

**CONTRACT DOCUMENTS & SPECIFICATIONS
FOR
CONTRACT NO. eDPW-040925**

Fair Acres Geriatric Kitchen Renovations

February 28, 2025

Volume 1

Prepared for:

**The County of Delaware
Department of Public Works**
Government Center Building
201 West Front Street, Suite 207
Media, PA 19063

Prepared by:

Spiezle Architectural Group, Inc.



Delaware County Council:

**Dr. Monica Taylor, Chair
Richard R. Womack, Vice Chair
Kevin M. Madden
Elaine Paul Schaefer
Christine A. Reuther**

PROJECT MANUAL

ADDITIONS AND ALTERATIONS TO FAIR ACRES GERIATRIC CENTER KITCHEN RENOVATIONS

340 MIDDLETOWN RD
MEDIA, PENNSYLVANIA 19063

FOR THE

DELAWARE COUNTY FAIR ACRES
340 MIDDLETOWN ROAD
MEDIA, PENNSYLVANIA 19063

ARCHITECT'S PROJECT NUMBER: 23H033

FOR PERMIT SUBMISSION DATE: 04/09/2025



ADDITIONS AND ALTERATIONS TO

FAIR ACRES GERIATRIC CENTER KITCHEN RENOVATIONS

FOR THE

FAIR ACRES GERIATRIC CENTER

340 MIDDLETOWN ROAD

MEDIA, PENNSYLVANIA 19063

ARCHITECTS/PLANNERS:

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ELECTRICAL

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**JEFFREY E. HOLSTEIN,
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END OF SECTION 00 01 07

**ADDITIONS AND ALTERATIONS TO
FAIR ACRES GERIATRIC CENTER KITCHEN RENOVATIONS**

FOR THE

**FAIR ACRES GERIATRIC CENTER
340 MIDDLETOWN ROAD
MEDIA, PENNSYLVANIA 19063**

ARCHITECT'S COMMISSION NUMBER: 23H033

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LIST OF DRAWINGS CONSIST OF THE FOLLOWING CONTRACT DRAWINGS AND OTHER DRAWINGS OF TYPE INDICATED:

THE ARCHITECT MAY FURNISH ADDITIONAL DRAWINGS AS MAY BE REQUIRED FOR FURTHER EXPLANATION OF DETAILS FOR WORK UNDER THIS CONTRACT, BUT THESE DRAWINGS WILL NOT INCLUDE SHOP DRAWINGS. SHOP DRAWINGS SHALL BE COMPLETED AND SUBMITTED FOR ARCHITECT'S REVIEW FOR COMPLIANCE WITH THE CONTRACT DOCUMENTS PRIOR TO THE STARTING OF WORK BY THE CONTRACTOR, AS SPECIFIED HEREIN.

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QF-D130	BUILDING 8 - EQUIPMENT SCHEDULE - PHASE 3
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P5.1	ENLARGED PLUMBING PLANS

- P6.1 PLUMBING ISOMETRIC DIAGRAMS
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- E3.1 POWER PLAN - BUILDING 5
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END OF SECTION 00 01 15

Advertisement

Sealed bids will be received through PennBid™ by Delaware County for The Fair Acres Geriatric Center Kitchen Renovations, until 11 AM, prevailing time, on April 9th, 2025.

All documents and solicitations details are available online anytime at no cost at PennBid™ (<https://pennbid.bonfirehub.com>). Note, PennBid™ assesses a fee to the bidder who is issued the award. Click on the “Solicitations” and “View” tabs.

Each bid must be accompanied by a certified check or bid bond payable to the Owner in an amount of not less than ten percent (10%) of the bid or bids. Only bonds from companies licensed to do business in the State where the Owner is located will be accepted and the bond shall so state same.

This project involves the renovation of building 5 and building 8 kitchens, this includes minor demolition and the renovation of building 5 kitchen to accept a new meal delivery system. The building 8 project includes the demolition of the entirety of the kitchen and its equipment. The kitchen will be renovated to accept the new meal delivery system as well as new kitchen equipment and a coffee shop for residents and families of Fair Acres. This project includes, new grease interceptor, new Burlodge retherm units, all new kitchen equipment, new exterior cooler boxes, and mechanical equipment to support these spaces.

Bids must be submitted unconditionally. No bidder may withdraw bid within SIXTY (60) days after the scheduled closing time for receipt of bids.

The Owner reserves the right to waive any informalities or to reject any or all bids.

CONTRACT eDPW-040925

Invitations for Bids for
Delaware County Fair Acres Geriatric Center Kitchen Renovations

The undersigned Delaware County Council will receive sealed bids electronically through PennBid™ until **11 am, on April 9th**, for the Fair Acres Geriatric Center Kitchen Renovations.

Failure to accompany this bid with an appropriate bid security noted above will automatically disqualify the bidder.

The contractor shall list related experience with appropriate references and complete the attached AIA Document A305 and submit with bid. In addition, the bidder shall submit with his bid a written statement describing his Apprentice Training Program and Affirmative Action Program **in accordance with the County of Delaware Ordinance No 2022-7**.

Contractors must provide in their bids an explicit list of apprentices and journeymen they will be using for the project, along with their respective trades. Contractors must also provide the applicable RAPIDS number or numbers for any identified apprenticeship programs accurately with their bids. Contractors must certify that all items included in the checklist are submitted accurately and uploaded in the correct folder on PennBid. Failure to comply with this paragraph will result in the bidder's disqualification.

All documents and solicitation details are available and open to public inspection at PennBid™ (<https://pennbid.bonfirehub.com>). Click on the "Solicitations" and "View" tabs. The bidder who is awarded the contract will be required to pay a fee to PennBid™. The names of those who have secured plans/specifications may be obtained at PennBid™.

This project involves the renovation of building 5 and building 8 kitchens, this includes minor demolition and the renovation of building 5 kitchen to accept a new meal delivery system. The building 8 project includes the demolition of the entirety of the kitchen and its equipment. The kitchen will be renovated to accept the new meal delivery system as well as new kitchen equipment and a coffee shop for residents and families of Fair Acres. This project includes, new grease interceptor, new Burlodge retherm units, all new kitchen equipment, new exterior cooler boxes, and mechanical equipment to support these spaces, as further defined on the drawings.

All workmen performing work on this project shall be paid the general minimum **Prevailing Wage Rates** supplied herein, as determined by the Secretary of the Pennsylvania Department of Labor and Industry, in accordance with the Regulations for Pennsylvania Prevailing Wage Act.

There will be an on-site Pre-Bid Conference at 1:00 p.m., March 20th, 2025, on site at 340 Middletown Rd., Media, PA. This conference is not mandatory but is highly encouraged.

Questions may be asked through the PennBID system. The final date to submit questions is 2:00pm, March 26th, 2025.

If you are a person with a disability and wish to attend the bid opening, and require an auxiliary aid, service or accommodation to observe or participate in the bid opening proceedings, please contact Delaware County Department of Public Works to discuss how your needs can best be accommodated.

The Delaware County Council reserves the right to reject any and all bids or parts thereof and to determine whether the quality and type of equipment and/or service to be furnished meet the requirements for which it is intended. They further reserve the right to insist or waive any technicalities required for the best interest of the County and to consider competency and responsibility of the bidder before the award of the Contract and award bids accordingly.

Delaware County Council:

Dr. Monica Taylor, Chair
Richard R. Womack, Vice Chair
Kevin M. Madden
Christine A. Reuther
Elaine Paul Schaefer
Delaware County Council

Fair Acres Geriatric Center Kitchen Renovations

Name and Address of Bidder

Section A
Invitation for Bids

Phone Number

Terms (if offered, list here):

INSTRUCTIONS TO BIDDERS

1. **PROJECT SCOPE**

The complete description of the work required to complete this project is contained in the General Conditions, Standard Specifications, Special Provisions and Construction Plans.

PLEASE NOTE: Contractor must develop and submit their own COVID-19 Work Safety Plan, and have their plan approved by Delaware County, prior to any work starting. Contractor will be responsible for any/all additional Personal Protective Equipment (PPE), which their employees require, in accordance with PennDOT Publication 408, Section 107.08. The contractor is also required and expected to adhere to their own COVID-19 Safety Plan while working on-site. Violations of the approved COVID-19 Safety Plan can result in project delays or shut-downs. The project shall not restart until Delaware County approves the re-start of work.

2. **TIME FOR COMPLETING WORK**

The work under this contract must be completed WITHIN 230 DAYS consecutive calendar days from the date of the Official Notice-to-Proceed. All Bidders are notified that time is of the essence of this Contract. The successful Bidder will be required to so execute the work to ensure its completion within the above number of calendar days set forth.

3. **BID INFORMATION**

The Owner may consider non-responsive any bid not prepared and submitted in accordance with the provisions hereof and may waive any informalities in or reject any and all bids. A bid which is incomplete, obscure, conditioned, or which contains additions not called for, or irregularities of any kind, including alterations or erasures, may be rejected. Any bid received after the time and date specified shall not be considered.

In the event that there is a tie between two or more lowest responsible bidders, and the place of business of one is located in Delaware County and the other(s)

is (are) located outside of the County, the Council may in their discretion opt to award the bid to the Delaware County bidder, all other relevant factors being equal.

Requests for Information are required to be submitted in writing seven (7) calendar days prior to bid opening to:

County of Delaware
Central Purchasing
<https://pennbid.bonfirehub.com>

No bid may be withdrawn within the twenty-four (24) hours prior to the bid opening.

The Contractor shall not transfer or sublet any portion of the work covered by these bid documents without written consent of the County.

4. BID SUBMITTAL FORMS

The Bid Submittal Forms consist of the following:

- Invitation to Bid
- Proposal Form for Unit Price Contract
- Bid Guarantee
- Consent / Agreement of Surety
- Non-Collusion Affidavit
- Contractor Responsibility Certification Form
- AIA Document A305 - 2020, Contractor's Qualification Statement
- Financial Statement in accordance with A305 – 2020, Section 5.1.1
- Apprenticeship Training Program (Special Conditions No. 21)
- Affirmative Action Program (Special Conditions No. 22)

5. PREPARATION OF BIDS

Bidders will be assumed to have carefully examined **the Invitation for Bids, the Instructions to Bidders, the Form of Proposal, the Agreement, the General Conditions, Other Conditions of the Contract, the Standard Specifications, Special Provisions and the Construction Drawings for the work**, all attached hereto, and to have carefully investigated physical conditions at the site and character of the work to be done and to have inquired fully into the difficulties of construction of the work before preparing their Proposal. The Owner will not be responsible for failure of the Contractor to properly estimate such difficulties and costs, or for overlooking any of the requirements of the Contract Documents.

If, in the Bidder's opinion, any work is specified in such a manner as would make it impossible for him to guarantee to produce the required result; or should obvious and unintentional errors or omissions appear in Contract Documents, the Bidder shall refer the same in writing to the Engineer for a decision before submitting his bid. If the Bidder fails to make such reference, no extra charge thereafter will be allowed or excuse entertained for failure to carry out the work in an acceptable manner, or to produce the required results, or to remedy defects in the workmanship because of alleged impossibilities in the production of the results specified or because of inadequate or improper Specifications.

No oral interpretations of the meaning of the Contract Documents made to any prospective Bidder by any person will be binding upon the Owner to any extent or for any purpose and may not be relied upon by any prospective Bidder.

Every request for such interpretation should be in writing, addressed to:

County of Delaware
Central Purchasing
<https://pennbid.bonfirehub.com>

To be given consideration, each request must be received at least seven (7) calendar days prior to the date fixed for the opening of bids. Any and all such interpretations and any supplemental instructions will be given in the form of written Addenda to the Bid Documents which will be mailed by Certified Mail to all prospective Bidders (at the respective address furnished for such purposes) not later than three (3) calendar days prior to the date fixed for the opening of bids. Failure of any Bidder to receive any such Addenda or interpretations shall

not relieve said Bidder from obligations with respect to the bid as submitted. All addenda so issued shall become part of the Contract Documents

6. CONDITIONS OF WORK

Each Bidder must inform himself fully of the conditions relating to the construction and labor under which the work will be performed; failure to do so will not relieve the successful Bidder of his obligation to furnish all material and labor necessary to carry out provisions of the Contract Documents and to complete the contemplated work for the consideration set forth in his bid.

Bidders are notified that it is obligatory upon them to obtain by their own means, information which they may require as to the existing physical conditions and, in particular, as to subsurface and groundwater conditions. Bids for all types of excavation are to be based on Unclassified Excavation which shall include all types of materials which are encountered, including, but not limited to weathered, decomposed, and sound bedrock; soil, gravel, and boulders; debris of any kind and organic matter.

7. ESTIMATED QUANTITIES

The quantities given in the Form of Proposal and attached to the Contract Documents are approximate only, being given as a basis for the uniform comparison of bids, and the Owner does not expressly or by implication warrant that the actual amount of work will correspond therewith.

8. CONTAMINATED SOILS

Should the Engineer agree that reasons exist to believe that contaminated soil is encountered in the excavation, the Owner shall, at his cost, engage the services of an environmental services company to assess the extent, if any, of the contamination of soils. If contamination is found to be present, the contaminated soils shall be separately stockpiled on and covered by plastic sheeting at the site for disposal by the Contractor.

PROPOSAL

Contract No. eDPW-040925

Date: _____

Council Members:

The undersigned hereby submits a proposal for Fair Acres Geriatric Center Kitchen Renovations, located at 340 Middletown Rd, Media, Delaware County, Pennsylvania, at the following price:

Having become completely familiar with the local conditions affecting the cost of Work at the place where Work is to be executed, and having carefully examined the site conditions as they currently exist, and having carefully examined the Bidding and Contract Documents prepared for this project, together with any Addenda to such Bidding and Contract Documents as listed hereinafter, the Undersigned hereby proposes and agrees to provide all labor, materials, plant, equipment, transportation and other facilities as necessary and/or required to execute all of the Work described by the Contract Documents for the above cited Contract for the lump sum consideration of:

_____ Dollars

(\$ _____), said amount being hereinafter referred to as the Base Proposal Amount. Base proposal Amount includes Unit Price Items listed below, if applicable.

BID ALTERNATES (AB-01 see "If and Where Directed Bid")

UNIT PRICES:

Item No.	Quantity	Item Description (Unit Price in words)	Unit Price	Total Price
Old Storage Area Ceiling Bldg. 5	Allow for 5% of Existing Plaster Ceiling in Bldg. 5	To replace the existing damaged Plaster ceiling		
Spray Fireproofing Bldg. 8	Allow for 25% additional steel fireproofing	To replace the existing damaged		

TOTAL BASE BID

Dollars \$

(The unit prices supplied above are required to be indicated in both words and figures. In the event of a discrepancy between the words and figures for a given item, the price shown in words will be accepted.)

- All items must be bid.
- A performance bond and a labor and materials bond in the amount of one hundred percent (100%) of the total amount bid, and a maintenance bond must be submitted by the successful bidder within ten (10) days from the bid award date.

IF AND WHERE DIRECTED BID

Item No.	Quantity	Item Description (Unit Price in words)	Unit Price	Total Price
AB-01		Remove and replace flooring, ceiling tiles, diffusers, paint, wall base and replace with new. (Existing light fixtures to be salvaged and re-used)		

IF AND WHERE DIRECTED BID

Dollars \$

It is understood that THE INSURANCE REQUIREMENTS ARE A CRITICAL PORTION OF THIS BID. THE REQUIREMENTS **AS SET FORTH IN VARIOUS SECTIONS** MUST BE SATISFIED. IT IS UNDERSTOOD THAT NO EXCEPTIONS WILL BE MADE.

It is further understood that upon notice to furnish the County with the necessary Contract and Bonds, we will execute the attached Form of Contract and Bonds with the County of Delaware within twenty (20) calendar days after receipt of such notice.

It is understood and agreed that the County Council reserves the right to reject any and all bids and that if the Successful Bidder fails to execute the attached Contract and Bond within twenty (20) calendar days after receiving notice from the County to do so, the County Council shall be free to notify the next lowest, responsible bidder. It is understood that if the Successful Bidder shall fail to execute a Contract as set forth in these General Condition, the deposit will be forfeited as liquidated damages. Award will be based on bids for the Base Bid(s) or a combination of Base Bid(s) and if and where directed.

It is understood that this Bid may not be withdrawn for a period of sixty (60) calendar days after the date of opening thereof.

It is understood that we will start work within **fourteen (14)** calendar days after execution of the Contract and shall complete work in accordance with the schedule given in Section B, Instructions to Bidders,

Time for Completing Work. Liquidated Damages (if any) shall be assessed as defined in the Special Conditions, Liquid Damages, for all days past this limit. It is understood that the County may, on its own decision or initiate, extend the completion date by giving notice of all parties to this Contract of its intention to extend.

Delaware County shall not be liable for any expenses, damages, or loss of profits, anticipated or otherwise.

It is understood that if our Bonding Company is not a Pennsylvania Company, the Bid Bond, Performance Bond and Payment Bond, must be countersigned by a Pennsylvania Resident Agent, with Power of Attorney so to do.

The undersigned acknowledges receipt of the foregoing Addenda and that he has prepared this bid accordingly.

Addendum No.	Date
_____	_____
_____	_____
_____	_____

Insert the numbers of all addenda received - If none were received, insert the word "None"

It is understood that each bidder is to prepare and present satisfactory evidence of his experience, qualifications, and financial abilities to carry out the terms of the Contract. In addition, the Prime Contractor shall prepare and present satisfactory evidence of his qualification and references related to the work.

Material Safety Data Sheets (MSDS) must be submitted for respective products before award, in compliance with the Federal Hazard Communication Standard Act (29 CFR 1910, 1200) and various State Right-to-Know laws, as applicable.

Our signature on this proposal page signifies that we have read and agree to comply with all parts of the Invitation, Instructions, Proposal, General Conditions, Special Conditions and Specifications of this Bid and will carry out all the conditions of the above.

The undersigned hereby certifies that this bid is genuine, and not a sham or collusive, or made in the interest or in behalf of any person, firm, or corporation not herein named; that the undersigned has not

directly or indirectly induced or solicited any bidder to refrain from bidding, and that the undersigned has not, in any manner, sought by collusion to secure for himself an advantage over any other bidder.

It is understood that the Proposal Page must have two (2) signatures, and if the firm is a corporation, the corporate seal must also be affixed when submitting bid.

Respectfully submitted,

FIRM NAME _____

SIGNATURE _____

TYPED NAME & TITLE _____

OFFICIAL ADDRESS _____

Telephone # _____ FAX # _____

ATTEST: _____

Secretary or Assistant Secretary

Bidder will check whether the bid is by:
an individual (), partnership (), or corporation ().

NOTES:

If the Bidder is a partnership, the names of all members of the firm, as well as the trading name, shall be set forth. If the Bidder is a corporation, the Bid must be executed by the President or Vice-President, and attested by the Secretary or Assistant Secretary of the corporation, with the corporate seal applied. No other names will be accepted unless accompanied by the proper certification from the corporation permitting other than the President or Vice-President and Secretary to sign contracts. If the business is operated by a sole owner, only his signature is required, and it should be noted under signature that he is the sole owner.

COUNTY OF DELAWARE

VENDOR/CONTRACTOR'S INSURANCE REQUIREMENTS

COMPREHENSIVE GENERAL LIABILITY

Before the Contract is awarded, the Contractor shall take out and maintain during the life of this Contract such Public Liability and Property Damage insurance as shall protect him and any sub-contractors, if any, performing work covered by this Contract, from all claims for loss arising from Property damage, personal injury and bodily injury including accidental death. Such Insurance Policy shall include Products and Completed Operations coverage and include coverage for damages that may arise from the Operations of the Contractor or by any sub-contractor or by anyone directly or indirectly employed by either of them. The Combined Single Limit of Liability required is \$3,000,000 per occurrence with a deductible of no more than \$1,000.

VEHICLES

Comprehensive Business Automobile Coverage shall be maintained with a Combined Single Limit of Liability in an amount no less than \$1,000,000 per occurrence with no deductible.

CATASTROPHE UMBRELLA LIABILITY

One million dollars in excess of Primary General.

WORKER'S COMPENSATION

Worker's Compensation Insurance required by Pennsylvania law covering all Owner's employees and all employees of the general contractors and all sub-contractors. A current certificate of Exempt status from the Pennsylvania Department of Labor and Industry is acceptable if the Owner is an Exempt Self-Insurer in the State of Pennsylvania.

EMPLOYER'S LIABILITY INSURANCE:

Employer's Liability Insurance with limits no less than \$500,000 per accident or employee disease.

The County of Delaware shall be named as an additional insured on all policies insofar as the specified Contract is concerned. In addition, the Contractor shall furnish the County with a certificate of insurance showing the type, amount, class of operations covered, effective dates and dates of expiration. All policies should also contain a sixty (60) day notice of cancellation clause.

Section D
Insurance Requirements

NOTE:

If the owner maintains a self-insurance program or a limited self-insurance program for any or all of the exposures listed above, a complete description of the program with information on excess carriers and funding arrangements should be provided. In the event that the worker's compensation is self-insured, a copy of the current exemption shall be provided.

BID GUARANTEE

KNOW ALL MEN BY THESE PRESENTS, THAT WE, the undersigned,
_____, as Principal,
and held firmly bound unto _____ as
OWNER in the penal sum of _____
for the payment of which, well and truly to be made, we hereby jointly and
severally bind ourselves, successors and assigns.

Signed, this _____ day of _____, 20 ____.

The Condition of the above obligation is such that whereas the Principal has
submitted to The Delaware County Council a certain BID, attached hereto and
hereby made a part hereof to enter into a contract in writing, for the Fair Acres
Geriatric Center Kitchen Renovations located at 340 Middletown Rd, Media,
Delaware County, Pennsylvania.

NOW, THEREFORE,

- (a) If said BID shall be rejected, or
- (b) If said BID shall be accepted and the Principal shall execute and
deliver a contract in the Form of Contract attached hereto (properly
completed in accordance with said BID) and shall furnish a BOND
for his faithful performance of said contract, and for the payment of
all persons performing labor or furnishing materials in connection

Section E
Bid Guarantee

therewith and shall in all other respects perform the agreement created by the acceptance of said BID, then this obligation shall be void, otherwise the same shall remain in force and effect; it being expressly understood and agreed that the liability of the Surety for any and all claims hereunder shall, in no event, exceed the penal amount of this obligation stated.

The Surety, for value received, hereby stipulates and agrees that the obligations of said Surety and its BOND shall be in no way impaired or affected by any extension of the time within which the OWNER may accept such BID; and said Surety does hereby waive notice of any such extension.

IN WITNESS WHEREOF, the Principal and the Surety have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, the day and year first set above.

Principal

Surety

By: _____

Section F
Consent/Agreement of Surety

CONSENT/AGREEMENT OF SURETY

The undersigned _____
Name of Surety Company
a corporation organized and existing under the laws of
_____ and authorized to do business
in the Commonwealth of Pennsylvania do hereby consent and agree with
The County of Delaware that if the proposal of
_____, for the project
Name of Bidder

Fair Acres Geriatric Center Kitchen Renovations
340 Middletown Road
Media, PA 19063

be accepted and a contract for said work be awarded to said bidder, it will, upon
its being so awarded, become the surety for said Bidder on such surety bonds as
are called for in the Bid Documents.

Signed and Sealed (Date)

Name of Surety Company

By: _____
Attorney-in-fact

INSTRUCTIONS FOR NON-COLLUSION AFFIDAVIT

1. This Non-Collusion Affidavit is material to any contract awarded pursuant to this bid. According to the Pennsylvania Antibid-Rigging Act, 73 P.S. 1611 et seq., governmental agencies may require Non-Collusion Affidavits to be submitted together with bids.
2. This Non-Collusion Affidavit must be executed by the member, officer or employee of the bidder who makes the final decision on prices and the amount quoted in the bid.
3. Bid rigging and other efforts to restrain competition, and the making of false sworn statements in connection with the submission of bids are unlawful and may be subject to criminal prosecution. The person who signs the Affidavit should examine it carefully before signing and assure himself or herself that each statement is true and accurate, making diligent inquiry, as necessary, of all other persons employed by or associated with the bidder with responsibilities for the preparation, approval or submission of this bid.
4. In the case of a bid submitted by a joint venture, each party to the venture must be identified in the bid documents, and an Affidavit must be submitted separately on behalf of each party.
5. The term “complementary bid” as used in the Affidavit has the meaning commonly associated with that term in the bidding process and includes the knowing submission of bids lower than the bid of another firm, any intentionally low or noncompetitive bid, and any other form of bid submitted for the purpose of giving a false appearance of competition.
6. Failure to file an Affidavit in compliance with these instructions may result in disqualification of the bid.

NON-COLLUSION AFFIDAVIT

State of _____: Contract/Bid No. _____

County of _____:

I state that I am _____ of _____
Title Name of Firm

and that I am authorized to make this affidavit on behalf of my firm and its owners, directors, and officers. I am the person responsible in my firm for the price(s) and the amount of this bid.

I state that:

(1) The price(s) and amount of this bid have been arrived at independently and without consultation, communication or agreement with any other contractor, bidder or potential bidder.

(2) Neither the price(s) nor the amount of this bid, and neither the approximate price(s) nor approximate amount of this bid have been disclosed to any other firm or person who is a bidder or potential bidder, and they will not be disclosed before bid opening.

(3) No attempt has been made or will be made to induce any firm or person to refrain from bidding on this contract, or to submit a bid lower than this bid, or to submit any intentionally low or noncompetitive bid or other form of complementary bid.

(4) The bid of my firm is made in good faith and not pursuant to any agreement or discussion with, or inducement from, any firm or person to submit a complementary or other noncompetitive bid.

(5) _____, its affiliates,
Name of my firm

Subsidiaries, officers, directors and employees are not currently under investigation by any governmental agency and have not in the last four years been convicted or found liable for any act prohibited by the State or Federal law

Section G
Non-Collusion Affidavit

in any jurisdiction, involving conspiracy or collusion with respect to bidding on any public contract, except as follows:

I _____ state that _____
Name of firm

understands and acknowledges that the representations are material and important and will be relied on by Delaware County in awarding the contract(s) for which this bid is submitted. I understand and my firm understands that any misstatement in this affidavit is and shall be treated as fraudulent concealment from Delaware County of the true facts relating to the submission of bids for this contract.

Name

Company Position

SWORN TO AND SUBSCRIBED
BEFORE ME THIS ____ DAY
OF _____, 20____

Notary Public

My Commission Expires: _____

COUNTY OF DELAWARE PENNSYLVANIA

ORDINANCE No. 2021-2

AN ORDINANCE OF THE COUNTY OF DELAWARE, COMMONWEALTH OF PENNSYLVANIA AMENDING SECTION 6-12 OF THE ADMINISTRATIVE CODE TO INCLUDE THAT COUNTY COUNCIL MEMBERS ARE PROHIBITED FROM KNOWINGLY DERIVING A FINANCIAL INTEREST FROM COUNTY CONTRACTS AND ADDING CERTAIN OTHER CONFLICT OF INTEREST PROVISIONS.

WHEREAS, pursuant to Section 6-121 of the Administrative Code (the "Code") of the County of Delaware, Commonwealth of Pennsylvania (the "County"), the Code may be amended by ordinances of the County Council; and

WHEREAS, Section 6-12.B(2) of the Code limits elected and appointed officials, the County Executive Director and department heads, and all County employees from having a business interest that would interfere with their official duties; and

WHEREAS, Section 6-12.B(2) includes only a limited restriction of Council members from having a financial interest or other conflict that would interfere with their official duties; and

WHEREAS, County Council believes that a more expansive restriction on financial interests and other conflicts of Council members will allow Delaware County citizens to be assured that Council members will not directly or indirectly knowingly realize any financial gain through their public office other than any compensation that is provided by law;

IT IS HEREBY, ENACTED AND ORDAINED BY County Council of Delaware County, Commonwealth of Pennsylvania as follows:

SECTION 1. The Code shall be amended to add a new Section 6-12.D to read as set forth below:

§ 6-12.D County Council Members Prohibited From Knowingly Deriving a Financial Interest From County Contracts.

(1) Prohibition Against Knowingly Deriving Financial Gain and Conflict of Interest. In addition to the limitations imposed elsewhere in this Administrative Code, including Section 6-12.B(2), no Council member shall knowingly have a financial interest (including any immediate family member having a financial interest) in any entity that is a party to a contract with the County, approved by County Council, including subcontractors.

Notwithstanding the foregoing, there shall be no violation of this Section 6-12.D(1) if a Council member recuses her or himself from voting on a contract in which such Council member (or an immediate family member) has a minor financial interest and submits a written statement listing the reasons for such recusal. Said statement shall be submitted by the Council member to the County Clerk, Council Chairman and Vice Chairman within seven (7) days of identification of the conflict by the member but not less than one (1) day prior to the Council meeting at which a vote on the contract is scheduled. Such statement shall be read into the Council minutes at such meeting.

(2). Other Prohibitions.

- (a) Council members are prohibited from receiving compensation (other than the payment of expenses) as an officer or director of (i) any entity that is a party to a contract with the County and/or (ii) any subcontractor to such an entity.
- (b) Council members are prohibited from using non-public information received through public office for their own financial benefit or the financial benefit of an immediate family member.

- (3). Conflicts of Interest. A Council member must recuse her or himself from voting on a contract if he or she knows that there is a conflict of interest (which is not a financial interest) and shall submit a written statement listing the reasons for such recusal. Such conflicts of interest shall include serving as an officer or director of a nonprofit organization that is a party to a contract with the County and/or any subcontractor to such a contract.

Said statement shall be submitted by the Council member to the County Clerk, Council Chairman and Vice Chairman within seven (7) days of identification of the conflict by the member but not less than one (1) day prior to the Council meeting at which a vote on the contract is scheduled. Such statement shall be read into the Council minutes at such meeting.

(4). Definitions.

A "financial interest" for purposes of this Section 6-12.D is any financial interest in a legal entity engaged in business for profit which comprises more than 5% of the equity of the business or more than 5% of the assets of the economic interest in indebtedness.

An "immediate family member" for purposes of this Section 6-12.D is defined as a parent, spouse, brother and sister (or like relative in laws), child(ren) and step-child(ren).

"Knowingly" or "Knows" means that the individual in question actually knew or, based on facts and circumstances, should have known, of the existence of a financial interest or conflict of interest, as applicable.

A "minor financial interest" for purposes of this Section 6-12.D is any financial interest from which a Council member and all immediate family members, in the aggregate, derives (or reasonably anticipates deriving) compensation, earnings, revenues and/or other payments not exceeding a total of \$25,000 on an annual basis (including the effect of the contract then under consideration for approval by Council).

- (5). Penalties. Any of the following penalties may be imposed for violations of the limitations in Section 6-12.D(1) as determined per Section 6-12.D (5):

- a. A reprimand of the Council member in violation.
- b. A censure of the Council member in violation.
- c. An assessment of a fine of the Council member in violation, in an amount not to exceed the lesser of (i) ten percent (10%) of the total compensation under the contract in question or (ii) \$20,000.

- d. To the extent legally permitted, termination of the contract in question and/or repayment to the County of any profit made by the contractor under such contract.
- e. Any entity, contractor or subcontractor which entered into a contract with the County which resulted in a violation of this section, may be banned as a contractor or subcontractor to the County for a period of two (2) years.

(6). **Determination of Penalties.** The determination of a penalty for the violation of this ordinance shall be made by a majority vote of County Council (not to include the Council member whose action is the subject of such vote) following such investigation and consideration of such evidence as County Council deems appropriate or such other entity or body as may be designated by resolution of County Council.

(7). **County Executive Director.** If the County Executive Director knows that he or she has a financial interest in a contract being considered for approval by County Council, he or she shall disclose such financial interest to County Council prior to approval of such contract by County Council, and such financial interest shall be noted in the minutes of the Council meeting at which such approval is considered. County Council may take appropriate disciplinary action for violation of this requirement by the County Executive Director, subject to the limitations elsewhere in the Administrative Code.

SECTION 2. This Ordinance shall take effect on the tenth day after its adoption.

ENACTED AND ORDAINED by County Council of the County of Delaware, Pennsylvania,
this 15 day of June 2022.

COUNTY OF DELAWARE


Dr. Monica Taylor, Chair


Elaine Paul Schaefer, Vice Chair


Kevin M. Madden


Christine A. Reuther


Richard R. Womack, Jr.

Attested:


Anne M. Coogan
County Clerk

COUNTY OF DELAWARE PENNSYLVANIA

ORDINANCE No. 2022-7

**AN ORDINANCE OF THE COUNTY OF DELAWARE, COMMONWEALTH
OF PENNSYLVANIA AMENDING AND RESTATING CHAPTER 29 OF
THE COUNTY CODE RELATING TO CONTRACTORS.**

WHEREAS, pursuant to § 1-10 of the Code (the "Code") of the County of Delaware, Commonwealth of Pennsylvania (the "County"), the Code may be amended by ordinances of the County Council when passed and adopted in such form as to indicate the intention of the County Council to be a part of the Code; and

WHEREAS, Chapter 29 of the Code sets forth provisions regarding the qualification of contractors for certain County public works projects; and

WHEREAS, County Council has been presented considerations regarding the current public works contract environment and the need for significant changes to its procurement standards for public works construction to address these considerations, limit project delivery risks, protect its financial and proprietary interests, and better ensure efficient procurement and successful delivery of these projects; and

WHEREAS, County Council is committed to addressing the challenges it faces relating to public works projects by enacting necessary and appropriate procurement legislation to protect its proprietary and financial interests and create adequate safeguards to ensure the successful delivery of such projects to the fullest extent possible; and

WHEREAS, Chapter 29 of the Code was last revised in 2007, and County Council desires to update and modernize the provisions of Chapter 29 of the Code;

IT IS HEREBY ENACTED AND ORDAINED BY County Council of Delaware County, Commonwealth of Pennsylvania as follows:

SECTION 1. The Code shall be amended to replace Chapter 29 of the Code in its entirety to read as set forth in Exhibit A attached hereto.

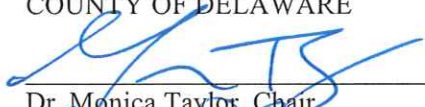
SECTION 2. Any and all other ordinances or parts of ordinances in violation or in conflict with the terms, conditions and provisions of this ordinance are hereby repealed to the extent of such irreconcilable conflict.

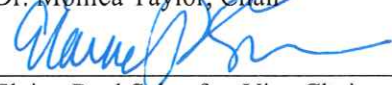
SECTION 3. The terms, conditions and provisions of this ordinance are hereby declared to be severable, and should any portion, part or provision of this ordinance be found by a court of competent jurisdiction to be invalid, unenforceable or unconstitutional, County Council hereby declares its intent that the ordinance shall have been enacted without regard to the invalid, unenforceable or unconstitutional portion, part or provision of this ordinance.


SECTION 4. This Ordinance shall take effect on the tenth day after its adoption.

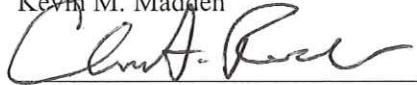
ENACTED AND ORDAINED by County Council of the County of Delaware, Pennsylvania,
this 15 day of June 2022.

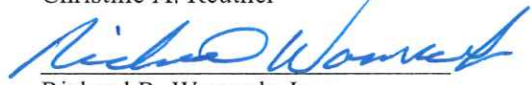
COUNTY OF DELAWARE


Dr. Monica Taylor, Chair


Elaine Paul Schaefer, Vice Chair


Kevin M. Madden


Christine A. Reuther


Richard R. Womack, Jr.

Attested:


Anne M. Coogan
County Clerk

Exhibit A

Chapter 29 CONTRACTORS

§ 29-1. Purpose

- A. Delaware County recognizes that there is a need to ensure that all work on public construction and maintenance contracts is performed by responsible, qualified firms that maintain the capacity, expertise, personnel and other qualifications and resources necessary to successfully perform such contracts in a timely, reliable and cost-effective manner.
- B. To effectuate the purpose of selecting responsible contractors for these public contracts and to protect Delaware County's investments in such contracts, prospective contractors and sub-contractors should be required to meet pre-established, clearly defined, minimum qualification standards regarding past project performance in terms of competency, safety and law compliance, technical abilities, experience, and adequacy of resources.
- C. Further, due to the critical impact that skilled craft labor has on the execution of public works projects, and the increasingly limited availability of such labor, it is necessary to require contractors and subcontractors to participate in proven apprenticeship training programs as a condition of bidding to promote successful project delivery and help ensure future workforce development.
- D. Therefore, Delaware County shall require compliance with the provisions of this Chapter by business entities seeking to provide services as specified herein. The requirements of this Chapter are intended to supplement, not replace, existing contractor qualification standards or other criteria currently required by Delaware County. However, in the event that this Chapter conflicts with any law, public policy or contracting documents of Delaware County, the requirements of this Chapter shall prevail.

§ 29-2. Responsible Contractor Requirements

- A. This Chapter shall apply to contracts valued at \$500,000 or more for public works projects undertaken by Delaware County for construction, demolition, alteration, renovation, modernization, service or maintenance of buildings, structures or facilities. All contractors and subcontractors of any tier that perform work on such projects, regardless of value of individual contract or subcontract packages shall meet the requirements of this Chapter.
- B. All firms engaged in public works contracts subject to this Chapter, including general contractors, construction managers, other lead or prime contractors, and subcontractors at any level, shall be qualified, responsible contracting firms that have sufficient capabilities in all respects to successfully perform contracts on which they are engaged, including the necessary experience, equipment, technical skills and qualifications and organizational, financial and personnel resources. Firms bidding or otherwise participating in public works contracts shall also be required to have a satisfactory past performance record and a satisfactory record of law compliance, integrity and business ethics.
- C. This Chapter does not apply to work incident to the installation of specialized equipment pursuant to either warranty requirements or manufacturers' requirements.
- D. Compliance with this Chapter and compliance with the provisions of Article V (Central Purchasing) of the Administrative Code are separate requirements which need to be independently satisfied.

§ 29-3. Contractor Responsibility Certifications

- A. As a condition of performing work on a public works contract subject to this Chapter, a general contractor, construction manager or other lead or prime contractor seeking award of a contract shall submit a Contractor Responsibility Certification as specified herein.

- B. The Contractor Responsibility Certification shall be completed on a form provided by Delaware County and reference the project for which a bid is being submitted by name and contract or project number.
- C. In the Contractor Responsibility Certification the construction manager, general contractor or other lead or prime contractor shall confirm the following facts regarding its past performance and work history and its current qualifications and performance capabilities:
- (1) The firm and its employees have all licenses, registrations, certificates or other credentials required by federal and state law and the laws of Delaware County
with respect to the contract work it seeks to self-perform.
 - (2) The firm meets the bonding requirements for the contract required by law or contract specifications, as well as applicable insurance requirements for the contract, including general liability, workers compensation and unemployment insurance.
 - (3) The firm has not been debarred or suspended by any federal, state or local government agency or authority in the past three years.
 - (4) The firm has not defaulted on any project in the past three years.
 - (5) The firm has not had any type of business, contracting or trade license, registration or certification revoked or suspended in the past three years.
 - (6) The firm and its principals/owners have not been convicted of any crime relating to its contracting business in the past ten years.
 - (7) Within the past three years, the firm has not been found in violation of any law applicable to its contracting business, including, but not limited, to licensing laws, tax laws, wage and hour laws, prevailing wage laws, environmental laws or others, where the result of such violation was the payment of a fine, back pay damages or any other type of penalty in the amount of \$5,000 or more.
 - (8) The firm will employ a sufficient number of craft labor personnel required to successfully perform any project work it self-performs or shall use qualified subcontractors to meet this requirement and shall assign workers to perform only work in their respective craft or trade for which they have sufficient skills and training, or shall use qualified subcontractors to meet this requirement.
 - (9) The firm will pay all craft employees on the project, at a minimum, the applicable wage and fringe benefit rates, as established for the classification in which the worker is employed, in accordance with the Pennsylvania Prevailing Wage Act (43 P.S. § 165-1 et seq.).
 - (10) The firm will ensure that all craft labor it employs on the project will have completed, prior to working on the project the OSHA 10-hour training course for safety established by the U.S. Department of Labor. If the firm is a prime contractor, it shall also ensure that at least one person on the project has completed the OSHA 30-hour construction training course established by the U.S. Department of Labor
 - (11) The firm participates in a Class A Apprenticeship Training Program, as defined below, for each separate trade or classification in which it employs craft employees.
 - (a) For purposes of this section, a Class A Apprenticeship Program is an apprenticeship program registered with and approved by the U.S. Department of Labor or a state apprenticeship agency and has graduated apprentices to journey person status for at least three of the past five years. This may be an apprenticeship program subject to the Employee Retirement Income Security Act of 1974, 29 U.S.C. § 1001 et seq. ("ERISA"), or a non-ERISA program.
 - (b) To demonstrate compliance with this section, the firm shall provide, with this certification, a list of all trades or classifications of craft employees it will employ on the project and

documentation verifying it participates in a Class A Apprenticeship Program for each trade or classification listed.

- (c) The requirements of this section and Section 29-3.C(12) help ensure that the bulk of the craft labor workforce employed on the project will have sufficient skills and training to correctly perform work assigned to them.
 - (12) The construction manager, general contractor or other lead or prime contractor responsible for the project shall ensure that at least 70 percent of the craft labor workers employed on the project shall be comprised of either journey person workers who have successfully completed a Class A Apprenticeship Program as defined in Section 29-3.C(10) or apprentices registered in such programs. The apprenticeship participation of specified by this section must be in the same trade or craft for which the workers are employed on the project.
 - (13) The firm shall assign craft labor personnel only work in the craft or trade in which they are employed.
 - (14) The firm has all other technical qualifications and resources, including equipment, personnel and financial resources, to successfully perform the referenced contract and shall maintain such capabilities throughout the duration of the project, or will obtain same through the use of qualified, responsible subcontractors or vendors
 - (15) The firm shall notify Delaware County within seven days of any material changes in its operation that relate to any matter attested to in this certification.
- D. Execution of the Contractor Responsibility Certification required by this Chapter shall not establish a presumption of contractor responsibility, and Delaware County may require any additional information it deems necessary to evaluate a firm's status as a responsible contractor, including information regarding the firm's technical qualifications, financial capacity or other resources and performance capabilities. Delaware County may require that such information be included in a separate Statement of Qualifications and Experience or as an attachment to the Contractor Responsibility Certification.
- E. The submitting firm shall stipulate in the Contractor Responsibility Certification that, if it receives a Notice of Intent to Award Contract, it will provide a Subcontractor List and required subcontractor information as specified in Section 29-5.
- F. If the submitting firm has ever operated under another name or is controlled by another company or business entity or in the past five years controlled or was controlled by another company or business entity, whether as a parent company, subsidiary or in any other business relation, it shall attach an appendix to its Contractor Responsibility Certification that explains in detail the nature of any such relationship. Additional information may be required from such an entity if the relationship in question could potentially impact contract performance.
- G. If a firm fails to provide a Contractor Responsibility Certification required by this section, it may be disqualified from bidding. No action of any nature shall lie against Delaware County because of its refusal to accept a bid for this reason.

§ 29-4. Notice of Intent to Award Contract

- A. After it has received bids for a project, Delaware County shall issue a Notice of Intent to Award Contract to the firm that has submitted the lowest responsive bid.
- B. Such Notice shall be issued immediately or as soon as practicable after bids are opened and shall stipulate that the contract award is conditioned on the issuance of a written Contractor Responsibility Determination for the firm as required by Section 29-6, compliance with Subcontractor Certifications required by Section 29-5, and any other qualification standards required by Delaware County.

§ 29-5. Subcontractor Responsibility Requirements

- A. Within fourteen (14) days of receiving a Notice of Intent to Award Contract, the prospective awardee shall submit a Subcontractor List, which provides the name and address of the subcontractors it will use on the project, the scope of work assigned to each subcontractor, and Subcontractor Responsibility Certifications as required by this section. The Director of Public Works may extend such deadline for submission upon good justification from a prospective awardee as to the delayed response.
- B. The prospective awardee shall not be permitted to use a subcontractor on any work performed for Delaware County unless it has identified the subcontractor on its Subcontractor List and provided a Subcontractor Responsibility Certification in accordance with the requirements of Section 29-5.
- C. At the time a prospective awardee submits the Subcontractor List it shall also submit Subcontractor Responsibility Certifications and applicable supporting information for all listed subcontractors to Delaware County.
- D. A prospective awardee shall determine whether any firm on its Subcontractor List is organized as a sole proprietorship owned and operated by a single person. This shall apply to subcontractors at any tier. For any such entity, the prospective awardee shall ensure that the sole proprietorship subcontractor is a legitimate business entity and not a misclassified employee by requiring the subcontractor to supplement its Subcontractor Certification with its Employer Identification Number and copies of any license, certificate or registration it is required to maintain in to do business in the state in which it is located.
- E. Subcontractor Responsibility Certifications shall be executed by the respective subcontractors on forms prepared by Delaware County and contain the same information, representations and supporting information required in Contractor Responsibility Certifications, including verification of apprenticeship qualifications required by Section 29-3.C(11) for each trade or classification of craft workers it will employ on the project.
- F. Subcontractor Responsibility Certifications shall be executed by a person having sufficient knowledge to address all matters in the certification and shall include an attestation stating, under the penalty of perjury, that all information submitted is true, complete and accurate.
- G. A subcontractor listed on a firm's Subcontractor List shall not be substituted unless written authorization is obtained from Delaware County and a Subcontractor Responsibility Certification is provided for the substitute subcontractor.
- H. In the event that Delaware County determines that a subcontractor fails to meet the requirements of this Chapter or is otherwise determined to be non-responsible, it may, after informing the prospective awardee, exercise one of the following options:
 - (1) Permit the awardee to substitute a qualified, responsible subcontractor in accordance with the requirements of this section, upon submission of a completed Subcontractor Certification for the substitute and approval of the substitute by Delaware County.
 - (2) Require the awardee to self-perform the work in question if the firm has the required experience, licenses and other qualifications to perform the work in question; or
 - (3) Disqualify the prospective awardee.
- I. In the event a subcontractor is disqualified under this Chapter, the general contractor, construction manager or other lead or prime contractor shall not be permitted to make any type of claim against Delaware County on the basis of a subcontractor disqualification.

§ 29-6. Contractor Responsibility Review and Determination

- A. After Delaware County has issued a Notice of Intent to Award Contract to the lowest responsive bidder, it shall undertake a contractor responsibility review process to determine whether the firm is a

qualified, responsible firm in accordance with the requirements of this Chapter and other applicable laws and regulations. The time frame for conducting this review process shall be as determined by Delaware County.

- B. As part of the review process, Delaware County shall ensure that the Contractor Responsibility Certification and Subcontractor Responsibility Certifications and applicable supporting information comply with the requirements of this Chapter.
- C. Delaware County may conduct any additional inquiries to verify that the prospective awardee and its subcontractors have the technical qualifications and performance capabilities necessary to successfully perform the contract and that the firms have a sufficient record of law compliance and business integrity to justify the award of a public contract. In conducting such inquiries, Delaware County may seek relevant information from the firm, its prior clients or customers, its subcontractors or any other relevant source.
- D. After Delaware County determines that all responsibility certifications have been properly executed and has verified that all other relevant information requested for reviews indicates that the prospective awardee and its subcontractors are qualified, responsible firms, it shall issue a written Contractor Responsibility Determination for the prospective awardee.
- E. In the event a firm is determined to be non-responsible, Delaware County shall notify the firm and proceed to conduct a responsibility review of the next lowest, responsive bidder or, if necessary, rebid the project. A Responsibility Determination may be revoked at any time if Delaware County obtains relevant information warranting any such revocations.

§ 29-7. Execution of Final Contract

- A. A contract subject to this Chapter shall not be executed until all requirements of this Chapter have been fulfilled and until a Contractor Responsibility Determination has been issued by Delaware County pursuant to Section 29-6.
- B. Prior to the execution of a final contract under this Section, Delaware County shall publicly post the Notice of Intent to Award, Contractor and Subcontractor Responsibility Certifications, Subcontractor Lists, related supporting documentation and the Contractor Responsibility Determination on a publicly available website for public inspection for a period of ten (10) calendar days after the issuance of the Contractor Responsibility Determination.

§ 29-8. False, Incomplete or Misleading Responsibility Certifications.

- A. If Delaware County determines that a Contractor Certification, Subcontractor List or Subcontractor Responsibility Certification contains false or misleading information that was provided knowingly or with reckless disregard for the truth or omits material information knowingly or with reckless disregard of the truth, the firm for which the certification was submitted shall be disqualified from the project and shall be prohibited from performing work for Delaware County for a period of three years. Delaware County may withhold payment of any monies due to the firm as damages and impose other applicable penalties and sanctions, including contract termination, as permitted by law or contract.

Section K
Contractor's Qualification Statement

CONTRACTOR'S QUALIFICATION STATEMENT

Contractor shall submit AIA Document A305 – 2020, Contractor's Qualification Statement, with Bid. (See Appendix B)

FORM OF CONTRACT

Article of Agreement made this _____ day of _____
_____, 20___ between _____

_____(hereinafter called Contractor)
and the County of Delaware (hereinafter called County).

WITNESSETH:

That the Contractor covenants, promises, and agrees to and with the County to

For the price or sum of _____

as per its annexed Bid, and to in all respects comply with the terms and conditions of the Annexed Proposal, Invitation to Bidders, Instructions to Bidders, General Conditions, Specifications and Drawings and the County covenants, promises, and agrees to and with the Contractor to pay it in the price of _____

for _____

It is further mutually agreed by said parties, in consideration of their aforesaid mutual covenants, that the annexed Invitation to Bidders, Proposal, General Conditions and Specifications annexed thereto constitute and are a part of the Contract as though fully set forth therein.

Section L
Form of Contract

In Witness Whereof, the Contractor and the County have hereunto caused their common of corporate Seals to be affixed hereto duly attested by their proper Officers the day and year aforesaid.

Attest: _____
Secretary or Assistant Secretary

COUNTY OF DELAWARE

Chairman

Attest: _____
County Clerk

Date: _____

LABOR AND MATERIALS BOND

KNOW ALL PERSONS BY THESE PRESENTS that _____
(Principal) and _____ (Surety) are held and firmly
bound unto the County of Delaware in the Commonwealth of Pennsylvania, (hereinafter called
County), in the sum of: _____ lawful money of the United States of America, to
which payment well and truly to be made, we do hereby jointly and severally bind and oblige
ourselves, and our respective successors and assigns firmly by these presents:

Sealed with our Seals this _____ day of _____, 20 _____.

Whereas, the bounden Principal has entered into a written Contract with the County to:

for the price or sum of _____
which Contract by reference is made a part hereof:

Now, therefore, the condition of this obligation is such that if the above bounden Principal shall and
will promptly pay or cause to be paid all sums of money which may be due any person, co-
partnership, association or corporation for all materials furnished and labor supplied or performed in
the prosecution of the work whether or not the same material or labor enter into and become
component parts of the work or improvement contemplated, then this obligation to be void and of no
effect, otherwise, to continue in full force and virtue.

The Principal and Surety further and severally agree with the Obligee herein that every person, co-
partnership, association or corporation who whether as sub-contractor or otherwise, has furnished
material or supplied or performed labor in the prosecution of the work as above mentioned and who
has not been paid therefore, may use in assumpsit on this bond in the name of the County of
Delaware, Obligee for his, their or its use, prosecute the same to final judgment for such sum or
sums as may be justly due him, them or it, and have execution thereon, provided, however, that
Obligee shall not be liable for the payment of any costs or expense of any such suit.

Recovery by any person, co-partnership, association or corporation hereunder shall be subject to
the provisions of the Act of the General Assembly No. 869 approved December 20, 1967, to the
same extent as if said Provisions were fully incorporated in this Bond.

It is further agreed that any alterations which may be made in terms of the Contractor in the work to
be done or materials to be furnished or labor to be supplied or performed under it or the giving of the
Obligee or the Principal and the Surety or Sureties or either or any of them their prospective
successors and assigns, from their liability hereunder, notice to the Surety or Sureties of any such
alteration, extension or forbearance being hereby waived.

Section M
Labor and Materials Bond

In Witness Whereof, the Principal and the Surety have hereunto caused their Common Corporate Seals to be affixed hereto duly attested by their proper Officer the day and year aforesaid.

Attest: _____
(Secretary or Assistant Secretary)

(Principal)

Sealed and delivered in the presence of:

(Surety)

MAINTENANCE BOND

KNOW ALL MEN BY THESE PRESENTS:

THAT WE _____
Name and Address of Contractor

OR WE _____
Name and Address of Partnership

(or if a corporation with address and state in which incorporated) (herein after called the "Principal"), as Principal, and _____
Name of Surety and Address

a corporation of the State of _____ with offices in the Commonwealth of Pennsylvania and licensed to do business in the Commonwealth of Pennsylvania (hereinafter called "Surety"), as Surety are held and firmly bound unto the County of Delaware in said Commonwealth (hereinafter called "Owner"), in the full and just sum of _____ Dollars (\$ _____) lawful money of the United States of America, to be paid to the said Principal and Surety bind themselves and their respective heirs, administrators, executors, successors and assigns, jointly and severally firmly by these presents.

Signed, sealed and dated this _____ day of _____ 20 ____.

WHEREAS, the Principal has entered into a certain contract with the Owner dated this _____ day of _____ A.D., 20____, to furnish:

in said County and Commonwealth, in strict conformance with the Specifications, a copy of which is or may be hereto attached.

NOW THE CONDITION OF THIS OBLIGATION IS SUCH, that if the said Principal shall remedy, without cost to the said Owner, any defect which may develop during the period of one (1) year from the date of completion, and acceptance of the work performed under said Contract, provided such defects, in the judgment of said Owner, are caused by defective or inferior materials or workmanship, then this obligation shall be null and void, otherwise remain in full force and virtue. AND FURTHER, we do in the event of default; hereby authorize and empower any attorney of the Court of Common Pleas of the County of Delaware, Pennsylvania, or any other Court of record elsewhere, or any Prothonotary or Clerk of Said Courts, to appear for us. our heirs, executors, administrators, successors or assigns, at the suit of the Owner, its successors, or

Section M
Maintenance Bond

assigns oblige in the above obligations as of any term, after the date thereof or hereof and thereupon to confess judgment against us or against our heirs, executors, administrators, successors or assigns for the above sum of: _____ Dollars (\$ _____) debt, besides the cost of suit and an attorney's fee of ten percent (10%) without stay of execution and inquisition upon any levy upon real estate is hereby waived, and condemnation agreed to and the exemption of personal property from levy and sale on any execution under and by virtue of any exemption law now in force, or which may be hereafter be passed, is also waived.

Attest: _____
Secretary or Assistant Secretary

Principal

Sealed and delivered in the presence of:

Surety

WAIVER OF LIENS

WHEREAS, entered into a contract with _____

to provide materials and perform labor necessary for _____

upon a lot of ground located _____

NOW, THEREFORE, it is hereby stipulated and agreed by and between the said parties, as part of the said contract and for the consideration therein set forth, that neither the undersigned contractor, any sub-contractor or material man, nor any other person furnishing labor or materials to the said contractor under this contract shall file a lien, commonly called a mechanic's lien, for work done or materials furnished to remove the said bridge or any part thereof.

This stipulation is made and intended to be filed with the County Prothonotary in accordance with the requirements of Section 1402 of the Mechanics Lien Law of 1963 of the Commonwealth of Pennsylvania in such case provided.

IN WITNESS WHEREOF, the said parties hereto have hereunto set their hands and seals this ____ day of _____, 20____.

COUNTY OF DELAWARE

By: _____
Authorized Signature

Attest:

CONTRACTOR

By: _____

By: _____
Authorized Signature

Typed Name & Title

STATEMENT OF SURETY COMPANY

Delaware County Contract No. eDPW-040925

In accordance with the provisions of the Contract dated _____
between the County of Delaware, Pennsylvania, and:

_____,
the _____ company of _____ Surety on
the Bonds of _____,
after a careful examination of the books and records of said Contractor or after
receipt of an Affidavit from Contractor, which examination or Affidavit satisfies
this Company that all claims for labor and materials have been satisfactorily
settled, hereby approve the final payment of the said
_____ Contractor and by
these presents witness that payment to the Contractor of the final payment shall
not relieve the Surety Company of any of its obligations to the County of
Delaware, Pennsylvania, as set forth in the said Surety Company's Bonds.

IN WITNESS WHEREOF, the said Surety Company has hereunto set its hand
and seal this

_____ day of _____, 20____.

Attest:

(SEAL) _____ BY: _____
President

NOTE: This statement, if executed by any person other than the President of
the Company, must be accompanied by a certificate of even date
showing authority conferred upon the person so signing to execute
such instruments on behalf of the company represented. This
statement must be executed and submitted by the Bonding Company,
to the Engineer, before final payment can be certified.

GENERAL CONDITIONS

These General Conditions shall apply to the Contract as a whole, and to each and all branches or sub-divisions and contractors for same, should the work be divided. Approved sub-contractors should be supplied with a copy of these General Conditions and no Contract or arrangements with them shall be such as to conflict herewith.

1. DEFINITIONS

The following terms shall have the meanings indicated below:

- a. The CONTRACT DOCUMENTS consist of the Agreement, the Instructions to Bidders, the General Conditions, the Proposal, the Drawings and Specifications, including all modifications thereof incorporated in the Documents before their execution.
- b. The term OWNER shall mean the County of Delaware.
- c. The term OFFICERS OF OWNER shall mean the County Council of the County of Delaware.
- d. The term ENGINEER shall mean the Design Professional who has prepared these Specifications.
- e. The term CONTRACTOR shall mean the person, firm, or corporation named in the Agreement, who will execute the work.
- f. The term SUB-CONTRACTOR includes only those having a direct Contract with a Prime Contractor for the performance of the work required under the Prime Contract, and it includes one who furnished materials worked to a special design according to the Drawings or Specifications for this work, but does not include one who merely furnishes material not so worked.
- g. Throughout the Contract Documents, the term OWNER, ENGINEER, CONTRACTOR, and SUB-CONTRACTOR are treated as if each were of the singular number.
- h. The term WORK of the Contractor or Sub-contractor includes labor, materials, and services, or any of them.
- i. Where AS SHOWN, AS DETAILED, or words of similar import are used, it shall be understood that reference to the Drawings accompanying this specification is made, unless otherwise stated.
- j. Where AS DIRECTED, AS REQUIRED, AS PERMITTED, APPROVED, ACCEPTANCE or words of similar import are used, it shall be understood that

- the directions, requirements, permission, approval, or acceptance of the Owner is intended, unless otherwise stated.
- k. As used herein, PROVIDED should be understood to mean PROVIDED COMPLETE IN PLACE, that is, FURNISHED AND INSTALLED.
 - l. CHANGE ORDER shall mean any changes in the work which alter the terms of conditions of the Contract, including, but not limited to, any extension of time for completion of the Contract or any additional to, or deduction from the Contract Sum for extra work or changes in the work. Change orders shall be processed on standard A.I.A. forms and shall be signed by the Owner and the Contractor prior to the start of any work affected by or included in the scope of the change.
 - m. The term NOTICE, as used herein, shall mean and include all written notices, demands, instructions, claims, approvals, and disapprovals required to obtain compliance with Contract requirements. Written notice by either party to the contract shall be deemed to have been duly served if delivered to or at the last known business address of the person, firm, or corporation, the other party to the Contract, or to his, their, or its duly authorized Agent, representative or Officer, or when enclosed in a postage repaid envelope addressed to such last known business address and deposited in the United States mail.
 - n. The words TIME OF COMPLETION, CONTRACT TIME, or similar shall be as indicated in the Contract Documents.
 - o. The law of the place of building shall govern the construction of this Contract.

2. ENGINEER'S INSPECTION

All work shall be subject to Engineer's inspection; he shall make all decisions regarding the work; shall interpret the contract documents and any authorized alterations in work; shall confirm in writing any oral orders, may stop work when necessary; have no authority to approve or order changes in work.

3. ENGINEER'S DECISION

All questions or disputes arising respecting any matter pertaining to the Contract or any part of it, or any breach of the Contract, or any questions and disagreements between the Owner and Contractor relating to the Meaning of the Drawings and Specifications or to kind and quality of work or materials required thereby, shall be decided by the Engineer. Reference of questions under this provision must be presented prior to the final payment.

4. INTENT OF CONTRACT DOCUMENTS

The Contract Documents are complementary. What is called for by any one of them, shall be as binding as if called for by all. The intention of the Contract Documents is to include the Contract Price, the cost of all labor and materials, scaffold, ladders, runs centering, shoring, staging, rigging, hoists, water, fuel, tools, plant equipment, lights, power, transportation, shop drawings, samples, tests, tools, warranties, taxes, insurance and all other service and expenses necessary for and incidental to the proper execution and completion of the work, unless distinctly specified otherwise. In interpreting the Contract Documents, words describing materials or work which have a well-known technical or trade meaning, unless otherwise specifically defined in the Contract Documents, shall be construed in accordance with such well-known meaning, recognized by Architects, Engineers and Trades.

The Specifications, Drawings, Conditions, and Instruction in Directions as set forth are intended to cooperate and agree, and they shall be interpreted so that the work exhibited in the Drawings and not mentioned in the Specifications, or vice versa, shall be included the same as if it were mentioned in the Specifications and set forth in the Drawing themselves. Any such discrepancies shall be interpreted, explained and decided by the Engineer, who shall have the right to correct any errors or omissions in them as are necessary for the proper fulfillment of their intentions, either before or during the prosecution of the work, and the Contractor shall conform to and abide by whatever supplementary Drawings and explanations may be furnished by the Engineer for the purpose of illustrating the work.

Where the work is shown in complete detail on only half or a portion of a Drawing or there is indication of continuation, the remainder being shown in outline, the work drawn out in detail shall be understood to apply to other portions of the structure. On all work of additions, or alterations, it shall be the responsibility of the Contractor, by personal inspection, to satisfy himself as to correctness of any information given which may affect the quantity, size and quality of material required for a satisfactorily completed Contract, whether or not such information is indicated on the Drawings or within the Specifications.

5. WORK IMPLIED

Should any incidental work or materials be required but not set forth in the Specifications and Drawings, either directly or indirectly, but which is nevertheless necessary for the proper carrying out of the intent thereof, it shall be deemed to be implied and required, and the Contractor shall furnish and install all such work and materials as fully as if they were particularly delineated and described, without additional cost to the owner.

6. ACTUAL MEASUREMENTS

In all Cases where dimensions are governed by conditions already established, the Contractor must depend entirely upon measurements taken by himself, scale or figured dimensions to the contrary notwithstanding, but no deviation from the specified dimensions shall be made unless duly authorized by the Engineer.

7. ERRORS AND DISCREPANCIES

If the Contractor, in the course of the work, finds any discrepancy between the Drawings or Specifications and the physical conditions of the premises, or any errors, in the Drawings or Specifications or in the layout as given by the points and instructions, it shall be his duty to immediately inform the Engineer, in writing. Should any work be undertaken after the discrepancy has been noted and prior to decision by the Engineer, it is understood that the Contractor will rectify, at his own expense, such work as may have been accomplished and which does not comply with the decision of the Engineer.

8. ASSUMPTION OF RISK

The Contractor represents that he has had an opportunity to examine, and has carefully examined all of the Specifications, Drawings, Instruction and Directions in connection with the work; that he has fully acquainted himself with the actual levels, the excavations and filling required, visible obstructions or known obstructions below the surface, and all other conditions relevant to the work, the site of the work and its surroundings; and is fully aware of any variances between the actual conditions relevant to the work and the same as shown or represented in said Specifications, Drawings and Directions, as far as such variances can be determined by an inspection of the site; that he has made all investigations essential to a full understanding of the difficulties which may be encountered in performing the work and that anything in any of said Documents or in any representation, statements, or information made or furnished by Owner or Engineer notwithstanding, the Contractor will, regardless of any such conditions relevant to the work, the site of the work or its surroundings, complete the work for the compensation agreed upon (except in the case of changes in the work made by the Owner or Engineer and conditions at the site that cannot be determined by inspection, in connection with which the Contractor will be paid as provided in the Article regarding Changes), and will assume full and complete responsibility therefore and all risk in connection therewith. In addition, thereto, the Contractor represents that he has special qualifications for doing the work and will complete the said work to the satisfaction of Owner and Engineer.

9. SIGNING OF DOCUMENTS

The Contract Documents shall be signed, in duplicate, by the Owner and the Contractor.

10. ASSIGNMENT OF CONTRACT

The Contractor shall not assign the Contract or any part thereof without the written consent of the County of Delaware. He shall not Sub-Contract without prior written approval from the County of Delaware.

11. SUB-CONTRACTS

As soon as practicable and before awarding any sub-contracts, the Contractor shall notify the Engineer and Owner in writing, of the names of the sub-contractors proposed for the principal parts of the work, and for such other parts as the Engineer or Owner may direct.

The Contractor shall not sublet or sub-contract any work to be performed, or any materials to be furnished in the performance of the contract without the written consent of the Engineer or Owner.

The Contractor shall not be required to employ any sub-contractor against whom he has a reasonable objection.

If the Contractor shall sublet or sub-contract any part of the Contract, the Contractor shall be as fully responsible to the Owner of the acts and omissions of his sub-contractor as he is for the acts and omissions of persons directly employed by himself. The Engineer shall, on request, furnish to any sub-contractor, whatever practicable, evidence of the amounts certified on his account.

Nothing contained in the Contract Documents shall create any contractual relationship between any sub-contractor and the Owner. The Contractor agrees to bind every sub-contractor and every subcontractor shall agree to be bound by the terms of the Instructions to Bidders, Special Conditions, General Conditions, Drawings and Specification as far as applicable to his work.

12. OTHER CONTRACTS

The Owner reserves the right to let other Contracts in connection with this work even if of like character to the work under this Contract. The Contractor shall afford other Contractors adequate opportunity for the introduction and storage of their materials

and the execution of their work and shall properly connect and coordinate his work with their work.

If any part of the Contractor's work depends for proper execution or results upon the work of any other Contractor, the Contractor shall inspect and promptly report to the Engineer and Owner, any defects in such work that render it unsuitable for such proper acceptance of the other Contractor's work as fit and proper acceptance of the Contractor's work as fit and proper for the reception of his work, except as to defects which may develop in the other Contractor's work after the execution of subsequent work.

To ensure the proper execution of this subsequent work, the Contractor shall measure work already in place and shall at once report to the Engineer any discrepancy between the executed work and the drawings.

13. TAXES

All Federal, State and Local Taxes, including Excise Tax, Sales and Use Taxes, when applicable, shall be included in the Proposal, and shall be paid by the Contractor.

14. OWNER'S RIGHT TO OCCUPY

The Owner reserves the right to occupy any portion of the project, before it has been entirely completed, with the distinct understanding that such occupancy shall in no way constitute acceptance of the work in whole or any part thereof, or of any work performed under the Contract.

The Contractor will be held strictly to the terms of the Contract regarding the diligent prosecution of the work and the time of completion of same. In case additional work is ordered or in case of delays not the fault of the Contractor, the Owner may make an equitable extension of working time by so designating in writing.

15. DEFAULT ON PART OF CONTRACTOR

If the Engineer shall at any time be of the opinion that the Contractor is not progressing with the work as rapidly as necessary to insure its completion by the date set forth in the Contract or is neglecting to remedy any imperfections or to repair damage to public or private property; or continues to employ or re-employ negligent or careless persons; or is conducting the work in a manner disapproved by the Engineer or if the Contractor stops or abandons work on any part of the construction without the written consent of the Engineer, or is violating any of the provisions of the Contract, the Engineer shall give the Contractor written notice of the specific deficiencies and direct the Contractor

to remedy same. If, at the end of seven (7) calendar days from the date of such notice, the Contractor shall have failed to comply therewith, then the Owner may withhold all payments until the provisions of such notice are carried out and may also place additional forces, equipment, tools and materials on parts of the work at the Contractor's expense as specified or it may annul the Contract.

In case the Owner should augment the Contractor's forces, equipment, etc., as herein provided, the cost incurred in carrying on such parts of the work shall be paid by the Contractor. The Owner may retain the amount of the cost of such work from any sum or sums due or to become due the Contractor under this Contract. If such costs exceed such unpaid balance, the Contractor shall pay the difference to the Owner.

Should the Contractor be judged as bankrupt, or if he should make a general assignment for the benefit of his creditors, or if a receiver should be appointed on account of his insolvency, or if he files any proceedings under the provisions of the Bankruptcy Act, or if he should persistently or repeatedly refuse, or should fail, except in cases for which extension of time is provided to supply enough properly skilled workmen or proper materials, or if he should fail to make prompt payment to sub-contractors or for material or labor, or persistently disregard laws, ordinances or the instruction of the Engineer or otherwise be guilty of a substantial violation of any provision of the Contract, then the Owner, upon the Certificate of the Engineer that sufficient cause exists to justify such action, may, without prejudice to any other right or remedy and after giving the Contractor, and his Surety, if any, seven (7) calendar days written notice, terminate the employment of the Contractor and take possession of the premises by whatever method he may deem expedient, including, but not limited to, contracting with another Contractor. The Contractor shall not be entitled to receive any further payment until the work is finished. If the unpaid balance of the Contract price shall exceed the expense of finishing the work, including compensation for additional engineering, managerial and administrative services, such balance shall be paid to the Contractor; should the unpaid balance be insufficient to complete the work, including compensation for engineering, managerial and administrative services, the Contractor shall pay the difference to the Owner. The expense incurred by the Owner as herein provided, and the damage incurred through the Contractor's default, shall be certified by the Engineer.

16. REMOVAL OF EQUIPMENT

No equipment shall be removed from the worksite by the Contractor, except as herein designated until the usefulness of such equipment on the worksite has ceased, or except with the written consent of the Engineer, otherwise such removal may be considered by the Owner as an abandonment on the part of the Contractor.

In the case of annulment or rescission, or termination of this Contract for any cause whatsoever before the completion of this Project, no equipment, material or supplies shall be removed from the site without the prior authorization in writing from the Owner. Upon written notice from the Engineer to do so, the Contractor shall promptly remove such equipment and supplies from the property of the Owner. The Contractor's failure to carry out the provisions of such notice shall give the right to the Owner to remove such equipment and supplies at the expense of the Contractor.

17. MATERIALS AND WORKMANSHIP

Unless otherwise specifically stipulated in the Specifications, all workmanship shall be of the best quality and all equipment, materials and articles incorporated in the work under the Contract shall be new and of the best grade of their respective kinds for the purpose. The Contractor shall, if required, furnish evidence as to kind and quality of materials.

Should any dispute arise as to the quality and fitness of workmanship, equipment, materials and articles, the decision shall rest strictly with the Engineer and shall be based upon the requirements of the Contract, and what is usual and customary in the execution of other work shall in no way enter any consideration or decision whatsoever.

Where equipment, materials or articles are referred to in the Specifications as equal to any particular standard, the Engineer shall decide the question of quality. The Contractor shall furnish to the Engineer for his approval, the name of the manufacturer of machinery, mechanical and other equipment that he contemplates incorporating in the work, together with their performance, capacities and other pertinent information.

Where required by the Specifications or when called for by the Engineer, the Contractor shall furnish the Engineer for approval, full information concerning the materials or articles that he contemplates incorporating in the work. Machinery, equipment, materials and articles installed or used without such approval shall be at the risk of subsequent rejection.

When the Specifications give the Contractor the option of using one of several definitely named makes or kinds of a particular item or "Approved" equal, the Contractor shall use one of the named items or submit a written request to the Engineer for approval and obtain his approval of an equal before purchasing such material.

Where the Specifications call for any stipulated items, "or equal thereto and approved" or other words to that effect, the Engineer shall be the sole judge of the equality of any article or material offered and reserves the right to demand the particular items stipulated.

18. CHANGES IN SPECIFICATIONS

The Owner reserves the right to make any change in the location of any piece of apparatus or equipment, or roughing-in dimensions up to the time of roughing-in and to make any changes in the Drawings and Specifications, should any be found desirable previous to commencing or during the progress of the work, without in any other respect or particular invalidating the original provisions of the Contract, without additional expense to the Owner unless such changes require additional labor and/or material. If such a change requires a less amount of labor and/or material than the original work shown or specified, the Owner will be entitled to a credit equal to the difference of the cost and installation. The greater or lesser amount, if any, to be paid the Contractor by the Owner by reason of such changes, shall be as herein specified or as agreed upon between them.

No part of the work shall be altered from that shown on the Drawings or described in the Specifications, nor shall any work in the nature of additional work, or any work not contemplated by the Contract Documents be performed except on written order of the Engineer, approved by the Owner, and if any extra, additional or different work be proceeded with or executed by the Contractor without previous order given, in writing, under the hand of the Engineer, as herein provided, the Contractor shall not be entitled to charge for such extra work.

19. ADDITIONAL OR OMITTED WORK

It is understood that the Owner shall have the right during the progress of construction to make any alterations, additions or omissions of work or material herein specified or shown on the Drawings that may be desired and the same shall be carried into effect by the Contractor without in any way violating the Contract. The amount of money to be added or deducted shall be agreed to, in writing, signed by the two contracting parties before any changes in the Contract Documents will be in force.

Unless specifically directed otherwise by the Engineer, the Contractor shall promptly submit his itemized prices for additions, alterations or deductions prior to proceeding with the changes, which prices, if approved by the Owner, shall be added to or deducted from the Contract price.

When so directed, the Contractor shall submit separate unit prices on work for both additions to and deductions from the Contract price; adjustment, if any, in the amounts to be paid to the Contractor by reason of any change, addition or reduction shall be determined by one or more of the following methods:

1. By unit price contained in the Contractor's Proposal and incorporated in the Contract which unit prices include all charges.
2. By an acceptable lump sum Proposal from the Contractor. Such Proposal shall indicate costs for materials and labor and shall indicate overhead and profit.
3. By actual time and material costs, verified by the Owner's representative, to which it is agreed that an overhead charge of 10% and a profit of 10% will be added.
4. No extra work or change shall be made unless in pursuance of a written order from the Owner signed or countersigned by the Engineer.

20. SUPERVISION AND LABOR

The Contractor shall provide continuous supervision of all work embraced in the Contract, from the beginning of the work to the date of final completion, by a duly authorized and competent Superintendent who shall be acceptable to the Engineer. The Superintendent shall be at all times in charge of the work and shall be provided with such assistants as are necessary to properly carry on the individual branches of the work. The Superintendent shall represent the Contractor in his absence from the work, and all directions, instruction, or notices given to the Superintendent by the Engineer shall be as binding as if given to the Contractor.

The Contractor shall at all times enforce good order and conduct among his employees. Every employee shall be a first-class workman and competent to perform the work assigned to him. Employees shall not be permitted to trespass or conduct themselves contrary to the rules and regulations governing the Owner's premises. Any employee of the Contractor whom the Engineer considers to be detrimental to the proper carrying out of the work is to be removed promptly on the request of the Engineer, and the services of such person shall not be employed on the project site without the written consent of the Engineer.

21. ENGINEERING AND LAYOUTS

If applicable, the Contractor shall provide competent engineering and layout services, approved by the Engineer, from the beginning of the work to the date of final

completion of the Contract, to execute the work in accordance with the Contract requirements.

22. RIGHTS OF VARIOUS INTERESTS

Wherever work is being done by workmen other than those employed by the Contractor, but contiguous to his work, the respective rights of the parties involved shall, if necessary, be established by the Engineer. Requests in writing for such determination shall be submitted in a timely manner by the Contractor.

23. INSPECTION OF WORK

The Contractor shall afford the Engineer every facility for observation. All materials and workmanship shall be, at all times, subject to the inspection and acceptance of the Engineer who shall have full power at any time during the progress of the work to reject any materials or workmanship which the Engineer may deem unsuitable for the purpose for which they are intended, or which are not in strict conformity with the Specifications. The Engineer shall also have the power to cause any inferior or unsafe work to be taken down and altered at the cost of the Contractor. When deemed necessary for the proper protection of materials or building, the materials must be sorted and handled as directed by the Engineer. Every part of the work shall be executed to the entire satisfaction and acceptance of the Engineer and Owner.

24. WORK MAY BE PULLED DOWN AND OPENED UP FOR EXAMINATION AND INSPECTION

If directed by the Owner and the Engineer, the Contractor shall pull down, undo or uncover any part of completed or partially completed work or make openings therein to enable the Engineer to make a proper and thorough inspection and the Contractor, after such inspection, shall repair or reconstruct such affected work to the satisfaction of the Engineer.

If, in the opinion of the Engineer, the work should be found unsatisfactory in any respect, the cost of exposing, removing, replacement and restoring it shall be defrayed by the Contractor.

Should the work thus exposed be found not faulty by the Engineer, and if adequate opportunity was afforded for inspection of the work before it was covered or

completed, the cost and expense thereby incurred shall be defrayed by the Owner or the Engineer to the extent to which they mutually accept responsibility for such required corrective work.

25. ROYALTIES AND PATENTS

The Contractor shall obtain all necessary consents and shall pay all royalties, licenses, and fees for the use of any patented invention, article, composition or process in the work done or the materials furnished, or any part thereof embraced in this Contract. The Contractor guarantees to save harmless the Owner, its Officers, members, Agents and employees from the liability of any kind of nature including cost and expense on account of suits and claims of any kind for the violation or infringement of any such patent rights by the Contractor or by anyone directly or indirectly employed by him, for, by reason of the use of any art, process, method, manufacture, or composition of matter patented or un-patented in the performance of this Contract, in violation or infringement of any such patented rights.

The Contractor shall pay for all royalties, claims, and fees for any patented invention, article, or arrangements that may be used in the work under Agreement.

26. PERMITS, LICENSES AND CERTIFICATES

The Contractor shall arrange for the issuance of all Local permits required both temporary and permanent and the Contractor shall include in his price the cost of any of these items. All other licenses, certificates, inspections, survey and/or inspection fees shall be paid by the Contractor including license to practice his trade.

The Contractor shall deliver to the Engineer certificates of inspection and certificate of occupancy where such are required.

The Contractor shall furnish to the local authorities all necessary bonds or cash deposits required as a pledge and security for the protection or maintenance of any public property.

The Contractor and each of his sub-contractors shall secure and pay for all inspections and certification of their work as required by laws and regulations in effect in the locality in which the project is built including those of the Underwriter's and other regulatory bodies.

27. BUILDING REGULATIONS

The requirements of all applicable laws, rules and regulations of Local and State Departments governing building construction and equipment, shall be followed, and all work shall be carried out in strict accordance with such requirements even though each item involved be not herein particularly mentioned or shown on the drawings.

Work required by the Drawings and Specifications above or in excess of the standards required by the above-mentioned laws and regulations shall be provided as specified.

If the Drawings and Specifications are at variance with the above-mentioned laws and regulations, the Contractor shall promptly notify the Engineer, in writing, and any necessary changes shall be made as provided in the Contract. If the Contractor performs any work contrary to such laws, rules and regulations, and without such notice to the Engineer, he shall bear all costs arising therefrom.

28. COOPERATION

The Contractor shall cooperate with the other Contractors on the work and with the Owner so that the completion of all portions of the work may proceed with all possible speed. The Contractor will be required to furnish any and all other Contractors, whose work is fitted to his, detail and erection Drawings giving full information regarding the fabrication and assembly of his work.

So far as possible, these drawings shall show checked field measurements. The Contractor shall further cooperate in timing his work to join with the work of the Contractors or the Owner.

29. MOVING MATERIALS

If it becomes necessary at any time during the execution of the work to move materials or equipment which have been temporarily placed, the Contractor or Sub-contractor furnishing said materials shall, when so directed by the Engineer, move them or cause them to be moved without additional charge.

30. RECEIVING MATERIAL FURNISHED BY OTHERS

Whenever the Contractor or any Sub-contractor shall receive items from another Contractor or the Owner for storage, erection or installations, the Contractor or Sub-contractor receiving such items shall give receipt for the items delivered, and

thereafter will be held responsible for the care, storage and any necessary replacing of items received.

31. INJURY TO PROPERTY

Should any direct or indirect injury be done to any existing installation or structures, or to public or private property of any kind or to any structure, materials, or fixtures, resulting from any act or omission on the part of the Contractor, his Sub-contractor, Employees or Agents, the Contractor shall, at his own expense, restore the same equal to its condition before the said damage or injury was done by repairing, replacing, rebuilding or otherwise as may be required by the Owner, Engineer or the Owner of the damaged property.

The Contractor shall take all necessary precautions to avoid injury or damage to buildings, driveways, sidewalks, grading, pipes, conduits, etc., and shall, unless otherwise specified, restore such structures, property, materials, etc., at his own cost and expense to a condition equal to that existing before such damage was done, by repairing, rebuilding, or otherwise, as may be required by the Owner, or shall make good such injury or damage in a satisfactory manner.

The Contractor shall be responsible for any injury or damage to the property of the Owner or to the property of any Public Utility Company included in this contract by or on account of any act, omission, neglect or misconduct of the Contractor in the prosecution of the work or in the storage of materials and equipment.

The Contractor shall properly safeguard the work under this Agreement and shall make good at his own expense all injuries or damages to said work before its completion and final acceptance.

32. BONDS

Should any surety upon the bonds for the performance of the Contract and payment for materials and labor become unsatisfactory to the Owner, the Contractor shall promptly furnish such additional security as may be required from time to time to protect the interest of the Owner and of persons supplying materials and labor in the prosecution of the work required by the Contract, including any change therein.

33. CUTTING AND PATCHING

The General Contractor shall do all demolition, cutting, patching, removals, additions, adjustments and replacements of building construction and finishes necessary for the installation of work of mechanical, electrical and other separate Contractors. All work

shall be performed so as to leave the buildings and structures complete and watertight and, in a condition, satisfactory to the Engineer.

The Contractor for Mechanical and Electrical construction shall furnish all labor, material and equipment and perform all operations for the demolition, removal, salvaging, disposition of materials and alterations to the installations and equipment, utilities and services of their respective trades. Any cost of cutting and fittings caused by defective or ill-timed work shall be borne by the party responsible, therefore.

The Contractor shall not endanger any work by cutting, fitting or otherwise. The Contractor shall not cut or alter the work of any other Contractor.

34. ORDER OF COMPLETION

The Contractor shall complete any portion or portions of the work in such order as may be stated in the Specifications. All work shall be so arranged, and Contractors shall so coordinate their work as to complete the work by the date as set forth in the Contract.

35. SUSPENSION OF WORK DUE TO UNFAVORABLE CONDITIONS

If, in the judgment of the Engineer, the Contractor is taking undue risk in the interruption of ongoing site operations and risk of damage to any part of the building by proceeding with the work during unfavorable weather or other conditions, the Engineer shall immediately verbally notify the Contractor or his representative on the site, confirming the same in writing, with copies to the Owner. The Owner may thereupon suspend the work temporarily either wholly or in part, for such period or periods as it may be necessary on account of unsuitable weather or other conditions unfavorable for the safe and proper prosecution of the work. In case of such suspension, no allowance will be made to the Contractor for any expense resulting therefrom. The Owner shall not be liable to the Contractor in any manner for any other charges whatsoever arising out of a suspension in the work of either this Contractor or any Contractor engaged on this Project. It shall be clearly understood that the failure of the Owner or Engineer to suspend the work shall not relieve the Contractor of his responsibility for compliance with the conditions of the Contract.

36. SUSPENSION OF WORK DUE TO FAULT OF CONTRACTOR

Should the Contractor fail to comply with any order of the Engineer relative to any particular part of the work, the Engineer shall have the right to suspend the work on any or all parts until his orders respecting the particular parts are complied with. In case of such suspension, which shall be considered due to the fault of the Contractor, it shall be at the expense of the Contractor on account of idle equipment or forces during the terms of such suspension.

37. SUSPENSION OF WORK DUE TO UNFORESEEN CAUSES

If the Contractor shall be delayed in the completion of his work by reason of unforeseeable causes beyond his control and without his fault or knowledge; such as acts of God or of a public enemy, fire, flood, epidemic, quarantine, restriction, strike, riot, civil commotion or freight embargo, the period may be extended as hereinafter provided. Suspension of work as outlined above shall not in themselves operate to extend the Contract date of completion.

38. REQUEST FOR EXTENSION

The request for extension of time shall be submitted by the Contractor to the Owner and the Engineer setting forth his reasons, therefore. In submitting such requests, the Contractor shall state the completion date as stated in the existing Contract, any changes that have been authorized, and the date he is now requesting as a new completion date. The Owner will grant or deny such request at such time as he deems proper.

The Owner shall not be liable to the Contractor in any manner for any expenses, damages, loss of profits, anticipated or otherwise, or any other charge whatsoever arising out of an extension in the completion date of the work of either this Contract or any Contractor engaged on this Project.

39. STOPPAGE OF WORK BY ENGINEER

Should conditions arise which, in the opinion of the Engineer, warrant a stoppage of work, then the engineer may so direct. If the work is stopped and the Engineer subsequently directs its resumption, the Contractor shall resume full operation within the period of ten (10) calendar days after date of written notice. The Owner shall not be liable to the Contractor in any manner for any expenses, damages, loss of profits, anticipated or otherwise, or any other charges whatsoever arising out of the stoppage of the work of either this Contract or any Contractor engaged on this project. Any work done by the Contractor during the period of suspension shall be at his sole risk and he shall receive no pay therefore, unless the construction is subsequently ordered to

be and is resumed and the work during the intervals of the suspension can be utilized in the resumed work.

In the event the Owner determines that any or all of the work as outlined in the Contract shall be terminated, the Contractor shall request payment for the percentage of the work that he actually has completed under the Contract.

The Owner will then determine the percentage of such work that has been completed and the Contractor will accept as full payment the sum of money determined by applying that percentage to the sum that would have been paid under the terms of the Contract, had all of the work been completed.

40. MONTHLY ESTIMATES AND PAYMENTS

Immediately following the receipt of executed copy of Contract, the Contractor shall submit, on forms approved by the Engineer, a detailed breakdown of all items of work entering into the Contract. This detailed breakdown will show quantities of the respective items and the allowances for labor, materials and other costs entering into each item. The detailed breakdown when approved by the Engineer shall be used as a basis by the Contractor in preparing monthly estimates for payment and shall, as accurately as possible, reflect the true division of cost of the respective items entering into the Contract.

As long as the work herein contracted for its prosecuted in accordance with the provisions of this Contract and with such progress as may insure completion by the date set forth in the Contract and to the satisfaction of the Engineer and owner, then the Owner will make payment to the Contractor for the value of the work completed at monthly intervals.

Monthly estimates shall be prepared by the Contractor on forms approved by the Engineer and will indicate the quantity and value of the work done and materials incorporated by the Contractor to the end of the monthly estimate period. The monthly estimate will be forwarded by the Contractor, for approval to the Engineer, and he shall, in turn, forward it to the Owner. Materials in reasonable quantities that are delivered and accepted for incorporation in the work but not yet so used may be included on monthly estimates for payment.

The Contractor shall submit with the monthly estimate, reflecting the unincorporated material, original and two (2) copies of itemized receipt invoices showing payment for such material by the Contractor and delivery slips certifying to the delivery of the quantities set forth on the estimate to the site of this work, upon the property of the Owner.

The Contractor shall mark or identify such material and shall be solely responsible for its safekeeping and usability of the time it is to be incorporated in the structure or project, and shall, at his own expense, care for and protect the same and take out insurance against theft, loss from any other cause, damage, destruction and/or such other risks as may be involved, which would render the aforesaid materials unfit or unavailable for incorporation in the project.

Payment for materials stored at the site shall be based on 50% of actual cost for same as shown by the receipted invoices and shall not exceed the cost of materials as indicated on the approved "Breakdown Sheet" for the particular items involved. Monthly payments to the Contractor will be made on the basis of submission prepared by the Contractor as above explained. The form will require breakdown of total work completed to date of submission. From this total will be deducted ten percent (10%). From the resultant amount will be deducted all previous payments. The remainder, as approved, will constitute current amount due. The retained ten percent (10%) will be paid when the project has been finally accepted by the Owner. No estimates given or payment made shall be conclusive of the performance of the Contract either wholly or in part and no estimates or certificates of final payment shall be construed to be an acceptance of inferior or defective work or materials.

In Contracts exceeding \$50,000.00 for the construction, reconstruction, alteration or repair of any public building or other public work or public improvement, including heating or plumbing contracts, under the terms of which the Contractor is required to give a performance bond and labor and material payment bond, the Owner, in order to insure the proper performance of the Contract, shall withhold from the Contractor sums not to exceed 10% of the amount due the Contractor until 50% of the Contract is completed. The sum or sums withheld by the Owner from the Contractor after the Contract is 50% completed shall not exceed 5% of the amount due the Contractor.

41. ACCEPTANCE AND FINAL PAYMENT

Whenever, in the opinion of the Engineer, the Contractor shall have completed his Contract in accordance with terms thereof, the Owner and the Engineer shall make a final observation of the entire work and, if satisfied that the Contractor has completely performed the Contract, the Contractor shall be instructed to submit a final estimate showing the entire amount of each class of work performed and the value thereof with such deductions as may be due the Owner under the Contracts or of such additions as may be due the Contractors. The total payments due to the Contractor cannot, however, exceed the sum authorized by the Owner under the terms of the Contract. The Engineer shall certify to the Owner the aggregate amount of said final estimates due to the Contractor and that all work in the Contract has been fully completed.

The final payment shall not become due and payable until the Contractor shall have furnished the Owner with satisfactory evidence that all labor and materials, outstanding claims and indebtedness of whatsoever nature arising out of the performance of the Contract have been paid, and until the Contractor shall have furnished a written General Release statement to such effect executed by Contractor and Sureties, which will further provide that payment to the Contractor of the final estimate shall not relieve any Surety of its obligation to the Owner as set forth in the Surety Bonds.

Where one or more claims against the Contractor, which are in controversy, appear unsatisfied, the Owner shall have the discretion to direct final payment to be withheld or a partial payment to be made from the retained percentage, should it be determined that the withholding of the entire final payment would work a hardship on the Contractor or delay the final payments to other Contractors on the project. If only partial payment is permitted under the paragraph from the retained percentage, final payment shall not be made until the Contractor shall have furnished satisfactory evidence and a statement from the Surety that all claims against the Contractor have been paid; that payment to the Contractor of the Contract balance shall not relieve any Surety of any of its obligations to the Owner as provided in the Surety Bond. The acceptance by the Contractor of the final payment made as aforesaid, shall operate as and be a release to the Owner and every member and agent thereof from all claims and liabilities to the Contractor for (1) anything done or furnished for, or relating to the work or (2) any act or neglect of the Owner, or of any person relating to or affecting the work, but his final payment shall not relieve the Contractor from his indemnity obligations under the terms of the Contract.

42. ESTOPPEL AND WAIVER OF LEGAL RIGHTS

Neither the Owner nor the Engineer shall be precluded or estopped by the measurements, estimate, or certificate, made or given by any of them or by any of their agents or employees, under any provision of the Contract, at any time, either before or after the completion and acceptance of the work and payment thereof, pursuant to any measurements, estimates, or certificate, from showing the true and correct amount or character of the work performed and materials furnished by the Contractor, nor from showing, at any time, that any such measurements, estimate or certificate is untrue or incorrectly made in any particular, or that the work or materials or any parts thereof do not conform in fact to Specifications and Contract. The Owner shall have the right to reject the whole or any part of the aforesaid work or materials should the said measurements, estimate, certificate or payments be found or be known to be inconsistent with terms of the Contract, or otherwise improperly given,

and the Owner shall not be precluded or estopped notwithstanding any such measurements, estimate, or certificate or payment in accordance therewith from demands and recovering from the Contractor and/or his surety such damages as may sustain by reason of his failure to comply with the terms of the Specification and Contract, or on account of any over payments made on any estimate or certificate. Neither the acceptance by the Owner or Engineer or any of their agents or employees, nor any certificate approved for payment of money; nor any payments for, nor acceptance of, the whole or any part of the work by the Owner, nor any extension of time nor any possession taken by the Owner or its employees shall operate as a waiver of any portion of the Contract or any power therein reserved by the Owner, or any right to damages herein provided, nor shall any waiver of any breach of the Contract be held to be a waiver of any other or subsequent breach.

43. CHASES, THIMBLES, SLEEVES

The General Contractor shall construct, or have built into the building walls, floors, ceilings and partitions all chases, thimbles, sleeves, inserts, bolts, hangers and fastening devices that are necessary. All other prime or separate Contractors shall furnish to the General Contractor, for installation, all material in required locations.

If the foregoing has not been complied with within such time as may be necessary so that the work can progress along with the structure, then the Sub-contractor or separate Prime Contractor whose work is affected shall make and bear expenses for such changes incidental to the construction as may be required so that his work can be properly installed. All such work shall be undertaken only after securing the Engineer's approval.

44. HIRING, ETC.

That, in the hiring of employees for the performance of work under this Contract or any Sub-Contract hereunder, no Contractor, shall by reason of race, creed, or color or sex discriminate against any citizen of the Commonwealth of Pennsylvania who is qualified and available to perform the work to which employment relates.

45. SHOP DRAWINGS AND SAMPLES

Shop Drawings are drawings, diagrams, illustrations, schedules, performance charts, brochures and other data which are prepared by the Contractor or Sub-contractor, manufacturer, supplier or distributor and which illustrate some portion of the work; samples are physical examples furnished by the Contractor to illustrate materials,

equipment or workmanship and to establish standards by which the work will be judged.

The Contractor shall review, stamp with his approval and submit, with reasonable promptness and in orderly sequence so as to cause no delay in the work or in the work of any other Contractor, all shop drawings required by the Contract Documents or subsequently by the Engineer as covered by Modifications. Shop drawings and samples shall be properly identified as specified, or as the Engineer may require, Contractor shall notify the Engineer in writing of any deviation in the shop drawings from the requirements of the Contract Documents at the time of submission.

The Contractor shall make any corrections required by the Engineer and shall resubmit the required number of corrected copies of shop drawings or new samples until approved. The Contractor shall direct specific attention in writing or on resubmitted shop drawings to revisions other than the corrections requested by the Engineer on previous submissions.

The Engineer's approval of Shop Drawings or Samples shall not relieve the Contractor of responsibility for any deviation from the requirements of the Contract Documents unless the Contractor has informed the Engineer in writing of such deviation at the time of submission and the Engineer has given written approval to the specific deviation, nor shall the Engineer's approval relieve the Contractor from responsibility for errors or omissions in the Shop Drawings or Samples.

For each Shop Drawing required, the Contractor shall submit one copy of an acceptable, legible, reproducible (sepia) print of the original tracing, along with two (2) prints. The Engineer will mark as previously specified and return corrected sepia print to Contractor. This process shall be repeated until approved shop drawings are received. Five (5) prints of approval sepia, along with the sepia print, will be finally submitted. All sepia prints will become the property of the Owner.

46. AS-BUILT DRAWINGS

At termination of work and before final payment, submit As-built drawings of the work completed.

After approval, submit one (1) corrected bound copy and two (2) electronic CD's in PDF Format.

47. REQUIRED BREAKDOWN OF PROJECT COSTS AND FORM FOR MONTHLY BILLINGS

American Institute of Architects Document G702, "Application and Certificate for Payment", and Document G702A, "Continuation Sheet", will be used for all monthly billings on this project.

48. PREVAILING WAGE RATES

If Prevailing Wage Rates apply, the Contractor shall conform to and be bound by the laws of the Commonwealth of Pennsylvania, relating to conditions of employment with respect to Act. No. 442. Prevailing Wage Rates apply to any project over \$25,000.00

49. CONTRACTOR'S SECURITY

Upon notice to the Contractor that he is the low bidder, and before award of the Contract, the Contractor shall furnish two (2) Bonds with Surety acceptable to the County, as follows:

One in the full amount of the Contract conditioned for the faithful performance of said Contract, including the indemnification of the Owner, in all respects set forth in these General Conditions and Specifications.

And the other for the full amount of the Contract conditioned to pay for all labor and materials which may be furnished to the Contract or which may enter into the Contract with right in all persons, firms or Corporation furnishing such labor or materials to sue on said Bond in the name of the Owner, for his, their, or its use.

The Delaware County Council will also require a Maintenance Bond in the amount of ten percent (10%) of the Contract price conditioned that the Principal shall remedy, without cost to the Owner, any defects which may develop during the period of one (1) year from date of completion and acceptance of the work performed under the Contract.

To each Bond shall be attached a recent financial statement of the Surety, along with a Power of Attorney showing that the person signing the Bonds on behalf of the Surety has power to do so.

The surety Bonds are subject to the approval of County Council. No Surety Bond will be approved unless the bonding Company shall have a rating of at least "B+" in Best's Key Rating Guide and shall be approved by the United States Department of the Treasury as a surety Company acceptable on Federal Bonds. In addition, the bonding Company shall have been registered with the Office of judicial support and the Office for Recording of Deeds of the **County of Delaware**.

The bonds shall be duly executed by the successful bidder as principal and by the signers of the Agreement of Prepared Surety, or Sureties. If the Owner determines that the Sureties are not acceptable, the bidder shall replace the bond with bonds offered by Sureties, which are acceptable to the Council within ten (10) calendar days of notification by the Council.

50. STEEL PRODUCTS

In accordance with the Pennsylvania Steel Products Procurement Act #1978-3, it is required that if any steel products are to be used or supplied in the performance of the Contract only steel products as defined in said act shall be used or supplied in the performance of the Contract or any sub-contracts thereunder.

Steel products as defined in said act are products made from steel made in the United States by the open hearth, basic oxygen, electric furnace, Bessemer or other steel making process. These steel products include products rolled, formed, shaped, drawn, extruded, forged, cast, fabricated or otherwise similarly processed, or processed by a combination of two or more of such operations.

51. MATERIAL SAFETY DATA SHEETS (MSDS)

Material Safety Data Sheets (MSDS) must be submitted for respective products with the Bid proposal, in compliance with the Federal Hazard Communication Standard Act (29 CFR 1910, 1200) and various State Right-to-Know laws.

52. GENERAL NOTES

Contracts shall be awarded to the lowest responsible bidder. In determining "lowest responsible bidder", in addition to price, the Central Purchasing Department in its pre-award evaluation shall, in consultation with the affected department head, ascertain and consider:

- a. The expertise of the bidder to perform the Contract or provide the service required;
- b. Whether the bidder can perform the Contract or provide the service promptly, or within the time specified and with adequate supervisory personnel;
- c. The character, integrity, reputation and judgment of the bidder;
- d. The quality of performance on previous contracts and services;
- e. The previous and existing compliance by the bidder with laws and ordinances relating to the Contract or service;

- f. The sufficiency of the financial resources of the bidder to perform the Contract or provide the service;
- g. The ready availability of supplies necessary to discharge performance in a prompt and workmanlike manner;
- h. The ability of the bidder to provide future maintenance and services for the use of the subject Contract;
- i. The number and scope of conditions attached to the bid.

(The acceptance of all bids for contracts is made expressly conditional upon a satisfactory rating from a pre-award investigation conducted by the Central Purchasing Department).

The following will automatically disqualify a low bidder:

- a. Default on the payment of taxes, licenses, or other monies due the County.
- b. Default, breach or repudiation on past contracts which reflect a course of performance deemed deleterious to the County's best interest.

When the award is not given to the lowest bidder, a full and complete statement of the reasons for placing the order elsewhere shall be prepared by the Central Purchasing Department and filed with the other papers relating to the transaction.

No verbal instructions or information will be binding. These specifications will be considered clear and complete unless attention is directed in writing to the Director of Public Works, County of Delaware, Delaware County Government Center, Media, Pennsylvania, to any apparent discrepancies or omissions thereof, before the opening of the Bids. Bidders should act promptly and allow sufficient time for replay to reach them before the submission of their Bids. Should any change in Specifications be required, an Addendum will be issued to all Bidders and receipt by the Bidders of the Form of Addendum must be acknowledged in space provided on Proposal Page.

Forms of Proposal are provided in these Specifications. This form must be used in submitting Proposal and must be signed by the Bidder.

DELAWARE COUNTY SPECIAL CONDITIONS

These General Conditions shall apply to the Contract as a whole, and to each and all branches or sub-divisions and contractors for same, should the work be divided. Sub-contractors shall have access to read a copy of these Special Conditions and no Contract or arrangements with them shall be such as to conflict herewith. Any requirements contained in the General Conditions which differ from any requirements contained in these "Special Conditions" shall be superseded by the requirements of these "Special Conditions".

1. ARRANGEMENT OF THE SPECIFICATIONS

- A. The Contractor is advised that the arrangement of the technical sections of the Specifications is furnished for his convenience only. The allocation of items of work between his Sub-contractors is entirely the responsibility of the Contractor.
- B. The Prime Contractors shall have a project foreman on-site whenever a Sub-contractor of the Prime Contractor is on-site to perform work. Sub-contractors shall submit all Owner related items to project foreman including operational and facility inquiries, building / room access. Scheduling conflicts and site coordination requests. It is the sole responsibility of the Prime Contractors to engage with Owner and Engineer, or their designated representatives to satisfy the Sub-contractors request.
- C. Materials and installation shall comply with the appropriate technical section of this specification unless otherwise indicated.

2. SAFETY DURING CONSTRUCTION

- A. The Contractor shall enforce suitable rules and provide the required guards and protective devices for the safe prosecution of the work and for the safety and health of the men employed in it and the public in general, both inside and outside the limit of Contract. The contractors are responsible for compliance with the Federal Occupational Safety and Health Act of 1970.
- B. The Prime Contractor and all Sub-contractors shall immediately report all accidents, injuries, or health hazards to the Owner and Engineer, or their designated representatives, in writing.

C. It shall be the single and sole responsibility of the Contractor to ensure that his activities comply with all applicable safety requirements, including, but not limited to local, state and federal regulations. Neither the Engineer nor the Owner shall owe any duty under this Contract or otherwise to the Contractor or its agents, employees or guests to inspect the work or otherwise ensure compliance by the Contractor with applicable safety requirements. No increases in the Contract price or extensions in the Contract time of completion shall be given by the Owner as the consequence of the Contractor's failure to so comply.

3. STANDARD OF QUALITY

See General Condition, Paragraph 17.

4. SUBSTITUTIONS OF MATERIAL

Bidders wishing to obtain acceptance on items other than those specified by name shall submit their request to the Engineer not less than ten (10) days before the bid opening, provided that such request is in accordance with the terms of conditions of the Contract Documents.

Acceptance by the Engineer will be in the form of an addendum to the Specifications issued to all prospective bidders indicating that the additional brand or brands are approved as equal to those specified so far as the requirements of the project are concerned. If the bidders do not elect to obtain prior approval during the time so specified, they have thereby evidenced their intention and are bound to provide all those articles and brand names stated in the Specifications.

5. CASH ALLOWANCES

In accordance with the Commonwealth of Pennsylvania Laws and Regulations, no cash allowances are included in the Project Manual and Contracts.

The Drawings and / or Specifications indicate the standard of quality and the finite quantity of materials and work, specialties, and items of work required, where such quantities can be determined prior to commencement of the work.

In those instances where it is known that quantities required may exceed those specified, as the result of conditions impossible to anticipate, the

Contractor shall state in his Proposal the unit price for such additional work, but no cash allowance for such additional quantity will be permitted.

6. DAMAGE TO PROPERTY

See General Conditions, Paragraph 31.

7. CLEAN-UP

The Contractor shall be responsible for periodic cleaning up of the building and premises. He shall remove all refuse of any kind regardless as to who may have left it. No rubbish shall be burned at the site. The Contractor shall also be responsible for keeping all property outside of the immediate work areas and material storage areas clean and free from all equipment, materials, and debris. If any condition in violation of this requirement persists more than twenty-four (24) hours after notification by the Owner or Engineer, the Owner shall have the right to abate the condition (without notice to the Contractor responsible) and charge the cost of abatement to the responsible Contractor.

8. DRAWINGS AND SPECIFICATIONS FURNISHED TO CONTRACTORS

Following the execution of their respective Contracts, Contractors shall be entitled to receive from the Engineer, without charge, sets of Contract Drawings and Specifications as follows:

A. Prime Contractors – 3 sets

Should a Contractor require a greater number of copies of Drawings and Specifications than above provided, he shall arrange to obtain them from the Engineer and pay the cost involved.

9. WARRANTY

Supplementing any specific guarantee or warranties provided for in any other provision of this Contract for the work to be performed hereunder; each Contractor covenants and agrees to remedy without cost to the Owner, any defect which may develop one (1) year from the date of completion and acceptance of the work performed under this Contract, or damage which may

be caused by such defects, provided such defects, in the judgment of the Owner, are caused by inferior materials and workmanship.

10. OPERATIONS AND STORAGE AREAS

All operations of the Contractor (including storage of materials) shall be confined to areas authorized or approved by the Owner. No unauthorized or unwarranted entry upon, passage through, or storage or disposal of material shall be made upon area not so authorized or approved. The Contractor responsible shall be liable for any and all damage caused by him to such area.

11. SCAFFOLDS, LADDERS, RUNS, AND HOISTS

The Contractor shall construct and maintain such temporary scaffolds, ladders, runs, hoists, centering, shoring, and other facilities as required to construct the work under his contract.

12. TIME FOR COMMENCEMENT AND COMPLETION

See General Conditions, Paragraph 34.

13. CODES AND PERMITS

See General Conditions, Paragraphs 26 and 27.

14. GENERAL SCOPE OF WORK

See General Conditions, Paragraph 4.

15. INDEMNIFICATION AGAINST SUITS

The Contractor shall indemnify and save harmless the Owner, the Board, its members and officers, the Engineer, his assistants, and all others who may act for the Board or the Owner from all suits and actions of every kind, nature, and description brought by anyone whatsoever against them or any of them in any manner connected with the contract here proposed or the work thereunder; provided that nothing herein stated shall be construed to preclude the Contractor from maintaining an action at law for money which may be due to him under the Contract.

16. COMPETENT WORKMEN – RATES OF WAGES

No person shall be employed to do work under such Contract except competent and first-class workmen and mechanics. No workmen shall be regarded as competent and first-class, within the meaning of this clause, except those who are fully skilled in their respective branches of labor, and who shall be paid not less than such rates of wages and for such hours' work as shall be the established and current rate of wages paid for such hours by employers or organized labor in doing of similar work in the general geographical location of the project.

17. LINES, LEVELS, ETC.

The Contractor shall, at his own expense, procure datum information, grades, elevations, verify existing construction, etc., at the site, before starting work, otherwise any cost of correction shall be entirely at the contractor's expense.

18. REGULATIONS FOR PENNSYLVANIA PREVAILING WAGE ACT

A. The general prevailing minimum wage rates including contributions for employee benefits as shall have been determined by the Secretary which must be paid to the workmen employed in the performance of the contracts.

The Contractor shall pay no less than the wage rates as determined in the decision of the Secretary of Labor and Industry and shall comply with the conditions of the Pennsylvania Prevailing Wage Act approved August 15, 1961 (No. 442), as amended August 9, 1963 (No. 342), and the Regulations issued pursuant thereto, to assure the full and proper payment of said wages.

B. The contract provisions shall apply to all work performed on the Contract by the Contractor and to all work performed on the Contract by the Sub-contractors.

C. The Contractor shall insert in each of the Sub-contracts all of the stipulations contained in these required provisions and such other stipulations as may be required.

D. The Contract shall provide that no workmen may be employed on the public work except in accordance with the classifications set forth in the decision of the Secretary. In the event that additional or different

classifications are necessary the procedures set forth in Section 7 of these Regulations shall be followed.

- E. The Contract shall provide that all workmen employed or working on the public work shall be paid unconditionally, regardless of whether any contractual relationship exists or the nature of any contractual relationship which may be alleged to exist between any contractor, sub-contractor and workmen, not less than once a week without deduction or rebate, on any account, either directly or indirectly, except authorized deductions, the full amounts due at the time of payment, computed at the rates applicable to the time worked in the appropriate classification. Nothing in the contract, the Act or these Regulations shall prohibit the payment of more than the general prevailing minimum wage rates as determined by the Secretary to any workmen on public work.
- F. The Contract shall provide that the Contractor and each Sub-contractor shall post for the entire period of construction the wage determination decisions of the Secretary, including the effective date of any changes thereof, in a prominent and easily accessible place or places used by them to pay workmen their wages. The posted notice of wage rates must contain the following information:
 - 1. Name of Project.
 - 2. Name of public body for which it is being constructed.
 - 3. The crafts and classifications of workmen listed in the Secretary's general prevailing minimum wage rate determination for the particular project.
 - 4. The general prevailing minimum wage rates determination for each craft and classification and the effective date of any changes.
 - 5. A statement advising workmen that if they have been paid less than the general prevailing minimum wage rate for their job classification or that the Contractor and / or Sub-contractor are not complying with the Act or these Regulations in any manner whatsoever they may file a protest in writing with the Secretary of Labor and Industry within three months of the date of the occurrence, objecting to the payment by any contractor to the extent of the amount or amounts due or to become due to them as wages for work performed on the public work project.

Section Q
Special Conditions

Any workman paid less than the rate specified in the Contract shall have a civil right of action for the difference between the wage paid and the wages stipulated in the contract, which right of action must be exercised within six months from the occurrence of the event creating such right.

- G. The Contract shall provide that the Contractor and all Sub-contractors shall keep an accurate record showing the name, craft, and / or classification, number of hours worked per day, and the actual hourly rate of wage paid (including employee benefits) to each workman employed by him in connection with the public work and such record must include any deductions from each workman. The record shall be preserved for two years from the date of payment and shall be open at all reasonable hours to the inspection of the public body awarding the contract and to the Secretary of his duly authorized representatives.
- H. The Contract shall provide that apprentices shall be limited to such numbers as shall be in accordance with a bona fide apprenticeship program registered with and approved by the Pennsylvania Apprenticeship and Training Council and only apprentices whose training and employment are in full compliance with the provisions of the Apprenticeship and Training Act approved July 14, 1961 (No. 304) and the Rules and Regulations issued pursuant thereto shall be employed on the public work project. Any workman using the tools of a craft who does not qualify as an apprentice within the provisions of this subsection shall be paid the rate predetermined for journeyman in that particular craft and / or classification.
- I. Wages shall be paid without any deductions except authorized deductions. Employers not parties to a contract requiring contributions for employee benefits which the Secretary has determined to be included in the general prevailing minimum wage rate shall pay the monetary equivalent thereof directly to the workmen.
- J. Payment of compensation to workmen for work performed on public work on a lump sum basis, or a piece work system, or a price certain for the completion of a certain amount of work, or the production of a certain result shall be deemed a violation of the Act and these Regulations, regardless of the average hourly earnings resulting therefrom.
- K. The Contract shall also provide that each contractor and each sub-contractor shall file a statement each week and a final statement at the

conclusion of the work on the Contract with the contracting agency, under oath, and in form satisfactory to the Secretary, certifying that all workmen have been paid wages in strict conformity with the provisions of the Contract as prescribed by this Section 3 of these Regulations, or if any wages remain unpaid to set forth the amount of wages due and owing to each workman respectively.

- L. The provisions of the Act and the Regulations are hereby incorporated by reference in the Contract.

19. LIQUIDATED DAMAGES

- A. The Owner will suffer damages if the construction contract(s) is not complete as set forth in the Proposal Form(s).
- B. The Contractor and Contractor's surety company shall be liable for and shall pay to the Owner the sum of \$500.00 per day as Liquidated Damages for each calendar day of delay until the construction contract is complete.

20. PROJECT SCHEDULE

- A. Provide Project Schedule in accordance with other Sections of these Specifications.
- B. Include within the Project Schedule the related work activities of all trades by task / event with completion time frame, allowable slippage and critical start and finish dates. Incorporate milestones for Owner responsibilities.
- C. Acceptable formats for presentation of Project Schedule include:
 - 1. Simplified overlapping and coordinated bar charts with a timeline and activity dates and duration.
 - 2. A network schedule using the critical path method (cpm) of plotting nodes (events) and connecting arrows (activities).
- D. Update the Project Schedule as required to accommodate field and project conditions. Issue an updated Project Schedule to the Owner for review and approval every Three (3) weeks or as required to inform the Owner of deviations and revisions.

- E. The project shall be complete and operational in the time frame specified in Section B, Instructions to Bidders, Time for Completing Work. The time for completing work stated in Instructions to Bidders, Time for Completing Work shall be considered the contract limit as defined in the Proposal Form in section C. It is understood that the County may, on its own decision or initiate, extend the completion date by giving notice to all parties to this contract of its intention to extend. The County shall not be liable for any expenses, damages, loss of profits, anticipated or otherwise for extending this contract.

21. APPRENTICESHIP TRAINING

- A. A bidder and all sub-contractors they may eventually employ on this Project shall each be a participant in a state or federally approved Apprenticeship Training Program. Each bidder shall submit with his / her proposal a complete description of the Apprenticeship Training Program in which the bidder participates. The bidder shall also provide with his / her bid a written statement that if awarded a contract, the bidder will employ apprentices enrolled in a state or federally approved Apprenticeships Training Program under the direction of experienced supervisors.
- B. If requested by the Owner, the bidder shall submit within three (3) days of the date of the request, the name, address, and telephone number of the state and federal agency which certifies the bidder's Apprentice / Training Program and the bidder's identification number (if any) that would enable the Owner's representative to verify the information provided by the bidder.
- C. Failure of a bidder to provide information as required under this paragraph shall be cause for disqualification of the bidder's proposal.

22. AFFIRMATIVE ACTION PROGRAM

- A. Each bidder shall have a formal documented Affirmative Action Program and must provide with his / her proposal a written statement describing the exact nature, scope and history of their Affirmative Action Program in the interest of extending work opportunities to qualified minority workers.
- B. Failure of a bidder to provide information as required under this paragraph shall be cause for disqualification of the bidder's proposal.

23. SUB-CONTRACTOR ON SITE

Prime Contractors shall have a project foreman on-site whenever a Sub-contractor of such Prime Contractor is on-site to perform work. Sub-contractors shall submit all Owner related items to project foreman including operational and facility inquiries, building / room access, scheduling conflicts and site coordination requests. It is the sole responsibility of the Prime Contractors to engage with Owner and Engineer, or their designated representatives to satisfy the Sub-contractor's request.

24. CRIMINAL BACKGROUND CHECK POLICY

The County will require all construction workmen working at the Facility to undergo a criminal background check. See Employee Background Requirements listed in Appendix B.

Contractor Responsibility Requirements for Construction of \$500,000.00 or more:

Chapter 29 of the Delaware County Code requires that as a condition of performing work on certain public works contracts, a firm seeking award of a contract shall submit a Contractor Responsibility Certification. Delaware County has determined that the contract subject to this Invitation to Bid is covered by Chapter 29, and that firms responding to this Invitation to Bid must submit this form and otherwise comply with the provisions of Chapter 29 as well as Delaware County Resolution Number 2022-3 (Regarding Goals for Diversity in Public Works Contracting).

The Contractors Responsibility Certification must be completed/submitted on the form contained within this Invitation to Bid package.

All firms engaged in contracts with the County of Delaware shall be qualified, responsible contractors or subcontractors that have sufficient capabilities in all respects to successfully perform contracts on which they are engaged, including the necessary experience, equipment, technical skills and qualifications and organizational, financial and personnel resources. Qualified, responsible firms shall also have a satisfactory past performance record and a satisfactory record of law compliance, integrity and business ethics.

A bidder shall submit with their bid documents a subcontractor list containing the names of subcontractors that will be used for the referenced project, their addresses and a description of the work each listed subcontractor will perform on the project.

If the firm receives a Notice of Intent to Award Contract, it agrees to provide Subcontractor Responsibility Forms and any required subcontractor information within fourteen days (Director of Public Works may extend such deadline upon good justification by firm). All provisions of this section shall be applicable to all subcontractors of subcontractors.

The Department of Public Works shall ensure that the contractor responsibility certification, the subcontractor list and subcontractor responsibility certifications, as required, have been submitted and properly executed.

The Department of Public Works may conduct any additional inquiries to verify a bidder or proposer (hereinafter collectively referred to as “bidder”) and its subcontractors have the technical qualifications and performance capabilities necessary to successfully perform the contract and that the firms have a sufficient record of law compliance and business integrity to justify the award of a public contract. In conducting such inquiries, the Department of Public Works may seek relevant information from the firm, its prior clients or customers, its subcontractors or any other relevant source.

Subcontractor responsibility review requirements

A construction manager, general contractor or other lead or prime contractor shall not be permitted to use a subcontractor on any work performed for the County of Delaware unless it has identified the subcontractor on its subcontractor list and provided a subcontractor responsibility certification.

A subcontractor listed on a firm's subcontractor list shall not be substituted unless written authorization is obtained from the Department of Public Works and a subcontractor responsibility certification is provided for the substitute subcontractor.

In the event that the Department of Public Works determines that a prospective subcontractor listed by a bidder does not meet the responsibility standards of this resolution, it may, after informing the bidder, exercise one of the following options:

1. Permit the bidder to substitute a qualified, responsible subcontractor in accordance with the requirements of this resolution;
2. Require the bidder to self-perform the work in question if the firm has the required experience, licenses and other qualifications to perform the work in question; or
3. Disqualify the bidder.

In the event that a subcontractor is disqualified, the general contractor, construction manager or other lead or prime contractor shall not be permitted to make any type of contractual claim against the County of Delaware on the basis of a subcontractor disqualification.

STANDARD SPECIFICATIONS

See Division 01 through 27 of the Project Manual.

SPECIAL PROVISIONS

NONDISCRIMINATION/SEXUAL HARASSMENT CLAUSE

The Contactor agrees:

1. In the hiring of any employee(s) for the manufacture of supplies, performance of work, or any other activity required under the contract or any sub-contract, the Contractor, each sub-contractor, or any person acting on behalf of the Contractor or sub-contractor, shall not, discriminate in violation of the *Pennsylvania Human Relations Act* (PHRA) and applicable federal laws against any citizen, who is qualified and available to perform the work to which the employment relates.
2. Neither the Contractor nor any sub-contractor nor any person on their behalf shall in any manner discriminate in violation of the PHRA and applicable federal laws against or intimidate any employee involved in the manufacture of supplies, the performance or work, or any other activity required under the contract.
3. The Contractor and each sub-contractor shall establish and maintain a written nondiscrimination and sexual harassment policy and shall inform their employees of the policy. The policy must contain a provision that sexual harassment will not be tolerated and employees who practice it will be disciplined. Posting this Nondiscrimination/Sexual Harassment Clause conspicuously in easily-accessible and well- lighted places customarily frequented by employees at or near where the contract services are performed shall satisfy this requirement.
4. The Contractor and each sub-contractor shall not discriminate in violation of PHRA and applicable federal laws against any sub-contractor or supplier who is qualified to perform the work to which the contract relates.
5. The Contractor and each sub-contractor represents that it is presently in compliance with and will maintain compliance with all applicable federal, state and local laws and regulations relating to nondiscrimination and sexual harassment. The Contractor and each sub-contractor further represents that it has filed a Standard Form 100 Employer Information Report ("EEO-1") with the U.S. Equal Employment Opportunity Commission ("EEOC") and shall file an annual EEO-1 report with the EEOC as required for employers' subject to Title VII of the Civil Rights Act of 1964, as amended, that have 100 or more employees and employers that have federal government contracts or first-tier sub-contracts and have 50 or more employees. The Contractor and each sub-contractor shall, upon request and within the time periods requested by the County, furnish all necessary employment documents and records, including EEO-1 reports and permit access to their books, records and accounts by the contracting agency and the Bureau of Small Business

Section T
Nondiscrimination/Sexual Harassment Clause

Opportunities (BSBO), for purpose of ascertaining compliance with provisions of the Nondiscrimination/Sexual Harassment Clause.

6. The Contractor shall include the provisions of this Nondiscrimination/Sexual Harassment Clause in every sub-contract so those provisions applicable to sub-contractors will be binding upon each sub-contractor.
7. The Contractor's and each sub-contractor's obligation pursuant to these provisions are ongoing from and after the effective date of the contract through termination date thereof. Accordingly, the Contractor and each sub-contractor shall have an obligation to inform the County if, at any time during the term of the Contract, it becomes aware of any actions or occurrences that would result in violation of these provisions.
8. The County may cancel or terminate the Contract and all money due or to become due under the Contract may be forfeited for a violation of the terms and conditions of the Nondiscrimination/Sexual Harassment Clause.

Appendix A

**SUPPLEMENTAL CONTRACT
FORMS**

APPLICATION AND CERTIFICATE FOR PAYMENT CONSTRUCTION MANAGER-ADVISER EDITION
AIA DOCUMENT G702/CMA (Instructions on reverse side)

TO OWNER: PROJECT: APPLICATION NO.: Distribution to:
PERIOD TO: OWNER
PROJECT NOS.: CONSTRUCTION
MANAGER
CONTRACT DATE: ARCHITECT
CONTRACTOR

FROM CONTRACTOR:

VIA CONSTRUCTION MANAGER:
VIA ARCHITECT:

CONTRACTOR'S APPLICATION FOR PAYMENT

Application is made for payment, as shown below, in connection with the Contract. Continuation Sheet, AIA Document G703, is attached.

1. ORIGINAL CONTRACT SUM\$

2. Net Change By Change Orders\$

3. CONTRACT SUM TO DATE (Line 1 + 2)\$

4. TOTAL COMPLETED & STORED TO DATE\$
(Column G on G702)

5. RETAINAGE:
a. _____% of Completed Work\$
(Columns D + E on G703)
b. _____% of Stored Material\$
(Column F on G703)
Total Retainage (Line 5a + 5b or
Total in Column I of G703)\$

6. TOTAL EARNED LESS RETAINAGE\$
(Line 4 less Line 5 Total)

7. LESS PREVIOUS CERTIFICATES FOR PAYMENT
(Line 6 from prior Certificate)\$

8. CURRENT PAYMENT DUE\$

9. BALANCE TO FINISH, INCLUDING RETAINAGE
(Line 3 less Line 6)\$

CHANGE ORDER SUMMARY	ADDITIONS	DEDUCTIONS
Total changes approved in previous months by Owner		
Total approved this Month		
TOTALS		
NET CHANGES by Change Order		

The undersigned Contractor certifies that to the best of the Contractor's knowledge, information and belief the Work covered by this Application for Payment has been completed in accordance with the Contract Documents, that all amounts have been paid by the Contractor for Work for which previous Certificates for Payment were issued and payments received from the Owner, and that current payment shown herein is now due.

CONTRACTOR:

By: _____ Date: _____

State of: _____

County of: _____

Subscribed and sworn to before me this _____ day of _____

Notary Public: _____

My Commission expires: _____

CERTIFICATE FOR PAYMENT

In accordance with the Contract Documents, based on on-site observations and the data comprising this application, the Construction Manager and Architect certify to the Owner that to the best of their knowledge, information and belief the Work has progressed as indicated, the quality of the Work is in accordance with the Contract Documents, and the Contractor is entitled to payment of the AMOUNT CERTIFIED.

AMOUNT CERTIFIED\$
(Attach explanation if amount certified differs from the amount applied for. Initial all figures on this Application and on the Continuation Sheet that changed to conform to the amount certified.)

CONSTRUCTION MANAGER:
By: _____ Date: _____
ARCHITECT:
By: _____ Date: _____

This Certificate is not negotiable. The AMOUNT CERTIFIED is payable only to the Contractor named herein. Issuance, payment and acceptance of payment are without prejudice to any rights of the Owner or Contractor under this Contract.

INSTRUCTION SHEET

FOR AIA DOCUMENT G702/CMA, APPLICATION AND CERTIFICATE FOR PAYMENT CONSTRUCTION MANAGER-ADVISED EDITION

A. GENERAL INFORMATION

AIA Document G702/CMA, Application and Certificate for Payment, Construction Manager-Advised Edition, is to be used in conjunction with AIA Document G703, Continuation Sheet. These documents are designed to be used on a Project where a Construction Manager is employed as an adviser to the Owner, but not as a constructor, and where multiple Contractors have direct Agreements with the Owner. Procedures for their use are covered in AIA Document A201/CMA, General Conditions of the Contract for Construction, Construction Manager-Advised Edition, 1992 Edition.

B. COMPLETING THE G702/CMA FORM:

After the Contractor has completed AIA Document G703, Continuation Sheet, summary information should be transferred to AIA Document G702/CMA, Application and Certificate for Payment, Construction Manager-Advised Edition.

The Contractor should sign G702/CMA, have it notarized and submit it, together with G703, to the Construction Manager and Architect.

The Construction Manager and Architect should review G702/CMA and G703 and, if they are acceptable, complete the Certificate for Payment on G702/CMA. The Construction Manager and Architect may certify a different amount than that applied for, pursuant to Paragraphs 9.5 and 9.6 of A201/CMA. They should then initial all figures on G702/CMA and G703 that have been changed to conform to the amount certified and attach an explanation. The completed G702/CMA and G703 should be forwarded to the Owner.

C. COMPLETING THE G703 FORM:

Heading: This information should be completed to be consistent with similar information on AIA Document G702/CMA, Application and Certificate for Payment, Construction Manager-Advised Edition.

Columns A, B & C: These columns should be completed by identifying the various portions of the Project and their scheduled value consistent with the schedule of values submitted to the Architect at the commencement of the Project or as subsequently adjusted. The breakdown may be by sections of the Work or by Subcontractors and should remain consistent throughout the Project. Multiple pages should be used when required.

Column C should be subtotaled at the bottom when more than one page is used and totaled on the last page. Initially, this total should equal the original Contract Sum. The total of column C may be adjusted by Change Orders during the Project.

Column D: Enter in this column the amount of completed work covered by the previous application (columns D & E from the previous application). Values from column F (Materials Presently Stored) from the previous application should not be entered in this column.

Column E: Enter here the value of Work completed at the time of this application, including the value of materials incorporated into the project which were listed on the previous application under Materials Presently Stored (column F).

Column F: Enter here the value of Materials Presently Stored for which payment is sought. The total of the column *must* be recalculated at the end of each pay period. This value covers both materials newly stored for which payment is sought and materials previously stored which are not yet incorporated into the Project. Mere payment by the Owner for stored materials does not result in a deduction from this column. Only as materials are incorporated into the Project is their value deducted from this column and incorporated into column E (Work Completed—This Period).

Column G: Enter here the total of columns D, E and F. Calculate the percentage completed by dividing column G by column C.

Column H: Enter here the difference between column C (Scheduled Value) and column G (Total Completed and Stored to Date).

Column I: This column is normally used only for contracts where variable retainage is permitted on a line-item basis. It need not be completed on projects where a constant retainage is withheld from the overall contract amount.

Change Orders: Although Change Orders could be incorporated by changing the schedule of values each time a Change Order is added to the Project, this is not normally done. Usually, Change Orders are listed separately, either on their own G703 form or at the end of the basic schedule. The amount of the original contract adjusted by Change Orders is to be entered in the appropriate location on the G702/CMA form.

Construction Change Directives: Amounts not in dispute that have been included in Construction Change Directives should be incorporated into one or more Change Orders. Amounts remaining in dispute should be dealt with according to Paragraph 7.3 in A201/CMA.

D. MAKING PAYMENT

The Owner should make payment directly to the Contractor based on the amount certified by the Construction Manager and Architect on AIA Document G702/CMA, Application and Certificate for Payment, Construction Manager-Advised Edition. The completed form contains the name and address of the Contractor. Payment should not be made to any other party unless specifically indicated on G702/CMA.

AIA DOCUMENT G703 (Instructions on reverse side)

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93	93	93	93
94	94	94	94
95	95	95	95
96	96	96	96
97	97	97	97
98	98	98	98
99	99	99	99
100	100	100	100

APPLICATION NO.:
APPLICATION DATE:
PERIOD TO:
ARCHITECT'S PROJECT NO.:

Use Column I on Contracts where variable retainage for line items may apply.

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G703-1992



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INSTRUCTION SHEET

FOR AIA DOCUMENT G703

A. GENERAL INFORMATION

1. Purpose and Related Documents

AIA Document G702, Application and Certificate for Payment, is to be used in conjunction with AIA Document G703, Continuation Sheet. These documents are designed for use on Projects where the Contractor has a direct Agreement with the Owner. Procedures for their use are covered in AIA Document A201, General Conditions of the Contract for Construction, 1987 Edition.

2. Use of Current Documents

The user should consult the AIA, an AIA component chapter or a current AIA Documents List to determine the current edition of each document.

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B. COMPLETING THE G703 FORM:

Heading: This information should be completed in a manner consistent with similar information on AIA Document G702, Application and Certificate for Payment.

Columns A, B & C: These columns should be completed by identifying the various portions of the Project and their scheduled values consistent with the schedule of values submitted to the Architect at the commencement of the Project or as subsequently adjusted. The breakdown may be by sections of the Work or by Subcontractors and should remain consistent throughout the Project. Multiple pages should be used when required.

Column C should be subtotaled at the bottom when more than one page is used and totaled on the last page. Initially, this total should equal the original Contract Sum. The total of column C may be adjusted by Change Orders during the Project.

Column D: Enter in this column the amount of completed Work covered by the previous application (columns D & E from the previous application). Values from column F (Materials Presently Stored) from the previous application should not be entered in this column.

Column E: Enter here the value of Work completed at the time of this application, including the value of materials incorporated in the project that were listed on the previous application under Materials Presently Stored (column F).

Column F: Enter here the value of Materials Presently Stored for which payment is sought. The total of the column must be recalculated at the end of each pay period. This value covers both materials newly stored for which payment is sought and materials previously stored which are not yet incorporated into the Project. Mere payment by the Owner for stored materials does not result in a deduction from this column. Only as materials are incorporated into the Project is their value deducted from this column and incorporated into column E (Work Completed—This Period.)

Column G: Enter here the total of columns D, E and F. Calculate the percentage completed by dividing column G by column C.

Column H: Enter here the difference between column C (Scheduled Value) and column G (Total Completed and Stored to Date).

Column I: This column is normally used only for contracts where variable retainage is permitted on a line-item basis. It need not be completed on projects where a constant retainage is withheld from the overall contract amount.

Change Orders: Although Change Orders could be incorporated by changing the schedule of values each time a Change Order is added to the Project, this is not normally done. Usually, Change Orders are listed separately, either on their own G703 form or at the end of the basic schedule. The amount of the original contract adjusted by Change Orders is to be entered in the appropriate location on the G702 form.

Construction Change Directives: Amounts not in dispute that have been included in Construction Change Directives should be incorporated into one or more Change Orders. Amounts remaining in dispute should be dealt with according to Paragraph 7.3 in A201.

The following is an example of a Continuation Sheet for work in progress. Please note that dollar amounts shown below are for illustrative purposes only, and are not intended to reflect actual construction costs.

ITEM NO.	DESCRIPTION OF WORK	SCHEDULED VALUE	WORK COMPLETED		MATERIALS PRESENTLY STORED (NOT IN D OR E)	TOTAL COMPLETED AND STORED TO DATE (D + E + F)		BALANCE TO FINISH (C - G)	RETAINAGE (IF VARIABLE RATE)
			FROM PREVIOUS APPLICATION (D + E)	THIS PERIOD			% (G ÷ C)		
1	MOBILIZATION	5,000	5,000	0	0	5,000	100	0	
2	STUMP REMOVAL	5,000	5,000	0	0	5,000	100	0	
3	EARTH WORK	15,000	10,000	5,000	0	15,000	100	0	
4	LOWER RETAINING WALL	10,000	0	5,000	0	5,000	50	5,000	
5	CURBS & MISC. CONC.	5,000	0	0	0	0	0	5,000	
6	PAVING, UPPER DRIVE	20,000	0	0	0	0	0	20,000	
7	PAVING, LOWER DRIVE	20,000	0	0	0	0	0	20,000	
8	PAVERS	10,000	0	0	10,000	10,000	50	10,000	
9	BRICK WORK	5,000	0	0	0	0	0	5,000	
		105,000	10,000	10,000	10,000	40,000		65,000	

CHANGE ORDER

CONSTRUCTION MANAGER-ADVISER EDITION

AIA DOCUMENT G701/CMa

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MAY BE OBTAINED AT <http://www.aia.org/constructiondocs/index.htm>

CONSTRUCTION MANAGER

ARCHITECT

CONTRACTOR

FIELD

OTHER

☐

☐

☐

☐

☐

☐

(Instructions on reverse side)

PROJECT:

(Name and address)

CHANGE ORDER NO.:

INITIATION DATE:

TO CONTRACTOR:

(Name and address)

PROJECT NOS.:

CONTRACT FOR:

CONTRACT DATE:

The Contract is changed as follows:

Not valid until signed by the Owner, Construction Manager, Architect and Contractor.

The original (Contract Sum) (Guaranteed Maximum Price) was \$

Net change by previously authorized Change Orders \$

The (Contract Sum) (Guaranteed Maximum Price) prior to this Change Order was \$

The (Contract Sum) (Guaranteed Maximum Price) will be (increased) (decreased) (unchanged) by
this Change Order \$

The new (Contract Sum) (Guaranteed Maximum Price) including this Change Order will be \$

The Contract Time will be (increased) (decreased) (unchanged) by () days

The date of Substantial Completion as of the date of this Change Order therefore is

NOTE: This summary does not reflect changes in the Contract Sum, Contract Time or Guaranteed Maximum Price which have been authorized
by Construction Change Directive.

CONSTRUCTION MANAGER

ADDRESS

BY

DATE

ARCHITECT

ADDRESS

BY

DATE

CONTRACTOR

ADDRESS

BY

DATE

OWNER

ADDRESS

BY

DATE



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G701/CMa-1992

INSTRUCTION SHEET

FOR AIA DOCUMENT G701/CMA, CHANGE ORDER
CONSTRUCTION MANAGER-ADVISER EDITION

A. GENERAL INFORMATION

1. Purpose

This document is intended for use in implementing changes in the Work agreed to by the Owner, Construction Manager, Architect and Contractor. Execution of a completed G701/CMA form indicates agreement upon all the terms of the change, including any changes in the Contract Sum (or Guaranteed Maximum Price) and Contract Time. In contrast, AIA Document G714/CMA, Construction Change Directive, Construction Manager-Adviser Edition, should be used in situations where, for whatever reason, the Owner and Contractor have not reached agreement upon the proposed changes in Contract Sum or Contract Time, and where changes in the Work need to be implemented expeditiously in order to avoid a delay in the Project.

2. Related Documents

This document was prepared for use under the terms of AIA Document A201/CMA, General Conditions of the Contract for Construction, Construction Manager-Adviser Edition.

3. Use of Current Documents

Prior to using any AIA document, the user should consult the AIA, an AIA component chapter or a current AIA Documents List to determine the current edition of each document.

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B. COMPLETING THE G701/CMA FORM

1. Description of Change in the Contract

Insert a detailed description of the change to be made in the Contract by this Change Order, including any Drawings, Specifications, documents or other supporting data to clarify the scope of the change.

2. Determination of Costs

Insert the following information in the blanks provided, and strike out the terms in parentheses that do not apply:

- a) the original Contract Sum or Guaranteed Maximum Price;
- b) the net change by previously authorized Change Order (note that this does not include changes authorized by Construction Change Directive unless such a change was subsequently agreed to by the Contractor and recorded as a Change Order);
- c) the Contract Sum or Guaranteed Maximum Price prior to this Change Order;
- d) the amount of increase or decrease, if any, in the Contract Sum or Guaranteed Maximum Price; and
- e) the new Contract Sum or Guaranteed Maximum Price as adjusted by this Change Order.

3. Change in Contract Time

Insert the following information in the blanks provided, and strike out the terms in parentheses that do not apply:

- a) in number of days, the increase or decrease, if any, in the Contract Time; and
- b) the date of Substantial Completion, including any adjustment effected by this Change Order.

C. EXECUTION OF THE DOCUMENT

When the Owner, Construction Manager, Architect and Contractor have reached agreement on the change to be made in the Contract, including any adjustments in the Contract Sum (or Guaranteed Maximum Price) and Contract Time, the G701/CMA document should be executed in quadruplicate by the two parties, the Construction Manager and Architect, each of whom retains an original.



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**CERTIFICATE OF
SUBSTANTIAL COMPLETION****CONSTRUCTION MANAGER-ADVISER EDITION**

AIA DOCUMENT G704/CMA

(Instructions on reverse side)

OWNER	<input type="checkbox"/>
CONSTRUCTION MANAGER	<input type="checkbox"/>
ARCHITECT	<input type="checkbox"/>
CONTRACTOR	<input type="checkbox"/>
FIELD	<input type="checkbox"/>
OTHER	<input type="checkbox"/>

PROJECT:

(Name and address)

PROJECT NOS.:

CONTRACT FOR:

CONTRACT DATE:

TO OWNER:

(Name and address)

TO CONTRACTOR:

(Name and address)

DATE OF ISSUANCE:

PROJECT OR DESIGNATED PORTION SHALL INCLUDE:

The Work performed under this Contract has been reviewed and found, to the Construction Manager's and Architect's best knowledge, information and belief, to be substantially complete. Substantial Completion is the stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so the Owner can occupy or utilize the Work for its intended use. The date of Substantial Completion of the Project or portion thereof designated above is hereby established as

which is also the date of commencement of applicable warranties required by the Contract Documents, except as stated below:

A list of items to be completed or corrected is attached hereto. The failure to include any items on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

CONSTRUCTION MANAGER

BY

DATE

ARCHITECT

BY

DATE

The Contractor will complete or correct the Work on the list of items attached hereto within

days from

the above date of Substantial Completion.

CONTRACTOR

BY

DATE

The Owner accepts the Work or designated portion thereof as substantially complete and will assume full possession thereof at (time) on (date).

OWNER

BY

DATE

The responsibilities of the Owner and the Contractor for security, maintenance, heat, utilities, damage to the Work and insurance shall be as follows:

(Note—Owner's and Contractor's legal and insurance counsel should determine and review insurance requirements and coverage.)



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INSTRUCTION SHEET

FOR AIA DOCUMENT G704/CMA, CERTIFICATE OF SUBSTANTIAL COMPLETION
CONSTRUCTION MANAGER-ADVISER EDITION

A. GENERAL INFORMATION

1. Purpose

AIA Document G704/CMA, Certificate of Substantial Completion, Construction Manager-Adviser Edition, is a new document. This document was developed to include the Construction Manager in the process of establishing the date of Substantial Completion, which is established for the purpose of commencement of applicable warranties and to allow the Owner to occupy or utilize the Work or designated portion thereof.

2. Related Documents

This document was prepared for use under the terms of AIA Document A201/CMA, General Conditions of the Contract for Construction, Construction Manager-Adviser Edition.

3. Use of Current Documents

Prior to using any AIA document, the user should consult the AIA, an AIA component chapter or a current AIA Documents List to determine the current edition of each document.

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B. COMPLETING THE G704/CMA FORM

1. After the words "Project or Designated Portion shall include:", insert a detailed description of the Project or portion(s) of the Project that have been accepted as being substantially complete.

2. Determine Work to be completed.

Provide a list of items that are to be completed or corrected.

Determine dates for completion of the Work.

Establish an amount to be withheld to complete the Work.

C. EXECUTION OF THE DOCUMENT

The G704/CMA document should be executed in not less than quadruplicate by the Owner, Construction Manager, Architect and Contractor, each of whom retains an original.

CONTRACTOR'S AFFIDAVIT OF RELEASE OF LIENS

AIA Document G706A

(Instructions on reverse side)

OWNER	<input type="checkbox"/>
ARCHITECT	<input type="checkbox"/>
CONTRACTOR	<input type="checkbox"/>
SURETY	<input type="checkbox"/>
OTHER	<input type="checkbox"/>

TO OWNER:
(Name and address)

ARCHITECT'S PROJECT NO.:

CONTRACT FOR:

PROJECT:
(Name and address)

CONTRACT DATED:

STATE OF:
COUNTY OF:

The undersigned hereby certifies that to the best of the undersigned's knowledge, information and belief, except as listed below, the Releases or Waivers of Lien attached hereto include the Contractor, all Subcontractors, all suppliers of materials and equipment, and all performers of Work, labor or services who have or may have liens or encumbrances or the right to assert liens or encumbrances against any property of the Owner arising in any manner out of the performance of the Contract referenced above.

EXCEPTIONS:

SUPPORTING DOCUMENTS ATTACHED HERETO:

1. Contractor's Release or Waiver of Liens, conditional upon receipt of final payment.
2. Separate Releases or Waivers of Liens from Subcontractors and material and equipment suppliers, to the extent required by the Owner, accompanied by a list thereof.

CONTRACTOR:
(Name and address)

BY: _____
(Signature of authorized representative)

(Printed name and title)

Subscribed and sworn to before me on this date:

Notary Public:

My Commission Expires:



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INSTRUCTION SHEET

FOR AIA DOCUMENT G706A, CONTRACTOR'S AFFIDAVIT OF RELEASE OF LIENS

A. GENERAL INFORMATION

1. Purpose

This document is intended for use as a companion to AIA Document G706, Contractor's Affidavit of Payment of Debts and Claims.

2. Related Documents

This document may be used with most of the AIA's Owner-Contractor agreements and general conditions, such as A201 and its related family of documents. As noted above, G706A is a companion document to AIA Document G706.

3. Use of Current Documents

Prior to using any AIA document, the user should consult the AIA, an AIA component chapter or a current AIA Documents List to determine the current edition of each document.

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B. CHANGES FROM THE PREVIOUS EDITION

A cross-reference to AIA Document A201 has been deleted to permit the use of G706A with other families of AIA documents, including construction management, interiors and design/build.

C. COMPLETING THE G706A FORM

GENERAL: The Owner-Contractor Agreement is the usual source of required information such as the contract date and the names and addresses of the Owner, Project and Contractor.

ARCHITECT'S PROJECT NO.: This information is typically supplied by the Architect and entered on the form by the Contractor.

CONTRACT FOR: This refers to the scope of the contract, such as "General Construction" or "Mechanical Work".

AFFIDAVIT: Indicate the state and county where the Affidavit is made. This is not necessarily the same location as the Project, but should be the location where the notary is authorized to administer sworn oaths. If there are any EXCEPTIONS to the statement, these should be listed in the space provided; otherwise enter as "None". It may be a stipulation of the Contract Documents that the Owner has the right to require the Contractor to furnish a bond to cover each exception listed on the Affidavit.

SUPPORTING DOCUMENTS: The AIA does not publish a "Release or Waiver of Liens" for contractors or subcontractors because of the great diversity of releases or waivers permitted by various state mechanics lien laws. Forms for such purposes may be available from local contractors' associations or may be written with the assistance of legal counsel.

D. EXECUTION OF THE DOCUMENT

The Notary Public should administer a sworn oath to the Contractor referencing the written statements appearing on G706A, and should duly sign and seal this document containing the Contractor's signature. G706A should be signed by the Contractor or the Contractor's authorized representative.

CONSENT OF SURETY TO FINAL PAYMENT

AIA Document G707

(Instructions on reverse side)

OWNER	<input type="checkbox"/>
ARCHITECT	<input type="checkbox"/>
CONTRACTOR	<input type="checkbox"/>
SURETY	<input type="checkbox"/>
OTHER	<input type="checkbox"/>

TO OWNER:
(Name and address)

ARCHITECT'S PROJECT NO.:

CONTRACT FOR:

PROJECT:
(Name and address)

CONTRACT DATED:

In accordance with the provisions of the Contract between the Owner and the Contractor as indicated above, the
(Insert name and address of Surety)

on bond of
(Insert name and address of Contractor)

, SURETY,

hereby approves of the final payment to the Contractor, and agrees that final payment to the Contractor shall not relieve the Surety of
any of its obligations to
(Insert name and address of Owner)

as set forth in said Surety's bond.
, OWNER,

IN WITNESS WHEREOF, the Surety has hereunto set its hand on this date:
(Insert in writing the month followed by the numeric date and year.)

(Surety)

(Signature of authorized representative)

Attest:
(Seal):

(Printed name and title)



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INSTRUCTION SHEET

FOR AIA DOCUMENT G707, CONSENT OF SURETY TO FINAL PAYMENT

A. GENERAL INFORMATION

1. Purpose

This document is intended for use as a companion to AIA Document G706, Contractor's Affidavit of Payment of Debts and Claims, on construction projects where the Contractor is required to furnish a bond. By obtaining the Surety's approval of final payment to the Contractor and its agreement that final payment will not relieve the Surety of any of its obligations, the Owner may preserve its rights under the bond.

2. Related Documents

This document may be used with most of the AIA's Owner-Contractor agreements and general conditions, such as A201 and its related family of documents. As noted above, this is a companion document to AIA Document G706.

3. Use of Current Documents

Prior to using any AIA document, the user should consult the AIA, an AIA component chapter or a current AIA Documents List to determine the current edition of each document.

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B. CHANGES FROM THE PREVIOUS EDITION

Changes in the location of various items of information were made, without revision to the substance of the document.

C. COMPLETING THE G707 FORM

GENERAL: The bond form is the usual source of required information such as the contract date and the names and addresses of the Surety, Owner, Contractor and Project.

ARCHITECT'S PROJECT NO.: This information is typically supplied by the Architect and entered on the form by the Contractor.

CONTRACT FOR: This refers to the scope of the contract, such as "General Construction" or "Mechanical Work".

D. EXECUTION OF THE DOCUMENT

The G707 form requires both the Surety's seal and the signature of the Surety's authorized representative.

Bidder Checklist

Have you carefully read and agreed to the entire bid package?

Have you returned complete Bid Submittal Forms (See Instructions to Bidders, Section 4)?

Has an authorized agent of your firm signed the Signature Page of the Bid?

Have you provided a Bid Bond, Certified or Cashier's Check or Cash equal to ten percent (10%) of the total bid with your bid?

If you are submitting a bid bond, has it been signed by both the insurance company and an authorized official of your firm?

Have you provided a signed Consent / Agreement of Surety with your Bid?

Have you submitted a Non-Collusion Affidavit?

Have you submitted AIA Document A305 – 2020, Contractor's Qualification Statement?

Have you included a financial statement in accordance with AIA Document A305 – 2020, Section 5.1.1?

Have you submitted a Contractor Responsibility Certification in accordance with Delaware County Ordinance No. 2022-?

Have you submitted a Contractor Responsibility Certification for all subcontractors identified in the bid proposal in accordance with Delaware County Ordinance No. 2022-?

Have you submitted a letter demonstrating your participation in a Class A Apprentice Training Program currently registered with and approved by the U.S. Department of Labor or a state apprenticeship agency **for each separate trade or classification?**

Have you included the applicable RAPIDS number(s) for the programs? (Special Condition No. 21)

Have you submitted your Affirmative Action Program? (Special Conditions No. 22)

Have you provided the list of the skilled craft labor positions you will be using for the project on your company letterhead?



AIA Document A305® – 2020

Contractor's Qualification Statement

THE PARTIES SHOULD EXECUTE A SEPARATE CONFIDENTIALITY AGREEMENT IF THEY INTEND FOR ANY OF THE INFORMATION IN THIS A305-2020 TO BE HELD CONFIDENTIAL.

SUBMITTED BY:

(Organization name and address.)

SUBMITTED TO:

(Organization name and address.)

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

TYPE OF WORK TYPICALLY PERFORMED

(Indicate the type of work your organization typically performs, such as general contracting, construction manager as constructor services, HVAC contracting, electrical contracting, plumbing contracting, or other.)

THIS CONTRACTOR'S QUALIFICATION STATEMENT INCLUDES THE FOLLOWING:

(Check all that apply.)

- ☐ Exhibit A – General Information
- ☐ Exhibit B – Financial and Performance Information
- ☐ Exhibit C – Project-Specific Information
- ☐ Exhibit D – Past Project Experience
- ☐ Exhibit E – Past Project Experience (Continued)

CONTRACTOR CERTIFICATION

The undersigned certifies under oath that the information provided in this Contractor's Qualification Statement is true and sufficiently complete so as not to be misleading.

Organization's Authorized Representative Signature Date

Printed Name and Title

NOTARY

State of:

County of:

Signed and sworn to before me this day of

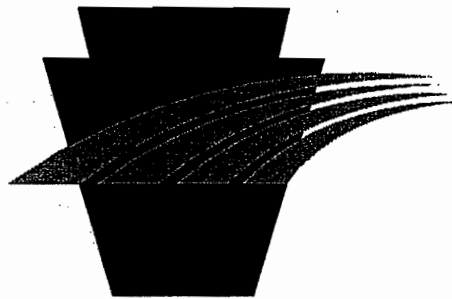
Notary Signature

My commission expires:

Appendix B

CONDITIONS OF CONTRACT

THE APPRENTICESHIP AND TRAINING ACT



DEPARTMENT OF
LABOR & INDUSTRY
COMMONWEALTH OF PENNSYLVANIA

BUREAU OF LABOR LAW COMPLIANCE

"THE APPRENTICESHIP AND TRAINING ACT"
Act of 1961, P.L. 604, No. 304

AN ACT

Relating to apprenticeship and training; creating a State Apprenticeship and Training Council in the Department of Labor and Industry to formulate an apprenticeship and training policy and program, and defining its powers and duties and providing for administration.

The General Assembly of the Commonwealth of Pennsylvania hereby enacts as follows:

Section 1. Declaration of Policy.

It is declared to be the policy of this act,

(1) to encourage the development of an apprenticeship and training system through the voluntary cooperation of management and labor and interested State agencies and in cooperation with other states and the Federal Government;

(2) to provide for the establishment and furtherance of standards of apprenticeship and training to safeguard the welfare of apprentices and trainees;

(3) to aid in providing maximum opportunities for unemployed and employed persons to improve and modernize their work skills; and

(4) to contribute to a healthy economy by aiding in the development and maintenance of a skilled labor force sufficient in numbers and quality to meet the expanding needs of Pennsylvania industry and to attract new industry.

Section 2. Short Title.

This act shall be known and may be cited as "The Apprenticeship and Training Act."

Section 3. State Apprenticeship and Training Council.

There is hereby created a State Apprenticeship and Training Council (hereinafter called "The Council") as a departmental agency in the Department of Labor and Industry to be composed of eleven members who shall be appointed by the Governor. Four members shall be representatives of employees and four members shall be representatives of employers and three members shall be representatives of the general public. Members of the council, other than the ex-officio members, shall be appointed for a term of four years and until their successors are appointed, except that two of the original members shall be appointed for a term of one year, two for a term of two years, and two for a term of three years, and two for a term of four years. Members of the council shall be eligible for reappointment. In case of a vacancy, the Governor shall make an appointment for the unexpired term. A Deputy Secretary of the Department of Labor and Industry, the Director of the State Employment Service of the Bureau of Employment Security of the Department of Labor and Industry, the Executive Director of the Advisory Board on Problems of Older Workers of the Department of Labor and Industry, and the Coordinator of Industrial Education of the Department of Public Instruction, and Chief of the Bureau of Rehabilitation of the Department of Labor and Industry, shall be ex-officio members of the council but shall not be entitled to vote, except that in the event of a tie vote, the Deputy Secretary of Labor and Industry shall have the right to cast the tie-breaking vote. The council shall organize immediately upon its appointment, and annually thereafter, by the election of one of its members as chairman and another as vice-chairman, one of whom shall be a representative of employees and the other a representative of employers. Each member of the State Apprenticeship and Training Council, except ex-officio members, shall receive actual traveling expenses and per diem compensation at the rate of twenty-five dollars (\$25) per day for the time actually devoted to the business of the council.

Section 4. Powers and Duties.

(a) The council shall

(1) establish standards for apprenticeship in conformity with the provisions of this act and applicable statutes and regulations of the Federal Government;

(2) adopt such rules and regulations, subject only to the approval of the Secretary of Labor and Industry, as may be necessary to carry out the intent and purpose of this act;

(3) compile such data on population and employment trends, industrial production, vocational and industrial education and job requirements as may be deemed necessary to carry out the intent and purpose of this act;

(4) to terminate or cancel any apprenticeship agreements in accordance with the provisions of such agreements or order modifications of such agreements;

(5) maintain close liaison with Bureau of Apprenticeship and Training, the United States Department of Labor, the State Board of Vocational Education, the Department of Public Instruction, the Department of Commerce, Bureau of Rehabilitation of the Department of Labor and Industry, and Juvenile Forestry Camps under the Department of Public Welfare, and such other agencies which carry on programs closely related to the purposes of this act;

(6) conduct studies, surveys and investigations of the special problems of retraining or training unemployed or employed persons to improve or modernize work skills and make appropriate recommendations to cooperating agencies described above, local community organizations, local school boards and the Secretary of Labor and Industry;

(7) act as a convening agency in local communities to bring together local representatives of employees, employers, educational agencies and industrial development agencies in order to promote closer local cooperation in establishing better apprenticeship and other training programs including programs for employed persons who wish to improve and modernize their work skills;

(8) use appropriate media of information and education to acquaint employers, employees and the public at large with the advantages and availability of apprenticeship and other occupational training programs;

(9) study the effectiveness of apprenticeship agreements and make recommendations in accordance with the provisions of such agreements for their improvement; and

(10) perform such other duties as may be necessary to give full effect to the provisions of this act.

(b) The council shall make a report to the Secretary of the Department of Labor and Industry, on or before February fifteenth, each year, indicating the extent of apprenticeship and other occupational training programs during the previous year, trends in employment requiring adjustments in apprenticeship training and other occupational programs, needs for expansion of apprenticeship and other occupational training programs, activities of the council and such recommendations as are in accord with the purposes of this act.

(c) No action affecting the status of an agreement shall be taken by the council until an attempt has been made to bring the employees and employer together to settle the problem in conformity with the standards of the council.

Compiler's Note: The Department of Commerce, referred to in subsec. (a), was renamed the Department of Community and Economic Development by Act 58 of 1996.

Section 5. Meetings.

Meetings of the council shall be held monthly and as often as is necessary in the opinion of the majority of the council. The chairman shall designate the time and place of the meetings and the secretary shall notify all council members at least one week in advance of each meeting. A majority of the voting membership of the council shall constitute a quorum if at least one representative from both the employe and employer groups is present.

Section 6. Administration.

The Secretary of the Department of Labor and Industry shall appoint a Director of Apprenticeship and Training who shall be responsible to the Secretary of Labor and Industry in carrying out the provisions of this act and who shall serve as ex-officio secretary of the council. The Secretary of the Department of Labor and Industry is authorized to appoint or make available to the Director of Apprenticeship and Training such clerical, technical and professional services necessary to the performance of his duties.

Section 7. Director Duties.

The Director of Apprenticeship and Training shall carry out the purposes of this act. His duties shall include, but shall not be limited to,

- (1) encouragement and promotion of the standards established in accordance with this act and with the basic standards of the Federal Committee on Apprenticeship;
- (2) bringing about the settlement of differences arising out of apprenticeship agreements when the differences cannot be adjusted locally or in accordance with established trade procedure;
- (3) supervision of the execution of agreements and maintenance of standards;
- (4) registration of apprenticeship agreements as the council shall authorize as conforming to the established standards;
- (5) keeping a record of apprenticeship agreements and, upon performance thereof, issuing certificates of completion of apprenticeship;
- (6) execution of the actions of the council in all of its powers and duties under section 4 of this act;
- (7) encouragement of liaison and cooperation between all private, State and Federal agencies concerned with apprenticeship, trade and industrial training;
- (8) promotion of employe, employer and public awareness of apprenticeship and other occupational training; and
- (9) keeping a record of the progress of apprenticeship and training programs initiated in accordance with the provisions of this act and informing the council periodically as to the results.

Section 8. Limitation.

The provisions of this act shall apply only to persons, copartnerships, associations, corporations and political subdivisions, and employer associations or organizations or associations of employes as voluntarily elect to conform with its provisions.

Section 9. General Repeal.

All acts or parts of acts inconsistent herewith are hereby repealed.

Section 10. This act shall become effective June 1, 1961.

STATEMENTS OF POLICY

DEPARTMENT OF GENERAL SERVICES

[4 PA. CODE CH. 66]

Guidelines for Administering and Enforcing the Public Works Employment Verification Act

[42 Pa.B. 7821]

[Saturday, December 29, 2012]

The Department of General Services (Department) adopts a statement of policy in Chapter 66 (relating to employment verification—statement of policy) to read as set forth in Annex A. Chapter 66 implements the Public Works Employment Verification Act (act) (43 P. S. §§ 167.1—167.11).

Chapter 66 establishes guidelines for administering and enforcing the act, which requires public works contractors and subcontractors performing work on public works projects in this Commonwealth to comply with the Federal E-Verify program to ensure employees are authorized to work in the United States. The E-Verify program is a free Internet-based program operated by the United States Department of Homeland Security that compares information from an employee's Form I-9, Employment Eligibility Verification, to data from the United States Department of Homeland Security and Social Security Administration records to confirm employment eligibility. The purpose of this statement of policy is to establish guidelines for administering and enforcing the act.

Fiscal Impact

Civil penalties collected in the enforcement of the act will be retained by the Department to offset the costs of administering the Pennsylvania Public Works Employment Verification Program.

Effective Date

This statement of policy is effective January 1, 2013.

Contact Person

Specific questions regarding this statement of policy should be directed to the Department of General Services, Public Works Employment Verification Compliance Office, Room 105 Tent Building, Public Works Deputate, 18th and Herr Streets, Harrisburg, PA 17125.

SHERI PHILLIPS,
Secretary

(Editor's Note: Title 4 of the Pennsylvania Code is amended by adding statements of policy in §§ 66.1—66.9 to read as set forth in Annex A.)

Fiscal Note: 8-17. This action will not result in a loss of revenue to the Commonwealth or its political subdivisions. This program may increase program costs for the administration and enforcement; however, such costs will be offset by any civil penalties collected through the enforcement of the act.

Annex A

TITLE 4. ADMINISTRATION

PART III. DEPARTMENT OF GENERAL SERVICES

Subpart C. CONSTRUCTION AND PROCUREMENT

ARTICLE II. CONSTRUCTION

CHAPTER 66. EMPLOYMENT VERIFICATION—STATEMENT OF POLICY

Sec.

- 66.1. Background and purpose.
- 66.2. Scope of work subject to the act.
- 66.3. Definitions.
- 66.4. General requirements for public works contractors and subcontractors.
- 66.5. Specific requirements for public works contractors.
- 66.6. Specific requirements for public works subcontractors.
- 66.7. Public Works Employment Verification Form.
- 66.8. Violations.
- 66.9. Enforcement.

§ 66.1. Background and purpose.

(a) To prevent unauthorized employment, the Federal government created the EVP system to ensure that companies employ a legal workforce. The EVP system is an Internet-based system operated by the United States Department of Homeland Security that compares information from an employee's Form I-9, Employment Eligibility Verification, to data from United States Department of Homeland Security and Social Security Administration records to confirm employment eligibility.

(b) The purpose of this chapter is to set forth the Department's policy guidelines for the scope, administration and enforcement of the act.

(c) The Department is responsible to implement the Commonwealth's process of notification, investigation and compliance with the act. Contractors and subcontractors performing work on a public works project shall comply with the act as set forth in this chapter by utilizing the EVP.

§ 66.2. Scope of work subject to the act.

(a) The act applies to public works contractors and subcontractors performing on a public works contract paid for in whole or in part out of the funds of a public body when the cost of the total project is in excess of \$25,000.

(b) The cost of the total project must include the sum of prime contracts to be issued by the public body for the project.

(c) To the extent the cost of the total project is in excess of \$25,000, contracts and subcontracts, regardless of value, shall comply with the act.

(d) The act does not apply to work performed under a manpower or rehabilitation training program.

§ 66.3. Definitions.

The following words and terms, when used in this chapter, have the following meanings, unless the context clearly indicates otherwise:

Act—The Public Works Employment Verification Act (43 P. S. §§ 167.1—167.11).

Contract—A type of written agreement, regardless of what it may be called, for the procurement of construction work.

Department—The Department of General Services of the Commonwealth.

EVP—E-Verify program—The program operated by the United States Department of Homeland Security that electronically verifies employment eligibility.

Employee—An individual hired by a public works contractor or a subcontractor after January 1, 2013, for whom a public works contractor or subcontractor is required by law to file a Form W-2 with the Internal Revenue Service.

Form—Public Works Employment Verification Form.

Maintenance work—Annual inspection or routine upkeep of an existing facility which does not alter the use or size of the facility.

Public body—The Commonwealth of Pennsylvania, its political subdivisions, authorities created by the General Assembly of the Commonwealth and instrumentalities or agencies of the Commonwealth.

Public works—

(i) The construction, reconstruction, demolition, alteration or repair work other than maintenance work done under contract and paid for in whole or in part out of the funds of a public body when the estimated cost of the total project is in excess of \$25,000.

(ii) The term does not include work performed under a manpower or rehabilitation training program.

Public works contractor—A contractor that provides work under a contract involving public works.

Secretary—The Secretary of the Department.

Subcontractor—

(i) A person, other than a natural person, including a staffing agency, that performs work for a public works contractor under a contract for public works.

(ii) The term includes subcontractors of every level, that is, sub-subcontractors, sub-sub-subcontractors, and the like.

(iii) The term does not include persons that supply materials for a project.

Willful—An action or conduct undertaken intentionally or with reckless disregard for or deliberate ignorance of the requirements and obligations established under the act.

§ 66.4. General requirements for public works contractors and subcontractors.

(a) Public works contractors and every subcontractor performing work under a public works contract shall utilize the EVP system to verify the employment eligibility of each new employee hired after January 1, 2013.

(b) Public works contractors and every subcontractor performing work under a public works contract shall submit the Form to the contracting public body to ensure compliance with the act.

(c) In addition to the Form, public works contractors and every subcontractor shall maintain documentation of continued compliance with the act by utilizing the EVP for new employees hired throughout the duration of the public work contract.

§ 66.5. Specific requirements for public works contractors.

(a) As a precondition to the award of a contract for public work, a public works contractor shall submit a completed Form to the public body that is bidding and awarding the public work contract. With respect to a contract that has been awarded but has not been fully executed as of January 1, 2013, a public works contractor is required to submit a completed Form to the contracting public body prior to contract execution. During a public works contract, a new employee hired by a public works contractor, regardless of whether he will be working onsite or offsite of a public work or otherwise, shall be verified within 5 business days of his start date.

(b) Subcontracts between a public works contractor and its subcontractors are required to contain notification of the applicability of the act, information regarding the use of EVP and reference to the Department's web site at www.dgs.state.pa.us to obtain a copy of the Form.

(c) A public works contractor shall cooperate with the Department during an investigation or audit arising under the act.

§ 66.6. Specific requirements for public works subcontractors.

(a) Prior to beginning either onsite or offsite work on a public works project when the public works contractor's contract was executed after January 1, 2013, every subcontractor shall submit a completed Form to the contracting public body. During a public works contract, a new employee hired by a public works subcontractor, regardless of whether he will be working onsite or offsite of a public work or otherwise, shall be verified within 5 business days of his start date.

(b) Subcontracts between a subcontractor and its subcontractors are required to contain notification of the applicability of the act, information regarding the use of EVP and reference to the Department's web site at www.dgs.state.pa.us to obtain a copy of the Form.

(c) A subcontractor shall cooperate with the Department during an investigation or audit arising under the act.

§ 66.7. Public Works Employment Verification Form.

(a) The Form for use by public bodies, public works contractors and subcontractors is posted on the Department's web site at www.dgs.state.pa.us. The Form may not be changed or altered.

(b) The Form shall be signed by an authorized representative of the public works contractor or subcontractor. The representative shall have sufficient knowledge to make the representations and certifications in the Form.

(c) The Department may require the public works contractor or subcontractor to provide supporting documentation that the representative signing the Form had authority to legally bind the public works contractor or subcontractor.

(d) The submitted Forms shall be retained by the public body for the duration of the public work contract.

§ 66.8. Violations.

A public works contractor or subcontractor violates the act if it does either of the following:

(1) Fails to verify the employment eligibility of a new employee hired after January 1, 2013, through EVP in accordance with the act and this chapter.

(2) Makes a false statement or misrepresentation in connection with the completion or submission of the Form to a public body.

§ 66.9. Enforcement.

The Department will enforce the act through investigations, audits, sanctions and civil penalties in accordance with the following guidelines.

(1) *Investigations of complaints.* The Department will accept, review and investigate timely and credible complaints filed on the Complaint Form posted on the Department's web site.

(i) A complaint must contain sufficient information to enable the Department to investigate the allegation. The Department reserves the right to reject complaints that do not provide sufficient information. The Department will consider the timeliness of the complaint in assessing its credibility.

(ii) Public bodies, public works contractors and subcontractors shall cooperate with the Department during the investigation of a complaint.

(2) *Audits.* The Department will conduct complaint-based and random audits of public works contractors and subcontractors performing a public works contract for a public body in this Commonwealth. The Department reserves the right to determine the time, place and nature of audits.

(i) Public bodies, public works contractors and subcontractors shall cooperate with the Department during an audit.

(ii) Upon an audit, the Department may request, and the public works contractors and subcontractors shall provide, the following:

(A) Documentation of the date of hire of all employees.

(B) Documentation of compliance with the act through the utilization of EVP.

(C) Other information required by the Department to ensure compliance with the act and utilization of EVP.

(3) *Sanctions.*

(i) If the Department's investigation determines that a public works contractor or subcontractor failed to verify an employee through the use of EVP in accordance with the act and this chapter, the Department will issue sanctions as follows:

(A) *First violation.* The Department will issue a warning letter to the public works contractor or subcontractor detailing the violation. This letter will be posted on the Department's E-Verify web site at www.dgs.state.pa.us. A violation by a public works contractor or subcontractor that occurs 10 years or more after a prior violation will be deemed to be a first violation for purposes of sanctions.

(B) *Second violation.* The Department will initiate debarment proceedings against the public works contractor or subcontractor. Once final, these proceedings will prevent a public works contractor or subcontractor from submitting a bid or being awarded a contract

or subcontract on a public works contract in this Commonwealth for 30 calendar days from the date of debarment.

(C) *Third and subsequent violations.* The Department will initiate debarment proceedings against the public works contractor or subcontractor. Once final, these proceedings will prevent a public work contractor or a subcontractor from submitting a bid or being awarded a contract or subcontract on a public works contract in this Commonwealth for not less than 180 days and not more than 1 year from the date of debarment.

(ii) *Willful violation.* If the Department investigates and forms a reasonable belief that there has been a willful violation of the act, the Secretary will file a petition in Commonwealth Court seeking the Court to issue a rule to show cause why a public works contractor or subcontractor did not engage in a willful violation of the act. If the Court finds that there was a willful violation, the Department will petition to have the public works contractor or subcontractor debarred from public work contracts for 3 years from the date of the Court's determination.

(4) *Civil penalties.* If the Secretary or a designee makes a written determination that the violation is for failing to submit a complete Form or making a false statement or misrepresentation in the Form, the Department will assess a civil penalty of not less than \$250 and not more than \$1,000 for each violation. The amount of the penalty is at the Department's discretion. The Department will consider the severity of the violation, and prior violations in imposing civil penalties.

(5) *Notice and appeal.* Sanctions or civil penalties imposed by the Department, other than those violations found to be willful, are subject to the notice, appeal and other provisions of 2 Pa.C.S. (relating to administrative law and procedure).

[Pa.B. Doc. No. 12-2525. Filed for public inspection December 28, 2012, 9:00 a.m.]

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COMMONWEALTH OF PENNSYLVANIA

PUBLIC WORKS EMPLOYMENT VERIFICATION FORM

Date _____

Business or Organization Name (Employer) _____

Address _____

City _____ State _____ Zip Code _____

☐ Contractor ☐ Subcontractor (check one)

Contracting Public Body _____

Contract/Project No _____

Project Description _____

Project Location _____

As a contractor/subcontractor for the above referenced public works contract, I hereby affirm that as of the above date, our company is in compliance with the Public Works Employment Verification Act ('the Act') through utilization of the federal E-Verify Program (EVP) operated by the United States Department of Homeland Security. To the best of my/our knowledge, all employees hired post January 1, 2013 are authorized to work in the United States.

It is also agreed to that all public works contractors/subcontractors will utilize the federal EVP to verify the employment eligibility of each new hire within five (5) business days of the employee start date throughout the duration of the public works contract. Documentation confirming the use of the federal EVP upon each new hire shall be maintained in the event of an investigation or audit.

I, _____, authorized representative of the company above, attest that the information contained in this verification form is true and correct and understand that the submission of false or misleading information in connection with the above verification shall be subject to sanctions provided by law.

Authorized Representative Signature

EMPLOYEE BACKGROUND CHECK

- A. All contractors are advised that the County of Delaware requires employee background checks in accordance with Act 34 of 1985 Background Clearance Procedures 24 PS1-111, as amended (Act 114 of 2006, Act 70 of 2004, Act 48 of 2003, Act 153 of 2002, Act 30 of 1997, and Act 211 of 1990) 22 PA Code Chapter 8, as amended, Act 43 Public Works Employment Verification Act 43 PS-167.1-167.11, and Act 151 of 1997 (Child Abuse), as amended. Contractor shall include in his bid all costs associated with obtaining and maintaining currency of these clearance reports.
- B. Information of the PA State Criminal History can be obtained via the PA State Police website at <http://www.psp.state.pa.us/psp/cwp/view.asp? A=4&0=48275>.
- C. Information on the Federal (FBI) Criminal History Report (as of March 30, 2007) can be found at www.pa.cogentid.com.
- D. Information on the Public Works Employment Verification Act can be obtained from the Department of General Services, Public Works Employment Verification Compliance Office, Room 105 Tent Building, Public Works Department, 18th & Herr Streets, Harrisburg, PA 17125.
- E. Child Abuse Reports Information can be obtained through the PA Department of Public Welfare at <http://www.dpw.state.pa.us/general/formspub/003671038.htm>.



COUNTY OF DELAWARE

Contractor Responsibility Certification

Chapter 29 of the Delaware County Code requires that as a condition of performing work on certain public works contracts, a firm seeking award of a contract shall submit a Contractor Responsibility Certification. Delaware County has determined that the contract subject to this solicitation is covered by Chapter 29, and that firms responding to this solicitation must submit this form and otherwise comply with the provisions of Chapter 29 as well as Delaware County Resolution Number 2022-3 (Regarding Goals for Diversity in Public Works Contracting).

In order for this Contractor Responsibility Certification to be considered validly submitted, it must be properly signed by the firm or an officer or employee of the Contractor authorized to make it. Contractor Responsibility Certifications that are not properly signed will not be considered as responsive to the requirements of the Delaware County Code. If a firm fails to provide a Contractor Responsibility Certification required by this section, it may be disqualified from bidding/responding. No action of any nature shall lie against Delaware County because of its refusal to accept a bid/response for this reason.

Execution of this Contractor Responsibility Certification shall not establish a presumption of contractor responsibility, and Delaware County may require any additional information it deems necessary to evaluate a firm's status as a responsible contractor, including information regarding the firm's technical qualifications, financial capacity or other resources and performance capabilities.

If Delaware County determines that a Contractor Certification, Subcontractor List or Subcontractor Responsibility Certification contains false or misleading information that was provided knowingly or with reckless disregard for the truth or omits material information knowingly or with reckless disregard of the truth, the firm for which the certification was submitted shall be disqualified from the project and shall be prohibited from performing work for Delaware County for a period of three years. Delaware County may withhold payment of any monies due to the firm as damages and impose other applicable penalties and sanctions, including contract termination, as permitted by law or contract.

I hereby represent, warrant and agree on behalf of the firm indicated below that:

Acknowledged*

- (1) The firm and its employees have all licenses, registrations, certificates or other credentials required by federal and state law and the laws of Delaware County with respect to the contract work it seeks to self-perform. ☐
- (2) The firm meets the bonding requirements for the contract required by law or contract specifications, as well as applicable insurance requirements for the contract, including general liability, workers compensation and unemployment insurance. ☐

- (3) The firm has not been debarred or suspended by any federal, state or local government agency or authority in the past three years. ☐
- (4) The firm has not defaulted on any project in the past three years. ☐
- (5) The firm has not had any type of business, contracting or trade license, registration or certification revoked or suspended in the past three years. ☐
- (6) The firm and its principals/owners have not been convicted of any crime relating to its contracting business in the past ten years. ☐
- (7) Within the past three years, the firm has not been found in violation of any law applicable to its contracting business, including, but not limited, to licensing laws, tax laws, wage and hour laws, prevailing wage laws, environmental laws or others, where the result of such violation was the payment of a fine, back pay damages or any other type of penalty in the amount of \$5,000) or more. ☐
- (8) Has the firm operated under a different name in the last ten (10) years? If yes, please provide prior name(s). ☐
- (9) Have the principals of the firm operated a business under a different name in the last ten (10) years? If yes, please provide name(s) of such businesses. ☐
- (10) The firm will employ a sufficient number of craft labor personnel required to successfully perform any project work it self-performs or shall use qualified subcontractors to meet this requirement and shall assign workers to perform only work in their respective craft or trade for which they have sufficient skills and training, or shall use qualified subcontractors to meet this requirement. ☐
- (11) The firm will pay all craft employees on the project, at a minimum, the applicable wage and fringe benefit rates, as established for the classification in which the worker is employed, in accordance with the Pennsylvania Prevailing Wage Act (43 P.S. § 165-1 et seq.). ☐
- (12) The firm will ensure that all craft labor it employs on the project will have completed, prior to working on the project the OSHA 10-hour training course for safety established by the U.S. Department of Labor. If the firm is a prime contractor, it shall also ensure that at least one person on the project has completed the OSHA 30-hour construction training course established by the U.S. Department of Labor ☐
- (13) The firm participates in a Class A Apprenticeship Training Program for each separate trade or classification in which it employs craft employees. ☐
- (a) A "Class A Apprenticeship Program" is an apprenticeship program registered with and approved by the U.S. Department of Labor or a state apprenticeship agency and has graduated apprentices to journey person status for at least three of the past five years. This may be an apprenticeship program subject to the Employee Retirement Income Security Act of 1974, 29 U.S.C. § 1001 et seq. ("ERISA"), or a non-ERISA program.
- (b) To demonstrate compliance with this section, the firm shall provide, with this certification, a list of all trades or classifications of craft employees it will employ on the project and documentation verifying it participates in a Class A

Apprenticeship Program for each trade or classification listed. See Attachment 1.

- (14) The construction manager, general contractor or other lead or prime contractor responsible for the project shall ensure that at least 70 percent of the craft labor workers employed on the project shall be comprised of either journeyperson workers who have successfully completed a Class A Apprenticeship Program or apprentices registered in such programs. The apprenticeship participation of specified by this section must be in the same trade or craft for which the workers are employed on the project. ☐
- (15) The firm shall assign craft labor personnel only work in the craft or trade in which they are employed. ☐
- (16) The firm has all other technical qualifications and resources, including equipment, personnel and financial resources, to successfully perform the referenced contract and shall maintain such capabilities throughout the duration of the project, or will obtain same through the use of qualified, responsible subcontractors or vendors ☐
- (17) The firm shall notify Delaware County within seven days of any material changes in its operation that relate to any matter attested to in this certification. ☐
- (18) If the submitting firm has ever operated under another name or is controlled by another company or business entity or in the past five years controlled or was controlled by another company or business entity, whether as a parent company, subsidiary or in any other business relation, it shall attach as Attachment 2 hereto that explains in detail the nature of any such relationship. Additional information may be required from such an entity if the relationship in question could potentially impact contract performance. ☐
- (19) Please include a proposed Subcontractor List as Attachment 3. If the firm receives a Notice of Intent to Award Contract, it agrees to: (a) provide Subcontractor Responsibility Forms and any required subcontractor information within fourteen days (Director of Public Works may extend such deadline upon good justification by firm); and (b) provide any reasonably requested supporting documentation as part of Delaware County's contractor responsibility review process. ☐
- (20) The firm and its owners have not declared bankruptcy in the past three (3) years. ☐
- (21) The firm has not committed or been cited for a willful violation of federal or state safety laws as determined by a final decision of a court or government agency in the past three (3) years. ☐
- (22) The firm will notify, in writing, the Delaware County Department of Public Works within seven (7) days of any material change to any of the above certifications. ☐

****Please check each box to acknowledge that you have read the corresponding representation/warranty/agreement.***

By executing below, you declare and certify that:

- (A) You are an employee or officer of the firm who is duly authorized to execute this Contractor Responsibility Certification.
- (B) Have sufficient knowledge to address all matters in this Contractor Responsibility Certification and attest that all information submitted is true, complete and accurate. This attestation is made subject to the penalties and provisions of 18 Pa. C.S.A. §4904 relating to unsworn falsification to authorities.

Name of Firm: _____

By: _____

Name:

Title:

Date:

Exhibit A

Diversity Goal Contract Provisions

Pursuant to Delaware County Resolution Number 2022-3 Regarding Goals for Diversity in Public Works Contracting, the following provisions will be required in any contract resulting from this solicitation.

- a. The contractor will make a good faith effort to employ local residents for completion of the project, when it has a need for new employees, in an effort to meet a goal of 10% local worker participation on the project. Good faith effort shall include, but not be limited to: hosting a public job fair prior to the commencement of the Project open to residents of Delaware County, posting of available employment opportunities with the Delaware County Workforce Development Board and its PACareerLink offices, providing employment and training services, advertisement of employment opportunities in a newspaper of general circulation throughout Delaware County, and internet advertisements.
- b. The contractor will make a good faith effort to employ minority and female craftspeople for completion of the qualified project when such contractor has a need for new employees to complete the project, in an effort to meet the goal of having 10% minority and female participation on the project. Good faith effort shall include, but not be limited to: hosting a public job fair prior to the commencement of the Project open to all applicants in an attempt to identify, hire and utilize minority and female craftspeople, the posting of available employment opportunities with the Delaware County Workforce Development Board and its PACareerLink offices, providing employment and training services, advertisement of employment opportunities in a newspaper of general circulation throughout Delaware County, and internet advertisements.
- c. The contractor shall, as a material condition of the contract, make a good faith effort to utilize veteran owned businesses, minority owned businesses, women owned businesses and small business enterprises on the qualified project. "Minority owned business" shall mean that at least 51% of the business is owned by an individual who is a United States citizen or permanent resident alien who has and can demonstrate membership in one of the following groups: Black persons having origins in any of the Black African racial groups; Hispanic persons of Mexican, Puerto Rican, Dominican, Cuban, Central or South American Descent of either Indian or Hispanic origin, regardless of race; Native American or Alaskan native persons having origins in any of the original peoples of North America; Asian and Pacific Islander persons having origins in any of the Far East countries, South East Asia, the Indian subcontinent or the Pacific Islands. "Small business enterprise" shall mean a business with an annual gross income which is determined by the United States Small Business Administration to qualify it as a small business enterprise.

Attachment 1

Class A Apprenticeship Program

[Firm to attach a list of all trades or classifications of craft employees it will employ on the project and documentation verifying it participates in a Class A Apprenticeship Program per paragraph 11(b).]

Attachment 2

Prior Names/Organization Changes

[Firm to attach additional information if required under Paragraph (16).]

Attachment 3

Subcontractor List

[Must include name, phone number, address and type of work to be performed for each subcontractor].



COUNTY OF DELAWARE

Subcontractor Responsibility Certification

Chapter 29 of the Delaware County Code requires that as a condition of performing work on certain public works contracts, a firm seeking award of a contract shall submit Subcontractor Responsibility Certification for all identified subcontractors. Delaware County has determined that the contract subject to this solicitation is covered by Chapter 29, and that firms responding to this solicitation must submit this form for all subcontractors.

In order for this Subcontractor Responsibility Certification to be considered validly submitted, it must be properly signed by the subcontractor or an officer or employee of the subcontractor authorized to make it. Subcontractor Responsibility Certifications that are not properly signed will not be considered as responsive to the requirements of the Delaware County Code.

Execution of this Subcontractor Responsibility Certification shall not establish a presumption of subcontractor responsibility, and Delaware County may require any additional information it deems necessary to evaluate a subcontractor's status as a responsible contractor, including information regarding the firm's technical qualifications, financial capacity or other resources and performance capabilities.

If Delaware County determines that a Subcontractor Responsibility Certification contains false or misleading information that was provided knowingly or with reckless disregard for the truth or omits material information knowingly or with reckless disregard of the truth, the firm for which the certification was submitted shall be disqualified from the project and shall be prohibited from performing work for Delaware County for a period of three years. Delaware County may withhold payment of any monies due to the firm as damages and impose other applicable penalties and sanctions, including contract termination, as permitted by law or contract.

I hereby represent, warrant and agree on behalf of the firm indicated below that:

Acknowledged*

(1) The subcontractor and its employees have all licenses, registrations, certificates or other credentials required by federal and state law and the laws of Delaware County with respect to the contract work it seeks to self-perform.

☐

(2) The subcontractor meets the bonding requirements for the contract required by law or contract specifications, as well as applicable insurance requirements for the contract, including general liability, workers compensation and unemployment insurance.

☐

- (3) The subcontractor has not been debarred or suspended by any federal, state or local government agency or authority in the past three years. ☐
- (4) The subcontractor has not defaulted on any project in the past three years. ☐
- (5) The subcontractor has not had any type of business, contracting or trade license, registration or certification revoked or suspended in the past three years. ☐
- (6) The subcontractor and its principals/owners have not been convicted of any crime relating to its contracting business in the past ten years. ☐
- (7) Within the past three years, the subcontractor has not been found in violation of any law applicable to its contracting business, including, but not limited, to licensing laws, tax laws, wage and hour laws, prevailing wage laws, environmental laws or others, where the result of such violation was the payment of a fine, back pay damages or any other type of penalty in the amount of \$5,000) or more. ☐
- (8) Has the firm operated under a different name in the last ten (10) years? If yes, please provide prior name(s). ☐
- (9) Have the principals of the firm operated a business under a different name in the last ten (10) years? If yes, please provide name(s) of such businesses. ☐
- (10) The subcontractor will employ a sufficient number of craft labor personnel required to successfully perform any project work and shall assign workers to perform only work in their respective craft or trade for which they have sufficient skills and training. ☐
- (11) The subcontractor will pay all craft employees on the project, at a minimum, the applicable wage and fringe benefit rates, as established for the classification in which the worker is employed, in accordance with the Pennsylvania Prevailing Wage Act (43 P.S. § 165-1 et seq.). ☐
- (12) The subcontractor will ensure that all craft labor it employs on the project will have completed, prior to working on the project the OSHA 10-hour training course for safety established by the U.S. Department of Labor. ☐
- (13) The subcontractor participates in a Class A Apprenticeship Training Program for each separate trade or classification in which it employs craft employees. ☐
- (a) A "Class A Apprenticeship Program" is an apprenticeship program registered with and approved by the U.S. Department of Labor or a state apprenticeship agency and has graduated apprentices to journey person status for at least three of the past five years. This may be an apprenticeship program subject to the Employee Retirement Income Security Act of 1974, 29 U.S.C. § 1001 et seq. ("ERISA"), or a non-ERISA program.
- (b) To demonstrate compliance with this section, the subcontractor shall provide, with this certification, a list of all trades or classifications of craft employees it will employ on the project and documentation verifying it participates in a Class A Apprenticeship Program for each trade or classification listed. See Attachment 1.

- (14) The subcontractor shall assign craft labor personnel only work in the craft or trade in which they are employed. ☐
- (15) The subcontractor has all other technical qualifications and resources, including equipment, personnel and financial resources, to successfully perform the referenced contract and shall maintain such capabilities throughout the duration of the project, or will obtain same through the use of qualified, responsible subcontractors or vendors ☐
- (16) The subcontractor shall notify Delaware County within seven days of any material changes in its operation that relate to any matter attested to in this certification. ☐
- (17) If the submitting subcontractor has ever operated under another name or is controlled by another company or business entity or in the past five years controlled or was controlled by another company or business entity, whether as a parent company, subsidiary or in any other business relation, it shall attach as Attachment 2 hereto that explains in detail the nature of any such relationship. Additional information may be required from such an entity if the relationship in question could potentially impact contract performance. ☐
- (18) If you are organized as a sole proprietorship owned and operated by a single person, to ensure that you are a legitimate business entity and not a misclassified employee, you must submit as Attachment 3 your Employer Identification Number and copies of any license, certificate or registration you are required to maintain in to do business in the state in which it is located. ☐
- (19) The subcontractor and its owners have not declared bankruptcy in the past three (3) years. ☐
- (20) The subcontractor has not committed or been cited for a willful violation of federal or state safety laws as determined by a final decision of a court or government agency in the past three (3) years. ☐
- (21) The subcontractor will notify, in writing, the Delaware County Department of Public Works within seven (7) days of any material change to any of the above certifications. ☐

****Please check each box to acknowledge that you have read the corresponding representation/warranty/agreement.***

By executing below, you declare and certify that:

- (A) You are an employee or officer of the subcontractor who is duly authorized to execute this Contractor Responsibility Certification.
- (B) Have sufficient knowledge to address all matters in this Contractor Responsibility Certification and attest that all information submitted is true, complete and accurate. This attestation is made subject to the penalties and provisions of 18 Pa. C.S.A. §4904 relating to unsworn falsification to authorities.

Name of Subcontractor: _____

By: _____

Name:

Title:

Date:

Attachment 1

Class A Apprenticeship Program

[Subcontractor to attach a list of all trades or classifications of craft employees it will employ on the project and documentation verifying it participates in a Class A Apprenticeship Program per paragraph 11(b).]

Attachment 2

Prior Names/Organization Changes

[Subcontractor to attach additional information if required under Paragraph (15).]

Attachment 3

Sole Proprietorship Information

[Subcontractor to attach additional information if required under Paragraph (16).]

APPENDIX O

Delaware County
Political Contribution Disclosure Form

Background: Under Section 6-12.E of the Administrative Code of Delaware County, Contractors under certain Covered Contracts are required to provide this Disclosure Form in connection with consideration of approval of such Covered Contract by County Council. ***Definitions of Contractor, Covered Contract, and certain other terms used in this Disclosure Form, as well as additional instructions for its completion, are set forth in Exhibit A attached hereto.***

Political Contribution Disclosure: Within the past twenty-four (24) months, Contractor* has:

_____ **NOT** made any Reportable Contributions.

_____ made Reportable Contributions as set forth on Schedule A attached hereto.

**Includes entities and persons related to a Contractor whose contributions are also required to be reported, as further described in the definition of "reportable contribution" on Exhibit A.*

Type of Business Entity

Corporation _____	LLC _____	Sole Proprietorship _____	Other: _____ (describe)
Limited Partnership _____	Partnership _____	LLP _____	_____

Certification: In order for this Disclosure Form to be considered validly submitted, it must be properly signed by the Contractor or an officer or employee of the Contractor that is authorized to make this certification. Disclosure Forms that are not properly signed will not be considered as responsive to the requirements of the Delaware County Administrative Code.

By executing below, you:

- (1) Declare and certify that you are the Contractor or an employee or officer of the Contractor and duly authorized to execute this Disclosure Form.
- (2) Represent and warrant that, to the best of your knowledge after appropriate inquiry, all of the information and disclosures provided are true and contain no material misstatement or omissions.
- (3) Acknowledge and agree to comply with the provisions described in Exhibit A.

Name of Contractor: _____

By: _____

Name:

Title:

Date:

**Exhibit A
Delaware County
Political Contribution Disclosure Form**

Definitions and Instructions

Timing.

Contracts subject to an RFP/Q, Invitation to Bid or other Solicitation – the Solicitation will have explicit instructions on when and how to submit this Disclosure Form. Please follow those instructions.

Other Contracts -- Disclosure Forms must be received by the County at least eight (8) days prior to the County Council meeting at which the approval of a contract will be considered. They should be submitted by e-mail to CentralPurchasing@co.delaware.pa.us.

In either case, failure to timely provide this Disclosure Form may delay consideration of your contract by County Council.

Public Posting; Right to Know Law.

The Disclosure Form for the selected Contractor is sought will be posted on the County website prior to the County Council meeting at which approval of the Covered Contract will be considered and included in the Agenda materials for such meeting.

The County will also provide copies of Disclosure Forms (whether or not the Contractor is awarded a Covered Contract) in response to requests under the Pennsylvania Right to Know Law.

Ongoing Reporting.

By January 30 of each year, commencing January 1, 2023, each Covered Contractor under a Covered Contract with a term exceeding one year is required to provide the County Clerk with an updated Disclosure Form showing any reportable contributions in the prior year or indicating that there are none. If a Contractor does not provide the required disclosure form within thirty (30) days of written notification from the County Solicitor of its failure to timely provide such form, the applicable Covered Contract is subject to being voided by County Council.

Penalties.

Any Contractor which fails to provide the Disclosure Form or which submits a Disclosure Form which is materially inaccurate may be banned as a contractor or subcontractor to the County for a period of up to three (3) years, and/or, to the extent legally permitted, the covered contract in question may be terminated, in each case, by a majority vote of County Council following such investigation and consideration of such evidence as County Council deems appropriate or by action of such other entity or body as may be designated by resolution of County Council.

Definitions.

“Contractor” means any non-governmental person, corporation, partnership, association or other entity, whether or not for profit, and includes any subcontractor which is reasonably anticipated to receive compensation of \$50,000 or more under the applicable Covered Contract. *See the definition of “Reportable Contribution” below for entities and persons related to a contractor whose contributions are also required to be reported.*

“Covered Candidate” means any individual who seeks nomination or election to the following offices by vote of the electorate (whether or not such individual is nominated or elected): (1) County Council, District Attorney, Sheriff, Controller or Register of Wills in Delaware County; (2) Judge of the Court of Common Pleas of Delaware County or the Magisterial District Courts of Delaware County; (3) any seat in the Pennsylvania General Assembly which represents residents of Delaware County; or (4) any state-wide office in Pennsylvania (non federal).

An individual shall be deemed to be seeking nomination or election to an office if such individual has:

- (1) received a contribution or made an expenditure or given consent for any other person or committee to receive a contribution or make an expenditure for the purpose of influencing his nomination or election to such office, whether or not the individual has announced the specific office for which he or she will seek nomination or election at the time the contribution is received or the expenditure is made; or
- (2) taken the action necessary under the laws of Pennsylvania to qualify for nomination or election to such office.

The term shall include individuals nominated or elected as write-in candidates unless they resign such nomination or elected office within 30 days of having been nominated or elected.

“Covered Contract” means any contract, agreement, memorandum of understanding or other arrangement which is (i) required to be approved by County Council and (ii) under which a Covered Contractor provides or leases goods, supplies, materials, equipment, consulting, professional or other services, and/or property to the County, whether or not payments under the Covered Contract are anticipated to be made from general revenues or another specified source of funds, but does not include grant agreements under which the County is the grantee.

“Political contribution” means any advance, conveyance, deposit, distribution, transfer of funds, loan, payment, pledge, purchase of a ticket to a testimonial or similar fund-raising affair, or subscription of money or anything of value, except volunteer services, in connection with a political campaign, and any contract, agreement, promise or other obligations, whether or not legally enforceable, to make a political contribution.

"Reportable Contribution" means a political contribution, to:

- (A) A Covered Candidate.
- (B) Any Pennsylvania state committee of a political party, any County committee of a political party or any committee of a political party established at the municipal level for a municipality in the County.
- (C) A contribution to a political action committee with the intent or expectation that some or all of such contribution will be directed to a covered candidate. This intent shall be presumed if a political action committee only supports one or more covered candidates.
- (D) A contribution to a political action committee controlled by a person or entity described in clauses (1) through (5) below.

Reportable contributions include contributions by: (1) a Contractor; (2) any corporate parent, subsidiary or other affiliate of a Contractor; (3) an officer or director of a Contractor; (4) a shareholder or partner of a Contractor with a 5% or greater ownership interest; and (5) the spouse of any person or entity listed in the preceding clauses; and shall also include any contribution reimbursed by a person or entity listed in clauses (1) through (5).

Questions.

Questions regarding the Disclosure Form may be directed to CentralPurchasing@co.delaware.pa.us.

Reportable Contributions within Past 24 Months

Date: _____

[illegible]

**Reporting required for Contractor and all other entities and persons related to Contractor whose contributions are also required to be reported, as further described in the definition of “reportable contribution” on Exhibit A.*

**COUNTY OF DELAWARE
COMMONWEALTH OF PENNSYLVANIA
RESOLUTION NUMBER 2022-3**

**RESOLUTION REGARDING GOALS FOR DIVERSITY
IN PUBLIC WORKS CONTRACTING**

WHEREAS, County Council is committed to addressing the challenges it faces relating to public works projects and, to that end, is considering enactment of the revision of Chapter 29 of the County Code to protect its proprietary and financial interests and create adequate safeguards to ensure the successful delivery of such projects to the fullest extent possible; and

WHEREAS, together with the changes to the County Code in such revision of Chapter 29, County Council also desires to set forth its goals for increasing the diversity of the workforce for such public works projects;

NOW, THEREFORE, BE IT RESOLVED BY THE COUNTY COUNCIL OF DELAWARE COUNTY, PENNSYLVANIA as follows:

1. County Council hereby directs that the following provisions shall be included in any contract which is subject to the requirements of Chapter 29 of the County Code:

a. The contractor will make a good faith effort to employ local residents for completion of the project, when it has a need for new employees, in an effort to meet a goal of 10% local worker participation on the project. Good faith effort shall include, but not be limited to: hosting a public job fair prior to the commencement of the Project open to residents of Delaware County, posting of available employment opportunities with the Delaware County Workforce Development Board and its PACareerLink offices, providing employment and training services, advertisement of employment opportunities in a newspaper of general circulation throughout Delaware County, and internet advertisements.

b. The contractor will make a good faith effort to employ minority and female craftspeople for completion of the qualified project when such contractor has a need for new employees to complete the project, in an effort to meet the goal of having 10% minority and female participation on the project. Good faith effort shall include, but not be limited to: hosting a public job fair prior to the commencement of the Project open to all applicants in an attempt to identify, hire and utilize minority and female craftspeople, the posting of available employment opportunities with the Delaware County Workforce Development Board and its PACareerLink offices, providing employment and training services, advertisement of employment opportunities in a newspaper of general circulation throughout Delaware County, and internet advertisements.

c. The contractor shall, as a material condition of the contract, make a good faith effort to utilize veteran owned businesses, minority owned businesses, women owned

businesses and small business enterprises on the qualified project. “Minority owned business” shall mean that at least 51% of the business is owned by an individual who is a United States citizen or permanent resident alien who has and can demonstrate membership in one of the following groups: Black persons having origins in any of the Black African racial groups; Hispanic persons of Mexican, Puerto Rican, Dominican, Cuban, Central or South American Descent of either Indian or Hispanic origin, regardless of race; Native American or Alaskan native persons having origins in any of the original peoples of North America; Asian and Pacific Islander persons having origins in any of the Far East countries, South East Asia, the Indian subcontinent or the Pacific Islands. “Small business enterprise” shall mean a business with an annual gross income which is determined by the United States Small Business Administration to qualify it as a small business enterprise.

2. County Council hereby directs the County Executive Director to take steps to obtain a disparity study related to relevant County public works contracting in order to assess the utilization by the County of a diverse workforce for public works projects and to help direct any further actions by County Council to increase such diversity.

ADOPTED by the County Council of the County of Delaware, Pennsylvania, this 15th day of June, 2022.

BY: DELAWARE COUNTY COUNCIL

Dr. Monica Taylor, Chair

ATTESTED: _____
ANNE COOGAN, County Clerk



REQUEST FOR INFORMATION

RFI No: _____

CONTRACT No: _____

RFI Title: _____

Date Needed: _____

Requested by Company: _____

Date: _____

Response:

Response Prepared By: _____

Date: _____

END OF SECTION 00 60 10



JOB MEETING REPORT

Project: _____

Commission No: _____

Contractor: _____

Date : _____

Job Meeting Report No.: _____

Contract No./Work: _____

Work accomplished during the previous period:

Work scheduled over the next period:

Signed: _____

Date: _____

END OF SECTION 00 60 20



SUBMITTAL COVER SHEET

NOTE:

The following information is required and shall accompany all project submittals.

Submittals received without this cover sheet shall be deemed incomplete and will not be reviewed.

CONTRACTOR'S SUBMITTAL NO:	
SUBMITTED ITEM(S) / TITLE:	
SPEC. SECTION / DRAWING REF.:	
SUBMITTING CONTRACTOR:	
SUBCONTRACTOR / MANUF.:	

YES NO

		Is submittal a substitution? If yes, provide the required Substitution Matrix.
--	--	--

CONTRACTORS COMMENTS:

SUBMITTED AND APPROVED BY:

_____ Signature	_____ Company	_____ Date
--------------------	------------------	---------------

REVIEWERS COMMENTS:

END OF SECTION 00 60 30



SUBMITTAL MATRIX FOR SUBSTITUTION EVALUATION AS APPROVED EQUAL

The following is being submitted for evaluation of a substitution as an approved equal.

(Manufacturer's literature must be attached for verification)

Specification Data (1):	Specified Product (2):	Proposed Equal (3):

1. The 1st column shall list data derived from the specific specification section (i.e. doors, windows, etc.).
2. The 2nd column shall list data values for the product from the specific specification section (i.e. size, load capacity, material thickness, etc.)
3. The 3rd column shall list data values for the 'proposed equal' product and MUST be accompanied by the manufacturer's written product data and/or other applicable literature for the Architect to conduct a full review.

END OF SECTION 00 60 40



READY FOR CLOSEOUT

Contractor shall submit a copy of this document with the completed punchlist, signed and sealed by the Contractor's authorized representative and notarized, to the Architect indicating that the Work has been completed as required in accordance with the Contract Documents and after which the Contractor shall notify the Architect when re-inspection is requested.

The undersigned certifies that all items of work noted herein, and all other required scope of Work have been completed in accordance with Contract Documents and is further certifying that the project is ready for final inspection by the Architect. The undersigned acknowledges providing all required close-out documents, including, but not limited to, all affidavits, warranties and a release of liens, to the Architect.

Items not completed shall be summarized by the Contractor in letter form and attached herewith.

The undersigned hereby certifies that he/she shall pay the Owner for any and all expenses incurred by the Architect due to the Contractor's misrepresentation of completion of punch list items.

Authorized Representative of the Contractor (Print/Type)

Title

Signature

Date

THE CONTRACTOR SHALL SEAL THIS PUNCHLIST AS NOTED BELOW:

Contractor's Corporate Seal

Notary Seal

Prepared by: _____

Date: _____

END OF SECTION 00 60 50

SECTION 01 10 00 - SUMMARY

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. Section Includes:
 - 1. Project information.
 - 2. Work covered by Contract Documents.
 - 3. Pre-Qualified Subcontractors
 - 4. Phased construction.
 - 5. Access to site
 - 6. Work performed by Owner.
 - 7. Work under Owner's separate contracts.
 - 8. Owner's product purchase contracts.
 - 9. Owner-furnished/Contractor-installed (OFCI) products.
 - 10. Owner-furnished/Owner-installed (OFOI) products.
 - 11. Contractor's use of site and premises.
 - 12. Coordination with occupants.
 - 13. Work restrictions.
 - 14. Specification and Drawing conventions.
 - 15. Miscellaneous provisions.
- B. Related Requirements:
 - 1. Section 01 50 00 - Temporary Facilities and Controls for limitations and procedures governing temporary use of Owner's facilities.
 - 2. Section 01 73 00 - Execution for coordination of Owner-installed products.

1.03 PROJECT INFORMATION

- A. Project Identification: Additions and Alterations to Fair Acres Geriatric Center Kitchen Renovations
 - 1. Project Location: 340 Middletown Rd
Media, Pennsylvania, 19063
- B. Owner: Fair Acres Geriatric Center
 - 1. Owner's Representative: Robert Bernstein
bernsteinr@co.delaware.pa.us
201 W Front Street, Government Center, Suite 207
Media, Pennsylvania, 19063

- C. Architect: Spiezle Architectural Group, Inc.
 - 1. Architect's Representative: Jason E. Maguire, AIA
jmaguire@spiezle.com
900 W Sproul Rd. Suite 201, Springfield, PA, 19064
- D. Architect's Consultants: Architect has retained the following design professionals, who have prepared designated portions of the Contract Documents:
 - 1. MEP Engineer: Reese Hackman
 - a. Representative: Mark Layfield, PE, LEED AP
- E. Other Owner Consultants: The owner has retained the following design professionals who have prepared designated portions of the Contract Documents:
 - 1. Food Service Designer: SCOPOS has prepared the Food Service portions of the Contract Documents:
 - a. Representative: Cassie Sketch

1.04 WORK COVERED BY CONTRACT DOCUMENTS

- A. The Work of Project is defined by the Contract Documents and includes, but is not limited to, the following:
 - 1. Additions and Alterations to Fair Acres Geriatric Center Kitchen Renovations and other Work indicated in the Contract Documents.
- B. Type of Contract:
 - 1. Project will be constructed under a single prime contract.

1.05 PHASED CONSTRUCTION

- A. The Work shall be conducted in phases.
- B. For projects with Phasing Drawings - The Work shall be conducted in multiple phases, with each phase commencing and substantially complete in the sequence as indicated on the Phasing Drawing(s).
 - 1. The remaining Work shall be substantially complete with a Certificate of Occupancy at time of Substantial Completion.
- C. Project Substantial Completion: Work will commence within ten (10) calendar days after receipt of written "Notice to Proceed" and be substantially completed in accordance with the Contract Documents and Contractor's Construction Schedule for substantial completion of the entire project including a Certificate of Occupancy for the entire building by 02-13-2026. All time limits stated in the Contract are of the essence.

1.06 ACCESS TO SITE

- A. General: Contractor shall have full use of Project site for construction operations during construction period. Contractor's use of Project site is limited only by Owner's right to perform work or to retain other contractors on portions of Project, and to conduct summer operations.
 - 1. Prior to commencing work on site, the Contractor shall meet with the Architect and Owner's designee to review work to be completed, determine its impact on occupied areas and adjacent properties, etc. to distribute necessary guidelines.
 - 2. Designated areas will be established, as necessary, for parking, toilet facilities, special trailers and deliveries, etc.

3. The Contractor and its Employees and its subcontractors are authorized to be on grounds only during the performance of work related to the project.
4. Obey speed limits as posted, or if not posted, not to exceed 10 mph on grounds. Yield to all pedestrian traffic. Do not blow horn unless absolutely necessary. Not all persons on site can be expected to possess good pedestrian skills.
5. Vehicles and operating equipment shall be turned off, locked and secure whenever not in use. All tools and equipment, not removed from the site on a daily basis, shall be secured and kept in the work staging area at the end of the work day. The owner will not assume responsibility for any missing articles.
6. Smoking shall not be permitted anywhere on School property.
7. Do not fraternize with owner's employees or building occupants while working on site.
8. Facility occupants and employees are not allowed in work areas. Active work areas shall be secured and/or enclosed at all times to prevent occupants and employees from wandering inside.
9. Safety shall be maintained by the Contractor at the job site at all times.
10. Possession and/or consumption of alcoholic beverages or drugs are strictly prohibited on site at all times.
11. Contractor and its personnel are required to report in and out on a daily basis at a location designated by the owner and may be required to sign in and out in a visitor's log book in the presence of the owner's staff person of responsible charge. The owner will notify its respective building supervisors and any affected departments when the Contractor and its personnel will be working in any occupied area of the building.

1.07 WORK PERFORMED BY OWNER

- A. Cooperate fully with Owner, so work may be carried out smoothly, without interfering with or delaying Work under this Contract or work by Owner. Coordinate the Work of this Contract with work performed by Owner.
- B. Preceding Work: Owner will perform the following construction operations at Project site. Those operations are scheduled to be substantially complete before Work under this Contract begins.
 1. Removal of existing equipment Fair Acres wishes to maintain.

1.08 WORK UNDER OWNER'S SEPARATE CONTRACTS

1.09 OWNER'S PRODUCT PURCHASE CONTRACTS

- A. Owner has negotiated Product Purchase contracts with suppliers of material and equipment to be incorporated into the Work. Owner will assign these Product Purchase contracts to Contractor. Include costs for purchasing, receiving, handling, storage if required, and installation of material and equipment in the Contract Sum unless otherwise indicated.
 1. Contractor's responsibilities are same as if Contractor had negotiated Product Purchase contracts, including responsibility to renegotiate purchase and to execute final purchasing agreements.
- B. Owner's Product Purchase Contracts Information:

1. ____ : See Section ____ "____".
 - a. Purchase Contract Firm and Representative: _____.
 - b. Product Purchase Contract Scope: Furnishing material.
 - c. Product Purchase Status: Price negotiated by Owner, to be incorporated into the Contract Sum by Contractor; see Section 012100 "Allowances" for cash allowance for Product Purchase contract.
 - d. Quantity: _____.
 - e. Other Requirements: _____.

1.10 OWNER-FURNISHED/CONTRACTOR-INSTALLED (OFCI) PRODUCTS

- A. Owner's Responsibilities: Owner will furnish products indicated and perform the following, as applicable:
 1. Provide to Contractor Owner-reviewed Product Data, Shop Drawings, and Samples.
 2. Provide for delivery of Owner-furnished products to Project site.
 3. Upon delivery, inspect, with Contractor present, delivered items.
 - a. If Owner-furnished products are damaged, defective, or missing, arrange for replacement.
 4. Obtain manufacturer's inspections, service, and warranties.
 5. Inform Contractor of earliest available delivery date for Owner-furnished products.
- B. Contractor's Responsibilities: The Work includes the following, as applicable:
 1. Designate delivery dates of Owner-furnished products in Contractor's construction schedule, utilizing Owner-furnished earliest available delivery dates.
 2. Review Owner-reviewed Product Data, Shop Drawings, and Samples, noting discrepancies and other issues in providing for Owner-furnished products in the Work.
 3. Receive, unload, handle, store, protect, and install Owner-furnished products.
 4. Make building services connections for Owner-furnished products.
 5. Protect Owner-furnished products from damage during storage, handling, and installation and prior to Substantial Completion.
 6. Repair or replace Owner-furnished products damaged following receipt.
- C. Owner-Furnished/Contractor-Installed (OFCI) Products:
 1. See equipment schedule on drawings.

1.11 OWNER-FURNISHED/OWNER-INSTALLED (OFOI) PRODUCTS

1.12 CONTRACTOR'S USE OF SITE AND PREMISES

- A. Restricted Use of Site: Each Contractor shall have limited use of Project site for construction operations as indicated on Drawings by the Contract limits and as indicated by requirements of this Section.
 1. Prior to commencing work on site, the Contractor shall meet with the Architect or Owner's Designee to review work to be completed, determine its impact on occupied areas and adjacent properties, etc. to distribute necessary guidelines.
 2. Designated areas will be established, as necessary, for parking, toilet facilities, special trailers and deliveries, etc.

3. The Contractor and its Employees and its subcontractors are authorized to be on grounds only during the performance of work related to the project.
 4. Obey speed limits as posted, or if not posted, not to exceed 10 mph on grounds. Yield to all pedestrian traffic. Do not blow horn unless necessary. Not all persons on site can be expected to possess good pedestrian skills.
 5. Vehicles and operating equipment shall be turned off, locked and secure whenever not in use. All tools and equipment, not removed from the site on a daily basis, shall be secured and kept in the work staging area at the end of the workday. The Owner will not assume responsibility for any missing articles.
 6. Do not fraternize with Owner's employees or building occupants while working on site.
 7. Facility occupants and employees are not allowed in work areas. Active work areas shall always be secured and/or enclosed to prevent occupants and employees from wandering inside.
 8. Safety shall always be maintained by the Contractor at the job site .
 9. Possession and/or consumption of alcoholic beverages or drugs are always strictly prohibited on site .
 10. Contractor and its personnel are required to report in and out on a daily basis at a location designated by the Owner and may be required to sign in and out in a visitor's log book in the presence of the Owner's staff person of responsible charge. The Owner will notify its respective building supervisors and any affected departments when the Contractor and its personnel will be working in any occupied area of the building.
- B. Limits on Use of Site: Limit use of Project site to Work in areas indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.
1. Limits on Use of Site: Confine construction operations to work in areas indicated or established by approval from the Owner so as not to interfere with facility hours of operations.
 2. Owner Occupancy: Allow for Owner occupancy of the Project site and use by the public.
 3. Driveways, Walkways and Entrances: Keep driveways, parking garage, loading areas, and entrances serving premises clear and available to Owner, Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or for storage of materials.
 - a. Schedule deliveries to minimize use of driveways and entrances by construction operations.
 - b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.
 - c. Contractor is not permitted to use any parking spaces designated for Owner's staff or visitors. Contractor shall review available on-site parking locations prior to submitting his bid.
 - d. Schedule deliveries to minimize use of driveways and entrances and to avoid morning and afternoon busing periods.
- C. Condition of Existing Building: Maintain portions of existing building affected by construction operations in a weathertight condition throughout construction period. Unless otherwise noted, maintain heating, ventilation and air conditioning levels in Owner occupied areas of the building throughout the construction period. Repair damage caused by construction operations.

- D. Condition of Existing Grounds: Maintain portions of existing grounds, landscaping, and hardscaping affected by construction operations throughout construction period. Repair damage caused by construction operations.

1.13 COORDINATION WITH OCCUPANTS

- A. Full Owner Occupancy: Owner will occupy Project site and existing building(s) during entire construction period. Cooperate with Owner during construction operations to minimize conflicts and facilitate Owner usage. Perform the Work so as not to interfere with Owner's day-to-day operations. Maintain existing exits unless otherwise indicated.
 - 1. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities. Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from Owner and approval of authorities having jurisdiction.
 - 2. Notify Owner not less than three (3) calendar days in advance of activities that will affect Owner's operations.
- B. Owner Limited Occupancy of Completed Areas of Construction: Owner reserves the right to occupy and to place and install equipment in completed portions of the Work, prior to Substantial Completion of the Work, provided such occupancy does not interfere with completion of the Work. Such placement of equipment and limited occupancy shall not constitute acceptance of the total Work.
 - 1. Architect will prepare a Certificate of Substantial Completion for each specific portion of the Work to be occupied prior to Owner acceptance of the completed Work.
 - 2. Obtain a Certificate of Occupancy from authorities having jurisdiction before limited Owner occupancy.
 - 3. Before limited Owner occupancy, mechanical and electrical systems shall be fully operational, and required tests and inspections shall be successfully completed. On occupancy, Owner will operate and maintain mechanical and electrical systems serving occupied portions of Work.
 - 4. On occupancy, Owner will assume responsibility for maintenance and custodial service for occupied portions of Work.
 - 5. The occupancy of any portion of the Project does not constitute an acceptance of any work as the Project will be accepted as a whole and not in units. Prior to such occupancy, however, the Architect, Owner's Representative, and the Contractor shall fully inspect the portions of the Project to be occupied, preparing a complete list of omissions of materials, faulty workmanship, or any items to be repaired or replaced. The Owner will assume responsibility for damage to premises so occupied of any items not on this list when such damage is due to greater than normal wear and tear but does not assume responsibility for improper or defective workmanship or materials.

1.14 WORK RESTRICTIONS

- A. Comply with restrictions on construction operations.
 - 1. Comply with limitations on use of public streets, work on public streets, rights of way, and other requirements of authorities having jurisdiction.
- B. On-Site Work Hours: Work shall be generally performed inside the existing building during the hours of 7:00 p.m. to 5:00 p.m., Monday through Friday, except as

otherwise indicated.

1. Evening Hours: 3:30 p.m. to 11:00 p.m., subject to approval by the Owner and further subject to ordinances and regulations by local and governing authorities having jurisdiction.
 2. Hours for Utility Shutdowns: Coordinate all utility shutdowns with the Owner through the Architect at least four (4) weeks prior to the anticipated work. Then notify the Owner at least three (3) calendar days prior to actual shutdown. The existing building fire protection system shall not be diminished. Removal of existing devices shall not occur until the new equipment is in place for the switchover.
 3. Hours for Core Drilling and other noisy activities, etc. and demolition shall be planned for the least distracting hours of the day and coordinated with the Owner through the Architect. The Owner reserves the right to stop those activities to be deemed excessive until a more appropriate time or day at their discretion.
 4. The Contractor shall not schedule deliveries that conflict with the normal bus drop-off or pick-up times.
 5. The Contractor shall comply with the Owner's Site Security Programs as described in section 'Access to Site'.
 6. All personnel shall dress in clothing appropriate to the work they perform. All personnel are to wear shirts, hardhats, safety shoes, glasses, gloves, masks or respirators, noise protection devices, and other protective clothing and equipment as required by OSHA standards.
 7. For the safety of occupants, the use of a crane to lift any items on the roof cannot be performed over an occupied building. This work must be scheduled and coordinated with the Owner. The Contractor shall always provide additional barricades around his crane as required .
 8. The Contractor is responsible for maintaining all temporary emergency egress routes. The Contractor shall obtain approval from the Building, Police, Rescue and Fire Departments for all temporary emergency egress routes. The Contractor shall provide temporary exit signs as required to ensure clearly marked egress routes.
 9. The Owner has the right to require disruptive work to be discontinued if affecting the students and employee staff.
- C. On-Site Work Day Restrictions: Do not perform work resulting in utility shutdowns or resulting in noisy activity on-site during work black-out days indicated in Document 003113 "Preliminary Schedules."
- D. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging for temporary utility services according to requirements indicated:
1. Notify Owner not less than three (3) calendar days in advance of proposed utility interruptions.
 2. Obtain Owner's written permission before proceeding with utility interruptions.
- E. Noise, Vibration, Dust, and Odors: Coordinate operations that may result in high levels of noise and vibration, dust, odors, or other disruption to Owner occupancy with Owner.
1. Notify Owner not less than three (3) calendar days in advance of proposed disruptive operations.
 2. Obtain Owner's written permission before proceeding with disruptive operations.

- F. Smoking and Controlled Substance Restrictions: Use of tobacco products, alcoholic beverages, and other controlled substances within the existing building and on Project site is not permitted.
- G. Employee Identification: Owner will provide identification tags for Contractor personnel working on Project site. Require personnel to use identification tags at all times.
- H. Employee Screening: Comply with Owner's requirements for drug and background screening of Contractor personnel working on Project site.
 - 1. Maintain list of approved screened personnel with Owner's representative.
- I. Changing of clothing in public spaces, including but not limited to the project area, corridors, parking lots, and other spaces where students might be present, is not permitted.

1.15 SPECIFICATION AND DRAWING CONVENTIONS

- A. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:
 - 1. Imperative mood and streamlined language are generally used in the Specifications. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.
 - 2. Text Color: Text used in the Specifications, including units of measure, manufacturer and product names, and other text may appear in multiple colors or underlined as part of a hyperlink; no emphasis is implied by text with these characteristics.
 - 3. Hypertext: Text used in the Specifications may contain hyperlinks. Hyperlinks may allow for access to linked information that is not residing in the Specifications.
Unless otherwise indicated, linked information is not part of the Contract Documents.
 - 4. Specification requirements are to be performed by Contractor unless specifically stated otherwise.
- B. Division 00 Contracting Requirements: General provisions of the Contract, including General and Supplementary Conditions, apply to all Sections of the Specifications.
- C. Division 01 General Requirements: Requirements of Sections in Division 01 apply to the Work of all Sections in the Specifications.
- D. Drawing Coordination: Requirements for materials and products identified on Drawings are described in detail in the Specifications. One or more of the following are used on Drawings to identify materials and products:
 - 1. Terminology: Materials and products are identified by the typical generic terms used in the individual Specifications Sections.
 - 2. Abbreviations: Materials and products are identified by abbreviations scheduled on Drawings and published as part of the U.S. National CAD Standard.
 - 3. Keynoting: Materials and products in the drawings may be identified by reference keynotes.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION 01 10 00

SECTION 01 21 00 - ALLOWANCES

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. Section includes administrative and procedural requirements governing allowances.
 - 1. Certain items are specified in the Contract Documents by allowances. Allowances have been established in lieu of additional requirements and to defer selection of actual materials and equipment to a later date when direction will be provided to Contractor. If necessary, additional requirements will be issued by Change Order.
- B. Types of allowances include the following:
 - 1. Lump Sum allowances.
 - 2. Unit-cost allowances.
 - 3. Quantity allowances.
- C. Related Requirements:
 - 1. Section 01 22 00 - Unit Prices for procedures for using unit prices, including adjustment of quantity allowances when applicable.
 - 2. Section 01 26 00 - Contract Modification Procedures for procedures for submitting and handling Change Orders.

1.03 DEFINITIONS

- A. Allowance: A quantity of work or dollar amount included in the Base Bid of the Contract, established in lieu of additional requirements, used to defer selection of actual materials and equipment to a later date when direction will be provided to Contractor. If necessary, additional requirements will be issued by Change Order.

1.04 SELECTION AND PURCHASE

- A. At the earliest practical date after award of the Contract, advise Architect of the date when final selection, or purchase and delivery, of each product or system described by an allowance must be completed by the Owner to avoid delaying the Work.
- B. At Architect's request, obtain proposals for each allowance for use in making final selections. Include recommendations that are relevant to performing the Work.
- C. Purchase products and systems selected by Architect from the designated supplier or approved equal.

1.05 ACTION SUBMITTALS

- A. Submit proposals for purchase of products or systems included in allowances in the form specified for Change Orders.

1.06 INFORMATIONAL SUBMITTALS

- A. Submit invoices or delivery slips to show actual quantities of materials delivered to the site for use in fulfillment of each allowance.
- B. Submit time sheets and other documentation to show labor time and cost for installation of allowance items that include installation as part of the allowance.
- C. Coordinate and process submittals for allowance items in same manner as for other portions of the Work.

1.07 LUMP SUM ALLOWANCES

- A. Allowance shall include cost to Contractor of specific products and materials according to Owner's/Architect's written instructions and shall include taxes, freight, and delivery to Project site.
- B. Unless otherwise indicated, Contractor's costs for receiving and handling at Project site, labor, installation, overhead and profit, and similar costs related to products and materials ordered by Owner or selected by Architect under allowance shall be included as part of the Contract Sum and not part of the allowance.
- C. Unused Materials: Return unused materials purchased under an allowance to manufacturer or supplier for credit to Owner, after installation has been completed and accepted.
 - 1. If requested by Architect, retain and prepare unused material for storage by Owner. Deliver unused material to Owner's storage space as directed.

1.08 UNIT-COST ALLOWANCES

- A. Allowance shall include cost to Contractor of specific products and materials ordered by Owner or selected by Architect under allowance and shall include taxes, freight, and delivery to Project site.
- B. Unless otherwise indicated, Contractor's costs for receiving and handling at Project site, labor, installation, overhead and profit, and similar costs related to products and materials ordered by Owner or selected by Architect under allowance shall be included as part of the Contract Sum and not part of the allowance.
- C. Unused Materials: Return unused materials purchased under an allowance to manufacturer or supplier for credit to Owner, after installation has been completed and accepted.
 - 1. If requested by Architect, retain and prepare unused material for storage by Owner. Deliver unused material to Owner's storage space as directed.

1.09 QUANTITY ALLOWANCES

- A. Allowance shall include cost to Contractor of specific products and materials ordered by Owner or selected by Architect under allowance and shall include taxes, freight, and delivery to Project site.
- B. Unless otherwise indicated, Contractor's costs for receiving and handling at Project site, labor, installation, overhead and profit, and similar costs related to products and materials ordered by Owner or selected by Architect under allowance shall be included as part of the Contract Sum and not part of the allowance.
 - 1. Coordinate quantity allowance adjustment with corresponding unit-price requirements in Section 012200 "Unit Prices."
- C. Unused Materials: Return unused materials purchased under an allowance to manufacturer or supplier for credit to Owner, after installation has been completed and accepted.
 - 1. If requested by Architect, retain and prepare unused material for storage by Owner. Deliver unused material to Owner's storage space as directed.

1.10 TESTING AND INSPECTING ALLOWANCES

- A. Testing and inspecting allowances include the cost of engaging testing agencies, actual tests and inspections, and reporting results.
- B. The allowance does not include incidental labor required to assist the testing agency or costs for retesting if previous tests and inspections result in failure. The cost for incidental labor to assist the testing agency shall be included in the Contract Sum.
- C. Costs of testing and inspection services not specifically required by the Contract Documents are Contractor responsibilities and are not included in the allowance.
- D. At Project closeout, credit unused amounts remaining in the testing and inspecting allowance to Owner by Change Order.

1.11 ADJUSTMENT OF ALLOWANCES

- A. Allowance Adjustment: To adjust allowance amounts, prepare a Change Order proposal based on the difference between purchase amount and the allowance, multiplied by final measurement of work-in-place where applicable. If applicable, include reasonable allowances for cutting losses, tolerances, mixing wastes, normal product imperfections, required maintenance materials, and similar margins.
 - 1. Include installation costs in purchase amount only where indicated as part of the allowance.
 - 2. If requested, prepare explanation and documentation to substantiate distribution of overhead costs and other markups.
 - 3. Submit substantiation of a change in scope of Work, if any, claimed in Change Orders related to unit-cost allowances.
 - 4. Owner reserves the right to establish the quantity of work-in-place by independent quantity survey, measure, or count.
- B. Submit claims for increased costs due to a change in the scope or nature of the allowance described in the Contract Documents, whether for the purchase order amount or Contractor's handling, labor, installation, overhead, and profit.
 - 1. Do not include Contractor's or subcontractor's indirect expense in the Change Order cost amount unless it is clearly shown that the nature or extent of Work has

changed from what could have been foreseen from information in the Contract Documents.

2. No change to Contractor's indirect expense is permitted for selection of higher- or lower-priced materials or systems of the same scope and nature as originally indicated.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine products covered by an allowance promptly on delivery for damage or defects. Return damaged or defective products to manufacturer for replacement.

3.02 PREPARATION

- A. Coordinate materials and their installation for each allowance with related materials and installations to ensure that each allowance item is completely integrated and interfaced with related work.

3.03 SCHEDULE OF ALLOWANCES

- A. **Lump Sum Allowance No. AL-01:** Lump Sum Allowance: Include a Lump Sum allowance of \$100,000.00 for use according to Owner's/Architect's written instructions.

END OF SECTION 01 21 00

SECTION 01 22 00 - UNIT PRICES

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. Section includes administrative and procedural requirements for unit prices.
- B. Related Requirements:
 - 1. Section 012100 "Allowances" for procedures for using unit prices to adjust quantity allowances.
 - 2. Section 012600 "Contract Modification Procedures" for procedures for submitting and handling Change Orders.
 - 3. Section 014000 "Quality Requirements" for field testing by an independent testing agency.

1.03 DEFINITIONS

- A. Unit price is an amount incorporated into the Agreement, applicable during the duration of the Work as a price per unit of measurement for materials, equipment, or services, or a portion of the Work, added to or deducted from the Contract Sum by appropriate modification, if the scope of Work or estimated quantities of Work required by the Contract Documents are increased or decreased.

1.04 PROCEDURES

- A. Unit prices include all necessary material, plus cost for delivery, installation, insurance, applicable taxes, and overhead and profit.
- B. Measurement and Payment: See individual Specification Sections for work that requires establishment of unit prices. Methods of measurement and payment for unit prices are specified in those Sections.
- C. Owner reserves the right to reject Contractor's measurement of work-in-place that involves use of established unit prices and to have this work measured, at Owner's expense, by an independent surveyor acceptable to Contractor.
- D. List of Unit Prices: A schedule of unit prices is included in Part 3. Specification Sections referenced in the Part 3 "Schedule of Unit Prices" Article contain requirements for materials described under each unit price.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 SCHEDULE OF UNIT PRICES

- A. Unit Price No. UP-1: Removal of unsatisfactory soil and replacement with satisfactory soil material.
 - 1. Description: Unsatisfactory soil excavation and disposal off-site and replacement with satisfactory fill material or engineered fill from off-site, as required, in accordance with Section 312000 "Earth Moving."
 - 2. Unit of Measurement: Cubic yard of soil excavated, based on in-place surveys of volume before and after removal.
 - 3. Quantity Allowance to include in bid: 5 Cubic Yards.
 - 4. Quantity Allowance: Coordinate unit price with allowance adjustment requirements in Section 012100 "Allowances."

END OF SECTION 01 22 00

SECTION 01 23 00 - ALTERNATES

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. Section includes administrative and procedural requirements for alternates.

1.03 DEFINITIONS

- A. Alternate: An amount proposed by bidders and stated on the Bid Form for certain work defined in the bidding requirements that may be added to or deducted from the base bid amount if the Owner decides to accept a corresponding change either in the amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.
 - 1. Alternates described in this Section are part of the Work only if included in the Form of Bid Proposal and enumerated as such in the Agreement.
 - 2. The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate alternates into the Work. No other adjustments are made to the Contract Sum.

1.04 PROCEDURES

- A. Coordination: Revise or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.
 - 1. Include, as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation, whether or not indicated as part of alternate.
 - 2. Bidders are required to provide numerical cost amounts for all alternates listed to reflect the cost associated with the Contract being bid. If an alternate bid does not pertain to a particular Contract or if there is no cost associated with the alternate, Bidders may input either "zero" or "no change" in that space.
- B. Notification: Immediately following award of the Contract, notify each party involved, in writing, of the status of each alternate. Indicate if alternates have been accepted, rejected, or deferred for later consideration. Include a complete description of negotiated revisions to alternates.
- C. Execute accepted alternates under the same conditions as other Work of the Contract.
- D. Schedule: A schedule of alternates is included at the end of this Section. Specification Sections referenced in schedule contain requirements for materials necessary to

achieve the work described under each alternate.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 SCHEDULE OF ALTERNATES

- A. Alternate No. AB-01: Resident Room Interior Door and Hardware Replacements.
 - 1. Alternate: State amount to be "ADDED TO" and in lieu of the base bid to removeprovide and install ONLY the Resident Room interior door and hardware and replacements as identified on the drawings and schedules including doors. Include all accessories, equipment, incidentals, and associated costs as indicated, shown, and specified.
 - 2. Base Bid: Added Face Moldings to the Resident Room doors.
- B. Alternate No. AB-02: Additional Private / Semi Private (Resident Room) Scope amount to be "ADDED TO" the base bid to provide and install additional Scope as identified in the CSG scope drawings, including all accessories, equipment, incidentals, and associated costs.
 - 1. Demo Window Treatment
 - 2. Demo Cubical Curtains
 - 3. Demo Corner Guards
 - 4. Replace outlet, switches and coverplates
 - 5. Replace drop ceilings in double rooms
 - 6. Applied door molding on suite entrance door Base Bid. ALTERNATE: Replace door (See Alternate No. AB-01)
 - 7. Provide power memory boxe at front entrance
 - 8. Replace closet bypass doors with french Doors
 - 9. Replace sprinkler heads
- C. Alternate No. AB-03: Additional (Resident Room) Bathroom Scope amount to be "ADDED TO" the base bid to provide and install additional Scope as identified in the CSG scope drawings, including all accessories, equipment, incidentals, and associated costs.
 - 1. Overlay sink valance corian
 - 2. Replace wainscotting on short bathroom wall next to sink
 - 3. Replace bathroom door
 - 4. Replace toilet
 - 5. Replace fold down grab bars
 - 6. Cabinet touch-up/Replace cabinet
 - 7. Replace wainscotting on 'wet' wall (remove sink and toilet)
- D. Alternate No. AB-04: Additional Landscape Furniture Scope amount to be "ADDED TO" the base bid to provide and install additional Scope as identified in the Landscape scope drawings, including all accessories, equipment, incidentals, and associated costs.
- E. Alternate No. AB-05: Deduct vestibule door Scope amount to be "DEDUCTED TO" the base bid to provide and install additional Scope as identified in the Architectural scope

drawings, including all accessories, equipment, incidentals, and associated costs.

END OF SECTION 01 23 00

SECTION 01 25 00 - SUBSTITUTION PROCEDURES

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. Section includes administrative and procedural requirements for substitutions.
- B. Related Requirements:
 - 1. Section 01 21 00 - Allowances for products selected under an allowance.
 - 2. Section 01 23 00 - Alternates for products selected under an alternate.
 - 3. Section 01 60 00 - Product Requirements for requirements for submitting comparable product submittals for products by listed manufacturers.

1.03 DEFINITIONS

- A. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents.
 - 1. Substitutions for Cause: Changes proposed by Contractor that are required due to changed Project conditions, such as unavailability of product, regulatory changes, or unavailability of required warranty terms.

1.04 ACTION SUBMITTALS

- A. Equivalent or Substitution Requests: Submit documentation identifying product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
 - 1. Equivalent or Substitution Request Form: Use form provided in Project Manual.
 - 2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:
 - a. Statement indicating why specified product, fabrication, or installation method cannot be provided, if applicable.
 - b. Coordination of information, including a list of changes or revisions needed to other parts of the Work and to construction performed by Owner and separate contractors that will be necessary to accommodate proposed substitution.
 - c. Detailed comparison of significant qualities of proposed substitutions with those of the Work specified. Include annotated copy of applicable Specification Section. Significant qualities may include attributes, such as performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific features and requirements indicated. Indicate deviations, if any, from the Work specified.

- d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
 - e. Samples, where applicable or requested.
 - f. Certificates and qualification data, where applicable or requested.
 - g. List of similar installations for completed projects, with project names and addresses as well as names and addresses of architects and owners.
 - h. Material test reports from a qualified testing agency, indicating and interpreting test results for compliance with requirements indicated.
 - i. Research reports evidencing compliance with building code in effect for Project.
 - j. Detailed comparison of Contractor's construction schedule using proposed substitutions with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating date of receipt of purchase order, lack of availability, or delays in delivery.
 - k. Cost information, including a proposal of change, if any, in the Contract Sum.
 - l. Contractor's certification that proposed substitution complies with requirements in the Contract Documents, except as indicated in substitution request, is compatible with related materials and is appropriate for applications indicated.
 - m. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.
3. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within seven days of receipt of a request for substitution. Architect will notify Contractor of acceptance or rejection of proposed substitution within 15 days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.
- a. Forms of Acceptance: Change Order, Construction Change Directive, or Architect's Supplemental Instructions for minor changes in the Work.
 - b. Use product specified if Architect does not issue a decision on use of a proposed substitution within time allocated.

1.05 QUALITY ASSURANCE

- A. Compatibility of Substitutions: Investigate and document compatibility of proposed substitution with related products and materials. Engage a qualified testing agency to perform compatibility tests recommended by manufacturers.

1.06 PROCEDURES

- A. Coordination: Revise or adjust affected work as necessary to integrate work of the approved substitutions.

1.07 SUBSTITUTIONS

- A. Substitutions for Cause: Submit requests for substitution immediately on discovery of need for change, but not later than 15 days prior to time required for preparation and

review of related submittals.

1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:
 - a. Requested substitution is consistent with the Contract Documents and will produce indicated results.
 - b. Substitution request is fully documented and properly submitted.
 - c. Requested substitution will not adversely affect Contractor's construction schedule.
 - d. Requested substitution has received necessary approvals of authorities having jurisdiction.
 - e. Requested substitution is compatible with other portions of the Work.
 - f. Requested substitution has been coordinated with other portions of the Work.
 - g. Requested substitution provides specified warranty.
 - h. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.
- B. Substitutions for Convenience: Architect will consider requests for substitution if received within 30 days after the Notice to Proceed. Requests received after that time may be considered or rejected at discretion of Architect.
 1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:
 - a. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Architect for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
 - b. Requested substitution does not require extensive revisions to the Contract Documents.
 - c. Requested substitution is consistent with the Contract Documents and will produce indicated results.
 - d. Substitution request is fully documented and properly submitted.
 - e. Requested substitution will not adversely affect Contractor's construction schedule.
 - f. Requested substitution has received necessary approvals of authorities having jurisdiction.
 - g. Requested substitution is compatible with other portions of the Work.
 - h. Requested substitution has been coordinated with other portions of the Work.
 - i. Requested substitution provides specified warranty.
 - j. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION 01 25 00

SECTION 01 26 00 - CONTRACT MODIFICATION PROCEDURES

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. Section includes administrative and procedural requirements for handling and processing Contract modifications.
- B. Related Requirements:
 - 1. Section 01 25 00 - Substitution Procedures for administrative procedures for handling requests for substitutions made after the Contract award.
 - 2. Section 01 31 00 - Project Management and Coordination for requirements for forms for contract modifications provided as part of web-based Project management software.

1.03 MINOR CHANGES IN THE WORK

- A. Architect will issue supplemental instructions authorizing minor changes in the Work, not involving adjustment to the Contract Sum or the Contract Time.

1.04 PROPOSAL REQUESTS

- A. Owner-Initiated Proposal Requests: Architect will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.
 - 1. Work Change Proposal Requests issued by Architect are not instructions either to stop work in progress or to execute the proposed change.
 - 2. Within time specified in Proposal Request or 20 days, when not otherwise specified, after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.
 - a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
 - b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
 - c. Include costs of labor and supervision directly attributable to the change.
 - d. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration,

start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.

- B. Contractor-Initiated Proposals: If latent or changed conditions require modifications to the Contract, Contractor may initiate a claim by submitting a request for a change to Architect.
 - 1. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.
 - 2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
 - 3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
 - 4. Include costs of labor and supervision directly attributable to the change.
 - 5. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
 - 6. Comply with requirements in Section 01 21 00 - Allowances if the proposed change requires substitution of one product or system for product or system specified.
 - 7. Proposal Request Form: Use form acceptable to Architect.

1.05 ADMINISTRATIVE CHANGE ORDERS

- A. Allowance Adjustment: See Section 01 21 00 - Allowances for administrative procedures for preparation of Change Order Proposal for adjusting the Contract Sum to reflect actual costs of allowances.
- B. Unit-Price Adjustment: See Section 01 22 00 - Unit Prices for administrative procedures for preparation of Change Order Proposal for adjusting the Contract Sum to reflect measured scope of unit-price work.

1.06 CHANGE ORDER PROCEDURES

- A. On Owner's approval of a Work Change Proposal Request, Architect will issue a Change Order for signatures of Owner and Contractor on AIA Document G701.

1.07 CONSTRUCTION CHANGE DIRECTIVE

- A. Construction Change Directive: Architect may issue a Construction Change Directive on AIA Document G714. Construction Change Directive instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.
 - 1. Construction Change Directive contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Sum or the Contract Time.
- B. Documentation: Maintain detailed records on a time and material basis of work required by the Construction Change Directive.

1. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION 01 26 00

SECTION 01 29 00 - PAYMENT PROCEDURES

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. Section includes administrative and procedural requirements necessary to prepare and process Applications for Payment.
- B. Related Requirements:
 - 1. Section 01 21 00 - Allowances for procedural requirements governing the handling and processing of allowances.
 - 2. Section 01 22 00 - Unit Prices for administrative requirements governing the use of unit prices.
 - 3. Section 01 26 00 - Contract Modification Procedures for administrative procedures for handling changes to the Contract.
 - 4. Section 01 32 00 - Construction Progress Documentation for administrative requirements governing the preparation and submittal of the Contractor's construction schedule.

1.03 DEFINITIONS

- A. Schedule of Values: A statement furnished by Contractor allocating portions of the Contract Sum to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

1.04 SCHEDULE OF VALUES

- A. Coordination: Coordinate preparation of the schedule of values with preparation of Contractor's construction schedule.
 - 1. Coordinate line items in the schedule of values with items required to be indicated as separate activities in Contractor's construction schedule.
 - 2. Submit the schedule of values to Architect at earliest possible date, but no later than (15) fifteen days of the written Notice to Proceed and no later than (7) seven days before the date scheduled for submittal of initial Applications for Payment.
- B. Format and Content: Use Project Manual table of contents as a guide to establish line items for the schedule of values. Provide at least one-line item for each Specification Section.
 - 1. Identification: Include the following Project identification on the schedule of values:

- a. Project name and location.
 - b. Owner's name.
 - c. Name of Architect.
 - d. Architect's Project number.
 - e. Contractor's name and address.
 - f. Date of submittal.
2. Arrange schedule of values consistent with format of AIA Document AIA G703: Continuation Sheets.
3. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Provide multiple line items for principal subcontract amounts in excess of five (5) percent of the Contract Sum.
4. Provide a separate line item in the schedule of values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.
 - a. Differentiate between items stored on-site and items stored off-site.
5. Allowances: Provide a separate line item in the schedule of values for each allowance. Show line-item value of unit-cost allowances, as a product of the unit cost, multiplied by measured quantity. Use information indicated in the Contract Documents to determine quantities.
6. Temporary Facilities: Show cost of temporary facilities and other major cost items that are not direct cost of actual work-in-place as separate line items.
7. Closeout Costs. Include separate line items under Contractor and principal subcontracts for Project closeout requirements in an amount totaling two (2) percent of the Contract Sum and subcontract amount.
8. Schedule of Values Revisions: Revise the schedule of values when Change Orders or Construction Change Directives result in a change in the Contract Sum. Include at least one separate line item for each Change Order and Construction Change Directive.

1.05 APPLICATIONS FOR PAYMENT

- A. Each Application for Payment following the initial Application for Payment shall be consistent with previous applications and payments, as certified by Architect and paid for by Owner.
- B. Payment Application Times: The date for each progress payment is indicated in the Supplementary Conditions. The period of construction work covered by each Application for Payment is the period indicated in the Agreement.
- C. Payment Application Times: Submit Application for Payment to Architect by the first day of the month. The period covered by each Application for Payment is one month, ending on the last day of the month .
 1. Submit draft copy of Application for Payment seven days prior to due date for review by Architect.
- D. Application for Payment Forms: Use AIA Document AIA G702 and AIA Document AIA G703 as form for Applications for Payment.
- E. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Architect will return incomplete applications without action.

1. Entries shall match data on the schedule of values and Contractor's construction schedule. Use updated schedules if revisions were made.
 2. Include amounts for work completed following previous Application for Payment, whether or not payment has been received. Include only amounts for work completed at time of Application for Payment.
 3. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.
 4. Indicate separate amounts for work being carried out under Owner-requested project acceleration.
- F. Stored Materials: Include in Application for Payment amounts applied for materials or equipment purchased or fabricated and stored, but not yet installed. Differentiate between items stored on-site and items stored off-site.
1. Provide certificate of insurance, evidence of transfer of title to Owner, and consent of surety to payment for stored materials.
 2. Provide supporting documentation that verifies amount requested, such as paid invoices. Match amount requested with amounts indicated on documentation; do not include overhead and profit on stored materials.
 3. Provide summary documentation for stored materials indicating the following:
 - a. Value of materials previously stored and remaining stored as of date of previous Applications for Payment.
 - b. Value of previously stored materials put in place after date of previous Application for Payment and on or before date of current Application for Payment.
 - c. Value of materials stored since date of previous Application for Payment and remaining stored as of date of current Application for Payment.
- G. Transmittal: After approval of pencil copy of Application for Payment, submit (3) three signed and notarized original copies of each Application for Payment to the Architect by a method ensuring receipt within 24 hours. One copy shall include waivers of lien form AIA G706 and AIA G706A and similar attachments if required.
1. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.
- H. Waivers of Mechanic's Lien: With each Application for Payment, submit waivers of mechanic's lien from entities lawfully entitled to file a mechanic's lien arising out of the Contract and related to the Work covered by the payment.
1. Submit partial waivers on each item for amount requested in previous application, after deduction for retainage, on each item.
 2. When an application shows completion of an item, submit conditional final or full waivers.
 3. Owner reserves the right to designate which entities involved in the Work must submit waivers.
 4. Waiver Forms: Submit executed waivers of lien on forms acceptable to Owner.
 5. Submit final Application for Payment with or preceded by conditional final waivers from every entity involved with performance of the Work covered by the application who is lawfully entitled to a lien.
- I. Form AA-202: Monthly Project Workforce Reports.
- J. Application for Payment at Substantial Completion: After Architect issues the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.

1. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.
 - a. Complete administrative actions, submittals, and Work preceding this application, as described in Section 01 77 00 - Closeout Procedures.
 2. This application shall reflect Certificate(s) of Substantial Completion issued previously for Owner occupancy of designated portions of the Work.
- K. Final Payment Application: After completing Project closeout requirements, submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:
1. Evidence of completion of Project closeout requirements.
 2. Certification of completion of final punch list items.
 3. Insurance certificates for products and completed operations where required and proof that taxes (unless tax exempt), fees, and similar obligations were paid.
 4. Updated final statement, accounting for final changes to the Contract Sum.
 5. Evidence that claims have been settled.
 6. Maintenance Bond.
 7. Contractor's 'As-Built' documents in PDF file format, unless otherwise agreed upon in writing by Architect.
 8. Operations and Maintenance Manuals.
 9. Proof of 'attic stock' or 'extra materials' received by the Owner.
 10. Waivers and releases.
 11. Written Guarantee of 2-years.
 12. Completed Punchlist signed and notarized by the Contractor's authorized representative.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION 01 29 00

SECTION 01 31 00 - PROJECT MANAGEMENT AND COORDINATION

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. Section includes administrative provisions for coordinating construction operations on Project, including, but not limited to, the following:
 - 1. General coordination procedures.
 - 2. Coordination drawings.
 - 3. RFIs.
 - 4. Digital project management procedures.
 - 5. Web-based Project management software package.
 - 6. Project meetings.
- B. The contractor and its subcontractors shall participate in coordination requirements as described herein.
- C. Related Requirements:
 - 1. Section 01 32 00 - Construction Progress Documentation for preparing and submitting Contractor's construction schedule.
 - 2. Section 01 73 00 - Execution for procedures for coordinating general installation and field-engineering services, including establishment of benchmarks and control points.
 - 3. Section 01 77 00 - Closeout Procedures for coordinating closeout of the Contract.

1.03 DEFINITIONS

- A. RFI: Request for Information. Request from Owner, Architect, or Contractor seeking information required by or clarifications of the Contract Documents.

1.04 INFORMATIONAL SUBMITTALS

- A. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Include the following information in tabular form:
 - 1. Name, address, telephone number, and email address of entity performing subcontract or supplying products.
 - 2. Number and title of related Specification Section(s) covered by subcontract.
 - 3. Drawing number and detail references, as appropriate, covered by subcontract.

- B. Key Personnel Names: Within (15) days of issuance of the Notice to Proceed, submit a list of key personnel assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses, cellular telephone numbers, and e-mail addresses. Provide names, addresses, and telephone numbers of individuals assigned as alternates in the absence of individuals assigned to Project.
1. Post copies of list in Project meeting room. Keep list current at all times.

1.05 GENERAL COORDINATION PROCEDURES

- A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations included in different Sections that depend on each other for proper installation, connection, and operation. The Contractor shall be responsible for being the supervisor, manager, overseer, coordinator and expeditor of its Subcontractors. The Contractor shall have included in its bid a sufficient cost amount to furnish such administrative and supervisory duties.
1. The Lump Sum Single Prime Contractor "The Contractor" is the sole responsible party for the coordination of the entire project.
 2. The Contractor shall be responsible to coordinate and expedite the total construction process and all of its parts. The Owner relies upon the organization, management, skill, cooperation and efficiency of the Contractor to supervise, direct, control and manage the work and to coordinate and expedite the efforts of the other prime contractors and subcontractors so as to deliver the work conforming to the contract within the scheduled time. The Contractor is responsible for proper sequence and coordination. It shall determine the location of work and resolve conflicts amongst Contractors.
 3. The Contractor shall provide a qualified full-time staff member or members to manage the project on site. This CONSTRUCTION SUPERINTENDENT shall coordinate, organize, and manage the project from the contractor's on site field office and oversee their own work and the work of their sub-contractors. Should the prime contractor be responsible for multiple projects at different sites, or multiple locations on one large site, then the contractor shall provide a separate qualified superintendent for each of the projects or locations. This determination shall be made by and subject to the approval of the Owner, Construction Manager, and Architect who at all times may require additional manpower. The superintendent shall be responsible for onsite safety, quality assurance, conformance with the Contract Documents and perform coordination with all on site construction personnel and/or subcontractors. The Construction superintendent shall be subject to the approval of the Owner, Construction Manager, and Architect who at all times have the right to require the contractor to replace this Construction superintendent if they fail to perform.
 4. The Contractor's Project Manager shall coordinate, organize, and manage the project from the contractor's main office and oversee the shop drawing process signing off for quality assurance and conformance with the Contract Documents on each shop drawing. The project manager shall be subject to the approval of the Owner, Construction Manager, and Architect who at all times have the right to require the contractor to replace this project manager if they fail to perform.
 5. The other subcontractor's shall also have a designated superintendent and/or foreman who will at all times be subject to the approval of the Owner,

- Construction Manager, and Architect. The Owner, Construction Manager, and Architect reserves the right to require the Contractor to replace the superintendent and/or foreman if, in the opinion of the Owner, Construction Manager, and Architect, the superintendent and/or foreman is not performing satisfactorily.
6. Each subcontractor shall coordinate his activities with the activities of other contractors.
 7. The Contractor is required to submit a site logistics plan coordinating all Owner functions with the access and safety of the job site.
 8. The Contractor is required to coordinate all the inspection and material testing to meet the contract documents specifications.
 9. The Contractor has full and sole responsibility for construction methods and implementation of a "quality control system" to insure coordination.
 10. The Contractor is responsible for field verification of all dimensions/measurements for the coordination of materials and trades. Check field dimensions, clearances, relationships to available space, and anchors.
 11. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
 12. The Contractor shall make all necessary arrangements to conduct work so that all parts shall be carried on harmoniously and simultaneously or sequentially, so as components or increments of the same shall not interfere or retard the progress of others.
 13. The Contractor shall coordinate the delivery, unloading, movement, relocation, storage and protection of all materials.
 14. Coordinate installation of different components with other contractors to ensure maximum accessibility for required maintenance, service, and repair.
 15. Minor changes in locations of equipment, parts, etc. due to field conditions shall be made, if so directed, at no additional cost.
 16. The Contractor shall examine the drawings and dimensions and is responsible for satisfactory joining and fitting of all parts of the work.
 17. Make adequate provisions to accommodate items scheduled for later installation.
 18. Where availability of space is limited, coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair of all components, including mechanical and electrical.
 19. Schedule construction operations in sequence required to obtain the best results, where installation of one part of the Work depends on installation of other components, before or after its own installation.
- B. Prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.
1. Prepare similar memoranda for Owner and separate contractors if coordination of their Work is required.
- C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities, scheduled activities of other contractors, and direction of Project Coordinator to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
1. Preparation of Contractor's construction schedule.

2. Preparation of the schedule of values.
 3. Installation and removal of temporary facilities and controls.
 4. Delivery and processing of submittals.
 5. Progress meetings.
 6. Preinstallation conferences.
 7. Project closeout activities.
 8. Startup and adjustment of systems.
- D. Conservation: Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials.
1. Salvage materials and equipment involved in performance of, but not actually incorporated into, the Work. Refer to other Sections for disposition of salvaged materials that are designated as Owner's property.

1.06 COORDINATION DRAWINGS

- A. Coordination Drawings, General: Prepare coordination drawings according to requirements in individual Sections, and additionally where installation is not completely indicated on Shop Drawings, where limited space availability necessitates coordination, or if coordination is required to facilitate integration of products and materials fabricated or installed by more than one entity.
1. Content: Project-specific information, drawn accurately to a scale large enough to indicate and resolve conflicts. Do not base coordination drawings on standard printed data. Include the following information, as applicable:
 - a. Use applicable Drawings as a basis for preparation of coordination drawings. Prepare sections, elevations, and details as needed to describe relationship of various systems and components.
 - b. Coordinate the addition of trade-specific information to coordination drawings in a sequence that best provides for coordination of the information and resolution of conflicts between installed components before submitting for review.
 - c. Indicate functional and spatial relationships of components of architectural, structural, civil, mechanical, and electrical systems.
 - d. Indicate space requirements for routine maintenance and for anticipated replacement of components during the life of the installation.
 - e. Show location and size of access doors required for access to concealed dampers, valves, and other controls.
 - f. Indicate required installation sequences.
 - g. Indicate dimensions shown on Drawings. Specifically note dimensions that appear to be in conflict with submitted equipment and minimum clearance requirements. Provide alternative sketches to Architect indicating proposed resolution of such conflicts. Minor dimension changes and difficult installations will not be considered changes to the Contract.
 - h. Where availability of space is limited, coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair of all components, including mechanical and electrical.
- B. Coordination drawings shall be prepared in a joint effort by the Contractor and its Subcontractors to avoid material and equipment installation interference as well as project delays. The coordination drawings will clearly indicate locations, dimensions,

and elevations including, but not limited to, duct work, insulation, mechanical equipment, hot water supply and return piping, fire sprinkler work, electrical fixtures, electrical conduit, structural steel, beams, columns, joist, plumbing piping, plumbing equipment, ceiling grid, penetrations, lintels, etc. Additionally, any trade Contractor requiring a penetration to be made in wall, floor and or roof shall identify the required opening size and location. The size and type of lintel required for the penetration shall be required. Each Prime Contractor is responsible for laying out their necessary wall, floor or roof penetration.

- C. The Contractor will coordinate a meeting between its subcontractors to finalize the coordination review. Upon the final review as to the accuracy of the coordination drawings, Contractor's representative who has written authorization from the President of the Contractor to approve and sign-off on the coordination drawings will sign and date the coordination drawings. The Contractor will then submit copies of the signed and dated coordination drawing to the Architect for review. The signed coordination drawings shall be submitted to the Architect within (30) thirty calendar days from the date of Notice to Proceed. The Contractor that fails to furnish completed coordination drawings within the time specified shall be financially responsible for removals, repairs, patching, etc. caused by failure to provide coordination drawings at the time needed in coordination with the Contractor's Construction Schedule.
- D. As the work progresses, the Contractor shall familiarize itself with the work to be done by others in so far as it affects its work and shall promptly give such information to others as affects their mutual interests. The Contractor shall notify the Architect of any condition that might prevent the satisfactory completion of their work.
- E. The Contractor shall carefully check job space requirements with all other subcontractors to make sure that the combined work can be installed in the allotted spaces, chases, etc., with all piping, conduits, ductwork, etc. concealed from view. The Contractor shall coordinate its shop drawings with those of all other subcontractors. Coordination drawings shall be the mutual responsibility of all Contractors and Subcontractors involved. Any Contractor or its Subcontractor not coordinating its work with others will be responsible for any additional costs arising from lack of coordination. In the case of conflict between Contractors and its subcontractors, the Architect will have the final decision in accordance with the General Conditions of the Contract for Construction. If the Contractor fails to supply the proper sizes and locations, it shall be financially responsible for consequential corrective work.
- F. Coordination Drawing Organization: Organize coordination drawings as follows:
 - 1. Floor Plans and Reflected Ceiling Plans: Show architectural and structural elements, and mechanical, plumbing, fire-protection, fire-alarm, and electrical Work. Show locations of visible ceiling-mounted devices relative to acoustical ceiling grid. Supplement plan drawings with section drawings where required to adequately represent the Work.
 - 2. Plenum Space: Indicate subframing for support of ceiling, raised access floor, and wall systems, mechanical and electrical equipment, and related Work. Locate components within plenums to accommodate layout of light fixtures and other components indicated on Drawings. Indicate areas of conflict between light fixtures and other components.
 - 3. Mechanical Rooms: Provide coordination drawings for mechanical rooms, showing plans and elevations of mechanical, plumbing, fire-protection, fire-alarm, and electrical equipment.

4. Structural Penetrations: Indicate penetrations and openings required for all disciplines.
 5. Slab Edge and Embedded Items: Indicate slab edge locations and sizes and locations of embedded items for metal fabrications, sleeves, anchor bolts, bearing plates, angles, door floor closers, slab depressions for floor finishes, curbs and housekeeping pads, and similar items.
 6. Mechanical and Plumbing Work: Show the following:
 - a. Sizes and bottom elevations of ductwork, piping, and conduit runs, including insulation, bracing, flanges, and support systems.
 - b. Dimensions of major components, such as dampers, valves, diffusers, access doors, cleanouts, and electrical distribution equipment.
 - c. Fire-rated enclosures around ductwork.
 7. Electrical Work: Show the following:
 - a. Runs of vertical and horizontal conduit 1-1/4 inches in diameter and larger.
 - b. Light fixture, exit light, emergency battery pack, smoke detector, and other fire-alarm locations.
 - c. Panel board, switchboard, switchgear, transformer, busway, generator, and motor-control center locations.
 - d. Location of pull boxes and junction boxes dimensioned from column center lines.
 8. Fire-Protection System: Show the following:
 - a. Locations of standpipes, mains piping, branch lines, pipe drops, and sprinkler heads.
 9. Review: Architect will review coordination drawings to confirm that, in general, the Work is being coordinated, but not for the details of the coordination, which are Contractor's responsibility. If Architect determines that coordination drawings are not being prepared in sufficient scope or detail, or are otherwise deficient, Architect will so inform Contractor, who shall make suitable modifications and resubmit.
 - a. If the Architect determines that coordination drawings are not being prepared in a manner consistent with the design intent, such as conduit runs, piping and the like exposed without regard to aesthetic effect of the design intent of the contract documents, or are otherwise deficient, Architect will inform the Contractor, who shall make changes as directed at no additional cost to the Contract amount.
 10. Coordination Drawing Prints: Prepare coordination drawing prints according to requirements in Section 01 33 00 - Submittal Procedures.
- G. Coordination Drawing Process: Prepare coordination drawings in the following manner:
1. Schedule submittal and review of Fire Sprinkler, Plumbing, HVAC, and Electrical Shop Drawings to make required changes prior to preparation of coordination drawings.
 2. Commence routing of coordination drawing files with HVAC Installer, who will provide drawing plan files denoting approved ductwork. HVAC Installer will locate ductwork and piping on a single layer, using orange color. Forward drawings to Plumbing Installer.
 3. Plumbing Installer will locate plumbing and equipment on a single layer, using blue color.
 4. Fire Sprinkler Installer will locate piping and equipment, using red color. Fire Sprinkler Installer shall forward drawing files to Electrical Installer.

5. Electrical Installer will indicate service and feeder conduit runs and equipment in green color. Electrical Installer shall forward drawing files to Communications and Electronic Safety and Security Installer.
 6. Communications and Electronic Safety and Security Installer will indicate cable trays and cabling runs and equipment in purple color. Communications and Electronic Safety and Security Installer shall forward completed drawing files to Contractor.
 7. Contractor shall perform the final coordination review. As each coordination drawing is completed, Contractor will meet with Architect to review and resolve conflicts on the coordination drawings.
- H. Coordination Digital Data Files: Prepare coordination digital data files according to the following requirements:
1. File Preparation Format:
 - a. CAD drawing files (.DWG) or BIM model files (.RVT) or other format as mutually agreed upon by all parties responsible for preparation of coordination drawings.
 2. File Submittal Format: Submit or post coordination drawing files using PDF format.
 3. Architect will furnish Contractor one set of digital data files of Drawings for use in preparing coordination digital data files.
 - a. Architect makes no representations as to the accuracy or completeness of digital data files as they relate to Drawings.
 - b. Digital Data Software Program: Drawings files are available in BIM and/or CAD format in the latest software versions.
 - c. Contractor(s) shall execute an indemnification/hold-harmless document as provided by the Architect prior to the distribution of digital data files.

1.07 REQUEST FOR INFORMATION (RFI)

- A. General: Immediately on discovery of the need for additional information, clarification, or interpretation of the Contract Documents, Contractor shall prepare and submit an RFI in the form specified.
1. Architect will return without response those RFIs submitted to Architect by other entities controlled by Contractor.
 2. Coordinate and submit RFIs in a prompt manner to avoid delays in Contractor's work or work of subcontractors.
 3. If the Architect must prepare "responses to Contractor's Requests for Information" (RFI's) where such information is available to the Contractor from a careful study and comparison of the Contract Documents, field conditions, other Owner-provided information, Contractor-prepared coordination drawings, or Project correspondence or documentation the Owner will back-charge the Contractor for all costs associated with the additional Contract Administration Services provided by the Architect.
- B. Content of the RFI: Include a detailed, legible description of item needing information or interpretation and the following:
1. Project name.
 2. Name of Architect.
 3. Architect's Project number.
 4. Date.

5. Name of Contractor.
 6. RFI number, numbered sequentially.
 7. RFI subject.
 8. Specification Section number and title and related paragraphs, as appropriate.
 9. Drawing number and detail references, as appropriate.
 10. Field dimensions and conditions, as appropriate.
 11. Contractor's suggested resolution. If Contractor's suggested resolution impacts the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
 12. Contractor's signature.
 13. Attachments: Include sketches, descriptions, measurements, photos, Product Data, Shop Drawings, coordination drawings, and other information necessary to fully describe items needing interpretation.
 - a. Include dimensions, thicknesses, structural grid references, and details of affected materials, assemblies, and attachments on attached sketches.
- C. RFI Forms: Form bound in Project Manual or Software-generated form with substantially the same content as indicated above, acceptable to Architect.
1. Attachments shall be electronic files in PDF format.
- D. Architect's Action: Architect will review each RFI, determine action required, and respond. Allow (7) seven calendar days for Architect's response for each RFI. RFIs received by Architect after 1:00 p.m. will be considered as received the following working day.
1. The following Contractor-generated RFIs will be returned without action:
 - a. Requests for approval of submittals.
 - b. Requests for approval of substitutions.
 - c. Requests for approval of Contractor's means and methods.
 - d. Requests for coordination information already indicated in the Contract Documents.
 - e. Requests for adjustments in the Contract Time or the Contract Sum.
 - f. Requests for interpretation of Architect's actions on submittals.
 - g. Incomplete RFIs or inaccurately prepared RFIs.
 2. Architect's action may include a request for additional information, in which case Architect's time for response will date from time of receipt by Architect of additional information.
 3. Architect's action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Change Proposal according to Section 012600 "Contract Modification Procedures."
 - a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Architect in writing within (5) five days of receipt of the RFI response.
- E. RFI Log: Prepare, maintain, and submit a tabular log of RFIs organized by the RFI number. Submit log weekly and at each job meeting. Use software log that is part of Project management software which includes not less than the following:
1. Project name.
 2. Name and address of Contractor.
 3. Name and address of Architect.
 4. RFI number, including RFIs that were returned without action or withdrawn.
 5. RFI description.
 6. Date the RFI was submitted.

7. Date Architect response was received.
 8. Identification of related Minor Change in the Work, Construction Change Directive, and Proposal Request, as appropriate.
- F. On receipt of Architect's[and Construction Manager's] action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify Architect within (3) three days if Contractor disagrees with response.

1.08 DIGITAL PROJECT MANAGEMENT PROCEDURES

- A. Use of Architect's Digital Data Files: Digital data files of Architect's BIM model will be provided by Architect for Contractor's use during construction.
1. Digital data files may be used by Contractor in preparing coordination drawings, Shop Drawings, and Project Record Drawings.
 2. Architect makes no representations as to the accuracy or completeness of digital data files as they relate to Contract Drawings.
 3. Digital Drawing Software Program: Contract Drawings are available in Revit.
 4. Contractor shall execute a data licensing agreement in the form of Agreement form acceptable to Owner and Architect].
 - a. Subcontractors and other parties granted access by Contractor to Architect's digital data files shall execute a data licensing agreement in the form of Agreement acceptable to Owner and Architect.
- B. PDF Document Preparation: Where PDFs are required to be submitted to Architect, prepare as follows:
1. Assemble complete submittal package into a single indexed file, incorporating submittal requirements of a single Specification Section and transmittal form with links enabling navigation to each item.
 2. Name file with submittal number or other unique identifier, including revision identifier.
 3. Certifications: Where digitally submitted certificates and certifications are required, provide a digital signature with digital certificate on where indicated.

1.09 FIELD SUPERVISION

- A. The Contractor shall have a full-time superintendent present on site to supervise its work and that of its Subcontractors. At no time shall the Contractor or its Subcontractors be working on the Project without the Contractor's superintendent present. The Contractor shall submit the name of its Superintendent to the Architect prior to commencement of work.
- B. Each Prime Contractor shall have a full-time superintendent present on site to supervise its work and that of its subcontractors and to coordinate its own work with that of other Prime Contractors. At no time shall any Prime Contractor or its Subcontractors be working on the Project without the Prime Contractor's superintendent present. Each Prime Contractor shall submit the name of its Superintendent to the Architect prior to commencement of work.
- C. Field Supervisor shall be fluent in the English language to ensure full communications can be achieved during daily operations between Contractor, Architect, and Owner.

1.10 PROJECT MEETINGS

- A. Job Meetings shall be held at the Site, or elsewhere as designated by the Architect or Construction Manager, for each project at least once every two (2) weeks on a prescribed date and time of each month, or more often, as directed and required by the Architect or Construction Manager.
- B. It will be mandatory for the President of the Contractor to be present or have its representative present who has written authorization from the President of the Contractor to approve and sign-off on updated Contractors' Construction Schedule, etc. at every Meeting for project, unless previously excused by the Architect. A Contractor more than fifteen (15) minutes late to any meeting shall be viewed as not in attendance.
- C. General: Architect shall schedule and conduct meetings and conferences at Project site unless otherwise indicated.
 - 1. Attendees: Architect will inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notification to all parties of scheduled meeting dates and times shall be provided a minimum of (7) seven days prior to meeting. Contractor(s) will inform its subcontractors, suppliers, participants and others involved whose presence is required at scheduled meetings and times.
 - 2. Agenda: Architect may prepare a meeting agenda to distribute to all invited attendees.
 - 3. Minutes: Entity responsible for conducting meeting will record significant discussions and agreements achieved and distribute the meeting minutes to everyone concerned, including Architect and Owner, within (7) seven calendar days of the meeting.
- D. Preconstruction Conference: Contractor Architect will schedule and conduct a preconstruction conference before starting construction, at a time convenient to all interested parties, but no later than (15) fifteen days after execution of the Agreement.
 - 1. Attendees: Authorized representatives of Architect and Owner, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. Participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
 - 2. Agenda: Discuss items of significance that could affect progress, including the following:
 - a. Responsibilities and personnel assignments.
 - b. Tentative construction schedule prepared by the Contractor.
 - c. Phasing.
 - d. Critical work sequencing and long lead items.
 - e. Designation of key personnel and their duties.
 - f. Lines of communications.
 - g. Use of web-based Project software.
 - h. Procedures for processing field decisions and Change Orders.
 - i. Procedures for RFIs.
 - j. Procedures for testing and inspecting.
 - k. Procedures for processing Applications for Payment.

- l. Distribution of the Contract Documents.
 - m. Submittal procedures.
 - n. Preparation of Record Documents.
 - o. Use of the premises and any existing building.
 - p. Work restrictions.
 - q. Working hours.
 - r. Owner's occupancy requirements.
 - s. Responsibility for temporary facilities and controls.
 - t. Procedures for moisture and mold control.
 - u. Procedures for disruptions and shutdowns.
 - v. Construction waste management and recycling.
 - w. Parking availability.
 - x. Office, work, and storage areas.
 - y. Equipment deliveries and priorities.
 - z. First aid.
 - aa. Security.
 - bb. Progress cleaning.
3. Minutes: Entity responsible for conducting meeting will record and distribute meeting minutes.
- E. Preinstallation Conferences: Conduct a preinstallation conference at Project site before each construction activity when required by other Sections and when required for coordination with other construction.
1. Attendees: Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise Architect of scheduled meeting dates.
 2. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:
 - a. Contract Documents.
 - b. Options.
 - c. Related RFIs.
 - d. Related Change Orders.
 - e. Purchases.
 - f. Deliveries.
 - g. Submittals.
 - h. Sustainable design requirements.
 - i. Review of mockups.
 - j. Possible conflicts.
 - k. Compatibility requirements.
 - l. Time schedules.
 - m. Weather limitations.
 - n. Manufacturer's written instructions.
 - o. Warranty requirements.
 - p. Compatibility of materials.
 - q. Acceptability of substrates.
 - r. Temporary facilities and controls.
 - s. Space and access limitations.
 - t. Regulations of authorities having jurisdiction.

- u. Testing and inspecting requirements.
- v. Installation procedures.
- w. Coordination with other work.
- x. Required performance results.
- y. Protection of adjacent work.
- z. Protection of construction and personnel.
- 3. Record significant conference discussions, agreements, and disagreements, including required corrective measures and actions.
- 4. Reporting: Distribute minutes of the meeting to each party present and to other parties requiring information.
- 5. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.
- F. Project Closeout Conference: Schedule and conduct a project closeout conference, at a time convenient to Owner and Architect, but no later than 30 days prior to the scheduled date of Substantial Completion.
 - 1. Conduct the conference to review requirements and responsibilities related to Project closeout.
 - 2. Attendees: Authorized representatives of Owner, Architect and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the meeting. Participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
 - 3. Agenda: Discuss items of significance that could affect or delay Project closeout, including the following:
 - a. Preparation of Record Documents.
 - b. Procedures required prior to inspection for Substantial Completion and for final inspection for acceptance.
 - c. Procedures for completing and archiving web-based Project software site data files.
 - d. Submittal of written warranties.
 - e. Requirements for completing sustainable design documentation.
 - f. Requirements for preparing operations and maintenance data.
 - g. Requirements for delivery of material samples, attic stock, and spare parts.
 - h. Requirements for demonstration and training.
 - i. Preparation of Contractor's punch list.
 - j. Procedures for processing Applications for Payment at Substantial Completion and for final payment.
 - k. Submittal procedures.
 - l. Coordination of separate contracts.
 - m. Owner's partial occupancy requirements.
 - n. Installation of Owner's furniture, fixtures, and equipment.
 - o. Responsibility for removing temporary facilities and controls.
 - 4. Minutes: Entity conducting meeting will record and distribute meeting minutes.
- G. Progress Meetings: Architect will conduct progress meetings at a minimum, biweekly intervals on a prescribed date and time, or more often as directed or required by the Architect.
 - 1. Coordinate dates of meetings with preparation of payment requests.

2. Attendees: In addition to representatives of Owner, Architect and their consultants, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
 3. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
 - a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's construction schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
 - 1) Review schedule for next period.
 - b. Review present and future needs of each entity present, including the following:
 - 1) Interface requirements.
 - 2) Sequence of operations.
 - 3) Resolution of BIM component conflicts.
 - 4) Status of submittals.
 - 5) Status of sustainable design documentation.
 - 6) Deliveries.
 - 7) Off-site fabrication.
 - 8) Access.
 - 9) Site use.
 - 10) Temporary facilities and controls.
 - 11) Progress cleaning.
 - 12) Quality and work standards.
 - 13) Status of correction of deficient items.
 - 14) Field observations.
 - 15) Status of RFIs.
 - 16) Status of Proposal Requests.
 - 17) Pending changes.
 - 18) Status of Change Orders.
 - 19) Pending claims and disputes.
 - 20) Documentation of information for payment requests.
 4. Minutes: Entity responsible for conducting the meeting will record and distribute the meeting minutes to each party present and to parties requiring information.
 - a. Schedule Updating: Contractor(s) shall revise the construction schedule after each progress meeting, where revisions to the schedule have been made or recognized. Issue revised schedule within (4) four days of the concurrent progress meeting.
- H. Coordination Meetings: Contractor shall conduct Project coordination meetings at weekly intervals. Project coordination meetings are in addition to specific meetings held for other purposes, such as progress meetings and preinstallation conferences.

1. Attendees: In addition to representatives of Owner, Architect and their consultants, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the meetings shall be familiar with Project and authorized to conclude matters relating to the Work.
2. Agenda: Review and correct or approve minutes of the previous coordination meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
 - a. Combined Contractor's Construction Schedule: Review progress since the last coordination meeting. Determine whether each contract is on time, ahead of schedule, or behind schedule, in relation to combined Contractor's construction schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
 - b. Schedule Updating: Revise combined Contractor's construction schedule after each coordination meeting, where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with report of each meeting.
 - c. Review present and future needs of each contractor present, including the following:
 - 1) Interface requirements.
 - 2) Sequence of operations.
 - 3) Resolution of BIM component conflicts.
 - 4) Status of submittals.
 - 5) Deliveries.
 - 6) Off-site fabrication.
 - 7) Access.
 - 8) Site use.
 - 9) Temporary facilities and controls.
 - 10) Work hours.
 - 11) Hazards and risks.
 - 12) Progress cleaning.
 - 13) Quality and work standards.
 - 14) Status of RFIs.
 - 15) Proposal Requests.
 - 16) Change Orders.
 - 17) Pending changes.
3. Reporting: The contractor shall record meeting results and distribute copies to everyone in attendance including Owner, Architect and to others affected by decisions or actions resulting from each meeting.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION 01 31 00

SECTION 01 32 00 - CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract Documents, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. This Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:
 - 1. Contractor's Construction Schedule.
 - 2. Submittals Schedule.
 - 3. Daily construction reports.
 - 4. Field condition reports.

1.03 SUBMITTALS

- A. Submittals Schedule: Submit (2) two copies of schedule. Arrange the following information in a tabular format:
 - 1. Scheduled date for first submittal.
 - 2. Specification Section number and title.
 - 3. Submittal category (action or informational).
 - 4. Name of subcontractor.
 - 5. Description of the Work covered.
 - 6. Scheduled date for Architect's final release or approval.
- B. Contractor's Construction Schedule: Submit (2) two opaque copies of initial schedule, large enough to show entire schedule for entire construction period.
- C. Daily Construction Reports: Submit (2) two copies with each monthly application for payment.
- D. Material Location Reports: Submit (2) two copies with each monthly application for payment.
- E. Field Condition Reports: Submit (2) two copies at time of discovery of differing conditions.
- F. Special Reports: Submit (2) two copies weekly intervals.

1.04 QUALITY ASSURANCE

- A. Pre-scheduling Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination." Review methods and procedures related to the Preliminary Construction Schedule and

Contractor's Construction Schedule, including, but not limited to, the following:

1. Discuss constraints, including phasing, work stages, area separations, interim milestones, and partial Owner occupancy.
2. Review schedule for work of Owner's separate contracts.
3. Review requirements for tests and inspections by independent testing and inspecting agencies.
4. Review time required for completion and startup procedures.
5. Review and finalize list of construction activities to be included in schedule.
6. Review submittal requirements and procedures.
7. Review procedures for updating schedule.

1.05 COORDINATION

- A. Coordinate preparation and processing of schedules and reports with performance of construction activities and with scheduling and reporting of separate contractors.
- B. Coordinate Contractor's Construction Schedule with the Schedule of Values, list of subcontracts, Submittals Schedule, progress reports, payment requests, and other required schedules and reports.
 1. Secure time commitments for performing critical elements of the Work from parties involved.
 2. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

PART 2 PRODUCTS

2.01 SUBMITTALS SCHEDULE

- A. Preparation: Submit a schedule of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, re-submittal, ordering, manufacturing, fabrication, delivery, and installation when establishing dates.
 1. Coordinate Submittals Schedule with list of subcontracts, the Schedule of Values, and Contractor's Construction Schedule.
 2. Final Submittal: Submit concurrently with the first complete submittal of Contractor's Construction Schedule.

2.02 CONTRACTOR'S CONSTRUCTION SCHEDULE, GENERAL

- A. Time Frame: Extend schedule from date established for Notice to Proceed to date of Substantial and Final Completion.
 1. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.
- B. Activities: Treat separate areas as a separate numbered activity for each principal element of the Work. Comply with the following:
 1. Activity Duration: Define activities so no activity is longer than (10) ten calendar days, unless specifically allowed by Architect.
 2. Procurement Activities: Include procurement process activities for long lead items and major items, requiring a cycle of more than (60) sixty days, as separate activities in schedule. Procurement cycle activities include, but are not limited to,

- submittals, approvals, purchasing, fabrication, and delivery.
3. Submittal Review Time: Include review and resubmittal times indicated in Division 01 Section "Submittal Procedures" in schedule. Coordinate submittal review times in Contractor's Construction Schedule with Submittals Schedule.
 4. Startup and Testing Time: Include not less than (10) ten calendar days for startup and testing.
 5. Substantial Completion: Indicate completion in advance of date established for Substantial Completion, and allow time for Architect's administrative procedures necessary for certification of Substantial Completion and for Township inspections and issuance of a TCO or CO.
- C. Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule, and show how the sequence of the Work is affected.
1. Phasing: Arrange list of activities on schedule by phase.
 2. Work Restrictions: Show the effect of the following types of items on the schedule including, but not limited to:
 - a. Coordination with existing construction.
 - b. Limitations of continued occupancies.
 - c. Uninterruptible services.
 - d. Partial occupancy before Substantial Completion.
 - e. Use of premises restrictions.
 - f. Provisions for future construction.
 - g. Seasonal variations.
 - h. Environmental control.
 - i. Local ordinances.
 3. Work Stages: Indicate important stages of construction for each major portion of the Work, including, but not limited to, the following:
 - a. Subcontract awards.
 - b. Submittals.
 - c. Purchases.
 - d. Mockups.
 - e. Fabrication.
 - f. Sample testing.
 - g. Deliveries.
 - h. Installation.
 - i. Tests and inspections.
 - j. Adjusting.
 - k. Curing.
 - l. Startup and placement into final use and operation.
 4. Area Separations: Identify each major area of construction for each major portion of the Work. Indicate where each construction activity within a major area must be sequenced or integrated with other construction activities to provide for, but not limited to, the following:
 - a. Structural completion.
 - b. Permanent space enclosure.
 - c. Completion of mechanical installation.
 - d. Completion of electrical installation.
 - e. Substantial Completion.

- D. Milestones: Include any milestones indicated in the Contract Documents, in schedule, including, but not limited to, the Notice to Proceed, Substantial Completion, and Final Completion.
- E. Contract Modifications: For each proposed contract modification and concurrent with its submission, prepare a time-impact analysis using fragnets to demonstrate the effect of the proposed change on the overall project schedule.
- F. Computer Software: Prepare schedules using a program that has been developed specifically to manage construction schedules.
 - 1. Microsoft Projects, latest version, for Windows XP operating system for Gantt Charts

2.03 CONTRACTOR'S CONSTRUCTION SCHEDULE

- A. Contractor shall, within (15) fifteen calendar days after issuance of a Notice to Proceed, submit a draft Contractor's Construction Schedule detailing logic, tasks and durations along with a detailed submittal schedule to the Architect.
- B. Schedule: The General Contractor shall submit a comprehensive, fully developed, Contractor's Construction Schedule detailing logic, tasks and durations related to all work of the entire Project. The schedule shall not exceed time limits current under the Contract Documents for substantial completion of (each) phase and that of the Project.
- C. Preparation: Indicate each significant construction activity separately. Identify first workday of each week through to completion.

2.04 CONTRACTOR'S CONSTRUCTION SCHEDULE

- A. Each Prime Contractor shall, within (15) fifteen calendar days after issuance of a Notice to Proceed, submit a draft Contractor's Construction Schedule detailing logic, tasks and durations along with a detailed submittal schedule to the Project Coordinator.
- B. Gantt-Chart Schedule: The Project Coordinator shall submit a comprehensive, fully developed, horizontal Gantt-chart-type, Contractor's Construction Schedule within (30) thirty calendar days of date established for the Notice to Proceed. Base schedule on the Preliminary Construction Schedule and whatever updating and feedback was received since the start of Project. The schedule shall include the joint coordination, input and collective agreement of each Prime Contractor. Schedule shall be a comprehensive, fully developed, Contractor's Construction Schedule detailing logic, tasks and durations related to all work of the entire Project. The schedule shall not exceed time limits current under the Contract Documents for substantial completion of (each) phase and that of the Project.
- C. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line.
 - 1. For construction activities that require 3 months or longer to complete, indicate an estimated completion percentage in (10) ten percent increments within time bar.

2.05 CONTRACTOR'S CONSTRUCTION SCHEDULE

- A. General: Prepare network diagrams using AON (activity-on-node) format.

- B. Preliminary Bar-Chart-Schedule: Submit schedule within (15) fifteen days of date established for the Notice to Proceed. Outline significant construction activities for the first (60) sixty days of construction. Include skeleton diagram for the remainder of the Work based on indicated activities.
- C. CPM Schedule: Prepare Contractor's Construction Schedule using a computerized, time-scaled CPM network analysis diagram for the Work.
 - 1. Develop network diagram in sufficient time to submit CPM schedule so it can be accepted for use no later than (30) thirty days after date established for the Notice to Proceed.
 - 2. Failure to include any work item required for performance of this Contract shall not excuse Contractor from completing all work within applicable completion dates, regardless of Architect's approval of the schedule.
 - 3. Conduct educational workshops to train and inform key Project personnel, including subcontractors' personnel, in proper methods of providing data and using CPM schedule information.
 - 4. Establish procedures for monitoring and updating CPM schedule and for reporting progress. Coordinate procedures with progress meeting and payment request dates.
 - 5. Use "one workday" as the unit of time. Include list of nonworking days and holidays incorporated into the schedule.
- D. CPM Schedule Preparation: Prepare a list of all activities required to complete the Work. Using the preliminary network diagram, prepare a skeleton network to identify probable critical paths.
 - 1. Activities: Indicate the estimated time duration, sequence requirements, and relationship of each activity in relation to other activities. Include estimated time frames for the following activities:
 - a. Preparation and processing of submittals.
 - b. Mobilization and demobilization.
 - c. Purchase of materials.
 - d. Delivery.
 - e. Fabrication.
 - f. Utility interruptions.
 - g. Installation.
 - h. Work by Owner that may affect or be affected by Contractor's activities.
 - i. Testing .
 - 2. Critical Path Activities: Identify critical path activities, including those for interim completion dates. Scheduled start and completion dates shall be consistent with Contract milestone dates.
 - 3. Processing: Process data to produce output data on a computer-drawn, time-scaled network. Revise data, reorganize activity sequences, and reproduce as often as necessary to produce the CPM schedule within the limitations of the Contract Time.
 - 4. Format: Mark the critical path. Locate the critical path near center of network; locate paths with most float near the edges.
 - a. Subnetworks on separate sheets are permissible for activities clearly off the critical path.
- E. Initial Issue of Schedule: Prepare initial network diagram from a list of straight "early start-total float" sort. Identify critical activities. Prepare tabulated reports showing the

following:

1. Contractor or subcontractor and the Work or activity.
 2. Description of activity.
 3. Principal events of activity.
 4. Immediate preceding and succeeding activities.
 5. Early and late start dates.
 6. Early and late finish dates.
 7. Activity duration in workdays.
 8. Total float or slack time.
 9. Average size of workforce.
- F. Schedule Updating: Concurrent with making revisions to schedule, prepare tabulated reports showing the following:
1. Identification of activities that have changed.
 2. Changes in early and late start dates.
 3. Changes in early and late finish dates.
 4. Changes in activity durations in workdays.
 5. Changes in the critical path.
 6. Changes in total float or slack time.
 7. Changes in the Contract Time.

2.06 REPORTS

- A. Daily Construction Reports: Contractor shall prepare a daily construction report recording the following information concerning events at Project site: Failure to comply is cause for docking payment.
1. List of subcontractors at Project site.
 2. Approximate count of personnel at Project site.
 3. Equipment at Project site.
 4. Material deliveries.
 5. High and low temperatures and general weather conditions.
 6. Accidents.
 7. Meetings and significant decisions.
 8. Unusual events (refer to special reports).
 9. Stoppages, delays, shortages, and losses.
 10. Emergency procedures.
 11. Orders and requests of authorities having jurisdiction.
 12. Change Orders received and implemented.
 13. Construction Change Directives received and implemented.
 14. Substantial Completions authorized.
- B. Field Condition Reports: Immediately on discovery of a difference between field conditions and the Contract Documents, prepare and submit a detailed report. Submit with a request for information in Section 00 60 00 - Project Forms, Form 00 60 10 - Request for Information. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

2.07 SPECIAL REPORTS

- A. General: Submit special reports directly to Owner within weekly of an occurrence. Distribute copies of report to parties affected by the occurrence.
- B. Reporting Unusual Events: When an event of an unusual and significant nature occurs at Project site, whether or not related directly to the Work, prepare and submit a special report. List chain of events, persons participating, response by Contractor's personnel, evaluation of results or effects, and similar pertinent information. Advise Owner in advance when these events are known or predictable.

PART 3 EXECUTION

3.01 CONTRACTOR'S CONSTRUCTION SCHEDULE

- A. Meeting to Review and approve Contractor's Construction Schedule: (14) fourteen calendar days after receipt of the Contractor's Construction Schedule, the Owner and Architect, President of the Company or Corporation, of the Contractor, shall meet to review, agree and sign off on the Contractor's Construction in the presence of the Owner and Architect. Failure of the Contractor to sign off on the Contractor's Construction Schedule shall result in the assessment of liquidated damages as outlined in Section 00 62 12 - Supplementary Conditions - AIA A201-2017, article 8.4.
- B. Contractor's Construction Schedule Updating: At, at least, every 30 calendar days or as often as deemed necessary by the Architect, update schedule to reflect actual construction progress and activities and to recommend changes in the sequencing and scheduling. Issue schedule (1) one week before each regularly scheduled progress meeting. Upon (7) seven working days of the Architect's request, submit an updated schedule to the Architect.
 - 1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.
 - 2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.
 - 3. As the Work progresses, indicate Actual Completion percentage for each activity.
- C. The updated Contractors' Construction Schedule will be reviewed at each Job Meeting. Contractor is required to have a representative present at the Job Meeting with written authorization from the President of the Company or Corporation to review, agree upon and sign-off on any approved and agreed upon changes to the updated Contractors' Construction Schedule. Failure by Contractor to provide timely input in the time required to update the schedule shall result in the liability of the Contractor for liquidated damages. In addition, payment to the Contractor may result in the withholding of payments to the Contractor, and in the liability of the Contractor for liquidated damages, for failure of the Project to be completed within the designated time due to the Contractor's failure to cooperate. Contractor shall be responsible for meeting the overall Project's phased completion date(s) and overall substantial completion date.
- D. Any acceleration of the Contractor's Construction Schedule shall be agreed upon by the Contractor and approved by the Architect in writing.

- E. In the absence of a signed change order approving an extension of time, all Contractor Construction Schedule updates must show substantial completion date(s) consistent with the date(s) required in Section 011000 – Summary, paragraph 1.5.D. Changes in logistics or duration shall not be made, except for good cause, and shall not result in an extension of the time for substantial completion. In the event certain aspects of the work fall behind the Contractor's Construction Schedule, the Contractor(s) responsible shall, in coordination, and consultation with all other Contractors, will develop a recovery plan to revise logistics, add manpower resources to reduce durations, expedite procurement or advance start of activities, to get the project back on a schedule that will assure completion in accordance with the substantial completion date.
- F. Distribution: Distribute copies of approved schedule to Architect, Owner, testing agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.
 - 1. Post copies in Project meeting rooms or temporary field offices.
 - 2. When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

END OF SECTION 01 32 00

SECTION 01 32 33 - PHOTOGRAPHIC DOCUMENTATION

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. Section includes administrative and procedural requirements for the following:
 - 1. Preconstruction photographs.
 - 2. Periodic construction photographs.
 - 3. Final completion construction photographs.
- B. Related Requirements:
 - 1. Section 01 33 00 - Submittal Procedures for submitting photographic documentation.
 - 2. Section 01 77 00 - Closeout Procedures for submitting photographic documentation as project record documents at Project closeout.
 - 3. Section 01 79 00 - Demonstration and Training for submitting video recordings of demonstration of equipment and training of Owner's personnel.

1.03 INFORMATIONAL SUBMITTALS

- A. Key Plan: Submit key plan of Project site and building for Architect's notation of vantage points marked for location and direction of each photograph recording. Indicate elevation or story of construction. Include same information as corresponding photographic documentation. Architect shall select a minimum of (6) six views to be photographed and included with each Application for Payment.
- B. Digital Photographs:
 - 1. Digital Camera: Minimum sensor resolution of 8 megapixels.
 - 2. Format: Minimum resolution of 3200 by 2400 pixels, in unaltered original files, with same aspect ratio as the sensor, uncropped, date and time stamped, in folder named by date of photograph, accompanied by key plan file.
 - 3. Identification: Provide the following information with each image description in file metadata tag:
 - a. Date photograph was taken.
 - b. Description of vantage point, indicating location, direction (by compass point), and elevation or story of construction.
 - c. Unique sequential numerical identifier.

1.04 USAGE RIGHTS

- A. Obtain and transfer copyright usage rights from photographer to Owner and Architect for unlimited reproduction of photographic documentation.

PART 2 PRODUCTS

2.01 PHOTOGRAPHIC MEDIA

- A. Digital Images: Provide images in JPG format, produced by a digital camera with minimum sensor size of 8 megapixels, and at an image resolution of not less than 3200 by 2400 pixels.
- B. Digital Video Recordings: Provide high-resolution, digital video in format acceptable to Architect/Owner.

PART 3 EXECUTION

3.01 CONSTRUCTION PHOTOGRAPHS

- A. General: Take photographs using the maximum range of depth of field, and that are in focus, to clearly show the Work. Photographs with blurry or out-of-focus areas will not be accepted.
- B. Digital Images: Submit digital images exactly as originally recorded in the digital camera, without alteration, manipulation, editing, or modifications using image-editing software.
 - 1. Date and Time: Include date and time in file name for each image.
 - 2. Field Office Images: Maintain one set of images accessible in the field office at Project site, available at all times for reference. Identify images in the same manner as those submitted to Architect.
- C. Preconstruction Photographs: Before starting construction, take photographs of Project site and surrounding properties, including existing items to remain during construction, from different vantage points, as directed by Architect.
 - 1. Flag construction limits before taking construction photographs.
 - 2. Take a sufficient number of photographs to show existing conditions adjacent to property before starting the Work.
 - 3. Take a sufficient number of photographs of existing buildings either on or adjoining property to accurately record physical conditions at start of construction.
 - 4. Take additional photographs as required to record settlement or cracking of adjacent structures, pavements, and improvements.
- D. Periodic Construction Photographs: Take photographs at regular intervals throughout construction to document regular progress and major milestone, including but not limited to:
 - 1. Commencement of the Work, through completion of subgrade construction.
 - 2. Above-grade structural framing.
 - 3. Exterior building enclosure.
 - 4. Interior Work, through date of Substantial Completion.
- E. Submit periodic construction photographs with the cutoff date associated with each Application for Payment. Select vantage points to show status of construction and

progress since last photographs were taken.

- F. Architect-Directed Construction Photographs: From time to time, the Architect may instruct photographer about number and frequency of photographs and general directions on vantage points. Select actual vantage points and take photographs to show the status of construction and progress since last photographs were taken.
- G. Final Completion Construction Photographs: Take 20 color photographs after date of Substantial Completion for submission as project record documents. Architect will inform photographer of desired vantage points.
 - 1. Do not include date stamp.
- H. Additional Photographs: Architect may request photographs in addition to periodic photographs specified.
 - 1. In emergency situations, take additional photographs within 24 hours of request.
 - 2. Circumstances that could require additional photographs include, but are not limited to, the following:
 - a. Special events planned at Project site.
 - b. Immediate follow-up when on-site events result in construction damage or losses.
 - c. Photographs to be taken at fabrication locations away from Project site..
 - d. Substantial Completion of a major phase or component of the Work.
 - e. Extra record photographs at time of final acceptance.
 - f. Owner's request for special publicity photographs.

END OF SECTION 01 32 33

SECTION 01 33 00 - SUBMITTAL PROCEDURES

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. Section Includes:
 - 1. Submittal schedule requirements.
 - 2. Administrative and procedural requirements for submittals.
- B. Related Requirements:
 - 1. Section 01 29 00 - Payment Procedures for submitting Applications for Payment and the schedule of values.
 - 2. Section 01 31 00 - Project Management and Coordination for submitting coordination drawings and subcontract list and for requirements for web-based Project software.
 - 3. Section 01 32 00 - Construction Progress Documentation for submitting schedules and reports, including Contractor's construction schedule.
 - 4. Section 01 32 33 - Photographic Documentation for submitting preconstruction photographs, periodic construction photographs, and Final Completion construction photographs.
 - 5. Section 01 77 00 - Closeout Procedures for submitting closeout submittals and maintenance material submittals.
 - 6. Section 01 78 23 - Operation and Maintenance Data for submitting operation and maintenance manuals.
 - 7. Section 01 78 39 - Project Record Documents 017839 "Project Record Documents" for submitting record Drawings, record Specifications, and record Product Data.
 - 8. Section 01 79 00 - Demonstration and Training for submitting video recordings of demonstration of equipment and training of Owner's personnel.

1.03 DEFINITIONS

- A. Action Submittals: Written and graphic information and physical samples that require Architect's responsive action. Action submittals are those submittals indicated in individual Specification Sections as "action submittals."
- B. Informational Submittals: Written and graphic information and physical samples that do not require Architect's responsive action. Submittals may be rejected for not complying with requirements. Informational submittals are those submittals indicated in individual Specification Sections as "informational submittals."

1.04 SUBMITTAL SCHEDULE

- A. Submittal Schedule: Submit, as an action submittal, a list of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, ordering, manufacturing, fabrication, and delivery when establishing dates. Include additional time required for making corrections or revisions to submittals noted by Architect and additional time for handling and reviewing submittals required by those corrections.
 - 1. Coordinate submittal schedule with list of subcontracts, the schedule of values, and Contractor's construction schedule.
 - 2. Final Submittal Schedule: Submit concurrently with the first complete submittal of Contractor's construction schedule.
 - a. Submit revised submittal schedule as required to reflect changes in current status and timing for submittals.
 - 3. Format: Arrange the following information in a tabular format:
 - a. Scheduled date for first submittal.
 - b. Specification Section number and title.
 - c. Submittal Category: Action; informational.
 - d. Name of subcontractor.
 - e. Description of the Work covered.
 - f. Scheduled date for Architect's final release or approval.
- B. No extension of contract time will be considered or authorized because of failure to transmit submittals far enough in advance of the work to permit processing.

1.05 SUBMITTAL FORMATS

- A. Submittal Information: All submittals shall include the Architects "Submittal Cover Sheet" as provided in the Project Manual, or approved document equivalent; and shall contain the following information in each submittal:
 - 1. Project name.
 - 2. Date.
 - 3. Name of Architect.
 - 4. Name of Contractor.
 - 5. Name of firm or entity that prepared submittal.
 - 6. Names of subcontractor, manufacturer, and supplier.
 - 7. Unique submittal number, including revision identifier. Include Specification Section number with sequential alphanumeric identifier and alphanumeric suffix for resubmittals.
 - 8. Number and title of Specification Section, with paragraph number and generic name for each of multiple items.
 - 9. Drawing number and detail references, as appropriate.
 - 10. Indication of full or partial submittal.
 - 11. Location(s) where product is to be installed, as appropriate.
 - 12. Other necessary identification.
 - 13. Remarks.
 - 14. Signature of transmitter.
- B. Options: Identify options requiring selection by Architect.

- C. Deviations and Additional Information: On each submittal, clearly indicate deviations from requirements in the Contract Documents, including minor variations and limitations; include relevant additional information and revisions, other than those requested by Architect on previous submittals. Indicate by highlighting on each submittal or noting on attached separate sheet.
- D. Paper Submittals:
 - 1. Place a permanent label or title block on each submittal item for identification; include name of firm or entity that prepared submittal.
 - 2. Provide a space approximately 6 by 8 inches on label or beside title block to record Contractor's review and approval markings and action taken by Architect.
 - 3. Action Submittals: Submit (3) three paper copies of each submittal unless otherwise indicated. Architect will return (2) two copies.
 - 4. Informational Submittals: Submit (2) two paper copies of each submittal unless otherwise indicated. Architect will not return copies.
 - 5. Additional Copies: Unless additional copies are required for final submittal, and unless Architect observes noncompliance with provisions in the Contract Documents, initial submittal may serve as final submittal.
- E. Electronic Submittals: Prepare submittals as a PDF package, incorporating complete information into each PDF file. Name PDF file with submittal number and a brief description.
 - 1. Transmittal for Submittals: Assemble each submittal individually and appropriately for transmittal and handling. Transmit each submittal using the Architect's "Submittal Cover Sheet" as included in Project Manual and Contractor's transmittal form. The Architect will return submittals, without review, received from sources other than the Contractor and those submittals received without the Architect's "Submittal Cover Sheet" and/or Contractor's transmittal form.

1.06 SUBMITTAL PROCEDURES

- A. Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in individual Specification Sections.
 - 1. Email: Prepare submittals as PDF package and transmit to Architect by sending via email. Include PDF of Contractor's transmittal form and Architects "Submittal Cover Sheet". Include information in email subject line as requested by Architect.
 - a. Architect will return annotated file. Annotate and retain one copy of file as a digital Project Record Document file.
- B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.
 - 1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
 - 2. Submit all submittal items required for each Specification Section concurrently unless partial submittals for portions of the Work are indicated on approved submittal schedule.
 - 3. Submit action submittals and informational submittals required by the same Specification Section as separate packages under separate transmittals.
 - 4. Coordinate transmittal of submittals for related parts of the Work specified in different Sections, so processing will not be delayed because of need to review submittals concurrently for coordination.

- a. Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
- C. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Architect's receipt of a fully prepared and complete submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.
 - 1. Initial Review: Allow fifteen (15) business days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Architect will advise Contractor when a submittal being processed must be delayed for coordination.
 - 2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
 - 3. Resubmittal Review: Allow fifteen (15) business days for review of each resubmittal.
 - 4. Sequential Review: Where sequential review of submittals by Architect's consultants, Owner, or other parties is indicated, allow twenty (20) business days for initial review of each submittal. Sequential reviews may include, but are not limited to the following:
 - a. Structural foundations and base plates.
 - b. Structural steel framing and decking.
 - c. HVAC systems and components.
 - d. Plumbing systems and components.
 - e. Electrical systems and components.
 - 5. Concurrent Consultant Review: Where the Contract Documents indicate that submittals may be transmitted simultaneously to Architect and to Architect's consultants, allow fifteen (15) business days for review of each submittal. Submittal will be returned to Architect before being returned to Contractor.
 - a. Submit one copy of submittal to concurrent reviewer(s) in addition to copies to Architect.
- D. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.
 - 1. Note date and content of previous submittal.
 - 2. Note date and content of revision in label or title block, and clearly indicate extent of revision.
 - 3. Resubmit submittals until they are marked with approval notation from Architect's action stamp.
- E. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.
- F. Use for Construction: Retain complete copies of submittals on Project site. Use only final action submittals that are marked with approval notation from Architect's action stamp.

1.07 SUBMITTAL REQUIREMENTS

- A. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.
 - 1. If information must be specially prepared for submittal because standard published data are unsuitable for use, submit as Shop Drawings, not as Product Data.
 - 2. Mark each copy of each submittal to show which products and options are applicable.
 - 3. Include the following information, as applicable:
 - a. Manufacturer's catalog cuts.
 - b. Manufacturer's product specifications.
 - c. Standard color charts.
 - d. Statement of compliance with specified referenced standards.
 - e. Testing by recognized testing agency.
 - f. Application of testing agency labels and seals.
 - g. Notation of coordination requirements.
 - h. Availability and delivery time information.
 - 4. For equipment, include the following in addition to the above, as applicable:
 - a. Wiring diagrams that show factory-installed wiring.
 - b. Printed performance curves.
 - c. Operational range diagrams.
 - d. Clearances required to other construction, if not indicated on accompanying Shop Drawings.
 - 5. Submit Product Data before Shop Drawings, and before or concurrently with Samples.
- B. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data unless submittal based on Architect's digital data drawing files is otherwise permitted.
 - 1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:
 - a. Dimensions
 - b. Identification of products.
 - c. Fabrication and installation drawings.
 - d. Rough-in and setting diagrams.
 - e. Shop work manufacturing instruction.
 - f. Templates and patterns.
 - g. Design calculations.
 - h. Schedules.
 - i. Compliance with specified standards.
 - j. Notation of coordination requirements.
 - k. Notation of dimensions established by field measurement.
 - l. Relationship and attachment to adjoining construction clearly indicated.
 - m. Seal and signature of professional engineer if specified, within the state Project is located.
 - n. Wiring diagrams showing field-installed wiring, including power, signal and control wiring.
 - o. Wiring diagrams differentiating between manufacturer-installed and field-installed wiring and responsibilities for who makes the final connections.

2. Paper Sheet Size: Except for templates, patterns, and similar full-size Drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches, but no larger than 30 by 42 inches.
 - a. Submit Shop Drawings to Architect via email or other electronic media transfer.
 - b. For larger projects where shop drawing quantities and file sizes may limit the amount of media allowed to be electronically transferred, Shop Drawing packages may be broken down into smaller groups. In this case, file names should be clearly identified with a description (i.e. Part 1, Part 2, etc.) to alert recipients to the receipt of multiple files.
- C. Samples: Submit Samples for review of type, color, pattern, and texture for a check of these characteristics with other materials.
 1. Transmit Samples that contain multiple, related components, such as accessories together in one submittal package.
 2. Identification: Permanently attach label on unexposed side of Samples that includes the following:
 - a. Project name and submittal number.
 - b. Generic description of Sample.
 - c. Product name and name of manufacturer.
 - d. Sample source.
 - e. Number and title of applicable Specification Section.
 - f. Specification paragraph number and generic name of each item.
 3. Email Transmittal: Provide PDF transmittal. Include digital image file illustrating Sample characteristics and identification information for record.
 4. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.
 - a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
 - b. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.
 5. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units, showing the full range of colors, textures, and patterns available.
 - a. Number of Samples: Submit two full sets of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Submit one directly to Owner and one to Architect. Architect will return submittal with options selected.
 6. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.

- a. Number of Samples: Submit (2) two sets of Samples. Architect will retain one Sample set; remainder will be provided to the Owner to be retained on site for future verification.
 - 1) Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.
 - 2) If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least (3) three sets of paired units that show approximate limits of variations.
- D. Product Schedule: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:
 - 1. Type of product. Include unique identifier for each product indicated in the Contract Documents or assigned by Contractor if none is indicated.
 - 2. Manufacturer and product name, and model number if applicable.
 - 3. Number and name of room or space.
 - 4. Location within room or space.
- E. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, contact information of architects and owners, and other information specified.
- F. Design Data: Prepare and submit written and graphic information indicating compliance with indicated performance and design criteria in individual Specification Sections. Include list of assumptions and summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Number each page of submittal.
- G. Certificates:
 - 1. Certificates and Certifications Submittals: Submit a statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity. Provide a notarized signature where indicated.
 - 2. Installer Certificates: Submit written statements on manufacturer's letterhead, certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.
 - 3. Manufacturer Certificates: Submit written statements on manufacturer's letterhead, certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.
 - 4. Material Certificates: Submit written statements on manufacturer's letterhead, certifying that material complies with requirements in the Contract Documents.
 - 5. Product Certificates: Submit written statements on manufacturer's letterhead, certifying that product complies with requirements in the Contract Documents.
 - 6. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of AWS B2.1 on AWS forms. Include names of firms and personnel certified.
- H. Test and Research Reports:
 - 1. Compatibility Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written

- recommendations for substrate preparation and primers required.
2. Field Test Reports: Submit written reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.
 3. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.
 4. Preconstruction Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.
 5. Product Test Reports: Submit written reports indicating that current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.
 6. Research Reports: Submit written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project. Include the following information:
 - a. Name of evaluation organization.
 - b. Date of evaluation.
 - c. Time period when report is in effect.
 - d. Product and manufacturers' names.
 - e. Description of product.
 - f. Test procedures and results.
 - g. Limitations of use.

1.08 DELEGATED-DESIGN SERVICES

- A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.
 1. If criteria indicated are insufficient to perform services or certification required, submit a written request for additional information to Architect.
- B. Delegated-Design Services Certification: In addition to Shop Drawings, Product Data, and other required submittals, submit digitally signed PDF files and (2) two paper copies of certificate, signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional.
 1. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.
 2. Responsible design professional shall be licensed in the state which the Project is located.

1.09 CONTRACTOR'S REVIEW

- A. Action Submittals and Informational Submittals: Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Architect.
- B. Contractor's Approval: Indicate Contractor's approval for each submittal with a uniform approval stamp or indication in web-based Project management software. Include name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.
 - 1. Architect will not review submittals received from Contractor that do not have Contractor's review and approval, and will return the same without action.

1.10 ARCHITECT'S REVIEW

- A. Action Submittals: Architect will review each submittal, indicate corrections or revisions required, and return.
 - 1. PDF Submittals: Architect will indicate, via markup on each submittal, the appropriate action, as follows:
 - a. Approved: Submittal contents have been reviewed without comment. Resubmission is not required.
 - b. Approved as Noted: Submittal contents have been reviewed with comments included. Resubmission is not required, unless specifically directed by Architect for purposes of 'record' or other indicated purpose.
 - c. Revise and Resubmit: Submittal contents have been reviewed and require resubmission based on the quantity or content of the comments included. Contractor shall not release material until resubmission is made with an 'Approved' or 'Approved as Noted' result.
 - d. Rejected: Submittal contents have been reviewed and found to be in non-conformance with the requirements of the contract drawings and/or specifications, lack sufficient information for a complete review or as otherwise noted in the Architect comments. Contractor shall not release material until resubmission is made with an 'Approved' or 'Approved as Noted' result.
 - e. Information/Record Only: Submittal contents is not required or is of a non-reviewable nature. At the Architect's discretion, the submittal may be returned without action or retains for record purposes only.
- B. Informational Submittals: Architect will review each submittal and will not return it, or will return it if it does not comply with requirements. Architect will forward each submittal to appropriate party.
- C. Partial submittals prepared for a portion of the Work will be reviewed when use of partial submittals has received prior approval from Architect.
- D. Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review.
- E. Architect will return without review submittals received from sources other than Contractor.
- F. Submittals not required by the Contract Documents will be returned by Architect without action.

- G. Whether specifically indicated or not on the returned submittal, the Architect's review does not include review of Material Safety Data Sheets (MSDS) where submitted with other received submittal information.
1. MSDS information shall always be maintained by the Contractor's field personnel and kept up to date. Include and catalog new MSDS sheets as materials are brought onto each Project and/or site.
 2. Record copies of MSDS information shall be required to be organized into a Project binder for each individual Project and/or site. Duplicate copies shall be provided to the Owner's designated representative.

1.11 CONTRACTOR'S USE OF ARCHITECT'S ELECTRONIC DIGITAL DATA FILES

- A. General: At Contractor's written request, copies of Architect's digital data files may be conditionally provided to Contractor for Contractor's use in connection with Project, subject to the following conditions:
1. Contractor will be required to sign an Indemnification and Hold Harmless Agreement in form provided by the Architect for the use of original electronic digital data created by the Architect.
 2. Electronic digital data files will be provided only for the specific purpose of providing a reference document to the Contractor to be used for backgrounds for the completion by the Contractor of shop drawings only.
 3. The Contractor shall agree the electronic digital data information is for reference purposes only and that the Architect provides no warranty of any kind, written or implied, as to the completeness or accuracy of the electronic digital data files.
 4. The Contractor shall agree to hold all information contained in the electronic digital data files confidential and protect it against use by others.
 5. The Contractor shall be required to indemnify and hold harmless the Architect, its principals, employees and consultants in accordance with all terms and conditions listed in the Architect's Indemnification and Hold Harmless Agreement.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION 01 33 00

SECTION 01 42 00 - REFERENCES

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.02 DEFINITIONS

- A. General: Basic Contract definitions are included in the Conditions of the Contract.
- B. "Approved": When used to convey Architect's action on Contractor's submittals, applications, and requests, "approved" is limited to Architect's duties and responsibilities as stated in the Conditions of the Contract.
- C. "Directed": A command or instruction by Architect. Other terms including "requested," "authorized," "selected," "required," and "permitted" have the same meaning as "directed."
- D. "Indicated": Requirements expressed by graphic representations or in written form on Drawings, in Specifications, and in other Contract Documents. Other terms including "shown," "noted," "scheduled," and "specified" have the same meaning as "indicated."
- E. "Regulations": Laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, and rules, conventions, and agreements within the construction industry that control performance of the Work.
- F. "Furnish": Supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.
- G. "Install": Unload, temporarily store, unpack, assemble, erect, place, anchor, apply, work to dimension, finish, cure, protect, clean, and similar operations at Project site.
- H. "Provide": Furnish and install, complete and ready for the intended use.
- I. "Project Site": Space available for performing construction activities. The extent of Project site is shown on Drawings and may or may not be identical with the description of the land on which Project is to be built.

1.03 INDUSTRY STANDARDS

- A. Applicability of Standards: Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.
- B. Publication Dates: Comply with standards in effect as of date of the Contract Documents unless otherwise indicated.
 - 1. For standards referenced by applicable building codes, comply with dates of standards as listed in building codes.

- C. Copies of Standards: Each entity engaged in construction on Project should be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.
1. Where copies of standards are needed to perform a required construction activity, obtain copies directly from publication source.

1.04 ABBREVIATIONS AND ACRONYMS

- A. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. The information in this list is subject to change and is believed to be accurate as of the date of the Contract Documents.
1. AABC - Associated Air Balance Council; www.aabc.com.
 2. AAMA - American Architectural Manufacturers Association; www.aamanet.org.
 3. AAPFCO - Association of American Plant Food Control Officials; www.aapfco.org.
 4. AASHTO - American Association of State Highway and Transportation Officials; www.transportation.org.
 5. AATCC - American Association of Textile Chemists and Colorists; www.aatcc.org.
 6. ABMA - American Bearing Manufacturers Association; www.americanbearings.org.
 7. ABMA - American Boiler Manufacturers Association; www.abma.com.
 8. ACI - American Concrete Institute; (Formerly: ACI International); www.concrete.org.
 9. ACPA - American Concrete Pipe Association; www.concrete-pipe.org.
 10. AEIC - Association of Edison Illuminating Companies, Inc. (The); www.aeic.org.
 11. AF&PA - American Forest & Paper Association; www.afandpa.org.
 12. AGA - American Gas Association; www.aga.org.
 13. AHAM - Association of Home Appliance Manufacturers; www.aham.org.
 14. AHRI - Air-Conditioning, Heating, and Refrigeration Institute (The); www.ahrinet.org.
 15. AI - Asphalt Institute; www.asphaltinstitute.org.
 16. AIA - American Institute of Architects (The); www.aia.org.
 17. AISC - American Institute of Steel Construction; www.aisc.org.
 18. AISI - American Iron and Steel Institute; www.steel.org.
 19. AITC - American Institute of Timber Construction; www.aitc-glulam.org.
 20. AMCA - Air Movement and Control Association International, Inc.; www.amca.org.
 21. ANSI - American National Standards Institute; www.ansi.org.
 22. AOSA - Association of Official Seed Analysts, Inc.; www.aosaseed.com.
 23. APA - APA - The Engineered Wood Association; www.apawood.org.
 24. APA - Architectural Precast Association; www.archprecast.org.
 25. API - American Petroleum Institute; www.api.org.
 26. ARI - Air-Conditioning & Refrigeration Institute; (See AHRI).
 27. ARI - American Refrigeration Institute; (See AHRI).
 28. ARMA - Asphalt Roofing Manufacturers Association; www.asphaltroofing.org.
 29. ASCE - American Society of Civil Engineers; www.asce.org.
 30. ASCE/SEI - American Society of Civil Engineers/Structural Engineering Institute; (See ASCE).

31. ASHRAE - American Society of Heating, Refrigerating and Air-Conditioning Engineers; www.ashrae.org.
32. ASME - ASME International; (American Society of Mechanical Engineers); www.asme.org.
33. ASSE - American Society of Sanitary Engineering; www.asse-plumbing.org.
34. ASSP - American Society of Safety Professionals (The); www.assp.org.
35. ASTM - ASTM International; www.astm.org.
36. ATIS - Alliance for Telecommunications Industry Solutions; www.atis.org.
37. AVIXA - Audiovisual and Integrated Experience Association; (Formerly: Infocomm International); www.soundandcommunications.com.
38. AWEA - American Wind Energy Association; www.awea.org.
39. AWI - Architectural Woodwork Institute; www.awinet.org.
40. AWMAC - Architectural Woodwork Manufacturers Association of Canada; www.awmac.com.
41. AWPA - American Wood Protection Association; www.awpa.com.
42. AWS - American Welding Society; www.aws.org.
43. AWWA - American Water Works Association; www.awwa.org.
44. BHMA - Builders Hardware Manufacturers Association; www.buildershardware.com.
45. BIA - Brick Industry Association (The); www.gobrick.com.
46. BICSI - BICSI, Inc.; www.bicsi.org.
47. BIFMA - BIFMA International; (Business and Institutional Furniture Manufacturer's Association); www.bifma.org.
48. BISSC - Baking Industry Sanitation Standards Committee; www.bissc.org.
49. BWF - Badminton World Federation; (Formerly: International Badminton Federation); www.bissc.org.
50. CDA - Copper Development Association; www.copper.org.
51. CE - Conformite Europeenne; www.ec.europa.eu/growth/single-market/ce-marking.
52. CEA - Canadian Electricity Association; www.electricity.ca.
53. CFFA - Chemical Fabrics and Film Association, Inc.; www.chemicalfabricsandfilm.com.
54. CFSEI - Cold-Formed Steel Engineers Institute; www.cfsei.org.
55. CGA - Compressed Gas Association; www.cganet.com.
56. CIMA - Cellulose Insulation Manufacturers Association; www.cellulose.org.
57. CISCA - Ceilings & Interior Systems Construction Association; www.cisca.org.
58. CISPI - Cast Iron Soil Pipe Institute; www.cispi.org.
59. CLFMI - Chain Link Fence Manufacturers Institute; www.chainlinkinfo.org.
60. CPA - Composite Panel Association; www.compositepanel.org.
61. CRI - Carpet and Rug Institute (The); www.carpet-rug.org.
62. CRRC - Cool Roof Rating Council; www.coolroofs.org.
63. CRSI - Concrete Reinforcing Steel Institute; www.crsi.org.
64. CSA - CSA Group; www.csa-group.org.
65. CSI - Construction Specifications Institute (The); www.csiresources.org.
66. CSSB - Cedar Shake & Shingle Bureau; www.cedarbureau.org.
67. CTA - Consumer Technology Association; www.cta.tech.
68. CTI - Cooling Technology Institute; (Formerly: Cooling Tower Institute); www.coolingtechnology.org.
69. CWC - Composite Wood Council; (See CPA).

70. DASMA - Door and Access Systems Manufacturers Association; www.dasma.com.
71. DHA - Decorative Hardwoods Association; (Formerly: Hardwood Plywood & Veneer Association); www.decorativehardwoods.org.
72. DHI - Door and Hardware Institute; www.dhi.org.
73. ECA - Electronic Components Association; (See ECIA).
74. ECAMA - Electronic Components Assemblies & Materials Association; (See ECIA).
75. ECIA - Electronic Components Industry Association; www.ecianow.org.
76. EIA - Electronic Industries Alliance; (See TIA).
77. EIMA - EIFS Industry Members Association; www.eima.com.
78. EJMA - Expansion Joint Manufacturers Association, Inc.; www.ejma.org.
79. EOS/ESD Association; (Electrostatic Discharge Association); www.esda.org.
80. ESTA - Entertainment Services and Technology Association; (See PLASA).
81. ETL - Intertek (See Intertek); www.intertek.com.
82. EVO - Efficiency Valuation Organization; www.evo-world.org.
83. FCI - Fluid Controls Institute; www.fluidcontrolsinstitute.org.
84. FIBA - Federation Internationale de Basketball; (The International Basketball Federation); www.fiba.com.
85. FIVB - Federation Internationale de Volleyball; (The International Volleyball Federation); www.fivb.org.
86. FM Approvals - FM Approvals LLC; www.fmglobal.com.
87. FM Global - FM Global; (Formerly: FMG - FM Global); www.fmglobal.com.
88. FRSA - Florida Roofing, Sheet Metal Contractors Association, Inc.; www.floridarooft.com.
89. FSA - Fluid Sealing Association; www.fluidsealing.com.
90. FSC - Forest Stewardship Council U.S.; www.fscus.org.
91. GA - Gypsum Association; www.gypsum.org.
92. GANA - Glass Association of North America; (See NGA).
93. GS - Green Seal; www.greenseal.org.
94. HI - Hydraulic Institute; www.pumps.org.
95. HI/GAMA - Hydronics Institute/Gas Appliance Manufacturers Association; (See AHRI).
96. HMMA - Hollow Metal Manufacturers Association; (See NAAMM).
97. HPVA - Hardwood Plywood & Veneer Association; (See DHA).
98. HPW - H. P. White Laboratory, Inc.; www.hpwhite.com.
99. IAPSC - International Association of Professional Security Consultants; www.iapsc.org.
100. IAS - International Accreditation Service; www.iasonline.org.
101. ICBO - International Conference of Building Officials; (See ICC).
102. ICC - International Code Council; www.iccsafe.org.
103. ICEA - Insulated Cable Engineers Association, Inc.; www.icea.net.
104. ICPA - International Cast Polymer Association; www.theicpa.com.
105. ICRI - International Concrete Repair Institute, Inc.; www.icri.org.
106. IEC - International Electrotechnical Commission; www.iec.ch.
107. IEEE - Institute of Electrical and Electronics Engineers, Inc. (The); www.ieee.org.
108. IES - Illuminating Engineering Society; (Formerly: Illuminating Engineering Society of North America); www.ies.org.

109. IESNA - Illuminating Engineering Society of North America; (See IES).
110. IEST - Institute of Environmental Sciences and Technology; www.iest.org.
111. IGMA - Insulating Glass Manufacturers Alliance; www.igmaonline.org.
112. IGSHPA - International Ground Source Heat Pump Association; www.igshpa.org.
113. II - Infocomm International; (See AVIXA).
114. ILI - Indiana Limestone Institute of America, Inc.; www.iliai.com.
115. Intertek - Intertek Group; (Formerly: ETL SEMCO; Intertek Testing Service NA); www.intertek.com.
116. ISA - International Society of Automation (The); (Formerly: Instrumentation, Systems, and Automation Society); www.isa.org.
117. ISAS - Instrumentation, Systems, and Automation Society (The); (See ISA).
118. ISFA - International Surface Fabricators Association; (Formerly: International Solid Surface Fabricators Association); www.isfanow.org.
119. ISO - International Organization for Standardization; www.iso.org.
120. ISSFA - International Solid Surface Fabricators Association; (See ISFA).
121. ITU - International Telecommunication Union; www.itu.int.
122. KCMA - Kitchen Cabinet Manufacturers Association; www.kcma.org.
123. LMA - Laminating Materials Association; (See CPA).
124. LPI - Lightning Protection Institute; www.lightning.org.
125. MBMA - Metal Building Manufacturers Association; www.mbma.com.
126. MCA - Metal Construction Association; www.metalconstruction.org.
127. MFMA - Maple Flooring Manufacturers Association, Inc.; www.maplefloor.org.
128. MFMA - Metal Framing Manufacturers Association, Inc.; www.metalframingmfg.org.
129. MHIA - Material Handling Industry of America; www.mhia.org.
130. MIA - Marble Institute of America; (See NSI).
131. MMPA - Moulding & Millwork Producers Association; www.wmmpa.com.
132. MPI - Master Painters Institute; www.paintinfo.com.
133. MSS - Manufacturers Standardization Society of The Valve and Fittings Industry Inc.; www.mss-hq.org.
134. NAAMM - National Association of Architectural Metal Manufacturers; www.naamm.org.
135. NACE - NACE International; (National Association of Corrosion Engineers International); www.nace.org.
136. NADCA - National Air Duct Cleaners Association; www.nadca.com.
137. NAIMA - North American Insulation Manufacturers Association; www.naima.org.
138. NALP - National Association of Landscape Professionals; www.landscapeprofessionals.org.
139. NBGQA - National Building Granite Quarries Association, Inc.; www.nbgqa.com.
140. NBI - New Buildings Institute; www.newbuildings.org.
141. NCAA - National Collegiate Athletic Association (The); www.ncaa.org.
142. NCMA - National Concrete Masonry Association; www.ncma.org.
143. NEBB - National Environmental Balancing Bureau; www.nebb.org.
144. NECA - National Electrical Contractors Association; www.necanet.org.
145. NeLMA - Northeastern Lumber Manufacturers Association; www.nelma.org.
146. NEMA - National Electrical Manufacturers Association; www.nema.org.
147. NETA - InterNational Electrical Testing Association; www.netaworld.org.
148. NFHS - National Federation of State High School Associations; www.nfhs.org.

149. NFPA - National Fire Protection Association; www.nfpa.org.
150. NFPA - NFPA International; (See NFPA).
151. NFRC - National Fenestration Rating Council; www.nfrc.org.
152. NGA - National Glass Association (The); (Formerly: Glass Association of North America); www.glass.org.
153. NHLA - National Hardwood Lumber Association; www.nhla.com.
154. NLGA - National Lumber Grades Authority; www.nlga.org.
155. NOFMA - National Oak Flooring Manufacturers Association; (See NWFA).
156. NOMMA - National Ornamental & Miscellaneous Metals Association; www.nomma.org.
157. NRCA - National Roofing Contractors Association; www.nrca.net.
158. NRMCA - National Ready Mixed Concrete Association; www.nrmca.org.
159. NSF - NSF International; www.nsf.org.
160. NSI - National Stone Institute; (Formerly: Marble Institute of America); www.naturalstoneinstitute.org.
161. NSPE - National Society of Professional Engineers; www.nspe.org.
162. NSSGA - National Stone, Sand & Gravel Association; www.nssga.org.
163. NTMA - National Terrazzo & Mosaic Association, Inc. (The); www.ntma.com.
164. NWFA - National Wood Flooring Association; www.nwfa.org.
165. NWRA - National Waste & Recycling Association; www.wasterecycling.org.
166. PCI - Precast/Prestressed Concrete Institute; www.pci.org.
167. PDI - Plumbing & Drainage Institute; www.pdionline.org.
168. PLASA - PLASA; (Formerly: ESTA - Entertainment Services and Technology Association); www.plasa.org.
169. RCSC - Research Council on Structural Connections; www.boltcouncil.org.
170. RFCI - Resilient Floor Covering Institute; www.rfci.com.
171. RIS - Redwood Inspection Service; www.redwoodinspection.com.
172. SAE - SAE International; www.sae.org.
173. SCTE - Society of Cable Telecommunications Engineers; www.scte.org.
174. SDI - Steel Deck Institute; www.sdi.org.
175. SDI - Steel Door Institute; www.steeldoor.org.
176. SEFA - Scientific Equipment and Furniture Association (The); www.sefalabs.com.
177. SEI/ASCE - Structural Engineering Institute/American Society of Civil Engineers; (See ASCE).
178. SIA - Security Industry Association; www.siaonline.org.
179. SJI - Steel Joist Institute; www.steeljoist.org.
180. SMA - Screen Manufacturers Association; www.smainfo.org.
181. SMACNA - Sheet Metal and Air Conditioning Contractors' National Association; www.smacna.org.
182. SMPTE - Society of Motion Picture and Television Engineers; www.smpte.org.
183. SPFA - Spray Polyurethane Foam Alliance; www.sprayfoam.org.
184. SPIB - Southern Pine Inspection Bureau; www.spib.org.
185. SPRI - Single Ply Roofing Industry; www.spri.org.
186. SRCC - Solar Rating & Certification Corporation; www.solar-rating.org.
187. SSINA - Specialty Steel Industry of North America; www.ssina.com.
188. SSPC - SSPC: The Society for Protective Coatings; www.sspc.org.
189. STI - Steel Tank Institute; www.steeltank.com.
190. SWI - Steel Window Institute; www.steelwindows.com.

191. SWPA - Submersible Wastewater Pump Association; www.swpa.org.
 192. TCA - Tilt-Up Concrete Association; www.tilt-up.org.
 193. TCNA - Tile Council of North America, Inc.; www.tileusa.com.
 194. TEMA - Tubular Exchanger Manufacturers Association, Inc.; www.tema.org.
 195. TIA - Telecommunications Industry Association (The); (Formerly: TIA/EIA - Telecommunications Industry Association/Electronic Industries Alliance); www.tiaonline.org.
 196. TIA/EIA - Telecommunications Industry Association/Electronic Industries Alliance; (See TIA).
 197. TMS - The Masonry Society; www.masonrysociety.org.
 198. TPI - Truss Plate Institute; www.tpinst.org.
 199. TPI - Turfgrass Producers International; www.turfgrasssod.org.
 200. TRI - Tile Roofing Institute; www.tilerroofing.org.
 201. UL - Underwriters Laboratories Inc.; www.ul.com.
 202. UNI - Uni-Bell PVC Pipe Association; www.uni-bell.org.
 203. USAV - USA Volleyball; www.usavolleyball.org.
 204. USGBC - U.S. Green Building Council; www.usgbc.org.
 205. USITT - United States Institute for Theatre Technology, Inc.; www.usitt.org.
 206. WA - Wallcoverings Association; www.wallcoverings.org.
 207. WCLIB - West Coast Lumber Inspection Bureau; www.wclib.org.
 208. WCMA - Window Covering Manufacturers Association; www.wcmanet.org.
 209. WDMA - Window & Door Manufacturers Association; www.wdma.com.
 210. WI - Woodwork Institute; www.wicnet.org.
 211. WSRCA - Western States Roofing Contractors Association; www.wsrca.com.
- B. Code Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. This information is believed to be accurate as of the date of the Contract Documents.
1. DIN - Deutsches Institut für Normung e.V.; www.din.de.
 2. IAPMO - International Association of Plumbing and Mechanical Officials; www.iapmo.org.
 3. ICC - International Code Council; www.iccsafe.org.
 4. ICC-ES - ICC Evaluation Service, LLC; www.icc-es.org.
- C. Federal Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Information is subject to change and is up to date as of the date of the Contract Documents.
1. COE - Army Corps of Engineers; www.usace.army.mil.
 2. CPSC - Consumer Product Safety Commission; www.cpsc.gov.
 3. DOC - Department of Commerce; National Institute of Standards and Technology; www.nist.gov.
 4. DOD - Department of Defense; www.quicksearch.dla.mil.
 5. DOE - Department of Energy; www.energy.gov.
 6. EPA - Environmental Protection Agency; www.epa.gov.
 7. FAA - Federal Aviation Administration; www.faa.gov.
 8. FG - Federal Government Publications; www.gpo.gov/fdsys.
 9. GSA - General Services Administration; www.gsa.gov.
 10. HUD - Department of Housing and Urban Development; www.hud.gov.

11. LBL - Lawrence Berkeley National Laboratory; Environmental Energy Technologies Division; www.eetd.lbl.gov.
 12. OSHA - Occupational Safety & Health Administration; www.osha.gov.
 13. SD - Department of State; www.state.gov.
 14. TRB - Transportation Research Board; National Cooperative Highway Research Program; The National Academies; www.trb.org.
 15. USDA - Department of Agriculture; Agriculture Research Service; U.S. Salinity Laboratory; www.ars.usda.gov.
 16. USDA - Department of Agriculture; Rural Utilities Service; www.usda.gov.
 17. USDOJ - Department of Justice; Office of Justice Programs; National Institute of Justice; www.ojp.usdoj.gov.
 18. USP - U.S. Pharmacopeial Convention; www.usp.org.
 19. USPS - United States Postal Service; www.usps.com.
- D. Standards and Regulations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the standards and regulations in the following list. This information is subject to change and is believed to be accurate as of the date of the Contract Documents.
1. CFR - Code of Federal Regulations; Available from Government Printing Office; www.govinfo.gov.
 2. DOD - Department of Defense; Military Specifications and Standards; Available from DLA Document Services; www.quicksearch.dla.mil.
 3. DSCC - Defense Supply Center Columbus; (See FS).
 4. FED-STD - Federal Standard; (See FS).
 5. FS - Federal Specification; Available from DLA Document Services; www.quicksearch.dla.mil.
 - a. Available from Defense Standardization Program; www.dsp.dla.mil.
 - b. Available from General Services Administration; www.gsa.gov.
 - c. Available from National Institute of Building Sciences/Whole Building Design Guide; www.wbdg.org.
 6. MILSPEC - Military Specification and Standards; (See DOD).
 7. USAB - United States Access Board; www.access-board.gov.
 8. USATBCB - U.S. Architectural & Transportation Barriers Compliance Board; (See USAB).
- E. State Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. This information is subject to change and is believed to be accurate as of the date of the Contract Documents.
1. CBHF; State of California; Department of Consumer Affairs; Bureau of Electronic and Appliance Repair, Home Furnishings and Thermal Insulation; www.bearhfti.ca.gov.
 2. CCR; California Code of Regulations; Office of Administrative Law; California Title 24 Energy Code; www.calregs.com.
 3. CDHS; California Department of Health Services; (See CDPH).
 4. CDPH; California Department of Public Health; Indoor Air Quality Program; www.cdph.ca.gov/Programs/CCDPHP/DEODC/EHLB/IAQ/Pages/Main-Page.aspx.
 5. CPUC; California Public Utilities Commission; www.cpuc.ca.gov.
 6. SCAQMD; South Coast Air Quality Management District; www.aqmd.gov.

7. TFS; Texas A&M Forest Service; Sustainable Forestry and Economic Development; www.txforestsservice.tamu.edu.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION 01 42 00

SECTION 01 45 33 - CODE-REQUIRED SPECIAL INSPECTIONS AND PROCEDURES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Code-required special inspections.
- B. Testing services incidental to special inspections.
- C. Submittals.
- D. Manufacturers' field services.
- E. Fabricators' field services.

1.02 RELATED REQUIREMENTS

- A. Section 01 30 00 - Administrative Requirements: Submittal procedures.
- B. Section 01 40 00 - Quality Requirements.
- C. Section 01 42 19 - Reference Standards.
- D. Section 01 60 00 - Product Requirements: Requirements for material and product quality.

1.03 ABBREVIATIONS AND ACRONYMS

- A. AHJ: Authority having jurisdiction.
- B. IAS: International Accreditation Service, Inc.
- C. NIST: National Institute of Standards and Technology.

1.04 DEFINITIONS

- A. Code or Building Code: ICC (IBC), International Building Code, Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements and specifically, Chapter 17 - Special Inspections and Tests.
- B. Authority Having Jurisdiction (AHJ): Agency or individual officially empowered to enforce the building, fire and life safety code requirements of the permitting jurisdiction in which the Project is located.
- C. Special Inspection:
 - 1. Special inspections are inspections and testing of materials, installation, fabrication, erection or placement of components and connections mandated by the AHJ that also require special expertise to ensure compliance with the approved Contract Documents and the referenced standards.
 - 2. Special inspections are separate from and independent of tests and inspections conducted by Owner or Contractor for the purposes of quality assurance and contract administration.

1.05 REFERENCE STANDARDS

- A. ACI CODE-318 - Building Code Requirements for Structural Concrete and Commentary; 2019 (Reapproved 2022).
- B. AISC 360 - Specification for Structural Steel Buildings; 2016 (Revised 2021).
- C. ASTM C31/C31M - Standard Practice for Making and Curing Concrete Test Specimens in the Field; 2023.
- D. ASTM C172/C172M - Standard Practice for Sampling Freshly Mixed Concrete; 2017.
- E. ASTM E329 - Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection; 2023.
- F. ASTM E605/E605M - Standard Test Methods for Thickness and Density of Sprayed Fire-Resistive Material (SFRM) Applied to Structural Members; 2019 (Reapproved 2023).
- G. ASTM E736/E736M - Standard Test Method for Cohesion/Adhesion of Sprayed Fire-Resistive Materials Applied to Structural Members; 2019 (Reapproved 2023).
- H. ASTM E2174 - Standard Practice for On-Site Inspection of Installed Firestop Systems; 2020a.
- I. ASTM E2393 - Standard Practice for On-Site Inspection of Installed Fire Resistive Joint Systems and Perimeter Fire Barriers; 2020a.
- J. ASTM E2570/E2570M - Standard Test Methods for Evaluating Water-Resistive Barrier (WRB) Coatings Used Under Exterior Insulation and Finish Systems (EIFS) or EIFS with Drainage; 2007 (Reapproved 2019).
- K. AWS D1.4/D1.4M - Structural Welding Code - Steel Reinforcing Bars; 2018, with Amendment (2020).
- L. ICC (IBC) - International Building Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- M. ICC (IBC)-2018 - International Building Code; 2018.
- N. SDI (QA/QC) - Standard for Quality Control and Quality Assurance for Installation of Steel Deck; 2017.
- O. TMS 402/602 - Building Code Requirements and Specification for Masonry Structures; 2022.

1.06 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Special Inspection Agency Qualifications: Prior to the start of work, the Special Inspection Agency is required to:
 - 1. Submit agency name, address, and telephone number, names of full time registered Engineer and responsible officer.
 - 2. Submit copy of report of laboratory facilities inspection made by NIST Construction Materials Reference Laboratory during most recent inspection, with memorandum of remedies of any deficiencies reported by the inspection.
 - 3. Submit certification that Special Inspection Agency is acceptable to AHJ.

- C. Testing Agency Qualifications: Prior to the start of work, the Testing Agency is required to:
 - 1. Submit agency name, address, and telephone number, and names of full time registered Engineer and responsible officer.
 - 2. Submit copy of report of laboratory facilities inspection made by NIST Construction Materials Reference Laboratory during most recent inspection, with memorandum of remedies of any deficiencies reported by the inspection.
 - 3. Submit certification that Testing Agency is acceptable to AHJ.
- D. Special Inspection Reports: After each special inspection, Special Inspector is required to promptly submit at least two copies of report; one to Architect and one to the AHJ.
 - 1. Include:
 - a. Date issued.
 - b. Project title and number.
 - c. Name of Special Inspector.
 - d. Date and time of special inspection.
 - e. Identification of product and specifications section.
 - f. Location in the Project.
 - g. Type of special inspection.
 - h. Date of special inspection.
 - i. Results of special inspection.
 - j. Compliance with Contract Documents.
 - 2. Final Special Inspection Report: Document special inspections and correction of discrepancies prior to the start of the work.
- E. Test Reports: After each test or inspection, promptly submit at least two copies of report; one to Architect and one to AHJ.
 - 1. Include:
 - a. Date issued.
 - b. Project title and number.
 - c. Name of inspector.
 - d. Date and time of sampling or inspection.
 - e. Identification of product and specifications section.
 - f. Location in the Project.
 - g. Type of test or inspection.
 - h. Date of test or inspection.
 - i. Results of test or inspection.
 - j. Compliance with Contract Documents.

1.07 SPECIAL INSPECTION AGENCY

- A. Owner will employ services of a Special Inspection Agency to perform inspections and associated testing and sampling in accordance with ASTM E329 and required by the building code.
- B. Employment of agency in no way relieves Contractor of obligation to perform work in accordance with requirements of Contract Documents.

1.08 TESTING AND INSPECTION AGENCIES

- A. Owner may employ services of an independent testing agency to perform additional testing and sampling associated with special inspections but not required by the building code.
- B. Employment of agency in no way relieves Contractor of obligation to perform work in accordance with requirements of Contract Documents.

1.09 QUALITY ASSURANCE

- A. Special Inspection Agency Qualifications:
 - 1. Independent firm specializing in performing testing and inspections of the type specified in this section.
- B. Testing Agency Qualifications:
 - 1. Independent firm specializing in performing testing and inspections of the type specified in this section.
- C. Copies of Documents at Project Site: Maintain at the project site a copy of each referenced document.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 SCHEDULE OF SPECIAL INSPECTIONS, GENERAL

- A. Frequency of Special Inspections: Special Inspections are indicated as continuous or periodic.
 - 1. Continuous Special Inspection: Special Inspection Agency is required to be present in the area where the work is being performed and observe the work at all times the work is in progress.
 - 2. Periodic Special Inspection: Special Inspection Agency is required to be present in the area where work is being performed and observe the work part-time or intermittently and at the completion of the work.

3.02 SPECIAL INSPECTIONS FOR STEEL CONSTRUCTION

- A. Structural Steel: Comply with quality assurance inspection requirements of ICC (IBC)-2018.
- B. Cold-Formed Steel Deck: Comply with quality assurance inspection requirements of SDI (QA/QC).
- C. Open-Web Joists and Joist Girders: Comply with requirements of ICC (IBC), Table 1705.2.3.
 - 1. End Connections - Welding or Bolted: Comply with requirements of SJI 100; periodic.
 - 2. Bridging - Horizontal or Diagonal:
 - a. Standard Bridging: Comply with requirements of SJI 100; periodic.
 - b. Bridging That Differs From the SJI Specifications: Periodic inspection.

- D. Cold-Formed Steel Trusses Spanning 60 feet or Greater: Special Inspector is required to verify that the temporary installation restraint/bracing and the permanent individual truss member restraint/bracing are installed in accordance with the approved truss submittal package.

3.03 SPECIAL INSPECTIONS FOR CONCRETE CONSTRUCTION

- A. Reinforcement, Including Prestressing Tendons, and Verification of Placement: Verify compliance with ACI CODE-318, Chapters 20, 25.2, 25.3, 26.6.1-26.6.3; periodic.
- B. Reinforcing Bar Welding: Verify compliance with AWS D1.4/D1.4M and ACI CODE-318, 26.6.4; periodic.
 - 1. Verify weldability of reinforcing bars other than those complying with ASTM A706/A706M; periodic.
 - 2. Inspect single-pass fillet welds, maximum 5/16 inch; periodic.
 - 3. Inspect all other welds; continuous.
- C. Anchors Cast in Concrete: Verify compliance with ACI CODE-318; periodic.
- D. Bolts Installed in Concrete: Where allowable loads have been increased or where strength design is used, verify compliance with approved Contract Documents and ACI CODE-318, Sections 8.1.3 and 21.2.8 prior to and during placement of concrete; continuous.
- E. Anchors Post-Installed in Hardened Concrete: Verify compliance with ACI CODE-318.
 - 1. Adhesive Anchors: Verify horizontally or upwardly-inclined orientation installations resisting sustained tension loads - Section 17.8.2.4; continuous.
 - 2. Other Mechanical and Adhesive Anchors: Verify as per Chapter 17.8.2; periodic.
- F. Design Mix: Verify plastic concrete complies with the design mix in approved Contract Documents and with ACI CODE-318, Chapter 19, 16.4.3, 26.4.4; periodic.
- G. Concrete Sampling Concurrent with Strength Test Sampling: Each time fresh concrete is sampled for strength tests, verify compliance with ASTM C172/C172M, ASTM C31/C31M, and ACI CODE-318, Chapter 26.5, 26.12, and record the following, continuous:
 - 1. Slump.
 - 2. Air content.
 - 3. Temperature of concrete.
- H. Concrete and Shotcrete Placement: Verify application techniques comply with approved Contract Documents and ACI CODE-318, Chapter 26.5; continuous.
- I. Specified Curing Temperature and Techniques: Verify compliance with ACI CODE-318, Chapter 26.5.3 through 26.5.5; periodic.
- J. Prestressed Concrete: Verify compliance with approved Contract Documents; continuous.
 - 1. Application of Prestressing Forces: Verify compliance with ACI CODE-318, Chapter 26.10.
 - 2. Grouting of Bonded Prestressing Tendons: Verify compliance with ACI CODE-318, Chapter 26.10.
- K. Precast Concrete Members: Verify erection techniques and placement comply with approved Contract Documents and ACI CODE-318, Chapter 26.9; periodic.

- L. Concrete Strength in Situ: Verify concrete strength complies with approved Contract Documents and ACI CODE-318, Chapter 26.11.2, for the following:
 - 1. Beams and structural slabs, prior to removal of shores and forms; periodic.
- M. Formwork Shape, Location and Dimensions: Verify compliance with approved Contract Documents and ACI CODE-318, Chapter 26.11.1.2(b); periodic.
- N. Materials: If the Contractor cannot provide sufficient data or documentary evidence that concrete materials comply with the quality standards of ACI CODE-318, the AHJ will require testing of materials in accordance with the appropriate standards and criteria in ACI CODE-318, Chapters 19 and 20.

3.04 SPECIAL INSPECTIONS FOR MASONRY CONSTRUCTION

- A. Masonry Structures Subject to Special Inspection:
 - 1. Masonry construction when required by the quality assurance program of TMS 402/602.
 - 2. Empirically designed masonry, glass unit masonry and masonry veneer in structures designated as "essential facilities".
 - 3. Engineered masonry in structures classified as "low hazard..." and "substantial hazard to human life in the event of failure".
- B. Verify each item below complies with approved Contract Documents and the applicable articles of TMS 402/602.
 - 1. Inspections and Approvals:
 - a. Verify compliance with the required inspection provisions of the approved Contract Documents; periodic.
 - b. Verify approval of submittals required by Contract Documents; periodic.
 - 2. Compressive Strength of Masonry: Verify compressive strength of masonry units prior to start of construction unless specifically exempted by code; periodic.
 - 3. Slump Flow and Visual Stability Index (VSI): Verify compliance as self consolidating grout arrives on site; continuous.
 - 4. Joints and Accessories: When masonry construction begins, verify:
 - a. Proportions of site prepared mortar; periodic.
 - b. Construction of mortar joints; periodic.
 - c. Location of reinforcement, connectors, prestressing tendons, anchorages, etc; periodic.
 - 5. Structural Elements, Joints, Anchors, Protection: During masonry construction, verify:
 - a. Size and location of structural elements; periodic.
 - b. Type, size and location of anchors, including anchorage of masonry to structural members, frames or other construction; periodic.
 - c. Size, grade and type of reinforcement, anchor bolts and prestressing tendons and anchorages; periodic.
 - d. Welding of reinforcing bars; continuous.
 - 6. Grouting Preparation: Prior to grouting, verify:
 - a. Grout space is clean; periodic.
 - b. Correct placement of reinforcing, connectors, prestressing tendons and anchorages; periodic.
 - c. Correctly proportioned site prepared grouts and prestressing grout for bonded tendons; periodic.

- d. Correctly constructed mortar joints; periodic.
- 7. Preparation of Grout Specimens, Mortar Specimens and Prisms: Observe preparation of specimens; periodic.

3.05 SPECIAL INSPECTIONS FOR SPRAYED FIRE RESISTANT MATERIALS

- A. Sprayed Fire Resistant Materials, General:
 - 1. Verify compliance of sprayed-fire resistant materials with specific fire-rated assemblies indicated in approved Contract Documents, and with applicable requirements of the building code.
 - 2. Perform special inspections after rough installation of electrical, mechanical, plumbing, automatic fire sprinkler and suspension systems for ceilings.
- B. Physical and visual tests: Verify compliance with fire resistance rating.
 - 1. Condition of substrates; periodic.
 - 2. Thickness of sprayed fire resistant material; periodic.
 - 3. Density of sprayed fire resistant material in pounds per cubic foot; periodic.
 - 4. Bond strength (adhesion and cohesion); periodic.
 - 5. Condition of finished application; periodic.
- C. Structural member surface conditions:
 - 1. Inspect structural member surfaces before application of sprayed fire resistant materials; periodic.
 - 2. Verify preparation of structural member surfaces complies with approved Contract Documents and manufacturer's written instructions; periodic.
- D. Application:
 - 1. Ensure minimum ambient temperature before and after application complies with the manufacturer's written instructions; periodic.
 - 2. Verify area where sprayed fire resistant material is applied is ventilated as required by the manufacturer's written instructions during and after application; periodic.
- E. Thickness: Verify that no more than 10 percent of thickness measurements taken from sprayed fire resistant material are less than thickness required by fire resistance design in approved Contract Documents. In no case shall the thickness of the sprayed fire resistant material be less than the minimum below.
 - 1. Minimum Allowable Thickness: Tested according to ASTM E605/E605M, periodic.
- F. Density: Verify density of sprayed fire resistant material is no less than density required by the fire resistance design in the approved Contract Documents.
- G. Bond Strength: Verify adhesive and cohesive bond strength of sprayed fire resistant materials is no less than 150 pounds per square foot when in-place samples of the cured material are tested according to ASTM E736/E736M and as described below.

3.06 SPECIAL INSPECTIONS FOR EXTERIOR INSULATION AND FINISH SYSTEMS (EIFS)

- A. Verify water resistive barrier coating applied over sheathing complies with ASTM E2570/E2570M.

3.07 SPECIAL INSPECTIONS FOR FIRE RESISTANT PENETRATIONS AND JOINTS

- A. Verify penetration firestops in accordance with ASTM E2174.
- B. Verify fire resistant joints in accordance with ASTM E2393.

3.08 OTHER SPECIAL INSPECTIONS

- A. Provide for special inspection of work that, in the opinion of the AHJ, is unusual in nature.

3.09 SPECIAL INSPECTION AGENCY DUTIES AND RESPONSIBILITIES

- A. Special Inspection Agency shall:
 - 1. Provide qualified personnel at site. Cooperate with Architect and Contractor in performance of services.
 - 2. Perform specified sampling and testing of products in accordance with specified reference standards.
 - 3. Ascertain compliance of materials and products with requirements of Contract Documents.
 - 4. Promptly notify Architect and Contractor of observed irregularities or non-compliance of work or products.
 - 5. Perform additional tests and inspections required by Architect.
 - 6. Submit reports of all tests or inspections specified.
- B. Limits on Special Inspection Agency Authority:
 - 1. Agency may not release, revoke, alter, or enlarge on requirements of Contract Documents.
 - 2. Agency may not approve or accept any portion of the work.
 - 3. Agency may not assume any duties of Contractor.
 - 4. Agency has no authority to stop the work.
- C. Re-testing required because of non-compliance with specified requirements shall be performed by the same agency on instructions by Architect.
- D. Re-testing required because of non-compliance with specified requirements shall be paid for by Contractor.

3.10 TESTING AGENCY DUTIES AND RESPONSIBILITIES

- A. Testing Agency Duties:
 - 1. Provide qualified personnel at site. Cooperate with Architect and Contractor in performance of services.
 - 2. Perform specified sampling and testing of products in accordance with specified standards.
 - 3. Ascertain compliance of materials and mixes with requirements of Contract Documents.
 - 4. Promptly notify Architect and Contractor of observed irregularities or non-compliance of work or products.
 - 5. Perform additional tests and inspections required by Architect.

6. Submit reports of all tests or inspections specified.
- B. Limits on Testing or Inspection Agency Authority:
 1. Agency may not release, revoke, alter, or enlarge on requirements of Contract Documents.
 2. Agency may not approve or accept any portion of the work.
 3. Agency may not assume any duties of Contractor.
 4. Agency has no authority to stop the work.
- C. On instructions by Architect, perform re-testing required because of non-compliance with specified requirements, using the same agency.
- D. Contractor will pay for re-testing required because of non-compliance with specified requirements.

3.11 CONTRACTOR DUTIES AND RESPONSIBILITIES

- A. Contractor Responsibilities, General:
 1. Deliver to agency at designated location, adequate samples of materials for special inspections that require material verification.
 2. Cooperate with agency and laboratory personnel; provide access to approved documents at project site, to the work, to manufacturers' facilities, and to fabricators' facilities.
 3. Provide incidental labor and facilities:
 - a. To provide access to work to be tested or inspected.
 - b. To obtain and handle samples at the site or at source of Products to be tested or inspected.
 - c. To facilitate tests or inspections.
 - d. To provide storage and curing of test samples.
 4. Notify Architect and laboratory 24 hours prior to expected time for operations requiring testing or inspection services.
 5. Arrange with Owner's agency and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.

END OF SECTION 01 45 33

SECTION 01 50 00 - TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract Documents, including General and Supplementary Conditions and other Division 01 and Technical Specifications, apply to this Section.

1.02 SUMMARY

- A. This Section includes requirements for temporary utilities, support facilities, and security and protection facilities.
- B. Specific administrative and procedural minimum actions are specified in this Section, as extensions of provisions in General Conditions and other Contract Documents.
These requirements have been included for special purposes as indicated. Nothing in this Section is intended to limit types and amounts of temporary work required, and no omission from this Section will be recognized as an indication by Architect or its Engineers that such temporary activity is not required for successful completion of the Work and compliance with requirements of Contract Documents. Provisions of this Section are applicable to, but not by way of limitation, utility services, construction facilities, security/protection provisions, and support facilities, etc.
- C. The types of temporary support facilities required and to be provided includes, but not by way of limitation include:
 - 1. Security.
 - 2. Field offices, storage sheds, fabrication sheds.
 - 3. Sanitary facilities, drinking water, water distribution, drainage, dewatering equipment.
 - 4. Temporary heating, cooling, ventilation.
 - 5. Electrical power distribution, lighting.
 - 6. Enclosure of work, hoisting facilities, ladders, scaffolds, stairs ramps, access ways and roads.
 - 7. First aid facilities, bulletin board, private and public telephones, clocks, thermometer.
 - 8. Project identification signs, cleanup facilities, dumpsters and waste disposal services, rodent/pest control and similar miscellaneous general services.
 - 9. All as may be reasonably required for proficient performance of the work and accommodation of personnel at the site including Architect's and Engineer's personnel.
 - 10. Include moving, relocation, and reinstallation as may be required to accommodate construction progress.
- D. Discontinue and remove temporary support facilities and make incidental similar use of permanent work of the project, only when and in manner authorized by the Architect; and, if not otherwise indicated, immediately before time of Substantial Completion.

Locate temporary support facilities for convenience of users, and for minimum interference with construction activities.

1.03 DEFINITIONS

- A. Permanent Enclosure: As determined by Architect, permanent or temporary roofing is complete, insulated, and weather tight; exterior walls are insulated and weather tight; and all openings are closed with permanent construction or substantial temporary closures.

1.04 USE CHARGES

- A. General: Cost or use charges for temporary facilities shall be included in the Contract Sum. Allow other entities to use temporary services and facilities without cost, including, but not limited to, Architect, occupants of the Project, and authorities having jurisdiction.
- B. Electric Power Service: Pay electric power service use charges for electricity used by all entities for construction operations.
- C. Water Service: Water from Owner's existing water system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations.
- D. Electric Power Service: Electric power from Owner's existing system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations.

1.05 QUALITY ASSURANCE

- A. General: In addition to compliance with governing regulations and rules/recommendations of franchised utility companies, comply with specific requirements indicated and with applicable local industry standards for construction work (published recommendations by local consensus "building councils").
- B. ANSI Standards: Comply with applicable provisions of ANSI A10-Series standards on construction safety.
- C. NFPA Code: Comply with NFPA 241 "Safeguarding Construction, Alteration and Demolition Operations".
- D. Environmental Impact Statement: Comply with provisions of Owner's committed EIS, for development and operation of temporary facilities and construction activities.
- E. Conservation: In compliance with Owner's policy on energy/materials conservation, install and operate temporary facilities and perform construction activities in manner which reasonably will be conservative and avoid waste of energy and materials including water.
- F. ADA and ICC/ANSI Compliance: Construction for this Project must comply with the Americans with Disability Act (ADA) of 2009 and ICC/ANSI A117.1.
- G. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.
- H. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.

1.06 PROJECT CONDITIONS

- A. Temporary Use of Permanent Facilities: Installer of each permanent service shall assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before Owner's acceptance, regardless of previously assigned responsibilities.
- B. Establish and initiate the use of each temporary facility at time first reasonably required for proper performance of the Work. Terminate use and remove facilities at earliest reasonable time, when no longer needed or when permanent facilities have, with authorized use, replaced the need.
- C. Install, operate, maintain, and protect temporary facilities in a manner and at locations which will be safe, non-hazardous, sanitary and protective of persons and property, and free of deleterious effects.
- D. Installers shall verify clearances of all paths at job site leading to final installation locations, and break down the final product components into component assemblies sized accordingly to negotiate all corners, turns, etc., in the path to its final installation location.
- E. Contractors will provide their own extension cords, hoses, etc. as required for their work.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Pavement: Comply with requirements in Pavement Sections.
- B. Chain-Link Fencing: Minimum 2-inch (50-mm), 0.148-inch- (3.76-mm-) (9 gage) thick, galvanized steel, chain-link fabric fencing; minimum 6 feet (1.8 m) high with galvanized steel pipe posts; minimum 2-3/8-inch- (60-mm-) OD line posts and 2-7/8-inch- (73-mm-) OD corner and pull posts, with 1-5/8-inch- (42-mm-) OD top rails. Include gates for both personnel and trucks with locks held under strict security control.
- C. Materials for Temporary Work: Lumber, plywood, gypsum board, insulation, paints, etc. required for temporary work shall comply with corresponding specification sections and applicable codes and regulations of in effect at the Project location by authorities having jurisdiction.
- D. Temporary Floor Protections: Provide Heavy-Duty temporary floor protection (Ram Board or Equal) under all work areas.

2.02 TEMPORARY FACILITIES

- A. Field Offices, General: Prefabricated or mobile unit(s) with adequate space, suitably furnished, with serviceable finishes, temperature controls, and foundations adequate for normal loading.
- B. Contractors Field Office: General Contractor will provide adequate office space for field office personnel, suitably finished, furnished, equipped, and conditioned.

- C. Common-Use Field Office: Of sufficient size to accommodate needs of construction personnel. Keep office clean and orderly. Furnish and equip offices as follows:
 - 1. Furniture required for Project-site documents including file cabinets, plan tables, plan racks, and bookcases.
 - 2. Conference room of sufficient size to accommodate meetings of (10) individuals. Provide electrical power service and 120-V ac duplex receptacles, with not less than 1 receptacle on each wall. Furnish room with conference table, chairs, and 4-foot square tack board.
 - 3. Drinking water.
 - 4. Heating and cooling equipment necessary to maintain a uniform indoor temperature of 68 to 78 deg F.
 - 5. Lighting fixtures capable of maintaining average illumination of 20 fc at desk height.
- D. Storage and Fabrication Sheds: The Contractor shall provide suitable storage facilities at the site for the proper protection and safe storage of his materials. Such storage facilities must be approved in advance in writing by the Architect.
 - 1. Store combustible materials apart from building.
- E. Other Contractors requiring storage facilities will supply their own and located where approved by the Architect.
- F. All materials delivered to the premises which are to form a part of the work are to be considered the property of the Owner and must not be removed without the Owner's consent; but the Contractor shall remove all surplus materials upon completion of each phase of the work and as directed by the Architect.

2.03 FIRE PROTECTION PROVISIONS

- A. Fire Extinguishers: Provide Fire protection equipment during the entire construction period as required by the authority having jurisdiction of types, sizes, numbers, and locations as would be reasonably effective in extinguishing fires during early stages, by personnel at Project site. Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures. Post warning and quick instructions at each extinguisher location, and instruct personnel at Project site, at time of their first arrival, on proper use of extinguishers and other available facilities at Project site. Post local fire department call number on each telephone instrument at Project site.

2.04 TEMPORARY UTILITY SERVICES

- A. The types of services required include, but not by way of limitation, sewers and drainage, water, sanitary, heat (and cooling), ventilation (and humidity control), electrical power, lighting, or telephones and electronic communication service. Where possible and reasonable, connect to existing franchised utilities for required services; and comply with service companies' recommendations on materials and methods, or engage service companies to install services. Locate and relocate services (as necessary) to minimize interference with construction operations.

PART 3 EXECUTION

3.01 INSTALLATION, GENERAL

- A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work.
- B. Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

3.02 TEMPORARY UTILITY INSTALLATION

- A. General: Install temporary service or connect to existing service.
 - 1. Arrange with utility company, Owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.
- B. Sanitary Facilities: Provide temporary self-contained toilet units with provisions to remove effluent lawfully, wash facilities, and drinking water with cups for use of construction personnel. Comply with authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.
- C. TEMPORARY WATER SERVICE:
 - 1. Water Service: Water from Owner's existing water system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations. Use of Owner's existing water service facilities will be permitted, as long as facilities are cleaned and maintained in a condition acceptable to Owner. At Substantial Completion, restore these facilities to condition existing before initial use.
 - a. Where installations below an outlet might be damaged by spillage or leakage, provide a drip pan of suitable size to minimize water damage. Drain accumulated water promptly from pans.
- D. TEMPORARY ELECTRIC SERVICE:
 - 1. Electric Power Service: Electric power from Owner's existing system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations. Use of Owner's existing electric power service will be permitted, as long as equipment is maintained in a condition acceptable to Owner.
 - 2. Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations, observations, inspections, and traffic conditions.
 - a. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.
- E. Telephone Service: Contractor shall provide temporary telephone service in common-use facilities for use by all construction personnel. Install (4) four telephone line(s) for each field office except as otherwise indicated.
 - 1. Provide additional telephone lines for the following:
 - a. Provide a dedicated telephone line for each facsimile machine and computer in each field office.
 - 2. At each telephone, post a list of important telephone numbers.
 - a. Police and fire departments.

- b. Ambulance service.
 - c. Contractor's home office.
 - d. Architect's office.
 - e. Engineers' offices.
 - f. Owner's office.
 - g. Principal subcontractors' field and home offices.
- 3. Provide superintendent with cellular telephone or portable two-way radio for use when away from field office.
- F. Electronic Communication Service: Contractor shall provide temporary electronic communication service, including electronic mail, in common-use facilities.
 - 1. Provide DSL in primary field office.

3.03 SUPPORT FACILITIES INSTALLATION

- A. General: Comply with the following:
- B. Traffic Controls: Comply with requirements of authorities having jurisdiction.
 - 1. Protect site improvements to remain including curbs, pavement, and utilities.
 - 2. Maintain access for emergency and fire-fighting equipment and access to fire hydrants.
- C. Parking: Use designated areas of Owner's existing parking areas for construction personnel.
- D. Project Identification and Temporary Signs: Contractor shall provide Project identification and other signs as indicated on drawings. Install signs where indicated or directed to inform public and individuals seeking entrance to Project. Unauthorized signs are not permitted. Engage an experienced sign painter to paint graphics on sign as indicated. Construct sign of treated wood framing and posts, and 3/4" plywood panels of exterior type Grade B-C sanded 2 sides. No other signs will be permitted at the Site. Remove the project identification and temporary signs at the completion of the project.
 - 1. Provide project identification sign showing name of the Project, Owner, Architect, Engineers, and Contractor(s).
 - 2. Provide temporary, directional signs for construction personnel and visitors.
 - 3. Maintain and touchup signs so they are legible at all times.
- E. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Comply with requirements of authorities having jurisdiction.
 - 1. The Contractor shall provide waste-collection containers for use by all construction personnel to deposit all rubbish, debris, boxes, crates, etc. The Contractor shall remove and properly dispose of the contents of the waste-collection containers as necessary to keep the progress of the job moving.
 - 2. The Contractor shall maintain the construction areas as clean as the progress of the work will permit.
 - a. The Contractor will clean up all its waste materials, rubbish and debris on a daily basis.
 - b. The Contractor will place its waste materials, rubbish and debris outside of building in the waste-collection containers on a daily basis.
 - c. The Contractor will broom clean the building a minimum of once a week.

- d. The Contractor will be responsible to keep the public streets, roadway access, construction area, etc. clean and free of debris, mud, snow, ice, materials, etc. at all times during the entire period of construction. If the Contractor does not adhere to this requirement, the Owner will engage a water power sweeping contractor to thoroughly clean the area and will back charge the Contractor for all costs involved.
3. Upon Substantial Completion, the Contractor shall completely clean the entire Project. The cleaning shall include, but is not limited to, cleaning of all surfaces, finishes, equipment, fixtures, sidewalks, driveway, parking lots, etc. The building and grounds and surrounding areas shall be left in a condition acceptable to the Owner.

3.04 SECURITY AND PROTECTION FACILITIES INSTALLATION

- A. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction in ways and by methods that comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.
 1. Contractor shall provide facilities, establish procedures, and conduct construction activities in a manner which will ensure compliance with Owner's environmental impact statement and other regulations controlling construction activities at Project site. Contractor shall designate one person, the Construction Superintendent or other, to enforce strict discipline on activities related to generation of wastes, pollution of air/water/soil, generation of noise, and similar harmful or deleterious effects which might violate regulations or reasonably irritate persons at or in vicinity of Project site and will be responsible to maintain acceptable environmental conditions at all times during the construction period.
 2. Contractor shall provide filtering systems, temporary enclosures, and other suitable methods to limit dust and dirt rising and scattering in air to lowest practical level. Maintain a minimum of 0.1 inches of water, negative pressure from point of enclosure. General Contractor shall provide exhaust from a location as remote as possible from unaltered areas. The point of exhaust shall be a minimum of 25 feet from any air intake or building opening in compliance with regulations as established by the environmental protection agency and applicable governmental and local requirements.
- B. Security Enclosure and Lockup: Install substantial temporary enclosure around partially completed areas of construction. Provide lockable entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security.
- C. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.
- D. Temporary Enclosures: Contractor shall provide temporary enclosures for protection of all new and existing construction, interior and exterior effected by scope of work, in progress and completed, from exposure, foul weather and unsatisfactory ambient conditions, other construction operations, and similar activities. Provide temporary weathertight enclosure for building exterior at all times during construction. Damage and/or leaks effecting existing materials and/or equipment within an existing building resulting from inadequate temporary enclosure materials and methods are the responsibility of the Contractor to remedy and replace to the satisfaction of the

Architect.

1. Where heating or cooling is needed and permanent enclosure is not complete, insulate temporary enclosures.
 2. Use fire-retardant treated lumber and plywood. Provide tarpaulins and UL label and flame spread of 15 or less; provide translucent type (nylon reinforced polyethylene) where daylighting of enclosed space would be beneficial for workmanship, and reduce use of temporary lighting.
- E. Temporary Partitions: Provide floor-to-ceiling dustproof partitions to limit dust and dirt migration and to separate areas occupied by Owner from fumes and noise.
1. Construct dustproof partitions with gypsum wallboard with joints taped on occupied side, and fire-retardant plywood on construction operations side.
 2. Construct dustproof partitions with 2 layers of 3-mil (0.07-mm) polyethylene sheet on each side. Cover floor with 2 layers of 3-mil (0.07-mm) polyethylene sheet, extending sheets 18 inches (460 mm) up the sidewalls. Overlap and tape full length of joints. Cover floor with fire-retardant plywood.
 - a. Construct vestibule and airlock at each entrance through temporary partition with not less than 48 inches (1219 mm) between doors. Maintain water-dampened foot mats in vestibule.
 3. Insulate partitions to provide noise protection to occupied areas.
 4. Seal joints and perimeter. Equip partitions with dustproof doors and security locks.
 5. Protect air-handling equipment.
 6. Construct temporary dustproof closures to open ends of ductwork and equipment until such time as systems are ready for use or till substantial completion.
 7. Weather strip openings.
 8. Provide walk-off mats at each entrance through temporary partition.
- F. Temporary Fire Protection: Install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 241.
1. Prohibit smoking in hazardous fire-exposure and construction areas.
 2. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition according to requirements of authorities having jurisdiction.
 3. Develop and supervise an overall fire-prevention and -protection program for personnel at Project site. Review needs with local fire department and establish procedures to be followed. Instruct personnel in methods and procedures. Post warnings and information.
 4. Fire Extinguishers: Provide portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.

3.05 OPERATION, TERMINATION, AND REMOVAL

- A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.
- B. Maintenance: Maintain facilities in good operating condition until removal.
 1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.

- C. Temporary Facility Changeover: Do not change over from using temporary security and protection facilities to permanent facilities until Substantial Completion.
- D. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.
 - 1. Materials and facilities that constitute temporary facilities are property of the Contractor. Owner reserves right to take possession of Project identification signs.
 - 2. Remove temporary paving not intended for or acceptable for integration into permanent paving. Where area is intended for landscape development, remove soil and aggregate fill that do not comply with requirements for fill or subsoil. Remove materials contaminated with road oil, asphalt and other petrochemical compounds, and other substances that might impair growth of plant materials or lawns. Repair or replace street paving, curbs, and sidewalks at temporary entrances, as required by authorities having jurisdiction.
 - 3. At Substantial Completion, clean and renovate permanent facilities used during construction period. Comply with final cleaning requirements specified in Closeout Procedures.

END OF SECTION 01 50 00

SECTION 01 51 00 - TEMPORARY UTILITIES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Temporary Utilities: Provision of electricity, lighting, heat, ventilation, and water.

1.02 REFERENCE STANDARDS

- A. 29 CFR 1926 - Safety and Health Regulations for Construction; Current Edition.

1.03 TEMPORARY ELECTRICITY

- A. Cost: By Contractor.
- B. Provide power service required from utility source.
- C. Provide temporary electric feeder from existing building electrical service at location as directed.
- D. Power Service Characteristics: ____ volt, ____ ampere, three phase, four wire.
- E. Provide power outlets for construction operations, with branch wiring and distribution boxes located at each floor. Provide flexible power cords as required.
- F. Provide main service disconnect and over-current protection at convenient location and meter.
- G. Permanent convenience receptacles may be utilized during construction.
- H. Provide adequate distribution equipment, wiring, and outlets to provide single phase branch circuits for power and lighting.

1.04 TEMPORARY LIGHTING FOR CONSTRUCTION PURPOSES

- A. Provide and maintain LED, compact fluorescent, or high-intensity discharge lighting as suitable for the application for construction operations in accordance with requirements of 29 CFR 1926 and authorities having jurisdiction.
- B. Provide branch wiring from power source to distribution boxes with lighting conductors, pigtails, and lamps as required.
- C. Maintain lighting and provide routine repairs.
- D. Permanent building lighting may be utilized during construction.

1.05 TEMPORARY HEATING

- A. Cost of Energy: By Contractor.
- B. Provide heating devices and heat as needed to maintain specified conditions for construction operations.

- C. Maintain minimum ambient temperature of 50 degrees F in areas where construction is in progress, unless indicated otherwise in specifications.
- D. Owner's existing heat plant may be used.
 - 1. Exercise measures to conserve energy.
 - 2. Enclose building prior to activating temporary heat.
 - 3. Provide separate metering and reimburse Owner for cost of energy used.
- E. Prior to operation of permanent equipment for temporary heating purposes, verify that installation is approved for operation, equipment is lubricated and filters are in place. Provide and pay for operation, maintenance, and regular replacement of filters and worn or consumed parts.

1.06 TEMPORARY COOLING

- A. Cost of Energy: By Contractor.
- B. Provide cooling devices and cooling as needed to maintain specified conditions for construction operations.
- C. Maintain maximum ambient temperature of 80 degrees F in areas where construction is in progress, unless indicated otherwise in specifications.
- D. Owner's existing cooling plant may be used.
 - 1. Exercise measures to conserve energy.
 - 2. Enclose building prior to activating temporary cooling.
 - 3. Provide separate metering and reimburse Owner for cost of energy used.
- E. Prior to operation of permanent equipment for temporary cooling purposes, verify that installation is approved for operation, equipment is lubricated and filters are in place. Provide and pay for operation, maintenance, and regular replacement of filters and worn or consumed parts.

1.07 TEMPORARY VENTILATION

- A. Existing ventilation equipment may not be used.

1.08 TEMPORARY WATER SERVICE

- A. Cost of Water Used: By Contractor.
- B. Provide and maintain suitable quality water service for construction operations at time of project mobilization.
- C. Connect to existing water source.
 - 1. Exercise measures to conserve water.
 - 2. Provide separate metering and reimburse Owner for cost of water used.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION 01 51 00

SECTION 01 52 13 - FIELD OFFICES AND SHEDS

PART 1 GENERAL

PART 2 PRODUCTS

2.01 OWNER AND ARCHITECT/ENGINEER OFFICE

PART 3 EXECUTION

3.01 INSTALLATION

END OF SECTION 01 52 13

SECTION 01 55 00 - VEHICULAR ACCESS AND PARKING

PART 3 EXECUTION

END OF SECTION 01 55 00

SECTION 01 56 39 - TEMPORARY TREE AND PLANT PROTECTION

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. This Section includes the protection and trimming of existing trees that interfere with, or are affected by, execution of the Work, whether temporary or permanent construction.
- B. Related Requirements:
 - 1. Section 01 50 00 - Temporary Facilities and Controls for temporary controls, utilities, support facilities, temporary site fencing, and, if applicable, temporary erosion and sedimentation controls if not specified in Section 31 10 00 - Site Clearing.

1.03 DEFINITIONS

- A. Tree Protection Zone: Area surrounding individual trees or groups of trees to remain during construction, and defined by the drip line of individual trees or the perimeter drip line of groups of trees, unless otherwise indicated.
- B. Plant-Protection Zone: Area surrounding individual trees, groups of trees, shrubs, or other vegetation to be protected during construction and indicated on Drawings.
- C. Vegetation: Trees, shrubs, groundcovers, grass, and other plants.

1.04 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Tree Pruning Schedule: Written schedule from arborist detailing scope and extent of pruning of trees to remain that interfere with or are affected by construction.
- C. Qualification Data: For tree service firm and arborist.
- D. Certification: From arborist, certifying that trees indicated to remain have been protected during construction according to recognized standards and that trees were promptly and properly treated and repaired when damaged.
- E. Maintenance Recommendations: From arborist, for care and protection of trees affected by construction during and after completing the Work.

1.05 QUALITY ASSURANCE

- A. Tree Service Firm Qualifications: An experienced tree service firm that has successfully completed tree protection and trimming work similar to that required for this Project and that will assign an experienced, qualified arborist to Project site during execution of tree protection and trimming.
- B. Arborist Qualifications: An arborist certified by ISA or licensed in the jurisdiction where Project is located.
- C. Tree Pruning Standard: Comply with ANSI A300 (Part 1), "Tree, Shrub, and Other Woody Plant Maintenance--Standard Practices (Pruning)."
- D. Pre-installation Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination."
 - 1. Before tree protection and trimming operations begin, meet with representatives of authorities having jurisdiction, Owner, Architect, consultants, and other concerned entities to review tree protection and trimming procedures and responsibilities.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Drainage Fill: Selected crushed stone, or crushed or uncrushed gravel, washed, ASTM D 448, Size 24, with 90 to 100 percent passing a 2-1/2-inch sieve and not more than 10 percent passing a 3/4-inch sieve.
- B. Topsoil: Natural or cultivated surface-soil layer containing organic matter and sand, silt, and clay particles; friable, pervious, and black or a darker shade of brown, gray, or red than underlying subsoil; reasonably free of subsoil, clay lumps, gravel, and other objects more than 1 inch in diameter; and free of weeds, roots, and toxic and other nonsoil materials.
 - 1. Obtain topsoil only from well-drained sites where topsoil is 4 inches deep or more; do not obtain from bogs or marshes.
- C. Filter Fabric: Manufacturer's standard, nonwoven, pervious, geotextile fabric of polypropylene, nylon, or polyester fibers.
- D. Chain-Link Fence: Metallic-coated steel chain-link fence fabric of 0.120-inch- diameter wire; a minimum of 48 inches high; with 1.9-inch- diameter line posts; 2-3/8-inch- diameter terminal and corner posts; 1-5/8-inch- diameter top rail; and 0.177-inch- diameter bottom tension wire; with tie wires, hog ring ties, and other accessories for a complete fence system.
- E. Organic Mulch: Wood and bark chips, free of deleterious materials.

PART 3 EXECUTION

3.01 PREPARATION

- A. Temporary Fencing: Install temporary fencing around tree protection zones to protect remaining trees and vegetation from construction damage. Maintain temporary fence and remove when construction is complete.

1. Install chain-link fence according to ASTM F 567 and manufacturer's written instructions.
- B. Protect tree root systems from damage caused by runoff or spillage of noxious materials while mixing, placing, or storing construction materials. Protect root systems from ponding, eroding, or excessive wetting caused by dewatering operations.
- C. Mulch areas within drip line of trees to remain and other areas indicated.
 1. Apply 3-inch average thickness of organic mulch. Do not place mulch within 6 inches of tree trunks.
- D. Do not store construction materials, debris, or excavated material inside tree protection zones. Do not permit vehicles or foot traffic within tree protection zones; prevent soil compaction over root systems.
- E. Maintain tree protection zones free of weeds and trash.
- F. Do not allow fires within tree protection zones.
- G. Trees with a diameter of 6 inches or greater cannot be removed or disturbed between the dates of April 1 and September 30.

3.02 EXCAVATION

- A. Install shoring or other protective support systems to minimize sloping or benching of excavations.
- B. Do not excavate within tree protection zones, unless otherwise indicated.
- C. Where excavation for new construction is required within tree protection zones, hand clear and excavate to minimize damage to root systems. Use narrow-tine spading forks and comb soil to expose roots.
 1. Redirect roots in backfill areas where possible. If encountering large, main lateral roots, expose roots beyond excavation limits as required to bend and redirect them without breaking. If encountered immediately adjacent to location of new construction and redirection is not practical, cut roots approximately 3 inches back from new construction.
 2. Do not allow exposed roots to dry out before placing permanent backfill. Provide temporary earth cover or pack with peat moss and wrap with burlap. Water and maintain in a moist condition. Temporarily support and protect roots from damage until they are permanently relocated and covered with soil.
- D. Where utility trenches are required within tree protection zones, tunnel under or around roots by drilling, auger boring, pipe jacking, or digging by hand.
 1. Root Pruning: Do not cut main lateral roots or taproots; cut only smaller roots that interfere with installation of utilities. Cut roots with sharp pruning instruments; do not break or chop.

3.03 REGRADING

- A. Grade Lowering: Where new finish grade is indicated below existing grade around trees, slope grade beyond tree protection zones. Maintain existing grades within tree protection zones.
- B. Grade Lowering: Where new finish grade is indicated below existing grade around trees, slope grade away from trees as recommended by arborist, unless otherwise indicated.

1. Root Pruning: Prune tree roots exposed during grade lowering. Do not cut main lateral roots or taproots; cut only smaller roots. Cut roots with sharp pruning instruments; do not break or chop.
- C. Minor Fill: Where existing grade is 6 inches or less below elevation of finish grade, fill with topsoil. Place topsoil in a single uncompacted layer and hand grade to required finish elevations.
- D. Moderate Fill: Where existing grade is more than 6 inches but less than 12 inches below elevation of finish grade, place drainage fill, filter fabric, and topsoil on existing grade as follows:
 1. Carefully place drainage fill against tree trunk approximately 2 inches above elevation of finish grade and extend not less than 18 inches from tree trunk on all sides. For balance of area within drip-line perimeter, place drainage fill up to 6 inches below elevation of grade.
 2. Place filter fabric with edges overlapping 6 inches minimum.
 3. Place fill layer of topsoil to finish grade. Do not compact drainage fill or topsoil. Hand grade to required finish elevations.

3.04 TREE PRUNING

- A. Prune trees to remain that are affected by temporary and permanent construction.
- B. Prune trees to remain to compensate for root loss caused by damaging or cutting root system. Provide subsequent maintenance during Contract period as recommended by arborist.
- C. Pruning Standards: Prune trees according to ANSI A300 (Part 1).
 1. Type of Pruning: Cleaning.
 2. Specialty Pruning: Restoration.
- D. Cut branches with sharp pruning instruments; do not break or chop.
- E. Chip removed tree branches and dispose of off-site.

3.05 TREE REPAIR AND REPLACEMENT

- A. Promptly repair trees damaged by construction operations within 24 hours. Treat damaged trunks, limbs, and roots according to arborist's written instructions.
- B. Remove and replace trees indicated to remain that die or are damaged during construction operations that Landscape Architect determines are incapable of restoring to normal growth pattern.
 1. Provide new trees of same size and species as those being replaced; plant and maintain as specified in Division 32 Section "Plants."
 2. Provide new trees of 6-inch caliper size and of a species selected by Architect when damaged trees more than 6 inches in caliper size, measured 12 inches above grade, are required to be replaced. Plant and maintain new trees as specified in Division 22 Section "Plants."
- C. Aerate surface soil, compacted during construction, 10 feet beyond drip line and no closer than 36 inches to tree trunk. Drill 2-inch- diameter holes a minimum of 12 inches deep at 24 inches o.c. Backfill holes with an equal mix of augered soil and sand.

3.06 DISPOSAL OF WASTE MATERIALS

- A. Burning is not permitted.
- B. Disposal: Remove excess excavated material and displaced trees from Owner's property.

END OF SECTION 01 56 39

SECTION 01 57 13 - TEMPORARY EROSION AND SEDIMENT CONTROL

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Prevention of erosion due to construction activities.
- B. Prevention of sedimentation of waterways, open drainage ways, and storm and sanitary sewers due to construction activities.
- C. Restoration of areas eroded due to insufficient preventive measures.
- D. Performance bond.
- E. Compensation of Owner for fines levied by authorities having jurisdiction due to non-compliance by Contractor.

1.02 RELATED REQUIREMENTS

- A. Section 03 30 00 - Cast-in-Place Concrete: Concrete for temporary and permanent erosion control structures indicated on drawings.
- B. Section 31 22 00 - Grading: Temporary and permanent grade changes for erosion control.
- C. Section 32 92 19 - Seeding: Permanent turf for erosion control.

1.03 REFERENCE STANDARDS

- A. ASTM D4355/D4355M - Standard Test Method for Deterioration of Geotextiles by Exposure to Light, Moisture, and Heat in a Xenon Arc-Type Apparatus; 2021.
- B. ASTM D4491/D4491M - Standard Test Methods for Water Permeability of Geotextiles by Permittivity; 2022.
- C. ASTM D4533/D4533M - Standard Test Method for Trapezoid Tearing Strength of Geotextiles; 2015 (Reapproved 2023).
- D. ASTM D4632/D4632M - Standard Test Method for Grab Breaking Load and Elongation of Geotextiles; 2015a (Reapproved 2023).
- E. ASTM D4751 - Standard Test Methods for Determining Apparent Opening Size of a Geotextile; 2021a.
- F. ASTM D4873/D4873M - Standard Guide for Identification, Storage, and Handling of Geosynthetic Rolls and Samples; 2017 (Reapproved 2021).
- G. EPA (NPDES) - National Pollutant Discharge Elimination System (NPDES), Construction General Permit; Current Edition.

1.04 PERFORMANCE REQUIREMENTS

- A. Comply with requirements of EPA (NPDES) for erosion and sedimentation control, as specified by the NPDES, for Phases I and II, and in compliance with requirements of Construction General Permit (CGP), whether the project is required by law to comply or not.
- B. Develop and follow an Erosion and Sedimentation Prevention Plan and submit periodic inspection reports.
- C. Do not begin clearing, grading, or other work involving disturbance of ground surface cover until applicable permits have been obtained; furnish all documentation required to obtain applicable permits.
- D. Provide to Owner a Performance Bond covering erosion and sedimentation preventive measures only, in an amount equal to 100 percent of the cost of erosion and sedimentation control work.
- E. Timing: Put preventive measures in place as soon as possible after disturbance of surface cover and before precipitation occurs.
- F. Storm Water Runoff: Control increased storm water runoff due to disturbance of surface cover due to construction activities for this project.
 - 1. Prevent runoff into storm and sanitary sewer systems, including open drainage channels, in excess of actual capacity or amount allowed by authorities having jurisdiction, whichever is less.
 - 2. Anticipate runoff volume due to the most extreme short term and 24-hour rainfall events that might occur in 25 years.
- G. Erosion On Site: Minimize wind, water, and vehicular erosion of soil on project site due to construction activities for this project.
 - 1. Control movement of sediment and soil from temporary stockpiles of soil.
 - 2. Prevent development of ruts due to equipment and vehicular traffic.
 - 3. If erosion occurs due to non-compliance with these requirements, restore eroded areas at no cost to Owner.
- H. Erosion Off Site: Prevent erosion of soil and deposition of sediment on other properties caused by water leaving the project site due to construction activities for this project.
 - 1. Prevent windblown soil from leaving the project site.
 - 2. Prevent tracking of mud onto public roads outside site.
 - 3. Prevent mud and sediment from flowing onto sidewalks and pavements.
 - 4. If erosion occurs due to non-compliance with these requirements, restore eroded areas at no cost to Owner.
- I. Sedimentation of Waterways On Site: Prevent sedimentation of waterways on the project site, including rivers, streams, lakes, ponds, open drainage ways, storm sewers, and sanitary sewers.
 - 1. If sedimentation occurs, install or correct preventive measures immediately at no cost to Owner; remove deposited sediments; comply with requirements of authorities having jurisdiction.
 - 2. If sediment basins are used as temporary preventive measures, pump dry and remove deposited sediment after each storm.
- J. Sedimentation of Waterways Off Site: Prevent sedimentation of waterways off the project site, including rivers, streams, lakes, ponds, open drainage ways, storm sewers, and sanitary sewers.

1. If sedimentation occurs, install or correct preventive measures immediately at no cost to Owner; remove deposited sediments; comply with requirements of authorities having jurisdiction.
- K. Open Water: Prevent standing water that could become stagnant.
- L. Maintenance: Maintain temporary preventive measures until permanent measures have been established.

1.05 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Erosion and Sedimentation Control Plan:
 1. Include:
 - a. Site plan identifying soils and vegetation, existing erosion problems, and areas vulnerable to erosion due to topography, soils, vegetation, or drainage.
 - b. Site plan showing grading; new improvements; temporary roads, traffic accesses, and other temporary construction; and proposed preventive measures.
 - c. Where extensive areas of soil will be disturbed, include storm water flow and volume calculations, soil loss predictions, and proposed preventive measures.
 - d. Schedule of temporary preventive measures, in relation to ground disturbing activities.
 - e. Other information required by law.
 - f. Format required by law is acceptable, provided any additional information specified is also included.
 2. Obtain the approval of the Plan by authorities having jurisdiction.
 3. Obtain the approval of the Plan by Owner.
- C. Certificate: Mill certificate for silt fence fabric attesting that fabric and factory seams comply with specified requirements, signed by legally authorized official of manufacturer; indicate actual minimum average roll values; identify fabric by roll identification numbers.
- D. Inspection Reports: Submit report of each inspection; identify each preventive measure, indicate condition, and specify maintenance or repair required and accomplished.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Mulch: Use one of the following:
 1. Straw or hay.
 2. Erosion control matting or netting.
- B. Grass Seed For Temporary Cover: Select a species appropriate to climate, planting season, and intended purpose. If same area will later be planted with permanent vegetation, do not use species known to be excessively competitive or prone to volunteer in subsequent seasons.

- C. Silt Fence Fabric: Polypropylene geotextile resistant to common soil chemicals, mildew, and insects; non-biodegradable; in longest lengths possible; fabric including seams with the following minimum average roll lengths:
 - 1. Average Opening Size: 30 U.S. Std. Sieve, maximum, when tested in accordance with ASTM D4751.
 - 2. Permittivity: 0.05 sec^{-1} , minimum, when tested in accordance with ASTM D4491/D4491M.
 - 3. Ultraviolet Resistance: Retaining at least 70 percent of tensile strength, when tested in accordance with ASTM D4355/D4355M after 500 hours exposure.
 - 4. Tensile Strength: 100 pounds-force, minimum, in cross-machine direction; 124 pounds-force, minimum, in machine direction; when tested in accordance with ASTM D4632/D4632M.
 - 5. Elongation: 15 to 30 percent, when tested in accordance with ASTM D4632/D4632M.
 - 6. Tear Strength: 55 pounds-force, minimum, when tested in accordance with ASTM D4533/D4533M.
 - 7. Color: Manufacturer's standard, with embedment and fastener lines preprinted.
- D. Silt Fence Posts: One of the following, minimum 5 feet long:

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine site and identify existing features that contribute to erosion resistance; maintain such existing features to greatest extent possible.

3.02 PREPARATION

- A. Schedule work so that soil surfaces are left exposed for the minimum amount of time.

3.03 SCOPE OF PREVENTIVE MEASURES

- A. In all cases, if permanent erosion resistant measures have been installed temporary preventive measures are not required.
- B. Construction Entrances: Traffic-bearing aggregate surface.
 - 1. Width: As required; 20 feet, minimum.
 - 2. Length: 50 feet, minimum.
 - 3. Provide at each construction entrance from public right-of-way.
 - 4. Where necessary to prevent tracking of mud onto right-of-way, provide wheel washing area out of direct traffic lane, with drain into sediment trap or basin.
- C. Linear Sediment Barriers: Made of silt fences.
 - 1. Provide linear sediment barriers:
 - a. Along downhill perimeter edge of disturbed areas, including soil stockpiles.
 - 2. Space sediment barriers with the following maximum slope length upslope from barrier:
 - a. Slope of Less Than 2 Percent: 100 feet..
 - b. Slope Between 2 and 5 Percent: 75 feet.

- c. Slope Between 5 and 10 Percent: 50 feet.
- d. Slope Between 10 and 20 Percent: 25 feet.
- e. Slope Over 20 Percent: 15 feet.
- D. Storm Drain Curb Inlet Sediment Trap: Protect each curb inlet using one of the following measures:
 - 1. Filter fabric wrapped around hollow concrete blocks blocking entire inlet face area; use one piece of fabric wrapped at least 1-1/2 times around concrete blocks and secured to prevent dislodging; orient cores of blocks so runoff passes into inlet.
 - 2. Straw bale row blocking entire inlet face area; anchor into pavement.
- E. Storm Drain Drop Inlet Sediment Traps: As detailed on drawings.
- F. Temporary Splash Pads: Stone aggregate over filter fabric; size to suit application; provide at downspout outlets and storm water outlets.
- G. Soil Stockpiles: Protect using one of the following measures:
 - 1. Cover with polyethylene film, secured by placing soil on outer edges.
 - 2. Cover with mulch at least 4 inches thickness of pine needles, sawdust, bark, wood chips, or shredded leaves, or 6 inches of straw or hay.
- H. Mulching: Use only for areas that may be subjected to erosion for less than 6 months.
- I. Temporary Seeding: Use where temporary vegetated cover is required.

3.04 INSTALLATION

- A. Traffic-Bearing Aggregate Surface:
 - 1. Excavate minimum of 6 inches.
 - 2. Place geotextile fabric full width and length, with minimum 12 inch overlap at joints.
 - 3. Place and compact at least 6 inches of 1 1/2 to 3 1/2 inch diameter stone.
- B. Silt Fences:
 - 1. Store and handle fabric in accordance with ASTM D4873/D4873M.
 - 2. Where slope gradient is less than 3:1 or barriers will be in place less than 6 months, use nominal 16 inch high barriers with minimum 36 inch long posts spaced at 6 feet maximum, with fabric embedded at least 4 inches in ground.
 - 3. Where slope gradient is steeper than 3:1 or barriers will be in place over 6 months, use nominal 28 inch high barriers, minimum 48 inch long posts spaced at 6 feet maximum, with fabric embedded at least 6 inches in ground.
 - 4. Where slope gradient is steeper than 3:1 and vertical height of slope between barriers is more than 20 feet, use nominal 32 inch high barriers with woven wire reinforcement and steel posts spaced at 4 feet maximum, with fabric embedded at least 6 inches in ground.
 - 5. Install with top of fabric at nominal height and embedment as specified.
 - 6. Do not splice fabric width; minimize splices in fabric length; splice at post only, overlapping at least 18 inches, with extra post.
 - 7. Wherever runoff will flow around end of barrier or over the top, provide temporary splash pad or other outlet protection; at such outlets in the run of the barrier, make barrier not more than 12 inches high with post spacing not more than 4 feet.
- C. Mulching Over Small and Medium Areas:
 - 1. Dry Straw and Hay: Apply 4 to 6 inches depth.

2. Erosion Control Matting: Comply with manufacturer's instructions.
- D. Temporary Seeding:
 1. When hydraulic seeder is used, seedbed preparation is not required.
 2. When surface soil has been sealed by rainfall or consists of smooth undisturbed cut slopes, and conventional or manual seeding is to be used, prepare seedbed by scarifying sufficiently to allow seed to lodge and germinate.
 3. If temporary mulching was used on planting area but not removed, apply nitrogen fertilizer at 1 pound per 1000 sq ft.
 4. On soils of very low fertility, apply 10-10-10 fertilizer at rate of 12 to 16 pounds per 1000 sq ft.
 5. Incorporate fertilizer into soil before seeding.
 6. Apply seed uniformly; if using drill or cultipacker seeders place seed 1/2 to 1 inch deep.
 7. Irrigate as required to thoroughly wet soil to depth that will ensure germination, without causing runoff or erosion.
 8. Repeat irrigation as required until grass is established.

3.05 MAINTENANCE

- A. Inspect preventive measures weekly, within 24 hours after the end of any storm that produces 0.5 inches or more rainfall at the project site, and daily during prolonged rainfall.
- B. Repair deficiencies immediately.
- C. Silt Fences:
 1. Promptly replace fabric that deteriorates unless need for fence has passed.
 2. Remove silt deposits that exceed one-third of the height of the fence.
 3. Repair fences that are undercut by runoff or otherwise damaged, whether by runoff or other causes.
- D. Clean out temporary sediment control structures weekly and relocate soil on site.
- E. Place sediment in appropriate locations on site; do not remove from site.

3.06 CLEAN UP

- A. Remove temporary measures after permanent measures have been installed, unless permitted to remain by Architect.
- B. Clean out temporary sediment control structures that are to remain as permanent measures.
- C. Where removal of temporary measures would leave exposed soil, shape surface to an acceptable grade and finish to match adjacent ground surfaces.

END OF SECTION 01 57 13

SECTION 01 58 13 - TEMPORARY PROJECT SIGNAGE

PART 2 PRODUCTS

END OF SECTION 01 58 13

SECTION 01 60 00 - PRODUCT REQUIREMENTS

PART 1 GENERAL

1.01 RELATED REQUIREMENTS

- A. Section 01 25 00 - Substitution Procedures: Substitutions made during procurement and/or construction phases.
- B. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions: Requirements for VOC-restricted product categories.
- C. Section 01 74 19 - Construction Waste Management and Disposal: Waste disposal requirements potentially affecting product selection, packaging and substitutions.

1.02 SUBMITTALS

- A. Product Data Submittals: Submit manufacturer's standard published data. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.
- B. Shop Drawing Submittals: Prepared specifically for this Project; indicate utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.
- C. Sample Submittals: Illustrate functional and aesthetic characteristics of the product, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.
 - 1. For selection from standard finishes, submit samples of the full range of the manufacturer's standard colors, textures, and patterns.

PART 2 PRODUCTS

2.01 NEW PRODUCTS

- A. Provide new products unless specifically required or permitted by Contract Documents.
- B. Use of products having any of the following characteristics is not permitted:
- C. Where other criteria are met, Contractor shall give preference to products that:
 - 1. If used on interior, have lower emissions, as defined in Section 01 61 16.
 - 2. If wet-applied, have lower VOC content, as defined in Section 01 61 16.

2.02 PRODUCT OPTIONS

- A. Products Specified by Reference Standards or by Description Only: Use any product meeting those standards or description.
- B. Products Specified by Naming One or More Manufacturers: Use a product of one of the manufacturers named and meeting specifications, no options or substitutions

allowed.

- C. Products Specified by Naming One or More Manufacturers with a Provision for Substitutions: Submit a request for substitution for any manufacturer not named.

PART 3 EXECUTION

3.01 SUBSTITUTION LIMITATIONS

- A. See Section 01 25 00 - Substitution Procedures.

3.02 TRANSPORTATION AND HANDLING

- A. Package products for shipment in manner to prevent damage; for equipment, package to avoid loss of factory calibration.
- B. If special precautions are required, attach instructions prominently and legibly on outside of packaging.
- C. Coordinate schedule of product delivery to designated prepared areas in order to minimize site storage time and potential damage to stored materials.
- D. Transport and handle products in accordance with manufacturer's instructions.
- E. Transport materials in covered trucks to prevent contamination of product and littering of surrounding areas.
- F. Promptly inspect shipments to ensure that products comply with requirements, quantities are correct, and products are undamaged.
- G. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage, and to minimize handling.
- H. Arrange for the return of packing materials, such as wood pallets, where economically feasible.

3.03 STORAGE AND PROTECTION

- A. Designate receiving/storage areas for incoming products so that they are delivered according to installation schedule and placed convenient to work area in order to minimize waste due to excessive materials handling and misapplication. See Section 01 74 19.
- B. Store and protect products in accordance with manufacturers' instructions.
- C. Store with seals and labels intact and legible.
- D. Store sensitive products in weathertight, climate-controlled enclosures in an environment favorable to product.
- E. For exterior storage of fabricated products, place on sloped supports above ground.
- F. Protect products from damage or deterioration due to construction operations, weather, precipitation, humidity, temperature, sunlight and ultraviolet light, dirt, dust, and other contaminants.
- G. Comply with manufacturer's warranty conditions, if any.

- H. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.
- I. Prevent contact with material that may cause corrosion, discoloration, or staining.
- J. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.
- K. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

END OF SECTION 01 60 00

SECTION 01 60 00 - PRODUCT REQUIREMENTS

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. Section includes administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; and equivalent products.
- B. Related Requirements:
 - 1. Section 01 10 00 - SUMMARY for Contractor requirements related to Owner-furnished products.
 - 2. Section 01 21 00 - Allowances for products selected under an allowance.
 - 3. Section 01 23 00 - Alternates for products selected under an alternate.
 - 4. Section 01 25 00 - Substitution Procedures for requests for substitutions.
 - 5. Section 01 42 00 - References for applicable industry standards for products specified.
 - 6. Section 01 77 00 - Closeout Procedures for submitting warranties.

1.03 DEFINITIONS

- A. Products: Items obtained for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
 - 1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature that is current as of date of the Contract Documents.
 - 2. New Products: Items that have not previously been incorporated into another project or facility. Salvaged items or items reused from other projects are not considered new products. Items that are manufactured or fabricated to include recycled content materials are considered new products, unless indicated otherwise.
 - 3. Equivalent Product: Product by named manufacturer that is demonstrated and approved through the equivalent product submittal process described in Part 2 "Equivalent Products" Article, to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.
- B. Basis-of-Design Product Specification: A specification in which a single manufacturer's product is named and accompanied by the words "basis-of-design product," or "approved equal" including make or model number or other designation. Published

attributes and characteristics of basis-of-design product establish salient characteristics of products.

1. Evaluation of Equivalent Products: In addition to the basis-of-design product description, product attributes and characteristics may be listed to establish the significant qualities related to type, function, in-service performance and physical properties, weight, dimension, durability, visual characteristics, and other special features and requirements for purposes of evaluating equivalent products of additional manufacturers named in the specification. Manufacturer's published attributes and characteristics of basis-of-design product also establish salient characteristics of products for purposes of evaluating equivalent products.
- C. Subject to Compliance with Requirements: Where the phrase "Subject to compliance with requirements" introduces a product selection procedure in an individual Specification Section, provide products qualified under the specified product procedure. In the event that a named product or product by a named manufacturer does not meet the other requirements of the specifications, select another named product or product from another named manufacturer that does meet the requirements of the specifications; submit a equivalent product request or substitution request, if applicable.
- D. Equivalent Product Request Submittal: An action submittal requesting consideration of a equivalent product, including the following information:
 1. Identification of basis-of-design product or fabrication or installation method to be replaced, including Specification Section number and title and Drawing numbers and titles.
 2. Data indicating compliance with the requirements specified in Part 2 "Equivalent Products" Article.
- E. Basis-of-Design Product Specification Submittal: An action submittal complying with requirements in Section 01 33 00 - Submittal Procedures.
- F. Substitution: Refer to Section 01 25 00 - Substitution Procedures for definition and limitations on substitutions.

1.04 QUALITY ASSURANCE

- A. Equivalency of Options: If Contractor is given option of selecting between two or more products for use on Project, select product equivalent with products previously selected, even if previously selected products were also options.
- B. Identification of Products: Except for required labels and operating data, do not attach or imprint manufacturer or product names or trademarks on exposed surfaces of products or equipment that will be exposed to view in occupied spaces or on the exterior.
 1. Labels: Locate required product labels and stamps on a concealed surface, or, where required for observation following installation, on a visually accessible surface that is not conspicuous.
 2. Equipment Nameplates: Provide a permanent nameplate on each item of service- or power-operated equipment. Locate on a visually accessible but inconspicuous surface. Include information essential for operation, including the following:
 - a. Name of product and manufacturer.
 - b. Model and serial number.
 - c. Capacity.

- d. Speed.
- e. Ratings.

1.05 COORDINATION

- A. Modify or adjust affected work as necessary to integrate work of approved equivalent products and approved substitutions.

1.06 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle products, using means and methods that will prevent damage, deterioration, and loss, including theft and vandalism. Comply with manufacturer's written instructions.
- B. Delivery and Handling:
 - 1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
 - 2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
 - 3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
 - 4. Inspect products on delivery to determine compliance with the Contract Documents and that products are undamaged and properly protected.
- C. Storage:
 - 1. Provide a secure location and enclosure at Project site for storage of materials and equipment.
 - 2. Store products to allow for inspection and measurement of quantity or counting of units.
 - 3. Store materials in a manner that will not endanger Project structure.
 - 4. Store products that are subject to damage by the elements under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation and with adequate protection from wind.
 - 5. Protect foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.
 - 6. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
 - 7. Protect stored products from damage and liquids from freezing.

1.07 PRODUCT WARRANTIES

- A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.
 - 1. Manufacturer's Warranty: Written standard warranty form furnished by individual manufacturer for a particular product and issued in the name of the Owner or endorsed by manufacturer to Owner.

2. Special Warranty: Written warranty required by the Contract Documents to provide specific rights for Owner and issued in the name of the Owner or endorsed by manufacturer to Owner.
- B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution.
1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
 2. Specified Form: When specified forms are included in the Project Manual, prepare a written document, using indicated form properly executed.
 3. See other Sections for specific content requirements and particular requirements for submitting special warranties.
- C. Submittal Time: Comply with requirements in Section 017700 "Closeout Procedures."

PART 2 PRODUCTS

2.01 PRODUCT SELECTION PROCEDURES

- A. General Product Requirements: Provide products that comply with the Contract Documents, are undamaged and, unless otherwise indicated, are new at time of installation.
1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
 2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
 3. Owner reserves the right to limit selection to products with warranties meeting requirements of the Contract Documents.
 4. Where products are accompanied by the term "as selected," Architect will make selection.
 5. Descriptive, performance, and reference standard requirements in the Specifications establish salient characteristics of products.
 6. Or Equal: For products specified by name and accompanied by the term "or equal," "or approved equal," or "or approved," comply with requirements in "Equivalent Products" Article to obtain approval for use of an unnamed product.
 - a. Submit additional documentation required by Architect in order to establish equivalency of proposed products. Unless otherwise indicated, evaluation of "or equal" product status is by the Architect, whose determination is final.
- B. Product Selection Procedures:
1. Non-Limited List of Products: Where Specifications include a list of names of both available manufacturers and products, provide one of the products listed or an unnamed product that complies with requirements.
 - a. Non-limited list of products is indicated by the phrase "Subject to compliance with requirements, available products that may be incorporated in the Work include, but are not limited to, the following."
 - b. Provision of an unnamed product is not considered a substitution, if the product complies with requirements.
 2. Non-Limited List of Manufacturers: Where Specifications include a list of available manufacturers, provide a product by one of the manufacturers listed or a product

- by an unnamed manufacturer that complies with requirements.
- a. Non-limited list of manufacturers is indicated by the phrase "Subject to compliance with requirements, available manufacturers whose products may be incorporated in the Work include, but are not limited to, the following."
 - b. Provision of products of an unnamed manufacturer is not considered a substitution, if the product complies with requirements.
3. Basis-of-Design Product: Where Specifications name a product, or refer to a product indicated on Drawings, and include a list of manufacturers, provide the specified or indicated product or a equivalent product. Drawings and Specifications may additionally indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with requirements in "Equivalent Products" Article for consideration of an unnamed product by one of the other named manufacturers.
- a. For approval of products by unnamed manufacturers, comply with requirements in Section 01 25 00 - Substitution Procedures for substitutions for convenience.
- C. Visual Matching Specification: Where Specifications require the phrase "match Architect's sample," provide a product that complies with requirements and matches Architect's sample. Architect's decision will be final on whether a proposed product matches.
1. If no product available within specified category matches and complies with other specified requirements, comply with requirements in Section 01 25 00 - Substitution Procedures for proposal of product.
- D. Visual Selection Specification: Where Specifications include the phrase "as selected by Architect from manufacturer's full range" or a similar phrase, select a product that complies with requirements. Architect will select color, gloss, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.
1. Standard Range: Where Specifications include the phrase "standard range of colors, patterns, textures" or similar phrase, Architect will select color, pattern, density, or texture from manufacturer's product line that does not include premium items.
 2. Full Range: Where Specifications include the phrase "full range of colors, patterns, textures" or similar phrase, Architect will select color, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.

2.02 EQUIVALENT PRODUCTS

- A. Conditions for Consideration of Equivalent Products: Architect will consider Contractor's request for equivalent product when the following conditions are satisfied. If the following conditions are not satisfied, Architect may return requests without action, except to record noncompliance with the following requirements:
1. Evidence that proposed product does not require revisions to the Contract Documents, is consistent with the Contract Documents, will produce the indicated results, and is compatible with other portions of the Work.
 2. Detailed comparison of significant qualities of proposed product with those of the named basis-of-design product. Significant product qualities include attributes, such as type, function, in-service performance and physical properties, weight,

- dimension, durability, visual characteristics, and other specific features and requirements.
- 3. Evidence that proposed product provides specified warranty.
- 4. List of similar installations for completed projects, with project names and addresses and names and addresses of architects and owners, if requested.
- 5. Samples, if requested.
- B. Architect's Action on Equivalent Products Submittal: If necessary, Architect will request additional information or documentation for evaluation, as specified in Section 01 33 00 - Submittal Procedures.
 - 1. Form of Approval of Submittal: As specified in Section 01 33 00 - Submittal Procedures.
 - 2. Use product specified if Architect does not issue a decision on use of a equivalent product request within time allocated.
- C. Submittal Requirements, Two-Step Process: Approval by the Architect of Contractor's request for use of equivalent product is not intended to satisfy other submittal requirements. Comply with specified submittal requirements.

PART 3 EXECUTION (NOT USED)

END OF SECTION 01 60 00

SECTION 01 61 16 - VOLATILE ORGANIC COMPOUND (VOC) CONTENT RESTRICTIONS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Requirements for Indoor-Emissions-Restricted products.
- B. Requirements for VOC-Content-Restricted products.

1.02 DEFINITIONS

- A. Indoor-Emissions-Restricted Products: All products in the following product categories, whether specified or not:
- B. VOC-Content-Restricted Products: All products in the following product categories, whether specified or not:
 - 1. Interior paints and coatings applied on site.
 - 2. Interior adhesives and sealants applied on site, including flooring adhesives.
- C. Interior of Building: Anywhere inside the exterior weather barrier.
- D. Adhesives: All gunnable, trowelable, liquid-applied, and aerosol adhesives, whether specified or not; including flooring adhesives, resilient base adhesives, and pipe jointing adhesives.
- E. Sealants: All gunnable, trowelable, and liquid-applied joint sealants and sealant primers, whether specified or not; including firestopping sealants and duct joint sealers.
- F. Inherently Non-Emitting Materials: Products composed wholly of minerals or metals, unless they include organic-based surface coatings, binders, or sealants; and specifically the following:
 - 1. Concrete.
 - 2. Clay brick.
 - 3. Metals that are plated, anodized, or powder-coated.
 - 4. Glass.
 - 5. Ceramics.
 - 6. Solid wood flooring that is unfinished and untreated.

1.03 REFERENCE STANDARDS

- A. 40 CFR 59, Subpart D - National Volatile Organic Compound Emission Standards for Architectural Coatings; U.S. Environmental Protection Agency; current edition.
- B. ASTM D3960 - Standard Practice for Determining Volatile Organic Compound (VOC) Content of Paints and Related Coatings; 2005 (Reapproved 2018).
- C. CARB (SCM) - Suggested Control Measure for Architectural Coatings; California Air Resources Board; 2020.
- D. SCAQMD 1113 - Architectural Coatings; 1977, with Amendment (2016).
- E. SCAQMD 1168 - Adhesive and Sealant Applications; 1989, with Amendment (2022).

1.04 SUBMITTALS

- A. Product Data: For each VOC-restricted product used in the project, submit evidence of compliance.

1.05 QUALITY ASSURANCE

- A. VOC Content Test Method: 40 CFR 59, Subpart D (EPA Method 24), or ASTM D3960, unless otherwise indicated.
 - 1. Evidence of Compliance: Acceptable types of evidence are:
 - a. Report of laboratory testing performed in accordance with requirements.
- B. Testing Agency Qualifications: Independent firm specializing in performing testing and inspections of the type specified in this section.

PART 2 PRODUCTS

2.01 MATERIALS

- A. VOC-Content-Restricted Products: VOC content not greater than required by the following:
 - 1. Adhesives, Including Flooring Adhesives: SCAQMD 1168 Rule.
 - 2. Joint Sealants: SCAQMD 1168 Rule.
 - 3. Paints and Coatings: Each color; most stringent of the following:
 - a. 40 CFR 59, Subpart D.
 - b. SCAQMD 1113 Rule.
 - c. CARB (SCM).

PART 3 EXECUTION

3.01 FIELD QUALITY CONTROL

- A. Owner reserves the right to reject non-compliant products, whether installed or not, and require their removal and replacement with compliant products at no extra cost to Owner.
- B. Additional costs to restore indoor air quality due to installation of non-compliant products will be borne by Contractor.

END OF SECTION 01 61 16

SECTION 01 73 00 - EXECUTION

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. Section includes general administrative and procedural requirements governing execution of the Work, including, but not limited to, the following:
 - 1. Construction layout.
 - 2. Field engineering and surveying.
 - 3. Installation of the Work.
 - 4. Alterations.
 - 5. Cutting and patching.
 - 6. Coordination of Owner's portion of the Work.
 - 7. Coordination of Owner-installed products.
 - 8. Progress cleaning.
 - 9. Starting and adjusting.
 - 10. Protection of installed construction.
- B. Related Requirements:
 - 1. Section 01 10 00 - SUMMARY for coordination of Owner-furnished products, Owner-performed work, Owner's separate contracts, and limits on use of Project site.
 - 2. Section 01 33 00 - Submittal Procedures for submitting surveys.
 - 3. Section 02 41 19 - Selective Demolition for demolition and removal of selected portions of the building.
 - 4. Section 07 84 00 - Firestopping for patching penetrations in fire-rated construction.

1.03 DEFINITIONS

- A. Cutting: Removal of in-place construction necessary to permit installation or performance of subsequent work.
- B. Patching: Fitting and repair work required to restore construction to original conditions after installation of other work.

1.04 PREINSTALLATION MEETINGS

- A. Cutting and Patching Conference: Conduct conference at Project site.

1. Prior to commencing work requiring cutting and patching, review extent of cutting and patching anticipated and examine procedures for ensuring satisfactory result from cutting and patching work. Inform Architect of scheduled meeting. Require representatives of each entity directly concerned with cutting and patching to attend, including the following:
 - a. Contractor's superintendent.
 - b. Trade supervisor responsible for cutting operations.
 - c. Trade supervisor(s) responsible for patching of each type of substrate.
 - d. Mechanical, electrical, and utilities subcontractors' supervisors, to the extent each trade is affected by cutting and patching operations.
 2. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.
- B. Layout Conference: Conduct conference at Project Site.
1. Prior to establishing layout of new and existing perimeter and structural column grid(s), review building location requirements. Review benchmark, control point, and layout and dimension requirements. Inform Architect of scheduled meeting. Require representatives of each entity directly concerned with Project layout to attend, including the following:
 - a. Contractor's superintendent.
 2. Review meanings and intent of dimensions, notes, terms, graphic symbols, and other layout information indicated on the Drawings.
 3. Review requirements for including layouts on Shop Drawings and other submittals.
 4. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

1.05 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For land surveyor or professional engineer licensed in the state the Project is located.
- B. Certified Surveys: Submit two copies signed by land surveyor or professional engineer licensed in the state the Project is located.
- C. Certificates: Submit certificate signed by land surveyor or professional engineer licensed in the state the Project is located, certifying that location and elevation of improvements comply with requirements.
- D. Cutting and Patching Plan: Submit plan describing procedures at least (10) ten days prior to the time cutting and patching will be performed. Include the following information:
 1. Extent: Describe reason for and extent of each occurrence of cutting and patching.
 2. Changes to In-Place Construction: Describe anticipated results. Include changes to structural elements and operating components as well as changes in building appearance and other significant visual elements.
 3. Products: List products to be used for patching and firms or entities that will perform patching work.
 4. Dates: Indicate when cutting and patching will be performed.
 5. Utilities and Mechanical and Electrical Systems: List services and systems that cutting and patching procedures will disturb or affect. List services and systems

that will be relocated and those that will be temporarily out of service. Indicate length of time permanent services and systems will be disrupted.

- a. Include description of provisions for temporary services and systems during interruption of permanent services and systems.
- 6. Structural Elements: Where cutting and patching involve adding reinforcement to structural elements, submit details and engineering calculations showing integration of reinforcement with original structure.
- E. Landfill Receipts: Submit copy of receipts issued by a landfill facility, licensed to accept hazardous materials, for hazardous waste disposal.

1.06 QUALITY ASSURANCE

- A. Land Surveyor Qualifications: A professional land surveyor who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing land-surveying services of the kind indicated.
- B. Professional Engineer Qualifications: Refer to Section 01 40 00 - Quality Requirements.
- C. Cutting and Patching: Comply with requirements for and limitations on cutting and patching of construction elements.
 - 1. Structural Elements: When cutting and patching structural elements, or when encountering the need for cutting and patching of elements whose structural function is not known, notify Architect of locations and details of cutting and await directions from Architect before proceeding. Shore, brace, and support structural elements during cutting and patching. Do not cut and patch structural elements in a manner that could change their load-carrying capacity or increase deflection.
 - 2. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety. Operational elements include, but are not limited to the following:
 - a. Primary operational systems and equipment.
 - b. Fire separation assemblies.
 - c. Air or smoke barriers.
 - d. Fire-suppression systems.
 - e. Plumbing piping systems.
 - f. Mechanical systems piping and ducts.
 - g. Control systems.
 - h. Communication systems.
 - i. Fire-detection and -alarm systems.
 - j. Conveying systems.
 - k. Electrical wiring systems.
 - l. Operating systems of special construction.
 - 3. Other Construction Elements: Do not cut and patch other construction elements or components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety. Other construction elements include but are not limited to the following:
 - a. Water, moisture, or vapor barriers.
 - b. Membranes and flashings.

- c. Exterior curtain-wall construction.
- d. Sprayed fire-resistive material.
- e. Equipment supports.
- f. Piping, ductwork, vessels, and equipment.
- g. Noise- and vibration-control elements and systems.
- 4. Visual Elements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch exposed construction in a manner that would, in Architect's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.
- 5. Provide comprehensive GPRS ground penetrating radar scanning and detection services prior to drilling and cutting to locate electrical and plumbing utilities below the concrete slabs before cutting or coring.
- D. Manufacturer's Installation Instructions: Obtain and maintain on-site manufacturer's written recommendations and instructions for installation of specified products and equipment.
- E. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during cutting and patching operations, by methods and with materials so as not to void or compromise existing warranties.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Comply with requirements specified in other Sections.
- B. In-Place Materials: Use materials for patching identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.
 - 1. If identical materials are unavailable or cannot be used, use materials that, when installed, will provide a match acceptable to Architect for the visual and functional performance of in-place materials. Use materials that are not considered hazardous.
- C. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Existing Conditions: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities, mechanical and electrical systems, and other construction affecting the Work.
 - 1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, gas service piping, and water-service piping; underground electrical services; and other utilities.

2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.
- B. Examination and Acceptance of Conditions: Before proceeding with each component of the Work, examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.
 1. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
 2. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
 3. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
- C. Written Report: Where a written report listing conditions detrimental to performance of the Work is required by other Sections, include the following:
 1. Description of the Work, including Specification Section number and paragraph, and Drawing sheet number and detail, where applicable.
 2. List of detrimental conditions, including substrates.
 3. List of unacceptable installation tolerances.
 4. Recommended corrections.
- D. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.02 PREPARATION

- A. Temporary Support: Provide temporary support of Work to be cut.
- B. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.
- C. Adjoining Areas: Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.
- D. Existing Utility Information: Furnish information to local utility that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.
 1. Where existing services and/or systems are required to be removed, relocated, or abandoned, whether shown on drawings or not, bypass such services and/or systems before cutting to prevent interruption to the fullest extent possible to occupied areas.
 2. Prior to cutting and patching work, survey and locate utilities, structural elements and hazards using location/detection equipment. Submit a written report to the Architect describing the nature and extent of any conflicts with the intended function or design of the work. Do not proceed until conflicts are resolved.
- E. Remove debris and abandoned items and items serving no useful purpose, such as abandoned piping, conduit and wiring from concealed and exposed spaces. Prepare surfaces and remove surface finishes to provide for proper installation of new work and new finishes.

- F. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
- G. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.
- H. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents, submit a request for information to Architect in accordance with requirements in Section 01 31 00 - Project Management and Coordination.

3.03 CONSTRUCTION LAYOUT

- A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks and existing conditions. If discrepancies are discovered, notify Architect promptly.
- B. Building Lines and Levels: Locate and lay out control lines and levels for structures, building foundations, column grids, and floor levels, including those required for mechanical and electrical work. Transfer survey markings and elevations for use with control lines and levels. Level foundations and piers from two or more locations.
- C. Record Log: Maintain a log of layout control work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by Architect.

3.04 FIELD ENGINEERING

- A. Identification: Owner will identify existing benchmarks, control points, and property corners if not specifically identified in the Site/Civil documents.
- B. Reference Points: Locate existing permanent benchmarks, control points, and similar reference points before beginning the Work. Preserve and protect permanent benchmarks and control points during construction operations.
 - 1. Do not change or relocate existing benchmarks or control points without prior written approval of Architect. Report lost or destroyed permanent benchmarks or control points promptly. Report the need to relocate permanent benchmarks or control points to Architect before proceeding.
 - 2. Replace lost or destroyed permanent benchmarks and control points promptly. Base replacements on the original survey control points.

3.05 INSTALLATION

- A. Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.
 - 1. Make vertical work plumb, and make horizontal work level.
 - 2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
 - 3. Conceal pipes, ducts, and wiring in finished areas unless otherwise indicated.

4. Maintain minimum headroom clearance of 96 inches in occupied spaces and 90 inches in unoccupied spaces, unless otherwise indicated on Drawings.
- B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.
- C. Install products at the time and under conditions that will ensure satisfactory results as judged by Architect. Maintain conditions required for product performance until Substantial Completion.
- D. Conduct construction operations, so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy of type expected for Project.
- E. Sequence the Work and allow adequate clearances to accommodate movement of construction items on-site and placement in permanent locations.
- F. Tools and Equipment: Select tools or equipment that minimize production of excessive noise levels.
- G. Templates: Obtain and distribute to the parties involved templates for Work specified to be factory prepared and field installed. Check Shop Drawings of other portions of the Work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.
- H. Attachment: Provide blocking and attachment plates and anchors and fasteners of adequate size and number to securely anchor each component in place, accurately located and aligned with other portions of the Work. Where size and type of attachments are not indicated, verify size and type required for load conditions with manufacturer.
 1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect.
 2. Allow for building movement, including thermal expansion and contraction.
 3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.
- I. Joints: Make joints of uniform width. Where joint locations in exposed Work are not indicated, arrange joints for the best visual effect, as judged by Architect. Fit exposed connections together to form hairline joints.
- J. Repair or remove and replace damaged, defective, or nonconforming Work.
 1. Comply with Section 01 77 00 - Closeout Procedures for repairing or removing and replacing defective Work.

3.06 ALTERATIONS

- A. Drawings showing existing construction and utilities are based on casual field observation and existing record documents only.
 1. Verify that construction and utility arrangements are as indicated.
 2. Report discrepancies to Architect before disturbing existing installation.
 3. Beginning of alterations work constitutes acceptance of existing conditions.
- B. Keep areas in which alterations are being conducted separated from other areas that are still occupied.

1. Provide, erect, and maintain temporary dustproof partitions of construction specified in Section 01 50 00 - Temporary Facilities and Controls in locations indicated on drawings.
 2. Provide sound retardant partitions of construction indicated on drawings in locations indicated on drawings.
- C. Maintain weatherproof exterior building enclosure except for interruptions required for replacement or modifications; take care to prevent water and humidity damage.
1. Where openings in exterior enclosure exist, provide construction to make exterior enclosure weatherproof.
 2. Insulate existing ducts or pipes that are exposed to outdoor ambient temperatures by alterations work.
- D. Remove existing work as indicated and as required to accomplish new work.
1. Remove rotted wood, corroded metals, and deteriorated masonry and concrete; replace with new construction specified.
 2. Remove items indicated on drawings.
 3. Relocate items indicated on drawings.
 4. Where new surface finishes are to be applied to existing work, perform removals, patch, and prepare existing surfaces as required to receive new finish; remove existing finish if necessary for successful application of new finish.
 5. Where new surface finishes are not specified or indicated, patch holes and damaged surfaces to match adjacent finished surfaces as closely as possible.
- E. Services (Including but not limited to HVAC, Plumbing, Fire Protection, Electrical, and Telecommunication): Remove, relocate, and extend existing systems to accommodate new construction.
1. Maintain existing active systems that are to remain in operation; maintain access to equipment and operational components; if necessary, modify installation to allow access or provide access panel.
 2. Where existing systems or equipment are not active and Contract Documents require reactivation, put back into operational condition; repair supply, distribution, and equipment as required.
 3. Where existing active systems serve occupied facilities but are to be replaced with new services, maintain existing systems in service until new systems are complete and ready for service.
 - a. Disable existing systems only to make switchovers and connections; minimize duration of outages.
 - b. See Section 01 10 00 - SUMMARY for other limitations on outages and required notifications.
 - c. Provide temporary connections as required to maintain existing systems in service.
 4. Verify that abandoned services serve only abandoned facilities.
 5. Remove abandoned pipe, ducts, conduits, and equipment, including those above accessible ceilings; remove back to source of supply where possible, otherwise cap stub and tag with identification; patch holes left by removal using materials specified for new construction.
- F. Protect existing work to remain.
1. Prevent movement of structure; provide shoring and bracing if necessary.
 2. Perform cutting to accomplish removals neatly and as specified for cutting new work.

3. Repair adjacent construction and finishes damaged during removal work.
- G. Adapt existing work to fit new work: Make as neat and smooth transition as possible.
 1. When existing finished surfaces are cut so that a smooth transition with new work is not possible, terminate existing surface along a straight line at a natural line of division and make recommendation to Architect.
 2. Where removal of partitions or walls results in adjacent spaces becoming one, rework floors, walls, and ceilings to a smooth plane without breaks, steps, or bulkheads.
 3. Where a change of plane of 1/4 inch or more occurs in existing work, submit recommendation for providing a smooth transition for Architect review and request instructions.
 4. Trim existing wood doors as necessary to clear new floor finish. Refinish trim as required.
- H. Patching: Where the existing surface is not indicated to be refinished, patch to match the surface finish that existed prior to cutting. Where the surface is indicated to be refinished, patch so that the substrate is ready for the new finish.
- I. Refinish existing surfaces as indicated:
 1. Where rooms or spaces are indicated to be refinished, refinish all visible existing surfaces to remain to the specified condition for each material, with a neat transition to adjacent finishes.
 2. If mechanical or electrical work is exposed accidentally during the work, re-cover and refinish to match.
- J. Clean existing systems and equipment.
- K. Remove demolition debris and abandoned items from alterations areas and dispose of off-site; do not burn or bury.
- L. Do not begin new construction in alterations areas before demolition is complete.
- M. Comply with all other applicable requirements of this section.

3.07 CUTTING AND PATCHING

- A. General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.
 1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.
- B. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during installation or cutting and patching operations, by methods and with materials so as not to void existing warranties.
- C. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.
- D. Adjacent Occupied Areas: Where interference with use of adjoining areas or interruption of free passage to adjoining areas is unavoidable, coordinate cutting and patching in accordance with requirements in Section 01 10 00 - SUMMARY.
- E. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage

elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.

1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots neatly to minimum size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
 2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
 3. Concrete and Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
 4. Excavating and Backfilling: Comply with requirements in applicable Sections where required by cutting and patching operations.
 5. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
 6. Proceed with patching after construction operations requiring cutting are complete.
- F. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other Work. Patch with durable seams that are as invisible as practicable, as judged by Architect. Provide materials and comply with installation requirements specified in other Sections, where applicable.
1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate physical integrity of installation.
 2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.
 - a. Clean piping, conduit, and similar features before applying paint or other finishing materials.
 - b. Restore damaged pipe covering to its original condition.
 3. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove in-place floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
 - a. Where patching occurs in a painted surface, prepare substrate and apply primer and intermediate paint coats appropriate for substrate over the patch, and apply final paint coat over entire unbroken surface containing the patch, corner to corner of wall and edge to edge of ceiling. Provide additional coats until patch blends with adjacent surfaces.
 4. Ceilings: Patch, repair, or rehang in-place ceilings as necessary to provide an even-plane surface of uniform appearance.
 5. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weathertight condition and ensures thermal and moisture integrity of building enclosure.
- G. Cleaning: Clean areas and spaces where cutting and patching are performed, immediately after work is performed. Remove paint, mortar, oils, putty, and similar materials from adjacent finished surfaces.

3.08 COORDINATION OF OWNER'S PORTION OF THE WORK

- A. Coordination: Coordinate construction and operations of the Work with work performed by Owner's construction personnel and/or Owner's separate contractors.
 - 1. Construction Schedule: Inform Owner of Contractor's preferred construction schedule for Owner's portion of the Work. Adjust construction schedule based on a mutually agreeable timetable. Notify Owner if changes to schedule are required due to differences in actual construction progress.
 - 2. Preinstallation Conferences: Include Owner's construction personnel and/or Owner's separate contractors at preinstallation conferences covering portions of the Work that are to receive Owner's work. Attend preinstallation conferences conducted by Owner's construction personnel if portions of the Work depend on Owner's construction.

3.09 PROGRESS CLEANING

- A. Clean Project site and work areas daily, including common areas. Enforce requirements strictly. Dispose of materials lawfully.
 - 1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
 - 2. Do not hold waste materials more than seven days during normal weather or three days if the temperature is expected to rise above 80 deg F.
 - 3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.
 - a. Use containers intended for holding waste materials of type to be stored.
 - 4. Coordinate progress cleaning for joint-use areas where Contractor and other contractors are working concurrently.
- B. Site: Maintain Project site free of waste materials and debris.
- C. Work Areas: Clean areas where Work is in progress to the level of cleanliness necessary for proper execution of the Work.
 - 1. Remove liquid spills promptly.
 - 2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.
- D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.
- E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.
- F. Exposed Surfaces: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.
- G. Waste Disposal: Do not bury or burn waste materials on-site. Do not wash waste materials down sewers or into waterways. Comply with waste disposal requirements in Section 01 50 00 - Temporary Facilities and Controls and/or Section 01 74 19 - Construction Waste Management and Disposal.

- H. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.
- I. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.
- J. Limiting Exposures: Supervise construction operations to ensure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.10 STARTING AND ADJUSTING

- A. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.
- B. Adjust equipment for proper operation. Adjust operating components for proper operation without binding.
- C. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- D. Manufacturer's Field Service: Comply with qualification requirements in Section 01 40 00 - Quality Requirements.

3.11 PROTECTION AND REPAIR OF INSTALLED CONSTRUCTION

- A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.
- B. Repair Work previously completed and subsequently damaged during construction period. Repair to like-new condition.
- C. Protection of Existing Items: Provide protection and ensure that existing items to remain undisturbed by construction are maintained in condition that existed at commencement of the Work.
- D. Comply with manufacturer's written instructions for temperature and relative humidity.

END OF SECTION 01 73 00

SECTION 01 74 19 - CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. Section includes administrative and procedural requirements for the following:
 - 1. Salvaging nonhazardous demolition and construction waste.
 - 2. Recycling nonhazardous demolition and construction waste.
 - 3. Disposing of nonhazardous demolition and construction waste.

1.03 DEFINITIONS

- A. Construction Waste: Building, structure, and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.
- B. Demolition Waste: Building, structure, and site improvement materials resulting from demolition operations.
- C. Disposal: Removal of demolition or construction waste and subsequent salvage, sale, recycling, or deposit in landfill, incinerator acceptable to authorities having jurisdiction, or designated spoil areas on Owner's property.
- D. Recycle: Recovery of demolition or construction waste for subsequent processing in preparation for reuse.
- E. Salvage: Recovery of demolition or construction waste and subsequent sale or reuse in another facility.
- F. Salvage and Reuse: Recovery of demolition or construction waste and subsequent incorporation into the Work.

1.04 MATERIALS OWNERSHIP

- A. Unless otherwise indicated, demolition and construction waste become property of Contractor.
- B. Historic items, relics, antiques, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, and other items of interest or value to Owner that may be uncovered during demolition remain the property of Owner.
 - 1. Carefully salvage in a manner to prevent damage and promptly return to Owner.

1.05 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For waste management coordinator and/or refrigerant recovery technician.

1.06 QUALITY ASSURANCE

- A. Waste Management Coordinator Qualifications: Experienced firm, or individual employed and assigned by General Contractor, with a record of successful waste management coordination of projects with similar requirements. Superintendent may serve as Waste Management Coordinator.
- B. Regulatory Requirements: Comply with transportation and disposal regulations of authorities having jurisdiction.

1.07 WASTE MANAGEMENT PLAN

- A. General: Develop a waste management plan according to requirements in this Section. Plan shall consist of waste identification, waste reduction work plan, and cost/revenue analysis. Distinguish between demolition and construction waste. Indicate quantities by weight or volume, but use same units of measure throughout waste management plan.

PART 2 PRODUCTS

2.01 RECYCLING RECEIVERS AND PROCESSORS

- A. Provide information on local, available recycling receivers and processors:

2.02 PERFORMANCE REQUIREMENTS

- A. General: Achieve end-of-Project rates for salvage/recycling of 50 percent by weight of total nonhazardous solid waste generated by the Work. Practice efficient waste management in the use of materials in the course of the Work. Use all reasonable means to divert construction and demolition waste from landfills and incinerators. Facilitate recycling and salvage of materials, including but not limited to the following:
 - 1. Demolition Waste:
 - a. Asphalt paving.
 - b. Concrete.
 - c. Concrete reinforcing steel.
 - d. Brick.
 - e. Concrete masonry units.
 - f. Wood studs.
 - g. Wood joists.
 - h. Plywood and oriented strand board.
 - i. Wood paneling.
 - j. Wood trim.
 - k. Structural and miscellaneous steel.

- l. Rough hardware.
- m. Roofing.
- n. Insulation.
- o. Doors and frames.
- p. Door hardware.
- q. Windows.
- r. Glazing.
- s. Metal studs.
- t. Gypsum board.
- u. Acoustical tile and panels.
- v. Carpet.
- w. Carpet pad.
- x. Demountable partitions.
- y. Equipment.
- z. Cabinets.
- aa. Plumbing fixtures.
- bb. Piping.
- cc. Supports and hangers.
- dd. Valves.
- ee. Sprinklers.
- ff. Mechanical equipment.
- gg. Refrigerants.
- hh. Electrical conduit.
- ii. Copper wiring.
- jj. Lighting fixtures.
- kk. Lamps.
- ll. Ballasts.
- mm. Electrical devices.
- nn. Switchgear and panelboards.
- oo. Transformers.
- 2. Construction Waste:
 - a. Masonry and CMU.
 - b. Lumber.
 - c. Wood sheet materials.
 - d. Wood trim.
 - e. Metals.
 - f. Roofing.
 - g. Insulation.
 - h. Carpet and pad.
 - i. Gypsum board.
 - j. Piping.
 - k. Electrical conduit.
 - l. Packaging: Regardless of salvage/recycle goal indicated in "General" Paragraph above, salvage or recycle 100 percent of the following uncontaminated packaging materials:
 - 1) Paper.
 - 2) Cardboard.
 - 3) Boxes.

- 4) Plastic sheet and film.
- 5) Polystyrene packaging.
- 6) Wood crates.
- 7) Wood pallets.
- 8) Plastic pails.
- m. Construction Office Waste: Regardless of salvage/recycle goal indicated in "General" Paragraph above, salvage or recycle 100 percent of the following construction office waste materials:
 - 1) Paper.
 - 2) Aluminum cans.
 - 3) Glass containers.

PART 3 EXECUTION

3.01 PLAN IMPLEMENTATION

- A. General: Implement approved waste management plan. Provide handling, containers, storage, signage, transportation, and other items as required to implement waste management plan during the entire duration of the Contract.
 - 1. Comply with operation, termination, and removal requirements in Section 015000 "Temporary Facilities and Controls."
- B. Training: Train workers, subcontractors, and suppliers on proper waste management procedures, as appropriate for the Work.
 - 1. Distribute waste management plan to everyone concerned within (3) three days of submittal return.
 - 2. Distribute waste management plan to entities when they first begin work on-site. Review plan procedures and locations established for salvage, recycling, and disposal.
- C. Site Access and Temporary Controls: Conduct waste management operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
 - 1. Designate and label specific areas on Project site necessary for separating materials that are to be salvaged and recycled.
 - 2. Comply with Section 015000 "Temporary Facilities and Controls" for controlling dust and dirt, environmental protection, and noise control.
- D. Waste Management in Historic Zones or Areas: Transportation equipment and other materials shall be of sizes that clear surfaces within historic spaces, areas, rooms, and openings, by 12 inches or more.

3.02 SALVAGING DEMOLITION WASTE

- A. Comply with requirements in Section 024119 "Selective Demolition" for salvaging demolition waste.
- B. Salvaged Items for Reuse in the Work: Salvage items for reuse and handle as follows:
 - 1. Clean salvaged items.
 - 2. Pack or crate items after cleaning. Identify contents of containers with label indicating elements, date of removal, quantity, and location where removed.

3. Store items in a secure area until installation.
 4. Protect items from damage during transport and storage.
 5. Install salvaged items to comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make items functional for use indicated.
- C. Salvaged Items for Sale and Donation: Not permitted on Project site.
- D. Salvaged Items for Owner's Use: Salvage items for Owner's use and handle as follows:
1. Clean salvaged items.
 2. Pack or crate items after cleaning. Identify contents of containers with label indicating elements, date of removal, quantity, and location where removed.
 3. Store items in a secure area until delivery to Owner.
 4. Transport items to Owner's storage area designated by Owner.
 5. Protect items from damage during transport and storage.

3.03 DISPOSAL OF WASTE

- A. General: Except for items or materials to be salvaged or recycled, remove waste materials from Project site and legally dispose of them in a landfill or incinerator acceptable to authorities having jurisdiction.
1. Except as otherwise specified, do not allow waste materials that are to be disposed of accumulate on-site.
 2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
- B. Burning: Do not burn waste materials.

END OF SECTION 01 74 19

SECTION 01 77 00 - CLOSEOUT PROCEDURES

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. Section includes administrative and procedural requirements for Contract closeout, including, but not limited to, the following:
 - 1. Substantial Completion procedures.
 - 2. Final completion procedures.
 - 3. Warranties.
 - 4. Final cleaning.
- B. Related Requirements:
 - 1. Section 01 29 00 - Payment Procedures for requirements for Applications for Payment for Substantial Completion and Final Completion.
 - 2. Section 01 32 33 - Photographic Documentation for submitting Final Completion construction photographic documentation.
 - 3. Section 01 50 00 - Temporary Facilities and Controls
 - 4. Section 01 73 00 - Execution
 - 5. Section 01 74 19 - Construction Waste Management and Disposal
 - 6. Section 01 78 23 - Operation and Maintenance Data for additional operation and maintenance manual requirements.
 - 7. Section 01 78 39 - Project Record Documents for submitting Record Drawings, Record Specifications, and Record Product Data.
 - 8. Section 01 79 00 - Demonstration and Training for requirements to train the Owner's maintenance personnel to adjust, operate, and maintain products, equipment, and systems.

1.03 DEFINITIONS

- A. List of Incomplete Items: Contractor-prepared list of items to be completed or corrected, prepared for the Architect's use prior to Architect's inspection, to determine if the Work is substantially complete.

1.04 ACTION SUBMITTALS

- A. Product Data: For each type of cleaning agent.
- B. Contractor's List of Incomplete Items: Initial submittal at Substantial Completion.
- C. Certified List of Incomplete Items: Final submittal at Final Completion.

1.05 CLOSEOUT SUBMITTALS

- A. Certificates of Release: From authorities having jurisdiction.
- B. Certificate of Insurance: For continuing coverage.
- C. Field Report: For pest-control inspection.

1.06 MAINTENANCE MATERIAL SUBMITTALS

- A. Schedule of Maintenance Material Items: For maintenance material submittal items required by other Sections.

1.07 SUBSTANTIAL COMPLETION PROCEDURES

- A. Contractor's List of Incomplete Items: Prepare and submit a list of items to be completed and corrected (Contractor's "punch list"), indicating the value of each item on the list and reasons why the Work is incomplete.
- B. Submittals Prior to Substantial Completion: Complete the following a minimum of (10) ten days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.
 - 1. Certificates of Release: Obtain and submit releases from authorities having jurisdiction, permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
 - 2. Submit closeout submittals specified in other Division 01 Sections, including Project Record Documents, operation and maintenance manuals, damage or settlement surveys, property surveys, and similar final record information.
 - 3. Submit closeout submittals specified in individual Sections, including specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
 - 4. Submit maintenance material submittals specified in individual Sections, including tools, spare parts, extra materials, and similar items, and deliver to location designated by Architect's. Label with manufacturer's name and model number.
 - a. Schedule of Maintenance Material Items: Prepare and submit schedule of maintenance material submittal items, including name and quantity of each item and name and number of related Specification Section. Obtain Architect's signature for receipt of submittals.
 - 5. Submit testing, adjusting, and balancing records.
 - 6. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.
- C. Procedures Prior to Substantial Completion: Complete the following a minimum of (10) ten days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.
 - 1. Advise Owner of pending insurance changeover requirements.
 - 2. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
 - 3. Complete startup and testing of systems and equipment.

4. Perform preventive maintenance on equipment used prior to Substantial Completion.
 5. Advise Owner of changeover in utility services.
 6. Participate with Owner in conducting inspection and walkthrough with local emergency responders.
 7. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
 8. Complete final cleaning requirements.
 9. Touch up paint and otherwise repair and restore marred exposed finishes to eliminate visual defects.
- D. Inspection: Submit a written request for inspection to determine Substantial Completion a minimum of (10) ten days prior to date the Work will be completed and ready for final inspection and tests. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Architect, that must be completed or corrected before certificate will be issued.
1. Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
 2. Results of completed inspection will form the basis of requirements for Final Completion.

1.08 FINAL COMPLETION PROCEDURES

- A. Submittals Prior to Final Completion: Before requesting final inspection for determining Final Completion, complete the following:
1. Submit a final Application for Payment in accordance with Section 012900 "Payment Procedures."
 2. Certified List of Incomplete Items: Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. Certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
 3. Certificate of Insurance: Submit evidence of final, continuing insurance coverage complying with insurance requirements.
 4. Submit Consent of Surety for Final Payment.
- B. Inspection: Submit a written request for final inspection to determine acceptance a minimum of 10 days prior to date the Work will be completed and ready for final inspection and tests. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.
1. Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
- C. Complete and submit to Architect "Ready for Closeout" form included as part of the Project Manual.

1.09 LIST OF INCOMPLETE ITEMS

- A. Organization of List: Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.
 - 1. Organize list of spaces in sequential order, starting with exterior areas first and proceeding from lowest floor to highest floor, listed by room or space number.
 - 2. Organize items applying to each space by major element, including categories for ceilings, individual walls, floors, equipment, and building systems.
 - 3. Include the following information at the top of each page:
 - a. Project name.
 - b. Date.
 - c. Name of Architect.
 - d. Name of Contractor.
 - e. Page number.
 - 4. Submit list of incomplete items in the following format:
 - a. PDF Electronic File: Architect will return annotated file.

1.10 SUBMITTAL OF PROJECT WARRANTIES

- A. Time of Submittal: Submit written warranties on request of Architect for designated portions of the Work where warranties are indicated to commence on dates other than date of Substantial Completion, or when delay in submittal of warranties might limit Owner's rights under warranty.
- B. Organize warranty documents into an orderly sequence based on the table of contents of Project Manual.
- C. Warranty Electronic File: Provide warranties and bonds in PDF format. Assemble complete warranty and bond submittal package into a single electronic PDF file with bookmarks enabling navigation to each item. Provide bookmarked table of contents at beginning of document.
 - 1. Submit on digital media acceptable to Architect, by email to Architect, or by uploading to web-based project software site.
 - 2. Original Warranties and Bond documents with raised seals shall be forwarded to the Architect for delivery to the Owner.
- D. Warranties in Paper Form:
 - 1. Bind warranties and bonds in heavy-duty, three-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch paper.
 - 2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
 - 3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.
- E. Provide additional copies of each warranty to include in operation and maintenance manuals.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

PART 3 EXECUTION

3.01 FINAL CLEANING

- A. General: Perform final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.
- B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.
 - 1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a designated portion of Project:
 - a. Clean Project site of rubbish, waste material, litter, and other foreign substances.
 - b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
 - c. Rake grounds that are not planted, mulched, or paved to a smooth, even-textured surface.
 - d. Remove tools, construction equipment, machinery, and surplus material from Project site.
 - e. Remove snow and ice to provide safe access to building.
 - f. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
 - g. Remove debris and surface dust from limited-access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
 - h. Clean flooring, removing debris, dirt, and staining; clean according to manufacturer's recommendations.
 - i. Vacuum and mop concrete.
 - j. Vacuum carpet and similar soft surfaces, removing debris and excess nap; clean according to manufacturer's recommendations if visible soil or stains remain.
 - k. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Polish mirrors and glass, taking care not to scratch surfaces.
 - l. Remove labels that are not permanent.
 - m. Wipe surfaces of mechanical and electrical equipment, elevator equipment, and similar equipment. Remove excess lubrication, paint and mortar

- droppings, and other foreign substances.
 - n. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
 - o. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
 - p. Clean ducts, blowers, and coils if units were operated without filters during construction or that display contamination with particulate matter on inspection.
 - q. Clean luminaires, lamps, globes, and reflectors to function with full efficiency.
 - r. Clean strainers.
 - s. Leave Project clean and ready for occupancy.
- C. Pest Control: Comply with pest control requirements in Section 01 50 00 - Temporary Facilities and Controls Prepare written report.
- D. Construction Waste Disposal: Comply with waste-disposal requirements in Section 01 50 00 - Temporary Facilities and Controls and/or Section 01 74 19 - Construction Waste Management and Disposal.

3.02 REPAIR OF THE WORK

- A. Complete repair and restoration operations required by Section 01 73 00 - Execution before requesting inspection for determination of Substantial Completion.

END OF SECTION 01 77 00

SECTION 01 78 23 - OPERATION AND MAINTENANCE DATA

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. Section includes administrative and procedural requirements for preparing operation and maintenance manuals, including the following:
 - 1. Operation and maintenance documentation directory manuals.
 - 2. Emergency manuals.
 - 3. Systems and equipment operation manuals.
 - 4. Systems and equipment maintenance manuals.
 - 5. Product maintenance manuals.
- B. Related Requirements:
 - 1. Section 01 33 00 - Submittal Procedures for submitting copies of submittals for operation and maintenance manuals.
 - 2. Section 01 91 13 - General Commissioning Requirements for verification and compilation of data into operation and maintenance manuals.

1.03 DEFINITIONS

- A. System: An organized collection of parts, equipment, or subsystems united by regular interaction.
- B. Subsystem: A portion of a system with characteristics similar to a system.

1.04 CLOSEOUT SUBMITTALS

- A. Submit operation and maintenance manuals indicated. Provide content for each manual as specified in individual Specification Sections, and as reviewed and approved at the time of Section submittals. Submit reviewed manual content formatted and organized as required by this Section.
 - 1. Architect will comment on whether content of operation and maintenance submittals is acceptable.
 - 2. Where applicable, clarify and update reviewed manual content to correspond to revisions and field conditions.
- B. Format: Submit operation and maintenance manuals in the following format:
 - 1. Submit on digital media acceptable to Architect, or by email to Architect, or by uploading to web-based project software site. Enable reviewer comments on draft submittals.

- C. Initial Manual Submittal: Submit draft copy of each manual at least (30) thirty days before commencing demonstration and training. Architect[and Commissioning Authority] will comment on whether general scope and content of manual are acceptable.
- D. Final Manual Submittal: Submit each manual in final form prior to requesting inspection for Substantial Completion and at least (15) fifteen days before commencing demonstration and training. Architect will return copy with comments.
 - 1. Correct or revise each manual to comply with Architect's comments. Submit copies of each corrected manual within (15) fifteen days of receipt of Architect's comments and prior to commencing demonstration and training.
- E. Comply with Section 01 77 00 - Closeout Procedures for schedule for submitting operation and maintenance documentation.

1.05 FORMAT OF OPERATION AND MAINTENANCE MANUALS

- A. Manuals, Electronic Files: Submit manuals in the form of a multiple file composite electronic PDF file for each manual type required.
 - 1. Electronic Files: Use electronic files prepared by manufacturer where available. Where scanning of paper documents is required, configure scanned file for minimum readable file size.
 - 2. File Names and Bookmarks: Bookmark individual documents based on file names. Name document files to correspond to system, subsystem, and equipment names used in manual directory and table of contents. Group documents for each system and subsystem into individual composite bookmarked files, then create composite manual, so that resulting bookmarks reflect the system, subsystem, and equipment names in a readily navigated file tree. Configure electronic manual to display bookmark panel on opening file.

1.06 REQUIREMENTS FOR EMERGENCY, OPERATION, AND MAINTENANCE MANUALS

- A. Organization of Manuals: Unless otherwise indicated, organize each manual into a separate section for each system and subsystem, and a separate section for each piece of equipment not part of a system. Each manual shall contain the following materials, in the order listed:
 - 1. Title page.
 - 2. Table of contents.
 - 3. Manual contents.
- B. Title Page: Include the following information:
 - 1. Subject matter included in manual.
 - 2. Name and address of Project.
 - 3. Name and address of Owner.
 - 4. Date of submittal.
 - 5. Name and contact information for Contractor.
 - 6. Name and contact information for Architect.
 - 7. Names and contact information for major consultants to the Architect that designed the systems contained in the manuals.
 - 8. Cross-reference to related systems in other operation and maintenance manuals.

- C. Table of Contents: List each product included in manual, identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in Project Manual.
 - 1. If operation or maintenance documentation requires more than one volume to accommodate data, include comprehensive table of contents for all volumes in each volume of the set.
- D. Manual Contents: Organize into sets of manageable size. Arrange contents alphabetically by system, subsystem, and equipment. If possible, assemble instructions for subsystems, equipment, and components of one system into a single binder.
- E. Identification: In the documentation directory and in each operation and maintenance manual, identify each system, subsystem, and piece of equipment with same designation used in the Contract Documents. If no designation exists, assign a designation according to ASHRAE Guideline 4, "Preparation of Operating and Maintenance Documentation for Building Systems."

1.07 EMERGENCY MANUALS

- A. Emergency Manual: Assemble a complete set of emergency information indicating procedures for use by emergency personnel and by Owner's operating personnel for types of emergencies indicated.
- B. Content: Organize manual into a separate section for each of the following:
 - 1. Type of emergency.
 - 2. Emergency instructions.
 - 3. Emergency procedures.
- C. Type of Emergency: Where applicable for each type of emergency indicated below, include instructions and procedures for each system, subsystem, piece of equipment, and component:
 - 1. Fire.
 - 2. Flood.
 - 3. Gas leak.
 - 4. Water leak.
 - 5. Power failure.
 - 6. Water outage.
 - 7. System, subsystem, or equipment failure.
 - 8. Chemical release or spill.
- D. Emergency Instructions: Describe and explain warnings, trouble indications, error messages, and similar codes and signals. Include responsibilities of Owner's operating personnel for notification of Installer, supplier, and manufacturer to maintain warranties.
- E. Emergency Procedures: Include the following, as applicable:
 - 1. Instructions on stopping.
 - 2. Shutdown instructions for each type of emergency.
 - 3. Operating instructions for conditions outside normal operating limits.
 - 4. Required sequences for electric or electronic systems.
 - 5. Special operating instructions and procedures.

1.08 SYSTEMS AND EQUIPMENT OPERATION MANUALS

- A. Systems and Equipment Operation Manual: Assemble a complete set of data indicating operation of each system, subsystem, and piece of equipment not part of a system. Include information required for daily operation and management, operating standards, and routine and special operating procedures.
 - 1. Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.
 - 2. Prepare a separate manual for each system and subsystem, in the form of an instructional manual for use by Owner's operating personnel.
- B. Content: In addition to requirements in this Section, include operation data required in individual Specification Sections and the following information:
 - 1. System, subsystem, and equipment descriptions. Use designations for systems and equipment indicated on Contract Documents.
 - 2. Performance and design criteria if Contractor has delegated design responsibility.
 - 3. Operating standards.
 - 4. Operating procedures.
 - 5. Operating logs.
 - 6. Wiring diagrams.
 - 7. Control diagrams.
 - 8. Piped system diagrams.
 - 9. Precautions against improper use.
 - 10. License requirements including inspection and renewal dates.
- C. Descriptions: Include the following:
 - 1. Product name and model number. Use designations for products indicated on Contract Documents.
 - 2. Manufacturer's name.
 - 3. Equipment identification with serial number of each component.
 - 4. Equipment function.
 - 5. Operating characteristics.
 - 6. Limiting conditions.
 - 7. Performance curves.
 - 8. Engineering data and tests.
 - 9. Complete nomenclature and number of replacement parts.
- D. Operating Procedures: Include the following, as applicable:
 - 1. Startup procedures.
 - 2. Equipment or system break-in procedures.
 - 3. Routine and normal operating instructions.
 - 4. Regulation and control procedures.
 - 5. Instructions on stopping.
 - 6. Normal shutdown instructions.
 - 7. Seasonal and weekend operating instructions.
 - 8. Required sequences for electric or electronic systems.
 - 9. Special operating instructions and procedures.

- E. Systems and Equipment Controls: Describe the sequence of operation, and diagram controls as installed.
- F. Piped Systems: Diagram piping as installed and identify color coding where required for identification.

1.09 SYSTEMS AND EQUIPMENT MAINTENANCE MANUALS

- A. Systems and Equipment Maintenance Manuals: Assemble a complete set of data indicating maintenance of each system, subsystem, and piece of equipment not part of a system. Include manufacturers' maintenance documentation, preventive maintenance procedures and frequency, repair procedures, wiring and systems diagrams, lists of spare parts, and warranty information.
 - 1. Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.
 - 2. Prepare a separate manual for each system and subsystem, in the form of an instructional manual for use by Owner's operating personnel.
- B. Content: For each system, subsystem, and piece of equipment not part of a system, include source information, manufacturers' maintenance documentation, maintenance procedures, maintenance and service schedules, spare parts list and source information, maintenance service contracts, and warranties and bonds as described below.
- C. Source Information: List each system, subsystem, and piece of equipment included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.
- D. Manufacturers' Maintenance Documentation: Include the following information for each component part or piece of equipment:
 - 1. Standard maintenance instructions and bulletins; include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more than one item in a tabular format, identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.
 - a. Prepare supplementary text if manufacturers' standard printed data are not available and where the information is necessary for proper operation and maintenance of equipment or systems.
 - 2. Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.
 - 3. Identification and nomenclature of parts and components.
 - 4. List of items recommended to be stocked as spare parts.
- E. Maintenance Procedures: Include the following information and items that detail essential maintenance procedures:
 - 1. Test and inspection instructions.
 - 2. Troubleshooting guide.
 - 3. Precautions against improper maintenance.

4. Disassembly; component removal, repair, and replacement; and reassembly instructions.
 5. Aligning, adjusting, and checking instructions.
 6. Demonstration and training video recording, if available.
- F. Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.
1. Scheduled Maintenance and Service: Tabulate actions for daily, weekly, monthly, quarterly, semiannual, and annual frequencies.
 2. Maintenance and Service Record: Include manufacturers' forms for recording maintenance.
- G. Spare Parts List and Source Information: Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturers' maintenance documentation and local sources of maintenance materials and related services.
- H. Maintenance Service Contracts: Include copies of maintenance agreements with name and telephone number of service agent.
- I. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
1. Include procedures to follow and required notifications for warranty claims.
- J. Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams. Coordinate these drawings with information contained in record Drawings to ensure correct illustration of completed installation.
1. Do not use original project record documents as part of maintenance manuals.

1.10 PRODUCT MAINTENANCE MANUALS

- A. Product Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.
- B. Content: Organize manual into a separate section for each product, material, and finish. Include source information, product information, maintenance procedures, repair materials and sources, and warranties and bonds, as described below.
- C. Source Information: List each product included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.
- D. Product Information: Include the following, as applicable:
1. Product name and model number.
 2. Manufacturer's name.
 3. Color, pattern, and texture.
 4. Material and chemical composition.
 5. Reordering information for specially manufactured products.
- E. Maintenance Procedures: Include manufacturer's written recommendations and the following:
1. Inspection procedures.

2. Types of cleaning agents to be used and methods of cleaning.
 3. List of cleaning agents and methods of cleaning detrimental to product.
 4. Schedule for routine cleaning and maintenance.
 5. Repair instructions.
- F. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.
- G. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
1. Include procedures to follow and required notifications for warranty claims.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION 01 78 23

SECTION 01 78 39 - PROJECT RECORD DOCUMENTS

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. Section includes administrative and procedural requirements for Project Record Documents, including the following:
 - 1. Record Drawings.
 - 2. Record specifications.
 - 3. Record Product Data.
 - 4. Miscellaneous record submittals.
- B. Related Requirements:
 - 1. Section 01 73 00 - Execution for final property survey.
 - 2. Section 01 77 00 - Closeout Procedures for general closeout procedures.
 - 3. Section 01 78 23 - Operation and Maintenance Data for operation and maintenance manual requirements.

1.03 CLOSEOUT SUBMITTALS

- A. Record Drawings: Comply with the following:
 - 1. Number of Copies: Submit copies of Record Drawings as follows:
 - a. Initial Submittal:
 - 1) Submit PDF electronic files of scanned record prints and one set of file prints.
 - 2) Architect will indicate whether general scope of changes, additional information recorded, and quality of drafting are acceptable.
 - b. Final Submittal:
 - 1) Submit PDF electronic files of scanned Record Prints and one set of file prints.
- B. Record Specifications: Submit annotated PDF electronic files of Project's Specifications, including addenda and Contract modifications.

1.04 RECORD DRAWINGS

- A. Record Prints: Maintain one set of marked-up paper copies of the Contract Drawings and Shop Drawings, incorporating new and revised drawings as modifications are issued.

1. Preparation: Mark record prints to show the actual installation, where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to provide information for preparation of corresponding marked-up record prints.
 - a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
 - b. Accurately record information in an acceptable drawing technique.
 - c. Record data as soon as possible after obtaining it.
 - d. Record and check the markup before enclosing concealed installations.
 - e. Cross-reference record prints to corresponding photographic documentation.
 2. Content: Types of items requiring marking include, but are not limited to, the following:
 - a. Dimensional changes to Drawings.
 - b. Revisions to details shown on Drawings.
 - c. Depths of foundations.
 - d. Locations and depths of underground utilities.
 - e. Revisions to routing of piping and conduits.
 - f. Revisions to electrical circuitry.
 - g. Actual equipment locations.
 - h. Duct size and routing.
 - i. Locations of concealed internal utilities.
 - j. Changes made by Change Order or Construction Change Directive.
 - k. Changes made following Architect's written orders.
 - l. Details not on the original Contract Drawings.
 - m. Field records for variable and concealed conditions.
 - n. Record information on the Work that is shown only schematically.
 3. Mark the Contract Drawings and Shop Drawings completely and accurately. Use personnel proficient at recording graphic information in production of marked-up record prints.
 4. Mark record prints with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
 5. Mark important additional information that was either shown schematically or omitted from original Drawings.
 6. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.
- B. Record Digital Data Files: Immediately before inspection for Certificate of Substantial Completion, review marked-up record prints with Architect . When authorized, prepare a full set of corrected digital data files of the Contract Drawings, as follows:
1. Format: Annotated PDF electronic file with comment function enabled.
 2. Incorporate changes and additional information previously marked on record prints. Delete, redraw, and add details and notations where applicable.
 3. Refer instances of uncertainty to Architect for resolution.
 4. Architect will furnish Contractor with one set of digital data files of the Contract Drawings for use in recording information.
 - a. See Section 01 31 00 - Project Management and Coordination for requirements related to use of Architect's digital data files.
- C. Format: Identify and date each Record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.

1. Record Prints: Organize record prints into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
2. Format: Annotated PDF electronic file with comment function enabled.
3. Identification: As follows:
 - a. Project name.
 - b. Date.
 - c. Designation "PROJECT RECORD DRAWINGS."
 - d. Name of Architect.
 - e. Name of Contractor.

1.05 RECORD SPECIFICATIONS

- A. Preparation: Mark Specifications to indicate the actual product installation, where installation varies from that indicated in Specifications, addenda, and Contract modifications.
 1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
 2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
 3. Record the name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
 4. For each principal product, indicate whether Record Product Data has been submitted in operation and maintenance manuals instead of submitted as Record Product Data.
 5. Note related Change Orders and Record Drawings where applicable.
- B. Format: Submit record specifications as annotated PDF electronic files.

1.06 RECORD PRODUCT DATA

- A. Recording: Maintain one copy of each submittal during the construction period for Project Record Document purposes. Post changes and revisions to Project Record Documents as they occur; do not wait until end of Project.
- B. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.
 1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
 2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
 3. Note related Change Orders and Record Drawings where applicable.
- C. Format: Submit Record Product Data as annotated PDF electronic files.
 1. Include Record Product Data directory organized by Specification Section number and title, electronically linked to each item of Record Product Data.

1.07 MISCELLANEOUS RECORD SUBMITTALS

- A. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use

and reference.

- B. Format: Submit miscellaneous record submittals as PDF electronic files.
 - 1. Include miscellaneous record submittals directory organized by Specification Section number and title, electronically linked to each item of miscellaneous record submittals.

1.08 MAINTENANCE OF RECORD DOCUMENTS

- A. Maintenance of Record Documents: Store Record Documents in the field office apart from the Contract Documents used for construction. Do not use Project Record Documents for construction purposes. Maintain Record Documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to Project Record Documents for Architect's reference during normal working hours.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION 01 78 39

SECTION 01 79 00 - DEMONSTRATION AND TRAINING

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. This Section includes administrative and procedural requirements for instructing Owner's personnel, including the following:
 - 1. Demonstration of operation of systems, subsystems, and equipment.
 - 2. Training in operation and maintenance of systems, subsystems, and equipment.
 - 3. Demonstration and training video.

1.03 SUBMITTALS

- A. Instruction Program: Submit (2) two copies of outline of instructional program for demonstration and training, including a schedule of proposed dates, times, length of instruction time, and instructors' names for each training module, no less than 10 days prior to the anticipated date of the Demonstration and Training. Include learning objective and outline for each training module.
 - 1. At completion of training, submit (2) two complete training manual(s) for Owner's use.
- B. Qualification Data: For Instructor.
- C. Attendance Record: For each training module, submit list of participants and length of instruction time.
- D. Demonstration and Training Video on DVD: Submit (2) two copies within (7) seven days of end of each training module.
 - 1. Identification: On each copy, provide an applied label with the following information:
 - a. Name of Project.
 - b. Name of Architect.
 - c. Name of Contractor.
 - d. Date videotape was recorded.
 - e. Description of vantage point, indicating location, direction (by compass point), and elevation or story of construction.

1.04 QUALITY ASSURANCE

- A. Instructor Qualifications: A factory-authorized service representative, experienced in operation and maintenance procedures and training.

1.05 COORDINATION

- A. Coordinate instruction schedule with Owner's operations. Adjust schedule as required to minimize disrupting Owner's operations.
- B. Coordinate instructors, including providing notification of dates, times, length of instruction time, and course content.
- C. Coordinate content of training modules with content of approved emergency, operation, and maintenance manuals. Do not submit instruction program until operation and maintenance data has been reviewed and approved by Architect.

PART 2 PRODUCTS

2.01 INSTRUCTION PROGRAM

- A. Program Structure: Develop an instruction program that includes individual training modules for each system and equipment, including, but not limited to, the following types of systems as provided:
 - 1. Motorized doors, including overhead coiling doors, overhead coiling grilles, and automatic entrance doors.
 - 2. Equipment, including stage equipment, projection screens, loading dock equipment, waste compactors, food-service equipment, residential appliances, and laboratory fume hoods.
 - 3. Electrically operated solar shades equipment and controls.
 - 4. Fire-protection systems, including fire alarm, fire pumps, and fire-extinguishing systems.
 - 5. Intrusion detection systems.
 - 6. Conveying systems, including elevators, wheelchair lifts, escalators, and cranes.
 - 7. Laboratory equipment, including laboratory air and vacuum equipment and piping.
 - 8. Heat generation, including boilers, feedwater equipment, pumps, and steam distribution piping.
 - 9. Plumbing systems, including fixtures, pumps, and water distribution piping.
 - 10. Refrigeration systems, including chillers, cooling towers, condensers, pumps, and distribution piping.
 - 11. HVAC systems, including air-handling equipment, air distribution systems, and terminal equipment and devices.
 - 12. HVAC instrumentation and controls.
 - 13. Electrical service and distribution, including transformers, switchboards, panelboards, uninterruptible power supplies, and motor controls.
 - 14. Packaged engine generators, including transfer switches.
 - 15. Lighting equipment and controls.
 - 16. Communication systems, including intercommunication, surveillance, clocks and programming, voice and data, and television equipment.
- B. Training Modules: Develop a learning objective and teaching outline for each module. Include a description of specific skills and knowledge that participant is expected to master. For each module, include instruction for the following:

1. Basis of System Design, Operational Requirements, and Criteria: Include the following:
 - a. System, subsystem, and equipment descriptions.
 - b. Performance and design criteria if Contractor is delegated design responsibility.
 - c. Operating standards.
 - d. Regulatory requirements.
 - e. Equipment function.
 - f. Operating characteristics.
 - g. Limiting conditions.
 - h. Performance curves.
2. Documentation: Review the following items in detail:
 - a. Emergency manuals.
 - b. Operations manuals.
 - c. Maintenance manuals.
 - d. Project Record Documents.
 - e. Identification systems.
 - f. Warranties and bonds.
 - g. Maintenance service agreements and similar continuing commitments.
3. Emergencies: Include the following, as applicable:
 - a. Instructions on meaning of warnings, trouble indications, and error messages.
 - b. Instructions on stopping.
 - c. Shutdown instructions for each type of emergency.
 - d. Operating instructions for conditions outside of normal operating limits.
 - e. Sequences for electric or electronic systems.
 - f. Special operating instructions and procedures.
4. Operations: Include the following, as applicable:
 - a. Startup procedures.
 - b. Equipment or system break-in procedures.
 - c. Routine and normal operating instructions.
 - d. Regulation and control procedures.
 - e. Control sequences.
 - f. Safety procedures.
 - g. Instructions on stopping.
 - h. Normal shutdown instructions.
 - i. Operating procedures for emergencies.
 - j. Operating procedures for system, subsystem, or equipment failure.
 - k. Seasonal and weekend operating instructions.
 - l. Required sequences for electric or electronic systems.
 - m. Special operating instructions and procedures.
5. Adjustments: Include the following:
 - a. Alignments.
 - b. Checking adjustments.
 - c. Noise and vibration adjustments.
 - d. Economy and efficiency adjustments.
6. Troubleshooting: Include the following:
 - a. Diagnostic instructions.
 - b. Test and inspection procedures.

7. Maintenance: Include the following:
 - a. Inspection procedures.
 - b. Types of cleaning agents to be used and methods of cleaning.
 - c. List of cleaning agents and methods of cleaning detrimental to product.
 - d. Procedures for routine cleaning
 - e. Procedures for preventive maintenance.
 - f. Procedures for routine maintenance.
 - g. Instruction on use of special tools.
 - h. Instructions on methods and material agents known to be detrimental and to be avoided.
8. Repairs: Include the following:
 - a. Diagnosis instructions.
 - b. Repair instructions.
 - c. Disassembly; component removal, repair, and replacement; and reassembly instructions.
 - d. Instructions for identifying parts and components.
 - e. Review of spare parts needed for operation and maintenance.

PART 3 EXECUTION

3.01 PREPARATION

- A. Assemble educational materials necessary for instruction, including documentation and training module. Assemble training modules into a combined training manual.
- B. Set up instructional equipment at instruction location.

3.02 SCHEDULING

- A. Scheduling: Provide instruction at mutually agreed on times. For equipment that requires seasonal operation, provide similar instruction at start of each season.
 1. Schedule training with Owner, through Architect in accordance with requirements outlined in Section 1 above.
- B. The Owner shall not be liable for any additional costs related to rescheduling of training, provided that they gave a minimum of 48 hours notice to the Contractor of the need to reschedule a Demonstration and Training Event.

3.03 INSTRUCTION

- A. Engage qualified instructors to instruct Owner's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.
 1. Owner will furnish Contractor with names and positions of participants, no less than 3 days prior to the training event.

3.04 DEMONSTRATION AND TRAINING VIDEO ON DVD

- A. General: Engage a qualified photographer to record demonstration and training videos. Record each training module separately. Include classroom instructions and

demonstrations, board diagrams, and other visual aids, but not student practice.

1. At beginning of each training module, record each chart containing learning objective and lesson outline.
- B. Video Format: Provide high-quality DVD color.
- C. Recording: Mount camera on tripod before starting recording, unless otherwise necessary to show area of demonstration and training. Display continuous running time.

END OF SECTION 01 79 00

SECTION 01 91 13 - GENERAL COMMISSIONING REQUIREMENTS

PART 1 GENERAL

1.01 SUMMARY

- A. Commissioning is intended to achieve the following specific objectives; this section specifies the Contractor's responsibilities for commissioning:
 - 1. Verify that the work is installed in accordance with Contract Documents and the manufacturer's recommendations and instructions, and that it receives adequate operational checkout prior to startup: Startup reports and Prefunctional Checklists executed by Contractor are utilized to achieve this.
 - 2. Verify and document that functional performance is in accordance with Contract Documents: Functional Tests executed by Contractor and witnessed by the Commissioning Authority are utilized to achieve this.
 - 3. Verify that operation and maintenance manuals submitted to Owner are complete: Detailed operation and maintenance (O&M) data submittals by Contractor are utilized to achieve this.
 - 4. Verify that the Owner's operating personnel are adequately trained: Formal training conducted by Contractor is utilized to achieve this.
- B. Commissioning, including Functional Tests, O&M documentation review, and training, is to occur after startup and initial checkout and be completed before Substantial Completion.
- C. The Commissioning Authority directs and coordinates all commissioning activities; this section describes some but not all of the Commissioning Authority's responsibilities.
- D. The Commissioning Authority is employed by Owner.

1.02 SCOPE OF COMMISSIONING

- A. The following are to be commissioned:
- B. HVAC System, including:
 - 1. Major and minor equipment items.
 - 2. Piping systems and equipment.
 - 3. Terminal units.
 - 4. Control system.
 - 5. Variable frequency drives.
- C. Integrated Automation.
- D. Electronic Safety and Security:
 - 1. Security system, including doors and hardware.
 - 2. Fire and smoke alarms.
- E. Communications:
 - 1. Voice and data systems.
 - 2. Public address/paging.

- F. Other equipment and systems explicitly identified elsewhere in Contract Documents as requiring commissioning.

1.03 RELATED REQUIREMENTS

- A. Section 01 78 00 - Closeout Submittals: Scope and procedures for operation and maintenance manuals and project record documents.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures; except:
 - 1. Make all submittals specified in this section, and elsewhere where indicated for commissioning purposes, directly to the Commissioning Authority, unless they require review by Architect; in that case, submit to Architect first.
 - 2. Submit one copy to the Commissioning Authority, not to be returned.
 - 3. Make commissioning submittals on time schedule specified by Commissioning Authority.
 - 4. Submittals indicated as "Draft" are intended for the use of the Commissioning Authority in preparation of Prefunctional Checklists or Functional Test requirements; submit in editable electronic format, Microsoft Word 2010 preferred.
 - 5. As soon as possible after submittals made to Architect are approved, submit copy of approved submittal to the Commissioning Authority.
- B. Product Data: If submittals to Architect do not include the following, submit copies as soon as possible:
 - 1. Manufacturer's product data, cut sheets, and shop drawings.
 - 2. Manufacturer's installation instructions.
 - 3. Startup, operating, and troubleshooting procedures.
 - 4. Fan and pump curves.
 - 5. Factory test reports.
 - 6. Warranty information, including details of Owner's responsibilities in regard to keeping warranties in force.
- C. Manufacturers' Instructions: Submit copies of all manufacturer-provided instructions that are shipped with the equipment as soon as the equipment is delivered.
- D. Startup Plans and Reports.
- E. Completed Prefunctional Checklists.

PART 2 PRODUCTS

2.01 TEST EQUIPMENT

- A. Provide all standard testing equipment required to perform startup and initial checkout and required Functional Testing; unless otherwise noted such testing equipment will NOT become the property of Owner.
- B. Calibration Tolerances: Provide testing equipment of sufficient quality and accuracy to test and/or measure system performance with the tolerances specified. If not otherwise noted, the following minimum requirements apply:

1. Temperature Sensors and Digital Thermometers: Certified calibration within past year to accuracy of 0.5 degree F and resolution of plus/minus 0.1 degree F.
 2. Pressure Sensors: Accuracy of plus/minus 2.0 percent of the value range being measured (not full range of meter), calibrated within the last year.
 3. Calibration: According to the manufacturer's recommended intervals and when dropped or damaged; affix calibration tags or keep certificates readily available for inspection.
- C. Equipment-Specific Tools: Where special testing equipment, tools and instruments are specific to a piece of equipment, are only available from the vendor, and are required in order to accomplish startup or Functional Testing, provide such equipment, tools, and instruments as part of the work at no extra cost to Owner; such equipment, tools, and instruments are to become the property of Owner.
- D. Dataloggers: Independent equipment and software for monitoring flows, currents, status, pressures, etc. of equipment.
1. Dataloggers required to for Functional Tests will be provided by the Commissioning Authority and will not become the property of Owner.

PART 3 EXECUTION

3.01 COMMISSIONING PLAN

- A. Commissioning Authority has prepared the Commissioning Plan.
1. Attend meetings called by the Commissioning Authority for purposes of completing the commissioning plan.
 2. Require attendance and participation of relevant subcontractors, installers, suppliers, and manufacturer representatives.
- B. Contractor is responsible for compliance with the Commissioning Plan.
- C. Commissioning Plan: The commissioning schedule, procedures, and coordination requirements for all parties in the commissioning process.
- D. Commissioning Schedule:
1. Submit anticipated dates of startup of each item of equipment and system to Commissioning Authority within 60 days after award of Contract.
 2. Re-submit anticipated startup dates monthly, but not less than 4 weeks prior to startup.
 3. Prefunctional Checklists and Functional Tests are to be performed in sequence from components, to subsystems, to systems.
 4. Provide sufficient notice to Commissioning Authority for delivery of relevant Checklists and Functional Test procedures, to avoid delay.

3.02 STARTUP PLANS AND REPORTS

- A. Startup Plans: For each item of equipment and system for which the manufacturer provides a startup plan, submit the plan not less than 8 weeks prior to startup.
- B. Startup Reports: For each item of equipment and system for which the manufacturer provides a startup checklist (or startup plan or field checkout sheet), document compliance by submitting the completed startup checklist prior to startup, signed and dated by responsible entity.

- C. Submit directly to the Commissioning Authority.

3.03 PREFUNCTIONAL CHECKLISTS

- A. A Prefunctional Checklist is required to be filled out for each item of equipment or other assembly specified to be commissioned.
 - 1. No sampling of identical or near-identical items is allowed.
 - 2. These checklists do not replace manufacturers' recommended startup checklists, regardless of apparent redundancy.
 - 3. Prefunctional Checklist forms will not be complete until after award of the contract; the following types of information will be gathered via the completed Checklist forms:
 - a. Certification by installing contractor that the unit is properly installed, started up, and operating and ready for Functional Testing.
 - b. Confirmation of receipt of each shop drawing and commissioning submittal specified, itemized by unit.
 - c. Manufacturer, model number, and relevant capacity information; list information "as specified," "as submitted," and "as installed."
 - d. Serial number of installed unit.
 - e. List of inspections to be conducted to document proper installation prior to startup and Functional Testing; these will be primarily static inspections and procedures; for equipment and systems may include normal manufacturer's start-up checklist items and minor testing.
 - f. Sensor and actuator calibration information.
- B. Contractor is responsible for filling out Prefunctional Checklists, after completion of installation and before startup; witnessing by the Commissioning Authority is not required unless otherwise specified.
 - 1. Each line item without deficiency is to be witnessed, initialed, and dated by the actual witness; checklists are not complete until all line items are initialed and dated complete without deficiencies.
 - 2. Checklists with incomplete items may be submitted for approval provided the Contractor attests that incomplete items do not preclude the performance of safe and reliable Functional Testing; re-submission of the Checklist is required upon completion of remaining items.
 - 3. Individual Checklists may contain line items that are the responsibility of more than one installer; Contractor shall assign responsibility to appropriate installers or subcontractors, with identification recorded on the form.
 - 4. If any Checklist line item is not relevant, record reasons on the form.
 - 5. Contractor may independently perform startup inspections and/or tests, at Contractor's option.
 - 6. Regardless of these reporting requirements, Contractor is responsible for correct startup and operation.
 - 7. Submit completed Checklists to Commissioning Authority within two days of completion.
- C. Commissioning Authority is responsible for furnishing the Prefunctional Checklists to Contractor.
 - 1. Initial Drafts: Contractor is responsible for initial draft of Prefunctional Checklist where so indicated in Contract Documents.

2. Provide all additional information requested by Commissioning Authority to aid in preparation of checklists, such as shop drawing submittals, manufacturers' startup checklists, and O&M data.
 3. Commissioning Authority may add any relevant items deemed necessary regardless of whether they are explicitly mentioned in Contract Documents or not.
 4. When asked to review the proposed Checklists, do so in a timely manner.
- D. Commissioning Authority Witnessing: Required for:
1. Each piece of primary equipment, unless sampling of multiple similar units is allowed by the commissioning plan.
 2. A sampling of non-primary equipment, as allowed by the commissioning plan.
- E. Deficiencies: Correct deficiencies and re-inspect or re-test, as applicable, at no extra cost to Owner.
1. If difficulty in correction would delay progress, report deficiency to the Commissioning Authority immediately.

3.04 FUNCTIONAL TESTS

- A. A Functional Test is required for each item of equipment, system, or other assembly specified to be commissioned, unless sampling of multiple identical or near-identical units is allowed by the final test procedures.
- B. Contractor is responsible for execution of required Functional Tests, after completion of Prefunctional Checklist and before closeout.
- C. Commissioning Authority is responsible for witnessing and reporting results of Functional Tests, including preparation and completion of forms for that purpose.
- D. Contractor is responsible for correction of deficiencies and re-testing at no extra cost to Owner; if a deficiency is not corrected and re-tested immediately, the Commissioning Authority will document the deficiency and the Contractor's stated intentions regarding correction.
1. Deficiencies are any condition in the installation or function of a component, piece of equipment or system that is not in compliance with Contract Documents or does not perform properly.
 2. When the deficiency has been corrected, the Contractor completes the form certifying that the item is ready to be re-tested and returns the form to the Commissioning Authority; the Commissioning Authority will reschedule the test and the Contractor shall re-test.
 3. Identical or Near-Identical Items: If 10 percent, or three, whichever is greater, of identical or near-identical items fail to perform due to material or manufacturing defect, all items will be considered defective; provide a proposal for correction within 2 weeks after notification of defect, including provision for testing sample installations prior to replacement of all items.
 4. Contractor shall bear the cost of Owner and Commissioning Authority personnel time witnessing re-testing.
 5. Contractor shall bear the cost of Owner and Commissioning Authority personnel time witnessing re-testing if the test failed due to failure to execute the relevant Prefunctional Checklist correctly; if the test failed for reasons that would not have been identified in the Prefunctional Checklist process, Contractor shall bear the cost of the second and subsequent re-tests.
- E. Functional Test Procedures:

1. Some test procedures are included in Contract Documents; where Functional Test procedures are not included in Contract Documents, test procedures will be determined by the Commissioning Authority with input by and coordination with Contractor.
2. Examples of Functional Testing:
 - a. Test the dynamic function and operation of equipment and systems (rather than just components) using manual (direct observation) or monitoring methods under full operation (e.g., the chiller pump is tested interactively with the chiller functions to see if the pump ramps up and down to maintain the differential pressure setpoint).
 - b. Systems are tested under various modes, such as during low cooling or heating loads, high loads, component failures, unoccupied, varying outside air temperatures, fire alarm, power failure, etc.
 - c. Systems are run through all the HVAC control system's sequences of operation and components are verified to be responding as the sequence's state.
 - d. Traditional air or water test and balancing (TAB) is not Functional Testing; spot checking of TAB by demonstration to the Commissioning Authority is Functional Testing.
- F. Deferred Functional Tests: Some tests may need to be performed later, after substantial completion, due to partial occupancy, equipment, seasonal requirements, design or other site conditions; performance of these tests remains the Contractor's responsibility regardless of timing.

3.05 SENSOR AND ACTUATOR CALIBRATION

- A. Calibrate all field-installed temperature, relative humidity, carbon monoxide, carbon dioxide, and pressure sensors and gauges, and all actuators (dampers and valves) on this piece of equipment shall be calibrated. Sensors installed in the unit at the factory with calibration certification provided need not be field calibrated.
- B. Calibrate using the methods described below; alternate methods may be used, if approved by Commissioning Authority and Owner beforehand. See PART 2 for test instrument requirements. Record methods used on the relevant Prefunctional Checklist or other suitable forms, documenting initial, intermediate and final results.
- C. All Sensors:
 1. Verify that sensor location is appropriate and away from potential causes of erratic operation.
 2. Verify that sensors with shielded cable are grounded only at one end.
 3. For sensor pairs that are used to determine a temperature or pressure difference, for temperature make sure they are reading within 0.2 degree F of each other, and for pressure, within tolerance equal to 2 percent of the reading, of each other.
 4. Tolerances for critical applications may be tighter.
- D. Sensors Without Transmitters - Standard Application:
 1. Make a reading with a calibrated test instrument within 6 inches of the site sensor.
 2. Verify that the sensor reading, via the permanent thermostat, gauge or building automation system, is within the tolerances in the table below of the instrument-measured value.

3. If not, install offset, calibrate or replace sensor.
- E. Sensors With Transmitters - Standard Application.
1. Disconnect sensor.
 2. Connect a signal generator in place of sensor.
 3. Connect ammeter in series between transmitter and building automation system control panel.
 4. Using manufacturer's resistance-temperature data, simulate minimum desired temperature.
 5. Adjust transmitter potentiometer zero until 4 mA is read by the ammeter.
 6. Repeat for the maximum temperature matching 20 mA to the potentiometer span or maximum and verify at the building automation system.
 7. Record all values and recalibrate controller as necessary to comply with specified control ramps, reset schedules, proportional relationship, reset relationship and P/I reaction.
 8. Reconnect sensor.
 9. Make a reading with a calibrated test instrument within 6 inches of the site sensor.
 10. Verify that the sensor reading, via the permanent thermostat, gauge or building automation system, is within the tolerances in the table below of the instrument-measured value.
 11. If not, replace sensor and repeat.
 12. For pressure sensors, perform a similar process with a suitable signal generator.
- F. Sensor Tolerances for Standard Applications: Plus/minus the following maximums:
1. Watthour, Voltage, Amperage: 1 percent of design.
 2. Pressure, Air, Water, Gas: 3 percent of design.
 3. Air Temperatures (Outside Air, Space Air, Duct Air): 0.4 degrees F.
 4. Relative Humidity: 4 percent of design.
 5. Barometric Pressure: 0.1 inch of Hg.
 6. Flow Rate, Air: 10 percent of design.
 7. Flow Rate, Water: 4 percent of design.
 8. AHU Wet Bulb and Dew Point: 2.0 degrees F.
- G. Critical Applications: For some applications more rigorous calibration techniques may be required for selected sensors. Describe any such methods used on an attached sheet.
- H. Valve/Damper Stroke Setup and Check:
1. For all valve/damper actuator positions checked, verify the actual position against the control system readout.
 2. Set pump/fan to normal operating mode.
 3. Command valve/damper closed; visually verify that valve/damper is closed and adjust output zero signal as required.
 4. Command valve/damper to open; verify position is full open and adjust output signal as required.
 5. Command valve/damper to a few intermediate positions.
 6. If actual valve/damper position does not reasonably correspond, replace actuator or add pilot positioner (for pneumatics).
- I. Isolation Valve or System Valve Leak Check: For valves not associated with coils.
1. With full pressure in the system, command valve closed.
 2. Use an ultra-sonic flow meter to detect flow or leakage.

3.06 TEST PROCEDURES - GENERAL

- A. Provide skilled technicians to execute starting of equipment and to execute the Functional Tests. Ensure that they are available and present during the agreed upon schedules and for sufficient duration to complete the necessary tests, adjustments and problem-solving.
- B. Provide all necessary materials and system modifications required to produce the flows, pressures, temperatures, and conditions necessary to execute the test according to the specified conditions. At completion of the test, return all affected equipment and systems to their pre-test condition.
- C. Sampling: Where Functional Testing of fewer than the total number of multiple identical or near-identical items is explicitly permitted, perform sampling as follows:
 - 1. Identical Units: Defined as units with same application and sequence of operation; only minor size or capacity difference.
 - 2. Sampling is not allowed for:
 - a. Major equipment.
 - b. Life-safety-critical equipment.
 - c. Prefunctional Checklist execution.
 - 3. XX = the percent of the group of identical equipment to be included in each sample; defined for specific type of equipment.
 - 4. YY = the percent of the sample that if failed will require another sample to be tested; defined for specific type of equipment.
 - 5. Randomly test at least XX percent of each group of identical equipment, but not less than three units. This constitutes the "first sample."
 - 6. If YY percent of the units in the first sample fail, test another XX percent of the remaining identical units.
 - 7. If YY percent of the units in the second sample fail, test all remaining identical units.
 - 8. If frequent failures occur, resulting in more troubleshooting than testing, the Commissioning Authority may stop the testing and require Contractor to perform and document a checkout of the remaining units prior to continuing testing.
- D. Manual Testing: Use hand-held instruments, immediate control system readouts, or direct observation to verify performance (contrasted to analyzing monitored data taken over time to make the "observation").
- E. Simulating Conditions: Artificially create the necessary condition for the purpose of testing the response of a system; for example apply hot air to a space sensor using a hair dryer to see the response in a VAV box.
- F. Simulating Signals: Disconnect the sensor and use a signal generator to send an amperage, resistance or pressure to the transducer and control system to simulate the sensor value.
- G. Over-Writing Values: Change the sensor value known to the control system in the control system to see the response of the system; for example, change the outside air temperature value from 50 degrees F to 75 degrees F to verify economizer operation.
- H. Indirect Indicators: Remote indicators of a response or condition, such as a reading from a control system screen reporting a damper to be 100 percent closed, are considered indirect indicators.

- I. Monitoring: Record parameters (flow, current, status, pressure, etc.) of equipment operation using dataloggers or the trending capabilities of the relevant control systems; where monitoring of specific points is called for in Functional Test Procedures:
 1. All points that are monitored by the relevant control system shall be trended by Contractor; at the Commissioning Authority's request, Contractor shall trend up to 20 percent more points than specified at no extra charge.
 2. Other points will be monitored by the Commissioning Authority using dataloggers.
 3. At the option of the Commissioning Authority, some control system monitoring may be replaced with datalogger monitoring.
 4. Provide hard copies of monitored data in columnar format with time down left column and at least 5 columns of point values on same page.
 5. Graphical output is desirable and is required for all output if the system can produce it.
 6. Monitoring may be used to augment manual testing.

3.07 OPERATION AND MAINTENANCE MANUALS

- A. See Section 01 78 00 - Closeout Submittals for additional requirements.
- B. Add design intent documentation furnished by Architect to manuals prior to submission to Owner.
- C. Submit manuals related to items that were commissioned to Commissioning Authority for review; make changes recommended by Commissioning Authority.
- D. Commissioning Authority will add commissioning records to manuals after submission to Owner.

END OF SECTION 01 91 13

SECTION 02 32 10 - HAZARDOUS MATERIALS DATA

The following report is made available for convenience of the contractor:

"LIMITED SITE ASSESSMENT FOR ACM and PCB'S" dated 11/27/23 (34) Pages Total

As prepared by:

Environmental Connection, Inc.

120 North Warren Street

Trenton, New Jersey 08608

Jordan Reed

DATA ON INDICATED HAZARDOUS MATERIAL CONDITIONS ARE NOT INTENDED AS REPRESENTATIONS OR WARRANTIES OF ACCURACY OR CONTINUITY OF SUCH CONDITIONS BETWEEN AND SURROUNDING AFFECTED AREAS. IT IS EXPRESSLY UNDERSTOOD THAT THE OWNER, ARCHITECT AND ITS ENGINEERS WILL NOT BE RESPONSIBLE FOR INTERPRETATIONS OR CONCLUSIONS DRAWN THEREFROM BY THE CONTRACTOR.

THE OWNER WILL BE RESPONSIBLE FOR THE REMOVAL AND DISPOSAL OF ANY HAZARDOUS MATERIAL WHICH INTERFERES WITH THE WORK.

END OF SECTION 02 32 10

SECTION 02 32 11 - HAZARDOUS MATERIAL REPORT

***<< REMOVE THIS PAGE AND INSERT PDF COPY OF HAZARDOUS MATERIAL REPORT
>>***

END OF SECTION 02 32 11

SECTION 02 41 00 - DEMOLITION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Building demolition excluding removal of hazardous materials and toxic substances.
- B. Selective demolition of built site elements.
- C. Selective demolition of building elements for alteration purposes.
- D. Abandonment and removal of existing utilities and utility structures.

1.02 RELATED REQUIREMENTS

- A. Section 01 10 00 - Summary: Limitations on Contractor's use of site and premises.
- B. Section 01 10 00 - Summary: Description of items to be salvaged or removed for re-use by Contractor.
- C. Section 01 50 00 - Temporary Facilities and Controls: Site fences, security, protective barriers, and waste removal.
- D. Section 01 60 00 - Product Requirements: Handling and storage of items removed for salvage and relocation.
- E. Section 01 70 00 - Execution and Closeout Requirements: Project conditions; protection of bench marks, survey control points, and existing construction to remain; reinstallation of removed products; temporary bracing and shoring.
- F. Section 01 74 19 - Construction Waste Management and Disposal: Limitations on disposal of removed materials; requirements for recycling.
- G. Section 02 65 00 - Underground Storage Tank Removal.
- H. Section 31 22 00 - Grading: Rough and fine grading.
- I. Section 31 23 23 - Fill: Fill material for filling holes, pits, and excavations generated as a result of removal operations.

1.03 DEFINITIONS

- A. Demolition: Dismantle, raze, destroy or wreck any building or structure or any part thereof.
- B. Remove: Detach or dismantle items from existing construction and dispose of them off site, unless items are indicated to be salvaged or reinstalled.
- C. Remove and Salvage: Detach or dismantle items from existing construction in a manner to prevent damage. Clean, package, label and deliver salvaged items to Owner in ready-for-reuse condition.
- D. Remove and Reinstall: Detach or dismantle items from existing construction in a manner to prevent damage. Clean and prepare for reuse and reinstall where indicated.

- E. Existing to Remain: Designation for existing items that are not to be removed and that are not otherwise indicated to be salvaged or reinstalled.

1.04 MATERIALS OWNERSHIP

- A. Unless otherwise indicated, demolition waste becomes property of Contractor.
- B. Historic items, relics, antiques, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, and other items of interest or value to Owner, that may be uncovered during demolition, remain the property of Owner.
 - 1. Carefully salvage in a manner to prevent damage and promptly return to Owner.
- C. Owner reserves first right of refusal for removal and salvaged items. Items indicated for removal and salvage remain the Owner's property. Remove, clean, and pack items to protect against damage and deliver to Owner's designated storage area with labels to identify contents of containers. Demolished materials shall become the Contractor's property and removed from the site with further disposition at the Contractor's option.

1.05 REFERENCE STANDARDS

- A. NFPA 241 - Standard for Safeguarding Construction, Alteration, and Demolition Operations; 2022, with Errata (2021).

1.06 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Site Plan: Indicate:
 - 1. Vegetation to be protected.
 - 2. Areas for temporary construction and field offices.
 - 3. Areas for temporary and permanent placement of removed materials.
- C. Demolition Plan: Submit demolition plan as required by OSHA and local AHJs.
 - 1. Indicate extent of demolition, removal sequencing, bracing and shoring, and location and construction of barricades and fences.
 - 2. Summary of safety procedures.
 - 3. Demolition firm qualifications.
- D. Inventory: Submit a list of items to be removed and salvaged and deliver to Owner prior to start of demolition.
- E. Pre-demolition Photographs or Video: Submit before Work begins.
- F. Warranties: Documentation indicated that existing warranties are still in effect after completion of selective demolition.
- G. Project Record Documents: Accurately record actual locations of capped and active utilities and subsurface construction.

1.07 QUALITY ASSURANCE

- A. Demolition Firm Qualifications: Company specializing in the type of work required.

1.08 CLOSEOUT SUBMITTALS

- A. Inventory: Submit a list of items that have been removed and salvaged.

1.09 FIELD CONDITIONS

- A. Owner will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted.
 - 1. Coordinate with the Owner's continuing occupation and use of portions of the building to maintain safe emergency access to and from the facilities at all times.
 - 2. Provide minimum of three (3) working days advance notice to Owner of demolition activities that will impact Owner's normal operations.
- B. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
- C. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.
- D. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.
 - 1. Hazardous materials will be removed by Owner before start of the Work.
 - 2. If materials suspected of containing hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Owner will remove hazardous materials under a separate contract.
- E. Partial Demolition and Removal: Items indicated to be removed, and not intended to be salvaged or retained by the Owner, but of salvageable value to Contractor, may be removed from the project as work progresses. Transport salvaged items from the project as they are removed.
 - 1. Storage or sale of removed items on site will not be permitted.
- F. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
 - 1. Maintain fire-protection facilities in service during selective demolition operations.

1.10 WARRANTY

- A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during selective demolition, by methods and with materials so as not to void existing warranties. Notify warrantor before proceeding. Existing warranties include the following:
 - 1. Roofing system
- B. Notify warrantor on completion of selective demolition and obtain documentation verifying that existing system has been inspected and warranty remains in effect. Submit documentation at Project closeout.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Fill Material: See Section 31 23 23.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that utilities have been disconnected and capped before starting selective demolition operations.
- B. Review record documents of existing construction provided by Owner. Owner does not guarantee that existing conditions are same as those indicated in record documents.
- C. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.
- D. Inventory and record the condition of items to be removed and re-installed and items to be removed and salvaged.
- E. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to Architect and Owner's Representative in accurate detail. Pending receipt of directive from Architect and/or Owner's Representative, rearrange demolition schedule as necessary to continue overall job progress without delay.
- F. Engage a professional engineer to perform an engineering survey of condition of building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of structure or adjacent structures during selective building demolition operations.
 - 1. Perform surveys as the Work progresses to detect hazards resulting from selective demolition activities.
- G. Survey of Existing Conditions: Record existing conditions by use of measured drawings, preconstruction photographs, preconstruction videotapes and/or templates.
 - 1. Comply with requirements specified in Section 01 32 33 - Photographic Documentation.
 - 2. Inventory and record the condition of items to be removed and salvaged. Provide photographs and/or video of conditions that might be misconstrued as damage caused by salvage operations.
- H. Before selective demolition or removal of existing building elements that will be reproduced or duplicated in final Work, make permanent record of measurements, materials, and construction details required to make exact reproduction.

3.02 DEMOLITION

- A. Remove the entire building as indicated on drawings.
- B. Remove paving and curbs required to accomplish new work.
- C. Remove all other paving and curbs within site boundaries.
- D. Within area of new construction, remove foundation walls and footings to minimum 4 feet below finished grade.

- E. Outside area of new construction, remove foundation walls and footings to minimum 2 feet below finished grade.
- F. Remove concrete slabs on grade within site boundaries.
- G. Remove underground tanks.
- H. Remove manholes and manhole covers, curb inlets and catch basins.
- I. Remove fences and gates.
- J. Remove creosote-treated wood utility poles.
- K. Remove other items indicated, for salvage, relocation, and recycling.
- L. Fill excavations, open pits, and holes in ground areas generated as result of removals, using specified fill; compact fill as specified in Section 31 22 00.

3.03 GENERAL PROCEDURES AND PROJECT CONDITIONS

- A. Comply with requirements in Section 01 70 00.
- B. Comply with applicable codes and regulations for demolition operations and safety of adjacent structures and the public.
 - 1. Obtain required permits.
 - 2. Comply with applicable requirements of NFPA 241.
 - 3. Take precautions to prevent catastrophic or uncontrolled collapse of structures to be removed; do not allow worker or public access within range of potential collapse of unstable structures.
 - 4. Provide, erect, and maintain temporary barriers and security devices.
 - 5. Conduct operations to minimize effects on and interference with adjacent structures and occupants.
 - 6. Do not close or obstruct roadways or sidewalks without permits from authority having jurisdiction.
 - 7. Conduct operations to minimize obstruction of public and private entrances and exits. Do not obstruct required exits at any time. Protect persons using entrances and exits from removal operations.
 - 8. Obtain written permission from owners of adjacent properties when demolition equipment will traverse, infringe upon, or limit access to their property.
- C. Do not begin removal until receipt of notification to proceed from Owner.
- D. Do not begin removal until built elements to be salvaged or relocated have been removed.
- E. Do not begin removal until vegetation to be relocated has been removed and vegetation to remain has been protected from damage.
- F. Protect existing structures and other elements to remain in place and not removed.
 - 1. Provide bracing and shoring.
 - 2. Prevent movement or settlement of adjacent structures.
 - 3. Stop work immediately if adjacent structures appear to be in danger.
- G. Minimize production of dust due to demolition operations. Do not use water if that will result in ice, flooding, sedimentation of public waterways or storm sewers, or other pollution.
- H. Hazardous Materials:

1. If hazardous materials are discovered during removal operations, stop work and notify Architect and Owner; hazardous materials include regulated asbestos containing materials, lead, PCBs, and mercury.
- I. Perform demolition in a manner that maximizes salvage and recycling of materials.
 1. Comply with requirements of Section 01 74 19 - Construction Waste Management and Disposal.
 2. Dismantle existing construction and separate materials.
 3. Set aside reusable, recyclable, and salvageable materials; store and deliver to collection point or point of reuse.
- J. Partial Removal of Paving and Curbs: Neatly saw cut at right angle to surface.
- K. Underground Storage Tanks: Remove and dispose of as specified in Section 02 65 00.

3.04 EXISTING UTILITIES

- A. Coordinate work with utility companies. Notify utilities before starting work, comply with their requirements, and obtain required permits.
- B. Protect existing utilities to remain from damage.
- C. Do not disrupt public utilities without permit from authority having jurisdiction.
- D. Do not close, shut off, or disrupt existing life safety systems that are in use without at least 7 days prior written notification to Owner.
- E. Do not close, shut off, or disrupt existing utility branches or take-offs that are in use without at least 3 days prior written notification to Owner.
- F. Locate and mark utilities to remain; mark using highly visible tags or flags, with identification of utility type; protect from damage due to subsequent construction, using substantial barricades if necessary.
- G. Remove exposed piping, valves, meters, equipment, supports, and foundations of disconnected and abandoned utilities.
- H. Prepare building demolition areas by disconnecting and capping utilities outside the demolition zone. Identify and mark, in same manner as other utilities to remain, utilities to be reconnected.

3.05 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

- A. Use utility and material locator equipment to locate utilities, structural elements etc. concealed within the building's construction.
- B. Existing building fire protection system shall not be diminished. Removal of existing devices shall not occur until the new equipment is in place and ready for the switchover.
- C. Existing Services/Systems to Remain: Locate and maintain services/systems indicated to remain and protect them against damage.
 1. Comply with requirements for existing services/systems interruptions specified in Section 01 10 00 - SUMMARY.
- D. <<<<< Retain "Existing Services/Systems to Be Removed, Relocated, or Abandoned" Paragraph below if required. Delete if Owner arranges and performs

work. >>>>>

- E. Existing Services/Systems to Be Removed, Relocated, or Abandoned: Locate, identify, disconnect, and seal or cap off indicated utility services and mechanical/electrical systems serving areas to be selectively demolished.
1. Owner will arrange to shut off indicated services/systems when requested by Contractor.
 2. If services/systems are required to be removed, relocated, or abandoned, provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of building. Provide minimum of three (3) working days advance notice to Owner if shutdown of service is necessary during change-over.
 3. Disconnect, demolish, and remove fire-suppression systems, plumbing, and HVAC systems, equipment, and components indicated to be removed. Protect store and re install existing equipment effected by the new work that is not noted to be demolished.
 - a. Piping to Be Removed: Remove piping indicated to be removed back to the main and cap or plug remaining piping with same or compatible piping material.
 - b. Equipment to Be Removed: Disconnect and cap services and remove equipment.
 - c. Equipment to Be Removed and Reinstalled: Disconnect and cap services and remove, clean, and store equipment; when appropriate, reinstall, reconnect, and make equipment operational.
 - d. Equipment to Be Removed and Salvaged: Disconnect and cap services and remove equipment and deliver to Owner.
 - e. Ducts to Be Removed: Remove portion of ducts indicated to be removed and plug remaining ducts with same or compatible ductwork material.
 - f. Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remove remaining portion of pipe or conduit after bypassing.
 - g. Where entire wall is to be removed, existing services/systems may be removed with removal of the wall.
 - h. Contractor's scope of work includes, and the Contractor is required and expected to, patch any hole(s) resulting in the removal and/or capping of plumbing fixture(s) and/or piping in a wall, ceiling or floor to remain to match existing conditions, unless otherwise noted.

3.06 SELECTIVE DEMOLITION FOR ALTERATIONS

- A. Existing construction and utilities indicated on drawings are based on casual field observation and existing record documents only.
1. Verify construction and utility arrangements are as indicated.
 2. Report discrepancies to Architect before disturbing existing installation.
 3. Beginning of demolition work constitutes acceptance of existing conditions that would be apparent upon examination prior to starting demolition.
- B. Separate areas in which demolition is being conducted from areas that remain occupied.
1. Provide, erect, and maintain temporary dustproof partitions of construction specified in Section 01 50 00 in locations indicated on drawings.

2. Provide sound retardant partitions of construction and in locations indicated on drawings.
- C. Maintain weatherproof exterior building enclosure, except for interruptions required for replacement or modifications; prevent water and humidity damage.
- D. Remove existing work as indicated and required to accomplish new work.
 1. Remove rotted wood, corroded metals, and deteriorated masonry and concrete; replace with new construction indicated.
 2. Remove items indicated on drawings.
- E. Services including, but not limited to, HVAC, Plumbing, Fire Protection, Electrical, and Telecommunications: Remove existing systems and equipment as indicated.
 1. Maintain existing active systems to remain in operation, and maintain access to equipment and operational components.
 2. Where existing active systems serve occupied facilities but are to be replaced with new services, maintain existing systems in service until new systems are complete and ready for service.
 3. See Section 01 10 00 - Summary for limitations on outages and required notifications.
 4. Verify that abandoned services serve only abandoned facilities before removal.
 5. Remove abandoned pipe, ducts, conduits, and equipment, including those above accessible ceilings. Remove back to source of supply where possible, otherwise cap stub and tag with identification.
- F. Protect existing work to remain.
 1. Prevent movement of structure. Provide shoring and bracing as required.
 2. Perform cutting to accomplish removal work neatly and as specified for cutting new work.
 3. Repair adjacent construction and finishes damaged during removal work.
 4. Patch to match new work.

3.07 DEBRIS AND WASTE REMOVAL

- A. Remove debris, junk, and trash from site.
- B. Leave site in clean condition, ready for subsequent work.
- C. Clean up spillage and wind-blown debris from public and private lands.

END OF SECTION 02 41 00

SECTION 02 41 19 - SELECTIVE DEMOLITION

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. Provide all removal, proper and legal disposal work as required to complete selective demolition work and prepare existing areas for new work required including, but not limited to, the following:
 - 1. Demolition, removal and legal disposal off-site of selected portions of the building, construction assemblies, and other incidental work, whether shown or not shown, but required to complete the installation of scheduled work, coordinated with other trades and construction components being replaced by new construction.
 - 2. Disconnecting, capping or sealing, abandoning or removing utilities as indicated and/or required.
 - 3. Patching, repairing and replacing areas damaged or altered by demolition work, with new materials and construction similar in kind unless otherwise indicated.
 - 4. Demolition and removal of selected site elements.
 - 5. Salvage of existing items to be reused, relocated or recycled.
- B. Related Requirements:
 - 1. Section 01 10 00 - SUMMARY for restrictions on the use of the premises, Owner-occupancy requirements, and phasing requirements.
 - 2. Section 01 73 00 - Execution for cutting and patching procedures.

1.03 DEFINITIONS

- A. Remove: Detach items from existing construction and legally dispose of them off-site unless indicated to be removed and salvaged or removed and reinstalled.
- B. Remove and Salvage: Carefully detach from existing construction, in a manner to prevent damage, and deliver to Owner ready for reuse.
- C. Remove and Reinstall: Detach items from existing construction, prepare for reuse, and reinstall where indicated.
- D. Existing to Remain: Existing items of construction that are not to be permanently removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

1.04 MATERIALS OWNERSHIP

- A. Unless otherwise indicated, demolition waste becomes property of Contractor.

- B. Historic items, relics, antiques, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, and other items of interest or value to Owner that may be uncovered during demolition remain the property of Owner.
 - 1. Carefully salvage in a manner to prevent damage and promptly return to Owner.
- C. Owner reserves first right of refusal for removal and salvage items. Items indicated for removal and salvage remain the Owner's property. Remove, clean, and pack items to protect against damage and deliver to Owner's designated storage area with labels to identify contents of containers. Demolished materials shall become the Contractor's property and removed from the site with further disposition at the Contractor's option.

1.05 PREINSTALLATION MEETINGS

- A. Pre-demolition Conference: Conduct conference at Project site.
 - 1. Inspect and discuss condition of construction to be selectively demolished.
 - 2. Review structural load limitations of existing structure.
 - 3. Review and finalize selective demolition schedule and verify availability of materials, demolition personnel, equipment, and facilities needed to make progress and avoid delays.
 - 4. Review requirements of work performed by other trades that rely on substrates exposed by selective demolition operations.
 - 5. Review areas where existing construction is to remain and requires protection.

1.06 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For professional Engineer and refrigerant recovery technician.
- B. Proposed Protection Measures: Submit report, including drawings, that indicates the measures proposed for protecting individuals and property, for environmental protection, dust control and for noise control. Indicate proposed locations and construction of barriers.
- C. Schedule of Selective Demolition Activities: Indicate the following:
 - 1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity. Ensure Owner's on-site operations are uninterrupted.
 - 2. Interruption of utility services. Indicate how long utility services will be interrupted.
 - 3. Coordination for shutoff, capping, and continuation of utility services.
 - 4. Coordination of Owner's continuing occupancy of portions of existing building and of Owner's partial occupancy of completed Work.
 - 5. Locations of proposed dust- and noise-control temporary partitions and means of egress.
- D. Inventory: Submit a list of items to be removed and salvaged and deliver to Owner prior to start of demolition.
- E. Pre-demolition Photographs or Video: Submit before Work begins.
- F. Warranties: Documentation indicated that existing warranties are still in effect after completion of selective demolition.

1.07 CLOSEOUT SUBMITTALS

- A. Inventory: Submit a list of items that have been removed and salvaged.
- B. Landfill Records: Indicate receipt and acceptance of hazardous wastes by a landfill facility licensed to accept hazardous wastes.

1.08 FIELD CONDITIONS

- A. Owner will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted.
 - 1. Coordinate with the Owner's continuing occupation and use of portions of the building to maintain safe emergency access to and from the facilities at all times.
 - 2. Provide minimum of three (3) working days advance notice to Owner of demolition activities that will impact Owner's normal operations.
- B. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
- C. The Contractor shall photograph and catalog the structural condition of each adjacent area, paying particular attention to the condition of existing foundations, evidence of cracks, poor condition of masonry, or other poor site conditions that exist before demolition and construction begins. The purpose of this exercise is to obtain a record of adjacent site conditions before work begins, in order to evaluate potential future claims of property damage caused by vibrations, noise, seismic disturbances, or direct impact. NOTE: The Contractor is encouraged to video record the condition of the property in addition to obtaining a photographic record.
- D. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.
- E. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.
 - 1. If materials suspected of containing hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Owner will remove hazardous materials under a separate contract.
- F. Partial Demolition and Removal: Items indicated to be removed, and not intended to be salvaged or retained by the Owner, but of salvageable value to Contractor, may be removed from the project as work progresses. Transport salvaged items from the project as they are removed.
 - 1. Storage or sale of removed items on site will not be permitted.
- G. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
 - 1. Maintain fire-protection facilities in service during selective demolition operations.
- H. Should the Contractor fail to photographically document the condition of existing structures, then, it shall be held responsible for all claims of property damage. Notwithstanding, photographically documenting the condition of existing facilities does not relieve the contractor from any responsibility for repairing subsequent damage to the facility caused by or resulting from the Contractor's demolition or construction activities

1.09 WARRANTY

- A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during selective demolition, by methods and with materials so as not to void existing warranties. Notify warrantor before proceeding. Existing warranties include the following:
 - 1. Roofing system
- B. Notify warrantor on completion of selective demolition, and obtain documentation verifying that existing system has been inspected and warranty remains in effect. Submit documentation at Project closeout.

PART 2 PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

- A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
- B. Standards: Comply with ANSI/ASSE A10.6 and NFPA 241.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that utilities have been disconnected and capped before starting selective demolition operations.
- B. Review record documents of existing construction provided by Owner. Owner does not guarantee that existing conditions are same as those indicated in record documents.
- C. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.
- D. Inventory and record the condition of items to be removed and re-installed and items to be removed and salvaged.
- E. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to Architect and Owner's Representative in accurate detail. Pending receipt of directive from Architect and/or Owner's Representative, rearrange demolition schedule as necessary to continue overall job progress without delay.
- F. Engage a professional engineer to perform an engineering survey of condition of building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of structure or adjacent structures during selective building demolition operations.
 - 1. Perform surveys as the Work progresses to detect hazards resulting from selective demolition activities.

- G. Survey of Existing Conditions: Record existing conditions by use of measured drawings, preconstruction photographs, preconstruction videotapes and/or templates.
 - 1. Comply with requirements specified in Section 01 32 33 - Photographic Documentation.
 - 2. Inventory and record the condition of items to be removed and salvaged. Provide photographs and/or video of conditions that might be misconstrued as damage caused by salvage operations.
 - 3. Before selective demolition or removal of existing building elements that will be reproduced or duplicated in final Work, make permanent record of measurements, materials, and construction details required to make exact reproduction.

3.02 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

- A. Use utility and material locator equipment to locate utilities, structural elements etc. concealed within the building's construction.
- B. Existing building fire protection system shall not be diminished. Removal of existing devices shall not occur until the new equipment is in place and ready for the switchover.
- C. Existing Services/Systems to Remain: Locate and maintain services/systems indicated to remain and protect them against damage.
 - 1. Comply with requirements for existing services/systems interruptions specified in Section 01 10 00 - SUMMARY.
- D. Existing Services/Systems to Be Removed, Relocated, or Abandoned: Locate, identify, disconnect, and seal or cap off indicated utility services and mechanical/electrical systems serving areas to be selectively demolished.
 - 1. Arrange to shut off indicated utilities with utility companies.
 - 2. If services/systems are required to be removed, relocated, or abandoned, provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of building. Provide minimum of (3) working days advance notice to Owner if shutdown of service is necessary during change-over.
 - 3. Disconnect, demolish, and remove fire-suppression systems, plumbing, and HVAC systems, equipment, and components indicated to be removed. Protect store and re install existing equipment effected by the new work that is not noted to be demolished.
 - a. Piping to Be Removed: Remove piping indicated to be removed back to the main and cap or plug remaining piping with same or compatible piping material.
 - b. Equipment to Be Removed: Disconnect and cap services and remove equipment.
 - c. Equipment to Be Removed and Reinstalled: Disconnect and cap services and remove, clean, and store equipment; when appropriate, reinstall, reconnect, and make equipment operational.
 - d. Equipment to Be Removed and Salvaged: Disconnect and cap services and remove equipment and deliver to Owner.
 - e. Ducts to Be Removed: Remove portion of ducts indicated to be removed and plug remaining ducts with same or compatible ductwork material.

- f. Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remove remaining portion of pipe or conduit after bypassing.
- g. Where entire wall is to be removed, existing services/systems may be removed with removal of the wall.
- h. Contractor's scope of work includes, and the Contractor is required and expected to, patch any hole(s) resulting in the removal and/or capping of plumbing fixture(s) and/or piping in a wall, ceiling or floor to remain to match existing conditions, unless otherwise noted.

3.03 PREPARATION

- A. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
 - 1. Comply with requirements for access and protection specified in Section 01 50 00 - Temporary Facilities and Controls.
- B. Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
 - 1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.
 - 2. Erect temporary protection, such as walks, fences, railings, canopies, and covered passageways, where required by authorities having jurisdiction.
 - 3. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas. Provide insulated temporary weather protection at heated spaces that are required to remain heated.
 - 4. Where temporary covered passageways are required or indicated, covers shall be constructed to sustain a minimum point loading of 500 lbs.
 - 5. Use utility and material locator equipment prior to cutting into existing construction to locate concealed utilities. By-pass or shut-off utilities anticipated to be near the demolition area.
 - 6. Construct temporary, insulated, solid, dustproof, partitions where required to separate areas where extensive dirt, dust, thermal and noisy operations are performed. Equip partitions with dustproof doors and security locks where passage is required. Use sound insulation to protect against noise and thermal insulation to protect against changes in temperature.
 - 7. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
 - 8. Cover and protect furniture, furnishings, and equipment that have not been removed.
 - 9. Comply with requirements for temporary enclosures, dust control, heating, and cooling specified in Section 015000 "Temporary Facilities and Controls."
 - 10. Maintain dust-proof partitions and closures as required preventing spread of dust or fumes to occupied portions of the building.
- C. Temporary Shoring: Provide and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.

1. Strengthen or add new supports when required during progress of selective demolition.
- D. Damages: Notify the Architect and Owner of any damages. Promptly repair damages caused to adjacent facilities by demolition work at no cost to Owner.
- E. Traffic: Conduct demolition operations and debris removal in a manner to ensure minimum interference with pedestrian and vehicular access and exit routes as well as other adjacent occupied or used facilities.
 1. Do not close, block or otherwise obstruct streets, parking areas, walks or other occupied or used facilities without written permission from authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by governing regulations.
- F. Explosives: Use of explosives will not be permitted.
- G. Pollution Controls: Use temporary enclosures, and other suitable methods to limit dust and dirt rising and scattering in the air to lowest practical level. Maintain a minimum of 0.1 inches of water, negative pressure from point of enclosure. The area shall be exhausted from a location as remote as possible from unaltered areas. The point of exhaust shall be a minimum of 25 feet from any air intake or building opening in compliance with regulations as established by the environmental protection agency and applicable governmental and local requirements.

3.04 SELECTIVE DEMOLITION, GENERAL

- A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
 1. Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition operations above each floor or tier before disturbing supporting members on the next lower level.
 2. Neatly cut openings and holes plumb, square, and true to dimensions required. Install lintels and or supports at all exterior and structural openings. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.
 3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
 4. Do not use cutting torches.
 5. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
 6. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
 7. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
 8. Dispose of demolished items and materials promptly.
 9. Promptly patch and repair holes and damaged surfaces caused to adjacent construction by selective demolition operations.
 10. Where repairs to existing surfaces are required, patch to produce surfaces with the integrity and visual appearance of the original installation when it was new

- and suitable for new scheduled finish materials.
11. Restore exposed finishes of patched areas and extend finish restoration into adjoining construction to remain in a manner that eliminates evidence of patching and refinishing.
 12. Patch and repair all surfaces in the newly created openings, Install lintels and or supports at all openings. Where demolition work extends from one finished area into another. Provide a flush and even surface of uniform stability, color and appearance.
 - a. Closely match integrity, texture and finish of existing adjacent surfaces as when they were newly installed.
 - b. Patch with durable seams that are as invisible as possible. Comply with specified tolerances.
 - c. Where patching smooth painted surfaces, extend final paint coat over entire unbroken surface containing the patch after the surface has received primer and first finish coat.
 - d. Remove existing applied finishes over the entire unbroken surface area and replace with new materials, if necessary, to achieve uniform color and appearance.
 - e. Inspect and test patched areas to demonstrate integrity of the installation, where feasible.
- B. Removed and Salvaged Items:
1. Clean salvaged items.
 2. Pack or crate items after cleaning. Identify contents of containers.
 3. Store items in a secure area until delivery to Owner.
 4. Transport items to Owner's storage area designated by Owner.
 5. Protect items from damage during transport and storage.
- C. Removed and Reinstalled Items:
1. Clean and repair items to functional condition adequate for intended reuse.
 2. Pack or crate items after cleaning and repairing. Identify contents of containers.
 3. Protect items from damage during transport and storage.
 4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.
- D. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Architect, items may be removed to a suitable, protected storage location during selective demolition and cleaned and reinstalled in their original locations after selective demolition operations are complete.

3.05 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS

- A. Concrete: Demolish in sections. Cut concrete full depth at junctures with construction to remain and at regular intervals using power-driven saw, then remove concrete between saw cuts.
- B. Masonry: Demolish in small sections. Cut masonry at junctures with construction to remain, using power-driven saw, then remove masonry between saw cuts.
- C. Roofing: Remove no more existing roofing than what can be covered in one day by new roofing and so that building interior remains watertight and weathertight. New

work to match existing.

1. Remove existing roof membrane, flashings, copings.
2. Remove existing roofing system on the top of parapets and roof curbs down to substrate to facilitate installation of new work.
3. Remove HVAC equipment without release of refrigerants.

3.06 DISPOSAL OF DEMOLISHED MATERIALS

- A. General: Except for items or materials indicated to be recycled, reused, salvaged, reinstalled, or otherwise indicated to remain Owner's property, remove demolished materials from Project site and legally dispose of them.
 1. Do not allow demolished materials to accumulate on-site.
 2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
 3. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.
 4. Comply with requirements specified in Section 017419 "Construction Waste Management and Disposal."
- B. Burning: Do not burn demolished materials.
- C. Disposal: Transport demolished materials off Owner's property and legally dispose of them.

3.07 REPAIRS

- A. Use repair materials identical to existing materials to the fullest extent possible.
- B. Where identical materials are unavailable or cannot be used for exposed surfaces, code or hazard issues, use code compliant materials that visually match and are compatible with existing adjacent surfaces, that are free of damage, defects, deterioration, as originally installed when new, to the fullest extent possible pending approval by the Architect.
- C. Use materials whose installed performance equals or surpasses that of the existing materials as originally installed and complies with applicable codes.

3.08 CLEANING

- A. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.
- B. Change filters on air handling equipment at completion of selective demolition operations.

END OF SECTION 02 41 19

SECTION 03 01 00 - MAINTENANCE OF CONCRETE

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Cleaning of existing concrete surfaces.
- B. Repair of exposed structural, shrinkage, and settlement cracks.
- C. Resurfacing of concrete surfaces having spalled areas and other damage.
- D. Repair of deteriorated concrete.
- E. Repair of internal concrete reinforcement.
- F. Scope of Work: As indicated on drawings.

1.02 RELATED REQUIREMENTS

- A. Section 03 30 00 - Cast-in-Place Concrete: Finishing of concrete surface to tolerance; floating, troweling, and similar operations; curing.

1.03 PRICE AND PAYMENT PROCEDURES

- A. See Section 01 22 00 - Unit Prices, for additional unit price requirements.
- B. Repair Surface: By the square foot. Includes surface preparation, repair, finishing.

1.04 REFERENCE STANDARDS

- A. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement; 2020.
- B. ASTM C109/C109M - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or [50 mm] Cube Specimens); 2021.
- C. ASTM C144 - Standard Specification for Aggregate for Masonry Mortar; 2018.
- D. ASTM C881/C881M - Standard Specification for Epoxy-Resin-Base Bonding Systems for Concrete; 2020a.
- E. ASTM C928/C928M - Standard Specification for Packaged, Dry, Rapid-Hardening Cementitious Materials for Concrete Repairs; 2020a.
- F. ASTM D2240 - Standard Test Method for Rubber Property--Durometer Hardness; 2015 (Reapproved 2021).
- G. ICRI 310.2R - Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings, Polymer Overlays, and Concrete Repair; 2013.

1.05 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

- B. Product Data: Indicate product standards, physical and chemical characteristics, technical specifications, limitations, maintenance instructions, and general recommendations regarding each material.
- C. Samples for Initial Selection: Cured Samples for each exposed product and for each color and texture
 - 1. Include sets of patching-material Samples in the form of briquettes, at least 6 inches long by 6 inches wide representative of the range of concrete colors on the building Document each Sample with product, mix, and or other information necessary to replicate it.
 - 2. Include sets of Samples for epoxy crack-injection adhesive and capping adhesive in the form of injection-treated, whole, dense concrete block or brick units representative of the range of required adhesive colors.
 - 3. Include sets of polymer-overlay Samples in the form of treated cementitious tiles at least 6 inches long by 6 inches wide representative of the range of required colors and textures.
 - 4. Include sets of polymer-sealer Samples in the form of treated cementitious tiles at least 6 inches long by 6 inches wide representative of the range of required colors and textures.
 - 5. Have each set of Samples contain a close color range of at least three samples of different mixes of materials that match the variations in existing, adjacent concrete when cured and dry.
- D. Samples for Verification: Cured Samples for each exposed product and for each color and texture specified.
 - 1. Include Samples of each required type, color, and texture of patching material in the form of patches in drilled holes or sawed joints in sample concrete representative of the range of concrete colors on the building.
 - 2. Include Samples of epoxy crack-injection in the form of injection-treated, whole, dense concrete block or brick units representative of the range of required adhesive colors.
 - 3. Include Samples of each required type, color, and texture of polymer-overlay material in the form of cementitious tiles at least 6 inches long by 6 inches wide.
- E. Product Test Reports: For each manufactured bonding agent, cementitious patching mortar, joint-filler, crack-injection adhesive, polymer overlay, sealer for tests performed by manufacturer and witnessed by a qualified testing agency.
- F. Field quality control submittals.
- G. Manufacturer's qualification statement.
- H. Installer's qualification statement.
- I. Material Certificates: For each type of portland cement and aggregate supplied for mixing or adding to products at Project site.

1.06 QUALITY ASSURANCE

- A. Quality-Control Program: Prepare a written plan for concrete maintenance to systematically demonstrate the ability of personnel to properly perform maintenance work, including each phase or process, protection of surrounding materials during operations, and control of debris and runoff during the Work. Describe in detail materials, methods, equipment, and sequence of operations to be used for each phase

of the Work.

- B. **Manufacturer Qualifications:** Company specializing in manufacturing products specified in this section, with not less than three years of documented experience.
 - 1. Each manufactured bonding agent, cementitious patching mortar, joint-filler, crack-injection adhesive, polymer overlay, sealer manufacturer shall employ factory-authorized service representatives who are available for consultation and Project-site inspection and on-site assistance.
- C. **Concrete-Maintenance Specialist Qualifications:** Engage an experienced concrete-maintenance firm that employs installers and supervisors who are trained and approved by manufacturer to apply each manufactured bonding agent, cementitious patching mortar, joint-filler, crack-injection adhesive, polymer overlay, sealer to perform work of this Section. Firm shall have completed work similar in material, design, and extent to that indicated for this Project with a record of successful in-service performance. Experience in only installing or patching new concrete is insufficient experience for concrete-maintenance work.

1.07 MOCK-UP(S)

- A. **Concrete Removal and Patching:** Remove and repair an approximately 100 sq. in. area of deteriorated concrete deck.
- B. **Crack Injection:** Prepare two samples of each type of injection.
 - 1. Perform epoxy crack injection in two separate areas, each approximately 48 inches long.
- C. **Horizontal Surface Repair:** Total of 10 foot square area, demonstrating each type of repair.
 - 1. **Floor Joint Repair:** Cut out and reinstall joints in two separate areas, each approximately 48 inches long.
- D. **Vertical Surface Repair:** Total of 10 foot square area, demonstrating each type of repair.
- E. **Polymer Overlay:** Apply an approximately 50 sq. ft. area of polymer overlay
- F. **Polymer Sealer:** Apply an approximately 50 sq. ft. area of polymer sealer
- G. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
- H. Satisfactory mock-up(s) may remain as part of the work.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. Comply with manufacturers' instructions for storage, shelf life limitations, and handling of products.
- B. Comply with manufacturer's written instructions for minimum and maximum temperature requirements and other conditions for storage
- C. Store materials off the ground in covered, dry, well-ventilated area and according to manufacturer's written storage instructions. Store polymer resins and hardeners separate from construction materials that can absorb odors.

PART 2 PRODUCTS

2.01 CLEANING MATERIALS

- A. Degreaser:
 - 1. Manufacturers:
 - a. Euclid Chemical Company; Euco Clean and Strip: www.euclidchemical.com/#sle.
 - b. L&M Construction Chemicals, Inc, a subsidiary of Laticrete International, Inc; CITREX: www.lmcc.com/#sle.
 - c. Nox-Crete, Inc; Bio-Clean Plus: www.nox-crete.com/#sle.
 - d. SpecChem, LLC; Orange Peel-Citrus Cleaner: www.specchemllc.com/#sle.
- B. Detergent: Non-ionic detergent.
- C. Strippers and Cleaners for Removal of Existing Coatings:
 - 1. Manufacturers:
 - a. Nox-Crete, Inc; Deco-Strip Series: www.nox-crete.com/#sle.
 - b. Nox-Crete, Inc; Deco-Peel Series: www.nox-crete.com/#sle.

2.02 CEMENTITIOUS PATCHING AND REPAIR MATERIALS

- A. Source Limitations: For repair products, obtain each color, grade, finish, type, and variety of product from single source and from single manufacturer with resources to provide products of consistent quality in appearance and physical properties.
- B. Manufacturers:
 - 1. Euclid Chemical Company: www.euclidchemical.com/#sle.
 - 2. Mapei Corporation; Mapecem 202: www.mapei.com/#sle.
 - 3. Master Builders Solutions; _____: www.master-builders-solutions.com/en-us/#sle.
 - 4. W. R. Meadows, Inc: www.wrmeadows.com/#sle.
 - 5. Substitutions: Or approved equal.
- C. Cementitious Resurfacing Mortar: One- or two-component, factory-mixed, polymer-modified cementitious mortar designed for continuous thin-coat application.
 - 1. Mixed with water or latex type bonding agent in proportions as recommended by manufacturer.
 - 2. Recommended Thickness: Feather edge to 1/8 inch.
 - 3. Manufacturers:
 - a. Euclid Chemical Company; THIN TOP SUPREME: www.euclidchemical.com/#sle.
 - b. Mapei Corporation; Planitop 12 SR: www.mapei.com/#sle.
 - c. Master Builders Solutions; MasterEmaco T 1061: www.master-builders-solutions.com/en-us/#sle.
 - d. W. R. Meadows, Inc; Meadow-Patch T2: www.wrmeadows.com/#sle.
- D. Cementitious Repair Mortar, Trowel Grade: One- or two-component, factory-mixed, polymer-modified cementitious mortar.
 - 1. Dry Material: Complies with ASTM C928/C928M.

2. Manufacturers:
 - a. Euclid Chemical Company; Speed Crete Red Line.
 - b. IPA; Ipatop HES
 - c. Master Builders Solutions; MasterEmaco T 1060: www.master-builders-solutions.com/en-us/#sle.
3. Job-Mixed Patching Mortar : 1 part portland cement and 2-1/2 parts fine aggregate complying with ASTM C144, except 100 percent passing a No. 16 sieve.

2.03 EPOXY PATCHING AND REPAIR MATERIALS

- A. Epoxy Repair Mortar: Epoxy resin mixed with aggregate and other materials in accordance with manufacturer's instructions for purpose intended; comply with pot life and workability limits.
 1. Manufacturers:
 - a. Euclid Chemical Company; DURALFLEX FASTPATCH: www.euclidchemical.com/#sle.
 - b. Mapei Corporation; Planibond AE: www.mapei.com/#sle.
 - c. W. R. Meadows, Inc; Rezi-Weld Gel Paste, Rezi-Weld Gel Paste State, Rezi-Weld 1000, Rezi-Weld LV, or Rezi-Weld LV State: www.wrmeadows.com/#sle.
- B. Epoxy Crack-Injection Bonding Adhesive: Non-sag, two-component, 100 percent solids; recommended by manufacturer for purpose and conditions under which used.
 1. Non-Load-Bearing Applications: ASTM C881/C881M Type I, II, III, IV, or V, whichever is appropriate to application.
 2. Load-Bearing Applications: ASTM C881/C881M Type IV or V, whichever is appropriate to application.
 3. Other Applications: ASTM C881/C881M Type as appropriate to application.
 4. Manufacturers:
 - a. BASF Corporation; Construction Systems; MasterInject 1380, MasterInject 1500.
 - b. Euclid Chemical Company; DURAL 452 GEL, DURAL 452 LV, or DURAL 452 MV: www.euclidchemical.com/#sle.
 - c. IPA; Ipanol – LV

2.04 URETHANE PATCHING AND REPAIR MATERIALS

- A. Hybrid Urethane Patching Material: Rapid setting, two-component, 100 percent solids; for rapid joint repair and crack filling where no future slab movement is anticipated. Shore durometer hardness of at least 80 according to ASTM D2240,
 1. Manufacturers:
 - a. Curecrete Distribution, Inc; CreteFill Spall Repair: www.curecrete.com/#sle.
 - b. BASF Corporation; Construction Systems; MasterSeal CR 100.
 - c. PennTek; CR Mender.

2.05 ACCESSORIES

- A. Portland Cement: ASTM C150/C150M, Type I, grey.

- B. Water: Clean and potable.
- C. Reinforcing Steel: ASTM A615/A615M Grade 40 (40,000 psi) billet-steel deformed bars, unfinished.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that surfaces are ready to receive work.
- B. Beginning of installation means acceptance of substrate.

3.02 PREPARATION

- A. Prepare concrete surfaces to be repaired according to ICRI 310.2R, _____.
- B. Ensure that supervisory personnel are on-site and on duty when concrete maintenance work begins and during its progress.
- C. Protect persons, motor vehicles, surrounding surfaces of building being repaired, building site, plants, and surrounding buildings from harm resulting from concrete maintenance work.
 - 1. Comply with each product manufacturer's written instructions for protections and precautions. Protect against adverse effects of products and procedures on people and adjacent materials, components, and vegetation.
 - 2. Use only proven protection methods appropriate to each area and surface being protected
 - 3. Use water-mist sprinkling and other wet methods to control dust only with adequate, approved procedures and equipment that ensure that such water will not create a hazard or adversely affect other building areas or materials.
 - 4. Protect floors and other surfaces along haul routes from damage, wear, and staining.
 - 5. Provide supplemental sound-control treatment to isolate removal and dismantling work from other areas of the building.
 - 6. Protect adjacent surfaces and equipment by covering them with heavy polyethylene film and waterproof masking tap or a liquid strippable masking agent. If practical, remove items, store, and reinstall after potentially damaging operations are complete.
 - 7. Neutralize and collect alkaline and acid wastes for disposal off Owner's property.
 - 8. Dispose of debris and runoff from operations by legal means and in a manner that prevents soil erosion, undermining of paving and foundations, damage to landscaping, and water penetration into building interiors.
- D. Existing Drains: Prior to the start of work in an area, test drainage system to ensure that it is functioning properly. Notify Architect immediately of inadequate drainage or blockage. Do not begin work in an area until the drainage system is in working order.
 - 1. Prevent solids such as aggregate or mortar residue from entering the drainage system. Clean out drains and drain lines that become sluggish or blocked by sand or other materials resulting from concrete maintenance work.
 - 2. Protect drains from pollutants Block drains or filter out sediments, allowing only clean water to pass.

- E. Preparation for Concrete Removal: Examine construction to be repaired to determine best methods to safely and effectively perform concrete maintenance work. Examine adjacent work to determine what protective measures will be necessary. Make explorations, probes, and inquiries as necessary to determine condition of construction to be removed in the course of repair.
 - 1. Verify that affected utilities have been disconnected and capped.
 - 2. Inventory and record the condition of items to be removed for reinstallation or salvage.
 - 3. Provide and maintain shoring, bracing, and temporary structural supports as required to preserve stability and prevent unexpected or uncontrolled movement, settlement, or collapse of construction being demolished and construction and finishes to remain. Strengthen or add new supports when required during progress of removal work.
- F. Reinforcing-Bar Preparation: Remove loose and flaking rust from exposed reinforcing bars by abrasive blast cleaning or wire brushing until only tightly adhered light rust remains.
 - 1. Where section loss of reinforcing bar is more than 25 percent, or 20 percent in two or more adjacent bars, cut bars and remove and replace as indicated on Drawings.
 - 2. Remove additional concrete as necessary to provide at least 3/4-inch clearance at existing and replacement bars.
 - 3. Splice replacement bars to existing bars according to ACI 318 by lapping, welding, or using mechanical couplings.
- G. Preparation of Floor Joints for Repair: Saw-cut joints full width to edges and depth of spalls, but not less than 3/4 inch deep. Clean out debris and loose concrete; vacuum or blow clear with compressed air.
- H.

3.03 CLEANING EXISTING CONCRETE

- A. Clean concrete surfaces of dirt or other contamination using the gentlest method that is effective.
 - 1. Try the gentlest method first, then, if not clean enough, use a less gentle method taking care to watch for impending damage.
 - 2. Clean out cracks and voids using same methods.
- B. The following are acceptable cleaning methods, in order from gentlest to less gentle:
 - 1. Water washing using low-pressure, maximum of 100 psi, and, if necessary, brushes with natural or synthetic bristles.
 - 2. Increasing the water washing pressure to maximum of 400 psi.
 - 3. Adding detergent to washing water; with final water rinse to remove residual detergent.
 - 4. Steam-generated low-pressure hot-water washing.

3.04 CONCRETE STRUCTURAL MEMBER REPAIR

3.05 CONCRETE SURFACE REPAIR USING CEMENTITIOUS MATERIALS

- A. Clean concrete surfaces, cracks, and joints of dirt, laitance, corrosion, and other contamination using method(s) specified above and allow to dry.
- B. Apply coating of bonding agent to entire concrete surface to be repaired.
- C. Fill voids with cementitious mortar flush with surface.
- D. Apply repair mortar by steel trowel to a minimum thickness of 1/4 inch over entire surface, terminating at a vertical change in plane on all sides.
- E. Trowel finish to match adjacent concrete surfaces.

3.06 FIELD QUALITY CONTROL

- A. See Section 01 40 00 - Quality Requirements for additional requirements.
- B. Environmental Limitations for Epoxies: Do not apply when air and substrate temperatures are outside limits permitted by manufacturer. During hot weather, cool epoxy components before mixing, store mixed products in shade, and cool unused mixed products to retard setting. Do not apply to wet substrates unless approved by manufacturer.
 - 1. Use only Class A epoxies when substrate temperatures are below or are expected to go below 40 deg F within eight hours.
 - 2. Use only Class A or B epoxies when substrate temperatures are below or are expected to go below 60 deg F within eight hours.
 - 3. Use only Class C epoxies when substrate temperatures are above and are expected to stay above 60 deg F for eight hours.
- C. Cold-Weather Requirements for Cementitious Materials:
 - 1. Do not apply unless concrete-surface and air temperatures are above 40 deg F and will remain so for at least 48 hours after completion of Work.
 - 2. When air temperature is below 40 deg F, heat patching-material ingredients and existing concrete to produce temperatures between 40 and 90 deg F.
 - 3. When mean daily air temperature is between 25 and 40 deg F, cover completed Work with weather-resistant insulating blankets for 48 hours after repair or provide enclosure and heat to maintain temperatures above 32 deg F within the enclosure for 48 hours after repair.
 - 4. When mean daily air temperature is below 25 deg F, provide enclosure and heat to maintain temperatures above 32 deg F within the enclosure for 48 hours after repair.
- D. Hot-Weather Requirements for Cementitious Materials:
 - 1. Protect repair work when temperature and humidity conditions produce excessive evaporation of water from patching materials.
 - 2. Provide artificial shade and wind breaks, and use cooled materials as required.
 - 3. Do not apply to substrates with temperatures of 90 deg F and above.
- E. An independent testing agency, as specified in Section 01 40 00, will perform field inspection and testing.
 - 1. Perform the following tests and inspections:
 - a. Packaged, Cementitious Patching Mortar:
 - 1) Three randomly selected sets of samples for each type of mortar required, tested according to ASTM C928/C928M.
 - b. Job-Mixed Patching Mortar:

- 1) Three randomly selected sets of samples for each type of mortar required, tested for compressive strength according to ASTM C109/C109M.
- c. Concrete: As specified in Section 033000 "Cast-in-Place Concrete."
 - 1) Testing Frequency: One sample for each 25 cu. yd. of grout or fraction thereof, but not less than one sample for each day's work.
- d. Joint Filler: Core-drilled samples to verify proper installation.
 - 1) Testing Frequency: One sample for each 100 feet of joint filled.
 - 2) Where samples are taken, refill holes with joint filler.
- e. Epoxy Crack Injection: Core-drilled samples to verify proper installation.
 - 1) Testing Frequency: Three samples from mockup and one sample for each 100 feet of crack injected.
 - 2) Where samples are taken, refill holes with epoxy mortar.
- F. Product will be considered defective if it does not pass tests and inspections.
- G. Prepare test and inspection reports.
- H. Manufacturers Field Service: Engage manufacturers' factory-authorized service representatives for consultation and Project-site inspection and to provide on-site assistance when requested by Architect.
 1. Have manufacturers' factory-authorized service representatives perform the following number of Project-site inspections to observe progress and quality of the Work distributed over the period of product installation, regardless of on-site assistance requested by Architect:
 - a. Bonding-Agent and Packaged Patching-Mortar Installation: Two inspections.
 - b. Joint-Filler Installation: Two inspections.
 - c. Crack-Injection-Adhesive Preparation and Installation: Two inspections.
 - d. Corrosion-Inhibiting Treatment: Two inspections.
 - e. Polymer Overlay: Two inspections.
 - f. Polymer Sealer: Two inspections.
 - g. Composite-Structural-Reinforcement: Two inspections inspections.
- I. Environmental Limitations for High-Molecular-Weight Methacrylate Sealers: Do not apply when concrete surface temperature is below 55 deg F or above 75 deg F. Apply only to substrates that have been dry for at least 72 hours.

3.07 CONCRETE REMOVAL

- A. Do not overload structural elements with debris.
- B. Saw-cut perimeter of areas indicated for removal to a depth of at least 1/2 inch. Make cuts perpendicular to concrete surfaces and no deeper than cover on reinforcement.
- C. Remove deteriorated and delaminated concrete by breaking up and dislodging from reinforcement.
- D. Remove additional concrete if necessary to provide a depth of removal of at least 1/2 inch over entire removal area.
- E. Where half or more of the perimeter of reinforcing bar is exposed, bond between reinforcing bar and surrounding concrete is broken, or reinforcing bar is corroded, remove concrete from entire perimeter of bar and to provide at least 3/4-inch clearance around bar.

- F. Test areas where concrete has been removed by tapping with hammer, and remove additional concrete until unsound and debonded concrete is completely removed.
- G. Provide surfaces with a fractured profile of at least 1/8 inch that are approximately perpendicular or parallel to original concrete surfaces. At columns and walls, make top and bottom surfaces level unless otherwise directed.
- H. Thoroughly clean removal areas of loose concrete, dust, and debris.

3.08 BONDING AGENT APPLICATION

- A. Epoxy-Modified, Cementitious Bonding and Anticorrosion Agent: Apply to reinforcing bars and concrete by stiff brush or hopper spray according to manufacturer's written instructions. Apply to reinforcing bars in two coats, allowing first coat to dry two to three hours before applying second coat. Allow to dry before placing patching mortar or concrete.
- B. Epoxy Bonding Agent: Apply to reinforcing bars and concrete by brush, roller, or spray according to manufacturer's written instructions, leaving no pinholes or other uncoated areas. Apply to reinforcing bars in at least two coats, allowing first coat to dry before applying second coat. Place patching mortar or concrete while epoxy is still tacky. If epoxy dries, recoat before placing patching mortar or concrete.
- C. Latex Bonding Agent, Type I: Apply to concrete by brush roller or spray. Allow to dry before placing patching mortar or concrete. Latex Bonding Agent, Type II: Mix with portland cement and scrub into concrete surface according to manufacturer's written instructions. Place patching mortar or concrete while bonding agent is still wet. If bonding agent dries, recoat before placing patching mortar or concrete.
- D. Mortar Scrub Coat for Job-Mixed Patching Mortar and Concrete: Dampen repair area and surrounding concrete 6 inches beyond repair area. Remove standing water and apply scrub coat with a brush, scrubbing it into surface and thoroughly coating repair area. If scrub coat dries, recoat before placing patching mortar or concrete.
- E. Slurry Coat for Cementitious Patching Mortar: Wet substrate thoroughly and then remove standing water. Scrub a slurry of neat patching mortar mixed with latex bonding agent into substrate, filling pores and voids.

3.09 PATCHING MORTAR APPLICATION

- A. Place patching mortar as specified in this article unless otherwise recommended in writing by manufacturer.
 - 1. Provide forms where necessary to confine patch to required shape.
 - 2. Wet substrate and forms thoroughly and then remove standing water.
- B. Pretreatment: Apply specified bonding agent, mortar scrub coat, and/or slurry coat.
- C. General Placement: Place patching mortar by troweling toward edges of patch to force intimate contact with edge surfaces. For large patches, fill edges first and then work toward center, always troweling toward edges of patch. At fully exposed reinforcing bars, force patching mortar to fill space behind bars by compacting with trowel from sides of bars.
- D. Vertical Patching: Place material in lifts of not more than 3 inches or less than 1/4 inch. Do not feather edge.

- E. Overhead Patching: Place material in lifts of not more than 2 inches or less than 1/4 inch. Do not feather edge.
- F. Consolidation: After each lift is placed, consolidate material and screed surface.
- G. Multiple Lifts: Where multiple lifts are used, score surface of lifts to provide a rough surface for placing subsequent lifts. Allow each lift to reach final set before placing subsequent lifts.
- H. Finishing: Allow surfaces of lifts that are to remain exposed to become firm and then finish to a surface matching adjacent concrete.
- I. Curing: Wet-cure cementitious patching materials, including polymer-modified cementitious patching materials, for not less than seven days by water-fog spray or water-saturated absorptive cover.

3.10 CONCRETE PLACEMENT

- A. Place concrete according to Section 033000 "Cast-in-Place Concrete" and as specified in this article.
- B. Pretreatment: Apply bonding agent and mortar scrub coat to reinforcement and concrete substrate.
- C. Standard Placement: Place concrete by form-and-pump method unless otherwise indicated.
 - 1. Use vibrators to consolidate concrete as it is placed.
 - 2. At unformed surfaces, screed concrete to produce a surface that when finished with patching mortar will match required profile and surrounding concrete.
- D. Form-and-Pump Placement: Place concrete by form-and-pump method where indicated.
 - 1. Design and construct forms to resist pumping pressure in addition to weight of wet concrete. Seal joints and seams in forms and where forms abut existing concrete.
 - 2. Pump concrete into place from bottom to top, releasing air from forms as concrete is introduced. When formed space is full, close air vents and pressurize to 14 psi.
- E. Wet-cure concrete for not less than seven days by leaving forms in place or keeping surfaces continuously wet by water-fog spray or water-saturated absorptive cover.
- F. Fill placement cavities with dry-pack mortar and repair voids with patching mortar. Finish to match surrounding concrete.

3.11 FLOOR-JOINT REPAIR

- A. Cut out deteriorated concrete and reconstruct sides of joint with patching mortar as indicated on Drawings. Install joint filler in nonmoving floor joints where indicated and as specified in this article.
- B. Depth: Install joint filler to a depth of at least 1 inch. Use fine silica sand no more than 1/4 inch deep to close base of joint. Do not use sealant backer rods or compressible fillers below joint filler.
- C. Top Surface: Install joint filler so that when cured, it is flush at top surface of adjacent concrete. If necessary, overfill joint and remove excess when filler has cured.

3.12 EPOXY CRACK INJECTION

- A. Clean cracks with oil-free compressed air or low-pressure water to remove loose particles.
- B. Clean areas to receive capping adhesive of oil, dirt, and other substances that would interfere with bond.
- C. Place injection ports as recommended by epoxy manufacturer, spacing no farther apart than thickness of member being injected. Seal injection ports in place with capping adhesive.
- D. Seal cracks at exposed surfaces with a ribbon of capping adhesive at least 1/4 inch thick by 1 inch wider than crack.
- E. Inject cracks wider than 0.003 inch to a depth of 8 inches.
- F. Inject epoxy adhesive, beginning at widest part of crack and working toward narrower parts. Inject adhesive into ports to refusal, capping adjacent ports when they extrude epoxy. Cap injected ports and inject through adjacent ports until crack is filled.
- G. After epoxy adhesive has set, remove injection ports and grind surfaces smooth.

END OF SECTION 03 01 00

SECTION 03 30 00 - CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Concrete formwork.
- B. Floors and slabs on grade.
- C. Concrete reinforcement.
- D. Joint devices associated with concrete work.
- E. Miscellaneous concrete elements, including equipment pads, equipment pits, light pole bases, flagpole bases, thrust blocks, and manholes.
- F. Concrete curing.

1.02 RELATED REQUIREMENTS

- A. Section 07 92 00 - Joint Sealants: Products and installation for sealants and joint fillers for saw cut joints and isolation joints in slabs.

1.03 REFERENCE STANDARDS

- A. ACI CODE-318 - Building Code Requirements for Structural Concrete and Commentary; 2019 (Reapproved 2022).
- B. ACI PRC-211.1 - Selecting Proportions for Normal-Density and High Density-Concrete - Guide; 2022.
- C. ACI PRC-302.1 - Guide to Concrete Floor and Slab Construction; 2015.
- D. ACI PRC-304 - Guide for Measuring, Mixing, Transporting, and Placing Concrete; 2000 (Reapproved 2009).
- E. ACI PRC-305 - Guide to Hot Weather Concreting; 2020.
- F. ACI PRC-306 - Guide to Cold Weather Concreting; 2016.
- G. ACI PRC-308 - Guide to External Curing of Concrete; 2016.
- H. ACI PRC-347 - Guide to Formwork for Concrete; 2014 (Reapproved 2021).
- I. ACI SPEC-117 - Specification for Tolerances for Concrete Construction and Materials; 2010 (Reapproved 2015).
- J. ACI SPEC-301 - Specifications for Concrete Construction; 2020.
- K. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement; 2020.
- L. ASTM A767/A767M - Standard Specification for Zinc-Coated (Galvanized) Steel Bars for Concrete Reinforcement; 2019.
- M. ASTM A775/A775M - Standard Specification for Epoxy-Coated Steel Reinforcing Bars; 2019.

- N. ASTM A884/A884M - Standard Specification for Epoxy-Coated Steel Wire and Welded Wire Reinforcement; 2019, with Editorial Revision (2020).
- O. ASTM A1064/A1064M - Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete; 2022.
- P. ASTM C33/C33M - Standard Specification for Concrete Aggregates; 2018.
- Q. ASTM C39/C39M - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens; 2021.
- R. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete; 2021b.
- S. ASTM C109/C109M - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or [50 mm] Cube Specimens); 2021.
- T. ASTM C143/C143M - Standard Test Method for Slump of Hydraulic-Cement Concrete; 2020.
- U. ASTM C150/C150M - Standard Specification for Portland Cement; 2021.
- V. ASTM C173/C173M - Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method; 2016.
- W. ASTM C260/C260M - Standard Specification for Air-Entraining Admixtures for Concrete; 2010a (Reapproved 2016).
- X. ASTM C309 - Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete; 2019.
- Y. ASTM C330/C330M - Standard Specification for Lightweight Aggregates for Structural Concrete; 2017a.
- Z. ASTM C494/C494M - Standard Specification for Chemical Admixtures for Concrete; 2019.
- AA. ASTM C618 - Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete; 2019.
- BB. ASTM C685/C685M - Standard Specification for Concrete Made by Volumetric Batching and Continuous Mixing; 2017.
- CC. ASTM C827/C827M - Standard Test Method for Change in Height at Early Ages of Cylindrical Specimens of Cementitious Mixtures; 2016.
- DD. ASTM C1059/C1059M - Standard Specification for Latex Agents for Bonding Fresh to Hardened Concrete; 2021.
- EE. ASTM C1107/C1107M - Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink); 2020.
- FF. ASTM C1116/C1116M - Standard Specification for Fiber-Reinforced Concrete; 2010a (Reapproved 2015).
- GG. ASTM C1240 - Standard Specification for Silica Fume Used in Cementitious Mixtures; 2020.
- HH. ASTM C1602/C1602M - Standard Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete; 2018.
- II. ASTM E11 - Standard Specification for Woven Wire Test Sieve Cloth and Test Sieves; 2022.
- JJ. ASTM E154/E154M - Standard Test Methods for Water Vapor Retarders Used in Contact with Earth Under Concrete Slabs, on Walls, or as Ground Cover; 2008a

(Reapproved 2019).

- KK. ASTM E1155 - Standard Test Method for Determining FF Floor Flatness and FL Floor Levelness Numbers; 2020.
- LL. ASTM E1643 - Standard Practice for Selection, Design, Installation and Inspection of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs; 2018a.
- MM. ASTM E1745 - Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill Under Concrete Slabs; 2017.
- NN. ASTM E1993/E1993M - Standard Specification for Bituminous Water Vapor Retarders Used in Contact with Soil or Granular Fill Under Concrete Slabs; 1998 (Reapproved 2020).
- OO. COE CRD-C 572 - Handbook for Concrete and Cement Corps of Engineers Specifications for Polyvinylchloride Waterstop; 1974.
- PP. ICC-ES AC308 - Acceptance Criteria for Termite Physical Barrier Systems; 2014, with Editorial Revision (2017).
- QQ. ICRI 310.2R - Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings, Polymer Overlays, and Concrete Repair; 2013.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Submit manufacturers' data on manufactured products showing compliance with specified requirements and installation instructions.
- C. Mix Design: Submit proposed concrete mix design.
 - 1. Indicate proposed mix design complies with fiber reinforcing manufacturer's written recommendations.
- D. Samples: Submit samples of underslab vapor retarder to be used.
- E. Test Reports: Submit report for each test or series of tests specified.
- F. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

1.05 QUALITY ASSURANCE

- A. Perform work of this section in accordance with ACI SPEC-301 and ACI CODE-318.
- B. Follow recommendations of ACI PRC-305 when concreting during hot weather.
- C. Follow recommendations of ACI PRC-306 when concreting during cold weather.

1.06 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals for additional warranty requirements.
- B. Termite-Resistant Vapor Barrier Sheet: Provide ten year manufacturer's limited warranty.

PART 2 PRODUCTS

2.01 FORMWORK

- A. Formwork Design and Construction: Comply with guidelines of ACI PRC-347 to provide formwork that will produce concrete complying with tolerances of ACI SPEC-117.
- B. Form Materials: Contractor's choice of standard products with sufficient strength to withstand hydrostatic head without distortion in excess of permitted tolerances.
 - 1. Form Facing for Exposed Finish Concrete: Contractor's choice of materials that will provide smooth, stain-free final appearance.
 - 2. Earth Cuts: Do not use earth cuts as forms for vertical surfaces. Natural rock formations that maintain a stable vertical edge may be used as side forms.
 - 3. Form Coating: Release agent that will not adversely affect concrete or interfere with application of coatings.
 - 4. Form Ties: Cone snap type that will leave no metal within 1-1/2 inches of concrete surface.

2.02 REINFORCEMENT MATERIALS

- A. Reinforcing Steel: ASTM A615/A615M, Grade 60 (60,000 psi).
 - 1. Type: Deformed billet-steel bars.
 - 2. Finish: Galvanized in accordance with ASTM A767/A767M, Class I, unless otherwise indicated.
- B. Steel Welded Wire Reinforcement (WWR): Galvanized, plain type, ASTM A1064/A1064M.
 - 1. Form: Coiled Rolls.
 - 2. WWR Style: 4 x 8-W6 x W10.
- C. Reinforcement Accessories:
 - 1. Tie Wire: Annealed, minimum 16 gauge, 0.0508 inch.
 - 2. Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for adequate support of reinforcement during concrete placement.
 - 3. Provide stainless steel, galvanized, plastic, or plastic coated steel components for placement within 1-1/2 inches of weathering surfaces.

2.03 CONCRETE MATERIALS

- A. Cement: ASTM C150/C150M, Type I - Normal Portland type.
 - 1. Acquire cement for entire project from same source.
 - 2. Color: Gray.
- B. Fine and Coarse Aggregates: ASTM C33/C33M.
 - 1. Acquire aggregates for entire project from same source.
- C. Lightweight Aggregate: ASTM C330/C330M.
- D. Water: ASTM C1602/C1602M; clean, potable, and not detrimental to concrete.
- E. Structural Fiber Reinforcement: ASTM C1116/C1116M.
 - 1. Fiber Length: 0.5 inch, nominal.
 - 2. Fiber Type: Alkali-resistant synthetic.

2.04 ADMIXTURES

- A. Chemical Admixture: Certified by manufacturer to be compatible with other admixtures that do not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride in steel-reinforced concrete.
 - 1. Water-Reducing Admixture: ASTM C494/C494M, Type A.
 - 2. Retarding Admixture: ASTM C494/C494M, Type B.
 - 3. Water-Reducing and -Retarding Admixture: ASTM C494/C494M, Type D.
 - 4. High-Range, Water-Reducing Admixture: ASTM C494/C494M, Type F.
 - 5. High-Range, Water-Reducing and -Retarding Admixture: ASTM C494/C494M, Type G.
 - 6. Plasticizing and Retarding Admixture: ASTM C1017/C1017M, Type II.
 - 7. Set-Accelerating Corrosion-Inhibiting Admixture: Commercially formulated, anodic inhibitor or mixed cathodic and anodic inhibitor; capable of forming a protective barrier and minimizing chloride reactions with steel reinforcement in concrete and complying with ASTM C494/C494M, Type C.
- B. Do not use chemicals that will result in soluble chloride ions in excess of 0.1 percent by weight of cement.
- C. Air Entrainment Admixture: ASTM C260/C260M.

2.05 ACCESSORY MATERIALS

- A. Underslab Vapor Retarder:
 - 1. Accessory Products: Vapor retarder manufacturer's recommended tape, adhesive, mastic, prefabricated boots, etc., for sealing seams and penetrations.
- B. Underslab Waterproofing and Vapor Retarder: Semi-rigid bituminous membrane, seven-ply, complying with ASTM E1993/E1993M.
- C. Non-Shrink Cementitious Grout: Premixed compound consisting of nonmetallic aggregate, cement, water reducing and plasticizing agents.
 - 1. Grout: Comply with ASTM C1107/C1107M.
 - 2. Height Change, Plastic State; when tested in accordance with ASTM C827/C827M:
 - a. Maximum: Plus 4 percent.
 - b. Minimum: Plus 1 percent.
 - 3. Minimum Compressive Strength at 48 Hours, ASTM C109/C109M: 2,000 pounds per square inch.
 - 4. Minimum Compressive Strength at 28 Days, ASTM C109/C109M: 7,000 pounds per square inch.
- D.
 - 1. Manufacturer: Subject to compliance with requirements, provide products of one of the following, or approved equal:
 - a. Dow Chemical Company: Midland, Mi.
 - b. VC Industries/V.5 Gypsum: Chicago, IL.

2.06 BONDING AND JOINTING PRODUCTS

- A. Latex Bonding Agent: Non-redispersable acrylic latex, complying with ASTM C1059/C1059M, Type II.
- B. Acetate Bonding Agent: Non-redispersable polyvinyl acetate.
- C. Waterstops: PVC, complying with COE CRD-C 572.
- D. Reglets: Formed steel sheet, galvanized, with temporary filler to prevent concrete intrusion during placement.
- E. Slab Isolation Joint Filler: 1/2-inch thick, height equal to slab thickness, with removable top section forming 1/2-inch deep sealant pocket after removal.
 - 1. Material: Closed-cell, non-absorbent, compressible polymer foam in sheet form.
- F. Termite-Excluding Slab Isolation Joint Filler: 1/2 inch thick, composite sheet of elastomeric membrane, embedded stainless steel termite-exclusion screen, adhesive on both sides, and a disposable, treated release sheet.
 - 1. Termite Resistance: 100 percent when tested in accordance with ICC-ES AC380.
 - 2. Stainless Steel Mesh: ASTM E11; opening size 0.018 inch, maximum.
- G. Slab Contraction Joint Device: Preformed linear strip intended for pressing into wet concrete to provide straight route for shrinkage cracking.
- H. Slab Construction Joint Devices: Combination keyed joint form and screed, galvanized steel, with rectangular or round knockout holes for conduit or rebar to pass through joint form at 6 inches on center; ribbed steel stakes for setting.

2.07 CURING MATERIALS

- A. Curing Compound, Naturally Dissipating: Clear, water-based, liquid membrane-forming compound; complying with ASTM C309.
- B. Curing Compound, Non-Dissipating: Liquid, membrane-forming, clear, nonyellowing acrylic; complying with ASTM C309.
 - 1. Vehicle: Water-based.
 - 2. Gloss: Low.
 - 3. Solids by Mass: 15 percent, minimum.
 - 4. VOC Content: OTC compliant.

2.08 CONCRETE MIX DESIGN

- A. Proportioning Normal Weight Concrete: Comply with ACI PRC-211.1 recommendations.
- B. Admixtures: Add acceptable admixtures as recommended in ACI PRC-211.1 and at rates recommended or required by manufacturer.
- C. Fiber Reinforcement: Add to mix at rate of 1.5 pounds per cubic yard, or as recommended by manufacturer for specific project conditions.
- D. Normal Weight Concrete:
 - 1. Compressive Strength, when tested in accordance with ASTM C39/C39M at 28 days: 3,000 pounds per square inch.
 - 2. Water-Cement Ratio: Maximum 40 percent by weight.
 - 3. Total Air Content: 4 percent, determined in accordance with ASTM C173/C173M.
 - 4. Maximum Slump: 3 inches.

- 5. Maximum Aggregate Size: 5/8 inch.
- E. Structural Lightweight Concrete:
 - 1. Compressive Strength, when tested in accordance with ASTM C39/C39M at 28 days: 3,000 pounds per square inch.

2.09 MIXING

- A. On Project Site: Mix in drum type batch mixer, complying with ASTM C685/C685M. Mix each batch not less than 1-1/2 minutes and not more than 5 minutes.
 - 1. Fiber Reinforcement: Batch and mix as recommended by manufacturer for specific project conditions.
- B. Transit Mixers: Comply with ASTM C94/C94M.
- C. Adding Water: If concrete arrives on-site with slump less than suitable for placement, do not add water that exceeds the maximum water-cement ratio or exceeds the maximum permissible slump.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify lines, levels, and dimensions before proceeding with work of this section.

3.02 PREPARATION

- A. Formwork: Comply with requirements of ACI SPEC-301. Design and fabricate forms to support all applied loads until concrete is cured and for easy removal without damage to concrete.
- B. Verify that forms are clean and free of rust before applying release agent.
- C. Coordinate placement of embedded items with erection of concrete formwork and placement of form accessories.
- D. Prepare existing concrete surfaces to be repaired according to ICRI 310.2R, _____.
- E. Where new concrete is to be bonded to previously placed concrete, prepare existing surface by cleaning and applying bonding agent in accordance with bonding agent manufacturer's instructions.
 - 1. Use latex bonding agent only for non-load-bearing applications.
- F. Where new concrete with integral waterproofing is to be bonded to previously placed concrete, prepare surfaces to be treated in accordance with waterproofing manufacturer's instructions. Saturate cold joint surface with clean water, and remove excess water before application of coat of waterproofing admixture slurry. Apply slurry coat uniformly with semi-stiff bristle brush at rate recommended by waterproofing manufacturer.
- G. In locations where new concrete is doweled to existing work, drill holes in existing concrete, insert steel dowels and pack solid with non-shrink grout.
- H. Interior Slabs on Grade: Install vapor retarder under interior slabs on grade. Comply with ASTM E1643. Lap joints minimum 6 inches. Seal joints, seams and penetrations

watertight with manufacturer's recommended products and follow manufacturer's written instructions. Repair damaged vapor retarder before covering.

1. Granular Fill Over Vapor Retarder: Cover vapor retarder with compactible granular fill as indicated on drawings. Do not use sand.

3.03 INSTALLING REINFORCEMENT AND OTHER EMBEDDED ITEMS

- A. Comply with requirements of ACI SPEC-301. Clean reinforcement of loose rust and mill scale, and accurately position, support, and secure in place to achieve not less than minimum concrete coverage required for protection.
- B. Install welded wire reinforcement in maximum possible lengths, and offset end laps in both directions. Splice laps with tie wire.

3.04 PLACING CONCRETE

- A. Place concrete in accordance with ACI PRC-304.
- B. Place concrete for floor slabs in accordance with ACI PRC-302.1.
- C. Notify Architect not less than 24 hours prior to commencement of placement operations.
- D. Maintain records of concrete placement. Record date, location, quantity, air temperature, and test samples taken.
- E. Ensure reinforcement, inserts, waterstops, embedded parts, and formed construction joint devices will not be disturbed during concrete placement.
- F. Place concrete continuously without construction (cold) joints wherever possible; where construction joints are necessary, before next placement prepare joint surface by removing laitance and exposing the sand and sound surface mortar, by sandblasting or high-pressure water jetting.
- G. Finish floors level and flat, unless otherwise indicated, within the tolerances specified below.

3.05 SLAB JOINTING

- A. Locate joints as indicated on drawings.
- B. Anchor joint fillers and devices to prevent movement during concrete placement.
- C. Isolation Joints: Use preformed joint filler with removable top section for joint sealant, total height equal to thickness of slab, set flush with top of slab.
 1. Install wherever necessary to separate slab from other building members, including columns, walls, equipment foundations, footings, stairs, manholes, sumps, and drains.
- D. Contraction Joint Devices: Use preformed joint device, with top set flush with top of slab.
- E. Construction Joints: Where not otherwise indicated, use metal combination screed and key form, with removable top section for joint sealant.

3.06 SEPARATE FLOOR TOPPINGS

- A. Prior to placing floor topping, roughen substrate concrete surface and remove deleterious material. Broom and vacuum clean.
- B. Place required dividers, edge strips, reinforcing, and other items to be cast in.
- C. Apply bonding agent to substrate in accordance with manufacturer's instructions.
- D. Place concrete floor toppings to required lines and levels.
- E. Screed toppings level, maintaining surface flatness of maximum 1:1000.

3.07 FLOOR FLATNESS AND LEVELNESS TOLERANCES

- A. An independent testing agency, as specified in Section 01 40 00, will inspect finished slabs for compliance with specified tolerances.
- B. Minimum F(F) Floor Flatness and F(L) Floor Levelness Values:
 - 1. Exposed to View and Foot Traffic: F(F) of 20; F(L) of 15, on-grade only.
 - 2. Under Thick-Bed Tile: F(F) of 20; F(L) of 15, on-grade only.
 - 3. Under Carpeting: F(F) of 35; F(L) of 25, on-grade only.
 - 4. Under Resilient Flooring and Thinset Tile: F(F) of 35; F(L) of 25, on-grade only.
- C. Measure F(F) Floor Flatness and F(L) Floor Levelness in accordance with ASTM E1155, within 48 hours after slab installation; report both composite overall values and local values for each measured section.
- D. Correct the slab surface if composite overall value is less than specified and if local value is less than two-thirds of specified value or less than F(F) 13/F(L) 10.
- E. Correct defects by grinding or by removal and replacement of the defective work. Areas requiring corrective work will be identified. Re-measure corrected areas by the same process.

3.08 CONCRETE FINISHING

- A. Repair surface defects, including tie holes, immediately after removing formwork.
- B. Unexposed Form Finish: Rub down or chip off fins or other raised areas 1/4 inch or more in height.
- C. Exposed Form Finish: Rub down or chip off and smooth fins or other raised areas 1/4 inch or more in height. Provide finish as follows:
 - 1. Smooth Rubbed Finish: Wet concrete and rub with carborundum brick or other abrasive, not more than 24 hours after form removal.
- D. Concrete Slabs: Finish to requirements of ACI PRC-302.1 and as follows:
 - 1. Surfaces to Receive Thick Floor Coverings: "Wood float" as described in ACI PRC-302.1; thick floor coverings include quarry tile, ceramic tile, and Portland cement terrazzo with full bed setting system.
 - 2. Surfaces to Receive Thin Floor Coverings: "Steel trowel" as described in ACI PRC-302.1; thin floor coverings include carpeting, resilient flooring, seamless flooring, resinous matrix terrazzo, thin set quarry tile, and thin set ceramic tile.
 - 3. Other Surfaces to Be Left Exposed: Trowel as described in ACI PRC-302.1, minimizing burnish marks and other appearance defects.

3.09 CURING AND PROTECTION

- A. Comply with requirements of ACI PRC-308. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.
- B. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.
- C. Formed Surfaces: Cure by moist curing with forms in place for full curing period.
- D. Surfaces Not in Contact with Forms:
 - 1. Slabs and Floors To Receive Adhesive-Applied Flooring: Curing compounds and other surface coatings are usually considered unacceptable by flooring and adhesive manufacturers. If such materials must be used, either obtain the approval of the flooring and adhesive manufacturers prior to use or remove the surface coating after curing to flooring manufacturer's satisfaction.
 - 2. Initial Curing: Start as soon as free water has disappeared and before surface is dry. Keep continuously moist for not less than three days by water ponding, water-saturated sand, water-fog spray, or saturated burlap.
 - a. Spraying: Spray water over floor slab areas and maintain wet.
 - 3. Final Curing: Begin after initial curing but before surface is dry.

3.10 FIELD QUALITY CONTROL

- A. An independent testing agency will perform field quality control tests, as specified in Section 01 40 00 - Quality Requirements.
- B. Provide free access to concrete operations at project site and cooperate with appointed firm.
- C. Submit proposed mix design of each class of concrete to inspection and testing firm for review prior to commencement of concrete operations.
- D. Tests of concrete and concrete materials may be performed at any time to ensure compliance with specified requirements.
- E. Compressive Strength Tests: ASTM C39/C39M, for each test, mold and cure three concrete test cylinders. Obtain test samples for every 100 cubic yards or less of each class of concrete placed.
- F. Take one additional test cylinder during cold weather concreting, cured on job site under same conditions as concrete it represents.
- G. Perform one slump test for each set of test cylinders taken, following procedures of ASTM C143/C143M.

3.11 DEFECTIVE CONCRETE

- A. Test Results: The testing agency shall report test results in writing to Architect and Contractor within 24 hours of test.
- B. Defective Concrete: Concrete not complying with required lines, details, dimensions, tolerances or specified requirements.
- C. Repair or replacement of defective concrete will be determined by the Architect. The cost of additional testing shall be borne by Contractor when defective concrete is identified.

- D. Do not patch, fill, touch-up, repair, or replace exposed concrete except upon express direction of Architect for each individual area.

3.12 PROTECTION

- A. Do not permit traffic over unprotected concrete floor surface until fully cured.

3.13 SCHEDULE - CONCRETE TYPES AND FINISHES

- A. Foundation Walls: 3,000 pounds per square inch 28 day concrete, form finish with honeycomb filled surface.
- B. Underside of Supported Floors and Structure Exposed to View: 4,000 pounds per square inch 28 day concrete, form finish with honeycomb filled surface.
- C. Exposed Portico Structure: 4,000 pounds per square inch 28 day concrete, air entrained, smooth rubbed finish.

END OF SECTION 03 30 00

SECTION 04 20 00 - UNIT MASONRY

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Concrete block.
- B. Mortar and grout.
- C. Reinforcement and anchorage.
- D. Flashings.
- E. Lintels.
- F. Accessories.

1.02 RELATED REQUIREMENTS

- A. Section 04 05 11 - Masonry Mortaring and Grouting.
- B. Section 07 92 00 - Joint Sealants: Sealing control and expansion joints.

1.03 REFERENCE STANDARDS

- A. ACI 318 - Building Code Requirements for Structural Concrete; 2019, with Errata (2021).
- B. ASCE 7 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures; Most Recent Edition Cited by Referring Code or Reference Standard.
- C. ASTM C109/C109M - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or [50 mm] Cube Specimens); 2021.
- D. ASTM C129 - Standard Specification for Nonloadbearing Concrete Masonry Units; 2022.
- E. ASTM C140/C140M - Standard Test Methods for Sampling and Testing Concrete Masonry Units and Related Units; 2022c.
- F. ASTM C780 - Standard Test Method for Preconstruction and Construction Evaluation of Mortars for Plain and Reinforced Unit Masonry; 2020.
- G. ASTM C1019 - Standard Test Method for Sampling and Testing Grout for Masonry; 2020.
- H. ASTM C1093 - Standard Practice for Accreditation of Testing Agencies for Masonry; 2023.
- I. BIA Technical Notes No. 7 - Water Penetration Resistance – Design and Detailing; 2017.
- J. TMS 402/602 - Building Code Requirements and Specification for Masonry Structures; 2022.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data for masonry units, fabricated wire reinforcement, mortar, and masonry accessories.
- C. Shop Drawings: Indicate pertinent dimensions, materials, anchorage, size and type of fasteners, and accessories for brickwork support system.
 - 1. Show sizes, profiles, coursing, and locations of special shapes.
 - 2. Reinforcing Steel: Detail bending, lap lengths, and placement of unit masonry reinforcing bars. Comply with ACI 318 . Show elevations of reinforced walls.
 - 3. Fabricated Flashing: Detail corner units, end-dam units, and other special applications.
 - 4. Thru Wall Flashing: Show layout, joining, profiles, and anchorages of fabricated work; layouts at 1/4" scale, details at 3" scale. Provide details of relationship to contiguous work.
- D. Manufacturer's Certificate: Certify that masonry units meet or exceed specified requirements.
- E. Material Certificates: For each type and size of the following:
 - 1. Masonry units.
 - a. Include data on material properties and material test reports substantiating compliance with requirements.
 - 2. Integral water repellent used in CMUs.
 - 3. Cementitious materials. Include name of manufacturer, brand name, and type.
 - 4. Mortar admixtures.
 - 5. Preblended, dry mortar mixes. Include description of type and proportions of ingredients.
 - 6. Grout mixes. Include description of type and proportions of ingredients.
 - 7. Reinforcing bars.
 - 8. Joint reinforcement.
 - 9. Anchors, ties, and metal accessories.
- F. Mix Designs: For each type of mortar and grout. Include description of type and proportions of ingredients.
 - 1. Include test reports for mortar mixes required to comply with property specification. Test according to ASTM C109/C109M for compressive strength, ASTM C1506 for water retention, and ASTM C91/C91M for air content.
 - 2. Include test reports, according to ASTM C1019, for grout mixes required to comply with compressive strength requirement.
- G. Manufacturer's Qualification Statement.
- H. Installer's Qualification Statement.
- I. Cold-Weather and Hot-Weather Procedures: Detailed description of methods, materials, and equipment to be used to comply with requirements.

1.05 QUALITY ASSURANCE

- A. Comply with provisions of TMS 402/602, except where exceeded by requirements of Contract Documents.

- B. Testing Agency Qualifications: Qualified according to ASTM C1093 for testing indicated.

PART 2 PRODUCTS

2.01 CONCRETE MASONRY UNITS

- A. Concrete Block: Comply with referenced standards and as follows:
 - 1. Size: Standard units with nominal face dimensions of 16 by 8 inches and nominal depth of 8 inches.
 - 2. Size: Standard units with nominal face dimensions of 16 by 8 inches and nominal depths as indicated on drawings for specific locations.
 - 3. Load-Bearing Units: ASTM C90, normal weight.
 - 4. Nonloadbearing Units: ASTM C129.

2.02 MORTAR AND GROUT MATERIALS

- A. Mortar and Grout: As specified in Section 04 05 11.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field conditions are acceptable and are ready to receive masonry.
 - 1. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.
 - 2. Verify that foundations are within tolerances specified.
 - 3. Verify that reinforcing dowels are properly placed.
 - 4. Verify that substrates are free of substances that impair mortar bond
- B. Verify that related items provided under other sections are properly sized and located.
 - 1. Before installation, examine rough-in and built-in construction for piping systems to verify actual locations of piping connections
- C. Verify that built-in items are in proper location, and ready for roughing into masonry work.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Provide temporary bracing during installation of masonry work. Maintain in place until building structure provides permanent bracing.

3.03 COLD AND HOT WEATHER REQUIREMENTS

- A. Cold Weather Requirements:
 - 1. Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen substrates. Remove and replace unit masonry damaged by frost

or by freezing conditions.

- a. Remove any ice or snow formed on masonry bed by carefully applying heat until top surface is dry to the touch.
 - b. Remove all masonry determined to be damaged by freezing conditions.
 - c. Protection of masonry against freezing when the temperature of the surrounding air is 40° F. and falling. Heat materials and provide temporary protection of completed portions of masonry work
2. Cold-Weather Cleaning: Use liquid cleaning methods only when air temperature is 40 deg F and higher and will remain so until masonry has dried, but not less than seven days after completing cleaning.
- B. Hot Weather Requirements
1. Comply with hot-weather construction requirements contained in TMS 402/602, ASCE 7.
- C. Maintain materials and surrounding air temperature to minimum 40 degrees F prior to, during, and 48 hours after completion of masonry work.
- D. Maintain materials and surrounding air temperature to maximum 90 degrees F prior to, during, and 48 hours after completion of masonry work.

3.04 COURSING

- A. Establish lines, levels, and coursing indicated. Protect from displacement.
- B. Maintain masonry courses to uniform dimension. Form vertical and horizontal joints of uniform thickness.
- C. Concrete Masonry Units:
 1. Bond: Running.

3.05 PLACING AND BONDING

- A. Lay solid masonry units in full bed of mortar, with full head joints, uniformly jointed with other work.
- B. Remove excess mortar and mortar smears as work progresses.
- C. Remove excess mortar with water repellent admixture promptly. Do not use acids, sandblasting or high pressure cleaning methods.
- D. Do not shift or tap masonry units after mortar has achieved initial set. Where adjustment must be made, remove mortar and replace.
- E. Perform job site cutting of masonry units with proper tools to provide straight, clean, unchipped edges. Prevent broken masonry unit corners or edges.
- F. Isolate masonry partitions from vertical structural framing members with a control joint as indicated.
- G. Isolate top joint of masonry partitions from horizontal structural framing members and slabs or decks with compressible joint filler.

3.06 MASONRY FLASHINGS

- A. General: Install embedded flashing and weep holes in masonry at shelf angles, lintels, ledges, other obstructions to downward flow of water in wall, and where indicated.

Install cavity vents at shelf angles, ledges, and other obstructions to upward flow of air in cavities, and where indicated.

- B. Whether or not specifically indicated, install masonry flashing to divert water to exterior at all locations where downward flow of water will be interrupted.
 - 1. Extend flashings full width at such interruptions and at least 6 inches, minimum, into adjacent masonry or turn up flashing ends at least 1 inch, minimum, to form watertight pan at nonmasonry construction.
 - 2. Remove or cover protrusions or sharp edges that could puncture flashings.
 - 3. Seal lapped ends and penetrations of flashing before covering with mortar.
- C. Extend metal flashings through exterior face of masonry and terminate in an angled drip with hemmed edge. Install joint sealer below drip edge to prevent moisture migration under flashing.
- D. Extend plastic, laminated, EPDM, and _____ flashings to within 1/2 inch of exterior face of masonry and adhere to top of stainless steel angled drip with hemmed edge.

3.07 LINTELS

- A. Install loose steel lintels over openings.
 - 1. Steel lintels weighing more than 250 lbs. shall be installed by the Steel Contractor. All others shall be installed by the General Contractor or respective trade.
- B. Provide reinforced concrete or masonry lintels where shown and where openings of more than 12 inches for brick-size units and 24 inches for block-size units are shown without structural steel or other supporting lintels
- C. In firewalls, provide concrete or masonry lintels. Steel lintels are prohibited at firewall locations.
- D. Thoroughly pack space between penetration material and masonry with mortar for full width of wall at fire rated walls or fill space thoroughly with fire-stopping sealant.
- E. Maintain minimum 8 inch bearing on each side of opening.

3.08 CONTROL AND EXPANSION JOINTS

- A. General: Install control- and expansion-joint materials in unit masonry as masonry progresses. Do not allow materials to span control and expansion joints without provision to allow for in-plane wall or partition movement
- B. Form control joints in concrete masonry by installing temporary foam-plastic filler in head joints, and removing filler when unit masonry is complete for application of sealant.
- C. Do not continue horizontal joint reinforcement through control or expansion joints.
- D. Provide horizontal, pressure-relieving joints by either leaving an airspace or inserting a compressible filler of width required for installing sealant and backer rod specified in Section 079200 "Joint Sealants," but not less than 3/8 inch.
 - 1. Locate horizontal, pressure-relieving joints beneath shelf angles supporting masonry
- E. Provide vertical expansion, control and isolation joints in masonry at junctions to existing masonry, where shown and required, but not to exceed 28'-0" spacing, within

10 feet of one side of a corner, at wall offsets, at changes in wall height and directly below shelf angles. Build in related masonry accessory items as the masonry work progresses

- F. Provide approved rated expansion joints and/or joints at joints within and between firewalls and intersecting/abutting walls including other rated walls.

3.09 BUILT-IN WORK

- A. As work progresses, install built-in metal door frames and glazed frames and other items to be built into the work and furnished under other sections.
- B. Install built-in items plumb, level, and true to line.
- C. Bed anchors of metal door and glazed frames in adjacent mortar joints. Fill frame voids solid with grout.
 - 1. Fill adjacent masonry cores with grout minimum 12 inches from framed openings.
- D. Do not build into masonry construction organic materials that are subject to deterioration.

3.10 TOLERANCES

- A. Install masonry within the site tolerances found in TMS 402/602.
- B. Maximum Variation from Plane of Wall: 1/4 inch in 10 ft and 1/2 inch in 20 ft or more.
- C. Maximum Variation from Level Coursing: 1/8 inch in 3 ft and 1/4 inch in 10 ft; 1/2 inch in 30 ft.
- D. Maximum Variation of Mortar Joint Thickness: Head joint, minus 1/4 inch, plus 3/8 inch.
- E. Maximum Variation from Cross Sectional Thickness of Walls: 1/4 inch.

3.11 FIELD QUALITY CONTROL

- A. An independent testing agency will perform field quality control tests, as specified in Section 01 40 00 - Quality Requirements.
- B. Concrete Masonry Unit Tests: Test each variety of concrete unit masonry in accordance with ASTM C140/C140M for compliance with requirements of this specification.
- C. Mortar Tests: Test each type of mortar in accordance with ASTM C780, testing with same frequency as masonry samples.

3.12 REPAIRING, POINTING, AND CLEANING

- A. Remove excess mortar and mortar droppings.
- B. Replace defective mortar. Match adjacent work.
- C. Clean soiled surfaces with cleaning solution.
- D. Use non-metallic tools in cleaning operations.
- E. Remove and replace masonry units that are loose, chipped, broken, stained, or otherwise damaged or that do not match adjoining units. Install new units to match

adjoining units; install in fresh mortar, pointed to eliminate evidence of replacement

- F. Pointing: During the tooling of joints, enlarge voids and holes, except weep holes, and completely fill with mortar. Point up joints, including corners, openings, and adjacent construction, to provide a neat, uniform appearance. Prepare joints for sealant application, where indicated
- G. In-Progress Cleaning: Clean unit masonry as work progresses by dry brushing to remove mortar fins and smears before tooling joints
- H. Final Cleaning: After mortar is thoroughly set and cured, clean exposed masonry as follows:
 - 1. Remove large mortar particles by hand with wooden paddles and nonmetallic scrape hoes or chisels.
 - 2. Test cleaning methods on sample wall panel; leave one-half of panel uncleaned for comparison purposes. Obtain Architect's approval of sample cleaning before proceeding with cleaning of masonry
 - 3. Protect adjacent stone and non-masonry surfaces from contact with cleaner by covering them with liquid strippable masking agent or polyethylene film and waterproof masking tape.
 - 4. Wet wall surfaces with water before applying cleaners; remove cleaners promptly by rinsing surfaces thoroughly with clear water.
 - 5. Clean brick by bucket-and-brush hand-cleaning method described in BIA Technical Notes 20.
 - 6. Clean concrete masonry by applicable cleaning methods indicated in NCMA TEK 8-4A
 - 7. Clean masonry with a proprietary acidic cleaner applied according to manufacturer's written instructions.

3.13 PROTECTION

- A. Without damaging completed work, provide protective boards at exposed external corners that are subject to damage by construction activities.

3.14 SCHEDULES

- A. Interior Partitions: Single wythe concrete block units.

END OF SECTION 04 20 00

SECTION 05 12 00 - STRUCTURAL STEEL FRAMING

PART 1 GENERAL

1.01 [IF !SUPPORTLISTS]SUMMARY

- A. [if !supportLists]Extent of structural steel work is shown on drawings, including schedules, notes and details to show size and location of members, typical connections, and type of steel required.
- B. [if !supportLists]Phase Work in Construction: Fabricate, deliver, and erect structural steel in accordance with construction phasing shown on drawings.
- C. Structural steel is that work defined in the American Institute of Steel Construction (AISC) "Code of Standard Practice", as modified here and as otherwise shown on drawings.
 - 1. [if !supportLists] Section 2.1 to include "Lintels shown or otherwise enumerated or scheduled."
 - 2. [if !supportLists]Section 4.2; The first two sentences of this section are to be replaced with the following: "Shop drawings are to be made by the fabricator, prints thereof are to be submitted to the structural engineer and architect for their examination and approval. These shop drawings are to be submitted in minimum of the following three phases: Anchor bolt plans and advanced shipment pieces; Erection plans and thirdly, Piece details (maximum of 100 sheets per submission). The fabricator is to await the receipt of the previous phase prior to submission of the next phase. The fabricator is to include an allowance of fourteen (14) calendar days in his schedule for the review of these drawings by the structural engineer for the return of shop drawings. These calendar days start from the time the drawings are received by the engineer.
- D. Miscellaneous Metal Fabrications are specified elsewhere in Division 5.
 - 1. [if !supportLists] Refer to Division 3 for anchor bolt installation in concrete; Division 4 for masonry.
- E. Source Quality Control: Materials and fabrication procedures are subject to inspection and tests in mill, shop, and field, conducted by a qualified inspection agency. Such inspections and tests will not relieve Contractor of responsibility for providing materials and fabrication procedures in compliance with specified requirements.
 - 1. [if !supportLists]Promptly remove and replace materials or fabricated components which do not comply.
- F. Design of Members and Connections: Details shown are typical; similar details apply to similar conditions, unless otherwise indicated. Verify dimensions at site whenever possible without causing delay in the work.
 - 1. [if !supportLists]Promptly notify Architect whenever design of members and connections for any portion of structure are not clearly indicated.

1.02 REFERENCE STANDARDS

- A. AISC (MAN) - Steel Construction Manual; 2017.

- B. AISC 303 - Code of Standard Practice for Steel Buildings and Bridges; 2016.
- C. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2019.
- D. ASTM A307 - Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength; 2021.
- E. ASTM A500/A500M - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes; 2021a.
- F. ASTM A992/A992M - Standard Specification for Structural Steel Shapes; 2020.
- G. AWI (AWS) - Architectural Woodwork Standards; 2014, with Errata (2016).
- H. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination; 2020.
- I. RCSC (HSBOLT) - Specification for Structural Joints Using High-Strength Bolts; Research Council on Structural Connections; 2020.

1.03 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Submit producer's or manufacturer's specifications and installation instructions for following products. Include laboratory test reports and other data to show compliance with specifications (including specified standards).
 - 1. [if !supportLists]Structural steel (each type), including certified copies of mill reports covering chemical and physical properties.
 - 2. High-strength bolts (each type), including nuts and washers.
 - 3. Structural steel primer paint.
- C. Shop Drawings: Submit shop drawings prepared under supervision of a registered professional engineer, including complete details and schedules for fabrication and assembly of structural steel members, procedures and diagrams:
 - 1. Indicate profiles, sizes, spacing, locations of structural members, openings, attachments, and fasteners.
 - 2. Include details of cuts, connections, camber, holes, and other pertinent data.
 - 3. Indicate welded connections with AWS A2.4 welding symbols. Indicate net weld lengths.
 - 4. Provide setting drawings, templates, and directions for installation of anchor bolts and other anchorages to be installed as work of others sections.
- D. [if !supportLists]Test Reports: Submit copies of reports of tests conducted on shop and field bolted and welded connections. Include data on type(s) of tests conducted and test results.

1.04 QUALITY ASSURANCE

- A. Codes and Standards: Comply with provisions of following, except as otherwise indicated:
 - 1. [if !supportLists]AISC "Code of Standard Practice for Steel Buildings and Bridges".
 - 2. Paragraph 4.2.1 of the above code is hereby modified by deletion of the following sentence: "This approval constitutes the owner's acceptance of all responsibility for the design adequacy of any connections designed by the fabricator as a part of his preparation of these shop drawings".

3. AISC "Specifications for Structural Steel Buildings - Allowable Stress Design and Plastic Design", including "Commentary" and Supplements thereto as issued.
 4. AISC "Specifications for Architecturally Exposed Structural Steel".
 5. AISC "Specifications for Structural Joints using ASTM A 325 or A 490 Bolts" approved by the Research Council on Riveted and Bolted Structural Joints of the Engineering Foundation.
 6. American Welding Society (AWS) D1.1 "Structural Welding Code - Steel".
 7. ASTM A 6 "General Requirements for Delivery of Rolled Steel Plates, Shapes, Sheet Piling and Bars for Structural Use".
- B. Qualifications for Welding Work: Qualify welding processes and welding operators in accordance with AWS "Standard Qualification Procedure".
1. [if !supportLists]Provide certification that welders to be employed in work have satisfactorily passed AWS qualification tests.
 - a. If recertification of welders is required, retesting will be Contractor's responsibility.
- C. Fabricate structural steel members in accordance with AISC (MAN) "Steel Construction Manual."

1.05 DELIVERY, STORAGE & HANDLING

- A. [if !supportLists]Deliver materials to site at such intervals to insure uninterrupted progress of work.
- B. Deliver anchor bolts and anchorage devices, which are to be embedded in cast-in-place concrete or masonry, in ample time to not to delay work.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Metal Surfaces, General: For fabrication of work which will be exposed to view, use only materials which are smooth and free of surface blemishes including pitting, rust and scale seam marks, roller marks, rolled trade names and roughness. Remove such blemishes by grinding, or by welding and grinding, prior to cleaning, treating and application of surface finishes.
- B. Steel Angles and Plates: ASTM A36/A36M.
- C. Steel W Shapes and Tees: ASTM A992/A992M.
- D. Cold-Formed Structural Tubing: ASTM A500/A500M, Grade B.
- E. Structural Bolts and Nuts: Carbon steel, ASTM A307, Grade A nonheaded type unless otherwise indicated.
- F. [if !supportLists]High-Strength Threaded Fasteners: Heavy hexagon structural bolts, heavy hexagon nuts, and hardened washers, as follows:
 1. [if !supportLists]Quenched and tempered medium-carbon steel bolts, nuts and washers, complying with ASTM A 325.
 2. [if !supportLists]Direct tension indicator washers may be used at Contractor's option.
- G. Electrodes for Welding: Comply with AWI (AWS) Code.

2.02 FABRICATION

- A. Shop fabricate to greatest extent possible. Fabricate items of structural steel in accordance with AISC Specifications and as indicated on final shop drawings. Provide camber in structural members where indicated.
 - 1. Properly mark and match-mark materials for field assembly. Fabricate for delivery sequence which will expedite erection and minimize field handling of materials.
 - 2. Where finishing is required, complete assembly, including welding of units, before start of finishing operations. Provide finish surfaces of members exposed in final structure free of markings, burrs, and other defects.
- B. [if !supportLists]Connections: Weld or bolt shop connections, as indicated.
- C. [if !supportLists]Bolt field connections, except where welded connections or other connections are indicated.
 - 1. Provide high-strength threaded fasteners for principal bolted connections, except where unfinished bolts are indicated.
- D. High-Strength Bolted Construction: Install high-strength threaded fasteners in accordance with AISC "Specifications for Structural Joints using ASTM A 325 or A 490 Bolts" (RCRBSJ).
- E. [if !supportLists]Welded Construction: Comply with AWS Code for procedures, appearance and quality of welds, and methods used in correcting welding work.
- F. [if !supportLists]Holes for Other Work: Provide holes required for securing other work to structural steel framing, and for passage of other work through steel framing members, as shown on final shop drawings.
 - 1. [if !supportLists]Provide threaded nuts welded to framing, and other specialty items as indicated to receive other work.
 - 2. [if !supportLists]Cut, drill, or punch holes perpendicular to metal surfaces. Do not flame cut holes or enlarge holes by burning. Drill holes in bearing plates.

2.03 FINISH

- A. Shop prime structural steel members. Do not prime surfaces that will be fireproofed, field welded, in contact with concrete, or high strength bolted.
 - 1. Structural Steel Primer Paint: SSPC Paint 13
- B. [if !supportLists]General: Shop paint structural steel, except those members or portions of members to be embedded in concrete or mortar. Paint embedded steel which is partially exposed on exposed portions and initial 2" of embedded areas only.
- C. [if !supportLists]Surface Preparation: After inspection and before shipping, clean steelwork to be painted. Remove loose rust, loose mill scale, and spatter, slag or flux deposits. Clean steel in accordance with Steel Structures Painting Council (SSPC) as follows:
 - 1. SP-1 "Solvent Cleaning".
 - 2. SP-3 "Power Tool Cleaning"
- D. Painting: Immediately after surface preparation, apply structural steel primer paint in accordance with manufacturer's instructions and at a rate to provide dry film thickness of not less than 1.5 mils. Use painting methods which result in full coverage of joints, corners, edges and exposed surfaces.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that conditions are appropriate for erection of structural steel and that the work may properly proceed.

3.02 ERECTION

- A. Erect structural steel in compliance with AISC 303.
- B. Surveys: Employ a registered professional engineer or land surveyor for accurate erection of structural steel. Check elevations of concrete and masonry bearing surfaces, and locations of anchor bolts and similar devices, before erection work proceeds, and report discrepancies to Architect. Do not proceed with erection until corrections have been made, or until compensating adjustments to structural steel work have been agreed upon with Architect.
- C. Temporary Shoring and Bracing: Provide temporary shoring and bracing members with connections of sufficient strength to bear imposed loads. Remove temporary members and connections when permanent members are in place and final connections are made. Provide temporary guy lines to achieve proper alignment of structures as erection proceeds.
- D. Temporary Planking: Provide temporary planking and working platforms as necessary to effectively complete work.
- E. [if !supportLists]Field Assembly: Set structural frames accurately to lines and elevations indicated. Align and adjust various members forming part of complete frame or structure before permanently fastening. Clean bearing surfaces and other surfaces which will be in permanent contact before assembly. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.
 - 1. [if !supportLists]Level and plumb individual members of structure within specified AISC tolerances.
 - 2. [if !supportLists]Splice members only where indicated and accepted on shop drawings.
- F. Erection Bolts: On exposed welded construction, remove erection bolts, fill holes with plug welds and grind smooth at exposed surfaces.
- G. [if !supportLists]Comply with AISC Specifications for bearing, adequacy of temporary connections, alignment, and removal of paint on surfaces adjacent to field welds.
 - 1. [if !supportLists]Do not enlarge unfair holes in members by burning or by use of drift pins, except in secondary bracing members. Ream holes that must be enlarged to admit bolts.
- H. Gas Cutting: Do not use gas cutting torches in field for correcting fabrication errors in primary structural framing. Cutting will be permitted only on secondary members which are not under stress, as acceptable to Architect. Finish gas-cut sections equal to a sheared appearance when permitted.
- I. Touch-Up Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint. Apply paint to exposed areas using same material

as used for shop painting. Apply by brush or spray to provide minimum dry film thickness of 1.5 mils.

3.03 FIELD QUALITY CONTROL

- A. Engage an independent testing agency to perform field quality control tests, as specified in Section 01 40 00 - Quality Requirements.
- B. High-Strength Bolts: Provide testing and verification of field-bolted connections in accordance with RCSC (HSBOLT) "Specification for Structural Joints Using High-Strength Bolts,"
 - 1. [if !supportLists]Provide access for testing agency to places where structural steel work is being fabricated or produced so that required inspection and testing can be accomplished.
 - 2. [if !supportLists]Testing agency may inspect structural steel at plant before shipment; however, Architect reserves right, at any time before final acceptance, to reject material not complying with specified requirements.
- C. Correct deficiencies in structural steel work which inspections and laboratory test reports have indicated to be not in compliance with requirements. Perform additional tests, at Contractor's expense, as may be necessary to reconfirm any non-compliance of original work, and as may be necessary to show compliance of corrected work.
- D. [if !supportLists]Shop Bolted Connections: Inspect or test in accordance with AISC specifications.
- E. [if !supportLists]Shop Welding: Inspect and test during fabrication of structural steel assemblies, as follows:
 - 1. Certify welders and conduct inspections and tests as required. Record types and locations of defects found in work. Record work required and performed to correct deficiencies.
 - 2. [if !supportLists]Perform visual inspection of all welds.
- F. Field Bolted Connections: Inspect in accordance with AISC specifications.
- G. [if !supportLists]Field Welding: Inspect and test during erection of structural steel as follows:
 - 1. Certify welders and conduct inspections and tests as required. Record types and locations of defects found in work. Record work required and performed to correct deficiencies.
 - 2. Perform visual inspection of all welds.
- H. [if !supportLists]Testing Agency: Shall confirm that the structure is square, plumb and level in accordance with AISC tolerances.

END OF SECTION 05 12 00

SECTION 05 40 00 - COLD-FORMED METAL FRAMING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Formed steel stud load bearing exterior wall and interior wall framing.
- B. Exterior non-load-bearing wall framing
- C. Floor joist framing
- D. Roof trusses.
- E. Roof rafter framing.
- F. Ceiling joist framing.
- G. Soffit framing.
- H. Exterior wall sheathing.
- I. Formed steel joist and purlin framing and bridging.

1.02 RELATED REQUIREMENTS

1.03 REFERENCE STANDARDS

- A. AISI S100 - North American Specification for the Design of Cold-Formed Steel Structural Members; 2016, with Supplement (2020).
- B. AISI S240 - North American Standard for Cold-Formed Steel Structural Framing; 2015, with Errata (2020).
- C. ASCE 7 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures; Most Recent Edition Cited by Referring Code or Reference Standard.
- D. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2016a.
- E. ASTM A1003/A1003M - Standard Specification for Steel Sheet, Carbon, Metallic- and Nonmetallic-Coated for Cold-Formed Framing Members; 2015.
- F. ASTM C1177/C1177M - Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing; 2017.
- G. ASTM E329 - Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection; 2023.
- H. AWS B2.1/B2.1M - Specification for Welding Procedure and Performance Qualification; 2021.
- I. AWS D1.3/D1.3M - Structural Welding Code - Sheet Steel; 2018, with Errata (2022).
- J. ICC (IBC) - International Building Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- K. PS 1 - Structural Plywood; 2009 (Revised 2019).

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordinate with work of other sections that is to be installed in or adjacent to metal framing systems, including but not limited to structural anchors, cladding anchors, utilities, insulation, and firestopping.
- B. Preinstallation Meeting: Conduct a preinstallation meeting one week prior to the start of the work of this section; require attendance by affected installers.

1.05 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data on cold-formed steel structural members; include material descriptions and base steel thickness.
- C. Shop Drawings: Indicate component details, framed openings, bearing, anchorage, loading, welds, and type and location of fasteners, and accessories or items required of related work.
 - 1. Include layout, spacings, sizes, thicknesses, and types of cold-formed steel framing; fabrication; and fastening and anchorage details, including mechanical fasteners.
 - 2. Indicate reinforcing channels, opening framing, supplemental framing, strapping, bracing, bridging, splices, accessories, connection details, and attachment to adjoining work.
 - 3. Shop drawings shall be signed and sealed by a qualified professional engineer licensed in the State where the Project is located who is responsible for the preparation of shop drawings.
- D. Design Data:
 - 1. Shop drawings signed and sealed by a professional structural engineer.
 - 2. Design calculations sufficient to demonstrate compliance with design criteria; signed and sealed by a professional structural engineer.
 - 3. Details and calculations for factory-made connectors, signed and sealed by a professional structural engineer.
- E. Mill certificates signed by manufacturers of cold-formed metal framing certifying that their products comply with requirements, including uncoated steel thickness, yield strength, tensile strength, total elongation, and galvanized-coating thickness.
 - 1. In lieu of mill certificates, submit test reports from a qualified independent testing agency evidencing compliance with requirements.
- F. Testing Agency Qualification Statement.
- G. Product Test Reports: For each listed product, for tests performed by a qualified testing agency.
 - 1. Steel sheet.
 - 2. Expansion anchors.
 - 3. Power-actuated anchors.
 - 4. Mechanical fasteners.
 - 5. Vertical deflection clips.
 - 6. Horizontal drift deflection clips
 - 7. Miscellaneous structural clips and accessories.

- H. Welders' Qualification Statement: Welders' certificates in accordance with AWS B2.1/B2.1M and dated no more than 12 months before the start of scheduled welding work.
- I. Research Reports: For non-standard cold-formed steel framing, from ICC-ES.
- J. Engineering Responsibility: Engage a fabricator who assumes undivided responsibility for engineering cold-formed metal framing by employing a qualified professional structural engineer licensed in the State where the Project is located to prepare design calculations, shop drawings, and other structural data.
- K. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of cold-formed metal framing that are similar to those indicated for this Project in material, design, and extent.

1.06 QUALITY ASSURANCE

- A. Designer Qualifications: Design framing system under direct supervision of a professional structural engineer experienced in designing this work and licensed in the State in which the Project is located.
- B. Testing Agency Qualifications: Qualified according to ASTM E329 for testing indicated.
- C. Product Tests: Mill certificates or data from a qualified independent testing agency, or in-house testing with calibrated test equipment indicating steel sheet complies with requirements, including base-metal thickness, yield strength, tensile strength, total elongation, chemical requirements, and metallic-coating thickness.
- D. Welder Qualifications: Welding processes and welding operators qualified in accordance with AWS D1.1/D1.1M and AWS D1.3/D1.3M and dated no more than 12 months before start of scheduled welding work.
- E. Codes and Standards: Comply with provisions of the latest adopted version of International Building Code 2018, unless more stringent requirements are indicated elsewhere.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Protect cold-formed steel framing from corrosion, moisture staining, deformation, and other damage during delivery, storage, and handling.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Structural Framing:
 - 1. ClarkDietrich; _____: www.clarkdietrich.com/#sle.
 - 2. MarinoWARE; ____: www.marinoware.com/#sle.
 - 3. [Nuconsteel; a Nucor Company](#).
 - 4. [United Steel Manufacturing](#).
 - 5. Substitutions: Or approved equal.

2.02 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design cold-formed steel framing.
- B. Design Requirements: Design cold-formed framing systems, components and connectors to withstand specified design loads in compliance with ICC (IBC), ASCE 7, AISI S100, and AISI S240.
 - 1. Design Loads: As indicated on drawings, and as required by the code in effect for the location of the Project Site.
 - 2. Deflection Limits: Design framing systems to withstand design loads without deflections greater than the following:
- C. Design Criteria: In accordance with applicable codes.
 - 1. Live load deflection meeting the following, unless otherwise indicated:
 - a. Floors: Maximum vertical deflection under live load of $1/480$ of span.
 - b. Roofs: Maximum vertical deflection under live load of $1/240$ of span.
 - c. Exterior Walls: Maximum horizontal deflection under wind load of $1/240$ of span.
 - d. Design nonaxial loadbearing framing to accommodate not less than $1/2$ in vertical deflection.
 - e. Ceiling Joist Framing: Vertical deflection of $1/240$ of the span for live loads and $1/240$ for total loads of the span.
 - 2. Design exterior non-load-bearing wall framing to accommodate horizontal deflection without regard for contribution of sheathing materials.
 - 3. Able to tolerate movement of components without damage, failure of joint seals, undue stress on fasteners, or other detrimental effects when subject to seasonal or cyclic day/night temperature ranges.
 - 4. Able to accommodate construction tolerances, deflection of building structural members, and clearances of intended openings.
 - 5. Design framing systems to provide for movement of framing members located outside the insulated building envelope without damage or overstressing, sheathing failure, connection failure, undue strain on fasteners and anchors, or other detrimental effects when subject to a maximum ambient temperature change of 120 deg F
 - 6. Design framing system to maintain clearances at openings, to allow for construction tolerances, and to accommodate live load deflection of primary building structure.

2.03 MATERIALS

- A. Steel Sheet: ASTM A1003/A1003M, subject to the ductility limitations indicated in AISI S240.

2.04 STRUCTURAL FRAMING COMPONENTS

- A. Wall Studs and Track Sections: AISI S240; c-shaped studs and u-shaped track sections in stud-matching nominal width and compatible height.
 - 1. Structural Grade: As required to meet design criteria.

2. Corrosion Protection Coating Designation: CP 90 in accordance with AISI S240.
 3. Thickness and Depth: Depth as indicated on the drawings; thickness and structural grade as required to meet design criteria.
 4. Provide components fabricated from ASTM A1011/A1011M Designation SS (structural steel).
- B. Jamb Studs: AISI S240; manufactured, engineered, c-shaped with wide flanges, designed to replace conventional double-stud framing at openings.
1. Structural Grade: As required to meet design criteria.
 2. Thickness and Depth: Depth as indicated on drawings; thickness and structural grade as required to meet specified design criteria.
- C. Headers: AISI S240; manufactured, engineered one-member or two-member assemblies, with wide flanges, designed to replace conventional box or nested header framing at openings.
1. Structural Grade: As required to meet design criteria.
 2. Corrosion Protection Coating Designation: CP 90 in accordance with AISI S240.
 3. Thickness and Depth: Depth as indicated on drawings; thickness and structural grade as required to meet specified design criteria.
 4. Jamb Mounting Clips: Manufacturer's standard.
- D. Joists: AISI S240; manufactured, engineered open-web steel joists.
1. Structural Grade: As required to meet design criteria.
 2. Corrosion Protection Coating Designation: CP 90 in accordance with AISI S240.
 3. Thickness and Depth: Depth as indicated on drawings; thickness and structural grade as required to meet specified design criteria.

2.05 LATERAL FORCE-RESISTING SYSTEMS

- A. Steel Sheet: ASTM A1003/A1003M, subject to the ductility limitations indicated in AISI S240.
1. Structural Grade: As required to meet design criteria.
 2. Corrosion Protection Coating Designation: CP 90 in accordance with AISI S240.

2.06 CONNECTIONS

- A. Performance Requirements: Provide connections in compliance with requirements of AISI S240.
- B. Steel Sheet: ASTM A1003/A1003M, subject to the ductility limitations indicated in AISI S240.
1. Structural Grade: As required to meet design criteria.
 2. Corrosion Protection Coating Designation: CP 90 in accordance with AISI S240.
- C. Structural Performance: Maintain load and movement capacity required by applicable building code and specified design criteria.
- D. Movement Connections: Provide mechanical anchorage devices that accommodate movement using slotted holes, shouldered screws or screws and anti-friction or stepped bushings, while maintaining structural performance of framing. Provide movement connections where indicated on drawings.
1. Where continuous studs bypass elevated floor slab, connect stud to slab in manner allowing vertical and horizontal movement of slab without affecting studs;

- allow for minimum movement of 1/2 inch.
2. Where top of stud wall terminates below structural floor or roof, connect studs to structure in manner allowing vertical and horizontal movement of slab without affecting studs; allow for minimum movement of 1/2 inch.
 3. Provide top track preassembled with connection devices spaced to fit stud spacing indicated on drawings; minimum track length of 10 feet.

2.07 MISCELLANEOUS CONNECTIONS

- A. Self-Drilling, Self-Tapping Screws, Bolts, Nuts and Washers: Hot-dip galvanized per ASTM A153/A153M.
- B. Anchorage Devices: Powder actuated.
- C. Welding: Comply with AWS D1.1/D1.1M.

2.08 SHEATHING

- A. Plywood; PS 1, Grade C-D, Exposure I.
- B. Glass-mat-faced gypsum board; ASTM C1177/C1177M, square long edges, 5/8 inch thick, Type X - fire-resistant.

END OF SECTION 05 40 00

SECTION 05 50 10 - MISCELLANEOUS METALS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 DESCRIPTION OF WORK

- A. Provide all plant, labor, materials, accessories, equipment and incidentals to complete Miscellaneous Metals work, as shown, specified, and as required, including, but not necessarily limited to, the following:
 - 1. Metal fabrications include items made from iron and steel shapes, plates, bars, strips, tubes, pipes and castings which are not part of structural steel or other metal systems specified elsewhere.
 - 2. Rough hardware
 - 3. Loose bearing and leveling plates, loose steel lintels, plates, bars, angles, etc.
 - 4. Steel lintels, shelf angles, and relieving angles.
 - 5. Miscellaneous framing and supports to support other work including suspended operable partitions, mechanical and electrical equipment and other applications where framing and supports are not specified in other sections.
 - 6. Miscellaneous steel trim, steel angle corner guards, etc.
 - 7. Steel framed stairs, landings, platforms, treads, risers, guardrail systems, posts and brackets, metal pan stairs, landings and platforms for concrete fill, Steel stairs, landings, platforms for bar grates and guardrails.
 - 8. Painted steel ornamental guardrails.
 - 9. Ladders.
 - 10. Floor Grates, Downspout Boots, and stair nosings for exposed poured exterior concrete stairs.
 - 11. Miscellaneous fabrications as noted and/or required to properly complete the project.

1.03 QUALITY ASSURANCE

- A. Codes and Standards: Comply with the provisions of the following, except as otherwise indicated:
 - a. IBC International Building Code 2009 AISC "Manual of Steel Construction" NAAMM "Metal Stairs Manual" NAAMM "Pipe Railing Manual"
 - b. NAAMM "Metal Handrail and Railing Manual" NAAMM "Metal Bar Grating Manual"
 - c. ANSI A12.1 "Floor and Wall Opening, Railings and Toe boards" ANSI A14.3 "Safety Requirements for Fixed Ladders"

- d. ASME A17.1 "Safety Code for Elevators and Escalators" AWS Structural Welding Codes
 - e. Woven Wire Products Association
- B. Qualifications for welding work: Qualify welding processes and welding operators in accordance with AWS "Standard Qualification Procedure".
 - 1. If re-certification of welders is required, retesting will be Contractors responsibility.
- C. Welding: Use qualified welders and comply with American Welding Society (AWS) D1.1, "Structural Welding Code – Steel", (AWS) D1.3, "Structural Welding Code – Sheet Steel".
- D. Fire-Rated Assemblies: Where framing units are components of assemblies indicated for a fire- resistance rating, including those required for compliance with governing regulations, provide units that have been approved by governing authorities that have jurisdiction.
- E. Take field measurements prior to preparation of shop drawings and fabrication, where possible, to insure proper fitting of the work, however, do not delay job progress; allow for trimming and fitting of miscellaneous steel wherever the taking of field measurements before fabrication might delay the work.
- F. Preassemble miscellaneous metal items in the shop to the greatest extent possible, so as to minimize field splicing and assembly of units at the project site. Disassemble units only to the extent necessary for shipping and handling limitations. Clearly mark units for re-assembly and coordinated installation.
- G. Be responsible for interface coordination between work provided and related work of other trades and contracts.
- H. Control of Corrosion: Prevent galvanic action and other forms of corrosion by insulating metals and other materials from direct contact with incompatible materials.

1.04 SUBMITTALS

- A. Product Data: Submit manufacturer's specifications, anchor details, installation and application instructions for metal products, fabrications, accessories and primer paint used in miscellaneous metal fabrications, including paint products and grout.
- B. Shop Drawings: Submit shop drawings showing complete details and schedules for fabrication and erection. Include plans, elevations, details of sections, connections, anchorage, accessory items and material properties. Provide templates and setting drawings. Provide signed and sealed engineered calculations by a Professional Engineer licensed in the Commonwealth of Pennsylvania for materials and fabrications required to comply with design loads. Indicate all adjacent work to which the fabrications are attached or with which components must interface.
- C. Samples: Submit two sets of representatives' samples of materials and finished products as may be requested by the Architect.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials to the site at such intervals to insure uninterrupted progress of the work.
- B. Store materials to permit easy access for inspection and identification. Keep metals inside a well-ventilated area off the ground, using pallets, platforms, or other supports.

Protect metal members and packaged materials from corrosion and deterioration.

1.06 PROJECT CONDITIONS

- A. Field Measurements: Where miscellaneous metal work is indicated to fit to other construction, check actual dimensions of other construction by accurate field measurements before fabrication; show recorded measurements on final shop drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
- B. Where field measurements cannot be made without delaying the Work, guarantee dimensions and proceed with fabricating miscellaneous metal work without field measurements. Coordinate other construction to ensure that actual dimensions correspond to guaranteed dimensions.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Metal Surfaces, General: For fabrication of miscellaneous metal work which will be exposed to view, use only materials which are smooth and free of surface blemishes including pitting, seam marks, roller marks, stains, discoloration, rolled trade names, roughness and other imperfections.
- B. Steel Plates, Shapes and Bars: ASTM A36/A36M.
- C. Steel Bar Grating: ASTM A569 or ASTM A36.
- D. Steel Tubing: Cold formed, ASTM A500; or hot rolled, ASTM A501.
- E. Structural Steel Sheet: Hot rolled, ASTM A570; or cold rolled, ASTM A611, Class 1, of grade required for design loading, unless otherwise indicated.
- F. Galvanized Structural Steel Sheet: ASTM A446, of grade required for design loading. Coating designation as indicated, or it not indicated, G90.
- G. Steel Pipe: ASTM A53, Type and grade (if applicable) as selected by Fabricator and as required for design loading stainless steel, black iron or galvanized as indicated; standard weight (Schedule 40), unless otherwise indicated, or another weight as required by structural loads.
- H. Grey Iron Castings: ASTM A48, Class 30, unless another class is indicated or required by structural loads.
- I. Malleable Iron Castings: ASTM A47/A47M, grade as selected by fabricator.
- J. Stainless Steel: Comply with standards for forms and types of stainless steel work required as follows:
 - 1. Type: ANSI Type 302/304 unless otherwise indicated.
 - 2. Plate: ASTM A 167
- K. Brackets, Flanges and Anchors: Cast or formed metal of the same type material and finish as supported rails, unless otherwise indicated.
- L. Concrete Inserts: Threaded or wedge type; galvanized ferrous castings, either malleable iron, ASTM A 47, or cast steel, ASTM A 27. Provide bolts, washers, and shims as required, hot-dip galvanized, ASTM A 153.

- M. Cast-In Place and Post-installed Anchors: Anchors of type indicated and as required, fabricated from corrosion-resistant materials, capable of sustaining, without failure, a load equal to 6 times the load imposed when installed in unit masonry and equal to 4 times the load imposed when installed in concrete, as determined by testing per ASTM E 488, conducted by a qualified, independent testing agency.
- N. Grout:
1. Metallic Non-Shrink Grout: Pre-mixed, factory-packaged, ferrous aggregate grout in accordance with CE CRD-C588, Type M and ASTM C 1107. Provide grout specifically recommended by manufacturer for heavy-duty loading applications.
 2. Non-Shrink, Non-Metallic Grout: Pre-mixed, factory-packaged, non-staining, non-corrosive, non gaseous grout complying with CE CRD C621 and ASTM C1107. Provide grout specifically recommended by manufacturer for interior and exterior applications of types specified herein.
- O. Fasteners:
1. General: Provide zinc-coated fasteners for exterior or where built into exterior walls. Select fasteners for the type, grade and class required.
 2. Bolts and Nuts: Regular hexagon-head bolts, ASTM A 307, Grade A (ASTM F 568M, Property Class 4.6); with hex nuts, ASTM A 563/A 563M; and where indicated, flat washers.
 3. Machine Screws: ASME B18.6.3 (ASME B18.6.7M).
 4. Wood Screws: Flat head carbon steel, ASME B18.6.1.
 5. Anchor Bolts: ASTM F1554, Grade 36.
 6. Lag Bolts: ASME B18.2.1 (ASME B18.2.3.8M).
 7. Plain Washers: Round, carbon steel, ASME B18.22.1 (ASME B18.22M).
 8. Lock Washers: Helical, spring type, carbon steel, ASME B18.21.1 (ASME B18.22.2M).
 9. Toggle Bolts: Tumble-wing type, class and style as needed, FS FF-B-588.
 10. Masonry Anchorage Devices: Expansion shields FS FF-S-325.
- P. Welding Rods and Bare Electrodes and Filler Material: Provide type and alloy of filler metal and electrodes according to AWS specifications for metal alloy welded and as recommended by producer of metal to be welded and as required for color match, strength, and compatibility in fabricated items.
- Q. Materials for Miscellaneous Steel: For the fabrication of miscellaneous metal work items which will be exposed to view, use only materials which are smooth and free of surface blemishes, including pitting, seam marks, roller marks, rolled trade names, and roughness. Remove such blemishes by grinding, or by welding and grinding, prior to cleaning, treating and application of surface finishes.
- R. Paint:
1. Primer selected to be compatible with finish coats of paint. Coordinate selection of metal primer with finish paint requirements specified in Section 099000.
 2. Shop Primer for Ferrous Metal: Organic zinc-rich primer, complying with SSPC-Paint 20 and compatible with topcoat.
 3. Galvanizing Repair Paint: High zinc dust content paint for re-galvanizing welds in steel, complying with SSPC-Paint 20.
 4. Bituminous Paint: Cold-applied asphalt mastic complying with SSPC-Paint 12, except containing no asbestos fibers, or cold-applied asphalt emulsion complying with ASTM D 1187.

2.02 FABRICATION

- A. Workmanship: Use of materials of size and thickness indicated or, if not indicated, as required to produce strength and durability in finished product for use intended. Work to dimensions shown or accepted on shop drawings, using proven details of fabrication and support. Use type of materials shown or specified for various components or work.
- B. Form exposed work true to line and level with accurate angles and surfaces and straight sharp edges. Ease exposed edges to a radius of approximately 1/32" unless otherwise shown. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.
- C. Weld corners and seams continuously, complying with AWS recommendations. At exposed connections, grind exposed welds smooth and flush to match and blend with adjoining surfaces.
- D. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners wherever possible. Use exposed fasteners of type indicated or, if not indicated, Phillips flat-head (countersunk) screws or bolts. Use fasteners of same basic metal as fastened metal unless otherwise indicated. Do not use metals that are corrosive or incompatible with materials joined.
- E. Provide for anchorage of type indicated and as required, coordinated with supporting structure. Fabricate and space anchoring devices to provide adequate support for intended use.
- F. Cut, reinforce, drill and tap miscellaneous metal work as indicated to receive hardware and similar items.
- G. Fabricate joints that will be exposed to weather in a manner to exclude water or provide weep holes where water may accumulate.
- H. Electrodes for Welding: Comply with AWS Code and as recommended by product manufacturer.
- I. Rough Hardware: Furnish bent or otherwise custom fabricated bolts, plates, inserts, anchors, hangers, dowels and other miscellaneous steel and iron shapes as required for framing, supporting, anchoring or securing woodwork to concrete or other structures. Straight bolts and other stock rough hardware items are specified in Division 06 - Sections.
- J. Fabricate items to sizes, and shapes and dimensions required. Furnish malleable-iron washers for heads and nuts that bear on wood structural connections; elsewhere, furnish steel washers.
- K. Shelf Angles: Furnish and install structural steel shelf angles of sizes indicated and required for attachments to concrete framing. Provide slotted holes to receive 3/4" bolts, spaces not more than 6" from ends and not more than 24" o.c. unless otherwise indicated.
- L. Loose Bearing and Leveling Plates: Furnish and install loose bearing and leveling plates for steel items bearing on masonry or concrete constructions, made flat, free from warps or twists, and of required thickness and bearing area. Drill plates to receive anchor bolts and for grouting required. Galvanize after fabrication.
- M. Loose Steel Lintels: Furnish and install loose structural steel lintels for openings and recesses in masonry walls and partitions whether they are indicated in the lintel

schedule or not. Weld adjoining members together to form a single unit where indicated. Provide not less than 8" bearing at each side of openings, unless otherwise indicated.

- N. Miscellaneous Steel Framing and Supports: Furnish and install miscellaneous steel framing and supports which are not part of structural steel framework, as required to complete work.
- O. Fabricate miscellaneous units to sizes, shapes and profiles indicated or, if not indicated, of required dimensions to receive adjacent other work to be retained by framing. Except as otherwise indicated, fabricate from structural steel shapes and plates and steel bars of welded construction using mitered joints for field connection. Cut, drill and tap units to receive hardware and similar items.
- P. Equip units with integrally welded anchors for casting into concrete or building into masonry. Furnish inserts if units must be installed after concrete is placed.
- Q. Except as otherwise shown, space anchors 24" o.c. and provide minimum anchor units of 1-1/4" x 1/4" x 8" steel straps.
- R. Galvanize All exterior miscellaneous frames, supports and trim. All interior miscellaneous frames, supports and trim at wet and high humidity areas and as otherwise indicated.
- S. Galvanizing:
 - 1. Provide a zinc coating for those items indicated or specified to be galvanized, as follows: Unit noted to be galvanized are to be hot dipped galvanized after fabrication.
 - a. ASTM A 153 for galvanizing iron and steel hardware.
 - b. ASTM A 123 for galvanizing rolled, pressed, and forged steel shapes, plates, bars, and strip 1/8" thick and heavier.
 - c. ASTM A 386 for galvanizing assembled steel products.
- T. Miscellaneous Steel Trim: Provide shapes and sizes for profiles indicated. Except as otherwise indicated, fabricate units from structural steel shapes and plates and steel bars, with continuously welded joints and smooth exposed edges. Use concealed field splices wherever possible. Provide cutouts, fittings and anchorages as required for coordination of assembly and installation with other work.

2.03 DOWNSPOUT BOOTS

- A. Downspout Boots shall accommodate downspout sizes and shapes indicated with outlet portion sized to accommodate downspout capacity and subsurface drainage system. Boots shall be cast iron, primed with rust inhibitor, equal to McKinley Iron Works, Inc. DS Series in length required to extend to heights indicated, but not less than a minimum of 2'-0" above finish grade and shall be connected to subsurface piping at no less than 6" below finish grade or spill out to grade as indicated.

2.04 METAL PAN STAIRS, TREADS & LANDINGS FOR CONCRETE FILL

- A. Design Criteria: Design stairs, treads and landings which, when installed comply with the following minimum structural performance requirements:
- B. Engineering Responsibility: Engage a fabricator who uses a qualified Professional Engineer licensed in the Commonwealth of Pennsylvania to prepare calculations, shop

drawings and other structural data for metal stairs, treads and landings

- C. Treads and landings of Steel Stairs: Capable of withstanding a uniform load of 100 lb. ft. per sq. ft. or a concentrated load of 300 lb. ft. located as to produce maximum stress conditions.
- D. Furnish all required inserts and anchors for building into work. Construct stairs of shapes and sizes of metal as shown, if not indicated, furnish in conformance with NAAMM requirements for Architectural Grade. Fabricate with welded joints unless otherwise indicated. Provide complete assemblies including metal framing, hangers, columns, railings, newels, balusters or infill guards as indicated, struts, clips, brackets, bearing plates and other components necessary for the support of stairs and platforms and as required to anchor and contain the stairs on the supporting structure.
- E. Fabricate stringers of structural steel channels or plates, or a combination thereof, as shown. Provide closures for exposed ends of stringers. Construct platforms of structural steel channel headers and miscellaneous framing members as indicated. Weld headers to stringers and
 1. newels, and framing members to stringers and headers; or use bolts, concealed and not appearing on finished surfaces. Where non fire rated masonry walls support steel stairs, provide temporary-supporting struts designed for erection of steel stair components before installation of masonry.
- F. Provide metal pan stair with closed risers and pan tread to receive cement fill as indicated. Form stair stringers and other members to sizes and shapes indicated. Form sub-treads, platforms, and risers of not less than 12 gauge steel and intermediate platforms of 12 gauge steel, reinforced with channel stiffeners except as otherwise shown.
- G. Form sub-treads and platforms with bent nosings. Allow for fill on treads and intermediate platforms as shown. Directly weld risers and sub-treads to stringer; locate welds on side of metal pans to be concealed by concrete fill. Weld sub-platform to platform framing members.
- H. Attach risers and subtreads to stringers by means of brackets made of steel angles or bars. Weld brackets to stringers and secure metal pans to brackets by welding, riveting or bolting.
- I. Stair Railings and Handrails: Comply with applicable requirements specified elsewhere in this section for steel pipe railing and handrails and other Division 5 section for aluminum pipe and tube railings.
- J. Railings may be bent at corners, rail returns and wall returns, instead of using prefabricated fittings.
- K. Connect railing posts to stair framing by direct welding, unless otherwise indicated.
- L. Hot-Dip Galvanized assembly after fabrication.

2.05 COATINGS AND PRIMER PAINTS

- A. Shop paint miscellaneous metal work, except members or portions of members to be embedded in concrete, masonry and surfaces and edges to be field welded, galvanized or finished metal surfaces unless otherwise indicated.
- B. Remove scale, rust and other deleterious materials before applying shop coat. Clean off heavy rust and loose mill scale in accordance with SSPC SP-2 (Hand Tool Cleaning), SSPC SP-3

1. (Power Tool Cleaning) or SSPC SP-6 (Commercial Blast Cleaning). Omit blast cleaning for interior work.
- C. Remove oil, grease and similar contaminants in accordance with SSPC SP-1 (Solvent Cleaning).
- D. Interior Ferrous Items: Manufacturer's standard, fast curing, lead free, universal primer, selected for resistance to normal atmospheric corrosion, for compatibility with proposed finish paint systems and for capability to provide a sound foundation for field applied topcoats despite prolonged exposure; complying with performance requirements of FS TT-P-645. Use painting methods that will result in full coverage of joints, corners, edges and all exposed surfaces.
- E. Apply one shop coat to fabricated metal items, except apply 2 coats of paint to surfaces inaccessible after assembly or erection. Change color of second coat to distinguish it from the first.
- F. Exterior Steel Items: Hot dipped galvanized to receive finish coats; ASTM A 153, A123, and A386, unless otherwise noted.
- G. Galvanized coating repair: Where galvanized surfaces are damaged, prepare surfaces and repair in accordance with procedures specified in ASTM A 780. SSPC P-20 or Mil-P-21D3T.

PART 3 - EXECUTION

3.01 INSPECTION

- A. Installer must examine the areas and conditions under which work is to be installed and notify the General Contractor in writing of conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected in a manner acceptable to the erector.

3.02 PREPARATION

- A. Coordinate and furnish anchorages, setting drawings, diagrams, templates, instructions, and directions for installation of anchorages, such as concrete inserts, sleeves, anchor bolts and miscellaneous items having integral anchors, which are to be embedded in concrete or masonry construction. Coordinate delivery of such items to project site.

3.03 INSTALLATION

- A. Install miscellaneous metals in accordance with referenced standards and as shown on final approved shop drawings.
- B. Install manufactured products in conformance with manufacturer's recommendations.
- C. Fastening to In-Place Construction:
 1. Except as otherwise specified, provide anchorage devices and fasteners where necessary for securing metal fabrication items to in place construction including threaded fasteners for concrete and masonry inserts, toggle bolts, through bolts, lag bolts, and other connectors as required.

D. Cutting, Fitting and Placement:

1. Perform cutting, drilling and fitting required for the installation of the miscellaneous metal items. Set the work accurately in location, alignment and elevation, plumb, level, true and free of rack, measured from established lines and levels. Provide temporary bracing or anchors in form work for items which are to be built into concrete, masonry or similar construction.
2. Fit exposed connections accurately together to form tight hairline joints. Weld connections that are not to be left as exposed joints, but cannot be shop welded because of shipping size limitations. Grind joints smooth and touch-up shop paint coat. Do not weld, cut or abrade the surfaces of units and components which are zinc coated, shop prime painted, or finish after fabrication or are intended for mechanical field connections or other means without further cutting or fitting.

E. Field Welding:

1. Comply with AWS Code for the procedures of manual shielded metal arc welding, the appearance and quality for welds made, and the methods used in correcting welding work. Use materials and methods that minimize distortion, develop strength, and corrosion resistance to base metals without undercut or overlap. Finish surfaces shall be left smooth and match contours of adjoining surfaces.

F. Setting Loose Plates:

1. Clean concrete and masonry bearing surfaces of any bond-reducing materials, and roughen to improve bond to surfaces. Clean bottom surface of bearing plates.
2. Set loose leveling and bearing plates on wedges, or other adjustable devices. After the bearing members have been positioned and plumbed, tighten the anchor bolts. Do not remove wedges or shims, but if protruding, cut-off flush with the edge of the bearing plate before packing with grout. Use metallic non-shrink grout in concealed locations where not exposed to moisture; use non-metallic non-shrink grout in exposed locations, unless otherwise indicated.
3. Pack grout solidly between bearing surfaces and plates to ensure that no voids remain.

G. Steel Pipe Railings and Handrails:

1. Adjust railings prior to anchoring to ensure matching alignment at abutting joints. Space posts at spacing indicated, or if not indicate, as require by design loadings. Plumb posts in each direction. Secure posts and railings ends to build construction as follows:
2. Anchor posts in concrete by means of pipe sleeves preset and anchored in to concrete. After posts have been inserted in to sleeves, fill annular space between post and sleeve solid with non-shrink, non-metallic grout mixed and placed to comply with grout manufacturer's directions.
3. Leave anchorage joint exposed, wipe off excess grout and leave 1/8" build-up, sloped away from post. For installation exposed on exterior or to flow of water, seal grout to comply with grout manufacturer's directions.
4. Anchor posts to steel with oval flanges, angle type or floor type and required by conditions welded to posts and bolted to steel supporting members, unless noted otherwise.
5. Anchor rail ends into concrete and masonry with steel round flanges welded to rail ends and anchored into wall construction with lead expansion shields and bolts.
6. Anchor rail ends to steel with steel oval or round flanges welded to rail ends and bolted to structural steel members, unless otherwise indicated.

7. Secure handrails to wall with wall brackets and end fittings. Provide bracket with not less than 1 1/2" clearance from inside face of handrail and finished wall surface. Locate brackets as indicated or, if not indicated, at spacing required for design loading. Secure wall brackets and wall return fitting to building construction as follows:
8. Use type of bracket with flange tapped for concealed anchorage to threaded hanger bolt.
9. For concrete and solid masonry anchorage, use drilled-in expansion shield and either concealed hanger bolt or exposed lag bolt, as applicable.
10. For hollow masonry anchorage, use toggle bolts having square heads.
11. Provide removable railing sections as indicated. Provide slip-fit metal socket or sleeve for casting into concrete. Accurately locate sleeves to match post spacing.

3.04 ADJUSTING, CLEANING AND PROTECTION

- A. Immediately after erection of steel items, clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with same material as used for shop painting. Apply by brush or spray to provide a minimum dry film thickness of 2.0 mils.
- B. For galvanized surfaces: Clean field welds, bolted connections and abraded areas and apply 2 coats of galvanizing repair paint.
- C. Restore finishes damaged during installation and construction period so that no evidence remains of correction work. Return items that cannot be refinished in the field to the shop; make required alterations and refinish entire unit, or provide new units.

END OF SECTION 05 50 10

SECTION 05 52 13 - PIPE AND TUBE RAILINGS

PART 2 PRODUCTS

1.01 RAILINGS - GENERAL REQUIREMENTS

- A. Design, fabricate, and test railing assemblies in accordance with the most stringent requirements of applicable local code.
- B. Allow for expansion and contraction of members and building movement without damage to connections or members.
- C. Dimensions: See drawings for configurations and heights.
- D. Provide anchors and other components as required to attach to structure, made of same materials as railing components unless otherwise indicated; where exposed fasteners are unavoidable provide flush countersunk fasteners.
- E. Provide slip-on non-weld mechanical fittings to join lengths, seal open ends, and conceal exposed mounting bolts and nuts, including but not limited to elbows, T-shapes, splice connectors, flanges, escutcheons, and wall brackets.

1.02 FABRICATION

- A. Accurately form components to suit specific project conditions and for proper connection to building structure.
- B. Fit and shop assemble components in largest practical sizes for delivery to site.
- C. Fabricate components with joints tightly fitted and secured. Provide spigots and sleeves to accommodate site assembly and installation.

END OF SECTION 05 52 13

SECTION 05 70 00 - DECORATIVE METAL MESH

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. Section Includes:
 - 1. Decorative metal mesh.
 - 2. Connection details.

1.03 COORDINATION

- A. Coordinate installation of anchorages for decorative metal items. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

1.04 SUBMITTALS

- A. Product Data: For each type of product, including finishing materials.
- B. Shop Drawings: Show installation details for decorative metal mesh and attachment and/or support.
 - 1. Include plans, elevations, component details, and attachment details.
 - 2. Indicate materials and profiles of each decorative metal member, fittings, joinery, finishes, fasteners, anchorages, and accessory items.
 - 3. Provide structural engineered design and connections of aluminum tube frame supporting the metal mesh. Include anchor points and connection details.
- C. Samples for Initial Selection: For products involving selection of color, texture, or design
- D. Samples for Verification: For each type of exposed finish.
 - 1. Samples of welded joints showing quality of workmanship

1.05 QUALITY ASSURANCE

- A. Fabricator Qualifications: A firm experienced in producing decorative metal similar to that indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units, 3 years minimum.

- B. Installer Qualifications: A firm experienced in installing decorative metal similar to that indicated for this Project and with a record of successful in-service performance of 3 years minimum.
- C. Powder-Coating Applicator Qualifications: A firm experienced in successfully applying powder coatings of type indicated and employing competent control personnel to conduct continuing, effective quality-control program to ensure compliance with requirements.
- D. Welding Qualifications: Qualify procedures and personnel according to the following:
 - 1. AWS D1.1/D1.1M, "Structural Welding Code - Steel."
 - 2. AWS D1.3/D1.3M, "Structural Welding Code - Sheet Steel."
 - 3. AWS D1.6/D1.6M, "Structural Welding Code - Stainless Steel."

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Store decorative metal in a well-ventilated area, away from uncured concrete and masonry, and protected from weather, moisture, soiling, abrasion, extreme temperatures, and humidity.
- B. Deliver and store cast-metal products in wooden crates surrounded by enough packing material to ensure that products are not cracked or otherwise damaged.

1.07 FIELD CONDITIONS

- A. Field Measurements: Verify actual locations of walls and other construction contiguous with decorative metal by field measurements before fabrication and indicate measurements on Shop Drawings.

PART 2 PRODUCTS

2.01 DECORATIVE METALS

- A. Subject to compliance with requirements, provide decorative metal and associated support system with appearance equivalent to the basis of design product:
 - 1. Basis of Design: Kent Design and Manufacturing. www.kentdesign.com.
 - a. Style: As indicated on drawings.
 - b. Finish: As indicated on drawings.
 - c. Wire Style: AS inicated on drawings.
 - d. Wire Size: As inicated on drawings.
 - 2. Or, approved equal.

2.02 QUALITY CONTROL

- A. Use materials with smooth, flat surfaces unless otherwise indicated. Use materials without seam marks, roller marks, rolled trade names, stains, discolorations, or blemishes.
- B. Fabricate decorative metal railings to comply with requirements indicated for design, dimensions, member sizes and spacing, details, finish, and anchorage.

- C. Cut, drill, and punch metals cleanly and accurately.
 - 1. Remove burrs and ease edges to a radius of approximately 1/32 inch unless otherwise indicated.
 - 2. Remove sharp or rough areas on exposed surfaces.
- D. Form work true to line and level with accurate angles and surfaces.

2.03 FASTENERS

- A. Fastener Materials: Unless otherwise indicated, provide the following:
 - 1. Uncoated-Steel Items: Plated steel fasteners complying with ASTM B 633, Class Fe/Zn 25 for electrodeposited zinc coating where concealed, Type 304 stainless-steel fasteners where exposed.
 - 2. Galvanized-Steel Items: Plated steel fasteners complying with ASTM B 633, Class Fe/Zn 25 for electrodeposited zinc coating.
 - 3. Dissimilar Metals: Type 304 stainless-steel fasteners.
- B. Fasteners for Anchoring to Other Construction: Unless otherwise indicated, select fasteners of type, grade, and class required to produce connections suitable for anchoring indicated items to other types of construction indicated.
- C. Provide concealed fasteners for interconnecting components and for attaching decorative metal items to other work unless exposed fasteners are unavoidable.
 - 1. Provide Phillips flat-head machine screws for exposed fasteners unless otherwise indicated.
- D. Post-Installed Anchors: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC193].
 - 1. Material for Exterior Locations and Where Stainless Steel Is Indicated: Alloy Group 1 (A1) stainless-steel bolts, ASTM F 593 (ASTM F 738M), and nuts, ASTM F 594 (ASTM F 836M).

2.04 MISCELLANEOUS MATERIALS

- A. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.
- B. Brazing Rods: For copper alloys, provide type and alloy as recommended by producer of metal to be brazed and as required for color match, strength, and compatibility in fabricated items.
- C. Etching Cleaner for Galvanized Metal: Complying with MPI#25.
- D. Low-Emitting Paints and Coatings: Paints and coatings applied to interior decorative metal items shall comply with the testing and product requirements of the California Department of Public Health's (formerly, the California Department of Health Services') "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."
- E. Galvanizing Repair Paint: High-zinc-dust-content paint complying with SSPC-Paint 20 and compatible with paints specified to be used over it.
- F. Universal Shop Primer for Ferrous Metal: Fast-curing, lead- and chromate-free, universal modified-alkyd primer complying with MPI#79 and compatible with topcoat.

1. Use primer containing pigments that make it easily distinguishable from zinc-rich primer.
- G. Epoxy Zinc-Rich Primer: Complying with MPI#20 and compatible with topcoat.
- H. Shop Primer for Galvanized Steel: Cementitious galvanized metal primer complying with MPI#26.
- I. Epoxy Intermediate Coat for Steel: Complying with MPI#77 and compatible with primer and topcoat.
- J. Polyurethane Topcoat for Steel: Complying with MPI#72 and compatible with undercoat.

2.05 METAL FINISH REQUIREMENTS

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine substrates and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of decorative metal.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION

- A. Provide anchorage devices and fasteners where needed to secure decorative metal to in-place construction.
- B. Perform cutting, drilling, and fitting required to install decorative metal. Set products accurately in location, alignment, and elevation, measured from established lines and levels. Provide temporary bracing or anchors in formwork for items to be built into concrete, masonry, or similar construction.
- C. Fit exposed connections accurately together to form tight, hairline joints or, where indicated, uniform reveals and spaces for sealants and joint fillers. Where cutting, welding, and grinding are required for proper shop fitting and jointing of decorative metal, restore finishes to eliminate evidence of such corrective work.
- D. Do not cut or abrade finishes that cannot be completely restored in the field. Return items with such finishes to the shop for required alterations, followed by complete refinishing, or provide new units as required.
- E. Install concealed gaskets, joint fillers, insulation, and flashings as work progresses.
- F. Restore protective coverings that have been damaged during shipment or installation. Remove protective coverings only when there is no possibility of damage from other work yet to be performed at same location.

1. Retain protective coverings intact; remove coverings simultaneously from similarly finished items to preclude nonuniform oxidation and discoloration.
- G. Field Welding: Comply with applicable AWS specification for procedures of manual shielded metal arc welding and requirements for welding and for finishing welded connections in "Fabrication, General" Article. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations.
- H. Field Brazing: Comply with requirements for brazing and for finishing brazed connections in "Fabrication, General" Article. Braze connections that are not to be left as exposed joints but cannot be shop brazed because of shipping size limitations.
- I. Control of Corrosion: Prevent galvanic action and other forms of corrosion by insulating metals and other materials from direct contact with incompatible materials.
 1. Coat concealed surfaces of aluminum that will be in contact with grout, concrete, masonry, wood, or dissimilar metals, with a heavy coat of bituminous paint.

3.03 CLEANING AND PROTECTION

- A. Unless otherwise indicated, clean metals by washing thoroughly with clean water and soap, rinsing with clean water, and drying with soft cloths.
- B. Touchup Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint and paint exposed areas with same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.
 1. Apply by brush or spray to provide a minimum 2.0-mil (0.05-mm) dry film thickness.
- C. Touchup Painting: Cleaning and touchup painting of field welds, bolted connections, and abraded areas of shop paint in accordance with manufacturer's recommendations.
- D. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A 780/A 780M.
- E. Protect finishes of decorative metal from damage during construction period with temporary protective coverings approved by decorative metal fabricator. Remove protective covering at time of Substantial Completion.
- F. Restore finishes damaged during installation and construction period so no evidence remains of correction work. Return items that cannot be refinished in the field to the shop; make required alterations and refinish entire unit, or provide new units.

END OF SECTION 05 70 00

SECTION 06 10 00 - ROUGH CARPENTRY

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Structural dimension lumber framing.
- B. Exposed timber structural framing.
- C. Nonstructural dimension lumber framing.
- D. Rough opening framing for doors, windows, and roof openings.
- E. Sheathing.
- F. Roofing nailers.
- G. Concealed wood blocking, nailers, and supports.

1.02 RELATED REQUIREMENTS

1.03 REFERENCE STANDARDS

- A. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2016a.
- B. AWC (WFCM) - Wood Frame Construction Manual for One- and Two-Family Dwellings; 2024, with Errata.
- C. PS 20 - American Softwood Lumber Standard; 2021.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide technical data on insulated sheathing, wood preservative materials, and application instructions.
- C. ABAA Field Quality Control Submittals: Submit third-party reports of testing and inspection required by ABAA QAP.
- D. ABAA Manufacturer Qualification: Submit documentation of current evaluation of proposed manufacturer and materials.
- E. ABAA Installer Qualification: Submit documentation of current contractor accreditation and current installer certification. Keep copies of all contractor accreditation and installer certification on site during and after installation. Present on-site documentation upon request.

1.05 QUALITY ASSURANCE

- A. Air Barrier Association of America (ABAA) Quality Assurance Program (QAP); www.airbarrier.org/#sle:
 - 1. Installer Qualification: Use accredited contractor, certified installers, evaluated materials, and third-party field quality control audit.
 - 2. Manufacturer Qualification: Use evaluated materials from a single manufacturer regularly engaged in air barrier material manufacture. Use secondary materials approved in writing by primary material manufacturer.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. General: Cover wood products to protect against moisture. Support stacked products to prevent deformation and to allow air circulation.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS

- A. Dimension Lumber: Comply with PS 20 and requirements of specified grading agencies.
 - 1. If no species is specified, provide species graded by the agency specified; if no grading agency is specified, provide lumber graded by grading agency meeting the specified requirements.
 - 2. Grading Agency: Grading agency whose rules are approved by the Board of Review, American Lumber Standard Committee at www.alsc.org, and who provides grading service for the species and grade specified; provide lumber stamped with grade mark unless otherwise indicated.

2.02 DIMENSION LUMBER FOR CONCEALED APPLICATIONS

- A. Sizes: Nominal sizes as indicated on drawings, S4S.
- B. Moisture Content: S-dry or MC19.
- C. Stud Framing (2 by 2 through 2 by 6):
 - 1. Species: Allowed under referenced grading rules.
 - 2. Species: Douglas Fir-Larch.
 - 3. Grade: No. 2.
- D. Joist, Rafter, and Small Beam Framing (2 by 6 through 4 by 16):
 - 1. Machine stress-rated (MSR) as follows:
 - a. Fb-single; minimum extreme fiber stress in bending: 1350 psi.
 - b. E; minimum modulus of elasticity: 1,300,000 psi.
 - 2. Species: Allowed under grading rules.
 - 3. Species: Douglas Fir-Larch.
- E. Miscellaneous Framing, Blocking, Nailers, Grounds, and Furring:
 - 1. Lumber: S4S, No. 2 or Standard Grade.
 - 2. Boards: Standard or No. 3.

2.03 STRUCTURAL COMPOSITE LUMBER

- A. Structural Composite Lumber: Factory fabricated beams, headers, and columns, of sizes and types indicated on drawings; structural capacity as published by manufacturer.
 - 1. Beams: Use laminated veneer lumber, laminated strand lumber, or parallel strand lumber with manufacturer's published modulus of elasticity, E: 1,800,000 psi, minimum.
 - 2. Headers Not Longer Than 48 inches: Use laminated veneer lumber, laminated strand lumber, or parallel strand lumber.
 - 3. Products:
 - a. Boise Cascade Company: www.bc.com/#sle.

2.04 ACCESSORIES

- A. Fasteners and Anchors:
 - 1. Metal and Finish: Hot-dipped galvanized steel complying with ASTM A153/A153M for high humidity and preservative-treated wood locations, unfinished steel elsewhere.

PART 3 EXECUTION

3.01 PREPARATION

- A. Coordinate installation of rough carpentry members specified in other sections.

3.02 INSTALLATION - GENERAL

- A. Select material sizes to minimize waste.
- B. Reuse scrap to the greatest extent possible; clearly separate scrap for use on site as accessory components, including: shims, bracing, and blocking.

3.03 FRAMING INSTALLATION

- A. Set structural members level, plumb, and true to line. Discard pieces with defects that would lower required strength or result in unacceptable appearance of exposed members.
- B. Make provisions for temporary construction loads, and provide temporary bracing sufficient to maintain structure in true alignment and safe condition until completion of erection and installation of permanent bracing.
- C. Install structural members full length without splices unless otherwise specifically detailed.
- D. Comply with member sizes, spacing, and configurations indicated, and fastener size and spacing indicated, but not less than required by applicable codes, AWC (WFCM) Wood Frame Construction Manual, and _____.
- E. Construct double joist headers at floor and ceiling openings and under wall stud partitions that are parallel to floor joists; use metal joist hangers unless otherwise detailed.

- F. Frame wall openings with two or more studs at each jamb; support headers on cripple studs.

3.04 BLOCKING, NAILERS, AND SUPPORTS

- A. Provide framing and blocking members as indicated or as required to support finishes, fixtures, specialty items, and trim.
- B. In framed assemblies that have concealed spaces, provide solid wood fireblocking as required by applicable local code, to close concealed draft openings between floors and between top story and roof/attic space; other material acceptable to authorities having jurisdiction may be used in lieu of solid wood blocking.
- C. In walls, provide blocking attached to studs as backing and support for wall-mounted items, unless item can be securely fastened to two or more studs or other method of support is explicitly indicated.
- D. Provide the following specific nonstructural framing and blocking:
 - 1. Cabinets and shelf supports.
 - 2. Wall brackets.
 - 3. Handrails.
 - 4. Grab bars.
 - 5. Towel and bath accessories.
 - 6. Wall-mounted door stops.
 - 7. Chalkboards and marker boards.
 - 8. Wall paneling and trim.
 - 9. Joints of rigid wall coverings that occur between studs.

END OF SECTION 06 10 00

SECTION 06 10 53 - MISCELLANEOUS ROUGH CARPENTRY

PART 2 PRODUCTS

1.01 GENERAL REQUIREMENTS

- A. Dimension Lumber: Comply with PS 20 and requirements of specified grading agencies.
 - 1. If no species is specified, provide species graded by the agency specified; if no grading agency is specified, provide lumber graded by grading agency meeting the specified requirements.
 - 2. Grading Agency: Grading agency whose rules are approved by the Board of Review, American Lumber Standard Committee (www.alsc.org) and who provides grading service for the species and grade specified; provide lumber stamped with grade mark unless otherwise indicated.

1.02 DIMENSION LUMBER FOR CONCEALED APPLICATIONS

- A. Sizes: Nominal sizes as indicated on drawings, S4S.
- B. Moisture Content: S-dry or MC19.
- C. Miscellaneous Framing, Blocking, Nailers, Grounds, and Furring:
 - 1. Lumber: S4S, No.2 or Standard Grade.
 - 2. Boards: Standard or No.3.

1.03 CONSTRUCTION PANELS

- A. Communications and Electrical Room Mounting Boards: PS 1, A-D plywood, or medium density fiberboard; 3/4 inch thick; flame spread index of 25 or less, smoke developed index of 450 or less, when tested in accordance with ASTM E84.

1.04 FACTORY WOOD TREATMENT

- A. Treated Lumber and Plywood: Comply with requirements of AWP A U1 - Use Category System for wood treatments determined by use categories, expected service conditions, and specific applications.
- B. Fire Retardant Treatment:
 - 1. Interior Type A: AWP A U1, Use Category UCFA, Commodity Specification H, low temperature, low hygroscopic type, chemically treated and pressure impregnated; capable of providing a maximum flame spread index of 25 when tested in accordance with ASTM E84, with no evidence of significant combustion when test is extended for an additional 20 minutes.
 - a. Kiln dry wood after treatment to a maximum moisture content of 19 percent for lumber and 15 percent for plywood.
 - b. Treat rough carpentry items as indicated.

- c. Do not use treated wood in applications exposed to weather or where the wood may become wet.

PART 3 EXECUTION

2.01 INSTALLATION - GENERAL

- A. Select material sizes to minimize waste.
- B. Reuse scrap to the greatest extent possible; clearly separate scrap for use on site as accessory components, including: shims, bracing, and blocking.
- C. Where treated wood is used on interior, provide temporary ventilation during and immediately after installation sufficient to remove indoor air contaminants.

2.02 BLOCKING, NAILERS, AND SUPPORTS

- A. Provide framing and blocking members as indicated or as required to support finishes, fixtures, specialty items, and trim.
- B. In walls, provide blocking attached to studs as backing and support for wall-mounted items, unless item can be securely fastened to two or more studs or other method of support is explicitly indicated.
- C. Where ceiling-mounting is indicated, provide blocking and supplementary supports above ceiling, unless other method of support is explicitly indicated.

2.03 INSTALLATION OF CONSTRUCTION PANELS

- A. Communications and Electrical Room Mounting Boards: Secure with screws to studs with edges over firm bearing; space fasteners at maximum 24 inches on center on edges and into studs in field of board.
 - 1. At fire-rated walls, install board over wall board indicated as part of the fire-rated assembly.
 - 2. Where boards are indicated as full floor-to-ceiling height, install with long edge of board parallel to studs.
 - 3. Install adjacent boards without gaps.

END OF SECTION 06 10 53

SECTION 06 40 00 - CASEWORK HARDWARE

PART 1 - GENERAL

1.01 REFERENCE STANDARDS

- A. BHMA A156.9 - Cabinet Hardware; 2020.
- B. BHMA A156.18 - Materials and Finishes; 2020.

1.02 SUMMARY

- A. Furnish and install casework hardware as shown on contract documents, and as specified herein.
 - 1. Hardware

1.03 REFERENCES

- A. American National Standards Institute (ANSI).
- B. American Society of Testing and Materials (ASTM) D 523.
- C. Architectural Woodwork Institute (AWI). AWI Quality Standards 6th Ed. Version 1.1.
- D. Builders Hardware Manufacturers Association (BHMA) 1. A156.9 Cabinet Hardware.
 - 1. A156.9 Cabinet Hardware
 - 2. A156.18 Materials and Finishes

1.04 SUBMITTALS

- A. Submit the following in accordance with conditions of contract and Section 01330, Submittal Procedures.
- B. Submit product data for each type of product and process specified and incorporated into items of casework hardware during fabrication, finishing, and installation.
- C. Shop drawings showing location of each item, dimensioned plans and elevations, large-scale details, attachment devices, and other components.
 - 1. Show details half-size.

1.05 QUALITY ASSURANCE

- A. Source of Casework Accessories: Provide accessories obtained from one single source for each type of hardware and accessories so finishes match.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Furnish and deliver all hardware items not shop installed, complete with templates, keys, screws, and hardware manufacturer's installation directions to the building.

PART 2 - PRODUCTS

2.01 PRODUCT

- A. Basis of Design: Mockett. www.mockett.com.
 - 1. Style: As indicated on drawings.
 - 2. Finish: As indicated on drawings.
 - 3. Dimension: As indicated on drawings.
- B. Or, approved equal.

2.02 CASEWORK HARDWARE AND ACCESSORY MATERIALS

- A. General: Provide casework hardware and accessory materials associated with architectural cabinets.
- B. Casework Hardware Schedule: Refer to contract drawings for schedule of required casework hardware for architectural cabinets.
- C. Hardware Standard: BHMA A156.9
- D. Exposed Hardware Finishes: For exposed hardware, provide finish that complies with BHMA A156.18 for type of finish.
- E. For concealed hardware provide manufacturer's standard finish that complies with product class requirements of BHMA A156.9.

2.03 INSTALLATION MATERIALS

- A. Screws: Select material, type, size, and finish required for each use. Comply with ASME B18.6.1 for applicable requirements.
- B. Nails: Select material, type, size, and finish required for each use. Comply with FS FF-N-105 for applicable requirements.
- C. Anchors: Select material, type, size, and finish required for each substrate for secure anchorage. Provide nonferrous metal or hot-dip galvanized anchors and inserts on inside face of exterior walls and elsewhere as required for corrosion resistance. Provide toothed steel or lead expansion bolt devices for drilled-in-place anchors.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Adjust hardware to center doors and drawers in openings to provide unencumbered operation. Complete installation of hardware and accessory items as indicated.

3.02 ADJUSTING AND CLEANING

- A. Repair damaged and defective hardware where possible to eliminate non-functional operation of casework and visual defects; where not possible to repair, replace

hardware.

- B. Clean, lubricate, and adjust hardware.

3.03 PROTECTION

- A. Provide final protection and maintain conditions in a manner acceptable to ensures hardware is without damage or deterioration at time of substantial completion.

END OF SECTION

4.01 ADJUSTING AND CLEANING

- A. Repair damaged and defective hardware where possible to eliminate non-functional operation of casework and visual defects; where not possible to repair, replace hardware.
- B. Clean, lubricate, and adjust hardware.

4.02 PROTECTION

- A. Provide final protection and maintain conditions in a manner acceptable to ensures hardware is without damage or deterioration at time of substantial completion.

END OF SECTION 06 40 00

SECTION 06 61 00 - CAST POLYMER FABRICATIONS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Solid surfacing fabrications.
- B. Quartz surfacing fabrications.

1.02 RELATED REQUIREMENTS

- A. Section 07 92 00 - Joint Sealants.
- B. Section 09 30 00 - Tiling: Setting materials for quartz surfacing applications.

1.03 REFERENCE STANDARDS

- A. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2016a.
- B. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2022.
- C. ISFA 2-01 - Classification and Standards for Solid Surfacing Material; 2013.
- D. ISFA 3-01 - Classification and Standards for Quartz Surfacing Material; 2013.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings: For each type of cast polymer, indicate:
 - 1. Plans and Elevations: Include dimensions and unit serial numbers; indicate location of fabricated units.
 - a. Drawing Scale: 1/4 inch to 1 foot, minimum.
- C. Test Reports: Indicate compliance with reference standard performance requirements.
- D. Evaluation Service Reports: Indicate compliance with specified performance requirements.
- E. Manufacturer's Instructions: Indicate installation and handling instructions.
- F. Operation and Maintenance Data: Maintenance instructions, including recommended cleaning procedures and materials.
 - 1. Include instructions for stain removal.
- G. Executed warranty.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with minimum three years of documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. See Section 01 74 19 - Construction Waste Management and Disposal for packaging waste requirements.
- B. Deliver products to project site in original packages, containers, or bundles bearing brand name and identification.
- C. Store products under cover, elevated above grade, and in dry, well-ventilated areas not exposed to heat or sunlight. Protect from moisture damage.
- D. Handle products to prevent damage to edges, ends, or surfaces, and in accordance with manufacturer's written instructions.

1.07 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals for additional warranty requirements.
- B. Manufacturer Warranty: Provide 2-year manufacturer warranty for _____. Complete forms in Owner's name and register with manufacturer.
- C. Finish Warranty: Provide 5-year manufacturer warranty against excessive degradation of exterior finish. Include provision for replacement of units with excessive fading, chalking, or flaking. Complete forms in Owner's name and register with warrantor.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Solid Surface Fabrications:
 - 1. Corian Solid Surface, www.corian.com..
 - 2. Or, approved equal..
 - 3. Substitutions: See Section 01 60 00 - Product Requirements.
- B. Quartz Surfacing Fabrications:
 - 1. Corian Corian Solid Surface, Quartz Products. www.corian.com..
 - 2. Or, approved equal.
 - 3. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 REGULATORY REQUIREMENTS

- A. Surface Burning Requirements:
 - 1. Interior Use: Flame spread index of 75 or less and smoke-development index of 450 or less; Class B interior finish classification when tested in accordance with ASTM E84.

2.03 SOLID SURFACING FABRICATIONS

- A. Solid Surfacing: Densified, homogeneous, nonporous castings fabricated into sheets; composed of acrylic resins, fillers, color chips, and pigment and performance-enhancing additives.
 - 1. Standard Type: Comply with minimum performance and engineering properties of ISFA 2-01.
 - 2. Special Purpose Type: Comply with minimum performance properties of ISFA 2-01.
- B. Applications: Counter Surfaces.
 - 1. Style: As indicated on drawings.
 - 2. Thickness: As indicated on drawings.
 - 3. Finish on Exposed Surfaces: As indicated on drawings.
 - 4. Color:

2.04 QUARTZ SURFACING FABRICATIONS

- A. Quartz Surfacing: Surfacing materials composed of natural quartz particles, reacted monomers and resins, pigments, and performance-enhancing additives; manufactured as slabs of various thicknesses.
- B. Applications: Counter Surfaces.
 - 1. Type: Slabs.
 - a. Comply with minimum performance and engineering properties of ISFA 3-01.
 - b. Thickness: As indicated on drawings.
 - 2. Type: As indicated on drawings.
 - a. Comply with minimum performance properties of ISFA 3-01.
 - b. Thickness: As indicated on drawings.
 - 3. Finish: As indicated on drawings.
 - 4. Color: As indicated on drawings.
 - 5. Setting Materials: See Section 09 30 00.

2.05 FABRICATION

- A. Fabricate units with embedded anchors, stiffening ribs, and sufficient strength for handling and placement stresses.
- B. Fabricate cutouts where indicated.
- C. Radius corners and edges with 1/4 inch minimum radius; polish exposed edges.
- D. Provide consistent finish over exposed surfaces matching approved samples.
- E. Fill seams and mold lines; grind smooth and finish to match adjacent cast polymer surfaces.
- F. Fabricate components with joints tightly fitted and secured.
- G. Label units with permanent serial numbers.
- H. Fabrication Tolerances:
 - 1. Maximum Variation from Specified Thicknesses: 1/16 inch.
 - 2. Maximum Variation from Specified Dimensions: 1/8 inch.
 - 3. Maximum Variation from Dimensioned Cutout Locations: 1/4 inch.

2.06 ACCESSORIES

- A. General: Accessories recommended by cast polymer manufacturer for complete installation.
- B. Fasteners: Threaded fasteners as recommended by cast polymer manufacturer; type and size to suit application:
 - 1. Low Corrosion Risk: Carbon steel with zinc-plated coatings.
 - 2. Medium Corrosion Risk: Carbon steel with zinc coating in accordance with ASTM A153/A153M Class D.
 - 3. High Corrosion Risk: Carbon steel with zinc coating ASTM A153/A153M Class C.
- C. Connectors: As recommended by cast polymer manufacturer; type and size to suit application:
 - 1. Low Corrosion Risk: Carbon steel sheet; powder coated.
- D. Adhesives: Type recommended by cast polymer manufacturer for application; not containing formaldehyde or volatile organic compounds.
- E. Joint Sealants: Type recommended by cast polymer manufacturer for application.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify field measurements are as indicated on shop drawings.
- B. Verify substrates are prepared to receive cast polymer fabrications.
- C. If substrate preparation is responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.
- D. Verify mechanical, electrical, and other building components affecting work of this section are placed and ready to receive work of this section.

3.02 PREPARATION

- A. Prepare substrates in accordance with manufacturer's written instructions.

3.03 INSTALLATION

- A. Install cast polymer units in accordance with manufacturer's written instructions.
- B. Align work plumb and level.
- C. Rigidly anchor to substrate to prevent misalignment.

3.04 TOLERANCES

- A. Maximum Variation from True Position: 1/4 inch.
- B. Maximum Variation from Plumb: 1/4 inch in 10 feet.
- C. Maximum Variation from Level: 1/4 inch in 10 feet.

3.05 CLEANING

- A. See Section 01 70 00 - Execution and Closeout Requirements for additional requirements.
- B. Clean exposed surfaces of installed units in accordance with manufacturer's instructions.

3.06 PROTECTION

- A. Protect installed cast polymer units from subsequent construction operations.

END OF SECTION 06 61 00

SECTION 06 83 16 - FIBERGLASS REINFORCED PANELING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Fiberglass reinforced plastic panels.
- B. Trim.

1.02 RELATED REQUIREMENTS

- A. Section 09 30 00 - Tiling
- B. Section 09 51 00 - Acoustical Ceilings
- C. Section 09 90 00 - PAINTING AND COATING

1.03 REFERENCE 09 90 00 STANDARDS

- A. ASTM D5319 - Standard Specification for Glass-Fiber Reinforced Polyester Wall and Ceiling Panels; 2022.
- B. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2022.
- C. FDA Food Code - Chapter 6 - Physical Facilities; Current Edition.
- D. FM 4880 - Evaluating the Fire Performance of Insulated Building Panel Assemblies and Interior Finish Materials; 2017.
- E. ISO 2812-1 - Paints and Varnishes -- Determination of Resistance to Liquids -- Part 1: Immersion in Liquids Other than Water; 2017.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on specified products, describing physical and performance characteristics; including sizes, patterns and colors available; and installation instructions.
- C. Samples: Submit two samples 4 inch by 4 inch in size illustrating material and surface design of panels.
- D. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 - 1. See Section 01 60 00 - Product Requirements, for additional provisions.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Store panels flat, indoors, on a clean, dry surface. Remove packaging and allow panels to acclimate to room temperature for 48 hours prior to installation.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Fiberglass Reinforced Plastic Panels:
 - 1. Marlite, Inc: www.marlite.com/#sle.
 - 2. Or Approved Equal

2.02 PANEL SYSTEMS

- A. Wall Panels FRP-1:
 - 1. Panel Size: 4 by 8 feet.
 - 2. Panel Thickness: 3/32 inch.
 - 3. Surface Design: Embossed pattern as indicated on the drawings.
 - 4. Color: As indicated on the drawings..
 - 5. Attachment Method: As indicated on the drawings.
 - 6. Classification: Class A
- B. Wall Panels at FRP-2:
 - 1. Panel Size: 4 by 8 feet.
 - 2. Panel Thickness: 3/32 inch.
 - 3. Surface Design: As indicated on the drawings.
 - 4. Color: As indicated on the drawings..
 - 5. Attachment Method: As indicated on the drawings.
 - 6. Classification: Class C

2.03 MATERIALS

- A. Panels: Fiberglass reinforced plastic (FRP), complying with ASTM D5319.
 - 1. Surface Burning Characteristics: Maximum flame spread index of 25 and smoke developed index of 450; when system tested in accordance with ASTM E84.
 - 2. Class 1 fire rated when tested in accordance with FM 4880.
 - 3. Surface Characteristics and Cleanability: Provide products that are smooth, durable, and easily cleanable, in compliance with FDA Food Code, Chapter 6 - Physical Facilities.
 - 4. Chemical Cleanability: Excellent chemical resistance to common cleaners and detergents when tested in accordance with ISO 2812-1.
- B. Trim: Vinyl; color coordinating with panel. Where indicated.
- C. Adhesive: Type recommended by panel manufacturer.
- D. Sealant: Type recommended by panel manufacturer; clear.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify existing conditions and substrate flatness before starting work.
- B. Verify that substrate conditions are ready to receive the work of this section.

3.02 INSTALLATION - WALLS

- A. Install panels in accordance with manufacturer's instructions.
- B. Cut and drill panels with carbide tipped saw blades, drill bits, or snips.
- C. Apply adhesive to the back side of the panel using trowel as recommended by adhesive manufacturer.
- D. Apply panels to wall with seams plumb and pattern aligned with adjoining panels.
- E. Install panels with manufacturer's recommended gap for panel field and corner joints.
- F. Place trim on panel before fastening edges, as required.
- G. Fill channels in trim with sealant before attaching to panel.
- H. Install trim with adhesive and screws or nails, as required.
- I. Seal gaps at floor, ceiling, and between panels with applicable sealant to prevent moisture intrusion.
- J. Remove excess sealant after paneling is installed and prior to curing.

END OF SECTION 06 83 16

SECTION 07 14 00 - FLUID-APPLIED WATERPROOFING

PART 1 GENERAL

PART 2 PRODUCTS

2.01 FLUID-APPLIED WATERPROOFING APPLICATIONS

- A. Cold-Applied Elastomeric Polymer Dispersion Waterproofing:

2.02 FLUID-APPLIED WATERPROOFING MATERIALS

- A. Cold-Applied Elastomeric Polymer Dispersion Waterproofing:
 - 1. Cured Thickness: 30 mil, 0.030 inch, minimum.
 - 2. Suitable for installation over unit masonry and exterior sheathing substrates at waterproofing of window, door, and CMU openings above and below grade.

END OF SECTION 07 14 00

SECTION 07 21 00 - THERMAL INSULATION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Mineral wool insulation for interior application at cavity wall construction.
- B. Fiberglass batt insulation for in interior application at cavity wall construction.

1.02 REFERENCE STANDARDS

- A. ASTM C557 - Standard Specification for Adhesives for Fastening Gypsum Wallboard to Wood Framing; 2003 (Reapproved 2017).
- B. ASTM C612 - Standard Specification for Mineral Fiber Block and Board Thermal Insulation; 2014 (Reapproved 2019).
- C. ASTM C726 - Standard Specification for Mineral Wool Roof Insulation Board; 2017.
- D. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2022.

1.03 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data on product characteristics, performance criteria, and product limitations.
- C. ABAA Field Quality Control Submittals: Submit third-party reports of testing and inspection required by ABAA QAP.
- D. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- E. Manufacturer's Installation Instructions: Include information on special environmental conditions required for installation and installation techniques.
- F. ABAA Manufacturer Qualification: Submit documentation of current evaluation of proposed manufacturer and materials.
- G. ABAA Installer Qualification: Submit documentation of current contractor accreditation and current installer certification. Keep copies of contractor accreditation and installer certification on project site during and after installation. Present on-site documentation upon request.

1.04 QUALITY ASSURANCE

- A. Air Barrier Association of America (ABAA) Quality Assurance Program (QAP); www.airbarrier.org/#sle:
 - 1. Installer Qualification: Use accredited contractors, certified installers, evaluated materials, and third-party field quality control audit.

2. Manufacturer Qualification: Use evaluated materials from a single manufacturer regularly engaged in air barrier material manufacture. Use secondary materials approved in writing by primary material manufacturer.
- B. Air Barrier Association of America (ABAA) Evaluated Materials Program (EAP); www.airbarrier.org/#sle: Use evaluated materials from a single manufacturer regularly engaged in air barrier material manufacture. Use secondary materials approved in writing by primary material manufacturer.

1.05 FIELD CONDITIONS

- A. Do not install insulation adhesives when temperature or weather conditions are detrimental to successful installation.

PART 2 PRODUCTS

2.01 APPLICATIONS

- A. Insulation inside Metal Framed Walls: Mineral Wool, unfaced.
- B. Insulation inside Metal Framed Walls: Fiberglass Batt insulation, unfaced.

2.02 INSULATION MATERIALS

- A. Mineral Wool Insulation: Comply with ASTM C612.
 1. Facing: None, unfaced.
 2. Flame Spread Index: Zero, when tested with or without facing, in accordance with ASTM E84.
 3. Smoke Developed Index: Zero, when tested with or without facing, in accordance with ASTM E84.
 4. Where indicated, provide mineral wool insulation.
 5. Thickness: 3-5/8" inch or as per metal stud wall cavity.
 6. Products:
 - a. Owens Corning; Thermafiber Safing Mineral Wool Insulation. www.owenscorning.com.
- B. Fiberglass Insulation: Complying with ASTM C665, Type I or ASTM E136.
 1. Facing: None, unfaced.
 2. Flame Spread Index: 25 or less, when tested with facing, if any, in accordance with ASTM E84.
 3. Smoke Developed Index: 50 or less, when tested with facing, if any, in accordance with ASTM E84.
 4. Where indicated, provide mineral wool insulation.
 5. Thickness: 3-5/8" inch or as per metal stud wall cavity.
 6. Products:
 - a. Johns Manville; Formaldehyde-Free Fiberglass Insulation. www.jm.com.
 - b. Owens Corning; Pink Next Gen Fiberglass Sound Attenuation Batts Metal Framing. www.owenscorning.com. www.owenscorning.com.

2.03 ACCESSORIES

- A. Adhesive: Type recommended by insulation manufacturer for application.
- B. Staples: Stapling tabs provided for attachment to framing is additional securement is required.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that substrate, adjacent materials, and insulation materials are dry and that substrates are ready to receive insulation.
- B. Verify substrate surfaces are flat, free of honeycomb, fins, irregularities, or materials or substances that may impede adhesive bond.

3.02 BATT INSTALLATION

- A. Install insulation in accordance with manufacturer's instructions.
- B. Install in interior wall spaces without gaps or voids. Do not compress insulation.
- C. Trim insulation neatly to fit spaces. Insulate miscellaneous gaps and voids.
- D. Fit insulation tightly in cavities and tightly to exterior side of mechanical and electrical services within the plane of the insulation.

3.03 PROTECTION

- A. Do not permit installed insulation to be damaged prior to its concealment.

END OF SECTION 07 21 00

SECTION 07 24 00 - EXTERIOR INSULATION AND FINISH SYSTEMS

PART 2 PRODUCTS

1.01 EXTERIOR INSULATION AND FINISH SYSTEM

- A. Exterior Insulation and Finish System: BARRIER type; reinforced finish coating on insulation board adhesive-applied direct to substrate; provide a complete system that has been tested to show compliance with the following characteristics; include all components of specified system and substrate in tested samples.
- B. Fire Characteristics:
 - 1. Flammability: Pass, when tested in accordance with NFPA 285.
 - 2. Ignitibility: No sustained flaming when tested in accordance with NFPA 268.
 - 3. Potential Heat of Foam Plastic Insulation Tested Independently of Assembly: No portion of the assembly having potential heat that exceeds that of the insulation sample tested for flammability (above), when tested in accordance with NFPA 259 with results expressed in Btu per square foot.
- C. Water Penetration Resistance: No water penetration beyond the plane of the base coat/insulation board interface after 15 minutes, when tested in accordance with ASTM E331 at 6.24 psf differential pressure with tracer dye in the water spray; include in tested sample at least two vertical joints and one horizontal joint of same type to be used in construction; disassemble sample if necessary to determine extent of water penetration.
- D. Salt Spray Resistance: No cracking, checking, crazing, erosion, blistering, peeling, delamination, or corrosion of finish coating after 300 hours exposure in accordance with ASTM B117, using at least three samples matching intended assembly, at least 4 by 6 inches in size.
- E. Freeze-Thaw Resistance: No cracking, checking, crazing, erosion, blistering, peeling, delamination, or corrosion of finish coating when viewed under 5x magnification after 10 cycles, when tested in accordance with ICC-ES AC219 or ICC-ES AC235.
- F. Weathering Resistance: No cracking, checking, crazing, erosion, blistering, peeling, delamination, or corrosion of finish coating when viewed under 5x magnification after 2000 hours of accelerated weathering conducted in accordance with ASTM G153 Cycle 1 or ASTM G155 Cycles 1, 5, or 9.
- G. Water Degradation Resistance: No cracking, checking, crazing, erosion, blistering, peeling, delamination, or corrosion of finish coating after 14 days exposure, when tested in accordance with ASTM D2247.
- H. Mildew Resistance: No growth supported on finish coating during 28 day exposure period, when tested in accordance with ASTM D3273.
- I. Abrasion Resistance Of Finish: No cracking, checking or loss of film integrity when tested in accordance with ASTM D968 with 113.5 gallons of sand.

1.02 MATERIALS

- A. Base Coat: Fiber-reinforced, acrylic or polymer-based product compatible with insulation board and reinforcing mesh, Class PB.
- B. Combination Drainage Layer/Water-Resistive Barrier: Air- and water-resistive sheet complying with ASTM E1677 Type I, dimpled or otherwise profiled to maintain air and drainage space between insulation board and sheathing; minimum water vapor permeance of 20 perms; furnished or approved by EIFS manufacturer.

1.03 ACCESSORIES

- A. Insulation Adhesive: Type required by EIFS manufacturer for project substrate.
- B. Trim: EIFS manufacturer's standard PVC or galvanized steel trim accessories, as required for a complete project and including starter track and drainage accessories.
- C. Sealant Materials: Compatible with EIFS materials and as recommended by EIFS manufacturer.

PART 3 EXECUTION

2.01 INSTALLATION - GENERAL

- A. Install in accordance with EIFS manufacturer's instructions and ASTM C1397.
 - 1. Where different requirements appear in either document, comply with the most stringent.
 - 2. Neither of these documents supercedes provisions of Contract Documents that defines contractual relationships between parties or scope of this work.

2.02 INSTALLATION - INSULATION

- A. Install in accordance with manufacturer's instructions.
- B. Install back wrap reinforcing mesh at all openings and terminations that are not to be protected with trim.
- C. On wall surfaces, install boards horizontally. On horizontal surfaces, install boards _____.
- D. Place boards in a method to maximize tight joints. Stagger vertical joints and interlock at corners. Butt edges and ends tight to adjacent board and to protrusions. Achieve a continuous flush insulation surface, with no gaps in excess of 1/16 inch.
- E. Fill gaps greater than 1/16 inch with strips or shims cut from the same insulation material.
- F. Rasp irregularities off surface of installed insulation board.
- G. Adhesive Attachment: Use method recommended by EIFS manufacturer.

END OF SECTION 07 24 00

SECTION 07 25 00 - WEATHER BARRIERS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Water-resistive barriers.

1.02 RELATED REQUIREMENTS

- A. Section 07 62 00 - Sheet Metal Flashing and Trim: Metal flashings installed in conjunction with weather barriers.

1.03 REFERENCE STANDARDS

- A. ASTM D1970/D1970M - Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection; 2021.
- B. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2022.
- C. ASTM E96/E96M - Standard Test Methods for Gravimetric Determination of Water Vapor Transmission Rate of Materials; 2022.
- D. ASTM E2178 - Standard Test Method for Determining Air Leakage Rate and Calculation of Air Permeance of Building Materials; 2021a.
- E. ICC (IBC) - International Building Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- F. NFPA 285 - Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Wall Assemblies Containing Combustible Components; 2019.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data on material characteristics.
- C. Manufacturer's Installation Instructions: Indicate preparation, installation methods, and storage and handling criteria.

1.05 FIELD CONDITIONS

- A. Maintain temperature and humidity recommended by materials manufacturers before, during, and after installation.

PART 2 PRODUCTS

2.01 WATER-RESISTIVE BARRIERS

- A. Description: Materials installed behind exterior wall coverings; designed to prevent liquid water from further penetration into exterior wall assembly. Primary materials include mechanically applied sheets; accessory materials include flashings and seam tapes.
- B. Regulatory Requirements: For use in ICC (IBC) construction Types I, II, III, and IV buildings greater than 40 feet in height.
 - 1. Comply with NFPA 285 wall assembly requirements in accordance with local building code and authorities having jurisdiction (AHJ).
- C. Water-Resistive and Air Barrier, Multilayers: Outer layers of nonwoven, spunbonded polypropylene with vapor permeable, watertight polymeric middle layer.
 - 1. Air Permeance: 0.0011 cfm/sq ft, maximum, when tested in accordance with ASTM E2178.
 - 2. Water Vapor Permeance: 28 perms, minimum, when tested in accordance with ASTM E96/E96M using Procedure A - Desiccant Method, at 73.4 degrees F.
 - 3. Ultraviolet (UV) and Weathering Resistance: Approved by manufacturer for up to 3 months of weather exposure.
 - 4. Surface Burning Characteristics: Flame spread index of 25 or less, smoke developed index of 450 or less, Class A when tested in accordance with ASTM E84.
 - 5. Seam and Perimeter Tape: As recommended by sheet manufacturer.
 - 6. Products:
 - a. SIGA Cover Inc; SIGA-Majvest 200: www.siga.swiss/global_en/#sle.
 - b. Dupont - Tyvek Commercial.
 - c. Henry Company - "Blueskin".
- D. Drainable, Water-Resistive Commercial Barrier Membrane: Nonwoven, polypropylene membrane with fiber-layer drainage plane.

2.02 ACCESSORIES

- A. Flashings and Sealants: As recommended by water-resistive barrier manufacturer for application.
- B. Metal Flashings: See Section 07 62 00.
- C. Sealant for Cracks and Joints In Substrates: Resilient elastomeric joint sealant compatible with substrates and weather barrier materials.
 - 1. Application: Apply at 30 to 40 mil, 0.030 to 0.040 inch nominal thickness.
 - 2. Color: Green.
- D. Flexible Flashing: Self-adhering sheet flashing complying with ASTM D1970/D1970M; waive slip resistance requirement if not installed on roof.
 - 1. Width: 9 inches.
 - 2. Ultraviolet (UV) and Weathering Resistance: Approved by manufacturer for up to 30 days of weather exposure.
 - 3. Products:
 - a. DuPont de Nemours, Inc; FlexWrap: www.dupont.com/building/#sle.
 - b. Henry Company; FortiFlex Butyl: www.henry.com/#sle.

- c. SIGA Cover Inc; SIGA-Wigluv: www.siga.swiss/global_en/#sle.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that surfaces and conditions comply with requirements of this section.

3.02 PREPARATION

- A. Remove projections, protruding fasteners, and loose or foreign matter that might interfere with proper installation.
- B. Clean and prime substrate surfaces to receive adhesives and sealants in accordance with manufacturer's installation instructions.

3.03 INSTALLATION

- A. Install materials in accordance with manufacturer's installation instructions.
- B. Install continuous water-resistive barriers where indicated on drawings, with sheets lapped to shed water.
- C. Apply sealants within recommended temperature range in accordance with manufacturer's installation instructions.
- D. Mechanically Fastened Sheets:
1. Install sheets in shingle fashion to shed water; align horizontally.
 2. Overlap seams as recommended by manufacturer, 6 inches, minimum.
 3. Overlap at outside and inside corners as recommended by manufacturer, 12 inches, minimum.
 4. Install water-resistive barrier over jamb flashings.
 5. Install head flashings under water-resistive barrier.
 6. At framed openings with frames having nailing flanges, extend sheet into opening and over flanges; at head of opening, seal sheet over flange and flashing.
- E. Self-Adhered Sheets:
1. Prepare substrate in accordance with sheet manufacturer's installation instructions; fill and tape joints in substrate and between dissimilar materials.
 2. Lap sheets shingle-fashion to shed water and seal laps airtight.
 3. Upon placement of sheets, firmly press onto substrate with resilient hand roller; ensure that laps are firmly adhered with no gaps or fishmouths.
 4. Use same material, or other material approved by sheet manufacturer, to seal sheets to adjacent substrates, and as flashing.
 5. At expansion joints, provide transition to joint assemblies approved by sheet manufacturer.
- F. Openings and Penetrations in Exterior Water-Resistive Barriers:
1. Install flashing over sills, covering entire sill framing member, and extend at least 5 inches onto water-resistive barrier and at least 6 inches up jambs; mechanically fasten stretched edges.

2. At openings filled with frames having nailing flanges, seal head and jamb flanges using a continuous bead of sealant compressed by flange and cover flanges with sealing tape at least 4 inches wide; do not seal sill flange.
3. At openings filled with nonflanged frames, seal water-resistive barrier to each side of framing at opening using flashing at least 9 inches wide, and covering entire depth of framing.
4. At head of openings, install flashing under water-resistive barrier extending at least 2 inches beyond face of jambs; seal water-resistive barrier to flashing.
5. At interior face of openings, seal gaps between window and door frames and rough framing using appropriate joint sealant over backer rod.
6. Service and Other Penetrations: Form flashing around penetrating items and seal to surface of water-resistive barrier.

3.04 FIELD QUALITY CONTROL

- A. See Section 01 40 00 - Quality Requirements for additional requirements.
- B. Owner's Inspection and Testing: Cooperate with Owner's testing agency.
 1. Allow access to work areas and staging.
 2. Notify Owner's testing agency in writing of schedule for work of this section to allow sufficient time for testing and inspection.
 3. Do not cover work of this section until testing and inspection is accepted.

3.05 PROTECTION

- A. Do not leave materials exposed to weather longer than recommended by manufacturer.

END OF SECTION 07 25 00

SECTION 07 26 00 - VAPOR RETARDERS

PART 1 GENERAL

1.01 REFERENCE STANDARDS

- A. 40 CFR 59, Subpart D - National Volatile Organic Compound Emission Standards for Architectural Coatings; U.S. Environmental Protection Agency; current edition.
- B. ASTM D4397 - Standard Specification for Polyethylene Sheeting for Construction, Industrial, and Agricultural Applications; 2016.
- C. ASTM E96/E96M - Standard Test Methods for Gravimetric Determination of Water Vapor Transmission Rate of Materials; 2022.

PART 2 PRODUCTS

2.01 VAPOR RETARDERS

- A. Vapor Retarder Sheet: Polyethylene sheeting complying with ASTM D4397, clear colored.
- B. Vapor Retarder Coating: Liquid applied, resilient, ultra-violet (UV) light resistant coating; associated joint treatment.
 - 1. Water Vapor Permeance: 1.0 perm, maximum, when tested in accordance with ASTM E96/E96M.
 - 2. VOC Content: Less than 6.68 oz/gal, when tested in accordance with 40 CFR 59, Subpart D - EPA Method 24.
 - 3. Suitable for use on concrete, masonry, plywood, and gypsum sheathing.
 - 4. Joint Preparation Treatment: Provide coating manufacturer's recommended method, either tape or reinforcing mesh saturated with coating material.
 - 5. Joint Filler: As recommended by coating manufacturer and suitable to the substrate.

2.02 ACCESSORIES

- A. Sealants, Tapes, and Accessories for Sealing Vapor Retarder and Adjacent Substrates: As indicated, complying with vapor retarder manufacturer's installation instructions.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install materials in accordance with manufacturer's installation instructions.

- B. Vapor Retarders: Install continuous airtight barrier over surfaces indicated, with sealed seams and sealed joints to adjacent surfaces.
- C. Apply sealants and adhesives within recommended temperature range in accordance with manufacturer's installation instructions.
- D. Vapor Retarder Coatings:
 - 1. Prepare substrate in accordance with coating manufacturer's installation instructions; treat joints in substrate and between dissimilar materials as indicated.
 - 2. Apply flashing to seal with adjacent construction and to bridge joints in coating substrate.

END OF SECTION 07 26 00

SECTION 07 81 00 - APPLIED FIRE PROTECTION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Applied fire protection of interior structural steel not exposed to damage or moisture.
- B. Applied fire protection of structural steel exposed to damage or moisture.
- C. Preparation of applied fire protection for application of exposed overcoat finish specified elsewhere.

1.02 REFERENCE STANDARDS

- A. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2022.
- B. ASTM E736/E736M - Standard Test Method for Cohesion/Adhesion of Sprayed Fire-Resistive Materials Applied to Structural Members; 2019 (Reapproved 2023).
- C. ASTM E760/E760M - Standard Test Method for Effect of Impact on Bonding of Sprayed Fire-Resistive Material Applied to Structural Members; 1992 (Reapproved 2023).
- D. ASTM E937/E937M - Standard Test Method for Corrosion of Steel by Sprayed Fire-Resistive Material (SFRM) Applied to Structural Members; 1993 (Reapproved 2023).
- E. UL (FRD) - Fire Resistance Directory; Current Edition.

1.03 ADMINISTRATIVE REQUIREMENTS

- A. Preinstallation Meeting: Convene one week before starting work of this section.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittals procedures.
- B. Product Data: Provide data indicating product characteristics.
- C. Manufacturer's Certificate: Certify that applied fireproofing products meet or exceed requirements of Contract Documents.
- D. Test Reports: Reports from reputable independent testing agencies for proposed products, indicating compliance with specified criteria, conducted under conditions similar to those on project, as follows:
 - 1. Bond strength.
 - 2. Bond impact.
 - 3. Compressive strength.
 - 4. Fire tests using substrate materials similar those on project.
- E. Manufacturer's Installation Instructions: Indicate special procedures.
- F. Field Quality Control Submittals: Submit field test report.

- G. Manufacturer Reports: Indicate environmental conditions that applied fireproofing materials were installed.
- H. Manufacturer's Qualification Statement.
- I. Installer's Qualification Statement.

1.05 FIELD CONDITIONS

- A. Do not apply fireproofing when temperature of substrate material and surrounding air is below 40 degrees F or when temperature is predicted to be below said temperature for 24 hours after application.
- B. Provide ventilation in areas to receive fireproofing during application and 24 hours afterward, to dry applied material.
- C. Provide temporary enclosure to prevent spray from contaminating air.
- D. Do not allow roof traffic during installation of roof fireproofing and drying period.

1.06 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.
- B. Correct defective Work within a two year period after Date of Substantial Completion.
 - 1. Include coverage for fireproofing to remain free from cracking, checking, dusting, flaking, spalling, separation, and blistering.
 - 2. Reinstall or repair failures that occur within warranty period.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Applied Fire Protection:
 - 1. GCP Applied Technologies: www.gcpat.com/#sle.
 - 2. Isolatek International Corp: www.isolatek.com/#sle.
 - 3. Southwest Fireproofing Products Company: www.sfrm.com/#sle.

2.02 APPLIED FIRE PROTECTION ASSEMBLIES

- A. Provide assemblies as indicated on drawings.
- B. UL listings with a Load Restriction are not allowed.
- C. Provide fire resistance ratings for following building elements as required by local building code:

2.03 MATERIALS

- A. Applied Fire Protection Material for Interior Applications, Concealed: Manufacturer's standard factory mixed material, which when combined with water is capable of providing indicated fire resistance, and complying with following requirements:
 - 1. Composition: Gypsum-based; not mineral-fiber-based.

2. Bond Strength: 150 pounds per square foot, minimum, when tested in accordance with ASTM E736/E736M when set and dry.
3. Dry Density: As required by fire resistance design.
4. Compressive Strength: 8.33 pounds per square inch, minimum.
5. Effect of Impact on Bonding: No cracking, spalling or delamination, when tested in accordance with ASTM E760/E760M.
6. Corrosivity: No evidence of corrosion, when tested in accordance with ASTM E937/E937M.
7. Surface Burning Characteristics: Maximum flame spread index of 0 (zero) and maximum smoke developed index of 0 (zero), when tested in accordance with ASTM E84.
8. Manufacturers:
 - a. GCP Applied Technologies; Monokote MK-6: www.gcpat.com/#sle.
 - b. GCP Applied Technologies; Monokote MK-10 HB: www.gcpat.com/#sle.
 - c. GCP Applied Technologies; Monokote MK-1000/HB: www.gcpat.com/#sle.
 - d. GCP Applied Technologies; Monokote Z-106 G: www.gcpat.com/#sle.

2.04 ACCESSORIES

- A. Primer Adhesive: Of type recommended by applied fire protection manufacturer.
- B. Overcoat: As recommended by manufacturer of applied fire protection material.
- C. Metal Lath: Expanded metal lath; minimum weight of 1.7 psf, galvanized finish.
- D. Water: Clean, potable.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that surfaces are ready to receive fireproofing.
- B. Verify that clips, hangers, supports, sleeves, and other items required to penetrate fireproofing are in place.
- C. Verify that ducts, piping, equipment, or other items that would interfere with application of fireproofing have not been installed.
- D. Verify that voids and cracks in substrate have been filled.
- E. Verify that projections have been removed where fireproofing will be exposed to view as a finish material.

3.02 PREPARATION

- A. Perform tests as recommended by fireproofing manufacturer in applications where adhesion of fireproofing to substrate is in question.
- B. Remove incompatible materials that could effect bond by scraping, brushing, scrubbing, or sandblasting.
- C. Prepare substrates to receive fireproofing in strict accordance with instructions of fireproofing manufacturer.

- D. Apply fireproofing manufacturer's recommended bonding agent on primed steel.
- E. Protect surfaces not scheduled for fireproofing and equipment from damage by overspray, fall-out, and dusting.
- F. Close off and seal duct work in areas where fireproofing is being applied.

3.03 APPLICATION

- A. Install metal lath over structural members as indicated or as required by UL Assembly Design Numbers.
- B. Apply primer adhesive in accordance with manufacturer's instructions.
- C. Apply fireproofing in uniform thickness and density as necessary to achieve required ratings.
- D. In exposed locations, trowel surface smooth and form square edges, using tools and procedures recommended by fireproofing manufacturer.
- E. Apply overcoat to a thickness of ____ inches.

3.04 FIELD QUALITY CONTROL

- A. Perform field inspection and testing in accordance with Section 01 40 00 - Quality Requirements.
- B. Inspect installed fireproofing after application and curing for integrity, prior to its concealment.
 - 1. Submit field test reports promptly to Contractor and Architect.
- C. Ensure that actual thicknesses, densities, and bond strengths meet requirements for specified ratings and requirements of authorities having jurisdiction (AHJ).
- D. Repair or replace applied fireproofing at locations where test results indicate fireproofing does not meet specified requirements.
- E. Re-inspect installed fireproofing for integrity of fire protection, after installation of subsequent Work.

3.05 CLEANING

- A. Remove excess material, overspray, droppings, and debris.
- B. Remove fireproofing from materials and surfaces not required to be fireproofed.
- C. At exposed fireproofing, clean surfaces that have become soiled or stained, using manufacturer's recommended procedures.

END OF SECTION 07 81 00

SECTION 07 84 00 - FIRESTOPPING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Firestopping systems.
- B. Firestopping of joints and penetrations in fire-resistance-rated and smoke-resistant assemblies, whether indicated on drawings or not, and other openings indicated.

1.02 PERFORMANCE REQUIREMENTS

- A. General: For penetrations through the following types of fire-resistance-rated constructions, including both empty openings and openings containing penetrating items, provide through-penetration firestop systems that are produced and installed to resist spread of fire according to requirements indicated, resist passage of smoke and other gases, and maintain original fire-resistance rating of construction penetrated.
 - 1. Fire-resistance-rated walls including fire walls, fire partitions, fire barriers, and smoke barriers.
 - 2. Fire-resistance-rated horizontal assemblies including floors, floor/ceiling assemblies, and ceiling membranes of roof/ceiling assemblies.
- B. Rated Systems: Provide through-penetration firestop systems with the following ratings determined per ASTM E814 or UL 1478:
 - 1. T-Rated Systems: For the following conditions, provide through-penetration firestop systems with T-ratings indicated, as well as F-ratings, where systems protect penetrating items exposed to potential contact with adjacent materials in occupiable floor areas:
 - a. Penetrations located outside wall cavities.
 - b. Penetrations located outside fire-resistance-rated shaft enclosures.
- C. For through-penetration firestop systems exposed to view, traffic, moisture, and physical damage, provide products that, after curing, do not deteriorate when exposed to these conditions both during and after construction.
 - 1. For piping penetrations for plumbing and wet-pipe sprinkler systems, provide moisture-resistant through-penetration firestop systems.
 - 2. For floor penetrations with annular spaces exceeding 4 inches in width and exposed to possible loading and traffic, provide firestop systems capable of supporting floor loads involved, either by installing floor plates or by other means.
 - 3. For penetrations involving insulated piping, provide through-penetration firestop systems not requiring removal of insulation.
 - 4. For through-penetration firestop systems exposed to view, provide products with flame-spread and smoke-developed indexes of less than 25 and 450, respectively, as determined per ASTM E84.

1.03 RELATED REQUIREMENTS

- A. Section 01 70 00 - Execution and Closeout Requirements: Cutting and patching.
- B. Section 09 21 16 - Gypsum Board Assemblies: Gypsum wallboard fireproofing.

1.04 REFERENCE STANDARDS

- A. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements; 2009 (Reapproved 2016).
- B. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2022.
- C. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials; 2020.
- D. ASTM E814 - Standard Test Method for Fire Tests of Penetration Firestop Systems; 2013a (Reapproved 2017).
- E. ASTM E1966 - Standard Test Method for Fire-Resistive Joint Systems; 2015 (Reapproved 2019).
- F. ASTM E2174 - Standard Practice for On-Site Inspection of Installed Firestop Systems; 2020a.
- G. ASTM E2393 - Standard Practice for On-Site Inspection of Installed Fire Resistive Joint Systems and Perimeter Fire Barriers; 2020a.
- H. ASTM E2307 - Standard Test Method for Determining Fire Resistance of Perimeter Fire Barriers Using Intermediate-Scale, Multi-story Test Apparatus; 2023a.
- I. ASTM E2837 - Standard Test Method for Determining the Fire Resistance of Continuity Head-of-Wall Joint Systems Installed Between Rated Wall Assemblies and Nonrated Horizontal Assemblies; 2023.
- J. ASTM G21 - Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi; 2015, with Editorial Revision (2021).
- K. ITS (DIR) - Directory of Listed Products; Current Edition.
- L. FM 4991 - Approval Standard of Firestop Contractors; 2013.
- M. FM (AG) - FM Approval Guide; Current Edition.
- N. SCAQMD 1168 - Adhesive and Sealant Applications; 1989, with Amendment (2022).
- O. UL 1479 - Standard for Fire Tests of Penetration Firestops; Current Edition, Including All Revisions.
- P. UL 2079 - Standard for Tests for Fire Resistance of Building Joint Systems; Current Edition, Including All Revisions.
- Q. UL (DIR) - Online Certifications Directory; Current Edition.
- R. UL (FRD) - Fire Resistance Directory; Current Edition.
- S. UL 1478 - Fire Pump Relief Valves; Current Edition, Including All Revisions.

1.05 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Schedule of Firestopping: List each type of penetration, fire rating of the penetrated assembly, and firestopping test or design number.

- C. Product Data: Provide data on product characteristics, performance ratings, and limitations.
- D. Sustainable Design Submittal: Submit VOC content documentation for nonpreformed materials.
- E. Manufacturer's Installation Instructions: Indicate preparation and installation instructions.
- F. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- G. Certificate from authority having jurisdiction indicating approval of materials used.
- H. Manufacturer's qualification statement.
- I. Installer's qualification statement.

1.06 QUALITY ASSURANCE

- A. Fire Testing: Provide firestopping assemblies of designs that provide the scheduled fire ratings when tested in accordance with methods indicated.
 - 1. Listing in UL (FRD), FM (AG), or ITS (DIR) will be considered as constituting an acceptable test report.
- B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.
- C. Installer Qualifications: Company specializing in performing the work of this section and:
 - 1. Trained by manufacturer.
 - 2. Approved by Factory Mutual Research Corporation under FM 4991, or meeting any two of the following requirements:
 - 3. Verification of minimum three years documented experience installing work of this type.
 - 4. Verification of at least five satisfactorily completed projects of comparable size and type.
 - 5. Licensed by local authorities having jurisdiction (AHJ).

1.07 FIELD CONDITIONS

- A. Comply with firestopping manufacturer's recommendations for temperature and conditions during and after installation; maintain minimum temperature before, during, and for three days after installation of materials.
- B. Provide ventilation in areas where solvent-cured materials are being installed.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Firestopping Manufacturers:
 - 1. 3M Fire Protection Products: www.3m.com/firestop/#sle.
 - 2. A/D Fire Protection Systems Inc: www.adfire.com/#sle.

3. Grabber Construction Products, Inc; GrabberGard EFC: www.grabberman.com/#sle.
4. Hilti, Inc: www.hilti.com/#sle.
5. MarinoWARE: www.marinoware.com/#sle.
6. Nelson FireStop Products: www.nelsonfirestop.com/#sle.
7. Passive Fire Protection Partners; Firestop 3600EX: www.firestop.com/#sle.
8. RectorSeal, a CSW Industrials Company; Metacaulk 150+ General Purpose Firestop Sealant: www.rectorseal.com/firestop-solutions/#sle.
9. Specified Technologies Inc: www.stifirestop.com/#sle.
10. Or Approved Equal.

2.02 MATERIALS

- A. Firestopping Materials: Any materials meeting requirements.
- B. Volatile Organic Compound (VOC) Content: Provide products having VOC content lower than that required by SCAQMD 1168.
- C. Mold and Mildew Resistance: Provide firestopping materials with mold and mildew resistance rating of zero(0) in accordance with ASTM G21.
- D. Primers, Sleeves, Forms, Insulation, Packing, Stuffing, and Accessories: Provide type of materials as required for tested firestopping assembly.
- E. Fire Ratings: Refer to drawings for required systems and ratings.

2.03 FIRESTOPPING ASSEMBLY REQUIREMENTS

- A. Perimeter Fire Containment Firestopping: Use system that has been tested according to ASTM E2307 to have fire resistance F Rating equal to required fire rating of floor assembly.
 1. Movement: Provide systems that have been tested to show movement capability as indicated.
 2. Temperature Rise: Provide systems that have been tested to show T Rating as indicated.
 3. Air Leakage: Provide systems that have been tested to show L Rating as indicated.
 4. Where floor assembly is not required to have a fire rating, provide systems that have been tested to show L Rating as indicated.
- B. Head-of-Wall (HW) Joint System Firestopping at Joints Between Fire-Rated Wall Assemblies and Non-Rated Horizontal Assemblies: Use system that has been tested according to ASTM E2837 to have fire resistance F Rating equal to required fire rating of wall assembly.
 1. Movement: Provide systems that have been tested to show movement capability as indicated.
- C. Through Penetration Firestopping: Use system that has been tested according to ASTM E814 to have fire resistance F Rating equal to required fire rating of penetrated assembly.
 1. Temperature Rise: Provide systems that have been tested to show T Rating as indicated.

2. Air Leakage: Provide systems that have been tested to show L Rating as indicated.
3. Watertightness: Provide systems that have been tested to show W Rating as indicated.
4. Listing by FM (AG), ITS (DIR), UL (DIR), or UL (FRD) in their certification directories will be considered evidence of successful testing.

2.04 FIRESTOPPING PENETRATIONS THROUGH CONCRETE AND CONCRETE MASONRY CONSTRUCTION

- A. Penetrations Through Walls By:
 1. Uninsulated Metallic Pipe, Conduit, and Tubing:
 - a. 1 Hour Construction: UL System W-J-1067; Hilti FS-ONE MAX Intumescent Firestop Sealant.
 - b. Or Approved Equal.
 2. Insulated Pipes:
 - a. 1 Hour Construction: UL System C-AJ-5090; Hilti FS-ONE MAX Intumescent Firestop Sealant.
 - b. 1 Hour Construction: UL System C-AJ-5091; Hilti FS-ONE MAX Intumescent Firestop Sealant.
 - c. Or Approved Equal.

2.05 FIRESTOPPING SYSTEMS

- A. Firestopping: Any material meeting requirements.
 1. Fire Ratings: Use system that is listed by FM (AG), ITS (DIR), or UL (FRD) and tested in accordance with ASTM E814, ASTM E119, or UL 1479 with F Rating equal to fire rating of penetrated assembly and minimum T Rating Equal to F Rating and in compliance with other specified requirements.
 2. Fire Ratings: See drawings for required systems and ratings.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify openings are ready to receive the work of this section.

3.02 PREPARATION

- A. Clean substrate surfaces of dirt, dust, grease, oil, loose material, or other materials that could adversely affect bond of firestopping material.
- B. Remove incompatible materials that could adversely affect bond.
- C. Install backing materials to prevent liquid material from leakage.

3.03 INSTALLATION

- A. Install materials in manner described in fire test report and in accordance with manufacturer's instructions, completely closing openings.
- B. Do not cover installed firestopping until inspected by Owner's Independent Testing Agency.
- C. Do not cover installed firestopping until inspected by authorities having jurisdiction.
- D. Install labeling required by code.

3.04 FIELD QUALITY CONTROL

- A. Independent Testing Agency: Inspection agency employed and paid by Owner, will examine penetration firestopping in accordance with ASTM E2174 and ASTM E2393.
- B. Repair or replace penetration firestopping and joints at locations where inspection results indicate firestopping or joints do not meet specified requirements.

3.05 CLEANING

- A. Clean adjacent surfaces of firestopping materials.

3.06 PROTECTION

- A. Protect adjacent surfaces from damage by material installation.

END OF SECTION 07 84 00

SECTION 07 92 00 - JOINT SEALANTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Nonsag gunnable joint sealants.
- B. Self-leveling pourable joint sealants.
- C. Joint backings and accessories.

1.02 RELATED REQUIREMENTS

- A. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions: Additional requirements for sealants and primers.

1.03 REFERENCE STANDARDS

- A. ASTM C661 - Standard Test Method for Indentation Hardness of Elastomeric-Type Sealants by Means of a Durometer; 2015 (Reapproved 2022).
- B. ASTM C794 - Standard Test Method for Adhesion-in-Peel of Elastomeric Joint Sealants; 2018 (Reapproved 2022).
- C. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2018.
- D. ASTM C1087 - Standard Test Method for Determining Compatibility of Liquid-Applied Sealants with Accessories Used in Structural Glazing Systems; 2023.
- E. ASTM C1248 - Standard Test Method for Staining of Porous Substrate by Joint Sealants; 2022.
- F. ASTM C1330 - Standard Specification for Cylindrical Sealant Backing for Use with Cold Liquid-Applied Sealants; 2023.
- G. ASTM D2240 - Standard Test Method for Rubber Property--Durometer Hardness; 2015 (Reapproved 2021).
- H. ASTM D412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers--Tension; 2016 (Reapproved 2021).
- I. SCAQMD 1168 - Adhesive and Sealant Applications; 1989, with Amendment (2022).

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Submit manufacturer's technical datasheets for each product to be used; include the following:
 - 1. Physical characteristics, including movement capability, VOC content, hardness, cure time, and color availability.
 - 2. List of backing materials approved for use with the specific product.

3. Substrates that product is known to satisfactorily adhere to and with which it is compatible.
4. Substrates the product should not be used on.
- C. Color Cards for Selection: Where sealant color is not specified, submit manufacturer's color cards showing standard colors available for selection.
- D. Samples for Verification: Where custom sealant color is specified, obtain directions from Architect and submit at least two physical samples for verification of color of each required sealant.
- E. Preconstruction Laboratory Test Reports: Submit at least four weeks prior to start of installation.
- F. Executed warranty.

1.05 QUALITY ASSURANCE

- A. Maintain one copy of each referenced document covering installation requirements on site.
- B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.
- C. Preconstruction Laboratory Testing: Arrange for sealant manufacturer(s) to test each combination of sealant, substrate, backing, and accessories.
 1. Adhesion Testing: In accordance with ASTM C794.
 2. Compatibility Testing: In accordance with ASTM C1087.
 3. Allow sufficient time for testing to avoid delaying the work.
 4. Deliver sufficient samples to manufacturer for testing.
 5. Report manufacturer's recommended corrective measures, if any, including primers or techniques not indicated in product data submittals.

1.06 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals for additional warranty requirements.
- B. Manufacturer Warranty: Provide 2-year manufacturer warranty for installed sealants and accessories that fail to achieve a watertight seal, exhibit loss of adhesion or cohesion, or do not cure. Complete forms in Owner's name and register with manufacturer.
- C. Extended Correction Period: Correct defective work within 2-year period commencing on Date of Substantial Completion.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Nonsag Sealants:
 1. Pecora Corporation: www.pecora.com/#sle.
 2. Sika Corporation: www.usa.sika.com/#sle.
 3. Tremco Commercial Sealants & Waterproofing: www.tremcosealants.com/#sle.
 4. Or Approved Equal.

5. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 JOINT SEALANT APPLICATIONS

- A. Scope:
1. Interior Joints:
 - a. Seal the following joints:
 - 1) Joints between door frames and window frames and adjacent construction.
 - 2) Joints at perimeter of all partitions wall and ceiling assemblies, gaps at electrical outlets, wiring devices, and piping penetrations with acoustic sealant.
 - 3) Joints at rated assemblies, gaps at electrical outlets, wiring devices and piping penetrations with fire rated sealant.
 2. Do Not Seal:
 - a. Intentional weep holes in masonry.
 - b. Joints indicated to be covered with expansion joint cover assemblies.
 - c. Joints where sealant is specified to be furnished and installed by manufacturer of product to be sealed.
 - d. Joints where sealant installation is specified in other sections.
- B. Exterior Joints: Use nonsag nonstaining silicone sealant, unless otherwise indicated.
- C. Interior Joints: Use nonsag polyurethane sealant, unless otherwise indicated.
1. Joints between Tile in Wet Areas and Floors, Walls, and Ceilings: Mildew-resistant silicone sealant; white.
- D. Interior Wet Areas: restrooms; fixtures in wet areas include plumbing fixtures, countertops, cabinets, and other similar items.

2.03 JOINT SEALANTS - GENERAL

- A. Sealants and Primers: Provide products with acceptable levels of volatile organic compound (VOC) content; see Section 01 61 16.
- B. Sealants and Primers: Provide products having lower volatile organic compound (VOC) content than indicated in SCAQMD 1168.
- C. Approved product or equal:
1. Joint Sealant: Sika
 2. Fire rated Sealant: Sika Firesil N

2.04 NONSAG JOINT SEALANTS

- A. Nonstaining Silicone Sealant: ASTM C920, Grade NS, Uses M and A; not expected to withstand continuous water immersion or traffic.
1. Movement Capability: Plus and minus 25 percent, minimum.
 2. Nonstaining to Porous Stone: Nonstaining to light-colored natural stone when tested in accordance with ASTM C1248.
 3. Dirt Pick-Up: Reduced dirt pick-up compared to other silicone sealants.
 4. Hardness Range: 15 to 35, Shore A, when tested in accordance with ASTM C661.

5. Color: Match adjacent finished surfaces.
6. Service Temperature Range: Minus 20 to 180 degrees F.
7. Products:
 - a. Adfast USA Inc; Adseal LM 4600 Series: www.adfastcorp.com/#sle.
 - b. Dow; DOWSIL 756 SMS Building Sealant: www.dow.com/#sle.
 - c. Momentive Performance Materials, Inc/GE Silicones; SCS9000 SilPruf NB - Non-Staining Silicone Weatherproofing Sealant: www.siliconeforbuilding.com/#sle.
 - d. Pecora Corporation; Pecora 890 NST (Non-Staining Technology): www.pecora.com/#sle.
 - e. Sika Corporation; Sikasil WS-290: www.usa.sika.com/#sle.
 - f. Tremco Commercial Sealants & Waterproofing; Spectrem 1: www.tremcosealants.com/#sle.
 - g. Or Approved Equal.
 - h. Substitutions: See Section 01 60 00 - Product Requirements.
- B. Silicone Sealant: ASTM C920, Grade NS, Use T; single component, explicitly approved by manufacturer for traffic exposure when recessed below traffic surface; not expected to withstand continuous water immersion.
 1. Movement Capability: Plus 100 percent and minus 50 percent, minimum.
 2. Color: To be selected by Architect from manufacturer's standard range.
 3. Products:
 - a. Dow; DOWSIL 888 Silicone Joint Sealant: www.dow.com/#sle.
 - b. Pecora Corporation; Pecora PCS: www.pecora.com/#sle.
 - c. Pecora Corporation; Pecora 301 NS (Non-Sag): www.pecora.com/#sle.
 - d. Tremco Commercial Sealants & Waterproofing; Spectrem 800: www.tremcosealants.com/#sle.
 - e. Or Approved Equal.
 - f. Substitutions: See Section 01 60 00 - Product Requirements.
- C. Mildew-Resistant Silicone Sealant: ASTM C920, Grade NS, Uses M and A; single component, mildew resistant; not expected to withstand continuous water immersion or traffic.
 1. Color: White.
 2. Products:
 - a. Pecora Corporation; Pecora 898 NST (Non-Staining Technology): www.pecora.com/#sle.
 - b. Sika Corporation; Sikasil GP: www.usa.sika.com/#sle.
 - c. Or Approved Equal.
 - d. Substitutions: See Section 01 60 00 - Product Requirements.
- D. Polyurethane Sealant: ASTM C920, Grade NS, Uses M and A; single or multi-component; not expected to withstand continuous water immersion or traffic.
 1. Movement Capability: Plus and minus 25 percent, minimum.
 2. Hardness Range: 20 to 35, Shore A, when tested in accordance with ASTM C661.
 3. Color: Match adjacent finished surfaces.
 4. Service Temperature Range: Minus 40 to 180 degrees F.
 5. Products:
 - a. Pecora Corporation; DynaTrol II: www.pecora.com/#sle.
 - b. Sika Corporation; Sikaflex-1a: www.usa.sika.com/#sle.

- c. Tremco Commercial Sealants & Waterproofing; Dymonic 100:
www.tremcosealants.com/#sle.
- d. Or Approved Equal.
- e. Substitutions: See Section 01 60 00 - Product Requirements.

2.05 ACCESSORIES

- A. Sealant Backing Rod, Closed-Cell Type:
 - 1. Cylindrical flexible sealant backings complying with ASTM C1330 Type C.
 - 2. Size: 25 to 50 percent larger in diameter than joint width.
 - 3. Products:
 - a. Nomaco, Inc; HBR: www.nomaco.com/#sle.
 - b. Or Approved Equal.
 - c. Substitutions: See Section 01 60 00 - Product Requirements.
- B. Preformed Extruded Silicone Joint Seal: Pre-cured low-modulus silicone extrusion, in sizes to fit applications indicated on drawings, combined with a neutral-curing liquid silicone sealant for bonding joint seal to substrates.
 - 1. Size: 1 inch wide, in rolls 100 feet long.
 - 2. Thickness: 0.78 inch, with ridges along outside bottom edges for bonding area.
 - 3. Color: As selected by Architect..
 - 4. Durometer Hardness, Type A: 26 to 32, minimum, when tested in accordance with ASTM D2240.
 - 5. Tensile Strength: 218 psi, in accordance with ASTM D412.
 - 6. Products:
 - a. Tremco Commercial Sealants & Waterproofing; Spectrem Simple Seal:
www.tremcosealants.com/#sle.
 - b. Or Approved Equal.
 - c. Substitutions: See Section 01 60 00 - Product Requirements.
- C. Preformed Extruded Polyurethane Joint Seal: Medium-modulus, preformed polyurethane extrusion used to bridge joints under elastomeric wall coatings, in sizes to fit applications indicated on drawings, combined with polyurethane sealant for bonding joint seal to substrates.
 - 1. Size: 1-1/2 inch wide, in rolls 100 feet long.
 - 2. Thickness: 0.051 inch, with ridges along outside bottom edges for bonding area.
 - 3. Durometer Hardness, Type A: 55, minimum, when tested in accordance with ASTM D2240.
 - 4. Tensile Strength: 532 psi, in accordance with ASTM D412.
 - 5. Elongation at Break: 690 percent, in accordance with ASTM D412.
 - 6. Products:
 - a. Tremco Commercial Sealants & Waterproofing; Dymonic Simple Seal:
www.tremcosealants.com/#sle.
 - b. Or Approved Equal
 - c. Substitutions: See Section 01 60 00 - Product Requirements.
- D. Backing Tape: Self-adhesive polyethylene tape with surface that sealant will not adhere to and recommended by tape and sealant manufacturers for specific application.
- E. Joint Cleaner: Noncorrosive and nonstaining type, type recommended by sealant manufacturer; compatible with joint forming materials.

F. Primers: Type recommended by sealant manufacturer to suit application; nonstaining.

END OF SECTION 07 92 00

SECTION 08 11 13 - HOLLOW METAL DOORS AND FRAMES

PART 1 GENERAL

1.01 REFERENCE STANDARDS

- A. ADA Standards - 2010 ADA Standards for Accessible Design; 2010.
- B. ANSI/SDI A250.3 - Test Procedure and Acceptance Criteria for Factory Applied Finish Coatings for Steel Doors and Frames; 2019.
- C. ANSI/SDI A250.4 - Test Procedure and Acceptance Criteria for Physical Endurance for Steel Doors, Frames and Frame Anchors; 2022.
- D. ANSI/SDI A250.8 - Specifications for Standard Steel Doors and Frames (SDI-100); 2023.
- E. ANSI/SDI A250.10 - Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames; 2020.
- F. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2020.
- G. ASTM A1008/A1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Required Hardness, Solution Hardened, and Bake Hardenable; 2021a.
- H. ASTM A1011/A1011M - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength; 2018a.
- I. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2017.

PART 2 PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

- A. Requirements for Hollow Metal Doors and Frames:
 - 1. Steel Sheet: Comply with one or more of the following requirements; galvanized steel complying with ASTM A653/A653M, cold-rolled steel complying with ASTM A1008/A1008M, or hot-rolled pickled and oiled (HRPO) steel complying with ASTM A1011/A1011M, commercial steel (CS) Type B, for each.
 - 2. Accessibility: Comply with ICC A117.1 and ADA Standards.
 - 3. Typical Door Face Sheets: Flush.
- B. Hollow Metal Panels: Same construction, performance, and finish as doors.
- C. Combined Requirements: If a particular door and frame unit is indicated to comply with more than one type of requirement, comply with the specified requirements for each type; for instance, an exterior door that is also indicated as being sound-rated must comply with the requirements specified for exterior doors and for sound-rated doors; where two requirements conflict, comply with the most stringent.

2.02 HOLLOW METAL DOORS

- A. Door Finish: Factory primed and field finished.
- B. Type ____, Interior Doors, Non-Fire-Rated:
 - 1. Based on SDI Standards: ANSI/SDI A250.8 (SDI-100).
 - a. Level 1 - Standard-duty.
 - b. Physical Performance Level C, 250,000 cycles; in accordance with ANSI/SDI A250.4.
 - c. Model 1 - Full Flush.
 - d. Door Face Metal Thickness: 20 gauge, 0.032 inch, minimum.
 - 2. Door Thickness: 1-3/4 inches, nominal.
 - 3. Door Face Sheets: Flush.
 - 4. Door Finish: Factory primed and field finished.

2.03 HOLLOW METAL FRAMES

- A. Comply with standards and/or custom guidelines as indicated for corresponding door in accordance with applicable door frame requirements.
- B. Frame Finish: Factory primed and field finished.
- C. Interior Door Frames, Non-Fire Rated: Full profile/continuously welded type.
 - 1. Terminated Stops: Provide at interior doors; closed end stop terminated 6 inch, maximum, above floor at 45 degree angle.
 - 2. Frame Metal Thickness: 18 gauge, 0.042 inch, minimum.
 - 3. Frame Finish: Factory primed and field finished.

2.04 FINISHES

- A. Primer: Rust-inhibiting, complying with ANSI/SDI A250.10, door manufacturer's standard.
- B. Factory Finish: Complying with ANSI/SDI A250.3, manufacturer's standard coating.

2.05 ACCESSORIES

- A. Astragals and Edges for Double Doors: Pairs of door astragals, and door edge sealing and protection devices.

END OF SECTION 08 11 13

SECTION 08 16 16 - POLYETHYLENE DOORS

PART 1 GENERAL

1.01 REFERENCE STANDARDS

- A. AAMA/WDMA/CSA 101/I.S.2/A440 - North American Fenestration Standard/Specification for Windows, Doors, and Skylights; 2017.
- B. ASTM D1308 - Standard Test Method for Effect of Household Chemicals on Clear and Pigmented Coating Systems; 2020.
- C. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2022.

PART 2 PRODUCTS

2.01 DOOR AND FRAME ASSEMBLIES

- A. Polyethylene Doors: Factory-fabricated using three-part recycled high-density polyethylene with integral color; with factory-installed glazing, door hardware, flashings, anchorages, attachment devices, and nailing fins.
 - 1. Configuration: As indicated on drawings.
 - a. Product Type: DASHD - Dual-action side-hinged door in accordance with AAMA/WDMA/CSA 101/I.S.2/A440.
 - 2. Size to fit openings with minimum clearance around perimeter of assembly, providing necessary space for perimeter seals.
 - 3. Clearance Between Door and Frame: 1/8 inch, maximum.
 - 4. Clearance Between Bottom of Door and Finished Floor: 3/4 inch, maximum; not less than 1/4-inch clearance to threshold.

2.02 COMPONENTS

- A. Doors:
 - 1. Thickness: 1-3/4 inches, nominal.
 - 2. Face Sheet: Smooth.
 - 3. Subframe and Reinforcements: Manufacturer's standard materials.
- B. Door Frames: Provide type complying with performance requirements specified for doors.
 - 1. Material: Fiberglass-reinforced panel.
- C. Door and Frame Reinforcement: Manufacturer's standard, as necessary to meet performance requirements.

2.03 MATERIALS

- A. Polyethylene: Manufacturer's standard polyethylene with additives such as stabilizers, lubricants, impact modifiers, and pigments. Do not use plasticizers.
 - 1. Surface Burning Characteristics: Flame spread index of 25 or less and smoke developed index of 55 or less, when tested in accordance with ASTM E84.
 - 2. Chemical and Stain Resistance: No visible staining or discoloration and no damage to surface texture when tested in accordance with ASTM D1308.
- B. Door Panel Construction:
 - 1. Manufacturer's standard factory finish.
 - a. Top Layer: 1/8-inch thick rotationally molded polyethylene.
 - b. Core Layer: High-density, non-CFC, foamed-in-place urethane.
 - c. Bottom Cap: Extruded powder-coated aluminum with replaceable bottom wiper gasket.
 - 2. Surface Finish: Uniform and free from streaks, blisters, sags, or other imperfections.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install in accordance with manufacturer's instructions; do not penetrate frames with anchors.
- B. Install door hardware according to manufacturer's instructions.
- C. Set units plumb, level, and true-to-line, without warping or racking doors and with specified clearances; anchor in place.
- D. Repair or replace damaged, installed products.

END OF SECTION 08 16 16

SECTION 08 33 26 - OVERHEAD COILING GRILLES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Overhead coiling metal grilles and operating hardware; electrically or manually operated.
- B. Wiring from electric circuit disconnect to operator and to control station.

1.02 RELATED REQUIREMENTS

- A. Section 06 20 00 - Finish Carpentry: Wood casings and moldings.
- B. Section 08 71 00 - Door Hardware: Cylinder cores and keys.
- C. Section 26 05 33.13 - Conduit for Electrical Systems: Conduit from electric circuit to operator and from operator to control station.
- D. Section 26 05 83 - Wiring Connections: Power to disconnect.

1.03 REFERENCE STANDARDS

- A. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2017.
- B. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2015.
- C. ITS (DIR) - Directory of Listed Products; Current Edition.
- D. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum); 2020.
- E. NEMA ICS 2 - Industrial Control and Systems Controllers, Contactors and Overload Relays Rated 600 Volts; 2008 (Reaffirmed 2020).
- F. NEMA MG 1 - Motors and Generators; 2021.
- G. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- H. UL (DIR) - Online Certifications Directory; Current Edition.
- I. UL 325 - Standard for Door, Drapery, Gate, Louver, and Window Operators and Systems; Current Edition, Including All Revisions.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide general construction component connections and details, and electrical equipment.
- C. Shop Drawings: Indicate pertinent dimensioning, anchorage methods, hardware locations, and installation details.

- D. Manufacturer's Installation Instructions: Indicate installation sequences and procedures, adjustment and alignment procedures.
- E. Manufacturer's qualification statement.
- F. Installer's qualification statement.
- G. Specimen warranty.
- H. Maintenance Data: Indicate lubrication requirements and frequency and periodic adjustments required.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years of documented experience.
- B. Installer Qualifications: Company specializing in performing work of type specified and with at least three years documented experience.
- C. Products Requiring Electrical Connection: Listed and classified by ITS (DIR), UL (DIR), or testing firm acceptable to authorities having jurisdiction as suitable for purpose specified.

1.06 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals for additional warranty requirements.
- B. Manufacturer Warranty: Provide 2-year manufacturer warranty for roller shaft counterbalance assembly. Complete forms in Owner's name and register with manufacturer.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Overhead Coiling Grilles:
 - 1. Basis of Design: Cornell Cookson, LLC; CrossingGard Security Grille, ERG-IBC; www.cornelliron.com.
 - 2. Clopay Corporation; Visionaire Microcoil Security Grille, CESC10C: www.clopaydoor.com.
 - 3. The Cookson Company; ____: www.cooksondoor.com/#sle.
 - 4. Or, approved equal..
 - 5. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 GRILLES AND COMPONENTS

- A. Grille: Stainless steel; horizontal bar curtain, coiling on overhead counterbalanced shaft.
 - 1. Finish: Factory polished.
 - 2. Manual hand chain lift operation.
 - 3. Electric operation.
 - 4. Mounting: Within framed opening.

- B. Curtain: Round horizontal bars connected with vertical links.
 - 1. Horizontal bars: 5/16 inch diameter.
 - 2. Bar spacing: 2 to 3 inch on center.
 - 3. Tube spacers: 1/2 inch diameter.
 - 4. Spacer spacing: 3-1/4 inch on center.
 - 5. Link spacing: 6 inch on center.
 - 6. Bar Ends: Provide with nylon runners for quiet operation.
 - 7. Bottom Bar: Back-to-back angles with tubular resilient cushion.
- C. Guides: Extruded aluminum angles, of profile to retain grille in place with snap-on trim, mounting brackets of same metal.
- D. Hood Enclosure and Trim: Sheet metal; completely covering operating mechanisms; internally reinforced to maintain rigidity and shape.
 - 1. Material: Same metal as grille.
- E. Lock Hardware:
 - 1. Cylindrical Locking Mechanism: Latchset lock cylinder, specified in Section 08 71 00.
 - 2. For motor operated units, additional lock or latching mechanisms are not required.
 - 3. Latching Mechanism: Inside mounted, adjustable keeper, spring activated latch bar feature to keep in locked or retracted position.
 - 4. Latch Handle: Manufacturer's standard.
 - 5. Slide Bolt: Provide on single-jamb side, extending into slot in guides, with padlock on one side.
 - 6. Manual Chain Lift: Provide padlockable chain keeper on guide.
- F. Roller Shaft Counterbalance: Steel pipe and helical steel spring system, capable of producing torque sufficient to ensure smooth operation of curtain from any position and capable of holding position at mid-travel; with adjustable spring tension; requiring 25 lb nominal force to operate.

2.03 MATERIALS

- A. Galvanized Steel Bars: Galvanized to minimum coating thickness grade in accordance with ASTM A123/A123M.

2.04 ELECTRIC OPERATION

- A. Operator, Controls, Actuators, and Safeties: Comply with UL 325; provide products listed by ITS (DIR), UL (DIR), or testing agency acceptable to authorities having jurisdiction.
 - 1. Provide interlock switches on motor operated units.
- B. Electric Operators:
 - 1. Mounting: Side mounted.
 - 2. Motor Enclosure:
 - a. Interior Coiling Grilles: NEMA MG 1, Type 1; open drip proof.
 - 3. Motor Rating: 1/3 hp; continuous duty.
 - 4. Motor Voltage: 120 volts, single phase, 60 Hz.
 - 5. Motor Controller: NEMA ICS 2, full voltage, reversing magnetic motor starter.
 - 6. Controller Enclosure: NEMA 250 Type 1.

7. Opening Speed: 12 inches per second.
 8. Brake: Adjustable friction clutch type, activated by motor controller.
 9. Manual override in case of power failure.
 10. Refer to Section 26 05 83 for electrical connections.
- C. Control Station: Provide standard three button (Open-Close-Stop) momentary-contact control device for each operator complying with UL 325.
1. 24 volt circuit.
 2. Surface mounted, at interior door jamb.
 3. Entrapment Protection Devices: Provide sensing devices and safety mechanisms complying with UL 325.
 - a. Primary Device: Provide electric sensing edge, wireless sensing, NEMA 1 photo eye sensors, or NEMA 4X photo eye sensors as required with momentary-contact control device.
- D. Safety Edge: Located at bottom of coiling grill, full width, electro-mechanical sensitized type, wired to stop and reverse grill direction upon striking object, hollow neoprene covered.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that adjacent construction is suitable for door installation.
- B. Verify that electrical services have been installed and are accessible.
- C. Verify that door opening is plumb, header is level, and dimensions are correct.
- D. Notify Architect of any unacceptable conditions or varying dimensions.
- E. Commencement of installation indicates acceptance of substrate and door opening conditions.

3.02 INSTALLATION

- A. Install grille unit assembly in accordance with manufacturer's instructions.
- B. Use anchorage devices to securely fasten assembly to wall construction and building framing without distortion or stress.
- C. Securely and rigidly brace components suspended from structure. Secure guides to structural members only.
- D. Fit and align assembly including hardware; level and plumb, to provide smooth operation.
- E. Coordinate installation of electrical service with Section 26 05 83.
- F. Complete wiring from disconnect to unit components.
- G. Install enclosure and perimeter trim.

3.03 ADJUSTING

- A. Adjust grille, hardware and operating assemblies for smooth and noiseless operation.

3.04 CLEANING

- A. Clean grille and components.
- B. Remove labels and visible markings.

END OF SECTION 08 33 26

SECTION 08 38 00 - TRAFFIC DOORS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Rigid and semi-rigid traffic doors.
- B. Flexible traffic doors.
- C. Door accessories.
- D. Door frames.

1.02 RELATED REQUIREMENTS

- A. Section 05 50 00 - Metal Fabrications: Steel jambs and header.
- B. Section 08 12 13 - Hollow Metal Frames: Flat-faced frame.
- C. Section 08 71 00 - Door Hardware: Wall-mounted door stops.

1.03 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Manufacturer's technical information for each type of door specified, including details about materials, components, profiles, gaskets, and finishes; include:
 - 1. Preparation and installation instructions and methods.
 - 2. Storage and handling requirements and recommendations.
 - 3. Operation and maintenance data.
- C. Shop Drawings: Indicate installation details of doors and frames, including elevations and attachment.
- D. Samples: Two color charts indicating full range of available colors and textures for each type of finish.
- E. Manufacturer's qualification statement.
- F. Installer's qualification statement.
- G. Executed warranty.

1.04 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products of type specified in this section, with not less than three years of documented experience.
- B. Installer Qualifications: Company specializing in performing type of work specified in this section with not less than three years of experience and approved by manufacturer.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Deliver product in manufacturer's original unopened packages with label legible and intact.
- B. Store doors at project site on edge or in upright position, under cover and elevated above grade, following manufacturer's instructions.

1.06 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals for additional warranty requirements.
- B. Manufacturer Warranty: Provide 2-year manufacturer warranty for molded polyethylene doors against damage due to vehicle traffic; state limitations in executed warranty. Complete forms in Owner's name and register with manufacturer.

PART 2 PRODUCTS

2.01 RIGID AND SEMI-RIGID TRAFFIC DOORS

- A. Construction: Manufacturer's standard.
 - 1. Door Assemblies: Double-acting, self-closing pairs of doors for installation in frame provided by others; factory fabricated and finished, complete with hinges and specified accessories.
 - a. Door Swing: Minimum of 90 degrees each direction.
 - b. Hinges: V-cam gravity hinges at top and pivots at bottom; mounted on bottom of header and on top of floor; maximum rise 1-1/2 inches; vertical and horizontal adjustment in the field; manufacturer's standard lower hinge guards.
 - c. Hinge Guards: Manufacturer's standard material and configuration to protect lower hinge finish floors from damage.
 - d. Exposed Metal Parts: Either stainless steel, extruded aluminum, or powder coated.
 - e. Cooler Doors: Provide gaskets, double glazing, and upper hinge seal.
 - f. Freezer Doors: Provide gaskets and upper hinge seal; no view window.
 - g. Where gaskets are specified, provide on all four edges of door.
 - h. Where gaskets are not specified, provide top and bottom seals.
 - i. Dimensional Tolerances: Plus or minus 1/4 inch in width and height of each panel.
 - 2. View Windows: Factory-installed glazing in molded or extruded black thermoplastic or rubber gasket.
 - a. Configuration: One window in each door panel unless otherwise indicated on drawings, centered in door width, and 48 inches, maximum, from finished floor to bottom of viewing area.
 - b. Square-Shaped Window Size: 14 inches by 16 inches.
 - c. Glazing: Manufacturer's standard; use scratch resistant acrylic vision panel glazing unless otherwise indicated on drawings.
 - 1) Single Glazing: Acrylic glazing sheet, 1/4-inch thick, clear.

3. Door Gaskets: Manufacturer's standard configuration.
 - a. Thermal Gaskets: 55 to 70 durometer extruded black santoprene.
 - b. Other Gaskets: Santoprene or PVC.
4. Impact Plates: Surface applied; factory installed.
 - a. Base Plates: 12 inches high by full width of door panel, mounted at bottom of door.
 - b. Scuff Plates: 24 inches high by full width of door panel, mounted at bottom of door.
 - c. Bumper Plates: 30 inches high, mounted 18 inches above bottom of door.
 - d. Push Plates: 12 inches high by 12 inches wide, mounted at leading edge of door with centerline at 48 inches above floor.
 - e. Materials:
 - 1) Stainless Steel: Type 304, with No.4 brushed satin finish; 18-gauge, 0.05-inch minimum base metal thickness.
- B. Thermoplastic Double-Acting Traffic Doors Type ____: Urethane foam core with high impact thermoplastic exterior.
 1. Door Thickness: 1-1/2 inches.
 2. Finish: 1/10 inch minimum thickness.
 3. Construction: Manufacturer's standard construction with faces bonded to thermoplastic or aluminum subframe or molded in one piece, reinforced for durability and rigidity, with all edges, cut-outs, and hardware preparations factory fabricated; provide view window cut-outs with joints sealed independently of glazing or trim.
 4. Hardware Preparations: Factory reinforce, machine, and prepare for all hardware including field installed items; provide solid blocking for each hardware item; make field cutting, drilling or tapping unnecessary.
 5. Bumpers: Provide spring bumpers on both sides of doors.
 6. Impact Plates: Provide base plates on both sides of doors.
 7. Color: As indicated on drawings.
 8. Products:
 - a. Eliason Corporation, a Division of Senneca Holdings; HCG-10 Impact Traffic Door: www.eliasoncorp.com.
 - b. Or, approved equal..
 - c. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 ACCESSORIES

- A. Frames: Provide doors pre-hung in frames by door manufacturer; tubular steel welded frame.
- B. Provide tamper proof fasteners and other hardware as recommended by manufacturer for complete installation.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that jambs and frames are square and plumb.

- B. Verify that opening is ready to receive work and opening dimensions and clearances are as indicated on drawings.
- C. If substrate preparation is responsibility of another installer, notify Architect of unsatisfactory conditions before proceeding.
- D. Commencement of work by installer indicates acceptance of opening conditions.

3.02 PREPARATION

- A. Clean surfaces thoroughly prior to installation.

3.03 INSTALLATION

- A. Install doors with clearances, anchors, hardware, and accessories according to the manufacturer's instructions and as specified.
- B. Install doors plumb, level, and properly aligned.

3.04 ADJUSTING

- A. Clean and lubricate operating parts.
- B. Adjust doors to open and close smoothly and freely without binding and for proper fit of seals.

3.05 CLEANING

- A. Clean surfaces using methods as recommended by manufacturer.

3.06 PROTECTION

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products before Date of Substantial Completion.

END OF SECTION 08 38 00

SECTION 08 43 13 - ALUMINUM-FRAMED STOREFRONTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Aluminum-framed storefront, with vision glass.
- B. Infill panels of metal and glass.
- C. Aluminum doors and frames.
- D. Weatherstripping.
- E. Door hardware.

1.02 RELATED REQUIREMENTS

- A. Section 08 71 00 - Door Hardware: Hardware items other than specified in this section.
- B. Section 08 80 00 - Glazing: Glass and glazing accessories.

1.03 REFERENCE STANDARDS

- A. AAMA CW-10 - Care and Handling of Architectural Aluminum from Shop to Site; 2015.
- B. AAMA 501.2 - Quality Assurance and Diagnostic Water Leakage Field Check of Installed Storefronts, Curtain Walls, and Sloped Glazing Systems; 2015.
- C. AAMA 503 - Voluntary Specification for Field Testing of Newly Installed Storefronts, Curtain Walls and Sloped Glazing Systems; 2014.
- D. AAMA 609 & 610 - Cleaning and Maintenance Guide for Architecturally Finished Aluminum (Combined Document); 2015.
- E. AAMA 611 - Voluntary Specification for Anodized Architectural Aluminum; 2020.
- F. AAMA 1503 - Voluntary Test Method for Thermal Transmittance and Condensation Resistance of Windows, Doors and Glazed Wall Sections; 2009.
- G. ASCE 7 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures; Most Recent Edition Cited by Referring Code or Reference Standard.
- H. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2021.
- I. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric); 2021.
- J. ASTM E283/E283M - Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Skylights, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen; 2019.
- K. ASTM E330/E330M - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference; 2014 (Reapproved 2021).

- L. ASTM E783 - Standard Test Method for Field Measurement of Air Leakage Through Installed Exterior Windows and Doors; 2002 (Reapproved 2018).
- M. ASTM E1105 - Standard Test Method for Field Determination of Water Penetration of Installed Exterior Windows, Skylights, Doors, and Curtain Walls, by Uniform or Cyclic Static Air Pressure Difference; 2015.
- N. SSPC-Paint 20 - Zinc-Rich Coating (Type I - Inorganic, and Type II - Organic); 2019.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide component dimensions, describe components within assembly, anchorage and fasteners, glass and infill, door hardware, and internal drainage details.
- C. Shop Drawings: Indicate system dimensions, framed opening requirements and tolerances, affected related work, expansion and contraction joint location and details, and field welding required.
 - 1. Include design engineer's stamp or seal on shop drawings for attachments and anchors.
- D. Samples: Submit two samples 12x12 inches in size illustrating finished aluminum surface, glass, infill panels, glazing materials.
- E. Manufacturer's Certificate: Certify that the products supplied meet or exceed the specified requirements.
- F. Design Data: Provide framing member structural and physical characteristics, engineering calculations, and dimensional limitations.
- G. Hardware Schedule: Complete itemization of each item of hardware to be provided for each door, cross-referenced to door identification numbers in Contract Documents.
- H. Field Quality Control Submittals: Report of field testing for water penetration and air leakage.
- I. Manufacturer's qualification statement.
- J. Installer's qualification statement.
- K. Specimen warranty.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in performing work of type specified and with at least three years of documented experience.
 - 1. Provide certified glass products through ANSI accredited certifications that include plant audits and independent laboratory performance testing.
 - a. Insulating Glass Certification Council (IGCC).
 - b. Safety Glazing Certification Council (SGCC).
- B. Installer Qualifications: Company specializing in performing work of type specified and with at least three years of documented experience.
 - 1. Provide company, field supervisors, and installers that hold active ANSI accredited certifications in appropriate categories for work specified.
 - a. North American Contractor Certification (NACC) for glazing contractors.
 - b. Equivalent independent third-party ANSI accredited certification.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Handle products of this section in accordance with AAMA CW-10.
- B. Protect finished aluminum surfaces with wrapping. Do not use adhesive papers or sprayed coatings that bond to aluminum when exposed to sunlight or weather.

1.07 FIELD CONDITIONS

- A. Do not install sealants when ambient temperature is less than 40 degrees F. Maintain this minimum temperature during and 48 hours after installation.

1.08 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals for additional warranty requirements.
- B. Correct defective Work within a five year period after Date of Substantial Completion.
- C. Provide five year manufacturer warranty against failure of glass seal on insulating glass units, including interpane dusting or misting. Include provision for replacement of failed units.
- D. Provide five year manufacturer warranty against degradation of exterior finish. Include provision for replacement of units with excessive fading, chalking, or flaking.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Aluminum-Framed Storefronts:
 - 1. Kawneer North America; 350T Insulpour Thermal Entrances. www.kawneer.us:
www.kawneer.com/#sle.
 - 2. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 BASIS OF DESIGN -- SWINGING DOORS

- A. Entrance Doors, Medium Stile Width:
 - 1. Basis of Design: Kawneer; 350T Insulpour Thermal Entrances www.kawneer.us.
 - 2. Thickness: 2-1/4 inches.

2.03 ALUMINUM-FRAMED STOREFRONT

- A. Aluminum-Framed Storefront: Factory fabricated, factory finished aluminum framing members with infill, and related flashings, anchorage and attachment devices.
 - 1. Glazing Rabbet: For 1 inch insulating glazing.
 - 2. Glazing Position: Centered (front to back).
 - 3. Finish: Class I color anodized.
 - a. Factory finish all surfaces that will be exposed in completed assemblies.

- b. Touch-up surfaces cut during fabrication so that no natural aluminum is visible in completed assemblies, including joint edges.
 - c. Coat concealed metal surfaces that will be in contact with cementitious materials or dissimilar metals with bituminous paint.
 - 4. Finish Color: As indicated on drawings.
 - 5. Fabrication: Joints and corners flush, hairline, and weatherproof, accurately fitted and secured; prepared to receive anchors and hardware; fasteners and attachments concealed from view; reinforced as required for imposed loads.
 - 6. Construction: Eliminate noises caused by wind and thermal movement, prevent vibration harmonics, and prevent "stack effect" in internal spaces.
 - 7. System Internal Drainage: Drain to the exterior by means of a weep drainage network any water entering joints, condensation occurring in glazing channel, and migrating moisture occurring within system.
 - 8. Expansion/Contraction: Provide for expansion and contraction within system components caused by cycling temperature range of 170 degrees F over a 12 hour period without causing detrimental effect to system components, anchorages, and other building elements.
 - 9. Movement: Allow for movement between storefront and adjacent construction, without damage to components or deterioration of seals.
 - 10. Perimeter Clearance: Minimize space between framing members and adjacent construction while allowing expected movement.
 - 11. Maintain continuous air barrier and/or vapor retarder seal throughout assembly, primarily in line with inside pane of glazing and inner sheet of infill panel, and heel bead of glazing compound.
- B. Performance Requirements
- 1. Wind Loads: Design and size components to withstand the specified load requirements without damage or permanent set, when tested in accordance with ASTM E330/E330M, using loads 1.5 times the design wind loads and 10 second duration of maximum load.
 - a. Design Wind Loads: Comply with requirements of ASCE 7.
 - b. Member Deflection: Limit member deflection to flexure limit of glass in any direction, with full recovery of glazing materials.
 - 2. Air Leakage: 0.06 cfm/sq ft maximum leakage of storefront wall area when tested in accordance with ASTM E283/E283M at 1.57 psf pressure difference.
 - 3. Condensation Resistance Factor of Framing: 50, minimum, measured in accordance with AAMA 1503.

2.04 COMPONENTS

- A. Aluminum Framing Members: Tubular aluminum sections, thermally broken with interior section insulated from exterior, drainage holes and internal weep drainage system.
 - 1. Glazing Stops: Flush.
- B. Glazing: See Section 08 80 00.
 - 1. For Exterior Framing: Type Tempered, Laminated Secured Glass, Insulated or SolarBan, Class E..
 - 2. Glazing Panels: Type Match existing building exterior glazing..
- C. Swing Doors: Glazed aluminum.

1. Thickness: 1-3/4 inches.
2. Top Rail: 3-1/2 inches wide.
3. Vertical Stiles: 3-1/2 inches wide.
4. Bottom Rail: 6-1/2 inches wide.
5. Glazing Stops: 1 to 1-1/2 inch..
6. Finish: Same as storefront.

2.05 MATERIALS

- A. Extruded Aluminum: ASTM B221 (ASTM B221M).
- B. Fasteners: Stainless steel.
- C. Exposed Flashings: Aluminum sheet, 20 gauge, 0.032 inch minimum thickness; finish to match framing members.
- D. Concealed Flashings: Galvanized steel, 26 gauge, 0.0179 inch minimum base metal thickness.
- E. Concealed Flashings: Stainless steel, 26 gauge, 0.0187 inch minimum thickness.
- F. Sill Flashing Sealant: Elastomeric, silicone or polyurethane, compatible with flashing material.
- G. Sealant for Setting Thresholds: Non-curing butyl type.
- H. Glazing Gaskets: Type to suit application to achieve weather, moisture, and air infiltration requirements.
- I. Glazing Accessories: See Section 08 80 00.
- J. Shop and Touch-Up Primer for Steel Components: Zinc oxide, alkyd, linseed oil primer appropriate for use over hand cleaned steel.
- K. Touch-Up Primer for Galvanized Steel Surfaces: SSPC-Paint 20, zinc rich.

2.06 FINISHES

- A. Class I Natural Anodized Finish: AAMA 611 AA-M12C22A41 Clear anodic coating not less than 0.7 mils thick.

2.07 HARDWARE

- A. For each door, include weatherstripping, sill sweep strip, and threshold.
- B. Other Door Hardware: See Section 08 71 00.
- C. Other Door Hardware: Storefront manufacturer's standard type to suit application.
 1. Finish on Hand-Contacted Items: Polished chrome.
 2. For each door, include butt hinges, pivots, push handle, pull handle, exit device, narrow stile handle latch, and closer.
- D. Weatherstripping: Wool pile, continuous and replaceable; provide on all doors.
- E. Sill Sweep Strips: Resilient seal type, retracting, of neoprene; provide on all doors.
- F. Threshold: Extruded aluminum, one piece per door opening, ribbed surface; provide on all doors.
- G. Hinges: Butt type, swing clear; top and bottom.

- 1. Provide on doors as indicated.
- H. Pivots: Center type; top and bottom.
 - 1. Provide on doors as indicated.
- I. Push/Pull Set: Standard configuration push/pull handles.
 - 1. Provide on doors as indicated.
- J. Door Closers: Concealed overhead.
 - 1. Provide on doors as indicated.
- K. Handle Latch: _____.
 - 1. Provide on doors as indicated.
- L. Locks: Dead latch with thumbturn inside ; keyed cylinder outside.
 - 1. Provide on doors as indicated.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify dimensions, tolerances, and method of attachment with other work.
- B. Verify that storefront wall openings and adjoining water-resistive and/or air barrier seal materials are ready to receive work of this section.

3.02 INSTALLATION

- A. Install wall system in accordance with manufacturer's instructions.
- B. Attach to structure to permit sufficient adjustment to accommodate construction tolerances and other irregularities.
- C. Provide alignment attachments and shims to permanently fasten system to building structure.
- D. Align assembly plumb and level, free of warp or twist. Maintain assembly dimensional tolerances, aligning with adjacent work.
- E. Provide thermal isolation where components penetrate or disrupt building insulation.
- F. Install sill flashings. Turn up ends and edges; seal to adjacent work to form water tight dam.
- G. Where fasteners penetrate sill flashings, make watertight by seating and sealing fastener heads to sill flashing.
- H. Pack fibrous insulation in shim spaces at perimeter of assembly to maintain continuity of thermal barrier.
- I. Set thresholds in bed of sealant and secure.
- J. Install hardware using templates provided.
 - 1. See Section 08 71 00 for hardware installation requirements.
- K. Install glass and infill panels using glazing method required to achieve performance criteria; see Section 08 80 00.
- L. Touch-up minor damage to factory applied finish; replace components that cannot be satisfactorily repaired.

3.03 TOLERANCES

- A. Maximum Variation from Plumb: 0.06 inch per 3 feet non-cumulative or 0.06 inch per 10 feet, whichever is less.
- B. Maximum Misalignment of Two Adjoining Members Abutting in Plane: 1/32 inch.

3.04 FIELD QUALITY CONTROL

- A. See Section 01 40 00 - Quality Requirements for independent field testing and inspection requirements, and requirements for monitoring quality of specified product installations.
- B. See Section 01 40 00 - Quality Requirements for general testing and inspection requirements.
- C. Water-Spray Test: Provide water spray quality test of installed storefront components in accordance with AAMA 501.2 during construction process and before installation of interior finishes.
 - 1. Perform a minimum of two tests in each designated area as indicated on drawings.
 - 2. Conduct tests in each area prior to 10 percent and 50 percent completion of this work.
- D. Provide field testing of installed storefront system by independent laboratory in accordance with AAMA 503 during construction process and before installation of interior finishes.
 - 1. Perform a minimum of two tests in each designated area as indicated on drawings.
 - 2. Conduct tests in each area prior to 10 percent and 50 percent completion of this work.
 - 3. Field test for water penetration in accordance with ASTM E1105 with uniform static air pressure difference (Procedure A) not less than 4.18 psf.
 - a. Maximum allowable rate of water penetration in 15-minute test is 0.5 ounce that is not contained in an area with provisions to drain to exterior, or collected on surface of interior horizontal framing member.
 - 4. Field test for air leakage in accordance with ASTM E783 with uniform static air pressure difference of 1.57 psf.
 - a. Maximum allowable rate of air leakage is 0.09 cfm/sq ft.
- E. Repair or replace storefront components that have failed designated field testing, and retest to verify performance complies with specified requirements.

3.05 ADJUSTING

- A. Adjust operating hardware and sash for smooth operation.

3.06 CLEANING

- A. Remove protective material from pre-finished aluminum surfaces.

- B. Wash down surfaces with a solution of mild detergent in warm water, applied with soft, clean wiping cloths, and take care to remove dirt from corners and to wipe surfaces clean.
- C. Upon completion of installation, thoroughly clean aluminum surfaces in accordance with AAMA 609 & 610.

3.07 PROTECTION

- A. Protect installed products from damage until Date of Substantial Completion.

END OF SECTION 08 43 13

SECTION 08 51 13 - ALUMINUM WINDOWS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Extruded aluminum windows with fixed sash.
- B. Factory glazing.

1.02 RELATED REQUIREMENTS

- A. Section 07 25 00 - Weather Barriers: Sealing frame to water-resistive barrier installed on adjacent construction.
- B. Section 07 92 00 - Joint Sealants: Sealing joints between window frames and adjacent construction.
- C. Section 08 80 00 - Glazing.

1.03 REFERENCE STANDARDS

- A. AAMA CW-10 - Care and Handling of Architectural Aluminum from Shop to Site; 2015.
- B. AAMA 609 & 610 - Cleaning and Maintenance Guide for Architecturally Finished Aluminum (Combined Document); 2015.
- C. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2021.
- D. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric); 2021.
- E. ASTM E2112 - Standard Practice for Installation of Exterior Windows, Doors and Skylights; 2019c.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Include component dimensions and information on glass and glazing.
- C. Shop Drawings: Indicate opening dimensions, elevations of different types, framed opening tolerances, anchorage locations, _____, and installation requirements.
- D. Manufacturer's Installation Instructions: Include complete preparation, installation, and cleaning requirements.
- E. Manufacturer's qualification statement.
- F. Installer's qualification statement.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with minimum three years of documented experience.
- B. Installer Qualifications: Company specializing in performing work of type specified and with at least three years of documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Comply with requirements of AAMA CW-10.
- B. Protect finished surfaces with wrapping paper or strippable coating during installation. Do not use adhesive papers or sprayed coatings that bond to substrate when exposed to sunlight or weather.

1.07 FIELD CONDITIONS

- A. Do not install sealants when ambient temperature is less than 40 degrees F.
- B. Maintain this minimum temperature during and 24 hours after installation of sealants.

1.08 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals for additional warranty requirements.
- B. Correct defective work within a five year period after Date of Substantial Completion.
- C. Manufacturer Warranty: Provide 5-year manufacturer warranty against failure of glass seal on insulating glass units, including interpane dusting or misting. Include provision for replacement of failed units. Complete forms in Owner's name and register with manufacturer.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Basis of Design: Kawneer; Trifab 400 Framing System (Non-Thermal).
www.kawneer.us.
- B. Aluminum Windows Manufacturers:
 - 1. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 ALUMINUM WINDOWS

- A. Aluminum Windows: Extruded aluminum frame and sash, factory fabricated, factory finished, with operating hardware, related flashings, and anchorage and attachment devices.
 - 1. Frame Depth: 4 inch.
 - 2. Provide factory-glazed units.
- B. Fixed, Non-Operable Type:
 - 1. Construction: Thermally broken.
 - 2. Glazing: Single; clear; transparent.

3. Interior Finish: Class I natural anodized.

2.03 COMPONENTS

- A. Glazing: See Section 08 80 00.
 1. For Interior Windows: Type Tempered, Safety Glass as specified in Division 08, Section "Glazing"..

2.04 MATERIALS

- A. Extruded Aluminum: ASTM B221 (ASTM B221M), 6063 alloy, T6 temper.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that wall openings and adjoining materials are ready to receive aluminum windows; see Section 07 25 00.

3.02 PRIME WINDOW INSTALLATION

- A. Install windows in accordance with manufacturer's instructions.
- B. Install windows in accordance with ASTM E2112.
- C. Attach window frame and shims to perimeter opening to accommodate construction tolerances and other irregularities.
- D. Align window plumb and level, free of warp or twist. Maintain dimensional tolerances and alignment with adjacent work.
- E. Install sill and sill end angles.
- F. Install glass and infill panels in accordance with requirements; see Section 08 80 00.

3.03 TOLERANCES

- A. Maximum Variation from Level or Plumb: 1/16 inches every 3 ft non-cumulative or 1/8 inches per 10 ft, whichever is less.

3.04 FIELD QUALITY CONTROL

- A. See Section 01 40 00 - Quality Requirements for independent field testing and inspection requirements, and requirements for monitoring quality of specified product installations.
- B. Repair or replace fenestration components that have failed designated field testing, and retest to verify performance complies with specified requirements.

3.05 CLEANING

- A. See Section 01 74 19 - Construction Waste Management and Disposal for additional requirements.
- B. Remove protective material from factory finished aluminum surfaces.
- C. Wash surfaces by method recommended and acceptable to window manufacturer; rinse and wipe surfaces clean.
- D. Upon completion of installation, thoroughly clean aluminum surfaces in accordance with AAMA 609 & 610.
- E. Remove excess glazing sealant by moderate use of mineral spirits or other solvent acceptable to sealant and window manufacturer.

END OF SECTION 08 51 13

**SECTION 087100
DOOR HARDWARE - DORMAKABA GROUP**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Hardware for fire-rated doors.
- B. Electrically operated and controlled hardware.
- C. Lock cylinders for doors with balance of hardware specified in other sections.
- D. Thresholds.
- E. Weatherstripping and gasketing.

1.02 RELATED REQUIREMENTS

- A. Section 062000 - Finish Carpentry: Wood door frames.
- B. Section 079200 - Joint Sealants: Sealants for setting exterior door thresholds.
- C. Section 080671 - Door Hardware Schedule: Schedule of door hardware sets.
- D. Section 081113 - Hollow Metal Doors and Frames.
- E. Section 081116 - Aluminum Doors and Frames.
- F. Section 081213 - Hollow Metal Frames.
- G. Section 081416 - Flush Wood Doors.
- H. Section 081433 - Stile and Rail Wood Doors.
- I. Section 084313 - Aluminum-Framed Storefronts: Door hardware, except as noted in section.
- J. Section 102600 - Wall and Door Protection: Door and frame protection.
- K. Section 281000 - Access Control: Electronic access control devices.

1.03 REFERENCE STANDARDS

- A. ADA Standards - 2010 ADA Standards for Accessible Design; 2010.
- B. ASTM E283/E283M - Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Skylights, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen; 2019.
- C. BHMA A156.1 - Standard for Butts and Hinges; 2021.
- D. BHMA A156.2 - Bored and Preassembled Locks and Latches; 2022.
- E. BHMA A156.3 - Exit Devices; 2020.
- F. BHMA A156.4 - Door Controls - Closers; 2019.
- G. BHMA A156.5 - Cylinders and Input Devices for Locks; 2020.
- H. BHMA A156.6 - Standard for Architectural Door Trim; 2021.
- I. BHMA A156.7 - Template Hinge Dimensions; 2016.
- J. BHMA A156.15 - Release Devices - Closer Holder, Electromagnetic and Electromechanical; 2021.
- K. BHMA A156.16 - Auxiliary Hardware; 2018.
- L. BHMA A156.18 - Materials and Finishes; 2020.
- M. BHMA A156.21 - Thresholds; 2019.
- N. BHMA A156.22 - Standard for Gasketing; 2021.
- O. BHMA A156.25 - Electrified Locking Devices; 2023.
- P. BHMA A156.26 - Standard for Continuous Hinges; 2021.
- Q. BHMA A156.28 - Standard for Recommended Practices for Mechanical Keying Systems; 2018.
- R. BHMA A156.31 - Electric Strikes and Frame Mounted Actuators; 2019.
- S. BHMA A156.115 - Hardware Preparation in Steel Doors and Steel Frames; 2016.

- T. BHMA A156.115W - Hardware Preparation in Wood Doors with Wood or Steel Frames; 2006.
- U. DHI (H&S) - Sequence and Format for the Hardware Schedule; 2019.
- V. DHI (KSN) - Keying Systems and Nomenclature; 2019.
- W. DHI (LOCS) - Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames; 2004.
- X. DHI WDHS.3 - Recommended Locations for Architectural Hardware for Flush Wood Doors; 1993; also in WDHS-1/WDHS-5 Series, 1996.
- Y. ICC (IBC) - International Building Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- Z. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2017.
- AA. ISO 9001 - Quality Management Systems — Requirements; 2015.
- BB. ITS (DIR) - Directory of Listed Products; Current Edition.
- CC. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- DD. NFPA 80 - Standard for Fire Doors and Other Opening Protectives; 2022.
- EE. NFPA 101 - Life Safety Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- FF. NFPA 105 - Standard for Smoke Door Assemblies and Other Opening Protectives; 2022.
- GG. NFPA 252 - Standard Methods of Fire Tests of Door Assemblies; 2022.
- HH. UL (DIR) - Online Certifications Directory; Current Edition.
- II. UL 10C - Standard for Positive Pressure Fire Tests of Door Assemblies; Current Edition, Including All Revisions.
- JJ. UL 294 - Access Control System Units; Current Edition, Including All Revisions.
- KK. UL 437 - Standard for Key Locks; Current Edition, Including All Revisions.
- LL. UL 1034 - Standard for Safety Burglary-Resistant Electrical Locking Mechanisms; Current Edition, Including All Revisions.
- MM. UL 1784 - Standard for Air Leakage Tests of Door Assemblies; Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordinate the manufacture, fabrication, and installation of products that door hardware is installed on.
- B. Sequence installation to ensure facility services connections are achieved in an orderly and expeditious manner.
- C. Preinstallation Meeting: Convene a preinstallation meeting one week prior to commencing work of this section; require attendance by affected installers and the following:
 - 1. Architect.
 - 2. Installer's Architectural Hardware Consultant (AHC).
 - 3. Hardware Installer.
 - 4. Owner's Security Consultant.
- D. Furnish templates for door and frame preparation to manufacturers and fabricators of products requiring internal reinforcement for door hardware.
- E. Keying Requirements Meeting:
 - 1. Schedule meeting at project site prior to Contractor occupancy.
 - 2. Attendance Required:
 - a. Owner.
 - b. Architect.
 - c. Owner's Security Consultant.
 - 3. Agenda:
 - a. Establish keying requirements.
 - b. Verify locksets and locking hardware are functionally correct for project requirements.

- c. Verify that keying and programming complies with project requirements.
- d. Establish keying submittal schedule and update requirements.
- 4. Incorporate "Keying Requirements Meeting" decisions into keying submittal upon review of door hardware keying system including, but not limited to, the following:
- 5. Record minutes and distribute copies within two days after meeting to participants, with two copies to Architect, Owner, participants, and those affected by decisions made.
- 6. Deliver established keying requirements to manufacturers.

1.05 SUBMITTALS

- A. See Section 013000 - Administrative Requirements for submittal procedures.
- B. Product Data: Manufacturer's catalog literature for each type of hardware, marked to clearly show products to be furnished for this project, and includes construction details, material descriptions, finishes, and dimensions and profiles of individual components.
- C. Shop Drawings - Door Hardware Schedule: A detailed listing that includes each item of hardware to be installed on each door.
 - 1. Prepared by or under supervision of Architectural Hardware Consultant (AHC).
 - 2. Comply with DHI (H&S) using door numbering scheme and hardware set numbers as indicated in Contract Documents.
 - a. Submit in vertical format.
 - 3. List groups and suffixes in proper sequence.
 - 4. Include complete description for each door listed.
 - 5. Include manufacturer's and product names, and catalog numbers; include functions, types, styles, sizes and finishes of each item.
- D. Shop Drawings - Electrified Door Hardware: Include diagrams for power, signal, and control wiring for electrified door hardware that include details of interface with building safety and security systems. Provide elevations and diagrams for each electrified door opening as follows:
 - 1. Prepared by or under supervision of Architectural Hardware Consultant (AHC) and Electrified Hardware Consultant (EHC).
 - 2. Elevations: Include front and back elevations of each door opening showing electrified devices with connections installed and an operations narrative describing how opening operates from either side at any given time.
 - 3. Diagrams: Include point-to-point wiring diagrams that show each device in door opening system with related colored wire connections to each device.
- E. Manufacturer's Installation Instructions: Indicate special procedures and perimeter conditions requiring special attention.
- F. Manufacturer's qualification statement.
- G. Installer's qualification statement.
- H. Supplier's qualification statement.
- I. Maintenance Data: Include data on operating hardware, lubrication requirements, and inspection procedures related to preventative maintenance.
 - 1. Include manufacturer's parts lists and templates.
- J. Keying Schedule:
 - 1. Submit three (3) copies of Keying Schedule in compliance with requirements established during Keying Requirements Meeting unless otherwise indicated.
- K. Warranty: Submit manufacturer's warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.
- L. Project Record Documents: Record actual locations of concealed equipment, services, and conduit.
- M. Maintenance Materials and Tools: Furnish the following for Owner's use in maintenance of project.
 - 1. See Section 016000 - Product Requirements, for additional provisions.

1.06 QUALITY ASSURANCE

- A. Standards for Fire-Rated Doors: Maintain one copy of each referenced standard on site, for use by Architect and Contractor.

- B. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with minimum three years of documented experience.
- C. Installer Qualifications: Company specializing in performing work of the type specified for commercial door hardware with at least three years of documented experience.
- D. Supplier Qualifications: Company with certified Architectural Hardware Consultant (AHC) and Electrified Hardware Consultant (EHC) to assist in work of this section.
- E. Manufacturer Certifications: Provide products manufactured in facilities using quality management system certified for compliance with ISO 9001 and environmental management systems certified for compliance with ISO 14001.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Package hardware items individually; label and identify each package with door opening code to match door hardware schedule.

1.08 WARRANTY

- A. See Section 017800 - Closeout Submittals for additional warranty requirements.
- B. Manufacturer Warranty: Provide manufacturer warranty against defects in material and workmanship for period indicated, from Date of Substantial Completion. Complete forms in Owner's name and register with manufacturer.
 - 1. Closers: Five years, minimum.
 - 2. Exit Devices: Three years, minimum.
 - 3. Locksets and Cylinders: Three years, minimum.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS

- A. Provide specified door hardware as required to make doors fully functional, compliant with applicable codes, and secure to extent indicated.
- B. Provide individual items of single type, of same model, and by same manufacturer.
- C. Closers:
 - 1. Provide door closer on each exterior door, unless otherwise indicated.
 - 2. Provide door closer on each fire-rated and smoke-rated door.
 - 3. Spring hinges are not an acceptable self-closing device, unless otherwise indicated.
- D. Weatherstripping and Gasketing:
 - 1. Provide weatherstripping on each exterior door at head, jambs, and meeting stiles of door pairs, unless otherwise indicated.
 - 2. Provide door bottom sweep on each exterior door, unless otherwise indicated.
 - 3. Fabricate as continuous gasketing, do not cut or notch gasketing material.
- E. Electrically Operated and/or Controlled Hardware: Provide necessary power supplies, power transfer hinges, relays, and interfaces as required for proper operation; provide wiring between hardware and control components and to building power connection in compliance with NFPA 70.
- F. See Section 281000 for additional access control system requirements.
- G. Fasteners:
 - 1. Provide fasteners of proper type, size, quantity, and finish that comply with commercially recognized standards for proposed applications.
 - a. Aluminum fasteners are not permitted.
 - b. Provide phillips flat-head screws with heads finished to match door surface hardware unless otherwise indicated.
 - 2. Provide machine screws for attachment to reinforced hollow metal and aluminum frames.
 - a. Self-drilling (Tek) type screws are not permitted.
 - 3. Provide stainless steel machine screws and lead expansion shields for concrete and masonry substrates.
 - 4. Provide wall grip inserts for hollow wall construction.
 - 5. Fire-Resistance-Rated Applications: Comply with NFPA 80.
 - a. Provide wood or machine screws for hinges mortised to doors or frames, strike plates to frames, and closers to doors and frames.

- b. Provide steel through bolts for attachment of surface mounted closers, hinges, or exit devices to door panels unless proper door blocking is provided.

2.02 PERFORMANCE REQUIREMENTS

- A. Provide door hardware products that comply with the following requirements:
 - 1. Applicable provisions of federal, state, and local codes.
 - a. ICC (IBC).
 - b. NFPA 101.
 - 2. Accessibility: ADA Standards and ICC A117.1.
 - 3. Fire-Resistance-Rated Doors: NFPA 80, listed and labeled by qualified testing agency for fire protection ratings indicated, based on testing at positive pressure in accordance with NFPA 252 or UL 10C.
 - 4. Hardware on Fire-Resistance-Rated Doors: Listed and classified by UL (DIR), ITS (DIR), testing firm acceptable to authorities having jurisdiction, or _____ as suitable for application indicated.
 - 5. Hardware for Smoke and Draft Control Doors (Indicated as "S" on Drawings): Provide door hardware that complies with local codes, and requirements of assemblies tested in accordance with UL 1784.
 - a. Air Leakage Rate: Tested in accordance with UL 1784, with air leakage rate not to exceed 3.0 cfm/sf (0.01524 cu m/sec/sq m) of door opening at 0.10 inch (24.9 Pa) of water for both ambient and elevated temperature tests.
 - 1) When required for acceptance by authorities having jurisdiction for code-mandated applications, test without an artificial bottom seal.
 - 6. Hardware Preparation for Steel Doors and Steel Frames: BHMA A156.115.
 - 7. Hardware Preparation for Wood Doors with Wood or Steel Frames: BHMA A156.115W.
 - 8. Products Requiring Electrical Connection: Listed and classified by UL (DIR) as suitable for the purpose specified.

2.03 HINGES

- A. Manufacturers: Conventional butt hinges.
 - 1. BEST; dormakaba Group: www.bestaccess.com/#sle.
 - 2. Hagar.
- B. Properties:
 - 1. Butt Hinges: As applicable to each item specified.
 - a. Standard Weight Hinges: Minimum of two (2) permanently lubricated non-detachable bearings.
 - b. Heavy Weight Hinges: Minimum of four (4) permanently lubricated bearings on heavy weight hinges.
 - c. Template screw hole locations.
 - d. Bearing assembly installed after plating.
 - e. Bearings: Concealed fully hardened bearings.
 - f. Bearing Shells: Shapes consistent with barrels.
 - g. Pins: Easily seated, non-rising pins.
 - 1) Fully plate hinge pins.
 - 2) Non-Removable Pins: Slotted stainless steel screws.
 - h. UL 10C listed for fire-resistance-rated doors.
 - 2. Continuous Hinges: As applicable to each item specified.
 - a. Geared Continuous Hinges: As applicable to each item specified.
 - 1) Non-handed.
 - 2) Anti-spinning through-fastener.
 - 3) UL 10C listed for fire-resistance-rated doors.
 - (a) Metal Door Installation: Rated up to 90 minutes.
 - (b) Wood Door Installation: Rated up to 60 minutes.
 - 4) Sufficient size to permit door to swing 180 degrees
- C. Sizes: See Door Hardware Schedule.
 - 1. Hinge Widths: As required to clear surrounding trim.
 - 2. Sufficient size to allow 180 degree swing of door.
- D. Finishes: See Door Hardware Schedule.

1. Fully polish hinges; front, back, and barrel.
- E. Grades:
 1. Butt Hinges: Comply with BHMA A156.1 and BHMA A156.7 for templated hinges.
 2. Comply with BHMA A156.18 Materials and Finishes.
 3. Continuous Hinges: Comply with BHMA A156.26, Grade 1.
- F. Material: Base metal as indicated for each item by BHMA material and finish designation.
- G. Types:
 1. Butt Hinges: Include full mortise hinges.
 2. Continuous Hinges: Include geared hinges.
- H. Options: As applicable to each item specified.
- I. Quantities:
 1. Butt Hinges: Three (3) hinges per leaves up to 90 inches (2286 mm) in height. Add one (1) for each additional 30 inches (762 mm) in height or fraction thereof.
 - a. Hinge weight and size unless otherwise indicated in hardware sets:
 - 1) For doors up to 36 inches (914 mm) wide and up to 1-3/4 inches (44.5 mm) thick provide hinges with a minimum thickness of 0.134 inch (3.4 mm) and a minimum of 4-1/2 inches (114 mm) in height.
 - 2) For doors from 36 inches (914 mm) wide up to 42 inches (1067 mm) wide and up to 1-3/4 inches (44.5 mm) thick provide hinges with a minimum thickness of 0.145 inch (3.7 mm) and a minimum of 4-1/2 inches (114 mm) in height.
 - 3) For doors from 42 inches (1067 mm) wide up to 48 inches (1219 mm) wide and up to 1-3/4 inches (44.5 mm) thick provide hinges with a minimum thickness of 0.180 inch (4.6 mm) and a minimum of 5 inches (127 mm) in height.
 - 4) For doors greater than 1-3/4 inches (44.5 mm) thick provide hinges with a minimum thickness of 0.180 inch (4.6 mm) and a minimum of 5 inches (127 mm) in height.
 2. Continuous Hinges: One per door leaf.
- J. Applications: At swinging doors.
 1. Provide non-removable pins at out-swinging doors with locking hardware and all exterior doors.
- K. Products:
 1. Butt Hinges:
 - a. Concealed bearing, five (5) knuckle.
 2. Continuous Hinges:
 - a. Aluminum geared hinges.

2.04 EXIT DEVICES

- A. Manufacturers:
 1. BEST, dormakaba Group: www.bestaccess.com/#sle.
 2. Substitutions As Approved By Architect.
- B. Properties:
 1. Actuation: Full-length touchpad.
 2. Chassis:
 - a. Construction: Investment cast steel, zinc dichromate plated.
 - b. Compatibility: Standard Stile and Narrow Stile doors.
 3. Touchpads: 'T' style metal touchpads and rail assemblies with matching chassis covers end caps.
 4. Latch Bolts: Stainless steel deadlocking with 3/4 inch (19 mm) projection using latch bolt.
 5. Lever Design: Match project standard lockset trims.
 6. Cylinder: Include where cylinder dogging or locking trim is indicated.
 7. Strike as recommended by manufacturer for application indicated.
 8. Sound dampening on touch bar.
 9. Dogging:
 - a. Non-Fire-Resistance-Rated Devices: Cylinder 1/4 inch (6 mm) hex key dogging.

- b. Fire-Resistance-Rated Devices: Manual dogging not permitted.
- 10. Touch bar assembly on wide style exit devices to have a 1/4 inch (6.3 mm) clearance to allow for vision frames.
- 11. All exposed exit device components to be of architectural metals and "true" architectural finishes.
- 12. Handing: Field-reversible.
- 13. Fasteners on Back Side of Device Channel: Concealed - exposed fasteners not allowed.
- 14. Vertical Latch Assemblies' Operation: Gravity, without use of springs.
- C. Grades: Complying with BHMA A156.3, Grade 1.
 - 1. Provide exit devices tested and certified by UL or by a recognized independent laboratory for mechanical operational testing to 10 million cycles minimum with inspection confirming Grade 1 Loaded Forces have been maintained.
- D. Standards Compliance:
 - 1. UL Listed for Panic and Fire for Class II Circuitry.
 - 2. Provide UL (DIR) listed exit device assemblies for fire-resistance-rated doors.
 - 3. Comply with UL 10C.
- E. Code Compliance: As required by authorities having jurisdiction in the State in which the Project is located.
- F. Options:
- G. Products:
 - 1. 2000.

2.05 REMOVABLE MULLIONS

- A. Manufacturers:
 - 1. BEST, dormakaba Group: www.bestaccess.com/#sle.
 - 2. Substitutions As Approved By Architect.
- B. Properties:
 - 1. Rectangular shape 3 inches (76 mm) by 2 inches (51 mm) tubes with minimum 1/8 inch (3.2 mm) wall thickness.
 - 2. Furnished by the same manufacturer as exit devices.
 - 3. Pre-drilled holes for installation of exit device strikes.
 - 4. Spacers: Provide as required for proper installation, based on frame profile and dimensions.
- C. Grades: Complying with BHMA A156.3.
- D. Materials: Manufacturer's standard for items specified.
 - 1. Top and Bottom Brackets: Investment-cast steel.
- E. Options:
 - 1. Furnish Keyed Removable "KR" feature and corresponding cylinders as specified.
 - a. Mullions capable of being installed without physical key present.
 - b. Physical key required to operate.
- F. Applications: As indicated on drawings and in Door Hardware Schedule.
- G. Products:
 - 1. 822 Series.

2.06 ELECTRIC STRIKES

- A. Manufacturers:
 - 1. RCI; dormakaba Group: www.dormakaba.com/us-en/#sle.
 - 2. Trine.
- B. Properties:
 - 1. Provide UL (DIR) listed burglary-resistant devices.
 - 2. Provide UL 1034 compliant devices.
 - 3. Provide UL 10C compliant devices.
 - 4. Non-handed devices suitable for door frame material and scheduled lock configuration.
 - 5. Field-selectable Fail Safe or Fail Secure modes, unless otherwise noted.
 - 6. Include transformer and rectifier as necessary for complete installation.

- 7. Holding Force: 1,500 lbs (680.4 kg).
- 8. Accommodating latch projections of 1/2 inch (13 mm) or 5/8 inch (16 mm).
- 9. Horizontal adjustment up to 1/8 inch (3.2 mm).
- C. Grades: Complying with BHMA A156.31, Grade 1.
- D. Code Compliance: As required by authorities having jurisdiction in the State in which the Project is located.
- E. Options: As applicable to each item specified.
 - 1. Voltage: 24 VDC.
 - 2. Latch bolt monitor.
- F. Installation: Connect electric strikes into fire alarm where non-rated doors are scheduled to release with fire or sprinkler alarm condition.
- G. Products:
 - 1. 2 Series (F2164, 2366).

2.07 LOCK CYLINDERS

- A. Manufacturers:
 - 1. BEST, dormakaba Group: www.bestaccess.com/#sle.
 - 2. Substitutions: Not permitted.
- B. Properties:
 - 1. Lock Cylinders: Provide key access on outside of each lock, unless otherwise indicated.
 - a. Provide cylinders from same manufacturer as locking device.
 - b. Provide cams and/or tailpieces as required for locking devices.
 - c. Provide cylinders with appropriate format interchangeable cores where indicated.
- C. Grades:
 - 1. Standard Security Cylinders: Comply with BHMA A156.5.
- D. Material:
- E. Types: As applicable to each item specified.
 - 1. Standard security small format interchangeable core (SFIC) type cylinders, with seven-pin, 1C - 7-pin cores.
 - 2. High security type cylinders with seven-pin cores.
- F. Applications: At locations indicated in hardware sets, and as follows
 - 1. As required for items with locking devices provided by other sections, including at elevator controls and cabinets.
 - a. When provisions for lock cylinders are referenced elsewhere in the Project Manual to this Section, provide compatible type of lock cylinder, keyed to building keying system, unless otherwise indicated.
- G. Products:
 - 1. Rim/mortise.

2.08 CYLINDRICAL LOCKS

- A. Manufacturers:
 - 1. BEST, dormakaba Group: www.bestaccess.com/#sle.
 - 2. Substitutions: Not permitted.
- B. Properties:
 - 1. UL listed for use on single or pairs of doors with fire-resistance-rating up to 3 hours and latchbolt throw of 1/2 inch (12.7 mm).
 - 2. Mechanical Locks:
 - a. Fitting modified ANSI A115.2 door preparation.
 - b. Door Thickness Fit: 1-3/8 inches (35 mm) to 2-1/4 inches (57 mm) thick doors.
 - c. Construction: Hub, side plate, shrouded rose, locking pin to be a one-piece casting with a shrouded locking lug.
 - 1) Through-bolted anti-rotational studs.
 - 2) Lock chassis constructed of steel, stainless steel and zinc components for superior strength and corrosion resistance.

- d. Cast stainless steel latch retractor with roller bearings for exceptionally smooth operation and superior strength and durability.
- e. Bored Hole: 2-1/8 inch (54 mm) diameter.
- f. Backset: 5 inches (127 mm) unless otherwise indicated.
- g. Latch: Single piece tail-piece construction.
 - 1) Latchbolt Throw: 9/16 inch (14.3 mm), minimum.
- h. Cylinders:
 - 1) Cylinder Core Types: Locks capable of supporting manufacturers' cores, as applicable.
 - (a) Small format interchangeable.
- i. Lever Trim:
 - 1) Style: See Door Hardware Schedule.
 - 2) Functionality: Allow the lever handle to move up to 45 degrees from horizontal position prior to engaging the latchbolt assembly.
 - 3) Strength: Locksets outside locked lever designed to withstand minimum 1,400 inch-lbs (158.2 Nm) of torque. In excess of that, a replaceable part will shear. Key from outside and/or inside lever will still operate lockset.
 - 4) Independent spring mechanism for each lever.
 - (a) Contain lever springs in the main lock hub.
 - 5) Outside Lever Sleeve: Seamless one-piece construction.
 - 6) Keyed Levers: Removable only after core is removed by authorized control key.
- 3. Electrified Locks: Same properties as standard locks, and as follows:
 - a. Voltage: 24 VDC.
 - b. Function: Electrically locked (Fail Safe) or unlocked (Fail Secure), as indicated for each lock in Door Hardware Schedule.
 - c. Temperature Control Module (TCM).
 - d. Internal request-to-exit feature.
- C. Finishes: See Door Hardware Schedule.
 - 1. Core Faces: Match finish of lockset.
- D. Grades: Comply with BHMA A156.2, Grade 1, Series 4000, Operational Grade 1, Extra Heavy Duty.
 - 1. Durability: Passing 50 Million cycle tests verified by third party testing agency.
- E. Material: Manufacturer's standard for specified lock.
 - 1. Critical Latch and Chassis Components: Brass or corrosion-resistance treated steel.
 - 2. Outside Lever Sleeve: Hardened steel alloy.
- F. Options:
 - 1. Regulatory Compliance: As required by authorities having jurisdiction the State in which the Project is located.
- G. Products: Cylindrical locks, including mechanical and electrified types.
 - 1. 9K (Grade 1).

2.09 CLOSERS

- A. Manufacturers:
 - 1. BEST, dormakaba Group www.bestaccess.com/#sle.
 - 2. Substitutions As Approved By Architect.
- B. Properties:
 - 1. Surface Mounted Closers: Manufacturer's standard.
 - a. Construction: R14 high silicon aluminum alloy or cast.
 - b. Maximum Projection from Face of Door: 2-7/16 inches (62 mm).
 - c. Mechanism: Separate tamper-resistant adjusting valves for closing and latching speeds.
 - 1) Include advanced backcheck feature.
 - 2) Include delayed action feature.
 - d. Pinion: Stainless steel.
 - e. Hydraulic Fluid: All-weather type.
 - f. Arm Assembly: Standard for product specified.

- 1) Material: Steel.
- 2) Include hold-open, integral stop, or spring-loaded stop feature, as specified in Door Hardware Schedule.
- 3) Parallel arm to be a heavy-duty rigid arm.
- 4) Where "IS" or "S-IS" arms are specified in hardware sets, if manufacturer does not offer this arm provide a regular arm mount closer in conjunction with a heavy-duty overhead stop equal to a dormakaba 900 Series.
- g. Covers:
 - 1) Type: Standard for product selected.
 - (a) Full.
 - 2) Material: Plastic.
 - 3) Finish: Painted.
- C. Grades:
 1. Closers: Comply with BHMA A156.4, Grade 1.
 - a. Underwriters Laboratories Compliance:
 - 1) Product Listing: UL (DIR) and ULC for use on fire-resistance-rated doors.
 - (a) UL 228 - Door Closers-Holders, With or Without Integral Smoke Detectors.
 - b. Testing Standards Compliance: Meeting requirements of UL 10C for positive pressure.
- D. Code Compliance: As required by authorities having jurisdiction in the State in which the Project is located.
 1. Devices listed with California Department of Forestry and Fire Protection, Office of the State Fire Marshal.
- E. Types:
 1. Rack-and-pinion, surface-mounted. 1-1/2 inches (38 mm) minimum bore.
- F. Options:
 1. Delayed action, adjustable with an independent valve.
 2. Advanced backcheck.
 3. Adjustable, for force or angle of opening hold open.
 4. Cushion limit stay.
- G. Installation:
 1. Mounting: Includes surface mounted installations.
 2. Mount closers on non-public side of door and stair side of stair doors unless otherwise noted in hardware sets.
 3. At outswinging exterior doors, mount closer on interior side of door.
 4. Provide adapter plates, shim spacers, and blade stop spacers as required by frame and door conditions.
 5. Where an overlapping astragal is included on pairs of swinging doors, provide coordinator to ensure door leaves close in proper order.
- H. Products:
 1. Surface Mounted:
 - a. HD8000
 - b. Substitutions As Approved By Architect.

2.10 PROTECTION PLATES

- A. Manufacturers:
 1. Trimco: www.trimcohardware.com/#sle.
 2. Equals by any current member of BHMA.
- B. Properties:
 1. Plates:
 - a. Armor Plates: Provide on bottom half of push side of doors that require protection from objects moving through openings that may damage door surface.
 - 1) Size: 40 inches (1016 mm) high by 1-1/2 inch (38 mm) less door width (LDW) on pull side and 2 inch (51 mm) LDW on push side of door.
 - 2) Notch or drill to accept specified hardware

- b. Kick Plates: Provide along bottom edge of push side of every wood door with closer, except aluminum storefront and glass entry doors, unless otherwise indicated.
 - 1) Size: 10 inches (254 mm) high by 2 inch (51 mm) less door width (LDW) on push side of door.
 - c. Edges: Beveled, on four (4) unless otherwise indicated.
 - d. Drill and countersing plates for mounting screws.
 - C. Grades: Comply with BHMA A156.6.
 - D. Material: As indicated for each item by BHMA material and finish designation.
 - 1. Metal Properties: Stainless steel.
 - a. Metal, Standard Duty: Thickness 0.050 inch (1.27 mm), minimum.
 - E. Installation:
 - 1. Fasteners: Countersunk screw fasteners
 - F. Products:
 - 1. Kick Plates

2.11 STOPS AND HOLDERS

- A. Manufacturers:
 - 1. Trimco: www.trimcohardware.com/#sle.
 - 2. Equals by any current member of BHMA.
- B. General: Provide overhead stop/holder when wall or floor stop is not feasible.
- C. Properties:
 - 1. Door Holders:
 - 2. Wall Bumpers:
 - 3. Floor Stops:
- D. Grades:
 - 1. Door Holders, Wall Bumpers, and Floor Stops: Comply with BHMA A156.16 and Resilient Material Retention Test as described in this standard.
- E. Material: Base metal as indicated for each item by BHMA material and finish designation.
- F. Types:
 - 1. Door Holders: Lever with rubber bumper at bottom end.
 - 2. Wall Bumpers: Bumper, concave, wall stop.
 - 3. Floor Stops: Provide with bumper floor stop.
- G. Installation:
 - 1. Non-Masonry Walls: Confirm adequate wall reinforcement has been installed to allow lasting installation of wall bumpers.
- H. Products: Trimco:
 - 1. Door Holders: 1220-5.
 - 2. Wall Bumpers: 1270 WX & 1298.
 - 3. Floor Stops: 7280 & 1209.

2.12 THRESHOLDS

- A. Manufacturers:
 - 1. National Guard Products, Inc: www.ngpinc.com/#sle.
 - 2. Reese.
 - 3. K.N. Crowder.
- B. Properties:
 - 1. Threshold Surface: Fluted horizontal grooves across full width.
- C. Grades: Thresholds: Comply with BHMA A156.21.
- D. Material: Base metal as indicated for each item by BHMA material and finish designation.
 - 1. Threshold Assemblies: Aluminum, with santoprene weatherstripping.
- E. Types: As applicable to project conditions. Provide barrier-free type at every location where specified.
 - 1. Saddle Thresholds: Without thermal break.
- F. Products:

1. Threshold.

2.13 WEATHERSTRIPPING AND GASKETING

- A. Manufacturers:
 1. National Guard Products, Inc: www.ngpinc.com/#sle.
 2. Reese.
 3. K.N. Crowder.
- B. Properties:
 1. Weatherstripping Air Leakage Performance: Not exceeding 0.3 cfm/sq ft of door opening at 0.3 inches of water pressure differential for single doors, and 0.5 cfm/sq ft of door area at 0.3 inches of water pressure differential for double doors for gasketing other than smoke control, as tested according to ASTM E283/E283M; with resilient or flexible seal strips that are easily replaceable and readily available from stocks maintained by manufacturer.
 2. Rigid, Housed, Perimeter Gasketing: Sponge silicone gasket material held in place by aluminum housing; fastened to frame stop with screws.
 3. Door Sweeps: Silicone gasket material held in place by flat aluminum housing or flange; surface mounted to face of door with screws.
- C. Grades: Comply with BHMA A156.22.
- D. Products:
 1. Weatherstripping: See Door Hardware Schedule.
 2. Smoke Seals: See Door Hardware Schedule.
 3. Meeting Stile Seals: See Door Hardware Schedule.
 4. Door Bottom Seals:
 - a. Door Sweeps: See Door Hardware Schedule.

2.14 MISCELLANEOUS ITEMS

- A. Manufacturers:
 1. Trimco: www.trimcohardware.com/#sle.
- B. Properties:
 1. Coat Hooks: Provide on room side of door, screw fastened.
 - a. Material: Stainless steel.
 2. Silencers: Provide at equal locations on door frame to mute sound of door's impact upon closing.
 - a. Single Door: Provide three on strike jamb of frame.
 - b. Pair of Doors: Provide two on head of frame, one for each door at latch side.
 - c. Material: Rubber, gray color.
- C. Products:
 1. Coat Hooks.
 2. Silencers.

2.15 ELECTRIFIED HARDWARE

- A. Manufacturers:
 1. dormakaba; dormakaba Group: www.dormakaba.com/us-en/#sle.
 2. RCI; dormakaba Group: www.dormakaba.com/us-en/#sle.
- B. Properties:
 1. Door Position Switches: Recessed devices with magnetic contacts.
 - a. Power Requirement: 50mA Max, 100 VDC.
 - b. SPDT configuration.
 2. Power Supply Units: Manufacturer's standard.
 - a. Regulatory Compliance:
 - 1) United States Compliance:
 - (a) UL listed for Class II Output.
 - (b) Comply with UL 294 Standards incorporating enhanced Access Control communications capabilities.
 - b. Enclosures: NEMA Type 1, with hinged cover and knockouts.
 - c. Power: 24 VAC, 10 Amp; field-selectable.
 - 1) Output circuit protection with 4 Amp fuse.

- d. Emergency Release Terminals: Designed to release devices upon activation of fire alarm system.
 - e. Auxiliary contacts for remote signaling.
 - f. User-selectable time delay from 0 to 4 minutes.
 - g. Fire Alarm System Interface: Standard.
 - h. Output Distribution Board with indicator LEDs.
 - i. On/Off LED power indicator.
- 3. Wire Harnesses: Of sufficient length, with quick connectors.
 - a. Wire Harness End Connection to Power Supply or Junction Box: One end with bare leads.
- 4. Key Switches: Include single gang, with bi-color LED.
 - a. Listed by UL.
 - b. Power: 24 VDC.
 - c. Operation: As indicated in Door Hardware Schedule.
 - d. Operating Temperature: 32 to 110 degrees F (0 to 43 degrees C).
 - e. Electrical Box: Standard interior and weather-resistant exterior, recessed boxes as required for application.
 - f. Type: Small format interchangeable cores.
- C. Products:
 - 1. Door Position Switches:
 - a. 9540 Recessed Magnetic Contact/Door Position Switch.
 - 2. Power Supplies:
 - a. DKPS Series.
 - 3. Key Switches:

2.16 KEYS AND CORES

- A. Manufacturers:
 - 1. BEST, dormakaba Group: www.bestaccess.com/#sle.
 - 2. Substitutions: Not permitted.
- B. Properties: Complying with guidelines of BHMA A156.28.
 - 1. Provide small format interchangeable core.
 - 2. Provide Patented CORMAX keys and cores.
 - 3. Provide keying information in compliance with DHI (KSN) standards.
 - 4. Keying Schedule: Arrange for a keying meeting, with Architect, Owner and hardware supplier, and other involved parties to ensure locksets and locking hardware, are functionally correct and keying complies with project requirements.
 - 5. Keying: Master keyed.
 - 6. Include construction keying and control keying with removable core cylinders.
 - 7. Supply keys in following quantities:
 - a. Master Keys: 4 each.
 - b. Construction Master Keys: 6 each.
 - c. Construction Keys: 15 each.
 - d. Construction Control Keys: 2 each.
 - e. Control Keys if New System: 2 each.
 - 8. Provide key collection envelopes, receipt cards, and index cards in quantity suitable to manage number of keys.
 - 9. Deliver keys with identifying tags to Owner by security shipment direct from manufacturer.
 - 10. Permanent Keys and Cores: Stamped with applicable key marking for identification. Do not include actual key cuts within visual key control marks or codes. Stamp permanent keys "Do Not Duplicate."
 - 11. Include installation of permanent cores and return construction cores to hardware supplier. Construction cores and keys to remain property of hardware supplier.
- C. Products:
 - 1. Patented:
 - a. CORMAX.

2.17 FINISHES

- A. Finishes: Provide door hardware of same finish, unless otherwise indicated.

1. Finish: 630; satin stainless steel, with stainless steel 3000 series base material (former US equivalent 32D), 652; satin chromium plated over nickel, with steel base material (former US equivalent 26D), and 689; aluminum painted, with any base material (former US equivalent US28); BHMA A156.18.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that doors and frames are ready to receive this work; labeled, fire-rated doors and frames are properly installed, and dimensions are as indicated on shop drawings.
- B. Correct all defects prior to proceeding with installation.
- C. Verify that electric power is available to power operated devices and of correct characteristics.

3.02 INSTALLATION

- A. Install hardware in accordance with manufacturer's instructions and applicable codes.
- B. Install hardware using the manufacturer's fasteners provided. Drill and tap all screw holes located in metallic materials. Do not use "Riv-Nuts" or similar products.
- C. Install hardware on fire-rated doors and frames in accordance with applicable codes and NFPA 80.
- D. Install hardware for smoke and draft control doors in accordance with NFPA 105.
- E. Use templates provided by hardware item manufacturer.
- F. Do not install surface mounted items until application of finishes to substrate are fully completed.
- G. Wash down masonry walls and complete painting or staining of doors and frames.
- H. Complete finish flooring prior to installation of thresholds.
- I. Door Hardware Mounting Heights: Distance from finished floor to center line of hardware item. As indicated in following list; unless noted otherwise in Door Hardware Schedule or on drawings.
 1. For Steel Doors and Frames: Install in compliance with DHI (LOCS) recommendations.
 2. For Steel Doors and Frames: See Section 6549.
 3. For Steel Door Frames: See Section 081213.
 4. For Aluminum-Framed Storefront Doors and Frames: See Section 084313.
 5. For Wood Doors: Install in compliance with DHI WDHS.3 recommendations.
 6. Flush Wood Doors: See Section 081416.
 7. Stile and Rail Wood Doors: See Section 081433.
 8. Mounting heights in compliance with ADA Standards:
 - a. Locksets: 40-5/16 inch (1024 mm).
 - b. Push Plates/Pull Bars: 42 inch (1067 mm).
 - c. Deadlocks (Deadbolts): 48 inch (1219 mm).
 - d. Exit Devices: 40-5/16 inch (1024 mm).
 - e. Door Viewer: 43 inch (1092 mm); standard height 60 inch (1524 mm).
- J. Set exterior door thresholds with full-width bead of elastomeric sealant at each point of contact with floor providing a continuous weather seal; anchor thresholds with stainless steel countersunk screws.
 1. See Section 079200 for additional requirements.
- K. Include in installation for existing doors and frames any necessary field modification and field preparation of doors and frames for new hardware. Provide necessary fillers, reinforcements, and fasteners for mounting new hardware and to cover existing door and frame preparations.

3.03 FIELD QUALITY CONTROL

- A. Perform field inspection and testing under provisions of Section 014000 - Quality Requirements.

- B. Provide an Architectural Hardware Consultant (AHC) to inspect installation and certify that hardware and installation has been furnished and installed in accordance with manufacturer's instructions and as specified.

3.04 ADJUSTING

- A. Adjust work under provisions of Section 017000 - Execution and Closeout Requirements.
- B. Adjust hardware for smooth operation.
- C. Adjust gasketing for complete, continuous seal; replace if unable to make complete seal.

3.05 CLEANING

- A. Clean finished hardware in accordance with manufacturer's written instructions after final adjustments have been made.
- B. Clean adjacent surfaces soiled by hardware installation activities.
- C. Replace items that cannot be cleaned to manufacturer's level of finish quality at no additional cost.
- D. See Section 017419 - Construction Waste Management and Disposal, for additional requirements.

3.06 PROTECTION

- A. Protect finished Work under provisions of Section 017000 - Execution and Closeout Requirements.
- B. Do not permit adjacent work to damage hardware or finish.

SCHEDULES

Manufacturer list

BES	Best
PRE	BEST (Precision)
NGP	National Guard Products
RCI	Rutherford Controls Inc
TRI	Trimco

Option list

Code:	Name:
MA	Maintained
PC90	PC90 Full Size Plastic
AVB	AVB Advanced Variable Backchk
D	Storeroom
S300	Standard strike
3	2-3/4" Backset
RP3	Rings for 7 pin cylinder
CORMAX	CORMAX
BSHD90	BSHD90 Heavy-Duty Bld Stop Spc
MO	Momentary
S3	ANSI 4 7/8" Strike
LD	Less Dogging
16	16 adjustable size 1-6
10"	Height
7	7 Pin
LDW	Less Door Width
SNTPK	Standard Fastener Pack, Sex nuts 1 3/4 mac scrw
PC	PC Plastic

4	Standard Mortise
SPAT90	HD thumb-turn HO
WX	Wrought Wall Bumper Convex Combo Pack
DA	DA Delayed Action
(1/4-20 MS/EA)	1/4-20 Mach. Screw/Exp Anchor
S	Silicone
N	Narrow Faceplate
DS/R	Spring Stop Parallel Arm
CB179	Concealed Bearing 5 Knuckle Standard Weight Hinge
LAR	Length As Required
RP	Rim Cylinder Ring
DP90	HD Parallel Arm Drop Plate
F2LM	Plug in Latch Monitor
NRP	NON-REMOVABLE PINS
CSK	Counter Sunk Holes

Finish list

Code:	Name:
28	Brushed Anodized Aluminum
W	White
689	Aluminum Powder Coat
A / AL	Anodized Aluminum
26D / 626	26D>CHROMIUM PLATED SATIN
Gray	Gray Rubber
630	Satin stainless steel

Specification Report

Set #1 - Sprinkler Closet

Doors: 52A

3.0	Hinge	CB179 NRP 45X45	26D	BES
1.0	Cylindrical Lock	9K 3 7 D 15 D S3 CORMAX	626	BES
1.0	Wall Stop	1270 WX	630	TRI
3.0	Silencer	1229A	Gray	TRI

Set #2 - Office

Doors: 52

3.0	Hinge	CB179 NRP 45X45	26D	BES
1.0	Cylindrical Lock	9K 3 7 D 15 D S3 CORMAX	626	BES
1.0	Electric Strike	F2164 F2LM	32D	RCI
1.0	Door Closer	HD80 16 DS/R PC SNDTPK	689	BES
1.0	Kick Plate	K0050 10" X 2" LDW CSK	630	TRI
1.0	Armor Plate	KA050 40" X 1" LDW CSK HWD Prep	630	TRI
3.0	Silencer	1229A	Gray	TRI
1.0	Card Reader	By Div. 28 Contractor		
1.0	Power Supply	DKPS-2A		RCI
1.0	Door Position Switch	9540	W	RCI

NOTE: Door normally closed and secure. Door Contact signals door status. Entry by key, approved credential or remote release. Free egress at all times.

Set #3 - Coffee Shop Exterior Pr. - ALD

Doors: 48

2.0	Hinge	661HDUL 83IN	AL	BES
1.0	Keyed Removeable Mullion	KR822 MCS	689	PRE
2.0	Exit Device	2101 LD S300	630	PRE
1.0	Rim Cylinder	12E 7 CORMAX RP	626	BES
2.0	Door Closer	EHD80 16 SPA90 DP90 BSHD90 NFHD90	689	BES
1.0	Gasketing	5100N		NGP
2.0	Sweep	C627 LAR	A	NGP
1.0	Threshold	896 S LAR (1/4-20 MS/EA)	A	NGP
2.0	Door Position Switch	9540	W	RCI

Set #4 - Coffee Shop - Eliason DS

Doors: 49A, 50A

1.0	Door Stop	1270CX	626	TRI
1.0	Door Holder	1220-5	630	TRI

NOTE: Packaged Opening. All hardware by manufacturer except stop on Coffee Shop, Retherm side of opening. Kitchen side bollard is by manufacturer.

Set #5 - Eliason Pr. DS

Doors: 49C, 50B

2.0	Door Holder	1220-5	630	TRI
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NOTE: Packaged Opening. All hardware by manufacturer except kick down holder. Overswing bollard is by manufacturer.

Set #6 - Packaged Opening - Coiling Door

Doors: 48A

2.0	Mortise Cylinder	1E 7 4 C4 RP3 CORMAX 626	BES
1.0	Key Switch	960 N D MO MA	28 RCI

NOTE: All hardware by manufacturer except key switch & cylinders. Maintained switch for up function, momentary switch for down function.

End of Section

SECTION 08 71 23 - COMMERCIAL DOOR OPERATORS

PART 2 PRODUCTS

1.01 POWER DOOR OPERATIONS - GENERAL

- A. Electrically Operated or Controlled Hardware: Provide necessary power supplies, relays, and interfaces as required for proper operation; provide wiring between control components and to building power connection. Comply with NFPA 70.
- B. Comply with ADA Standards for egress requirements.
- C. Comply with NFPA 101 and requirements of authorities having jurisdiction; provide units selected for actual door weight and for light and heavy traffic unless otherwise indicated on drawings.
- D. System Integration: Integrate operator functionality with other systems as required for complete working installation. See Section 28 10 00.

END OF SECTION 08 71 23

SECTION 08 80 00 - GLAZING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Insulating glass units.
- B. Glazing units.
- C. Laminated glass interlayers.
- D. Glazing compounds.

1.02 RELATED REQUIREMENTS

- A. Section 06 41 00 - Plastic-Laminate-Faced Architectural Cabinets: Cabinets with requirements for glass shelves and _____.
- B. Section 07 26 00 - Vapor Retarders.
- C. Section 07 92 00 - Joint Sealants: Sealants for other than glazing purposes.
- D. Section 08 11 13 - Hollow Metal Doors and Frames: Glazed lites in doors and borrowed lites.
- E. Section 08 43 13 - Aluminum-Framed Storefronts: Glazing provided as part of storefront assembly.
- F. Section 08 44 13 - Glazed Aluminum Curtain Walls: Glazing provided as part of wall assembly.
- G. Section 08 51 13 - Aluminum Windows: Glazing provided by window manufacturer.
- H. Section 08 87 23 - Safety and Security Films.
- I. Section 08 88 13 - Fire-Rated Glazing.

1.03 REFERENCE STANDARDS

- A. 16 CFR 1201 - Safety Standard for Architectural Glazing Materials; Current Edition.
- B. ANSI Z97.1 - American National Standard for Safety Glazing Materials Used in Buildings - Safety Performance Specifications and Methods of Test; 2015 (Reaffirmed 2020).
- C. ASCE 7 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures; Most Recent Edition Cited by Referring Code or Reference Standard.
- D. ASTM C864 - Standard Specification for Dense Elastomeric Compression Seal Gaskets, Setting Blocks, and Spacers; 2005 (Reapproved 2019).
- E. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2018.
- F. ASTM C1036 - Standard Specification for Flat Glass; 2021.
- G. ASTM C1048 - Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass; 2018.

- H. ASTM C1172 - Standard Specification for Laminated Architectural Flat Glass; 2019.
- I. ASTM C1193 - Standard Guide for Use of Joint Sealants; 2016 (Reapproved 2023).
- J. ASTM C1376 - Standard Specification for Pyrolytic and Vacuum Deposition Coatings on Flat Glass; 2021a.
- K. ASTM E1300 - Standard Practice for Determining Load Resistance of Glass in Buildings; 2016.
- L. ASTM E1886 - Standard Test Method for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Missile(s) and Exposed to Cyclic Pressure Differentials; 2019.
- M. ASTM E1996 - Standard Specification for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Windborne Debris in Hurricanes; 2023.
- N. ASTM E2190 - Standard Specification for Insulating Glass Unit Performance and Evaluation; 2019.
- O. GANA (GM) - GANA Glazing Manual; 2022.
- P. GANA (SM) - GANA Sealant Manual; 2008.
- Q. GANA (LGRM) - Laminated Glazing Reference Manual; 2019.
- R. ICC (IgCC) - International Green Construction Code; 2018.
- S. IGMA TM-3000 - North American Glazing Guidelines for Sealed Insulating Glass Units for Commercial & Residential Use; 1990 (Reaffirmed 2016).
- T. NFRC 100 - Procedure for Determining Fenestration Product U-factors; 2020.
- U. NFRC 200 - Procedure for Determining Fenestration Product Solar Heat Gain Coefficient and Visible Transmittance at Normal Incidence; 2023.
- V. NFRC 300 - Test Method for Determining the Solar Optical Properties of Glazing Materials and Systems; 2023.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data on Insulating Glass Unit and Glazing Unit Glazing Types: Provide structural, physical and environmental characteristics, size limitations, special handling and installation requirements.
- C. Product Data on Glazing Compounds and Accessories: Provide chemical, functional, and environmental characteristics, limitations, special application requirements, and identify available colors.
- D. Samples: Submit one samples 6 inch by 6 inch in size of glass units.
- E. Certificate: Certify that products of this section meet or exceed specified requirements.
- F. Manufacturer's qualification statement.
- G. Installer's qualification statement.
- H. Warranty Documentation: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.
- I. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.

1. See Section 01 60 00 - Product Requirements, for additional provisions.
2. Extra Insulating Glass Units: One of each glass size and each glass type.

1.05 QUALITY ASSURANCE

- A. Perform Work in accordance with GANA (GM), GANA (SM), GANA (LGRM), and IGMA TM-3000 for glazing installation methods. Maintain one copy on site.
- B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years of documented experience.
 1. Provide certified glass products through ANSI accredited certifications that include plant audits and independent laboratory performance testing.
 - a. Insulating Glass Certification Council (IGCC).
 - b. Safety Glazing Certification Council (SGCC).
- C. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years documented experience.
 1. Provide company, field supervisors, and installers that hold active ANSI accredited certifications in appropriate categories for work specified.
 - a. North American Contractor Certification (NACC) for glazing contractors.
 - b. Equivalent independent third-party ANSI accredited certification.
- D. Testing Agency Qualifications: Independent firm specializing in performing testing and inspections of the type specified in this section.

1.06 FIELD CONDITIONS

- A. Do not install glazing when ambient temperature is less than 40 degrees F.
- B. Maintain minimum ambient temperature before, during and 24 hours after installation of glazing compounds.

1.07 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals for additional warranty requirements.
- B. Insulating Glass Units: Provide a ten (10) year manufacturer warranty to include coverage for seal failure, interpane dusting or misting, including providing products to replace failed units.
- C. Laminated Glass: Provide a ten (10) year manufacturer warranty to include coverage for delamination, including providing products to replace failed units.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Glass Fabricators:
 1. GGI - General Glass International: www.generalglass.com/#sle.
 2. Standard Bent Glass Corp: www.standardbent.com/#sle.
 3. Viracon, Inc: www.viracon.com/#sle.
 4. Or Approved Equal.

5. Substitutions: See Section 01 60 00 - Product Requirements.
- B. Float Glass Manufacturers:
 1. Guardian Glass, LLC: www.guardianglass.com/#sle.
 2. Pilkington North America Inc: www.pilkington.com/na/#sle.
 3. Vitro Architectural Glass (formerly PPG Glass): www.vitroglazings.com/#sle.
 4. Or Approved Equal.
 5. Substitutions: See Section 01 60 00 - Product Requirements.
- C. Laminated Glass Manufacturers:
 1. Cardinal Glass Industries: www.cardinalcorp.com/#sle.
 2. Thompson I.G., LLC; Laminated Glass: www.thompsonig.com/#sle.
 3. Viracon, Architectural Glass segment of Apogee Enterprises, Inc: www.viracon.com/#sle.
 4. Or Approved Equal.
 5. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 PERFORMANCE REQUIREMENTS - EXTERIOR GLAZING ASSEMBLIES

- A. General: Installed glazing systems shall withstand normal thermal movement and wind and impact loads (where applicable) without failure, including loss or glass breakage attributable to the following: defective manufacture, fabrication, or installation; failure of sealants or gaskets to remain watertight and airtight; deterioration of glazing materials; or other defects in construction.
- B. Delegated Design: Engage a qualified professional engineer; licensed in the State the Project is located in, and as defined in Section 014000 "Quality Requirements," to design glazing.
- C. Provide type and thickness of exterior glazing assemblies to support assembly dead loads, and to withstand live loads caused by positive and negative wind pressure acting normal to plane of glass.
 1. Design Pressure: Calculated in accordance with ASCE 7.
 2. Comply with ASTM E1300 for design load resistance of glass type, thickness, dimensions, and maximum lateral deflection of supported glass.
 3. Seismic Loads: Design and size glazing components to withstand seismic loads and sway displacement in accordance with the requirements of ASCE 7
 4. Provide glass edge support system sufficiently stiff to limit the lateral deflection of supported glass edges to less than 1/175 of their lengths under specified design load.
 5. Glass thicknesses listed are minimum.
- D. Weather-Resistive Barrier Seals: Provide completed assemblies that maintain continuity of building enclosure water-resistive barrier, vapor retarder, and/or air barrier.
 1. In conjunction with weather barrier related materials described in other sections, as follows:
 2. To utilize inner pane of multiple pane insulating glass units for continuity of vapor retarder and/or air barrier seal.
 3. To maintain a continuous vapor retarder and/or air barrier throughout glazed assembly from glass pane to heel bead of glazing sealant.

- E. Windborne-Debris-Impact Resistance: Exterior glazing shall comply with enhanced-protection testing requirements in ASTM E1996 for Wind Zone 1 when tested according to ASTM E1886. Test specimens shall be no smaller in width and length than glazing indicated for use on Project and shall be installed in same manner as glazing indicated for use on Project.
 - 1. Large-Missile Test: For glazing located within 30 feet of grade.
 - 2. Small-Missile Test: For glazing located more than 30 feet above grade.
- F. Safety Glazing: Where safety glazing is indicated, provide glazing that complies with 16 CFR 1201, Category II.
- G. Safety Glazing Labeling: Where safety glazing is indicated, permanently mark glazing with certification label of the SGCC or another certification agency acceptable to authorities having jurisdiction or the glazing manufacturer. Label shall indicate manufacturer's name, type of glass, thickness, and safety glazing standard with which glass complies.
- H. Insulating-Glass Certification Program: Permanently marked either on spacers or on at least one component lite of units with appropriate certification label of ICC (IgCC).
- I. Thermal and Optical Performance: Provide exterior glazing products with performance properties as indicated. Performance properties are in accordance with manufacturer's published data as determined with the following procedures and/or test methods:
 - 1. Center of Glass U-Value: Comply with NFRC 100 using Lawrence Berkeley National Laboratory (LBNL) WINDOW 6.3 computer program.
 - 2. Center of Glass Solar Heat Gain Coefficient (SHGC): Comply with NFRC 200 using Lawrence Berkeley National Laboratory (LBNL) WINDOW 6.3 computer program.
 - 3. Solar Optical Properties: Comply with NFRC 300 test method.

2.03 GLASS MATERIALS

- A. Float Glass: Provide float glass based glazing unless otherwise indicated.
 - 1. Kind FT - Fully Tempered Type: Complies with ASTM C1048.
- B. Laminated Glass: Float glass laminated in accordance with ASTM C1172.
 - 1. Laminated Safety Glass: Complies with ANSI Z97.1 - Class B or 16 CFR 1201 - Category I impact test requirements.

2.04 INSULATING GLASS UNITS

- A. Manufacturers:
 - 1. Guardian Glass, LLC; _____: www.guardianglass.com/#sle.
 - 2. Pilkington North America Inc; _____: www.pilkington.com/na/#sle.Pilkington North America Inc; _____: www.pilkington.com/na/#sle.
 - 3. Viracon, Apogee Enterprises, Inc; _____: www.viracon.com/#sle.
 - 4. Vitro Architectural Glass (formerly PPG Glass); _____: www.vitroglazings.com/#sle.
 - 5. Substitutions: See Section 01 60 00 - Product Requirements.
- B. Fabricator: Certified by glass manufacturer for type of glass, coating, and treatment involved and capable of providing specified warranty.
- C. Insulating Glass Units: Types as indicated.

1. Durability: Certified by an independent testing agency to comply with ASTM E2190.
 2. Coated Glass: Comply with requirements of ASTM C1376 for pyrolytic (hard-coat) or magnetic sputter vapor deposition (soft-coat) type coatings on flat glass; coated vision glass, Kind CV; coated overhead glass, Kind CO; or coated spandrel glass, Kind CS.
 3. Warm-Edge Spacers: Low-conductivity thermoplastic with desiccant warm-edge technology design.
 - a. Spacer Width: As required for specified insulating glass unit.
 - b. Spacer Height: Manufacturer's standard.
 4. Spacer Color: Black.
 5. Edge Seal:
 - a. Dual-Sealed System: Provide polyisobutylene sealant as primary seal applied between spacer and glass panes, and silicone, polysulfide, or polyurethane sealant as secondary seal applied around perimeter.
 - b. Color: Black.
 6. Purge interpane space with dry air, hermetically sealed.
- D. Type IG-1 - Insulating, Tempered Glass Units: Low-E Coated, Insulating Laminate Vision Glass.
1. Applications: Exterior glazing unless otherwise indicated.
 2. Space between lites filled with Argon filled, 12 mm (1/2 inch) wide, hermetically sealed.
 3. Outboard Lite: Fully tempered float glass, 1/4 inch thick, minimum.
 - a. Tint: Clear.
 - b. Coating: Self-cleaning type, on #1 surface.
 - c. Coating: Low-E (passive type), on #2 surface.
 4. Inboard Lite: Laminated float glass, 1/4 inch thick, minimum.
 - a. Tint: Clear.
 - b. Interlayer: Ionoplast interlayer, 0.060 inch thick.
 5. Total Thickness: 1-1/8 inch.
 6. Thermal Transmittance (U-Value), Summer - Center of Glass: 0.21, nominal.
 7. Visible Light Transmittance (VLT): 49 percent, nominal.
 8. Solar Heat Gain Coefficient (SHGC): 0.22, nominal.
 9. Glazing Method: Dry glazing method, gasket glazing.

2.05 GLAZING UNITS

- A. Type G-1 - Clear Fully Tempered Vision Glazing:
1. Applications: Interior..
 2. Glass Type: Fully tempered float glass.
 3. Tint: Clear.
 4. Thickness: 1/4 inch, nominal.

2.06 ACCESSORIES

- A. Concealed nonprogressive structural glass mounting system.
- B. Setting Blocks: Silicone, with 80 to 90 Shore A durometer hardness; ASTM C864 Option II. Length of 0.1 inch for each square foot of glazing or minimum 4 inch by

width of glazing rabbet space minus 1/16 inch by height to suit glazing method and pane weight and area.

- C. Spacer Shims: Neoprene, 50 to 60 Shore A durometer hardness; ASTM C864 Option II. Minimum 3 inch long by one half the height of the glazing stop by thickness to suit application, self adhesive on one face.
- D. Glazing Tape, Back Bedding Mastic Type: Preformed, butyl-based, 100 percent solids compound with integral resilient spacer rod applicable to application indicated; 5 to 30 cured Shore A durometer hardness; coiled on release paper; black color.
- E. Glazing Splines: Resilient silicone extruded shape to suit glazing channel retaining slot; ASTM C864 Option II; color black.
- F. Glazing Clips: Manufacturer's standard type.

2.07 SOURCE QUALITY CONTROL

- A. See Section 01 40 00 - Quality Requirements for additional requirements.
- B. Provide shop inspection and testing for _____ glass.

PART 3 EXECUTION

3.01 VERIFICATION OF CONDITIONS

- A. Verify that openings for glazing are correctly sized and within tolerances, including those for size, squareness, and offsets at corners.
- B. Verify that surfaces of glazing channels or recesses are clean, free of obstructions that may impede moisture movement, weeps are clear, and support framing is ready to receive glazing system.
- C. Proceed with glazing system installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Clean contact surfaces with appropriate solvent and wipe dry within maximum of 24 hours before glazing. Remove coatings that are not tightly bonded to substrates.
- B. Seal porous glazing channels or recesses with substrate compatible primer or sealer.
- C. Prime surfaces scheduled to receive sealant where required for proper sealant adhesion.

3.03 INSTALLATION, GENERAL

- A. Install glazing in compliance with written instructions of glass, gaskets, and other glazing material manufacturers, unless more stringent requirements are indicated, including those in glazing referenced standards.
- B. Install glazing sealants in accordance with ASTM C1193, GANA (SM), and manufacturer's instructions.

- C. Do not exceed edge pressures around perimeter of glass lites as stipulated by glass manufacturer.
- D. Set glass lites of system with uniform pattern, draw, bow, and similar characteristics.
- E. Set glass lites in proper orientation so that coatings face exterior or interior as indicated.
- F. Prevent glass from contact with any contaminating substances that may be the result of construction operations such as, and not limited to the following; weld splatter, fire-safing, plastering, mortar droppings, and paint.

3.04 INSTALLATION - DRY GLAZING METHOD (GASKET GLAZING)

- A. Application - Exterior and/or Interior Glazed: Set glazing infills from either the exterior or the interior of the building.
- B. Place setting blocks at 1/4 points with edge block no more than 6 inch from corners.
- C. Rest glazing on setting blocks and push against fixed stop with sufficient pressure on gasket to attain full contact.
- D. Install removable stops without displacing glazing gasket; exert pressure for full continuous contact.

3.05 INSTALLATION - DRY GLAZING METHOD (TAPE AND GASKET SPLINE GLAZING)

- A. Application - Exterior Glazed: Set glazing infills from the exterior of the building.
- B. Cut glazing tape to length; install on glazing pane. Seal corners by butting tape and sealing junctions with butyl sealant.
- C. Place setting blocks at 1/4 points with edge block no more than 6 inch from corners.
- D. Rest glazing on setting blocks and push against fixed stop with sufficient pressure to attain full contact.
- E. Install removable stops without displacing glazing spline. Exert pressure for full continuous contact.
- F. Carefully trim protruding tape with knife.

3.06 FIELD QUALITY CONTROL

- A. See Section 01 40 00 - Quality Requirements for additional requirements.
- B. Glass and Glazing product manufacturers to provide field surveillance of the installation of their products.
- C. Monitor and report installation procedures and unacceptable conditions.

3.07 CLEANING

- A. See Section 01 74 19 - Construction Waste Management and Disposal, for additional requirements.
- B. Remove excess glazing materials from finish surfaces immediately after application using solvents or cleaners recommended by manufacturers.

- C. Remove nonpermanent labels immediately after glazing installation is complete.
- D. Clean glass and adjacent surfaces after sealants are fully cured.
- E. Clean glass on both exposed surfaces not more than 4 days prior to Date of Substantial Completion in accordance with glass manufacturer's written recommendations.

3.08 PROTECTION

- A. After installation, mark pane with an 'X' by using removable plastic tape or paste; do not mark heat absorbing or reflective glass units.
- B. Remove and replace glass that is damaged during construction period prior to Date of Substantial Completion.

END OF SECTION 08 80 00

SECTION 08 91 00 - LOUVERS

PART 2 PRODUCTS

1.01 LOUVERS

- A. Louvers: Factory fabricated and assembled, complete with frame, mullions, and accessories; AMCA Certified in accordance with AMCA 511.

END OF SECTION 08 91 00

SECTION 09 05 61 - COMMON WORK RESULTS FOR FLOORING PREPARATION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. This section applies to floors identified in Contract Documents that are receiving the following types of floor coverings:

PART 2 PRODUCTS

PART 3 EXECUTION

END OF SECTION 09 05 61

SECTION 09 05 63 - SUBSTRATE PREPARATION FOR FLOORING INSTALLATION- USG

PART 1 GENERAL

1.01 SECTION INCLUDES

PART 2 PRODUCTS

2.01 MATERIALS

PART 3 EXECUTION

3.01 SEQUENCE OF PROCEDURES

- A. Patching, smoothing, and leveling of substrates, as required.
- B. Other preparation specified.
- C. Adhesive bond and compatibility test performed by affected flooring installer.
- D. Protection.

END OF SECTION 09 05 63

SECTION 09 21 16 - GYPSUM BOARD ASSEMBLIES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Performance criteria for gypsum board assemblies.
- B. Metal stud wall framing.
- C. Metal channel ceiling framing.
- D. Resilient sound isolation clips.
- E. Acoustic insulation.
- F. Gypsum sheathing.
- G. Cementitious backing board.
- H. Gypsum wallboard.
- I. Joint treatment and accessories.

1.02 RELATED REQUIREMENTS

- A. Section 06 10 00 - Rough Carpentry: Building framing and sheathing.
- B. Section 06 10 00 - Rough Carpentry: Wood blocking product and execution requirements.
- C. Section 07 25 00 - Weather Barriers: Water-resistive barrier over sheathing.
- D. Section 07 84 00 - Firestopping: Top-of-wall assemblies at fire-resistance-rated walls.
- E. Section 07 92 00 - Joint Sealants: Sealing acoustical gaps in construction other than gypsum board or plaster work.

1.03 REFERENCE STANDARDS

- A. AISI S220 - North American Standard for Cold-Formed Steel Nonstructural Framing; 2020.
- B. AISI S240 - North American Standard for Cold-Formed Steel Structural Framing; 2015, with Errata (2020).
- C. ANSI A118.9 - American National Standard Specifications for Test Methods and Specifications for Cementitious Backer Units; 2019.
- D. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2019.
- E. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2020.
- F. ASTM A1003/A1003M - Standard Specification for Steel Sheet, Carbon, Metallic- and Nonmetallic-Coated for Cold-Formed Framing Members; 2015.
- G. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2021.

- H. ASTM C475/C475M - Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board; 2017 (Reapproved 2022).
- I. ASTM C557 - Standard Specification for Adhesives for Fastening Gypsum Wallboard to Wood Framing; 2003 (Reapproved 2017).
- J. ASTM C645 - Standard Specification for Nonstructural Steel Framing Members; 2018.
- K. ASTM C754 - Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products; 2020.
- L. ASTM C840 - Standard Specification for Application and Finishing of Gypsum Board; 2020.
- M. ASTM C954 - Standard Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs from 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness; 2022.
- N. ASTM C1002 - Standard Specification for Steel Self-Piercing Tapping Screws for Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs; 2022.
- O. ASTM C1047 - Standard Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base; 2019.
- P. ASTM C1178/C1178M - Standard Specification for Coated Glass Mat Water-Resistant Gypsum Backing Panel; 2018.
- Q. ASTM C1288 - Standard Specification for Fiber-Cement Interior Substrate Sheets; 2017.
- R. ASTM C1325 - Standard Specification for Fiber-Mat Reinforced Cementitious Backer Units; 2022.
- S. ASTM C1396/C1396M - Standard Specification for Gypsum Board; 2017.
- T. ASTM C1629/C1629M - Standard Classification for Abuse-Resistant Nondecorated Interior Gypsum Panel Products and Fiber-Reinforced Cement Panels; 2019.
- U. ASTM D3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber; 2021.
- V. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2022.
- W. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements; 2009 (Reapproved 2016).
- X. ASTM E413 - Classification for Rating Sound Insulation; 2022.
- Y. ASTM E1264 - Standard Classification for Acoustical Ceiling Products; 2022.
- Z. ASTM E1414/E1414M - Standard Test Method for Airborne Sound Attenuation Between Rooms Sharing a Common Ceiling Plenum; 2021a.
- AA. ASTM E1966 - Standard Test Method for Fire-Resistive Joint Systems; 2015 (Reapproved 2019).
- BB. GA-216 - Application and Finishing of Gypsum Panel Products; 2021.
- CC. ICC (IBC) - International Building Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- DD. ICC-ES AC38 - Acceptance Criteria for Water-Resistive Barriers; 2016, with Editorial Revision (2019).

EE. UL (FRD) - Fire Resistance Directory; Current Edition.

FF. UL 723 - Standard for Test for Surface Burning Characteristics of Building Materials; Current Edition, Including All Revisions.

GG. UL 2079 - Standard for Tests for Fire Resistance of Building Joint Systems; Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination: Coordinate the installation of gypsum board assemblies with size, location, and installation of service utilities.
- B. Sequencing: Install service utilities in an orderly and expeditious manner.

1.05 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data:
 - 1. Provide data on metal framing, gypsum board, accessories, and joint finishing system.
 - 2. Provide manufacturer's data on partition head to structure connectors, showing compliance with requirements.
- C. Shop Drawings: Indicate special details associated with fireproofing and acoustic seals.
- D. Steel Framing Industry Association (SFIA) Certification:
 - 1. Submit documentation that metal studs and connectors used on project meet or exceed requirements of International Building Code.
- E. Test Reports: For stud framing products that do not comply with AISI S220 or ASTM C754, provide independent laboratory reports showing maximum stud heights at required spacings and deflections.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. See Section 01 74 19 - Construction Waste Management and Disposal for packaging waste requirements.
- B. Store gypsum products and accessories indoors and keep above freezing. Elevate boards above floor, on nonwicking supports, in accordance with manufacturer's recommendations.
- C. Store metal products to prevent corrosion.

PART 2 PRODUCTS

2.01 GYPSUM BOARD ASSEMBLIES

- A. Provide completed assemblies complying with ASTM C840 and GA-216.
- B. Interior Partitions, Indicated as Acoustic: Provide completed assemblies with the following characteristics:

1. Acoustic Attenuation: STC of 50-54 calculated in accordance with ASTM E413, based on tests conducted in accordance with ASTM E90.
- C. Grid Suspension Systems: Provide grid suspension systems in accordance with ASTM C840 and GA-216 complying with the following:
 1. ICC-ES Evaluation Report No. ESR-1338.
- D. Fire-Resistance-Rated Assemblies: Provide completed assemblies complying with applicable code.
 1. UL Assembly Numbers: Provide construction equivalent to that listed for the particular assembly in the current UL (FRD).

2.02 METAL FRAMING MATERIALS

- A. Steel Sheet: ASTM A1003/A1003M, subject to the ductility limitations indicated in AISI S220 or equivalent.
- B. Nonstructural Framing System Components: AISI S220; galvanized sheet steel, of size and properties necessary to comply with ASTM C754 for the spacing indicated, with maximum deflection of wall framing of L/120 at 5 psf.
 1. Studs: ASTM C645 C-shaped with knurled or embossed faces, 0.0329 (20 gauge) min. thickness of base metal unless otherwise indicated.
 - a. Depth of Section: 3-5/8", or as otherwise indicated.
 2. Runners: U shaped, sized to match studs.
 3. Ceiling Channels: C-shaped.
 4. Flexible Track: Flexible framing consisting of adjustable leg straps and pivoting, hinged track brackets designed to provide curved framing assemblies of varying radii.
 - a. Dimensions: 3-5/8 inches deep by 1-3/16 inches high in lengths and configurations indicated.
 5. Furring Members: ASTM C645; 0.0179 (25 gauge) Hat-shaped sections, minimum depth of 7/8 inch.
 6. Furring Members: U-shaped sections, minimum depth of 3/4 inch.
 7. Furring Members: Zee-shaped sections, minimum depth of 1 inch.
 8. Resilient Furring Channels: Single or double leg configuration; 1/2 inch channel depth.
 9. Resilient Sound Isolation Clips: Steel resilient clips with molded rubber isolators, attaches to framing; improves noise isolation performance of wall and floor-ceiling assemblies.
 10. Sill Plate Isolation Pads: Acoustical separation between sole plate and subfloor.
- C. Shaft Wall Studs and Accessories: AISI S220; galvanized sheet steel, of size and properties necessary to comply with ASTM C754 and specified performance requirements.
- D. Area Separation Wall Studs and Accessories: AISI S220; galvanized sheet steel, of size and properties necessary to comply with specified performance requirements.
- E. Partition Head To Structure Connections: Provide track fastened to structure with legs of sufficient length to accommodate deflection, for friction fit of studs cut short.
- F. Deflection and Firestop Track: Intumescent strip factory-applied to track flanges expands when exposed to heat or flames to provide a perimeter joint seal.
- G. Preformed Top Track Firestop Seal:

1. Provide components UL-listed for use in UL-listed fire-resistance-rated head of partition joint systems indicated on drawings.
- H. Preformed Top of Wall Firestop Gasket:
 1. Provide components UL-listed for use in UL-listed fire-resistance-rated head of partition joint systems indicated on drawings.
- I. Non-structural Framing Accessories:
 1. Ceiling Hangers: Type and size as specified in ASTM C754 for spacing required.
 2. Partial Height Wall Framing Support: Provides stud reinforcement and anchored connection to floor.
 - a. Materials: ASTM A36/A36M formed sheet steel support member with factory-welded ASTM A1003/A1003M steel plate base.
 - b. Height: 35-3/4 inches.
 3. Framing Connectors: ASTM A653/A653M G90 galvanized steel clips; secures cold rolled channel to wall studs for lateral bracing.
 4. Drywall Corner Clips: Drywall clips help support drywall to reduce wood blocking on top plates, end walls, and corners.
 5. Steel Column and Beam Drywall Clip: UL-listed slip-on clips to connect gypsum board to steel beams and columns for fireproofing.
- J. Grid Suspension Systems: Aluminum grid system of main tees and support bars connected to structure using hanging wire.

2.03 BOARD MATERIALS

- A. Manufacturers - Gypsum-Based Board:
 1. American Gypsum Company: www.americangypsum.com/#sle.
 2. CertainTeed Corporation: www.certainteed.com/#sle.
 3. Georgia-Pacific Gypsum: www.gpgypsum.com/#sle.
 4. Gold Bond Building Products, LLC provided by National Gypsum Company: www.goldbondbuilding.com/#sle.
 5. USG Corporation: www.usg.com/#sle.
 6. Or Approved Equal.
 7. Substitutions: See Section 01 60 00 - Product Requirements.
- B. Interior Gypsum Wallboard: Paper-faced gypsum panels as defined in ASTM C1396/C1396M; Provide panels in maximum lengths and widths available that will minimize joints in each area and correspond with the support system indicated.
 1. Application: Use for vertical surfaces and ceilings, unless otherwise indicated.
 2. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
 - a. Mold-resistant board is required whenever board is being installed before the building is enclosed and conditioned.
 3. Thickness:
 - a. Vertical Surfaces: 5/8 inch thick, unless otherwise indicated, with long ends tapered.
 - b. Interior Gypsum Ceiling Board: 1/2 inch thick, unless otherwise indicated, manufactured with a special gypsum core containing additives to offer greater support and sag resistance for water based spray texture paints and insulation than 5/8" standard regular-type panels.
 - c. Flexible Gypsum Wallboard: 1/4 inch, unless otherwise indicated, manufactured to bend to fit tight radii and to be more flexible than standard

regular-type panels of the same thickness, with long ends tapered. Apply in double layer at curved assemblies unless additional layers are indicated.

d. Multi-Layer Assemblies: Thicknesses as indicated on drawings.

C. Abuse Resistant Wallboard:

1. Application: High-traffic areas indicated, including:
2. Surface Abrasion: Level 2, minimum, when tested in accordance with ASTM C1629/C1629M.
3. Indentation: Level 1, minimum, when tested in accordance with ASTM C1629/C1629M.
4. Soft Body Impact: Level 1, minimum, when tested in accordance with ASTM C1629/C1629M.
5. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
6. Paper-Faced Type: Gypsum wallboard, as defined in ASTM C1396/C1396M.
7. Type: Fire-resistance-rated Type X, UL or WH listed.
8. Thickness: 5/8 inch.
9. Edges: Tapered.

D. Impact Resistant Wallboard:

1. Application: High-traffic areas indicated.
2. Surface Abrasion: Level 3, minimum, when tested in accordance with ASTM C1629/C1629M.
3. Indentation: Level 1, minimum, when tested in accordance with ASTM C1629/C1629M.
4. Soft Body Impact: Level 3, minimum, when tested in accordance with ASTM C1629/C1629M.
5. Hard Body Impact: Level 2, minimum, when tested in accordance with ASTM C1629/C1629M.
6. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
7. Type: Fire-resistance-rated Type X, UL or WH listed.
8. Thickness: 5/8 inch.
9. Edges: Tapered.

E. Backing Board For Wet Areas: One of the following products:

1. Application: Surfaces behind tile in wet areas including tub and shower surrounds and shower ceilings.
2. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
3. ANSI Cement-Based Board: Non-gypsum-based; aggregated Portland cement panels with glass fiber mesh embedded in front and back surfaces complying with ANSI A118.9 or ASTM C1325.
 - a. Thickness: 5/8 inch.
4. ASTM Cement-Based Board: Non-gypsum-based, cementitious board complying with ASTM C1288.
 - a. Thickness: 5/16 inch thick, 48" x 48" unless otherwise indicated. Cement board underlayment is for use in the installation of ceramic tile over wood floor systems.
 - b. Products:
 - 1) James Hardie Building Products, Inc: www.jameshardie.com/#sle.
 - 2) Durock by United States Gypsum.
 - 3) Or Approved Equal.
 - 4) Substitutions: See Section 01 60 00 - Product Requirements.

5. Glass Mat Faced Board: Coated glass mat water-resistant gypsum backing panel as defined in ASTM C1178/C1178M.
 - a. Regular Type: Thickness 5/8 inch.
 - b. Fire-Resistance-Rated Type: Type X core, thickness 5/8 inch.
 - c. Products:
 - 1) Georgia-Pacific Gypsum; DensShield Tile Backer: www.gpgypsum.com/#sle.
 - 2) Or Approved Equal.
 - 3) Substitutions: See Section 01 60 00 - Product Requirements.
- F. Backing Board For Non-Wet Areas: Water-resistant gypsum backing board as defined in ASTM C1396/C1396M; sizes to minimum joints in place; ends square cut.
 1. Application: Vertical surfaces behind thinset tile, except in wet areas.
 2. Type: Regular, in locations indicated.
 3. Type X Thickness: 5/8 inch.
 4. Regular Board Thickness: 5/8 inch.
 5. Edges: Tapered.
- G. Ceiling Board: Special sag resistant gypsum ceiling board as defined in ASTM C1396/C1396M; sizes to minimize joints in place; ends square cut.
 1. Application: Ceilings, unless otherwise indicated.
 2. Thickness: 1/2 inch.
 3. Edges: Tapered.

2.04 GYPSUM BOARD ACCESSORIES

- A. Acoustic Sealant: Acrylic emulsion latex or water-based elastomeric sealant; do not use solvent-based non-curing butyl sealant.
- B. Water-Resistive Barrier: See Section 07 25 00.
- C. Beads, Joint Accessories, and Other Trim: ASTM C1047, rigid plastic, galvanized steel, or rolled zinc, unless noted otherwise.
 1. Corner Beads: Low profile, for 90 degree outside corners.
 2. Expansion Joints:
 - a. Fire-Resistance Rated: 1 hour when joint system tested in accordance with UL 2079.
 - b. Type: V-shaped metal with factory-installed protective tape.
- D. Decorative Metal Trim:
 1. Material: Extruded aluminum alloy 6063-T5 temper.
 2. Finish: Anodized, clear.
 3. Type: Profile as selected from manufacturer's standard range.
- E. Joint Materials: ASTM C475/C475M and as recommended by gypsum board manufacturer for project conditions.
 1. Fiberglass Tape: 2 inch wide, coated glass fiber tape for joints and corners on glass mat gypsum sheathing, except as otherwise indicated.
 2. Paper Tape: 2 inch wide, creased paper tape for joints and corners on interior and exterior gypsum, except as otherwise indicated.
 3. Joint Compound: Setting type, field-mixed. Comply with ASTM C 475 and recommendations of the manufacturer.

- a. For interior gypsum wallboard and exterior gypsum soffit board use setting-type taping compound followed by coats of setting-type sandable topping compound or as otherwise recommended by manufacturer.
 - b. For Glass-Mat Gypsum Sheathing Board use type(s) recommended by the manufacturer for the application required at this project.
 - c. For tile backing panels use the type recommended by the manufacturer for the application required at this project.
 - d. For veneer plaster panels use the type recommended by the manufacturer, (veneer plaster base coat or setting type joint compound), for the application required at this project.
- F. Finishing Compound: Surface coat and primer, takes the place of skim coating.
- G. Screws for Fastening of Gypsum Panel Products to Cold-Formed Steel Studs Less than 0.033 inches in Thickness and Wood Members: ASTM C1002; self-piercing tapping screws, corrosion-resistant.
- H. Screws for Fastening of Gypsum Panel Products to Steel Members from 0.033 to 0.112 inch in Thickness: ASTM C954; steel drill screws, corrosion-resistant.
- I. Anchorage to Substrate: Tie wire, nails, screws, and other metal supports, of type and size to suit application; to rigidly secure materials in place.
- J. Adhesive for Attachment to Wood, ASTM C557 and Metal:
- K. Exterior Soffit Vents: One piece, perforated, ASTM B221 6063 T5 alloy aluminum, with edge suitable for direct application to gypsum board and manufactured especially for soffit application. Provide continuous vent.

END OF SECTION 09 21 16

SECTION 09 22 16 - NON-STRUCTURAL METAL FRAMING

PART 2 PRODUCTS

1.01 FRAMING MATERIALS

- A. Non-Loadbearing Framing System Components: AISI S220; sheet steel, of size and properties necessary for the spacing indicated, with maximum deflection of wall framing of $L/240$ at 5 psf.
 - 1. Studs: C-shaped with flat faces.
 - 2. Runners: U-shaped, sized to match studs.

END OF SECTION 09 22 16

SECTION 09 30 00 - TILING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Tile for floor applications.
- B. Tile for wall applications.
- C. Cementitious backer board as wall tile substrate.
- D. Ceramic accessories.
- E. Ceramic trim.
- F. Non-ceramic trim.

1.02 RELATED REQUIREMENTS

- A. Section 03 54 00 - Cast Underlayment.
- B. Section 07 92 00 - Joint Sealants: Sealing joints between tile work and adjacent construction and fixtures.
- C. Section 09 05 61 - Common Work Results for Flooring Preparation: Concrete slab moisture and alkalinity testing and remediation procedures.

1.03 REFERENCE STANDARDS

- A. ANSI A108/A118/A136 - American National Standard Specifications for the Installation of Ceramic Tile (Compendium); 2019.
- B. ANSI A108.1a - American National Standard Specifications for Installation of Ceramic Tile in the Wet-Set Method, with Portland Cement Mortar; 2017.
- C. ANSI A108.1b - Installation of Ceramic Tile on a Cured Portland Cement Mortar Setting Bed with Dry-Set, Modified Dry-Set, or Improved Modified Dry-Set Cement Mortar; 2023.
- D. ANSI A108.1c - Contractor's Option: Installation of Ceramic Tile in the Wet-Set Method with Portland Cement Mortar or Installation of Ceramic Tile on a Cured Portland Cement Mortar Setting Bed with Dry-Set, Modified Dry-Set, or Improved Modified Dry-Set Cement Mortar; 2023.
- E. ANSI A108.2 - American National Standard General Requirements: Materials, Environmental and Workmanship; 2019.
- F. ANSI A108.4 - American National Standard Specifications for Installation of Ceramic Tile with Organic Adhesive or Water Cleanable Tile-Setting Epoxy Adhesive; 2023.
- G. ANSI A108.5 - Setting of Ceramic Tile with Dry-Set Cement Mortar, Modified Dry-Set Cement Mortar, EGP (Exterior Glue Plywood) Modified Dry-Set Cement Mortar, or Improved Modified Dry-Set Cement Mortar; 2023.

- H. ANSI A108.6 - American National Standard Specifications for Installation of Ceramic Tile with Chemical Resistant, Water Cleanable Tile-Setting and -Grout Epoxy; 2023.
- I. ANSI A108.8 - American National Standard Specifications for Installation of Ceramic Tile with Chemical Resistant Furan Resin Mortar and Grout; 1999 (Reaffirmed 2019).
- J. ANSI A108.9 - American National Standard Specifications for Installation of Ceramic Tile with Modified Epoxy Emulsion Mortar/Grout; 2023.
- K. ANSI A108.10 - American National Standard Specifications for Installation of Grout in Tilework; 2017 (Reaffirmed 2022).
- L. ANSI A108.11 - American National Standard Specifications for Interior Installation of Cementitious Backer Units; 2018.
- M. ANSI A108.12 - Installation of Ceramic Tile with EGP (Exterior Glue Plywood) Modified Dry-Set Mortar; 2023.
- N. ANSI A108.13 - American National Standard for Installation of Load Bearing, Bonded, Waterproof Membranes for Thin-Set Ceramic Tile and Dimension Stone; 2005 (Reaffirmed 2021).
- O. ANSI A108.19 - American National Standard Specifications for Interior Installation of Gauged Porcelain Tiles and Gauged Porcelain Tile Panels/Slabs by the Thin-Bed Method Bonded with Modified Dry-Set Cement Mortar or Improved Modified Dry-Set Cement Mortar; 2020.
- P. ANSI A108.20 - American National Standard Specifications for Exterior Installation of Gauged Porcelain Tiles and Gauged Porcelain Tile Panels/Slabs; 2020.
- Q. ANSI A118.3 - American National Standard Specifications for Chemical Resistant, Water Cleanable Tile-Setting and -Grouting Epoxy and Water Cleanable Tile-Setting Epoxy Adhesive; 2021.
- R. ANSI A118.9 - American National Standard Specifications for Test Methods and Specifications for Cementitious Backer Units; 2019.
- S. ANSI A118.10 - American National Standard Specifications for Load Bearing, Bonded, Waterproof Membranes for Thin-Set Ceramic Tile and Dimension Stone; 2014 (Reaffirmed 2019).
- T. ANSI A118.12 - American National Standard Specifications for Crack Isolation Membranes for Thin-Set Ceramic Tile and Dimension Stone Installation; 2014 (Reaffirmed 2019).
- U. ANSI A137.1 - American National Standard Specifications for Ceramic Tile; 2022.
- V. ASTM F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring; 2021.
- W. ASTM F1869 - Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride; 2016a.
- X. ASTM F2170 - Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes; 2019a.
- Y. TCNA (HB) - Handbook for Ceramic, Glass, and Stone Tile Installation; 2021.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

- B. Product Data: Provide manufacturers' data sheets on tile, mortar, grout, and accessories. Include instructions for using grouts and adhesives.
- C. Shop Drawings: Indicate tile layout, patterns, color arrangement, perimeter conditions, junctions with dissimilar materials, control and expansion joints, thresholds, ceramic accessories, and setting details.
- D. Samples: Mount tile and apply grout on two plywood panels, minimum 18 by 18 inches in size illustrating pattern, color variations, and grout joint size variations.
- E. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- F. Installer's Qualification Statement:
 - 1. Submit documentation of National Tile Contractors Association (NTCA) or Tile Contractors' Association of America (TCAA) accreditation.
- G. Maintenance Data: Include recommended cleaning methods, cleaning materials, and stain removal methods.
- H. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 - 1. See Section 01 60 00 - Product Requirements, for additional provisions.
 - 2. Extra Tile: 10 square feet of each size, color, and surface finish combination.

1.05 QUALITY ASSURANCE

- A. Maintain one copy of ANSI A108/A118/A136 and TCNA (HB) on site.
- B. Manufacturer Qualifications: Company specializing in manufacturing the types of products specified in this section, with minimum five years of documented experience.
- C. Installer Qualifications:
 - 1. Company specializing in performing tile installation, with minimum of five years of documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Protect adhesives from freezing or overheating in accordance with manufacturer's instructions.

1.07 FIELD CONDITIONS

- A. Do not install solvent-based products in an unventilated environment.
- B. Maintain ambient and substrate temperature above 50 degrees F and below 100 degrees F during installation and curing of setting materials.

PART 2 PRODUCTS

2.01 TILE

- A. Manufacturers: All products by the same manufacturer.
 - 1. Dal-Tile Corporation: www.daltile.com/#sle.

2. Tilebar.
 3. Substitutions: See Section 01 60 00 - Product Requirements.
- B. Ceramic Mosaic Tile: ANSI A137.1 standard grade.
1. Size: As indicated on drawings.
 2. Shape: As indicated on drawings..
 3. Surface Finish: As indicated on d.
 4. Pattern: As indicated on drawings..
- C. Ceramic Glazed Wall Tile: ANSI A137.1 standard grade.
1. Semi-gloss, non-vitreous tile. Multiple colors and layout patterns as indicated or another approved manufacturer having matching colors to blend with the color schemes selected for adjacent materials in the project.
 - a. Style: As indicated on drawings
 - b. Color: As indicated on drawings
 - c. Pattern: As indicated on drawings
 2. Size: As indicated on drawings
 3. Trim Units: Coordinated sizes and coursing of adjoining flat tile.
 4. Base: Coved; style and color as indicated on the drawings.
- D. Porcelain Floor Tile: ANSI A137.1 standard grade.
1. A large format, fine grained tile, smooth and impervious with a water absorption of 0.5% or less measured by the ASTM C373 test method with a sharply formed face with color through body. Multiple colors and layout patterns as indicated or another approved manufacturer having matching colors to blend with the color schemes selected for adjacent materials in the project.
 2. Style: As indicated on drawings
 3. Color: As indicated on drawings
 4. Pattern: As indicated on the drawings
 5. Finish: As indicated on drawings
 6. Size: As indicated on drawing

2.02 TRIM AND ACCESSORIES

- A. Accessory and Trim Tiles
1. Provide accessory and trim tiles to match colors of floor, base, and wall tile as indicated. Field butt inside corners, bullnose out corners. Trims for thinset and mudset installations as indicated and transitions from mud set to thinset and other floor finishes or transition strips or saddles.
- B. Metal Thresholds
1. Metal extruded sloped transition-shaped profile trim for transitions between new floor tiles and lower height installed floors as manufactured by Schluter Systems, or Approved Equal.
 2. Profile: Schluter – RENO-U, or approved equal.
 3. Material: Brushed stainless steel 304
 4. Height: As required to accommodate tile thickness and adjacent lower floor thickness.
 5. ADA Compliant.
- C. Satin anodized aluminum, extruded square shaped profile trim for outside corners as manufactured by Schluter Systems, or Approved Equal.

1. Profile: Schluter – QUADEC, or approved equal.
2. Material: Satin Aluminum, matte finish
3. Height: As required to accommodate tile thickness
4. Provide matching connectors where lengths exceed those provided by manufacturer.

2.03 GROUTS

- A. Provide setting and grout materials from same manufacturer.
- B. Manufacturers:
 1. Mapei: www.mapei.com.
 2. Substitutions: See Section 01 60 00 - Product Requirements.
- C. Epoxy Grout: ANSI A118.3 chemical resistant and water-cleanable epoxy grout.
 1. Applications: Where indicated.
 2. Color(s): As indicated on drawings.
 3. Products:
 - a. Mapei; Kerapoxy CQ.
 - b. Substitutions: See Section 01 60 00 - Product Requirements.

2.04 MAINTENANCE MATERIALS

- A. Grout Sealer: Liquid-applied, moisture and stain protection for existing or new Portland cement grout.
 1. Composition: Water-based colorless silicone.

2.05 ACCESSORY MATERIALS

- A. Tile Cleaner
 1. Product specifically acceptable to manufacturer of tile and grout manufacturer for application indicated and as recommended by National Tile Promotion Federation, 112 North Alfred St., Alexandria, VA 22134 or Ceramic Tile Institute, 700 N. Virgil Ave., Los Angeles, CA 90029, or Approved Equal.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that wall surfaces are smooth and flat within the tolerances specified for that type of work, are dust-free, and are ready to receive tile.

3.02 PREPARATION

- A. Protect surrounding work from damage.
- B. Vacuum clean surfaces and damp clean.
- C. Seal substrate surface cracks with filler. Level existing substrate surfaces to acceptable flatness tolerances.

- D. Install backer board in accordance with ANSI A108.11 and board manufacturer's instructions. Tape joints and corners, cover with skim coat of setting material to a feather edge.
- E. Prepare substrate surfaces for adhesive installation in accordance with adhesive manufacturer's instructions.

3.03 INSTALLATION - GENERAL

- A. Install tile and grout in accordance with applicable requirements of ANSI A108.1a through ANSI A108.20, manufacturer's instructions, and TCNA (HB) recommendations.
- B. Lay tile to pattern indicated. Do not interrupt tile pattern through openings.
- C. Cut and fit tile to penetrations through tile, leaving sealant joint space. Form corners and bases neatly.
- D. Place tile joints uniform in width, subject to variance in tolerance allowed in tile size. Make grout joints without voids, cracks, excess mortar or excess grout, or too little grout.
- E. Form internal angles square and external angles bullnosed.
- F. Install ceramic accessories rigidly in prepared openings.
- G. Install non-ceramic trim in accordance with manufacturer's instructions.
- H. Sound tile after setting. Replace hollow sounding units.
- I. Keep control and expansion joints free of mortar, grout, and adhesive.
- J. Prior to grouting, allow installation to completely cure; minimum of 48 hours.
- K. Grout tile joints unless otherwise indicated. Use standard grout unless otherwise indicated.
- L. At changes in plane and tile-to-tile control joints, use tile sealant instead of grout, with either bond breaker tape or backer rod as appropriate to prevent three-sided bonding.

3.04 INSTALLATION - WALL TILE

- A. Over cementitious backer units on studs, install in accordance with TCNA (HB) Method W244, using membrane at toilet rooms.
- B. Over coated glass mat backer board on studs, install in accordance with TCNA (HB) Method W245.
- C. Over gypsum wallboard on wood or metal studs install in accordance with TCNA (HB) Method W243, thin-set with dry-set or latex-Portland cement bond coat, unless otherwise indicated.
- D. Over interior concrete and masonry install in accordance with TCNA (HB) Method W202, thin-set with dry-set or latex-Portland cement bond coat.

3.05 CLEANING

- A. Clean tile and grout surfaces.

END OF SECTION 09 30 00

SECTION 09 51 00 - ACOUSTICAL CEILINGS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Suspended metal grid ceiling system.
- B. Acoustical panels.
- C. Wood Veneer plank.
- D. Metal edge moldings and trim
- E. Acoustical sealant.
- F. Miscellaneous accessories including Beam End Retaining Clips, Hold-Down Clips, Stiffening Braces and Hanger Wire, etc.

1.02 RELATED REQUIREMENTS

- A. 09 21 16 - Gypsum Board Assemblies
- B. Division 21 – Fire Suppression related work.
- C. Division 22 – Plumbing related work.
- D. Division 23 – Mechanical related work.
- E. Division 26 – Electrical related work.

1.03 REFERENCE STANDARDS

- A. ASCE 7 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures; Most Recent Edition Cited by Referring Code or Reference Standard.
- B. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2020.
- C. ASTM B209/B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2021a.
- D. ASTM C635/C635M - Standard Specification for Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings; 2022.
- E. ASTM C636/C636M - Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels; 2019.
- F. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2022.
- G. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials; 2020.
- H. ASTM E580/E580M - Standard Practice for Installation of Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels in Areas Subject to Earthquake Ground Motions;

2022.

- I. ASTM E795 - Standard Practices for Mounting Test Specimens during Sound Absorption Tests; 2023.
- J. ASTM E1264 - Standard Classification for Acoustical Ceiling Products; 2022.
- K. UL (FRD) - Fire Resistance Directory; Current Edition.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Sequence work to ensure acoustical ceilings are not installed until building is enclosed, sufficient heat is provided, dust generating activities have terminated, and overhead work is completed, tested, and approved.
- B. Do not install acoustical units until after interior wet work is dry.

1.05 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Shop Drawings: Indicate grid layout and related dimensioning, junctions with other ceiling finishes, and mechanical and electrical items installed in the ceiling.
- C. Product Data: Provide data on suspension system components and acoustical units.
- D. Manufacturer's Installation Instructions: Indicate special procedures and perimeter conditions requiring special attention.
- E. Manufacturer's qualification statement.
- F. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 - 1. See Section 01 60 00 - Product Requirements, for additional provisions.
 - 2. Extra Acoustical Units: Quantity equal to two percent of total installed.

1.06 QUALITY ASSURANCE

- A. Suspension System Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.
- B. Acoustical Unit Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

1.07 FIELD CONDITIONS

- A. Environmental Limitations: Do not install acoustical panel ceilings until spaces are enclosed and weatherproof, wet work in spaces is complete and dry, work above ceilings is complete, and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.
- B. Pressurized Plenums: Operate ventilation system for not less than 48 hours before beginning acoustical panel ceiling installation.

- C. Contractor should be aware that the reflected ceiling plans and layouts may vary due to job conditions.

PART 2 PRODUCTS

2.01 GENERAL

- A. Seismic Performance: Acoustical ceiling shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.
- B. Surface-Burning Characteristics: Comply with ASTM E 84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
 - 1. Flame-Spread Index: Comply with ASTM E 1264 for Class A materials.
 - 2. Smoke-Developed Index: 50 or less.
- C. Fire-Resistance Ratings: Comply with ASTM E 119; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
 - 1. Indicate design designations from UL's "Fire Resistance Directory" or from the listings of another qualified testing agency.

2.02 MANUFACTURERS

- A. Acoustic Tiles/Panels:
 - 1. Armstrong World Industries, INC; Basis of Design for performance, design, and quality: www.armstrongceilings.com/#sle.
 - 2. Substitutions: See Section 01 60 00 - Product Requirements.
- B. Suspension Systems:
 - 1. Same as for acoustical units.
 - 2. Armstrong World Industries, Inc: www.armstrongceilings.com/#sle.

2.03 PERFORMANCE REQUIREMENTS

- A. Fire-Resistance Rating: Determined in accordance with test procedures in ASTM E119 and complying with the following:
 - 1. Indicate design designations from UL's "Fire Resistance Directory" or from the listings of another qualified testing agency.
- B. Seismic Performance: Ceiling systems designed to withstand the effects of earthquake motions determined according to ASCE 7 for Seismic Design Category D, E, or F and complying with the following:
 - 1. Local authorities having jurisdiction.
- C. Surface-Burning Characteristics: Comply with ASTM E84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
 - 1. Flame-Spread Index: Comply with ASTM E1264 for Class A materials.
 - 2. Smoke-Developed Index: 50 or less.

2.04 ACOUSTICAL PANELS, GENERAL

- A. Source Limitations: Obtain each type of acoustical ceiling panel and supporting suspension system from single source from single manufacturer.
- B. Glass-Fiber-Based Panels: Made with binder containing no urea formaldehyde.
- C. Acoustical Units - General: ASTM E1264, Class A.
 - 1. Mounting Method for Measuring NRC: Type E-400; plenum mounting in which face of test specimen is 15-3/4 inches away from test surface according to ASTM E795.

2.05 ACOUSTICAL PANEL TYPES

- A. Acoustical panel designations below are interior applications for high humidity and unconditioned spaces. Provide antimicrobial paint to inhibit mold and mildew growth and provide 30 year performance guarantee against sag or warp.
- B. TYPE ACP-1:
 - 1. Panel Style / Second Look II Model #2712 or approved Equal, with the following characteristics:
 - 2. Classification: ASTM E1264 Type III.
 - 3. Fire Rating: Class A
 - 4. Size: 24 by 48 inches.
 - 5. Thickness: 3/4 inch.
 - 6. Light Reflectance 0.81 percent, determined in accordance with ASTM E1264.
 - 7. NRC .85, determined in accordance with ASTM E1264.
 - 8. Ceiling Attenuation Class (CAC): 35, determined in accordance with ASTM E1264.
 - 9. Panel Edge: Angled Tegal.
 - 10. Color: White.
 - 11. Suspension System: 15/16" Exposed Tee System Prelude XL, white, or approved equal.
- C. TYPE ACP-2:
 - 1. Panel Style / Model: #3257 or approved Equal, with the following characteristics:
 - 2. Classification: ASTM E1264 Type III.
 - 3. Fire Rating: Class A
 - 4. Size: 24 by 48 inches.
 - 5. Thickness: 1 inch.
 - 6. Light Reflectance: 0.88 percent, determined in accordance with ASTM E1264.
 - 7. NRC .95, determined in accordance with ASTM E1264.
 - 8. Ceiling Attenuation Class (CAC): 35, determined in accordance with ASTM E1264.
 - 9. Panel Edge: Square Tegal.
 - 10. Color: White.
 - 11. Suspension System: 9/16" Exposed Tee System Superfine, white, or approved equal..
- D. TYPE LWC
 - 1. Fire Rating: Class A, Not for use as a fire rated ceiling assembly
 - 2. 4 1/2" O.C. Plank
 - 3. Size: 3 3/4" X 96" X 3/4"
 - 4. Color: Walnut (CWA)

5. Suspension System: Item # 5370 12' HD Linear Carriers (concealed) with integral clips (factory - applied) for nominal 4 1/2" modules, or approved equal.
 - a. 15/16" X 144" X 1 11/16"
 - b. Color: Black

2.06 METAL SUSPENSION SYSTEM

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers of products that may be include in the work include, but are not limited to the following, or approved equal:
 1. Armstrong (Basis of Design for performance, design and quality).
- B. Metal Suspension Systems - General: Complying with ASTM C635/C635M; die cut and interlocking components, with perimeter moldings, hold down clips, stabilizer bars, clips, and splices as required.
 1. Materials:
 - a. Aluminum Grid: Aluminum sheet, ASTM B209/B209M.
 2. High-Humidity Finish: Comply with ASTM C 635 requirements for "Coating Classification for Severe Environment Performance" where high-humidity finishes are indicated.
- C. Attachment Devices: Size for five times the design load indicated in ASTM C 635, Table 1, "Direct Hung," unless otherwise indicated. Comply with seismic design requirements.
- D. Components: Main runner and cross tees shall be double-web hot dipped galvanized steel construction per ASTM A635 with 15/16" type exposed flange design, unless otherwise indicated. Members shall be fire/flame rated and seismic zone rated. Each exposed bottom flange shall be continuous with unbroken roll formed cap the length of the member. Cap shall be steel, finished as specified below.
 1. Structural Classification: Intermediate duty.
 2. Main Beam: Routed 6" center to center, continuously along the length of its web to locate intersecting cross tees. Web Height shall be 1-1/2".
 3. 4' Cross Tees: Web height shall be 1-1/2".
 4. 2' Cross Tees: Web height shall be 1-3/8".
 5. End condition of Cross Tees: Staked-on (stab) end detail with override flange.
- E. Cross Tee shall be double web bulb section of steel conforming to ASTM A 366, web height 1-1/2" and have a 15/16" bottom flange. Exposed bottom flange shall be continuous with unbroken roll formed cap the length of the member.
- F. Wire Hangers, Braces, and Ties: Provide wires complying with the following requirements:
 1. Zinc-Coated, Carbon-Steel Wire: ASTM A 641, Class 1 zinc coating, soft temper.
 2. Size: Select wire diameter so its stress at three times hanger design load (ASTM C 635M, Table 1, "Direct Hung") will be less than yield stress of wire, but provide not less than 12 gauge diameter wire.
- G. Hanger Rods or Flat Hangers: Mild steel, zinc coated or protected with rust-inhibitive paint.
- H. Angle Hangers: Angles with legs not less than 7/8 inch wide; formed with 0.04-inch thick, galvanized-steel sheet complying with ASTM A 653, G90 coating designation; with bolted connections and 5/16-inch diameter bolts.

- I. Hanger Channels shall be 1 1/2"; 0.475 lb. per 1,000 ft.; cold rolled steel or 1.12 lb. per 1,000 ft. hot rolled steel for integrating with metal stud framing for supporting suspended ceiling system.
- J. Bulb Tee Hanger shall be used for suspending bulb tees from 1 1/2" hanger channels - hanger will slide onto and hang from channel and bulb tee will slide and be clipped to bulb tee hanger. Hanger is also known as "New York City Clip".
- K. Seismic Stabilizer Bars: Manufacturer's standard perimeter stabilizers designed to accommodate seismic forces.
- L. Seismic Struts: Manufacturer's standard compression struts designed to accommodate seismic forces.
- M. Seismic Clips: Manufacturer's standard seismic clips designed and spaced to secure acoustical panels in place.
- N. Stiffening Brace shall be provided to the entire grid system of vestibule areas leading to the exterior and within 10 feet of exterior doors in areas exposed to wind uplift of up to 90 lbs./sq. ft. Brace shall be attached between the upper and lower ties on each vertical hanger wire. Combine with hold-down clips.
- O. Beam End Retaining Clips shall be provided for attachment of beam ends to wall moldings for seismic stabilization, and or stabilizer bars when required by current Seismic Code.
- P. Hold-Down Clips: Where indicated, provide manufacturer's standard hold-down clips spaced 24 inches o.c. on all cross tees.
- Q. Impact Clips: Where indicated, provide manufacturer's standard impact-clip system designed to absorb impact forces against acoustical panels.
- R. Lighting fixtures to have lighting fixture support clips in addition to being supported from above independent of ceiling grid.

2.07 METAL EDGE MOLDINGS AND TRIM

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers of products that may be include in the work include, but are not limited to the following, or approved equal:
 - 1. Armstrong (Basis of Design for performance, design and quality).
- B. Roll-Formed, Sheet-Metal Edge Moldings and Trim: Type and profile indicated or, if not indicated, manufacturer's standard moldings for edges and penetrations that comply with seismic design requirements; formed from sheet metal of same material, finish, and color as that used for exposed flanges of suspension-system runners.
 - 1. Provide manufacturer's standard edge moldings that fit acoustical panel edge details and suspension systems indicated and that match width and configuration of exposed runners unless otherwise indicated.
 - 2. For lay-in panels with reveal edge details, provide stepped edge molding that forms reveal of same depth and width as that formed between edge of panel and flange at exposed suspension member.
 - 3. For circular penetrations of ceiling, provide edge moldings fabricated to diameter required to fit penetration exactly.
- C. Wall moldings shall be "L" shape molding and have at least 7/8" exposed flanges, not less than .019 nominal steel with finish specified below. Use shadow molding with

square edge lay-in and 15/16" flanges where indicated. Include inside and outside corner moldings with rounded inside corners for bullnose block walls.

- D. Bullnose Corner Cover: For use with 15/16" grids. Armstrong No. 7866 or approved equal. Cover snaps over molding to trim outside corners. Fits 1" radius block.
- E. Special Profiled Perimeter Trim as indicated and shall be of extruded aluminum channel trim compatible with the exposed suspension system. Profile height as indicated and finished to match ceiling grid.

2.08 ACCESSORIES

- A. Support Channels and Hangers: Galvanized steel; size and type to suit application, seismic requirements, and ceiling system flatness requirement specified.
- B. Hanger Wire: 12 gauge, 0.08 inch galvanized steel wire.
- C. Perimeter Moldings: Same metal and finish as grid.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify that layout of hangers will not interfere with other work.
- C. Examine substrates, areas, and conditions, including structural framing to which acoustical panel ceilings attach or abut, with Installer present, for compliance with requirements specified in this and other Sections that affect ceiling installation and anchorage and with requirements for installation tolerances and other conditions affecting performance of acoustical panel ceilings.
- D. Examine acoustical panels before installation. Reject acoustical panels that are wet, moisture damaged, or mold damaged.
- E. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Install after major above-ceiling work is complete.
- B. Coordinate the location of hangers with other work.
- C. Provide hanger clips during steel deck erection. Provide additional hangers and inserts as required.
- D. Measure each ceiling area and establish layout of acoustical panels to balance border widths at opposite edges of each ceiling. Unless otherwise indicated on the drawings, avoid using less-than-half-width panels at borders, and comply with layout shown on reflected ceiling plans.

3.03 INSTALLATION - SUSPENSION SYSTEM

- A. Install suspension system in accordance with ASTM C636/C636M, ASTM E580/E580M, and manufacturer's instructions and as supplemented in this section.

- B. Rigidly secure system, including integral mechanical and electrical components, for maximum deflection of 1:360.
- C. Lay out system to a balanced grid design with edge units no less than 50 percent of acoustical unit size.
- D. Perimeter Molding: Install at intersection of ceiling and vertical surfaces and at junctions with other interruptions.
 - 1. Use longest practical lengths.
- E. Suspension System, Non-Seismic: Hang suspension system independent of walls, columns, ducts, pipes and conduit. Where carrying members are spliced, avoid visible displacement of face plane of adjacent members.
- F. Seismic Suspension System, Seismic Design Categories D, E, F: Hang suspension system with grid ends attached to the perimeter molding on two adjacent walls; on opposite walls, maintain a 3/4 inch clearance between grid ends and wall.
- G. Where ducts or other equipment prevent the regular spacing of hangers, reinforce the nearest affected hangers and related carrying channels to span the extra distance.
- H. Do not support components on main runners or cross runners if weight causes total dead load to exceed deflection capability.
- I. Support fixture loads using supplementary hangers located within 6 inches of each corner, or support components independently.
- J. Do not eccentrically load system or induce rotation of runners.
- K. Form expansion joints as detailed. Form to accommodate plus or minus 1 inch movement. Maintain visual closure.

3.04 INSTALLATION - ACOUSTICAL PANELS

- A. Install acoustical panels in accordance with manufacturer's instructions.
- B. Fit acoustical panels in place, free from damaged edges or other defects detrimental to appearance and function.
- C. Fit border trim neatly against abutting surfaces.
- D. Install acoustical panels level, in uniform plane, and free from twist, warp, and dents.
- E. Cutting Acoustical Panels:
 - 1. Make field cut edges of same profile as factory edges.
- F. Where round obstructions occur, provide preformed closures to match perimeter molding.
- G. Lay acoustical insulation for a distance of 48 inches either side of acoustical partitions as indicated.
- H. Install hold-down clips on panels within 20 ft of an exterior door.

3.05 TOLERANCES

- A. Maximum Variation from Flat and Level Surface: 1/8 inch in 10 feet.
- B. Maximum Variation from Plumb of Grid Members Caused by Eccentric Loads: 2 degrees.

3.06 CLEANING

- A. See Section 01 70 00 - Execution and Closeout Requirements for additional requirements.
- B. Clean surfaces.
- C. Replace damaged or abraded components.

END OF SECTION 09 51 00

SECTION 09 65 00 - RESILIENT FLOORING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Resilient tile flooring.
 - 1. Luxury vinyl tile flooring.
- B. Installation accessories.

1.02 RELATED REQUIREMENTS

- A. Section 09 05 61 - Common Work Results for Flooring Preparation: Removal of existing floor coverings, cleaning, and preparation.

1.03 REFERENCE STANDARDS

- A. ASTM D2047 - Standard Test Method for Static Coefficient of Friction of Polish-Coated Flooring Surfaces as Measured by the James Machine; 2017.
- B. ASTM E648 - Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source; 2019a, with Editorial Revision (2020).
- C. ASTM E662 - Standard Test Method for Specific Optical Density of Smoke Generated by Solid Materials; 2021a, with Editorial Revision.
- D. NFPA 253 - Standard Method of Test for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source; 2023.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data on specified products, describing physical and performance characteristics; including sizes, patterns and colors available; and installation instructions.
- C. Shop Drawings: Show layout of special tile, sheet, special patterns, logos, details and color coding for verification of correct color and pattern locations coordinated with layout on Architectural drawings. Show locations of seams, expansion joints, edges, columns, doorways, enclosing partitions, built-in furniture, cabinets, and cutouts.
- D. Selection Samples: Submit manufacturer's complete set of color samples for Architect's initial selection.
- E. Verification Samples: Submit two samples, 6 by 9 inch in size illustrating color and pattern for each resilient flooring product specified.
- F. Concrete Subfloor Test Report: Submit a copy of the moisture and alkalinity (pH) test reports.

- G. Certification: Prior to installation of flooring, submit written certification by flooring manufacturer and adhesive manufacturer that condition of subfloor is acceptable.
- H. Manufacturer's Qualification Statement.
- I. Installer's Qualification Statement.
- J. Maintenance Data: Include maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning, stripping, and re-waxing.
- K. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 - 1. See Section 01 60 00 - Product Requirements, for additional provisions.
 - 2. Extra Flooring Material: 1 box for each 50 boxes of each type and color.
 - 3. Extra Wall Base: 10 linear feet for each 500 linear feet of each type and color.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing specified flooring with minimum three years documented experience.
- B. Installer Qualifications: Company specializing in installing specified flooring with minimum three years documented experience.
- C. Fire Test Performance: Provide resilient flooring products and accessories that comply with the following fire performance characteristics as determined by testing products per ASTM test method indicated below by UL or another testing and inspecting agency acceptable to authorities having jurisdiction.
 - 1. Critical Radiant Flux: Class I, Not less than 0.45 watts per sq. cm when tested in conformance with ASTM E648 or NFPA 253.
 - 2. Smoke Density: Less than 450 in conformance with ASTM E662.
 - 3. Static Coefficient of Friction: Greater than 0.6 for level surfaces and greater than 0.8 for ramped surfaces in accordance with ASTM D2047.
- D. Testing Agency Qualifications: Independent firm specializing in performing concrete slab moisture testing and inspections of the type specified in this section.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Upon receipt, immediately remove any shrink-wrap and check materials for damage and the correct style, color, quantity and run numbers.
- B. Store all materials off of the floor in an acclimatized, weather-tight space.
- C. Maintain temperature in storage area between 55 degrees F and 90 degrees F.
- D. Protect roll materials from damage by storing on end.
- E. Do not double stack pallets.

1.07 FIELD CONDITIONS

- A. Maintain temperature of not less than 70 deg F (21 deg C) or more than 95 deg F (35 deg C) in spaces to receive resilient flooring products for at least 72 hours prior to installation, during installation, and for not less than 72 hours after installation. Subsequently, maintain a temperature of not less than 55 deg F (13 deg C) or more

than 95 deg F (35 deg C) in areas where work is completed.

- B. Do not install resilient flooring materials and accessories until they are at the same temperature as the space where they are to be installed.
- C. Maintain relative humidity in spaces to receive resilient flooring products and accessories before, during, and after installation within the range recommended in writing by manufacturer.
- D. Close spaces to traffic during flooring installation and for time period after installation recommended in writing by manufacturer.
- E. Install resilient flooring and accessories after other finishing operations, including painting and ceiling operations, have been completed. Moisture content of concrete slabs and environmental conditions must be within limits recommended by manufacturer of products being installed for sufficient bonding with adhesives as determined by moisture tests.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Designs, Logos, Features, Colors and Patterns: Multiple colors for patterns, logos, features, borders, fields, and designs shall be selected by Architect from manufacturer's full range of colors.

2.02 TILE FLOORING

- A. Luxury Vinyl Tile - Flooring: Commercial Polyurethane Plank. Quantum-Guard Elite Finish or Approved Equal. Commercial grade backing class.
 - 1. Manufacturers:
 - a. Shaw, Inc..
 - b. Patcraft.
 - c. Or Approved Equal
 - d. Substitutions: See Section 01 60 00 - Product Requirements.
 - 2. Style: As indicated on drawings
 - 3. Color: As indicated on drawings
 - 4. Pattern: As indicated on drawings
 - 5. Dimensions: As indicated on drawings
 - 6. Wear Layer: As indicated on drawings
 - 7. Color: As indicated on drawings.

2.03 ACCESSORIES

- A. Subfloor Filler: White premix latex; type recommended by adhesive material manufacturer.
- B. Primers, Adhesives, and Seam Sealer: Waterproof; types recommended by flooring manufacturer.
- C. Adhesive for Vinyl Flooring:
 - 1. Manufacturers:

- a. Patcraft. www.patcraft.com.
 - b. Substitutions: Section 01 60 00 - Product Requirements.
- D. Resilient Edge Strips: Homogenous vinyl or rubber composition; 1/8" thick; not less than 1" wide; tapered or bullnose edge as selected by the Architect.
- E. Metal Edge Strips: Extruded aluminum with mill finish of width shown, of height required to protect exposed edge of tiles, and in maximum available lengths to minimize running joints.
- F. Epoxy Caulking Compound: Water-resistant type two-component epoxy caulking compound by the tread manufacturer to suite resilient flooring products and substrate conditions.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that surfaces are flat to tolerances acceptable to flooring manufacturer, free of cracks that might telegraph through flooring, clean, dry, and free of curing compounds, surface hardeners, and other chemicals that might interfere with bonding of flooring to substrate.
- B. Verify that wall surfaces are smooth and flat within the tolerances specified for that type of work, are dust-free, and are ready to receive resilient base.
- C. Cementitious Subfloor Surfaces: Verify that substrates are ready for resilient flooring installation by testing for moisture and alkalinity (pH).
 - 1. Test in accordance with Section 09 05 61.
 - 2. Obtain instructions if test results are not within limits recommended by resilient flooring manufacturer and adhesive materials manufacturer.
 - 3. Follow moisture and alkalinity remediation procedures in Section 09 05 61.
- D. Verify that required floor-mounted utilities are in correct location.

3.02 PREPARATION

- A. Prepare floor substrates for installation of flooring in accordance with Section 09 05 61.

3.03 INSTALLATION - GENERAL

- A. Starting installation constitutes acceptance of subfloor conditions.
- B. Install in accordance with manufacturer's written instructions.
- C. Scribe, cut, and fit flooring to but neatly and tightly to vertical surfaces and permanent fixtures, including built-in furniture, cabinets, pipes, outlets, edgings, door frames, thresholds, and nosings.
- D. Extend flooring into toe spaces, door reveals, closets, and similar openings.
- E. Maintain reference markers, holes and openings that are in place or marked for future cutting by repeating of finish flooring as marled on the subfloor.
- F. Install flooring on covers for telephone and electrical ducts and similar items in finished floor areas. Maintain overall continuity of color and pattern with flooring cut, scribed

and installed on covers. Tightly adhere edges to perimeter of substrate around covers and to covers.

- G. Adhere floor coverings to substrates using a full spread of adhesives applied to substrate to comply with adhesive and floor covering manufacturer's written instructions, including those for trowel notching, adhesive mixing, and adhesive open and working times.
- H. Provide complete installation without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, and other surface imperfections.
- I. Heat-Welded Seams: Rout joints and heat with welding bead, permanently fusing sections into a seamless floor covering. Prepare, weld, and finish seams according to manufacturer's written instructions to produce surfaces flush with adjoining floor covering surfaces.
- J. Adhesive-Applied Installation:
 - 1. Spread only enough adhesive to permit installation of materials before initial set.
 - 2. Fit joints and butt seams tightly.
 - 3. Set flooring in place, press with heavy roller to attain full adhesion.

3.04 INSTALLATION - TILE FLOORING

- A. Mix tile from container to ensure shade variations are consistent when tile is placed, unless otherwise indicated in manufacturer's installation instructions.
- B. Lay flooring from center marks established with principal walls or center aisles, discounting minor offsets, so that tile at opposite edges of areas are of equal width. Adjust as necessary to avoid use of cut width less than 1/2 tile at room perimeters. Lay flooring square to room axis, unless otherwise shown.
- C. Match floor tiles for color and pattern by using tile from cartons of the same batch and mixing tiles as recommended in writing by the manufacturer. Cut tile neatly around all fixtures. Broken, cracked, chipped or deformed tiles are not acceptable.
- D. Lay flooring with grain running in one direction unless directed otherwise.
- E. Lay flooring in pattern layout design with respect to location of colors, patterns, borders, fields and design layout, and sizes as provided by time of submittal review by Architect.
- F. Place flooring with adhesive cement in strict conformance with manufacturer's recommendations. Place epoxy caulking compound in the nose of all treads in accordance with tread manufacturer's recommendations. Scribe, cut and fit flooring materials as required. Butt tightly to vertical surfaces, thresholds, nosing and edgings. Extend flooring into toe spaces, door reveals and into closets and similar openings. Make joints even, straight and as inconspicuous as possible and laid tight. The entire surface shall be smooth, straight, and free from buckles, waves and projecting edges.
- G. Tightly cement resilient flooring to subbase without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, or other surface imperfections. Hand roll resilient flooring at perimeter of each covered area to assure adhesion.
- H. Maintain reference markers, holes or openings that are in place or plainly marked for future cutting by repeating on finish flooring as marked on subfloor. Use chalk or other non-permanent marking device.

- I. Install flooring on covers for telephone and electrical ducts, and other such items as occur within finished floor areas. Maintain overall continuity of color and pattern with pieces of flooring installed on these covers.
- J. Use full spread of adhesive applied to substrate in accordance with tile manufacturer's directions including those for trowel notching, adhesive mixing, and adhesive open and working times.
- K. Lay flooring with joints and seams parallel to building lines to produce symmetrical pattern.
- L. Install square tile to ashlar pattern. Allow minimum 1/2 full size tile width at room or area perimeter.

3.05 CLEANING

- A. Remove excess adhesive from floor, base, and wall surfaces without damage.
- B. Clean in accordance with manufacturer's written instructions.

3.06 PROTECTION

- A. Prohibit traffic on resilient flooring for 48 hours after installation.

END OF SECTION 09 65 00

SECTION 09 65 13 - RESILIENT WALL BASE

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Resilient Vinyl Wall Base. .

1.02 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.03 REFERENCE STANDARDS

- A. ASTM F1861 Standard Specification for Resilient Vinyl Wall Base, Type TV, Group 1.
- B. ASTM E 648, Standard Test Method for Critical Radiant Flux

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Resilient Vinyl Wall Base..
- C. Samples: Two (2), 2 by 6 inches in size.
- D. Certificate: Certify that products of this section meet or exceed specified requirements.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing specified flooring with minimum three years documented experience.
- B. Fire Test Performance: Provide resilient flooring products and accessories that comply with the following fire performance characteristics as determined by testing products per ASTM test method indicated below by UL or another testing and inspecting agency acceptable to authorities having jurisdiction.
- C. Installer Qualifications: Company specializing in installing specified flooring with minimum three years documented experience[<>].
- D. Testing Agency Qualifications: Independent firm specializing in performing testing and inspections of type specified in this section.
- E. Documents at Project Site: Maintain at project site one copy of manufacturer's instructions, erection drawings, and shop drawings.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Store resilient products and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by Tarkett, but not less than 55 deg F (13 deg C) or more than 85 deg F (29 deg C).

1.07 FIELD CONDITIONS

- A. Install resilient products after other finishing operations, including painting, have been completed.
- B. Maintain ambient temperatures within range recommended by Tarkett, but not less than 65 deg F (18 deg C) or more than 85 deg F (29 deg C) in spaces to receive resilient products during the following time periods:
 - 1. 48 hours before installation.
 - 2. During installation.
 - 3. 48 hours after installation.
- C. Maintain the ambient relative humidity between 40% and 60% during installation.
- D. Until Substantial Completion, maintain ambient temperatures within range recommended by Johnsonite, but not less than 55 deg F (13 deg C) or more than 85 deg F (29 deg C).

1.08 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals for additional warranty requirements.
- B. Manufacturer Warranty: Provide 2-year manufacturer warranty. Complete forms in Owner's name and register with manufacturer.
- C. Installer Warranty: Provide 2-year warranty commencing on the Date of Substantial Completion. Complete forms in Owner's name and register with installer.
- D. Special Warranty: Provide 2-year warranty commencing on the Date of Substantial Completion. Complete forms in Owner's name and register with warrantor.
- E. Finish Warranty: Provide 5-year manufacturer warranty against excessive degradation of exterior finish. Include provision for replacement of units with excessive fading, chalking, or flaking. Complete forms in Owner's name and register with warrantor.
- F. Extended Correction Period: Correct defective work within 2-year period commencing on Date of Substantial Completion.

PART 2 PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

- A. Fire-Test-Response Characteristics: For resilient tile flooring, as determined by testing identical products according to ASTM E 648 or NFPA 253 by a qualified testing agency.
 - 1. Critical Radiant Flux Classification: Class I, not less than 0.45 W/sq. cm.
- B. Fire-Test-Response Characteristics: For resilient tile flooring, as determined by testing identical products according to ASTM E 648 or NFPA 253 by a qualified testing

agency.

- C. Flooring products shall comply with the requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."

2.02 MANUFACTURERS

- A. Basis of Design: Johnsonite, Traditional Vinyl Wall Base.
www.commercial.tarkett.com.
- B. Or, approved equal.
- C. Substitutions: See Section 01 60 00 - Product Requirements.
- D. Source Limitations: Furnish products produced by single manufacturer and obtained from single supplier.

2.03 RESILIENT TRADITIONAL VINYL WALL BASE

- A. Thickness, specify: 0.125" (3.17 mm).
- B. Type: As indicated on drawings.
- C. Height: As indicated on drawings.
- D. Colors: As indicated on drawings.
- E. Test Data:
 - 1. Flexibility, ASTM F13: Passes 1/4 inch mandrel.
 - 2. Resistance to light, ASTM F1515: Passes.
 - 3. Resistance to Chemicals, ASTM F925: Passes.
 - 4. ASTM E 648, Standard Test Method for Critical Radiant Flux of 0.45 watts/cm² or greater, Class 1.

2.04 INSTALLATION MATERIALS

- A. Adhesives: As recommended by Johnsonite to meet site conditions
 - 1. Tarkett 960 Cove Base Adhesive (Porous applications).
 - 2. Tarkett 946 Premium Contact Bond Adhesive (Non-porous applications).

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine substrates, with Installer present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the work.
- B. Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of resilient products.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Prepare substrates according to Tarkett's written instructions to ensure adhesion of resilient wall base.
- B. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound and remove bumps and ridges to produce a uniform and smooth substrate.
- C. Move resilient products and installation materials into spaces where they will be installed at least 48 hours in advance of installation.
- D. Vacuum clean substrates to be covered by resilient products immediately before installation.

3.03 INSTALLATION

- A. Comply with Johnsonite's written instructions for installing resilient base.
- B. Apply resilient base to walls, columns, pilasters, casework and cabinets in toe spaces, and other permanent fixtures in rooms and areas where base is required.
- C. Install resilient base in lengths as long as practicable without gaps at seams and with tops of adjacent pieces aligned.
- D. Tightly adhere resilient wall base to substrate throughout length of each piece, with base in continuous contact with horizontal and vertical substrates.
- E. Do not stretch resilient base during installation.

3.04 CLEANING AND PROTECTION

- A. See Section 01 70 00 - Execution and Closeout Requirements for additional requirements.
- B. Comply with Johnsonite's written instructions for cleaning and protection of resilient products.
- C. Perform the following operations immediately after completing resilient product installation:
 - 1. Remove adhesive and other blemishes from exposed surfaces.
- D. Protect resilient products from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.

3.05 PROTECTION

- A. Protect installed Resilient Vinyl Wall Base from subsequent construction operations.
- B. Do not permit traffic over unprotected floor surface.

3.06 MAINTENANCE

- A. See Section 01 70 00 - Execution and Closeout Requirements for additional requirements.

END OF SECTION 09 65 13

SECTION 09 67 00
FLUID-APPLIED FLOORING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Fluid-applied flooring.
- B. Integrated sanitary cove base.
- C. Transitions

1.02 RELATED REQUIREMENTS

- A. Section 07 92 00 - Joint Sealants: Sealing joints between fluid-applied flooring and adjacent construction and fixtures.
- B. Section 09 05 61 - Common Work Results for Flooring Preparation: Removal of existing floor coverings, cleaning, and preparation.

1.03 REFERENCE STANDARDS

- A. ANSI/ESD STM7.1 - The Protection of Electrostatic Discharge Susceptible Items Flooring Systems Resistive Characterization; 2021.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data on specified products, describing physical and performance characteristics; sizes, patterns and colors available.
- C. Concrete Subfloor Test Report: Submit a copy of the moisture and alkalinity (pH) test reports.
- D. Manufacturer's Installation Instructions: Indicate special procedures, perimeter conditions requiring special attention, and application rate for each coat.
- E. Maintenance Data: Include maintenance procedures, recommended maintenance materials, procedures for stain removal, repairing surface, and suggested schedule for cleaning.
- F. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 - 1. See Section 01 60 00 - Product Requirements, for additional provisions.
 - 2. Extra Top Coat Materials: 2 gallons.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with minimum three years documented experience.

1.06 MOCK-UPS

- A. Construct mock-up(s) of fluid applied flooring to serve as basis for evaluation of texture and workmanship.
 - 1. Number of Mock-Ups to be Prepared: One.
 - 2. Use same materials and methods for use in the work.
 - 3. Use approved design samples as basis for mock-ups.
 - 4. Locate where directed.
 - 5. Minimum Size: 48 inches by 48 inches.
- B. See Section 01 40 00 - Quality Requirements for additional requirements.
- C. Obtain approval of mock-up by Architect before proceeding with work.
- D. Approved mock-up may remain as part of the work.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Store resin materials in a dry, secure area.
- B. Store materials for three days prior to installation in area of installation to achieve temperature stability.

1.08 FIELD CONDITIONS

- A. Maintain minimum temperature in storage area of 55 degrees F.
- B. Store materials in area of installation for minimum period of 24 hours prior to installation.
- C. Maintain ambient temperature required by manufacturer 72 hours prior to, during, and 24 hours after installation of materials.
- D. Lighting: Provide permanent lighting or, if permanent lighting is not in place, simulate permanent lighting conditions during resinous flooring application.
- E. Close spaces to traffic during resinous flooring application and for 24 hours after application unless manufacturer recommends a longer period for curing.
- F. Coordinate work with other trades.
- G. Commence preparation and application after all other trades have completed their work.

1.09 WARRANTY

- A. Submit a written warranty, signed by the manufacturer and applicator, agreeing to repair or replace failures and defects in material and workmanship for a period of two (2) years from the date of Substantial Completion.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Fluid-Applied Flooring:
 - 1. Dura-A-Flex, Inc.: www.dur-a-flex.com/#sle.
 - 2. Key Resin Company: www.keyresin.com/#sle.
 - 3. Or Approved Equal.
 - 4. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 DECORATIVE RESINOUS FLOORING

- a. Shallow Fill and Patching: Use Dur-A-Flex, Inc. Dur-A-Glaze #4 Cove Rez.
- B. Cove Caps: Provide aluminum cove caps to top of integral cove base to match thickness of flooring system. Adhere caps to substrates per the manufacturer's recommendations at heights indicated on the drawings. Mitre corners for neat transitions and grind outside corners to remove sharp edges.
- C. Floor Transitions: Provide saw cut joint and backer rod at transitions between resinous flooring materials.
- D. Fluid-Applied Flooring Type ____ : Epoxy, with aggregate.
 - 1. Aggregate: Silica sand.
 - 2. System Thickness: 15 mils, nominal, dry film thickness (DFT).
 - 3. Texture: Smooth.
 - 4. Sheen: High gloss.
 - 5. Color: As indicated on drawings..

2.03 ACCESSORIES

- A. Base Caps: Zinc with projecting base of 1/8 inch; color as selected.
- B. Cant Strips: Molded of flooring resin material.
- C. Subfloor Filler: Type recommended by fluid-applied flooring manufacturer.
- D. Primer: Type recommended by fluid-applied flooring manufacturer.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that subfloor surfaces are smooth and flat within the tolerances specified for that type of work and are ready to receive flooring.
- B. Verify that wall surfaces are smooth and flat within the tolerances specified for that type of work, are dust-free, and are ready to receive flooring.
- C. Verify that subfloor surfaces are dust-free and free of substances that could impair bonding of materials to subfloor surfaces.
- D. Verify that wood subfloors have 12 percent maximum moisture content.
- E. Cementitious Subfloor Surfaces: Verify that substrates are ready for fluid-applied flooring installation by testing for moisture and alkalinity (pH).

1. Obtain instructions if test results are not within limits recommended by fluid-applied flooring manufacturer.
2. Alkalinity and Adhesion Testing: Verify that concrete substrates have pH within acceptable range. Perform tests recommended by manufacturer. Proceed with application only after substrates pass testing.
3. Moisture Testing: Perform tests recommended by manufacturer and as follows.
 - a. Perform anhydrous calcium chloride test ASTM F 1869-98. Application will proceed only when the vapor/moisture emission rates from the slab is less than and not higher than 20 lbs/1,000 sf/24 hrs.
 - b. Perform relative humidity test using in situ probes, ASTM F 2170. Proceed with installation only after substrates have a maximum 99% relative humidity level measurement. For test results indicating excessive levels of moisture content or vapor emission rate, apply manufacturer's recommended moisture vapor emission control system based on the highest test reading.

3.02 PREPARATION

- A. Mechanical surface preparation
 1. Shot blast all surfaces to receive flooring system with a mobile steel shot, dust recycling machine (Blastrac or equal). All surface and embedded accumulations of paint, toppings hardened concrete layers, laitance, power trowel finishes and other similar surface characteristics shall be completely removed leaving a bare concrete surface having a minimum profile of CSP 4-5 as described by the International Concrete Repair Institute.
 2. Floor areas inaccessible to the mobile blast machines shall be mechanically abraded to the same degree of cleanliness, soundness and profile using diamond grinders, needle guns, bush hammers, or other suitable equipment.
 3. Where the perimeter of the substrate to be coated is not adjacent to a wall or curb, a minimum 1/4 inch key cut shall be made to properly seat the system, providing a smooth transition between areas. The detail cut shall also apply to drain perimeters and expansion joint edges.
 4. Cracks and joints (non-moving) greater than 1/8 inch wide are to be chiseled or chipped-out and repaired per manufacturer's recommendations.
- B. Patching and Filling: Use patching and fill material to fill holes and depressions in substrates according to manufacturer's written instructions.
 1. Control Joint Treatment: Treat control joints and other nonmoving substrate cracks to prevent cracks from reflecting through resinous flooring according to manufacturer's written instructions.
- C. Resinous Materials: Mix components and prepare materials according to resinous flooring manufacturer's written instructions.
- D. Notify the Architect in writing prior to commencing work of any conditions deemed unsatisfactory for the installation. Installation of flooring materials is considered acceptance of the substrate(s) as satisfactory.

3.03 INSTALLATION - FLOORING

- A. Apply in accordance with manufacturer's instructions.
- B. Apply each coat to minimum thickness required by manufacturer.

- C. Finish to smooth level surface.
- D. Apply components of resinous flooring system according to manufacturer's written instructions to produce a uniform, monolithic wearing surface of thickness indicated.
 - 1. Coordinate application of components to provide optimum adhesion of resinous flooring system to substrate, and optimum intercoat adhesion.
 - 2. Cure resinous flooring components according to manufacturer's written instructions. Prevent contamination during application and curing processes.
 - 3. Expansion and Isolation Joint Treatment: At substrate expansion and isolation joints, comply with resinous flooring manufacturer's written instructions.
- E. Primer: Apply primer over prepared substrate at manufacturer's recommended spreading rate.
- F. Waterproofing Membrane: Apply waterproofing membrane over entire substrate surface, in manufacturer's recommended thickness.
 - 1. Apply waterproofing membrane to integral cove base substrates.
- G. Reinforcing Membrane: Apply reinforcing membrane to substrate cracks.
- H. Self-Leveling Body Coats: Apply self-leveling slurry body coats in thickness indicated for flooring system.
 - 1.
- I. Troweled or Screeded Body Coats: Apply troweled or screeded body coats in thickness indicated for flooring system. Hand or power trowel and grout to fill voids. When body coats are cured, remove trowel marks and roughness using method recommended by manufacturer.
- J. Grout Coat: Apply grout coat, of type recommended by resinous flooring manufacturer, to fill voids in surface of final body coat.
- K. Topcoats: Apply topcoats in number indicated for flooring system and at spreading rates recommended in writing by manufacturer and to produce wearing surface indicated.
- L. Match finish work of approved mockup(s) and uniform in thickness, sheen, color, pattern and texture, and free from defects detrimental to appearance.
- M. Integral Cove Base: Apply cove base mix to wall surfaces before applying flooring. Apply according to manufacturer's written instructions and details, including those for taping, mixing, priming, troweling, sanding, and topcoating of cove base. Round internal and external corners.
 - 1. Integral Cove Base: 6 inches high.

3.04 FIELD QUALITY CONTROL

- A. See Section 01 40 00 - Quality Requirements, for additional requirements.
- B. Test installed floor surface in accordance with ANSI/ESD STM7.1 .

3.05 PROTECTION

- A. Prohibit traffic on floor finish for 48 hours after installation.
- B. Barricade area to protect flooring until fully cured.

END OF SECTION 09 67 00

SECTION 09 78 00 - INTERIOR WALL PANELING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Decorative Fiberglass Reinforced Wall paneling.
- B. Accessories.

1.02 RELATED REQUIREMENTS

- A. Section 06 83 16 - Fiberglass Reinforced Paneling.

1.03 REFERENCE STANDARDS

- A. ASTM D256 - Standard Test Methods for Determining the Izod Pendulum Impact Resistance of Plastics; 2023, with Editorial Revision.
- B. ASTM D570 - Standard Test Method for Water Absorption of Plastics; 2022.
- C. ASTM D5319 - Standard Specification for Glass-Fiber Reinforced Polyester Wall and Ceiling Panels; 2022.
- D. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2022.
- E. UL 723 - Standard for Test for Surface Burning Characteristics of Building Materials; Current Edition, Including All Revisions.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Submit manufacturer's descriptive literature for each specified product. Include anchorage devices specific to project substrate types.
- C. Shop Drawings: Submit elevations for each application and location. Indicate details of joints and attachments.
- D. Samples: Submit two samples 12 by 12 inches in size, indicating finish, surface design, and color for each type of panels.
- E. Certificates: Certify that products of this section meet or exceed specified requirements.
- F. Manufacturer's Instructions: Provide manufacturer's installation instructions.
- G. Manufacturer's qualification statement.
- H. Installer's qualification statement.
- I. Maintenance Data: Include recommended instructions, methods, and materials for cleaning materials.

- J. Warranty Documentation: Manufacturer warranty; ensure that forms have been completed in Owner's name and registered with manufacturer.
- K. Specimen Warranty: Manufacturer warranty.
- L. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 - 1. See Section 01 60 00 - Product Requirements, for additional provisions.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with at least five years of documented experience.
- B. Installer Qualifications: Company specializing in installing work of the type specified in this section, and with at least three years of documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Deliver products to project site in manufacturer's original packaging, marked with manufacturer's product identification.
- B. Store panels flat, indoors, on a clean, dry surface. Remove packaging and allow panels to acclimate to room temperature for 48 hours prior to installation.
- C. When moving sheets, lift and carry evenly to avoid dragging panels across each other and scratching the decorative surface. DO NOT SLIDE PANELS.
- D. Remove all labels and stickers immediately after installation.

1.07 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals for additional warranty requirements.
- B. Extended Correction Period: Correct defective work within a 5-year period for failure of materials or workmanship commencing on the Date of Substantial Completion.

1.08 PROJECT CONDITIONS

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.
- B. Field Measurements: Verify actual measurements/openings by field measurements performed by the installer prior to release for fabrication. Recorded measurements to be indicated on shop drawings based on field measurements provided by the installer. Coordinate field measurements and fabrication schedule with construction progress to avoid construction delays.
- C. Field Measurements: Where paneling is indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

1.09 COORDINATION

- A. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of Work specified in other Sections to ensure that paneling can be installed as indicated.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Decorative Fiberglass Reinforced Wall Paneling:
 - 1. Marlite, Inc; Standard FRP: www.marlite.com.
 - 2. Or Approved Equal.
 - 3. Substitutions: See Section 016000 - Product Requirements.

2.02 REGULATORY REQUIREMENTS

- A. Surface Burning Classification: Provide wall paneling assemblies meeting Class A when tested in accordance with ASTM E84.

2.03 DECORATIVE FIBERGLASS REINFORCED WALL PANELING

- A. Decorative Fiberglass Reinforced Wall Paneling: Marlite, Standard FR: (Basis of Design) or approved equal.
 - 1. Panel Size: 4 by 8 feet.
 - 2. Panel Thickness: 0.090 mm. Fabricated Panel Sizes: Multiple sizes as shown in the interior elevation drawings. Contractor shall field measure as-built walls, doors, windows, and display cases. Contractor shall make necessary dimensional adjustments to panel sizes to meet the intent, layout, and patterns shown on the drawings. Joints shall align as indicated on the interior elevation drawings.
 - 3. Pattern: Pebbled.
 - 4. Material: Fiberglass reinforced plastic (FRP), complying with ASTM D5319.
 - 5. Edges: Square.
 - 6. Wall Panel Colors: As indicated on drawings and Finish Schedule. Single sided color.

2.04 SUB-FRAME ASSEMBLY

- A. Aluminum z-clips as approved by Manufacturer and according to Manufacturer technical guidelines and must be designed to handle the weight per square foot of the specified panel
- B. Trim Molding Profiles: Extruded Aluminum; Manufactured by Wall Panel Systems; or approved equal:
 - 1. Top Edge: Shadow Line Extruded Edge.
 - 2. Horizontal Base Edge: Shadow Line Extruded Edge.
 - 3. Vertical Edge Trim: Shadow Line Extruded Edge.

4. Vertical Joints: Tongue and Groove.
 5. Horizontal Joints: Tongue and Groove.
 6. Vertical Joints: Tongue
 7. Horizontal Joints: Tongue
 8. Multi-row support molding
 9. Single-row wall molding
 10. Corner Trim: Mitered, Compound Outer corner/concealed hardware.
 11. Anodized Aluminum Finish.
- C. Glue-fix adhesive system as approved by Manufacturer and according to Manufacturer technical guidelines.
- D. Allow manufacturer minimum clear air space of $\frac{3}{4}$ " behind vertical attached sub-structure for ventilation of panels to prevent condensation accumulation behind wall panels

2.05 SOURCE QUALITY CONTROL

- A. Flame Spread/Smoke Development (ASTM E84 / UL 723)
1. Class A, Flame Spread less than 25; Smoke Development less than 450.
- B. Panel Tolerance
1. Thickness: $\frac{1}{32}$ ", maximum
 2. Length: $\frac{1}{4}$ ", maximum.
 3. Width: $\frac{1}{4}$ ", maximum.
 4. Non-porous surface and edges.

2.06 FABRICATION

- A. Panel Dimensions: Field fabrication shall be allowed where necessary but shall be kept to an absolute minimum. All fabrication shall be done under controlled shop conditions when possible.
- B. Appearance: Panel lines, breaks, and angles shall be sharp, true, and surfaces free from warp and buckle.
- C. Accessories:
1. Trim:
 - a. Material: Aluminum Anodized Trim, PVC, or Stainless Steel..
 - b. Color/Finish: As specified on drawings..
 - c. Divider Bars: Manufacturer's standard, matching and aligning with design pattern.
 2. Products:
 - a. Marlite, www.marlite.com.
 - b. Or, approved equal.
 - c. Substitutions: See Section 01 6000 - Product Requirements.
 3. Adhesive: Type recommended by panel manufacturer.
 4. Sealant: Type recommended by paneling manufacturer; clear.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify existing conditions and substrate flatness before starting work.
- B. Verify that substrate surfaces for adhered items are clean and smooth.
 - 1. Test painted or wall covering surfaces for adhesion in inconspicuous area, as recommended by manufacturer.
 - 2. Comply with adhesive manufacturer's recommendations for remedial measures at locations and application conditions where adhesion test results are unsatisfactory.
- C. Start of installation constitutes acceptance of project conditions.

3.02 INSTALLATION

- A. Install panels in accordance with manufacturer's instructions.
- B. Cut and drill holes in panels with carbide tipped saw blades, drill bits, or snips.
- C. Apply adhesive to back side of panel using trowel recommended by adhesive manufacturer.
- D. Apply panels to wall with vertical joints plumb and horizontal joints level and pattern aligned with adjoining panels.
- E. Using a roller, apply pressure to panel face to ensure proper adhesion between surfaces.
- F. Install panels with manufacturer's recommended gaps for panel field and corner joints.
- G. Fill channels in trim with sealant before mounting to panel.
- H. Install trim with adhesive.
- I. Seal joints at wall base and between panels with approved sealant to prevent moisture intrusion.
- J. Remove excess sealant after paneling is installed and prior to curing.

3.03 ADJUSTING

- A. Replace paneling installed out of plumb and/or not aligned with adjacent panels or construction.

3.04 CLEANING

- A. See Section 01 70 00 - Execution and Closeout Requirements for additional requirements.
- B. Remove nonpermanent labels immediately after glazing installation is complete.
- C. Clean panel faces using cleaning agents and methods recommended by manufacturer to remove soiling.

3.05 CLOSEOUT ACTIVITIES

- A. See Section 01 78 00 - Closeout Submittals for closeout submittals.

3.06 PROTECTION

- A. Protect installed interior wall paneling from subsequent construction operations.

END OF SECTION 09 78 00

SECTION 09 91 13 - EXTERIOR PAINTING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Surface preparation.
- B. Field application of paints.
- C. Scope: Finish exterior surfaces exposed to view, unless fully factory-finished and unless otherwise indicated, including the following:
 - 1. Both sides and edges of plywood backboards for electrical and telecom equipment before installing equipment.
 - 2. Exposed surfaces of steel lintels and ledge angles.
- D. Do Not Paint or Finish the Following Items:
 - 1. Items factory-finished unless otherwise indicated; materials and products having factory-applied primers are not considered factory finished.
 - 2. Items indicated to receive other finishes.
 - 3. Items indicated to remain unfinished.
 - 4. Fire rating labels, equipment serial number and capacity labels, and operating parts of equipment.
 - 5. Non-metallic roofing and flashing.
 - 6. Stainless steel, anodized aluminum, bronze, terne-coated stainless steel, zinc, and lead.
 - 7. Marble, granite, slate, and other natural stones.
 - 8. Floors, unless specifically indicated.
 - 9. Ceramic and other types of tiles.
 - 10. Brick, glass unit masonry, architectural concrete, cast stone, integrally colored plaster and stucco.
 - 11. Glass.
 - 12. Concealed pipes, ducts, and conduits.

1.02 REFERENCE STANDARDS

- A. 40 CFR 59, Subpart D - National Volatile Organic Compound Emission Standards for Architectural Coatings; U.S. Environmental Protection Agency; current edition.
- B. MPI (APSM) - Master Painters Institute Architectural Painting Specification Manual; Current Edition.

PART 2 PRODUCTS

2.01 PAINTS AND FINISHES - GENERAL

- A. Paints and Finishes: Ready-mixed, unless required to be a field-catalyzed paint.

1. Provide paints and finishes of a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating, with good flow and brushing properties, and capable of drying or curing free of streaks or sags.
 2. Supply each paint material in quantity required to complete entire project's work from a single production run.
 3. Do not reduce, thin, or dilute paint or finishes or add materials unless such procedure is described explicitly in manufacturer's product instructions.
- B. Volatile Organic Compound (VOC) Content:
1. Provide paints and finishes that comply with the most stringent requirements specified in the following:
 - a. 40 CFR 59, Subpart D--National Volatile Organic Compound Emission Standards for Architectural Coatings.
 2. Determination of VOC Content: Testing and calculation in accordance with 40 CFR 59, Subpart D (EPA Method 24), exclusive of colorants added to a tint base and water added at project site; or other method acceptable to authorities having jurisdiction.

2.02 PAINT SYSTEMS - EXTERIOR

PART 3 EXECUTION

3.01 PREPARATION

- A. Clean surfaces thoroughly and correct defects prior to application.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
- C. Remove or mask surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces for finishing.
- D. Seal surfaces that might cause bleed through or staining of topcoat.
- E. Remove mildew from impervious surfaces by scrubbing with solution of tetra-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.

3.02 APPLICATION

- A. Apply products in accordance with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual".
- B. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.
- C. Apply each coat to uniform appearance.
- D. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.
- E. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

END OF SECTION 09 91 13

SECTION 09 91 23 - INTERIOR PAINTING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Surface preparation.
- B. Field application of paints.
- C. Scope: Finish interior surfaces exposed to view, unless fully factory-finished and unless otherwise indicated.
- D. Do Not Paint or Finish the Following Items:
 - 1. Items factory-finished unless otherwise indicated; materials and products having factory-applied primers are not considered factory finished.
 - 2. Items indicated to receive other finishes.
 - 3. Items indicated to remain unfinished.
 - 4. Fire rating labels, equipment serial number and capacity labels, bar code labels, and operating parts of equipment.
 - 5. Floors, unless specifically indicated.
 - 6. Glass.
 - 7. Concealed pipes, ducts, and conduits.

1.02 RELATED REQUIREMENTS

- A. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions.
- B. Section 21 05 53 - Identification for Fire Suppression Piping and Equipment: Painted identification.
- C. Section 22 05 53 - Identification for Plumbing Piping and Equipment: Painted identification.
- D. Section 23 05 53 - Identification for HVAC Piping and Equipment: Painted identification.
- E. Section 26 05 53 - Identification for Electrical Systems: Painted identification.

1.03 REFERENCE STANDARDS

- A. ASTM D4442 - Standard Test Methods for Direct Moisture Content Measurement of Wood and Wood-Based Materials; 2020.
- B. MPI (APSM) - Master Painters Institute Architectural Painting Specification Manual; Current Edition.
- C. SSPC-SP 1 - Solvent Cleaning; 2015, with Editorial Revision (2016).
- D. SSPC-SP 6 - Commercial Blast Cleaning; 2007.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide complete list of products to be used, with the following information for each:
 - 1. Manufacturer's name, product name and/or catalog number, and general product category (e.g., "alkyd enamel").
 - 2. MPI product number (e.g., MPI #47).
 - 3. Cross-reference to specified paint system products to be used in project; include description of each system.
 - 4. Manufacturer's installation instructions.
 - 5. If proposal of substitutions is allowed under submittal procedures, explanation of substitutions proposed.
- C. Samples: Submit three paper "draw down" samples, 8-1/2 by 11 inches in size, illustrating range of colors available for each finishing product specified.
 - 1. Where sheen is specified, submit samples in only that sheen.
 - 2. Where sheen is not specified, submit each color in each sheen available.
 - 3. Allow 30 days for approval process, after receipt of complete samples by Architect.
 - 4. Paint color submittals will not be considered until color submittals for major materials not to be painted, such as masonry, have been approved.
- D. Manufacturer's Instructions: Indicate special surface preparation procedures.
- E. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 - 1. See Section 01 60 00 - Product Requirements, for additional provisions.
 - 2. Extra Paint and Finish Materials: 1 gal of each color; from the same product run, store where directed.
 - 3. Label each container with color in addition to the manufacturer's label.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified, with minimum three years documented experience.

1.06 MOCK-UP

- A. See Section 01 40 00 - Quality Requirements, for general requirements for mock-up.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.
- B. Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.
- C. Paint Materials: Store at minimum ambient temperature of 45 degrees F and a maximum of 90 degrees F, in ventilated area, and as required by manufacturer's instructions.

1.08 FIELD CONDITIONS

- A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the paint product manufacturer.
- B. Follow manufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.
- C. Minimum Application Temperatures for Paints: 50 degrees F for interiors unless required otherwise by manufacturer's instructions.
- D. Provide lighting level of 80 fc measured mid-height at substrate surface.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Provide paints and finishes used in any individual system from the same manufacturer; no exceptions.
- B. Provide paints and finishes from the same manufacturer to the greatest extent possible.
 - 1. If a single manufacturer cannot provide specified products; minor exceptions will be permitted provided approval by Architect is obtained using the specified procedures for substitutions.
 - 2. Substitution of MPI-approved products by a different manufacturer is preferred over substitution of unapproved products by the same manufacturer.
 - 3. Substitution of a different paint system using MPI-approved products by the same manufacturer will be considered.
- C. Paints:
 - 1. Base Manufacturer: Sherwin- Williams.
 - 2. Behr Process Corporation: www.behr.com/#sle.
 - 3. PPG Paints: www.ppgpaints.com/#sle.
 - 4. Sherwin-Williams Company: www.sherwin-williams.com/#sle.
- D. Primer Sealers: Same manufacturer as top coats.
- E. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 PAINTS AND FINISHES - GENERAL

- A. Paints and Finishes: Ready-mixed, unless intended to be a field-catalyzed paint.
 - 1. Provide paints and finishes of a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating, with good flow and brushing properties, and capable of drying or curing free of streaks or sags.
 - 2. For opaque finishes, tint each coat including primer coat and intermediate coats, one-half shade lighter than succeeding coat, with final finish coat as base color.
 - 3. Supply each paint material in quantity required to complete entire project's work from a single production run.
 - 4. Do not reduce, thin, or dilute paint or finishes or add materials unless such procedure is specifically described in manufacturer's product instructions.

- B. Volatile Organic Compound (VOC) Content: See Section 01 61 16.

2.03 PAINT SYSTEMS - INTERIOR

- A. Paint I-OP - Interior Surfaces to be Painted, Unless Otherwise Indicated: Including gypsum board, concrete, and concrete masonry units.
1. Two top coats and one coat primer.
 2. Top Coat(s): Interior Ceiling High-Quality Latex; MPI #43, 44, 52, 53, 54, or 114.
 - a. Products:
 - 1) Sherwin-Williams ProMar 200 Zero VOC Interior Latex, Flat.
 - 2) Sherwin-Williams Solo Series, Flat. (MPI#53)
 - 3) Substitutions: See Section 01 60 00 - Product Requirements
- B. Paint I-OP-MD-WC - Medium Duty Vertical and Overhead: Including gypsum board, plaster, concrete, and concrete masonry units.
1. Two top coats and one coat primer.
 2. Top Coat(s): Interior Alkyd, Water Based; MPI #157, 167, 168, or 169.
 - a. Products:
 - 1) Sherwin-Williams ProMar 200 Waterbased Acrylic-Alkyd, Semi-Gloss.
 - 2) Sherwin-Williams ProClassic Interior Waterbased Acrylic-Alkyd, Semi-Gloss..
 - 3) Substitutions: See Section 01 60 00 - Product Requirements

2.04 PRIMERS

- A. Primers: Provide the following unless other primer is required or recommended by manufacturer of top coats.
1. Stain Blocking Primer, Water Based; MPI #137.
 - a. Products:
 - 1) Sherwin Williams, Extreme Block Interior/Exterior Stain Blocking Waterbased Primer.
 - 2) Substitutions: See Section 01 60 00 - Product Requirements

2.05 ACCESSORY MATERIALS

- A. Accessory Materials: Provide primers, sealers, cleaning agents, cleaning cloths, sanding materials, and clean-up materials as required for final completion of painted surfaces.
- B. Patching Material: Latex filler.
- C. Fastener Head Cover Material: Latex filler.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that surfaces are ready to receive work as instructed by the product manufacturer.

- B. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application.
- C. Test shop-applied primer for compatibility with subsequent cover materials.
- D. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces is below the following maximums:
 - 1. Gypsum Wallboard: 12 percent.
 - 2. Plaster and Stucco: 12 percent.
 - 3. Masonry, Concrete, and Concrete Masonry Units: 12 percent.
 - 4. Interior Wood: 15 percent, measured in accordance with ASTM D4442.

3.02 PREPARATION

- A. Clean surfaces thoroughly and correct defects prior to application.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
- C. Remove or mask surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces or finishing.
- D. Seal surfaces that might cause bleed through or staining of topcoat.
- E. Remove mildew from impervious surfaces by scrubbing with solution of tetra-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.
- F. Concrete:
- G. Masonry:
- H. Gypsum Board: Fill minor defects with filler compound. Spot prime defects after repair.
- I. Plaster: Fill hairline cracks, small holes, and imperfections with latex patching plaster. Make smooth and flush with adjacent surfaces. Wash and neutralize high-alkali surfaces.
- J. Wood Surfaces to Receive Opaque Finish: Wipe off dust and grit prior to priming. Seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after primer has dried; sand between coats. Back prime concealed surfaces before installation.

3.03 APPLICATION

- A. Remove unfinished louvers, grilles, covers, and access panels on mechanical and electrical components and paint separately.
- B. Apply products in accordance with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual".
- C. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.
- D. Apply each coat to uniform appearance in thicknesses specified by manufacturer.
- E. Sand wood and metal surfaces lightly between coats to achieve required finish.
- F. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.

- G. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

3.04 CLEANING

- A. Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.

3.05 PROTECTION

- A. Protect finishes until completion of project.
- B. Touch-up damaged finishes after Substantial Completion.

3.06 COLOR SCHEDULE

- A. P-1: Match existing paint color as noted on construction documents.
- B. P-2: Sherwin Williams, SW7005 Pure White; Finish: Semi-Gloss.
- C. P-3: Sherwin Williams, SW7029 Agreeable Gray; Finish: Semi-Gloss.
- D. P-4: Sherwin Williams, SW9062 Bluebird Feather; Finish: Semi-Gloss.
- E. CP-1: Match existing paint color as noted on construction documents.
- F. CP-2: Sherwin Williams, SW7007 Bright White; Finish: Flat.

END OF SECTION 09 91 23

SECTION 10 26 00 - WALL AND DOOR PROTECTION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Bumper rails.
- B. Corner guards.
- C. Protective wall covering.

1.02 RELATED REQUIREMENTS

- A. Section 06 10 00 - Rough Carpentry: Blocking for wall and corner guard anchors.
- B. Section 09 21 16 - Gypsum Board Assemblies: Placement of supports in stud wall construction.
- C. Section 09 22 16 - Non-Structural Metal Framing: Placement of supports in stud wall construction.
- D. Section 09 72 00 - Wall Coverings: Terminating wall covering at wall and door protection.

1.03 REFERENCE STANDARDS

- A. ASTM D256 - Standard Test Methods for Determining the Izod Pendulum Impact Resistance of Plastics; 2023, with Editorial Revision.
- B. ASTM D543 - Standard Practices for Evaluating the Resistance of Plastics to Chemical Reagents; 2021.
- C. ASTM F476 - Standard Test Methods for Security of Swinging Door Assemblies; 2023.
- D. ASTM G21 - Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi; 2015, with Editorial Revision (2021).

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Indicate physical dimensions, features, wall mounting brackets with mounted measurements, anchorage details, and rough-in measurements.
- C. Shop Drawings: Include plans, elevation, sections, and attachment details. Show design and spacing of supports for protective corridor handrails, required to withstand structural loads.
- D. Samples: Submit samples illustrating component design, configurations, joinery, color and finish.
 - 1. Submit two sections of corner guards, bumper rails, and protective corridor handrails, 6 inches long.
 - 2. Submit two samples of protective wall covering, 6 by 6 inches square.

- E. Manufacturer's Instructions: Indicate special procedures, perimeter conditions requiring special attention, and _____.
- F. Warranty Documentation: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.
- G. Maintenance Materials: Furnish the following for Owner's use in maintenance of project:
 - 1. See Section 01 60 00 - Product Requirements, for additional provisions.
- H. Maintenance Data: Manufacturer's instructions for care and cleaning of each type of product. Include information about both recommended and potentially detrimental cleaning materials and methods.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Deliver wall and door protection items in original, undamaged protective packaging. Label items to designate installation locations.
- B. Protect work from moisture damage.
- C. Protect work from UV light damage.
- D. Do not deliver products to project site until areas for storage and installation are fully enclosed, and interior temperature and humidity are in compliance with manufacturer's recommendations for each type of item.
- E. Store products in either horizontal or vertical position, in compliance with manufacturer's instructions.

1.06 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals for additional warranty requirements.
- B. Manufacturer Warranty: Provide 5-year manufacturer warranty for metal crash rails. Complete forms in Owner's name and register with manufacturer.
 - 1. Failures include, but are not limited to, the following:
 - a. Structural failures or internal connection failures.
 - b. Deterioration of materials beyond that expected of normal use, as intended by manufacturer.
- C. Installer Warranty: Provide 5-year warranty for metal crash rails commencing on Date of Substantial Completion. Complete forms in Owner's name and register with installer.
 - 1. Failures include, but are not limited to, the following:
 - a. Detachment of rail system from substrate.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Corner Guards:
 - 1. Construction Specialties, Inc; Acrovyn Solid Color and Chameleon Crash Rails: www.c-sgroup.com/#sle.
 - 2. Substitutions: See Section 01 60 00 - Product Requirements.

- B. Protective Wall Covering:
 - 1. Construction Specialties, Inc; Acrovyn High-Impact Wall Covering: www.csgroup.com/#sle.
 - 2. See drawings for manufacturer and description
 - 3. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 PERFORMANCE CRITERIA

- A. Impact Strength: Unless otherwise noted, provide protection products and assemblies that have been successfully tested for compliance with applicable provisions of ASTM D256 and/or ASTM F476.
- B. Chemical and Stain Resistance: Unless otherwise noted, provide protection products and assemblies with chemical and stain resistance complying with applicable provisions of ASTM D543.
- C. Fungal Resistance: Unless otherwise noted, provide protection products and assemblies which pass ASTM G21 testing.

2.03 PRODUCT TYPES

- A. Corner Guards - Surface Mounted:
 - 1. Width of Wings: 3-1/2 inches.
 - 2. Corner: Square.
 - 3. Color: Stainless Steel.
 - 4. Length: 72 inches.
- B. Adhesives and Primers: As recommended by manufacturer.
- C. Mounting Brackets and Attachment Hardware: Appropriate to component and substrate.

2.04 FABRICATION

- A. Fabricate components with tight joints, corners and seams.
- B. Pre-drill holes for attachment.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that rough openings, concealed blocking, and anchors are correctly sized and located.
- B. Verify that field measurements are as indicated on drawings.
- C. Verify that substrate surfaces for adhered items are clean and smooth.

3.02 INSTALLATION

- A. Install components in accordance with manufacturer's instructions, level and plumb, secured rigidly in position to supporting construction.
- B. Position corner guard 4 inches above finished floor to 72 inches high.

3.03 TOLERANCES

- A. Maximum Variation From Required Height: 1/4 inch.
- B. Maximum Variation From Level or Plane For Visible Length: 1/4 inch.

3.04 CLEANING

- A. See Section 01 74 19 - Construction Waste Management and Disposal, for additional requirements.
- B. Clean wall and door protection items of excess adhesive, dust, dirt, and other contaminants.

3.05 SCHEDULE

- A. CG-1: Corner Guard; Finish: Stainless Steel, Satin; Style: CO-8.
- B. CG-2: Corner Guard; Finish: Stainless Steel, Satin; Style: SCO-8.
- C. WP-1: Wall Covering; Finish: Stainless Steel, Smooth; Panel Size: 48" x 96".

END OF SECTION 10 26 00

SECTION 10 44 00 - FIRE PROTECTION SPECIALTIES

PART 1 GENERAL

1.01 REFERENCE STANDARDS

- A. ASTM E814 - Standard Test Method for Fire Tests of Penetration Firestop Systems; 2013a (Reapproved 2017).
- B. NFPA 10 - Standard for Portable Fire Extinguishers; 2022.

PART 2 PRODUCTS

2.01 FIRE EXTINGUISHERS

- A. Fire Extinguishers - General: Comply with product requirements of NFPA 10 and applicable codes, whichever is more stringent.
- B. Dry Chemical Type Fire Extinguishers: Stainless steel tank, with pressure gauge.
 - 1. Class: K type.
 - 2. Size: 1.6 gallons.
 - 3. Temperature range: Minus 20 degrees F to 120 degrees F.

2.02 FIRE EXTINGUISHER CABINETS

- A. Fire Rating: Listed and labeled in accordance with ASTM E814 requirements for fire resistance rating of walls where being installed.
- B. Basis of Design: Uline, model number H-5799.
- C. Cabinet Configuration: Semi-recessed type.

END OF SECTION 10 44 00

SECTION 11 40 00 – FOOD SERVICE EQUIPMENT

PART 11 40 01 - SUMMARY:

General and Supplementary conditions of the contract and Division 1 General Requirements apply to this Section.

- A. Index of the 11 40 00 Section
 - 1. Section 11 40 01 – Summary
 - A. Bidding Instructions
 - B. Alternate Proposals
 - C. Drawings and Specifications
 - D. Changes While Bidding
 - E. Examination of Site, Drawings, Etc.
 - F. Conditions of work
 - G. Owner's Option
 - H. Submission of Bids
 - 2. Section 11 40 02 - General Conditions
 - A. Description of Work
 - B. Intent of Specifications
 - C. Permits and Certificates
 - D. Public Liability, Casualty and Workmen's Compensation Insurance
 - E. Materials and Workmanship
 - F. Construction
 - G. Lost or Stolen Food Service Equipment and Accessories
 - H. Contract responsibility and Omissions
 - I. Fire Protection Systems
 - 3. Section 11 40 03 - General Fabrication Standards
 - A. Legs
 - B. Crossbracing
 - C. Undershelves
 - D. Cabinet Shelves
 - E. Wall Shelves
 - F. Overshelves
 - G. Sinks
 - H. Closure Trim Pieces
 - I. Refrigerated Equipment
 - J. Laminated Plastic
 - K. Dish Tables
 - L. Exhaust Hoods and Canopies
 - M. Walk-In Boxes and Refrigeration Standards
 - 4. Section 11 40 04 - Itemized Specifications
 - A. Schedule of Equipment

- 5. Section 11 40 05 –Execution
 - A. Coordination of Responsibility
 - B. Scheduling Lead Times and Delivery
 - C. General Contractor Responsibilities
 - D. Food Service Equipment Contractor Responsibilities
 - E. Fire Protection System Contractor Responsibilities
 - F. Millwork Fabricator Responsibilities
 - G. Refrigeration Contractor Responsibilities
 - H. Electrical Contractor Responsibilities
 - I. Plumbing Contractor Responsibilities
 - J. HVAC Contractor Responsibilities
 - K. Storage and Delivery
 - L. Site Inspection and Field Verification
 - M. Installation
 - N. Protection
 - O. Project Closeout Procedures
 - P. Project Record Documents
 - Q. Warranties
 - R. Exhibits
- B. 11 40 00 Foodservice Equipment Section Includes:**
 - 1. Food Service Equipment, including storage, preparation, cooking, serving equipment, Exhaust Hoods, Walk-In Boxes, Custom Fabricated Equipment, and Commercial Grade Custom Food Service Millwork as indicated on the Food Service Equipment (FS) drawings. The Food Service Equipment drawings form part of these specifications and includes the following sections and equipment typically referred to in these sections:
 - A. 11 41 00 Foodservice Storage Equipment**
 - i. 11 41 13 Refrigerated Food Storage Cases
 - ii. 11 41 23 Walk-In Coolers
 - iii. 11 41 26 Walk-In Freezers
 - iv. 11 41 33 Foodservice Shelving
 - B. 11 42 00 Food Preparation Equipment**
 - i. 11 42 13 Food Preparation Appliances
 - ii. 11 42 16 Food Preparation Surfaces
 - C. 11 43 00 Food Delivery Carts and Conveyors**
 - i. 11 43 13 Food Delivery Carts
 - ii. 11 43 16 Food Delivery Conveyors
 - D. 11 44 00 Food Cooking Equipment**
 - i. 11 44 13 Commercial Ranges
 - ii. 11 44 16 Commercial Ovens
 - E. 11 46 00 Food Dispensing Equipment**
 - i. 11 46 13 Bar Equipment
 - ii. 11 46 16 Service Line Equipment
 - iii. 11 46 19 Soda Fountain Equipment
 - iv. 11 46 23 Coffee and Espresso Equipment
 - v. 11 46 83 Ice Machines
 - F. 23 38 00 Ventilation Hoods**
 - i. 23 38 13 Commercial-Kitchen Hoods
 - ii. 23 38 13.13 Listed Commercial-Kitchen Hoods
 - iii. 23 38 13.16 Standard Commercial-Kitchen Hoods

G. 21 23 00 Wet-Chemical Fire-Extinguishing Systems

- i. 21 23 13 Wet-Chemical Fire-Extinguishing Piping
- ii. 21 23 16 Wet-Chemical Fire-Extinguishing Equipment

H. 12 35 00 Specialty Casework

- i. 12 35 39 Commercial Kitchen Casework

C. Related Sections to be performed by other trades and GC on the project including but not limited by the following Sections:

1. **Concrete Section 03 30 00** and all related sub sections to provide any concrete curbs, pads, and anchors to concrete and masonry for all food service equipment compressors, evaporators and hanging of exhaust hoods.
2. **Openings Section 08 00 00** and all related sub sections to provide any required openings, penetrations, and access doors for food service equipment installation, venting and serviceability.
3. **Flooring Section 09 60 00** and all related sub sections to provide any required flooring finishes that would extend into recessed walk-in cooler/freezer boxes.
4. **Residential Equipment Section 11 30 00:** The Food Service Equipment drawings may have additional residential equipment specified to be provided by GC and may include the following sections and equipment. **11 30 13 Residential Appliances, 11 30 13.13 Residential Kitchen Appliances.** GC to bid and supply this equipment outside of Food Service Equipment Dealer (section 11 40 00) scope.
5. **Plumbing Section 22 00 00** and all related sub sections to provide final connections to all food service equipment including all fittings and accessories. Refer to Part V - Execution Section 5.10 for additional Plumbing requirements and coordination with Food Service Equipment.
6. **Heating, Ventilating, and Air Conditioning (HVAC) Section 23 00 00** and all related sub sections to provide final connections to commercial Kitchen Hoods exhaust air and make up air, both tempered and conditioned. Refer to Part V - Execution Section 5.11 for additional HVAC requirements and coordination with Food Service Equipment.
7. **Electrical Section 26 00 00** and all related sub sections to provide final connections to all food service equipment including all breakers, panels, disconnects and accessories. Refer to Part V - Execution Section 5.9 for additional Electrical requirements and coordination with Food Service Equipment.
8. **Communications Section 27 00 00** and all related sub sections to provide final connections for all low voltage requirements including but not limited to POS (Point of Sale), POS Printers, Digital Menu Boards, Order Management Screens, HACCP Temperature Monitoring Systems, Video Exhibition Systems.

1.01 Bidding Instructions

- A. Bids for Food Service Equipment must be based on the materials, fabrication methods, equipment and accessories exactly as specified without exception. Failure to follow this instruction will disqualify the bid. The Contract is to be awarded as follows:
 - 1. The competence and responsibility of bidders shall be considered in making the award.
 - 2. The Architect, Consultant, and/or Owner are not obligated to accept the lowest or any other bid. The award of the Contract and the choice of the Food Service Equipment Contractor (section 11 40 00) shall be at the Architect's, Consultant's, and/or Owner's discretion.

1.02 Alternate Proposals

- A. Various items are specified by brand, trade name, or name of manufacturer and model number. **The base bid must include the price for the manufacturer and model number exactly as specified.**
- B. The Food Service Equipment Contractor (section 11 40 00) may propose alternate equipment to be considered for substitution supplying full data and cut sheet for each item. Alternate bid items to include all options, accessories and features for each individual item clearly noted and listed. For all systems, remote rack, walk-in boxes, cooking suites, etc. FSEC to provide engineered drawings to accompany bid illustrating that the alternate manufacturer has captured all design features and quality of construction. Some alternate manufacturers must provide additional components and accessories beyond what is specified in basis of design to deliver equal performance of system. Change orders for additional components, material, labor, and service to make system fully operational will be rejected.
- C. Dealer to fill out and submit form as provided in specifications, exhibit B – “VE & Alternate Product Certification Form”. Submittals will be rejected and not reviewed if this form is not included as part of the submittal.
- D. Prices for all proposed alternate equipment shall state the amount to be added to or deducted from the base bid if the alternate item is accepted.
- E. The Architect, Consultant or their representatives shall be the judge of the quality and acceptability of the substitute offered. Review will be conducted and returned with notes and recommendations. GC – General Contractor to seek final approval from Owner Team or their Representative in acceptance of all alternates submitted based on consultant's preliminary review.
- F. **Alternates or substitutions shall be considered only at the time of bidding as outlined above. See exhibit 9 – and utilize “VE & Alternate Product Certification Form” for any proposed alternates. Alternates proposed without this form provided will be rejected.**
- G. The Food Service Equipment Contractor (section 11 40 00) shall bear all additional expenses incurred due to dimensional or field utility changes occurring as a result of the acceptance of alternate proposals. Any change orders generated as a result of higher utility requirements for the base designed item will be rejected.

H. SHG Alternates Accepted:

Product Category	Accepted Manuf. Alternates	Strictly Prohibited
Bar Equipment	<ul style="list-style-type: none"> • Krowne • Eagle • Perlick 	<ul style="list-style-type: none"> • Regency
Beverage Blenders	<ul style="list-style-type: none"> • Vitamix • Waring • Blendtec 	<ul style="list-style-type: none"> • Avamix • Galaxy
Blast Chillers	<ul style="list-style-type: none"> • Irinox • American Panel • Thermo-Kool 	<ul style="list-style-type: none"> • Electrolux • Delfield
Braising Pans/Tilt Skillets	<ul style="list-style-type: none"> • Vulcan • Cleveland • Groen • Rational 	<ul style="list-style-type: none"> • Eurodib • Infrico
Kitchen Blenders	<ul style="list-style-type: none"> • Vitamix • Waring • Blendtec 	<ul style="list-style-type: none"> • Avamix • Galaxy
Carts and Kiosks	<ul style="list-style-type: none"> • Custom • Duke • Vollrath 	<ul style="list-style-type: none"> • Regency • Choice
Char Broilers	<ul style="list-style-type: none"> • Vulcan • Garland • Southbound 	<ul style="list-style-type: none"> • Avantco • Cooking Performance Group
Concession Equipment	<ul style="list-style-type: none"> • Star • APW 	<ul style="list-style-type: none"> • CPG
Cook and Hold Ovens	<ul style="list-style-type: none"> • Winston CVAP • Alto-Shaam • Cres Cor 	
Cooking Suites	<ul style="list-style-type: none"> • Vulcan • Jade • Montague 	<ul style="list-style-type: none"> • Hestan
Custom S/S Counters	<ul style="list-style-type: none"> • Eagle Group • Titan • Advance Tabco 	<ul style="list-style-type: none"> • Commercial Stainless • Spokane Stainless • Regency
Dish/Warewashers	<ul style="list-style-type: none"> • Hobart • Champion 	<ul style="list-style-type: none"> • Jackson • CMA • Noble
Display Cases	<ul style="list-style-type: none"> • Structural Concepts • RPI 	<ul style="list-style-type: none"> • Federal • Avantco • Oscartek
Disposers	<ul style="list-style-type: none"> • Salvajor • InSinkErator 	
Drawer Warmers	<ul style="list-style-type: none"> • Alto-Shaam • Winston-CVAP • Hatco 	<ul style="list-style-type: none"> • ServIt
Drop-In Hot Wells Drop-In Cold Wells Drop-In Hot/Cold Wells	<ul style="list-style-type: none"> • Vollrath • Delfield • Low Temp Industries • Alto-Shaam • Wells • Duke 	
Espresso Machines	<ul style="list-style-type: none"> • Rancilio/Eggo USA • Nuova • Cimbali • Schaerer 	<ul style="list-style-type: none"> • Estella Coffee

Food Processors	<ul style="list-style-type: none"> • Robot Coupe • Waring • KitchenAid 	<ul style="list-style-type: none"> • Avantco • Avamix
Fryers	<ul style="list-style-type: none"> • Frymaster • Vulcan • Pitco 	<ul style="list-style-type: none"> • Avantco
Gas Hoses	<ul style="list-style-type: none"> • Dormont • T&S Brass 	<ul style="list-style-type: none"> • Regency
Glasswasher	<ul style="list-style-type: none"> • Meiko • Krowne • Hobart • Glastender 	<ul style="list-style-type: none"> • Noble
Griddles	<ul style="list-style-type: none"> • Vulcan • Accutemp • Garland 	<ul style="list-style-type: none"> • Avantco • CPG
Heat Lamps	<ul style="list-style-type: none"> • Hatco 	<ul style="list-style-type: none"> • Avantco
Heat Lamps - Decorative	<ul style="list-style-type: none"> • Hatco • Baselite 	
High Speed Oven (Ventless)	<ul style="list-style-type: none"> • Merrychef • Turbochef • Amana 	
High Speed Steamers/ Microwaves	<ul style="list-style-type: none"> • Amana/ACP • Panasonic 	
Hoods	<ul style="list-style-type: none"> • Captive-Aire • Halton • Accurex • Caddy 	<ul style="list-style-type: none"> • Halifax
Hot Food Heating/Holding Cabinets	<ul style="list-style-type: none"> • Metro • Alto-Shaam • Winston-CVAP 	<ul style="list-style-type: none"> • Avantco
Hot Food Tables i.e., steamtables	<ul style="list-style-type: none"> • Vollrath • Delfield • Randell • Duke • Eagle Group 	<ul style="list-style-type: none"> • ServIt
Ice Cream Machine	<ul style="list-style-type: none"> • Taylor • Stoelting 	
Ice Cream Dipping Cabinet – Drop-In	<ul style="list-style-type: none"> • Randell • Delfield 	
Ice Cream Dipping Cabinet - Stand Alone	<ul style="list-style-type: none"> • Master-Bilt • Stoelting 	
Ice Makers	<ul style="list-style-type: none"> • Follett • Manitowoc • Hoshizaki 	<ul style="list-style-type: none"> • Avantco
Induction Cooktops	<ul style="list-style-type: none"> • Vollrath • Garland • Spring 	<ul style="list-style-type: none"> • Avantco
Kettles	<ul style="list-style-type: none"> • Vulcan • Cleveland • Groen 	
Microwaves	<ul style="list-style-type: none"> • Amana/ACP • Panasonic • Waring 	<ul style="list-style-type: none"> • Solwave
Millwork	<ul style="list-style-type: none"> • Only NSF Certified & UL listed millwork will be accepted 	<ul style="list-style-type: none"> • Commercial Stainless • Creative Concepts • Sparks Custom Fabrication • Stainless Innovations • Titan Stainless

Mixers 20+ quarts	<ul style="list-style-type: none"> • Hobart • Globe 	<ul style="list-style-type: none"> • Avantco
Mixers	<ul style="list-style-type: none"> • KitchenAid 	
Oven - Combination	<ul style="list-style-type: none"> • Rational • Alto-Shaam • Cleveland 	
Oven - Convection	<ul style="list-style-type: none"> • Vulcan • Blodgett • Southbend 	<ul style="list-style-type: none"> • Avantco • CPG
Oven - Conveyor	<ul style="list-style-type: none"> • Lincoln • TurbChef (Ventless) 	<ul style="list-style-type: none"> • Avantco
Oven, Hearth	<ul style="list-style-type: none"> • Woodstone • Marra Forni 	<ul style="list-style-type: none"> • Beech • Earthstone
Ovens, Deck	<ul style="list-style-type: none"> • Baker's Pride • Blodgett • Empire 	
Panini Press	<ul style="list-style-type: none"> • Star • Hatco • Equipex 	<ul style="list-style-type: none"> • Avantco
Patient Delivery Carts	<ul style="list-style-type: none"> • Aladdin • Burlodge • Dinex • Cambro 	
Pellet Activators	<ul style="list-style-type: none"> • Aladdin • Dinex 	
Pot Wash Sinks	<ul style="list-style-type: none"> • PowerSoak • Duke 	
Pulpers	<ul style="list-style-type: none"> • Hobart • Somat • InSinkErator 	
Racks	<ul style="list-style-type: none"> • Metro – MetroMax Q Racks • Metro – Green Epoxy Coated • Eagle Group 	<ul style="list-style-type: none"> • Regency
Ranges	<ul style="list-style-type: none"> • Vulcan • Garland • Southbend 	<ul style="list-style-type: none"> • Avantco • CPG
Refrigeration	<ul style="list-style-type: none"> • Victory • True Spec Line • Beverage Air • Continental • Hoshizaki • Adande 	<ul style="list-style-type: none"> • Delfield • Avantco • Galaxy
Refrigeration Racks	<ul style="list-style-type: none"> • RDT • ColdZone 	<ul style="list-style-type: none"> • Cooltec
Remote Beer Systems	<ul style="list-style-type: none"> • Krowne • MicroMatic • Perlick • ChillRite 	
Rotisseries	<ul style="list-style-type: none"> • Vertical Rotisserie – Wood Stone ONLY • Rotisol • BKL • Alto-Sham 	
Self-Leveling Dispensers	<ul style="list-style-type: none"> • Delfield • Lakeside 	
Serving Carts	<ul style="list-style-type: none"> • Duke • Vollrath • Eagle Group 	

Shelving	<ul style="list-style-type: none"> • Metro - Dishrooms • Eagle Group – All Other Shelving 	<ul style="list-style-type: none"> • Regency
Slicers	<ul style="list-style-type: none"> • Bizerba • Hobart • Berkel • Globe 	<ul style="list-style-type: none"> • Avantco • Backyard Pro
Smokers	<ul style="list-style-type: none"> • Southern Pride • Cook Shack 	
Sneeze guards	<ul style="list-style-type: none"> • BSI • Premier Metal Glass • Versa-Guard 	
Steamers	<ul style="list-style-type: none"> • Vulcan • Cleveland • Southbend 	<ul style="list-style-type: none"> • Crown
Toasters - Conveyor	<ul style="list-style-type: none"> • Hatco • Waring • Star 	<ul style="list-style-type: none"> • Avatoast
Ventless Hoods	<ul style="list-style-type: none"> • Wells • Gaylord • Giles 	
Walk-In Refrigeration	<ul style="list-style-type: none"> • Norbec • Bally • American Panel • Kolpak • Norlake 	<ul style="list-style-type: none"> • ThermalRite • Thermo-Kool
Wine Coolers	<ul style="list-style-type: none"> • True • Perlick 	<ul style="list-style-type: none"> • Oscartek • Vino-Temp
Water Filters	<ul style="list-style-type: none"> • Everpure (Rational Filters for Combis) • OptiPure • Cuno/3M 	<ul style="list-style-type: none"> • C Pure

I. Alternates Disclaimer:

These specifications were developed under the guidelines and principles of best practices within the commercial kitchen design industry. However, due to time constraints and the necessity of Value Engineering (VE), certain changes to these specifications may be mandated by the dealer, owner, or other third parties

Such changes are made without our explicit approval and may involve the adoption of alternate specifications or products that we may not typically endorse. In these circumstances, our role is limited to adapting plans to accommodate these changes but does not extend to the endorsement or approval of these changes.

As such, we disclaim any and all responsibility for the performance, aesthetics, quality, or suitability of any product or design change made as a result of VE that we have not specifically and expressly approved. We make no representations or warranties, expressed or implied, concerning these changes and their effects on the final product.

All stakeholders should be aware that any VE changes made without our express approval may have an impact on the quality and functionality of the end product, and any issues arising from such changes are the sole responsibility of the party making the change.

By proceeding with the project, the Client and other stakeholders acknowledge and agree to this disclaimer and our limited role in the adaptation of VE changes and agree to absolve us from any liability arising from issues related to these changes. Any party not in agreement with this disclaimer is advised to seek our approval before implementing any VE changes.

1.03 Drawings and Specifications Conflicts and Discrepancies

- A. If any floor plan to written specifications exist, for binding and estimating purposes, the following shall apply.
- B. **Floor Plans vs. Written Specifications:** The project shall be performed in accordance with the requirements of the drawings and specifications combined, subject to modifications as provided in the General Conditions. The drawings and specifications are intended to complement and supplement each other. Any work required by either of them or not by the other shall be performed as if denoted in both.
- C. **Quantities:** Larger quantity takes precedence. If floor plans call out for larger quantity, that quantity shall be provided or if specifications call for larger quantity, that quantity shall be provided.
- D. **Door Swings:** Plan orientation of door swings define function and flow and take precedence over written specification when conflicts exist.
- E. Food Service Equipment Dealer to submit formal RFI's for all above clarifications purposes and record.

1.04 Changes While Bidding

- A. During examination of the contract documents, or the site, should a bidder find any discrepancies, omissions, ambiguities, or conflicts, or be in doubt as to their meaning, the Architect and/or Consultant shall be notified no later than four (4) days before the bid opening date. Where the information sought is not clearly available, the Architect and/or Consultant shall issue a clarifying bulletin to all bidders which shall become a part of the contract documents.

1.05 Examination of Site, Drawings, Etc.

- A. Each bidder shall visit the site of the proposed work, if applicable, and fully acquaint himself with the conditions as they exist so that he may fully understand the facilities, difficulties, and restrictions attending the execution of the work under this contract.
- B. Bidders shall also thoroughly examine and be familiar with the drawings and specifications. The failure or omission of any bidder to receive or examine any form, instrument, or document, or to visit the site and acquaint himself with the conditions there existing shall in no way relieve him from obligation with respect to his bid. By submitting a bid, the bidder agrees and warrants that he has examined these items and finds them to be adequate to produce the desired results. No claim for any extra will be allowed because of alleged difficulties arising from unintentional errors or conflicts in the contract documents.

1.06 Conditions of Work

- A. Insofar as possible, the Food Service Equipment Contractor (section 11 40 00) in carrying out his work must employ such methods or means as necessary to avoid interruption of or interference with the work of any other contractor.

1.07 Owner's Option

- A. It is intended that the contract be awarded as a whole to the successful bidder.
- B. An itemized breakdown is required so that the Owner may, at his option, delete the item in its entirety, supply any part or portion thereof, or increase the quantity, making a suitable adjustment in the contract price based on the breakdown.
- C. The Owner reserves the right to reject any or all bids, or to waive irregularities or informalities, accepting only that best serving his interests.

1.08 Submission of Bids

- A. Bids shall be addressed to:
REFERENCE BIDDERS' INVITATION LETTER
- B. Bids shall be received no later than:
REFERENCE BIDDERS' INVITATION LETTER
- C. Equipment installation is expected to begin:
REFERENCE BIDDERS' INVITATION LETTER

PART 11 40 02 - GENERAL CONDITIONS

2.01 Description of Work

- A. The Food Service Equipment Contractor (section 11 40 00) shall furnish all labor, materials, equipment, and services necessary for all items specified. These shall be delivered prepaid; uncharted; assembled with all components within the equipment proper completely connected; set in place; leveled; fastened to the walls, floor, and ceiling if required; and left ready for final connections by other trades, which shall extend utility lines from rough-in locations to the final connection points on the equipment.
- B. If items appear on drawings and are not included in the specifications, or vice versa, the Food Service Equipment Contractor (section 11 40 00) shall furnish the items as though they appear in both places. If a conflict exists between drawings and specifications the Food Service Equipment Contractor (section 11 40 00) shall notify the Architect or Consultant for a determination as to which is correct.
- C. All work is to be performed by the proper trades using skilled labor. All work shall be performed at hours required to maintain consistent work schedules with all other trades without additional cost to the Architect, Consultant, or Owner.
- D. If any work specified under this Contract must be done by others as a result of jurisdictional trade agreements or other restrictions, this Food Service Equipment Contractor (section 11 40 00) shall sublet such work as necessary or make other satisfactory arrangements at his own expense and with the understanding that such work shall be done in accordance with the specifications and work schedule.
- E. Care shall be taken to prevent any damage whatsoever to the equipment, building, or previous work. Such damage will be repaired at the expense of the Food Service Equipment Contractor (section 11 40 00) causing same.

- F. Any field cutting, or welding shall comply with the provisions of the National Fire Protection Association's "National Fire Codes" or local requirement, whichever is more stringent, pertaining to such work, and the Food Service Equipment Contractor (section 11 40 00) shall be responsible for any damage resulting from failure to comply.
- G. The Food Service Equipment Contractor (section 11 40 00) shall at all times keep the premises free from waste materials or rubbish caused by his work. At the completion of each day's work such refuse must be removed, and the area swept broom clean. Dust partitions shall be constructed around the areas under work.
- H. Prior to turning completed areas over to the Owner, the Food Service Equipment Contractor (section 11 40 00) shall clean and polish all equipment herein specified and make it ready for use, including commissioning and demonstration to the Owner.

2.02 NOT USED

2.03 Intent of Specifications

- A. Equipment shall be of the finest quality in materials, finish, and workmanship.
- B. Particular attention shall be paid to details of fabrication to insure ready accessibility for cleaning.
- C. All equipment shall strictly adhere to or exceed the guidelines of the National Sanitation Foundation as well as any requirements of the jurisdiction having authority.
- D. All eligible equipment shall display the NSF seal or be rejected.
- E. All eligible equipment shall display the UL/CSA label or be rejected.
- F. All fabricated equipment shall meet or exceed the standards of construction used by the National Association of Food Equipment Manufacturers, National Sanitation Foundation, and National Fire Protection Association.
- G. The Food Service Equipment Contractor (section 11 40 00) shall be responsible for checking all pages of this specification, and missing pages will be provided by the Architect or Consultant upon request. When the Food Service Equipment Contract is placed it will be assumed that the Food Service Equipment Contractor (section 11 40 00) has all pages and addenda in his possession, and they are part of the Food Service Equipment Contract.

2.04 Permits and Certificates

- A. The Owner may withhold any payments which are due, or which may become due to the Food Service Equipment Contractor (section 11 40 00) until the necessary certificates are procured and delivered to him. Copies of certificates shall be provided to the Architect or Consultant upon request.

2.05 Public Liability, Casualty and Workmen's Compensation Insurance

- A. The Food Service Equipment Contractor (section 11 40 00), at his own cost and expense, shall procure and maintain satisfactory public and property liability and casualty insurance to adequately protect himself and the Owner against liens for damages and personal injury, including death, which may arise from operations whether by himself or by any subcontractor, or anyone directly or indirectly employed. In the case of new construction, the requirements are as directed by the Architect or Owner. The Food Service Equipment Contractor (section 11 40 00) is responsible for determining what insurance is required before starting work.

2.06 Not Used

2.07 Not Used

2.08 Not Used

2.09 Materials and Workmanship

A. General

1. Stainless steel shall be type 302 or 304, #4 finish where exposed and #2B where concealed. Sheets shall be flat and free of buckles or imperfections.
2. Core materials shall be 3/4" exterior or marine grade plywood unless otherwise specified. Particle board or other pressed wood products are not acceptable.
3. All exterior galvanized parts, exposed framework members, and other areas where painting is indicated shall be cleaned, primed, degreased, and finished with two coats of epoxy-based grey hammertone paint.

B. Plumbing

1. The Food Service Equipment Contractor (section 11 40 00) shall provide all necessary faucets, drains, overflows, pre-rinse spray assemblies and tailpieces. All faucets shall be equipped with a vandal proof non-splash aerator.
2. Where so indicated in the specifications, the Food Service Equipment Contractor (section 11 40 00) shall run piping internally from the fixture(s) to an accessible point for final connection by the plumbing contractor. All horizontal piping shall be run as high as possible within the equipment, and in no case, shall be less than 6" above the floor.

C. Electrical

1. Equipment shall be completely internally pre-wired by the Food Service Equipment Contractor (section 11 40 00) in accordance with applicable codes and regulations. Where multiple electrical requirements occur in a single piece of equipment, the Food Service Equipment Contractor (section 11 40 00) shall wire to a junction box or electrical panel, as shown on the drawings and item specifications, for final connection by the electrical contractor. All wires left for such final connection shall be neatly tagged showing item number, voltage, and load.
2. The Food Service Equipment Contractor (section 11 40 00) shall provide neoprene cords and plugs for all items requiring same and shall coordinate his work with the electrical contractor to insure proper receptacle match. The Electrical Contractor will shorten, lengthen, or conceal all electrical cords as required by the Consultant and/or Architect. The Electrical Contractor will also change all plugs, wires, and outlets so connections can be properly made.
3. The Food Service Equipment Contractor (section 11 40 00) shall provide fluorescent light fixtures, lamps, ballasts, and protective non-breakable sleeves for all equipment requiring fluorescent lighting.

D. Refrigeration

1. Mechanically operated cold pans and similar devices shall be provided with a normally closed liquid line electric solenoid installed before the expansion valve and wired to a switch with a neon "on" indicator. This shall be a circuit separate from the compressor. This arrangement will not directly turn off the compressor but will stop the refrigerant flow and cause the compressor to turn off through the action of the compressor control.

2.10 Construction

A. General

1. All items of custom fabricated equipment shall be constructed in a workmanlike and strong manner, in accordance with the highest standards and traditions of the craft, including the adequate number and gauge of reinforcing members and uprights. Wherever standard sizes will permit, each component shall be from a single sheet of material. Where tops or other large, unbroken surfaces are of such size to require more than one sheet, joints shall be welded, ground, and polished so as to appear integral.
2. Any pipe slots or other openings cut in the equipment for passage of utilities shall be performed in the shop whenever possible and shall be ground to eliminate any possibility of injury or damage to personnel and equipment.

2.11 Lost or Stolen Food Service Equipment and Accessories

- A. Until all the equipment is accepted by the Owner, the Food Service Equipment Contractor (section 11 40 00) is responsible for the replacement of all items that are either lost or stolen regardless of where they were lost.
- B. All costs to replace the items either lost or stolen will be that of the Food Service Equipment Contractor (section 11 40 00).
- C. The Food Service Equipment Contractor (section 11 40 00) must do everything within his control to expedite the fastest delivery to replace the lost or stolen items not excluding air freight and overtime if required to maintain all work schedules.
- D. The Food Service Equipment Contractor (section 11 40 00) has the same replacement responsibility described above on any item that was ordered or shipped incorrectly.

2.12 Contract Responsibility and Omissions

- A. In a case of "omission(s)" of any kind, whether it is a utility or food service equipment, and it is certain that none of the contract documents have any information on the "omission," it is understood that the item or items referred to the omission(s) are to be provided as an 'extra' work order and the Food Service Equipment Contractor (section 11 40 00) will be asked to submit an estimate to furnish the extra item(s). If the "omission(s)" is discovered at the time of estimating the food service equipment, the Food Service Equipment Contractor (section 11 40 00) will furnish a separate bid to include the omission(s).
- B. All utilities such as steam, electric, gas, water, drains, etc., for items of omission will be provided by the General Contractor or subcontractors.
- C. All costs to provide extra work will be processed, reviewed, and assembled by the person that requested the bid.
- D. If a Performance Bond is required by the Owner, it will be requested prior to awarding contracts.

PART 11 40 03 - GENERAL FABRICATION STANDARDS

3.01 Legs

- A. Legs shall be constructed of 1-5/8" outside diameter #16-gauge stainless steel tubing meeting specifications for tubing previously set forth. Each leg shall be swaged and tapered at the bottom and be provided with a cast or formed, fully enclosed stainless-steel bullet shaped adjustable foot. This foot shall be threaded into a collar which is welded completely inside the tubular leg in such position as to permit a minimum adjustment of 1" up or 1" down without any thread exposure. The bullet shaped foot must have a minimum bearing surface of 3/4" diameter at floor contact. Leg and foot assemblies shall be equal to Klein series #22R or Klein #1012-1002-1144 or United Show Case #8F-158 for bullet foot and #22F or Klein #1012-1003-1144 for flanged foot without holes. Flanged feet with holes shall be Klein #1012-1004-1144.
- B. The legs shall be fastened to 4" high stainless steel conical shaped, die formed gussets with locking set screw, equal to Klein #483-58 or #1018-1206-1283 or United Show Case #SG-158.
- C. The gussets are to be welded continuously to the sink bottom or to table or dish table bracing with welds filleted, ground, and polished to smooth coved radius. Particular care must be taken to prevent warping of sink bottom and to see that legs are plumb and true.
- D. On cabinet fixtures, the legs shall be equal to Klein #222-50 SSA or Klein #1012-1002-1144 or United Show Case #BF-158 for bullet feet, welded directly to bottom angle frame and/or to flat steel triangular plates which are welded fully to bottom frame.

3.02 Crossbracing

- A. All sinks, drainboards and tables, except where fixed undershelves are specified, shall be provided with 1-1/4" outside diameter, #16-gauge stainless steel tubular crossbracing running between legs at a point 10" above floor. Crossbraces shall be continuously welded to legs neatly fitted, ground and polished to provide a smooth coved radius.
- B. In certain fixtures, crossbracing will abut cabinet-type fixtures. In such instances, round, stainless steel collar-type flanges shall be provided for fastening crossbracing to bodies. Flange shall be equal to Klein Hardware #SS-425-FC. The collar shall be tapped and provided with a cone point, stainless steel Allen Headset screw.

3.03 Undershelves

- A. Undershelves shall be constructed of #18-gauge stainless steel. Each corner shall be notched 90° to the exact contour of tubular legs and continuously welded to same, ground smooth and polished.
- B. Shelves shall be turned down 1-1/2" then back 1/2" at a 45° angle. Mount shelf 10" above floor unless otherwise noted. Where abutting walls or fixtures, turn up 2" on a 1/2" radius.
- C. Suitable pipe slots shall be provided through all undershelves on open base fixtures to accommodate necessary service lines. These slots shall be of proper size and shall be neatly made with turned up edges on all four (4) sides to eliminate cutting or defacing of the equipment on the job. Cabinet bases shall be provided with an inner panel duct at ends or rear (or both) of cabinet to allow vertical pipe space to conceal the verdict piping.

3.04 Cabinet Shelves

- A. All shelves shall be constructed of #16-gauge stainless steel, turned up 2" at back and ends on a 1/2" radius. Turn down front (exposed edge) 1-1/2" to 1-3/4" on a 90° angle and back 1/2" on a 45° angle (unless otherwise specified). Close corners by welding continuously for rigidity, grind smooth and polish weld. Where specified as removable, shelves shall be set into 1-1/2" x 1/8" stainless steel angle frame welded in place.
- B. Fixed intermediate shelves shall be welded to front stiles and welded to #14-gauge stainless steel brackets which in turn are welded to the body in such a manner so that intermediate shelves set 1" clear from back and ends of cabinets.
- C. Where adjustable shelves are specified, they shall have edges formed into a channel on four (4) sides with all corners welded, ground smooth and polished. Mount shelves on removable Klein Hardware #502-R-SS (standards), with #503-SS (supports).
- D. Fixed bottom shelves shall be welded to bodies as specified for counters.

3.05 Wall Shelves

- A. Wall shelves shall be size, and shape as shown on plan, constructed of #16-gauge stainless steel with 1-1/2" to 1-5/8" diameter roll on front and turned up 2" on a 1/2" radius on back and unexposed ends adjacent to other fixtures. All corners are to be welded, ground smooth and polished.
- B. Exposed ends of shelf shall be enclosed, full width of shelf to bottom of front roll, fully welded, ground smooth and polished.
- C. Wall brackets of approved shape shall be constructed of #12-gauge stainless steel flanged in under shelf and at wall 1-1/2" with intersecting flanges completely welded. Each bracket shall be fastened to wall with minimum of two (2) 1/4" #20-gauge stainless steel bolts anchored securely by means of toggles or expansion shields, whichever is best suited to wall construction.
- D. Shelves to set either 1" clear from wall or flush with wall and be sealed with silicone sealant. Secure shelf to brackets using 1/4" #20-gauge stainless steel stud bolts, chrome plated lockwashers and cap nuts.

3.06 Overshelves

- A. Shelves mounted over equipment not adjacent to walls shall be fabricated of #16-gauge stainless steel and shall set on 1" outside diameter #16-gauge stainless steel tubular standards neatly fitted with stainless steel base flanges. The top of the tubular standards shall be completely welded to #14-gauge stainless steel support channels which shall run the full width of the overshelf and be welded thereto.
- B. Inside the tubular standards and securely welded to same shall run 1/2" outside diameter steel tension rods, which shall be extended through counter tops and reinforcing angle framing. This extension shall be threaded and secured to framing with nuts and lock washer in such a manner to assure a stable, sway free structure.
- C. Where shelves are mounted over drainboards or dish tables, the stainless-steel tubular uprights shall be continuously welded to the upturned, rolled edges omitting flanges and scribing lower end of the tube to match the contour of the roll.

- D. Wall mounted rack shelves shall be constructed of #14-gauge s/s, all welded, with closed ends and a reversed raised rolled edge. Front edge to terminate in a 1-5/8" diameter 180° roll edge, turned in. Rear edge shall be turned up approximately 120° flush with wall. Support shelf to rear wall at an angle of 40° by means of #12-gauge stainless steel cantilever-type wall plates. Brackets shall be flanged outward 90° at 1-1/2". Drill adequate holes and secure to wall using lead anchors or toggles and stainless-steel bolts. Verify wall construction for proper mounting. Shelf shall be adequately braced with 1" x 3" x 1" #12-gauge stainless steel channels welded to underside of shelf not over 26" on centers. Pitch to 1" outside diameter stainless steel bleeder drain at one end of the shelf by varying the dimension of the horizontal trough bottom. The raised rolled edge shall not be pitched but shall remain parallel to the floor. Provide a flexible drain tube to the stainless-steel drain which shall be firmly mounted and strapped in place, running down from shelf to a point 2" above drainboard or dish table surface.

3.07 Sinks

- A. Sinks shall be fabricated from #14-gauge stainless steel with all interior corners rounded to a 3/4" minimum radius, both horizontally and vertically, forming spherical corners. Solder or separate filler pieces to achieve the rounded corner construction will not be used or permitted. All joints shall be butt-edged, electrically welded, ground smooth and polished so that no evidence of welding will appear.
- B. The bottom of each compartment shall be pitched and creased to a die-stamped recess, so tapered and shaped as to receive lever-type waste without use of solder, rivets, or welding.

3.08 Closure Trim Pieces

- A. Trim pieces of #16-gauge stainless steel (minimum thickness) one (1) piece construction shall be furnished to seal both horizontal and vertical joints and openings where the conditions given below occur.
1. Where equipment is installed into wall openings, trim shall be applied to both sides of wall. All corners welded, use straps to connect inside trim to outside trim, no screws exposed to view.
 2. Where items of similar construction are butted together.
 3. Where equipment installed against walls or other equipment, results in a gap or joint where vermin or grease might collect.
 4. Butt or overlapping joints will not be acceptable. Where channel-type closures are required, they shall be delivered to the job site before surrounding walls are erected or equipment is set in place.
- B. Silicone sealant shall be used only where trim pieces will not effectively seal the gap. Sealant shall be as specified hereinbefore in Materials and Workmanship.

3.09 Refrigerated Equipment

- A. All refrigeration condensing units shall be installed so that adequate air circulation is obtained. Compressor compartments in all fabricated units shall be provided with stainless steel grilles and cross ventilation shall be provided where required.

3.10 Laminated Plastic

- A. Where an item is specified to be faced with laminated plastic, Formica, Nevamar, Wilsonart or other selected material shall be used bonded with contact adhesive to exterior grade plywood 3/4" minimum thickness.
- B. Stainless steel counters specified to be finished with plastic laminate shall have all exposed faces and edges faced with 1/16" thick plastic laminate. Unexposed back shall be faced with .020 or .020 cabinet liner. Beveling will be not acceptable on finished edges. Although plastic laminate counter fronts are backed up, the counter unit will be stainless steel on the complete interior.
- C. Millwork counters shall be constructed of 3/4" thick exterior grade plywood for the cabinet body and splashes and 1-1/4" thick exterior grade plywood for the countertop. Blocking shall be provide as required to provide support. Undersides of counter tops shall be finished with backing sheets. All other interior finishes shall be finished with white cabinet liner. All finished edges of cut-outs and recessed surfaces shall be finished with plastic laminate. All exposed exterior surfaces, whether visible to the eye or not, shall be finished with plastic laminate (i.e., door edges, drawer edges, underside of countertop overhang, all shelf edges, and surfaces, etc.). Painted finishes will not be acceptable.
- D. Where plastic laminate is specified to be bonded directly to the counter or cabinet bodies, a contact adhesive shall be used as recommended by the plastic laminate manufacturer (compatible with the metal surface).

3.11 Dish Tables

- A. Tops shall be fabricated of #14-gauge stainless steel with all freestanding edges turned up 3" and finished with a 1-5/8" diameter 180° integral roll. Where tables adjoin walls, they shall be turned up integrally 10" on a 1/2" radius at 90° and back 2" at 45° and down 1/2" along the back. Where the table enters the dishwasher, it shall be turned down into the mouth and fastened thereto in a watertight manner as recommended by the manufacturer of the dishwasher. All corners, both horizontal and vertical, shall be coved on a 1" radius.
- B. Tables shall be fully reinforced by means of #14-gauge stainless steel channels to eliminate deflection under full workload. All interior horizontal and vertical corners shall be coved, and exterior corners shall be bullnosed.
- C. Where a scrap trough is indicated, it shall be length as shown on plan x 6" wide x 5" deep and formed integrally with dish tabletop. Trough shall be of all cove corner construction with the bottom only pitched a minimum of 1/8" to the foot downward toward the disposer.
- D. The tables shall be mounted on stainless steel tubular legs with adjustable feet and crossbraces as previously specified. Where scrap blocks are installed in the top, the front crossbrace shall be eliminated for the insertion of garbage can. Undershelves shall be provided where called for in the Schedule of Equipment and when so indicated shall be fabricated as previously specified.

3.12 Exhaust Hoods and Canopies

- A. All hangers, duct work, dampers, collars, cleanouts, filters, and grease receptacles will be furnished and installed by the Food Service Equipment Contractor (section 11 40 00) (in accordance with surrounding construction).
- B. All mechanical and electrical work required for exhaust hoods, canopies and ventilators will be provided by the General Contractor or Subcontractors, not the Food Service Equipment Contractor (section 11 40 00). The only plumbing and electrical work provided by the Food Service Equipment Contractor (section 11 40 00) will be that which is provided as a standard practice by the hood, canopy and/or ventilator supplier or manufacturer.
- C. All vertical and horizontal duct connections will be designed by the HVAC Engineer or exhaust air with proper velocity control and coordination to hood duct collar location(s).
- D. All roofing, curbing, construction openings, general construction and duct work above ceiling related to the final exhausting including the fan(s) will be furnished by Contractors other than the Food Service Equipment Contractor (section 11 40 00).

3.13 Walk-in Boxes and Refrigeration Standards

- A. The Food Service Equipment Contractor (section 11 40 00) will be responsible for furnishing and installing all walk-in boxes including compressors, blowers, coils, evaporators, lights, thermostats, thermometers, condensate lines and heater wires around freezer condensate lines within the freezer walk-in.
- B. All remote and self-contained refrigeration lines will be provided by the Food Service Equipment Contractor (section 11 40 00) as required and shall be adequately insulated.
- C. All sleeves, openings, holes, conduits, Orangeburg, required to run the refrigeration lines that are going through construction such as walls, floors and ceilings will be made and provided by the General Contractor. All openings, sleeves, sealers required in food service equipment will be provided by the Food Service Equipment Contractor (section 11 40 00).
- D. All freezer alarms and time clocks will be provided and set-in place by the Food Service Equipment Contractor (section 11 40 00) including securing same to walls, floors, or ceilings. All final connections will be made by the Electrical Contractor.
- E. All walk-in box filler panels (stainless steel) will be provided by the Food Service Equipment Contractor (section 11 40 00) as required by the Board of Health, the Architect, Consultant and/or Owner if the boxes are to be right against walls, food service equipment or ceilings.
- F. The refrigerant lines to be sized to maintain proper velocity for good oil return and to prevent capacity loss. The proper sizes of all compressors to maintain adequate temperatures for the various coolers and freezers will be the responsibility of the Food Service Equipment Contractor (section 11 40 00).

PART 11 40 04 - ITEMIZED SPECIFICATIONS

4.1 Schedule of Equipment

- A. Equipment Schedule: Refer to all Contract Documents pertaining to the food service areas. Equipment itemized along with brands and model numbers and salient features establish the standard for construction, operation, and engineering criteria.
- B. Equipment indicated below is intended to establish the standard of quality of the food service equipment. Alternate products by other manufacturers may be considered if equivalent in design, performance, durability, and function.
- C. All alternate items should be submitted prior to bidding. Dealer to fill out and submit form as provided in specifications, Exhibit 9 – “VE & Alternate Product Certification Form”

SECTION 11 40 04 – FOOD SERVICE EQUIPMENT

BUILDING 8 TEMP. COFFEE (PHASE 1)
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ITEM # 8R200 DUMP SINK, Existing to be Relocated
Quantity: One (1)
Manufacturer: Advance Tabco
Model: 93-61-18

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model 93-61-18 Dump Sink
2. This unit is existing and is to be relocated.
3. GC shall coordinate to disconnect and reconnect of services, if required, shall be performed by related trades; final required utility connections to be verified by Plumber/Electrician. All Final connections by Electrician/Plumber.
4. GC is responsible for the removal, cleaning, storage, and relocation of the equipment.
5. FSEC to inspect unit and present a separate proposal fee if any repair/replacement of parts as necessary for item to operate in accordance with manufacturer requirements and specifications.

ITEM # 8R200.1 WALL / SPLASH MOUNT FAUCET, Existing to be Relocated
Quantity: One (1)
Manufacturer: T&S Brass
Model: B-0232

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model B-0232 Sink Mixing Faucet, 6" swing nozzle, wall mounted, 8" centers on sink faucet with 1/2" IPS eccentric flanged female inlets, lever handles, quarter-turn Eterna cartridges, low lead, ADA Compliant
2. This unit is existing and is to be relocated.
3. GC shall coordinate to disconnect and reconnect of services, if required, shall be performed by related trades; final required utility connections to be verified by Plumber/Electrician. All Final connections by Electrician/Plumber.
4. GC is responsible for the removal, cleaning, storage, and relocation of the equipment.
5. FSEC to inspect unit and present a separate proposal fee if any repair/replacement of parts as necessary for item to operate in accordance with manufacturer requirements and specifications.

ITEM # 8R200.2 PAPER TOWEL DISPENSER, Existing to be Relocated
Quantity: One (1)
Manufacturer: Ecolab
Model: IO BOX

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model IO BOX Paper Towel Dispenser
2. This unit is existing and is to be relocated.
3. GC shall coordinate to disconnect and reconnect of services, if required, shall be performed by related trades; final required utility connections to be verified by Plumber/Electrician. All Final connections by Electrician/Plumber.
4. GC is responsible for the removal, cleaning, storage, and relocation of the equipment.
5. FSEC to inspect unit and present a separate proposal fee if any repair/replacement of parts as necessary for item to operate in accordance with manufacturer requirements and specifications.

ITEM # 8R200.3 SOAP DISPENSER, Existing to be Relocated
Quantity: One (1)
Manufacturer: Ecolab
Model: OASIS PRO ULTRA 1 DISPENSER

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model OASIS PRO ULTRA 1 DISPENSER Soap Dispenser
2. This unit is existing and is to be relocated.
3. GC shall coordinate to disconnect and reconnect of services, if required, shall be performed by related trades; final required utility connections to be verified by Plumber/Electrician. All Final connections by Electrician/Plumber.
4. GC is responsible for the removal, cleaning, storage, and relocation of the equipment.
5. FSEC to inspect unit and present a separate proposal fee if any repair/replacement of parts as necessary for item to operate in accordance with manufacturer requirements and specifications.

ITEM # 8R201 HAND SINK, Existing to be Relocated
Quantity: One (1)
Manufacturer: Eagle Group
Model: HSA-10

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model HSA-10 Hand Sink, wall mount, 13-1/2" wide x 9-3/4" front-to-back x 6-3/4" deep bowl, 304 stainless steel construction, requires splash mounted faucet, deep-drawn seamless design-positive drain, inverted "V" edge, NSF
2. One (1) Model -MG MicroGard™ antimicrobial finish on bowl only- add suffix "-MG" to end of hand sink model number
3. This unit is existing and is to be relocated.
4. GC shall coordinate to disconnect and reconnect of services, if required, shall be performed by related trades; final required utility connections to be verified by Plumber/Electrician. All Final connections by Electrician/Plumber.
5. GC is responsible for the removal, cleaning, storage, and relocation of the equipment.
6. FSEC to inspect unit and present a separate proposal fee if any repair/replacement of parts as necessary for item to operate in accordance with manufacturer requirements and specifications.

ITEM # 8R201.1 TOWEL/SOAP DISPENSER, Existing to be Relocated
Quantity: One (1)
Manufacturer: Existing
Model: EXISTING

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model EXISTING Towel/Soap Dispenser
2. This unit is existing and is to be relocated.
3. GC shall coordinate to disconnect and reconnect of services, if required, shall be performed by related trades; final required utility connections to be verified by Plumber/Electrician. All Final connections by Electrician/Plumber.
4. GC is responsible for the removal, cleaning, storage, and relocation of the equipment.
5. FSEC to inspect unit and present a separate proposal fee if any repair/replacement of parts as necessary for item to operate in accordance with manufacturer requirements and specifications.

ITEM # 8R202 SPEC-MASTER QWIK-SET POT & PAN RACKS W/ EMBOSSED SHELVES,
Existing to be Relocated
Quantity: Two (2)
Manufacturer: Eagle Group
Model: PR2424SE14

Furnish and set-in place per manufacturer's standard specifications:

1. Two (2) Model PR2424SE14 Spec-Master Qwik-Set Pot & Pan Racks w/ Embossed Shelves
2. This unit is existing and is to be relocated.
3. GC shall coordinate to disconnect and reconnect of services, if required, shall be performed by related trades; final required utility connections to be verified by Plumber/Electrician. All Final connections by Electrician/Plumber.
4. GC is responsible for the removal, cleaning, storage, and relocation of the equipment.
5. FSEC to inspect unit and present a separate proposal fee if any repair/replacement of parts as necessary for item to operate in accordance with manufacturer requirements and specifications.

ITEM # 8R203 SPARE NO.

ITEM # 8R204 MICROWAVE OVEN, Existing to be Relocated
Quantity: Two (2)
Manufacturer: Panasonic
Model: NE-17523

Furnish and set-in place per manufacturer's standard specifications:

1. Two (2) Model NE-17523 PRO1 Commercial Microwave Oven, heavy volume, 1700 Watts, 0.6 cu. ft. capacity, compact, (15) power levels, 5-stage cooking, 30 program memory capacity, self-diagnostics, oven cycle counter, LCD digital display with countdown, see-thru left hinged door, programmable lock, stackable, LED interior light, cULus, ETL, NSF
2. This unit is existing and is to be relocated.
3. GC shall coordinate to disconnect and reconnect of services, if required, shall be performed by related trades; final required utility connections to be verified by Plumber/Electrician. All Final connections by Electrician/Plumber.
4. GC is responsible for the removal, cleaning, storage, and relocation of the equipment.
5. FSEC to inspect unit and present a separate proposal fee if any repair/replacement of parts as necessary for item to operate in accordance with manufacturer requirements and specifications.

ITEM # 8R205 MICROWAVE OVEN, Existing to be Relocated
Quantity: One (1)
Manufacturer: Panasonic
Model: NE-17523

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model NE-17523 PRO1 Commercial Microwave Oven, heavy volume, 1700 Watts, 0.6 cu. ft. capacity, compact, (15) power levels, 5-stage cooking, 30 program memory capacity, self-diagnostics, oven cycle counter, LCD digital display with countdown, see-thru left hinged door, programmable lock, stackable, LED interior light, cULus, ETL, NSF
2. This unit is existing and is to be relocated.
3. GC shall coordinate to disconnect and reconnect of services, if required, shall be performed by related trades; final required utility connections to be verified by Plumber/Electrician. All Final connections by Electrician/Plumber.
4. GC is responsible for the removal, cleaning, storage, and relocation of the equipment.
5. FSEC to inspect unit and present a separate proposal fee if any repair/replacement of parts as necessary for item to operate in accordance with manufacturer requirements and specifications.

ITEM # 8R206 MICROWAVE OVEN, Existing to be Relocated
Quantity: One (1)
Manufacturer: Panasonic
Model: NE-17523

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model NE-17523 PRO1 Commercial Microwave Oven, heavy volume, 1700 Watts, 0.6 cu. ft. capacity, compact, (15) power levels, 5-stage cooking, 30 program memory capacity, self-diagnostics, oven cycle counter, LCD digital display with countdown, see-thru left hinged door, programmable lock, stackable, LED interior light, cULus, ETL, NSF
2. This unit is existing and is to be relocated.
3. GC shall coordinate to disconnect and reconnect of services, if required, shall be performed by related trades; final required utility connections to be verified by Plumber/Electrician. All Final connections by Electrician/Plumber.
4. GC is responsible for the removal, cleaning, storage, and relocation of the equipment.
5. FSEC to inspect unit and present a separate proposal fee if any repair/replacement of parts as necessary for item to operate in accordance with manufacturer requirements and specifications.

ITEM # 8R207 AIR CURTAIN REFRIGERATOR, Existing to be Relocated
Quantity: One (1)
Manufacturer: ALLADIN TEMP-RITE
Model: RAC10SR-LP

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model RAC10SR-LP Air Curtain Refrigerator
2. This unit is existing and is to be relocated.
3. GC shall coordinate to disconnect and reconnect of services, if required, shall be performed by related trades; final required utility connections to be verified by Plumber/Electrician. All Final connections by Electrician/Plumber.
4. GC is responsible for the removal, cleaning, storage, and relocation of the equipment.
5. FSEC to inspect unit and present a separate proposal fee if any repair/replacement of parts as necessary for item to operate in accordance with manufacturer requirements and specifications.

ITEM # 8R208 REACH-IN FREEZER, Existing to be Relocated
Quantity: One (1)
Manufacturer: True Mfg. - General Foodservice
Model: T-23F

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model T-23F Freezer, reach-in, one-section, -10°F, (1) solid door, (3) PVC coated adjustable wire shelves, interior lighting, stainless steel door, stainless steel front, aluminum sides, clear coated aluminum interior with stainless steel floor, 4" castors, R290 Hydrocarbon refrigerant, 1/2 HP, 115v/60/1-ph, 3.7 amps, NEMA 5-15P, cULus, UL EPH Classified, ENERGY STAR®
2. This unit is existing and is to be relocated.
3. GC shall coordinate to disconnect and reconnect of services, if required, shall be performed by related trades; final required utility connections to be verified by Plumber/Electrician. All Final connections by Electrician/Plumber.
4. GC is responsible for the removal, cleaning, storage, and relocation of the equipment.
5. FSEC to inspect unit and present a separate proposal fee if any repair/replacement of parts as necessary for item to operate in accordance with manufacturer requirements and specifications.

ITEM # 8R209 SPARE NO.

ITEM # 8R210 WORK TABLE, CABINET BASE SLIDING DOORS, Existing to be Relocated
Quantity: One (1)
Manufacturer: Advance Tabco
Model: SS-304

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model SS-304 Work Table, 48"W x 30"D, cabinet base with sliding doors, 14 gauge 304 stainless steel top, stainless steel legs with adjustable hex feet, NSF
2. This unit is existing and is to be relocated.
3. GC shall coordinate to disconnect and reconnect of services, if required, shall be performed by related trades; final required utility connections to be verified by Plumber/Electrician. All Final connections by Electrician/Plumber.
4. GC is responsible for the removal, cleaning, storage, and relocation of the equipment.
5. FSEC to inspect unit and present a separate proposal fee if any repair/replacement of parts as necessary for item to operate in accordance with manufacturer requirements and specifications.

ITEM # 8R211 COFFEE BREWER, Existing to be Relocated
Quantity: One (1)
Manufacturer: Cecilware (see Grindmaster-Cecilware)
Model: FE 200

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model FE 200 Coffee Brewer
2. This unit is existing and is to be relocated.
3. GC shall coordinate to disconnect and reconnect of services, if required, shall be performed by related trades; final required utility connections to be verified by Plumber/Electrician. All Final connections by Electrician/Plumber.
4. GC is responsible for the removal, cleaning, storage, and relocation of the equipment.
5. FSEC to inspect unit and present a separate proposal fee if any repair/replacement of parts as necessary for item to operate in accordance with manufacturer requirements and specifications.

ITEM # 8R212 SPARE NO

ITEM # 8R213 WORK TABLE, STAINLESS STEEL TOP, Existing to be Relocated
Quantity: One (1)
Manufacturer: Eagle Group
Model: T3048EB-BS

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model T3048EB-BS Deluxe Series Work Table, 48"W x 30"D, 16/300 series stainless steel top with rolled front edge & 4-1/2" backsplash, adjustable galvanized undershelf, Uni-Lok® gusset system, (4) galvanized legs with adjustable plastic bullet feet, NSF
2. This unit is existing and is to be relocated.
3. GC shall coordinate to disconnect and reconnect of services, if required, shall be performed by related trades; final required utility connections to be verified by Plumber/Electrician. All Final connections by Electrician/Plumber.
4. GC is responsible for the removal, cleaning, storage, and relocation of the equipment.
5. FSEC to inspect unit and present a separate proposal fee if any repair/replacement of parts as necessary for item to operate in accordance with manufacturer requirements and specifications.

BUILDING 8 RETHERM ROD ROOM (PHASE 2)
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ITEM # 8B100	REMOTE RACK
Quantity:	One (1)
Manufacturer:	RDT
Model:	RDMC

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model RDMC Remote Rack

2. ITEM NO. 8K193 REMOTE REFRIGERATION PACKAGE

The refrigeration package shall be pre-engineered and factory assembled unit as manufactured by Refrigeration Design Technologies, (RDT) 1808 FM 66, Waxahachie, Texas 75167. Phone: 972-937-3215 fax: 972-937-0970 e-mail address: Info@rdtonline.com .

Contractor shall furnish and install, where shown on plans, (1) RDT U.L. approved air cooled remote refrigeration package, model RDMC, with control panel, 208 Volts, 3 Phase, 60 Hertz. The refrigeration package shall be housed in a weather-protected compact structural-steel frame. The entire housing shall be brushed 304 stainless steel and include stainless steel louvered panels for access. The unit shall include an air-cooled, aluminum fin copper tube condenser designed to operate at 15 degrees TD. Frame to be welded galvanized steel. Lifting rings shall be installed at each corner to facilitate installations. Condenser motor fans shall be mounted within the enclosure. The condenser intake surface shall be protected with stainless steel louvered panels to protect against vandalism and hail damage.

Each unit shall be equipped with a ball-bearing fan motor, adjustable head-pressure control, suction filter, sight glass, drier, liquid line inlet and outlet valve and high-pressure super hose connections.

Warranties: All refrigeration systems are to include a 5 year compressor warranty, a 1 year parts warranty and a 1 year labor warranty. These warranties are to be built in to the equipment price and not separate options.

3. **REFRIGERATION UNITS:**

Air-cooled condensing units shall be scroll type manufactured by Copeland. Each unit shall be equipped with high-low pressure control.

Liquid line drier, sight glass and head pressure control.

All compressor units shall be new factory assembled to operate with the refrigerant specified in the engineering summary sheet. Refrigerant R-448A shall be used on all commercial medium temperature units and low temperature units.

The condenser shall be sectional, removable, with rifled tube slotted finned, and shall be designed for 15°ftd.

Factory to review all project phasing and engineer system for multi-phase operation installing any gas pressure relief ports for temporary partial load operation until all phases of project are installed and connected to the system.

All compressors are to be properly labeled for type and equipment they are serving to allow proper maintenance and service.

4. **PRE-PIPING:**

All refrigerant lines shall be extended to one side of the package in a neat and orderly manner. Suction lines must be insulated with Armaflex (1" thick for low temp, 3/4" thick for medium temp). All tubing shall be securely supported and anchored with clamps.

Silver solder and/or sil-fos shall be used for all refrigerant piping. Soft solder is not acceptable.

All piping to be pressure tested with nitrogen at 300 psi. After the condensing unit and coil have been connected, the balance of the system shall be leaked tested with all valves opened.

5. **CONTROL PANEL:**

The package shall have a factory mounted and pre-wired control panel complete with disconnect for single point connection.

Electrical contractor shall provide and install main power lines to panel in accordance with the wiring diagram and per local codes.

6. **SAFETY CAUTION:**

Each system and evaporator is shipped under nitrogen pressure. Use caution and exercise safety at all times when preparing for final hook-up.

7. **EVAPORATOR COILS:**

Evaporator coils shall be direct expansion type, fabricated of copper tubes with aluminum fins. All evaporator coils shall be provided with solenoid valve, electronic expansion valve and piped and wired to the junction box for positive pump down. All evaporator coils shall be pre-wired to a junction box with an on/off switch and the liquid and suction lines shall be pre-plumbed and stubbed out the back.

Evaporator coils shall include an Eco-Smart controller for on-demand defrost and monitoring.

Evaporator coils shall be equipped with energy saving "EC" motors.

8. **CONSTRUCTION NOTES FOR TRADES:**

It is the responsibility of each contractor to pull necessary permits for their respective work performed.

FOOD SERVICE EQUIPMENT CONTRACTOR:

The Kitchen Equipment Contractor shall verify all dimensions and coordinate with other trades.

The Kitchen Equipment Contractor shall verify all required refrigerant line lengths and runs and to be detailed on shop drawing submittal.

Dealer to review phasing and sequencing of building and equipment installation and ensure rack system can accommodate phased operation with proper allowances for isolation valves as required with balanced capacity until complete system load is achieved.

Dealer is required to have factory supervision on site during installation and start-up of the system and provide a factory certified letter of compliance. Refer to "SYSTEM INSTALLATION VERIFICATION - SIV" section below.

GENERAL CONTRACTOR:

General contractor to verify and co-ordinate location of refrigeration rack with refrigeration contractor to satisfy local code requirements and maintenance of the rack.

General contractor to verify refrigeration line runs thru to roof or multi-story building prior to construction with refrigeration contractor for accessibility.

General contractor to verify access of crane or mechanical lift with refrigeration contractor prior to construction (if required).

General contractor shall prepare and weather proof the platform and curbed openings for refrigeration piping and electrical conduit. Roof pad to be constructed of heavy duty steel framing, and the finished height dictated per local codes.

Provide sheet metal cap with 2" high pitch pocket collar and water tight soldered joints.

General contractor to allow 3'-0" (36") of clear space around roof pad for maintenance.

All core drilling required for remote refrigeration piping work by the refrigeration contractor, is in the general contractor's scope of work. Coordinate exact location and number of penetrations with the refrigeration contractor and comply with all landlord requirements for x-ray of slab prior to work.

All sleeves, openings, holes, conduits, Orangeburg, required to run the refrigeration lines that are going through construction such as walls, floors and ceilings will be made and provided by the General Contractor. All openings, sleeves, sealers required in food service equipment will be provided by the Food Service Equipment Contractor.

Any attachment to building structure for load bearing weight to be provided and coordinated by general contractor.

General Contractor/Roofer to provide any required pitch pockets.

General contractor to backfill all pitch pockets to top with tar or pitch after refrigeration and electrical lines have been run.

General contractors shall provide any required concrete pads for installation of the rack system.

REFRIGERATION CONTRACTOR:

Refrigeration pipe sizes are based on a maximum line run up to 100 equivalent feet for liquid and suction lines. Refrigeration pipe sizes are to be verified with the RDT factory. Verify line lengths with job site conditions and line routing at individual installations. If line runs are greater than 100 feet, please contact the RDT factory.

Refrigeration contractor shall run all refrigeration lines which extend down thru wall(s) before wall(s) are closed up when conduit is not provided.

Refrigeration contractor to seal both ends of conduit with fomofil after all lines have been run. If pull box(es) are specified, they must be a minimum 12"x 12".

Refrigeration contractor shall insulate all refrigeration suction lines.

Refrigeration contractor shall verify location of blower coil(s) and compressor(s) for all refrigerated areas.

All liquid and suction lines are to have isolation ball valves installed on them behind the evaporator coils.

Refrigeration contractor shall verify location of pitch pocket(s) for refrigeration line penetration thru roof with general contractor. General contractor to install all pitch pockets.

Contractor shall use only clean dehydrated, sealed refrigeration grade A.C.R. copper tubing or type "L".

Use only long radius elbows to reduce flow resistance and line breakage.

Silver solder and/or sil-fos shall be used on all refrigerant piping. Soft solder is not acceptable.

Use minimum 35% silver solder for dissimilar metals.

All piping must be supported with hangers that can withstand the combined weight of tubing, insulation, valves, and fluid in the tubing.

Use nitrogen in the copper tubing during brazing to prevent formation of copper oxides. Liquid and suction lines must be free to expand independently of each other. Do not exceed 100 feet without a change in direction or an offset. Plan proper pitching, expansion allowance, and p-traps at the base of all suction risers and at every 8 feet of every vertical rise. Install service valves at several locations for ease of maintenance. These valves must be approved for 450 psi working pressure.

All piping to be pressure tested with nitrogen at 300 psi with all valves open and held for 12 hours.

Electronic leak detectors shall be used to locate all leaks.

Complete system shall be evacuated to 500 microns with vacuum pump before charging the system.

Once system is charged and running, adjust all controls, including pressure controls and expansion valves.

Return after 24 hours to verify proper operation of systems.

Refrigeration contractor to provide and install drain line heater with insulation in freezer to be connected by electrical contractor.

Refrigerant suction lines outside of refrigerated compartments, not run in conduit, shall be insulated back to compressor with Armstrong arma-flex ap-25/50 foamed plastic insulation or equal in accord with direction of the manufacturer. Minimum thickness shall be 3/4 inch for commercial temperature and 1.0 inch for low temperature.

Fill roof refrigeration and electrical pitch pockets with foam and sealant.

Refrigeration contractor to seal all refrigeration line penetrations made thru walk-in coolers/freezers, and refrigerated base sections of counters.

Recommend using K-Flex Titan line sets instead of Armflex with added UV ray protection. Some states required to have UV protection by code. Contractor to review and comply with local codes. In all cases, line sets are not to be exposed to elements without any UV covering and or protection.

Nylon zip ties are not to be used to secure any flexible line sets to the compressor racks. Provide proper fastening methods as required by local codes.

ELECTRICAL CONTRACTOR:

Electrical contractor to provide main power for the refrigeration package and evaporator coils.
Electrical contractor to connect drain-line heater in the freezer.

All electrical wiring and installation shall be accordance with the wiring diagram and per local codes.

If contracted, electrical contractor to install all conduits for refrigeration lines in walls, prior to walls are closed up. All pull boxes must be a minimum of 12"x 12".

Nylon zip ties are not to be used to secure any flexible power conduit to the compressor racks.

Provide proper fastening methods as required by local codes.

Disconnects when located on roof installations, mount high enough to clear any snow level ratings for the region.

Disconnect switches are to be weather tight and prevent any exposure to the elements.

Please Note: It is recommended for all electrical connections and receptacles powering compressor equipment to be interconnected through Pass and Seymour 2084I – 20A GFCI Dead Front to serve as Class A Ground Fault Protection. Do not plug into a standard GFCI as the compressor motor will create an overload spike and trip the GFCI. Standard dual receptacle to be installed adjacent to Pass and Seymour 2084I in a quad box and the receptacle to be wired through Pass and Seymour 2084I.

NOTE: Receptacles for units that are built-into counters or millwork are to be installed to the left or right side of the unit for accessibility and resetting the GFCI as needed.

PLUMBING CONTRACTOR

Plumbing contractor to provide type "M" copper drain lines for walk-in refrigerator and freezer, pitched 1/2 inch per foot of run. In freezer, heated drain line must be insulated to prevent freezing. Trap drain lines outside of refrigerated space to avoid entrance of warm and moist air.

Contractor to provide individual drain line for each evaporator unless otherwise called for in the plans.

Plumbing contractor to provide refrigeration PVC sleeve conduit runs through underground to all serviced refrigeration units.

All conduit is to be capped and waterproofed.

Provide access points and pull boxes are required by installer, refer to pull box detail.

All plumbing installation shall be in accordance with local codes.

9. **TESTING:**

Testing notes are included with refrigeration contractor responsibility section.

10. **OPERATION AND MAINTENANCE INSTRUCTIONS:**

The rack system shall be supplied with a complete set of installation, operational and maintenance instructions to cover operating procedures and routine maintenance schedule.

11. **SHOP DRAWINGS AND SUBMITTALS:**

Refer to food service manufacture specification drawings for more information. FSEC to submit shop drawings for review and approval before starting manufacturing.

Shop drawing to have complete piping detail showing runs and bends through building.

12. **CLOSEOUT:**

A close out package to include the following:

Testing/Certification Report as outlined above

Operation and Maintenance Manual package as outlined above

As Built Drawing showing refrigeration pipe runs and all installation conditions, service access points, etc.

Pictures of piping installation before building structures get closed in.

13. **SYSTEM INSTALLATION VERIFICATION - SIV (NOT OPTIONAL):**
Food Service Equipment Contractor shall secure System Installation Verification (SIV) Manufacturer Service from RDT - rack manufacturer to perform an SIV two times during the duration of the project. The SIV is to be by an RDT engineer or an RDT certified refrigeration mechanic.
First SIV, is to supervise the dealer installation of the refrigeration rack, evaporator coils, refrigerant lines etc. providing oversight, direction and inspecting line set installation. The final SIV will be performed during the start-up of the system. Any field related discrepancies that are discovered during the SIV will be brought to the attention of Food Service Equipment Refrigeration Contractor, General Contractor and corresponding trades on site. These issues will be documented and forwarded to the appropriate sales office and design team. During the SIV Manufacturer Service will address any discrepancy that is the fault of the manufacturer at no cost. If SIV Manufacturer Service has to resolve a discrepancy that is a field issue, the General Contractor will be notified and will need to approve the work to be completed either by SIV Manufacturer Service or direct respective trades to remedy those issues.
The Food Service Equipment Refrigeration Contractor installer is to inform RDT's engineer if the installation and start up will take place at the same time, or if the startup will be at a later date. If the startup will be at a later date, the installer is to inform RDT's engineer to schedule the SIV dates.
The warranties will not go into effect unless this procedure is followed.
14. Provide item as specified with all accessories and options or equal as manufactured by ColdZone and Cooltec. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8B900 TRAY CART
Quantity: Twenty-Four (24)
Manufacturer: Burlodge
Model: BLP0S.000

Furnish and set-in place per manufacturer's standard specifications:

1. Twenty-Four (24) Model BLP0S.000 Tray Cart
2. **CONSTRUCTION**
 Sub frame and chassis – Stainless Steel AISI 304 or X5CrNi “18-10” (EN10088-1)
 Top shutter made in carbon fibre material
 High density CFC-foam insulation
 Heavy duty top and bottom bumper
 Ergonomic handles
 Four or six heavy duty double bearing (EN 12532) non marking castors
 Removable gaskets without the use of tools
 Construction designed to be easily cleaned and in compliance with hygienic standards (EN ISO 14159): rounded corners, easily cleanable of any soiling material
3. **DIVIDING BARRIER**
 Injection moulded divider filled with high density polyurethane insulation
 Individually removable dividers for easy cleaning
 Self sealing when tray is not inserted
 Two different pitches: 80mm, 92mm
4. **TRAY SUPPORTS**
 Stainless Steel tray supports easily removable without the use of tools
 Removable ventilation panels without the use of tools
5. **DOORS**
 Doors constructed with aluminium frame with laminated exterior and stainless steel interior panels, filled with CFC-free foam
 Heavy duty 270 degrees opening hinges with stay open catches
 Two door option with lockable latch and two ergonomic handles
 Two door tunnel washable option hinged on opposite sides with 260 degree stay open catch and lockable door latch
 Four door option with sliding latch and four ergonomic handles

ITEM # 8B900.1 B-POD BASE STATION
Quantity: Twenty-Four (24)
Manufacturer: Burlodge
Model: BLP1A.760

Furnish and set-in place per manufacturer's standard specifications:

1. Twenty-Four (24) Model BLP1A.760 B-Pod Base Station
2. **CONSTRUCTION**
Sub frame and chassis – Stainless Steel AISI 304 or X5CrNi “18-10” (EN10088-1)
Front panel is made from anti-static high impact thermoplastic
Adjustable feet
3. **HEATING**
Unique vertical thermo-convection forced air ventilation
Stainless steel elements surrounding two high velocity fan motors to ensure proper and even air temperature throughout the chamber.
4. **REFRIGERATION**
Unique vertical forced air ventilation.
Vertical evaporators for the heated and refrigerated section. Two high velocity fan motors to ensure uniformity of air temperature throughout the chamber
Self contained with R134a refrigerant gas.
Condenser air duct opening is located at the back of Base Station
5. **SAFETY FEATURES**
Fully fuse protected, safety class I, appliance
Safety Extra Low Voltage control panel
High temperature security thermostat
High pressure security pressure-switch
Enclosed and ventilated electrical compartment
6. **CONTROL PANEL**
Mounted at the front of the Base Station and easily accessible even when the Pod is nested
Proximity switch to start up automatically once the POD has been nested
Electronics controls with liquid quartz display offering the following functions:
Three (3) heating Cycle Touch Pads
Count Down Timer. Cycle in progress and hot cold temperature LCD display
Audible Alarm to indicate cycle completion
Error Code Display
HACCP monitoring system
Automatic Cycle Start Timer with summer and winter time change
Programmable control panel capabilities to suit individual client requirement.
Food probing
Smart-Temp system to reduce energy consumption based on food load
Maintenance cycle
7. **PERFORMANCE:**
For best results food temperatures should be loaded below 10°C (50°F) and above 63°C (145°F) into the cold and hot section respectively.

BUILDING 8 STAGING KITCHEN

ITEM # 8K100 SPARE NO.

ITEM # 8K101 HAND SINK
Quantity: One (1)
Manufacturer: Eagle Group
Model: YSCOPOS-HSA-0001-00

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model YSCOPOS-HSA-0001-00 Hand Sink, wall mount, 13-1/2" wide x 9-3/4" front-to-back x 6-3/4" deep bowl with MicroGard™ antimicrobial finish, single faucet hole for T&S EC-3101-HG by others, 304 stainless steel construction, basket drain, tubular wall support & brackets, inverted "V" edge, NSF
2. FSEC to be responsible for providing and installing hollow masonry anchors and any other appropriate hardware to support Hand Sink on wall.
3. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
4. GC to furnish and install blocking in wall, as needed to support Hand Sink.
5. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.
6. Refer to MEP-103 hand sink details for additional requirements and provisions.
7. Equipment to be NSF and UL listed and labeled.
8. To be provided with T&S Brass Faucet, item #8K101.1
9. Client agency to provide towel & soap dispenser.
10. Provide item as specified with all accessories and options or equal as manufactured by Advance Tabco and John Boos. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8K101.1 HANDS FREE ELECTRONIC FAUCET
Quantity: One (1)
Manufacturer: T&S Brass
Model: EC-3101-HG

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model EC-3101-HG ChekPoint™ Electronic Faucet, wall mount, rigid gooseneck with vandal resistant aerator , AC/DC control module, mixing tee, with hydro-generator power supply, includes optional 100-240 VAC adapter
2. Unit is specified and provided with Hydro Generator; no receptacle is needed to power the electronic sensor.
3. Provide item as specified with all accessories and options or equal as manufactured by Fisher and AllPoints. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8K102-8K118 SPARE NO.

ITEM # 8K119 - 8K119.4, 8K133 - 8K133.3, 8K135 - 8K135.4, 8K137 - 8K137.4 WALK-IN BOX COMBO

KIT:
Quantity: One (1)
Manufacturer: Norbec
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM To include the following items:
 - Item #8K119 - Cooler, Walk-In
 - Item #8K119.1 - Cooler Evaporator, Double (Qty. of 2)
 - Item #8K119.2 - Cooler Compressor
 - Item #8K119.3 - Cooler Junction Heat Tape (By Others)
 - Item #8K119.4 - Temperature Monitoring
 - Item #8K133 - Cold Receiving Room
 - Item #8K133.1 - Cooler Evaporator, Double
 - Item #8K133.2 - Cooler Compressor, Remote (RDT)
 - Item #8K133.3 - Temperature Monitoring
 - Item #8K133.4 - Junction Box, Heat Tape
 - Item #8K135 - Freezer, Walk-in
 - Item #8K135.1 - Freezer Evaporator
 - Item #8K135.2 - Freezer Compressor, Remote (RDT)
 - Item #8K135.3 - Freezer Junction Heat Tape (By Others)
 - Item #8K135.4 - Temperature Monitoring
 - Item #8K137 - Cooler, Walk-In
 - Item #8K137.1 - Cooler Evaporator
 - Item #8K137.2 - Cooler Compressor, Remote (RDT)
 - Item #8K137.3 - Cooler Junction Heat Tape (By Others)
 - Item #8K137.4 - Temperature Monitoring
2. **GENERAL SPECIFICATIONS:**

The NORBEC walk-in specified shall be prefabricated modular construction. It shall be designed and constructed to allow fast and easy field assembly, disassembly, relocation and enlargement by the addition of like modular panels. Walk-in shall be designed and constructed as shown on plan. Overall size of walk-in shall be customizable on all directions up to the ½" with a maximum box height of 18'.
3. **PANEL CONSTRUCTION:**

Wall and ceiling panel widths shall be within 1/2" increments up to 47" wide. Corner panels shall be made of 2 separate panels joined by cam-lock on sides forming a coved corner, top and bottom (bottom if bottom comes with a floor panel). All panels shall be interchangeable with same size panels for fast and easy assembly.

Partition panel placement shall be within 1/2" increments to meet shelving space requirements. All panels shall consist of metal pans formed to precise dimensions. Metal finish to be as specified. Insulation shall be "foamed-in-place" polyurethane to bond permanently to complete inner surfaces of both interior and exterior metal pans to form strong rigid unit. Panels shall not have internal wood or metal support, framing, straps, or other non-insulating members. Each panel shall be 100% polyurethane foam insulation exclusive of metal pans. Perimeter structure shall be with the same material forming tongues and grooves to assure vapor and airtight joints and to prevent pre-installation damage and deterioration of exposed urethane surfaces.
4. **WARRANTY:**

Panels shall be covered by a Ten-Year Factory Warranty

5. **INSULATION:**

Insulation shall be 4" or 5" thick rigid, free of HFC and CFC classified according to UL 723 (ASTM-E-84) as tested by Underwriters Laboratories, Inc. The core material has a flame spread of 25 or less and a smoke density of 450 or less.

The polyurethane foam is foamed-in-place to bond to inner surfaces of metal pans having an average thermal conductivity (K factor) of 0.12 BTU/hr./sq. ft. per degrees /Fahrenheit/inch @ mean temperature of 20 F and a thermal conductivity (K factor) of 0.138 BTU/hr./sq. ft. per degrees /Fahrenheit/inch @ mean temperature of 55; and an overall coefficient of heat transfer (U factor) of not more than .0312. As tested in accordance with ASTM C 518-2004, the R factor for coolers at temperatures of 55 F° is greater than 28.0 for 4" thick and greater than 36.0 for 5" thick panels; for freezers at temperatures of 20 F° the R factor is greater than 33.0 for 4" thick and greater than 41.0 for 5" thick panels. The above R-value result shall be third party tested and verified.

The prefabricated polyurethane foamed panels shall be supplied with a Class I fire hazard classification according to UL 723 (ASTM E84) as tested by QAI. Panels shall have a flame spread rating of 25 or less and bear a certifying QAI.org label.

This rating is not intended to reflect hazards presented by this or any other material under actual fire conditions.

6. **METAL FINISHES:**

Metal finishes on exterior exposed to be Smooth stainless steel, all other interior and exterior surfaces to be 26ga Galvanized steel White baked enamel with Silkline pattern.

7. **PANEL LOCKING ASSEMBLIES:**

Assembly of walk-in shall be accomplished by cam-action hook arm assembly set in one panel and a self-aligning, self-centering, pin assembly set in the matching panel. All vertical joints must have a minimum of two cam-lock. Rotation of the cam-action hook arm shall pull and lock panels together to form airtight, vapor proof joints. No metal straps or connecting rods shall be used inside the panels. Rotation of the cam-locks shall be operated from inside the walk-in through access ports that are sealed with vinyl snap-in closures.

8. **PANEL GASKETS:**

NSF listed double-bead PVC foam gasket shall be applied to the tongue side of all panels, on both interior and exterior. Gaskets shall be impervious to stains, grease, oils, mildew, sunlight, etc.

9. **ENTRANCE DOOR AND FRAME:**

Walk-in compartment shall be equipped with a 36" x 78" (contact factory for additional sizes) hinged-type, flush-mounted entrance door mounted and located in exact location as shown on drawing. Door placement shall be within 1/2" increments to meet shelving space and job site requirements. Door shall be manufactured to accommodate floor construction. Door and frame shall be listed for UL 471 for electrical approval and be equipped with the following:

Door shall be equipped with a one-piece perimeter PVC accordion type removable gasket with magnetic core at the top and along the side perimeter of the door. An adjustable double wiper gasket shall be mounted along the bottom edge of the door.

Pull handle shall be break-a-way type with cylinder lock (Kason 1236) and inside safety release handle so the door can be opened from the inside even if locked. A positive action hydraulic door closer (Kason 1092) shall be included to ensure gentle closing action of door to opening and to ensure positive closing of door. The handle shall be of high-pressure zinc die cast with highly polished chrome finish.

Hinges shall be, cam-lift, spring loaded, self-closing design with door lift off capability of high-pressure zinc die cast with highly polished chrome finish.

Door frame shall consist of extruded PVC with integrated heat trace cavity that encompass entire perimeter of opening, foamed-in-place to give extra support and rigidity to frame and to prevent racking, distortion, warping and twisting. An armored anti-sweat heater cable shall be run in a breaker strip located behind a removable heavy gauge stainless steel trim for easy access to heater cable.

Thermostatically controlled door frame heater cable shall be run into the frame extrusion covered by an easy to remove heat trace cover.

- Threshold consisting of extruded aluminium with integrated heat trace cavity integrating or the same heat trace that runs along the door frame or a second heater wire shall be provided. Door section shall be provided with an IM4 module with exterior side of the door frame. A LED vapor proof light and face mounted inlet box shall be center mounted on the interior side of the door frame for 115 volts, 60 cycle, 1 phase A.C. service. All wiring shall be in concealed rigid conduit. A 2-1/2" diameter chrome face, flush mount, dual reading, adjustable dial thermometer shall be provided on exterior of door section to provide temperature reading of -40 degrees C to +150 degrees C.
- A Berner air curtain model #CLC08-1036E shall be supplied at each door.
- A foot treadle (Dent D82) shall be provided on the door to assist for hands free door operation.
10. **TREADBRITE KICKPLATES:**
Door and frame shall have 1/8" aluminum diamond treadplate kickplates 36" high on the interior and exterior. Diamond treadplate kickplates shall be mounted with rivets and adhesive and sealed with silicone.
11. **HEATED PRESSURE RELIEF VENT:**
Freezer shall be equipped with a two-way heated pressure relief vent to equalize pressure between the interior and exterior caused by defrost cycles and opening of door. Electrical service to be 115v/60/1 phase.
12. **FLOOR CONSTRUCTION:**
Walk-in floor shall have similar fabrication to other panels and be designed to withstand uniformly distributed stationary loads of 600 lbs. per square foot. Interior surface of floor panels to be foamed-in-place of either Stainless steel or 0.100" Aluminium with NextGrip non-skid integral pattern. Verify loading requirements to adjust floor design accordingly.
For recessed floor, or floor with access ramps, 1/2 plywood underlay, foamed in place must be added.
For recessed floor, with tile or vinyl application, 0.100" smooth Aluminium surface will be provided. Verify the tile/vinyl thickness for threshold height adjustment.
NORBEC HEAVY-DUTY FLOOR: For additional stationary floor load strength of up to 2,000 lbs. per square foot shall be provided which shall consist of an interior surface of foamed-in-place .100" smooth Aluminum surface with an additional 3/16 T.P overlay with structural support foamed-in-place on interior of floor panel and firmly attached to a foamed-in-place 1/2 plywood subfloor.
13. **INTERIOR RAMP:**
To eliminate a step-up the walk-in shall be equipped with an interior built-in foamed-in-place ramp at entrance door. The interior ramp shall have a NextGrip non-skid surface and be equipped with a threshold and heater wire on freezer applications. Interior ramp shall be width of door opening x 24" depth (ramp depth are customizable).
14. **LED LIGHT FIXTURES:**
Additional illumination is provided with 4' LED light fixtures with bulbs included and shall be provided in quantity as shown on plan.
15. **IM4 ALARM: :**
The IM4 monitor brings together the temperature display and alarm functions in addition to allowing control of cold room lighting. To include power source failure alarm with adjustable set point for temperature, jack (dry contact) for remote alarm telephone dialer and enunciator panel, digital temperature display with minus 40 degrees F to plus 140 degrees F range and a built-in battery and charger, door ajar alarm with adjustable delay set point, door sensor for automatic light opening along with an internal panic button linked to the external display alarm. Control panel shall be located at door frame of compartment being monitored or remotely on another compartment door when the door is enclosed within another walk-in.
16. **TEMPERATURE MONITORING:**
Provided with EM-Plus temperature monitoring system able to monitor, record and send alerts. Monthly cost of monitoring system is not included and is to be taken in charge by customer if needed.

17. **TRIM AND ENCLOSURES:**

Trim matching the walk-in finish and fabricated to fit building conditions shall be supplied to close all joints between walk-in and building walls. Enclosure panels matching the walk-in finish shall be supplied to close off space between top of walk-in and building ceiling and shall be removable without tools.

18. **REFRIGERATION:**

Basic refrigeration components shall consist of a condensing unit of the scroll. Condensing units shall be factory assembled and UL approved. The condenser shall be air-cooled. Refrigerant for medium temperature systems and the low temperature system shall be R448-A.

See quote for model numbers.

Evaporators shall be forced air type with air flow parallel to the walk-in ceiling. Evaporators shall be a standard low profile center mount space saver series. All evaporator coil components shall be housed in heavy gauge aluminum housing. Units shall have drain pan with drain pipe connection. Evaporator coil must come with Intelliref V2 controller factory pre-assembled as well as P-Trap to coil to be factory pre-assembled.

Intelliref V2 controller will have an on time defrost on schedule or custom defrost, time clock with battery backup insures defrost schedules are not lost during power failures, service call saver defrost indicator (dEF), 1st defrost 2hrs after start up, digital thermostat, compressor protection, maximum starts per hour, visual alarms – High temp/Low temp/Sensor Failure, low battery indicator ModBus terminals

Condensing unit voltage to be 208-230/60/1.

Units shall have drain pan with drain pipe connection. Evaporators shall be equipped with an automatic electric defrost system including coil heaters, time clock, fan delay control, drain line heaters and liquid line solenoid.

The basic components shall be supplied as specified Remote Preassembled, and shall include condensing unit, evaporator coil, controller kit (Intelliref V2). All parts shall be factory mounted except dryer and sight glass that shall be mounted on site.

Remote Preassembled systems require tubing, electrical hook-up, drain line and refrigerant charge supplied by qualified refrigeration, electrical and plumbing contractors

A low ambient kit and weatherproof housing shall be supplied with condensing units. The low ambient kit shall consist of a crankcase heater and headmaster valve.

19. **EVAPORATOR DRAIN LINES:**

All evaporator coils shall be provided with proper sized drain lines, supplied and field installed by contractor. Drains shall be trapped outside of walk-in. Drain shall be heated and insulated to prevent freezing. All plumbing is to be in accordance with applicable codes.

Contractor shall be responsible for providing units completely installed and operational. Cooler to operate at +35 degrees Fahrenheit and Freezer to operate at –10 degrees Fahrenheit.

20. **NSF CONSTRUCTION:**

The walk-ins provided in the above specifications shall be constructed in accordance with National Sanitation Foundation, Standard No. 7. The NSF approval seal shall be affixed to the serial plate of the walk-in.

21. **QUALITY INSPECTION REQUIREMENTS & INSTALLATION:**

Walk-ins shall be set up at the manufacturer's facility prior to shipment and a quality control inspection performed on the product. A digital photograph of the walk-ins set up at the manufacturer's facility shall be provided for the Food Equipment Contractor's permanent records.

22. **ELECTRICAL:**

The tops of the walk-in shall be drilled and fitted with conduit for electrical wiring. No exposed conduit will be allowed on the interior of the walk-ins. All conduit shall be routed above the ceiling sections.

The Electrical Contractor will provide and install electric power supply disconnects at the condensing unit location and evaporator location. The FSEC will furnish all necessary control and power wiring between the condensing unit and evaporator, heating wires, lights, control switches, etc. as required to place all refrigeration systems into satisfactory operation. Freezer section drain to be covered with heat tape, heat tape to be provided by electrical contractor. Power connection to be made to a separate circuit provide by Electrical Contractor.

- Please Note:** It is recommended for all electrical connections and receptacles powering compressor equipment to be interconnected through Pass and Seymour 2084I – 20A GFCI Dead Front to serve as Class A Ground Fault Protection. Do not plug into a standard GFCI as the compressor motor will create an overload spike and trip the GFCI. Standard dual receptacle to be installed adjacent to Pass and Seymour 2084I in a quad box and the receptacle to be wired through Pass and Seymour 2084I.
23. **PLUMBING & DRAIN LINES:**
The Plumbing Contractor shall furnish and install hard temper L copper waste piping from the evaporator drain to the nearest floor sink. Waste piping shall have two coats of aluminized paint, and shall be wrapped with electric heating coil to prevent freezing. All plumbing is to be in accordance with applicable codes.
24. **START-UP:**
FSEC to Provide start-up and testing of complete system.
FSEC to Set and adjust all temperature and defrost cycles.
Cooler to operate at +35 degrees Fahrenheit and Freezer to operate at –10 degrees Fahrenheit.
25. **INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS:**
FSEC to Provide start-up and testing of complete system.
FSEC to Set and adjust all temperature and defrost cycles.
Cooler to operate at +35 degrees Fahrenheit and Freezer to operate at –10 degrees Fahrenheit.
26. **SHOP DRAWINGS AND SUBMITTALS:**
Refer to food service manufacture specification drawings for more information. FSEC to submit shop drawings for review and approval before starting manufacturing.
27. Provide item as specified with all accessories and options or equal as manufactured by Bally and American Panel. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8K120

SPARE NO.

ITEM # 8K121 METROMAX Q RACKS
Quantity: One (1)
Manufacturer: Metro
Model: LOT

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model LOT MetroMax Q Racks
2. Four (4) Model MQ74UPE MetroMax® Q Post, 73-3/16"H, for use with stem casters, epoxy coated steel with built in Microban® antimicrobial product protection, taupe
3. Two (2) Model 5PCXM Polymer Stem Caster, swivel, 5" dia., 1-1/4"W face, -20° F to 120°F temperature range, polyurethane wheel tread, 300 lb. capacity, Microban® antimicrobial product protection, NSF (donut bumpers included) (for use with all MetroMax posts & shelves)
4. Two (2) Model 5PCBXM Polymer Stem Caster, brake, 5" dia., 1-1/4"W face, -20° F to 120°F temperature range, polyurethane wheel tread, 300 lb. capacity, Microban® antimicrobial product protection, NSF (donut bumpers included) (for use with all MetroMax posts & shelves)
5. Three (3) Model MQ2442G MetroMax® Q Shelf, 42"W x 24"D, removable open grid polymer shelf mats on an epoxy coated steel frame with quick adjust corner releases, (4) wedge connectors, Microban® antimicrobial product protection, 800 lb. capacity per shelf, NSF
6. One (1) Model MX2442F MetroMax® i Shelf, 42"W x 24"D, reinforced type 304 stainless steel corners, removable one-piece solid polymer shelf mat, (4) wedge connectors, built in Microban® antimicrobial product protection, 1000 lb. capacity per shelf, NSF
7. FSEC to Assemble into four tier high shelving units, locate shelves with SOLID mat inserts at bottom. Bottom shelf to be minimum of 12" above floor.
8. FSEC to verify all shelving sizing prior to ordering due to any field conditions/alterations.
9. If applicable (for walk-ins): Smaller posts supplied for unit(s) under evaporator.
10. Provide item as specified with all accessories and options or equal as manufactured by Eagle Group and Quantum. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8K122 SPARE NO.

ITEM # 8K123 ROLL-IN REFRIGERATOR
Quantity: One (1)
Manufacturer: Victory Refrigeration
Model: RIS-2D-S1-HC

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model RIS-2D-S1-HC UltraSpec™ Series Refrigerator, Powered by V-Core™, Roll-in, two-section, self-contained refrigeration, 70.84 cu. ft. capacity, stainless exterior & interior, standard depth cabinet, (2) full height 20 gauge stainless steel doors, TOUCH POINT™ electronic temperature control/indicator, LED lighting, expansion valve technology, Santoprene door gaskets with 2 year warranty, stainless steel breakers, stainless steel ramp, 3/4 HP, cULus, UL-Sanitation, UL EPH Classified, MADE IN USA
2. One (1) 7-year parts & labor and 7-year compressor warranty; excludes maintenance items
3. One (1) 115v/60/1-ph, 8.5 amps, cord with NEMA 5-15P
4. One (1) Door hinging: left door hinged on left, right door hinged on right standard
5. Provide item as specified with all accessories and options or equal as manufactured by Beverage Air and True. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8K123.1 BUN / SHEET PAN RACK
Quantity: Two (2)
Manufacturer: Channel Manufacturing
Model: 401A

Furnish and set-in place per manufacturer's standard specifications:

1. Two (2) Model 401A Bun Pan Rack, All-Welded, Standard Heavy-Duty Series, 20.5"W x 26"D x 70.25"H, Aluminum Construction, End Load, 3" Angle Spacing, (20) 18" x 26" or (40) 13" x 18" pans (2 per shelf), 5" Swivel Plate Casters model # CPS45U, Made in USA, NSF
2. Two (2) Lifetime warranty against rust and corrosion
3. Two (2) Model /015 Accessories, Pan Stop - Web-Strap
4. FSEC to verify that racks will fit roll-in (item number #8K123) properly.
5. Provide item as specified with all accessories and options or equal as manufactured by Eagle Group and Advance Tabco. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8K124 MOBILE HEATED CABINET
Quantity: Two (2)
Manufacturer: Metro
Model: C587-SFS-UA

Furnish and set-in place per manufacturer's standard specifications:

1. Two (2) Model C587-SFS-UA C5™ 8 Series Controlled Temperature Holding Cabinet with 6.8" touch-screen controls, mobile, 3/4 height, insulated, solid doors, universal wire slides, (14) 18" x 26" or (28) 12" x 20" x 2-1/2" pan capacity, 3" O.C. (adjustable on 1-1/2" increments), 5" casters, 304 stainless steel, 120v/60/1-ph, 2000 watts, 16.7 amps, NEMA 5-20P, cULus, NSF, Made in USA, ENERGY STAR®
2. Two (2) 1 year warranty against manufacturing defects
3. Two (2) Right hand hinging, standard
4. Two (2) Model C5-LATCHFLUSH C5 Flush Latch Handle
5. Two (2) Model C5-BUMPDRIP Corner Bumper/Drip Trough, for 8 series, 6 series
6. Provide item as specified with all accessories and options or equal as manufactured by Alto-Shaam and Winston. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8K125 WORK TABLE, STAINLESS STEEL TOP W/ CASTORS
Quantity: One (1)
Manufacturer: Eagle Group
Model: T3048SEM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model T3048SEM Spec-Master® Marine Series Work Table, 48"W x 30"D, 14/300 series stainless steel top, box marine edge on all sides, adjustable 18/300 series stainless steel undershelf with marine edge, Uni-Lok® gusset system, (4) stainless steel legs & adjustable bullet feet, NSF
2. One (1) Model CAHW4-SB Table Casters, set of (4), 5" diameter, (2) swivel & (2) swivel/brake, 250 lbs. capacity per caster, polymer cart washable with polymer tread, NSF
3. Where top abuts any walls, provide side splash.
4. Provide item as specified with all accessories and options or equal as manufactured by Advance Tabco and John Boos. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8K125.1 DRAWER
Quantity: One (1)
Manufacturer: Eagle Group
Model: 502946

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model 502946 Drawer Assembly, 20" x 20" x 5", 430 type stainless steel housing & frame, removable drawer pan, NSF approved removable slides, hemmed safety pull handle
2. Provide item as specified with all accessories and options or equal as manufactured by Advance Tabco and John Boos. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8K125.2 OVERSHELF, DOUBLE
Quantity: One (1)
Manufacturer: Eagle Group
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Overshelf, Double
2. FSEC shall furnish and install as a custom fabricated item, size and configuration as shown on drawings and as described here and in the General Specifications Parts.
3. FSEC is responsible for field verification of space available prior to fabrication.
4. Adjust item as required if field conditions deem it necessary.
5. Construct overshelves and single-sided utensil rack (above hot food wells) of #14 GA s/s; shelves to have 1-1/2" turned down edges all sides to conceal heat lamps.
6. Top of bottom shelf to be 18" above countertop; second shelf to be 16" above first shelf.
7. Provide provisions for heat lamps and Install with controls mounted on heat lamps, including infinite controls, pilot lights and on/off switches.
8. Provide Ticket Rail on chefs side of overhead shelf.
9. FSEC to coordinate installation of double overshelves with heat lamps & lights and all other adjacent and associated equipment.
10. Equipment to be NSF listed and labeled.
11. Provide item as specified with all accessories and options or equal as manufactured by Advance Tabco and John Boos. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8K126 SPARE NO.

ITEM # 8K127 WORK TABLE, STAINLESS STEEL TOP W/ CASTORS
Quantity: One (1)
Manufacturer: Eagle Group
Model: T3048SEM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model T3048SEM Spec-Master® Marine Series Work Table, 48"W x 30"D, 14/300 series stainless steel top, box marine edge on all sides, adjustable 18/300 series stainless steel undershelf with marine edge, Uni-Lok® gusset system, (4) stainless steel legs & adjustable bullet feet, NSF
2. One (1) Model CAHW4-SB Table Casters, set of (4), 5" diameter, (2) swivel & (2) swivel/brake, 250 lbs. capacity per caster, polymer cart washable with polymer tread, NSF
3. Where top abuts any walls, provide side splash.
4. Provide item as specified with all accessories and options or equal as manufactured by Advance Tabco and John Boos. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8K127.1 OVERSHELVES, NON ADJUSTABLE
Quantity: One (1)
Manufacturer: Eagle Group
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Overshelves, Non Adjustable
2. FSEC shall furnish and install as a custom fabricated item, size and configuration as shown on drawings and as described here and in the General Specifications Parts.
3. FSEC is responsible for field verification of space available prior to fabrication.
4. Adjust item as required if field conditions deem it necessary.
5. Construct overshelves and single-sided utensil rack (above hot food wells) of #14 GA s/s; shelves to have 1-1/2" turned down edges all sides to conceal heat lamps.
6. Top of bottom shelf to be 18" above countertop; second shelf to be 16" above first shelf.
7. Provide provisions for heat lamps and Install with controls mounted on heat lamps, including infinite controls, pilot lights and on/off switches.
8. Provide Ticket Rail on chefs side of overhead shelf.
9. FSEC to coordinate installation of double overshelves with heat lamps & lights and all other adjacent and associated equipment.
10. Equipment to be NSF listed and labeled.
11. Provide item as specified with all accessories and options or equal as manufactured by Advance Tabco and John Boos. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8K128-8K132 SPARE NO.

ITEM # 8K134 AIR CURTAIN
Quantity: One (1)
Manufacturer: Berner
Model: CLC08-1036A

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CLC08-1036A Commercial Series Low Profile Air Curtain, 36"L, unheated, (1) 1/5 hp 2-speed motor, for doors up to 8' high, interior mounting only, cULus, Made in USA
2. One (1) Five year parts warranty (unheated units)
3. One (1) If special freight fees are requested, (See below) all applicable fees will be added to the invoice; fees subject to change; contact factory for addition information.
4. One (1) Model A 120v/60/1-ph
5. One (1) White powder coat exterior finish, standard
6. Provide item as specified with all accessories and options or equal as manufactured by Mars Air Curtain and Curtron. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8K136 METROMAX Q RACKS
Quantity: One (1)
Manufacturer: Metro
Model: LOT

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model LOT MetroMax Q Racks
2. Fourty (40) Model MQ74UPE MetroMax® Q Post, 73-3/16"H, for use with stem casters, epoxy coated steel with built in Microban® antimicrobial product protection, taupe
3. Twenty (20) Model 5PCXM Polymer Stem Caster, swivel, 5" dia., 1-1/4"W face, -20° F to 120°F temperature range, polyurethane wheel tread, 300 lb. capacity, Microban® antimicrobial product protection, NSF (donut bumpers included) (for use with all MetroMax posts & shelves)
4. Twenty (20) Model 5PCBXM Polymer Stem Caster, brake, 5" dia., 1-1/4"W face, -20° F to 120°F temperature range, polyurethane wheel tread, 300 lb. capacity, Microban® antimicrobial product protection, NSF (donut bumpers included) (for use with all MetroMax posts & shelves)
5. Six (6) Model MQ2430G MetroMax® Q Shelf, 30"W x 24"D, removable open grid polymer shelf mats on an epoxy coated steel frame with quick adjust corner releases, (4) wedge connectors, Microban® antimicrobial product protection, 800 lb. capacity per shelf, NSF
6. Two (2) Model MX2430F MetroMax® i Shelf, 30"W x 24"D, reinforced type 304 stainless steel corners, removable one-piece solid polymer shelf mat, (4) wedge connectors, built in Microban® antimicrobial product protection, 1000 lb. capacity per shelf, NSF
7. Twelve (12) Model MQ2442G MetroMax® Q Shelf, 42"W x 24"D, removable open grid polymer shelf mats on an epoxy coated steel frame with quick adjust corner releases, (4) wedge connectors, Microban® antimicrobial product protection, 800 lb. capacity per shelf, NSF
8. Four (4) Model MX2442F MetroMax® i Shelf, 42"W x 24"D, reinforced type 304 stainless steel corners, removable one-piece solid polymer shelf mat, (4) wedge connectors, built in Microban® antimicrobial product protection, 1000 lb. capacity per shelf, NSF
9. Twelve (12) Model MQ2448G MetroMax® Q Shelf, 48"W x 24"D, removable open grid polymer shelf mats on an epoxy coated steel frame with quick adjust corner releases, (4) wedge connectors, Microban® antimicrobial product protection, 800 lb. capacity per shelf, NSF
10. Four (4) Model MX2448F MetroMax® i Shelf, 48"W x 24"D, reinforced type 304 stainless steel corners, removable one-piece solid polymer shelf mat, (4) wedge connectors, built in Microban® antimicrobial product protection, 1000 lb. capacity per shelf, NSF
11. FSEC to Assemble into four tier high shelving units, locate shelves with SOLID mat inserts at bottom. Bottom shelf to be minimum of 12" above floor.
12. FSEC to verify all shelving sizing prior to ordering due to any field conditions/alterations.
13. Provide item as specified with all accessories and options or equal as manufactured by Eagle Group and Quantum. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8K138 METROMAX Q RACKS
Quantity: One (1)
Manufacturer: Metro
Model: LOT

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model LOT MetroMax Q Racks
2. Thirty-Two (32) Model MQ74UPE MetroMax® Q Post, 73-3/16"H, for use with stem casters, epoxy coated steel with built in Microban® antimicrobial product protection, taupe
3. Sixteen (16) Model 5PCXM Polymer Stem Caster, swivel, 5" dia., 1-1/4"W face, -20° F to 120°F temperature range, polyurethane wheel tread, 300 lb. capacity, Microban® antimicrobial product protection, NSF (donut bumpers included) (for use with all MetroMax posts & shelves)
4. Sixteen (16) Model 5PCBXM Polymer Stem Caster, brake, 5" dia., 1-1/4"W face, -20° F to 120°F temperature range, polyurethane wheel tread, 300 lb. capacity, Microban® antimicrobial product protection, NSF (donut bumpers included) (for use with all MetroMax posts & shelves)
5. Three (3) Model MQ2430G MetroMax® Q Shelf, 30"W x 24"D, removable open grid polymer shelf mats on an epoxy coated steel frame with quick adjust corner releases, (4) wedge connectors, Microban® antimicrobial product protection, 800 lb. capacity per shelf, NSF
6. One (1) Model MX2430F MetroMax® i Shelf, 30"W x 24"D, reinforced type 304 stainless steel corners, removable one-piece solid polymer shelf mat, (4) wedge connectors, built in Microban® antimicrobial product protection, 1000 lb. capacity per shelf, NSF
7. Three (3) Model MQ2436G MetroMax® Q Shelf, 36"W x 24"D, removable open grid polymer shelf mats on an epoxy coated steel frame with quick adjust corner releases, (4) wedge connectors, Microban® antimicrobial product protection, 800 lb. capacity per shelf, NSF
8. One (1) Model MX2436F MetroMax® i Shelf, 36"W x 24"D, reinforced type 304 stainless steel corners, removable one-piece solid polymer shelf mat, (4) wedge connectors, built in Microban® antimicrobial product protection, 1000 lb. capacity per shelf, NSF
9. Nine (9) Model MQ2442G MetroMax® Q Shelf, 42"W x 24"D, removable open grid polymer shelf mats on an epoxy coated steel frame with quick adjust corner releases, (4) wedge connectors, Microban® antimicrobial product protection, 800 lb. capacity per shelf, NSF
10. Three (3) Model MX2442F MetroMax® i Shelf, 42"W x 24"D, reinforced type 304 stainless steel corners, removable one-piece solid polymer shelf mat, (4) wedge connectors, built in Microban® antimicrobial product protection, 1000 lb. capacity per shelf, NSF
11. Nine (9) Model MQ2448G MetroMax® Q Shelf, 48"W x 24"D, removable open grid polymer shelf mats on an epoxy coated steel frame with quick adjust corner releases, (4) wedge connectors, Microban® antimicrobial product protection, 800 lb. capacity per shelf, NSF
12. Three (3) Model MX2448F MetroMax® i Shelf, 48"W x 24"D, reinforced type 304 stainless steel corners, removable one-piece solid polymer shelf mat, (4) wedge connectors, built in Microban® antimicrobial product protection, 1000 lb. capacity per shelf, NSF
13. FSEC to Assemble into four tier high shelving units, locate shelves with SOLID mat inserts at bottom. Bottom shelf to be minimum of 12" above floor.
14. FSEC to verify all shelving sizing prior to ordering due to any field conditions/alterations.
15. Provide item as specified with all accessories and options or equal as manufactured by Eagle Group and Quantum. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8K139 SPARE NO.

ITEM # 8K140 SPARE NO.

ITEM # 8K141 WALL MOUNTED HAND SINK
Quantity: One (1)
Manufacturer: Eagle Group
Model: YSCOPOS-HSA-0001-00

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model YSCOPOS-HSA-0001-00 Hand Sink, wall mount, 13-1/2" wide x 9-3/4" front-to-back x 6-3/4" deep bowl with MicroGard™ antimicrobial finish, single faucet hole for T&S EC-3101-HG by others, 304 stainless steel construction, basket drain, tubular wall support & brackets, inverted "V" edge, NSF
2. FSEC to be responsible for providing and installing hollow masonry anchors and any other appropriate hardware to support Hand Sink on wall.
3. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
4. GC to furnish and install blocking in wall, as needed to support Hand Sink.
5. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.
6. Refer to MEP-103 hand sink details for additional requirements and provisions.
7. Equipment to be NSF and UL listed and labeled.
8. To be provided with T&S Brass Faucet, item #8K141.1
9. Client agency to provide towel & soap dispenser.
10. Provide item as specified with all accessories and options or equal as manufactured by Advance Tabco and John Boos. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8K141.1 ELECTRONIC FAUCET W/ HYDRO-GENERATOR
Quantity: One (1)
Manufacturer: T&S Brass
Model: EC-3101-HG

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model EC-3101-HG ChekPoint™ Electronic Faucet, wall mount, rigid gooseneck with vandal resistant aerator , AC/DC control module, mixing tee, with hydro-generator power supply, includes optional 100-240 VAC adapter
2. Unit is specified and provided with Hydro Generator; no receptacle is needed to power the electronic sensor.
3. Provide item as specified with all accessories and options or equal as manufactured by Fisher and AllPoints. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8K142 METROMAX Q RACKS
Quantity: One (1)
Manufacturer: Metro
Model: LOT

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model LOT MetroMax Q Racks
2. Four (4) Model MQ74UPE MetroMax® Q Post, 73-3/16"H, for use with stem casters, epoxy coated steel with built in Microban® antimicrobial product protection, taupe
3. Two (2) Model 5PCXM Polymer Stem Caster, swivel, 5" dia., 1-1/4"W face, -20° F to 120°F temperature range, polyurethane wheel tread, 300 lb. capacity, Microban® antimicrobial product protection, NSF (donut bumpers included) (for use with all MetroMax posts & shelves)
4. Two (2) Model 5PCBXM Polymer Stem Caster, brake, 5" dia., 1-1/4"W face, -20° F to 120°F temperature range, polyurethane wheel tread, 300 lb. capacity, Microban® antimicrobial product protection, NSF (donut bumpers included) (for use with all MetroMax posts & shelves)
5. Three (3) Model MQ2442G MetroMax® Q Shelf, 42"W x 24"D, removable open grid polymer shelf mats on an epoxy coated steel frame with quick adjust corner releases, (4) wedge connectors, Microban® antimicrobial product protection, 800 lb. capacity per shelf, NSF
6. One (1) Model MX2442F MetroMax® i Shelf, 42"W x 24"D, reinforced type 304 stainless steel corners, removable one-piece solid polymer shelf mat, (4) wedge connectors, built in Microban® antimicrobial product protection, 1000 lb. capacity per shelf, NSF
7. FSEC to Assemble into four tier high shelving units, locate shelves with SOLID mat inserts at bottom. Bottom shelf to be minimum of 12" above floor.
8. FSEC to verify all shelving sizing prior to ordering due to any field conditions/alterations.
9. Provide item as specified with all accessories and options or equal as manufactured by Eagle Group and Quantum. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8K143 EQUIPMENT STAND, FOR MIXER / SLICER
Quantity: One (1)
Manufacturer: Bizerba
Model: SLICER-TABLE-315

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model SLICER-TABLE-315 Equipment Stand, mobile, 27.9"W x 32.25"D x 31.75"H, 600 lb. capacity, coved-upward edge on all four sides of table-top, 14-gauge stainless steel top, (4) predrilled mounting holes, combination handle/remote sharpener holder, (6) 18" x 26" pan capacity, 2.375" tray slide spacing, side lift arm for mobility or lock in place, (1) fixed stainless steel bottom shelf with 3" center drain, stainless steel welded construction, (4) high friction pad feet with retractable casters, NSF, Made in USA
2. One (1) Model FREE FREIGHT Prepaid Freight, shipping charges prepaid in the 48 Contiguous U.S. States to a standard "Dock High" loading dock during normal business hours of 8:00 a.m. – 5:00 p.m. Excludes lift-gate & other additional accessorial shipping fees.
3. Provide item as specified with all accessories and options or equal as manufactured by Eagle Group and Advance Tabco. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8K144 WORK TABLE, STAINLESS STEEL TOP
Quantity: One (1)
Manufacturer: Eagle Group
Model: T3660SEM-BS

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model T3660SEM-BS Spec-Master® Marine Series Work Table, 60"W x 36"D, 4-1/2"H backsplash, 14/300 series stainless steel top, box marine edge on front & sides, adjustable 18/300 series stainless steel undershelf with marine edge, Uni-Lok® gusset system, (4) stainless steel legs & adjustable bullet feet, NSF
2. Provide provisions for item #8K144.1, sink, plumbing.
3. Where top abuts any walls, provide side splash.
4. Provide item as specified with all accessories and options or equal as manufactured by Advance Tabco and John Boos. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8K144.1 PREP SINK, WELD-IN
Quantity: One (1)
Manufacturer: Eagle Group
Model: E24

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model E24 Sink, 18" x 20" x 14" bowl, for 30"W tables, complete with faucet & basket drain; sink location per plan.
2. Provide item as specified with all accessories and options or equal as manufactured by Advance Tabco and John Boos. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8K144.2 PANTRY FAUCET
Quantity: One (1)
Manufacturer: T&S Brass
Model: B-0325-CR-WH4

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model B-0325-CR-WH4 Pantry Faucet, double, deck mount, 4" adjustable centers, 5-3/4" swivel gooseneck spout with Series 1 stream regulator outlet (includes lock washer to convert to rigid), 4" wrist action handles, quarter-turn Cerama cartridges with check valves, polished chrome plated brass body, 1/2" NPT female inlets, low lead, cCSAus, ADA Compliant
2. One (1) Model B-0425-KIT Inlet Kit with 24" supply hoses, Nipples, Washer and Locknuts that provide 1/2" NPT male outlet and 3/8" female compression inlet. Certified to ASME A112.18.1/CSA B125.1, NSF 61-Section 9 and NSF 372.
3. One (1) 1 year limited warranty, standard
4. Provide item as specified with all accessories and options or equal as manufactured by Fisher and AllPoints. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8K144.3 DRAIN, LEVER
Quantity: One (1)
Manufacturer: T&S Brass
Model: B-3970

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model B-3970 Waste Valve, lever handle, 3-1/2" sink opening, 2" drain outlet with 1-1/2" adapter
2. Provide item as specified with all accessories and options or equal as manufactured by Fisher and AllPoints. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8K144.4 DRAWER
Quantity: One (1)
Manufacturer: Eagle Group
Model: 502946

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model 502946 Drawer Assembly, 20" x 20" x 5", 430 type stainless steel housing & frame, removable drawer pan, NSF approved removable slides, hemmed safety pull handle
2. Provide item as specified with all accessories and options or equal as manufactured by Advance Tabco and John Boos. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8K144.5 SHELVING, WALL MOUNTED
Quantity: Two (2)
Manufacturer: Eagle Group
Model: SWS1560-14/3

Furnish and set-in place per manufacturer's standard specifications:

1. Two (2) Model SWS1560-14/3 Snap-n-Slide® Shelf, wall-mounted, 60"W x 15"D, rolled front edge, 1-1/2"H up-turn on sides & rear, stainless steel wall brackets mount to wall studs (no wall backing required), 225 lbs. weight capacity, 14/304 stainless steel construction, NSF
2. Two (2) Model 358115 Divider, 15"W, for Snap-n-Slide wall shelf, 4"H
3. FSEC to furnish proper type of stainless-steel mounting hardware for wall construction to sustain weight while in use.
4. GC to furnish and install blocking in wall, as needed to support fully loaded shelf.
5. FSEC to install shelf approximately 20" above countertop of work surface.
6. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
7. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.
8. Provide item as specified with all accessories and options or equal as manufactured by Advance Tabco and John Boos. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8K145-L & 8K145-R EXHAUST HOOD

Quantity: One (1)
Manufacturer: Halton
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Exhaust Hood
2. Refer to sheet QF-X700 - QF-X711 for Halton engineering drawings for size and shape of each ventilator, CFM requirements and additional construction information.
3. Provide Halton Company, Scottsville, KY. Capture Jet wall type exhaust canopy hood. Hood capture area shall have sufficient inside dimensions, front to back to ensure proper overhang for equipment shown.
4. Unit to be listed to U.L. 710 standards, wall mounted exhaust hood of size and shape as shown on plan. Hood heights not to exceed 24", mounted 6'-8" AFF. Canopy hood shall be designed specifically for the cooking equipment being covered.
5. Hood shall provide provisions for the M.A.R.V.E.L II Demand Control System. This includes Infrared Radiation Index Sensors (IRIS Sensors), duct temperature thermostat, pressure transducer, controller and Automated Balancing Damper (ABD Damper) at each exhaust duct. There shall also be an "Override" panel mounted to the face of each individual hood. There shall be one common control panel for MARVEL. The M.A.R.V.E.L II system shall come with a HMI color touch screen capable of monitoring parameters including but not limited, hood status (off, idle, cooking), real time airflow monitoring, exhaust temperature, damper position and energy savings. HMI will indicate any current faults that need operator attention. Some features are password protected for security purposes. HMI touch screen to be housed in stainless steel surface mounted control box.
6. Listed manufacturers and manufacturers requesting approval as equals must apply for permission to do so, in writing from the office of the consultant. Application must be received by the consultant at least 10 working days prior to bid date. Any alternate system must meet construction and performance requirements and efficiencies as outlined in this specification. Requests for approval must include:
 7. Grease filtration performance data (micron size vs. extraction), pressure loss curve for exhaust airflow
 8. Efficiency comparison data to be performed in accordance with ASTM standard F1704-96 and include results for exhaust rate for capture and containment of convective plume, temperature rise of exhaust air and heat gain to the space (kBtu/h). The data in these reports should not be used as the basis for design exhaust rates and specifications.
 9. Provide stainless steel ceiling make up air plenum with 10% open perforated panels. Make up air will be calculated so that the same amount of air will be taken from the zone as is required by the specified system. Any additional load cannot be placed on the kitchen HVAC system
 10. Manufacturer must provide a written guarantee of performance, ensuring the specifying engineer that the system will perform to the engineer's satisfaction when installed and balanced according to design airflows and be consistent with ASTM standard F1704-96 test results (as determined by TAB ports and pressure vs. airflow curves).
 11. Engineer/Consultant reserves the right to reject any system which is not consistent with results of ASTM standard F1704-96 testing wherein the original hood configuration (height increases, rear seals, etc.) are deleted from substitution request and would result in additional heat gain being rejected. Contractor would be required to replace at contractor's expense.
 12. The canopy shall bear the ETL, US/Canada, for listed range hood without exhaust fire damper per standard 710 and be fabricated in compliance with NFPA-96-2010 and shall bear the National Sanitation Foundation seal of approval

13. Construction: Hood construction shall be all 18-gauge stainless steel type 304 with #4 finish where exposed. All seams on the inner liner shall have grease tight joints. Each canopy shall have a filter housing of the same material as the canopy liner. The outer shell shall be 18-gauge stainless steel, type 304 with #4 finish. Canopy ends shall be double sidewall construction (no single wall hoods permitted). All exterior joints shall be grease tight, ground smooth, and polished to a #4 finish. The canopy shall have an integral exhaust duct collar, sized as shown. The canopy shall have an integral Capture Jet intake grille. (top standard, front optional) Hood shall be installed with hanger rods to structural ceiling, and leveled, by this contractor at least 6'-8" above finished floor to the bottom front edge. The hood system shall be listed to 0" clearance to combustibles on all open sides. Provide 18 or 20 gauge stainless steel closure securely anchored to the hood extending to the finished ceiling.
14. Hood to be equipped with U.L listed exhaust automatic balancing dampers and all necessary components that will be controlled by the Halton M.A.R.V.E.L II controls system.
15. Exhaust Airflow: The exhaust airflow will be based on the convective heat generated by the appliances underneath each canopy. Submittal shall include convective heat calculations based on the input power of the appliance served.
16. Capture Air: Hood shall include an integral Capture Air Jet fan with top intake. Fan shall introduce air into a front plenum where Capture Air Jets are used to increase capture air velocities at all opens sides the hood opening and increase the capture efficiency of the smoke and contaminated air at both the face and sides of the hood. The jets are a part of a special discharge panel introducing a maximum of 10% of the calculated exhaust flow. The air jet discharge velocity will be a minimum of 1500 FPM. Slot or curtain type discharge shall not be used. The airflows through the grease extractors and canopy capture area are to be determined through integral Testing and Balancing ports mounted on the hood. The airflows are to be determined by the pressure vs. airflow curves. Use of Capture Walls to create a seal between cooking equipment and wall shall not be used as they require cooking equipment to be located further from wall reducing isle space. Bottom edge of hood front panels to be square, chamfered front shall not be allowed as they reduce front overhang and jeopardize capture and containment over tall cooking equipment.
17. A manufacturer's representative shall be present at the startup of all systems and witness the testing and balancing. A written startup and installation report shall be submitted by the manufacturer's representative to the client agency and engineer
18. Grease Extraction: The hood shall be equipped with model KSA multi-cyclone stainless steel grease extractors. The grease extraction efficiency is 93% on particles with a diameter of 5 microns and 98% on particles with a diameter of 15 microns or larger, as tested by an independent testing laboratory. The pressure loss over the extractor shall not exceed 0.50" of water at flow rates approved by U.L. for heavy load cooking. Sound levels shall not exceed an NC rating of 55. Baffle of slot type extractors shall not be used.
19. Grease Trough: The filter housing shall be equipped with a concealed drip tray the full length of the canopy and with a grease cup for easy removal and daily cleaning.
20. Ventilator shall be provided with thermostat/fan interlock option as required by the 2006 IMC.
21. Provide and install Halton Patent Pending LED light fixture with the following certifications U.L., CSA, NSF and CE for use in grease exhaust hoods in quantity sufficient to provide 50-foot candles at the cooking surface when hood is mounted 84" A.F.F. Halton LED light fixture is complete with die cast aluminum junction box with integral fins for natural heat dissipation. Input voltage of 24Vdc with a power consumption not to exceed 20-watts. The housing encases 24 LED light emitters with a brightness of 1000-lumens. Lamp body is stainless steel ring with a high temperature silicone seal. Junction box to accept standard ½" NPT fitting. Fixture shall come complete with integral power supply with an input voltage of 108VAC – 305VAC and input frequency of 50/60 Hz. Input current rating shall be 0.57A @ 120VAC. Fixture shall contain no mercury or lead.
22. Fire suppression pre-piping for Ansul R102 shall be provided by the hood manufacturer to conceal all horizontal piping. Exposed fire suppression drops to be chrome sleeved. Fire suppression system to be installed in utility cabinet mounted on end of hood. Fire suppression enclosure to be mounted on end of hood.

23. FSE Contractor is responsible for fit of equipment. Prior to releasing hoods for fabrication, FSE Contractor needs to verify field conditions (existing &/or proposed) and to determine clearances to all structural items, obstructions, etc. The FSE Contractor will coordinate with other trades to confirm that the hood can be mounted as proposed and that the ductwork and final connection can be accommodated without conflict. Failure to perform this step may result in modifications to the exhaust hood at the FSE Contractor's expense.
24. Provide item as specified with all accessories and options or equal as manufactured by Gaylord and Captive-Aire. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8K145.1 HOOD CONTROLS
Quantity: One (1)
Manufacturer: Halton
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Hood Controls
2. Halton M.A.R.V.E.L. II system to service hood item D106. System to interface with hood mounted infrared cooking activity sensors capable of measuring appliance surface temperatures. Infrared sensor will read appliance surface temperature which will be translated by the specific calculation algorithm for that appliance and will respond proactively to any change in cooking status. Infrared sensor and exhaust collar mounted temperature sensor work in concert on differential temperature reading back to the controller. System is capable of operating multiple individual hoods and/or hood sections on a common fan independently of each other. Additionally, the hood mounted ABD damper shall be controlled to adjust automatically based on appliance status to maintain proper airflow from idle to design airflow.
System to also come equipped with utility cabinet and VFD(s), (provided by Mechanical Contractor) to control fan speeds (if specified). The M.A.R.V.E.L. II system shall automatically control the speed of the exhaust fan. System will output a 0-10v proportional signal to the BMS to control make up air fan. Signal is proportional of exhaust 0-100% of design flow.
The system is equipped with a manual override switch on the face of the hood. Normal hood function is automatically regulated based on the appliance status. The integrated PLC will analyze signals from the cooking activity sensors, temperature sensors and pressure transducers mounted in the hood and then send a signal to the ABD damper and VFD to adjust the exhaust fan and supply fan speed to satisfy current cooking load conditions. The system shall be monitored with an internet connected web browser from either a local or remote location. Marvel II Demand Control System shall be provided with a graphical display of the kitchen hood(s) and cooking equipment viewable in real time. Such a model will be accessible thru a broadband connection (installed per specification) and show real time status and function of the exhaust hoods, current exhaust airflow, damper position, duct temperature, space temperature, grease sensor and VFD status. System will include 1 year monitoring service with automated alarm signaling to the client agency or BMS. System will also be accessible by the client agency thru the Web for this one year term.

3. Division 16 will be responsible for wiring between the supplied Halton M.A.R.V.E.L. control panel and the hood mounted sensors. Division 16 will also be responsible for wiring between the Halton M.A.R.V.E.L. control panel and the VFD's and then from the VFD's to the exhaust/supply fan motors. Halton to provide inter-connectivity cables between the hoods and associated control panels. Halton to provide room temperature sensor. Electrician to provide labor to run cables and required control power per submittal drawings.
The Demand Control system shall have the capability to be expanded to deploy additional control and monitoring functions should the facility operator choose to do so post commissioning. The System shall have the capability to be continuously connected via the internet to a Network Operations Center (NOC) operating 24/7/365 for real-time supervision, management, trending, reports and alarms notifications via email and SMS. The Operator shall have the ability to connect to the Demand system console from any Web access device to monitor, configure or manage it.
4. The Demand Control System may be utilized as a single autonomous device, or as a part of a network. The Demand Control System when controlling 4 hoods or more shall be capable of monitoring and controlling up to 3 typical roof top units. The optional expansion of the MARVEL system to include such features but not limited to monitoring building power, monitor a walk in cooler or a walk in freezer, with a total of up to 12 inputs without additional control hardware. Upgrading to Facilities Optimization and Resource Management (FORM) is project specific and outlined in the specifications. The Demand Control System shall support one UART-based serial interface that is jumper selectable to provide an RS-232 or an RS-485 interface to an external device (e.g., power meter), or to an internal daughterboard for supporting another communications interface (e.g., wireless sensor network connection). All of the controllers within the Demand Control System cooperate and share information to optimize the overall energy performance of the facility.
5. Provide item as specified with all accessories and options or equal as manufactured by Gaylord and Captive-Aire. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8K145.2 FIRE PROTECTION SYSTEM
Quantity: One (1)
Manufacturer: Ansul Fire Protection
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Fire Protection System
2. Fire Suppression System shall be furnished and installed by MEC and shall be an automatic wet chemical system equipped with fusible link release and a remote pull box system designed to protect the ventilator plenum, ductwork and cooking equipment, as required. Wet chemical system shall be installed in full compliance with the requirements of Underwriters Laboratories, NFPA Pamphlet #96, Insurance Interests and ventilator manufacturer. Interior piping and nozzles shall be installed in the ventilator to ensure compatibility with the terms of the UL listing
3. Cylinders and remote manual pull box shall be mounted in appropriate approved locations. System shall be complete with mounting brackets, tripping mechanisms, fusible link housings and stainless steel cable. All $\frac{3}{4}$ " connecting pipe and cable conduit from cylinders to ventilator shall be run above the finished ceiling and concealed as much as possible. All exposed pipe, cable, conduit, tees, elbows, detector housings and nozzles shall be stainless steel, chrome plated or sheathed in chrome plated tubing. Wiring to and from the heat detectors shall be furnished and installed by MEC.
4. Activation shall be through: A.) manual activation of push button cabinet OR, B.) manual activation of remote manual pull station OR, C.) automatic action of fusible links or thermostatic detectors located in hood
5. Included in the installation shall be two (2) inspections of the system: one at six month interval and one at a twelve month interval. The responsibility for the complete recharge will be that of the client agency.
6. The Electrical Contractor will furnish and install electrical conduit wiring from cylinder micro-switch to shunt trip breaker for shut-off of electrical service to equipment as required. All equipment under the hood should be on a shunt trip breaker.
7. Gas shut-off valve to be furnished by MEC for up to 3" size and installed in the main gas line by the Plumbing Contractor. Gas shut off valve to be visible and accessible.
8. FSEC to locate manual fire pull stations, coordinate with GC and note on shop drawings. Electrical Contractor to supply recessed octagon junction box at the located fire pull station. Refer to typical detail EXH-1 on Food Service Design documents.
9. Equipment to be NSF and UL300 listed and labeled.
10. Installation to be performed by authorized and licensed dealer only.

ITEM # 8K145.3 FIRE PULL STATION, WALL MOUNT
Quantity: One (1)
Manufacturer: Ansul Fire Protection
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Fire Pull Station, Wall Mount
2. Included in Fire Suppression System item #8K145.2
3. FSEC to verify Manual Fire Pull location with the Fire Marshal prior to installing and confirm if shown location meets AHJ requirements.
4. Refer to Manual Fire Pull Detail EXH-11.

ITEM # 8K145.4 S/S WALL FLASHING, EXHAUST HOOD
Quantity: One (1)
Manufacturer: Halton
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM S/S Wall Flashing, Exhaust Hood
2. Wall Panels are supplied as part of the hood package, item #8K145.
3. Provide item as specified with all accessories and options or equal as manufactured by Gaylord and Captive-Aire. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8K145.5 FIRE EXTINGUISHER
Quantity: One (1)
Manufacturer: Ansul Fire Protection
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Fire Extinguisher
2. Provide K-Guard fire extinguisher and mount on wall at 48" AFF.
3. The K-GUARD fire extinguisher is to be constructed of high-quality materials, including a stainless-steel shell, tube and strainer, and to have an effective discharge range of approximately 10 feet (3.1 m). To feature a "universal" hose and nozzle configuration, along with a valve and tube assembly, for easy maintenance. The extinguisher to contain 1.6 gallons (6 L) of ANSULEX Low pH agent which is gentler on stainless steel appliances and is approved for operation in environments with temperatures from -20 °F to 120 °F (-29 °C to 49 °C). Additionally, bi-lingual pictogram nameplates and bold caution statements help to ensure employees understand how to operate the extinguisher in a fire emergency. The K-GUARD extinguisher is to be warranted for six years from date of delivery to the original end-user purchaser.
4. G.C. to provide blocking in wall.

ITEM # 8K146 COMBI OVEN, ELECTRIC
Quantity: One (1)
Manufacturer: RATIONAL
Model: ICP 20-FULL E

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model ICP 20-FULL E 208/240V 3 PH (LM100GE) (CG1ERRA.0000227) iCombi Pro® 20-Full Size Combi Oven, electric, (20) 18" x 26" sheet pan or (40) 12" x 20" steam pan or (20) 2/1 GN pan capacity, mobile oven rack & (10) stainless steel grids included, intelligent cooking system with (4) assistants; iDensityControl, iCookingSuite, iProductionManager, & iCareSystem, (6) operating modes, (5) cooking methods, (3) manual operating modes, 85° to 572°F temperature range, quick clean, care control, eco mode, 6-point core temperature probe, retractable hand shower, Ethernet interface, Wi-Fi enabled, 208/240v/60/3-ph, 67.9 kW, IPX5, UL, cULus, NSF
2. One (1) 2 years parts and labor, 5 years steam generator warranty
3. One (1) Model CAP Chef Assistance Program, a RATIONAL certified Chef conducts 4 hours/location specialized application training with personnel, no charge
4. One (1) Model 9999.2002 Pre-Installation Site Consultation, provides an installation consultation to ensure the site has proper space and connections for gas, electric, drain & water, one (1) Consultation is needed for every four (4) cooking systems, includes 100 miles (200 miles round trip).
5. One (1) Model 9999.2212 RCI RATIONAL Certified Installation, new certified installation for each gas floor iCombi, 100 miles (200 round-trip) included.

6. One (1) Model 8720.1561US Installation Kit
7. One (1) Model 56.01.535 Active Green Cleaner Tabs, for all iCombi Pro/Classic, 150 pieces/bucket
8. One (1) Model 56.00.562 Care Tabs, bucket of 150 packets for all iCombi Pro/Classic models and SelfCooking Center® units from 10/2008, with CareControl - Serial SG, SH or SI series
9. One (1) Model 60.71.022 Positioning aid for core temperature probe, facilitates the correct placement of the core temperature probe in liquid and in soft or very small products
10. One (1) Model 60.22.490 (Mobile Oven Rack, type 20-full size Pro/Classic, (20) 24" x 20" pan capacity, 2-1/2" spacing
11. One (1) Model 60.75.774 Heat Shield, for right side panel, type 10-full size Pro/Classic
12. (10) Model 6010.2101 Gastronorm Grid Shelf, 2/1 size, 25-5/8" x 20-7/8", stainless steel
13. (10) Model 6015.1103 Gastronorm Perforated Baking Tray, 1/1 size, 12-3/4" x 20-7/8", aluminum with TriLax® coating
14. (10) Model 60.73.314 Diamond & Grill Plate, 1/1 GN
15. (10) Model 60.73.287 Roasting/Baking Pan, "large set", steel carrier plate (1/1 GN) with 2 pans (diameter 10"), TriLax® coating
16. (10) Model 60.71.157 Multibaker, 1/1 GN, 12-3/4" x 20-7/8", 8 molds, TriLax Coating
17. (10) Model 6019.1150 CombiFry Basket, 1/1 GN, 12-3/4" x 20-7/8"
18. (10) Model 6017.1002 Muffin & Timbale moulds, 1/1 GN, 12-3/4" x 20-7/8"
19. (10) Model 20.02.553P Door Gasket, for iCombi 10-full size Classic/Pro & SelfCookingCenter/CombiMaster Plus 102
20. (10) Model 40.05.424P Air Inlet Filter, for iCombi 6-half, 6-full, 10-half, or 10-full size Classic/Pro
21. Water Supply to have shut-off valve and back flow preventer furnished and installed by plumbing contractor.
22. Water supply to be flexible tubing (such as PEX, PE or PP tubing) from water filter system. Do not direct connect without filter system.
23. Floor Sink to be located in steam free zone - not below combi oven.
24. Electrical contractor to provide shunt trip breaker.
25. FSEC required to schedule and provide equipment training with documentation having client agency/operator present.
26. Client Agency/Operator to be signed up with manufacturer's update notification service and instructed how to receive and update software when it is made available.
27. Provide item as specified with all accessories and options or equal as manufactured by Convotherm and Alto-Shaam. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8K146.1 EQUIPMENT STAND, OVEN
Quantity: One (1)
Manufacturer: RATIONAL
Model: 60.22.496

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model 60.22.496 MobilityLine Mobile Base Frame, (4) stainless steel casters with locking brakes, type 20-full size Pro/Classic
2. Provide item as specified with all accessories and options or equal as manufactured by Convotherm and Alto-Shaam. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8K146.2 WATER FILTER SYSTEM, COMBI
Quantity: One (1)
Manufacturer: RATIONAL
Model: 1900.1158US

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model 1900.1158US Water Filtration Double Cartridge System, for full-size Combi-Duos or if used for more than (2) units, includes: (1) double head with pressure gauge, (2) R95-CL filter & (1) filter installation kit (for each additional unit add (1) additional head & additional cartridge. Maximum (4) cartridges)
2. One (1) NOTE: The RATIONAL Water Filtration Systems helps provide consistent high quality water to your RATIONAL SelfCooking Center or your CombiMaster Plus. The patented carbon block technology reduces the effects of sediment, chloramines and chlorine while providing the required flow rates
3. One (1) NOTE: All public water systems using surface water and most ground water systems treat with either chlorine/chloramine or chlorine dioxide (EPA will allow levels as high as 4ppm safe for drinking water, exceeding our maximum level of .2ppm.
4. One (1) NOTE: Chloride concentrations above 80ppm can cause corrosion. RATIONAL Water Filtration does NOT reduce chloride
5. One (1) Model 9999.2271 RCI RATIONAL Certified Installation, additional installation cost for a RATIONAL Water Filter System is available when purchased with Certified Installation of RATIONAL unit
6. Two (2) Model 1900.1155US Water Filtration Cartridge, replacement or add on with additional Modular Head to Double Cartridge System, includes: (1) R95-CL filter
7. Plumbing Contractor to install water filter system in water supply line and furnish and install interconnecting flexible piping (such as PEX, PE or PP tubing) between water filter and equipment water inlet. Water Filter provided by FSEC.
8. FSEC to furnish proper type of stainless steel mounting hardware for wall construction to sustain weight while in use.
9. GC to install wall blocking as required for mounting. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
10. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.
11. Install filter as per elevations on food service drawings.
12. FSEC to provide a sticker and date of installation on filter cartridges.
13. Water filter overflow tube to be extend to nearest floor sink with 1" air gap
14. For more information see filter installation detail MEP-101.
15. Provide item as specified with all accessories and options or equal as manufactured by Everpure and 3M Purification. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8K147 CONVECTION OVEN, ELECTRIC
Quantity: One (1)
Manufacturer: Vulcan
Model: VC44ED

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model VC44ED Convection Oven, electric, double-deck, standard depth, solid state controls, temperature range 150° to 500°F, 60 minute timer with audible alarm per oven, oven cool switch for rapid cool down, independently operated stainless steel doors with double pane windows, porcelain enamel on steel oven interiors, (5) nickel plated racks per oven, stainless steel front, top, sides & 8"H legs, (2) 1/2 HP two speed oven blower-motors, 12 kW each section, NSF, cUL, UL, ENERGY STAR®
2. One (1) 1 year limited parts & labor warranty, standard
3. One (1) (2) 208v/60/3-ph, 70 amps total, standard
4. Two (2) Simultaneous doors, both ovens
5. One (1) Model RACK-1PCNEW Oven rack (1 PC), for VC4, VC5, SG models
6. One (1) Model DRIPPAN-SSDD Drip Pan (per section), stainless steel
7. One (1) Model RACK HANGRV Rack Hanger
8. One (1) Casters, set of (4) in lieu of standard legs
9. One (1) Dormont Model PS (PS) Dormont Safety-Set, equipment placement system for all caster-mounted equipment, allows precise, consistent equipment placement under the fire suppression and ventilation systems, satisfies NFPA codes 17A (5.6.4) and 96 (12.1.2.3), includes two (2) units and hardware pack
10. FSEC required to schedule and provide equipment training with documentation having client agency/operator present.
11. Provide item as specified with all accessories and options or equal as manufactured by Cleveland and Groen. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8K148 SPARE NO.

ITEM # 8K149 FLOOR TROUGH
Quantity: One (1)
Manufacturer: Eagle Group
Model: ASFT-2424-SG

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model ASFT-2424-SG Anti-Splash Floor Trough, 24"W x 24"D, stainless steel subway-style grating, 6" deep trough pan with built-in pitch toward drain, accommodates up to a 4" diameter drain pipe, stainless steel removable perforated basket, all-welded 14/304 stainless steel construction, NSF
2. General Contractor (GC) shall provide floor recess and install floor pan in recess flush with adjacent kitchen floor in a watertight manner.
3. FSEC to provide drawing showing cut-out size and location, in floor, to ensure proper pour path for equipment.
4. FSEC to deliver troughs earlier, as needed, by schedule, to install with in-ground utilities and slab pour, prior to delivery and installation of the rest of the kitchen equipment.
5. For more information see detail FAB-100 on the rough-in sheet/typical detail installation sheet.
6. Provide item as specified with all accessories and options or equal as manufactured by Advance Tabco and John Boos. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8K150 KETTLE CABINET ASSEMBLY, ELECTRIC
Quantity: One (1)
Manufacturer: Cleveland Range
Model: 24EMK624

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model 24EMK624 Kettle/Cabinet Assembly, electric, 24" wide cabinet base, (1) 6-gallon kettle, standard height cabinet, stainless steel interior & exterior finish with 316 series stainless steel liner, includes lift-off cover, double pantry faucet, splash guard, sink & drain, 24 kW
2. One (1) 1-year parts & labor warranty, standard
3. One (1) 5 year pro-rated parts warranty on boilers & steam generators
4. One (1) Performance start-up included at customer request after equipment is installed (Free Water Quality Check included) (contact Cleveland Sales Representative for details)
5. One (1) (VOS1) 208v/60/3-ph, 57.0 amps, standard
6. One (1) Model DTV15CLV Drain Cooling Kit with 1-1/2" Drain, (includes 1-1/4" adapter for T/T steamers)
7. Two (2) Model BS6 Cooking Basket (6 gallons)
8. One (1) Model KBK Kettle Brush Kit, includes clean-up brush, paddle, brush
9. One (1) Model DISSOLVE Descaling Solution, (6) one-gallon containers with quart markings (P/N 106174)
10. Provide item as specified with all accessories and options or equal as manufactured by Cleveland and Vulcan. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8K151 SPARE NO.

ITEM # 8K152 REACH-IN REFRIGERATOR
Quantity: One (1)
Manufacturer: Victory Refrigeration
Model: RS-1D-S1-HC

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model RS-1D-S1-HC UltraSpec™ Series Refrigerator, Powered by V-Core™, Reach-in, one-section, self-contained refrigeration, 21.01 cu. ft. capacity, (1) full height solid hinged door, (3) silver freeze (chrome-style) shelves, stainless steel exterior & interior, standard depth cabinet, TOUCH POINT™ electronic temperature control/indicator, LED lighting, expansion valve technology, Santoprene door gaskets with 2 year warranty, stainless steel breakers, R290 Hydrocarbon refrigerant, 1/3 HP, cULus, UL EPH Classified, UL-Sanitation, MADE IN USA
2. One (1) 7-year parts & labor and 7-year compressor warranty; excludes maintenance items
3. One (1) 115v/60/1-ph, 6.5 amps, with cord & NEMA 5-15P
4. One (1) Door hinging: on left at factory
5. Eighteen (18) Type "A/C" Tray Slide Pair, 1 tray slide set for (1) 18" x 26" or (2) 14" x 18" or (2) 12" x 20" Pans
6. One (1) Front Kick Plate
7. One (1) 6" Casters, in lieu of standard 6" stainless steel legs
8. Provide item as specified with all accessories and options or equal as manufactured by Beverage Air and True. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8K153 SPARE NO.

ITEM # 8K154 BLAST CHILLER/SHOCK FREEZER, ROLL-IN
Quantity: One (1)
Manufacturer: Irinox North America
Model: MULTIFRESH MF 100.2

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model MULTIFRESH MF 100.2 MultiFresh® Blast Chiller/Shock Freezer, Roll-in: 91-3/4 high cabinet, rolling rack capacity (1) single standard universal angle rolling rack sized for 12" x 20" x 2-1/2" steam table pans or 18" x 26" full size sheet pans or combi rack* (pans & racks not included), 220 lbs. blast chill/freeze capacity from finish cooked temperature/194°F to 37°F in approximately 90 minutes or from the finished cooked temperature/194°F to 0°F in approximately 4 hours on average, door hinged left, touch pad controls, (4) standard chilling and freezing cycles, an additional (51) dynamic chef designed, icon-controlled product specific cycles, able to customize and record replicable cycles, favorites menu, WIFI or USB for data transfer to HACCP software, multi-sensor temperature probe, automatic SANIGEN® sanitation system, 304 grade stainless steel construction, 2-1/4" thick insulated floor, IRINOX BALANCE SYSTEM® remote energy efficient air-cooled condensing unit, (6) hp compressor rating, installation not included, R404a, cULus, UL EPH Classified (compliant with NSF standards)
2. One (1) (2) year parts and labor warranty, standard
3. One (1) (5) year compressor warranty, standard
4. One (1) Cabinet: 208v/60/3-ph, 3.4 kW, 10.6 amps, standard
5. One (1) Remote Condensing Unit: 208v/60/3-ph, 12.0 kW, 38.7 amps
6. One (1) Compressor distance MAX 107 ft, standard
7. One (1) RU: Air-cooled remote condensing unit, standard
8. One (1) Front left of cabinet, standard
9. One (1) Standard door hanging (hinge on the right)
10. Provide item as specified with all accessories and options or equal as manufactured by American Panel and Victory. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8K154.1 BUN / SHEET PAN RACK
Quantity: One (1)
Manufacturer: Channel Manufacturing
Model: 401A

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model 401A Bun Pan Rack, All-Welded, Standard Heavy-Duty Series, 20.5"W x 26"D x 70.25"H, Aluminum Construction, End Load, 3" Angle Spacing, (20) 18" x 26" or (40) 13" x 18" pans (2 per shelf), 5" Swivel Plate Casters model # CPS45U, Made in USA, NSF
2. One (1) Lifetime warranty against rust and corrosion
3. One (1) Model /015 Accessories, Pan Stop - Web-Strap
4. Provide item as specified with all accessories and options or equal as manufactured by Eagle Group and Advance Tabco. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8K155 WORK TABLE, STAINLESS STEEL TOP
Quantity: One (1)
Manufacturer: Eagle Group
Model: T3672STEM-BS

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model T3672STEM-BS Spec-Master® Marine Series Work Table, 72"W x 36"D, 4-1/2"H backsplash, 14/300 series stainless steel top, box marine edge on front & sides, Uni-Lok® gusset system, stainless steel crossrails on side & rear, (4) stainless steel legs & adjustable bullet feet, NSF
2. Provide provisions for item #8K155.1, sink, plumbing.
3. Where top abuts any walls, provide side splash.
4. Provide item as specified with all accessories and options or equal as manufactured by Advance Tabco and John Boos. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8K155.1 PREP SINK, WELD-IN
Quantity: One (1)
Manufacturer: Eagle Group
Model: E24

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model E24 Sink, 18" x 20" x 14" bowl, for 30"W tables, complete with faucet & basket drain; sink location per plan.
2. Provide item as specified with all accessories and options or equal as manufactured by Advance Tabco and John Boos. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8K155.2 PANTRY FAUCET
Quantity: One (1)
Manufacturer: T&S Brass
Model: B-0325-CR-WH4

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model B-0325-CR-WH4 Pantry Faucet, double, deck mount, 4" adjustable centers, 5-3/4" swivel gooseneck spout with Series 1 stream regulator outlet (includes lock washer to convert to rigid), 4" wrist action handles, quarter-turn Cerama cartridges with check valves, polished chrome plated brass body, 1/2" NPT female inlets, low lead, cCSAus, ADA Compliant
2. One (1) Model B-0425-KIT Inlet Kit with 24" supply hoses, Nipples, Washer and Locknuts that provide 1/2" NPT male outlet and 3/8" female compression inlet. Certified to ASME A112.18.1/CSA B125.1, NSF 61-Section 9 and NSF 372.
3. One (1) 1 year limited warranty, standard
4. Provide item as specified with all accessories and options or equal as manufactured by Fisher and AllPoints. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8K155.3 DRAIN, LEVER
Quantity: One (1)
Manufacturer: T&S Brass
Model: B-3970

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model B-3970 Waste Valve, lever handle, 3-1/2" sink opening, 2" drain outlet with 1-1/2" adapter
2. Provide item as specified with all accessories and options or equal as manufactured by Fisher and AllPoints. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8K155.4 SHELVING, WALL MOUNTED
Quantity: Two (2)
Manufacturer: Eagle Group
Model: SWS1572-14/3

Furnish and set-in place per manufacturer's standard specifications:

1. Two (2) Model SWS1572-14/3 Snap-n-Slide® Shelf, wall-mounted, 72"W x 15"D, rolled front edge, 1-1/2"H up-turn on sides & rear, stainless steel wall brackets mount to wall studs (no wall backing required), 270 lbs. weight capacity, 14/304 stainless steel construction, NSF
2. Two (2) Model 358115 Divider, 15"W, for Snap-n-Slide wall shelf, 4"H
3. FSEC to furnish proper type of stainless-steel mounting hardware for wall construction to sustain weight while in use.
4. GC to furnish and install blocking in wall, as needed to support fully loaded shelf.
5. FSEC to install shelf approximately 20" above countertop of work surface.
6. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
7. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.
8. Provide item as specified with all accessories and options or equal as manufactured by Advance Tabco and John Boos. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8K155.5 SINK COVER FOR ITEM #8K155.1
Quantity: One (1)
Manufacturer: Eagle Group
Model: 346175

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model 346175 Sink Cover, fits 20" x 18" sink bowl, stainless steel
2. Provide item as specified with all accessories and options or equal as manufactured by Advance Tabco and John Boos. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8K156 SPARE NO.

ITEM # 8K157 PLANETARY MIXER
Quantity: One (1)
Manufacturer: KitchenAid Commercial
Model: KSM8990OB

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model KSM8990OB KitchenAid® Commercial Stand Mixer, countertop, 8 quart bowl with lift, PowerCore® technology, commercial attachment power hub, ASF control panel, stainless steel bowl, dough hook, flat beater, and wire whip, speed control protection, onyx black finish, 500 watts, 1.3 HP, 120v/60/1-ph, 4' cord, cULus, NSF
2. One (1) Two year replacement warranty from date of purchase, extends to the purchaser and any succeeding owner Commercial Immersion Blenders operated in the 50 United States, the District of Columbia, & Canada, standard
3. One (1) Model KSMC8QBOWL KitchenAid® Mixer Bowl, 8 quart capacity, with "J" style handle, polished stainless steel, NSF (for KitchenAid models KSMC895, KSM8990 and KSM7990)
4. One (1) Model KSMC7QDH Spiral Dough Hook, 7 and 8 quart, stainless steel, NSF (dishwasher safe) (for KitchenAid models KSMC895, KSM8990 and KSM7990)
5. One (1) Model KSMC7QEW Elliptical Wire Whisk, 7 and 8 quart, stainless steel, NSF (dishwasher safe) (for KitchenAid models KSMC895, KSM8990 and KSM7990)
6. One (1) Model KSMC7QFB Flat Beater, 7 and 8 quart, stainless steel, NSF (dishwasher safe) (for KitchenAid models KSMC895, KSM8990 and KSM7990)
7. One (1) Model KSMPB7SSC Pastery Beater, 7 and 8 quart, stainless steel, NSF (dishwasher safe) (for KitchenAid models KSMC895, KSM8990 and KSM7990)
8. Provide item as specified with all accessories and options or equal as manufactured by Hatco and Globe. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8K158 PLANETARY MIXER
Quantity: One (1)
Manufacturer: Hobart
Model: HL300-1STD

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model HL300-1STD 200-240/50/60/3 Mixer; with bowl, beater, & "D" whip; US/EXP configuration - Legacy Planetary Mixer, 3/4 hp, 30 quart capacity, (3) fixed speeds, gear-driven transmission, 15-Minute SmartTimer™, #12 taper attachment hub, manual bowl lift, bowl guard, stainless steel bowl, "B" beater, "D" whip
2. One (1) Standard warranty: 1-Year parts, labor & travel time during normal working hours within the USA
3. One (1) Model BOWL-HL30 Legacy® Mixer Bowl, 30-quart, stainless steel
4. One (1) Model BBEATER-HL4030 Legacy® Mixer 30/40 quart, "B" flat beater, aluminum
5. One (1) Model SCRAPER-HL30 Bowl Scraper for 30-quart bowl
6. One (1) Model SPLASH-LEX030 Mixer Bowl Splash Cover, for 3- quart, Lexan
7. One (1) Model CHUTE-HL4030 Ingredient chute, 30/40 qt.
8. One (1) Model TRUCK-HL4030 Legacy® Mixer Bowl Truck, aluminum, for 30- & 40-quart mixers
9. Provide item as specified with all accessories and options or equal as manufactured by Globe and Waring. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8K159 SALAD / VEGETABLE DRYER, ELECTRIC
Quantity: One (1)
Manufacturer: Electrolux Professional
Model: 602258

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model 602258 Greens Machine Vegetable Dryer, floor model, 20-gallon capacity, approximately 16 heads of chopped lettuce, adjustable on/off timer, stainless steel outer shell, stainless steel drum, includes basket (653788), casters, 1/2 HP, 115v/60/1-ph, 0.37kW, 2.7 amps, NEMA 5-15P, cETLus, ETL-Sanitation
2. One (1) One year labor, 2-year parts warranty
3. Provide item as specified with all accessories and options or equal as manufactured by Hobart and Delfield. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8K160 TWO (2) COMPARTMENT SINK
Quantity: One (1)
Manufacturer: Eagle Group
Model: FN2040-2-30-14/3

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model FN2040-2-30-14/3 Spec-Master® FN Series Sink, two compartment, 104"W x 27"D, 14/304 stainless steel top, coved corners, 20" x 20" x 14" deep compartments, 30" drainboards on left & right, 9-1/2"H backsplash with 1" upturn & tile edge, 8" OC splash mount faucet holes, rolled edges on front & sides, includes 3-1/2" basket drains, stainless steel crossbracing on all sides, stainless steel legs & adjustable bullet feet, NSF
2. Vendor to provide Chemical Sanitizing Agent System (Pre-Wash, Rinse, Sanitize). Sinks should be clearly labeled showing water lines and cleaning stage.
3. Where top abuts any walls, provide side splash.
4. Provide item as specified with all accessories and options or equal as manufactured by Advance Tabco and John Boos. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8K160.1 PRE-RINSE FAUCET ASSEMBLY
Quantity: One (1)
Manufacturer: T&S Brass
Model: B-0133-CR-VBJSK

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model B-0133-CR-VBJSK EasyInstall Prerinse Unit, 8" wall mount mixing faucet with polished chrome plated brass body, 18" riser, 44" flexible stainless steel hose with heat resistant handle and swivel, 1.07 GPM spray valve, ceramic cartridges with check valves, lever handles, installation kit with 1/2" NPT male inlets, 6" adjustable wall bracket, spray valve holder and overhead spring. Certified to ASME A112.18.1/CSA B125.1, NSF 61-Section 9 and NSF 372. 2019 DOE PRSV - Class II compliant.
2. Provide blocking in wall to support pre-rinse bracket mounting. Blocking to be provided by GC.
3. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.
4. Provide item as specified with all accessories and options or equal as manufactured by Fisher and AllPoints. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8K160.2 ADD ON FAUCET, FOR PRE RINSE FAUCET
Quantity: One (1)
Manufacturer: T&S Brass
Model: B-0156-CR

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model B-0156-CR Add-on Faucet, ceramic cartridge, 12" swing nozzle
2. Provide item as specified with all accessories and options or equal as manufactured by Fisher and AllPoints. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8K160.3 DRAIN, LEVER
Quantity: Two (2)
Manufacturer: T&S Brass
Model: B-3970

Furnish and set-in place per manufacturer's standard specifications:

1. Two (2) Model B-3970 Waste Valve, lever handle, 3-1/2" sink opening, 2" drain outlet with 1-1/2" adapter
2. Provide item as specified with all accessories and options or equal as manufactured by Fisher and AllPoints. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8K160.4 SMART WALL SYSTEM
Quantity: One (1)
Manufacturer: Metro
Model: G3 LOT

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model G3 LOT Smart Wall System
2. Two (2) Model SW40K3 SmartWall Wall Track, 40", 12 gauge steel, Metroseal 3™ epoxy-coated corrosion-resistant finish with Microban® antimicrobial protection; includes: hardware to join the track to another, NSF
3. Two (2) Model WG2436K3 SmartWall Wire Grid, 36" x 24", Metroseal 3™ epoxy-coated corrosion-resistant finish with Microban® antimicrobial protection; brackets not included, NSF
4. Four (4) Model SWU30K3 SmartWall Upright, 30", Metroseal 3™ epoxy-coated corrosion-resistant finish with Microban® antimicrobial protection, slots for grids/shelf supports at 1-1/2" increments; 17 slots total; sold by the piece
5. Two (2) Model MX1836F MetroMax® i Shelf, 36"W x 18"D, reinforced type 304 stainless steel corners, removable one-piece solid polymer shelf mat, (4) wedge connectors, built in Microban® antimicrobial product protection, 1000 lb. capacity per shelf, NSF
6. Four (4) Model SWS18K3 SmartWall Shelf Support, single, for 18" deep shelf, Metroseal 3™ epoxy-coated corrosion-resistant finish with Microban® antimicrobial protection, actual dimensions (DxWxH 20-9/16" x 1-1/2" x 8-3/16"); compatible with Super Erecta® wire & solid shelves, MetroMax® Q, & MetroMax® i; (2) required per shelf
7. Six (6) Model H210K3 SmartWall Storage Basket, 17-3/8"W x 7-1/2"D x 5"H, Metroseal 3™ epoxy-coated corrosion-resistant finish with Microban® antimicrobial protection, NSF
8. Six (6) Model IWA-12K3 SmartWall Large Utensil Holder, 10-3/8"W x 10-1/2"D, Metroseal 3™ epoxy-coated corrosion-resistant finish with Microban® antimicrobial protectionepoxy finish
9. FSEC to furnish proper type of stainless-steel mounting hardware for wall construction to sustain weight while in use.
10. GC to furnish and install blocking in wall, as needed to support fully loaded shelf.
11. FSEC to install shelf approximately 20" above countertop of work surface.
12. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
13. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.
14. Provide item as specified with all accessories and options or equal as manufactured by Eagle Group and Quantum. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8K160.5 SINK COVER FOR ITEM #8K160
Quantity: Two (2)
Manufacturer: Eagle Group
Model: 305428

Furnish and set-in place per manufacturer's standard specifications:

1. Two (2) Model 305428 Sink Cover, fits 20" x 20" sink bowl, stainless steel
2. Provide item as specified with all accessories and options or equal as manufactured by Advance Tabco and John Boos. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8K161 WALL MOUNTED HAND SINK
Quantity: One (1)
Manufacturer: Eagle Group
Model: YSCOPOS-HSA-0001-00

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model YSCOPOS-HSA-0001-00 Hand Sink, wall mount, 13-1/2" wide x 9-3/4" front-to-back x 6-3/4" deep bowl with MicroGard™ antimicrobial finish, single faucet hole for T&S EC-3101-HG by others, 304 stainless steel construction, basket drain, tubular wall support & brackets, inverted "V" edge, NSF
2. FSEC to be responsible for providing and installing hollow masonry anchors and any other appropriate hardware to support Hand Sink on wall.
3. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
4. GC to furnish and install blocking in wall, as needed to support Hand Sink.
5. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.
6. Refer to MEP-103 hand sink details for additional requirements and provisions.
7. Equipment to be NSF and UL listed and labeled.
8. To be provided with T&S Brass Faucet, item #8K161.1
9. Client agency to provide towel & soap dispenser.
10. Provide item as specified with all accessories and options or equal as manufactured by Advance Tabco and John Boos. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8K161.1 ELECTRONIC FAUCET W/ HYDRO-GENERATOR
Quantity: One (1)
Manufacturer: T&S Brass
Model: EC-3101-HG

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model EC-3101-HG ChekPoint™ Electronic Faucet, wall mount, rigid gooseneck with vandal resistant aerator , AC/DC control module, mixing tee, with hydro-generator power supply, includes optional 100-240 VAC adapter
2. Unit is specified and provided with Hydro Generator; no receptacle is needed to power the electronic sensor.
3. Provide item as specified with all accessories and options or equal as manufactured by Fisher and AllPoints. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8K162 SPARE NO.

ITEM # 8K163 COMBI OVEN, ELECTRIC
Quantity: Two (2)
Manufacturer: RATIONAL
Model: ICP 6-FULL E 208/240 3PH AD-QS

Furnish and set-in place per manufacturer's standard specifications:

1. Two (2) Model ICP 6-FULL E 208/240 3PH AD-QS (Quick Ship) (CC1ERRA.0011976) iCombi Pro® 6-Full Size Combi Oven, electric, (6) 18" x 26" sheet pan or (12) 12" x 20" steam pan or (6) 2/1 GN pan capacity, (3) stainless steel grids included, intelligent cooking system with (4) assistants; iDensityControl, iCookingSuite, iProductionManager, & iCareSystem AutoDose, (6) operating modes, (5) cooking methods, (3) manual operating modes, 85° to 572°F temperature range, quick clean, care control, eco mode, 6-point core temperature probe, retractable hand shower, Ethernet interface, Wi-Fi enabled, 208/240v/60/3-ph, 22.4 kW, CE, IPX5, UL, cULus, NSF, ENERGY STAR-®
2. Two (2) NOTE: All discounts subject to approval by manufacturer
3. Two (2) Model ICARESYSTEM AUTODOSE iCareSystem AutoDose, Integrated autonomous cleaning and storage system for iCombi Pro tabletop units. Uses RATIONAL Active Green and Care cartridges
4. Two (2) 2 years parts and labor, 5 years steam generator warranty
5. Two (2) Model CAP Chef Assistance Program, a RATIONAL certified Chef conducts 4 hours/location specialized application training with personnel, no charge
6. One (1) Model 9999.2252 RCI RATIONAL Certified Installation, new certified installation for each table-top iCombi of a combi-duo, 100 miles (200 round-trip) included.
7. One (1) Model 9999.2002 Pre-Installation Site Consultation, provides an installation consultation to ensure the site has proper space and connections for gas, electric, drain & water, one (1) Consultation is needed for every four (4) cooking systems, includes 100 miles (200 miles round trip).
8. Two (2) Model 9999.2110 Commissioning -one (1) gas iCombi - the operational function test and gas flue analysis when not completed at time of RATIONAL certified installation.
9. Two (2) Model 8720.1560US Installation Kit, for gas iCombi/SCC/CMP 101G (120/60/1ph); gas iCombi/SCC/CMP 62G (208-240/60/1ph); gas iCombi/SCC/CMP 61G (120/60/1ph)
10. Two (2) Model 56.01.535 Active Green Cleaner Tabs, for all iCombi Pro/Classic, 150 pieces/bucket
11. Two (2) Model 56.00.562 Care Tabs, bucket of 150 packets for all iCombi Pro/Classic models and SelfCooking Center® units from 10/2008, with CareControl - Serial SG, SH or SI series
12. One (1) Model 60.75.752 Combi-Duo Universal Stacking Kit, for iCombi 6-half size or 6-full size (electric or gas) on iCombi 6-full size (gas only)
13. One (1) Model 9999.2262 RCI RATIONAL Certified Installation, for Universal Stacking kit at the time of Certified Unit Installation. Not needed for iCombi-Duo. Universal Stacking kit allows for using the top surface for items up to 551 lb.
14. Two (2) Safety Door Lock, prevents rapid door opening, requires 2-step pressing of door handle
15. Two (2) Model 60.71.022 Positioning aid for core temperature probe, facilitates the correct placement of the core temperature probe in liquid and in soft or very small products
16. Two (2) Model 60.75.769 Heat Shield, for left side panel, type 6-full size Pro/Classic
17. Two (2) Model 60.62.168 Hinging Rack, type 6-full size Pro/Classic, (7) 24" x 20" pan capacity, 2-1/2" spacing
18. Two (2) Model 6013.1103 Gastronorm Baking Tray, 1/1 GN, 12-3/4" x 20-7/8", aluminum with Trilax coating
19. Two (2) Model 60.73.314 Diamond & Grill Plate, 1/1 GN
20. Two (2) Model 60.71.617 Grilling & Searing Plate, 1/1 size, 12-3/4" x 20-7/8" (the continuous lip at the back makes it ideal for roasting food that is likely to give off fat or liquid, coated with TriLax coating)
21. Two (2) Model 60.73.286 Roasting/Baking Pan, "small set", steel carrier plate (1/1 GN) with 4 pans (diameter 6-1/4"), TriLax® coating
22. Two (2) Model 60.73.287 Roasting/Baking Pan, "large set", steel carrier plate (1/1 GN) with 2 pans (diameter 10"), TriLax® coating

23. Two (2) Model 6019.1150 CombiFry Basket, 1/1 GN, 12-3/4" x 20-7/8"
24. Two (2) Model 20.02.551P Door Gasket, for iCombi 6-full size Classic/Pro & SelfCookingCenter/CombiMaster Plus 62
25. Water Supply to have shut-off valve and back flow preventer furnished and installed by plumbing contractor.
26. Water supply to be flexible tubing (such as PEX, PE or PP tubing) from water filter system. Do not direct connect without filter system.
27. Floor Sink to be located in steam free zone - not below combi oven.
28. Electrical contractor to provide shunt trip breaker.
29. FSEC required to schedule and provide equipment training with documentation having client agency/operator present.
30. Client Agency/Operator to be signed up with manufacturer's update notification service and instructed how to receive and update software when it is made available.
31. Provide item as specified with all accessories and options or equal as manufactured by Convotherm and Alto-Shaam. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8K163.1	EQUIPMENT STAND, COMBI
Quantity:	One (1)
Manufacturer:	RATIONAL
Model:	60.31.204

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model 60.31.204 Stand I for Combi-Duo, mobile, 7-3/4"H, all sides open, stainless steel construction, height adjustable casters, for iCombi 6-full size on 6-full size
2. One (1) Model 87.00.732US Safety-Set, Equipment placement system for all casters-mounted equipment, allows precise, consistent equipment placement for drain lines to floor sinks and under the fire suppression in ventilation systems, satisfies NFPA codes 17A (5.6.4) and 96 (12.1.2.3), includes tow (2) pieces and installation pack.
3. Two (2) Model 9999.2262 RCI RATIONAL Certified Installation, for Universal Stacking kit at the time of Certified Unit Installation. Not needed for iCombi-Duo. Universal Stacking kit allows for using the top surface for items up to 551 lb.
4. Provide item as specified with all accessories and options or equal as manufactured by Convotherm and Alto-Shaam. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8K163.2 WATER FILTER SYSTEM, COMBI
Quantity: One (1)
Manufacturer: RATIONAL
Model: 1900.1158US

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model 1900.1158US Water Filtration Double Cartridge System, for full-size Combi-Duos or if used for more than (2) units, includes: (1) double head with pressure gauge, (2) R95H filter & (1) filter installation kit (for each additional unit add (1) additional head & additional cartridge. Maximum (4) cartridges)
2. One (1) NOTE: The RATIONAL Water Filtration Systems helps provide consistent high quality water to your RATIONAL SelfCooking Center or your CombiMaster Plus. The patented carbon block technology reduces the effects of sediment, chloramines and chlorine while providing the required flow rates
3. One (1) NOTE: All public water systems using surface water and most ground water systems treat with either chlorine/chloramine or chlorine dioxide (EPA will allow levels as high as 4ppm safe for drinking water, exceeding our maximum level of .2ppm.
4. One (1) NOTE: Chloride concentrations above 80ppm can cause corrosion. RATIONAL Water Filtration does NOT reduce chloride
5. One (1) Model 9999.2271 RCI RATIONAL Certified Installation, additional installation cost for a RATIONAL Water Filter System is available when purchased with Certified Installation of RATIONAL unit
6. Two (2) Model 1900.1155US Water Filtration Cartridge, replacement or add on with additional Modular Head to Double Cartridge System, includes: (1) R95HF filter
7. Plumbing Contractor to install water filter system in water supply line and furnish and install interconnecting flexible piping (such as PEX, PE or PP tubing) between water filter and equipment water inlet. Water Filter provided by FSEC.
8. FSEC to furnish proper type of stainless steel mounting hardware for wall construction to sustain weight while in use.
9. GC to install wall blocking as required for mounting. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
10. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.
11. Install filter as per elevations on food service drawings.
12. FSEC to provide a sticker and date of installation on filter cartridges.
13. Water filter overflow tube to be extend to nearest floor sink with 1" air gap
14. For more information see filter installation detail MEP-101.
15. Provide item as specified with all accessories and options or equal as manufactured by Everpure and 3M Purification. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8K164 HD RANGE, 36", 6 COIL BURNERS
Quantity: One (1)
Manufacturer: Garland
Model: 36ER33

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model 36ER33 36E Series Heavy Duty Range, electric, 36", (6) coil elements, standard oven, 4-position rack glides, (1) rack, 3" high vent riser, stainless steel front, sides & front rail, 6" legs, 19.1kW, cCSAus, NSF (Garland)
2. One (1) One year limited parts and labor warranty, covers products purchased and installed in the USA only, standard
3. One (1) 208v/60/1-ph, 92 amps, standard
4. One (1) Extra Oven Rack, for full size ovens
5. One (1) Model PCASTPC-36E Swivel casters, polyurethane wheels (non-marking)
6. One (1) Dormont Model PS (PS) Dormont Safety-Set, equipment placement system for all caster-mounted equipment, allows precise, consistent equipment placement under the fire suppression and ventilation systems, satisfies NFPA codes 17A (5.6.4) and 96 (12.1.2.3), includes two (2) units and hardware pack
7. Provide item as specified with all accessories and options or equal as manufactured by Vulcan and Imperial Range. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8K165 EQUIPMENT STAND, REFRIGERATED BASE
Quantity: One (1)
Manufacturer: Victory Refrigeration
Model: CBR72HC

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CBR72HC Chef Base Refrigerator, Powered by V-Core™, two-section, 72"W, self-contained, 14.51 cu. ft. capacity, (4) drawers (upper drawers accommodates (2) 12" x 20" x 6" pans per drawer & lower drawers accommodates (2) 12" x 20" x 6" pans per drawer - not included), full electronic control, stainless steel exterior (galvanized back & bottom), aluminum interior, magnetic gaskets with 2 year warranty, side mounted self-contained refrigeration system, R290 hydrocarbon refrigerant, 1/3 HP, cULus, UL EPH Classified, UL-Sanitation, MADE IN USA
2. One (1) 7-year parts & labor and 7-year compressor warranty; excludes maintenance items
3. One (1) 115v/60/1-ph, 5.0 amps, cord with NEMA 5-15P
4. One (1) Compressor located on right, standard
5. One (1) Marine edge, standard
6. One (1) Drawer locks on all drawers, per unit
7. One (1) Model 00C31S074A 3" Casters, plate (3 braked), for CBF & CBR series (set of 6), standard
8. Provide item as specified with all accessories and options or equal as manufactured by Beverage Air and True. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8K166 CHARBROILER, ELECTRIC, COUNTERTOP
Quantity: One (1)
Manufacturer: Wells (Middleby)
Model: B-50

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model B-50 Charbroiler, countertop, electric, 4" high legs, cast iron grate, 36" wide, stainless-steel construction, with grease pan and scraper/brush, UL, CE
2. One (1) Note: Must specify voltage and phase
3. One (1) One year warranty on cast iron grates, burners & burner shields, standard
4. One (1) 208v/60/3-ph, 10.8 kW, 30.0 amps, standard
5. Provide item as specified with all accessories and options or equal as manufactured by Garland and Vollrath. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8K167 GRIDDLE, ELECTRIC, COUNTERTOP
Quantity: One (1)
Manufacturer: Vulcan
Model: RRE36E

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model RRE36E Rapid Recovery™ Heavy Duty Griddle, electric, countertop, 36" W x 24" D cooking surface, 3/4" thick composite griddle plate with stainless steel cooking surface, bottom mounted snap action thermostat every 12", stainless steel front, sides, front top ledge, front grease trough, 4" back & tapered side splashes, 4" adjustable legs, cCSAus, NSF
2. One (1) 1-year limited parts & labor warranty, standard
3. One (1) 208v/60/3-ph, 45.0amps, 16.2kW, standard
4. Provide item as specified with all accessories and options or equal as manufactured by Garland and Vollrath. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8K168 EXHAUST HOOD
Quantity: One (1)
Manufacturer: Halton
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Exhaust Hood
2. Refer to sheet QF-X700 - QF-X711 for Halton engineering drawings for size and shape of each ventilator, CFM requirements and additional construction information.
3. Provide Halton Company, Scottsville, KY. Capture Jet wall type exhaust canopy hood. Hood capture area shall have sufficient inside dimensions, front to back to ensure proper overhang for equipment shown.
4. Unit to be listed to U.L. 710 standards, wall mounted exhaust hood of size and shape as shown on plan. Hood heights not to exceed 24", mounted 6'-8" AFF. Canopy hood shall be designed specifically for the cooking equipment being covered.
5. Hood shall provide provisions for the M.A.R.V.E.L II Demand Control System. This includes Infrared Radiation Index Sensors (IRIS Sensors), duct temperature thermostat, pressure transducer, controller and Automated Balancing Damper (ABD Damper) at each exhaust duct. There shall also be an "Override" panel mounted to the face of each individual hood. There shall be one common control panel for MARVEL. The M.A.R.V.E.L II system shall come with a HMI color touch screen capable of monitoring parameters including but not limited, hood status (off, idle, cooking), real time airflow monitoring, exhaust temperature, damper position and energy savings. HMI will indicate any current faults that need operator attention. Some features are password protected for security purposes. HMI touch screen to be housed in stainless steel surface mounted control box.
6. Listed manufacturers and manufacturers requesting approval as equals must apply for permission to do so, in writing from the office of the consultant. Application must be received by the consultant at least 10 working days prior to bid date. Any alternate system must meet construction and performance requirements and efficiencies as outlined in this specification. Requests for approval must include:
 7. Grease filtration performance data (micron size vs. extraction), pressure loss curve for exhaust airflow
 8. Efficiency comparison data to be performed in accordance with ASTM standard F1704-96 and include results for exhaust rate for capture and containment of convective plume, temperature rise of exhaust air and heat gain to the space (kBtu/h). The data in these reports should not be used as the basis for design exhaust rates and specifications.
 9. Provide stainless steel ceiling make up air plenum with 10% open perforated panels. Make up air will be calculated so that the same amount of air will be taken from the zone as is required by the specified system. Any additional load cannot be placed on the kitchen HVAC system
 10. Manufacturer must provide a written guarantee of performance, ensuring the specifying engineer that the system will perform to the engineer's satisfaction when installed and balanced according to design airflows and be consistent with ASTM standard F1704-96 test results (as determined by TAB ports and pressure vs. airflow curves).
 11. Engineer/Consultant reserves the right to reject any system which is not consistent with results of ASTM standard F1704-96 testing wherein the original hood configuration (height increases, rear seals, etc.) are deleted from substitution request and would result in additional heat gain being rejected . Contractor would be required to replace at contractor's expense.
 12. The canopy shall bear the ETL, US/Canada, for listed range hood without exhaust fire damper per standard 710 and be fabricated in compliance with NFPA-96-2010 and shall bear the National Sanitation Foundation seal of approval

13. Construction: Hood construction shall be all 18-gauge stainless steel type 304 with #4 finish where exposed. All seams on the inner liner shall have grease tight joints. Each canopy shall have a filter housing of the same material as the canopy liner. The outer shell shall be 18-gauge stainless steel, type 304 with #4 finish. Canopy ends shall be double sidewall construction (no single wall hoods permitted). All exterior joints shall be grease tight, ground smooth, and polished to a #4 finish. The canopy shall have an integral exhaust duct collar, sized as shown. The canopy shall have an integral Capture Jet intake grille. (top standard, front optional) Hood shall be installed with hanger rods to structural ceiling, and leveled, by this contractor at least 6'-8" above finished floor to the bottom front edge. The hood system shall be listed to 0" clearance to combustibles on all open sides. Provide 18 or 20 gauge stainless steel closure securely anchored to the hood extending to the finished ceiling.
14. Hood to be equipped with U.L listed exhaust automatic balancing dampers and all necessary components that will be controlled by the Halton M.A.R.V.E.L II controls system.
15. Exhaust Airflow: The exhaust airflow will be based on the convective heat generated by the appliances underneath each canopy. Submittal shall include convective heat calculations based on the input power of the appliance served.
16. Capture Air: Hood shall include an integral Capture Air Jet fan with top intake. Fan shall introduce air into a front plenum where Capture Air Jets are used to increase capture air velocities at all opens sides the hood opening and increase the capture efficiency of the smoke and contaminated air at both the face and sides of the hood. The jets are a part of a special discharge panel introducing a maximum of 10% of the calculated exhaust flow. The air jet discharge velocity will be a minimum of 1500 FPM. Slot or curtain type discharge shall not be used. The airflows through the grease extractors and canopy capture area are to be determined through integral Testing and Balancing ports mounted on the hood. The airflows are to be determined by the pressure vs. airflow curves. Use of Capture Walls to create a seal between cooking equipment and wall shall not be used as they require cooking equipment to be located further from wall reducing isle space. Bottom edge of hood front panels to be square, chamfered front shall not be allowed as they reduce front overhang and jeopardize capture and containment over tall cooking equipment.
17. A manufacturer's representative shall be present at the startup of all systems and witness the testing and balancing. A written startup and installation report shall be submitted by the manufacturer's representative to the client agency and engineer
18. Grease Extraction: The hood shall be equipped with model KSA multi-cyclone stainless steel grease extractors. The grease extraction efficiency is 93% on particles with a diameter of 5 microns and 98% on particles with a diameter of 15 microns or larger, as tested by an independent testing laboratory. The pressure loss over the extractor shall not exceed 0.50" of water at flow rates approved by U.L. for heavy load cooking. Sound levels shall not exceed an NC rating of 55. Baffle of slot type extractors shall not be used.
19. Grease Trough: The filter housing shall be equipped with a concealed drip tray the full length of the canopy and with a grease cup for easy removal and daily cleaning.
20. Ventilator shall be provided with thermostat/fan interlock option as required by the 2006 IMC.
21. Provide and install Halton Patent Pending LED light fixture with the following certifications U.L., CSA, NSF and CE for use in grease exhaust hoods in quantity sufficient to provide 50-foot candles at the cooking surface when hood is mounted 84" A.F.F. Halton LED light fixture is complete with die cast aluminum junction box with integral fins for natural heat dissipation. Input voltage of 24Vdc with a power consumption not to exceed 20-watts. The housing encases 24 LED light emitters with a brightness of 1000-lumens. Lamp body is stainless steel ring with a high temperature silicone seal. Junction box to accept standard ½" NPT fitting. Fixture shall come complete with integral power supply with an input voltage of 108VAC – 305VAC and input frequency of 50/60 Hz. Input current rating shall be 0.57A @ 120VAC. Fixture shall contain no mercury or lead.
22. Fire suppression pre-piping for Ansul R102 shall be provided by the hood manufacturer to conceal all horizontal piping. Exposed fire suppression drops to be chrome sleeved. Fire suppression system to be installed in utility cabinet mounted on end of hood. Fire suppression enclosure to be mounted on end of hood.

23. FSE Contractor is responsible for fit of equipment. Prior to releasing hoods for fabrication, FSE Contractor needs to verify field conditions (existing &/or proposed) and to determine clearances to all structural items, obstructions, etc. The FSE Contractor will coordinate with other trades to confirm that the hood can be mounted as proposed and that the ductwork and final connection can be accommodated without conflict. Failure to perform this step may result in modifications to the exhaust hood at the FSE Contractor's expense.
24. Provide item as specified with all accessories and options or equal as manufactured by Gaylord and Captive-Aire. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8K168.1 HOOD CONTROLS
Quantity: One (1)
Manufacturer: Halton
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Hood Controls
2. Halton M.A.R.V.E.L. II system to service hood item D106. System to interface with hood mounted infrared cooking activity sensors capable of measuring appliance surface temperatures. Infrared sensor will read appliance surface temperature which will be translated by the specific calculation algorithm for that appliance and will respond proactively to any change in cooking status. Infrared sensor and exhaust collar mounted temperature sensor work in concert on differential temperature reading back to the controller. System is capable of operating multiple individual hoods and/or hood sections on a common fan independently of each other. Additionally, the hood mounted ABD damper shall be controlled to adjust automatically based on appliance status to maintain proper airflow from idle to design airflow.
System to also come equipped with utility cabinet and VFD(s), (provided by Mechanical Contractor) to control fan speeds (if specified). The M.A.R.V.E.L. II system shall automatically control the speed of the exhaust fan. System will output a 0-10v proportional signal to the BMS to control make up air fan. Signal is proportional of exhaust 0-100% of design flow.
The system is equipped with a manual override switch on the face of the hood. Normal hood function is automatically regulated based on the appliance status. The integrated PLC will analyze signals from the cooking activity sensors, temperature sensors and pressure transducers mounted in the hood and then send a signal to the ABD damper and VFD to adjust the exhaust fan and supply fan speed to satisfy current cooking load conditions. The system shall be monitored with an internet connected web browser from either a local or remote location. Marvel II Demand Control System shall be provided with a graphical display of the kitchen hood(s) and cooking equipment viewable in real time. Such a model will be accessible thru a broadband connection (installed per specification) and show real time status and function of the exhaust hoods, current exhaust airflow, damper position, duct temperature, space temperature, grease sensor and VFD status. System will include 1 year monitoring service with automated alarm signaling to the client agency or BMS. System will also be accessible by the client agency thru the Web for this one year term.

3. Division 16 will be responsible for wiring between the supplied Halton M.A.R.V.E.L. control panel and the hood mounted sensors. Division 16 will also be responsible for wiring between the Halton M.A.R.V.E.L. control panel and the VFD's and then from the VFD's to the exhaust/supply fan motors. Halton to provide inter-connectivity cables between the hoods and associated control panels. Halton to provide room temperature sensor. Electrician to provide labor to run cables and required control power per submittal drawings.
The Demand Control system shall have the capability to be expanded to deploy additional control and monitoring functions should the facility operator choose to do so post commissioning. The System shall have the capability to be continuously connected via the internet to a Network Operations Center (NOC) operating 24/7/365 for real-time supervision, management, trending, reports and alarms notifications via email and SMS. The Operator shall have the ability to connect to the Demand system console from any Web access device to monitor, configure or manage it.
4. The Demand Control System may be utilized as a single autonomous device, or as a part of a network. The Demand Control System when controlling 4 hoods or more shall be capable of monitoring and controlling up to 3 typical roof top units. The optional expansion of the MARVEL system to include such features but not limited to monitoring building power, monitor a walk in cooler or a walk in freezer, with a total of up to 12 inputs without additional control hardware. Upgrading to Facilities Optimization and Resource Management (FORM) is project specific and outlined in the specifications. The Demand Control System shall support one UART-based serial interface that is jumper selectable to provide an RS-232 or an RS-485 interface to an external device (e.g., power meter), or to an internal daughterboard for supporting another communications interface (e.g., wireless sensor network connection). All of the controllers within the Demand Control System cooperate and share information to optimize the overall energy performance of the facility.
5. Provide item as specified with all accessories and options or equal as manufactured by Gaylord and Captive-Aire. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8K168.2 FIRE PROTECTION SYSTEM
Quantity: One (1)
Manufacturer: Ansul Fire Protection
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Fire Protection System
2. Fire Suppression System shall be furnished and installed by MEC and shall be an automatic wet chemical system equipped with fusible link release and a remote pull box system designed to protect the ventilator plenum, ductwork and cooking equipment, as required. Wet chemical system shall be installed in full compliance with the requirements of Underwriters Laboratories, NFPA Pamphlet #96, Insurance Interests and ventilator manufacturer. Interior piping and nozzles shall be installed in the ventilator to ensure compatibility with the terms of the UL listing
3. Cylinders and remote manual pull box shall be mounted in appropriate approved locations. System shall be complete with mounting brackets, tripping mechanisms, fusible link housings and stainless steel cable. All $\frac{3}{4}$ " connecting pipe and cable conduit from cylinders to ventilator shall be run above the finished ceiling and concealed as much as possible. All exposed pipe, cable, conduit, tees, elbows, detector housings and nozzles shall be stainless steel, chrome plated or sheathed in chrome plated tubing. Wiring to and from the heat detectors shall be furnished and installed by MEC.
4. Activation shall be through: A.) manual activation of push button cabinet OR, B.) manual activation of remote manual pull station OR, C.) automatic action of fusible links or thermostatic detectors located in hood
5. Included in the installation shall be two (2) inspections of the system: one at six month interval and one at a twelve month interval. The responsibility for the complete recharge will be that of the client agency.
6. The Electrical Contractor will furnish and install electrical conduit wiring from cylinder micro-switch to shunt trip breaker for shut-off of electrical service to equipment as required. All equipment under the hood should be on a shunt trip breaker.
7. Gas shut-off valve to be furnished by MEC for up to 3" size and installed in the main gas line by the Plumbing Contractor. Gas shut off valve to be visible and accessible.
8. FSEC to locate manual fire pull stations, coordinate with GC and note on shop drawings. Electrical Contractor to supply recessed octagon junction box at the located fire pull station. Refer to typical detail EXH-1 on Food Service Design documents.
9. Equipment to be NSF and UL300 listed and labeled.
10. Installation to be performed by authorized and licensed dealer only.

ITEM # 8K168.3 FIRE PULL STATION, WALL MOUNT
Quantity: One (1)
Manufacturer: Ansul Fire Protection
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Fire Pull Station, Wall Mount
2. Included in Fire Suppression System item #8K168.2
3. FSEC to verify Manual Fire Pull location with the Fire Marshal prior to installing and confirm if shown location meets AHJ requirements.
4. Refer to Manual Fire Pull Detail EXH-11.

ITEM # 8K168.4 S/S WALL FLASHING, EXHAUST HOOD
Quantity: One (1)
Manufacturer: Halton
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM S/S Wall Flashing, Exhaust Hood
2. Wall Panels are supplied as part of the hood package, item #8K168.
3. Provide item as specified with all accessories and options or equal as manufactured by Gaylord and Captive-Aire. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8K168.5 FIRE EXTINGUISHER
Quantity: One (1)
Manufacturer: Ansul Fire Protection
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Fire Extinguisher
2. Provide K-Guard fire extinguisher and mount on wall at 48" AFF.
3. The K-GUARD fire extinguisher is to be constructed of high-quality materials, including a stainless-steel shell, tube and strainer, and to have an effective discharge range of approximately 10 feet (3.1 m). To feature a "universal" hose and nozzle configuration, along with a valve and tube assembly, for easy maintenance. The extinguisher to contain 1.6 gallons (6 L) of ANSULEX Low pH agent which is gentler on stainless steel appliances and is approved for operation in environments with temperatures from -20 °F to 120 °F (-29 °C to 49 °C). Additionally, bi-lingual pictogram nameplates and bold caution statements help to ensure employees understand how to operate the extinguisher in a fire emergency. The K-GUARD extinguisher is to be warranted for six years from date of delivery to the original end-user purchaser.
4. G.C. to provide blocking in wall.

ITEM # 8K169 METROMAX Q RACKS
Quantity: One (1)
Manufacturer: Metro
Model: LOT

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model LOT MetroMax Q Racks
2. Four (4) Model MQ74UPE MetroMax® Q Post, 73-3/16"H, for use with stem casters, epoxy coated steel with built in Microban® antimicrobial product protection, taupe
3. Two (2) Model 5PCXM Polymer Stem Caster, swivel, 5" dia., 1-1/4"W face, -20° F to 120°F temperature range, polyurethane wheel tread, 300 lb. capacity, Microban® antimicrobial product protection, NSF (donut bumpers included) (for use with all MetroMax posts & shelves)
4. Two (2) Model 5PCBXM Polymer Stem Caster, brake, 5" dia., 1-1/4"W face, -20° F to 120°F temperature range, polyurethane wheel tread, 300 lb. capacity, Microban® antimicrobial product protection, NSF (donut bumpers included) (for use with all MetroMax posts & shelves)
5. Three (3) Model MQ2448G MetroMax® Q Shelf, 48"W x 24"D, removable open grid polymer shelf mats on an epoxy coated steel frame with quick adjust corner releases, (4) wedge connectors, Microban® antimicrobial product protection, 800 lb. capacity per shelf, NSF
6. One (1) Model MX2448F MetroMax® i Shelf, 48"W x 24"D, reinforced type 304 stainless steel corners, removable one-piece solid polymer shelf mat, (4) wedge connectors, built in Microban® antimicrobial product protection, 1000 lb. capacity per shelf, NSF
7. FSEC to Assemble into four tier high shelving units, locate shelves with SOLID mat inserts at bottom. Bottom shelf to be minimum of 12" above floor.
8. FSEC to verify all shelving sizing prior to ordering due to any field conditions/alterations.
9. Provide item as specified with all accessories and options or equal as manufactured by Eagle Group and Quantum. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8K170 SPARE NO.

ITEM # 8K171 CHEF'S COUNTER, S/S
Quantity: One (1)
Manufacturer: Eagle Group
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Chef's Counter, S/S
2. Custom counter size and shape as shown on drawing. This is a custom fabricated item and is to be constructed as described in General Specifications and as further detailed on Food Service contract documents. Provide with all options, accessories and features as listed below.
3. Top shall be fabricated of #14-gauge stainless steel with all edges turned down 2" with ½" return. Underside of top shall be reinforced with #14 gauge stainless steel channels. Top shall be of one piece construction having all corners rounded, and have cut-outs to receive all countertop equipment shown on drawing. Field joints shall be kept to a minimum with all traces of welding removed.
4. Top shall be mounted on 1-1/2" x 1-1/2" welded stainless steel framework. Front, ends and back of base shall be enclosed with #16-gauge stainless steel panels having all exposed joints continuously welded, ground and polished. Base to be supported on stainless steel legs with adjustable stainless steel bullet feet. Legs shall have a 6" high #16-gauge s/s removable kickplate on all sides.
5. Where drop-in pans are installed in the countertop (hot or cold), provide a recess to allow 18" x 26" pans to set flush with the top.
6. All controls to be installed in aprons.
7. Provide a stainless steel hinged doors with louvers to allow air circulation at the locations of the refrigerated drop-in pans.
8. Drains are to be manifolded to one end with a ball valve and extended to the nearest acceptable floor drain. Ball valve to be recessed and accessible for operation.
9. Whole unit assembly to be NSF and UL listed.
10. Counter to be integrated with factory pre-wired load center. Stainless-steel fabricator shall interconnect all wiring and receptacles, within counter, to the load center panel, inclusive of all DCR's. All electrical connections and receptacles powering compressor equipment to be interconnected through Pass and Seymour 2084I – 20A GFCI Dead Front to serve as Class A Ground Fault Protection. Do not plug into a standard GFCI as the compressor motor will create an overload spike and trip the GFCI. Standard dual receptacle to be installed adjacent to Pass and Seymour 2084I in a quad box and the receptacle to be wired through Pass and Seymour 2084I. All interconnections to be done in factory. Electrical Contractor shall interconnect between the load center panel, in the counter, and the electrical supply stub-up. FSEC to provide dimensioned rough-in plan showing ground stub-up location.
11. All built in, drop in and slide in equipment items shall be coordinated and installed by FSEC supplier/installer.
12. Dealer to provide shop drawings submittal for review and approval before starting manufacturing.
13. Provide item as specified with all accessories and options or equal as manufactured by Advance Tabco and John Boos. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8K171.1 PREP SINK, WELD-IN
Quantity: Two (2)
Manufacturer: Eagle Group
Model: E24

Furnish and set-in place per manufacturer's standard specifications:

1. Two (2) Model E24 Sink, 18" x 20" x 14" bowl, for 30"W tables, complete with faucet & basket drain; sink location per plan.
2. Provide item as specified with all accessories and options or equal as manufactured by Advance Tabco and John Boos. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8K171.2 PANTRY FAUCET
Quantity: Two (2)
Manufacturer: T&S Brass
Model: B-0325-CR-WH4

Furnish and set-in place per manufacturer's standard specifications:

1. Two (2) Model B-0325-CR-WH4 Pantry Faucet, double, deck mount, 4" adjustable centers, 5-3/4" swivel gooseneck spout with Series 1 stream regulator outlet (includes lock washer to convert to rigid), 4" wrist action handles, quarter-turn Cerama cartridges with check valves, polished chrome plated brass body, 1/2" NPT female inlets, low lead, cCSAus, ADA Compliant
2. Two (2) Model B-0425-KIT Inlet Kit with 24" supply hoses, Nipples, Washer and Locknuts that provide 1/2" NPT male outlet and 3/8" female compression inlet. Certified to ASME A112.18.1/CSA B125.1, NSF 61-Section 9 and NSF 372.
3. Two (2) 1 year limited warranty, standard
4. Provide item as specified with all accessories and options or equal as manufactured by Fisher and AllPoints. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8K171.3 DRAIN, LEVER
Quantity: Two (2)
Manufacturer: T&S Brass
Model: B-3970

Furnish and set-in place per manufacturer's standard specifications:

1. Two (2) Model B-3970 Waste Valve, lever handle, 3-1/2" sink opening, 2" drain outlet with 1-1/2" adapter
2. Provide item as specified with all accessories and options or equal as manufactured by Fisher and AllPoints. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8K171.4 HOT / COLD FOOD WELL UNIT, DROP-IN, ELECTRIC
Quantity: One (1)
Manufacturer: Delfield
Model: N8643P

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model N8643P Drop-In Hot/Cold Food Well, 43-1/2", 3-pan size for 12" x 20" pans, 8" deep single tank with drain, remote control panel with single temperature control & three-way toggle switch, stainless steel top & well, galvanized steel exterior housing, self-contained refrigeration, R290 refrigerant, 1/5 HP, (42-1/2" x 25" cutout required), cUL, UL, NSF
2. One (1) Model 0460000N 1 year parts & labor warranty, standard
3. One (1) Model W00003N 1 year compressor warranty, standard
4. One (1) 120/240v/60/1-ph, 21.0 amps, standard
5. One (1) Model 000-504-0030 Autofill assembly kit (shipped loose), for N8600 and N8800 series
6. One (1) Model AS000-BMU-0034 Ball valve assembly (shipped loose) for N8600 & N8800
7. Size and locations of cut-outs are to be verified by FSEC and noted on shop drawings.
8. Equipment shall be securely fastened to counter with equipment controls easily accessible. On/Off operation of hot/cold well to be by a recessed switch mounted in apron, interconnected to receptacle powering hot/cold well. Switch to be recessed. Switch, control enclosure and interconnection by stainless steel fabricator of counter.
9. FSEC is responsible for verifying that space available in field will accommodate units and for verifying that it will interface properly with all associated and adjacent equipment.
10. FSEC is responsible for coordinating with stainless steel shop drawings and associated equipment, including breath protector.
11. FSEC is responsible for providing appropriate louvers, panel fans or other means, to address air circulation for equipment with compressors or other heat producing components.
12. Drains are to be manifolded to one end with a shut-off ball valve and extended to the nearest acceptable indirect waste floor drain.
13. Drain to be indirect to nearest floor sink, piping and connection by PC.
14. Client agency shall supply pans, bowls, crocks, etc.
15. FSEC to verify quantity and sizes of adapter bars to be used with variety of pans.
16. Equipment to be NSF and UL listed and labeled.
17. Provide item as specified with all accessories and options or equal as manufactured by Vollrath and Wells. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8K171.5 OVERSHELF, DOUBLE
Quantity: One (1)
Manufacturer: Eagle Group
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Overshelf, Double
2. FSEC shall furnish and install as a custom fabricated item, size and configuration as shown on drawings and as described here and in the General Specifications Parts.
3. FSEC is responsible for field verification of space available prior to fabrication.
4. Adjust item as required if field conditions deem it necessary.
5. Construct overshelves and single-sided utensil rack (above hot food wells) of #14 GA s/s; shelves to have 1-1/2" turned down edges all sides to conceal heat lamps.
6. Top of bottom shelf to be 18" above countertop; second shelf to be 16" above first shelf.
7. Provide provisions for heat lamps and Install with controls mounted on heat lamps, including infinite controls, pilot lights and on/off switches.
8. Provide Ticket Rail on chefs side of overhead shelf.
9. FSEC to coordinate installation of double overshelves with heat lamps & lights and all other adjacent and associated equipment.
10. Equipment to be NSF listed and labeled.
11. Provide item as specified with all accessories and options or equal as manufactured by Advance Tabco and John Boos. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8K171.6 HEAT LAMP
Quantity: One (1)
Manufacturer: Hatco
Model: GRAH-48D3

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model GRAH-48D3 Glo-Ray® Infrared Strip Heater, 48" W, high wattage, tubular metal heater rod, double heater rod housing 3" spacing, aluminum construction, 2200 watts, NSF, cULus, Made in USA
2. One (1) NOTE: Includes 24/7 parts & service assistance
3. One (1) One year on-site parts & labor warranty, plus one additional year parts only warranty on all Glo-Ray metal sheathed elements
4. One (1) 120v/60/1-ph
5. One (1) Model REM INF 2 (2) Remote infinite control in lieu of standard built-in toggle, shipped loose (max. 12.2 amp each) price for two
6. One (1) Model IND.LGT-2-REM (2) Indicator Lights, per circuit
7. One (1) Model LEADS10 6'-10' Extended Electrical Leads
8. One (1) Model STANDARD Clear Anodized Aluminum housing, finish, standard

ITEM # 8K171.7 LOAD CENTER
Quantity: One (1)
Manufacturer: Eagle Group
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Load Center
2. Included with item #8K171, Chef's Counter.
3. Entire counter to be pre-wired to a built-in circuit breaker panel. This shall include all outlets, Jboxes, conduit, wiring, electrical components, and accessories attached to, or built into the counter. All conduit, with wiring, shall be concealed from view, and installed in a manner which will not interfere with the intended use of the counter. Panel to include a main breaker for single circuit service connection, and individual breakers for items included in the counter. Panel and electrical components and installation shall comply with the National Electrical Code. Verify and coordinate panel service circuit size, load, phasing, and requirements with the Electrical Engineer's documents, and the Electrical Division.
4. Receptacle and counter provision provided by Eagle Group with table.
5. Electrician to run conduit connection to receptacle and wire to a dedicated 120v, 15a circuit.
6. Provide item as specified with all accessories and options or equal as manufactured by Advance Tabco and John Boos. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8K171.8 DUPLEX CONVENIENCE RECEPTACLE
Quantity: One (1)
Manufacturer: Eagle Group
Model: E18

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model E18 Duplex receptacle & mounting plate (under table)
2. Provide item as specified with all accessories and options or equal as manufactured by Advance Tabco and John Boos. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8K171.9 TICKET RAIL
Quantity: One (1)
Manufacturer: Eagle Group
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Ticket Rail
2. Provide item as specified with all accessories and options or equal as manufactured by Advance Tabco and John Boos. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8K172 SPARE NO.

ITEM # 8K173 SANDWICH / SALAD PREPARATION REFRIGERATOR
Quantity: One (1)
Manufacturer: Victory Refrigeration
Model: VSP48HC-12

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model VSP48HC-12 UltraSpec™ Series Sandwich Prep Table, Powered by V-Core™, two-section, 48"W, self-contained, 13.0 cubic feet capacity, (2) self-closing doors, (4) epoxy coated shelves, stainless top with opening for (12) 1/6 size pans, 10" cutting board constructed of white polyethylene plastic, locking divider bars, hinged, insulated flat lift-up lid, full electronic control, stainless steel door, front, & sides, aluminum interior, Santoprene gaskets with 2 year warranty, rear mount refrigeration system, R290 Hydrocarbon refrigerant, 1/6 HP, cULus, UL EPH Classified, UL-Sanitation, MADE IN USA
2. One (1) 7-year parts & labor and 7-year compressor warranty; excludes maintenance items
3. One (1) 115v/60/1-ph, 2.0 amps, cord, NEMA 5-15P
4. One (1) Door hinging: left door hinged on left, right door hinged on right standard
5. Two (2) Model 00C30-099A Door Lock
6. One (1) Casters, set of (4), 6" high, (2) with brakes, standard
7. Provide item as specified with all accessories and options or equal as manufactured by Beverage Air and True. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8K174 UNDERCOUNTER REFRIGERATOR
Quantity: One (1)
Manufacturer: Victory Refrigeration
Model: VUR27HC

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model VUR27HC Undercounter Refrigerator, Powered by V-Core™, one-section, 27"W, rear mounted self-contained refrigeration, 6.15 cubic feet capacity, (1) self-closing door, (2) epoxy coated wire shelves, full electronic control, 1/2" thick stainless steel top, stainless steel door, front & sides, aluminum interior, Santoprene gaskets with 2 year warranty, R290 Hydrocarbon refrigerant, 1/10 HP, UL-Sanitation, cULus, UL EPH Classified, MADE IN USA
2. One (1) 7-year parts & labor and 7-year compressor warranty; excludes maintenance items
3. One (1) 115v/60/1-ph, 2.0 amps, with cord & NEMA 5-15P
4. One (1) Door hinging: standard on right
5. One (1) Model 00C30-099A Door Lock
6. One (1) 3" Casters, in lieu of standard 6" casters
7. Provide item as specified with all accessories and options or equal as manufactured by Beverage Air and True. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8K175 MOBILE HEATED CABINET
Quantity: One (1)
Manufacturer: Metro
Model: C563L-SFS-UA

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model C563L-SFS-UA C5™ 6 Series Heated Holding Cabinet, mobile, undercounter, insulated, solid door, top mount controls & analog thermometer, ducted heating system, thermostat 70° to 200°F temp, universal wire slides (5) 18" x 26" or (10) 12" x 20" x 2-1/2" pan capacity, 1-1/2" adjustable wire slides, 3" casters, 304 stainless steel, 120v/60/1-ph, 1440 watts, 12 amps, NEMA 5-15P, cULus, NSF
2. One (1) 1 year warranty against manufacturing defects
3. One (1) Right hand hinging, standard
4. One (1) Model C5-BUMPDRIP Corner Bumper/Drip Trough, for 8 series, 6 series

ITEM # 8K176 SPARE NO.

ITEM # 8K177 WORK TABLE, STAINLESS STEEL TOP
Quantity: One (1)
Manufacturer: Eagle Group
Model: T36120SEM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model T36120SEM Spec-Master® Marine Series Work Table, 120"W x 36"D, 14/300 series stainless steel top, box marine edge on all sides, adjustable 18/300 series stainless steel undershelf with marine edge, Uni-Lok® gusset system, (6) stainless steel legs & adjustable bullet feet, NSF
2. Provide provisions for item #8K177.1, sink, plumbing.
3. Where top abuts any walls, provide side splash.
4. Provide item as specified with all accessories and options or equal as manufactured by Advance Tabco and John Boos. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.
5. Provide item as specified with all accessories and options or equal as manufactured by Alto-Shaam and Winston. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8K177.1 PREP SINK, WELD-IN
Quantity: One (1)
Manufacturer: Eagle Group
Model: E24

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model E24 Sink, 18" x 20" x 14" bowl, for 30"W tables, complete with faucet & basket drain; sink location per plan.
2. Provide item as specified with all accessories and options or equal as manufactured by Advance Tabco and John Boos. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8K177.2 PANTRY FAUCET
Quantity: One (1)
Manufacturer: T&S Brass
Model: B-0325-CR-WH4

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model B-0325-CR-WH4 Pantry Faucet, double, deck mount, 4" adjustable centers, 5-3/4" swivel gooseneck spout with Series 1 stream regulator outlet (includes lock washer to convert to rigid), 4" wrist action handles, quarter-turn Cerama cartridges with check valves, polished chrome plated brass body, 1/2" NPT female inlets, low lead, cCSAus, ADA Compliant
2. One (1) Model B-0425-KIT Inlet Kit with 24" supply hoses, Nipples, Washer and Locknuts that provide 1/2" NPT male outlet and 3/8" female compression inlet. Certified to ASME A112.18.1/CSA B125.1, NSF 61-Section 9 and NSF 372.
3. One (1) 1 year limited warranty, standard
4. Provide item as specified with all accessories and options or equal as manufactured by Fisher and AllPoints. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8K177.3 DRAIN, LEVER
Quantity: One (1)
Manufacturer: T&S Brass
Model: B-3970

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model B-3970 Waste Valve, lever handle, 3-1/2" sink opening, 2" drain outlet with 1-1/2" adapter
2. Provide item as specified with all accessories and options or equal as manufactured by Fisher and AllPoints. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8K177.4 DUPLEX CONVENIENCE RECEPTACLE
Quantity: One (1)
Manufacturer: Eagle Group
Model: E18

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model E18 Duplex receptacle & mounting plate (under table)
2. Provide item as specified with all accessories and options or equal as manufactured by Advance Tabco and John Boos. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8K177.5 DRAWER
Quantity: One (1)
Manufacturer: Eagle Group
Model: 502946

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model 502946 Drawer Assembly, 20" x 20" x 5", 430 type stainless steel housing & frame, removable drawer pan, NSF approved removable slides, hemmed safety pull handle
2. Provide item as specified with all accessories and options or equal as manufactured by Advance Tabco and John Boos. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8K177.6 OVERSHELF, DOUBLE
Quantity: One (1)
Manufacturer: Eagle Group
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Overshelf, Double
2. FSEC shall furnish and install as a custom fabricated item, size and configuration as shown on drawings and as described here and in the General Specifications Parts.
3. FSEC is responsible for field verification of space available prior to fabrication.
4. Adjust item as required if field conditions deem it necessary.
5. Construct overshelves and single-sided utensil rack (above hot food wells) of #14 GA s/s; shelves to have 1-1/2" turned down edges all sides to conceal heat lamps.
6. Top of bottom shelf to be 18" above countertop; second shelf to be 16" above first shelf.
7. Provide provisions for heat lamps and Install with controls mounted on heat lamps, including infinite controls, pilot lights and on/off switches.
8. Provide Ticket Rail on chefs side of overhead shelf.
9. FSEC to coordinate installation of double overshelves with heat lamps & lights and all other adjacent and associated equipment.
10. Equipment to be NSF listed and labeled.
11. Provide item as specified with all accessories and options or equal as manufactured by Advance Tabco and John Boos. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8K178 SPARE NO.

ITEM # 8K179 PUMPFILL STATION
Quantity: One (1)
Manufacturer: Groen
Model: CKPF/3

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CKPF/3 Pumpfill Station
 CKPF/3 PUMPFILL STATION, 208/1/60, CASING CLIPPER, NSF LISTED, INTEGRAL CONTROL PACKAGE, TEMP ASSURANCE, AIR EDUCTOR, 40" WIDE X 80" TALL x 36" DEEP, FOB VICKSBURG, MS 39272, 755 LBS
2. **STANDARD FEATURES:**
 Heavy duty stainless steel construction
 Unit mounted on four 5" heavy duty locking swivel casters
 Air actuated casing clipper complete with regulator and filter. 15' air hose supplied for easy field connection.
 Quick action air activated product flow control valve
 USDA food transfer hose. Two (2) hose sections 3" in diameter by 3' long, with fittings to interconnect kettle and fill station.
 Exterior rear mounted rotary positive displacement pump for easy cleaning
 Full surface spill tray with drain and removable stainless steel grate
 Stainless steel elbow with 10' hose provided for spill tray
 Manufactured to latest sanitary standards and HACCP compliant
 CKPF/3 is NSF listed
3. **INTEGRAL CONTROL PACKAGE:**
 Control panel is pedestal mounted to fill station and provided with a water resistant case to simplify cleanup and protect solid state control systems. Eye Level digital input of pump speed and volume setting changes for different products. Operating controls include:
 Selection of manual, metered or continuous pumping modes
 Operator input of pump speed from 0 to 20 gallons per minute
 Operator input of metered volume from 0.5 to 2.0 gallons in 0.01 gallon increments
 Foot activated fill switch
 Knee and hand operated emergency stop switches
 LED digital display of volume pumped per casing, total casings pumped and total fill volume per batch
4. **MECHANICAL START UP:**
 Included complete inspection with factory technician on site for 5 full days. Technician will perform a complete functional test of equipment operation.
5. **EQUIPMENT TRAINING:**
 Comprehensive equipment training with maintenance/service personnel - 3 Full Days
6. Provide item as specified with all accessories and options or equal as manufactured by Cleveland and Advance CapKold. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8K180 & 8K180-A	EXHAUST HOOD
Quantity:	One (1)
Manufacturer:	Halton
Model:	CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Exhaust Hood
2. Refer to sheet QF-X700 - QF-X711 for Halton engineering drawings for size and shape of each ventilator, CFM requirements and additional construction information.
3. Provide Halton Company, Scottsville, KY. Capture Jet wall type exhaust canopy hood. Hood capture area shall have sufficient inside dimensions, front to back to ensure proper overhang for equipment shown.
4. Unit to be listed to U.L. 710 standards, wall mounted exhaust hood of size and shape as shown on plan. Hood heights not to exceed 24", mounted 6'-8" AFF. Canopy hood shall be designed specifically for the cooking equipment being covered.
5. Hood shall provide provisions for the M.A.R.V.E.L II Demand Control System. This includes Infrared Radiation Index Sensors (IRIS Sensors), duct temperature thermostat, pressure transducer, controller and Automated Balancing Damper (ABD Damper) at each exhaust duct. There shall also be an "Override" panel mounted to the face of each individual hood. There shall be one common control panel for MARVEL. The M.A.R.V.E.L II system shall come with a HMI color touch screen capable of monitoring parameters including but not limited, hood status (off, idle, cooking), real time airflow monitoring, exhaust temperature, damper position and energy savings. HMI will indicate any current faults that need operator attention. Some features are password protected for security purposes. HMI touch screen to be housed in stainless steel surface mounted control box.
6. Listed manufacturers and manufacturers requesting approval as equals must apply for permission to do so, in writing from the office of the consultant. Application must be received by the consultant at least 10 working days prior to bid date. Any alternate system must meet construction and performance requirements and efficiencies as outlined in this specification. Requests for approval must include:
 7. Grease filtration performance data (micron size vs. extraction), pressure loss curve for exhaust airflow
 8. Efficiency comparison data to be performed in accordance with ASTM standard F1704-96 and include results for exhaust rate for capture and containment of convective plume, temperature rise of exhaust air and heat gain to the space (kBtu/h). The data in these reports should not be used as the basis for design exhaust rates and specifications.
 9. Provide stainless steel ceiling make up air plenum with 10% open perforated panels. Make up air will be calculated so that the same amount of air will be taken from the zone as is required by the specified system. Any additional load cannot be placed on the kitchen HVAC system
 10. Manufacturer must provide a written guarantee of performance, ensuring the specifying engineer that the system will perform to the engineer's satisfaction when installed and balanced according to design airflows and be consistent with ASTM standard F1704-96 test results (as determined by TAB ports and pressure vs. airflow curves).
 11. Engineer/Consultant reserves the right to reject any system which is not consistent with results of ASTM standard F1704-96 testing wherein the original hood configuration (height increases, rear seals, etc.) are deleted from substitution request and would result in additional heat gain being rejected. Contractor would be required to replace at contractor's expense.
 12. The canopy shall bear the ETL, US/Canada, for listed range hood without exhaust fire damper per standard 710 and be fabricated in compliance with NFPA-96-2010 and shall bear the National Sanitation Foundation seal of approval

13. Construction: Hood construction shall be all 18-gauge stainless steel type 304 with #4 finish where exposed. All seams on the inner liner shall have grease tight joints. Each canopy shall have a filter housing of the same material as the canopy liner. The outer shell shall be 18-gauge stainless steel, type 304 with #4 finish. Canopy ends shall be double sidewall construction (no single wall hoods permitted). All exterior joints shall be grease tight, ground smooth, and polished to a #4 finish. The canopy shall have an integral exhaust duct collar, sized as shown. The canopy shall have an integral Capture Jet intake grille. (top standard, front optional) Hood shall be installed with hanger rods to structural ceiling, and leveled, by this contractor at least 6'-8" above finished floor to the bottom front edge. The hood system shall be listed to 0" clearance to combustibles on all open sides. Provide 18 or 20 gauge stainless steel closure securely anchored to the hood extending to the finished ceiling.
14. Hood to be equipped with U.L listed exhaust automatic balancing dampers and all necessary components that will be controlled by the Halton M.A.R.V.E.L II controls system.
15. Exhaust Airflow: The exhaust airflow will be based on the convective heat generated by the appliances underneath each canopy. Submittal shall include convective heat calculations based on the input power of the appliance served.
16. Capture Air: Hood shall include an integral Capture Air Jet fan with top intake. Fan shall introduce air into a front plenum where Capture Air Jets are used to increase capture air velocities at all opens sides the hood opening and increase the capture efficiency of the smoke and contaminated air at both the face and sides of the hood. The jets are a part of a special discharge panel introducing a maximum of 10% of the calculated exhaust flow. The air jet discharge velocity will be a minimum of 1500 FPM. Slot or curtain type discharge shall not be used. The airflows through the grease extractors and canopy capture area are to be determined through integral Testing and Balancing ports mounted on the hood. The airflows are to be determined by the pressure vs. airflow curves. Use of Capture Walls to create a seal between cooking equipment and wall shall not be used as they require cooking equipment to be located further from wall reducing isle space. Bottom edge of hood front panels to be square, chamfered front shall not be allowed as they reduce front overhang and jeopardize capture and containment over tall cooking equipment.
17. A manufacturer's representative shall be present at the startup of all systems and witness the testing and balancing. A written startup and installation report shall be submitted by the manufacturer's representative to the client agency and engineer
18. Grease Extraction: The hood shall be equipped with model KSA multi-cyclone stainless steel grease extractors. The grease extraction efficiency is 93% on particles with a diameter of 5 microns and 98% on particles with a diameter of 15 microns or larger, as tested by an independent testing laboratory. The pressure loss over the extractor shall not exceed 0.50" of water at flow rates approved by U.L. for heavy load cooking. Sound levels shall not exceed an NC rating of 55. Baffle of slot type extractors shall not be used.
19. Grease Trough: The filter housing shall be equipped with a concealed drip tray the full length of the canopy and with a grease cup for easy removal and daily cleaning.
20. Ventilator shall be provided with thermostat/fan interlock option as required by the 2006 IMC.
21. Provide and install Halton Patent Pending LED light fixture with the following certifications U.L., CSA, NSF and CE for use in grease exhaust hoods in quantity sufficient to provide 50-foot candles at the cooking surface when hood is mounted 84" A.F.F. Halton LED light fixture is complete with die cast aluminum junction box with integral fins for natural heat dissipation. Input voltage of 24Vdc with a power consumption not to exceed 20-watts. The housing encases 24 LED light emitters with a brightness of 1000-lumens. Lamp body is stainless steel ring with a high temperature silicone seal. Junction box to accept standard ½" NPT fitting. Fixture shall come complete with integral power supply with an input voltage of 108VAC – 305VAC and input frequency of 50/60 Hz. Input current rating shall be 0.57A @ 120VAC. Fixture shall contain no mercury or lead.
22. Fire suppression pre-piping for Ansul R102 shall be provided by the hood manufacturer to conceal all horizontal piping. Exposed fire suppression drops to be chrome sleeved. Fire suppression system to be installed in utility cabinet mounted on end of hood. Fire suppression enclosure to be mounted on end of hood.

23. FSE Contractor is responsible for fit of equipment. Prior to releasing hoods for fabrication, FSE Contractor needs to verify field conditions (existing &/or proposed) and to determine clearances to all structural items, obstructions, etc. The FSE Contractor will coordinate with other trades to confirm that the hood can be mounted as proposed and that the ductwork and final connection can be accommodated without conflict. Failure to perform this step may result in modifications to the exhaust hood at the FSE Contractor's expense.
24. Provide item as specified with all accessories and options or equal as manufactured by Gaylord and Captive-Aire. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8K180.1 HOOD CONTROLS
Quantity: One (1)
Manufacturer: Halton
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Hood Controls
2. Halton M.A.R.V.E.L. II system to service hood item D106. System to interface with hood mounted infrared cooking activity sensors capable of measuring appliance surface temperatures. Infrared sensor will read appliance surface temperature which will be translated by the specific calculation algorithm for that appliance and will respond proactively to any change in cooking status. Infrared sensor and exhaust collar mounted temperature sensor work in concert on differential temperature reading back to the controller. System is capable of operating multiple individual hoods and/or hood sections on a common fan independently of each other. Additionally, the hood mounted ABD damper shall be controlled to adjust automatically based on appliance status to maintain proper airflow from idle to design airflow.
System to also come equipped with utility cabinet and VFD(s), (provided by Mechanical Contractor) to control fan speeds (if specified). The M.A.R.V.E.L. II system shall automatically control the speed of the exhaust fan. System will output a 0-10v proportional signal to the BMS to control make up air fan. Signal is proportional of exhaust 0-100% of design flow.
The system is equipped with a manual override switch on the face of the hood. Normal hood function is automatically regulated based on the appliance status. The integrated PLC will analyze signals from the cooking activity sensors, temperature sensors and pressure transducers mounted in the hood and then send a signal to the ABD damper and VFD to adjust the exhaust fan and supply fan speed to satisfy current cooking load conditions. The system shall be monitored with an internet connected web browser from either a local or remote location. Marvel II Demand Control System shall be provided with a graphical display of the kitchen hood(s) and cooking equipment viewable in real time. Such a model will be accessible thru a broadband connection (installed per specification) and show real time status and function of the exhaust hoods, current exhaust airflow, damper position, duct temperature, space temperature, grease sensor and VFD status. System will include 1 year monitoring service with automated alarm signaling to the client agency or BMS. System will also be accessible by the client agency thru the Web for this one year term.

3. Division 16 will be responsible for wiring between the supplied Halton M.A.R.V.E.L. control panel and the hood mounted sensors. Division 16 will also be responsible for wiring between the Halton M.A.R.V.E.L. control panel and the VFD's and then from the VFD's to the exhaust/supply fan motors. Halton to provide inter-connectivity cables between the hoods and associated control panels. Halton to provide room temperature sensor. Electrician to provide labor to run cables and required control power per submittal drawings.
The Demand Control system shall have the capability to be expanded to deploy additional control and monitoring functions should the facility operator choose to do so post commissioning. The System shall have the capability to be continuously connected via the internet to a Network Operations Center (NOC) operating 24/7/365 for real-time supervision, management, trending, reports and alarms notifications via email and SMS. The Operator shall have the ability to connect to the Demand system console from any Web access device to monitor, configure or manage it.
4. The Demand Control System may be utilized as a single autonomous device, or as a part of a network. The Demand Control System when controlling 4 hoods or more shall be capable of monitoring and controlling up to 3 typical roof top units. The optional expansion of the MARVEL system to include such features but not limited to monitoring building power, monitor a walk in cooler or a walk in freezer, with a total of up to 12 inputs without additional control hardware. Upgrading to Facilities Optimization and Resource Management (FORM) is project specific and outlined in the specifications. The Demand Control System shall support one UART-based serial interface that is jumper selectable to provide an RS-232 or an RS-485 interface to an external device (e.g., power meter), or to an internal daughterboard for supporting another communications interface (e.g., wireless sensor network connection). All of the controllers within the Demand Control System cooperate and share information to optimize the overall energy performance of the facility.
5. Provide item as specified with all accessories and options or equal as manufactured by Gaylord and Captive-Aire. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8K180.2 FIRE PROTECTION SYSTEM
Quantity: One (1)
Manufacturer: Ansul Fire Protection
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Fire Protection System
2. Fire Suppression System shall be furnished and installed by MEC and shall be an automatic wet chemical system equipped with fusible link release and a remote pull box system designed to protect the ventilator plenum, ductwork and cooking equipment, as required. Wet chemical system shall be installed in full compliance with the requirements of Underwriters Laboratories, NFPA Pamphlet #96, Insurance Interests and ventilator manufacturer. Interior piping and nozzles shall be installed in the ventilator to ensure compatibility with the terms of the UL listing
3. Cylinders and remote manual pull box shall be mounted in appropriate approved locations. System shall be complete with mounting brackets, tripping mechanisms, fusible link housings and stainless steel cable. All $\frac{3}{4}$ " connecting pipe and cable conduit from cylinders to ventilator shall be run above the finished ceiling and concealed as much as possible. All exposed pipe, cable, conduit, tees, elbows, detector housings and nozzles shall be stainless steel, chrome plated or sheathed in chrome plated tubing. Wiring to and from the heat detectors shall be furnished and installed by MEC.
4. Activation shall be through: A.) manual activation of push button cabinet OR, B.) manual activation of remote manual pull station OR, C.) automatic action of fusible links or thermostatic detectors located in hood
5. Included in the installation shall be two (2) inspections of the system: one at six month interval and one at a twelve month interval. The responsibility for the complete recharge will be that of the client agency.
6. The Electrical Contractor will furnish and install electrical conduit wiring from cylinder micro-switch to shunt trip breaker for shut-off of electrical service to equipment as required. All equipment under the hood should be on a shunt trip breaker.
7. Gas shut-off valve to be furnished by MEC for up to 3" size and installed in the main gas line by the Plumbing Contractor. Gas shut off valve to be visible and accessible.
8. FSEC to locate manual fire pull stations, coordinate with GC and note on shop drawings. Electrical Contractor to supply recessed octagon junction box at the located fire pull station. Refer to typical detail EXH-1 on Food Service Design documents.
9. Equipment to be NSF and UL300 listed and labeled.
10. Installation to be performed by authorized and licensed dealer only.

ITEM # 8K180.3 FIRE PULL STATION, WALL MOUNT
Quantity: One (1)
Manufacturer: Ansul Fire Protection
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Fire Pull Station, Wall Mount
2. Included in Fire Suppression System item #8K180.2
3. FSEC to verify Manual Fire Pull location with the Fire Marshal prior to installing and confirm if shown location meets AHJ requirements.
4. Refer to Manual Fire Pull Detail EXH-11.

ITEM # 8K180.4 S/S WALL FLASHING, EXHAUST HOOD
Quantity: One (1)
Manufacturer: Halton
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM S/S Wall Flashing, Exhaust Hood
2. Wall Panels are supplied as part of the hood package, item #8K180.
3. Provide item as specified with all accessories and options or equal as manufactured by Gaylord and Captive-Aire. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8K180.5 FIRE EXTINGUISHER
Quantity: One (1)
Manufacturer: Ansul Fire Protection
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Fire Extinguisher
2. Provide K-Guard fire extinguisher and mount on wall at 48" AFF.
3. The K-GUARD fire extinguisher is to be constructed of high-quality materials, including a stainless-steel shell, tube and strainer, and to have an effective discharge range of approximately 10 feet (3.1 m). To feature a "universal" hose and nozzle configuration, along with a valve and tube assembly, for easy maintenance. The extinguisher to contain 1.6 gallons (6 L) of ANSULEX Low pH agent which is gentler on stainless steel appliances and is approved for operation in environments with temperatures from -20 °F to 120 °F (-29 °C to 49 °C). Additionally, bi-lingual pictogram nameplates and bold caution statements help to ensure employees understand how to operate the extinguisher in a fire emergency. The K-GUARD extinguisher is to be warranted for six years from date of delivery to the original end-user purchaser.
4. G.C. to provide blocking in wall.

ITEM # 8K180.6 INTERNAL EXHAUST FAN, FOR ITEM #8K180
Quantity: One (1)
Manufacturer: Halton
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Internal Exhaust Fan, For Item #8K180
2. Supplied as part of the hood package, item #8K180.

ITEM # 8K181 BUN / SHEET PAN RACK
Quantity: Two (2)
Manufacturer: Channel Manufacturing
Model: 401A

Furnish and set-in place per manufacturer's standard specifications:

1. Two (2) Model 401A Bun Pan Rack, All-Welded, Standard Heavy-Duty Series, 20.5"W x 26"D x 70.25"H, Aluminum Construction, End Load, 3" Angle Spacing, (20) 18" x 26" or (40) 13" x 18" pans (2 per shelf), 5" Swivel Plate Casters model # CPS45U, Made in USA, NSF
2. Two (2) Lifetime warranty against rust and corrosion
3. Two (2) Model /015 Accessories, Pan Stop - Web-Strap
4. Provide item as specified with all accessories and options or equal as manufactured by Eagle Group and Advance Tabco. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8K182 SOUS VIDE COOKING SYSTEMS
Quantity: One (1)
Manufacturer: Groen
Model: CKHPCC-100

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CKHPCC-100 Sous Vide Cooking Systems
2. **STANDARD FEATURES:**
 - User friendly touch screen control allows automatic cooking and chilling in either a timed mode or probe mode
 - Accurate temperature control in the cooking mode
 - Automatic temperature control in the chilling mode
 - Automatic water fill, cold and/or hot depending on mode selected
 - Type 304 stainless steel construction with 2" radius corners for easy cleaning and improved water flow
 - Stainless steel product hold-down grid and latch included
 - Stainless steel refrigeration coil built into tank with expansion control valve that is adaptable to glycol
 - Adjustable bullet feet
 - Internal components and water delivery pipes are easily removable for cleaning
 - 3 hp motor, stainless steel pump and 304 stainless steel distribution piping circulate water evenly throughout the tank
 - Overflow connection
 - Stainless steel NEMA 4 control enclosure
 - External stainless steel electric heat exchanger for use in the cooking mode
 - Unit automatically drains between cooking and chilling cycles
 - Automatic hot and cold water fill solenoids
 - 2" insulation on bottom and sides to reduce condensation and conserve energy
 - Time/temperature recorder capable of saving data from each product batch and connecting directly to a network
 - The side mounted electrical component box is removable for wall mounting or back mounting.
3. **INSTALLATION:**
 - Contact CapKold® for any refrigeration piping run over 100 feet or installation at any elevation higher than 10 feet above the chiller. Professional consultant and/or mechanical contractor must determine suitability of installation site and provide for all necessary site preparations.
 - Refrigerant piping and electrical control wiring between the tank and Refrigeration Package must be installed by a licensed refrigeration contractor in accordance with all applicable plumbing and electrical codes, good practice and the detailed installation instructions provided with both system components.

4. Provide item as specified with all accessories and options or equal as manufactured by Cleveland and Advance CapKold. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8K182.1 AIR COMPRESSOR
Quantity: One (1)
Manufacturer: Groen
Model: CKAC5

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CKAC5 Air Compressor
2. Provide item as specified with all accessories and options or equal as manufactured by Cleveland and Advance CapKold. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8K183 KETTLE, ELECTRIC, TILTING
Quantity: One (1)
Manufacturer: Groen
Model: DEE/4-60A

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model DEE/4-60A Tilting Kettle, electric, 60-gallon capacity, 2/3 jacket, IPX6 water rated electronic Advanced controls with digital display, 1 minute to 10 hour timer, low (2) and high (7) preset intensities with manual capability, 316 stainless steel liner, crank tilt, floor mounted control console, stainless steel construction, bullet feet, 50 PSI, cULus, NSF, Made in USA
2. One (1) (1) year parts & labor, (10) year hemisphere warranty, standard
3. One (1) Start-up Program, included at customer's request (See start-up request form document)
4. One (1) 208v/60/3-ph, 21.0kW, 59.0 amps, std.
5. One (1) 2" Tangent draw-off (TDO)
6. One (1) Model 104278 Brush Set, 2", includes drain valve brush & paddle, for 2" TDO
7. One (1) Model 150273 Lip Strainer, for 40 and 60 gallon kettles (DEES-40 & 60)
8. One (1) Etch Marks, 5 gallon increments
9. One (1) Model 159147 Hinged Cover Kit (no. 41), for 60 gallon floor model kettles (factory installed)
10. One (1) Model N60346 Faucet, double pantry, with 60" spray hose
11. NOTE: Add 2" welded triclover flange to TDO for pumping application.
12. Provide item as specified with all accessories and options or equal as manufactured by Cleveland and Advance CapKold. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8K184 FLOOR TROUGH
Quantity: One (1)
Manufacturer: Eagle Group
Model: ASFT-2424-SG

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model ASFT-2424-SG Anti-Splash Floor Trough, 24"W x 24"D, stainless steel subway-style grating, 6" deep trough pan with built-in pitch toward drain, accommodates up to a 4" diameter drain pipe, stainless steel removable perforated basket, all-welded 14/304 stainless steel construction, NSF
2. General Contractor (GC) shall provide floor recess and install floor pan in recess flush with adjacent kitchen floor in a watertight manner.
3. FSEC to provide drawing showing cut-out size and location, in floor, to ensure proper pour path for equipment.
4. FSEC to deliver throughs earlier, as needed, by schedule, to install with in-ground utilities and slab pour, prior to delivery and installation of the rest of the kitchen equipment.
5. For more information see detail FAB-100 on the rough-in sheet/typical detail installation sheet.
6. Provide item as specified with all accessories and options or equal as manufactured by Advance Tabco and John Boos. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8K185 FLOOR TROUGH
Quantity: One (1)
Manufacturer: Eagle Group
Model: ASFT-1260-SG

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model ASFT-1260-SG Anti-Splash Floor Trough, 60"W x 12"D, stainless steel subway-style grating, 6" deep trough pan with built-in pitch toward drain, accommodates up to a 4" diameter drain pipe, stainless steel removable perforated basket, all-welded 14/304 stainless steel construction, NSF
2. General Contractor (GC) shall provide floor recess and install floor pan in recess flush with adjacent kitchen floor in a watertight manner.
3. FSEC to provide drawing showing cut-out size and location, in floor, to ensure proper pour path for equipment.
4. FSEC to deliver throughs earlier, as needed, by schedule, to install with in-ground utilities and slab pour, prior to delivery and installation of the rest of the kitchen equipment.
5. For more information see detail FAB-100 on the rough-in sheet/typical detail installation sheet.
6. Provide item as specified with all accessories and options or equal as manufactured by Advance Tabco and John Boos. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 1K186 HOSE REEL
Quantity: One (1)
Manufacturer: T&S Brass
Model: B-7132-U01WS7TC

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model B-7132-U01WS7TC 35' Stainless Steel Open Hose Reel with Stainless Steel Recessed Cabinet with Top Inlets, Mixing Valve with Cerama Cartridges, Control Valve, Vacuum Breaker and EasyInstall Stainless Steel Swing Bracket
2. G.C. to reinforce wall behind hose reel to sustain weight while in use.
3. G.C. to furnish and install wall blocking as required for mounting. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
4. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.
5. Hose Reel to be installed as per elevations.
6. For more information see detail MEP-111 on the rough-in sheet/typical detail installation sheet.
7. Provide item as specified with all accessories and options or equal as manufactured by Fisher and AllPoints. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 1K187 SPARE NO.

ITEM # 1K188 SPARE NO.

ITEM # 8K189 ICE MAKER, CUBE-STYLE
Quantity: One (1)
Manufacturer: Hoshizaki
Model: KM-1601SRJZ

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model KM-1601SRJZ Ice Maker, Cube-Style, 48"W, air-cooled, remote condenser (priced separately), production capacity up to 1640 lb/24 hours at 70°/50° (1600 lb AHRI certified at 90°/70°), crescent cube style, stainless steel finish, R-404A refrigerant, 208-230v/60/1-ph, 15.9 amps, protected with H-GUARD Plus Antimicrobial Agent, NSF, UL (always pair "Z" model ice machines with "Z" model remote condenser)
2. One (1) Warranty: 3-Year parts & labor on entire machine
3. One (1) Warranty: 5-Year parts & labor on evaporator
4. One (1) Always pair Z model ice machines with Z model remote condenser
5. Provide adapter kit for installation with specified ice bin and securely mount ice maker on bin in accordance with manufacturers requirements.
6. Plumbing Contractor to extend drain lines to Floor Sink for indirect waste requirements.
7. Provide item as specified with all accessories and options or equal as manufactured by Manitowoc and Scotsman. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8K189.1 ICE BIN SHUTTLE SYSTEM
Quantity: One (1)
Manufacturer: Follett Products, LLC
Model: DEV1010SG-48-75

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model DEV1010SG-48-75 Ice-Device™ with SmartCART™ 75, 1000 lb. bin storage capacity, with front chute, poly liner, SmartGATE ice shield, poly door with PowerHinge™ door hinge, full stainless steel exterior and base, ABS/poly top custom cut for ice machine, includes 82 oz plastic ice scoop, paddle and rake set, and (1) polyethylene cart with hinged lid and (3) polyethylene Totes ice carriers, each carrier holds 25 lb/75 lb total per cart, for cube or Chewblet ice only, NSF
2. Provide item as specified with all accessories and options or equal as manufactured by Manitowoc and Scotsman. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8K189.2 WATER FILTER SYSTEM, ICE MACHINE
Quantity: One (1)
Manufacturer: Everpure
Model: EV932422

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model EV932422 Insurice® Water Filtration System, Insurice® Twin PF-i2000², Twin, (1) EC210 Prefilter, (2) i2000²Micro-Pure® II Precoat primary filtration cartridge, reduces chlorine, taste & odor, inhibits scale, outlet pressure gauge, flushing valve, 18,000 gallons, 3.34 gpm, 0.5 micron, 3/4" inlet, 3/4" outlet, NSF 42 & 53
2. One (1) This system requires (2) cartridges.
3. Two (2) Model EV961222 i2000² Water Filter Cartridge, i2000² Cartridge, (1) i2000² cartridge, reduces cysts, chlorine, taste & odor, inhibits scale, 9,000 gallons, 1.67 gpm, 0.5 micron, NSF 42 & 53
4. One (1) Model EV953426 Replacement Cartridge: EC210 Prefilter Cartridge, EC210, (6) EC210 cartridges, sediment reduction, 10 micron
5. Plumbing Contractor to install water filter system in water supply line and furnish and install interconnecting hard copper piping between water filter and equipment water inlet. Water Filter provided by FSEC.
6. FSEC to furnish proper type of stainless steel mounting hardware for wall construction to sustain weight while in use.
7. GC to install wall blocking as required for mounting. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
8. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.
9. Install filter as per elevations on food service drawings.
10. FSEC to provide a sticker and date of installation on filter cartridges.
11. Water filter overflow tube to be extend to nearest floor sink with 1" air gap
12. For more information see filter installation detail MEP-101.
13. Provide item as specified with all accessories and options or equal as manufactured by 3M Purification and OptiPure. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8K190 FLOOR TROUGH
Quantity: One (1)
Manufacturer: Eagle Group
Model: ASFT-1236-SG

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model ASFT-1236-SG Anti-Splash Floor Trough, 36"W x 12"D, stainless steel subway-style grating, 6" deep trough pan with built-in pitch toward drain, accommodates up to a 4" diameter drain pipe, stainless steel removable perforated basket, all-welded 14/304 stainless steel construction, NSF
2. General Contractor (GC) shall provide floor recess and install floor pan in recess flush with adjacent kitchen floor in a watertight manner.
3. FSEC to provide drawing showing cut-out size and location, in floor, to ensure proper pour path for equipment.
4. FSEC to deliver throughs earlier, as needed, by schedule, to install with in-ground utilities and slab pour, prior to delivery and installation of the rest of the kitchen equipment.
5. For more information see detail FAB-100 on the rough-in sheet/typical detail installation sheet.
6. Provide item as specified with all accessories and options or equal as manufactured by Advance Tabco and John Boos. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8K191 ICE BIN / ICE CADDY , MOBILE
Quantity: One (1)
Manufacturer: Cambro
Model: ICS100L110

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model ICS100L110 SlidingLid™ Ice Caddy, mobile, 28-3/4"H, 100 lb. capacity, slant top slides up/back into secured top, foam insulation, molded in side grips, lift grips front/back, drain shelf, recessed drain faucet, no assembly required, (4) 5" caster (2 swivel, 2 fixed with brakes), black, NSF
2. Provide item as specified with all accessories and options or equal as manufactured by Forbes and Winco. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8K192 REMOTE RACK
Quantity: One (1)
Manufacturer: RDT
Model: RDMC

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model RDMC Remote Rack
2. **ITEM NO. 8K192 REMOTE REFRIGERATION PACKAGE**
The refrigeration package shall be pre-engineered and factory assembled unit as manufactured by Refrigeration Design Technologies, (RDT) 1808 FM 66, Waxahachie, Texas 75167. Phone: 972-937-3215 fax: 972-937-0970 e-mail address: Info@rdtonline.com .
Contractor shall furnish and install, where shown on plans, (1) RDT U.L. approved air cooled remote refrigeration package, model RDMC, with control panel, 208 Volts, 3 Phase, 60 Hertz. The refrigeration package shall be housed in a weather-protected compact structural-steel frame. The entire housing shall be brushed 304 stainless steel and include stainless steel louvered panels for access. The unit shall include an air-cooled, aluminum fin copper tube condenser designed to operate at 15 degrees TD. Frame to be welded galvanized steel. Lifting rings shall be installed at each corner to facilitate installations. Condenser motor fans shall be mounted within the enclosure. The condenser intake surface shall be protected with stainless steel louvered panels to protect against vandalism and hail damage.
Each unit shall be equipped with a ball-bearing fan motor, adjustable head-pressure control, suction filter, sight glass, drier, liquid line inlet and outlet valve and high-pressure super hose connections.
Warranties: All refrigeration systems are to include a 5 year compressor warranty, a 1 year parts warranty and a 1 year labor warranty. These warranties are to be built in to the equipment price and not separate options.
3. **REFRIGERATION UNITS:**
Air-cooled condensing units shall be scroll type manufactured by Copeland. Each unit shall be equipped with high-low pressure control.
Liquid line drier, sight glass and head pressure control.
All compressor units shall be new factory assembled to operate with the refrigerant specified in the engineering summary sheet. Refrigerant R-448A shall be used on all commercial medium temperature units and low temperature units.
The condenser shall be sectional, removable, with rifled tube slotted finned, and shall be designed for 15°ftd.
Factory to review all project phasing and engineer system for multi-phase operation installing any gas pressure relief ports for temporary partial load operation until all phases of project are installed and connected to the system.
All compressors are to be properly labeled for type and equipment they are serving to allow proper maintenance and service.
4. **PRE-PIPING:**
All refrigerant lines shall be extended to one side of the package in a neat and orderly manner. Suction lines must be insulated with Armaflex (1" thick for low temp, 3/4" thick for medium temp). All tubing shall be securely supported and anchored with clamps.
Silver solder and/or sil-fos shall be used for all refrigerant piping. Soft solder is not acceptable. All piping to be pressure tested with nitrogen at 300 psi. After the condensing unit and coil have been connected, the balance of the system shall be leaked tested with all valves opened.
5. **CONTROL PANEL:**
The package shall have a factory mounted and pre-wired control panel complete with disconnect for single point connection.
Electrical contractor shall provide and install main power lines to panel in accordance with the wiring diagram and per local codes.
6. **SAFETY CAUTION:**
Each system and evaporator is shipped under nitrogen pressure. Use caution and exercise safety at all times when preparing for final hook-up.

7. **EVAPORATOR COILS:**

Evaporator coils shall be direct expansion type, fabricated of copper tubes with aluminum fins. All evaporator coils shall be provided with solenoid valve, electronic expansion valve and piped and wired to the junction box for positive pump down. All evaporator coils shall be pre-wired to a junction box with an on/off switch and the liquid and suction lines shall be pre-plumbed and stubbed out the back.

Evaporator coils shall include an Eco-Smart controller for on-demand defrost and monitoring.

Evaporator coils shall be equipped with energy saving "EC" motors.

8. **CONSTRUCTION NOTES FOR TRADES:**

It is the responsibility of each contractor to pull necessary permits for their respective work performed.

FOOD SERVICE EQUIPMENT CONTRACTOR:

The Kitchen Equipment Contractor shall verify all dimensions and coordinate with other trades.

The Kitchen Equipment Contractor shall verify all required refrigerant line lengths and runs and to be detailed on shop drawing submittal.

Dealer to review phasing and sequencing of building and equipment installation and ensure rack system can accommodate phased operation with proper allowances for isolation valves as required with balanced capacity until complete system load is achieved.

Dealer is required to have factory supervision on site during installation and start-up of the system and provide a factory certified letter of compliance. Refer to "SYSTEM INSTALLATION VERIFICATION - SIV" section below.

GENERAL CONTRACTOR:

General contractor to verify and co-ordinate location of refrigeration rack with refrigeration contractor to satisfy local code requirements and maintenance of the rack.

General contractor to verify refrigeration line runs thru to roof or multi-story building prior to construction with refrigeration contractor for accessibility.

General contractor to verify access of crane or mechanical lift with refrigeration contractor prior to construction (if required).

General contractor shall prepare and weather proof the platform and curbed openings for refrigeration piping and electrical conduit. Roof pad to be constructed of heavy duty steel framing, and the finished height dictated per local codes.

Provide sheet metal cap with 2" high pitch pocket collar and water tight soldered joints.

General contractor to allow 3'-0" (36") of clear space around roof pad for maintenance.

All core drilling required for remote refrigeration piping work by the refrigeration contractor, is in the general contractor's scope of work. Coordinate exact location and number of penetrations with the refrigeration contractor and comply with all landlord requirements for x-ray of slab prior to work.

All sleeves, openings, holes, conduits, Orangeburg, required to run the refrigeration lines that are going through construction such as walls, floors and ceilings will be made and provided by the General Contractor. All openings, sleeves, sealers required in food service equipment will be provided by the Food Service Equipment Contractor.

Any attachment to building structure for load bearing weight to be provided and coordinated by general contractor.

General Contractor/Roofer to provide any required pitch pockets.

General contractor to backfill all pitch pockets to top with tar or pitch after refrigeration and electrical lines have been run.

General contractors shall provide any required concrete pads for installation of the rack system.

REFRIGERATION CONTRACTOR:

Refrigeration pipe sizes are based on a maximum line run up to 100 equivalent feet for liquid and suction lines. Refrigeration pipe sizes are to be verified with the RDT factory. Verify line lengths with job site conditions and line routing at individual installations. If line runs are greater than 100 feet, please contact the RDT factory.

Refrigeration contractor shall run all refrigeration lines which extend down thru wall(s) before wall(s) are closed up when conduit is not provided.

Refrigeration contractor to seal both ends of conduit with foam after all lines have been run. If pull box(es) are specified, they must be a minimum 12"x 12".

Refrigeration contractor shall insulate all refrigeration suction lines.
Refrigeration contractor shall verify location of blower coil(s) and compressor(s) for all refrigerated areas.
All liquid and suction lines are to have isolation ball valves installed on them behind the evaporator coils.
Refrigeration contractor shall verify location of pitch pocket(s) for refrigeration line penetration thru roof with general contractor. General contractor to install all pitch pockets.
Contractor shall use only clean dehydrated, sealed refrigeration grade A.C.R. copper tubing or type "L".
Use only long radius elbows to reduce flow resistance and line breakage.
Silver solder and/or sil-fos shall be used on all refrigerant piping. Soft solder is not acceptable.
Use minimum 35% silver solder for dissimilar metals.
All piping must be supported with hangers that can withstand the combined weight of tubing, insulation, valves, and fluid in the tubing.
Use nitrogen in the copper tubing during brazing to prevent formation of copper oxides. Liquid and suction lines must be free to expand independently of each other. Do not exceed 100 feet without a change in direction or an offset. Plan proper pitching, expansion allowance, and p-traps at the base of all suction risers and at every 8 feet of every vertical rise. Install service valves at several locations for ease of maintenance. These valves must be approved for 450 psi working pressure.
All piping to be pressure tested with nitrogen at 300 psi with all valves open and held for 12 hours.
Electronic leak detectors shall be used to locate all leaks.
Complete system shall be evacuated to 500 microns with vacuum pump before charging the system.
Once system is charged and running, adjust all controls, including pressure controls and expansion valves.
Return after 24 hours to verify proper operation of systems.
Refrigeration contractor to provide and install drain line heater with insulation in freezer to be connected by electrical contractor.
Refrigerant suction lines outside of refrigerated compartments, not run in conduit, shall be insulated back to compressor with Armstrong arma-flex ap-25/50 foamed plastic insulation or equal in accord with direction of the manufacturer. Minimum thickness shall be 3/4 inch for commercial temperature and 1.0 inch for low temperature.
Fill roof refrigeration and electrical pitch pockets with foam and sealant.
Refrigeration contractor to seal all refrigeration line penetrations made thru walk-in coolers/freezers, and refrigerated base sections of counters.
Recommend using K-Flex Titan line sets instead of Armflex with added UV ray protection. Some states required to have UV protection by code. Contractor to review and comply with local codes. In all cases, line sets are not to be exposed to elements without any UV covering and or protection.
Nylon zip ties are not to be used to secure any flexible line sets to the compressor racks. Provide proper fastening methods as required by local codes.

ELECTRICAL CONTRACTOR:

Electrical contractor to provide main power for the refrigeration package and evaporator coils.
Electrical contractor to connect drain-line heater in the freezer.
All electrical wiring and installation shall be accordance with the wiring diagram and per local codes.
If contracted, electrical contractor to install all conduits for refrigeration lines in walls, prior to walls are closed up. All pull boxes must be a minimum of 12"x 12".
Nylon zip ties are not to be used to secure any flexible power conduit to the compressor racks. Provide proper fastening methods as required by local codes.
Disconnects when located on roof installations, mount high enough to clear any snow level ratings for the region.
Disconnect switches are to be weather tight and prevent any exposure to the elements.

Please Note: It is recommended for all electrical connections and receptacles powering compressor equipment to be interconnected through Pass and Seymour 2084I – 20A GFCI Dead Front to serve as Class A Ground Fault Protection. Do not plug into a standard GFCI as the compressor motor will create an overload spike and trip the GFCI. Standard dual receptacle to be installed adjacent to Pass and Seymour 2084I in a quad box and the receptacle to be wired through Pass and Seymour 2084I.

NOTE: Receptacles for units that are built-into counters or millwork are to be installed to the left or right side of the unit for accessibility and resetting the GFCI as needed.

PLUMBING CONTRACTOR

Plumbing contractor to provide type "M" copper drain lines for walk-in refrigerator and freezer, pitched 1/2 inch per foot of run. In freezer, heated drain line must be insulated to prevent freezing. Trap drain lines outside of refrigerated space to avoid entrance of warm and moist air.

Contractor to provide individual drain line for each evaporator unless otherwise called for in the plans.

Plumbing contractor to provide refrigeration PVC sleeve conduit runs through underground to all serviced refrigeration units.

All conduit is to be capped and waterproofed.

Provide access points and pull boxes are required by installer, refer to pull box detail.

All plumbing installation shall be in accordance with local codes.

9. **TESTING:**

Testing notes are included with refrigeration contractor responsibility section.

10. **OPERATION AND MAINTENANCE INSTRUCTIONS:**

The rack system shall be supplied with a complete set of installation, operational and maintenance instructions to cover operating procedures and routine maintenance schedule.

11. **SHOP DRAWINGS AND SUBMITTALS:**

Refer to food service manufacture specification drawings for more information. FSEC to submit shop drawings for review and approval before starting manufacturing.

Shop drawing to have complete piping detail showing runs and bends through building.

12. **CLOSEOUT:**

A close out package to include the following:

Testing/Certification Report as outlined above

Operation and Maintenance Manual package as outlined above

As Built Drawing showing refrigeration pipe runs and all installation conditions, service access points, etc.

Pictures of piping installation before building structures get closed in.

13. **SYSTEM INSTALLATION VERIFICATION - SIV (NOT OPTIONAL):**

Food Service Equipment Contractor shall secure System Installation Verification (SIV)

Manufacturer Service from RDT - rack manufacturer to perform an SIV two times during the duration of the project. The SIV is to be by an RDT engineer or an RDT certified refrigeration mechanic.

First SIV, is to supervise the dealer installation of the refrigeration rack, evaporator coils, refrigerant lines etc. providing oversight, direction and inspecting line set installation.

The final SIV will be performed during the start-up of the system. Any field related discrepancies that are discovered during the SIV will be brought to the attention of Food Service Equipment Refrigeration Contractor, General Contractor and corresponding trades on site. These issues will be documented and forwarded to the appropriate sales office and design team. During the SIV Manufacturer Service will address any discrepancy that is the fault of the manufacturer at no cost. If SIV Manufacturer Service has to resolve a discrepancy that is a field issue, the General Contractor will be notified and will need to approve the work to be completed either by SIV Manufacturer Service or direct respective trades to remedy those issues.

The Food Service Equipment Refrigeration Contractor installer is to inform RDT's engineer if the installation and start up will take place at the same time, or if the startup will be at a later date. If the startup will be at a later date, the installer is to inform RDT's engineer to schedule the SIV dates.

The warranties will not go into effect unless this procedure is followed.

14. Provide item as specified with all accessories and options or equal as manufactured by ColdZone and Cooltec. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8K200 BUN PAN RACK, Existing to be Relocated
Quantity: Five (5)
Manufacturer: Existing
Model: EXISTING

Furnish and set-in place per manufacturer's standard specifications:

1. Five (5) Model EXISTING Bun Pan Rack
2. This unit is existing and is to be relocated.
3. GC shall coordinate to disconnect and reconnect of services, if required, shall be performed by related trades; final required utility connections to be verified by Plumber/Electrician. All Final connections by Electrician/Plumber.
4. GC is responsible for the removal, cleaning, storage, and relocation of the equipment.
5. FSEC to inspect unit and present a separate proposal fee if any repair/replacement of parts as necessary for item to operate in accordance with manufacturer requirements and specifications.

ITEM # 8K201 DISH CART / DOLLY, Existing to be Relocated
Quantity: Three (3)
Manufacturer: Metro
Model: PCD11A

Furnish and set-in place per manufacturer's standard specifications:

1. Three (3) Model PCD11A Poker Chip Dish Dolly, 26-5/8"W x 26-5/8"D x 31-15/16"H, adjustable, dish size 4-1/4" to 11-3/4", removable dividers & towers, two-handed access, recessed handles, 5"Dia. swivel casters with neoprene wheels (2 with brakes), chip-resistant polymer shell with Microban® antimicrobial protection, aesthetic blue, vinyl dust/water splash cover, NSF
2. This unit is existing and is to be relocated.
3. GC shall coordinate to disconnect and reconnect of services, if required, shall be performed by related trades; final required utility connections to be verified by Plumber/Electrician. All Final connections by Electrician/Plumber.
4. GC is responsible for the removal, cleaning, storage, and relocation of the equipment.
5. FSEC to inspect unit and present a separate proposal fee if any repair/replacement of parts as necessary for item to operate in accordance with manufacturer requirements and specifications.

ITEM # 8K202 INGREDIENT BIN, Existing to be Relocated
Quantity: Three (3)
Manufacturer: Cambro
Model: IBS20148

Furnish and set-in place per manufacturer's standard specifications:

1. Three (3) Model IBS20148 Ingredient Bin, mobile, 21 gallon capacity, molded polyethylene with sliding cover, scoop holder included (scoop sold separately), (4) 3" heavy duty casters (2 front swivel, 2 fixed), with bin securely attached to base plate, white with clear cover, NSF
2. This unit is existing and is to be relocated.
3. GC shall coordinate to disconnect and reconnect of services, if required, shall be performed by related trades; final required utility connections to be verified by Plumber/Electrician. All Final connections by Electrician/Plumber.
4. GC is responsible for the removal, cleaning, storage, and relocation of the equipment.
5. FSEC to inspect unit and present a separate proposal fee if any repair/replacement of parts as necessary for item to operate in accordance with manufacturer requirements and specifications.

ITEM # 8K203 FOOD SLICER, ELECTRIC, Existing to be Relocated
Quantity: One (1)
Manufacturer: Hobart
Model: HS8N-1

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model HS8N-1 Heavy Duty Meat Slicer, manual, 13" CleanCut™ knife, non-removable knife, anodized finish with (6) interlocks, removable meat grip assembly, removable ring guard cover, single action top mounted sharpener with Borazon™ stones, cleaning kickstand, 1/2 hp motor, 5.4amps, 120v/60hz/1-ph NSF cETLus
2. This unit is existing and is to be relocated.
3. GC shall coordinate to disconnect and reconnect of services, if required, shall be performed by related trades; final required utility connections to be verified by Plumber/Electrician. All Final connections by Electrician/Plumber.
4. GC is responsible for the removal, cleaning, storage, and relocation of the equipment.
5. FSEC to inspect unit and present a separate proposal fee if any repair/replacement of parts as necessary for item to operate in accordance with manufacturer requirements and specifications.

ITEM # 8K204 DUNNAGE RACK, Existing to be Relocated
Quantity: Two (2)
Manufacturer: Channel Manufacturing
Model: ES2048

Furnish and set-in place per manufacturer's standard specifications:

1. Two (2) Model ES2048 Dunnage Rack, Tubular Dunnage Rack, Stainless Series, 48"W x 20"D x 12"H, Stainless Steel Construction, (4,000) lb. distributed weight capacity per shelf, Made in USA, NSF, 20lbs. (ITEM WEIGHT ONLY), add /8 after model number for (8") height
2. This unit is existing and is to be relocated.
3. GC shall coordinate to disconnect and reconnect of services, if required, shall be performed by related trades; final required utility connections to be verified by Plumber/Electrician. All Final connections by Electrician/Plumber.
4. GC is responsible for the removal, cleaning, storage, and relocation of the equipment.
5. FSEC to inspect unit and present a separate proposal fee if any repair/replacement of parts as necessary for item to operate in accordance with manufacturer requirements and specifications.

ITEM # 8K205 TILTING SKILLET BRAISING PAN, ELECTRIC, Existing to be Relocated
Quantity: One (1)
Manufacturer: Cleveland Range
Model: SEL40TR

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model SEL40TR DuraPan™ Tilting Skillet, electric, 40-gallon capacity, modular open base, standard with hydraulic hand tilt with quick lowering feature, stainless steel construction, includes spring-assisted cover and gallon markings, stainless steel level adjustable feet, UL, CE, NSF, IPX6
2. This unit is existing and is to be relocated.
3. GC shall coordinate to disconnect and reconnect of services, if required, shall be performed by related trades; final required utility connections to be verified by Plumber/Electrician. All Final connections by Electrician/Plumber.
4. GC is responsible for the removal, cleaning, storage, and relocation of the equipment.
5. FSEC to inspect unit and present a separate proposal fee if any repair/replacement of parts as necessary for item to operate in accordance with manufacturer requirements and specifications.

ITEM # 8K300 MAKE-UP AIR FAN, HEATED, By MEC
Quantity: One (1)
Manufacturer: Halton
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Make-Up Air Fan, Heated
2. MEC to size and provide.
3. Refer to sheet QF-X700 - QF-X711 Halton engineering drawings for CFM requirements and additional hood information.

ITEM # 8K301 EXHAUST FAN, FOR ITEM #8K145, By MEC
Quantity: One (1)
Manufacturer: Halton
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Exhaust Fan, For Item #8K145
2. MEC to size and provide.
3. Refer to sheet QF-X700 - QF-X711 Halton engineering drawings for CFM requirements and additional hood information.
4. MEC to size and provide based on CFM requirements as engineered by hood manufacturer.

ITEM # 8K302 EXHAUST FAN, FOR ITEM #8K168, By MEC
Quantity: One (1)
Manufacturer: Halton
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Exhaust Fan, For Item #8K168
2. MEC to size and provide.
3. Refer to sheet QF-X700 - QF-X711 Halton engineering drawings for CFM requirements and additional hood information.
4. MEC to size and provide based on CFM requirements as engineered by hood manufacturer.

ITEM # 8K303 SPARE NO.

ITEM # 8K304 CHEMICAL DISPENSING - JFILL SOLO CHEMICAL DISPENSER, By Vendor
Quantity: One (1)
Manufacturer: Diversey
Model: D100863620

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model D100863620 Chemical Dispensing - JFill Solo Chemical Dispenser
2. This item is part of a Chemical Dispensing System and will be provided by chemical vendor.
3. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination, reference, and space allocation only.
4. Owner shall furnish and install this item, through his vendor.
5. Owner is responsible for verifying manufacturer, model number, size and components.
6. Owner shall furnish GC with this information for utility requirements.
7. Owner shall be responsible for verifying that space available will accommodate unit(s) and that these interface properly with adjacent equipment and counters.
8. FSEC is responsible for coordinating installation of this item with Owner and GC in relation to adjacent and associated equipment.
9. GC to provide finished hole(s) in wall to accommodate utility lines, as needed, in coordination with Owner and Owner provided equipment.
10. Drain to be indirect to nearest floor sink, piping and connection by Plumbing Contractor.

ITEM # 8K500 TOWEL/SOAP DISPENSER, SMALLWARES
Quantity: One (1)
Manufacturer: Smallwares
Model: SMALLWARES

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model SMALLWARES Towel/Soap Dispenser
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
3. Client agency shall furnish and install this item, through his smallwares supplier.
4. Client agency is responsible for verifying manufacturer, model number, size and components.
5. GC to furnish and install blocking in wall, as needed to support dispenser.
6. GC to be responsible for providing and installing hollow masonry anchors and any other appropriate hardware to support dispenser on wall.
7. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.

ITEM # 8K501 TRASH BIN, SLIM JIM, SMALLWARES
Quantity: Two (2)
Manufacturer: Smallwares
Model: SMALLWARES

Furnish and set-in place per manufacturer's standard specifications:

1. Two (2) Model SMALLWARES Trash Bin, Slim Jim
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
3. Client agency shall furnish and install this item, through his smallwares supplier.
4. Client agency is responsible for verifying manufacturer, model number, size and components.

ITEM # 8K502 TOWEL/SOAP DISPENSER, SMALLWARES
Quantity: One (1)
Manufacturer: Smallwares
Model: SMALLWARES

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model SMALLWARES Towel/Soap Dispenser
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
3. Client agency shall furnish and install this item, through his smallwares supplier.
4. Client agency is responsible for verifying manufacturer, model number, size and components.
5. GC to furnish and install blocking in wall, as needed to support dispenser.
6. GC to be responsible for providing and installing hollow masonry anchors and any other appropriate hardware to support dispenser on wall.
7. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.

ITEM # 8K503 TRASH CAN, 32-GAL W/ DOLLY, SMALLWARES
Quantity: One (1)
Manufacturer: Smallwares
Model: SMALLWARES

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model SMALLWARES Trash Can, 32-Gal w/ Dolly
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
3. Client agency shall furnish and install this item, through his smallwares supplier.
4. Client agency is responsible for verifying manufacturer, model number, size and components.

ITEM # 8K504 TOWEL/SOAP DISPENSER, SMALLWARES
Quantity: One (1)
Manufacturer: Smallwares
Model: SMALLWARES

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model SMALLWARES Towel/Soap Dispenser
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
3. Client agency shall furnish and install this item, through his smallwares supplier.
4. Client agency is responsible for verifying manufacturer, model number, size and components.
5. GC to furnish and install blocking in wall, as needed to support dispenser.
6. GC to be responsible for providing and installing hollow masonry anchors and any other appropriate hardware to support dispenser on wall.
7. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.

ITEM # 8K505 TRASH BIN, SLIM JIM, SMALLWARES
Quantity: One (1)
Manufacturer: Smallwares
Model: SMALLWARES

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model SMALLWARES Trash Bin, Slim Jim
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
3. Client agency shall furnish and install this item, through his smallwares supplier.
4. Client agency is responsible for verifying manufacturer, model number, size and components.

ITEM # 8K506 KDS SCREEN, SMALLWARES
Quantity: Two (2)
Manufacturer: Smallwares
Model: SMALLWARES

Furnish and set-in place per manufacturer's standard specifications:

1. Two (2) Model SMALLWARES KDS Screen
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
3. Client agency shall furnish and install this item, through his smallwares supplier.
4. Client agency is responsible for verifying manufacturer, model number, size and components.
5. Obtain specifications and verify required utilities for smallwares equipment from Client agency/operator.
6. Data requirements, if any, to be coordinated with Client agency, provided by Electrical Contractor.
7. Millwork fabricator to Provide 2.5" black grommets for POS equipment. Grommet locations to be confirmed onsite with Food Service Director.

ITEM # 8K600 DUPLEX CONVENIENCE RECEPTACLE, BY EC
Quantity: One (1)
Manufacturer: BY EC
Model: BY EC

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model BY EC Duplex Convenience Receptacle
2. Convenience receptacle to be provided by EC.
3. Shown whereas to not interfere with food service equipment. Provide additional dual convenience receptacle as necessary.
4. E.C. to provide dedicated 15-amp service to each receptacle.
5. When in counter, E.C. to install in front apron. Junction box not to be visible to operator or interfere with cabinet storage.

ITEM # 8K700-8K721 FOOD SERVICE FLOOR SINK & A.F.D PACKAGE, BY PC
Quantity: One (1)
Manufacturer: BY PC
Model: BY PC

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model BY PC To include the following items:
 - Item #8K700 – Funnel Floor Drain
 - Item #8K701 – Area Floor Drain
 - Item #8K702 – Floor Sink
 - Item #8K703 – Area Floor Drain
 - Item #8K704 – Area Floor Drain
 - Item #8K705 – Floor Sink
 - Item #8K706 – Area Floor Drain
 - Item #8K707 – Floor Sink
 - Item #8K708 – Spare Number
 - Item #8K709 – Floor Sink
 - Item #8K710 – Area Floor Drain
 - Item #8K711 – Floor Sink
 - Item #8K712 – Floor Sink
 - Item #8K713 – Area Floor Drain
 - Item #8K714 – Floor Sink
 - Item #8K715 – Floor Sink
 - Item #8K716 – Floor Sink
 - Item #8K717 – Floor Sink
 - Item #8K718 – Floor Sink
 - Item #8K719 – Floor Sink
 - Item #8K720 – Floor Sink
 - Item #8K721 – Floor Sink
2. Floor sinks to be sized and located by Engineers/PC.
3. Keep Floor Sink locations as shown on food service floor plan. Not to interfere with food service equipment, and or legs/casters. Floor sink to be accessible for cleaning.
4. Care should be taken not to locate floor sinks directly below equipment with electronic controls. Critical for combi ovens. Hot discharge and steam may cause damage to controls.
5. Millwork Fabricator to provide stainless steel Floor Sink Sleeve when in Millwork counter base installation.
6. Floor sink sleeve to be 1/2" larger than floor sink and be sealed to the floor.
7. **NOTE:** Floor sink needs to have full access for cleaning. Piping not to obstruct access and allow removal of grate.
8. See floor sink installation detail MEP-100 on plumbing rough-in sheet/typical installation sheet.
9. Area Floor Drain to be sized and located by Engineer/ PC.
10. Shown as where to not interfere with Food Service equipment and provide sufficient area drainage.
11. Floor to be slopped to A.F.D
12. Provide additional A.F.D as required.

ITEM # 8K900 SPARE NO.

ITEM # 8K901 TRAY CART
Quantity: Twenty-Six (26)
Manufacturer: Burlodge
Model: BLP0S.000

Furnish and set-in place per manufacturer's standard specifications:

1. Twenty-Six (26) Model BLP0S.000 Tray Cart
2. **CONSTRUCTION**
Sub frame and chassis – Stainless Steel AISI 304 or X5CrNi “18-10” (EN10088-1)
Top shutter made in carbon fibre material
High density CFC-foam insulation
Heavy duty top and bottom bumper
Ergonomic handles
Four or six heavy duty double bearing (EN 12532) non marking castors
Removable gaskets without the use of tools
Construction designed to be easily cleaned and in compliance with hygienic standards (EN ISO 14159): rounded corners, easily cleanable of any soiling material
3. **DIVIDING BARRIER**
Injection moulded divider filled with high density polyurethane insulation
Individually removable dividers for easy cleaning
Self sealing when tray is not inserted
Two different pitches: 80mm, 92mm
4. **TRAY SUPPORTS**
Stainless Steel tray supports easily removable without the use of tools
Removable ventilation panels without the use of tools
5. **DOORS**
Doors constructed with aluminium frame with laminated exterior and stainless steel interior panels, filled with CFC-free foam
Heavy duty 270 degrees opening hinges with stay open catches
Two door option with lockable latch and two ergonomic handles
Two door tunnel washable option hinged on opposite sides with 260 degree stay open catch and lockable door latch
Four door option with sliding latch and four ergonomic handles

ITEM # 8K902 SPARE NO.

ITEM # 8K903 COLD FOOD TABLE
Quantity: One (1)
Manufacturer: Burlodge
Model: BCFS-M-5

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model BCFS-M-5 Cold Food Table
2. **SPECIFICATIONS:**
 Stainless steel; Type 304
 "Heliarc" and spot-welded construction
 Heavy gauge base is channel reinforced over entire length
 Enclosed base on back and sides; open front for storage
 Cabinet is complete with evaporator tubing, compressor, controls and bottom drain
 Open recessed cold pan with perforated bottom spacers
 5 pan server
 Capacity: 5 > 12" x20" full size standard pans
 Optional adapter bars available for fractional size pans
 Drain in cold pan is connected to drain spigot under unit
 Fan cooled hermetically sealed condensing unit (1/3 HP) For standard tank only and with cold storage base
 For refrigerated base 1/2 HP condensing unit is utilized
 Evaporator tubing is refrigerant grade solid wall copper
 Sealed interior liner is isolated from cabinet exterior by a plastic breaker strip for condensation control
 Interior liner is separated from exterior shell on all sides by a layer of refrigerant grade insulation
 "On/Off" indicator light
 Burlodge "Blue" wrap-around bumper w/internal stainless steel core for strength and durability
 Approved power supply cord with 3 prong end cap
 Customer to advise whether power cord is to be on operator's left or right
 6" swivel, non-marking casters, with 2 side brakes
3. **ELECTRICAL DATA:**
 120V, 60Hz, 1 Phase, 1/3 or 1/2 HP options; NEMA 5-15 end cap

ITEM # 8K904 TRAY AND RACK DISPENSER
Quantity: One (1)
Manufacturer: Burlodge
Model: BTRC-M-1323-P

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model BTRC-M-1323-P Tray And Rack Dispenser
2. **CAPACITY:**
 Trays: App 100 – 150 trays
 Racks: 5 to 6 racks per stack
 Baskets: 5 to 6 baskets per stack
3. **DISPENSES:**
 Trays
 Chinaware in racks
 Chinaware in baskets
4. **SPECIFICATIONS:**
 Stainless steel; Type 304
 "Heliarc" and spot welded construction
 Channel reinforced extended base for rigidity and stability
 Dispensing system in a steel upright uni-frame enclosure
 Cantilever dispensing system
 Dispensers are equipped with springs that are heat treated for strength & durability
 Burlodge "Blue" wrap-around bumper with internal stainless steel core for strength and durability
 Push handle on rear with Burlodge "Blue" grips
 4 > 5" swivel, non-marking casters

ITEM # 8K905 MOBILE GRAVITY SHELF CART
Quantity: One (1)
Manufacturer: Burlodge
Model: B2-FSGS-M-2620-4

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model B2-FSGS-M-2620-4 Mobile Gravity Shelf Cart
2. **SPECIFICATIONS:**
 Stainless steel; type 304
 Open style, solid base
 4 independent moving shelves
 Non-removable shelves
 Shelf front can be labeled
 Shelf size 26" wide front x 20" deep
 Each shelf can be used in horizontal position, raised at back by 5-1/2" from horizontal or raised at back by 6-1/2" from horizontal position
 Front of shelf to remain stationary
 Security stopper at 0 degrees for each shelf
 Spacing between shelf surfaces to be 8" in horizontal position
 Each shelf not to be loaded with more than 20lb
 In horizontal position, the shelves extend past the bumper approximately 3"
 First shelf surface 37-3/4" from floor
 Burlodge "Blue" wrap-around bumper with internal stainless steel core for strength and durability
 5" Swivel casters, 2 with side brakes at the back

ITEM # 8K906 MOBILE REFRIGERATED SLIDER TABLE
Quantity: One (1)
Manufacturer: Burlodge
Model: BMW CST-TRD-1-20

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model BMW CST-TRD-1-20 Mobile Refrigerated Slider Table
2. **SPECIFICATIONS:**
 Stainless steel; type 304
 All welded seams and corners
 Fully Insulated; Refrigerated
 1/3 HP compressor
 With on/off switch and pilot light indicator
 With 2 self-leveling mechanisms to accommodate independent single stacks of 10" x 20" dish
 baskets (length way) 7" tall
 Storage space to be 22.5" deep
 Top of compressor can also be used to store baskets
 1 set of 3 1/4" thick lexan covers w/sides to accommodate open tray cavity sized according to
 current tray size utilization
 Covers are equipped with 2 stainless steel handles per cover which are used for cover storage
 1 set of 1/2" white Comco manually adjustable slider assemblies at top
 With 4 hand turning knobs to adjust the tray slide to accommodate different tray sizing
 To accommodate tray widths from 12" to 18"
 Drain spigot at opposite end of unit from compressor for clean out
 No drip pan added so spigot can be visible
 Stainless steel cord hanger at compressor end
 Burlodge "Blue" wrap-around bumper with stainless steel insert for strength and durability
 Equipped with stud and acorn nut hardware to accommodate connector brackets (not included)
 6 > 5" swivel casters, 4 side brakes, 2 swivel casters in centre
 CSA approved
3. **ELECTRICAL DATA:**
 120V, 60Hz, 1Ph, 8Amp

ITEM # 8K907 REFRIGERATOR, AIR CURTAIN, PASS-THRU, SLIDING DOOR
Quantity: Three (3)
Manufacturer: Burlodge
Model: BC3-RH GD HC

Furnish and set-in place per manufacturer's standard specifications:

1. Three (3) Model BC3-RH GD HC Refrigerator, Air Curtain, Pass-Thru, Sliding Door
2. **CABINET CONSTRUCTION**
 Stainless Steel Exterior And Interior
 Glass Door With Aluminum Frame On Back (optional)
 20 Gauge, Stainless Steel Door On Front
 Heavy Duty Cylinder Locks
 One Piece, Snap-In Magnetic Door Gasket
 Stainless Steel Hinges
 Five Pair (5) Adjustable Stainless Steel Pan Slides (pans not included)
 7 1/4" Heavy-Duty Casters, (2) Swivel w/locks & (2) Fixed
 10 ft Cord And Plug (see electrical data for details)
3. **FEATURES**
 Full Electronic Control
 90 Minutes Of Door Opening In A 80°F/55% Relative Humidity Ambient Conditions
 Manager's Lockout Feature
 Front Sliding Door Swings Open 90° With Slide Back Option
 Rear Door Swings Open 270° With Side Door Catch
 Recessed Side Hand Grips
 Ergonomically Correct Door Handles, Guaranteed For Life
 5" Tray Spacing
 Angled Pan Slides allow for gravity-feed of products to reduce reach during operation
 Open –Glide-Hide door designed to allow equipment to remain in place while keeping the door out of the way during trayline operation
 Designed as part of Burlodge's BLean tray assembly
4. **REFRIGERATION**
 Refrigeration System Uses R-290 Refrigerant To Comply With All Environmental Concerns
 Note: Capable Of Maintaining Product Temperatures At Or Below 41°F For Up To 90 Minutes With Door Open, When Used As Directed. See Installation/Operation Manual For More Information
 Bottom-mounted compressor for stability
 Removable panels for easy access for cleaning and maintenance

ITEM # 8K908 MOBILE SLIDER TABLE
Quantity: One (1)
Manufacturer: Burlodge
Model: B2-ST-M-2360

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model B2-ST-M-2360 Mobile Slider Table
2. **SPECIFICATIONS:**
 Stainless steel; type 304
 With Comco slides to adjust for 1520 or 1321/1323 trays
 Narrow tray insertion
 Adjustment size: 12 7/8" min to 15 1/4" max
 Open top to allow reach-in to product
 Front of table is open for product placement
 With two non-adjustable intermediate, non-removable horizontal shelves below (side by side)
 6 11/16" (170mm) shelf clearance
 Solid base area for storage
 Top of table to overhang 1" each side to allow a tight fit with the next table
 (Bumper will not protect the sides)
 Burlodge "Blue" wrap-around bumper with internal stainless steel core for strength and durability
 Equipped with stud and acorn nut hardware to accommodate connector brackets (not included)
 6 - 5" H/D casters, 4 side brakes

ITEM # 8K909 MOBILE GRAVITY SHELF CART
Quantity: Two (2)
Manufacturer: Burlodge
Model: B2-FSGS-M-2620-4

Furnish and set-in place per manufacturer's standard specifications:

1. Two (2) Model B2-FSGS-M-2620-4 Mobile Gravity Shelf Cart
2. **SPECIFICATIONS:**
 Stainless steel; type 304
 Open style, solid base
 4 independent moving shelves
 Non-removable shelves
 Shelf front can be labeled
 Shelf size 26" wide front x 20" deep
 Each shelf can be used in horizontal position, raised at back by 5-1/2" from horizontal or raised at
 back by 6-1/2" from horizontal position
 Front of shelf to remain stationary
 Security stopper at 0 degrees for each shelf
 Spacing between shelf surfaces to be 8" in horizontal position
 Each shelf not to be loaded with more than 20lb
 In horizontal position, the shelves extend past the bumper approximately 3"
 First shelf surface 37-3/4" from floor
 Burlodge "Blue" wrap-around bumper with internal stainless steel core for strength and durability
 5" Swivel casters, 2 with side brakes at the back

ITEM # 8K910 MOBILE SLIDER TABLE
Quantity: One (1)
Manufacturer: Burlodge
Model: B2-ST-M-2360

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model B2-ST-M-2360 Mobile Slider Table
2. **SPECIFICATIONS:**
 Stainless steel; type 304
 With Comco slides to adjust for 1520 or 1321/1323 trays
 Narrow tray insertion
 Adjustment size: 12 7/8" min to 15 1/4" max
 Open top to allow reach-in to product
 Front of table is open for product placement
 With two non-adjustable intermediate, non-removable horizontal shelves below (side by side)
 6 11/16" (170mm) shelf clearance
 Solid base area for storage
 Top of table to overhang 1" each side to allow a tight fit with the next table
 (Bumper will not protect the sides)
 Burlodge "Blue" wrap-around bumper with internal stainless steel core for strength and durability
 Equipped with stud and acorn nut hardware to accommodate connector brackets (not included)
 6 - 5" H/D casters, 4 side brakes

ITEM # 8K911 MOBILE SLIDER TABLE
Quantity: One (1)
Manufacturer: Burlodge
Model: B2-ST-M-2360

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model B2-ST-M-2360 Mobile Slider Table
2. **SPECIFICATIONS:**
 Stainless steel; type 304
 With Comco slides to adjust for 1520 or 1321/1323 trays
 Narrow tray insertion
 Adjustment size: 12 7/8" min to 15 1/4" max
 Open top to allow reach-in to product
 Front of table is open for product placement
 With two non-adjustable intermediate, non-removable horizontal shelves below (side by side)
 6 11/16" (170mm) shelf clearance
 Solid base area for storage
 Top of table to overhang 1" each side to allow a tight fit with the next table
 (Bumper will not protect the sides)
 Burlodge "Blue" wrap-around bumper with internal stainless steel core for strength and durability
 Equipped with stud and acorn nut hardware to accommodate connector brackets (not included)
 6 - 5" H/D casters, 4 side brakes

ITEM # 8K912 MOBILE GRAVITY SHELF CART
Quantity: Two (2)
Manufacturer: Burlodge
Model: B2-FSGS-M-2620-4

Furnish and set-in place per manufacturer's standard specifications:

1. Two (2) Model B2-FSGS-M-2620-4 Mobile Gravity Shelf Cart
2. **SPECIFICATIONS:**
 - Stainless steel; type 304
 - Open style, solid base
 - 4 independent moving shelves
 - Non-removable shelves
 - Shelf front can be labeled
 - Shelf size 26" wide front x 20" deep
 - Each shelf can be used in horizontal position, raised at back by 5-1/2" from horizontal or raised at back by 6-1/2" from horizontal position
 - Front of shelf to remain stationary
 - Security stopper at 0 degrees for each shelf
 - Spacing between shelf surfaces to be 8" in horizontal position
 - Each shelf not to be loaded with more than 20lb
 - In horizontal position, the shelves extend past the bumper approximately 3"
 - First shelf surface 37-3/4" from floor
 - Burlodge "Blue" wrap-around bumper with internal stainless steel core for strength and durability
 - 5" Swivel casters, 2 with side brakes at the back

ITEM # 8K913 MOBILE SLIDER TABLE
Quantity: One (1)
Manufacturer: Burlodge
Model: B2-ST-M-2360

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model B2-ST-M-2360 Mobile Slider Table
2. **SPECIFICATIONS:**
 - Stainless steel; type 304
 - With Comco slides to adjust for 1520 or 1321/1323 trays
 - Narrow tray insertion
 - Adjustment size: 12 7/8" min to 15 1/4" max
 - Open top to allow reach-in to product
 - Front of table is open for product placement
 - With two non-adjustable intermediate, non-removable horizontal shelves below (side by side)
 - 6 11/16" (170mm) shelf clearance
 - Solid base area for storage
 - Top of table to overhang 1" each side to allow a tight fit with the next table
(Bumper will not protect the sides)
 - Burlodge "Blue" wrap-around bumper with internal stainless steel core for strength and durability
 - Equipped with stud and acorn nut hardware to accommodate connector brackets (not included)
 - 6 - 5" H/D casters, 4 side brakes

ITEM # 8K914 REFRIGERATOR, AIR CURTAIN, PASS-THRU, SLIDING DOOR
Quantity: Three (3)
Manufacturer: Burlodge
Model: BC3-RH GD HC

Furnish and set-in place per manufacturer's standard specifications:

1. Three (3) Model BC3-RH GD HC Refrigerator, Air Curtain, Pass-Thru, Sliding Door
2. **CABINET CONSTRUCTION**
 Stainless Steel Exterior And Interior
 Glass Door With Aluminum Frame On Back (optional)
 20 Gauge, Stainless Steel Door On Front
 Heavy Duty Cylinder Locks
 One Piece, Snap-In Magnetic Door Gasket
 Stainless Steel Hinges
 Five Pair (5) Adjustable Stainless Steel Pan Slides (pans not included)
 7 1/4" Heavy-Duty Casters, (2) Swivel w/locks & (2) Fixed
 10 ft Cord And Plug (see electrical data for details)
3. **FEATURES**
 Full Electronic Control
 90 Minutes Of Door Opening In A 80°F/55% Relative Humidity Ambient Conditions
 Manager's Lockout Feature
 Front Sliding Door Swings Open 90° With Slide Back Option
 Rear Door Swings Open 270° With Side Door Catch
 Recessed Side Hand Grips
 Ergonomically Correct Door Handles, Guaranteed For Life
 5" Tray Spacing
 Angled Pan Slides allow for gravity-feed of products to reduce reach during operation
 Open –Glide-Hide door designed to allow equipment to remain in place while keeping the door out of the way during trayline operation
 Designed as part of Burlodge's BLean tray assembly
4. **REFRIGERATION**
 Refrigeration System Uses R-290 Refrigerant To Comply With All Environmental Concerns
 Note: Capable Of Maintaining Product Temperatures At Or Below 41°F For Up To 90 Minutes With Door Open, When Used As Directed. See Installation/Operation Manual For More Information
 Bottom-mounted compressor for stability
 Removable panels for easy access for cleaning and maintenance

ITEM # 8K915 MOBILE REFRIGERATED SLIDER TABLE
Quantity: One (1)
Manufacturer: Burlodge
Model: BMW CST-TRD-1-20

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model BMW CST-TRD-1-20 Mobile Refrigerated Slider Table
2. **SPECIFICATIONS:**
 Stainless steel; type 304
 All welded seams and corners
 Fully Insulated; Refrigerated
 1/3 HP compressor
 With on/off switch and pilot light indicator
 With 2 self-leveling mechanisms to accommodate independent single stacks of 10" x 20" dish
 baskets (length way) 7" tall
 Storage space to be 22.5" deep
 Top of compressor can also be used to store baskets
 1 set of 3 1/4" thick lexan covers w/sides to accommodate open tray cavity sized according to
 current tray size utilization
 Covers are equipped with 2 stainless steel handles per cover which are used for cover storage
 1 set of 1/2" white Comco manually adjustable slider assemblies at top
 With 4 hand turning knobs to adjust the tray slide to accommodate different tray sizing
 To accommodate tray widths from 12" to 18"
 Drain spigot at opposite end of unit from compressor for clean out
 No drip pan added so spigot can be visible
 Stainless steel cord hanger at compressor end
 Burlodge "Blue" wrap-around bumper with stainless steel insert for strength and durability
 Equipped with stud and acorn nut hardware to accommodate connector brackets (not included)
 6 > 5" swivel casters, 4 side brakes, 2 swivel casters in centre
 CSA approved
3. **ELECTRICAL DATA:**
 120V, 60Hz, 1Ph, 8Amp

ITEM # 8K916 MOBILE GRAVITY SHELF CART
Quantity: One (1)
Manufacturer: Burlodge
Model: B2-FSGS-M-2620-4

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model B2-FSGS-M-2620-4 Mobile Gravity Shelf Cart
2. **SPECIFICATIONS:**
 Stainless steel; type 304
 Open style, solid base
 4 independent moving shelves
 Non-removable shelves
 Shelf front can be labeled
 Shelf size 26" wide front x 20" deep
 Each shelf can be used in horizontal position, raised at back by 5-1/2" from horizontal or raised at back by 6-1/2" from horizontal position
 Front of shelf to remain stationary
 Security stopper at 0 degrees for each shelf
 Spacing between shelf surfaces to be 8" in horizontal position
 Each shelf not to be loaded with more than 20lb
 In horizontal position, the shelves extend past the bumper approximately 3"
 First shelf surface 37-3/4" from floor
 Burlodge "Blue" wrap-around bumper with internal stainless steel core for strength and durability
 5" Swivel casters, 2 with side brakes at the back

ITEM # 8K917 TRAY AND RACK DISPENSER
Quantity: One (1)
Manufacturer: Burlodge
Model: BTRC-M-1323-P

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model BTRC-M-1323-P Tray And Rack Dispenser
2. **CAPACITY:**
 Trays: App 100 – 150 trays
 Racks: 5 to 6 racks per stack
 Baskets: 5 to 6 baskets per stack
3. **DISPENSES:**
 Trays
 Chinaware in racks
 Chinaware in baskets
4. **SPECIFICATIONS:**
 Stainless steel; Type 304
 "Heliarc" and spot welded construction
 Channel reinforced extended base for rigidity and stability
 Dispensing system in a steel upright uni-frame enclosure
 Cantilever dispensing system
 Dispensers are equipped with springs that are heat treated for strength & durability
 Burlodge "Blue" wrap-around bumper with internal stainless steel core for strength and durability
 Push handle on rear with Burlodge "Blue" grips
 4 > 5" swivel, non-marking casters

ITEM # 8K918 COLD FOOD TABLE
Quantity: One (1)
Manufacturer: Burlodge
Model: BCFS-M-5

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model BCFS-M-5 Cold Food Table
2. **SPECIFICATIONS:**
 Stainless steel; Type 304
 "Heliarc" and spot-welded construction
 Heavy gauge base is channel reinforced over entire length
 Enclosed base on back and sides; open front for storage
 Cabinet is complete with evaporator tubing, compressor, controls and bottom drain
 Open recessed cold pan with perforated bottom spacers
 5 pan server
 Capacity: 5 > 12" x20" full size standard pans
 Optional adapter bars available for fractional size pans
 Drain in cold pan is connected to drain spigot under unit
 Fan cooled hermetically sealed condensing unit (1/3 HP) For standard tank only and with cold storage base
 For refrigerated base 1/2 HP condensing unit is utilized
 Evaporator tubing is refrigerant grade solid wall copper
 Sealed interior liner is isolated from cabinet exterior by a plastic breaker strip for condensation control
 Interior liner is separated from exterior shell on all sides by a layer of refrigerant grade insulation
 "On/Off" indicator light
 Burlodge "Blue" wrap-around bumper w/internal stainless steel core for strength and durability
 Approved power supply cord with 3 prong end cap
 Customer to advise whether power cord is to be on operator's left or right
 6" swivel, non-marking casters, with 2 side brakes
3. **ELECTRICAL DATA:**
 120V, 60Hz, 1 Phase, 1/3 or 1/2 HP options; NEMA 5-15 end cap

ITEM # 8K919 SPARE NO.

ITEM # 8K920 SPARE NO.

ITEM # 8K921 MOBILE GRAVITY SHELF CART
Quantity: One (1)
Manufacturer: Burlodge
Model: B2-FSGS-M-2620-4

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model B2-FSGS-M-2620-4 Mobile Gravity Shelf Cart
2. **SPECIFICATIONS:**
 Stainless steel; type 304
 Open style, solid base
 4 independent moving shelves
 Non-removable shelves
 Shelf front can be labeled
 Shelf size 26" wide front x 20" deep
 Each shelf can be used in horizontal position, raised at back by 5-1/2" from horizontal or raised at back by 6-1/2" from horizontal position
 Front of shelf to remain stationary
 Security stopper at 0 degrees for each shelf
 Spacing between shelf surfaces to be 8" in horizontal position
 Each shelf not to be loaded with more than 20lb
 In horizontal position, the shelves extend past the bumper approximately 3"
 First shelf surface 37-3/4" from floor
 Burlodge "Blue" wrap-around bumper with internal stainless steel core for strength and durability
 5" Swivel casters, 2 with side brakes at the back

ITEM # 8K922 REFRIGERATOR, AIR CURTAIN, PASS-THRU, SLIDING DOOR
Quantity: Two (2)
Manufacturer: Burlodge
Model: BC3-RH GD HC

Furnish and set-in place per manufacturer's standard specifications:

1. Two (2) Model BC3-RH GD HC Refrigerator, Air Curtain, Pass-Thru, Sliding Door
2. **CABINET CONSTRUCTION**
 Stainless Steel Exterior And Interior
 Glass Door With Aluminum Frame On Back (optional)
 20 Gauge, Stainless Steel Door On Front
 Heavy Duty Cylinder Locks
 One Piece, Snap-In Magnetic Door Gasket
 Stainless Steel Hinges
 Five Pair (5) Adjustable Stainless Steel Pan Slides (pans not included)
 7 1/4" Heavy-Duty Casters, (2) Swivel w/locks & (2) Fixed
 10 ft Cord And Plug (see electrical data for details)
3. **FEATURES**
 Full Electronic Control
 90 Minutes Of Door Opening In A 80°F/55% Relative Humidity Ambient Conditions
 Manager's Lockout Feature
 Front Sliding Door Swings Open 90° With Slide Back Option
 Rear Door Swings Open 270° With Side Door Catch
 Recessed Side Hand Grips
 Ergonomically Correct Door Handles, Guaranteed For Life
 5" Tray Spacing
 Angled Pan Slides allow for gravity-feed of products to reduce reach during operation
 Open –Glide-Hide door designed to allow equipment to remain in place while keeping the door out of the way during trayline operation
 Designed as part of Burlodge's BLean tray assembly

4. **REFRIGERATION**

Refrigeration System Uses R-290 Refrigerant To Comply With All Environmental Concerns

Note: Capable Of Maintaining Product Temperatures At Or Below 41°F For Up To 90 Minutes With Door Open, When Used As Directed. See Installation/Operation Manual For More Information

Bottom-mounted compressor for stability

Removable panels for easy access for cleaning and maintenance

ITEM # 8K923	METROMAX Q RACKS
Quantity:	One (1)
Manufacturer:	Metro
Model:	LOT

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model LOT MetroMax Q Racks
2. Sixteen (16) Model MQ74UPE MetroMax® Q Post, 73-3/16"H, for use with stem casters, epoxy coated steel with built in Microban® antimicrobial product protection, taupe
3. Eight (8) Model 5PCXM Polymer Stem Caster, swivel, 5" dia., 1-1/4"W face, -20° F to 120°F temperature range, polyurethane wheel tread, 300 lb. capacity, Microban® antimicrobial product protection, NSF (donut bumpers included) (for use with all MetroMax posts & shelves)
4. Eight (8) Model 5PCBXM Polymer Stem Caster, brake, 5" dia., 1-1/4"W face, -20° F to 120°F temperature range, polyurethane wheel tread, 300 lb. capacity, Microban® antimicrobial product protection, NSF (donut bumpers included) (for use with all MetroMax posts & shelves)
5. Twelve (12) Model MQ2442G MetroMax® Q Shelf, 42"W x 24"D, removable open grid polymer shelf mats on an epoxy coated steel frame with quick adjust corner releases, (4) wedge connectors, Microban® antimicrobial product protection, 800 lb. capacity per shelf, NSF
6. Four (4) Model MX2442F MetroMax® i Shelf, 42"W x 24"D, reinforced type 304 stainless steel corners, removable one-piece solid polymer shelf mat, (4) wedge connectors, built in Microban® antimicrobial product protection, 1000 lb. capacity per shelf, NSF
7. FSEC to Assemble into four tier high shelving units, locate shelves with SOLID mat inserts at bottom. Bottom shelf to be minimum of 12" above floor.
8. FSEC to verify all shelving sizing prior to ordering due to any field conditions/alterations.
9. Provide item as specified with all accessories and options or equal as manufactured by Eagle Group and Quantum. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

BUILDING 8 COFFEE SHOP

ITEM # 8C100 DISPLAY CASE, REFRIGERATED/NON-REFRIG
Quantity: One (1)
Manufacturer: Structural Concepts
Model: NR4851RRSSV

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model NR4851RRSSV Reveal® Combination Convertible Service Above Refrigerated Self-Service Case, freestanding, 47-3/4"W, 51"H, Breeze-E (Type II) with EnergyWise self-contained refrigeration, LED top light, fixed vertical glass, black front panel, upper rear clear glass sliding doors, coated coil, condensate pan, cETLus, ETL-Sanitation
2. One (1) NOTE: If GFCI is required, a GFCI breaker MUST be used in lieu of a GFCI receptacle
3. One (1) Model NESHIPNOTE Must ship prepaid/add
SCC will ship via air ride truck using a carrier that will not transfer the freight
Glass warranty only applicable to first point of delivery
4. One (1) Warranty: 1 year parts & labor warranty, 5 year compressor warranty, standard
5. One (1) Refrigeration: Breeze-E (Type II) self-contained refrigeration, rear access (R290) standard
6. One (1) Electrical Connection: 10' NEMA 6-20P, 208-240v/60/1-ph straight blade power cord, standard
7. One (1) Clean Sweep: Clean Sweep®, automatic condenser coil cleaner (self-cont.)
8. One (1) Base Support: Adjustable, locking casters (self-cont.), standard
9. One (1) Interior Color: Powder coated SCC Standard Silversan Black (FDA compliant)
10. One (1) Frame Exterior: Powder coated SCC Standard Silversan Black (FDA compliant), standard
11. One (1) Panel Exterior Color: Laminate standard color 909-58 Black
12. One (1) Model GRAIN DIRECTION Standard laminate grain directions (when applicable):
- Front Panels (Upper Header and Lower Panels): Horizontal grain direction
- End Panels: Vertical grain direction
- Blend & Reveal Cases Only: Horizontal grain direction on front and end panels
13. One (1) Lower Front Panel Color: Powder coated SCC Standard Silversan Black (FDA compliant), standard
14. One (1) Lower Rear Doors: None (solid back panel), standard
15. One (1) Upper Rear Doors: Clear glass rear sliding doors, standard
16. One (1) Rear door lock
17. One (1) Lower Rear Panel Color: Powder coated SCC Standard Silversan Black (FDA compliant), standard
18. One (1) Lights: LED 3500K with frost lens, standard
19. One (1) Night curtain, retractable, non-locking
20. One (1) Lower Display: 2"H Full depth display riser(s) for lower display
21. One (1) 1" Price tag molding (matches interior color) (CDR7658)
22. Provide item as specified with all accessories and options or equal as manufactured by RPI Industries and Turbo Air. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8C101 SPARE NO.

ITEM # 8C102 SPARE NO.

ITEM # 8C103 WARMING DRAWER, BUILT-IN
Quantity: One (1)
Manufacturer: Alto-Shaam
Model: 500-1D

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model 500-1D Halo Heat® Warming Drawer, built-in, one drawer, digital controller, (1) 12" x 20" pan, (50) rolls or (34) baked potatoes capacity, drawer can adapt to hold optional oversize pan, adjustable thermostat, stainless steel exterior, EcoSmart®, cULus, UL EPH ANSI/NSF 4, CE, EAC
2. One (1) 120v/50/60/1-ph, 5.3 amps, .64 kW, NEMA 5-15P, standard
3. One (1) Vented drawer, per drawer
4. One (1) Model 5015147 Built-In Trim Kit, for 500-1D one drawer warmer
5. Millwork fabricator to trim drawer unit for a flush mount finish installation. Trim installation should not have any visible fasteners. Unit should not sit on a shelf or floor with surrounding gaps.
6. Refer to Heated Drawer Trim Installation Detail MWK-311 on Typical Installation Detail Sheet.
7. Provide item as specified with all accessories and options or equal as manufactured by Winston and Wells. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8C104 BLENDER, BAR
Quantity: One (1)
Manufacturer: Vitamix
Model: 036019-ABAB

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model 036019-ABAB The Quiet One® Twist Lock Blender (VM0145), countertop, 48 oz. (1.4 liter) capacity, clear Tritan™ BPA free Advance® container, 24-1/2"H with lid open, stackable, removable compact twist lock cover, (6) touch control buttons with (34) program options, includes: Advance® blade assembly & lid, 3-peak HP, 120v/50/60/1-ph, 15.0 amps, NEMA 5-15P, RoHs compliant, CE, cULus, NSF
2. One (1) 3 years warranty on motor base parts & 1 year warranty on labor, standard
3. One (1) Model 015978 Advance® Complete Blender Container, 48 oz. (1.4 liter) capacity, clear BPA Free, Tritan™ container, includes: Advance® blade assembly & lid, NSF (for use with The Quiet One®, Drink Machine™ Advance®)
4. One (1) Model 000891 Drive Socket Kit, includes: (1) drive socket, Allen wrench & instructions(for The Quiet One® Drink Machine™ Advance®, Drink Machine™ & Vita-Prep®)
5. One (1) Model 015596 Retainer Nut Wrench, plastic (for The Quiet One®, TGA, Drink Machine™ Advance®, Drink Machine™, Vita-Prep® & XL®)
6. Provide item as specified with all accessories and options or equal as manufactured by Waring and Hamilton Beach. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8C105 DUMP SINK
Quantity: One (1)
Manufacturer: Eagle Group
Model: YSINK-0309-00

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model YSINK-0309-00 Custom drop-in sink with raised drip tray in rear
2. Omit standard faucet, provide T&S Brass faucet, item #8C105.1
3. Client agency to provide towel & soap dispenser. (DON'T USE THIS NOTE IF WE ARE SPECIFYING THE SOAP DISPENSER)
4. Food Service Equipment Contractor to drop-in and seal sink to millwork stone countertop utilizing manufacturer recommended sealer and fasteners; Ensure a complete even seal without any gaps providing easy cleanability and preventing bacteria growth in gaps.
5. Provide item as specified with all accessories and options or equal as manufactured by Advance Tabco and John Boos. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8C105.1 SINGLE TEMP. FAUCET
Quantity: One (1)
Manufacturer: T&S Brass
Model: B-0208-CR

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model B-0208-CR Temp deck mount Faucet , 6" cast spout, quarter-turn Cerama cartridge, low lead, ADA Compliant (OSC6)
2. Provide item as specified with all accessories and options or equal as manufactured by Fisher and AllPoints. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8C105.2 MIXING FAUCET
Quantity: One (1)
Manufacturer: T&S Brass
Model: B-0200-CR-LN

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model B-0200-CR-LN B-0200-LN, with cerama cartridges
2. Provide item as specified with all accessories and options or equal as manufactured by Fisher and AllPoints. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8C105.3 BLENDER CONTAINER RINSER
Quantity: One (1)
Manufacturer: Hamilton Beach
Model: BCR100

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model BCR100 Blender Container Rinser, for rinsing residue out of any 64 oz. or smaller blender containers, push down to activate/clean, compact, no electricity required operates on water pressure, stainless steel spray nozzle, break resistant polycarbonate base with suction cups, 2.5 ft. flexible 3/8" reinforced tubing with swivel garden hose fitting, NSF, cULus
2. Provide item as specified with all accessories and options or equal as manufactured by Blendtec and Vitamix. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8C106 INDUCTION RETHERMALIZER, BUILT-IN / DROP-IN
Quantity: Two (2)
Manufacturer: Vollrath
Model: 74701D

Furnish and set-in place per manufacturer's standard specifications:

1. Two (2) Model 74701D Mirage® Induction Rethermalizer, drop-in, dry operation, 7 quart, inset with hinged cover, (4) soup presets, stir indicator LED, solid state controls with locking function, temperature control in °F or °C, cabinet mount controls with leads, includes: mounting hardware, cord with NEMA 5-15P, 800 watts, 6.7 amps, 120v/60/1-ph, cULus, NSF, FCC (cover not NSF)
2. Two (2) Requires use of included Vollrath induction-ready inset - failure to use these insets may damage the unit & will void the warranty
3. Six (6) Model 88184 Inset, 7-1/4 quart, induction ready, for Mirage induction rethermalizer, NSF
4. Two (2) Model 4980422 Ergo Grip® Ladle, 4 oz., 3-1/8" bowl dia., 13-1/8"L OAL, equipped with all-natural antimicrobial, 3 oz., stainless steel, 13-1/8" OA length, Kool-Touch™ one-piece black construction offset handle, safe up to 225°F (107.2°C), fully functional to 350°F (176.6°C), integrated handle stopper, Jacob's Pride® Collection, Limited Lifetime Warranty, NSF
5. Two (2) Model 47493 Contemporary Inset Cover, hinged, fits 7 quart inset, easy on/off lid, welded handle, condensation returns to inset, no friction fit tabs for easy installation & removal, dishwasher safe, stainless steel construction, imported
6. Two (2) Model 47491 Decorative Ring, for 7 qt. induction soup drop in units, 22 gauge stainless steel
7. FSEC to install soup well into engineered stone countertop utilizing manufacturers approved specifications for heat deflection to avoid cracking of stone. Provide blocking around cut-out and supports to the cabinet base.
8. Size and locations of cut-outs are to be verified by FSEC and noted on shop drawings.
9. Equipment shall be securely fastened to counter with equipment controls easily accessible. On/Off operation of hot/cold well to be by a recessed switch mounted in apron, interconnected to receptacle powering hot/cold well. Switch to be recessed in a control enclosure Component Hardware model #R73-1212. If larger equipment controls do not fit in these two standard recessed modules, use a Vollrath 30312 1/3 Pan. See Millwork Detail MWK-300. Switch, control enclosure and interconnection by millwork fabricator of counter.
10. Equipment to be NSF and UL listed and labeled.
11. When located in enclosed cabinet: Ventilation required, Millwork Fabricator to provide McNichols 16-gauge 1614381648 wire mesh framed insert in doors. AC Infinity fans, models AI-CFD120BA to be utilized. All millwork fan systems should contain an intake and an exhaust fans. This is required to balance the static pressures between the inside and outside of the cabinet. Position fans near the top of the cabinet configured to exhaust out the warmer air and position fans near the bottom to pull in colder air. Refer to typical detail MWK-360 Cabinet Venting.
12. Provide item as specified with all accessories and options or equal as manufactured by Spring and CookTek. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8C107 HOT FOOD WELL UNIT, DROP-IN, ELECTRIC
Quantity: One (1)
Manufacturer: Delfield
Model: N8731-DESP

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model N8731-DESP Drop-In Hot Food Well Unit, Electric, individual pans, wet/dry type with drain & manifold, 2-pan size for 12" x 20" pan, individual digital temperature controls, stainless steel top & wells, galvanized exterior body, (30-3/4" x 25" cutout required), UL, NSF, cUL, CE
2. One (1) 208-230v/60/1-ph, 4.8/5.4 amps, 1000 watts, standard
3. One (1) Model 000-504-0031 Autofill assembly kit (shipped loose), for N8700 series
4. FSEC to install hot well into engineered stone countertop utilizing manufacturers approved specifications for heat deflection to avoid cracking of stone. Provide blocking around cut-out and supports to the cabinet base.
5. Size and locations of cut-outs are to be verified by FSEC and noted on shop drawings.
6. FSEC to coordinate and millwork fabricator to construct countertop with appropriate insulation between solid surface material and heat source. Refer to Millwork Detail MWK-351.
7. Equipment shall be securely fastened to counter with equipment controls easily accessible. On/Off operation of hot well to be by a recessed switch mounted in apron, interconnected to receptacle powering hot well. Switch to be recessed in a control enclosure Component Hardware model #R73-1212. If larger equipment controls do not fit in these two standard recessed modules, use a Vollrath 30312 1/3 Pan. See Millwork Detail MWK-300. Switch, control enclosure and interconnection by millwork fabricator of counter.
8. FSEC is responsible for verifying that space available in field will accommodate units and for verifying that it will interface properly with all associated and adjacent equipment.
9. FSEC is responsible for coordinating with millwork shop drawings and associated equipment, including breath protector.
10. FSEC is responsible for providing appropriate louvers, panel fans or other means, to address air circulation for equipment with compressors or other heat producing components.
11. Drains are to be manifolded to one end with a shut-off ball valve and extended to the nearest acceptable indirect waste floor drain.
12. Drain to be indirect to nearest floor sink, piping and connection by PC.
13. Client agency shall supply pans, bowls, crocks, etc.
14. FSEC to verify quantity and sizes of adapter bars to be used with variety of pans.
15. Equipment to be NSF and UL listed and labeled.
16. When located in enclosed cabinet: Ventilation required, Millwork Fabricator to provide McNichols 16-gauge 1614381648 wire mesh framed insert in doors.
17. Provide item as specified with all accessories and options or equal as manufactured by Vollrath and Wells. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8C108 ICE BIN / ICE CADDY , MOBILE
Quantity: One (1)
Manufacturer: Cambro
Model: ICS100L110

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model ICS100L110 SlidingLid™ Ice Caddy, mobile, 28-3/4"H, 100 lb. capacity, slant top slides up/back into secured top, foam insulation, molded in side grips, lift grips front/back, drain shelf, recessed drain faucet, no assembly required, (4) 5" caster (2 swivel, 2 fixed with brakes), black, NSF
2. Provide item as specified with all accessories and options or equal as manufactured by AllPoints and Rubbermaid. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8C109 ESPRESSO CAPPUCCINO MACHINE
Quantity: One (1)
Manufacturer: Egro USA
Model: EGRO NEXT TOP MILK XP

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model EGRO NEXT TOP MILK XP Egro NEXT Top Milk XP, super-automatic, app-controlled user interface, 10" HD Android smart tablet for unlimited menu selections, (2) self-adjusting grinders & (2) hoppers, automatic daily cleaning, centralized hot water, Americano bypass single cup, milk is automatically steamed & frothed, includes: milk pumps (for one type of milk), up to 250 milk drinks per hour, ABS & stainless steel construction, CE, cETLus, ETL-Sanitation
2. One (1) 2 year parts & 1 year labor warranty
3. One (1) Machine install, start-up and calibration of equipment by Egro authorized service provider. Does not include the creation of new menu items or loading custom graphics. Please contact us prior to equipment shipment with menu needs
4. One (1) 220v/60/1-ph, 30 amp, 6000 watts, NEMA L6-30P, standard
5. One (1) Model 98-RG-WTR-SYS Rancilio Water Filter Complete System, with Sanitary Quick Change (SQC), inhibits scale, reduces chloramines, chlorine taste & odor, 0.5 micron rating, 0.5 gpm flow rate, 1204 gallons hardness capacity (based on 9gpm), includes hardness test kit, connections, & mounting bracket, for use with coffee & tea, NSF
6. One (1) Water filtration kit required for warranty, 98-RG-WTR-SYS water filter is acceptable to most locations; Water hardness should be within 2-3 gpg (see RGNA Water Quality Statement); failure to comply with RGNA Water Quality Statement will void warranty.
7. One (1) Model MILK COFFEE CLEANING TABLETS (1) Egro Coffee Cleaning Tablets, (100) tabs per bottle & (2) Egro Milk Coffee Cleaning Tablets, (50) tabs per bottle
8. One (1) Model SELF-SERVICE PACKAGE (NEXT TOP MILK) Complete self-service package for Egro Next Top Milk models. Includes locks for hoppers, grounds drawer, tablet chute and fridge. A cup guide and automatic cup outlet that automatic adjusts to the cup height and lowers during rinsing.
9. One (1) NEXT Fridge, 6.5 liter (1.7 gallon) capacity countertop fridge fits on the left side of the machine
10. One (1) Model EGRO POWDER MODULE Egro Powder Module for Egro NEXT, (2) removable hoppers, 2.6 lbs capacity each, external module fits alongside machine, enables machine to create a variety of flavored drinks using powder, 110v/60/1-ph, CE, cETLus, ETL-Sanitation
11. One (1) Multi-Milk, enables the machine to deliver two different types of milk. Special order option, may result in longer lead times.
12. One (1) Year 1 scheduled maintenance visit, at 12 months from date of install
13. One (1) Shipping from Woodridge, IL 60517. For shipments to Hawaii & Alaska, rural delivery, areas with high security, residential delivery or when a liftgate is needed additional fees may be applied
14. FSEC required to schedule and provide equipment training with documentation having client agency/operator present.
15. Plumbing Contractor to make all connection, from water source, to filter and unit and extend drain to floor sink.
16. Provide item as specified with all accessories and options or equal as manufactured by Franke and Scchaerer. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8C109.1 WATER FILTER SYSTEM, ESPRESSO, Included
Quantity: One (1)
Manufacturer: Egro USA
Model: 98-RG-WTR-SYS

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model 98-RG-WTR-SYS Water Filter System, Espresso
2. Included with item #8C109, Espresso Machine
3. Plumbing Contractor to install water filter system in water supply line and furnish and install interconnecting hard copper piping between water filter and equipment water inlet. Water Filter provided by FSEC.
4. FSEC to furnish proper type of stainless steel mounting hardware for wall construction to sustain weight while in use.
5. GC to install wall blocking as required for mounting. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
6. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.
7. Install filter as per elevations on food service drawings.
8. FSEC to provide a sticker and date of installation on filter cartridges.
9. Water filter overflow tube to be extend to nearest floor sink with 1" air gap
10. For more information see filter installation detail MEP-101.
11. Provide item as specified with all accessories and options or equal as manufactured by Everpure and 3M Purification. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8C110 REACH-IN UNDERCOUNTER FREEZER
Quantity: One (1)
Manufacturer: Victory Refrigeration
Model: VUF27HC

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model VUF27HC Undercounter Freezer, Powered by V-Core™, one-section, 27"W, rear mounted self-contained refrigeration, 6.15 cubic feet capacity, (1) self-closing door, (2) epoxy coated wire shelves, full electronic control, 1/2" thick stainless steel top, stainless steel door, front, & sides, aluminum interior, Santoprene gaskets with 2 year warranty, R290 Hydrocarbon refrigerant, 1/4 HP, UL-Sanitation, cULus, UL EPH Classified, MADE IN USA
2. One (1) 7-year parts & labor and 7-year compressor warranty; excludes maintenance items
3. One (1) 115v/60/1-ph, 2.5 amps, with cord & NEMA 5-15P
4. One (1) Door hinging: on left at factory
5. One (1) Model 00C30-099A Door Lock
6. One (1) 3" Casters, in lieu of standard 6" casters
7. Provide item as specified with all accessories and options or equal as manufactured by Beverage Air and True. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8C111 WATER FILTER SYSTEM, COMBINATION APPLICATIONS
Quantity: One (1)
Manufacturer: Everpure
Model: EV933042

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model EV933042 High Flow CSR Twin-MC2 System, for combination coffee brewers, fountain, ice & steam, 18,000 gallon capacity, 3.34 gpm flow rate, 0.2 micron rating, (2) MC 0.2 micron precoat Cartridges (1) SRX scale reduction feeder (1) EC210 pre-filter, water shut-off, pressure gauges, flushing valve
2. One (1) This system requires (2) cartridges, (1) pre-filter & (1) scale reduction feeder.
3. Two (2) Model EV961256 MC² Water Filter Cartridge, For cold beverage applications, Everpure® MC² Cartridge, (1) MC² Micro-Pure® II Precoat primary filtration cartridge, reduces scale, chlorine, taste & odor, inhibits bacterial growth, 9,000 gallons, 1.67 gpm, 0.2 micron, NSF 42 & 53
4. One (1) Model EV953426 Replacement Cartridge: EC210 Prefilter Cartridge, EC210, (6) EC210 cartridges, sediment reduction, 10 micron
5. One (1) Model EV979902 SS-10 ScaleStick Water Filter Cartridge, SS-10 ScaleStick, (12) SS-10 ScaleStick cartridges, HydroBlend compound inhibits scale, 0.1-6.0 gpm
6. Plumbing Contractor to install water filter system in water supply line and furnish and install interconnecting hard copper piping between water filter and equipment water inlet. Water Filter provided by FSEC.
7. FSEC to furnish proper type of stainless steel mounting hardware for wall construction to sustain weight while in use.
8. GC to install wall blocking as required for mounting. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
9. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.
10. Install filter as per elevations on food service drawings.
11. FSEC to provide a sticker and date of installation on filter cartridges.
12. Water filter overflow tube to be extend to nearest floor sink with 1" air gap
13. For more information see filter installation detail MEP-101.
14. Provide item as specified with all accessories and options or equal as manufactured by 3M Purification and OptiPure. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8C112 RAPID COOK OVEN
Quantity: One (1)
Manufacturer: Merrychef USA
Model: CONNEX 12 HIGH POWER CARBON BLACK

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CONNEX 12 HIGH POWER CARBON BLACK Merrychef conneX® 12, High Power Microwave Convection/Impingement Oven, 2000 watt microwave / 2200 watt convection, ventless, 12" x 12" cooking cavity, EasyTouch™ 2.0 , 7" high definition touchscreen control, bottom-hinged door, built-in catalytic converters, (1) cook plate (DB0739), (1) paddle (SR318), (1) solid bottom basket (32Z4165), (1) cool down pan (32Z4079), (1) non-stick cooking liner (32Z4088), (1) oven cleaner/protector pack (32Z4148), (1) Scraper (32Z4191), (1) steam pipe brush (32Z4188), carbon black exterior, cULus, UL EPH Classified
2. One (1) 1 year parts & labor warranty, standard
3. One (1) 208-240v/60/1-ph, 6 foot cord with NEMA 6-30P (X12DBMV6DFL1BKUS), standard
4. One (1) Model DB0739 Flat/Flat e2s Cook Plate, 12" x 12.1" x 0.24"
5. One (1) Model 32Z4081 Teflon Basket, perforated base, 11" x 11" x .5", black
6. One (1) Model 32Z4166 Signature, Teflon Basket, perforated base, 11" x 11" x 1/2", black
7. One (1) Model P80011 Mesh liner, Black, H1/8 x W12 x D12"
8. One (1) Model SR318 Guarded Paddle, 16.8" x 11.8" x 2.7", with supporting side walls & handle
9. One (1) Model 32Z4113 Non-Stick Mould 4x
10. One (1) Model 32Z4190 Brush, soft bristles, blue
11. One (1) Model 32Z4189 Brush, hard bristles, red
12. One (1) Model 32Z4191 Scraper
13. One (1) Model 32Z4144 Oven cleaner, (1) case, includes (6) bottles oven cleaner with 2 spray triggers
14. One (1) Model 32Z4145 Oven protector, (1) case, includes (6) bottles oven protector with 2 spray triggers
15. FSEC required to schedule and provide equipment training with documentation having client agency/operator present.
16. Client agency/Operator to be signed up with manufacturer's update notification service and instructed how to receive and update software, when it is made available.
17. Provide item as specified with all accessories and options or equal as manufactured by TurboChef and UNOX. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8C113 HAND SINK, DROP-IN
Quantity: One (1)
Manufacturer: Eagle Group
Model: SR10-14-5-1

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model SR10-14-5-1-RS Self-Rimming Drop-In Sink, one compartment, 10" wide x 14" front-to-back x 5" deep bowl, 4" OC deck mount faucet with gooseneck spout (302004), includes basket drain, 20/304 stainless steel construction, NSF
2. One (1) Model E44 Punching extra faucet holes or changing location of faucet holes from standard
3. Omit standard faucet, provide T&S Brass faucet, item #8C113.1
4. Food Service Equipment Contractor to drop-in and seal sink to millwork stone countertop utilizing manufacturer recommended sealer and fasteners; Ensure a complete even seal without any gaps providing easy cleanability and preventing bacteria growth in gaps.
5. Provide item as specified with all accessories and options or equal as manufactured by Advance Tabco and John Boos. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8C113.1 HANDS FREE ELECTRONIC FAUCET
Quantity: One (1)
Manufacturer: T&S Brass
Model: EC-3100-HG

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model EC-3100-HG ChekPoint™ Electronic Faucet, deck mount, rigid gooseneck, vandal resistant aerator, AC/DC control module, mixing tee, hydro-generator power supply, includes optional 100-240 VAC adapter
2. Unit is specified and provided with Hydro Generator; no receptacle is needed to power the electronic sensor.

ITEM # 8C113.2 PAPER TOWEL DISPENSER, SURFACE MOUNTED
Quantity: One (1)
Manufacturer: Bradley Corporation
Model: 2B1-110000

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model 2B1-110000 Surface-mounted towel dispenser. High quality and style. 20-gauge, 300 series stainless steel in a brushed #3 satin finish. Welded, pill-shape construction. Red, low-level indicator provides notice that refill is needed. Integral, easy-feed towel guide liner. Magnetic locking system and magnetic key included.
Overall Dimensions:
16-13/16" H x 13-15/16" W x 4" D
2. FSEC to VERIFY paper towel SIZES with owner BEFORE placing order and adjust dispenser model number accordingly, as required to accommodate client agency's standard facility paper towel size/fold.
3. FSEC to be responsible for providing and installing hollow masonry anchors and any other appropriate hardware to support dispenser on wall.
4. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
5. GC to furnish and install blocking in wall, as needed to support dispenser.
6. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.
7. Provide item as specified with all accessories and options or equal as manufactured by Bobrick and AllPoints. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8C113.3 SOAP DISPENSER, SURFACE MOUNTED
Quantity: One (1)
Manufacturer: Bradley Corporation
Model: 6B1-119300

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model 6B1-119300 Sensor-activated, surface-mounted soap dispenser shall be fabricated of 20-gauge, 300 series stainless steel in a brushed #3 satin finish. Dispenser shall have completely concealed mounting and low-level indicator. Capacity is 40-oz liquid soap/gel sanitizer or bulk foam soap. Mounting hardware is not included.
Overall Dimensions:
18-1/16" H x 6-7/8" W x 3-15/16" D
2. FSEC to VERIFY paper towel SIZES with owner BEFORE placing order and adjust dispenser model number accordingly, as required to accommodate client agency's standard facility paper towel size/fold.
3. FSEC to be responsible for providing and installing hollow masonry anchors and any other appropriate hardware to support dispenser on wall.
4. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
5. GC to furnish and install blocking in wall, as needed to support dispenser.
6. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.
7. Provide item as specified with all accessories and options or equal as manufactured by Bobrick and AllPoints. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8C114 SNEEZEGUARD SYSTEM
Quantity: One (1)
Manufacturer: BSI
Model: ZG9915

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model ZG9915 ZGuard® Food Shield, single, combo service, fully adjustable, 20-1/2" height, 14" wide tempered glass top shelf & 14" wide vertical offset service shelf, 1" diameter tubing single supports, cULus
2. One (1) Stainless steel tubing
3. One (1) Frame Finish: Stainless steel #4
4. One (1) 3/8" Tempered glass
5. One (1) 1" radius corner, standard
6. One (1) Model MWU5 Millwork Undercounter Mount, includes heavy duty flange & stainless steel wood screws, nylon grommet, requires undercounter access, NSF, UL
7. Provide 1" dia. support posts, at each end with (1) adjustable bracket per end post and center post
8. 3/8" tempered glass construction with eased edges
9. 3/8" tempered glass end panels, (not 1/4")
10. ZGuard Mounting Method to be MWU5- Below Counter Mount Heavy Duty Flange – 2.25". Extend post to base for added stability when possible.
11. Provide nylon grommet for each post where post interfaces with countertop
12. Construction and installation of breath protector to meet NSF requirements.
13. Finishes as per finish schedules.
14. Unit shall be shipped knocked down to millwork fabricator shop for pre-fitting and installation in millwork counters at factory.
15. FSEC to coordinate with millwork shop drawings and verify all dimensions and locations of uprights, counter supports and ballasts to ensure proper interface with counter and associated equipment.
16. This item shall have junction box(es) and ballast, furnished and installed by FSEC in a way as not to interfere with cabinet storage and light switch to be installed in apron. On/Off operation of lights to be by a recessed switch mounted in apron, interconnected to light ballast. Switch to be recessed in a control enclosure Component Hardware model #R73-1212. See Millwork Detail MWK-300. Switch, control enclosure and interconnection by millwork fabricator of counter.
17. Equipment to be NSF and UL listed and labeled.
18. Provide Shop Drawings for review and approval.
19. For sneezeguard configuration refer to details BG-100 through BG-107.
20. For post installation details refer to detail #BG-201.
21. Provide item as specified with all accessories and options or equal as manufactured by PMG and Versa-Gard. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8C115 NUGGET ICE MAKER
Quantity: One (1)
Manufacturer: Hoshizaki
Model: FD-650MAJ-C

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model FD-650MAJ-C Ice Maker, Cubelet-Style, 22"W, air-cooled, self-contained condenser, production capacity up to 634 lb/24 hours at 70°/50° (495 lb AHRI certified at 90°/70°), stainless steel finish, H-Guard Plus antimicrobial agent, compressed cubelet style ice, Advanced CleanCycle24™, R404A refrigerant, 115v/60/1-ph, 11.3 amps, NSF, UL
2. One (1) Warranty: 3-Year parts & labor on entire machine
3. One (1) Warranty: 5-Year parts on compressor & air-cooled condenser
4. One (1) 3 wire with neutral for 115v, standard
5. Plumbing Contractor to extend drain lines to Floor Sink for indirect waste requirements.
6. Provide item as specified with all accessories and options or equal as manufactured by PMG and Versa-Gard. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8C116 ELECTRIC FRYER, BATTERY
Quantity: One (1)
Manufacturer: Frymaster/Dean
Model: FPRE214

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model FPRE214 Frymaster® Fryer Battery, electric, hi-efficiency, (2) 50 lb. capacity each, built-in filtration, open frypot design, automatic melt cycle, boil out temperature control, temperature probe, includes: rack-type basket support, basket hanger & twin baskets, stainless steel frypots, doors, & cabinets, (2) 14kW, cULus, NSF, TUV, ENERGY STAR®, Enerlogic®
2. One (1) Electrical specs must be specified
3. One (1) CM3.5 controller, standard
4. One (1) Full frypots, standard
5. Two (2) Model 8030132 Frymaster®/Dean® Basket Support Rack, full pot, 12-1/2" W x 13-3/4" D (not available in split pot) (H55, MJ50, GF40, RE14, RE17, RE22, RE14TC, RE17TC, RE22TC, OCF30, SR14E)
6. Two (2) Model 8239414 Frymaster® Frypot Cover, 14-7/8" W x 19-3/8" D, stainless steel
7. One (1) Model 8030002 Frymaster®/Dean® Filter Powder, box of 80, 1 ounce packs
8. One (1) External oil discharge (front option), available on built-in filter batteries of two more frypots or a frypot/spreader, front connection comes with 5' washdown hose (Call Customer Service for availability)
9. One (1) Casters, 5" diameter (set of 4), standard
10. One (1) Installation-2 battery
11. FSEC required to schedule and provide equipment training with documentation having client agency/operator present.
12. Provide item as specified with all accessories and options or equal as manufactured by Vulcan and Pitco. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8C117 EQUIPMENT STAND, REFRIGERATED BASE
Quantity: One (1)
Manufacturer: Victory Refrigeration
Model: CBR48HC-ALT

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CBR48HC-ALT Chef Base Refrigerator, Powered by V-Core™, one-section, 48"W, self-contained, 8.59 cu. ft. capacity, (2) drawers (upper drawer accommodates (2) 12" x 20" x 6" pans per drawer & lower drawer accommodates (2) 12" x 20" x 6" pans per drawer - not included), full electronic control, stainless steel exterior (galvanized back & bottom), aluminum interior, magnetic gaskets with 2 year warranty, side mounted self-contained refrigeration system, R290 hydrocarbon refrigerant, 1/6 HP, cULus, UL EPH Classified, UL-Sanitation, MADE IN USA
2. One (1) 7-year parts & labor and 7-year compressor warranty; excludes maintenance items
3. One (1) 115v/60/1-ph, 1.7 amps, cord with NEMA 5-15P
4. One (1) Compressor located on left
5. One (1) Marine edge, standard
6. One (1) Drawer locks on all drawers, per unit
7. One (1) Model 00C31S073A 3" Casters, plate (2 braked), for WTFCS & WTRCS series (set of 4), standard
8. Provide item as specified with all accessories and options or equal as manufactured by Beverage Air and True. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8C118 GRIDDLE, ELECTRIC, COUNTERTOP
Quantity: One (1)
Manufacturer: Star (Middleby)
Model: 748TA

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model 748TA Ultra-Max® Heavy Duty Griddle, electric, countertop, 48" W x 24" D cooking surface, 1" thick polished steel griddle plate, 150°-450°F snap-action thermostat and 4350 watt element every 12", 5" tapered wrap-around splash guard, 3-1/2" front grease trough, 6 qt. grease drawer, heavy-duty metal knobs, welded steel frame with stainless steel exterior, 4" legs with 1-5/8" adjustment, cULus, UL EPH Classified, Made in USA
2. One (1) 2 year parts & labor warranty, standard
3. One (1) (748TA-1PH) 208v/50/60/1-ph, 17.4 kW, 83.6 amps, standard
4. Provide item as specified with all accessories and options or equal as manufactured by Vulcan and Garland. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8C119 EXHAUST HOOD
Quantity: One (1)
Manufacturer: Halton
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Exhaust Hood
2. Refer to sheet QF-X700 - QF-X711 for Halton engineering drawings for size and shape of each ventilator, CFM requirements and additional construction information.
3. Provide Halton Company, Scottsville, KY. Capture Jet wall type exhaust canopy hood. Hood capture area shall have sufficient inside dimensions, front to back to ensure proper overhang for equipment shown.
4. Unit to be listed to U.L. 710 standards, wall mounted exhaust hood of size and shape as shown on plan. Hood heights not to exceed 24", mounted 6'-8" AFF. Canopy hood shall be designed specifically for the cooking equipment being covered.
5. Hood shall provide provisions for the M.A.R.V.E.L II Demand Control System. This includes Infrared Radiation Index Sensors (IRIS Sensors), duct temperature thermostat, pressure transducer, controller and Automated Balancing Damper (ABD Damper) at each exhaust duct. There shall also be an "Override" panel mounted to the face of each individual hood. There shall be one common control panel for MARVEL. The M.A.R.V.E.L II system shall come with a HMI color touch screen capable of monitoring parameters including but not limited, hood status (off, idle, cooking), real time airflow monitoring, exhaust temperature, damper position and energy savings. HMI will indicate any current faults that need operator attention. Some features are password protected for security purposes. HMI touch screen to be housed in stainless steel surface mounted control box.
6. Listed manufacturers and manufacturers requesting approval as equals must apply for permission to do so, in writing from the office of the consultant. Application must be received by the consultant at least 10 working days prior to bid date. Any alternate system must meet construction and performance requirements and efficiencies as outlined in this specification. Requests for approval must include:
 7. Grease filtration performance data (micron size vs. extraction), pressure loss curve for exhaust airflow
 8. Efficiency comparison data to be performed in accordance with ASTM standard F1704-96 and include results for exhaust rate for capture and containment of convective plume, temperature rise of exhaust air and heat gain to the space (kBtu/h). The data in these reports should not be used as the basis for design exhaust rates and specifications.
 9. Provide stainless steel ceiling make up air plenum with 10% open perforated panels. Make up air will be calculated so that the same amount of air will be taken from the zone as is required by the specified system. Any additional load cannot be placed on the kitchen HVAC system
 10. Manufacturer must provide a written guarantee of performance, ensuring the specifying engineer that the system will perform to the engineer's satisfaction when installed and balanced according to design airflows and be consistent with ASTM standard F1704-96 test results (as determined by TAB ports and pressure vs. airflow curves).
 11. Engineer/Consultant reserves the right to reject any system which is not consistent with results of ASTM standard F1704-96 testing wherein the original hood configuration (height increases, rear seals, etc.) are deleted from substitution request and would result in additional heat gain being rejected . Contractor would be required to replace at contractor's expense.
 12. The canopy shall bear the ETL, US/Canada, for listed range hood without exhaust fire damper per standard 710 and be fabricated in compliance with NFPA-96-2010 and shall bear the National Sanitation Foundation seal of approval

13. Construction: Hood construction shall be all 18-gauge stainless steel type 304 with #4 finish where exposed. All seams on the inner liner shall have grease tight joints. Each canopy shall have a filter housing of the same material as the canopy liner. The outer shell shall be 18-gauge stainless steel, type 304 with #4 finish. Canopy ends shall be double sidewall construction (no single wall hoods permitted). All exterior joints shall be grease tight, ground smooth, and polished to a #4 finish. The canopy shall have an integral exhaust duct collar, sized as shown. The canopy shall have an integral Capture Jet intake grille. (top standard, front optional) Hood shall be installed with hanger rods to structural ceiling, and leveled, by this contractor at least 6'-8" above finished floor to the bottom front edge. The hood system shall be listed to 0" clearance to combustibles on all open sides. Provide 18 or 20 gauge stainless steel closure securely anchored to the hood extending to the finished ceiling.
14. Hood to be equipped with U.L listed exhaust automatic balancing dampers and all necessary components that will be controlled by the Halton M.A.R.V.E.L II controls system.
15. Exhaust Airflow: The exhaust airflow will be based on the convective heat generated by the appliances underneath each canopy. Submittal shall include convective heat calculations based on the input power of the appliance served.
16. Capture Air: Hood shall include an integral Capture Air Jet fan with top intake. Fan shall introduce air into a front plenum where Capture Air Jets are used to increase capture air velocities at all opens sides the hood opening and increase the capture efficiency of the smoke and contaminated air at both the face and sides of the hood. The jets are a part of a special discharge panel introducing a maximum of 10% of the calculated exhaust flow. The air jet discharge velocity will be a minimum of 1500 FPM. Slot or curtain type discharge shall not be used. The airflows through the grease extractors and canopy capture area are to be determined through integral Testing and Balancing ports mounted on the hood. The airflows are to be determined by the pressure vs. airflow curves. Use of Capture Walls to create a seal between cooking equipment and wall shall not be used as they require cooking equipment to be located further from wall reducing isle space. Bottom edge of hood front panels to be square, chamfered front shall not be allowed as they reduce front overhang and jeopardize capture and containment over tall cooking equipment.
17. A manufacturer's representative shall be present at the startup of all systems and witness the testing and balancing. A written startup and installation report shall be submitted by the manufacturer's representative to the client agency and engineer
18. Grease Extraction: The hood shall be equipped with model KSA multi-cyclone stainless steel grease extractors. The grease extraction efficiency is 93% on particles with a diameter of 5 microns and 98% on particles with a diameter of 15 microns or larger, as tested by an independent testing laboratory. The pressure loss over the extractor shall not exceed 0.50" of water at flow rates approved by U.L. for heavy load cooking. Sound levels shall not exceed an NC rating of 55. Baffle of slot type extractors shall not be used.
19. Grease Trough: The filter housing shall be equipped with a concealed drip tray the full length of the canopy and with a grease cup for easy removal and daily cleaning.
20. Ventilator shall be provided with thermostat/fan interlock option as required by the 2006 IMC.
21. Provide and install Halton Patent Pending LED light fixture with the following certifications U.L., CSA, NSF and CE for use in grease exhaust hoods in quantity sufficient to provide 50-foot candles at the cooking surface when hood is mounted 84" A.F.F. Halton LED light fixture is complete with die cast aluminum junction box with integral fins for natural heat dissipation. Input voltage of 24Vdc with a power consumption not to exceed 20-watts. The housing encases 24 LED light emitters with a brightness of 1000-lumens. Lamp body is stainless steel ring with a high temperature silicone seal. Junction box to accept standard ½" NPT fitting. Fixture shall come complete with integral power supply with an input voltage of 108VAC – 305VAC and input frequency of 50/60 Hz. Input current rating shall be 0.57A @ 120VAC. Fixture shall contain no mercury or lead.
22. Fire suppression pre-piping for Ansul R102 shall be provided by the hood manufacturer to conceal all horizontal piping. Exposed fire suppression drops to be chrome sleeved. Fire suppression system to be installed in utility cabinet mounted on end of hood. Fire suppression enclosure to be mounted on end of hood.

23. FSE Contractor is responsible for fit of equipment. Prior to releasing hoods for fabrication, FSE Contractor needs to verify field conditions (existing &/or proposed) and to determine clearances to all structural items, obstructions, etc. The FSE Contractor will coordinate with other trades to confirm that the hood can be mounted as proposed and that the ductwork and final connection can be accommodated without conflict. Failure to perform this step may result in modifications to the exhaust hood at the FSE Contractor's expense.

ITEM # 8C119.1 WALL MOUNTED CONTROL CABINET
Quantity: One (1)
Manufacturer: Halton
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

- . One (1) Model CUSTOM Wall Mounted Control Cabinet
2. Halton M.A.R.V.E.L. II system to service hood item D106. System to interface with hood mounted infrared cooking activity sensors capable of measuring appliance surface temperatures. Infrared sensor will read appliance surface temperature which will be translated by the specific calculation algorithm for that appliance and will respond proactively to any change in cooking status. Infrared sensor and exhaust collar mounted temperature sensor work in concert on differential temperature reading back to the controller. System is capable of operating multiple individual hoods and/or hood sections on a common fan independently of each other. Additionally, the hood mounted ABD damper shall be controlled to adjust automatically based on appliance status to maintain proper airflow from idle to design airflow.
System to also come equipped with utility cabinet and VFD(s), (provided by Mechanical Contractor) to control fan speeds (if specified). The M.A.R.V.E.L. II system shall automatically control the speed of the exhaust fan. System will output a 0-10v proportional signal to the BMS to control make up air fan. Signal is proportional of exhaust 0-100% of design flow.
The system is equipped with a manual override switch on the face of the hood. Normal hood function is automatically regulated based on the appliance status. The integrated PLC will analyze signals from the cooking activity sensors, temperature sensors and pressure transducers mounted in the hood and then send a signal to the ABD damper and VFD to adjust the exhaust fan and supply fan speed to satisfy current cooking load conditions. The system shall be monitored with an internet connected web browser from either a local or remote location. Marvel II Demand Control System shall be provided with a graphical display of the kitchen hood(s) and cooking equipment viewable in real time. Such a model will be accessible thru a broadband connection (installed per specification) and show real time status and function of the exhaust hoods, current exhaust airflow, damper position, duct temperature, space temperature, grease sensor and VFD status. System will include 1 year monitoring service with automated alarm signaling to the client agency or BMS. System will also be accessible by the client agency thru the Web for this one year term.
3. Division 16 will be responsible for wiring between the supplied Halton M.A.R.V.E.L. control panel and the hood mounted sensors. Division 16 will also be responsible for wiring between the Halton M.A.R.V.E.L. control panel and the VFD's and then from the VFD's to the exhaust/supply fan motors. Halton to provide inter-connectivity cables between the hoods and associated control panels. Halton to provide room temperature sensor. Electrician to provide labor to run cables and required control power per submittal drawings.
The Demand Control system shall have the capability to be expanded to deploy additional control and monitoring functions should the facility operator choose to do so post commissioning. The System shall have the capability to be continuously connected via the internet to a Network Operations Center (NOC) operating 24/7/365 for real-time supervision, management, trending, reports and alarms notifications via email and SMS. The Operator shall have the ability to connect to the Demand system console from any Web access device to monitor, configure or manage it.

4. The Demand Control System may be utilized as a single autonomous device, or as a part of a network. The Demand Control System when controlling 4 hoods or more shall be capable of monitoring and controlling up to 3 typical roof top units. The optional expansion of the MARVEL system to include such features but not limited to monitoring building power, monitor a walk in cooler or a walk in freezer, with a total of up to 12 inputs without additional control hardware. Upgrading to Facilities Optimization and Resource Management (FORM) is project specific and outlined in the specifications. The Demand Control System shall support one UART-based serial interface that is jumper selectable to provide an RS-232 or an RS-485 interface to an external device (e.g., power meter), or to an internal daughterboard for supporting another communications interface (e.g., wireless sensor network connection). All of the controllers within the Demand Control System cooperate and share information to optimize the overall energy performance of the facility.
5. Provide item as specified with all accessories and options or equal as manufactured by Gaylord and Captive-Aire. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8C119.2 FIRE PROTECTION SYSTEM
Quantity: One (1)
Manufacturer: Ansul Fire Protection
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Fire Protection System
2. Fire Suppression System shall be furnished and installed by the Food Service Equipment Contractor and shall be an automatic wet chemical system equipped with fusible link release and a remote pull box system designed to protect the ventilator plenum, ductwork and cooking equipment, as required. Wet chemical system shall be installed in full compliance with the requirements of Underwriters Laboratories, NFPA Pamphlet #96, Insurance Interests and ventilator manufacturer. Interior piping and nozzles shall be installed in the ventilator to ensure compatibility with the terms of the UL listing
3. Cylinders and remote manual pull box shall be mounted in appropriate approved locations. System shall be complete with mounting brackets, tripping mechanisms, fusible link housings and stainless-steel cable. All $\frac{3}{4}$ " connecting pipe and cable conduit from cylinders to ventilator shall be run above the finished ceiling and concealed as much as possible. All exposed pipe, cable, conduit, tees, elbows, detector housings and nozzles shall be stainless steel, chrome plated or sheathed in chrome plated tubing. Wiring to and from the heat detectors shall be furnished and installed by the FSEC.
4. Activation shall be through: A.) manual activation of push button cabinet OR, B.) manual activation of remote manual pull station OR, C.) automatic action of fusible links or thermostatic detectors located in hood
5. Included in the installation shall be two (2) inspections of the system: one at six-month interval and one at a twelve-month interval. The responsibility for the complete recharge will be that of the client agency.
6. The Electrical Contractor will furnish and install electrical conduit wiring from cylinder micro-switch (4 micro switches furnished and installed by the FSEC) to shunt trip breaker for shut-off of electrical service to equipment as required. All equipment under the hood should be on a shunt trip breaker.
7. Electric Gas shut-off valve to be furnished by the FSEC for up to 3" size and installed in the main gas line by the Plumbing Contractor. Gas valve to be normally-closed, powered-open design and shall fail closed upon activation of hood fire suppression system, loss of power, manual deactivation of hood-fan or failure of fan. Gas shut off valve installation to be visible and accessible
8. FSEC to locate manual fire pull stations, coordinate with GC and note on shop drawings. Electrical Contractor to supply recessed octagon junction box at the located fire pull station. Refer to typical detail EXH-1 on Food Service Design documents.
9. Equipment to be NSF and UL300 listed and labeled.
10. Installation to be performed by authorized and licensed dealer only.

ITEM # 8C119.3 FIRE PULL STATION, WALL MOUNT
Quantity: One (1)
Manufacturer: Ansul Fire Protection
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Fire Pull Station, Wall Mount
2. Included in Fire Suppression System item #8C119.2
3. FSEC to verify Manual Fire Pull location with the Fire Marshal prior to installing and confirm if shown location meets AHJ requirements.
4. Refer to Manual Fire Pull Detail EXH-11.

ITEM # 8C119.4 FIRE EXTINGUISHER
Quantity: One (1)
Manufacturer: Ansul Fire Protection
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Fire Extinguisher
2. Provide K-Guard fire extinguisher and mount on wall at 48" AFF.
3. The K-GUARD fire extinguisher is to be constructed of high-quality materials, including a stainless-steel shell, tube and strainer, and to have an effective discharge range of approximately 10 feet (3.1 m). To feature a "universal" hose and nozzle configuration, along with a valve and tube assembly, for easy maintenance. The extinguisher to contain 1.6 gallons (6 L) of ANSULEX Low pH agent which is gentler on stainless steel appliances and is approved for operation in environments with temperatures from -20 °F to 120 °F (-29 °C to 49 °C). Additionally, bi-lingual pictogram nameplates and bold caution statements help to ensure employees understand how to operate the extinguisher in a fire emergency. The K-GUARD extinguisher is to be warranted for six years from date of delivery to the original end-user purchaser.
4. G.C. to provide blocking in wall.

ITEM # 8C119.5 S/S WALL FLASHING, HOOD
Quantity: One (1)
Manufacturer: Halton
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM S/S Wall Flashing, Hood
2. Wall Panels are supplied as part of the hood package, item #8C119

ITEM # 8C120 UNDERCOUNTER REFRIGERATOR
Quantity: One (1)
Manufacturer: Victory Refrigeration
Model: VUR27HC

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model VUR27HC Undercounter Refrigerator, Powered by V-Core™, one-section, 27"W, rear mounted self-contained refrigeration, 6.15 cubic feet capacity, (1) self-closing door, (2) epoxy coated wire shelves, full electronic control, 1/2" thick stainless steel top, stainless steel door, front & sides, aluminum interior, Santoprene gaskets with 2 year warranty, R290 Hydrocarbon refrigerant, 1/10 HP, UL-Sanitation, cULus, UL EPH Classified, MADE IN USA
2. One (1) 7-year parts & labor and 7-year compressor warranty; excludes maintenance items
3. One (1) 115v/60/1-ph, 2.0 amps, with cord & NEMA 5-15P
4. One (1) Door hinging: standard on right
5. One (1) Model 00C30-099A Door Lock
6. One (1) 3" Casters, in lieu of standard 6" casters
7. Provide item as specified with all accessories and options or equal as manufactured by Beverage Air and True. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8C121 WATER FILTER SYSTEM, COMBINATION APPLICATION
Quantity: One (1)
Manufacturer: Everpure
Model: EV933042

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model EV933042 High Flow CSR Twin-MC2 System, for combination coffee brewers, fountain, ice & steam, 18,000 gallon capacity, 3.34 gpm flow rate, 0.2 micron rating, (2) MC 0.2 micron precoat Cartridges (1) SRX scale reduction feeder (1) EC210 pre-filter, water shut-off, pressure gauges, flushing valve
2. One (1) This system requires (2) cartridges, (1) pre-filter & (1) scale reduction feeder.
3. Two (2) Model EV961256 MC² Water Filter Cartridge, For cold beverage applications, Everpure® MC² Cartridge, (1) MC² Micro-Pure® II Precoat primary filtration cartridge, reduces scale, chlorine, taste & odor, inhibits bacterial growth, 9,000 gallons, 1.67 gpm, 0.2 micron, NSF 42 & 53
4. One (1) Model EV953426 Replacement Cartridge: EC210 Prefilter Cartridge, EC210, (6) EC210 cartridges, sediment reduction, 10 micron
5. One (1) Model EV979902 SS-10 ScaleStick Water Filter Cartridge, SS-10 ScaleStick, (12) SS-10 ScaleStick cartridges, HydroBlend compound inhibits scale, 0.1-6.0 gpm
6. Plumbing Contractor to install water filter system in water supply line and furnish and install interconnecting hard copper piping between water filter and equipment water inlet. Water Filter provided by FSEC.
7. FSEC to furnish proper type of stainless steel mounting hardware for wall construction to sustain weight while in use.
8. GC to install wall blocking as required for mounting. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
9. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.
10. Install filter as per elevations on food service drawings.
11. FSEC to provide a sticker and date of installation on filter cartridges.
12. Water filter overflow tube to be extend to nearest floor sink with 1" air gap
13. For more information see filter installation detail MEP-101.
14. Provide item as specified with all accessories and options or equal as manufactured by 3M Purification and OptiPure. These must be fully compatible with the design, meet or exceed the specified performance criteria, and ensure seamless integration and functionality.

ITEM # 8C200 SANDWICH / SALAD PREPARATION REFRIGERATOR, Existing to be Relocated
Quantity: One (1)
Manufacturer: True Mfg. - General Foodservice
Model: TSSU-72-18-HC

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model TSSU-72-18-HC Sandwich/Salad Unit, (18) 1/6 size (4"D) poly pans, stainless steel insulated cover, 11-3/4"D cutting board, (3) full doors, (6) PVC coated adjustable wire shelves, stainless steel top/front/sides, GalFan coated steel back, aluminum interior with stainless steel floor, R290 Hydrocarbon refrigerant, 1/2 HP, 115v/60/1-ph, 7.2 amps, NEMA 5-15P, cULus, UL EPH Classified, Made in USA
2. This unit is existing and is to be relocated.
3. GC shall coordinate to disconnect and reconnect of services, if required, shall be performed by related trades; final required utility connections to be verified by Plumber/Electrician. All Final connections by Electrician/Plumber.
4. GC is responsible for the removal, cleaning, storage, and relocation of the equipment.
5. FSEC to inspect unit and present a separate proposal fee if any repair/replacement of parts as necessary for item to operate in accordance with manufacturer requirements and specifications.

ITEM # 8C300 COFFEE BREWER, By Vendor
Quantity: One (1)
Manufacturer: BUNN
Model: 34600.0000

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model 34600.0000 34600.0000 DUAL TF DBC® BrewWISE® ThermoFresh® Coffee Brewer, 18.9 gal/hr., coffee extraction controlled with pre-infusion & pulse brew, digital temperature control, large spray head, automatic programming, stores individual recipes, SplashGard® & optional funnel locks, wireless brewer-grinder interface, stainless steel finish, lower hot water faucet, wireless brewer-grinder interface, holds (2) 1-1/2 gallon ThermoFresh servers (servers sold separately), 120/240v/60/1-ph, 6600w, 27.5amps, UL, NSF
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination, reference, and space allocation only.
3. Client agency shall furnish and install this item, through his vendor.
4. Client agency is responsible for verifying manufacturer, model number, size and components.
5. Client agency shall furnish GC with this information for utility requirements.
6. Client agency shall be responsible for verifying that space available will accommodate unit(s) and that these interface properly with adjacent equipment and counters.
7. FSEC is responsible for coordinating installation of this item with Client agency and GC in relation to adjacent and associated equipment.
8. GC to provide finished hole(s) in wall to accommodate utility lines, as needed, in coordination with Client agency and Client agency provided equipment.
9. Drain to be indirect to nearest floor sink, piping and connection by Plumbing Contractor.

ITEM # 8C300.1 THERMAL SERVER, BREW-THRU, By Vendor
Quantity: Two (2)
Manufacturer: BUNN
Model: 42750.0200

Furnish and set-in place per manufacturer's standard specifications:

1. Two (2) Model 42750.0200 42750.0200 TF ThermoFresh® Server with Digital Sight Gauge, with base & drip tray, 1-1/2 gallon, lever action dispensing, battery operated volume indicator display & 4-hour digital count-up timer, brew-through lid, portable, soft-grip bail handle, fast flow faucet, aluminum faucet guard, vacuum insulated, stainless steel liner, black finish, for use with twin or single Infusion Series brewers, NSF
2. G.C. to obtain specifications for equipment supplied by vendor.
3. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination, reference, and space allocation only.
4. Client agency shall furnish and install this item, through his vendor.
5. Client agency is responsible for verifying manufacturer, model number, size and components.
6. Client agency shall be responsible for verifying that space available will accommodate unit(s) and that these interface properly with adjacent equipment and counters.
7. FSEC is responsible for coordinating installation of this item with Owner and GC in relation to adjacent and associated equipment.

ITEM # 8C301 BAG-IN-BOX SYSTEM, By Vendor
Quantity: One (1)
Manufacturer: By Vendor
Model: BY VENDOR

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model BY VENDOR Bag-In-Box System
2. Refer to Item #8C302, Soda Dispenser, for installation notes.
3. Electrical Contractor to provide standard 20 amp receptacle at location.
4. Refer to Beverage Conduit Installation Detail MEP-401 on Typical Installation Detail Sheet.

ITEM # 8C302 SODA & ICE DISPENSER - LOCKABLE, By Vendor
Quantity: One (1)
Manufacturer: Manitowoc
Model: CEV40I

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CEV40I Soda & Ice Dispenser - Lockable
2. FSEC to verify routing and destination with vendor and all applicable trades and coordinate.
3. Soda Vendor to provide a complete and operational soda delivery system that will adequately handle the soda dispensers as indicated in this specification section.
4. Soda Vendor to provide and install all lines, pumps, gauges, dispensing units, carbonators, racks, product and miscellaneous parts. Coordinate with Food Service Director on site.
5. Soda Vendor to verify location and type of carbonators prior to installation.
6. GC to provide and install 6" PVC conduit for the soda lines. Location to be verified with the design team.
7. Placement of the soda line conduits are critical. Every effort shall be made to locate penetrations so they are concealed but accessible. All applicable contractors are to coordinate conduit locations with the project manager on site.
8. Millwork fabricator to provide soda line chase and counter cut-outs in beverage counter if required. Millwork fabricator to coordinate with soda Vendor.
9. FSEC to coordinate all specifications and installation of systems in advance of close-in and fabrication with the project manager, equipment fabricators, GC and food service consultant.

ITEM # 8C303 EXHAUST FAN, BY MEC
Quantity: One (1)
Manufacturer: Captive-Aire
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM EXHAUST FAN
2. MEC to size and provide.
3. Refer to sheet QF-X700 - QF-X711 Captive-Aire engineering drawings for CFM requirements and additional hood information.
4. MEC to size and provide based on CFM requirements as engineered by hood manufacturer.

ITEM # 8C400-8C404 FOOD SERVICE MILLWORK PACKAGE:
Quantity: One (1)
Manufacturer: CraftPoint Concepts
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

I. **PART 1 – GENERAL:**

- A. **FOOD SERVICE MILLWORK PACKAGE:** This is a custom fabricated item and is to be constructed as described in General Specifications and as further detailed on Food Service Contract Documents. Refer to architectural/interior design documents for finish selections and locations. Provide with all options, accessories and features as listed below. To include the following items:
Item #8C400 – Low Wall, Millwork
Item #8C401 – Bussing Counter
Item #8C402 – Front Counter
Item #8C402.1 – POS Surround
Item #8C402.2 – SneezeGuard System, Jewelry Case
Item #8C402.3 – S/S Corner Guards (Qty. of 4)
Item #8C403 – Back Bar Counter
Item #8C403.1 – Glove Box Dispenser, Single
Item #8C403.2 – S/S Corner Guards (Qty. of 2)
Item #8C404 – Low Wall
- B. **MANUFACTURER:**
Fabrication and installation of custom casework/millwork shall be provided by:
CraftPoint Concepts, 300 W Chestnut St, Ste 301, Ephrata, PA 17522
Phone: (717)283-4325
Email: quotes@craftpointconcepts.com
- C. **SUBSTITUTIONS:**
Will be considered from those that meet the following qualifications.
Minimum qualifications: Ten (10) years of custom millwork fabrication experience with projects of similar scope and complexity in food service type millwork.
Provide firm name, physical address, phone number, email address and contact person.
Provide engineered surface material certification numbers.
Provide brief list of projects recently completed with scope and complexity similar to this type of project.
Provide a 12x12 corner cabinet assembly sample showing construction method of cabinet structure and core material.
Full requirements of spec will be expected to be met including core material base construction and warranties as outlined in specification and contract drawing requirements.
Fabricator to certify and acknowledge best practices and expectation set as outlined in <https://millwork.scoposhq.com/> resource site.
Substitution form should be used as pre requirements outlined in section 114000-1.02, B/C "Alternate Proposals"
- D. **CERTIFICATION:**
UL: Millwork shall be UL listed for all integrated wiring and load centers. Shop drawings are to list UL number. Equipment to be labeled with UL listing number.
NSF: Millwork shall be NSF listed and certified. Shop drawings are to list NSF number. Equipment to be labeled with NSF listing.
- E. **GENERAL CONDITIONS:**
Refer to The General Conditions section 11 40 02, and Execution section 11 40 05 for additional requirements of this section.

F. RELATED WORK SPECIFIED ELSEWHERE TO BE PROVIDE BY OTHER TRADES:

1. General architectural millwork and custom cabinetry unless specified herein or so noted on the project plans.
2. Rubber, vinyl or other material for finishing cabinet toe kicks.
3. Locks Master key to room doors and other special locks.
4. Blocking within walls.
5. Sinks, plumbing fixtures, electrical and mechanical equipment of all types, food service equipment and the related installation and service connections thereof.

G. DESIGN & SPECIFICATION:

1. For sizes and functions of counters, refer to Food Service Design Documents consisting of elevations, sections, 3D illustrations, typical installation details and finish schedules.
2. All casework under this Section shall be the product of and supplied under the direction one manufacturer as specified in Section 3 of this part to eliminate incompatible items.
3. The Drawings and Specifications outline the design intent and the general requirements of casework for the project. Construction details and specifications for casework are not complete, and casework furnished shall be completed for the intended use.
4. The Drawings and Specification indicate requirements which may differ from manufacturer's standard product. Make all modifications necessary to comply with the requirements.
5. Casework shall be designed, fabricated and installed to meet the "Premium Grade" quality standards established in the latest edition of "Architectural Woodwork Standards" of the American Woodwork Institute (AWI).

II. PART 2 – PRODUCTS:

A. MATERIALS & FINISHES:

1. **GENERAL:** All casework shall comply with Premium Grade, as defined by AWI, unless otherwise specified or shown on Drawings.
2. **LAMINATED PLASCTICS/FINISHES:** High pressure decorative plastic laminate (HDPL) and vertical grade (.032) for exterior cabinet surfaces shall meet NEMA standards for vertical grade. HDPL for countertops shall be general purpose grade (.050).
3. **SUBSTRATE (CORE) MATERIAL:** Exterior grade plywood 18MM (3/4") 13 ply Baltic Birch glued with urea adhesive. Melamine, Particle Board or MDF are not acceptable for food service millwork.
4. **EDGING:** Solid, high impact, homogeneous color polyvinyl chloride (PVC), applied by high speed edge bander with hot melt adhesive and automatically trimmed all edges for consistent, uniform appearance. HPL to match produce top surface is also acceptable.
5. **HARDWARE:**
(1) **See PART 3 for hardware specifications.**
6. **EXTERIOR:** P-LAM on all exposed surfaces as per elevations/sections and finish schedule listed on Food Service Design Documents. Finishes to comply with AWI standards. Millwork fabricator to provide pro-industrial water based catalyzed epoxy on all painted finishes. Cabinet finishes to be PL-1; Refer to architectural/interior design documents for finish selections and locations.
7. **INTERIOR:** Interior of cabinets/storage area to be black p-lam finish. Finishes to comply with AWI standards.
8. **ACCENT:** Plate pockets and/or framed accents to receive backer board and tile finish as per elevations/sections and finish schedule listed on Food Service Design Documents. Tile edges are to be finished with trim or Schluter strips. Tile work to be performed by General Contractor. Refer to architectural/interior design documents for finish selections and locations.

B. CABINET SURFACE TERMINOLOGY:

1. **EXPOSED EXTERIOR (Per AWI STANDARDS 10.1.5.2):** All exterior surfaces exposed to view to include:
 - (1) All surfaces visible when doors and drawers are closed including knee spaces
 - (2) Underside of cabinet bottoms over 42" AFF, including cabinet bottoms behind light valances and the bottom end of light valances.
 - (3) Cabinet tops under 80" above the finished floor, or if 80" and over and visible from an upper building level or floor.
 - (4) Front edges of stretchers, end, divisions, tops, and bottoms.
 - (5) Sloping tops of cabinets that are visible.
2. **EXPOSED INTERIOR (Per AWI STANDARDS 10.1.5.3):** All surfaces defined as all interior surfaces exposed to view in open casework or behind transparent doors, including:
 - (1) Shelves, including edgebanding.
 - (2) Divisions and partitions (front edge is an exposed surface).
 - (3) Interior face of ends (sides), backs, and bottoms (including pull outs). Also included are the interior surfaces of cabinet top members 36" or more above the finished floor.
 - (4) Interior face of door and applied drawer fronts.
3. **SEMI-EXPOSED (Per AWI STANDARDS 10.1.5.4):** Defined as those interior surfaces only exposed to view when doors or drawers are opened, include:
 - (1) Tops and bottoms of shelves, including front edgebanding (front edge is an exposed surface)
 - (2) Divisions and partitions (front edge is an exposed surface)
 - (3) Interior face of ends (sides), backs and bottoms (including a bank of drawers). Also included are the interior surfaces of cabinet top members 36" or more above the finished floor.
 - (4) Drawer sides, sub fronts, backs and bottoms.
 - (5) The underside of cabinet bottoms between 24" and 42" above the finished floor.
 - (6) Security and dust panels or drawer stretchers.
4. **CONCEALED (Per AWI STANDARDS 10.1.5.5):** Surfaces defined as those exterior or interior surfaces that are covered or not normally exposed to view, include:
 - (1) Toe space unless otherwise specified.
 - (2) Sleepers, stretchers, and solid sub tops.
 - (3) The underside of cabinet bottoms less than 24" above the finished floor.
 - (4) The flat tops of cabinets 80" or more above the finished floor, except if visible from an upper floor or building level.
 - (5) The three non-visible edges of adjustable shelves.
 - (6) The underside of countertops, knee spaces, aprons and drawer boxes that are less than 36" above the finished floor.
 - (7) The faces of cabinet ends of adjoining units that butt together.

C. FACE FRAME AND FRAMELESS CONSTRUCTION:

1. **FRAMLESS CONSTRUCTION:** Also known as "European Style" or "32mm Standard" is where the front edge of the cabinet body is edgebanded and no front face panel is present. All doors are attached to the cabinet sides

III. PART 3 - DETAILED CABINET CONSTRUCTION REQUIREMENTS

A. CABINET BOX:

1. **CONSTRUCTION:** Premium qualified blind dado/ Glue and screw panel joinery
2. **MATERIAL:** 18mm (3/4") Baltic Birch plywood, NO added formaldehyde, Exterior glue, BB/CP industrial grade (HPL layer on face and back surface to balance material and avoid warpage)
3. **CONCEALED INTERIOR:** 0.032" HPL Cabinet liner, Vertical Grade Frosty White or Black
4. **FACE EDGE BANDING:** 0.032" HPL Decorative, Vertical grade exterior finish/color to be specified by finish schedule

B. END PANELS:

1. **CONCEALED:** FINISHED - 0.032" HPL Cabinet liner, Vertical Grade Frosty White or Black (assembly screws and other structural hardware exposed until final installation performance)
2. **EXPOSED EXTERIOR:** APPLIED PANEL - 18mm (3/4") Baltic Birch plywood core with 0.032" HPL Decorative, Vertical grade, applied to the side after cabinet box assembled (1/2" x 1/2" SS protective guard on exposed corner)
3. **SEMI-EXPOSED EXTERIOR:** FINISHED - 0.032" HPL Decorative, Vertical grade, directly applied to the side after cabinet box assembled; to be specified by finish schedule

C. TOP:

1. **BASE:** TOP STRETCHERS or FULL TOP when required for equipment or C-top support - 18mm (3/4") Baltic Birch plywood core with 0.032" HPL Cabinet liner on both sides and exposed edges
2. **UPPER:** FULL TOP - 18mm (3/4") Baltic Birch plywood core with 0.032" HPL Cabinet liner on both sides and exposed edges

D. BOTTOM:

1. **BASE:** FULL BOTTOM with 3/4" LIGHT RAIL - 18mm (3/4") Baltic Birch plywood core with 0.032" HPL Cabinet liner on both sides and exposed edges
2. **UPPER:** FULL BOTTOM with 1-1/2" LIGHT RAIL - 18mm (3/4") Baltic Birch plywood core with 0.032" HPL Cabinet liner on both sides and exposed edges

E. BACK:

1. **BASE & UPPER CABINETS:** FULL BACK - 18mm (3/4") Baltic Birch plywood core with 0.032" HPL Cabinet liner on both sides and exposed edges
2. **EXPOSED EXTERIOR:** 0.032" HPL Decorative/finishes to match exterior finish/ to be specified by finish schedule

F. TOE BASE:

1. **PLYWOOD BASE:** DETACHED and ADJUSTABLE PLATFORM - 18mm (3/4") Baltic Birch plywood core with Decorative finished toe board per client's selection. Metal adjustable levelers to keep base off the floor for moisture barrier, rated to withstand total weight of casework, C-top and integrated equipment. Standard selection will be used if not specified otherwise.
2. **OPTION SELECTION:** Shall be listed on the shop drawings cover sheet with finishes.

G. PULLOUTS:

1. **DRAWER BOX:** 12mm (5/8") Baltic Birch plywood core 0.032" HPL Cabinet liner on both sides and exposed edges. Undermount glides with integrates Soft-close mechanism
2. **TRASH UNIT:** 18mm (3/4") Baltic Birch plywood core with 0.032" HPL Cabinet liner on both sides and exposed edges. Self-closing, Full Extension Side mount glides, 150lb load capacity per pair
3. **EQUIPMENT INTEGRATED PULL-OUT:** 18mm (3/4") Baltic Birch plywood core with 0.032" HPL Cabinet liner on both sides and exposed edges. Self-closing, Full Extension Side mount glides, 150lb load capacity per pair.

H. DOORS AND DRAWER HEADS:

1. **DOOR/DRAWER FRONTS:** Door and drawer fronts shall be fabricated from an 3/4" particleboard or MDF core laminated on both faces with HPL. To avoid warping, plywood core shall not be used. Doors and drawer fronts shall overlay the cabinet body and establish a 1/8" reveal between pairs of doors, doors and drawer fronts, and multiple drawer fronts on the same cabinet.
2. **STANDARD FLAT PLAM:** 3/4" Engineered substrate with 0.032" HPL Decorative on both sides and exposed edges. Color coordinated with the finish/color of material selection.
3. **PANELED PLAM:** Custom Design to be determined by client.
4. **VENTILATION:** When ventilation is required, Millwork Fabricator to provide McNichols 16-gauge, 1614381648 perforated metal mesh or equal on doors. Mesh panel to be sandwiched between face frame and retainage molding. Interior to be fully laminated as one piece with interior HPL.

I. CONSTRUCTION – COUNTERTOP:

1. Countertops to be 3cm engineered stone. Backsplashes where applicable to be 2cm engineered stone. In instances where back wall tile is specified, back splash to be omitted. Refer to elevations on Food Service Design Documents. Countertop finish to be Q-1; Refer to architectural/interior design documents for finish selections and locations.
2. Stone cut-outs for drop-ins to have round corners to prevent stone from cracking and corners to be re-enforced with double layer substrate. Refer to recommended typical installation details on details sheet of Food Service Design Documents for countertop protection from heat to prevent cracking.
3. At locations where sneeze guards will penetrate the top, provide double substrate 6"x6" exterior grade plywood block to reinforce Below Counter Mounting of Heavy-Duty Flange. Provide nylon grommet for each post where post interfaces with countertop
4. Countertop to have 2" overhang on front edge and have 1/2" overhang at ends that are next to adjacent equipment, display cases, etc.
5. **COUNTERTOP SUPPORT BRACKETS:** Where required for counter overhangs, use A&M Hardware CFLAT12 Bracket for standard counter overhangs. Use ECFLAT12 Bracket for overhangs that have a transaction top behind allowing the additional protrusion support.

J. FEATURES/OPTIONS/ACCESSORIES:

1. **DOOR HINGES – CABINET:** Blum Clip-top Concealed, 107-degree Full overlay hinge with Integrated Soft-close. Opening restriction stop (integrated or cable) and Quiet Bumpers will be used as needed. Provide two (2) per door, provide three (3) if door height exceeds 36" height.
2. **DOOR PULLS:** Front of house – 6" standard bar pull & Back of house – 2" standard edge pull, Brushed aluminum/nickel finish. Unless other decorative hardware specified by client (all final selections are listed on Cover Sheet)
3. **PULL-OUT GLIDES:** UNDERMOUNT – Blum 563 series with Soft-close SIDEMOUNT - Accuride 3634EC series with Soft-close (150lb load capacity) and Accuride 7957 series Heavy-duty (350lb load capacity) per weight requirements.
4. **LOCKS – CABINETS:** CompX CAM disc tumbler with removable core locks with Latches on pair doors. All looks will be provided keyed alike, unless otherwise specified by client. Locks to be provided with elbow catch or strike plate. Do not notch cabinet creating a slot for lock pin.
5. **CONTROLS:** Controls to be mounted in millwork counter apron. In instances where depth will interfere with drop-in, apron to be extended lower to allow clearance for controls. Separate detached aprons or controls hanging below apron, behind or on side of cabinet will not be accepted. All Controls to be recessed in a control enclosure Component Hardware model #R73-1210/R73-1212. If larger equipment controls do not fit in these two standard recessed modules, use a Vollrath 30312 1/3 Pan. See Millwork Detail MWK-300. Switch, control enclosure and interconnection by millwork fabricator of counter.
6. **GROMMETS-CUTOUT/OPENINGS:** Provide 2.5" black grommets for countertop equipment. Grommet locations to be confirmed onsite with Food Service Director before installation. Large cutouts for trash or bussing access with no grommets should have substrate step back 2" larger than the cutout opening to prevent visibility of substrate material. Edge of substrate should be sealed.
7. **HOOKS/WIRE BASKETS:** All accessories of hooks and wire baskets as shown in elevations and sections of millwork is to be provided

8. **SHELVING:**

- (1) **CONCEALED:** ADJUSTABLE - 18mm (3/4") Baltic Birch plywood core with 0.032" HPL Cabinet liner on both sides, Vertical Grade Frosty White or Black. 1mm PVC edge banding on ALL edges, color to match Cabinet liner. Supported by "Spoon" type metal shelf pins and line boring on the sides, adjustable in 3 positions per cabinet section. No exposed holes/slots to be left open, each whole is to be covered as per NSF requirements. Wall Cabinets to be provided with 2 adjustable shelves, base cabinets to be provided with one adjustable shelf, spacing allowing with a distance of 12 inches between.
 - (2) **EXPOSED INTERIOR:** ADJUSTABLE or FIXED - 18mm (3/4") Baltic Birch plywood core with 0.032" HPL Decorative on both sides and exposed edges. Color coordinated with the finish/color of material selection. Supported by "Spoon" type metal shelf pins and line boring on the sides, adjustable in 32mm (1-1/4") increments, or client selected decorative supports.
 - (3) **SHELVING SUPPORT PIN HOLES:** are to be drilled using a 32mm hole drilling via computer-controlled point-to-point machines for ensured uniformity and consistency. Provide shelf pins for all shelving capable of supporting 150lbs. 3 positions are to be provided per cabinet section. No exposed holes/slots to be left open, each whole is to be covered as per NSF requirements.
9. **LED LIGHTS - WALL CABINETS:** All wall cabinets to be provided with SuperBrightLEDs (alternate equal manufactures accepted from the following CALI, DiodeLED, Luminii, Klus, and Optic Arts) Under Cabinet Light Strip Kit rated at 3000 kelvin temp generating 380 lumens/ft. with 90+ CRI rating, housed in a L-TASK-12F LED Aluminum Channel with frosted styrene lens to diffuse light. Size lengths of LED lights based on width of cabinets. Installed below wall cabinet with light rail, daisy chained to single point connection. System to be complete with LED Controller, operation to be by single switch and remote control. Remote control to be secured inside a wall cabinet to prevent misplacement. Remote Control to provide dimmable operation. Electrical Contractor to provide receptacle for LED lights power adapter and switch installed in wall below wall cabinets. Millwork fabricator to provide LED lights and install in wall cabinets complete with all interconnections.
10. **FILLERS:** Fillers shall be provided and scribed to walls and other adjoining surfaces. Same material as in cabinet construction shall be used. Filler thickness not to exceed 1 1/2" unless required by site conditions.
11. **REMOVABLE ACCESS:** All integrated equipment shall be accessible for service via removable panels, doors or removable casework sections. Removable panels to be provided with finger slot holes and countersunk screws. All edges to be rounded and sealed - DO NOT caulk removable panels.
12. **FLOOR SINKS:** Stainless steel sleeves extending to the floor shall be used for all floor sinks located beneath casework.
13. **CORNER GUARDS:** 22 gage stainless steel corners shall cover all outside corners of casework bases.
14. **DECORATIVE MATERIALS:** Custom TBD (Acrylic, Special film or vinyl covering). Refer to architectural/interior design documents for finish selections and locations.
15. **TRASH RECEPTACLES:** All trash receptacles to feature stainless steel ring covering the circular cut out. Trash receptacles construction materials and assembly to match the rest of casework. Foot Pedal – Hafele, 502.47.183
16. **FASTENERS:** Screws, Hidden brackets, Z-clips are as required by custom design and to be indicated on shop drawings. Exposed fasteners are not allowed, (interior or exterior of the cabinet), and or countersinking or using "stickers" to conceal fasteners. Cabinet construction, assembly and use of fasteners to be done before finishes are applied to the cabinet
17. **INTEGRATED ACCESSORIES:** Pullouts, Wine are TBD by client; Refer to architectural/interior design documents for finish selections and locations.
18. **TRIM:** Crown molding design, Baseboards, etc. are TBD by client; Refer to architectural/interior design documents for finish selections and locations

K. EQUIPMENT INTEGRATION & PROTECTION:

1. Furnish finished openings through countertop and base where needed to accommodate utility lines, floor receptacles, and provide black plastic grommets where required. Any utility line cut-outs done in the field by other trades shall be neatly done and all exposed surfaces created by cuts to be grommet covered or painted by contractor making such field modifications.
2. **GROMMETS-CUTOUT/OPENINGS:** Provide 2.5" black grommets for countertop equipment. Grommet locations to be confirmed onsite with Food Service Director before installation. Large cutouts for trash or bussing access with no grommets should have substrate step back 2" larger than the cutout opening to prevent visibility of substrate material. Edge of substrate should be sealed.
 - (1) Provide angle iron supports around long drop-in cut-outs and heavy countertop equipment extending to base of cabinet or floor as required to sustain weight.
 - (2) All drop-in heated equipment is to be isolated from casework components via Nomex® heat tape and ¼" air gap.
3. **CONTROLS:** Controls to be mounted in millwork counter apron. In instances where depth will interfere with drop-ins, apron to be extended lower to allow clearance for controls. Separate detached aprons or controls hanging below apron, behind or on side of cabinet will not be accepted. All Controls to be recessed in a control enclosure Component Hardware model #R73-1210/R73-1212. If larger equipment controls do not fit in these two standard recessed modules, use a Vollrath 30312 1/3 Pan. See Millwork Detail. Switch, control enclosure and interconnection by millwork fabricator of counter.
4. Provide Stainless Steel Corner Guards where equipment slides in at locations such as plate lowerators, refrigerators, hot boxes, etc.
5. **MOISTURE PROTECTION:** Provide sealed tight Stainless-Steel Paneling to protect cabinetry where moisture is present at locations such as under counter dish-machines.
6. **PROTECTIVE S/S SHEETS:** All casework surfaces exposed to heat from adjacent food service equipment is to be protected by 18 gage stainless steel sheets. All induction generators are to be contained in the stainless-steel enclosure shield.
7. **AIR FLOW & VENTILATION:** When ventilation is required, Millwork Fabricator to provide McNichols 16-gauge, 1614381648 perforated metal mesh or equal on doors. Air flow in food service custom millwork is a critical engineering component and extra care should be taken to ensure integrated equipment is vented properly or it will fail in a short period. Venting of food service millwork is the responsibility of the food service millwork fabricator. AC Infinity fans, models AI-CFD120BA to be utilized. All millwork fan systems should contain an intake and an exhaust fans. This is required to balance the static pressures between the inside and outside of the cabinet. Position fans near the top of the cabinet configured to exhaust out the warmer air and position fans near the bottom to pull in colder air. Refer to typical detail MWK-360 Cabinet Venting, shown for induction, but applicable for all conditions.

L. COORDINATION:

1. Coordinate work of this section with related work of other Sections as necessary to obtain proper installation of all items.
2. Verify site dimensions of casework/millwork locations at jobsite prior to fabrication.
3. It is the responsibility of the Electrical Contractor, in coordination with the Food Service Equipment Contractor, to make final interconnections within serving counter interior to junction boxes, outlets, etc., for equipment indicated, if required.

M. SUBMITTALS:

1. Submit in accordance with the General, Supplementary, and Special Conditions of the Specifications.
2. Submit Shop Drawings for approval showing materials, dimensions, cabinet-cut details, and equipment locations. Show size and locations of all cutouts. Indicate all manufacturer's standard components with catalog numbers and identify all materials and construction details of custom-fabricated items. Shop Drawings should meet all AWI requirements.
3. Include MEP sheet if a part of the Scope.
4. Include dimensioned countertop Layout sheet with Sneeze guard's location if applicable.
5. Submit samples of exposed material colors and hardware as requested by the architect/owner.

N. JOB CONDITIONS

1. Prior to delivery of millwork, building shall be completely enclosed, all wet work complete, and HVAC system operating and maintaining temperature and relative humidity at levels prescribed in Section 1.06.B of this part during the remainder of the construction period.
2. Per 2nd edition of "Architectural Woodwork Standards" of the AWI, job site relative humidity levels shall be maintained at the following levels (Ref Section 2, table 2-001):
 - (1) Most of US and Canada: 25-55%
 - (2) Damp Southern Coastal areas of the US: 43-70%
 - (3) Dry Southwestern US: 20-50%.
3. For proper curing of sealant and adhesives, and to prevent any material shrinks, interior building temperature is not to register below 65-degree F.
4. Interior building temperature is not to exceed 80-degree F to avoid undue drying of materials, subsequently causing structural fatigue and damage. Additionally, frequent or excessive changes in temperature or humidity level during the course of the installation, or once millwork and equipment is installed, must be avoided to prevent damages.
5. General Contractor shall be responsible for millwork protection and for any damages caused to casework and cabinetry by other trades after installation. All casework warranty shall be considered waived should job conditions not meet requirements of this section.
6. Installation contractor to coordinate with plumbing, mechanical and electrical trades for proper sizing, location and sequence of construction.
7. All cut-outs and holes for mechanical, plumbing and electrical work shall be made at the project site by respective trades.
8. **STRUCTURAL MEMBERS**, grounds, in wall blocking, backing, furring, brackets, or other anchorage that becomes an integral part of the building's walls, floors, or ceilings, required for the installation of architectural woodwork is not furnished or installed by the architectural woodwork manufacturer or installer (AWI Standards 10.1.14.1). GC shall be responsible for providing such supports.
9. **WALL, CEILING**, and/or opening variations in excess of 1/4" (6.4 mm) or **FLOORS** in excess of 1/2" (12.7 mm) in 144" (3658 mm) of being plumb, level, flat, straight, square, or of the correct size are not acceptable for the installation of architectural woodwork, nor is it the responsibility of the installer to scribe or fit to tolerances in excess of such. (AWI Standards 10.1.14.2)
10. **TOE BASE HEIGHT VARIANCE** due to floor variations is not considered a defect. Casework is required to be installed level; shimming of the toe base, not to exceed 1/2" (12.7 mm), is acceptable. Floor variations exceeding 1/2" (12.7 mm) shall be corrected before cabinets are installed; however, correction of such is not the responsibility of the cabinet installer. (AWI Standards 10.1.14.12)
11. All overhead mechanical, electrical or plumbing rough-in work is to be complete prior to delivery of casework.
12. All overhead mechanical, electrical or plumbing rough-in work required along walls or service islands where casework and equipment is to be installed, should be complete prior to delivery materials and casework. Final connections are to be coordinated with casework manufacturer and installer.
13. Walls and Partitions (whether framed, demountable or masonry) must be in place.

14. Overhead soffits and ceiling grid (with or without acoustic tile) must be in place prior installation.
15. Flooring required to be placed under casework and equipment, must be installed prior to millwork installation.
16. Installation area is to be cleared of debris, construction materials, other trades' tools or any other obstructions and be broom swept.
17. Elevator, hoist or other means of delivering millwork/equipment to the floors above/below grade level is to be provided by General Contractor. Casework installation contractor is not responsible for carrying items up/down the stairs nor is expected to be equipped for such deliveries.
18. Loading dock must be accessible or entry to the building adequate for unloading and available during scheduled delivery time.

O. INSTALLATION, QUALITY ASSURANCE AND WARRANTY:

1. **Delivery:** Millwork shall not be delivered until painting and all overhead operations that can damage the product is complete in the spaces to receive casework.
2. **Storage and Protection:** protect casework in transit. Store at jobsite in ventilated area not exposed to extreme temperature and humidity changes. Store in the same temperature and relative humidity environment as installation location for acclimation purposes. Do not store or install casework in building until all wet work is complete. Storage location shall be out of the way of other construction activities to prevent accidental damages.
3. Install and trim millwork to walls, floors, ceiling and adjoining equipment/millwork. Work shall be performed by factory installers only, NO EXCEPTIONS. Installation of millwork cannot be outsourced to a third-party installer. All installation work to be closely coordinated by FSEC.
4. **Field Seams:** Countertop seam, base cabinet, etc. – all seams to be staggered and should not line up avoiding evident field connections and gaps of long counters.
5. **Installation Workmanship:** Erect casework straight, level, and plumb. Scribe and closely fit to adjacent work, cutting and fitting around all obstructions. Install all items complete and adjust all moving parts to operate freely. Leave all exposed surfaces clean and free of defects at time of final acceptance.
6. **Guarantee:** All materials shall be guaranteed for a period of 1/3 year from defects in material and manufacturing workmanship.
 - (1) Three (3) years for all casework/cabinetry/millwork surfaces, acrylic panels, glass, tile, paint/stain finishes and other wood components from warping, delaminating, peeling, cracking or failing to properly carry to weight of equipment.
 - (2) One (1) year for all solid surface, engineered stone and granites from discoloration, cracking and seam separation.
 - (3) One (1) year for all upholstery from rips, discoloration, seam separation and detachment from bearing millwork.
 - (4) All integrated venting equipment (fans, etc.) shall be limited in warranty to the duration provided by respective equipment manufacturer's warranty.
 - (5) Fabricator to provide a warranty letter stating above guarantee at the completion of project
 - (6) Fabricator to provide a service and care package detailing best practices for use, cleaning, care and maintenance of custom millwork.
7. **Site Cleanup:** Installation contractor to remove all debris associated with casework installation including cartons, packing, scraps, sawdust, and packaging materials.

ITEM # 8C500 TRASH BIN, SLIM JIM, SMALLWARES
Quantity: One (1)
Manufacturer: Smallwares
Model: SMALLWARES

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model SMALLWARES Trash Bin, Slim Jim
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
3. Client agency shall furnish and install this item, through his smallwares supplier.
4. Client agency is responsible for verifying manufacturer, model number, size and components.

ITEM # 8C501 POS SYSTEM, SMALLWARES
Quantity: One (1)
Manufacturer: Smallwares
Model: SMALLWARES

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model SMALLWARES POS System
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
3. Client agency shall furnish and install this item, through his smallwares supplier.
4. Client agency is responsible for verifying manufacturer, model number, size and components.
5. Obtain specifications and verify required utilities for smallwares equipment from client agency /operator.
6. Data requirements, if any, to be coordinated with client agency, provided by Electrical Contractor.
7. Millwork fabricator to Provide 2.5" black grommets for POS equipment. Grommet locations to be confirmed onsite with Food Service Director.

ITEM # 8C502 TRASH BIN, SLIM JIM, SMALLWARES
Quantity: One (1)
Manufacturer: Smallwares
Model: SMALLWARES

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model SMALLWARES Trash Bin, Slim Jim
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
3. Client agency shall furnish and install this item, through his smallwares supplier.
4. Client agency is responsible for verifying manufacturer, model number, size and components.

ITEM # 8C503 KDS SCREEN, SMALLWARES
Quantity: One (1)
Manufacturer: Smallwares
Model: SMALLWARES

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model SMALLWARES KDS Screen
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
3. Client agency shall furnish and install this item, through his smallwares supplier.
4. Client agency is responsible for verifying manufacturer, model number, size and components.
5. Obtain specifications and verify required utilities for smallwares equipment from client agency /operator.
6. Data requirements, if any, to be coordinated with client agency, provided by Electrical Contractor.
7. Millwork fabricator to Provide 2.5" black grommets for POS equipment. Grommet locations to be confirmed onsite with Food Service Director.

ITEM # 8C504 TRASH BIN, SLIM JIM, SMALLWARES
Quantity: One (1)
Manufacturer: Smallwares
Model: SMALLWARES

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model SMALLWARES Trash Bin, Slim Jim
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
3. Client agency shall furnish and install this item, through his smallwares supplier.
4. Client agency is responsible for verifying manufacturer, model number, size and components.

ITEM # 8C700-8C704 FOOD SERVICE FLOOR SINK & A.F.D PACKAGE, BY PC

Quantity: One (1)
Manufacturer: BY PC
Model: BY PC

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model BY PC To include the following items:
 - Item #8C700 – Floor Sink
 - Item #8C701 – Area Floor Drain
 - Item #8C702 – Floor Sink
 - Item #8C703 – Floor Sink
 - Item #8C704 – Floor Sink
2. Floor sinks to be sized and located by Engineers/PC.
3. Keep Floor Sink locations as shown on food service floor plan. Not to interfere with food service equipment, and or legs/casters. Floor sink to be accessible for cleaning.
4. Care should be taken not to locate floor sinks directly below equipment with electronic controls. Critical for combi ovens. Hot discharge and steam may cause damage to controls.
5. Millwork Fabricator to provide stainless steel Floor Sink Sleeve when in Millwork counter base installation.
6. Floor sink sleeve to be 1/2" larger than floor sink and be sealed to the floor.
7. **NOTE:** Floor sink needs to have full access for cleaning. Piping not to obstruct access and allow removal of grate.
8. See floor sink installation detail MEP-100 on plumbing rough-in sheet/typical installation sheet.
9. Area Floor Drain to be sized and located by Engineer/ PC.
10. Shown as where to not interfere with Food Service equipment and provide sufficient area drainage.
11. Floor to be slopped to A.F.D
12. Provide additional A.F.D as required.

BUILDING 5 KITCHEN

ITEM # 5K100	REMOTE RACK
Quantity:	One (1)
Manufacturer:	RDT
Model:	RDMC

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model RDMC Remote Rack
2. ITEM NO. 5K100 REMOTE REFRIGERATION PACKAGE
The refrigeration package shall be pre-engineered and factory assembled unit as manufactured by Refrigeration Design Technologies, (RDT) 1808 FM 66, Waxahachie, Texas 75167. Phone: 972-937-3215 fax: 972-937-0970 e-mail address: Info@rdtonline.com .
Contractor shall furnish and install, where shown on plans, (1) RDT U.L. approved air cooled remote refrigeration package, model RDMC, with control panel, 208 Volts, 3 Phase, 60 Hertz. The refrigeration package shall be housed in a weather-protected compact structural-steel frame. The entire housing shall be brushed 304 stainless steel and include stainless steel louvered panels for access. The unit shall include an air-cooled, aluminum fin copper tube condenser designed to operate at 15 degrees TD. Frame to be welded galvanized steel. Lifting rings shall be installed at each corner to facilitate installations. Condenser motor fans shall be mounted within the enclosure. The condenser intake surface shall be protected with stainless steel louvered panels to protect against vandalism and hail damage.
Each unit shall be equipped with a ball-bearing fan motor, adjustable head-pressure control, suction filter, sight glass, drier, liquid line inlet and outlet valve and high-pressure super hose connections.
Warranties: All refrigeration systems are to include a 5 year compressor warranty, a 1 year parts warranty and a 1 year labor warranty. These warranties are to be built in to the equipment price and not separate options.
3. Air-cooled condensing units shall be scroll type manufactured by Copeland. Each unit shall be equipped with **REFRIGERATION UNITS:** high-low pressure control.
Liquid line drier, sight glass and head pressure control.
All compressor units shall be new factory assembled to operate with the refrigerant specified in the engineering summary sheet. Refrigerant R-448A shall be used on all commercial medium temperature units and low temperature units.
The condenser shall be sectional, removable, with rifled tube slotted finned, and shall be designed for 15°ftd.
Factory to review all project phasing and engineer system for multi-phase operation installing any gas pressure relief ports for temporary partial load operation until all phases of project are installed and connected to the system.
All compressors are to be properly labeled for type and equipment they are serving to allow proper maintenance and service.
4. **PRE-PIPING:**
All refrigerant lines shall be extended to one side of the package in a neat and orderly manner. Suction lines must be insulated with Armaflex (1" thick for low temp, 3/4" thick for medium temp). All tubing shall be securely supported and anchored with clamps.
Silver solder and/or sil-fos shall be used for all refrigerant piping. Soft solder is not acceptable. All piping to be pressure tested with nitrogen at 300 psi. After the condensing unit and coil have been connected, the balance of the system shall be leaked tested with all valves opened.
5. **CONTROL PANEL:**
The package shall have a factory mounted and pre-wired control panel complete with disconnect for single point connection.
Electrical contractor shall provide and install main power lines to panel in accordance with the wiring diagram and per local codes.

6. **SAFETY CAUTION:**

Each system and evaporator is shipped under nitrogen pressure. Use caution and exercise safety at all times when preparing for final hook-up.

7. **EVAPORATOR COILS:**

Evaporator coils shall be direct expansion type, fabricated of copper tubes with aluminum fins. All evaporator coils shall be provided with solenoid valve, electronic expansion valve and piped and wired to the junction box for positive pump down. All evaporator coils shall be pre-wired to a junction box with an on/off switch and the liquid and suction lines shall be pre-plumbed and stubbed out the back.

Evaporator coils shall include an Eco-Smart controller for on-demand defrost and monitoring.

Evaporator coils shall be equipped with energy saving "EC" motors.

8. **CONSTRUCTION NOTES FOR TRADES:**

It is the responsibility of each contractor to pull necessary permits for their respective work performed.

FOOD SERVICE EQUIPMENT CONTRACTOR:

The Kitchen Equipment Contractor shall verify all dimensions and coordinate with other trades.

The Kitchen Equipment Contractor shall verify all required refrigerant line lengths and runs and to be detailed on shop drawing submittal.

Dealer to review phasing and sequencing of building and equipment installation and ensure rack system can accommodate phased operation with proper allowances for isolation valves as required with balanced capacity until complete system load is achieved.

Dealer is required to have factory supervision on site during installation and start-up of the system and provide a factory certified letter of compliance. Refer to "SYSTEM INSTALLATION VERIFICATION - SIV" section below.

GENERAL CONTRACTOR:

General contractor to verify and co-ordinate location of refrigeration rack with refrigeration contractor to satisfy local code requirements and maintenance of the rack.

General contractor to verify refrigeration line runs thru to roof or multi-story building prior to construction with refrigeration contractor for accessibility.

General contractor to verify access of crane or mechanical lift with refrigeration contractor prior to construction (if required).

General contractor shall prepare and weather proof the platform and curbed openings for refrigeration piping and electrical conduit. Roof pad to be constructed of heavy duty steel framing, and the finished height dictated per local codes.

Provide sheet metal cap with 2" high pitch pocket collar and water tight soldered joints.

General contractor to allow 3'-0" (36") of clear space around roof pad for maintenance.

All core drilling required for remote refrigeration piping work by the refrigeration contractor, is in the general contractor's scoop of work. Coordinate exact location and number of penetrations with the refrigeration contractor and comply with all landlord requirements for x-ray of slab prior to work.

All sleeves, openings, holes, conduits, Orangeburg, required to run the refrigeration lines that are going through construction such as walls, floors and ceilings will be made and provided by the General Contractor. All openings, sleeves, sealers required in food service equipment will be provided by the Food Service Equipment Contractor.

Any attachment to building structure for load bearing weight to be provided and coordinated by general contractor.

General Contractor/Roofer to provide any required pitch pockets.

General contractor to backfill all pitch pockets to top with tar or pitch after refrigeration and electrical lines have been run.

General contractors shall provide any required concrete pads for installation of the rack system.

REFRIGERATION CONTRACTOR:

Refrigeration pipe sizes are based on a maximum line run up to 100 equivalent feet for liquid and suction lines. Refrigeration pipe sizes are to be verified with the RDT factory. Verify line lengths with job site conditions and line routing at individual installations. If line runs are greater than 100 feet, please contact the RDT factory.

Refrigeration contractor shall run all refrigeration lines which extend down thru wall(s) before wall(s) are closed up when conduit is not provided.

Refrigeration contractor to seal both ends of conduit with fomofil after all lines have been run. If pull box(es) are specified, they must be a minimum 12"x 12".

Refrigeration contractor shall insulate all refrigeration suction lines.

Refrigeration contractor shall verify location of blower coil(s) and compressor(s) for all refrigerated areas.

All liquid and suction lines are to have isolation ball valves installed on them behind the evaporator coils.

Refrigeration contractor shall verify location of pitch pocket(s) for refrigeration line penetration thru roof with general contractor. General contractor to install all pitch pockets.

Contractor shall use only clean dehydrated, sealed refrigeration grade A.C.R. copper tubing or type "L".

Use only long radius elbows to reduce flow resistance and line breakage.

Silver solder and/or sil-fos shall be used on all refrigerant piping. Soft solder is not acceptable.

Use minimum 35% silver solder for dissimilar metals.

All piping must be supported with hangers that can withstand the combined weight of tubing, insulation, valves, and fluid in the tubing.

Use nitrogen in the copper tubing during brazing to prevent formation of copper oxides. Liquid and suction lines must be free to expand independently of each other. Do not exceed 100 feet without a change in direction or an offset. Plan proper pitching, expansion allowance, and p-traps at the base of all suction risers and at every 8 feet of every vertical rise. Install service valves at several locations for ease of maintenance. These valves must be approved for 450 psi working pressure.

All piping to be pressure tested with nitrogen at 300 psi with all valves open and held for 12 hours.

Electronic leak detectors shall be used to locate all leaks.

Complete system shall be evacuated to 500 microns with vacuum pump before charging the system.

Once system is charged and running, adjust all controls, including pressure controls and expansion valves.

Return after 24 hours to verify proper operation of systems.

Refrigeration contractor to provide and install drain line heater with insulation in freezer to be connected by electrical contractor.

Refrigerant suction lines outside of refrigerated compartments, not run in conduit, shall be insulated back to compressor with Armstrong arma-flex ap-25/50 foamed plastic insulation or equal in accord with direction of the manufacturer. Minimum thickness shall be 3/4 inch for commercial temperature and 1.0 inch for low temperature.

Fill roof refrigeration and electrical pitch pockets with foam and sealant.

Refrigeration contractor to seal all refrigeration line penetrations made thru walk-in coolers/freezers, and refrigerated base sections of counters.

Recommend using K-Flex Titan line sets instead of Armflex with added UV ray protection. Some states required to have UV protection by code. Contractor to review and comply with local codes. In all cases, line sets are not to be exposed to elements without any UV covering and or protection.

Nylon zip ties are not to be used to secure any flexible line sets to the compressor racks. Provide proper fastening methods as required by local codes.

ELECTRICAL CONTRACTOR:

Electrical contractor to provide main power for the refrigeration package and evaporator coils.
Electrical contractor to connect drain-line heater in the freezer.

All electrical wiring and installation shall be accordance with the wiring diagram and per local codes.

If contracted, electrical contractor to install all conduits for refrigeration lines in walls, prior to walls are closed up. All pull boxes must be a minimum of 12"x 12".

Nylon zip ties are not to be used to secure any flexible power conduit to the compressor racks.

Provide proper fastening methods as required by local codes.

Disconnects when located on roof installations, mount high enough to clear any snow level ratings for the region.

Disconnect switches are to be weather tight and prevent any exposure to the elements.

Please Note: It is recommended for all electrical connections and receptacles powering compressor equipment to be interconnected through Pass and Seymour 2084I – 20A GFCI Dead Front to serve as Class A Ground Fault Protection. Do not plug into a standard GFCI as the compressor motor will create an overload spike and trip the GFCI. Standard dual receptacle to be installed adjacent to Pass and Seymour 2084I in a quad box and the receptacle to be wired through Pass and Seymour 2084I.

NOTE: Receptacles for units that are built-into counters or millwork are to be installed to the left or right side of the unit for accessibility and resetting the GFCI as needed.

PLUMBING CONTRACTOR

Plumbing contractor to provide type "M" copper drain lines for walk-in refrigerator and freezer, pitched 1/2 inch per foot of run. In freezer, heated drain line must be insulated to prevent freezing. Trap drain lines outside of refrigerated space to avoid entrance of warm and moist air.

Contractor to provide individual drain line for each evaporator unless otherwise called for in the plans.

Plumbing contractor to provide refrigeration PVC sleeve conduit runs through underground to all serviced refrigeration units.

All conduit is to be capped and waterproofed.

Provide access points and pull boxes are required by installer, refer to pull box detail.

All plumbing installation shall be in accordance with local codes.

9. **TESTING:**

Testing notes are included with refrigeration contractor responsibility section.

10. **OPERATION AND MAINTENANCE INSTRUCTIONS:**

The rack system shall be supplied with a complete set of installation, operational and maintenance instructions to cover operating procedures and routine maintenance schedule.

11. **SHOP DRAWINGS AND SUBMITTALS:**

Refer to food service manufacture specification drawings for more information. FSEC to submit shop drawings for review and approval before starting manufacturing.

Shop drawing to have complete piping detail showing runs and bends through building.

12. **CLOSEOUT:**

A close out package to include the following:

Testing/Certification Report as outlined above

Operation and Maintenance Manual package as outlined above

As Built Drawing showing refrigeration pipe runs and all installation conditions, service access points, etc.

Pictures of piping installation before building structures get closed in.

13. **SYSTEM INSTALLATION VERIFICATION - SIV (NOT OPTIONAL):**

Food Service Equipment Contractor shall secure System Installation Verification (SIV) Manufacturer Service from RDT - rack manufacturer to perform an SIV two times during the duration of the project. The SIV is to be by an RDT engineer or an RDT certified refrigeration mechanic.

First SIV, is to supervise the dealer installation of the refrigeration rack, evaporator coils, refrigerant lines etc. providing oversight, direction and inspecting line set installation.

The final SIV will be performed during the start-up of the system. Any field related discrepancies that are discovered during the SIV will be brought to the attention of Food Service Equipment Refrigeration Contractor, General Contractor and corresponding trades on site. These issues will be documented and forwarded to the appropriate sales office and design team. During the SIV Manufacturer Service will address any discrepancy that is the fault of the manufacturer at no cost. If SIV Manufacturer Service has to resolve a discrepancy that is a field issue, the General Contractor will be notified and will need to approve the work to be completed either by SIV Manufacturer Service or direct respective trades to remedy those issues.

The Food Service Equipment Refrigeration Contractor installer is to inform RDT's engineer if the installation and start up will take place at the same time, or if the startup will be at a later date. If the startup will be at a later date, the installer is to inform RDT's engineer to schedule the SIV dates.

The warranties will not go into effect unless this procedure is followed.

ITEM # 5K900	TRAY CART
Quantity:	(10)
Manufacturer:	Burlodge
Model:	BLP0S.000

Furnish and set-in place per manufacturer's standard specifications:

1. Ten (10) Model BLP0S.000 Tray Cart
2. **CONSTRUCTION**
Sub frame and chassis – Stainless Steel AISI 304 or X5CrNi “18-10” (EN10088-1)
Top shutter made in carbon fibre material
High density CFC-foam insulation
Heavy duty top and bottom bumper
Ergonomic handles
Four or six heavy duty double bearing (EN 12532) non marking castors
Removable gaskets without the use of tools
Construction designed to be easily cleaned and in compliance with hygienic standards (EN ISO 14159): rounded corners, easily cleanable of any soiling material
3. **DIVIDING BARRIER**
Injection moulded divider filled with high density polyurethane insulation
Individually removable dividers for easy cleaning
Self sealing when tray is not inserted
Two different pitches: 80mm, 92mm
4. **TRAY SUPPORTS**
Stainless Steel tray supports easily removable without the use of tools
Removable ventilation panels without the use of tools
5. **DOORS**
Doors constructed with aluminium frame with laminated exterior and stainless steel interior panels, filled with CFC-free foam
Heavy duty 270 degrees opening hinges with stay open catches
Two door option with lockable latch and two ergonomic handles
Two door tunnel washable option hinged on opposite sides with 260 degree stay open catch and lockable door latch
Four door option with sliding latch and four ergonomic handles

ITEM # 5K900.1 B-POD BASE STATION
Quantity: (10)
Manufacturer: Burlodge
Model: BLP1A.760

Furnish and set-in place per manufacturer's standard specifications:

1. Ten (10) Model BLP1A.760 B-Pod Base Station
2. **CONSTRUCTION**
Sub frame and chassis – Stainless Steel AISI 304 or X5CrNi “18-10” (EN10088-1)
Front panel is made from anti-static high impact thermoplastic
Adjustable feet
3. **HEATING**
Unique vertical thermo-convection forced air ventilation
Stainless steel elements surrounding two high velocity fan motors to ensure proper and even air temperature throughout the chamber.
4. **REFRIGERATION**
Unique vertical forced air ventilation.
Vertical evaporators for the heated and refrigerated section. Two high velocity fan motors to ensure uniformity of air temperature throughout the chamber
Self contained with R134a refrigerant gas.
Condenser air duct opening is located at the back of Base Station
5. **SAFETY FEATURES**
Fully fuse protected, safety class I, appliance
Safety Extra Low Voltage control panel
High temperature security thermostat
High pressure security pressure-switch
Enclosed and ventilated electrical compartment
6. **CONTROL PANEL**
Mounted at the front of the Base Station and easily accessible even when the Pod is nested
Proximity switch to start up automatically once the POD has been nested
Electronics controls with liquid quartz display offering the following functions:
Three (3) heating Cycle Touch Pads
Count Down Timer. Cycle in progress and hot cold temperature LCD display
Audible Alarm to indicate cycle completion
Error Code Display
HACCP monitoring system
Automatic Cycle Start Timer with summer and winter time change
Programmable control panel capabilities to suit individual client requirement.
Food probing
Smart-Temp system to reduce energy consumption based on food load
Maintenance cycle
7. **PERFORMANCE:**
For best results food temperatures should be loaded below 10°C (50°F) and above 63°C (145°F) into the cold and hot section respectively.

END OF ITEMIZED SPECIFICATIONS

PART 11 40 05 - EXECUTION

5.1 DESCRIPTION AND PURPOSE OF THIS SECTION

- A.** This section is additional supplemental information to sections 01 70 00 "Execution and Closeout Requirements", to further define coordination and responsibilities of all parties involved with executing a Food Service Equipment project.

The proper sequence of coordination, communication, scheduling, installation, operation, and maintenance of foodservice equipment will help eliminate unnecessary service issues and will facilitate the professional completion of the project. By creating a sequence of work for this foodservice project involving proper process and defining expectations, responsibilities, and sequence upfront is critical for project success. SCOPOS Hospitality Group has created a "Dealer Resources & Process" workgroup site with all this information outlined in an easy-to-follow format with all exhibit template files for download. If you do not have access to the workgroup site yet, please submit request to info@scoposhg.com and you will be invited to the platform.

Once the equipment is purchased and installed, it is essential for all parties involved that, where needed, a professional start up or performance check be performed by an authorized service company, followed by a thorough demonstration by the manufacturers' representative. When a proper installation is completed, one where the Manufacturer's Requirements, as spelled out in the equipment manual, have all been met along with any and all governing codes, the FSEC shall be responsible for scheduling all of the services outlined in this section to aid in providing a professionally complete kitchen project. It is the responsibility of the FSEC to ensure all forms in the exhibit 1-5 are issued for the appropriate equipment as required, completed and copies are provided to the proper parties as described after the completion of each task. These forms have been created through the joint effort of CFESA (Commercial Food Equipment Service Association), FCSI/NAD (Foodservice Consultants Society International / North America Division) and MAFSI (Manufacturer's Agents for the Foodservice Industry)

- B.** This section contains the following areas of coordination:

1. Description and Purpose of this Section
2. Responsibility Matrix
3. Coordination of Responsibility
4. Scheduling Lead Times and Delivery
5. General Contractor Responsibilities
6. Food Service Equipment Contractor Responsibilities
7. Fire Protection System Contractor Responsibilities
8. Millwork Fabricator Responsibilities
9. Refrigeration Contractor Responsibilities
10. Electrical Contractor Responsibilities
11. Plumbing Contractor Responsibilities
12. HVAC Contractor Responsibilities
13. Storage and Delivery
14. Site Inspection and Field Verification
15. Installation
16. Protection
17. Project Closeout Procedures
18. Project Record Documents
19. Warranties
20. Exhibits

5.2 RESPONSIBILITY MATRIX

Food Service Trade Responsibilities

TRADE	FOOD SERVICE CONTRACTOR SPEC SECTION 11 40 00		ELECTRICAL CONTRACTOR SPEC SECTION 26 00 00		PLUMBING CONTRACTOR SPEC SECTION 22 00 00		MECHANICAL CONTRACTOR SPEC SECTION 23 00 00		GENERAL CONTRACTOR SPEC SECTION 01 00 00		BY OWNER	
ACTIVITY	FURNISH	INSTALL	FURNISH	INSTALL	FURNISH	INSTALL	FURNISH	INSTALL	FURNISH	INSTALL	FURNISH	INSTALL
FOOD SERVICE EQUIPMENT												
Furnish of Specified Equipment (unless otherwise noted, i.e., by owner, by vendor, etc.)	X	X										
Installation - Deliver, uncrate, and set-in place equipment	X	X										
All floor, wall, roof penetrations, sleeving, and fireproofing/insulating/resealing necessary for the performance of your work.									X	X		
Start-up, testing, and calibrating equipment	X	X										
Owner training of equipment - videotaping not included	X	X										
Demolition of Kitchen Equipment (if required - provide additional quote)	X	X										
Refurbishing of Kitchen Equipment (if required - provide additional quote)	X	X										
Modification of Kitchen Equipment (if required - provide additional quote)	X	X										
Sneeze Guards, Furnished by FSEC, Installed by MWC	X	X										
Trim and Seal Foodservice Equipment	X	X										
Liquor Dispensing & Beer System (if required)	X	X										
Provide Warranty Letter and Certification	X	X										
Provide Service Agency Listing and Equipment Catalogue Record	X	X										
FOOD SERVICE GRADE MILLWORK												
Millwork contractor is a sub to Food Service Equipment Contractor	X	X										
Millwork associated with foodservice equipment	X	X										
Engineered Stone associated with foodservice equipment	X	X										
Millwork Shop Drawings, CAD/BIM Level	X	X										
Pre-fit and Install drop-ins at factory	X	X										
Provide Grommets and holes for countertop equipment	X	X										
Seal all exposed raw wood surfaces and trim/seal/caulk millwork to walls	X	X										
All apron mounted receptacles and switches in pre-wired millwork	X	X										
Tile work on millwork accents - match same batches with flooring contractor	X	X										
LED Lighting in millwork counters	X	X										
LED Lighting in millwork counters - Wiring and Light Switch			X	X								
Load Centers in prewired millwork counters	X			X								
ELECTRICAL												
All final electrical connections to equipment from building services			X	X								
All control wiring			X	X								
Interwiring complete for serving counters			X	X								
Electrical safety disconnects as required			X	X								
Electrical Load Centers and/or Panelboards per bid documents			X	X								
All wall mounted electrical receptacles			X	X								
Provide all DCR's shown on foodservice rough-in drawings.			X	X								
Wire provided table limit switch in clean dish table.			X	X								
Low voltage data wiring from POS to manager's office and digital menu boards.			X	X								
Low Voltage wiring of alarm systems to building system.			X	X								
Interconnections of electrical feeds within foodservice equipment that were disconnected for shipping purposes	X	X										
PLUMBING												
Interconnections of plumbing feeds within foodservice equipment that were disconnected for shipping purposes	X	X										
All final Plumbing connections to equipment from building services					X	X						
Indirect waste lines extended from interconnected equipment to drain locations					X	X						
Hand sinks - as noted on foodservice documents	X					X						
Sink faucets/pre-rinse spray assemblies	X					X						
Overflows	X					X						
Lever waste fittings	X					X						
Provide all plumbing materials including pipe, traps, stops, valves, gauges, unions, and insulation.					X	X						
Flexible quick disconnect gas hoses for mobile equipment	X					X						
Flexible quick disconnect water hoses for mobile equipment	X					X						
Appliance gas pressure regulator for main feed to equipment	X					X						
Backflow preventers					X	X						
Beverage 6" PVC Raceway and Conduits (if required)					X	X						
Provide 3-inch PVC Refrigeration Piping Raceway and Conduits					X	X						
Floor Sinks, Area Floor Drains & Standpipes - 700 Series Tags on equipment schedule					X	X						
Floor troughs - Connections	X					X						
Floor troughs - grouting and backfill	X									X		
Provide all grease interceptors and grease traps					X	X						
HOODS												
Exhaust Hood and pre-piping in factory for fire protection system	X	X										
Duct work and duct connections at hood collars, grease & condensate							X	X				
Exhaust Fan, Make-Up Fan							X	X				
Fan starters and/or relays from Exhaust/Make-Up fans to control points.							X	X				
Interwire heat detectors and T-Stats to control panel			X	X								
Control wiring from fan starters to hood fan controls including EMS and VFD's			X	X								
Inter-connecting light circuits at field joints			X	X								
Final electrical connections to lights			X	X								
Light fixtures	X			X								
Light bulbs			X	X								
Provide wiring to all lights/switches in exhaust hoods.			X	X								
Air balancing							X	X				
Permits to hang hoods (if required) Fee is extra	X	X										
Closure panels to finished ceiling	X	X										
Structural engineering or hanging structure									X	X		
Balance system to prevent any cross drafts and negative pressure							X	X				
FIRE SUPPRESSION SYSTEMS												

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OWNER & VENDOR												
All vendor provided items - 300 series item numbers in the schedule											X	X
Bulk CO2 System - Bag-in-Box (if required)											X	X
Paper Towel and soap dispensers - 300 series item numbers in the schedule											X	X
POS - Point of Sale System - 500 series item numbers in the schedule											X	X
Sound System											X	X
Security System											X	X
Telephone System											X	X
Safe											X	X
Garbage/Recycling bins - 500 series item numbers in the schedule											X	X
COORDINATION & INSPECTIONS												
Project Coordination	X	X	X	X	X	X	X	X	X	X	X	X
Host Discipline Coordination meeting and develop "Discipline Coordination Sheet"	X	X										
Coordinate the sequencing of all equipment, hoods-ceilings, boxes-flooring, etc.										X	X	
Floor, Ceiling and Wall Protection during equipment installation										X	X	
Permits (Health Department)											X	X
Health department inspection walk through	X											
Coordination of inspections for foodservice areas	X	X										
Testing, Start-up & Demonstration of Kitchen Equipment	X	X										
Construction Schedule										X	X	
Rough-in Drawings, Electric/Plumbing	X											
Rough-in height and locations - to be shown in FSEC submittal drawings	X			X								
Shop Drawings for all custom fabrication items,	X	X										
BIM/REVIT plans and coordination	X	X										
Critical Dimensions and Hold to Dimensions - provide to FSEC										X		

5.3 COORDINATION OF RESPONSIBILITY

A. The responsibility of the Architect consists of the following:

1. Receive and forward all Submittals to Foodservice Consultant.
2. Receive and forward all RFI's to Foodservice Consultant.
3. Receive and forward all Meeting Minutes to Foodservice Consultant.
4. Receive and forward all Project Schedules to Foodservice Consultant.
5. Notify Foodservice Consultant when project is ready for inspection.

B. The responsibility of the Food Service Consultant consists of the following:

1. Receive and review all Submittals.
2. Receive and review all RFI's.
3. Receive and review all Meeting Minutes.
4. Receive and review all Project Schedules.
5. Complete final project inspection and report.

5.4 SCHEDULING LEAD TIMES AND DELIVERY

A. The Work shall be conducted based on the following sequence and lead times:

1. Schedule starts after PO's are released to FSEC.
2. Submittals and Shop Drawing Lead Time to produce: **Typical 2 weeks.**
3. Shop Drawing Review by General Contractor/Architect/Consultant: **Typical 2 weeks.**
4. Rough ins completed by trades, stub up locations.
5. Field Measure millwork: **Typical 1-2 days.**
6. Install millwork: **Typical 2 weeks** – this varies depending on project size
7. Template Counter Tops: **Typical 1-2 days.**
8. FSEC Partial Installation: **Typical 1 week** – this varies depending on project size
9. Install Countertop: **Typical 1-3 days** – this varies depending on project size
10. FSEC Final Installation: **Typical 1 week** – this varies depending on project size
11. MEP Trades to make final connections.

- B. Delivery:** Coordinate with progress of construction and Owner's operation schedules. Unless otherwise instructed and documented by Owner or General Contractor, the following procedures apply:

1. Field-Assembled Fixed Equipment: Integrated into the structure; including, but not limited to, walk-in box assemblies, exhaust hoods, drain trench or grate assemblies, conveyor systems, and ceiling mounted utensil racks are to be sent to the jobsite when directed by the General Contractor and installed or protected accordingly.
2. All other Fixed Equipment: Deliver after completion of adjacent finished ceilings, lighting, finished floor and wall systems; including painting.
3. Major Movable Equipment: Deliver when possible to inventory in a secured area for the interim job site storage or, if secured storage is not available, when fixed equipment installation and clean-up has been completed.

5.5 GENERAL CONTRACTOR (GC) RESPONSIBILITIES

- A. General:** Cooperate fully with the Food Service Consultant so work may be carried out smoothly, without interfering with or delaying other work for this Contract or work by Owner.

- B.** The General Contractor (GC), or GC's designated sub shall be responsible for the following:

1. Construction Waste and Disposal: Provide dumpsters for foodservice packaging.
2. Building Access: Provide proper building access for all equipment.
3. Critical Dimensions: Carefully coordinate all critical dimensions with FSEC, especially for counters and other special fit items. Provide these dimensions as much in advance as possible to ensure sufficient time for FSEC's fabricator to fabricate these complex counters and "hold" dimensions.
4. Provide refrigeration contractor with refrigeration pack rigging to curb.
5. Floor, Ceiling and Wall Protection: Provide as necessary during the course of the entire project to ensure that no harm comes to any equipment and or new finishes.
6. Coordinate the sequencing of all equipment and items which potentially might adversely affect the installation of same by improper sequencing.
7. Floor troughs: Set and level into concrete wet bed.
8. Carefully coordinate with FSEC all coordinated finishes such as stainless-steel wall panels, location, and heights.
9. Coordinate recess depth: For Walk-In Refrigeration finished floor, thick set quarry tile or as per finish schedule
10. Coordinate and provide concrete pads for remote compressors or rack system.
11. Penetrations: Sealing of penetrations through rooftop and any sleeving of any walls required.
12. Coordinate and supply tile work as needed in recess of millwork pockets.
13. Install FRP (wall panels) in food preparation areas to meet Board of Health sanitation requirements.
14. Host regular Foodservice Specific meetings. Attendees include:
 - a. Architect.
 - b. Food Service Consultant.
 - c. Dining Service representative.
 - d. FSEC.
 - e. Electrical Contractor.
 - f. Plumbing Contractor.
15. Host occasional meeting with vendor/owner provided equipment installers and refrigeration contractor as required.
16. Fire Protection System: Coordinate the items below.

- a. Wiring to building alarm monitoring stations.
 - b. Installation of gas valves (sized by MEC, supplied by FPSC).
 - c. Wiring between gas valve and Automan (control head unit).
 - d. In wall recesses for remote pull stations – See detail EXH-1
 - e. Power supply and electrical connection to Automan.
17. Contractor shall issue a letter, signed by all sub-contractors involved and co-signed by Owner's representative stating that staff have been satisfactorily instructed in the use of the equipment.
 18. GC to consolidate all punch list inspection reports to one report, Food Service, Architects, Engineers, and GC.

C. Composite Crews and Claims of Jurisdiction:

1. The FSEC will be expected to bring all foodservice items to the site and set these items in their proper locations using their labor force.

5.6 FOOD SERVICE EQUIPMENT CONTRACTOR RESPONSIBILITIES

- A. General:** Cooperate fully with the General Contractor so work may be carried out smoothly, without interfering with or delaying other work for this Contract or work by Owner. Dealer is responsible for reviewing, correcting, and guiding food service fabrication process, installation requirements, and codes. Dealer to follow formal protocol and flag any code or compliance issues, submitting RFI's or noting issues on submittals.
1. Coordination of Information: FSEC will coordinate information required by other trades relating to food service equipment and hold a meeting with GC discussing requirements specific for this project. Dealer to provide and generate a "Discipline Coordination Sheet" clearly defining scope of work performed by dealer and scope of work expected by other trades. See attached "Exhibit B - Discipline Coordination Sheet" at the end of this specification.
 2. Subcontracting of Work: Is allowed where due to jurisdictional agreements and/or conditions must be done by others. This is at the expense of the FSEC. Some subcontractors may include Millwork, Stainless Steel Fabrication, Fire Suppression, Refrigeration, etc.
 3. Coordinate details and scheduling work at site with other work to avoid unnecessary interference or damage. Dealer to submit a "Project Plan" outlining sequence of delivery items, like, hoods, walk-in boxes, equipment, millwork, etc. See attached "Exhibit C - Project Plan" at the end of this specification.
 4. Installer's Qualifications: Work will be completed by experienced installers in accordance with Drawings and Specifications.
 5. Staffing Level: Employ qualified installers and supervisors to complete the work without delay.
 6. Final Connections: Notify in writing, a minimum of five (5) days in advance, all trades involved in final connections of food service equipment and prior to beginning of this installation.
 7. Installation and Supervision: Continuous during normal job hours until all equipment is installed and connected.

- B.** The Foodservice Equipment Contractor (FSEC) in compliance with Section 11 4000 will be expected to provide and install the following:

1. EXISTING EQUIPMENT (FOOD SERVICE EQUIPMENT CONTRACTOR):

- a. The term "existing equipment" as used in this specification shall mean food service equipment now in storage or active use by the Owner. Where such equipment is reused, it shall be the responsibility of the Food Service Equipment Contractor (section 11 40 00) to carefully examine each unit beforehand to ascertain proper fitting and alignment in its new location.
- b. The Food Service Equipment Contractor (section 11 40 00) shall verify and indicate on his rough in plan all utility connections required for the proper installation of existing equipment to be reused.
- c. GC is responsible for the removal, cleaning, storage, and relocation of the equipment. GC shall coordinate to disconnect and reconnect of services, if required, shall be performed by related trades; final required utility connections to be verified by Plumber/Electrician. All Final connections by Electrician/Plumber.
- d. FSEC to inspect existing equipment and present a separate proposal fee if any repair/replacement of parts as necessary for item to operate in accordance with manufacturer requirements and specifications.

2. RECONDITIONING/REFURBISHING shall be interpreted to mean:

- a. A thorough scraping and steam cleaning to remove scale and all foreign material.
 - b. Repainting of all items having exposed, worn, or scarred surfaces which are not of rustproof materials.
 - c. Furnishing any required filler pieces, braces, hardware, and so on necessary to complete the installation in a workmanlike manner.
 - d. Repainting of the understructure (legs, shelves, drawers, etc.) where required shall be in aluminum lacquer or other chip resistant finish. Other items shall be completely repainted or touched up, as required by their condition, in their original color.
 - e. Refrigeration equipment shall have all components checked for efficient operation, and all worn or malfunctioning items shall be replaced.
 - f. Items containing heating elements shall be checked and any electrical components not functioning properly shall be replaced.
3. When existing equipment is to be reconditioned, the Food Service Equipment Contractor (section 11 40 00) shall submit a time and materials proposal with a list of the items to be reconditioned, which shall be in addition to the base bid.
4. The GC is responsible for removing and disposing of existing food service equipment which is not to be reused and shall verify with the Owner and obtain written release prior to removing such equipment. The GC shall retain any salvage value, unless specified otherwise by the owner.

5. A schedule of relocating existing equipment shall be determined before the Contract is awarded. If changes are made that cause additional charges, the company causing such changes will be responsible for the costs involved.

C. SUBMITTAL PACKAGE: Including all rough-in drawings, shop drawings, finish samples and all associated submittals in compliance with Section 11 40 00 "Food Service Equipment."

1. Equipment Digital base plan may be requested from Consultant and will be provided by FSEC use in preparation of submittals. Electric/Plumbing rough-ins, equipment details, and millwork sections will not be provided as these need to be generated by the FSEC completing final step of due diligence check generating technical submittals illustrating what is being supplied, how it will be fabricated and how it will be installed. Copying and pasting design document details will not be permitted. All shop drawings are to be submitted to scale or they will be rejected. Hand drawn shop drawings will be rejected.
2. Obtain copies of the latest architectural plans from architect prior to beginning the dimensioned rough-in submittal plans. Submittals are to be based off latest set of drawings, including all addendum/revision released.
3. Submittals are to be coordinated between all engineered systems by FSEC before submitting for review. FSEC is to take ownership of all submittals.
4. Review all shop drawings internally prior to submitting to SHG, especially those that are typically auto generated and are not accurate. check for accessories, utility ratings and dimensions. SHG will reject submittals if they are found to be completely off and not line up with project.
5. Submittals to be sent as a complete package; partial or incomplete submittals will be rejected by GC/Architect/Consultant. Equipment Plans should not be submitted without equipment cutbooks or vice versa. Both need to be submitted together for comprehensive submittal review.
6. Submittals are to be separated out, per specifications. Not lumped together as (1) large submittal file
7. All Equipment plans and rough-in drawings to utilize FS design corresponding item numbers. Do not create your own numbering system.
8. Shop Drawings should not read "confirm" or "verify" - the dealer as part of the submittal process needs to close those gaps via formal RFI's if need or site survey dimensions or dictate a hold dimension on shop drawings if need be.
9. Shop drawings to include all equipment, including by others for proper spacing verification. Especially millwork shop drawings. Do not submit millwork only with gaps. Exact actual equipment to be shown and how the millwork is constructed around it for proper fabrication, reinforcement, and clearances.

10. Submit the following:
 - a. Equipment Floor Plans and Dimensioned Rough-ins for Electric, Plumbing & any chase drawings (soda runs, refrigerant runs, beer lines, etc) . See section 11 bellow for further requirements on this submittal.
 - b. Custom Fabricated Shop Drawings, Exhaust Hood, Stainless Steel Fabrication, Millwork etc. See section 10 bellow for further requirements on this submittal.
 - c. Sneezeguard submittals to be reviewed and coordinated with Millwork, uncoordinated default system generated guards will be rejected. Sneezeguard submittal to be reviewed by millwork fabricator and signed off
 - d. Equipment Cut-Book complete with numbered cover sheets and accessory listing. See section 12 bellow for further requirements on this submittal.
 - e. "General Responsibility Outline" sheet defining roles and responsibility for all relevant project scope. Refer to SHG Exhibit 6 Form, feel free to replicate and update as relevant.

11. Equipment Floor Plans and Dimensioned Rough-ins for Electric and Plumbing.
 - a. Within **30** working days from award of contract, the Food Service Equipment Contractor (section 11 40 00) shall submit electronic PDF files of the following drawings to the Owner or his designated representative for review:
 - 1). A floor plan of all food service areas showing all items of equipment and sufficient dimensions to indicate placement of equipment from walls, other items, etc. This sheet shall include an equipment schedule indicating item number, quantity, and description. This sheet is to be based on the Architect's dimensional drawings or field review of existing conditions, whichever is available. Under no circumstances will a tracing from the Architect's or Consultant's work be acceptable.
 - 2). A completely and clearly dimensioned electrical rough-in plan indicating exact locations, heights, and services required for each item of food service equipment, as well as any incidental services (for example, convenience receptacles) shown on the Consultant's spot connection plan. This sheet shall also include an equipment schedule, and each utility description on the body of the sheet shall be accompanied by the appropriate item number. It is expected that the Food Service Equipment Contractor (section 11 40 00) will refer to the data prepared by the Architect and Consultant to complete this requirement; however, it is the responsibility of the Food Service Equipment Contractor (section 11 40 00) to verify information shown thereon, and submittal by the Food Service Equipment Contractor (section 11 40 00) will warrant that he is fully satisfied that the information shown on the submittal is totally correct, complete, and ready for use in the field by other trades. On a new project, rough-in dimensions shall be calculated from column center lines or other established datum points. On a project in an existing space, calculations shall be from finished walls. Indicate all interconnection requirements by other trades.
 - 3). A plumbing rough-in plan conforming to the requirements noted in (b) above.

- 4). A chase provision drawing indicating soda line PVC chases, Refrigerant Line PVC Chases and or Beer Line PVC Chases. Plan is to show full detailed runs/rises from source to destination with all penetration detail, sweep curve radius, etc. GC – General Contract will utilize these to provide the PVC chase.
 - 5). A ventilation rough-in plan conforming to the requirements noted in (b) above.
 - 6). A building conditions plan conforming to the requirements noted in (b) above, and including all pertinent information regarding masonry bases, curbs, recesses, critical dimensions of walls and openings, wall anchorages and overhead supports, and any other special information required to insure a properly completed installation.
- b. The scale of these drawings shall be $1/4" = 1'-0"$, and it shall be the responsibility of the Food Service Equipment Contractor (section 11 40 00) to ensure that his drawings are properly coordinated and that there are no conflicts between sheets. The Food Service Equipment Contractor (section 11 40 00) may, at his option, combine [(b) and (c)] and [(d) and (e)], providing that the scale of all drawings is increased to $1/2" = 1'-0"$.
 - c. The review of these drawings by the Owner or his designated representative is for design purposes only, and that review and/or the reviewer's election to review drawings submitted not in accordance with the above directions will not relieve the Food Service Equipment Contractor (section 11 40 00) from responsibility for the consequences of not having prepared the drawings as above described.
 - d. The Food Service Equipment Contractor (section 11 40 00) shall be fully responsible for the accuracy of all submissions and drawings made by him. If such mechanical, electrical, refrigeration, illumination, service lines or ventilation service lines are not properly installed because of errors or omissions on said drawings, it shall be the duty of the Food Service Equipment Contractor (section 11 40 00) to remove, relocate or install new lines at his own expense. Cutting, patching, installing, removing, or relocating of such utilities shall be done as directed by the Architect and/or Consultant.
 - e. The Food Service Equipment Contractor (section 11 40 00) should attend a slab rough-in inspection before slab is poured to confirm locations of major stub-ups.

10. Manufacturer's Drawings:

- a. It is the responsibility of the Food Service Equipment Contractor (section 11 40 00) to ensure that drawings required from his vendors are received and submitted so as to allow review, correction, re-submittal, and production within the requirements of the project schedule.
- b. The Food Service Equipment Contractor (section 11 40 00) shall review, coordinate, and correct these drawings before submitting them for review. Submit electronic copies for review and approval.
- c. The Food Service Equipment Contractor (section 11 40 00) is responsible for verifying that notes and revisions on these drawings do not conflict with his rough-in drawings and shall immediately notify the Owner or his representative of any such conflicts.

11. Shop Fabrication Drawings:

- a. Within **30** working days from award of contract the Food Service Equipment Contractor (section 11 40 00) shall submit electronic PDF files of the following drawings showing complete fabrication details of custom fabricated equipment.
- b. The scale of these drawings shall be $3/4" = 1'-0"$, with sufficient cross sections to accurately describe construction. Sections shall be at a scale of $1-1/2" = 1'-0"$. Each drawing shall show name and address of fabricator.
- c. These drawings shall indicate locations of utilities and interconnections in relation to the custom equipment. Junction boxes and breaker panels shall be presented in schedule form showing individual connections and total load. If requested by the Owner, provide complete wiring diagrams. The sepia copy will be returned.
- d. Shop drawings shall indicate all pertinent details, including item number, type of material, gauge of material, method of fastening, dimensions, hardware, model numbers, location and size of mechanical and electrical connections, number of units required. Where an item of standard production line equipment, i.e., "buy-out" item, is mounted on, or adjacent to a shop fabricated item, it shall be shown in outline form on plan and elevation, accurately scaled, to indicate relationship and clearances.
- e. All fabricators involved should be aware that the project has bought the details specified and the design team will be conducting site inspection and will require that everything gets replaced that does not conform to those details. This is related to Stainless Steel custom fabrication and Food service Millwork. Submittals should reflect all of the details and how they intend to be constructed. Submittals without those details will be rejected for resubmission.
- f. After final approval of shop drawings, the Food Service Equipment Contractor (section 11 40 00) shall furnish additional copies as requested.
- g. Approval of shop drawings shall not relieve the Food Service Equipment Contractor (section 11 40 00) from full compliance with the Contract drawings and specifications unless any deviation from same has been brought to the Consultant's attention in writing and approval for same has been given in writing.

12. Manufacturers' Illustrations:

- a. Within **30** working days from award of contract, the Food Service Equipment Contractor (section 11 40 00) shall submit electronic PDF files of the equipment cut book to the Owner or his designated representative for review:
 - b. Provide a cover sheet for each item number, indicating item number, quantity, description, manufacturer, model number, utilities required, and accessories.
13. The review of these items by the Owner or his representative is for the assistance of the Food Service Equipment Contractor (section 11 40 00) and does not relieve the Food Service Equipment Contractor (section 11 40 00) of any responsibility for accuracy and completeness. When the Food Service Equipment Contractor (section 11 40 00) is notified that further resubmittals will not be required, he shall provide to the Owner a reasonable number of copies of prints and brochures without charge.

D. INSTANT REBATE PROGRAMS

- A. The enclosed project specifications may contain pieces of equipment that are Energy Star Certified and may qualify for an instant rebate from the utility providing service to the installation address. The awarded Food Service Equipment Contractor of this bid is to engage the team from Energy Solutions who will determine the equipment eligibility/rebate amount and file for the qualifying rebates. Food Service Equipment Contractor will be required to provide a line-item discount to the customer and provide proof of discount on final billing. Please contact Ed Wiernasz at Energy Solutions for more information. ewiernasz@energy-solution.com office 510-482-4420 x461 cell 860-614-5051.

E. COMPLIANCE AND CERTIFICATION

- A. New York State Appliance and Equipment Efficiency Standards:
1. Dealers involved in the sale and installation of food service equipment in New York State must comply with the New York State Appliance and Equipment Efficiency Standards. This includes ensuring that all regulated products are listed in the relevant databases before any transaction or installation takes place
 2. Dealer is to follow Certification process for SASD and MAEDbS by creating an account, uploading specs and distribute the approval notification to the project team for record

**5.7 FIRE PROTECTION SYSTEM CONTRACTOR RESPONSIBILITIES
(FOOD SERVICE EQUIPMENT SUBCONTRACTOR)**

- A. General: Cooperate fully with the General Contractor so work may be carried out smoothly, without interfering with or delaying other work for this Contract or work by Owner.
- B. Provide and install the following:
1. Provide and install Ansul Fire protection system including the following components.
 - a. Provide Mechanical/Electric Gas Valve, sized by direction of MEC (installed by GC).
 - b. Gas valve to be normally closed, powered-open design and shall fail closed upon activation of hood fire suppression system, loss of power, manual deactivation of hood-fan or failure of fan. See fire suppression specifications.
 - c. Required Cabling for a complete system.
 - d. Mounting of Automan (control head unit).
 - e. Mounting of Tanks below ceiling line and located out of customers view.
 - f. Mounting of remote pull station in provided recessed box. Recessed box provided by electrical contractor. Surface mounted pull stations will not be accepted. Refer to detail #EXH-1
 - g. Piping and protection nozzles over equipment and in duct plenum (if hood is not pre-piped from factory).
 - h. Tag and Arm System.
 - i. Provide shop drawing submittal with system information as required by local authority having jurisdiction for permit application and acquire the permit which is to be present during testing procedure.
 - j. Ansul System Tank placement is critical and should be located as per Food Service Design plans. Tanks, Control cabinets, Electrical Panels, all should not be visible from customer in any front of the house applications, such as Bistro's, Cafes, Serveries, Markets, Hospitality Kitchens, Grills, Bars, etc. and should be located back of the house. If placement is not possible per drawings a formal RFI needs to be submitted

- C.** Testing and Inspection: Electrician/plumber should be present and actively involved during testing procedure as it relates to their trade, to ensure equipment operates properly, prevent damage and remedy issues as they occur.
1. Perform follow up 6-month inspection.
 2. Set-up annual inspection program.
 3. The Following items are to be managed and provided by the General Contractor:
 - a. Wiring to building alarm monitoring systems.
 - b. Installation of gas valves (Sized by MEC, supplied by FPSC).
 - c. Wiring between gas valve and Automan (control head unit).
 - d. In wall recesses for remote pull stations.
 - e. Power supply and electrical connection to Automan.

**5.8 MILLWORK FABRICATOR RESPONSIBILITIES
(FOOD SERVICE EQUIPMENT SUBCONTRACTOR)**

- A.** General: Cooperate fully with the General Contractor so work may be carried out smoothly, without interfering with or delaying other work for this Contract or work by Owner.
- B.** Provide and install the following:
1. Review in detail Food Service Millwork details, specifications, and architectural related finish schedules.
 2. Provide detailed CAD level shop drawings showing construction and installation details and how millwork interfaces with foodservice equipment. Hand drawings will not be accepted.
 3. Receive all drop-ins and sneezeguards from FSEC, pre-fit in factory.
 4. Provide load centers for any island equipment, interconnect all electrical connections in factory
 5. Deliver and install millwork counters and sneezeguards in accordance with the project schedule and needs of the project ready for final connections by mechanical trades.
 6. Provide, locate and cut-in stainless steel floor sink sleeves after millwork is installed. (Refer to detail MEP-100.)
 7. Provide grommet holes, cut in place after equipment installation. Location of grommet holes to be coordinated with kitchen operating staff preferences.
 8. Seal all exposed raw wood surfaces and trim/seal/caulk millwork to walls as required to meet board of health regulations.

**5.9 REFRIGERATION CONTRACTOR RESPONSIBILITIES
(FOOD SERVICE EQUIPMENT SUBCONTRACTOR)**

- A.** General: Cooperate fully with the General Contractor so work may be carried out smoothly, without interfering with or delaying other work for this Contract or work by Owner.
- B.** Provide and install the following:
 - 1. Mount refrigeration unit on curb (coordinate rigging if necessary, w/ GC rigging dates).
 - 2. Provide all refrigeration piping for units which remotely connect to rooftop refrigeration unit.
 - 3. Factory supervision on site is required during installation and start-up of the system and provide a factory certified letter of compliance. Refer to "SYSTEM INSTALLATION VERIFICATION - SIV" section below.
- C.** Submittals: Submit shop drawing of rack system and piping diagram of installation runs showing chase requirements from source to each destination.
- D.** Testing:
 - 1. Nitrogen test and subsequently charge refrigeration piping.
 - 2. Factory inspection of installation is required and should be performed prior to startup of system.
 - 3. Startup: Remote refrigeration units in coordination with GC's electrician and in presence of factory engineer.
 - a. Plumber should be present and actively involved in start-up of all equipment as it relates to their trade to ensure correct operation, prevent damage and remedy issues as they occur.
- E.** Project Closeout:
 - 1. Provide operation and maintenance manuals for all equipment in digital CD and 3 ring binder form including a comprehensive service listing for all equipment items including fabrication.
 - 2. As Built Drawing showing refrigeration pipe runs and all installation conditions, service access points, etc.
 - 3. Pictures of piping installation before building structures get closed in.

4. Provide report of SYSTEM INSTALLATION VERIFICATION - SIV as required per specifications.
 - Food Service Equipment Contractor shall secure System Installation Verification (SIV) Manufacturer Service from factory rack manufacturer to perform an SIV two times during the duration of the project. The SIV is to be by a factory engineer or by factory certified refrigeration mechanic.
 - First SIV, is to supervise the dealer installation of the refrigeration rack, evaporator coils, refrigerant lines etc. providing oversight, direction and inspecting line set installation.
 - The final SIV will be performed during the start-up of the system. Any field related discrepancies that are discovered during the SIV will be brought to the attention of Food Service Equipment Refrigeration Contractor, General Contractor and corresponding trades on site. These issues will be documented and forwarded to the appropriate sales office and design team. During the SIV Manufacturer Service will address any discrepancy that is the fault of the manufacturer at no cost. If SIV Manufacturer Service has to resolve a discrepancy that is a field issue, the General Contractor will be notified and will need to approve the work to be completed either by SIV Manufacturer Service or direct respective trades to remedy those issues.
 - The Food Service Equipment Refrigeration Contractor installer is to inform factory engineer if the installation and start up will take place at the same time, or if the startup will be at a later date. If the startup will be at a later date, the installer is to inform factory engineer to schedule the SIV dates.
 - The warranties will not go into effect unless this procedure is followed.
- F. Work not included in the Refrigeration Contractors Scope to include the following:
 1. GC to provide pad for refrigeration rack.
 2. Electrical wiring and disconnect to rack.
 3. Interconnecting wiring from rack to freezer evaporator coils.
 4. Piping of condensate lines from all evaporator coils.
 5. Heat trace on freezer section condensate lines.
 6. Penetrations and sealing of penetrations through rooftop and any sleeving of any walls as required.
 7. Low voltage wiring and CAT-5 wiring of alarm system to building system and to control data software in foodservice manager's office.
 8. Piping of condensate lines from all evaporator coils.
- G. Meetings: Participate in regularly scheduled (as required) foodservice specific coordination meetings as scheduled by GC.

5.10 ELECTRICAL CONTRACTOR RESPONSIBILITIES

- A.** General: Cooperate fully with the General Contractor so work may be carried out smoothly, without interfering with or delaying other work for this Contract or work by Owner.
- B.** Provide and install the following:
 - 1. Provide all rough-ins (required service to utility connections noted on FSEC rough-in drawings).
 - 2. Electrical Contractor to follow shop drawings submitted by dealer and reviewed by Food Service designers and MEP Engineers. These shop drawings will contain dimensioned rough-ins and utility loads. By no means should the Electrical trades rough-in from design plans as equipment loads and/or manufacturers might change through submittal process.
 - 3. Provide all final connections to all foodservice equipment.
 - 4. Electrical Safety Disconnects (provide means of disconnect for all direct wired equipment) Typical for, Dishwasher, Disposer, Heavy duty Mixers, Walk-in Compressors, etc.
 - 5. Wiring interface from Exhaust/Make-Up fans to control points.
 - 6. Provide wiring to all lights/switches in exhaust hoods.
 - 7. Provide switching, interconnected wiring and all associated starters for exhaust/condensate hood fans.
 - 8. Wire provided table limit switch in clean dish table.
 - 9. Provide all shunt rips for any electrical cooking equipment and interconnect to Ansul system.
 - 10. Provide ethernet wiring for walk-in alarm units (interconnected to building alarm monitoring system).
 - 11. Interconnecting wiring from rack to Walk-In Freezer evaporator coils.
 - 12. Lighting connections in Walk-In Cooler/Freezer.
 - 13. Heat trace on condensate lines in Walk-In Freezer section.
 - 14. Low voltage data wiring from POS to manager's office and digital menu boards.
 - 15. Ethernet wiring of alarm system to building system.
 - 16. Main supply to millwork counter, chefs' counters load centers and final connection to load center.
 - 17. Install loose light fixtures (including penetrations and sealing penetrations) in walk-ins.
 - 18. LED Lighting in millwork counters will be provided by FSEC. Provide required light switch and wiring to LED light.
 - 19. Provide all DCR's shown on foodservice rough-in drawings.
- C.** Project Closeout: Electrician should be present and actively involved in startup/testing of all equipment as it relates to their trade to ensure correct operation, prevent damage, and remedy issues as they occur.
- D.** Meetings: Participate in regularly scheduled (as required) foodservice specific coordination meetings as scheduled by GC.
- E.** Temporary Equipment Relocation: If electrician needs to move a piece of equipment for proper access after it has been set then the electrician will be expected to return this same piece of equipment to its correct location or coordinate temporary positioning with FSEC.

5.11 PLUMBING CONTRACTOR RESPONSIBILITIES

- A.** General: Cooperate fully with the General Contractor so work may be carried out smoothly, without interfering with or delaying other work for this Contract or work by Owner.
- B.** Provide and install the following:
 - 1. Provide all rough-ins (required service to utility connections noted on FSEC rough-in drawings)
 - 2. Plumbing Contractor to follow shop drawings submitted by dealer and reviewed by Food Service designers and MEP Engineers. These shop drawings will contain dimensioned rough-ins and utility loads. By no means should the Plumbing trades rough-in from design plans as equipment loads and/or manufacturers might change through submittal process.
 - 3. Extend all interconnected safe drains to building Floor Sinks for safe indirect waste including indirect waste drain from walk-in cooler/freezer assemblies and refrigeration units to drains.
 - 4. When drains are extending through stainless tables and cuts are made, all edges to be treated with Trim Lok Edge or equal, no rough cut exposed edges will be acceptable.
 - 5. Provide all Floor Sinks, Area Floor Drains and Standpipes. Install and plumb Floor Through - Floor Throughs will be provided by FSEC.
 - 6. Install Quick-Disconnect gas hoses and restraining Devices (provided by FSEC).
 - 7. Install Quick-Disconnect water hoses (provided by FSEC). All mobile equipment is to be connected with a Quick-Disconnect safety water hose – do NOT hard plumb to building.
 - 8. Provide all connections to all foodservice equipment. All interconnections will be provided by FSEC.
 - 9. Mount hand wash sinks. (faucets, drain wastes, drain levelers, etc.)
 - 10. Make joining connections for plumbing connections to large items that need to be broken into smaller components for building access.
 - 11. Provide all plumbing materials including pipe, traps, stops, valves, gauges, unions, and insulation.
 - 12. Extra care should be taken to run all piping inside the wall including gas lines as much as possible limiting amount of exposed piping.
 - 13. Provide all backflow preventers for beverage equipment including vendor supplied beverage equipment.
 - 14. Install mechanical/electric gas valve provided by FPSC, Run wiring to Automan (Control Head).
 - 15. Provide 6-inch PVC Beverage Raceway and Conduits, coordinate with owners Vendor/Supplier of Bulk CO2 System for routing.
 - 16. Provide 3-inch PVC Refrigeration Piping Raceway and Conduits, coordinate with Food Service Equipment refrigeration subcontractor for routing.
 - 17. Provide 6-inch PVC Beer Raceway and Conduits, coordinate with dealer's supplier of Beer System for routing requirements.
 - 18. Provide interconnecting piping from all water filters to all water filter outlet destinations.
 - 19. Provide all grease interceptors and grease traps
- C.** Temporary Equipment Relocation: If plumber needs to move a piece of equipment for proper access after it has been set then the plumber will be expected to return this same piece of equipment to its correct location or coordinate temporary positioning with FSEC.

5.12 HVAC CONTRACTOR Section 23 00 00 (retained by GC Section 01 00 00)

- A.** General: Cooperate fully with the General Contractor so work may be carried out smoothly, without interfering with or delaying other work for this Contract or work by Owner.
- B.** Provide and install the following:
 - 1. Review all Exhaust Hood Engineered data spec drawings for CFM Exhaust and Make Up Air requirements for all kitchen hoods, cooking, and dishwashing.
 - 2. Size and engineer ductwork and fans for all kitchen hoods, cooking, and dishwashing. Provide Tempered (heated) air for make-up and conditioned air as required. Ensure fans are VFD compatible for smart on demand hood controls.
 - 3. Provide and install Grease Ductwork: The HVAC Contractor shall make an approved type of connection to hood duct collar in accordance with NFPA 96, Vapor Removal from Cooking Equipment. Ductwork required for the connection of ventilators to the exhaust blower must be of at least 16-gauge carbon steel or 18-gauge stainless steel, all welded watertight construction, and pitched for proper drainage. Long horizontal runs should be avoided if at all possible. All ductwork shall be provided and installed by the HVAC Contractor. HVAC contractor may choose to request duct collars to be shipped loose for flexibility in locating in the field – coordinate with FSEC contractor. Ensure installation complies to any clearance to combustibles requirements.
 - 4. Provide and install Condensate Ductwork: Non-cooking exhaust ductwork such as dishwasher exhaust system, etc. cannot be connected to the grease ductwork. Separate systems must be maintained. Warewashers will commonly be provided with stainless steel ductwork risers by the FSEC to a point 3" above the finished ceiling. The FSEC shall provide a balancing damper for each duct riser. HVAC Contractor shall make the connection to the two straight ducts above.
 - 5. Ceiling diffusers shall be at least 6'-0" from all sides of the ventilator and the velocity at the diffuser shall not exceed 150 feet per minute (fpm) or ceiling diffusers shall be 15'-0" from all sides of the ventilator and the velocity at the diffuser shall not exceed 300 feet per minute (fpm). The maximum velocity of the make-up air from transfer air, diffusers, etc. Shall not exceed 75 fpm at the ventilator lip. Kitchen pressurization shall not exceed - 0.02"w.g. relative to the dining or adjacent spaces, as stated in NFPA-96 and ashrae standard 154.
 - 6. Balance system to prevent any cross drafts and negative pressure. Provide balancing report to design team.
 - 7. Dishmachines with Built-In Condenser Systems and Recirculating Hoods generate substantial heat, provide additional exhaust to remove heat as typically these are located in tight pantries

5.13 STORAGE AND DELIVERY (FOOD SERVICE EQUIPMENT CONTRACTOR)

- A.** Receive all equipment at an offsite warehouse and store equipment until required
- B.** Receive all equipment at an offsite warehouse and store equipment until required.
- C.** Field-Assembled Fixed Equipment: For types integrated into the structure; including but not limited to walk-in boxes assemblies, exhaust hoods, drain trench/grate assemblies, conveyor systems, and ceiling mounted utensil racks, deliver to the jobsite when directed by the General Contractor.
- D.** Other Fixed Equipment: Deliver after the work on adjacent finished ceilings, lighting, finished floor and wall systems is complete.
- E.** Major Movable Equipment: Deliver to the inventory area for interim job-site storage or, deliver when the fixed equipment installation and clean-up has been completed.
- F.** Deliver all equipment to the jobsite in accordance with the project schedule and needs of the project.
 - 1. Exhaust Hoods and Walk-In coolers to be delivered/installed prior to equipment delivery to accommodate construction schedules with other trades (flooring, ceiling contractors).
- G.** Coordinate any large equipment that will not fit through standard 36-inch finished door opening and arrange prior delivery/installation with GC
- H.** Coordinate with GC any equipment having heavy load bearings to ensure building structure can handle loads. (Hearth Pizza Ovens, etc.).
- I.** Field-Assembled Fixed Equipment: For types integrated into the structure; including but not limited to walk-in boxes assemblies, exhaust hoods, drain trench/grate assemblies, conveyor systems, and ceiling mounted utensil racks, deliver to the jobsite when directed by the General Contractor.
- J.** Assemble all equipment and provide manufacturer interconnections of any electrical and plumbing work as provided by manufacturer as part of the equipment package. Equipment to be ready for final connections by GC's Electrician and Plumber. This includes:
 - 1. Mount faucets
 - 2. Overflows
 - 3. Disposer(s), Scraper(s) piping and electrical interconnections to remote on/off switch.
 - 4. Table Mount Shelving.
 - 5. Mobile/Stationary Shelving.
 - 6. Booster Heater water interconnections to warewasher.
 - 7. Heat Lighting Strips.
 - 8. Direct Draw Beer Taps, countertop cut, mount taps from top to cooler and provide insulation/sealant ready for keg connections by others.
- K.** Trim and seal all equipment to walls once equipment is fully connected, including but not limited to, walk-in boxes, exhaust hood, condensate hoods, tables, and millwork
- L.** Provide and Install Stainless Steel Wall Panels behind cooking equipment and in dishrooms prior to electrical face plates and gas manifold line installation when specified.

- M.** Construction Waste Disposal: All equipment packaging and crating to be placed in dumpsters on site as provided by GC. All trash is to be removed from work areas prior to the end of each workday if not accomplished immediately.
- N.** Protection: Provide floor and wall protection as necessary during delivery and setup of equipment to prevent any damage to building and new finishes.
- O.** Hang all exhaust hoods and PSPs (perforated supply plenums) from building structure per factory requirements. Bottom of ventilators to be installed 6' -8" above the finished floor. Ventilators to be suspended from overhead construction with ½" diameter steel rods having adjusting turnbuckles. Ensure hood is installed to provide proper overhangs over cooking equipment, recommended 12" in front, 6" on each side. Center hood on island applications. Dealer to provide critical dimensioned drawing to GC showing "keep clear area" for hood hanging locations.
- P.** Ship all buy-out equipment, drop-ins, sneezeguards etc. to millwork fabrication shop.
- Q.** Coordinate delivery and set-up of millwork counters.
- R.** Provide floor trough(s) for GC to set in wet bed of concrete. Provide detailed recessed slab drawings to GC for proper positioning of floor through(s) to ensure pour path aligns with tilting kettles/skillets.
- S.** Coordinate with GC/Owner for Bulk CO2 System location and installation as supplied by owner's Vendor.

5.14 SITE INSPECTION AND FIELD VERIFICATION (FOOD SERVICE EQUIPMENT CONTRACTOR)

- A.** Installation Inspection - This is the act of a qualified individual reviewing the "job site" to be certain and confirm that all of the mechanical connections to a particular piece of equipment are correct and in accordance with the manufacturer's written specifications. The term MECHANICAL in this definition refers to gas, steam, water, electric and ventilation. The installation inspection also includes proper clearances, service access, positioning and leveling of equipment, and the use of restraining devices when applicable. This inspection does not include confirmation of the installation meeting applicable codes.
 - 1) CFESA Recommended
Installation Form – Form shall be completed by the Installer with copies provided to the FSEC The FSEC will be responsible for forwarding completed copies to SHG (who will provide the final bond copy of all completed forms to the Owner/End User when all work is finalized) and the manufacturer representative (who will provide a copy to the manufacturer if required). See exhibit 2 for the required form. Original form files are available upon request from SCOPOS Hospitality Group, CFESA and MAFSI for reproduction as required.
- B.** Examine conditions, for compliance with requirements and other conditions affecting performance of the Work.
 - 1. Report discrepancies to the Architect.
 - 2. Proceed with installation only after unsatisfactory conditions have been corrected.
- C.** Review submittals to confirm compliance with contract documents. Report all conflicts in writing to the Architect.

- D. Verifying all dimensions, quantities, construction details, finishes, sizes, etc.
- E. Equipment to be Reused: Inspect to verify the mechanical, electrical, or other service needs required.
 - 1. Report discrepancies to the Architect.
 - 2. Proceed with installation only after mechanical, electrical, or other service needs have been mitigated.

5.15 INSTALLATION (FOOD SERVICE EQUIPMENT CONTRACTOR)

- A. Installation shall include assembly of all food service equipment as shown and scheduled in foodservice equipment plans, properly leveled, fitted, and secured in place, ready for other contractors to make final electrical, steam, gas, water, waste, and ventilating connections, according to manufacturer's written instructions, original design, and referenced standards.
- B. Except for mobile and adjustable-leg equipment, all equipment resting against walls, floors, ceilings and/or other equipment and accessories shall be sealed to walls, floors, or bases with stainless steel fasteners with silicone sealant approved by NSF, as required to prevent entry of vermin and insects. Gaps over 1/4 inch wide will not be accepted.
- C. All horizontal runs of piping and conduit shall be a minimum of 6 inches above finished floors and 3 inches out from all walls. Extra care should be taken to run all piping inside the wall including gas lines as much as possible limiting amount of exposed piping.
- D. Install equipment with access and maintenance clearances according to manufacturer's written instructions and requirements of authorities having jurisdiction.
- E. FSEC is responsible for access to installation locations in building. If it becomes necessary to schedule construction so that all partitions be erected prior to delivery of foodservice equipment, bidders are cautioned that all equipment must be fabricated so that it can be handled through finished door openings.
 - 1. Removal of and replacement of any doors, door frames, wall windows, or other portion of building for access is responsibility of FSEC and he shall assume all costs for such work.
 - 2. If special hoisting equipment and operators are required, FSEC shall include such costs.
- F. Provide cutouts in equipment, neatly formed, where required to run service lines through equipment to make final connections.
 - 1. Gaps of one-quarter (1/4") inch or less adjacent to or between equipment to be sealed with General Electric Series SE-1200 silicon mastic (clear or silver color to be determined by Architect) with excess neatly and cleanly removed.
 - 2. Gaps greater than one-quarter (1/4") inch to be neatly trimmed with eighteen (18) gauge stainless steel molding of proper shape with concealed attachment. Use epoxy cement or wall matching finish or trimmed fixture.
 - 3. Gaps of more than one and one-half (1-1 1/2") inch are NOT acceptable to trim.
 - 4. Install hoods to comply with NFPA 96 requirements and to remain free from vibration when operating. Refer to typical installation provisions sheet in food service drawings.
- G. Install hoods to comply with NFPA 96 requirements and to remain free from vibration when operating. Refer to typical installation provisions sheet in food service drawings.

5.15 PROTECTION (FOOD SERVICE EQUIPMENT CONTRACTOR):

- A. Protective Covering and Coatings: FSEC to remove all protective covering and coatings from work and clean and service all equipment. Leave equipment free from defect, adjusted and lubricated according to manufacturer instructions.
- B. **CAUTION:** Equipment with scratches, dents, discoloration, or any other obvious damage will not be accepted. All work and materials to be in full accordance with the latest rules of U.S. Public Health Service, National Board of Fire Underwriters, and local or State ordinances, regulations of State Fire Marshall and Underwriter's Laboratory.

5.16 PROJECT CLOSEOUT PROCEDURES (FOOD SERVICE EQUIPMENT CONTRACTOR)

- 1. Cleaning and Protection:
 - 1. Clean up and remove from job site all debris resulting from delivery, installation, protection, cleaning, and adjustment of Food Service Equipment as work progresses.
 - 2. Thoroughly clean interior and exterior of all Food Service Equipment prior to demonstration and final observation. Food Service Equipment to be ready for the Owner's use.
 - 3. Clean or replace line strainers, and faucet aerators.
 - 4. Touch up damage to painted fixtures.
- 2. **Final Observation:** Provided by Food Service Design Consultant when the General Contractor will certify that the work is complete, has made a thorough review of the installation and operation of each item in the contract and found it to be in compliance with the Construction Documents.
- 3. Repetitive Final Observations: In excess of two, and all costs associated thereto which may be incurred due to the General Contractor's failure to comply with the requirements of this article will be invoiced on a time and expense basis and reimbursed to Food Service Design Consultant.
- 4. **Contractor's List of Incomplete Items:** The FSEC will complete a walkthrough with GC and architect and issue detailed punch list report for actions needed to be taken.
 - 1. Procedures will be in compliance with Section 01 7700 "Closeout Procedures."
 - 2. GC to consolidate all punch list inspections reports (Food Service, Architects, Engineers and GC) to one report.
- 5. Installation, Connections, and Testing: To be complete a minimum of five (5) days prior to Owner takeover.

6. Start-up Procedures:

Once the equipment is purchased and installed, it is essential for all parties involved that, where needed, a professional start up or performance check be performed by an authorized service company, followed by a thorough demonstration by the manufacturers' representative. Refer to itemized specification, certain items specifically call out this requirement. When a proper installation is completed, one where the Manufacturer's Requirements, as spelled out in the equipment manual, have all been met along with any and all governing codes, the FSEC shall be responsible for scheduling all of the services outlined in this section to aid in providing a professionally complete kitchen project. It is the responsibility of the FSEC to ensure all forms in the exhibit 1-5 are issued for the appropriate equipment as required, completed and copies are provided to the proper parties as described after the completion of each task. These forms have been created through the joint effort of CFESA (Commercial Food Equipment Service Association), FCSI/NAD (Foodservice Consultants Society International / North America Division) and MAFSI (Manufacturer's Agents for the Foodservice Industry).

1. FSEC will provide start-up service for all refrigeration equipment.
2. Lubricate and adjust drawer slides, hinges, and casters.
3. Adjust pressure regulating valves, time delay relays, thermostatic controls, temperature sensors, exhaust hood grilles, etc.
4. Start up and check out operation of all refrigerated systems for at least 72 hours prior to acceptance and turn over.
5. Calibrate all thermometers to reflect actual temperatures of refrigerated equipment.
6. Start up and test run rotary, reel, or hearth ovens for a minimum of forty-eight (48) hours prior to the Owners inspection.
7. Plumber and electrician should be present and actively involved in startup of all equipment as it relates to their trade to ensure correct operation, prevent damage, and remedy issues as they occur.
8. Provide demonstrations for use of all equipment as requested by Owner or Dining Services. Demonstrations to be conducted by factory trained individuals, typically a factory representative firm.
9. Provide operation and maintenance manuals for all equipment in digital USB flash drive including a comprehensive service listing for all equipment items including fabrication.
10. Upon startup ensure and account for all equipment accessories including but not limited to exhaust hood lights, Walk-In Lights, replacement filter cartridges, mixer/bowl/cutter attachments, gas hoses, cleaning kits, keys for lockable equipment, etc.
11. Startup MUST include a written report of all completed work or operation problems with the specific piece of equipment. Start-up cannot occur until an installation inspection has been performed and approved and any warranty service has been completed.
 - a. Provide CFESA Recommended Start-Up/Performance Check Form - Form shall be completed by the authorized service technician with copies provided to the FSEC. The FSEC will be responsible for forwarding completed copies to SHG (who will provide the final bond copy of all completed forms to the Owner/End User when all work is finalized) and the manufacturer representative (who will provide a copy to the manufacturer if required). See exhibit 3 for the required form. Original form files are available upon request from SCOPOS Hospitality Group, CFESA and MAFSI for reproduction as required.

12. Performance Check - Verification, by an authorized service technician, that the manufacturer's installation specifications are met, and utilities are correct for newly installed equipment. To ensure proper operation of the piece of equipment, an authorized technician, may need to perform minor adjustments, alignments, and calibrations. Performance checks are done any time after equipment has been in operation for a minimum of two weeks to a maximum of 90 days.
 - a. CFESA Recommended Start-Up/Performance Check Form - Form shall be completed by the authorized service technician. with copies provided to the FSEC. The FSEC will be responsible for forwarding completed copies to SHG (who will provide the final bond copy of all completed forms to the Owner/End User when all work is finalized) and the manufacturer representative (who will provide a copy to the manufacturer if required). See exhibit 3 for the required form. Original form files are available upon request from SCOPOS Hospitality Group, CFESA and MAFSI for reproduction as required.

7. Certification Letters and Portal Monitoring Accounts:

1. FSEC to provide all the following certification letters and account access information as applicable for the project
 - a. Letters of certification for dishwasher operation and sanitation compliance
 - b. Letter of certification for the Accurex Hood.
 - c. Letter of Certification and SDV - System Design Verification from Captive-air Hoods indicating proper EMS and VFD operation.
 - d. Provide log-in access for Captive-Aire hood operation and maintenance monitoring. Set-up with owner and program automatic error notifications to be notified via email or text as preferred by facilities.

8. Demonstration and Training: Provide demonstrations for use of all equipment, item by item, including fabricated equipment as requested by Owner or Dining Services.

1. Demonstrations to be conducted by factory trained individuals, typically a factory representative firm.
 - a. Instruction shall include care and cleaning of all equipment and a complete demonstration of operation
 - b. All buy-out equipment shall be demonstrated by factory trained personnel only.
 - c. All actions within the demonstration should be referenced in the operator manual as prepared by the manufacturer of said piece of equipment.
2. General Contractor will provide a letter, signed by all sub-contractors involved and co-signed by the Owner's Representative stating that dining staff have been adequately instructed in the use of equipment.
3. MAFSI Recommended Demonstration Request Form - Form shall be completed by the FSEC with copies provided to the manufacturer representative. The manufacturer representative will be responsible for forwarding completed copies to SHG (who will provide the final bond copy of all completed forms to the Owner/End User when all work is finalized). The manufacturer representative is responsible for forwarding a copy to the manufacturer if required. See exhibit 4 for the required form. Original form files are available upon request from SCOPOS Hospitality Group, CFESA and MAFSI for reproduction as required.

4. MAFSI Recommended Demonstration Inspection Report - Form shall be completed by the manufacturer representative with completed copies provided to the F.E.C. The FSEC will be responsible for forwarding copies to SHG (who will provide the final bond copy of all completed forms to the Owner/End User when all work is finalized). The manufacturer representative is responsible for forwarding a copy to the manufacturer if required. See exhibit 5 for the required form. Original form files are available upon request from SCOPOS Hospitality Group, CFESA and MAFSI for reproduction as required.
9. In addition to the guarantee called for under the General Conditions, this FSEC shall further agree that in the event of failure of any system or item of equipment or improper functioning of specified work during the guarantee period, he shall have "on call" competent service personal available to make the necessary repairs or replacements of specified work promptly at no cost to the Owner. In the event that replacement of an entire item is required, the Owner shall have the option of full use of the defective equipment until a replacement has been delivered and completely installed.

5.17 PROJECT RECORD DOCUMENTS (FOOD SERVICE EQUIPMENT CONTRACTOR)

1. Operation and Maintenance Manuals: Comply with Section 017700 "Closeout Procedures" for schedule for submitting operation and maintenance documentation.
 1. A minimum of three (3) weeks before the job opening, the Food Service Equipment Contractor shall furnish USB Flash Drive containing digital maintenance and repair manuals, giving operating and maintenance instructions, parts lists.
 - a. Provide wiring and connection diagrams where one or more items are interconnected.
 - b. Provide Authorized Service Agency Listings and representatives for each piece of equipment having electrical and/or mechanical components and 24-hour emergency call numbers.
 - c. Provide excel spreadsheet listing of all equipment utilizing equipment item numbering as per plan, include description of item, manufacturer, model, applicable warranty information and serial number of each unit. Sort spreadsheets into different tabs by restaurant/space areas. First tab to include item b. – Service Agency Listing index. Dealer may submit alternate cataloging process/system they have in place to accomplish same results – i.e., QR code stickers on equipment, etc.
 - d. See exhibit A – “*Service Agency Listing and Equipment Catalogue Record*” example for format.
 2. FSEC shall thoroughly instruct Owner in complete contents of manuals and service agencies and service process.






5.18 WARRANTIES (FOOD SERVICE EQUIPMENT CONTRACTOR)

1. All Equipment shall be warranted in writing from the date of final acceptance for a minimum period of one (1) year (regardless of the duration of the manufacturer's warranty) from defective parts, material, design, and workmanship, whether furnished by the Food Service Equipment Contractor (section 11 40 00) or any of his subcontractors. The Food Service Equipment Contractor (section 11 40 00) will be responsible for the cost of the affected equipment and/or its parts as well as any related costs of affected structural, electrical, mechanical, or other work requiring removal or replacement as a direct or indirect result of the failure of the equipment.


2. Compressors: Additional (4) four-year warranty, parts only.
3. No additional costs shall be transferred to the Owner. Neither the final certificate nor payment will relieve the Food Service Equipment Contractor of responsibility for honoring the warranty.
4. If the Food Service Equipment Contractor is requested to provide service necessary as a result of faulty utility connections, misuse or abuse, or other reason beyond the control of the Food Service Equipment Contractor, then they shall be reimbursed for the expenses and costs by the party making the original request for service.
5. Repair/Replacement of any individual unit to be limited to 3 major replacements parts before a new replacement unit to be provided in its place within the time frame of warranty. This is to ensure that there are no hidden damages present in the unit giving the owner a fully functioning equipment. This is applies to countertop, built-in to millwork/counter and standalone equipment. Hoods, remote refrigeration systems, etc. to be provided with standard service requirements.
6. Initial Warranty Service: Beginning at Substantial Completion, maintenance service shall include 12 months' full maintenance by skilled employees of Food Service Equipment Contractor. This includes service in the event of failure of any system or equipment component or improper functioning of specified work during the warranty period.
 1. Perform warranty during normal working hours.
 2. Perform emergency callback service during normal working hours with response time of **two** hours or less.
 3. Include 24-hour-per-day, 7-day-per-week emergency callback service with response time of **two** hours or less.

5.19 EXHIBITS – SEE ATTACHED TO THIS SPECIFICATION:

1. Service Agency Listing and Equipment Catalogue Record

EXHIBIT 1 – SERVICE AGENCY LISTING					
Manufacturer	Item Description	Model #	Serial #	Warranty Info	Service Info
 BEVERAGE-AIR <small>MAKING THE WORLD'S BEST BEVERAGES</small>	Reach-In Undercounter Freezer	UCF27A-23	10508428	Limited Warranty: 3 yr parts and labor, Additional 2 yr compressor warranty	NATIONAL REFRIG - A/C SVC - 713- 222-9282
	Refrigerated Counter, Chf Base	WTRCS2-1	10602825		
	Refrigerated Pizza Table	DP46	10606621		
	Reach-In Undercounter Refrigerator	UCR27A-23	10504475		
 Delfield	Drop-In Cold Food Pan	N8143B	1303150001054	(5) year compressor warranty, (1) year parts & (90) day labor warranty, standard. (1) Year service & labor warranty	Armstrong Repair Center - Houston 713-666-7100
	Drop-In Cold Food Pan	N8118B	1303150001173		
	Drop-In Hot Well	N8745-D	1303150000941		
 Frymaster	Spill Pail Fryer w Basket Lifts	MJ4SE-2BL/C	1303GA0081	FRYPOT warranty - 4th year replace part only, standard. FRYPOT & ASSEMBLY warranty - 1st year parts and labor, 2nd and 3rd year part only standard. CONTROLLER warranty - (1) One year parts and labor, standard. FENVAL THERMOSTAT warranty - (1) One year parts and labor, 2nd year part only, standard. ALL OTHER PARTS warranty - (1) One year parts and labor, standard	Armstrong Repair Center - Houston 713-666-7100
 Garland	Countertop Griddle	GD-24G	1303100100712	One year limited parts and labor warranty	Armstrong Repair Center - Houston 713-666-7100
	Charbroiler	GD-24RB	1303100101110		
 Glastender	Lettuce Crisper	LC	134142864X	1 year parts & labor warranty	Armstrong Repair Center - Houston 713-666-7100

2. CFESA Installation Form

EXHIBIT 2 – CFESA INSTALLATION FORM	
Place Service Agency Logo Here	Place Contact Information Here
Recommended Installation Form	
Date of Installation _____ Make _____ Model _____ Serial _____ First Visit YES NO Project Manager _____ Sold By _____ Address _____ Phone _____ Fax _____	Customer Name _____ Billing Address _____ Phone _____ Fax _____ Servicer Name _____ Address _____ Phone _____ Fax _____ CFESA Installer # _____
<p><u>Note: It is the recipient's responsibility to report any concealed or non-concealed damage to freight Company</u></p> <p>Does the equipment, shipping container or any accessories show signs of shipping damage? _____ If so, describe damage _____ Has a freight claim been filed? _____ Has the unit been operated prior to checkout? _____ Is unit located under the exhaust hood? _____ If so, provide Make & Model _____ Verify that the location does not have a negative air pressure situation. Make up air present? _____ Verify there is no down draft present blowing into flue and/or bake chamber _____ Is unit level? _____ Is unit stacked? _____ If so, was a stacking kit used and is it secured properly? _____ Is the unit installed on legs or casters? _____ If casters, is a restraining device installed properly? _____ Type of energy supplied? _____ Rating plate energy specified? Gas _____ Elec _____ Phase _____ Steam _____ Water _____</p>	
Gas Equipment	
<p><u>Check gas connections and piping for leaks with soap test</u></p> <p>Measure and record pressure entering unit, static _____ and flow _____ What is the incoming pipe size? _____ How far away is the gas meter? _____ What is the gas meter flow rate? _____ Measure pressure at manifold with unit heating _____ Was there a regulator installed before the unit? _____ Is there a separate shut-off? _____ Check burner operation and adjust as necessary _____ Check pilots and bypass settings and adjust as necessary _____</p>	
Electrical	
<p><u>Note: If supplied voltages are not +/- 10% of the rated voltage stop and consult the factory. Operation under these conditions may void the equipment warranty</u></p> <p>Measure and record incoming voltage with unit off L1-N _____ L2-N _____ L3-N _____ L1-L2 _____ L2-L3 _____ Measure and record amp draw L1 _____ L2 _____ L3 _____ Are the incoming wires properly sized? _____ Does the unit have a separate grounding wire? _____ Does the unit have it's own electrical disconnect? _____ Is it properly sized? _____ Measure and record incoming voltage with unit on L1-N _____ L2-N _____ L3-N _____ L1-L2 _____ L2-L3 _____ L1-L3 _____</p>	
ITEM NO. _____	
	

Place Service Agency Logo Here

Place Contact Information Here

Steam

Does the unit have a steam pressure regulator installed?

Measure and record incoming steam pressure _____ Static _____ & Flow _____ What size is the supply piping? _____

Measure and record operating flow pressure _____ Check for and repair any leaks _____

Water

If water quality test is required, provide results; PH _____ Hardness _____ Alk _____

Tcolor _____ Fcolor _____

Is there a pressure reg. Installed? _____ What is the incoming water temp _____, pressure? _____

Turbidity Reading _____ Flush Interval Time _____ Flush Duration Time _____ TransMembrane

Pressure _____

What is the size of the drain piping? _____ How long is the drain run? _____ # of elbows? _____

How far is the unit located from the nearest floor drain? _____ Is the unit installed over a floor drain? _____

Check all gauges, timers valves and switches for proper operation _____

Proper temperatures achieved? _____

Check any motors for proper operation and calibrate if necessary

Check thermostat operations and calibrate if necessary

Verify all fitting parts operate normally; doors, gaskets and racks

Is kitchen manager present? _____ How many kitchen staff are present? _____

Operating instruction manual given to owner/operator? _____ Managers Name _____

Service agency sticker placed on unit with contact # _____

Customer has been informed of preventative maintenance requirements? _____ Preventative Maintenance offered? _____

Test with customer's product performed? _____ Results satisfactory? _____

If not, explain _____

Warranty terms have been explained? _____

Customer's Approval _____

Technician _____


Date _____

Additional Comments:



ITEM NO. _____




3. CFESA Start-Up Performance Check Form

EXHIBIT 3 – START-UP PERFORMANCE CHECK FORM																	
Place Service Agency Logo Here	Place Contact Information Here																
<div style="background-color: black; color: white; padding: 5px; margin: 10px auto; width: 80%;">Recommended Start-Up/Performance Check Form</div> <p>It is important that we understand and are prepared for the job conditions prior to our visit. To avoid any confusion and possible charges for a second start up attempt, please check off the items which apply and return promptly. Any requests for service outside that which is factory specified in the start up will be the responsibility of the customer and/or dealer requesting such service. Equipment has or will be demonstrated by an authorized factory representative. Please note that we are not trained to demonstrate equipment.</p> <div style="background-color: black; color: white; padding: 5px; margin: 10px auto; width: 80%;">Recommended Start-Up Request</div> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top;"> Dealer: _____ Contact: _____ Manufacturers: _____ _____ Models: _____ _____ Date of Installation: _____ Preferred day/time for start-up: _____ </td> <td style="width: 50%; vertical-align: top;"> Job Name: _____ Address: _____ City, State, Zip: _____ Phone: _____ Fax: _____ Contact: _____ Installed By: _____ Cert. of occupancy: Yes _____ No _____ </td> </tr> </table> <p>Utilities hooked up and operating: (check those that apply)</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 60%;">• Gas:</td> <td style="width: 20%;">Yes _____</td> <td style="width: 20%;">No _____</td> </tr> <tr> <td>• Elec:</td> <td>Yes _____</td> <td>No _____</td> </tr> <tr> <td>• Steam:</td> <td>Yes _____</td> <td>No _____</td> </tr> <tr> <td>• Water:</td> <td>Yes _____</td> <td>No _____</td> </tr> </table> <p>Supplied voltage and phase match nameplate: Yes _____ No _____ Exhaust hoods and fire suppression system tested: Yes _____ No _____ Fryers have been boiled out and oil is available for testing: Yes _____ No _____</p> <p>I verify that the information above represents that this project is ready for start-up. Company: _____ Date: _____ Signature: _____</p> <div style="background-color: black; color: white; padding: 5px; margin: 10px auto; width: 80%;">Recommended Performance Check Request</div> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top;"> Dealer: _____ Contact: _____ Manufacturers: _____ _____ Models: _____ _____ Date of Installation: _____ Date unit was put into service: _____ Preferred day/time for check out: _____ Please list any problems or concerns with equipment: _____ _____ </td> <td style="width: 50%; vertical-align: top;"> Job Name: _____ Address: _____ City, State, Zip: _____ Phone: _____ Fax: _____ Contact: _____ Installed By: _____ Hours per day of operation: _____ </td> </tr> </table> <p>I verify that the information above represents that this project is ready for performance check. Dealer: _____ Date: _____ Signature: _____</p> <p>ITEM NO. _____</p> <div style="text-align: right; padding-top: 20px;">  </div>		Dealer: _____ Contact: _____ Manufacturers: _____ _____ Models: _____ _____ Date of Installation: _____ Preferred day/time for start-up: _____	Job Name: _____ Address: _____ City, State, Zip: _____ Phone: _____ Fax: _____ Contact: _____ Installed By: _____ Cert. of occupancy: Yes _____ No _____	• Gas:	Yes _____	No _____	• Elec:	Yes _____	No _____	• Steam:	Yes _____	No _____	• Water:	Yes _____	No _____	Dealer: _____ Contact: _____ Manufacturers: _____ _____ Models: _____ _____ Date of Installation: _____ Date unit was put into service: _____ Preferred day/time for check out: _____ Please list any problems or concerns with equipment: _____ _____	Job Name: _____ Address: _____ City, State, Zip: _____ Phone: _____ Fax: _____ Contact: _____ Installed By: _____ Hours per day of operation: _____
Dealer: _____ Contact: _____ Manufacturers: _____ _____ Models: _____ _____ Date of Installation: _____ Preferred day/time for start-up: _____	Job Name: _____ Address: _____ City, State, Zip: _____ Phone: _____ Fax: _____ Contact: _____ Installed By: _____ Cert. of occupancy: Yes _____ No _____																
• Gas:	Yes _____	No _____															
• Elec:	Yes _____	No _____															
• Steam:	Yes _____	No _____															
• Water:	Yes _____	No _____															
Dealer: _____ Contact: _____ Manufacturers: _____ _____ Models: _____ _____ Date of Installation: _____ Date unit was put into service: _____ Preferred day/time for check out: _____ Please list any problems or concerns with equipment: _____ _____	Job Name: _____ Address: _____ City, State, Zip: _____ Phone: _____ Fax: _____ Contact: _____ Installed By: _____ Hours per day of operation: _____																

4. MAFSI Demonstration Form

EXHIBIT 4 – MAFSI DEMONSTRATION REQUEST FORM																																																				
Place Service Agency Logo Here	Place Contact Information Here																																																			
<div style="background-color: black; color: white; padding: 5px; margin: 10px auto; width: 80%;">Recommended Demonstration Request Form</div>																																																				
Dealer: _____ Contact: _____ Manufacturers: _____ _____ _____ _____	Job Name: _____ Address: _____ City, State, Zip: _____ Phone: _____ Fax: _____ Contact: _____																																																			
<p>Providing a proper demonstration may require more time for various equipment and/ or systems. Please allocate _____ to ensure a complete and professional demonstration.</p> <p>It is important that we understand and are prepared for the job conditions prior to our visit. To avoid any confusion and possible charges for a second demonstration, please check off the points that apply and return promptly.</p>																																																				
<table style="width: 100%; border: none;"> <tr> <td style="width: 60%;">1. Equipment has been started up by an authorized service technician to ensure proper hook-up by the trades. Please note that due to limitations in our liability policy we do not start up equipment, we only perform demonstrations.</td> <td style="width: 10%; text-align: center;">Yes _____</td> <td style="width: 30%; text-align: center;">No _____</td> </tr> <tr> <td>2. Appointments set for demonstration(s):</td> <td style="text-align: center;">Yes _____</td> <td style="text-align: center;">No _____</td> </tr> <tr> <td></td> <td style="text-align: center;">Date _____</td> <td style="text-align: center;">Time _____</td> </tr> <tr> <td>3. Utilities hooked up and operating:</td> <td style="text-align: center;">Yes _____</td> <td style="text-align: center;">No _____</td> </tr> <tr> <td> • Gas</td> <td style="text-align: center;">Yes _____</td> <td style="text-align: center;">No _____</td> </tr> <tr> <td> • Steam</td> <td style="text-align: center;">Yes _____</td> <td style="text-align: center;">No _____</td> </tr> <tr> <td> • Water</td> <td style="text-align: center;">Yes _____</td> <td style="text-align: center;">No _____</td> </tr> <tr> <td>Electric voltage and phase checked:</td> <td style="text-align: center;">Yes _____</td> <td style="text-align: center;">No _____</td> </tr> <tr> <td>Gas leak tested by utility or plumber:</td> <td style="text-align: center;">Yes _____</td> <td style="text-align: center;">No _____</td> </tr> <tr> <td>Steam pressure regulators adjusted:</td> <td style="text-align: center;">Yes _____</td> <td style="text-align: center;">No _____</td> </tr> <tr> <td> • Boilers running:</td> <td style="text-align: center;">Yes _____</td> <td style="text-align: center;">No _____</td> </tr> <tr> <td>Hoods and Fans operational:</td> <td style="text-align: center;">Yes _____</td> <td style="text-align: center;">No _____</td> </tr> <tr> <td> • UDS Operating</td> <td style="text-align: center;">Yes _____</td> <td style="text-align: center;">No _____</td> </tr> <tr> <td>Accessories and supplies available:</td> <td style="text-align: center;">Yes _____</td> <td style="text-align: center;">No _____</td> </tr> <tr> <td> • Oil in Fryers for Filtration:</td> <td style="text-align: center;">Yes _____</td> <td style="text-align: center;">No _____</td> </tr> <tr> <td> • Filters, Cleaners, Tools:</td> <td style="text-align: center;">Yes _____</td> <td style="text-align: center;">No _____</td> </tr> <tr> <td>4. Appropriate set of instruction manuals with unit to be demonstrated?</td> <td style="text-align: center;">Yes _____</td> <td style="text-align: center;">No _____</td> </tr> </table>		1. Equipment has been started up by an authorized service technician to ensure proper hook-up by the trades. Please note that due to limitations in our liability policy we do not start up equipment, we only perform demonstrations.	Yes _____	No _____	2. Appointments set for demonstration(s):	Yes _____	No _____		Date _____	Time _____	3. Utilities hooked up and operating:	Yes _____	No _____	• Gas	Yes _____	No _____	• Steam	Yes _____	No _____	• Water	Yes _____	No _____	Electric voltage and phase checked:	Yes _____	No _____	Gas leak tested by utility or plumber:	Yes _____	No _____	Steam pressure regulators adjusted:	Yes _____	No _____	• Boilers running:	Yes _____	No _____	Hoods and Fans operational:	Yes _____	No _____	• UDS Operating	Yes _____	No _____	Accessories and supplies available:	Yes _____	No _____	• Oil in Fryers for Filtration:	Yes _____	No _____	• Filters, Cleaners, Tools:	Yes _____	No _____	4. Appropriate set of instruction manuals with unit to be demonstrated?	Yes _____	No _____
1. Equipment has been started up by an authorized service technician to ensure proper hook-up by the trades. Please note that due to limitations in our liability policy we do not start up equipment, we only perform demonstrations.	Yes _____	No _____																																																		
2. Appointments set for demonstration(s):	Yes _____	No _____																																																		
	Date _____	Time _____																																																		
3. Utilities hooked up and operating:	Yes _____	No _____																																																		
• Gas	Yes _____	No _____																																																		
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4. Appropriate set of instruction manuals with unit to be demonstrated?	Yes _____	No _____																																																		
<div style="background-color: black; height: 15px; margin: 10px auto; width: 80%;"></div> <p>I verify that the information above represents that this project is ready for demonstration.</p> <p>Dealer: _____ Date: _____</p> <p>Signature: _____</p> <p>ITEM NO. _____</p> <div style="text-align: right; padding-top: 20px;">   </div>																																																				

5. MAFSI Demonstration Inspection Report

EXHIBIT 5 – MAFSI DEMONSTRATION INSPECTION REPORT FORM		
Place Service Agency Logo Here	Place Contact Information Here	
Recommended Demonstration Inspection Report		
Dealer: _____	Customer: _____	
Address: _____	Address: _____	
City, State, Zip: _____	City, State, Zip: _____	
Phone: _____	Phone: _____	
Fax: _____	Fax: _____	
Date Performed: _____		
Manufacturer(s): _____		
Model: _____		
Model: _____		
Model: _____		
Serial No.: _____		
Serial No.: _____		
Serial No.: _____		
1. Utilities connected:		
• Steam	Yes _____	No _____
• Gas	Yes _____	No _____
• Electricity	Yes _____	No _____
• Water	Yes _____	No _____
• Drain	Yes _____	No _____
Pilots operational:	Yes _____	No _____
Start-Up/Performance Check Done:	Yes _____	No _____
Calibrated/Fired Off:	Yes _____	No _____
Authorized Service Agent:	Yes _____	No _____
Operational/Maintenance Manual:	Yes _____	No _____
All Accessories with Units:	Yes _____	No _____
Installation Notes: _____		
Type of Equipment Demonstrated: _____		
• Reviewed Operation and Controls:	Yes _____	No _____
• Discussed Product Applications:	Yes _____	No _____
• Reviewed Daily and Periodic Cleaning/Maintenance:	Yes _____	No _____
• Provided Authorized Service/Warranty/Information:	Yes _____	No _____
Demonstration Notes/Follow-up: _____		
I verify that the equipment listed above has been demonstrated to my satisfaction.		
Customer: _____	Date: _____	
Signature: _____	Manufacturers' Rep: _____	
ITEM NO. _____		
		

6. General Responsibilities Outline

EXHIBIT 6 – GENERAL RESPONSIBILITIES OUTLINE FORM

GENERAL RESPONSIBILITIES				
ITEM	BARING INDUSTRIES		OTHER TRADES	
	Provide	Install	Provide	Install
General				
deliver, uncrate and set in place equipment				
wall blocking				
all floor, wall, roof penetrations, sleeving and fireproofing/insulation				
Electrical				
all final electrical connection and interconnection to equipment room building services				
all control wiring				
all floor, wall, roof penetrations, sleeving and fireproofing/insulating/re-sealing				
Mechanical				
all final plumbing connections and interconnections to equipment from building services				
all plumbing materials including pipes, traps, stops, valves, fittings, shut-offs, water hammer arrestors, pressure reducing valves, etc. for a complete and operable system				
all floor, wall, roof penetrations, sleeving and fireproofing/insulating/re-sealing				

NOTES:

1. See Baring coordination drawings for location

2. Maximum gas pressure not to exceed 8" WC natural gas. **Verify gas pressure requirements w/ Baring for LP service**

7. Project Plan Outline

EXHIBIT 7 – PROJECT PLAN OUTLINE FORM

DATE	
PROJECT MGR	
PROJECT NAME	
PROJECT #	
AREA	
NO. OF AREAS	
NUMBER OF ITEMS IN AREA	

PROJECT PLAN							
DESCRIPTION	WEEKS	DURATION/DAYS	START				FINISH
PROJECT REVIEW							
ENGINEERING							
SUBMITTAL APPROVAL							
PURCHASING							
ORDER WIC							
FABRICATE WIC							
SHIP WIC							
INSTALL WIC							
ORDER EXHAUST HOODS							
FABRICATE EXHAUST HPPDS							
SHIP EXHAUST HOODS							
INSTALL EXHAUST HPPDS							
DAYS HOODS/WIC PRIOR TO EQUIPMENT							
ORDER REFRIGERATION							
FABRICATE REFRIGERATION							
SHIP REFRIGERATION							
REFRIGERATION PIPING INSTALL							
FINAL REFRIGERATION HOOK UP							
ORDER CUSTOM FAB							
SHIP CUSTON FAB							
SHIP CUSTOM FAB							
INSTALL CUSTON FAB							
ORDER EQUIPMENT BUYOUT							
EQUIPMENT SHIP							
EQUIPMENT TO WAREHOUSE							
EQUIPMENT SHIP							
EQUIPMENT INSTALL							
UTILITY CONNECTION							
FRIESYSTEM INSTALL							
PUNCH LIST							
ANSUL TEST							
BOH							
STARTUP							
TURNOVER							
TRAINING							

8. Submittal Log & Process

EXHIBIT 8 – SUBMITTAL LOG & PROCESS FORM



The following is our submittal log, record of all submittals we have received to date and the ones we are expecting to review. Please note, written 11 40 00 specifications have a very detailed submittal process, this is spelled out in execution section 5.6/C. You can also find more information in our Dealer Resource Workgroup with examples of submittals, etc. If you don't have access to this workgroup, please submit a request to info@sconoshg.com

SUBMITTAL NUMBER	SUBMITTAL TYPE/SECTION	DATE SUBMITTED	DATE APPROVED	NOTES
BASIC PLANS & CUTS:				
	Equipment Plan & Rough- Ins <i>(needs to be submitted with cutbook)</i>			
	Equipment Cutbook <i>(needs to be submitted with equipment plans)</i>			
ENGINEERED SYSTEMS:				
	Walk-in Boxes			
	Exhaust Hoods			
	Remote Rack Systems			
	Custom Stainless-Steel Fabrication			
	FS Millwork			
	Bar - Krown			
	Cooking Suites			
	Cook Chill Systems			
SPECIALTY EQUIPMENT:				
	Hearth Ovens			
	Sneeze Guards			
	Kaliber			
	Custom Display Cases - Ie. Structural Concepts			
	PowerSoak			

300 WEST CHESTNUT STREET, SUITE 201, EPHRATA, PA 17522 (717) 733-5810

SUBMITTAL EXPECTATIONS REMINDER:

- Submittals are to be coordinated between all engineered systems by FSEC before submitting for review. FSEC is to take ownership of all submittals.
- Review all shop drawings internally prior to submitting to SHG, especially those that are typically auto generated and are not accurate. SHG will reject submittals if they are found to be completely off and not line up with project.
- Submit digital copies for review, do not submit hard copies
- Submittals to go through proper channels, GC, Developer, Owners Rep, Architect, Consultant, etc - do not submit them directly to SHG.
- All fabricators involved should be aware that the project has bought the details specified and the design team will be conducting site inspection and will require that everything gets replaced that does not conform to those details. This is related to Stainless Steel custom fabrication and Food service Millwork. Submittals should reflect all of the details and how they intend to be constructed. Submittals without those details will be rejected for resubmission.
- Equipment Plans should not be submitted without equipment cutbooks or vice versa. Both need to be submitted together for comprehensive submittal review.
- Obtain copies of the latest architectural plans from architect prior to beginning the dimensioned rough-in submittal plans. Submittals are to be based off latest set of drawings, including all addendum/revision released.
- Feel free to request CAD backgrounds for use in preparation of your submittals. Please note, we will not provide rough-in CAD exports, we will provide equipment background. Due diligence must be done by the dealer and prepare all rough-in connection points. Digital files will be released once release form is filled out. Please see Release Forms Section ([link here](#))
- All shop drawings are to be submitted to scale or they will be rejected. Hand drawn shop drawings will be rejected.
- Shop drawings to include all equipment, including by others for proper spacing verification. Especially millwork shop drawings. Do not submit millwork only with gaps. Exact actual equipment to be shown and how the millwork is constructed around it for proper fabrication, reinforcement and clearances.
- Confirm all utilities requirements for Owner/Vendor provided equipment.
- Confirm all and any special sizing and verifications, like plate sizes
- Shop Drawings should not read "confirm" or "verify" - you the dealer as part of the submittal process needs to close those gaps via formal RFI's if need or site survey dimensions or dictate a hold dimension on shop drawings if need be.
- All Equipment plans and rough-in drawings to utilize FS design corresponding item numbers. Do not create your own numbering system.
- Shop Drawing submittal to have a "General Responsibility Outline" sheet defining roles and responsibility for all relevant project scope. Refer to SHG Exhibit 6 Form, feel free to replicate and update as relevant.
- Submittals are to be separated out, per specifications. Not lumped together as (1) large submittal file

SCOPOS Hospitality Group, Ephrata, PA

9. VE & Alternate Product Certification Form


EXHIBIT 9 – VE & ALTERNATE PRODUCT CERTIFICATION FORM																	
<div style="display: flex; align-items: center; justify-content: center; margin-bottom: 20px;">  </div> <h2 style="text-align: center; margin: 0;">VE & Alternate Product Certification Form</h2> <p style="margin-top: 10px;"><i>Alternates or substitutions shall be considered only at the time of bidding. It will be assumed and expected that the base bid included the price for the manufacturer and model number exactly as specified.</i></p> <p style="margin-top: 10px;"><i>If and when project circumstances require alternates to be considered due to scheduling or budgets, dealer is to fill out this form for product comparison and validation before an alternate can be accepted.</i></p> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <tr> <td style="width: 5%; text-align: center; padding: 5px;">1</td> <td style="padding: 5px;">Explain goal and purpose of substitution:</td> </tr> <tr> <td style="text-align: center; padding: 5px;">2</td> <td style="padding: 5px;">Provide cost difference, savings of using this product over specified product:</td> </tr> <tr> <td style="text-align: center; padding: 5px;">3</td> <td style="padding: 5px;">Provide proof that owner is receiving this savings and how it is being credited back towards the project:</td> </tr> <tr> <td style="text-align: center; padding: 5px;">4</td> <td style="padding: 5px;">Provide proof that original specified manufacturer has been approached and given an opportunity to be competitive.</td> </tr> <tr> <td style="text-align: center; padding: 5px;">5</td> <td style="padding: 5px;">If a custom fabrication item, such as a spec drawing showing products engineered to project needs to be provided. Please note spec conditions for these items in 11 400 00 Section 1.02/B</td> </tr> <tr> <td style="text-align: center; padding: 5px;"></td> <td style="padding: 5px;">For all systems, remote rack, walk-in boxes, cooking suites, etc. FSEC to provide engineered drawings to accompany bid illustrating that the alternate manufacturer has captured all design features and quality of construction. Some alternate manufacturers must provide additional components and accessories beyond what is specified in basis of design to deliver equal performance of system. Change orders for additional components, material, labor and service to make system fully operational will be rejected.</td> </tr> <tr> <td style="text-align: center; padding: 5px;">6</td> <td style="padding: 5px;">GC - General Contractor to carefully evaluate acceptance of alternate manufacturers for utility changes and requirements in MEP design systems for any impact. Please note the following spec 11 400 00 Section 1.02/F</td> </tr> <tr> <td style="text-align: center; padding: 5px;"></td> <td style="padding: 5px;">The Food Service Equipment Contractor (section 11 40 00) shall bear all additional expenses incurred due to dimensional or field utility changes occurring as a result of the acceptance of alternate proposals. Any change orders generated as a result of higher utility requirements for the base designed item will be rejected.</td> </tr> </table>		1	Explain goal and purpose of substitution:	2	Provide cost difference, savings of using this product over specified product:	3	Provide proof that owner is receiving this savings and how it is being credited back towards the project:	4	Provide proof that original specified manufacturer has been approached and given an opportunity to be competitive.	5	If a custom fabrication item, such as a spec drawing showing products engineered to project needs to be provided. Please note spec conditions for these items in 11 400 00 Section 1.02/B		For all systems, remote rack, walk-in boxes, cooking suites, etc. FSEC to provide engineered drawings to accompany bid illustrating that the alternate manufacturer has captured all design features and quality of construction. Some alternate manufacturers must provide additional components and accessories beyond what is specified in basis of design to deliver equal performance of system. Change orders for additional components, material, labor and service to make system fully operational will be rejected.	6	GC - General Contractor to carefully evaluate acceptance of alternate manufacturers for utility changes and requirements in MEP design systems for any impact. Please note the following spec 11 400 00 Section 1.02/F		The Food Service Equipment Contractor (section 11 40 00) shall bear all additional expenses incurred due to dimensional or field utility changes occurring as a result of the acceptance of alternate proposals. Any change orders generated as a result of higher utility requirements for the base designed item will be rejected.
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7	Provide a detailed side by side features and product comparison listing all accessories, properties, certifications and listing such as NSF, UL, etc. in spreadsheet format. Clearly list out any features that alternate manufacturer is not being able to meet. Spec sheets of both, original and alternate to be provided in the package. Use form example below.				
Requested Substitution: (example)					
	ITEM #	DESCRIPTION	SPECIFIED	PROPOSED ALTERNATE	NOTES/COMMENTS
	K100		Combi Oven	Combi Oven	
		QTY.	2	2	
		MANUF.	Rational	Alto-Shaam	
		MODEL	SCC 62NG	CTP7-20G	
		ACCESSORIES (LIST ALL)	(1) CAP - Chef Assistance Program	NOT AVAILABLE	
			(1) 9999.9951 - RCI Rational Certified Installation	(2) Installation Program:	
			(1) 9999.9812 - Pre-Installation Site Survey	Included with Installation Program	
			(1) 9999.9957 - RCI Rational Certified Installation	Included with Installation Program	
			(2) 8720.1560US - Installation Kit	(2) 5021522 - Installation Kit	
			(2) 56.00.210A - Cleaner tablet (100)	(2) CE-36354 - CombiClean® Cleaning Tabs (90)	
			(2) 56.00.562 - Care Tablets (150)	NOT AVAILABLE	
			(1) 60.71.936 - Combi-Duo Stacking kit	(1) 5016710 - Stacking Hardware	
			(1) 9999.9959 - RCI Rational Certified Installation	Included with Installation Program	
			(2) 87.00.521US - Wearable Parts Kit	NOT AVAILABLE	
			(6) 6010.2101 - Shelf, stainless steel	(6) SH-22584 - Shelf, stainless steel wire	
			(2) - 6015.1103 - Gastronorm Perforated Baking Tray, 2/1 size, 25-5/8" x 20-7/8", aluminum with TriLax® coating	NOT AVAILABLE	

		(2) 6013.1103 - Gastronorm Baking Tray, 1/1 GN, 12-3/4" x 20-7/8", aluminum with TriLax coating	NOT AVAILABLE	
		(2) 6013.2103 - Gastronorm Baking Tray, 2/1 GN, 25-5/8" x 20-7/8", aluminum with TriLax coating	NOT AVAILABLE	
		(2) 60.73.314 - Cross & Stripe Grill Plate, 1/1 GN	(2) SH-26731 - Grilling Grate, 12" x 20"	
		(6) 60.73.216 - Tray, for large roasting/baking pan, steel carrier plate (1/1 GN)	NOT AVAILABLE	
		(6) 6019.1250 - CombiFry Basket, 1/2 GN, 12" x 10"	(2) BS-26730 - Fry Basket, 12" x 20"	
		(2) 60.71.157 - Multibaker, 1/1 GN, 12-3/4" x 20-7/8", 8 molds, TriLax Coating	NOT AVAILABLE	
		(2) - 6017.1002 - Muffin & Timbale moulds, 1/1 GN, 12-3/4" x 20-7/8"	NOT AVAILABLE	
		(2) 6017.1001 - Muffin & Timbale moulds, 2/1 GN, 25-5/8" x 20-7/8"	NOT AVAILABLE	
		(2) 6014.1102 - Gastronorm Container, 1/1 size, 12-3/4" x 20-7/8", 3/4" deep, granite enameled	NOT AVAILABLE	
		(2) Dormont 1675KIT48 - Blue Hose Gas Connector Kit	(2) Dormont 1675KIT48 - Blue Hose Gas Connector Kit	
		(1) Dormont PS - Wheel Placement	(1) Dormont PS - Wheel Placement	
	UTILITIES	208v/60/1-ph, 3.7 amps, NEMA 6-15P cCSAus, NSF, IPX5, ENERGY STAR® (Natural Gas)	208-240v/50/60/1-ph, 4.8-4.2 amps, 1.0kW, 14 AWG, NO cord or plug (Natural Gas)	
	WARRANTY	2 years parts and labor, 5 years steam generator warranty	All units come standard with a one-year warranty. An additional one-year warranty may be purchased at an additional charge. -	Dealer to provide additional 1-year warranty to match 2-year standard from Rational

	K101	DESCRIPTION			
		QTY.			
		MANUFACTURER			
		MODEL			
		ACCESSORIES (LIST ALL)			
		UTILITIES			
		WARRANTY			
8.0	Acknowledgement				
8.1	Contractor and Subcontractor request that Owner, Architect & Consultant authorize the Requested Substitution described above. Contractor and Subcontractor, jointly and severally, make the following promises and representations about the Requested Substitution:				
8.2	The Requested Substitution complies in all respects with all applicable building laws, codes and regulations.				
8.3	Contractor and Subcontractor have carefully evaluated the Authorized Substitution and have determined that it complies in all respects with all requirements of the plans, specifications and contract documents for the Project except as specifically noted herein or in any attached exhibit-				
8.4	Contractor and Subcontractor clearly understand that any authorizations to make the Requested Substitution will be based entirely on the promises and representations of Contractor and Subcontractor and will not permit, authorize, or approve any deviation from the plans, specifications or contract documents except as specifically set forth herein or in any exhibit.				
8.5	Contractor and Subcontractor are completely and solely responsible for compliance of the Requested Substitution With all requirements of the Plans, specifications, and contract documents except as specifically set forth herein or in any attached exhibit. Contractor and Subcontractor expressly warrant that the Requested Substitution is merchantable and suitable for its intended purpose.				
	SIGNATURES:				
	DEALER:				
	GENERAL CONTRACTOR:				
	FILE WITH OWNER/OWNERS REP:				

10. Walk-In-Box System Start-Up Checklist for Installer

EXHIBIT 10 – WALK-IN BOX SYSTEM START-UP CHECKLIST FOR INSTALLER				
 <div style="display: inline-block; vertical-align: middle; margin-left: 10px;"> <p>System Start-up Checklist</p> <p>Date System Installed: / /</p> <p>Installer and Address: _____</p> <p>Phone Number: () _____</p> <p>Start-Up Service Agency: _____</p> <p>Phone Number: () _____</p> </div>				
Freezer Condensing Unit				
Inspection Feature	Data	Accept	Reject	Action Required
Model Number:				
Serial Number:				
Electrical Volts:				
Electrical Phase:				
Amperage @ L1:				
Amperage @ L2:				
Amperage @ L3:				
Ambient Temp:	°F			
Comp. Discharge Pressure:	PSIG			
Comp. Suction Pressure:	PSIG			
Suction Line Temp @ Comp.:	°F			
Discharge Line Temp @ Comp.:	°F			
Comp. Superheat:	°F			
Defrost Setting (4 day/45 min):				
All electrical connections are tight:				
Unit base properly supported:				
Fans Running & No Vibration:				
All guards, covers attached:				
Refrigerant Sight Glass Clear:				
Comp. Oil Level @ 1/2 Sight Glass:				
Comp. Mounting Clips Removed:				
Suction line insulated fully and properly supported:				
Freezer Evaporator				
Inspection Feature	Data	Accept	Reject	Action Required
Evaporator installed with nylon bolts with proper airflow clearance:				
Model Number:				
Serial Number:				
Electrical Volts:				
Electrical Phase:				
Suction Line Temp @ Evap:	°F			
Evap Superheat:	°F			
Thermostat Set:	°F			
Operating Temp:	°F			
TXV Bulb Properly Mounted:				
All guards, covers attached:				
All electrical connections are tight:				
Defrost Heater Amp Draw:	A			

Freezer Piping				
Inspection Feature	Data	Accept	Reject	Action Required
Suction Lines Insulated:				
Oil Trap at Base of Suction Riser:				
Copper Drain Lines Sloped Min 1/2" ft:				
Piping Supported Every 5':				
Copper drain line heater attached, working, and insulated:				
Copper Drain Line Trapped Outside Freezer Space:				
Cooler Condensing Unit				
Inspection Feature	Data	Accept	Reject	Action Required
Model Number:				
Serial Number:				
Electrical Volts:				
Electrical Phase:				
Amperage @ L1:				
Amperage @ L2:				
Amperage @ L3:				
Ambient Temp:	°F			
Comp. Discharge Pressure:	PSIG			
Comp. Suction Pressure:	PSIG			
Suction Line Temp @ Comp.:	°F			
Discharge Line Temp @ Comp.:	°F			
Comp. Superheat:	°F			
Defrost Setting (4 day/45 min):				
All electrical connections are tight:				
Unit base properly supported:				
Fans Running & No Vibration:				
All guards, covers attached:				
Refrigerant Sight Glass Clear:				
Comp. Oil Level @ 1/2 Sight Glass:				
Comp. Mounting Clips Removed:				
Suction line insulated fully and properly supported:				
Cooler Evaporator				
Inspection Feature	Data	Accept	Reject	Action Required
Evaporator installed with nylon bolts with proper airflow clearance:				
Model Number:				
Serial Number:				
Electrical Volts:				
Electrical Phase:				
Suction Line Temp @ Evap:	°F			
Evap Superheat:	°F			
Thermostat Set:	°F			
Operating Temp:	°F			
TXV Bulb Properly Mounted:				
All guards, covers attached:				
All electrical connections are tight:				

Cooler Piping				
Inspection Feature	Data	Accept	Reject	Action Required
Suction Lines Insulated:				
Oil Trap at Base of Suction Riser:				
Copper Drain Lines Sloped Min 1/2" ft:				
Copper Drain Lines Insulated:				
Copper Piping Supported Every 5':				
Copper Drain Line Trapped Outside Cooler Space:				
Walk-In Freezer				
Inspection Feature	Data	Accept	Reject	Action Required
Serial Number:				
Interior Lights Installed and Working:				
All Penetrations Sealed:				
Doors/Jambs Squared and Operating Properly:				
All Panel Locks Fully Engaged:				
All Plug Buttons Installed:				
Door Heater Working:				
Door Sweeps Adjusted:				
Heat Air Vent Working:				
Door Closers Adjusted and Working:				
Wainscot and Trim Installed:				
Alarm Set and Working:				
Thermometer Bulb Mounted and Calibrated:				
Walk-In Clean (no excessive caulk, etc.)				
Walk-in at proper temperature:				
Walk-In Cooler				
Inspection Feature	Data	Accept	Reject	Action Required
Serial Number:				
Interior Lights Installed and Working:				
All Penetration Sealed:				
Doors/Jambs Squared and Operating Properly:				
All Panel Locks Fully Engaged:				
All Plug Buttons Installed:				
Door Heater Working:				
Door Sweeps Adjusted:				
Heat Air Vent Working:				
Door Closers Adjusted and Working:				
Wainscot and Trim Installed:				
Alarm Set and Working:				
Thermometer Bulb Mounted and Calibrated:				
Walk-In Clean (no excessive caulk, etc.)				
Walk-in at proper temperature:				

Notes:

Superintendent/Customer Signature:
Service Tech/Installer Signature:

Date:
Date:

System Start-Up Checklist adapted by SHG with permission from Kolpak.

<https://scoposhospitalitygroup.com>

END OF SECTION 11 40 00

SECTION 11 40 01 - CUSTOM FABRICATED FOODSERVICE EQUIPMENT

PART 2 PRODUCTS

1.01 MATERIALS

- A. Stainless Steel: 18-8 percent chromium-nickel composition, minimum; alloy Type 302, 304, or 316; No. 4 - Brushed finish on exposed surfaces.
 - 1. Sheets: ASTM A240/A240M or ASTM A666.
 - 2. Tubing: ASTM A269/A269M or ASTM A270/A270M; of true roundness with seams and welds ground smooth.
 - 3. Bars: ASTM A276/A276M.
- B. Copper Tubing: ASTM B88; Type L, hard drawn.
 - 1. Fittings: ASME B16.18, ASME B16.22, or ASME B16.26.
 - 2. Solder: ASTM B32, lead-free.
 - 3. Brazing Alloy: AWS A5.8M/A5.8 silver solder.
- C. Sound Deadening Material: Bituminous paint or other water resistant mastic.
- D. Manufactured Components:
 - 1. Finish Hardware: Manufacturer's standard; stainless steel with polished finish.
- E. Bolts, Screws, and Rivets: Stainless steel; do not use on exposed surfaces unless specifically indicated or unavoidable.
 - 1. Bolt and Screw Caps: Provide lock washer and chromium-plated brass/bronze acorn nut to cap visible or exposed threads on inside of fixtures.
- F. Anchoring Devices: Stainless steel, of type appropriate for use; provide seismic anchorage as specified in SMACNA (KVS).

1.02 CUSTOM FABRICATED UNITS - GENERAL REQUIREMENTS

- A. See drawings for dimensions and configurations; ensure proper fit by taking field measurements prior to fabrication.
- B. Provide fully shop assembled units complying with SMACNA (KVS) and NSF 2 and stainless steel components, unless otherwise indicated.
 - 1. Where details are referenced as "SMACNA" details, refer to SMACNA (KVS).
 - 2. Stainless Steel Sheet: For surfaces up to 12 feet in length provide one continuous sheet without joints or welds, including back and end splashes.
 - 3. Joints: Provide welded joints unless specifically indicated or not possible; do not solder or braze stainless steel; do not use bolts, screws, or other fasteners on work surfaces, food contact surfaces, or wet surfaces.
 - 4. Drainage of Surfaces: Provide distinct pitch of top surfaces toward waste or drain outlets while maintaining level tops of rolled and marine edges and back and end splashes.
 - 5. Drainage of Equipment: Provide drain piping as indicated; where compartments or pans are intended to hold liquids or catch drips and no drain piping is indicated, provide drain fitting and gravity draining piping terminating over nearest floor

- drain.
6. Shop prepare openings for plumbing fixtures, fittings, and other service components.
 7. Sound Deadening: Apply sound deadening material to accessible internal surfaces of metal work and underside of metal counters and sinks.

END OF SECTION 11 40 01

SECTION 12 34 00 - HIGH PRESSURE LAMINATE

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. High Pressure Laminaate (HPL) for interior applications. .

1.02 RELATED REQUIREMENTS

- A. Division 6 Section – Interior Finish Carpentry.
- B. Division 6 Section – Interior Architectural Woodwork.
- C. Division 12 Section – Casework.

1.03 REFERENCE STANDARDS

- A. ANSI A208.1 – Particleboard.
- B. ANSI A208.2 – Medium Density Fiberboard (MDF) for Interior Applications.
- C. ANSI/NEMA LD 3 – High-Pressure Decorative Laminates.
- D. ASTM E 84 – Standard Test Method for Surface Burning Characteristics of Building Materials.
- E. AWI Architectural Woodwork Standards.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Comply with Section 01 33 00 – Submittal Procedures.
- C. Product Data: Submit manufacturer's product data, including inspection, preparation, fabrication, and installation instructions.
- D. Samples: Submit manufacturer's samples of each pattern, grade, and finish of high-pressure decorative laminate specified.
 - 1. Sample Size: Minimum 5 inches by 8 inches.
- E. Manufacturer's Certification: Submit manufacturer's certification that materials comply with specified requirements and are suitable for intended application.
 - 1. Greenguard certification.
- F. Manufacturer's Project References: Submit manufacturer's list of successfully completed high-pressure decorative laminate projects, including project name and location, name of architect, and type and quantity of high-pressure decorative laminate furnished.
- G. Fabricator/Installer's Project References: Submit fabricator/installer's list of successfully completed high-pressure decorative laminate projects, including project name and location, name of architect, and type and quantity of high-pressure

decorative laminate fabricated and installed.

- H. Maintenance Instructions: Submit manufacturer's maintenance instructions.
- I. Warranty Documentation: Submit manufacturer's standard warranty.
- J. Maintenance Materials: Furnish the following for Owner's use in maintenance of project:
 - 1. See Section 01 60 00 - Product Requirements for additional provisions.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with at least three years of documented experience.
- B. Fabricator Qualifications: Company specializing in fabricating products specified in this section, with at least three years of documented experience.
- C. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years of documented experience.
- D. Testing Agency Qualifications: Independent firm specializing in performing testing and inspections of type specified in this section.
- E. Documents at Project Site: Maintain at project site one copy of manufacturer's instructions, erection drawings, and shop drawings.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. See Section 01 74 19 - Construction Waste Management and Disposal for packaging waste requirements.
- B. Delivery Requirements: Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.
- C. Storage and Handling Requirements:
 - 1. Store and handle materials in accordance with manufacturer's instructions.
 - 2. Keep materials in manufacturer's original, unopened containers and packaging until fabrication and installation.
 - 3. Store materials in clean, dry area indoors.
 - 4. Store materials out of direct sunlight.
 - 5. Keep materials from freezing.
 - 6. Store high-pressure decorative laminate horizontally with top face-down and caulk board placed on top to protect laminate from damage and warping.
 - 7. Store high-pressure decorative laminate and substrates at 75 degrees F (24 degrees C) and 45 percent to 55 percent relative humidity.
 - 8. Protect high-pressure decorative laminate from moisture and from contact with floors and exterior walls.
 - 9. Protect corners of high-pressure decorative laminate from damage.
 - 10. Protect materials during storage, handling, fabrication, and installation to prevent damage.

1.07 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals for additional warranty requirements.
- B. Manufacturer Warranty: Provide 2-year manufacturer warranty for _____. Complete forms in Owner's name and register with manufacturer.
- C. Installer Warranty: Provide 2-year warranty for _____ commencing on the Date of Substantial Completion. Complete forms in Owner's name and register with installer.
- D. Special Warranty: Provide 2-year warranty for _____ commencing on the Date of Substantial Completion. Complete forms in Owner's name and register with warrantor.
- E. Finish Warranty: Provide 5-year manufacturer warranty against excessive degradation of exterior finish. Include provision for replacement of units with excessive fading, chalking, or flaking. Complete forms in Owner's name and register with warrantor.
- F. Extended Correction Period: Correct defective work within 2-year period commencing on Date of Substantial Completion.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Basis of Design: Wilsonart, High Pressure Laminate. www.wilsonart.com.
- B. Or, approved equal..
- C. Substitutions: See Section 01 60 00 - Product Requirements.
- D. Source Limitations: Furnish products produced by single manufacturer and obtained from single supplier.

2.02 MATERIALS

- A. High-Pressure Laminate: Wilsonart.
- B. Use: Interior applications.
- C. Conformance: NEMA LD 3.
- D. Fire Rating, ASTM E 84: [Class II] [Class I].
- E. Pattern: As indicated on drawings.
- F. Thickness: As indicated on drawings.
- G. Finish: As indicated on drawings.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install in accordance with manufacturer's written instructions.

B. Substrates:

1. Acceptable Substrates:

- a. 45-pound-density particleboard, ANSI A208.1.
- b. Medium-density fiberboard (MDF), ANSI A208.2.
- c. High-density fiberboard (HDF).

2. Substrates Not Acceptable:

- a. Plywood.
- b. Plaster.
- c. Gypsum board.
- d. Concrete.

C. Adhesives: Use for bonding high-pressure decorative laminate to substrates.

- 1. Contact adhesive.
- 2. Polyvinyl acetate resin (PVA) adhesive.
- 3. Urea adhesive.
- 4. Resorcinol resin adhesive.
- 5. Hot-melt adhesive.
- 6. Epoxy adhesive.

D. Backing Sheets:

- 1. Kraft-paper core sheets impregnated with phenolic resin.
- 2. As necessary to balance assembly and prevent warping.

3.02 CLEANING

- A. See Section 01 70 00 - Execution and Closeout Requirements for additional requirements.

3.03 CLOSEOUT ACTIVITIES

- A. See Section 01 78 00 - Closeout Submittals for additional submittals.
- B. See Section 01 79 00 - Demonstration and Training for additional requirements.

3.04 PROTECTION

- A. Protect installed high pressure laminate from subsequent construction operations.

3.05 MAINTENANCE

- A. See Section 01 70 00 - Execution and Closeout Requirements for additional requirements.

END OF SECTION 12 34 00

SECTION 13 21 26 - COLD STORAGE ROOMS

PART 2 PRODUCTS

1.01 COLD STORAGE ROOMS

- A. Cold Storage Rooms: Factory-fabricated packaged units, comprised of modular panels, equipment, and fittings.

1.02 MATERIALS

END OF SECTION 13 21 26