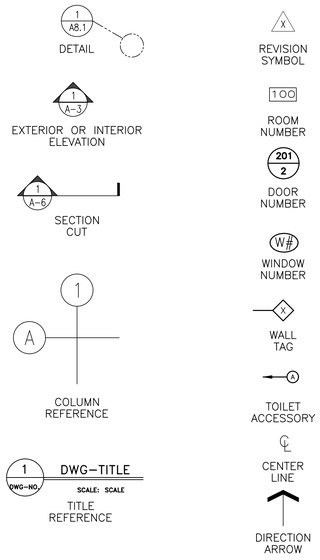
GRAPHIC SYMBOLS



BUILDING CODE DATA

THESE DRAWINGS HAVE BEEN PREPARED IN ACCORDANCE WITH THE PENNSYLVANIA UNIFORM CONSTRUCTION CODE. ALL CONTRACTORS SHALL PERFORM WORK IN ACCORDANCE WITH THIS CODE AND THE REQUIREMENTS AND CODES OF ALL GOVERNING AGENCIES HAVING JURISDICTION. CONTRACTORS SHALL OBTAIN ALL REQUIRED LICENSES AND PERMITS AS REQUIRED.

CODE REFERENCES WITH APPLICABLE PA AMENDMENTS:
2018 INTERNATIONAL EXISTING BUILDING CODE (IEBC)
2018 INTERNATIONAL BUILDING CODE (IBC)
2009 ANSI A117.1

2018 INTERNATIONAL EXISTING BUILDING CODE (IEBC)
PROPOSED WORK IS CLASSIFIED AS ALTERATION–LEVEL 2

2018 INTERNATIONAL BUILDING CODE (IBC)
CHAPTER 3 USE AND OCCUPANCY CLASSIFICATION
CURRENT USE: 'B' BUSINESS
PROPOSED USE: 'B' BUSINESS

CHAPTER 8 INTERIOR FINISH CLASSES W/O SPRINKLER SYSTEM

TABLE 803.13 FINISH REQUIREMENTS	BUSINESS
EXIT ENCLOSURES & PASSAGEWAYS:	A
CORRIDORS:	B
ROOMS & ENCLOSED SPACES:	C

CHAPTER 9 FIRE PROTECTION SYSTEMS
– A SPRINKLER SYSTEM IS NOT REQUIRED AND WILL NOT BE INSTALLED
– A FIRE ALARM SYSTEM WILL BE PROVIDED

SECTION 802, IEBC 2018
802.21 EXCEPTION 5
– IN GROUP B, OCCUPANCIES, A MINIMUM 30–MINUTE ENCLOSURE SHALL BE PROVIDED TO PROTECT ALL VERTICAL OPENINGS NOT EXCEEDING3 STORIES. THIS ENCLOSURE, OF THE ENCLOSURE SPECIFIED IN SECTION 802.21 SHALL NOT BE REQUIRED IN THE FOLLOWING LOCATIONS.

5.1 BUILDINGS NOT EXCEEDING 3,000 SF PER FLOOR.

NOTE: STAIRWELL CONNECTS 3 STORIES. SEE CHAPTER 10 UNDER THIS CODE DATA FOR SQUARE FOOTAGES. NO FLOOR EXCEEDS 2,000 SF.

CHAPTER 10 MEANS OF EGRESS
SECTION 1004, TABLE 1004.5
BUILDING OCCUPANT LOAD CALCULATION

BUSINESS	=	150 GROSS SQ. FT./OCCUPANT	
STORAGE	=	300 GROSS SQ. FT./OCCUPANT	
BASEMENT	1,131	GSF / 300	= 4 OCCUPANTS
FIRST FLOOR	1,660	GSF / 150	= 12 OCCUPANTS
SECOND FLOOR	1,221	GSF / 150	= 9 OCCUPANTS
THIRD FLOOR	961	GSF / 300	= 4 OCCUPANTS
			=29 TOTAL OCCUPANTS

SECTION 1006 NUMBER OF EXITS & TRAVEL DISTANCE
BASEMENT:
MAX OCCUPANCY 35 OCCUPANTS, 1 EXIT & 75 FEET OF TRAVEL DISTANCE

(AT GRADE PLANE) FIRST FLOOR:
3 EXITS, 200 FT TRAVEL DISTANCE TO EXIT.

(FIRST ABOVE GRADE PLANE) SECOND FLOOR:
1 EXIT, MAX OCCUPANCY 35 OCCUPANTS, 75 FEET OF TRAVEL DISTANCE.

(SECOND ABOVE GRADE PLANE) THIRD FLOOR:
1 EXIT, MAX OCCUPANCY 35 OCCUPANTS, 75 FEET OF TRAVEL DISTANCE.

SECTION 1008.1	MEANS OF EGRESS ILLUMINATION	–	REQUIRED
SECTION 1013	EXIT SIGNS	–	REQUIRED
SECTION 1013.4	TACTILE EXIT SIGNS	–	REQ'D AT ALL EXITS
SECTION 1006.2.1	COMMON PATH TRAVEL DISTANCE	–	75 FT. MAX. (B WITH OCCUPANT LOAD >30)

CHAPTER 11 ACCESSIBILITY
BUILDING SHALL COMPLY WITH 2018 IBC CHAPTER 11 AND ANSI A117.1–2009

PROJECT TEAM

OWNER
AIDS CARE GROUP
2304 EDGMONT AVE
CHESTER, PA 19013
CONTACT: ERIC STRAUSS
(P) 610–742–3409
ericstrauss@aidscaregroup.org

M E P
ADVANCED ENGINEERING, INC.
5561 PENNELL RD.
MEDIA, PA 19463
CONTACT: DEREK FINK, PE
(P) 610–361–0700
dfink@advenginc.com

SITE IMPROVEMENTS
LINN ARCHITECTS
1140 N. PROVIDENCE ROAD
MEDIA, PA. 19063
CONTACT: SHAWN PAUL
(P) 610–566–7044
spaul@rlinn.com

ARCHITECTURAL
LINN ARCHITECTS
1140 N. PROVIDENCE ROAD
MEDIA, PA. 19063
CONTACT: ROBERT NELSON
(P) 610–566–7044
rnelson@rlinn.com

GENERAL NOTES

1. THE ENUMERATION OF PARTICULAR ITEMS OF WORK IN ONE PORTION OF THE CONTRACT DOCUMENTS SHALL NOT BE CONSTRUED TO EXCLUDE OTHER ITEMS NECESSARY OR IMPLIED THEREFROM.
2. THE CONTRACTOR IS RESPONSIBLE FOR THE COORDINATION OF ALL PARTS OF THE WORK SO THAT NO WORK SHALL BE LEFT IN AN UNFINISHED OR INCOMPLETE CONDITION, OWING TO ANY DISAGREEMENT BETWEEN THE VARIOUS SUBCONTRACTORS, OR THE SUBCONTRACTORS AND THE CONTRACTOR AS TO WHERE THE WORK OF ONE BEGINS OR ENDS IN RELATION TO THE WORK OF THE OTHER.
3. ALL WORK SHALL CONFORM TO APPLICABLE INDUSTRY AND MANUFACTURER'S PUBLISHED STANDARDS FOR ALL REQUIREMENTS IN THESE DRAWINGS AND SPECIFICATIONS. ANY CONFLICTING REQUIREMENTS OF THE SOURCES LISTED ABOVE SHALL BE BROUGHT TO THE ARCHITECT'S ATTENTION PRIOR TO PROCEEDING WITH WORK.
4. ALL WORK NOTED 'N.I.C.' IS NOT MEANT TO BE PART OF THE CONSTRUCTION AGREEMENT.
5. THE CONTRACTOR SHALL PAY FOR AND COORDINATE THE REMOVAL AND LEGAL DISPOSAL OF MATERIALS AND RUBBISH WITH THE BUILDING OWNER.
6. DO NOT SCALE DRAWINGS; DIMENSIONS GOVERN; LARGE SCALE DETAILS GOVERN OVER SMALL SCALE DETAILS. THE GENERAL CONTRACTOR SHALL NOTIFY THE ARCHITECT IN WRITING OF ANY DISCREPANCIES, OMISSIONS AND/OR CONFLICTS BEFORE COMMENCEMENT OF WORK.
7. UNLESS NOTED OTHERWISE, ALL GYPSUM BOARD SURFACES ARE TO RECEIVE LEVEL 4 FINISH, ONE COAT OF PRIMER AND TWO FINISH COATS OF PAINT.
8. DIMENSIONS NOTED AS 'HOLD' SHALL NOT VARY BY MORE THAN 1/8" FROM SIDE TO SIDE OR FROM FRONT TO BACK, FINISHED SURFACE TO FINISHED SURFACE.
9. GLASS ASSEMBLIES AND GLAZING SHALL CONFORM TO ALL APPLICABLE STATE CODES AND GOVERNING AUTHORITIES, INCLUDING OSHA AND CRSC GLAZING SAFETY STANDARDS.
10. DIMENSIONS SHOWN ARE TO FINISH FACE OF WALL UNLESS SPECIFICALLY NOTED OTHERWISE.
11. PROVIDE EXPANSION AND CONTROL JOINTS IN ALL WORK AS PER PRODUCT MANUFACTURER'S STANDARDS.
12. THE CONTRACTOR SHALL PERFORM ALL WORK IN ACCORDANCE WITH ALL APPLICABLE CODES, ORDINANCES AND REGULATORY AGENCIES.
13. ALL INTERIOR FINISH MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF ALL APPLICABLE CODES, ORDINANCES AND REGULATORY AGENCIES.
14. NOTES APPEAR ON VARIOUS SHEETS FOR DIFFERENT SYSTEMS AND MATERIALS. SHEETS ARE TO BE REVIEWED AND NOTES ON ANY ONE SHEET ARE TO BE APPLIED TO RELATED DRAWINGS AND DETAILS. CONFLICTS AND/OR DISCREPANCIES SHALL BE BROUGHT TO THE ARCHITECT'S ATTENTION.
15. A FINISH OR FIRE RATING INDICATION ON A WALL SHALL MEAN THE ENTIRE LENGTH AND HEIGHT OF WALL IS TO BE FINISHED OR FIRE–RATED AS INDICATED.
16. WHEN UNDIMENSIONED PARTITIONS APPEAR IN CONJUNCTION WITH DOOR OPENINGS, THE DOOR WIDTH AND THE DOOR FRAME DETAILS DETERMINE THE LOCATION OF ADJACENT WALLS AND FRAMES. UNO, ALL INTERIOR DOOR OPENINGS SHALL BE PLACED 4" FROM THE HINGE SIDE FINISH FRAME OPENING TO THE ADJACENT PERPENDICULAR WALL.
17. DETAILS NOT SHOWN ARE SIMILAR IN CHARACTER TO THOSE DETAILED. WHERE SPECIFIC DIMENSIONS, DETAILS OR DESIGN INTENT CANNOT BE DETERMINED, CONSULT THE ARCHITECT BEFORE PROCEEDING WITH THE WORK.
18. THE CONTRACTOR SHALL COORDINATE ALL MECHANICAL AND ELECTRICAL FLOOR AND WALL SLEEVES, CONDUIT AND ALL MECHANICAL, ELECTRICAL, PLUMBING, FIRE PROTECTION, STRUCTURAL AND ARCHITECTURAL DRAWINGS.
19. ALL PIPE, DUCTS AND BUS DUCTS THAT PENETRATE FLOOR SLABS OR WALL PARTITIONS SHALL BE INSTALLED IN A MANNER THAT WILL PRESERVE THE MOISTURE RESTIVENESS, FIRE RATING, AND STRUCTURAL INTEGRITY OF THE SPACE.
20. INTERIOR PARTITION MOVEMENT CONTROL:
    A. PROVIDE FOR VERTICAL MOVEMENT AT THE HEAD OF ALL GYPSUM DRYWALL CONSTRUCTION AS INDICATED IN THE NOTES AND ON THE DRAWINGS. CUT STUDS TO ALLOW FOR VERTICAL MOVEMENT; DO NOT FASTEN STUDS TO HEAD RUNNER CHANNEL. FASTEN DRYWALL TO STUDS ONLY.
    B. HORIZONTAL CONTROL JOINTS ARE TO OCCUR AT NOT MORE THAN 12'–0" O.C. IN THE VERTICAL DIRECTION, UNLESS NOTED OTHERWISE.
    C. VERTICAL CONTROL JOINTS FOR ANY WALL LENGTH ARE TO OCCUR AT NOT MORE THAN 30'–0" O.C. IN THE HORIZONTAL DIRECTION, UNLESS NOTED OTHERWISE.
    D. THE TYPICAL MOVEMENT OF THE STRUCTURE DUE TO DEFLECTION AT THE HEAD OF THE WALL CONSTRUCTION RUNNING TO THE UNDERSIDE OF THE STRUCTURE SHALL BE PLUS OR MINUS 1/2".
22. CONTRACTOR SHALL PLAN HIS WORK TO PROVIDE ADEQUATE PROTECTION FOR THE PERSONS AND PROPERTY AT ALL TIMES, AND EXECUTE THE WORK IN SUCH A MANNER TO AVOID ANY HAZARD TO PERSONS AND PROPERTY AS PER CITY AND LOCAL CODE REQUIREMENTS.
23. G.C. TO VERIFY PLACEMENT OF NEW FIRESTOPPING THROUGHOUT WALL & CEILING FRAMING AREAS PER CODE AS CONDITIONS REQUIRE.
24. WHERE EXIST. EXTERIOR WALLS & ROOFS ARE OPENED TO EXPOSE CAVITIES, NEW BATT INSULATION SHALL BE INSTALLED TO FILL THE VOID OR AS REQUIRED BY CODE.
25. G.C. AND SUBCONTRACTORS ARE TO VERIFY EXISTING FIELD CONDITIONS AND DIMENSIONS ENCOUNTERED FOR COORDINATION WITH THE WORKING DRAWINGS AND NOTIFY THE ARCHITECT IMMEDIATELY OF ANY DISCREPANCIES.

BUILDING RENOVATIONS
for the
AIDS CARE GROUP
2304 EDGMONT AVENUE
CHESTER, PA 19013

LINN PROJECT #24066

DRAWING INDEX

SHEET NO.	SHEET TITLE	BID SET 08/09/2024			
CS–1	COVER SHEET	●			
CS–2	SPECIFICATIONS	●			
C–1	NEW RAMP PLAN	●			
D–1	DEMOLITION PLANS	●			
A–1	PROPOSED FLOOR PLANS	●			
A–1.1	PROPOSED CEILING FLOOR PLANS	●			
A–2	PROPOSED FLOOR PLANS	●			
A–2.1	PROPOSED CEILING FLOOR PLANS	●			
A–3	KITCHEN/BATHROOM DETAILS	●			
A–4	PROPOSED RAMP DETAILS	●			
A–4.1	PROPOSED DETAILS	●			
A–5	SCHEDULES	●			
M–1	MECHANICAL COVER SHEET AND SCHEDULES	●			
M–1.1	MECH DETAILS	●			
M–2	MECH FLOOR PLANS	●			
M–3	MECH FLOOR PLANS	●			
M–4	MECH SPECIFICATIONS	●			
M–4.1	MECH SPECIFICATIONS	●			
P–1	PLUMBING COVER SHEET	●			
P–1.1	PLUMBING DETAILS	●			
P–2	PLUMBING FLOOR PLANS	●			
P–3	PLUMBING FLOOR PLANS	●			
P–4	PLUMBING RISER DIAGRAMS	●			
P–5	PLUMBING SPECIFICATIONS	●			
E–1	ELECTRICAL COVER SHEET	●			
E–1.1	ELECTRICAL DETAILS	●			
E–2	ELECTRICAL FLOOR PLANS	●			
E–3	ELECTRICAL FLOOR PLANS	●			
E–6	ELECTRICAL PANEL SCHEDULES	●			
E–6.1	ELECTRICAL PANEL SCHEDULES	●			
E–6.2	ELECTRICAL SCHEDULES	●			
E–7	ELECTRICAL SPECIFICATIONS	●			
FA–1	FIRE ALARM COVER SHEETS	●			
FA–2	FIRE ALARM FLOOR PLANS	●			
FA–3	FIRE ALARM FLOOR PLANS	●			

SITE

LINN ARCHITECTS
ARCHITECTURE
ENGINEERING
SITE PLANNING
CODE SERVICES
1140 N. PROVIDENCE ROAD
MEDIA, PENNSYLVANIA 19063
TEL: 610–566–7044
FAX: 610–566–3258

NOT FOR PERMIT OR CONSTRUCTION

COVER SHEET
BUILDING RENOVATIONS
AIDS CARE GROUP
2304 EDGMONT AVENUE
CHESTER, PA 19013

REVISIONS NO.	DESCRIPTION	DATE
1	ISSUED FOR BID	08.09.24

DATE: 06.18.2024
SCALE: AS NOTED
DRAWN BY: GP
CHECKED BY: MJK
PROJ. NO.: 24066

SHEET NO. CS–1
SHEET OF X

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GENERAL CONDITIONS

1. GENERAL CONDITIONS: General Conditions are Standard Documents of the American Institute of Architects and are included in this contract. Copies of these documents and all referenced materials are available from the Architect upon request. Consult the provisions of the General Condition in detail for applicable information as they have important legal consequences.

2. LAWS, ORDINANCES AND PERMITS: The Contractor(s) shall give all notices and comply with all applicable Federal, State, Municipal and local codes, laws, regulations, rules, ordinances and lawful orders of any public authority bearing on the performance of the work. The owner shall secure and pay for the building permits and for all other permits, agency fees, licenses, certificates of inspection and approval necessary for the proper execution and completion of the work.

3. QUALITY OF WORK: All work shall be in accordance with accepted trade practices, and all materials shall be of the proper grade for their purpose. The Contractor is responsible to notify the Architect of any discrepancies or non-conformalities in the documents, and to bear all costs crising from rectifying work performed contrary to law or best practices. Substitutions for specified products shall only be approved in writing and must be coordinated with adjacent materials.

4. WARRANTY: The Contractor guarantees that all work performed under the Contract shall be of good quality using new materials and equipment unless otherwise stated. Any work found to be defective or not in accordance with the Contract Documents within one (1) year of Owner Acceptance shall be promptly corrected by the Contractor. Any corresponding damage caused during the repair work shall also be repaired at the Contractor's expense.

5. PROTECTION OF PERSONS AND PROPERTY: The contractor shall comply with all laws, codes, and ordinances necessary to adequately protect all persons and property associated with the Contract from injury, damage, or loss. He shall install and maintain all reasonable safeguards, notices, barriers, scaffolding, ladders, and precautions required to provide this protection.

6. INSURANCE: The Contract shall provide the Owner with Certificates of Insurance at adequate amounts for liability,. property damage, and workmen's compensation as required by local codes and accepted practice. The Owner will provide theft, vandalism, malicious mischief, and fire insurance on 100% of insurable value of the structure. The Owner's insurance will no duplicate coverage of Contractor's tools or equipment.

1. SUBMITTALS

A. Shop Drawings: Submit newly prepared information drawn to scale. Indicate deviations from the Contract Documents. Do not reproduce Contract Documents or copy standard information. Do not use Shop Drawings without an appropriate final stamp indicating action taken. Include the following information:

1. Dimensions
2. Identification of products and materials included by sheet and detail number.
3. Compliance with standards.
4. Notation of coordination requirements.
5. Notation of dimensions established by field measurement.
6. Sheet Size: Except for templates and full-size Drawings, submit one correctable, reproducible print and one blue- or black-line print on sheets at least 8-1/2 by 11 inches (215 by 280 mm) but no longer 56 by 48 inches (840 by 1220 mm). The architect will return the reproducible print.

B. Product Data: Collect Product Data into single submittal for each element of construction. Mark each copy to show applicable choices and options. Where Product Data includes information on several products, mark copies to indicate applicable information.

1. Include the following applicable information:
   a. Manufacturer's printed recommendations.
   b. Compliance with trade association standards.
   c. Compliance with recognized testing agency standards.
   d. Application of testing agency labels and seals.
   e. Notation of dimensions verified by field measurements.
   f. Notation of coordination requirements.
2. Distribution: Furnish copies to installers, subcontractors, suppliers, and others required for performance of construction activities. Show distribution on transmittal forms. Do not proceed with installation until a copy of Product Data is in the installer's possession. Do not use unmarked Product Data for construction.

C. Samples; Submit Samples for review of size, kind, color, pattern, and textures, for a check of these characteristics, and for a comparison of these characteristics between the final submittal and the actual component as delivered and installed. Samples to be cured and finished as specified and identical with the material proposed. Where variations are inherent in the material, submit at least 3 units that show limits of the variations. Include the following:
1. CSI Section number and reference
2. Generic description of the Sample.
3. Sample Source.
4. Product name or name of the manufacturer.
5. Compliance with recognized standards.
6. Availability and delivery time.

2. PROJECT CLOSEOUT: The Contractor shall file the guarantee release or waiver of liens, Certificate of Occupancy and three (3) complete sets of operation & maintenance manuals, and as-built record drawings with the architect prior to final payment. The manuals shall contain all manufacturer's instructions for maintenance and operation for each item of equipment furnished under the Contract. Arrange the manuals in proper order with indexed sections and a proper binding.

DIVISION 7 - THERMAL AND MOISTURE PROTECTION

1. ALL INTERIOR INSULATION TO BE CLASS A NON COMBUSTIBLE WITH A FLAME SPREAD RATING B/W 0 & 25 AND A SMOKE DEVELOPED B/W 0 & 450.

DIVISION 8 - DOORS AND WINDOWS

1. FINISH HARDWARE
   A. Submit for the Architect's approval a finish hardware schedule organized by sets indicating furnished products for each door item. A list of manufacturers may be used upon approval of the Architect.

   B. Key all locks to a Master System

2.. INTERIOR WOOD DOORS
   A. All interior wood doors to be Rotary Natural Birch. Finish to be clear
      1. Maintain the minimum warranty as required by the manufacturer.
      2. Basis of design : Masonite

DIVISION 9 - FINISHES

1. GYPSUM DRYWALL

   A. Gypsum wall and ceiling boards shall be 5/8" thick, except fire rated walls shall be 5/8" fire code gypsum wall board as per applicable UL number. (Unless otherwise noted) Provide tapered edges for Perf-A-Tape joint system as manufactured by US Gypsum Ceiling and Walls: tape and spackle all joints with three (3) coats of spackle and make ready for painting and finishing. Exterior corners shall receive metal corner beads and exposed edges shall receive USS 200 A or 200 B spackle mold as appropriate.

   B. Drywall control joints shall not exceed what is recommended by the product manufacturer to maintain the product warranty.

   C. Trim and Miscellaneous Accessories include
      1. Gypsum board screws and nails must be galvanized or cadmium plates
      2. Acoustical sealant - concealed or exposed
      3. Sounds attenuation blankets - mineral or glass fiber board
      4. Paper joint tape and joint compound (vinyl interior type or chemical hardening for exterior work).
      5. Trim materials of metal or plastic include: corner beads, L, J, or U edge trim, use L trim for drywall abutting tightly to other work. Use J trim at exposed edges. H-molding or beaded type control joint.

   C. Manufaturers of gypsum drywall and accessories include:
      United States Gypsum Co.
      American Gypsum
      Fintkote Products, genstar Building Materials Co.
      Georgia-Pacific Co.
      Gold Bond Building Products Division, National Gypsum Co.

2. PAINTING

   A. Painting shall include surface preparation, cleaning, painting, finishing, protecting and cleaning of finished work including but not limited to all wood, gypsum board, unfinished or shop primed ferrous metals, and all other surfaces throughout interior and exterior of building as specified.

   B. Apply three (3) coats of paint on all surfaces unless otherwise noted. Colors for paint and stain shall be as selected by Architect.

   C. All gypsum board shall receive on (1) prime coat and two (2) finish coats of eggshell (washable) interior latex.

   D. paint grade trim shall receive one (1) prime coat and two (2) finish coats of semi-gloss latex enamel.

   E. All HM doors and frames to be painted as specified on the door schedule and notes.

   F. Painting Procedure: Painting shall vary in tone as follows:
      1. Primer coat
      2. 1st finish coat
      3. 2nd finish coat

3. FLOORING

   A. Floor as indicated on Floor/Finish Plan and Finish Legend Sheet.

LINN ARCHITECTS
ARCHITECTURE
ENGINEERING
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CODE SERVICES
1140 N. PROVIDENCE ROAD
MEDIA, PENNSYLVANIA 19063
TEL: 610-566-7044
FAX: 610-566-3258

NOT FOR PERMIT OR CONSTRUCTION

SPECIFICATIONS

BUILDING RENOVATIONS
AIDS CARE GROUP
2304 EDGMONT AVENUE
CHESTER, PA 19013

REVISIONS NO.	DESCRIPTION	DATE
1	ISSUED FOR BID	08.09.24

DATE: 06.18.2024
SCALE: AS NOTED
DRAWN BY: GP
CHECKED BY: MJK
PROJ. NO.: 24066

SHEET NO. CS-2 SHEET OF X

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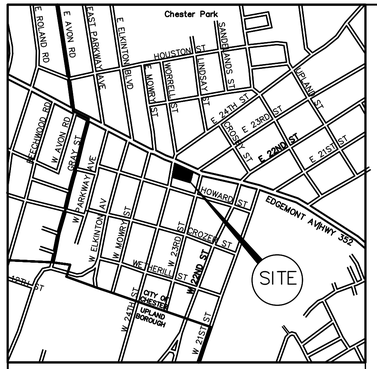


LOCATION MAP
1" = 800'

NOTES

1. THIS PLAN IS BASED ON A FINAL LOT CONSOLIDATION PLAN BY PADULA ENGINEERING DATED OCTOBER 29, 2021.
2. PLAN COORDINATES REFER TO THE PENNSYLVANIA STATE PLANE COORDINATE SYSTEM NAD 83 OBTAINED BY GPS OBSERVATION TAKEN ON OCTOBER 6, 2021.
3. ELEVATIONS BASED ON NAVD88 DATUM OBTAINED BY GPS OBSERVATION TAKEN ON OCTOBER 6, 2021.
4. ADJOINER INFORMATION TAKEN FROM CURRENT TAX RECORDS.
5. UTILITY INFORMATION FROM OBSERVED SURFACE EVIDENCE. ALL UTILITY LOCATIONS AND DEPTHS SHALL BE FIELD VERIFIED PRIOR TO CONSTRUCTION.
6. BY GRAPHIC PLOTTING ONLY, THIS PROPERTY IS IN ZONE 'X' OF THE FLOOD INSURANCE RATE MAP, MAP No. 42045C0201H, COMMUNITY PANEL No. 0201H, WHICH BEARS AN EFFECTIVE DATE OF NOVEMBER 3, 2017.
7. SOIL DELINEATION LINES TAKEN FROM PENN STATE COLLEGE OF AGRICULTURAL SCIENCES COOPERATIVE EXTENSION SOIL MAP VERSION 2.
8. SITE IS SERVICED BY PUBLIC SEWER AND WATER.

CALL BEFORE YOU DIG!

PENNSYLVANIA LAW REQUIRES THREE (3) WORKING DAYS NOTICE FOR CONSTRUCTION PHASE AND TEN (10) WORKING DAYS FOR DESIGN STAGE. UTILITY INFORMATION IDENTIFIED THROUGH THE ONE-CALL PROCESS IS VALID FOR 90 DAYS FROM THE DATE OF THE CALL.

Pennsylvania One Call System, Inc.
800-242-1776
SERIAL# 20232211633
ONE-CALL DATE: 08/09/2023

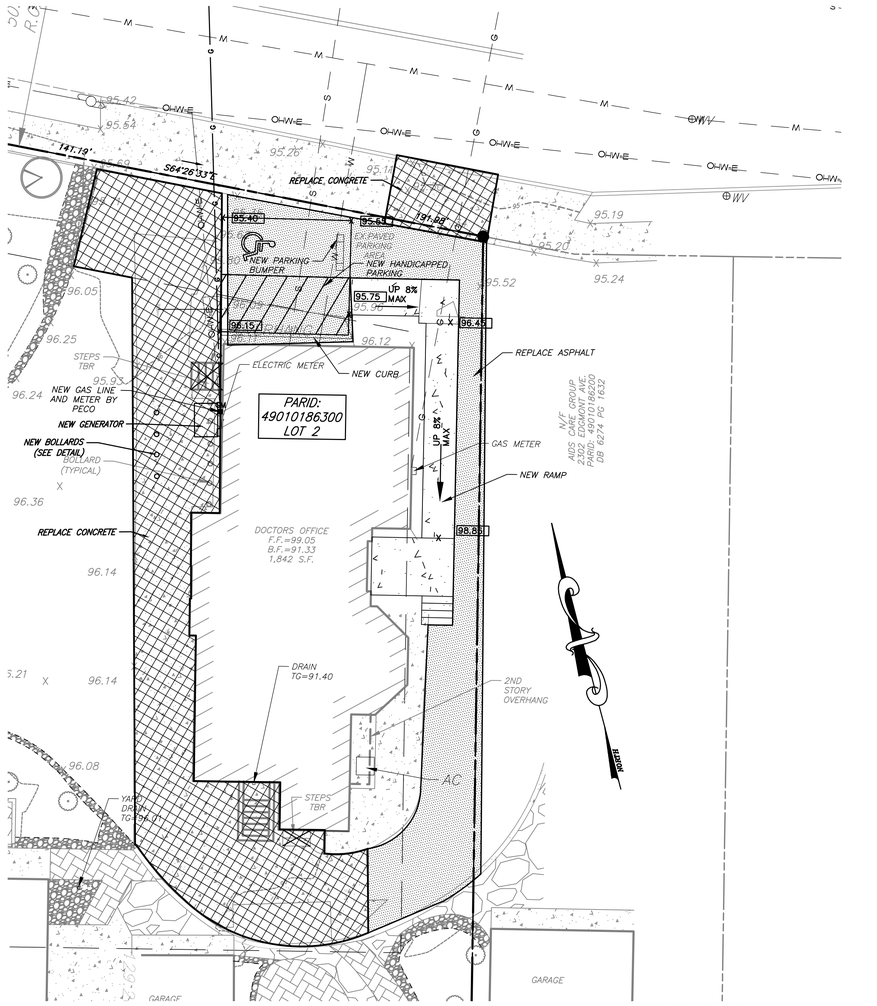
SITE INFORMATION

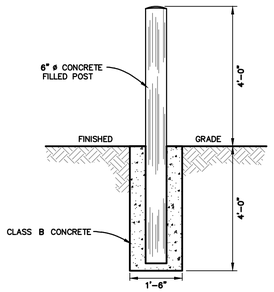
ADDRESS:
LOT 1: 2308 EDGMONT AVE
CHESTER, PA 19013
TAX MAP: 49-05-451:025
FOLIO NO.: 49-01-01864-00
DB/PG: 5322/0833

LOT 2: 2304 EDGMONT AVE
CHESTER, PA 19013
TAX MAP: 49-05-451:024
FOLIO NO.: 49-01-01863-00
DB/PG: 6274/1626

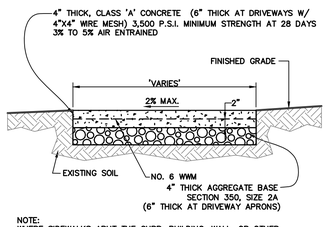
NOTE: THE PURPOSE OF THIS PLAN IS TO DEPICT THE IMPROVEMENTS NECESSARY TO CONSTRUCT A HANDICAPPED RAMP AND HANDICAPPED PARKING SPACES TO SERVICE AND EXISTING BUILDING

NOTE: SEE ARCHITECTURAL PLANS PREPARED BY THIS OFFICE FOR ADDITIONAL SITE DETAILS AND LAYOUT



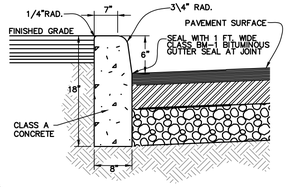


TYPICAL BOLLARD DETAIL
N.T.S. (BOLLARD1)



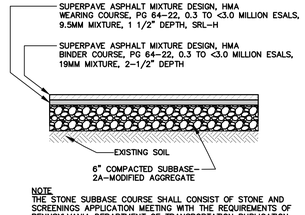
NOTE:
WHERE SIDEWALKS ABUT THE CURB, BUILDING, WALL, OR OTHER PERMANENT STRUCTURE, A PREMOLDED EXPANSION JOINT 1/4 INCH IN THICKNESS SHALL BE PLACED BETWEEN THE CURB AND THE STRUCTURE FOR THE FULL LENGTH OF SUCH STRUCTURE. SIDEWALKS SHALL BE CONSTRUCTED IN SEPARATE SLABS 30 FEET IN LENGTH EXCEPT FOR CLOSURES. THE SLABS BETWEEN EXPANSION JOINTS SHALL BE DIVIDED INTO BLOCKS FIVE FEET IN LENGTH BY SCORING TRANSVERSELY.

CONCRETE SIDEWALK AND GENERATOR PAD SECTION
NOT TO SCALE (SW-SECT)



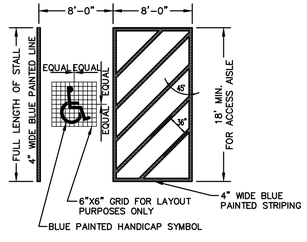
NOTE:
CONSTRUCT CURBING IN TEN-FOOT LENGTHS WITH A 1/4" PRE-MOLDED BITUMINOUS IMPREGNATED EXPANSION JOINTS BETWEEN SECTIONS OF CURVED CURB AND AT A MAXIMUM SPACING OF 50 FEET. INTERMEDIATE JOINTS BETWEEN TEN-FOOT SECTIONS TO BE SAW CUT. HOWEVER, WHEREVER A DRIVEWAY ENTERS A STREET, THAT AREA OF DRIVEWAY SHALL NOT HAVE A CURB JOINT AND CAN BE CONSTRUCTED IN LENGTHS NOT LONGER THAN 20 FEET.

CONCRETE CURB DETAIL
NOT TO SCALE (SITECURB)

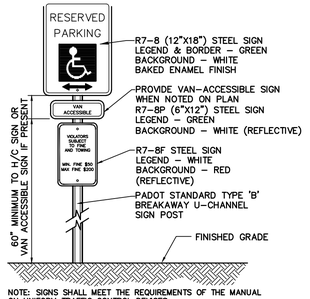


NOTE
THE STONE SUBBASE COURSE SHALL CONSIST OF STONE AND SCREENINGS APPLICATION MEETING WITH THE REQUIREMENTS OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION PUBLICATION 408, AS AMENDED. EVERY ATTEMPT SHALL BE MADE TO COMPLETELY FILL VOIDS WITH FINES. NO LARGE AREAS OF SOLID SCREENINGS OF LOSE STONE AREAS SHALL BE PERMITTED.

DRIVEWAY PAVING SECTION DETAIL
NOT TO SCALE (SITE-PAV)

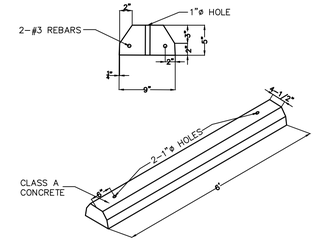


VAN ACCESSIBLE HANDICAPPED PAINTED MARKING
NOT TO SCALE



NOTE: SIGNS SHALL MEET THE REQUIREMENTS OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.

HANDICAPPED PARKING SIGN
NOT TO SCALE (HANDSIGN)



PRECAST CONCRETE WHEEL STOP DETAIL
NOT TO SCALE (CURB-STOP)

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NEW RAMP PLAN

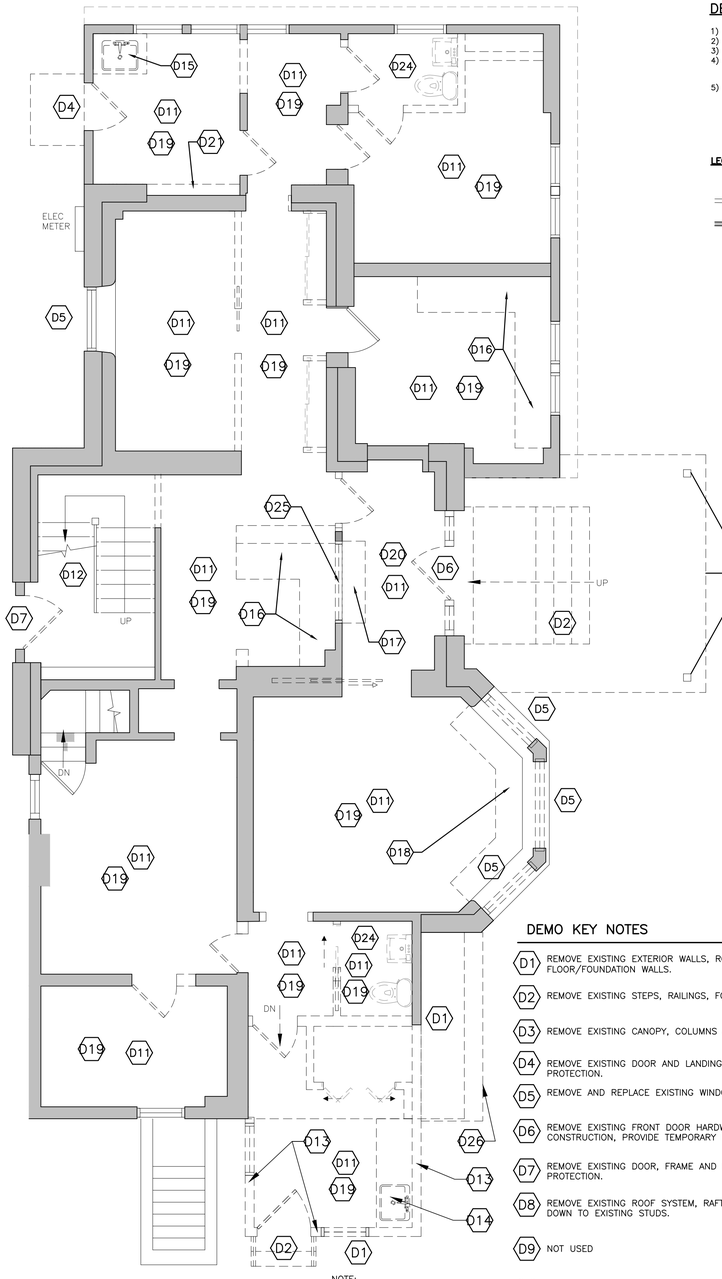
BUILDING MODIFICATIONS FOR
ACG COUNSELING CENTER
2304 AND 2308 EDGMONT AVENUE
CHESTER CITY DELAWARE COUNTY, PA

REVISIONS NO.	DESCRIPTION	DATE
1		
2		
3		
4		

DATE: 08.07.2024
SCALE: 1"=10'
DRAWN BY: SPP
CHECKED BY:
PROJ. NO.: 24018

SHEET NO. C-1
SHEET 1 OF 1

Plotted: 8-16-24 @12:23pm By: intern
F:\Projects\Storage\Project Docs\23016\Civil\dwg\2024 Ramp plan\C-3 Grade.dwg[Layout1]



DEMOLITION NOTES

1) REMOVE ALL INTERIOR FINISHES
2) REMOVE EXISTING CEILINGS AS NEEDED FOR NEW LIGHTING AND DUCTWORK
3) REMOVE EXISTING BUILT IN FURNITURE AND TURN OVER TO OWNER.
4) ALL EXISTING 1ST FLOOR WALL PLASTER OR GYPSUM FINISHES ARE TO BE REMOVED DOWN TO EXISTING WALL STUDS ON INTERIOR AND EXTERIOR WALLS
5) REMOVE ALL GYP BOARD CEILINGS IN BASEMENT AND 1ST FLOOR

LEGEND

EXISTING WALL, DOOR, ETC TO BE REMOVED

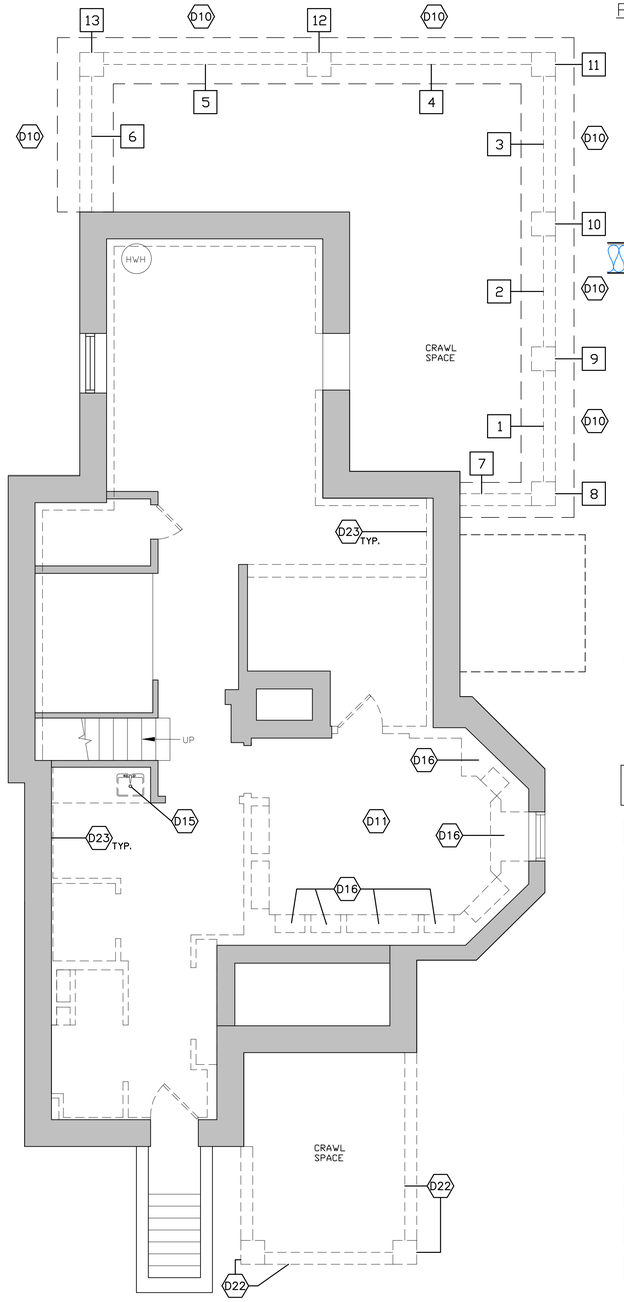
EXISTING WALL REMAIN

DEMO KEY NOTES

- D1 REMOVE EXISTING EXTERIOR WALLS, ROOF DOWN TO EXISTING FLOOR/FOUNDATION WALLS.
- D2 REMOVE EXISTING STEPS, RAILINGS, FOOTINGS, ETC.
- D3 REMOVE EXISTING CANOPY, COLUMNS AND ASSOCIATED FOOTINGS.
- D4 REMOVE EXISTING DOOR AND LANDING. PROVIDE TEMPORARY PROTECTION.
- D5 REMOVE AND REPLACE EXISTING WINDOW TO MATCH EXISTING.
- D6 REMOVE EXISTING FRONT DOOR HARDWARE, FRAME SIDELIGHTS. DURING CONSTRUCTION, PROVIDE TEMPORARY PROTECTION.
- D7 REMOVE EXISTING DOOR, FRAME AND HARDWARE. PROVIDE TEMPORARY PROTECTION.
- D8 REMOVE EXISTING ROOF SYSTEM, RAFTERS, GUTTER, DOWNSPOUT DOWN TO EXISTING STUDS.
- D9 NOT USED
- D10 SEE DETAIL 3/D-1 FOR MORE INFO.
- D11 REMOVE EXISTING DRYWALL CEILING.
- D12 REMOVE EXISTING NON-COMPLIANT GUARDRAILS.
- D13 REMOVE EXISTING STUDS, SHEATHING, WINDOWS, SIDING, FLOORING, FLOOR JOISTS. SEE DETAIL 1/A-4 FOR PROPOSED WORK.
- D14 REMOVE EXISTING MILLWORK AND CAP ALL UNUSED PLUMBING.
- D15 REMOVE EXISTING CASEWORK AND SINK. CAP ANY UNUSED PLUMBING.
- D16 REMOVE EXISTING BUILT-IN CASEWORK
- D17 REMOVE EXISTING COUNTER
- D18 REMOVE EXISTING WINDOW BENCH
- D19 REMOVE ALL FLOOR BASE IN THIS AREA
- D20 REMOVE ALL FLOOR BASE AND CROWN MOLDING IN THIS AREA
- D21 REMOVE SHELVES ABOVE AND BELOW
- D22 REMOVE EXISTING FOUNDATION WALL/PIER FOOTINGS
- D23 REMOVE EXISTING PERIMETER STUD WALLS AND DRYWALL/INSULATION DOWN TO EXISTING FOUNDATION
- D24 EXISTING PLUMBING FIXTURES TO BE REMOVED AND CAP UNUSED PIPING. SEE PLUMBING DRAWINGS FOR MORE INFORMATION.
- D25 REMOVE EXISTING SLIDING WINDOW AND ASSOCIATED FRAMING AS NECESSARY FOR NEW WINDOW. SEE A-1 FOR MORE INFO.
- D26 REMOVE EXISTING CHAIN LINK FENCE

2 / D-1 **DEMO FLOOR PLAN**

SCALE: 1/4"=1'-0"

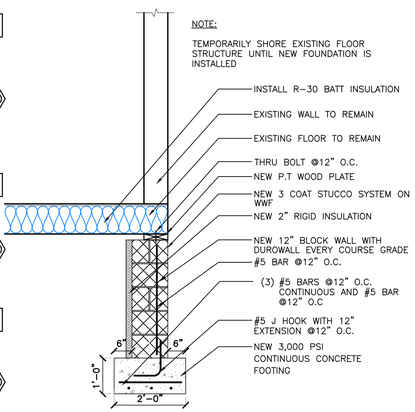


CANOPY DEMOLITION NOTE

- IT IS UNDERSTOOD THAT THE EXISTING ENTRANCE CANOPY PENETRATES THE

1 / D-1 **BASEMENT FLOOR PLAN**

SCALE: 1/4"=1'-0"



3 / D-1 **FOOTING SECTION DETAIL**

SCALE: 1/2"=1'-0"

PHASING DEMO AT FRONT PORCH

- REMOVE EXISTING BLOCK WALL IN BETWEEN PIERS. SEE ORDER ON PLAN. REMOVAL AND REPLACEMENT MUST FALL IN ORDER.
- FOR WALL AND FOOTING INFILL, SEE DETAIL 3/D-1.
- AFTER THE REMOVAL OF BLOCK AND INSTALLATION OF NEW WALL AND FOOTING, FOLLOW STEPS 8-13 FOR PIER REMOVAL AND NEW WALL AND FOOTING INSTALLATION.

NOTE: CONTRACTOR TO SAVE EXISTING STONE FROM PIERS AS NEEDED FOR RE-INSTALLATION AT NEW ENTRANCE CANOPY. SEE CANOPY NOTE THIS SHEET AND DETAIL ON A-4

1. STEP 1 - REMOVE EXISTING FOOTING AND INSTALL NEW WALL AND FOOTING PER DETAIL 3/D-1.
2. STEP 2 - REMOVE EXISTING FOOTING AND INSTALL NEW WALL AND FOOTING PER DETAIL 3/D-1.
3. STEP 3 - REMOVE EXISTING FOOTING AND INSTALL NEW WALL AND FOOTING PER DETAIL 3/D-1.
4. STEP 4 - REMOVE EXISTING FOOTING AND INSTALL NEW WALL AND FOOTING PER DETAIL 3/D-1.
5. STEP 5 - REMOVE EXISTING FOOTING AND INSTALL NEW WALL AND FOOTING PER DETAIL 3/D-1.
6. STEP 6 - REMOVE EXISTING FOOTING AND INSTALL NEW WALL AND FOOTING PER DETAIL 3/D-1.
7. STEP 7 - REMOVE EXISTING FOOTING AND INSTALL NEW WALL AND FOOTING PER DETAIL 3/D-1.
8. STEP 8 - REMOVE PIER FOOTING AND INSTALL NEW WALL AND FOOTING PER DETAIL 3/D-1.
9. STEP 9 - REMOVE PIER FOOTING AND INSTALL NEW WALL AND FOOTING PER DETAIL 3/D-1.
10. STEP 10 - REMOVE PIER FOOTING AND INSTALL NEW WALL AND FOOTING PER DETAIL 3/D-1.
11. STEP 11 - REMOVE PIER FOOTING AND INSTALL NEW WALL AND FOOTING PER DETAIL 3/D-1.
12. STEP 12 - REMOVE PIER FOOTING AND INSTALL NEW WALL AND FOOTING PER DETAIL 3/D-1.
13. STEP 13 - REMOVE PIER FOOTING AND INSTALL NEW WALL AND FOOTING PER DETAIL 3/D-1.

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DEMOLITION PLANS

BUILDING RENOVATIONS
AIDS CARE GROUP
2304 EDGMONT AVENUE
CHESTER, PA 19013

REVISIONS NO.	DESCRIPTION	DATE
1	ISSUED FOR BID	08.09.24

DATE: 06.16.2024
SCALE: AS NOTED
DRAWN BY: GP
CHECKED BY: MJK
PROJ. NO.: 24066

SHEET NO. D-1 SHEET OF X

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DEMO KEY NOTES

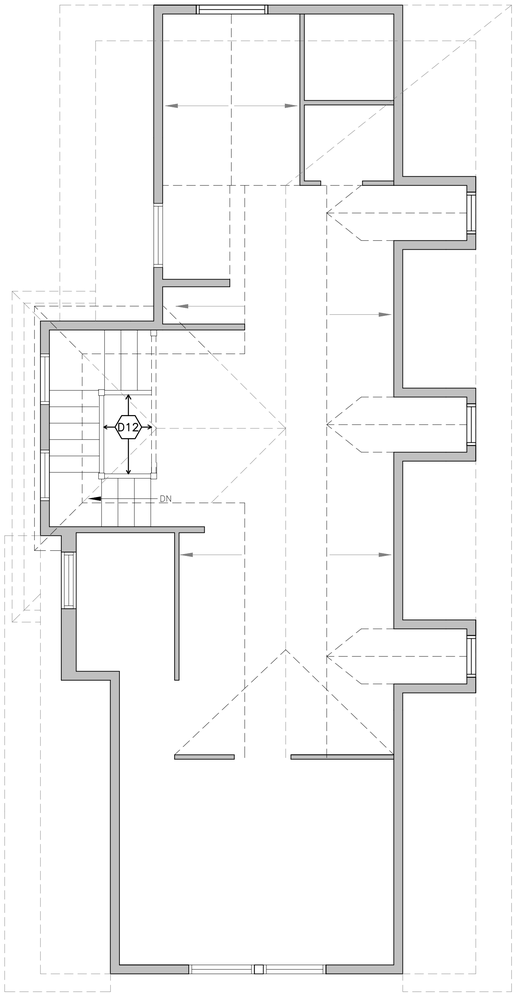
- D1 REMOVE EXISTING EXTERIOR WALLS, ROOF DOWN TO EXISTING FLOOR/FOUNDATION WALLS.
- D2 REMOVE EXISTING STEPS, RAILINGS, FOOTINGS, ETC.
- D3 REMOVE EXISTING CANOPY, COLUMNS AND ASSOCIATED FOOTINGS.
- D4 REMOVE EXISTING DOOR AND LANDING. PROVIDE TEMPORARY PROTECTION.
- D5 REMOVE AND REPLACE EXISTING WINDOW TO MATCH EXISTING.
- D6 REMOVE EXISTING FRONT DOOR HARDWARE, FRAME SIDELIGHTS. DURING CONSTRUCTION, PROVIDE TEMPORARY PROTECTION.
- D7 REMOVE EXISTING DOOR, FRAME AND HARDWARE. PROVIDE TEMPORARY PROTECTION.
- D8 REMOVE EXISTING ROOF SYSTEM, RAFTERS, GUTTER, DOWNSPOUT DOWN TO EXISTING STUDS.
- D9 NOT USED
- D10 SEE DETAIL 3/D-1 FOR MORE INFO.
- D11 REMOVE EXISTING DRYWALL CEILING.
- D12 REMOVE EXISTING NON-COMPLIANT GUARDRAILS.
- D13 REMOVE EXISTING STUDS, SHEATHING, WINDOWS, SIDING, FLOORING, FLOOR JOISTS. SEE DETAIL 1/A-4 FOR
- D14 REMOVE EXISTING MILLWORK AND CAP ALL UNUSED PLUMBING.
- D15 REMOVE EXISTING CASEWORK AND SINK. CAP ANY UNUSED PLUMBING.
- D16 REMOVE EXISTING BUILT-IN CASEWORK
- D17 REMOVE EXISTING COUNTER
- D18 REMOVE EXISTING WINDOW BENCH
- D19 REMOVE ALL FLOOR BASE IN THIS AREA
- D20 REMOVE ALL FLOOR BASE AND CROWN MOLDING IN THIS AREA
- D21 REMOVE SHELVES ABOVE AND BELOW
- D22 REMOVE EXISTING FOUNDATION WALL/PIER FOOTINGS
- D23 REMOVE EXISTING PERIMETER STUD WALLS AND DRYWALL/INSULATION DOWN TO EXISTING FOUNDATION
- D24 EXISTING PLUMBING FIXTURES TO BE REMOVED AND CAP UNUSED PIPING. SEE PLUMBING DRAWINGS FOR MORE INFORMATION.
- D25 REMOVE EXISTING SLIDING WINDOW AND ASSOCIATED FRAMING AS NECESSARY FOR NEW WINDOW. SEE A-1 FOR MORE INFO.
- D26 REMOVE EXISTING CHAIN LINK FENCE
- D27 REMOVE PORTION OF EXISTING VINYL SIDING IN THIS AREA AS NEEDED FOR NEW ROOF ADDITION

DEMOLITION NOTES

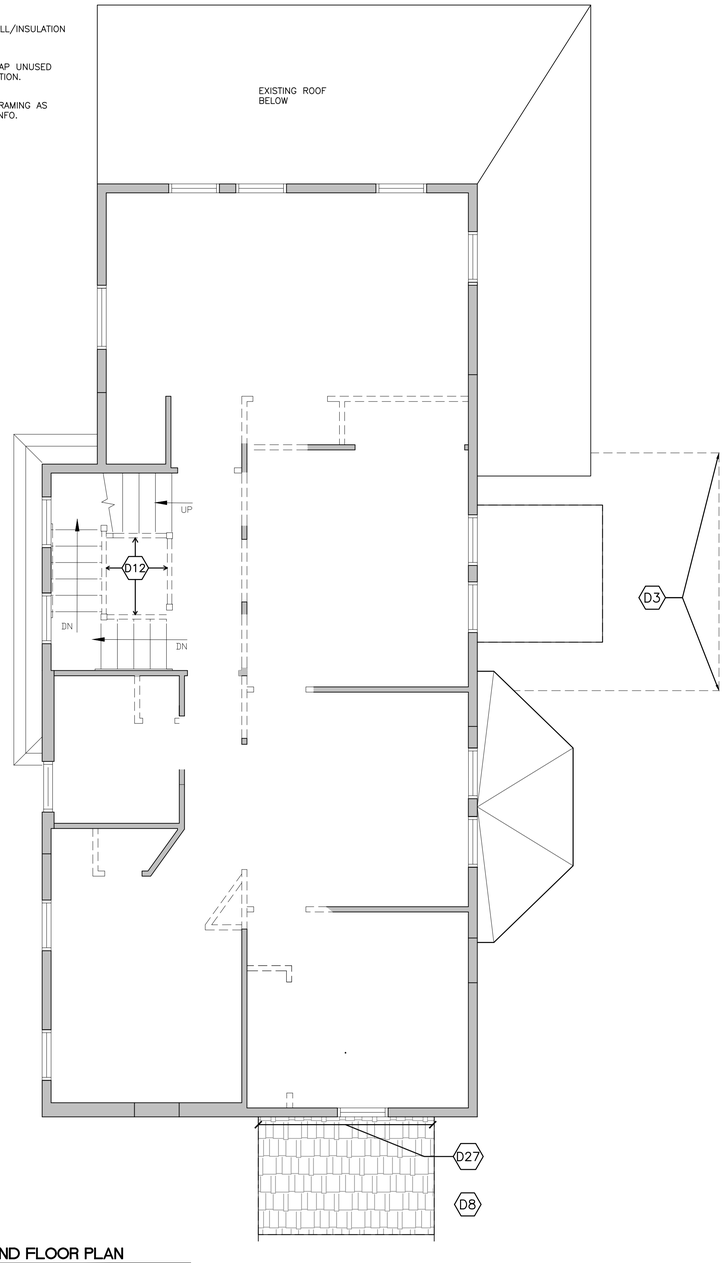
1) REMOVE ALL INTERIOR FINISHES
2) REMOVE EXISTING CEILINGS AS NEEDED FOR NEW LIGHTING AND DUCTWORK
3) REMOVE EXISTING BUILT IN FURNITURE AND TURN OVER TO OWNER.
4) ALL EXISTING 1ST FLOOR WALL PLASTER OR GYPSUM FINISHES ARE TO BE REMOVED DOWN TO EXISTING WALL STUDS ON INTERIOR AND EXTERIOR WALLS

LEGEND

- EXISTING WALL, DOOR, ETC TO BE REMOVED
- EXISTING WALL REMAIN



4 D-2 THIRD FLOOR PLAN
SCALE: 1/4"=1'-0"



3 D-2 DEMOLITION SECOND FLOOR PLAN
SCALE: 1/4"=1'-0"

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DEMOLITION FLOOR PLANS

BUILDING RENOVATION
AIDS CARE GROUP

2304 EDGMONT AVENUE
CHESTER, PA 19013

REVISIONS NO.	DESCRIPTION	DATE
1	ISSUED FOR BID	08.09.24

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LEGEND

EXISTING WALL TO REMAIN.

1 — 2X4 WOOD STUDS @16" O.C. WITH SOUND BATT INSUL. AND ⅝" GWB ON EACH SIDE. RUN WALL TO UNDERSIDE OF JOISTS ABOVE.

1A — 2X4 WOOD STUDS @16" O.C. AND ⅝" GWB ON EACH SIDE. RUN WALL TO UNDERSIDE OF JOISTS ABOVE.

2 — NEW WALL WITH 2X4 WOOD STUDS @16" WITH SOUND BATT INSULATION AND ONE LAYER OF ⅝" GYP ON ONE SIDE. CONSTRUCT WALL ON BOTH SIDES OF OPENING.

3 — NOT USED

4 — NEW WALL WITH 2X4 WOOD STUDS @16" O.C. WITH SOUND BATT INSUL. AND ⅝" GYP BOARD ON ONE SIDE.

5 — EXISTING STUD FRAMED WALL TO RECEIVE ⅝" GYP BOARD ON EACH SIDE.

6 — EXISTING EXTERIOR STUD WALL TO RECEIVE R-21 BATT INSULATION AND ⅝" GYP BOARD ON INTERIOR

7 — NEW 2X6 WOOD STUDS @ 16" O.C. R-21 BATT INSULATION, (2) LAYERS OF TYVEK WRAP ON ½" EXT PLYWOOD SHEATHING. 1 LAYER OF ⅝" GYP BOARD ON INTERIOR. ON EXTERIOR, INSTALL JAMES HARDIE STAGGERED EDGE SIDING FROM STATEMENT COLLECTION. COLOR TO BE SELECTED.

7A — SAME AS WALL TYPE 7, BUT INSTALL RELOCATED EXISTING SIDING FROM DEMOLISHED BREAK ROOM ON EXTERIOR.

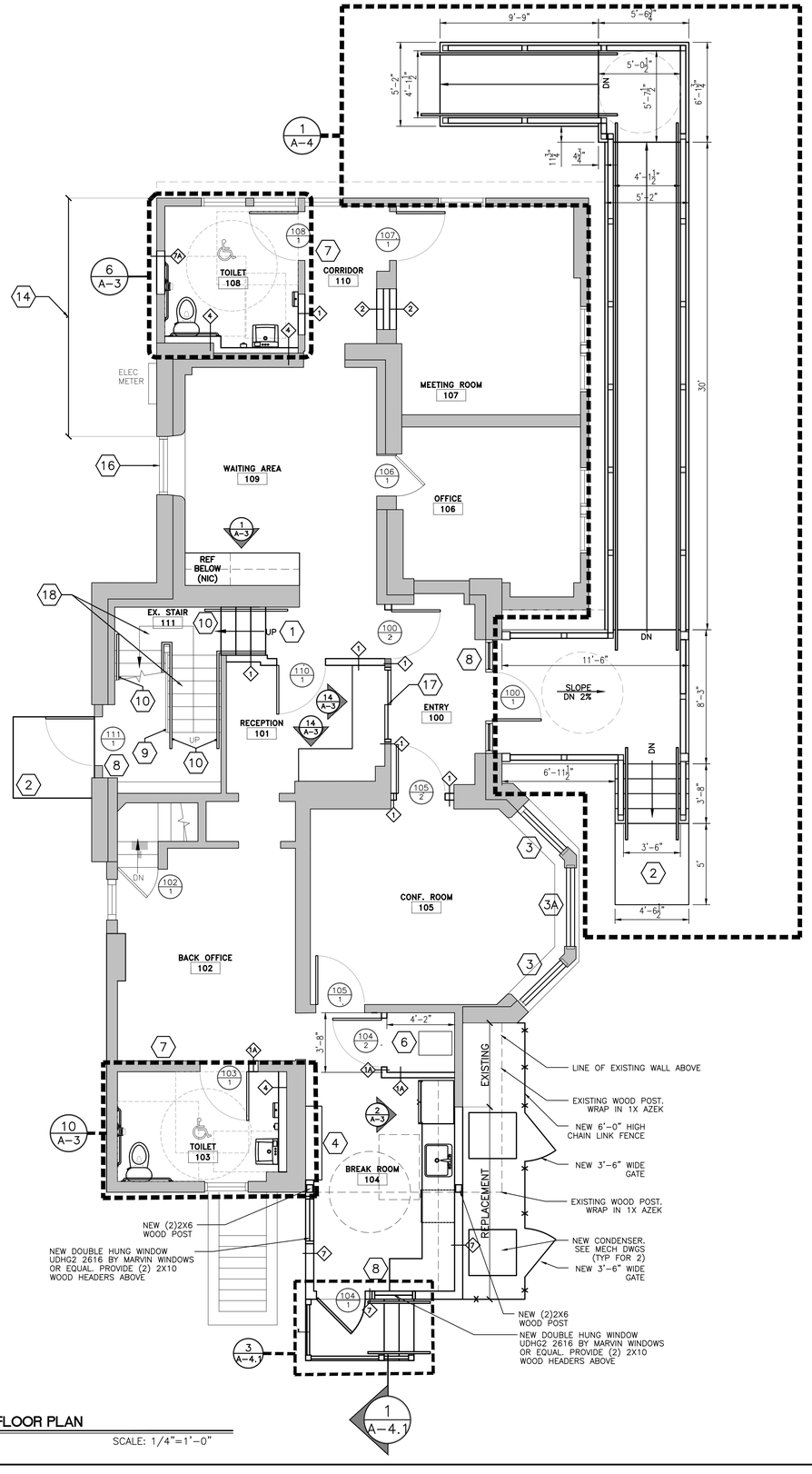
8 — EXISTING FOUNDATION WALL TO RECEIVE 2X6 P.T. WOOD STUDS @16" O.C. WITH R-19 BATT INSULATION AND ⅝" GYP BOARD ON INTERIOR.

KEY NOTES

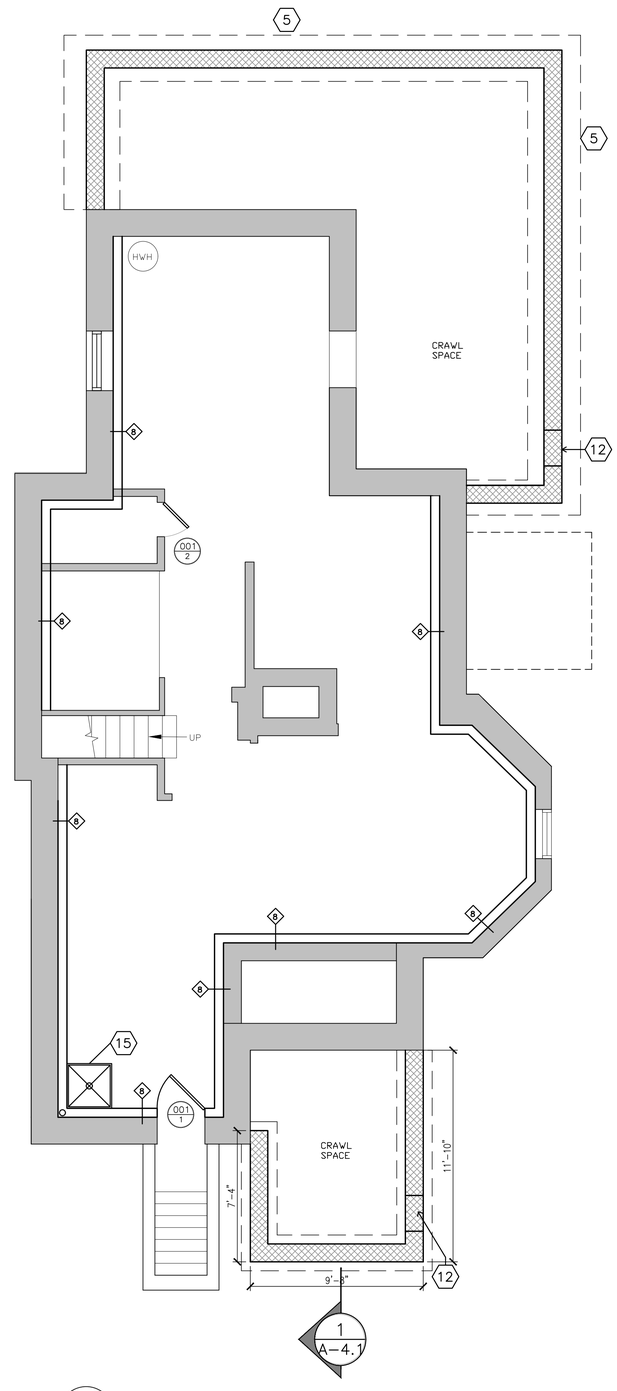
1. NEW WOOD STAIR, 7" MAX RISER AND 11" TREADS. VERIFY OVERALL RISE IN FIELD. SEE DETAIL 5/A-4.1.
2. NEW 5X5 THICK CONCRETE SLAB WITH 6X6 1⁹⁄₁₀ WWF ON 5" CRUSHED STONE.
3. NEW WINDOW UDHG2 4036E DOUBLE HUNG BY MARVIN WINDOWS OR EQUAL.
3A. NEW WINDOW UDHG2 5436E DOUBLE HUNG BY MARVIN WINDOWS OR EQUAL.
4. NEW LOCKERS BY OWNER.
5. NEW FOUNDATION WALL WITH FOOTING. SEE DETAIL ON D-1 FOR MORE INFORMATION.
6. NEW HVAC UNIT LOCATION. SEE MECHANICAL DRAWINGS FOR MORE INFORMATION.
7. NEW ADA TACTILE BATHROOM SIGN. SEE DETAILS ON A-5.
8. NEW TACTILE EXIT SIGN. SEE DETAILS ON A-5.
9. NEW 42" HIGH 1-1/2" PTD STEEL GUARD RAIL WITH 1" PICKETS @4" O.C. MAY SPACING.
10. NEW 36" HIGH 1-1/2" PTD STEEL HANDRAIL WITH 12" EXTENSIONS @TOP AND BOTTOM LANDINGS
11. INSTALL NEW 2X8 WOOD CEILING JOISTS 16" O.C. INSTALL NEW R-30 BATT INSULATION AT CEILING JOISTS AND 5/8" GYP BOARD CEILING. SEE DETAIL 3/A-2
12. PROVIDE 1'-6" HIGH x 2'-0" WIDE CRAWL SPACE CAST IRON VENT.
13. INSTALL NEW 2X8'S @16" O.C. FOR CEILING ABOVE CLOSET BELOW WITH ¾" PAINTED PLYWOOD. FINISH TO BE BY OWNER.
14. INSTALL RE-USED SIDING FROM DEMOLISHED BREAK ROOM.
15. NEW MOP SINK. SEE MEP DRAWINGS FOR MORE INFORMATION.
16. NEW PICTURE WINDOW UDHPG2 4074 BY MARVIN WINDOWS OR APPROVED EQUAL
17. NEW SLIDING WINDOW BY CRL LAURENCE, SATIN ANODIZED ALUMINUM 47-1/2" W X 43-3/4" H OR APPROVED EQUAL FRAME OUT EXISTING OPENING AS NEEDED FOR NEW WINDOW. INSTALL NEW (2)2X10 WOOD HEADER OVER EXISTING OPENING WITH ⅝" GYP BOARD ON EACH SIDE TO MATCH EXISTING WALL THICKNESS.
18. ENCLOSE UNDERSIDE OF LOWER STAIR FLIGHT AND LANDING WITH 2X4 WOOD STUDS @ 16" O.C AND ⅝" GYP BOARD ON 1 SIDE. (NO STORAGE PERMITTED)

GENERAL NOTES

- GENERAL CONTRACTOR SHALL PROVIDE AN ALLOWANCE FOR PROPERLY SUPPORTING OPENINGS/ FRAMING WHERE DUCTWORK PENETRATES EXISTING STONE WALLS. DURING DEMOLITION, AN EVALUATION WILL BE MADE AND A DETAIL WILL BE PROVIDED UPON REQUEST.
- VERIFY ALL EXISTING CONDITIONS AND LET OWNER AND ARCHITECT KNOW OF ANY DISCREPANCIES.
- VERIFY ALL DIMENSIONS IN FIELD.
- CONTRACTOR IS RESPONSIBLE FOR PATCHING AND REPAIRING EXTERIOR AND INTERIOR WALLS AS REQUIRED FOR NEW ELECTRICAL SWITCH AND OUTLET LOCATIONS. REFER TO ELECTRICAL DRAWINGS FOR LOCATIONS AND QUANTITIES. TYPICAL ALL 1ST FLOOR ROOMS.
- ALL EXISTING WINDOWS TO REMAIN U.N.O.
- ALL EXISTING EXTERIOR WALLS NOT NOTED IN WALL TYPES ON THE FIRST FLOOR SHALL RECEIVE 1 LAYER OF ⅝" GYP BOARD ON INSIDE AND ALL INTERIOR WALLS SHALL RECEIVE 1 LAYER OF ⅝" GYP BOARD ON EACH SIDE. THIS IS TO REPLACE THE PLASTER OR GYP BOARD REMOVED AS A PART OF THE DEMO SCOPE.



2 / A-1 **GROUND FLOOR PLAN**
SCALE: 1/4"=1'-0"



1 / A-1 **BASEMENT FLOOR PLAN**
SCALE: 1/4"=1'-0"

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PROPOSED FLOOR PLANS

BUILDING RENOVATIONS
AIDS CARE GROUP

2304 EDGMONT AVENUE
CHESTER, PA 19013

REVISIONS NO.	DESCRIPTION	DATE
1	ISSUED FOR BID	08.09.24

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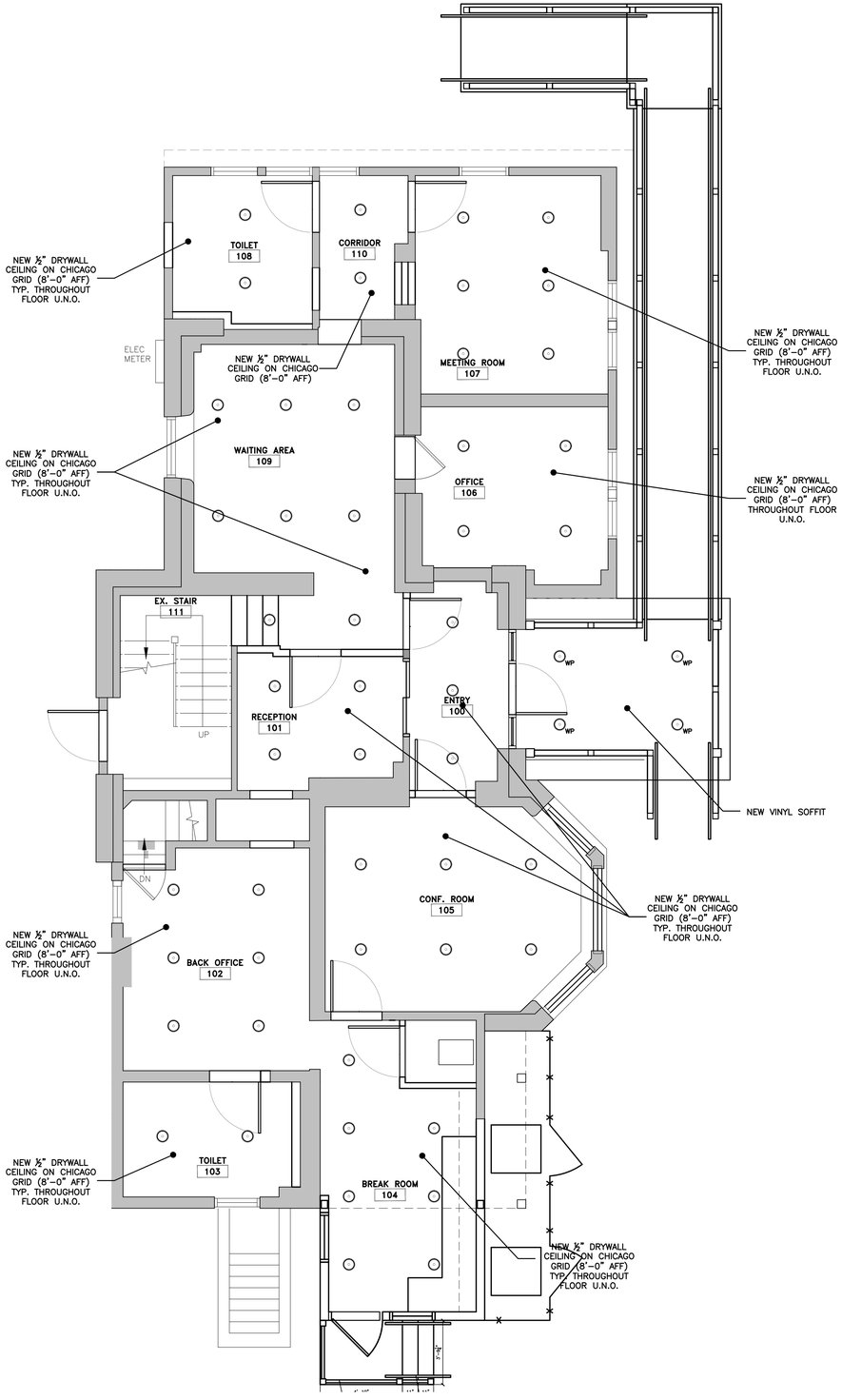
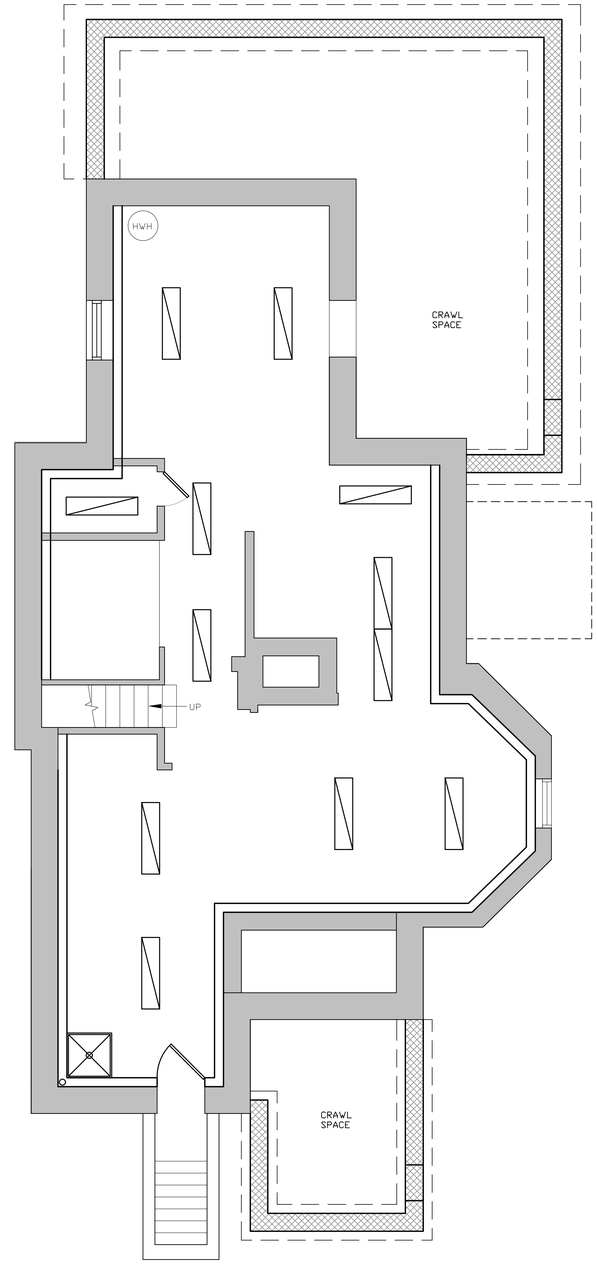
LIGHTING LEGEND

- NEW LED SLIM RETROFIT CANS. SEE ELECTRICAL DRAWINGS FOR MORE INFORMATION.
- WP — NEW WEATHER PROTECTED HI HAT. SEE ELECTRICAL DWGS FOR MORE INFORMATION.
- NEW LIGHT FIXTURE SEE ELECTRICAL DRAWINGS FOR MORE INFORMATION



2 A-1.1 GROUND FLOOR CEILING PLAN

SCALE: 1/4"=1'-0"



1 A-1.1 BASEMENT CEILING PLAN

SCALE: 1/4"=1'-0"

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PROPOSED CEILING PLANS

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KEY NOTES

1. NEW WOOD STAIR, 7" MAX RISER AND 11" TREADS. VERIFY OVERALL RISE IN FIELD. SEE DETAIL 5/A-4.1.
2. NEW 5X5 THICK CONCRETE SLAB WITH 6X6 19/0 WWF ON 5" CRUSHED STONE.
3. NEW WINDOW UDHG2 4036E DOUBLE HUNG BY MARVIN WINDOWS OR EQUAL.
3A. NEW WINDOW UDHG2 5436E DOUBLE HUNG BY MARVIN WINDOWS OR EQUAL.
4. NEW LOCKERS BY OWNER.
5. NEW FOUNDATION WALL WITH FOOTING. SEE DETAIL ON D-1 FOR MORE INFORMATION.
6. NEW HVAC UNIT LOCATION. SEE MECHANICAL DRAWINGS FOR MORE INFORMATION.
7. NEW ADA TACTILE BATHROOM SIGN. SEE DETAILS ON A-5.
8. NEW TACTILE EXIT SIGN. SEE DETAILS ON A-5.
9. NEW 42" HIGH 1-1/2" PTD STEEL GUARD RAIL WITH 1" PICKETS @4" O.C. MAY SPACING.
10. NEW 36" HIGH 1-1/2" PTD STEEL HANDRAIL WITH 12" EXTENSIONS @TOP AND BOTTOM LANDINGS
11. INSTALL NEW 2X8 WOOD CEILING JOISTS 16" O.C. INSTALL NEW R-30 BATT INSULATION AT CEILING JOISTS AND 5/8" GYP BOARD CEILING. SEE DETAIL 3/A-2
12. PROVIDE 1'-6" HIGH x 2'-0" WIDE CRAWL SPACE CAST IRON VENT.
13. INSTALL NEW 2X8'S @16" O.C. FOR CEILING ABOVE CLOSET BELOW WITH ¾" PAINTED PLYWOOD. FINISH TO BE BY OWNER.
14. INSTALL RE-USED SIDING FROM DEMOLISHED BREAK ROOM.
15. NEW MOP SINK. SEE MEP DRAWINGS FOR MORE INFORMATION.
16. NEW PICTURE WINDOW UDHPG2 4074 BY MARVIN WINDOWS OR APPROVED EQUAL
17. NEW SLIDING WINDOW BY CRL LAURENCE, SATIN ANODIZED ALUMINUM 47-1/2" W X 43-3/4" H OR APPROVED EQUAL. FRAME OUT EXISTING OPENING AS NEEDED FOR NEW WINDOW. INSTALL NEW (2)2X10 WOOD HEADER OVER EXISTING OPENING WITH 5/8" GYP BOARD ON EACH SIDE TO MATCH EXISTING WALL THICKNESS.
18. ENCLOSE UNDERSIDE OF LOWER STAIR FLIGHT AND LANDING WITH 2X4 WOOD STUDS @ 16" O.C AND 5/8" GYP BOARD ON 1 SIDE. (NO STORAGE PERMITTED)
19. NEW ASPHALT SHINGLES ON 15# FELT ON ½" EXT PLYWOOD SHEATHING. NEW 5" ALUMINUM K GUTTER. DRAIN TO GRADE.

NOTE:
NEW ROOF SHINGLES WHERE SPECIFIED SHALL BE LANDMARK SERIES BY CERTAINTEED OR APPROVED EQUAL. COLOR TO BE SELECTED.

LEGEND

EXISTING WALL TO REMAIN.

1 — 2X4 WOOD STUDS @16" O.C. WITH SOUND BATT INSUL. AND 5/8" GWB ON EACH SIDE. RUN WALL TO UNDERSIDE OF JOISTS ABOVE.

1A — 2X4 WOOD STUDS @16" O.C. AND 5/8" GWB ON EACH SIDE. RUN WALL TO UNDERSIDE OF JOISTS ABOVE.

2 — NEW WALL WITH 2X4 WOOD STUDS @16" WITH SOUND BATT INSULATION AND ONE LAYER OF 5/8" GYP ON ONE SIDE. CONSTRUCT WALL ON BOTH SIDES OF OPENING.

3 — NOT USED

4 — NEW WALL WITH 2X4 WOOD STUDS @16" O.C. WITH SOUND BATT INSUL. AND 5/8" GYP BOARD ON ONE SIDE.

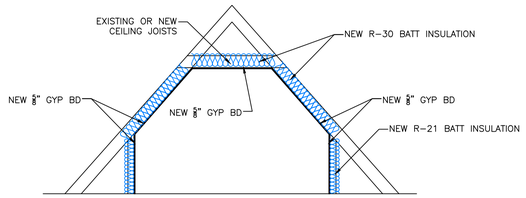
5 — EXISTING STUD FRAMED WALL TO RECEIVE 5/8" GYP BOARD ON EACH SIDE.

6 — EXISTING EXTERIOR STUD WALL TO RECEIVE R-21 BATT INSULATION AND 5/8" GYP BOARD ON INTERIOR

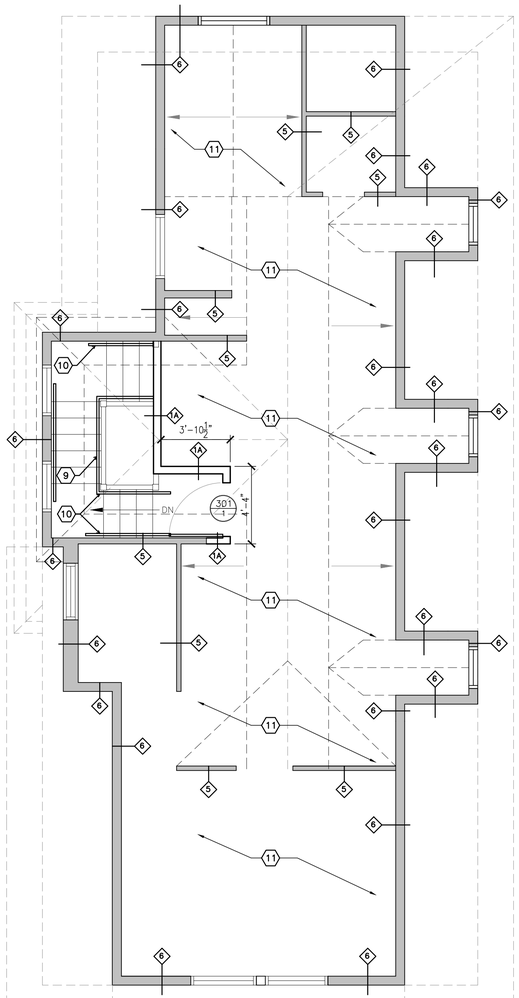
7 — NEW 2X6 WOOD STUDS @ 16" O.C. R-21 BATT INSULATION, (2) LAYERS OF TYVEK WRAP ON ½" EXT PLYWOOD SHEATHING. 1 LAYER OF ½" GYP BOARD ON INTERIOR. ON EXTERIOR, INSTALL JAMES HARDIE STAGGERED EDGE SIDING FROM STATEMENT COLLECTION. COLOR TO BE SELECTED.

7A — SAME AS WALL TYPE 7, BUT INSTALL RELOCATED EXISTING SIDING FROM DEMOLISHED BREAK ROOM ON EXTERIOR.

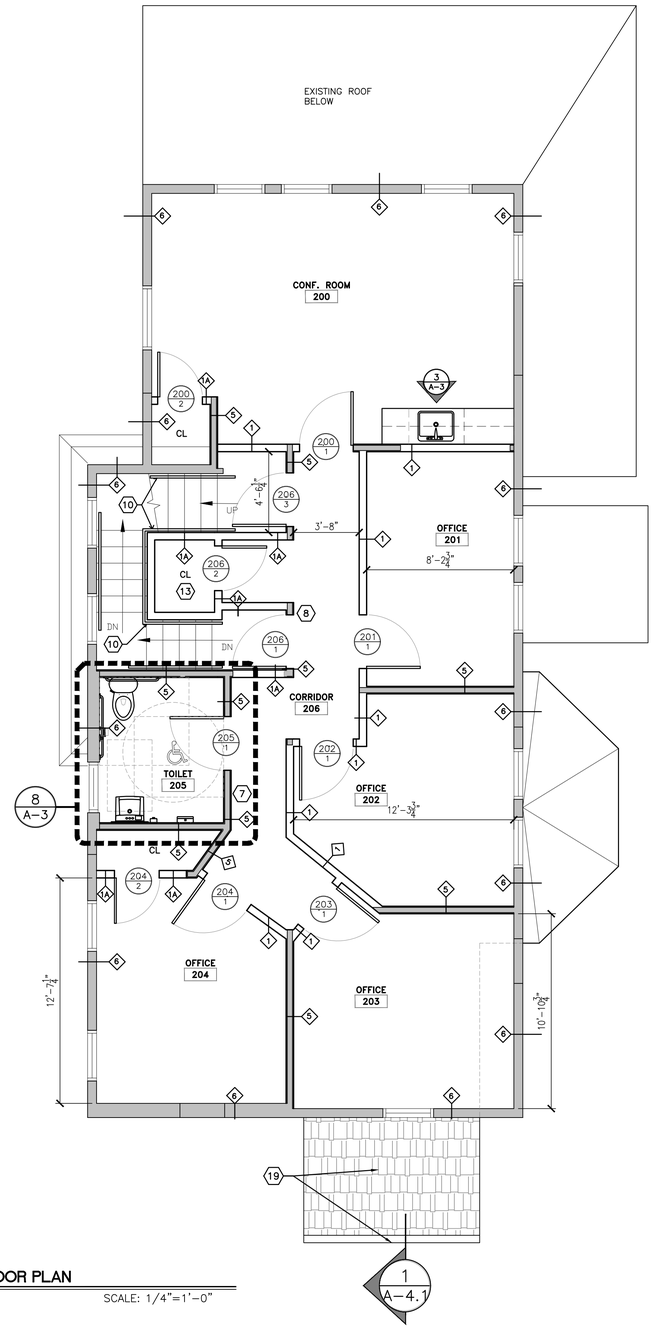
8 — EXISTING FOUNDATION WALL TO RECEIVE 2X6 P.T. WOOD STUDS @16" O.C. WITH R-19 BATT INSULATION AND 5/8" GYP BOARD ON INTERIOR.



3 A-2 **ATTIC DETAIL**
SCALE: 1/4"=1'-0"



2 A-2 **THIRD FLOOR PLAN**
SCALE: 1/4"=1'-0"



1 A-2 **SECOND FLOOR PLAN**
SCALE: 1/4"=1'-0"

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PROPOSED FLOOR PLANS
BUILDING RENOVATIONS
AIDS CARE GROUP
2304 EDGMONT AVENUE
CHESTER, PA 19013

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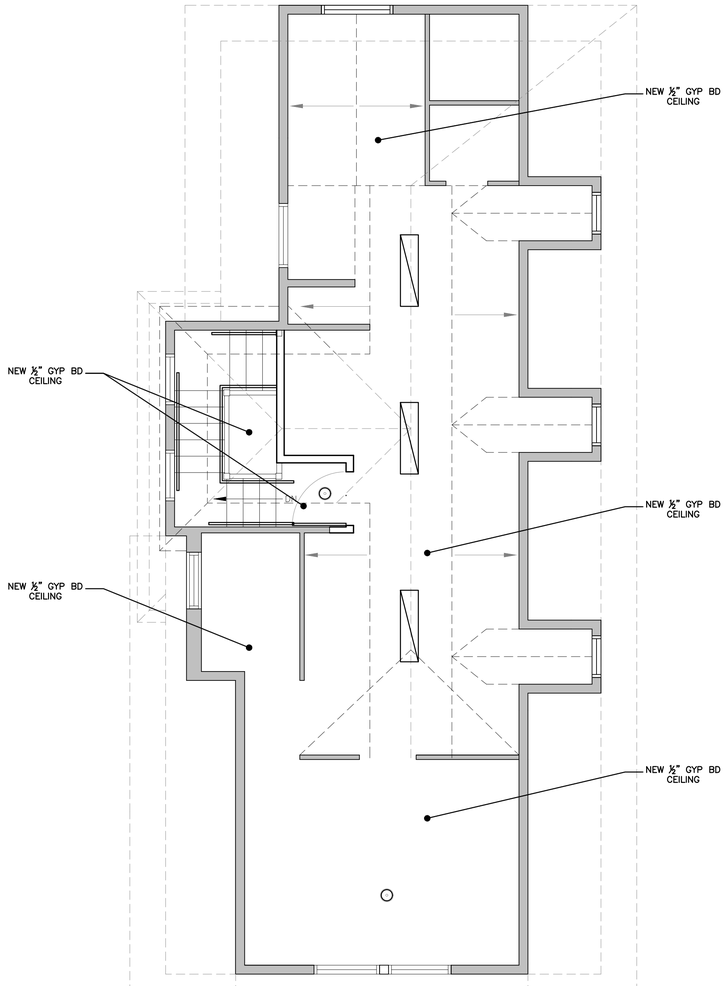
LIGHTING LEGEND

NEW LED SLIM RETROFIT CANS. SEE ELECTRICAL DRAWINGS FOR MORE INFORMATION.

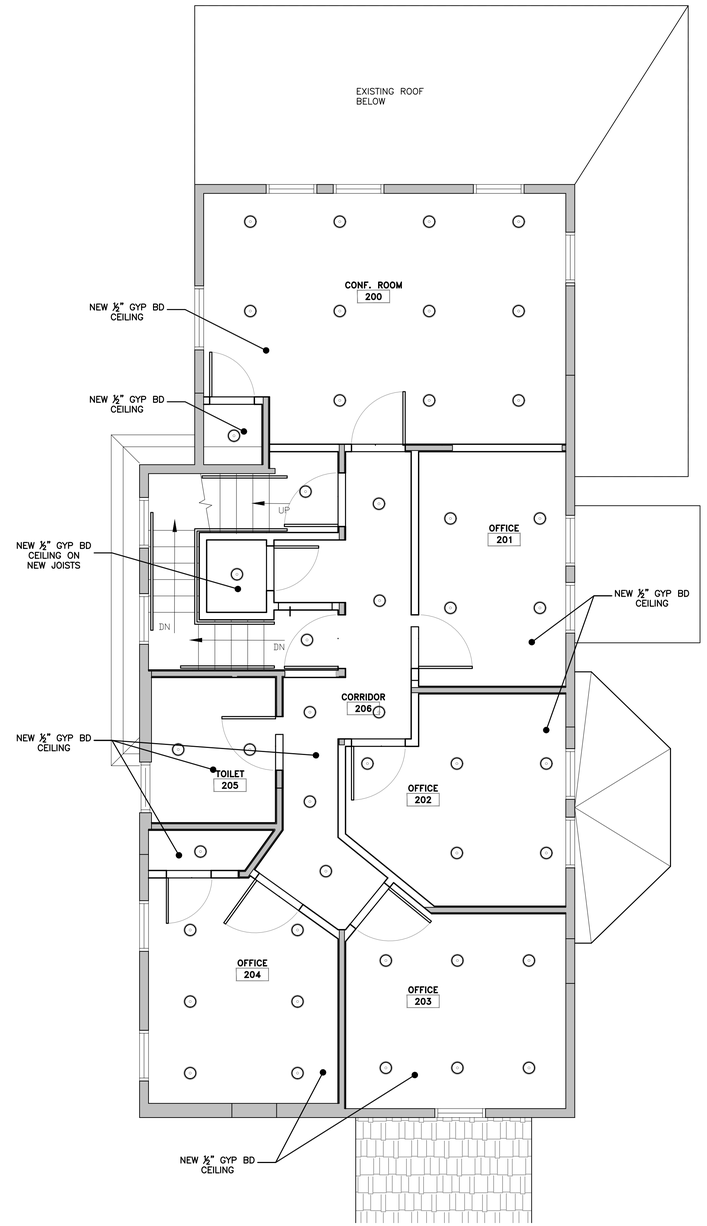
NEW WEATHER PROTECTED HI HAT. SEE ELECTRICAL DWGS FOR MORE INFORMATION.

NEW LIGHT FIXTURE SEE ELECTRICAL DRAWINGS FOR MORE INFORMATION



2 A-2.1 THIRD FLOOR CEILING PLAN

SCALE: 1/4"=1'-0"



1 A-2.1 SECOND FLOOR CEILING PLAN

SCALE: 1/4"=1'-0"

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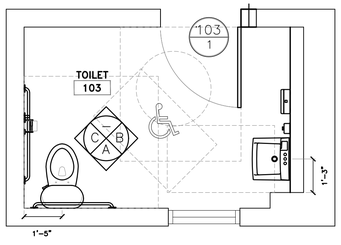
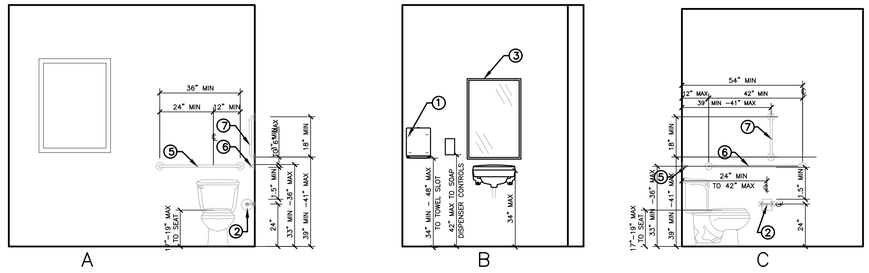


10 A-3 **TOILET ROOM PLAN**

SCALE: 3/8"=1'-0"

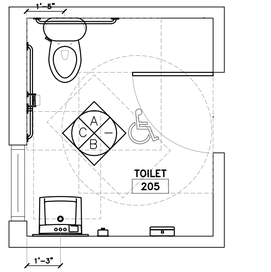


11 A-3 **TOILET ROOM ELEVATIONS**

SCALE: 3/8"=1'-0"

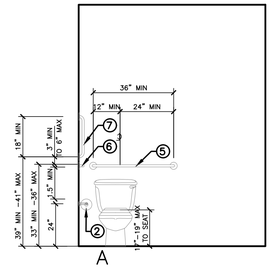
ACCESSORY SCHEDULE							
DESIG.	MANUF.	CAT. #	ITEM	MTG.	FINISH	MTG. HEIGHT	TOTAL QTY.
1	BOBRICK	B-262 &	P. TOWEL DISPENSER	SURFACE	STAIN. STL.	34" MIN TO 48" MAX TO TOWEL SLOT	–
2	BOBRICK	B-7685 &	TOIL. PAPER DISPENSER	SURFACE	STAIN. STL.	24" AFF TO OUTLET	–
3	BOBRICK	B-290 2436	MIRROR	SURFACE	STAIN. STL.	40" MAX TO BOTTOM OF REFLECTIVE SURFACE	–
4	BOBRICK	B-2111 &	SOAP DISPENSER	SURFACE	STAIN. STL.	48" MAX TO CONTROLS (REACH RANGE: VARIES)	–
5	BOBRICK	B-6806 x 36	REAR GRAB BAR	SURFACE	STAIN. STL.	33" MIN TO 36" MAX A.F.F	–
6	BOBRICK	B-6806 x 42	SIDE GRAB BAR	SURFACE	STAIN. STL.	33" MIN TO 36" MAX A.F.F	–
7	BOBRICK	B-6806 x 18	VERT GRAB BAR	SURFACE	STAIN. STL.	39" MIN TO 41" MAX A.F.F TO BOTTOM	–

NOTE: PLUMBING DRAWINGS FOR FUTURE SPECS.



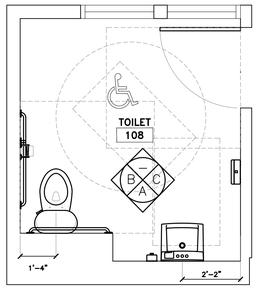
8 A-3 **TOILET ROOM PLAN**

SCALE: 3/8"=1'-0"



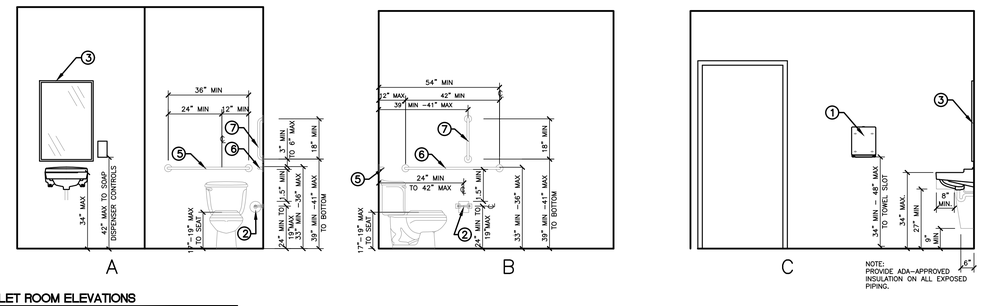
9 A-3 **TOILET ROOM ELEVATIONS**

SCALE: 3/8"=1'-0"



6 A-3 **TOILET ROOM PLAN**

SCALE: 3/8"=1'-0"

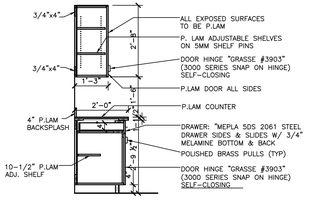


7 A-3 **TOILET ROOM ELEVATIONS**

SCALE: 3/8"=1'-0"

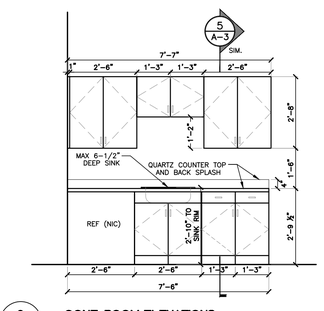
NOTES

1) ALL BASE CABINETS ARE TO HAVE (1) ADJUSTABLE SHELF
2) ALL WALL CABINETS ARE TO HAVE (2) ADJUSTABLE SHELVES
3) ALL EXPOSED CABINET SURFACES ARE TO BE PLASTIC LAMINATE
4) ALL SHELVES ARE TO BE PLASTIC LAMINATE
5) ALL DOOR HINGES ARE TO BE "GRASSE #3903" (3000 SERIES SNAP ON HINGE) SELF-CLOSING
6) ALL DRAWER SLIDES ARE TO BE FULL EXTENSION ALL – BEARING DRAWER SLIDES
7) ALL DRAWER / DOOR PULLS ARE TO BE 4" WIRE PULL, STAINLESS FINISH
8) VERIFY ALL DIMENSIONS IN FIELD BEFORE FABRICATION.
9) P.LAM SPEC TO BE WILSONART.
10) ALL COUNTERS TO BE QUARTZ



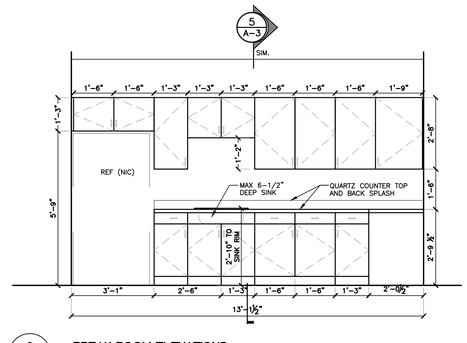
5 A-3 **KITCHEN DETAIL SECTION**

SCALE: 3/8"=1'-0"



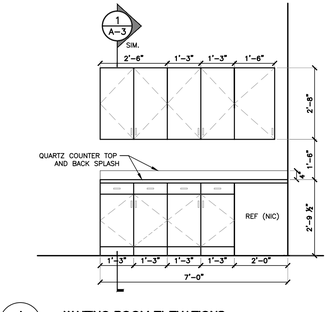
3 A-3 **CONF. ROOM ELEVATIONS**

SCALE: 3/8"=1'-0"



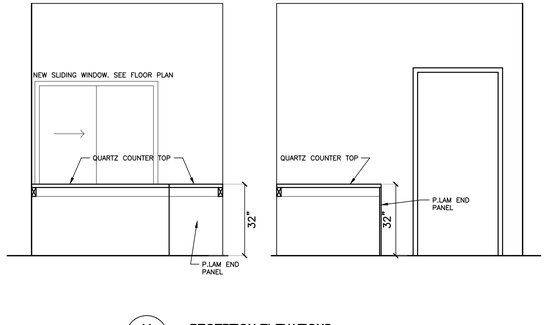
2 A-3 **BREAK ROOM ELEVATIONS**

SCALE: 3/8"=1'-0"



1 A-3 **WAITING ROOM ELEVATIONS**

SCALE: 3/8"=1'-0"



14 A-3 **RECEPTION ELEVATIONS**

SCALE: 3/8"=1'-0"

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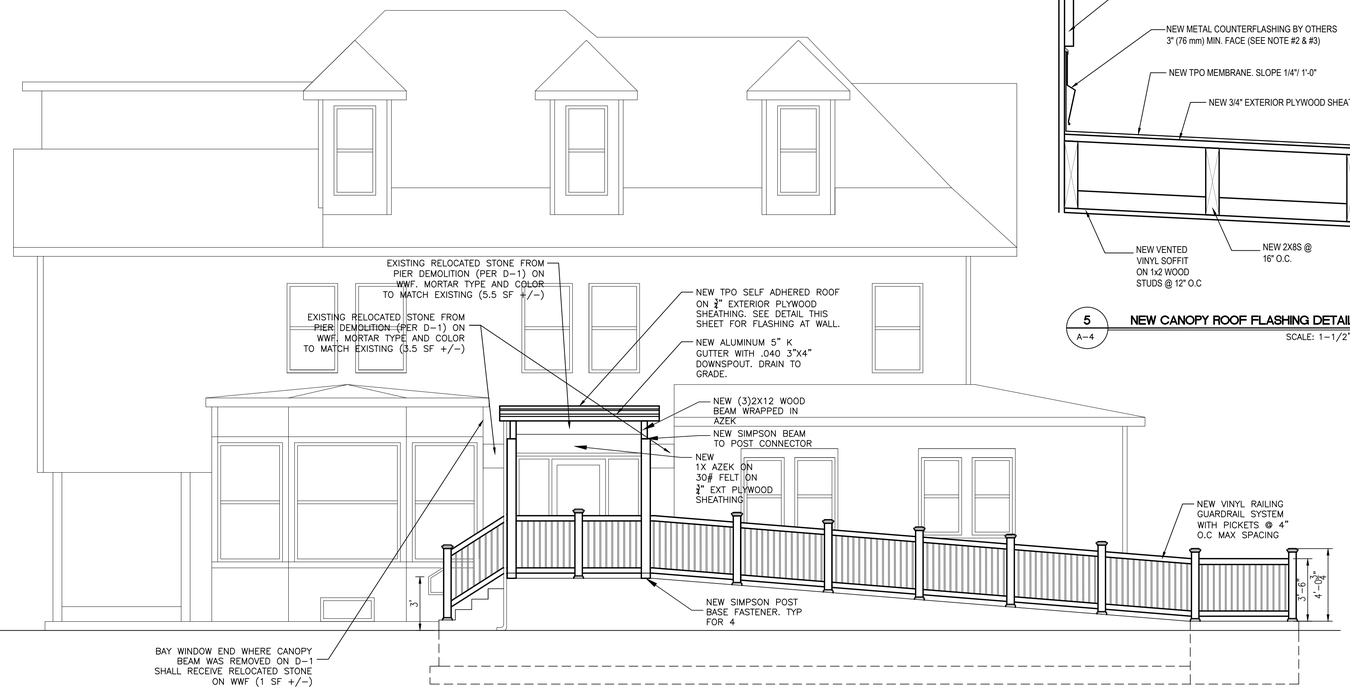
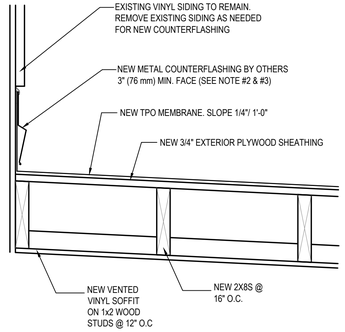


3 A-4 **NEW RAMP/ CANOPY DETAIL**

SCALE: 1/4"=1'-0"



5 A-4 **NEW CANOPY ROOF FLASHING DETAIL**

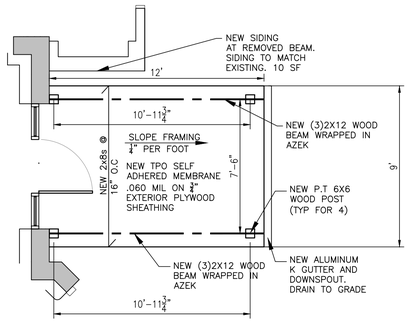
SCALE: 1-1/2"=1'-0"

NOTES

- ALL CONCRETE TO BE 3,500 PSI MINIMUM COMPRESSIVE STRENGTH
- ALL GUARDRAILS TO BE 42" HIGH
- ALL HANDRAILS TO BE 36" HIGH
- LANDINGS SLOPES NOT TO EXCEED 2% IN ANY DIRECTION
- RAMP RUNNING SLOPE NOT TO EXCEED 8.33% AND CROSS SLOPE NOT TO EXCEED 2%

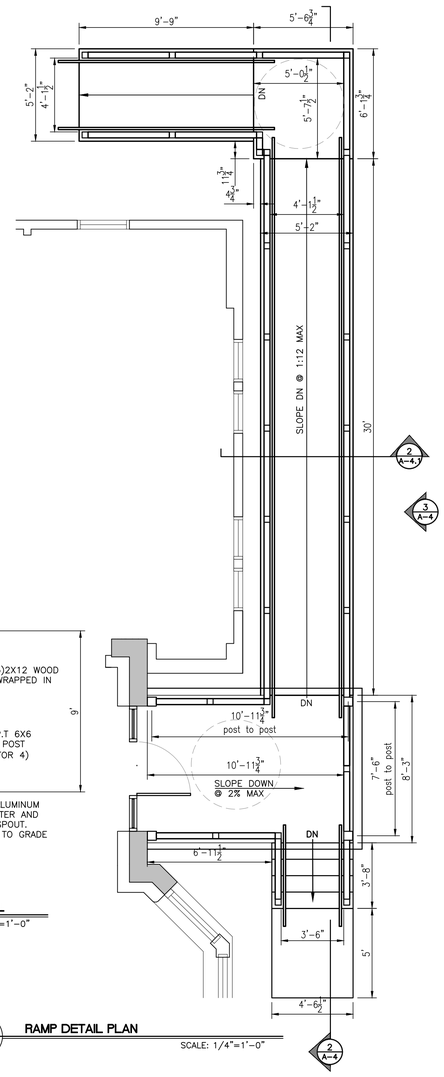
NOTES:

1. REFER TO FIRESTONE WEBSITE FOR MOST CURRENT INFORMATION. ROOF MEMBRANE TO BE FIRESTONE SELF ADHERED OR EQUAL.
2. REGULAR MAINTENANCE OF COUNTERFLASHING AND SEALANTS REQUIRED. NOT INCLUDED AS PART OF THE FIRESTONE WARRANTY.
3. METAL COUNTERFLASHING SHALL BE 24 GAUGE PRE-FINISHED STEEL OR .032" MIN. ALUMINUM FORMED WITH HEMMED LOWER EDGE.
4. INSTALL METAL WORK IN ACCORDANCE WITH CURRENT SMACNA RECOMMENDATIONS.



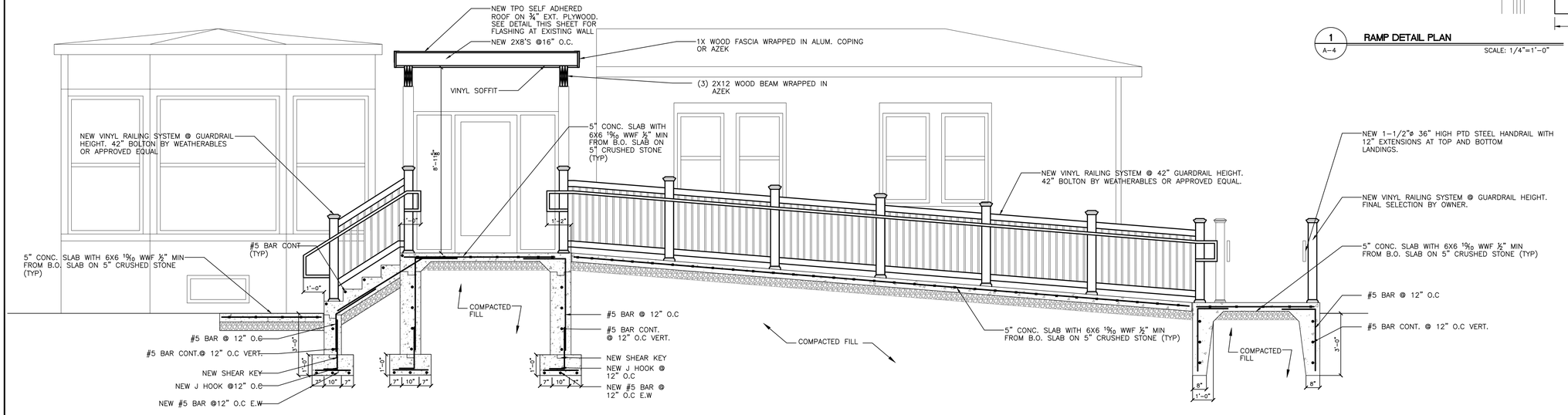
4 A-4 **NEW CANOPY PLAN FRAMING DETAIL**

SCALE: 1/4"=1'-0"



1 A-4 **RAMP DETAIL PLAN**

SCALE: 1/4"=1'-0"



2 A-4 **RAMP ELEVATION**

SCALE: 3/8"=1'-0"

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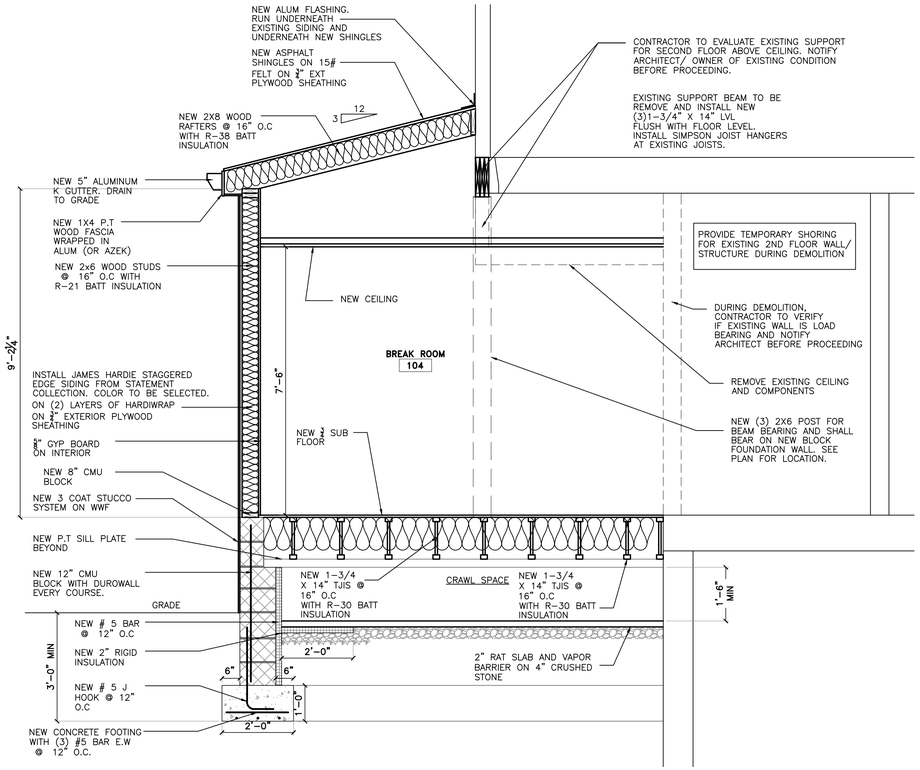
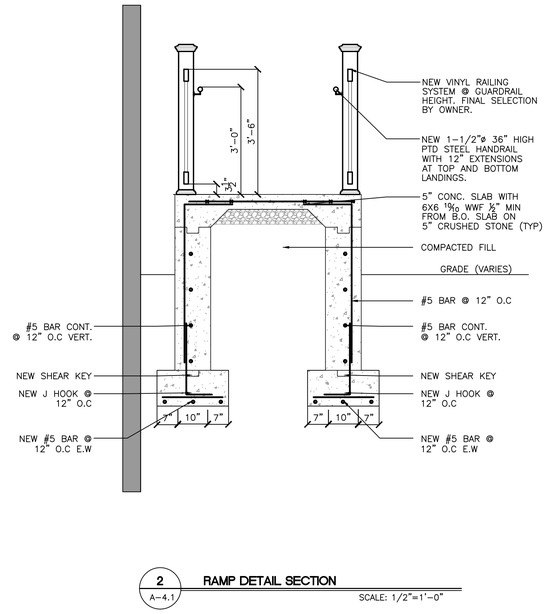


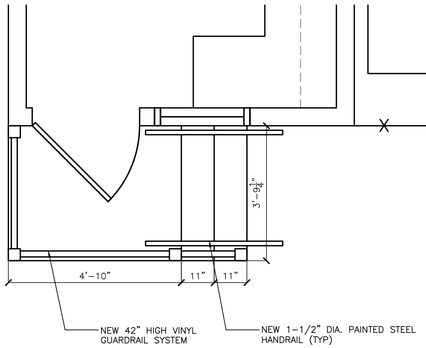
1 A-4.1 **RAMP DETAIL SECTION**

SCALE: 1/2"=1'-0"



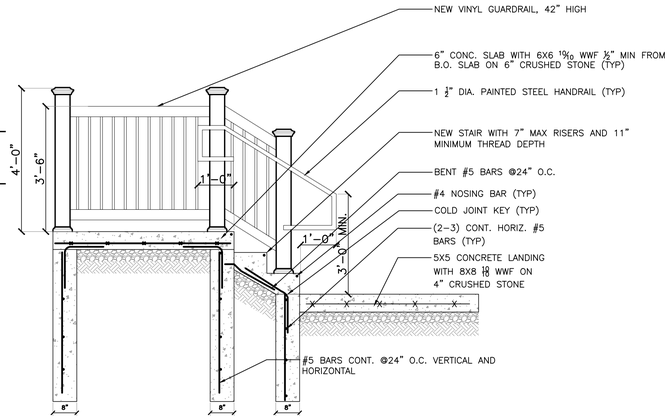
2 A-4.1 **RAMP DETAIL SECTION**

SCALE: 1/2"=1'-0"



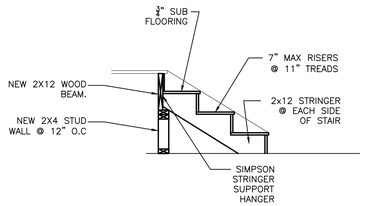
3 A-4.1 **EXTERIOR STAIR**

SCALE: 1/2"=1'-0"



4 A-4.1 **EXTERIOR STAIR SECTION**

SCALE: 1/2"=1'-0"



5 A-4.1 **PROPOSED INTERIOR STAIR DETAIL**

SCALE: 1/2"=1'-0"

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MATERIAL SPECIFICATIONS

ITEM	MANUFACTURER	STYLE OR CATALOG #	COLOR	REMARKS
FLOORS				
LVT	SHAW	TERRAIN II	TBD	GLUE DOWN, 20 MIL, 6X48
CERAMIC TILE	AMERICAN OLEAN	THEORETICAL	TBD	12X24
BASE				
WOOD BASE	TAGUE LUMBER	TL-623	TBD	
PAINT 1 (PT 1)	SHERWIN WILLIAMS	TBD	TBD	PAINT WOOD BASE
CERAMIC TILE	AMERICAN OLEAN	THEORETICAL	TBD	3X12
WALLS				
PAINT 1 (PT 1)	SHERWIN WILLIAMS	TBD	TBD	
PAINT 2 (PT 2)	SHERWIN WILLIAMS	TBD	TBD	
PAINT 5 (PT 5)	SHERWIN WILLIAMS	TBD	TBD	DOOR/WINDOW FRAMES, SEMI-GLOSS FINISH
CEILING				
PAINT 2 (PT 2)	SHERWIN WILLIAMS	TBD	TBD	GWB CEILINGS & SOFFITS, FLAT FINISH
ACOUSTICAL	ROCKFON	CHICAGO METALLIC DRYWALL GRID	TBD	#640.00C
MILLWORK				
QUARTZ	TBD	TBD	TBD	COUNTERTOPS
PLAM 1	TBD	TBD	TBD	EXTERIOR AND INTERIOR CABINETS

INTERIOR ROOM FINISH SCHEDULE

ROOM		FLOORS		BASES			WALLS				CEILINGS		
	ROOM NAME	MATERIALS		MATERIALS			PAINT FINISHES				MATERIALS		REMARKS
		LVT	CERAMIC	PAINT	CERAMIC	NEW WOOD	N	S	E	W	ACOUSTIC	GWB(PT 2)	
100	ENTRY	●		●		●	PT 1	PT 1	PT 1	PT 1	●	●	
101	RECEPTION	●		●		●	PT 1	PT 1	PT 1	PT 1	●	●	
102	BACK OFFICE	●		●		●	PT 1	PT 1	PT 1	PT 1	●	●	
103	TOILET		●		●		PT 1	PT 1	PT 1	PT 1	●	●	
104	BREAK ROOM	●		●		●	PT 1	PT 1	PT 1	PT 1	●	●	
105	CONF. ROOM	●		●		●	PT 1	PT 1	PT 1	PT 1	●	●	
106	OFFICE	●		●		●	PT 1	PT 1	PT 1	PT 1	●	●	
107	MEETING ROOM	●		●		●	PT 1	PT 1	PT 1	PT 1	●	●	
108	TOILET		●		●		PT 1	PT 1	PT 1	PT 1	●	●	
109	WAITING AREA	●		●		●	PT 1	PT 1	PT 1	PT 1	●	●	
110	CORRIDOR	●		●		●	PT 1	PT 1	PT 1	PT 1	●	●	
111	STAIR	●		●		●	PT 1	PT 1	PT 1	PT 1	●	●	SEE NOTE 1 BELOW
200	CONF. ROOM	●		●		●	PT 1	PT 1	PT 1	PT 1		●	
201	OFFICE	●		●		●	PT 1	PT 1	PT 1	PT 1		●	
202	OFFICE	●		●		●	PT 1	PT 1	PT 1	PT 1		●	
203	OFFICE	●		●		●	PT 1	PT 1	PT 1	PT 1		●	
204	OFFICE	●		●		●	PT 1	PT 1	PT 1	PT 1		●	
205	TOILET		●		●		PT 1	PT 1	PT 1	PT 1		●	
206	CORRIDOR	●		●		●	PT 1	PT 1	PT 1	PT 1		●	

NOTE 1: STAIR TREADS AND LANDINGS TO BE LVT. RISERS TO BE PAINT. COLOR TO BE SELECTED.

DOOR AND FRAME SCHEDULE

DOOR									FRAME			FIRE RATING	HARDWARE SET	STOP TYPE	CLOSER	REMARKS
		SIZE			TYPE	MAT.	CORE	GLASS	TYPE	MAT.	DETAILS HEAD & JAMB					
FROM / TO	NO.	W	H	T												
BASEMENT	001-1	3⁰	6⁸	1 3/4	E	FG	INSUL		1	CJ			STOREROOM		●	DEADBOLT,ADD ELECTRIC STRIKE. ADD HOLD OPEN
BASEMENT	001-2	3⁰	6⁸	1 3/4	F	WD	SC		1	WD			PASSAGE			LOUVERED DOOR
EXTERIOR/ENTRY	100-1	3⁰	6⁸	1 3/4	B	ALUM		TEMP	2	ALUM			ENTRY 1		●	ADD ELECTRIC STRIKE ADD HOLD OPEN
ENTRY/CORRIDOR	100-2	3⁰	6⁸	1 3/4	B	WD	SC		1	WD			OFFICE			
BACK OFFICE/STAIR	102-1	3⁰	6⁸	1 3/4	A	WD	SC		1	WD			PASSAGE			
BACK OFFICE/TOILET	103-1	3⁰	6⁸	1 3/4	A	WD	SC		1	WD			PRIVACY			
BREAK ROOM EXIT	104-1	3⁰	6⁸	1 3/4	E	WD	SC		1	WD			ENTRY 2		●	ADD ELECTRIC STRIKE ADD HOLD OPEN
CONF.ROOM/BREAK ROOM	105-1	3⁰	6⁸	1 3/4	A	FG	INSUL		1	CJ			OFFICE	WALL		
CONF. ROOM/ENTRY	105-2	3⁰	6⁸	1 3/4	C	WD	SC		1	WD			PRIVACY			
CORRIDOR/OFFICE	106-1	3⁰	6⁸	1 3/4	A	WD	SC		1	WD			PRIVACY	WALL		
CORRIDOR/MEETING ROOM	107-1	3⁰	6⁸	1 3/4	C	WD	SC		1	WD			PRIVACY			
CORRIDOR/TOILET	108-1	3⁰	6⁸	1 3/4	A	WD	SC		1	WD			PRIVACY			
CORRIDOR/RECEPTION	110-1	3⁰	6⁸	1 3/4	C	WD	SC		1	WD			OFFICE	WALL	●	ADD HOLD OPEN
EXIT DOOR STAIR	111-1	3⁰	6⁸	1 3/4	E	FG	INSUL		1	CJ			ENTRY 2		●	ADD ELECTRIC STRIKE ADD HOLD OPEN
CONF. ROOM/CORRIDOR	200-1	3⁰	6⁸	1 3/4	C	WD	SC		1	WD			PRIVACY	WALL		
CONF. ROOM/CLOSET	200-2	3⁰	6⁸	1 3/4	A	WD	SC		1	WD			PASSAGE	WALL		
CORRIDOR/OFFICE	201-1	3⁰	6⁸	1 3/4	A	WD	SC		1	WD			PRIVACY	WALL		
CORRIDOR/OFFICE	202-1	3⁰	6⁸	1 3/4	A	WD	SC		1	WD			PRIVACY	WALL		
CORRIDOR/OFFICE	203-1	3⁰	6⁸	1 3/4	A	WD	SC		1	WD			PRIVACY	WALL		
CORRIDOR/OFFICE	204-1	3⁰	6⁸	1 3/4	A	WD	SC		1	WD			PRIVACY	WALL		
CORRIDOR/TOILET	205-1	3⁰	6⁸	1 3/4	A	WD	SC		1	WD			PRIVACY	WALL		
CORRIDOR/STAIR	206-1	3⁰	6⁸	1 3/4	D	WD	SC		1	WD			OFFICE	WALL		
CORRIDOR/CLOSET	206-2	3⁰	6⁸	1 3/4	A	WD	SC		1	WD			PASSAGE	WALL		
CORRIDOR/STAIR	206-3	3⁰	6⁸	1 3/4	A	WD	SC		1	WD			PASSAGE	WALL		
CORRIDOR/STAIR	301-1	3⁰	6⁸	1 3/4	A	WD	SC		1	WD			PASSAGE	WALL		

NOTE: GC TO COORDINATE AND VERIFY OPENING SIZES WITH NEW DOORS IN FIELD FG = FIBERGLASS CJ = COMPOSITE JAMB

SET DESCRIPTION/ SPEC

PASSAGE – NOT LOCKABLE ON EITHER SIDE

GENERAL LOCK, L210S 626 234 S ANSI

OFFICE – LOCKABLE OUTSIDE WITH KEY, PUSH BUTTON LOCK INSIDE

GENERAL LOCK, –

PRIVACY – NOT LOCKABLE ON THE OUTSIDE, PUSH BUTTON LOCK INSIDE

GENERAL LOCK, L240S 626 234 S ANSI

ENTRY 1 – LOCKABLE OUTSIDE WITH A KEY/ PANIC BAR RELEASE ON INSIDE

GENERAL LOCK, ED2300R SERIES PANIC DEVICE AND ESCUTCHEON TRIM ED23T-LET-NL 626 STOREROOM FUNCTION

ENTRY 2 – LOCKABLE OUTSIDE WITH A KEY/ PANIC BAR RELEASE ON INSIDE

GENERAL LOCK, ED2300R SERIES PANIC DEVICE AND KEY-IN-LEVER TRIM ED23T-KIL-NL 695 STOREROOM FUNCTION

STOREROOM – DEADLOCKING LATCHBOLT WITH KEY ON OUTSIDE, FREE OPERATING ON INSIDE. OUTSIDE LEVER IS ALWAYS INOPERABLE

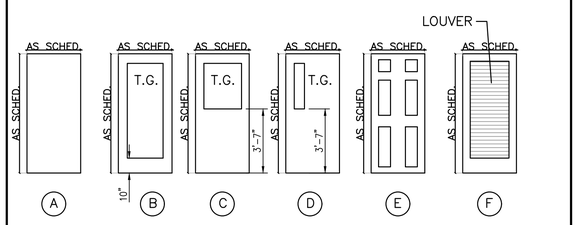
FINISH NOTES

1) ALL FINISH SELECTIONS (COLORS, MATERIALS, ETC.) TO BE APPROVED BY THE ARCHITECT AND THE OWNER.
2) PROVIDE MOISTURE RESISTANT GYP. BOARD AT TOILET ROOMS AND JANITORS CLOSET AND WET AREAS.
3) ALL INTERIOR FRAMES(NEW) TO BE PAINTED.
4) ALL HOLLOW METAL FRAMES TO BE PAINTED.
5) ALL NEW WALLS SHALL RECEIVE (1) COAT OF PRIMER/SEALER AND (2) COATS OF PAINT.
8) ALL PAINT TO BE EGGSHELL FINISH UNLESS NOTED OTHERWISE.
9) FOLLOW ALL MANUFACTURERS INSTALLATION, CLEANING, AND FINISHING GUIDELINES FOR ALL PRODUCTS.
10) CODE COMPLIANT MARBLE THRESHOLDS SHALL BE PROVIDED AT ALL DOORS IN ROOMS RECEIVING CERAMIC TILE FLOORING.
11) ALL PAINT SHALL BE BY SHERWIN WILLIAMS (ALLOWABLE SUBSTITUTION BENJAMIN MOORE)
12) ALL FINISHES SHALL BE CLASS B MINIMUM.

DOOR/ HARDWARE NOTES

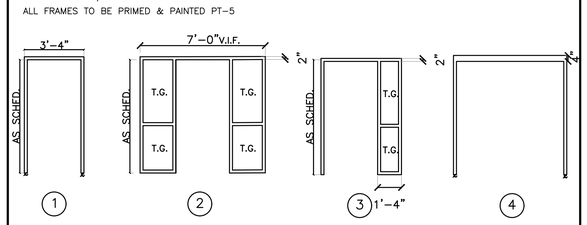
1) ALL DOORS TO BE PROVIDE WITH LEVER HANDLES
2) ALL LEVER HANDLES TO BE CLUTCH GRADE 2 WITH 2-3/4" BACKSET BY GENERAL LOCK. OR APPROVED EQUAL.
4) ALL FRAMES SHALL BE PAINTED. COLOR TO BE SELECTED
5) THRESHOLDS, WEATHERSTRIPPING & SWEEPS TO BE INSTALLED PER MANF. INSTRUCTIONS
6) REPLACE ALL EXISTING DOOR HARDWARE.
7) ALL DOOR HARDWARE TO RECEIVE A.D.A. COMPLIANT LEVER SET @ 36" A.F.F. U.N.O
8) ALL NEW DOOR CLOSERS SHALL BE A.D.A COMPLIANT. CLOSERS SHALL TAKE 3 SECONDS TO OPERATE FROM AN OPEN POSITION OF 70° TO A POINT 3" FROM THE LATCH. MAXIMUM OPENING FORCE IS NOT TO EXCEED 5 LBS.
9) ALL WOOD DOORS TO BE SOLID CORE MASONITE ROTARY NATURAL BIRCH BY CENDURA. FINISH TO BE CLEAR
10) ALL DOORS TO HAVE INTERCHANGEABLE CORES, EXCEPT FOR DOORS LISTED TO HAVE A PASSAGE SET.
11) ALL DOOR CLOSERS TO BE FALCON SC70A SERIES.
12) ALL DEADBOLTS TO BE D160 626 ADJ IC BY GENERAL LOCK, GRADE 2
13) ALL EXTERIOR DOORS TO RECEIVE ALUMINUM ADA THRESHOLD
14) ALL STOREFRONT DOORS TO BE YKK 35D SERIES WITH A U FACTOR OF 0.29. DOORS TO BE OUTSIDE CONFIGURATION.
15) ALL INSULATED FIBERGLASS EXTERIOR DOORS TO BE BY TRUDOOR OR APPROVED EQUAL WITH A POLYSTYRENE CORE.

DOOR TYPES

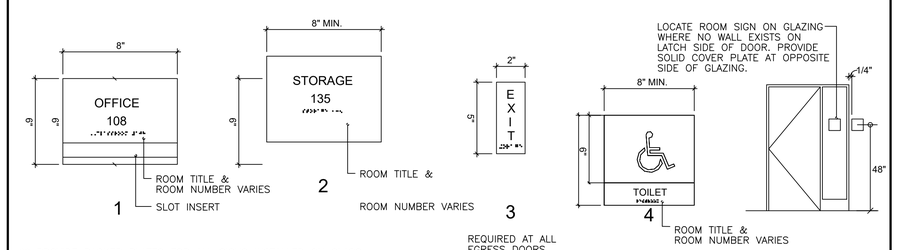


FRAME TYPES

ALL WOOD FRAMES TO MATCH EXISTING
T.G.: PROVIDE 1/4" TEMPERED GLASS PANELS
ALL FRAMES TO BE PRIMED & PAINTED PT-5



SIGNAGE



** PROVIDE BACKER PLATES FOR ALL SIGNS INSTALLED ON GLASS

LINN ARCHITECTS
ARCHITECTURE
ENGINEERING
SITE PLANNING
CODE SERVICES
1140 N. PROVIDENCE ROAD
MEDIA, PENNSYLVANIA 19063
TEL: 610-566-7044
FAX: 610-566-3258

NOT FOR PERMIT OR CONSTRUCTION

PROPOSED DOOR AND FINISH SCHEDULES
BUILDING RENOVATIONS
AIDS CARE GROUP
2304 EDGMONT AVENUE
CHESTER, PA 19013

REVISIONS NO.	DESCRIPTION	DATE
1	ISSUED FOR BID	08.09.24

DATE: 06.18.2024
SCALE: AS NOTED
DRAWN BY: GP
CHECKED BY: MJK
PROJ. NO.: 24066

SHEET NO. A-5 SHEET OF X

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GENERAL SPECIFICATIONS

1. DRAWINGS AND SPECIFICATIONS FORM COMPLIMENTARY REQUIREMENTS: PROVIDE WORK SPECIFIED AND NOT SHOWN, AND WORK SHOWN BUT NOT SPECIFIED AS THOUGH EXPLICITLY REQUIRED BY BOTH. ALTHOUGH WORK IS NOT SPECIFICALLY SHOWN OR SPECIFIED, PROVIDE SUPPLEMENTARY OR MISCELLANEOUS ITEMS, APPURTENANCES, DEVICES AND MATERIALS OBVIOUSLY NECESSARY FOR A SOUND, SECURE AND COMPLETE INSTALLATION.

2. DRAWINGS ARE DIAGRAMMATIC. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL COMPONENTS NECESSARY FOR A COMPLETE AND OPERATIONAL SYSTEM. DETERMINE LOCATIONS OF COMPONENTS NECESSARY FOR A COMPLETE AND OPERATIONAL SYSTEM. DETERMINE LOCATIONS OF SYSTEMS AND COMPONENTS IN FIELD. COORDINATE WITH ARCHITECTURAL DRAWINGS AND OTHER TRADES.

3. ADDRESS QUESTIONS REGARDING DRAWINGS TO ARCHITECT IN WRITING BEFORE AWARD OF CONTRACT. OTHERWISE, ARCHITECTS INTERPRETATION OF MEANING AND INTENT OF DRAWINGS SHALL BE FINAL.

4. THE INTENTION IS FOR INSTALLATION OF COMPLETE AND OPERATING SYSTEMS INSTALLED IN ACCORDANCE WITH THE ASSOCIATED MANUFACTURER'S INSTRUCTIONS. NOT EVERY COMPONENT REQUIRED IS SHOWN. THE CONTRACTOR SHALL INCLUDE ALL COMPONENTS NORMALLY ASSOCIATED WITH THE PARTICULAR SYSTEM AND/OR REQUIRED BY THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. THE SYSTEM SHALL BE FULLY COMMISSIONED AND SIGNED OFF BY AN OFFICER OF THE RESPECTIVE CONTRACTOR, PRIOR TO FINAL OWNER ACCEPTANCE TESTING, PROVIDE PERSONNEL TO ASSIST IN 24 HOURS OF ACCEPTANCE TESTING.

5. GIVE NOTICES, FILE PLANS, OBTAIN PERMITS AND LICENSES, PAY FEES AND BACK CHARGES, AND OBTAIN NECESSARY APPROVALS FROM AUTHORITIES THAT HAVE JURISDICTION AS REQUIRED TO PERFORM WORK IN ACCORDANCE WITH ALL LEGAL REQUIREMENTS AND WITH THE DESIGN DOCUMENTS.

6. PRIOR TO COMMENCING WORK, CONTRACTOR SHALL SUBMIT SHOP DRAWINGS AND EQUIPMENT DATA FOR MATERIALS AND EQUIPMENT TO THE ARCHITECT FOR REVIEW AND APPROVAL. MATERIALS AND EQUIPMENT SHALL NOT BE INSTALLED BEFORE SHOP DRAWINGS ARE REVIEWED AND APPROVED. SCHEDULE AT LEAST TEN WORKING DAYS, EXCLUSIVE OF TRANSMITTAL TIME, FOR SUBMITTAL REVIEW SHALL BE ALLOWED.

7. MATERIALS AND EQUIPMENT SHALL BE LISTED BY UNDERWRITERS LABORATORIES (UL) AND APPROVED BY ASME AND AGA FOR INTENDED SERVICE.

8. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR CONSTRUCTION MEANS, METHODOS, TECHNIQUES, SEQUENCES AND PROCEDURES REQUIRED FOR SAFE EXECUTION AND COMPLETION OF WORK, AND FOR INITIATING, MAINTAINING AND SUPERVISING ALL SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THE WORK.

9. COORDINATE WORK OF THIS SECTION WITH THAT OF OTHER SECTIONS.

10. ALL MATERIALS, EQUIPMENT AND METHOD OF INSTALLATION SHALL BE ACCORDANCE WITH THE STANDARDS, REGULATIONS, CODES, ORDINANCES, AND LAW OF LOCAL, STATE, AND FEDERAL GOVERNMENTS, AND OTHER AUTHORITIES THAT HAVE LAWFUL JURISDICTION.

11. IT SHALL BE THE RESPONSIBILITY OF THIS CONTRACTOR TO COORDINATE THEIR WORK WITH THAT OF ALL OTHER TRADES, INCLUDING (BUT NOT LIMITED TO), ELECTRICAL, HVAC, SPRINKLER, PLUMBING, STRUCTURAL AND GENERAL ARCHITECTURE. OFFSETS IN PIPING AND OFFSETS AROUND OBSTRUCTIONS SHALL BE PROVIDED AT NO ADDITIONAL COST TO THE OWNER.

12. DEVIATION FROM CONTRACT DOCUMENTS, OR PROPOSED SUBSTITUTION OF MATERIALS OR EQUIPMENT FOR THOSE SPECIFIED, SHALL BE REQUESTED IN SEPARATE LETTER, WHETHER DEVIATIONS ARE DUE TO FIELD CONDITIONS, STANDARD SHOP PRACTICE OR OTHER CAUSE. THE CONTRACTOR IS RESPONSIBLE FOR AN COSTS INCURRED AS A RESULT OF THE CHANGES NEEDED TO ACCOMMODATE THE SUBSTITUTED EQUIPMENT INCLUDING THE WORK OF OTHER TRADES.

13. EACH CONTRACTOR IS RESPONSIBLE FOR ITS CUTTING AND PATCHING REQUIRED FOR THE INSTALLATION OF ITS NEW WORK. CUTTING AND PATCHING SHALL BE COMPLETED IN A NEAT AND WORKMANLIKE MANNER. PATCHING MATERIALS SHALL MATCH EXISTING MATERIALS TO THE GREATEST EXTENT POSSIBLE. PROVIDE TOUCH-UP TO MATCH EXISTING SURROUNDING AREAS OF CUTTING AND PATCHING WORK.

14. CONTRACTOR SHALL COORDINATE ITS RESPECTIVE CEILING MOUNTED EQUIPMENT WITH OTHER TRADE CONTRACTORS PRIOR TO INSTALLATION TO AVOID CONFLICTS.

15. WORK SHALL BE EXECUTED IN A WORKMANLIKE MANNER AND SHALL PRESENT NEAT, RECTILINEAR APPEARANCE WHEN COMPLETED. MAINTAIN MAXIMUM HEAD ROOM AT ALL TIMES. DO NOT RUN PIPES, DUCTS, AND CONDUIT EXPOSED UNLESS SHOWN AND NOTED TO BE EXPOSED ON DRAWINGS. MATERIALS AND EQUIPMENT SHALL BE NEW AND INSTALLED ACCORDING TO MANUFACTURER'S INSTRUCTIONS AND RECOMMENDATIONS, SO THAT COMPLETED INSTALLATION SHALL OPERATE SAFELY AND EFFICIENTLY.

16. EACH RESPECTIVE CONTRACTOR SHALL FIRE STOP ALL NEW SLEEVES THROUGH CONCRETE FLOORS AND FIRE RATED WALLS OR PARTITIONS WITH UL RATED ASSEMBLIES WITH EQUAL FIRE RATING. COORDINATE ROOF PENETRATIONS WITH WORK OF OTHER SECTIONS AND WITH FLASHING REQUIREMENTS.

17. ANY INTERFERENCE SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER'S REPRESENTATIVE, AND SHALL BE RESOLVED PRIOR TO THE INSTALLATION OF THE WORK INVOLVED.

18. ALL MATERIALS AND EQUIPMENT SHALL BE NEW UNLESS NOTED OTHERWISE.

19. MANUFACTURERS' MODEL NUMBERS ARE SPECIFIED SOLELY TO ESTABLISH STANDARDS OF QUALITY FOR PERFORMANCE AND MATERIALS.

20. SUBSTITUTED PRODUCTS SUBMITTED AND APPROVED FOR USE THAT NECESSITATE CHANGES TO THE SAID CONTRACTOR'S WORK OR THE WORK OF OTHER TRADES OF CONTRACT SHALL BE COORDINATED AND ARRANGED BY THE CONTRACTOR WHO SUBMITTED THE SUBSTITUTION WITHOUT ADDITIONAL COST TO THE OWNER.

21. EACH RESPECTIVE CONTRACTOR SHALL PROVIDE PROPER ACCESS TO EQUIPMENT THAT REQUIRES INSPECTION, REPLACEMENT OR REPAIR. ACCESS PANELS SHALL BE A MINIMUM OF 12" X 12" OR AS NEEDED FOR APPROPRIATE ACCESS. TO BE SUPPLIED TO GENERAL CONTRACTOR FOR INSTALLATION.

22. CONTRACTOR SHALL COORDINATE ELECTRICAL CHARACTERISTICS AND REQUIREMENTS APPLICABLE EQUIPMENT WITH THE ELECTRICAL CONTRACTOR.

23. ALL EQUIPMENT, PIPING, INSULATION, ETC., INSTALLED IN HVAC PLENUM SPACES SHALL MEET CODE REQUIREMENTS FOR SMOKE AND COMBUSTIBILITY.

24. AS WORK PROGRESSES AND FOR DURATION OF CONTRACT, MAINTAIN COMPLETE SET OF PRINTS OF CONTRACT DRAWINGS AT JOB SITE AT ALL TIMES. RECORD WORK COMPLETED AND ALL CHANGES FROM ORIGINAL CONTRACT DRAWINGS CLEARLY AND ACCURATELY INCLUDING WORK INSTALLED AS A MODIFICATION OR ADDITION TO THE ORIGINAL DESIGN TURN OVER ALL OPERATING MANUALS, MAINTENANCE MANUALS, AND "AS BUILT" DRAWINGS TO OWNER AT CONCLUSION OF CONSTRUCTION.

25. DO NOT SUPPORT EQUIPMENT FROM SUSPENDED CEILINGS. SUPPORT ALL EQUIPMENT AND PIPING FROM BUILDING STRUCTURE TO PROVIDE A VIBRATION FREE INSTALLATION. NOTIFY ARCHITECT AND STRUCTURAL ENGINEER OF ALL WEIGHTS AND METHODS OF SUPPORT.

26. RUN PIPING/WIRING CONCEALED, UNLESS SPECIFIED OTHERWISE, AND CLEAR OF CEILING INSERTS. PROVIDE CLAMPS, OFFSETS, EXPANSION JOINTS, ANCHORS AND GUIDES AS NECESSARY TO PREVENT STRESS ON PIPING/WIRING.

27. ANY REFERENCE TO ELECTRICAL, PLUMBING AND HVAC CONTRACTORS, NOTED ON THESE DRAWINGS OR STATED IN THE SPECIFICATIONS SHALL NOT BE MISCONSTRUED AS AN INTENTION TO DEFINE SEPARATE CONTRACTORS FOR THE RESPECTIVE WORK. THE GENERAL CONTRACTOR SHALL COORDINATE AND PROVIDE A COMPLETE BUILDING WITH COMPLETE MECHANICAL AND ELECTRICAL SYSTEMS, REGARDLESS OF ANY SPECIFICATION REFERENCES TO OTHER CONTRACTORS.

28. GUARANTEE WORK OF THIS CONTRACTOR IN WRITING FOR ONE YEAR FROM THE DATE OF OWNERS ACCEPTANCE OF CERTIFICATE OF SUBSTANTIAL COMPLETION. PROMPTLY, REPAIR OR REPLACE DEFECTIVE MATERIALS, EQUIPMENT, WORKMANSHIP AND INSTALLATIONS THAT DEVELOP DEFECTS WITHIN THIS PERIOD. PROMPTLY AND TO OWNERS SATISFACTION, CORRECT DAMAGE CAUSED IN MAKING NECESSARY REPAIRS AND REPLACEMENTS. UNDER GUARANTEED AT NO ADDITIONAL COST TO OWNER. SUBMIT GUARANTEE TO ARCHITECT BEFORE FINAL PAYMENT. STATEMENT OF GUARANTEE REQUIREMENTS SHALL NOT BE INTERPUTTED TO LIMIT OWNERS RIGHTS UNDER LAW AND THIS CONTRACT.

CODE SUMMARY

MUNICIPALITY	CITY OF CHESTER
USE AND OCC. CLASSIFICATION	B-BUSINESS
APPLICABLE CODES	BUILDING CODE: 2018 INTERNATIONAL BUILDING CODE MECHANICAL CODE: 2018 INTERNATIONAL MECHANICAL CODE PLUMBING CODE: 2018 INTERNATIONAL PLUMBING CODE FUEL GAS CODE: 2018 INTERNATIONAL FUEL GAS CODE ELECTRICAL CODE: 2017 NATIONAL ELECTRICAL CODE (BY REFERENCE) FIRE CODE: 2018 INTERNATIONAL FIRE CODE ENERGY CODE: 2018 INTERNATIONAL ENERGY CONSERVATION CODE/ASHRAE 90.1-2016

MECHANICAL PIPING NOTES

1. PIPE MATERIALS
   A. CONDENSATE PIPING:
      A.1. 3/4" DIAMETER CONDENSATE PIPING FOR HVAC EQUIPMENT 5 TONS AND BELOW
      A.2. 1" DIAMETER CONDENSATE PIPING UP TO 20 TONS OF CONNECTED COOLING CAPACITY
      A.3. 1 1/4" DIAMETER CONDENSATE PIPING UP TO 40 TONS OF CONNECTED COOLING CAPACITY
      A.4. 1 1/2" DIAMETER CONDENSATE PIPING UP TO 90 TONS OF CONNECTED COOLING CAPACITY
      A.5. 2" DIAMETER CONDENSATE PIPING UP TO 125 TONS OF CONNECTED COOLING CAPACITY
      PIPE MATERIAL: TYPE DWV COPPER TUBING/PVC WHERE ALLOWABLE BY CODE
      FITTING MATERIAL: WROUGHT COPPER AND BRONZE SOLDER JOINTS.
      PIPE JOINT: 95-5 LEAD FREE SOLDER
   B. REFRIGERANT PIPING:
      B.1. PIPE MATERIAL: HARD-DRAWN (TEMPERED) TOPPER TUBE, TYPE L ARC.
      B.2 PIPE JOINT: BRAZED. BRAZING MATERIAL SHALL BE SILFOS 15.
2. INSULATION:
   2.1 CONDENSATE PIPING INSULATION SHALL BE 1" THICK FIBERGLASS INSULATION AND ALL SERVICE.
   SUCTION REFRIGERANT LINES ON CONVENTIONAL SPLIT SYSTEMS SHALL BE INSULATED. LIQUID AND SUCTION REFRIGERANT LINES ON DUCTLESS SPLIT SYSTEMS (OR WHERE REQUIRED BY MANUFACTURER) SHALL BE INSULATED. INSULATION SHALL BE CLOSED CELL ELASTOMERIC BY ARMACELL. WHERE LOCATED OUTDOORS THE INSULATION SHALL BE UV RESISTANT.
   2.2. INSULATION SHALL BE OWENS CORNING, CERTAIN-TEED OR MANVILLE.
   2.3. INSULATION, JACKETS AND ADHESIVES SHALL BE FLAME RETARDANT AND SHALL HAVE ASTME-84 FIRE HAZARD RATINGS OF 25 FLAME SPREAD, 50 SMOKE DEVELOPED, AND 50 FUEL CONTRIBUTED
3 HANGERS, ANCHORS, CLAMPS AND INSERTS
   3.1. PROVIDE CAST BRASS SPLIT RING HINGE HANGERS, SUPPORT PIPING FROM BUILDING STRUCTURE TO MAINTAIN REQUIRED GRADE AND PITCH OF PIPE LINES. PREVENT VIBRATIONS. SECURE PIPING IN PLACE. SECURE HANGERS TO INSERTS WHERE PRACTICAL. HANGER RODS SHALL HAVE MACHINES THREADS
   3.2: HANGER RODS SHALL BE CONNECTED TO BEAM CLAMP. UL APPROVE CONCRETE INSERTS SHALL BE PHILLIPS OR APPROVED EQUAL EXPANSION SHIELD. RAMSET OR POWER DRIVEN INSETS WILL NOT BE ALLOWED.
   3.3. HANGER SPACING SHALL MEET REQUIREMENTS OF STATE AND LOCAL CODES.
4. SLEEVES AND PENETRATIONS
   4.1. PIPE SLEEVES THROUGH FIRE RATED CONSTRUCTION SHALL BE SHEDULE 40 STEEL. SLEEVES THROUGH PARTITIONS AND NON FIRE RATED CONSTRUCTION SHALL BE 26 GAUGE GALVANIZED STEEL WITH LOCAL LONGITUDINAL SEAMS.
   4.2: PACKING FOR SLEEVES THAT DO NOT REQUIRE MAINTENANCE OF FIRE RATING SHALL BE OAKUM. SILICATE FOAM, CERAMIC FIBER WITH APPROVED SEALANT. PACK OR FOAM TO WITHIN ONE INCH OF BOTH WALL SURFACE FINISH OR SILICONE CAULKING.
5. METHODS
   5.1 REFRIGERANT PIPING: ALL PIPING SHALL E SUPPORTED WITH CUSH A CLAMPS AND STRUT AS MANUFACTURED BY B-LINE. INC OR APPROVED EQUAL. ALL REFRIGERANT PIPING SHALL BE INSTALLED IN STRICT ACCORDANCE WITH THE RECOMMENDATIONS OF THE REFRIGERATION EQUIPMENT MANUFACTURER AND SHALL INCLUDE, BUT NOT BE LIMITED TO, FLEXIBLE CONNECTIONS, VALVES, RELIEF VALVES, EXPANSION VALVES, SOLENOID VALVES, FILTER DRIERS, PIPE INSULATION, FLASHING AND SLEEVES THROUGH WALLS, PROPER SUPPORT OF REFRIGERANT PIPING, AND FULL REFRIGERANT CHARGE. ALL PIPING JOINTS SHALL BE BRAZED WITH SILFOS 15 FILLER METAL AND THE PIPING CHARGED WITH DRY NITROGEN WHILE CONSTRUCTING THE JOINTS PITCH REFRIGERATION PIPING IN DIRECTION OF OIL RETURN TO COMPRESSOR. PROVIDE TRAPS IN SUCTION LINE RISERS WHERE REQUIRED. TRAPS SHALL BE FABRICATED FROM SHORT RADIUS STREET ELLS. ALL OTHER ELLS SHALL BE LONG RADIUS TYPE. SOLENOID VALVES SHALL BE INSTALLED WITH STEMS POINTING UP. AFTER THE REFRIGERANT PIPING HAS BEEN COMPLETED, THE SYSTEM SHALL BE PRESSURE TESTED AT 300 PSI (HIGH SIDE) AND 150 PSI (LOW SIDE). THIS PRESSURE SHALL BE MAINTAINED IN THE SYSTEM FOR 12 CONSECUTIVE HOURS WITH NO APPRECIABLE PRESSURE CHANGE. WHILE THE PRESSURE IS APPLIED. THE SYSTEM SHALL BE CHECKED FOR LEAKS. THE SYSTEM SHALL THEN BE EVACUATED TO A MINIMUM VACUUM EQUIVALENT OF 500 MICRONS AND MAINTAINED FOR 12 HOURS. RELEASE VACUUM WITH NITROGEN AND EVACUATE AGAIN. AFTER EVACUATION, THE SYSTEM SHALL BE CHARGED WITH REFRIGERANT IN STRICT ACCORDANCE WITH THE RECOMMENDATIONS OF THE EQUIPMENT MANUFACTURER.

MECHANICAL EQUIPMENT NOTES

1. PROVIDE EQUIPMENT AND PIPE SUPPORTS TO SUPPORT ROOF MOUNTED EQUIPMENT DUCTWORK AND PIPING ABOVE ROOF. PIPE AND DUCT SUPPORTS ON 8' 0" C.C. OR LESS ACCORDING TO HANGER SPACING.
2. INSTALL THERMOSTATS 48" ABOVE FINISHED FLOOR OR AS DIRECTED OTHERWISE BY ARCHITECT. WHERE THERMOSTATS ARE LOCATED IN PUBLIC AREAS, PROVIDE PASSWORD PROTECTED MODELS OR LOCKING COVERS.
3. ALL CONTROL WIRE AND CONDUIT SHALL COMPLY WITH NEC.
4. PROVIDE HANGERS, CLAMPS, OFFSETS, EXPANSION JOINTS, ANCHORS AND GUIDES AS NECESSARY TO PREVENT STRESS ON PIPING.
5. ALL CONDENSATE DRAIN LINES SHALL BE PIPED FULL SIZE OF THE UNIT DRAIN OUTLET, WITH "P" TRAP, CONNECTED TO PLUMBING IWR AS INDICATED ON DRAWINGS.
6. THE SYSTEM SHALL BE FULLY TESTED AND BALANCED UPON COMPLETION OF INSTALLATION.
7. TESTING AND BALANCING SHALL BE PROVIDED BY A COMPANY SPECIALIZING IN THE TESTING AND BALANCING OF HVAC SYSTEMS. THE TEST AND BALANCE COMPANY SHALL BE A MEMBER OF AABC OR NEBB. BALANCE AIRFLOWS TO WITHIN 10% OF SCHEDULED AIR FLOWS AT ALL DIFFUSERS. IF AIR FLOW CANNOT BE BALANCED TO 10% PERFORM UP TO TWO PITOT TUBE TRAVERSES, AS DIRECTED BY OWNERS REPRESENTATIVE TO DETERMINE THE CAUSE OF THE DEFICIENCY. SUBMIT THE BALANCING REPORT FOR REVIEW PRIOR TO FINAL INSPECTIONS.
8. PROVIDE 1/4" WELDED WIRE MESH SCREEN AT ALL OUTSIDE AIR INTAKE AND EXHAUST LOUVERS AND WHERE SHOWN ON DRAWINGS.
9. ALL EQUIPMENT PIPING, WIRING AND INSULATION ETC. INSTALLED IN HVAC AIR PLENUM SPACES SHALL MEET CODE REQUIREMENTS FOR SMOKE AND COMBUSTIBILITY
10. CONTROL WIRING FOR HVAC EQUIPMENT, WHETHER IT BE LINE OR LOW VOLTAGE, SHALL BE THE RESPONSIBILITY OF THE MECHANICAL/CONTROLS CONTRACTOR.
11. DESIGN CONDITIONS ARE AS FOLLOWS (PHILADELPHIA, PA):
    OUTDOOR SUMMER: 90.9 DEG DB, 74.0 DEG WB (ASHRAE 1%)
    INDOOR SUMMER: 75 DEG DB, 55% RH
    OUTDOOR WINTER: 14.5 DEG DB (ASHRAE 99.6%)
    INDOOR WINTER: 70 DEG DB

DUCTWORK SYMBOLOGY

SINGLE LINE	ACTUAL CONSTRUCTION
	ELBOW
	SPLIT OR TAKE-OFF B VOLUME DAMPER TO VAV TERMINAL UNIT A CONSTANT VOLUME SYSTEM VARIABLE VOLUME SYSTEM "X" DIMENSIONS SHALL BE 4" (10 CM) MINIMUM IF A OR B IS GREATER THAN 24" X 8" MINIMUM, VOLUME DAMPER SHALL BE IN SHORTER BRANCH.
	TAP TAKE-OFF VOLUME DAMPER VOLUME DAMPER SUPPLY AIR TERMINAL DEVICE RETURN / EXHAUST AIR TERMINAL DEVICE
	RISE OR DROP ELEVATION VIEW - OFFSET IN VERTICAL PLANE SHALL BE MADE WITH SMOOTH FITTINGS.
	TRANSITION MAXIMUM INCLUDED ANGLE OF TRANSITION SIDES IS 15°.
	HORIZONTAL OFFSET PLAN VIEW - OFFSET IN HORIZONTAL PLANE SHALL BE MADE WITH SMOOTH FITTINGS.
FLEX DUCT HAND DAMPER	FLEX DUCT FLEX DUCT HAND DAMPER
	NEW WORK

GENERAL ABBREVIATIONS

AC	AIR CONDITIONING	MTD	MOUNTED
ACV	AUTOMATIC CONTROL VALVE	N/A	NOT APPLICABLE
AD	ACCESS DOOR	NIC	NOT IN CONTRACT
ADDL	ADDITIONAL	NO	NUMBER
AFF	ABOVE FINISHED FLOOR	NTS	NOT TO SCALE
AHU	AIR HANDLING UNIT	OA	OUTSIDE AIR
AP	ACCESS PANEL	OD	OUTSIDE DIAMETER
ARCH	ARCHITECT	PD	PRESSURE DROP
BHP	BRAKE HORSEPOWER	PLBG	PLUMBING
BOD	BOTTOM OF DUCT	PSIA	POUNDS PER SQ INCH ABSOLUTE
CD	CEILING DIFFUSER	PSIG	POUNDS PER SQ INCH GAUGE
CFM	CUBIC FEET PER MINUTE	(R)	RELOCATED
CL	CENTERLINE	REG	REGISTER
CLG	CEILING	REQ'D	REQUIRED
CO	CLEAN-OUT	RG	RETURN GRILLE
COL	COLUMN	RH	RELATIVE HUMIDITY
CONN	CONNECTION	RM	ROOM
CONTR	CONTRACTOR	RPM	REVOLUTIONS PER MINUTE
DB	DRY BULB TEMPERATURE	SCH	SCHEDULE
DDC	DIRECT DIGITAL CONTROL	SF	SQUARE FOOT SPECS SPECIFICATIONS
DIA	DIAMETER OFF DIFFUSER	SR	SUPPLY REGISTER
DX	DIRECT EXPANSION	SUP	SUPPLY
EA	EACH	TEMP	TEMPERATURE
EAT	ENTERING AIR TEMPERATURE	TG	TRANSFER GRILLE
EFF	EFFICIENCY	TR	TRANSFER
EG	EXHAUST GRILLE	TYP	TYPICAL
ELEC	ELECTRICAL	UC	UNDERCUT DOOR
ESP	EXTERNAL STATIC PRESSURE	V	VENT
EWT	ENTERING WATER TEMPERATURE	VD	VOLUME DAMPER
EXH	EXHAUST	VFD	VARIABLE FREQUENCY DRIVE
FPM	FEET PER MINUTE	W	WIDTH
FT	FEET	W/	WITH
FURN	FURNISHED	WB	WET BULB TEMPERATURE
GAL	GALLONS	WWMS	WELD-WIRE MESH SCREEN (1/4")
GC	GENERAL CONTRACTOR	W/O	WITHOUT
GR	GRILLE	Ø	DIAMETER
HZ	HERTZ IN INCHES KW KILOWATT		
LAT	LEAVING AIR TEMPERATURE		
MECH	MECHANICAL		
MFR	MANUFACTURER		
MOD	MOTOR OPERATED DAMPER		
MIN	MINIMUM		

CALL OUT SYMBOLS

- REVISION NUMBER/INDICATES A REVISED FEATURE
- TEMPERATURE SENSOR OR THERMOSTAT
- AVG AVERAGING TEMPERATURE SENSOR OR THERMOSTAT
- S VARIABLE SPEED FAN SWITCH
- XXX XXX- EQUIPMENT ABBREVIATION. SEE BELOW

AHU	BUILT-UP HYDRONIC OR LARGE SPLIT (<5 TONS)
AH	SPLIT SYSTEM AIR HANDLER
AC	MINISPLIT INDOOR UNIT
B	BOILER
BB	HYDRONIC BASEBOARD HEATER
C	CONDENSER
CH	CHILLER
CRAC	COMPUTER ROOM AIR CONDITIONING UNIT
CT	COOLING TOWER
CU	CONDENSING UNIT
CDP	CONDENSATE PUMP
DOAS	DEDICATED OUTSIDE AIR UNIT
EF	EXHAUST FAN
EH	ELECTRIC HEATER
ERU	ENERGY RECOVERY UNIT
FCU	FAN COIL UNIT
FPB	FAN POWERED VAV BOX
GF	GAS-FIRED FURNACE

HVAC LEGEND

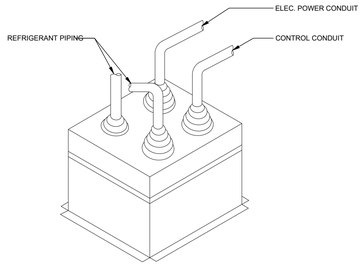
- MOD/2D MOTOR OPERATED DAMPER/ ZONE DAMPER
- HD HAND DAMPER
- FSD COMBINATION FIRE SMOKE DAMPER
- FD SELF-CLOSING FIRE DAMPER W/ ACCESS DOOR
- SD SMOKE DAMPER WITH ACCESS DOOR
- BLANKED FOR 3-WAY BLOW SUPPLY DIFFUSER
- OR BLANKED FOR 2-WAY BLOW SUPPLY DIFFUSER
- 1-WAY BLOW SUPPLY DIFFUSER
- UC UNDERCUT DOOR
- LVR LOUVERED DOOR
- RETURN OR EXHAUST AIR FLOW
- SUPPLY AIR FLOW
- EXHAUST FAN
- NEW CONNECTION TO EXISTING
- TERMINATION OF DEMOLITION

MECHANICAL DUCTWORK NOTES

1. ALL DUCTWORK SHALL BE IN ACCORDANCE WITH SMACNA (SHEET METAL AND AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION) STANDARDS.
2. PRIOR TO COMMENCING THE WORK, SHEET METAL SHOP DRAWINGS MUST BE PREPARED AND SUBMITTED FOR REVIEW AND APPROVAL TO THE ARCHITECT/ENGINEER. SHEET METAL SHOP DRAWINGS SHALL INCLUDE ALL ELEMENTS OF THE EQUIPMENT, DUCTWORK, AIR DEVICES AND REFLECTED CEILING PLAN FOR COORDINATION OF CRITICAL DIMENSIONS OF ARCHITECTURAL/ STRUCTURAL COMPONENTS.
3. SHEET METAL FITTINGS SHOWN ARE TO BE PROVIDED. NO SUBSTITUTIONS ALLOWED WITHOUT PRIOR CONSENT FROM ENGINEER AND WILL BE REQUIRED TO BE REPLACED IF INSTALLED.
4. RUN DUCTS AND PIPING CONCEALED, UNLESS SPECIFIED OTHERWISE AND CLEAR OF CEILING INSERTS. ALL DUCTWORK SHALL BE INSTALLED AS CLOSE AS POSSIBLE TO WALL AND UNDERSIDE OF BEAMS AND JOISTS.
5. ALL WORK SHALL BE COORDINATED WITH ALL TRADES INVOLVED. OFFSETS IN PIPING AND DUCTS (INCLUDING DIVIDED DUCTS) AND TRANSITIONS AROUND OBSTRUCTIONS SHALL BE PROVIDED AT NO ADDITIONAL COST TO THE OWNER.
6. VERIFY ALL EQUIPMENT CONNECTIONS WITH MANUFACTURERS CERTIFIED DRAWINGS. VERIFY AND PROVIDE DUCT TRANSITIONS TO EQUIPMENT. FIELD VERIFY AND COORDINATE ALL DIMENSIONS BEFORE FABRICATING.
7. ACCESS PANELS SHOULD BE PROVIDED TO CLEAN COILS AND SERVICE DAMPERS, HEATERS, VALVES AND ALL CONCEALED MECHANICAL EQUIPMENT.
8. SUPPORT ALL EQUIPMENT, PIPING AND DUCTWORK FROM BUILDING STRUCTURE TO PROVIDE A VIBRATION FREE INSTALLATION. NOTIFY STRUCTURAL ENGINEER OF ALL WEIGHTS AND METHODS OF SUPPORT.
9. REFER TO ARCHITECTURAL REFLECTED CEILING PLANS FOR EXACT LOCATIONS OF AIR TERMINAL DEVICES.
10. INTERNAL AIR FLOW DIMENSIONS ARE SHOWN FOR DUCTS. CONTRACTOR SHALL INCREASE SIZE FOR LINER IF APPLICABLE.
11. PROVIDE FLEXIBLE CONNECTIONS ON ALL DUCTS CONNECTING TO VAVS, FANS, AND AIR HANDLING UNITS.
12. THE INSIDE OF ALL UNLINED DUCTWORK VISIBLE THROUGH A GRILLE SHALL BE PAINTED FLAT BLACK.
13. INSULATE OUTSIDE AIR, SUPPLY, RETURN AIR DUCTS AND PLENUMS WITH MINIMUM OF R-6 INSULATION. SUPPLY, RETURN, OUTSIDE AIR AND EXHAUST DUCTWORK LOCATED IN UNCONDITIONED SPACES AND OUTSIDE THE BUILDING SHALL BE INSULATED WITH A MINIMUM OF R-12 INSULATION. DUCT-WRAP SHALL BE FIBROUS GLASS DUCT-WRAP WITH FOIL-CRAFT FLAME RESISTANT VAPOR BARRIER. ON EXTERIOR DUCTWORK PROVIDE ALUMINUM WATERPROOF MEMBRANE OVER DUCT INSULATION. INSULATION SHALL BE FIRE RATED IN ACCORDANCE WITH ASHRAE (AMERICAN SOCIETY OF HEATING, REFRIGERATING AND AIR CONDITIONING ENGINEERS) 90A, 50/25 SMOKE DEVELOPMENT AND FLAME SPREAD REQUIREMENTS. EXCEPTIONS FOR DUCT INSULATION SHALL BE IF THE DUCTWORK IS LOCATED WITHIN EQUIPMENT AND WHERE THE DESIGN TEMPERATURE DIFFERENCE BETWEEN THE INTERIOR AND EXTERIOR OF THE DUCT OR PLENUM IS NOT GREATER THAN 15 DEGREES F. DUCTWORK SHALL BE WRAPPED INSULATION UNLESS OTHERWISE NOTED.
14. FLEXIBLE DUCT IS ALLOWABLE ON SUPPLY AIR SYSTEMS ONLY. MAXIMUM LENGTH OF FLEXIBLE DUCT SHALL NOT EXCEED 10 FEET. FLEXIBLE DUCT SHALL BE FABRIC COVERED GALVANIZED STEEL HELIX MECHANICALLY LOCKED TO THE FABRIC. THE FABRIC SHALL BE A LAMINATE OF ALUMINUM FOIL FIBERGLASS & ALUMINIZED POLYESTER RATED AT 5500 RPM WITH FLEX-MASTER USA TYPE 3 OR EQUAL. 1" EXTERNAL FIBERGLASS R-6 INSULATION AND VAPOR BARRIER JACKET. SUPPLY AIR SYSTEMS ABOVE NON-ACCESSIBLE CEILINGS AND ALL RETURN, EXHAUST, AND OUTSIDE AIR DUCTWORK SHALL BE HARD DUCTED.
15. THOROUGHLY CLEAN ALL NEW DUCTWORK AFTER INSTALLATION.
16. NO DUCTWORK SHALL BE LOCATED ABOVE ELECTRICAL PANELS/GEAR.
17. VOLUME DAMPERS SHALL BE PROVIDED AT THE BRANCH TAKE-OFF OF THE MAIN.
18. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION.
19. DUCTWORK SCHEDULE
    A. LOW PRESSURE - ALL OTHER SUPPLY, RETURN EXHAUST AND OUTSIDE AIR DUCTWORK TO BE 2" CONSTRUCTION, 2" STATIC, LEAKAGE CLASS B, SEAL CLASS 12. MATERIAL TO BE GALVANIZED STEEL UNLESS NOTED OTHER WISE.
    B. FURNACE/WATER HEATING VENTING- CPVC ON MANUFACTURERS APPROVED MATERIAL
20. ALL DUCTWORK AND VENTS CONNECTED TO EXTERIOR LOUVERS SHALL BE SLOPED TOWARD THE LOUVER.

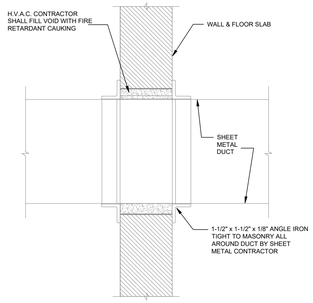
GAS FIRED SPLIT SYSTEM HVAC UNIT SCHEDULE (GF / CU)

UNIT NO.	TYPE	SERVICE	NOM. TONS	SEER/ EER	INDOOR CFM	MIN. OA CFM	ESP	HEATING (GAS) 1ST STAGE INPUT MBH	1ST STAGE OUTPUT MBH	2ND STAGE INPUT MBH	2ND STAGE OUTPUT MBH	FUR. EFF	ELECTRICAL CHARACTERISTICS VOLT / PH	FLA GF	FLA CU	MCA GF	MCA CU	MOCP GF	MOCP CU	MFGR FURN. COIL	MFGR CU	MODEL NO. AHU	MODEL NO. CU	WEIGHT LBS GF	WEIGHT LBS CU	REMARKS
GF 1-1 / CU 1-1	SPLIT SYSTEM W/ DX HEAT PUMP	BASEMENT, 1ST	5.0	16	1950	315	1.0	60.0	51.8	1.00	26.9	1.30	65.00	63.05	100.00	97.00	99.49	96 AFUE	120V/1Ø	10.6	13.3	15	60	TRANE	TRANE	5V80 FURNACE 4TXCB DX COIL	4TTR6	145/57	275	1 2 3
													208V/1Ø	6.1	7.6	8.0	10.0	15	60							
GF 3-1 / CU 3-1	SPLIT SYSTEM W/ DX HEAT PUMP	2ND FLOOR	4.0	16	1600	235	1.0	48.0	38.4	0.75	20.4	2.80	39.0	37.83	60.00	58.20	99.49	96 AFUE	120V/1Ø	8.26	10.3	15	45	TRANE	TRANE	5V80 FURNACE 4TXCB DX COIL	4TTR6	120/50	259	1 2 3
													208V/1Ø	14.91	28.0

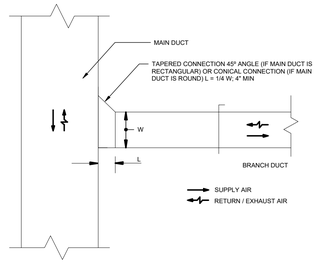


NOTE:
PROVIDE QUATITY/SIZE OF PIPE/CONDUIT OPENING AS REQUIRED.
COORDINATE WITH OTHER TRADES.

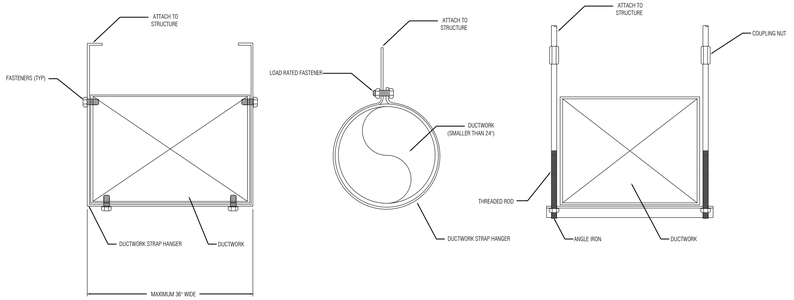
1 DETAIL OF PIPING AND CONDUITS THRU ROOF
SCALE: NONE



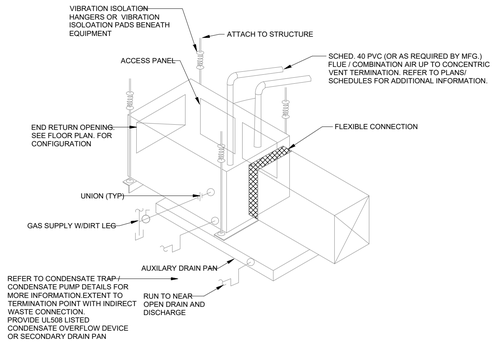
2 DETAIL OF DUCT PIERCING WALLS
SCALE: NONE



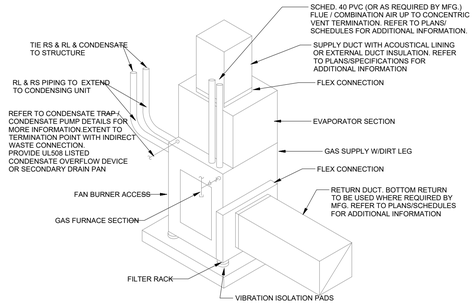
3 DUCT TAKE-OFF
SCALE: NONE



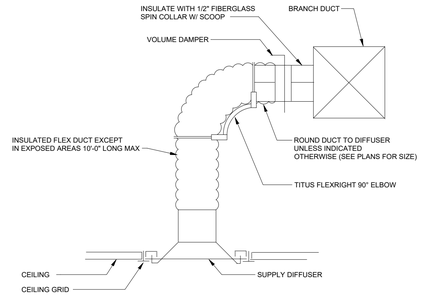
4 DUCTWORK HANGER DETAIL
SCALE: NONE



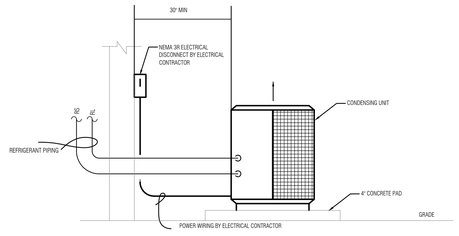
5 DETAIL - HORIZONTAL FURNACE
SCALE: NONE



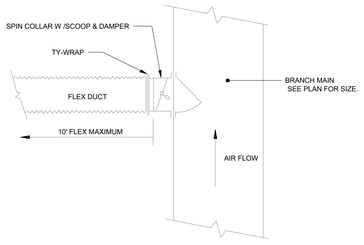
6 DETAIL - VERTICAL GAS FURNANCE W/DX COIL
SCALE: NONE



7 DETAIL - TYPICAL SUPPLY TAKEOFF AND DIFFUSER
SCALE: NONE



8 DETAIL OF CONDENSING UNIT ON GRADE
SCALE: NONE

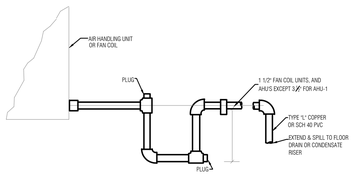


9 DETAIL - TYPICAL FLEX DUCT TAKEOFF
SCALE: NONE

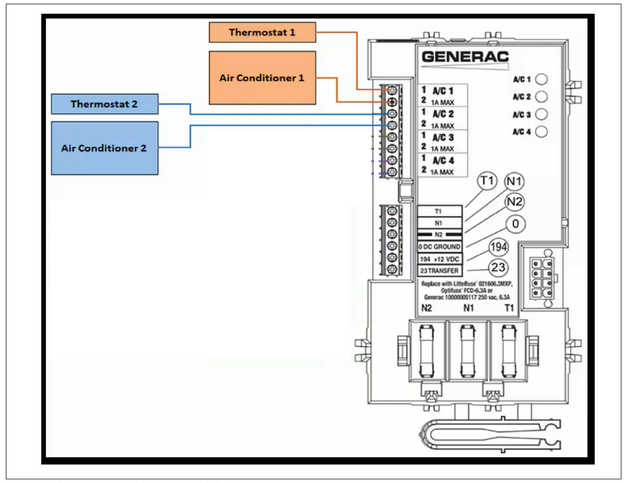
GENERAL NOTES:

1. CONTRACTOR IS RESPONSIBLE FOR CONFIRMING ANY SUBSTITUTIONS TO BOD ARE CAPABLE OF MEETING PROJECT CONSTRAINTS (IE HEIGHT DIFFERENTIAL AND TOTAL DISTANCE BETWEEN INDOOR AND OUTDOOR UNITS).
2. CONTRACTOR IS RESPONSIBLE FOR SELECTING REFRIGERANT LINE SIZES WITH MANUFACTURER FOR EACH UNIT TO ENSURE COMPLIANCE WITH INSTALLATION MANUAL REQUIREMENTS. OVERALL LENGTH, ELEVATION CHANGE, AND CAPACITY OF SYSTEM SHALL BE CONSIDERED WHEN PIPE SIZING IS BEING PERFORMED.
3. CONTRACTOR SHALL PROVIDE ANY ADDITIONAL ACCESSORIES/ INSTALLATION PROCEDURES (IE REFRIGERANT TRAPS) REQUIRED BY MANUFACTURER.
4. CONTRACTOR SHALL MAINTAIN ALL REQUIRED SERVICE AND AIRFLOW CLEARANCES AS RECOMMENDED BY EQUIPMENT INSTALLATION MANUAL.
5. FOR INSTALLATION OF MULTIPLE OUTDOOR UNITS, MAINTAIN EQUIPMENT INSTALLATION MANUAL RECOMMENDED CLEARANCES.
6. REFER TO CONDENSING UNIT AND AIR HANDLING UNIT DETAILS FOR ADDITIONAL INSTALLATION REQUIREMENTS.
7. CONTACT ENGINEER WITH ANY QUESTIONS/CONCERNS APPLICABLE TO REFRIGERANT LINE SIZING AND CONFIGURATION PRIOR TO ROUGH-IN.

10 DETAIL - REFRIGERANT PIPING
SCALE: NONE



11 DETAIL OF CONDENSATE TRAP
SCALE: NONE



12 DETAIL - SACM HVAC LOAD MANAGEMENT WIRING
SCALE: NONE

LINN ARCHITECTS
ARCHITECTURE
ENGINEERING
SITE PLANNING
CODE SERVICES
1140 N. PROVIDENCE ROAD
MEDIA, PENNSYLVANIA 19063
TEL: 610-566-7044
FAX: 610-566-3258

ADVANCED ENGINEERING INC
550 Pennell Road | Media PA 19063
Project No. 23028

MECHANICAL DETAILS

BUILDING RENOVATIONS
AIDS CARE GROUP
2304 EDGMONT AVENUE
CHESTER, PA 19013

REVISIONS NO.	DESCRIPTION	DATE
0	BID SET	08/09/24

DATE: 08/09/24
SCALE: AS NOTED
DRAWN BY: JH
CHECKED BY: EE
PROJ. NO.: 23028

SHEET NO.
M-1.1

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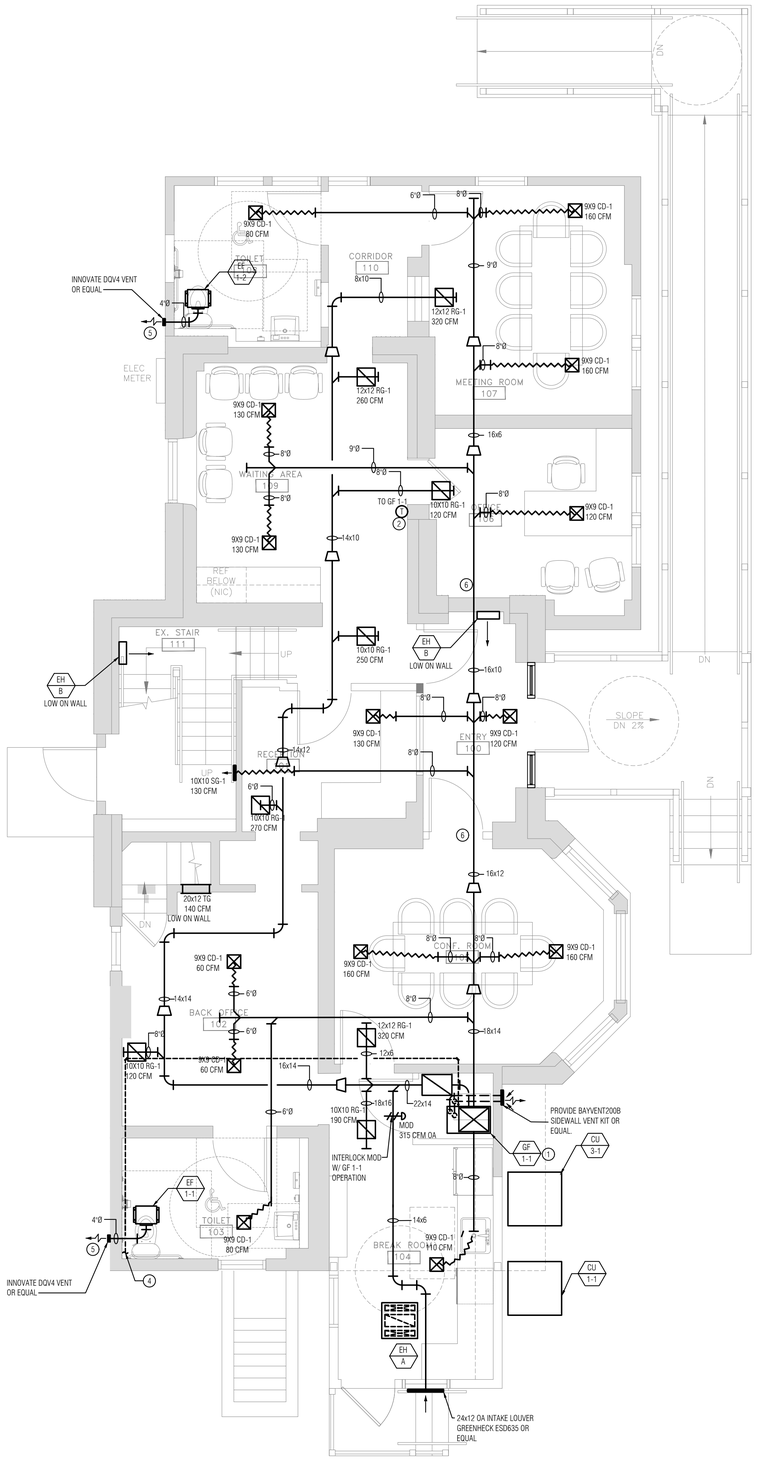
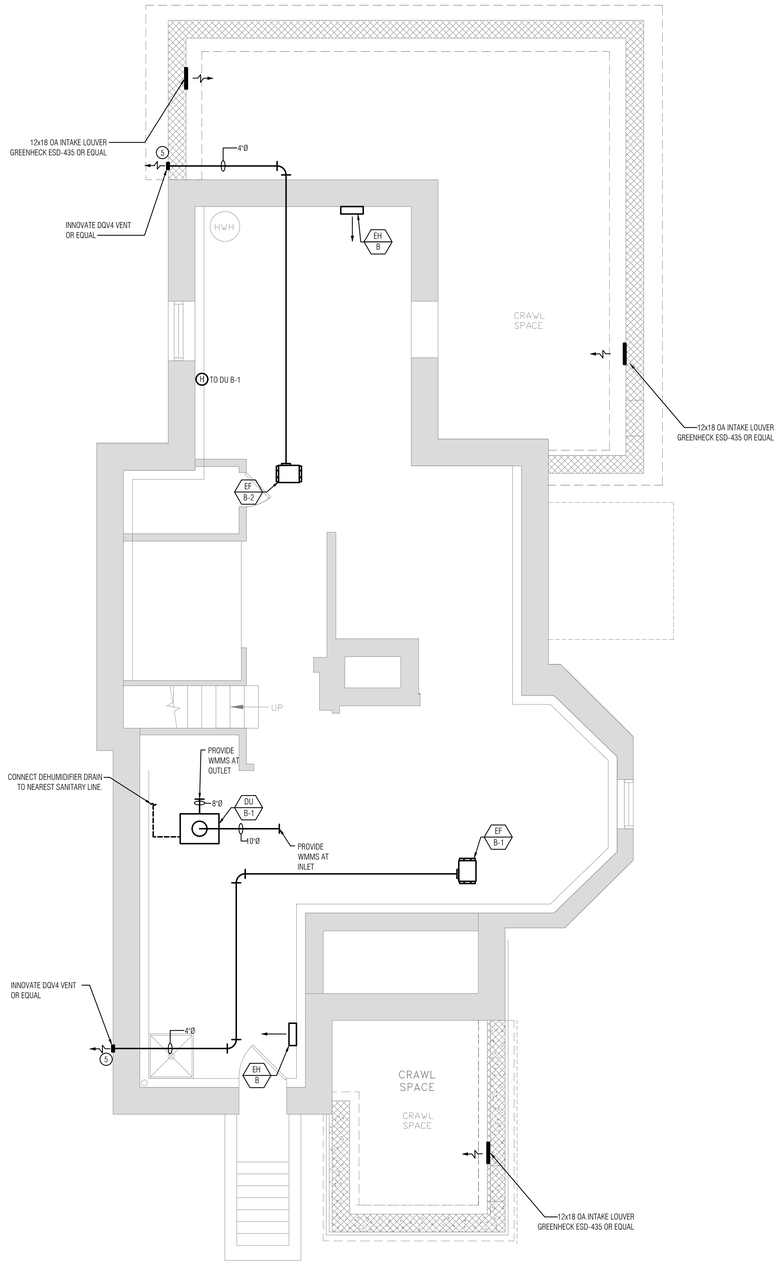


2 FIRST FLOOR PLAN
M-2 SCALE - 1/4" = 1'-0"



1 BASEMENT FLOOR PLAN
M-2 SCALE - 1/4" = 1'-0"

GENERAL MECHANICAL CONSTRUCTION NOTES

1. IN INACCESSIBLE CEILINGS PROVIDE INTEGRAL OPPOSED BLADE DAMPERS AT ALL AIR DEVICES. FINAL SUPPLY AIR DEVICE BALANCING SHALL BE PERFORMED VIA INTEGRAL AIR DEVICE. IN ACCESSIBLE CEILINGS PROVIDE HAND DAMPERS AT BRANCH DUCTS OFF OF MAINS FOR BALANCING.
2. ALL DIFFUSERS AND REGISTERS LOCATED IN TOILET ROOMS SHALL BE ALUMINUM CONSTRUCTION.
3. ALL RETURN/EXHAUST REGISTERS SHALL HAVE 45° FIXED BLADES.
4. ALL DUCT SIZES ARE INSIDE DUCT DIMENSIONS.
5. REFER TO ARCHITECTURAL ELEVATIONS FOR EXTERIOR TERMINATION LOCATIONS.
6. REFER TO ARCHITECTURAL PLANS FOR FINAL AIR DEVICE LOCATIONS.

MECHANICAL SHEET NOTES:

1. REFRIGERANT PIPING TO CONDENSING UNITS ON DECK. SIZE AND ROUTE REFRIGERANT PIPING PER MANUFACTURER'S RECOMMENDATIONS.
2. COORDINATE THERMOSTAT LOCATION WITH OWNER PRIOR TO ROUGH-IN
3. SUPPLY AND RETURN DUCTWORK FROM GF 3-1 WILL RUN TIGHT TO 3RD LEVEL FLOOR AND DROP TO 2ND FLOOR AIR TERMINALS.
4. CONNECT 3 /4 " CONDENSATE TO IWR. SEE PLUMBING FLOOR PLANS FOR DETAILS.
5. COORDINATE FINAL LOCATION, COLOR AND FINISH OF EXHAUST TERMINATION WITH ARCHITECT.
6. COORDINATE PENETRATIONS THROUGH EXISTING STONE WALLS.

BRANCH/ FLEX DUCT SIZING SCHEDULE

DUCT SIZE	CFM RANGE	REMARK
6'Ø	0-100	MAX 10' LENGTH. FLEX DUCTWORK APPROVED ON SUPPLY SYSTEMS ONLY.RETURN AND EXHAUST TO BE HARD DUCTED.
8'Ø	101-200	
10'Ø	201-300	
12'Ø	301-500	

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550 Pennell Road | Media PA 19063
Project No. 23028

MECHANICAL FLOOR PLANS

BUILDING RENOVATIONS
AIDS CARE GROUP

2304 EDGMONT AVENUE
CHESTER, PA 19013

REVISIONS NO.	DESCRIPTION	DATE
0	BID SET	08/09/24

DATE: 08/09/24
SCALE: AS NOTED
DRAWN BY: JH
CHECKED BY: EE
PROJ. NO.: 23028

SHEET NO.
M-2

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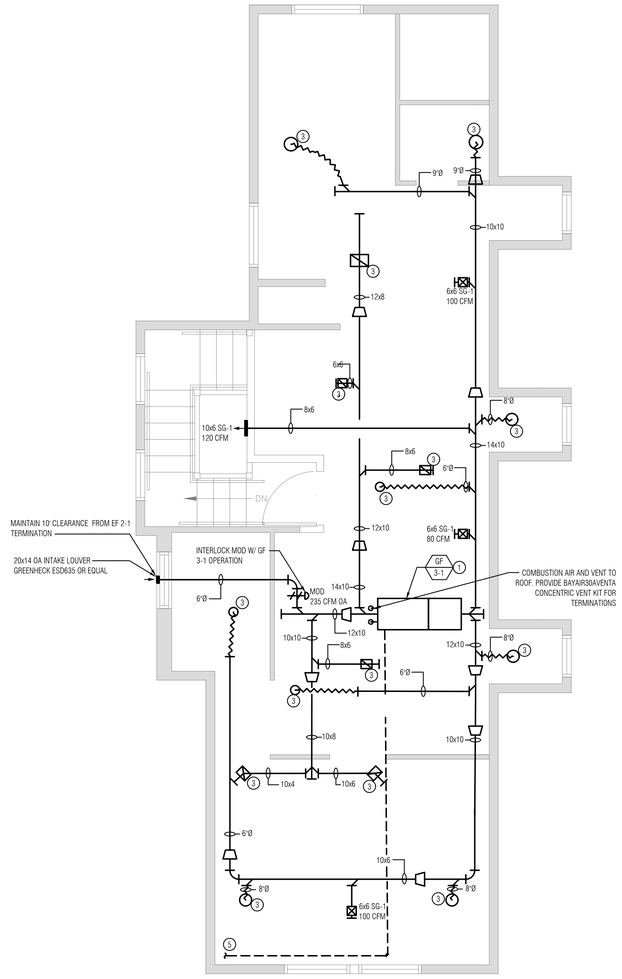
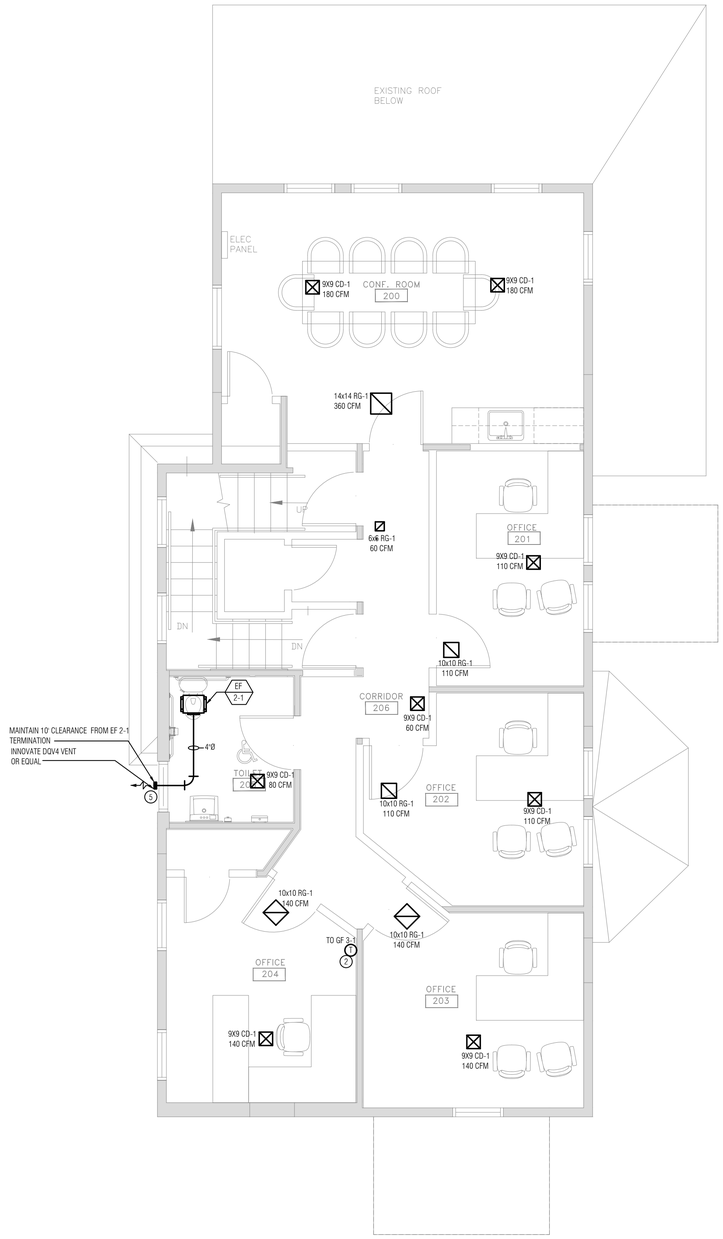


2 THIRD FLOOR PLAN
M-3 SCALE - 1/4" = 1'-0"



1 SECOND FLOOR PLAN
M-3 SCALE - 1/4" = 1'-0"

GENERAL MECHANICAL CONSTRUCTION NOTES

1. IN INACCESSIBLE CEILINGS PROVIDE INTEGRAL OPPOSED BLADE DAMPERS AT ALL AIR DEVICES. FINAL SUPPLY AIR DEVICE BALANCING SHALL BE PERFORMED VIA INTEGRAL AIR DEVICE. IN ACCESSIBLE CEILINGS PROVIDE HAND DAMPERS AT BRANCH DUCTS OFF OF MAINS FOR BALANCING.
2. ALL DIFFUSERS AND REGISTERS LOCATED IN TOILET ROOMS SHALL BE ALUMINUM CONSTRUCTION.
3. ALL RETURN/EXHAUST REGISTERS SHALL HAVE 45° FIXED BLADES.
4. ALL DUCT SIZES ARE INSIDE DUCT DIMENSIONS.
5. REFER TO ARCHITECTURAL ELEVATIONS FOR EXTERIOR TERMINATION LOCATIONS.
6. REFER TO ARCHITECTURAL PLANS FOR FINAL AIR DEVICE LOCATIONS.

MECHANICAL SHEET NOTES:

1. REFRIGERANT PIPING TO CONDENSING UNITS ON DECK. SIZE AND ROUTE REFRIGERANT PIPING PER MANUFACTURER'S RECOMMENDATIONS.
2. COORDINATE THERMOSTAT LOCATION WITH OWNER PRIOR TO ROUGH-IN
3. SUPPLY AND RETURN DUCTWORK FROM GF 3-1 WILL RUN TIGHT TO 3RD LEVEL FLOOR AND DROP TO 2ND FLOOR AIR TERMINALS.
4. CONNECT 3 /4 " CONDENSATE TO IWR. SEE PLUMBING FLOOR PLANS FOR DETAILS.
5. COORDINATE FINAL LOCATION, COLOR AND FINISH OF EXHAUST TERMINATION WITH ARCHITECT.
6. COORDINATE PENETRATIONS THROUGH EXISTING STONE WALLS.

BRANCH/ FLEX DUCT SIZING SCHEDULE

DUCT SIZE	CFM RANGE	REMARK
6'Ø	0-100	MAX 10' LENGTH. FLEX DUCTWORK APPROVED ON SUPPLY SYSTEMS ONLY. RETURN AND EXHAUST TO BE HARD DUCTED.
8'Ø	101-200	
10'Ø	201-300	
12'Ø	301-500	

LINN ARCHITECTS
ARCHITECTURE
ENGINEERING
SITE PLANNING
CODE SERVICES
1140 N. PROVIDENCE ROAD
MEDIA, PENNSYLVANIA 19063
TEL: 610-566-7044
FAX: 610-566-3258

ADVANCED ENGINEERING INC
550 Pennell Road | Media PA 19063
Project No. 23028

MECHANICAL FLOOR PLANS

BUILDING RENOVATIONS
AIDS CARE GROUP

2304 EDGMONT AVENUE
CHESTER, PA 19013

REVISIONS NO.	DESCRIPTION	DATE
0	BID SET	08/09/24

DATE: 08/09/24
SCALE: AS NOTED
DRAWN BY: JH
CHECKED BY: EE
PROJ. NO.: 23028

SHEET NO.
M-3

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SECTION 23 05 00 MECHANICAL SUPPLEMENTAL CONDITIONS

1. **GENERAL**
   - A. DEFINITIONS
     - I. AS USED IN THE DRAWINGS AND SPECIFICATIONS, "PROVIDE" MEANS "FURNISH AND INSTALL". "FURNISH" MEANS "TO PURCHASE AND DELIVER TO THE PROJECT SITE COMPLETE WITH EVERY NECESSARY APPURTENANCE AND SUPPORT," AND "INSTALL" MEANS "TO UNLOAD AT THE DELIVERY POINT AT THE SITE AND PERFORM EVERY OPERATION NECESSARY TO ESTABLISH SECURE MOUNTING AND CORRECT OPERATION AT THE PROPER LOCATION IN THE PROJECT".
     - II. MATERIAL AND EQUIPMENT SHALL BE LISTED BY UNDERWRITERS' LABORATORIES (UL), AND APPROVED BY ASME, ANSI AND ASTM FOR INTENDED SERVICE. MATERIALS NOT LISTED WITH UL RATING AND PART OF UL ASSEMBLY ARE NOT ACCEPTABLE FOR INSTALLATION. CONTRACTOR IS RESPONSIBLE FOR CONFIRMING UL RATING OF ALL MATERIALS.
2. **SCOPE**
   - A. PERFORM WORK AND PROVIDE MATERIAL AND EQUIPMENT AS SHOWN ON DRAWINGS AND/OR AS SPECIFIED AND/OR INDICATED IN THIS DIVISION OF THE SPECIFICATIONS. COMPLETELY COORDINATE WORK OF THE DIVISION WITH WORK OF OTHER TRADES AND PROVIDE A COMPLETE AND FULLY FUNCTIONAL INSTALLATION.
   - B. DRAWINGS AND SPECIFICATIONS FORM COMPLIMENTARY REQUIREMENTS; PROVIDE WORK SPECIFIED AND NOT SHOWN, AND WORK SHOWN AND NOT SPECIFIED AS THOUGH EXPLICITLY REQUIRED BY BOTH. ALTHOUGH WORK IS NOT SPECIFICALLY SHOWN OR SPECIFIED, PROVIDE SUPPLEMENTARY OR MISCELLANEOUS ITEMS, APPURTENANCES, DEVICES AND MATERIALS OBVIOUSLY NECESSARY FOR A SOUND, SECURE AND COMPLETE INSTALLATION.
   - C. GIVE NOTICES, FILE PLANS, OBTAIN PERMITS AND LICENSES, PAY FEES AND BACK CHARGES, AND OBTAIN NECESSARY APPROVALS FROM AUTHORITIES THAT HAVE JURISDICTION AS REQUIRED TO PERFORM WORK IN ACCORDANCE WITH ALL LEGAL REQUIREMENTS AND WITH SPECIFICATIONS, DRAWINGS, ADDENDA AND CHANGE ORDERS, ALL OF WHICH ARE PART OF CONTRACT DOCUMENTS.
3. **CONTRACT DOCUMENTS**
   - A. LISTING OF DRAWINGS DOES NOT LIMIT RESPONSIBILITY OF DETERMINING FULL EXTENT OF WORK REQUIRED BY THESE CONTRACT DOCUMENTS. REFER TO ARCHITECTURAL, HVAC, FIRE PROTECTION, PLUMBING, ELECTRICAL, STRUCTURAL AND ALL OTHER DRAWINGS AND OTHER DIVISIONS THAT INDICATE TYPES OF CONSTRUCTION IN WHICH WORK SHALL BE INSTALLED AND WORK OF OTHER TRADES WITH WHICH WORK OF THIS DIVISION MUST BE COORDINATED.
   - B. EXCEPT WHERE MODIFIED BY A SPECIFIC NOTATION TO THE CONTRARY, IT SHALL BE UNDERSTOOD THAT THE INDICATION AND/OR DESCRIPTION OF ANY ITEM, IN THE DRAWINGS OR SPECIFICATIONS OR BOTH, CARRIES WITH IT THE INSTRUCTION TO FURNISH AND INSTALL THE ITEM, REGARDLESS OF WHETHER OR NOT THIS INSTRUCTION IS EXPLICITLY STATED AS PART OF THE INDICATION OR DESCRIPTION.
4. **DISCREPANCY IN DOCUMENTS**
   - A. WHERE DRAWINGS OR SPECIFICATIONS CONFLICT OR ARE UNCLEAR, ADVISE ARCHITECT/ENGINEER IN WRITING BEFORE AWARD OF CONTRACT. OTHERWISE, ARCHITECT/ENGINEERS INTERPRETATION OF CONTRACT DOCUMENTS SHALL BE FINAL AND NO ADDITIONAL COMPENSATION SHALL BE PERMITTED DUE TO DISCREPANCIES OR UNCLARITIES THUS RESOLVED.
   - B. WHERE DRAWINGS OR SPECIFICATIONS DO NOT COINCIDE WITH MANUFACTURERS' RECOMMENDATIONS, OR WITH APPLICABLE CODES AND STANDARDS, ALERT ARCHITECT/ENGINEER IN WRITING BEFORE INSTALLATION. OTHERWISE, MAKE CHANGES IN INSTALLED WORK AS ARCHITECT REQUIRES WITHIN CONTRACT PRICE.
5. **MODIFICATIONS IN LAYOUT**
   - A. MAINTAIN MAXIMUM HEADROOM AT ALL LOCATIONS. ALL PIPING, DUCT, CONDUIT, AND ASSOCIATED COMPONENTS TO BE AS TIGHT TO UNDERSIDE OF STRUCTURE AS POSSIBLE.
   - B. WHERE CONFLICTS OR POTENTIAL CONFLICTS EXIST AND ENGINEERING GUIDANCE IS DESIRED, SUBMIT SKETCH OR PROPOSED RESOLUTION TO ENGINEERS FOR REVIEW AND APPROVAL
6. **RECORD DRAWINGS**
   - A. AS WORK PROGRESSES AND FOR DURATION OF CONTRACT, MAINTAIN COMPLETE AND SEPARATE SET OF PRINTS OF CONTRACT DRAWINGS AT JOB SITE AT ALL TIMES. RECORD WORK COMPLETED AND ALL CHANGES FROM ORIGINAL CONTRACT DRAWINGS CLEARLY AND ACCURATELY INCLUDING WORK INSTALLED AS A MODIFICATION OR ADDITION TO THE ORIGINAL DESIGN. INCLUDE ACTUAL LOCATION OF EXISTING UTILITIES IF THEY DIFFER FROM DESIGN DOCUMENTS. RECORD VALVE TAGS AS THEY ARE INSTALLED. RECORDS TO BE KEPT VIA AUTOCAD/REVIT.
   - B. THE ENGINEER WILL NOT CERTIFY THE ACCURACY OF THE RECORD DRAWINGS - THIS IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
7. **MANUALS, OPERATING INSTRUCTIONS & PROTECTION**
   - A. OBTAIN AT TIME OF PURCHASE OF EQUIPMENT, THREE (3) COPIES OF OPERATION, LUBRICATION AND MAINTENANCE MANUALS FOR ALL ITEMS. ASSEMBLE LITERATURE IN COORDINATED MANUALS WITH ADDITIONAL INFORMATION DESCRIBING COMBINED OPERATION OF FIELD ASSEMBLED UNITS, INCLUDING AS-BUILT WIRING DIAGRAMS. MANUAL SHALL CONTAIN NAMES AND ADDRESSES OF MANUFACTURERS AND LOCAL REPRESENTATIVES WHO STOCK OR FURNISH REPAIR PARTS FOR ITEMS OR EQUIPMENT.
   - B. OPERATING INSTRUCTIONS: UPON COMPLETION OF INSTALLATION, OR WHEN OWNER ACCEPTS PORTIONS OF BUILDING AND EQUIPMENT FOR OPERATIONAL USE, INSTRUCT OWNER'S OPERATING PERSONNEL IN ANY OR ALL PARTS OF ALL SYSTEMS. INSTRUCTIONS SHALL BE PERFORMED BY FACTORY-TRAINED PERSONNEL. OWNER SHALL DETERMINE WHICH SYSTEMS REQUIRE ADDITIONAL INSTRUCTIONS. DURATION OF INSTRUCTIONS SHALL TAKE EQUIPMENT THROUGH COMPLETE CYCLE OF OPERATION (AT LEAST FIVE WORKING DAYS). MAKE ADJUSTMENTS UNDER OPERATING CONDITIONS.
8. **SUBMITTALS**
   - A. PROVIDE A SUBMITTAL COVER SHEET AS SHOWN ON THE FOLLOWING PAGE FOR EACH ITEM SUBMITTED, COMPLETELY FILLED OUT. DO NOT PROVIDE ONE SHEET FOR MULTIPLE SUBMISSIONS.
   - B. PROVIDE PRODUCT DATA FOR ALL EQUIPMENT SHOWN ON DRAWINGS OR SCHEDULED, PREPARED BY MANUFACTURERS, SUPPLIERS AND VENDORS INCLUDING, BUT NOT LIMITED TO:
     - I. DETAILED DIMENSIONAL DRAWINGS.
     - II. ACCURATE AND COMPLETE DESCRIPTION OF MATERIALS OF CONSTRUCTION.
     - III. INSTALLATION DETAILS.
     - IV. MANUFACTURER'S PUBLISHED PERFORMANCE CHARACTERISTICS AND CAPACITY RATING (PERFORMANCE DATA, ALONE, IS NOT ACCEPTABLE).
     - V. ELECTRICAL REQUIREMENTS AND WIRING DIAGRAMS. DRAWINGS SHALL CLEARLY INDICATE LOCATION (TERMINAL BLOCK OR WIRE NUMBER), VOLTAGE AND FUNCTION FOR ALL FIELD TERMINATIONS.
   - C. SUBMITTALS SHALL CONTAIN INFORMATION SPECIFIC TO SYSTEM, EQUIPMENT, AND MATERIALS REQUIRED BY CONTRACT DOCUMENTS FOR THIS PROJECT ONLY. DO NOT SUBMIT CATALOGS THAT DESCRIBE PRODUCTS, MODELS, OPTIONS OR ACCESSORIES OTHER THAN THOSE REQUIRED, UNLESS IRRELEVANT INFORMATION IS MARKED OUT OR UNLESS RELEVANT INFORMATION IS HIGHLIGHTED CLEARLY.
9. **METHOD OF PROCEDURE**
   - A. THE DRAWINGS ACCOMPANYING THE SPECIFICATIONS ARE DIAGRAMMATIC AND INTENDED TO COVER THE APPROXIMATE AND RELATIVE LOCATIONS OF THE HEATING, VENTILAITNG, PLUMBING AND DRAINAGE, AND FIRE PROTECTION AND COMPONENTS.
   - B. INSTALLATION, CONNECTION AND INTERCONNECTION OF ALL COMPONENTS OF THESE SYSTEMS SHALL BE COMPLETE AND MADE IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS AND BEST PRACTICES OF EACH TRADE.
   - C. CONTRACTORS SHALL CONFER BETWEEN THEMSELVES AND EACH CONTRACTOR SHALL LAY OUT HIS OWN WORK AND BE RESPONSIBLE FOR THE ESTABLISHMENTS OF HEIGHTS, GRADES, ETC., FOR ALL INTERIOR AND EXTERIOR PIPING, DRAINS, FIXTURES, DUCT WORK, ETC., IN STRICT ACCORDANCE WITH THE DRAWINGS AND SPECIFICATIONS, AND ALL PHYSICAL CONDITIONS TO BE MET AT THE BUILDING AND SHALL BE RESPONSIBLE FOR ACCURACY THEREOF. IN CASE OF CONFLICT, EQUIPMENT SHALL BE RELOCATED WITHOUT COST TO THE OWNER, AS DIRECTED BY THE ENGINEER.
   - D. EXTRAORDINARY CARE SHALL BE USED IN THE ERECTION AND INSTALLATION OF ALL EQUIPMENT AND MATERIALS TO AVOID MARRING SURFACES OF THE WORK OF OTHER CONTRACTORS, OR OF FINISH WORK PRESENTLY IN THE BUILDING, EACH CONTRACTOR WILL BE HELD FINANCIALLY RESPONSIBLE FOR ALL SUCH INJURY CAUSED BY LACK OF PRECAUTION AND DUE TO NEGLIGENCE ON THE PART OF HIS WORKMEN.
10. **SHOP DRAWINGS**
    - A. COORDINATION DRAWINGS MUST BE PREPARED. EACH TRADE IS (HVAC, PLUMBING, ELECTRIC, AND FIRE PROTECTION) IS RESPONSIBLE FOR DOCUMENTING THEIR WORK AND CREATING AN OVERLAY OF DRAWINGS TO LOCATE DISCREPANCIES IN CAD/3D BIM. LOCATION AND ELEVATION OF THE RESPECTIVE DISCIPLINE'S WORK MUST BE SHOWN ON THE COORDINATION DRAWINGS. PLAN FOR WEEKLY COORDINATION MEETINGS DURING THIS PHASE OF WORK TO RESOLVE ALL INSTALLATION ISSUES PRIOR TO FABRICATION.
    - B. SUBMITTAL PROCEDURES AND FORMAT
      - I. REVIEW SUBMITTAL PACKAGES FOR COMPLIANCE WITH CONTRACT DOCUMENTS AND THEN SUBMIT TO ARCHITECT/ENGINEER FOR REVIEW.
      - II. SHOP DRAWINGS SHOWING LAYOUTS OF SYSTEMS SHALL CONTAIN SUFFICIENT PLANS, ELEVATIONS, DIVISIONS, DETAILS AND SCHEMATICS TO DESCRIBE WORK CLEARLY. THEY SHALL BE 1/4"=1'-0" SCALE, UNLESS SPECIFIED OTHERWISE. SHEET METAL SHOP DRAWINGS SHALL BE 3/8"=1'-0" AND SHALL INDICATE WORK OF OTHER DIVISIONS WHERE PHYSICAL CLEARANCES ARE CRITICAL AND WHERE INTERFERENCES ARE POSSIBLE. PROVIDE LARGER SCALE DETAILS AS NECESSARY. SHEET METAL DRAWINGS SHALL SHOW ELEMENTS OF ARCHITECT'S REFLECTED CEILING PLAN, EXPOSED DUCTWORK, WALLS, PARTITIONS, DIFFUSERS, REGISTERS, GRILLES, FIRE DAMPERS, SLEEVES AND OTHER ASPECTS OF CONSTRUCTION AS NECESSARY FOR COORDINATION.
      - III. ALL FIREWALLS MUST BE HIGHLIGHTED ON THE SHEETMETAL DRAWINGS FOR APPROPRIATE COORDINATION.
      - IV. PROVIDE SHOP DRAWING SUBMITTALS SHOWING DETAILS OF PIPING CONNECTIONS TO ALL EQUIPMENT. IF CONNECTION DETAILS ARE NOT SUBMITTED AND CONNECTIONS ARE FOUND TO BE INSTALLED INCORRECTLY IN THE FIELD, THIS CONTRACTOR SHALL REINSTALL THEM WITH NO COST TO OWNER.
    - C. ACCEPTABLE MANUFACTURERS
      - I. THE ENGINEER'S MECHANICAL DESIGN FOR EACH PRODUCT IS BASED ON THE SINGLE MANUFACTURER LISTED IN THE SCHEDULE OR SHOWN ON THE DRAWINGS.
    - D. REQUIRED USE OF ACCEPTABLE MANUFACTURERS ON THIS PROJECT
      - I. SUBSTITUTION OF PRODUCTS OTHER THAN THOSE OF THE ACCEPTABLE MANUFACTURERS SPECIFIED HEREIN SHALL NOT BE MADE. ONLY THE SPECIFIED ITEMS SHALL BE SUBMITTED. PRODUCTS BY OTHER MANUFACTURERS SHALL NOT BE USED ON THIS PROJECT.
    - E. SUBSTITUTIONS/DEVIATIONS
      - I. IF SUBSTITUTED MANUFACTURER IS REQUESTED, SUBMIT A SUBSTITUTION REQUEST IN WRITING STATING COST/SCHEDULE IMPACTS, AND WHY SUBSTITUTION HAS BEEN REQUIRED WITH FULL PRODUCT DATA OF SUBSTITUTED MANUFACTURER.
      - II. CONCERNING DEVIATIONS OTHER THAN SUBSTITUTIONS. PROPOSED DEVIATIONS FROM CONTRACT DOCUMENTS SHALL BE REQUESTED INDIVIDUALLY, IN WRITING, WHETHER DEVIATIONS RESULT FROM FIELD CONDITIONS, STANDARD SHOP PRACTICE, OR OTHER CAUSE. SUBMIT LETTER WITH TRANSMITTAL OF SHOP DRAWINGS, WHICH FLAGS THE DEVIATION TO THE ATTENTION OF THE ARCHITECT.
      - III. APPROVAL OF PROPOSED DEVIATIONS, IF ANY, WILL BE MADE AT DISCRETION OF ARCHITECT/ENGINEER
    - F. RESPONSIBILITY
      - I. INTENT OF SUBMITTAL REVIEW IS TO CHECK FOR CAPACITY, RATING, AND CERTAIN CONSTRUCTION FEATURES. CONTRACTOR SHALL ENSURE THAT WORK MEETS REQUIREMENTS OF CONTRACT DOCUMENTS REGARDING INFORMATION THAT PERTAINS TO FABRICATION PROCESSES OR MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES OF CONSTRUCTION; AND FOR COORDINATION OF WORK OF THIS AND OTHER DIVISIONS. WORK SHALL COMPLY WITH SUBMITTALS MARKED "REVIEWED" TO EXTENT THAT THEY AGREE WITH CONTRACT DOCUMENTS. SUBMITTAL REVIEW SHALL NOT DIMINISH RESPONSIBILITY UNDER THIS CONTRACT FOR DIMENSIONAL COORDINATION, QUANTITIES, INSTALLATION, WIRING, SUPPORTS AND ACCESS FOR SERVICE, NOR SHOP DRAWING ERRORS OR DEVIATIONS FROM REQUIREMENTS OF CONTRACT DOCUMENTS. THE ARCHITECT'S NOTING OF SOME ERRORS WHILE OVERLOOKING OTHERS WILL NOT EXCUSE THE CONTRACTOR FROM PROCEEDING IN ERROR. CONTRACT DOCUMENTS REQUIREMENTS ARE NOT LIMITED, WAIVED NOR SUPERSEDED IN ANY WAY BY REVIEW.
      - II. INFORM SUBCONTRACTORS, MANUFACTURERS, SUPPLIERS, ETC. OF SCOPE AND LIMITED NATURE OF REVIEW PROCESS AND ENFORCE COMPLIANCE WITH CONTRACT DOCUMENTS.
    - G. SCHEDULE: INCORPORATE SHOP DRAWING REVIEW PERIOD INTO CONSTRUCTION SCHEDULE SO THAT WORK IS NOT DELAYED. CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY FOR DELAYS CAUSED BY NOT INCORPORATING THE FOLLOWING SHOP DRAWING REVIEW TIME REQUIREMENTS INTO HIS PROJECT SCHEDULE. WORKING DAYS LISTED REFERENCE THE TIME IN THE ENGINEER'S OFFICE. IT DOES NOT INCLUDE TRANSMITTAL OR REVIEW TIME OF CONTRACTOR OR ARCHITECT. ALLOW AT LEAST 10 WORKING DAYS, EXCLUSIVE OF TRANSMITTAL TIME, FOR REVIEW EACH TIME SHOP DRAWING IS SUBMITTED OR RESUBMITTED.
11. **CUTTING AND PATCHING**
    - A. CONTRACTOR SHALL FURNISH AND SET ALL SLEEVES, INSERTS, ETC., REQUIRED FOR THE INSTALLATION OF HIS WORK.
12. **FLASHING**
    - A. BASE FLASHING WILL BE PROVIDED BY THE CONTRACTOR AND COUNTER FLASHING SHALL BE PROVIDED BY THE CONTRACTOR WHERE WORK PIERCES ROOF CONSTRUCTION.
13. **CLEANING**
    - A. AFTER TESTING ACCEPTANCE BY ENGINEER AND OWNER, CONTRACTOR SHALL THOROUGHLY CLEAN ALL EQUIPMENT AND MATERIAL INVOLVED IN HIS CONTRACT TO THE SATISFACTION OF THE ENGINEER.
    - B. CONTRACTOR IS RESPONSIBLE FOR COMPLETION OF PAINTING OF ALL OF THEIR INSTALLED MATERIALS AND EQUIPMENT NOT FACTORY FINISHED ADDITIONAL MISCELLANEOUS PAINTING OF THEIR WORK AS DIRECTED BY THE ENGINEER.
14. **DUCTWORK, PIPING AND CONDUIT — GENERAL**
    - A. DUE TO THE SCALE OF DRAWINGS, IT IS NOT POSSIBLE TO INDICATE ALL OFFSETS AND FITTINGS WHICH MAY BE REQUIRED IN THE DUCTWORK, PIPING AND CONDUIT SYSTEMS. CONTRACTOR SHALL FURNISH ALL OFFSETS, FITTINGS, VALVES, TRAPS, SPECIALTIES, JUNCTION BOXES, AND OTHER MATERIALS THAT MAY BE REQUIRED TO MEET THE CONDITIONS WITHOUT ADDITIONAL COST TO THE OWNER. FAILURE TO IDENTIFY OFFSETS DURING SITE VISIT BY CONTRACTOR SHALL NOT RESULT IN ANY ADDITIONAL COST TO THE OWNER.
    - B. GRADE WATER PIPING OF ALL MECHANICAL SYSTEMS TO AVOID POCKETS AND PERMIT SYSTEMS TO BE PURGED OF AIR AS WELL AS TO BE DRAINED. INSTALL AIR VENTS AS NECESSARY TO ALLOW FOR SYSTEM TO BE FULLY FILLED. PROVIDE ACCESS PANEL FOR ANY AIR VENT LOCATION INSTALLED.
    - C. PROVIDE MINIMUM 6FT ABOVE ALL ELECTRICAL EQUIPMENT. DO NOT INSTALL DUCTWORK DIRECTLY ABOVE ANY ELECTRICAL PANEL, SWITCHGEAR, OR ANY OTHER ELECTRICAL EQUIPMENT. PRIOR TO INSTALLING DUCTWORK OR PIPING ABOVE ANY ELECTRICAL EQUIPMENT NOTIFY ENGINEER IN WRITING. COSTS FOR REWORK IF INSTALLED ABOVE ELECTRICAL EQUIPMENT SHALL BE PROVIDED AT NO COST TO THE OWNER.
15. **UNIONS AND FLANGES**
    - A. INSTALL ACCESSIBLE UNIONS AND FLANGES IN SUPPLY AND RETURN CONNECTIONS AND OTHER ADJACENT TO ALL EQUIPMENT, FIXTURES, SPECIALTIES, AUTOMATIC VALVES AND AT ALL OTHER POINTS IN ALL SYSTEMS WHERE REQUIRED TO FACILITATE REMOVAL OF SPECIALTIES OR EQUIPMENT FOR REPAIRS.
    - B. PROVIDE DIELECTRIC FITTINGS FOR ANY DISSIMILAR MATERIALS.
16. **MECHANICAL/ELECTRICAL COORDINATION**
    - A. MECHANICAL CONTRACTOR REQUIRED TO PROVIDE ALL INTERCONNECTING WIRING TO OPERATE ALL MECHANICAL EQUIPMENT. THIS INCLUDES BUT IS NOT LIMITED TO LOW VOLTAGE, LINE VOLTAGE, AND ALL CONTROL/POWER WIRING.
    - B. THE CONTRACTOR SHALL FURNISH AND INSTALL DISCONNECT SWITCHES AND FEEDERS FOR ALL MOTORIZED EQUIPMENT UNDER ALL CONTRACTS AND MAKE FINAL CONNECTION TO ALL MOTORS. COORDINATE WITH ELECTRICAL CONTRACTOR TO DETERMINE IF FUSE IS REQUIRED IN DISCONNECT.
17. **ABANDONMENT AND REMOVAL**
    - A. REMOVALS SHOWN ON DRAWINGS ARE A GENERAL INDICATION ONLY AND MAY NOT NECESSARILY SHOW THE FULL EXTENT OF REQUIRED REMOVALS.
    - B. ANY EXISTING SYSTEM AFFECTED EITHER DIRECTLY OR INDIRECTLY BY THE REMOVAL OF EQUIPMENT OR MATERIALS SHALL BE IMMEDIATELY REPAIRED AND RETURNED TO ITS ORIGINAL OPERATING CONDITION.
18. **TESTS**
    - A. THE FOLLOWING REQUIREMENTS ARE SUPPLEMENTARY TO TEST SPECIFIED FOR INDIVIDUAL EQUIPMENT OR SYSTEMS IN MECHANICAL AND ELECTRICAL WORK DIVISIONS, BUT ARE REQUIRED TO BE PROVIDED BY THE CONTRACTOR.
      - I. CONCEALED OR INSULATED WORK SHALL REMAIN UNCOVERED UNTIL REQUIRED TESTS HAVE BEEN COMPLETED.
      - II. CONDUCT PRESSURE, PERFORMANCE AND OPERATING TESTS AS SPECIFIED OR REQUIRED FOR EACH SYSTEM OR EQUIPMENT UNIT IN PRESENCE OF REPRESENTATIVE OF AGENCIES HAVING JURISDICTION.
      - III. OBTAIN CERTIFICATES OF APPROVAL AND/OR ACCEPTANCE AS SPECIFIED OR REQUIRED IN COMPLIANCE WITH REGULATIONS OF AGENCIES HAVING JURISDICTION. WORK SHALL NOT BE DEEMED COMPLETE UNTIL SUCH CERTIFICATES HAVE BEEN DELIVERED TO THE ENGINEER.
      - IV. TESTING SHALL PROVE CONCLUSIVELY THAT ALL SYSTEMS OPERATE PROPERLY, EFFICIENTLY AND QUIETLY IN ACCORDANCE WITH INTENT OF DRAWINGS AND SPECIFICATIONS. EACH CONTRACTOR'S PARTICIPATION WILL BE REQUIRED FOR THE LIFE SAFETY ACCEPTANCE TEST.
19. **SERVICING OF EQUIPMENT AND SYSTEMS**
    - A. AFTER WORK HAS BEEN COMPLETED UNDER THE CONTRACT AND PRIOR TO FINAL ACCEPTANCE TESTS, CONTRACTOR SHALL HAVE THE MANUFACTURER OF THE EQUIPMENT, OR THEIR AUTHORIZED AGENTS, PUT IT INTO ACTUAL OPERATION. IN EACH CASE, THE CONTRACTOR SHALL HAVE THE MANUFACTURER THOROUGHLY CHECK THE COMPLETE INSTALLATION OF THE EQUIPMENT PRODUCED BY HIM FOR PROPER AND CORRECT OPERATION UNDER THE SERVICES INTENDED. TRAVEL, TIME, AND COSTS FOR AUTHORIZED MANUFACTURER AGENT SHALL BE ACCOUNTED FOR IN BASE BID AND INCLUDED AT NO ADDITIONAL COST TO OWNER.
20. **GUARANTEE**
    - A. GUARANTEE THE WORK OF THIS DIVISION IN WRITING FOR ONE YEAR FOLLOWING THE DATE OF SUBSTANTIAL COMPLETION. THE GUARANTEE SHALL REPAIR OR REPLACE DEFECTIVE MATERIALS, EQUIPMENT, WORKMANSHIP, AND INSTALLATION THAT DEVELOP WITHIN THIS PERIOD, PROMPTLY AND TO ENGINEER'S SATISFACTION AND CORRECT DAMAGE CAUSED IN MAKING NECESSARY REPAIRS AND REPLACEMENTS UNDER GUARANTEE WITHIN CONTRACT PRICE.
    - B. PROVIDE 24 HOUR SERVICE BEGINNING ON THE DATE OF SUBSTANTIAL COMPLETION AND LASTING UNTIL THE TERMINATION OF THE GUARANTEE PERIOD. SERVICE SHALL BE AT NO COST TO THE OWNER.
    - C. AT END OF GUARANTEE PERIOD, TRANSFER MANUFACTURERS' EQUIPMENT AND MATERIAL WARRANTIES STILL IN FORCE TO OWNER.
    - D. GUARANTEE SHALL INCLUDE RESTORATION TO ITS ORIGINAL CONDITION OF ALL ADJACENT WORK THAT MUST BE DISTURBED IN FULFILLING THIS GUARANTEE.

SECTION 23 05 17 - SLEEVES AND PENETRATIONS

1. **MATERIAL**
   - A. PIPE SLEEVES
     - I. SLEEVES THROUGH WALLS AND THROUGH STRUCTURAL AND FIRE-RATED CONSTRUCTION SHALL BE HOT-DIPPED GALVANIZED SCHEDULE 40 STEEL. SLEEVES SHALL EXTEND 1" BEYOND WALL. SLEEVES THROUGH PARTITIONS AND NON-FIRE-RATED CONSTRUCTION SHALL BE 26 GAUGE GALVANIZED STEEL WITH LOCK LONGITUDINAL SEAMS, OR APPROVED FIRE RETARDANT, PLASTIC PIPE.
   - B. PIPE SLEEVE PACKING
     - I. PACKING BETWEEN THE PIPE AND THE SLEEVE (OR WALL OR SLAB OPENING) IN FIRE-RATED WALLS, PARTITIONS OR SLABS SHALL BE A COMBINATION OF FIREPROOF INSULATION AND FIREPROOF CAULK. THE COMBINATION OR MATERIALS SHALL HAVE THE SAME FIRE RATING IN HOURS AS THE WALL OR SLAB, AS TESTED IN ACCORDANCE WITH THE LATEST EDITION OF ASTME-119. THE COMBINATION OF MATERIALS SHALL BE CLASSIFIED BY UL, (FILL, VOID, OR CAVITY MATERIALS) FOR THE FIRE RATING REQUIRED AND SHALL BE LISTED AS A NUMBERED SYSTEM IN THE UL BUILDING MATERIALS DIRECTORY. FIBERGLASS SHALL NOT BE USED AS THE INSULATION MATERIAL.
     - II. ACCEPTABLE FIREPROOF INSULATION MATERIALS SHALL BE: KAOLIN (KAOWOOL BY BABCOCK AND WILCOX); CERAMIC FIBER BLANKET (FIBERFRAX BY STANDARD OIL) OR FIRE-RATED CAULKS SHALL BE: SILICONE (FIRESTOP BY DOW CORNING); CERAMIC FIBER (FYREPUTTY BY STANDARD OIL) OR INTUMESCENT SYNTHETIC ELASTOMER (FIRE BARRIER CAULK BY 3M).
     - III. PACKING FOR SLEEVES THAT DO NOT REQUIRE MAINTENANCE OR FIRE RATING SHALL BE OAKUM, SILICATE FOAM, CERAMIC FIBRE OR MINERAL FIBER WITH APPROVED SEALANT. PACK OR FOAM TO WITHIN 1" OF BOTH WALL SURFACES. SEAL PENETRATION PACKING WITH APPROVED CAULKING AND PAINTABLE WATERPROOF MASTIC SURFACE FINISH OR SILICONE CAULKING.
     - IV. ALL MATERIALS MUST BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS; ALL GAPS MUST BE SEALED. FINISH CAULK FLUSH WITH WALL OR SLAB SURFACE IF PIPING RUNS EXPOSED.
   - C. PACKING FOR SLEEVES THAT DO NOT REQUIRE MAINTENANCE OF FIRE RATING SHALL BE OAKUM, SILICATE FOAM, CERAMIC FIBRE OR MINERAL FIBRE WITH APPROVED SEALANT. PACK OR FOAM TO WITHIN 1" OF BOTH WALL SURFACES. SEAL PENETRATION PACKING WITH APPROVED CAULKING AND PAINTABLE WATERPROOF MASTIC SURFACE FINISH OR SILICONE CAULKING.

SECTION 23 05 53 — IDENTIFICATION FOR HVAC PIPING AND EQUIPMENT

1. PRODUCTS
   - A. EQUIPMENT LABELS
     - I. METAL LABELS FOR EQUIPMENT:
       - A. MATERIAL AND THICKNESS: STAINLESS STEEL, 0.025-INCH THICKNESS, WITH PREDRILLED OR STAMPED HOLES FOR ATTACHMENT HARDWARE.
       - B. MINIMUM LETTER SIZE: 1/4 INCH
       - C. FASTENERS: STAINLESS STEEL RIVETS OR SELF-TAPPING SCREWS.
       - D. ADHESIVE: CONTACT-TYPE PERMANENT ADHESIVE, COMPATIBLE WITH LABEL AND WITH SUBSTRATE.
     - II. LABEL CONTENT: INCLUDE EQUIPMENT'S DRAWING DESIGNATION OR UNIQUE EQUIPMENT NUMBER,
   - B. PIPE LABELS
     - I. GENERAL REQUIREMENTS FOR MANUFACTURED PIPE LABELS: PREPRINTED, COLOR CODED, WITH LETTERING INDICATING SERVICE AND SHOWING FLOW DIRECTION IN ACCORDANCE WITH ASME A13.1.
     - II. LETTER AND BACKGROUND COLOR: PROVIDE STANDARDIZED ASME COLORS FOR EACH PIPE SYSTEM
     - III. PRETENSIONED PIPE LABELS: PRECOILED, SEMIRIGID PLASTIC FORMED TO PARTIALLY COVER CIRCUMFERENCE OF PIPE AND TO ATTACH TO PIPE WITHOUT FASTENERS OR ADHESIVE.
     - IV. PIPE LABEL CONTENTS: INCLUDE IDENTIFICATION OF PIPING SERVICE USING SAME DESIGNATIONS OR ABBREVIATIONS AS USED ON DRAWINGS. ALSO INCLUDE:
       - A. PIPE SIZE.
       - B. FLOW-DIRECTION ARROWS: INCLUDE FLOW-DIRECTION ARROWS ON MAIN DISTRIBUTION PIPING. ARROWS MAY BE EITHER INTEGRAL WITH LABEL OR APPLIED SEPARATELY.

SECTION 23 05 93 — TESTING, ADJUSTING, AND BALANCING FOR HVAC

2. GENERAL
   - A. DEFINITIONS
     - I. AABC: ASSOCIATED AIR BALANCE COUNCIL.
     - II. NEBB: NATIONAL ENVIRONMENTAL BALANCING BUREAU.
     - III. TAB: TESTING, ADJUSTING, AND BALANCING.
     - IV. TABB: TESTING, ADJUSTING, AND BALANCING BUREAU.
     - V. TAB SPECIALIST: AN INDEPENDENT ENTITY MEETING QUALIFICATIONS TO PERFORM TAB WORK.
   - B. INFORMATIONAL SUBMITTALS
     - I. CERTIFIED TAB REPORTS.
     - II. SAMPLE REPORT FORMS.
     - III. INSTRUMENT CALIBRATION REPORTS, TO INCLUDE THE FOLLOWING:
       - A. INSTRUMENT TYPE AND MAKE.
       - B. SERIAL NUMBER.
       - C. APPLICATION.
       - D. DATES OF USE.
       - E. DATES OF CALIBRATION.
   - C. QUALITY ASSURANCE
     - I. TAB SPECIALISTS QUALIFICATIONS: CERTIFIED BY NEBB OR TABB.
       - A. TAB FIELD SUPERVISOR: EMPLOYEE OF THE TAB SPECIALIST AND CERTIFIED BY NEBB OR TABB.
       - B. TAB TECHNICIAN: EMPLOYEE OF THE TAB SPECIALIST AND CERTIFIED BY NEBB OR TABB AS A TAB TECHNICIAN.
     - II. INSTRUMENTATION TYPE, QUANTITY, ACCURACY, AND CALIBRATION: COMPLY WITH REQUIREMENTS IN ASHRAE 111, SECTION 4, "INSTRUMENTATION."
     - III. ASHRAE/IES 90.1 COMPLIANCE: APPLICABLE REQUIREMENTS IN ASHRAE/IES 90.1, SECTION 6.7.2.3 - "SYSTEM BALANCING."
   - D. FIELD CONDITIONS
     - I. PARTIAL OWNER OCCUPANCY: OWNER MAY OCCUPY COMPLETED AREAS OF BUILDING BEFORE SUBSTANTIAL COMPLETION. COOPERATE WITH OWNER DURING TAB OPERATIONS TO MINIMIZE CONFLICTS WITH OWNER'S OPERATIONS.
3. EXECUTION
   - A. EXAMINATION
     - I. EXAMINE THE CONTRACT DOCUMENTS TO BECOME FAMILIAR WITH PROJECT REQUIREMENTS AND TO DISCOVER CONDITIONS IN SYSTEMS DESIGNS THAT MAY PRECLUDE PROPER TAB OF SYSTEMS AND EQUIPMENT.
     - II. EXAMINE THE APPROVED SUBMITTALS FOR HVAC SYSTEMS AND EQUIPMENT.
     - III. EXAMINE DESIGN DATA INCLUDING HYDRAULIC SYSTEM DESCRIPTIONS, STATEMENTS OF DESIGN ASSUMPTIONS FOR ENVIRONMENTAL CONDITIONS AND SYSTEMS OUTPUT, AND STATEMENTS OF PHILOSOPHIES AND ASSUMPTIONS ABOUT HVAC SYSTEM AND EQUIPMENT CONTROLS.
     - IV. EXAMINE EQUIPMENT PERFORMANCE DATA INCLUDING FAN AND PUMP CURVES.
       - A. RELATE PERFORMANCE DATA TO PROJECT CONDITIONS AND REQUIREMENTS, INCLUDING SYSTEM EFFECTS THAT CAN CREATE UNDESIRED OR UNPREDICTED CONDITIONS THAT CAUSE REDUCED CAPACITIES IN ALL OR PART OF A SYSTEM.
       - B. CALCULATE SYSTEM-EFFECT FACTORS TO REDUCE PERFORMANCE RATINGS OF HVAC EQUIPMENT WHEN INSTALLED UNDER CONDITIONS DIFFERENT FROM THE CONDITIONS USED TO RATE EQUIPMENT PERFORMANCE. TO CALCULATE SYSTEM EFFECTS FOR AIR SYSTEMS, USE TABLES AND CHARTS FOUND IN AMCA 201, "FANS AND SYSTEMS," OR IN SMACNA'S "HVAC SYSTEMS - DUCT DESIGN." COMPARE RESULTS WITH THE DESIGN DATA AND INSTALLED COND

A. CUPPED-HEAD, CAPACITOR-DISCHARGE-WELD PINS; COPPER- OR ZINC-COATED STEEL PIN, FULLY ANNEALED FOR CAPACITOR-DISCHARGE WELDING, 0.106-INCH- DIAMETER SHANK, LENGTH TO SUIT DEPTH OF INSULATION INDICATED WITH INTEGRAL 1-1/2-INCH GALVANIZED CARBON-STEEL WASHER.
B. INSULATION-RETAINING WASHERS: SELF-LOCKING WASHERS FORMED FROM 0.016-INCH-THICK GALVANIZED STEEL; WITH BEVELED EDGE SIZED AS REQUIRED TO HOLD INSULATION SECURELY IN PLACE, BUT NOT LESS THAN 1-1/2 INCHES IN DIAMETER.

III. SHOP APPLICATION OF DUCT LINER: COMPLY WITH SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE,"

E. SEALANTS AND GASKETS
I. GENERAL SEALANT AND GASKET REQUIREMENTS: SURFACE-BURNING CHARACTERISTICS FOR SEALANTS AND GASKETS SHALL BE A MAXIMUM FLAME-SPREAD INDEX OF 25 AND A MAXIMUM SMOKE-DEVELOPED INDEX OF 50 WHEN TESTED IN ACCORDANCE WITH UL 723; CERTIFIED BY AN NRTL.

F. HANGERS AND SUPPORTS
I. HANGER RODS FOR NONCORROSIVE ENVIRONMENTS: GALVANIZED-STEEL RODS AND NUTS.
II. HANGER RODS FOR CORROSIVE ENVIRONMENTS: ELECTROGALVANIZED, ALL-THREAD RODS OR GALVANIZED RODS WITH THREADS PAINTED WITH ZINC-CHROMATE PRIMER AFTER INSTALLATION.
III. STRAP AND ROD SIZES: COMPLY WITH SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE," TABLE 5-1, "RECTANGULAR DUCT HANGERS MINIMUM SIZE," AND TABLE 5-2, "MINIMUM HANGER SIZES FOR ROUND DUCT."
IV. STEEL CABLES FOR GALVANIZED-STEEL DUCTS: GALVANIZED STEEL COMPLYING WITH ASTM A 603.
V. STEEL CABLES FOR STAINLESS-STEEL DUCTS: STAINLESS STEEL COMPLYING WITH ASTM A 492.
VI. STEEL CABLE END CONNECTIONS: GALVANIZED-STEEL ASSEMBLIES WITH BRACKETS, SWIVEL, AND BOLTS DESIGNED FOR DUCT HANGER SERVICE; WITH AN AUTOMATIC-LOCKING AND CLAMPING DEVICE.
VII. DUCT ATTACHMENTS: SHEET METAL SCREWS, BLIND RIVETS, OR SELF-TAPPING METAL SCREWS; COMPATIBLE WITH DUCT MATERIALS.
VIII. TRAPEZE AND RISER SUPPORTS:
IX. SUPPORTS FOR GALVANIZED-STEEL DUCTS: GALVANIZED-STEEL SHAPES AND PLATES.
X. SUPPORTS FOR STAINLESS-STEEL DUCTS: STAINLESS-STEEL SHAPES AND PLATES.
XI. SUPPORTS FOR ALUMINUM DUCTS: ALUMINUM OR GALVANIZED STEEL COATED WITH ZINC CHROMATE

3. EXECUTION
A. DUCT INSTALLATION
I. DRAWING PLANS, SCHEMATICS, AND DIAGRAMS INDICATE GENERAL LOCATION AND ARRANGEMENT OF DUCT SYSTEM. INDICATED DUCT LOCATIONS, CONFIGURATIONS, AND ARRANGEMENTS WERE USED TO SIZE DUCTS AND CALCULATE FRICTION LOSS FOR AIR-HANDLING EQUIPMENT SIZING AND FOR OTHER DESIGN CONSIDERATIONS. INSTALL DUCT SYSTEMS AS INDICATED UNLESS DEVIATIONS TO LAYOUT ARE APPROVED ON SHOP DRAWINGS AND COORDINATION DRAWINGS.
II. INSTALL DUCTS IN ACCORDANCE WITH SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE" UNLESS OTHERWISE INDICATED.
III. INSTALL DUCTS IN MAXIMUM PRACTICAL LENGTHS WITH FEWEST POSSIBLE JOINTS.
IV. INSTALL FACTORY- OR SHOP-FABRICATED FITTINGS FOR CHANGES IN DIRECTION, SIZE, AND SHAPE AND FOR BRANCH CONNECTIONS.
V. UNLESS OTHERWISE INDICATED, INSTALL DUCTS VERTICALLY AND HORIZONTALLY, AND PARALLEL AND PERPENDICULAR TO BUILDING LINES.
VI. INSTALL DUCTS CLOSE TO WALLS, OVERHEAD CONSTRUCTION, COLUMNS, AND OTHER STRUCTURAL AND PERMANENT ENCLOSURE ELEMENTS OF BUILDING.
VII. INSTALL DUCTS WITH A CLEARANCE OF 1 INCH, PLUS ALLOWANCE FOR INSULATION THICKNESS.
VIII. ROUTE DUCTS TO AVOID PASSING THROUGH TRANSFORMER VAULTS AND ELECTRICAL EQUIPMENT ROOMS AND ENCLOSURES.
IX. WHERE DUCTS PASS THROUGH NON-FIRE-RATED INTERIOR PARTITIONS AND EXTERIOR WALLS AND ARE EXPOSED TO VIEW, COVER THE OPENING BETWEEN THE PARTITION AND DUCT OR DUCT INSULATION WITH SHEET METAL FLANGES OF SAME METAL THICKNESS AS THE DUCT. OVERLAP OPENINGS ON FOUR SIDES BY AT LEAST 1-1/2 INCHES.
X. INSTALL FIRE AND COMBINATION FIRE/SMOKE AND SMOKE DAMPERS WHERE INDICATED ON DRAWINGS AND AS REQUIRED BY CODE, AND BY LOCAL AUTHORITIES HAVING JURISDICTION. COMPLY WITH REQUIREMENTS FOR FIRE AND SMOKE DAMPERS AND SPECIFIC INSTALLATION REQUIREMENTS OF THE DAMPER UL LISTING.
XI. INSTALL HEATING COILS, COOLING COILS, AIR FILTERS, DAMPERS, AND ALL OTHER DUCT-MOUNTED ACCESSORIES IN AIR DUCTS WHERE INDICATED ON DRAWINGS.
XII. PROTECT DUCT INTERIORS FROM MOISTURE, CONSTRUCTION DEBRIS AND DUST, AND OTHER FOREIGN MATERIALS BOTH BEFORE AND AFTER INSTALLATION. COMPLY WITH SMACNA'S "IAQ GUIDELINES FOR OCCUPIED BUILDINGS UNDER CONSTRUCTION," APPENDIX G, "DUCT CLEANLINESS FOR NEW CONSTRUCTION GUIDELINES."
XIII. ELBOWS: USE LONG-RADIUS ELBOWS WHEREVER THEY FIT.
XIV. FABRICATE 90-DEGREE RECTANGULAR MITERED ELBOWS TO INCLUDE TURNING VANES.
XV. FABRICATE 90-DEGREE ROUND ELBOWS WITH A MINIMUM OF THREE SEGMENTS FOR 12 INCHES AND SMALLER AND A MINIMUM OF FIVE SEGMENTS FOR 14 INCHES AND LARGER.
XVI. BRANCH CONNECTIONS: USE LATERAL OR CONICAL BRANCH CONNECTIONS.

B. INSTALLATION OF EXPOSED DUCTWORK
I. PROTECT DUCTS EXPOSED IN FINISHED SPACES FROM BEING DENTED, SCRATCHED, OR DAMAGED.
II. TRIM DUCT SEALANTS FLUSH WITH METAL. CREATE A SMOOTH AND UNIFORM EXPOSED BEAD, DO NOT USE TWO-PART TAPE SEALING SYSTEM.
III. GRIND WELDS TO PROVIDE SMOOTH SURFACE FREE OF BURRS, SHARP EDGES, AND WELD SPLATTER. WHEN WELDING STAINLESS STEEL WITH A NO. 3 OR 4 FINISH, GRIND THE WELDS FLUSH, POLISH THE EXPOSED WELDS, AND TREAT THE WELDS TO REMOVE DISCOLORATION CAUSED BY WELDING.
IV. MAINTAIN CONSISTENCY, SYMMETRY, AND UNIFORMITY IN ARRANGEMENT AND FABRICATION OF FITTINGS, HANGERS AND SUPPORTS, DUCT ACCESSORIES, AND AIR OUTLETS.
V. REPAIR OR REPLACE DAMAGED SECTIONS AND FINISHED WORK THAT DOES NOT COMPLY WITH THESE REQUIREMENTS.

C. DUCTWORK EXPOSED TO WEATHER
I. ALL EXTERNAL JOINTS ARE TO BE WELDED. SEAL ALL OPENINGS TO PROVIDE WEATHERPROOF CONSTRUCTION.
II. CONSTRUCT DUCTWORK TO RESIST EXTERNAL LOADS OF WIND, SNOW, ICE, AND OTHER EFFECTS OF WEATHER. PROVIDE NECESSARY SUPPORTING STRUCTURES.
III. SINGLE WALL:
A. DUCTWORK SHALL BE GALVANIZED STEEL UNLESS NOTED OTHERWISE.
IV. IF DUCT OUTER SURFACE IS UNINSULATED, PROTECT OUTER SURFACE WITH SUITABLE PAINT. PAINT MATERIALS AND APPLICATION REQUIREMENTS.
V. WHERE DUCTS HAVE EXTERNAL INSULATION, PROVIDE WEATHERPROOF ALUMINUM JACKET.

D. DUCT SEALING
I. SEAL DUCTS FOR DUCT STATIC-PRESSURE, SEAL CLASSES, AND LEAKAGE CLASSES SPECIFIED IN "DUCT SCHEDULE" ARTICLE IN ACCORDANCE WITH SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE."
II. SEAL DUCTS AT A MINIMUM TO THE FOLLOWING SEAL CLASSES IN ACCORDANCE WITH SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE":
A. COMPLY WITH SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE."
B. OUTDOOR, SUPPLY-AIR DUCTS: SEAL CLASS A.
C. OUTDOOR, EXHAUST DUCTS: SEAL CLASS C.
D. OUTDOOR, RETURN-AIR DUCTS: SEAL CLASS C.
E. UNCONDITIONED SPACE, SUPPLY-AIR DUCTS IN PRESSURE CLASSES 2-INCH WG AND LOWER: SEAL CLASS B.
F. UNCONDITIONED SPACE, SUPPLY-AIR DUCTS IN PRESSURE CLASSES HIGHER THAN 2-INCH WG: SEAL CLASS A.
G. UNCONDITIONED SPACE, EXHAUST DUCTS: SEAL CLASS C.
H. UNCONDITIONED SPACE, RETURN-AIR DUCTS: SEAL CLASS B.
I. CONDITIONED SPACE, SUPPLY-AIR DUCTS IN PRESSURE CLASSES 2-INCH WG AND LOWER: SEAL CLASS C.
J. CONDITIONED SPACE, SUPPLY-AIR DUCTS IN PRESSURE CLASSES HIGHER THAN 2-INCH WG: SEAL CLASS B.
K. CONDITIONED SPACE, EXHAUST DUCTS: SEAL CLASS B.
L. CONDITIONED SPACE, RETURN-AIR DUCTS: SEAL CLASS C.

E. HANGER AND SUPPORT INSTALLATION
I. COMPLY WITH SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE," CHAPTER 5, "HANGERS AND SUPPORTS."
II. BUILDING ATTACHMENTS: CONCRETE INSERTS, POWDER-ACTUATED FASTENERS, OR STRUCTURAL-STEEL FASTENERS APPROPRIATE FOR CONSTRUCTION MATERIALS TO WHICH HANGERS ARE BEING ATTACHED.
A. WHERE PRACTICAL, INSTALL CONCRETE INSERTS BEFORE PLACING CONCRETE.
B. INSTALL POWDER-ACTUATED CONCRETE FASTENERS AFTER CONCRETE IS PLACED AND COMPLETELY CURED.
C. USE POWDER-ACTUATED CONCRETE FASTENERS FOR STANDARD-WEIGHT AGGREGATE CONCRETES OR FOR SLABS MORE THAN 4 INCHES THICK.
D. DO NOT USE POWDER-ACTUATED CONCRETE FASTENERS FOR LIGHTWEIGHT-AGGREGATE CONCRETES OR FOR SLABS LESS THAN 4 INCHES THICK.
E. DO NOT USE POWDER-ACTUATED CONCRETE FASTENERS FOR SEISMIC RESTRAINTS.
III. HANGER SPACING: COMPLY WITH SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE," TABLE 5-1, "RECTANGULAR DUCT HANGERS MINIMUM SIZE," AND TABLE 5-2, "MINIMUM HANGER SIZES FOR ROUND DUCT," FOR MAXIMUM HANGER SPACING; INSTALL HANGERS AND SUPPORTS WITHIN 24 INCHES OF EACH ELBOW AND WITHIN 48 INCHES OF EACH BRANCH INTERSECTION.
IV. HANGERS EXPOSED TO VIEW: AIRCRAFT STYLE STEEL CABLE WITH "GRIPPLE" FASTENERS
V. SUPPORT VERTICAL DUCTS WITH STEEL ANGLES OR CHANNEL SECURED TO THE SIDES OF THE DUCT WITH WELDS, BOLTS, SHEET METAL SCREWS, OR BLIND RIVETS; SUPPORT AT EACH FLOOR AND AT A MAXIMUM INTERVALS OF 16 FEET.
VI. INSTALL UPPER ATTACHMENTS TO STRUCTURES. SELECT AND SIZE UPPER ATTACHMENTS WITH PULL-OUT, TENSION, AND SHEAR CAPACITIES APPROPRIATE FOR SUPPORTED LOADS AND BUILDING MATERIALS WHERE USED.

F. CONNECTIONS
I. MAKE CONNECTIONS TO EQUIPMENT WITH FLEXIBLE CONNECTORS
II. COMPLY WITH SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE" FOR BRANCH, OUTLET AND INLET, AND TERMINAL UNIT CONNECTIONS.

G. PAINTING
I. PAINT INTERIOR OF METAL DUCTS THAT ARE VISIBLE THROUGH REGISTERS AND GRILLES AND THAT DO NOT HAVE DUCT LINER. APPLY ONE COAT OF FLAT, BLACK, LATEX PAINT OVER A COMPATIBLE GALVANIZED-STEEL PRIMER.

H. FIELD QUALITY CONTROL
I. PERFORM TESTS AND INSPECTIONS
II. DUCT SYSTEM CLEANLINESS TESTS:
A. VISUALLY INSPECT DUCT SYSTEM TO ENSURE THAT NO VISIBLE CONTAMINANTS ARE PRESENT.
B. TEST SECTIONS OF METAL DUCT SYSTEM, CHOSEN RANDOMLY BY OWNER, FOR CLEANLINESS IN ACCORDANCE WITH "DESCRIPTION OF METHOD 3 - NADCA VACUUM TEST" IN NADCA ACR, "ASSESSMENT, CLEANING AND RESTORATION OF HVAC SYSTEMS."
A. ACCEPTABLE CLEANLINESS LEVEL: NET WEIGHT OF DEBRIS COLLECTED ON THE FILTER MEDIA SHALL NOT EXCEED 0.75 MG/100 SQ. CM.

I. DUCT CLEANING
I. CLEAN NEW DUCT SYSTEM(S) BEFORE TESTING, ADJUSTING, AND BALANCING.
II. CLEAN EXISTING DUCTWORK (WHERE APPLICABLE)
III. USE DUCT CLEANING METHODOLOGY AS INDICATED IN NADCA ACR.

J. STARTUP
I. AIR BALANCE: COMPLY WITH REQUIREMENTS IN "TESTING, ADJUSTING, AND BALANCING FOR HVAC."

SECTION 23 37 13.23 — GRILLES, REGISTERS AND GRILLES

1. GENERAL
a. SUMMARY
I. SECTION INCLUDES:
A. ADJUSTABLE BLADE FACE REGISTERS AND GRILLES.
B. FIXED FACE REGISTERS AND GRILLES.
C. LINEAR BAR GRILLES
D. RECTANGULAR AND SQUARE CEILING DIFFUSERS.
E. PERFORATED DIFFUSERS.
F. LOUVER FACE DIFFUSERS.
G. LINEAR BAR DIFFUSERS.
H. LINEAR SLOT DIFFUSERS.

B. ACTION SUBMITTALS
I. PRODUCT DATA: FOR EACH TYPE OF PRODUCT.
A. DATA SHEET: INDICATE MATERIALS OF CONSTRUCTION, FINISH, AND MOUNTING DETAILS; AND PERFORMANCE DATA INCLUDING THROW AND DROP, STATIC-PRESSURE DROP, AND NOISE RATINGS.
B. REGISTER AND GRILLE SCHEDULE: INDICATE DRAWING DESIGNATION, ROOM LOCATION, QUANTITY, MODEL NUMBER, SIZE, AND ACCESSORIES FURNISHED.

C. INFORMATIONAL SUBMITTALS
I. COORDINATION DRAWINGS: REFLECTED CEILING PLANS, DRAWN TO SCALE, ON WHICH THE FOLLOWING ITEMS ARE SHOWN AND COORDINATED WITH EACH OTHER, USING INPUT FROM INSTALLERS OF THE ITEMS INVOLVED:
A. CEILING SUSPENSION ASSEMBLY MEMBERS.
B. METHOD OF ATTACHING HANGERS TO BUILDING STRUCTURE.
C. SIZE AND LOCATION OF INITIAL ACCESS MODULES FOR ACOUSTICAL TILE.
D. CEILING-MOUNTED ITEMS INCLUDING LIGHTING FIXTURES, DIFFUSERS, GRILLES, SPEAKERS, SPRINKLERS, ACCESS PANELS, AND SPECIAL MOLDINGS.
E. DUCT ACCESS PANELS.

2. PRODUCTS
A. REGISTERS AND GRILLES
I. REFER TO MECHANICAL SCHEDULES FOR BASIS OF DESIGN. SUBMIT ANY ALTERNATES TO MECHANICAL ENGINEER.
B. CEILING DIFFUSERS
I. REFER TO MECHANICAL SCHEDULE FOR BASIS OF DESIGN DIFFUSERS. CONTRACTOR TO SUBMIT APPROVED EQUALS IF DESIRED.

3. EXECUTION
A. EXAMINATION
I. EXAMINE AREAS WHERE REGISTERS AND GRILLES ARE INSTALLED FOR COMPLIANCE WITH REQUIREMENTS FOR INSTALLATION TOLERANCES AND OTHER CONDITIONS AFFECTING PERFORMANCE OF EQUIPMENT.
II. PROCEED WITH INSTALLATION ONLY AFTER UNSATISFACTORY CONDITIONS HAVE BEEN CORRECTED.
B. INSTALLATION
I. INSTALL REGISTERS AND GRILLES LEVEL AND PLUMB.
II. OUTLETS AND INLETS LOCATIONS: DRAWINGS INDICATE GENERAL ARRANGEMENT OF DUCTS, FITTINGS, AND ACCESSORIES. AIR OUTLET AND INLET LOCATIONS HAVE BEEN INDICATED TO ACHIEVE DESIGN REQUIREMENTS FOR AIR VOLUME, NOISE CRITERIA, AIRFLOW PATTERN, THROW, AND PRESSURE DROP. MAKE FINAL LOCATIONS WHERE INDICATED, AS MUCH AS PRACTICAL. FOR UNITS INSTALLED IN LAY-IN CEILING PANELS, LOCATE UNITS IN THE CENTER OF PANEL. WHERE ARCHITECTURAL FEATURES OR OTHER ITEMS CONFLICT WITH INSTALLATION, NOTIFY ARCHITECT FOR A DETERMINATION OF FINAL LOCATION.
III. INSTALL REGISTERS AND GRILLES WITH AIRTIGHT CONNECTIONS TO DUCTS AND TO ALLOW SERVICE AND MAINTENANCE OF DAMPERS, AIR EXTRACTORS, AND FIRE DAMPERS.
C. ADJUSTING
I. AFTER INSTALLATION, ADJUST REGISTERS AND GRILLES TO AIR PATTERNS INDICATED, OR AS DIRECTED, BEFORE STARTING AIR BALANCING.

SECTION 233300 - AIR DUCT ACCESSORIES

1. GENERAL
A. SUMMARY
I. SECTION INCLUDES: **(**SPECIFIER TO EDIT**)**
A. MANUAL VOLUME DAMPERS.
B. CONTROL DAMPERS.
C. FIRE DAMPERS.
D. CEILING RADIATION DAMPERS.
E. COMBINATION FIRE AND SMOKE DAMPERS.
F. SMOKE DAMPERS.
G. FLANGE CONNECTORS.
H. TURNING VANES.
I. DUCT-MOUNTED ACCESS DOORS.
J. FLEXIBLE CONNECTORS.
K. DUCT ACCESSORY HARDWARE.

2. SUBMITTAL
I. PRODUCT DATA
A. PROVIDE MANUFACTURER'S CUT SHEETS FOR ALL DUCT ACCESSORIES LISTED ABOVE.
B. PROVIDE ELECTRICAL CHARACTERISTICS/WIRING DIAGRAMS (WHERE APPLICABLE

3. PRODUCTS
I. ASSEMBLY DESCRIPTION
A. COMPLY WITH NFPA 90A, "INSTALLATION OF AIR CONDITIONING AND VENTILATING SYSTEMS," AND WITH NFPA 90B, "INSTALLATION OF WARM AIR HEATING AND AIR CONDITIONING SYSTEMS."
B. COMPLY WITH SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE" FOR ACCEPTABLE MATERIALS, MATERIAL THICKNESSES, AND DUCT CONSTRUCTION METHODS UNLESS OTHERWISE INDICATED. SHEET METAL MATERIALS SHALL BE FREE OF PITTING, SEAM MARKS, ROLLER MARKS, STAINS, DISCOLORATIONS, AND OTHER IMPERFECTIONS.

II. MANUAL VOLUME DAMPERS
A. STANDARD, STEEL, MANUAL VOLUME DAMPERS:
1. CODE MINIMUM LEAKAGE RATING.
2. SUITABLE FOR HORIZONTAL OR VERTICAL APPLICATIONS.
B. FRAMES:
1. FRAME: HAT-SHAPED, 0.094-INCH-THICK, GALVANIZED SHEET STEEL 0.05-INCH-THICK STAINLESS STEEL.
2. MITERED AND WELDED CORNERS.
3. FLANGES FOR ATTACHING TO WALLS AND FLANGELESS FRAMES FOR INSTALLING IN DUCTS.
C. BLADES:
1. OPPOSED-BLADE DESIGN.
2. STIFFEN DAMPER BLADES FOR STABILITY.
3. GALVANIZED STEEL, 0.064 INCH THICK.
D. BLADE AXLES: GALVANIZED STEEL.
1. BEARINGS:
A. OIL-IMPREGNATED BRONZE.
B. DAMPERS IN DUCTS WITH PRESSURE CLASSES OF 3-INCH WG OR LESS SHALL HAVE AXLES FULL LENGTH OF DAMPER BLADES AND BEARINGS AT BOTH ENDS OF OPERATING SHAFT.
E. TIE BARS AND BRACKETS: GALVANIZED STEEL.

III. CONTROL DAMPERS
A. LOW-LEAKAGE RATING, WITH LINKAGE OUTSIDE AIRSTREAM, AND BEARING AMCA'S CERTIFIED RATINGS SEAL FOR BOTH AIR PERFORMANCE AND AIR LEAKAGE.
B. FRAMES:
1. HAT SHAPED.
2. 0.094-INCH-THICK, GALVANIZED SHEET STEEL.
3. MITERED AND WELDED CORNERS.
C. BLADES:
1. MULTIPLE BLADE WITH MAXIMUM BLADE WIDTH OF 6 INCHES.
2. OPPOSED-BLADE DESIGN.
3. GALVANIZED-STEEL.
4. 0.064 INCH THICK SINGLE SKIN.
5. BLADE EDGING: CLOSED-CELL NEOPRENE.
6. BLADE EDGING: INFLATABLE SEAL BLADE EDGING, OR REPLACEABLE RUBBER SEALS.
I. BLADE AXLES: 1/2-INCH-DIAMETER; GALVANIZED STEEL; BLADE-LINKAGE HARDWARE OF ZINC-PLATED STEEL AND BRASS; ENDS SEALED AGAINST BLADE BEARINGS.
D. BEARINGS:
1. OIL-IMPREGNATED BRONZE.
2. DAMPERS IN DUCTS WITH PRESSURE CLASSES OF 3-INCH WG OR LESS SHALL HAVE AXLES FULL LENGTH OF DAMPER BLADES AND BEARINGS AT BOTH ENDS OF OPERATING SHAFT.
3. THRUST BEARINGS AT EACH END OF EVERY BLADE.

IV. CEILING RADIATION DAMPERS
A. GENERAL REQUIREMENTS:
1. DYNAMIC: LABELED ACCORDING TO UL 555C BY AN NRTL.
2. COMPLY WITH CONSTRUCTION DETAILS FOR TESTED FLOOR- AND ROOF-CEILING ASSEMBLIES AS INDICATED IN UL'S "FIRE RESISTANCE DIRECTORY."
B. FRAME: GALVANIZED SHEET STEEL, ROUND OR RECTANGULAR, STYLE TO SUIT CEILING CONSTRUCTION.
C. BLADES: GALVANIZED SHEET STEEL WITH REFRACTORY INSULATION.
D. HEAT-RESPONSIVE DEVICE: REPLACEABLE, 165 DEG F RATED, FUSIBLE LINKS.
E. FIRE RATING: REFERENCE ASSEMBLY RATING.

V. FLEXIBLE CONNECTORS
A. MATERIALS: FLAME-RETARDANT OR NONCOMBUSTIBLE FABRICS.
B. COATINGS AND ADHESIVES: COMPLY WITH UL 181, CLASS 1.
C. METAL-EDGED CONNECTORS: FACTORY FABRICATED WITH A FABRIC STRIP 3-1/2 INCHES WIDE ATTACHED TO TWO STRIPS OF 2-3/4-INCH-WIDE, 0.028-INCH-THICK, GALVANIZED SHEET STEEL OR 0.032-INCH-THICK ALUMINUM SHEETS. PROVIDE METAL COMPATIBLE WITH CONNECTED DUCTS.
D. INDOOR SYSTEM, FLEXIBLE CONNECTOR FABRIC: GLASS FABRIC DOUBLE COATED WITH NEOPRENE.
E. OUTDOOR SYSTEM, FLEXIBLE CONNECTOR FABRIC: GLASS FABRIC DOUBLE COATED WITH WEATHERPROOF, SYNTHETIC RUBBER RESISTANT TO UV RAYS AND OZONE.

4. EXECUTION
A. INSTALLATION
1. INSTALL DUCT ACCESSORIES ACCORDING TO APPLICABLE DETAILS IN SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE" FOR METAL DUCTS
2. INSTALL DUCT ACCESSORIES OF MATERIALS SUITED TO DUCT MATERIALS: USE GALVANIZED-STEEL ACCESSORIES IN GALVANIZED-STEEL, STAINLESS-STEEL ACCESSORIES IN STAINLESS-STEEL DUCTS, AND ALUMINUM ACCESSORIES IN ALUMINUM DUCTS.
3. COMPLIANCE WITH CURRENT ASHRAE/IESNA 90.1 INCLUDES SECTION 6.4.3.4 - "SHUTOFF DAMPER CONTROLS," RESTRICTS THE USE OF BACKDRAFT DAMPERS, AND REQUIRES CONTROL DAMPERS FOR CERTAIN APPLICATIONS. INSTALL BACKDRAFT CONTROL DAMPERS AT INLET OF EXHAUST FANS OR EXHAUST DUCTS AS CLOSE AS POSSIBLE TO EXHAUST FAN UNLESS OTHERWISE INDICATED.
4. INSTALL VOLUME DAMPERS AT POINTS ON SUPPLY, RETURN, AND EXHAUST SYSTEMS WHERE BRANCHES EXTEND FROM LARGER DUCTS. WHERE DAMPERS ARE INSTALLED IN DUCTS HAVING DUCT LINER, INSTALL DAMPERS WITH HAT CHANNELS OF SAME DEPTH AS LINER, AND TERMINATE LINER WITH NOSING AT HAT CHANNEL.
5. INSTALL STEEL VOLUME DAMPERS IN STEEL DUCTS.
6. INSTALL ALUMINUM VOLUME DAMPERS IN ALUMINUM DUCTS.
7. INSTALL FIRE AND SMOKE DAMPERS ACCORDING TO UL LISTING.
8. INSTALL DUCT ACCESS DOORS ON SIDES OF DUCTS TO ALLOW FOR INSPECTING, ADJUSTING, AND MAINTAINING ACCESSORIES AND EQUIPMENT AT THE FOLLOWING LOCATIONS:
A. ON BOTH SIDES OF DUCT COILS (WHERE APPLICABLE).
B. UPSTREAM AND DOWNSTREAM FROM DUCT FILTERS (WHERE APPLICABLE).
C. AT OUTDOOR-AIR INTAKES AND MIXED-AIR PLENUMS.
D. AT DRAIN PANS AND SEALS.
E. DOWNSTREAM FROM CONTROL DAMPERS, BACKDRAFT DAMPERS, AND EQUIPMENT.
F. ADJACENT TO AND CLOSE ENOUGH TO FIRE OR SMOKE DAMPERS, TO RESET OR REINSTALL FUSIBLE LINKS. ACCESS DOORS FOR ACCESS TO FIRE OR SMOKE DAMPERS HAVING FUSIBLE LINKS SHALL BE PRESSURE RELIEF ACCESS DOORS AND SHALL BE OUTWARD OPERATION FOR ACCESS DOORS INSTALLED UPSTREAM FROM DAMPERS AND INWARD OPERATION FOR ACCESS DOORS INSTALLED DOWNSTREAM FROM DAMPERS.
G. UPSTREAM AND DOWNSTREAM FROM TURNING VANES.
H. CONTROL DEVICES REQUIRING INSPECTION.
I. ELSEWHERE AS INDICATED.
9. INSTALL ACCESS DOORS WITH SWING AGAINST DUCT STATIC PRESSURE.
10. ACCESS DOOR SIZES:
A. ONE-HAND OR INSPECTION ACCESS: 8 BY 8 INCHES.
B. TWO-HAND ACCESS: 12 BY 12 INCHES.
C. HEAD AND HAND ACCESS: 18 BY 12 INCHES.
D. HEAD AND SHOULDERS ACCESS: 21 BY 18 INCHES.
E. BODY ACCESS: 25 BY 18 INCHES.
F. BODY PLUS LADDER ACCESS: 25 BY 18 INCHES.
11. LABEL ACCESS DOORS ACCORDING TO PURPOSE.
12. INSTALL FLEXIBLE CONNECTORS TO CONNECT DUCTS TO EQUIPMENT.
13. CONNECT TERMINAL UNITS TO SUPPLY DUCTS DIRECTLY OR WITH MAXIMUM 12-INCH LENGTHS OF FLEXIBLE DUCT. DO NOT USE FLEXIBLE DUCTS TO CHANGE DIRECTIONS.
14. CONNECT DIFFUSERS TO DUCTS DIRECTLY OR WITH MAXIMUM LENGTHS OF FLEXIBLE DUCT CLAMPED OR STRAPPED IN PLACE.
15. CONNECT FLEXIBLE DUCTS TO METAL DUCTS WITH ADHESIVE PLUS SHEET METAL SCREWS.
B. FIELD QUALITY CONTROL
1. OPERATE DAMPERS TO VERIFY FULL RANGE OF MOVEMENT.
2. INSPECT LOCATIONS OF ACCESS DOORS AND VERIFY THAT PURPOSE OF ACCESS DOOR CAN BE PERFORMED.
3. OPERATE FIRE, SMOKE, AND COMBINATION FIRE AND SMOKE DAMPERS TO VERIFY FULL RANGE OF MOVEMENT AND VERIFY THAT PROPER HEAT-RESPONSE DEVICE IS INSTALLED.
4. INSPECT TURNING VANES FOR PROPER AND SECURE INSTALLATION.

SECTION 233346 - FLEXIBLE DUCTS

1. GENERAL
1.1 ACTION SUBMITTALS
A. SHOP DRAWINGS: FOR FLEXIBLE DUCTS.

2. PRODUCTS
A. COMPLY WITH SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE" FOR ACCEPTABLE MATERIALS, MATERIAL THICKNESSES, AND DUCT CONSTRUCTION METHODS UNLESS OTHERWISE INDICATED.
B. COMPLY WITH THE AIR DIFFUSION COUNCIL'S "ADC FLEXIBLE AIR DUCT TEST CODE FD 72-R1."
C. COMPLY WITH ASTM E 96/E 96M, "TEST METHODS FOR WATER VAPOR TRANSMISSION OF MATERIALS."
D. FLEXIBLE DUCT SHALL BE FABRIC COVERED GALVANIZED STEEL HELIX MECHANICALLY LOCKED TO THE FABRIC. THE FABRIC SHALL BE A LAMINATE OF ALUMINUM FOIL FIBERGLASS & ALUMINIZED POLYESTER RATED AT 5500 RPM WITH FLEX-MASTER USA TYPE 3 OR EQUAL. 1" EXTERNAL FIBERGLASS INSULATION AND VAPOR BARRIER JACKET. RETURN, EXHAUST, AND OUTSIDE AIR DUCTWORK SHALL BE HARD DUCTED FLEXIBLE DUCT CONNECTORS

3. EXECUTION
3.1 INSTALLATION
A. FLEXIBLE DUCT IS ALLOWABLE ON SUPPLY AIR SYSTEMS ONLY.
B. INSTALL IN INDOOR APPLICATIONS ONLY. FLEXIBLE DUCTWORK SHOULD NOT BE EXPOSED TO UV LIGHTING.
C. CONNECT AIR DEVICE TO SUPPLY DUCTS DIRECTLY OR WITH MAXIMUM 10-FT LENGTHS OF FLEXIBLE DUCT. DO NOT USE FLEXIBLE DUCTS TO CHANGE DIRECTIONS. FLEX DUCT SHALL BE CLAMPED OR STRAPPED IN PLACE.
D. CONNECT FLEXIBLE DUCTS TO METAL DUCTS WITH ADHESIVE PLUS MECHANICAL FASTENER.
E. PROVIDE THERMAFLEX "FLEXFLOW" ELBOW (OR EQUAL) AT ALL CONNECTIONS TO AIR DEVICES.
F. INSTALLATION:
1. INSTALL DUCTS FULLY EXTENDED.
2. DO NOT BEND DUCTS ACROSS SHARP CORNERS.
3. BENDS OF FLEXIBLE DUCTING SHALL NOT EXCEED A MINIMUM OF ONE DUCT DIAMETER.
4. AVOID CONTACT WITH METAL FIXTURES, WATER LINES, PIPES, OR CONDUITS.
5. INSTALL FLEXIBLE DUCTS IN A DIRECT LINE, WITHOUT SAGS, TWISTS, OR TURNS.
G. SUPPORTING FLEXIBLE DUCTS:
1. SUSPEND FLEXIBLE DUCTS WITH BANDS 1-1/2 INCHES WIDE OR WIDER AND SPACED A MAXIMUM OF 48 INCHES APART. MAXIMUM CENTERLINE SAG BETWEEN SUPPORTS SHALL NOT EXCEED 1/2 INCH PER 12 INCHES.
2. INSTALL EXTRA SUPPORTS AT BENDS PLACED APPROXIMATELY ONE DUCT DIAMETER FROM CENTER LINE OF THE BEND.
3. DUCTS MAY REST ON CEILING JOISTS OR TRUSS SUPPORTS. SPACING BETWEEN SUPPORTS SHALL NOT EXCEED THE MAXIMUM SPACING PER MANUFACTURER'S WRITTEN INSTALLATION INSTRUCTIONS.
4. VERTICALLY INSTALLED DUCTS SHALL BE STABILIZED BY SUPPORT STRAPS AT A MAXIMUM OF 72 INCHES O.C.

SECTION 238126 - SPLIT-SYSTEM AIR-CONDITIONERS

1. GENERAL
SUMMARY
A. SECTION INCLUDES SPLIT-SYSTEM AIR-CONDITIONING AND HEAT-PUMP UNITS CONSISTING OF SEPARATE EVAPORATOR-FAN AND COMPRESSOR-CONDENSER COMPONENTS.
SUBMITTALS
B. PRODUCT DATA: FOR EACH TYPE OF PRODUCT INDICATED. INCLUDE RATED CAPACITIES, OPERATING CHARACTERISTICS, AND FURNISHED SPECIALTIES AND ACCESSORIES. INCLUDE PERFORMANCE DATA IN TERMS OF CAPACITIES AT ASHRAE REGIONAL DESIGN TEMPERATURES, OUTLET VELOCITIES, STATIC PRESSURES, SOUND POWER CHARACTERISTICS, MOTOR REQUIREMENTS, AND ELECTRICAL CHARACTERISTICS.
SHOP DRAWINGS: INCLUDE PLANS, ELEVATIONS, SECTIONS, DETAILS, AND ATTACHMENTS TO OTHER WORK.
A. DETAIL EQUIPMENT ASSEMBLIES AND INDICATE DIMENSIONS, WEIGHTS, LOADS, REQUIRED CLEARANCES, METHOD OF FIELD ASSEMBLY, COMPONENT

GENERAL SPECIFICATIONS

1. DRAWINGS AND SPECIFICATIONS FORM COMPLIMENTARY REQUIREMENTS; PROVIDE WORK SPECIFIEDAND NOT SHOWN, AND WORK SHOWN BUT NOT SPECIFIED AS THOUGH EXPLICITLY REQUIRED BY BOTH. ALTHOUGH WORK IS NOT SPECIFICALLY SHOWN OR SPECIFIED, PROVIDE SUPPLEMENTARY OR MISCELLANEOUS ITEMS, APPURTENANCES, DEVICES AND MATERIALS OBVIOUSLY NECESSARY FOR A SOUND, SECURE AND COMPLETE INSTALLATION.
2. DRAWINGS ARE DIAGRAMMATIC: THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL COMPONENTS NECESSARY FOR A COMPLETE INSTALLATION. DETERMINE LOCATIONS OF SYSTEMS AND COMPONENTS IN FIELD. COORDINATE WITH ARCHITECTURAL DRAWINGS AND OTHER TRADES.
3. ADDRESS QUESTIONS REGARDING DRAWINGS TO ARCHITECT IN WRITING BEFORE AWARD OF CONTRACT. OTHERWISE, ARCHITECT'S INTERPRETATION OF MEANING AND INTENT OF DRAWINGS SHALL BE FINAL.
4. THE INTENTION IS FOR INSTALLATION OF COMPLETE AND OPERATING SYSTEMS INSTALLED IN ACCORDANCE WITH THE ASSOCIATED MANUFACTURER'S INSTRUCTIONS. NOT EVERY COMPONENT REQUIRED IS SHOWN. THE CONTRACTOR SHALL INCLUDE ALL COMPONENTS NORMALLY ASSOCIATED WITH THE PARTICULAR SYSTEM AND/OR REQUIRED BY THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. THE SYSTEM SHALL BE FULLY COMMISSIONED AND SIGNED OFF BY AN OFFICER OF THE RESPECTIVE CONTRACTOR. PRIOR TO FINAL OWNER ACCEPTANCE TESTING.
5. GIVE NOTICES, FILE PLANS, OBTAIN PERMITS AND LICENSES, PAY FEES AND BACK CHARGES, AND OBTAIN NECESSARY APPROVALS FROM AUTHORITIES THAT HAVE JURISDICTION AS REQUIRED TO PERFORM WORK IN ACCORDANCE WITH ALL LEGAL REQUIREMENTS AND WITH THE DESIGN DOCUMENTS
6. PRIOR TO COMMENCING WORK, CONTRACTOR SHALL SUBMIT SHOP DRAWINGS AND EQUIPMENT DATA FOR MATERIALS AND EQUIPMENT TO THE ARCHITECT FOR REVIEW AND APPROVAL. MATERIALS AND EQUIPMENT SHALL NOT BE INSTALLED BEFORE SHOP DRAWINGS ARE REVIEWED AND APPROVED. SCHEDULE AT LEAST TEN WORKING DAYS, EXCLUSIVE OF TRANSMITTAL TIME, FOR SUBMITTAL REVIEW SHALL BE ALLOWED.
7. MATERIALS AND EQUIPMENT SHALL BE LISTED BY UNDERWRITERS LABORATORIES (UL) AND APPROVED BY ASME AND AGA FOR INTENDED SERVICE.
8. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES REQUIRED FOR SAFE EXECUTION AND COMPLETION OF WORK, AND FOR INITIATING, MAINTAINING AND SUPERVISING ALL SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THE WORK.
9. ALL MATERIALS, EQUIPMENT AND METHOD OF INSTALLATION SHALL BE ACCORDANCE WITH THE STANDARDS, REGULATIONS, CODES, ORDINANCES, AND LAW OF LOCAL, STATE, AND FEDERAL GOVERNMENTS, AND OTHER AUTHORITIES THAT HAVE LAWFUL JURISDICTION.
10. IT SHALL BE THE RESPONSIBILITY OF THIS CONTRACTOR TO COORDINATE HIS WORK WITH THAT OF ALL OTHER TRADES, INCLUDING (BUT NOT LIMITED TO), ELECTRICAL, HVAC, SPRINKLER, PLUMBING, STRUCTURAL AND GENERAL ARCHITECTURE. OFFSETS IN PIPING AND OFFSETS AROUND OBSTRUCTIONS SHALL BE PROVIDED AT NO ADDITIONAL COST TO THE OWNER.
11. DEVIATION FROM CONTRACT DOCUMENTS, OR PROPOSED SUBSTITUTION OF MATERIALS OR EQUIPMENT FOR THOSE SPECIFIED, SHALL BE REQUESTED IN SEPARATE LETTER, WHETHER DEVIATIONS ARE DUE TO FIELD CONDITIONS, STANDARD SHOP PRACTICE OR OTHER CAUSE. THE CONTRACTOR IS RESPONSIBLE FOR ANY COSTS INCURRED AS A RESULT OF THE CHANGES NEEDED TO ACCOMMODATE THE SUBSTITUTED EQUIPMENT INCLUDING THE WORK OF OTHER TRADES.
12. EACH CONTRACTOR IS RESPONSIBLE FOR ITS CUTTING AND PATCHING REQUIRED FOR THE INSTALLATION OF ITS NEW WORK. CUTTING AND PATCHING SHALL BE COMPLETED IN A NEAT AND WORKMANLIKE MANNER. PATCHING MATERIALS SHALL MATCH EXISTING MATERIALS TO THE GREATEST EXTENT POSSIBLE. PROVIDE TOUCH-UP TO MATCH EXISTING SURROUNDING AREAS OF CUTTING AND PATCHING WORK
13. CONTRACTOR SHALL COORDINATE ITS RESPECTIVE CEILING MOUNTED EQUIPMENT WITH OTHER TRADE CONTRACTORS PRIOR TO INSTALLATION TO AVOID CONFLICTS.
14. WORK SHALL BE EXECUTED IN A WORKMANLIKE MANNER AND SHALL PRESENT NEAT, RECTILINEAR APPEARANCE WHEN COMPLETED. MAINTAIN MAXIMUM HEAD ROOM AT ALL TIMES. DO NOT RUN PIPES, DUCTS, AND CONDUIT EXPOSED UNLESS SHOWN AND NOTED TO BE EXPOSED ON DRAWINGS. MATERIALS AND EQUIPMENT SHALL BE NEW AND INSTALLED ACCORDING TO MANUFACTURER'S INSTRUCTIONS AND RECOMMENDATIONS, SO THAT COMPLETED INSTALLATION SHALL OPERATE SAFELY AND EFFICIENTLY.
15. EACH RESPECTIVE CONTRACTOR SHALL FIRE STOP ALL NEW AND EXISTING SLEEVES THROUGH WOOD FLOORS AND FIRE RATED WALLS OR PARTITIONS WITH UL RATED ASSEMBLIES WITH EQUAL FIRE RATING. FIELD VERIFY EXISTING CONDITIONS BEFORE SUBMITTING PRICE.
16. COORDINATE ROOF PENETRATIONS WITH WORK OF OTHER SECTIONS AND WITH FLASHING REQUIREMENTS.
17. ANY INTERFERENCE SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER'S REPRESENTATIVE, AND SHALL BE RESOLVED PRIOR TO THE INSTALLATION OF THE WORK INVOLVED.
18. ALL MATERIALS AND EQUIPMENT SHALL BE NEW UNLESS NOTED OTHERWISE.
19. MANUFACTURERS' MODEL NUMBERS ARE SPECIFIED SOLELY TO ESTABLISH STANDARDS OF QUALITY FOR PERFORMANCE AND MATERIALS.
20. SUBSTITUTED PRODUCTS SUBMITTED AND APPROVED FOR USE THAT NECESSITATE CHANGES TO THE WORK OF THAT OR ANY OTHER TRADES OF CONTRACT SHALL BE COORDINATED AND ARRANGED BY THE CONTRACTOR WHO SUBMITTED THE SUBSTITUTION WITHOUT ADDITIONAL COST TO THE OWNER.
21. PRODUCT INSTALLATION SHALL ADHERE TO MANUFACTURERS RECOMMENDATIONS.
22. CONTRACTOR SHALL COORDINATE ELECTRICAL CHARACTERISTICS AND REQUIREMENTS OF ALL APPLICABLE EQUIPMENT WITH THE ELECTRICAL CONTRACTOR.
23. AS WORK PROGRESSES AND FOR DURATION OF CONTRACT, MAINTAIN COMPLETE SET OF PRINTS OF CONTRACT DRAWINGS AT JOB SITE AT ALL TIMES. RECORD WORK COMPLETED AND ALL CHANGES FROM ORIGINAL CONTRACT DRAWINGS CLEARLY AND ACCURATELY INCLUDING WORK INSTALLED AS A MODIFICATION OR ADDITION TO THE ORIGINAL DESIGN TURN OVER ALL OPERATING MANUALS, MAINTENANCE MANUALS, AND "AS BUILT" DRAWINGS TO OWNER AT CONCLUSION OF CONSTRUCTION.
24. DO NOT SUPPORT EQUIPMENT FROM SUSPENDED CEILINGS. SUPPORT ALL EQUIPMENT AND PIPING FROM BUILDING. STRUCTURE TO PROVIDE A VIBRATION FREE INSTALLATION. NOTIFY ARCHITECT AND STRUCTURAL ENGINEER OF ALL WEIGHTS AND METHODS OF SUPPORT.
25. RUN PIPING/WIRING CONCEALED, UNLESS SPECIFIED OTHERWISE, AND CLEAR OF CEILING INSERTS.
26. PROVIDE CLAMPS, OFFSETS, EXPANSION JOINTS, ANCHORS AND GUIDES AS NECESSARY TO PREVENT STRESS ON PIPING/WIRING. .
27. ANY REFERENCE TO ELECTRICAL, PLUMBING AND HVAC CONTRACTORS, NOTED ON THESE DRAWINGS OR STATED IN THE SPECIFICATIONS SHALL NOT BE MISCONSTRUED AS AN INTENTION TO DEFINE SEPARATE CONTRACTORS FOR THE RESPECTIVE WORK. THE GENERAL CONTRACTOR SHALL COORDINATE AND PROVIDE A COMPLETE BUILDING WITH COMPLETE MECHANICAL AND ELECTRICAL SYSTEMS, REGARDLESS OF ANY SPECIFICATION REFERENCES TO OTHER CONTRACTORS.
28. GUARANTEE WORK OF THIS CONTRACTOR IN WRITING FOR ONE YEAR FROM THE DATE OF OWNER'S ACCEPTANCE OF CERTIFICATE OF SUBSTANTIAL COMPLETION. PROMPTLY, REPAIR OR REPLACE DEFECTIVE MATERIALS, EQUIPMENT, WORKMANSHIP AND INSTALLATIONS THAT DEVELOP DEFECTS WITHIN THIS PERIOD. PROMPTLY AND TO OWNERS SATISFACTION, CORRECT DAMAGE CAUSED IN MAKING NECESSARY REPAIRS AND REPLACEMENTS UNDER GUARANTEED AT NO ADDITIONAL COST TO OWNER. SUBMIT GUARANTEE TO ARCHITECT BEFORE FINAL PAYMENT. STATEMENT OF GUARANTEE REQUIREMENTS SHALL NOT BE INTERRUPTED TO LIMIT OWNER'S RIGHTS UNDER LAW AND THIS CONTRACT.

LEGEND

AFF	ABOVE FINISHED FLOOR
AP	ACCESS PANEL
ARCH	ARCHITECT
BV	BALL VALVE
BLDG	BUILDING
CV	CHECK VALVE
CO	WALL CLEANOUT
CO	FLOOR CLEANOUT
CW	COLD WATER
CD	CONDENSATE
CTE	CONNECT TO EXISTING
	DIRECTION OF SLOPE
DN	DOWN
DWG	DRAWING
ED	EMERGENCY DRAIN
DP, DN	ELBOW DOWN OR DROP
UP	ELBOW UP OR RISE
FLR	FLOOR
FD	FLOOR DRAIN
	FLOW IN DIRECTION OF ARROW
G	GAS
HB	HOSE BIBB W/ VACUUM BREAKER
HW	HOT WATER
HWR	HOT WATER RETURN
140 HW	140 DEG. HOT WATER
IWR	INDIRECT WASTE RECEPTOR
LAV	LAVATORY
MFR	MANUFACTURER
MSB	MOP SERVICE BASIN
NTS	NOT TO SCALE
	P-TRAP
RAC	RUN ABOVE CEILING
RAF	RUN ABOVE FLOOR
RBF	RUN BELOW FLOOR
RCP	REINFORCED CONCRETE PIPE
RWC	RAIN WATER CONDUCTOR
SAN	SANITARY
DP, DN	TEE LOOKING DOWN
UP	TEE LOOKING UP
TYP	TYPICAL
UR	URINAL
V	VENT
VTR	VENT THRU ROOF
WH	WALL HYDRANT
WC	WATER CLOSET

PLUMBING FIXTURE SCHEDULE

*PLUMBING CONTRACTOR TO VERIFY PLUMBING FIXTURES WITH ARCHITECT/OWNER PRIOR TO PURCHASE/BID.

SYMBOL	DESCRIPTION	FIXTURE				FITTING			TRAP	COLOR	CARRIER	REMARKS
		MFGR	MODEL	TYPE	SIZE	MFGR	TYPE	SUPPLY				
WC-1	PUBLIC ADA WATER CLOSET. FLOOR MTD, TANK TYPE	MANFIELD	137-160	ELONGATED BOWL, VITREOUS CHINA	1.6 GPF	---	ADA TANK TYPE TOILET	1/2" SUPPLY	INTEGRAL	WHITE	---	SOLID PLASTIC, OPEN FRONT SEAT W/O COVER, BEMIS #1955CT.
LAV-1	PUBLIC ADA WALL HUNG LAVATORY	ZURN	Z5350	WALL HUNG, VITREOUS CHINA	19"X17"	MOEN #WS84503	SINGLE LEVER FAUCET	1/2" SUPPLIES, ANGLE STOPS, C.B. ESCUTCHEON	1 1/2" PVC W/ CLEANOUT PLUG	WHITE	---	PROVIDE TRUEBRO #102W & 105W SUPPLY & WASTE PIPING INSULATION. PROVIDE THERMOSTATIC MIXING VALVE.
SK-1	KITCHENETTE SINK	AMERICAN STANDARD	22SB.62522 83S.075	ADA DROP-IN	25"X22"X6"	MOEN #87233	ADA PULL DOWN FAUCET	1/2" SUPPLIES, ANGLE STOPS, C.B. ESCUTCHEON	1 1/2" PVC W/ CLEANOUT PLUG	STAINLESS	---	PROVIDE WITH STRAINER/OFFSET TAILPIECE & TRUEBRO #102W & 105W SUPPLY & WASTE PIPING INSULATION.
MSB-1	MOP SERVICE BASIN	MUSTEE	63M	FLOOR MOUNTED	24"X24"X10"	MUSTEE #63.600A	WALL MOUNTED FAUCET	1/2" SUPPLIES,	3" PVC	WHITE	---	PROVIDE WITH HOSE & HOSE HOLDER (#65.700), MOP HANGER (#65.600), BUMPER GUARDS (#63.401), & WALL GUARDS (#67.2424).

WATER HEATER SCHEDULE

UNIT NO.	LOCATION	MFGR	MODEL NO.	STORAGE CAPACITY	HEATING MEDIUM	ELECTRICAL CHARACTERISTICS	INPUT	RECOVERY @ 100° F	REMARKS
WH-1	MECHANICAL ROOM	BRADFORD WHITE	LE250S3-3	50 GALLON	ELECTRIC	240 V, 1-PHASE	4.5 KW	---	W/ WATTS #PLT-S-M1 2-GALLON EXPANSION TANK (ET-1) & IPS CORPORATION WATER HEATER PAN

PLUMBING SPECIALTIES

UNIT NO	DESCRIPTION	MFGR	MODEL NO.	REMARK
CO	FLOOR CLEANOUT	JR SMITH	4031	ROUND TOP
CO	WALL CLEANOUT	JR SMITH	4436	FACE OF WALL COVER
BFP-1	BACKFLOW PREVENTER	WATTS	LF909 - SMALL	---
ROB-1	WATER OUTLET BOX	OATEY	38486	TO BE FIRE-RATED WHEN LOCATED IN A FIRE-RATED WALL.
IWR-1	INDIRECT WASTE RECEPTOR	JR SMITH	3821	PROVIDE JR SMITH #2692 TRAP SEAL. SEAL TO BE IN ACCORDANCE WITH ASSE 1072
HB-1	FROST-PROOF HOSE BIB	WOODFORD	MODEL 19	INSTALL HOSE BIB WITH INTERIOR SHUT-OFF VALVE FOR WINTERIZATION.

WATER SUPPLY DATA

LOCATION: 10 W. 23RD STREET

WATER MAIN SIZE	---
STATIC PRESSURE	45 PSI
RESIDUAL PRESSURE	42 PSI *
WATER FLOW	1,060 GPM

* CONTRACTOR SHALL CONFIRM PRESSURE PRIOR TO PREPARING HYDRAULIC CALCULATIONS

PUMP SCHEDULE

UNIT NO.	SERVICE	LOCATION	GPM	HEAD (FT)	ELECTRIC CHARACTERISTICS	MOTOR HP	MODEL NUMBER	REMARKS
HWRP-1	HOT WATER RECIRC PUMP	MECHANICAL ROOM	1	15	115 V/ 1Ø	--	BELL & GOSSETT #ECO-CIRC+ 20-18	PUMP TO HAVE SET POINT TEMPERATURE SENSOR OPTION TO MAINTAIN 125F. INSTALL PER DETAIL.

PUMP SCHEDULE: **CONTRACTOR TO PRICE AS A DEDUCT ALTERNATE**

UNIT NO.	SERVICE	LOCATION	GPM	HEAD (FT)	ELECTRIC CHARACTERISTICS	MOTOR HP	MODEL NUMBER	REMARKS
DWBP-1	DOM. WATER BOOSTER	BASEMENT	20	66	240 V/ 1Ø	3/4	ALYAN PUMPS #VSPP-CDU120/1-1	SIMPLEX PUMP PACKAGE W/ NEMA 4X PUMP CONTROLLER (#ESV751N02YXB), DISCONNECT SWITCH AND ELBI 4.5 GALLON EXPANSION TANK (#DXT-18). PROVIDE AN ELBI DOUBLE SPHERE RUBBER EXPANSION JOINT (#EMSEJX2-015) ON THE DOMESTIC WATER DISCHARGE END OF PIPE AND SPRING-ACTION VIBRATION-DAMPING MOUNTS FOR DOMESTIC WATER PUMP SKID FOR VIBRATION ISOLATION/NOISE ATTENUATION.

CIRCUIT SOLVER SCHEDULE

UNIT NO	LOCATION	MFGR	MODEL NO.	SIZE	RETURN TEMP	FLOW RATE	PRESSURE DROP	REMARKS
CS-1	VARIES, HOT WATER RECIRCULATION	THERM OMEGATECH	CSUAS-3/4-120	3/4"	120°F	1 GPM	1.4 PSI (3.24' HD)	THERMOSTATIC BALANCE VALVE W/INTERGATED UNION BODY, BALL VALVES, & STAINER

CODE SUMMARY

MUNICIPALITY	CITY OF CHESTER
USE AND OCC. CLASSIFICATION	GROUP B (BUSINESS)
APPLICABLE CODES	BUILDING CODE: 2018 INTERNATIONAL BUILDING CODE MECHANICAL CODE: 2018 INTERNATIONAL MECHANICAL CODE PLUMBING CODE: 2018 INTERNATIONAL PLUMBING CODE FUEL GAS CODE: 2018 INTERNATIONAL FUEL GAS CODE ELECTRICAL CODE: 2017 NATIONAL ELECTRICAL CODE (BY REFERENCE) FIRE CODE: 2018 INTERNATIONAL FIRE CODE ENERGY CODE: 2018 INTERNATIONAL ENERGY CONSERVATION CODE/ASHRAE 90.1-2016

2304 EDGEMONT AVE MEP - DRAWING INDEX

ISSUE: BID SET - 08/09/2024; DESIGN DEVELOPMENT - 06/14/2024

DRAWING NO.	DRAWING TITLE
P-1	PLUMBING COVER SHEET
P-1.1	PLUMBING DETAILS
P-2	PLUMBING FLOOR PLANS - NEW WORK
P-3	PLUMBING FLOOR PLANS - NEW WORK
P-4	PLUMBING RISER DIAGRAMS
P-5	PLUMBING SPECIFICATIONS

LINN ARCHITECTS
ARCHITECTURE
ENGINEERING
SITE PLANNING
CODE SERVICES
1140 N. PROVIDENCE ROAD
MEDIA, PENNSYLVANIA 19063
TEL: 610-566-7044
FAX: 610-566-3258

ADVANCED ENGINEERING INC
5500 Pennell Road | Media PA 19063

Project No. 23028

PLUMBING COVER SHEET

BUILDING RENOVATIONS
AIDS CARE GROUP

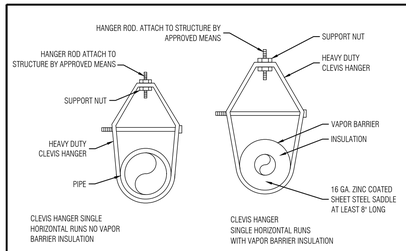
2304 EDGMONT AVENUE
CHESTER, PA 19013

REVISIONS NO.	DESCRIPTION	DATE
0	BID SET	08/09/24

DATE: 08/09/24
SCALE: AS NOTED
DRAWN BY: AG
CHECKED BY: EE
PROJ. NO.: 23028

SHEET NO.
P-1

© 2024



1. HORIZONTAL PIPING SHALL BE SUSPENDED FROM BUILDING STRUCTURE BY MILD STEEL ROD CONNECTING PIPE HANGER TO INSERTS, BEAM CLAMPS, ANGLE BRACKETS AND LAG SCREWS AS REQUIRED BY BUILDING CONSTRUCTION IN ACCORDANCE WITH THE FOLLOWING:

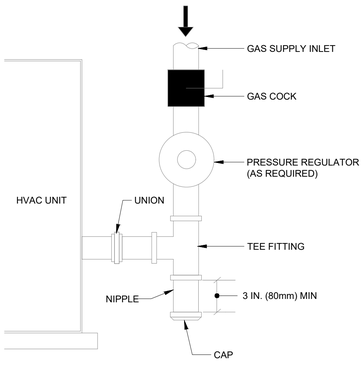
ROD SIZE	PIPE SIZE
3/8"	1/2" TO 2"
1/2"	2 1/2" TO 4"
5/8"	4" - 8"

2. HANGERS ON INSULATED LINES SHALL BE SIZED TO FIT THE OUTSIDE DIAMETER OF PIPE INSULATION. PROVIDE HANGERS FOR INSULATED PIPING WITH 12" LONG, 18 GAUGE GALVANIZED INSULATION SHIELDS.

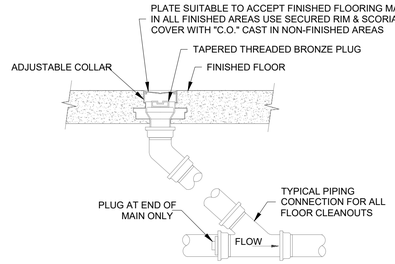
3. SCHEDULE - HANGER SPACING IN FEET/PIPE MATERIAL

PIPE SIZE (INCHES)	STEEL (FEET)	COPPER OR BRASS (FEET)	PVC
1/2" -1"	7	5	4
1 1/4" - 3"	10	6	4
4" - 8"	10	8	4

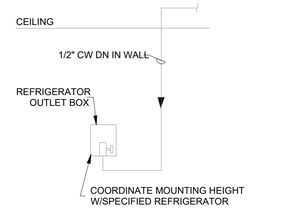
1 PIPE SUPPORT DETAIL
SCALE: NONE



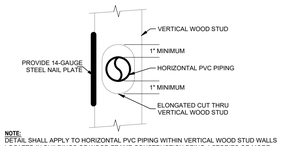
2 GAS EQUIPMENT DRIP LEG DETAIL
SCALE: NONE



3 TYPICAL INTERIOR CLEANOUT DETAIL
SCALE: NONE

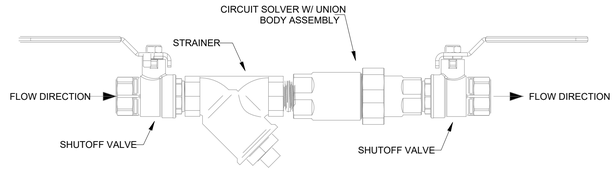


4 WATER OUTLET BOX DETAIL
SCALE: NONE

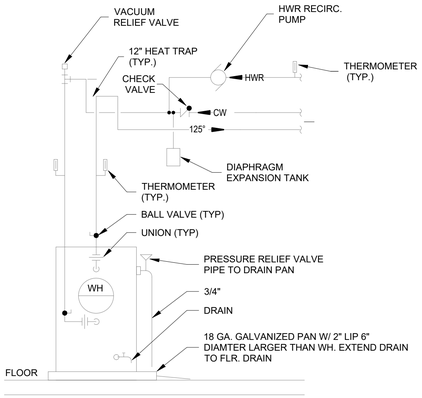


NOTE:
DETAIL SHALL APPLY TO HORIZONTAL PVC PIPING WITHIN VERTICAL WOOD STUD WALLS LOCATED IN BUILDINGS OF WOOD FRAME CONSTRUCTION BEING 4 STORIES OR MORE.

5 PIPE THRU VERTICAL WOODEN STUD DETAIL
SCALE: NONE



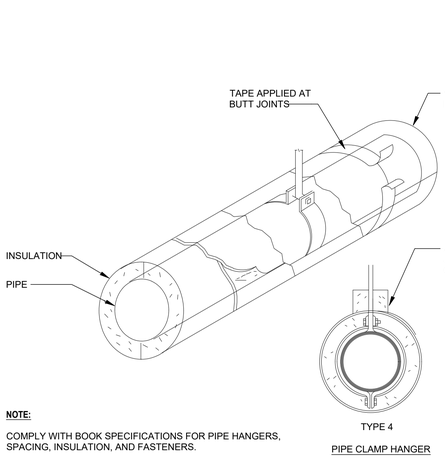
6 CIRCUIT SOLVER DETAIL
SCALE: NONE



NOTES:

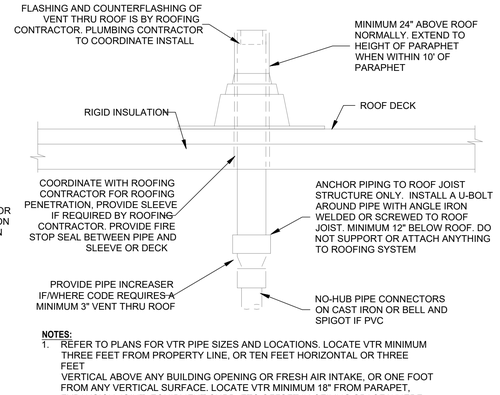
1. ALL WATER HEATERS AND WATER HEATING EQUIPMENT SHALL HAVE A MINIMUM OF 4 FEET OF DEVELOPED LENGTH OF COPPER TUBING OR SIMILAR METALLIC PIPING MATERIAL CONNECTING DIRECTLY TO THE INLET AND OUTLET OF THE UNIT.

7 WATER HEATER - ELETRIC WITH RECIRCULATION DETAIL
SCALE: NONE



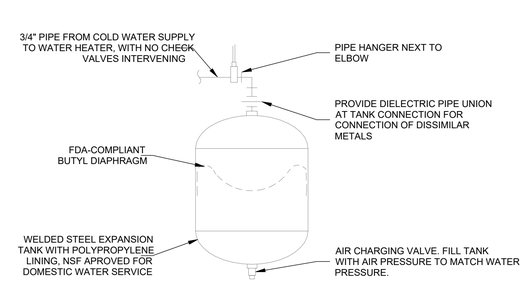
NOTE:
COMPLY WITH BOOK SPECIFICATIONS FOR PIPE HANGERS, SPACING, INSULATION, AND FASTENERS.

8 PIPE HANGER SUPPORT WITH INSULATION & VAPOR JACKET DETAIL
SCALE: NONE



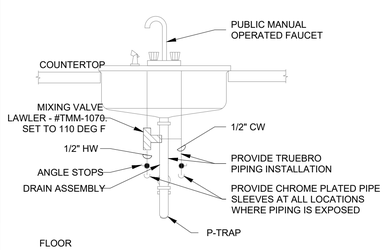
NOTES:
1. REFER TO PLANS FOR VTR PIPE SIZES AND LOCATIONS. LOCATE VTR MINIMUM THREE FEET FROM PROPERTY LINE, OR TEN FEET HORIZONTAL OR THREE FEET VERTICAL ABOVE ANY BUILDING OPENING OR FRESH AIR INTAKE, OR ONE FOOT FROM ANY VERTICAL SURFACE. LOCATE VTR MINIMUM 18" FROM PARAPET, EXPANSION JOINT, EQUIPMENT CURB, ETC OFFSET IN CEILING SPACE WHERE REQUIRED TO MEET THESE CONDITIONS.
2. ALL ROOF PENETRATIONS TO BE MADE SHALL BE IN COMPLIANCE WITH ANY EXISTING ROOF WARRANTIES.

9 VENT THRU ROOF DETAIL
SCALE: NONE

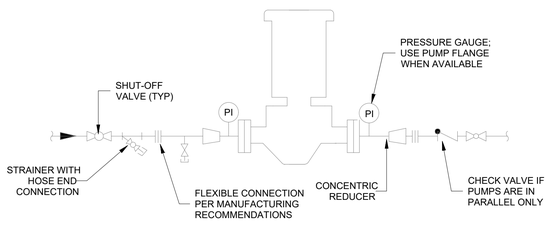


NOTE:
PIPING ARRANGEMENT SHOWN IS SCHEMATIC. ADJUST TO SUIT FIELD CONDITIONS. FOLLOW MANUFACTURER'S INSTRUCTIONS FOR INSTALLATION PROCEDURE. VERIFY PROPER OPERATION WHEN INSTALLED. PROVIDE SEISMIC STRAP OR BRACING WHEN REQUIRED BY LOCAL AUTHORITIES.

10 WATER HEATER EXPANSION TANK DETAIL
SCALE: NONE



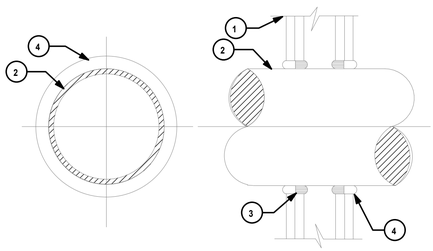
11 PUBLIC LAVATORY SINK (MANUAL OPERATED) DETAIL
SCALE: NONE



NOTES

1. PIPE SUPPORTS NOT SHOWN; INSTALL AND SUPPORT PER MFG RECOMMENDATIONS.
2. SUPPORT PUMP IF FLEX CONNECTIONS ARE USED.

12 HOT WATER RECIRCULATION PUMP DETAIL
SCALE: NONE

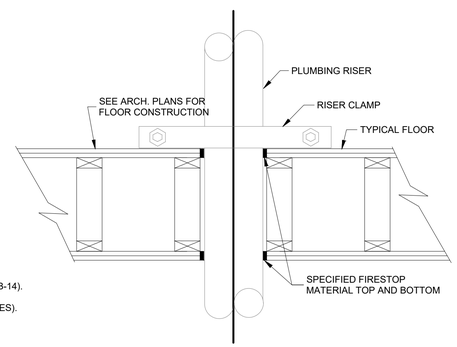


1. FIRE-RATED GYPSUM WALLBOARD.
2. METALLIC PIPE (NOT FOR USE WITH ALUMINUM OR LEAD).
3. FORMING MATERIAL. CERAMIC FIBER OR MINERAL WOOL. PACK AS NECESSARY TO RETAIN FILL MATERIAL.
4. FILL VOID OR CAVITY MATERIAL. FLAME-SAFE TYPE FS OR FST900 SERIES COMPOUND CAULKED OR TROWELLED TO REQUIRED DEPTH.

NOTES:
1. SYSTEM DESIGN EVALUATED TO THE TIME TEMPERATURE REQUIREMENTS OF ASTM E110.
2. DESIGN BASED UPON UL CLASSIFIED SYSTEM NO. 230 EVALUATED UL STANDARD 1470 (ASTMEB-14).
3. INSTALL FIRESTOP COMPOUND TO A NET DEPTH THICKNESS OF 1 1/4" MINIMUM (BOTH SIDES).
4. MINIMUM ANGULAR SPACE (BETWEEN PIPE AND SIDE OF OPENING) 3/16 MAX. FT.

1 & 2 HOUR RATED FIRESTOP FOR METALLIC PIPE PENETRATIONS THROUGH GYPSUM WALLBOARD ASSEMBLIES USING FLAME-SAFE FS, FST900 SEROES

13 FIRE STOP DETAIL - 1&2 HOUR RATED
SCALE: NONE



14 PIPE RISER SUPPORT DETAIL
SCALE: NONE

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TEL: 610-566-7044
FAX: 610-566-3258

ADVANCED ENGINEERING INC
5560 Pennell Road | Media PA 19063

Project No. 23028

PLUMBING DETAILS

BUILDING RENOVATIONS
AIDS CARE GROUP

2304 EDGMONT AVENUE
CHESTER, PA 19013

REVISIONS NO.	DESCRIPTION	DATE
0	BID SET	08/09/24

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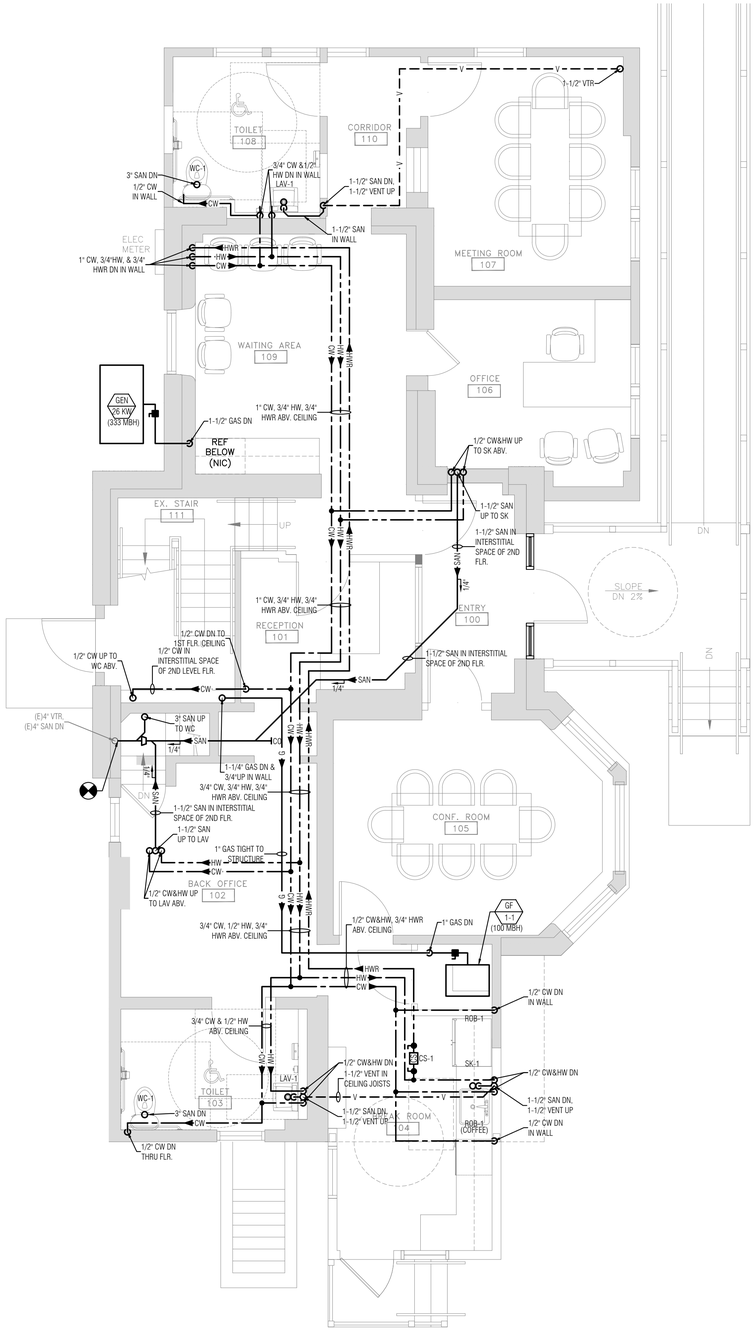
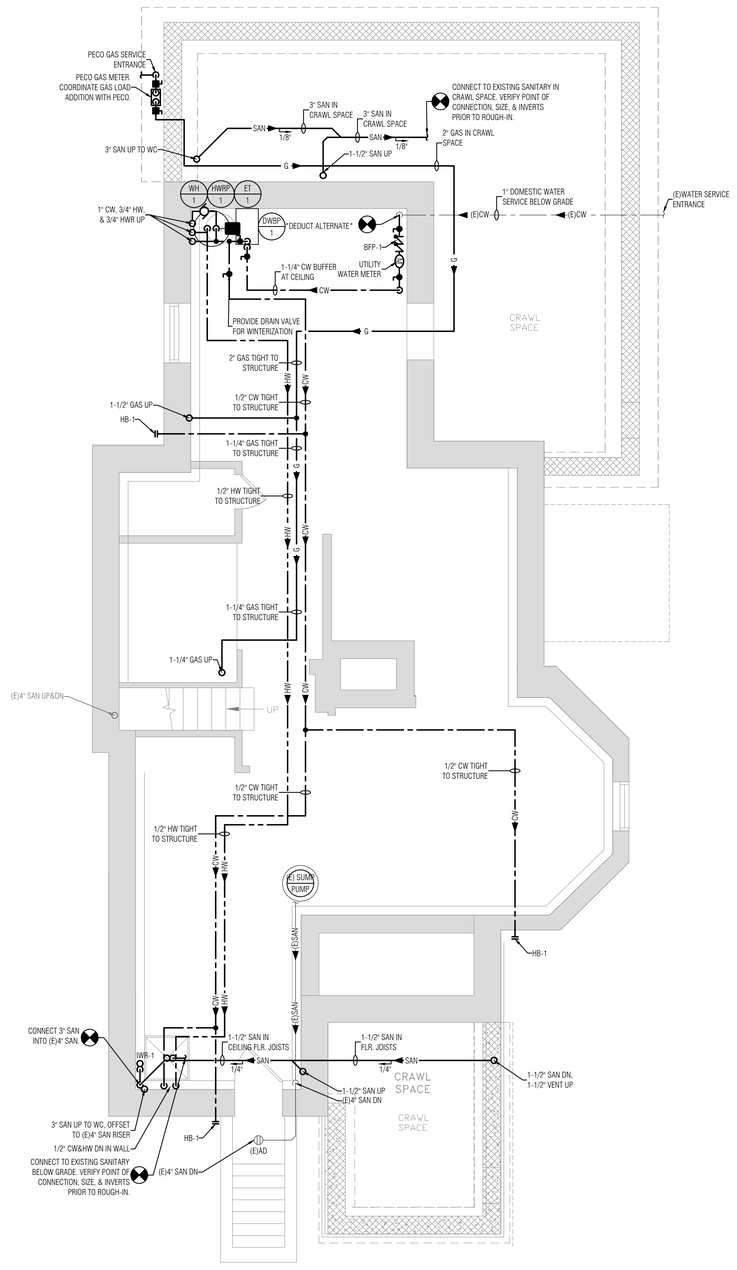


2 FIRST FLOOR PLAN

P-2 SCALE - 1/4" = 1'-0"



1 BASEMENT FLOOR PLAN

P-2 SCALE -1/4" = 1'-0"

PLUMBING SHEET NOTES - NEW WORK

1. CONTRACTOR SHALL VERIFY THE EXACT LOCATION, SIZE, CONFIGURATION AND ROUTING OF PLUMBING IN THE FIELD. ALL INFORMATION SHOWN IS BASED ON BEST INFORMATION AVAILABLE AT THE TIME OF DOCUMENTATION. CONTRACTOR SHALL REPORT BACK TO ENGINEER WITH ANY DISCREPANCIES BETWEEN EXISTING CONDITIONS AND PLUMBING PLANS.
2. PLUMBING CONTRACTOR IS RESPONSIBLE FOR ITS CUTTING AND PATCHING REQUIRED FOR THE INSTALLATION OF ITS NEW WORK. CUTTING AND PATCHING SHALL BE COMPLETED IN A NEAT WORKMANLIKE MANNER. PATCHING MATERIALS SHALL MATCH EXISTING MATERIALS TO THE GREATEST EXTENT POSSIBLE. PROVIDE TOUCH-UP TO MATCH EXISTING SURROUNDING AREAS OF CUTTING AND PATCHING WORK.
3. INSTALL ALL PIPING ON THE INSULATED, CONDITIONED SIDE OF THE BUILDING ENVELOPE.

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ENGINEERING
SITE PLANNING
CODE SERVICES
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MEDIA, PENNSYLVANIA 19063
TEL: 610-566-7044
FAX: 610-566-3258

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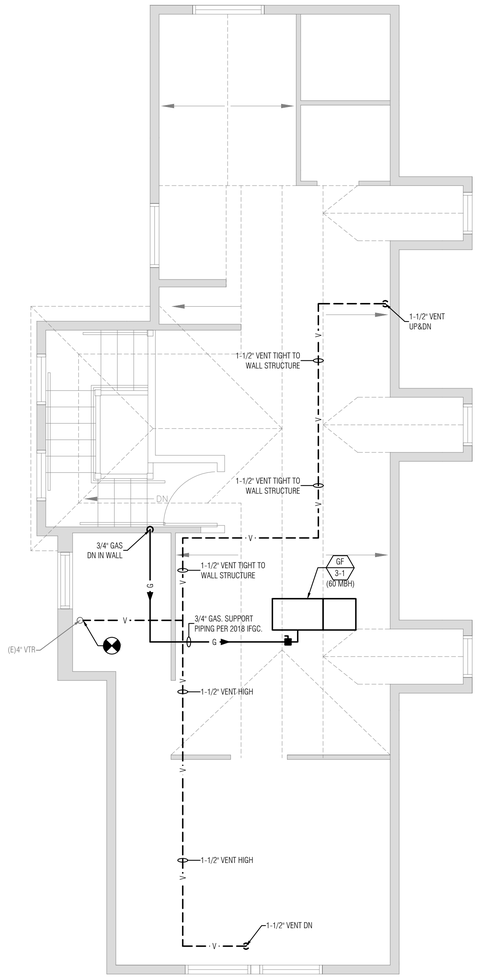
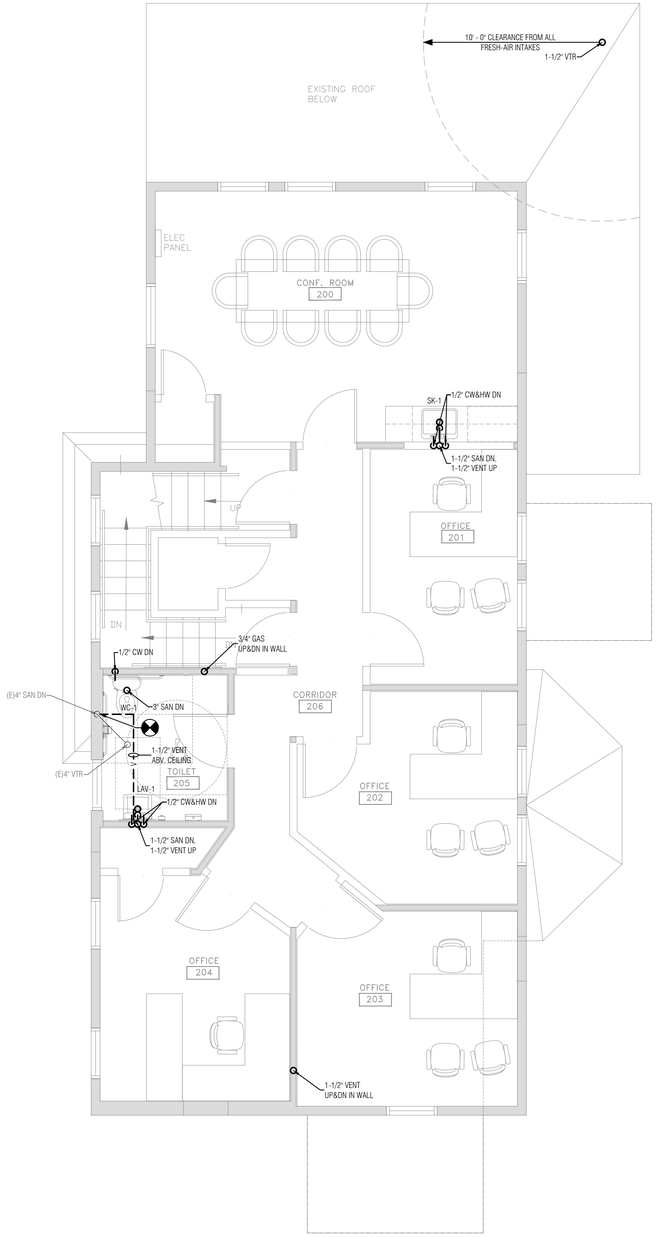


2 P-3 **THIRD FLOOR PLAN**

SCALE - 1/4" = 1'-0"



1 P-3 **SECOND FLOOR PLAN**

SCALE - 1/4" = 1'-0"

PLUMBING SHEET NOTES - NEW WORK

1. CONTRACTOR SHALL VERIFY THE EXACT LOCATION, SIZE, CONFIGURATION AND ROUTING OF PLUMBING IN THE FIELD. ALL INFORMATION SHOWN IS BASED ON BEST INFORMATION AVAILABLE AT THE TIME OF DOCUMENTATION. CONTRACTOR SHALL REPORT BACK TO ENGINEER WITH ANY DISCREPANCIES BETWEEN EXISTING CONDITIONS AND PLUMBING PLANS.
2. PLUMBING CONTRACTOR IS RESPONSIBLE FOR ITS CUTTING AND PATCHING REQUIRED FOR THE INSTALLATION OF ITS NEW WORK. CUTTING AND PATCHING SHALL BE COMPLETED IN A NEAT WORKMANLIKE MANNER. PATCHING MATERIALS SHALL MATCH EXISTING MATERIALS TO THE GREATEST EXTENT POSSIBLE. PROVIDE TOUCH-UP TO MATCH EXISTING SURROUNDING AREAS OF CUTTING AND PATCHING WORK.
3. INSTALL ALL PIPING ON THE INSULATED, CONDITIONED SIDE OF THE BUILDING ENVELOPE.

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PIPE MATERIAL SCHEDULE

SYSTEMS		PIPE											FITTINGS										JOINTS							REMARKS
		CAST IRON (NO-HUB)	CAST IRON (HUB & SPIGOT)	GALVANIZED STEEL SCH. 40	BLACK STEEL SCH. 40	TYPE DWV COPPER	TYPE L COPPER	TYPE K COPPER	PVC	CPVC	PEX	CORRUGATED STAINLESS STEEL TUBING (CSST)	NO-HUB	HUB & SPIGOT	GALVANIZED STEEL SCH. 40	BLACK STEEL SCH. 40	DWV COPPER SOLDER FITTINGS	COPPER SOLDER FITTINGS OR PROPRESS FITTINGS	DWV PVC FITTINGS	CPVC FITTINGS	MECHANICAL JOINT FOR PEX	BRASS FITTINGS FOR CSST	MECHANICAL COUPLING	LEAD & OAKUM OR COMPRESSION GASKET	THREADED	SOLDERED 95-5	SOLDERED 95-5 OR PROPRESS	PVC SOLVENT CEMENT	CPVC SOLVENT CEMENT	
COLD WATER	ABOVE GROUND						●			●	●								●		●	●						●		●	
	BELOW GROUND									●	●								●		●	●								●	
HOT WATER	ABOVE GROUND						●			●	●								●		●	●						●		●	
	BELOW GROUND																														
SANITARY	ABOVE GROUND								●											●									●		
	BELOW GROUND								●											●									●		
VENT	ABOVE GROUND								●											●									●		
	BELOW GROUND								●											●									●		
STORM	ABOVE GROUND								●											●									●		
	BELOW GROUND								●											●									●		
NATURAL GAS	INTERIOR, ABOVE GROUND				●							●				●						●				●					①
	INTERIOR, BELOW GROUND											●										●								②
NATURAL GAS	EXTERIOR, ABOVE GROUND				●							●				●						●				●				③
	EXTERIOR, BELOW GROUND											●										●								④
INDIRECT WASTE	ABOVE GROUND								●											●									●		
	BELOW GROUND																														

① GAS PIPE SYSTEM SIZED BASED ON BLACK STEEL SCHEDULE 40 MATERIAL. IF ALTERNATE MATERIAL (CSST) IS USED, CONTRACTOR IS RESPONSIBLE FOR ADJUSTING PIPE SIZE TO MEET THE DESIGN PRESSURE DROP.

② PIPING TO BE INSTALLED IN CONDUIT IN ACCORDANCE WITH INTERNATIONAL FUEL GAS CODE.

③ EXTERIOR GAS PIPING TO BE PAINTED. COORDINATE COLOR WITH ARCHITECT.

④ CSST PIPE TO BE RATED FOR DIRECT BURIAL.

PLUMBING PIPE INSULATION MATRIX

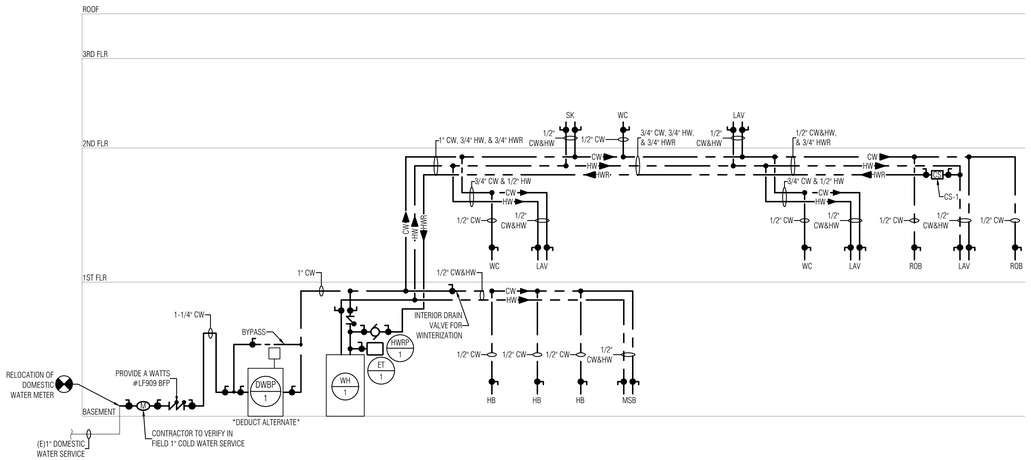
PLUMBING SYSTEM TYPE	FLUID OPERATING TEMPERATURE RANGE (°F)	INSULATION CONDUCTIVITY		NOMINAL PIPE OR TUBE SIZE (INCHES)					REMARKS
		CONDUCTIVITY (BTU·IN./(HR·FT²·°F)	MEAN RATING TEMPERATURE, °F	SMALLER THAN 1"	1" & 1-1/4"	1-1/2" TO 3"	4" TO 6"	8" & LARGER	
DOMESTIC COLD WATER	40°F - 60°F	0.21 - 0.27	75	1/2"	1/2"	1"	1"	1"	2 3 4
DOMESTIC HOT WATER	105°F -140°F	0.21 - 0.28	100	1"	1"	1-1/2"	1-1/2"	1-1/2"	2 3 4
DOMESTIC HOT WATER RETURN	105°F -120°F	0.21 - 0.28	100	1"	1"	1-1/2"	1-1/2"	1-1/2"	3 4
DOMESTIC TEPID WATER	60°F - 100°F	---	---	N/A	N/A	N/A	N/A	N/A	
SANITARY	40°F - 60°F	0.21 - 0.27	75	1"	1"	1"	1"	1"	1 2
STORM	40°F - 60°F	0.21 - 0.27	75	1"	1"	1"	1"	1"	1

① INSULATION IS TO BE PROVIDED ON **ALL** TRAPS LOCATED IN UNCONDITIONED SPACES INCLUDING GARAGES / CRAWL SPACES.

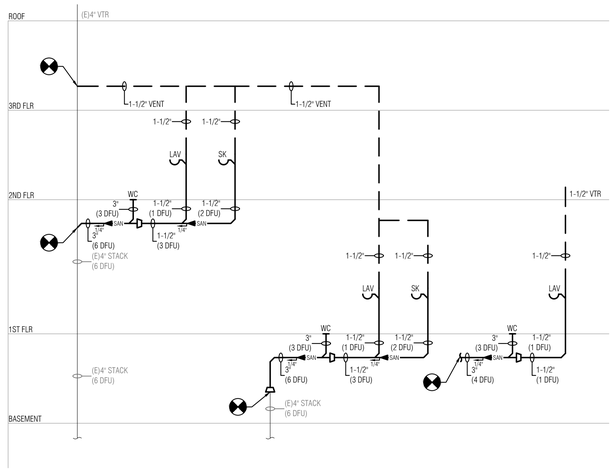
② TRAP GUARDS & SUPPLY VALVE STOP GUARDS ARE TO BE PROVIDED ON ALL PUBLIC SINKS & LAVATORIES.

③ FOR PIPING SMALLER THAN 1-1/2" AND LOCATED IN PARTITIONS WITHIN CONDITIONED SPACES, REDUCTION OF THESE THICKNESSES BY 1" SHALL BE PERMITTED, BUT NOT TO A THICKNESS LESS THAN 1".

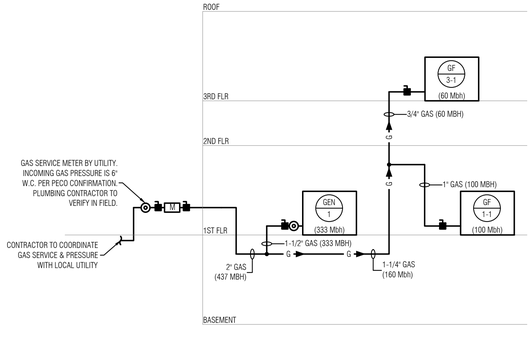
④ PIPE INSULATION SHALL BE CONTINUOUS EXCEPT WHERE PASSING THROUGH A FRAMING MEMBER.



1 P-4 DOMESTIC WATER RISER DIAGRAM
NO SCALE



2 P-4 SANITARY RISER DIAGRAM
NO SCALE



3 P-4 NATURAL GAS RISER DIAGRAM
NO SCALE

GAS PIPING CALCULATION

GAS TYPE	INLET PRESSURE	PRESSURE DROP	SPECIFIC GRAVITY	LENGTH	TOTAL CONNECTED LOAD	PIPE SIZE*
NATURAL	>2 PSI	0.3" W.C.	0.60	125'	493 Mbh	2"

*GAS PIPING SIZED PER 2018 INTERNATIONAL FUEL GAS CODE TABLE 402.4(1)

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CODE SERVICES
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MEDIA, PENNSYLVANIA 19063
TEL: 610-566-7044
FAX: 610-566-3258

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PLUMBING RISER DIAGRAMS

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AIDS CARE GROUP
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CHESTER, PA 19013

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SECTION 22 00 00 BASIC PLUMBING REQUIREMENTS

1. **GENERAL**
   a. THE PLUMBING CONTRACTOR SHALL BE A LICENSED INSTALLER OF PLUMBING SYSTEMS IN THE STATE/JURISDICTION IN WHICH THE PROJECT IS LOCATED.
   b. ALL WORK SHALL COMPLY WITH THE REQUIREMENTS OF THE CURRENT CODES AND REGULATIONS.
   c. THE PLUMBING SYSTEMS SHALL BE COMPLETE WITH ALL PIPES, FITTING, TRAPS, SUPPLIES, VALVES, HANGERS AND SUPPORTS, INSULATION, ETC. AND ALL OTHER ITEMS NECESSARY FOR COMPLETE, SATISFACTORY OPERATING AND APPROVED TYPE SYSTEM.
   d. ALL PIPE FITTINGS, VALVES, FIXTURES, HANGERS, SUPPORTS, INSULATION, ETC. SHALL CONFORM TO THE REQUIREMENTS OF THE CODES.
2. **VERIFYING CONDITIONS**
   a. EXAMINE ALL DRAWINGS COVERING THE WORK OF THIS SECTION AND REFER TO ALL OTHER DRAWINGS, INCLUDING ARCHITECTURAL, MECHANICAL, AND ELECTRICAL DRAWINGS, WHICH MAY AFFECT THE WORK OF THIS SECTION OR REQUIRE COORDINATION BY SAME.
   b. BEFORE STARTING ANY WORK, EXAMINE EXISTING CONDITIONS, AND THOROUGHLY CHECK DRAWINGS, DIMENSIONS, SPECIFICATIONS, AND ADJOINING OR UNDERLYING CONDITIONS IN WHICH THE WORK OF THIS SECTION IS TO BE PERFORMED.
   c. REPORT, IN WRITING, TO THE ARCHITECT/OWNER ANY AND ALL CONDITIONS WHICH MAY INTERFERE WITH OR OTHERWISE AFFECT OR PREVENT THE PROPER EXECUTION AND COMPLETION OF THE WORK OF THIS SECTION. DO NOT COMMENCE WORK UNTIL ANY AND ALL SUCH CONDITIONS HAVE BEEN CORRECTED BY THE TRADE OR TRADES RESPONSIBLE.
   d. FAILURE TO NOTIFY THE ARCHITECT OF UNSATISFACTORY CONDITIONS WILL BE CONSTRUED AS AN ACCEPTANCE OF ALL CONDITIONS.
   e. THE EXECUTION OF THE WORK OF THIS SECTION CONSTITUTES ACCEPTANCE OF THE BASE OR ADJOINING WORK AND OTHER CONDITIONS AS BEING SATISFACTORY IN EVERY RESPECT AND LATER CLAIMS OF DEFECTS IN SUCH CASES WILL NOT BE PERMITTED.
   f. THE DRAWINGS INDICATE AND THE SPECIFICATIONS DESCRIBE THE GENERAL ARRANGEMENT AND THE APPROXIMATE LOCATION OF EQUIPMENT, FIXTURES, PIPING, ETC. EXACT LOCATIONS MAY BE ADJUSTED IN THE FIELD TO SUIT EXISTING CONDITIONS.
   g. THE CONTRACTOR SHALL, WITHOUT ADDITIONAL COST TO THE OWNER, MAKE ALL REASONABLE MODIFICATIONS IN THE WORK AS MAY BE REQUIRED TO PREVENT CONFLICT WITH THE WORK OF OTHER TRADES, OR FOR THE PROPER INSTALLATION OF THE WORK.
3. **SUBMITTALS**
   a. MATERIAL AND EQUIPMENT REQUIRING SHOP DRAWING SUBMITTALS SHALL INCLUDE BUT NOT LIMITED TO::
      i. PLUMBING FIXTURES.
      ii. BACKFLOW PREVENTERS.
      iii. SUMP PUMP.
      iv. DOMESTIC WATER PUMPING SYSTEM.
      v. DOMESTIC WATER HEATING SYSTEM.
      vi. PIPE MATERIALS & FITTING.
      vii. PIPE HANGERS & SUPPORTS.
      viii. VALVES.
      ix. INSULATION.
4. **TESTING OF PIPING SYSTEMS**
   a. GENERAL
      i. PIPING SYSTEMS SHALL BE SUBJECTED TO TESTING WATER OR AIR AS NOTED AND SHALL HOLD TIGHT AT THE PRESSURE HEAD STATED FOR THE TIME INTERVAL REQUIRED WITHOUT ADDING AIR OR WATER. WHILE ANY SYSTEM IS BEING TESTED, REQUIRED HEAD OR PRESSURE SHALL BE MAINTAINED UNTIL JOINTS ARE INSPECTED.
      ii. TESTS SHALL BE WITNESSED BY INSPECTOR HAVING JURISDICTION AND THE ARCHITECT WITH 48-HOUR NOTICE GIVEN THESE AUTHORITIES.
      iii. EQUIPMENT, MATERIAL AND LABOR REQUIRED FOR TESTING OF VARIOUS SYSTEMS OR PART THEREOF SHALL BE PROVIDED BY PLUMBING CONTRACTOR.
   b. WASTE SYSTEM
      i. WATER TEST SHALL BE APPLIED TO DRAINAGE SYSTEMS EITHER IN THEIR ENTIRETY OR IN DIVISIONS AS REQUIRED, AFTER ROUGH PIPING HAS BEEN INSTALLED.
      ii. IF APPLIED TO ENTIRE SYSTEM, OPENINGS IN PIPING SYSTEM SHALL BE TIGHTLY CLOSED, EXCEPT THE HIGHEST OPENING, AND SYSTEM FILLED WITH WATER TO POINT OF OVERFLOW.
      iii. IF SYSTEM IS TESTED IN DIVISIONS, EACH OPENING SHALL BE TIGHTLY CLOSED EXCEPT HIGHEST OPENING IN THE DIVISION UNDER TEST, AND EACH DIVISION SHALL BE FILLED WITH WATER BUT NO DIVISION SHALL BE
      iv. IN TESTING SUCCESSIVE DIVISIONS, AT LEAST UPPER 10' OF NEXT PRECEDING DIVISION SHALL BE TESTED SO THAT NO JOINT OF PIPING IN BUILDING, EXCEPT THE UPPERMOST 10' OF THE SYSTEM SHALL BE SUBMITTED TO A TEST OF LESS THAN A 10' HEAD OF WATER.
      v. WATER SHALL BE KEPT IN SYSTEM FOR AT LEAST 15 MINUTES BEFORE INSPECTION STARTS; THE SYSTEM SHALL THEN BE MADE TIGHT AT ALL POINTS.
      vi. PRESSURE TEST PIPING IF REQUIRED BY AUTHORITIES HAVING JURISDICTION.
   c. POINTS OF DRAINAGE SYSTEMS TESTED WITH AIR INSTEAD OF WATER SHALL BE TESTED BY ATTACHING AN AIR COMPRESSOR TESTING APPARATUS TO SUITABLE OPENING AND, AFTER CLOSING ALL OTHER INLETS OR OUTLETS, FORCING AIR INTO SYSTEMS UNTIL A UNIFORM GAUGE PRESSURE OF 5 PSI OR SUFFICIENT PRESSURE TO BALANCE A COLUMN OF MERCURY 10" HIGH. PRESSURE SHALL BE HELD WITHOUT INTRODUCTION OF ADDITIONAL AIR FOR A PERIOD OF AT LEAST 10 MINUTES.
   d. TESTING SUMMARY
      i. W & V - WITH WATER TO A 10 FOOT HEAD FOR 30 MINUTES.
      ii. WATER - WITH POTABLE WATER TO 150 PSI FOR ONE HOUR.
   e. DEFECTIVE WORK: IF INSPECTION OR TESTS SHOW DEFECTS, SUCH DEFECTIVE WORK OR MATERIAL SHALL BE REPLACED AND INSPECTION AND TESTS SHALL BE REPEATED. REPAIRS TO PIPING SHALL BE MADE WITH NEW MATERIAL. NO CAULKING OF SCREWED JOINTS OR HOLES SHALL BE ACCEPTABLE.
5. **CLEANING**
   a. CLEAN SYSTEMS THOROUGHLY BEFORE TESTING. FIXTURES, EQUIPMENT, PIPE, VALVES AND FITTINGS SHALL BE FREE OF GREASE, METAL CUTTINGS, DIRT AND OTHER FOREIGN MATERIAL. REMOVE PROTECTIVE COVERS. FIXTURES (INCLUDING LAVATORIES, WATER CLOSETS AND URINALS) SHALL BE CLEANED AND READY FOR
   b. REPAIR STOPPAGE, DISCOLORATION AND DAMAGE TO PARTS OF BUILDING, FINISH AND FURNISHINGS DUE TO FAILURE TO PROPERLY CLEAN PIPING SYSTEM WITHIN CONTRACT PRICE.
   c. AFTER COMPLETION OF PROJECT, CLEAN THE EXTERIOR SURFACE OF EQUIPMENT INCLUDED IN THIS DIVISION, INCLUDING CONCRETE RESIDUE.
6. **DISINFECTION OF WATER SYSTEMS INTERIOR**
   a. WATER PIPING SYSTEMS SHALL BE THOROUGHLY DISINFECTED WITH A SOLUTION CONTAINING NO LESS THAN 50 PARTS PER MILLION OF AVAILABLE CHLORINE. CHLORINATING MATERIALS SHALL BE EITHER LIQUID CHLORINE OR SODIUM HYPOCHLORITE SOLUTION, SHALL BE INTRODUCED INTO THE SYSTEM AND DRAWN TO ALL JOINTS IN THE SYSTEM. DISINFECTION SOLUTION SHALL BE ALLOWED TO REMAIN IN SYSTEM FOR 24 HOURS, DURING THIS TIME, VALVES AND FAUCETS SHALL BE OPENED AND CLOSED SEVERAL TIMES. AFTER DISINFECTION, SOLUTION SHALL BE FLUSHED FROM THE SYSTEM WITH CLEAR WATER UNTIL RESIDUAL CHLORINE CONTENT IS NO GREATER THAN 0.2 PARTS PER MILLION.
   b. WORK SHALL BE SUPERVISED BY OWNER AND PERFORMED BY APPROVED CHEMICAL TESTING LABORATORY AND RESULTS SENT TO THE ARCHITECT OR ARCHITECT'S REPRESENTATIVE FOR VERIFICATION.
   c. TESTING LABORATORY SHALL SUBMIT A SUMMARY OF TEST PROCEDURE FOR APPROVAL PRIOR TO ANY WORK PERFORMED. WORK SHALL BE IN ACCORDANCE WITH OWNERS REQUIREMENTS. SUBCONTRACTOR SHALL PROVIDE VALVES REQUIRED TO DISINFECT WATER SUPPLY SYSTEM IN PART AS REQUIRED BY PHASING OF CONSTRUCTION AND TO PROVIDE ISOLATING VALVES AND DRAW-OFF VALVES FOR PROPER CONTAINMENT, PHASING AND FLUSHING.
7. **IDENTIFICATION**
   a. PIPING SYSTEM IDENTIFICATION LABELS - INSTALL LABELS ON PIPING IDENTIFYING SYSTEM TYPE. INSTALL LABELS ON PIPING EVERY 20 FEET.
   b. DIRECTION OF FLOW LABEL - INSTALL LABELS ON PIPING INDICATING DIRECTION OF FLOW OF PIPING CONTENTS.
   c. VALVE IDENTIFICATION SIGNS INSTALL BRASS IDENTIFICATION TAGS W/CHAINS ON VALVES. PROVIDE VALVE TAG CHART IDENTIFYING VALVE NUMBER, LOCATION AND SYSTEM TYPE.
8. **LAWS & ORDINANCES**
   a. THE WORK OF THE CONTRACTOR MUST COMPLY WITH ALL LOCAL CODES, LAWS, ORDINANCES AND RULES. THE CONTRACTOR MUST HAVE
9. **SUPERVISION**
   a. THIS CONTRACTOR SHALL HAVE A COMPETENT FOREMAN IN RESPONSIBLE CHARGE OF THE WORK WHO SHALL BE ON THE SITE DURING THE INSTALLATION OF THE MATERIAL FURNISHED UNDER THIS SPECIFICATION UNTIL SAME HAS BEEN PUT IN COMPLETE OPERATIVE CONDITION AND ACCEPTED BY THE OWNER.
10. **CUTTING AND PATCHING**
   a. THIS CONTRACTOR SHALL DO ALL CUTTING AND PATCHING FOR PLUMBING WORK AND SHALL COORDINATE SAME WITH ALL OTHER TRADES. ALL CUTTING SHALL BE SUBJECT TO TRADE REGULATIONS. NO CUTTING OF STRUCTURAL MEMEBERS SHALL BE DONE WITHOUT THE APPROVAL OF THE ARCHITECT/STRUCTURAL ENGINEER.
11. **EXPANSION PROVISIONS**
   a. ALLOW FOR EXPANSION WITH OFFSETS, LOOPS, SWING JOINTS, EXPANSION JOINTS, AND OTHER MEANS, WHERE NECESSARY TO PROTECT PIPING SYSTEMS AS SHOWN. TAKE-OFFS FROM MAINS TO RUN OUTS SHALL NOT HAVE LESS THAN THREE ELBOW SWING.
   b. ANCHOR MAINS AND RISERS WITH LOOPS OR OFFSETS TO STRUCTURE TO IMPART EXPANSION TOWARDS LOOPS AND OFFSETS. ANCHORS SHALL BE FORGED WROUGHT IRON, SECURED TO PIPE AND STRUCTURE. PROVIDE VIBRATION ISOLATION AS REQUIRED AND AS SPECIFIED.
   c. PROVIDE PIPE ALIGNMENT GUIDES TO GUIDE EXPANDING PIPE TO MOVE FREELY FROM ANCHOR POINTS TOWARD EXPANSION JOINTS, OFFSETS, AND OTHER EXPANSION PROVISIONS.
12. **JOINT CONNECTIONS**
   a. JOINTS AND CONNECTIONS SHALL BE PERMANENT AND SHALL BE GAS AND WATERTIGHT. JOINTING SHALL BE TYPES SPECIFIED FOR SERVICE INDICATED. JOINTS AND CONNECTIONS SHALL MEET REQUIREMENTS OF MANUFACTURER'S BEST RECOMMENDED PRACTICE. ALL TRANSITIONS BETWEEN DIFFERENT PIPING MATERIALS SHALL BE MADE USING APPROVED ADAPTERS. ADAPTERS FOR TRANSITIONS BETWEEN TWO TYPES OF PIPING MATERIALS SHALL BE MANUFACTURED FOR PURPOSE INTENDED.
13. **EXECUTION**
   A. ARRANGE FOR PIPE SPACES, CHASES, SLOTS, SLEEVES, AND OPENINGS IN BUILDING STRUCTURE DURING PROGRESS OF CONSTRUCTION, TO ALLOW FOR MECHANICAL INSTALLATIONS.
   B. DO NOT ENCLOSE, COVER, OR PUT PIPING INTO OPERATION UNTIL IT IS INSPECTED AND APPROVED BY AUTHORITIES HAVING JURISDICTION.
   C. COORDINATE EXCAVATION AND FILLING WITH GENERAL CONTRACTOR.
   D. INSTALL PIPING CONCEALED FROM VIEW AND PROTECTED FROM PHYSICAL CONTACT BY BUILDING OCCUPANTS UNLESS OTHERWISE INDICATED AND EXCEPT IN EQUIPMENT ROOMS AND SERVICE AREAS.
   E. INSTALL PIPING INDICATED TO BE EXPOSED AND PIPING IN EQUIPMENT ROOMS AND SERVICE AREAS AT RIGHT ANGLES OR PARALLEL TO BUILDING WALLS. DIAGONAL RUNS ARE PROHIBITED UNLESS SPECIFICALLY INDICATED OTHERWISE.
   F. INSTALL PIPING ABOVE ACCESSIBLE CEILINGS TO ALLOW SUFFICIENT SPACE FOR CEILING PANEL REMOVAL, AND COORDINATE WITH OTHER SERVICES OCCUPYING THAT SPACE.
   G. WHERE INSTALLING PIPING ADJACENT TO EQUIPMENT, ALLOW SPACE FOR SERVICE AND MAINTENANCE.
   H. INSTALL PIPING TO PERMIT VALVE SERVICING.
   I. INSTALL NIPPLES, UNIONS, SPECIAL FITTINGS, AND VALVES WITH PRESSURE RATINGS THE SAME AS OR HIGHER THAN THE SYSTEM PRESSURE RATING USED IN APPLICATIONS BELOW UNLESS OTHERWISE INDICATED.
   J. INSTALL PIPING FREE OF SAGS AND BENDS.
   K. INSTALL FITTINGS FOR CHANGES IN DIRECTION AND BRANCH CONNECTIONS.
   L. INSTALL SLEEVES FOR PIPING PENETRATIONS OF WALLS, CEILINGS, AND FLOORS.
   M. INSTALL SLEEVE SEALS FOR PIPING PENETRATIONS OF CONCRETE WALLS AND SLABS.
   N. INSTALL ESCUTCHEONS FOR PIPING PENETRATIONS OF WALLS, CEILINGS, AND FLOORS.
   o. INSTALL PIPING TO ALLOW APPLICATION OF INSULATION.
   P. INSTALL WOOD-BLOCKING REINFORCEMENT FOR WALL-MOUNTING-TYPE SPECIALTIES.
14. **GUARANTEE**
   a. GUARANTEE WORK OF THIS CONTRACTOR IN WRITING FOR ONE YEAR FROM THE DATE OF OWNER'S ACCEPTANCE OF CERTIFICATE OF SUBSTANTIAL COMPLETION. PROMPTLY, REPAIR OR REPLACE DEFECTIVE MATERIALS, EQUIPMENT, WORKMANSHIP, AND INSTALLATIONS THAT DEVELOP DEFECTS WITHIN THIS PERIOD. PROMPTLY AND TO OWNERS' SATISFACTION, CORRECT DAMAGE CAUSED IN MAKING NECESSARY REPAIRS AND REPLACEMENTS UNDER GUARANTEED AT NO ADDITIONAL COST TO OWNER. SUBMIT GUARANTEE TO ARCHITECT BEFORE FINAL PAYMENT. STATEMENT OF GUARANTEE REQUIREMENTS SHALL NOT BE INTERRUPTED TO LIMIT OWNER'S RIGHTS UNDER LAW AND THIS CONTRACT.
   b. WHERE SPECIAL GUARANTEES COVERING INSTALLATION, OPERATION OR PERFORMANCE OF ANY SYSTEMS OR APPLIANCES FURNISHED UNDER THIS CONTRACTOR ARE REQUIRED, THE FULL RESPONSIBILITY FOR THE
   FULFILLMENT OF SUCH GUARANTEES MUST BE ASSUMED BY THE CONTRACTOR, WHO SHALL OBTAIN WRITTEN GUARANTEES, IN TRIPLICATE, WHICH SHALL BE FILED WITH THE ARCHITECT BEFORE FINAL ACCEPTANCE.
   c. CONTRACTOR WILL BE RESPONSIBLE FOR ALL LEAKS IN ALL PIPES FOR A PERIOD OF ONE YEAR FROM THE DATE OF COMPLETION OF WORK UNDER THIS CONTRACT. CONTRACTOR SHALL REPAIR AT NO COST TO THE OWNER, ALL SUCH LEAKS WHICH OCCUR AFTER COMPLETION OF THIS CONTRACT UPON 24 HOURS NOTICE THEREOF BY THE CONSTRUCTION MANAGER/GENERAL CONTRACTOR. LEAKS WHICH OCCUR PRIOR TO THE COMPLETION OF THIS CONTRACT SHALL BE REPAIRED AT ONCE. CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGE CAUSED BY SUCH LEAKS AND THE REPAIR THEREOF AND WILL REIMBURSE THE CONSTRUCTION MANAGER/GENERAL CONTRACTOR FOR ALL EXPENSE INCURRED THEREBY.

SECTION 22 05 19 - PLUMBING SPECIALTIES

1. MATERIAL
   a. THE WORK COVERED BY THIS SECTION OF THE SPECIFICATIONS CONSISTS OF FURNISHING ALL LABOR, EQUIPMENT AND MATERIALS IN CONNECTION WITH THE ROUGH-IN, FINAL SETTING AND CONNECTIONS TO ALL PLUMBING SPECIALTIES. THE CONTRACTOR SHALL CAREFULLY REVIEW THE CONDITIONS AT THE SITE AND ALL OF THE CONTRACT DRAWINGS TO DETERMINE THE EXTEND OF THE NEW AND RENOVATION PLUMBING WORK REQUIRED.
   b. ALL PLUMBING SPECIALTIES SHALL BE COMPLETE IN EVERY DETAIL WITH ALL TRIMMING AND CONNECTIONS. ALL SPECIALTIES SHALL BE DESIGNED TO PREVENT THE BACKFLOW OF POLLUTED WATER OR WASTE INTO THE WATER SUPPLY SYSTEM.
   c. REFER TO "PLUMBING SPECIALTIES SCHEDULE" FOR FIXTURE SPECIFICATIONS.

SECTION 22 05 29 - HANGERS AND SUPPORTS

1. MATERIAL
   a. PROVIDE ADJUSTABLE CLEVIS HANGERS FOR HANGER SIZES 4" AND LARGER AND CAST BRASS BAND TYPE HANGERS FOR SMALLER. SUPPORT PIPING FROM BUILDING STRUCTURE TO MAINTAIN REQUIRED GRADE AND PITCH OF PAGE LINES, PREVENT VIBRATION, SECURE PIPING IN PLACE, AND PROVIDE FOR EXPANSION AND CONTRACTION. HANGERS ON ALL INSULATED PIPE SHALL BE CLEVIS TYPE.
   b. PROVIDE VERTICAL BRACKETS AND GUIDES FOR HORIZONTAL PIPING WHERE IT IS RACKED ALONG WALLS. TRAPEZE HANGERS MAY BE USED WHERE CONDITIONS PERMIT. PROVIDE ALL NECESSARY PIPE CLIPS, ANCHORS AND SUNDRIES FOR PROPER ALIGNMENT AND SUPPORT OF PIPING SYSTEM. HANGERS FOR COPPER PIPING SHALL BE COPPER OR BRONZE OR SHALL BE COATED FOR DIELECTRIC ISOLATION.
   c. HANGER RODS SHALL HAVE MACHINE THREADS, BEAM CLAMPS, CONCRETE INSERTS AND EXPANSION SHIELDS SHALL BE PROVIDED AS REQUIRED. NO RAMSET OR SHOT SHIELDS WILL BE ALLOWED.
   d. HANGER SPACING SHALL MEET REQUIREMENTS OF STATE AND LOCAL PLUMBING CODES. IN NO CASE SHALL HORIZONTAL PIPING BE SUPPORTED AT INTERVALS GREATER THAN 10'-0".
   e. PIPING BELOW BASEMENT OR LOWEST LEVEL SLAB (THAT IS, BURIED PIPING) NEED NOT BE SUPPORTED FROM STRUCTURE IF SLAB IS NOT DESIGNED AS STRUCTURAL SLAB. THE PLUMBING CONTRACTOR SHALL SUPPORT ALL PIPING UNDER STRUCTURAL SLABS ON GRADE.
   f. PIPE SUPPORTS SHALL NOT BEAR ON SLEEVES.
   g. HORIZONTAL PIPING SHALL BE SUSPENDED FROM BUILDING STRUCTURE BY MILD STEEL ROD CONNECTING PIPE HANGER TO INSERTS, BEAM CLAMPS, ANGLE BRACKETS AND LAG SCREWS AS REQUIRED BY BUILDING CONSTRUCTION IN ACCORDANCE WITH THE FOLLOWING:
      i. 3/8" ROD FOR 1/2" TO 2" PIPE.
      ii. 1/2" ROD FOR 2-1/2" TO 4" PIPE.
      iii. 5/8" ROD FOR 4" TO 8" PIPE.
   h. HANGERS ON INSULATED LINES SHALL BE SIZED TO FIT THE OUTSIDE DIAMETER OF PIPE INSULATION. PROVIDE HANGERS FOR INSULATED PIPING WITH 12" LONG, 18 GAUGE GALVANIZED INSULATION SHIELDS.
   i. PIPING AT EQUIPMENT AND CONTROL VALVES SHALL BE SUPPORTED TO PREVENT STRAINS OR DISTORTIONS IN CONNECTED EQUIPMENT AND CONTROL VALVES. PIPING AT EQUIPMENT SHALL BE SUPPORTED TO ALLOW FOR REMOVAL OF EQUIPMENT, VALVES, AND ACCESSORIES WITH A MINIMUM OF DISMANTLING AND WITHOUT REQUIRING ADDITIONAL SUPPORT AFTER THESE ITEMS ARE REMOVED.
   j. PIPING INSTALLED UNDER THIS DIVISION SHALL BE INDEPENDENTLY SUPPORTED FROM BUILDING STRUCTURE BY MEANS OF BEAM ATTACHMENTS AND NOT FROM PIPING, DUCTWORK, OR CONDUIT OF OTHER TRADES. SUPPLEMENTARY STEEL, INCLUDING FACTORY-FABRICATED CHANNELS, REQUIRED TO MEET THE REQUIREMENTS SPECIFIED HEREIN, SHALL BE PROVIDED BY THE PLUMBING CONTRACTOR.
   k. MAXIMUM SPACING OF HANGERS ON RUNS OF STEEL, COPPER OR BRASS PIPE SHALL BE IN ACCORDANCE WITH CURRENT CODES AND REGULATIONS.
2. EXECUTION
   a. INSTALL HANGERS, SUPPORTS, CLAMPS, AND ATTACHMENTS AS REQUIRED TO PROPERLY SUPPORT PIPING FROM BUILDING STRUCTURE.
   b. INSTALL HANGERS AND SUPPORTS COMPLETE WITH NECESSARY ATTACHMENTS, INSERTS, BOLTS, RODS, NUTS, WASHERS, AND OTHER ACCESSORIES.
   c. INSTALL HANGERS AND SUPPORTS TO ALLOW CONTROLLED THERMAL AND SEISMIC MOVEMENT OF PIPING SYSTEMS, TO PERMIT FREEDOM OF MOVEMENT BETWEEN PIPE ANCHORS, AND TO FACILITATE ACTION OF EXPANSION JOINTS, EXPANSION LOOPS, EXPANSION BENDS, AND SIMILAR UNITS.
   d. ARRANGE FOR GROUPING OF PARALLEL RUNS OF PIPING, AND SUPPORT TOGETHER ON FIELD ASSEMBLED METAL FRAMING SYSTEMS.
   e. INSTALL THERMAL HANGER SHIELD FOR INSULATED PIPING.
   f. INSTALL MECHANICAL EXPANSION ANCHORS IN CONCRETE, AFTER CONCRETE IS PLACED AND COMPLETELY CURED. INSTALL FASTENERS ACCORDING TO MANUFACTURER'S WRITTEN INSTRUCTIONS.
   g. ASSEMBLE ROOFTOP PIPE SUPPORT COMPONENTS AND MOUNT ON SMOOTH ROOF SURFACE. DO NOT PENETRATE ROOF MEMBRANE

SECTION 22 07 19 - INSULATION

1. MATERIAL
   a. INSULATION SHALL BE BY OWENS-CORNING, CERTAIN-TEED OR MANVILLE.
   b. INSULATION SHALL BE INSTALLED BY INSULATION FIRM REGULARLY SPECIALIZING IN THIS WORK AND EMPLOYING MEN PARTICULARLY SKILLED THEREIN. NO COVERING APPLIED BY PLUMBERS HELPERS WILL BE ACCEPTABLE.
   c. INSULATION INSTALLATION SHALL MEET MANUFACTURER'S RECOMMENDATIONS. NO INSULATION SHALL BE APPLIED UNTIL PIPING HAS PASSED TESTS AS REQUIRED BY AUTHORITIES THAT HAVE JURISDICTION.
   d. INSULATION, JACKETS AND ADHESIVES SHALL BE FLAME RETARDANT AND SHALL HAVE ASTM E-84 FIRE HAZARD RATINGS OF 25 FLAME SPREAD, 50 SMOKE DEVELOPED AND 50 FUEL CONTRIBUTED.
      iv. INTERIOR APPLICATIONS: (JACKETS)
         a. TYPE A: VAPOR BARRIER JACKETS: KRAFT REINFORCED FOIL VAPOR BARRIER WITH SELF-SEALING ADHESIVE JOINTS. JACKET SHALL BE HEAVY-DUTY, FIRE RETARDANT MATERIAL WITH GLASS FIBER REINFORCING AND SELF-SEALING LAP. JACKET WILL BE FACTORY APPLIED TO THE INSULATION. JACKET SHALL HAVE NEAT, WHITE KRAFT FINISH OR WHITE VINYL SUITABLE FOR PAINTING, WITH BEAD PUNCTURE RESISTANCE OF 50 UNITS MINIMUM. VAPOR BARRIER SHALL BE .001" ALUMINUM FOIL ADHERED TO THE INNER SURFACE OF THE JACKET. PERMEANCE SHALL BE OWENS-CORNING FIBERGLASS "ASJ-SSL" OR MANVILLE FLAME SAFE "AP-T".
   e. INSULATION AND JACKETING SHALL BE IN ACCORDANCE WITH THE FOLLOWING:
      v. TYPE A: GLASS FIBER INSULATION; ANSI/ASTM C547; "K" VALUE OF 0.24 AT 75F NONCOMBUSTIBLE. EXTERIOR RUNS SHALL HAVE CORRUGATED WET-PROOF JACKET AND HEAT TRACING.
   f. INSULATION REQUIREMENTS: REFER TO PLUMBING PIPING INSULATION MATRIX
   g. SCHEDULE:
      i. REFER TO "PIPE INSULATION MATRIX" FOR THERMAL CONDUCTIVITY AND THICKNESS REQUIREMENTS. SEE THE PIPING SYSTEMS BELOW THAT REQUIRE INSULATION ALONG WITH THE ASSUMED OPERATING TEMPERATURE
   h. PIPE HANGERS SHALL BE OUTSIDE INSULATION AND SHALL INCORPORATE 12", 26 GAUGE PROTECTION SHIELDS. INSULATION ON PIPING THAT PASSES THROUGH WALLS OR PARTITIONS SHALL PASS CONTINUOUSLY THROUGH SLEEVES, EXCEPT AT FIRE WALLS, SMOKE PARTITIONS, AND FLOOR PENETRATIONS WHERE SPACE BETWEEN SLEEVES AND PIPING SHALL BE FIRE STOPPED WITH APPROVED PACKING.
2. EXECUTION
   a. INSULATION INSTALLATION ON FITTINGS, VALVES, STRAINERS, FLANGES, AND UNIONS:
      i. INSTALL INSULATION OVER FITTINGS, VALVES, STRAINERS, FLANGES, UNIONS, AND OTHER SPECIALTIES WITH CONTINUOUS THERMAL AND VAPOR-RETARDER INTEGRITY UNLESS OTHERWISE INDICATED.
      ii. INSULATE PIPE ELBOWS USING PREFORMED FITTING INSULATION OR MITERED FITTINGS MADE FROM SAME MATERIAL AND DENSITY AS ADJACENT PIPE INSULATION. EACH PIECE SHALL BE BUTTED TIGHTLY AGAINST ADJOINING PIECE AND BONDED WITH ADHESIVE. FILL JOINTS, SEAMS, VOIDS, AND IRREGULAR SURFACES WITH INSULATING CEMENT FINISHED TO A SMOOTH, HARD, AND UNIFORM CONTOUR THAT IS UNIFORM WITH ADJOINING PIPE INSULATION.
      iii. INSULATE TEE FITTINGS WITH PREFORMED FITTING INSULATION OR SECTIONAL PIPE INSULATION OF SAME MATERIAL AND THICKNESS AS USED FOR ADJACENT PIPE. CUT SECTIONAL PIPE INSULATION TO FIT, BUTT TIGHTLY AND EACH SECTION CLOSELY TO THE NEXT AND HOLD IN PLACE WITH TIE WIRE. BOND PIECES WITH ADHESIVE.
      iv. INSULATE VALVES USING PREFORMED FITTING INSULATION OR SECTIONAL PIPE INSULATION OF SAME MATERIAL, DENSITY, AND THICKNESS AS USED FOR ADJACENT PIPE. OVERLAP ADJOINING PIPE INSULATION BY NOT LESS THAN TWO TIMES THE THICKNESS OF PIPE INSULATION, OR ONE PIPE DIAMETER, WHICHEVER IS THICKER. FOR VALVES, INSULATE UP TO AND INCLUDING THE BONNETS, VALVE STUFFING-BOX STUDS, BOLTS, AND NUTS. FILL JOINTS, SEAMS, AND IRREGULAR SURFACES WITH INSULATING CEMENT.
      v. INSULATE STRAINERS USING PREFORMED FITTING INSULATION OR SECTIONAL PIPE INSULATION OF SAME MATERIAL, DENSITY, AND THICKNESS AS USED FOR ADJACENT PIPE. OVERLAP ADJOINING PIPE INSULATION BY NOT LESS THAN TWO TIMES THE THICKNESS OF PIPE INSULATION, OR ONE PIPE DIAMETER, WHICHEVER IS THICKER. FILL JOINTS, SEAMS, AND IRREGULAR SURFACES WITH INSULATING CEMENT. INSULATE STRAINERS SO STRAINER BASKET FLANGE OR PLUG CAN BE EASILY REMOVED AND REPLACED WITHOUT DAMAGING THE INSULATION AND JACKET. PROVIDE A REMOVABLE REUSABLE INSULATION COVER. FOR BELOW-AMBIENT SERVICES, PROVIDE A DESIGN THAT MAINTAINS VAPOR BARRIER.
      vi. INSULATE FLANGES AND UNIONS USING A SECTION OF OVERSIZED PREFORMED PIPE INSULATION. OVERLAP ADJOINING PIPE INSULATION BY NOT LESS THAN TWO TIMES THE THICKNESS OF PIPE INSULATION, OR ONE PIPE DIAMETER, WHICHEVER IS THICKER.
      vii. COVER SEGMENTED INSULATED SURFACES WITH A LAYER OF FINISHING CEMENT AND COAT WITH A MASTIC. INSTALL VAPOR-BARRIER MASTIC FOR BELOW-AMBIENT SERVICES AND A BREATHER MASTIC FOR ABOVE-AMBIENT SERVICES. REINFORCE THE MASTIC WITH FABRIC-REINFORCING MESH. TROWEL THE MASTIC TO A SMOOTH AND WELL-SHAPED CONTOUR.
      viii. FORE SERVICES NOT SPECIFIED TO RECEIVE A FIELD APPLIED JACKET EXCEPT FOR FLEXIBLE ELASTOMERIC AND POLYOLEFIN. INSTALL FITTED PVC COVER OVER ELBOW, TEES, STRAINERS, VALVES, FLANGES, AND UNIONS. TERMINATE ENDS WITH PVC END CAPS. TAPE PVC COVERS TO ADJOINING INSULATION FACING USING PVC TAPE.
      ix. STENCIL OR LABEL THE OUTSIDE INSULATION JACKET OF EACH UNION WITH THE WORD "UNION". MATCH SIZE AND COLOR OF PIPE LABELS.
   b. INSULATE INSTRUMENT CONNECTIONS FOR THERMOMETERS, PRESSURE GAGES, PRESSURE TEMPERATURE TAPS, TEST CONNECTIONS, FLOW METERS, SENSORS, SWITCHES, AND TRANSMITTERS ON INSULATED PIPES. SHAPE INSULATION AT THESE CONNECTIONS BY TAPERING IT TO AND AROUND THE CONNECTION WITH INSULATING CEMENT AND FINISH WITH FINISHING CEMENT, MASTIC, AND FLASHING SEALANT.

SECTION 22 11 16 - DOMESTIC WATER PIPING

1. MATERIALS
   a. PROVIDE ALL LABOR AND MATERIALS NECESSARY TO FURNISH AND INSTALL ALL DOMESTIC WATER SYSTEMS :
   b. PIPING AND FITTINGS SHALL BE AS FOLLOWS:
      vi. TYPE L COPPER TUBING
         a. PIPING: ASTM B882
         b. FITTINGS: WROUGH COPPER AND BRONZE SOLDER JOINTS.
         c. PIPE JOINT: 95-5 LEAD FREE SOLDER
      vii. CPVC
         a. PIPING: ASTM D 2846
         b. FITTINGS: ASTM D 2846
         c. PIPE JOINT: SOLVENT JOINT
      viii. CROSS-LINKED POLYETHYLENE (PEX)
         a. PIPING: ASTM F 876
         b. FITTINGS: ASTM F 877
         c. PIPE JOINT
2. EXECUTION
   A. INSTALL COPPER TUBING UNDER BUILDING SLAB ACCORDING TO CDA'S "COPPER TUBE HANDBOOK."
   B. INSTALL SHUTOFF VALVE, HOSE-END DRAIN VALVE, STRAINER, PRESSURE GAGE, AND TEST TEE WITH VALVE INSIDE THE BUILDING AT EACH DOMESTIC WATER-SERVICE ENTRANCE.
   C. INSTALL SHUTOFF VALVE IMMEDIATELY UPSTREAM OF EACH DIELECTRIC FITTING.
   D. INSTALL DOMESTIC WATER PIPING LEVEL WITHOUT PITCH AND PLUMB.
   E. INSTALL PEX TUBING WITH LOOP AT EACH CHANGE OF DIRECTION OF MORE THAN 90 DEGREES.
   F. INSTALL UNIONS IN COPPER TUBING AT FINAL CONNECTION TO EACH PIECE OF EQUIPMENT, MACHINE, AND SPECIALTY.
   G. INSTALL BACKFLOW PREVENTERS IN EACH WATER SUPPLY TO MECHANICAL EQUIPMENT AND SYSTEMS AND TO OTHER EQUIPMENT AND WATER SYSTEMS THAT MAY BE SOURCES OF CONTAMINATION. COMPLY WITH AUTHORITIES HAVING JURISDICTION.
      I. LOCATE BACKFLOW PREVENTERS IN SAME ROOM AS CONNECTED EQUIPMENT OR SYSTEM.
      II. INSTALL DRAIN FOR BACKFLOW PREVENTERS WITH ATMOSPHERIC-VENT DRAIN CONNECTION WITH AIR-GAP FITTING, FIXED AIR-GAP FITTING, OR EQUIVALENT POSITIVE PIPE SEPARATION OF AT LEAST TWO PIPE DIAMETERS IN DRAIN PIPING AND PIPE-TO-FLOOR DRAIN. LOCATE AIR-GAP DEVICE ATTACHED TO OR UNDER BACKFLOW PREVENTER.

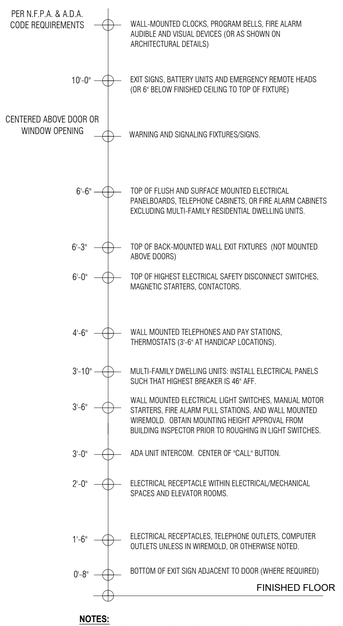
GENERAL SPECIFICATIONS

1. DRAWINGS AND SPECIFICATIONS FORM COMPLIMENTARY REQUIREMENTS; PROVIDE WORK SPECIFIED AND NOT SHOWN, AND WORK SHOWN BUT NOT SPECIFIED AS THOUGH EXPLICITLY REQUIRED BY BOTH. ALTHOUGH WORK IS NOT SPECIFICALLY SHOWN OR SPECIFIED, PROVIDE SUPPLEMENTARY OR MISCELLANEOUS ITEMS, APPURTENANCES, DEVICES AND MATERIALS OBVIOUSLY NECESSARY FOR A SOUND, SECURE AND COMPLETE INSTALLATION.
2. THE DRAWINGS AND SPECIFICATIONS INDICATE A PERFORMANCE SPECIFICATION FOR BIDDING PURPOSES FOR FIRE ALARM SYSTEM. AWARDED CONTRACTORS ARE RESPONSIBLE FOR DETAILED DESIGN AND PREPARATION OF SIGNED AND SEALED ENGINEERING DOCUMENTS FOR REVIEW/APPROVAL FROM OWNERS INSURANCE CARRIER AND LOCAL AUTHORITY HAVING JURISDICTION.
3. DRAWINGS ARE DIAGRAMMATIC: THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL COMPONENTS NECESSARY FOR A COMPLETE AND OPERATIONAL SYSTEM. DETERMINE LOCATIONS OF COMPONENTS NECESSARY FOR A COMPLETE AND OPERATIONAL SYSTEM. DETERMINE LOCATIONS OF SYSTEMS AND COMPONENTS IN FIELD. COORDINATE WITH ARCHITECTURAL DRAWINGS AND OTHER TRADES.
4. ADDRESS QUESTIONS REGARDING DRAWINGS TO ARCHITECT IN WRITING BEFORE AWARD OF CONTRACT. OTHERWISE, ARCHITECT'S INTERPRETATION OF MEANING AND INTENT OF DRAWINGS SHALL BE FINAL.
5. THE INTENTION IS FOR INSTALLATION OF COMPLETE AND OPERATING SYSTEMS INSTALLED IN ACCORDANCE WITH THE ASSOCIATED MANUFACTURER'S INSTRUCTIONS. NOT EVERY COMPONENT REQUIRED IS SHOWN. THE CONTRACTOR SHALL INCLUDE ALL COMPONENTS NORMALLY ASSOCIATED WITH THE PARTICULAR SYSTEM AND/OR REQUIRED BY THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. THE SYSTEM SHALL BE FULLY COMMISSIONED AND SIGNED OFF BY AN OFFICER OF THE RESPECTIVE CONTRACTOR.
6. GIVE NOTICES, FILE PLANS, OBTAIN PERMITS AND LICENSES, PAY FEES AND BACK CHARGES, AND OBTAIN NECESSARY APPROVALS FROM AUTHORITIES THAT HAVE JURISDICTION AS REQUIRED TO PERFORM WORK IN ACCORDANCE WITH ALL LEGAL REQUIREMENTS AND WITH THE DESIGN DOCUMENTS.
7. PRIOR TO COMMENCING WORK, CONTRACTOR SHALL SUBMIT SHOP DRAWINGS AND EQUIPMENT DATA FOR MATERIALS AND EQUIPMENT TO THE ARCHITECT FOR REVIEW AND APPROVAL. MATERIALS AND EQUIPMENT SHALL NOT BE INSTALLED BEFORE SHOP DRAWINGS ARE REVIEWED AND APPROVED. SCHEDULE AT LEAST TEN WORKING DAYS, EXCLUSIVE OF TRANSMITTAL TIME, FOR SUBMITTAL REVIEW SHALL BE ALLOWED.
8. MATERIALS AND EQUIPMENT SHALL BE LISTED BY UNDERWRITERS LABORATORIES (UL) AND APPROVED BY ASME AND AGA FOR INTENDED SERVICE.
9. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES REQUIRED FOR SAFE EXECUTION AND COMPLETION OF WORK, AND FOR INITIATING, MAINTAINING AND SUPERVISING ALL SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THE WORK.
10. COORDINATE WORK OF THIS SECTION WITH THAT OF OTHER SECTIONS.
11. ALL MATERIALS, EQUIPMENT AND METHOD OF INSTALLATION SHALL BE ACCORDANCE WITH THE STANDARDS, REGULATIONS, CODES, ORDINANCES, AND LAW OF LOCAL, STATE, AND FEDERAL GOVERNMENTS, AND OTHER AUTHORITIES THAT HAVE LAWFUL JURISDICTION.
12. IT SHALL BE THE RESPONSIBILITY OF THIS CONTRACTOR TO COORDINATE HIS WORK WITH THAT OF ALL OTHER TRADES, INCLUDING (BUT NOT LIMITED TO), ELECTRICAL, HVAC, SPRINKLER, PLUMBING, STRUCTURAL AND GENERAL ARCHITECTURE. OFFSETS IN PIPING AND OFFSETS AROUND OBSTRUCTIONS SHALL BE PROVIDED AT NO ADDITIONAL COST TO THE OWNER.
13. DEVIATION FROM CONTRACT DOCUMENTS, OR PROPOSED SUBSTITUTION OF MATERIALS OR EQUIPMENT FOR THOSE SPECIFIED, SHALL BE REQUESTED IN SEPARATE LETTER, WHETHER DEVIATIONS ARE DUE TO FIELD CONDITIONS, STANDARD SHOP PRACTICE OR OTHER CAUSE. THE CONTRACTOR IS RESPONSIBLE FOR ANY COSTS INCURRED AS A RESULT OF THE CHANGES NEEDED TO ACCOMMODATE THE SUBSTITUTED EQUIPMENT INCLUDING THE WORK OF OTHER TRADES.
14. EACH CONTRACTOR IS RESPONSIBLE FOR ITS CUTTING AND PATCHING REQUIRED FOR THE INSTALLATION OF ITS NEW WORK. CUTTING AND PATCHING SHALL BE COMPLETED IN A NEAT AND WORKMANLIKE MANNER. PATCHING MATERIALS SHALL MATCH EXISTING MATERIALS TO THE GREATEST EXTENT POSSIBLE. PROVIDE TOUCH-UP TO MATCH EXISTING SURROUNDING AREAS OF CUTTING AND PATCHING WORK.
15. CONTRACTOR SHALL COORDINATE ITS RESPECTIVE CEILING MOUNTED EQUIPMENT WITH OTHER TRADE CONTRACTORS PRIOR TO INSTALLATION TO AVOID CONFLICTS.
16. WORK SHALL BE EXECUTED IN A WORKMANLIKE MANNER AND SHALL PRESENT NEAT, RECTILINEAR APPEARANCE WHEN COMPLETED. MAINTAIN MAXIMUM HEAD ROOM AT ALL TIMES. DO NOT RUN PIPES, DUCTS, AND CONDUIT EXPOSED UNLESS SHOWN AND NOTED TO BE EXPOSED ON DRAWINGS. MATERIALS AND EQUIPMENT SHALL BE NEW AND INSTALLED ACCORDING TO MANUFACTURER'S INSTRUCTIONS AND RECOMMENDATIONS, SO THAT COMPLETED INSTALLATION SHALL OPERATE SAFELY AND EFFICIENTLY.
17. EACH RESPECTIVE CONTRACTOR SHALL FIRE STOP ALL NEW SLEEVES THROUGH CONCRETE FLOORS AND FIRE RATED WALLS OR PARTITIONS WITH UL RATED ASSEMBLIES WITH EQUAL FIRE RATING. COORDINATE ROOF PENETRATIONS WITH WORK OF OTHER SECTIONS AND WITH FLASHING REQUIREMENTS.
18. ANY INTERFERENCE SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER'S REPRESENTATIVE, AND SHALL BE RESOLVED PRIOR TO THE INSTALLATION OF THE WORK INVOLVED.
19. ALL MATERIALS AND EQUIPMENT SHALL BE NEW UNLESS NOTED OTHERWISE.
20. MANUFACTURERS' MODEL NUMBERS ARE SPECIFIED SOLELY TO ESTABLISH STANDARDS OF QUALITYFOR PERFORMANCE AND MATERIALS.
21. SUBSTITUTED PRODUCTS SUBMITTED AND APPROVED FOR USE THAT NECESSITATE CHANGES TO THE SAID CONTRACTOR'S WORK OR THE WORK OF OTHER TRADES OF CONTRACT SHALL BE COORDINATED AND ARRANGED BY THE CONTRACTOR WHO SUBMITTED THE SUBSTITUTION WITHOUT ADDITIONAL COST TO THE OWNER.
22. CONTRACTOR SHALL COORDINATE ELECTRICAL CHARACTERISTICS AND REQUIREMENTS APPLICABLE EQUIPMENT WITH THE ELECTRICAL CONTRACTOR.
23. ALL EQUIPMENT, PIPING, INSULATION, ETC., INSTALLED IN HVAC PLENUM SPACES SHALL MEET CODE REQUIREMENTS FOR SMOKE AND COMBUSTIBILITY.
24. AS WORK PROGRESSES AND FOR DURATION OF CONTRACT, MAINTAIN COMPLETE SET OF PRINTS OF CONTRACT DRAWINGS AT JOB SITE AT ALL TIMES. RECORD WORK COMPLETED AND ALL CHANGES FROM ORIGINAL CONTRACT DRAWINGS CLEARLY AND ACCURATELY INCLUDING WORK INSTALLED AS A MODIFICATION OR ADDITION TO THE ORIGINAL DESIGN TURN OVER ALL OPERATING MANUALS, MAINTENANCE MANUALS, AND "AS BUILT" DRAWINGS TO OWNER AT CONCLUSION OF CONSTRUCTION.
25. DO NOT SUPPORT EQUIPMENT FROM SUSPENDED CEILINGS. SUPPORT ALL EQUIPMENT AND PIPING FROM BUILDING. STRUCTURE TO PROVIDE A VIBRATION FREE INSTALLATION. NOTIFY ARCHITECT AND STRUCTURAL ENGINEER OF ALL WEIGHTS AND METHODS OF SUPPORT.
26. RUN PIPING/WIRING CONCEALED, UNLESS SPECIFIED OTHERWISE, AND CLEAR OF CEILING INSERTS. PROVIDE CLAMPS, OFFSETS, EXPANSION JOINTS, ANCHORS AND GUIDES AS NECESSARY TO PREVENT STRESS ON PIPING/WIRING.
27. ANY REFERENCE TO ELECTRICAL, PLUMBING AND HVAC CONTRACTORS, NOTED ON THESE DRAWINGS OR STATED IN THE SPECIFICATIONS SHALL NOT BE MISCONSTRUED AS AN INTENTION TO DEFINE SEPARATE CONTRACTORS FOR THE RESPECTIVE WORK. THE GENERAL CONTRACTOR SHALL COORDINATE AND PROVIDE A COMPLETE BUILDING WITH COMPLETE MECHANICAL AND ELECTRICAL SYSTEMS, REGARDLESS OF ANY SPECIFICATION REFERENCES TO OTHER CONTRACTORS.
28. GUARANTEE WORK OF THIS CONTRACTOR IN WRITING FOR ONE YEAR FROM THE DATE OF OWNER'S ACCEPTANCE OF CERTIFICATE OF SUBSTANTIAL COMPLETION. PROMPTLY REPAIR OR REPLACE DEFECTIVE MATERIALS, EQUIPMENT, WORKMANSHIP, AND INSTALLATIONS THAT DEVELOP DEFECTS WITHIN THIS PERIOD. PROMPTLY, AND TO OWNERS SATISFACTION, CORRECT DAMAGE CAUSED IN MAKING NECESSARY REPAIRS AND REPLACEMENTS UNDER GUARANTEE AT NO ADDITIONAL COST TO OWNER. SUBMIT GUARANTEE TO ARCHITECT BEFORE FINAL PAYMENT. STATEMENT OF GUARANTEE REQUIREMENTS SHALL NOT BE INTERRUPTED TO LIMIT OWNER'S RIGHTS UNDER LAW AND THIS CONTRACT.

ABBREVIATIONS

A	AMPS	IG	ISOLATED GROUND
ABV.	ABOVE	JB	JUNCTION BOX
A.F.F.	ABOVE FINISHED FLOOR	KVA	KILOVOLT-AMPERE
A.F.G.	ABOVE FINISHED GRADE	KW	KILOWATT
A.H.U.	AIR HANDLER UNIT	LTG.	LIGHTING
C/B	CIRCUIT BREAKER	L.V.	LOW VOLTAGE
C.H.	CABINET HEATER	M.C.	MECHANICAL CONTRACTOR
CLG.	CEILING	MCB	MAIN CIRCUIT BREAKER
CONC.	CONCRETE	MECH.	MECHANICAL
COND.	CONDENSER	MLO	MAIN LUGS ONLY
DWG	DRAWING	MOD	MOTOR OPERATED DOOR
E.C.	ELECTRICAL CONTRACTOR	MT.	MOUNT
E.F.	EXHAUST FAN	MTD.	MOUNTED
ELECT.	ELECTRIC	MTG.	MOUNTING
EM	INDICATES LIGHT FIXTURE OR DEVICE WIRED TO EMERGENCY CIRCUIT	P.C.	PLUMBING CONTRACTOR
		PLG	PLUMBING
E.P.O.	EMERGENCY POWER-OFF PUSHBUTTON SWITCH	R.T.U	ROOF TOP UNIT
EUH	ELECTRIC UNIT HEATER	SLD	SINGLE LINE DIAGRAM
EWC	ELECTRIC WATER COOLER	SP/ST	SINGLE POLE/SINGLE THROW
EWH	ELECTRIC WALL HEATER	S/S	SAFETY SWITCH (DISCONNECT SWITCH)
EXIST.	EXISTING	SW	SWITCH
FACP	FIRE ALARM CONTROL PANEL	TYP.	TYPICAL
FATB	FIRE ALARM TERMINAL BOX	UH	UNIT HEATER
FSD	FIRE SMOKE DAMPER	U.O.N.	UNLESS OTHERWISE NOTED
FU	FUSE (OR FUSED)	V	VOLTS
GEN.	GENERAL	VAV	VARIABLE AIR VOLUME
G.F.I.	GROUND FAULT INTERRUPT	WH	WATER HEATER
GND.	GROUND	WP	WEATHERPROOF
HP	HORSE POWER	XFMR.	TRANSFORMER
HTR.	HEATER	(E)	EXISTING TO REMAIN
HVAC	HEATING, VENTILATING, AND AIR CONDITIONING	(D)	DEMOLISH EXISTING
H.V.	HIGH VOLTAGE (PRIMARY)	(RL)	RELOCATED EXISTING

STANDARD MOUNTING HEIGHTS



NOTES:

1. MOUNTING HEIGHTS TO CENTER OF OUTLETS UNLESS OTHERWISE NOTED. IN MASONRY WALL CONSTRUCTION THE ABOVE MOUNTING HEIGHTS SHALL BE USED FOR REFERENCE TO NEAREST BLOCK OR BRICK COURSING.
2. THE ABOVE MOUNTING HEIGHTS SHALL BE ADHERED TO UNLESS SPECIFICALLY NOTED OR DETAILED OTHERWISE ON THE DRAWINGS OR SPECIFICATIONS.

ELECTRICAL SYMBOLS

- 2'X4' RECESSED LED FIXTURE, "A" INDICATES TYPE, "2" INDICATES CIRCUIT BREAKER POSITION, "a" INDICATES SWITCHING
- 2'X4' RECESSED LED FIXTURE CONNECTED TO EMERGENCY (EM) AND/OR NIGHT LIGHT (NL) CIRCUIT, "A" INDICATES TYPE, "2" INDICATES CIRCUIT BREAKER POSITION, "a" INDICATES SWITCHING
- 2'X2' RECESSED LED FIXTURE, "A" INDICATES TYPE, "2" INDICATES CIRCUIT BREAKER POSITION, "a" INDICATES SWITCHING
- 2'X2' RECESSED LED FIXTURE CONNECTED TO EMERGENCY (EM) AND/OR NIGHT LIGHT (NL) CIRCUIT, "A" INDICATES TYPE, "2" INDICATES CIRCUIT BREAKER POSITION, "a" INDICATES SWITCHING
- PENDANT MOUNTED LIGHT FIXTURE, "A" INDICATES TYPE, "2" INDICATES CIRCUIT BREAKER POSITION, "a" INDICATES SWITCHING
- RECESSED DOWNLIGHT, "A" INDICATES TYPE, "2" INDICATES CIRCUIT BREAKER POSITION, "a" INDICATES SWITCHING
- RECESSED WALLWASHER DOWNLIGHT, "A" INDICATES TYPE, "2" INDICATES CIRCUIT BREAKER POSITION, "a" INDICATES SWITCHING
- WALL MOUNTED LIGHT FIXTURE, "A" INDICATES TYPE, "2" INDICATES CIRCUIT BREAKER POSITION, "a" INDICATES SWITCH CONTROL
- CEILING OR WALL MOUNTED LINEAR LED LIGHT FIXTURE, "A" INDICATES TYPE, "2" INDICATES CIRCUIT BREAKER POSITION, "a" INDICATES SWITCH CONTROL
- CEILING OR WALL MOUNTED INDUSTRIAL LED STRIP LIGHT FIXTURE, "A" INDICATES TYPE, "2" INDICATES CIRCUIT BREAKER POSITION, "a" INDICATES SWITCH CONTROL
- CEILING OR WALL MOUNTED TRACK LIGHT FIXTURE, "A" INDICATES TYPE, "2" INDICATES CIRCUIT BREAKER POSITION, "a" INDICATES SWITCHING
- POLE MOUNTED LIGHT FIXTURE. "A" INDICATES TYPE, "2" INDICATES CIRCUIT BREAKER POSITION
- CEILING OR WALL MOUNTED SINGLE FACE EXIT SIGN, "X" INDICATES TYPE, ARROWS AS INDICATED ON PLANS. CONNECT TO LOCAL LIGHTING BRANCH CIRCUIT AHEAD OF ALL SWITCHING UNLESS OTHERWISE NOTED
- CEILING OR WALL MOUNTED DOUBLE FACE EXIT SIGN, "X" INDICATES TYPE, ARROWS AS INDICATED ON PLANS. CONNECT TO LOCAL LIGHTING BRANCH CIRCUIT AHEAD OF ALL SWITCHING UNLESS OTHERWISE NOTED
- CEILING OR WALL MOUNTED EXIT SIGN WITH INTEGRAL EMERGENCY LIGHT HEADS, "X" INDICATES TYPE, ARROWS AS INDICATED ON PLANS. CONNECT TO LOCAL LIGHTING BRANCH CIRCUIT AHEAD OF ALL SWITCHING UNLESS OTHERWISE NOTED
- EM — WALL MOUNTED EMERGENCY BATTERY PACK WITH (2)-LIGHT HEADS, "EM" INDICATES TYPE. CONNECT TO LOCAL LIGHTING BRANCH CIRCUIT AHEAD OF ALL SWITCHING UNLESS OTHERWISE NOTED
- WALL OR CEILING MOUNTED SINGLE HEAD OR TWIN REMOTE EMERGENCY LIGHT "EM" INDICATES TYPE, "WP" INDICATES WEATHERPROOF.
- RECESSED CABLE TV OUTLET. COORDINATE MOUNTING HEIGHT WITH ARCHITECTURAL/ID ELEVATIONS. CHIEF PAC526F OR EQUAL
- VOICE COMMUNICATION OUTLET
- DATA COMMUNICATION OUTLET
- 125V., 20A TOGGLE SWITCH MOUNTED AT 42" AFF UNLESS OTHERWISE NOTED.
- 125V., 20A 3-WAY TOGGLE SWITCH MOUNTED AT 42" AFF UNLESS OTHERWISE NOTED.
- WALL MOUNTED DUAL TECHNOLOGY OCCUPANCY SENSOR
- CEILING MOUNTED DUAL TECHNOLOGY OCCUPANCY SENSOR
- 125V., 20A DUPLEX RECEPTACLE MOUNTED AT 18" AFF UNLESS OTHERWISE NOTED. "+" INDICATES MOUNTED AT 42" AFF OR 6" ABOVE COUNTER OR BACKSPLASH
- 125V., 20A DUPLEX GFCI RECEPTACLE MOUNTED AT 18" AFF UNLESS OTHERWISE NOTED. "+" INDICATES MOUNTED AT 42" AFF OR 6" ABOVE COUNTER OR BACKSPLASH. "WP" INDICATES WEATHERPROOF ENCLOSURE
- CEILING MOUNTED 125V., 20A DUPLEX RECEPTACLE
- CEILING MOUNTED 125V., 20A DOUBLE DUPLEX RECEPTACLE.
- 125V., 20A DOUBLE DUPLEX RECEPTACLE MOUNTED AT 18" AFF UNLESS OTHERWISE NOTED.
- 125V., 20A DUPLEX RECEPTACLE WITH BOTTOM RECEPTACLE CONNECTED TO WALL SWITCH, MOUNTED AT 18" AFF UNLESS OTHERWISE NOTED. "+" INDICATES MOUNTED AT 42" AFF OR 6" ABOVE COUNTER
- LOCKING OR NONLOCKING NEMA RECEPTACLE AS NOTED
- CEILING MOUNTED JUNCTION BOX
- WALL MOUNTED JUNCTION BOX
- JUNCTION OR PULL BOX. SIZE AS INDICATED ON PLAN
- DISCONNECT SWITCH, SIZE AS INDICATED ON PLAN
- FUSED DISCONNECT SWITCH, SIZE AS INDICATED ON PLAN
- MOTOR STARTER, SIZE AS INDICATED ON PLAN
- COMBINATION MOTOR STARTER AND DISCONNECT SWITCH, SIZE AS INDICATED ON PLAN
- PANEL "P1" — PANELBOARD, SIZE, TYPE AND RATING AS INDICATED ON PLAN
- METER AND SOCKET
- PANELBOARD, SURFACE MOUNTED
- PANELBOARD, FLUSH MOUNTED
- T — TRANSFORMER, SIZE, TYPE AND RATING AS INDICATED ON PLAN
- COPPER GROUND BAR, SIZE AS INDICATED ON PLAN
- # — PLAN NOTE CALLOUT
- POWER TRANSFORMER W/ VOLTAGES AS INDICATED
- POTENTIAL TRANSFORMER
- CURRENT TRANSFORMER
- AUTOMATIC TRANSFER SWITCH
- CR — CARD READER

SWITCHES, COVERPLATES AND RECEPTACLES BASIS OF DESIGN: COMMERCIAL - DEVICES SHALL BE WHITE WITH A METAL STAINLESS STEEL COVERPLATE

RESIDENTIAL-DEVICE COLOR BY ARCHITECT WITH A MATCHING SCREWLESS COVERPLATE

BRANCH & FEEDER CIRCUIT SCHEDULE

	COPPER (CU)			ALUMINUM (AL)		
WIRE ID	# OF WIRES	GROUND	CONDUIT	# OF WIRES	GROUND	CONDUIT
20W2	2# 12	1# 12 G.	3/4"C	2# 10	1# 12 G.	3/4"C
30W2	2# 10	1# 10 G.	3/4"C	2# 8	1# 8 G.	3/4"C
35W2	2# 10	1# 10 G.	3/4"C	2# 8	1# 8 G.	3/4"C
40W2	2# 8	1# 10 G.	3/4"C	2# 8	1# 8 G.	3/4"C
45W2	2# 8	1# 10 G.	3/4"C	2# 6	1# 8 G.	3/4"C
50W2	2# 8	1# 10 G.	3/4"C	2# 6	1# 8 G.	3/4"C
60W2	2# 6	1# 10 G.	3/4"C	2# 4	1# 8 G.	3/4"C
70W2	2# 4	1# 8 G.	1 "C	2# 2	1# 6 G.	1"C
80W2	2# 4	1# 8 G.	1 "C	2# 2	1# 6 G.	1"C
90W2	2# 2	1# 8 G.	1 1/4 "C	2# 2	1# 6 G.	1 1/4 "C
100W2	2# 2	1# 8 G.	1 1/4 "C	2# 1	1# 6 G.	1 1/4 "C
20W3	3# 12	1# 12 G.	3/4"C	3# 10	1# 10 G.	3/4"C
25W3	3# 12	1# 10 G.	3/4"C	3# 10	1# 8 G.	3/4"C
30W3	3# 10	1# 10 G.	3/4"C	3# 8	1# 8 G.	3/4"C
40W3	3# 8	1# 10 G.	3/4"C	3# 8	1# 8 G.	3/4"C
50W3	3# 8	1# 10 G.	3/4"C	3# 6	1# 8 G.	3/4"C
60W3	3# 6	1# 10 G.	3/4"C	3# 4	1# 8 G.	3/4"C
70W3	3# 4	1# 8 G.	1 "C	3# 2	1# 6 G.	1"C
80W3	3# 4	1# 8 G.	1 "C	3# 2	1# 6 G.	1"C
90W3	3# 2	1# 8 G.	1 "C	3# 2	1# 6 G.	1"C
100W3	3# 2	1# 8 G.	1 "C	3# 1	1# 6 G.	1 1/4"C
125W3	3# 1	1# 6 G.	1 1/4 "C	3# 2/0	1# 6 G.	1 1/2"C
200W3	3# 3/0	1# 6 G.	1 1/2 "C	3-250 KCMIL	1# 4 G.	2 "C
225W3	3# 4/0	1# 4 G.	2"C	3-300 KCMIL	1# 4 G.	2"C

NOTE: (#) DENOTES NUMBER OF SETS OF WIRES AND CONDUITS

###W#

- DENOTES NUMBER OF PHASE/LINE & NEUTRAL CONDUCTORS WIRE
- X DENOTES SEPARATELY DERIVED SYSTEMS, SERVICES AND TRANSFORMER SECONDARIES
- CONDUCTORS AMPERE VALUE

NOTES

THIS CHART IS BASED UPON INSULATED WIRE IN CONDUIT- NEC TABLE 310.15(B)(16).
60 DEG COLUMN #1 AND LESS
75 DEG COLUMN #1/0 AND GREATER

CODE SUMMARY

MUNICIPALITY	CITY OF CHESTER
USE AND OCC. CLASSIFICATION	B (BUSINESS)
APPLICABLE CODES	BUILDING CODE: 2018 INTERNATIONAL BUILDING CODE MECHANICAL CODE: 2018 INTERNATIONAL MECHANICAL CODE PLUMBING CODE: 2018 INTERNATIONAL PLUMBING CODE FUEL GAS CODE: 2018 INTERNATIONAL FUEL GAS CODE ELECTRICAL CODE: 2017 NATIONAL ELECTRICAL CODE (BY REFERENCE) FIRE CODE: 2018 INTERNATIONAL FIRE CODE ENERGY CODE: 2018 INTERNATIONAL ENERGY CONSERVATION CODE/ASHRAE 90.1-2016

2304 EDGEMONT AVE
MEP - DRAWING INDEX

DRAWING NO.	DRAWING TITLE	ISSUE: BID SET - 08/09/24
E-1	ELECTRICAL COVER SHEET	●
E-1.1	ELECTRICAL DETAILS	●
E-2	ELECTRICAL FLOOR PLANS	●
E-3	ELECTRICAL FLOOR PLANS	●
E-6	ELECTRICAL PANEL SCHEDULES	●
E-6.1	ELECTRICAL PANEL SCHEDULES	●
E-6.2	ELECTRICAL SCHEDULES	●
E-7	ELECTRICAL SPECIFICATIONS	●

LINN ARCHITECTS
ARCHITECTURE
ENGINEERING
SITE PLANNING
CODE SERVICES
1140 N. PROVIDENCE ROAD
MEDIA, PENNSYLVANIA 19063
TEL: 610-566-7044
FAX: 610-566-3258

ADVANCED ENGINEERING INC
5560 Pennell Road | Media PA 19063

Project No. 23028

ELECTRICAL COVER SHEET

BUILDING RENOVATIONS
AIDS CARE GROUP

2304 EDGMONT AVENUE
CHESTER, PA 19013

REVISIONS NO.	DESCRIPTION	DATE
0	BID SET	08/09/24

DATE: 08/09/24
SCALE: AS NOTED
DRAWN BY: SJS
CHECKED BY: AH
PROJ. NO.: 23028

SHEET NO.
E-1

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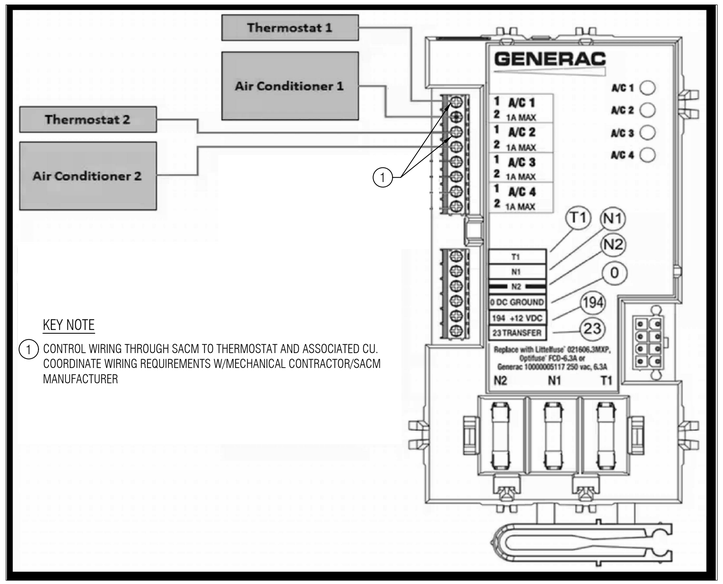
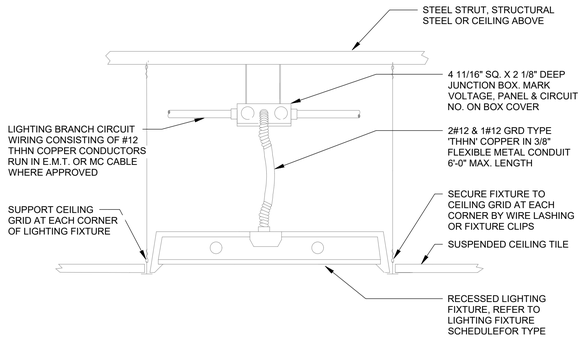
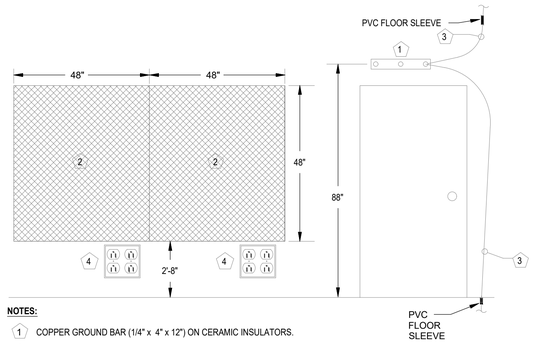


1 SACM HVAC LOAD MANAGEMENT WIRING DETAIL
NO SCALE

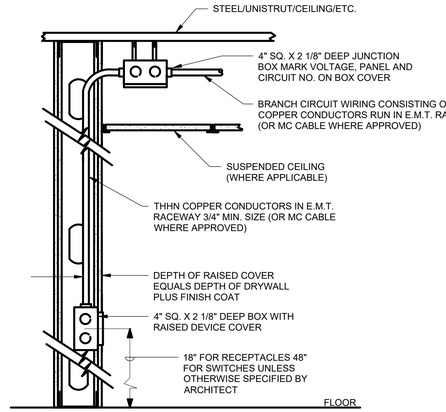


2 TYPICAL RECESSED LIGHT FIXTURE INSTALLATION DETAIL
NO SCALE

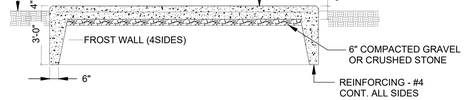


NOTES:
1. COPPER GROUND BAR (1/4" x 4" x 12") ON CERAMIC INSULATORS.
2. PLYWOOD FOR EQUIPMENT MOUNTING. QUANTITIES AS NOTED ON FLOOR PLAN. EACH PLYWOOD SHALL BE PAINTED WITH A WHITE LATEX NONCONDUCTIVE FIRE-RETARDANT OVERCOAT.
3. BARE COPPER GROUNDING WIRE. CONNECTED BACK TO MDF ROOM GROUND BAR OR UNDER LOCATED TELE/DATA GROUND POINTS.
4. DEDICATED QUADRUPLEX RECEPTACLE.

3 TELE/DATA ROOM DETAIL
NO SCALE

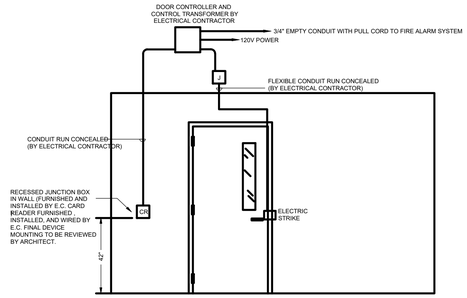


4 DEVICE INSTALLATION IN HOLLOW PARTITIONS DETAIL
NO SCALE



NOTES:
1. PAD DIMENSIONS SHALL BE COORDINATED WITH GENERATOR MANUFACTURER.
2. CHAMFER ALL EXPOSED EDGES OF CONCRETE.

5 GENERATOR PAD DETAIL
NO SCALE



NOTES:
1. DOOR CONTROL SCOPE SHOWN FOR DESIGN INTENT. ELECTRICAL CONTRACTOR RESPONSIBILE FOR COORDINATING WITH OWNER SECURITY VENDOR PRIOR TO SUBMITTING END DOCUMENTS. IF ELECTRICAL CONTRACTOR DOES NOT COORDINATE WITH OWNER SECURITY VENDOR, ALL WIRING AND COMPONENTS SHALL BE ASSUMED TO BE THE CONTRACTURAL RESPONSIBILITY OF ELECTRICAL CONTRACTOR TO FURNISH AND INSTALL.

6 TYPICAL SECURITY DOOR-TYPICAL CARD READER DETAIL
NO SCALE

LINN ARCHITECTS
ARCHITECTURE
ENGINEERING
SITE PLANNING
CODE SERVICES
1140 N. PROVIDENCE ROAD
MEDIA, PENNSYLVANIA 19063
TEL: 610-566-7044
FAX: 610-566-3258

ADVANCED ENGINEERING INC. AEI CONSULTANTS
550 Pennell Road | Media PA 19063
Project No. 23028

ELECTRICAL DETAILS

BUILDING RENOVATIONS
AIDS CARE GROUP
2304 EDGMONT AVENUE
CHESTER, PA 19013

REVISIONS NO.	DESCRIPTION	DATE
0	BID SET	08/09/24

DATE: 08/09/24
SCALE: AS NOTED
DRAWN BY: SJS
CHECKED BY: AH
PROJ. NO.: 23028

SHEET NO.
E-1.1

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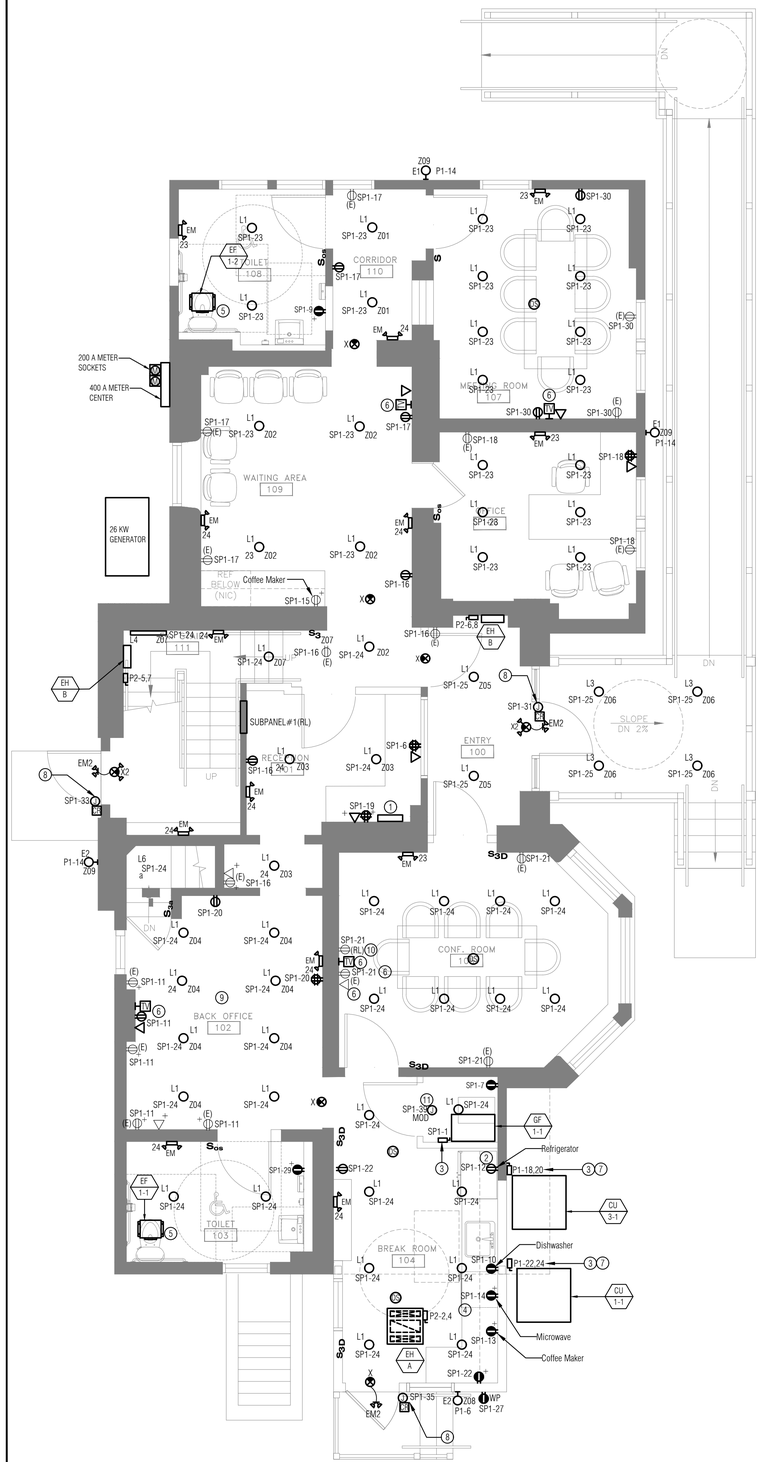


2 FIRST FLOOR PLAN

E-2 SCALE - 1/4" = 1'-0"

FIRST FLOOR ELECTRICAL KEY NOTES

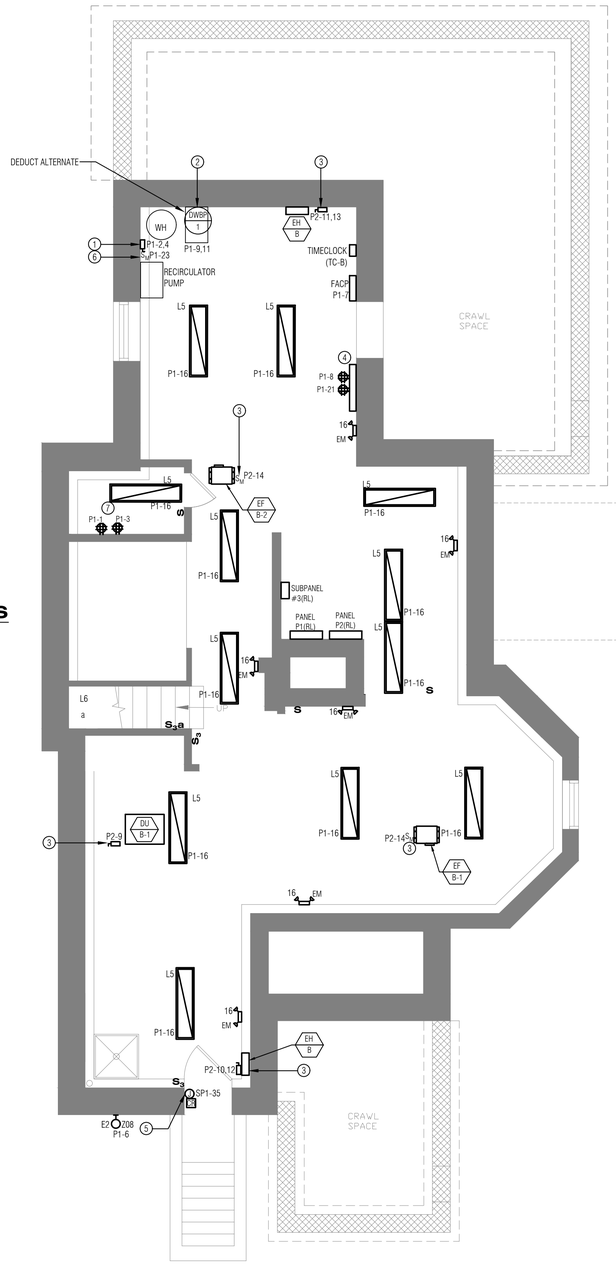
1. PROVIDE ZONE RELAY, BREAKER CONTROLLED TIMECLOCK.
2. PROVIDE GFCI BREAKER.
3. DISCONNECT FOR CONNECTION TO HVAC EQUIPMENT. COORDINATE CONNECTION REQUIREMENTS AND FINAL LOCATION WITH MECHANICAL CONTRACTOR PRIOR TO ROUGH-IN.
4. COORDINATE FINAL LOCATION OF CONFERENCE/ BREAK ROOM COUNTER RECEPTACLES WITH OWNER PRIOR TO ROUGH-IN.
5. CIRCUIT EXHAUST FAN TO NEAREST LIGHTING CIRCUIT. INTERCONNECT EXHAUST FAN WITH BATHROOM OCCUPANCY SENSOR SWITCH
6. MOUNT CABLE TV OUTLET, DATA OUTLET, AND RECEPTACLE 78" A.F.F. CONFIRM MOUNTING HEIGHT WITH ARCHITECT/OWNER PRIOR TO ROUGH-IN.
7. CU CONTROLS TO BE WIRED THROUGH INTEGRATED SMART AIR CONDITIONING MODULE (SACM) LOCATED IN GENERATOR AUTOMATIC TRANSFER SWITCH. SEE DETAIL #1 ON E1.1 FOR SACM WIRING INFORMATION.
8. JUNCTION BOX FOR ELECTRIC STRIKE. COORDINATE CONNECTION REQUIREMENTS AND FINAL LOCATION WITH SECURITY VENDOR. SEE DETAIL #6 ON E1.1 FOR TYPICAL SECURITY DOOR POWER DIAGRAM. COORDINATE FINAL CARD READER LOCATION WITH ARCHITECT.
9. COORDINATE EXACT HEIGHT OF RECEPTACLES LOCATED IN BACK OFFICE PRIOR TO ROUGH-IN.
10. EXISTING RECEPTACLE INSTALLED IN BASEBOARD. RELOCATE RECEPTACLE TO 18" AFF.
11. JUNCTION BOX FOR MOTOR OPERATED DAMPER. COORDINATE CONNECTION REQUIREMENTS AND FINAL LOCATION WITH MECHANICAL CONTRACTOR PRIOR TO ROUGH-IN.

GENERAL ELECTRICAL NOTES

1. REFER TO APPROPRIATE TRADE DRAWINGS FOR EXACT LOCATION OF HVAC, PLUMBING, AND ARCHITECTURAL EQUIPMENT.
2. PROVIDE GFCI PROTECTION AS PER NEC ARTICLES 210.8 (B), 422.5 AND WHERE REQUIRED.
3. ALL FIRST FLOOR RECEPTACLES DESIGNATED (E) REFERS TO THE LOCATION OF THE RECEPTACLE ONLY. EXISTING RECEPTACLES (INCLUDING ASSOCIATED BACKBOXES AND WIRING) ARE TO BE REPLACED WITH NEW. COORDINATE WITH GENERAL CONTRACTOR IF DRYWALL IS BEING REMOVED AT ALL LOCATIONS OR IF CHANNELING IS REQUIRED.
4. COORDINATE FINAL EXTERIOR LIGHT FIXTURE LOCATIONS WITH ARCHITECT.
5. EXTERIOR/GARAGE LIGHTING AND RECEPTACLE CIRCUITS EXISTING TO REMAIN. EC TO TRACE CIRCUITS IN FIELD. ALL CIRCUITS TO BE RELOCATED TO PANELS P2 OR SUBPANEL #3 IN NEW WORK.
6. ELECTRICAL PANELS TO BE RELOCATED TO LOCATIONS SHOWN ON ELECTRICAL PLANS. SEE ARCH DEMOLITION PLANS FOR EXISTING PANEL LOCATIONS.

LIGHTING CONTROL GENERAL NOTES

1. REFER TO LIGHTING CONTROL SEQUENCES FOR ADDITIONAL INFORMATION.
2. ALL EXIT SIGNS SHALL BE CONNECTED TO NEAREST LIGHTING CIRCUIT AHEAD OF ALL SWITCHING.
3. PATH OF EGRESS SHALL BE COORDINATED WITH ARCHITECTURAL DRAWINGS. FINAL LOCATION OF EXIT SIGNS SHALL BE COORDINATED ACCORDINGLY.
4. ALL OCCUPANCY AND DAYLIGHT SENSORS SHALL BE PROVIDED, INSTALLED, AIMED, AND CALIBRATED BY THE ELECTRICAL CONTRACTOR. ALL OCCUPANCY SENSORS AND POWER PACKS SHALL BE INSTALLED AND WIRED AS PER THE MANUFACTURER'S RECOMMENDATIONS. OCCUPANCY SENSOR LOCATIONS SHOWN ON THESE DRAWINGS ARE APPROXIMATE. COORDINATE THE EXACT LOCATION OF ALL SENSORS IN THE FIELD.
5. PROVIDE A POWER/RELAY PACK FOR EACH CONTROL ZONE INDICATED ON DRAWINGS. ELECTRICAL CONTRACTOR SHALL MATCH POWER/RELAY PACK DIMMING REQUIREMENTS WITH FINAL SELECTED FIXTURES. PROVIDE ADDITIONAL POWER/RELAY PACKS AS REQUIRED BASED ON SELECTED MANUFACTURER'S SPECIFICATIONS.
6. LIGHTING CONTROL COMPONENTS, FIXTURES, SWITCHES, AND OCCUPANCY SENSORS SHALL BE GROUPED TOGETHER BY ZONE DESIGNATION.
7. EXTERIOR LIGHTING SHALL BE CONNECTED TO CIRCUIT VIA THE EXTERIOR LIGHTING TIME CLOCK AND CONTROL PANEL, UNLESS OTHERWISE INDICATED.
8. CONFIRM LIGHTING CONTROL COMPONENT FINAL LOCATIONS WITH OWNERSHIP/ARCHITECT PRIOR TO ROUGH-IN.
9. LIGHT FIXTURE LOCATIONS IN ROOMS WITHOUT A CEILING ARE APPROXIMATE. COORDINATE EXACT LOCATIONS OF FIXTURES WITH DUCTWORK, CABLE TRAY, PIPING, AND EQUIPMENT.
12. EMERGENCY LIGHT FIXTURES WITH INTEGRAL BATTERY BACKUP SHALL BE PROVIDED WITH A SEPARATE UNSWITCHED LINE IN ADDITION TO THE SWITCHED LINE.



1 BASEMENT FLOOR PLAN

E-2 SCALE - 1/4" = 1'-0"

BASEMENT ELECTRICAL KEY NOTES

1. DISCONNECT FOR CONNECTION TO ELECTRIC WATER HEATER. COORDINATE CONNECTION REQUIREMENTS AND FINAL LOCATION WITH PLUMBING CONTRACTOR PRIOR TO ROUGH-IN.
2. NEMA4X PUMP CONTROLLER/DISCONNECT SWITCH FOR CONNECTION TO WATER BOOSTER PUMP. COORDINATE CONNECTION REQUIREMENTS AND FINAL LOCATION WITH PLUMBING CONTRACTOR PRIOR TO ROUGH-IN.
   NOTE: CONTRACTOR TO PRICE AS A DEDUCT ALTERNATE.
3. DISCONNECT FOR CONNECTION TO HVAC EQUIPMENT. COORDINATE CONNECTION REQUIREMENTS AND FINAL LOCATION WITH MECHANICAL CONTRACTOR PRIOR TO ROUGH-IN.
4. 4'X4' FIRE RESISTANT PLYWOOD BACKBOARD FOR AV RACK.
5. JUNCTION BOX FOR ELECTRIC STRIKE. COORDINATE CONNECTION REQUIREMENTS AND FINAL LOCATION WITH SECURITY VENDOR. SEE DETAIL #6 ON E1.1 FORTYPICAL SECURITY DOOR POWER DIAGRAM. COORDINATE FINAL CARD READER LOCATION WITH ARCHITECT.
6. DISCONNECT FOR RECIRCULATOR PUMP. COORDINATE CONNECTION REQUIREMENTS AND FINAL LOCATION WITH PLUMBING CONTRACTOR.
7. VERIZON SERVICE EQUIPMENT QUAD RECEPTACLES.

GENERAL ELECTRICAL NOTES

1. REFER TO APPROPRIATE TRADE DRAWINGS FOR EXACT LOCATION OF HVAC, PLUMBING, AND ARCHITECTURAL EQUIPMENT.
2. PROVIDE GFCI PROTECTION AS PER NEC ARTICLES 210.8 (B), 422.5 AND WHERE REQUIRED.
3. EXTERIOR/GARAGE LIGHTING AND RECEPTACLE CIRCUITS EXISTING TO REMAIN. EC TO TRACE CIRCUITS IN FIELD. ALL CIRCUITS TO BE RELOCATED TO PANELS P2 OR SUBPANEL #3.
4. COORDINATE FINAL EXTERIOR LIGHT FIXTURE LOCATIONS WITH ARCHITECT.
5. ELECTRICAL PANELS TO BE RELOCATED TO LOCATIONS SHOWN ON ELECTRICAL PLANS. SEE ARCH DEMOLITION PLANS FOR EXISTING PANEL LOCATIONS.

LIGHTING CONTROL GENERAL NOTES

1. REFER TO LIGHTING CONTROL SEQUENCES FOR ADDITIONAL INFORMATION.
2. ALL EXIT SIGNS SHALL BE CONNECTED TO NEAREST LIGHTING CIRCUIT AHEAD OF ALL SWITCHING.
3. PATH OF EGRESS SHALL BE COORDINATED WITH ARCHITECTURAL DRAWINGS. FINAL LOCATION OF EXIT SIGNS SHALL BE COORDINATED ACCORDINGLY.
4. ALL OCCUPANCY AND DAYLIGHT SENSORS SHALL BE PROVIDED, INSTALLED, AIMED, AND CALIBRATED BY THE ELECTRICAL CONTRACTOR. ALL OCCUPANCY SENSORS AND POWER PACKS SHALL BE INSTALLED AND WIRED AS PER THE MANUFACTURER'S RECOMMENDATIONS. OCCUPANCY SENSOR LOCATIONS SHOWN ON THESE DRAWINGS ARE APPROXIMATE. COORDINATE THE EXACT LOCATION OF ALL SENSORS IN THE FIELD.
5. PROVIDE A POWER/RELAY PACK FOR EACH CONTROL ZONE INDICATED ON DRAWINGS. ELECTRICAL CONTRACTOR SHALL MATCH POWER/RELAY PACK DIMMING REQUIREMENTS WITH FINAL SELECTED FIXTURES. PROVIDE ADDITIONAL POWER/RELAY PACKS AS REQUIRED BASED ON SELECTED MANUFACTURER'S SPECIFICATIONS.
6. LIGHTING CONTROL COMPONENTS, FIXTURES, SWITCHES, AND OCCUPANCY SENSORS SHALL BE GROUPED TOGETHER BY ZONE DESIGNATION.
7. EXTERIOR LIGHTING SHALL BE CONNECTED TO CIRCUIT VIA THE EXTERIOR LIGHTING TIME CLOCK AND CONTROL PANEL, UNLESS OTHERWISE INDICATED.
8. CONFIRM LIGHTING CONTROL COMPONENT FINAL LOCATIONS WITH OWNERSHIP/ARCHITECT PRIOR TO ROUGH-IN.
9. LIGHT FIXTURE LOCATIONS IN ROOMS WITHOUT A CEILING ARE APPROXIMATE. COORDINATE EXACT LOCATIONS OF FIXTURES WITH DUCTWORK, CABLE TRAY, PIPING, AND EQUIPMENT.
12. EMERGENCY LIGHT FIXTURES WITH INTEGRAL BATTERY BACKUP SHALL BE PROVIDED WITH A SEPARATE UNSWITCHED LINE IN ADDITION TO THE SWITCHED LINE.

LINN ARCHITECTS
ARCHITECTURE
ENGINEERING
SITE PLANNING
CODE SERVICES
1140 N. PROVIDENCE ROAD
MEDIA, PENNSYLVANIA 19063
TEL: 610-566-7044
FAX: 610-566-3258
ADVANCED ENGINEERING INC
5501 Pennell Road | Media PA 19063
Project No. 23028

ELECTRICAL FLOOR PLANS

BUILDING RENOVATIONS
AIDS CARE GROUP
2304 EDGMONT AVENUE
CHESTER, PA 19013

REVISIONS NO.	DESCRIPTION	DATE
0	BID SET	08/09/24

DATE: 08/09/24
SCALE: AS NOTED
DRAWN BY: SJS
CHECKED BY: AH
PROJ. NO.: 23028

SHEET NO.
E-2

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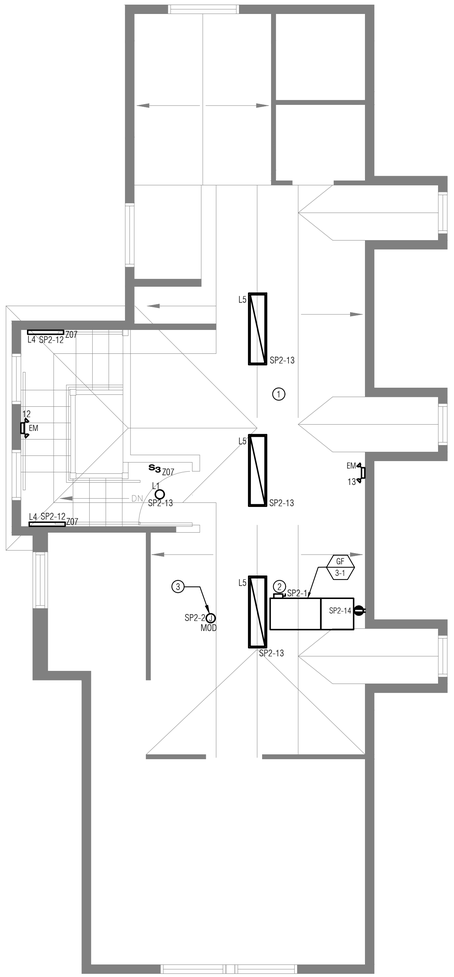


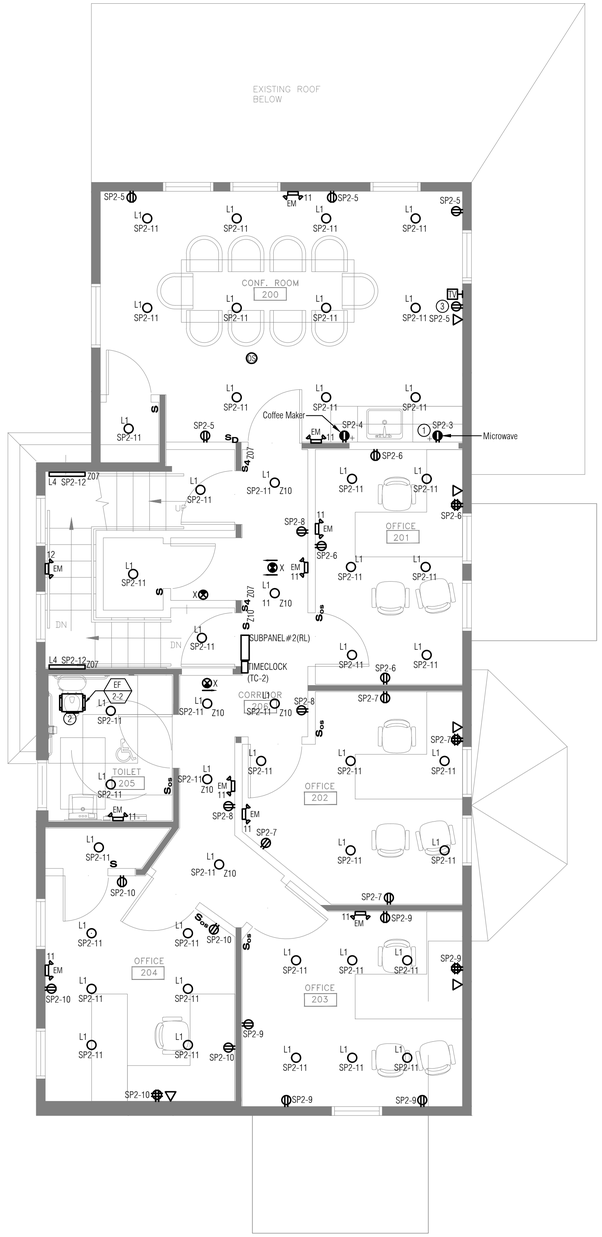
2 THIRD FLOOR PLAN
E-3 SCALE - 1/4" = 1'-0"

THIRD FLOOR ELECTRICAL KEY NOTES

1. COORDINATE FINAL THIRD FLOOR LIGHTING LAYOUT WITH ARCHITECT.
2. DISCONNECT FOR CONNECTION TO HVAC EQUIPMENT. COORDINATE CONNECTION REQUIREMENTS AND FINAL LOCATION WITH MECHANICAL CONTRACTOR PRIOR TO ROUGH-IN.
3. JUNCTION BOX FOR MOTOR OPERATED DAMPER. COORDINATE CONNECTION REQUIREMENTS AND FINAL LOCATION WITH MECHANICAL CONTRACTOR PRIOR TO ROUGH-IN.

GENERAL ELECTRICAL NOTES

1. REFER TO APPROPRIATE TRADE DRAWINGS FOR EXACT LOCATION OF HVAC, PLUMBING, AND ARCHITECTURAL EQUIPMENT.
2. PROVIDE GFCI PROTECTION AS PER NEC ARTICLES 210.8 (B), 422.5 AND WHERE REQUIRED.



1 SECOND FLOOR PLAN
E-3 SCALE - 1/4" = 1'-0"

SECOND FLOOR ELECTRICAL KEY NOTES

1. COORDINATE FINAL LOCATION OF CONFERENCE/ BREAK ROOM COUNTER RECEPTACLES WITH OWNER PRIOR TO ROUGH-IN.
2. CIRCUIT EXHAUST FAN TO NEAREST LIGHTING CIRCUIT. INTERCONNECT EXHAUST FAN WITH BATHROOM OCCUPANCY SENSOR SWITCH
3. MOUNT CABLE TV OUTLET, DATA OUTLET, AND RECEPTACLE 60" A.F.F. CONFIRM MOUNTING HEIGHT WITH ARCHITECT/OWNER PRIOR TO ROUGH-IN.

GENERAL ELECTRICAL NOTES

1. REFER TO APPROPRIATE TRADE DRAWINGS FOR EXACT LOCATION OF HVAC, PLUMBING, AND ARCHITECTURAL EQUIPMENT.
2. PROVIDE GFCI PROTECTION AS PER NEC ARTICLES 210.8 (B), 422.5 AND WHERE REQUIRED.
3. EXTERIOR/GARAGE LIGHTING AND RECEPTACLE CIRCUITS EXISTING TO REMAIN. EC TO TRACE CIRCUITS IN FIELD. ALL CIRCUITS TO BE RELOCATED TO PANELS P2 OR SUBPANEL #3 IN NEW WORK.
4. ELECTRICAL PANELS TO BE RELOCATED TO LOCATIONS SHOWN ON ELECTRICAL PLANS. SEE ARCH DEMOLITION PLANS FOR EXISTING PANEL LOCATIONS.

LIGHTING CONTROL GENERAL NOTES

1. REFER TO LIGHTING CONTROL SEQUENCES FOR ADDITIONAL INFORMATION.
2. ALL EXIT SIGNS SHALL BE CONNECTED TO NEAREST LIGHTING CIRCUIT AHEAD OF ALL SWITCHING.
3. PATH OF EGRESS SHALL BE COORDINATED WITH ARCHITECTURAL DRAWINGS. FINAL LOCATION OF EXIT SIGNS SHALL BE COORDINATED ACCORDINGLY.
4. ALL OCCUPANCY AND DAYLIGHT SENSORS SHALL BE PROVIDED, INSTALLED, AIMED, AND CALIBRATED BY THE ELECTRICAL CONTRACTOR. ALL OCCUPANCY SENSORS AND POWER PACKS SHALL BE INSTALLED AND WIRED AS PER THE MANUFACTURER'S RECOMMENDATIONS. OCCUPANCY SENSOR LOCATIONS SHOWN ON THESE DRAWINGS ARE APPROXIMATE. COORDINATE THE EXACT LOCATION OF ALL SENSORS IN THE FIELD.
5. PROVIDE A POWER/RELAY PACK FOR EACH CONTROL ZONE INDICATED ON DRAWINGS. ELECTRICAL CONTRACTOR SHALL MATCH POWER/RELAY PACK DIMMING REQUIREMENTS WITH FINAL SELECTED FIXTURES. PROVIDE ADDITIONAL POWER/RELAY PACKS AS REQUIRED BASED ON SELECTED MANUFACTURERS SPECIFICATIONS.
6. LIGHTING CONTROL COMPONENTS, FIXTURES, SWITCHES, AND OCCUPANCY SENSORS SHALL BE GROUPED TOGETHER BY ZONE DESIGNATION.
7. EXTERIOR LIGHTING SHALL BE CONNECTED TO CIRCUIT VIA THE EXTERIOR LIGHTING TIME CLOCK AND CONTROL PANEL, UNLESS OTHERWISE INDICATED.
8. CONFIRM LIGHTING CONTROL COMPONENT FINAL LOCATIONS WITH OWNERSHIP/ARCHITECT PRIOR TO ROUGH-IN.
9. LIGHT FIXTURE LOCATIONS IN ROOMS WITHOUT A CEILING ARE APPROXIMATE. COORDINATE EXACT LOCATIONS OF FIXTURES WITH DUCTWORK, CABLE TRAY, PIPING, AND EQUIPMENT.
12. EMERGENCY LIGHT FIXTURES WITH INTEGRAL BATTERY BACKUP SHALL BE PROVIDED WITH A SEPARATE UNSWITCHED LINE IN ADDITION TO THE SWITCHED LINE.

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Project No. 23028

ELECTRICAL FLOOR PLANS

BUILDING RENOVATIONS
AIDS CARE GROUP

2304 EDGMONT AVENUE
CHESTER, PA 19013

REVISIONS NO.	DESCRIPTION	DATE
0	BID SET	08/09/24

DATE: 08/09/24
SCALE: AS NOTED
DRAWN BY: SJS
CHECKED BY: AH
PROJ. NO.: 23028

SHEET NO.
E-3

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PANEL P1 (EXISTING)

VOLTAGE: 120/240 V, 1Ø , 3W
MAIN : 200 A MCB
NEUTRAL:

LOCATION: BASEMENT
MOUNTING: SURFACE

CKT NO.	WIRE ID	CB AMP/POLE	DESCRIPTION	LOAD (KW) A	LOAD (KW) B	LOAD (KW) A	LOAD (KW) B	DESCRIPTION	CB AMP/POLE	WIRE ID	CKT NO.
1			Space					Space			2
3			Space					Space			4
5		15A/1P	Existing Circuit (D)					Existing Circuit (D)	20A/1P		6
7		20A/1P	Existing Circuit (D)					Existing Circuit	20A/1P		8
9		60A/2P	Subpanel 3(RL)*					Existing Surge Protector (E)	20A/2P		10
11											12
13		100A/2P	Subpanel 1 or 2					Existing Circuit (D)	20A/1P		14
15								Existing Circuit (D)	20A/1P		16
17		100A/2P	Subpanel 1 or 2					Existing Circuit (D)	20A/1P		18
19								Existing Circuit (D)	20A/1P		20
21		20A/1P	Existing Circuit (D)					Existing Circuit (D)	20A/1P		22
23		20A/1P	Existing Circuit (D)					Existing Circuit (D)	15A/1P		24
25			Space					Existing Circuit (D)	15A/1P		26
27			Space					Space			28
29			Space					Space			30
31			Space					Space			32
33			Space					Space			34
35			Space					Space			36
37			Space					Space			38
39			Space					Space			40
			SUB TOTAL KW	0.00	0.00	0.00	0.00	SUB TOTAL KW			

TOTAL CONNECTED KW LOAD 0.0 KVA
TOTAL CONNECTED AMPERE LOAD 0.0 A

*EXISTING 60A/2P BREAKER TO BE RELOCATED TO PANEL P2. SEE P2 NEW WORK PANEL SCHEDULE FOR MORE INFORMATION.

NOTE: PANEL TO BE RELOCATED DURING NEW WORK. SEE SHEET E-2 FOR NEW LOCATION.

SUBPANEL 1 (EXISTING)

VOLTAGE: 120/240 V, 1Ø , 3W
MAIN : 200 A MCB
NEUTRAL:

LOCATION: BASEMENT
MOUNTING: SURFACE

CKT NO.	WIRE ID	CB AMP/POLE	DESCRIPTION	LOAD (KW) A	LOAD (KW) B	LOAD (KW) A	LOAD (KW) B	DESCRIPTION	CB AMP/POLE	WIRE ID	CKT NO.
1		20A/1P	Existing Circuit					Existing Circuit	15A/1P		2
3		20A/1P	Existing Circuit					Existing Circuit	20A/1P		4
5		15A/1P	Existing Circuit					Existing Circuit	20A/1P		6
7		15A/1P	Existing Circuit					Existing Circuit	15A/1P		8
9		20A/1P	Existing Circuit					Existing Circuit	20A/1P		10
11		20A/1P	Existing Circuit					Existing Circuit	15A/1P		12
13		20A/1P	Existing Circuit					Existing Circuit	15A/1P		14
15		20A/1P	Existing Circuit					Existing Circuit	15A/1P		16
17		40A/2P	Existing Circuit					Existing Circuit	20A/1P		18
19			Existing Circuit					Existing Circuit	20A/1P		20
21		15A/1P	Existing Circuit					Existing Circuit	20A/1P		22
23		15A/1P	Existing Circuit					Existing Circuit	20A/1P		24
25		15A/1P	Existing Circuit					Existing Circuit	20A/1P		26
27		15A/1P	Existing Circuit					Existing Circuit	15A/1P		28
29		20A/1P	Existing Circuit					Existing Circuit	15A/1P		30
31		15A/1P	Existing Circuit					Space			32
33		15A/1P	Existing Circuit					Space			34
35		15A/1P	Existing Circuit					Space			36
37			Space					Space			38
39			Space					Space			40
			SUB TOTAL KW	0.00	0.00	0.00	0.00	SUB TOTAL KW			

TOTAL CONNECTED KW LOAD 0.0 KVA
TOTAL CONNECTED AMPERE LOAD 0.0 A

NOTE: ALL CIRCUITS IN PANELTO BE DEMOLISHED.

NOTE 2: PANEL TO BE RELOCATED TO FIRST FLOOR DURING NEW WORK. SEE SHEET E-2 FOR NEW LOCATION.

SUBPANEL 3 (EXISTING)

VOLTAGE: 120/240 V, 1Ø , 3W
MAIN : 60 A MLO
NEUTRAL:

LOCATION: BASEMENT
MOUNTING: SURFACE

CKT NO.	WIRE ID	CB AMP/POLE	DESCRIPTION	LOAD (KW) A	LOAD (KW) B	LOAD (KW) A	LOAD (KW) B	DESCRIPTION	CB AMP/POLE	WIRE ID	CKT NO.
1		30A/2P	Existing Feed to 2304 Edgmont Garage (E)					Existing Verizon Equipment(D)	20A/1P		2A
3								Existing Feed to 8 West 23rd Garage (E)	20A/1P		2B
								Existing Water Pipe Heating Tape(D)	20A/1P		4A
								Existing Circuit(D)	20A/1P		4B
								Existing Feed to 2308 Edgmont Garage €	20A/2P		6
											8
			SUB TOTAL KW	0.00	0.00	0.00	0.00	SUB TOTAL KW			

TOTAL CONNECTED KW LOAD 0.0 KVA
TOTAL CONNECTED AMPERE LOAD 0.0 A

GENERAL NOTE 1: ELECTRICAL CONTRACTOR TO TRACE EXISTING CIRCUITS IN FIELD. REMOVE CONDUIT AND WIRE BACK TO SOURCE IF CONNECTED TO EQUIPMENT/DEVICES TO BE DEMOLISHED. ELECTRICAL CONTRACTOR TO TEST FUNCTIONALITY OF CIRCUIT BREAKER. RETAIN CIRCUIT BREAKER FOR NEW WORK IF IN FUNCTIONING CONDITION. VERIFY EQUIPMENT/DEVICES TO BE DEMOLISHED WITH OWNER.

GENERAL NOTE 2: REVISE PANEL SCHEDULE LABELING ACCORDING TO CHANGES MADE DURING DEMOLITION/INVESTIGATIVE FINDINGS.

PANEL P2 (EXISTING)

VOLTAGE: 120/240 V, 1Ø , 3W
MAIN : 200 A MCB
NEUTRAL:

LOCATION: BASEMENT
MOUNTING: SURFACE

CKT NO.	WIRE ID	CB AMP/POLE	DESCRIPTION	LOAD (KW) A	LOAD (KW) B	LOAD (KW) A	LOAD (KW) B	DESCRIPTION	CB AMP/POLE	WIRE ID	CKT NO.
1			Space					Space			2
3			Space					Space			4
5			Space					Space			6
7			Space					Space			8
9			Space					Space			10
11			Space					Space			12
13			Space					Space			14
15			Space					Space			16
17			Space					Space			18
19			Space					Existing Circuit (D)			20
21			Space					Space			22
23			Space					Space			24
25			Space					Space			26
27			Space					Space			28
29			Space					Space			30
31			Space					Space			32
33			Space					Space			34
35			Space					Space			36
37			Space					Space			38
39			Space					Space			40
			SUB TOTAL KW	0.00	0.00	0.00	0.00	SUB TOTAL KW			

TOTAL CONNECTED KW LOAD 0.0 KVA
TOTAL CONNECTED AMPERE LOAD 0.0 A

NOTE: PANEL TO BE RELOCATED TO BASEMENT DURING NEW WORK. SEE SHEET E-2 FOR NEW LOCATION.

SUBPANEL 2 (EXISTING)

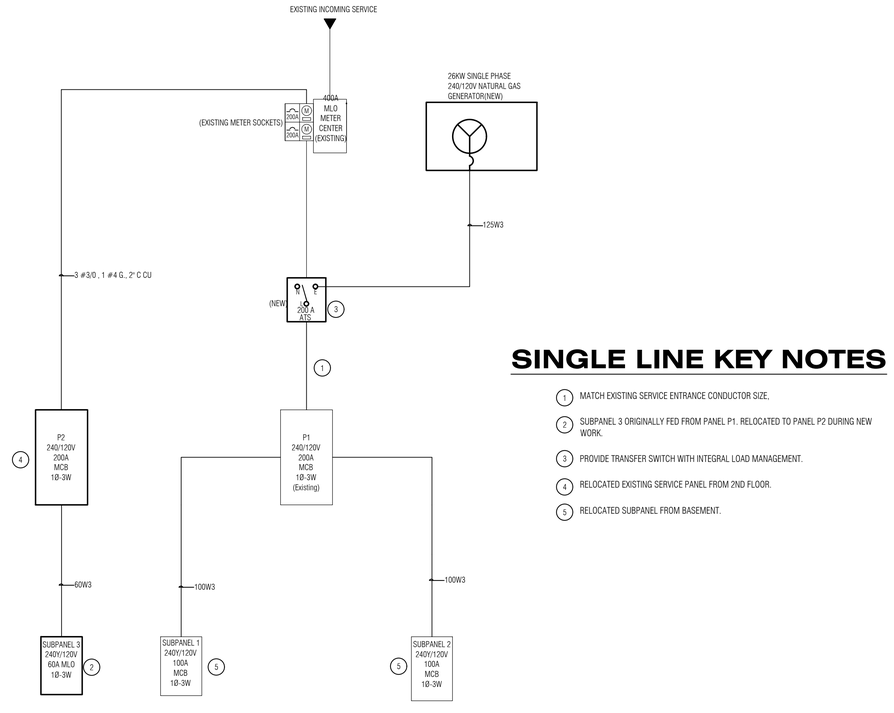
VOLTAGE: 120/240 V, 1Ø , 3W
MAIN : 100 A MCB
NEUTRAL:

LOCATION: BASEMENT
MOUNTING: SURFACE

CKT NO.	WIRE ID	CB AMP/POLE	DESCRIPTION	LOAD (KW) A	LOAD (KW) B	LOAD (KW) A	LOAD (KW) B	DESCRIPTION	CB AMP/POLE	WIRE ID	CKT NO.
1		20A/1P	Space					Space	20A/1P		2
3		15A/1P	Space					Space	15A/1P		4
5		20A/1P	Existing Circuit(D)					Existing Circuit(D)	15A/1P		6
7		20A/1P	Existing Circuit(D)					Existing Circuit(D)	15A/1P		8
9		20A/1P	Existing Circuit(D)					Existing Circuit(D)	20A/1P		10
11		15A/1P	Existing Circuit(D)					Existing Circuit(D)	15A/1P		12
13		20A/1P	Existing Circuit(D)					Existing Circuit(D)	20A/1P		14
15			Space					Existing Circuit(D)	15A/1P		16
17		20A/1P	Existing Circuit(D)					Space			18
19		20A/1P	Existing Circuit(D)					Space			20
			SUB TOTAL KW	0.00	0.00	0.00	0.00	SUB TOTAL KW			

TOTAL CONNECTED KW LOAD 0.0 KVA
TOTAL CONNECTED AMPERE LOAD 0.0 A

NOTE: PANEL TO BE RELOCATED TO SECOND FLOOR DURING NEW WORK. SEE SHEET E-3 FOR NEW LOCATION.



SINGLE LINE KEY NOTES

1. MATCH EXISTING SERVICE ENTRANCE CONDUCTOR SIZE.
2. SUBPANEL 3 ORIGINALLY FED FROM PANEL P1. RELOCATED TO PANEL P2 DURING NEW WORK.
3. PROVIDE TRANSFER SWITCH WITH INTEGRAL LOAD MANAGEMENT.
4. RELOCATED EXISTING SERVICE PANEL FROM 2ND FLOOR.
5. RELOCATED SUBPANEL FROM BASEMENT.

LINN ARCHITECTS
ARCHITECTURE
ENGINEERING
SITE PLANNING
CODE SERVICES
1140 N. PROVIDENCE ROAD
MEDIA, PENNSYLVANIA 19063
TEL: 610-566-7044
FAX: 610-566-3258

ADVANCED ENGINEERING INC
5500 Pennell Road | Media PA 19063

Project No. 23028

EXISTING ELECTRICAL PANEL SCHEDULES

BUILDING RENOVATIONS
AIDS CARE GROUP

2304 EDGMONT AVENUE
CHESTER, PA 19013

REVISIONS NO.	DESCRIPTION	DATE
0	BID SET	08/09/24

DATE: 08/09/24
SCALE: AS NOTED
DRAWN BY: SJS
CHECKED BY: AH
PROJ. NO.: 23028

SHEET NO.
E-6

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PANEL P1 (NEW WORK)

VOLTAGE: 120/240 V, 1Ø , 3W
MAIN : 200 A MCB
NEUTRAL:

LOCATION: BASEMENT
MOUNTING: SURFACE

CKT NO.	WIRE ID	CB AMP/POLE	DESCRIPTION	LOAD (KW) A	LOAD (KW) B	LOAD (KW) A	LOAD (KW) B	DESCRIPTION	CB AMP/POLE	WIRE ID	CKT NO.
1	20W2	20A/1P	Existing Verizon Equipment	0.50		2.25		Water Heater WH-1 Basement	30A/2P	30W2	2
3	20W2	20A/1P	Existing Verizon Equipment		0.50		2.25				4
5		15A/1P	Spare			0.30		Exterior Lighting - First Floor	20A/1P	30W2	6
7	20W2	20A/1P	Fire Alarm Control Panel - Basement		0.50		0.36	IT Rack Quad - Basement	20A/1P	20W2	8
9	20W3	20A/2P	Water Booster Pump - Basement***	1.06				**Existing Surge Protector**	**20A/2P**		10
11					1.06						12
13	100W3	**100A/2P**	**Subpanel 1 or 2 (Existing)**	9.37		0.30		Exterior Lighting - First Floor	20A/1P	30W2	14
15					9.37		0.50	Basement Lighting	20A/1P	20W2	16
17	100W3	**100A/2P**	**Subpanel 1 or 2 (Existing)**	5.95		2.79		Condensing Unit CU 3-1 - Outside Break Room	45A/2P	45W3	18
19					5.95		2.79				20
21	20W2	20A/1P	IT Rack Quad - Basement	0.36		3.39		Condensing Unit CU 1-1 - Outside Break Room	60A/2P	60W3	22
23	20W2	20A/1P	Recirc Pump - Basement		0.12		3.39				24
25								Spare	15A/1P		26
27			Space					Space			28
29			Space					Space			30
31			Space					Space			32
33			Space					Space			34
35			Space					Space			36
37			Space					Space			38
39			Space					Space			40
			SUB TOTAL KW	**17.23**	**17.49**	**9.03**	**9.29**	**SUB TOTAL KW**			

TOTAL CONNECTED KW LOAD 53.0 KVA
TOTAL DEMAND KW LOAD 40.2 KVA
TOTAL DEMAND AMPERE LOAD 167.5 A

EXISTING CIRCUITS IN BOLD

***CONTRACTOR TO PRICE AS A DEDUCT ALTERNATE

SUBPANEL 1 (NEW WORK)

VOLTAGE: 120/240 V, 1Ø , 3W
MAIN : 100 A MCB
NEUTRAL:

LOCATION: BASEMENT
MOUNTING: SURFACE

CKT NO.	WIRE ID	CB AMP/POLE	DESCRIPTION	LOAD (KW) A	LOAD (KW) B	LOAD (KW) A	LOAD (KW) B	DESCRIPTION	CB AMP/POLE	WIRE ID	CKT NO.
1	20W2	20A/1P	Gas Furnace GF 1-1	1.28							2
3											4
5						0.54		Receptacles - Reception 101	20A/1P	20W2	6
7	20W2	20A/1P	Gas Furnace GF 1-1 Maint Recep		0.18						8
9	20W2	20A/1P	Toilet 108 Receptacle	0.18		1.44		Dishwasher - Break Room	20A/1P	20W2	10
11	20W2	20A/1P	Receptacles - Back Office 102		0.90		0.50	Refrigerator - Break Room*	20A/1P	20W2	12
13	30W2	20A/1P	Coffee Maker - Break Room	1.80		1.20		Microwave - Break Room	20A/1P	20W2	14
15	30W2	20A/1P	Coffee Maker - Waiting Area		1.80		0.60	Water Fountain - Waiting Area	20A/1P	20W2	16
17	30W2	20A/1P	Receptacles - Waiting Area/Corridor 110	0.90		0.90		Receptacles - Office 106	20A/1P	20W2	18
19	20W2	20A/1P	Receptacles - Reception 101		0.72		0.90	Receptacles - Back Office 102	20A/1P	20W2	20
21	20W2	20A/1P	Receptacles - Conference Room 105	0.54		0.18		Receptacles - Break Room Countertop	20A/1P	20W2	22
23	20W2	20A/1P	Interior Lighting - First Floor		0.40		0.40	Interior Lighting - First Floor	20A/1P	30W2	24
25	20W2	20A/1P	Interior Lighting - First Floor			0.30		Exterior Lighting - First Floor	20A/1P	30W2	26
27	20W2	20A/1P	Maintenance Receptacle for Condensing Units		0.18						28
29	20W2	20A/1P	Toilet 103 Receptacle			0.72		Receptacles - Meeting Room 107	20A/1P	20W2	30
31	20W2	15A/1P	Security Door-Entry		0.50						32
33	20W2	15A/1P	Security Door-Rear Entry	0.50				Space			34
35	20W2	15A/1P	Security Door-Basement/ Break Room		0.50			Space			36
37								Space			38
39	20W2	20A/1P	MOD Break Room		0.68			Space			40
			SUB TOTAL KW	**5.20**	**5.86**	**5.28**	**2.40**	**SUB TOTAL KW**			

TOTAL DEMAND KW LOAD 18.7 KVA
TOTAL DEMAND AMPERE LOAD 78.1 A

*PROVIDE GFCI BREAKER

SUBPANEL 3 (NEW WORK)

VOLTAGE: 120/240 V, 1Ø , 3W
MAIN : 60 A MLO
NEUTRAL:

LOCATION: BASEMENT
MOUNTING: SURFACE

CKT NO.	WIRE ID	CB AMP/POLE	DESCRIPTION	LOAD (KW) A	LOAD (KW) B	LOAD (KW) A	LOAD (KW) B	DESCRIPTION	CB AMP/POLE	WIRE ID	CKT NO.
1		30A/2P	Existing Feed to 2304 Edgmont Garage*					Spare	20A/1P		2A
3								Existing Feed to 8 West 23rd Garage*	20A/1P		2B
								Existing Water Pipe Heating Tape(E)*	20A/1P		4A
								Existing Circuit*	20A/1P		4B
								Existing Feed to 2308 Edgmont Garage *	20A/2P		6
											8
			SUB TOTAL KW	**0.00**	**0.00**	**0.00**	**0.00**	**SUB TOTAL KW**			

TOTAL CONNECTED KW LOAD 0.0 KVA
TOTAL CONNECTED AMPERE LOAD 0.0 A

NOTE: VERIFY EXISTING CIRCUITS TO REMAIN/SPARE CIRCUITS IN FIELD.

GENERAL POWER NOTES

1. EXISTING SITE LIGHTING CIRCUITS TO REMAIN. RELOCATE CIRCUIT TO PANEL P2 IF IT IS NOT ON SUBPANEL 3.

PANEL P2 (NEW WORK)

VOLTAGE: 120/240 V, 1Ø , 3W
MAIN : 200 A MCB
NEUTRAL:

LOCATION: BASEMENT
MOUNTING: SURFACE

CKT NO.	WIRE ID	CB AMP/POLE	DESCRIPTION	LOAD (KW) A	LOAD (KW) B	LOAD (KW) A	LOAD (KW) B	DESCRIPTION	CB AMP/POLE	WIRE ID	CKT NO.
1	60W3	60A/2P	Subpanel 3(RL)			1.50					
3							1.50	EH-A- First Floor Break Room	20A/2P	20W2	2
5	20W2	20A/2P	EH-B- Stair 111	2.00		2.00					4
7					2.00		2.00	EH-B- Entry	20A/2P	20W2	6
9	20W2	20A/1P	DU B-1 Basement	0.88		2.00					8
11	30W2	25A/2P	EH-B Basement		2.00		2.00	EH-B Basement	25A/2P	30W2	10
13				2.00		0.18					12
15			Space					EF B-1/EF B-2	20A/1P	20W2	14
17			Space					Space	20A/1P		16
19			Space					Space	20A/1P		18
21			Space					Existing Circuit	20A/1P		20
23			Space					Space	20A/1P		22
25			Space					Space	15A/1P		24
27			Space					Space	15A/1P		26
29			Space					Space			28
31			Space					Space			30
33			Space					Space			32
35			Space					Space			34
37			Space					Space			36
39			Space					Space			38
			SUB TOTAL KW	**4.88**	**4.00**	**5.68**	**5.50**	**SUB TOTAL KW**			40

TOTAL CONNECTED KW LOAD 20.1 KVA
TOTAL CONNECTED AMPERE LOAD 83.6 A

SUBPANEL 2 (NEW WORK)

VOLTAGE: 120/240 V, 1Ø , 3W
MAIN : 100 A MCB
NEUTRAL:

LOCATION: BASEMENT
MOUNTING: SURFACE

CKT NO.	WIRE ID	CB AMP/POLE	DESCRIPTION	LOAD (KW) A	LOAD (KW) B	LOAD (KW) A	LOAD (KW) B	DESCRIPTION	CB AMP/POLE	WIRE ID	CKT NO.
1	30W2	20A/1P	Gas Furnace GF 3-1	1.00		0.50		MOD 3rd floor	20A/1P	20W2	2
3	30W2	20A/1P	Mircrowave 2nd Floor		1.20		1.80	Coffee Maker 2nd Floor	20A/1P	30W2	4
5	30W2	20A/1P	Receptacles - Conference Room 200	0.90		0.90		Receptacles - Office 201	20A/1P	20W2	6
7	20W2	20A/1P	Receptacles - Office 202		0.90		0.54	Receptacles - 2nd Floor Corridors	20A/1P	30W2	8
9	30W2	20A/1P	Receptacles - Office 203	1.08		0.90		Receptacles - Office 204	20A/1P	20W2	10
11	30W2	20A/1P	Lighting - 2nd Floor		0.60		0.40	Lighting - Stairwell	20A/1P	30W2	12
13	30W2	20A/1P	Lighting - 3rd Floor	1.00		0.18		Maintenance Receptacle- Gas Furnace 3-1	20A/1P	20W2	14
15		20A/1P	Spare					Space			16
17		20A/1P	Spare					Space			18
19			Space					Space			20
			SUB TOTAL KW	**3.98**	**2.70**	**2.48**	**2.74**	**SUB TOTAL KW**			

TOTAL CONNECTED KW LOAD 11.9 KVA
TOTAL CONNECTED AMPERE LOAD 49.6 A

LINN ARCHITECTS
ARCHITECTURE
ENGINEERING
SITE PLANNING
CODE SERVICES
1140 N. PROVIDENCE ROAD
MEDIA, PENNSYLVANIA 19063
TEL: 610-566-7044
FAX: 610-566-3258

ADVANCED ENGINEERING INC
5550 Pennell Road | Media PA 19063

Project No. 23028

ELECTRICAL PANEL SCHEDULES (NEW WORK)

BUILDING RENOVATIONS
AIDS CARE GROUP

2304 EDGMONT AVENUE
CHESTER, PA 19013

REVISIONS NO.	DESCRIPTION	DATE
0	BID SET	08/09/24

DATE: 08/09/24
SCALE: AS NOTED
DRAWN BY: SJS
CHECKED BY: AH
PROJ. NO.: 23028

SHEET NO.
E-6.1

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ACG EDGEMONT LIGHTING FIXTURE SCHEDULE

TYPE	DESCRIPTION	MANUFACTURER & MODEL NUMBER	SPECIFIED BY	VOLTAGE	LAMP						MOUNTING	CLG TYPE (GYP/ACT)	REMARKS
					QUANTITY	TYPE	WATTAGE	DIMMABLE	COLOR TEMP	LUMEN			
L1	RECESSED 6" RECESSED DOWNLIGHT	**Feit Electric** 1200274	OWNER	120	1	LED	9.4	YES	2700K	850	RECESSED	GYP	COORDINATE DIMMING REQUIREMENTS WITH MANUFACTURER.
L3	4" CANOPY DOWNLIGHT	**Elite Lighting** RL-443-1000L/1500/2000L-DIM10-MVOLT-27K/30K/35K/40K/50K-90-W-WH	AEI	MVOLT	1	LED	18	YES	27-50K	2000	RECESSED		
L4	2' LONG LED FIXTURE WITH HIGH IMPACT ACRYLIC LENS.	**LITHONIA** ZL1N-24-SMR-3500LM-FST-120-35K-80CRI-WH	AEI	120	1	LED	31	YES	3500K	3500	SURFACE	N/A	
L5	LED STRIP LIGHT	**LITHONIA** CSS-L48-ALO3-MVOLT-SWW3-80CRI	AEI	120	1	LED	27-43	YES	35,40, OR 50K	3851-5884	CEILING		
L6	VAPOR TIGHT UTILITY LIGHT	**LITHONIA** VW150I-M12	AEI	120	1	LED	150	NO			SURFACE	N/A	
E1	WALL MOUNTED LED EMERGENCY FIXTURE	**LITHONIA** AFF-PEL-XXXX-UVOLT-LTP-SDRT-FCT	AEI	120	1	LED	10.8	NO	4000K	635	SURFACE	N/A	U.L. LISTED FOR WET LOCATION. NORMALLY ON WITH INTERNAL BATTERY. COORDINATE FINISH WITH OWNER.
E2	EXTERIOR LED WALL FIXTURE	**WESTINGHOUSE** 6361100	ARCH	120	1	LED	12.5	YES	2700K	600	Wall	NA	CONFIRM VOLTAGE PRIOR TO PURCHASE. COORDINATE CONTROL(PHOTOCELL OR TIMECLOCK) WITH OWNER PRIOR TO ROUGH-IN.
EM	EMERGENCY WALL PACK	**LITHONIA** ELM2L	AEI	120/277V	2	LED	(2) 2.4	NO	5000K	(2) 220	SURFACE	NA	FINISH: WHITE MOUNTING: 7'6" AFF SPACING: SINGLE FIXTURE IN ROOM: 32' COVERAGE MULTIPLE FIXTURES: MAXIMUM 35' BETWEEN ADJACENT FIXTURES
EM2	TWIN REMOTE HEADS	**LITHONIA** ERE-GY-T-WP-SQ	AEI	3.6V	1	LED	-	NO	-	-	SURFACE	N/A	WET LOCATION LISTED. NORMALLY OFF FIXTURE. COORDINATE FINISH WITH OWNER. CONFIRM COMPATIBILITY WITH TYPES 'X' AND 'X2' EXIT SIGNS.
X	WALL MOUNTED POLYCARBONATE EXIT SIGN	**LITHONIA** LHQM-LED-G-HO-RO	AEI	120/277V	-	LED	4.3	NO	NA	NA	WALL	WALL	PROVIDE SINGLE OR DOUBLE FACE AS INDICATED ON PLANS. PROVIDE CHEVRONS AS INDICATED ON PLANS. GREEN LETTERING. CONFIRM COMPATIBILITY WITH REMOTE FIXTURE TYPE 'E2'.
X2	WALL MOUNTED POLYCARBONATE EXIT SIGN WITH EMERGENCY LIGHTS	**LITHONIA** LHQM-LED-G-HO	AEI	120/277V	-	LED	4.3	NO	NA	NA	WALL	WALL	PROVIDE SINGLE OR DOUBLE FACE AS INDICATED ON PLANS. PROVIDE CHEVRONS AS INDICATED ON PLANS. GREEN LETTERING. CONFIRM COMPATIBILITY WITH REMOTE FIXTURE TYPE 'E2'.

LIGHTING FIXTURE SCHEDULE NOTES

1. REFER TO THE ARCHITECTURAL REFLECTED CEILING PLAN(S) FOR THE CEILING TYPE AND EXACT LOCATION OF ALL LIGHT FIXTURES.
2. PROVIDE PLASTER/GWB CEILING FRAMING KITS WHERE APPLICABLE.
3. ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL POWER SUPPLIES, CONTROLS, HARDWARE, ETC. NEEDED FOR A COMPLETE AND OPERATIONAL INSTALLATION.
4. ALL FIXTURES RECESSED WITHIN A FIRE RATED CEILING SHALL BE INSTALLED IN A FIRE RATED ENCLOSURE TO MAINTAIN THE CEILING FIRE RATING. THIS CAN BE DONE BY EITHER A FIRE RATED FIXTURE, A TENMAT ENCLOSURE OR A SAFELITE ENCLOSURE.

TC-B RELAY SCHEDULE

RELAY	CONTROL ZONE	DESCRIPTION	ZONE WATTAGE	FIXTURE TYPE	CONTROL FUNCTION: ON/OFF OR DIM	EMERGENCY	CIRCUIT	NOTES
1	Z08	Exterior Lighting	100	E1	ON/OFF	YES	P1-6	Lighting on generator
2	Z09	Exterior Lighting	100	E1	ON/OFF	YES	P1-14	Lighting on generator
3								
4								
5								
6								
7								
8								
9								

BASIS OF DESIGN: INTERMATIC ET9015CR. COORDINATE EXACT MODEL WITH RELAY/CIRCUITING REQUIREMENTS.
TIMECLOCK TC-B, LOCATED IN BASEMENT
ALLOW SPACE IN BASEMENT FOR MOUNTING OF TIMECLOCK

NOTES:

1. LIGHTING SHALL TURN 'ON' 30 MINUTES PRIOR TO DUSK AND 'OFF' 30 MINUTES AFTER DAWN VIA ASTRONOMIC TIMECLOCK SETTING. EXTERIOR PHOTOCELL SHALL OVERRIDE TIMECLOCK SETTINGS WHEN INCLEMENT WEATHER REDUCES THE NATURAL LIGHT TO MINIMAL LEVELS DURING DAYTIME HOURS (MIMICKING DUSK/NIGHT CONDITIONS).
2. LIGHTING SHALL TURN 'ON' 30 MINUTES PRIOR TO DUSK AND 'OFF' AT 11:00PM (ADJ.) VIA ASTRONOMIC CLOCK SETTING.
3. CONFIRM TIMER SETTINGS WITH OWNER PRIOR TO PROGRAMMING.

TC-2 RELAY SCHEDULE

RELAY	CONTROL ZONE	DESCRIPTION	ZONE WATTAGE	FIXTURE TYPE	CONTROL FUNCTION: ON/OFF OR DIM	EMERGENCY	CIRCUIT	NOTES
1	Z07	Stairwell Lighting	200	L1, L4	ON/OFF		SP2-12	Lighting on generator
2	Z10	2nd Floor Corridor	55	L1	ON/OFF		SP2-11	Lighting on generator
3								
4								
5								
6								
7								
8								
9								

BASIS OF DESIGN: INTERMATIC ET9015CR. COORDINATE EXACT MODEL WITH RELAY/CIRCUITING REQUIREMENTS.
TIMECLOCK TC-2, LOCATED ON SECOND FLOOR

NOTES:

1. CONFIRM TIMER SETTINGS WITH OWNER PRIOR TO PROGRAMMING.

Lighting Control Sequence of Operations

Location	Sequence of Operations	Zoning	Manufacturer	Devices
Private Offices	Manual-on/off, automatic shutoff after 20 minutes of no motion detection(Vacancy).	N/A	Intelligent Lighting Controls, nLight, or Prior Approved Equal	Switch or ceiling mounted occupancy sensor, Wall Switch
Corridors / Lobby / Entry / Waiting Area / Front Desk/Canopy	Scheduled on/off (user defined time). Swtich override.	Z01/Z02/Z03/ Z04/Z05/Z06	Intelligent Lighting Controls, nLight, or Prior Approved Equal	Zone relay / Breaker-controlled / Timeclock
Stairwells (Except Basement)	Scheduled on/off (user defined time). Swtich override.	Z07	Intermatic	ET9015CR Timeclock (Or prior approved equal)
Conference Rooms	Automatic-on to 50%, automatic shutoff after 20 minutes of no motion detection (Occupancy). Manual, multi-zone switching and dimming.	N/A	Intelligent Lighting Controls, nLight, or Prior Approved Equal	Switch or ceiling mounted occupancy sensor, Wall Switch
Bathrooms	Automatic-on to 100%, automatic shutoff after 20 minutes of no motion detection (Occupancy).	N/A	Intelligent Lighting Controls, nLight, or Prior Approved Equal	Switch or ceiling mounted occupancy sensor, Wall switch
Exterior Lighting	Scheduled on/off (user defined time).	Z08/Z09	Intermatic	ET9015CR Timeclock (Or prior approved equal)
Break Room	Automatic-on to 50%, automatic shutoff after 20 minutes of no motion detection (Occupancy). Manual, multi-zone switching and dimming.	N/A	Intelligent Lighting Controls, nLight, or Prior Approved Equal	Switch or ceiling mounted occupancy sensor, Wall Switch
Basement	Manual-on/off.	N/A	Intelligent Lighting Controls, nLight, or Prior Approved Equal	Wall Switch

Notes:
1. EC to coordination pre-installation meeting with lighting control vendor prior to rough-in.
2. EC to coordinate final programming and training with end-user.
3. Lighting Control vendor to provide a follow up visit 6 months after completion for fine-tuning of lighting control system.

ACG EDGMONT GENERATOR SCHEDULE

TAG	SIZE	V/PH/HZ	DISTRIBUTION BREAKERS			FUEL			SOUND ENCLOSURE	BASIS OF DESIGN
			QTY	SIZE	LOCATION	SOURCE	INPUT BTUS	LOCATION		
GEN-1	26 KW	240V/1PH/60HZ	1	110A	--	NATURAL GAS	333,000	N/A	FACTORY	GENERAC GUARDIAN MODEL 7291

NOTES:

1. PROVIDE ELECTRIC ENGINE BLOCK HEATER WITH NORMAL POWER FROM BUILDING
2. TRANSFER SWITCHES SHALL BE OPEN TRANSITION TYPE. TRANSFER SWITCH SHALL TRANSFER TO THE EMERGENCY SOURCE ONLY WHEN THE EMERGENCY VOLTAGE AND FREQUENCY ATTAIN 90 PERCENT OF NOMINAL. TRANSFER SWITCHES SHALL BE UL LISTED. TRANSFER TIME SHALL MEET THE REQUIREMENTS OF NEC 700.12
3. PROVIDE REMOTE STOP TO BE MOUNTED AWAY FROM GENERATOR TO COMPLY WITH NFPA 110 (2016) SECTION 5.6.5.6.
4. FIRE ALARM CONTRACTOR TO MONITOR GENERATOR RUNTIME/FAULT.
5. FURNISH AND INSTALL CONCRETE GENERATOR PAD. REFER TO DETAIL FOR ADDITIONAL INFORMATION. COORDINATE PAD MOUNT LOCATION WITH SITE ENGINEER. ELECTRICAL CONTRACTOR RESPONSIBLE FOR COORDINATING UNDERGROUND UTILITY LINES WITH ALL OTHER UNDERGROUND UTILITIES. REFER TO SITE PLAN FOR ADDITIONAL DETAILS.
6. PROVIDE TRANSFER SWITCH WITH INTEGRAL LOAD MANAGEMENT.
7. FURNISH AND INSTALL BOLLARDS. COORDINATE BOLLARDS LOCATION WITH SITE ENGINEER.

8 RELAY CONTROLLER SCHEDULE

RELAY	CONTROL ZONE	DESCRIPTION	ZONE WATTAGE	FIXTURE TYPE	CONTROL FUNCTION: ON/OFF OR DIM	EMERGENCY	CIRCUIT	NOTES
1	Z01	Corridor 110	55	L1	ON/OFF		SP1-24	Lighting on generator
2	Z02	Waiting Area	45	L1	ON/OFF		SP1-24	Lighting on generator
3	Z03	Reception 101	30	L1	ON/OFF		SP1-24	Lighting on generator
4	Z04	Back Office 102	55	L1	ON/OFF		SP1-24	Lighting on generator
5	Z05	Entry 100	20	L1	ON/OFF		SP1-25	Lighting on generator
6	Z06	Exterior Canopy	40	L3	ON/OFF		SP1-25	Lighting on generator
7								
8								
9								

BASIS OF DESIGN: LIGHTLEEDER EVO INTEGRATED RELAY CONTROLLER. COORDINATE EXACT MODEL WITH RELAY/CIRCUITING REQUIREMENTS.
TIMECLOCK FOR LIGHTING ZONES 1-6, LOCATED BEHIND RECEPTION DESK
ALLOW SPACE IN RECEPTION AREA FOR MOUNTING OF RELAY CONTROLLER.

NOTES:

1. LIGHTING SHALL TURN 'ON' 30 MINUTES PRIOR TO DUSK AND 'OFF' 30 MINUTES AFTER DAWN VIA ASTRONOMIC TIMECLOCK SETTING. EXTERIOR PHOTOCELL SHALL OVERRIDE TIMECLOCK SETTINGS WHEN INCLEMENT WEATHER REDUCES THE NATURAL LIGHT TO MINIMAL LEVELS DURING DAYTIME HOURS (MIMICKING DUSK/NIGHT CONDITIONS).
2. LIGHTING SHALL TURN 'ON' 30 MINUTES PRIOR TO DUSK AND 'OFF' AT 11:00PM (ADJ.) VIA ASTRONOMIC CLOCK SETTING.
3. CONFIRM TIMER SETTINGS WITH OWNER PRIOR TO PROGRAMMING.

LINN ARCHITECTS
ARCHITECTURE
ENGINEERING
SITE PLANNING
CODE SERVICES
1140 N. PROVIDENCE ROAD
MEDIA, PENNSYLVANIA 19063
TEL: 610-566-7044
FAX: 610-566-3258
ADVANCED ENGINEERING INC. ADVANCEDENGINEERING.COM
5500 Pennell Road | Media PA 19063
Project No. 23028

ELECTRICAL SCHEDULES

BUILDING RENOVATIONS
AIDS CARE GROUP

2304 EDGMONT AVENUE
CHESTER, PA 19013

REVISIONS NO.	DESCRIPTION	DATE
0	BID SET	08/09/24

DATE: 08/09/24
SCALE: AS NOTED
DRAWN BY: SJS
CHECKED BY: AH
PROJ. NO.: 23028

SHEET NO.
E-6.2

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SECTION 26 00 00 BASIC ELECTRICAL REQUIREMENTS

A. GENERAL - THE CONDITIONS OF CONTRACT AND SPECIAL CONDITIONS ARE A PART OF THIS CONTRACT FOR ELECTRICAL WORK.
B. SCOPE OF WORK - FURNISH ALL LABOR, MATERIALS, TOOLS, EQUIPMENT, INSURANCES, PERMITS, AND INSPECTIONS NECESSARY FOR THE COMPLETE INSTALLATION OF THE ELECTRICAL SYSTEMS AS SHOWN AS SPECIFIED, THE SCOPE OF THE WORK SHALL INCLUDE, BUT NOT LIMITED TO, THE FOLLOWING:
   a. ELECTRIC SERVICE
      i. COORDINATION WITH THE ELECTRICAL UTILITY COMPANY FOR THE INSTALLATION OF TEMPORARY ELECTRICAL SERVICE(S) IS THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR, THIS INCLUDES, BUT IS NOT LIMITED TO, EXECUTION/UPDATE OF SERVICE AND METER APPLICATION, MEETING WITH THE UTILITY REPRESENTATIVE TO COORDINATE POINT OF SERVICE/SCHEDULE, AND ENSURING THE SERVICE IS ENERGIZED TO MAINTAIN OVERALL PROJECT SCHEDULE.
   b. PANELBOARDS, DISCONNECTS
   c. LIGHTING AND POWER SYSTEM
   d. FIRE ALARM SYSTEM
   e. GROUNDING OF ENTIRE SYSTEM SHALL BE PROVIDED IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE SECTION 250.
   f. SHORT CIRCUIT, COORDINATION AND ARCH FLASH HAZARD STUDIES
C. REGULATIONS - ALL WORK SHALL CONFORM TO THE NEC, NFPA, ADA, AND LOCAL AUTHORITIES HAVING JURISDICTION. SUBMIT CERTIFICATES OF UNDERWRITER INSPECTION FROM A RECOGNIZED AGENCY UPON COMPLETION OF THE WORK.
D. SUBMIT ELECTRICAL EQUIPMENT SHOP DRAWINGS ELECTRONICALLY FOR APPROVAL.
E. ALL WORK SHALL BE PERFORMED IN COMPLIANCE WITH CURRENT ENVIRONMENTAL REGULATIONS. CONTRACTOR TO FOLLOW LOCK-OUT/ TAG-OUT PROCEDURES.
F. PRODUCTS SUBMITTED & APPROVED FOR USE THAT NECESSITATE CHANGES TO THE WORK OF OTHER TRADES OF CONTRACT SHALL BE COORDINATED & ARRANGED BY THE CONTRACTOR WITHOUT ADDITIONAL COST TO THE OWNER.
G. ELECTRICAL CONTRACTOR SHALL COORDINATE WITH EACH TRADE CONTRACTOR FOR THE ELECTRICAL REQUIREMENTS OF THEIR WORK PRIOR TO THE SHOP DRAWINGS SUBMISSIONS.
H. ELECTRICAL CONTRACTOR SHALL COORDINATE CEILING MOUNTED EQUIPMENT WITH OTHER TRADE CONTRACTORS PRIOR TO INSTALLATION TO AVOID CONFLICTS.
I. ELECTRICAL CONTRACTOR SHALL UPON COMPLETION OF THE PROJECT SUBMIT A SET OF RECORD DRAWINGS ("AS BUILTS" DRAWINGS) SHOWING ALL CHANGES FROM THE CONTRACT DRAWINGS MADE DURING INSTALLATION OF ELECTRICAL EQUIPMENT AND SHOWING DIMENSIONED LOCATIONS OF BURIED, OR CONCEALED, EQUIPMENT.
J. ELECTRICAL CONTRACTOR TO VERIFY LOCATION OF ALL NEW DEVICES IN COMPLIANCE WITH NFPA/NEC, ADA, AND LOCAL JURISDICTIONS.
K. THE CONTRACTOR SHALL COORDINATE THE EXACT LOCATION AND ROUGH-IN IN DIMENSIONS OF ALL EQUIPMENT AND SHALL MAKE ALL FINAL CONNECTIONS AS REQUIRED, I.E., POWER, CONTROL, INTERLOCK, ETC.
L. ALTHOUGH ALL BRANCH CIRCUIT WIRE AND CONDUIT IS NOT SHOWN, IT IS THE INTENT OF THESE DOCUMENTS THAT A COMPLETE BRANCH CIRCUIT WIRING SYSTEM BE INSTALLED. THERE SHALL BE NO COMMON NEUTRALS.
M. THE ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL ALL INCIDENTAL ACCESSORIES NECESSARY TO MAKE THE ELECTRICAL WORK COMPLETE AND READY FOR OPERATION.
N. PENETRATIONS
   a. PRIOR TO CORE DRILLING THROUGH THE FLOOR, THE ELECTRICAL CONTRACTOR SHALL VISUALLY SURVEY BOTH SIDES TO SEE IF THERE ARE ANY PIPES, DUCTS, OR ELECTRICAL SERVICES THAT MAY PRESENT AN OBSTACLE, IN ADDITION TO A VISUAL SURVEY, THE ELECTRICAL CONTRACTOR SHALL HAVE THE FLOOR X-RAYED, TO DETERMINE IF THERE ARE ANY HIDDEN OBSTACLES IN THE FLOOR. AFTER IT HAS BEEN DETERMINED THAT THERE ARE NOT ANY OBSTACLES, THE FLOOR CAN THEN BE CORE DRILLED.
   b. ALL CONDUIT PENETRATIONS THRU THE ROOF, AND WALLS TO THE OUTSIDE SHALL BE SEALED WATERTIGHT.
   c. ALL CONDUIT PENETRATIONS THRU FIRE RATED FLOORS AND WALLS SHALL BE SEALED IN ACCORDANCE WITH UL REQUIREMENTS
O. FASTENINGS AND SUPPORTS AS FOLLOWS:
   a. HOLLOW TIE - TOGGLE BOLTS
   b. WOOD - LAG SCREWS OR BOLTS
   c. SOLID MASONRY - METALLIC EXPANSION SHIELDS AND MACHINE BOLTS.
   d. DO NOT SUPPORT EQUIPMENT FROM SUSPENDED CEILINGS. ALL SUPPORT SHALL COME FROM BUILDING STRUCTURE.
P. ELECTRICAL CONTRACTOR SHALL PROVIDE & INSTALL AN APPROVED FIRE STOP SEALANT TOTALLY ENCLOSING ALL CONDUIT PENETRATION THRU CEILINGS, WALLS , AND FLOORS. THIS CODE REQUIREMENT DOES NOT ALLOW ANY EXCEPTIONS.
Q. PATCH, REPAIR, AND PAINT ALL HOLES AND COSMETIC BLEMISHES DUE TO REMOVAL OF DEVICES AND EQUIPMENT. INSTALL BLANK STAINLESS STEEL FACEPLATES ON UNCOVERED OUTLET AND SWITCH BOXES.

SECTION 26 05 19 LOW VOLTAGE POWER CONDUCTORS AND CABLES

A. SIZE #10 AND SMALLER SOLID, #8 AND LARGER - STANDARD, MINIMUM SIZE FOR POWER AND LIGHTING WIRING - #12 UNLESS OTHERWISE NOTED. ALL INTERIOR BUILDING WIRE SHALL BE COPPER CONDUCTORS, TYPE THWN-2/THHN(DUAL LISTED), 90°C INSULATION, APPLIED AT 75°C AMPACITY.
B. USE PROPERLY INSULATED CABLES IN LOCATIONS SUBJECT TO EXCESSIVE HEAT.
C. PROVIDE AN INSULATED GROUNDING CONDUCTOR OF NOT LESS THAN #12 AWG FOR ALL EQUIPMENT, LIGHTING, & OUTLETS UNLESS OTHERWISE NOTED.
D. CABLING SHALL BE INCREASED IN SIZE AS NEEDED TO LIMIT VOLTAGE DROP ACROSS THE COMBINATION OF FEEDERS AND BRANCH CIRCUITS TO A MAXIMUM OF 5%.
E. ALL SPLICING TO BE DONE IN OUTLET, JUNCTION BOXES OR WIREMOLD. USE WIRE NUTS ON #8 AND SMALLER WIRE. USE COMPRESSION "LUGS" FOR SPLICES ON #6 AND LARGER, WITH RUBBER AND PLASTIC TAPE APPLIED OVER JOINT.
F. PROVIDE SEPARATE GROUND CONDUCTORS FOR ALL BRANCH CIRCUITS.
G. METAL CLAD (MC) CABLE AND CONDUIT SHALL BE PROVIDED WHERE PERMISSIBLE BY CODE, ON A LIMITED BASIS AS FOLLOWS:
   a. M.C. CABLE SHALL NOT BE USED FOR SINGLE OR 3 PHASE 480-VOLT CIRCUITS OF ANY AMPERAGE.
   b. M.C. CABLE SHALL NOT BE USED ANYWHERE IT IS EXPOSED OUTSIDE OF ELECTRICAL ROOMS SUCH AS NON FINISHED AREAS OR AREAS WITHOUT A DROP CEILING.
   c. CAN BE USED FOR ALL BRANCH CIRCUITS WHERE ALLOWED BY CODE.
   d. FITTINGS USED FOR CONNECTING TYPE M.C. CABLE TO BOXES AND LIGHT FIXTURES SHALL BE LISTED AND IDENTIFIED FOR SUCH USE. NO SNAP IN CONNECTORS, OR INTERNAL BOX CLAMPS ARE PERMITTED. ALL M.C. CONNECTORS SHALL BE OF THE LOCKNUT TYPE, DESIGNED TO SECURE THE CONNECTOR TO A BOX OR ENCLOSURE.
   e. ANTI-SHORT (RED DEVILS) SHALL BE INSERTED INTO THE ENDS OF ALL M.C. CABLE.
   f. ONLY TOOLS SPECIFICALLY DESIGNED TO CUT M.C. CABLE SHALL BE PERMITTED ON THE PROJECT.
   g. THE JACKET OF M.C. CABLE SHALL NOT BE PERMITTED TO BE USED AS AN EQUIPMENT GROUND PATH, ALL M.C. CABLE SHALL CONTAIN A SEPARATE EQUIPMENT GROUND CONDUCTOR. WHERE ISOLATED GROUNDING IS REQUIRED THEN (TWO GROUND CONDUCTORS WITHIN THE CABLE SHALL BE USED.
   h. ALL M.C. CABLE SHALL BE RUN TO BUILDING STRUCTURE AT RIGHT ANGLES. ALL CABLE SHALL BE SUPPORTED TO STRUCTURE THROUGH A SYSTEM OF M.C. CABLE SUPPORTS, OR CADDY BRIDLE RINGS. CABLE MAY ALSO BE SUPPORTED DIRECTLY TO STRUCTURE. ALL CABLE SHALL BE SUPPORTED A (6) SIX FOOT INTERVALS. WHERE BUILDING STRUCTURE DOES NOT EXIST TO MEET THE 6-FOOT SUPPORT REQUIREMENT THE CONTRACTOR SHALL FURNISH AND INSTALL STEEL CHANNEL TO TRAVERSE EXISTING STRUCTURE AND HANG CABLE AT THE REQUIRED (6) FOOT INTERVAL.
H. WIRING FOR MECHANICAL EQUIPMENT
   a. PROVIDE POWER WIRING FOR ALL EQUIPMENT FURNISHED AND INSTALLED BY THE MECHANICAL TRADES.
   b. CONTROL FEEDERS TO MECHANICAL AND PROCESS EQUIPMENT SHALL BE FURNISHED AND INSTALLED BY OTHERS UNLESS OTHERWISE NOTED.
   c. WIRING CONNECTIONS ON EQUIPMENT WHICH PRODUCES VIBRATION OR NOISE SHALL HAVE AT LEAST THREE (3) FEET OF LIQUID TIGHT FLEXIBLE METALLIC CONDUIT.
I. WIRE TERMINATIONS
   a. SOLID WIRE CONDUCTORS #10 AND SMALLER SHALL BE TERMINATED UNDER THE TERMINAL SCREW OF THE DEVICE. THE CONTRACTOR SHALL NOT USE THE PRESSURE PUSH-IN WIRING TERMINALS ON THE DEVICE. THE TERMINATION SHALL BE MADE USING STANDARD INDUSTRY PRACTICES. AND THE TORQUE-TIGHTENED SCREWS SHALL BE TO THE MANUFACTURER'S RECOMMENDATIONS.
   b. CONDUCTORS #10 AND SMALLER - STRANDED WIRE CONDUCTORS #10 AND SMALLER SHALL BE TERMINATED USING CRIMP-ON TERMINALS, UNLESS THE TERMINATION LUG OR SCREW IS SPECIFICALLY DESIGNED FOR STRANDED CONDUCTOR TERMINATION. THE CRIMP-ON TERMINATION SHALL BE VINYL INSULATED, SPADE TYPE, TURNED UP AT THE TIPS, TIN-PLATED COPPER, AND RATED CuAL, 105°C, AND UL LISTED. THE TERMINALS SHALL BE SIZED AS CLOSELY AS POSSIBLE TO THE CONDUCTOR SIZE AND TERMINATION LUG OR SCREW SIZE.
   c. CONDUCTORS #8 AND LARGER TERMINATION OF CONDUCTORS #8 AND LARGER SHALL BE MADE WITH SOLDERLESS COMPRESSION TYPE LUGS, LUGS SHALL BE CONSTRUCTED OF HIGH CONDUCTIVITY ELECTRO-TIN PLATED WROUGHT COPPER, 600 VOLT APPLICATION AND UL LISTED, LUGS SHALL BE SIZED AS CLOSELY TO CONDUCTOR SIZE AND EQUIPMENT TERMINATION REQUIREMENTS.
   d. THE ELECTRICAL CONTRACTOR SHALL PROVIDE TERMINATION LUGS FOR ALL EQUIPMENT NOT PROVIDED WITH THE PROPER TERMINATIONS. ANY EQUIPMENT PROVIDED WITH LUGS OR TERMINATIONS NOT CONFORMING TO THIS SPECIFICATION SHALL REMOVE THE PROVIDED TERMINATIONS, AND PROVIDE THE CORRECT TERMINATION OR LUG THAT MEETS THIS SPECIFICATION.
   e. TERMINATIONS AT MOTORS SHALL BE MADE WITH THE QUICK DISCONNECT TYPE MOTOR CONNECTORS, THE CONNECTORS TO THE MOTOR LEADS AND SUPPLY CABLES SHALL BE SOLDERLESS COMPRESSION CONNECTORS, THOMAS & BETTS PIGTAIL TYPE, A MOLDED NEOPRENE SPLICE INSULATOR SHALL COVER THE ASSEMBLED CONNECTORS. THE TERMINATION SHALL BE UL LISTED FOR ENGAGE/DISENGAGE, CURRENT CYCLING, VIBRATION, GROUND FAULT, AND FLAMMABILITY. TERMINATIONS SHALL BE SIZED AS CLOSELY AS POSSIBLE TO THE MOTOR LEAD, AND SUPPLY CABLE CONDUCTOR SIZE AS POSSIBLE.

SECTION 26 05 26 GROUNDING AND BONDING

A. ELECTRICAL SERVICE
   a. SERVICE GROUND CONDUCTORS SHALL BE SIZED IN ACCORDANCE WITH NEC 250 TABLE 250.66.
   b. EQUIPMENT GROUNDING CONDUCTORS AND GROUNDING ELECTRODE CONDUCTORS SHALL BE CONNECTED TO THE GROUND BUS, WATER SERVICE PIPING, AND GAS SERVICE PIPING AS REQUIRED.
   c. INSTALL A MAIN BONDING JUMPER BETWEEN THE SERVICE NEUTRAL AND GROUND BUSES.
B. COMPLY WITH UL 467 FOR GROUNDING AND BONDING MATERIALS AND EQUIPMENT.
C. EQUIPMENT
   a. INSTALL INSULATED EQUIPMENT GROUNDING CONDUCTORS WITH ALL FEEDERS AND BRANCH CIRCUITS IN ACCORDANCE WITH NEC 250 TABLE 250.122.
D. GROUNDING ELECTRODES: COPPER-CLAD; 3/4 INCH BY 10 FEET.
E. INSULATED CONDUCTORS: COPPER WIRE OR CABLE INSULATED FOR 600 V.
F. BARE COPPER CONDUCTORS:
   a. SOLID CONDUCTORS: ASTM B 3.
   b. STRANDED CONDUCTORS: ASTM B 8.
   c. TINNED CONDUCTORS: ASTM B 33.
G. GROUNDING BUS
   a. INSTALL IN ELECTRICAL EQUIPMENT ROOMS, IN ROOMS HOUSING SERVICE EQUIPMENT, AND ELSEWHERE AS INDICATED
   b. PREDRILLED RECTANGULAR BARS OF ANNEALED COPPER, 1/4 BY 4 INCHES IN CROSS SECTION, WITH 9/32-INCH HOLES SPACED 1-1/8 INCHES APART.
   c. STAND-OFF INSULATORS FOR MOUNTING SHALL COMPLY WITH UL 891, 600 V AND SHALL BE LEXAN OR PVC, IMPULSE TESTED AT 5000 V.
H. APPLICATIONS:
   a. CONDUCTORS: INSTALL SOLID CONDUCTORS FOR NO. 10 AWG AND SMALLER, AND STRANDED FOR NO. 8 AND LARGER.
   b. BONDING JUMPERS: BARE COPPER.
   c. EQUIPMENT GROUNDING CONDUCTORS: COPPER WITH GREEN-COLORED INSULATION.

SECTION 26 05 33 RACEWAYS

I. USE ONLY U.L. APPROVED RACEWAYS - MINIMUM SIZE 3/4".
J. ALL RACEWAYS RUNNING THROUGH BUILDING EXPANSION JOINTS SHALL BE EQUIPPED WITH EXPANSION FITTINGS.
K. ELECTRICAL METALLIC TUBING (EMT) - THINWALL GALVANIZED.
   a. MAY BE USED ANYWHERE IN DRY LOCATIONS FOR FEEDERS, AND BRANCH CIRCUITS 480 VOLTS AND UNDER TO GROUND.
   b. USE EMT FOR EXPOSED AND CONCEALED WIRING IN DRY LOCATIONS.EXPOSED CONDUITS WILL BE PERMITTED ONLY IN UNFINISHED AREAS. (FINAL APPROVAL BY ARCHITECT)
   c. SHALL NOT BE INSTALLED IN WET OR DAMP LOCATIONS.
   d. ALL FEEDERS AND BRANCH CIRCUITS ON THE EXTERIOR OF THE BUILDING SHALL BE INSTALLED WITHIN GALVANIZED RIGID STEEL CONDUIT.
   e. PROVIDE INSULATED BUSHINGS ON ALL BOX CONNECTORS. AN INTERNAL EQUIPMENT GROUND SHALL BE RUN WITHIN ALL ELECTRICAL METALLIC TUBING.
   f. E.M.T. SHALL BE USED FOR ALL FEEDERS. IT SHALL BE USED WHEREVER M.C. CABLE IS NOT PERMITTED.
   g. PROVIDE FLEXIBLE CONDUIT AND FITTINGS FOR FINAL CONNECTIONS TO MOTORS.
L. RIGID GALVANIZED STEEL CONDUIT(GRS)
   a. GALVANIZED RIGID STEEL (GRS) CONDUIT ELBOWS AND RISERS, OF THE TYPE LISTED FOR UNDERGROUND, SHALL BE USED AS THE TRANSITION FROM THE UNDERGROUND SERVICE FEEDERS UP INTO EQUIPMENT IN THE 1ST MAIN ELECTRICAL ROOM. RIGID STEEL ELBOWS SHALL BE USED FOR ALL UNDERGROUND CONDUIT RISERS.
   b. MAY BE USED OUTSIDE OF THE BUILDING.
   c. 'GRS' MAY BE USED ON THE ROOF.
   d. 'GRS' SHALL BE USED TO CONNECT C.T. CABINETS TO UTILITY METERS.
   e. ALL CONDUIT SHALL BE INSTALLED AND SUPPORTED IN ACCORDANCE WITH THE N.E.C.
M. LIQUIDTIGHT FLEXIBLE METAL CONDUIT
   a. SHALL BE USED FOR ALL FLEXIBLE CONNECTIONS REQUIRED ON THE EXTERIOR OF THE BUILDING OR ROOF.
   b. LENGTH SHALL NOT EXCEED 18 INCHES FOR CONNECTION TO MOTORS AND 48 INCHES FOR CONNECTION TO HVAC EQUIPMENT.
   c. AN INTERNAL EQUIPMENT GROUNDING CONDUCTOR SHALL BE INSTALLED WITHIN AL WATER TIGHT CONDUIT.
N. RIGID NON-METALLIC CONDUIT
   a. MAY BE USED ANYWHERE AS PERMITTED BY CODE.
   b. MINIMUM SIZE RNC TO BE USED IS 1".
   c. CONDUIT BENDS SHALL BE MADE WITH AN APPROVED HEAT BLANKET OR HOT BOX BENDER. FACTORY ELBOWS SHALL BE USED FOR CONDUIT LARGER THAN 2".
   d. ALL CUT ENDS OF RNC SHALL BE TRIMMED OR OTHERWISE FINISHED TO REMOVE ANY SHARP EDGES.
   e. ALL RIGID NONMETALLIC CONDUIT SHALL BE SCHEDULE 80.
   f. AN INTERNAL EQUIPMENT GROUND SHALL BE RUN WITHIN ALL RIGID NONMETALLIC CONDUIT.
O. RIGID ALUMINUM CONDUIT
   a. MAY BE USED ANYWHERE AS PERMITTED BY CODE, AND SHALL BE INSTALLED WHERE SPECIFICALLY INDICATED ON PLANS.
   b. SHALL BE PERMITTED TO BE USED IN MECHANICAL SPACES, AND PENTHOUSES.
   c. SHALL NOT BE USED IN ANY CONCRETE ENCASEMENT. RIGID ALUMINUM CONDUIT SHALL NOT BE USED FOR ANY UNDERGROUND USE, OR BE ALLOWED TO COME IN CONTACT WITH THE GROUND.
   d. PROVIDE BUSHINGS AT ALL CONDUIT ENDS IN ACCORDANCE WITH NOTES #A3 AND A4 ABOVE.
   e. AN INTERNAL EQUIPMENT GROUND SHALL BE RUN WITHIN ALL RIGID ALUMINUM CONDUIT.

SECTION 26 27 26 WIRING DEVICES

A. LOCAL SWITCHES - 20 AMPERE, 120/277 VOLT, FLUSH TUMBLER QUIET OPERATING SINGLE THREE WAY AND FOUR WAY AS REQUIRED.
B. DUPLEX RECEPTACLES - GROUNDING TYPE 20 AMPERE, 125 VOLTS, - SEE FLOOR PLAN FOR LOCATION
C. COORDINATE DEVICE PLATES WITH ARCHITECTS
D. ACCESSIBILITY
   a. ALL DEVICES AND OUTLET BOXES SHALL BE ACCESSIBLE. ANY DEVICES LOCATED ABOVE A DRYWALL/HARD CEILING SHALL BE EITHER RELOCATED OR AN ACCESS PANEL INSTALLED.
   b. BOXES, ENCLOSURES AND CONDUIT BODIES SHALL BE INSTALLED SO THAT THE WIRING CONTAINED WITHIN CAN BE RENDERED ACCESSIBLE WITHOUT REMOVING ANY PART OF THE BUILDING. (NEC 314.29)
   c. WHERE MULTIPLE SWITCHES ARE INDICATED AT THE SAME LOCATION, THEY SHALL BE MOUNTED BEHIND A COMMON FACEPLATE.
E. USE PRESSED STEEL WALL BOXES OR WIREMOLD FOR EACH OUTLET INDICATED, SIZED FOR NO. OF WIRES CONTAINED. USE 4" OCTAGON BOX WITH 3/8" FIXTURE STUD FOR LIGHTING FIXTURES.

SECTION 26 05 53 IDENTIFICATION

A. REGARDLESS OF VOLTAGE, ALL JUNCTION BOXES, AND PULL BOXES FOR BRANCH CIRCUITS, SUB FEEDERS, AND FEEDERS SHALL IDENTIFY THE CIRCUITS WITHIN BY CIRCUIT NUMBER AND PANEL OF ORIGIN. IDENTIFICATION SHALL BE ACCOMPLISHED WITH A BLACK PERMANENT FELT TIP MARKER.
B. ALL INDIVIDUAL PHASE, AND NEUTRAL BRANCH CIRCUIT CONDUCTORS SHALL BE IDENTIFIED WITHIN ALL PULL BOXES, JUNCTION BOXES, AND AT THE POINT OF USE WITH THE BRANCH CIRCUIT POLE POSITION CONNECTED TO AT THE POWER OR LIGHTING PANEL.
C. ALL WIRING DEVICES (RECEPTACLES AND LIGHT SWITCHES) SHALL HAVE P-TOUCH (CLEAR W/BLACK) LABELS AFFIXED TO THEIR COVERPLATE. IDENTIFY THE CONNECTED BRANCH CIRCUIT BY PANEL AND CIRCUIT NUMBER. (NON RESIDENTIAL APPLICATIONS)
D. ALL POWER PANELS, LIGHTING PANELS, DISTRIBUTION PANELS, DISCONNECT SWITCHES, STARTERS, VFD'S, TRANSFORMERS, MOTOR CONTROL CENTERS, AND CONTROL PANELS, ETC. SHALL HAVE A WHITE LAMINATED PLASTIC I.D. NAMEPLATE WITH 1/4 INCH HIGH BLACK LETTERS. INDICATING THE NAME OF THE DEVICE, VOLTAGE CONTAINED WITHIN, AND WHERE THE DEVICE IS FED FROM. THE I.D. NAMEPLATE SHALL BE ATTACHED TO THE COVER USING EPOXY CEMENT.

SECTION 26 05 73.13 SHORT CIRCUIT STUDY

A. SUMMARY
   A. PROVIDE A COMPUTER-BASED, FAULT-CURRENT STUDY TO DETERMINE THE MINIMUM INTERRUPTING CAPACITY OF CIRCUIT PROTECTIVE DEVICES.
   B. SUBMIT THE FOLLOWING AFTER THE APPROVAL OF SYSTEM PROTECTIVE DEVICES SUBMITTALS, SUBMITTALS SHALL BE IN DIGITAL FORM,
      I. SHORT-CIRCUIT STUDY INPUT DATA, INCLUDING COMPLETED COMPUTER PROGRAM INPUT DATA SHEETS.
      II. SHORT-CIRCUIT STUDY AND EQUIPMENT EVALUATION REPORT; SIGNED, DATED, AND SEALED BY A QUALIFIED PROFESSIONAL ENGINEER.
         1. SUBMIT STUDY REPORT FOR ACTION PRIOR TO RECEIVING FINAL APPROVAL OF DISTRIBUTION EQUIPMENT SUBMITTALS. IF FORMAL COMPLETION OF STUDIES WILL CAUSE DELAY IN EQUIPMENT MANUFACTURING, OBTAIN APPROVAL FROM ARCHITECT FOR PRELIMINARY SUBMITTAL OF SUFFICIENT STUDY DATA TO ENSURE THAT SELECTION OF DEVICES AND ASSOCIATED CHARACTERISTICS IS SATISFACTORY.
         2. REVISED ONE-LINE DIAGRAM, REFLECTING FIELD INVESTIGATION RESULTS AND RESULTS OF SHORT-CIRCUIT STUDY.
B. EXECUTION
   A. OBTAIN ALL DATA NECESSARY FOR CONDUCT OF THE STUDY.
      I. FOR EQUIPMENT INCLUDED AS WORK OF THIS PROJECT, USE CHARACTERISTICS SUBMITTED UNDER PROVISIONS OF ACTION SUBMITTALS AND INFORMATION SUBMITTALS FOR THIS PROJECT.
      II. FOR RELOCATED EQUIPMENT, OBTAIN REQUIRED ELECTRICAL DISTRIBUTION SYSTEM DATA BY FIELD INVESTIGATION AND SURVEYS, CONDUCTED BY QUALIFIED TECHNICIANS AND ENGINEERS. QUALIFICATIONS OF TECHNICIANS AND ENGINEERS SHALL BE AS DEFINED BY NFPA 70E.
   B. GATHER AND TABULATE ALL REQUIRED INPUT DATA TO SUPPORT THE COORDINATION STUDY. COMPLY WITH RECOMMENDATIONS IN IEEE 551 FOR THE AMOUNT OF DETAIL REQUIRED TO BE ACQUIRED IN THE FIELD.
   C. PERFORM STUDY FOLLOWING THE GENERAL STUDY PROCEDURES CONTAINED IN IEEE 399.
   D. ELECTRICAL CONTRACTOR TO CONTACT UTILITY COMPANY FOR CONFIRMATION OF UPSTREAM SHORT CIRCUIT CURRENT AVAILABLE.

SECTION 26 05 73.16 COORDINATION STUDY

A. SUMMARY
   A. SECTION INCLUDES COMPUTER-BASED, OVERCURRENT PROTECTIVE DEVICE COORDINATION STUDIES TO DETERMINE OVERCURRENT PROTECTIVE DEVICES AND TO DETERMINE OVERCURRENT PROTECTIVE DEVICE SETTINGS FOR SELECTIVE TRIPPING.
      I. STUDY RESULTS SHALL BE USED TO DETERMINE COORDINATION OF SERIES-RATED DEVICES.
   B. SUBMIT THE FOLLOWING AFTER THE APPROVAL OF SYSTEM PROTECTIVE DEVICES SUBMITTALS, SUBMITTALS SHALL BE IN DIGITAL FORM,
      I. COORDINATION-STUDY INPUT DATA, INCLUDING COMPLETED COMPUTER PROGRAM INPUT DATA SHEETS.
      II. STUDY AND EQUIPMENT EVALUATION REPORTS.
   C. OVERCURRENT PROTECTIVE DEVICE COORDINATION STUDY REPORT; SIGNED, DATED, AND SEALED BY A QUALIFIED PROFESSIONAL ENGINEER.
      I. SUBMIT STUDY REPORT FOR ACTION PRIOR TO RECEIVING FINAL APPROVAL OF DISTRIBUTION EQUIPMENT SUBMITTALS. IF FORMAL COMPLETION OF STUDIES WILL CAUSE DELAY IN EQUIPMENT MANUFACTURING, OBTAIN APPROVAL FROM ARCHITECT FOR PRELIMINARY SUBMITTAL OF SUFFICIENT STUDY DATA TO ENSURE THAT SELECTION OF DEVICES AND ASSOCIATED CHARACTERISTICS IS SATISFACTORY.
B. EXECUTION
   A. OBTAIN ALL DATA NECESSARY FOR CONDUCT OF THE STUDY.
      I. FOR EQUIPMENT INCLUDED AS WORK OF THIS PROJECT, USE CHARACTERISTICS SUBMITTED UNDER PROVISIONS OF ACTION SUBMITTALS AND INFORMATION SUBMITTALS FOR THIS PROJECT.
      II. FOR RELOCATED EQUIPMENT, OBTAIN REQUIRED ELECTRICAL DISTRIBUTION SYSTEM DATA BY FIELD INVESTIGATION AND SURVEYS, CONDUCTED BY QUALIFIED TECHNICIANS AND ENGINEERS. QUALIFICATIONS OF TECHNICIANS AND ENGINEERS SHALL BE AS DEFINED BY NFPA 70E.
   B. GATHER AND TABULATE ALL REQUIRED INPUT DATA TO SUPPORT THE COORDINATION STUDY. COMPLY WITH RECOMMENDATIONS IN IEEE 551 FOR THE AMOUNT OF DETAIL REQUIRED TO BE ACQUIRED IN THE FIELD.
   C. PERFORM STUDY FOLLOWING THE GENERAL STUDY PROCEDURES CONTAINED IN IEEE 242 AND IEEE 399.

SECTION 26 05 73.19 ARC FLASH HAZARD ANALYSIS

A. SUMMARY
   A. SECTION INCLUDES A COMPUTER-BASED, ARC-FLASH STUDY TO DETERMINE THE ARC-FLASH HAZARD DISTANCE AND THE INCIDENT ENERGY TO WHICH PERSONNEL COULD BE EXPOSED DURING WORK ON OR NEAR ELECTRICAL EQUIPMENT.
   B.

SECTION 26 09 23 LIGHTING CONTROLS

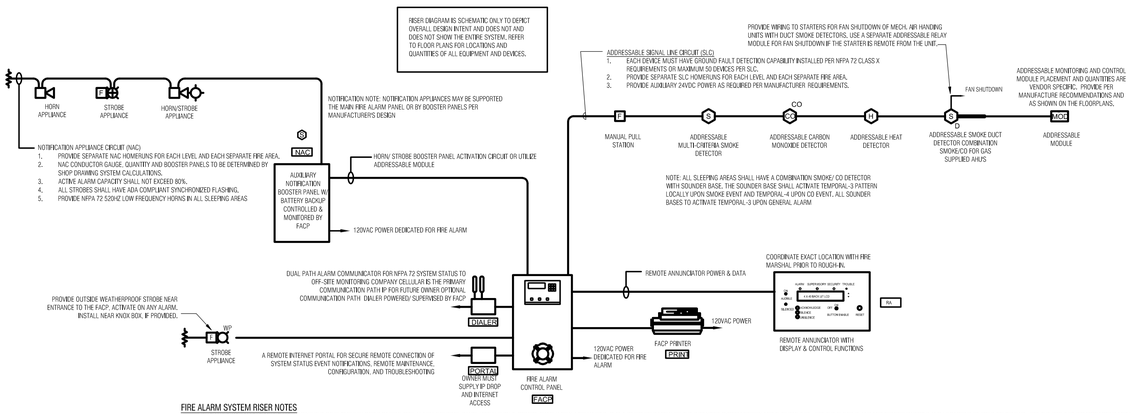
A. CAT 5/6 CABLING FOR LIGHTING CONTROLS SHALL BE PLENUM RATED. ABOVE DROP CEILINGS CAT 5/6 CABLE SHALL BE SUSPENDED FROM J-HOOKS. IN WALLS OR EXPOSED, CAT 5/6 CABLING SHALL BE IN CONDUIT.

SECTION 26 51 19 LIGHTING FIXTURES

A. PROVIDE A LIGHTING FIXTURE AT EACH LOCATION INDICATED ON THE DRAININGS. FIXTURES SHALL BE AT SPECIFIED ON THE LIGHTING FIXTURE SCHEDULE ON THE DRAWINGS.
B. EACH FIXTURE SHALL BE COMPLETELY EQUIPPED WITH LAMPS OF THE SIZE, TYPE, WATTAGE AND SHAPE INDICATED AND SPECIFIED. ALL LAMPS SHALL BE MANUFACTURED BY THE GENERAL ELECTRIC CO., PHILIPS LIGHTING CO., VENTURE LIGHTING INTERNATIONAL OR SYLVANIA/OSRAM CORPORATION. LUMEN OUTPUT AND LIFE OF LAMPS SHALL BE EQUIVALENT TO THE GENERAL ELECTRIC LAMP OF THAT TYPE AND WATTAGE. EXACT VOLTAGE SHALL BE CHECKED BEFORE ORDERING LAMPS.
C. ALL LED FIXTURES ARE TO COUPLE WITH THE FOLLOWING STANDARDS: UL STANDARD 875O, IEC STANDARD LM–79, ANSI C78.377, IES STANDARD TM–21 AND IES STANDARD LM — 80. PROVIDE WITH A MINIMUM WARRANTY OF 5 YEARS WHICH INCLUDES BOTH PRODUCT REPLACEMENT AND INSTALLATION COST.
D. ALL LED LAMPS TO HAVE A COLOR TEMPERATURE OF 3000K AND A MINIMUM CRI RATING OF 80 UNLESS SPECIFICALLY NOTED OTHERWISE.
E. ALL LED DRIVERS SHALL BE ELECTRONIC TYPE AND LABELED COMPLIANT WITH FCC TITLE 47 SECTION 15 FOR RFI (RADIO FREQUENCY INTERFERENCE). DRIVERS SHALL HAVE A SOUND RATING OF "A" WITH 20% MAXIMUM THD AND AN EFFICIENCY RATING OF 85% MINIMUM. DRIVERS SHALL BE PROPERLY RATED FOR THE AMBIENT TEMPERATURES IN WHICH THEY WILL BE LOCATED.
F. DURABLE LED DRIVERS SHALL BE 0–10V TYPE AND ABLE TO DIM THROUGHOUT THEIR FULL RATED RANGE WITHOUT FLICKER OR STROBING.
G. ALL PLASTIC DIFFUSERS SHALL BE 100 PERCENT VIRGIN ACRYLIC (VINYL .125 INCH THICK) AND ALL LEXAN DIFFUSERS SHALL BE LEXAN TYPE MR-4000, OR EQUAL.
H. CONSULT THE CEILING CONTRACTOR AND ARCHITECT'S DRAWINGS FOR APPROVED REFLECTED CEILING PLANS BEFORE ORDERING FIXTURES TO ENSURE THAT ALL ARE COMPATIBLE WITH THE CEILING SYSTEM AND PROPERLY LOCATED. VERIFY THAT ADEQUATE CLEARANCE FOR INSTALLATION, MAINTENANCE, AND HEAT DISSIPATION IS AVAILABLE.
I. ON ALL RECEIVED LIGHTING FIXTURES, PROVIDE A MINIMUM OF TWO (2) GALVANIZED STEEL #12 GAUGE HANGER WIRES TO BUILDING STRUCTURE (ALTERNATE CORNERED).
J. RELOCATE OR PROVIDE ADDITIONAL EXIT LIGHTS AND EMERGENCY BATTERY PACK WITH DUAL HEADS AS NEEDED TO MEET FIRE MARSHAL'S WALK-THROUGH AND ACCEPTANCE.
K. CONNECT EXIT LIGHTS, EMERGENCY BATTERY UNITS AND NIGHT LIGHTS (NL) TO THE UNSWITCHED PORTION OF THIS LIGHTING CIRCUIT SERVING THE RESPECTIVE AREA.

SECTION 262416 PANELBOARDS

A. CIRCUIT BREAKERS
   1. ALL PANELBOARD BREAKERS FOR LIGHTING LOADS SHALL BE SWITCH DUTY RATED.
   2. ALL PANELBOARD BREAKERS FOR HVAC EQUIPMENT SHALL BE HVAC RATED
   3. PROVIDE PADLOCK LOCKOUT DEVICES ON ALL CIRCUIT BREAKERS.
B. THE CONTRACTOR SHALL PROVIDE ARC FLASH LABELS ON ALL PANEL BOARDS, SAFETY SWITCHES, STARTERS, MOTOR CONTROL CENTERS AND CONTROL PANELS AS REQUIRED BY NEC ARTICLE 110.16.
C. BRANCH CIRCUIT PANELBOARDS
   1. THE MINIMUM SHORT-CIRCUIT RATING FOR THE BRANCH CIRCUIT PANELBOARDS SHALL BE AS REQUIRED BASED ON THE SHORT CIRCUIT STUDY.
   2. BRANCH CIRCUIT PANELBOARDS SHALL BE SEIMENS P SERIES OR APPROVED EQUAL.
   3. PLUG-ON TYPE, HEAVY DUTY, QUICK-MAKE, QUICK-BREAK, SINGLE- AND MULTI-POLE CIRCUIT BREAKERS OF THE TYPES SPECIFIED HEREIN, SHALL BE PROVIDED FOR EACH CIRCUIT WITH TOGGLE HANDLES THAT INDICATE WHEN UNIT HAS TRIPPED.
   4. CIRCUIT BREAKERS SHALL BE THERMAL-MAGNETIC TYPE WITH COMMON TYPE HANDLE FOR ALL MULTIPLE POLE CIRCUIT BREAKERS. CIRCUIT BREAKERS SHALL BE MINIMUM 100-AMPERE FRAME AND THROUGH 100-AMPERE TRIP SIZES SHALL TAKE UP THE SAME POLE SPACING. CIRCUIT BREAKERS SHALL BE U



	NORMAL GREEN	SIGNAL SILENCE	DISTRIBUTION WORK	ALARM LED RESET	MANUAL EVAC	ALARM SIGNAL SILENCE	ALARM SILENCE INHIBIT	SUPERVISORY SILENCE INHIBIT	SUPERVISORY LED RESET	TROUBLE SILENCE	TROUBLE LED RESET	SYSTEM LED RESET	
MANUAL PULL STATION	•			•	•	•	•	•	•	•	•	•	NFPA 72 SIGNAL TYPE
AREA DETECTOR (SMOKE, HEAT, OR BEAM)	•			•	•	•	•	•	•				ALARM A SIGNAL WHICH INDICATES AN EMERGENCY SITUATION REQUIRING IMMEDIATE ACTION
FIRE SPRINKLER/ WATERFLOW	•			•	•	•	•	•	•				
FIRE EXTINGUISHING SYSTEM AGENT RELEASE	•			•	•	•	•	•	•				
FACP, NAC BOOSTER OR DACT FAULT		•		•	•	•							TROUBLE A SIGNAL WHICH INDICATES A FAULT WITH AN APPLIANCE, DEVICE, OR SYSTEM COMPONENT
SLC/NAC EQUIPMENT OR CIRCUIT FAULT		•		•	•	•							
SLC/NAC OPEN-CIRCUIT		•		•	•	•							
HVAC DUCT SMOKE DETECTOR													
SPRINKLER TAMPER SWITCH			•	•	•	•							SUPERVISORY A SIGNAL WHICH INDICATES A NON-EMERGENCY SITUATION REQUIRING IMMEDIATE ACTION
CARBON MONOXIDE DETECTOR			•	•	•	•	•			•			
FIRE PUMP RUNNING													
AREA SMOKE W/ LOCAL SOUNDER BASE			•	•	•	•				•			

FIRE ALARM SYSTEM OPERATION NOTES:

1. THIS NFPA 72 OPERATIONAL MATRIX IS BASED ON A SIEMENS FIRE ALARM SYSTEM. THE CONTRACTOR SHALL SUBMIT A COMPREHENSIVE SEQUENCE OF OPERATIONS INCUDED WITH THE INSTALLATION SHOP DRAWINGS
2. IN NORMAL STANDBY OPERATION, A GREEN POWER ON LED SHOULD BE ILLUMINATED ON THE FACP. THE LCD DISPLAY WILL SHOW THE SYSTEM NAME, "SYSTEM NORMAL" ANNOUNCEMENT AND THE CURRENT DATE, DAY, AND TIME.
3. ALL SYSTEM STATUS CONDITIONS SHALL BE MIRRORED AT REMOTE ANNUCIATOR(S), AS PROVIDED.
4. CARBON MONOXIDE DETECTORS SHALL INITIATE A GENERAL ALARM IF REQUIRED BY THE AHJ.
5. ALL ADDRESSABLE DETECTORS, MANUAL PULLS, MONITORING MODULES AND REMOTE LAMPS SHALL PROVIDE VISIBLE INDICATION FOR STATUS.
   5.1 NORMAL: GREEN, LED FLASHES.
   5.2 ALARM: RED, LED FLASHES.
   5.3 TROUBLE: AMBER, LED FLASHES

FIRE ALARM SEQUENCE OF OPERATIONS MATRIX

FIRE ALARM SYSTEM RISER NOTES

1. THIS RISER DIAGRAM IS BASED ON SIEMENS BUILDING TECHNOLOGIES DESIGO RIRE ALARM CONTROL PANEL WITH HORN & STROBE EVACUATION APPLIANCES. IT IS A REPRESENTATION OF THE INTENDED SYSTEM DESIGN FOR THIS PROJECT. SEE THE FLOOR PLANS FOR EXACTQUANTITIES AND LOCATIONS OF FIELD EQUIPMENT. SEE THE PROJECT SPECIFICATIONS FOR PERFORMANCE, CAPACITY AND CODE COMPLIANCE REQUIREMENTS. THIS DRAWING DEPICTS SCHEMATIC INTERCONNECTIONS OF WIRING, EXACT ROUTING OF CONDUITS AND WIRING SHALL BE DETERMINED IN THE FIELD BY THE INSTALLING CONTRACTOR TO SUIT FIELD CONDITIONS AND AS SUBMITTED IN THE SHOP DRAWINGS. ALL CHANGES SHALL BE CLEARLY INDICATED ON THE RECORD DRAWINGS. QUANTITY AND SIZE OF CONDUCTORS TO BE DETERMINED BY SIEMENS.
2. THE MAIN FIRE ALARM CONTROL PANEL WILL PROVIDE THE PRIMARY OPERATORS INTERFACE WITH LCD DISPLAY, FOR COMPLETE SYSTEM ANNUNCIATION/ CONTROL IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.
3. THE SEQUENCE OF EVACUATION FOR THIS PROJECT IS 100% OCCUPANT EVACUATION UPON ANY GENERAL ALARM. NFPA 72 CHAPTER 24 NOTIFICATION APPLIANCE CIRCUIT AND EQUIPMENT SURVIVABILITY REQUIREMENTS DO NOT APPLY.
4. PROVIDE AUXILIARY RIRE ALARM SIGNAL PANEL(S) W/ BATTERY BACKUP AS REQUIRED TO SUPPORT NOTIFICATION APPLIANCE LOADS. PER MANUFACTURERS RECOMMENDATIONS. INSTALL A SMOKE DETECTOR WITHIN 5FT OF A NAC BOOSTER IF AREA COVERAGE NOT PROVIDED.
5. CONTROL UNITS, POWER SUPPLIES AND BATTERY CABINETS SHALL BE INSTALLED SO THAT WORKING CLEARANCES ARE MAINTAINED AROUND UNITS IN ACCORDANCE WITH NFPA 70 NATIONAL ELECTRIC CODE (NEC) AND MANUFACTURERS ALLOWANCES. PANEL MOUNTING SHALL BE SUCH THAT ALL SWITCHES AND OPERATOR CONTROLS ARE NO LESS THAN 36 INCHES AND NO MORE THAN 72 INCHES ABOVE THE RINISHED FLOOR.
6. WIRING SHALL BE INSTALLED SO THAT EQUIPMENT CAN BE SERVICED OR REMOVED WITHOUT DISCONNECTING OR MOVING UNRELATED CIRCUITS. ALL WIRING WITHIN CONTROL UNITS, JUNCTION BOXES, AND TERMINAL CABINETS SHALL BE NEATLY TRIMMED, DRESSED, LABELED, AND INSTALLED IN GUTTERS OR CHANNELS. SEE SPECIFICATIONS FOR MAXIMUM ALLOWABLE CIRCUIT LOADING AND WIRE SIZE REQUIREMENTS, COORDINATE RINAL CIRCUIT QUANTITIES, AND CABLE TYPES WITH THE SYSTEM SUPPLIERS SHOP DRAWINGS.
7. CONNECT PRIMARY 120VAC POWER TO 20A/1P CIRCUIT BREAKER DEDICATED FOR FIRE ALARM. SECONDARY POWER BATTERY BACKUP (STANDBY & ALARM) SHALL BE SIZED PER NFPA 72 REQUIREMENTS.
8. PANEL NETWORK WIRING, INCLUDING DATA COMMUNICATIONS, SHALL BE WIRED CLASS X (FORMER CLASS A, STYLE 7) WITH SEPARATE OUTGOING AND RETURN LOOPS.
9. ADDRESSABLE DEVICE SLC'S SHALL BE NFPA 72 CLASS B. PROVIDE PROVIDE GROUND FAULT ISOLATION DETECTION BETWEEN EACH ADDRESSABLE DEVICE AND NFPA 72 CLASS X CIRCUITS IF QUANTITY OF DEVICES PER SLC EXCEED 50 FOR NFPA 72 DETECTION REDUCES TROUBLE SHOOTING TIME. :
10. NOTIFICATION APPLIANCE NACS SHALL BE NFPA 72 CLASS B. INDIVIDUALLY ISOLATED SO THAT A SINGLE WIRING FAULT WILL NOT EFFECT THE OPERATION OF CIRCUIT(S) SERVING ANY OTHER FLOOR OR EVACUATION SIGNALING ZONE
11. STROBE CANDELAS SETTINGS MUST BE SIZED PER NFPA 72 REQUIREMENTS BY THE RIRE ALARM VENDOR AND SHOWN ON THE SHOP DRAWINGS.
12. A COMPLETE SET FOR RIRE ALARM PRODUCT CUTSHEETS, RIRE ALARM INSTALLATION SHOP DRAWINGS, AND BATTERY/ VOLTAGE/ LOAD CALCULATIONS MUST BE SUBMITTED AND APPROVED PRIOR TO INSTALLATION.
13. THE OFF-SITE COMMUNICATOR SHALL PROVIDE GENERAL (ALARM/ TROUBLE/ SUPERVISORY) AND ABILITY FOR CONTACT/ GROUPED EVENT ID REPORTING FROM THE RIRE ALARM CONTROL PANEL (FACP) TO A CENTRAL OR REMOTE RECEIVING STATION. IT SHALL OFFER THREE SELECTABLE REPORTING PATHS WHICH INCLUDE: CELLULAR ONLY, IP ONLY, OR IP PRIMARY/CELLULAR BACKUP. FOR THIS PROJECT, UTILIZE CELLULAR COMMUNICATIONS AS THE PRIMARY MEANS OF COMMUNICATION, PER NFPA 72 REQUIREMENTS. IP COMMUNICATIONS FOR OWNER SELECTED/PROVIDED FUTURE OPTION. THE COMMUNICATOR SHALL RECEIVE ITS POWER AND SUPERVISION FROM THE FACP AND BE SUPPLIED WITH A LOCAL CELLULAR ANTENNA. WHEN THE MINIMUM CELLULAR SIGNAL STRENGTH PER THE MANUFACTURES INSTALLATION INSTRUCTIONS CANNOT BE MET, PROVIDE AN EXTERNAL ANTENNA LOCATED AND INSTALLED PER FIELD CONDITIONS, WITH THE OWNERS APPROVAL.
14. COORDINATE EXACT DEVICE LOCATIONS AND BACKBOX/MOUNTING REQUIREMENTS WITH THE ARCHITECTURAL ELEVATIONS, MANUFACTURERS INSTALLATION INSTRUCTIONS, THE SYSTEM SUPPLIERS SHOP DRAWINGS, AND THE WORK OF RELATED TRADES. INSTALL ALL CEILING-MOUNTED EQUIPMENT IN THE CENTER OF A LAY-IN TILE.

ADDRESSABLE NON-VOICE FIRE ALARM RISER DIAGRAM

FIRE ALARM SYMBOL

S	FIRE ALARM SMOKE DETECTOR
S CO	FIRE ALARM COMBINATION SMOKE/CARBON DIOXIDE DETECTOR
S	FIRE ALARM DUCT SMOKE DETECTOR
H	FIRE ALARM HEAT DETECTOR
AM	FIRE ALARM ADDRESSABLE MODULE
CM	FIRE ALARM CONTROL MODULE
S	CEILING MOUNTED 125V., COMBINATION SMOKE DETECTOR/HORN-STROBE
CO	CEILING MOUNTED 125V., CARBON DIOXIDE DETECTOR
FS	FIRE ALARM SPEAKER
	FIRE ALARM PULL STATION
	FIRE ALARM STROBE
	FIRE ALARM HORN/STROBE
	FIRE ALARM SOUNDER-LOW FREQUENCY (520 HZ) FOR USE IN SLEEPING AND GENERAL LIVING AREAS IN RESIDENTAL UNITS/GUESTROOMS
	FIRE ALARM WATER FLOW SWITCH
	FIRE ALARM TAMPER SWITCH
HC	FIRE DOOR HOLD OPEN
RA	RESCUE ASSISTANCE CALL STATION (RATH 3300FSN OR EQUAL)

GENERAL NOTES:

WHERE AVAILABLE, PROVIDE WHITE FINISH ON ALL DEVICES

TYPICAL FIRE ALARM EQUIPMENT MOUNTING NOTES:

THESE MOUNTING DIMENSIONS COMPLY WITH THE FOLLOWING:
- NFPA 72 CHAPTER 5 & 7
- CABO/ANSI A117.1
- IBC CHAPTER 9
- ADA PARAGRAPH 4.2.5 & 4.2.6
- THE ADA ACCESSIBILITY GUIDELINES FOR BUILDINGS & FACILITIES (ADAAG)

FOR LOW CEILINGS WHERE THE PRESCRIBED MOUNTING HEIGHTS FOR THE SIGNALING APPLIANCES CAN NOT BE MET, INSTALL THE APPLIANCE 6" FROM THE CEILING.

ALL DEVICE & APPLIANCE HEIGHTS SHOULD BE CONSISTENT FOR THE ENTIRE PROJECT.

FOR COMBINATION AUDIO/ VISUAL APPLIANCES, THE STROBE PLACEMENT TAKES PRECEDENCE

NFPA 72 - 2016 DOCUMENTATION REQUIREMENTS

THE DOCUMENTATION CABINET SHALL BE SIZED SO THAT IT CAN CONTAIN THE FOLLOWING DOCUMENTATION:

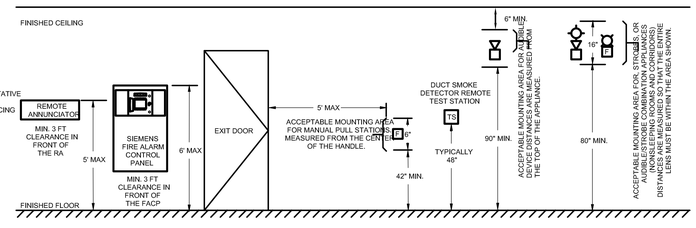
- SITE-SPECIFIC SOFTWARE
- OWNER'S MANUAL
- AS-BUILT PLANS AND SYSTEM CALCULATIONS

THE BUILDING OWNER OR THE BUILDING OWNER'S REPRESENTATIVE SHALL, ON AN ANNUAL BASIS, REVIEW ANY ELECTRONIC DOCUMENTATION MEDIA FORMATS AND ASSOCIATED INTERFACING HARDWARE FOR COMPATIBILITY AND UPDATE IF NECESSARY.

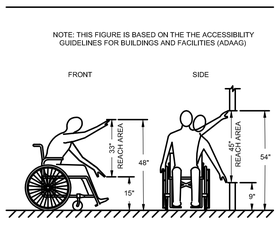
MANUAL PULL STATION MOUNTING HEIGHT REFERENCES

CODE	MINIMUM	MAXIMUM
NFPA-72	35"	54"
IBC	42"	48"
ADAAG	-	*48"

* THE MOST RESTRICTIVE FRONT REACH DISTANCE



FIRE ALARM EQUIPMENT MOUNTING HEIGHTS DIMENSIONS



ADA WHEELCHAIR ACCESSIBILITY DIMENSIONS

HARMONIZED FIRE ALARM EQUIPMENT MOUNTING DISTANCE REQUIREMENTS - IBC/ADA/NFPA/ANSI

NOT TO SCALE–FOR INSTALLER'S REFERENCE

CODE SUMMARY	
MUNICIPALITY	CITY OF CHESTER
USE AND OCC. CLASSIFICATION	B (BUSINESS)
APPLICABLE CODES	BUILDING CODE: 2018 INTERNATIONAL BUILDING CODE MECHANICAL CODE: 2018 INTERNATIONAL MECHANICAL CODE PLUMBING CODE: 2018 INTERNATIONAL PLUMBING CODE FUEL GAS CODE: 2018 INTERNATIONAL FUEL GAS CODE ELECTRICAL CODE: 2017 NATIONAL ELECTRICAL CODE (BY REFERENCE) FIRE CODE: 2018 INTERNATIONAL FIRE CODE ENERGY CODE: 2018 INTERNATIONAL ENERGY CONSERVATION CODE/ASHRAE 90.1-2016

2304 EDGEMONT AVE
MEP - DRAWING INDEX

DRAWING NO.	DRAWING TITLE	ISSUED FOR BID SET - 08/09/24
FA-1	FIRE ALARM COVER SHEET	●
FA-2	FIRE ALARM FLOOR PLANS	●
FA-3	FIRE ALARM FLOOR PLANS	●

FIRE ALARM SYSTEM GENERAL NOTES:

PROVIDE FIRE ALARM SYSTEM TO ACCOMPLISH THE PARAMETERS BELOW:

1. THE DRAWINGS INDICATE A PERFORMANCE SPECIFICATION FOR A FIRE ALARM SYSTEM. CONTRACTOR IS RESPONSIBLE FOR DETAILED DESIGN AND PREPARATION OF SIGNED AND SEALED ENGINEERING DOCUMENTS FOR REVIEW/APPROVAL FROM OWNERS INSURANCE CARRIER AND LOCAL AUTHORITY HAVING JURISDICTION. ALL MODULES, INTERFACING, SIGNALS, SIGNAL LIGHTS AND PROGRAMMING SHALL BE INCLUDED IN THE FIRE ALARM CONTRACTORS SCOPE OF WORK. SYSTEM SHALL BE INCOMPLIANCE WITH NFPA 72, ICC CODES, NATIONAL ELECTRIC CODE, OSHA, ADA, AND THE AUTHORITY HAVING JURISDICTION (AHJ) INCLUDE, BUT NOT BE LIMITED TO:
   1.1. VISUAL STROBE IN ALL AREAS (TO MEET ADA). 100 CANDELA MINIMUM.
   1.2. HEAT AND SMOKE DETECTORS (AS REQUIRED PER CODE AND LOCAL AUTHORITIES HAVING JURISDICTION.
   1.3. GENERAL LOCATIONS OF HORNS/STROBES AND PULL STATIONS ARE SHOWN ON DRAWINGS. FINAL COUNT AND LOCATIONS ARE TO BE IN ACCORDANCE WITH AHJ.
2. SYSTEM SHALL BE CONNECTED TO NORMAL POWER AND BE PROVIDED WITH BATTERY BACKUP. ALL COMPONENTS OF THE SYSTEM SHALL BE UL LISTED FOR FIRE ALARM USE.
3. ALL HORNS AND STROBE LIGHT WIRING TO BE #16 AWG MINIMUM TO SUIT LOAD SERVED - ALL OTHER FIRE ALARM WIRE TO BE #16 AWG MINIMUM.
4. ALL WIRING TO BE IN CONDUIT, WIREMOLD, OR PLENUM RATED CABLE ALLOWED BY AHJ
5. UPON ACTIVATION OF ANY INITIATING DEVICE, THE FOLLOWING SEQUENCE SHALL OCCUR:
   5.1. ILLUMINATE THE STROBES.
   5.2. THE HORN/STROBES SHALL OPERATE WHEN THE FIRE ALARM SYSTEM IS ACTIVATED.
   5.3. THE SYSTEM SHALL BE MANUALLY RESET AFTER ALL DEVICES HAVE CLEARED.
6. ALL DEVICES SHALL BE "INTELLIGENT" AND SHALL BE INDIVIDUALLY ADDRESSABLE, VIA DIGITAL SIGNAL.
7. ALL STROBES SHALL HAVE THE CAPABILITY TO BE SYNCHRONIZED.

LINN ARCHITECTS
ARCHITECTURE
ENGINEERING
SITE PLANNING
CODE SERVICES
1140 N. PROVIDENCE ROAD
MEDIA, PENNSYLVANIA 19063
TEL: 610-566-7044
FAX: 610-566-3258
ADVANCED ENGINEERING INC. www.AEI-inc.com
5561 Pennell Road | Media PA 19063
Project No. 23028

FIRE ALARM COVER SHEETS

BUILDING RENOVATIONS
AIDS CARE GROUP
2304 EDGMONT AVENUE
CHESTER, PA 19013

REVISIONS NO.	DESCRIPTION	DATE
0	BID SET	08/09/24

DATE: 08/09/24
SCALE: AS NOTED
DRAWN BY: SJS
CHECKED BY: AH
PROJ. NO.: 23028

SHEET NO.
FA-1

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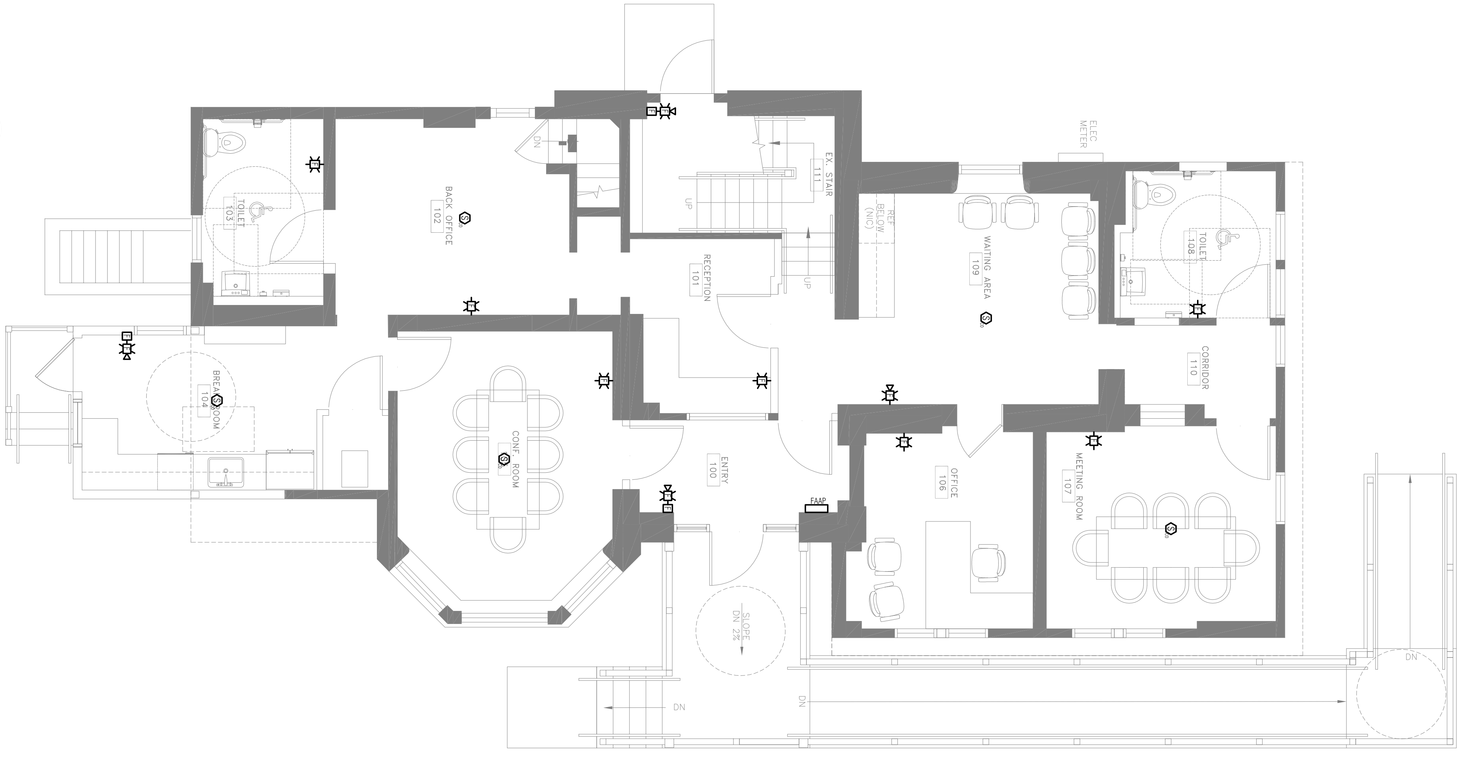
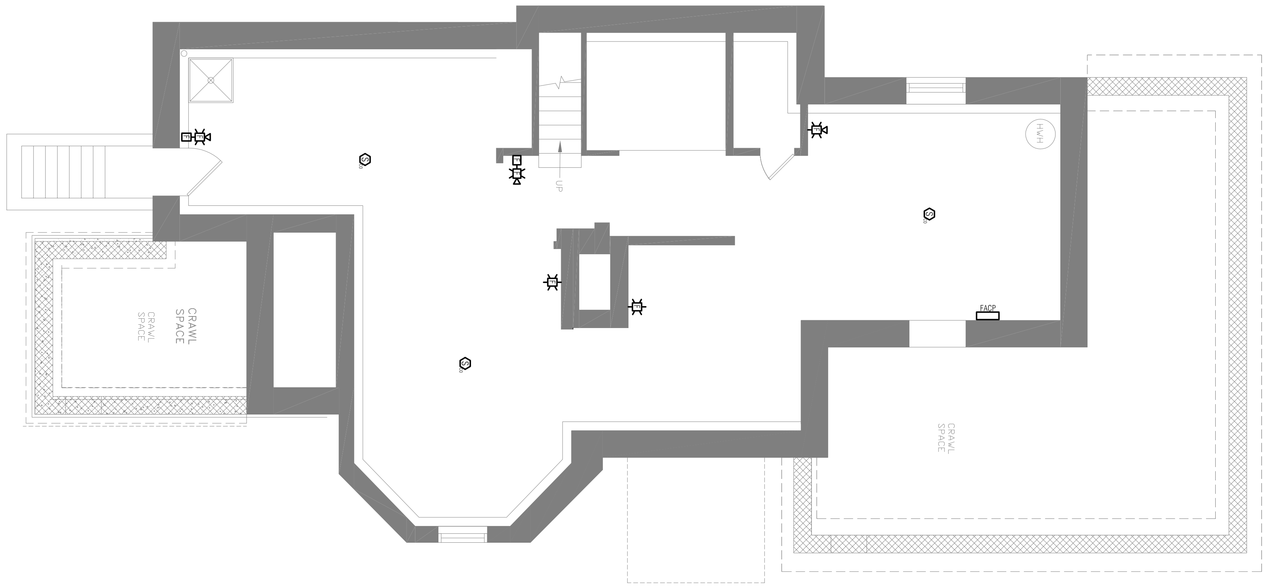
2 FA-2 FIRST FLOOR PLAN

SCALE - 1/4" = 1'-0"



1 FA-2 BASEMENT FLOOR PLAN

SCALE - 1/4" = 1'-0"



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SHEET NO. FA-2

DATE	08/09/24
SCALE	AS NOTED
DRAWN BY	AH
CHECKED BY	TWL
PROJ. NO.	23028

REVISIONS

NO.	DESCRIPTION	DATE
0	BID SET	08/09/24

FIRE ALARM FLOOR PLANS

BUILDING RENOVATIONS

AIDS CARE GROUP

2304 EDGMONT AVENUE

CHESTER, PA 19013

ADVANCED ENGINEERING INC
www.ADVENGINC.com
556i Pennell Road | Media PA 19063

Project No. 23028

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ARCHITECTURE
ENGINEERING
SITE PLANNING
CODE SERVICES
1140 N. PROVIDENCE ROAD
MEDIA, PENNSYLVANIA 19063
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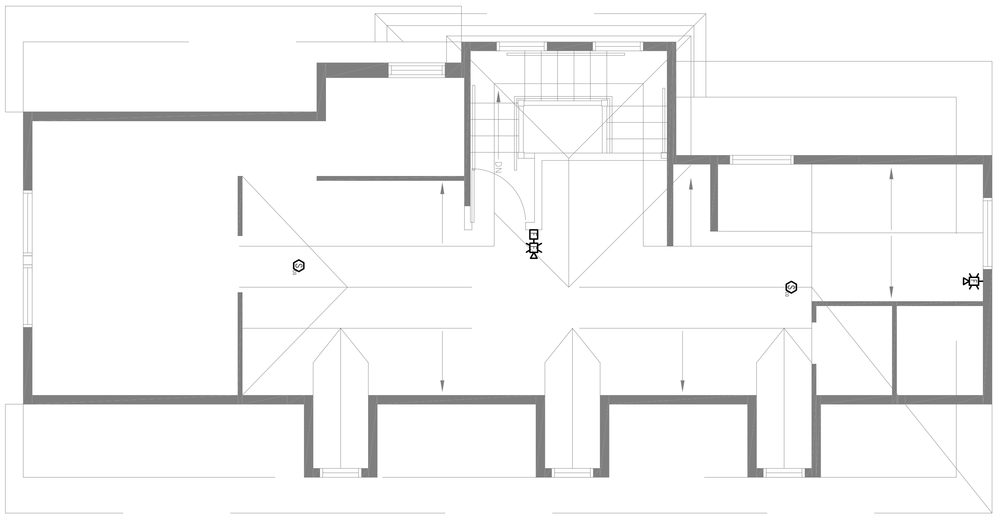
FAX: 610-566-3258

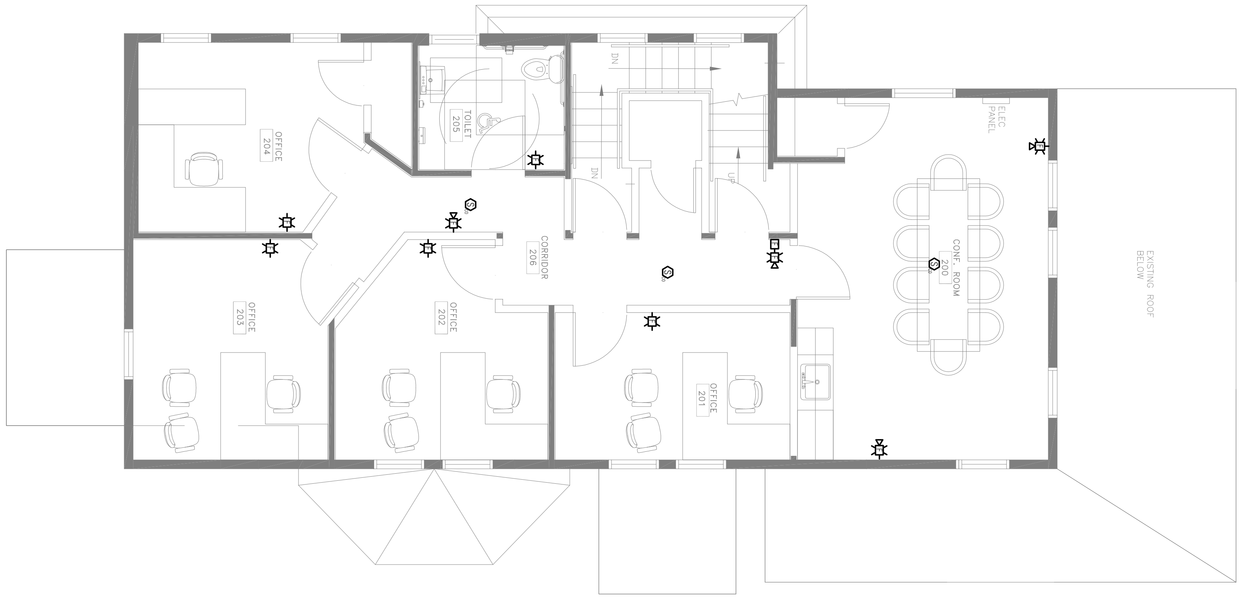
2 FA-3 THIRD FLOOR PLAN

SCALE - 1/4" = 1'-0"



1 FA-3 SECOND FLOOR PLAN

SCALE - 1/4" = 1'-0"



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SHEET NO. FA-3

DATE	08/09/24
SCALE	AS NOTED
DRAWN BY	SJS
CHECKED BY	AH
PROJ. NO.	23028

REVISIONS		
NO.	DESCRIPTION	DATE
0	BID SET	08/09/24

FIRE ALARM FLOOR PLANS

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CHESTER, PA 19013

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www.ADVENGINC.com
556i Pennell Road | Media PA 19063

Project No. 23028

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ARCHITECTURE
ENGINEERING
SITE PLANNING
CODE SERVICES
1140 N. PROVIDENCE ROAD
MEDIA, PENNSYLVANIA 19063
TEL: 610-566-7044
FAX: 610-566-3258