Woods Services

Renovations for New Mollie Woods Psychiatric Hospital

16-Bed Adult Behavioral Health Unit

10 Meadowood Drive
Woods Services, Langhorne, PA 19047

Project Manual

February 2, 2026

Charles Cross Architecture, PC

WOODS SERVICES
Renovations for New 16-Bed
Mollie Woods Psychiatric Hospital

PROJECT MANUAL
TABLE OF CONTENTS

DIVISION 22: PLUMBING WORK

SEE DRAWINGS

DIVISION 23: MECHANICAL WORK

SEE DRAWINGS

DIVISION 26: ELECTRICAL WORK

SEE DRAWINGS

END OF SECTION

Renovations for New 16-Bed
Mollie Woods Psychiatric Hospital
Woods Services, Langhorne, PA

INVITATION AND INSTRUCTIONS TO BIDDERS

You are invited to submit a proposal for the following project for Woods Services, 40 Martin Gross Drive, Langhorne, PA 19047 in accordance with the drawings and specifications prepared by

CHARLES CROSS ARCHITECTURE, P.C.

Renovations for New 16-Bed Mollie Woods Psychiatric Hospital

Architectural and MPE drawings and specifications for bidding can be obtained at no cost on PennBid at https://pennbid.bonfirehub.com/ on Thursday, February 5, 2026.

A mandatory pre-bid conference will be held 10 am Thursday, February 12, 2026 at the Building Site (Heatherwood Residence Building – 20 Meadowbrook Drive – for specific directions, contact Fran Schwendeman at 215-801-0412). Attendees should report to the Main Lobby at the specified time. Contractors are encouraged to invite subcontractors to the walk-thru.

Each bidder should familiarize himself fully with the drawings and specifications, visit the site of the work and inform himself of all existing conditions and limitations as he will be held to have included the cost of all items of work required thereby in his bid. This will be a prevailing wage project, each payment application must be accompanied with a certified payroll.

Inquiries about the drawings and specifications should be addressed to the Architect and submitted electronically via the "Ask a Question" feature in PennBid. In order to obtain consideration, all inquiries must be received at least Five (5) days before the time bids are due. Answers to inquiries will be in the form of written Addenda, issued to all bidders via a Public Notice and posted on PennBid. Bidders who have registered with and downloaded documents for this project from PennBid will be notified by email when a change or addenda has been posted.

Addenda issued during the bidding period shall be covered in the bid and shall be listed therein as indicated. Upon execution of the Contract, such Addenda will form a part thereof.

Proposals shall be submitted on the form furnished with the bidding documents, properly filled out and signed. The proposal of a corporation, if not signed by a corporate officer, shall be accompanied by a current power of attorney certifying the signer's authority to bind the corporation.

Proposals must be submitted electronically via PennBid at https://pennbid.bonfirehub.com, no later than 12:00 P.M., Thursday, March 19, 2026.

Any bid may be withdrawn, altered or otherwise modified within PennBid at any time by the bidder prior to the stated bid due date and time or authorized postponement thereof, but no bid may be withdrawn for thirty days after the actual date of the bid opening.

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

A Bid Bond will not be required and Builders Risk Insurance will be paid for by the owner.

The cost of a Performance Bond and a Labor and Material Payment Bond in the amount of 100% of the contract sum is to be indicated on the bid proposal as a separate line item not included in the base bid.

END OF SECTION

PROPOSAL FOR SINGLE CONTRACT
FOR THE CONSTRUCTION OF:

Renovations for New 16-Bed
Mollie Woods Psychiatric Hospital
Woods Services, Langhorne, PA 19047

TO: Dawn Diamond

Dear Ms. Diamond,

The Undersigned, having carefully examined the Instructions to Bidders, General Conditions, Supplementary General Conditions, Specifications, Drawings, and all Addenda thereto, prepared by Charles Cross Architecture, PC, and having inspected the site and premises and all conditions affecting the work, hereby proposes to furnish all labor, materials, equipment and incidental necessary to complete all the work required by said documents as follows:

BASE BID: For all work required to complete the construction of all work related to the below referenced project:

Renovations for New 16-Bed
Mollie Woods Psychiatric Hospital
Woods Services, Langhorne, PA 19047

for the total sum of:

_____

_____ Dollars ($_____)

SCHEDULE OF VALUES:

General Contractors are required to itemize below their total bid:

	Base Bid	Total
1.	Demolition	_____
2.	Concrete	_____
3.	Masonry	_____

4.	Steel	
5.	Carpentry	
6.	Millwork	
7.	Roofing	
8.	Doors, Frames, Hardware	
9.	Flooring & Tile	
10.	Painting	
11.	Specialities	
12.	Fire Sprinklers	
13.	Plumbing	
14.	HVAC	
15.	Electrical	
	Subtotal	
	Construction Contingency (5%)	
	Allowances	
	General Conditions	
	Permit Fees	
	Performance and Payment Bond	
	Total	

SUBCONTRACTOR EXCEPTION:

_____

_____

COMPLETION OF WORK:

The Undersigned agrees, if awarded the contract, to have the work substantially complete (including any accepted alternates) for the above stated compensation within _____ (_____) calendar days counting from the date of the Notice to Proceed to date of Substantial Completion. No construction is to begin until stipulation against Mechanics Liens have been filed.

LIST OF MPE SUBCONTRACTORS:

MECHANICAL _____

PLUMBING _____

ELECTRICAL _____

ADDENDA:

The Undersigned acknowledges receipt of the following Addenda to Contract Documents. If none received, write "None".

Addendum No. _____ Date: _____

Addendum No. _____ Date: _____

Addendum No. _____ Date: _____

Addendum No. _____ Date: _____

ALLOWANCES:

The Undersigned has included the following allowances as listed in Section 01 29 00 CONTRACT CONSIDERATIONS of the Specifications. Check answer in appropriate space.

Allowance No. 1 ($45,000.00) Included___ Not Included ___

SIGNATURE:

If bidder is a corporation, write the State of incorporation under signature and affix corporate seal, and if a partnership, give full name of all partners.

Name and address and telephone number of bidder must be placed on envelope containing bid.

Firm Name: _____
(Please Print)

Firm Address: _____
(Please Print)

By: _____ Date: _____

CONTRACTOR'S QUALIFICATION STATEMENT

This form is approved by Woods Services.

The Undersigned certifies under oath that the information provided herein is true and sufficiently complete as not to be misleading.

SUBMITTED BY:

NAME:

ADDRESS:

Corporation ___
Partnership ___
Individual ___
Joint Venture ___
Other ___

TYPE OF WORK (file separate form for each Classification of Work):

_____ HVAC
_____ Plumbing
_____ Other _____

_____ Electrical
_____ Roofing
_____ General Remodeling

1. ORGANIZATION

1.1 How many years has your organization been in business as a Contractor?

1.2 How many years has your organization been in business under its present business name:

Date of incorporation:

1.2.1 Under what other or former names has your organization operated?

1.3 If your organization is a corporation, answer the following:

1.3.1 Date of incorporation:

1.3.2 State of incorporation:
1.3.3 President's name:

1.4 If your organization is a partnership, answer the following:

1.4.1 Date of organization:
1.4.2 Type of partnership (if applicable):
1.4.3 Name(s) of general partner(s):

1.5 If your organization is individually owned, answer the following:

1.5.1 Date of organization:
1.5.2 Name of owner:

1.6 If the form of your organization is other than those listed above, describe it and name the principals:

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2. LICENSING

2.1 List jurisdictions and trade categories in which your organization is legally qualified to do business, and indicate registration of license numbers, if applicable.

2.2 List jurisdictions (counties) in which your organization's partnership or trade name is filed.

3. EXPERIENCE

3.1 List the categories of work that your organization normally performs with its own forces. List in detail the amount of experience within these categories

3.2 Claims and Suits. (If the answer to any of the questions below is yes, please attach details.)

3.2.1 Has your organization ever failed to complete any work awarded to it?

3.2.2 Are there any judgments, claims, arbitration proceedings or suits pending or outstanding against your organization or its officers?

3.2.3 Has your organization filed any lawsuits or requested arbitration with regard to construction contracts within the last five years?

4. REFERENCES AND SUPPORTING

4.1 Customer References (at least three full contact references):

4.2 Contractor References:

4.3 You are encouraged to include any company specific prepared marketing and job history materials along with this response form

4.4 Insurance (include copy of certificate of insurance):

4.4.1 Name and address of Insurance Agent for General Liability:

Policy Number:
Carrier:

4.4.2 Name and address of insurance agent for workers compensation:

Policy Number:
Carrier:

5.0 SIGNATURE

5.1 Dated at this _____ day of _____, 200__.

Name of Organization:

_____
By:

Title:

WOODS SERVICES
Renovations for New 16-Bed
Mollie Woods Psychiatric Hospital

LIST OF DRAWINGS

ARCHITECTURAL DRAWINGS

CS COVER SHEET
LS-G GROUND FLOOR LIFE SAFETY PLAN
A1.0 GROUND FLOOR PLAN - EXISTING
A1.1 GROUND FLOOR PLAN – NEW WORK
A2.1 GROUND FLOOR PLAN – DEMOLITION
A2.2 GROUND FLOOR PLAN – DEMOLITION
A3.1 ENLARGED GROUND FLOOR PLAN – NEW WORK
A3.2 ENLARGED GROUND FLOOR PLAN – NEW WORK
A4.1 GROUND FLOOR REFLECTED CEILING PLAN – NEW WORK
A4.2 GROUND FLOOR REFLECTED CEILING PLAN – NEW WORK
A5.1 PARTITION TYPES
A6.1 ELEVATIONS
A6.2 CASEWORK ELEVATIONS & DETAILS
A7.1 DOOR SCHEDULE, NOTES & DETAILS
A7.2 FINISH SCHEDULE, NOTES & DETAILS

INTERIOR DRAWINGS

I-1 INTERIOR FINISH SPECIFICATIONS (NOT ISSUED)
I-2 INTERIOR FINISH PLAN (NOT ISSUED)
I-3 INTERIOR ELEVATIONS (NOT ISSUED)

STRUCTURAL DRAWINGS

S0.1 COVER SHEET
S0.2 GENERAL NOTES
S0.3 GENERAL NOTES
S0.4 SCHEDULE OF SPECIAL INSPECTIONS
S1.1 FOUNDATION & ROOF FRAMING PLANS
S4.1 FOUNDATION DETAILS & SECTIONS
S5.1 FRAMING DETAILS & SECTIONS

MECHANICAL, PLUMBING, FIRE PROTECTION, ELECTRICAL

MECHANICAL

MD-1 OVERALL DEMOLITION FLOOR PLAN – MECHANICAL
MD-2 OVERALL DEMOLITION FLOOR PLAN – MECHANICAL
M-1 OVERALL NEW WORK FLOOR PLAN – MECHANICAL
M-2 DETAILS & SCHEDULES - MECHANICAL

PLUMBING

PD-1 OVERALL DEMOLITION FLOOR PLAN – PLUMBING
P-1 OVERALL NEW WORK FLOOR PLAN – PLUMBING
P-2 OVERALL NEW WORK FLOOR PLAN – PLUMBING
P-3 LEGENDS & SCHEDULES – PLUMBING
P-4 DETAILS – PLUMBING

FIRE PROTECTION

FPD-1 OVERALL DEMOLITION FLOOR PLAN – FIRE PROTECTION
FP-1 OVERALL NEW WORK FLOOR PLAN – FIRE PROTECTION
FP-2 DETAILS & SCHEDULES – FIRE PROTECTION

ELECTRICAL

ED-1 OVERALL DEMOLITION FLOOR PLAN – LIGHTING
ED-2 OVERALL DEMOLITION FLOOR PLAN – POWER
E-1 OVERALL NEW WORK FLOOR PLAN – LIGHTING
E-2 OVERALL NEW WORK FLOOR PLAN – POWER
E-3 OVERALL NEW WORK FLOOR PLAN – SPECIAL SYSTEMS
E-4 DETAILS & SCHEDULES – ELECTRICAL
E-5 SCHEDULES - ELECTRICAL

END OF SECTION

SECTION 01 11 00

SUMMARY OF WORK

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Work by Owner.

B. Contractor use of site and premises.

C. Work Sequence.

D. Owner occupancy.

E. Work by Contractor.

F. Hazardous Materials.

G. Damage to Property.

H. Interruption of Utilities.

1.02 WORK BY OWNER

A. The Owner reserves the right to award other contracts which will commence on dates to be determined. Work under these contracts will include:

1. Telephone Service and Data.
2. Cable Television Service.
3. Security System.
4. Dictation System.

B. Items noted `NIC' (Not in Contract), such as moveable, furnishings, and equipment will be furnished and installed by Owner.

1.03 CONTRACTOR USE OF SITE AND PREMISES

A. Limit use of site and premises to allow:

1. Ongoing function of fire department and first floor tenant.

2. Construction Operations: Limited to areas indicated on Drawings.

3. Utility Outages and Shutdown: Minimum notice, 72 hours, indicating expected duration. Allow for utility shutdowns at nights and weekends at no additional cost to the owner.

4. Maintain existing building in a weather tight condition.

5. Protect building and its occupants during construction period.

6. Take every precaution for the safety of persons working on or entering upon the property, the protection of the building, tools, equipment and materials and those of all other parties interested in, or working upon, the Project. Lights, fences, barriers, danger warning and detour signs shall be placed and every means provided to protect life and property.

1.04 WORK SEQUENCE

A. General

1. The Owner will occupy the site and premises during entire period of construction for the conduct of normal operations.

2. Cooperate with Owner to minimize conflict, and to facilitate Owner's operations.

3. Construct work in sequence to accommodate Owner's occupancy requirements during the construction period, coordinate construction schedule and operations with Owner.

4. Meet with Owner and schedule the work to accommodate this requirement.

B. General Phasing Objectives

Woods Services is pursuing the renovation of their existing Heatherwood Building into a 16-bed adult Behavioral Health Psychiatric Hospital with a combination of single patient and semi-private bedrooms. Heatherwood is a one-story residence facility on the Woods Services campus that consists of approximately 17,000 square feet and contains 19 private patient bedrooms.

This project was last reviewed by the PADOH on 9/19/2025 and the plans now show one continuous 1-hour rated ceiling instead of each room with its own sealed 1-hour ceiling. The plans were also reviewed on 8/16/2024 and the review comment was as a Psych Hospital, it would have to be reviewed as a New

Healthcare Occupancy under Chapter 18 of NFPA 101 2012 Edition as Type III (211) construction type, per table 18.1.6.1.

The building is of masonry construction (all interior partitions are 6-inch block, fully sprinklered, including the attic space above the ceiling. The issue is having existing wood trusses, and the DOH indicated a UL design U 415 is an accepted ceiling separation with type C gypsum board for the required 1-hour separation between the non-combustible construction below and the wood trusses above. The existing top masonry block course has to be removed to allow the continuous ceiling to be installed at the underside of the wood trusses.

Woods Services, in recent discussions with Scott Antsey of the Department of Human Services, has put together a Roadmap (see attached), listing 6 steps necessary for obtaining approval for a new Free-standing Psychiatric Hospital in Pennsylvania. Step 1 is contacting the Office of Mental Health & Substance Abuse Services (OMHSAS) for a provisional license number to begin plan review with the PADOH Division of Safety Inspection. The pending license number is 154330. The project will be designed in accordance with Chapter 2.5 Specific Requirements for Behavioral and Mental Health Hospitals of the "2022 FGI Guidelines for Design and Construction of Hospitals" and Owners' program.

1.05 WORK BY CONTRACTOR

A. The Contractor shall procure all permits, licenses, pay all charges and fees, and give all notices necessary and incident to the due and lawful prosecution of the work. He shall obtain and furnish to the Owner all certificates for electrical and other work for which certificates are required. The Contractor shall pay for all State, County, and Boro fees, permits, licenses, and taxes which may be required in the performance of his contract and not otherwise provided for.

B. The project consists of remodeling of the existing facilities at Woods Services as shown on Contract Documents prepared by Charles Cross Architecture, PC.

1.06 HAZARDOUS MATERIALS

A. If asbestos materials are encountered during demolition operations, immediately stop work and notify Owner. Take precautions to prevent environmental pollution until determination is made, by the Owner, for continuing construction operations.

B. If other hazardous materials are encountered, or suspected, during demolition operations, comply with applicable regulations, laws and ordinances concerning removal, handling and protection against exposure and environmental pollution.

1.07 DAMAGE TO PROPERTY

A. In case any direct or indirect injury is done to existing construction or to any materials or fixtures by or because of the work in consequence of any act or omission on the part of the Contractor, his employees or agents, the Contractor, at his own cost and expense, shall restore such structures, property or materials to a condition equal and similar to that existing before such damage or injury was done.

1.08 INTERRUPTION OF UTILITIES

A. Provide Owner with projected schedule of utility service interruptions and 72 hours notice prior to any service disconnect. Notice shall include time and duration of interruption.

B. The following interruptions must be kept to an absolute minimum:

1. Fire Calls/Alarms.

2. Telephone Contact.

3. Medical Gas

4. HVAC

5. Electric and Water Shutdowns.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01 29 00

CONTRACT CONSIDERATIONS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Schedule of Values.

B. Application for Payment.

C. Guarantee Period.

1.02 RELATED SECTIONS

A. Agreement/Contract sum including allowances.

B. Section 01 33 00 - Submittals: Schedule of Values.

D. Section 01 60 00 - Material and Equipment: Product substitutions and alternates.

1.03 SCHEDULE OF VALUES

A. Submit typed schedule on AIA Form G703 - Application and Certificate for Payment Continuation Sheet.

B. Submit Schedule of Values in duplicate within 15 days after date of Owner-Contractor Agreement.

C. Format: Utilize the Table of Contents of this Project Manual. Identify each line item with number and title of the major specification Section. Identify site mobilization, bonds and insurance.

D. Include within each line item, a directly proportional amount of Contractor's overhead and profit.

E. Revise schedule to list approved Change Orders, with each Application For Payment.

1.04 APPLICATIONS FOR PAYMENT

A. Submit four copies of each application on AIA Form G702 and back-up sheets, Application and Certificate for Payment.

B. Content and Format: Utilize Schedule of Values for listing items in Application for Payment.

C. List Payment Period.

D. List each Change Order by number as a new line item.

1.05 GUARANTEE PERIOD

A. In addition to any other general or specific requirements for guarantees or warranties called for under other parts of the Contract Documents, all materials and workmanship shall be guaranteed for a period of one year from the date of final acceptance of a particular stage or phase of the work by the Owner. But in no way shall the guarantee not start upon issuance of the final Substantial Completion Certificate with Architect's and Owner's signature to same.

1.06 ALLOWANCES

A. Include cash allowances for the purchase and installation of the following: Cost of product to Contractor or Subcontractor, less applicable trade discounts delivery to the site including unloading, uncrating and storage and applicable taxes. Note: Installation to be included in the Base Bid:

B. Architect Responsiblites:

1. Consult with Contractor in consideration and selection of products and installers.

2. Select products in consultation with owner and transmit decision to contractor

3. Review submissions.

C. Contractor Responsibilities:

1. Installation

2. Assist Architect in selection of products and suppliers.

3. Obtain proposals from suppliers and installers and offer recommendations.

4. On notifications of selection by Architect, execute purchase agreement with designated supplier and installer.

5. Arrange for and process shop drawings, product data, and samples. Arrange for delivery.

6. Promptly inspect products upon delivery for completion, damage and defects. Submit claims for transportation damage.

7. List differences in Cash Allowances as line item in application for payment.

D. Cash Allowances

Allowance No. 1: Allow the stipulated sum of $45,000.00 under the Base Bid Contract for unforseeen building deficiences.

Contractor's profit is not included in this allowance.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01 31 00

COORDINATION AND MEETINGS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Coordination.

B. Field engineering.

C. Alteration project procedures.

D. Preconstruction conference.

E. Site mobilization conference.

F. Progress meetings.

G. Preinstallation conferences.

1.02 RELATED SECTIONS

A. Section 01 73 29 - Cutting and Patching.

1.03 COORDINATION

A. Coordinate scheduling, submittals, and Work of the various Sections of specifications to assure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.

B. Verify that utility requirement characteristics of operating equipment are compatible with building utilities. Coordinate work of various Sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.

C. Coordinate space requirements and installation of mechanical and electrical work which are indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduit, as closely as practicable; place runs parallel with line of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.

1. Make necessary adjustments to equipment location and utility line runs as required to accommodate existing structural system.

D. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.

E. Coordinate completion and clean up of Work of separate Sections in preparation for Substantial Completion and for portions of Work designated for Owners occupancy.

F. After Owner occupancy of premises, or portion thereof, coordinate access to site for correction of defective Work and Work not in accordance with Contract Documents, to minimize disruption of Owner's activities.

1.04 ALTERATION PROJECT PROCEDURES

A. Remove, cut, and patch work in a manner to minimize damage and to provide a means of restoring products and finishes to specified condition.

B. Refinish visible existing surfaces to remain in renovated rooms and spaces, to specified condition for each material, with a neat transition to adjacent finishes.

C. Where new work abuts or aligns with existing, perform a smooth and even transition. Patched work to match existing adjacent work in texture and appearance.

D. When 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.

E. Where a change of plane of 1/4 inch or more occurs, submit recommendation for providing a smooth transition for Architect review.

F. Patch or replace portions of existing surfaces which are damaged, out of plane, discolored, or showing other imperfections.

G. Finish surfaces as specified in individual product Sections.

1.05 PRECONSTRUCTION CONFERENCE

A. Owner will schedule a preconstruction conference after Notice of Award.

B. Attendance Required: Owner, Architect and Contractor.

C. Agenda:

1. Submission of executed bonds and insurance certificates.
2. Distribution of Contract Documents.
3. Submission of list of Subcontractors, list of products, Schedule of Values, and progress schedule.
4. Designation of personnel representing the parties in Contract, and the Architect.
5. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders maintaining record documents and Contract closeout procedures.
6. Construction Schedule.
7. Scheduling activities of special consultants and quality control services.
8. Use of premises by Owner and Contractor.
9. Owner's requirements and partial occupancy.
10. Construction facilities and controls provided by Owner.
11. Temporary utilities provided by Owner.
12. Survey and building layout.
13. Security and housekeeping procedures.
14. Procedures for testing.
15. Inspection and acceptance of equipment put into service during construction period.

1.06 PROGRESS MEETINGS

A. Architect will schedule and administer meetings throughout progress of the Work at two week intervals.

B. Architect will make arrangements for meetings, prepare agenda with copies for participants, preside at meetings, record minutes, and distribute copies within three days to Owner, Contractor, and participants.

C. Attendance Required: Contractor's Job superintendent, major subcontractors and suppliers, Owner's representative; Architect, and Special Consultants as appropriate to agenda topics for each meeting.

D. Agenda:

1. Review minutes of previous meetings.
2. Review of Work progress.
3. Field observations, problems, and decisions.
4. Identification of problems which impede planned progress.
5. Review of submittals schedule and status of submittals.
6. Review of off-site fabrication and delivery schedules.
7. Maintenance of progress schedule.
8. Corrective measures to regain projected schedules.
9. Planned progress during succeeding work period.

10. Coordination of projected progress.
11. Maintenance of quality and work standards.
12. Effect of proposed changes on progress schedule and coordination.
13. Other business relating to Work.

1.07 PREINSTALLATION CONFERENCES

A. When required in individual specification Section Contractor shall convene a preinstallation conference at designated location prior to commencing work of the Section.

B. Contractor shall require attendance of parties directly affecting, or affected by, work of the specific Section.

C. Contractor shall notify Architect and Owner ten days in advance of meeting date.

D. Contractor shall prepare agenda, preside at conference, record minutes, and distribute copies within three days after conference to Owner, Architect and participants.

E. Contractor shall review conditions of installation, preparation and installation procedures, and coordination with related work.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.01 GENERAL INSTALLATION PROVISIONS

A. Inspection of Conditions: Require the Installer of each construction component to inspect both the substrate and conditions under which Work is to be performed. Do not proceed until unsatisfactory conditions have been corrected in an acceptable manner.

B. Manufacturer's Instruction: Comply with manufacturer's installation instructions and recommendations, to the extent that those instructions and recommendations are more explicit or stringent than requirements contained in Contract Documents.

C. Inspect materials or equipment immediately upon delivery and again prior to installation. Reject damaged and defective items.

D. Provide attachment and connection devices and methods necessary for securing Work. Secure Work true to line and level. Allow for expansion and building movement.

E. Visual Effects: Provide uniform joint widths in exposed Work. Arrange joints in exposed Work to obtain the best visual effect.

F. Refer questionable choices to the Architect for final decision.

G. Recheck measurements and dimensions, before starting each installation.

H. Install each component during weather conditions and project status that will ensure the best possible results. Isolate each part of the completed construction from incompatible material as necessary to prevent deterioration.

I. Coordinate temporary enclosures with required inspections and tests, to minimize the necessity of uncovering completed construction for that purpose.

J. Mounting Heights: Where mounting heights are not indicated, install individual components at standard mounting heights recognized within the industry for the particular application indicated. Refer questionable mounting height decisions to the Architect for final decision.

3.02 CLEANING AND PROTECTION

A. During handling and installation, clean and protect construction in progress and adjoining materials in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.

B. Clean and maintain completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

C. Limiting Exposures: Supervise construction activities 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. Where applicable, such exposures include, but are not limited to the following:

Excessive static or dynamic loading.
Excessive internal or external pressures.
Excessively high or low temperatures.
Thermal shock.
Excessively high or low humidity.
Air contamination or pollution.
Water or ice.
Solvents.
Chemicals.

Light.
Radiation.
Puncture.
Abrastion.
Heavy Traffic.
Soiling, staining and corrosion.
Bacteria.
Rodent and insect infestation.
Combustion.
Electrical current.
High speed operation.
Improper lubrication.
Unusual wear or other misuse.
Contact between incompatible materials.
Destructive testing.
Misalignment.
Excessive weathering.
Unprotected storage.
Improper shipping or handling.
Theft.
Vandalism.

END OF SECTION

SECTION 01 33 00

SUBMITTALS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Submittal Schedule and procedures.

B. Construction progress schedules.

C. Proposed products list.

D. Shop drawings.

E. Product data.

F. Samples.

G. Manufacturers' instructions.

H. Manufacturers' certificates.

I. Construction photographs.

1.02 RELATED SECTIONS

A. Section 01 29 00 - Contract Considerations: Schedule of Values.

B. Section 01 40 00 - Quality Control: Manufacturers' field services, tests and reports.

C. Section 01 77 00 - Contract Closeout: Contract closeout submittals.

1.03 SUBMITTAL PROCEDURES

A. Transmit each submittal with Architect accepted form.

B. Schedule submittals to expedite the Project; deliver to and pick-up from Architect at business address.

C. Identify Project, Contractor, Subcontractor or supplier; pertinent Drawing sheet and detail number(s), and specification Section number, as appropriate.

D. Provide space for Contractor and Architect review stamps.

E. Review submission and apply Contractor's stamp, signed or initialled certifying that review, verification of products required, field dimensions, adjacent construction Work, and coordination of information, is in accordance with the requirements of the Work and Contract Documents.

F. Identify variations from Contract Documents and Product or system specifications.

G. Revise and resubmit submittals as required, identify all changes made since previous submittal.

H. Distribute copies of reviewed submittals to concerned parties. Instruct parties to promptly report any inability to comply with provisions.

I. Unrequired submittals will not be reviewed.

1.04 CONSTRUCTION PROGRESS SCHEDULES

A. Submit initial progress schedule in duplicate within 10 days after date of Owner-Contractor Agreement for Owner and Architect review.

B. Revise and resubmit when changes occur or are projected to occur.

C. Submit revised schedules with each Application for Payment, identifying changes since previous version.

D. At Contractor's option submit a horizontal bar chart with separate line for each major section of Work or operation, identifying first work day of each week, or submit network analysis diagram using the critical path or PERT method, generally as outlined in Associated General Contractors of America (AGC) publication "The Use of CPM in Construction - A Manual for General Contractors and the Construction Industry".

E. Show complete sequence of construction by activity, identifying Work of separate stages and other logically grouped activities. Indicate the early and late start, early and late finish, float dates, and duration.

F. Indicate estimated percentage of completion for each item of Work at each submission.

G. Indicate submittal dates required for shop drawings, product data, samples, and product delivery dates, including those furnished by Owner.

1.05 PROPOSED PRODUCTS LIST

A. Within 15 days after date of Owner-Contractor Agreement, submit complete list of products proposed for use, with name of manufacturer, trade name, and model number of each product.

B. For products specified only by reference standards, give manufacturer, trade name, model or catalog designation, and reference standards.

1.06 SHOP DRAWINGS

A. Submit newly prepared information in the form of one reproducible transparency (with positive side up), and two opaque reproductions. Do not fold.

B. Drawings must be reviewed and stamped by the Contractor attesting to his review and approval of conformance of drawings with Contract Documents prior to submission for Architect's review.

C. After Architect's review and return, reproduce and distribute in accordance with Article on Procedures above and for Record Documents described in Section 01700 - Contract Closeout.

D. Reproduction of Contract Drawings for shop drawing submission not permitted.

1.07 PRODUCT DATA

A. Submit the number of copies which the Contractor requires, plus two copies which will be retained by the Architect.

B. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information unique to this Project.

C. After review, distribute in accordance with Article on Procedures above and provide copies for Record Documents described in Section 01700 - Contract Closeout.

1.08 SAMPLES

A. Submit samples to illustrate functional and aesthetic characteristics of the Product, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.

B. Submit samples of finishes from the full range of manufacturers' standard colors or in custom colors selected, textures, and patterns for Architect's selection.

C. Include identification on each sample, with full Project information.

D. Submit the number of samples specified in individual specification Sections; one of which will be retained by Architect.

E. Reviewed samples which may be used in the Work are indicated in individual specification Sections.

1.09 MANUFACTURER'S INSTRUCTIONS

A. When specified in individual specification Sections, submit manufacturers' printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, in quantities specified for Product Data.

B. Identify, in writing, conflicts between manufacturers' instructions and Contract Documents.

1.10 MANUFACTURER'S CERTIFICATES

A. When specified in individual specification Sections, submit manufacturers' certificate to Architect for review, in quantities specified for Product Data.

B. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference date, affidavits, and certifications as appropriate.

C. Certificates may be recent or previous test results on material or Product, but must be acceptable to Architect.

1.11 CONSTRUCTION PHOTOGRAPHS

A. Provide a photographic survey to completely record and show existing conditions in area of new work.

B. Identify photographs with date, time, orientation and project identification.

C. At the completion of project, eight (8) views of the Work are to be taken. These views shall be selected by the Architect. Three 8" x 10" color prints and negatives of each view are to be submitted. For final photographs, Contractor to submit name of photographer to Architect for approval prior to this work being performed.

1.12 ARCHITECT'S ACTION

A. Except for submittals for record, information or similar purposes, where action and return is required or requested, the Architect will review each submittal, mark to indicate action taken, and return promptly.

1. Compliance with specified characteristics is the Contractor's responsibility.
2. Submittals not presented in conformance with the requirements of this Section will be returned noted "Not Accepted".

B. Action Stamp: The Architect will stamp each submittal with a uniform, self-explanatory action stamp. The stamp will be appropriately marked, as follows, to indicate the action taken:

1. Final Unrestricted Release: Where submittals are marked "No exception taken," that part of the Work covered by the submittal may proceed provided it complies with requirements of the Contract Documents; final acceptance will depend upon that compliance.
2. Final-But-Restricted Release: When submittals are marked "Make corrections noted", that part of the Work covered by the submittal may proceed provided it complies with notations or corrections on the submittal and requirements of the Contract Documents; final acceptance will depend on that compliance.
3. Returned for Resubmittal: When submittal is marked "Submit Specified Item" or "Rejected", do not proceed with that part of the Work covered by the submittal, including purchasing, fabrication, delivery, or other activity. Revise or prepare a new submittal in accordance with the notations; resubmit without delay. Repeat as necessary to obtain a different action mark.
4. Do not permit submittals marked "Revise and Resubmit" to be used at the Project site, or elsewhere Work is in progress.

C. Where samples are marked "Acceptable" that part of the Work may proceed provided it complies with requirements of the Contract Documents.

D. Where samples are marked "Not Acceptable", new samples must be submitted. Do not proceed with that part of the Work.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.01 ARCHITECT'S REVIEW

A. Allow 10 working days for Architect's review of submittals.

END OF SECTION

SECTION 01 40 00

QUALITY CONTROL

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Quality assurance and control of installation.

B. References.

C. Field samples.

D. Mock-up.

E. Inspection and testing laboratory services.

F. Manufacturers' field services and reports.

G. Approved Permit Drawings.

1.02 RELATED SECTIONS

A. Section 01 42 00 - Definitions and Standards.

B. Section 01 33 00 - Submittals: Submission of Manufacturers' Instructions and Certificates.

C. Section 01 60 00 - Material and Equipment: Requirements for material and product quality.

1.03 QUALITY ASSURANCE/CONTROL OF INSTALLATION

A. Monitor quality control over suppliers, manufacturers, Products, services, site conditions, and workmanship, to produce Work of specified quality.

B. Comply fully with manufacturers' instructions, including each step in sequence.

C. Should manufacturers' instructions conflict with Contract Documents, notify Architect in writing and request clarification from Architect before proceeding.

D. Comply with specified standards as a minimum quality for the Work except when more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

E. Perform work by persons qualified to produce workmanship of specified quality.

F. Secure Products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion or disfigurement.

G. Requirements for the Contractor to provide quality control services required by authorities having jurisdiction are not limited by provisions of this section.

1.04 REFERENCES

A. Conform to reference standard by date of issue current on date of Contract Documents.

B. Obtain copies of standards when requested by Owner or Architect.

C. Should specified reference standards conflict with Contract Documents, request, in writing, clarification by Architect before proceeding.

D. The contractual relationship of the parties to the Contract shall not be altered from the Contract Documents by mention or inference otherwise in any reference document.

1.05 FIELD SAMPLES

A. Install field samples at the site as required by individual specifications Sections for review.

B. Acceptable samples represent a quality level for the Work.

C. Where field sample not to be incorporated in finish Project, is specified in individual Sections to be removed, clear area when directed by Architect.

1.06 MOCK-UP

A. Tests will be performed under provisions identified in this section.

B. Assemble and erect specified items, with attachment and anchorage devices, flashings, seals, and finishes.

C. Where mock-up not to be incorporated in finished Project, is specified in individual Sections to be removed, clear area when directed by Architect.

1.07 INSPECTION AND TESTING LABORATORY SERVICES

A. Contractor shall employ, and pay for services of an independent firm to perform inspection and testing. Submit qualifications of firm to Owner within 15 days of Owner-Contractor Agreement. Firm subject to approval of Owner.

B. The independent firm shall perform inspections, tests, and other services specified in individual specification Sections and as required by the Architect.

C. Reports shall be submitted by the independent firm to the Architect and Owner, in triplicate indicating observations and results of tests and indicating compliance or non-compliance with Contract Documents. Submit additional copies of reports to the governing authority, when authority so directs.

D. Cooperate with independent firm; furnish samples of materials, design mix, equipment, tools, storage and assistance as requested.

1. Notify Architect and independent firm 48 hours prior to expected time for operations requiring services.

2. Make arrangements with independent firm and pay for additional samples and tests required for Contractor's use.

E. Retesting required because of non-conformance to specified requirements shall be performed by the same independent firm on instructions by the Architect. Payment for retesting will be charged to the Contractor.

1.08 MANUFACTURERS' FIELD SERVICES AND REPORTS

A. Submit qualifications of observer to Architect 30 days in advance of required observations. Observer subject to approval of Owner.

B. When specified in individual specification Sections, require material or Product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, test, adjust, and balance of equipment as applicable, and to initiate instructions when necessary.

C. Individuals to report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.

D. Submit report in triplicate within 5 days of observation to Architect/Engineer for review.

1.09 APPROVED PERMIT DRAWINGS

A. Contractor shall keep at the job site the approved permit set of contract documents and make available to local and state inspectors.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used.

END OF SECTION

SECTION 01 42 00

DEFINITIONS AND STANDARDS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Quality assurance.

B. Schedule of references.

1.02 QUALITY ASSURANCE

A. For products or workmanship specified by association, trade, or Federal Standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.

B. Conform to reference standard by date of issue current on date of Contract Documents.

C. Obtain copies of standards when required by Contract Documents.

D. It requested by Owner or Architect, maintain copy at jobsite during submittals, planning, and progress of the specific work, until Substantial Completion.

E. Should specified reference standards conflict with Contract Documents, request clarification from Architect before proceeding.

F. The contractual relationship of the parties to the Contract shall not be altered from the Contract Documents by mention or inference otherwise in any reference document.

G. All manufactured articles, materials, and equipment shall be applied, installed, connected, cleaned and conditioned in accordance with the manufacturer's printed directions except as more particularly specified.

1.03 DEFINITIONS

A. General: Basic contract definitions are included in the General Conditions.

B. Indicated: Refers to graphic representations, notes or schedules on the Drawings, or other Paragraphs or Schedules in Specifications, and similar requirements in

Contract Documents. Where terms such as "shown", "noted", "scheduled", and "specified" are used, it is to help locate the reference; no limitation on location is intended except as specifically noted.

C. Directed: Terms such as "directed", "requested", "authorized", "selected", "approved", "required", and "permitted" mean "directed by the Architect", "requested by the Architect", and similar phrases.
However, no implied meaning shall be interpreted to extend the Architect's responsibility into the Contractor's area of construction supervision.

D. No Exception Taken: The term "No Exception Taken", where used in conjunction with the Architect's action on the Contractor's submittals, applications, and requests, is limited to the responsibilities and duties of the Architect stated in General and Supplementary Conditions. Such action shall not release the Contractor from responsibility to fulfill Contract Document requirements, unless otherwise provided in the Contract Documents.

E. Regulation: The term "Regulations" includes laws, statutes, ordinances and lawful orders issued by authorities having jurisdiction, as well as rules, conventions and agreements within the construction industry that control performance of the Work, whether lawfully imposed by authorities having jurisdiction or not.

F. Furnish: The term "furnish" is used to mean "supply and deliver to the Project site, ready for unloading, unpacking, assembly, installation, and similar operations."

G. Install: The term "install" is used to describe operations at project site including the actual "unloading, unpacking, assembly, erection,placing, anchoring, applying, working to dimension, finishing curing, protecting, cleaning and similar operations."

H. Provide: The term "provide" means "to furnish and install, complete and ready for the intended use."

I. Installer: An "Installer" is an entity engaged by the Contractor, either as an employee, subcontractor or sub-subcontractor for performance of a particular construction activity, including installation, erection, application and similar operations. Installers are required to be experienced in the operations they are engaged to perform.

1. The term "experienced", when used with the term "Installer" means having a minimum of 5 previous Projects similar in size and scope to this Project, and familiar with the precautions required, and has complied with requirements of the authority having jurisdiction.

J. Project Site is the space available to the Contractor for performance of the Work, either exclusively or in conjunction with others performing other construction as part of the Project. The extent of the Project Site is shown on the Drawings, and may or may not be identical with the description of the land upon which the Project is to be built.

K. Testing Laboratories: A "testing laboratory" is an independent entity engaged to perform specific inspections or tests, either at the Project Site or elsewhere, and to report on, and, if required, to interpret, results of those inspections or tests.

1.04 SPECIFICATION FORMAT AND CONTENT EXPLANATION

A. Specification Format: These Specifications are organized into Divisions and Sections based on the Construction Specifications Institute's 16-Division format and the MASTERFORMAT numbering system.

B. Assignment of Specialists: The Specification requires that certain specific construction activities shall be performed by specialists who are recognized experts in the operations to be performed. The specialists must be engaged for those activities, and assignments are requirements over which the Contractor has no choice or option. Nevertheless, the ultimate responsibility for fulfilling Contract requirements remains with the Contractor.

1. This requirement shall not be interpreted to conflict with enforcement of building codes and similar regulations governing the Work. It is also not intended to interfere with local trade union jurisdictional settlements and similar conventions.

2. Trades: Use of titles such as "carpentry" is not intended to imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as "carpenter". It also does not imply that requirements specified apply exclusively to tradespersons of the corresponding generic name.

1.05 DRAWING SYMBOLS

A. Graphic Symbols: Where not otherwise noted, symbols are defined by "Architectural Graphic Standards", published by John Wiley & Sons, Inc., eighth edition.

B. Mechanical/Electrical Drawings: Graphic symbols used on mechanical and electrical Drawings are generally aligned with symbols recommended by ASHRAE. Where appropriate, they are supplemented by more specific symbols recommended by technical associations including ASME, ASPE, IEEE and similar organizations.

1.06 INDUSTRY STANDARDS

A. Applicability of Standards: Except where Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into Contract Documents. Such standards are made a part of the Contract Documents by reference.

B. Conflicting Requirements: Where compliance with two or more standards is specified, and they establish different or conflicting requirements for minimum quantities or quality levels, the most stringent requirement will be enforced. Refer requirements that are different, but apparently equal, and uncertainties as to which quality level is more stringent to the Architect for a decision before proceeding.

C. Abbreviations and Names: Trade associations names and titles of general standards are frequently abbreviated. Where acronyms or abbreviations are used in the Specification or other Contract Documents they mean the recognized name of the trade association, standards generating organization, authority having jurisdiction or other entity applicable to the context of the text provision. Refer to the "Encyclopedia of Associations", published by Gale Research Co., available in most libraries.

D. Federal Government Agencies: Names and titles of federal government standard or Specification producing agencies are frequently abbreviated. The acronyms or abbreviations referenced in the Contract Documents indicate names of standard or Specification producing agencies of the federal government.

1.07 GOVERNING REGULATIONS/AUTHORITIES

A. The Architect has contacted authorities having jurisdiction where necessary to obtain information necessary for the preparation of Contract Documents; that information may or may not be of significance to the Contractor. Contractor must contact authorities having jurisdiction directly for information and decisions having a bearing on the Work.

1.08 SCHEDULE OF REFERENCES

ACI American Concrete Institute
Box 19150
Reford Station
Detroit, MI 48219

AISC American Institute of Steel Construction
400 North Michigan Avenue
Eighth Floor
Chicago, IL 60611

ANSI	American National Standards Institute 1430 Broadway New York, NY 10018
ASHRAE	American Society of Heating, Refrigerating and Air Conditioning Engineers 1791 Tullie Circle, N.E. Atlanta, GA 30329
ASTM	American Society for Testing and Materials 1916 Race Street Philadelphia, PA 19103
AWI	Architectural Woodwork Institute 2310 South Walter Reed Drive Arlington, VA 22206
AWPA	American Wood-Preservers' Association 7735 Old Georgetown Road Bethesda, MD 20014
AWS	American Welding Society 550 LeJeune Road, N.W. Miami, FL 33135
CRSI	Concrete Reinforcing Steel Institute 933 Plum Grove Road Schaumburg, IL 60195
DHI	Door and Hardware Institute 7711 Old Springhouse Road McLean, VA 22102
FM	Factory Mutual System 1151 Boston-Providence Turnpike P.O. Box 688 Norwood, MA 02062
FS	Federal Specification General Services Administration Specifications and Consumer Information Distribution Section (WFSIS) Washington Navy Yard, Bldg. 197 Washington, DC 20407
GA	Gypsum Association 1603 Orrington Avenue

Evanston, IL 60201

NCMA National Concrete Masonry Association
P.O. Box 781
Herndon, VA 22070

NEMA National Electrical Manufacturers' Association
2101 'L' Street, N.W.
Washington, DC 20037

NFPA National Fire Protection Association
Battery March Park
Quincy, MA 02269

PCA Portland Cement Association
5420 Old Orchard Road
Skokie, IL 60077

PS Product Standard
U. S. Department of Commerce
Washington, DC 20203

SMACNA Sheet Metal and Air Conditioning Contractors' National Association
8224 Old Court House Road
Vienna, VA 22180

SSPC Steel Structures Painting Council
4400 Fifth Avenue
Pittsburgh, PA 15213

TCA Tile Council of America, Inc.
Box 326
Princeton, NJ 08540

UL Underwriters' Laboratories, Inc.
333 Pfingston Road
Northbrook, IL 60062

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01 50 00

CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Temporary Utilities: Electricity, lighting, heat, ventilation, telephone service, water, and sanitary facilities.

B. Temporary Controls: Barriers, enclosures and fencing, protection of the Work and fire protection.

C. Construction Facilities: Access roads, parking, progress cleaning, project signage, and temporary enclosures.

1.02 RELATED SECTIONS

A. Section 01 77 00 - Contract Closeout: Final cleaning.

1.03 TEMPORARY ELECTRICITY

A. Connect to existing power service. Power consumption shall not disrupt Owner's need for continuous service.

B. Provide temporary electric feeder from electrical service at location as directed. Power consumption shall not disrupt Owner's need for continuous service.

C. Power Service Characteristics: 120/208 volt, 3 phase.

D. Provide power outlets for construction operations, with branch wiring and distribution boxes. Provide flexible power cords as required.

E. Provide main service disconnect and overcurrent protection at convenient location meter.

F. Permanent convenience receptacles may be utilized during construction.

G. Provide adequate distribution equipment, wiring, and outlets to provide single phase branch circuits for power and lighting.

1. Provide 20 ampere duplex outlets, single phase circuits for power tools for every 900 sq ft of active work area.

2. Provide 20 ampere, single phase branch circuits for lighting.

H. Owner will pay for electric power used during construction.

1.04 TEMPORARY LIGHTING

A. Provide and maintain lighting for construction operations to achieve a minimum lighting level of 5 watt/sq ft.

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.

E. Relamp prior to final acceptance by Owner.

1.05 TEMPORARY HEAT

A. Provide and pay for heat devices and heat as required to maintain specified conditions for construction operations.

B. Provide separate metering and reimburse Contractor shall pay for cost of energy used. Enclose building prior to activating temporary heat.

C. 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.

D. Maintain minimum ambient temperature of 50 degrees F in areas where construction is in progress, unless indicated otherwise in specification Sections.

1.06 TEMPORARY VENTILATION

A. Ventilate enclosed areas to assist cure of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.

1.07 TELEPHONE SERVICE

A. Provide, maintain and pay for telephone and facsimile service to field office at time of project mobilization, for duration of project.

1.08 TEMPORARY WATER SERVICE

A. Utilize existing water service at locations designated by Owner.

B. Provide hoses to point of use.

C. Owner will pay for water used during construction.

1.09 TEMPORARY SANITARY FACILITIES

A. Existing and new facilities may be used by the Contractor's employees.

B. Maintain facilities and enclosures in a neat sanitary condition at all times during the contract. Contractor shall clean toilet facilities daily.

1.10 BARRIERS

A. Provide barriers to prevent unauthorized entry to construction areas and to protect existing facilities and adjacent properties from damage from construction operations and demolition.

1.11 FIRE EXTINGUISHERS

A. Provide portable 20 pound UL rated class A,B,C fire extinguishers. Comply with NFPA 10 and NFPA 241 for location/area requirements.

1.12 INTERIOR ENCLOSURES

A. Provide temporary partitions as required to separate work areas from Owner occupied areas, to prevent penetration of dust and moisture into Owner occupied areas, and to prevent damage to existing materials and equipment.

B. Construction: Wood framing and reinforced polyethylene or gypsum board sheet materials with closed joints and sealed edges at intersections with existing surfaces.

1.13 PROTECTION OF INSTALLED WORK

A. Protect installed Work and provide special protection where specified in individual specification Sections.

B. Provide temporary and removable protection for installed Products. Control activity in immediate work area to minimize damage.

C. Protect finished floors, walls, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.

1.14 SECURITY

A. Provide security and facilities to protect Work, and existing facilities and Owner's operations from unauthorized entry, vandalism, or theft.

1.15 PROGRESS CLEANING

A. Maintain areas free of waste materials, debris, and rubbish. Maintain areas in a clean and orderly condition.

B. Remove debris and rubbish from pipe chases, plenums, and other closed or remote spaces, prior to enclosing the space.

C. Vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.

D. Remove waste materials, debris, and rubbish from site daily and dispose off-site.

1.16 FIELD OFFICES AND STORAGE

A. Field Office: Utilize space within existing building designated by the Owner. Equip with sturdy furniture drawing rack and drawing display table.

B. Provide space for project meetings, with table and chairs to accommodate 4 persons. Provide file space and furnishings for project documents, records and samples.

1.17 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

A. Remove temporary utilities, equipment, facilities, materials, prior to substantial completion inspection.

B. Clean and repair damage caused by installation or use of temporary work.

C. Restore existing facilities used during construction to original condition. Restore permanent facilities used during construction to specified condition.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

SECTION 01 56 00

INFECTION CONTROL PROCEDURES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. This Section includes required procedures for Infection Control related to new and renovated construction including, but not limited to, the following:
   1. Infection prevention and control measures shall be undertaken by the Contractor during all phases of the project to prevent dust from becoming air-born in occupied patient and other areas.

B. Related Sections include the following:
   1. Division 01 Section "Submittal Procedures" for a description of general submittal requirements not in this Section.
   2. Division 01 Section "Temporary Facilities" for a description of temporary facilities related to this Section.
   3. Division 02 Section "Demolition" for a description of demolition requirements related to this Section.

1.02 REFERENCES

A. Centers for Disease Control, Guideline for Prevention of Nosocomial Pneumonia, Atlanta, GA - Latest Edition.

B. American Institute of Architects Academy of Architecture for Health, U.S. department of health and Human Services, guidelines for Design and Construction of Hospital and HealthCare Facilities, Washington, DC, 2003

C. American Society of Heating, Refrigerating, and Air-Conditioning Engineers, Inc., HVAC Design Manual for Hospitals and Clinics, Atlanta, GA - Latest edition.

D. ANSI/ASHRAE Standard 52.1 - 1992, Gravimetric and Dust-Spot Procedures for Testing Air Cleaning Devices Used in General Ventilation for Removing Particulate Matter.

1.03 INFECTION CONTROL RISK ASSESMENT (ICRA)

A. Prior to Construction and within 15 days after Notice to Proceed the scope of the project shall be evaluated by representatives of the Owner, Architect, and Contractor and an Infection Control Risk Assessment (ICRA) shall be prepared.

B. The Risk Assessment shall identify potential infection hazards and provide a written plan of preventative measures to be implemented during construction.

C. Areas of consideration shall include, but are not limited to:

1. Functional purpose of the project.
2. The services provided in the area.
3. Patient Risk.
4. Worker Risk.
5. Coordination of construction Preparation and Demolition.
6. Operation and maintenance of facilities during construction.
7. Post-Construction cleaning procedures.
8. Monitoring methods and standards during and after construction.
9. Contractor accountability in the event of a breach in infection control procedures.
10. Health expectations for the contractor's workers.
11. The physical layout of the area.
12. Air handling systems.
13. Hand-washing facilities.
14. Traffic patterns for people, supplies, waste, construction debris, etc.
15. Isolation rooms.
16. Water supply.
17. Storage areas.
18. Sanitation.
19. Waste management.
20. Emergency preparedness.
21. Applicable Federal, Local, and State Laws, Standards, and Regulations.

D. Specific infectious/biohazard risks shall be discussed and documented in the ICRA.

E. Specific Construction Hazards and Preventative Measures as listed in this section and as applicable to the project shall be noted in the ICRA and followed during the course of construction.

F. Copies of the ICRA shall be kept on site by the Contractor.

G. Copies of the ICRA will be retained by the Owner and Architect.

H. The Owner shall perform ongoing assessment of the preventative measures throughout the duration of the project.

1.04 SUBMITTALS

A. A. Infection Control Plan: Within 15 days after meeting with Hospital staff and Architect regarding preparation of the ICRA. The Contractor shall submit for inclusion in the ICRA an Infection Control Plan of the contractor's responsibilities and duties during construction for inclusion in the ICRA. This Plan shall include:

1. Floor plan drawings indicating locations of all infection control elements including limits of work area, Infection Control Protection Class, adjacent or included Patient Risk Groups, Construction Risk Type (greatest), entrances, exits, doors, vestibules, barriers and types ventilation discharge points, exhaust fans, portable filtration devices dust mats, staff traffic routes, debris traffic routes, construction materials traffic routes, storage areas
2. Written description of procedures to be followed during construction.

B. B. Product Data: Provide Data for fire retardant awareness barrier, sealant tape, dust mat, portable dust containment system, and portable filtration devices.

PART 2 PRODUCTS

2.01 FIRE RETARDANT AWARENESS BARRIER

A. Manufacturers:
[N]CASE Dust Control Awareness Barrier by [N]CASE, Inc
(www.ncaseonline.com) distributed by Abatement Technologies 1-800-634-9091
(www.abatement.com)

B. Physical Characteristics:

1. Flame retardant awareness barrier.
    a. Flame retardant manufacturer: Ampacet Corp.
2. Thickness: 6-mil.
3. Color: White opaque with green awareness text.
4. NFPA - Class A.
5. UBS - Class 1.
6. Passes NFPA 701, Large Scale.
7. ASTM E-84; flame-spread 15, smoke density 70.
8. Printed Awareness Text Includes:
    a. DUST CONTROL BARRIER
    b. FLAME RETARDANT: ASTM E-84; NFPA 701
    c. THICKNESS: 6 MIL
    d. ICRA DISCIPLINES
    e. AIR PRESSURE REQUIREMENTS

C. Fire Retardant Sealant Tape: As recommended by fire retardant awareness barrier manufacturer for intended application.

2.02 PORTABLE DUST CONTAINMENT SYSTEM

A. Manufacturers:
1. Zip-Wall" by Zipwall, LLC (www.zipwall.com)

B. Portable dust containment system shall be accessible from either side.

C. Fire Retardant Sealant Tape: As recommended by fire retardant awareness barrier manufacturer for intended application.

2.03 DUST MAT

A. Manufacturer:
1. "Sticky Mats" manufactured by Cole Static Control Inc. (www.stickymats.com).

B. Physical Characteristics:
1. Size: 23 inches by 35 inches.
2.. Color: Blue.
3. Sheets per mat: 30
4. Individual sheets numbered.
5. Thickness each sheet: 2-mil.
6. Adhesive included on bottom of mat to hold mat in place.

2.04 EXHAUST HOSES

A. Manufacturers:
1. Federal Hose Manufacturing Co., Painsville, OH 44077.
2. Provide heavy duty flexible steel reinforced; Ventilator Blower Hose, WPC.

2.05 FILTERS

A. Manufacturers:
1. Purolator or approved equal.
2. Provide return and exhaust air ducts covered with 2 inch thick pleated air filters. Provide Model #FME-40 or approved equal.

2.06 PORTABLE AIR SCRUBBER

A. A. Manufacturers:
1. PAS Series manufactured by Abatement Technologies (www.abatement.com).

B. Provide unitary system consisting of fan, Merv 7 prefilter, Merv 17 (HEPA) final filter, HEPA filter frame, duct collars. System shall be UL or ETL listed.

PART 3 EXECUTION

3.01 CONSTRUCTION HAZARDS AND PREVENTATIVE MEASURES

A. Internal Hazards and Measures:

1. Hazards: During internal renovation/construction there is dissemination of dust/debris which may carry pathogenic organisms.

a. Immuno-compromised patients are at highest risk of fungal infection during construction and renovation.

b. Clean/sterile supplies, patient care surfaces. and equipment may become contaminated.

c. The accumulation of dust and debris on ventilation system filters results in decreased filtration and airflow.

2. Preventative Measures: Each construction/renovation project shall be assessed using the patient population at risk and type of activity that is planned.

a. Levels of Construction Risk Based on Potential Contamination: Using the following definitions, identify the Type of construction activity (Type A-D).

1. Type "A": Inspection and non-invasive activities including, but not limited to:
   a. Removal of ceiling tile for visual inspection limited to one (1) tile per fifty (50) square feet.
   b. Painting, but not sanding.
   c. Wall covering, electrical trim work, minor plumbing, and other activities which do not generated dust or require cutting of walls or access to ceiling other than for visual inspection.
2. Type "B": Small Scale, short term duration activities which create minimal dust including, but not limited to:
   a. Installation of computer cables
   b. Access to chase spaces
   c. Cutting of walls or ceiling where dust migration can be controlled
3. Type "C": Work that generates a moderate to high level of dust or requires demolition or removal of a fixed building component or assembly including, but not limited to:
   a. Sanding of walls for painting or wall covering.
   b. Removal of wall coverings, ceiling tiles, or casework/millwork.
   c. New wall construction.
   d. Minor ductwork or electrical work above ceilings.
   e. Major cabling activities.
   f. Any activity which cannot be completed within a single work shift.
4. Type "D": major demolition and construction projects which include, but are not limited to:
   a. Activities requiring consecutive work shifts

b. Activities requiring heavy demolition or removal of a complete cabling system
c. New construction

b. Patient Risk Groups. See Infection Control Matrix (3.03).
c. Infection Control Precaution Class
    1. Class I Precautions
        a. Routine dust control measures are used in situations where dust and/or. air-born contaminants are very limited and are unlikely to be spread to adjacent areas.
        b. Replace ceiling tile immediately when above ceiling work is completed.
    2. Class II Precautions
        a. Before construction begins, isolate the area of activity from any patients using fire rated dust control awareness barrier, sealed at full ceiling height, and with a minimum of two-foot overlapping flaps or installed zipper entrance system for entry access.
        b. Provide dust mat outside each entrance or exit to the area.
        c. Place construction area under negative pressure with respect to adjacent areas utilizing separate construction exhaust fans ducted to the outside such that re-circulation to the work area is not possible, and such that introduction of the exhausted air is not introduce into the hospital HVAC system. Rebalance adjacent areas as needed to assure positive pressure with respect to the work area.
        d. If work area exhaust cannot be ducted to the outside, work area air shall be filtered to at least 95% efficiency before it is re-circulated.
        e. Cover all exposed surfaces with drop-cloths.
        f. Close all room doors and post signage on both sides of the door indicating that the door must remain closed.
        g. Seal unused doors with sealing tape.
        h. Block-off and seal air vents.
        i. Dampen surfaces, if needed, to control dust when cutting, chipping, or breaking materials.
        j. Place dust mat at entrance and exit of work area.
        k. Vacuum with HEPA-filtered equipment and/or wet-mop daily.
        l. Contain construction and demolition waste before transport in tightly covered containers.
        m. Transport construction and demolition waste only along predetermined routes away from patient and visitor traffic.

    3. 3) Class III Precautions. In addition to Class II Precautions:
        a. Remove or isolate/seal HVAC system in the work area from the HVAC unit and ductwork serving the work-area to prevent contamination of duct system.

b. Maintain appropriate air filtration and/or utilize HEPA
c. equipped air filtration units
d. Seal all exterior windows in the work area
e. Provide monitors in the barrier system to signal when negative pressures are not maintained.
f. Maintain all barriers intact until the completed project has been inspected by representatives of the Hospital's Infection Control or Safety departments as determined by the Hospital.
g. After project completion and approval of the Hospital, remove all barriers using dust controlling practices and techniques, vacuum with HEP A filtered vacuum equipment, and wet-mop with hospital-approved disinfectant.
h. After project completion, replace all HV AC filters. Dispose of all filters as construction debris.

4. Class IV Precautions. In addition to Class III Precautions:
   a. Erect an open able and close able barrier at each entrance to and exit from the work area. This shall include access to elevators and stairs within the work area as used for construction access. Barriers and openings shall include the following:
      (1) A rigid temporary or permanent fire-rated partition with tight seals along the entire perimeter of the walls and at all penetrations.
      (2) A solid gasketed dust-proof door and frame.
   b. The balance of the barrier utilizing existing partitions and structural floor slabs shall Seal all holes for pipes, conduit, and other miscellaneous penetrations in the perimeter walls, floors and roof decks of the work area.
   c. Contractor personnel clothing shall be tree of loose soil and debris before leaving the work area. A HEP A filtered vacuum may be used to clean the clothing prior to leaving the work area.

5. Class V Precautions. In addition to Class N Precautions as determined by the Hospital for extremely sensitive areas:
   a. Erect an ante room at each entrance and exit from the work area. Each ante room shall:
      (1) Be constructed as a pair of entrances in Class IV Precautions.
      (2) Be exhausted individually and be neutral in pressure to the construction area (negative pressure) and the non-work area (positive pressure).
      (3) Contain dust-mats within. And be large enough for storage of tools and clothing changes.

b. Seal all holes for pipes, conduit, and other miscellaneous penetrations in the perimeter walls, floors and roof decks of the work area.
c. Additionally, at the discretion of the Hospital, workers may be required to wear cloth/paper shoe covers and coveralls. These items must be removed every time the worker leaves the work area.

B. External Hazards and Preventative Measures
1. Hazards:
a. During construction, particularly excavations, the increased potential for contamination by dust/debris on air intake filters may result in decreased filtration and the spread of micro organisms via the HVAC system.
b. Increased contamination of HVAC cooling tower water may result in dissemination of organisms such as Legionella to patients and employees.
2. Preventative Measures:
a. Increase the frequency of the inspection and changing of filters during construction.
b. Maintain adequate air exchange rates, pressure differentials.
c. Eliminate air leakage.
d. Change air filters to those with high efficiency ratings.
e. Increase the frequency for cleaning and decontamination of cooling towers.

C. Interruption of Potable Water Sources During Construction
1. Hazards:
a. During construction the water supply may be interrupted for functions such as; patient bathing, drinking and food preparation, hand washing, surgical scrubbing, patient procedures, flushing toilets and clinical sinks, and cleaning and decontamination/sterilization procedures.
b. Interruptions in water supply increase the risk for contamination of the system due to stagnation, scaling, sediment, and microbes present that might be released when the system is returned to operation.
2. Preventative Measures:
a. Schedule interruptions during low-activity periods such as nights and weekends.
b. Notify affected areas in advance of planned service interruptions.
c. The Hospital will provide temporary· supplies of potable water for certain uses according to their policies for utility failure.
d. The hospital will make available supplies of waterless anti-microbial agents for Hospital use.
e. The Hospital shall be contacted regarding any suspicious water hazards.

3.02 WORKER RISK ASSESSMENT AND EDUCATION

A. Hospital staff shall assist the Contractor in determining potential environmental risk for contractor's workers.

B. Hospital staff shall participate in training that alerts Contractor's workers to the potential for air-born dust containing spores and microorganisms.

C. Workers may require health protection, vaccinations, skin tests for tuberculosis, and testing for hepatitis before beginning construction.

3.03 ISOLATION PROCEDURES

A. Construction activities causing disturbances of existing ducts, or creating new dust, will be conducted in tight enclosures that cut off flow of particles into adjacent areas.

B. Where containment· is possible, utilizing building walls and doors (all doors except construction access doors) should be closed and sealed with duct tape to prevent dust and debris from escaping.

1. Construction demolition, or reconstruction not capable of containment utilizing, existing building walls and doors, will use one of the following methods of isolation:
    a. Airtight dust control awareness barriers extending from floor to ceiling decking, or ceiling tiles if not removed. Awareness barrier seams shall be sealed with duct tape to prevent dust and debris from escaping.
    b. Portable dust containment units with awareness barriers pulled tight against floor and ceiling.

C. Drywall Barriers: Seams or joints shall be covered or sealed to prevent dust and debris from escaping.

3.04 ADDITIONAL ISOLATION REQUIREMENTS

A. Cover penetrations of existing perimeter walls.

B. Place isolation barriers at penetration of ceiling envelopes, chases and ceiling spaces to stop movement of air and debris.

C. Erect dust control awareness barriers at elevator shafts or stairways with the field of construction, allowing for emergency egress.

D. Provide anteroom or double entrance opening that allows workers to remove protective clothing or vacuum off existing clothing. Construct anteroom to maintain airflow from clean area through anteroom and into work area.

E. Create overlapping flap (minimum of 2 feet wide) at dust control awareness barriers enclosures for personnel access.

F. When openings are made into existing ceilings, a portable dust containment awareness barrier will be used, sealing off openings, and fitted tightly from ceiling to floor. Any ceiling access panels opened for investigation beyond the sealed areas will be replaced immediately when unattended.

G. Direct pedestrian traffic from construction areas away from patient-care areas to limit opening and closing of doors (or other barriers) that may cause dust dispersion, entry of contaminated air, or tracking of dust to patient areas.

H. Prevent birds and insects from gaining access to the hospital and hospital air-intact ducts. Exterior openings will remain closed when not in use.

3.05 VENTILATION PROCEDURES

A. Negative air pressure will be maintained within the construction area.

B. The central HVAC system will be used where possible to help maintain negative air pressure. Contractors will be responsible for blocking off supply ducts and covering return air ducts with 2 inch pleated air filters.

C. Where central HVAC systems are not capable of maintaining negative air pressure in the work area, the contractor will provide exhaust fans or HEPA filtered ventilation units to maintain the negative air-pressure within the construction area. Exhaust fans or HEPA filtered ventilation units will run continuously. Contractors are responsible for maintaining equipment and replacement of HEPA and other filters in accordance with the manufacturer's recommendations.

D. Construct an anteroom to maintain airflow from clean area through the anteroom and into the work area.

3.06 HOUSKEEPING

A. Walk-off mats will be used at exits and entrances to the work area. Adhesive walk-off mats should be placed at all doors exiting the construction area and carpeted walk-off mats should be placed at all doors entering into a construction area.

B. Carpeted walk-off dust mats shall be vacuumed at least twice per 8-hour shift and at the end of the workday. Any dust tracked outside of the construction area shall be vacuumed or damp mopped immediately. vacuum cleaners shall be outfitted with HEPA filters.

C. Adhesive walk-off mats shall be changed daily or more frequently as needed to maintain adhesive surfaces.

D. When construction is an occupied area, the construction area shall be vacuumed or damp mopped at least at the end of each shift. Vacuum cleaners shall be outfitted with HEPA filters.

3.07 PROTECTIVE CLOTHING

A. Disposable shoe covers and coveralls are to be worn during demolition.

B. Protective clothing will be removed any time the worker leaves the immediate work area.

C. Used coveralls and shoe covers will be placed in a sealed plastic bag, prior to removal from the work area, for disposal by the contractor.

3.08 STORAGE OF BUILDING SUPPLIES

A. Construction materials such as drywall will be stored in clean, dry areas to prevent the growth of bacteria and fungi.

B. Ductwork materials shall be stored in a clean, dry area to prevent the accumulation of dust in the ductwork prior to installation.

3.09 POST CONSTRUCTION

A. The contractor shall vacuum and clean all surfaces in the completed construction area, rendering them free of dust prior to the removal of isolation barriers.

B. Barrier materials should be removed carefully to minimize spreading of dirt and debris associated with construction. Barriers should be discarded as construction debris. Barrier materials should be wet wiped, REP A vacuumed or water misted prior to removal. If dust control awareness barrier is double hung then remove the inner layer first.

C. The Contractor shall remove all blockages from the air systems.

D. The Contractor shall balance the ventilation system to design specifications as described in the Project Manual or Owner-Contractor Agreement.

E. Owner's facilities department-shall examine-the HVAC equipment and filters for blockage and/or leakage.

F. Owner's environment services shall perform the final cleaning of newly construction/renovated areas before allowing patients to enter the areas.

3.10 SPECIAL PRECAUTIONS FOR WATER HANDLING (PLUMBING ALTERATIONS)

A. Exercise caution when handling fluids (i.e. removing plumbing pipes and fixtures) to prevent wetting of building materials and/or contamination of work areas.

B. Cap unused domestic water pipe branches at no more than 12 inches from the main line.

C. Before an area is turned over for patient occupancy/use, Owner shall have domestic water test for temperature and potability.

D. Aerators shall not be used on water faucets in patient care/testing/treatment areas.

3.11 INFECTION CONTROL MATRIX

A. The Infection Control Protection Class needed for the project or portion there-of shall be determined by the appropriate Patient Risk Group and planned Construction Risk by Activity (Type) according to the Matrix/Table below:

Infection Control Precaution Class Required for:				
Patient Risk Group (If more than one risk group is affected, select the higher risk group)	Construction Risk Type			
	Type A	Type B	Type C	Type D
Low Risk Office Areas	I	II	II	III/IV
Medium Risk EKG/Non-Invasive Cardiology Nuclear Medicine Rehabilitation Services Imaging/Radiology/MRI Respiratory Therapy Nutritional/Dietary Services	I	II	III	IV/V
High Risk Coronary Care Nursing Units Emergence Departments General Medical Nursing Units Laboratories Labor and Delivery Newborn Nursery, Level 1 Outpatient Clinics Outpatient Surgery PACU Pediatrics Surgical Nursing Units	I	II	III/IV	IV/V
Highest Risk Anesthesia Areas Any area caring for immuno-compromised patients Cardiac Catheterization Labs Critical Care Nursing Units Dialysis Endoscopy Negative pressure rooms NICU Oncology Operating Rooms (including labor and delivery) Pharmacy admixture areas Sterile processing areas	II	III/IV	III/IV/V	IV/V

END OF SECTION

SECTION 01 60 00

MATERIAL AND EQUIPMENT

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Products.

B. Transportation and handling.

C. Storage and protection.

D. Product options.

E. Substitutions.

F. Testing Equipment.

1.02 RELATED SECTIONS

A. Section 01 40 00 - Quality Control: Product quality monitoring.

1.03 PRODUCTS

A. Products: Means new material, machinery, components, equipment, fixtures, and systems forming the Work. Does not include machinery and equipment used for preparation, fabrication, conveying and erection of the Work. Products may also include existing materials or components required for reuse.

1.04 TRANSPORTATION AND HANDLING

A. Transport and handle products in accordance with manufacturer's I nstructions.

B. Promptly inspect shipments to assure that products comply with requirements, quantities are correct, and products are undamaged.

C. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage.

1.05 STORAGE AND PROTECTION

A. Store and protect products in accordance with manufacturer's instructions, with seals and labels intact and legible. Store sensitive products in weather-tight, climate controlled enclosures.

B. Arrange storage of products to permit access for inspection. Periodically inspect to assure products are undamaged and are maintained under specified conditions.

1.06 PRODUCT OPTIONS

A. Products Specified by Reference Standards or by Description Only: Any product meeting those standards or description.

B. Products Specified by Naming One or More Manufacturers: Products of 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.

1.07 SUBSTITUTIONS

A. Architect will consider requests for Substitutions prior to receipt of bids and up to within 10 days after date of Owner-Contractor Agreement.

B. Substitutions may be considered if a product becomes unavailable through no fault of the Contractor.

C. Document each request with complete data substantiating compliance of proposed Substitution with Contract Documents.

D. A request constitutes a representation that the Contractor:
   1. Has investigated proposed product and determined that it meets or exceeds the quality level of the specified product.
   2. Will provide the same warranty for the Substitution as for the specified product.
   3. Will coordinate installation and make changes to other Work which may be required for the Work to be complete with no additional cost to Owner or time extensions to Contract.
   4. Waives claims for additional costs or time extension which may subsequently become apparent.
   5. Will reimburse the Owner for credit of less expensive products accepted.

6. Will reimburse Owner for review or redesign services associated with re-approval by authorities.

E. Substitutions will not be considered when they are indicated or implied on shop drawing or product data submittals, without separate written request, or when acceptance will require revision to the Contract Documents.

F. Substitution Submittal Procedure:

1. Submit three copies of request for Substitution for consideration. Limit each request to one proposed Substitution.
2. Submit shop drawings, product data, samples, coordination information, cost information and certified test results attesting to the proposed product equivalence.
3. The Architect will notify Contractor, in writing, within 3 weeks of receipt of all required information of decision to accept or reject request.

1.08 TESTING EQUIPMENT

A. When items of heating, electrical or other mechanical equipment are installed, it shall be the responsibility of the Contractor installing such equipment to operate it for a satisfactory period of time as required by the Architect for proper testing of the equipment and instructing the Owner's operating personnel. Fuel, as well as any other items required for proper testing of equipment and for the period of instructing personnel, shall be supplied by the Contractor furnishing such equipment at his expense.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not used

END OF SECTION

SECTION 01 73 29

CUTTING AND PATCHING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Requirements and limitations for cutting and patching of Work.

1.02 RELATED SECTIONS

A. Section 01 11 00 - Summary of Work: Work by Owner or by separate contractors.

B. Section 01 33 00 - Submittals.

C. Section 01 60 00 - Materials and Equipment: Product Options and Substitutions.

D. Individual Product Specification Sections:
   1. Cutting and patching incidental to work of the Section.
   2. Advance notification to other Sections of openings required in work of those Sections.
   3. Limitations on cutting structural members.

1.03 SUBMITTALS

A. Submit written request in advance of cutting or alteration which affects:
   1. Structural integrity of any element of Project.
   2. Integrity of weather-exposed or moisture-resistant element.
   3. Efficiency, maintenance, or safety of any operational element.
   4. Visual qualities of sight exposed elements.
   5. Work of Owner or separate contractor.

B. Include in request:
   1. Identification of Project.
   2. Location and description of affected work.
   3. Necessity for cutting or alteration.
   4. Description of proposed work, and products to be used.
   5. Alternatives to cutting and patching.
   6. Effect on work of Owner or separate contractor.
   7. Written permission of affected separate contractor.
   8. Date and time work will be executed.
   9. Temporary interruption of utilities affected.

PART 2 PRODUCTS

2.01 MATERIALS

A. Primary Products: Those required for original installation.

B. Product Substitution: For any proposed change in materials, submit request for substitution under provisions of Section 01600.

PART 3 EXECUTION

3.01 EXAMINATION

A. Inspect existing conditions prior to commencing Work, including elements subject to damage or movement during cutting and patching.

B. After uncovering existing work, inspect conditions affecting performance of work.

C. Beginning of cutting or patching means acceptance of existing conditions.

3.02 PREPARATION

A. Provide temporary supports to ensure structural integrity of the Work. Provide devices and methods to protect other portions of Project from damage.

B. Provide protection from elements for areas which may be exposed by uncovering work.

3.03 CUTTING AND PATCHING

A. Execute cutting, fitting, and patching to complete work.

B. Fit parts or products together, to integrate with other work.

C. Uncover work to install ill-timed work.

D. Remove and replace defective or non-conforming work.

E. Remove samples of installed work for testing when requested by the Architect.

F. Provide openings in the work for penetration of mechanical and electrical work.

3.04 PERFORMANCE

A. Execute work by methods to avoid damage to other Work, and which will provide appropriate surfaces to receive patching and finishing. Execute work to minimize noise, dust, and impact to adjacent occupied areas. Schedule work to minimize disruption to the Owner's activities.

B. Employ original installer under this Contract to perform cutting and patching for weather exposed and moisture resistant elements, and sight-exposed surfaces. Accomplish work in accordance with applicable requirements of particular specification section governing construction and material.

C. Cut rigid materials using grinding tools, saws or core drill. Pneumatic tools and impact tools are not permitted.

D. Restore work with new products and materials in accordance with requirements of Contract Documents.

E. Maintain integrity of wall, roof, ceiling and floor construction; completely seal voids.

F. Fit work air tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.

G. At penetrations of fire rated and smoke separation walls, partitions, ceiling, or floor construction, completely seal voids with U.L. fire rated material and assemblies to maintain rating of the penetrated element.

H. Refinish surfaces to match adjacent finish. For continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit.

I. Clean areas and spaces where cutting and patching occurs.

END OF SECTION

SECTION 01 77 00

CONTRACT CLOSEOUT

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Closeout procedures.

B. Final cleaning.

C. Adjusting.

D. Project record documents.

E. Operation and maintenance data.

F. Warranties.

G. Spare parts and maintenance materials.

H. Substantial Completion Inspection.

I. Final Acceptance Inspection.

1.02 RELATED SECTIONS

A. Section 01 50 00 - Construction Facilities and Temporary Controls: Progress cleaning.

1.03 CLOSEOUT PROCEDURES

A. Submit written certification that Contract Documents have been reviewed, Work has been inspected, and that Work is complete in accordance with Contract Documents and ready for Architect's inspection.

B. Provide statement of occupancy to Owner, executed by governing authorities.

C. Submit final Application for Payment identifying total adjusted Contract Sum, previous payments, and sum remaining due.

D. Owner will occupy portions of the building as specified in Section 01010.

1.04 FINAL CLEANING

A. Execute final cleaning prior to inspection.

B. Clean interior and exterior glass and surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces, vacuum carpeted and soft surfaces.

C. Clean equipment and fixtures to a sanitary condition.

D. Replace filters of operating equipment.

E. Clean debris from roofs, gutters, downspouts, and drainage systems.

F. Clean site; sweep paved areas, rake clean landscaped surfaces.

G. Remove waste and surplus materials, rubbish, and construction facilities from the site.

1.05 ADJUSTING

A. Adjust operating Products and equipment to ensure smooth and unhindered operation.

1.06 PROJECT RECORD DOCUMENTS

A. Maintain on site, one set of the following record documents; record actual revisions to the Work:

1. Contract Drawings.
2. Specifications.
3. Addenda.
4. Change Orders and other Modifications to the Contract.
5. Reviewed shop drawings, product data, and samples.

B. Store Record Documents separate from documents used for construction.

C. Record information concurrent with construction.

D. Specifications: Legibly mark and record at each Product section description of actual Products installed, including the following:

1. Manufacturer's name and product model and number.
2. Product substitutions or alternates utilized.
3. Changes made by Addenda and Contract Modifications.

E. Record Documents and Shop Drawings: Legibly mark each item to record actual construction including:

1. Measured depths of foundations in relation to finish main floor datum.
2. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
3. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
4. Field changes of dimension and detail.
5. Details not on original Contract Drawings.

F. Delete Architect title block from all documents.

G. Submit documents to Architect with claim for final Application for Payment.

1.07 OPERATION AND MAINTENANCE DATA

A. Submit two sets prior to final inspection, bound in 8-1/2 x 11 inch text pages, three "D size" ring capacity expansion binders with durable plastic covers.

B. Prepare binder covers with printed title "OPERATION AND MAINTENANCE INSTRUCTIONS", title of project, and subject matter of binder when multiple binders are required.

C. Internally subdivide the binder contents with permanent page dividers, logically organized as described below; with tab titling clearly printed under reinforced laminated plastic tabs.

D. Contents: Prepare a Table of Contents for each volume, with each Product or system description identified, type on 30 pound white paper.

E. Part 1: Directory, listing names, addresses, and telephone numbers of Architect, Architect's Consultants, Special Consultants, Contractor, Subcontractors, and major equipment suppliers.

F. Part 2: Operation and maintenance instructions, arranged by system and subdivided by specification section. For each category, identify names, addresses, and telephone numbers of Subcontractors and suppliers. Identify the following:

1. Significant design criteria.
2. List of equipment.

3. Parts list for each component.
4. Operating instructions.
5. Maintenance instructions for equipment and systems.
6. Maintenance instructions for finishes, including recommended cleaning methods and materials and special precautions identifying detrimental agents.

G. Part 3: Project documents and certificates, including the following:

1. Shop drawings and product data.
2. Air and water balance reports.
3. Certificates.
4. Photocopies of warranties and bonds.
5. Code Letter - General Contractor (certifying that all demolition, new, and concealed work was done according to State approved plans) -Notarized
6. Flame Spread Information - (as applicable)
   a) Acoustical Ceiling Tile
   b) Flooring - VCT, carpet, welded seam products
   c) Vinyl Cove Base
   d) Paint
   e) Vinyl Wall covering
   f) Acrovyn (IPC) wall covering
   g) Fireproofing materials
   h) Pipe Insulation
   i) Window Treatments
   j) Cubicle Curtains
   k) Fabrics
7. Electrical Certification (Normal and Emergency)
8. Letter - Electrical - Notarized
9. Ground and Polarity Testing Letter - Notarized
10. Fire Alarm Certification
11. Code Letter - HVAC - Notarized
12. Balancing Reports
13. Code Letter - Plumbing - Notarized
14. Medical Gases Certification
15. Fire Rating Certification - frames, door, hardware

H. Submit one copy of completed volumes in final form 15 days prior to final Inspection. This copy will be returned with Architect comments. Revise content of documents as required prior to final submittal.

I. Submit final volumes revised, within ten days after final inspection.

1.08 WARRANTIES

A. Provide duplicate notarized copies.

B. Execute and assemble documents from Subcontractors, suppliers, and manufacturers.

C. Provide Table of Contents and assemble in three "D size" ring binder with durable plastic cover.

D. Submit prior to final Application for Payment.

E. For items of Work delayed beyond date of Substantial Completion, provide updated submittal within ten days after acceptance, listing date of acceptance as start of warranty period.

1.09 SPARE PARTS AND MAINTENANCE MATERIALS

A. Provide products, spare parts, maintenance and extra materials in quantities specified in individual specification Sections.

B. Deliver to Project site and place in location directed by Owner; obtain receipt prior to final payment.

PART 2 PRODUCTS

Not used

PART 3 EXECUTION

3.01 SUBSTANTIAL COMPLETION INSPECTION

A. Inspection Procedures: On receipt of a request for inspection, the Architect and Owner will either proceed with inspection or advise the Contractor of unfilled requirements. The Architect will prepare the Certificate of Substantial Completion following inspection, or advise the Contractor of construction that must be completed or corrected before the certificate will be issued.

1. The Architect and Owner will repeat inspection when assured that the Work has been substantially completed.
2. Results of the completed inspection will form the basis of requirements for final acceptance inspection.

B. The Architect and Owner will repeat the Substantial Completion inspection once. If there are still unfulfilled requirements the Contractor

will be backcharged against final payment for Architect's and Owner's time and expense.

3.02 FINAL ACCEPTANCE INSPECTION

A. Preliminary Procedures: Before requesting final acceptance inspection for certification of final acceptance and final payment, complete the following.

1. Submit the final payment request with releases and supporting documentation not previously submitted and accepted. Include certificates of insurance for products and completed operations where required.
2. Submit an updated final statement, accounting for final additional changes to the Contract Sum.
3. Submit a certified copy of the Architect's substantial completion inspection list of items to be completed or corrected, stating that each item has been completed or otherwise resolved for acceptance, and the list has been endorsed and dated by the Architect.
4. Submit final meter readings for utilities, a measured record of stored fuel, and similar data as of the date of Substantial Completion, or when the Owner took possession of and responsibility for corresponding elements of the Work.
5. Submit consent of surety to final payment.
6. Submit evidence of final, continuing insurance coverage complying with insurance requirements.

B. Inspection Procedure: The Architect and Owner will inspect the Work upon receipt of notice that the Work, including inspection list items from earlier inspections, has been completed.

1. Upon completion of inspection, the Architect will prepare a certificate of final payment, or advise the Contractor of Work that is incomplete, or of obligations that have not been fulfilled but are required for final acceptance.
2. If necessary, reinspection will be repeated once by the Owner and Architect.

END OF SECTION

SECTION 02 41 19

SELECTIVE DEMOLITION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Cut out and remove existing masonry as indicated.

B. Cut out and remove existing walls, partitions and floor construction as indicated.

C. Remove doors and frames as indicated.

D. Remove unused utilities in their entirety.

E. Remove interior finishes as required to accommodate new construction.

F. Demolish portions of building construction indicated and noted on drawings as required to accommodate new construction.

G. Salvage identified items and turn over to Owner.

H. Remove demolished materials from site, not designated as salvage by Owner.

1.02 RELATED SECTIONS

A. Section 04 20 00 – Unit Masonry: Cutting and re-building existing masonry wall.

B. Divisions 15 & 16 - Disconnecting and capping work of the respective mechanical and electrical trades.

1.03 SUBMITTALS

A. Submit demolition and removal procedures and schedule.

1.04 EXISTING CONDITIONS

A. Conduct demolition to minimize interference with adjacent construction to remain.

B. Provide, erect, and maintain temporary barriers and security devices.

C. Conduct operations with minimum interference to public and private thoroughfares. Maintain egress and access at all times.

D. Provide temporary weather protection during interval between demolition and removal of existing construction on exterior surfaces and installation of new construction to insure that no water leakage or damage occurs to structure or interior areas of existing building.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 PREPARATION

A. Protect existing appurtenances and materials which are not to be demolished.

B. Disconnect, remove, and cap designated utility lines within demolition areas.

C. Mark location of disconnected utilities. Identify utilities and indicate capping locations on Project Record Documents.

D. Protect from damage existing work that is to remain in place and becomes exposed during demolition operations.

E. If hazardous materials are encountered, stop work, enclose in plastic wrapping and notify Owner.

3.02 EXECUTION

A. Demolish indicated construction and appurtenances in an orderly and careful manner.

B. Cease operations and notify Architect immediately if adjacent construction appears to be endangered. Do not resume operations until corrective measures have been taken.

C. Except where designated as salvage, immediately remove demolished material from site.

D. Sale of material or equipment not permitted at site.

E. Remove and promptly dispose of contaminated, vermin infested, or dangerous materials encountered.

F. Do not burn or bury materials on site.

G. Promptly repair damages caused to adjacent facilities by demolition work at no cost to Owner.

H. Unless otherwise noted, HVAC, plumbing and electrical systems, and equipment, lines, pipes, ducts and appurtenances shall be removed in their entirety and disposed of offsite. Owner retains the right to claim any equipment by notifying the Contractor, prior to demolition.

3.03 SALVAGE ITEMS

A. See drawings for list of items.

END OF SECTION

SECTION 02 75 10

CEMENT CONCRETE PAVEMENT

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.02 SUMMARY

A. This Section includes exterior cement concrete pavement for the following:

1. Curbs
2. Walkways

B. Related Sections include the following:

1. Division 2 Section "Earthwork" for subgrade preparation, grading, and subbase course.
2. Division 2 Section "Pavement Joint Sealants" for joint sealants of joints in concrete pavement and at isolation joints of concrete pavement with adjacent construction.
3. Division 3 Section "Cast-in-Place Concrete" for general building applications of concrete.

1.03 DEFINITIONS

A. Cementitious Materials: Portland cement alone or in combination with one or more of blended hydraulic cement, fly ash and other pozzolans, and ground granulated blast-furnace slag.

1.04 SUBMITTALS

A. PRODUCT DATA. Unless otherwise indicated, submit the following for each type of product provided under work of this Section:
1. Include technical data and tested physical and performance properties.

B. Design Mixtures: For each concrete pavement mixture. Include alternate mixture designs when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.

C. Qualification Data: For manufacturer and testing agency.

D. Material Test Reports: From a qualified testing agency indicating and interpreting test results for compliance of the following with requirements indicated, based on comprehensive testing of current materials:

1. Aggregates.

E. Material Certificates: Signed by manufacturers certifying that each of the following materials complies with requirements:

1. Cementitious materials.
2. Steel reinforcement and reinforcement accessories.
3. Admixtures.
4. Curing compounds.
5. Applied finish materials.
6. Bonding agent or epoxy adhesive.
7. Joint fillers.

F. Field quality-control test reports.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Manufacturer of ready-mixed concrete products who complies with ASTM C 94/C 94M requirements for production facilities and equipment.

1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities."

B. Testing Agency Qualifications: An independent agency qualified according to ASTM C 1077 and ASTM E 329 for testing indicated, as documented according to ASTM E 548.

C. ACI Publications: Comply with ACI 301, "Specification for Structural Concrete," unless modified by requirements in the Contract Documents.

D. Concrete Testing Service: Engage a qualified independent testing agency to perform material evaluation tests and to design concrete mixtures.

1.06 PROJECT CONDITIONS

A. Traffic Control: Maintain access for vehicular and pedestrian traffic as required for other construction activities.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:

1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, products specified.
2. Products: Subject to compliance with requirements, provide one of the products specified.
3. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, manufacturers specified.
4. Manufacturers: Subject to compliance with requirements, provide products by one of the manufacturers specified.

2.02 FORMS

A. Form Materials: Plywood, metal, metal-framed plywood, or other approved panel-type materials to provide full-depth, continuous, straight, smooth exposed surfaces.

1. Use flexible or curved forms for curves.

B. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.

2.03 STEEL REINFORCEMENT

A. Plain-Steel Welded Wire Reinforcement: ASTM A 185, fabricated from as-drawn steel wire into flat sheets.

B. Deformed-Steel Welded Wire Reinforcement: ASTM A 497, flat sheet.

C. Reinforcing Bars: ASTM A 615/A 615M, Grade 60 (Grade 420); deformed.

D. Steel Bar Mats: ASTM A 184/A 184M; with ASTM A 615/A 615M, Grade 60 (Grade 420), deformed bars; assembled with clips.

E. Plain Steel Wire: ASTM A 82, as drawn.

F. Deformed-Steel Wire: ASTM A 496.

G. Joint Dowel Bars: Plain steel bars, ASTM A 615/A 615M, Grade 60 (Grade 420). Cut bars true to length with ends square and free of burrs.

H. Tie Bars: ASTM A 615/A 615M, Grade 60 (Grade 420), deformed.

I. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars, welded wire reinforcement, and dowels in place. Manufacture bar supports according to CRSI's "Manual of Standard Practice" from steel wire, plastic, or precast concrete of greater compressive strength than concrete, and as follows:

2.04 CONCRETE MATERIALS

A. Cementitious Material: Use the following cementitious materials, of the same type, brand, and source throughout the Project:

1. Portland Cement: ASTM C 150, Type I, gray. Supplement with the following:

2. Blended Hydraulic Cement: ASTM C 595, Type IP, portland-pozzolan cement.

B. Normal-Weight Aggregates: ASTM C 33, Class 4M coarse aggregate, uniformly graded. Provide aggregates from a single source with documented service record data of at least 10 years' satisfactory service in similar pavement applications and service conditions using similar aggregates and cementitious materials.

1. Maximum Coarse-Aggregate Size: 3/4 inch (19 mm) nominal.
2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.

C. Water: ASTM C 94/C 94M.

D. Air-Entraining Admixture: ASTM C 260.

E. Chemical Admixtures: Provide admixtures certified by manufacturer to be compatible with other admixtures and to contain not more than 0.1 percent water-soluble chloride ions by mass of cementitious material.

1. Water-Reducing Admixture: ASTM C 494/C 494M, Type A.
2. Retarding Admixture: ASTM C 494/C 494M, Type B.
3. Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type D.
4. High-Range, Water-Reducing Admixture: ASTM C 494/C 494M, Type F.
5. High-Range, Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type G.
6. Plasticizing and Retarding Admixture: ASTM C 1017/C 1017M, Type II.

2.05 CURING MATERIALS

A. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. (305 g/sq. m) dry.

B. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.

C. Water: Potable.

D. Evaporation Retarder: Waterborne, monomolecular film forming; manufactured for application to fresh concrete.

1. Available Products:

a. Axim Concrete Technologies; Cimfilm.
b. Burke by Edeco; BurkeFilm.
c. ChemMasters; Spray-Film.
d. Conspec Marketing & Manufacturing Co., Inc.; Aquafilm.
e. Dayton Superior Corporation; Sure Film.
f. Euclid Chemical Company (The); Eucobar.
g. Kaufman Products, Inc.; Vapor Aid.
h. Lambert Corporation; Lambco Skin.
i. L&M Construction Chemicals, Inc.; E-Con.
j. MBT Protection and Repair, ChemRex Inc.; Confilm.
k. Meadows, W. R., Inc.; Sealtight Evapre.
l. Metalcrete Industries; Waterhold.
m. Nox-Crete Products Group, Kinsman Corporation; Monofilm.
n. Sika Corporation, Inc.; SikaFilm.
o. Symons Corporation; Finishing Aid.
p. Vexcon Chemicals, Inc.; Certi-Vex EnvioAssist.

2.06 RELATED MATERIALS

A. Expansion- and Isolation-Joint-Filler Strips: ASTM D 1751, asphalt-saturated cellulosic fiber.

B. Color Pigment: ASTM C 979, synthetic mineral-oxide pigments or colored water-reducing admixtures; color stable, free of carbon black, nonfading, and resistant to lime and other alkalis.

1. Available Manufacturers:

a. Bayer Corporation.
b. ChemMasters.
c. Conspec Marketing & Manufacturing Co., Inc.
d. Davis Colors.
e. Elementis Pigments, Inc.
f. Hoover Color Corporation.
g. Lambert Corporation.
h. Scofield, L. M.Company.
i. Solomon Colors.

2. Color: Match Architect's sample.

C. Slip-Resistive Aggregate Finish: Factory-graded, packaged, rustproof, nonglazing, abrasive aggregate of fused aluminum-oxide granules or crushed emery with emery aggregate containing not less than 50 percent aluminum oxide and not less than 20 percent ferric oxide; unaffected by freezing, moisture, and cleaning materials.

D. Bonding Agent: ASTM C 1059, Type II, non-redispersible, acrylic emulsion or styrene butadiene.

E. Epoxy Bonding Adhesive: ASTM C 881, two-component epoxy resin, capable of humid curing and bonding to damp surfaces, of class suitable for application temperature and of grade to requirements, and as follows:

1. Types IV and V, load bearing, for bonding hardened or freshly mixed concrete to hardened concrete.

F. Pigmented Mineral Dry-Shake Hardener: Factory-packaged dry combination of portland cement, graded quartz aggregate, color pigments, and plasticizing admixture. Use color pigments that are finely ground, nonfading mineral oxides interground with cement.

1. Available Products:

a. Conspec Marketing & Manufacturing Co., Inc.; Conshake 600 Colortone.
b. Dayton Superior Corporation; Quartz Tuff.
c. Euclid Chemical Company (The); Surflex.
d. Lambert Corporation; Colorhard.
e. L&M Construction Chemicals, Inc.; Quartz Plate FF.
f. MBT Protection and Repair, ChemRex Inc.; Mastercron.
g. Metalcrete Industries; Floor Quartz.
h. Scofield, L. M. Company; Lithochrome Color Hardener.
i. Symons Corporation; Hard Top.
j. Others as approved by the Architect.

2. Color: Match Architect's sample.

2.07 PAVEMENT MARKINGS

A. Pavement-Marking Paint: Alkyd-resin type, lead and chromate free, ready mixed, complying with FS TT-P-115, Type II.

1. Color: White, unless otherwise indicated.

B. Pavement-Marking Paint: Latex, waterborne emulsion, lead and chromate free, ready mixed, complying with FS TT-P-1952, with drying time of less than 45 minutes.

1. Color: White, unless otherwise indicated.

2.08 CONCRETE MIXTURES

A. Prepare design mixtures, proportioned according to ACI 301, for each type and strength of normal-weight concrete determined by either laboratory trial mixes or field experience.

1. Use a qualified independent testing agency for preparing and reporting proposed concrete mixture designs for the trial batch method.

B. Proportion mixtures to provide normal-weight concrete with the following properties:

1. Compressive Strength (28 Days): 3000 psi (20.7 MPa).
2. Maximum Water-Cementitious Materials Ratio at Point of Placement: 0.45.
3. Slump Limit: 4 inches (100 mm), plus or minus 1 inch (25 mm).

C. Add air-entraining admixture at manufacturer's prescribed rate to result in normal-weight concrete at point of placement having an air content as follows:

1. Air Content: 5 percent plus or minus 1.5 percent for 3/4-inch (19-mm) nominal maximum aggregate size

D. Limit water-soluble, chloride-ion content in hardened concrete to 0.30 percent by weight of cement.

E. Chemical Admixtures: Use admixtures according to manufacturer's written instructions.

F. Color Pigment: Add color pigment to concrete mixture according to manufacturer's written instructions and to result in hardened concrete color consistent with approved mockup.

2.09 CONCRETE MIXING

A. Ready-Mixed Concrete: Measure, batch, and mix concrete materials and concrete according to ASTM C 94/C 94M. Furnish batch certificates for each batch discharged and used in the Work.

1. When air temperature is between 85 deg F (30 deg C) and 90 deg F (32 deg C), reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F (32 deg C), reduce mixing and delivery time to 60 minutes.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine exposed subgrades and subbase surfaces for compliance with requirements for dimensional, grading, and elevation tolerances.

1. Compact and proof-roll subgrade to achieve uniform stable surface compliant with requirements indicated on contract drawings.
2. Subbase with soft spots and areas of pumping or rutting exceeding depth of 1/2 inch (13 mm) require correction according to requirements in Division 2 Section "Earthwork."

B. Proceed with concrete pavement operations only after nonconforming conditions have been corrected and subgrade is ready to receive pavement.

3.02 PREPARATION

A. Remove loose material from compacted subbase surface immediately before placing concrete.

3.03 EDGE FORMS AND SCREED CONSTRUCTION

A. Set, brace, and secure edge forms, bulkheads, and intermediate screed guides for pavement to required lines, grades, and elevations. Install forms to allow continuous progress of work and so forms can remain in place at least 24 hours after concrete placement.

B. Clean forms after each use and coat with form-release agent to ensure separation from concrete without damage.

3.04 STEEL REINFORCEMENT

A. General: Comply with CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.

B. Clean reinforcement of loose rust and mill scale, earth, ice, or other bond-reducing materials.

C. Arrange, space, and securely tie bars and bar supports to hold reinforcement in position during concrete placement. Maintain minimum cover to reinforcement.

D. Install welded wire reinforcement in lengths as long as practicable. Lap adjoining pieces at least one full mesh, and lace splices with wire. Offset laps of adjoining widths to prevent continuous laps in either direction.

3.05 JOINTS

A. General: Form construction, isolation, and contraction joints and tool edgings true to line with faces perpendicular to surface plane of concrete. Construct transverse joints at right angles to centerline, unless otherwise indicated.

1. When joining existing pavement, place transverse joints to align with previously placed joints, unless otherwise indicated.

B. Construction Joints: Set construction joints at side and end terminations of pavement and at locations where pavement operations are stopped for more than one-half hour unless pavement terminates at isolation joints.

1. Continue steel reinforcement across construction joints, unless otherwise indicated. Do not continue reinforcement through sides of pavement strips, unless otherwise indicated.
2. Provide tie bars at sides of pavement strips where indicated.
3. Butt Joints: Use epoxy bonding adhesive at joint locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.

C. Isolation Joints: Form isolation joints of preformed joint-filler strips abutting concrete curbs, catch basins, manholes, inlets, structures, walks, other fixed objects, and where indicated.

1. Locate expansion joints at intervals of 25 feet (7.13 m), unless otherwise indicated.
2. Extend joint fillers full width and depth of joint.
3. Terminate joint filler not less than 1/2 inch (13 mm) or more than 1 inch (25 mm) below finished surface if joint sealant is indicated.
4. Place top of joint filler flush with finished concrete surface if joint sealant is not indicated.
5. Furnish joint fillers in one-piece lengths. Where more than one length is required, lace or clip joint-filler sections together.
6. Protect top edge of joint filler during concrete placement with metal, plastic, or other temporary preformed cap. Remove protective cap after concrete has been placed on both sides of joint.

D. Contraction Joints: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of the concrete thickness, as follows:

1. Grooved Joints: Form contraction joints after initial floating by grooving and finishing each edge of joint with grooving tool to a 1/4-inch (6-mm) radius. Repeat grooving of contraction joints after applying surface finishes. Eliminate groover marks on concrete surfaces.

E. Edging: Tool edges of pavement, gutters, curbs, and joints in concrete after initial floating with an edging tool to a 1/4-inch (6-mm) radius. Repeat tooling of edges after applying surface finishes. Eliminate tool marks on concrete surfaces.

3.06 CONCRETE PLACEMENT

A. Inspection: Before placing concrete, inspect and complete formwork installation, steel reinforcement, and items to be embedded or cast in. Notify other trades to permit installation of their work.

B. Remove snow, ice, or frost from subbase surface and reinforcement before placing concrete. Do not place concrete on frozen surfaces.

C. Moisten subbase to provide a uniform dampened condition at time concrete is placed. Do not place concrete around manholes or other structures until they are at required finish elevation and alignment.

D. Comply with ACI 301 requirements for measuring, mixing, transporting, and placing concrete.

E. Do not add water to fresh concrete after testing.

F. Deposit and spread concrete in a continuous operation between transverse joints. Do not push or drag concrete into place or use vibrators to move concrete into place.

G. Consolidate concrete according to ACI 301 by mechanical vibrating equipment supplemented by hand spading, rodding, or tamping.

1. Consolidate concrete along face of forms and adjacent to transverse joints with an internal vibrator. Keep vibrator away from joint assemblies, reinforcement, or side forms. Use only square-faced shovels for hand spreading and consolidation. Consolidate with care to prevent dislocating reinforcement, dowels, and joint devices.

H. Screed pavement surfaces with a straightedge and strike off.

I. Commence initial floating using bull floats or darbies to impart an open textured and uniform surface plane before excess moisture or bleed water appears on the surface. Do not further disturb concrete surfaces before beginning finishing operations or spreading surface treatments.

J. Curbs and Gutters: When automatic machine placement is used for curb and gutter placement, submit revised mix design and laboratory test results that meet or exceed requirements. Produce curbs and gutters to required cross section, lines, grades, finish, and jointing as specified for formed concrete. If results are not approved, remove and replace with formed concrete.

K. Slip-Form Pavers: When automatic machine placement is used for pavement, submit revised mix design and laboratory test results that meet or exceed requirements. Produce pavement to required thickness, lines, grades, finish, and jointing as required for formed pavement.

1. Compact subbase and prepare subgrade of sufficient width to prevent displacement of paver machine during operations.

L. Cold-Weather Placement: Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.

1. When air temperature has fallen to or is expected to fall below 40 deg F (4.4 deg C), uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than 50 deg F (10 deg C) and not more than 80 deg F (27 deg C) at point of placement.
2. Do not use frozen materials or materials containing ice or snow.
3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mix designs.

M. Hot-Weather Placement: Comply with ACI 301 and as follows when hot-weather conditions exist:

1. Cool ingredients before mixing to maintain concrete temperature below 90 deg F (32 deg C) at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
2. Cover steel reinforcement with water-soaked burlap so steel temperature will not exceed ambient air temperature immediately before embedding in concrete.
3. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade moisture uniform without standing water, soft spots, or dry areas.

3.07 FLOAT FINISHING

A. General: Do not add water to concrete surfaces during finishing operations.

B. Float Finish: Begin the second floating operation when bleed-water sheen has disappeared and concrete surface has stiffened sufficiently to permit operations. Float surface with power-driven floats, or by hand floating if area is small or inaccessible to power units. Finish surfaces to true planes. Cut down high spots and fill low spots. Refloat surface immediately to uniform granular texture.

1. perpendicular to line of traffic, to provide a uniform, gritty texture.
2. Medium-to-Fine-Textured Broom Finish: Draw a soft bristle broom across float-finished concrete surface perpendicular to line of traffic to provide a uniform, fine-line texture.

3.08 CONCRETE PROTECTION AND CURING

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures.

B. Comply with ACI 306.1 for cold-weather protection.

C. Evaporation Retarder: Apply evaporation retarder to concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h (1 kg/sq. m x h) before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.

D. Begin curing after finishing concrete but not before free water has disappeared from concrete surface.

E. Curing Methods: Cure concrete by moisture curing, moisture-retaining-cover curing, curing compound, or a combination of these as follows:
   1. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.

3.09 PAVEMENT TOLERANCES

A. Comply with tolerances of ACI 117 and as follows:

   1. Elevation: 1/4 inch (6 mm).
   2. Thickness: Plus 3/8 inch (10 mm), minus 1/4 inch (6 mm).
   3. Surface: Gap below 10-foot- (3-m-) long, unleveled straightedge not to exceed 1/4 inch (6 mm).
   4. Lateral Alignment and Spacing of Tie Bars and Dowels: 1 inch (25 mm).
   5. Vertical Alignment of Tie Bars and Dowels: 1/4 inch (6 mm).
   6. Alignment of Tie-Bar End Relative to Line Perpendicular to Pavement Edge: 1/2 inch (13 mm).
   7. Alignment of Dowel-Bar End Relative to Line Perpendicular to Pavement Edge: Length of dowel 1/4 inch per 12 inches (6 mm per 300 mm).
   8. Joint Spacing: 3 inches (75 mm).
   9. Contraction Joint Depth: Plus 1/4 inch (6 mm), no minus.
   10. Joint Width: Plus 1/8 inch (3 mm), no minus.

3.10 PAVEMENT MARKING

A. Do not apply pavement-marking paint until layout, colors, and placement have been verified with Architect.

B. Allow concrete pavement to cure for 28 days and be dry before starting pavement marking.

C. Sweep and clean surface to eliminate loose material and dust.

D. Apply paint with mechanical equipment to produce pavement markings of dimensions indicated with uniform, straight edges. Apply at manufacturer's recommended rates to provide a minimum wet film thickness of 15 mils (0.4 mm).

3.11 FIELD QUALITY CONTROL

A. Testing Agency: Engage qualified independent testing and inspecting agency to perform field tests and inspections and prepare test reports.

B. Testing Services: Testing of composite samples of fresh concrete obtained according to ASTM C 172 shall be performed according to the following requirements:

1. Testing Frequency: Obtain at least 1 composite sample for each 500 cu. yd. (380 cu. m) or fraction thereof of each concrete mix placed each day.

    a. When frequency of testing will provide fewer than five compressive-strength tests for each concrete mixture, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.

2. Slump: ASTM C 143/C 143M; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mix. Perform additional tests when concrete consistency appears to change.
3. Air Content: ASTM C 231, pressure method; one test for each composite sample, but not less than one test for each day's pour of each concrete mix.
4. Concrete Temperature: ASTM C 1064; one test hourly when air temperature is 40 deg F (4.4 deg C) and below and when 80 deg F (27 deg C) and above, and one test for each composite sample.
5. Compression Test Specimens: ASTM C 31/C 31M; cast and laboratory cure one set of three standard cylinder specimens for each composite sample.
6. Compressive-Strength Tests: ASTM C 39/C 39M; test 1 specimen at 7 days and 2 specimens at 28 days.

    a. A compressive-strength test shall be the average compressive strength from 2 specimens obtained from same composite sample and tested at 28 days.

C. Strength of each concrete mix will be satisfactory if average of any 3 consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi (3.4 MPa).

D. Test results shall be reported in writing to Architect, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.

E. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Architect but will not be used as sole basis for approval or rejection of concrete.

F. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Architect.

G. Remove and replace concrete pavement where test results indicate that it does not comply with specified requirements.

H. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

3.12 REPAIRS AND PROTECTION

A. Remove and replace concrete pavement that is broken, damaged, or defective or that does not comply with requirements in this Section.

B. Drill test cores, where directed by Architect, when necessary to determine magnitude of cracks or defective areas. Fill drilled core holes in satisfactory pavement areas with portland cement concrete bonded to pavement with epoxy adhesive.

C. Protect concrete from damage. Exclude traffic from pavement for at least 14 days after placement. When construction traffic is permitted, maintain pavement as clean as possible by removing surface stains and spillage of materials as they occur.

D. Maintain concrete pavement free of stains, discoloration, dirt, and other foreign material. Sweep concrete pavement not more than two days before date scheduled for Substantial Completion inspections.

END OF SECTION

SECTION 02 76 40

PAVEMENT JOINT SEALANTS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.02 SUMMARY

A. This Section includes the following:

1. Expansion and contraction joints within cement concrete pavement.
2. Joints between cement concrete and asphalt pavement.

B. Related Sections include the following:

1. Division 2 Section "Hot-Mix Asphalt Paving" for constructing joints between concrete and asphalt pavement.
2. Division 2 Section "Cement Concrete Pavement" for constructing joints in concrete pavement.
3. Division 7 Section "Joint Sealants" for sealing non-traffic and traffic joints in locations not specified in this Section.

1.03 SUBMITTALS

A. Samples for Verification: For each type and color of joint sealant required. Install joint-sealant samples in 1/2-inch- (13-mm-) wide joints formed between two 6-inch- (150-mm-) long strips of material matching the appearance of exposed surfaces adjacent to joint sealants.

B. Product Certificates: For each type of joint sealant and accessory, signed by product manufacturer.

C. Compatibility and Adhesion Test Reports: From sealant manufacturer, indicating the following:

1. Materials forming joint substrates and joint-sealant backings have been tested for compatibility and adhesion with joint sealants.
2. Interpretation of test results and written recommendations for primers and substrate preparation needed for adhesion.

D. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for sealants.

1.04 QUALITY ASSURANCE

A. Installer Qualifications: An employer of workers trained and approved by manufacturer.

B. Source Limitations: Obtain each type of joint sealant through one source from a single manufacturer.

C. Preconstruction Compatibility and Adhesion Testing: Submit to joint-sealant manufacturers, for testing indicated below, samples of materials that will contact or affect joint sealants.

1. Use ASTM C 1087 to determine whether priming and other specific joint preparation techniques are required to obtain rapid, optimum adhesion of joint sealants to joint substrates.
2. Submit not fewer than five pieces of each type of material, including joint substrates, shims, joint-sealant backings, secondary seals, and miscellaneous materials.
3. Schedule sufficient time for testing and analyzing results to prevent delaying the Work.
4. For materials failing tests, obtain joint-sealant manufacturer's written instructions for corrective measures including use of specially formulated primers.
5. Testing will not be required if joint-sealant manufacturers submit joint preparation data that are based on previous testing of current sealant products for adhesion to, and compatibility with, joint substrates and other materials matching those submitted.

D. Product Testing: Obtain test results for "Product Test Reports" Paragraph in "Submittals" Article from a qualified testing agency based on testing of current sealant products within a 36-month period preceding the commencement of the Work.

1. Testing Agency Qualifications: An independent testing agency qualified according to ASTM C 1021 for testing indicated, as documented according to ASTM E 548.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to Project site in original unopened containers or bundles with labels indicating manufacturer, product name and designation, color, expiration date, pot life, curing time, and mixing instructions for multicomponent materials.

B. Store and handle materials to comply with manufacturer's written instructions to prevent their deterioration or damage due to moisture, high or low temperatures, contaminants, or other causes.

1.06 PROJECT CONDITIONS

A. Do not proceed with installation of joint sealants under the following conditions:

1. When ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer.
2. When joint substrates are wet or covered with frost.
3. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
4. Where contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, products listed in other Part 2 articles.

B. Products: Subject to compliance with requirements, provide one of the products listed in other Part 2 articles.

2.02 MATERIALS, GENERAL

A. Compatibility: Provide joint sealants, backing materials, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by joint-sealant manufacturer based on testing and field experience.

B. Colors of Exposed Joint Sealants: Match Architect's samples.

2.03 COLD-APPLIED JOINT SEALANTS

A. Type NS Silicone Sealant for Concrete: Single-component, low-modulus, neutral-curing, nonsag silicone sealant complying with ASTM D 5893 for Type NS.

1. Available Products:

a. Crafco Inc.; RoadSaver Silicone.

b. Dow Corning Corporation; 888.

B. Type SL Silicone Sealant for Concrete and Asphalt: Single-component, low-modulus, neutral-curing, self-leveling silicone sealant complying with ASTM D 5893 for Type SL.

1. Available Products:

a. Crafco Inc.; RoadSaver Silicone SL.
b. Dow Corning Corporation; 890-SL.

2.04 HOT-APPLIED JOINT SEALANTS

A. Elastomeric Sealant for Concrete: Single-component formulation complying with ASTM D 3406.

1. Available Products:

a. Crafco Inc.; Superseal 444/777.
b. Meadows, W. R., Inc.; Poly-Jet 3406.

B. Sealant for Concrete and Asphalt: Single-component formulation complying with ASTM D 3405.

1. Available Products:

a. Koch Materials Company; Product No. 9005.
b. Koch Materials Company; Product No. 9030.
c. Meadows, W. R., Inc.; Sealtight Hi-Spec.

2.05 JOINT-SEALANT BACKER MATERIALS

A. General: Provide joint-sealant backer materials that are nonstaining; are compatible with joint substrates, sealants, primers, and other joint fillers; and are approved for applications indicated by joint-sealant manufacturer based on field experience and laboratory testing.

B. Round Backer Rods for Cold- and Hot-Applied Sealants: ASTM D 5249, Type 1, of diameter and density required to control sealant depth and prevent bottom-side adhesion of sealant.

C. Backer Strips for Cold- and Hot-Applied Sealants: ASTM D 5249; Type 2; of thickness and width required to control sealant depth, prevent bottom-side adhesion of sealant, and fill remainder of joint opening under sealant.

D. Round Backer Rods for Cold-Applied Sealants: ASTM D 5249, Type 3, of diameter and density required to control sealant depth and prevent bottom-side adhesion of sealant.

2.06 PRIMERS

A. Primers: Product recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting joint-sealant performance.

1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions.

B. Joint Priming: Prime joint substrates where indicated or where recommended in writing by joint-sealant manufacturer, based on preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.

3.03 INSTALLATION OF JOINT SEALANTS

A. General: Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.

B. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.

C. Install backer materials of type indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.

1. Do not leave gaps between ends of backer materials.

2. Do not stretch, twist, puncture, or tear backer materials.
3. Remove absorbent backer materials that have become wet before sealant application and replace them with dry materials.

D. Install sealants using proven techniques that comply with the following and at the same time backings are installed:

1. Place sealants so they directly contact and fully wet joint substrates.
2. Completely fill recesses provided for each joint configuration.
3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.

E. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.

1. Remove excess sealants from surfaces adjacent to joint.
2. Use tooling agents that are approved in writing by joint-sealant manufacturer and that do not discolor sealants or adjacent surfaces.

F. Provide joint configuration to comply with joint-sealant manufacturer's written instructions, unless otherwise indicated.

G. Provide recessed joint configuration for silicone sealants of recess depth and at locations indicated.

3.04 CLEANING

A. Clean off excess sealants or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved by manufacturers of joint sealants and of products in which joints occur.

3.05 PROTECTION

A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealants immediately and replace with joint sealant so installations with repaired areas are indistinguishable from the original work.

END OF SECTION

SECTION 02 92 00

LAWNS AND GRASSES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.02 SUMMARY

A. This Section includes the following:

1. Seeding.
2. Lawn renovation.

B. Related Sections include the following:

1. Division 2 Section "Site Clearing" for topsoil stripping and stockpiling.
2. Division 2 Section "Earthwork" for excavation, filling and backfilling, and rough grading.
3. Division 2 Section "Subdrainage" for subsurface drainage.
4. Division 2 Section "Exterior Plantings" for trees, shrubs, ground cover, and plants.

1.03 DEFINITIONS

A. Finish Grade: Elevation of finished surface of planting soil.

B. Manufactured Soil: Soil produced off-site by homogeneously blending mineral soils or sand with stabilized organic soil amendments to produce topsoil or planting soil.

C. Planting Soil: Native or imported topsoil, manufactured topsoil, or surface soil modified to become topsoil; mixed with soil amendments.

D. Subgrade: Surface or elevation of subsoil remaining after completing excavation, or top surface of a fill or backfill immediately beneath planting soil.

1.04 SUBMITTALS

A. Certification of Grass Seed: From seed vendor for each grass-seed monostand or mixture stating the botanical and common name and percentage by weight of each species and variety, and percentage of purity, germination, and weed seed. Include the year of production and date of packaging.

B. Product Certificates: For soil amendments and fertilizers, signed by product manufacturer.

C. Qualification Data: For landscape Installer.

D. Material Test Reports: For existing surface soil and imported topsoil.

E. Planting Schedule: Indicating anticipated planting dates for each type of planting.

F. Maintenance Instructions: Recommended procedures to be established by Owner for maintenance of lawns during a calendar year. Submit before expiration of required maintenance periods.

1.05 QUALITY ASSURANCE

A. Installer Qualifications: A qualified landscape installer whose work has resulted in successful lawn establishment.

1. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on Project site when planting is in progress.

B. Soil-Testing Laboratory Qualifications: An independent laboratory, recognized by the State Department of Agriculture, with the experience and capability to conduct the testing indicated and that specializes in types of tests to be performed.

C. Topsoil Analysis: Furnish soil analysis by a qualified soil-testing laboratory stating percentages of organic matter; gradation of sand, silt, and clay content; cation exchange capacity; sodium absorption ratio; deleterious material; pH; and mineral and plant-nutrient content of topsoil.

1. Report suitability of topsoil for lawn growth. State recommended quantities of nitrogen, phosphorus, and potash nutrients and soil amendments to be added to produce a satisfactory topsoil.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Seed: Deliver seed in original sealed, labeled, and undamaged containers.

B. Sod: Harvest, deliver, store, and handle sod according to requirements in TPI's "Specifications for Turfgrass Sod Materials" and "Specifications for Turfgrass Sod Transplanting and Installation" in its "Guideline Specifications to Turfgrass Sodding."

1.07 SCHEDULING

A. Planting Restrictions: Refer to Contract Drawings and Erosion and Sediment Control Plan as approved by the Montgomery County Conservation District.

1.08 LAWN MAINTENANCE

A. Begin maintenance immediately after each area is planted and continue until acceptable lawn is established, but for not less than the following periods:

1. Seeded Lawns: 60 days after final inspection and acceptance by Montgomery County Conservation District

a. When full maintenance period has not elapsed before end of planting season, or if lawn is not fully established, continue maintenance during next planting season.

B. Maintain and establish lawn by watering, fertilizing, weeding, mowing, trimming, replanting, and other operations. Roll, regrade, and replant bare or eroded areas and remulch to produce a uniformly smooth lawn. Provisions of Erosion and Sediment Control Plan for mulching or protecting with erosion mat/blanket shall be followed.

C. Watering: Provide and maintain temporary piping, hoses, and lawn-watering equipment to convey water from sources and to keep lawn uniformly moist to a depth of 4 inches (100 mm).

1. Schedule watering to prevent wilting, puddling, erosion, and displacement of seed or mulch. Lay out temporary watering system to avoid walking over muddy or newly planted areas.

D. Mow lawn as soon as top growth is tall enough to cut. Repeat mowing to maintain specified height without cutting more than 40 percent of grass height. Remove no more than 40 percent of grass-leaf growth in initial or subsequent mowings. Do not delay mowing until grass blades bend over and become matted. Do not mow when grass is wet. Schedule initial and subsequent mowings to maintain the following grass height:

1. Mow grass 1-1/2 to 2 inches (38 to 50 mm) high.

E. Lawn Postfertilization: Apply fertilizer after initial mowing and when grass is dry.

1. Use fertilizer that will provide actual nitrogen of at least 1 lb/1000 sq. ft. (0.45 kg/92.9 sq. m) to lawn area.

PART 2 - PRODUCTS

2.01 SEED

A. Grass Seed: Fresh, clean, dry, new-crop seed complying with AOSA's "Journal of Seed Technology; Rules for Testing Seeds" for purity and germination tolerances.

B. Seed Species: State-certified seed of grass species, as indicated on Contract Drawings.

2.02 TOPSOIL

A. Topsoil: ASTM D 5268, pH range of 5.5 to 7, a minimum of 4 percent organic material content; free of stones 1 inch (25 mm) or larger in any dimension and other extraneous materials harmful to plant growth.

1. Topsoil Source: Reuse surface soil stockpiled on-site. Verify suitability of stockpiled surface soil to produce topsoil. Clean surface soil of roots, plants, sod, stones, clay lumps, and other extraneous materials harmful to plant growth.

a. Supplement with imported or manufactured topsoil from off-site sources when quantities are insufficient. Obtain topsoil displaced from naturally well-drained construction or mining sites where topsoil occurs at least 4 inches (100 mm) deep; do not obtain from bogs or marshes.

2. Topsoil Source: Import topsoil or manufactured topsoil from off-site sources. Obtain topsoil displaced from naturally well-drained construction or mining sites where topsoil occurs at least 4 inches (100 mm) deep; do not obtain from bogs or marshes.

2.03 INORGANIC SOIL AMENDMENTS

A. Lime: ASTM C 602, agricultural limestone containing a minimum 80 percent calcium carbonate equivalent and as follows:

1. Class: Class O, with a minimum 95 percent passing through No. 8 (2.36-mm) sieve and a minimum 55 percent passing through No. 60 (0.25-mm) sieve.

B. Perlite: Horticultural perlite, soil amendment grade.

C. Agricultural Gypsum: Finely ground, containing a minimum of 90 percent calcium sulfate.

D. Sand: Clean, washed, natural or manufactured, free of toxic materials.

E. Zeolites: Mineral clinoptilolite with at least 60 percent water absorption by weight.

2.04 ORGANIC SOIL AMENDMENTS

A. Compost: Well-composted, stable, and weed-free organic matter, pH range of 5.5 to 8; moisture content 35 to 55 percent by weight; 100 percent passing through 3/4-inch (19-mm) sieve; soluble salt content of 5 to 10 decisiemens/m; not exceeding 0.5 percent inert contaminants and free of substances toxic to plantings; and as follows:

1. Organic Matter Content: 50 to 60 percent of dry weight.
2. Feedstock: Agricultural, food, or industrial residuals; biosolids; yard trimmings; or source-separated or compostable mixed solid waste.

B. Peat: Finely divided or granular texture, with a pH range of 6 to 7.5, containing partially decomposed moss peat, native peat, or reed-sedge peat and having a water-absorbing capacity of 1100 to 2000 percent.

C. Wood Derivatives: Decomposed, nitrogen-treated sawdust, ground bark, or wood waste; of uniform texture, free of chips, stones, sticks, soil, or toxic materials.

2.05 PLANTING ACCESSORIES

A. Selective Herbicides: EPA registered and approved, of type recommended by manufacturer for application.

2.06 FERTILIZER

A. Bonemeal: Commercial, raw or steamed, finely ground; a minimum of 1 percent nitrogen and 10 percent phosphoric acid.

B. Superphosphate: Commercial, phosphate mixture, soluble; a minimum of 20 percent available phosphoric acid.

C. Commercial Fertilizer: Commercial-grade complete fertilizer of neutral character, consisting of fast- and slow-release nitrogen, 50 percent derived from natural organic sources of urea formaldehyde, phosphorous, and potassium in the following composition:

1. Composition: 1 lb/1000 sq. ft. (0.45 kg/92.9 sq. m) of actual nitrogen, 4 percent phosphorous, and 2 percent potassium, by weight.
2. Composition: Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified soil-testing agency.

D. Slow-Release Fertilizer: Granular or pelleted fertilizer consisting of 50 percent water-insoluble nitrogen, phosphorus, and potassium in the following composition:

1. Composition: 20 percent nitrogen, 10 percent phosphorous, and 10 percent potassium, by weight.

2. Composition: Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified soil-testing agency.

2.07 MULCHES

A. Straw Mulch: Provide air-dry, clean, mildew- and seed-free, salt hay or threshed straw of wheat, rye, oats, or barley.

B. Fiber Mulch: Biodegradable, dyed-wood, cellulose-fiber mulch; nontoxic; free of plant-growth or germination inhibitors; with maximum moisture content of 15 percent and a pH range of 4.5 to 6.5.

C. Nonasphaltic Tackifier: Colloidal tackifier recommended by fiber-mulch manufacturer for slurry application; nontoxic and free of plant-growth or germination inhibitors.

2.08 EROSION-CONTROL MATERIALS

A. Erosion-Control Blankets: Biodegradable wood excelsior, straw, or coconut-fiber mat enclosed in a photodegradable plastic mesh. Include manufacturer's recommended steel wire staples, 4 inches (100 mm) long.

B. Erosion-Control Fiber Mesh: Biodegradable twisted jute or spun-coir mesh, a minimum of 0.92 lb/sq. yd. (0.5 kg/sq. m), with 50 to 65 percent open area. Include manufacturer's recommended steel wire staples, 4 inches (100 mm) long.

2.09 PLANTING SOIL MIX

A. Planting Soil Mix: Mix topsoil with the following soil amendments and fertilizers.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine areas to receive lawns and grass for compliance with requirements and other conditions affecting performance. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Protect structures, utilities, sidewalks, pavements, and other facilities, trees, shrubs, and plantings from damage caused by planting operations.

1. Protect adjacent and adjoining areas from hydroseeding overspray.

B. Provide erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

3.03 LAWN PREPARATION

A. Limit lawn subgrade preparation to areas to be planted.

B. Newly Graded Subgrades: Loosen subgrade to a minimum depth of 6 inches (150 mm). Remove stones larger than 1 inch (25 mm) in any dimension and sticks, roots, rubbish, and other extraneous matter and legally dispose of them off Owner's property.

1. Thoroughly blend planting soil mix off-site before spreading or spread topsoil, apply soil amendments and fertilizer on surface, and thoroughly blend planting soil mix.

    a. Delay mixing fertilizer with planting soil if planting will not proceed within a few days.
    b. Mix lime with dry soil before mixing fertilizer.

2. Spread planting soil mix to a depth of 6 inches (150 mm) but not less than required to meet finish grades after light rolling and natural settlement. Do not spread if planting soil or subgrade is frozen, muddy, or excessively wet.

C. Finish Grading: Grade planting areas to a smooth, uniform surface plane with loose, uniformly fine texture. Grade to within plus or minus 1/2 inch (13 mm) of finish elevation. Roll and rake, remove ridges, and fill depressions to meet finish grades. Limit fine grading to areas that can be planted in the immediate future.

D. Moisten prepared lawn areas before planting if soil is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil.

E. Restore areas if eroded or otherwise disturbed after finish grading and before planting.

3.04 SEEDING

A. Sow seed with spreader or seeding machine. Do not broadcast or drop seed when wind velocity exceeds 5 mph (8 km/h). Evenly distribute seed by sowing equal quantities in two directions at right angles to each other.

1. Do not use wet seed or seed that is moldy or otherwise damaged.

B. Sow seed at the rate of at rate shown on Contract Drawings

C. Rake seed lightly into top 1/8 inch (3 mm) of topsoil, roll lightly, and water with fine spray.

D. Protect seeded areas with slopes exceeding [1V:6H with erosion-control fiber mesh] [and] [1V:3H with erosion-control blankets] installed and stapled according to manufacturer's written instructions.

3.05 HYDROSEEDING

A. Hydroseeding: Mix specified seed, fertilizer, and fiber mulch in water, using equipment specifically designed for hydroseed application. Continue mixing until uniformly blended into homogeneous slurry suitable for hydraulic application.

1. Mix slurry with nonasphaltic tackifier.
2. Apply slurry uniformly to all areas to be seeded in a one-step process. Apply mulch at a minimum rate of 1500-lb/acre (15.3-kg/92.9 sq. m) dry weight but not less than the rate required to obtain specified seed-sowing rate.

3.06 LAWN RENOVATION

A. Renovate existing lawn.

B. Renovate existing lawn damaged by Contractor's operations, such as storage of materials or equipment and movement of vehicles.

1. Reestablish lawn where settlement or washouts occur or where minor regrading is required.

C. Remove sod and vegetation from diseased or unsatisfactory lawn areas; do not bury in soil.

D. Remove topsoil containing foreign materials resulting from Contractor's operations, including oil drippings, fuel spills, stone, gravel, and other construction materials, and replace with new topsoil.

E. Mow, dethatch, core aerate, and rake existing lawn.

F. Remove weeds before seeding. Where weeds are extensive, apply selective herbicides as required. Do not use pre-emergence herbicides.

G. Remove waste and foreign materials, including weeds, soil cores, grass, vegetation, and turf, and legally dispose of them off Owner's property.

H. Till stripped, bare, and compacted areas thoroughly to a soil depth of 6 inches (150 mm).

I. Apply soil amendments and initial fertilizers required for establishing new lawns and mix thoroughly into top 4 inches (100 mm) of existing soil. Provide new planting soil to fill low spots and meet finish grades.

J. Apply seed and protect with straw mulch as required for new lawns.

K. Water newly planted areas and keep moist until new lawn is established.

3.07 SATISFACTORY LAWNS

A. Satisfactory Seeded Lawn: At end of maintenance period, a healthy, uniform, close stand of grass has been established, free of weeds and surface irregularities, with coverage exceeding requirements of the Soil Erosion and Sediment Control Plan.

B. Reestablish lawns that do not comply with requirements and continue maintenance until lawns are satisfactory.

3.08 CLEANUP AND PROTECTION

A. Promptly remove soil and debris created by lawn work from paved areas. Clean wheels of vehicles before leaving site to avoid tracking soil onto roads, walks, or other paved areas.

B. Erect barricades and warning signs as required to protect newly planted areas from traffic. Maintain barricades throughout maintenance period and remove after lawn is established.

C. Remove erosion-control measures after grass establishment period.

END OF SECTION

SECTION 02 93 00

EXTERIOR PLANTS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.02 SUMMARY

A. This Section includes the following:

1. Trees.
2. Shrubs.
3. Ground cover.
4. Plants.

B. Related Sections include the following:

1. Division 2 Section "Earthwork" for excavation, filling, and rough grading and for subsurface aggregate drainage and drainage backfill materials.
2. Division 2 Section "Subdrainage" for below-grade drainage of landscaped areas, paved areas, and wall perimeters.

1.03 DEFINITIONS

A. Balled and Burlapped Stock: Exterior plants dug with firm, natural balls of earth in which they are grown, with ball size not less than sizes indicated; wrapped, tied, rigidly supported, and drum-laced as recommended by ANSI Z60.1.

B. Balled and Potted Stock: Exterior plants dug with firm, natural balls of earth in which they are grown and placed, unbroken, in a container. Ball size is not less than sizes indicated.

C. Bare-Root Stock: Exterior plants with a well-branched, fibrous-root system developed by transplanting or root pruning, with soil or growing medium removed, and with not less than minimum root spread according to ANSI Z60.1 for kind and size of exterior plant required.

D. Container-Grown Stock: Healthy, vigorous, well-rooted exterior plants grown in a container with well-established root system reaching sides of container and maintaining

a firm ball when removed from container. Container shall be rigid enough to hold ball shape and protect root mass during shipping and be sized according to ANSI Z60.1 for kind, type, and size of exterior plant required.

E. Fabric Bag-Grown Stock: Healthy, vigorous, well-rooted exterior plants established and grown in-ground in a porous fabric bag with well-established root system reaching sides of fabric bag. Fabric bag size is not less than diameter, depth, and volume required by ANSI Z60.1 for type and size of exterior plant.

F. Finish Grade: Elevation of finished surface of planting soil.

G. Manufactured Topsoil: Soil produced off-site by homogeneously blending mineral soils or sand with stabilized organic soil amendments to produce topsoil or planting soil.

H. Planting Soil: Native or imported topsoil, manufactured topsoil, or surface soil modified to become topsoil; mixed with soil amendments.

I. Subgrade: Surface or elevation of subsoil remaining after completing excavation, or top surface of a fill or backfill, before placing planting soil.

1.04 SUBMITTALS

A. Qualification Data: For landscape Installer.

B. Material Test Reports: For existing surface soil and imported topsoil.

C. Planting Schedule: Indicating anticipated planting dates for exterior plants.

D. Integrated Pest Management Plan: Submit description of integrated pest management, including proposed alternative herbicides and pesticides.

E. Operation and Maintenance Manuals Submittals:
   1. Instructions indicating procedures during one typical year including variations of maintenance for climatic conditions throughout the year. Provide instructions and procedures including:
      a. Watering.
      b. Promotion of growth, including fertilizing, pruning, and mowing.
      c. Integrated pest management.
      d. Pictures of planting materials cross referenced to botanical and common names. Describe normal appearance in each season.

1.05 QUALITY ASSURANCE

A. Installer Qualifications: A qualified landscape installer whose work has resulted in successful establishment of exterior plants.

1. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on Project site when exterior planting is in progress.

B. Soil-Testing Laboratory Qualifications: An independent laboratory, recognized by the State Department of Agriculture, with the experience and capability to conduct the testing indicated and that specializes in types of tests to be performed.

C. Topsoil Analysis: Furnish soil analysis by a qualified soil-testing laboratory stating percentages of organic matter; gradation of sand, silt, and clay content; cation exchange capacity; sodium absorption ratio; deleterious material; pH; and mineral and plant-nutrient content of topsoil.

1. Report suitability of topsoil for plant growth. State recommended quantities of nitrogen, phosphorus, and potash nutrients and soil amendments to be added to produce a satisfactory topsoil.

D. Provide quality, size, genus, species, and variety of exterior plants indicated, complying with applicable requirements in ANSI Z60.1, "American Standard for Nursery Stock."

E. Observation: Architect may observe trees and shrubs either at place of growth or at site before planting for compliance with requirements for genus, species, variety, size, and quality. Architect retains right to observe trees and shrubs further for size and condition of balls and root systems, insects, injuries, and latent defects and to reject unsatisfactory or defective material at any time during progress of work. Remove rejected trees or shrubs immediately from Project site.

1. Notify Architect of sources of planting materials seven days in advance of delivery to site.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver exterior plants freshly dug.

1. Immediately after digging up bare-root stock, pack root system in wet straw, hay, or other suitable material to keep root system moist until planting.

B. Do not prune trees and shrubs before delivery, except as approved by Architect. Protect bark, branches, and root systems from sun scald, drying, sweating, whipping, and other handling and tying damage. Do not bend or bind-tie trees or shrubs in such a manner as to destroy their natural shape. Provide protective covering of exterior plants during delivery. Do not drop exterior plants during delivery.

C. Handle planting stock by root ball.

D. Deliver exterior plants after preparations for planting have been completed and install immediately. If planting is delayed more than six hours after delivery, set exterior plants trees in shade, protect from weather and mechanical damage, and keep roots moist.

1. Heel-in bare-root stock. Soak roots in water for two hours if dried out.
2. Set balled stock on ground and cover ball with soil, peat moss, sawdust, or other acceptable material.
3. Do not remove container-grown stock from containers before time of planting.
4. Water root systems of exterior plants stored on-site with a fine-mist spray. Water as often as necessary to maintain root systems in a moist condition.

1.07 COORDINATION

A. Planting Restrictions: Plant during the periods indicated on the Contract Drawings or in accordance with "American Standard for Nursery Stock".

1.08 WARRANTY

A. Special Warranty: Warrant the following exterior plants, for the warranty period indicated, against defects including death and unsatisfactory growth, except for defects resulting from lack of adequate maintenance, neglect, or abuse by Owner, or incidents that are beyond Contractor's control.

1. Warranty Period for Trees and Shrubs: One year from date of Substantial Completion.
2. Warranty Period for Ground Cover and Plants: Six months from date of Substantial Completion.
3. Remove dead exterior plants immediately. Replace immediately unless required to plant in the succeeding planting season.
4. Replace exterior plants that are more than 25 percent dead or in an unhealthy condition at end of warranty period.
5. A limit of one replacement of each exterior plant will be required, except for losses or replacements due to failure to comply with requirements.

1.09 MAINTENANCE

A. Minimum one year from date of initial acceptance.
1. Promotion of growth: Weed, water, and perform other operations necessary to promote growth and as approved by Owner and consistent with approved Integrated Pest Management Plan.
2. Inspection: Inspect plants at least once a week and perform needed maintenance promptly.

3. Herbicides and pesticides are not permitted; use organic/natural matter for pest and disease control.
4. Remove noxious weeds common to the area from planting areas by mechanical means.

B. Mowing of groundcover and grass areas:
1. Wildflowers: Mow three times per season above height of the wildflowers (approximately 12 to 15 inches).

C. Chemical controls:
1. Wildflowers, groundcover, and grasses: Do not fertilize.
2. Trees, plants, and shrubs: Fertilize exterior planting materials to promote healthy plant growth without encouraging excessive top foliar growth.

D. At end of maintenance period, request End of Maintenance Period Inspection by Owner.
1. Final acceptance of wildflower and grass areas will be based upon a satisfactory stand of groundcover and grasses. Stand of groundcover and grass is 95 percent ground cover of established species. Replant areas which do not have a satisfactory stand of groundcover and grasses.
2. Final acceptance of exterior plants will be based upon satisfactory health and growth of plants.
3. Complete Operation and Maintenance Manuals submittals for planting materials.

E. When work is found to be unsatisfactory, maintenance period will be extended at no additional cost to Owner until work has been completed, inspected and accepted by Owner.

PART 2 - PRODUCTS

2.01 TREE AND SHRUB MATERIAL

A. General: Furnish nursery-grown trees and shrubs complying with ANSI Z60.1, with healthy root systems developed by transplanting or root pruning. Provide well-shaped, fully branched, healthy, vigorous stock free of disease, insects, eggs, larvae, and defects such as knots, sun scald, injuries, abrasions, and disfigurement.

B. Grade: Provide trees and shrubs of sizes and grades complying with ANSI Z60.1 for type of trees and shrubs required. Trees and shrubs of a larger size may be used if acceptable to Architect, with a proportionate increase in size of roots or balls.

C. Label each tree and shrub with securely attached, waterproof tag bearing legible designation of botanical and common name.

2.02 SHADE AND FLOWERING TREES

A. Shade Trees: Single-stem trees with straight trunk, well-balanced crown, and intact leader, of height and caliper indicated, complying with ANSI Z60.1 for type of trees required.

1. Provide balled and burlapped trees.
2. Branching Height: One-half of tree height.

B. Small Upright Trees: Branched or pruned naturally according to species and type, with relationship of caliper, height, and branching according to ANSI Z60.1; stem form as follows:

1. Stem Form: Single stem.
2. Provide balled and burlapped

2.03 DECIDUOUS SHRUBS

A. Form and Size: Deciduous shrubs with not less than the minimum number of canes required by and measured according to ANSI Z60.1 for type, shape, and height of shrub.

1. Provide balled and burlapped shrubs.

2.04 CONIFEROUS EVERGREENS

A. Form and Size: Normal-quality, well-balanced, coniferous evergreens, of type, height, spread, and shape required, complying with ANSI Z60.1.

B. Form and Size: Specimen-quality, exceptionally heavy, tightly knit, symmetrically shaped coniferous evergreens and the following grade:

1. Provide balled and burlapped trees.

2.05 GROUND COVER PLANTS

A. Ground Cover: Provide ground cover of species indicated, established and well rooted in pots or similar containers, and complying with ANSI Z60.1 and the following the schedule established on the Contract Drawings.requirements:

2.06 PLANTS

A. Annuals: Provide healthy, disease-free plants of species and variety shown or listed. Provide only plants that are acclimated to outdoor conditions before delivery and that are in bud but not yet in bloom.

B. Perennials: Provide healthy, field-grown plants from a commercial nursery, of species and variety shown or listed.

2.07 TOPSOIL

A. Topsoil: ASTM D 5268, pH range of 5.5 to 7, a minimum of 4 percent organic material content; free of stones 1 inch or larger in any dimension and other extraneous materials harmful to plant growth.

1. Topsoil Source: Reuse surface soil stockpiled on-site. Verify suitability of stockpiled surface soil to produce topsoil. Clean surface soil of roots, plants, sod, stones, clay lumps, and other extraneous materials harmful to plant growth.

a. Supplement with imported or manufactured topsoil from off-site sources when quantities are insufficient. Obtain topsoil displaced from naturally well-drained construction or mining sites where topsoil occurs at least 4 inches deep; do not obtain from agricultural land, bogs or marshes.

2. Topsoil Source: Import topsoil or manufactured topsoil from off-site sources. Obtain topsoil displaced from naturally well-drained construction or mining sites where topsoil occurs at least 4 inches deep; do not obtain from agricultural land, bogs or marshes.

2.08 INORGANIC SOIL AMENDMENTS

A. Lime: ASTM C 602, agricultural limestone containing a minimum 80 percent calcium carbonate equivalent and as follows:
1. Class: Class O, with a minimum 95 percent passing through No. 8 sieve and a minimum 55 percent passing through No. 60 sieve.

B. Perlite: Horticultural perlite, soil amendment grade.

C. Agricultural Gypsum: Finely ground, containing a minimum of 90 percent calcium sulfate.

D. Sand: Clean, washed, natural or manufactured, free of toxic materials.

E. Zeolites: Mineral clinoptilolite with at least 60 percent water absorption by weight.

2.09 ORGANIC SOIL AMENDMENTS

A. Compost: Well-composted, stable, and weed-free organic matter, pH range of 5.5 to 8; moisture content 35 to 55 percent by weight; 100 percent passing through 3/4-inch sieve; soluble salt content of 5 to 10 decisiemens/m; not exceeding 0.5 percent inert contaminants and free of substances toxic to plantings; and as follows:

1. Organic Matter Content: 50-60 percent of dry weight.
2. Feedstock: Agricultural, food, or industrial residuals; biosolids; yard trimmings; or source-separated or compostable mixed solid waste.

B. Peat: Finely divided or granular texture, with a pH range of 6 to 7.5, containing partially decomposed moss peat, native peat, or reed-sedge peat and having a water-absorbing capacity of 1100 to 2000 percent.

C. Wood Derivatives: Decomposed, nitrogen-treated sawdust, ground bark, or wood waste; of uniform texture, free of chips, stones, sticks, soil, or toxic materials.

2.10 FERTILIZER

A. Bonemeal: Commercial, raw or steamed, finely ground; a minimum of 1 percent nitrogen and 10 percent phosphoric acid.

B. Superphosphate: Commercial, phosphate mixture, soluble; a minimum of 20 percent available phosphoric acid.

C. Commercial Fertilizer: Commercial-grade complete fertilizer of neutral character, consisting of fast- and slow-release nitrogen, 50 percent derived from natural organic sources of urea formaldehyde, phosphorous, and potassium in the following composition:

1. Composition: 1 lb/1000 sq. ft. of actual nitrogen, 4 percent phosphorous, and 2 percent potassium, by weight.
2. Composition: Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified soil-testing agency.

D. Slow-Release Fertilizer: Granular or pelleted fertilizer consisting of 50 percent water-insoluble nitrogen, phosphorus, and potassium in the following composition:

1. Composition: 20 percent nitrogen, 10 percent phosphorous, and 10 percent potassium, by weight.
2. Composition: Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified soil-testing agency.

2.11 MULCHES

A. Free from noxious weeds, mold, or other deleterious materials.

B. Inert Mulch Materials: Recycled porcelain, concrete, stone, or other recycled material complying with ASTM D6155.
1. Recycled Content: Minimum 10 percent post-consumer recycled content, or minimum 40 percent pre-consumer recycled content at contractor’s option.

C. Organic Mulch Materials:
   1. Mulch from recycled site debris: Coordinate with Section 02230 - Site Clearing to identify and prepare suitable organic debris for use as mulch on site.
   2. Wood Cellulose Fiber:
      a. Toxicity: Processed to contain no growth or germination-inhibiting factors, dyed with non toxic, biodegradable dye to an appropriate color to facilitate visual metering of materials application.
      b. Recycled content:
         1) Paper-based hydraulic mulch: Minimum 100 percent post-consumer recycled content.

D. Wood-based hydraulic mulch: Minimum 100 recycled material

2.12 WEED-CONTROL BARRIERS

A. Polyethylene Sheeting: ASTM D 4397, black, 0.006-inch- minimum thickness.

B. Nonwoven Fabric: Polypropylene or polyester fabric, 3 oz./sq. yd. minimum.

C. Composite Fabric: Woven, needle-punched polypropylene substrate bonded to a nonwoven polypropylene fabric, 4.8 oz./sq. yd..

2.13 STAKES AND GUYS

A. Upright and Guy Stakes: Rough-sawn, sound, new hardwood, redwood, or pressure-preservative-treated softwood, free of knots, holes, cross grain, and other defects, 2 by 2 inches by length indicated, pointed at one end.

B. Guy and Tie Wire: ASTM A 641/A 641M, Class 1, galvanized-steel wire, 2-strand, twisted, 0.106 inch in diameter.

C. Guy Cable: 5-strand, 3/16-inch- diameter, galvanized-steel cable, with zinc-coated turnbuckles, a minimum of 3 inches long, with two 3/8-inch galvanized eyebolts.

D. Hose Chafing Guard: Reinforced rubber or plastic hose at least 1/2 inch in diameter, black, cut to lengths required to protect tree trunks from damage.

E. Flags: Standard surveyor's plastic flagging tape, white, 6 inches long.

2.14 PLANTING SOIL MIX

A. Planting Soil Mix: Mix topsoil with the following soil amendments and fertilizers.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine areas to receive exterior plants for compliance with requirements and conditions affecting installation and performance. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Protect structures, utilities, sidewalks, pavements, and other facilities, and lawns and existing exterior plants from damage caused by planting operations.

B. Provide erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

C. Lay out individual tree and shrub locations and areas for multiple exterior plantings. Stake locations, outline areas, adjust locations when requested, and obtain Architect's acceptance of layout before planting. Make minor adjustments as required.

D. Lay out exterior plants at locations directed by Architect. Stake locations of individual trees and shrubs and outline areas for multiple plantings.

E. Apply antidesiccant to trees and shrubs using power spray to provide an adequate film over trunks, branches, stems, twigs, and foliage to protect during digging, handling, and transportation.

1. If deciduous trees or shrubs are moved in full leaf, spray with antidesiccant at nursery before moving and again two weeks after planting.

3.03 PLANTING BED ESTABLISHMENT

A. Loosen subgrade of planting beds to a minimum depth of 6 inches. Remove stones larger than 1 inch in any dimension and sticks, roots, rubbish, and other extraneous matter and legally dispose of them off Owner's property.

1. Apply fertilizer directly to subgrade before loosening.
2. Spread topsoil, apply soil amendments and fertilizer on surface, and thoroughly blend planting soil mix.

a. Delay mixing fertilizer with planting soil if planting will not proceed within a few days.
b. Mix lime with dry soil before mixing fertilizer.

3. Spread planting soil mix to a depth of 6 inches but not less than required to meet finish grades after natural settlement. Do not spread if planting soil or subgrade is frozen, muddy, or excessively wet.

    a. Spread approximately one-half the thickness of planting soil mix over loosened subgrade. Mix thoroughly into top 2 inches of subgrade. Spread remainder of planting soil mix.

B. Finish Grading: Grade planting beds to a smooth, uniform surface plane with loose, uniformly fine texture. Roll and rake, remove ridges, and fill depressions to meet finish grades.

C. Restore planting beds if eroded or otherwise disturbed after finish grading and before planting.

3.04 TREE AND SHRUB EXCAVATION

A. Pits and Trenches: Excavate circular pits with sides sloped inward. Trim base leaving center area raised slightly to support root ball and assist in drainage. Do not further disturb base. Scarify sides of plant pit smeared or smoothed during excavation.

1. Excavate approximately three times as wide as ball diameter for balled and burlapped stock.
2. Excavate at least 12 inches (300 mm) wider than root spread and deep enough to accommodate vertical roots for bare-root stock.

B. Subsoil removed from excavations may not be used as backfill.

C. Obstructions: Notify Architect if unexpected rock or obstructions detrimental to trees or shrubs are encountered in excavations.

D. Fill excavations with water and allow to percolate away before positioning trees and shrubs.

3.05 TREE AND SHRUB PLANTING

A. Set balled and burlapped stock plumb and in center of pit or trench with top of root ball flush with adjacent finish grades.

1. Remove burlap and wire baskets from tops of root balls and partially from sides, but do not remove from under root balls. Remove pallets, if any, before setting. Do not use planting stock if root ball is cracked or broken before or during planting operation.
2. Place planting soil mix around root ball in layers, tamping to settle mix and eliminate voids and air pockets. When pit is approximately one-half backfilled, water thoroughly before placing remainder of backfill. Repeat watering until no

more water is absorbed. Water again after placing and tamping final layer of planting soil mix.

B. Organic Mulching: Apply 2-inch average thickness of organic mulch extending 12 inches beyond edge of planting pit or trench. Do not place mulch within 3 inches of trunks or stems.

C. Wrap trees of 2-inch caliper and larger with trunk-wrap tape. Start at base of trunk and spiral cover trunk to height of first branches. Overlap wrap, exposing half the width, and securely attach without causing girdling. Inspect tree trunks for injury, improper pruning, and insect infestation; take corrective measures required before wrapping.

3.06 TREE AND SHRUB PRUNING

A. Prune, thin, and shape trees and shrubs according to standard horticultural practice. Prune trees to retain required height and spread. Unless otherwise indicated by Architect, do not cut tree leaders; remove only injured or dead branches from flowering trees. Prune shrubs to retain natural character. Shrub sizes indicated are sizes after pruning.

3.07 GUYING AND STAKING

A. Upright Staking and Tying: Stake trees of 2- through 5-inch caliper. Stake trees of less than 2-inch caliper only as required to prevent wind tip-out. Use a minimum of 2 stakes of length required to penetrate at least 18 inches below bottom of backfilled excavation and to extend at least 72 inches above grade. Set vertical stakes and space to avoid penetrating root balls or root masses. Support trees with two strands of tie wire encased in hose sections at contact points with tree trunk. Allow enough slack to avoid rigid restraint of tree. Use the number of stakes as follows:

1. Use 2 stakes for trees up to 12 feet high and 2-1/2 inches or less in caliper; 3 stakes for trees less than 14 feet high and up to 4 inches in caliper. Space stakes equally around trees.

B. Guying and Staking: Guy and stake trees exceeding 14 feet in height and more than 3 inches in caliper, unless otherwise indicated. Securely attach no fewer than 3 guys to stakes 30 inches long, driven to grade.

1. For trees more than 6 inches in caliper, anchor guys to pressure-preservative-treated deadmen 8 inches in diameter and 48 inches long buried at least 36 inches below grade. Provide turnbuckles for each guy wire and tighten securely.
2. Attach flags to each guy wire, 30 inches (760 mm) above finish grade.
3. Paint turnbuckles with luminescent white paint.

3.08 GROUND COVER AND PLANT PLANTING

A. Set out and space ground cover and plants as indicated.

B. Dig holes large enough to allow spreading of roots, and backfill with planting soil.

C. Work soil around roots to eliminate air pockets and leave a slight saucer indentation around plants to hold water.

D. Water thoroughly after planting, taking care not to cover plant crowns with wet soil.

E. Protect plants from hot sun and wind; remove protection if plants show evidence of recovery from transplanting shock.

3.09 PLANTING BED MULCHING

A. Install weed-control barriers before mulching according to manufacturer's written instructions. Completely cover area to be mulched, overlapping edges a minimum of 6 inches.

1. Material and Seam Treatment: Polyethylene sheeting with seams taped

B. Mulch backfilled surfaces of planting beds and other areas indicated.

1. Organic Mulch: Apply 2-inch average thickness of organic mulch, and finish level with adjacent finish grades. Do not place mulch against plant stems.
2. Mineral Mulch: Apply 2-inch average thickness of mineral mulch, and finish level with adjacent finish grades. Do not place mulch against plant stems.

3.10 CLEANUP AND PROTECTION

A. During exterior planting, keep adjacent pavings and construction clean and work area in an orderly condition.

B. Protect exterior plants from damage due to landscape operations, operations by other contractors and trades, and others. Maintain protection during installation and maintenance periods. Treat, repair, or replace damaged exterior planting.

3.11 DISPOSAL

A. Disposal: Remove surplus soil and waste material, including excess subsoil, unsuitable soil, trash, and debris, and legally dispose of them off Owner's property.

END OF SECTION

SECTION 03 54 00

CONCRETE LEVELING COURSE

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Self-leveling fluid applied concrete leveling course.

1.02 RELATED SECTIONS

A. Section 02 41 19 – Selective Demolition.

1.03 REFERENCES

A. ACI 304 - Measuring, mixing, transporting and placing concrete.

1.04 PERFORMANCE REQUIREMENTS

A. Install leveling course to conform to the following:

Property		
Bond Strength	ASTM C234	400 psi minimum
Flexural Strength	ASTM C348	1020 at 28 days
Compressive Strength	4100 at 28 days	

1.05 QUALIFICATIONS

A. Applicator: Company experienced in concrete leveling course applications with three years' experience.

1.06 REGULATORY REQUIREMENTS

A. Conform to ASTM E119 for flame/fuel/smoke ratings of 0/0/0 for 1 hour, 1 inch.

1.07 SUBMITTALS

A. Submit product data.

B. Submit manufacturer's installation instructions.

C. Submit manufacturer's certificate that products meet or exceed specified requirements.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Store materials in a dry, secure area.

B. Maintain minimum temperature of 50°F.

C. Keep products away from fire or open flame.

1.09 ENVIRONMENTAL REQUIREMENTS

A. Do not install flooring when substrate temperature is below 70°F or above 90°F.

B. Maintain this temperature range, 24 hours before, during, and 72 hours after installation of flooring.

C. Restrict traffic from area for a period of 7 days where leveling course is curing.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. L & M Construction Chemicals, Inc. "Levelex".

B. Ardex "K-15".

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that patching is complete and that concrete substrate is ready to receive work, and that subfloor surface is clean, cured, and free of substances that could affect bond.

B. Repair cracks with epoxy crack filler.

C. Do not begin work until concrete substrate has cured 28 days minimum, and measured moisture content is not greater than 16 percent.

D. Test concrete surface for negative alkalinity with litmus paper test.

E. Beginning of installation means acceptance of substrate.

3.02 PREPARATION

A. Protect elements surrounding the work of this Section from damage or disfiguration.

B. Grind down high point edges of existing concrete floor.

C. Remove all grease, dirt and foreign substances that will interfere proper bonding of leveling course. Clean and vacuum substrate surface.

D. Fill cracks and joints with epoxy crack filler; finish smooth and level.

3.03 INSTALLATION

A. Mix and apply concrete leveling course in accordance with manufacturer's written instructions.

B. Apply primer to prepared substrate.

C. Place in a maximum of 3/4 inch course. Allow proper curing time between course placement.

D. Apply primer over course that has cured for more than 24 hours.

E. Protect from rapid evaporation.

3.04 PROTECTION

A. Do not permit foot traffic over finished surface for 4 days minimum.

B. Do not permit heavy equipment or concentrated loads on finished surface.

END OF SECTION

SECTION 04 20 00

UNIT MASONRY

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Concrete Masonry Units.

B. Face Brick

C. Reinforcement, anchorages, and accessories.

D. Cutting and rebuilding existing masonry walls for installation of new construction.

1.02 PRODUCTS INSTALLED BUT FURNISHED UNDER OTHER SECTIONS

A. Section 05500 - Loose steel lintels and fabricated steel items.

B. Section 07900 - Sealants

1.03 RELATED SECTIONS

A. Section 07900 - Joint Sealers: Rod and sealant at control joints.

1.04 REFERENCES

A. ASTM C55 - Concrete Building Brick.

B. ASTM C90 - Load-Bearing and Non-load Bearing Concrete Masonry Units.

C. International Masonry Industry All-Weather Council (IMIAC) - Recommended Practices and Guide Specifications for Cold Weather Masonry Construction.

1.05 SUBMITTALS

A. Submit product data for each material used.

B. Submit manufacturer's certificates that products meet or exceed specified requirements.

C. Submit face brick samples.

1.06 ENVIRONMENTAL REQUIREMENTS

A. Hot and Cold Weather Requirements: Comply with ACI 350.1/ASCE 6/TMS 602.

B. Maintain materials and surrounding air temperature to a minimum of 50°F prior to, during and 48 hours after completion of masonry work.

PART 2 PRODUCTS

2.01 CONCRETE MASONRY UNITS

A. Hollow and Solid Units: ASTM C90, Grade N, Type I; medium weight, minimum compressive strength of 1900 PSI.

B. Concrete Brick: ASTM C55, Grade N, Type I; light weight.

2.02 FACE BRICK

A. Size, color and texture to match existing.

2.03 MASONRY LINTELS

A. Prefabricated, reinforced, precast concrete.

2.04 MORTAR AND GROUT MATERIALS

A. Portland Cement: ASTM C150, normal-Type I; white color.

B. Mortar Aggregate: ASTM C144, standard masonry type; clean, dry, protected against dampness, freezing, and foreign matter.

C. Pigments:

1. Davis Colors “True Tone Mortar Colors”

2. Solomon “SGS Mortar Colors”

D. Grout Course Aggregate: Maximum 3/8 inch size; ASTM C404

E. Grout Fine Aggregate: Natural bar sand.

F. Hydrated Lime: ASTM C207, Type S.

G. Quicklime: ASTM C5, non-hydraulic type.

H. Water: Clean and potable.

2.05 MIXES

A. Mortar: ASTM C270, Type S, unless otherwise noted.

1. Type S below grade and in reinforced masonry.

B. Grout: ASTM C476; 8 to 11 inch slump.

2.06 MORTAR AND GROUT MIXING

A. Thoroughly mix mortar ingredients in quantities needed for immediate use in accordance with ASTM C270.

C. If water is lost by evaporation, retemper within two hours of mixing. Do not retemper mortar after two hours of mixing.

2.07 REINFORCEMENT

A. Horizontal Joint Reinforcement: 9 gage galvanized wire; truss type at single wythe masonry; ladder type with adjustable tabs at multi-wythe masonry.

B. Bars: Steel, deformed, ASTM A615, Grade 60, see Structural Drawings.

2.08 ANCHORS AND ACCESSORIES

A. Joint Filler: Closed cell polyurethane or rubber oversized 50 percent; wide by maximum lengths; manufactured by Toch, Sonneborn or Grace.

B. Corrugated Ties: 7/8 x 8 x 0.25 inches, stainless steel.

C. Masonry Veneer Anchors: (Stainless steel)

1. Dur-O-Wal “D/A 213 S

2. H & B “DW-10-X”

3. Wire Bond: “RJ-711”

D. Stainless steel screws for attaching veneer anchors to studs.

E. Control Joint Gaskets: PVC or rubber.

F. Weeps: ¼ inch wicking rope.

G. Cavity Drainage: “Mortar Net” or “Mortar Stop”

2.08 FLASHING

A. Exposed: Stainless steel, ASTM A 240, Type 304, 0.016 inch thick.

B. Concealed: Stainless steel, or Rubberized Asphalt; – Carlisle “CCW-705-TWF”, Dur-O-Wal “Dur-O-Barrier 44” or H & B “Textroflash”

2.09 CLEANERS

A. Products by ProSoCo or Diedrich as recommended for masonry materials.

PART 3 EXECUTION

3.01 PREPARATION

A. Establish lines, levels, and coursing. Protect from disturbance.

B. Provide temporary bracing during erection of masonry work. Maintain in place until building structure provides permanent bracing.

3.02 COURSING

A. Place masonry to lines and levels indicated. Match existing work.

3.03 PLACING AND BONDING

A. Lay masonry in full bed of mortar and completely fill head joints, properly jointed with other work. Buttering corners of joints, and deep or excessive furrowing of mortar joints are not permitted.

B. Fully interlock and bond intersections with existing construction.

C. Do not shift or tap masonry units after mortar has taken initial set. Where adjustment must be made, remove mortar and replace.

D. Anchor masonry veneers to backup metal wall framing with anchors spaced not more than 16 inches on center vertically, and not more than 24 inches on center horizontally, with every other row staggered.

E. Provide ½ inch wide control joints in masonry at 30 feet on center maximum and 4 feet from outside corners.

F. Remove excess mortar as work progresses.

G. Perform jobsite cutting with masonry saw to provide straight unchipped edges. Take care to prevent breaking unit masonry corners or edges.

3.04 TOLERANCES

A. Variation from Unit to Adjacent Unit: 1/32 inch maximum.

B. Variation from Plane of Wall: 1/4 inch in 10 feet and 1/2 inch in 20 feet or more.

C. Variation of Joint Thickness: 1/8 inch in 3 feet.

3.05 LINTELS

A. Install loose concrete and steel lintels as scheduled and detailed. Minimum bearing of 8 inches at jambs.

3.06 QUALITY CONTROL

A. Masonry shall be free of chips, cracks or other surface defects that are observable with the naked eye from a distance of four feet perpendicular to the wall surface, under final lighting conditions.

B. Finish jointing of face brick to blend with existing construction. Match size, color and texture of existing construction.

3.07 CLEANING

A. Remove excess mortar and smears.

B. Replace defective mortar. Point to match adjacent work.

C. Clean soiled surfaces with specified materials as directed by masonry manufacturer.

D. Use non-metallic tools in cleaning operations.

END OF SECTION

SECTION 05 12 00

STRUCTURAL STEEL FRAMING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes:

1. Structural steel.
2. Grout.

B. Related Sections:

1. Division 01 Section "Quality Requirements" for independent testing agency procedures and administrative requirements.
2. Division 05 Section "Steel Decking" for field installation of shear connectors through deck.
3. Division 05 Section "Metal Fabrications" for steel lintels and shelf angles not attached to structural-steel frame, miscellaneous steel fabrications, and other metal items not defined as structural steel.

1.3 DEFINITIONS

A. Structural Steel: Elements of structural-steel frame, as classified by AISC 303, "Code of Standard Practice for Steel Buildings and Bridges."

1.4 PERFORMANCE REQUIREMENTS

A. Connections: Provide details of connections required by the Contract Documents to be selected or completed by structural-steel fabricator, including comprehensive engineering design by a qualified professional engineer, to withstand loads indicated and comply with other information and restrictions indicated.

1. Select and complete connections using schematic details indicated and AISC 360.
2. Use ASD; data are given at service-load level.

B. Moment Connections: Type PR, partially and FR, fully restrained.

C. Construction: As indicated on Contract Documents.

1.5 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: Show fabrication of structural-steel components. The contractor shall deliver to the engineer, at the completion of the job, one (1) electronic version of the final field copies of all steel erection drawing shop drawings.

1. Include details of cuts, connections, splices, camber, holes, and other pertinent data.
2. Include embedment drawings.
3. Indicate welds by standard AWS symbols, distinguishing between shop and field welds, and show size, length, and type of each weld. Show backing bars that are to be removed and supplemental fillet welds where backing bars are to remain.
4. Indicate type, size, and length of bolts, distinguishing between shop and field bolts. Identify pretensioned and slip-critical high-strength bolted connections.
5. For structural-steel connections indicated to comply with design loads, include structural design data signed and sealed by the qualified professional engineer responsible for their preparation.

C. Welding Procedure Specifications (WPSs) and Procedure Qualification Records (PQRs): Provide according to AWS D1.1/D1.1M, "Structural Welding Code - Steel," for each welded joint whether prequalified or qualified by testing, including the following:

1. Power source (constant current or constant voltage).
2. Electrode manufacturer and trade name, for demand critical welds.

1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified Installer, Fabricator, Professional Engineer, and Testing Agency.

B. Welding certificates.

C. Paint Compatibility Certificates: From manufacturers of topcoats applied over shop primers, certifying that shop primers are compatible with topcoats.

D. Mill test reports for structural steel, including chemical and physical properties.

E. Product Test Reports: For the following:

1. Bolts, nuts, and washers including mechanical properties and chemical analysis.
2. Direct-tension indicators.
3. Tension-control, high-strength bolt-nut-washer assemblies.
4. Shear stud connectors.
5. Shop primers.
6. Nonshrink grout.

F. Source quality-control reports.

1.7 QUALITY ASSURANCE

A. Fabricator Qualifications: A qualified fabricator that participates in the AISC Quality Certification Program and is designated an AISC-Certified Plant, Category STD.

B. Shop-Painting Applicators: Qualified according to AISC's Sophisticated Paint Endorsement P3 or SSPC-QP 3, "Standard Procedure for Evaluating Qualifications of Shop Painting Applicators."

C. Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."

1. Welders and welding operators performing work on bottom-flange, demand-critical welds shall pass the supplemental welder qualification testing, as required by AWS D1.8. FCAW-S and FCAW-G shall be considered separate processes for welding personnel qualification.

D. Comply with applicable provisions of the following specifications and documents:

1. AISC 303.
2. AISC 341 and AISC 341s1.
3. AISC 360.
4. RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."

E. Preinstallation Conference: Conduct conference at Project site.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Store materials to permit easy access for inspection and identification. Keep steel members off ground and spaced by using pallets, dunnage, or other supports and spacers. Protect steel members and packaged materials from erosion and deterioration.

1. Do not store materials on structure in a manner that might cause distortion, damage, or overload to members or supporting structures. Repair or replace damaged materials or structures as directed.

B. Store fasteners in a protected place in sealed containers with manufacturer's labels intact.

1. Fasteners may be repackaged provided Owner's testing and inspecting agency observes repackaging and seals containers.
2. Clean and relubricate bolts and nuts that become dry or rusty before use.
3. Comply with manufacturers' written recommendations for cleaning and lubricating ASTM F 1852 fasteners and for retesting fasteners after lubrication.

1.9 COORDINATION

A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' recommendations to ensure that shop primers and topcoats are compatible with one another.

B. Coordinate installation of anchorage items to be embedded in or attached to other construction without delaying the Work. Provide setting diagrams, sheet metal templates, instructions, and directions for installation.

PART 2 - PRODUCTS

2.1 STRUCTURAL-STEEL MATERIALS

A. Recycled Content of Steel Products: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 50 percent.

B. W-Shapes: ASTM A 992/A 992M.

C. Channels, Angles: ASTM A 36/A 36M.

D. Plate and Bar: ASTM A 36/A 36M.

E. Cold-Formed Hollow Structural Sections: ASTM A 500, Grade B structural tubing.

F. Steel Pipe: ASTM A 53/A 53M, Type E or S, Grade B.

1. Weight Class: As indicated on documents.
2. Finish: Black, except where indicated to be galvanized.

G. Welding Electrodes: Comply with AWS requirements.

2.2 BOLTS, CONNECTORS, AND ANCHORS

A. High-Strength Bolts, Nuts, and Washers: ASTM A 325 (ASTM A 325M), Type 1, heavy-hex steel structural bolts; ASTM A 563, Grade C, (ASTM A 563M, Class 8S) heavy-hex carbon-steel nuts; and ASTM F 436 (ASTM F 436M), Type 1, hardened carbon-steel washers; all with plain finish.

1. Direct-Tension Indicators: ASTM F 959, Type 325 (ASTM F 959M, Type 8.8), compressible-washer type with plain finish.

B. High-Strength Bolts, Nuts, and Washers: ASTM A 490 (ASTM A 490M), Type 1, heavy-hex steel structural bolts or tension-control, bolt-nut-washer assemblies with splined ends; ASTM A 563, Grade DH, (ASTM A 563M, Class 10S) heavy-hex carbon-steel nuts; and ASTM F 436 (ASTM F 436M), Type 1, hardened carbon-steel washers with plain finish.

1. Direct-Tension Indicators: ASTM F 959, Type 490 (ASTM F 959M, Type 10.9), compressible-washer type with plain finish.

C. Tension-Control, High-Strength Bolt-Nut-Washer Assemblies: ASTM F 1852, Type 1, heavy-hex or round head assemblies consisting of steel structural bolts with splined ends, heavy-hex carbon-steel nuts, and hardened carbon-steel washers.

1. Finish: Plain.

D. Unheaded Anchor Rods: ASTM F1554, Grade 36 (ASTM F1554 Grade 55, weldable can be substituted for Grade 36) or as indicated on documents.

1. Configuration: Straight and threaded with nut for anchorage.
2. Nuts: ASTM A 563 (ASTM A 563M) heavy hex carbon steel.
3. Plate Washers: ASTM A 36/A 36M carbon steel to be used at all column baseplate locations.
4. Washers: ASTM F 436 (ASTM F 436M), Type 1, hardened carbon steel.
5. Finish: Plain.

E. Headed Anchor Rods: ASTM F 1554, Grade 36 (ASTM F 1554, Grade 55, weldable can be substituted for Grade 36) straight with heavy-hex head, or as indicated on documents.

1. Nuts: ASTM A 563 (ASTM A 563M) heavy hex carbon steel.
2. Plate Washers: ASTM A 36/A 36M carbon steel to be used at all column baseplate locations.
3. Washers: ASTM F 436 (ASTM F 436M) Type 1, hardened carbon steel.
4. Finish: Plain.

F. Threaded Rods: ASTM A 36/A 36M.

1. Nuts: ASTM A 563 (ASTM A 563M) heavy hex carbon steel.
2. Washers: ASTM F 436 (ASTM F 436M) Type 1, hardened carbon steel.
3. Finish: Plain.

G. Expansion Anchors: Type and size as indicated on documents. Wedge type, torque-controlled, with impact section to prevent thread damage and wedge ridges to prevent spinning during installation, complete with required nuts, washers, and manufacturer's installation instructions. All expansion anchors shall be equipped with length identification markings.

1. Interior Use: For use in conditioned environments free from potential moisture, provide carbon steel anchors with zinc plating in accordance with ASTM B633.
2. Exposed Use: In exposed, potentially wet, or otherwise corrosive environment, provide anchors of Type 304 or Type 316 stainless steel with stainless steel nuts, and washers of matching alloy group and minimum proof stress equal to or greater than the specified minimum full-size tensile strength of the externally threaded faster. All nuts shall conform to ASTM A563 Grade A unless otherwise specified. Stainless steel anchors shall not be installed in contact with galvanized steel, aluminum, or other galvanically dissimilar metals.
3. Products: Provide the following:
    a. Hilti Kwik Bolt TZ Expansion Anchor for installation into concrete.
    b. Hilti Kwik Bolt III Expansion Anchor for installation into masonry.

H. Cartridge Injection Adhesive Anchors and rebar doweling: Threaded steel rod or inserts, complete with nuts, washers, polymer, cementitious, epoxy, or hybrid mortar adhesive injection system, and manufacturer's installation instructions. Type and size as indicated on documents.

1. Interior Use: For use in conditioned environments free from potential moisture, provide threaded carbon steel rods conforming to ISO898, ASTM A36, or ASTM A 193, Grade B7 as indicated on documents.

2. Exposed Use: In exposed, potentially wet or otherwise corrosive environments provide stainless steel anchors, nuts, and washers in accordance with ASTM F593. Provide nuts and washers with matching alloy group and minimum poof stress equal to or greater than the specified minimum full-size tensile strength of the externally threaded fastener. All nuts shall conform with ASTM F594 unless other otherwise specified. Stainless steel anchors shall not be installed in contact with galvanized steel, aluminum, or other galvanically dissimilar metals.
3. Products: Provide the following:

    a. Hilti HAS or HIT threaded rods or rebar (by others) with Hilti HIT HY-150 Adhesive for anchorage to masonry or stone. Hilti HIT HY-20 Adhesive System for anchorage to brick or concrete masonry (with screen tubes).
    b. Hilti HAS, HIS threaded rods or rebar (by others) for doweling with Hilti HIT-RE 500-SD Adhesive Anchoring System for anchorage to concrete.

2.3 PRIMER

A. Low-Emitting Materials: Paints and coatings shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

B. Primer: Fabricator's standard lead- and chromate-free, nonasphaltic, rust-inhibiting primer, complying with MPI #79 and compatible with topcoat unless otherwise indicated on documents or in Division 09.

2.4 GROUT

A. Nonmetallic, Shrinkage-Resistant Grout: ASTM C 1107, factory-packaged, nonmetallic aggregate grout, noncorrosive, nonstaining, mixed with water to consistency suitable for application and a 30-minute working time.

2.5 FABRICATION

A. Structural Steel: Fabricate and assemble in shop to greatest extent possible. Fabricate according to AISC's "Code of Standard Practice for Steel Buildings and Bridges" and AISC 360.

1. Camber structural-steel members where indicated.
2. Fabricate beams with rolling camber up.
3. Identify high-strength structural steel according to ASTM A 6/ A 6M and maintain markings until structural steel has been erected.

4. Mark and match-mark materials for field assembly.
5. Complete structural-steel assemblies, including welding of units, before starting shop-priming operations.

B. Thermal Cutting: Perform thermal cutting by machine to greatest extent possible.

1. Plane thermally cut edges to be welded to comply with requirements in AWS D1.1/D1.1M.

C. Bolt Holes: Cut, drill, mechanically thermal cut, or punch standard bolt holes perpendicular to metal surfaces.

D. Finishing: Accurately finish ends of columns and other members transmitting bearing loads.

E. Cleaning: Clean and prepare steel surfaces that are to remain unpainted according to SSPC-SP 3, "Power Tool Cleaning."

2.6 SHOP CONNECTIONS

A. High-Strength Bolts: Shop install high-strength bolts according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts" for type of bolt and type of joint specified.

1. Joint Type: Snug tightened or Slip critical.

B. Weld Connections: Comply with AWS D1.1/D1.1M for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.

1. Remove backing bars or runoff tabs, back gouge, and grind steel smooth.
2. Assemble and weld built-up sections by methods that will maintain true alignment of axes without exceeding tolerances of AISC 303 for mill material.

2.7 SHOP PRIMING

A. Shop prime steel surfaces except the following:

1. Surfaces embedded in concrete or mortar. Extend priming of partially embedded members to a depth of 2 inches (50 mm).
2. Surfaces to be field welded.
3. Surfaces to be high-strength bolted with slip-critical connections.
4. Surfaces to receive sprayed fire-resistive materials.

B. Surface Preparation: Clean surfaces to be painted. Remove loose rust and mill scale and spatter, slag, or flux deposits. Prepare surfaces according to the following specifications and standards:
   1. SSPC-SP 3, "Power Tool Cleaning", unless indicated otherwise on documents or in Division 09.

2.8 SOURCE QUALITY CONTROL

A. Testing Agency: Owner will engage an independent testing and inspecting agency to perform shop tests and inspections and prepare test reports.

   1. Provide testing agency with access to places where structural-steel work is being fabricated or produced to perform tests and inspections.

B. Correct deficiencies in Work that test reports and inspections indicate does not comply with the Contract Documents.

C. Bolted Connections: Shop-bolted connections will be tested and inspected according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."

D. Welded Connections: In addition to visual inspection, shop-welded connections will be tested and inspected according to AWS D1.1/D1.1M and the following inspection procedures, at testing agency's option:

   1. Liquid Penetrant Inspection: ASTM E 165.
   2. Magnetic Particle Inspection: ASTM E 709; performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration will not be accepted.
   3. Ultrasonic Inspection: ASTM E 164.
   4. Radiographic Inspection: ASTM E 94.

E. In addition to visual inspection, shop-welded shear connectors will be tested and inspected according to requirements in AWS D1.1/D1.1M for stud welding and as follows:

   1. Bend tests will be performed if visual inspections reveal either a less-than-continuous 360-degree flash or welding repairs to any shear connector.
   2. Tests will be conducted on additional shear connectors if weld fracture occurs on shear connectors already tested, according to requirements in AWS D1.1/D1.1M.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify, with Steel Erector present, elevations of concrete- and masonry-bearing surfaces and locations of anchor rods, bearing plates, and other embedments, for compliance with requirements.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Provide temporary shores, guys, braces, and other supports during erection to keep structural steel secure, plumb, and in alignment against temporary construction loads and loads equal in intensity to design loads. Remove temporary supports when permanent structural steel, connections, and bracing are in place unless otherwise indicated.

1. Do not remove temporary shoring supporting composite deck construction until cast-in-place concrete has attained its design compressive strength.

3.3 ERECTION

A. Set structural steel accurately in locations, to elevations indicated, and according to AISC 303 and AISC 360.

B. Base, Bearing and Leveling Plates: Clean concrete- and masonry-bearing surfaces of bond-reducing materials, and roughen surfaces prior to setting plates. Clean bottom surface of plates.

1. Set plates for structural members on wedges, shims, or setting nuts as required.
2. Weld plate washers to top of base plate.
3. Pretension anchor rods after supported members have been positioned and plumbed. Do not remove wedges or shims but, if protruding, cut off flush with edge of plate before packing with grout.
4. Promptly pack grout solidly between bearing surfaces and plates so no voids remain. Neatly finish exposed surfaces; protect grout and allow to cure. Comply with manufacturer's written installation instructions for shrinkage-resistant grouts.

C. Maintain erection tolerances of structural steel structural steel within AISC’s “Code of Standard Practice for Steel Buildings and Bridges.”

D. Align and adjust various members forming part of complete frame or structure before permanently fastening. Before assembly, clean bearing surfaces and other surfaces that will be in permanent contact with members. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.

1. Level and plumb individual members of structure.
2. Make allowances for difference between temperature at time of erection and mean temperature when structure is completed and in service.

E. Do not use thermal cutting during erection unless approved by Architect. Finish thermally cut sections within smoothness limits in AWS D1.1/D1.1M.

F. Do not enlarge unfair holes in members by burning or using drift pins. Ream holes that must be enlarged to admit bolts.

3.4 FIELD CONNECTIONS

A. High-Strength Bolts: Install high-strength bolts according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts" for type of bolt and type of joint specified.

1. Joint Type: Pretensioned or Slip critical.

B. Weld Connections: Comply with AWS D1.1/D1.1M for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.

1. Comply with AISC 303 and AISC 360 for bearing, alignment, adequacy of temporary connections, and removal of paint on surfaces adjacent to field welds.
2. Remove backing bars or runoff tabs, back gouge, and grind steel smooth.
3. Assemble and weld built-up sections by methods that will maintain true alignment of axes without exceeding tolerances of AISC's "Code of Standard Practice for Steel Buildings and Bridges" for mill material.

3.5 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified independent testing and inspecting agency to inspect field welds and high-strength bolted connections.

B. Bolted Connections: Field-bolted connections will be tested and inspected according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."

C. Welded Connections: Field fillet welds will be visually inspected according to AWS D1.1/D1.1M.

1. In addition to visual inspection, all suspect field fillet welds and all field full/partial penetration welds will be tested and inspected according to AWS D1.1/D1.1M and the following inspection procedures, at testing agency's option:

a. Liquid Penetrant Inspection: ASTM E 165.
b. Magnetic Particle Inspection: ASTM E 709; performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration will not be accepted.
c. Ultrasonic Inspection: ASTM E 164.
d. Radiographic Inspection: ASTM E 94.

D. In addition to visual inspection, test and inspect field-welded shear connectors according to requirements in AWS D1.1/D1.1M for stud welding and as follows:

1. Perform bend tests if visual inspections reveal either a less-than- continuous 360-degree flash or welding repairs to any shear connector.
2. Conduct tests on additional shear connectors if weld fracture occurs on shear connectors already tested, according to requirements in AWS D1.1/D1.1M.

E. Correct deficiencies in Work that test reports and inspections indicate does not comply with the Contract Documents.

3.6 REPAIRS AND PROTECTION

A. Touchup Painting: Immediately after erection, clean exposed areas where primer is damaged or missing and paint with the same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.

1. Clean and prepare surfaces by SSPC-SP 2 hand-tool cleaning or SSPC-SP 3 power-tool cleaning.

B. Touchup Painting: Cleaning and touchup painting are specified in Division 09 painting Sections.

END OF SECTION

SECTION 05 40 00

COLD-FORMED METAL FRAMING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.02 SUMMARY

A. This Section includes the following:
   1. Exterior nonload-bearing steel-stud curtainwall.

B. Related Sections: The following Sections contain requirements that relate to this Section:
   1. Division 5 Section "Metal Fabrications" for masonry shelf angles and connections.
   2. Division 9 Section "Gypsum Board Assemblies" for gypsum board and nonload-bearing metal-stud framing and ceiling-suspension assemblies.

1.03 PERFORMANCE REQUIREMENTS

A. AISI "Specifications": Calculate structural characteristics of cold-formed metal framing according to AISI's "Specification for the Design of Cold-Formed Steel Structural Members" and the following:
   1. Center for Cold-Formed Steel Structures (CCFSS) Technical Bulletin, Vol. 2, No. 1, February 1993 "AISI Specification Provisions for Screw Connections."

B. Structural Performance: Engineer, fabricate and erect cold-formed metal framing with the following minimum physical and structural properties:
   1. Physical and Structural Properties: As indicated on the drawings.

1.04 SUBMITTALS

A. General: Submit each item in this Article according to the Conditions of the Contract and Division 1 Specification Sections.

B. Product data for each type of cold-formed metal framing, accessory, and product specified.

C. Shop drawings showing layout, spacings, sizes, thicknesses, and types of cold-formed metal framing, fabrication, fastening and anchorage details, including mechanical fasteners. Show reinforcing channels, opening framing, supplemental framing, strapping, bracing, bridging, splices, accessories, connection details, and attachments to other units of Work.

D. 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.

E. Welder certificates signed by Contractor certifying that welders comply with requirements specified under the "Quality Assurance" Article.

F. Qualification data for firms and persons specified in the "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.

G. Product test reports from a qualified independent testing agency evidencing compliance with requirements of the following based on comprehensive testing:
   1. Expansion anchors.
   2. Powder-actuated anchors.
   3. Mechanical fasteners.

H. Research reports or evaluation reports of the model code organization acceptable to authorities having jurisdiction that evidence cold-formed metal framing's compliance with building code in effect for Project.

1.05 QUALITY ASSURANCE

A. Installer Qualifications: Engage an experienced Installer who has completed cold-formed metal framing similar in material, design, and extent to that indicated for this Project and with a record of successful in-service performance.

B. Testing Agency Qualifications: To qualify for acceptance, an independent testing agency must demonstrate to Architect's satisfaction, based on evaluation of agency-submitted criteria conforming to ASTM E 699, that it has the experience and capability to satisfactorily conduct the testing indicated without delaying the Work.

C. Welding Standards: Comply with applicable provisions of AWS D1.1 "Structural Welding Code--Steel" and AWS D1.3 "Structural Welding Code--Sheet Steel."

1. Certify that each welder has satisfactorily passed AWS qualification tests for welding processes involved and, if pertinent, has undergone recertification.

D. Fire-Test-Response Characteristics: Where fire-resistance-rated assemblies are indicated, provide cold-formed metal framing identical to that tested as part of an assembly for fire resistance per ASTM E 119 by an independent testing and inspecting agency acceptable to authorities having jurisdiction.
   1. Fire-Resistance Ratings: As indicated by design designations listed in UL "Fire Resistance Directory," or by Warnock Hersey or another testing and inspecting agency acceptable to authorities having jurisdiction.

E. Professional Engineer Qualifications: A professional engineer legally authorized to practice in the jurisdiction where Project is located and experienced in providing engineering services of the kind indicated that have resulted in the installation of cold-formed metal framing similar to this Project in material, design, and extent and that have a record of successful in-service performance.

F. Preinstallation Conference: Conduct conference at Project site to comply with requirements of Division 1 Section "Project Meetings."

1.06 DELIVERY, STORAGE, AND HANDLING

A. Protect cold-formed metal framing from corrosion, deformation, and other damage during delivery, storage, and handling.

B. Store cold-formed metal framing, protect with a waterproof covering, and ventilate to avoid condensation.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering cold-formed metal framing that may be incorporated in the Work include, but are not limited to, the following:

B. Manufacturers: Subject to compliance with requirements, provide cold-formed metal framing by one of the following:
   1. American Studco, Inc.
   2. Clark-Cincinnati, Inc.
   3. Consolidated Fabricators Corp.
   4. Dale//Incor Industries of Florida.
   5. Dale Industries, Inc.

6. Dietrich Industries, Inc.
7. Incor Plant Dale Industries.
8. MarinoWare; Div. of Ware Industries, Inc.

2.02 MATERIALS

A. Galvanized-Steel Sheet: (ASTM A 525M), and as follows:
   1. Coating Designation: G 60 (Z 180) in accordance with the requirements of ASTM A924.
   2. 12, 14 and 16 gage studs shall be formed from steel conforming to the requirements of ASTM A 653, SQ Grade 50, Class 1, possessing a minimum yield of 50,000 psi.
   3. 18 and 20 gage studs shall be formed from steel conforming to the minimum requirements of ASTM A653, CQ, Grade 33, possessing a minimum yield of 33,000 psi.

2.03 WALL FRAMING

A. Steel Studs: Manufacturer's standard C-shaped steel studs of punched web depths indicated on the drawings, with lipped flanges.

B. Steel Track: Manufacturer's standard U-shaped steel track, unpunched, of web depths indicated on the drawings with straight flanges, and complying with the following:
   1. Track shall be formed from steel conforming to the minimum requirements of ASTM A653, CQ, Grade 33, possessing a minimum yield of 33,000 psi.

2.04 FRAMING ACCESSORIES

A. Fabricate steel-framing accessories of the same material and finish used for framing members, with a minimum yield strength of 33,000 psi (230 MPa).

B. Provide accessories of manufacturer's standard thickness and configuration, unless otherwise indicated, as follows:
   1. Supplementary framing.
   2. Bracing, bridging, and solid blocking.
   3. Web stiffeners.
   4. Gusset plates.
   5. Deflection track and vertical slide clips.
   6. Stud kickers and girts.
   7. Joist hangers and end closures.
   8. Reinforcement plates.

2.05 ANCHORS, CLIPS, AND FASTENERS

A. Steel Shapes and Clips: ASTM A 36 (ASTM A 36M), zinc coated by the hot-dip process according to ASTM A 123.

B. Cast-in-Place Anchor Bolts and Studs: ASTM A 307, Grade A (ASTM F 568, Property Class 4.6); carbon-steel hex-head bolts and studs; carbon-steel nuts; and flat, unhardened-steel washers. Zinc coated by the hot-dip process according to ASTM A 153.

C. Expansion Anchors: Fabricated from corrosion-resistant materials, with capability to sustain, without failure, a load equal to 5 times the design load, as determined by testing per ASTM E 488 conducted by a qualified independent testing agency.

D. Powder-Actuated Anchors: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with capability to sustain, without failure, a load equal to 10 times the design load, as determined by testing per ASTM E 1190 conducted by a qualified independent testing agency.

E. Mechanical Fasteners: Corrosion-resistant coated, self-drilling, self-threading steel drill screws.
   1. Head Type: Low-profile head beneath sheathing, manufacturer's standard elsewhere.

F. Welding Electrodes: Comply with AWS standards.

2.06 MISCELLANEOUS MATERIALS

A. Galvanizing Repair Paint: SSPC-Paint 20 or DOD-P-21035, with dry film containing a minimum of 94 percent zinc dust by weight.

B. Cement Grout: Portland cement, ASTM C 150, Type I; and clean, natural sand, ASTM C 404. Mix at ratio of 1 part cement to 2-1/2 parts sand, by volume, with minimum water required for placement and hydration.

C. Nonmetallic, Nonshrink Grout: Premixed, nonmetallic, noncorrosive, nonstaining grout containing selected silica sands, portland cement, shrinkage-compensating agents, plasticizing and water-reducing agents, complying with ASTM C 1107, with fluid consistency and a 30-minute working time.

D. Thermal Insulation: ASTM C 665, Type I, unfaced mineral-fiber blankets produced by combining glass or slag fibers with thermosetting resins.

2.07 FABRICATION

A. Fabricate cold-formed metal framing and accessories plumb, square, true to line, and with connections securely fastened, according to manufacturer's recommendations and the requirements of this Section.
   1. Fabricate framing assemblies in jig templates.
   2. Cut framing members by sawing or shearing; do not torch cut.
   3. Fasten cold-formed metal framing members by welding. Wire tying of framing members is not permitted.
   4. Fasten cold-formed metal framing members by welding or screw fastening, as standard with fabricator. Wire tying of framing members is not permitted.
      a. Comply with AWS requirements and procedures for welding, appearance and quality of welds, and methods used in correcting welding work.
      b. Locate mechanical fasteners and install according to cold-framed metal framing manufacturer's instructions with screw penetrating joined members by not less than 3 exposed screw threads.
   5. Fasten other materials to cold-formed metal framing by welding, bolting, or screw fastening, according to manufacturer's recommendations.

B. Reinforce, stiffen, and brace framing assemblies to withstand handling, delivery, and erection stresses. Lift fabricated assemblies to prevent damage or distortion.

C. Fabrication Tolerances: Fabricate assemblies to a maximum allowable tolerance variation from plumb, level, and true to line of 1/8 inch in 10 feet (1:960) and as follows:
   1. Spacing: Space individual framing members no more than plus or minus 1/8 inch (3 mm) from plan location. Cumulative error shall not exceed minimum fastening requirements of sheathing or other finishing materials.
   2. Squareness: Fabricate each cold-formed metal framing assembly to a maximum out-of-square tolerance of 1/8 inch (3 mm).

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine supporting substrates and abutting structural framing for compliance with requirements, including installation tolerances and other conditions affecting performance of cold-formed metal framing. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Before sprayed-on fireproofing is applied, attach continuous angles, supplementary framing, or tracks to structural members indicated to receive sprayed-on fireproofing.

B. After sprayed-on fireproofing has been applied, remove only as much fireproofing as needed to complete installation of cold-formed framing without reducing thickness of fireproofing below that required to obtain fire-resistance rating indicated. Protect remaining fireproofing from damage.

C. Grout bearing surfaces uniform and level to ensure full contact of bearing flanges or track webs on supporting concrete or masonry construction.

3.03 INSTALLATION, GENERAL

A. Cold-formed metal framing may be shop or field fabricated for installation, or it may be field assembled.

B. Install cold-formed metal framing and accessories plumb, square, true to line, and with connections securely fastened, according to manufacturer's recommendations and the requirements of this Section.
   1. Cut framing members by sawing or shearing; do not torch cut.
   2. Fasten cold-formed metal framing members by welding or screw fastening, as standard with fabricator. Wire tying of framing members is not permitted.
      a. Comply with AWS requirements and procedures for welding, appearance and quality of welds, and methods used in correcting welding work.
      b. Locate mechanical fasteners and install according to cold-framed metal framing manufacturer's instructions with screw penetrating joined members by not less than 3 exposed screw threads.

C. Install framing members in one-piece lengths, unless splice connections are indicated for track or tension members.

D. Provide temporary bracing and leave in place until framing is permanently stabilized.

E. Do not bridge building expansion and control joints with cold-formed metal framing. Independently frame both sides of joints.

F. Install insulation in built-up exterior framing members, such as headers, sills, boxed joists, and double studs, inaccessible upon completion of framing work.

G. Fasten reinforcement plate over web penetrations that exceed size of manufacturer's standard punched openings.

H. Erection Tolerances: Install cold-formed metal framing to a maximum allowable tolerance variation from plumb, level, and true to line of 1/8 inch in 10 feet (1:960) and as follows:
   1. Space individual framing members no more than plus or minus 1/8 inch (3 mm) from plan location. Cumulative error shall not exceed minimum fastening requirements of sheathing or other finishing materials.

3.04 NONLOAD-BEARING CURTAINWALL INSTALLATION

A. Install continuous tracks sized to match studs. Align tracks accurately and securely anchor to supporting structure as indicated.

B. Squarely seat studs against webs of top and bottom tracks. Fasten both flanges of studs to top and bottom track, unless otherwise indicated. Space studs in accordance with the drawings.

C. Set studs plumb, except as needed for diagonal bracing or required for nonplumb walls or warped surfaces and similar requirements.

D. Isolate steel framing from building structure at locations indicated to prevent transfer of vertical loads while providing lateral support.
   1. Install deflection track and anchor to building structure.
   2. Connect studs with vertical slide clips to continuous angles or supplementary framing anchored to building structure.

E. Install horizontal bridging in curtainwall studs, spaced in rows not more than 48 inches (1219 mm) apart. Fasten at each stud intersection.
   1. Install additional row of horizontal bridging in curtainwall stud beneath deflection track when curtainwall studs are not fastened to an additional top track.
   2. Bridging: Combination of flat, steel-sheet straps of width and thickness indicated and stud-track solid blocking of width and thickness matching studs. Fasten flat straps to stud flanges and secure solid blocking to stud webs or flanges.

F. Install miscellaneous framing and connections, including stud kickers, web stiffeners, clip angles, continuous angles, anchors, fasteners, and stud girts, to provide a complete and stable curtainwall-framing system.

3.05 FIELD QUALITY CONTROL

A. Testing Agency: A qualified independent testing agency employed and paid by Owner will perform field quality-control testing.

B. Field and shop welds will be subject to inspection and testing.

C. Testing agency will report test results promptly and in writing to Contractor and Architect.

D. Remove and replace Work that does not comply with specified requirements.

E. Additional testing will be performed to determine compliance of corrected Work with specified requirements.

3.06 REPAIRS AND PROTECTION

A. Galvanizing Repairs: Prepare and repair damaged galvanized coatings on fabricated and installed cold-formed metal framing with galvanizing repair paint according to ASTM A 780 and the manufacturer's instructions.

B. Touchup Painting: Wire brush, clean, and paint scarred areas, welds, and rust spots on fabricated and installed prime-painted, cold-formed metal framing.
   1. Touchup painted surfaces with same type of shop paint used on adjacent surfaces.

C. Provide final protection and maintain conditions in a manner acceptable to manufacturer and Installer to ensure that cold-formed metal framing is without damage or deterioration at the time of Substantial Completion.

END OF SECTION

SECTION 05 50 00

METAL FABRICATIONS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Shop fabricated metal items.

B. Refer to Schedule at end of this Section.

1.02 RELATED SECTIONS

A. Section 09 90 00 - Painting.

1.03 REFERENCES

A. ASTM A36 - Structural Steel.

B. ASTM A386 - Zinc-Coating (Hot-Dip) on Assembled Steel Products.

C. ASTM A500 - Cold-formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.

D. ASTM A501 - Hot-formed Welded and Seamless Carbon Steel Structural Tubing.

E. AWS D1.1 - Structural Welding Code.

F. FS TT-P-645 - Primer, Paint, Zinc Chromate, Alkyd Type.

1.04 PERFORMANCE CRITERIA

A. Comply with BOCA Basic Building Code, 1996 edition, with supplements.

1.05 SUBMITTALS

A. Submit shop drawings.

B. Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories.

C. Include erection drawings, elevations, and details where applicable.

D. Indicate welded connections using standard AWS welding symbols. Indicate net weld lengths.

PART 2 PRODUCTS

2.01 MATERIALS

A. Steel Sections: ASTM A36.

B. Steel Tubing: ASTM A500, Grade B, ASTM A501 or ASTM A53, Grade B, Schedule 40.

C. Bolts, Nuts, Washers, and Anchors: ASTM A307, stainless steel.

D. Welding Materials: AWS D1.1; type required for materials being welded.

2.02 FABRICATION

A. Verify dimensions on site prior to shop fabrication.

B. Fabricate items with joints tightly fitted and secured.

C. Fit and shop assemble in largest practical sections, for delivery to site.

D. Grind exposed welds flush and smooth with adjacent finished surface. Ease exposed edges to small uniform radius.

E. Exposed Mechanical Fastenings: Flush countersunk phillips head screws or bolts; unobtrusively located; consistent with design of structure, except where specifically noted otherwise.

F. Make exposed joints butt tight, flush, and hairline.

G. Supply components required for anchorage of metal fabrications. Fabricate anchorage and related components of same material and finish as metal fabrication, except where specifically noted otherwise.

2.03 FINISH

A. Clean surfaces of rust, scale, grease, and foreign matter prior to finishing.

B. Do not prime ferrous surfaces in direct contact with concrete or where field welding is required.

C. Prime paint items scheduled with one coat.

D. Galvanize items to minimum G-90 zinc coating in accordance with ASTM A386.

PART 3 EXECUTION

3.01 PREPARATION

A. Obtain Architect approval prior to site cutting or making adjustments not scheduled.

B. Make provision for erection loads with temporary bracing. Keep work in alignment.

C. Clean and strip site primed steel items to bare metal where site welding is necessary.

3.02 INSTALLATION

A. Install items plumb and level, accurately fitted, free from distortion or defects.

B. After installation, touch-up scratched or damaged surfaces with primer and finish.

3.03 SCHEDULE

A. Provide and install items listed in Schedule and shown on Drawings with anchorage and attachments necessary for installation.

B. The Schedule is a list of principal items only. Refer to Drawing details for items not specifically scheduled.

C. Overhead supports for medical equipment.

D. Loose lintels, prime paint at interior locations, G-90 galvanized at exterior locations.

E. Miscellaneous supports for walls, partitions, door frames, T.V. racks, cubicle, and I.V. tracks.

F. Provide angle supports for all ceiling mounted HVAC units, water heaters or other equipment placed or stored above finished ceiling or additional bracing as required by truss manufacturer.

G. Unless qualified/excluded by Contractor in writing, Contractor to provide structural support required for the intended use of the space.

H. Work affecting structural steel members or other structural members to be approved by Contractor's structural engineer and Owner.

I. Reference structural and construction drawings for further specifications / requirements.

END OF SECTION

SECTION 06 10 00

ROUGH CARPENTRY

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Rough carpentry, temporary partitions and barriers.

1.02 RELATED SECTIONS

A. Section 06 20 00: Finish Carpentry.

1.03 REFERENCES

A. MIL-L-1914-C Lumber and Plywood, Fire Retardant Treated

B. PS 1 - Construction and Industrial Plywood

C. PS 20 - American Softwood Lumber Standard

D. NFPA - National Design Specification for Wood Construction.

1.04 QUALITY ASSURANCE

A. Rough Carpentry Lumber: Visible grade stamp, of agency certified by National Forest Products Association (NFPA).

B. Do not permit fire treated wood products to be exposed to moisture or dampness during transportation, storage or installation.

1.05 SUBMITTALS

A. Indicate blocking and grounds on shop drawings of other sections as applicable.

PART 2 PRODUCTS

2.01 ROUGH CARPENTRY MATERIALS

A. Lumber: PS 20; graded in accordance with established Grading rules; maximum moisture content of 19 percent; of following species and grades:

1. Blocking, nailers and grounds: Stress group B; construction grade, pressure treated with fire retardant.

B. Douglas Fir Plywood: Sheathing grade, pressure treated with fire retardant.

C. Nails, Spikes and Staples: Galvanized.

D. Bolts, Nuts, Washers, Lags, Pins and Screws: Medium carbon steel; sized to suit application, galvanized.

E. Fasteners: Toggle bolt type for anchorage to hollow masonry. Expansion shield and lag bolt type for anchorage to solid masonry or concrete. Bolts or power activated type for anchorage to steel.

2.02 WOOD TREATMENT

A. Interior Fire Resistant: AWPA C20 and C27; Interior, Type A; Hickson Corp.

"Dricon"; Osmose "Flameproof LHC-HTT"; Hoover "Pyro-Guard".

B. Shop pressure treat and deliver to site completely moisture protected, ready for installation.

PART 3 EXECUTION

3.01 BLOCKING, FURRING, AND STRIPPING

A. Erect wood blocking, stripping and nailing members true to lines and levels. Do not deviate from true alignment more than 1/4 inch.

B. Construct members of continuous pieces of longest possible lengths.

C. Blocking: To be provided for all door stops, toilet partitions, bath accessories, handrails where shown and cabinetry. Costs to be included in any unit prices.

3.02 SCHEDULE

A. Rough Carpentry Work:

1. Fire retardant treatment of wood members.
2. Miscellaneous furring and blocking.
3. Telephone backboards.

B. Treatment

1. Wood and plywood shall be fire resistant treated wood.

END OF SECTION

SECTION 06 20 00

FINISH CARPENTRY

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Standing and running trim.

B. Cabinetwork.

C. Patch, repair and refinish of existing wood handrails.

1.02 RELATED SECTIONS

A. Section 06 10 00 - Wood Blocking.

B. Section 08 14 00 - Wood Doors.

C. Section 09 90 00 - Painting: Painting and finishing of finish carpentry items.

1.03 REFERENCES

A. ANSI/HPHA HP - American Standard for Hardwood and Decorative Plywood.

B. AWI - Quality Standards.

C. FS MM-L-736 - Lumber; Hardwood.

D. NEMA LD-3 - High Pressure Decorative Laminates.

E. PS 1 - Construction and Industrial Hardwood.

F. PS 20 - American Softwood Lumber Standard.

G. FS MMM-A-130 Adhesive, Contact.

1.04 SUBMITTALS

A. Submit shop drawings indicating materials, component profiles, fastening methods, jointing details, finishes, accessories and to a minimum scale of 1-1/2 inch to one foot.

B. Submit product data.

C. Submit two samples 18 x 18 inch in size illustrating each wood grain and specified finish.

D. Submit two samples 18 inch long of wood trim.

E. Submit two samples 12 x 12 inch in size of each plastic laminate color, pattern and texture.

F. Submit two samples 8 x 8 inch in size of each solid surface material.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Store materials in ventilated, interior locations under constant minimum temperatures of 60°F and maximum relative humidity of 55 percent.

PART 2 PRODUCTS

2.01 LUMBER MATERIALS

A. Hardwood Lumber: FS MM-L-736; Custom grade in accordance with AWI; maximum moisture content of 6 percent; select birch species, with vertical grain, of quality capable of stained finish.

2.02 SHEET MATERIALS

A. Softwood Plywood: PS 1; Standard Sheathing Grade, Group 2, Appearance Quality; douglas fir species, with face veneer of plain sawn grain.

B. Hardwood Plywood: ANSI/HPHA HP; Custom Grade in accordance with AWI; particleboard core material; with face veneer of plain sawn birch, vertical grain.

C. Wood Particleboard: Composed of wood chips or flakes made with waterproof resin binders; sanded faces, fire treated.

1. Product: “Medite FR”, or “Duraflake FR”.

2.03 PLASTIC LAMINATE MATERIALS

A. Plastic Laminate: 0.050 inch General Purpose, 0.028 inch Vertical Grade; colors, and patterns, as selected, furniture surface finish; manufactured by Formica, Wilson Art or Nevamar.

B. Plastic Laminate Backing: High pressure paper base laminate without a decorative finish; 0.020 inch thick, smooth surface finish.

2.04 SOLID SURFACE MATERIALS

A. Corian.

B. Meganite.

2.05 ADHESIVE

A. Contact Adhesives: FS MMM-A-130; approved by laminate or solid surface material manufacturer.

2.06 ACCESSORIES

A. Nails: Size and type to suit application, plain finish.

B. Bolts, Nuts, Washers, Blind Fasteners, Lags, and Screws: Size and type to suit application; plain finish.

C. Lumber for Shimming, and Blocking, Softwood lumber of fir species.

D. Primer: Water based latex primer sealer type.

2.07 CABINET HARDWARE

A. Hinges: Grass 3903, self closing.

B. Drawer slides: Accuride 3832 and 3837.

C. Cabinet Locks: National Lock Corporation pin tumbler door and drawer locks, types as appropriate, US 26D, Dull Chrome finish. Provide two keys for each lock.

D. Cabinet Door and Drawer Pulls: Match existing.

2.08 FABRICATION

A. Fabricate to AWI "Custom" Quality standards.

B. Shop prepare and identify components for book match grain matching during site erection.

2.09 FACTORY FINISHING MILLWORK

A. Quality Standard: AWI Section 1500 for Custom Grade.

B. Finish architectural woodwork at factory. Defer only final touch-up, cleaning, and polishing until after installation.

C. Transport Finish for Closed-Grain Woods: Comply with requirements indicated below with sheen measured on 60 deg. Gloss meter per ASTM D 523.

1. AWI Finish System #5: Catalyzed polyurethane.

2. Staining: Match existing.

3. Effect: Closed grain.

D. Contractor to provide millwork, casework, countertops,vanities and other special millwork items as shown on drawings.

1. Wall Cabinets - 30 inch high-typical, appearance and construction to match base. Plastic laminate fascia soffits shall typically be provided above all wall cabinets, unless drywall soffits are specifically called out on the drawings.

2. Unless detailed otherwise on plan, all base cabinets to have one drawer with double door per unit with one adjustable shelf.

3. Doors and exposed faces - 4" wire pull grips standard.

4. Countertops - Solid surface material with integral backsplashes as detailed and shown on drawings. Supports shall be provided as required to properly support all countertops.

5. Waterproof laminate glue to be used in all potential wet areas.

6. Use heavy duty KV type standards and brackets on all shelving. Standards shall be fastened directly to studs or blocking in the wall. The use of “Zipits” or other hollow wall anchors is unacceptable.

7. Provide 2 1/2" grommet hole (complimentary color to laminate) at a minimum of every 5' in counters where electrical or voice/data outlets are located undercounter or at every kneehole location where there are outlets.

8. All drawer slides shall be equal to KV full extension heavy duty drawer slides. Hinges shall be equal to Blum fully adjustable/removable hinges.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that surfaces and openings are ready to receive work and field measurements are as instructed by the fabricator.

B. Verify mechanical, electrical, and building items affecting work of this Section are placed and ready to receive this work.

C. Beginning of installation means acceptance of existing conditions.

3.02 PREPARATION

A. Before installation, back prime paint surfaces of items or assemblies to be in contact with cementitious materials.

3.03 INSTALLATION

A. Install work in accordance with AWI "Custom" Quality standards.

B. Set and secure materials and components in place, plumb and level.

C. Install components with concealed nails and screws.

D. Cover exposed edges of particleboard shelving with 3/8 inch thick Birch edging. Width of edging to match thickness of shelving.

E. Apply plastic laminate finishes where indicated. Adhere with adhesive over entire surface. Make joints and corners hairline. Match patterns. Slightly bevel arises. Cap exposed edges with plastic laminate of same finish and pattern. Apply laminate backing sheet on reverse side of plastic laminate finished surfaces.

F. Install hardware in accordance with manufacturer's instructions.

G. Finish Carpentry: Provide and install all millwork, installation of solid core stain grade wood doors, hardware shelving, hanger rods, as shown on individual drawings or other customary carpentry items.

H. Sink Installation: (Coordinate with Division 15):
   1. See drawings.

I. Interior Trim and Finish:
   1. Fasteners shall be concealed when possible. Nail or screw heads shall be countersunk and puttied, painted or otherwise finished.
   2. Storage shelving shall be minimum ¾” melamine laminated particleboard with finishes edges.

3.04 TOLERANCES

A. Maximum Variation from True Position: 1/16 inch.

B. Maximum Offset from True Alignment with Abutting Materials: 1/32 inch.

3.05 PREPARATION FOR SITE FINISHING

A. Set exposed fasteners. Apply wood filler in exposed fastener indentations. Sand work smooth.

B. Site Finishing: Refer to Section 09 90 00.

3.06 PROTECTION

A. Protect finished installation.

3.07 SCHEDULE

A. See Drawings.

END OF SECTION

SECTION 07 81 00

SPRAY-ON FIREPROOFING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Concealed spray-on fireproofing.

B. Related Sections:

1. Division 5 Sections "Structural Steel", "Steel Joists", and "Steel Deck",for surface conditions specified for receiving sprayed-on fireproofing.
2. Division 7 Section "Firestopping" for through-penetration firestop systems.

1.3 DEFINITIONS

A. Concealed spray-on fireproofing refers to applications where sprayed-on materials are applied to surfaces that are concealed from view behind other construction when the Work is completed.

1.4 SUBMITTALS

A. Product data for each spray-on fireproofing product indicated.

1. Certification by manufacturer that products supplied comply with local regulations controlling use of volatile organic compounds (VOCs).
2. Certification by manufacturer that products are compatible with existing fireproofing materials.

B. Shop drawings in form of structural framing plans indicating the following:

1. Where and what kinds of surface preparations are required before applying fireproofing.
2. Extent of spray-on fireproofing for each different construction and fire-resistance rating including the following:

a. Applicable fire-resistive design designations of inspecting and testing agency acceptable to authorities having jurisdiction.
b. Minimum thicknesses needed to achieve required fire-resistance ratings of structural components and assemblies.

3. Treatment of fireproofing after its application.

C. Test reports for spray-on fireproofing from a qualified independent testing agency employed and paid by Contractor or manufacturer. Provide reports indicating that physical properties of proposed spray-on fireproofing products comply with specified requirements based on comprehensive testing of current product formulations according to the following requirements:

1. Testing is performed on spray-on fireproofing materials randomly selected from bags bearing the applicable classification marking of UL or another inspecting and testing agency acceptable to authorities having jurisdiction.
2. Testing is performed on specimens of spray-on fireproofing materials that comply with laboratory testing requirements specified in Part 2 and are otherwise identical in every respect to installed fireproofing including application of sealers, topcoats, tamping, troweling, rolling, and water overspray, if any of these are used in final application.
3. Qualified independent testing agency does testing on laboratory specimens that it witnessed during preparation and conditioning. Include in test reports a full description of preparation and conditioning of laboratory test specimens.

a. Test reports without the above information are not acceptable.

D. Test reports for primers and other coatings applied to structural steel from a qualified independent testing agency employed and paid by Contractor indicating that primers and coatings proposed for application in shop or field are compatible with sprayed-on fireproofing. Instruct laboratory to determine compatibility as follows:

1. By testing for bond per ASTM E 736 and requirements specified in UL "Fire Resistance Directory" about coating materials.
2. By verifying that fireproofing manufacturer has not found primers or coatings to be incompatible with fireproofing based on its own laboratory testing or field experience.

E. Product certificates from fireproofing manufacturers that each sprayed-on fireproofing product indicated for Project complies with specified requirements including those for fire-test-response characteristics and compatibility with adhesives, primers, and other surface coatings on substrates indicated to receive fireproofing.

F. Qualification data for firms and persons specified in "Quality Assurance" article to demonstrate their capabilities and experience. Include list of completed

projects with project names, addresses, names of Architects and Owners, and other information specified.

G. Research reports or evaluation reports of the model code organization acceptable to authorities having jurisdiction showing that sprayed-on fireproofing products comply with building code in effect for Project.

1.5 QUALITY ASSURANCE

A. Fire-Test-Response Characteristics: Provide spray-on fireproofing products identical to those used in assemblies tested for the following fire-test-response characteristics, per test method indicated below, by UL or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify packages (bags) containing fireproofing with appropriate classification markings of applicable testing and inspecting agency.

1. Fire-Resistance Ratings: As indicated by reference to fire-resistive designs listed in UL "Fire Resistance Directory," or in the comparable publication of another testing and inspecting agency acceptable to authorities having jurisdiction, for fire-resistive assemblies where sprayed-on fireproofing serves as direct-applied protection, tested per ASTM E 119.
2. Surface-Burning Characteristics: As indicated for each sprayed-on fireproofing product required, tested per ASTM E 84.

B. Installer Qualifications: Engage an experienced Installer certified, licensed, or approved in writing by the sprayed-on fireproofing manufacturer as having the necessary experience, staff, and training to install manufacturer's products per specified requirements.

C. Single-Source Responsibility: Obtain spray-on fireproofing materials from a single manufacturer for each different product require.

D. Provide fireproofing products containing no detectable asbestos as determined according to the method specified in 40 CFR Part 763, Subpart F, Appendix A, Section 1, Polarized Light Microscopy.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to Project site in original, unopened packages with intact and legible manufacturers' labels identifying product and manufacturer; date of manufacture; shelf life, if applicable; and fire-resistance ratings applicable to Project.

B. Use materials with limited shelf life within period indicated. Remove from Project site and discard any materials whose shelf life has expired.

C. Store spray-on fireproofing materials inside, under cover, above ground, so they are kept dry until ready for use. Remove from Project site and discard any materials that have deteriorated.

1.7 PROJECT CONDITIONS

A. Environmental Conditions: Do not install spray-on fireproofing when ambient or substrate temperatures are 40 deg F and falling, unless temporary protection and heat is provided to maintain temperatures at or above this level for 24 hours before, during, and for 24 hours after applying sprayed-on fireproofing.

B. Ventilation: Ventilate sprayed-on fireproofing by natural means or, where this is inadequate, forced-air circulation during and after application until fireproofing dries thoroughly.

1.8 SEQUENCING

A. Sequence and coordinate application of spray-on fireproofing with other related work specified in other Sections to comply with the following requirements:

1. Provide temporary enclosures to prevent deterioration of sprayed-on fireproofing for interior applications due to exposure to unfavorable environmental conditions.
2. Avoid unnecessary exposure of sprayed-on fireproofing to abrasion and other damage likely to occur during construction operations subsequent to its application.
3. Do not apply fireproofing to metal roof decking substrates until roofing has been completed; prohibit roof traffic during application and drying of fireproofing.
4. Do not begin applying fireproofing until clips, hangers, supports, sleeves, and other items penetrating fireproofing are in place.
5. Defer installing ducts, piping, and other items that would interfere with applying fireproofing until fireproofing is installed.
6. Do not install enclosing or concealing construction until after fireproofing has been applied, inspected, tested, and corrections have been made to any defective fireproofing.

1.9 WARRANTY

A. Warranty: Submit a written warranty, executed by Contractor and cosigned by Installer, agreeing to repair or replace sprayed-on fireproofing that has failed within the specified warranty period. Failures include but are not limited to the following:

1. Cracking, flaking, eroding in excess of specified requirements, peeling, and delaminating of sprayed-on fireproofing from substrates due to defective materials and workmanship within the specified warranty period.

2. Not covered under the warranty are failures attributable to damage by occupants and Owner's maintenance personnel, exposure to environmental conditions other than those investigated and approved during fire-response testing, and to other causes not reasonably foreseeable under conditions of normal use.

B. The warranty specified in this Article shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and shall be in addition to and run concurrent with other warranties made by the Contractor under requirements of the Contract Documents.

C. Warranty Period: 2 years from date of Substantial Completion.

PART 2 – PRODUCTS

2.1 CONCEALED SPRAY-ON FIREPROOFING MATERIALS

A. For concealed applications of spray-on fireproofing provide manufacturer's standard products complying with requirements indicated in this article for material composition and physical properties representative of installed products.

B. Material Composition:

1. Cementitious fireproofing consisting of factory-mixed, dry formulation of gypsum or portland cement and lightweight mineral or synthetic aggregates mixed with water at Project site to form a slurry or mortar for conveyance and application.

C. Physical Properties: Minimum values, unless otherwise indicated or higher values required to attain designated fire-resistance ratings, measured per standard test methods referenced with each property listed below:

1. Bond Strength: 150 lb. per sq. ft. as determined per ASTM E 736 under the following conditions:

a. Field test spray-on fireproofing that is applied to flanges of wide-flange structural steel members on surfaces matching those that will exist for remainder of steel receiving fireproofing.
b. If surfaces of structural steel receiving spray-on fireproofing are primed or otherwise painted, perform series of bond tests specified in UL "Fire Resistance Directory" for coating materials.
c. Minimum spray-on fireproofing thickness tested in laboratory shall be 0.75 inch.

2. Compressive Strength: 5.21 lb. per sq. inch as determined in the laboratory per ASTM E 761. Minimum sprayed-on fireproofing thickness tested shall be 0.75 inch and the minimum dry density shall be as specified, but not less than 15 pcf.

3. Corrosion Resistance: No evidence of corrosion as determined per ASTM E 937.
4. Deflection: No cracking, spalling, delamination or the like as determined per ASTM E 759.
5. Effect of Impact on Bonding: No cracking, spalling, delamination or the like as determined per ASTM E 760.
6. Air Erosion: Maximum weight loss of 0.025 gram per sq. ft. in 24 hours as determined per ASTM E 859. For laboratory tests, the minimum sprayed-on fireproofing thickness is 0.75 inch, the maximum dry density is 15 pcf, test specimens are not prepurged by mechanically induced air velocities, and tests are terminated after 24 hours.
7. Dry Density: 15 pcf for average and individual densities regardless of density indicated in referenced fire-resistive design, or greater if required to attain fire-resistance ratings indicated, as determined per ASTM E 605 or Appendix A "Alternate Method for Density Determination" of AWCI Technical Manual 12-A.
8. Thickness: Provide minimum average thickness required for fire-resistive design indicated according to the following criteria, but not less than 0.375 inch, as determined per ASTM E 605.

    a. Where the referenced fire-resistive design lists a thickness of one inch or greater, the minimum allowable individual spray-on fireproofing thickness is the design thickness minus 0.25 inch.
    b. Where the referenced fire-resistive design lists a thickness of less than one inch but more than 0.375 inch, the minimum allowable individual sprayed-on fireproofing thickness is the greater of 0.375 inch or 75 percent of the design thickness.
    c. No reduction in average thickness is permitted for those fire-resistive designs whose fire resistance ratings were established at densities of less than 15 pcf.

9. Surface-Burning Characteristics: Maximum flame-spread value of 10 and smoke-developed value of 0.

D. Products: Subject to compliance with requirements, provide one of the following:

1. Cementitious Fireproofing:

    a. Type 5, Southwest Vermculite.
    b. Pyrolite 1, Carboline Fireproofing Products Div., Carboline Co.
    c. Monokote Type MK-6/HY, Construction Products Div., W.R. Grace & Co.--Conn.
    d. Cafco Blaze Shield, Isolatek International Corp.

2.2 AUXILIARY FIREPROOFING MATERIALS

A. Provide auxiliary fireproofing materials that are compatible with spray-on fireproofing products and substrates and are approved by UL or another testing

and inspecting agency acceptable to authorities having jurisdiction for use in the fire-resistive designs indicated.

B. Substrate Primers: For use on each different substrate and with each different spray-on fireproofing product, provide primer that complies with one or more of the following requirements:

1. Primer's bond strength complies with requirements specified in UL "Fire Resistance Directory" for coating materials based on a series of bond tests per ASTM E 736.
2. Primer is identical to those used in assemblies tested for the fire-test-response characteristics of sprayed-on fireproofing, per ASTM E 119, by UL or another testing and inspecting agency acceptable to authorities having jurisdiction.

C. Adhesive for Bonding Fireproofing: Product approved by manufacturer of sprayed-on fireproofing.

D. Reinforcing Fabric: Glass-fiber fabric of type, weight, and form required to comply with fire-resistive designs indicated, approved by manufacturer of intumescent mastic fireproofing.

E. Sealer coats: Type as recommended by manufacturer of each fireproofing material required for applications indicated.

1. Elevator equipment rooms
2. Elevator shafts
3. Electrical rooms and closets
4. Telephone and communication rooms and closets
5. Exposed in finished construction

PART 3 – EXECUTION

3.1 EXAMINATION

A. Examine substrates with Installer present to determine if they are in satisfactory condition to receive spray-on fireproofing. A substrate is in satisfactory condition if it complies with the following:

1. Substrates comply with requirements in the Section where the substrate and related materials and construction are specified.
2. Substrates are free of oil, grease, rolling compounds, incompatible primers, loose mill scale, dirt, or other foreign substances capable of impairing bond of fireproofing with substrate under conditions of normal use or fire exposure.
3. Objects penetrating fireproofing, including clips, hangers, support sleeves, and similar items, are securely attached to substrates.

4. Substrates are not obstructed by ducts, piping, equipment, and other suspended construction that will interfere with applying the fireproofing.

B. Conduct tests according to spray-on fireproofing manufacturer's recommendations to verify that substrates are free of oil, rolling compounds, and other substances capable of interfering with bond where there is any doubt as to their presence.

C. Do not proceed with installation of fireproofing until unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Clean substrates of substances that could impair bond of fireproofing, including oil, grease, rolling compounds, incompatible primers, and loose mill scale.

B. Prime substrates where recommended by fireproofing manufacturer, except where compatible shop primer has been applied to steel surfaces and is in satisfactory condition to receive fireproofing.

C. Cover other work subject to damage from fall-out or overspray of fireproofing materials during application. Provide temporary enclosure as required to confine spraying operations, protect the environment, and ensure maintaining adequate ambient conditions for temperature and ventilation.

3.3 INSTALLATION

A. Comply with fireproofing manufacturer's instructions for mixing materials, application procedures, and types of equipment used to convey and spray on fireproofing materials; as applicable to the particular conditions of installation and as required to achieve fire-resistance ratings indicated.

B. Apply spray-on fireproofing that is identical to products tested as specified in Part 1 under "Test Reports" in "Submittals" article, with respect to rate of application, use of sealers, topcoats, tamping, troweling, water overspray, or other materials and procedures affecting test results.

C. Coat substrates with adhesive prior to applying fireproofing where required to achieve fire-resistance rating or as recommended by fireproofing manufacturer for material and application indicated.

D. Extend fireproofing in full thickness over entire area of each substrate to be protected. Unless otherwise recommended by fireproofing manufacturer, install body of fireproof covering in a single course.

E. Apply fireproofing materials by spray-on method to maximum extent possible. Following the spraying operation in each area, complete the coverage by trowel application or other placement method recommended by manufacturer.

F. Provide sealer type topcoat over fireproofing at locations noted.. Apply product that is tinted to differentiate it from the spray-on fireproofing over which it is applied.

G. Apply fireproofing in thicknesses and densities indicated but not less than those required to achieve fire-resistance ratings designated for each condition and comply with requirements for thickness specified in Part 2 "Concealed Fireproofing" article.

3.4 CLEANING, REPAIR, AND PROTECTION

A. Cleaning: Immediately after completing spraying operations in each containable area of Project, remove material over-spray and fall-out from surfaces of other construction and clean exposed surfaces to remove evidence of soiling.

B. Cure exposed cementitious fireproofing materials according to fireproofing manufacturer's recommendations to prevent premature drying.

C. Protect fireproofing, according to advice of fireproofing manufacturer and Installer, from damage resulting from construction operations or other causes so that fireproofing will be without damage or deterioration at time of Substantial Completion.

D. Coordinate installation of fireproofing with other construction to minimize the need to cut or remove fireproofing. As installation of other construction proceeds, inspect fireproofing and patch any areas where fireproofing was removed or damaged.

E. Repair or replace work that has not been successfully protected.

END OF SECTION

SECTION 07 84 13

THROUGH-PENETRATION FIRESTOP SYSTEMS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Through-penetration firestop systems for penetrations through fire-resistance-rated floors, walls, and partitions.

1.02 RELATED SECTIONS

A. Section 04 20 00 – Unit Masonry

B. Section 09 20 00 - Gypsum Drywall Systems

1.03 QUALITY ASSURANCE

A. Fire-Test-Response Characteristics: Tested per ASTM E 814 by UL.

1.04 SUBMITTALS

A. U.L. Assembly drawings, and data sheets.

PART 2 PRODUCTS

2.01 MATERIALS

A. Accessories: Permanent forming/damming/backing materials, substrate primers, and collars.

B. Fill Materials: Latex sealants, firestop devices, intumescent putties, intumescent wrap strips, and silicone sealants.

2.02 MANUFACTURERS

A. Nelson Firestop.

B. Hilti.

C. 3M.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install in strict accordance with U.L. criteria and manufacturer’s printed instructions.

B. Identification: Apply pressure-sensitive, self-adhesive, preprinted vinyl labels to wall surfaces adjacent to assembly.

3.02 FIELD QUALITY CONTROL

A. Inspecting Agency: Authorities having jurisdiction

END OF SECTION

SECTION 07 84 43

FIRE-RESISTIVE JOINT SYSTEMS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Fire-resistive joint systems for the following:

1. Floor-to-wall joints.

2. Head-of-wall joints.

3. Joints between perimeter edge of fire-resistance-rated floor assemblies and back of non-fire-resistance-rated exterior curtain walls (perimeter fire-containment systems).

1.02 RELATED SECTIONS

A. Section 04 20 00 – Unit Masonry

B. Section 05 40 00 Cold Formed Metal Framing

C. Section 09 20 00 - Gypsum Drywall Systems.

1.03 QUALITY ASSURANCE

A. Fire-Test-Response Characteristics of Fire-Resistive Joint Systems: Tested per UL 2079.

B. Fire Resistance of Perimeter Fire-Containment Systems: Integrity and insulation ratings determined by UBC Standard 26-9 and UL 2079.

1.04 SUBMITTALS

A. UL Assembly drawings and data sheets.

PART 2 PRODUCTS

2.01 MATERIALS

A. Accessories: Forming materials and other components needed to install file materials.

B. Floor-to-wall, Fire-Resistive Joint System:

1. Assembly Rating: 1 and 2 hours as indicated.

2. Nominal Joint Width: ½ inch.

3. Movement Capabilities: Class II – 50 percent.

C. Head-of-Wall, Fire-Resistive Joint System

1. Assembly Rating: 1 and 2 hours as indicated

2. Nominal Joint Width: ½ inch.

3. Movement Capabilities: Class II – 50 percent.

D. Perimeter Fire-Containment Systems:

1. Integrity Rating: 2 hours unless noted otherwise.
2. Insulation Rating: 1 hour.
3. Linear Opening Width: As indicated.

2.02 MANUFACTURERS

A. Nelson Firestop

B. Hilti

C. 3M

PART 3 EXECUTION

3.01 INSTALLATION

A. Install in strict accordance with UL criteria and manufacturer's printed instructions.

3.02 FIELD QUALITY CONTROL

Inspecting Agency: Authorities having jurisdiction.

END OF SECTION

SECTION 07 92 00

JOINT SEALANTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Silicone joint sealants.
2. Urethane joint sealants.
3. Silyl-terminated polyether joint sealants.
4. Butyl joint sealants.
5. Latex joint sealants.

B. Related Requirements:

1. Section 079100 "Preformed Joint Seals" for preformed compressible foam and precured joint seals.
2. Section 079219 "Acoustical Joint Sealants" for sealing joints in sound-rated construction.
3. Section 321373 "Concrete Paving Joint Sealants" for sealing joints in paved roads, parking lots, walkways, and curbing.

1.3 ACTION SUBMITTALS

A. Product Data: For each joint-sealant product.

B. LEED Submittals:

1. Product Data for Credit IEQ 4.1: For sealants and sealant primers used inside the weatherproofing system, documentation including printed statement of VOC content.
2. Laboratory Test Reports for Credit IEQ 4.1: For sealants and sealant primers used inside the weatherproofing system, documentation indicating that products 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."

C. Samples for Initial Selection: Manufacturer's color charts consisting of strips of cured sealants showing the full range of colors available for each product exposed to view.

D. Samples for Verification: For each kind and color of joint sealant required, provide Samples with joint sealants in 1/2-inch- (13-mm-) wide joints formed between two 6-inch- (150-mm-) long strips of material matching the appearance of exposed surfaces adjacent to joint sealants.

E. Joint-Sealant Schedule: Include the following information:

1. Joint-sealant application, joint location, and designation.
2. Joint-sealant manufacturer and product name.
3. Joint-sealant formulation.
4. Joint-sealant color.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified testing agency.

B. Product Test Reports: For each kind of joint sealant, for tests performed by manufacturer and witnessed by a qualified testing agency.

C. Preconstruction Laboratory Test Schedule: Include the following information for each joint sealant and substrate material to be tested:

1. Joint-sealant location and designation.
2. Manufacturer and product name.
3. Type of substrate material.
4. Proposed test.
5. Number of samples required.

D. Preconstruction Laboratory Test Reports: From sealant manufacturer, indicating the following:

1. Materials forming joint substrates and joint-sealant backings have been tested for compatibility and adhesion with joint sealants.
2. Interpretation of test results and written recommendations for primers and substrate preparation are needed for adhesion.

E. Preconstruction Field-Adhesion-Test Reports: Indicate which sealants and joint preparation methods resulted in optimum adhesion to joint substrates based on testing specified in "Preconstruction Testing" Article.

F. Field-Adhesion-Test Reports: For each sealant application tested.

G. Sample Warranties: For special warranties.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: An authorized representative who is trained and approved by manufacturer.

B. Product Testing: Test joint sealants using a qualified testing agency.

1. Testing Agency Qualifications: Qualified according to ASTM C 1021 to conduct the testing indicated.

C. Mockups: Install sealant in mockups of assemblies specified in other Sections that are indicated to receive joint sealants specified in this Section. Use materials and installation methods specified in this Section.

1.6 PRECONSTRUCTION TESTING

A. Preconstruction Laboratory Testing: Submit to joint-sealant manufacturers, for testing indicated below, samples of materials that will contact or affect joint sealants.

1. Adhesion Testing: Use ASTM C 794 to determine whether priming and other specific joint preparation techniques are required to obtain rapid, optimum adhesion of joint sealants to joint substrates.
2. Compatibility Testing: Use ASTM C 1087 to determine sealant compatibility when in contact with glazing and gasket materials.
3. Stain Testing: Use ASTM C 1248 to determine stain potential of sealant when in contact with [**stone**] [**masonry**] <**Insert substrate**> substrates.
4. Submit manufacturer's recommended number of pieces of each type of material, including joint substrates, joint-sealant backings, and miscellaneous materials.
5. Schedule sufficient time for testing and analyzing results to prevent delaying the Work.
6. For materials failing tests, obtain joint-sealant manufacturer's written instructions for corrective measures, including use of specially formulated primers.
7. Testing will not be required if joint-sealant manufacturers submit data that are based on previous testing, not older than 24 months, of sealant products for adhesion to, staining of, and compatibility with joint substrates and other materials matching those submitted.

B. Preconstruction Field-Adhesion Testing: Before installing sealants, field test their adhesion to Project joint substrates as follows:

1. Locate test joints where indicated on Project or, if not indicated, as directed by Architect.
2. Conduct field tests for each kind of sealant and joint substrate.
3. Notify Architect seven days in advance of dates and times when test joints will be erected.
4. Arrange for tests to take place with joint-sealant manufacturer's technical representative present.

    a. Test Method: Test joint sealants according to Method A, Field-Applied Sealant Joint Hand Pull Tab, in Appendix X1.1 in ASTM C 1193 or Method A, Tail Procedure, in ASTM C 1521.

        1) For joints with dissimilar substrates, verify adhesion to each substrate separately; extend cut along one side, verifying adhesion to opposite side. Repeat procedure for opposite side.

5. Report whether sealant failed to adhere to joint substrates or tore cohesively. Include data on pull distance used to test each kind of product and joint substrate. For sealants that fail adhesively, retest until satisfactory adhesion is obtained.
6. Evaluation of Preconstruction Field-Adhesion-Test Results: Sealants not evidencing adhesive failure from testing, in absence of other indications of noncompliance with requirements, will be considered satisfactory. Do not use sealants that fail to adhere to joint substrates during testing.

1.7 FIELD CONDITIONS

A. Do not proceed with installation of joint sealants under the following conditions:

1. When ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer or are below 40 deg F (5 deg C).
2. When joint substrates are wet.
3. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
4. Where contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

1.8 WARRANTY

A. Special Installer's Warranty: Installer agrees to repair or replace joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.

1. Warranty Period: Two years from date of Substantial Completion.

B. Special Manufacturer's Warranty: Manufacturer agrees to furnish joint sealants to repair or replace those joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.

1. Warranty Period: Five years from date of Substantial Completion.

C. Special warranties specified in this article exclude deterioration or failure of joint sealants from the following:

1. Movement of the structure caused by stresses on the sealant exceeding sealant manufacturer's written specifications for sealant elongation and compression.
2. Disintegration of joint substrates from causes exceeding design specifications.
3. Mechanical damage caused by individuals, tools, or other outside agents.
4. Changes in sealant appearance caused by accumulation of dirt or other atmospheric contaminants.

PART 2 - PRODUCTS

2.1 JOINT SEALANTS, GENERAL

A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by joint-sealant manufacturer, based on testing and field experience.

B. VOC Content of Interior Sealants: Sealants and sealant primers used inside the weatherproofing system shall comply with the following:

1. Architectural sealants shall have a VOC content of 250 or less.
2. Sealants and sealant primers for nonporous substrates shall have a VOC content of 250 or less.
3. Sealants and sealant primers for nonporous substrates shall have a VOC content of 775 or less.

C. Low-Emitting Interior Sealants: Sealants and sealant primers shall comply with the testing and product requirements of the California Department of 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."

D. Colors of Exposed Joint Sealants: As selected by Architect from manufacturer's full range.

2.2 SILICONE JOINT SEALANTS

A. Silicone, S, NS, 25, NT: Single-component, nonsag, plus 25 percent and minus 25 percent movement capability, nontraffic-use, neutral-curing silicone joint sealant; ASTM C 920, Type S, Grade NS, Class 25, Use NT.

1. Basis-of-Design Product: Subject to compliance with requirements, provide The Sherwin-Williams Company, Silicone Rubber All Purpose Sealant, or a comparable product by one of the following:

a. Dow Corning Corporation.
b. Polymeric Systems, Inc.
c. Schnee-Morehead, Inc., an ITW company.

2.3 URETHANE JOINT SEALANTS

A. Urethane, S, NS, 25, NT: Single-component, nonsag, nontraffic-use, plus 25 percent and minus 25 percent movement capability, urethane joint sealant; ASTM C 920, Type S, Grade NS, Class 25, Use NT.

1. Basis-of-Design Product: Subject to compliance with requirements, provide The Sherwin Williams Company or comparable product by one of the following:

a. BASF Construction Chemicals, LLC, Building Systems.
b. Bostik, Inc.; Chem-Calk.
c. Pecora Corporation.
d. Polymeric Systems, Inc.
e. Schnee-Morehead, Inc., an ITW company.
f. Sika Corporation U.S.
g. Tremco Incorporated.

B. Urethane, S, NS, 50, NT: Single-component, nonsag, nontraffic-use, plus 50 percent and minus 50 percent movement capability, hybrid urethane joint sealant; ASTM C 920, Type S, Grade NS, Class 50, Use NT.

1. Basis-of-Design Product: Subject to compliance with requirements, provide The Sherwin-Williams Company; Stampede-100 or comparable product by one of the following:

C. Urethane, S, P, 25, T, NT: Single-component, pourable, plus 25 percent and minus 25 percent movement capability, traffic- and nontraffic-use, urethane joint sealant; ASTM C 920, Type S, Grade P, Class 25, Uses T and NT.

1. Basis-of-Design Product: Subject to compliance with requirements, provide The Sherwin Williams Company; Stampede-1SL or comparable product by one of the following:

a. BASF Construction Chemicals, LLC, Building Systems.
b. Polymeric Systems, Inc.
c. Schnee-Morehead, Inc.; an ITW company.

D. Urethane, M, NS, 25, NT: Multicomponent, nonsag, plus 25 percent and minus 25 percent movement capability, nontraffic-use, urethane joint sealant; ASTM C 920, Type M, Grade NS, Class 25, Use NT.

1. Basis-of-Design Product: Subject to compliance with requirements, provide The Sherwin Williams Company; Stampede-2NS or comparable product by one of the following:

E. Urethane, M, P, 25, T, NT: Multicomponent, pourable, plus 25 percent and minus 25 percent movement capability, traffic- and nontraffic-use, urethane joint sealant; ASTM C 920, Type M, Grade P, Class 25, Uses T and NT.

1. Basis-of-Design Product: Subject to compliance with requirements, provide The Sherwin Williams Company; Stampede-2SL or comparable product by one of the following:

a. Bostik, Inc..
b. Pecora Corporation.
c. Tremco Incorporated.

2.4 SILYL-TERMINATED POLYETHER (STPE) JOINT SEALANTS

A. STPE, S, NS, 35, NT: Single-component, nonsag, plus 35 percent and minus 35 percent movement capability, nontraffic-use, silyl-terminated polyether joint sealant; ASTM C 920, Type S, Grade NS, Class 35, Use NT.

1. Basis-of-Design Product: Subject to compliance with requirements, provide The Sherwin Williams Company; Stampede-1H or comparable product by one of the following:

a. Tremco Incorporated.

2.5 BUTYL JOINT SEALANTS

A. Butyl-Rubber-Based Joint Sealants: ASTM C 1311.

1. Products: Subject to compliance with requirements, provide the following:

2.6 LATEX JOINT SEALANTS

A. Acrylic Latex: Acrylic latex or siliconized acrylic latex, ASTM C 834, Type OP, Grade NF.

1. Basis-of-Design Product: Subject to compliance with requirements, provide The Sherwin Williams Company or comparable product by one of the following:

a. BASF Construction Chemicals, LLC, Building Systems.
b. May National Associates, Inc., a subsidiary of Sika Corporation U.S.
c. Pecora Corporation.
d. Tremco Incorporated.

2.7 JOINT-SEALANT BACKING

A. Sealant Backing Material, General: Nonstaining; compatible with joint substrates, sealants, primers, and other joint fillers; and approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.

B. Cylindrical Sealant Backings: ASTM C 1330, as approved in writing by joint-sealant manufacturer for joint application indicated, and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.

C. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint. Provide self-adhesive tape where applicable.

2.8 MISCELLANEOUS MATERIALS

A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.

B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants to joint substrates.

C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:

1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
2. Clean porous joint substrate surfaces by brushing, grinding, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining after cleaning operations

above by vacuuming or blowing out joints with oil-free compressed air. Porous joint substrates include the following:

a. Concrete.
b. Masonry.
c. Unglazed surfaces of ceramic tile.
d. Exterior insulation and finish systems.

3. Remove laitance and form-release agents from concrete.
4. Clean nonporous joint substrate surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants. Nonporous joint substrates include the following:

a. Metal.
b. Glass.
c. Porcelain enamel.
d. Glazed surfaces of ceramic tile.

B. Joint Priming: Prime joint substrates where recommended by joint-sealant manufacturer or as indicated by preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.

C. Masking Tape: Use masking tape where required to prevent contact of sealant or primer with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.3 INSTALLATION OF JOINT SEALANTS

A. General: Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.

B. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.

C. Install sealant backings of kind indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.

1. Do not leave gaps between ends of sealant backings.
2. Do not stretch, twist, puncture, or tear sealant backings.
3. Remove absorbent sealant backings that have become wet before sealant application, and replace them with dry materials.

D. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.

E. Install sealants using proven techniques that comply with the following and at the same time backings are installed:

1. Place sealants so they directly contact and fully wet joint substrates.
2. Completely fill recesses in each joint configuration.

3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.

F. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified in subparagraphs below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.

1. Remove excess sealant from surfaces adjacent to joints.
2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
3. Provide concave joint profile per Figure 8A in ASTM C 1193 unless otherwise indicated.
4. Provide flush joint profile according to Figure 8B in ASTM C 1193.
5. Provide recessed joint configuration of recess depth and according to Figure 8C in ASTM C 1193.

a. Use masking tape to protect surfaces adjacent to recessed tooled joints.

3.4 FIELD QUALITY CONTROL

A. Field-Adhesion Testing: Field test joint-sealant adhesion to joint substrates as follows:

1. Extent of Testing: Test completed and cured sealant joints as follows:

a. Perform **10** tests for the first 1000 feet (300 m) of joint length for each kind of sealant and joint substrate.
b. Perform one test for each 1000 feet (300 m)] of joint length thereafter or one test per each floor per elevation.

2. Test Method: Test joint sealants according to Method A, Field-Applied Sealant Joint Hand Pull Tab, in Appendix X1 in ASTM C 1193 or Method A, Tail Procedure, in ASTM C 1521.

a. For joints with dissimilar substrates, verify adhesion to each substrate separately; extend cut along one side, verifying adhesion to opposite side. Repeat procedure for opposite side.

3. Inspect tested joints and report on the following:

a. Whether sealants filled joint cavities and are free of voids.
b. Whether sealant dimensions and configurations comply with specified requirements.
c. Whether sealants in joints connected to pulled-out portion failed to adhere to joint substrates or tore cohesively. Include data on pull distance used to test each kind of product and joint substrate. Compare these results to determine if adhesion complies with sealant manufacturer's field-adhesion hand-pull test criteria.

4. Record test results in a field-adhesion-test log. Include dates when sealants were installed, names of persons who installed sealants, test dates, test locations, whether joints were primed, adhesion results and percent elongations, sealant material, sealant configuration, and sealant dimensions.
5. Repair sealants pulled from test area by applying new sealants following same procedures used originally to seal joints. Ensure that original sealant surfaces are clean and that new sealant contacts original sealant.

B. Evaluation of Field-Adhesion-Test Results: Sealants not evidencing adhesive failure from testing or noncompliance with other indicated requirements will be considered satisfactory. Remove sealants that fail to adhere to joint substrates during testing or to comply with other requirements. Retest failed applications until test results prove sealants comply with indicated requirements.

3.5 CLEANING

A. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

3.6 PROTECTION

A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out, remove, and repair damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original work.

3.7 JOINT-SEALANT SCHEDULE

A. Joint-Sealant Application: Exterior joints in horizontal traffic surfaces

1. Joint Locations:

    a. Control and expansion joints in brick pavers.
    b. Isolation and contraction joints in cast-in-place concrete slabs.
    c. Joints between plant-precast architectural concrete paving units.
    d. Joints in stone paving units, including steps.
    e. Tile control and expansion joints.
    f. Joints between different materials listed above.
    g. Other joints as indicated on Drawings.

2. Joint Sealant: Urethane, M, P, 50, T, NT
3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

B. Joint-Sealant Application: Exterior joints in horizontal traffic surfaces subject to water immersion.

1. Joint Locations:

    a. Joints in pedestrian plazas.
    b. Joints in swimming pool decks.
    c. Other joints as indicated on Drawings.

2. Joint Sealant: Urethane, immersible, S, P, 25, T, NT, I.
3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

C. Joint-Sealant Application: Exterior joints in vertical surfaces and horizontal nontraffic surfaces.

1. Joint Locations:

a. Construction joints in cast-in-place concrete.
b. Joints between plant-precast architectural concrete units.
c. Control and expansion joints in unit masonry.
d. Joints in dimension stone cladding.
e. Joints in glass unit masonry assemblies.
f. Joints in exterior insulation and finish systems.
g. Joints between metal panels.
h. Joints between different materials listed above.
i. Perimeter joints between materials listed above and frames of doors windows and louvers.
j. Control and expansion joints in ceilings and other overhead surfaces.
k. Other joints as indicated on Drawings.

2. Sealant: Silicone, nonstaining, S, NS, 50, NT.
3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

D. Joint-Sealant Application: Interior joints in horizontal traffic surfaces.

1. Joint Locations:

a. Isolation joints in cast-in-place concrete slabs.
b. Control and expansion joints in stone flooring.
c. Control and expansion joints in brick flooring.
d. Control and expansion joints in tile flooring.
e. Other joints as indicated on Drawings.

2. Joint Sealant: Urethane, S, P, 25, T, NT.
3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

E. Joint-Sealant Application: Interior joints in vertical surfaces and horizontal nontraffic surfaces.

1. Joint Locations:

a. Control and expansion joints on exposed interior surfaces of exterior walls.
b. Tile control and expansion joints.
c. Vertical joints on exposed surfaces of unit masonry concrete walls and partitions.
d. Joints on underside of plant-precast structural concrete beams and planks.
e. Other joints as indicated on Drawings.

2. Joint Sealant: Urethane, S, NS, 25, NT.
3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

F. Joint-Sealant Application: Interior joints in vertical surfaces and horizontal nontraffic surfaces not subject to significant movement.

1. Joint Locations:

a. Control joints on exposed interior surfaces of exterior walls.
b. Perimeter joints between interior wall surfaces and frames of interior doors windows and elevator entrances.
c. Other joints as indicated on Drawings.

2. Joint Sealant: Acrylic latex.
3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

G. Joint-Sealant Application: Mildew-resistant interior joints in vertical surfaces and horizontal nontraffic surfaces.

1. Joint Locations:

    a. Joints between plumbing fixtures and adjoining walls, floors, and counters.
    b. Tile control and expansion joints where indicated.
    c. Other joints as indicated on Drawings.

2. Joint Sealant: Silicone, mildew resistant, acid curing, S, NS, 25, NT.
3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

H. Joint-Sealant Application: Concealed mastics.

1. Joint Locations:

    a. Aluminum thresholds.
    b. Sill plates.
    c. Other joints as indicated on Drawings.

2. Joint Sealant: Butyl-rubber based.
3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

END OF SECTION

SECTION 08 11 00

CUSTOM STEEL DOORS & FRAMES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Custom fabricated non-rated and fire rated steel doors and steel frames.

B. Fire rated assemblies.

1.02 RELATED SECTIONS

A. Section 04 20 00 - Unit Masonry Systems: Masonry mortar fill of metal frames.

B. Section 08 71 00 - Door Hardware: Finish Hardware.

C. Section 08 80 00 - Glazing: Glass lites

D. Section 09 90 00 - Painting: Field Painting

1.03 REFERENCES

A. ANSI/ASTM A366 - Steel Sheet, Carbon, Cold-Rolled, Commercial Quality.

B. ASTM A525 - Steel Sheet, Zinc-Coated (Galvanized) by the Hot Dip Process, General Requirements.

C. ASTM A569 - Steel, Carbon, Hot-Rolled Sheet and Strip, Commercial Quality.

D. ASTM E152 - Methods of Fire Tests of Door Assemblies.

E. DHI - Door Hardware Institute: The Installation of Commercial Steel Doors and Steel Frames, Insulated Steel Doors in Wood Frames and Builder's Hardware.

F. NAAMM CHM-1-74 - Custom Hollow Metal Doors (Section 7).

G. NAAMM CHM-1-74 - Fire Rated Custom Metal Doors and Frames (Section 8).

H. NFPA 80 - Fire Doors and Windows.

I. NFPA 252 - Fire Tests of Door Assemblies.

1.04 QUALITY ASSURANCE

A. Conform to requirements of NAAMM CHM-1-74 and as supplemented in this Section.

B. Fire rated door panel and frame construction to conform to ASTM E152 and NFPA 252.

C. Installed frame and door assembly to conform to NFPA 80 for fire rated class indicated.

1.05 REGULATORY REQUIREMENTS

A. Conform to applicable references for fire rated frames, doors and panels.

1.06 SHOP DRAWINGS AND PRODUCT DATA

A. Submit shop drawings and product data.

B. Indicate frame configuration, anchor spacings, anchor types, and location of cutouts for hardware and reinforcement.

C. Indicate door elevations, stile and rail reinforcement and closure method, and cut outs for glazing and louvers.

D. Submit manufacturer's installation instructions.

1.07 DELIVERY, STORAGE, AND PROTECTION

A. Protect doors and frames with resilient packaging, sealed with heat shrunk plastic.

B. Break seal on-site to permit ventilation.

1.08 WARRANTY

A. Provide five year manufacturer's warranty.

PART 2 PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Ceco Doors.

B. Pioneer.

C. Curries Co.

D. Amweld Products.

2.02 FRAMES AND DOORS

A. Material: ANSI/ASTM A366, cold rolled steel sheet or ASTM A569, hot rolled carbon steel; galvanize exterior locations with G-90 zinc coating.

B. Door Core: Interior - Kraft honeycomb; exterior foam insulation.

C. Door Face: Exterior - 16 gage minimum; interior - 18 gage.

D. Frame Gage: Interior 16 gage; exterior - 14 gage

E. Hardware Reinforcement: NAAMM CHM-1-74.

F. Provide hospital stops and sills at interior jambs.

2.03 ACCESSORIES

A. Louvers: Roll formed steel material, inverted 'V' blade; 45 percent free area; with tamperproof fasteners.

B. Jamb Anchors: T-strap type.

C. Silencers: Resilient rubber.

D. Glazing Bars: Rolled steel channel shape, mitered corners; prepared for countersink style tamperproof screws.

2.04 PROTECTIVE COATINGS

A. Shop applied Primer: Zinc chromate type.

2.05 FABRICATION

A. Knock down frames, field painted, joint at miter requires particular attention to be flush and caulked as required.

B. Any door openings wider than 48" to be fabricated and assembled as a complete fully welded corner unit. Reinforce frames wider than 48 inches with roll formed steel channels fitted tightly into frame head, flush with top.

C. Fabricate frames with hardware reinforcement plates welded in place. Provide mortar guard boxes.

D. Prepare frame for silencers. Provide three single silencers for single doors on strike side and two single silencers on frame head at double doors.

E. Fabricate doors to S.D.I. "Full Flush Seamless" criteria.

F. Attach fire rated label to frame unit.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install frames in accordance with NAAMM CHM-1-74 & NFPA 80 for fire rated assemblies.

B. Coordinate with wall construction for anchor placement. Provide three anchors per jamb and knee angle brace at floor.

C. Coordinate installation of doors, hardware and glazing.

3.02 TOLERANCES

A. Maximum Diagonal Distortion: 1/16 inch measured with straight edge, corner to corner.

3.03 ADJUSTING AND CLEANING

A. Adjust for smooth and balanced door movement.

END OF SECTION

SECTION 08 14 00

WOOD DOORS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Wood doors, fire rated and non-rated.

1.02 RELATED SECTIONS

A. Section 08 11 00 - Custom Steel Doors and Frames: Steel frames

B. Section 08 71 00 - Hardware.

C. Section 08 80 00 - Glazing.

D. Section 09 90 00 - Painting: Site finishing doors.

1.03 REFERENCES

A. ANSI/NWMA I.S.1 - Industry Standard For Wood Flush Doors (Includes Standards I.S.1.1 through I.I.S.1.7).

B. ASTM E152 - Methods of Fire Tests of Door Assemblies.

C. AWI - Quality Standards of Architectural Woodwork Institute.

D. NFPA 80 - Fire Doors and windows.

1.04 QUALITY ASSURANCE

A. Conform to requirements of AWI Quality Standard Section 1300 and 1400, Custom Grade.

B. Fire Door Construction: Conform to ASTM E152.

C. Installed Doors: Conform to NFPA 80 for fire rated class indicated.

1.05 SUBMITTALS

A. Submit shop drawings and product data.

B. Indicate door elevations, stile and rail reinforcement, internal blocking for hardware attachment, and cutouts for glazing.

C. Submit two samples 16 x 16 inch in size illustrating construction at corner and veneer.

D. Submit manufacturer's installation instructions.

F. Submit manufacturer's certificate that doors meet or exceed fire rated requirements.

1.06 DELIVERY, STORAGE, AND PROTECTION

A. Package, deliver, and store doors in accordance with AWI requirements.

1.07 WARRANTY

A. Provide lifetime manufacturer's warranty.

PART 2 PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Weyerhauser.

B. Mohawk.

C. Algoma.

D. Grahm.

2.02 DOOR TYPES

A. Flush Interior Doors: 1-3/4 inches thick; solid core construction; wood veneer faces, fire rated and glazed as indicated.

2.03 DOOR CONSTRUCTION (AWI QUALITY STANDARD)

A. Solid, Non-Rated Core: AWI Section 1300, PC-Particleboard, SLC-5 (glue block core, 5-ply).

B. Solid, Fire Rated Core: AWI Section 1300, Type FD 1-1/2 and FD-3/4.

2.04 FLUSH DOOR FACING

A. Facing Quality: AWI Premium grade.

B. Flush Interior Door Veneer: Oak species wood, plain sawn with vertical grain, for dark stain finish.

2.05 ADHESIVES

A. Interior Doors: AWI, Type II.

2.06 ACCESSORIES

A. Glass Stops: Rolled metal type designed to conform to UL 45 minute and 90 minute requirements as scheduled.

2.07 FABRICATION

A. Fabricate non-rated doors in accordance with AWI Quality Standards requirements.

B. Fabricate fire rated doors in accordance with AWI Quality Standards and to UL requirements. Attach fire rating label to door edge.

C. Provide flush doors with 1/2 inch thick edge strips of wood species to match face veneer.

D. Premachine doors for finish hardware.

E. Provide T- shaped metal astragals in one piece to UL requirements for double fire doors to rating required.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install doors in accordance with manufacturer's instructions and NFPA 80 for fire rated assemblies.

B. Machine cut relief for hinges and closers and coring for handsets and cylinders.

C. Trim door width by cutting equally on both jamb edges. Trim fire door width from lock edge only, to a maximum of 3/16 inch.

D. Trim door height by cutting equally on top and bottom edges to a maximum of 3/4 inch. Trim fire door height at bottom edge only, to a maximum of 3/4 inch.

E. Pilot drill screw and bolt holes.

F. Prepare doors to receive finish hardware in accordance with AWI requirements.

G. Conform to AWI requirements for fit tolerances.

H. Coordinate installation of glass and glazing.

3.02 INSTALLATION TOLERANCES

A. Maximum Diagonal Distortion: 1/16 inch measured with straight edge, corner to corner.

3.03 ADJUSTING AND CLEANING

A. Adjust for smooth and balanced door movement.

END OF SECTION

SECTION 08 31 00

ACCESS DOORS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Fire resistive rated and non-rated access doors and frames.

1.02 RELATED SECTIONS

A. Section 04 20 00 - Unit Masonry: Openings in masonry.

B. Section 09 20 00 - Gypsum Drywall: Openings in ceilings and partitions.

C. Section 09 90 00 - Painting: Field paint finish.

1.03 QUALITY ASSURANCE

A. Manufacture fire rated access doors and frames to conform to UL 1 1/2 hr. "B" label requirements, where noted.

1.04 SUBMITTALS

A. Submit product data.

B. Include sizes, types, finishes, scheduled locations, and details of adjoining work.

C. Submit manufacturer's installation instructions.

1.05 ALLOWANCE

A. Allow for a total of 4 units, 24" x 36".

PART 2 PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Inland - Ryerson.

B. Karp Associates.

C. JL Industries.

D. Acudor

2.02 ACCESS UNITS

A. In Masonry: Flush door model, rated where required.

B. In Gypsum Board: Flush door model, rated where required.

2.03 FABRICATION

A. Fabricate frames and flanges of 16 gage steel and door panels of 14 gage steel; pan insulated with non-combustible filler, where fire rated.

B. Weld, fill, and grind joints to assure flush and square unit.

C. Hardware: 175 degree steel hinges with pin, anti-ligature, quarter turn cam lock for ceiling units; cylinder lock with latch, two keys for each unit for wall units.

2.04 FINISH

A. Prime coat units with latex primer.

PART 3 EXECUTION

3.01 INSPECTION

A. Verify rough openings for door and frame are correctly sized and located.

B. Beginning of installation means acceptance of existing conditions.

3.02 INSTALLATION

A. Install frame plumb and level in wall and ceiling openings.

B. Position to provide convenient access to concealed work requiring access.

C. Secure in accordance with manufacturer's instructions.

END OF SECTION

SECTION 08 51 13

ALUMINUM WINDOWS

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. All exterior Architectural Performance Class (AW) behavioral care windows furnished and installed as shown on drawings, specified in this section and designated in AAMA/WDMA/CSA 101/I.S.2/A440 (NAFS).
   2. All labor, materials, tools, equipment and services needed to furnish and install AW Class windows.
   3. Components furnished with installed windows.
   4. Installation accessories furnished and installed.

1.02 REFERENCES

A. Refer to AAMA/WDMA/CSA 101/I.S.2/A440 (NAFS) for a complete list of references and industry standards.

1.03 SYSTEM DESCRIPTION AND PERFORMANCE REQUIREMENTS

A. Design Wind Loads - Allowable Stress Design (ASD)
   1. The design wind pressure for the project will be:
      a. Per local building codes

   2. All structural components, including meeting rails, mullions and anchors shall be designed accordingly, complying with deflection and stress requirements of Paragraph 1.03.B.

B. Air, Water and Structural Performance Requirements
   1. When tested in accordance with cited test procedures, windows shall meet or exceed the following performance criteria, as well as those indicated in AAMA/WDMA/CSA 101/I.S.2/A440-(NAFS) for AW Performance Class windows, Performance Grade 120 (AW120) unless otherwise noted herein.
      a. Test units shall not be smaller in either width or height than the “Gateway Test Size” specified in AAMA/WDMA/CSA 101/I.S.2/A440 (NAFS) for AW Performance Class.
      b. “Downsize” testing to meet Optional Performance Class requirements specified herein shall not be permitted.
      c. Test units shall employ manufacturer’s standard sealing, lock spacing and anchorage.
   2. Air Test Performance Requirements
      a. Air infiltration maximum 0.1 cfm per square foot at 6.24 psf pressure differential when tested in accordance with ASTM E283.
   3. Water Test Performance Requirements

a. No uncontrolled water leakage at 15.00 psf static pressure differential, with water application rate of 5 gallons/hr/sq ft when tested in accordance with both ASTM E331 and ASTM E547.

4. Structural Test Performance Requirements
   a. Uniform Load Deflection Test
      a. No deflection of any unsupported span L of test unit (framing rails, muntins, mullions, etc.) in excess of L/175 at both a positive and negative load of 120 psf (design test pressure) when tested in accordance with ASTM E330.
   b. Uniform Load Structural Test
      a. Unit to be tested at 1.5 x design test pressure, both positive and negative, acting normal to plane of wall in accordance with ASTM E330.
      b. No glass breakage; permanent damage to fasteners, hardware parts, or anchors; damage to make windows inoperable; or permanent deformation of any main frame or ventilator member in excess of 0.2% of its clear span.
5. Simulated Human Impact Tests
   a. Conduct tests in accordance with AAMA 501.8, to simulate a purposeful shoulder impact from the interior. Test units shall be representative of windows on the project in details of frame connections, glazing, and anchorage.
   b. Test units shall be representative of the largest unit on the project (both width and height), or 4’-0” x 6’-0”, whichever is greater.
   c. Meeting rails and mullions to be used on the project shall be incorporated in test units, and similarly tested at maximum and minimum unsupported span.
   d. Interior of each test unit shall be impacted with a heavy shot bag swung from a vertical height sufficient to generate 2000 ft-lb of impact, directed at the locations specified in AAMA 501.8. Center-of-glass impact shall be repeated if any plies break upon impact.
   e. At the conclusion of impact testing, the window shall remain intact as a barrier to egress, and meet the performance requirements of AAMA 501.8.

4000i-DT TESTING SUMMARY Exterior Behavioral Care Windows 2000 ft-lbs Impact Energy *AAMA 501.8 - 14 "Standard Test Method for Determination of Resistance to Human Impact of Windows Intended for Use in Psychiatric Applications"*				
Test Specimen Configuration	Width (inches)	Height (inches)	Interior Glazing	Anchors and Substrate
Fixed Single Lite with Hinged Access Door DP6	72	84	1/2" Polycarbonate	Steel Strap Anchors in a Steel Test Buck
Fixed Single Lite with Hinged Access Door DP7	66	84	7/16" Tempered Laminated Glass	
Fixed** Single Lite with Hinged Access Door DP8	72	84	9/16" Tempered Laminated Glass	
Fixed Single Lite with Hinged Access Door DP8A	54	84	19/32" Glass-Clad Polycarbonate	
Fixed Single Lite with Lift-Out Access Door DP4	60	30	1/2" Polycarbonate	Impact Receptors in a Steel Test Buck (see note below)
Inswing Casement/Fixed*** with Meeting Rail DP5	40 (Two lites wide)	72	7/16" Tempered Laminated Glass	
Inswing Casement/Fixed* with Meeting Rail DP1	96 (Two lites wide)	72	1/2" Polycarbonate	Through-Frame and Steel Strap Anchors in SPF #2 Wood Blocking
Inswing Casement/Fixed with Meeting Rail DP9	96 (Two lites wide)	72	9/16" Tempered Laminated Glass	Through-Frame and Steel Strap Anchors in a Steel Test Buck
Inswing Casement/Fixed with Meeting Rail DP9A	96 (Two lites wide)	72	19/32" Glass-Clad Polycarbonate	
Inswing Casement/Fixed with Stacking Mullion DP2	96 (Two lites wide)	72	1/2" Polycarbonate	Through-Frame and Steel Strap Anchors in 16-Gauge Steel Studs

**Testing was successfully repeated at 2500 ft-lb impact energy on Unit DP8
***CMU substrate tested on a larger test unit of this configuration and glazing infill

C. Life Cycle Testing
   1. When tested in accordance with AAMA 910, there is to be no damage to fasteners, hardware parts, support arms, activating mechanisms or any other damage that would cause the window to be inoperable at the conclusion of testing.
      a. Air infiltration and water resistance tests shall meet the primary performance requirements specified after completion of cycling.

D. Condensation Resistance and Thermal Transmittance Performance Requirements
   1. Perform thermal tests in accordance with NFRC and/or AAMA test methods, or provide finite element computer thermal modeling and calculations per NFRC, AAMA and/or manufacturer's proprietary software as deemed acceptable by the design team. To help ensure proper interpretation, all representations of thermal and solar-optical performance shall be qualified explicitly for the glass type, size, configuration, installation accessories and substrate conditions used in their determination.

      a. Thermal Transmittance (U-Factor) for the overall window area shall be less than or equal to code required BTU/hr-ft^2-°F.

      b. Solar Heat Gain Coefficient (SHGC) for the overall window area shall not exceed code required.

      c. Condensation Resistance Factor (CRF) requirements: CRF minimum code required (Frame) and CRF minimum code required (Glass).

E. Acoustic Performance Requirements
   1. Perform acoustical tests in accordance with ASTM E90 and ASTM E1425 on the glass type(s) specified in 08 80 00, rigidly supported in aluminum framing of the same product type.
   2. “Glass-only” test results shall not be acceptable.
   3. Sound Transmission Class (STC) shall not be less than ___.
   4. Outdoor-Indoor Transmission Class (OITC) shall not be less than code required.

1.04 SUBMITTALS

A. General Requirements
   1. Provide all submittals in a timely manner to meet the required construction completion schedule.

B. Shop Drawings
   1. Shop drawings must be prepared wholly by the window manufacturer, or a qualified engineering services firm under the guidance of the manufacturer. Shop drawings for pre-engineered configurations may be prepared by qualified engineering firms upon written manufacturer consent.
   2. Provide design details along with bid proposals to define system aesthetic and functional characteristics.
   3. Provide up to three photocopied sets of shop drawings, including half size details of all necessary conditions.

C. Samples
   1. Components: Submit samples of anchors, fasteners, hardware, assembled corner sections and other materials and components as requested by Architect.
   2. Finish: Submit color samples for Architect's approval as requested.

D. Test Reports and Calculations
   1. Submit certified independent laboratory test reports verifying compliance with all test requirements of 1.03.
   2. Submit structural calculations indicating adequacy of all materials furnished under this section, to meet the human impact, uniform and structural load requirements as specified in 1.03.

1.05 QUALITY ASSURANCE

A. Qualifications: Upon request, the window manufacturer shall provide written consent for the installation subcontractor to install window products to be used on this project.

B. In-Plant Testing: Conduct detailed quality audits and ASTM E331 static water infiltration testing on a statistically valid sample of factory-glazed windows prior to shipping, subject to reasonable unit size restrictions.
   1. Each tested unit shall be identified with a removable sticker on the inside glass face.

2. Provide detailed documentation of in-plant testing upon request.

1.06 DELIVERY, STORAGE AND HANDLING

A. Packing, Shipping, Handling and Unloading
   1. Materials will be packed, loaded, shipped, unloaded, stored and protected in accordance with AAMA CW-10.

1.07 WARRANTY

A. Aluminum Window Warranty
   1. Products: Submit a written warranty, executed by the window manufacturer, for a period of 10 years from the date of manufacture, against defective materials or workmanship, including substantial non-compliance with applicable specification requirements and industry standards, which result in premature failure of the windows, finish, factory-glazed glass, or parts, outside of normal wear.
   2. In the event that windows or components are found defective, manufacturer will repair or provide replacement material without charge at manufacturer's option.
   3. Warranty for all components must be direct from the manufacturer (non pass-through) and non pro-rated for the entire term. Warranty must be assignable to the non-residential owner, and transferable to subsequent owners through its length.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Acceptable Manufacturer
   1. Drawings and specification are based on:
      a. Wausau Window and Wall Systems – 4000i-DT Series Behavioral Care - Fixed.
         i. Base bid will be Wausau Window and Wall Systems
   2. Substitutions
      a. Other manufacturers' products that meet or exceed specified design requirements may be considered. Submit the following information with request for substitutions at least ten (10) working days prior to bid date.
         i. Test reports specified in 1.03.
         ii. Full proposal details and samples specified in 1.04.
         iii. Copy of manufacturer's warranty specified in 1.07.
         iv. Proof of at least 10 years experience in the design and fabrication of behavioral care windows.
         v. Other information as requested for evaluation
   3. Substitute products not pre-approved by the Architect via addenda will not be considered.
   4. Clear preference will be given to products produced in LEED®-certified manufacturing facilities.

2.02 MATERIALS

A. Aluminum Framing Members

1. Extruded aluminum billet, 6063-T6 alloy for primary non-radius components; 6063-T6 or 6061-T6 for anchor components; all meeting the requirements of ASTM B221.
2. Aluminum sheet alloy 5005-H32 (for anodic finishing), or alloy 3003-H14 (for painted or unfinished sheet) meeting the requirements of ASTM B209.
3. Principal window frame and sash ventilator members will be a minimum 0.125" in thickness at glazing legs, hardware mounting webs and section flanges.
4. *(4000i-DT only)* Extruded aluminum security glazing stops will be a minimum 0.125” in thickness.
5. Extruded or formed trim components will be a minimum 0.060" in thickness.
6. Perimeter frame depth 4" minimum.
7. Sash ventilator and fixed lite access panel sections must be tubular and overlap framing members.
    a. Vented areas shall be indistinguishable in sightline from fixed areas from the exterior, with vents in the closed position.
    b. Sash ventilator joinery shall not be exposed to the exterior with vents in the closed position.
    c. Sash ventilator edges shall be filleted.
8. Exterior sightlines at perimeter framing members will not exceed 3 ½ " unless detailed otherwise on architectural drawings.

2.03 COMPONENTS

A. Hardware
    1. All steel components including attachment fasteners to be 300 Series stainless steel except as noted.
    2. Extruded aluminum components 6063-T6.
    3. Locking handles, bases and strikes to be aluminum, die cast, white bronze or stainless steel in manufacturer’s standard surface finish.
    4. Thermo-plastic or thermo-set plastic caps, housings and other components to be injection-molded nylon, extruded PVC, or other suitable compound.
    5. Hardware to be custodial- or supervisory-operated and include:
B. Sealants
    1. All sealants shall comply with applicable provisions of AAMA 800 and/or Federal Specifications FS-TT-001 and 002 Series.
    2. Frame joinery sealants shall be suitable for application specified and as tested and approved by window manufacturer.

C. Glass and Security Glazing Infill Material
    1. Provide in accordance with Section 08 80 00.
    2. Sealed insulating glass shall be tested and certified in accord with ASTM E2190.
    3. Interior security glazing infill material to be in accordance with Section 08 80 00.

D. Glazing
    1. Provide in general accordance with Section 08 80 00.
    2. Glazing method shall be in general accordance with the GANA Glazing Manual for specified glass type, or as approved by the glass fabricator.

3. *(4000i-DT only)* Glazing stops retaining security glazing shall be secured at 12" on center using ¼"-20 plated or stainless steel thread-rolling fasteners.
4. *(4000i-DT only)* Glazing materials at the interior must be rendered tamper-resistant by a continuous extruded hood projection or other tested and approved method.
5. *(4000i-DT only)* Provide minimum glazing "bite" as recommended by the security glazing infill fabricator and tested per 1.03.
6. Provide windows factory-glazed wherever practical.

E. Glazing Materials
1. Setting Blocks/Edge Blocking: Provide in sizes and locations recommended by GANA Glazing Manual. Setting blocks used in conjunction with soft-coat low-e glass shall be silicone.
2. Back-bedding tapes, expanded cellular glazing tapes, toe beads, heel beads and cap beads shall meet the requirements of applicable specifications cited in AAMA 800.
3. Glazing gaskets shall be non-shrinking, weather-resistant, and compatible with all materials in contact.
4. Structural silicone sealant where used shall meet the requirements of ASTM C1184.
5. Spacer tape in continuous contact with structural silicone shall be tested for compatibility and approved by the sealant manufacturer for the intended application.
6. Gaskets in continuous contact with structural silicone shall be extruded silicone or compatible material.

F. Steel Components
1. Provide steel reinforcements as necessary to meet the performance requirements of 1.03.
2. Concealed steel anchors and reinforcing shall be factory painted after fabrication with TGIC powder coating, or rust-inhibitive primer complying with Federal Specification TT-P-645B.

G. Panning:
1. Provide extruded aluminum panning to receive replacement windows as shown on architectural drawings.
2. Panning shall be pre-assembled and all joinery back sealed prior to installation.
3. Finish to match window frames.

H. Receptors:
1. Provide extruded aluminum receptors to receive windows, as shown on architectural drawings.
2. Finish to match window frames.
3. If provided, receptors must be tested to the performance requirements of 1.03.B.5 and structural calculations provided per 1.04.D.2.

I. Dual or Triple Glazed Access Panel:
1. Hinged access panel shall be constructed with mitered corners, mechanically staked over a solid aluminum corner block.
2. Provide a hook latch for custodial operation.
3. Finish to match window frames.

J. Integral Venetian Blinds:
   1. 5/8" wide aluminum slat blinds. Blind color shall be determined. *(Specify from standard color chart.)*
   2. Blind to be integrally mounted between the dual or triple glazing.
   3. Behavioral care tilt-control knob will be located on the interior face and incorporate a "slip clutch" feature.
   4. Raise and lower pull cords will be located between glass for access only when glazed access panel is opened.

2.04 FABRICATION

A. General:
   1. Finish, fabricate and shop assemble frame and sash ventilator members into complete windows under the responsibility of one manufacturer.
   2. No bolts, screws or fastenings shall impair independent frame movement, or bridge the thermal barrier, unless such bridging was also present in thermal test units and thermal models.
   3. Fabricate to allow for thermal movement of materials when subjected to a temperature differential from -30 °F to +180 °F.

B. Frames:
   1. Miter each perimeter frame corner, then mechanically stake over a solid extruded aluminum corner block or weld; then seal weather tight.
   2. Cope and mechanically fasten each intermediate meeting rail; then seal weather tight.
   3. Make provisions for continuity of frame joinery seals at extrusion webs.

C. Main Sash and Access Sash Ventilators
   1. Miter all corners and mechanically stake over a solid extruded aluminum corner block, set and sealed in epoxy.

D. Glass Drainage: (field glazed units only)
   1. Provision shall be made to insure that water will not accumulate and remain in contact with the perimeter area of sealed insulating glass.

E. Hardware:
   1. Concealed Hinges at Fixed Lite Access Panels
      a. Provide two concealed extruded aluminum “walk-around” butt hinges with stainless steel pins.
   2. Locks
      a. Die cast or stainless steel cam locks, strikes and/or keepers for custodial or supervisory operation shall secure sash in closed position.
      b. Provide tamper-resistant locks for ventilators at maximum 48" spacing. Keys shall not be removable in the unlocked position.
   3. Provide a supplemental keyed GEM® lock for interior sash ventilators and access panels.
   4. Friction Adjuster

a. Provide concealed device with adjustable friction shoe to arrest sash opening before contact with adjacent materials occurs.

5. Dual or Triple Glazed Access Panel at Sash Ventilators
   a. Access panel to have a custodial hook latch.

F. Dual or Triple Glazed Access Panel *(Select)*
   1. Hinged access panel will be constructed with mitered corners, mechanically staked over a solid aluminum corner block.

G. Thermal Break Construction:
   1. Continuous extruded 6/6 polyamide nylon with 25% glass fiber reinforcing, mechanically crimped into cross-knurled cavities.
   2. Minimum thermal separation 3/8".
   3. Quality assurance records must be maintained and available as requested.

H. Weather-stripping:
   1. Bulb- or fin-type neoprene, EPDM, dual-durometer PVC, polypropylene, TPE, or other suitable material as tested and approved by the window manufacturer.
   2. Miter, crowd, stake or join at corners. Provide drainage to exterior as necessary.
   3. Provide weather-strip at access panels for minimum thermal separation of ¼ “.
   4. Weather-stripping shall provide an effective pressure-equalization seal at the interior face of the sash ventilator.

2.05 FINISHES

A. Finish of Aluminum Components
   1. Finish of all exposed areas of aluminum windows and components shall be done in accordance with the appropriate AAMA Voluntary Guide Specification shown:

Designation	Description	Standard
Color		
AAM10C21A44	Electrolytically Deposited Class I	AAMA 611
	Champagne, Light Bronze, Medium Bronze Dark Bronze	

PART 3 EXECUTION

3.01 EXAMINATION

A. Site Verification of Conditions

1. Verify that building substrates permit installation of windows according to the manufacturer's instructions, approved shop drawings, calculations and contract documents.
2. Do not install windows until unsatisfactory conditions are corrected.

3.02 INSTALLATION

A. Erection of Aluminum Windows
   1. Install all windows with skilled workers in accordance with approved shop drawings, installation instructions, specifications, and the AAMA Commercial Window and Door Installation Manual.

   2. Windows must be installed, and remain, plumb, square and level, to one-half of the unit shimming tolerances cited in the AAMA Commercial Window and Door Installation Manual, for proper weathering and operation. Installer to make necessary final hardware adjustments on site.
   3. Aluminum that is not organically coated shall be insulated from direct contact with steel, masonry, concrete or other dissimilar metals by bituminous paint, rust-inhibiting primer, non-conductive shims or other suitable insulating material.

END OF SECTION

SECTION 08 71 00

DOOR HARDWARE

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Hardware for steel and wood doors.

B. Gasketting

1.02 PRODUCTS FURNISHED BUT INSTALLED UNDER OTHER SECTIONS

A. Furnish templates to Section 08114 and Section 08210 for door and frame preparation.

1.03 RELATED SECTIONS

A. Section 08 11 00 - Steel Doors and Frames.

B. Section 08 14 00 - Flush Wood Doors.

1.04 REFERENCES

A. ANSI A117.1 - Specifications for Making Buildings and Facilities Accessible to and Usable by Physically Handicapped People.

B. ANSI/NFPA 80 - Fire Doors and Windows.

C. BHMA - Builders' Hardware Manufacturers Association.

D. NFPA 101 - Life Safety Code.

E. SDI - Steel Door Institute.

F. ADA - Federal Register 28 CFR Part 36.

1.05 COORDINATION

A. Coordinate work of this Section with other directly affected Sections involving manufacturer of any internal reinforcement for door hardware.

1.06 QUALITY ASSURANCE

A. Manufacturers: Companies specializing in manufacturing door hardware with minimum ten years experience.

B. Hardware Supplier: Company specializing in supplying institutional door hardware with five years experience.

1.07 REGULATORY REQUIREMENTS

A. Conform to the applicable sections of Chapter 5 of NFPA 101.

1.08 SUBMITTALS

A. Submit schedule, shop drawings, and product data.

B. Indicate locations and mounting heights of each type of hardware.

C. Provide product data on specified hardware.

D. Submit samples of hinge latchset closers and lockset illustrating style, color, and finish.

E. Samples: May be incorporated into the Work, if accepted for use by the Architect.

F. Submit manufacturer's parts lists, templates, and installation instructions.

G. Submit manufacturer's certificate that fire rated hardware meets or exceeds specified requirements.

1.09 OPERATION AND MAINTENANCE DATA

A. Submit operation and maintenance data.

B. Include data on operating hardware, lubrication requirements, and inspection procedures related to preventative maintenance.

1.10 DELIVERY, STORAGE, AND HANDLING

A. Store and protect products.

B. Package hardware items individually; label and identify package with door opening code to match hardware schedule.

C. Provide locksets, less cores / keys.

D. Provide adequate locked storage space with shelving and be responsible for the scheduled quantities of hardware when delivered to the job, and for the payment invoices covering such material, when and as delivered.

1.11 WARRANTY

A. Provide five year warranty.

B. Warranty: Include coverage of door closers and exit devices.

1.12 MAINTENANCE MATERIALS

A. Provide special wrenches and tools applicable to each different or special hardware component.

B. Provide maintenance tools and accessories supplied by hardware component manufacturer.

PART 2 PRODUCTS

2.1 HARDWARE

A. Hinges: Full mortise for interior, continuous Markar for listed doors.

1. Hager, McKinney, Roton, Markar.

B. Latchsets and Locksets: Cylindrical

1. Best Lock, 9K Heavy Duty Lever Series – 93K7D14D-S3-626

2. Owner will supply cores.

C. Closers: Overhead, surface mounted.

1. LCN "Series 4041 Super Smoothie"

D. Anti-Ligature Patient Room Passage Sets:

1. Stanley Best SPSL Lever Anti-ligature - 15D

E. Exit Device: Rim type for single leaf, concealed rod for double leaf.

1. Von Duprin Series 98/99

F. Astragals: Fire rated, U.L. label.

G. Electric Strikes: Fail-safe operation.

1. Horton.

2. Tie into hospital card reader system. (card reader by Owner)

H. Automatic Door Closers: Overhead, surface mounted.

1. Horton.

2. Tie into hospital card reader system. (card reader by Owner)

I. Combination Door Locks:

1. Best Basis V Proximity Reader (Where scheduled).

J. Additional Hardware:

1. Provide wall bumpers for all doors at lever handle height. Where site restrictions require provide floor bumper or overhead stop.

2. Weather stripping and thresholds shall be provided on all exterior doors.

3. Hinges shall be full Roton hinges for all patient room doors, hallway doors or doors where bed traffic may occur. Roton hinge shall fully wrap/protect the hinge edge of the door.

4. All double doors and any single doors which will routinely be subject to bed, stretcher or similar traffic shall have a full edge guard on the strike edge of the door.

5. All double acting toilet room doors to have sight seals routed into door edge.

PART 3 EXECUTION

3.01 INSPECTION

A. Verify that doors and frames are ready to receive work and dimensions are as indicated on shop drawings.

B. Beginning of installation means acceptance of existing conditions.

3.02 INSTALLATION

A. Install hardware in accordance with manufacturer's instructions and requirements of ANSI/NFPA 80 and BHMA.

B. Use the templates provided by hardware item manufacturer.

C. Conform to ANSI A117.1 for positioning requirements for the handicapped.

D. Owner will provide cores.

END OF SECTION

WOODS SERVICES STANDARD HARDWARE (SEE HARDWARE SCHEDULE)

W Series

Grade 2, medium-duty cylindrical lever and knob locks

Whether your application is government/military, retail, industrial or multi-family, there's a W Series lock that fits perfectly. In two popular lever and two popular knob styles Falcon can match most commercial door trim. The Falcon W Series locks feature conventional cylinders and small format interchangeable cores that are compatible with SFIC products from other manufacturers. Our conventional cylinders are available in all Falcon conventional key sections as well as Schlage C keyway, which we now masterkey across the complete Falcon product line. If quality product at a value price is what you are looking for, the Falcon W Series is the lock for you. And they're backed by one of the best names in the business, Allegion.

Features

ADMINISTRATION AREA

ADMINISTRATION AREA

Lever designs

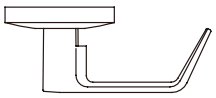
Levers

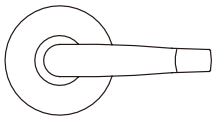
Levers are solid pressure cast zinc, finished to match mating parts. Roses are wrought brass or bronze installed over steel through-bolted rose inserts. A spring-loaded retainer secures levers. Secure side retainer cannot be depressed without a key that operates the lock.

W Series
standard rose
Dane lever shown
actual size

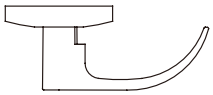
Standard rose

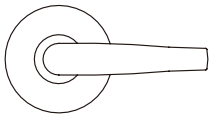
Dane



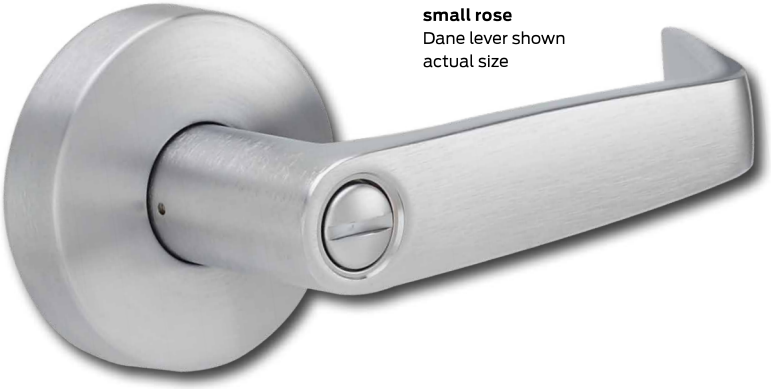


Quantum



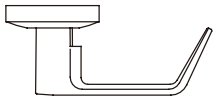


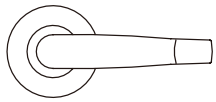
W Series
small rose
Dane lever shown
actual size



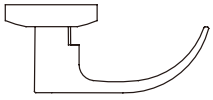
Small rose

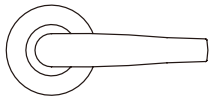
Dane





Quantum



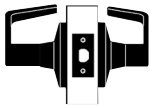
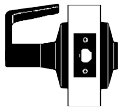
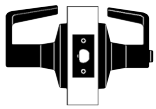
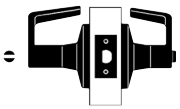
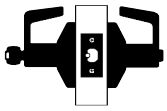
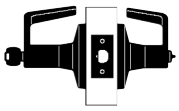
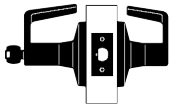
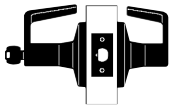
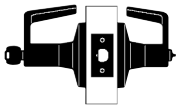


Abrasive lever options

All levers are available with an abrasive strip along the length of the lever to identify entrances to areas hazardous to the disabled. To order add 6 (for example, 6DA for Dane lever or 6QU for Quantum lever) to the order number.

Functions

Levers

Catalog number		Description	ANSI number/grade
*W101		Passage latchset—Latch bolt by levers at all times.	F75
*W161		Communicating/exit latch—Deadlocking latch bolt by inside lever. Non-removable blank plate outside. Inside lever is always free.	
W201		Patio lock—Deadlocking latch bolt by levers. Outside lever is locked by push button from inside. Rotating inside lever or closing door releases button and unlocks outside lever.	F77
*W301		Privacy lock—Latch bolt by levers. Outside lever is locked by push button on inside lever. Rotating inside lever or closing door releases push button and frees outside lever. Inside lever is always free. Emergency release in outside lever unlocks door.	F76
W501		Entry lock—Push button locking. Button on inside locks outside lever until unlocked by key or by rotating inside lever. Closing door release push button and unlocks door. Inside lever always free. Deadlock latchbolt.	F82
*W511		Entry/office lock—Deadlocking latch bolt by levers. Turn/push button locking. Pushing and turning button locks outside lever, requiring use of a key for unlocking the door until button is manually unlocked. Pushing button locks outside lever until unlocked by key or by rotating inside lever. Inside lever is always free.	F109
*W561		Classroom lock—Deadlocking latch bolt by levers. Outside lever is locked by key in outside lever. Inside lever is always free.	F84
*W581		Storeroom lock—Deadlocking latch bolt by lever inside or key outside. Outside lever is always locked. Inside lever is always free.	F86
W711		Apartment entrance lock—Deadlocking latch bolt by levers. Turn/push button locking. Pushing and turning button locks outside lever, requiring use of a key for unlocking the door until button is manually unlocked. Pushing button locks outside lever until unlocked by key, by rotating inside lever, or by closing the door. Inside lever is always free.	
*W12		Single dummy trim—Single trim, surface-mounted rigid lever.	

*Available as small rose

ADMINISTRATION AREA

Hinge Numbering System

Hinge Prefixes

EG	Edge Guard
FM	Edge Mount
FS	Full Surface
HG	Hinge/Guard
HM	Half Mortise
HS	Half Surface
SC	Swing Clear

Hinge Series

This series number indicates the type of hinge and base material used:

100	Aluminum barrel hinges with stainless pin
200	Carbon steel barrel hinges with stainless pin
300	Stainless steel barrel hinges with stainless pin
400	Spring loaded aluminum toilet partition hinge
600	14 Gauge 316 stainless steel pin and barrel security hinges
900	Spring loaded stainless steel toilet partition hinges
1900	Reinforcing pivots
3500	12 Gauge stainless steel pin and barrel security hinges

Hinge Models

The last two digits of the model number indicate the application:

00	Edge mount (formerly full mortise)
01	Full surface, 1/8" offset
02	Full surface, flush
03	Half surface, 1/8" offset
04	Half mortise, 1/8" offset
05	Edge mount hinge/guard
06	Half mortise hinge/guard
07	Double hinge/guard
08	Edge guard
09	Full surface, swing clear
10	Swing clear hinge/guard
11	Edge mount, self aligning
15	Edge mount, self aligning flush edge guard
21	Full surface inset, 3/4" offset
22	Edge mount hinge/guard, deep
23	Edge mount hinge/guard, deep, thru bolt
25	Edge mount swing clear
26	Edge mount hinge/guard, swing clear
27	Edge mount, safety hinge
29	Edge mount, self aligning

Other numbers are used for specific applications

Optional Suffixes

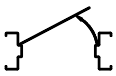
AMS	Adjustable Monitoring Switch
CTP	Current Transfer Preparation
DDP	Dutch Door Prep
EL	ElectroLynx® Wires (Specify 4, 8, or 12)
ETAP	Electrical Transfer Access Prep
EPT	Electric Power Transfer
HT	Hospital Tip
LL	Lead Lined
PC	Powder Coated
RB	Raised Barrel
WT	Wide Throw
PoE	Power over Ethernet

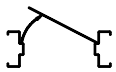
Hinge Standard Lengths

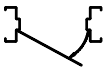
Standard Hinge Length Conversion Chart

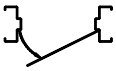
A 6'8"	door opening	=	actual length	79 3/16"
A 7'0"	door opening	=	actual length	83 1/8"
A 7'2"	door opening	=	actual length	85 1/8"
A 8'0"	door opening	=	actual length	95"
A 10'0"	door opening	=	actual length	118 3/4"

Custom hinge length will be evaluated at the time of request to ensure proper pin to knuckle alignment. Some custom length requests may be adjusted to ensure a proper hinge assembly. Specify handing on all custom hinge lengths.


LEFT HAND


RIGHT HAND


LEFT HAND REVERSE


RIGHT HAND REVERSE

Markar 300 Series Stainless Steel Pin & Barrel Continuous Hinges

Short Form Architectural Specification:

Continuous hinges shall be full height piano-type hinge providing full height door support.

- Supports weights up to 600 lbs. 4' 0" maximum door width
- Material to be 14 gauge Stainless Steel
- .187" diameter Stainless Steel pin (rod)
- Exterior barrel diameter .438" ($^{7}/_{16}$")
- Each knuckle 2", including nylon bearing at each separation for a quiet, smooth, self-lubricating operation
- Finish: US32D Satin Stainless Steel (630)
  Optional Finish: US32 Bright Stainless Steel (629), Scratch-Resistant Powder Coated Paint.
- All hinges shall be furnished with manufacturer's recommended hardware pack per specific model application
- Must be able to carry Warnock Hersey Int. or UL for fire rated doors and frames up to 3 hours
- Hinges shall meet ANSI/BHMA Standard A 156.26 Grade 1
- Symmetrically templated hole pattern

NOTE: 25-Year Warranty on Continuous Pin & Barrel Hinges

NOTE: Fire label for doors and frames should be placed on the header and top rail of fire rated doors and frames

Markar FM300 Edge Mount Hinge

Standard Features

Barrel Type Hinge
.187" diameter Stainless Steel pin (rod)
Medical bearings
Stainless Steel end pins

Material
Heavy-duty 14 gauge Stainless Steel

Finishes
US32D Satin Stainless Steel (630)

Standards
ANSI/BHMA Standard A156.26 Grade 1

Hole Pattern
Symmetrically templated

Mounting Hardware
Fasteners concealed when door is closed
Custom 12-24 x $^{11}/_{16}$" S.S Phillips Flat Head Undercut TEK Screws

Capacity
Supports weights up to 600 lbs.
4'0" maximum door width

Standard Sizes
6'8", 7'0", 7'2", 8'0", 10'0"

Handing
Handing not required on standard hinges. Specify handing when ordering a hinge with modification.

Rating
3 hours- hollow metal doors
90 minutes- hollow metal and composite core wood fire doors
20 minutes- wood doors

Classified in accordance with UL10C for positive pressure

Fire-rated label

Windstorm
Evaluated in accordance with TAS 201-94, TAS 202-94, TAS 203-94, ASTM E330, ASTM E1886, ASTM E1996 and ANSI A250.13

Optional Features

Finishes
Scratch-Resistant Powder Coated Paint

Fasteners
Tamper-proof security screws

Other Features
Custom lengths- specify in inches
Custom hole pattern

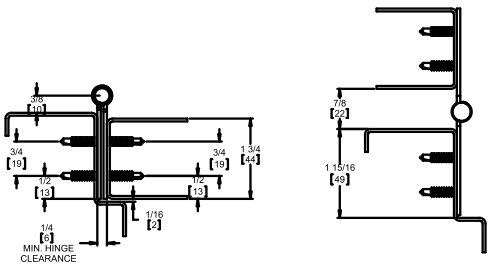
Dutch door hinges- suffix "DDP"
Hospital tips - suffix "HT"
Raised barrel - suffix "RB"
Welded end pins
Security studs.

Electrical Modifications
Adjustable Monitoring Switch - "AMS"

Current Transfer Prep - suffix "CTP"
Electrical Transfer Access Prep - suffix "ETAP"

ElectroLynx®
EL4 (4 wire), EL8 (8 wire), EL12 (12 wire)
PoE (9 wire)

This edge-mounted pin & barrel hinge is used on many of today's high traffic, high abuse doors. The hinge works well in locations that would normally call out for anchor hinges, pivot reinforcement hinges or thrust pivot unit and hinge sets. This hinge saves on special door and frame preparation charges and makes the installer's job easier. It can be used on both fire labeled and non-labeled openings.



Door Closed *Door Open 180°*

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Markar HG305 Adjustable Hinge Guard

Standard Features

Barrel Type Hinge
.187" diameter Stainless Steel pin (rod)
Medical bearings
Stainless Steel end pins

Material
Heavy-duty 14 gauge Stainless Steel

Finishes
US32D Satin Stainless Steel (630)

Standards
ANSI/BHMA Standard A156.26 Grade 1

Mounting Hardware
Fasteners concealed when door is closed
Custom 12-24 x 11/16" S.S Phillips Flat Head Undercut TEK Screws

Capacity
Supports weights up to 600 lbs.
4'0" maximum door width

Standard Sizes
6'8", 7'0", 7'2", 8'0", 10'0"

Hole Pattern
Symmetrically templated

Handing
Not required for standard 7'0", 8'0" or 10'0". Handing required for 6'8" and 7'2" and for most optional features listed

Fire Rating
3 hours- hollow metal doors
90 minutes- hollow metal and composite
20 minutes- wood doors

Classified in accordance with UL10C for positive pressure

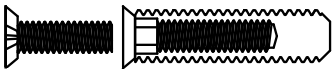
Fire-rated label

Windstorm
Products is constructed in accordance with Guidelines FEMA 320 & FEMA 361.

Optional Features

Finish
US32 Bright Stainless Steel (629)
Scratch-Resistant Powder Coated Paint

Fasteners
Adjust-A-Screw™ for correcting frame fit problems up to 3/8"

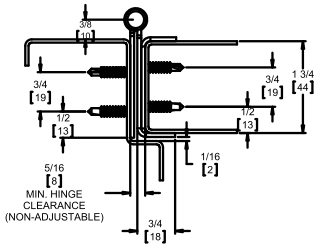


Other Features
Custom lengths- specify in inches
Custom hole pattern
Dutch door hinges- suffix "DDP"
Hospital tips – suffix "HT"
Raised barrel – suffix "RB"
Welded end pins
Security studs

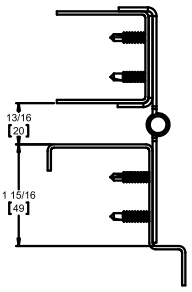
Electrical Modifications
Adjustable Monitoring Switch - suffix "AMS"
Current Transfer Prep - suffix "CTP"
Electrical Transfer Access Prep - suffix "ETAP"

ElectroLynx®
EL4 (4 wire), EL8 (8 wire), EL12 (12 wire)
PoE (9 wire)

The integral hinge guard protects the door from dings and gouges from carts and gurneys while providing clean lines and aesthetic appearance. Our HG products also have fire ratings up to and including 3 hours. Not only that, but the wrap-around edge guard protects the door from unsightly dents and gouges and will deflect objects, preventing further damage.



Door Closed



Door Open 180°

MacPro® Five Knuckle Standard Weight Series

The MacPro line offers contractor grade hinges to get the job done right. High quality MacPro hinges are an extraordinary value, ideal when you need large quantities of standard hinges.

- Plain bearing hinges are for standard weight doors only
- For standard weight doors with a closing device, MPB79 or MPB91 bearing hinge must be used
- MacPro templated hinges are made to conform to ANSI/BHMA 156.1, 156.7
- For available finishes consult the factory

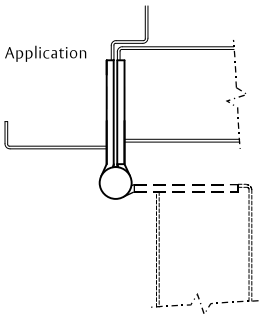
MP79

MPB79
MPB91

No.	ANSI Cross Reference	Base Material	Weight	Bearing
MP79	A8133	Steel	STD	Plain Bearing
MPB79	A8112	Steel	STD	Bearing
MPB91	A5112	Stainless*	STD	Bearing

*4 1/2" x 4 1/2"

Application



Specifications

Inches	mm	Gauge	No. of Holes	Fasteners	
				Machine	Wood
4 1/2" x 4"	114.3 x 101.6	.134	8	1/2 x 12-24	1 1/4 x 12
4 1/2" x 4 1/2"	114.3 x 114.3	.134	8	1/2 x 12-24	1 1/4 x 12

Options:

Code	Description
NRP	Non-Removable Pin

McKinney Hinge Pin Door Stop

- Recommended for high-use or high impact doors with MacPro MP79 & MPB79 hinges
- Protects against damage to doors and walls
- Runs the full length of the hinge

Part number	Description	Finish
76305	Hinge Pin Stop for MacPro MP79 & MPB79	26D
76306	Hinge Pin Stop for McKinney T2714 & TA2714	26D

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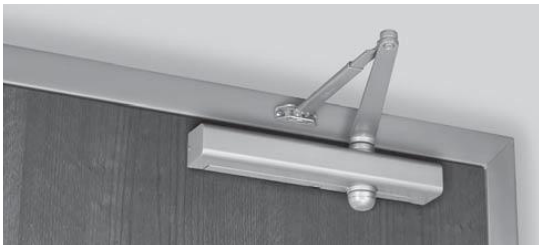

8301 - slim cover

Regular Arm
This is the only pull side application where a double lever arm is used. It is the most power-efficient application for a door closer. Sufficient frame, door and/or ceiling clearance must be considered.

8501 - full cover

Since the arm assembly projects directly out from the frame, this application may present an aesthetics issue or be prone to vandalism.

Top Jamb
For efficiency reasons this application provides the best alternative to the regular arm application. There must be sufficient frame face and/or ceiling clearance for this application. It requires a top rail on the door of just 2-1/4" (57mm). This application provides the best door control for doors in exterior walls that swing out of a building.

The entire door closer and arm assembly project from the frame, similar to the regular arm application, where matters of appearance and malicious abuse can be of concern. Consideration must be given to depth of frame reveal.

Parallel Arm
This application provides the most appealing design appearance for a surface mounted door closer having a double lever arm. This also makes it beneficial in vandalism-prone areas. It is on the push side of the door and the arm assembly extends almost parallel to the door. In the closed position, there is very little or no hardware projecting beyond the frame face in most situations.

Due to the geometry of the arm it is approximately 25% less power efficient than a regular arm application. The entire closer and arm assembly are mounted below the frame stop. Top rail clearance dimensions will vary based on the type of cover used.

Barrier-Free Systems

The ASSA ABLOY Pemko line includes many products such as modular ramps, thresholds and floor treads, that help you meet the requirements of the Americans with Disabilities Act (ADA) as outlined in the Americans with Disabilities Act Accessibility Guidelines (ADAAG-2010 amended); ICC /ANSI A117.1-2009 Standard Accessible and Usable Buildings and Facilities; any of the various Uniform Building Codes; or state access codes (e.g. California Building Code, Title 24).

The following table shows which products comply with the ADAAG and ICC /ANSI standard and also notes their respective sections.

ICC / ANSI A117.1 (ADAAG)	Pemko Recommendation
302 (4.5) Floor or Ground Surfaces. 302.1 (4.5.1) General. "shall be slip resistant"  *Skid resistant.*	"Slip resistant" PemKote™, non-skid surface • PemKote™ (finish code: "K") is a rugged abrasive finish of nickel-aluminum composite • PemKote™ provides safety in environments used by youths and people with disabilities • For more information, see the Modular Ramps section  *PemKote™: skid resistant surface.*
302.2 (4.5.3) Carpet. "Exposed edges of carpet.... shall have trim along the entire length of the exposed edge. Trim shall comply with Section 303"	 Note: See Commercial Thresholds section (page 134) for more options.
303 (4.5) Changes in Level 303.2 (4.5.2) Vertical. "Changes in level of 1/4" (6mm) high maximum shall permitted to be vertical"	 Note: See Commercial Thresholds section (pages 132-133) for more options.
303.3 (4.5.2) Beveled. "Changes in level between 1/4" (6mm) high minimum and 1/2" (13mm) high maximum shall be beveled with a slope not steeper than 1:2"	 Note: See Commercial Thresholds section (pages 104-110) for more options.
303.4 (4.5.2) Ramped. "Changes in level greater than 1/2" (13mm) shall be ramped and comply with Section 405 (4.8)"	• Assemblies accommodate 1/2" to 2 1/4" floor offsets in meeting the 1:12 slope requirements of the "Americans with Disabilities Act" • Rubber ramp component assemblies meet the same requirements. • Answer the needs of architects, specifiers, building owners, installers, and physically challenged people • For use in schools, hospitals, stadiums, offices, restaurants, hotels, airports, and more • For complete information, see the Modular Ramps section
404 (4.13) Doors and Doorways. 404.2.5 (4.13.8) Thresholds at Doorways. "...shall be 1/2" high maximum...shall comply with Sections 302 and 303"	 Note: See Commercial Thresholds section (pages 104-110 and 121) for more options.
404.2.9 (4.13.11) Door-Opening Force	
405 (4.8) Ramps 405.2 (4.8.2) Slope. "Ramp runs shall have a running slope not steeper than 1:12" *(Note: Some exceptions apply to this with respect to existing buildings having space limitations. Consult Pemko for specific applications.)*	 Note: See Modular Ramp section (pages 142-146) for more options.
504 (4.9) Stairways 504.4 Tread Surface 504.5 (4.9.3) Nosings	  Note: See Floor Treads section (pages 132-133) and Floor Molding, Trim section (page 284) for more options.

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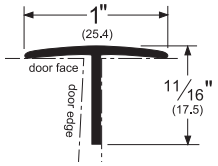
"T" and Overlapping Astragals

359_

AVAILABLE FINISHES:
10BE, A, BDG, BSP, D, WSP

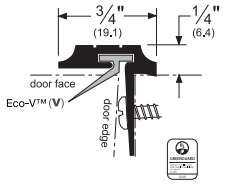
- Supplied with weatherstrip nails for installation



356_V

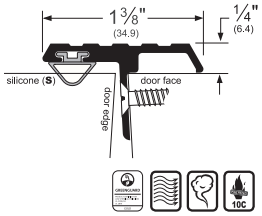
AVAILABLE FINISHES:
10BE, A, BDG, BSP, D, PW, SN, WSP
REPLACEMENT INSERT:
EV17 (BL, GR, W)

- Countersink drilling with countersunk flathead screws also available upon request at no extra charge



355_S

AVAILABLE FINISHES:
10BE, B, BDG, BSP, C, D, G, PW, SN, WSP
REPLACEMENT INSERT:
S4 (BL, GR)



Alternate Inserts For 355

355_ V

AVAILABLE FINISHES:
10BE, B, BDG, BSP, C, D, G, PW, SN, WSP
REPLACEMENT INSERT:
EV7 (BL, GR, W)

355_ P

AVAILABLE FINISHES:
10BE, B, BDG, BSP, C, D, G, PW, SN, WSP
REPLACEMENT INSERT:
P2 (BL, GR)

355_ PK

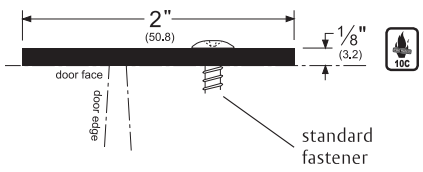
AVAILABLE FINISHES:
B, BDG, BSP, C, D, G, PW, SN
REPLACEMENT INSERT:
PK7 (BL, GR, W)

357_
357_ND

AVAILABLE FINISHES:
10BE, BSP, C, D, SP, SPBSP, SPWSP, SS
(#4 Finish & #4 Edge)

11 GAUGE

- "ND" denotes "no drill" (unless specified "ND", astragals are drilled)
- Standard fastener is #10 x 1" Truss Head SMS
- Lead-line option available

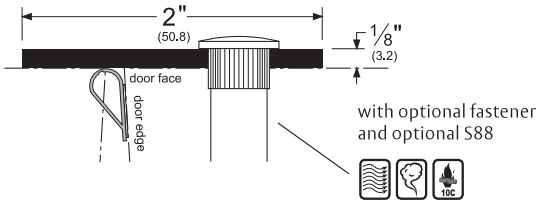


357_ with S88

AVAILABLE FINISHES:
SP, SS (#4 Finish & #4 Edge)

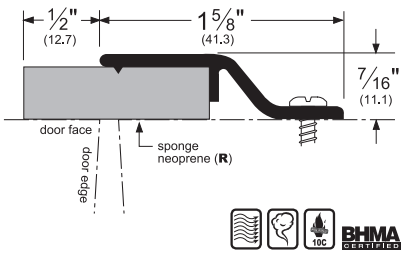
11 GAUGE

- Standard fastener is #10 x 1" Truss Head SMS
- 1/4" - 20 machine screws and thru-bolts must be ordered separately at additional cost
- S88 seal must be ordered separately at an additional cost, if required



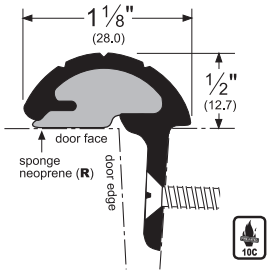
375_R

AVAILABLE FINISHES: **10BE, B, BSP, C, D, G, WSP**
REPLACEMENT INSERT: **ER6 (BL)**
ANSI: **R3C634, R3C635**



352_R

AVAILABLE FINISHES: **C, D, G**
REPLACEMENT INSERT: **R8 (BL)**
For reverse bevel doors



AVAILABLE FINISHES FOR PRODUCTS SHOWN ON THIS PAGE (see General Information section for finish chart)
10BE (Satin Bronze Powder Coated Aluminum) **A** (Mill Finish Aluminum) **B** (Mill Finish Extruded Bronze [Brass]) **BDG** (Bright Dip Gold Anodized) **C** (Clear Anodized) **BSP** (Black Suede Powder Coated Aluminum) **D** (Dark Bronze Anodized) **G** (Gold Anodized) **PW** (Painted White) **SN** (Satin Nickel Anodized) **SP** (Galvannealed Steel) **SPBSP** (Black Suede Powder Coated Steel) **SPWSP** (White Suede Powder Coated Steel) **SS** (See Individual Part) **WSP** (White Suede Powder Coated Aluminum) Special finishes available upon request

Push Plates – .050" Thick

Material: Aluminum, brass, bronze, stainless steel

Finishes: Available in standard architectural finishes, US32D**MS**, and US32D**316** (see page 9)

Fastener: #6 x 5/8" OH SMS

Features: Four beveled edges

Ordering: Specify plate number followed by size designation and finish (70B US32D) or for non-standard size 70 Specify width x height and finish. Specify any additional options

Options:
- Custom sizes available upon request
- TEK – self-drilling screws
- TORX – security Torx screws
- SA – self-adhesive mounting: 1/16" double face foam tape (no screw holes on plate)
- Engraving on plates 4" wide or wider. Specify copy. See page B1 for standard engraving locations
- Cylinder cutouts (CFC) and turn knob cutouts (CFTT). See page B1 for standard locations and sizes
- Heavy bevel available on 70A to 70G, specify HVBEV

No. 70

No.	Standard Size	Weight	ANSI A156.6
70A	3"x12"	0.7 lbs.	J301
70B	3 1/2"x15"	0.9 lbs.	J301
70C-RKW	4"x16"	.85 lbs..	J301
70E	6"x16"	1.5 lbs.	J301
70F	8"x16"	2.0 lbs.	J301
70G	4"x20"	1.3 lbs.	J301

No. 70RC

No.	Standard Size	Weight	ANSI A156.6
70RCA	3"x12"	0.7 lbs.	J301
70RCB	3 1/2"x15"	0.9 lbs.	J301
70RCC	4"x16"	1.0 lbs.	J301
70RCE	6"x16"	1.5 lbs.	J301
70RCF	8"x16"	2.0 lbs.	J301
70RCG	4"x20"	1.3 lbs.	J301

No. 70RE

No.	Standard Size	Weight	ANSI A156.6
70REA	3"x12"	0.7 lbs.	J301
70REB	3 1/2"x15"	0.9 lbs.	J301
70REC	4"x16"	1.0 lbs.	J301
HG70C	4"x16"	.85 lbs.	

Flush Pulls No. 94, 94BTB

Material: .125" brass, bronze, stainless steel

Finishes: Available in standard architectural finishes, US32D**MS**, US32D**316**, and US32**316** (see page 9)
NOTE: Cups are painted black on all finishes except stainless steel.

Fastener: No. 94: #8 x 3/4" SMS
No. 94BTB: #8 - 32 x 3/4" OH MS with sleeves Type 10

Options: TORX – security Torx screws

No.	Size	Grip Opening	Depth	Weight	ANSI A156.6
94	3 1/2" x 5"	1 3/4" x 3 1/8"	7/8"	0.6 lbs.	J403
94BTB (pair)	3 1/2" x 5"	1 3/4" x 3 1/8"	1 3/4"	1.2 lbs.	J403

Flush Pull No. 94C

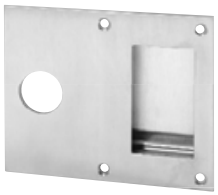
Material: .125" brass, bronze, stainless steel

Finishes: Available in standard architectural finishes, US32D**MS**, US32D**316**, and US32**316** (see page 9)
NOTE: Cups are painted black on all finishes except stainless steel

Fastener: #6 x 1" TH SMS.

Features:
- Fasteners concealed in cup.
- Accepted by the New York State Office of Mental Health (OMH) for use in high risk areas

No.	Size	Grip Opening	Depth	Weight	ANSI A156.6
94C	3 1/2" x 5"	1 3/4" x 3 1/8"	7/8"	0.6 lbs.	J403



Dead Lock Flush Pulls No. 94DLL, 94DLS

Material: .125" brass, bronze, stainless steel

Finishes: Available in standard architectural finishes, US32D**MS**, US32D**316**, and US32**316** (see page 9)
NOTE: Cups are painted black on all finishes except stainless steel

Fastener: #8 x 3/4" OH SMS.

Features:
- Used with dead bolt lock. 1 1/4" cylinder hole is standard
- Vandal resistant.
- Use where projecting trim is an operational problem or an aesthetic objection
- Ideal for use on "exit only" doors where occasional entrance is required (warehouse exits), night latch function exit device openings (classroom exit only doors), mechanical closet doors and anywhere dead locking is approved

Options:
- TORX – security Torx screws
- Custom sizes

No.	Size	Grip Opening	Depth	Weight	ANSI A156.6
94DLL	6 1/8" x 8"	1 3/4" x 6 1/8"	7/8"	1.0 lbs.	J403
94DLS	6 1/8" x 5"	1 3/4" x 3 1/8"	7/8"	0.8 lbs.	J403

Flush Pull No. 94L

Material: .125" brass, bronze, stainless steel

Finishes: Available in standard architectural finishes, US32D**MS**, US32D**316**, and US32**316** (see page 9)
NOTE: Cups are painted black on all finishes except stainless steel

Fastener: 1/4 - 20 x 1 1/2" thru bolt & finish washer (standard 1 3/4" door)

Features: Includes lugs for thru bolt. No fasteners on pull side

Options:
- TORX – security Torx screws
- Advise if door thickness other than 1 3/4"

No.	Size	Grip Opening	Depth	Weight	ANSI A156.6
94L	3 1/2" x 5"	1 3/4" x 3 1/8"	7/8"	0.6 lbs.	J403

Flush Pull No. 94P

Material: .125" brass, bronze, stainless steel

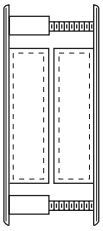
Finishes: Available in standard architectural finishes, US32D**MS**, US32D**316**, and US32**316** (see page 9)
NOTE: Cups are painted black on all finishes except stainless steel

Fastener: 1/4 - 20 x 1 1/2" MS

Features: Usually used with the 94L as a set (see below)

Options: TORX - security Torx screws

No.	Size	Grip Opening	Depth	Weight	ANSI A156.6
94P	3 1/2" x 5"	1 3/4" x 3 1/8"	7/8"	0.6 lbs.	J403



Flush Pull Set No. 94P x 94L

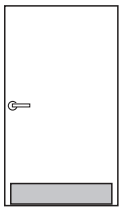
Material: .125" brass, bronze, stainless steel

Finishes: Available in standard architectural finishes, US32D**MS**, US32D**316**, and US32**316** (see page 9)
NOTE: Cups are painted black on all finishes except stainless steel

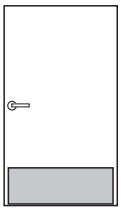
Fastener: 1/4 - 20 x 1 1/2" thru bolt (standard 1 3/4" door)

Options:
- TORX – security Torx screws
- Advise if door thickness other than 1 3/4"

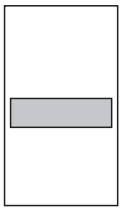
No.	Size	Weight	ANSI A156.6
94P x 94L	Set consists of 1 94L and 1 94P	1.3 lbs.	J403



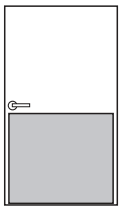
Mop Plate
Up to 6"h x 48"w



Kick Plate
6" to 12"h x 48"w



Stretcher Plate
6" to 12"h and up to 48"w



Armor Plate
Up to 48"h x 48"w and available in most finishes

OPTIONAL Self-Drilling TEK Screws: Cuts door plate installation time in half.

Width of Plates:
Push Side: 2" less than door width.
Pull Side: 1½" less than door width.

NFPA 80 STANDARDS — 2-4.5 Protection Plates: Factory-installed protection plates shall be installed in accordance with the listing of the door. Field-installed protection plates shall be labeled and installed in accordance with their listing.

Exception: Labeling is not required where the top of the protection plate is not more than 16" (406 mm) above the bottom of the door.

Metal Door Plate – Economy Duty No. K1038

Material: .038" aluminum, stainless steel
Finishes: US32D
Fastener: #6 x 5/8" OH SMS
Ordering: Specify height x width x finish code. Add any options
Weight: 8"x 34" = 3.2 lbs
Options:
- SA – self-adhesive mounting
- TORX – security Torx screws
- TEK – self-drilling screws
- Cutouts for locks, louvers, or windows (see worksheets on pages C14-C15 for details on how to order)

Metal Door Plate - Standard Duty No. K1050

Material: .050" Stainless Steel
Finishes: US32D
Fastener: #6 x 5/8" OH SMS
Ordering:

Size	High	Width
8x34BEV.32D	8"	34"
10x34BEV.32D	10"	34"
34x34BEV.32D	34"	34"

Options:
- Beveled Edge and Counter Sink included
- One day shipping available
- Door markings are not available on quick ship

Metal Door Plate – Standard Duty No. K1050, K1050F

Material: .050" aluminum, brass, bronze, stainless steel
Finishes: US10BE, US32D, US32DMS
Fastener: #6 x 5/8" OH SMS
Ordering: Specify height x width x finish code. Add any options
Weight: 8"x 34" = 4.0 lbs
ANSI: J101 - metal armor plate, J102 - metal kick plate, J103 - metal stretcher & mop plate

Options:
- SA – self-adhesive mounting
- TEK – self-drilling screws
- Beveled 3 or 4 edges, specify B3E or B4E
- Cutouts for locks, louvers, or windows (see worksheets on pages C14-C15 for details on how to order)
- Heavy bevel available, specify HVBEV
- Screw mounting (K1050F) and UL listed for use on 90-minute label wood doors and 3-hour label metal doors
- CSK – countersunk holes
- TORX – security Torx screws

Windstorm Plate – K1050WS

Material: 050" Aluminium, Brass, Bronze, Stainless Steel
Finishes: Standard Architectural Finishes
Fastener: #10x5/8" Pan Head Tek Screws
Ordering: Part # when ordering is K1050WS
All plates are UL and Windstorm rated
Options:
- Cutouts for locks, louvers or windows
- Rounded Corners
- Heavy Bevel
- Screw Mount only

Certified to the below standards:
- ICC-500 (2014)
- FEMA Guideline 320 (2014)
- FEMA Guideline 361 (2015)

Part of windstorm assembly cards: ZHLA.45, ZHLA.46, ZHLA.47, ZHLA.51, ZHLA.53, ZHLA.54

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Solid Cast Wall Stops No. 400, 401, 402

Material: Cast brass with rubber bumper

Finishes: Available in standard architectural finishes (see page 9)

Features: Concealed mounting, convex bumper.

No.	Bumper	Fastener	Size	Projection	Weight	ANSI A156.16
400	Convex	#6 x 1 1/2" FH SMS, plastic toggle	2 7/16" dia.	1"	2 lbs./10	L02101
401	Convex	#8 x 1" RH WS, plastic anchor	2 7/16" dia.	1"	2 lbs./10	L02101
402	Convex	#8 - 32 x 1" TH MS, anchor	2 7/16" dia.	1"	2 lbs./10	L02101

Solid Cast Wall Stops No. 403, 404, 405

Material: Cast brass with rubber bumper

Finishes: Available in standard architectural finishes (see page 9)

Features: Concealed mounting, concave bumper.

No.	Bumper	Fastener	Size	Projection	Weight	ANSI A156.16
403	Concave	#6 - 1 1/2" FH SMS, plastic toggle	2 7/16" dia.	1"	2 lbs./10	L02251
404	Concave	#8 x 1" RH WS, plastic anchor	2 7/16" dia.	1"	2 lbs./10	L02251
405	Concave	#8 - 32 x 1" TH MS, anchor	2 7/16" dia.	1"	2 lbs./10	L02251

Wrought Wall Stops No. 406

Material: Wrought brass, bronze, and stainless steel with rubber bumper

Finishes: Available in standard architectural finishes (see page 9)

Features:
- Concealed mounting, convex bumper. Back plate prevents damage to wall
- Accepted by the New York State Office of Mental Health (OMH) for use in high risk areas

No.	Bumper	Fastener	Size	Projection	Weight	ANSI A156.16
406	Convex	#8 x 1 1/4" TH SMS, plastic toggle	2 1/2" dia.	1"	1 1/4 lbs./10	L02101

Wrought Wall Stops No. 409

Material: Wrought brass, bronze, and stainless steel with rubber bumper

Finishes: Available in standard architectural finishes (see page 9)

Features:
- Concealed mounting, concave bumper. Back plate prevents damage to wall
- Accepted by the New York State Office of Mental Health (OMH) for use in high risk area

Options: Rubber bumper available in standard gray or optional black

No.	Bumper	Fastener	Size	Projection	Weight	ANSI A156.16
409	Concave	#8 x 1 1/4" TH SMS, plastic toggle	2 1/2" dia.	1"	1 1/4 lbs./10	L02251

Lever Extension Flush Bolt No. 555

Material: Brass

Finishes: Available in standard architectural finishes (see page 9)

Fastener: 8 ea. #8 x 3/4" FH combo screws

Features:
- For Fire Rated Hollow Metal Swinging Doors measuring up to 4'w x 10'h rated up to and including 3 Hours
- Fits ANSI A115 door and frame preparation
- 3/4" bolt throw, 3/4" rod backset
- 12" rod length (center of face to bolt end - retracted)
- 1 1/2" adjustable bolt head

Options:
- Other size rods available are 18", 24", 36", 48"
- Extra long bolt head - 2 1/2" (or to your specification)
- Use No. 570 Dust Proof Strike (shown on page E4) to prevent dirt blocking bottom strike

No.	Size	Weight	ANSI A156.16
555	Face plate: 1" x 6 3/4" Strike: 15/16" x 2 1/4" Guide: 1" x 2"	1.5 lbs./2	L04251

Lever Extension Flush Bolt with Bottom Fire Bolt No. 555 x 18BFB

Material: Flush bolt – brass
Bottom fire bolt – stainless steel

Finishes: Available in standard architectural finishes (see page 9)

Fastener: 8 ea. #8 x 3/4" FH combo screws

Features:
- For Fire Rated Hollow Metal Swinging Doors measuring up to 4'w x 9'h rated up to and including 3 Hours
- Fits ANSI A115 door and frame preparation
- 3/4" bolt throw, 3/4" rod backset
- 12" rod length (center of face to bolt end - retracted)
- 1 1/2" adjustable bolt head
- When door is subjected to 230°F the plug and black plastic cover will melt allowing the bolt to project, locking the leaves together
- Bottom fire bolt eliminates need for floor prep.
- Oversize fire bolt strike hole allows for slight door misalignment

Options:
- Other size rods available are 18", 24", 36", 48"
- Extra long bolt head – 2 1/2" (or to your specification)

No.	Size	Weight
555 x 18BFB	Top bolt: 1" x 6 3/4" Bottom bolt: 13/16" dia.	0.9 lbs.

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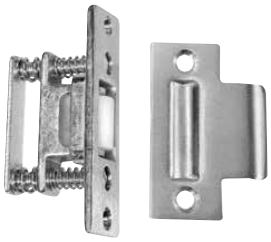


Roller Latch with No. 161 Strike No. 592

Material: Cast brass

Finishes: Available in standard architectural finishes (see page 9)

Fastener: Body: 2 ea. #8 x 3/4" FH combo screws
Strike: 2 ea. #8 x 3/4" FH combo screws

Features:
- Solid nylon roller for durable silent operation
- Simple adjustment for roller projection
- Accepted by the New York State Office of Mental Health (OMH) for use in high risk areas

No.	Latch Face	Strike	Weight
592	1" x 3 3/8"	1 1/8" x 2 3/4"	0.6 lbs.

Roller Latch with Angle Stop No. 593

Material: Cast brass.

Finishes: Available in standard architectural finishes (see page 9)

Fastener: Body: 2 ea. #12 x 1 1/2" FH WS
Strike: 2 ea. #8 x 3/4" FH combo screws

Features:
- Mounts in header with strike in top of door
- Solid nylon roller for durable silent operation
- Simple adjustment for roller projection

No.	Latch Face	Strike	Projection	Weight	ANSI A156.16
593	1 1/2" x 4 1/2"	1 1/8" x 2 1/4"	5/8"	0.8 lbs.	E09111

Roller Latch with No. 161 Strike No. 594

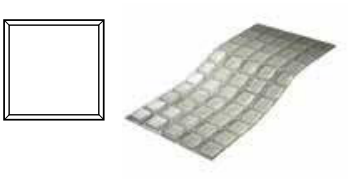
Material: Cast brass

Finishes: Available in standard architectural finishes (see page 9)

Fastener: Body: 2 ea. #8 x 3/4" FH combo screws
Strike: 2 ea. #8 x 3/4" FH combo screws

Features:
- Solid nylon roller for durable silent operation
- Simple adjustment for roller projection

No.	Latch Face	Strike	Weight
594	1 1/8" x 2 1/4"	1 1/8" x 2 3/4"	0.7 lbs.



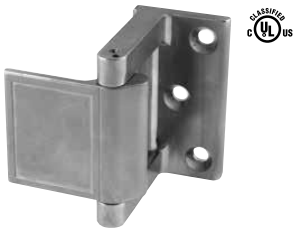
Wall Guard No. 606-RKW

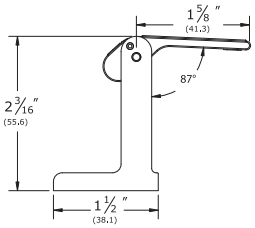
Material: Clear rubber

Other: Sold in sheets of 55

Features: Self-adhesive mounting

No.	Fastener	Size	Weight
606-RKW	Self-adhesive back	1"x1"	0.4 lbs./55





Privacy Door Latch No. PDL (formerly 607)

Material: Zinc die cast

Finishes: BRS, DBRS, STNN, CRM, DCRM, ORB

Features:
- ADA compliant
- Enhanced in room privacy
- Easy to install
- For use with UL Classified fire doors for use with hollow metal steel composite type fire doors rated up to and including 3 hrs Wood composite type fire doors rated up to and including 1 1/2 hrs and 20 minutes without hose stream

No.	Fastener	Size	Weight
PDL	#12 x 1 1/4" FH SMS	1 1/2 "x 2 3/16"	0.75 lbs.

Door Silencer No. 608CA

Material: Clear rubber

Other: Sold in packages of 300

Features: Self-adhesive mounting

No.	Fastener	Size	Weight
608CA	3/8" dia. x 1/8"	Metal or wood	0.2 lbs./300


608


609

Door Silencers No. 608-RKW, 609

Material: Gray rubber

Other: Sold in packages of 100

No.	Size	Frame Type	Weight	ANSI A156.16
608-RKW	1/2" dia. x 5/8"	Metal	1.3 lbs./500	L03011
609	3/8" x 3/4"	Wood	1.3 lbs./500	L03021

SECTION 08 80 00

GLAZING

PART 1 GENERAL

1.01 WORK INCLUDED

A. Glass and glazing for frames and doors not factory glazed.

1.02 RELATED WORK

A. Section 08 11 00 - Steel Doors and Frames.

B. Section 07 92 00 - Joint Sealers: Sealant and back-up materials.

1.03 REFERENCES

A. ANSI Z97.1 - Safety Performance Specifications and Methods of Test for Safety Glazing Material Used in Buildings.

B. FS DD-G-451 - Glass, Float or Plate, Sheet, Figured (Flat for glazing mirrors and other uses.)

C. FS DD-G-1503 - Glass, Plate (Float), Sheet, Figured and Spandrel (Heat strengthened and fully tempered.)

D. FS TT-S-230 - Sealing Compound: Synthetic Rubber Base, Single Component, Chemically Curing for Caulking, Sealing, and Glazing in Building Construction.

E. FS TT-S-1543 - Sealing Compound: Silicone Rubber Base (for caulking, sealing, and glazing in buildings and other structures.

F. SIGMA No. 64-7-2 - Specification for Sealed Insulating Glass Units.

G. FGMA - Glazing Manual.

1.04 QUALITY ASSURANCE

A. Conform to Flat Glass Marketing Association (FGMA) Glazing Manual for glazing installation methods.

1.05 SUBMITTALS

A. Submit product data.

B. Provide structural, physical and environmental characteristics, size limitations, special handling and installation requirements.

C. Provide data on glazing sealant. Identify colors available.

D. Submit two samples, 18 x 18 inches in size, illustrating glass unit and coloration for each glass type.

E. Submit 6 inch long bead of glazing sealant in color selected.

1.06 DELIVERY, STORAGE, AND PROTECTION

A. Deliver, store and protect products.

1.07 WARRANTY

A. Provide ten year manufacturer's warranty.

B. Warranty: Include coverage of sealed glass units from seal failure, interpane dusting or misting, and replacement of units.

PART 2 PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. PPG

B. Ford Glass

C. Falconer

D. Guardian

2.02 GLASS MATERIALS

A. Float Glass: FS DD-G-451; Type 1, Class 1, glazing select quality, 1/4 inch thick, clear.

B. Safety Glass: FS DD-G-1403; Kind FT, condition A, Type 1, Class 1, 1/4" thick, clear.

C. Wire Glass: FS DD-G-451; Type II, Class 1, Form clear, glazing select quality, square mesh, 1/4" thick.

D. Lead Glass: ASTM C1036, clear.

E. 1” Clear High Performance Insulating Glass, ¼” (e=0.035, #2), ½” warm edge spacer and argon gas fill, ¼”.

F. Frosted Tempered Glass: ICU Automatic Sliding Glass Doors.

2.03 ACCEPTABLE GLAZING COMPOUND MANUFACTURERS

A. Tremco - Mono.

B. Pecora - 60+.

C. Woodmont - Chem Calk 800.

2.04 GLAZING COMPOUNDS

A. Acrylic Sealant: FS TT-S-230, Type II, Class A; single component; cured Shore A hardness of 15-25; color selected by Architect.

2.05 GLAZING ACCESSORIES

A. Setting Blocks: Neoprene; 70-90 Shore A durometer hardness; 4 inch long x 3/8 inch wide x 1/4 inch high.

B. Spacer Shims: Neoprene; 50 Shore A durometer hardness; 3 inch long x 1/4 inch wide x 1/4 inch thick.

C. Glazing Tape: Preformed compound with integral resilient tube spacing device; 10-15 Shore A durometer hardness; coiled on release paper; 1/4 x 1/2 inch size; black color.

PART 3 EXECUTION

3.01 INSPECTION

A. Verify surfaces of glazing channels or recesses are clean, free of obstructions, and ready for work of this Section.

B. Beginning of installation means acceptance of substrate.

3.02 PREPARATION

A. Clean contact surfaces with solvent and wipe dry.

B. Seal porous glazing channels or recesses.

3.03 COMBINATION METHOD (TAPE AND SEALANT)

A. Cut glazing tape to length and set against permanent stops, 3/16 inch below sightline. Seal corners by butting tape and dabbing with butyl sealant.

B. Apply heel bed of butyl sealant along exterior void ensuring full contact with pane.

C. Place setting blocks at 1/4 points.

D. Rest glass on setting blocks and push against tape and heel bead of sealant with sufficient pressure to attain full contact at perimeter of pane.

E. Install removable stops, spacer strips inserted between plastic, and applied stops at 24 inch intervals, 1/4 inch below sightline.

F. Fill gap between pane and applied stop with type sealant to depth equal to bite of frame on pane, but not more than 3/8 inch below sightline.

G. Apply cap bead of sealant along exterior void, to uniform line, flush with sightline. Tool or wipe sealant surface with solvent for smooth appearance.

3.04 DRY METHOD (TAPE AND TAPE)

A. Cut glazing tape to length and set against permanent stops, projecting 1/16 inch above sightline.

B. Place setting blocks at 1/3 points.

C. Rest glass on setting blocks and push against tape for full contact at perimeter of pane.

D. Place glazing tape on free perimeter of pane in same

manner described above.

E. Install removable stop without displacement of tape. Exert pressure on tape for full continuous contact.

F. Knife trim protruding tape.

3.05 CLEANING

A. After installation, mark pane with an "X" by using plastic tape or removable paste.

B. Remove glazing materials from finish surfaces.

C. Remove labels after work is completed.

3.06 SCHEDULE

A. Type A - 1/4" clear float glass, unless noted.

B. Type B - 1/4" clear tempered glass, in doors amd openings within 36 inches of doors and 18 inches of walking surface.

C. Type C - 1/4" clear wire glass at fire rated openings.

D. Any glass within (12) inches of either side of doors from floor to sixty (60) inches above floor to be tempered.

END OF SECTION

SECTION 09 20 00

GYPSUM BOARD SYSTEMS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Metal Stud partition framing.

B. Metal channel ceiling fascia and soffit framing.

C. Gypsum board.

D. DensArmor Plus Interior Panel. (Georgia Pacific)

E. DensShield Tile Backer (Georgia Pacific)

F. Acoustic and thermal insulation.

G. Taped and sanded joint treatment.

H. Acoustic drywall.

1.02 PRODUCTS INSTALLED BUT FURNISHED UNDER OTHER SECTIONS

A. Section 08305 - Access Doors: access panels.

1.03 RELATED SECTIONS

A. Section 06 10 00 - Rough Carpentry: Wood blocking and plywood.

B. Section 08 31 00 - Access Doors: Metal access panels.

C. Section 09 90 00 - Painting: Surface finish.

1.04 REFERENCES

A. ANSI/ASTM C36 - Gypsum Wallboard.

B. ANSI/ASTM C442 - Gypsum Backing Board and Core Board

C. ANSI/ASTM C475 - Joint Treatment Materials for Gypsum Wallboard Construction.

D. ANSI/ASTM C630 - Water Resistant Gypsum Backing Board.

E. ANSI/ASTM C645 - Non-Load (Axial) Bearing Steel Studs, Runners (Track), and Rigid Furring Channels for Screw Application of Gypsum Board.

F. ANSI/ASTM C1002 - Steel Drill Screws for the Application of Gypsum Board.

G. ANSI/ASTM C754 - Installation of Framing Members to Receive Screw Attached Gypsum Wallboard, Backing Board, or Water Resistant Backing Board.

H. GA-201 - Gypsum Board for Walls and Ceilings.

I. GA-600 - Fire Resistance Design Manual

J. FS HH-I-521 - Insulation Blankets, Thermal.

K. GA-216 - Recommended Specifications for the Application and Finishing of Gypsum Board.

1.05 SYSTEM DESCRIPTION

A. Acoustic Attenuation for interior partitions: 48 STC in accordance with ANSI/ASTM E90.

B. See drawings for fire rating construction of partitions.

1.06 QUALITY ASSURANCE

A. Applicator: Company specializing in gypsum board systems work with ten years experience, approved by manufacturer.

1.07 SUBMITTALS

A. Provide product data on metal framing, gypsum board, and joint tape.

B. Submit manufacturer's installation instructions.

PART 2 PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS - GYPSUM BOARD SYSTEM

A. United States Gypsum Co..

B. Gold Bond Building Prods.

C. Georgia - Pacific Co.

D. Domtar.

2.02 FRAMING AND SUSPENSION SYSTEMS MATERIALS

A. Studs and Tracks: GA 201 and GA 216; galvanized sheet steel, 22 gage thick, 'C' shape, 3-5/8 and 6 inches wide

1. Provide two, 20 gage studs at jambs of framed openings.

B. Furring, Framing and Accessories: GA 201 and GA 216.

C. Fasteners: GA 201 and GA 216.

D. Adhesive: GA201 and GA216.

2.03 GYPSUM BOARD MATERIALS

A. Standard Gypsum Board: ANSI/ASTM C 36; 5/8 inch thick, maximum permissible lengths; ends square cut, tapered edges.

B. Fire Rated Gypsum Board: ANSI/ASTM C 36; fire resistive (and moisture resistive) type, UL rated; 1/2 and 5/8 inch thick, maximum permissible length; ends square cut, tapered edges.

C. Tile Backer Board: Georgia Pacific "Dens-Shield", 1/4 inch thick.

D. Interior Panel Protection: Georgia Pacific “DensArmor Plus” 5/8” thick.

2.04 ACCESSORIES

A. Acoustical Sealant: Non-hardening, non-skinning, for use in conjunction with gypsum board.

B. Corner Beads: Zinc.

C. Edge Trim: GA 201 and GA 216; Type LC bead.

D. Joint Materials: GA 201 and GA 216; reinforcing tape, joint compound, adhesive, water, and fasteners.

E. Thermal and Acoustical Insulation: FS-HH-I-521; preformed mineral wool, friction fit, 3 ½ inches minimum thickness (R-13).

PART 3 EXECUTION

3.01 INSPECTION

A. Verify that site conditions are ready to receive work and opening dimensions are as indicated on drawings.

B. Beginning of installation means acceptance of existing substrate.

3.02 METAL STUD INSTALLATION

A. Install in accordance with GA 201 and GA 216.

B. Stud Spacing: 16 inches on center, maximum.

C. Partition Heights: Full height to construction above unless noted. Install horizontal bracing at ceiling line and other bracing as required.

D. Frame Openings: Install double studs at jambs. Install stud tracks at frame head, sill and between studs and adjacent studs.

E. Provide 20 gage flat plate, 6 inches wide supported by at least 3 studs for attaching handrails, wall guards, casework, TV supports, light fixtures. Use Two screws per stud.

F. Coordinate installation of bucks, frames, anchors, blocking.

3.03 WALL FURRING INSTALLATION

A. Install E.P.S. board thermal insulation vertically in thickness noted, and hold in place with Z-furring spaced at 24 inches on center, 3 inches at external corners and 12 inches at internal corners.

3.04 CEILING FRAMING INSTALLATION

A. Install in accordance with ANSI/ASTM C754. GA 201 and GA 216 and manufacturer's instructions.

B. Coordinate location of hangers with other trades.

C. Install ceiling framing independent of walls, columns, and above-ceiling work.

D. Reinforce openings in ceiling suspension system which interrupt main carrying channels or furring channels, with lateral channel bracing. Extend bracing minimum 24 inches past each end of openings.

E. Laterally brace entire suspension system.

3.05 GYPSUM BOARD INSTALLATION

A. Install gypsum board in accordance with GA 201 and GA 216 and manufacturer's instructions.

B. Erect single layer of gypsum board in most economical direction, with ends and edges occurring over firm bearing.

C. Use screws when fastening gypsum board to metal furring or framing.

D. Double Layer Applications: Screw and adhesive application, in accordance with GA 201 and GA 216.

E. Place control joints consistent with lines of building spaces as directed, 25 to 30 feet on center maximum.

F. Treat cut edges and holes of moisture resistant board with sealer.

G. Place corner beads at external corners. Use longest practical length. Place edge trim where gypsum board abuts dissimilar materials.

3.06 JOINT TREATMENT

A. Provide three coat system, tape, fill and sand exposed joints, edges, and corners to produce smooth surface ready to receive finishes.

B. Feather coats onto adjoining surfaces so that camber is maximum 1/32 inch.

C. Gypsum Association Type 4 finish unless noted.

1. Type 3 finish behind ceramic tile and above ceilings.

3.07 TOLERANCES

A. Maximum Variation from True Flatness: 1/8 inch in 10 feet in any direction.

END OF SECTION

SECTION 09 30 13

CERAMIC TILE

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Ceramic tile wall.

B. Ceramic tile floor and base.

1.02 RELATED SECTIONS

A. Section 07900 - Sealants: Control joint components.

1.03 REFERENCES

A. ANSI A108.1 - Ceramic Tile Installed with Portland Cement Mortar.

B. ANSI A118.4 - Latex-Portland Cement Mortar.

C. TCA 137.1 - Recommended Standard Specifications for Ceramic Tile.

D. TCA - Handbook for Ceramic Tile Installation.

1.04 SUBMITTALS

A. Submit product data indicating material specifications, characteristics, and instructions for using mortars and grouts.

B. Submit samples.

1. Samples of grout and accessories showing color selections.

2. Mount tile and apply grout on one 24 x 24 inch plywood panel to indicate pattern, color variations, and grout joint size variations.

C. Submit manufacturer's installation instructions.

1.05 QUALITY ASSURANCE

A. Conform to ANSI/TCA A137.1

B. Conform to TCA Handbook for Ceramic Tile Installation.

1.06 QUALIFICATIONS

A. Manufacturer: Company specializing in the manufacture of products specified in this Section with minimum ten years documented experience.

B. Installer: Company specializing in applying the work of this Section with minimum five years documented] experience.

1.07 ENVIRONMENTAL REQUIREMENTS

A. Maintain 50°F during installation of mortar and grout materials.

1.08 EXTRA STOCK

A. Deliver extra material to Owner. Match products installed. Package with protective covers for storage and identify with labels.

1. Furnish 5% of amount installed for each color, size, type and pattern used.

PART 2 PRODUCTS

2.01 MANUFACTURERS - TILE

A. See ISD Finish Specification.

2.02 TILE MATERIAL

A. Ceramic Mosaic Floor Tile: ANSI/TCA A137.1, conforming to the following:

Moisture Absorption	0.5 to 3.0 percent
Size	2 x 2 x 1/4 inch
Edge	Cushioned
Surface Finish	Unglazed, slip resistant, coeff of friction=0.6 minimum
Colors and Patterns	As selected by Architect from full range of colors including all premium colors. Allow for up to four colors. Multi-colored pattern with border.

B. Ceramic Wall Tile: ANSI/TCA A137.1, conforming to the following:

Moisture Absorption	0.5 to 3.0 percent
Size	4 1/4 x 4 1/4 x 3/16 inch
Edge	Cushioned
Surface Finish	Glazed
Colors and Patterns	As selected by Architect from full range of colors including all premium colors. Allow for up to four colors. Use Trim Accent Liner as feature strip. Assume up to three bands of color per wall.

C. Base: Match floor tile for moisture absorption, surface finish, and color; six inch high; coved bottom, bull nose top where not abutting wall tile.

2.03 MORTAR MATERIALS

A. Mortar Materials: ANSI/TCA A118.4; Portland cement, sand, latex additive by L & M Surco, and water.

2.04 GROUT MATERIALS

A. Grout: ANSI A118.4 Latex and portland cement.

B. Color: As selected; manufactured by L & M Surco, or Laticrete.

2.05 MORTAR MIX AND GROUT MIX

A. Mix and proportion pre-mix materials in accordance with manufacturer's instructions and ANSI/TCA.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that surfaces are ready to receive work.

B. Beginning of installation means installer accepts condition of existing substrate.

3.02 PREPARATION

A. Protect surrounding work from damage or disfiguration.

B. Vacuum clean existing substrate and damp clean.

C. Apply cement board units to floor, using screws, in strict accordance with manufacturers directions.

D. Seal substrate surface cracks with filler. Level existing substrate surfaces to acceptable flatness tolerances.

3.03 FLOOR TILE INSTALLATION

A. Install mortar bed, tile, threshold, and grout to TCA Handbook for Ceramic Tile Installation, Handbook Number F-113, in accordance with ANSI A108.5 and A108.10.

B. Lay tile to pattern indicated on drawings. Do not interrupt tile pattern through openings.

C. Place thresholds at exposed tile edges.

D. Cut and fit tile tight to penetrations through tile. Form corners neatly. Align floor, base, and wall joints.

E. Place tile joints uniform in width, subject to variance in tolerance allowed in tile size. Make joints watertight without voids, cracks, excess mortar, or excess grout.

F. Sound tile after setting. Replace hollow sounding units.

G. Allow tile to set for a minimum of 48 hours prior to grouting.

H. Grout tile joints.

3.04 WALL TILE INSTALLATION

A. Install tile, and grout to TCA Handbook for Ceramic Tile Installation, Handbook Number W202 or Number W243.

B. Cut and fit tile tight to penetrations through tile. Form corners and bases neatly. Align wall, base, and floor joints.

C. Place tile joints uniform in width, subject to variance in tolerance allowed in tile size. Make joints watertight, without voids, cracks, excess mortar or excess grout.

D. Form internal angles square and external angles bullnosed.

E. Sound tile after setting. Replace hollow sounding units.

F. Allow tile to set for a minimum of 48 hours prior to grouting.

G. Grout tile joints.

H. Apply sealant to junction of tile and dissimilar materials and at junction of dissimilar planes.

3.05 CLEANING

A. Clean tile surfaces.

3.06 PROTECTION

A. Do not permit traffic over finished floor surface.

END OF SECTION

SECTION 09 65 00

RESILIENT FLOORING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Luxury tile flooring.

B. Vinyl composition tile.

B. Resilient vinyl plank flooring.

C. Resilient base.

1.02 RELATED SECTIONS

A. Section 03 54 00 – Concrete Leveling Course: Floor substrate surface.

1.03 REFERENCES

A. ASTM E84 - Surface Burning Characteristics of Building Materials.

B. FS SS-T-312 - Tile, Floor: Asphalt, Rubber, Vinyl, Vinyl Composition.

C. FS SS-W-40 - Wall Base: Rubber and Vinyl Plastic.

1.04 REGULATORY REQUIREMENTS

A. Conform to referenced code for Class 1 flame/ fuel/smoke rating requirements in accordance with ASTM E84.

1.05 SUBMITTALS

A. Submit shop drawings and product data.

B. Submit two full size samples illustrating color and pattern for each floor material specified.

C. Submit two 6-inch-long samples of base material for each color specified.

D. Submit manufacturer's installation instructions.

1.06 OPERATION AND MAINTENANCE DATA

A. Submit cleaning and maintenance data.

B. Include maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning, stripping, and re-waxing.

1.07 ENVIRONMENTAL REQUIREMENTS

A. Store materials for three days prior to installation in area of installation to achieve temperature stability.

B. Maintain ambient temperature required by adhesive manufacturer three days prior to, during, and 24 hours after installation of materials.

PART 2 PRODUCTS

2.01 FLOORING MATERIALS

A. Vinyl Luxury Tile: See ISD Finish Schedule

B. Vinyl Plank: See ISD Finish Schedule.

C. Vinyl Composition Tile: See ISD Finish Schedule.

D. Sheet Rubber: 3 mm thick, 49.2’ x 48” rubber sheet. Full welded seams.

1. Allow for colors as selected.

2. Product: See ISD Finish Schedule.

2.02 BASE MATERIALS

A. Base: FS SS-W-40, Type 1 rubber; 4-inch-high; 1/8-inch-thick; top set coved; premolded external corners. Colors and manufacturer as scheduled. If not scheduled, approved manufacturers include:

1. Mercer.

2. Roppe.

3. Johnsonite.

B. Base Accessories: Premolded end stops and external corners, of same material, size, and color as base.

C. Integral sheet, 6 inches high, with cove, as scheduled.

2.03 ACCESSORIES

A. Subfloor Filler: White premix latex; type recommended by flooring material manufacturer.

B. Primers and Adhesives: Waterproof; types recommended by flooring manufacturer.

C. Edge Strips: 1 1/4 inches wide, solid color. Provide solid vinyl edge strip, in complimentary color to adjacent flooring, wherever change of flooring occurs. Provide aluminum edge strip at juncture between ceramic tile and other floor materials. Transitions between adjacent flooring products shall be level.

D. Sealer and Wax: Types recommended by flooring manufacturer.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that surfaces are smooth and flat with maximum variation of 1/8 inch in 10 ft and are ready to receive Work.

B. Verify concrete floors are dry to a maximum moisture content of 7 percent, and exhibit negative alkalinity, carbonization, or dusting.

C. Beginning of installation means acceptance of existing substrate and site conditions.

3.02 PREPARATION

A. Remove sub-floor ridges and bumps. Fill low spots, cracks, joints, holes, and other defects with subfloor filler.

B. Apply, trowel, and float filler to leave a smooth, flat, hard surface.

C. Prohibit traffic from area until filler is cured.

D. Vacuum clean substrate.

3.03 INSTALLATION - TILE

A. Install in accordance with manufacturers' instructions.

B. Mix tile from container to ensure shade variations are consistent.

C. Spread only enough adhesive to permit installation of materials before initial set.

D. Set flooring in place, press with heavy roller to attain full adhesion.

E. Install tile to square grid pattern with all joints aligned. with pattern grain parallel for all units and parallel to width of room. Allow minimum 1/2 full size tile width at room or area perimeter.

F. Terminate flooring at centerline of closed door where adjacent floor finish is dissimilar.

G. Install edge strips at unprotected or exposed edges, and where flooring terminates.

H. Scribe flooring to walls, columns, cabinets, floor outlets, and other appurtenances to produce tight joints. Heat weld in operating rooms.

I. Install feature strips, edge strips, and floor markings where indicated. Fit joints tightly. Heat weld joints in operating rooms.

3.04 INSTALLATION OF SHEET FLOORING

A. Lay sheet flooring to provide as few seams as possible. Match edges for color shading and pattern at seams in compliance with manufacturer's recommendations.

1. See drawings for colors and patterns.

B. Adhere sheet flooring to substrate following flooring manufacturer's instructions for substrate condition indicated.

C. Prepare seams in vinyl sheet flooring with manufacturer's special routing tool and heat weld with vinyl rod in seams. Use methods and sequence of work in conformance with written instructions of flooring manufacturer.

D. Provide six inch high integral flash cove base where vinyl sheet flooring meets vertical surfaces. Include continuous cove fillet support strip of minimum 3/4 " radius and aluminum top edge cap trim in manufacturer's standard finish as selected by Architect. Construct coved base in accordance with manufacturer's instructions.

E. Apply sealant specified in Section 07900 at joint between cove cap and walls.

1. Use clear silicone if wall has been painted.

2. Use paintable silicone if wall has not been painted.

3.05 INSTALLATION - BASE MATERIAL

A. Fit joints tight and vertical. Maintain minimum measurement of 18 inches between joints.

B. Miter internal corners. At external corners, use premolded units. At exposed ends use premolded units.

C. Install base on solid backing. Bond tight to wall and floor surfaces.

D. Scribe and fit to door frames and other interruptions.

3.05 PROTECTION

A. Prohibit traffic on floor finish for 48 hours after installation.

3.06 CLEANING

A. Remove excess adhesive from floor, base, and wall surfaces without damage.

B. Clean, seal, and wax floor and base surfaces in accordance with manufacturer's instructions (by Owner).

3.07 EXTRA STOCK

A. Two percent additional units of each tile color/pattern, and sheet goods.

B. Three, eight feet lengths of each base color/style.

END OF SECTION

SECTION 09 73 00

EPOXY RESIN FLOORING WITH INTEGRAL COVE BASE

PART 1 GENERAL

1.01 SUMMARY

A. Related Sections:

1. 033000 - Cast-in-Place Concrete.

2. 090000 - Patching and Finishes.

3. 099000 - Painting.

4. 099050 - Epoxy Resin Wall Finish.

1.02 REFERENCES

A. American Society for Testing and Standards (ASTM):

1. F710-92 Standard Practice for Preparing Concrete Floors and other Monolithic Floors to Receive Resilient Flooring.

1.03 SUBMITTALS

A. Manufacturer's specifications, recommendations, and installation instructions for specified underlayment and topping materials. Include the following:

1. Manufacturer's published data, or letter of certification, or certified testing laboratory report, indicating each material complies with specified requirements and is intended for application shown.

2. Manufacturer's standard color chart.

3. Manufacturer's top coat skid-resistance chart ranging from fine to coarse.

B. Samples: Provide 4 inch by 4 inch minimum samples in the color and finish as selected by the A/E.

1. Provide a minimum of 3 samples per color and finish as selected by the A/E.

2. The epoxy resin composition flooring samples shall be applied to a rigid backing.

1.04 QUALITY ASSURANCE

Installer Qualifications:

1. Perform installation by a qualified contractor with skilled mechanics having not less than 5 years satisfactory experience in installation of specified systems.

2. Submit a list of projects of similar size and scope of current project where specified resinous flooring system has been used with satisfactory service. Include project name, address, square footage, owner contact person, and phone number.

B. Regulatory Requirements: Provide flooring system complying with slip-resistance according to applicable building codes.

C. Mock-Ups:

1. Apply mock-up sample where directed by Architect to verify selections submitted and confirm adhesion to substrate. [Size: _____x _____].

   a. Mock-up will demonstrate substrate preparation, products, colors, sheen, mil thickness, number of coats, and desired slip resistance.
   b. Modify sample as directed until accepted by Architect.
   c. Perform adhesion test per ASTM D 3359 after full cure time as recommended by the manufacturer for the use intended and under proper temperature and relative humidity conditions Report in writing the results of the test.

2. Upon acceptance of Architect, sample area will be the standard of workmanship quality throughout the project.

B. Compliance: Upon completion of work submit report signed by an authorized representative of applicator certifying compliance with the flooring manufacturer's recommended procedures and specifications.

C. Pre-Installation Conference:

1. Arrange a meeting not less than 30 days before starting work.

2. Attendance: General Contractor, A/E, the Board's representative, manufacturer's representative, and installer's representative.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Check delivered material to job-site for completeness and shipping damage before starting work.

B. Materials used shall be factory pre-weighed and prepackaged in single, easy to manage batches.

C. Store materials in a dry and enclosed area, protected from exposure to moisture. Maintain temperature of storage area between 68 and 90 degrees F.

1.06 PROJECT CONDITIONS

A. Allow for concrete substrate to properly cure concrete substrate for a minimum of 28 days.

1. If manufacturer requirements are stricter than the minimum required 28 days curing time, comply with manufacturer's requirements.

B. Work area shall be free of other trades during installation, and for a minimum period of 24 hours after installation.

C. Protect finished floor from damage by subsequent trades.

1.07 WARRANTY

A. Manufacturer shall furnish a single written warranty covering both material and labor for a period of 5 years from date of substantial completion.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Epoxy Resin Composition Flooring:

1. SW/GeneralPolymers Softop Rubber Flooring system

2. StonHard, Inc.: Stonblend RTZ.

B. Epoxy Resin Flashcove Base:

1. SW/General Polymers Epoxy Cove Base

2. StonHard, Inc.: Stonclad GS/GS4.

2.02 MATERIALS

A. Epoxy Resin Composition Flooring:

1. Basecoat:

a. Thickness: 1/4".

b. Color: Selected by the A/E from the basecoat manufacturer's stock color selection.

2. Top Coat:

a. Colored, skid-resistant, orange peel texture, non-abrasive topping in quantity as recommended by the basecoat manufacturer or use with the specified basecoat.

b. Color: Matching basecoat color.

3. Skid-Resistance: Selected by the A/E from the basecoat manufacturer's stock selection showing a smooth skid-resistance and with a coefficient of friction of at least 0.5.

4. Underlayment: As recommended by the basecoat manufacturer.

5. Joint Sealant Materials: As produced by manufacturer of epoxy resin composition flooring system for type of service and joint condition indicated.

B. Slip Retardant Epoxy Resin Coating:

1. Skid-resistant, metallic oxide aggregate course topping in quantity as recommended by the basecoat manufacturer for use with the specified basecoat.

2. Skid-Resistance: Dry and wet coefficient of friction of at least 0.8.

PART 3 EXECUTION

3.01 INSPECTION

A. Do not proceed with the work of this section until conditions detrimental to the proper and timely completion of the work have been corrected in an acceptable manner.

B. At kitchen areas, notify M-DCPS Food and Nutrition at least 48 hours before application of epoxy resin flooring.

C. Existing Slopes To Floor Drains: Before starting work, verify existing slopes to floor drains function properly and do not leave standing water or "bird baths". If such conditions are found to exist, notify the A/E before proceeding with the work.

3.02 PREPARATION

A. Comply with ASTM F710, manufacturer's recommendations, and as specified for surface preparation of new and existing substrates.

B. Remove fixed and movable equipment before application of impervious flooring material. Reinstall after application of impervious flooring materials is complete.

C. Moisture Tests:

1. Determine whether the concrete slab is adequately dry for flooring installation.

2. Test concrete slabs in new construction or existing slabs on grade for manufacturer's allowable moisture content by one of the following:

a. The protimeter electrical conductivity survey master moisture test instrument.

b. Calcium chloride test.

D. Concrete shall be smooth and level, with maximum surface variations not exceeding 1/8" in a 10 foot radius. Grind down ridges and other irregularities.

1. Fill cracks, holes, and depressions with latex cement underlayment as recommended by the flooring manufacturer.

E. Cleaning Before Installation:

1. Clean substrate surfaces to be free of paint, wax, oil, grease or other materials that can effect bonding and smoothness of basecoat materials. Provide a clean, dry, and neutral substrate.

2. Shot-blast concrete surfaces as required to obtain optimum bond of flooring to concrete.

a. Remove sufficient material to provide a sound surface free of laitance, glaze, efflorescence, and any bond-inhibiting curing

compounds or form release agents.

b. Remove grease, oil, and other penetrating contaminates.

c. Repair damaged and deteriorated concrete to acceptable condition.

d. Leave surfaces free of dust, dirt, laitance, and efflorescence.

3.03 INSTALLATION

A. Application:

1. Apply troweled epoxy resin composition flooring with integral 4 inch high cove base by an applicator approved by the manufacturer of the flooring materials.

2. Apply without seams according to shop drawings and the flooring manufacturer's printed instructions.

3. New flooring thickness shall be uniform to maintain existing slope to floor drain, chip a minimum of 12 inches around floor drain to maintain new flooring thickness at the drain.

B. Patching or Repair: Patch or repair cracks and level uneven areas with specified underlayment materials according to underlayment manufacturer's recommendations.

3.04 ADJUSTING AND CLEANING

A. Use cleaning materials and procedures recommended by flooring manufacturer.

B. Contractor is responsible for protection and cleaning of surfaces after final coats.

3.05 PROTECTION

A. Protect installed floor from damage and wear during overall construction operation. Contractor shall comply with manufacturer's recommendations for protective materials.

END OF SECTION

SECTION 09 90 00

PAINTING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Surface preparation.

B. Painting

1.02 RELATED SECTIONS

A. Section 05 50 00 - Metal fabrications: Shop primed items.

B. Section 06 20 00 - Finish Carpentry: Field painted items.

C. Section 09 20 00 - Gypsum Board Systems: Field Paint.

D. Division 15 - Mechanical Identification.

E. Division 16 - Electrical Identification.

1.03 REFERENCES

A. ANSI/ASTM D16 - Definitions of Terms Relating to Paint, Varnish, Lacquer, and Related Products.

1.04 DEFINITIONS

A. Conform to ANSI/ASTM D16 for interpretation of terms used in this Section.

1.05 QUALITY ASSURANCE

A. Product Manufacturer: Company specializing in manufacturing quality paint and finish products with ten years experience.

B. Applicator: Company specializing in commercial painting and finishing with five years experience.

C. Products: Manufacturers premium grade "over-the-counter" retail coatings with no odor guarantee.

1.06 REGULATORY REQUIREMENTS

A. Conform to applicable V.O.C. requirements.

1.07 SUBMITTALS

A. Submit product data.

B. Submit two samples 12 x 12 inch in size illustrating range of colors and sheen available for each surface finishing product scheduled, for selection.

C. Submit manufacturer's application instructions.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Store and protect products.

B. Deliver products to site in sealed and labeled containers; inspect to verify acceptance.

C. Container labeling to include manufacturer's name, type of paint, brand name, brand code, coverage, surface preparation, drying time, cleanup, color designation, and instructions for mixing and reducing.

D. Store paint materials at minimum ambient temperature of 45°F and a maximum of 90°F, in well ventilated area, unless required otherwise by manufacturer's instructions.

E. Take precautionary measures to prevent fire hazards and spontaneous combustion.

1.09 ENVIRONMENTAL REQUIREMENTS

A. Provide continuous ventilation and heating facilities to maintain surface and ambient temperatures above 45°F for 24 hours before, during, and 48 hours after application of finishes, unless required otherwise by manufacturer's instructions.

B. Do not apply exterior coatings during rain or snow, or when relative humidity is above 50 percent, unless required otherwise by manufacturer's instructions.

C. Minimum Application Temperatures for Latex Paints: 45°F for interiors; 50°F for exterior.

D. Provide lighting level of 80 ft candles measured mid-height at substrate surface.

PART 2 PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS - PAINT SYSTEMS

A. Sherwin-Williams.

B. Benjamin Moore.

2.02 MATERIALS

A. Manufacturers full custom, premium color line premixed at the point of origin. Process pigments to a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating.

B. Good flow and brushing properties; capable of drying or curing free of streaks or sags.

C. Accessory Materials: Paint thinners and other materials not specifically indicated but required to achieve the finishes specified, of commercial quality.

2.03 FINISHES

A. Refer to schedule on ISD finish schedule.

2.04 COLORS

A. Refer to schedule on ISD finish schedule.

PART 3 EXECUTION

3.01 INSPECTION

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. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces are below the following maximums:

1. Gypsum Wallboard: 12 percent.

2. Concrete, and Concrete Unit Masonry: 12 percent.

3. Wood: 15 percent, measured in accordance with ASTM D 2016.

D. Beginning of installation means acceptance of surfaces.

3.02 PREPARATION

A. Remove electrical plates, hardware, light fixture trim, and fittings prior to preparing surfaces or finishing.

B. Correct minor defects and clean surfaces which affect work of this Section.

C. Seal marks which may bleed through surface finishes.

D. Impervious Surfaces: Remove mildew by scrubbing with solution of tri-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.

E. Gypsum Board Surfaces: Latex fill minor defects. Spot prime defects after repair.

F. Galvanized Surfaces: Remove surface contamination and oils and wash with solvent. Apply coat of etching primer.

G. Concrete and Unit Masonry Surfaces Scheduled to Receive Paint or Coating Finish: Remove dirt, loose mortar, scale, salt or alkali powder, and other foreign matter. Remove oil and grease with a solution of tri-sodium phosphate; rinse well and allow to dry. Remove stains caused by weathering of corroding metals with a solution of sodium metasilicate after thoroughly wetting with water. Allow to dry.

H. Uncoated Steel and Iron Surfaces: Remove grease, scale, dirt, and rust. Where heavy coatings of scale are evident, remove by wire brushing or sandblasting; clean by washing with solvent. Apply a treatment of phosphoric acid solution, ensuring weld joints, bolts, and nuts are similarly cleaned. Spot prime paint after repairs.

I. Shop Primed Steel Surfaces: Sand and scrape to remove loose primer and rust. Feather edges to make touch-up patches inconspicuous. Clean surfaces with solvent. Prime bare steel surfaces.

J. Interior Wood Items Scheduled to Receive Painted 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.

K. Existing Painted Hollow Metal Door Frames: Sand and scrape to remove loose paint. Clean by washing with solvent. Apply a treatment of phosphoric acid solution,

ensuring weld joints, bolts, and nuts are similarly cleaned. Spot prime paint after repairs.

3.03 PROTECTION

A. Protect elements surrounding the work of this Section from damage or disfiguration.

B. Repair damage to other surfaces caused by work of this Section.

C. Furnish drop cloths, shields, and protective methods to prevent spray or droppings from disfiguring other surfaces.

D. Remove empty paint containers from site.

3.04 APPLICATION

A. Apply products in accordance with manufacturer's printed instructions.

B. Do not apply finishes to surfaces that are not dry.

C. Apply each coat to uniform finish.

D. Apply each coat of paint slightly darker than preceding coat unless otherwise approved.

E. Sand lightly between coats to achieve required finish.

F. Allow applied coat to dry before next coat is applied.

G. Where clear finishes are required, tint fillers to match wood. Work fillers into the grain before set. Wipe excess from surface.

H. Prime back surfaces of woodwork with primer paint.

I. In areas with nearby occupants, contractor shall give special attention to finishes which emit strong odors which might be offensive. Work shall be scheduled, as required, to mitigate any problems. To the extent possible, finishes will be completed outside of the facility.

3.05 FINISHING MECHANICAL AND ELECTRICAL EQUIPMENT

A. Refer to Division 15 and Division 16 for schedule of color coding and identification banding of equipment, ductwork, piping, and conduit.

B. Paint shop primed equipment.

C. Remove unfinished louvers, grilles, covers, and access panels on mechanical and electrical components and paint separately.

D. Prime and paint insulated and exposed pipes, conduit, boxes, insulated and exposed ducts, hangers, brackets, collars and supports, except where items are prefinished.

E. Replace identification markings on mechanical or electrical equipment when painted accidently.

F. Paint interior surfaces of air ducts, and convector and baseboard heating cabinets that are visible through grilles and louvers with one coat of flat black paint, to limit of sight line. Paint dampers exposed behind louvers, grilles, and convector and baseboard cabinets to match face panels.

G. Paint exposed conduit and electrical equipment occurring in finished areas.

H. Paint both sides and edges of plywood backboards for electrical and telephone equipment before installing equipment.

I. Replace electrical plates, hardware, light fixture trim, and fittings removed prior to finishing.

3.06 CLEANING

A. As Work proceeds, promptly remove paint where spilled, splashed, or spattered.

B. During progress of Work maintain premises free of unnecessary accumulation of tools, equipment, surplus materials, and debris.

C. Collect cotton waste, cloths, and material which may constitute a fire hazard, place in closed metal containers and remove daily from site.

3.07 SCHEDULE - SHOP PRIMED ITEMS FOR SITE FINISHING - EXTERIOR SURFACES

A. Metal Fabrications (Section 05500): Exposed ferrous metal surfaces.

1. One coat primer sealer.

2. Two coats exterior oil-based paint.

3.08 SCHEDULE - INTERIOR SURFACES

A. Wood - Painted

1. One coat primer sealer.

2. Two coats acrylic latex enamel semi-gloss.

B. Wood - Transparent

1. Filler coat (for open grained wood only).

2. One coat stain.

3. One coat sealer.

4. Two coats semi-gloss polyurethane varnish.

C. Concrete Block - Painted

1. One coat block filler.

2. Two coats acrylic latex enamel semi-gloss.

D. Steel - Unprimed

1. One coat zinc chromate primer.

2. Two coats acrylic latex enamel semi-gloss.

E. Steel - Primed

1. Touch-up with compatible primer.

2. Two coats acrylic latex enamel semi-gloss.

F. Gypsum Board - Painted

1. One coat primer-sealer.

2. Min. two coats acrylic latex (eggshell) as required for complete coverage.

G. Gypsum Board – Toilet Rooms, Kitchens, Utility Rooms (etc.)

1. One coat primer-sealer.

2. Two coats acrylic latex (semi-gloss).

3.09 DO NOT PAINT:

A. Acoustical Tile.

B. Concrete floors.

C. Plastic laminate.

D. Glass.

E. Prefinished Aluminum & Steel.

F. Resilient Flooring.

G. Mechanical piping ductwork and sprinklers will not be painted unless exposed to view.

END OF SECTION

SECTION 10 26 00

WALL SURFACE PROTECTION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Corner Guards

B. Protective Wall Covering

1.02 RELATED SECTIONS

A. Section 09250 - Gypsum Board Systems

1.03 SUBMITTALS

A. Submit manufacturers standard printed product data.

B. Submit full size samples as requested by Architect.

C. Submit manufacturer's installation instructions.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Construction Specialties, Inc.

B. IPC

2.02 MATERIALS (C.S. Referenced)

A. High Impact Protective Wall Covering: "Acrovyn Pebblette", 0.040 inches thick, complete with caps, closures, trim, primer adhesive and installation hardware.

B. Corner Guards: 3 x 3 inches, "Acrovyn SM-20", height from top of base to ceiling, unless otherwise indicated.

C. Hand Rail: (“IPC” Referenced) 1200 Series with continuous mounting anti-ligature bracket.

D. Crash Rail: As noted on Drawings.

E. Door Frame Coping: "Acrovyn Pebblette, 0.060 inches thick, formed to match frame profile. Height from finished floor to 48 inches above floor. Provide cut-outs for door hardware.

F. Adhesive: As recommended by manufacturer.

G. Colors: To be selected from manufacturers standard color selection.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that surfaces and openings are ready to receive work.

B. Verify field measurements are as shown on drawings and required by manufacturer.

C. Verify that required utilities are available, in proper locations, and ready for use.

D. Beginning of installation means installer accepts existing surface and substrate conditions.

3.02 PREPARATION

A. Protect elements surrounding the work of this Section from damage or disfiguration.

3.03 INSTALLATION

A. Install protective wall covering using adhesive in accordance with manufacturer's printed instructions.

B. Install corner guards using mechanical anchors.

C. Adjust and clean installed work.

3.04 PROTECTION

A. Protect finished installation.

END OF SECTION

SECTION 10 28 00

TOILET AND BATH ACCESSORIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Toilet and washroom accessories.

B. Mirrors.

C. Attachment hardware.

1.02 REFERENCES

A. ANSI A117.1 - Specifications for Making Buildings and Facilities Accessible To and Usable by Physically Handicapped People.

B. ANSI/ASTM A366 - Steel, Carbon, Cold-Rolled Sheet, Commercial Quality.

C. ANSI/ASTM B456 - Electrodeposited Coatings of Copper Plus Nickel Plus Chromium and Nickel Plus Chromium.

D. ASTM A167 - Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet and Strip.

E. ASTM A269 - Seamless and Welded Austenitic Stainless Steel Tubing for General Service.

1.03 SUBMITTALS

A. Provide product data on accessories describing size, finish, details of function, attachment methods.

B. Submit manufacturer's installation instructions.

1.04 KEYING

A. Supply two keys for each accessory to Owner.

B. Master key all accessories.

1.05 REGULATORY REQUIREMENTS

A. Conform to code for installing work in conformance with ANSI A117.1.

PART 2 PRODUCTS

2.01 ACCEPTABLE MANUFACTURER

A. Bobrick Washroom Equip., Inc.

B. American Specialties, Inc.

C. Odd Ball Industries

D. Evans & Paul

E. Truebro

F. Approved Equal.

2.02 MATERIALS

A. Sheet Steel: ANSI/ASTM A366.

B. Stainless Steel Sheet: ASTM A167, Type 304.

C. Tubing: ASTM A269, stainless steel.

D. Fasteners, Screws, and Bolts: Hot dip galvanized, tamperproof.

E. Expansion Shields: Fiber, lead, or rubber as recommended by accessory manufacturer for component and substrate.

2.03 FABRICATION

A. Weld and grind smooth joints of fabricated components.

B. Form exposed surfaces from single sheet of stock, free of joints.

C. Form surfaces flat without distortion. Maintain flat surfaces without scratches or dents.

D. Back paint components where contact is made with building finishes to prevent electrolysis.

E. Shop assemble components and package complete with anchors and fittings.

F. Provide steel anchor plates, adapters, and anchor components for installation.

2.04 FACTORY FINISHING

A. Chrome/Nickel Plating: ANSI/ASTM B456, Type SC 2 satin finish.

B. Stainless Steel: No. 4 satin luster finish.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that site conditions are ready to receive work and dimensions are as indicated on shop drawings.

B. Beginning of installation means acceptance of existing substrate.

3.02 PREPARATION

A. Deliver inserts and rough-in frames to site at appropriate time for building-in.

B. Provide templates and rough-in measurements as required.

C. Verify exact location of accessories for installation.

3.03 INSTALLATION

A. Install fixtures, accessories and items in accordance with manufacturers' instructions.

B. Install plumb and level, securely and rigidly anchored to substrate.

3.04 SCHEDULE - See also Accessory Schedule on drawings

A. HDPE Toilet Partitions

1. When shown on drawing, provide floor mounted high density polyethylene doors, gravity hinges, slide bar latch and coat hook. Provide HDPE wall mounted urinal screens where shown on plan to match toilet partition. Provide all accessories as required for a complete installation. Manufacturer shall be Santana Products or equal.

B. Bathroom Accessories (In addition to Accessories Schedule on Drawings)

1. Mirrors: Provide one Bobrick or American Specialities Model # ASI-600 SS – 18”x36” surface mounted, anti-ligature.
2. Toilet Tissue Dispensers: Ligature resistant as manufactured by Evans & Paul. These dispensers shall be furnished and installed by the contractor.
3. Grab Bars: Provide Odd Ball Industries grab bars with exposed mounting. See accessories schedule on drawings for sizes. Installed per manufacturer's recommendations.
4. Paper Towel Dispensers: Bobrick B-35 in new bathrooms. These dispensers shall be furnished and installed by the contractor.
5. Soap Dispensers: Soap dispensers shall be furnished and installed at all sinks by the contractor. Soap dispensers shall be surface mounted, anti-ligature type as manufactured by Norva Plastics.
6. Plumbing Protection: These shall be furnished and installed by the contractor. They shall be surface mounted as manufactured by Truebro.
7. Door Hooks: At all offices and exam rooms, provide Bobrick B-2116. At patient room toilets provide door hook on back side of door equal to Bobrick single robe anti-ligature hook #B-983.

END OF SECTION

SECTION 10 44 00

FIRE EXTINGUISHERS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Fire extinguishers.

B. Cabinets.

C. Accessories.

1.02 RELATED SECTIONS

A. Section 09 20 00 - Gypsum Board Systems: Roughed-in wall openings.

B. Section 09 90 00 - Painting: Field paint finish.

1.03 REFERENCES

A. NFPA 10 - Portable Fire Extinguishers.

1.04 QUALITY ASSURANCE

A. Conform to NFPA 10 requirements for extinguishers.

1.05 SUBMITTALS

A. Submit product data.

B. Include physical dimensions, operational features, color and finish, wall mounting brackets with mounted measurements, anchorage details, rough-in measurements, location, and details.

C. Submit manufacturer's installation instructions.

1.06 OPERATION AND MAINTENANCE DATA

A. Submit manufacturer's operation and maintenance data.

B. Include test, refill or recharge schedules, procedures, and re-certification requirements.

1.07 ENVIRONMENTAL REQUIREMENTS

A. Do not install extinguishers when ambient temperatures may cause freezing.

PART 2 PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. J. L. Industries.

B. Larsen's Manufacturing Co.

C. Walter Kidde.

2.02 EXTINGUISHERS

A. Dry Chemical Type: Painted steel tank, U.L. rated, general purpose ABC, 10 pound capacity with pressure gage.

2.03 CABINETS (Lockable anti-ligature)

A. Cabinet: Formed sheet steel, 18 gage, primed, semi-recessed type, size to accommodate extinguishers.

B. Trim: Returned to wall surface, 1 1/2 inches wide face, primed steel.

C. Door: Primed steel, 18 gage thick, reinforced for flatness and rigidity with clear plastic "bubble"; latch access.

D. Mounting Hardware: Appropriate to cabinet.

2.04 ACCESSORIES

A. Fire Extinguisher Brackets: For units not mounted in cabinets.

2.05 FABRICATION

A. Form body of cabinet with tight inside corners and seams.

B. Predrill holes for anchorage.

C. Form perimeter trim stiles by welding, filling, and grinding smooth.

D. Hinge doors for 180 degree opening with continuous piano hinge. Provide nylon catch.

2.06 FINISHES

A. Extinguisher: Red enamel.

B. Cabinet Trim and Door: Primed.

C. Cabinet Interior: white baked enamel.

PART 3 EXECUTION

3.01 INSPECTION

A. Verify rough openings for cabinet are correctly sized and located.

B. Beginning of installation means acceptance of existing conditions.

3.02 INSTALLATION

A. Install cabinets plumb and level in wall openings.

B. Secure rigidly in place.

3.03 SCHEDULE

A. Type 1 - Fire extinguisher and cabinet, top of cabinet mounted 48 inches above

finished floor surface.

B. Contractor to provide number of fire extinguishers and cabinets where shown on drawings, as required to meet code, or provide a minimum of one for every 2,500 square feet or fraction thereof. Contractor to certify that extinguishers are new.

END OF SECTION

SECTION 10 51 13

WARDROBE LOCKERS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Metal Locker units with hinged doors.

B. Base, top, and filler panels.

C. Hooks, latches, and hardware.

D. Attachment hardware.

1.02 RELATED SECTIONS

A. Section 06100 - Rough Carpentry: Wood grounds and nailing strips.

1.03 SYSTEM DESCRIPTION

A. Lockers: Double tier lockers; with base; flat tops and integral combination locks.

1.04 MOCKUP

A. Provide one full size locker, single tier with top, and base, in selected color.

B. Accepted unit may be incorporated into final Work.

1.05 SUBMITTALS

A. Submit shop drawings and product data.

B. Include locker types, sizes, configurations, layout of groups of lockers, accessories, and numbering plan.

C. Submit manufacturer's installation instructions.

D. Provide two samples 8 x 8 inches of each color selected on actual base material.

1.06 PROTECTION

A. Protect locker finishes and adjacent surfaces from damage during installation.

PART 2 PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Penco Products.

B. ASI Storage Solutions.

C. Hadrian Lockers.

2.02 ACCESSORIES

A. Provide each locker with two single prong wall hooks, metal number plate, and rubber bumper.

2.03 FABRICATION

A. Locker Units: As scheduled on drawings.

B. Hinges: Three.

C. Provide locking handle for combination lock. Locking device supplied by manufacturer.

D. Provide 4 inch high bases.

E. Provide end panels, filler panels, and sloped metal tops.

F. Provide ventilation openings at top and bottom of each locker.

G. Provide number plates.

H. 10% of total number of lockers to be ADA compliant.

2.05 FINISHES

A. Color: Allow for four colors as selected from manufacturer's standard range.

PART 3 EXECUTION

3.01 PREPARATION

A. Verify recesses are properly sized and located.

3.02 INSTALLATION

A. Install lockers secure, plumb, square, and in line.

B. Anchor lockers with appropriate anchor devices to suit materials encountered.

C. Bolt adjoining locker units together to provide rigid installation.

D. Install end panels, filler panels, sloped tops, and bases to completely close off openings.

END OF SECTION

SECTION 10 90 00

MISCELLANEOUS ITEMS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Coat Hooks

B. Signage

1.02 RELATED SECTIONS

A. Section 09 20 00 Gypsum Board Systems.

B. Section 09 51 00 Suspended Acoustical Ceilings.

1.03 DESIGN REQUIREMENTS

A. Limit materials and equipment to referenced manufacturers.

1.04 SUBMITTALS

A. Submit manufacturers standard printed product data.

B. Submit design data.

C. Submit manufacturer's installation instructions.

D. Submit operation and maintenance data.

E. Provide samples as requested by Architect.

F. Accepted samples may remain as part of the work.

PART 2 PRODUCTS

2.01 MATERIALS

A. Coat Hooks

1. Bobrick

a. Non-patient rooms: B-2116

b. Anti-ligature: B-983

B. Signage

1. Provide and install signage as follows, anti-ligature and mechanically fastened:

a) toilet rooms, fire extinguishers, other signage as required to obtain certificates of occupancy.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that surfaces and openings are ready to receive work.

B. Verify field measurements are as shown on drawings and required by manufacturer.

C. Verify that required utilities are available, in proper locations, and ready for use.

D. Beginning of installation means installer accepts existing surface and substrate conditions.

3.02 PREPARATION

A. Protect elements surrounding the work of this Section from damage or disfiguration.

3.03 INSTALLATION

A. Install in accordance with manufacturer's instructions.

3.04 ADJUSTING & CLEANING

A. Adjust and clean installed work.

3.05 PROTECTION

A. Protect finished installation.

Where documented on the drawings provide:

END OF SECTION