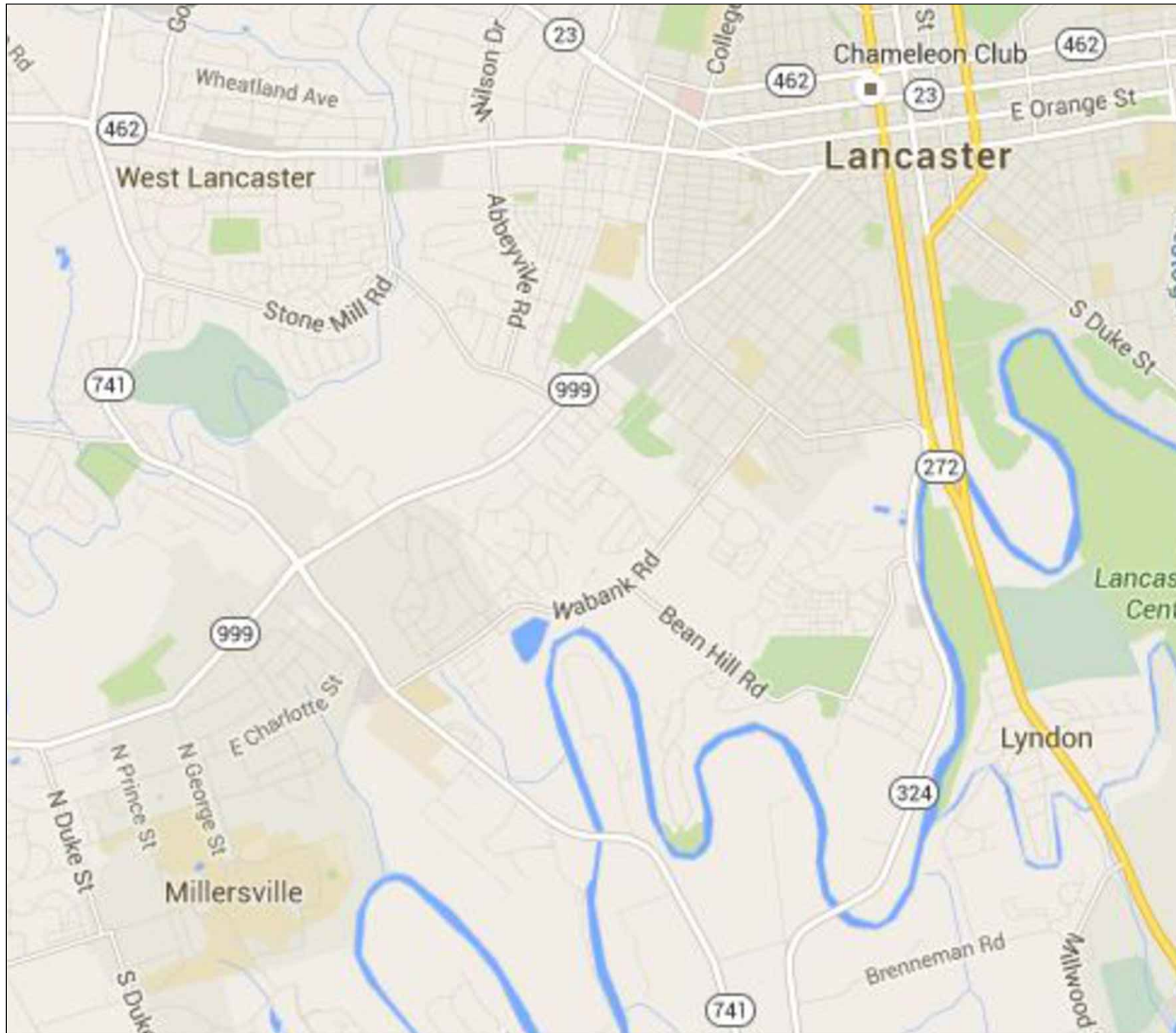
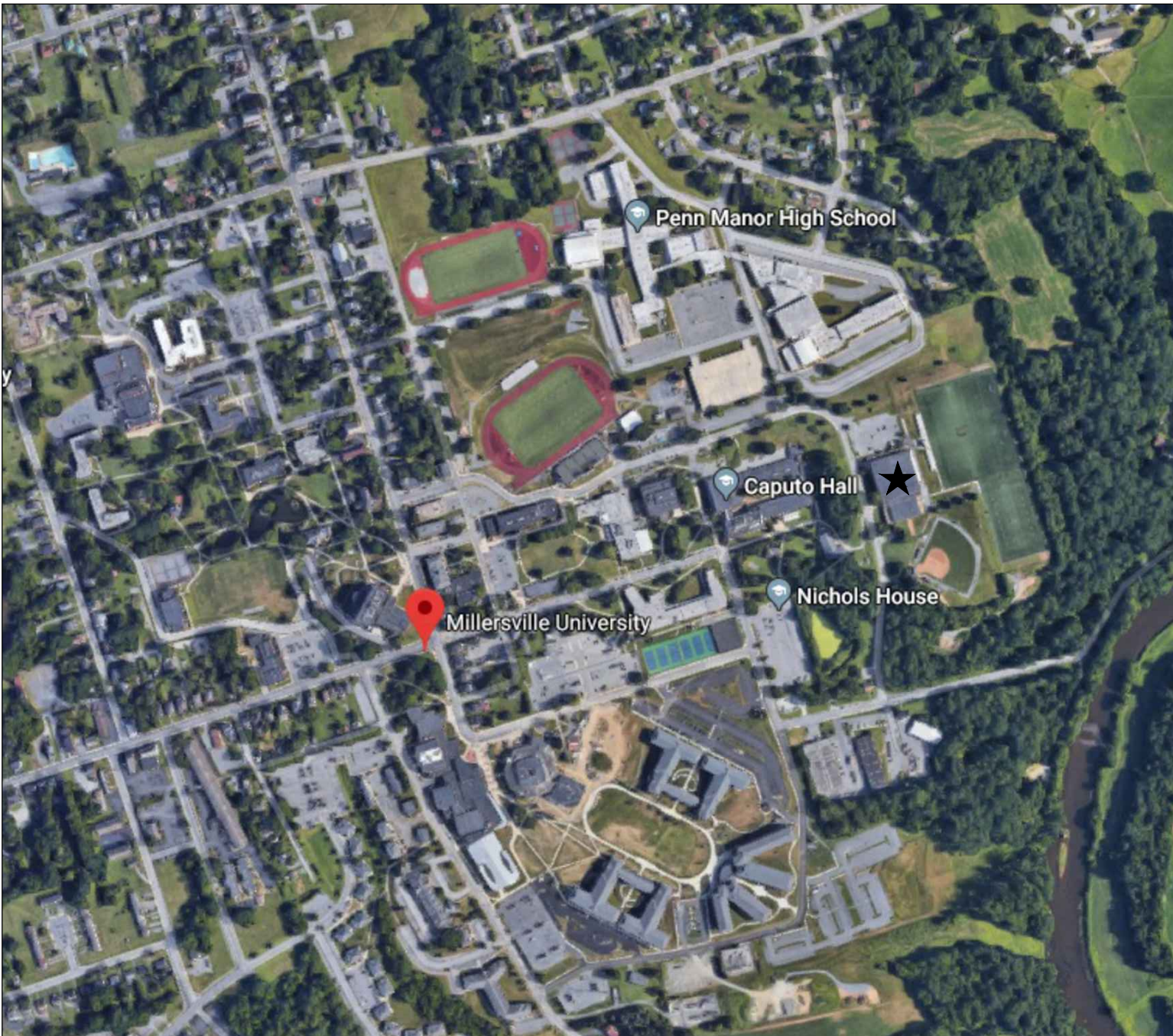


MILLERSVILLE UNIVERSITY OF PENNSYLVANIA
of the State System of Higher Education
Millersville, Pennsylvania

Vicinity Map



Campus Map - Lehigh Hall (★)



Dr. Dan Greenstein, Chancellor
State System of Higher Education of Pennsylvania
Harrisburg, PA

PROJECT MI - 1226
LYLE HEALTH SERVICES RENOVATION

Contract: MI-1226.G

Drawing List:

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- E-001 SYMBOLS, NOTES & ABBREVIATIONS
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VOLTAGE

E-801 ELECTRICAL SPECIFICATIONS
E-802 ELECTRICAL SPECIFICATIONS
E-803 ELECTRICAL SPECIFICATIONS

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DOCUMENT
FOR CONSTRUCTION

APPROVALS			
VICE PRESIDENT FOR FINANCE AND ADMINISTRATION			
DIRECTOR OF FACILITIES			
CHANCELLOR			
PROFESSIONAL SEALS:			
STATE SYSTEM OF HIGHER EDUCATION MILLERSVILLE UNIVERSITY			
PROJECT/CONTRACT NO. MI-1226			
TITLE: LYLE HEALTH SERVICES RENOVATION MILLERSVILLE UNIVERSITY MILLERSVILLE, LANCASTER COUNTY, PENNSYLVANIA			
COVER SHEET			
DATE: 09.12.2025 SCALE: AS NOTED		DRAWING NO. CS-1	

EXISTING BUILDING CODE SUMMARY

BUILDING CODE INFORMATION SUMMARY
International Existing Building Code, Volume Date: IEBC 2018

ALTERATIONS – LEVEL 2: Chapter 8
The reconfiguration of space, the addition or elimination of any door or window, the reconfiguration or extension of any system, or the installation of any additional equipment.

GENERAL: Section 801	
1. Alteration Level 1 compliance	Required
2. New construction elements, components, systems and spaces	Required compliance with 2018 International Building Code (2018 IBC)

BUILDING ELEMENTS AND MATERIALS: Section 802

1. Vertical openings	N/A
2. Existing vertical openings	N/A
3. Supplemental shaft & floor openings	N/A
4. Supplemental stairway enclosures	N/A
5. Smoke compartments	1 hr
6. Interior finishes	Required compliance with 2018 IBC
7. Guards	N/A
8. Fire resistance ratings	Provided as required

FIRE PROTECTION: Section 803

1. Automatic sprinkler systems	N/A
2. Windowless stories	N/A
3. Supervision	Required
4. Standpipes	Not required
5. Fire alarm and detection	Required
6. Supplemental fire alarm system requirements	Not required or Required

CARBON MONOXIDE DETECTION: Section 804

1. Carbon monoxide alarms	N/A
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MEANS OF EGRESS: Section 805

1. Number of exits	Required compliance with 2018 IBC
2. Fire escapes	N/A
3. Mezzanines	N/A
4. Egress doorways	Two required (minimum)
5. Openings in corridor walls	Required compliance with 2018 IBC
6. Dead-end corridors	N/A
7. Means-of-egress lighting	Required compliance with 2018 IBC
8. Exit signs	Required compliance with 2018 IBC
9. Handrails	N/A or Required compliance with 2018 IBC
10. Guards	N/A or Required compliance with 2018 IBC

STRUCTURAL: Section 806

1. N/A	
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ELECTRICAL: Section 807

1. New installations	Required compliance 2017 NEC and 2018 IEBC
2. Existing installations	Required compliance Chapter 7, 2018 IEBC

MECHANICAL: Section 808

1. Reconfigured or converted spaces	Required compliance with 2018 IMC
2. Altered existing systems	N/A
3. Local Exhaust	As required by Section 808.3

PLUMBING: Section 809

1. Minimum fixtures	Required or provided as required by Section 808.3 (see information below)
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ENERGY CONSERVATION: Section 810

1. Minimum requirement	The entire building or structure <i>is not</i> required to comply with the energy requirements of the 2018 International Energy Conservation Code or International Residential Code. Alterations shall conform to the energy requirements of the 2018 International Energy Conservation Code or International Residential Code as they relate to new construction only
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GENERAL EXISTING BUILDING INFORMATION:

1. Use Group	B Business
2. Height (ft)	48'-0" (65' allowable maximum)
3. Stories	3 st (proposed alterations on 1 st & 2 nd floor)
4. Gross building area	69,262 sf
5. Gross area of Level 2 Alteration	3,990 sf
6. Construction type	Type IIIA (3A), noncombustible
7. Occupant load (Table 1004.5, 2018 IBC)	150 sf / person gross
8. Square foot per person factor	3,780 sf = 150 sf/person = 25 persons
9. Occupant load per work area	
10. Toilet fixture count:	
11. Minimum number of plumbing facilities at 2 nd floor	
12. a. Water closets	(8) provided, (1) Unisex
13. b. Lavatories	(11) provided
14. c. Drinking fountains	(1) provided
15. d. Service sink	(1) provided

END OF 2018 INTERNATIONAL EXISTING BUILDING CODE INFORMATION SUMMARY:
ALTERATIONS – LEVEL 2

APPLICABLE CODES SUMMARY

ARCHITECTURAL

- 2018 INTERNATIONAL EXISTING BUILDING CODE
- 2018 INTERNATIONAL BUILDING CODE
- 2021 INTERNATIONAL BUILDING CODE, CHAPTER 11 ACCESSIBILITY REQUIREMENTS
- 2018 INTERNATIONAL FIRE CODE
- 2018 INTERNATIONAL ENERGY CONSERVATION CODE
- 2017 AMERICAN NATIONAL STANDARD ICC/ANSI A117.1 ACCESSIBLE AND USABLE BUILDINGS AND FACILITIES
- 2018 NFPA 101 LIFE SAFETY CODE

MECHANICAL

- 2018 INTERNATIONAL MECHANICAL CODE
- 2018 INTERNATIONAL ENERGY CONSERVATION CODE

ELECTRICAL

- NFPA-70 2017 NATIONAL ELECTRIC CODE
- 2018 INTERNATIONAL ENERGY CONSERVATION CODE

PLUMBING

- 2018 INTERNATIONAL PLUMBING CODE
- 2017 AMERICAN NATIONAL STANDARD ICC/ANSI A117.1 ACCESSIBLE AND USABLE BUILDINGS AND FACILITIES

FIRE PROTECTION

- N/A

GENERAL NOTES

THESE GENERAL NOTES ARE TO BE FOLLOWED IN CONJUNCTION WITH THE PROJECT MANUAL AND SPECIFICATIONS FOR THIS PROJECT. REFER TO SPECIFICATIONS FOR BASIC AND DETAIL REQUIREMENTS.

1. FIELD CONDITIONS

- G.C.* WILL EXAMINE THE JOB SITE TO BECOME FAMILIAR AND SATISFIED WITH CONDITIONS UNDER WHICH THEY WILL BE OBLIGED TO OPERATE IN PERFORMING THE WORK. THE OWNER WILL BE OCCUPYING PORTIONS OF THE EXISTING SPACE WHICH ARE TO BE SEPARATED FROM THE AREAS OF CONSTRUCTION.
- G.C.* WILL VERIFY AND BE RESPONSIBLE FOR FIELD VERIFICATION OF ALL DIMENSIONS ON SITE BEFORE ORDERING MATERIALS FABRICATION OR INSTALLATION. VERIFY ALL MEASUREMENTS AT THE BUILDING AS THE WORK AND COORDINATION OF TRADES REQUIRES.
- G.C.* WILL NOTIFY THE ARCHITECT WHEN LAYING OUT CONSTRUCTION ASSEMBLIES TO ALLOW FOR ON SITE ADJUSTMENTS REQUIRED BY BUILDING PLAN VARIATIONS OR AS MAY BE REQUIRED BY ADJACENT INSTALLATIONS AND MEP SYSTEMS.

2. CONTRACT DOCUMENTS AND SUBMITTALS

- G.C.* TO PROVIDE A CONSTRUCTION SCHEDULE AND SUBMITTAL SCHEDULE AS IDENTIFIED BY DIVISION I SPECIFICATIONS. UPON APPROVAL OF THE SUBMITTAL SCHEDULE, THE *G.C.* WILL VERIFY AVAILABILITY OF MATERIALS AND PRODUCTS AND THAT SEMI-PROPRIETARY ITEMS ARE SPECIFIED USING UP TO DATE IDENTIFICATION INFORMATION. IRREGULARITIES ARE TO BE REPORTED TO THE ARCHITECT IMMEDIATELY.
- DO NOT SCALE DRAWINGS. NOTIFY THE ARCHITECT IN CASES OF DIMENSIONAL OR INFORMATIONAL DISCREPANCIES OR CONDITIONS REQUIRING CLARIFICATION BEFORE PROCEEDING WITH THE WORK.
- IN THE CASE OF CONFLICTING INFORMATION WITHIN THE CONTRACT DOCUMENTS, COMPLY WITH THE MOST STRINGENT REQUIREMENT.
- SUBMIT SHOP DRAWINGS FOR ARCHITECTS AND/OR ENGINEERS APPROVAL PRIOR TO FABRICATION AND BEFORE COMMENCING ROUGH-IN WORK ASSOCIATED W/ REQUIRED SUBMITTALS. THE GENERAL CONTRACTOR SHALL CLEARLY INDICATE DEVIATIONS FROM REQUIREMENTS IN CONTRACT DOCUMENTS, INCLUDING VARIATIONS AND LIMITATIONS, INCLUDE RELEVANT ADDITIONAL INFORMATION AND REVISIONS OTHER THAN THOSE REQUESTED BY ARCHITECT ON PREVIOUS SUBMITTALS. PROVIDE CONTRACTORS REVIEW AND APPROVAL MARKINGS AND ACTION TAKEN BY ARCHITECT. DO NOT SUBMIT TO ARCHITECT WITHOUT PRIOR *G.C.* REVIEW WITH PERTINENT NOTATIONS. BY SUBMITTING SHOP DRAWINGS, PRODUCT DATA, SAMPLES AND/OR SIMILAR SUBMITTALS, CONTRACTOR REPRESENTS TO OWNER AND ARCHITECT THAT CONTRACTOR HAS: (1) REVIEWED AND APPROVED THEM; (2) DETERMINED AND VERIFIED MATERIALS, FIELD MEASUREMENTS AND FIELD CONSTRUCTION CRITERIA RELATED THERETO; OR WILL DO SO; AND (3) CHECKED AND COORDINATED INFORMATION CONTAINED WITHIN SUCH SUBMITTALS WITH REQUIREMENTS OF THE WORK.
- DIMENSIONS GIVEN ARE TO ROUGH CONSTRUCTION UNLESS NOTED OTHERWISE. FINISHED DIMENSIONS ARE SO NOTED, OR ARE FOLLOWED BY "FO" OR "FIN DIM" ABBREVIATION.
- MINOR CHANGES IN THE WORK INCLUDE ANY CHANGES DIRECTED BY THE ARCHITECT OR OWNER THAT DO NOT REQUIRE ADJUSTMENT IN THE CONTRACT SUM EXTENSION OF THE CONTRACT TIME, AND/OR ARE NOT INCONSISTENT WITH THE INTENT OF THE CONTRACT DOCUMENTS. CHANGES (NOT CONSIDERED MINOR) WILL BE EXECUTED THROUGH THE USE OF A WRITTEN CHANGE ORDER OR CONSTRUCTION CHANGE DIRECTIVE AUTHORIZED BY THE ARCHITECT AND SIGNED BY BOTH THE OWNER AND CONTRACTOR. THE CONTRACTOR SHALL SUBMIT A WRITTEN PROPOSAL TO THE OWNER REGARDING ANY ANTICIPATED ADJUSTMENT TO THE CONTRACT AMOUNT OR CONTRACT TIME AND OBTAIN WRITTEN APPROVAL FROM THE OWNER PRIOR TO COMMENCEMENT OF THE CHANGE IN THE WORK. SUBMIT PROPOSALS AS SOON AS PRACTICABLE AFTER FIRST OBSERVANCE OF CONDITIONS ANTICIPATED TO RESULT IN COST OR TIME ADJUSTMENT IN A TIMELY MANNER THAT DOES NOT DELAY PROGRESS OF THE WORK, AND IN NO EVENT AFTER BEGINNING THE WORK. CHANGES OR ADJUSTMENTS TO THE WORK UNDERTAKEN BY THE CONTRACTOR THAT ARE NOT APPROVED BY THE OWNER THROUGH THE USE OF A CONSTRUCTION CHANGE DIRECTIVE OR CHANGE ORDER ARE DONE AT THE CONTRACTOR'S OWN RISK AND ARE SUBJECT TO POTENTIAL NON-COMPENSATION.

3. CODE COMPLIANCE AND STANDARDS

- COMPLY WITH PERTINENT PROVISIONS OF CITY OR TOWNSHIP, COUNTY, AND STATE LAWS AND REGULATIONS. COMPLY WITH PERTINENT PROVISIONS OF THE 2008 EDITION OF THE INTERNATIONAL

BUILDING CODE (IBC), OR THE LOCALLY ACCEPTED CODE. CHARGE THE CONTRACTOR FOR COSTS INCURRED BY THE AMERICANS WITH DISABILITIES ACT (ADA) AND ALL PERTINENT REGULATIONS REGARDING FEDERAL REGISTER UNIVERSAL ACCESSIBILITY STANDARDS AND INTERNATIONAL CODE COUNCIL (ICC) AMERICAN NATIONAL STANDARD INSTITUTE (ANSI) STANDARD A117-2001

- COMPLY WITH ALL PROVISIONS OF PENNSYLVANIA ACT 281 OF 1994 AS AMENDED BY ACT 181 OF 1996 (OSHA 1926.650) REQUIRING CONTRACTORS INTENDING TO PERFORM EXCAVATION OR DEMOLITION WORK ON A SITE WITHIN A POLITICAL SUBDIVISION ASCERTAIN THE LOCATION AND TYPE OF UTILITY LINES AND PIPES AT EACH SITE AND NOTIFIES THE UTILITY COMPANY(S) NOT LESS THAN THREE (3) WORKING DAYS IN ADVANCE OF PERFORMING THE EXCAVATION OR DEMOLITION. THIS INCLUDES UTILITY INSTALLATIONS SUCH AS GAS, PETROLEUM, SEWER, TELEPHONE, FUEL, ELECTRIC, WATER, OR ANY OTHER UNDERGROUND DIGGING OPERATIONS. CALL PENNSYLVANIA ONE CALL SYSTEM, INC. AT (1.800.242.1176) OR CONTACT THEM AT www.pafonecall.org.
- GIVE SPECIAL ATTENTION TO THE INCORPORATION OF EXISTING PARTITIONS AND CONSTRUCTION OF NEW PARTITIONS TO ASSURE POSITIVE SEAL AT TOP AND BOTTOM PLATES AND ALL PENETRATIONS. VERIFY USE OF ACCEPTED AND APPROVED SEALANTS WHERE FIRE RATING IS REQUIRED OR IF REQUIRED FOR ACoustICAL PURPOSES. VERIFY AND ASSURE CODE COMPLIANCE OF EXISTING DESIGN PARTITIONS AND PARTITION PENETRATIONS CONDITIONS (TYP).
- NOTIFY ARCHITECT OF ANY IRREGULARITIES NOTED DURING THE INVESTIGATION OF EXISTING CONDITIONS OR DURING SELECTIVE DEMOLITION AND EXPOSURE OF VISUALLY CONCEALED CONDITIONS. ALL EXISTING AND NEW PARTITION PENETRATIONS ARE TO BE SEALED WITH FIRE CAULK WITH A FIRE RESISTANCE RATING THAT IS EQUAL TO OR EXCEEDS THE REQUIRED RATED OR SMOKE BARRIER PARTITION ASSEMBLY.
- GAPS AND JOINTS IN NEW AND EXISTING FLOOR, WALL, CEILING, ROOF ASSEMBLIES, AND PENETRATIONS SHALL BE FILLED OR CLOSED WITH MATERIALS THAT PROVIDE AN AIR-TIGHT, WATER-TIGHT, OR FIRE-RESISTIVE SEAL.
- COORDINATE: CENTRAL-STATION SYSTEM, PROPRIETARY SYSTEM, REMOTE-STATION SYSTEM OR SUPERVISORY SERVICE WHICH WILL CAUSE THE ACTIVATION OF AN ADJULABLE APPLIANCE AT A CONSECUTIVELY ATTACHED LOCATION IN ACCORDANCE WITH NFPA 72. COORDINATE REQUIREMENTS OF OWNER'S SECURITY SYSTEM, MUNICIPALITY AND LOCAL FIRE DEPARTMENT AND FIRE MARSHAL.
- RESEARCH OR EVALUATION REPORTS: PROVIDE FIRE-RETARDANT-TREATED WOOD ACCEPTABLE TO AUTHORITIES HAVING JURISDICTION AND FOR WHICH A CURRENT MODEL CODE RESEARCH OR EVALUATION REPORT EXISTS THAT EVIDENCES COMPLIANCE OF FIRE-RETARDANT-TREATED WOOD FOR APPLICATION INDICATED, WHERE FIRE-RETARDANT-TREATED WOOD IS INDICATED, COMPLY WITH APPLICABLE REQUIREMENTS OF AWPA200 (LUMBER) AND AWPA27 (PLYWOOD). IDENTIFY FIRE-RETARDANT-TREATED WOOD WITH APPROPRIATE CLASSIFICATION MARKING OF U.S. TESTING. TIMBER PRODUCTS INSPECTION, INC., OR ANOTHER TESTING AND INSPECTING AGENCY ACCEPTABLE TO AUTHORITIES HAVING JURISDICTION, VERIFY THAT CONTACT WITH TREATED WOOD DOES NOT PROMOTE CORROSION OF METAL FASTENERS INTENDED FOR USE. USE 304 STAINLESS STEEL FASTENERS IN CONNECTION WITH ALL TREATED WOOD CONDITIONS.
- PLYWOOD BACKING PANELS: FOR MOUNTING ELECTRICAL OR TELEPHONE EQUIPMENT, PROVIDE FIRE-RETARDANT-TREATED PLYWOOD PANELS WITH GRADE, C-P PLUGGED EXPOSURE, IN THICKNESS INDICATED, OR, IF NOT OTHERWISE INDICATED, NOT LESS THAN 5/32 INCH (1.6 MM) THICK.
- CUTTING & PATCHING
- WHERE WORK IS PERFORMED ADJACENT TO EXISTING CONSTRUCTION ASSEMBLIES REQUIRING THE TEMPORARY OR PARTIAL DISTURBANCE OF THESE ASSEMBLIES TO FACILITATE INSTALLATION OF NEW WORK, ETC., PATCH EXISTING FINISH SURFACES TO MATCH NEW FINISH SURFACES INDICATED PROVIDING A SEAMLESS TRANSITION ALONG THE JUNCTURE OF EACH SURFACE.
- PREP, PATCH, AND TOUCH-UP PAINT AT ALL EXISTING WALL, G/L, & HD TRIM SURFACES AT LOCATIONS OF REMOVED EXIST CONSTRUCTION. PROVIDE SEAMLESS TRANSITION W/ADJACENT CONSTRUCTION AND CONTINUITY OF THERMAL AND MOISTURE ASSEMBLIES. PAINT ENTIRETY OF SURFACES AFFECTED BY DEMOLITION TO NEAREST PERPENDICULAR SURFACE.
- FINISHES AND MATERIAL INSTALLATION
- PROTECT EXISTING FLOORING, WINDOW SILLS, DOOR FRAMES, ETC., DESIGNATED TO REMAIN WITH MASONRY AND OTHER SUITABLE MEANS DURING DEMOLITION AND CONSTRUCTION PROCEDURES. ALSO PROTECT EXISTING FLOORING, SILLS, WINDOWS, DOORS, ETC., WITH SUITABLE MEANS DURING CONTIGUOUS CONSTRUCTION OPERATIONS THAT MAY DAMAGE OR COMPROMISE MATERIAL FINISHES OR THE STRUCTURAL INTEGRITY OF NEWLY INSTALLED CONDITION.
- FURNITURE NOT DESIGNED AS BUILT-IN INSTALLATIONS AND MOVABLE EQUIPMENT SHOWN ON THESE DRAWINGS ARE N.G. UNLESS NOTED OTHERWISE, AND ARE INDICATED FOR GENERAL INFORMATION PURPOSES.
- PROVIDE INSTALLATIONS IN ACCORDANCE WITH MANUFACTURERS SPECIFICATIONS. OBTAIN TECHNICAL INFORMATION REQUIRED FOR INSTALLATIONS FROM MANUFACTURERS PRIOR TO ORDERING FABRICATION, OR INSTALLATION OF ANY MATERIALS. COORDINATE TEMPLATE INFORMATION WITH ALL PERTINENT TRADES.
- PROVIDE UNSPECIFIED PARTS REQUIRED FOR PROPER SYSTEM OPERATION OF BUILDING SYSTEMS ENUMERATED IN THIS CONTRACT.
- SOLID WOOD BLOCKING SHALL BE PROVIDED IN ALL AREAS WHERE SOLID ANCHORAGE IS REQUIRED; PROVIDE ROUGH CARPENTRY AND MISCELLANEOUS BLOCKING AS REQUIRED; CORRELATING LOCATIONS OF FURNISHING WALLS, BLOCKING, ETC., TO COMPLY WITH DESIGN REQUIREMENTS. USE APPROVED FIRE RETARDANT TREATED WOOD WHEN REQUIRED BY CODE.
- AT POTENTIALLY DAMP CONDITIONS SUCH AS FOUNDATIONS, ROOF EAVES, ROOF PENETRATIONS AREAS, ETC., PRESSURE TREAT ABOVEGROUND ITEMS WITH WATERBORNE PRESERVATIVES TO A MINIMUM RETENTION OF 0.25 LB/CU FT, (4.0 KG/CU M), AFTER TREATMENT, CUMULATIVE LUMBER AND PLYWOOD TO A MAXIMUM MOISTURE CONTENT OF 19 AND IS PERCENT, RESPECTIVELY. TREAT INDICATED ITEMS AND THE FOLLOWING: WOOD GRAFTS, WALLS, GABLES, EQUIPMENT SUPPORT BASES, BLOCKING, STRIPPING, AND SIMILAR MEMBERS IN CONNECTION WITH ROOFING, FLASHING, VAPOR BARRIERS, AND WATERPROOFING.
- ALL EXTERIOR FASTENERS AND SUPPORTS TO BE 304 STAINLESS STEEL, UNLESS NOTED OTHERWISE).
- ALL EXTERIOR WINDOWS, FLASHING, CORNER FLASHING AND WALL PENETRATIONS TO BE CALKED AND SEALED, COMPLY WITH SPECIFICATIONS, PROVIDE SEMI-TIGHT, AND USE COLORS APPROVED BY THE ARCHITECT.
- PROVIDE 5/8" TYPE "X" GYPSUM HALDBOARD (GWB) AS MANUFACTURED BY U.S. GYPSUM NATIONAL GYPSUM, OR APPROVED EQUAL, INSTALLED WITH TYPE "X" DRYHALL STRIPS DRIVEN WITH AN ELECTRIC SCREW GUN, INSTALL WITH COMPATIBLE CONSTRUCTION GRADE ADHESIVE APPLIED TO STUDS AND FURRING STRIPS PRIOR TO INSTALLATION. APPLY THREE COATS OF PRIMERED GUN COMPOUND AND SAND SMOOTH. TAPE OR PROVIDE METAL GWE TRIM ACCESSORIES TO EDGES AS CONDITIONS DICTATE. FINISH ALL CONDITIONS TIE AND SMOOTH. REFER TO DRAWING DETAILS AND SPEC.
- PATCH PLASTER INSTALLATION: COMPLY WITH MANUFACTURER'S INSTRUCTIONS UNLESS OTHERWISE INDICATED. PROVIDE 3 COAT WORK. FINISH GYPSUM PLASTER WITH SMOOTH TRIMFEL FINISH. SAND LIGHTLY TO REMOVE TRIMFEL MARKS AND ABRAS. GUT, PATCH, POINT UP AND REPAIR PLASTER TO ACCOMMODATE OTHER CONSTRUCTION AND TO RESTORE CRACKS, JOINTS AND IMPERFECTIONS. MATCH EXISTING SURFACE TEXTURE. SO PATCH AND TRANSITION AREAS ARE NOT VISIBLE AFTER WALL OR CEILING FINISH IS APPLIED. COORDINATE DRYING TIME WITH FINISHING OPERATIONS.
- WHERE WOOD SILLS ARE IN CONTACT WITH CONCRETE OR MASONRY, PROVIDE SILL-SEALER GASKETS GLASS-FIBER-RESILIENT INSULATION FABRICATED IN STRIP FORM FOR USE AS A SILL SEALER. (MGA 25-MIN NOMINAL THICKNESS, COMPRESSIBLE TO 1/32 INCH (0.8 MM), SELECTED FROM MANUFACTURER'S STANDARD WIDTHS TO SUIT WIDTH OF SILL MEMBERS INDICATED.
- G.C.* TO COORDINATE AND VERIFY THAT ALL PLUMBING LINES RECEIVE ADEQUATE INSULATION AND PROTECTION FROM EXTERIOR CONDITIONS AND TEMPERATURES AT EXTERIOR WALLS, SOFFITS, ATTIC SPACE, AND ANY CAVITIES CREATED WITHIN CONSTRUCTION ASSEMBLIES THAT OCCUR ADJACENT TO EXTERIOR EXPOSURE AND UNCONTROLLED TEMPERATURE CONDITIONS.
- CLEANUP AND SAFETY BARRIERS
- KEEP CONSTRUCTION DEBRIS IN DESIGNATED CONTAINERS AND REMOVE FROM THE SITE AT REGULAR INTERVALS TO AVOID UNSIGHTLY OR HAZARDOUS SAFETY CONDITIONS.
- COMPLY WITH THE FEDERAL OCCUPATIONAL SAFETY AND HEALTH ACT OF 1970 (OSHA) AND UPDATES, INCLUDING SPECIFIC RESPONSIBILITIES TO PERFORM

REPORTING AND RECORDING REQUIREMENTS. OBTAIN BACK-CHARGE THE CONTRACTOR FOR COSTS INCURRED, AND TO MAKE CLAIM AGAINST THE CONTRACTOR AS TO CHARACTER, QUALITY AND QUANTITY OF WORK AND MATERIALS FURNISHED. REFER TO PROJECT MANUAL, GENERAL CONDITIONS, AND SUPPLEMENTARY CONDITIONS.

C. KEEP THE PROJECT SITE IN A NEAT, ORDERLY FASHION DURING CONSTRUCTION. REMOVE DEBRIS, MATERIALS, EQUIPMENT, ETC., FROM THE SITE UPON COMPLETION OF THE WORK. WORK UNDER THIS CONTRACT SHALL BE VACUUM CLEANED WITH PLUMBING FIXTURES, FINISH HARDWARE, MIRRORS, LIGHT FIXTURES, AND WINDOW GLASS CLEANED AND POLISHED.

COORDINATION OF WORK

- GENERAL CONTRACTOR IS RESPONSIBLE FOR COORDINATING THEIR TRADES AND PRIME CONTRACTORS REQUIRED FOR THE COMPLETION OF WORK INDICATED IN CONTRACT DOCUMENTS AND FOR COORDINATION WITH OTHER CONTRACTOR(S) ENGAGED BY OWNER FOR WORK CONTIGUOUS TO THIS CONTRACT. COORDINATION INCLUDES OWNER'S SUBCONTRACTORS FOR WORK SUCH AS FURNITURE AND/OR EQUIPMENT INSTALLATION, ETC., AS WELL AS HAZARDOUS MATERIAL ABATEMENT.
- WATERTIGHT BUILDING
- THE GENERAL CONTRACTOR IS RESPONSIBLE FOR A WATERTIGHT BUILDING CONDITION IN AREAS WHERE WORK UNDER THIS CONTRACT IS UNDERTAKEN.
- PERMITS, FEES AND INSPECTIONS
- PROVIDE AND PAY FOR PERMITS, FEES AND INSPECTIONS. PROVIDE CERTIFICATES OF INSPECTION GENERALLY ISSUED BY GOVERNMENTAL AGENCIES OR UTILITIES CONCERNING PROJECTS OF THIS TYPE TO THE ARCHITECT PRIOR TO THE ISSUANCE OF THE CERTIFICATE OF SUBSTANTIAL COMPLETION.
- REQUIRED CODE INSPECTIONS OF THE BUILDING AND SITE ARE TO BE COORDINATED BY THE *G.C.* THE *G.C.* IS TO FACILITATE PRELIMINARY INSPECTIONS NO LESS THAN TWO WEEKS BEFORE THE FINAL INSPECTION DATES AND ADVISE THE ARCHITECT AND OWNER OF THE SCHEDULED TIMES AND DATES OF THE INSPECTIONS.
- TEMPORARY FACILITIES
- PROVIDE AND PAY FOR TEMPORARY FACILITIES NEEDED TO COMPLETE THE WORK. THESE TEMPORARY FACILITIES INCLUDE, BUT ARE NOT LIMITED TO: FIRST AID, FIRE PROTECTION SECURITY, CONSTRUCTION LIFT EQUIPMENT, STORAGE, MOISTURE CONTROL, SCAFFOLDING, TRASH AND DEBRIS REMOVAL, LIGHTS, TELEPHONE, TOILETS AND HEAT AND VENTILATION IF REQUIRED.
- PROVIDE TEMPORARY PARTITIONS AND SECURE LOCKABLE DOORS AS REQUIRED BY OWNER BETWEEN NEW WORK AND ANY EXISTING CONDITIONS TO BE TEMPORARILY OCCUPIED. EXISTING WORK SO THAT CONSTRUCTION DIRT AND DUST IS NOT TRANSMITTABLE TO ADJACENT SPACES OUTSIDE THE DEFINED SCOPE OF WORK.
- GUARANTEE OF WORK AND MATERIAL
- GARANTEE ALL WORK AND MATERIALS FOR A MINIMUM PERIOD OF ONE YEAR FOLLOWING FINAL ACCEPTANCE OF THE BUILDING BY THE OWNER. CARRY OUT NECESSARY REPAIRS, PATCHING, ADJUSTMENTS, REVISIONS, ETC., REQUIRED DURING GUARANTEE PERIOD AT NO ADDITIONAL COST TO THE OWNER. STOP WATER LEAKS, REPAIR SETTLEMENT AND SHRINKAGE CRACKS, REMEDY DEFECTS OR DEFICIENCIES CAUSED BY UNSATISFACTORY WORKMANSHIP OR THE USE OF INTERIOR MATERIAL OR EQUIPMENT WHICH DOES NOT MEET REQUIREMENTS NOTED AND/OR SPECIFIED. CORRECT DAMAGE CAUSED BY WATER LEAKS DURING THE GUARANTEE PERIOD TO ORIGINAL CONDITION, AS DETERMINED BY THE ARCHITECT. CORRECT DEFECTS, DAMAGE, AND/OR INJURY BY THE OWNER. DO NOT DISTURB WORK GUARANTEED UNDER ANOTHER CONTRACT WITHOUT WRITTEN PERMISSION FROM THAT CONTRACTOR.
- G.C.* IS RESPONSIBLE TO COORDINATE MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES OF THE WORK TO AVOID INTERFERENCE BETWEEN RESPECTIVE INSTALLATIONS OF EACH TRADE. INSTALL CONSTRUCTION THAT REQUIRES DIMENSIONAL CLEARANCES BEFORE PROCEEDING WITH OTHER CONSTRUCTION THAT WOULD CONFINE OR RESTRICT SUCH CLEARANCES. PRIOR TO FINAL APPROVAL OF SUBMITTALS AND ORDERING MATERIALS, FIELD VERIFY DIMENSIONAL CLEARANCES OF EXISTING CONSTRUCTION, WHERE EXISTING CONSTRUCTION DOES NOT ACCOMMODATE INSTALLATION OF NEW ASSEMBLIES, EQUIPMENT, FIXTURES AND FURNISHINGS, PROVIDE CUTTING & PATCHING FOR TEMPORARY OPENINGS AT LOCATIONS APPROVED BY ARCHITECT. WORK INSTALLED IN AN UNCOORDINATED MANNER WITHOUT REGARD FOR SUBSEQUENT INSTALLATIONS SHALL BE REMOVED AND REPLACED AT THE CONTRACTOR'S EXPENSE.
- THE GUARANTEE PERIOD SHALL NOT TERMINATE UNTIL CORRECTIVE MAINTENANCE REQUIRED DURING THE PERIOD IS COMPLETED TO THE SATISFACTION OF THE OWNER AND ARCHITECT. IF CONTRACTOR FAILS TO PROCEED OR COMPLY WITH THE TERMS OF THIS GUARANTEE, THE OWNER RESERVES THE RIGHT TO

HAVE THE REPAIRS CORRECTED BY OTHERS AND BACK-CHARGE THE CONTRACTOR FOR COSTS INCURRED, AND TO MAKE CLAIM AGAINST THE CONTRACTOR AS TO CHARACTER, QUALITY AND QUANTITY OF WORK AND MATERIALS FURNISHED. REFER TO PROJECT MANUAL, GENERAL CONDITIONS, AND SUPPLEMENTARY CONDITIONS.

DEMOLITION

- UNLESS OTHERWISE INDICATED, DEMOLITION WASTE BECOMES PROPERTY OF CONTRACTOR.
- HISTORIC ITEMS, RELICS, ANTIQUES, AND SIMILAR OBJECTS INCLUDING, BUT NOT LIMITED TO, CORNERSTONES AND THEIR CONTENTS, COMMEMORATIVE PLATES AND TABLETS, AND OTHER ITEMS OF INTEREST OR VALUE TO OWNER THAT MAY BE UNCOVERED DURING DEMOLITION. RETAIN THE PROPERTY OF OWNER CAREFULLY SALVAGE IN A MANNER TO PREVENT DAMAGE AND PROMPTLY RETURN TO OWNER.
- REGULATORY REQUIREMENTS: COMPLY WITH GOVERNING EPA NOTIFICATION REGULATIONS BEFORE BEGINNING DEMOLITION. COMPLY WITH HAULING AND DISPOSAL REGULATIONS OF AUTHORITIES HAVING JURISDICTION.
- STANDARDS: COMPLY WITH ANSI/ASSE A106 AND NFPA 241.
- HAZARDOUS MATERIALS: IF MATERIALS SUSPECTED OF CONTAINING HAZARDOUS MATERIALS, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY ARCHITECT AND OWNER. HAZARDOUS MATERIALS WILL BE REMOVED BY OWNER UNDER A SEPARATE CONTRACT.
- LIGHTING FIXTURES: SEPARATE LAMPS BY TYPE AND PROTECT FROM BREAKAGE AND DISPOSE OF IN A LAWFUL MANNER. VERIFY AND ASSURE PROPER DISPOSAL OF LIGHT FIXTURE BALLASTS CONTAINING PCBs.
- EXAMINATION: VERIFY THAT MATERIALS HAVE BEEN DISCONNECTED AND CAPPED BEFORE STARTING DEMOLITION OPERATIONS. PERFORM AN ENGINEERING SURVEY OF CONDITION OF BUILDING TO DETERMINE WHETHER REMOVING ANY PART OF THE BUILDING OR STRUCTURAL PORTION OR UNPLANNED COLLAPSE OF ANY PORTION OF STRUCTURE OR ADJACENT STRUCTURES DURING SELECTIVE DEMOLITION OR OPERATIONS. VERIFY THAT HAZARDOUS MATERIALS HAVE BEEN REMEDIATED BEFORE PROCEEDING WITH BUILDING DEMOLITION OPERATIONS.
- REFRIGERANT: REMOVE REFRIGERANT FROM MECHANICAL EQUIPMENT ACCORDING TO ADOPTED AND REGULATIONS OF AUTHORITIES HAVING JURISDICTION BEFORE STARTING DEMOLITION.
- EXISTING UTILITIES: LOCATE, IDENTIFY, DISCONNECT, AND SEAL OR CAP OFF UTILITIES SERVING BUILDINGS ADJACENT TO BE DEMOLISHED. OWNER WILL ARRANGE TO SHUT OFF INDICATED UTILITIES WHEN REQUESTED BY CONTRACTOR.
- TEMPORARY SHORING: PROVIDE AND MAINTAIN INTERIOR AND EXTERIOR SHORING, BRACING, OR STRUCTURAL SUPPORT TO PRESERVE STABILITY AND PREVENT UNEXPECTED MOVEMENT OR COLLAPSE OF CONSTRUCTION BEING DEMOLISHED.
- CLEAN SALVAGED ITEMS OF DIRT AND DEMOLITION DEBRIS.
- EXISTING UTILITIES: MAINTAIN UTILITY SERVICES TO REMAIN AND PROTECT FROM DAMAGE DURING DEMOLITION OPERATIONS. DO NOT INTERRUPT EXISTING UTILITIES SERVING ADJACENT OCCUPIED OR OPERATING FACILITIES UNLESS AUTHORIZED IN WRITING BY OWNER AND AUTHORITIES HAVING JURISDICTION.
- TEMPORARY PROTECTION: ERECT TEMPORARY PROTECTION SUCH AS WALLS, FENCES, RAILINGS, CANOPIES, AND COVERED PASSAGEWAYS, WHERE REQUIRED BY AUTHORITIES HAVING JURISDICTION. PROTECT WALLS, WINDOWS, DOORS, AND OTHER ADJACENT EXTERIOR CONSTRUCTION THAT ARE TO REMAIN AND THAT ARE EXPOSED TO BUILDING DEMOLITION OPERATIONS. ERECT AND MAINTAIN DUSTPROOF PARTITIONS AND TEMPORARY ENCLOSURES TO LIMIT DUST, NOISE, AND DIRT MIGRATION TO OCCUPIED PORTIONS OF ADJACENT BUILDINGS.
- GENERAL: DO NOT USE CUTTING TORCHES UNTIL WORK AREA IS CLEARED OF FLAMMABLE MATERIALS. MAINTAIN PORTABLE FIRE-SUPPRESSION DEVICES DURING FLAME-CUTTING OPERATIONS. MAINTAIN FIRE WATCH IN ACCORDANCE WITH LOCAL FIRE MARSHAL'S REQUIREMENTS. MAINTAIN ADEQUATE VENTILATION WHEN USING CUTTING TORCHES. LOCATE BUILDING DEMOLITION EQUIPMENT AND REMOVE DEBRIS AND MATERIALS SO AS NOT TO IMPOSE EXCESSIVE LOADS ON SUPPORTING WALLS, FLOORS, OR FRAMING.
- DISPOSAL OF MATERIALS: REMOVE DEMOLITION WASTE MATERIALS FROM PROJECT SITE AND LEGALLY DISPOSE OF THEM IN AN EPA-APPROVED LANDFILL ACCEPTABLE TO AUTHORITIES HAVING JURISDICTION.
- LEAD-BASED PAINT: CONTRACTOR(S) ARE ADVISED THAT THERE COULD BE LEAD AND LEAD-CONTAINING SURFACE COATINGS PRESENT THROUGHOUT THE EXISTING SITE. WORK PERFORMED UNDER THIS CONTRACT AS DESCRIBED ON THE DRAWINGS MAY CAUSE THE DISTURBANCE OF LEAD CONTAINING SURFACE COATINGS. THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) REGULATES WORKER LEAD EXPOSURE.

THE CONTRACTOR IS SOLELY RESPONSIBLE FOR THE HEALTH AND SAFETY OF ITS WORKERS DURING THE EXECUTION OF THIS CONTRACT. WORK SHALL BE CONDUCTED UNDER THE ASSUMPTION THAT ALL SURFACE

COATINGS MAY CONTAIN SOME AMOUNT OF LEAD AND, IN ACCORDANCE WITH ALL APPLICABLE LOCAL, STATE AND FEDERAL REGULATIONS, INCLUDING, BUT NOT LIMITED TO, 24 CFR 102.62 LEAD EXPOSURE IN CONSTRUCTION, EPCRA AND HCSHA RESPIRATORY PROTECTION AND U.S. EPA AND PA DEP REGULATIONS APPLICABLE TO THIS WORK EFFORT, THESE REGULATIONS AND SUBSEQUENT METHODS OF COMPLIANCE SHALL BE BINDING UPON THE CONTRACTOR AND CONSIDERED PART OF THIS CONTRACT.

THE CONTRACTOR SHALL HANDLE, CONTAIN, STORE, TEST, TRANSPORT, AND DISPOSAL OF DEMOLITION DEBRIS WITH LEAD-CONTAINING SURFACE COATING IN ACCORDANCE WITH APPLICABLE LOCAL, STATE AND FEDERAL REGULATIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COLLECTING AND HAVING ANALYZED REPRESENTATIVE SAMPLES OF THE WASTE. SAMPLES SHALL BE TESTED FOR TOXICITY USING THE TOXICITY CHARACTERISTICS LEACHING PROCEDURE (TCLP) FOR LEAD SUFFICIENT TO DETERMINE WHETHER THE DEBRIS IS A HAZARDOUS WASTE AS DEFINED IN 40 CFR 261.5, OR A RESIDUAL WASTE AS DEFINED IN 29 PA CODE 3811, AND SHALL INCLUDE SUCH ANALYSIS AS REQUIRED BY THE DISPOSAL FACILITY. TESTS SHALL BE CONDUCTED BY A QUALIFIED ENVIRONMENTAL LABORATORY AND COPIES OF ALL TESTING FORWARDED TO THE OWNER AND THE ENVIRONMENTAL ENGINEER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COSTS OF SAMPLE COLLECTION AND LABORATORY ANALYSIS.

IF THERE IS ANY HAZARDOUS WASTE TRANSFERRED TO A HAZARDOUS WASTE DISPOSAL FACILITY, THE CONTRACTOR SHALL PROVIDE WRITTEN FORTY-FIVE (45) DAYS FROM THE TIME THE MATERIAL IS TRANSFERRED TO THE DISPOSAL FACILITY, A WASTE MANIFEST TO THE OWNER AND THE OWNER'S CONSULTING ENVIRONMENTAL ENGINEER THAT IDENTIFIES THE DATE, DISPOSAL FACILITY, THE NAME AND ADDRESS, EPA IDENTIFICATION NUMBER, THE IDENTITY OF THE OPERATOR, MATERIAL, AND A STATEMENT CERTIFYING THAT THE WASTE WAS DISPOSED AT THAT FACILITY.

END OF GENERAL NOTES

DOCUMENT FOR CONSTRUCTION

PROFESSIONAL SEAL

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GENERAL NOTES; 2018 IEBC
EVALUATION; KEY PLANS

PROJ. NO.: M1-1226

DATE: 03.12.2025

SCALE: AS NOTED

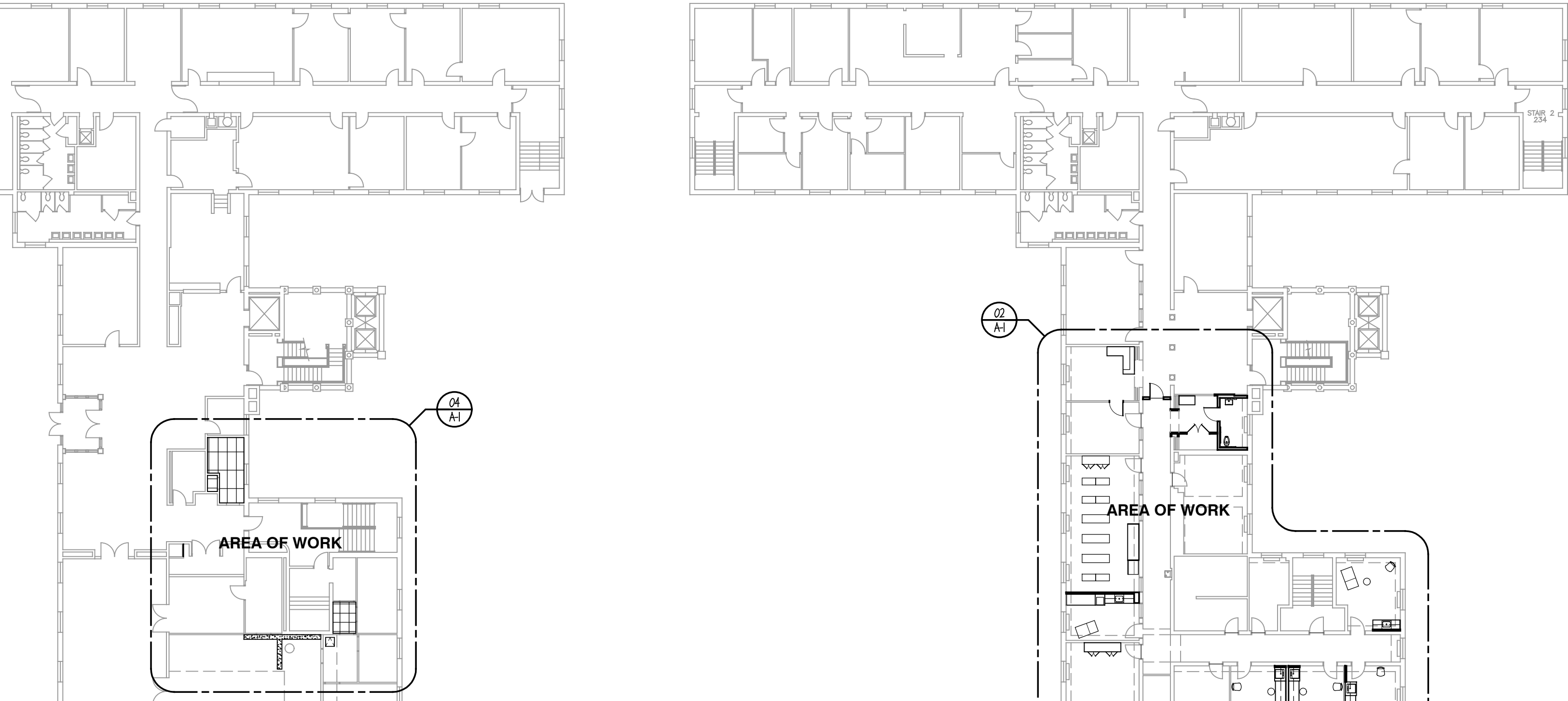
CS-2



KEY PLAN - 1ST FLOOR
SCALE: N.T.S.

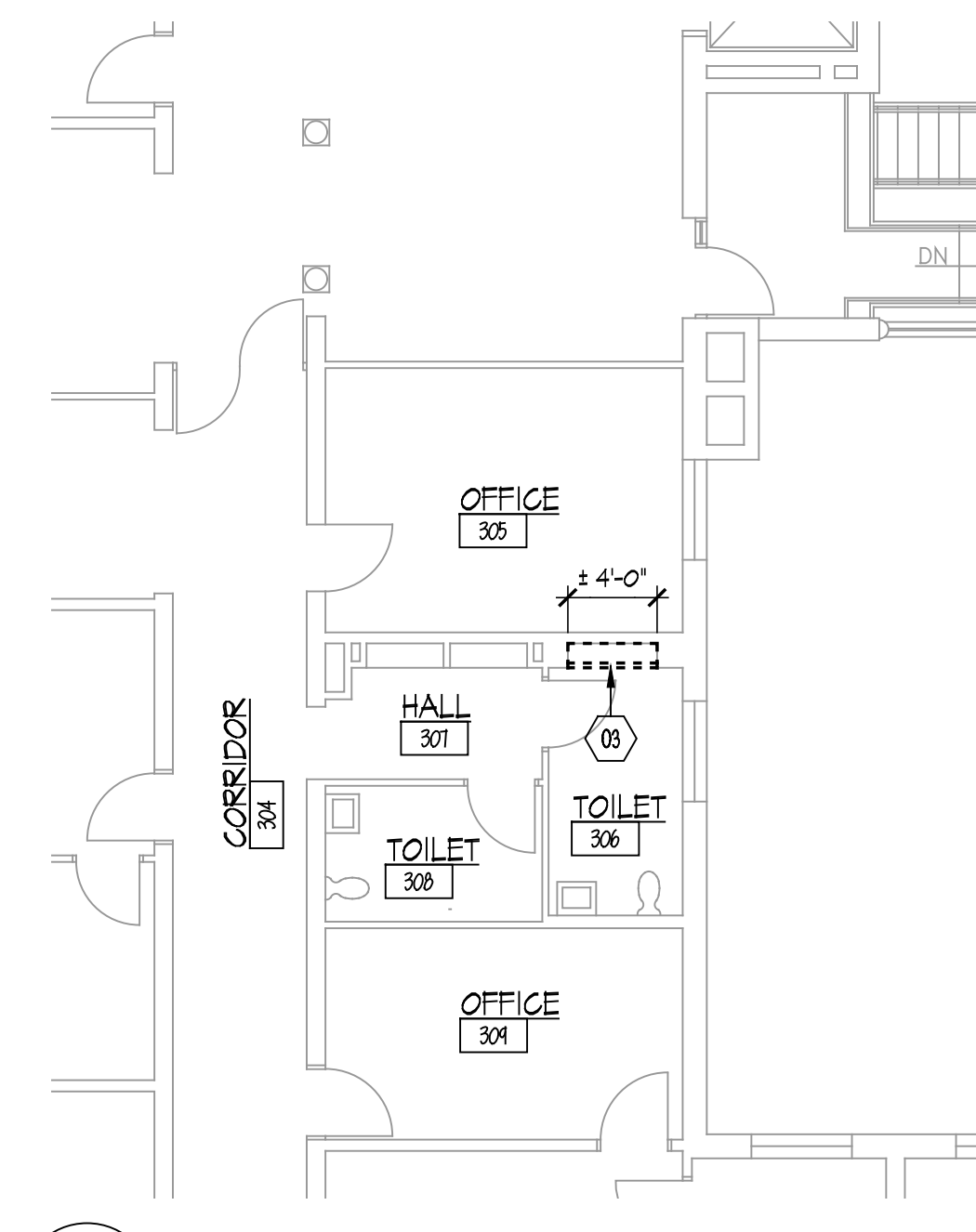


KEY PLAN - 2ND FLOOR
SCALE: N.T.S.

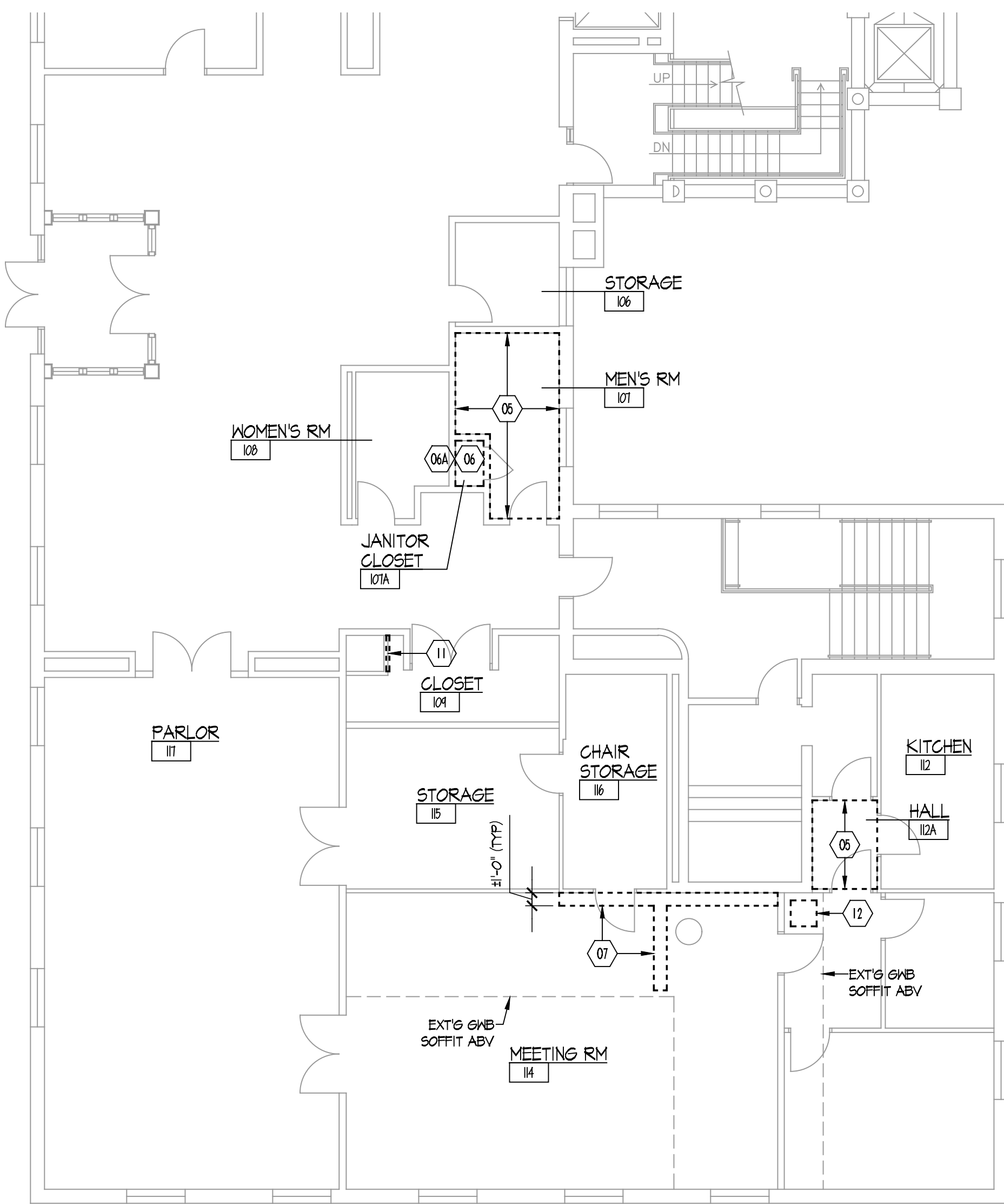


DEMOLITION NOTES APPLY TO SIMILAR CONDITIONS EXCEPT HERE NOTED

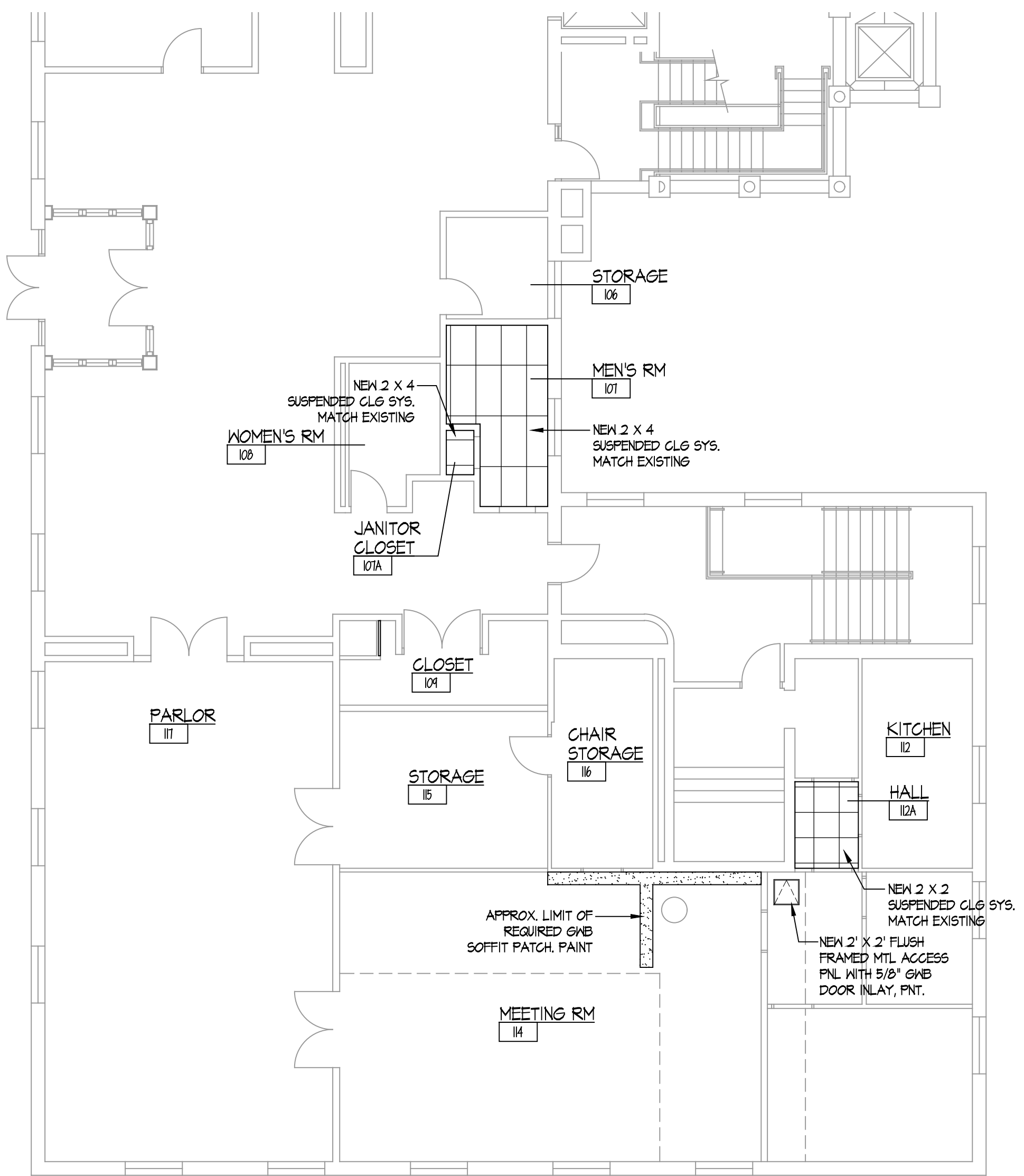
- 01 CAREFULLY REMOVE AND DISCARD EXISTING METAL DOOR FRAME AND PREPARE OPENING FOR NEW GNB PARTITION ASSEMBLY, DOOR FRAME AND DOOR. PREPARE AND PATCH ADJOINING WALL, JUNCTURES AS NEEDED FOR RECEIPT OF MATCHING PANEL FINISH AND WALL BASE INSTALLATION.
- 02 CAREFULLY CUT AND REMOVE EXISTING PARTITION ASSEMBLY AS NEEDED FOR RECEPTION OF NEW HOLLOW METAL DOOR FRAME AND DOOR. PREPARE AND PATCH ADJOINING WALL SURFACES FOR RECEIPT OF MATCHING PANEL FINISH. PROVIDE A SEAMLESS TRANSITION, PATCH FLOOR AT AFFECTED AREA WITH SALVAGED CARPET.
- 03 CAREFULLY REMOVE AND DISCARD EXISTING HOLLOW METAL WINDOW FRAME ASSEMBLY AND INFLIT OPENING WITH METAL STUDS AND 5/8" TYPE 'X' GNB. PROVIDE A SEAMLESS TRANSITION, PATCH FLOOR AT AFFECTED AREA. SURFACES AS NEEDED FOR RECEIPT OF MATCHING PANEL FINISH AT LOBBY SIDE OF PARTITION.
- 04 CAREFULLY REMOVE EXISTING GARDEN AND WALL BASE AS INDICATED. PREP CONCRETE FLOOR AS NEEDED FOR INSTALLATION OF NEW RESILIENT FLOOR FINISH. PREP ADJOINING WALL SURFACE FOR INSTALLATION OF NEW WALL BASE. PROVIDE PANEL FINISH TOUCH-UP ALONG WALL JUNCTURES WHEN REQUIRED. PROVIDE SEAMLESS TRANSITION BETWEEN NEW AND EXISTING PANEL APPLICATION.
- 05 REMOVE AND DISCARD EXISTING SUSPENDED ACCT CELLING. COORDINATE REMOVE EXISTING HANGING LIGHT FIXTURES AND LIGHTING HOUSED APPLIANCES WITH MEP DRAWINGS AND NOTES. PREP EXISTING WALL SURFACES AS NEEDED FOR THE INSTALLATION OF A NEW SUSPENDED ACCT CELLING. MATCH EXISTING.
- 06 CUT, REMOVE, AND DISCARD EXISTING PLASTER GIRDING ASSEMBLY. COORDINATE REMOVAL OF EXISTING LIGHT FIXTURES AND OTHER HOLLOW METAL PARTS OF NEW DOMESTIC WATER PIPING. REBUILD OFF SOFFIT WITH 5/8" GNB AND LIGHT GAGE METAL FRAMING. IF REQUIRED, PREP ADJOINING GNB SURFACES AS NEEDED FOR THE INSTALLATION OF A NEW 2'X4 SUSPENDED ACCT CELLING.
- 06A PLUMBING CONTRACTOR TO REMOVE EXISTING SINK, WATER AND SANITARY LINES. SEE MEP DRAWINGS. GENERAL CONTRACTOR SHALL PLUG/FILL HOLES AND PATCH ADJOINING WALL SURFACE BASED BY REMOVAL OF SINK AND RELATED PLUMBING PIPES.
- 07 CAREFULLY REMOVE AND DISCARD EXISTING GNB SURFACE FINISH AT BOTTOM OF EXISTING GIRDING SOFFIT TO FACILITATE THE INSTALLATION OF NEW SANITARY PIPING. COORDINATE REMOVAL OF EXISTING LIGHT FIXTURES AND LIGHTING HOUSED APPLIANCES THAT MAY BE IN THE AREA OF WORK WITH MEP DRAWINGS AND NOTES. REBUILD OFF SOFFIT WITH 5/8" GNB. PREP ADJOINING GNB SURFACES AS NEEDED FOR RECEIPT OF MATCHING PANEL FINISH. PROVIDE A SEAMLESS TRANSITION.
- 08 CAREFULLY CUT, REMOVE, AND DISCARD EXISTING GNB SURFACE FINISH ALONG VERTICAL GAGE OF EXISTING GIRDING SOFFIT TO FACILITATE THE INSTALLATION OF NEW DOMESTIC WATER PIPING. REBUILD OFF SOFFIT WITH 5/8" GNB AND LIGHT GAGE METAL FRAMING. IF REQUIRED, PREP ADJOINING GNB SURFACES AS NEEDED FOR RECEIPT OF MATCHING PANEL FINISH. PROVIDE A SEAMLESS TRANSITION.
- 09 CAREFULLY CUT, REMOVE, AND DISCARD EXISTING GNB SURFACE FINISH OF EXISTING GIRDING SOFFIT TO FACILITATE INSTALLATION OF NEW DOMESTIC WATER PIPING. REBUILD OFF SOFFIT WITH 5/8" GNB AND LIGHT GAGE METAL FRAMING. IF REQUIRED, PREP ADJOINING GNB SURFACES AS NEEDED FOR RECEIPT OF MATCHING PANEL FINISH. PROVIDE A SEAMLESS TRANSITION.
- 10 CAREFULLY REMOVE AND DISCARD EXISTING ACCT SOFFIT PANELS AND EDGE ANGLE (TYPICAL, EACH SIDE) FOR NEW ACCT SOFFIT PANEL. INSTALLATION AT NEW SCISSOR HEIGHT. SEE DRAWING 05A/2.
- 11 CAREFULLY CUT, REMOVE AND DISCARD EXISTING GNB SURFACE FINISH AT FACE OF EXISTING GIRDING SOFFIT TO FACILITATE INSTALLATION OF NEW OPEN CEILING WITH 5/8" GNB AND LIGHT GAGE METAL FRAMING. IF REQUIRED, PREP ADJOINING GNB SURFACES AS NEEDED FOR RECEIPT OF MATCHING PANEL FINISH. PROVIDE A SEAMLESS TRANSITION.
- 12 CAREFULLY CUT AND REMOVE EXISTING GNB SOFFIT ASSEMBLY AS NEEDED TO ACCOMMODATE THE INSTALLATION OF A 2' X 2' FLUSH FLOOR MOUNTED GARDEN WITH 5/8" GNB DOOR. LOCATE ALWAY, COORDINATE LOCATION OF PANEL WITH MEP CONTRACTOR.
- 13 CAREFULLY CUT, REMOVE AND DISCARD EXISTING GNB SOFFIT ASSEMBLY TO FACILITATE THE REPLACEMENT OF AN EXISTING EXHAUST FAN. SEE MEP DRAWINGS. REBUILD SOFFIT TO MATCH EXISTING. PREP ADJOINING GNB SURFACES AS NEEDED FOR RECEIPT OF MATCHING PANEL FINISH. PROVIDE A SEAMLESS TRANSITION.



 DEMO PLAN - PARTIAL 3RD FLOOR
SCALE: 1/8" = 1'-0"



 DEMOLITION PLAN - PARTIAL FIRST FLOOR
SCALE: 1/8" = 1'-0"

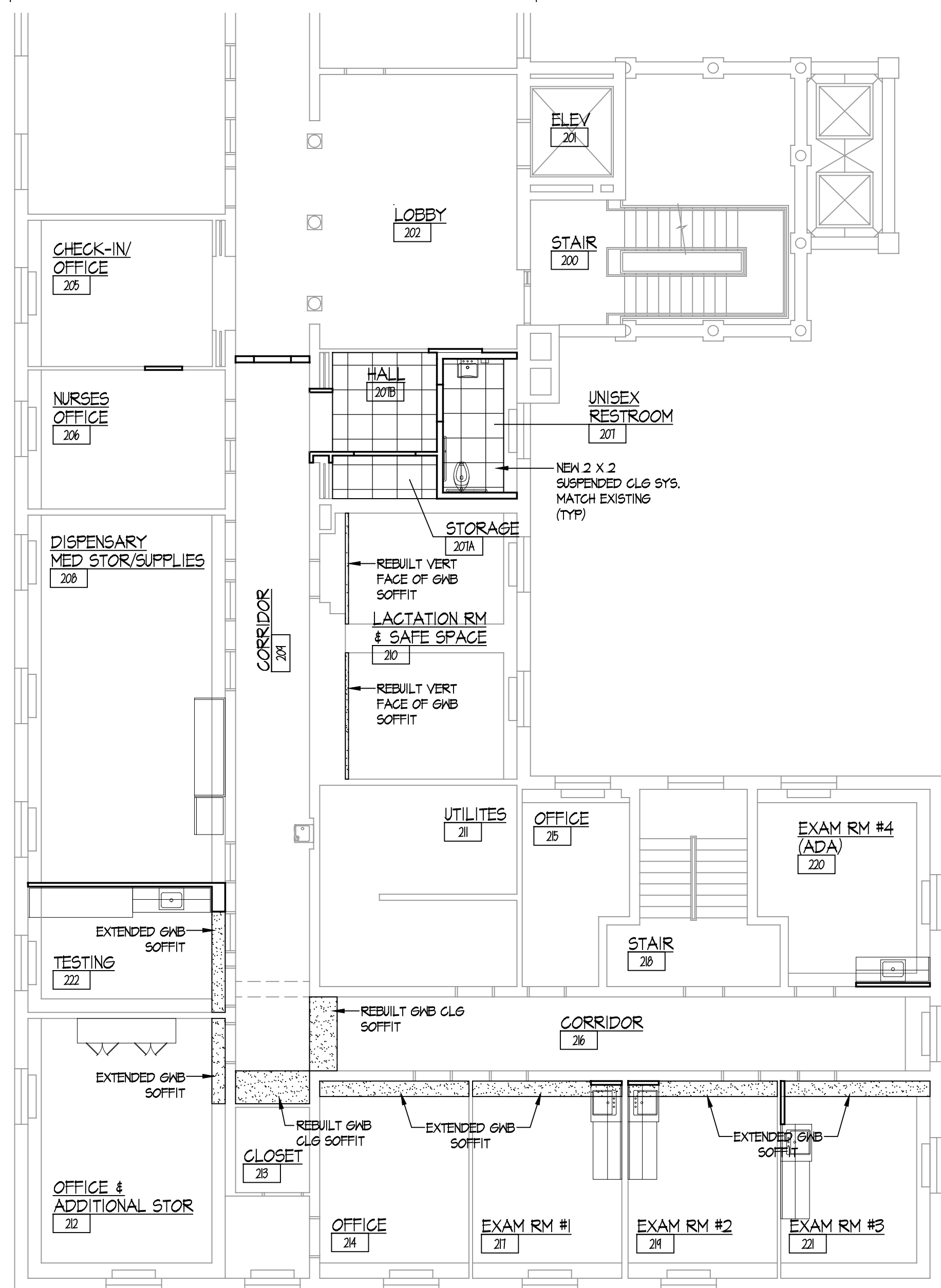


 **REFLECTED CLG. PLAN - PARTIAL FIRST FLOOR**
SCALE: 1/8" = 1'-0"

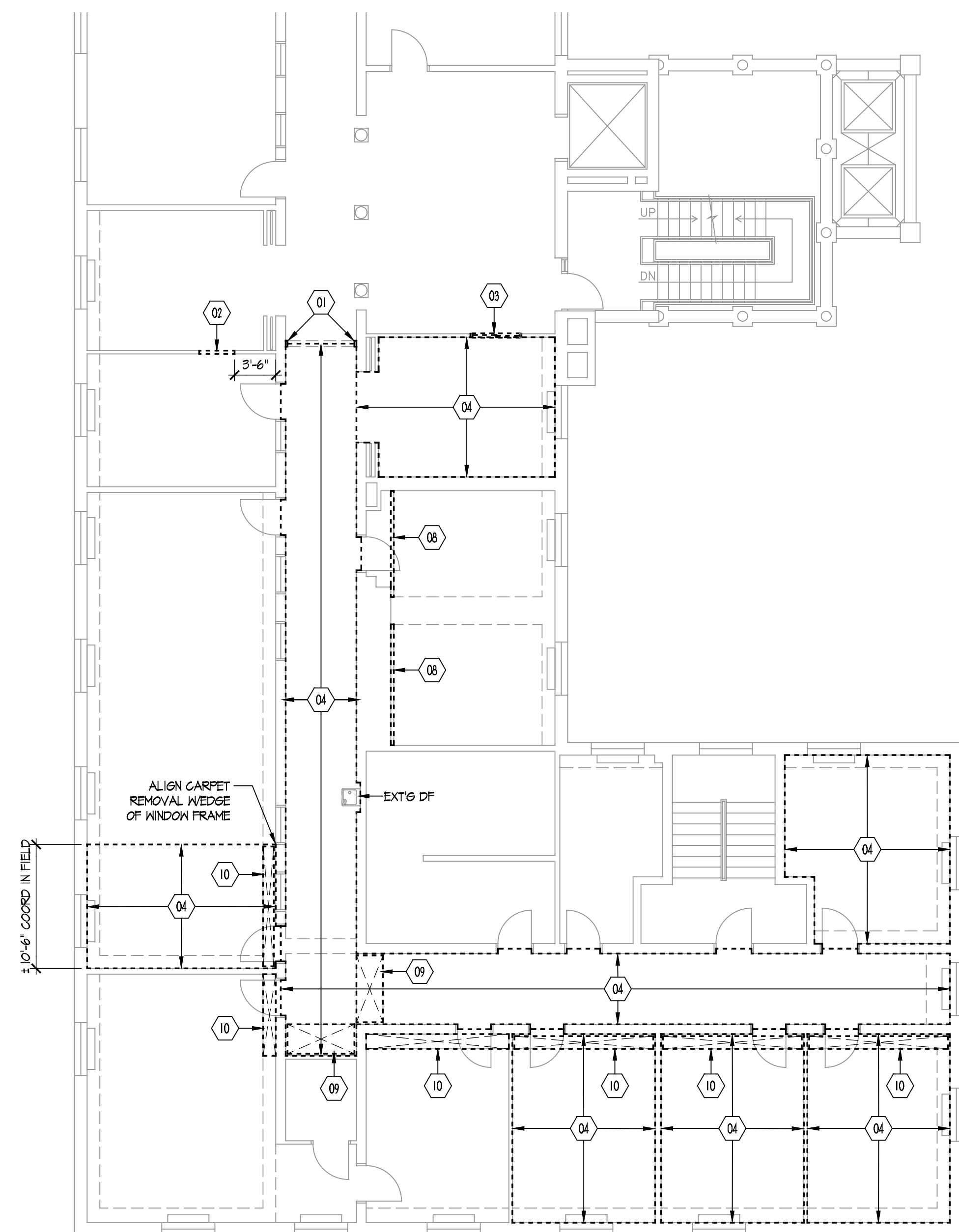
- | | |
|-------|--|
| ===== | EXISTING CONSTRUCTION ASSEMBLY, EQUIPMENT, OR OTHER PHYSICAL CONDITION SCHEDULED TO REMAIN |
| ----- | EXISTING CONSTRUCTION ASSEMBLY, EQUIPMENT, OR OTHER PHYSICAL CONDITION SCHEDULED FOR REMOVAL OR SALVAGE. SEE DEMOLITION NOTES. |
| ■ | ITEM(S) SCHEDULED FOR DEMOLITION OR SALVAGE. SEE DEMOLITION NOTES. |
| ===== | NEW METAL STUD PARTITION, MISCELLANEOUS FRAMING, OR CONSTRUCTION ASSEMBLY |
| | HATCH PATTERN DENOTES EXTENT OF NEW LVL FLOOR FINISH. COORDINATE WITH ROOM FINIS SCHEDULE |

1. GENERAL CONTRACTOR SHALL PROTECT AND MAINTAIN THE INTEGRITY OF ALL MECHANICAL, ELECTRICAL, PLUMBING SYSTEMS, AND RELATED COMPONENTS, THAT SERVICE BUILDING AREAS THAT ARE NOT PART OF THIS PROJECT.
2. GENERAL CONTRACTOR IS RESPONSIBLE FOR PATCHING ADJACENT WALL, FLOOR, AND CEILING SURFACES, AFFECTED BY DEMOLITION OR CONSTRUCTION ACTIVITIES. PATCHING SHALL MATCH THE ADJACENT SURFACE FINISH AND PROVIDE A SEAMLESS TRANSITION BETWEEN THE NEW AND EXISTING SURFACE.
3. GENERAL CONTRACTOR SHALL ADEQUATELY PROTECT FROM DAMAGE EXISTING WALL, FLOOR, AND CEILING FINISHES, PLUMBING FIXTURES AND FITTINGS, TOILET PARTITIONS, METAL LOCKERS, BUILT-IN FURNISHINGS, AND FLOORING. PROTECT ALL EXISTING SURFACE FINISHES, MATERIALS, OR CONSTRUCTION ASSEMBLIES SCHEDULED FOR REMOVAL OR SALVAGE.

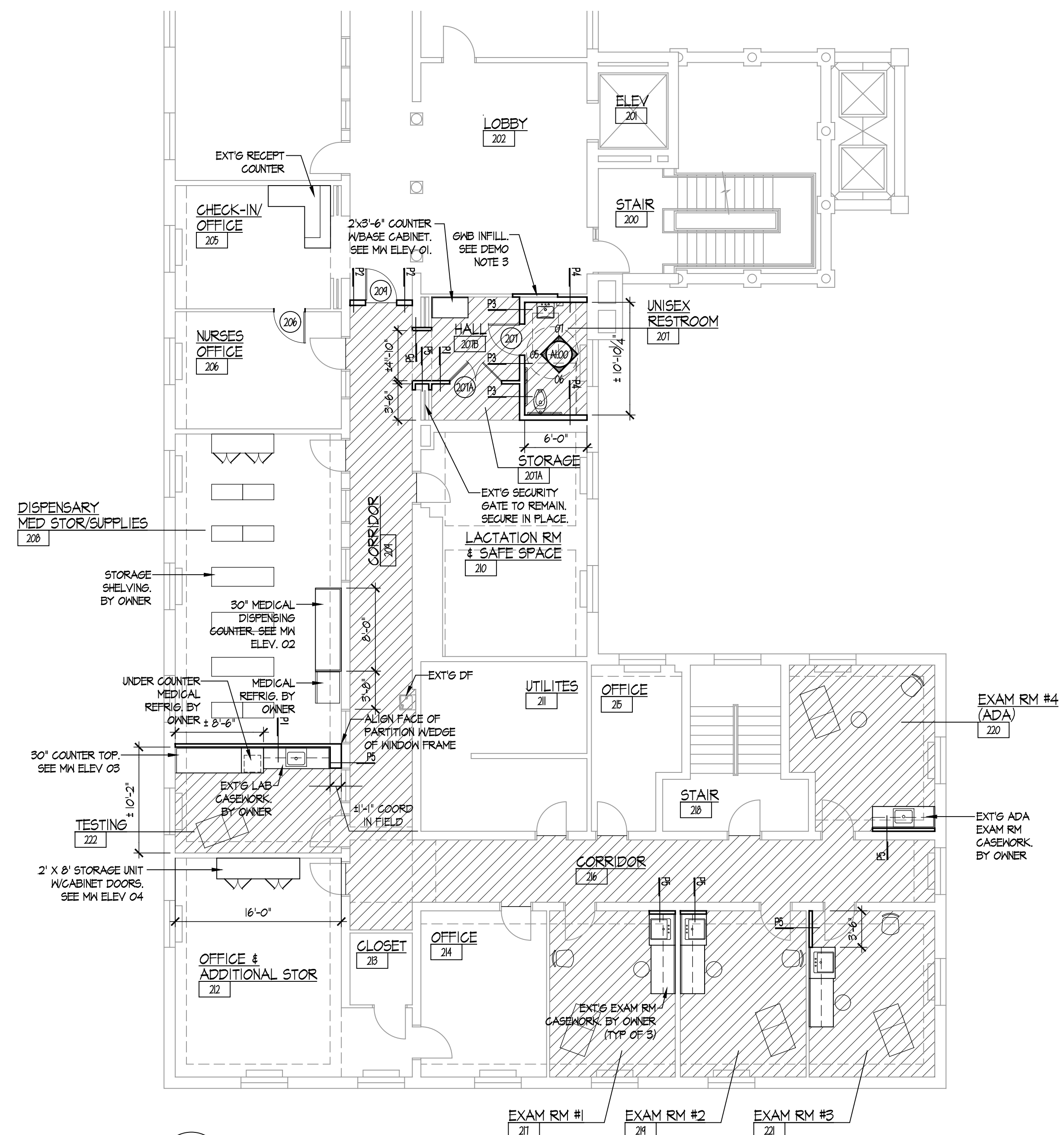
This image shows a single sheet of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page. There is no handwriting or other markings on the paper.





  **REFLECTED CLG. PLAN - PARTIAL SECOND FLOOR**
SCALE: 1/8" = 1'-0"



  **DEMOLITION PLAN - PARTIAL SECOND FLOOR**
SCALE: 1/8" = 1'-0"





PLAN - PARTIAL SECOND FLOOR
 SCALE: 1/8" = 1'-0"

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DEMO PLANS, FLOOR PLAN,
REFLECTED CLG PLANS

PROJ. NO.: MI-1226

DATE: 03.12.2025

SCALE: AS NOTED

A-1

GENERAL NOTES
(APPLY TO THE WORK PROVIDED UNDER DIVISION 20)

- THE CONTRACT DOCUMENTS ARE SCHEMATIC IN NATURE, INTENDING TO SHOW THE GENERAL ARRANGEMENT OF WORK PROVIDED UNDER THIS DIVISION. THEY DO NOT SHOW IN DETAIL OFFSETS, FITTINGS, TRANSITIONS, ETC. EXAMINE THE CONTRACT DOCUMENTS, INVESTIGATE SITE CONDITIONS TO BE ENCOUNTERED AND MODIFY WORK DEPICTED IN THE CONTRACT DOCUMENTS ACCORDINGLY, WITHOUT ANY ADDITIONAL COST TO THE OWNER. FOR PROJECTS INVOLVING EXISTING CONDITIONS, COORDINATE NEW WORK WITH EXISTING ELEMENTS SUCH AS THE BUILDING STRUCTURE AND ARCHITECTURAL FEATURES, SPRINKLER PIPING, LIGHTS, PLUMBING, AND ELECTRICAL CONDUIT.
- COORDINATE WORK PROVIDED UNDER THIS DIVISION WITH THAT OF OTHER TRADES. FIELD VERIFY AND COORDINATE DIMENSIONS PRIOR TO PROCUREMENT OR FABRICATION. CHECK SPACE LIMITATIONS AND VERIFY ELECTRICAL REQUIREMENTS PRIOR TO ORDERING ANY MECHANICAL EQUIPMENT OR MATERIALS. PLACE LARGE EQUIPMENT INSIDE OF THE BUILDING PRIOR TO THE ERECTION OF EXTERIOR WALLS WHERE EQUIPMENT CANNOT ENTER FINISHED BUILDING OPENINGS.
- MEASUREMENT OF DRAWINGS BY SCALE SHALL NOT BE USED AS DIMENSIONAL DATA FOR FABRICATION. MEASUREMENTS FOR LOCATIONS OF FIXTURES, EQUIPMENT, OR DUCTWORK, PIPING, ETC. SHALL BE MADE ON THE SITE AND SHALL BE BASED ON ACTUAL JOB CONDITIONS.
- AS PART OF THE SUBMITTAL REQUIREMENTS OUTLINED WITHIN THIS DIVISION, SUBMIT SHOP DRAWINGS WITH POWER CONNECTIONS PROVIDED UNDER DIVISION 26 TO THE ELECTRICAL CONTRACTOR TO COORDINATE THAT EQUIPMENT BEING FURNISHED UNDER THIS DIVISION COMPLIES WITH THE ELECTRICAL CHARACTERISTICS OF THE SOURCE POWER WHICH WILL BE FURNISHED UNDER DIVISION 26.
- PIPING, EQUIPMENT AND OTHER WORK PROVIDED UNDER DIVISION 20 SHALL NOT BE LOCATED WITHIN 42" OF THE FRONT OR 36" OF THE SIDE OF ANY ELECTRICAL SWITCHBOARDS, PANELBOARDS, MOTOR CONTROL CENTERS, ELECTRICAL TRANSFORMERS OR SIMILAR ELECTRICAL EQUIPMENT. PIPING AND DUCTWORK SHALL NOT PASS THROUGH OR ABOVE ELECTRICAL EQUIPMENT ROOMS EXCEPT AS REQUIRED TO SERVE THOSE ROOMS.
- OBTAIN NECESSARY PERMITS AND INSPECTIONS REQUIRED BY THE LOCAL AUTHORITY HAVING JURISDICTION FOR THE INSTALLATION OF WORK PROVIDED UNDER THIS DIVISION AND PAY ASSOCIATED COSTS. DELIVER TO THE ARCHITECT CERTIFICATES OF INSPECTION ISSUED BY THE LOCAL AUTHORITY HAVING JURISDICTION.
- SEWER TAP FEES, WATER TAP FEES, METER FEES, DEPARTMENT OF LABOR FEES AND OTHER COSTS FOR WORK PROVIDED UNDER THIS DIVISION, INCLUDING ALL CHARGES FOR METER INSTALLATION BY UTILITY COMPANIES, ARE TO BE PAID AS PART OF THE WORK PROVIDED UNDER DIVISION 20.
- WORK PROVIDED UNDER DIVISION 20 SHALL CONFORM TO THE EDITION OF THE FOLLOWING CODES ENFORCED BY THE AUTHORITIES HAVING JURISDICTION:
 - THE INTERNATIONAL BUILDING CODE
 - THE INTERNATIONAL MECHANICAL CODE
 - THE INTERNATIONAL PLUMBING CODE
 - THE INTERNATIONAL FIRE PROTECTION CODE
 - NFPA STANDARD 70, NATIONAL ELECTRIC CODE
 - ADDITIONAL CODES AND STANDARDS AS MENTIONED WITHIN THE CONTRACT DOCUMENTS
- OSHA, FEDERAL, STATE, AND LOCAL SAFETY REQUIREMENTS APPLICABLE TO THE PROJECT SHALL BE COMPLIED WITH. MANUFACTURER'S SAFETY INSTRUCTIONS SHALL BE FOLLOWED.
- WASTE GENERATED BY WORK PERFORMED SHALL BE DISPOSED OF LEGALLY PER THE REQUIREMENTS OF THE AUTHORITIES HAVING JURISDICTION.
- SCHEDULE INTERRUPTIONS OF EXISTING SERVICES FOR TIMES OTHER THAN NORMAL OPERATING HOURS (SUCH AS NIGHTS OR WEEKENDS), SUCH INTERRUPTIONS TO SERVICES SHALL NOT BE MADE WITHOUT PRIOR WRITTEN AUTHORIZATION OF THE OWNER'S REPRESENTATIVE AND COORDINATION WITH OTHER TRADES. PERFORM PRE-WORK AS NECESSARY TO MAKE THE INTERRUPTION PERIOD AS BRIEF AS POSSIBLE.
- THE EQUIPMENT LISTED WITHIN THE CONTRACT DOCUMENTS AS THE BASIS OF DESIGN HAS BEEN USED FOR PHYSICAL ARRANGEMENT OF THE MECHANICAL SYSTEMS, INCLUDING MANUFACTURER AND CODE REQUIRED SERVICE CLEARANCES. CONFIRM THESE REQUIREMENTS BEFORE BEGINNING WORK. WHEN EQUIPMENT LISTED AS ANOTHER ACCEPTABLE MANUFACTURER IN THE SPECIFICATIONS IS USED, PROVIDE STRUCTURAL, DUCTWORK, ELECTRICAL SERVICE CLEARANCES, OR OTHER CHANGES REQUIRED TO ACCOMMODATE THE SUBSTITUTED EQUIPMENT. CHANGES SHALL BE MADE AT NO ADDITIONAL COST TO THE OWNER. SUBMIT A LIST OF REQUIRED CHANGES AS PART OF THE ASSOCIATED SHOP DRAWING SUBMITTALS.
- PREPARE AND SUBMIT 1/4" SCALE DRAWINGS AS PART OF THE SHOP DRAWING SUBMITTAL PROCESS FOR PORTIONS OF THE PROJECT WHERE WORK PROVIDED UNDER THIS DIVISION REQUIRES DETAILED COORDINATION WITH WORK PROVIDED UNDER OTHER DIVISIONS. AT A MINIMUM, THIS SHALL APPLY TO MAJOR PIECES OF EQUIPMENT, MECHANICAL AND WATER SERVICE ROOMS. SHOP DRAWING SUBMITTAL SHALL INCLUDE PLANS, SECTIONS, AND ELEVATIONS AS NECESSARY TO CONVEY THAT THE WORK BEING PROVIDED UNDER THIS DIVISION HAS BEEN COORDINATED WITH WORK BEING PROVIDED UNDER OTHER DIVISIONS.
- REVIEW OF THE SUBMITTALS DOES NOT RELIEVE THE CONTRACTOR OF THE REQUIREMENTS OF THE CONTRACT DOCUMENTS. WHERE AND WHEN THE ENGINEER DOES NOT DOCUMENT DEVIATIONS OR OMISSIONS AS PART OF THE ENGINEER'S REVIEW OF THE CONTRACTOR'S SUBMITTALS DOES NOT CONSTITUTE A WAIVER OF ANY OF THE REQUIREMENTS OF THE CONTRACT DOCUMENTS.
- THE DESIGN INTENT IS FOR WORK PROVIDED UNDER THIS DIVISION IN FINISHED AREAS IS FOR THE SYSTEM COMPONENTS TO BE CONCEALED WITHIN OR BEHIND ARCHITECTURAL ELEMENTS, SUCH AS CEILINGS, BULKHEADS, CHASES, ETC. MAINTAIN THE CEILING HEIGHTS INDICATED ON THE ARCHITECTURAL DRAWINGS AND AS REQUIRED BY THE INTERNATIONAL BUILDING CODE. IF DISCREPANCIES EXIST, BRING TO THE ARCHITECTS ATTENTION PRIOR TO BEGINNING WORK.
- ACCESS PANELS IN DUCTWORK AND CEILINGS SHALL BE PROVIDED WHERE REQUIRED FOR OPERATION, BALANCING, OR MAINTENANCE OF THE SYSTEMS.
- NOTE TYPES USED -
 - "GENERAL NOTES" - APPLY TO WORK PROVIDED UNDER THE ASSOCIATED DIVISION INDICATED
 - "DRAWING NOTES" - ARE A LIST OF NOTES ON A SINGLE DRAWING WITHIN THE DRAWING SET WHICH APPLY TO THAT ENTIRE DRAWING
 - "SPECIFIC NOTES" - ARE INDIVIDUAL NOTES THAT ONLY APPLY WHERE THE CORRESPONDING "SPECIFIC NOTE" SYMBOL IS INDICATED.
- THE NORTH ARROW USED ON THE DRAWINGS REPRESENTS PLAN NORTH, NOT NECESSARILY TRUE NORTH.
- EXISTING EQUIPMENT DESIGNATED TO REMAIN IN SERVICE SHALL BE REFURBISHED AS DEFINED HEREIN:
 - INSPECT AND REPAIR UNIT CABINET
 - CLEAN COILS
 - REPLACE BELTS
 - LUBRICATE BEARINGS
 - CHANGE FILTERS
 - INSPECT AND CLEAN GAS FIRED HEAT EXCHANGERS
 - CLEAN & REPAIR CONDENSATE DRAIN AND SECONDARY DRAIN PAN AND ALARM
 - CHECK AND ADJUST REFRIGERATION CHARGE OF EACH CIRCUIT
 - LEAK TEST AND REPAIR REFRIGERATION LEAKS
 - A REFURBISHED UNIT SHALL BE BROUGHT INTO THE MANUFACTURER'S ORIGINAL OPERATING SPECIFICATIONS & TOLERANCES AND PROVIDED WITH A WARRANTY OF OPERABILITY FOR (60) DAYS AFTER THE SYSTEMS HAVE BEEN TURNED OVER TO THE OWNER
 - EXISTING SYSTEMS AND THE COMPONENTS OF SYSTEMS INDICATED TO REMAIN IN SERVICE SHALL BE MADE SERVICEABLE, SIMILAR TO NEW SYSTEMS AND SYSTEM COMPONENTS
 - EXISTING SYSTEMS AND THE COMPONENTS OF SYSTEMS INDICATED TO REMAIN IN SERVICE SHALL BE MADE SERVICEABLE AND OPERABLE, SIMILAR TO NEW SYSTEMS AND SYSTEM COMPONENTS
- SLEEVE AND SEAL PIPING PENETRATIONS THROUGH BUILDING PARTITIONS WITH A UL-APPROVED SEALANT THAT MEETS THE VOC REQUIREMENTS OF THE PROJECT.
- SEAL PENETRATIONS THROUGH FIRE-RATED PARTITIONS WITH A UL-APPROVED SEALANT THAT MAINTAINS THE ASSOCIATED FIRE-RATING OF THE ASSEMBLY BEING PENETRATED AND THAT MEETS THE VOC REQUIREMENTS OF THE PROJECT.
- ADHERE TO THE SITE SAFETY PLAN THAT IS IN EFFECT FOR THE PROJECT. AT A MINIMUM, ADHERE TO THE SAFETY REQUIREMENTS OUTLINED BY OSHA.
- SYSTEM COMPONENTS SHALL BE INSTALLED SUCH THAT UL CERTIFICATIONS ARE NOT COMPROMISED.
- SYSTEM COMPONENTS WHICH PENETRATE FIRE RATED ASSEMBLIES SHALL BE PROVIDED WITH SEALED OPENINGS IN ORDER TO MAINTAIN THE INTEGRITY OF THE FIRE RATED ASSEMBLY.

GENERAL NOTES
(APPLY TO THE WORK PROVIDED UNDER DIVISION 23)

- PROVIDE FULLY OPERATIONAL HVAC SYSTEMS WHEN THE BUILDING IS TURNED OVER TO THE OWNER, INCLUDING SYSTEMS WHICH HAVE BEEN:
 - FULLY TESTED UNDER FACTORY START UP CONDITIONS, AND BALANCED.
 - FULLY COMMISSIONED WITH REMEDIAL MEASURES HAVING BEEN ADDRESSED TO THE SATISFACTION OF THE PROJECT'S COMMISSIONING AUTHORITY
 - INSPECTED AND CERTIFIED BY THE AUTHORITIES HAVING JURISDICTION.
- DUCT CONSTRUCTION IS TO BE GALVANIZED SHEET METAL, UNLESS NOTED OTHERWISE, AND OF THE GAUGES, THICKNESS, BRACING REQUIREMENTS, ETC. IN ACCORDANCE WITH THE LATEST EDITION OF THE SMACNA HVAC DUCT CONSTRUCTION STANDARD. DUCT SIZES SHOWN ARE INSIDE CLEAR DIMENSIONS. PROVIDE STANDING SEAMS ON AIR DISTRIBUTION UNLESS SPACE CONSTRAINTS LEAD TO THE USE OF FLAT SEAMS. LOCATE STANDING SEAMS IN BETWEEN STRUCTURAL ELEMENTS WHERE FEASIBLE. WHEN NEEDED, FLAT SLIP SEAMS SHALL BE LIMITED TO DUCTWORK WITH DIMENSIONS LESS THAN 18".
- COORDINATE AIR DEVICE LOCATIONS WITH ARCHITECTURAL REFLECTED CEILING PLANS AND WORK PROVIDED UNDER OTHER DIVISIONS. VERIFY AIR DEVICE FINISH WITH ARCHITECT PRIOR TO ORDERING.
- IN ADDITION TO THE MANUAL VOLUME DAMPER LOCATIONS INDICATED ON THE DRAWINGS, PROVIDE MANUAL VOLUME DAMPERS AT EACH TAP TO SINGLE AIR DEVICES TO FACILITATE THE BALANCING OF INDIVIDUAL AIR DEVICES TO THE AIR QUANTITIES INDICATED ON THE DRAWINGS. DAMPERS INTEGRAL TO THE AIR DEVICES SHALL BE USED FOR FINAL FINE TUNING OF THE SYSTEM BALANCE. THE INITIAL AND MAJORITY OF THE ADJUSTMENTS NEEDED TO MODIFY AIRFLOW RATE FOR A SINGLE AIR DEVICE SHALL BE PROVIDED BY THE MANUAL VOLUME DAMPER IN THE BRANCH DUCT.
- FOR SYSTEMS SERVED BY WEIGHTED BAROMETRIC RELIEF DAMPERS (WBD), THE SYSTEM BALANCING SHALL INCLUDE THE BALANCING OF THE WEIGHTED DAMPER TO MAINTAIN SPACE PRESSURE RELATIONSHIPS IN ADDITION TO BALANCING AIRFLOW RATES.
- SEAL DUCTWORK IN ACCORDANCE WITH SMACNA SEALING "CLASS A" REQUIREMENTS. SEAL TRANSVERSE JOINTS AND LONGITUDINAL SEAMS WITH A UL-APPROVED MASTIC THAT MEETS THE VOC REQUIREMENTS OF THE PROJECT. PRESSURE SENSITIVE TAPE SHALL NOT BE USED AS THE PRIMARY FORM OF SEALANT. REMOVE EXCESS MASTIC FROM THE EXTERIOR OF THE DUCTWORK AND PAINT TO MATCH THE FINISH OF THE DUCTWORK. SEAL DUCTWORK PENETRATIONS THROUGH BUILDING PARTITIONS WITH A UL-APPROVED SEALANT THAT MEETS THE VOC REQUIREMENTS OF THE PROJECT.

GENERAL DEMOLITION NOTES
(APPLY TO THE WORK PROVIDED UNDER DIVISION 20)

- THE CONTRACT DOCUMENTS INDICATE THE INTENT OF THE DEMOLITION WORK BY SHOWING THE MAJOR SYSTEM COMPONENTS TO BE REMOVED BUT IS NOT LIMITED TO THE COMPONENTS INDICATED. IF SYSTEMS AND COMPONENTS ARE DISCOVERED AS PART OF THE DEMOLITION WORK WHICH CAN ALSO BE REMOVED WITHOUT IMPACTING THE EXISTING TO REMAIN OR NEW WORK INDICATED, OBTAIN APPROVAL FROM THE OWNER AND REMOVE THE SYSTEMS AND COMPONENTS. REFER TO THE ARCHITECTURAL DEMOLITION DRAWINGS AND NOTES FOR ADDITIONAL INFORMATION.
- VISIT THE SITE AND BECOME FAMILIAR WITH THE CONDITION OF THE PREMISES AND EXTENT OF DEMOLITION WORK REQUIRED. FIELD VERIFY DEMOLITION WORK AND EXISTING CONDITIONS. PROVIDE ANY ADDITIONAL WORK REQUIRED AS THE RESULT OF FIELD CONDITIONS AT NO ADDITIONAL COST TO THE OWNER.
- BEFORE STARTING DEMOLITION WORK, PROVIDE NECESSARY PROTECTIVE DEVICES, WHERE REQUIRED IN ACCORDANCE WITH OSHA REGULATIONS AND THE LOCAL AUTHORITY HAVING JURISDICTION.
- PROVIDE ADEQUATE PROTECTION WHERE REQUIRED FOR THE BUILDING AND ITS CONTENTS. PROVIDE TEMPORARY BARRIERS WHERE REQUIRED FOR PROTECTION OF PERSONNEL, FOR SECURITY, FIRE AND WEATHER PROTECTION. PROVIDE TEMPORARY ENCLOSURES, OR OTHER SUITABLE METHODS TO LIMIT DUST AND DEBRIS TO THE AREA UNDER DEMOLITION. WET DEMOLISHED DEBRIS TO PREVENT DUST AND DEBRIS FROM RISING DURING THE DEMOLITION PROCESS. USING WETTING AGENTS. EXCESSIVE USE OF WATER WILL NOT BE PERMITTED. COMPLY WITH ENVIRONMENTAL PROTECTION REQUIREMENTS OF THE LOCAL AUTHORITY HAVING JURISDICTION.
- PRIOR TO BEGINNING DEMOLITION WORK, REVIEW WITH THE OWNER THE MATERIALS TO BE REMOVED AND VERIFY IF THE OWNER WOULD LIKE TO KEEP ANY OF THE MATERIALS REMOVED. REMOVE AND DELIVER ON SITE WHERE DIRECTED BY THE OWNER THE MATERIALS TO BE KEPT. REMAINING REMOVED MATERIALS BECOME THE PROPERTY OF THE CONTRACTOR. REMOVE FROM SITE AND DISPOSE OF IN A LEGAL MANNER FOLLOWING OSHA REGULATIONS AND THE REGULATIONS OF THE LOCAL AUTHORITY HAVING JURISDICTION.
- PROVIDE ADEQUATE TEMPORARY SUPPORT IN ORDER TO PREVENT THE FAILURE OF EXISTING TO REMAIN SYSTEMS AND EQUIPMENT.
- ESTABLISH A PATH OF TRAVEL AND TIME SCHEDULE FOR THE REMOVAL OF DEBRIS AND WASTE. THIS SCHEDULE AND PATH SHALL BE APPROVED BY THE OWNER PRIOR TO BEGINNING WORK. ENSURE THAT CORRIDORS AND PUBLIC AREAS ARE KEPT FREE FROM OBSTRUCTIONS, DEBRIS, AND KEPT BROOM SWEEP CLEAN.
- EXECUTE THE DEMOLITION IN A CAREFUL AND ORDERLY MANNER WITH THE LEAST AMOUNT OF DISTURBANCE TO THE PUBLIC, EGRESS, OR THE FUNCTION OF THE EXISTING BUILDING.
- REMOVE, DISCONNECTIONS, AND RELOCATIONS TO BE PERFORMED BY WORKMEN SKILLED IN THE TRADE INVOLVED AND EMPLOYED BY THE CONTRACTOR LICENSED IN THE TRADE INVOLVED. WORK SHALL BE DONE IN ACCORDANCE WITH ACCEPTED TRADE PRACTICES.
- DEMOLITION WORK TO INCLUDE REMOVAL OF COMPONENTS AND SYSTEMS IN THEIR ENTIRETY BACK TO POINTS INDICATED, OR IF NOT INDICATED BACK TO THEIR POINT OF ORIGIN.
- WHERE CONDITIONS PROHIBIT THE TOTAL REMOVAL OF THE WORK, THE REMAINING PORTION SHALL BUT CUT FLUSH WITH THE SURROUNDING SURFACE AND BE CAPPED, PLUGGED, OR SEALED AND THE SURROUNDING SURFACE SHALL BE REFINISHED IN A MANNER APPROVED BY THE ARCHITECT.
- DO NOT REMOVE EXISTING STRUCTURAL WORK. DO NOT REMOVE OPERATIONAL ELEMENTS OF SYSTEMS TO REMAIN, AND SAFETY-RELATED COMPONENTS IN A MANNER RESULTING IN A REDUCTION OF CAPACITIES TO PERFORM IN THE MANNER INTENDED OR RESULTING IN DECREASED OPERATIONAL LIFE, INCREASED MAINTENANCE, OR DECREASED SAFETY.

COMPLETE MECHANICAL DEMOLITION SPECIFIC NOTES		
SPECIFIC NOTE VALUE	SPECIFIC NOTE TEXT	
MD1	REMOVE EXISTING EXHAUST FAN AND PREPARE ROOF CURB FOR RECONNECTION UNDER NEW WORK.	

COMPLETE MECHANICAL SPECIFIC NOTES	
SPECIFIC NOTE VALUE	SPECIFIC NOTE TEXT
M1	EXISTING EXHAUST AIR DEVICE SHALL BE MODIFIED TO LOWERED CEILING HEIGHT.
M2	REBALANCE EXISTING EXHAUST AIR DEVICES TO INDICATED AIRFLOW VALUES.
M3	REFURBISH EXISTING TO REMAIN PTHP AND REFURBISH SPEED CONTROLLERS TO BE OPERATIONAL. REBALANCE EXISTING OUTSIDE AIR QUANTITY TO 30 CFM.
M4	REMOVE EXISTING MAKE CONNECTION TO EXISTING 10" DIA EA AND 16"x10" EA DUCTWORK.
M5	DUCT ROUTING SHOWN ON THIS FLOOR IS SHOWN FOR DIAGRAMMATIC PURPOSES ONLY. DUCTWORK IS ABOVE GYPNUM CEILING AND HAS NOT BEEN VERIFIED IN THE FIELD.
M6	REFURBISH EXISTING TO REMAIN PTHP AND REFURBISH SPEED CONTROLLERS TO BE OPERATIONAL. REBALANCE EXISTING OUTSIDE AIR QUANTITY TO 15 CFM.
M7	REFURBISH EXISTING TO REMAIN PTHP AND REFURBISH SPEED CONTROLLERS TO BE OPERATIONAL. REBALANCE EXISTING OUTSIDE AIR QUANTITY TO 20 CFM.
M8	REFURBISH EXISTING TO REMAIN PTHP AND REFURBISH SPEED CONTROLLERS TO BE OPERATIONAL. REBALANCE EXISTING OUTSIDE AIR QUANTITY TO 25 CFM.

ABBREVIATIONS

A/C	AIR CONDITIONING
ABV	ABOVE
AFB	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AFMS	AIR FLOW MEASURING STATION
AHU	AIR HANDLING UNIT
AP	ACCESS PANEL
APD	AIR PRESSURE DROP
ARCH	ARCHITECTURAL OR ARCHITECT
ATC	AUTOMATIC TEMPERATURE CONTROL
AVG	AVERAGE
BDD	BACKDRAFT DAMPER
BHP	BRAKE HORSEPOWER
BLDG	BUILDING
BLW	BELOW
BMS	BUILDING MANAGEMENT SYSTEM
BOD	BASIS OF DESIGN
BTU	BRITISH THERMAL UNITS
CA	COMPRESSED AIR
CAP	CAPACITY
CFM	CUBIC FEET PER MINUTE
CO	CARBON MONOXIDE OR CLEANOUT
CO2	CARBON DIOXIDE
CLG	CEILING
CLE	CONNECT TO EXISTING
CTR	COOLING TOWER RETURN
CTS	COOLING TOWER SUPPLY
CWS	CHILLED WATER SUPPLY
CWR	CHILLED WATER RETURN
DB	DRY BULB
DEG	DEGREE
DISCH	DISCHARGE
DIA	DIAMETER
DN	DOWN
DOAS	DEDICATED OUTSIDE AIR SYSTEM
DWG	DRAWING
EA	EXHAUST AIR
EAT	ENTERING AIR TEMPERATURE
EDB	ENTERING DRY BULB
EF	EXHAUST FAN
ELECT	ELECTRICAL
EMS	ENERGY MANAGEMENT SYSTEM
ERV	ENERGY RECOVERY VENTILATOR
ESP	EXTERNAL STATIC PRESSURE OR ELEVATOR SUMP PUMP
EWB	ENTERING WET BULB
EWI	ELECTRIC WALL HEATER
EWI	ENTERING WATER TEMPERATURE
EX	EXISTING
EXTR	EXISTING TO REMAIN
FCU	FAN COIL UNIT
FD	FIRE DAMPER
FFE	FINISHED FLOOR ELEVATION
FSD	FIRE SMOKE DAMPER
FOR	FUEL OIL RETURN
FOS	FUEL OIL SUPPLY
FS	FEET PER MINUTE
FT	FEET
FT-HD	FEET OF HEAD
FT	FIN TUBE RADIATOR
G	NATURAL GAS
GA	GAUGE
GAL	GALLONS
GC	GENERAL CONTRACTOR
H2	HYDROGEN
HGRH	HOT GAS REHEAT
HP	HORSEPOWER OR HEAT PUMP
HT	HEIGHT
HTG	HEATING
HTR	HEATER
HVAC	HEATING VENTILATION & AIR CONDITIONING
IN	INCHES
KW	KILOWATT
LAT	LEAVING AIR TEMPERATURE
LB	POUNDS
LD	LEAVING DRY BULB
LWB	LEAVING WET BULB
LWT	LEAVING WATER TEMPERATURE
MAU	MAKE-UP AIR UNIT
MBH	1000 BRITISH THERMAL UNITS
MCA	MINIMUM CIRCUIT AMPS
MECH	MECHANICAL
MFR	MANUFACTURER
MISC	MISCELLANEOUS
MSCP	MINIMUM OVER CURRENT PROTECTION
MTO	MANUAL VOLUME DAMPER
N2	NITROGEN
NA	NOT APPLICABLE
NC	NOISE CRITERIA OR NORMALLY CLOSED
NO	NOT IN CONTACT
NO	NORMALLY OPEN
NTS	NOT TO SCALE
O2	OXYGEN
OA	OUTSIDE AIR
ODB	OPPOSED BLADE DAMPER
O.C.	ON CENTER
OED	OPEN END DUCT
OS&Y	OUTSIDE SCRE & YOKE GATE VALVE
PH	PHASE
PPM	POUNDS PER MILLION
PSI	POUNDS PER SQUARE INCH
RA	RETURN AIR
REF	REFERENCE
REQ'D	REQUIRED
RL	REFRIGERANT LIQUID
RM	ROOM
RPM	REVOLUTIONS PER MINUTE
RPZ	REDUCED PRESSURE ZONE BACKFLOW PREVENTER
RS	REFRIGERANT SUCTION
RTU	ROOFTOP UNIT
SA	SUPPLY AIR
SD	SMOKE DAMPER
SEC	SECOND
SECT	SECTION
SENS	SENSIBLE
SF	SQUARE FOOT OR SUPPLY FAN
SOV	SHUT-OFF VALVE
SPEC	SPECIFICATION
SSAC	SPLIT SYSTEM AIR CONDITIONER
SSHP	SPLIT SYSTEM HEAT PUMP
STD	STANDARD
STRUCT	STRUCTURAL
T&P	TEMPERATURE AND PRESSURE
TD	TRANSPIRANT
TEMP	TEMPERATURE
THERM	THERMOMETER
THRU	THROUGH
TSTAT	THERMOSTAT
TYP	TYPICAL
UG	UNDERGROUND
UL	UNDERWRITER'S LABORATORY
UNO	UNLESS NOTED OTHERWISE
UTIL	UTILITY
V	VOLTAGE
VFD	VARIABLE FREQUENCY DRIVE
VIF	VERIFY IN FIELD
VOL	VOLUME
VRF	VARIABLE REFRIGERANT FLOW
W/	WITH
W/O	WITHOUT
WB	WET BULB
WBD	WEIGHTED BAROMETRIC RELIEF DAMPER
WMS	WIRE MESH SCREEN
WSHP	WATER SOURCE HEAT PUMP

MECHANICAL LEGENDS

SYMBOLS	ABBREVIATION	DESCRIPTION
	SA UP	SUPPLY AIR DUCT UP
	SA DN	SUPPLY AIR DUCT DOWN
	MD	MEDIUM PRESSURE SUPPLY AIR DUCT UP
	MD DN	MEDIUM PRESSURE SUPPLY AIR DUCT DOWN
	RA UP	RETURN AIR DUCT UP
	RA DN	RETURN AIR DUCT DOWN
	EA UP	EXHAUST AIR DUCT UP
	EA DN	EXHAUST AIR DUCT DOWN
	OA UP	OUTSIDE AIR DUCT UP
	OA DN	OUTSIDE AIR DUCT DOWN
	FD	FIRE DAMPER
	F/SD	FIRE SMOKE DAMPER
	MVD	MANUAL VOLUME DAMPER
	MOD	MOTOR OPERATED DAMPER
	WBD	WEIGHTED BAROMETRIC DAMPER
	BDD	BACKDRAFT DAMPER
	TV	TURNING VANES
	T	THERMOSTAT
	TS	TEMPERATURE SENSOR
	MD	MECHANICAL SPECIFIC NOTES - DEMOLITION
	M	MECHANICAL SPECIFIC NOTES - NEW
	SD	SUPPLY AIR DIFFUSER
	RG	RETURN AIR GRILLE
	EG	EXHAUST AIR GRILLE
	SECTION NUMBER	SECTION DESIGNATION
	SHEET NUMBER	SHEET DESIGNATION
	DETAIL NUMBER	DETAIL DESIGNATION
		CONNECT TO EXISTING
		DEMO TO THIS POINT
		DUCT RISE
		DUCT DROP

MECHANICAL DRAWING LIST	
SHEET NUMBER	SHEET NAME
H001	SYMBOLS, NOTES AND ABBREVIATIONS
H101	FIRST FLOOR PLAN - MECHANICAL
H102	SECOND FLOOR PLAN - MECHANICAL
H103	THIRD FLOOR PLAN - MECHANICAL
H501	MECHANICAL DETAILS
H701	MECHANICAL SCHEDULES
H801	MECHANICAL SPECIFICATIONS
H802	MECHANICAL SPECIFICATIONS

NOTES



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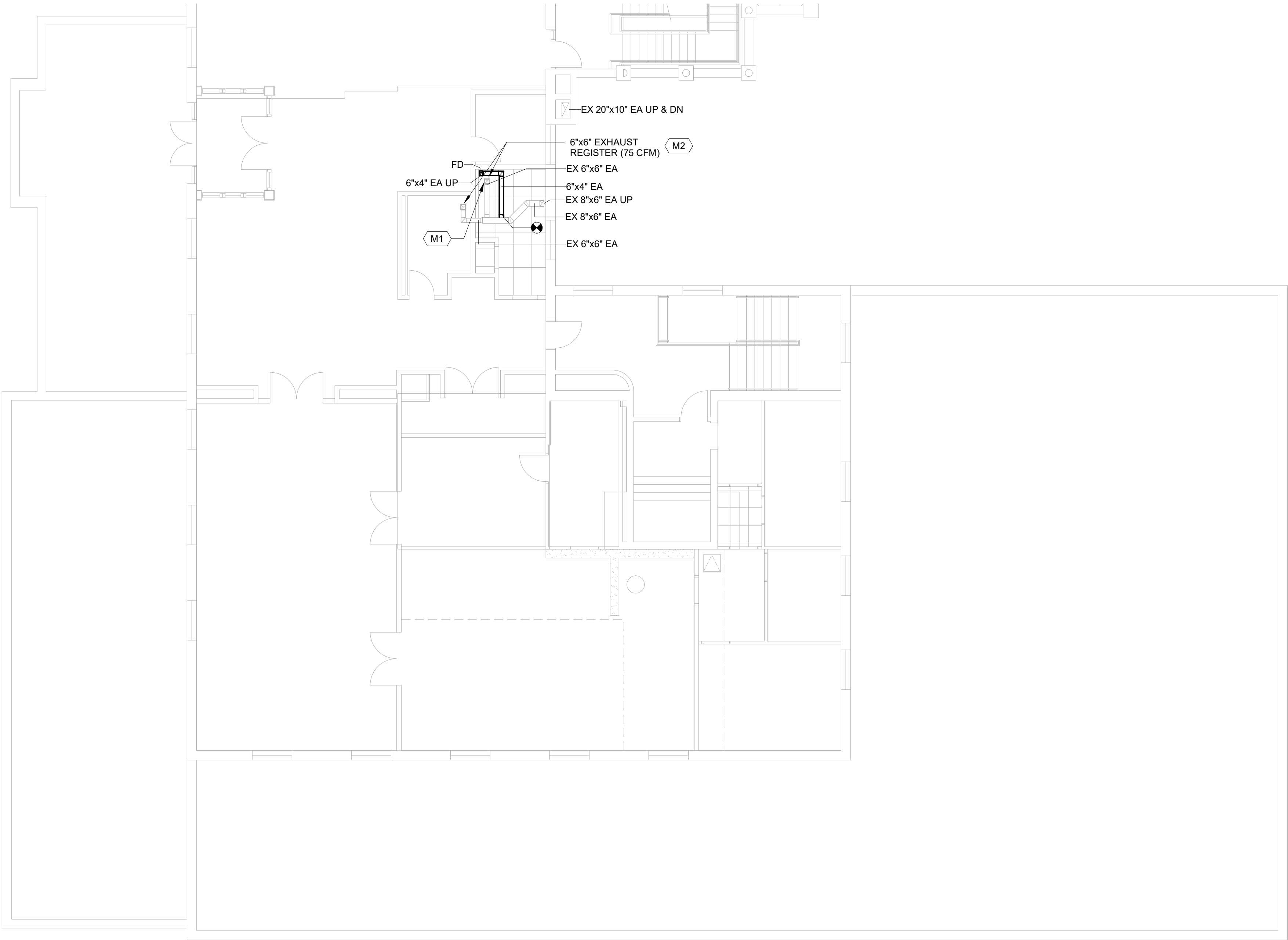
SYMBOLS, NOTES AND
ABBREVIATIONS

Project Number MI-1226

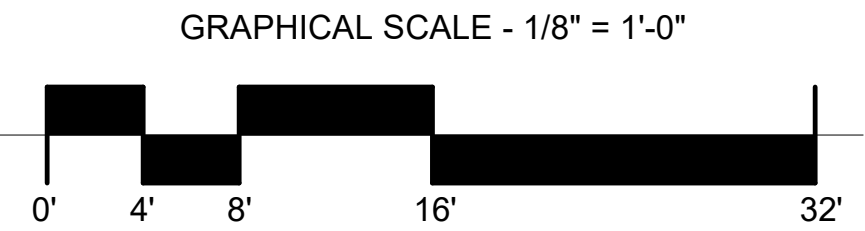
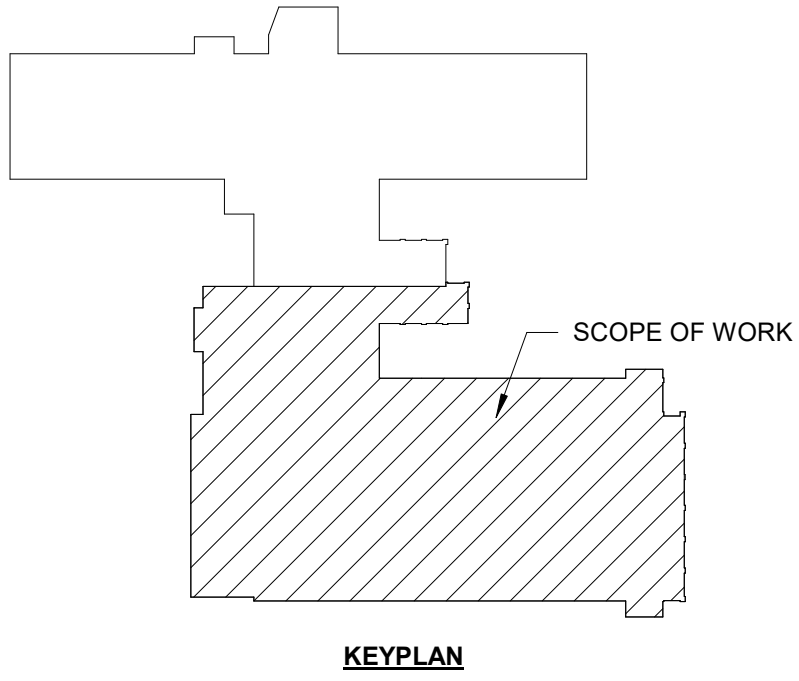
Date 03/12/2025

SCALE: AS NOTED

H001



① FIRST FLOOR PLAN - MECHANICAL
1/8" = 1'-0"



MECHANICAL SPECIFIC NOTES	
SPECIFIC NOTE VALUE	SPECIFIC NOTE TEXT
M1	EXISTING EXHAUST AIR DEVICE SHALL BE MODIFIED TO LOWERED CEILING HEIGHT.
M2	REBALANCE EXISTING EXHAUST AIR DEVICES TO INDICATED AIRFLOW VALUES.

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FIRST FLOOR PLAN -
MECHANICAL

Project Number MI-1226
Date 03/12/2025
SCALE: AS NOTED

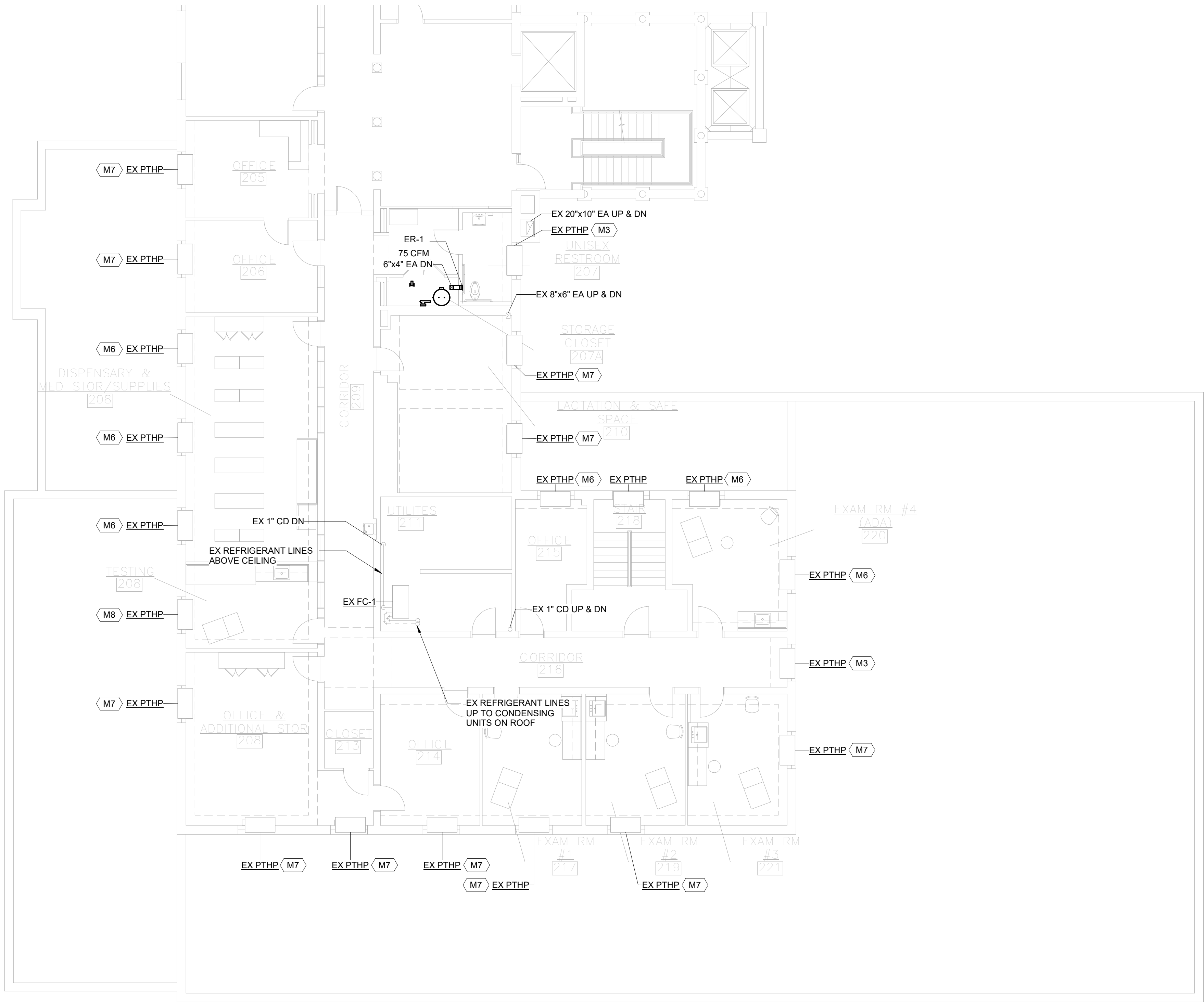
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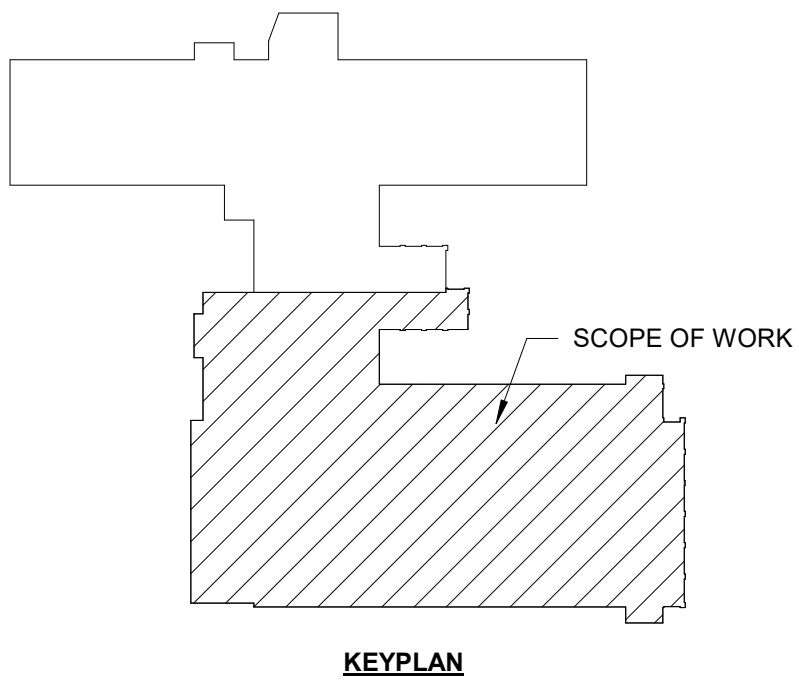


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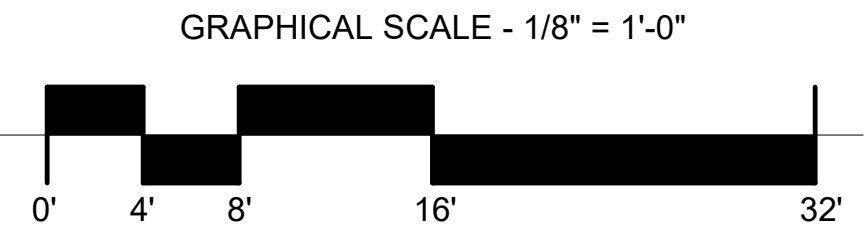
MECHANICAL SPECIFIC NOTES	
SPECIFIC NOTE VALUE	SPECIFIC NOTE TEXT
M3	REFURBISH EXISTING TO REMAIN PTHP AND REFURBISH SPEED CONTROLLERS TO BE OPERATIONAL. REBALANCE EXISTING OUTSIDE AIR QUANTITY TO 30 CFM.
M6	REFURBISH EXISTING TO REMAIN PTHP AND REFURBISH SPEED CONTROLLERS TO BE OPERATIONAL. REBALANCE EXISTING OUTSIDE AIR QUANTITY TO 15 CFM.
M7	REFURBISH EXISTING TO REMAIN PTHP AND REFURBISH SPEED CONTROLLERS TO BE OPERATIONAL. REBALANCE EXISTING OUTSIDE AIR QUANTITY TO 20 CFM.
M8	REFURBISH EXISTING TO REMAIN PTHP AND REFURBISH SPEED CONTROLLERS TO BE OPERATIONAL. REBALANCE EXISTING OUTSIDE AIR QUANTITY TO 25 CFM.



1 SECOND FLOOR PLAN - MECHANICAL
1/8" = 1'-0"



KEYPLAN



GRAPHICAL SCALE - 1/8" = 1'-0"

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SECOND FLOOR PLAN -
MECHANICAL

Project Number MI-1226

Date

03/12/2025

SCALE: AS NOTED

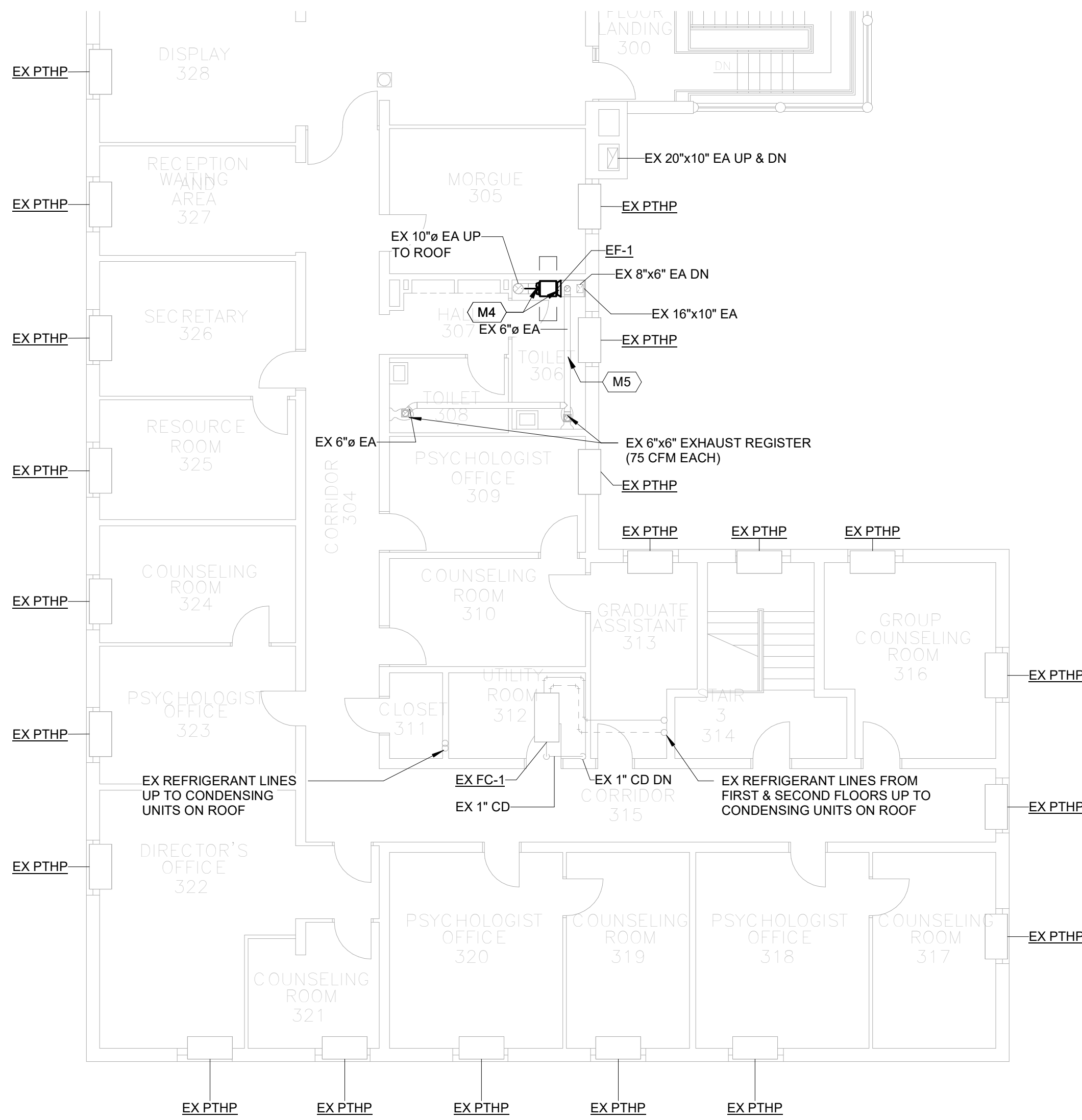
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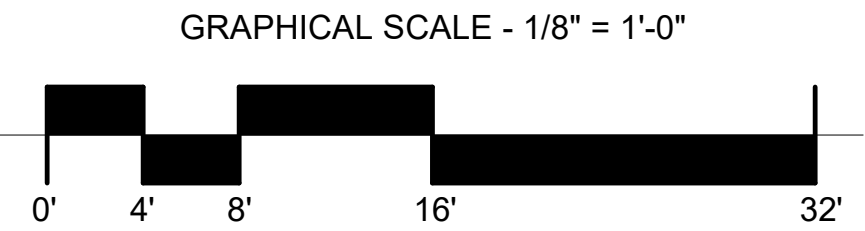
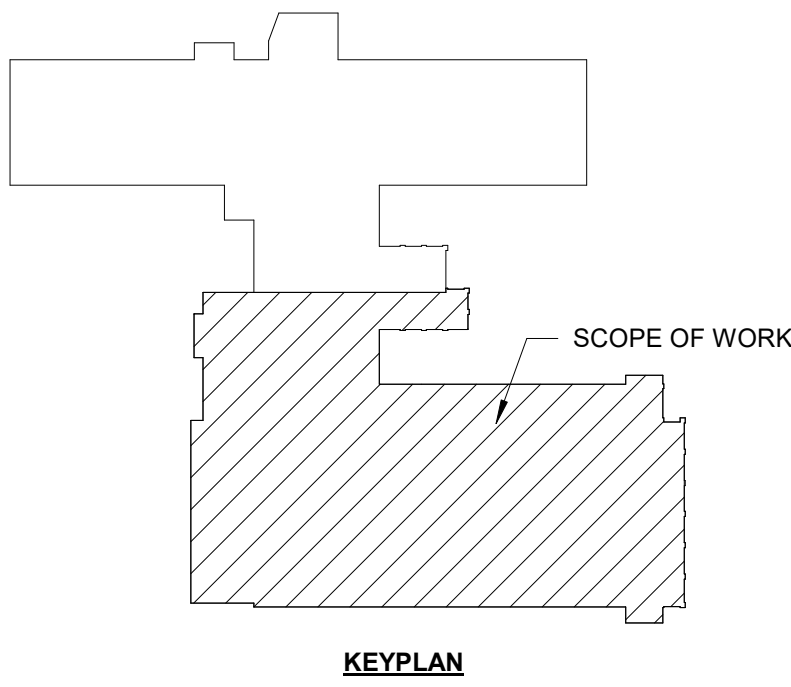


400 EAST PRATT STREET
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MECHANICAL SPECIFIC NOTES	
SPECIFIC NOTE VALUE	SPECIFIC NOTE TEXT
M4	TRANSITION AND MAKE CONNECTION TO EXISTING 10" DIA EA AND 16"x10" EA DUCTWORK.
M5	DUCT ROUTING SHOWN ON THIS FLOOR IS SHOWN FOR DIAGRAMMATIC PURPOSES ONLY. DUCTWORK IS ABOVE GYPSUM CEILING AND HAS NOT BEEN VERIFIED IN THE FIELD.



1 THIRD FLOOR PLAN - MECHANICAL
1/8" = 1'-0"



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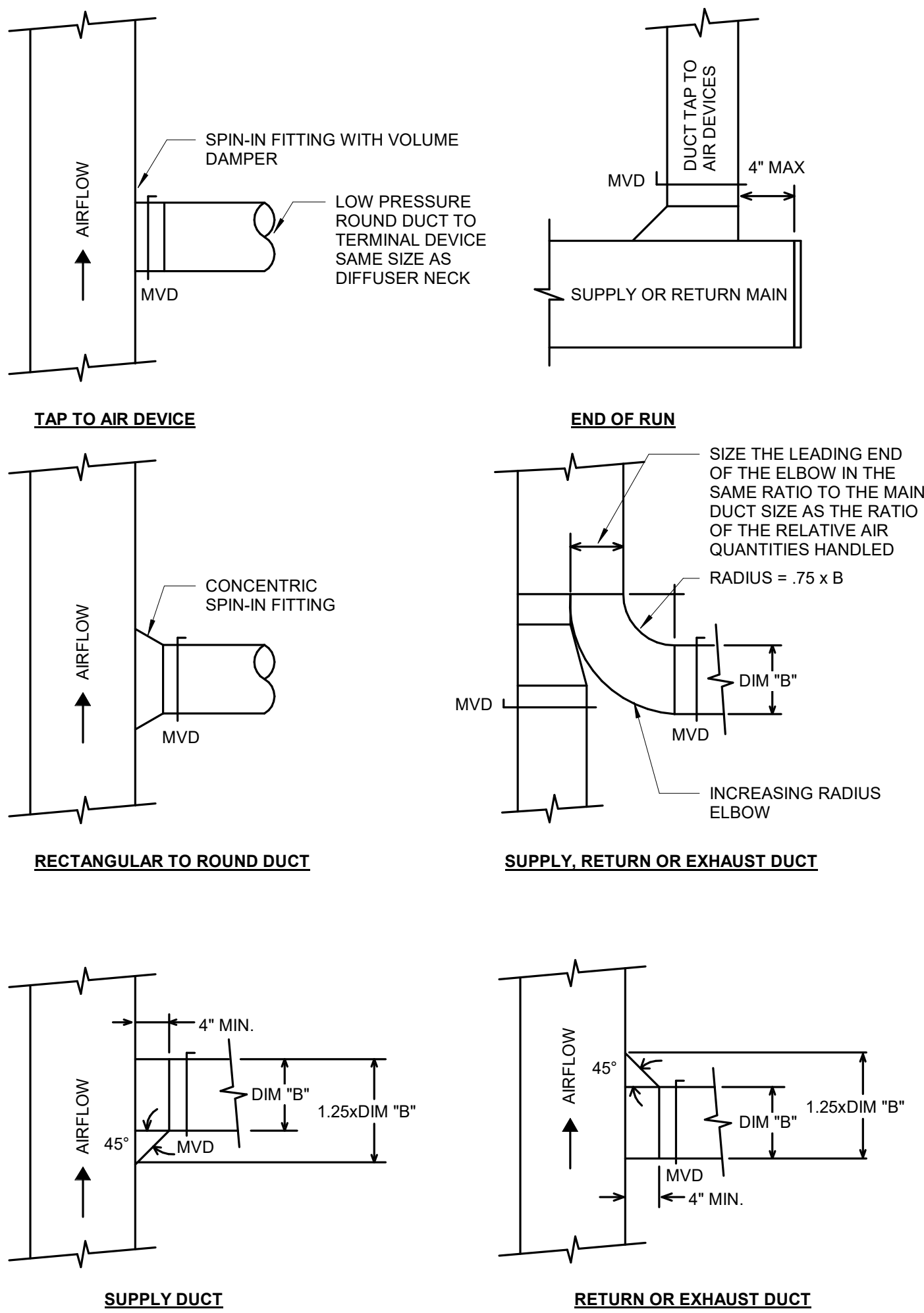
THIRD FLOOR PLAN -
MECHANICAL

Project Number MI-1226

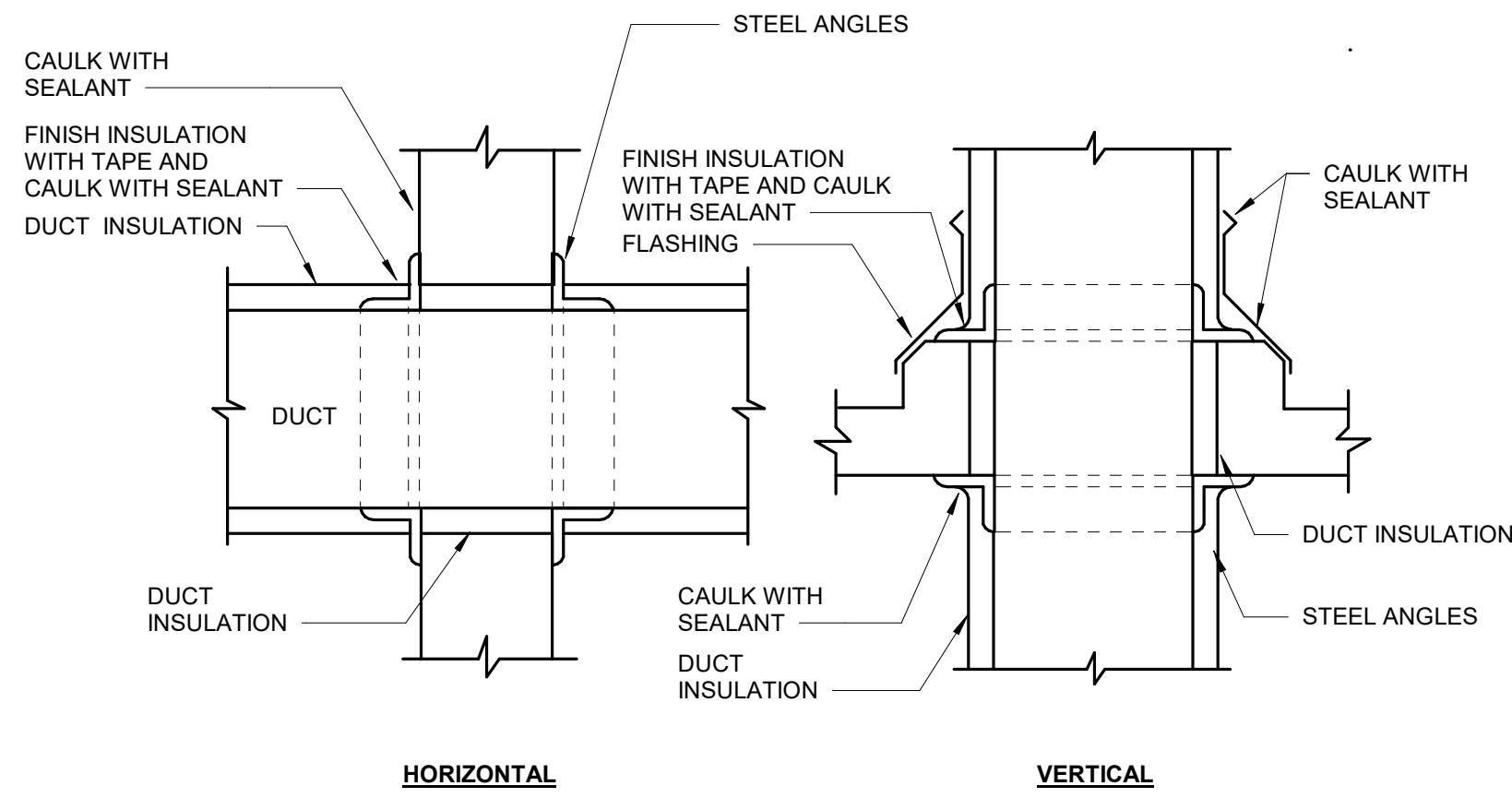
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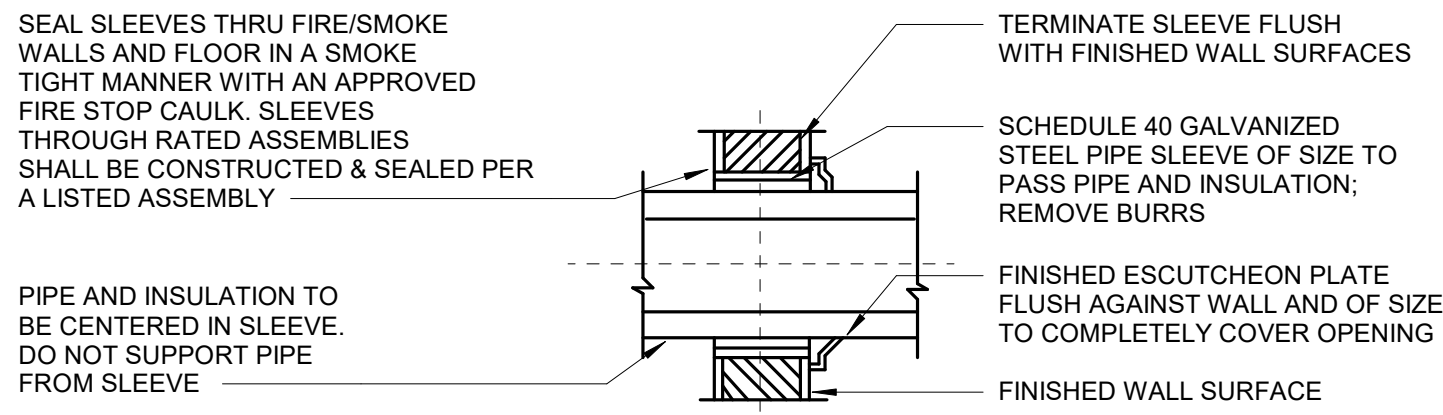
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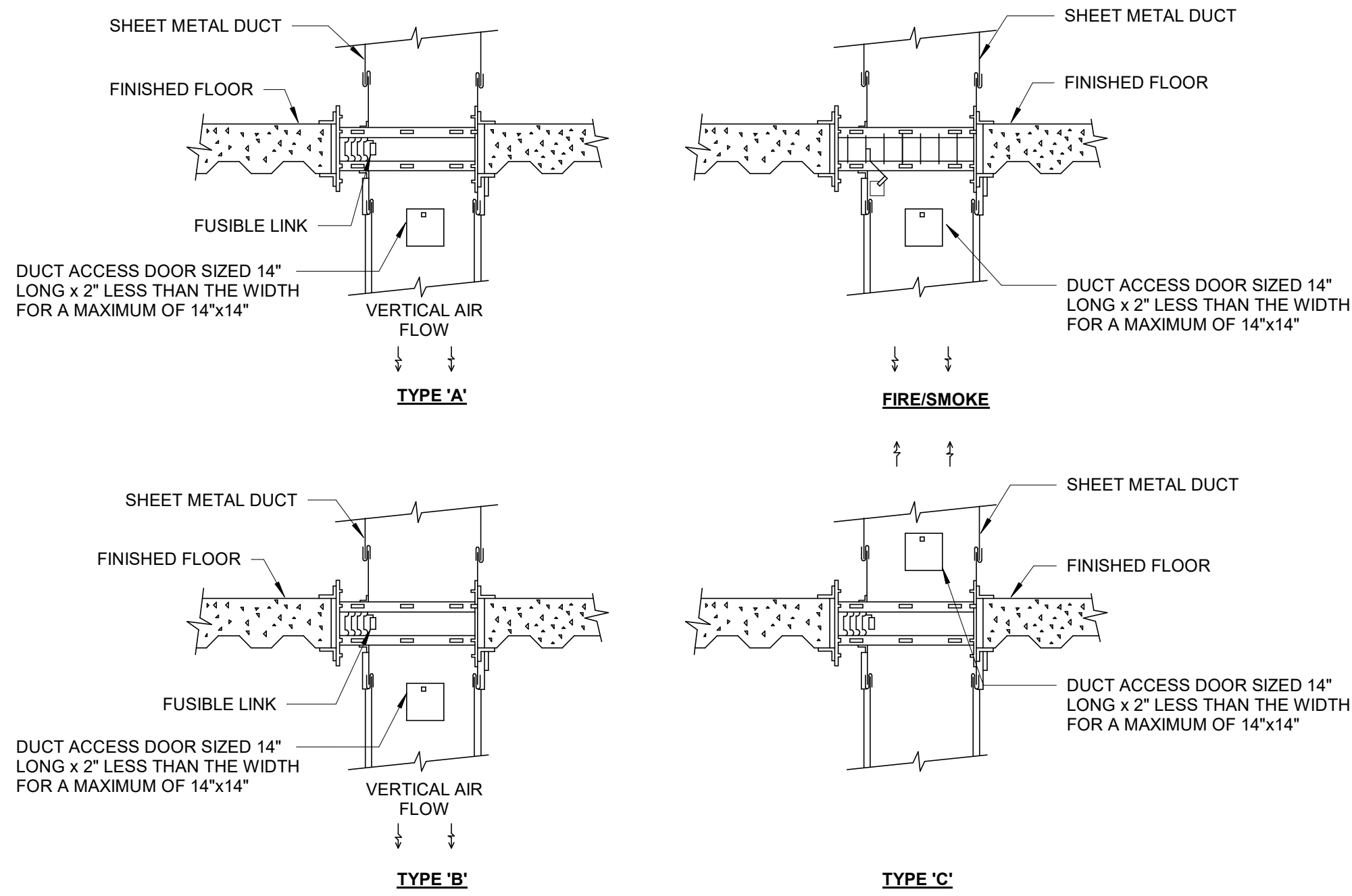
1 RECTANGULAR DUCT BRANCH TAKE-OFF DETAIL
NOT TO SCALE



2 NON FIRE RATED ASSEMBLY HORIZONTAL OR VERTICAL DUCT PENETRATION DETAIL
NOT TO SCALE

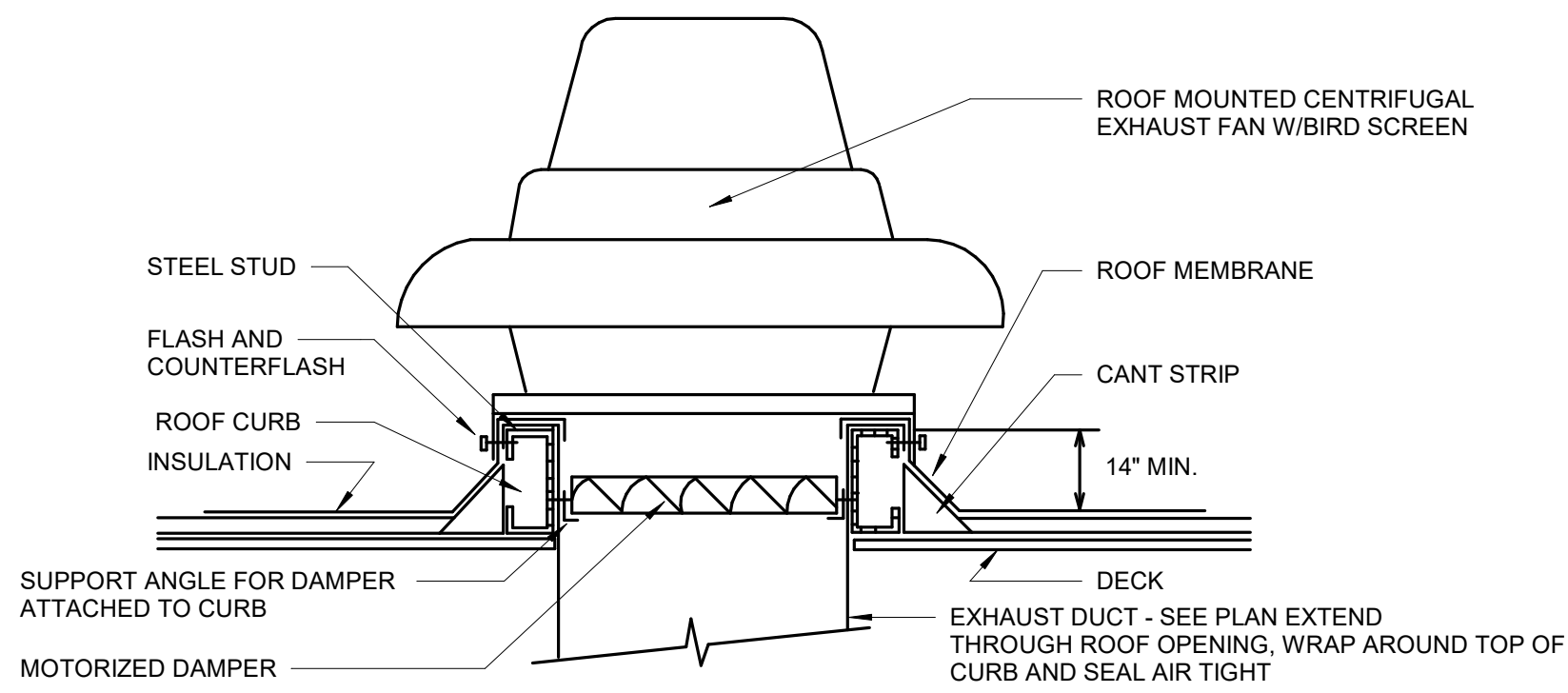


3 TYPICAL PIPE SLEEVE THRU INTERNAL WALL DETAIL
NOT TO SCALE



NOTES:
1. COORDINATE ACCESS PANEL LOCATION IN CEILING OR WALL WITH ARCHITECTURAL DRAWINGS.
2. UL LABEL RATING FOR DAMPERS SHALL BE COORDINATED WITH THE WALL TYPE AS INDICATED ON THE ARCHITECTURAL DRAWINGS.

4 HORIZONTAL FIRE DAMPER & COMBINATION FIRE/SMOKE DAMPER DETAIL
NOT TO SCALE



5 EXHAUST FAN DETAIL
NOT TO SCALE

NOTES



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MECHANICAL DETAILS

Project Number MI-1226

Date 03/12/2025

SCALE: AS NOTED

H501

NOTES



Hoffman Jun & Associates
Consulting Engineers

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TAG	LOCATION	TYPE	AIRFLOW (CFM)	ESP (IN. W. C.)	RPM	DRIVE	ELECTRIC DATA			BASIS OF DESIGN	
							HP	VOLTAGE	PHASE	MANUFACTURER	MODEL
EF-1	3RD FLOOR BULKHEAD	INLINE	375	0.65	1650	DIRECT	1/4	120 V	1	GREENHECK	SQ-95-VG

NOTES:

1. PROVIDE WITH INTEGRAL DISCONNECT.
2. PROVIDE BACKDRAFT DAMPER.
3. PROVIDE MOTOR MOUNTED SPEED CONTROL DIAL

AIR DEVICE SCHEDULE - EXHAUST AIR REGISTER								
TAG	TYPE	CFM	MAX PD	REGISTER WIDTH (IN)	REGISTER LENGTH (IN)	NC	BASIS OF DESIGN	
							MANUFACTURER	MODEL
ER-1	CEILING	75	0.08	6	6	21	TITUS	350RL

NOTES:
1. PROVIDE WITH OPPOSED BLADE DAMPER.

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MECHANICAL SCHEDULES

Project Number MI-1226

Date 03/12/2025

SCALE: AS NOTED

H701

SECTION 20 00 00
GENERAL MECHANICAL REQUIREMENTS

PART 1 GENERAL

- 1.01 SUMMARY**
- A. SECTION INCLUDES ADMINISTRATIVE AND PROCEDURAL REQUIREMENTS FOR WORK UNDER DIVISION 20, 22 AND 23.
- B. COORDINATE WORK OF THIS SECTION WITH THE REQUIREMENTS OF THE PROJECT.
- 1.02 GENERAL DESCRIPTION**
- A. THE FOLLOWING IS A GENERAL DESCRIPTION OF THE WORK INCLUDED IN THE MECHANICAL DIVISION AND AS SHOWN ON THE MECHANICAL AND PLUMBING/FIRE PROTECTION DRAWINGS.
- B. THE WORK SHALL INCLUDE, BUT NOT BE LIMITED TO THE FOLLOWING:
- PLUMBING (DIVISION 22)
 - SANITARY PIPING SHALL BE EXTENDED FROM FIXTURES AND APPLIANCES REQUIRING CONNECTION TO THE EXISTING PIPING. VERIFY LOCATION AND INVERT OF THE EXISTING PIPING BEFORE STARTING WORK.
 - DOMESTIC WATER PIPING SHALL BE EXTENDED FROM FIXTURES AND APPLIANCES REQUIRING CONNECTION TO THE EXISTING PIPING. VERIFY LOCATION AND INVERT OF THE EXISTING PIPING BEFORE STARTING WORK.
 - DOMESTIC HOT WATER SHALL BE PROVIDED BY AN ELECTRIC STORAGE TANK WATER HEATER WITH DISTRIBUTION PIPING.
 - A DOMESTIC HOT WATER RECIRCULATION PUMP SHALL BE PROVIDED.
 - HEATING, VENTILATION AND AIR CONDITIONING (DIVISION 23)
 - EXHAUST VENTILATION SHALL BE PROVIDED FOR TOILET ROOMS, JANITORS CLOSETS, EMPLOYEE BREAK ROOMS AND ELEVATOR MACHINE ROOMS.
 - A SYSTEM OF AUTOMATIC TEMPERATURE CONTROLS SHALL BE PROVIDED.
- 1.03 DEFINITIONS**
- A. FOLLOWING ARE DEFINITION OF TERMS AND EXPRESSIONS USED IN THE ELECTRICAL SECTIONS IN ADDITION TO THE DEFINITIONS FOUND IN THE CONTRACT DOCUMENTS.
- "PIPING" INCLUDES PIPE, FITTINGS, VALVES, HANGERS, AND OTHER ACCESSORIES THAT COMPRISE A SYSTEM.
 - "DUCTWORK" INCLUDES DUCTS, FITTINGS, HOUSINGS, DAMPERS, HANGERS, AND OTHER ACCESSORIES, WHICH COMPRISE A SYSTEM.
 - "REFURBISH" SHALL INCLUDE BUT NOT BE LIMITED TO:
 - INSPECTING & REPAIRING UNIT CABINET SUCH AS REPAIRING SEALS/LATCHES, CURBS, ETC.
 - CLEANING COILS
 - REPLACING BELTS
 - LUBRICATING BEARINGS
 - CHANGING FILTERS
 - INSPECTING & CLEANING GAS FIRED HEAT EXCHANGERS
 - CLEANING & REPAIRING CONDENSATE DRAIN AND SECONDARY DRAIN PAN
 - CHECKING & ADJUSTING REFRIGERATION CHARGE OF EACH CIRCUIT
 - LEAK TEST & REPAIR ANY REFRIGERATION LEAKS
- A REFURBISHED UNIT SHALL BE BROUGHT INTO THE MANUFACTURER'S ORIGINAL OPERATING SPECIFICATIONS & TOLERANCES AND PROVIDED WITH A WARRANTY OF OPERABILITY FOR (60) DAYS AFTER THE SYSTEMS HAVE BEEN TURNED OVER TO THE OWNER.
- 1.04 WARRANTY**
- A. PROVIDE WARRANTY AS INDICATED IN FRONT END DOCUMENTS BUT NOT LESS THAN 1 YEAR FROM DATE OF SUBSTANTIAL COMPLETION AS DETERMINED BY THE ARCHITECT.
- B. DURING THE WARRANTY PERIOD, MAKE THE PROPER ADJUSTMENTS OF SYSTEMS, EQUIPMENT AND DEVICES INSTALLED AND PERFORM WORK NECESSARY TO ENSURE THE EFFICIENT AND PROPER OPERATION OF THE SYSTEMS, EQUIPMENT AND DEVICES.
- C. CERTAIN ITEMS OF EQUIPMENT SHALL BE WARRANTED FOR A LONGER TIME THAN THE GENERAL WARRANTY PERIOD. PROVIDE FOR SERVICE OR REPLACEMENT REQUIRED IN CONNECTION WITH THE WARRANTY OF THESE ITEMS.
- 1.05 VARIANCES**
- A. WHERE CONFLICTS EXIST WITHIN THE CONTRACT DOCUMENTS, REQUEST CLARIFICATION PRIOR TO SUBMISSION OF BID. IF CLARIFICATION IS NOT REQUESTED, PROVIDE THE WORK REPRESENTING THE HIGHER COST AND QUALITY.
- 1.06 QUALITY ASSURANCE**
- A. REGULATORY REQUIREMENTS
- WORK SHALL CONFORM TO THE REQUIREMENTS OF THE CODES, LAWS AND ORDINANCES OF MILLERSVILLE UNIVERSITY, NATIONAL FIRE PROTECTION ASSOCIATION, AMERICAN SOCIETY OF MECHANICAL ENGINEERS AND OTHER AUTHORITIES HAVING JURISDICTION.
 - COMPLY WITH APPLICABLE CODES, LAWS, STANDARD PRACTICES
 - COMPLY WITH THE STANDARDS OF GOOD PRACTICE AS OUTLINED IN THE ASHRAE GUIDE, THE SHEET METAL AND AIR CONDITIONING CONTRACTORS' ASSOCIATIONS' DUCT MANUAL, AND THE APPRENTICE TRAINING MANUAL OF THE STEAM FITTERS UNION.
 - THE REQUIREMENTS OF THE AUTHORITIES HAVING JURISDICTION SHALL TAKE PRECEDENCE OVER THE DRAWINGS AND SPECIFICATIONS AND CHANGES REQUIRED BY THE AUTHORITIES SHALL BE MADE AFTER REVIEW BY THE ARCHITECT.
- 1.07 SUBMITTALS**
- A. SHOP DRAWINGS AND PRODUCT INFORMATION ARE REQUIRED FOR THE FOLLOWING:
- PLUMBING (DIVISION 22)
 - WATER HEATERS
 - PLUMBING FIXTURES
 - CIRCULATING PUMPS
 - HEATING, VENTILATING, AND AIR CONDITIONING (DIVISION 23)
 - AIR DEVICES
 - INSULATION
 - FANS
 - ENERGY MANAGEMENT SYSTEM/TEMPERATURE CONTROLS
 - TESTING, ADJUSTMENT AND BALANCING REPORTS AND QUALIFICATIONS
 - OPERATION AND MAINTENANCE MANUAL.
- B. ADDITIONAL SUBMITTALS MAY BE PROVIDED BY THE CONTRACTOR FOR RECORD PURPOSES. ADDITIONAL SUBMITTALS WILL NOT BE PROVIDED WITH A DOCUMENTED REVIEW BY THE ENGINEER.
- C. REVIEW OF SHOP DRAWINGS DOES NOT RELIEVE THE CONTRACTOR OF RESPONSIBILITY FOR COMPLYING WITH THE CONTRACT DOCUMENTS. ENGINEER'S REVIEW SHALL BE PROVIDED WITH ONE OF THE FOLLOWING CLASSIFICATIONS:
- REVIEWED
 - ENGINEER HAS REVIEWED THE SUBMITTAL AND DOES NOT HAVE COMMENTS TO PROVIDE TO THE CONTRACTOR.
 - REVIEWED AS NOTED
 - ENGINEER HAS REVIEWED THE SUBMITTAL AND HAS PROVIDED COMMENTS FOR THE CONTRACTOR'S BENEFIT.
 - THIS CLASSIFICATION DOES NOT WARRANT A RESUBMITTAL BY THE CONTRACTOR, ACCORDINGLY SUBSEQUENT SUBMISSIONS ON THIS SUBMITTAL WILL NOT BE REVIEWED BY THE ENGINEER.
 - REVISE AND RESUBMIT
 - ENGINEER HAS REVIEWED THE SUBMITTAL AND HAS ENOUGH COMMENTS TO WARRANT THE CONTRACTOR'S ADDRESSING THE COMMENTS AND PROVIDING A RESUBMITTAL.
 - THIS CLASSIFICATION REQUIRES A RESUBMITTAL BY THE CONTRACTOR AND CAN BE BASED ON THE SAME PRODUCT OR MANUFACTURER.
 - REJECTED
 - ENGINEER HAS REVIEWED THE SUBMITTAL, WHICH MAY HAVE BEEN CURSORY, SINCE THE PRODUCT OR MANUFACTURER DOES NOT MEET THE INTENT OF THE CONTRACT DOCUMENTS.
 - THIS CLASSIFICATION REQUIRES A RESUBMITTAL BY THE CONTRACTOR AND MUST BE BASED ON A NEW PRODUCT OR MANUFACTURER.
- D. SHOP DRAWINGS SHALL REFLECT THE MANUFACTURER BEING PROVIDED FOR THE PROJECT. SHOP DRAWINGS CONTAINING MULTIPLE MANUFACTURERS FOR THE SAME PRODUCT WILL NOT BE REVIEWED.
- E. SHOP DRAWING SHALL BE CLEARLY MARKED TO INDICATE THE PRODUCT BEING PROVIDED. SHOP DRAWINGS THAT DO NOT INDICATE THE PRODUCT BEING PROVIDED WILL NOT BE REVIEWED.
- 1.08 PROTECTION**
- A. PROTECT MATERIAL AND EQUIPMENT FROM DAMAGE.
- B. CAP OR PLUG OPENINGS IN EQUIPMENT AND CONDUITS.
- C. POST NOTICES PROHIBITING THE USE OF WATER CLOSETS.
- D. CONSTRUCTION MATERIALS SHALL BE STORED IN A WEATHER-TIGHT, CLEAN AREA PRIOR TO UNPACKING FOR INSTALLATION.
- E. ACCUMULATION OF WATER DURING CONSTRUCTION SHALL BE AVOIDED AND ANY POROUS CONSTRUCTION MATERIALS SUCH AS INSULATION SHALL BE PROTECTED FROM MOISTURE.
- 1.09 TEMPORARY CONDITIONING**
- A. REFER TO FRONT END SPECIFICATIONS FOR THE REQUIREMENTS OF TEMPORARY HVAC.

PART 2 PRODUCTS

- 2.01 MATERIALS**
- A. PROVIDE MATERIALS WHETHER THE MATERIALS ARE SHOWN BUT NOT SPECIFIED, SPECIFIED BUT NOT SHOWN, OR ARE REASONABLY INCIDENTAL FOR A COMPLETE OPERATIONAL SYSTEM.
- 2.02 IDENTIFICATION**
- A. PROVIDE LABELING FOR:
- EQUIPMENT
 - PIPING
 - DUCTWORK
- B. LABELS SHALL BE CLEARLY VISIBLE AND ACCURATE BEFORE TURNOVER OF SYSTEMS OR COMMISSIONING WORK BEGINS.
- C. LABELS SHALL
- INDICATE DIRECTION OF FLOW ON PIPING AND DUCTWORK SYSTEMS
 - HAVE LETTERING AND NUMBERS A MINIMUM OF 2" HIGH
 - BE AT INTERVALS NO GREATER THAN 25 FEET ON PIPING AND DUCTWORK
 - BE OF ANODIZED ALUMINUM FOR EQUIPMENT, APPLIED WITH MOLY RIVETS
 - USE THE SAME NOMENCLATURE IDENTIFIED ON THE DRAWINGS
- D. PROVIDE COLOR CODED CEILING IDENTIFICATION FOR VALVES AND DAMPERS ABOVE CEILINGS. THE IDENTIFICATION SHALL BE LOCATED ON THE ASSOCIATED ACCESS PANEL AND SHALL BE APPROVED BY THE ARCHITECT BEFORE INSTALLATION.
- 2.03 ELECTRICAL**
- A. PROVIDE THE FOLLOWING UNLESS COORDINATED WITH THE WORK PROVIDED UNDER DIVISION 26:
- STARTERS
 - VARIABLE FREQUENCY DRIVES
 - DISCONNECTING MEANS
 - MAINTENANCE RECEPTACLES, CIRCUITED
 - POWER FOR EQUIPMENT CONTROLS AND ASSOCIATED CONTROLLERS AND ACTUATORS
 - DUCT DETECTORS
- B. SUBCONTRACT WITH A CONTRACTOR LICENSED TO PERFORM THE WORK SPECIFIED UNDER DIVISION 26 AS NECESSARY FOR THE AUTHORITY HAVING JURISDICTION. ELECTRICAL SYSTEMS PROVIDED UNDER DIVISION 20 SHALL MEET THE REQUIREMENTS SPECIFIED UNDER DIVISION 26.
- C. COORDINATE THE VOLTAGES AND MOPC REQUIREMENTS FOR EQUIPMENT WITH THE WORK BEING PROVIDED UNDER DIVISION 26 BEFORE ORDERING EQUIPMENT, INCLUDING EQUIPMENT PROVIDED UNDER DIVISION 20 AND 26.
- D. ELECTRICAL COMPONENTS PROVIDED UNDER DIVISION 20 SHALL HAVE THE SUITABLE NEMA HOUSING CLASSIFICATION FOR THE INSTALLATION.
- E. PROVIDE A SUBMITTAL WITH A LIST OF THE PROVIDED EQUIPMENT, THE ELECTRICAL CHARACTERISTICS OF EACH ITEM, AND THE COORDINATED PANEL/CIRCUIT INFORMATION.
- F. EQUIPMENT PROVIDED UNDER DIVISION 20 SHALL HAVE A UL RATING LABEL, OR EQUAL INDEPENDENT TESTING CERTIFICATION AS APPROVED BY THE AUTHORITY HAVING JURISDICTION.
- G. EQUIPMENT PROVIDED UNDER THIS DIVISION WITH A MOPC REQUIREMENT GREATER THAN 20 AMPS SHALL HAVE A POWER FACTOR OF 0.90 OR GREATER. EQUIPMENT NOT MEETING THIS 0.90 CRITERIA SHALL BE PROVIDED WITH POWER CORRECTION DEVICES TO PROVIDE AN EQUIVALENT POWER FACTOR.
- H. EQUIPMENT, PIPING, DUCTWORK, ETC. PROVIDED UNDER THIS DIVISION SHALL NOT BE INSTALLED WITHIN THE NATIONAL ELECTRIC CODE REQUIRED CLEARANCE AREAS OR AS REQUIRED BY THE AUTHORITY HAVING JURISDICTION. DISCREPANCIES INDICATED WITHIN THE DRAWINGS SHALL BE BROUGHT TO THE ENGINEER'S ATTENTION BEFORE BEGINNING WORK.
- 2.04 PRODUCTS TO BE USED**
- A. ITEMS INDICATED ON THE DRAWINGS OR IN THE SPECIFICATIONS BY COMMON TRADE NAME, MANUFACTURERS NAME/MODEL, PROVIDE AN INDICATION OF THE QUALITY OF THE PRODUCTS OR MATERIALS TO BE USED ON THIS PROJECT.
- B. PRODUCTS INDICATED AS THE "BASIS OF DESIGN" ON THE DRAWINGS HAVE BEEN COORDINATED WITH OTHER TRADES. COORDINATE SUBSTITUTED EQUIPMENT OF OTHER MANUFACTURERS, LISTED AS APPROVED EQUALS, WITH OTHER TRADES. MAKE NECESSARY MODIFICATIONS FOR USE OF AN APPROVED EQUAL MANUFACTURER'S PRODUCT, INCLUDING COORDINATION WITH OTHER TRADES.
- 2.05 ACCESS PANELS**
- A. GROUP DAMPERS, TRAPS, VALVES AND OTHER ACTUATORS IN REASONABLE PROXIMITY TO REDUCE THE NUMBER OF REQUIRED ACCESS PANELS.
- B. PROVIDE ACCESS PANELS TO MAINTAIN THE FIRE RATING OF THE ASSOCIATED WALL, FLOOR, CEILING, ETC. ASSEMBLY.
- C. ACCESS PANELS ARE NOT REQUIRED WHERE LOCATED ABOVE LAY-IN CEILING PANELS.
- D. ACCESS PANELS SHALL BE COORDINATED WITH THE FINISH OF THE ASSOCIATED ASSEMBLY.
- E. PROVIDE A SHOP DRAWING INDICATING THE LOCATION AND TYPES OF ACCESS PANELS BEFORE BEGINNING INSTALLATION.
- F. PROVIDE ACCESS PANELS IN DUCTWORK TO PROVIDE ACCESS TO FIRE AND SMOKE DAMPERS THAT ARE SUITABLE FOR THE ASSOCIATED DUCT PRESSURE CLASSIFICATION AND WHICH MAINTAINS THE AIR LEAKAGE CRITERIA INDICATED HEREIN.
- 2.06 ROOF CURBS**
- A. ROOF MOUNTED EQUIPMENT LOCATED ON EITHER ON A ROOF AREA OR ON A SLAB-ON-GRADE SHALL BE PROVIDED WITH AN EQUIPMENT SUPPORT CURB SPECIFIC FOR THE EQUIPMENT BEING SERVED, FOR ROOF MOUNTED SYSTEMS. PROVIDE THE CURB ASSEMBLIES WITH ISOLATION RAILS ON ALL SIDES OF THE CURB. ISOLATION RAILS SHALL BE FURNISHED AS PART OF THE SAME SUBMITTAL PACKAGE AS THE CURB AND EQUIPMENT NATIONAL ROOFING CONTRACTORS NATIONAL ASSOCIATION CURBS SHALL BE PROVIDED.
- B. CURBS SHALL BE SUITABLE FOR THE PITCH OF THE ROOF AND SHALL BE SET FOR THE EQUIPMENT TO BE LEVEL. PROVIDE WOOD BLOCKING AS NEEDED TO MAINTAIN A MINIMUM TOP OF CURB ELEVATION AT 14" ABOVE THE FINISHED ROOF LEVEL, OR THE NOMINAL HEIGHT OF THE CURB INDICATED WITHIN THE EQUIPMENT SPECIFICATION ARTICLE.
- C. CURBS SHALL BE DOUBLE WALL INSULATED TYPE. ADDED INSULATION SHALL BE APPLIED TO THE INTERIOR OF THE CURB TO PROVIDE SIMILAR INSULATION VALUE FOR THE ISOLATION RAIL AREA.
- D. EQUIPMENT CURBS AND RAILS SHALL BE PATE ES SERIES OR EQUIVALENT OF THY CURB, PROVIDED WITH:
- 18 GAUGE GALVANIZED BASE PLATE
 - WOOD NAILER STRIP
 - GALVANIZED COUNTER FLASHING

- ACRYLIC TOP CLADDING FOR RAILS
 - DOUBLE WALL INSULATION
 - ISOLATION RAIL
- PIPE CURBS SHALL BE OF SIMILAR CONSTRUCTION AS EQUIPMENT CURBS WITH ACRYLIC TOP CLADDING AND WITHOUT ISOLATION RAILS. PATE PC SERIES OR EQUAL OF THY CURB.
- 2.07 FLASHING**
- A. SEE THE ARCHITECTURAL DRAWINGS AND ASSOCIATED DIVISIONS OF THE SPECIFICATION FOR FLASHING REQUIREMENTS.
- B. COORDINATE THE FLASHING REQUIREMENTS WITH THE WORK OF OTHER TRADES FOR THE FOLLOWING:
- SANITARY VENTS THROUGH ROOF
 - CURBS
 - PIPE AND DUCT PENETRATIONS THROUGH ROOF CURBS AND WALL ASSEMBLIES
- 2.08 SUPPORTS - HANGERS AND PIPE SUPPORTS**
- A. PROVIDE HANGERS AND SUPPORTS.
- MANUFACTURED BY EATON, GLOBE, OR CARPENTER & PATERSON
 - TRAPEZE HANGERS ARE ACCEPTABLE
 - PROVIDE WITH SWAY BRACING SPACED AND CONFIGURED TO PREVENT LATERAL MOVEMENT
 - HANGER AND SUPPORTS SHALL BE INSTALLED PER THE REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION WITH THE FOLLOWING MAXIMUM SPACING:
 - 1/2 PIPE: 6 FEET
 - 3/4" AND 1" PIPE: 8 FEET
 - PIPING OVER 1": 10 FEET
- B. WOOD CONSTRUCTION:
- BOLT THROUGH HANGERS TO STRUCTURAL MEMBERS
 - LAG SCREWS TO STRUCTURAL MEMBERS
- C. CONCRETE CONSTRUCTION:
- GREATER THAN 2" TOPPING:
 - RODS SHALL EXTEND THROUGH CONCRETE ASSEMBLY WITH A 4X4 STEEL TOP PLATE
 - LESS THAN 2" TOPPING:
 - RODS SHALL BE BOLTED INTO THE CONCRETE ASSEMBLY USING SUITABLE TOGGLE BOLTS
- D. STEEL CONSTRUCTION:
- SUPPORT FROM TOP CHORD OF THE JOIST OR PANEL POINTS OF LOWER CHORD OF OPEN WEB JOISTS FOR PIPING RUNNING PERPENDICULAR TO THE DIRECTION OF THE JOISTS
 - WELD STEEL ANGLES TO TOP CHORD OF OPEN WEB JOISTS FOR PIPING RUNNING PARALLEL TO THE DIRECTION OF THE JOISTS
- E. PIPES SHALL BE SUPPORTED TO PROVIDE PROPER SLOPE AND SHALL NOT BE SUPPORTED FROM OTHER SUPPORT SYSTEMS PROVIDED TO SERVE THE EQUIPMENT COVERED WITHIN OTHER DIVISIONS OF THE SPECIFICATIONS.
- F. PIPE HANGERS:
- STATIC AND DYNAMIC: CARPENTER AND PATERSON FIGURE 2015
 - SWAY BRACES: CARPENTER AND PATERSON FIGURE 2300 SERIES
 - INSULATED PIPE SECTIONS: CARPENTER AND PATERSON 61 SERIES OR 82-86 SERIES
- G. FLOOR MOUNTED PIPE SUPPORTS:
- CARPENTER AND PATERSON FIGURE 628, 629, 630
 - PROVIDE INDEPENDENT CONCRETE FOOTER AS NEEDED.
- 2.09 VIBRATION ISOLATION**
- A. PROVIDE APPROPRIATE VIBRATION ISOLATION AS A DELEGATED DESIGN. PROVIDE A SUBMITTAL INDICATING DETAILS AND CUTSHEETS TO PROVIDE ADEQUATE EXTERNAL VIBRATION ISOLATION FOR THE FOLLOWING:
- FANS/FAN COIL UNITS/VAV BOXES (2,000 CFM SYSTEMS OR LESS)
 - 0.75" MINIMUM DEFLECTION
 - PIPE AND DUCT SUPPORT ASSEMBLIES (WITHIN 75 FEET OF ASSOCIATED EQUIPMENT)
 - 1.0" MINIMUM DEFLECTION
- B. WHERE EQUIPMENT INDICATED HEREIN/BEFORE IS INDICATED TO BE PROVIDED WITH EXTERNAL VIBRATION ISOLATION AND ALSO SPECIFIED TO BE PROVIDED WITH INTERNAL ISOLATION, THE EQUIPMENT SHALL BE TESTED DURING EQUIPMENT STARTUP AT THE FULL RANGE OF SYSTEM MODULATION. INTERNAL ISOLATION SHALL BE CLAMPED DOWN AS NEEDED DURING THE STARTUP AS WELL AS DURING THE WARRANTY PERIOD.
- C. VIBRATION SYSTEMS SHALL BE:
- OF AN APPROVED MANUFACTURER:
 - MASON INDUSTRIES
 - KORFUND
 - VIBRATION ELIMINATOR
 - COORDINATED WITH THE:
 - TYPES OF SUPPORT SYSTEMS APPLIED
 - FULL RANGE OF OPERATIONAL FREQUENCY
 - EQUIPMENT WEIGHT DISTRIBUTION
 - THE CRITERIA INDICATED IN THE ASHRAE APPLICATIONS HANDBOOK
 - PROVIDED ON DUCT AND PIPE SYSTEMS WITHIN 75 FEET OF THE ASSOCIATED FAN OR PUMP EQUIPMENT.
- 2.10 SLEEVES, OPENINGS, AND LINTELS**
- A. REVIEW THE COMPLETE SET OF CONTRACT DOCUMENTS FOR MISSING SLEEVES, OPENING, AND LINTELS IN ORDER TO ACCOMMODATE THE WORK PROVIDED UNDER DIVISION 20:
- PROVIDE A SHOP DRAWING OF ADDITIONAL REQUIRED SLEEVES AND OPENINGS THROUGH FLOOR, CEILINGS, ROOF AND WALL ASSEMBLIES FOR THE ARCHITECT'S REVIEW.
 - PROVIDE A DRAWING OF REQUIRED LINTELS FOR THE ARCHITECTS AND STRUCTURAL ENGINEER'S REVIEW.
- B. SEAL CONDUITS THROUGH FIRE RATED ASSEMBLIES AND WALLS WITH UL LISTED PRODUCTS RATED FOR THE FIRE RATING OF THE ASSEMBLY/WALL AND COMPATIBLE WITH THE FLOOR/WALL CONSTRUCTION.
- C. FOR WORK THAT REQUIRES CHASES, LINTELS, OPENINGS AND SLEEVES BE PLACED IN EXISTING WALLS AND FLOORS, PATCH, REPAIR AND RESTORE TO ORIGINAL CONDITION THE SURFACES DISTURBED DURING THE INSTALLATION. DO NOT CUT ANY STRUCTURAL MEMBERS WITHOUT APPROVAL FROM ARCHITECT.
- D. PROVIDE PIPE SEALS AT PIPE PENETRATIONS.
- COMBUSTIBLE PIPING AND DUCTWORK: PROVIDE INTUMESCENT FIRESTOP WHICH WILL EXPAND WITH HEAT AS APPROVED BY THE AUTHORITY HAVING JURISDICTION AND WHICH MEETS THE REQUIREMENTS OF THE ASSOCIATED UL CERTIFIED ASSEMBLY.
- E. PROVIDE UL APPROVED PIPE AND DUCT PENETRATION DETAILS IF REQUIRED BY THE AUTHORITY HAVING JURISDICTION.
- F. PROVIDE ESCUTCHEON PLATES AT EXPOSED PIPE PENETRATIONS IN FINISHED AREAS.

PART 3 EXECUTION

- 3.01 EXISTING CONDITIONS**
- A. DURING THE BIDDING PERIOD, AND PRIOR TO SUBMITTING A BID, PERFORM A SITE VISIT TO REVIEW THE EXISTING CONDITIONS:
- SUBMIT A REQUEST FOR INFORMATION (RFI) BASED ON ANY QUESTIONS THAT ARISE FROM THE SITE VISIT.
 - EXCEPT FOR EXISTING WORK THAT QUALIFIES AS HIDDEN CONDITIONS, THE BIDS SUBMITTED BY THE CONTRACTOR SHALL ACCOUNT FOR EXISTING CONDITIONS AND INCLUDE THE WORK NEEDED TO PROVIDE THE FINAL SYSTEMS INDICATED IN THE CONTRACT DOCUMENTS.
 - BIDS SHALL INCLUDE THE WORK TO REMOVE AND REINSTALL EXISTING EQUIPMENT, CONTROLS, POWER, SUPPORTS, PIPING AND DUCTWORK NECESSARY TO INSTALL THE NEW WORK. THIS SHALL INCLUDE NECESSARY TEMPORARY PIPING, DUCTWORK, OR EQUIPMENT TO MAINTAIN SYSTEM OPERABILITY WHEN THE OWNER INTENDS TO MAINTAIN BUILDING OPERATIONS.
- B. COORDINATE ANY SYSTEM OUTAGES WITH OWNER AT LEAST 7 DAYS IN ADVANCE OF OUTAGE.
- 3.02 EXISTING EQUIPMENT**
- A. EXISTING EQUIPMENT SHALL BE:
- REMOVED: RETURN TO THE OWNER IN THE SAME CONDITION AS BEFORE THE WORK COMMENCED, OR TO BE REINSTALLED UNDER THE WORK COVERED UNDER DIVISION 20.
 - REPLACED: EQUIPMENT SHALL BE LEFT IN PLACE TO SERVE THE SYSTEM(S) WHILE THE FACILITY IS STILL OCCUPIED. THE NEW EQUIPMENT SHALL BE INSTALLED CONCURRENTLY WITH THE REMOVAL OF THE EXISTING EQUIPMENT AS PART OF THE WORK COVERED UNDER DIVISION 20.
 - DEMOLISHED: THE EQUIPMENT SHALL BE REMOVED FROM THE FACILITY.
- B. PROVIDE A SUBMITTAL INDICATING WHICH SYSTEMS AND PIECES OF EQUIPMENT WILL BE REMOVED, REPLACED, OR DEMOLISHED PRIOR TO BEGINNING WORK.
- 3.03 INSTALLATION**
- A. MAKE MINOR ADJUSTMENTS IN THE LOCATION OF EQUIPMENT AND DEVICES WITHOUT COST TO THE OWNER AS NECESSARY.
- B. PROVIDE ACCESS TO EQUIPMENT AS REQUIRED TO MAINTAIN SYSTEMS AS INDICATED BY THE MANUFACTURER OF THE EQUIPMENT OR AS REQUIRED BY THE AUTHORITY HAVING JURISDICTION. COORDINATE THESE REQUIREMENTS BEFORE BEGINNING WORK.
- C. THE PIPING AND DUCTWORK SYSTEMS SHALL BE INSTALLED PARALLEL TO BUILDING WALLS AND COLUMN LINES. IF SLOPED LINES WILL NOT MEET INTENDED INVERT ELEVATIONS OR WILL CREATE CONFLICTS WITH CEILING HEIGHTS AS A RESULT, ALTERNATE INSTALLATION ROUTES SHALL BE BROUGHT TO THE ENGINEER'S ATTENTION PRIOR TO BEGINNING WORK.
- D. PROVIDE OFFSETS AND FITTINGS NEEDED TO MEET THE PROJECT'S NEEDS.
- E. THE EQUIPMENT AND SYSTEMS INSTALLED UNDER THIS DIVISION OF THE SPECIFICATION SHALL BE IN ACCORDANCE WITH THE STANDARD OF CARE.
- 3.04 MOUNTING HEIGHTS**
- A. COORDINATE THE MOUNTING HEIGHTS OF EQUIPMENT, CONTROLLERS, ETC. TO PROVIDE ACCESSIBILITY TO MEET THE REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION ALONG WITH THE REQUIREMENTS OF THE CONTRACT DOCUMENTS.
- B. COORDINATE MOUNTING HEIGHTS WITH THE WORK PROVIDED UNDER OTHER DIVISIONS OF THE SPECIFICATIONS.
- 3.05 PAINTING**
- A. PAINT SURFACES OF EQUIPMENT THAT HAVE BEEN SCRATCHED TO MATCH FACTORY CONDITIONS.
- 3.06 RECORD DRAWINGS**
- A. KEEP A RECORD OF DEPARTURES BETWEEN THE CONTRACT DOCUMENTS AND THE INSTALLED WORK FOR THE PURPOSES OF PROVIDING "AS-BUILT" OR RECORD DRAWINGS TO THE OWNER.
- B. AS PART OF THE CONTRACTOR'S BID, PROVIDE FOR PAYMENT TO THE ENGINEER FOR THE CAD OR BIM TO BE UPDATED.
- 3.07 TESTING**
- A. PERFORM TESTING AND INSPECTIONS AS REQUIRED BY THE AUTHORITY HAVING JURISDICTION AND AS REQUIRED UNDER THE PROVISIONS OF THE CONTRACT DOCUMENTS.
- B. PERFORM TESTS PRIOR TO THE CONNECTION OF EQUIPMENT THAT COULD BE DAMAGED FROM TESTS.
- 3.08 OPERATION AND MAINTENANCE MANUAL**
- A. PROVIDE COPIES AND THUMB DRIVES OF THE O&M MANUAL.
- HARDCOPIES
 - HEAVY DUTY 3-RING BINDER
 - LABELLED DIVIDERS
 - POCKETED FOLDERS
 - THUMB DRIVES
- B. COMPOSITION OF THE MANUAL:
- TITLE PAGE
 - PROJECT NAME
 - PROJECT ADDRESS
 - DESIGN TEAM
 - CONTRACTOR AND SUBCONTRACTORS
 - TABLE OF CONTENTS
 - COPY OF EACH SUBMITTAL
 - MANUFACTURERS' SERVICE REPRESENTATIVES
 - MANUFACTURER'S OPERATING AND MAINTENANCE INSTRUCTIONS.
 - WARRANTY INFORMATION.

- 3.09 TRAINING**
- A. PROVIDE NOT LESS THAN 2 HOURS OF TRAINING FOR EACH OF THE SYSTEMS INCLUDED IN THE COMMISSIONING WORK.
- B. TRAINING SHALL BE PERFORMED BY MANUFACTURERS REPRESENTATIVE.
- C. PROVIDE A VIDEO RECORDING OF TRAINING SESSIONS ON (2) THUMB DRIVES.

END OF SECTION

NOTES



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MECHANICAL
SPECIFICATIONS

Project Number MI-1226

Date 03/12/2025

SCALE: AS NOTED

H801

SECTION 23 00 00
HEATING, VENTILATION, AND AIR CONDITIONING

PART 1 GENERAL

1.01 SUMMARY

- A. SECTION INCLUDES ADMINISTRATIVE AND PROCEDURAL REQUIREMENTS AS INDICATED IN SECTION 20 00 00.
- B. THIS SECTION COVERS THE PROJECT'S HEATING, VENTILATION AND AIR CONDITIONING SYSTEMS AND COMPONENTS, INCLUDING:
- AIR DISTRIBUTION
 - INSULATION
 - CONTROL/ENERGY MANAGEMENT SYSTEM

1.02 GENERAL DESCRIPTION

- A. PROVIDE HVAC SYSTEMS TO SERVE THE PROJECT AS INDICATED ON THE DRAWINGS AND AS SPECIFIED HEREIN.
- THE HVAC SYSTEMS INDICATED ON THE DRAWINGS ARE INDICATED IN A SCHEMATIC APPROACH. PROVIDE COORDINATION WITH OTHER TRADES AND NECESSARY OFFSETS, AS DETERMINED BEFORE SUBMITTING A BID TO PERFORM THE ASSOCIATED WORK.
 - COORDINATE THE WORK WITH THE AUTHORITIES HAVING JURISDICTION AND THE WORK BEING PROVIDED BY OTHER TRADES BEFORE BEGINNING WORK.
 - COORDINATE THE PLUMBING SYSTEMS WITH THE WORK PROVIDED UNDER DIVISION 26.

PART 2 PRODUCTS

2.01 INLINE DIRECT DRIVE EXHAUST FANS

- A. PROVIDE DIRECT DRIVE INLINE FANS AS INDICATED ON THE DRAWINGS:
- CAPACITY LISTED IN THE SCHEDULES
 - LOCATIONS AS SHOWN ON THE DRAWINGS
 - UNITS SHALL BE ARI RATED AND UL LISTED.
- B. ACCEPTABLE MANUFACTURERS ARE:
- GREENHECK
 - COOK
 - PENN
- C. THE FAN SHALL BE DIRECT DRIVEN PACKAGED FAN UNIT.
- THE FAN SHALL BE/HAVE:
 - CENTRIFUGAL, BACKWARD INCLINED WHEEL.
 - GALVANIZED STEEL INSULATED HOUSING.
 - DIRECT DRIVEN MOTOR IN AIR STREAM.
 - INTEGRAL BACK DRAFT DAMPER
 - ACCESS PANEL THROUGH CABINET.
 - DISCONNECT MEANS (CORD AND PLUG). - WARRANTY:
 - UNIT SHALL HAVE 1 YEAR FAN AND MOTOR WARRANTY.

2.02 AIR DISTRIBUTION MATERIALS

- A. AIR DISTRIBUTION SHALL BE AS APPROVED BY THE AUTHORITY HAVING JURISDICTION, WITH THE FOLLOWING AS PROJECT MINIMUM STANDARDS:
- DUCTWORK SHALL BE FABRICATED AND INSTALLED PER SMACNA STANDARDS, INCLUDING:
 - GAUGE OF DUCTWORK
 - THE PRESSURE CLASSIFICATION SHALL BE BASED ON A SYSTEM RATED PRESSURE DETERMINED BY REFERRING TO THE EXTERNAL STATIC PRESSURE VALUES INDICATED IN THE EQUIPMENT SCHEDULES AND ADDING A 25% SAFETY FACTOR.
 - JOINT METHODOLOGIES
 - SEALING OF JOINTS
 - COORDINATE DIMENSIONS AND ROUTING OF DUCTWORK WITH THE WORK ASSOCIATED WITH OTHER TRADES BEFORE BEGINNING FABRICATION OF DUCTWORK. THE DUCTWORK SHOP DRAWING SHALL REPRESENT THE COORDINATED DUCTWORK LAYOUT. ENGINEER'S REVIEW OF THE DUCTWORK SHOP DRAWING WILL BE RELATED TO THE COMPLIANCE WITH THE ENGINEERING REQUIREMENTS INDICATED IN THE CONTRACT DOCUMENTS, NOT FOR COORDINATION WITH THE WORK ASSOCIATED WITH OTHER TRADES.
 - AIR DISTRIBUTION DUCTWORK SHALL BE GALVANIZED STEEL UNLESS NOTED OTHERWISE IN THESE SPECIFICATIONS OR ON THE DRAWINGS.
 - ACOUSTICAL LINING:
 - APPLIED A MINIMUM OF 15 FEET FROM FAN BASED EQUIPMENT ON THE INLET AND OUTLET SIDE OF THE UNIT, UNLESS NOTED OTHERWISE ON THE DRAWINGS
 - 1/2" THICKNESS
 - INSIDE (AIRSIDE) SURFACE OF LINING SHALL BE USED TO PROVIDE THE DUCT DIMENSION CALLED OUT ON THE DRAWINGS
 - LINED DUCTWORK SHALL ALSO BE EXTERNALLY WRAPPED TO MEET THERMAL INSULATION REQUIREMENTS. THE INSULATING PROPERTIES OF THE LINING SHALL NOT BE ACCOUNTED FOR WHEN DETERMINING THE REQUIRED R-VALUE OF THE EXTERNAL INSULATION.
 - MINIMUM SOUND ABSORPTION COEFFICIENTS:
 - 125 HZ: 0.07
 - 250 HZ: 0.20
 - 500 HZ: 0.44
 - 1000 HZ: 0.66
 - 2000 HZ: 0.84
 - 4000 HZ: 0.93
 - ANTH-MICROBIAL COATING; MEETS ASTM C1338 AND ASTM G21 REQUIREMENTS
 - SEAMS AND CUT EDGES SHALL BE SEALED FROM AIRSTREAM
 - JOHNS MANVILLE LINACOUSTIC RC OR EQUAL OF KNAUF OR OWENS CORNING
 - DUCT CONNECTIONS TO AIR HANDLING EQUIPMENT, SUCH AS FANS, FAN-COIL UNITS, AIR HANDLING UNITS, VAV TERMINAL UNITS, AND OTHER EQUIPMENT WITH INTEGRAL FANS AND SUBJECT TO VIBRATIONAL FORCES, SHALL BE MADE WITH FLEXIBLE DUCT CONNECTORS:
 - DUAL FABRIC VINYL SUPER DUTY
 - UL CLASSIFIED
 - AIRTIGHT AND WATERPROOF RATING UP TO 10"WG
 - DUCTMATE PROFLEX
 - MANUAL VOLUME DAMPERS:
 - ACCEPTABLE MANUFACTURERS:
 - RUSKIN
 - GREENHECK
 - TAMCO
 - DAMPERS SHALL BE RATED FOR THE APPLICABLE PRESSURE AND VELOCITY DUTY.
 - ROUND:
 - MANUAL BUTTERFLY DAMPER
 - RECTANGULAR:
 - OPPOSED BLADE INTERLOCKING DAMPER
 - PROVIDE LOCKING QUADRANT STYLE OPERATOR, VENTLOK 555, FOR DAMPERS IN ACCESSIBLE LOCATIONS.
 - WHERE LOCATED BEHIND INACCESSIBLE CEILINGS OR WALLS, PROVIDE CONCEALED DAMPER REGULATORS, PROVIDE RACK AND PINION TYPE GEAR DRIVE WITH CABLE CONNECTION, BOWDEN CABLE AND YOUNG REGULATOR. COORDINATE LOCATION OF OPERATOR WITH THE ARCHITECT BEFORE BEGINNING WORK.
 - FOR DAMPERS IN EXTERNALLY INSULATED DUCTWORK, PROVIDE STANDOFF BRACKET OF THE SAME DEPTH AS THE INSULATION OR GREATER.
 - INSULATION SHALL EXTEND UNDER THE ELEVATED DIAL.
 - FIRE DAMPERS:
 - ACCEPTABLE MANUFACTURERS:
 - RUSKIN
 - GREENHECK
 - POTTORF
 - DAMPER PROTECTION RATING SHALL BE COORDINATED WITH THE ASSOCIATED ASSEMBLY RATING AS INDICATED ON THE ARCHITECTURAL DRAWINGS AND AS REQUIRED BY THE AUTHORITY HAVING JURISDICTION.
 - DAMPERS SHALL BE RATED FOR THE APPLICABLE PRESSURE AND VELOCITY DUTY.
 - DAMPERS SHALL BEAR A UL LABEL
 - STANDARD FUSIBLE LINK TEMPERATURE RATING OF 165 DEG.F, UNLESS THE SPECIFIC APPLICATION REQUIRES A DIFFERENT RATING AS DETERMINED BY THE AUTHORITY HAVING JURISDICTION.
 - CURTAIN TYPE DAMPERS SHALL BE USED WHERE POSSIBLE. USE MULTIPLE BLADE DAMPERS WHERE THE USE OF CURTAIN STYLE IS NOT FEASIBLE.
 - CURTAIN TYPE:
 - DAMPER SHALL BE CLASSIFIED FOR DYNAMIC CLOSURE TO 2000 FPM AND 4 INCHES W.G. STATIC PRESSURE.
 - DAMPER SHALL HAVE 5" FRAME CONSTRUCTED FROM MINIMUM 20 GAGE GALVANIZED STEEL.
 - BLADES SHALL BE MINIMUM 24 GAGE GALVANIZED STEEL
 - CLOSURE SPRINGS SHALL BE TYPE 301 STAINLESS STEEL, CONSTANT FORCE OR SPRING CLIP TYPE.
 - PROVIDE GRILLE, GRILLE ACCESS TYPE OR OUT OF WALL TYPE OF FRAME WHERE INDICATED ON THE DRAWINGS.
 - MULTIPLE BLADE TYPE:
 - DAMPERS SHALL BE SUITABLE FOR DYNAMIC CLOSURE TO 3000 FPM AND 6 INCHES W.G. STATIC PRESSURE AT 90°X64° FOR VERTICAL INSTALLATION AND 60°X48° FOR HORIZONTAL INSTALLATION.
 - DAMPER SHALL HAVE 5" FRAME CONSTRUCTED FROM MINIMUM 16 GAGE GALVANIZED STEEL CHANNEL AND REINFORCED AT THE CORNERS.
 - BLADES SHALL BE 6" WIDE AIRFOIL TYPE AND CONSTRUCTED FROM MINIMUM 14 GAGE GALVANIZED STEEL.
 - BEARINGS SHALL BE SELF-LUBRICATING STAINLESS STEEL SLEEVE, TURNING IN EXTRUDED HOLE IN FRAME.
 - BLADE SEALS SHALL BE GALVANIZED STEEL FOR FLAME SEAL TO 1,900 DEGREES F AND MECHANICALLY ATTACHED TO BLADE EDGE.
 - LINKAGE SHALL BE CONCEALED IN FRAME.
 - PROVIDE 1/2-INCH DIAMETER PLATED STEEL HEX SHAPED AXLE ATTACHED TO BLADE.
 - PRESSURE DROP SHALL BE A MAXIMUM OF 0.07 INCHES W.G. AT 1,500 FEET PER MINUTE THROUGH 24"X24" DAMPER.

2.03 AIR DEVICES

- A. AIR DEVICES SHALL BE PROVIDED AS INDICATED ON THE MECHANICAL DRAWINGS IN REGARD TO APPROXIMATE LOCATION, COORDINATE THE FINAL INSTALLATION, FINISH AND BORDER/MOUNTING MECHANISM WITH THE ARCHITECTURAL REFLECTED CEILING PLAN AND THE WORK OF OTHER TRADES, UNLESS NOTED OTHERWISE:
- AIR DEVICES INDICATED TO BE LOCATED IN CEILINGS OR WALLS WITH A WHITE FINISH SHALL BE FACTORY WHITE.
 - AIR DEVICES INDICATED TO BE LOCATED IN CEILINGS OR WALLS WITH A COLOR FINISH OTHER THAN WHITE WILL BE PROVIDED WITH PRIMER FINISH SUITABLE FOR FIELD PAINTING.
 - SUPPLY AIR DEVICES SHALL BE PROVIDED WITH INTEGRATED OPPOSED BLADE DAMPERS.
 - EXHAUST AND RETURN AIR DEVICES CALLED OUT AS REGISTERS SHALL BE PROVIDED WITH INTEGRATED OPPOSED BLADE DAMPERS. EXHAUST AND RETURN AIR DEVICES CALLED OUT AS GRILLES SHALL BE PROVIDED WITHOUT INTEGRATED OPPOSED BLADE DAMPERS.
- B. THE AIR DEVICES SHALL BE AS MANUFACTURED BY TITUS OR EQUAL OF PRICE, METALAIR, KRUEGER, OR ANEMOSTAT AS INDICATED BELOW:
- RETURN/EXHAUST REGISTERS/GRILLES - CEILING:
 - ALUMINUM FRAME CONSTRUCTION
 - 12"X12"X1/2" CORE
 - TITUS - 60F SERIES

PART 3 EXECUTION

3.01 EXISTING CONDITIONS

- A. WHERE HVAC SYSTEMS PASS THROUGH RENOVATED AREAS TO SERVE AREAS OUTSIDE LIMITS OF WORK AND INTERFERE WITH NEW WORK, RELOCATE SUCH SYSTEMS AS REQUIRED FOR INSTALLATION OF NEW WORK AND RESTORE RELOCATED SYSTEMS TO OPERATION OR MODIFY NEW WORK TO ACCOUNT FOR EXISTING CONDITIONS. SUBMIT PROPOSED MODIFICATIONS TO ARCHITECT FOR APPROVAL PRIOR TO ANY WORK.
- B. COORDINATE ANY OUTAGES OF HVAC SYSTEMS WITH OWNER AT LEAST 7 DAYS IN ADVANCE OF OUTAGE.

3.02 INSTALLATION OF SYSTEMS

- A. THE DRAWINGS INDICATE THE GENERAL LAYOUT AND PLACEMENT OF EQUIPMENT AND DEVICES. SOME ADJUSTMENT IN THE LOCATION OF EQUIPMENT AND DEVICES IS EXPECTED WITHOUT COST TO THE OWNER TO ACCOUNT FOR FIELD CONDITIONS.
- B. IF INDICATED ON THE DRAWINGS, THE ROUTING OF PIPING AND LOCATION OF DEVICES IS INTENDED TO BE SCHEMATIC ONLY. FINAL ROUTING OF PIPING, DUCTWORK AND LOCATION OF DEVICES SHALL BE COORDINATED WITH THE ARCHITECTURAL AND STRUCTURAL DRAWINGS. SUBMIT PLAN ROUTING TO ARCHITECT FOR APPROVAL.
- C. PROVIDE DIELECTRIC UNIONS MEETING ASSE 1079 IN LOCATIONS WHERE PIPES OF DISSIMILAR METALS ARE JOINED TO PREVENT ACCELERATED CORROSION AND DETERIORATION IN THE PIPING SYSTEM DUE TO GALVANIC AND STRAY CURRENT.

3.03 AIR DISTRIBUTION

- A. PROVIDE MANUAL VOLUME DAMPERS AS CALLED OUT ON THE DRAWINGS AND AS NEEDED, AS DETERMINED BY THE TEST AND BALANCE CONTRACTOR, TO PROPERLY BALANCE THE SYSTEMS. THE OPPOSED BLADE DAMPERS INTEGRAL TO THE AIR DEVICES ARE TO BE USED FOR FINAL TUNING OF THE AIR BALANCE. THE LARGEST COMPONENT OF THE BALANCING SHALL BE ACCOMPLISHED BY THE USE OF THE DUCT MOUNTED MANUAL VOLUME DAMPERS. IF FEWER MANUAL VOLUME DAMPERS ARE INSTALLED THAN CALLED FOR ON THE DRAWINGS, AND A HIGH LEVEL OF THE BALANCING IS DONE VIA THE AIR DEVICES TO THE POINT THAT THE SOUND LEVELS DUE TO AIR NOISE ARE ABOVE ASHRAE RECOMMENDED NC LEVELS, ADDITIONAL DAMPERS SHALL BE CUT INTO THE SYSTEM AND THE ENTIRE AIR DISTRIBUTION SYSTEM SHALL BE REBALANCED.
- B. FIRE AND/OR COMBINATION FIRE/SMOKE DAMPERS SHALL BE PROVIDED AT THE LOCATIONS INDICATED ON THE DRAWINGS AND AS COORDINATED WITH THE AUTHORITY HAVING JURISDICTION'S INSPECTOR. COORDINATE THE INSPECTOR'S REQUIRED FIRE OR COMBINATION FIRE/SMOKE DAMPERS BEFORE BEGINNING WORK.
- C. WHERE THERE ARE UNUSED PORTIONS OF EXTERIOR WALL LOUVERS, PROVIDE BLANK OFF PANELS TO MAKE THE UNUSED SECTIONS AIRTIGHT.
- BLANK OFF PANELS SHALL BE COMPRISED OF GALVANIZED SHEET METAL CLAD INSULATION BOARD. R-VALUE OF THE INSULATION BOARD SHALL BE A MINIMUM OF R-12. THE PANEL FINISH ON THE LOUVER SIDE OF THE PANEL SHALL BE MATT BLACK.

3.04 TEST AND BALANCE

- A. TEST AND BALANCE THE AIR DISTRIBUTION AND HYDRONIC DISTRIBUTION SYSTEMS TO THE FLOW RATES INDICATED ON THE DRAWINGS.
- B. TESTING AGENCY SHALL BE AN INDEPENDENT ORGANIZATION FROM ANY OF THE CONTRACTORS PERFORMING OTHER WORK COVERED UNDER DIVISION 20. TESTING AGENCY SHALL BE A CERTIFIED MEMBER OF ONE OF THE FOLLOWING ORGANIZATIONS:
- ASSOCIATED AIR BALANCE COUNCIL
 - NATIONAL ENVIRONMENTAL BALANCING BUREAU
- C. PROVIDE A REPORT INDICATING THE RESULTS OF THE TEST AND BALANCE WORK:
- AIR AND WATER FLOW RATES AT:
 - EACH AIR DEVICE.
 - TRAVERSE READINGS AT DISCHARGE AND INLET OF AIR HANDLING UNITS AND FAN COILS.
 - TRAVERSE READINGS AT EACH INTERMEDIATE MANUAL VOLUME DAMPER INDICATED ON THE DRAWINGS. THIS DOES NOT INCLUDE DAMPERS SERVING INDIVIDUAL AIR DEVICES.
 - EACH HYDRONIC COIL.
 - EACH CIRCULATING PUMP.
 - EACH BOILER, CHILLER, COOLING TOWER

2. PRESSURE DROP ACROSS:

- EACH SECTION OF THE AIR HANDLING UNITS
- EACH PIECE OF AIR HANDLING EQUIPMENT
- EACH CIRCULATING PUMP
- EACH COIL

3. TEMPERATURES:

- LAT AT EACH PIECE OF HEATING/COOLING EQUIPMENT UNDER LOAD CONDITIONS
- EAT AT EACH PIECE OF HEATING/COOLING EQUIPMENT UNDER LOAD CONDITIONS
- LWT AT EACH PIECE OF HEATING/COOLING EQUIPMENT UNDER LOAD CONDITIONS
- EWI AT EACH PIECE OF HEATING/COOLING EQUIPMENT UNDER LOAD CONDITIONS

4. ELECTRICAL CHARACTERISTICS OF FANS AND PUMPS

- BHP
- RATED HP
- PERCENTAGE OF SERVICE FACTOR INCURSION
- OPERATING PARAMETERS FOR VFDs

5. PROVIDE SUMMARIES OF EACH AIR DISTRIBUTION SYSTEM:

- SUM OF ALL AIR DEVICES ON THE SYSTEMS
- TRAVERSE READINGS AT THE SYSTEM AIR HANDLING PIECE OF EQUIPMENT
- SUMMARY OF AIR LOSS BY CFM AND BY PERCENTAGE

3.05 ENERGY MANAGEMENT SYSTEM

- A. PROVIDE AN ENERGY MANAGEMENT SYSTEM (EMS) TO AUTOMATICALLY CONTROL AND MONITOR HVAC TEMPERATURE, HUMIDITY, PRESSURE AND FLOW, AS NEEDED AND OUTLINED IN THE CONTROL SEQUENCES INDICATED ON THE DRAWINGS, USING MICROPROCESSOR-BASED CONTROLLERS WITH COMMUNICATIONS TO CENTRAL MONITORING/CONTROL STATION(S).
- THE EMS SHALL BE INTEGRATED WITH THE EXISTING CAMPUS-WIDE SYSTEM SERVING THE BUILDING. SYSTEM SHALL BE SCHNEIDER ELECTRIC/INVENSYS IA SERIES, AND SHALL BE INSTALLED BY NRG CONTROLS, INC. 48 S. HARRISBURG STREET, 2ND FLOOR HARRISBURG, PA 17113.
 - THE EMS SHALL INCLUDE HARDWARE, FIRMWARE, AND SOFTWARE NECESSARY TO OBTAIN THE PERFORMANCE REQUIREMENTS BY FUNCTION AND SYSTEM COMPONENTS FOR OPERATION, RELIABILITY, SECURITY, PACKAGING, CONTROL SEQUENCING, ALARM REPORTING, SCHEDULING, LOOP TUNING, TRENDSING, INTERLOCKS, AND SYSTEM INTEGRATIONS.
 - THE EMS SHALL INCLUDE EQUIPMENT SUCH AS OPERATOR WORKSTATIONS, DIRECT DIGITAL CONTROL (DDC) CONTROLLERS AND ENCLOSURES, FIELD DEVICES, TERMINAL EQUIPMENT, CIRCUIT BREAKERS, AND TRANSFORMERS.
 - INCLUDED WITH FIELD DEVICES ARE ALL SENSORS, TRANSMITTERS, TRANSDUCERS, WELLS, RELAYS, SWITCHES AND POWER SUPPLIES WITH ASSOCIATED WIRING, CONDUIT, CABLING, MOUNTING, AND ENCLOSURES NECESSARY FOR COMPLETE OPERATION OF THE SYSTEM.
 - ALSO INCLUDED ARE CONTROL VALVES, DAMPERS, VALVE ACTUATORS AND DAMPER ACTUATORS NECESSARY FOR A COMPLETELY FUNCTIONAL SYSTEM IN ACCORDANCE WITH THE SEQUENCE OF OPERATION.
 - MODEMS, WIRELESS DEVICES OR OTHER REMOTE TYPE COMMUNICATION DEVICES WHICH CIRCUMVENT NETWORK SECURITY SHALL NOT BE USED FOR ACCESS TO THE EMS.
 - THE EMS SHALL HAVE SYSTEM COMPONENTS AND INFRASTRUCTURE CAPABLE OF PROVING THE FOLLOWING PARAMETER TOLERANCES:
 - AIR DUCT PRESSURE: ±0.2"WG
 - AIR DUCT FLOW: ±5% OF ACTUAL FLOW
 - TEMPERATURE: ±1°F
 - HUMIDITY: ±5% RH
 - FLUID PRESSURE: ±2% OF FULL SCALE
 - FLUID FLOW: ±2% OF FULL SCALE
 - EXECUTION RATES THROUGHOUT THE SYSTEM SHALL BE 5 SECONDS OR LESS.
 - AS PART OF THE SUBMITTAL PROCESS:
 - PROVIDE PROJECT SPECIFIC GRAPHICAL USER INTERFACE (GUI) SCREEN SHOTS OF THE COMPLETE SET OF SCREEN VIEWS WHICH WILL BE IMPLEMENTED FOR THE PROJECT.
 - PROVIDE SEQUENCES OF OPERATION WHICH INDICATE THE USE OF FACTORY CONTROLLERS/SEQUENCES AND EMS SPECIFIC CONTROLLERS/SEQUENCES.
 - SHOP DRAWINGS SHALL INCLUDE:
 - PLANS OF ENCLOSURE LOCATIONS AND RISER DIAGRAMS DEPICTING LOCATIONS OF CONTROLLERS WITH ASSOCIATED NETWORK WIRING.
 - DRAWINGS SHALL INCLUDE WIRE AND TERMINAL NUMBERING RELATED TO INPUT AND OUTPUTS (I/O) FOR EACH CONTROLLER. EACH I/O SHALL BE LABELED WITH THE ASSOCIATED FIELD DEVICE NAME.
 - TYPICAL DRAWINGS SHALL BE ALLOWED WHERE APPROPRIATE (FOR EXAMPLE, TERMINAL EQUIPMENT CONTROLS).
 - LABELING OF EQUIPMENT AND WIRING ON THE DRAWINGS SHALL BE CONSISTENT WITH FIELD LABELING.
 - PROVIDE A POINTS LIST FOR EACH CONTROLLER. THE LIST SHALL DETAIL INPUT AND OUTPUT POINTS AND SHALL INCLUDE A DESCRIPTION OF EQUIPMENT EACH POINT SERVES. CLEARLY INDICATE WHICH POINTS ATTACH TO CONTROLLERS AND WHICH POINTS ATTACH TO EXPANSION MODULES. MULTIPLE POINTS ASSOCIATED WITH A PARTICULAR PIECE OF EQUIPMENT SHALL BE SEQUENTIALLY GROUPED ONTO THE CONTROLLER'S INPUT AND OUTPUT TERMINALS.
 - SUBMITTALS SHALL INCLUDE PROJECT SPECIFIC INFORMATION AND OPTIONS PROPOSED FOR ALL HARDWARE AND SOFTWARE PRODUCTS REQUIRED BY THE SPECIFICATION, INCLUDING EQUIPMENT TECHNICAL DATA SHEETS AND DRAWINGS. EQUIPMENT SHALL BE LISTED IN A MASTER BILL OF MATERIAL AT THE FRONT OF THE SUBMITTAL. THE BILL OF MATERIAL SHALL LIST THE DEVICE NAME, MANUFACTURER, MODEL NUMBER AND ACCURACIES, WITH COMPLETE PART NUMBERS, INDICATING AND DESCRIBING ALL OPTIONS BEING PROPOSED FOR ALL COMPONENTS.
 - SUBMITTALS SHALL INCLUDE MANUFACTURER'S CATALOG DATA DESCRIBING AND SPECIFICALLY INDICATING EACH ITEM OF EQUIPMENT OR COMPONENT PROVIDED AND INSTALLED FOR THE PROJECT.
 - IN ADDITION, SUBMITTALS SHALL INCLUDE:
 - SYMBOLS LEGEND AND TABLE OF CONTENTS.
 - VALVE AND DAMPER SCHEDULES. VALVES SCHEDULES SHALL INCLUDE AS A MINIMUM ASSOCIATED SYSTEM NAME, SERVICE, DRAWING REFERENCE, QUANTITIES, MODEL AND CODE INFORMATION, CONFIGURATION, FAIL POSITION, PIPE SIZE, VALVE SIZE, BODY CONFIGURATION, CLOSE OFF PRESSURE, FLOW DATA, DESIGN AND ACTUAL CV, DESIGN AND ACTUAL PRESSURE DROP, VALVE TOP MODEL AND CODE INFORMATION, AND SPRING RANGE. DAMPER SCHEDULE SHALL INCLUDE AS A MINIMUM ASSOCIATED SYSTEM NAME, SERVICE (RETURN, RELIEF, OUTSIDE, LATERAL, ETC.), QUANTITY, MODEL AND CODE INFORMATION, SIZE, FAIL POSITION, ACTUATOR CODE AND MODEL INFORMATION.
 - POINT LIST DELINEATED BY EACH PIECE OF CONTROLLED OR MONITORED EQUIPMENT. POINT NAMES AND DESCRIPTIONS MUST BE LOGICAL, DESCRIPTIVE, AND CONSISTENT IN ALL PROGRAMS, DRAWINGS, AND DOCUMENTATION.
 - SEQUENCES OF OPERATION WHICH MATCH THE SEQUENCES OF OPERATION IN THE DESIGN DOCUMENTS.
 - POWER RISER DIAGRAMS DEPICTING LAYOUT OF ALL CONTROLLER ENCLOSURES. INCLUDE POWER CIRCUITING AND ENCLOSURE ROOM LOCATIONS. INDICATE WHICH CONTROLLERS RECEIVE UPS POWER.
 - DIAGRAM DEPICTING THE SYSTEM ARCHITECTURE, COMPLETE WITH COMMUNICATION RISER DIAGRAMS DEPICTING LAYOUT OF CONTROLLER ENCLOSURES AND CABLING.
 - CONSTRUCTION PLANS DETAILING LOCATIONS OF ALL MECHANICAL EQUIPMENT, SUGGESTED LOCATIONS FOR BAS ENCLOSURES AND APPROXIMATE LOCATIONS FOR FIELD DEVICES.
 - SCHEMATIC DIAGRAMS OF HVAC EQUIPMENT AND ASSOCIATED POINTS WITH WIRING NOMENCLATURE.
 - PROPORTIONAL DRAWING OF ENCLOSURE INTERIOR DEVICE LAYOUT. DRAWING SHALL DEPICT HIGH AND LOW VOLTAGE SECTIONS, CONTROLLERS, POWER OUTLET, TERMINAL STRIPS, POWER SUPPLIES, TRANSFORMERS, FUSES, SURGE SUPPRESSERS AND WIRE MANAGEMENT. INCLUDE DEVICE SIZING INFORMATION (I.E. FUSE SIZES, ETC.) AND BILL OF MATERIAL.
 - SAMPLE BAS GRAPHIC PAGES FOR ALL PAGES THAT WILL BE USED IN THE GRAPHICAL USER INTERFACE.

END OF SECTION

NOTES



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LYLE HEALTH SERVICES RENOVATION
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MECHANICAL
SPECIFICATIONS

Project Number MI-1226

Date 03/12/2025

SCALE: AS NOTED

H802



ABBREVIATIONS

ABV	ABOVE
AD	AREA DRAIN
AFF	ABOVE FINISHED FLOOR
AFS	ABOVE FINISHED GRADE
AFMS	AIR FLOW MEASURING STATION
AP	ACCESS PANEL
APU	AIR HANDLING UNIT
AP	ACCESS PANEL
APD	AIR PRESSURE DROP
ARCH	ARCHITECTURAL OR ARCHITECT
ATC	AUTOMATIC TEMPERATURE CONTROL
AVG	AVERAGE
BFP	BACKFLOW PREVENTER
BHP	BRAKE HORSEPOWER
BLDG	BUILDING
BLW	BELOW
BMS	BUILDING MANAGEMENT SYSTEM
BOD	BASIS OF DESIGN
C	CONDENSER WATER SUPPLY
CAP	CAPACITY
CD	CONDENSATE
CO	CLEANOUT
CO2	CARBON DIOXIDE
CLG	CEILING
CR	CONDENSER WATER RETURN
CTE	CONNECT TO EXISTING
CW	COLD COLD WATER
CWS	CHILLED WATER SUPPLY
CWR	CHILLED WATER RETURN
DEG	DEGREE
DFU	DRAINAGE FIXTURE UNITS
DI	DISCHARGE
DISCH	DISCHARGE
DIA	DIAMETER
DN	DOWN
DS	DOWNSPOUT
DWG	DRAWING
EMS	ENERGY MANAGEMENT SYSTEM
ESP	EXTERNAL STATIC PRESSURE OR ELEVATOR SUMP PUMP
ET	EXPANSION TANK
EWH	ELECTRIC WALL HEATER
EX	EXISTING
EXTR	EXISTING TO REMAIN
F	FIRE SUPPRESSION
FCO	FLOOR CLEANOUT
FCU	FAN COIL UNIT
FCW	FILTERED COLD WATER
FD	FIRE DAMPER OR FLOOR DRAIN
FDE	FINISHED FLOOR ELEVATION
FSD	FIRE SMOKE DAMPER
FUR	FUEL RETURN
FOS	FUEL OIL SUPPLY
FP	FIRE PROTECTION
FS	FEET PER MINUTE
FT	FLOOR SINK
FTD	FOUNDATION DRAIN
FT-HD	FEET OF HEAD
FT-WG	FEET WATER GAUGE
FTR	FIN TUBE RADIATOR
G	NATURAL GAS
GA	GAUGE
GAL	GALLONS
GC	GENERAL CONTRACTOR
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
GW	GREASE WASTE
HB	HOSE BIBB
HGRH	HOT GAS REHEAT
HP	HORSEPOWER OR HEAT PUMP
HT	HEIGHT
HTG	HEATING
HTR	HEATER
HW	DOMESTIC HOT WATER
HWC	HOT WATER RECIRCULATING
HWR	HOT WATER RETURN
HWS	HOT WATER SUPPLY
IN	INCHES
INV EL	INVERT ELEVATION
KW	KILOWATT
LB	POUND
LWT	LEAVING WATER TEMPERATURE
MH	1000 BRITISH THERMAL UNITS
MCA	MINIMUM CIRCUIT AMPS
MFOR	MANUFACTURER
MISC	MISCELLANEOUS
MCCP	MINIMUM OVER CURRENT PROTECTION
MTD	MOUNTED
N/A	NOT APPLICABLE
NIC	NOT IN CONTRACT
NO	NORMALLY OPEN
NTS	NOT TO SCALE
O.C.	ON CENTER
OD	OVERFLOW ROOF DRAIN
OS&Y	OUTSIDE SCRE & YOKE GATE VALVE
OSD	OPEN SITE DRAIN
PD	PUMPED DISCHARGE
PH	PHASE
PLUMB	PLUMBING
PPM	PARTS PER MILLION
PRV	PRESSURE REDUCING VALVE
PSI	POUNDS PER SQUARE INCH
RD	ROOF DRAIN
REF	REFERENCE
REQ'D	REQUIRED
ROOM	ROOM
RP	REVOLUTIONS PER MINUTE
RP2	REDUCED PRESSURE ZONE BACKFLOW PREVENTER
RTU	ROOFTOP UNIT
SA	SHOCK ABSORBER
SAN	SANITARY
SE	SEWAGE EJECTOR
SEC	SECOND
SECT	SECTION
SF	SQUARE FOOT
SOV	SHUT-OFF VALVE
SP	SUMP PUMP
SPEC	SPECIFICATION
SS	STAINLESS STEEL
SSW	SECONDARY STORM WATER
ST	STORAGE TANK
STD	STANDARD
STRUCT	STRUCTURAL
SW	STORM WATER
T&P	TEMPERATURE AND PRESSURE
TD	TRENCH DRAIN
TEMP	TEMPERATURE
THERM	THERMOMETER
THRU	THROUGH
TP	TRAP PRIMER
TP	TYPICAL
TW	TEMPERED HOT WATER
UG	UNDERGROUND
UL	UNDERWRITER'S LABORATORY
UNO	UNLESS NOTED OTHERWISE
UTIL	UTILITY
V	VENT
VIF	VERIFY IN FIELD
VOL	VOLUME
VTR	VENT THROUGH ROOF
W/	WITH
W/O	WITHOUT
WC	WATER COLUMN OR WATER CLOSET
WCO	WALL CLEANOUT
WG	WATER GAUGE
WH	WALL HYDRANT
WMS	WIRE MESH SCREEN
WPD	WATER PRESSURE DROP

GENERAL NOTES

(APPLY TO THE WORK PROVIDED UNDER DIVISION 20)

- THE CONTRACT DOCUMENTS ARE SCHEMATIC IN NATURE, INTENDING TO SHOW THE GENERAL ARRANGEMENT OF WORK PROVIDED UNDER THIS DIVISION. THEY DO NOT SHOW IN DETAIL OFFSETS, FITTINGS, TRANSITIONS, ETC. EXAMINE THE CONTRACT DOCUMENTS, INVESTIGATE SITE CONDITIONS TO BE ENCOUNTERED AND MODIFY WORK DEPicted IN THE CONTRACT DOCUMENTS ACCORDINGLY. WITHOUT ANY ADDITIONAL COST TO THE OWNER, FOR PROJECTS INVOLVING EXISTING CONDITIONS, COORDINATE NEW WORK WITH EXISTING ELEMENTS SUCH AS THE BUILDING STRUCTURE AND ARCHITECTURAL FEATURES, SPRINKLER PIPING, LIGHTS, PLUMBING, AND ELECTRICAL CONDUIT.
- COORDINATE WORK PROVIDED UNDER THIS DIVISION WITH THAT OF OTHER TRADES. FIELD VERIFY AND COORDINATE DIMENSIONS PRIOR TO PROCUREMENT OR FABRICATION. CHECK SPACE LIMITATIONS AND VERIFY ELECTRICAL REQUIREMENTS PRIOR TO ORDERING ANY MECHANICAL EQUIPMENT OR MATERIALS. PLACE LARGE EQUIPMENT INSIDE OF THE BUILDING PRIOR TO THE ERECTION OF EXTERIOR WALLS WHERE EQUIPMENT CANNOT ENTER FINISHED BUILDING OPENINGS.
- MEASUREMENT OF DRAWINGS BY SCALE SHALL NOT BE USED AS DIMENSIONAL DATA FOR FABRICATION OR INSTALLATION FOR LOCATIONS FIXTURES, EQUIPMENT, DUCTWORK, PIPING, ETC. SHALL BE MADE ON THE SITE AND SHALL BE BASED ON ACTUAL JOB CONDITIONS.
- AS PART OF THE SUBMITTAL REQUIREMENTS OUTLINED WITHIN THIS DIVISION, SUBMIT SHOP DRAWINGS WITH POWER CONNECTIONS PROVIDED UNDER DIVISION 26 TO THE ELECTRICAL CONTRACTOR TO COORDINATE THAT EQUIPMENT BEING FURNISHED UNDER THIS DIVISION COMPLIES WITH THE ELECTRICAL CHARACTERISTICS OF THE SOURCE POWER WHICH WILL BE FURNISHED UNDER DIVISION 26.
- PIPING, EQUIPMENT AND OTHER WORK PROVIDED UNDER DIVISION 20 SHALL NOT BE LOCATED WITHIN 42" OF THE FRONT OR 36" OF THE SIDE OF ANY ELECTRICAL SWITCHBOARDS, PANELBOARDS, MOTOR CONTROL CENTERS, ELECTRICAL TRANSFORMERS OR SIMILAR ELECTRICAL EQUIPMENT. PIPING AND DUCTWORK SHALL NOT PASS THROUGH OR ABOVE ELECTRICAL EQUIPMENT ROOMS EXCEPT AS REQUIRED TO SERVE THOSE ROOMS.
- OBTAIN NECESSARY PERMITS AND INSPECTIONS REQUIRED BY THE LOCAL AUTHORITY HAVING JURISDICTION FOR THE INSTALLATION OF WORK PROVIDED UNDER THIS DIVISION AND PAY ASSOCIATED COSTS. DELIVER TO THE ARCHITECT CERTIFICATES OF INSPECTION ISSUED BY THE LOCAL AUTHORITY HAVING JURISDICTION.
- SEWER TAP FEES, WATER TAP FEES, METER FEES, DEPARTMENT OF LABOR FEES AND OTHER COSTS FOR WORK PROVIDED UNDER THIS DIVISION, INCLUDING CHARGES FOR METER INSTALLATION BY UTILITY COMPANIES, ARE TO BE PAID AS PART OF THE WORK PROVIDED UNDER DIVISION 20.
- WORK PROVIDED UNDER DIVISION 20 SHALL CONFORM TO THE EDITION OF THE FOLLOWING CODES ENFORCED BY THE AUTHORITIES HAVING JURISDICTION:
 - THE INTERNATIONAL BUILDING CODE
 - THE INTERNATIONAL MECHANICAL CODE
 - THE INTERNATIONAL PLUMBING CODE
 - THE INTERNATIONAL FIRE PROTECTION CODE
 - NFPA STANDARD 70, NATIONAL ELECTRICAL CODE
 - ADDITIONAL CODES AND STANDARDS AS MENTIONED WITHIN THE CONTRACT DOCUMENTS
- OSHA, FEDERAL, STATE, AND LOCAL SAFETY REQUIREMENTS APPLICABLE TO THE PROJECT SHALL BE COMPLIED WITH, MANUFACTURER'S SAFETY INSTRUCTIONS SHALL BE FOLLOWED.
- WASTE GENERATED BY WORK PERFORMED SHALL BE DISPOSED OF LEGALLY PER THE REQUIREMENTS OF THE AUTHORITIES HAVING JURISDICTION.
- SCHEDULE INTERRUPTIONS OF EXISTING SERVICES FOR TIMES OTHER THAN NORMAL OPERATING HOURS (SUCH AS NIGHTS OR WEEKENDS). SUCH INTERRUPTIONS TO SERVICES SHALL NOT BE MADE WITHOUT PRIOR WRITTEN AUTHORIZATION OF THE OWNER'S REPRESENTATIVE AND COORDINATION WITH OTHER TRADES. PERFORM PRE-WORK AS NECESSARY TO MAKE THE INTERRUPTION PERIOD AS BRIEF AS POSSIBLE.
- THE EQUIPMENT LISTED WITHIN THE CONTRACT DOCUMENTS AS THE BASIS OF DESIGN HAS BEEN USED FOR PHYSICAL ARRANGEMENT OF THE MECHANICAL SYSTEMS, INCLUDING MANUFACTURER AND CODE REQUIRED SERVICE CLEARANCES. CONFIRM THESE REQUIREMENTS BEFORE BEGINNING WORK. WHEN EQUIPMENT LISTED AS ANOTHER ACCEPTABLE MANUFACTURER IN THE SPECIFICATIONS IS USED, PROVIDE STRUCTURAL, DUCTWORK, ELECTRICAL, SERVICE CLEARANCES, OR OTHER CHANGES REQUIRED TO ACCOMMODATE THE SUBSTITUTED EQUIPMENT. CHANGES SHALL BE MADE AT NO ADDITIONAL COST TO THE OWNER. SUBMIT A LIST OF REQUIRED CHANGES AS PART OF THE ASSOCIATED SHOP DRAWING SUBMITTALS.
- PREPARE AND SUBMIT 1/4" SCALE DRAWINGS AS PART OF THE SHOP DRAWING SUBMITTAL PROCESS FOR PORTIONS OF THE PROJECT WHERE WORK PROVIDED UNDER THIS DIVISION REQUIRES DETAILED COORDINATION WITH WORK PROVIDED UNDER OTHER DIVISIONS. AT A MINIMUM, THIS SHALL APPLY TO MAJOR PIECES OF EQUIPMENT, MECHANICAL AND WATER SERVICE ROOMS. SHOP DRAWING SUBMITTAL SHALL INCLUDE PLANS, SECTIONS, AND ELEVATIONS AS NECESSARY TO CONVEY THAT THE WORK BEING PROVIDED UNDER THIS DIVISION HAS BEEN COORDINATED WITH WORK BEING PROVIDED UNDER OTHER DIVISIONS.
- REVIEW OF THE SUBMITTALS DOES NOT RELIEVE THE CONTRACTOR OF THE REQUIREMENTS OF THE CONTRACT DOCUMENTS, WHERE AND WHEN THE ENGINEER DOES NOT DOCUMENT DEVIATIONS OR OMISSIONS AS PART OF THE ENGINEER'S REVIEW OF THE CONTRACTOR'S SUBMITTALS DOES NOT CONSTITUTE A WAIVER OF ANY OF THE REQUIREMENTS OF THE CONTRACT DOCUMENTS.
- THE DESIGN INTENT IS FOR WORK PROVIDED UNDER THIS DIVISION IN FINISHED AREAS IS FOR THE SYSTEM COMPONENTS TO BE CONCEALED WITHIN OR BEHIND ARCHITECTURAL ELEMENTS, SUCH AS CEILINGS, BULKHEADS, CHASES, ETC. MAINTAIN THE CEILING HEIGHTS INDICATED ON THE ARCHITECTURAL DRAWINGS AND AS REQUIRED BY THE INTERNATIONAL BUILDING CODE. IF DISCREPANCIES EXIST, BRING TO THE ARCHITECT'S ATTENTION PRIOR TO BEGINNING WORK.
- ACCESS PANELS IN DUCTWORK AND CEILINGS SHALL BE PROVIDED WHERE REQUIRED FOR OPERATION, BALANCING, OR MAINTENANCE OF THE SYSTEMS.
- NOTE TYPES USED -
 - "GENERAL NOTES" - APPLY TO WORK PROVIDED UNDER THE ASSOCIATED DIVISION INDICATED
 - "DRAWINGS NOTES" - ARE A LIST OF NOTES ON A SINGLE DRAWING WITHIN THE DRAWING SET WHICH APPLY TO THAT ENTIRE DRAWING.
 - "SPECIFIC NOTES" - ARE INDIVIDUAL NOTES THAT ONLY APPLY WHERE THE CORRESPONDING "SPECIFIC NOTE" SYMBOL IS INDICATED.
- THE NORTH ARROW USED ON THE DRAWINGS REPRESENTS PLAN NORTH, NOT NECESSARILY TRUE NORTH.
- EXISTING EQUIPMENT DESIGNATED TO REMAIN IN SERVICE SHALL BE REFURBISHED AS DEFINED HEREIN:
 - INSPECT AND REPAIR UNIT CABINET
 - CLEAN COILS
 - REPLACE BELTS
 - LUBRICATE BEARINGS
 - CHANGE FILTERS
 - INSPECT AND CLEAN GAS FIRED HEAT EXCHANGERS
 - CLEAN & REPAIR CONDENSATE DRAIN AND SECONDARY DRAIN PAN AND ALARM
 - CHECK AND ADJUST REFRIGERATION CHARGE OF EACH CIRCUIT
 - LEAK TEST AND REPAIR REFRIGERATION LEAKS
 - A REFURBISHED UNIT SHALL BE BROUGHT INTO THE MANUFACTURER'S ORIGINAL OPERATING SPECIFICATIONS & TOLERANCES AND PROVIDED WITH A WARRANTY OF OPERABILITY FOR (60) DAYS AFTER THE SYSTEMS HAVE BEEN TURNED OVER TO THE OWNER.
 - EXISTING SYSTEMS AND THE COMPONENTS OF SYSTEMS INDICATED TO REMAIN IN SERVICE SHALL BE MADE SERVICEABLE, SIMILAR TO NEW SYSTEMS AND SYSTEM COMPONENTS.
 - EXISTING SYSTEMS AND THE COMPONENTS OF SYSTEMS INDICATED TO REMAIN IN SERVICE SHALL BE MADE SERVICEABLE AND OPERABLE, SIMILAR TO NEW SYSTEMS AND SYSTEM COMPONENTS.
- SLEEVE AND SEAL PIPING PENETRATIONS THROUGH BUILDING PARTITIONS WITH A UL-APPROVED SEALANT THAT MEETS THE VOC REQUIREMENTS OF THE PROJECT.
- SEAL PENETRATIONS THROUGH FIRE-RATED PARTITIONS WITH A UL-APPROVED SEALANT THAT MAINTAINS THE ASSOCIATED FIRE-RATING OF THE ASSEMBLY BEING PENETRATED AND THAT MEETS THE VOC REQUIREMENTS OF THE PROJECT.
- ADHERE TO THE SITE SAFETY PLAN THAT IS IN EFFECT FOR THE PROJECT. AT A MINIMUM, ADHERE TO THE SAFETY REQUIREMENTS OUTLINED BY OSHA.
- SYSTEM COMPONENTS SHALL BE INSTALLED SUCH THAT UL CERTIFICATIONS ARE NOT COMPROMISED.
- SYSTEM COMPONENTS WHICH PENETRATE FIRE RATED ASSEMBLIES SHALL BE PROVIDED WITH SEALED OPENINGS IN ORDER TO MAINTAIN THE INTEGRITY OF THE FIRE RATED ASSEMBLY.

GENERAL NOTES

(APPLY TO THE WORK PROVIDED UNDER DIVISION 22)

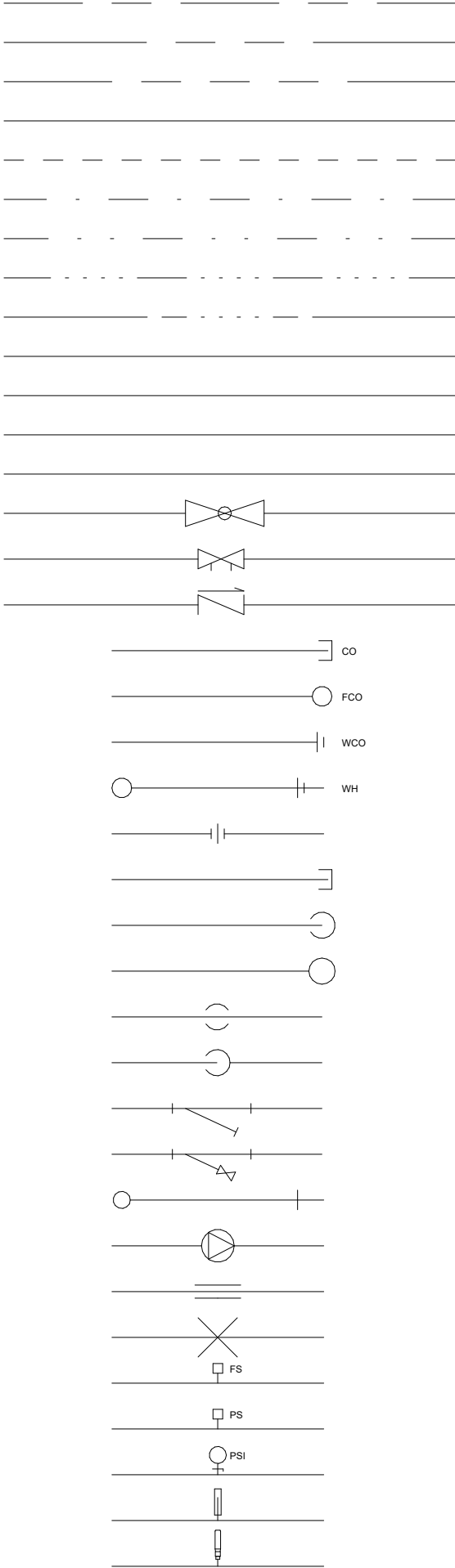
- PROVIDE FULLY OPERATIONAL PLUMBING SYSTEMS WHEN THE BUILDING IS TURNED OVER TO THE OWNER, INCLUDING SYSTEMS WHICH HAVE BEEN:
 - FULLY TESTED UNDER FACTORY START UP CONDITIONS, AND BALANCED.
 - FULLY COMMISSIONED WITH REMEDIAL MEASURES HAVING BEEN ADDRESSED TO THE SATISFACTION OF THE PROJECT'S COMMISSIONING AUTHORITY.
 - INSPECTED AND CERTIFIED BY THE AUTHORITIES HAVING JURISDICTION.
- SANITARY, STORM WATER, CONDENSATE AND OTHER DRAINAGE PIPING SHALL BE INSTALLED WITH A 2% SLOPE UNLESS NOTED OTHERWISE. ADJUST SLOPE AS NEEDED TO COORDINATE WITH EXISTING INVERTS OR THE INVERTS ASSOCIATED WITH WORK PROVIDED UNDER OTHER DIVISIONS OR THE SPECIFICATIONS. ADJUSTMENTS TO SLOPES WHERE THE SLOPE WILL BE LESS THAN THAT INDICATED WITHIN THE CONTRACT DOCUMENTS SHALL BE BROUGHT TO THE ENGINEER'S ATTENTION PRIOR TO BEGINNING WORK.
- WHERE PIPING IS INDICATED TO BE LOCATED WITHIN A PERIMETER WALL, THE PIPING SHALL BE INSTALLED BETWEEN THE CONDITIONED SPACE AND THE WALL OR ROOF ASSEMBLY'S INSULATION.
- EACH FIXTURE AND APPLIANCE REQUIRING CONNECTION TO THE DOMESTIC WATER INFRASTRUCTURE SHALL BE PROVIDED WITH A SHUTOFF VALVE OR VALVES, AND UNIONS FOR EASE OF FUTURE REPLACEMENT.
- PROVIDE CLEANOUTS AS INDICATED ON THE DRAWINGS, AT CHANGES IN DIRECTION, AS REQUIRED BY THE AUTHORITY HAVING JURISDICTION, OR AT 90 FEET INTERVALS, WHICHEVER IS MORE STRINGENT.
- CAULK AROUND EACH PLUMBING FIXTURE INTERFACE WITH THE WALL OR FLOOR MOUNTING SURFACE.
- EACH DOMESTIC HOT WATER RECIRCULATION CIRCUIT REQUIRING BALANCING SHALL BE BALANCED AT NOT LESS THAN 0.5 GPM OR AS INDICATED ON THE DRAWINGS, WHICHEVER IS GREATER.

GENERAL DEMOLITION NOTES

(APPLY TO THE WORK PROVIDED UNDER DIVISION 20)

- THE CONTRACT DOCUMENTS INDICATE THE INTENT OF THE DEMOLITION WORK BY SHOWING THE MAJOR SYSTEM COMPONENTS TO BE REMOVED BUT IS NOT LIMITED TO THE COMPONENTS INDICATED. IF SYSTEMS AND COMPONENTS ARE DISCOVERED AS PART OF THE DEMOLITION WORK WHICH CAN ALSO BE REMOVED WITHOUT IMPACTING THE EXISTING TO REMAIN OR NEW WORK INDICATED, OBTAIN APPROVAL FROM THE OWNER AND REMOVE THE SYSTEMS AND COMPONENTS. REFER TO THE ARCHITECTURAL DEMOLITION DRAWINGS AND NOTES FOR ADDITIONAL INFORMATION.
- VISIT THE SITE AND BECOME FAMILIAR WITH THE CONDITION OF THE PREMISES AND EXTENT OF DEMOLITION WORK REQUIRED. FIELD VERIFY DEMOLITION WORK AND EXISTING CONDITIONS. PROVIDE ANY ADDITIONAL WORK REQUIRED AS THE RESULT OF FIELD CONDITIONS AT NO ADDITIONAL COST TO THE OWNER.
- BEFORE STARTING DEMOLITION WORK, PROVIDE NECESSARY PROTECTIVE DEVICES, WHERE REQUIRED IN ACCORDANCE WITH OSHA REGULATIONS AND THE LOCAL AUTHORITY HAVING JURISDICTION.
- PROVIDE ADEQUATE PROTECTION WHERE REQUIRED FOR THE BUILDING AND ITS CONTENTS. PROVIDE TEMPORARY BARRIERS WHERE REQUIRED FOR PROTECTION OF PERSONNEL, FOR SECURITY, FIRE AND WEATHER PROTECTION. PROVIDE TEMPORARY ENCLOSURES, OR OTHER SUITABLE METHODS TO LIMIT DUST AND DEBRIS TO THE AREA UNDER DEMOLITION. WET DEMOLISHED DEBRIS TO PREVENT DUST AND DEBRIS FROM RISING DURING THE DEMOLITION PROCESS. USING WETTING AGENTS. EXCESSIVE USE OF WATER WILL NOT BE PERMITTED. COMPLY WITH ENVIRONMENTAL PROTECTION REQUIREMENTS OF THE LOCAL AUTHORITY HAVING JURISDICTION.
- PRIOR TO BEGINNING DEMOLITION WORK, REVIEW WITH THE OWNER THE MATERIALS TO BE REMOVED AND VERIFY IF THE OWNER WOULD LIKE TO KEEP ANY OF THE MATERIALS REMOVED. REMOVE AND DELIVER ON SITE WHERE DIRECTED BY THE OWNER THE MATERIALS TO BE KEPT. REMAINING REMOVED MATERIALS BECOME THE PROPERTY OF THE CONTRACTOR. REMOVE FROM SITE AND DISPOSE OF IN A LEGAL MANNER FOLLOWING OSHA REGULATIONS AND THE REGULATIONS OF THE LOCAL AUTHORITY HAVING JURISDICTION.
- PROVIDE ADEQUATE TEMPORARY SUPPORT IN ORDER TO PREVENT THE FAILURE OF EXISTING TO REMAIN SYSTEMS AND EQUIPMENT.
- ESTABLISH A PATH OF TRAVEL AND TIME SCHEDULE FOR THE REMOVAL OF DEBRIS AND WASTE. THIS SCHEDULE AND PATH SHALL BE APPROVED BY THE OWNER PRIOR TO BEGINNING WORK. ENSURE THAT CORRIDORS AND PUBLIC AREAS ARE KEPT FREE FROM OBSTRUCTIONS, DEBRIS, AND KEPT BROOM SWEEP CLEAN.
- EXECUTE THE DEMOLITION IN A CAREFUL AND ORDERLY MANNER WITH THE LEAST AMOUNT OF DISTURBANCE TO THE PUBLIC, EGRESS, OR THE FUNCTION OF THE EXISTING BUILDING.
- REMOVALS, DISCONNECTIONS, AND RELOCATIONS TO BE PERFORMED BY WORKMEN SKILLED IN THE TRADE INVOLVED AND EMPLOYED BY THE CONTRACTOR LICENSED IN THE TRADE INVOLVED. WORK SHALL BE DONE IN ACCORDANCE WITH ACCEPTED TRADE PRACTICES.
- DEMOLITION WORK TO INCLUDE REMOVAL OF COMPONENTS AND SYSTEMS IN THEIR ENTIRETY BACK TO POINTS INDICATED, OR IF NOT INDICATED BACK TO THEIR POINT OF ORIGIN.
- WHERE CONDITIONS PROHIBIT THE TOTAL REMOVAL OF THE WORK, THE REMAINING PORTION SHALL BUT CUT FLUSH WITH THE SURROUNDING SURFACE AND BE CAPPED, PLUGGED, OR SEALED AND THE SURROUNDING SURFACE SHALL BE REFINISHED IN A MANNER APPROVED BY THE ARCHITECT.
- DO NOT REMOVE EXISTING STRUCTURAL WORK. DO NOT REMOVE OPERATIONAL ELEMENTS OR SYSTEMS TO REMAIN, AND SAFETY-RELATED COMPONENTS IN A MANNER RESULTING IN A REDUCTION OF CAPACITIES TO PERFORM IN THE MANNER INTENDED OR RESULTING IN DECREASED OPERATIONAL LIFE, INCREASED MAINTENANCE, OR DECREASED SAFETY.

SYMBOLS



ABBREVIATIONS

CW	DOMESTIC COLD WATER
HW	DOMESTIC HOT WATER
HWC	HOT WATER RECIRCULATING
SAN	SANITARY
V	VENT
SW	STORM WATER
SSW	SECONDARY STORM WATER
G	NATURAL GAS
GV	GAS VENT
GW	GREASE WASTE
CD	CONDENSATE
FP	FIRE PROTECTION
PD	PUMPED DISCHARGE
SOV	SHUT-OFF VALVE
BV	CALIBRATED BALANCING VALVE
CV	CHECK VALVE
CO	CLEANOUT
FCO	FLOOR CLEANOUT
WCO	WALL CLEANOUT
WH	WALL HYDRANT
	UNION
	PIPE CAP
	PIPE DROP
	PIPE RISE
	BOTTOM OUTLET TEE
	TOP OUTLET TEE
	STRAINER ("Y" TYPE)
	STRAINER ("Y" TYPE) WITH BLOWDOWN
	HOSE BIBB
	PUMP
	GUIDE
	ANCHOR
	FLOW SWITCH
	PESSURE SWITCH
	PESSURE GUAGE
	THERMOMETER
	SHOCK ABSORBER

DESCRIPTION

COMPLETE PLUMBING DEMOLITION SPECIFIC NOTES		
SPECIFIC NOTE VALUE	SPECIFIC NOTE TEXT	
PD1	REMOVE EXISTING JANITOR'S SINK AND 2" SAN PIPE DN. CAP PIPING WITHIN THE GROUND FLOOR CEILING.	

COMPLETE PLUMBING SPECIFIC NOTES	
SPECIFIC NOTE VALUE	SPECIFIC NOTE TEXT
P1	MAKE 1-1/2" CW CONNECTION TO EXISTING 2-1/2" CW ORIGINATING FROM CHASE. CONNECTION SHALL BE MADE WITHIN THE EXISTING BULKHEAD FOOTPRINT. PIPING SHOWN ON PLAN IS SHOWN DIAGRAMMATICALLY.
P2	PROVIDE 1/2" CW AND 1/2" HW CONNECTION TO SINK.
P3	PROVIDE MECHANICAL VENT (AIR ADMITTANCE VALVE), SUCH AS STUDOR MINIVENT, FOR BATHROOM VENTING.
P4	PROVIDE 2" V CONNECTION TO EXISTING 2" V. ROUTE 2" V TO BATHROOM LAVATORY.
P5	CW, HW, AND HWC PIPING SHALL BE CONCEALED, LOCATED WITHIN EXISTING ACT BULKHEAD. PIPING SHOWN ON PLAN IS SHOWN DIAGRAMMATICALLY.
P6	CW, HW, AND HWC PIPING SHALL BE CONCEALED, LOCATED WITHIN EXISTING ACT BULKHEAD. PIPING SHOWN ON PLAN IS SHOWN DIAGRAMMATICALLY.
P8	FLOW CONTROL VALVE ASSEMBLY SHALL BE SET TO 1.0 GPM.
P9	ROUTE 4" SAN DN IN JANITOR'S CLOSET AND MAKE CONNECTION TO EXISTING 4" SAN LOCATED WITHIN GROUND FLOOR CEILING. VERIFY LOCATION AND INVERT PRIOR TO BEGINNING WORK (TYP.)
P10	ROUTE 2" SAN AND MAKE CONNECTION TO 4" SAN RISER.
P11	2" SAN SHALL BE LOCATED ABOVE ACT CEILING.
P12	2" SAN SHALL BE ROUTED BETWEEN DOOR OPENING AND PANELBOARD AS HIGH AS POSSIBLE.
P13	2" SAN SHALL BE ROUTED ABOVE EXISTING BULKHEAD. REFER TO ARCHITECTURAL FOR RECONSTRUCTION OF EXISTING BULKHEAD WITHIN MEETING ROOM 114.
P14	CAP EXISTING PIPING.
P15	FLOW CONTROL VALVE ASSEMBLY SHALL BE SET TO 0.5 GPM.

PLUMBING DRAWING LIST	
SHEET NUMBER	SHEET NAME
P001	SYMBOLS, NOTES AND ABBREVIATIONS
P021	GROUND FLOOR PLAN - PLUMBING
P022	FIRST FLOOR PLAN - DEMOLITION - PLUMBING
P101	GROUND FLOOR PLAN - PLUMBING
P102	FIRST FLOOR PLAN - PLUMBING
P103	SECOND FLOOR PLAN - PLUMBING
P201	PLUMBING DETAILS
P701	PLUMBING SCHEDULES
P801	PLUMBING SPECIFICATIONS
P802	PLUMBING SPECIFICATIONS

NOTES



400 EAST PRATT STREET
BALTIMORE MD, 21202, 8TH FLOOR

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MILLERSVILLE UNIVERSITY
40 DILWORTH ROAD
MILLERSVILLE, PA 17551

SYMBOLS, NOTES AND
ABBREVIATIONS

Project Number MI-1226

Date 03/12/2025

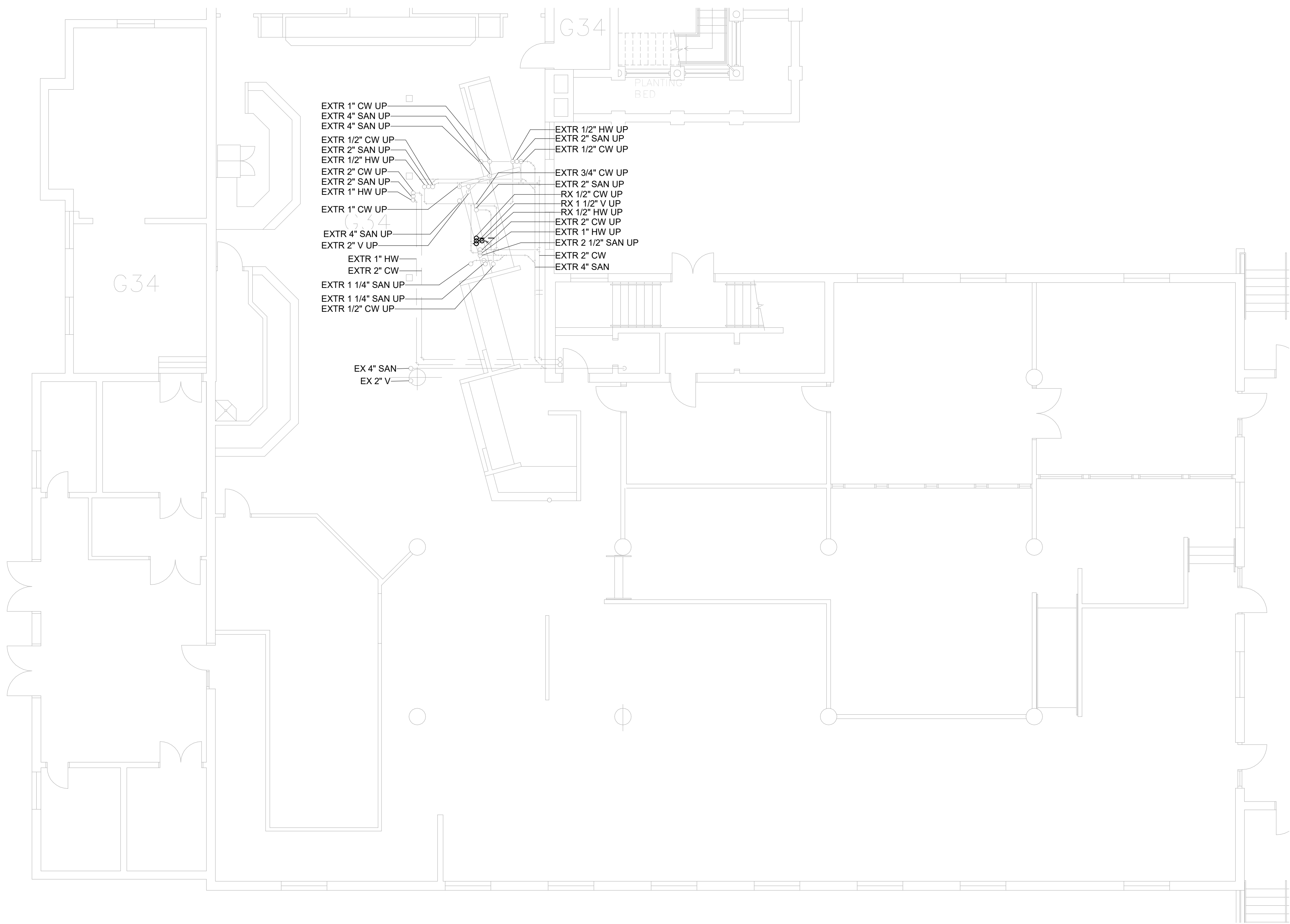
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P001

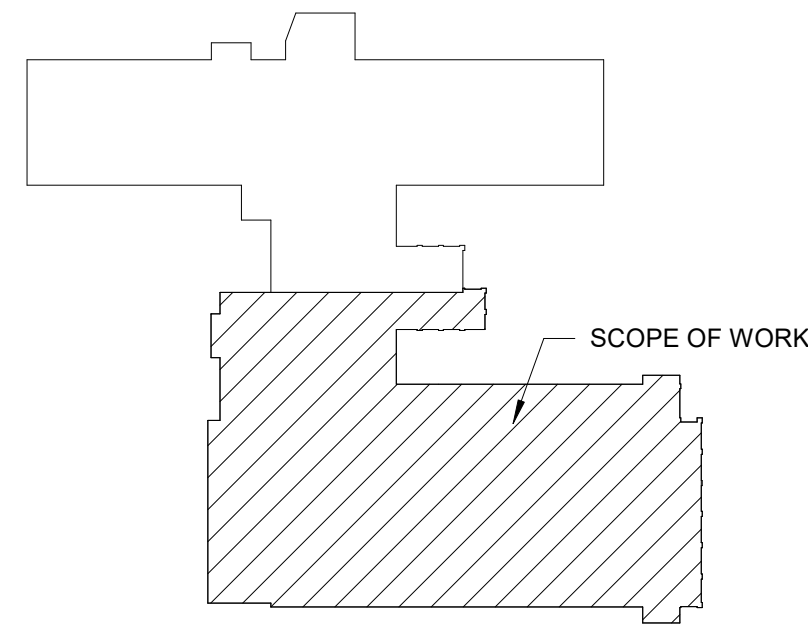
NOTES



400 EAST PRATT STREET
BALTIMORE MD, 21202, 8TH FLOOR

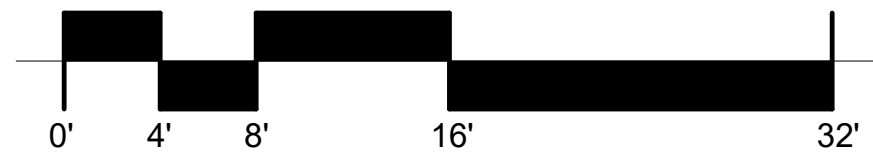


① GROUND FLOOR PLAN - DEMOLITION - PLUMBING
1/8" = 1'-0"



KEYPLAN

GRAPHICAL SCALE - 1/8" = 1'-0"



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GROUND FLOOR PLAN -
DEMOLITION - PLUMBING

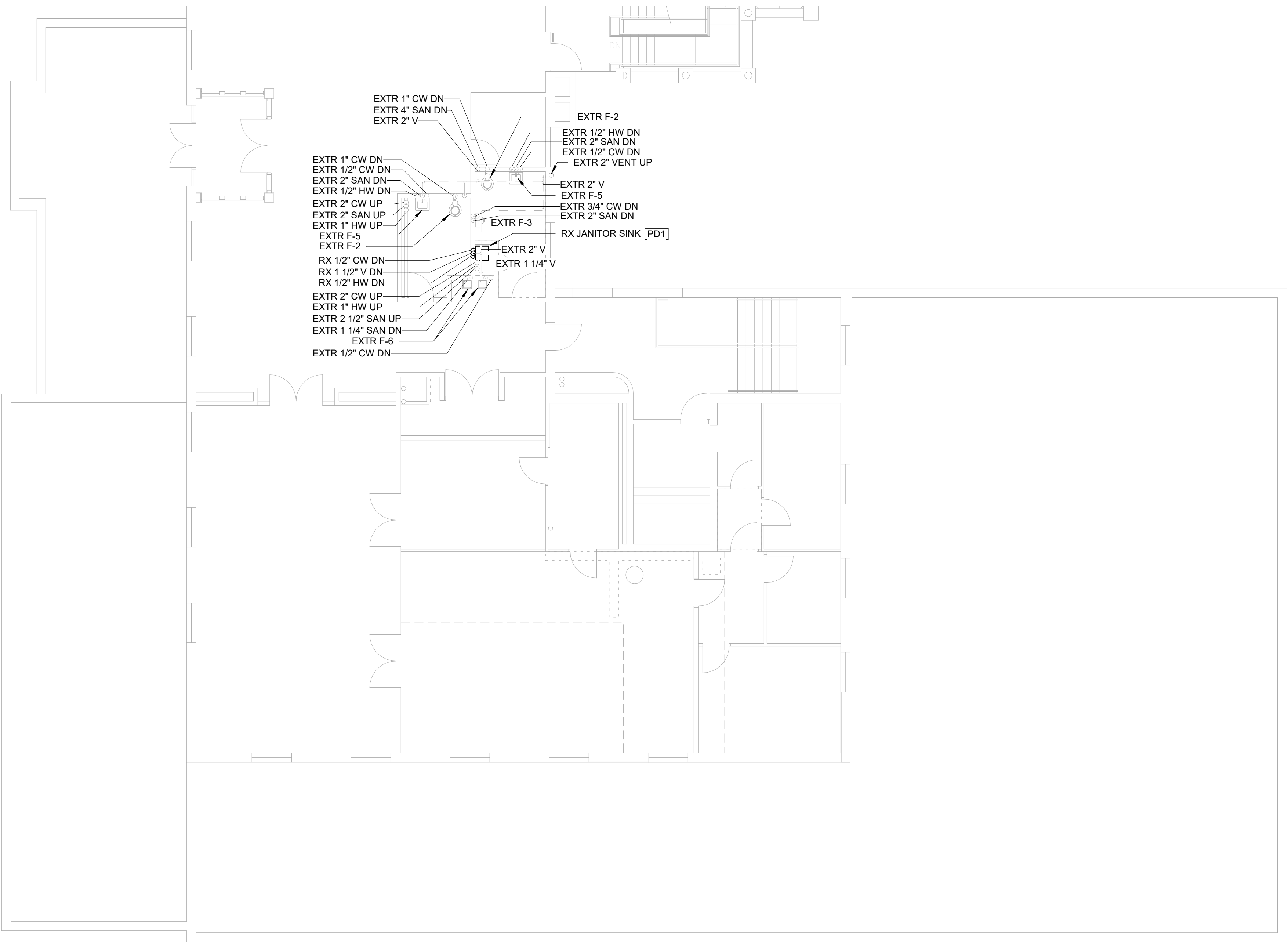
Project Number MI-1226

Date 03/12/2025

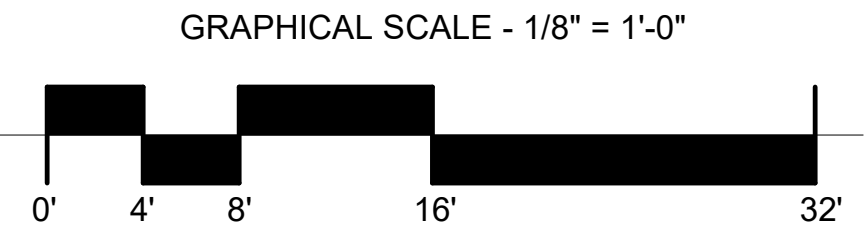
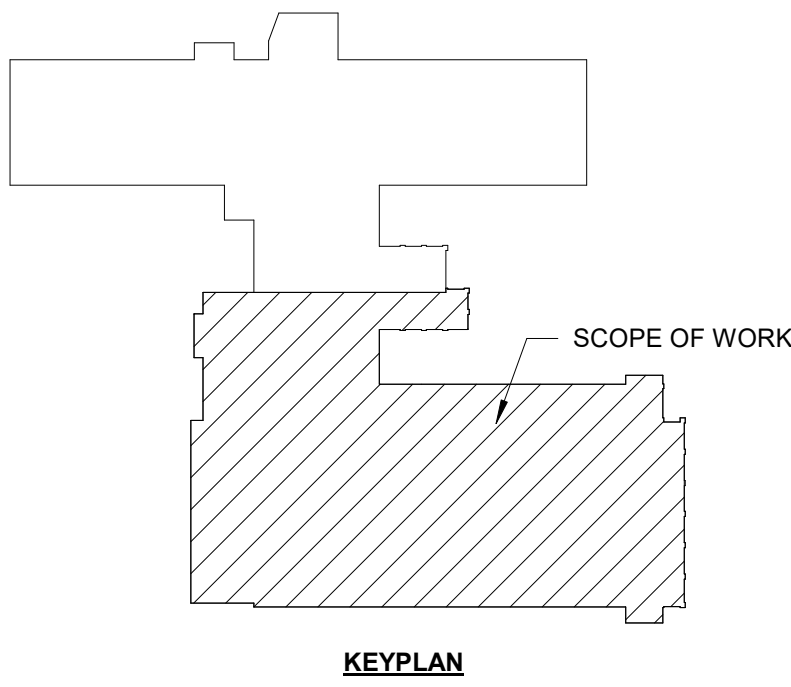
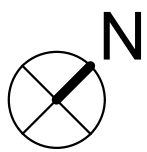
SCALE: AS NOTED

P021

PLUMBING DEMOLITION SPECIFIC NOTES	
SPECIFIC NOTE VALUE	SPECIFIC NOTE TEXT
PD1	REMOVE EXISTING JANITOR'S SINK AND 2" SAN PIPE DN. CAP PIPING WITHIN THE GROUND FLOOR CEILING.



1 FIRST FLOOR PLAN - DEMOLITION - PLUMBING
1/8" = 1'-0"



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FIRST FLOOR PLAN -
DEMOLITION - PLUMBING

Project Number MI-1226

Date

03/12/2025

SCALE: AS NOTED

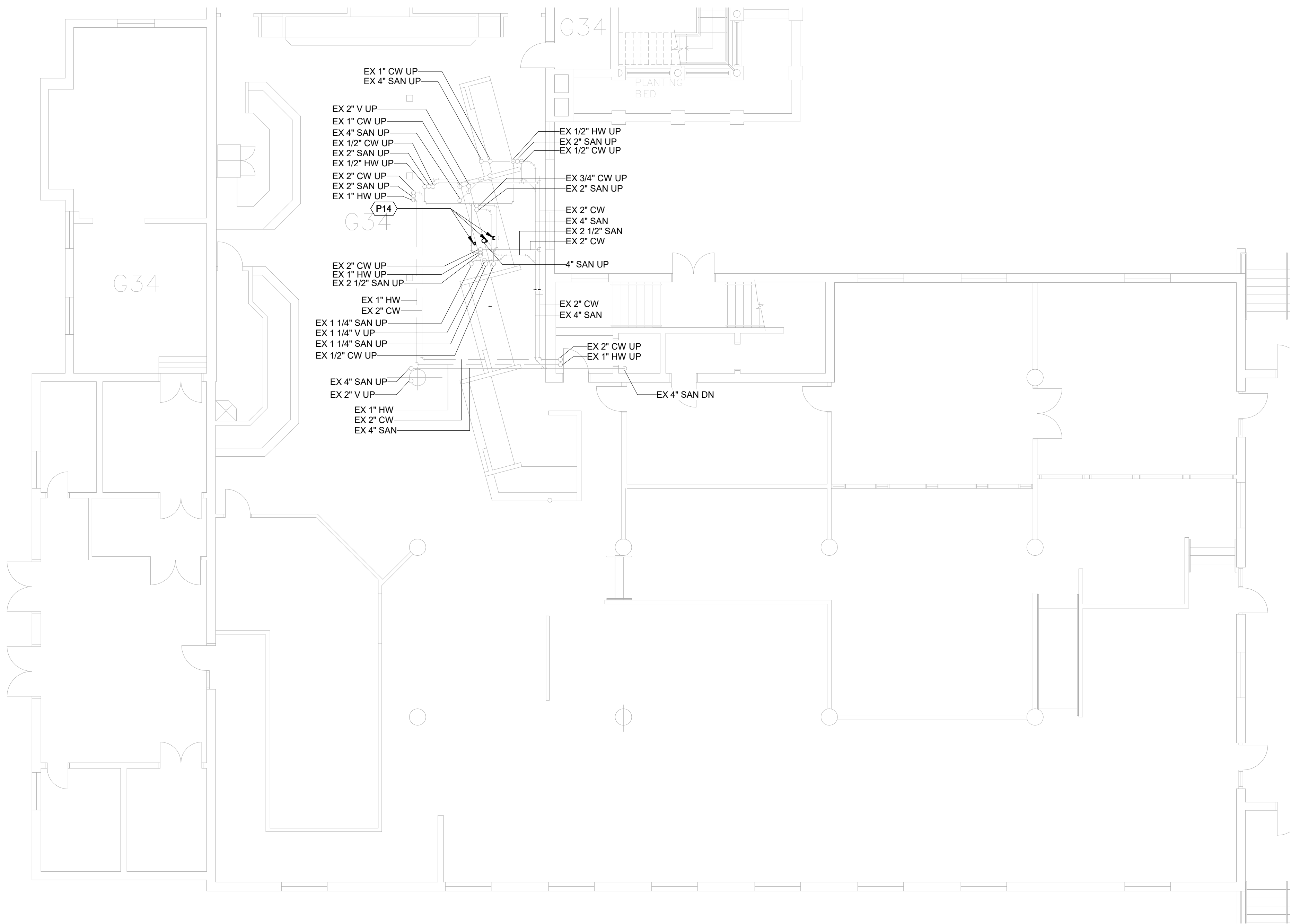
P022

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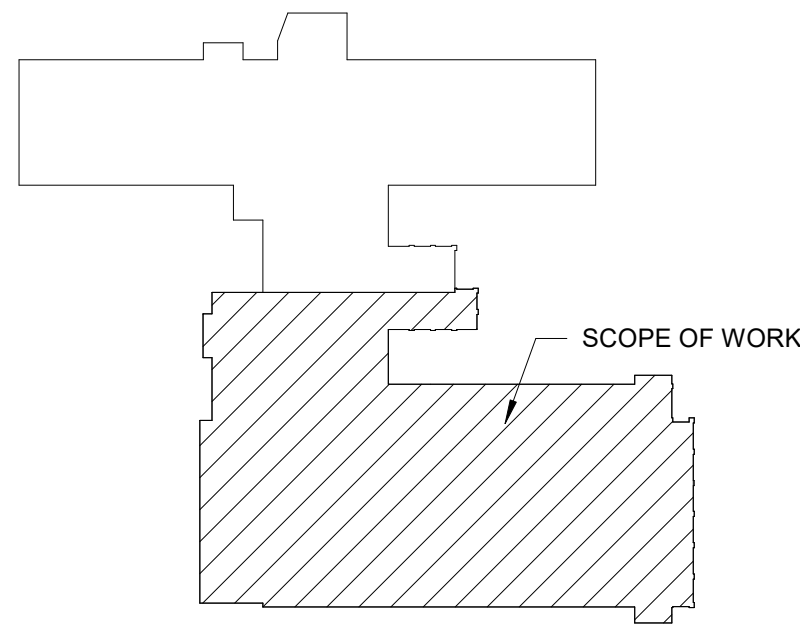


400 EAST PRATT STREET
BALTIMORE MD, 21202, 8TH FLOOR

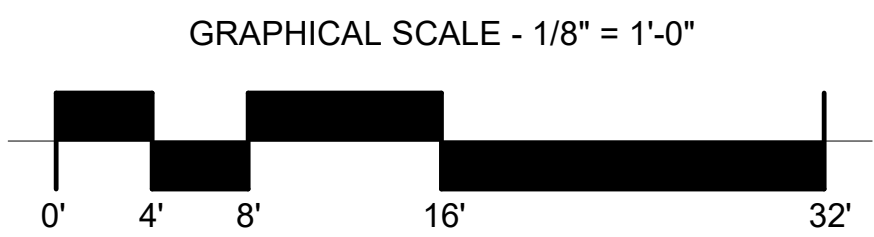
PLUMBING SPECIFIC NOTES	
SPECIFIC NOTE VALUE	SPECIFIC NOTE TEXT
P14	CAP EXISTING PIPING.



1 GROUND FLOOR PLAN - PLUMBING
1/8" = 1'-0"



KEYPLAN



GRAPHICAL SCALE - 1/8" = 1'-0"

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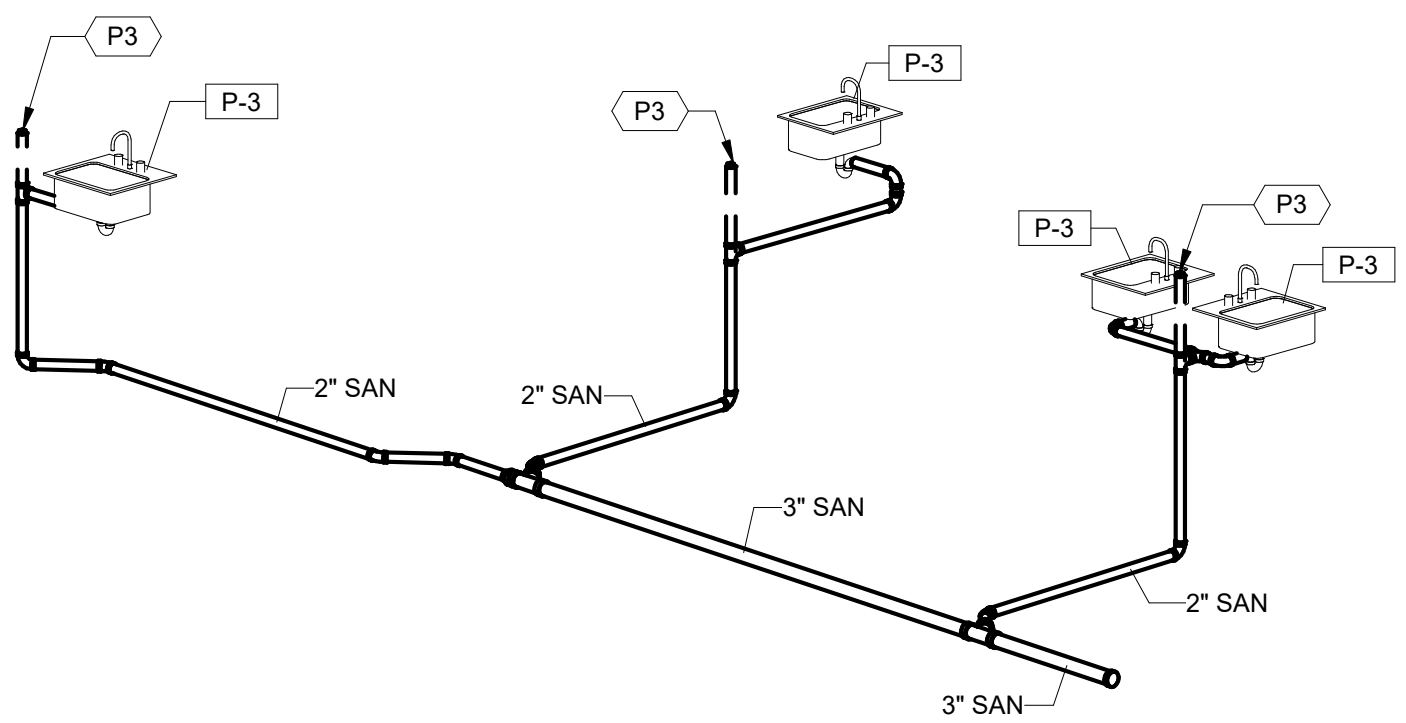
GROUND FLOOR PLAN -
PLUMBING

Project Number MI-1226

Date 03/12/2025

SCALE: AS NOTED

P101



The diagram shows a 2' SAN (Stainless Steel) assembly. It features a vertical pipe with a horizontal branch. A P-3 component is connected to the vertical pipe. A 2" SAN pipe is connected to the horizontal branch. A 2' SAN pipe is connected to the vertical pipe. A P-3 component is connected to the 2" SAN pipe. A 2' SAN pipe is connected to the vertical pipe.

The diagram shows a building footprint with a hatched area indicating the 'SCOPE OF WORK'. An arrow points from the text 'SCOPE OF WORK' to the hatched area.

KEYPLAN

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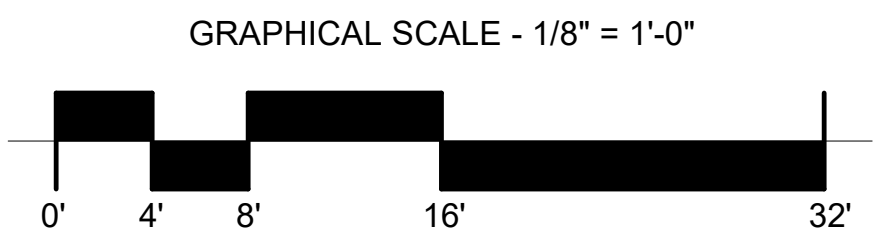
FIRST FLOOR PLAN - PLUMBING

Date _____

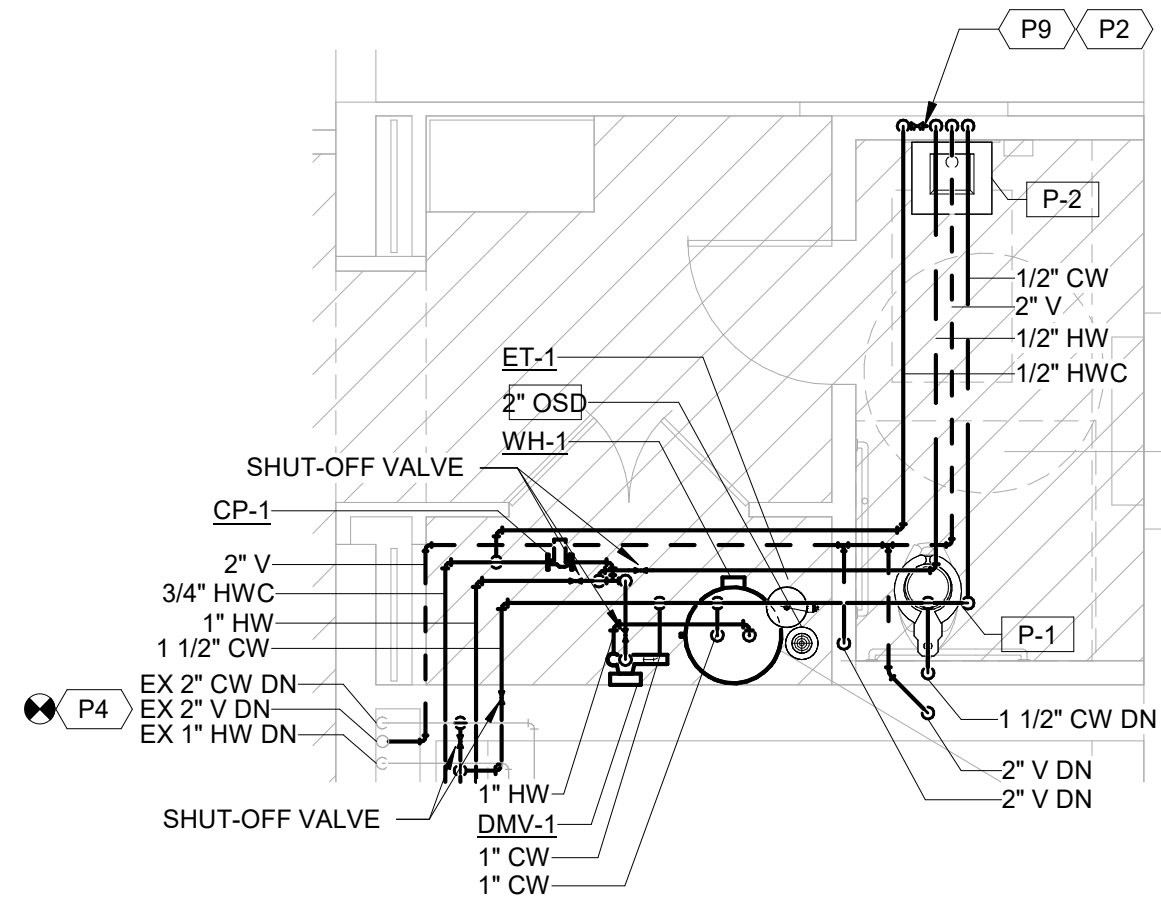
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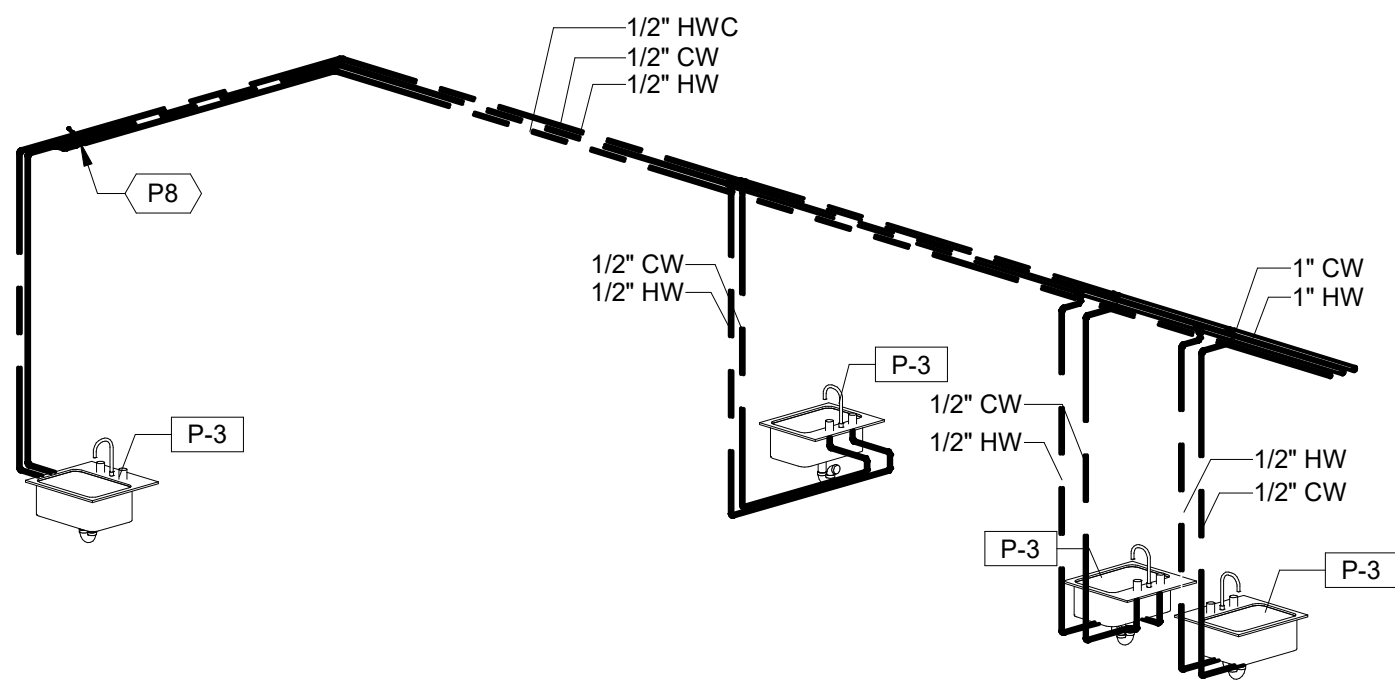
P102



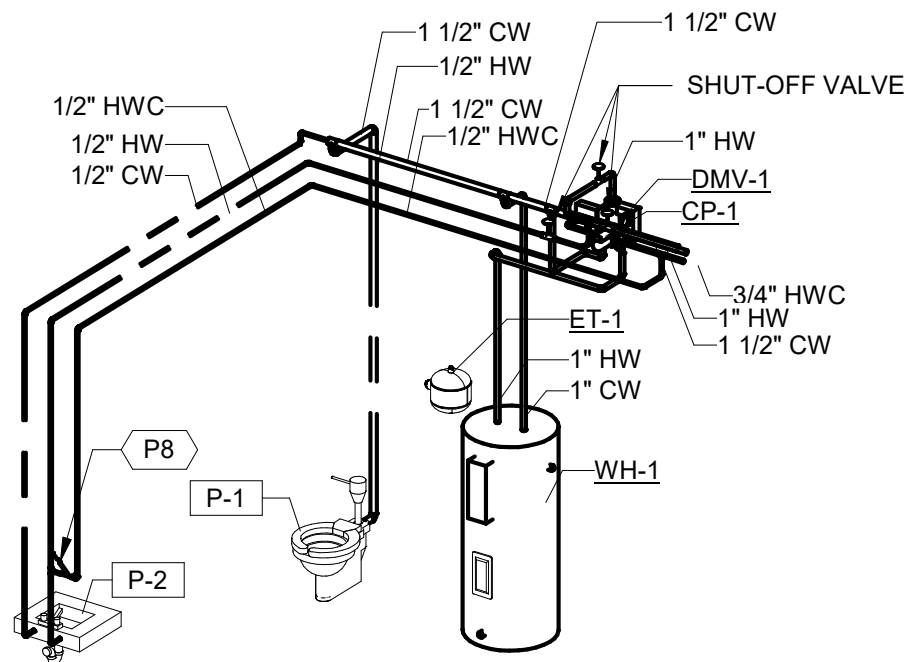
PLUMBING SPECIFIC NOTES	
SPECIFIC NOTE VALUE	SPECIFIC NOTE TEXT
P1	MAKE 1-1/2" CW CONNECTION TO EXISTING 2-1/2" CW ORIGINATING FROM CHASE. CONNECTION SHALL BE MADE WITHIN THE EXISTING BULKHEAD FOOTPRINT. PIPING SHOWN ON PLAN IS SHOWN DIAGRAMMATICALLY.
P2	PROVIDE 1/2" CW AND 1/2" HW CONNECTION TO SINK.
P3	PROVIDE MECHANICAL VENT (AIR ADMITTANCE VALVE), SUCH AS STUDOR MINI-VENT, FOR FIXTURE VENTING.
P4	PROVIDE 2" V CONNECTION TO EXISTING 2" V. ROUTE 2" V TO BATHROOM LAVATORY.
P5	CW, HW, AND HWC PIPING SHALL BE CONCEALED, LOCATED WITHIN EXISTING ACCT BULKHEAD. PIPING SHOWN ON PLAN IS SHOWN DIAGRAMMATICALLY.
P6	CW, HW, AND HWC PIPING SHALL BE CONCEALED, LOCATED WITHIN EXISTING ACCT BULKHEAD. PIPING SHOWN ON PLAN IS SHOWN DIAGRAMMATICALLY.
P8	FLOW CONTROL VALVE ASSEMBLY SHALL BE SET TO 1.0 GPM.
P9	ROUTE 4" SAN DN IN JANITOR'S CLOSET AND MAKE CONNECTION TO EXISTING 4" SAN LOCATED WITHIN GROUND FLOOR CEILING. VERIFY LOCATION AND INVERT PRIOR TO BEGINNING WORK (TYP.)
P15	FLOW CONTROL VALVE ASSEMBLY SHALL BE SET TO 0.5 GPM.



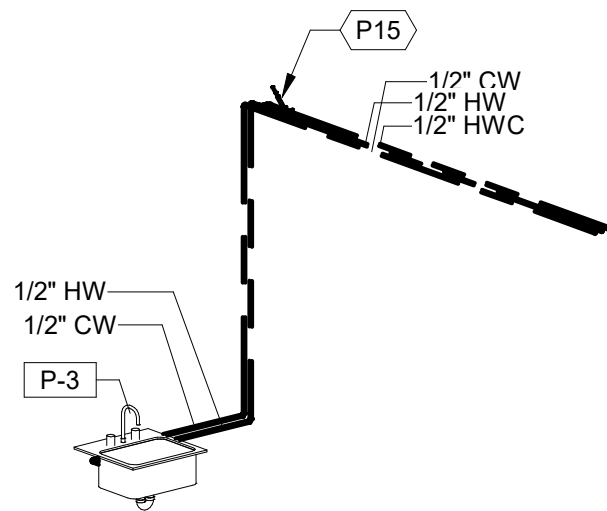
5 UNISEX RESTROOM 207 & STORAGE CLOSET 207A - PLUMBING
1/4" = 1'-0"



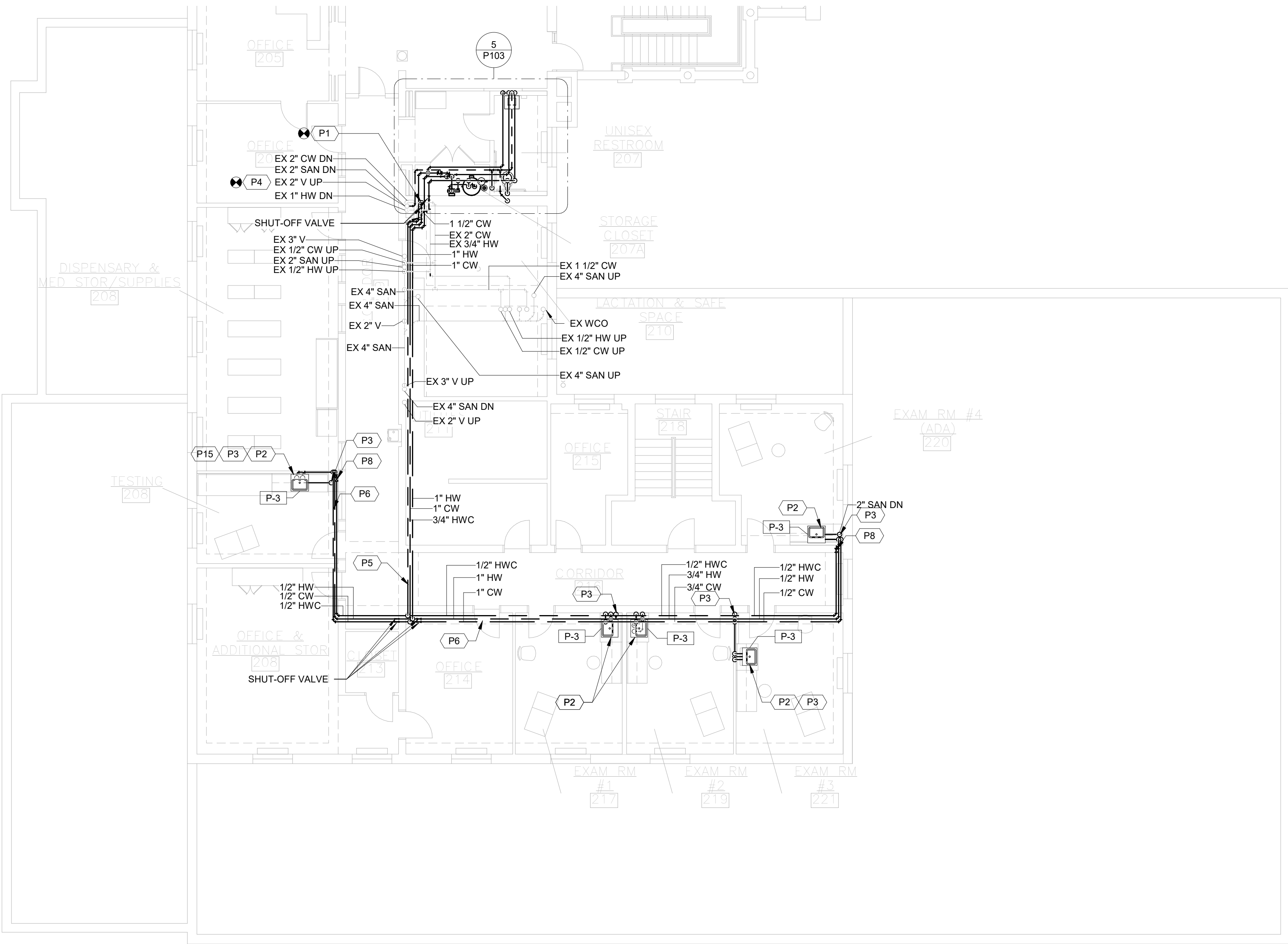
2 EXAM RM 1, 2, 3 & 4 - DOMESTIC WATER SUPPLY



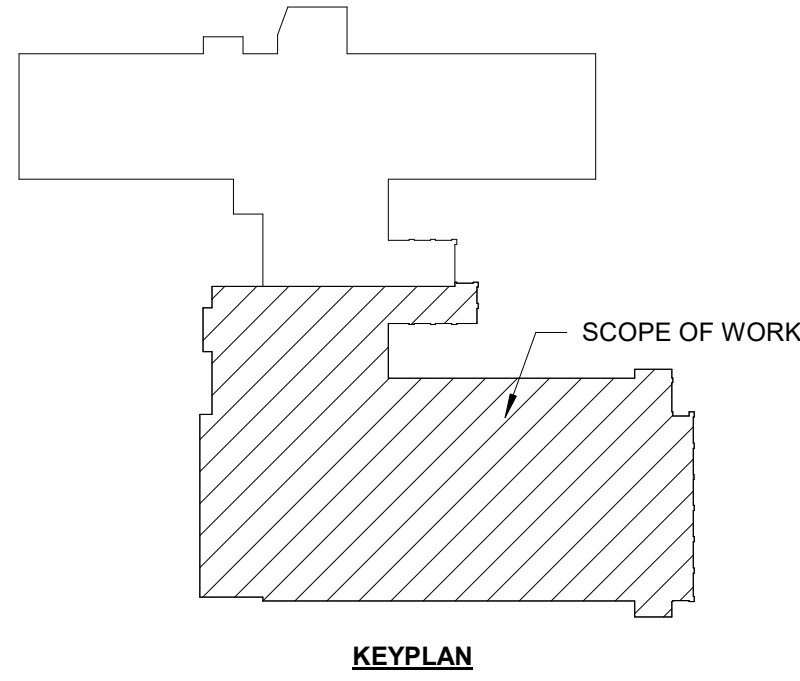
3 UNISEX RESTROOM 201 & STORAGE CLOSET 201A - DOMESTIC WATER SUPPLY



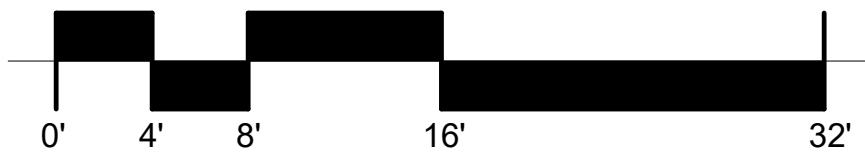
4 TESTING 208 - DOMESTIC WATER SUPPLY



1 SECOND FLOOR PLAN - PLUMBING
1/8" = 1'-0"



GRAPHICAL SCALE - 1/8" = 1'-0"



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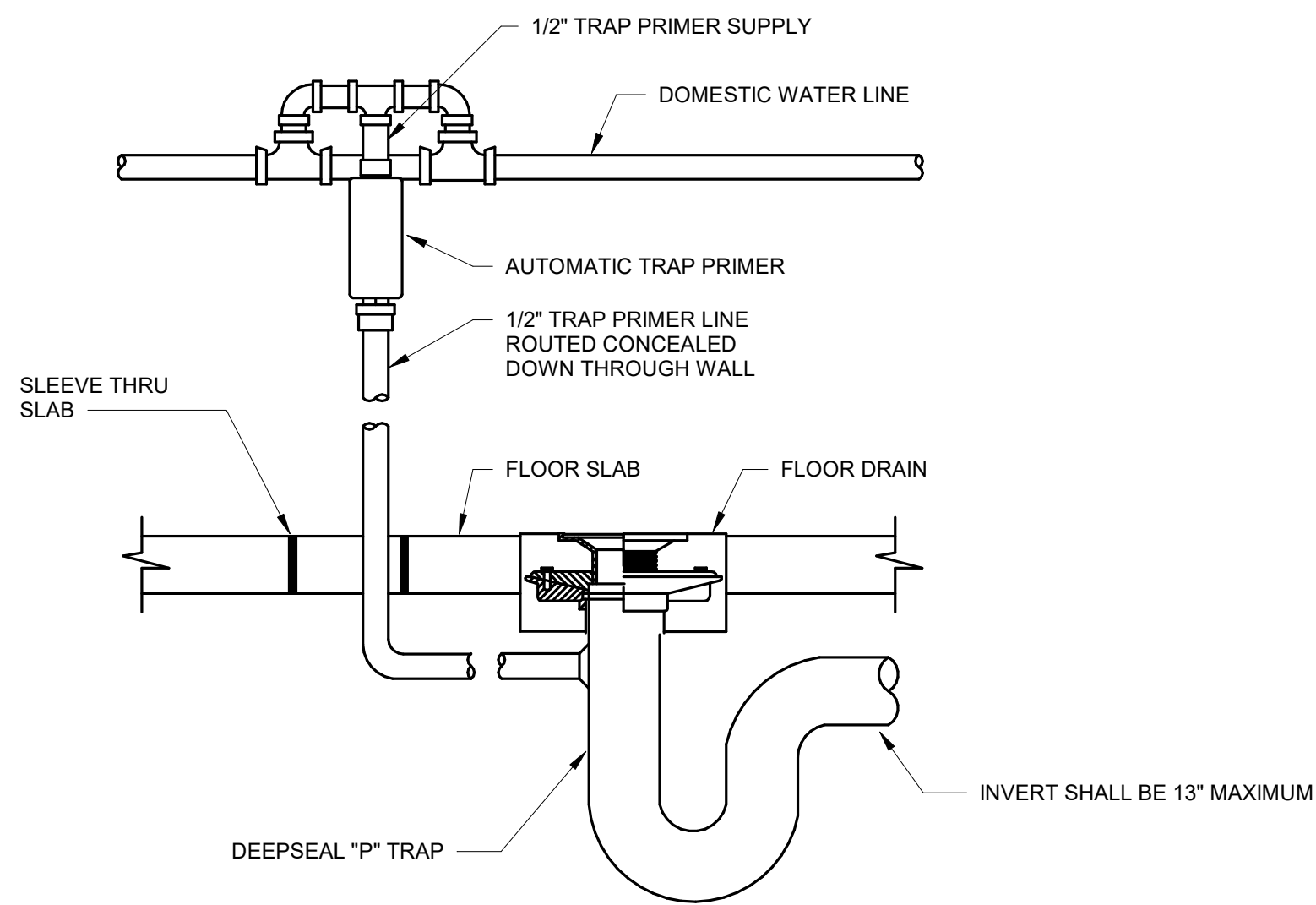
SECOND FLOOR PLAN -
PLUMBING

Project Number MI-1226

Date 03/12/2025

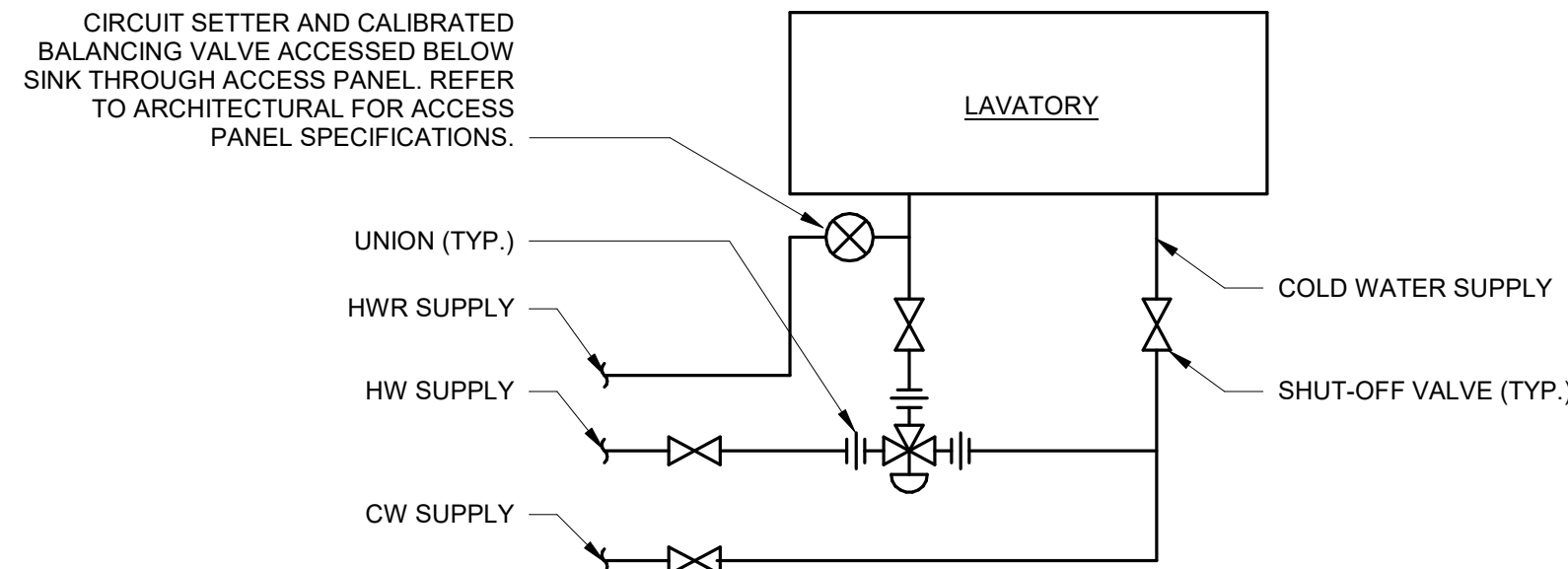
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P103

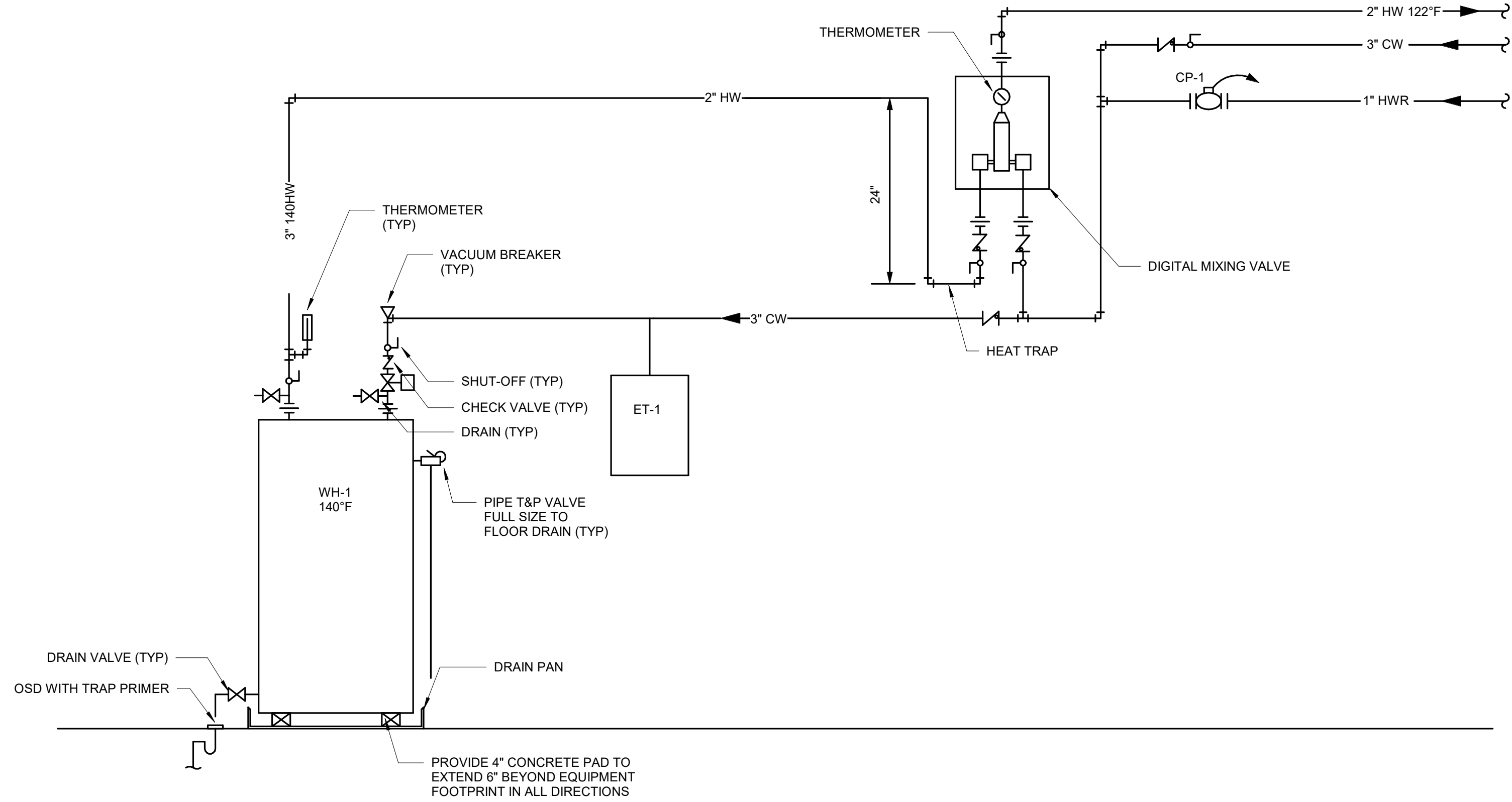


NOTES:
1. REFER TO STRUCTURAL DRAWINGS FOR FLOOR ASSEMBLY DETAILS.

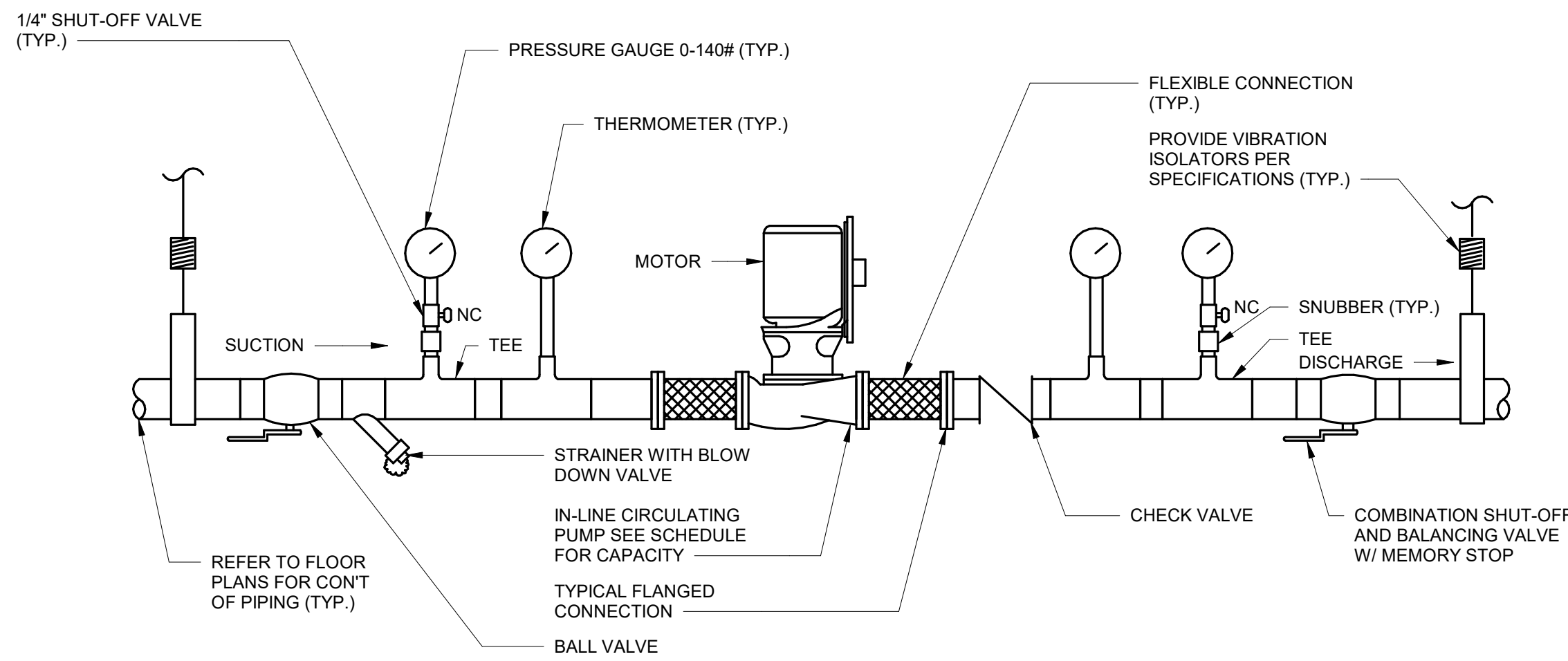
1 FLOOR DRAIN WITH TRAP PRIMER DETAIL
NOT TO SCALE



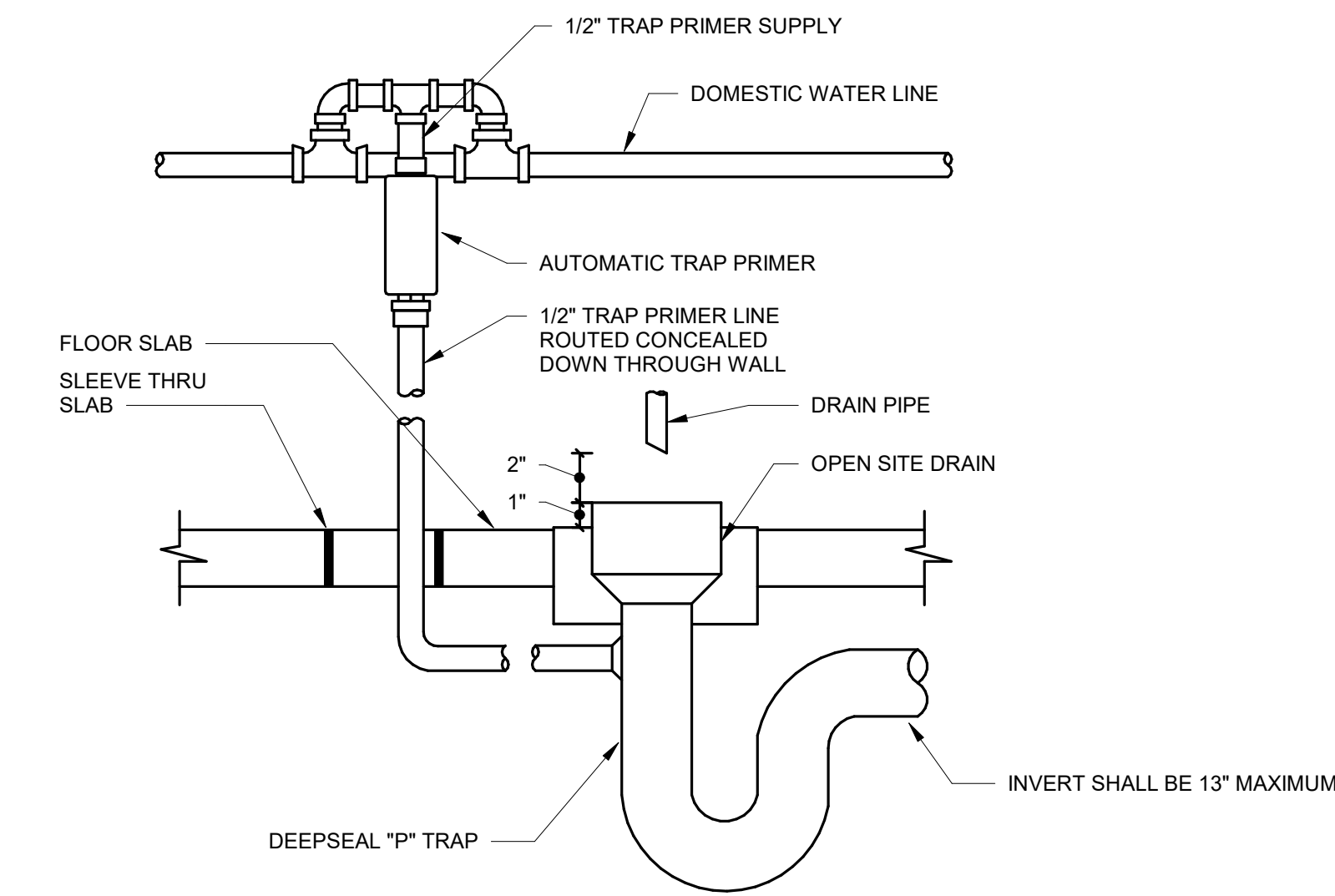
2 LAVATORY ASSE 1070 MIXING VALVE INSTALLATION DETAIL Copy 1
NOT TO SCALE



3 ELECTRIC WATER HEATER DETAIL
NOT TO SCALE

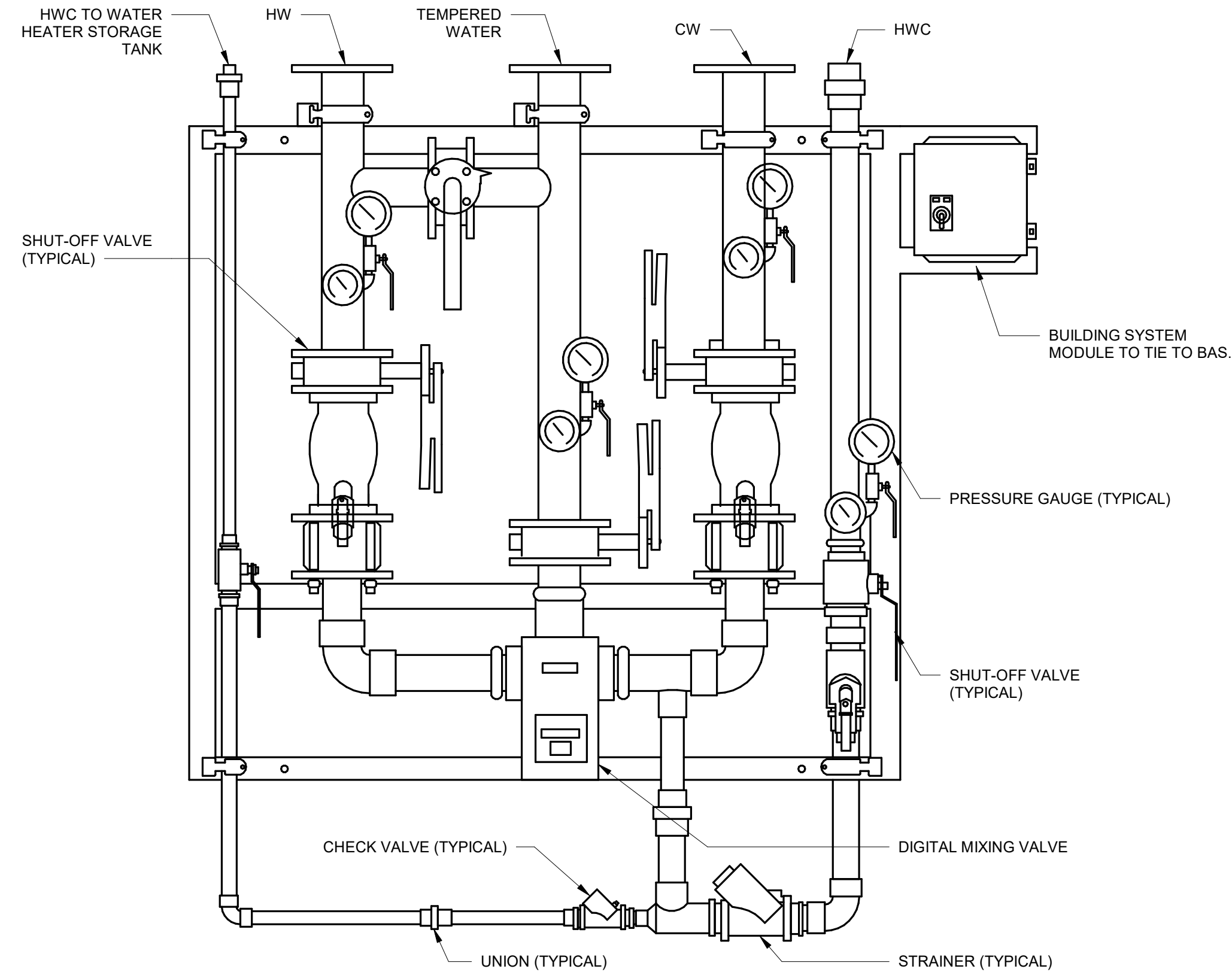


4 IN-LINE HOT-WATER RECIRCULATING PUMP DETAIL
NOT TO SCALE



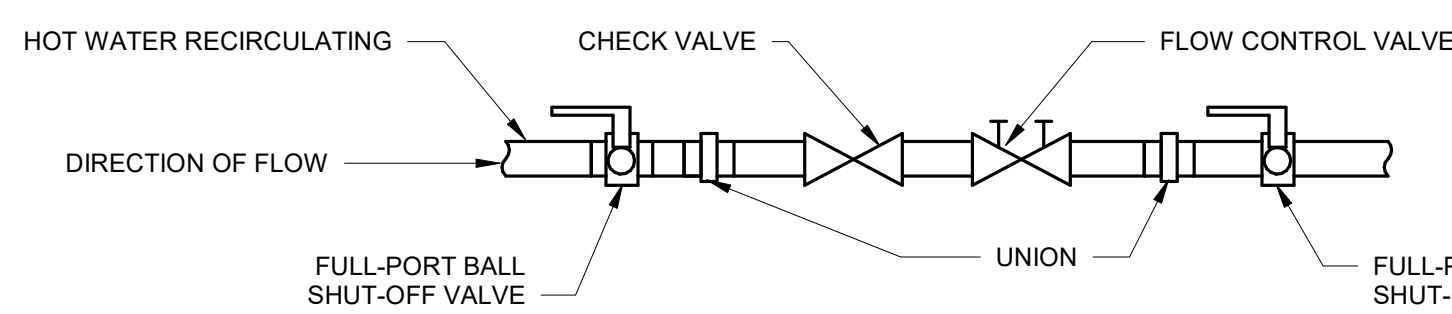
NOTES:
1. REFER TO STRUCTURAL DRAWINGS FOR FLOOR ASSEMBLY DETAILS.
2. PROVIDE FUNNEL CONNECTION TO OPEN SITE DRAIN.

5 OPEN SITE DRAIN WITH TRAP PRIMER DETAIL
NOT TO SCALE

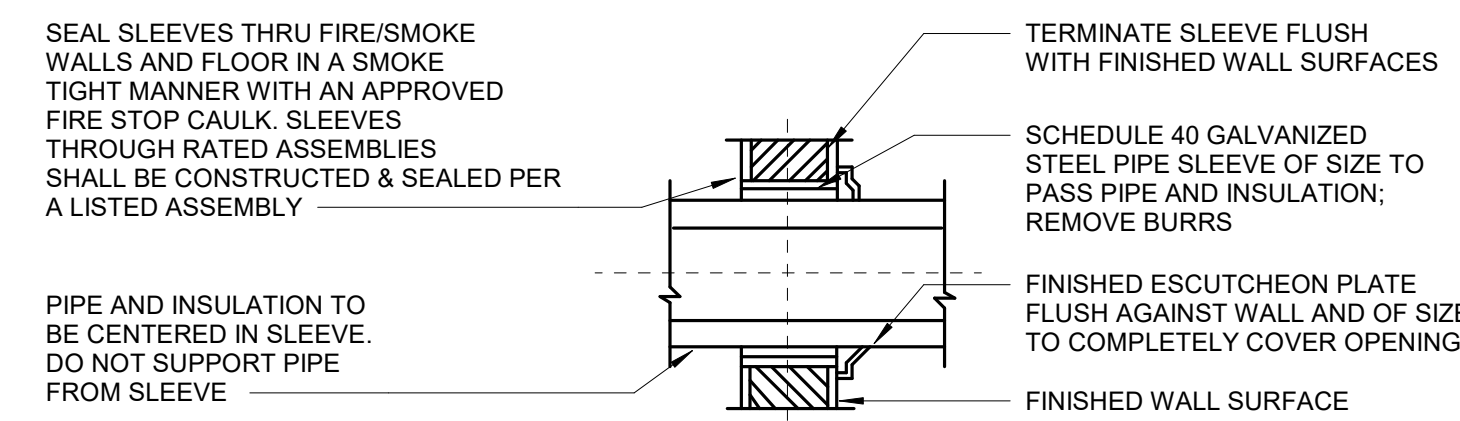


NOTES:
1. DIGITAL MIXING CENTER SHALL BE A PACKAGED ASSEMBLY AND SUPPORT

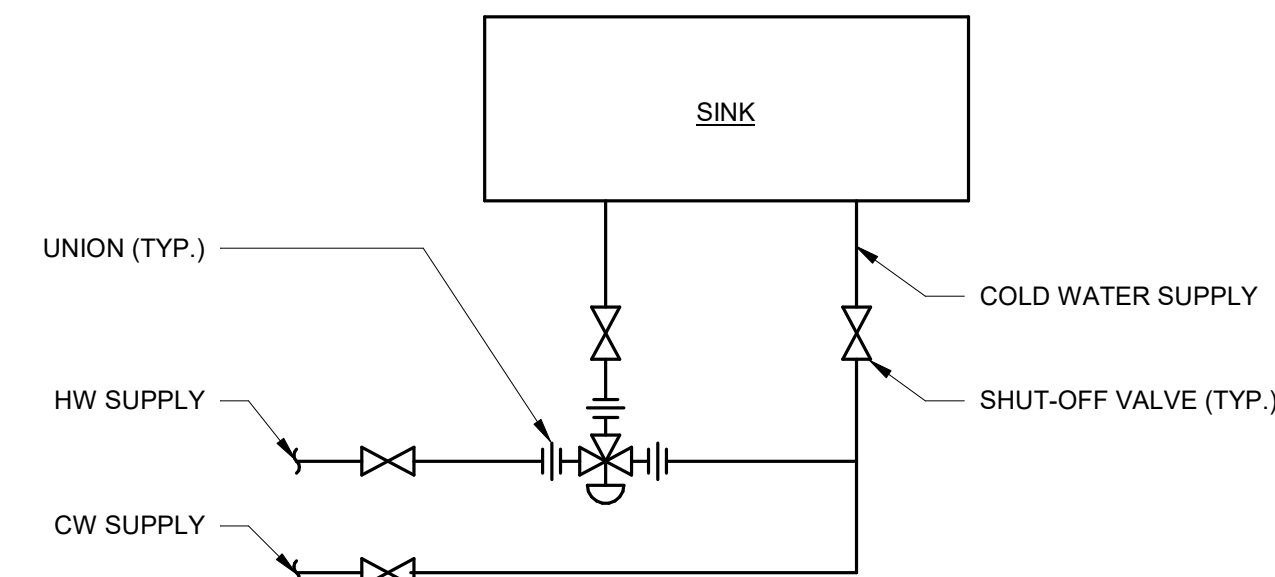
6 DIGITAL MIXING CENTER DETAIL
NOT TO SCALE



7 FLOW CONTROL VALVE ASSEMBLY DETAIL
NOT TO SCALE



8 TYPICAL PIPE SLEEVE THRU INTERNAL WALL DETAIL
NOT TO SCALE



9 SINK ASSE 1070 MIXING VALVE INSTALLATION DETAIL
NOT TO SCALE

NOTES

Hoffman Jun & Associates
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PLUMBING DETAILS

Project Number MI-1226

Date

03/12/2025

SCALE: AS NOTED

P501

NOTES



400 EAST PRATT STREET
BALTIMORE MD, 21202, 8TH FLOOR

PLUMBING FIXTURE SCHEDULE										
							BASIS OF DESIGN			
TAG	FIXTURE TYPE	SAN (IN)	V (IN)	CW (IN)	HW (IN)	FIXTURE FLOWRATE (GPM/GPF)	DESCRIPTION	MANUFACTURER		MODEL
P-1	WATER CLOSET	4"	2"	1 1/2"		1.28	FLOOR MOUNT REAR OUTLET ELONGATED FLUSHOMETER TOILET WITH ANGLE BACK AND BASE, WHITE VITREOUS CHINA, 17-1/8" RIM, 1.28GPF, EVERCLEAN SURFACE, SIPHON JET FLUSH ACTION, 1-1/2" INLET SPUD WITH 4 BOLT CAP WATER CLOSET BOWL, EXTRA HEAVY DUTY OPEN FRONT SEAT LESS COVER, SELF-CLEANING BRASS PISTON WITH INTEGRAL WIPER SPRING, PISTON OPERATED, NON-HOLD OPEN, 1-1/2" TOP SPUD, 1.28 GPF FLUSH VALVE.	AMERICAN STANDARD		3312.001, 6047.121.002, 5901.100
P-2	LAVATORY	2"	2"	1/2"	1/2"	0.50	21-1/4"x18-1/4" WALL-HUNG SINK COMPLYING WITH ADA REQUIREMENTS, WHITE VITREOUS CHINA, FRONT OVERFLOW, 4" CENTER SET FAUCET, SELF-DRAINING DECK AREA WITH CONTOURED BACK AND SIDE SPLASH SHIELDS, LAVATORY FAUCET WITH INDEXED METAL LEVER HANDLE, GRID DRAIN, 0.5 GPM, PROTECT SUPPLY AND DRAIN PIPES WITH 3/16" THICK WHITE MOLDED VINYL INTERNALLY RIBBED INSULATION WITH ACCESS FOR STOP VALVES, TRAP, ETC. THERMOSTATIC MIXING VALVE PIPED TO LAVATORY.	AMERICAN STANDARD / ZURN		0355.012, 2385.003 / ZW3870XL.T
P-3	HAND SINK	2"	2"	1/2"	1/2"	1.50	STAINLESS STEEL SINGLE BOWL TOP MOUNT 25"x21-1/4"x5-1/2" SINK FROM 18 GAUGE 304 STAINLESS STEEL, REAR CENTER DRAIN PLACEMENT AND FULL SPRAY SIDES AND BOTTOM, AND DRAIN, 8" SWIVEL SPOUT, WRIST BLADE FAUCET WITH AERATOR, THERMOSTATIC MIXING VALVE PIPED TO HAND SINK.	ELKAY / CHICAGO FAUCET / ZURN		LRADQ252155, LK99 / 786-GN2FCVPCABCP / ZW3870XL.T

ELECTRIC WATER HEATER SCHEDULE								
TAG	LOCATION	STORAGE CAPACITY (GAL)	RECOVERY @ 100°F RISE (GPH)	ELECTRIC DATA			BASIS OF DESIGN	
				KW	VOLTAGE	PHASE	MANUFACTURER	MODEL
WH-1	STORAGE 207A	50.0	18	4500.0	208 V	1	AO SMITH	DEN-52

- NOTES:
1. WATER HEATER SHALL STORE DOMESTIC HOT WATER AT 140 °F.
2. DISCONNECTING MEANS PROVIDED UNDER DIVISION 26.

CIRCULATING PUMP SCHEDULE										
TAG	LOCATION	TYPE	FLOW (GPM)	HEAD (FT)	RPM	ELECTRIC DATA			BASIS OF DESIGN	
						HP	VOLTAGE	PHASE	MANUFACTURER	MODEL
CP-1	STORAGE 207A	CARTRIDGE CIRCULATOR	2.5	25.00	3250	1/8	120 V	1	TACO	0013

- NOTES:
1. PROVIDE NON-OVERLOADING PUMP.
2. PROVIDE PREMIUM EFFICIENCY INVERTER DUTY MOTORS.
3. DISCONNECTING MEANS PROVIDED UNDER DIVISION 26.

DIGITAL MIXING VALVE SCHEDULE							
TAG	LOCATION	FLOW (GPM)	HEAD LOSS (PSI)	ELECTRIC DATA		BASIS OF DESIGN	
				VOLTAGE	PHASE	MANUFACTURER	MODEL
DMV-1	STORAGE 207A	16	5.00	120 V	1	POWERS	LFIS075VL

EXPANSION TANK SCHEDULE					
TAG	TYPE	TANK VOL. (GAL.)	ACCEPTANCE VOL. (GAL.)	BASIS OF DESIGN	
				MANUFACTURER	MODEL
ET-1	DIAPHRAGM	6.4	3.20	AMTROL	ST-12-C-DD

- NOTES:
1. EXPANSION TANKS SHALL BE ASME RATED.

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PLUMBING SCHEDULES

Project Number MI-1226

Date 03/12/2025

SCALE: AS NOTED

P701

SECTION 20 00 00
GENERAL MECHANICAL REQUIREMENTS

PART 1 GENERAL

- 1.01 SUMMARY**
- A. SECTION INCLUDES ADMINISTRATIVE AND PROCEDURAL REQUIREMENTS FOR WORK UNDER DIVISION 20, 22 AND 23.
- B. COORDINATE WORK OF THIS SECTION WITH THE REQUIREMENTS OF THE PROJECT.
- 1.02 GENERAL DESCRIPTION**
- A. THE FOLLOWING IS A GENERAL DESCRIPTION OF THE WORK INCLUDED IN THE MECHANICAL DIVISION AND AS SHOWN ON THE MECHANICAL AND PLUMBING/FIRE PROTECTION DRAWINGS.
- B. THE WORK SHALL INCLUDE, BUT NOT BE LIMITED TO THE FOLLOWING:
1. PLUMBING (DIVISION 22)
 - a. SANITARY PIPING SHALL BE EXTENDED FROM FIXTURES AND APPLIANCES REQUIRING CONNECTION TO THE EXISTING PIPING. VERIFY LOCATION AND INVERT OF THE EXISTING PIPING BEFORE STARTING WORK.
 - b. DOMESTIC WATER PIPING SHALL BE EXTENDED FROM FIXTURES AND APPLIANCES REQUIRING CONNECTION TO THE EXISTING PIPING. VERIFY LOCATION AND INVERT OF THE EXISTING PIPING BEFORE STARTING WORK.
 - c. DOMESTIC HOT WATER SHALL BE PROVIDED BY AN ELECTRIC STORAGE TANK WATER HEATER WITH DISTRIBUTION PIPING.
 - d. A DOMESTIC HOT WATER RECIRCULATION PUMP SHALL BE PROVIDED.
 2. HEATING, VENTILATING AND AIR CONDITIONING (DIVISION 23)
 - a. EXHAUST VENTILATION SHALL BE PROVIDED FOR TOILET ROOMS, JANITORS CLOSETS, EMPLOYEE BREAK ROOMS AND ELEVATOR MACHINE ROOMS.
 - b. A SYSTEM OF AUTOMATIC TEMPERATURE CONTROLS SHALL BE PROVIDED.
- 1.03 DEFINITIONS**
- A. FOLLOWING ARE DEFINITION OF TERMS AND EXPRESSIONS USED IN THE ELECTRICAL SECTIONS IN ADDITION TO THE DEFINITIONS FOUND IN THE CONTRACT DOCUMENTS.
1. "PIPING" INCLUDES PIPE, FITTINGS, VALVES, HANGERS, AND OTHER ACCESSORIES THAT COMPRISE A SYSTEM.
 2. "DUCTWORK" INCLUDES DUCTS, FITTINGS, HOUSINGS, DAMPERS, HANGERS, AND OTHER ACCESSORIES, WHICH COMPRISE A SYSTEM.
 3. "REFURBISH" SHALL INCLUDE BUT NOT BE LIMITED TO:
 - a. INSPECTING & REPAIRING UNIT CABINET SUCH AS REPAIRING SEALS/LATCHES, CURBS, ETC.
 - b. CLEANING COILS
 - c. REPLACING BELTS
 - d. LUBRICATING BEARINGS
 - e. CHANGING FILTERS
 - f. INSPECTING & CLEANING GAS FIRED HEAT EXCHANGERS
 - g. CLEANING & REPAIRING CONDENSATE DRAIN AND SECONDARY DRAIN PAN
 - h. CHECKING & ADJUSTING REFRIGERATION CHARGE OF EACH CIRCUIT
 - i. LEAK TEST & REPAIR ANY REFRIGERATION LEAKS
- A REFURBISHED UNIT SHALL BE BROUGHT INTO THE MANUFACTURER'S ORIGINAL OPERATING SPECIFICATIONS & TOLERANCES AND PROVIDED WITH A WARRANTY OF OPERABILITY FOR (60) DAYS AFTER THE SYSTEMS HAVE BEEN TURNED OVER TO THE OWNER.
- 1.04 WARRANTY**
- A. PROVIDE WARRANTY AS INDICATED IN FRONT END DOCUMENTS BUT NOT LESS THAN 1 YEAR FROM DATE OF SUBSTANTIAL COMPLETION AS DETERMINED BY THE ARCHITECT.
- B. DURING THE WARRANTY PERIOD, MAKE THE PROPER ADJUSTMENTS OF SYSTEMS, EQUIPMENT AND DEVICES INSTALLED AND PERFORM WORK NECESSARY TO ENSURE THE EFFICIENT AND PROPER OPERATION OF THE SYSTEMS, EQUIPMENT AND DEVICES.
- C. CERTAIN ITEMS OF EQUIPMENT SHALL BE WARRANTED FOR A LONGER TIME THAN THE GENERAL WARRANTY PERIOD. PROVIDE FOR SERVICE OR REPLACEMENT REQUIRED IN CONNECTION WITH THE WARRANTY OF THESE ITEMS.
- 1.05 VARIANCES**
- A. WHERE CONFLICTS EXIST WITHIN THE CONTRACT DOCUMENTS, REQUEST CLARIFICATION PRIOR TO SUBMISSION OF BID. IF CLARIFICATION IS NOT REQUESTED, PROVIDE THE WORK REPRESENTING THE HIGHER COST AND QUALITY.
- 1.06 QUALITY ASSURANCE**
- A. REGULATORY REQUIREMENTS
1. WORK SHALL CONFORM TO THE REQUIREMENTS OF THE CODES, LAWS AND ORDINANCES OF MILLERSVILLE UNIVERSITY, NATIONAL FIRE PROTECTION ASSOCIATION, AMERICAN SOCIETY OF MECHANICAL ENGINEERS AND OTHER AUTHORITIES HAVING JURISDICTION.
 2. COMPLY WITH APPLICABLE CODES, LAWS, STANDARD PRACTICES
 3. COMPLY WITH THE STANDARDS OF GOOD PRACTICE AS OUTLINED IN THE ASHRAE GUIDE, THE SHEET METAL AND AIR CONDITIONING CONTRACTORS' ASSOCIATIONS' DUCT MANUAL, AND THE APPRENTICE TRAINING MANUAL OF THE STEAM FITTERS UNION.
 4. THE REQUIREMENTS OF THE AUTHORITIES HAVING JURISDICTION SHALL TAKE PRECEDENCE OVER THE DRAWINGS AND SPECIFICATIONS AND CHANGES REQUIRED BY THE AUTHORITIES SHALL BE MADE AFTER REVIEW BY THE ARCHITECT.
- 1.07 SUBMITTALS**
- A. SHOP DRAWINGS AND PRODUCT INFORMATION ARE REQUIRED FOR THE FOLLOWING:
1. PLUMBING (DIVISION 22)
 - a. WATER HEATERS
 - b. PLUMBING FIXTURES
 - c. CIRCULATING PUMPS
 2. HEATING, VENTILATING, AND AIR CONDITIONING (DIVISION 23)
 - a. AIR DEVICES
 - b. INSULATION
 - c. FANS
 - d. ENERGY MANAGEMENT SYSTEM/TEMPERATURE CONTROLS
 - e. TESTING, ADJUSTMENT AND BALANCING REPORTS AND QUALIFICATIONS
 3. OPERATION AND MAINTENANCE MANUAL.
- B. ADDITIONAL SUBMITTALS MAY BE PROVIDED BY THE CONTRACTOR FOR RECORD PURPOSES. ADDITIONAL SUBMITTALS WILL NOT BE PROVIDED WITH A DOCUMENTED REVIEW BY THE ENGINEER.
- C. REVIEW OF SHOP DRAWINGS DOES NOT RELIEVE THE CONTRACTOR OF RESPONSIBILITY FOR COMPLYING WITH THE CONTRACT DOCUMENTS. ENGINEER'S REVIEW SHALL BE PROVIDED WITH ONE OF THE FOLLOWING CLASSIFICATIONS:
1. REVIEWED
 - a. ENGINEER HAS REVIEWED THE SUBMITTAL AND DOES NOT HAVE COMMENTS TO PROVIDE TO THE CONTRACTOR.
 2. REVIEWED AS NOTED
 - a. ENGINEER HAS REVIEWED THE SUBMITTAL AND HAS PROVIDED COMMENTS FOR THE CONTRACTOR'S BENEFIT.
 - b. THIS CLASSIFICATION DOES NOT WARRANT A RESUBMITTAL BY THE CONTRACTOR, ACCORDINGLY SUBSEQUENT SUBMISSIONS ON THIS SUBMITTAL WILL NOT BE REVIEWED BY THE ENGINEER.
 3. REVISE AND RESUBMIT
 - a. ENGINEER HAS REVIEWED THE SUBMITTAL AND HAS ENOUGH COMMENTS TO WARRANT THE CONTRACTOR'S ADDRESSING THE COMMENTS AND PROVIDING A RESUBMITTAL.
 - b. THIS CLASSIFICATION REQUIRES A RESUBMITTAL BY THE CONTRACTOR AND CAN BE BASED ON THE SAME PRODUCT OR MANUFACTURER.
 4. REJECTED
 - a. ENGINEER HAS REVIEWED THE SUBMITTAL, WHICH MAY HAVE BEEN CURSORY, SINCE THE PRODUCT OR MANUFACTURER DOES NOT MEET THE INTENT OF THE CONTRACT DOCUMENTS.
 - b. THIS CLASSIFICATION REQUIRES A RESUBMITTAL BY THE CONTRACTOR AND MUST BE BASED ON A NEW PRODUCT OR MANUFACTURER.
- D. SHOP DRAWINGS SHALL REFLECT THE MANUFACTURER BEING PROVIDED FOR THE PROJECT. SHOP DRAWINGS CONTAINING MULTIPLE MANUFACTURERS FOR THE SAME PRODUCT WILL NOT BE REVIEWED.
- E. SHOP DRAWING SHALL BE CLEARLY MARKED TO INDICATE THE PRODUCT BEING PROVIDED. SHOP DRAWINGS THAT DO NOT INDICATE THE PRODUCT BEING PROVIDED WILL NOT BE REVIEWED.
- 1.08 PROTECTION**
- A. PROTECT MATERIAL AND EQUIPMENT FROM DAMAGE.
- B. CAP OR PLUG OPENINGS IN EQUIPMENT AND CONDUITS.
- C. POST NOTICES PROHIBITING THE USE OF WATER CLOSETS.
- D. CONSTRUCTION MATERIALS SHALL BE STORED IN A WEATHER-TIGHT, CLEAN AREA PRIOR TO UNPACKING FOR INSTALLATION.
- E. ACCUMULATION OF WATER DURING CONSTRUCTION SHALL BE AVOIDED AND ANY POROUS CONSTRUCTION MATERIALS SUCH AS INSULATION SHALL BE PROTECTED FROM MOISTURE.
- 1.09 TEMPORARY CONDITIONING**
- A. REFER TO FRONT END SPECIFICATIONS FOR THE REQUIREMENTS OF TEMPORARY HVAC.

PART 2 PRODUCTS

- 2.01 MATERIALS**
- A. PROVIDE MATERIALS WHETHER THE MATERIALS ARE SHOWN BUT NOT SPECIFIED, SPECIFIED BUT NOT SHOWN, OR ARE REASONABLY INCIDENTAL FOR A COMPLETE OPERATIONAL SYSTEM.
- 2.02 IDENTIFICATION**
- A. PROVIDE LABELING FOR:
1. EQUIPMENT
 2. PIPING
 3. DUCTWORK
- B. LABELS SHALL BE CLEARLY VISIBLE AND ACCURATE BEFORE TURNOVER OF SYSTEMS OR COMMISSIONING WORK BEGINS.
- C. LABELS SHALL
1. INDICATE DIRECTION OF FLOW ON PIPING AND DUCTWORK SYSTEMS
 2. HAVE LETTERING AND NUMBERS A MINIMUM OF 2" HIGH
 3. BE AT INTERVALS NO GREATER THAN 25 FEET ON PIPING AND DUCTWORK
 4. BE OF ANODIZED ALUMINUM FOR EQUIPMENT, APPLIED WITH MOLY RIVETS
 5. USE THE SAME NOMENCLATURE IDENTIFIED ON THE DRAWINGS
- D. PROVIDE COLOR CODED CEILING IDENTIFICATION FOR VALVES AND DAMPERS ABOVE CEILINGS. THE IDENTIFICATION SHALL BE LOCATED ON THE ASSOCIATED ACCESS PANEL AND SHALL BE APPROVED BY THE ARCHITECT BEFORE INSTALLATION.
- 2.03 ELECTRICAL**
- A. PROVIDE THE FOLLOWING UNLESS COORDINATED WITH THE WORK PROVIDED UNDER DIVISION 26:
1. STARTERS
 2. VARIABLE FREQUENCY DRIVES
 3. DISCONNECTING MEANS
 4. MAINTENANCE RECEPTACLES, CIRCUITED
 5. POWER FOR EQUIPMENT CONTROLS AND ASSOCIATED CONTROLLERS AND ACTUATORS
 6. DUCT DETECTORS
- B. SUBCONTRACT WITH A CONTRACTOR LICENSED TO PERFORM THE WORK SPECIFIED UNDER DIVISION 26 AS NECESSARY FOR THE AUTHORITY HAVING JURISDICTION. ELECTRICAL SYSTEMS PROVIDED UNDER DIVISION 20 SHALL MEET THE REQUIREMENTS SPECIFIED UNDER DIVISION 26.
- C. COORDINATE THE VOLTAGES AND MOPC REQUIREMENTS FOR EQUIPMENT WITH THE WORK BEING PROVIDED UNDER DIVISION 26 BEFORE ORDERING EQUIPMENT, INCLUDING EQUIPMENT PROVIDED UNDER DIVISION 20 AND 26.
- D. ELECTRICAL COMPONENTS PROVIDED UNDER DIVISION 20 SHALL HAVE THE SUITABLE NEMA HOUSING CLASSIFICATION FOR THE INSTALLATION.
- E. PROVIDE A SUBMITTAL WITH A LIST OF THE PROVIDED EQUIPMENT, THE ELECTRICAL CHARACTERISTICS OF EACH ITEM, AND THE COORDINATED PANEL/CIRCUIT INFORMATION.
- F. EQUIPMENT PROVIDED UNDER DIVISION 20 SHALL HAVE A UL RATING LABEL, OR EQUAL INDEPENDENT TESTING CERTIFICATION AS APPROVED BY THE AUTHORITY HAVING JURISDICTION.
- G. EQUIPMENT PROVIDED UNDER THIS DIVISION WITH A MOPC REQUIREMENT GREATER THAN 20 AMPS SHALL HAVE A POWER FACTOR OF 0.90 OR GREATER. EQUIPMENT NOT MEETING THIS 0.90 CRITERIA SHALL BE PROVIDED WITH POWER CORRECTION DEVICES TO PROVIDE AN EQUIVALENT POWER FACTOR.
- H. EQUIPMENT, PIPING, DUCTWORK, ETC. PROVIDED UNDER THIS DIVISION SHALL NOT BE INSTALLED WITHIN THE NATIONAL ELECTRIC CODE REQUIRED CLEARANCE AREAS OR AS REQUIRED BY THE AUTHORITY HAVING JURISDICTION. DISCREPANCIES INDICATED WITHIN THE DRAWINGS SHALL BE BROUGHT TO THE ENGINEER'S ATTENTION BEFORE BEGINNING WORK.
- 2.04 PRODUCTS TO BE USED**
- A. ITEMS INDICATED ON THE DRAWINGS OR IN THE SPECIFICATIONS BY COMMON TRADE NAME, MANUFACTURERS NAME/MODEL, PROVIDE AN INDICATION OF THE QUALITY OF THE PRODUCTS OR MATERIALS TO BE USED ON THIS PROJECT.
- B. PRODUCTS INDICATED AS THE "BASIS OF DESIGN" ON THE DRAWINGS HAVE BEEN COORDINATED WITH OTHER TRADES. COORDINATE SUBSTITUTED EQUIPMENT OF OTHER MANUFACTURERS, LISTED AS APPROVED EQUALS, WITH OTHER TRADES. MAKE NECESSARY MODIFICATIONS FOR USE OF AN APPROVED EQUAL MANUFACTURER'S PRODUCT, INCLUDING COORDINATION WITH OTHER TRADES.
- 2.05 ACCESS PANELS**
- A. GROUP DAMPERS, TRAPS, VALVES AND OTHER ACTUATORS IN REASONABLE PROXIMITY TO REDUCE THE NUMBER OF REQUIRED ACCESS PANELS.
- B. PROVIDE ACCESS PANELS TO MAINTAIN THE FIRE RATING OF THE ASSOCIATED WALL, FLOOR, CEILING, ETC. ASSEMBLY.
- C. ACCESS PANELS ARE NOT REQUIRED WHERE LOCATED ABOVE LAY-IN CEILING PANELS.
- D. ACCESS PANELS SHALL BE COORDINATED WITH THE FINISH OF THE ASSOCIATED ASSEMBLY.
- E. PROVIDE A SHOP DRAWING INDICATING THE LOCATION AND TYPES OF ACCESS PANELS BEFORE BEGINNING INSTALLATION.
- F. PROVIDE ACCESS PANELS IN DUCTWORK TO PROVIDE ACCESS TO FIRE AND SMOKE DAMPERS THAT ARE SUITABLE FOR THE ASSOCIATED DUCT PRESSURE CLASSIFICATION AND WHICH MAINTAINS THE AIR LEAKAGE CRITERIA INDICATED HEREIN.
- 2.06 ROOF CURBS**
- A. ROOF MOUNTED EQUIPMENT LOCATED ON EITHER ON A ROOF AREA OR ON A SLAB-ON-GRADE SHALL BE PROVIDED WITH AN EQUIPMENT SUPPORT CURB SPECIFIC FOR THE EQUIPMENT BEING SERVED, FOR ROOF MOUNTED SYSTEMS. PROVIDE THE CURB ASSEMBLIES WITH ISOLATION RAILS ON ALL SIDES OF THE CURB. ISOLATION RAILS SHALL BE FURNISHED AS PART OF THE SAME SUBMITTAL PACKAGE AS THE CURB AND EQUIPMENT NATIONAL ROOFING CONTRACTORS NATIONAL ASSOCIATION CURBS SHALL BE PROVIDED.
- B. CURBS SHALL BE SUITABLE FOR THE PITCH OF THE ROOF AND SHALL BE SET FOR THE EQUIPMENT TO BE LEVEL. PROVIDE WOOD BLOCKING AS NEEDED TO MAINTAIN A MINIMUM TOP OF CURB ELEVATION AT 14" ABOVE THE FINISHED ROOF LEVEL, OR THE NOMINAL HEIGHT OF THE CURB INDICATED WITHIN THE EQUIPMENT SPECIFICATION ARTICLE.
- C. CURBS SHALL BE DOUBLE WALL INSULATED TYPE. ADDED INSULATION SHALL BE APPLIED TO THE INTERIOR OF THE CURB TO PROVIDE SIMILAR INSULATION VALUE FOR THE ISOLATION RAIL AREA.
- D. EQUIPMENT CURBS AND RAILS SHALL BE PATE ES SERIES OR EQUIVALENT OF THY CURB, PROVIDED WITH:
1. 18 GAUGE GALVANIZED BASE PLATE
 2. WOOD NAILER STRIP
 3. GALVANIZED COUNTER FLASHING

4. ACRYLIC TOP CLADDING FOR RAILS
 5. DOUBLE WALL INSULATION
 6. ISOLATION RAIL
- E. PIPE CURBS SHALL BE OF SIMILAR CONSTRUCTION AS EQUIPMENT CURBS WITH ACRYLIC TOP CLADDING AND WITHOUT ISOLATION RAILS. PATE PC SERIES OR EQUAL OF THY CURB.
- 2.07 FLASHING**
- A. SEE THE ARCHITECTURAL DRAWINGS AND ASSOCIATED DIVISIONS OF THE SPECIFICATION FOR FLASHING REQUIREMENTS.
- B. COORDINATE THE FLASHING REQUIREMENTS WITH THE WORK OF OTHER TRADES FOR THE FOLLOWING:
1. SANITARY VENTS THROUGH ROOF
 2. CURBS
 3. PIPE AND DUCT PENETRATIONS THROUGH ROOF CURBS AND WALL ASSEMBLIES
- 2.08 SUPPORTS - HANGERS AND PIPE SUPPORTS**
- A. PROVIDE HANGERS AND SUPPORTS.
1. MANUFACTURED BY EATON, GLOBE, OR CARPENTER & PATERSON
 2. TRAPRAZE HANGERS ARE ACCEPTABLE
 3. PROVIDE WITH SWAY BRACING SPACED AND CONFIGURED TO PREVENT LATERAL MOVEMENT
 4. HANGER AND SUPPORTS SHALL BE INSTALLED PER THE REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION WITH THE FOLLOWING MAXIMUM SPACING:
 - a. ½ PIPE: 6 FEET
 - b. ¾" AND 1" PIPE: 8 FEET
 - c. PIPING OVER 1": 10 FEET
- B. WOOD CONSTRUCTION:
1. BOLT THROUGH HANGERS TO STRUCTURAL MEMBERS
 2. LAG SCREWS TO STRUCTURAL MEMBERS
- C. CONCRETE CONSTRUCTION:
1. GREATER THAN 2" TOPPING:
 - a. RODS SHALL EXTEND THROUGH CONCRETE ASSEMBLY WITH A 4X4 STEEL TOP PLATE
 2. LESS THAN 2" TOPPING:
 - a. RODS SHALL BE BOLTED INTO THE CONCRETE ASSEMBLY USING SUITABLE TOGGLE BOLTS
- D. STEEL CONSTRUCTION:
1. SUPPORT FROM TOP CHORD OF THE JOIST OR PANEL POINTS OF LOWER CHORD OF OPEN WEB JOISTS FOR PIPING RUNNING PERPENDICULAR TO THE DIRECTION OF THE JOISTS
 2. WELD STEEL ANGLES TO TOP CHORD OF OPEN WEB JOISTS FOR PIPING RUNNING PARALLEL TO THE DIRECTION OF THE JOISTS
- E. PIPES SHALL BE SUPPORTED TO PROVIDE PROPER SLOPE AND SHALL NOT BE SUPPORTED FROM OTHER SUPPORT SYSTEMS PROVIDED TO SERVE THE EQUIPMENT COVERED WITHIN OTHER DIVISIONS OF THE SPECIFICATIONS.
- F. PIPE HANGERS:
1. STATIC AND DYNAMIC: CARPENTER AND PATERSON FIGURE 2015
 2. SWAY BRACES: CARPENTER AND PATERSON FIGURE 2300 SERIES
 3. INSULATED PIPE SECTIONS: CARPENTER AND PATERSON 61 SERIES OR 82-86 SERIES
- G. FLOOR MOUNTED PIPE SUPPORTS:
1. CARPENTER AND PATERSON FIGURE 628, 629, 630
 2. PROVIDE INDEPENDENT CONCRETE FOOTER AS NEEDED.
- 2.09 VIBRATION ISOLATION**
- A. PROVIDE APPROPRIATE VIBRATION ISOLATION AS A DELEGATED DESIGN. PROVIDE A SUBMITTAL INDICATING DETAILS AND CUTSHEETS TO PROVIDE ADEQUATE EXTERNAL VIBRATION ISOLATION FOR THE FOLLOWING:
1. FANS/FAN COIL UNITS/VAV BOXES (2,000 CFM SYSTEMS OR LESS)
 - a. 0.75" MINIMUM DEFLECTION
 2. PIPE AND DUCT SUPPORT ASSEMBLIES (WITHIN 75 FEET OF ASSOCIATED EQUIPMENT)
 - a. 1.0" MINIMUM DEFLECTION
- B. WHERE EQUIPMENT INDICATED HEREIN BEFORE IS INDICATED TO BE PROVIDED WITH EXTERNAL VIBRATION ISOLATION AND ALSO SPECIFIED TO BE PROVIDED WITH INTERNAL ISOLATION, THE EQUIPMENT SHALL BE TESTED DURING EQUIPMENT STARTUP AT THE FULL RANGE OF SYSTEM MODULATION. INTERNAL ISOLATION SHALL BE CLAMPED DOWN AS NEEDED DURING THE STARTUP AS WELL AS DURING THE WARRANTY PERIOD.
- C. VIBRATION SYSTEMS SHALL BE:
1. OF AN APPROVED MANUFACTURER:
 - a. MASON INDUSTRIES
 - b. KORFUND
 - c. VIBRATION ELIMINATOR
 2. COORDINATED WITH THE:
 - a. TYPES OF SUPPORT SYSTEMS APPLIED
 - b. FULL RANGE OF OPERATIONAL FREQUENCY
 - c. EQUIPMENT WEIGHT DISTRIBUTION
 - d. THE CRITERIA INDICATED IN THE ASHRAE APPLICATIONS HANDBOOK
 3. PROVIDED ON DUCT AND PIPE SYSTEMS WITHIN 75 FEET OF THE ASSOCIATED FAN OR PUMP EQUIPMENT.
- 2.10 SLEEVES, OPENINGS, AND LINTELS**
- A. REVIEW THE COMPLETE SET OF CONTRACT DOCUMENTS FOR MISSING SLEEVES, OPENING, AND LINTELS IN ORDER TO ACCOMMODATE THE WORK PROVIDED UNDER DIVISION 20:
1. PROVIDE A SHOP DRAWING OF ADDITIONAL REQUIRED SLEEVES AND OPENINGS THROUGH FLOOR, CEILINGS, ROOF AND WALL ASSEMBLIES FOR THE ARCHITECT'S REVIEW.
 2. PROVIDE A DRAWING OF REQUIRED LINTELS FOR THE ARCHITECTS AND STRUCTURAL ENGINEER'S REVIEW.
- B. SEAL CONDUITS THROUGH FIRE RATED ASSEMBLIES AND WALLS WITH UL LISTED PRODUCTS RATED FOR THE FIRE RATING OF THE ASSEMBLY/WALL AND COMPATIBLE WITH THE FLOOR/WALL CONSTRUCTION.
- C. FOR WORK THAT REQUIRES CHASES, LINTELS, OPENINGS AND SLEEVES BE PLACED IN EXISTING WALLS AND FLOORS, PATCH, REPAIR AND RESTORE TO ORIGINAL CONDITION THE SURFACES DISTURBED DURING THE INSTALLATION. DO NOT CUT ANY STRUCTURAL MEMBERS WITHOUT APPROVAL FROM ARCHITECT.
- D. PROVIDE PIPE SEALS AT PIPE PENETRATIONS.
1. COMBUSTIBLE PIPING AND DUCTWORK: PROVIDE INTUMESCENT FIRESTOP WHICH WILL EXPAND WITH HEAT AS APPROVED BY THE AUTHORITY HAVING JURISDICTION AND WHICH MEETS THE REQUIREMENTS OF THE ASSOCIATED UL CERTIFIED ASSEMBLY.
- E. PROVIDE UL APPROVED PIPE AND DUCT PENETRATION DETAILS IF REQUIRED BY THE AUTHORITY HAVING JURISDICTION.
- F. PROVIDE ESCUTCHEON PLATES AT EXPOSED PIPE PENETRATIONS IN FINISHED AREAS.

END OF SECTION

NOTES



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PLUMBING
SPECIFICATIONS

Project Number MI-1226

Date 03/12/2025

SCALE: AS NOTED

P801

SECTION 22 00 00
PLUMBING

PART 1 GENERAL

- 1.01 SUMMARY
- A. SECTION INCLUDES ADMINISTRATIVE AND PROCEDURAL REQUIREMENTS AS INDICATED IN SECTION 20 00 00.
- B. THIS SECTION COVERS THE PROJECT'S PLUMBING SYSTEMS AND COMPONENTS, INCLUDING:
- SANITARY AND VENT
 - DOMESTIC WATER

- 1.02 GENERAL DESCRIPTION
- A. PROVIDE PLUMBING SYSTEMS TO SERVE THE PROJECT AS INDICATED ON THE DRAWINGS AND AS SPECIFIED HEREIN.
- THE PLUMBING SYSTEMS INDICATED ON THE DRAWINGS ARE INDICATED IN A SCHEMATIC APPROACH. PROVIDE COORDINATION WITH OTHER TRADES AND NECESSARY OFFSETS, AS DETERMINED BEFORE SUBMITTING A BID TO PERFORM THE ASSOCIATED WORK.
 - MAKE CONNECTIONS TO EQUIPMENT SPECIFIED IN THIS DIVISION OF THE SPECIFICATION AS WELL AS PLUMBING EQUIPMENT FURNISHED BY THE OWNER OR AS SPECIFIED UNDER OTHER DIVISIONS OF THE SPECIFICATION.
 - COORDINATE THE WORK WITH THE AUTHORITIES HAVING JURISDICTION AND THE WORK BEING PROVIDED BY OTHER TRADES BEFORE BEGINNING WORK.
 - COORDINATE THE PLUMBING SYSTEMS WITH THE WORK PROVIDED UNDER DIVISION 26.

PART 2 PRODUCTS

2.01 PIPING MATERIALS

- A. PIPING SHALL BE AS APPROVED BY THE AUTHORITY HAVING JURISDICTION, WITH THE FOLLOWING AS PROJECT MINIMUM STANDARDS:
- SANITARY AND VENT
 - BELOW GRADE AND UNDER THE LOWEST BUILDING SLAB:
 - SCHEDULE 40 PVC WITH SOLVENT WELD JOINTS AND FITTINGS, FOR USE EXTERIOR OF BUILDING ONLY.
 - ABOVE GRADE AND ABOVE THE LOWEST BUILDING SLAB:
 - CHLORINATED POLY VINYL CHLORIDE (CPVC) DWV SCHEDULE 40 ASTM F2618 PIPE AND FITTINGS WITH SOLVENT CEMENT WELD JOINTS.
 - ALL PIPE AND FITTINGS SHALL CONFORM TO NSF STD. 14 AND CARRY A 25/50 FLAME SPREAD AND SMOKE DEVELOPMENT RATINGS.
 - DOMESTIC WATER
 - ABOVE GRADE AND ABOVE THE LOWEST BUILDING SLAB:
 - FOR PIPE SIZES 4-INCH AND SMALLER:
 - PIPE PRE-INSULATED PEX TUBING WITH CLOSED CELL POLYOLEFIN INSULATION AVAILABLE IN TUBING COILS.
 - JOINTS SHALL BE MADE USING PUSH-FIT FITTINGS OR BARBED FITTINGS WITH CLAMPS. TUBING AND FITTING SHALL BE INSTALLED AS OUTLINED IN THE MANUFACTURER'S INSTALLATION MANUAL.
 - PIPE RISERS TO FIXTURES, WHICH ARE EXPOSED, SHALL BE CHROME PLATED IPS BRASS.

2.02 WATER HEATERS - COMMERCIAL ELECTRIC

- A. PROVIDE WATER HEATERS AS INDICATED ON THE DRAWINGS.
- CAPACITY LISTED IN THE SCHEDULES
 - LOCATION AS SHOWN ON THE DRAWINGS.
- B. ACCEPTABLE MANUFACTURERS ARE:
- LOCHVAR
 - AO SMITH
- C. WATER HEATERS SHALL BEHAVE:
- FACTORY COMPLETE WITH INSULATED TANK, HEATING ELEMENTS, OPERATING AND SAFETY CONTROLS AND INTERNAL WIRING TO A JUNCTION AND CONTROL BOX.
 - GLASS LINED STEEL TANK.
 - INCOLOY HEATING ELEMENTS.
 - MAGNESIUM TANK ANODES.
 - ENAMEL FINISHED STEEL JACKET.
 - HINGED DOOR WITH KEY-LOCK ACCESS.
 - HANDHOLE CLEANOUT.
 - IMMERSION THERMOSTAT.
 - LOW WATER CUTOFF.
 - HIGH LIMIT WITH MANUAL RESET.
 - ASME T&P RELIEF VALVE.
 - 125 PSI WORKING PRESSURE.
 - UL LISTED.
 - THREE YEAR TANK WARRANTY.
 - LIFTING LUGS.
 - PRESSURE GAUGE.
 - HIGH AND LOW PRESSURE SWITCHES.
 - TEMPERATURE GAUGE.
 - ENERGY MANAGEMENT SYSTEM INTEGRATION
- D. HEATING ELEMENTS SHALL BE:
- CONTROLLED BY AN IMMERSION THERMOSTAT
 - ELEMENTS SHALL BE PROTECTED BY FUSES WITH A 100,000 AMP INTERRUPTING CAPACITY.

2.03 DOMESTIC RECIRCULATING PUMPS

- A. PROVIDE INLINE DOMESTIC CIRCULATING PUMP AS INDICATED ON THE DRAWINGS:
- CAPACITY LISTED IN THE SCHEDULES
 - LOCATION AS SHOWN ON THE DRAWINGS.
- B. ACCEPTABLE MANUFACTURERS ARE:
- BELL AND GOSSETT
 - TACO
- C. INLINE DOMESTIC CIRCULATING PUMPS SHALL BEHAVE:
- FACTORY ASSEMBLY INCLUDING MOTOR, FLEXIBLE COUPLER WITH GUARD, MECHANICAL SEAL AND PUMP BODY.
 - ALL BRONZE BRONZE IMPELLER AND BODY WITH STAINLESS STEEL SLEEVE BEARINGS.
 - SUPPORT FOR PUMPS, NOT RELYING ON PIPING FOR SUPPORT.
 - VIBRATION ISOLATION.
- D. CAPACITY SHALL BE:
- AS LISTED ON THE DRAWINGS WITH THE FOLLOWING PROVISIONS:
 - CAN ACCOMMODATE AN OPERATING POINT AT APPROXIMATELY 25 PERCENT BEYOND THE LISTED DESIGN OPERATING POINT.
 - HAVE THE ABILITY TO ACCEPT AN IMPELLER DIAMETER THAT IS 25% LARGER THAN THE OPERATING POINT IMPELLER DIAMETER.
 - MOTOR SHALL BE SELECTED AT AN OPERATING POINT WHICH HAS A MINIMUM OF 20 PERCENT HEADROOM BEFORE OPERATING IN THE SERVICE FACTOR.
 - PUMP CURVES SHALL BE INCLUDED IN THE SHOP DRAWING SUBMITTAL.

2.04 DIGITAL MIXING VALVE

- A. PROVIDE WATER HEATERS AS INDICATED ON THE DRAWINGS:
- CAPACITY LISTED IN THE SCHEDULES
 - LOCATION AS SHOWN ON THE DRAWINGS.
- B. ACCEPTABLE MANUFACTURERS ARE:
- POWERS
 - ARMSTRONG
- C. DIGITAL MIXING VALVE SHALL BEHAVE:
- LEAD FREE DIGITAL WATER TEMPERATURE CONTROL AND MONITORING SYSTEM.
 - 3.5" FULL-COLOR TOUCHSCREEN INTERFACE WHICH IS CONFIGURABLE ON LOCATION AND DOES NOT REQUIRE FACTORY PRE-PROGRAMMING
 - CONTROL WATER TEMPERATURE TO +/- 2°F IN ACCORDANCE WITH ASSE 1017 AND RESIST TEMPERATURE CREEP DURING PERIODS OF LOW/ZERO DEMAND.
 - CONTROLLER SHALL BE PASSWORD PROTECTED AND FEATURE A USER-ADJUSTABLE OUTLET TEMPERATURE RANGE OF 60 – 180°F WITH HIGH AND LOW TEMPERATURE ALERTS, AND AN APPROACH TEMPERATURE OF 2°F.
 - CONTROLLER SHALL INTEGRATE WITH BUILDING ENERGY MANAGEMENT SYSTEM THROUGH BACNET AND MODBUS PROTOCOLS AND FEATURE LOCAL AND REMOTE TEMPERATURE ALARMS.
 - PROVIDE MONITORING AND VISIBILITY OF MIXING VALVE ASSETS ACROSS MULTIPLE LOCATIONS/SUBLOCATIONS.
 - ABILITY TO REMOTE TEMPERATURE CONTROL FOR OWNER AND ADMIN LEVELS. APP SHALL BE CAPABLE OF SENDING SYSTEM ALERTS VIA TEXT AND/OR EMAIL AND PRIORITIZES ALERTS BASED ON LEVELS OF SAFETY AND POTENTIAL LIABILITY.
 - THREE USER LEVELS FOR SECURITY.
 - EQUIPPED WITH SECURE WI-FI PROTOCOLS WPA2-PSK AND WPA2-PEAP-MSCHAPV2.
 - A USER-SET, HIGH-TEMPERATURE SANITIZATION MODE FOR THERMAL DISINFECTION OF BACTERIA AND A PROGRAMMABLE TEMPERATURE SET BACK FEATURE TO IMPROVE ENERGY EFFICIENCY.
 - HIGH SPEED ACTUATOR WITH OVERRIDE FEATURE. IN THE EVENT OF A POWER FAILURE, SYSTEM WILL OPEN FULL COLD SUPPLY.
 - IN CASE OF A LOSS OF COLD WATER, THE SYSTEM WILL CLOSE HOT WATER SUPPLY.
 - LISTED/APPROVED TO ASSE 1017, UPC, NSF, CSA 90730 AND BTL (BACNET TESTING LABORATORIES)

2.05 EXPANSION TANKS

- A. PROVIDE EXPANSION TANKS AS INDICATED ON THE DRAWINGS:
- CAPACITY LISTED IN THE SCHEDULES
 - LOCATION AS SHOWN ON THE DRAWINGS.
- B. ACCEPTABLE MANUFACTURERS ARE:
- AMTROL
 - BELL AND GOSSETT
 - TACO
- C. EXPANSION TANK SHALL BEHAVE:
- FIXED HEAVY DUTY BUTYL DIAPHRAGM NSF/ANSI 61
 - ANTIMICROBIAL POLYPROPYLENE W/ ANTI-LEGIONELLA PROTECTION LINER
 - STAINLESS STEEL CONNECTION
 - SCHRAEDER VALVE W/ EPDM SEAT
 - DESIGNED AND CONSTRUCTED PER ASME CODE SECTION VIII, DIVISION 1.
 - TESTED TO JIS Z 2801 FOR REDUCTION OF LEGIONELLA, STAPHYLOCOCCUS AND E.COLI.
 - FOLLOWS ASHRAE 188 ANTI-LEGIONELLA GUIDELINES.

2.06 VALVES

- A. VALVES INDICATED ON THE DRAWINGS ARE CALLED OUT BASED ON DUTY:
- SHUTOFF
 - BALANCING
 - CHECK
- B. ACCEPTABLE MANUFACTURERS: NIBCO, MILWAUKEE OR APOLLO
- C. SHUTOFF VALVES - WATER
- 2-1/2" AND SMALLER
 - BALL VALVE, TWO PIECE, FULL PORT, BRONZE BODY, STAINLESS STEEL BALL AND STEM
 - TEFLON SEATS, PACKING AND GASKET, PLASTIC SHEATHED STEEL LEVER TYPE HANDLE, CLASS 150 SWP/600 WOG.
- D. BALANCING VALVES - WATER
- 2-1/2" AND SMALLER
 - BALL VALVE, TWO PIECE, FULL PORT, BRONZE BODY, STAINLESS STEEL BALL AND STEM
 - TEFLON SEATS, PACKING AND GASKET, PLASTIC SHEATHED STEEL LEVER TYPE HANDLE, CLASS 150 SWP/600 WOG.
- E. CHECK VALVES – WATER
- 2" AND SMALLER
 - BRONZE BODY
 - REGROUNDING DISC AND SEAT WITH SCREW-IN CAP

2.07 SHOCK ABSORBERS

- A. SHOCK ABSORBERS SHALL BE ZURN Z1700 SERIES, OR EQUAL OF JAY R. SMITH OR JOSAM:
- TYPE 304 STAINLESS STEEL CONSTRUCTION OF CASING AND BELLOW
 - NESTING TYPE BELLOW

2.08 DRAINS

- A. PROVIDE DRAINS AS MANUFACTURED BY ZURN, AS INDICATED BELOW, OR EQUAL OF JAY R. SMITH OR JOSAM.
- FLOOR DRAIN, DESIG = FD, GENERAL AREA DRAINAGE, Z415 SERIES-ROUND, WITH:
 - P-TRAP
 - INTEGRATED BACKWATER "FLAPPER" VALVE
 - DRAINS CONNECTING TO THE STORM WATER SYSTEM
 - DRAINS CONNECTING TO THE SANITARY SEWER WHERE THE FINISHED FLOOR ELEVATION IS BELOW THE ELEVATION OF THE ADJACENT MANHOLE COVERS SERVING THE PUBLIC SEWER
 - TRAP PRIMER CONNECTION AND PIPING BACK TO THE TRAP PRIMER
 - FLOOR DRAIN WITH FUNNEL, DESIG = FDF, GENERAL AREA DRAINAGE AND RECEIVING PIPED DISCHARGE, Z415 SERIES-ROUND, WITH:
 - TYPE STRAINER
 - P-TRAP
 - INTEGRATED BACKWATER "FLAPPER" VALVE
 - DRAINS CONNECTING TO THE STORM WATER SYSTEM
 - DRAINS CONNECTING TO THE SANITARY SEWER WHERE THE FINISHED FLOOR ELEVATION IS BELOW THE ELEVATION OF THE ADJACENT MANHOLE COVERS SERVING THE PUBLIC SEWER
 - TRAP PRIMER CONNECTION AND PIPING BACK TO THE TRAP PRIMER
 - PROVIDE DRAINS WITH LEVELING DEVICES AND FLOOR PLATES TO ACCOMMODATE THE INDIVIDUAL INSTALLATION.
 - TRAP PRIMERS SHALL BE FLOW THROUGH TYPE WITH BRONZE BODY. LOCATE TRAP PRIMER IN LOCAL DOMESTIC COLD WATER PIPE IN A SIDE STREAM ARRANGEMENT.

2.09 CLEANOUTS

- A. PROVIDE CLEANOUTS WHICH ARE SUITABLE FOR THE ADJACENT FLOOR OR WALL FINISH.
- B. CLEANOUTS SHALL BE OF THE SAME PIPING MATERIAL AS THE SYSTEM BEING SERVED BY THE CLEANOUT.
- C. ACCESS COVERS SHALL BE:
- FINISHED AREAS: POLISHED NICKEL BRONZE
 - UNFINISHED AREAS: BRASS
- D. CLEANOUTS SHALL BE AS MANUFACTURED BY ZURN: ZN SERIES, OR EQUAL OF JAY R. SMITH, OR JOSAM

2.10 INSULATION

- A. INSULATION SYSTEMS SHALL BE AS MANUFACTURED BY OWENS CORNING, JOHNS MANVILLE OR KNAUF.
- B. PIPE INSULATION ON SHALL:
- SERVE THE FOLLOWING SYSTEMS:
 - DOMESTIC WATER
 - BE LONG STRAND FIBERGLASS:
 - THERMAL CONDUCTIVITY: A MINIMUM K-VALUE OF 0.23 BTU-IN/HR.-DEGREE F OR LESS AT 75°F AND 0.32 BTU-IN/HR.-DEGREE F OR LESS AT 250°, OR AS REQUIRED BY THE AUTHORITIES HAVING JURISDICTION.
 - RATED MAXIMUM SERVICE TEMPERATURE: 1000°F.
 - DENSITY: 3.5-5.5 LBS/FT³
 - RATED AS MAXIMUM 25 FLAME SPREAD AND MAXIMUM 50 SMOKE DEVELOPED WHEN TESTED IN ACCORDANCE WITH APPLICABLE ASTM, UL AND NFPA CRITERIA
 - BE TREATED WITH A WATER RESISTANT RESIN ON THE SURFACE AND WITHIN EACH LAYER OF THE INSULATION.
 - PAPER FREE ALL-SERVICE JACKET WITH DOUBLE ADHESIVE LAP SEAL AND A TWO-PART BUTT STRIP SEAL.
- C. WHERE INDICATED, PROVIDE PIPE AND INSULATION ASSEMBLY WITH A JACKET.
- B209 ALUMINUM, 0.016-INCH THICK, WITH FACTORY-APPLIED 2-MIL MOISTURE BARRIER.
 - WEATHER TIGHT COVERING OF INSULATION INCLUDING CAPS, FLANGES AND END OF LINES.
 - SEALANT: FURNISH 1/8" BEAD OF FOSTER 95-44 OR CHILDERS CP-76 UNDERNEATH METAL JACKETING LAPS TO PREVENT WATER ENTRY ON OUTDOOR APPLICATIONS

2.11 PLUMBING FIXTURES

- A. SEE PLUMBING FIXTURE SCHEDULE ON THE DRAWINGS FOR FIXTURE SPECIFICATIONS.
- B. SINKS DESIGNATED AS ADA COMPLIANT SHALL BE PROVIDED WITH:
- MOLDED VINYL PIPE COVER TO PROVIDE SCALD PROTECTION ON HOT WATER, HOT WATER RECIRCULATION, TEMPERED WATER, AND DRAIN PIPING WHERE WHEELCHAIR ACCESS IS ADJACENT TO THE PIPING.
- C.
 - TRUEBRO - LAV GUARD 2 SERIES
 - FOR FIXTURES INDICATED TO BE PROVIDED WITH SENSOR OPERATED FLUSH VALVES AND FAUCETS, PER TOILET ROOM:
 - PROVIDE ONE TRANSFORMER TO SERVE A MAXIMUM OF THREE LAVATORIES
 - PROVIDE ONE TRANSFORMER TO SERVE A MAXIMUM OF TEN WATER CLOSETS
 - PROVIDE ONE TRANSFORMER TO SERVE A MAXIMUM OF TEN URINALS
 - TRANSFORMERS SHALL BE FOR 120V PRIMARY POWER.
 - EXTEND POWER FROM A JUNCTION BOX PROVIDED UNDER DIVISION 26 TO THE TRANSFORMER AND EXTEND THE SECONDARY POWER TO THE SENSORS, PER THE WIRING REQUIREMENTS SPECIFIED UNDER DIVISION 26.

PART 3 EXECUTION

3.01 EXISTING CONDITIONS

- A. WHERE PLUMBING SYSTEMS PASS THROUGH RENOVATED AREAS TO SERVE AREAS OUTSIDE LIMITS OF WORK AND INTERFERE WITH NEW WORK, RELOCATE SUCH SYSTEMS AS REQUIRED FOR INSTALLATION OF NEW WORK AND RESTORE RELOCATED SYSTEMS TO OPERATION OR MODIFY NEW WORK TO ACCOUNT FOR EXISTING CONDITIONS. SUBMIT PROPOSED MODIFICATIONS TO ARCHITECT FOR APPROVAL PRIOR TO ANY WORK.
- B. COORDINATE ANY OUTAGES OF PLUMBING SYSTEMS WITH OWNER AT LEAST 7 DAYS IN ADVANCE OF OUTAGE

3.02 INSTALLATION OF SYSTEMS

- A. THE DRAWINGS INDICATE THE GENERAL LAYOUT AND PLACEMENT OF EQUIPMENT AND DEVICES. SOME ADJUSTMENT IN THE LOCATION OF EQUIPMENT AND DEVICES IS EXPECTED WITHOUT COST TO THE OWNER TO ACCOUNT FOR FIELD CONDITIONS.
- B. IF INDICATED ON THE DRAWINGS, THE ROUTING OF PIPING AND LOCATION OF EQUIPMENT AND DEVICES IS INTENDED TO BE SCHEMATIC ONLY. FINAL ROUTING OF PIPING AND LOCATION OF EQUIPMENT AND DEVICES SHALL BE COORDINATED WITH THE ARCHITECTURAL AND STRUCTURAL DRAWINGS.
- C. PRIOR TO INSULATING PIPING, REMOVE OIL, GREASE, CUTTING OILS, DIRT AND OTHER CONTAMINANTS. USE SUITABLE SOLVENTS, STEAM CLEANING WITH DETERGENT, OR FRESH WATER WASH WITH DETERGENT. FOLLOW EFFECTIVE WATER RINSE. PROVIDE PRIMER COAT ON STEEL PIPING TO BE INSULATED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS, TO INCLUDE FIELD WELDS AND OVER FACTORY APPLIED PAINT/COATING, IN TOTAL COMPLIANCE WITH MECHANICAL IDENTIFICATION SECTION AND COMPATIBLE WITH AND APPROVED BY THE INSULATION MANUFACTURER. PAINTING MUST BE COMPATIBLE WITH AND APPROVED BY THE INSULATION MANUFACTURER.
- D. WHERE PIPING PASSES THROUGH OR UNDER FOUNDATION WALLS OR FOOTERS, PROVIDE CONCRETE ENCASEMENT OF THE LINES AS APPROVED BY THE STRUCTURAL ENGINEER.
- E. PROVIDE TRAPS, SHUTOFF VALVES, AND OTHER APPURTENANCES WHICH ARE INDUSTRY STANDARD ITEMS AND AS REQUIRED BY THE AUTHORITY HAVING JURISDICTION.
- F. PROVIDE ELECTRIC UNIONS MEETING ASSE 1079 IN LOCATIONS WHERE PIPES OF DISSIMILAR METALS ARE JOINED TO PREVENT ACCELERATED CORROSION AND DETERIORATION IN THE PIPING SYSTEM DUE TO GALVANIC AND STRAY CURRENT.
- G. INSTALLATION SHALL BE PERFORMED IN ORDER TO ACCOUNT FOR BUILDING SETTLING AND TEMPERATURE CHANGES VIA ASSOCIATED PIPE ANCHORS, FLEXIBLE CONNECTIONS, MOMENT GUIDES, ETC.
- H. PROVIDE CLEANOUTS AS INDICATED ON THE DRAWINGS, AS REQUIRED BY THE AUTHORITY HAVING JURISDICTION, AND AT A MINIMUM OF 50 FEET ON CENTER FOR THE SANITARY, STORM WATER AND CONDENSATE DRAINAGE SYSTEMS.
- I. PROVIDE DRAINS AS INDICATED ON THE PLUMBING DRAWINGS AND AS INDICATED ON THE ARCHITECTURAL DRAWINGS. DISCREPANCIES IN THE INFORMATION SHOWN SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO SUBMITTING A BID.
- J. MOUNTING HEIGHTS:
- COORDINATE THE MOUNTING HEIGHTS OF FIXTURES, VALVE ACTUATORS, ETC. WITH:
 - THE ELEVATIONS INDICATED ON THE ARCHITECTURAL DRAWINGS.
 - THE REQUIREMENTS OF THE AMERICANS WITH DISABILITIES ACT.
 - THE REQUIREMENTS OF THE AUTHORITIES HAVING JURISDICTION.

3.03 SANITARY AND VENT

- A. PROVIDE PLUMBING FIXTURES, DRAINS, ETC. AS INDICATED ON THE DRAWINGS. EXTEND PIPING FROM THE FIXTURES, DRAINS AND OTHER DEVICES REQUIRING CONNECTION TO A POINT 5 FEET FROM THE BUILDING AND TRANSITION/MAKE CONNECTIONS TO SITE SANITARY SEWER INFRASTRUCTURE.

3.04 DOMESTIC WATER

- A. MOVEMENT OF THE PIPING SYSTEMS SHALL BE ACCOMMODATED:
- SWING JOINTS
 - PIPE BENDS
 - EXPANSION LOOPS
 - EXPANSION FITTINGS
- B. A METALLIC SLEEVE SHALL BE INSERTED IN THE BUILDING WALL FORMS THROUGH WHICH THE WATER SERVICE ENTERS. SUCH SLEEVES' INTERIOR DIAMETER SHALL BE SIZED TO ALLOW A LINK-SEAL SYSTEM OR OWNER APPROVED EQUAL. THE WATER SERVICE PIPE FROM WITHIN THE BUILDING SHALL BE EXTENDED FIVE FEET OUTSIDE THE BUILDING WALL THROUGH THIS SLEEVE. THE POSITION OF THE WATER SERVICE IN THIS SLEEVE SHALL BE CENTERED AND THE INTERVENING SPACE SHALL BE PACKED WITH LINKSEAL OR OWNER APPROVED EQUAL TO AVERT THE FLOW OF WATER FROM OUTSIDE OF THE BUILDING INTO THE BASEMENT.
- C. INSULATE NEW AND EXISTING DOMESTIC WATER PIPING.
- INSULATION WORK SHALL BE PERFORMED AFTER SYSTEMS HAVE BEEN TESTED AND INSPECTED.
 - CHROME PLATED PIPING RISERS AT EQUIPMENT AND FIXTURES SHALL NOT BE INSULATED.
 - INSULATED PIPING AT THE FOLLOWING LOCATIONS SHALL ALSO BE PROVIDED WITH A METAL JACKET:
 - EXPOSED IN MECHANICAL ROOMS AND CLOSETS
 - EXPOSED ON ROOF
 - VALVE BODIES AND FITTINGS SHALL BE PROVIDED WITH FACTORY MANUFACTURED VINYL INSULATION JACKETS.

3.05 PLUMBING FIXTURES

- A. DOMESTIC WATER CONNECTIONS AT FIXTURES SHALL BE COMMERCIAL GRADE PIPE RISERS WITH INTEGRATED SHUTOFF VALVE.
- B. PROVIDE SUPPORT SYSTEMS SUITABLE FOR THE APPLICATION.
- COORDINATED WITH WALL THICKNESS BEFORE BEGINNING WORK.
 - SUPPORT SYSTEMS SHALL BE FLOOR MOUNTED FOR STRUCTURAL BEARING, INCLUDING "WALL MOUNTED" FIXTURE SUPPORT SYSTEMS.
 - COORDINATE FIXTURE SUPPORT SYSTEMS WITH THE INDIVIDUAL FIXTURE PIPE ARRANGEMENT.
 - PROVIDE FIXTURE "CUTOUT" TEMPLATES TO THE COUNTERTOP SUBCONTRACTOR.
 - CAULK WALL AND FLOOR MOUNTED EQUIPMENT:
 - SILICONE CAULKING MATERIAL
 - SAME COLOR AS THE FIXTURE

3.06 STERILIZATION

- A. THE DOMESTIC WATER SYSTEM SHALL BE STERILIZED PER THE REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION. THE CRITERIA NOTED HEREINAFTER SERVES AS THE PROJECT MINIMUM. IF THE AUTHORITY HAVING JURISDICTION CRITERIA IS LESS STRINGENT.
- B. THE NEW DOMESTIC WATER SYSTEMS SHALL BE STERILIZED.
- C. FOR SYSTEMS WHERE THE NEW DOMESTIC WATER SYSTEMS TIE INTO AN EXISTING DOMESTIC WATER SYSTEM:
- THE EXISTING DOMESTIC WATER SYSTEM DOWNSTREAM OF THE ISOLATION VALVE USED TO RESTRICT FLOW DURING SYSTEM TIE-IN SHALL BE STERILIZED IN ADDITION TO THE NEW PIPING SYSTEM.
 - PROVIDE A NEW THREADED HOSE CONNECTION AND ASSOCIATED NEW SHUTOFF VALVE NEAR THE EXISTING ISOLATION VALVE TO ACCOMMODATE THE SYSTEM FLUSH AND STERILIZATION PROCESS FOR THE NEW AND EXISTING PIPING SYSTEM.
- D. THE SYSTEM BEING STERILIZED SHALL BE FLUSHED PRIOR TO ADDING CHEMICALS TO PERFORM THE STERILIZATION.
- E. THE DOMESTIC WATER SYSTEM BEING STERILIZED SHALL UNDERGO A 3 HOUR RETENTION PERIOD WHERE THE CHLORINE CONCENTRATION IS ABOVE 100 PPM.
- F. AFTER THE RETENTION PERIOD, FLUSH THE SYSTEM WITH CLEAN WATER UNTIL THE SYSTEM CONTAINS LESS THAN 1.0 PPM OF CHLORINE CONCENTRATION.
- G. AFTER THE SYSTEM HAS BEEN STERILIZED AND FLUSHED, SEND REPRESENTATIVE SAMPLES FOR ANALYSIS TO A RECOGNIZED BACTERIOLOGICAL LABORATORY FOR TESTING AND CERTIFICATION. A REPORT INDICATING THE CERTIFICATION OF THE SYSTEM BY THE TESTING LABORATORY SHALL BE SUBMITTED TO THE OWNER.

END OF SECTION

NOTES



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PLUMBING
SPECIFICATIONS

Project Number MI-1226

Date 03/12/2025

SCALE: AS NOTED

P802

LIGHTING SYMBOLS:

	LIGHT FIXTURE (CEILING MOUNTED)
	EMERGENCY LIGHT FIXTURE (TYPICAL FOR SHADED FIXTURES)
	LIGHT FIXTURE (WALL MOUNTED)
	LIGHT FIXTURE (DECORATIVE PENDANT)
	EMERGENCY BATTERY UNIT LIGHT FIXTURE
	EMERGENCY REMOTE HEAD LIGHT FIXTURE
	EXIT SIGN (CEILING MOUNTED, ARROWS AND FACES PER PLANS)
	EXIT SIGN (AS ABOVE, WALL MOUNTED)
	EXTERIOR LIGHT POLE (QUANTITY OF HEADS PER DRAWINGS)
	EXTERIOR LIGHT POLE (POST TOP)
	CEILING FAN RATED JUNCTION BOX
	LIGHT SWITCH (SINGLE POLE)
	LIGHT SWITCH (THREE WAY)
	LIGHT SWITCH (FOUR WAY)
	LIGHT SWITCH (WITH DIMMING)
	LIGHT SWITCH (LOW VOLTAGE WALL STATION)
	LIGHT SWITCH (LOW VOLTAGE WALL STATION W/ DIMMING)
	SHADE CONTROL SWITCH (COORDINATE WITH SHADES PROVIDED)
	CEILING FAN SWITCH (COORDINATE WITH FAN PROVIDED)
	LIGHT SWITCH (TIMER)
	LIGHT SWITCH (IN WEATHERPROOF COVER)
	LIGHT SWITCH (OCCUPANCY/VACANCY WALL STATION)
	LIGHT SWITCH (OCCUPANCY/VACANCY WALL STATION W/ DIMMING)
	LIGHT SWITCH (SCENE CONTROLLER)
	LIGHT SWITCH (LOWER CASE SUFFIX INDICATES SPECIFIC CONTROL ZONE)
	PHOTOCELL (WALL MOUNTED)
	LIGHTING ROOM CONTROLLER
	TIME CLOCK
	OCCUPANCY/VACANCY SENSOR (LOW VOLTAGE, CEILING MOUNTED)
	OCCUPANCY/VACANCY SENSOR (LOW VOLTAGE, CEILING MOUNTED, CORRIDOR COVERAGE)
	DAYLIGHT SENSOR (LOW VOLTAGE, CEILING MOUNTED)
	OCCUPANCY/VACANCY SENSOR (LOW VOLTAGE, WALL MOUNTED)

POWER SYMBOLS:

	DUPLEX RECEPTACLE (NEMA RATING PER SPECIFICATION, UNO.)
	DOUBLE DUPLEX RECEPTACLE (NEMA RATING PER SPECIFICATION, UNO.)
	DUPLEX RECEPTACLE AS ABOVE, GFI TYPE (OR PROTECTED BY UPSTREAM GFI RECEPTACLE)
	DUPLEX RECEPTACLE AS ABOVE, ABOVE COUNTER
	DUPLEX RECEPTACLE AS ABOVE, GFI TYPE, ABOVE COUNTER (OR PROTECTED BY UPSTREAM GFI RECEPTACLE)
	DUPLEX RECEPTACLE AS ABOVE, WEATHER RESISTANT, GFI TYPE (WITH WEATHERPROOF WHILE IN USE COVER)
	DUPLEX RECEPTACLE AS ABOVE (DEDICATED FOR WASHER, 5-20R)
	DUPLEX RECEPTACLE AS ABOVE (DEDICATED FOR COUNTERTOP MICROWAVE, 5-20R)
	DUPLEX RECEPTACLE AS ABOVE (HORIZONTALLY MOUNTED)
	DUPLEX RECEPTACLE AS ABOVE (W/ INTEGRAL USB PORTS)
	DUPLEX RECEPTACLE AS ABOVE (BACKED BY STANDBY POWER)
	DUPLEX RECEPTACLE AS ABOVE (SPLIT YOKEL BOTTOM SHALL BE SWITCHED, TOP SHALL BE UNSWITCHED)
	SIMPLEX RECEPTACLE (NEMA RATING PER SPECIFICATION, UNO.)
	SIMPLEX RECEPTACLE AS ABOVE (DEDICATED FOR REFRIGERATOR, 5-20R)
	SIMPLEX RECEPTACLE AS ABOVE (DEDICATED FOR DISHWASHER, 5-20R)
	SIMPLEX RECEPTACLE AS ABOVE (DEDICATED FOR MICROWAVE, 5-20R)
	SIMPLEX RECEPTACLE AS ABOVE (DEDICATED FOR GARBAGE DISPOSAL, 5-20R)
	DUPLEX RECEPTACLE AS ABOVE (IN FLOOR BOX)
	DUPLEX RECEPTACLE AS ABOVE (CEILING MOUNTED)
	DUPLEX RECEPTACLE AS ABOVE (CORD REEL)
	SPECIAL RECEPTACLE (TYPE AS INDICATED ON PLANS)
	RANGE RECEPTACLE (NEMA 14-50R)
	DRYER RECEPTACLE (NEMA 14-50R)
	TV WALL BOX WITH POWER AND LOW VOLTAGE (PROVIDE ARLINGTON TVB5505 2G' W/ TYPE-F CONNECTOR, PROVIDE DUPLEX RECEPTACLE, PROVIDE VOLTAGE DIVIDER, # INDICATES QUANTITY OF LV OUTLETS, IN ABSENCE OF A NUMBER, PROVIDE ONE DATA AND ONE VOICE)
	FLOOR BOX WITH POWER AND LOW VOLTAGE (PER SPECIFICATION, PROVIDE DUPLEX RECEPTACLE, PROVIDE BRANCH CIRCUIT WIRING AND LV CABLING, PROVIDE VOLTAGE DIVIDER, # INDICATES QUANTITY OF LV OUTLETS, IN ABSENCE OF A NUMBER, PROVIDE ONE DATA AND ONE VOICE)
	JUNCTION BOX (CEILING, WALL, FLOOR MOUNTED)
	120/240V PANELBOARD (FRONT LINE INDICATES RECESSED MOUNTING)
	208Y/120V PANELBOARD (FRONT LINE INDICATES RECESSED MOUNTING)
	480Y/277V PANELBOARD (FRONT LINE INDICATES RECESSED MOUNTING)
	DISCONNECT MEANS (REFER TO SPECIFIC NOTES AND DISCONNECT SCHEDULE FOR REQUIREMENTS)
	MANUAL MOTOR STARTER SWITCH (NO OVERLOADS)
	ELECTRICAL METER
	HAND HOLE / MAN HOLE (IN GRADE PER SPECIFICATION)

LOW VOLTAGE SYMBOLS:

	TELEPHONE OUTLET
	DWELLING UNIT APPLICATIONS: PROVIDE MUDRING, FACE PLATE, JACKS AND CABLE TO APARTMENT TERMINATION CABINET. PROVIDE ONE CAT6 CONNECTOR WITH CAT6 CABLE. NON-DWELLING UNIT APPLICATIONS: PROVIDE 1-6 GANG BOX, FACE PLATE, JACK, AND 3/4" CONDUIT TO ABOVE ACCESSIBLE CEILING. PROVIDE CAT6 CABLING FROM BOX BACK TO NEAREST TELECOM CLOSET. # - INDICATES NUMBER OF JACKS AND CABLES, PROVIDE 2 WHERE NOT SPECIFIED. CENTER LINE INDICATES COUNTERTOP MOUNTED 9" ABOVE COUNTER TO Ɔ .
	DATA OUTLET
	DWELLING UNIT APPLICATIONS: PROVIDE MUDRING, FACE PLATE, JACKS AND CABLE TO APARTMENT TERMINATION CABINET. PROVIDE ONE CAT6 CONNECTOR WITH CAT6 CABLE. NON-DWELLING UNIT APPLICATIONS: PROVIDE 2-6 GANG BOX, FACE PLATE, JACKS, AND 3/4" CONDUIT TO ABOVE ACCESSIBLE CEILING. PROVIDE CAT6 CABLING FROM BOX BACK TO NEAREST TELECOM CLOSET. # - INDICATES NUMBER OF JACKS AND CABLES, PROVIDE 2 WHERE NOT SPECIFIED. CENTER LINE INDICATES COUNTERTOP MOUNTED 9" ABOVE COUNTER TO Ɔ .
	LOW VOLTAGE OUTLET
	DWELLING UNIT APPLICATIONS: PROVIDE MUDRING, FACE PLATE, JACKS AND CABLE TO APARTMENT TERMINATION CABINET. PROVIDE ONE CAT6 CONNECTOR AND ONE TYPE-F CONNECTOR. PROVIDE CAT6 AND R6G CABLE. NON-DWELLING UNIT APPLICATIONS: PROVIDE 2-6 GANG BOX, FACE PLATE, JACKS, TYPE-F CONNECTOR, AND 3/4" CONDUIT TO ABOVE ACCESSIBLE CEILING. PROVIDE CAT6 AND R6G CABLING FROM BOX BACK TO NEAREST TELECOM CLOSET. # - INDICATES NUMBER OF JACKS AND CABLES (HALF VOICE, HALF DATA), PROVIDE ONE VOICE, ONCE DATA, AND ONE COAX IN ABSENCE OF A NUMBER. CENTER LINE INDICATES COUNTERTOP MOUNTED 9" ABOVE COUNTER TO Ɔ .
	LOW VOLTAGE OUTLET AS ABOVE (IN FLOOR BOX)
	TELEVISION OUTLET (PROVIDE ARLINGTON TVB5505 2G' W/ TYPE-F CONNECTOR AND R6G CABLING)
	DOORBELL (HARDWIRED)
	DOORBELL AUDIO APPLIANCE
	DOORBELL VISUAL APPLIANCE
	AUDIO SPEAKER (CEILING MOUNTED)
	WIRELESS ACCESS POINT (CEILING MOUNTED, PROVIDE CAT6 CABLE BACK TO NEAREST TELECOM CLOSET)
	AUDIO/VISUAL CONTROL PANEL (REFER TO PLANS FOR MORE INFORMATION)
	TWO WAY COMMUNICATIONS CALL STATION
	TENANT ENTRY APARTMENT CALL STATION
	TENANT ENTRY CONTROL PANEL WITH INTERCOM
	SECURITY CONTROL PANEL
	ACCESS CONTROL PANEL
	DURESS ALARM (UNDER COUNTER, PROVIDE BACK BOX AND 3/4" CONDUIT WITH PULLSTRING TO ACCESSIBLE LOCATION)
	DOOR CONTACT (PROVIDE BACK BOX AND 3/4" CONDUIT WITH PULLSTRING TO ACCESSIBLE LOCATION)
	ELECTRIC DOOR STRIKE (PROVIDE BACK BOX AND 3/4" CONDUIT WITH PULLSTRING TO ACCESSIBLE LOCATION)
	CARD READER (PROVIDE BACK BOX AND 3/4" CONDUIT WITH PULLSTRING TO ACCESSIBLE LOCATION)
	DOOR RELEASE DEVICE (PROVIDE BACK BOX AND 3/4" CONDUIT WITH PULLSTRING TO ACCESSIBLE LOCATION)
	DOOR OPERATOR PUSH BUTTON (PROVIDE BACK BOX AND 3/4" CONDUIT WITH PULLSTRING TO ACCESSIBLE LOCATION)
	AUTOMATIC DOOR OPERATOR (PROVIDE 3/4" CONDUIT WITH PULLSTRING TO ACCESSIBLE LOCATION, PROVIDE 3/4" CONDUIT WITH PULLSTRING TO EACH DOOR OPERATOR PUSHBUTTON)
	CCTV CAMERA (PROVIDE BACK BOX AND 3/4" CONDUIT WITH PULLSTRING TO ACCESSIBLE LOCATION, P SUBSCRIPT INDICATES EXTERIOR CAMERA WITH HEATER, PROVIDE 120V BRANCH CIRCUIT AS INDICATED)

FIRE ALARM SYMBOLS:

	FIRE ALARM HORN (WALL MOUNTED)
	FIRE ALARM STROBE (WALL MOUNTED)
	FIRE ALARM HORN / STROBE (WALL MOUNTED)
	FIRE ALARM SPEAKER (WALL MOUNTED)
	FIRE ALARM SPEAKER / STROBE (WALL MOUNTED)
	FIRE ALARM HORN (CEILING MOUNTED)
	FIRE ALARM STROBE (CEILING MOUNTED)
	FIRE ALARM HORN / STROBE (CEILING MOUNTED)
	FIRE ALARM SPEAKER (CEILING MOUNTED)
	FIRE ALARM SPEAKER / STROBE (CEILING MOUNTED)
	FIRE ALARM PULL STATION
	ADDRESSABLE SMOKE DETECTOR (CEILING MOUNTED)
	ADDRESSABLE HEAT DETECTOR (CEILING MOUNTED)
	ADDRESSABLE SMOKE / CARBON MONOXIDE DETECTOR (CEILING MOUNTED)
	ADDRESSABLE DUCT DETECTOR
	STAND ALONE SMOKE DETECTOR (CEILING MOUNTED)
	STAND ALONE HEAT DETECTOR (CEILING MOUNTED)
	STAND ALONE SMOKE / CARBON MONOXIDE DETECTOR (CEILING MOUNTED)
	SPRINKLER FLOW SWITCH
	SPRINKLER TAMPER SWITCH
	DRY PIPE SPRINKLER PRESSURE SWITCH
	DOOR HOLD OPEN DEVICE
	MONITORING MODULE
	CONTROL MODULE
	FIRE SMOKE DAMPER
	HOOD SUPPRESSION FIRE ALARM INTERFACE
	FIRE ALARM CONTROL PANEL
	FIRE ALARM ANNUNCIATOR PANEL
	FIRE ALARM EXTENDER PANEL
	FIRE ALARM CONTROL PANEL (GRAPHIC DISPLAY)

ABBREVIATIONS:

AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AL	ALUMINUM
ADA	AMERICAN DISABILITY ACT
AWG	AMERICAN WIRE GAUGE
A	AMPERE(S)
AF	AMPERES FUSED
AIC	AMPERE INTERRUPTING CAPACITY
AFCI	ARC FAULT CIRCUIT INTERRUPTER
ATS	AUTOMATIC TRANSFER SWITCH
BFG	BELOW FINISHED GRADE
BLDG	BUILDING
CATV	CABLE TELEVISION
C	CONDUIT
CLG	CEILING
CKT	CIRCUIT
CJ	COPPER
CCT	CORRELATED COLOR TEMPERATURE
CRI	COLOR RENDERING INDEX
CT	CURRENT TRANSFORMER
Δ	DELTA CONNECTED
DACT	DIGITAL ALARM COMMUNICATOR TRANSMITTER
DC	DIRECT CURRENT
DISC	DISCONNECT
DAS	DISTRIBUTED ANTENNA SYSTEM
DS	DISCONNECT SWITCH
2P	DOUBLE POLE
DWG	DRAWING
EMT	ELECTRICAL METALLIC TUBING
E	EMERGENCY
ECB	ENCLOSED CIRCUIT BREAKER
EMS	ENERGY MANAGEMENT SYSTEM
EV	ELECTRIC VEHICLE
EF	EXHAUST FAN
EX	EXISTING
ER	EXISTING RELOCATED
ETR	EXISTING TO REMAIN
FEET	FEET
FA	FIRE ALARM
FAAP	FIRE ALARM ANNUNCIATOR PANEL
FACP	FIRE ALARM CONTROL PANEL
FAEP	FIRE ALARM EXTENDER PANEL
4P	FOUR POLE
FLA	FULL LOAD AMPERES
F	FUSED OR FUSIBLE
FSS	FUSED SAFETY SWITCH
FS	FUSED SWITCH
GIGRD	GROUND
GB	GROUND BAR
GEC	GROUNDING ELECTRODE CONDUCTOR
GFI	GROUND FAULT CIRCUIT INTERRUPTER
HOA	HAND-OFF-AUTOMATIC
HZ	HERTZ
HV	HIGH VOLTAGE
HP	HORSEPOWER
IG	ISOLATED GROUND
IT	INFORMATION TECHNOLOGY
JJB	JUNCTION BOX
KV	KILOVOLTS
KVA	KILOVOLT-AMPERES
KW	KILOWATTS
LTD	LIGHTING
LED	LIGHT EMITTING DIODE
LRA	LOCKED ROTOR AMPS
LV	LOW VOLTAGE
MCB	MAIN CIRCUIT BREAKER
MGB	MAIN GROUND BAR
MLO	MAIN LUGS ONLY
MTS	MANUAL TRANSFER SWITCH
MISC	MISCELLANEOUS
MOD	MOTOR OPERATED DAMPER
MH	MOUNTING HEIGHT
NEC	NATIONAL ELECTRICAL CODE
NL	NIGHT LIGHT (UNSWITCHED)
NFSS	NON-FUSED SAFETY SWITCH
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
NIC	NOT IN CONTRACT
NTS	NOT TO SCALE
PNL	PANELBOARD
∅ / PH	PHASE
P	POLE
PVC	POLYVINYL CHLORIDE
PWR	POWER
PF	POWER FACTOR
PRM	PRIMARY
RM	ROOM
RX	REMOVE EXISTING
SS	SAFETY DISCONNECT SWITCH
SEC	SECONDARY
SD	SERVICE DISCONNECT
SCCR	SHORT CIRCUIT CURRENT RATING
1P	SINGLE POLE
SIN	SOLID NEUTRAL
SPD	SURGE PROTECTION DEVICE
SWBD	SWITCHBOARD
SYM	SYMMETRICAL
TGB	TELECOMMUNICATIONS GROUND BAR
TMGB	TELECOMMUNICATIONS MAIN GROUND BAR
TELE	TELEPHONE
TTB	TELEPHONE TERMINAL BOARD
KCM	THOUSAND CIRCULAR MILS
3P	THREE POLE
XFMR	TRANSFORMER
TYP	TYPICAL
UNO	UNDERWRITERS LABORATORY
V	UNLESS NOTED OTHERWISE
V	VOLTS
VA	VOLT-AMPERE
WH	WATER HEATER
W	WATTS, WIRE
WP	WEATHERPROOF
W	WITH
WCR	WITHSTAND AND CLOSE-ON RATING
Y	WYE CONNECTED

MOUNTING HEIGHTS:

ALL VALUES ARE UNLESS NOTED OTHERWISE.

SWITCHES	46" AFF TO Ɔ
RECEPTABLES	18" AFF TO Ɔ
COUNTERTOP RECEP.	9" ABOVE CTR TO Ɔ
REFRIGERATOR RECEP.	46" AFF TO Ɔ
WASHER RECEP.	46" AFF TO Ɔ
COUNTER MICROWAVE RECEP.	9" ABOVE CTR TO Ɔ
RANGE MICROWAVE RECEP.	INSIDE UPPER CABINET
DISHWASHER RECEP.	IN BASE CABINET
DRYER RECEP.	46" AFF TO Ɔ
RANGE RECEP.	COORDINATE WITH MANUF.
FA PULL STATIONS	46" AFF TO Ɔ
FA NOTIFICATION APP.	80" AFF TO Ɔ
LOW VOLTAGE OUTLETS	18" AFF TO Ɔ
TV OUTLET	18" AFF TO Ɔ
TV WALL BOX	CENTERED BEHIND TV
EXIT SIGNS	6" ABOVE DOOR TO Ɔ
PANELBOARDS	80" AFF TO TOP OF PANEL

VOLTAGE DROP	
WIRE LENGTH	WIRE SIZE
0' - 60'	#12 AWG
60' - 100'	#10 AWG
100' - 150'	#8 AWG

NOTES:
THIS CHART IS APPLICABLE TO 120V, 20A, SINGLE PHASE CIRCUITS AND IS CALCULATED BASED ON 100% WATT LOADS. DATA SHOWN HERE IS BASED ON 1% VOLTAGE DROP. NO DERATING FOR WIRE BUNDLING IS INCLUDED HERE. TOTAL MAXIMUM VOLTAGE DROP (FEEDER AND BRANCH CIRCUIT) SHALL NOT EXCEED 3%, WHERE PANEL SCHEDULES SHOW DIFFERENT SIZE THAT THAT LISTED HERE, PROVIDE THE LARGER SIZE.

GENERAL NOTES:

(APPLY TO THE WORK PROVIDED UNDER DIVISIONS 26, 27, 28)

- COORDINATE WORK WITH THAT OF OTHER TRADES INCLUDING ARCHITECTURAL, STRUCTURAL, HVAC AND PLUMBING.
- ELECTRICAL MATERIALS SHALL BE UL LISTED AND SUITABLE FOR THE AREA CLASSIFICATIONS IN WHICH THEY ARE INSTALLED.
- OBTAIN ROUGH-IN DRAWINGS FOR THE ACTUAL EQUIPMENT TO BE INSTALLED PRIOR TO ROUGH-IN, INCLUDING EQUIPMENT INSTALLED BY OTHER DIVISIONS OR BY THE OWNER. FINAL CONNECTIONS TO EQUIPMENT SHALL CONSIST OF WIRE AND CONDUIT SIZES AS INDICATED FOR THE FEEDER OR BRANCH CIRCUIT.
- ELECTRICAL WORK INSTALLED IN FINISHED AREAS SHALL BE CONCEALED WITHIN WALLS, BELOW FLOOR SLAB, IN FLOOR SLAB OR ABOVE CEILING. PROVIDE CUTTING OF SURFACES AS REQUIRED AND PATCH DISTURBED AREAS TO MATCH ADJACENT SURROUNDING SURFACES.
- COORDINATE WITH OWNER'S REPRESENTATIVE FOR SCHEDULING OF WORK.
- VOLTAGE DROP CALCULATIONS ARE BASED ON CIRCUIT LOADING, CIRCUIT DISTANCES FROM SOURCE, AND THE WIRE MATERIAL SPECIFIED IN THE PANEL SCHEDULES. IF AN ALTERNATE CIRCUIT ROUTING, CIRCUIT LOADING OR CONDUCTOR MATERIAL (IF APPROVED) IS PROVIDED, VERIFY VOLTAGE DROP AND SUBMIT VOLTAGE DROP CALCULATIONS AS SPECIFIED.
- CONDUIT AND OPEN CABLING SHALL BE INSTALLED PARALLEL AND PERPENDICULAR TO STRUCTURAL MEMBERS. SUPPORT OPEN CABLING ON J-HOOKS SPACED 5'-0" ON CENTER, MAXIMUM.
- UNLESS NOTED OTHERWISE, CIRCUITS HAVE NOT BEEN DERATED FOR CONDUCTOR BUNDLING, NOR HAVE CONDUITS BEEN SIZED FOR MULTIPLE CIRCUITS. IF MULTIPLE CIRCUITS ARE INSTALLED IN A SINGLE RACEWAY, DERATE CONDUCTOR CAPACITY PER NEC AND PROVIDE THE APPROPRIATELY SIZED CONDUIT. WHERE CONDUIT SIZE INCREASES, COORDINATE WITH ADJACENT UTILITIES AND BUILDING FEATURES.
- THE CONTRACT DOCUMENTS ARE SCHEMATIC IN NATURE. INTENDING TO SHOW THE GENERAL ARRANGEMENT OF WORK PROVIDED UNDER THIS DIVISION. EXAMINE THE CONTRACT DOCUMENTS, INVESTIGATE SITE CONDITIONS TO BE ENCOUNTERED AND MODIFY WORK DEPICTED IN THE CONTRACT DOCUMENTS ACCORDINGLY, WITHOUT ANY ADDITIONAL COST TO THE OWNER. FOR PROJECTS INVOLVING EXISTING CONDITIONS, COORDINATE NEW WORK WITH EXISTING ELEMENTS SUCH AS THE BUILDING STRUCTURE AND ARCHITECTURAL FEATURES, SPRINKLER PIPING, PLUMBING PIPING AND EQUIPMENT, AND HVAC DUCTWORK AND EQUIPMENT.
- COORDINATE WORK PROVIDED UNDER THIS DIVISION WITH THAT OF OTHER TRADES. FIELD VERIFY AND COORDINATE DIMENSIONS PRIOR TO PROCUREMENT OR FABRICATION. CHECK SPACE LIMITATIONS AND VERIFY HVAC AND PLUMBING EQUIPMENT ELECTRICAL REQUIREMENTS PRIOR TO ORDERING ANY ELECTRICAL EQUIPMENT OR MATERIALS AND INSTALLING CONDUCTORS. PLACE LARGE EQUIPMENT INSIDE OF THE BUILDING DURING CONSTRUCTION WHERE EQUIPMENT CANNOT ENTER FINISHED BUILDING OPENINGS.
- MEASUREMENT OF DRAWINGS BY SCALE SHALL NOT BE USED AS DIMENSIONAL DATA FOR LOCATING FIXTURES, EQUIPMENT, ETC. MEASUREMENTS SHALL BE MADE ON THE SITE AND SHALL BE BASED ON ACTUAL JOB CONDITIONS.
- OBTAIN NECESSARY INSPECTIONS REQUIRED BY THE LOCAL AUTHORITY HAVING JURISDICTION FOR THE INSTALLATION OF WORK PROVIDED UNDER THIS DIVISION.
- WORK PROVIDED UNDER DIVISION 26 SHALL CONFORM TO THE EDITION OF THE FOLLOWING CODES ENFORCED BY THE AUTHORITIES HAVING JURISDICTION:
 - THE INTERNATIONAL BUILDING CODE
 - THE INTERNATIONAL MECHANICAL CODE
 - THE INTERNATIONAL PLUMBING CODE
 - THE INTERNATIONAL FIRE PROTECTION CODE
 - NFPA STANDARD 70, NATIONAL ELECTRIC CODE
 - ADDITIONAL CODES AND STANDARDS AS MENTIONED WITHIN THE CONTRACT DOCUMENTS OSHA, FEDERAL, STATE, AND LOCAL SAFETY REQUIREMENTS APPLICABLE TO THE PROJECT SHALL BE COMPLIED WITH. MANUFACTURER'S SAFETY INSTRUCTIONS SHALL BE FOLLOWED.
- WASTE GENERATED BY WORK PERFORMED SHALL BE DISPOSED OF LEGALLY PER THE REQUIREMENTS OF THE AUTHORITIES HAVING JURISDICTION.
- SCHEDULE INTERRUPTIONS OF EXISTING SERVICES FOR TIMES OTHER THAN NORMAL OPERATING HOURS (SUCH AS NIGHTS OR WEEKENDS). SUCH INTERRUPTIONS TO SERVICES SHALL NOT BE MADE WITHOUT PRIOR WRITTEN AUTHORIZATION OF THE OWNER'S REPRESENTATIVE AND COORDINATION WITH OTHER TRADES. PERFORM PRE-WORK AS NECESSARY TO MAKE THE INTERRUPTION PERIOD AS BRIEF AS POSSIBLE.
- THE EQUIPMENT LISTED WITHIN THE CONTRACT DOCUMENTS AS THE BASIS OF DESIGN HAS BEEN USED FOR PHYSICAL ARRANGEMENT OF THE MECHANICAL SYSTEMS, INCLUDING MANUFACTURER AND CODE REQUIRED SERVICE CLEARANCES. CONFIRM THESE REQUIREMENTS BEFORE BEGINNING WORK. WHEN EQUIPMENT LISTED AS ANOTHER ACCEPTABLE MANUFACTURER IN THE SPECIFICATIONS IS USED, PROVIDE STRUCTURAL, DUCTWORK, ELECTRICAL, SERVICE CLEARANCES, OR OTHER CHANGES REQUIRED TO ACCOMMODATE THE SUBSTITUTED EQUIPMENT. CHANGES SHALL BE MADE AT NO ADDITIONAL COST TO THE OWNER. SUBMIT A LIST OF REQUIRED CHANGES AS PART OF THE ASSOCIATED SHOP DRAWING SUBMITTALS.
- REVIEW OF THE SUBMITTALS DOES NOT RELIEVE THE CONTRACTOR OF THE REQUIREMENTS OF THE CONTRACT DOCUMENTS. WHERE AND WHEN THE ENGINEER DOES NOT DOCUMENT DEVIATIONS OR OMISSIONS AS PART OF THE ENGINEER'S REVIEW OF THE CONTRACTOR'S SUBMITTALS DOES NOT CONSTITUTE A WAIVER OF ANY OF THE REQUIREMENTS OF THE CONTRACT DOCUMENTS.
- THE DESIGN INTENT IS FOR WORK PROVIDED UNDER THIS DIVISION IN FINISHED AREAS IS FOR THE SYSTEM COMPONENTS TO BE CONCEALED WITHIN OR BEHIND ARCHITECTURAL ELEMENTS, SUCH AS CEILINGS, BULKHEADS, CHASES, ETC. MAINTAIN THE CEILING HEIGHTS INDICATED ON THE ARCHITECTURAL DRAWINGS AND AS REQUIRED BY THE INTERNATIONAL BUILDING CODE. IF DISCREPANCIES EXIST, BRING TO THE ARCHITECT'S ATTENTION PRIOR TO BEGINNING WORK.
- NOTE TYPES USED -
 - "GENERAL NOTES" - APPLY TO WORK PROVIDED UNDER THE ASSOCIATED DIVISION INDICATED
 - "DRAWING NOTES" - ARE A LIST OF NOTES ON A SINGLE DRAWING WITHIN THE DRAWING SET WHICH APPLY TO THAT ENTIRE DRAWING.
 - "SPECIFIC NOTES" - ARE INDIVIDUAL NOTES THAT ONLY APPLY WHERE THE CORRESPONDING "SPECIFIC NOTE" SYMBOL IS INDICATED.
- THE NORTH ARROW USED ON THE DRAWINGS REPRESENTS PLAN NORTH, NOT NECESSARILY TRUE NORTH.
- SLEEVE AND SEAL CONDUIT PENETRATIONS THROUGH BUILDING PARTITIONS WITH A UL-APPROVED SEALANT THAT MEETS THE VOC REQUIREMENTS OF THE PROJECT.
- SEAL PENETRATIONS THROUGH FIRE-RATED PARTITIONS WITH A UL-APPROVED SEALANT THAT MAINTAINS THE ASSOCIATED FIRE-RATING OF THE ASSEMBLY BEING PENETRATED AND THAT MEETS THE VOC REQUIREMENTS OF THE PROJECT.
- ADHERE TO THE SITE SAFETY PLAN THAT IS IN EFFECT FOR THE PROJECT. AT A MINIMUM, ADHERE TO THE SAFETY REQUIREMENTS OUTLINED BY OSHA.
- SYSTEM COMPONENTS SHALL BE INSTALLED SUCH THAT UL CERTIFICATIONS ARE NOT COMPROMISED.
- CONFIRM EQUIPMENT PLUG TYPES PRIOR TO RECEPTACLE INSTALLATION. PROVIDE RECEPTACLE TYPES TO MATCH PLUG TYPES AND NEMA CONFIGURATION.
- VERIFY ACTUAL MOTOR CHARACTERISTICS PRIOR TO THE PURCHASE OF ANY MOTOR CONTROL EQUIPMENT. STARTER OVERLOADS SHALL BE SIZED OR SET IN ACCORDANCE WITH THE ACTUAL MOTOR FULL LOAD AMPERES.
- PROVIDE SEPARATE UNSHARED NEUTRAL CONDUCTOR(S) FOR EACH CIRCUIT REQUIRING A NEUTRAL.
- PROVIDE INSULATED GROUND WIRE IN CONDUITS FOR FEEDERS AND BRANCH CIRCUITS.
- MULTIWIRE BRANCH CIRCUITS ARE NOT PERMITTED.
- CENTER EQUIPMENT OR DEVICES ABOVE OPENINGS SUCH AS DOORS, LOUVERS, ETC.
- PROVIDE A LISTED FIRE STOPPING METHOD FOR PENETRATIONS THROUGH FIRE RATED WALLS AND FLOORS TO MAINTAIN APPLICABLE FIRE RATING.
- PROVIDE EQUIPMENT ENERGIZED FROM TWO SOURCES WITH PERMANENT LABEL STATING "WARNING! EQUIPMENT ENERGIZED FROM MULTIPLE SOURCES".
- PROVIDE STRUCTURAL GALVANIZED STEEL FRAME SUPPORTS AS REQUIRED TO MOUNT DISCONNECT SWITCHES AND MOTOR STARTERS. IF DISCONNECT SWITCHES OR STARTERS ARE LOCATED ON EQUIPMENT HOUSINGS, COORDINATE LOCATIONS WITH EQUIPMENT SUPPLIER AND INSTALLER TO ENSURE ACCESS TO EQUIPMENT IS MAINTAINED.
- PROVIDE STRUCTURAL GALVANIZED STEEL FRAME SUPPORTS OR FIRE RATED PLYWOOD BACKBOARDS TO MOUNT PANELBOARDS ON METAL STUD, CONCRETE AND BLOCK WALLS/PARTITIONS.
- VERIFY ELECTRICAL SYSTEM PHASING AND ROTATION WITH EXISTING CONDITIONS.
- TO THE GREATEST EXTENT POSSIBLE, LOCATE JUNCTION BOXES ABOVE ACCESSIBLE CEILINGS. WHERE JUNCTION BOXES ARE LOCATED ABOVE INACCESSIBLE CEILINGS, GROUP THEM TOGETHER WITH OTHER ITEMS REQUIRING ACCESS AND PROVIDE AN ACCESS PANEL IN CEILING OF TYPE APPROVED BY THE ARCHITECT.
- REMOVE AND REINSTALL CEILING TILES REQUIRED FOR NEW ELECTRICAL WORK. REPLACE ANY DAMAGED CEILING TILES IN KIND.

GENERAL DEMOLITION NOTES:

(APPLY TO THE WORK PROVIDED UNDER DIVISIONS 26, 27, 28)

- DISCONNECT AND REMOVE ITEMS SHOWN DASHED ON ELECTRICAL DEMOLITION DRAWINGS. THIS INCLUDES REMOVAL OF ASSOCIATED BOXES, CONDUIT, WIRING AND SUPPORTS BACK TO SOURCE, AS WELL AS ANY LOCAL DISCONNECTING MEANS, ETC. UNLESS NOTED OTHERWISE.
- DISCONNECT AND REMOVE WIRING DEVICES, FIRE ALARM DEVICES, LIGHTING FIXTURES AND COMMUNICATIONS OUTLETS ON WALLS, CEILINGS, MILLWORK, ETC. INDICATED ON THE ARCHITECTURAL DRAWINGS AS BEING REMOVED. THIS INCLUDES REMOVAL OF ASSOCIATED BOXES, CONDUIT, WIRING AND SUPPORTS BACK TO SOURCE, AS WELL AS ANY LOCAL DISCONNECTING MEANS, ETC. UNLESS NOTED OTHERWISE.
- LABEL ALL CIRCUIT BREAKERS NOT INDICATED FOR REUSE AS "SPARE".
- WHEN DEMOLITION OCCURS THAT CREATES A BREAK IN AN EXISTING TO REMAIN BRANCH CIRCUIT, RECONNECT REMAINING DEVICES AND ENSURE OPERATION IS RESTORED.
- CONDUIT AND WIRING ROUTED THROUGH THE LIMITS OF CONSTRUCTION FEEDING DEVICES AND EQUIPMENT OUTSIDE THE LIMITS OF CONSTRUCTION SHALL REMAIN UNLESS NOTED OTHERWISE.
- REMOVE EXISTING EXPOSED CONDUIT, OR CONDUIT THAT BECOMES EXPOSED DURING CONSTRUCTION IN ITS ENTIRETY. CONDUIT STUBBED THROUGH THE FLOOR SHALL BE CUT FLUSH WITH FLOOR SLAB, FILLED WITH GROUT AND MADE READY FOR NEW FLOOR FINISHES.
- CONDUIT THAT REMAINS CONCEALED IN WALLS OR SLABS SHALL BE ABANDONED IN PLACE AFTER REMOVAL OF WIRING.
- CONDUITS THROUGH ROOF THAT ARE NO LONGER USED AND ARE NOT IN AREA BEING ROEROOFED SHALL BE CUT OFF 6" ABOVE AND BELOW ROOF LEVEL. FILLED WITH EXPANDABLE FOAM SEALANT AND CAPPED ON BOTH ENDS. CONDUITS THROUGH THE ROOF THAT ARE NO LONGER USED AND ARE IN AN AREA BEING ROEROOFED SHALL BE REMOVED IN THEIR ENTIRETY.
- PROVIDE FLUSH MOUNTED OUTLET BOXES THAT REMAIN WITH BLANK COVER PLATES.
- PATCH AND FINISH SURFACES DISTURBED BY DEMOLITION UNDER

ELECTRICAL KEYNOTES DEMO	
KEY VALUE	KEYNOTE TEXT
ED1	DISCONNECT LIGHT FIXTURE AND SMOKE DETECTOR TO ALLOW NEW CEILING TO BE INSTALLED AT A LOWER HEIGHT. REINSTALL LIGHT FIXTURE AND SMOKE DETECTOR TO MATCH EXISTING AFTER CEILING HAS BEEN LOWERED.

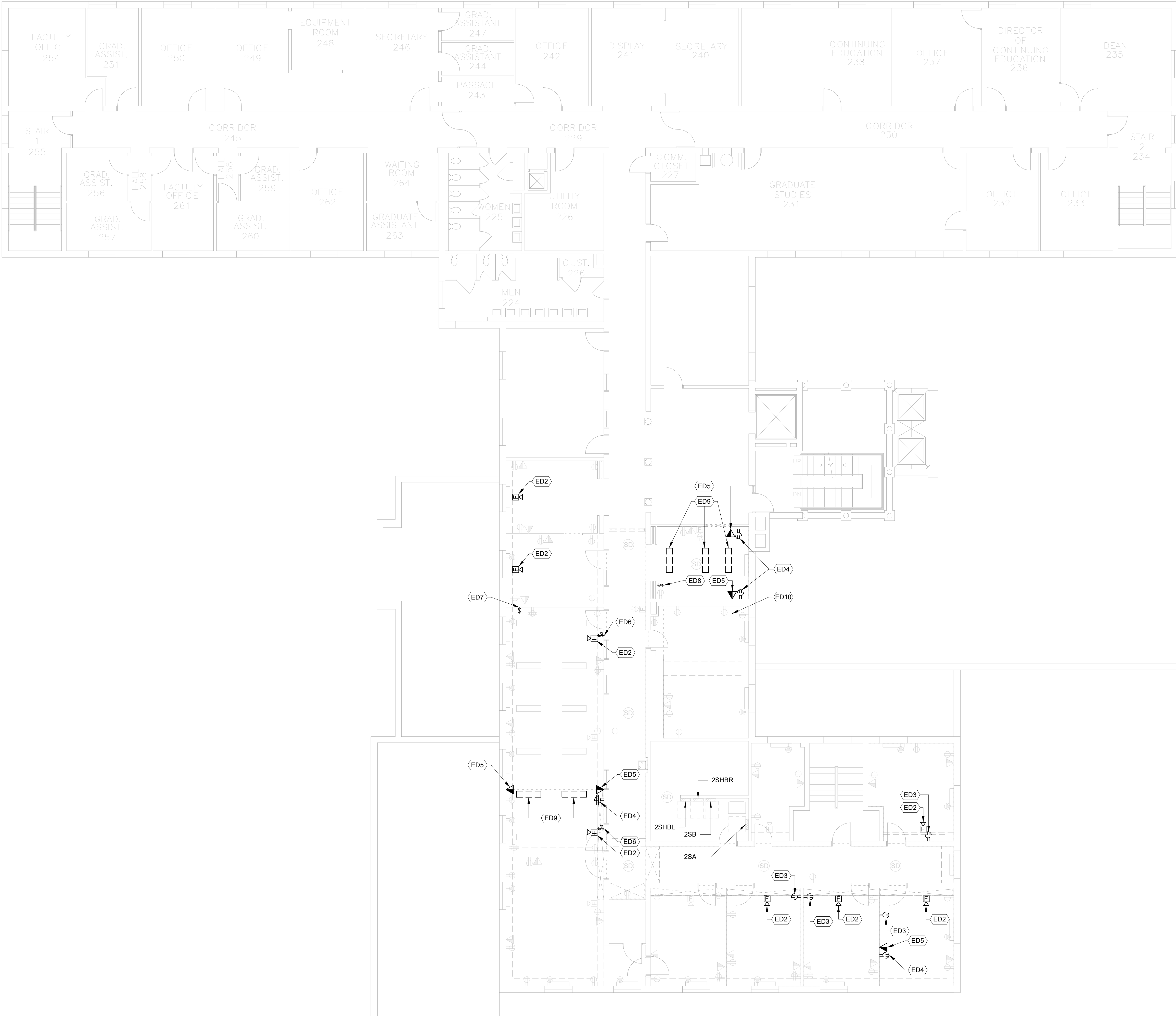


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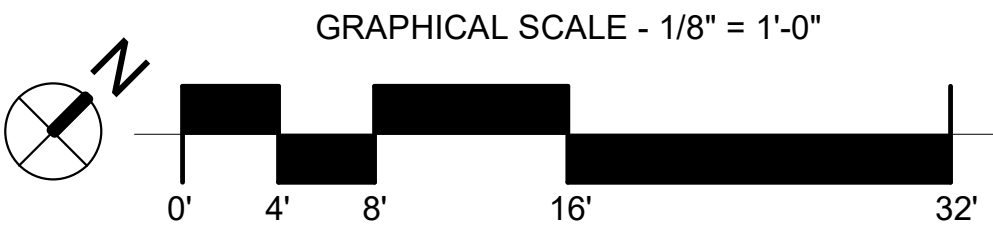


400 EAST PRATT STREET
BALTIMORE MD, 21202, 8TH FLOOR

ELECTRICAL KEYNOTES DEMO	
KEY VALUE	KEYNOTE TEXT
ED2	DISCONNECT AND REMOVE FIRE ALARM HORN. BACKBOX AND CABLING TO REMAIN.
ED3	DISCONNECT AND REMOVE RECEPTACLE. RETAIN WIRING FOR EXTENSION TO COUNTERTOP MOUNTED RECEPTACLES.
ED4	DISCONNECT AND REMOVE RECEPTACLE AND COVERPLATE. REMOVE ASSOCIATED WIRING BACK TO DEVICES THAT REMAIN. PROVIDE BLANK COVER.
ED5	TELECOMMUNICATIONS CABLING/JACKS/FACEPLATE TO BE DISCONNECTED AND REMOVED BY OWNER.
ED6	DISCONNECT AND REMOVE TOGGLE SWITCH. BACKBOX AND WIRING TO REMAIN.
ED7	DISCONNECT AND REMOVE TOGGLE SWITCH. LIGHTS CONTROLLED BY TOGGLE SWITCH TO BE REWIRED AS INDICATED.
ED8	DISCONNECT AND REMOVE TOGGLE SWITCH. BACKBOX TO REMAIN. WIRING TO BE EXTENDED. PROVIDE BLANK COVER.
ED9	DISCONNECT AND REMOVE LIGHT FIXTURE. REMOVE ASSOCIATED WIRING BACK TO SOURCE. PROVIDE BLANK COVER.
ED10	IN THIRD FLOOR BATHROOM ABOVE, DISCONNECT ABOVE CEILING EXHAUST FAN TO ALLOW FOR REMOVAL BY DIVISION 23. CIRCUIT TO REMAIN AND BE REUSED.



1 SECOND FLOOR PLAN - DEMOLITION - ELECTRICAL
1/8" = 1'-0"



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SECOND FLOOR PLAN -
DEMOLITION -
ELECTRICAL

Project Number MI-1226

Date 03/12/2025

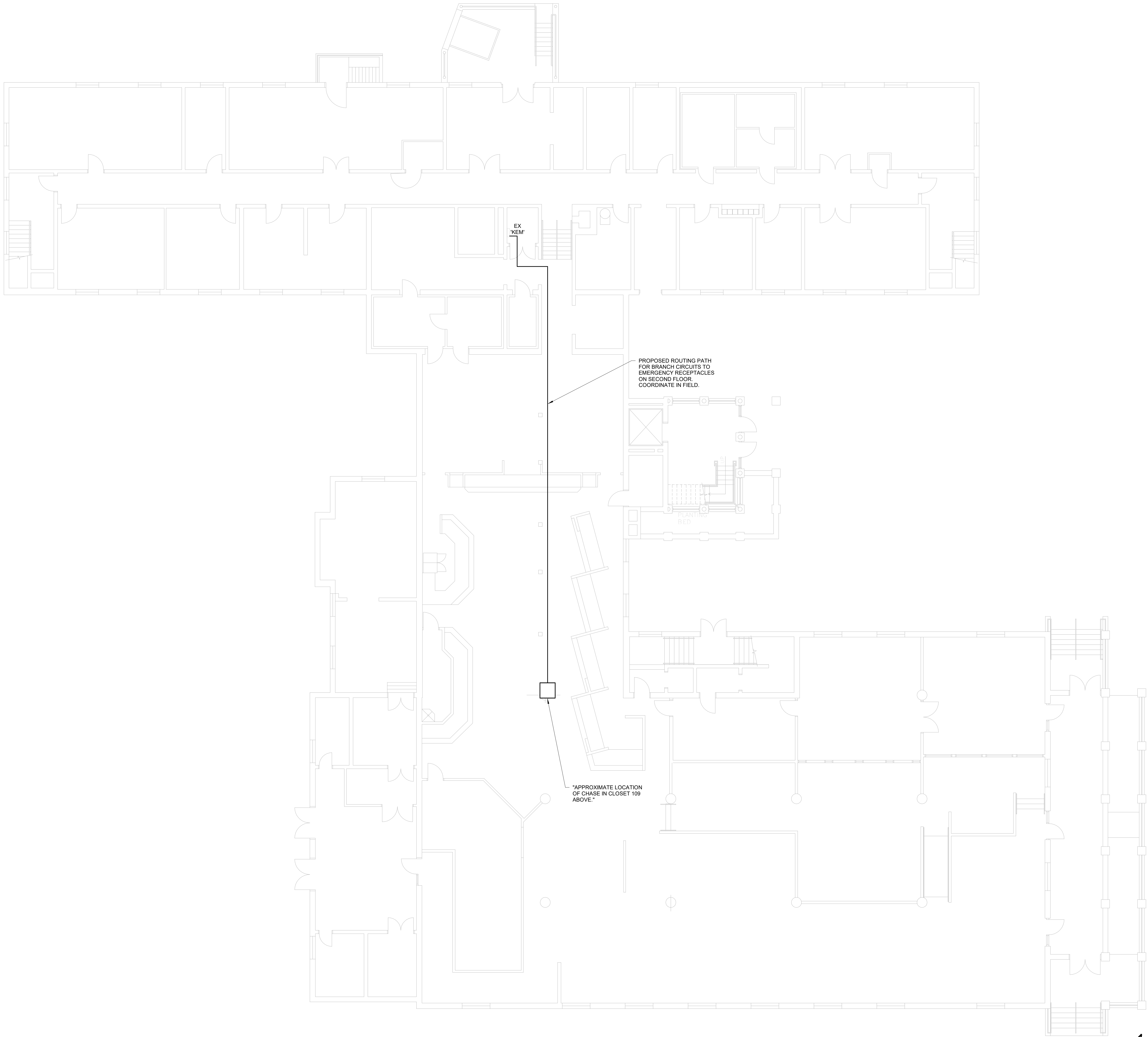
SCALE: AS NOTED

E022

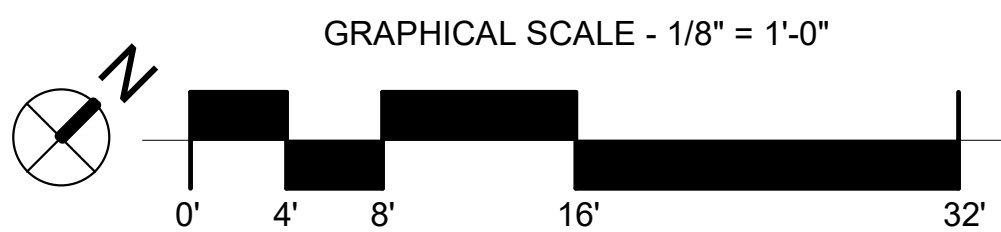
NOTES



400 EAST PRATT STREET
BALTIMORE MD, 21202, 8TH FLOOR



① GROUND FLOOR PLAN - POWER & LOW VOLTAGE
1/8" = 1'-0"



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GROUND FLOOR PLAN -
POWER & LOW VOLTAGE

Project Number MI-1226

Date 03/12/2025

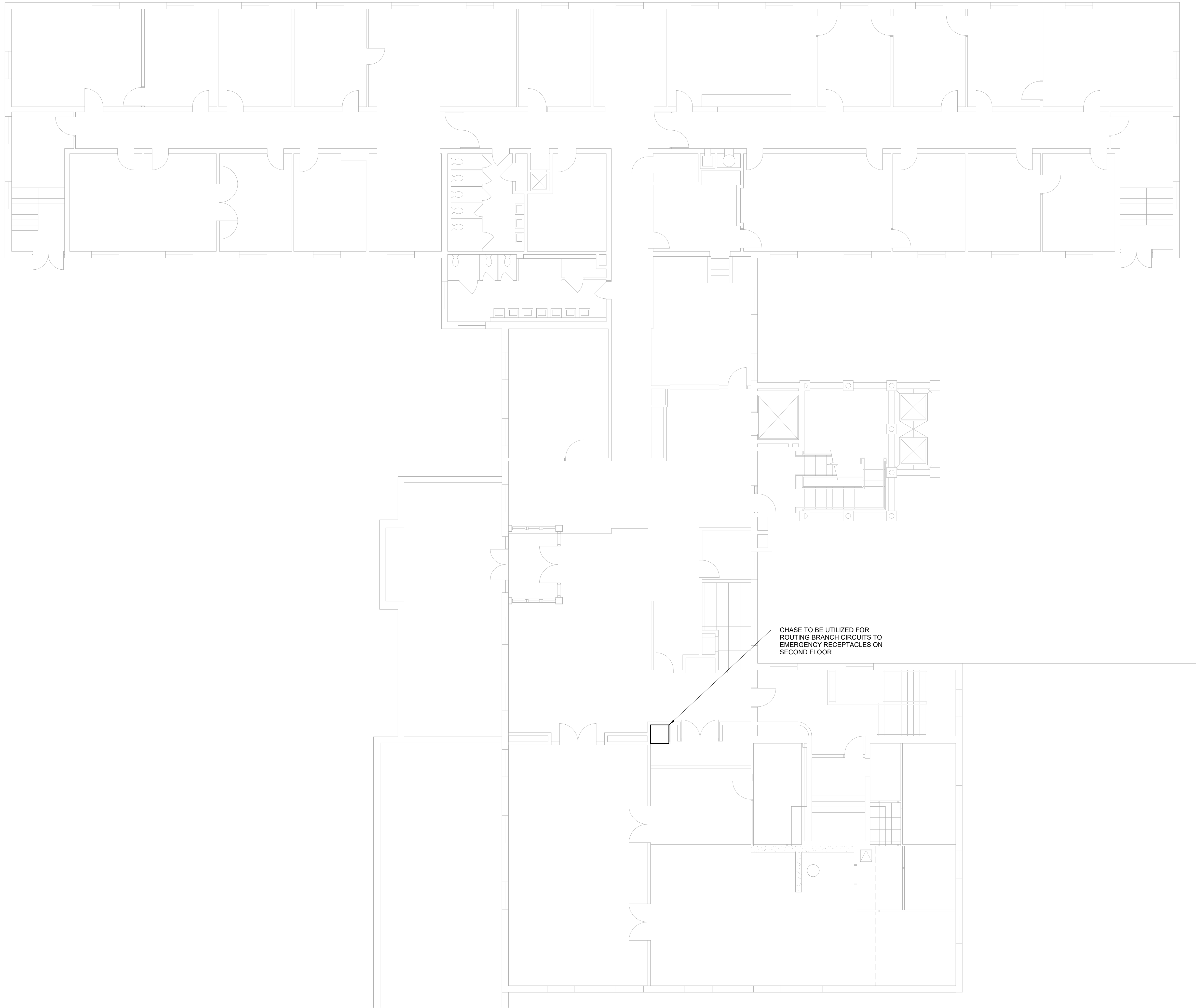
SCALE: AS NOTED

E201

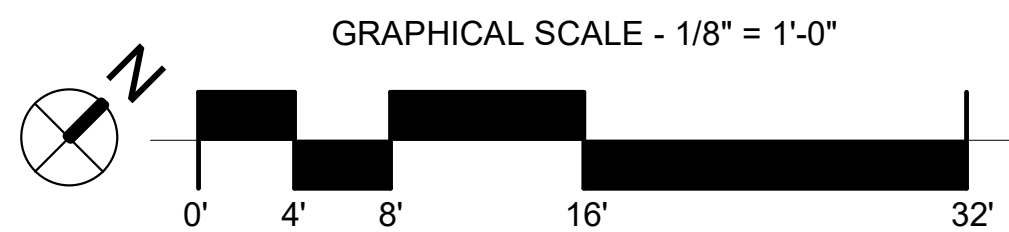
NOTES



400 EAST PRATT STREET
BALTIMORE MD, 21202, 8TH FLOOR



① FIRST FLOOR PLAN - POWER & LOW VOLTAGE
1/8" = 1'-0"



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FIRST FLOOR PLAN -
POWER & LOW VOLTAGE

Project Number MI-1226

Date 03/12/2025

SCALE: AS NOTED

E202

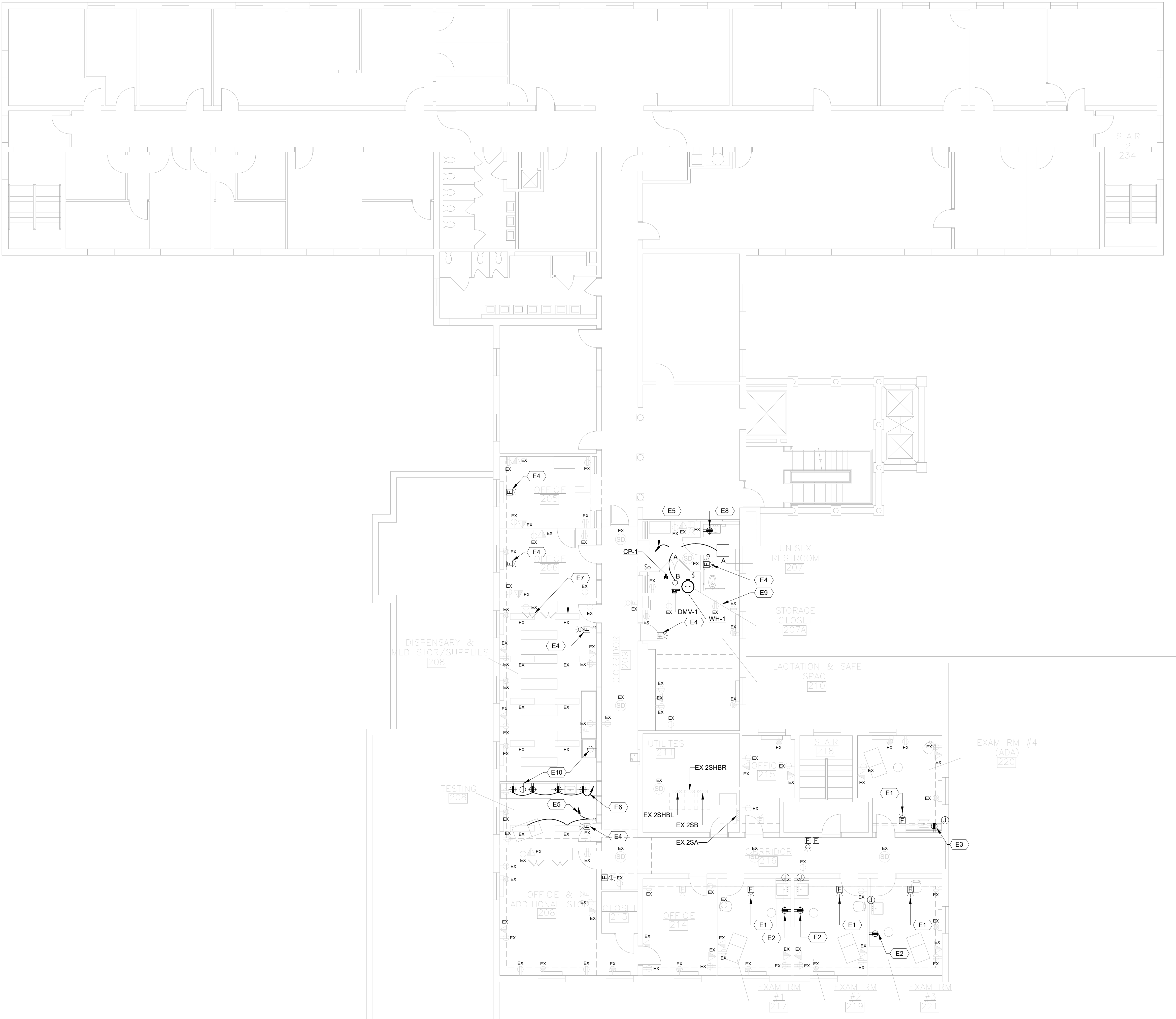
E - MECHANICAL EQUIPMENT CONNECTION SCHEDULE												
ID	VOLTS	PH	MCA	MOCP	LOAD WATTAGE	DS POLES	DS RATED AMPS	FUSE AMPS	FUSE TYPE	PANEL	CIRCUIT	REMARKS
CP-1	120 V	1	5.5 A	15 A	594 W	1	20	--	--	EX 2SB	37	NOTE 2
DMV-1	120 V	1	6.3 A	15 A	681 W	1	20	--	--	EX 2SB	37	NOTE 3
WH-1	208 V	1	21.6 A	25 A	4500 W	2	30	--	--	EX 2SB	33.35	NOTE 1

NOTE 1: FURNISH 30A-2P BREAKER AND INSTALL IN EXISTING GE A-SERIES PANEL 2SB. BREAKER TYPE AND AIC TO MATCH EXISTING. CONNECT WATER HEATER TO THIS BREAKER VIA DISCONNECT SWITCH WITH 2#10, 1#10G, MC CABLE.

NOTE 2: FURNISH 20A-1P BREAKER AND INSTALL IN EXISTING GE A-SERIES PANEL 2SB. BREAKER TYPE AND AIC TO MATCH EXISTING. PROVIDE MOTOR RATED TOGGLE SWITCH AS DISCONNECTING MEANS FOR CP-1. CONNECT TO THIS BREAKER VIA SWITCH WITH 2#12, 1#12G MC CABLE.

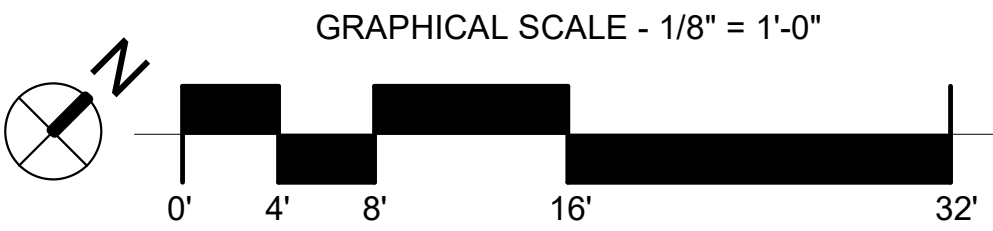
NOTE 3: PROVIDE 20A TOGGLE SWITCH AS DISCONNECTING MEANS. CONNECT TO CIRCUIT INDICATED WITH 2#12, 1#12G MC CABLE.

E - LIGHTING FIXTURE SCHEDULE											
ID	DESCRIPTION	VOLTS	LAMP TYPE	WATTS	LUMENS	CCT (K)	CRI	MOUNTING	MANUFACTURER	MODEL SERIES	REMARKS
A	2X2 LED FLAT PANEL	120 V	LED	19 W	2000	3500	80	RECESSED	ELITE LIGHTING	22-FPL1-LED SERIES	
B	5" LED DOWNLIGHT	120 V	LED	7 W	650	3500	80	SURFACE	LIGHTOLIER	SLIM SURFACE SERIES	



ELECTRICAL KEYNOTES NEW	
KEY VALUE	KEYNOTE TEXT
E1	INSTALL ON EXISTING BACKBOX AND CONNECT TO EXISTING SIGNAL CIRCUIT.
E2	MOUNT CENTERED OVER LENGTH OF COUNTERTOP. PROVIDE NONMETALLIC SURFACE MOUNTED RACEWAY TO MOUNT RECEPTACLE IN. EXTEND EXISTING WIRING IN 3/4" TO SURFACE MOUNTED RACEWAY.
E3	PROVIDE NONMETALLIC SURFACE MOUNTED RACEWAY TO MOUNT RECEPTACLE IN. EXTEND EXISTING WIRING IN 3/4" TO SURFACE MOUNTED RACEWAY.
E4	CONNECT TO EXISTING FIREALARM SIGNAL CIRCUIT SERVING THIS FLOOR.
E5	CONNECT TO EXISTING LIGHTING CIRCUIT SERVING SPACE.
E6	FURNISH A 20A-1P BREAKER AND INSTALL IN EXISTING GE A-SERIES PANEL 2SB. BREAKER TYPE AND AIC TO MATCH EXISTING BREAKERS.
E7	REWIRE TO COME ON WITH REMAINDER OF LIGHTS IN SPACE.
E8	CONNECT TO EXISTING RECEPTACLE CIRCUIT SERVING SPACE.
E9	IN THIRD FLOOR BATHROOM ABOVE. PROVIDE MANUAL MOTOR STARTER SWITCH ABOVE CEILING FOR EXHAUST FAN AND CONNECT FAN VIA SWITCH TO EXISTING 120V CIRCUIT.
E10	FURNISH A 20A/1P BREAKER AND INSTALL IN EXISTING GE A-SERIES PANEL KEM. REMOVE EXISTING 2-POLE SPARE BREAKER. BREAKER TYPE AND AIC TO MATCH EXISTING. CONNECT TO THIS BREAKER WITH 2#10, 1#10G, 3/4".

1 SECOND FLOOR PLAN - LIGHTING, POWER & LOW VOLTAGE
1/8" = 1'-0"



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SECOND FLOOR PLAN -
LIGHTING, POWER & LOW
VOLTAGE

Project Number MI-1226

Date 03/12/2025

SCALE: AS NOTED

NOTES



400 EAST PRATT STREET
BALTIMORE MD, 21202, 8TH FLOOR

SECTION 260000
GENERAL ELECTRICAL REQUIREMENTS

PART 1 GENERAL

1SUMMARY

- A. Section includes administrative and procedural requirements for work under Division 26, 27 and 28.
- B. Coordinate work of this Section with the requirements of the Project.

2 GENERAL DESCRIPTION

- A. The following is a general description of the work included in the Electrical Division and as shown on the Electrical Drawings.
- B. The work shall include, but not be limited to the following:
 - 1. Lighting and lighting controls
 - 2. Power to hvac and plumbing equipment
 - 3. Power to owner provided equipment
 - 4. Data, phone and CATV rough in.
 - 5. Modifications to an existing fire alarm system.

3 DEFINITIONS

- A. Following are definition of terms and expressions used in the Electrical Sections in addition to the definitions found in the Contract Documents.
 - 1. "Wiring" includes wire, fittings, conduit, boxes and other accessories that comprise a complete system.

4 QUALITY ASSURANCE

- A. Regulatory Requirements
 - 1. Work shall conform to the requirements of the enforced codes, laws and ordinances of the local authority having jurisdiction, National Fire Protection Association (NFPA), National Electrical Code (NEC) and National Manufacturer's Association (NEMA).
 - 2. The requirements of the authorities having jurisdiction shall take precedence over the Drawings and Specifications. Changes required by the authorities having jurisdiction shall be made after review by the Architect.

5 SUBMITTALS

- A. Shop drawings and product information are required for the following to be submitted to the owner for record only:
 - 1. Safety Switches
 - 2. Motor Starters (Manual Type)
 - 3. Lighting
 - 4. Occupancy/Vacancy sensors
 - 5. Wiring Devices
 - 6. Surface Mounted Raceway
 - 7. Fire Alarm System including fire alarm device layout and wiring diagrams specific to project. Generic wiring diagrams are not acceptable.
 - 8. Operation and Maintenance Manual

6 PROTECTION

- A. Protect material and equipment from damage.
- B. Cap or plug openings in equipment and conduits.

7 VARIANCES

- A. Where conflicts exist within the contract documents, request clarification prior to submission of bid. If clarification is not requested, provide the work representing the higher cost and quality.

8 WARRANTY

- A. Provide warranty as indicated in front end documents but not less than 1 year from date of substantial completion as determined by the Architect.
- B. Certain items of equipment shall be warranted for a longer time than the general warranty period. Provide for service or replacement in connection with the warranty of these items.

9 TEMPORARY POWER AND LIGHT

- A. Refer to front end specifications for the requirements of temporary electric service, jobsite power and jobsite lighting.

PART 2 PRODUCTS

1 PRODUCTS TO BE USED

- A. Items specified by trade name, manufacturers name, series or model number indicate the quality of the products or materials to be used on this project.
- B. Products indicated by name, series or model number or as 'basis of design' have been coordinated with other trades. Coordinate items of other manufacturers listed with other trades. Make necessary modifications for use of a product from another listed manufacturer.

2 MATERIALS

- A. Provide all items/materials whether specified but not shown, shown but not specified or are reasonably incidental for a complete operational system.

3 EQUIPMENT SUPPORTS

- A. Provide foundations, supports and curbs for equipment as indicated or necessary for the installation and operation of equipment. Anchor equipment per manufacturer's instructions.
- B. For equipment not mounted to a wall surface or concrete pad, provide floor anchored structural steel stands/supports (interior dry locations) or galvanized structural steel stands/support and hardware (interior and exterior damp or wet locations).
- C. For equipment mounted to a non-structural surface (drywall, stucco, etc) provide fire retardant ¾" plywood backboard or structural steel supports anchored to wall structural members.
- D. Paint cut ends with rust inhibiting primer for structural steel supports installed in damp or wet locations.

4 CONDUIT SUPPORTS

- A. Provide conduit hangers and supports.
- B. Conduits may not be supported from other conduits or other divisions supports.
- C. Utilize trapeze hangers for parallel runs of conduits. Minimum rod size shall be 3/8".
- D. For steel bar joist construction, support hanger rods from top cord of joist or from panel points of the lower chord. For conduit runs parallel to joists, provide structural steel supports between and fastened to joist top cord.

5 OPENINGS, CHASES, LINTELS AND SLEEVES

- A. Coordinate locations of and size of chases, lintels and openings during the construction.
- B. Provide sleeves through walls (interior, exterior and foundation) and floors for conduit. Sleeves shall be flush with wall. Sleeves through floors shall extend 6" above and below floor and/or floor assembly.
- C. Provide 'link seal' type seal for conduits through foundation walls.
- D. Seal conduits through fire rated assemblies and walls with UL listed products rated for the fire rating of the assembly/wall and compatible with the floor/wall construction.
- E. For work that requires chases, lintels, openings and sleeves be placed in existing walls and floors, patch, repair and restore to original condition the surfaces disturbed during the installation. Do not cut any structural members without approval from Architect.

6 REMOVABLE PANELS

- A. Boxes, devices and equipment shall be accessible where installed above a ceiling or in wall. Where not accessible, provide removable or hinged access panels. Access panels shall be compatible with construction being installed in and maintain applicable fire rating.

7 IDENTIFICATION OF ELECTRICAL SYSTEMS

- A. Provide the following types of nameplates:
 - 1. For interior dry locations, nameplate shall be engraved laminated acrylic, minimum 1/16" thick with mitered edges.
 - 2. For interior damp/wet locations and exterior locations, nameplate shall be metal backed butyrate.
 - 3. Nameplates shall be provided with self adhesive backing and drilled holes to fasten to equipment with rivets.
 - 4. Letters shall be at least ½" high letters.
 - 5. Nameplate shall be black with white lettering and shall include identification to match drawings, voltage/phase and source. Nameplates for meter stack meters shall include apartment number.
- B. Provide nameplates for the following equipment:
 - 1. Disconnect switches
- C. Provide circuit identification on all junction boxes and cabinets with permanent marker. In finished areas identification shall be placed on inside of cover.
- D. Provide circuit identification on the backside of receptacle coverplates with permanent marker.
- E. Provide final typed circuit directories for panelboards and load centers.

PART 3 EXECUTION

1 EXISTING CONDITIONS

- A. Where electrical systems pass through renovated areas to serve areas outside limits of work and interfere with new work, relocate such systems as required for installation of new work and restore relocated systems to operation or modify new work to account for existing conditions. Submit proposed modifications to Architect for approval prior to any work.
- B. Coordinate any outages with Owner at least 7 days in advance of outage. Provide temporary power if outage duration cannot be tolerated by Owner.

2 REMOVED EQUIPMENT

- A. Owner reserves the first right of refusal for equipment indicated for removal. If Owner's direction is to retain equipment, deliver equipment to location directed by owner on site. Otherwise, equipment is to be removed in its entirety by the contractor.

3 INSTALLATION OF EQUIPMENT

- A. The Drawings indicate the general layout and placement of equipment and devices. Some adjustment in the location of equipment and devices is expected without cost to the owner to account for field conditions and other divisions equipment/devices.
- B. If indicated on the drawings, the routing of conduits/wiring is intended to be schematic only. Final routing of conduits/wiring shall be coordinated with the Architectural and Structural drawings. Submit plan routing to Architect for approval.

4 RECORD DRAWINGS

- A. Contractor is responsible to document changes to the construction documents to reflect field installed conditions by maintaining a marked up copy of contract documents. Markup shall be in red pencil. Deliver to Architect at end of project and note as "Record Drawings".

5 TESTING

- A. Perform testing and inspections as indicated below and as indicated in specific electrical sections.
- B. Perform tests prior to the connection of equipment that could be damaged from tests.
- C. Provide at least 5 days notice to Architect prior to tests.
- D. The following shall be tested to the satisfaction of the Architect:
 - 1. Lighting, power and control circuits are continuous and free from short circuits.
 - 2. The resistance to ground of non-grounded circuits is at least one megaohm.
 - 3. The circuits are operable.
 - 4. The resistance to ground field system does not exceed 5 ohms
- E. Refer to other division 26, 27 and 28 specification sections for tests specific to equipment.

6 PAINTING

- A. In finished spaces to be painted, prepare electrical equipment and materials to receive paint.
- B. In unfinished spaces and exterior spaces, provide equipment with standard factory finishes. Touch up painted surfaces of equipment that have been scratched during installation and construction.

7 OPERATION AND MAINTENANCE MANUAL

- A. Unless requirements for O & M manuals are covered in another section, provide 2 hard copies and 2 thumb drives. Hardcopies shall be comprised of heavy duty 3-ring binder with labeled dividers and pocketed folders as required.
- B. The manual shall contain the following:
 - 1. Title page including the name of the project, address of the project, contractors' information include contact and contact number, name and address of Architect.
 - 2. Table of contents.
 - 3. Copy of each reviewed shop drawing for project.
 - 4. List of manufacturers' representatives with address and contact number.
 - 5. Manufacturer's printed operating and maintenance instructions, parts lists, illustration diagrams for each piece of equipment.
 - 6. Copy of warranties.
 - 7. Copy of final inspection certificate.

8 GROUNDING

- A. Provide grounding as shown on the Drawings, the enforced version of the National Electrical Code and local regulations.
- B. Ground conductors shall be copper unless noted otherwise. Size per the National Electrical Code.
- C. Provide a separate insulated green equipment grounding conductor in each feeder and branch circuit.

9 MOUNTING HEIGHTS

- A. Mounting heights indicated on drawings provide a general location for bidding purposes. Coordinate mounting heights of devices in casework, shelving, above counters, millwork and furniture with Architectural Details and Architect.
- B. If mounting height information is not provided, request information from Architect.

END OF SECTION

SECTION 260500
ELECTRICAL METHODS AND MATERIALS

PART 1 GENERAL

1SUMMARY

- A. Section includes furnishing of labor, materials and equipment for the installation of a complete electrical system as shown and as specified herein.
- B. The requirements of Section 26 00 00 apply to work performed under this section.

PART 2 PRODUCTS

1 SAFETY SWITCHES

- A. Subject compliance with requirements, provide products by one of the following:
 - 1. Square D
 - 2. Eaton Cutler Hammer
- B. Safety switches shall have the following features:
 - 1. Horsepower rated where required.
 - 2. Heavy Duty rated for all sizes at 240V
 - 3. Heavy Duty rated for all sizes at 480V
 - 4. Heavy duty switches rated up to 200,000AIC at 480V
 - 5. Cover interlock to prevent operation when cover is open.
 - 6. Viewing window
 - 7. Visible blade
 - 8. External operable handle
 - 9. Provisions for padlock
 - 10. Capable of accepting copper and aluminum conductors
 - 11. Ground kits and neutral kits as required.
 - 12. Labeled as service entrance equipment.
 - 13. Pull out type disconnects are not acceptable.
 - 14. Enclosure ratings as follows:
 - a. Interior dry locations: NEMA 1
 - b. Interior wet/damp locations and exterior: NEMA 3R

2 FUSES

- A. Subject to compliance with requirements, provide products by one of the following:
 - 1. Bussman (basis of design)
 - 2. Mersen
 - 3. Littelfuse
- B. Fuses shall have the following features:
 - 1. Current limiting, non-renewable cartridge fuses with voltage ratings per application
 - 2. Type RK-1, 250V and 600V, zero to 600A rating, 200kAIC time delay
- C. Coordinate fuse ratings with utilization equipment nameplate limitations of maximum fuse size and short circuit current ratings.

3 MOTOR STARTERS

- A. Manual Motor Starting Switches
 - 1. Subject to compliance with requirements, provide products by one of the following:
 - a. Square D Class 2510
 - b. Allen Bradley
 - c. Eaton Cutler Hammer
 - 2. Switch shall have the following features:
 - a. Built in thermal overload protection sized per the motor nameplate.
 - b. Handle guards to permit locking in 'off' position.
 - c. Red 'on' pilot light
 - d. Enclosures:
 - 1) Interior dry locations (flush or surface mounted): NEMA 1
 - 2) Interior damp/wet locations and exterior locations (surface mounted): NEMA 4

4 OCCUPANY/VACANCY SENSORS

- A. Subject to compliance with requirements, provide products by one of the following:
 - 1. Sensor Switch (basis of design)
 - 2. Leviton
 - 3. Wattstopper
- B. Occupancy/Vacancy sensor shall have the following features:
 - 1. Be programmable as vacancy sensors (manual on/automatic off) in all areas except corridors, stairwells, restrooms, primary building entrances, lobbies and parking garages). Ceiling mount sensors shall achieve manual on via low voltage wall station.
 - 2. Utilize dual technology (infrared and ultrasonic)
 - 3. Color: White
- C. Wall box sensors
 - 1. 120/277V operation
 - 2. Compatible with load controlled and with capacity exceeding load connected.
 - 3. Field or factory set to manual on operation.
 - 4. Provided with manual override switch for on/off operation and adjustable timer settings.
 - 5. Basis of design product is Sensor Switch WSX PDT SA (Dual Tech)

5 WIRING DEVICES

- A. Subject to compliance with requirements, provide products from one of the following:
 - 1. Hubbell
 - 2. Leviton
 - 3. Pass & Seymour
- B. Lighting Switches
 - 1. Single pole, Three-way and Four-way
 - 2. Toggle Type
 - 3. Back and side wired
 - 4. Commercial Specification Grade:
 - a. 120/277V
 - b. 20A
 - 5. Color: match existing device colors
- C. Receptacles
 - 1. Duplex or simplex as noted
 - 2. Polarized grounding
 - 3. Back and side wired

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ELECTRICAL
SPECIFICATIONS

Project Number MI-1226

Date 03/12/2025

SCALE: AS NOTED

E801

NOTES



400 EAST PRATT STREET
BALTIMORE MD, 21202, 8TH FLOOR

- 4. Tamper resistant where required
 - 5. Commercial Grade
 - a. 120V
 - b. 20A
 - c. Galvanized steel mounting strap
 - 6. Color: match existing device color
 - 7. Receptacles connected to the emergency distribution system shall be red.
 - D. GFCI Receptacles
 - 1. Duplex
 - 2. Back and side wired
 - 3. Tamper resistant where required
 - 4. Weather resistant type in damp or wet locations
 - 5. Self testing with LED indicators for power status, trip condition, ground fault condition and end of life status.
 - 6. Commercial specification grade
 - a. 120V
 - b. 20A
 - 7. Color: match existing device color
 - E. Wiring Device Coverplates
 - 1. Interior use
 - a. Standard sized
 - b. Oversized
 - c. Plastic/Nylon: Color to match wiring device color.
 - 2. Exterior use or in interior damp/wet locations
 - a. Weatherproof cast aluminum construction
 - b. Gasketed
 - c. UL listed as follows:
 - 1) Type 1: Suitable for wet locations while in use (plug inserted at all times).
 - 3. Provide gasketed covers on exposed FS boxes.
- 6 BOXES AND FITTINGS
- A. Subject to compliance with requirements, provide products by one of the following:
 - 1. Steel City
 - 2. Thomas & Betts
 - 3. Raco
 - 4. Crouse-Hinds
 - 5. Carlon
 - 6. Bell
 - 7. Hoffman
 - B. Metallic boxes shall have the following features:
 - 1. Constructed of pressed stamped zinc galvanized steel
 - 2. Integral tapped hole for ground wire connection
 - 3. Knockouts for conduit sizes from ½" to 1"
 - 4. Weight rated with appropriate mounting hardware where used in conjunction with ceiling mounted fans and light fixtures
 - C. Cast aluminum boxes shall have the following features:
 - 1. Single and double gang configurations
 - 2. Threaded ports for ½" to 1" conduit fittings

- 3. Blank removable threaded caps for unused ports
 - D. Pull boxes shall have the following features:
 - 1. Sized per application
 - 2. Constructed of welded galvanized steel with rounded corners
 - 3. Overlap covers held in place by stainless steel machine screws
 - E. Wire troughs shall have the following features:
 - 1. Sized per application
 - 2. Construction of welded galvanized steel with rounded corners
 - 3. NEMA 3R rated for interior damp/wet locations and exterior locations
- 7 CONDUCTORS
- A. Copper conductors shall have the following features:
 - 1. Constructed of soft drawn, 98 percent conductivity
 - 2. 600 volt, 90 degrees C, THHN-THWN insulation.
 - 3. Manufactured in compliance with the following:
 - a. National Electrical Code
 - b. ASTM
 - c. UL
 - d. NEMA
 - B. Feeders and conduit sizes are based on copper conductors unless noted otherwise.
- 8 CABLE
- A. Metal Clad Cable
 - 1. Type MC cable with galvanized steel armor, THHN-THWN 90 degree C, 600 volt insulated copper conductors and green grounding conductor.
 - 2. Comply with Federal Specification A-A-59544
 - B. Healthcare Metal Clad Cable
 - 1. Type HCF with green colored aluminum armor, THHN-THWN 90 degree C 600 volt insulated copper conductors, green grounding conductor and full sized bare aluminum grounding/bonding conductor.
 - 2. Comply with Federal Specification A-A-59544
- 9 RACEWAYS AND WIRING METHODS
- A. Rigid Metal Conduit (RMC)
 - 1. Galvanized threaded heavy walled steel conduit and threaded couplings
 - 2. Comply with UL6 and ANSI Standard C80.1
 - B. Electrical Metallic Tubing (EMT)
 - 1. Galvanized steel conduit
 - 2. Comply with UL797 and ANSI C80.3
 - 3. Concrete tight, steel, compression type couplings and connectors for use in concrete and masonry walls
 - 4. Steel compression ring in all other locations
 - C. Flexible Metal Conduit (FMC)
 - 1. Zinc coated steel
 - 2. Comply with UL 1
 - D. Liquid Tight Flexible Metal Conduit (LFMC)
 - 1. Flexible metal conduit with PVC jacket.
 - 2. Comply with UL 360

- E. Surface Mounted Raceway (SMR)
 - 1. Subject to compliance with requirements, provide products from one of the following:
 - a. Wire/Legrand
 - b. Hubbell
 - 2. Surface nonmetallic raceway to be construction of rigid textured PVC in color selected by Owner. Comply with UL 94 V-0 requirements for self-extinguishing characteristics.
 - 3. Provide number of channels as indicated on the drawings.
 - 4. Provide elbows, boxes, fittings, supports, etc with same finish and manufacturer as raceway for a complete system.

PART 3 EXECUTION

- 1 GENERAL REQUIREMENTS
- A. Install equipment plumb and level.
 - B. Provide final connections to equipment whether specified under this division or other divisions in the specifications.
 - C. Coordinate electrical requirements of equipment in other divisions that differ from that indicated on the contract documents.
- 2 WIRING DEVICES
- A. Clean boxes prior to device installation.
 - B. Protect devices after installation.
 - C. Reduce conductors larger than device accepts at an accessible location or within the device box to #12AWG. Do not exceed device box conductor fill requirements.
 - D. Install ground pin to match existing device orientation.
- 3 FUSES
- A. Types shall be provided as follows:
 - 1. Motor Circuit Protection
 - a. Up to 600A: Class RK1, time delay
 - 2. Install fuses after installation is complete.
 - 3. Install fuses so that fuses information can be read easily when equipment is open.
 - 4. Provide (1) set of spare fuses for each fuse type and size on project. If project includes a spare fuse cabinet, place spare fuses in cabinet, otherwise turn over to owner.
 - B. Motors, Equipment, Controls and Control Wiring
 - 1. Provide control wiring as indicated on the drawings. Control wiring not indicated will be by other divisions.
 - 2. Tag all control wiring at each end near termination point
 - 3. Coordinate with manufacturers wiring diagrams.
 - 4. Install control wiring in conduit, minimum size ½".
- 4 CONDUCTOR MATERIAL APPLICATIONS
- A. Feeders: Copper. Solid for No. 10AWG and smaller, stranded for #8AWG and larger.
 - B. Branch Circuits: Copper. Solid for No. 10AWG and smaller, stranded for #8AWG and larger.
- 5 CONDUCTOR INSULATION & CABLE APPLICATIONS & WIRING METHODS
- A. Exposed Feeders: Type THHN/THWN, single conductors in raceway

- B. Feeders concealed in ceilings, walls, partitions and crawl spaces: Type THHN/THWN, single conductors in raceway
 - C. Exposed branch circuits: Type THHN/THWN, single conductors in raceway
 - D. Branch circuits concealed in ceilings, walls, partitions and crawl spaces:
 - 1. Type THHN/THWN, single conductors in raceway
 - 2. MC cable (#8AWG and smaller)
 - E. Branch circuits in Healthcare
 - 1. Type HCF rated cabling for #8AWG and smaller in areas used for patient care such as examination rooms, cast rooms, treatment rooms and similar areas where patients may come in contact with ordinary appliances.
- 6 INSTALLATION OF CONDUCTORS AND CABLES
- A. Minimum size is #12AWG for lighting and power circuits unless indicated otherwise.
 - B. Minimum size for control circuits is #14AWG unless indicated otherwise.
 - C. Conceal cables in finished walls, ceiling and floors unless indicated otherwise.
 - D. Use manufacture approved pulling compound or lubricant where required. Compound/lubricant shall not deteriorate conductor or insulation. Do not exceed manufacturers recommended maximum pulling tensions.
 - E. Install cables in a neat and workmanlike manner, parallel and perpendicular to structural members.
 - F. Identify and color code conductors and cables as follows:
 - 1. 480Y/277V
 - a. Phase A: Brown
 - b. Phase B: Orange
 - c. Phase C: Yellow
 - d. Neutral: Gray
 - 2. 208Y/120V
 - a. Phase A: Black
 - b. Phase B: Red
 - c. Phase C: Blue
 - d. Neutral: White
 - 3. Wire and cable delivered to the size shall bear the UL stamp, name of the manufacturer, trade name, type of wire and month/year of manufacturer.

- 7 SPLICES AND TERMINATIONS
- A. Utilize 3-M company 'Scotchlock' or Ideal 'Wirenuts' for splices in branch circuits. Splices shall be insulated rated for 90 degrees C and 600V.
 - B. Splices and taps for feeder circuits shall be made with approved set screw mechanical lugs or Polaris type lugs.
 - C. Terminations shall be rated for 75 degree C and 600V.
 - D. Vinyl electrical tape shall be rated for 90 degrees C and 600V insulation.
- 8 RACEWAYAPPLICATIONS
- A. Outside:
 - 1. Exposed: RMC
 - 2. Connections to vibrating equipment (including transformers, motor driven equipment, etc): LFMC. The use of LFNC is not permitted.
 - B. Indoors:

- 1. Exposed dry locations: EMT
 - 2. Exposed and concealed damp/wet locations: RMC
 - 3. Connections to Vibrating Equipment:
 - a. Indoor dry locations: FMC
 - b. Indoor damp/wet locations: LFMC. The use of LFNC is not permitted.
- C. Surface mounted raceways:
- 1. Install where indicated on the drawings.
 - 2. Applications at other locations must be approved by the Owner.
- 9 RACEWAY AND BOX INSTALLATION
- A. Comply with NECA 1 and NECA 101 for installation requirements except where requirements on drawings or in this article are stricter.
 - B. Install raceways in a neat and workmanlike manner parallel and perpendicular to structural members.
 - C. Install no more than the equivalent of (3) 90 degree bends in any conduit run before providing a pull box.
 - D. Install conduits concealed in finished spaces.
 - E. Raceway fittings shall be compatible with conduit type and listed for location installed.
 - F. Provide bushings on the ends of all conduits.
 - G. Install pull wires in all spare conduits.
 - H. Minimum raceway size is ¾" except ½" may be used for control cabling.
 - I. Do not fasten conduits to metal deck
 - J. Install devices to seal raceway interiors at accessible locations in the following locations:
 - 1. Conduits passing from warm to cold locations (ie refrigerated spaces)
 - 2. Heated to unheated spaces
 - 3. Where required by NEC
 - K. Provide expansion fittings in the following locations:
 - 1. Where conduits cross building expansion joints
 - 2. Exposed above grade runs of PVC conduit with straight run lengths greater than 50'-0"
 - L. Utilize a maximum of 6'-0" of FMC, LFMC or MC cable for connections to recessed light fixtures. Utilized a maximum of 6'-0" of FMC or LFMC for connections to transformers and equipment subject to vibration.
 - M. Maintain fire rating of walls and floors with UL listed fire stop materials.
 - N. Provide cable supports in conductors installed in vertical raceways per NEC. In conduit risers provide type "S" cable supports as manufactured by OZ Geney or equal. For fire rated cable assemblies, provide support per manufacturer in addition to NEC requirements.
 - O. Mount boxes plumb and square.
 - P. Provide blank coverplates for unused outlet boxes.
 - Q. Mount boxes flush in walls and ceilings.
 - R. Provide galvanized covers for boxes in exposed unfinished locations.
 - S. Provide grounded neutral conductor at all switch locations.

- 0 TESTING
- A. Disconnect Switches
 - 1. Perform the following tests and inspections:
 - a. Test continuity of circuit
 - B. Wiring Devices
 - 1. Perform the following test and inspections:
 - a. Line voltage: acceptable range is 114V to 126V
 - b. GFCI test
 - 2. Prepare test and inspection reports

END OF SECTION

PROFESSIONAL SEAL

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ELECTRICAL
SPECIFICATIONS

Project Number MI-1226

Date

03/12/2025

SCALE: AS NOTED

E802

NOTES



400 EAST PRATT STREET
BALTIMORE MD, 21202, 8TH FLOOR

SECTION 265000
LIGHTING

PART 1 GENERAL

1SUMMARY

- A. Section includes furnishing of labor, materials and equipment for the installation of lighting fixtures as shown and as specified herein.
- B. The requirements of Section 26 00 00 apply to work performed under this section.

2 QUALITY ASSURANCE

- A. When alternate interior light fixtures are proposed and accepted by the Owner, provide photometric calculation for all spaces indicating light levels (footcandles), max/min values and average light level (footcandles) for each space. Light loss factor for interior lighting calculations shall be 0.85. Calculations where results are more than 5% above or below that of the fixtures specified are not acceptable. In addition, the use of non-standard or custom lumen packages to achieve results within 5% of fixtures specified are not acceptable.

PART 2 PRODUCTS

1 LIGHTING FIXTURES

- A. Lighting fixture information is indicated on the drawings based on fixture type designations and the Lighting Fixture Schedule.
- B. Luminaires shall comply with UL 1598
- C. General construction:
 - 1. Metal parts free of burrs, sharp corners and edges.
 - 2. Galvanized steel support hangers, channels and bolts.
 - 3. Stainless steel hardware for exterior applications
 - 4. Integral disconnecting means in compliance with NEC Article 410.
 - 5. Recessed luminaires: comply with NEMA LE 4
 - 6. Internal driver with 0-10V dimming control
 - 7. Nominal operating voltage: 120-277V ac.
 - 8. Verify fixture finishes with Architect (were applicable).
- D. LED Luminaires and Drivers
 - 1. General requirements:
 - a. Comply with IES LM-79 for measuring lumen maintenance
 - b. Comply with IES LM-80 for electrical and photometric measurement
 - c. Minimum 70% rated output at 50,000 hours (L70)
 - 2. Drivers
 - a. Power Factor: 0.90 or higher
 - b. Operating frequency: 60Hz
 - c. Interference: EMI and RFI compliant with FCC 47 CFT Part 15
 - d. Total harmonic distortion: 20% maximum
 - e. Operating temperature range compatible with environment installed
- E. Luminaire Support
 - 1. Single stem hangers: ½" steel tubing with swivel ball fittings and ceiling canopy. Same finish as fixture.
 - 2. Wires: ASTM A641/A 641M, Class 3, soft temper zinc coated steel, minimum 12 gage.

PART 3 EXECUTION

1 INSTALLATION

- A. Luminaires:
 - 1. Set level, plumb and square with ceilings and walls and secure according to manufacturer's written instructions unless otherwise indicated
 - 2. Mounting height indicated is from finished floor to bottom of fixture. Coordinate final height of fixtures with Architect and equipment/materials of other Divisions work.
 - 3. Support luminaires smaller than the ceiling grid with at least 2 channels spanning and secured to ceiling tees. In addition, provide 2 independent wire hangers to structure from opposite corners of fixture. A single continuous wire looped over a structural member is not acceptable.
 - 4. Support luminaires of same size as ceiling grid with secured to ceiling tees. In addition, provided 2 independent wire hangers to structure from opposite corners of fixture. A single continuous wire looped over a structural member is not acceptable.
 - 5. Suspended Luminaire shall be supported as follows:
 - a. Pendants and Rods: where longer than 48", brace to limit swinging
 - b. Stem-mounted single luminaires: Suspend with twin stem hangers
 - c. Continuous rows: Use tubing or stem for wiring at one point and tubing or rod for suspension for each unit length of luminaire housing, including on at each end.
 - 6. Provide all necessary handing or mounting devices for ceiling type application.
 - 7. Refer to Architectural reflected ceiling grids for luminaire locations and coordinate with mechanical, fire protection and fire safety equipment. Where conflicts occur, notify Architect prior to installing any of the systems.
 - 8. Luminaires located in recessed ceilings with a fire resistive rating shall be either fire rated or shall be provided with an auxiliary enclosure of rating to maintain fire rating of ceiling.
- B. Cleaning and Adjusting
 - 1. Set color temperature of selectable luminaires to values indicated in the Lighting Fixture Schedule.
 - 2. Clean all luminaires at end of project prior to turning over to Owner.

END OF SECTION

SECTION 283000
FIRE ALARM SYSTEMS

PART 1 GENERAL

1SUMMARY

- A. Section includes furnishing of labor, materials and equipment for the additions to an existing fire alarm system as shown and as specified herein.
- B. The requirements of Section 26 00 00 apply to work performed under this section.

2 QUALITY ASSURANCE

- A. The installation shall be performed by a company specializing in the installation of products specified in this section. Company shall have a minimum of 5 years experience and be certified by the manufacturer for installation of their products.
- B. Notification appliances, smoke detectors and heat detectors layout on the drawings is for general compliance with the requirements of the Pennsylvania Labor and Industry. Final layout and locations of devices, including candela ratings of visual devices shall be the responsibility of the NICET certified technician based on the specific ratings of the devices to be installed.
- C. All items of the fire alarm system shall be listed as a product of a single fire alarm system manufacturer.
- D. All items of the fire alarm system added to an existing fire alarm system shall be compatible with the existing fire alarm system. Provide certification from system manufacturer of such compatibility.
- E. Provide a UL certificate for the system.

3 SUBMITTALS

- A. In addition to the requirements of Section 26 00 00, provide the following:
 - 1. Riser diagram specific to project including wiring type/quantity/size.
 - 2. Scaled shop drawings showing equipment, device locations and installation requirements.
 - 3. Catalog cuts
 - 4. Battery Calculations
 - 5. Input/output matrix
 - 6. Fire alarm control panel detailed drawings
 - 7. Fire alarm annunciator detailed drawings.
 - 8. Installer qualifications
 - 9. NICET certificate of person preparing the shop drawings.
- B. Submit a copy of the shop drawings to the Pennsylvania Labor and Industry for their review and approval prior to submitting to the Owner.

PART 2 PRODUCTS

1 MANUFACTURERS

- 1. Manufacturer is proprietary as approved by the University Contracting Officer: Siemens building Technologies, Inc, fire alarm equipment and devices. Berkshire Systems Group, Inc., 50 South Museum Road, Reading, PA 19607, Phone No. 610-775-1220, attention: Mr. Kyle Slenker.

2 SYSTEM DESCRIPTION

- A. The fire alarm system shall comply with these specifications and all enforced applicable codes.

- B. All components shall be listed.
- C. Non-coded, addressable system with audible horn/strobe notification.
- D. Class I or Class II wiring methods as applicable to project requirements.

3 NOTIFICATION DEVICES

- A. General Requirements:
 - 1. Addressable
 - 2. Red or White as required by Authorities Having Jurisdiction. For devices installed in existing buildings match color unless otherwise required by Authorities Having Jurisdiction.
 - 3. Ceiling or wall mounted as indicated
 - 4. Devices installed in exterior locations or damp/wet interior locations shall be weatherproof and listed for wet locations.
- B. Visual Devices - Strobes
 - 1. Comply with UL 1971
 - 2. Clear polycarbonate lens.
 - 3. Provide adjustable candela output settings of 15/30/75/110 candela
 - 4. Self synchronizing flash
- C. Audible Devices – Horns
 - 1. Comply with UL 464
 - 2. Self-synchronizing temporal output
 - 3. Adjustable high and low dBA output with a maximum of 98dBA at 10 feet
- D. Combination Audible/Visual Devices – Horn/Strobes
 - 1. Properties of individual units above apply to the combination device.
 - 2. Unit shall be factory assembled as a single unit.

PART 3 EXECUTION

1 INSTALLATION

- A. Provide non-specified equipment required for a complete and operation system.
- B. Minimum wire size:
 - 1. 18 AWG solid copper for initiation and annunciator circuits
 - 2. 14 AWG for indicating circuits
- C. Install fire alarm and detection cabling as follows:
 - 1. Open wiring utilizing FPL listed cabling. Plenum and Riser rated where applicable.

2 TESTING AND ADJUSTING

- A. Verify that circuits are continuous and free from short circuits and unspecified grounds.
- B. Testing for the acceptance of the alarm and detection system shall be conducted in accordance with the requirements in Chapter 7 of NFPA 72.

END OF SECTION

PROFESSIONAL SEAL

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ELECTRICAL
SPECIFICATIONS

Project Number MI-1226

Date 03/12/2025

SCALE: AS NOTED

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