DC TO25 Heating System Upgrade

500 Indiana Ave NW, Washington, DC 20001



District of Columbia Courts

500 Indiana Ave NW, Washington, DC 20001

SMITHGROUP

1700 NEW YORK AVENUE NW
SUITE 100
WASHINGTON, DC 20006
202.842.2100
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VOLUME I OF I

ISSUED FOR:
ISSUE FOR BID

ISSUE DATE:
7/3/2025

15749.000

Plot Date: 7/3/2025 9:47:30 AM

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PROJECT TEAM

OWNER / CLIENT:

DC COURTS
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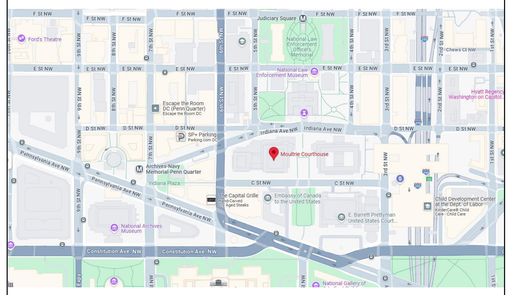
CONTACT
MARGARET COWIE
margaret.cowie@tylin.com
202.333.6230

PROJECT GENERAL NOTES

THE FOLLOWING PROJECT GENERAL NOTES APPLY TO THE ENTIRE DRAWING SET AND ARE NOT SPECIFIC TO ANY ONE DISCIPLINE, UNLESS OTHERWISE NOTED:

1. THE DRAWING SET AND SPECIFICATIONS (PROJECT MANUAL) ARE COMPLEMENTARY AND ESTABLISH DETAILED MINIMUM REQUIREMENTS FOR THE DESIGN AND CONSTRUCTION OF THE PROJECT.
2. THE DRAWING SET CONSISTS OF ALL SHEETS LISTED BY THE SHEET INDEX. THE WORK DESCRIBED BY THE DRAWINGS OF ANY ONE DISCIPLINE MAY BE AFFECTED BY THE WORK DESCRIBED ON DRAWINGS OF ANOTHER DISCIPLINE AND MAY REQUIRE REFERENCE TO DRAWINGS OF ANOTHER DISCIPLINE. AS SUCH, DO NOT DISTRIBUTE OR UTILIZE PARTIAL SETS OF DRAWINGS.
3. COLUMN GRID LINES IDENTIFIED BY A LETTER DESIGNATION ARE PARALLEL, UNLESS OTHERWISE NOTED. COLUMN GRID LINES IDENTIFIED BY A NUMBER DESIGNATION ARE PARALLEL AND ARE PERPENDICULAR TO THOSE WITH LETTER DESIGNATIONS, UNLESS OTHERWISE NOTED.
4. DISCIPLINE GENERAL NOTES, SYMBOLS AND DEFINITIONS APPLICABLE TO EACH DISCIPLINE'S DRAWINGS MAY BE FOUND AT THE FRONT OF EACH DISCIPLINE'S PORTION OF THE DRAWING SET AND ARE LISTED IN THE SHEET INDEX.
5. UNLESS INDICATED OTHERWISE, THE 'ARCHITECTURAL' SERIES DRAWINGS TAKE PRECEDENCE FOR THE FINISHED APPEARANCE AND LOCATION OF ALL EXPOSED ELEMENTS OF THE WORK OF ALL TRADES, INCLUDING THAT WORK WHICH IS ILLUSTRATED PRIMARILY ON DRAWINGS OF OTHER DISCIPLINES.
6. THE DRAWINGS MAY MAKE REFERENCE TO OR ILLUSTRATE ITEMS WHICH ARE NOT PART OF THE WORK OF THE CONTRACT. THESE "NOT IN CONTRACT" ITEMS AS INDICATED ARE REFERENCED OR ILLUSTRATED FOR THE CONTRACTOR'S REFERENCE, INFORMATION AND COORDINATION ONLY.
7. EXISTING CONDITIONS, IF SHOWN, ARE FROM AVAILABLE RECORD DRAWINGS AND/OR VISUAL FIELD SURVEYS. VERIFY ACTUAL EXISTING CONDITIONS AT THE SITE PRIOR TO SUBMITTING A BID. NOTIFY THE ARCHITECT, IN WRITING AND PRIOR TO SUBMITTING A BID, OF ANY DISCREPANCIES.
8. TAKE PRECAUTIONS TO MAINTAIN AND PROTECT NEW WORK AS WELL AS EXISTING SYSTEMS AND ELEMENTS, IF ANY, WHICH ARE TO REMAIN OR BE SALVAGED. ANY DAMAGE TO SUCH SYSTEMS AND ELEMENTS SHALL BE IMMEDIATELY REPAIRED IN A MANNER ACCEPTABLE TO THE ARCHITECT. IF SATISFACTORY REPAIRS CANNOT BE MADE, REPLACE SYSTEMS AND ELEMENTS WITH "LIKE NEW" QUALITY ACCEPTABLE TO THE ARCHITECT, ALL AT NO ADDITIONAL COST.
9. ALL PARTS OF THE WORK, INCLUDING BUT NOT LIMITED TO MATERIALS, METHODS, OR ASSEMBLIES, MUST COMPLY WITH THE REQUIREMENTS OF THE GOVERNING CODES AND REGULATIONS OF ALL FEDERAL, STATE AND LOCAL AUTHORITIES HAVING JURISDICTION OVER THE PROJECT, AS WELL AS THOSE GREATER REQUIREMENTS INDICATED BY THE CONTRACT DOCUMENTS. NO PART OF THE CONTRACT DOCUMENTS MAY BE CONSTRUED TO REQUIRE OR ALLOW WORK CONTRARY TO A GOVERNING CODE OR REGULATION.
10. IDENTIFY AND NOTIFY THE ARCHITECT OF CONFLICTS BETWEEN THE WORK OF DIFFERENT PARTIES AT THE EARLIEST POSSIBLE DATE SO AS TO ALLOW REASONABLE AND ADEQUATE TIME FOR THE CONFLICT TO BE RESOLVED WITHOUT DELAYING THE WORK. ALL DEVIATIONS FROM THE CONTRACT DOCUMENTS MUST BE APPROVED IN ADVANCE BY THE ARCHITECT AND OWNER.
11. REVIEW AND COORDINATE THE WORK OF ALL OTHER PARTIES PERFORMING WORK AT THE PROJECT, INCLUDING BUT NOT LIMITED TO, DELEGATED DESIGN ENTITIES, TRADES AND SUPPLIERS WITH THE REQUIREMENTS OF THE CONTRACT DOCUMENTS BEFORE COMMENCING CONSTRUCTION, AND ASSURE THAT ALL PARTIES ARE AWARE OF ALL REQUIREMENTS, REGARDLESS OF WHERE THE REQUIREMENTS OCCUR IN THE CONTRACT DOCUMENTS, WHICH MIGHT AFFECT THE WORK OF THAT PARTY.

VICINITY MAP



Mechanical Room 1000 Heating System Upgrade
500 Indiana Avenue N.W.
Washington, DC 20001

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ISSUE FOR BID		03 JULY 2025

SEALS AND SIGNATURES

DISTRICT OF COLUMBIA
JOHN G. CRUMBIA
ARC100840
LICENSED
ARCHITECT

SHEET TITLE

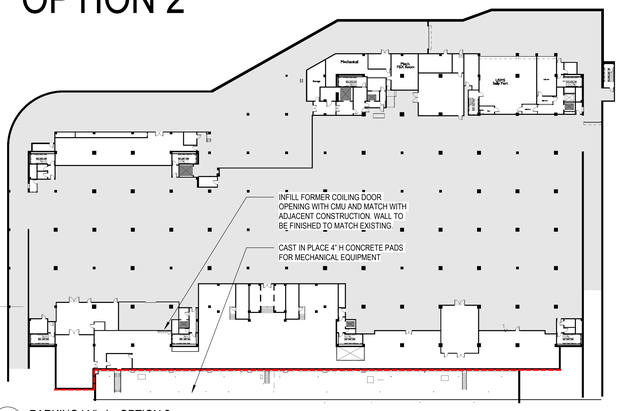
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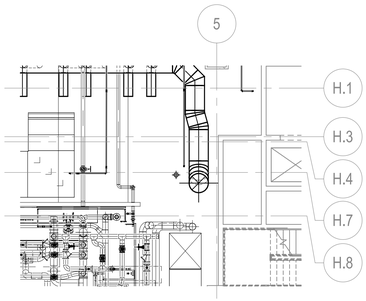
15749.000
PROJECT NUMBER

G0.1
SHEET NUMBER

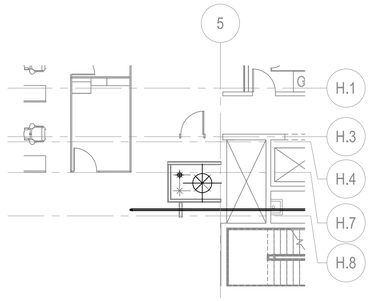
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OPTION 2

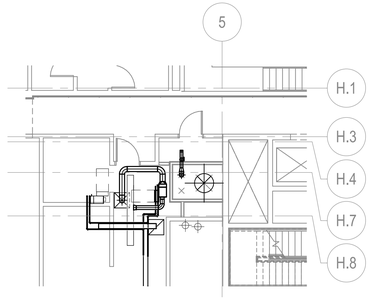

INFILL FORMER COILING DOOR OPENING WITH CMU AND MATCH WITH ADJACENT CONSTRUCTION. WALL TO BE FINISHED TO MATCH EXISTING.
CAST IN PLACE 4" H CONCRETE PADS FOR MECHANICAL EQUIPMENT
Mechanical
Elec. Room
Elec. Room
Elec. Room



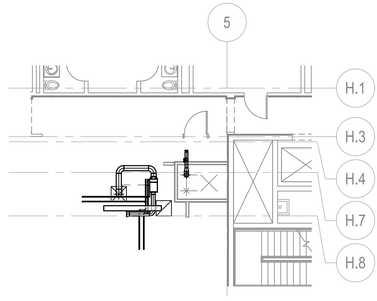
1 TO-25 BASE - PARKING LEVEL
SCALE: 1/8" = 1'-0"



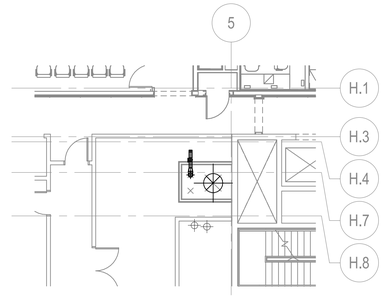
2 TO-25 BASE - C STREET LEVEL
SCALE: 1/8" = 1'-0"



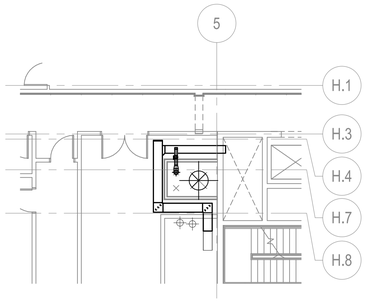
3 TO-25 - JOHN MARSHALL LEVEL
SCALE: 1/8" = 1'-0"



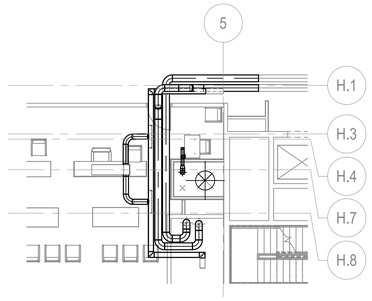
4 TO-25 BASE - INDIANA AVENUE LEVEL
SCALE: 1/8" = 1'-0"



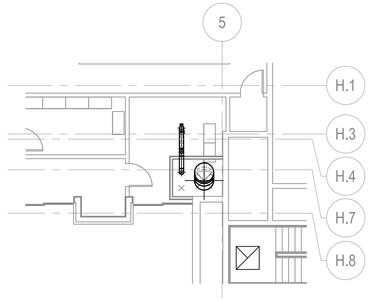
5 TO-25 BASE- SECOND LEVEL
SCALE: 1/8" = 1'-0"



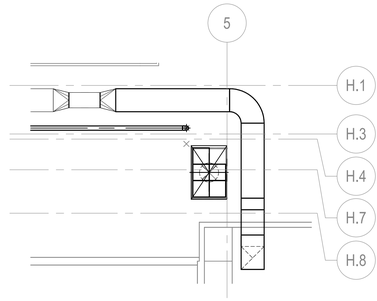
6 TO-25 BASE - THIRD LEVEL
SCALE: 1/8" = 1'-0"



7 TO-25 BASE - FOURTH LEVEL
SCALE: 1/8" = 1'-0"

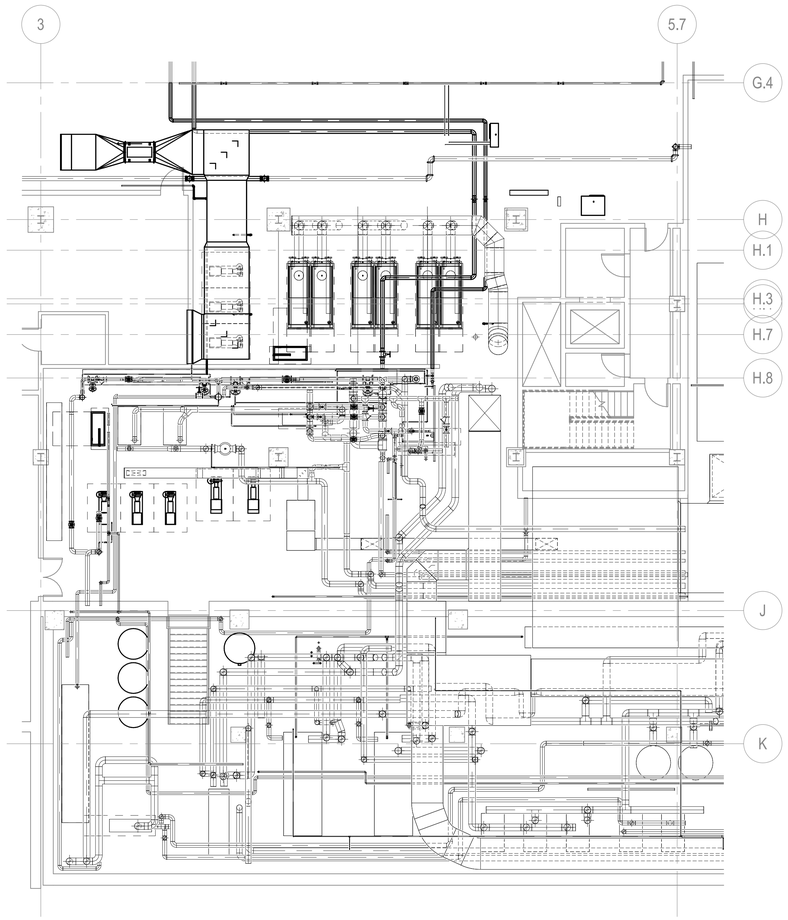


8 TO-25 BASE - FIFTH LEVEL
SCALE: 1/8" = 1'-0"



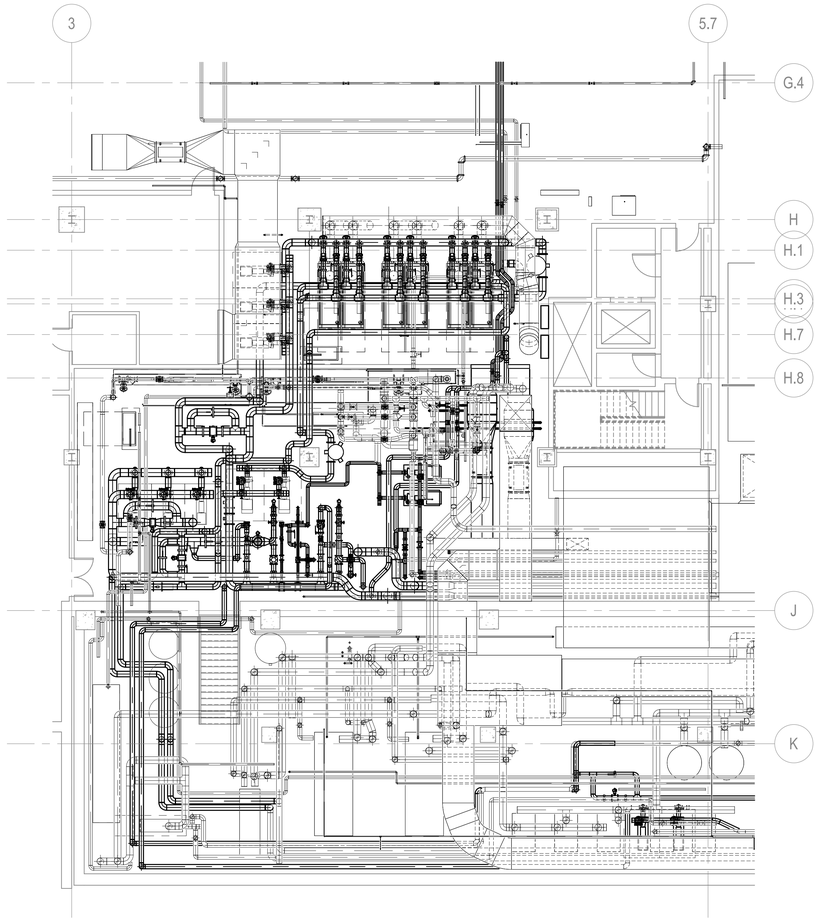
9 TO-25 BASE - SIXTH LEVEL
SCALE: 1/8" = 1'-0"

BASE: BUILD NEW FLUE SHAFT FROM PARKING LEVEL TO SIXTH LEVEL ROOF PENETRATION.
DEMOLISH AND REBUILDING CEILINGS IN THE AFFECTED SPACES ACROSS ALL FLOORS.
REROUTE EXISTING CONDITIONS DUCTWORK AND PIPING TO CONTINUE SERVING ADJACENT SPACES.



10 TO-25 OPTION 1
SCALE: 1/8" = 1'-0"

OPTION 1: PURCHASE AND INSTALL BOILERS AND PUMPS (EQUIPMENT ONLY).
EXISTING HYDRONIC PIPING AND STEAM PIPING TO REMAIN.
EXISTING HEATING HOT WATER SYSTEMS TO REMAIN AND TO BE FULLY OPERATIONAL.



11 TO-25 OPTION 2
SCALE: 1/8" = 1'-0"

OPTION 2: INSTALL ALL NEW DIV 23 PROJECT INFASTRUCTURE, INSTALL ALL NEW DIV 22 PIPING.

Plot Date: 7/3/2025 12:46:47 PM Author

DISTRICT OF COLUMBIA COURT OF APPEALS

SUPERIOR COURT DISTRICT OF COLUMBIA

Mechanical Room 1000 Heating System Upgrade
500 Indiana Avenue N.W.
Washington, DC 20001

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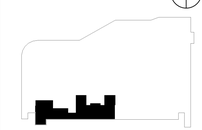
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SEALS AND SIGNATURES

DISTRICT OF COLUMBIA
IONEL PETRUS
No. PE907217
MECHANICAL
PROFESSIONAL ENGINEER

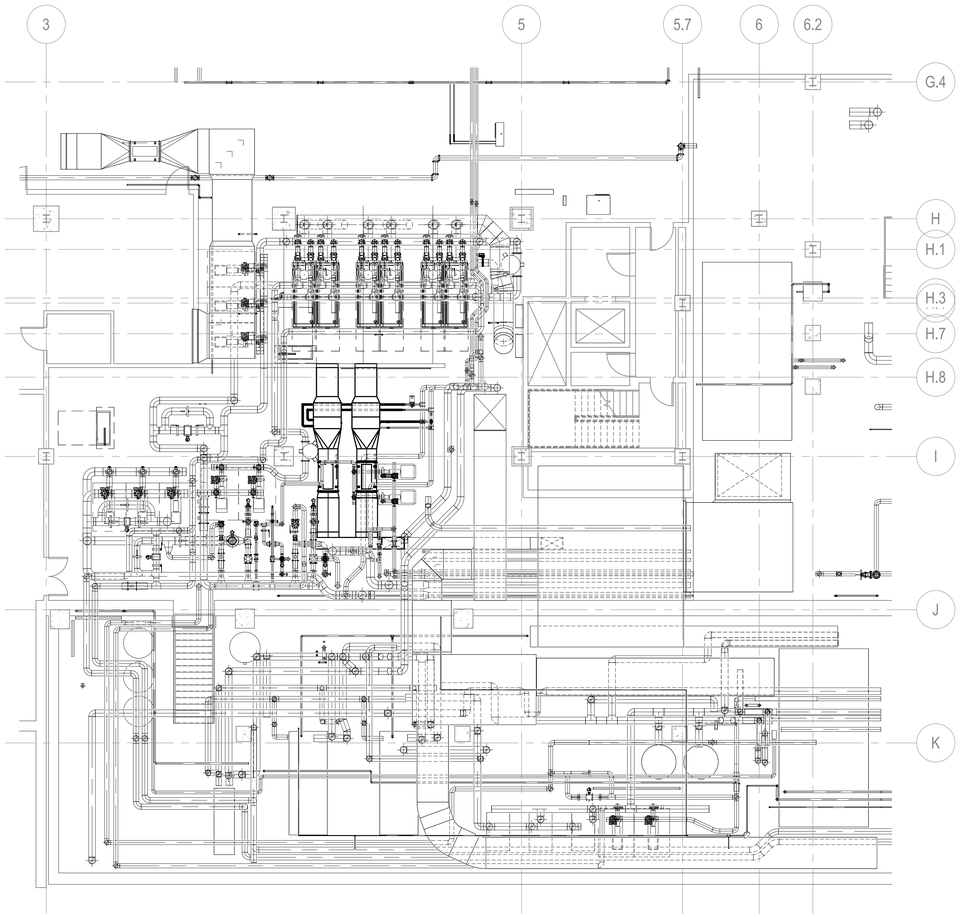
KEYPLAN



SHEET TITLE
HVAC OPTION PLANS

15749.000
PROJECT NUMBER

G1.2
SHEET NUMBER



1 TO-25 OPTION 3
SCALE: 1/8" = 1'-0"

OPTION 3: DEMOLISH AND REMOVE EXISTING DIV 23, DIV 26, AND DIV 22 INFRASTRUCTURE.

Plot Date: 7/3/2025 12:47:04 PM Author

Mechanical Room 1000 Heating System Upgrade
500 Indiana Avenue N.W.
Washington, DC 20001

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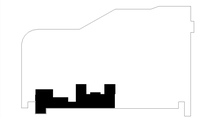
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SEALS AND SIGNATURES

DISTRICT OF COLUMBIA
IONEL PETRUS
No. PE907217
MECHANICAL
PROFESSIONAL ENGINEER

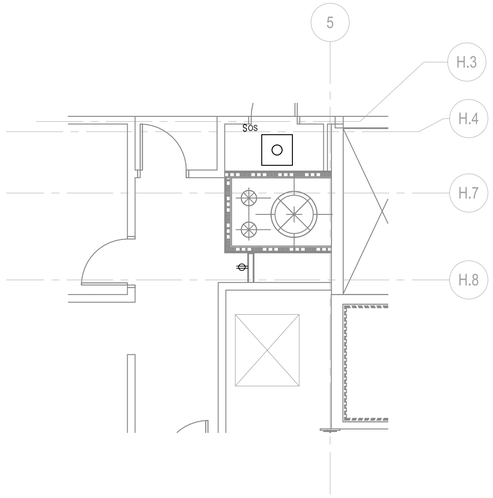
KEYPLAN NORTH



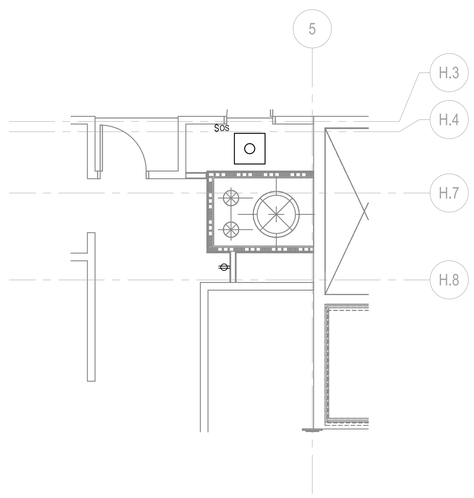
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HVAC OPTION PLANS

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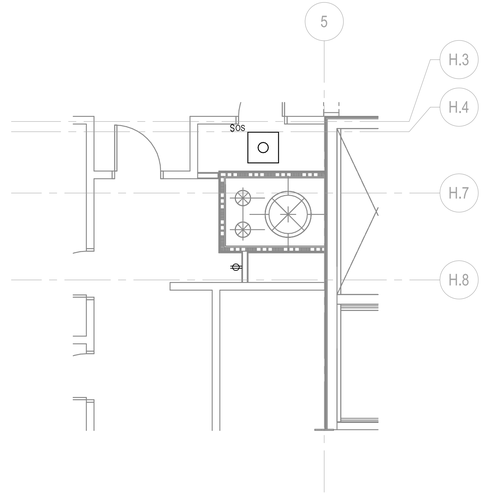
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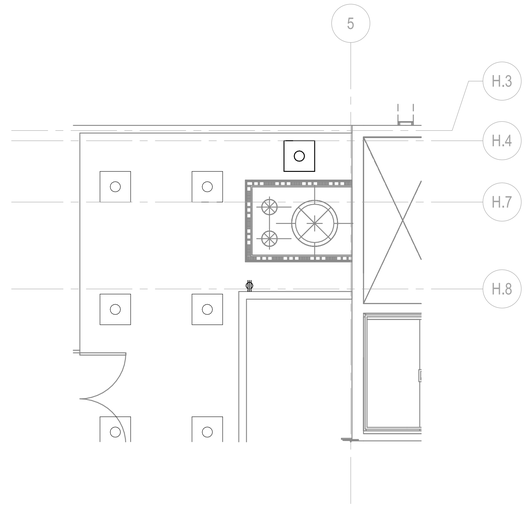
1 TO-25 BASE - C STREET LEVEL ELECTRICAL POWER AND LIGHTING PLAN
SCALE: 1/4" = 1'-0"



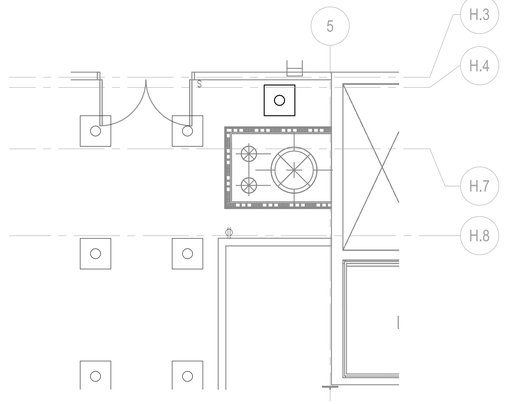
2 TO-25 BASE - JOHN MARSHALL LEVEL ELECTRICAL POWER AND LIGHTING PLAN
SCALE: 1/4" = 1'-0"



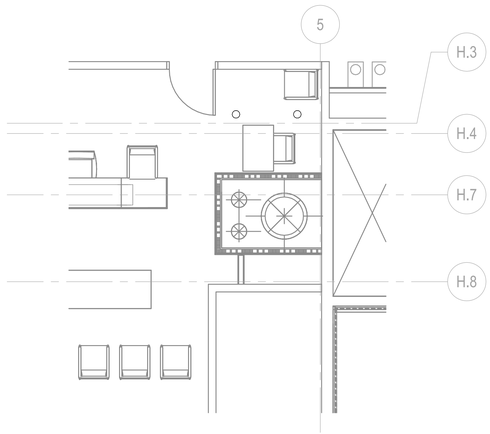
3 TO-25 BASE - INDIANA AVENUE LEVEL ELECTRICAL POWER AND LIGHTING PLAN
SCALE: 1/4" = 1'-0"



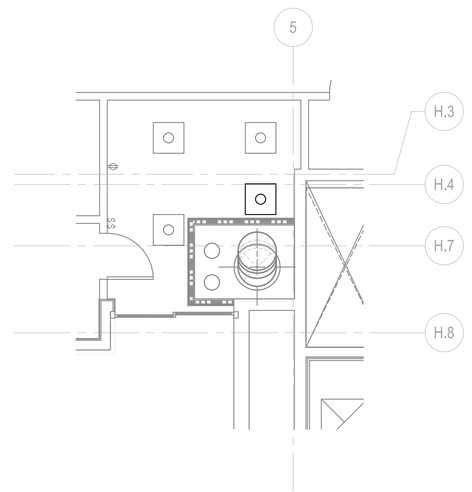
4 TO-25 BASE - SECOND LEVEL ELECTRICAL POWER AND LIGHTING PLAN
SCALE: 1/4" = 1'-0"



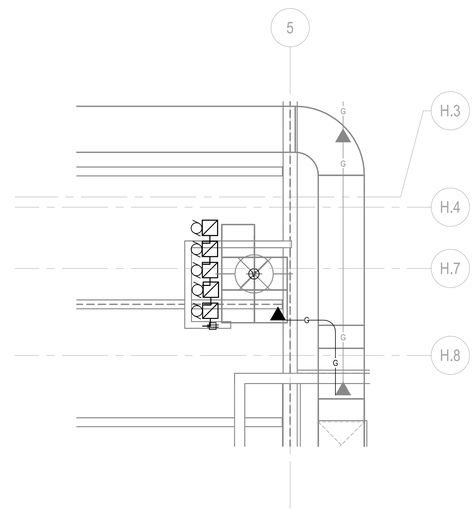
5 TO-25 BASE - THIRD LEVEL ELECTRICAL POWER AND LIGHTING PLAN
SCALE: 1/4" = 1'-0"



6 TO-25 BASE - FOURTH LEVEL ELECTRICAL POWER AND LIGHTING PLAN
SCALE: 1/4" = 1'-0"



7 TO-25 BASE - FIFTH LEVEL ELECTRICAL POWER AND LIGHTING PLAN
SCALE: 1/4" = 1'-0"



8 TO-25 BASE - SIXTH LEVEL ELECTRICAL POWER AND LIGHTING PLAN
SCALE: 1/4" = 1'-0"

BASE:

1. Remove existing lighting fixtures, occupancy sensors, receptacles, and switches that are to be demolished.
2. Disconnect, and reinstall existing lighting fixtures and receptacles that need to be relocated.
3. Purchase and install new lighting switches.
4. Purchase and install new electrical conduits inside of the shaft.
5. Purchase and install disconnect switches for the exhaust fans on the roof.
6. Purchase and install lightning protection system equipment and tie into existing system.

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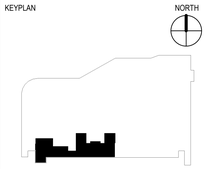
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SEALS AND SIGNATURES

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KENZ MELIANI
No. PE 40001940
ELECTRICAL
PROFESSIONAL ENGINEER

03 JULY 2025

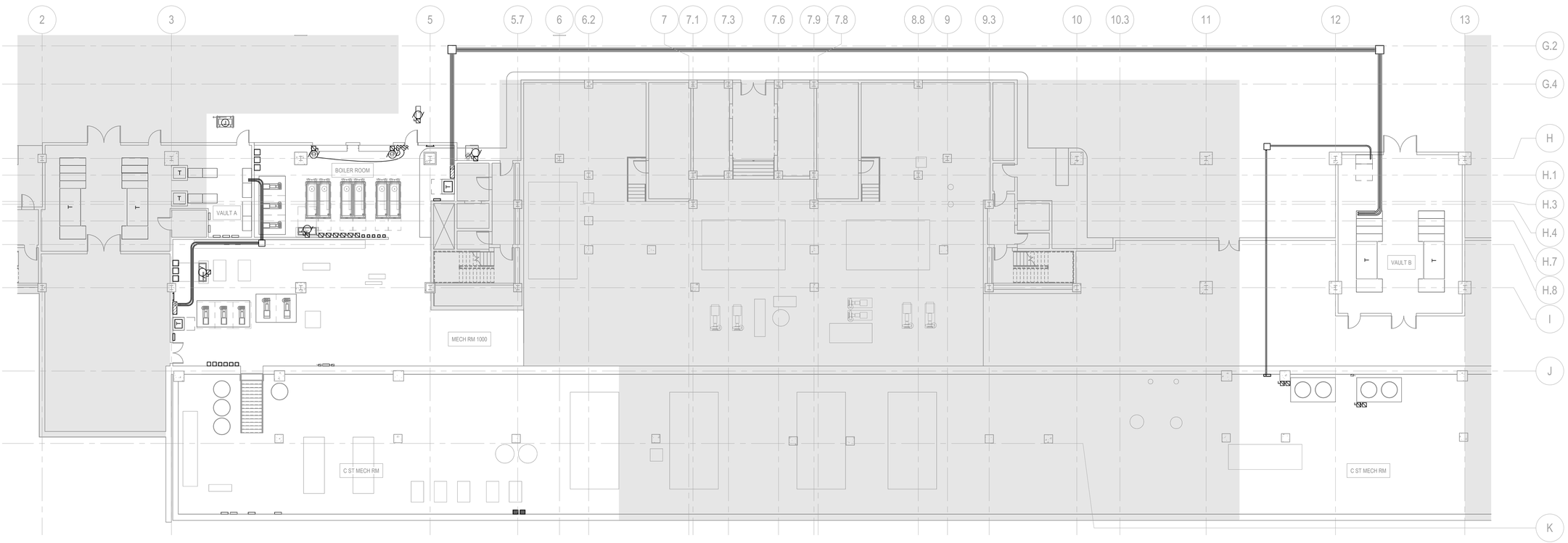
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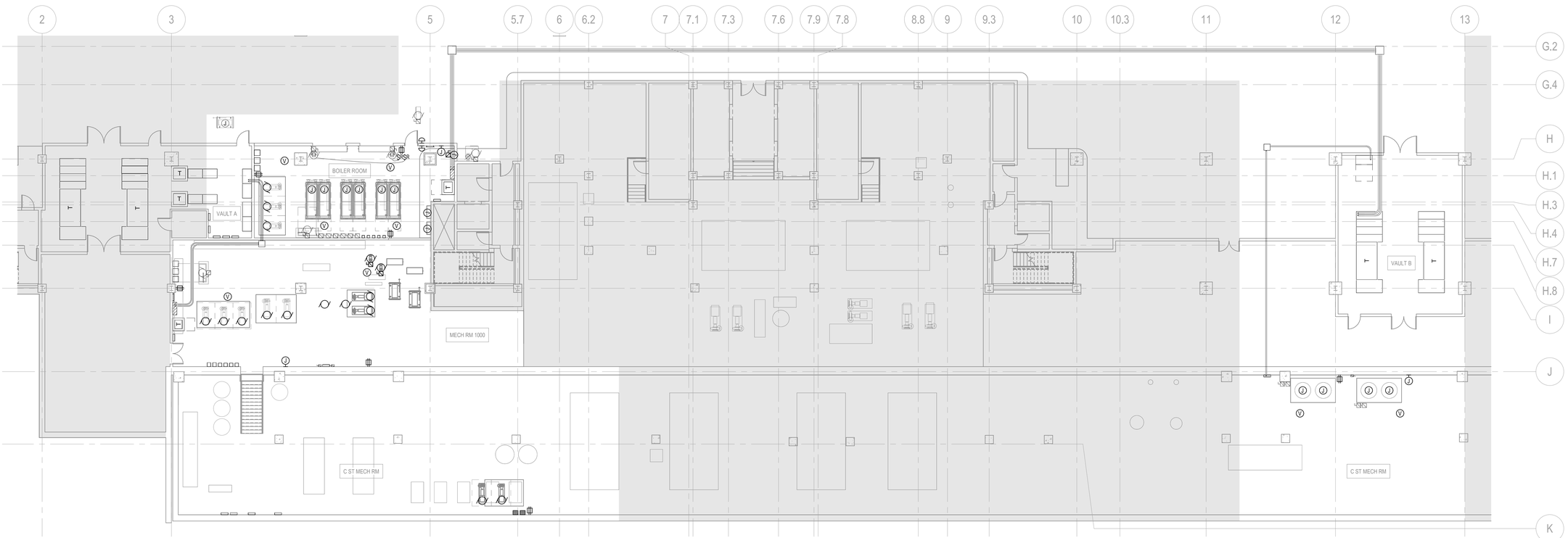
SHEET TITLE
ELECTRICAL BASE PLAN

15749.000
PROJECT NUMBER

G1.4
SHEET NUMBER



1 TO-25 OPTION 1 - PARKING LEVEL ELECTRICAL POWER PLAN
SCALE: 3/32" = 1'-0"



2 TO-25 OPTION 2 - PARKING LEVEL ELECTRICAL POWER PLAN
SCALE: 3/32" = 1'-0"

OPTION 1
1. Purchase and install new grounding and bonding, power monitoring and control, low-voltage distribution transformers, panelboards, fuses, enclosed switches, and variable-frequency drives.

2. Purchase and install new raceways and boxes for main distribution feeders.

OPTION 2
1. Purchase and install new low-voltage electrical power conductors and cables, control-voltage electrical power cables, hangers and supports, raceways and boxes, sleeves, identification, wiring devices, lighting control devices, and interior lighting.

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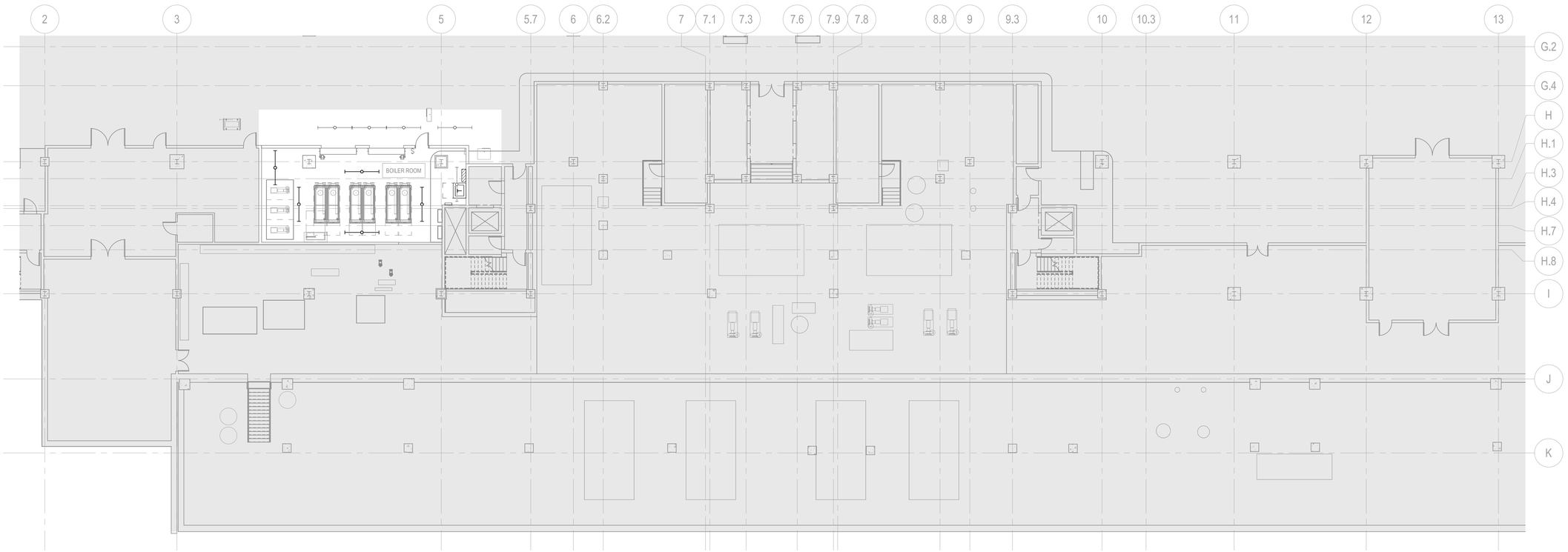
KEYPLAN

NORTH

SHEET TITLE
ELECTRICAL OPTION PLAN

15749.000
PROJECT NUMBER

G1.5
SHEET NUMBER



1 TO-25 OPTION 2 - PARKING LEVEL ELECTRICAL LIGHTING PLAN
SCALE: 3/32" = 1'-0"

OPTION 2
1. Purchase and install new low-voltage electrical power conductors and cables, control-voltage electrical power cables, hangers and supports, raceways and boxes, sleeves, identification, wiring devices, lighting control devices, and interior lighting.

OPTION 3
1. Remove existing equipment wiring, disconnect switches, occupancy sensors, and variable frequency drives that are to be demolished.

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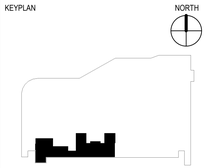
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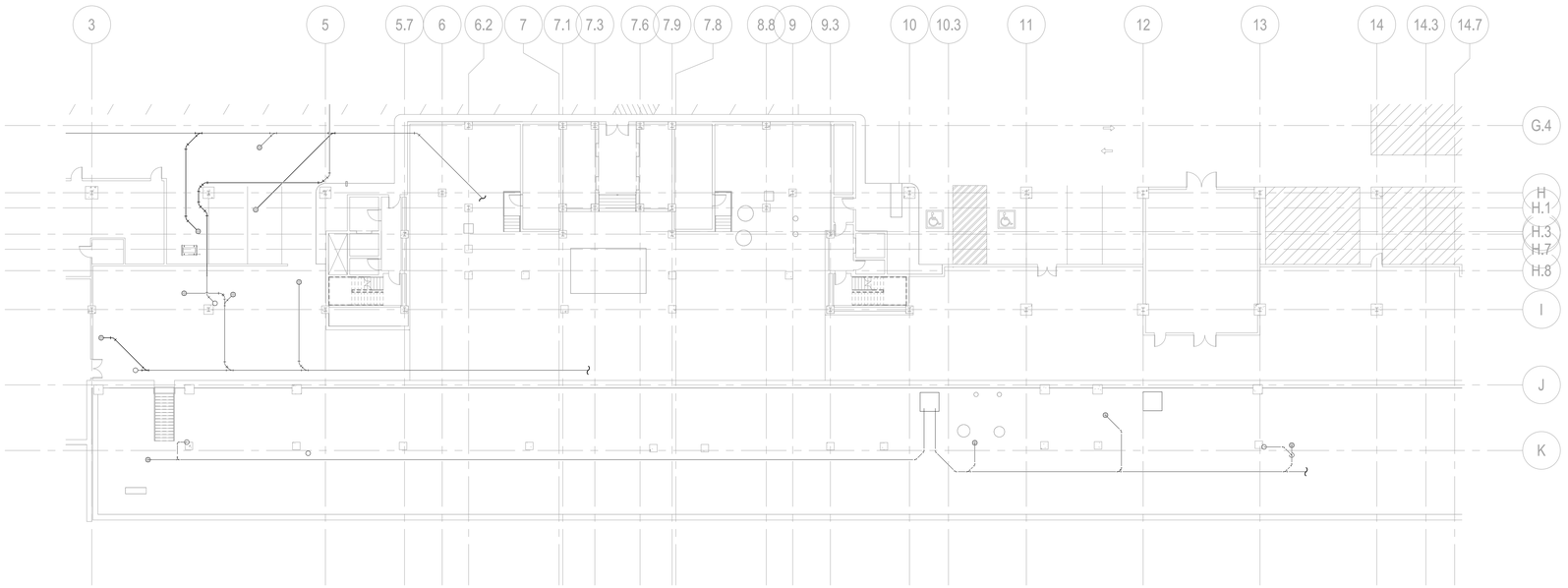
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SHEET TITLE
ELECTRICAL OPTION PLAN

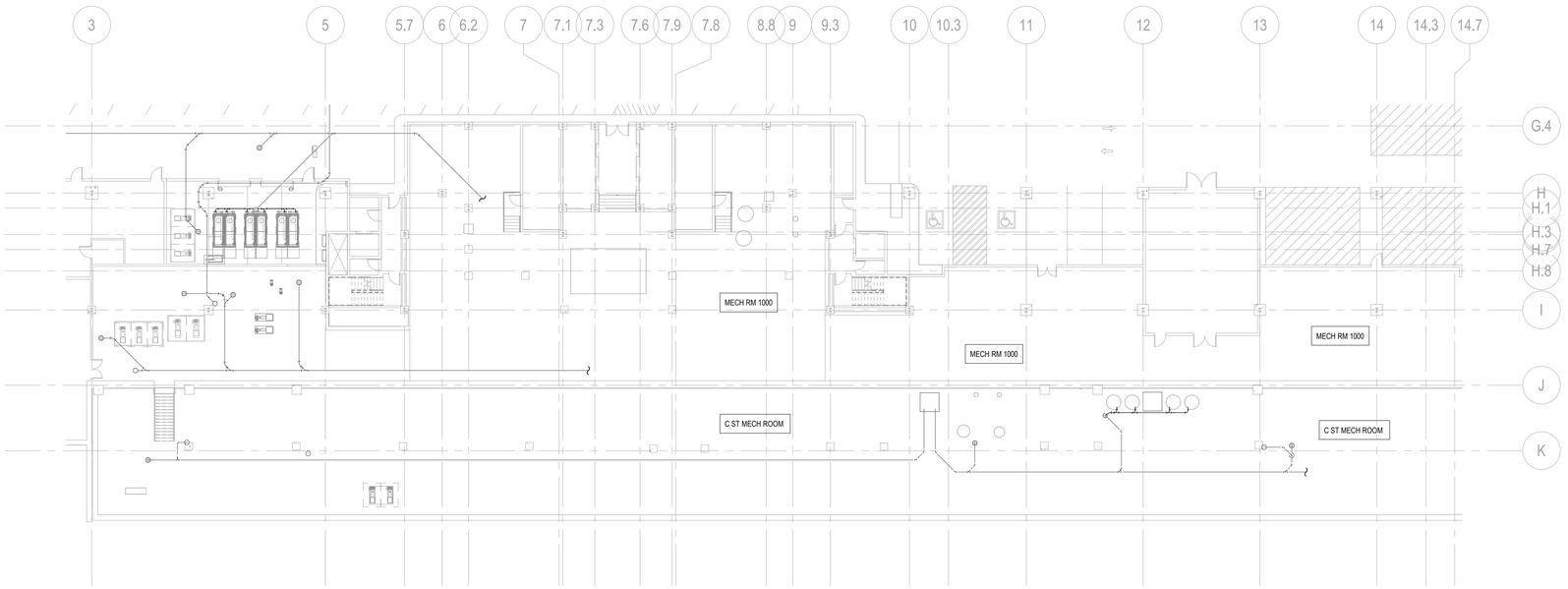
15749.000
PROJECT NUMBER

G1.6
SHEET NUMBER



1 DRAINAGE, WASTE & VENT BASE
SCALE: 1/16" = 1'-0"

BASE: DEMOLISH EXISTING STORM PIPING IN NEW BOILER ROOM. SAW CUT EXISTING SLAB FOR NEW WASTE PIPING AND FLOOR DRAINS. INSTALL NEW WASTE PIPING, FLOOR DRAINS & STORM PIPING.



2 DRAINAGE, WASTE & VENT OPTION 2
SCALE: 1/16" = 1'-0"

OPTION 2: INSTALL CONDENSATE PIPING FOR NEW EQUIPMENT.

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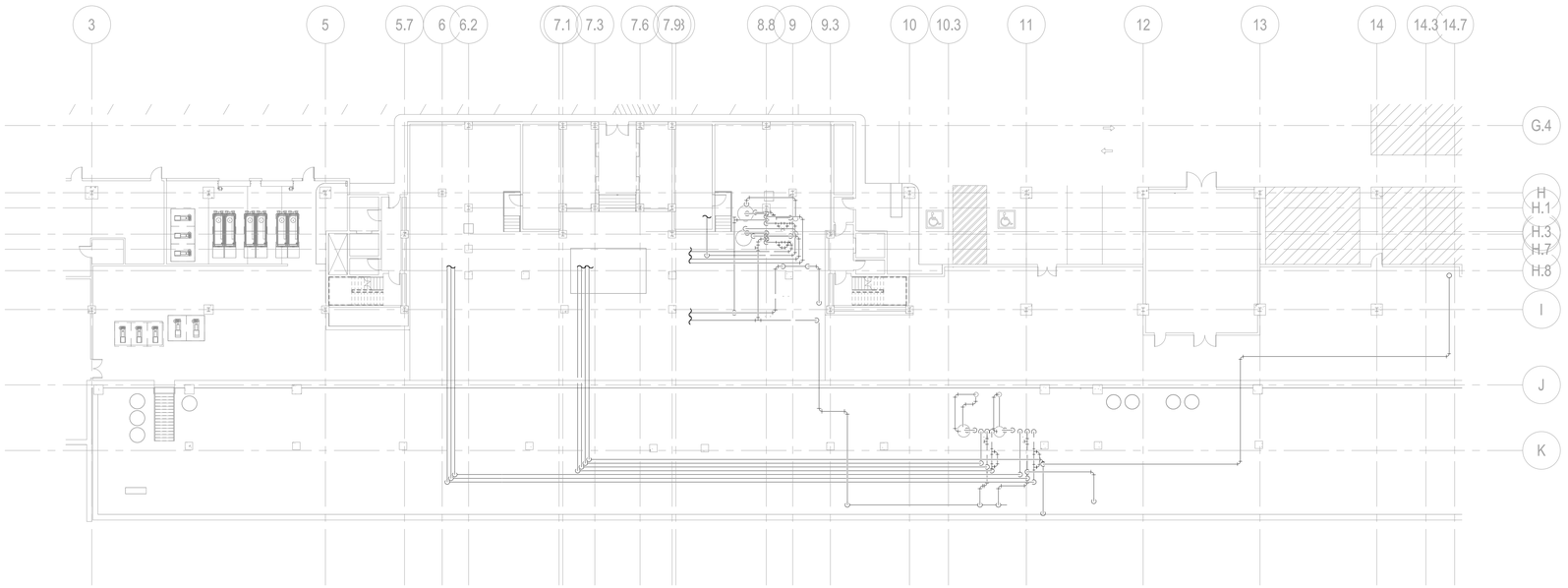
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SHEET TITLE
PLUMBING DRAINAGE, WASTE & VENT OPTION PLAN

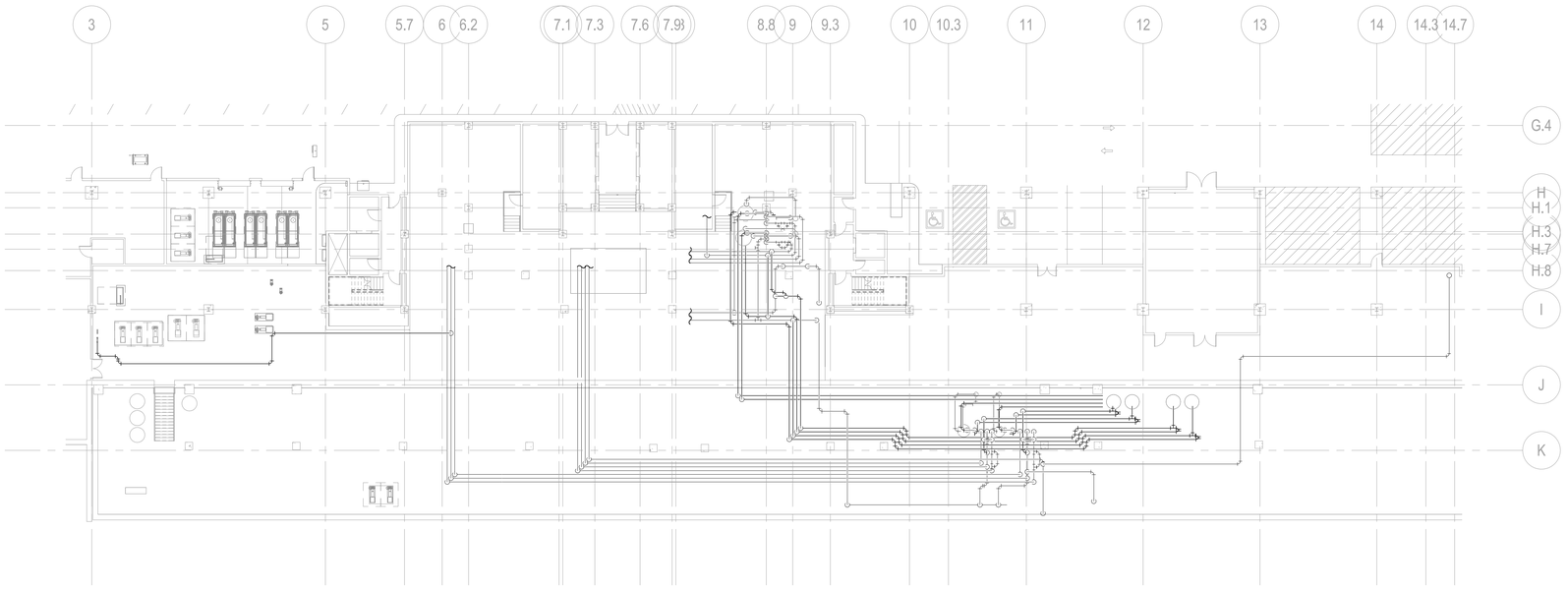
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PROJECT NUMBER

G1.7
SHEET NUMBER



1 WATER OPTION 1
SCALE: 1/16" = 1'-0"

OPTION 1: PURCHASE AND INSTALL DOMESTIC HOT WATER STORAGE TANKS (EQUIPMENT ONLY).



2 WATER OPTION 2
SCALE: 1/16" = 1'-0"

OPTION 2: INSTALL ALL NEW DIV 22 PIPING. PURCHASE AND INSTALL REDUCED PRESSURE ZONE BACKFLOW PREVENTER.

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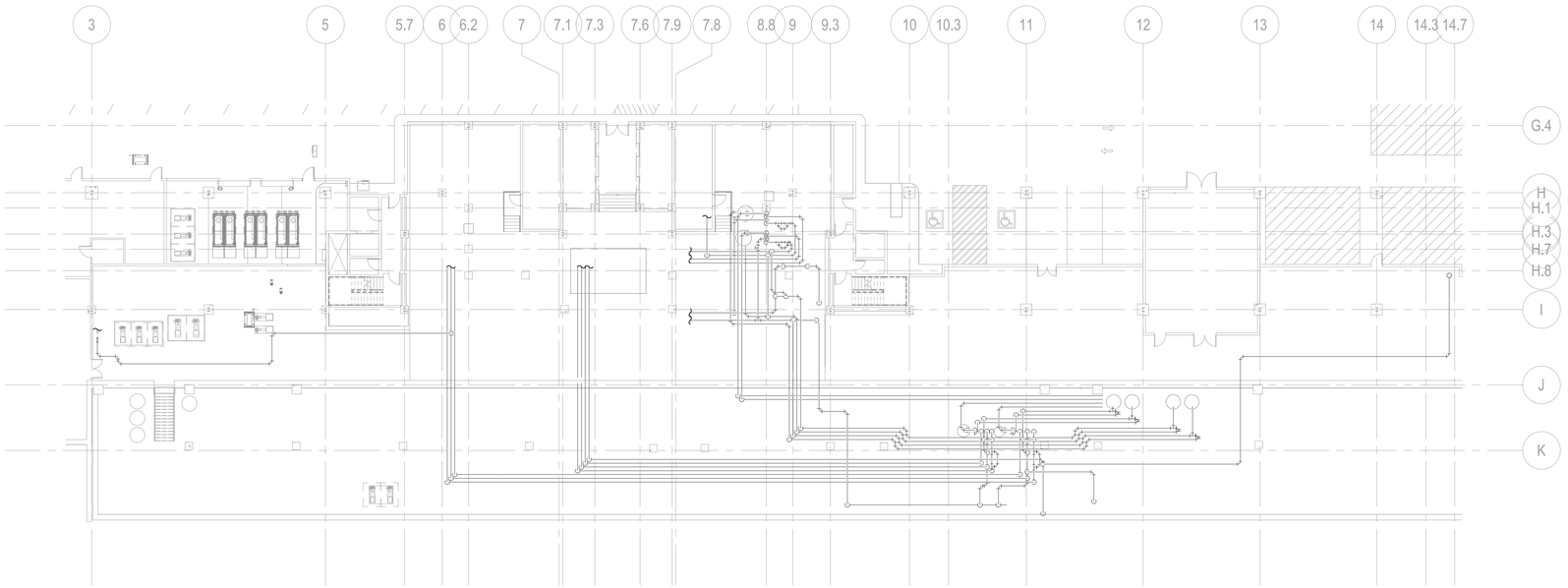
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SHEET TITLE
PLUMBING WATER OPTION PLAN

15749.000
PROJECT NUMBER

G1.8
SHEET NUMBER



1 WATER OPTION 3
SCALE: 1/16" = 1'-0"

OPTION 3: DEMOLISH AND REMOVE EXISTING DOMESTIC WATER STEAM HEAT EXCHANGERS AND CONNECTED HOT WATER PIPING.

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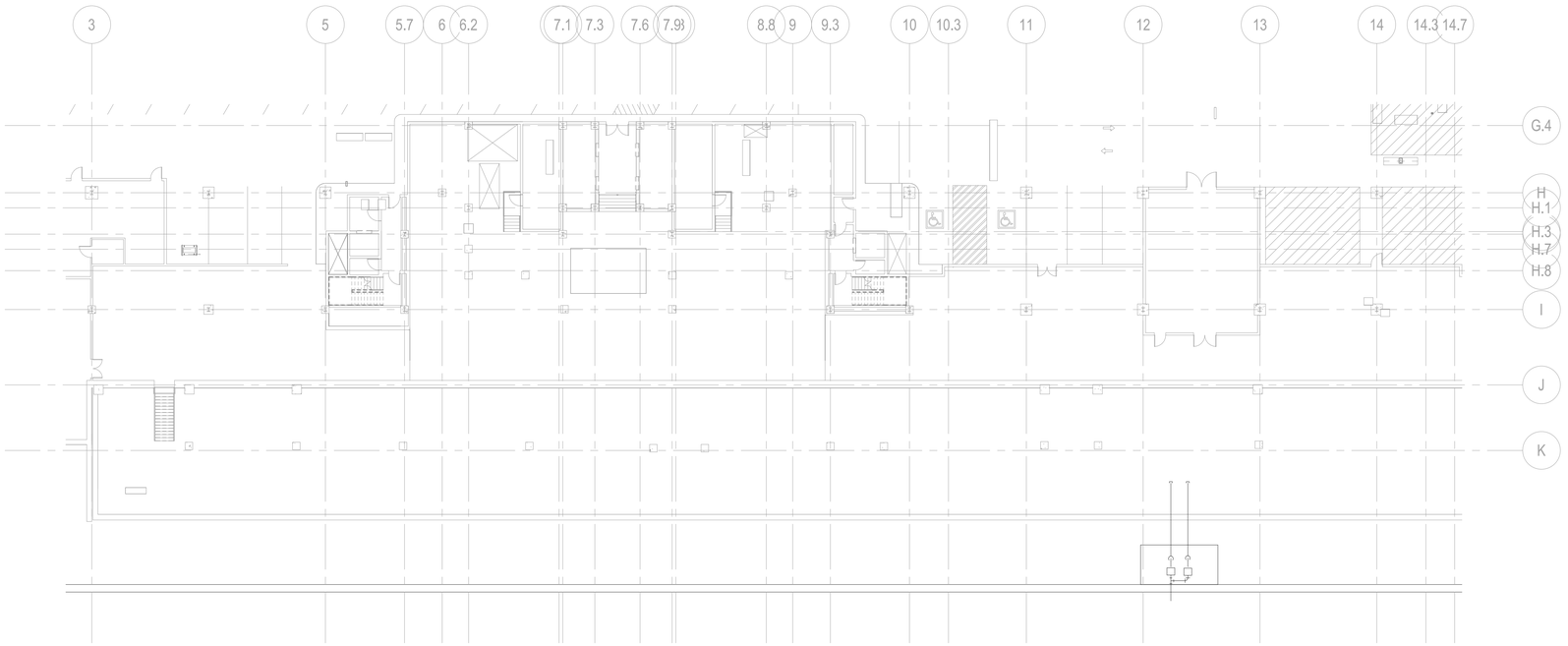
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PLUMBING WATER OPTION PLAN

15749.000
PROJECT NUMBER

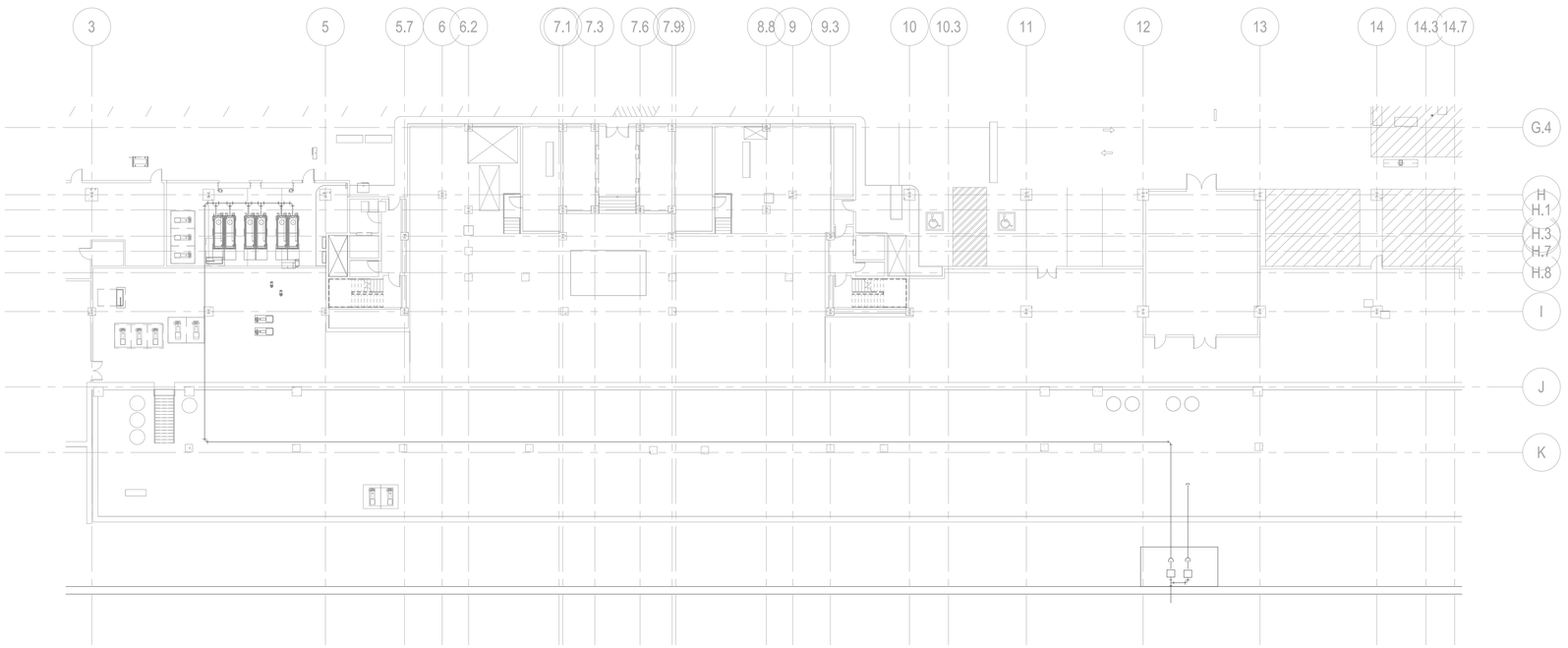
G1.9
SHEET NUMBER

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1 GAS BASE
SCALE: 1/16" = 1'-0"

BASE: ISNTALL NEW GAS SERVICE. CAP OPEN ENDS INSIDE OF BUILDING.



2 GAS OPTION 2
SCALE: 1/16" = 1'-0"

OPTION 2: INSTALL ALL NEW DIV 22 PIPING.

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SHEET TITLE
PLUMBING GAS OPTION PLAN

15749.000
PROJECT NUMBER

G1.10
SHEET NUMBER

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GENERAL NOTES

1. ALL STRUCTURAL WORK SHALL BE COORDINATED WITH ARCHITECTURAL AND MECHANICAL DRAWINGS AND SHALL CONFORM TO THE PROJECT SPECIFICATIONS, INCLUDING THE 2015 INTERNATIONAL BUILDING CODE AND INTERNATIONAL EXISTING BUILDING CODE AS AMENDED BY THE 207 DCMR 12A AND 12B. THE FOLLOWING STANDARDS WERE USED AS SPECIFIED IN THE GOVERNING BUILDING CODE:
   a. ASCE 7-10 MINIMUM DESIGN LOADS (AND ASSOCIATED CRITERIA) FOR BUILDINGS AND OTHER STRUCTURES
   b. ACI 318-14 BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE
   c. AISC 360-10 SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS
2. CONTRACTOR SHALL PROVIDE TEMPORARY SHORING, BRACING, AND SHEETING AND SHALL MAKE SAFE ALL FLOORS, ROOFS, WALLS, AND ADJACENT PROPERTY AS PROJECT CONDITIONS REQUIRE. SHORING AND SHEETING SHALL BE DESIGNED BY A REGISTERED PROFESSIONAL ENGINEER LICENSED IN THE PROJECT JURISDICTION, HIRED BY THE CONTRACTOR, WHO SHALL SUBMIT SHOP DRAWINGS AND CALCULATIONS FOR THE OWNER'S REVIEW.
3. DIMENSIONS AND ELEVATIONS OF EXISTING CONSTRUCTION GIVEN IN STRUCTURAL DRAWINGS ARE BASED ON INFORMATION CONTAINED IN VARIOUS ORIGINAL DESIGN AND CONSTRUCTION DOCUMENTS PROVIDED BY THE OWNER, AND LIMITED FIELD OBSERVATIONS AND MEASUREMENTS. THE CONTRACTOR SHALL VERIFY ALL INFORMATION PERTAINING TO EXISTING CONDITIONS BY ACTUAL MEASUREMENT AND OBSERVATION AT THE SITE. ALL DISCREPANCIES BETWEEN ACTUAL CONDITIONS AND THOSE SHOWN IN THE CONTRACT DOCUMENTS SHALL BE REPORTED TO THE ENGINEER OF RECORD FOR EVALUATION BEFORE THE AFFECTED CONSTRUCTION IS PUT IN PLACE.
4. THE CONTRACT DRAWINGS AND SPECIFICATIONS ARE COMPLEMENTARY. THESE NOTES HIGHLIGHT RATHER THAN REPLACE THE SPECIFICATIONS CONTAINED IN THE PROJECT MANUAL.

CONCRETE

1. ALL CONCRETE WORK SHALL CONFORM TO THE FOLLOWING GOVERNING STANDARDS:
   A. AMERICAN CONCRETE INSTITUTE (ACI) "BUILDING CODE REQUIREMENTS FOR CONCRETE" (ACI 318)
   B. ACI COLLECTION; LATEST EDITION
   C. CONCRETE REINFORCING STEEL INSTITUTE (CRSI) "MANUAL OF STANDARD PRACTICE"
2. ALL CONCRETE COMPOSITE ON METAL DECK SHALL BE LIGHT WEIGHT CONCRETE WITH A MINIMUM COMPRESSIVE STRENGTH OF 4,000 PSI AT 28 DAYS, UNLESS OTHERWISE NOTED.
3. ALL OTHER CONCRETE SHALL BE NORMAL WEIGHT CONCRETE WITH A MINIMUM COMPRESSIVE STRENGTH OF 4,000 PSI AT 28 DAYS, UNLESS OTHERWISE NOTED.
4. CONTRACTOR SHALL SUBMIT A PROJECT-SPECIFIC SIGNED AND SEALED CONCRETE MIX DESIGN FOR EACH CONCRETE TYPE SPECIFIED IN THE CONTRACT DOCUMENTS. WHERE 033000 SPECIFICATIONS HAVE BEEN INCLUDED IN THE CONTRACT DOCUMENTS, REFER TO THAT SPECIFICATION SECTION FOR ENHANCE OF MIX DESIGN REQUIREMENTS (AGGREGATES, ADMIXTURES, W/C RATIO, AIR CONTENT, ETC.)
5. REINFORCING STEEL SHALL BE DEFORMED BARS CONFORMING TO ASTM A615, GRADE 60 OR A775 EPOXY COATED WHEN CALLED OUT ON PLAN. REINFORCING STEEL SHALL BE DETAILED ACCORDING TO THE ACI "DETAILS AND DETAILING OF REINFORCEMENT" (ACI 315).
6. REINFORCING STEEL TO BE WELDED TO CONFORM TO ASTM A706 GRADE 60.
7. WELDED WIRE REINFORCEMENT (W.W.R.) SHALL CONFORM TO ASTM A1064, WITH A MINIMUM YIELD STRENGTH OF 65,000 PSI.
8. COORDINATE SIZE AND LOCATION OF ALL OPENINGS AND PIPE SLEEVES WITH ALL OTHER DISCIPLINES. MINIMUM CONCRETE BETWEEN SLEEVES SHALL BE 6".
9. GENERAL CONTRACTOR SHALL PROVIDE COORDINATED MEP TRADE SUBMITTALS FOR DESIGN TEAM REVIEW OF PENETRATIONS. ALL TRADES SHALL BE OVERLAID INTO ONE SUBMITTAL TO CAPTURE AND EVALUATE ALL PENETRATIONS THROUGH SLABS AND WALLS TOGETHER.
10. ALL GROUT SHALL BE NONSHRINK WITH A MINIMUM COMPRESSIVE STRENGTH OF 5000 PSI.
11. MINIMUM CONCRETE COVER FOR REINFORCING STEEL IN CAST-IN-PLACE NON-PRESTRESSED MEMBERS SHALL BE AS FOLLOWS:
    A. ALL CONCRETE CAST AGAINST AND PERMANENTLY IN CONTACT WITH GROUND: 3"
    B. ALL CONCRETE EXPOSED TO WEATHER OR IN CONTACT WITH GROUND:
       a. 2" (#6 THROUGH #18 BARS)
       b. 1-1/2" (#5 BAR, W31 OR D31 WIRE, AND SMALLER)
    C. NOT EXPOSED TO WEATHER OR IN CONTACT WITH GROUND:
       a. SLABS, JOISTS, AND WALLS:
          - 1-1/2" (#14 THROUGH #18 BARS)
          - 3/4" (#11 BAR AND SMALLER)
       b. BEAMS, COLUMNS, PEDESTALS, AND TENSION TIES (STIRRUPS, TIES, SPIRALS, HOOPS, AND PRIMARY REINFORCEMENT): 1-1/2"
    D. SHEAR WALLS: SEE ELEVATIONS FOR SPECIFIED CONCRETE COVER.
12. SHOP DRAWINGS SHALL BE SUBMITTED TO THE STRUCTURAL ENGINEER FOR REVIEW AND APPROVAL. NO CONCRETE WORK SHALL COMMENCE WITHOUT APPROVED SHOP DRAWINGS.
13. CLEAN AND ROUGHEN TO 1/4" AMPLITUDE ALL EXISTING CONCRETE SURFACES TO RECEIVE NEW CONCRETE PRIOR TO PLACEMENT.
14. SEE OTHER DRAWINGS IN THIS PROJECT FOR SIZE AND LOCATIONS OF EQUIPMENT PADS, INSERTS, AND EMBED ITEMS.
15. REINFORCING DOWELS, WATER STOPS, AND OTHER EMBED ITEMS SHALL BE INSTALLED AND SECURED PRIOR TO CONCRETE PLACEMENT. "WET-SETTING" OF EMBEDDED ITEMS IS NOT PERMITTED.
16. WELDED WIRE REINFORCEMENT IN COMPOSITE CONSTRUCTION SHALL HAVE TENSION SPLICES AND BE ANCHORED AT DISCONTINUOUS EDGES, AND SHALL NOT BE SUBSTITUTED WITH ALTERNATIVE MATERIALS INCLUDING BUT NOT LIMITED TO FIBERS.

STRUCTURAL STEEL

1. ALL STRUCTURAL STEEL WORK SHALL CONFORM TO THE FOLLOWING GOVERNING STANDARDS:
   A. AISC 360 "SPECIFICATIONS FOR STRUCTURAL STEEL BUILDINGS".
   B. AISC 303 "CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES".
   C. AMERICAN WELDING SOCIETY (AWS D1.1) "STRUCTURAL WELDING CODE - STEEL".
   D. RESEARCH COUNCIL ON STRUCTURAL CONNECTIONS (RCSC) "SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH-STRENGTH BOLTS".
2. ALL STRUCTURAL STEEL SHALL CONFORM TO THE FOLLOWING ASTM SPECIFICATIONS:
   A. WIDE FLANGE BEAMS, COLUMNS, AND STRUCTURAL TEES: ASTM A992.
   B. HOLLOW STRUCTURAL SECTIONS: ASTM A500, GRADE C.
   C. STRUCTURAL PIPE SECTIONS: ASTM A53, GRADE B.
   D. CHANNELS, ANGLES, AND PLATES: ASTM A36 UNLESS OTHERWISE NOTED.
   E. BOLTED CONNECTIONS SHALL BE PER ASTM F3125, GRADES ARE TO BE SELECTED AS FOLLOWS:
      a. STANDARD BEAM TO BEAM/GIRDER: ASTM F3125, GRADES A325, F1852, A490 OR F2280 BOLTS IN SNUG-TIGHTENED JOINTS (3/4" DIAMETER MINIMUM WITH HARDENED WASHERS).
   F. ANCHOR RODS: ASTM F1554, GRADE 36.
3. STEEL CONNECTIONS SHALL BE STANDARD AISC FRAMED BEAM CONNECTIONS, AND SHALL BE DESIGNED BY A LICENSED ENGINEER WORKING FOR THE FABRICATOR, WHO SHALL PROVIDE CALCULATIONS, UTILIZING LRFD LOADS AND PROCEDURES.
   A. WHERE CONNECTIONS HAVE BEEN DESIGNED BY A LICENSED ENGINEER, STEEL CONTRACTOR IS RESPONSIBLE FOR INTEGRATING RESULTS OF ALL CALCULATIONS INTO THE SHOP DRAWINGS.
   B. UNLESS OTHERWISE NOTED ON PLAN, PROVIDE CONNECTIONS BASED ON MINIMUM SHEAR CAPACITY REQUIREMENTS IN THE FOLLOWING TABLE WHICH ARE BASED ON AISC SINGLE SHEAR TAB CONNECTIONS.

MINIMUM SHEAR CAPACITY REQUIREMENTS			
BEAM DEPTH (NOMINAL)	MIN. SHEAR CAPACITY ASD (Kips)	MIN. SHEAR CAPACITY LRFD (Kips)	MIN. NUMBER OF BOLT ROWS
8", 10"	16	24	2

   B. REINFORCING IS TO BE PROVIDED AT CONNECTIONS WHERE CUTS REDUCE THE SHEAR OR MOMENT CAPACITY BELOW THAT REQUIRED TO SUSTAIN THE REACTION. FLANGES AND WEBS ARE TO BE REINFORCED WHERE THE LOCAL CAPACITY TO SUSTAIN CONNECTION LOADS ARE INADEQUATE. CUTS OR COPES MAY PREVENT MINIMUM NUMBER OF BOLT ROWS SHOWN ABOVE FROM BEING ACHIEVED, WHICH IS ACCEPTABLE PENDING WRITTEN APPROVAL AND CONFIRMATION THAT MINIMUM SHEAR CAPACITY HAS BEEN MET.
   C. CONNECTIONS SHALL BE DESIGNED FOR SHEAR AND ECCENTRICITY, CONSIDERING THAT THE CONNECTIONS ARE AN EXTENSION OF THE BEAMS AND GIRDERS.
4. MINIMUM WELD SIZE IS 1/4" FILLET UNLESS NOTED OTHERWISE.
5. ALL BEAMS EXCEPT CANTILEVER BEAMS SHALL BE FABRICATED AND INSTALLED WITH NATURAL CAMBER UP. CANTILEVER BEAMS SHALL BE FABRICATED AND INSTALLED SO THAT NATURAL CAMBER RAISES CANTILEVER END.
6. FIELD CUTTING OR BURNING OF STEEL IS PROHIBITED EXCEPT WITH THE EXPRESS WRITTEN APPROVAL OF THE STRUCTURAL ENGINEER OF RECORD (IN WHICH CASE ALL BURNING OF STEEL MUST CONFORM TO THE THERMAL CUTTING REQUIREMENTS OF AISC AND AWS).
7. WELDING SHALL BE PERFORMED BY CERTIFIED, AWS-QUALIFIED WELDERS. WELDING ELECTRODES FOR CARBON STEEL SHALL BE AWS 5.1, CLASS E70XX. FOR ASTM A572 GRADE 50 KSI PLATE USE ELECTRODE E7018 OR APPROVED EQUAL WELDING ELECTRODES FOR ASTM A276 STAINLESS STEEL TYPE 304, SHALL CONFORM TO AWS A5.4 FOR SHIELDED METAL ARC WELDING, ELECTRODE CLASS E308; OR AWS A5.9 FOR GAS METAL ARC WELDING, ELECTRODE CLASS ER308.
8. SHOP PAINT EXPOSED STEEL MEMBERS, STEEL MEMBERS NOT ENCASED IN CONCRETE OR SPRAY FIREPROOFED, AND ALL STEEL MEMBERS AT THE EXTERIOR WALL WITH TNEMEC V10-99 OR APPROVED EQUAL EXCEPT FOR MEMBERS TO BE HOT DIPPED GALVANIZED.
9. SHOP AND ERECTION DRAWINGS SHALL BE SUBMITTED TO THE STRUCTURAL ENGINEER FOR REVIEW AND APPROVAL. NO FABRICATION OF STEEL SHALL COMMENCE WITHOUT APPROVED SHOP DRAWINGS.
10. SHOP DRAWING SUBMITTALS SHALL FOLLOW THE FOLLOWING SEQUENCE (WITH EACH NOT BEING SUBMITTED UNTIL THE PREVIOUS ONE IS APPROVED):
    A. JOB STANDARDS (BASIS OF DESIGN AND REPRESENTATIVE CALCULATIONS FOR VARIOUS CONNECTION TYPES)
    B. ERECTION PLANS
    C. PIECE DETAILS AND PIECE-SPECIFIC CONNECTION CALCULATIONS

CONCRETE BLOCK

1. ALL CONCRETE BLOCK WORK SHALL CONFORM TO THE "NATIONAL CONCRETE MASONRY ASSOCIATION TEK MANUAL FOR THE DESIGN AND CONSTRUCTION OF CONCRETE MASONRY", LATEST EDITION, AND "ACI 530-BUILDING CODE REQUIREMENTS FOR MASONRY STRUCTURES".
2. CONCRETE BLOCK SHALL BE OF LIGHTWEIGHT AGGREGATE AND CONFORM TO THE FOLLOWING STANDARDS: HOLLOW BLOCK: ASTM C90.

NET AREA COMPRESSIVE STRENGTH OF CONCRETE MASONRY UNIT (PSI)	NET AREA COMPRESSIVE STRENGTH OF MASONRY ASSEMBLY, F'm (PSI) USING TYPE S MORTAR
2000	2000

   UNLESS OTHERWISE NOTED ON PLANS AND/OR ELEVATIONS, CONCRETE BLOCK UNIT STRENGTH SHALL BE 2000 PSI MIN. (NOTE: CONCRETE BLOCK WITH UNIT STRENGTH HIGHER THAN 2000 PSI GENERALLY REQUIRES LONGER DELIVERY LEAD TIMES.)
3. ALL MORTAR SHALL BE ASTM C270, TYPE S.
4. ALL GROUT FOR FILLING CELLS SHALL BE ASTM C 476 WITH MINIMUM COMPRESSIVE STRENGTH OF 2000 PSI BUT NOT LESS THAN THE COMPRESSIVE STRENGTH OF THE MASONRY ASSEMBLY, F'm. WHERE GROUT CELLS DO NOT EXCEED 4" IN DIAMETER FINE GROUT SHALL BE USED.
5. ALL BLOCK DIMENSIONS INDICATED ON STRUCTURAL PLANS ARE NOMINAL DIMENSIONS. DESIGN OF WALL REINFORCING ASSUMES CONCRETE MASONRY UNITS THAT ARE 16" LONG AND HAVE TWO CORES/CELLS, RESULTING IN A NOMINAL BAR SPACING OF 8" ON CENTER.
6. ALL CONCRETE BLOCK BELOW GRADE SHALL BE FILLED SOLID WITH GROUT.
7. INSTALL STANDARD WEIGHT LADDER-TYPE JOINT REINFORCEMENT AT 16" ON CENTER (SPACED VERTICALLY).
8. UNLESS NOTED OTHERWISE ALL MASONRY WALLS SHALL BE REINFORCED WITH #4@48" ON CENTER VERTICAL. GROUT ALL REINFORCED CELLS SOLID. PROVIDE DOWELS TO MATCH VERTICAL REINFORCING AT FOUNDATION.
9. PROVIDE CONTINUOUS BOND BEAM WITH 2-#5 CONTINUOUS MINIMUM AT TOPMOST COURSE OF EACH FLOOR LEVEL AND AT ALL TOP OF PARAPET CONDITIONS, TYPICAL THROUGHOUT.
10. ALL CMU WALLS (STRUCTURAL AND NON-STRUCTURAL) SHALL BE PERMANENTLY BRACED TO FLOOR SLABS OR SPANDREL BEAMS AT EACH FLOOR LEVEL. SEE TYPICAL DETAILS FOR BALANCE OF INFORMATION. IF BRACING DETAILS NOT SHOWN, CONTRACTOR TO PROVIDE PREFERRED DETAIL FOR EOR REVIEW.

SPECIAL INSPECTIONS (IBC)

A. INSPECTIONS REQUIRED BY THE LOCAL JURISDICTION SHALL BE PERFORMED BY A TESTING AGENCY PROVIDED BY THE OWNER FOR THE FOLLOWING ITEMS:
   A. INSPECTION OF FABRICATORS (IBC 1704.2.5)
   B. STEEL CONSTRUCTION (IBC 1705.2)
      a. STRUCTURAL STEEL (IBC 1705.2.1)
         1. HIGH STRENGTH BOLTS (AISC 360)

MATERIAL/ACTIVITY	TYPE OF INSPECTION	Y/N	C/P	EXTENT/REFERENCE	AGENT	COMPLETED
GENERAL						
Pre-construction conference	Meeting with parties listed in Section 6 of DOB SPN# to discuss Special Inspection procedures	Y	P	Scheduled by DOB with the Contractor prior to commencement of work	SIER	
EARTHWORK						
Site preparation (building)	Field testing and inspection	N	P	Field Review: IBC 1705.6	SIER	
Fill material (building)	Review submittals, field testing and inspection	N	P	Field Review: IBC 1705.6	SIER	
Fill compaction (building)	In-place density tests, lift thickness	N	C	Field Review: IBC 1705.6	SIER	
Excavation	Field inspection and verification of proper depth	N	P	Field Review: IBC 1705.6	SIER	
Foundation sub-grade	Field inspection of foundation subgrade prior to placement of concrete	N	P	Field Review: IBC 1705.6	SIER	
Sheeting and shoring	H piles and lagging, tie backs.	N	C	IBC 1705.2,1705.7, 1705.8 T1705.7	SIER	
DEEP FOUNDATION ELEMENTS						
Materials	Review product, sizes, and lengths	N	C	Submittal and Field Review: IBC 1705.7, 1705.8 1705.9	SIER	
Test piles	Monitor driving of test piles	N	C	Field Review: IBC 1705.8, 9 or .10	SIER	
Installation	Monitor drilling, placement, plumb, driving of piles, including recording blows per foot, cut off, and tip elevation	N	C	Field Review: IBC 1705.2, 1705.3, 1705.7	SIER	
Load test	Monitor pile load test	N	C	Field Review: IBC 1705.8, 9 or .10	SIER	
Helical Piles	Continuous special inspections shall be performed during installation of helical pile foundations	N	C	IBC 1705.9, 1810.3.1, 1810.4.11	SIER	
CONCRETE						
Materials	Review product supplied versus certificates of compliance and mix design	Y	P	Submittal & Field Review: IBC 1705.3; ACI 318 Ch. 4 and 5; IBC 1904.2, 1910.2, 1903.3	SIER	
Installation of reinforcing steel, including Pre-stressed tendons and anchor bolts as well as welding	Field inspection of placement	N	P	Submittal and Field Review: ACI 318:3.5, 3.5.2, 3.6.6 & Ch. 7 8.1.3 and 21.2.8; AWS D1.4; IBC 1705.3, 1908.5, 1909.1, 1910.4	S	I
Formwork installation	Field inspection	N	P	Field Review: ACI 318: 6.1.1; IBC 1705.3	SIER	
Concreting operations and placement	Field inspection of placement/sampling	Y	C	Field Review: ACI 318: 5.6, 5.8, 5.9-10; ASTM C 172, C 31; IBC 1705.3, 1910.6, 1910.7, 1910.8, 1910.10	SIER	
Concrete curing	Field inspection of curing process	Y	P	Field Review: ACI 318: 5.11-13; IBC 1705.3, 1910.9	SIER	
Concrete strength	Evaluation of concrete strength	Y	P	Laboratory Testing; ACI 318: 6.2; IBC 1705.3	SIER	
Inspect anchors post-installed in hardened concrete members	IBC TABLE 1705.3	N	C	ACI 318: 17.8.2.4	SIER	
PRECAST CONCRETE						
Verify fabrication/quality control procedures	In-plant inspection of fabrication/quality control procedures**	N	P	Submittal or Field Review: IBC 1705.3	SIER	
Erection and installation	Review submittals and as-built assemblies; Field inspection of in-place precast	N	P	Submittal and Field Review: ACI 318: Ch. 16; IBC Table 1705.3	SIER	
MASONRY (Level ___: Building Risk Category __) TYPICAL FOR LEVEL B AND RISK CATEGORY I, II, III						
Materials	Review of products supplied versus certificate of compliance and material submitted	N	P	Submittal & Field Review: ACI 530/ASCE 5; ACI 530.1/ASCE 6; IBC 1705.4, 1708	SIER	
Strength	Testing/review of strength	N	C	Submittal & Field Review: ACI 530/ASCE 5; ACI 530.1/ASCE 6; IBC 1705.4, 2105.2.2, 2105.3	SIER	
Mortar and Grout	Inspection of proportioning and mixing. Placement of mortar only.	N	P	Field Review: IBC 1705.4; ACI 530/ASCE 5; ACI 530.1/ASCE 6	SIER	
Grout placement, including pre-stressing grout	Verification to ensure compliance	N	C	Field Review: IBC 1705.4; ACI 530/ASCE 5; ACI 530.1/ASCE 6	SIER	
Grout space	Verification to ensure compliance	N	P	Field Review: IBC 1705.4; ACI 530/ASCE 5; ACI 530.1/ASCE 6; TMS 602	SIER	
Mortar, grout, and prism specimens	Observe Preparation	N	C	Field Review: IBC 1704.5, ACI 530.1; ASCE 6	SIER	
Reinforcement, pre-stressing tendons, and connections	Inspect condition, size, location, and spacing	N	P	Field Review: IBC 1704.5; ACI 530/ASCE 5; ACI 530.1/ASCE 6	SIER	
Welding of reinforcing bars	Inspection and testing of welds	N	C	Field Review: IBC 1705.4; ACI 530/ASCE 5; ACI530.1/ ASCE 6	SIER	
Pre-stressing force	Verify application and measurement	N	C	Field Review: IBC 1705.4; ACI 530/ASCE 5; ACI530.1/ASCE 6	SIER	
Protection	Inspect procedures for protection during cold and hot weather	N	P	Field Review: IBC 1705.4; ACI 530/ASCE 5;ACI 530.1/ASCE 6	SIER	
Anchorage	Inspection of anchorages	N	P	Field Review: ACI 530.1/ASCE 6, ASCE 6; IBC1705.4; ACI 530/ASCE 5	SIER	
Masonry installation	Inspection of placement of masonry and joints (Periodic after the first 5000 SF.)	N	C	Field Review: ACI 530/ASCE 5; ACI 530.1/ASCE; IBC 1705.4	SIER	
Grouting of pre-stressed tendons	Field inspection	N	C	Field Review: ACI 318: 18.18.4; IBC 1705.3	SIER	
Application of forces for pre-stressed concrete	Field inspection	N	C	Field Review: ACI 318: 18.20; IBC 1705.3	SIER	
STRUCTURAL STEEL		**Y/N**	**C/P**			
Verify fabrication/quality control procedures	In-plant inspection of fabrication/quality control procedures or submit Certificate of Compliance	Y	P	IBC 1704.2.5, IBC 1704.2.5.1, 1704.2.5.2, 1705.2	SIER	
Bolts, nuts, and washers – materials	Material identification markings, Review of Certificate of Compliance	Y	P	Submittal & Field Review: IBC 1705.2.1; IBC 1705.2.2; IBC 1706; ASTM; AISC 360, Section A3.3	SIER	
Bolts, nuts, washers – installation	Inspection of in-place high-strength bolts, snug- tight joints, pre-tensioned and bearing type, and slip critical connections	Y	C	Submittal & Field Review: IBC 1705.2.1, 1705.2.2, AISC 360 Section M2.5	SIER	
Structural steel – materials	Material identification markings and review of Certificate of Compliance	Y	P	Submittal & Field Review: IBC 705.2.1,1705.2.2 1706; ASTM A6, A568	SIER	
Structural steel details – installation	Inspection of member locations, structural details for bracing, connections, stiffening	Y	P	Submittal & Field Review; IBC 1705.2.1,1705.2.2 AISC 360	SIER	
Weld filler materials and welder certification	Review of identification markings, Certificate of Compliance, and welder certifications	Y	P	Submittal & Field Review: ASTM AISC 360 A3.5	SIER	
Welds	Inspection and testing of welds	Y	C	Field Review: IBC 1705.2.2.1; AWS D1.1, D1.3	SIER	
Cold-formed metal deck – materials	Review of identification marking manufacturer's certified test results	N	P	Submittal and Field Review; IBC 1705.2.2; ASTM	SIER	
Cold-formed metal deck – installation	Review laps and welds	N	P	Submittal and Field Review; IBC 1705.2.2; AWS D1.3	SIER	
Cold-formed light frame construction – welds	Review welding operation	N	P	IBC 1705.11.2	SIER	
Cold-form light frame construction wind resistance – screws	Review screw attachment bolting, anchoring hold downs, bracing, diaphragms, struts	N	P	Field Review; IBC 1705.11.2	SIER	
Cold-formed steel trusses spanning 60' or greater	Inspection of temporary and permanent restraints/bracing	N	C	Field review IBC 1705.2.4	SIER	
WOOD						
Verify fabrication/quality control procedures	In-plant inspection of fabrication/quality control procedures** or submit Certificate of Compliance	N	P	Submittal or Field Review; IBC 1704.2.5, 1705.5, 1705.5.2	SIER	
Metal plate connected wood/metal trusses spanning 60' or more	Review approved submittal and installation of restraint/bracing	N	P	Field Review: IBC 1704.2.5, 1705.5, 1705.2	SIER	
Joist Hangers – Materials/Installation	Review manufacturer's material and test standards	N	P	Field Review; IBC 1711, ASTM D 1761	SIER	
High-Load Diaphragms – Installation	Review submittal and as-built assemblies; inspection of sheathing, framing size, nail and staple diameter and length, number of fastener lines, and fastener spacing.	N	C	IBC 1705.5, 1705.5.1	S	I
Wood Shear Walls-installation	Review nailing, bolting, anchoring, fastening. Diaphragms, struts, braces, and hold downs when fasteners are ≤ 4" on center.	N	P	Field Review; IBC 1705.11.1	SIER	
MAIN WIND FORCE RESISTING SYSTEM		**Y/N**	**C/P**			
Wind requirements	Review of the system components and installation for wood construction, cold-formed steel light frame construction, components, and cladding	N	P	Submittal and Field Review: IBC 1609.1.2, 1704.5.2, 1705.111705, 1705.4, 1705.4.1, 1705.4.2, 1710	S	I
SEISMIC FORCE RESISTING SYSTEMS						
Seismic requirements	Review of the designated seismic systems and seismic force resistance systems	N	C	Submittal and Field Review: IBC 1613, 1704.5.1, 1705.11, 1705.12; ASCE 7	SIER	
SMOKE CONTROL						
Special inspection of smoke control sytems	Leakage testing and recording of device location, Pressure difference testing, flow measurement and detection, and control verification	N	P	Field Review: IBC ,1705.18 ,1705.18.1 1705.17.2 1705.16.2	S	I
					S	I
SPRAYED FIRE RESISTIVE MATERIAL FIRE RESISTANT PENETRATIONS; JOINTS, MASTIC AND INTUMESCENT FIRE RESISTANT COATING						
Structural member surface conditions	Field Review of surface conditions prior to application	N	P	AWCI 12-B; IBC 1705.14 1705.14.2	SIER	
Application/thickness/density/bond strength	Field review of application operations, thickness, and density	N	P	ASTM E605, AWCI 12-B; IBC 1705.14.3 1705.14.1, 1705.14.3, 1705.14.4&C 1705.14.5 1705.14.6	SIER	
Mastic & Intumescent Fire Resistant Coating	Field review of application operations and thickness	N	P	AWCI 12-B; IBC 1705.15	SIER	
Fire-resistant penetrations and joints. In high-rise buildings or in buildings assigned to Risk Categgory III or IV.	Field inspection per design	Y	P	IBC 1705.17.1, 1705.17.2; ASTM E2174.	SIER	
EXTERIOR INSULATION AND FINISH SYSTEMS (EIFS)						
Application	Field Review of application/installation	N	P	ASTM E2570, IBC 1705.16	SIER	
SPECIAL CASES						
Alternative Materials and Systems	As requested by Chief Building Official, review system and installation	N	C/P	IBC 1705.1.1	SIER	
INSPECTION AGENTS	**FIRM**			**ADDRESS**		**TELEPHONE**
Special Inspections Engineer of Record	TBD					
Materials and Testing Laboratory	TBD					
Special Inspections Engineer of Record Smoke Control System	TBD					
Additional Agents	N/A					

LEGEND

- EXISTING CONCRETE FOOTING, GRADE BEAM, OR PILE CAP
- WALL OR CONCRETE BEAM BELOW
- EXISTING WALL, BEAM FLOOR, OR FOUNDATION (SEE NOTES FOR MATERIAL)
- EXISTING STEEL COLUMN
- COLUMN ABOVE / BELOW
- HANGER COLUMN ABOVE / BELOW
- EXISTING STEEL BEAM
- STEEL BEAM
- EXISTING BEAM TO BE DEMOLISHED
- CONCRETE ON METAL DECK (SEE SCHEDULE), OPEN ARROW INDICATES SPAN DIRECTION
- SLAB ON GRADE (SEE SCHEDULE)
- STEP IN SLAB
- SLAB SLOPE TRANSITION
- OPENING IN SLAB
- EXISTING OPENING IN EXISTING SLAB
- KEYNOTE
- REVISION
- APPROXIMATE EXTENTS OF TRENCHING IN EXISTING BASEMENT SLAB. SEE TYP. DETAIL ON S-5.1

STANDARD ABBREVIATIONS

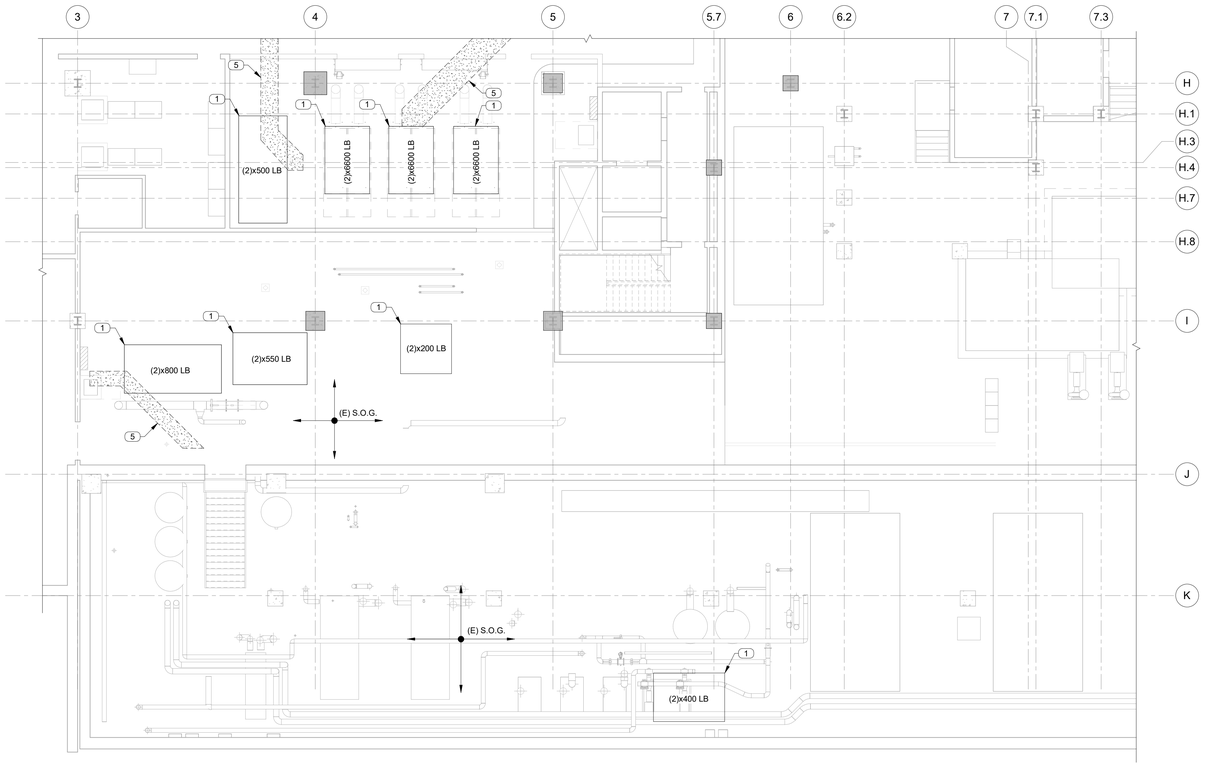
ADD'L	ADDITIONAL	ENGR.	ENGINEER	NO.	NUMBER
ADJ.	ADJACENT	E.O.R.	ENGINEER OF RECORD	N.S.	NEAR SIDE
A/E	DESIGN TEAM OF RECORD	EQ.	EQUAL	N.T.S.	NOT TO SCALE
ALT.	ALTERNATE	E.S.	EACH SIDE	N.W.	NORMAL WEIGHT
ANCH.	ANCHOR	E.W.	EACH WAY	O.C.	ON CENTER
APPROX.	APPROXIMATE/APPROXIMATELY	EXP.	EXPANSION	O.D.	OUTSIDE DIAMETER
ARCH.	ARCHITECT/ARCHITECTURAL	EXT.	EXTERIOR	O.F.	OUTSIDE FACE
BLDG.	BUILDING	FDN.	FOUNDATION	OPNG.	OPENING
BM.	BEAM	FIN.	FINISH	OPP.	OPPOSITE
B.O.	BOTTOM OF	FLR.	FLOOR	PC.	PIECE
BOT.	BOTTOM	FRMG.	FRAMING	P/C	PRECAST
BRG.	BEARING	F.S.	FAR SIDE	PED.	PEDESTAL
BSMT.	BASEMENT	FT.	FEET	PERP.	PERPENDICULAR
CANT.	CANTILEVER	FTG.	FOOTING	PL.	PLATE
CFS	COLD FORMED STEEL	GA.	GAUGE	PLF	POUNDS PER LINEAR FOOT
C.I.P.	CAST IN PLACE	GALV.	GALVANIZED	PREFAB.	PREFABRICATED
C.J.	CONTRACTION JOINT	G.B.	GRADE BEAM	PSF	POUNDS PER SQUARE FOOT
CLG.	CEILING	HDR.	HEADER	PSI	POUNDS PER SQUARE INCH
CLR.	CLEAR	HGR.	HANGER	P-T	POST-TENSIONED
CMU	CONCRETE MASONRY UNIT	HORIZ.	HORIZONTAL	REINF.	REINFORCE(D)/REINFORCEMENT
COL.	COLUMN	H.P.	HIGH POINT	REQ'D	REQUIRED
COMP.	COMPOSITE	HT.	HEIGHT	REV.	REVISION
CONC.	CONCRETE	HVAC	HEATING, VENTILATION, & AIR CONDITIONING	SCHED.	SCHEDULE
CONST.	CONSTRUCTION	I.D.	INSIDE DIAMETER	SECT.	SECTION
CONT.	CONTINUOUS	I.F.	INSIDE FACE	S.I.F.	STEP IN FOOTING
COORD.	COORDINATE/COORDINATION	I.J.	INSULATION JOINT	SLBB	SHORT LEGS BACK-TO-BACK
CONTR.	CONTRACTOR	INFO	INFORMATION	SIM.	SIMILAR
COTR	CONTRACT OFFICER'S TECHNICAL REPRESENTATIVE	INT.	INTERIOR	S.O.G.	SLAB ON GRADE
CTR.	CENTER	JT.	JOINT	SPEC.	SPECIFICATION
DBL.	DOUBLE	K	KIP	SQ.	SQUARE
DEMO	DEMOLITION/DEMOLISH	LB.	POUND	S.S.	STAINLESS STEEL
DIA.	DIAMETER	L.L.	LIVE LOAD	STD.	STANDARD
DIAG.	DIAGONAL	LLBB	LONG LEGS BACK-TO-BACK	STIFF.	STIFFENER
DIM.	DIMENSION	LLH	LONG LEG HORIZONTAL	STL.	STEEL
D.L.	DEAD LOAD	LLV	LONG LEG VERTICAL	SW.	SHORT WAY
DN.	DOWN	L.P.	LOW POINT	SYM.	SYMMETRIC
DTL.	DETAIL	L.W.	LIGHTWEIGHT	T & B	TOP & BOTTOM
DWG(S)	DRAWING(S)	L.W.(S)	LONG WAY	TEMP.	TEMPORARY/TEMPERATURE
DWL.	DOWEL	MAS.	MASONRY	THK.	THICK(NESS)
EA.	EACH	MAX.	MAXIMUM	T.O.	TOP OF
E.F.	EACH FACE	MECH.	MECHANICAL	TR.	TRANSFER
E.J.	EXPANSION JOINT	MEP	MECH., ELECT., PLUMBING, & FIRE PROTECTION	TYP.	TYPICAL
EL.	ELEVATION	MFR.	MANUFACTURER	U.N.O.	UNLESS NOTED OTHERWISE
ELEC.	ELECTRICAL	MIN.	MINIMUM	VERT.	VERTICAL
ELEV.	ELEVATOR	MISC.	MISCELLANEOUS	W/	WITH
EMBED.	EMBEDMENT	M.O.	MASONRY OPENING	W.P	WORK POINT
E.O.	EDGE OF	MPI	MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS	W.W.R.	WELDED WIRE REINFORCEMENT
		N.F.	NEAR FACE	#	NUMBER/SIZE
		N.I.C.	NOT IN CONTRACT	Ø	DIAMETER

STANDARD ABBREVIATIONS FOR EXISTING STRUCTURES

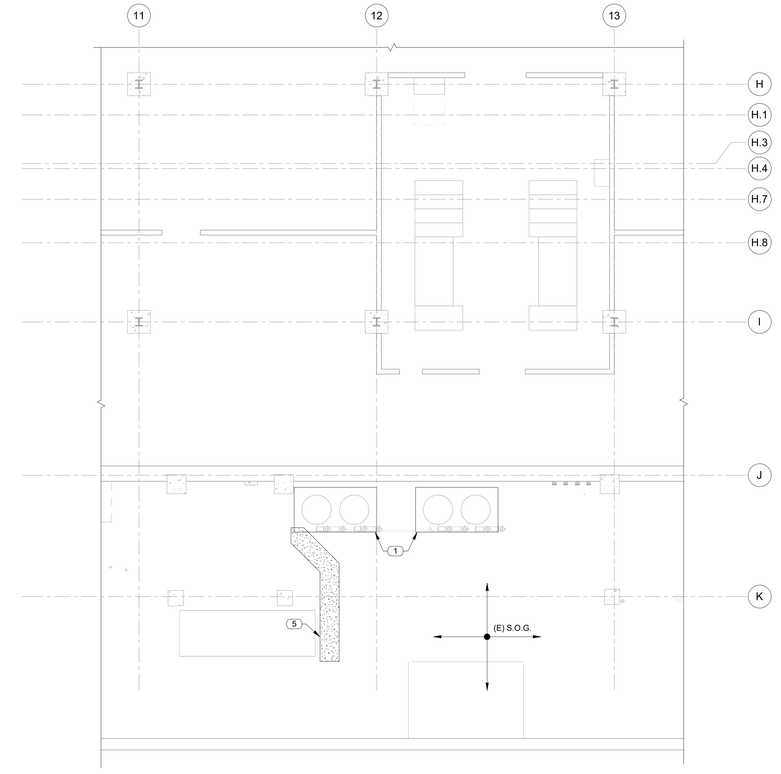
C.I.	CAST IRON
(E)	EXISTING MEMBER OR DIMENSION
EXIST.	EXISTING
T.C.	TERRA COTTA
U-P	UNDERPINNING
V.I.F.	VERIFY IN FIELD

STANDARD ABBREVIATIONS FOR WOOD STRUCTURES

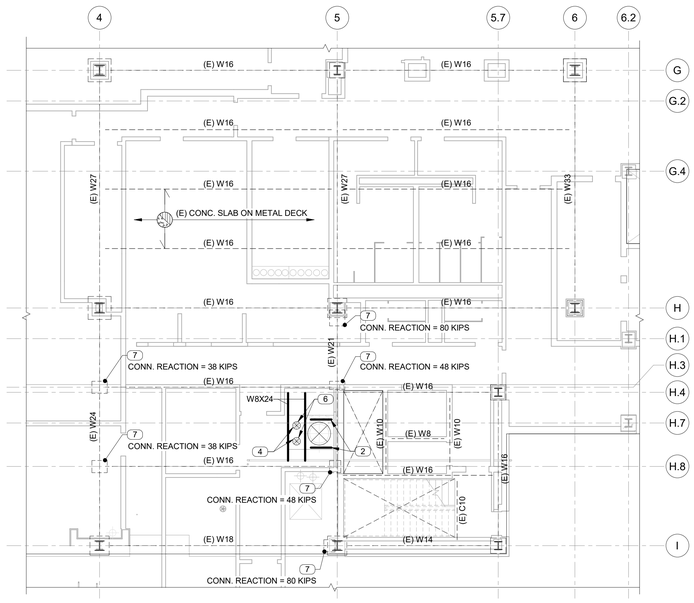
NO.	NUMBER
N.S.	NEAR SIDE
ACT.	ACTUAL
GLULAM	GLUE LAMINATED TIMBER
LSL	LAMINATED STRAND LUMBER
LVL	LAMINATED VENEER LUMBER
NOM.	NOMINAL
PSL	PARALLEL STRAND LUMBER
P.T.	PRESERVATIVE TREATED
R.O



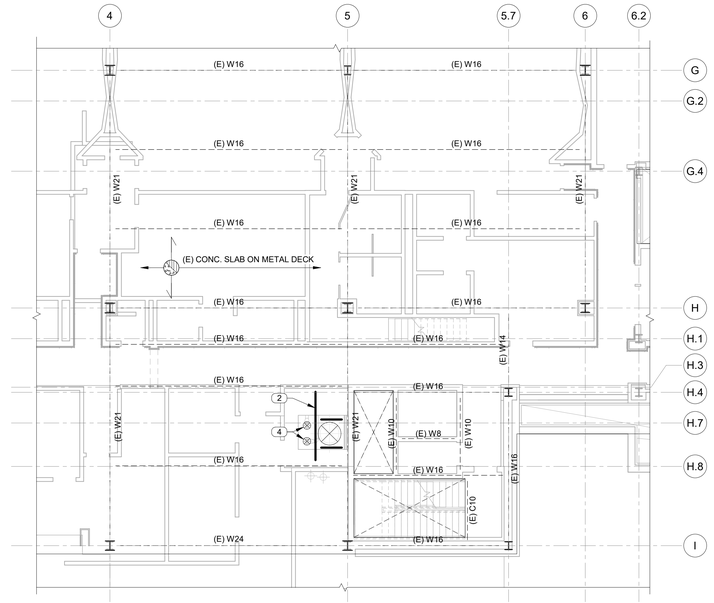
1 S1.1 PARKING LEVEL PARTIAL PLAN
1/8" = 1'-0"



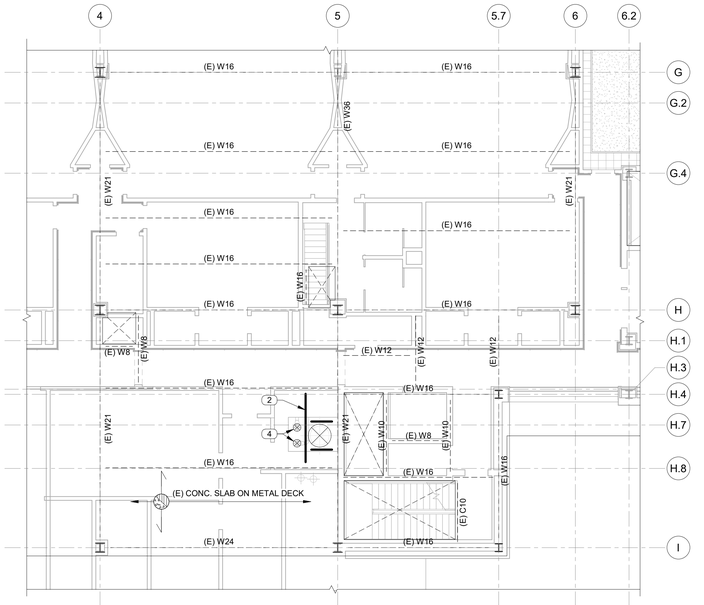
2 S1.1 PARKING LEVEL PARTIAL PLAN
1/8" = 1'-0"



3 S1.1 C STREET LEVEL FLOOR PLAN
1/8" = 1'-0"



4 S1.1 JOHN MARSHALL LEVEL FLOOR PLAN
1/8" = 1'-0"



5 S1.1 INDIANA AVENUE LEVEL FLOOR PLAN
1/8" = 1'-0"

SHEET NOTES

1. ALL DEMOLITION, SHORING, BRACING, AND SEQUENCING IS THE RESPONSABILITY OF THE CONTRACTOR'S ENGINEER. TEMPORARY BRACING, IF NOTED ON STRUCTURAL DRAWINGS, IS INTENDED IN A QUALITATIVE, SCHEMATIC AND NON-COMPREHENSIVE MANNER FOR THE PURPOSES OF OF ASSISTANCE IN COORDINATION AND GENERAL SCOPE AND PRICING.
2. ALL DIMENSIONS OF EXISTING STRUCTURE SHALL BE FIELD VERIFIED BY THE CONTRACTOR. WHERE DIMENSIONS OF NEW ELEMENTS ARE DEPENDENT ON EXISTING GEOMETRY, THE CONTRACTOR SHALL PERFORM FIELD SURVEY FOR VERIFICATION PRIOR TO DEVELOPING SHOP DRAWINGS FOR NEW ELEMENTS.
3. COORDINATE ALL DIMENSIONS AND ELEVATIONS WITH ARCHITECT, MEP, AND ALL OTHER PRIME CONTRACTORS.
4. STEEL LINTELS OR SLEEVES ARE REQUIRED AT ALL MECHANICAL PENETRATIONS THROUGH EXISTING MASONRY WALLS. REFER TO MEP DRAWINGS FOR LOCATIONS.
5. BASIS OF DESIGN CONSTRUCTION SEQUENCING:
   1. CONTRACTOR TO NOTIFY SEOR IF THERE ARE ANY EXISTING STEEL BEAM WEB PENETRATIONS WITHIN 4 FT OF PROPOSED NEW CONNECTION LOCATIONS. LOCATION OF BEAM PENETRATIONS NEAR NEW CONNECTIONS TO BE REVIEWED AND APPROVED BY SEOR PRIOR TO INSTALLATION OF ANY NEW STEEL FRAMING.
   2. ALL NEW FRAMING AT SLAB OPENINGS SHALL BE INSTALLED AND INSPECTED PRIOR TO DEMOLITION OF THE SLAB.
6. BASEMENT SLAB WITHIN FOOTPRINT OF ORIGINAL BUILDING IS A STRUCTURED SLAB 12" THICK WITH BAR REINFORCING, AS OPPOSED TO A SLAB ON GRADE. TRENCHING IN THIS EXISTING SLAB REQUIRES STRUCTURAL PATCHING AND REPAIR PER TYPICAL DETAIL ON S5.1. TRENCHING ONLY PERMITTED WITHIN SLAB; NOT ACCEPTABLE AT EXISTING PILE CAPS AND/OR SPREAD FOOTINGS.COORDINATE WITH EXTENTS SHOWN ON PLAN AND WITH MEP DRAWINGS.

KEYNOTES

MARK	DESCRIPTION
1	NEW 4" THICK CONCRETE EQUIPMENT PAD AT MEP EQUIPMENT. SEE TYPICAL DETAIL ON S5.1 FOR REINFORCING AND MECHANICAL & PLUMBING DRAWINGS FOR SIZE AND LOCATION. MAXIMUM EQUIPMENT WEIGHT NOTED ON PLAN.
2	PROVIDE INFILL STEEL FRAMING PER TYPICAL DETAIL ON S5.1 AT NEW SHAFT OPENINGS THROUGH EXISTING SLAB ON METAL DECK. CONNECT NEW CHANNEL FRAMING TO EXISTING BEAMS.
4	NEW UNFRAMED OPENING IN SLAB ON DECK. ALIGN PENETRATIONS IN AXIS PARALLEL TO DECK SPAN (NORTH-SOUTH). SEE TYPICAL DETAIL ON S5.1 FOR DECK REINFORCING.

MARK	DESCRIPTION
5	APPROXIMATE EXTENTS OF TRENCHING IN STRUCTURED BASEMENT SLAB. SEE TYPICAL DETAIL ON S5.1 AND MEP DRAWINGS FOR EXACT LOCATIONS. DO NOT TRENCH AT EXISTING PILE CAPS OR SPREAD FOOTINGS; V.I.F. LOCATIONS OF EXISTING FOOTINGS.
6	SUPPORT FOR NEW STEEL PIPES AT C STREET LEVEL. PROVIDE PIPE ANCHORS DIRECTLY TO NEW STEEL BEAMS ON EACH SIDE. MAXIMUM ALLOWABLE POINT LOAD OF 9,000 LB AT EACH PIPE, (2) LOCATIONS TOTAL.

MARK	DESCRIPTION
7	EXPOSE EXISTING CONNECTION BETWEEN STEEL BEAM AND GIRDER AND/OR GIRDER AND COLUMN. PROVIDE DOCUMENTATION OF CONNECTION TO EOR FOR EVALUATION. CONTRACTOR TO PROVIDE DELEGATED DESIGN OF CONNECTION REINFORCING FOR REQUIRED SHEAR LOADING. ASSUME EXISTING BOLTED SHEAR CONNECTION TO BE FULLY WELDED.

Plot Date: 7/1/2025 2:48:51 PM CM

Mechanical Room 1000 Heating System Upgrade
500 Indiana Avenue N.W.
Washington, DC 20001

SMITHGROUP
1700 NEW YORK AVENUE NW
SUITE 100
WASHINGTON, DC 20006
202.842.2100
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TYLin

ISSUED FOR	REV	DATE
ISSUE FOR BID		03 JULY 2027

SEALS AND SIGNATURES

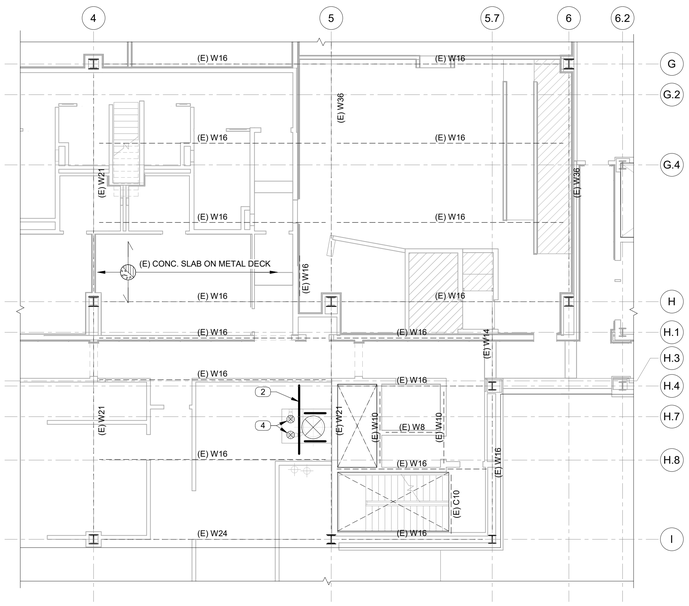
DISTRICT OF COLUMBIA
CHRISTOPHER K. RUTZ
No. PES40000232
STRUCTURAL ENGINEER
PROFESSIONAL ENGINEER
07/03/2025

KEYPLAN NORTH

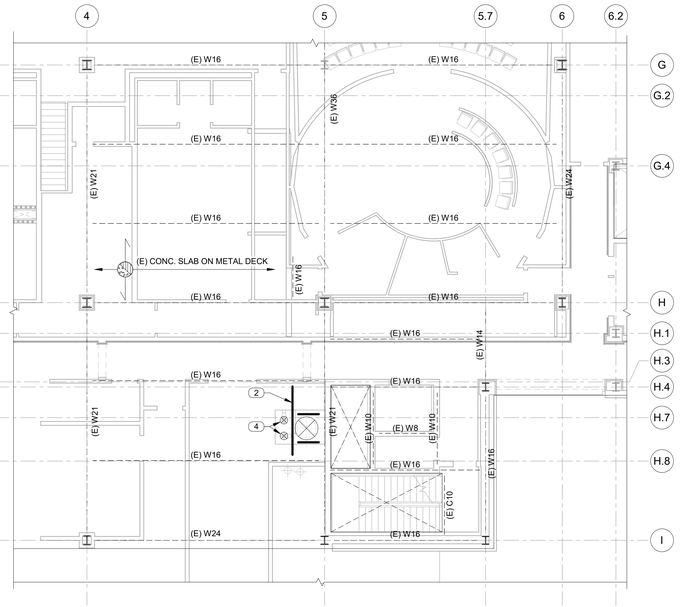
SHEET TITLE
STRUCTURAL FRAMING PART PLANS

3026.0030352
PROJECT NUMBER

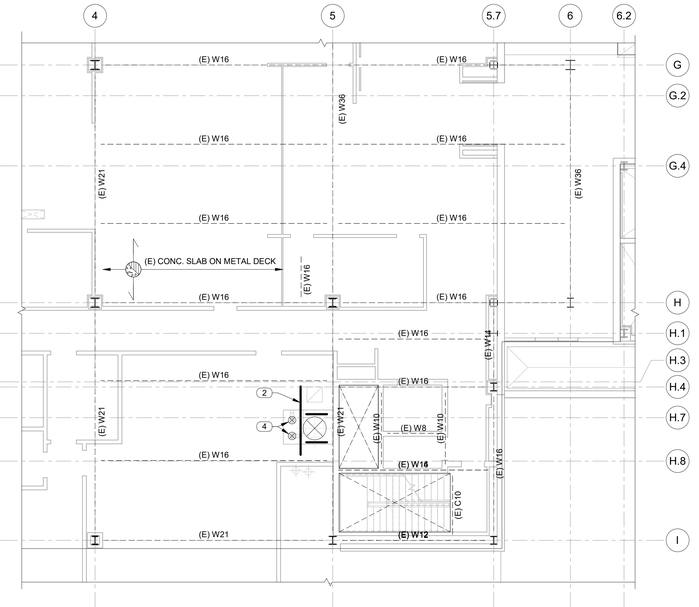
S1.1
SHEET NUMBER



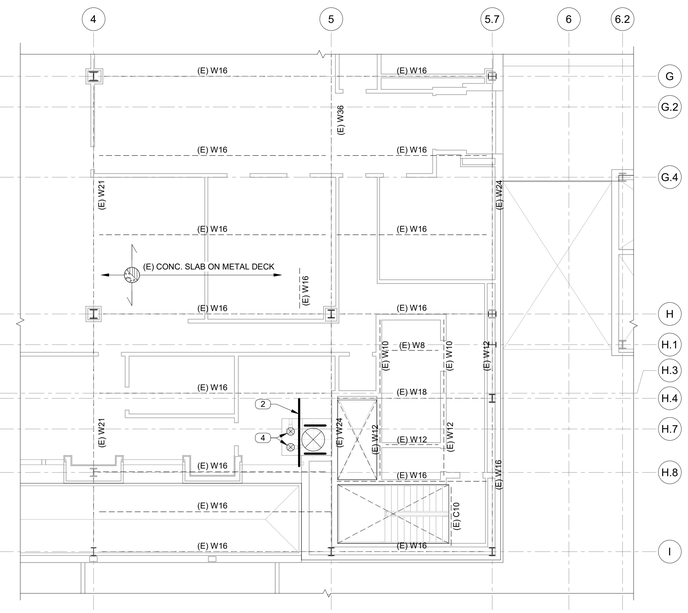
1 S1.2 SECOND LEVEL FLOOR PLAN
1/8" = 1'-0"



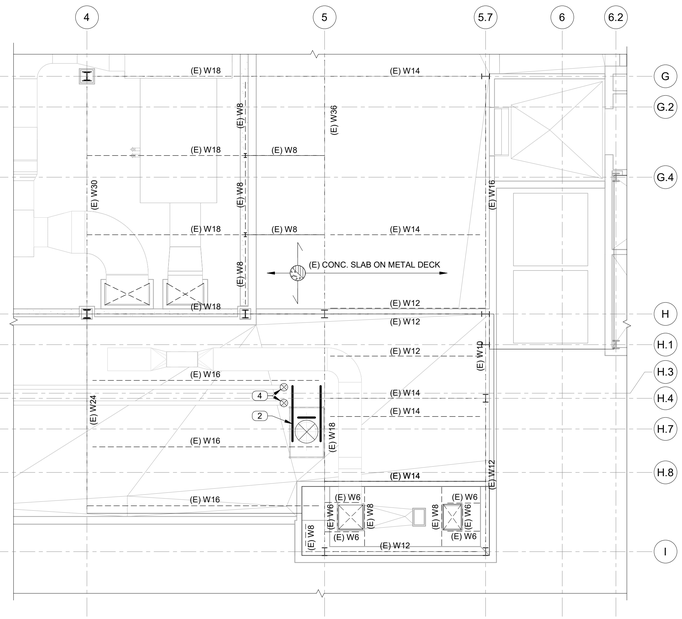
2 S1.2 THIRD LEVEL FLOOR PLAN
1/8" = 1'-0"



3 S1.2 FOURTH LEVEL FLOOR PLAN
1/8" = 1'-0"



4 S1.2 FIFTH LEVEL FLOOR PLAN
1/8" = 1'-0"



5 S1.2 SIXTH LEVEL FLOOR PLAN
1/8" = 1'-0"

SHEET NOTES

1. ALL DEMOLITION, SHORING, BRACING, AND SEQUENCING IS THE RESPONSABILITY OF THE CONTRACTOR'S ENGINEER. TEMPORARY BRACING, IF NOTED ON STRUCTURAL DRAWINGS, IS INTENDED IN A QUALITATIVE, SCHEMATIC AND NON-COMPREHENSIVE MANNER FOR THE PURPOSES OF OF ASSISTANCE IN COORDINATION AND GENERAL SCOPE AND PRICING.
2. ALL DIMENSIONS OF EXISTING STRUCTURE SHALL BE FIELD VERIFIED BY THE CONTRACTOR. WHERE DIMENSIONS OF NEW ELEMENTS ARE DEPENDENT ON EXISTING GEOMETRY, THE CONTRACTOR SHALL PERFORM FIELD SURVEY FOR VERIFICATION PRIOR TO DEVELOPING SHOP DRAWINGS FOR NEW ELEMENTS.
3. COORDINATE ALL DIMENSIONS AND ELEVATIONS WITH ARCHITECT, MEP, AND ALL OTHER PRIME CONTRACTORS.
4. STEEL LINTELS OR SLEEVES ARE REQUIRED AT ALL MECHANICAL PENETRATIONS THROUGH EXISTING MASONRY WALLS. REFER TO MEP DRAWINGS FOR LOCATIONS.
5. BASIS OF DESIGN CONSTRUCTION SEQUENCING:
   1. CONTRACTOR TO NOTIFY SEOR IF THERE ARE ANY EXISTING STEEL BEAM WEB PENETRATIONS WITHIN 4 FT OF PROPOSED NEW CONNECTION LOCATIONS. LOCATION OF BEAM PENETRATIONS NEAR NEW CONNECTIONS TO BE REVIEWED AND APPROVED BY SEOR PRIOR TO INSTALLATION OF ANY NEW STEEL FRAMING.
   2. ALL NEW FRAMING AT SLAB OPENINGS SHALL BE INSTALLED AND INSPECTED PRIOR TO DEMOLITION OF THE SLAB.
6. BASEMENT SLAB WITHIN FOOTPRINT OF ORIGINAL BUILDING IS A STRUCTURED SLAB 12" THICK WITH BAR REINFORCING, AS OPPOSED TO A SLAB ON GRADE. TRENCHING IN THIS EXISTING SLAB REQUIRES STRUCTURAL PATCHING AND REPAIR PER TYPICAL DETAIL ON S5.1. TRENCHING ONLY PERMITTED WITHIN SLAB; NOT ACCEPTABLE AT EXISTING PILE CAPS AND/OR SPREAD FOOTINGS.COORDINATE WITH EXTENTS SHOWN ON PLAN AND WITH MEP DRAWINGS.

KEYNOTES

MARK	DESCRIPTION
2	PROVIDE INFILL STEEL FRAMING PER TYPICAL DETAIL ON S5.1 AT NEW SHAFT OPENINGS THROUGH EXISTING SLAB ON METAL DECK. CONNECT NEW CHANNEL FRAMING TO EXISTING BEAMS.
4	NEW UNFRAMED OPENING IN SLAB ON DECK. ALIGN PENETRATIONS IN AXIS PARALLEL TO DECK SPAN (NORTH-SOUTH). SEE TYPICAL DETAIL ON S5.1 FOR DECK REINFORCING.

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SEALS AND SIGNATURES

DISTRICT OF COLUMBIA
CHRISTOPHER K. RUIZ
No. PES40000232
STRUCTURAL ENGINEER
PROFESSIONAL ENGINEER
Christopher K Ruiz
7/1/2025

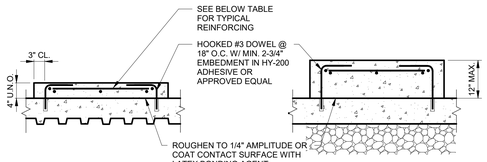
KEYPLAN NORTH

SHEET TITLE
STRUCTURAL FRAMING PART PLANS

PROJECT NUMBER 3026.0030352

SHEET NUMBER S1.2

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AT SUPPORTED SLAB AT SLAB ON GRADE

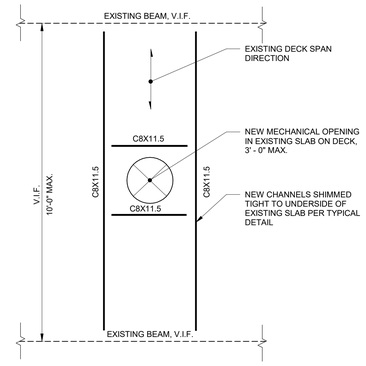
EQUIPMENT PAD TEMPERATURE AND SHRINKAGE REINFORCING	
PAD THICKNESS	REINFORCING
4"-5"	#3 @ 12" O.C. EACH WAY
6"-9"	#4 @ 12" O.C. EACH WAY
10"-12"	#5 @ 12" O.C. EACH WAY

NOTES:

1. FOR SIZE AND LOCATION SEE ARCHITECTURAL AND MECHANICAL DRAWINGS.
2. CONCRETE FOR PADS SHALL BE NORMAL WEIGHT WITH f'c = 4,000 PSI.

TYPICAL EQUIPMENT PAD

N.T.S.

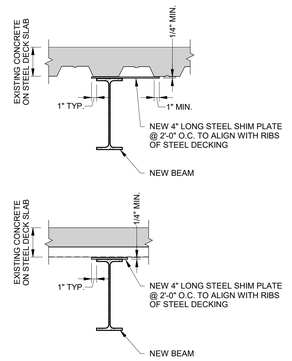


NOTES:

1. COORDINATE REQUIRED MECHANICAL OPENING PENETRATIONS WITH MEP AND ARCHITECTURAL DRAWINGS

TYPICAL DETAIL FRAMING OUT NEW MEP OPENING IN EXISTING SLAB ON DECK

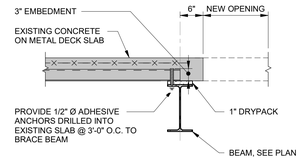
N.T.S.



NOTE: TACK WELD NEW SHIM PLATE TO BEAM AND STEEL DECK

TYPICAL BEAM AND SHIM PLATE BELOW EXISTING METAL DECK SLAB

N.T.S.

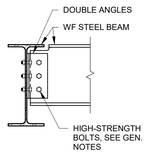


NOTES:

1. EITHER DRYPACK OR STEEL SHIM MAY BE PROVIDED PER CONTRACTOR'S OPTION.
2. PROVIDE ANCHORS ADJACENT TO ALL SLAB EDGES.

TYPICAL DETAIL OF BEAM DRYPACKED BELOW EXISTING SLAB AT NEW OPENING

N.T.S.



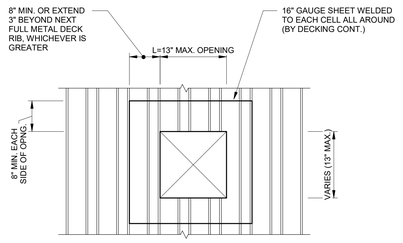
WF BEAM TO WF BEAM

NOTES:

1. CONNECTION DETAILS SHOWN ABOVE ARE SCHEMATIC ONLY. THE CONTRACTOR MAY SUBMIT ALTERNATE DETAILS FROM THOSE SHOWN ABOVE, BUT IN ANY CASE THE CONTRACTOR IS RESPONSIBLE FOR PRODUCING STEEL SHOP DRAWINGS IN ACCORDANCE WITH THE PROJECT GENERAL NOTES AND AISC GUIDELINES. CALCULATIONS SHALL BE SUBMITTED AS REQUIRED IN THE GENERAL NOTES AND ELSEWHERE IN THE CONTRACT DOCUMENTS.
2. THE CONTRACTOR SHALL DETAIL THE PROJECT CONNECTIONS FOR THE LOADS AS INDICATED IN THE CONTRACT DOCUMENTS, PER AISC GUIDELINES. THE SCHEMATIC DETAILS ABOVE ARE NOT SUGGESTIVE OF SPECIFIC CAPACITIES. THE NUMBER AND SIZE OF BOLTS, SIZE AND LENGTH OF WELDS, AND SIZE OF STEEL PIECES MUST BE DETERMINED PER AISC GUIDELINES AND THE CONTRACT DOCUMENTS.
3. SEE GENERAL NOTES FOR REQUIRED CAPACITY AT CONNECTIONS.

TYPICAL SUGGESTED SHEAR CONNECTIONS AT GRAVITY LOADS ONLY

N.T.S.



NO REINF. REQUIRED WHERE "L" IS 2" OR LESS IN DIRECTION PERPENDICULAR TO DECK.

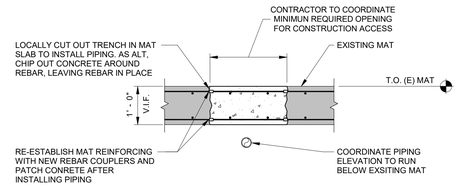
FOR OPENINGS UP TO 13" PERPENDICULAR TO DECK

NOTES:

1. SEE MECHANICAL AND ARCHITECTURAL DRAWINGS FOR OPENING SIZE AND LOCATION.
2. WHERE POSSIBLE, EXTEND DECK CONTINUOUSLY OVER OPENING, REINFORCE AND CUT DECK WHEN OPENING IS REQUIRED.
3. FOR MULTIPLE PENETRATIONS, ALIGN IN AXIS PARALLEL TO DECK SPAN. PROVIDE MIN 12" CLEAR BETWEEN ADJACENT PENETRATIONS.

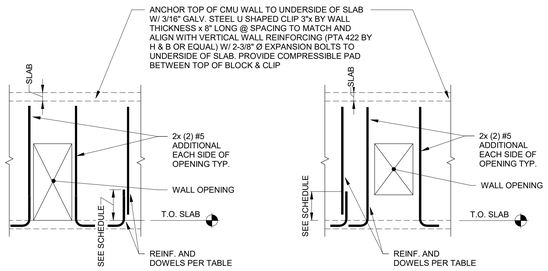
TYPICAL REINFORCEMENT FOR UNFRAMED OPENINGS IN ROOF DECK

N.T.S.



TYPICAL TRENCHING AT EXISTING MAT SLAB

N.T.S.

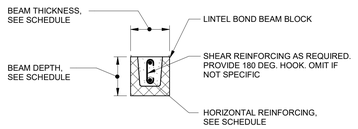


NOTE: PROVIDE LINTELS AS REQUIRED OVER WALL OPENINGS.

INTERIOR WALLS				
NOMINAL CMU THICKNESS	VERTICAL REBAR	HORIZONTAL REBAR	MAXIMUM HEIGHT (FT)	DOWELS
8"	#4 @ 48"	9 GAGE LADDER REINFORCING @ 16" O.C.	27'-7"	SAME AS VERTICAL BARS

TYPICAL REINFORCING FOR NON-BEARING MASONRY WALLS (ELEVATION)

N.T.S.



CMU BOND BEAM SCHEDULE				
LENGTH	BEAM THICKNESS	BEAM DEPTH	HORIZONTAL REINF.	SHEAR REINF.
0'-0" - 4'-0"	6"	8" (1 COURSE HIGH)	1-#5	
4'-8" - 8-0"	8"	8" (1 COURSE HIGH)	2-#5	

NOTES:

1. ALL CMU BOND BEAM BEAMS TO BE GROUTED SOLID FOR FULL LENGTH OF BEAM.
2. ALL OTHER (NON-SPANNING) BOND BEAMS TO BE SINGLE COURSE WITH 2-#4 HORIZONTAL REINFORCING.
3. VERTICAL PLACEMENT OF HORIZONTAL REINFORCEMENT IN ALL BOND BEAMS SHALL BE 3" FROM THE BOTTOM OF THE BEAM TO CENTER OF BAR, U.N.O. LINTEL REINFORCEMENT SHALL BE SUPPORTED BY WIRE CHAIRS.
4. CLEAR DISTANCE BETWEEN PARALLEL BARS SHALL NOT BE LESS THAN THE NOMINAL DIAMETER OF THE BARS OR 1", WHICHEVER IS GREATER.

CMU BOND BEAM LINTEL

N.T.S.

Author

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SEALS AND SIGNATURES

DISTRICT OF COLUMBIA · CHRISTOPHER K. RUIZ · No. PES40000232 · STRUCTURAL ENGINEER · PROFESSIONAL ENGINEER · 7/1/2025

SHEET TITLE

STRUCTURAL TYPICAL DETAILS

3026.0030352

PROJECT NUMBER

S5.1

SHEET NUMBER

ARCHITECTURAL ABBREVIATIONS

A	AB	ANCHOR BOLT
	ACP	ACOUSTICAL CEILING PANEL
	ACS PNL	ACCESS PANEL
	ACT	ACOUSTICAL CEILING TILE
	AD	AREA DRAIN
	ADDL	ADDITIONAL
	ADH	ADHESIVE
	ADJ	ADJUSTABLE
	ADJ	ADJACENT
	AFF	ABOVE FINISH FLOOR
	AFG	ABOVE FINISH GRADE
	AFS	ABOVE FINISH SLAB
	AGGR	AGGREGATE
	ALT	ALTERNATE
	ALUM	ALUMINIM
	ANOD	ANODIZED
	APPROX	APPROXIMATE(LY)
	ARCH	ARCHITECT(URAL)
	AS	ADJUSTABLE SHELF
	ASPH	ASPHALT
	AVG	AVERAGE
	AWF	ACOUSTICAL WALL FABRIC
	AWP	ACOUSTICAL WALL PANEL
B	B	BASE
	BB	BULLETIN BOARD
	BD	BOARD
	BFC	BAFFLE CEILING
	BITUM	BITUMINOUS
	BLDG	BUILDING
	BM	BENCHMARK
	BOS	BOTTOM OF STEEL
	BOT	BOTTOM
	BRG	BEARING
	BSMT	BASEMENT
	BTWN	BETWEEN
	BUR	BUILT UP ROOFING SYSTEM
C	CAB	CABINET
	CB	CATCH BASIN
	CCR	CARD CONTROL READER
	CCT	CUBICLE CURTAIN TRACK
	CCTV	CLOSED CIRUIT TELEVISION
	CEM	CEMENT, CEMENTITIOUS
	CER	CERAMIC
	CFCI	CONTRACTOR FURNISHED CONTRACTOR INSTALLED
	CG	CORNER GUARD
	CI	CAST IRON
	CJ	CONTROL JOINT
	CL	CENTER LINE
	CLG	CEILING
	CLR	CLEAR
	CMU	CONCRETE MASONRY
	CNTR	COUNTER
	COL	COLUMN
	CONC	CONCRETE
	CONF	CONFERENCE
	CONN	CONNECTION
	CONSTR	CONSTRUCTION
	CONT	CONTINUOUS
	CONTR	CONTRACTOR
	CORR	CORRUGATED
	CPT	CARPET
	CRK	CORK
	CSK	COUNTERSUNK
	CSP	COMBINATION STANDPIPE
	CSWK	CASEWORK
	CU	CUBIC
D	D	DEPTH
	DBL	DOUBLE
	DBL ACT	DOUBLE ACTING
	DEG	DEGREE
	DEMO	DEMOLISH
	DEPT	DEPARTMENT
	DET	DETAIL
	DF	DRINKING FOUNTAIN
	DIA	DIAMETER
	DIAG	DIAGONAL
	DIFF	DIFFUSER
	DIM	DIMENSION
	DIM PT	DIMENSION POINT
	DISP	DISPENSER
	DIST	DISTANCE
	DN	DOWN
	DR	DRAIN
	DS	DOWNSPOUT
	DSP	DRY STANDPIPE
	DW	DISHWASHER
	DWG	DRAWING
	DWGS	DRAWINGS
E	(E)	EXISTING
	EA	EACH
	EDR	EQUPMENT DRAWING
	EG	EDGE GUARD
	EIFS	EXTERIOR INSULATION FINISH SYSTEM
	EL	ELEVATION
	ELAST	ELASTOMERIC
	ELEC	ELECTRICAL
	ELEV	ELEVATOR
	EMER	EMERGENCY
	ENCL	ENCLOSURE
	ENGR	ENGINEER
	EOS	EDGE OF SLAB
	EP	ELECTRICAL PANEL
	EPB	ELECTRICAL PANEL BOARD
	EPD	ENVIRONMENTAL PRODUCT DECLARATION
	EPDM	ETHYLENE PROPYLENE DIENE MONOMER
	EPX	EPOXY
	EQ	EQUAL
	EQL SO	EQUALLY SPACED
	EQUIP	EQUIPMENT
	EQUIV	EQUIVALENT
	ER	EPOXY RESIN
	ESCAL	ESCALATOR
	EST	ESTIMATE(D)
	ETR	EXISTING TO REMAIN
	EWC	ELECTRIC WATER COOLER
	EXC	EXCAVATED
	EXH	EXHAUST
	EXP	EXPANSION
	EXP JT	EXPANSION JOINT
	EXT	EXTERIOR
F	F/F	FACE TO FACE
	FA	FIRE ALARM
	FACP	FIRE ALARM CONTROL PANEL
	FAS	FIRE SLARM STATION
	FB	FLAT BAR
	FCU	FAN COIL UNIT
	FD	FLOOR DRAIN
	FDC	FIRE DEPARTMENT CONNECTION
	FDN	FOUNDATION
	FE	FIRE EXTINGUISHER
	FEC	FIRE EXTINGUISHER CABINET
	FF	FINISH FACE
	FF&E	FURNITURE FIXTURES AND EQUIPMENT
	FH/FEC	FIRE HOSE/FIRE EXTINGUISHER CABINET
	FHC	FIRE HOSE CABINET
	FHMS	FLAT HEAD MACHINE SCREW
	FHWS	FLAT HEAD WOOD SCREW
	FHY	FIRE HYDRANT
	FLAM	FLAMMABLE
	FLASH	FLASHING
	FLEX	FLEXIBLE
	FLUOR	FLUORESCENT
	FO	FACE OF
	FRP	FIBERGLASS REINFORCED PLASTIC
	FSB	FOLDING SHOWER BENCH
	FSTNR	FASTNER
	FT	FOOT, FEET
	FTG	FOOTING
	FURN	FURNITURE
	FXTR	FIXTURE
G	G	GAS
	GA	GAUGE, GAGE
	GAL	GALLON
	GALV	GALVANIZED
	GB	GRAB BAR
	GC	GENERAL CONTRACTOR
	GFRC	GLASS FIBER REINFORCED CONCRETE
	GFRG	GLASS FIBER REINFORCED GYPSUM
	GL	GLASS
	GLU LAM	GLUE LAMINATED
	GLZ	GLAZING
	GR	GRADE OR GRADING
	GVL	GRAVEL
	GYP	GYPSUM
	GYP BD	GYPSUM BOARD
	GYP PLAS	GYPSUM PLASTER
H	H	HIGH
	HB	HOSE BIBB
	HC	HOLLOW CORE
	HD	HEAD
	HDBD	HARDBOARD
	HDW	HARDWARE
	HDWD	HARDWOOD
	HGT	HEIGHT
	HM	HOLLOW METAL
	HNDRL	HANDRAIL
	HORIZ	HORIZONTAL
	HPC	HIGH PERFORMANCE COATING
	HPD	HEALTH PRODUCT DECLARATION
	HPT	HIGH POINT
	HR	HOUR
	HVAC	HEATING-VENTILATION-AIR CONDITIONING
I	ICE	ICE MACHINE
	ID	INSIDE DIAMETER
	IN	INCH
	INCAND	INCANDESCENT
	INCL	INCLUDE, INCLUDING
	INFO	INFORMATION
	INSUL	INSULATION
	INTR	INTERIOR
	INV	INVERT
	IVT	INTRAVENOUS TRACK
J	JAN	JANITOR
	JST	JOIST
	JT	JOINT
K	KG	KILOGRAM
	KIT	KITCHEN
	KPL	KICK PLATE
	KS	KNEE SPACE
L	L	LENGTH, LONG
	LAB	LABORATORY
	LAM	LAMINATE, LAMINATION
	LAV	LAVATORY
	LB	POUND
	LED	LIGHT EMITTING DIODE
	LF	LINEAR FOOT
	LG	LENGTH
	LIN	LINEAR
	LL	LEAD LINED
	LPT	LOW POINT
	LT	LIGHT
	LT WT	LIGHT WEIGHT
	LTG	LIGHTING
	LVR	LOUVER
M	M	METERS
	MACH	MACHINE
	MATL	MATERIAL
	MATV	MASTER ANTENNA TELEVISION SYSTEM
	MAX	MAXIMUM
	MB	MACHINE BOLT
	MC	MEDICINE CABINET
	MDO	MEDIUM DENSITY OVERLAY
	MECH	MECHANICAL
	MED	MEDIUM
	MEMB	MEMBRANE
	MFR	MANUFACTURER
	MH	MANHOLD
	MICRO	MICROWAVE
	MIN	MINIMUM
	MISC	MISCELLANEOUS
	MKB	MARKERBOARD
	MLDG	MOLDING
	MM	MILLIMETERS
	MO	MASONRY OPENING
	MOD	MODULE, MODULAR
	MTD	MOUNTED
	MTG	MOUNTING
	MTL	METAL
	MTLB	METAL BASE
	MULL	MULLION
	MVBL	MOVABLE
N	NA	NOT APPLICABLE
	NAT	NATURAL
	NE	NORTHEAST
	NIC	NOT IN CONTRACT
	NO	NUMBER
	NOM	NOMINAL
	NRC	NOISE REDUCTION COEFFICIENT
	NTS	NOT TO SCALE
	NW	NORTHWEST
O	OA	OVERALL
	OC	ON CENTER
	OD	OUTSIDE DIAMETER
	OFCI	OWNER FURNISHED- CONTRACTOR INSTALLED
	OFOI	OWNER FURNISHED- OWNER INSTALLED
	OPP	OPPOSITE
	ORD	OVERFLOW ROOF DRAIN
	OVHD	OVERHEAD
	OZ	OUNCE
P	P	PAINT
	PA	PUBLIC ADDRESS
	PART	PARTIAL
	PBD	PARTICLEBOARD
	PBX	PRIVATE TELEPHONE EXCHANGE
	PC	PRIVACY CURTAIN
	PCF	POUNDS PER CUBIC FOOT
	PCI	POUNDS PER CUBIC INCH
	PERF	PERFORATED
	PERIM	PERIMETER
	PERM	PERMANENT
	PERP	PERPENDICULAR
	PI	POINT OF INTERSECTION
	PL	PLATE
	PLAM	PLASTIC LAMINATE
	PLAS	PLASTER
	PLBG	PLUMBING
	PLF	POUNDS PER LINEAR FOOT
	PLYWD	PLYWOOD
	PNEU	PENUMATIC
	PNL	PANEL
	PNL BD	PANEL BOARD
	PORT	PORTABLE
	PP	PUSH PLATE
	PPM	PARTS PER MILLION
	PPR	PAPER DISPENSER
	PR	PAIR
	PRCST	PRECAST
	PREFAB	PREFABRICATION
	PREFIN	PREFINISHED
	PREP	PREPARATION
	PRKG	PARKING
	PROJ	PROJECT
	PROP	PROPERTY
	PSF	POUNDS PER SQUARE FOOT
	PSI	POUNDS PER SQUARE INCH
	PT	POINT
	PTN	PARTITION
	PTX	PNEUMATIC TUBE STATION
	PVC	POLYVINYL CHLORIDE
	PVG	PAVING
	PVMT	PAVEMENT
	PWR	POWER
Q	QTR	QUARTER
	QTY	QUANTITY
R	R	RISER
	R/O	REVERSE OSMOSIS WATER
	RA	RETURN AIR
	RAD	RADIUS
	RB	RESILIENT BASE
	RCP	REFLECTED CEILING PLAN
	RCPT	RECEPTACLE
	RD	ROOF DRAIN
	RE	REFERENCE
	RECT	RECTANGULAR
	REF	REFRIGERATOR
	REG	REGISTER
	REINF	REINFORCE (D) (ING) (MENT)
	REQD	REQUIRED
	REQT	REQUIREMENT
	RET	RETURN AIR
	REV	REVISION
	RF	RESILIENT FLOORING
	RH	RIGHT HAND
	RHMS	ROUND HEAD MACHINE
	RHWS	ROUND HEAD WOOD SCREW
	RM	ROOM
	RND	ROUND
	RO	ROUGH OPENING
	ROW	RIGHT OF WAY
	RS	RESINOUS FLOOR
	RSN	RESIN PANEL
	RWL	RAIN WATER LEADER
S	S	SOUTH
	SA	SUPPLY AIR
	SB	SPLASH BLOCK
	SC	SOLID CORE
	SCHED	SCHEDULE
	SCRN	SCREEN
	SD	STORM DRAIN
	SE	SOUTHEAST
	SECT	SECTION
	SEG	SEGMENT
	SEP	SEPARATION OR SEPARATE
	SEP JT	SEPARATION JOINT
	SHT	SHEET, SHEETING
	SHV	SHELVES, SHELVING
	SHWR	SHOWER
	SIM	SIMILAR
	SK	SINK
	SKLR	SPRINKLER
	SMS	SHEET METAL SCREW
	SOG	SLAB ON GRADE
	SP	SPACE, SPACED, SPACING
	SPC	SPECIALTY APPLICATION
	SPD	SOAP DISPENSER
	SPEC	SPECIFICATION
	SPKR	SPEAKER
	SQ	SQUARE
	SS	SANITARY SEWER
	SSK	SERVICE SINK
	SSM	SOLID SURFACE MATERIAL
	SST	STAINLESS STEEL
	ST	STREET
	STA	STATION
	STAG	STAGGERED
	STC	SOUND TRANSMISSION COEFFICIENT
	STD	STANDARD
	STL	STEEL
	STN	STONE
	STNB	STONE BASE
	STOR	STORAGE
	STRUCT	STRUCTURAL
	STS	SELF-TAPPING STEEL
	SUSP	SUPSENDED
	SVCE	SERVICE
	SW	SOUTHWEST
	SYMM	SYMMETRICAL
	SYST	SYSTEM
T	T	TREAD
	T&B	TOP AND BOTTOM
	T&G	TONGUE AND GROOVE
	TBD	TO BE DETERMINED
	TC	TOP OF CONCRETE, TOP OF CURB
	TD	TRENCH DRAIN
	TEL	TELEPHONE
	TEMP	TEMPORARY
	THERM	THERMAL
	THK	THICK, THICKNESS
	THRES	THRESHOLD
	THRU	THROUGH
	TL	TILE
	TLB	TILE BASE
	TMPD GL	TEMPERED GLASS
	TO	TOP OF
	TOR	TOP OF RAILING
	TOS	TOP OF STEEL
	TOT	TOTAL
	TOW	TOP OF WALL
	TP	TOP OF PAVEMENT
	TPT	TOILET PARTITION
	TRC	TRASH RECEPTACLE
	TRZ	TERAZZO
	TTB	TELEPHONE TERMINAL BOARD
	TV	TELEVISION
	TYP	TYPICAL
U	UC	UNDER COUNTER
	UL	UNDERWRITER'S LABORATORIES
	UON	UNLESS OTHERWISE NOTED
	UPH	UPHOLSTERY
	UPS	UNINTERRUPTABLE POWER SUPPLY
	UTIL	UTILITY
V	VAC	VACUUM
	VB	VALVE BOX
	VCT	VINYL COMPOSITION TILE
	VERT	VERTICAL
	VEST	VESTIBULE
	VIF	VERIFY IN FIELD
	VIT	VITREOUS
	VOL	VOLUME
	VP	VENT PIPE
W	W	WEST
	W/	WITH
	W/D	WASHER/DRYER
	W/O	WITHOUT
	WW	WALL TO WALL
	WC	WATER CLOSET
	WCHR	WHEELCHAIR
	WCV	WALLCOVERING
	WD	WOOD
	WDB	WOOD BASE
	WDF	WOOD FLOORING
	WDV	WOOD VENEER
	WDW	WINDOW
	WF	WINDOW FILM
	WGL	WIRE GLASS
	WH	WHITEBOARD
	WM	WIRE MESH
	WO	WHERE OCCURS
	WOM	WALK OFF MAT
	WP	WALL PROTECTION
	WPT	WORKING POINT
	WR	WATER RESISTANT
	WSCT	WAINSCOT
	WSP	WET STANDPIPE
	WT	WEIGHT
	WTHPRF	WEATHERPROOF
	WTR	WINDOW TREATMENT
	WTRPRF	WATERPROOF
	WWF	WELDED WIRE FABRIC
	WWM	WELDED WIRE MESH
X	XFMR	TRANSFORMER
Y	YD	YARD

ARCHITECTURAL FLOOR PLAN SYMBOLS

DIMENSION SYMBOLS

10' - 0" — DIMENSION SHOWN TO:
- STRUCTURAL GRID
- LAYOUT GRID
- CENTERLINE OF ASSEMBLY
- CENTER OF OPENING
- CENTER OF EQUIP/ FURN

GRID OR CENTER LINE TYPICAL

10' - 0" — DIMENSION SHOWN TO:
- PARTITION ASSEMBLY
- EDGE OF DOOR OPENING
- OTHER BUILDING ELEMENT
- WORKING POINT INDICATED ON DETAIL

PARTITION SYMBOLS

PARTITION

EXISTING PARTITION

GENERAL SYMBOLS

BASE CABINETS

BASE AND WALL CABINETS

WALL CABINETS

TOILET PARTITION AND DOOR

HANDRAIL

BUMPER GUARD

CG CG — CORNER GUARD

EG — EDGE GUARD

OVERHEAD ITEMS

UNDER-COUNTER ITEMS

NIC — NOT-IN-CONTRACT ITEMS

FIRE EXTINGUISHER SYMBOLS

FEXT — FIRE EXTINGUISHER BRACKET MOUNTED

FEC — FIRE EXTINGUISHER SURFACE MOUNTED

FEC — FIRE EXTINGUISHER CABINET SEMI-RECESSED

FEC — FIRE EXTINGUISHER CABINET RECESSED

PLUMBING SYMBOLS

TOILET - WALL HUNG

URINAL - FLOOR/WALL HUNG

LAVATORY - COUNTERTOP

LAVATORY - PEDESTAL/WALL HUNG

UTILITY SINK

DRINKING FOUNTAIN / EWC

JANITOR'S RECEPTOR

BATHTUB

SHOWER

FD — FLOOR DRAIN IN SLOPING FLOOR

ARCHITECTURAL DEMOLITION SYMBOLS

EXISTING PARTITION TO REMAIN

EXISTING PARTITION TO BE REMOVED

NO OPENING MARK AT EXISTING DOORS WITH NO WORK - TYP

EXISTING DOOR TO REMAIN

EXISTING DOOR AND FRAME TO BE REMOVED

EXISTING WINDOW TO REMAIN

EXISTING WINDOW TO BE REMOVED

EXISTING LAY-IN CEILING TO REMAIN

EXISTING LAY-IN CEILING TO BE REMOVED

DOOR AND INTERIOR OPENING SYMBOLS

DOOR OPENING MARK - TYP

SINGLE OPENING DOOR

DOUBLE ACTING DOOR

PAIR DOORS - EQUAL SIZES

PAIR DOORS - UNEQUAL SIZES

PAIR DOORS - DOUBLE EGRESS

2 PANEL BI-FOLD DOOR

PAIR - BI FOLD DOOR

OVERHEAD ROLLING DOOR

INTERIOR GLAZED WINDOW

DOOR WITH SIDE LIGHT

SLIDING DOOR - BETWEEN JAMBS

SLIDING POCKET DOOR

ARCH REFLECTED CEILING PLAN SYMBOLS

ARCHITECTURAL

2'X4' LAY IN ACOUSTIC TILE CEILING

2'X2' LAY IN ACOUSTIC TILE CEILING

GYPSUM BOARD

AP — ACCESS PANEL

MECHANICAL

SUPPLY GRILLE

RETURN GRILLE

EXHAUST GRILLE

LINEAR DIFFUSER

ELECTRICAL

2'X4' LIGHTING FIXTURE

2'X2' LIGHTING FIXTURE

1'X4' LIGHTING FIXTURE

LIGHTING STRIP FIXTURE

RECESSED DOWN LIGHT

WALL WASH

TRACK LIGHTING

EXIT SIGN, SINGLE-SIDED

EXIT SIGN, DOUBLE-SIDED

F — FIRE ALARM

S — SPEAKER

P — SMOKE DETECTOR

W — WIRELESS INTERNET

MISCELLANEOUS

+12'-8" — HEIGHT OF CEILING FINISH ABOVE FINISH FLOOR

SPRINKLER HEAD - CLG MOUNT SPECIAL AREAS - REFER TO FIRE PROTECTION DWGS FOR SPECIFIC TYPE

ARCHITECTURAL REFERENCE SYMBOLS

BUILDING SECTION

SIM / A101 — WALL SECTION NUMBER; DIRECTION OF VIEW; SHEET WHERE DRAWN

WALL SECTION

SIM / A101 — WALL SECTION NUMBER; SHEET WHERE DRAWN; DIRECTION OF VIEW

EXTERIOR ELEVATION

AX.X.X / X — ELEVATION NUMBER AND DIRECTION; SHEET WHERE DRAWN

DETAIL REFERENCE

SIM / A101 — DETAIL NUMBER; SHEET WHERE DRAWN, HYPHEN INDICATES DETAIL ON SAME SHEET.

SECTION DETAIL REFERENCE

1 / SIM / A101 — ELEVATION NUMBER AND DIRECTION; SHEET WHERE DRAWN

INTERIOR ELEVATION REFERENCE

1 / 2 / A102 / 2 / 1 — ELEVATION NUMBER AND DIRECTION OF VIEW; SHEET WHERE DRAWN

ROOM NAME AND NUMBER

Room Name
101

WINDOW AND LOUVER TYPE MARK

W-X — SEE CORRESPONDING NUMBER ON SCHEDULE

M-X — SEE ASSEMBLY TYPE FOR DETAILS.

LEVEL LINE

SECOND LEVEL +12'-0" — NAME OF LEVEL; INDICATES HEIGHT ABOVE PROJECT DATUM

REVISION EXTENT

EXTENT OF CURRENT REVISION

SHEET KEYNOTE MARK

A502 — SEE CORRESPONDING NUMBERED KEYNOTE ON SHEET WHERE REFERENCE OCCURS

REFERENCE KEYNOTE MARK

088000.A03 — THE FIRST SIX DIGITS REPRESENT THE SPECIFICATION SECTION
EXAMPLE 1: THE CHARACTERS FOLLOWING THE PERIOD REPRESENT PARTICULAR ITEMS OF THE SPECIFIED SYSTEM

061600.5/8" PLYWOOD — EXAMPLE 2: THE TEXT IS THE PRODUCT DESCRIPTION

MATCH LINE REFERENCES

MATCH LINE / SHEET A2.1.1 — REFER TO THE SHEET WHERE CONTINUATION IS FOUND

OR

SHEET A2.1.2 / SHEET A2.1.1 — REFER TO THE SHEETS EITHER SIDE OF THE MATCH LINE

DRAWING TITLE SYMBOLS

1 View Name SCALE: 1/8" = 1'-0" — BASIC DRAWING TITLE

1 View Name SCALE: 1/8" = 1'-0" — BASIC DRAWING TITLE WITH LINE

View Name SCALE: 1/8" = 1'-0" — DRAWING TITLE WHEN ONLY ONE PLAN EXISTS ON THE DRAWING

LAYOUT GRID LINES

A / B / 1 — NEW GRID IDENTIFICATION; EXISTING GRID IDENTIFICATION; 90.00°

NORTH ARROW REFERENCES

NORTH OR PROJECT NORTH OR TRUE NORTH

ARCHITECTURAL MATERIAL INDICATIONS

PLAN AND SECTION

EARTH
AGGREGATE BASE COURSE
CONCRETE
CONCRETE MASONRY UNIT
BRICK MASONRY
PRECAST CONCRETE
LIMESTONE, SANDSTONE, GRANITE
MARBLE
STEEL, STAINLESS STEEL (LARGE SCALE)
ALUMINUM (LARGE SCALE)
OTHER METALS (LARGE SCALE)
WOOD FRAMING / BLOCKING - CONTINUOUS (LARGE SCALE)
WOOD FRAMING / BLOCKING - DISCONTINUOUS (LARGE SCALE)
GYPSUM SHEATHING (LARGE SCALE)

PLYWOOD (LARGE SCALE)
FINISH WOOD (LARGE SCALE)
COMPOSITE BOARD (LARGE SCALE)
ORIENTED STRAND BOARD (OSB) (LARGE SCALE)
EIFS INSULATION BOARD (LARGE SCALE)
SEMI-RIGID INSULATION (LARGE SCALE)
BATT INSULATION (LARGE SCALE)
MORTAR, SAND, FIREPROOFING, STUCCO, GYPSUM BOARD
ACOUSTIC TILE (LARGE SCALE)
PROTECTION BOARD (LARGE SCALE)
CERAMIC TILE (LARGE SCALE)
GLASS (LARGE SCALE)
TERRAZZO (LARGE SCALE)

ELEVATION

PLASTER CONCRETE
MASONRY, METAL SIDING (HORIZONTAL)
GLASS BLOCK, CERAMIC TILE

METAL SIDING (VERTICAL)
GLASS

ARCHITECTURAL GENERAL NOTES

THE FOLLOWING GENERAL NOTES APPLY TO ALL ARCHITECTURAL SERIES SHEETS. FOR GENERAL NOTES APPLICABLE TO ALL SHEETS REFER TO THE "PROJECT GENERAL NOTES":

A. THE ARCHITECTURAL SERIES SHEETS ARE PART OF A COMPLETE SET OF CONSTRUCTION DOCUMENTS DESCRIBING THE WORK FOR THIS PROJECT. USERS OF THESE DOCUMENTS ARE RESPONSIBLE TO REVIEW ALL CONSTRUCTION DOCUMENTS TO UNDERSTAND AND COORDINATE THE GRAPHIC AND ANNOTATED INFORMATION PROVIDED IN THESE ARCHITECTURAL SERIES SHEETS.

B. EXCEPT WHERE DIRECTED TO PLACE ITEMS OF WORK AT THE APPROXIMATE LOCATIONS SHOWN, DO NOT SCALE DRAWINGS FOR DIMENSIONAL INFORMATION. ALL ELEMENTS OF THE DRAWINGS MAY NOT BE DRAWN TO EXACT SCALE. ALL DIMENSIONS REQUIRED ARE SHOWN OR MAY BE DERIVED FROM THOSE SHOWN ON THE FLOOR PLANS, DETAIL PLANS, ELEVATIONS, SECTIONS, DETAILS, SCHEDULES, AND SPECIFICATIONS.

C. ALL VISUALLY EXPOSED STRUCTURAL, MECHANICAL AND ELECTRICAL ELEMENTS, INCLUDING EXPOSED METAL FLOOR AND ROOF DECK, ARE TO BE PAINTED UNLESS OTHERWISE NOTED. THIS INCLUDES ELEMENTS THAT MAY BE VISIBLE THROUGH GRILLES, LOUVERS OR CEILINGS. COLORS AND PAINT MATERIALS ARE DEFINED IN THE FINISH SCHEDULE, THE SPECIFICATIONS, AND THE DRAWINGS AS APPLICABLE TO THE CONSTRUCTION DOCUMENTS.

REFERENCE ELEVATION DEFINITIONS

A. THE TERM "REFERENCE" ELEVATION OR DIMENSIONS REFERS TO A NOMINAL WORK POINT. THE ACTUAL ELEVATION MAY VARY FROM THE REFERENCE POINT. REFER TO APPLICABLE DETAIL TO DETERMINE THE RELATIONSHIP BETWEEN THE ACTUAL ELEVATION OR DIMENSION AND THE STATED REFERENCE POINT."

B. THE DESIGN REFERENCE ELEVATION +0'-0" SHOWN ON THE ARCHITECTURAL DRAWINGS CORRESPONDS TO THE FINISH FLOOR ELEVATION OF THE GROUND FLOOR. ESTABLISH THE ACTUAL ELEVATION WITH RESPECT TO SITE-SPECIFIC BENCHMARKS AND CONTROL POINTS AS DEFINED IN THE CIVIL DRAWINGS.

C. "FINISH FLOOR" ELEVATIONS ARE MEASURED AT THE TOP OF THE CONCRETE FLOOR SLAB UNLESS OTHERWISE NOTED. APPLIED FINISHES SUCH AS RESILIENT FLOORING OR CARPET MAY RAISE THE ACTUAL FINISH SURFACE ABOVE THE REFERENCE ELEVATION PROVIDED FOR THE FINISH FLOOR.

D. WHERE CONCRETE FLOOR SLAB IS DEPRESSED TO ACCOMMODATE MORTAR BEDS, SETTING BEDS, RAISED ACCESS FLOORS, AND OTHER SIMILAR FLOOR ASSEMBLIES, "FINISHED FLOOR" ELEVATIONS ARE MEASURED AS IF CONCRETE DEPRESSION DOES NOT OCCUR.

E. CEILING HEIGHT ELEVATIONS ARE MEASURED TO BOTTOM OF FINISH SURFACES AND STATED IN RELATION TO DISTANCE ABOVE THE REFERENCE ELEVATION FOR THE FINISH FLOOR UNLESS OTHERWISE NOTED.

F. ROOF ELEVATIONS ARE MEASURED TO TOP OF SURFACES AND STATED IN RELATION TO DISTANCE ABOVE THE REFERENCE ELEVATION PROVIDED FOR THE UPPERMOST FINISH FLOOR UNLESS OTHERWISE NOTED. ELEVATIONS GIVEN ARE TO TOP OF STEEL (TOS), TOP OF DECK (TOD), OR TOP OF TAPERED INSULATION (TOT) UNLESS OTHERWISE NOTED.

ARCHITECTURAL ASSEMBLY SYSTEM TAGS

TYPICAL ARCHITECTURAL ASSEMBLY IDENTIFICATION MARK

A000X — PLAN
A000X — SECTION

FOR THE ASSEMBLY TYPES LISTED, SEE THE FOLLOWING SHEETS FOR SYSTEM DETAILS AND DESCRIPTIONS:

TYPE **A** = EXTERIOR WALLS - ABOVE GRADE - SHEET A5.0.X
TYPE **B** = VERTICAL BELOW GRADE - SHEET A5.0.X
TYPE **H** = HORIZONTAL BELOW GRADE - SHEET A5.0.X
TYPE **R** = ROOFING SYSTEMS - SHEET A5.0.X
TYPE **S** = EXTERIOR SOFFITS - SHEET A5.0.X

TYPE **U** = EXTERIOR ALL GLASS FENESTRATION SYSTEMS - SHEET A5.0.X
TYPE **V** = EXTERIOR STOREFRONT FENESTRATION SYSTEMS - SHEET A5.0.X
TYPE **W** = EXTERIOR PUNCHED WINDOW FENESTRATION SYSTEMS - SHEET A5.0.X
TYPE **X** = EXTERIOR CURTAIN WALL FENESTRATION SYSTEMS - SHEET A5.0.X
TYPE **Z** = EXTERIOR SKYLIGHT FENESTRATION SYSTEMS - SHEET A5.0.X

TYPE **P** = INTERIOR WALL PARTITIONS - SHEET A9.2.X

TYPE **Y** = INTERIOR FENESTRATION SYSTEMS - SHEET A9.3.X

A000X
- **ASSEMBLY TYPE**
- **ASSEMBLY NAME** REPRESENTING: -MAJOR GROUP -FINISH SYSTEM -SUBSTRATE CONFIGURATION
- **ASSEMBLY VARIABLE** (NOT ALWAYS PRESENT)

ASSEMBLY TAG DESIGNATION

FIRE RESISTIVE RATING INDICATION

- 0 HOUR SMOKE PARTITION
- 0 HOUR EXISTING SMOKE PARTITION
- 1 HOUR FIRE RESISTANCE RATING
- 1 HOUR EXISTING FIRE RESISTANCE RATING
- 2 HOUR FIRE RESISTANCE RATING
- 2 HOUR EXISTING FIRE RESISTANCE RATING
- 3 HOUR FIRE RESISTANCE RATING
- 3 HOUR EXISTING FIRE RESISTANCE RATING
- 4 HOUR FIRE RESISTANCE RATING
- 4 HOUR EXISTING FIRE RESISTANCE RATING

ARCHITECTURAL SYMBOL NOTES

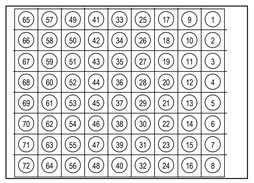
A. THE PURPOSE OF THIS SHEET IS TO ILLUSTRATE AND DEFINE TYPICAL GRAPHIC SYMBOLS WHICH MAY TYPICALLY OCCUR ON THE ARCHITECTURAL DRAWINGS.

B. THIS SHEET MAY ILLUSTRATE ABBREVIATIONS, SYMBOLS AND LEGENDS WHICH DO NOT OCCUR AS PART OF THIS PROJECT. REFER TO THE DRAWINGS TO DETERMINE WHICH ITEMS APPLY TO THE WORK OF THIS PROJECT.

C. ADDITIONAL SYMBOLS NOT SHOWN OR DEFINED ON THIS SHEET MAY BE USED ON THE ARCHITECTURAL DRAWINGS AND ARE TYPICALLY DEFINED ON OTHER SHEETS.

D. SYMBOLS ARE NOT DRAWN TO SCALE. TO DETERMINE THE ACTUAL SIZES OF ELEMENTS REPRESENTED BY SYMBOLS, REFER TO THE SPECIFICATIONS AND OTHER SHEETS, AS MAY APPLY.

MODULAR LAYOUT / DETAIL NUMBER

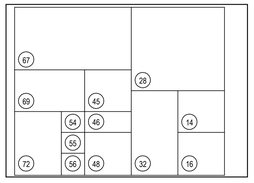


DETAIL MODULE LAYOUT

DETAILS ARE NUMBERED ACCORDING TO THEIR LOCATION ON EACH SHEET AND ARE NOT NUMBERED CONSECUTIVELY. EACH MODULE MAINTAINS THE NUMBER ASSOCIATED WITH IT

THIS SYSTEM CAN BE APPLIED TO ANY SHEET THAT CONTAINS MULTIPLE IMAGES. THE IMAGES ARE NUMBERED ACCORDING TO THE MODULE SYSTEM SHOWN ILLUSTRATED TO THE LEFT

EACH DETAIL MAY OCCUPY ONE OR MORE WHOLE MODULES. THE DETAIL MODULE IS USED TO ESTABLISH THE IDENTIFYING LABEL FOR EACH DETAIL, NOT TO LIMIT THE SIZE OF THE DETAIL



DETAIL NUMBERING EXAMPLE

THE NUMBER OF THE MODULE WHICH OCCURS IN THE LOWER LEFT CORNER OF A SINGLE MODULE OR SEVERAL MODULES GROUPED TOGETHER WILL DEFINE THE FINAL DETAIL NUMBER AS SHOWN IN THE ILLUSTRATION TO THE LEFT. ALTHOUGH THE MODULE NUMBERS OCCUR IN CONSECUTIVE ORDER, NOT ALL NUMBERS ARE NECESSARILY USED ON EACH SHEET

Mechanical Room 1000 Heating System Upgrade
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SEALS AND SIGNATURES

DISTRICT OF COLUMBIA JOHN G. CRUMP ARC100840 LICENSED ARCHITECT

SHEET TITLE
ARCHITECTURAL ABBREVIATIONS AND SYMBOLS

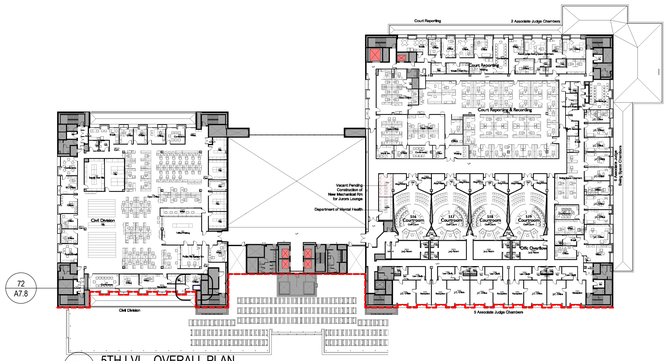
PROJECT NUMBER
15749.000

SHEET NUMBER
A0.1

Author

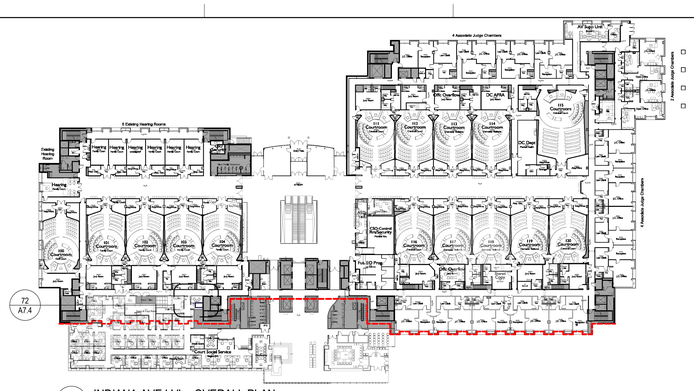
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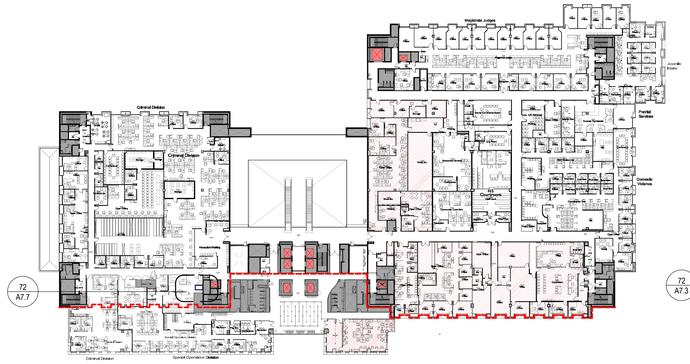
72 A7.8

50 5TH LVL - OVERALL PLAN
SCALE: 1" = 50'-0"



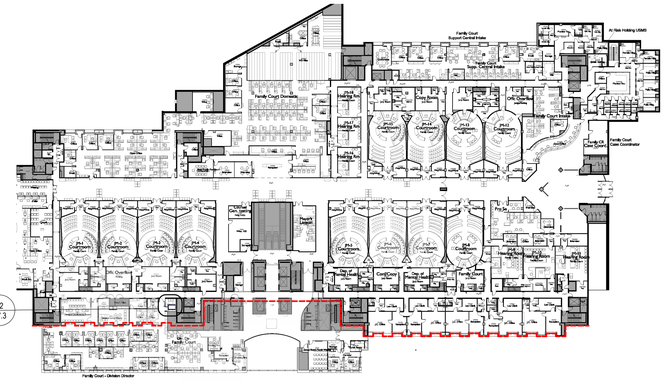
72 A7.4

26 INDIANA AVE LVL - OVERALL PLAN
SCALE: 1" = 50'-0"



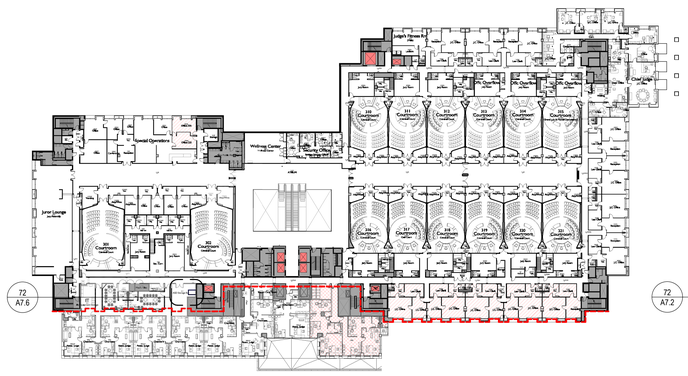
72 A7.7

52 4TH LVL - OVERALL PLAN
SCALE: 1" = 50'-0"



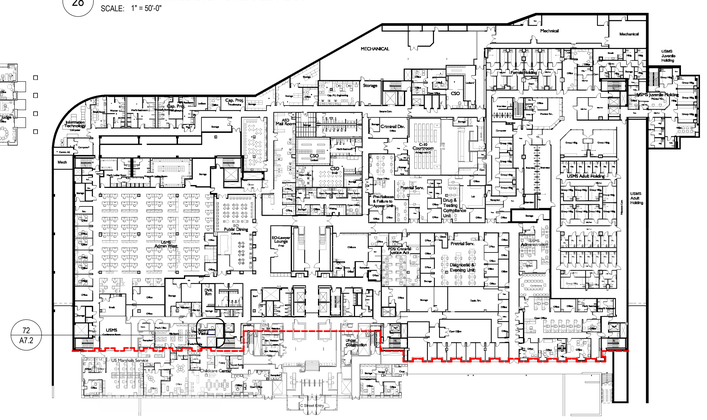
72 A7.3

28 JOHN MARSHALL LVL - OVERALL PLAN
SCALE: 1" = 50'-0"



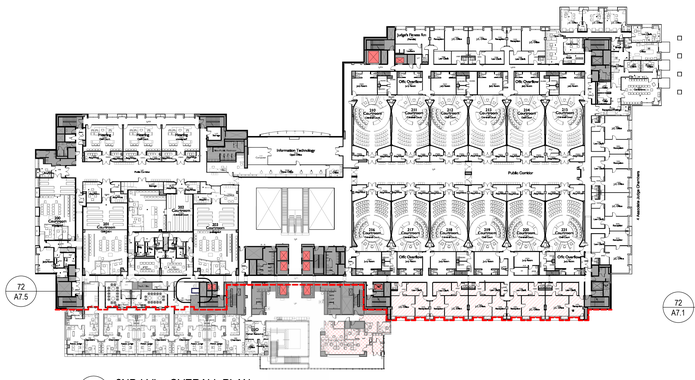
72 A7.6

55 3RD LVL - OVERALL PLAN
SCALE: 1" = 50'-0"



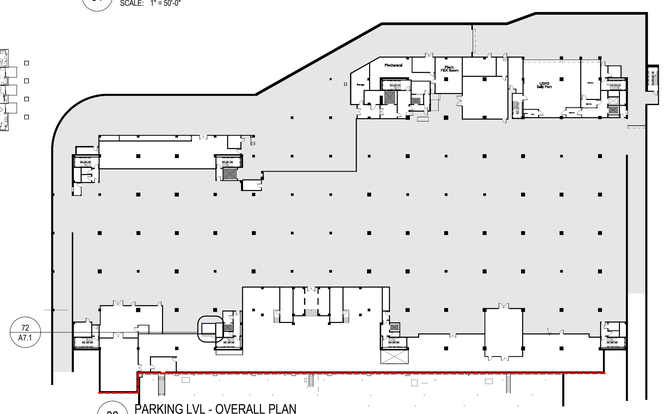
72 A7.2

31 C STREET LVL - OVERALL PLAN
SCALE: 1" = 50'-0"



72 A7.5

56 2ND LVL - OVERALL PLAN
SCALE: 1" = 50'-0"



72 A7.1

32 PARKING LVL - OVERALL PLAN
SCALE: 1" = 50'-0"



72 A7.9

72 ROOF PLAN - OVERALL PLAN
SCALE: 1" = 50'-0"

GRAPHIC LEGEND

GENERAL SHEET NOTES

A. REFER TO THE A0.X SERIES SHEETS FOR ARCHITECTURAL GENERAL NOTES, DRAWING, REFERENCE AND MATERIAL SYMBOLS, ABBREVIATIONS, AS WELL AS DIMENSIONING CONVENTIONS USED ON THIS SHEET.

B. FOR BASIC LIFE SAFETY AND CODE INFORMATION APPLYING TO THIS PROJECT, REFER TO THE G2.X SERIES SHEETS LOCATED PER THE PROJECT SHEET INDEX.

C. REFER TO THE A3.X SERIES SHEETS FOR THE REFLECTED CEILING PLANS.

D. REFER TO THE A9.2.X SERIES SHEETS FOR PARTITION SYSTEMS TYPES AND DETAILS.

E. REFER TO THE A9.3.X SERIES SHEETS FOR THE INTERIOR OPENING SCHEDULE(S), TYPES, AND DETAILS.

F. REFER TO THE 'A1' SERIES SHEETS FOR INTERIOR FINISH INFORMATION.

G. REFER TO THE 'A1' SERIES SHEETS FOR INTERIOR FURNISHING INFORMATION.

REFERENCE KEYNOTES

SHEET KEYNOTES

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DISTRICT OF COLUMBIA
JOHN G. CRUMP
ARC100840
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ARCHITECT

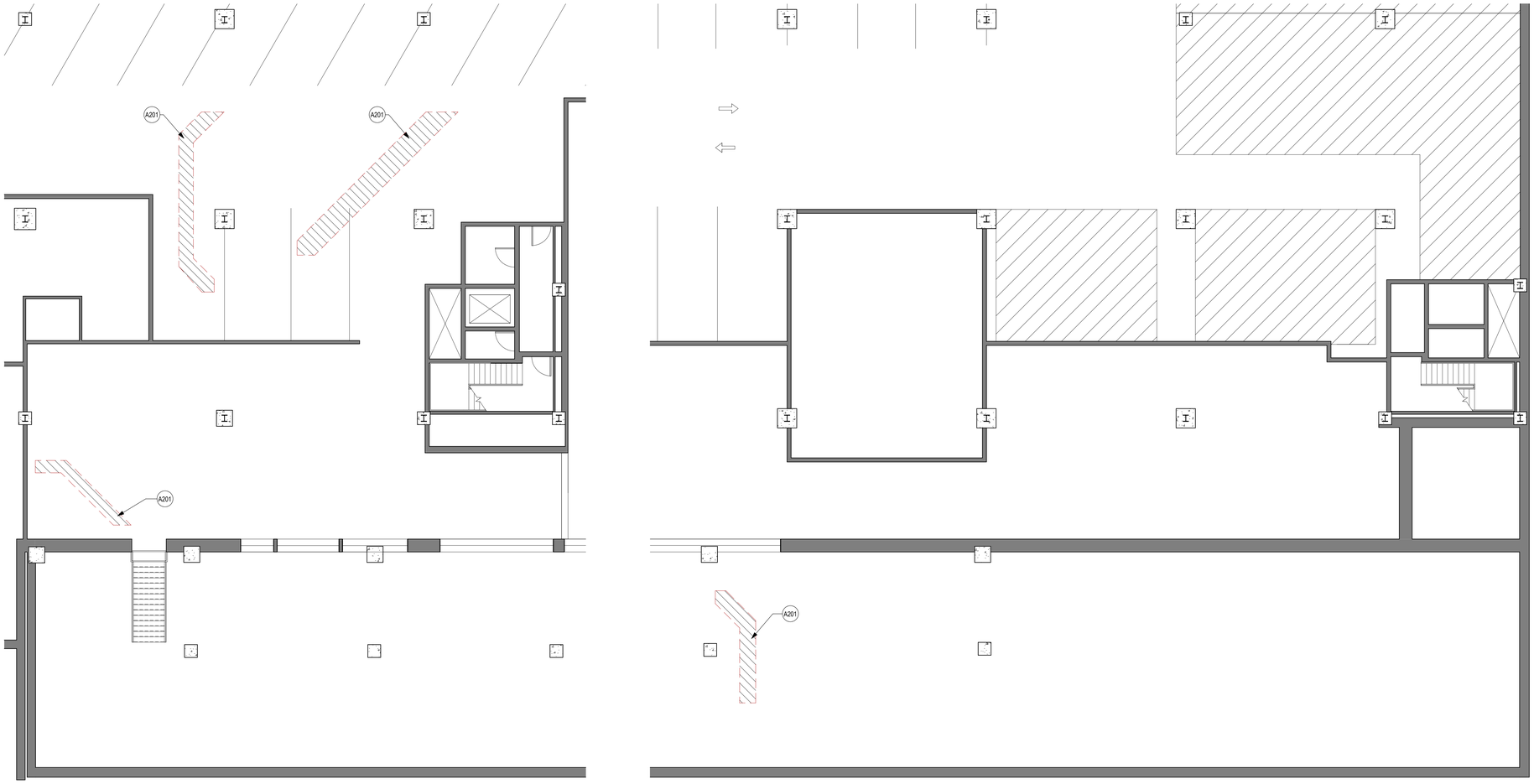
SHEET TITLE
OVERALL FLOOR PLANS

PROJECT NUMBER
15749.000

SHEET NUMBER
A2.1

Author

Plot Date: 7/3/2025 9:47:34 AM



72 PARKING LEVEL - FLOOR PLAN
SCALE: 1/8" = 1'-0"

GRAPHIC LEGEND

GENERAL SHEET NOTES

A. REFER TO THE A0.X SERIES SHEETS FOR ARCHITECTURAL GENERAL NOTES, DRAWING, REFERENCE AND MATERIAL SYMBOLS, ABBREVIATIONS, AS WELL AS DIMENSIONING CONVENTIONS USED ON THIS SHEET.

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E. REFER TO THE A9.3.X SERIES SHEETS FOR THE INTERIOR OPENING SCHEDULE(S), TYPES, AND DETAILS.

F. REFER TO THE 'A' SERIES SHEETS FOR INTERIOR FINISH INFORMATION.

G. REFER TO THE 'AF' SERIES SHEETS FOR INTERIOR FURNISHING INFORMATION.

REFERENCE KEYNOTES

SHEET KEYNOTES

A201 BASE: SAW CUT EXISTING SLAB FOR NEW WASTE PIPING INSTALLATION. REPAIR SLAB TO MATCH EXISTING - SEE PLUMB DWGS FOR EXACT LOCATION. SEE STRUCT FOR CONC SLAB DETAILS.

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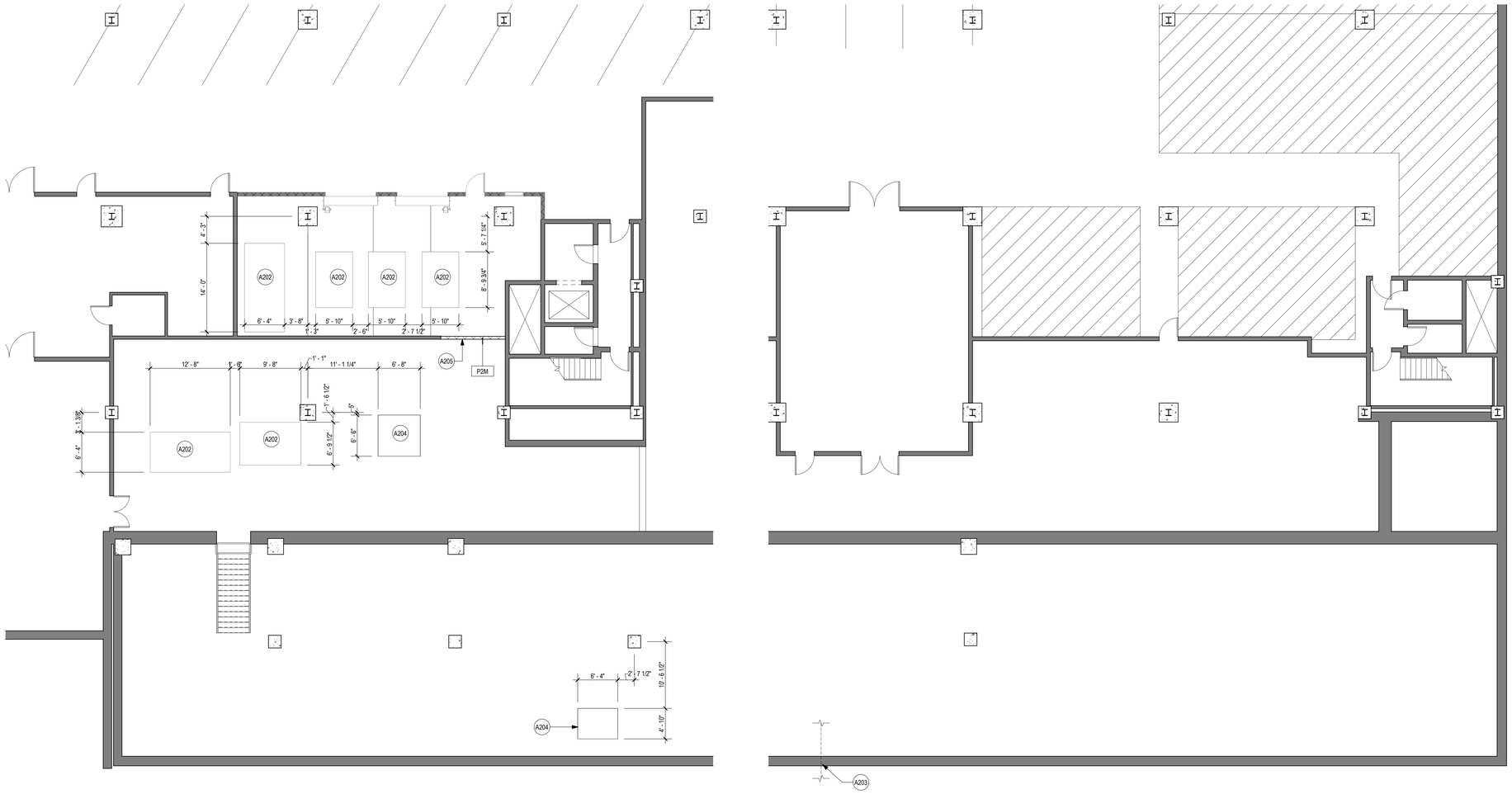
DISTRICT OF COLUMBIA
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ARC100840
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ARCHITECT

SHEET TITLE
PARKING LVL & C ST
MECH ROOM LVL PLAN

15749.000
PROJECT NUMBER

A2.2
SHEET NUMBER

Plot Date: 7/3/2025 9:47:34 AM
Author



72 PARKING LEVEL - CONCRETE PADS
SCALE: 1/8" = 1'-0"

GRAPHIC LEGEND

GENERAL SHEET NOTES

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B. FOR BASIC LIFE SAFETY AND CODE INFORMATION APPLYIING TO THIS PROJECT, REFER TO THE G2.X SERIES SHEETS LOCATED PER THE PROJECT SHEET INDEX.

C. REFER TO THE A3.X SERIES SHEETS FOR THE REFLECTED CEILING PLANS.

D. REFER TO THE A9.2.X SERIES SHEETS FOR PARTITION SYSTEMS TYPES AND DETAILS.

E. REFER TO THE A9.3.X SERIES SHEETS FOR THE INTERIOR OPENING SCHEDULE(S), TYPES, AND DETAILS.

F. REFER TO THE 'A' SERIES SHEETS FOR INTERIOR FINISH INFORMATION.

G. REFER TO THE 'AF' SERIES SHEETS FOR INTERIOR FURNISHING INFORMATION.

REFERENCE KEYNOTES

SHEET KEYNOTES

A202 OPTION 1: 4" CONC PADS FOR MECH EQUIP, SEE STRUCT.
A203 BASE: POST-APPLIED WATERPROOFING PIPE PENETRATION AFTER NEW GAS PIPE INSTALLATION AT C ST MECHANICAL ROOM LEVEL. SEE DET
A204 OPTION 2: 4" CONC PAD FOR MECH EQUIP, SEE STRUCT.
A205 OPTION 2: INFILL FORMER COILING DOOR OPENING WITH 2HR RATED CMU AND MATCH WITH ADJACENT CONSTRUCTION. WALL TO BE FINISHED TO MATCH EXISTING.

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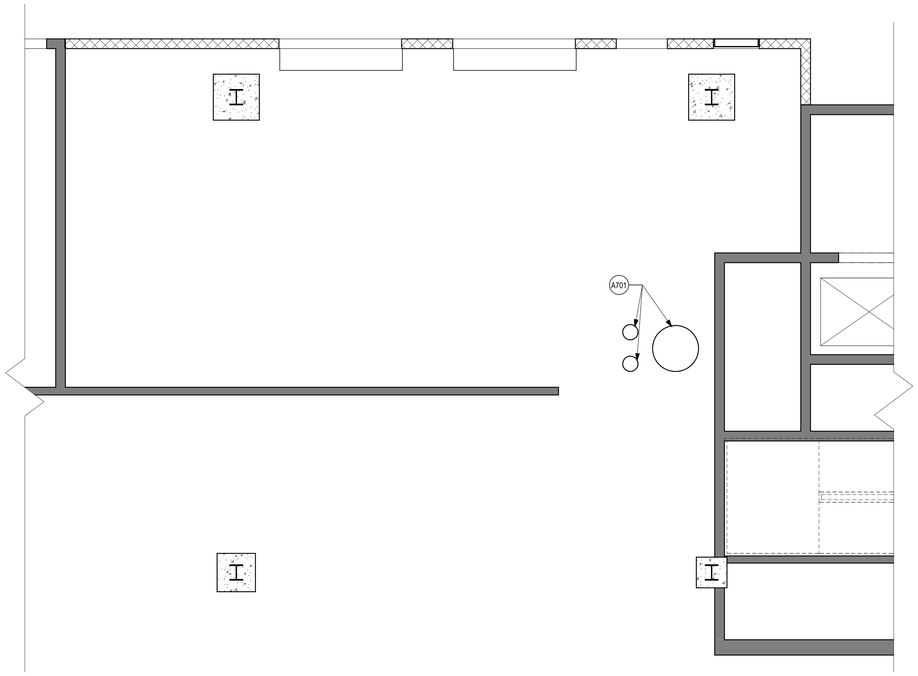
DISTRICT OF COLUMBIA
JOHN G. CRUMP
ARC100840
LICENSED
ARCHITECT

SHEET TITLE
PARKING LVL & C ST
MECH ROOM LVL PLAN

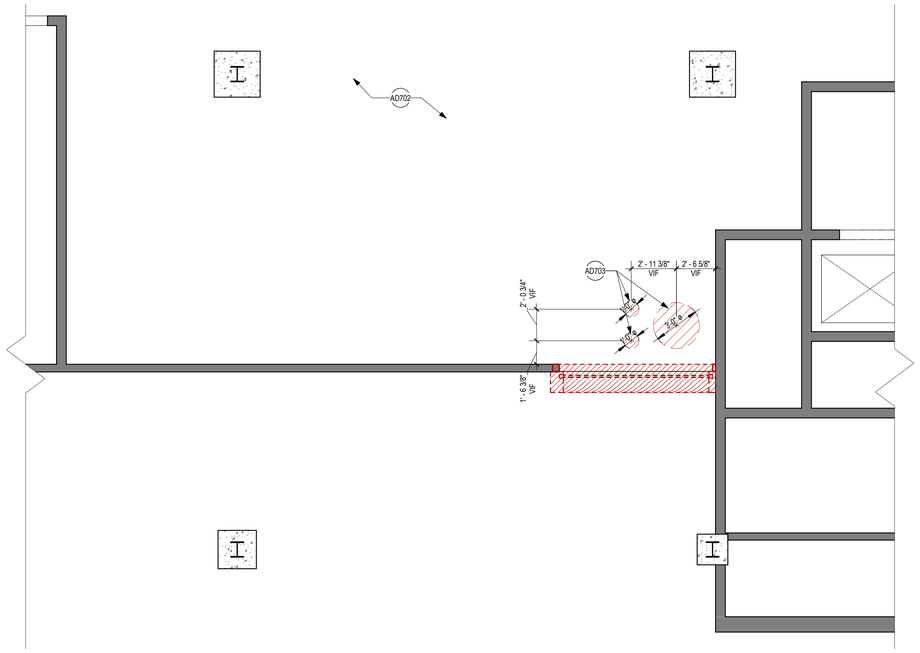
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SHEET NUMBER

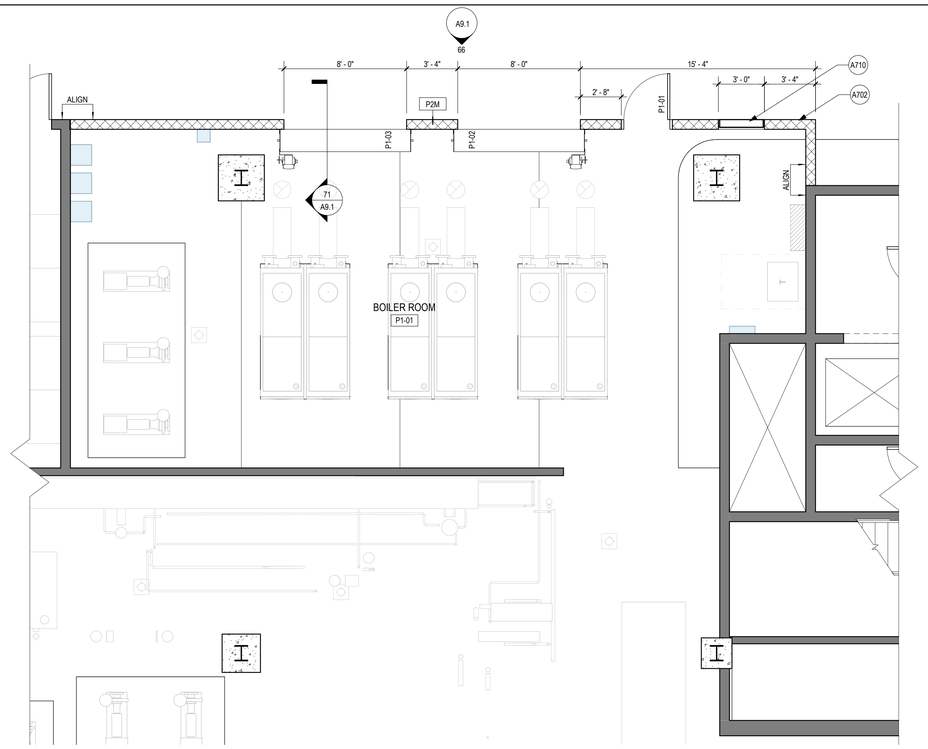
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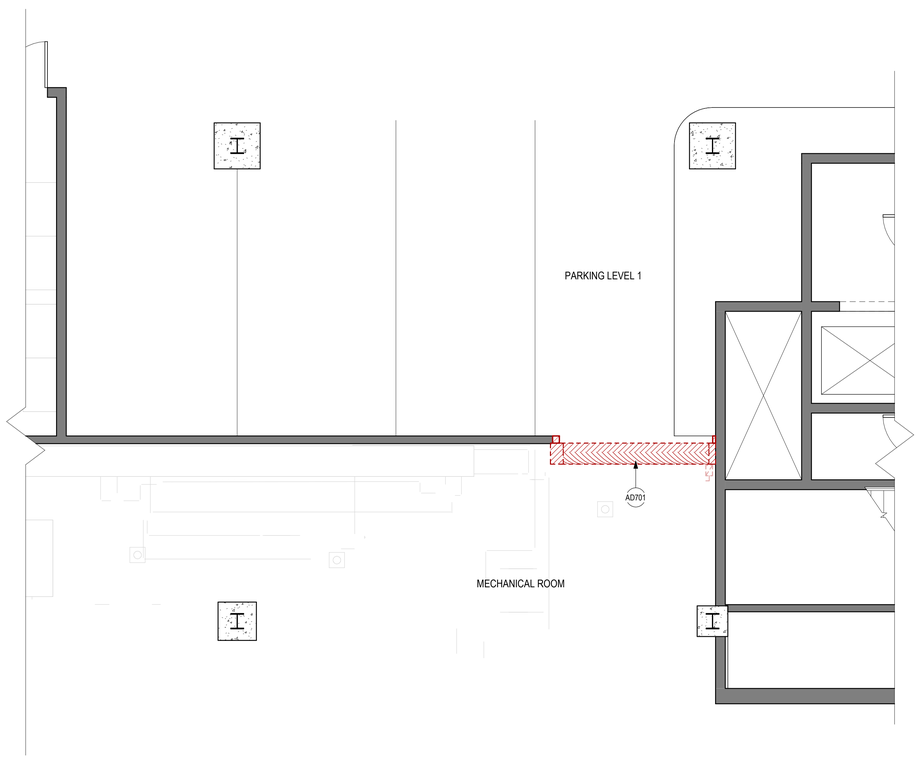
68 PARKING LEVEL - RCP
SCALE: 1/4" = 1'-0"



36 PARKING LEVEL - DEMO RCP
SCALE: 1/4" = 1'-0"



72 PARKING LEVEL - ENLARGED FLOOR PLAN
SCALE: 1/4" = 1'-0"



40 PARKING LEVEL - DEMO PLAN
SCALE: 1/4" = 1'-0"

GRAPHIC LEGEND

- EXISTING PARTITION TO REMAIN
- EXISTING PARTITION TO BE REMOVED
- NO OPENING MARK AT EXISTING DOORS WITH NO WORK - TYP
- EXISTING DOOR TO REMAIN
- EXISTING DOOR AND FRAME TO BE REMOVED
- EXISTING WINDOW TO REMAIN
- EXISTING WINDOW TO BE REMOVED
- EXISTING FLOOR SLAB TO BE REMOVED

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H. PATCH AND REPAIR ALL ELEMENTS THAT ARE TO REMAIN WHICH ARE DAMAGED FROM THE DEMOLITION WORK WITH CONSTRUCTION TO MATCH EXISTING CONDITIONS.

REFERENCE KEYNOTES

SHEET KEYNOTES

A701 MECH FLUE AND PIPE SLAB OPENINGS
A702 CMU WALL TO BE FINISHED TO MATCH EXISTING
A710 MECH LOUVER: GREENHECK EAD-635-36X44
AD701 REMOVE EXISTING COILING DOOR AND ALL ASSOCIATED HARDWARE.
AD702 REFER TO MEP DRAWINGS FOR ANY DEMOLITION WORK ON THE P1 CEILING
AD703 DEMO SLAB FOR MECH FLUE AND PIPE PENETRATION. SLAB OPENINGS TO BE ALIGNED AT SAME PLACE FROM C.ST LVL UP TO 5TH LVL. SEE DET 36/A7.1 FOR DIMENSIONS. RE MECH DRAWINGS.

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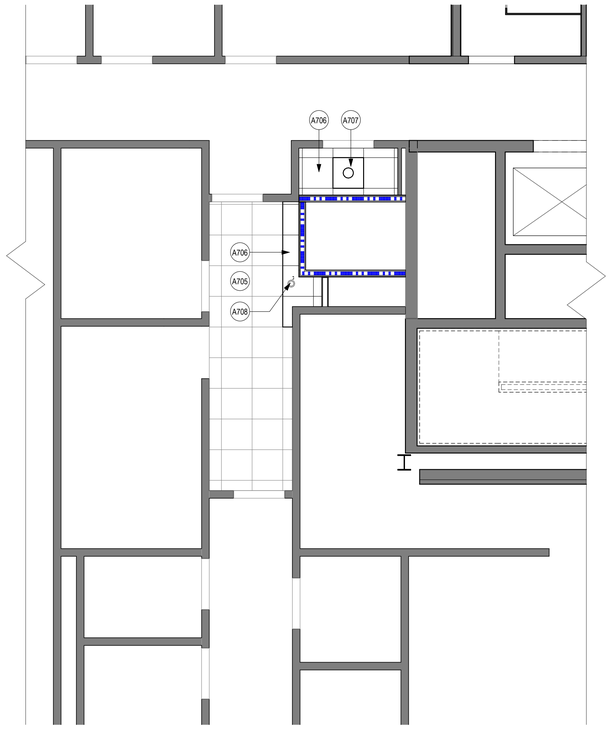
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SHEET TITLE
ENLARGED FLOOR PLAN - PARKING LEVEL

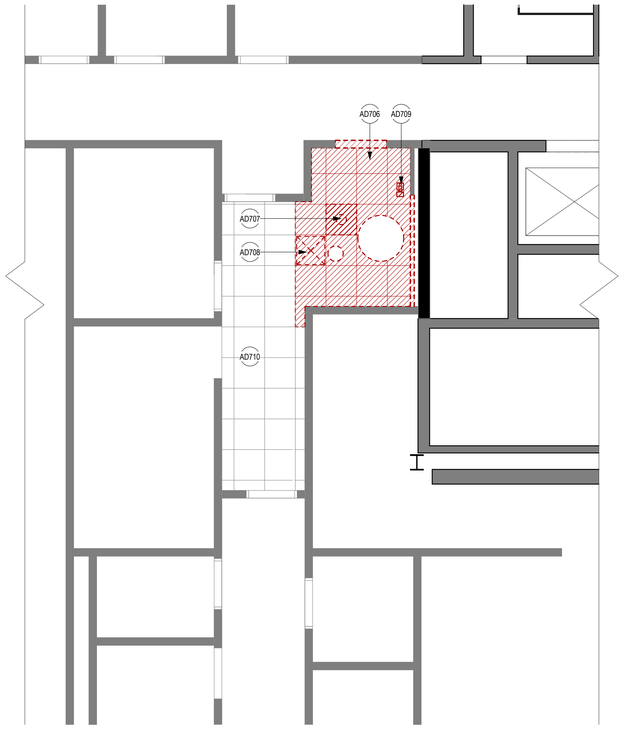
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SHEET NUMBER

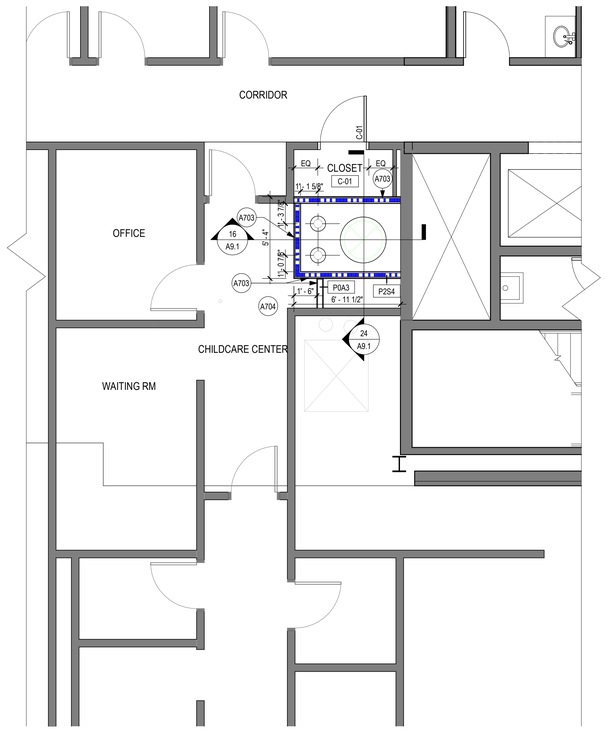
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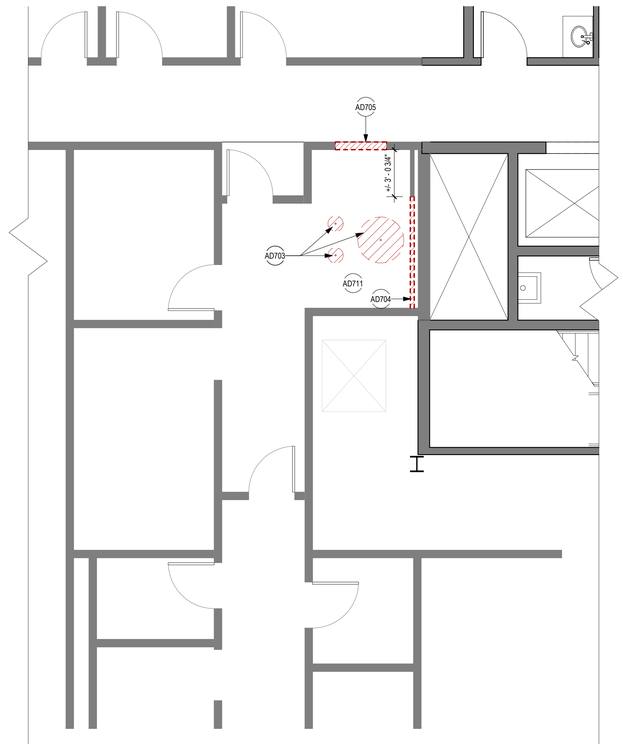
68 C STREET LEVEL
SCALE: 1/4" = 1'-0"



36 C STREET LEVEL - DEMO RCP
SCALE: 1/4" = 1'-0"



72 C STREET LEVEL - ENLARGED FLOOR PLAN
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40 C STREET LEVEL - DEMO PLAN
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REFERENCE KEYNOTES

SHEET KEYNOTES

A703	NEW WALL TO BE FINISHED TO MATCH EXISTING, INCLUDING PAINT AND BASEBOARD
A704	RE-INSTALL SALVAGED FINISH FLOOR; OTHERWISE INSTALL NEW FLOORING TO MATCH EXISTING.
A705	EXISTING ACT
A706	RE-INSTALL SALVAGED ACT IF POSSIBLE; OTHERWISE INSTALL NEW ACT TO MATCH EXISTING.
A707	RE-INSTALL SALVAGED LIGHT FIXTURE
A708	RE-INSTALL SALVAGED SECURITY CAMERA
AD703	DEMO SLAB FOR MECH FLUE AND PIPE PENETRATION. SLAB OPENINGS TO BE ALIGNED AT SAME PLACE FROM C ST LVL UP TO 5TH LVL. SEE DET 36/A7.1 FOR DIMENSIONS. RE MECH DRAWINGS.
AD704	DEMO PORTION OF EXISTING WALL. SEE PROPOSED PLAN FOR SHAFT WALL LOCATION
AD705	DEMO PORTION OF EXISTING WALL AND PREPARE OPENING TO RECEIVE NEW DOOR
AD706	REMOVE AND SALVAGE EXISTING ACT; ACT TO BE RE-INSTALLED DURING BASE DESIGN
AD707	REMOVE AND SALVAGE EXISTING LIGHT FIXTURE; FIXTURE TO BE RE-INSTALLED DURING BASE DESIGN
AD708	REMOVE AND SALVAGE EXISTING MECH GRILLE; GRILLE TO BE RE-INSTALLED DURING BASE DESIGN
AD709	REMOVE AND SALVAGE EXISTING SECURITY CAMERA; CAMERA TO BE RE-INSTALLED DURING BASE DESIGN
AD710	EXISTING ACT TO REMAIN
AD711	REMOVE AND SALVAGE EXISTING FLOORING. SEE PROPOSED PLAN FOR SCOPE OF WORK

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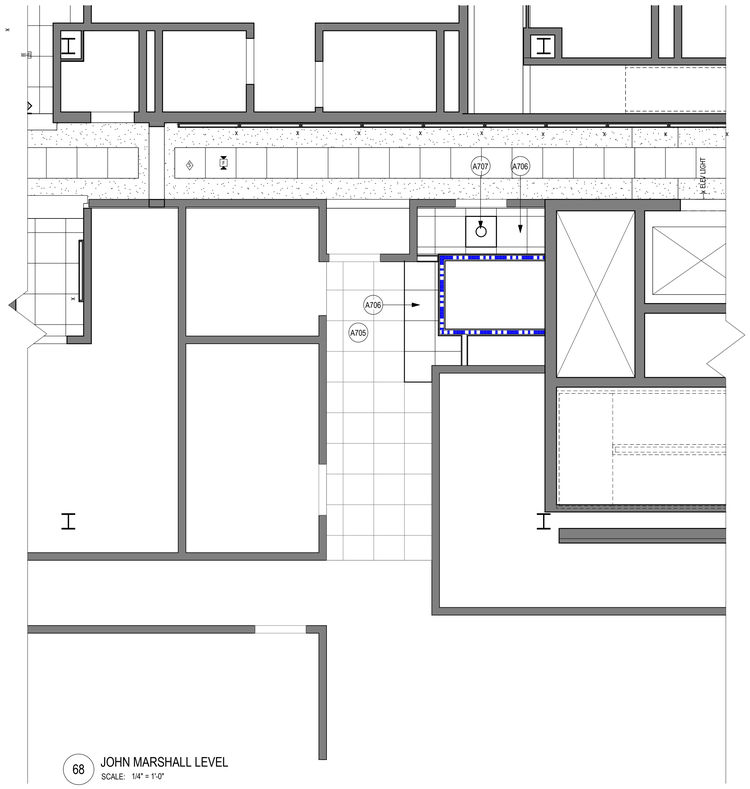
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SHEET TITLE
ENLARGED FLOOR PLANS
- C STREET LEVEL

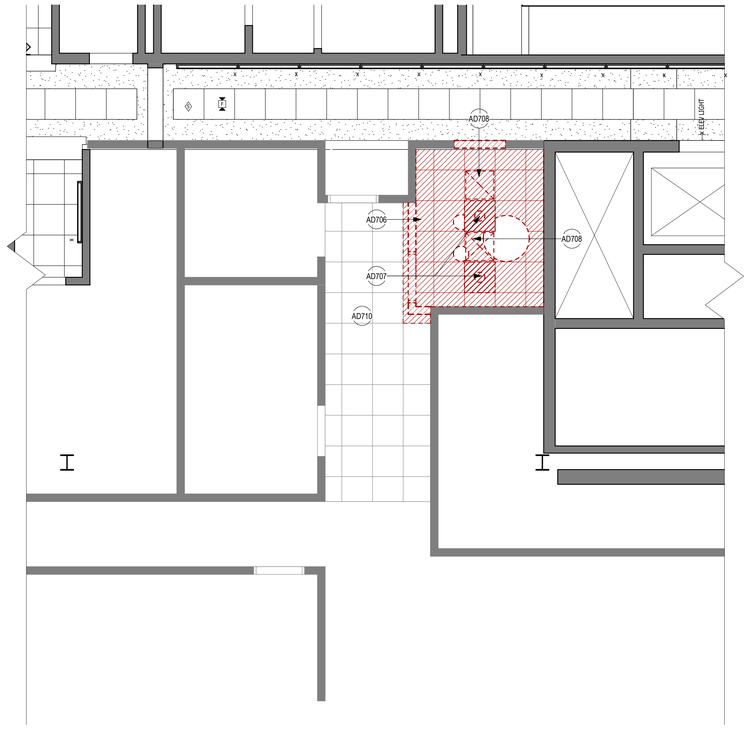
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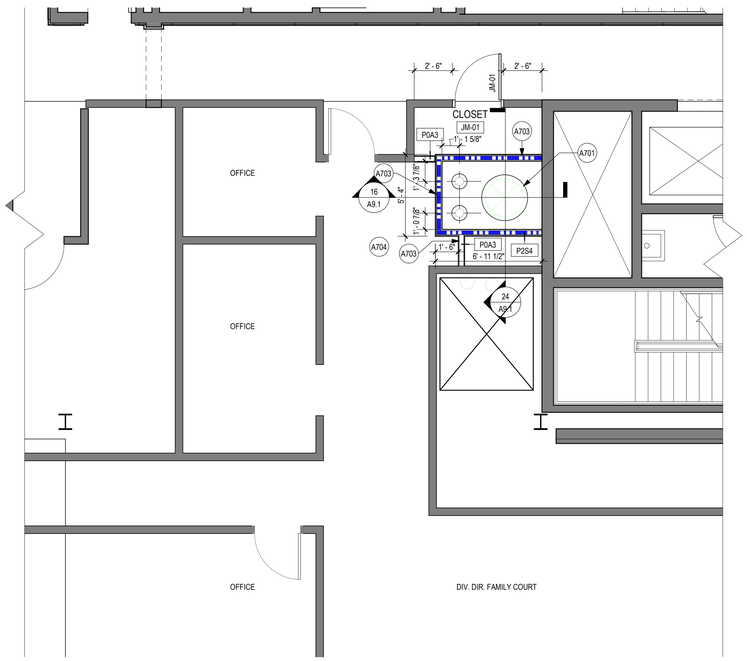
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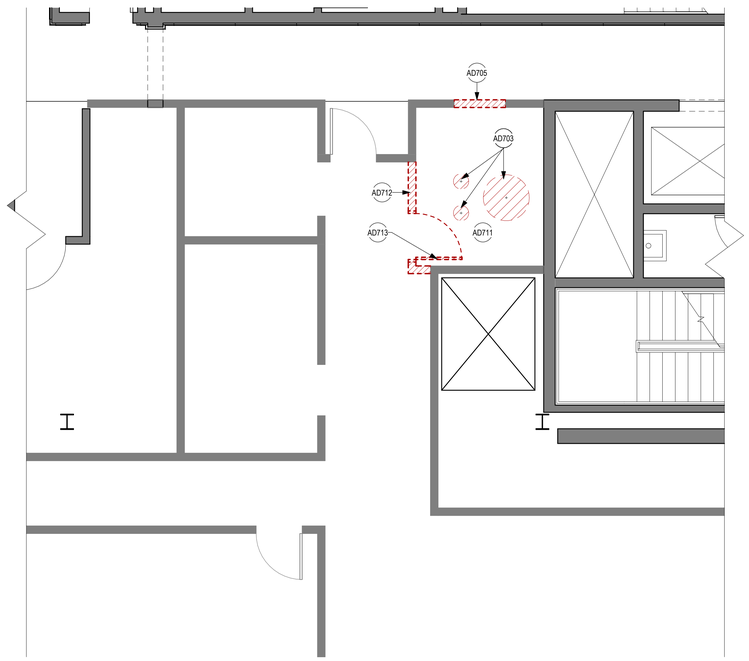
68 JOHN MARSHALL LEVEL
SCALE: 1/4" = 1'-0"



36 JOHN MARSHALL LEVEL - DEMO RCP
SCALE: 1/4" = 1'-0"



72 JOHN MARSHALL LEVEL - ENLARGED FLOOR PLAN
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AD703	DEMO SLAB FOR MECH FLUE AND PIPE PENETRATION. SLAB OPENINGS TO BE ALIGNED AT SAME PLACE FROM C ST LVL UP TO 5TH LVL. SEE DET 36/A7.1 FOR DIMENSIONS. RE MECH DRAWINGS.
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AD710	EXISTING ACT TO REMAIN
AD711	REMOVE AND SALVAGE EXISTING FLOORING. SEE PROPOSED PLAN FOR SCOPE OF WORK
AD712	DEMO EXISTING WALL
AD713	DEMO EXISTING DOOR

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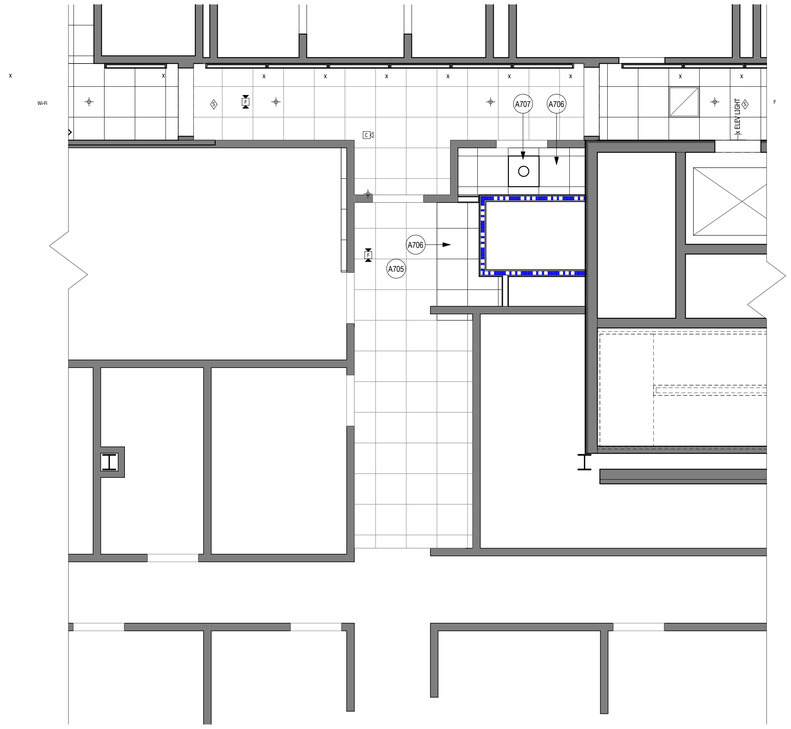
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SHEET TITLE
ENLARGED FLOOR PLANS - JOHN MARSHALL LEVEL

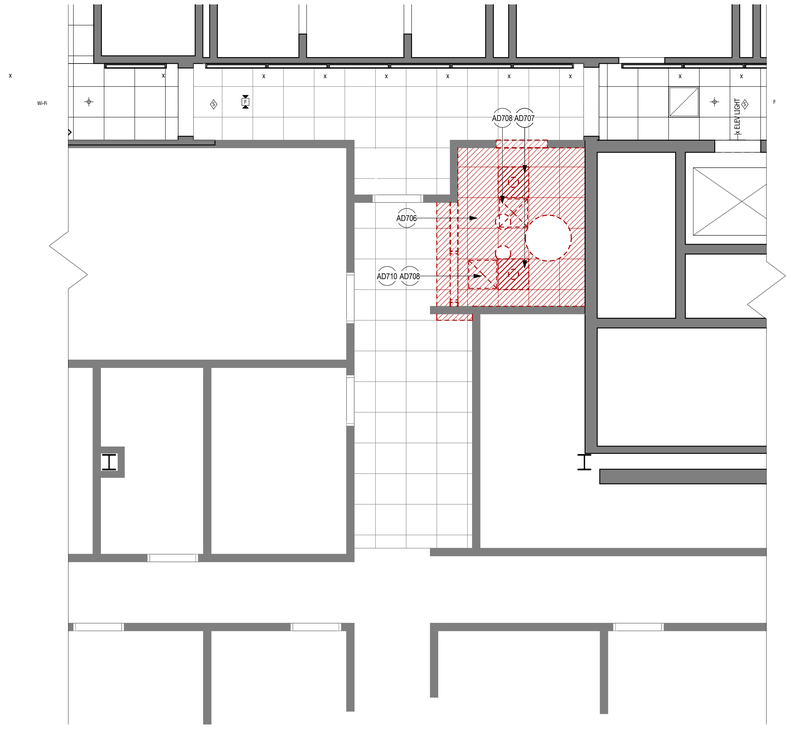
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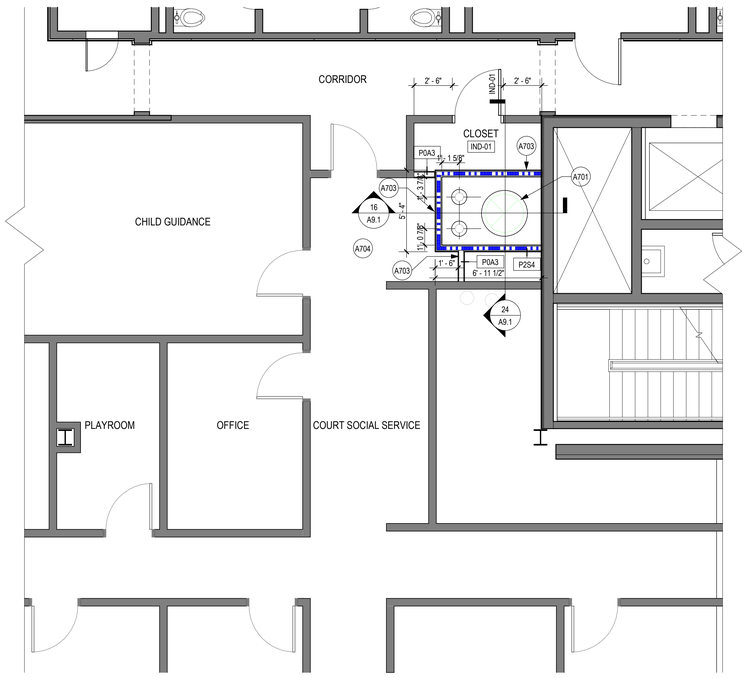
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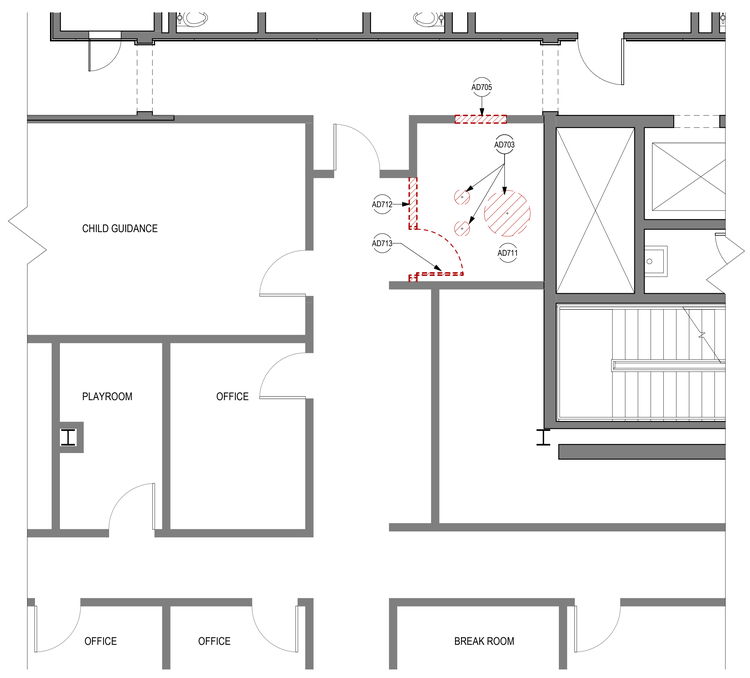
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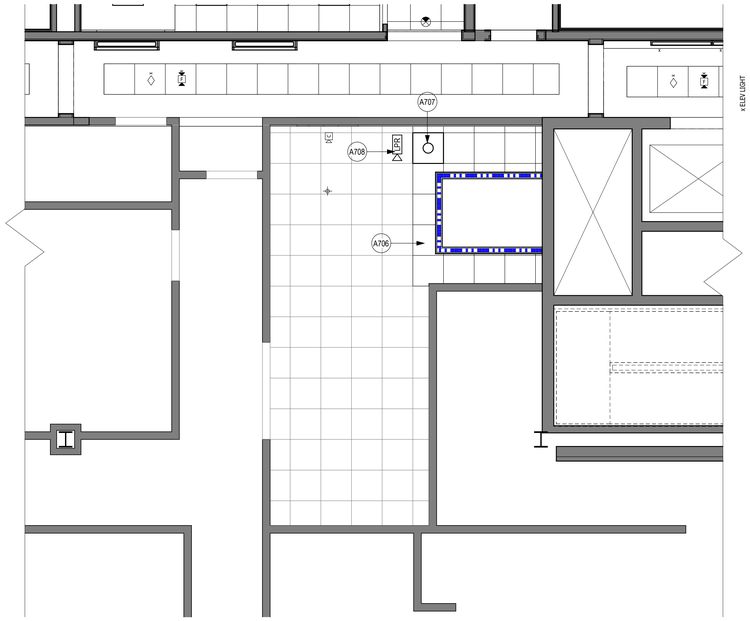
DISTRICT OF COLUMBIA JOHN G. CRUMP ARC100840 LICENSED ARCHITECT

SHEET TITLE
ENLARGED FLOOR PLANS - INDIANA LEVEL

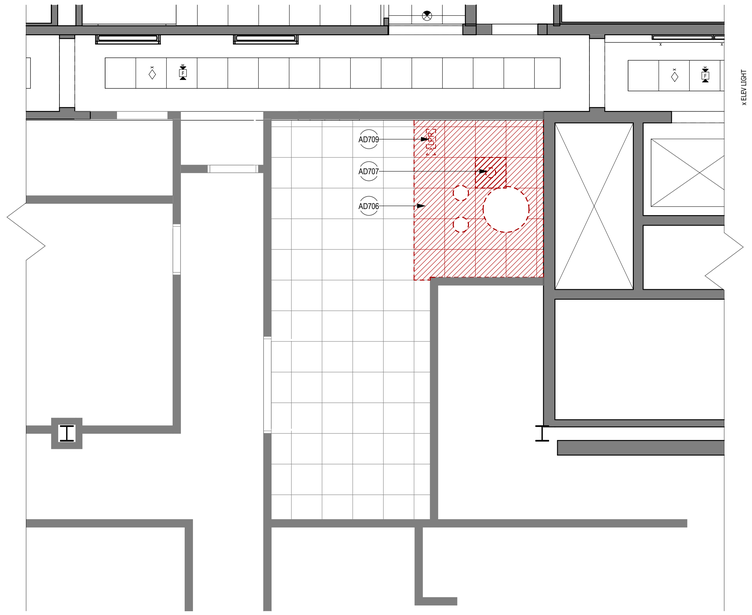
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SHEET NUMBER A7.4

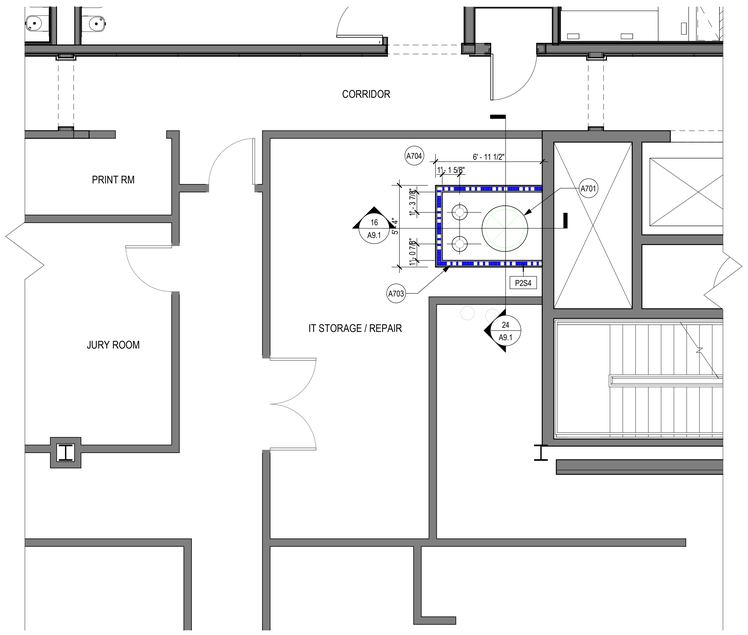
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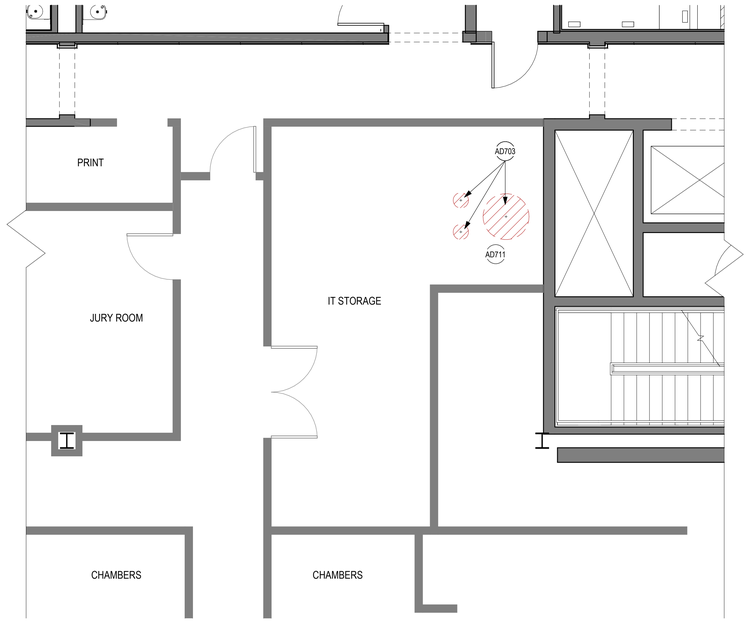
68 SECOND LEVEL - RCP
SCALE: 1/4" = 1'-0"



36 SECOND LEVEL - DEMO RCP
SCALE: 1/4" = 1'-0"



72 SECOND LEVEL - ENLARGED PLAN
SCALE: 1/4" = 1'-0"



40 SECOND LEVEL - DEMO PLAN
SCALE: 1/4" = 1'-0"

GRAPHIC LEGEND

- EXISTING PARTITION TO REMAIN
- EXISTING PARTITION TO BE REMOVED
- NO OPENING MARK AT EXISTING DOORS WITH NO WORK - TYP
- EXISTING DOOR TO REMAIN
- EXISTING DOOR AND FRAME TO BE REMOVED
- EXISTING WINDOW TO REMAIN
- EXISTING WINDOW TO BE REMOVED
- EXISTING FLOOR SLAB TO BE REMOVED

GENERAL SHEET NOTES

A. REFER TO THE PROJECT GENERAL NOTES IN THE G1.X SERIES FOR INFORMATION REGARDING VERFICATION AND PROTECTION OF EXISTING CONDITIONS.

B. REFER TO THE A0.X SERIES SHEETS FOR ARCHITECTURAL GENERAL NOTES, DRAWING, REFERENCE AND MATERIAL SYMBOLS, ABBREVIATIONS, AS WELL AS DIMENSIONING CONVENTIONS USED ON THIS DRAWING.

C. REFER TO AND COORDINATE WITH STRUCTURAL, CIVIL, MECHANICAL, PLUMBING, AND ELECTRICAL DRAWINGS FOR ADDITIONAL DEMOLITION INFORMATION NOT SHOWN ON THIS DRAWING.

D. DEMOLITION WORK SHALL BE DONE IN A MANNER WHICH WILL NOT CAUSE UNNECESSARY INCONVENIENCE OR DANGER TO USERS OF THE PREMISES AND ADJACENT SITE AND NOT INTERFERE WITH ITS OPERATION. ANY DEMOLITION WORK TO BE PERFORMED MUST BE PLANNED IN ADVANCE AND APPROVED BY THE OWNER.

E. ALL MATERIALS INDICATED TO BE REMOVED SHALL BE DISPOSED OF PROPERLY AND REMOVED FROM THE SITE.

F. ALL REMOVED MATERIALS AND EQUIPMENT WHICH IS CLASSIFIED AS "SALVAGE FOR OWNER" SHALL REMAIN THE PROPERTY OF THE OWNER. DELIVER SUCH MATERIALS AND EQUIPMENT ON THE PREMISES AS DIRECTED BY THE OWNER AND NEATLY STORE AND PROTECT FROM DAMAGE.

G. ALL REMOVED MATERIALS AND EQUIPMENT WHICH IS CLASSIFIED "SALVAGE FOR RELOCATION" SHALL REMAIN THE PROPERTY OF THE OWNER. THE CONTRACTOR IS RESPONSIBLE FOR PLACING ITEMS IN STORAGE ON SITE AND FOR THE PROTECTION OF THOSE ITEMS. THESE ITEMS WILL BE RELOCATED. REFER TO THE FLOOR PLANS FOR NEW LOCATIONS.

H. PATCH AND REPAIR ALL ELEMENTS THAT ARE TO REMAIN WHICH ARE DAMAGED FROM THE DEMOLITION WORK WITH CONSTRUCTION TO MATCH EXISTING CONDITIONS.

REFERENCE KEYNOTES

SHEET KEYNOTES

A701 MECH FLUE AND PIPE SLAB OPENINGS
A703 NEW WALL TO BE FINISHED TO MATCH EXISTING, INCLUDING PAINT AND BASEBOARD
A704 RE-INSTALL SALVAGED FINISH FLOOR; OTHERWISE INSTALL NEW FLOORING TO MATCH EXISTING.
A706 RE-INSTALL SALVAGED ACT IF POSSIBLE; OTHERWISE INSTALL NEW ACT TO MATCH EXISTING.
A707 RE-INSTALL SALVAGED LIGHT FIXTURE
A708 RE-INSTALL SALVAGED SECURITY CAMERA
AD703 DEMO SLAB FOR MECH FLUE AND PIPE PENETRATION. SLAB OPENINGS TO BE ALIGNED AT SAME PLACE FROM C ST LVL UP TO 5TH LVL. SEE DET 36/A7.1 FOR DIMENSIONS. RE MECH DRAWINGS.
AD706 REMOVE AND SALVAGE EXISTING ACT; ACT TO BE RE-INSTALLED DURING BASE DESIGN
AD707 REMOVE AND SALVAGE EXISTING LIGHT FIXTURE; FIXTURE TO BE RE-INSTALLED DURING BASE DESIGN
AD709 REMOVE AND SALVAGE EXISTING SECURITY CAMERA; CAMERA TO BE RE-INSTALLED DURING BASE DESIGN
AD711 REMOVE AND SALVAGE EXISTING FLOORING. SEE PROPOSED PLAN FOR SCOPE OF WORK

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SEALS AND SIGNATURES

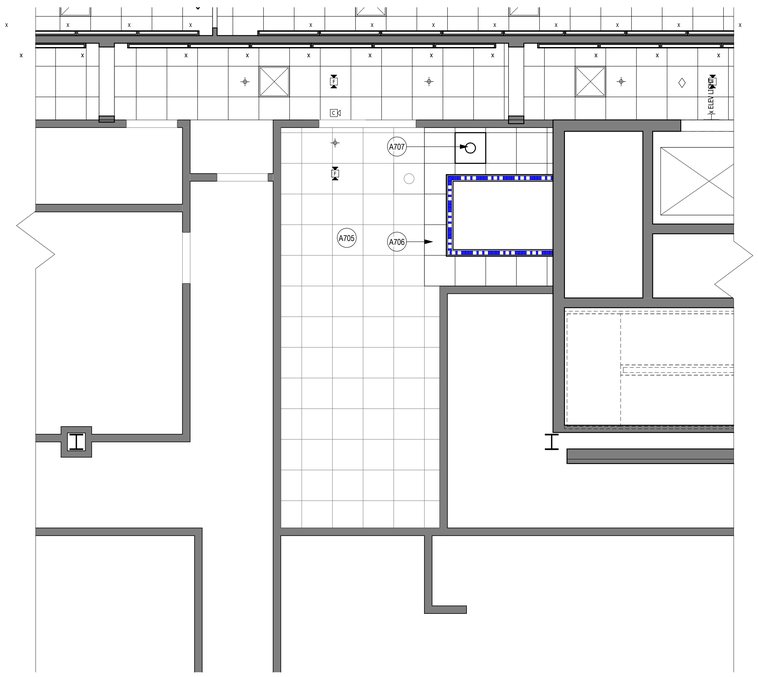
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SHEET TITLE
ENLARGED FLOOR PLANS - SECOND LEVEL

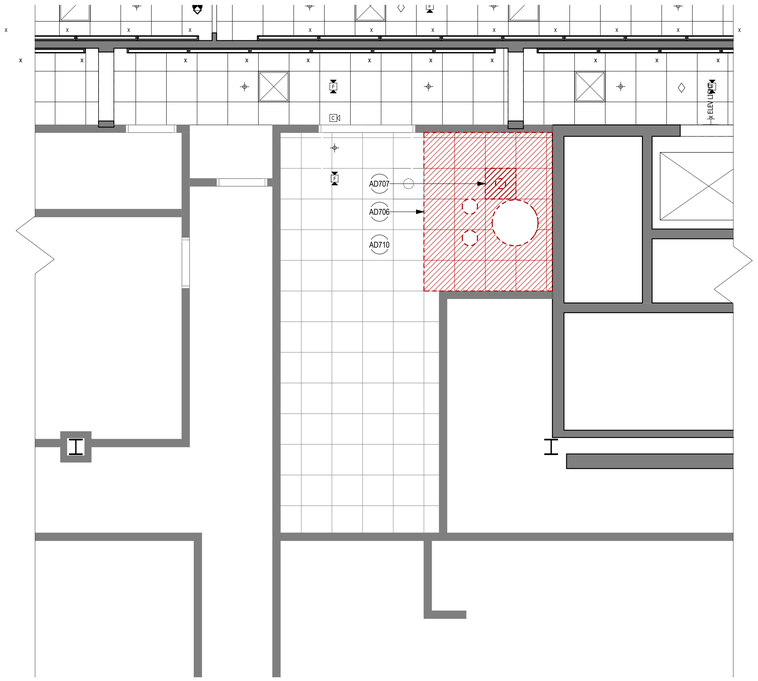
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PROJECT NUMBER

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SHEET NUMBER

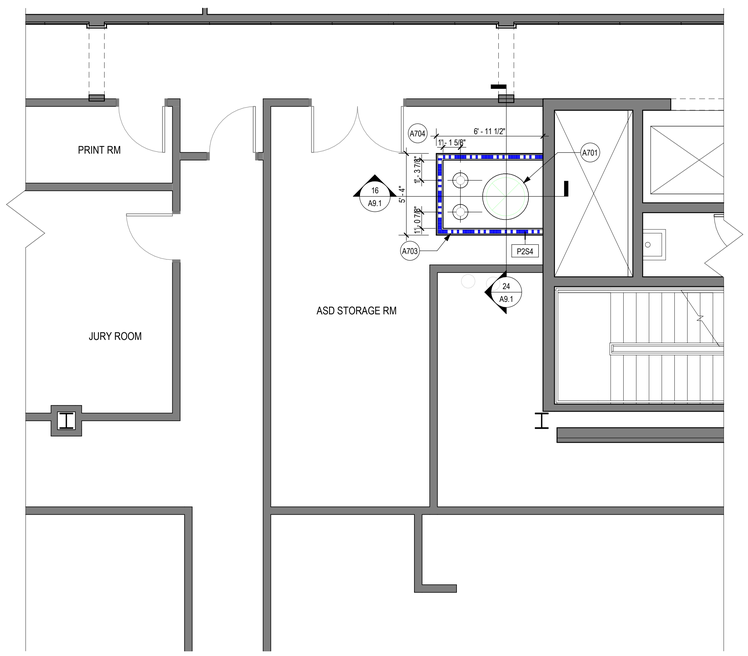
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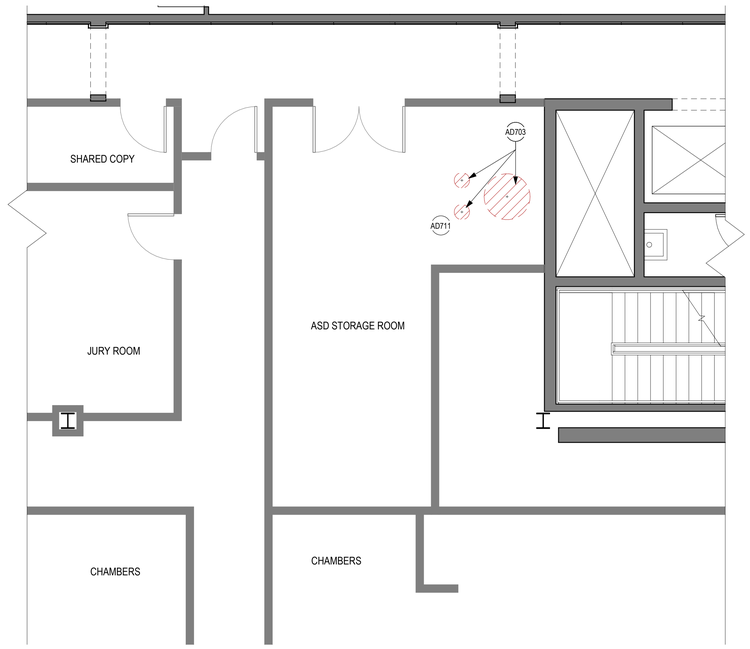
68 THIRD LEVEL - RCP
SCALE: 1/4" = 1'-0"



36 THIRD LEVEL - DEMO RCP
SCALE: 1/4" = 1'-0"



72 THIRD LEVEL - ENLARGED PLAN
SCALE: 1/4" = 1'-0"



40 THIRD LEVEL - DEMO PLAN
SCALE: 1/4" = 1'-0"

GRAPHIC LEGEND

- EXISTING PARTITION TO REMAIN
- EXISTING PARTITION TO BE REMOVED
- NO OPENING MARK AT EXISTING DOORS WITH NO WORK - TYP
- EXISTING DOOR TO REMAIN
- EXISTING DOOR AND FRAME TO BE REMOVED
- EXISTING WINDOW TO REMAIN
- EXISTING WINDOW TO BE REMOVED
- EXISTING FLOOR SLAB TO BE REMOVED

GENERAL SHEET NOTES

A. REFER TO THE PROJECT GENERAL NOTES IN THE G1.X SERIES FOR INFORMATION REGARDING VERFICATION AND PROTECTION OF EXISTING CONDITIONS.

B. REFER TO THE A0.X SERIES SHEETS FOR ARCHITECTURAL GENERAL NOTES, DRAWING, REFERENCE AND MATERIAL SYMBOLS, ABBREVIATIONS, AS WELL AS DIMENSIONING CONVENTIONS USED ON THIS DRAWING.

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REFERENCE KEYNOTES

SHEET KEYNOTES

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A703	NEW WALL TO BE FINISHED TO MATCH EXISTING, INCLUDING PAINT AND BASEBOARD
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A706	RE-INSTALL SALVAGED ACT IF POSSIBLE; OTHERWISE INSTALL NEW ACT TO MATCH EXISTING.
A707	RE-INSTALL SALVAGED LIGHT FIXTURE
AD703	DEMO SLAB FOR MECH FLUE AND PIPE PENETRATION. SLAB OPENINGS TO BE ALIGNED AT SAME PLACE FROM C ST LVL UP TO 5TH LVL. SEE DET 36/A7.1 FOR DIMENSIONS. RE MECH DRAWINGS.
AD706	REMOVE AND SALVAGE EXISTING ACT; ACT TO BE RE-INSTALLED DURING BASE DESIGN
AD707	REMOVE AND SALVAGE EXISTING LIGHT FIXTURE; FIXTURE TO BE RE-INSTALLED DURING BASE DESIGN
AD710	EXISTING ACT TO REMAIN
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SEALS AND SIGNATURES

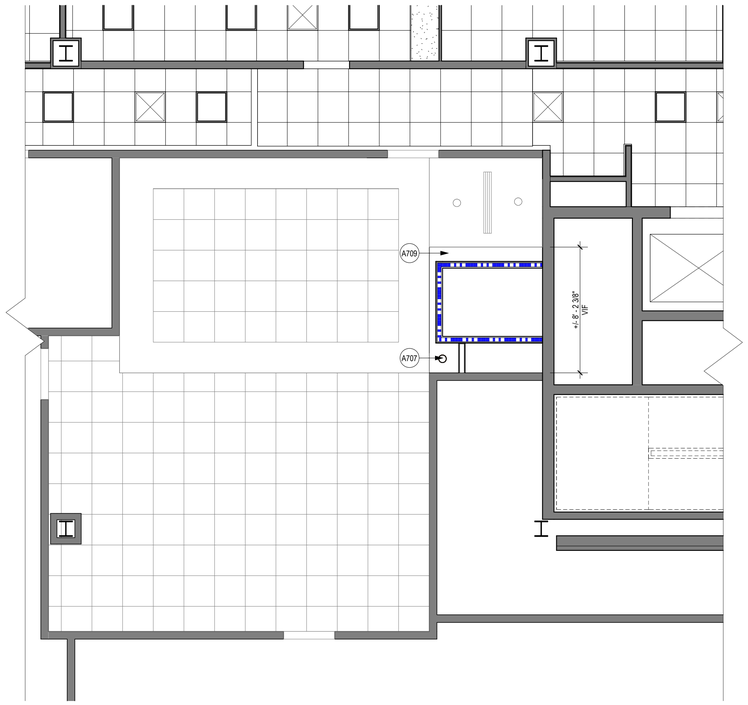
DISTRICT OF COLUMBIA JOHN G. CRUMP ARC100840 LICENSED ARCHITECT

SHEET TITLE
ENLARGED FLOOR PLANS - THIRD LEVEL

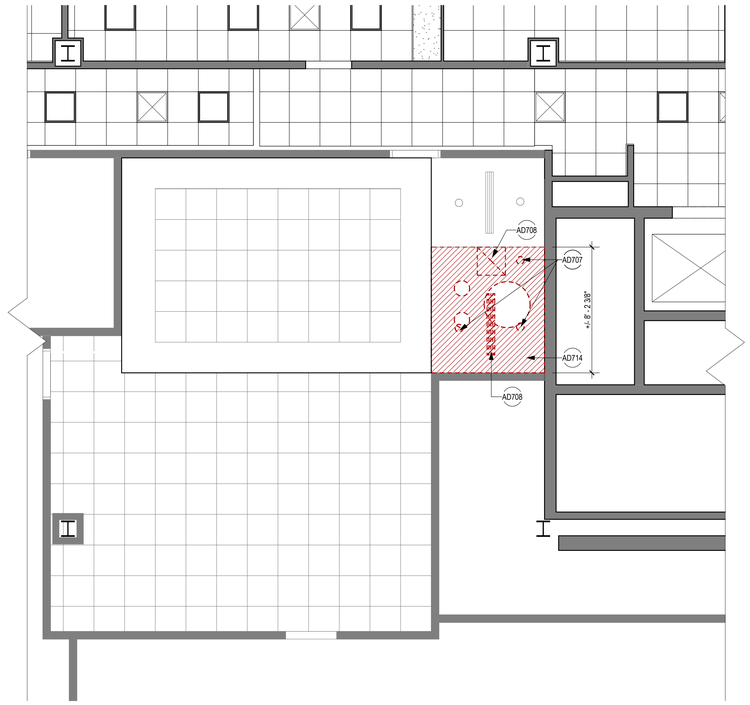
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SHEET NUMBER A7.6

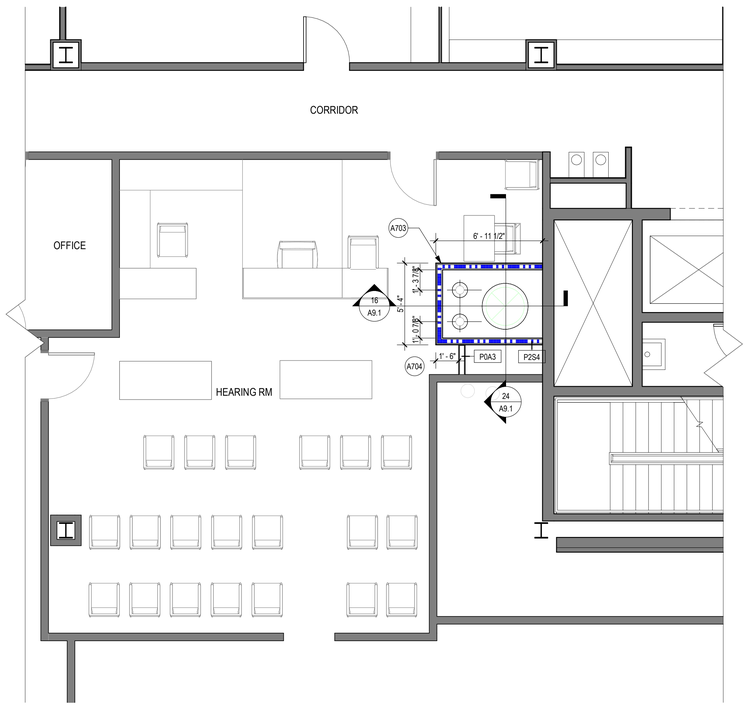
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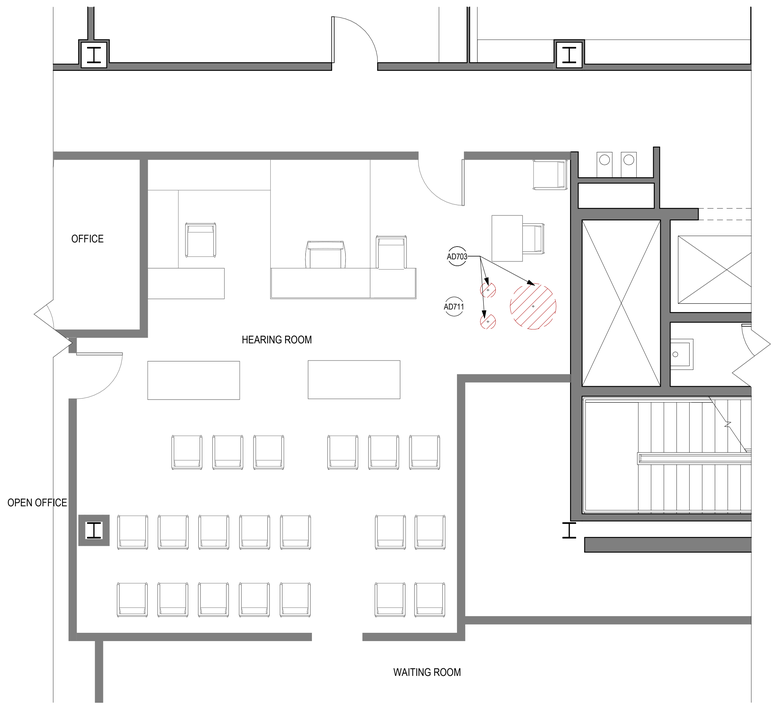
68 FOURTH LEVEL - RCP
SCALE: 1/4" = 1'-0"



36 FOURTH LEVEL - DEMO RCP
SCALE: 1/4" = 1'-0"



72 FOURTH LEVEL - ENLARGED PLAN
SCALE: 1/4" = 1'-0"



40 FOURTH LEVEL - DEMO PLAN
SCALE: 1/4" = 1'-0"

GRAPHIC LEGEND

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SHEET KEYNOTES

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A707	RE-INSTALL SALVAGED LIGHT FIXTURE
A709	INSTALL NEW GWB CEILING TO MATCH ADJACENT CEILING
AD703	DEMO SLAB FOR MECH FLUE AND PIPE PENETRATION. SLAB OPENINGS TO BE ALIGNED AT SAME PLACE FROM C ST LVL UP TO 5TH LVL. SEE DET 36/A7.1 FOR DIMENSIONS. RE MECH DRAWINGS.
AD707	REMOVE AND SALVAGE EXISTING LIGHT FIXTURE; FIXTURE TO BE RE-INSTALLED DURING BASE DESIGN
AD708	REMOVE AND SALVAGE EXISTING MECH GRILLE; GRILLE TO BE RE-INSTALLED DURING BASE DESIGN
AD711	REMOVE AND SALVAGE EXISTING FLOORING. SEE PROPOSED PLAN FOR SCOPE OF WORK
AD714	DEMO EXISTING GWB CLNG; SEE PROPOSED PLAN FOR SCOPE OF WORK

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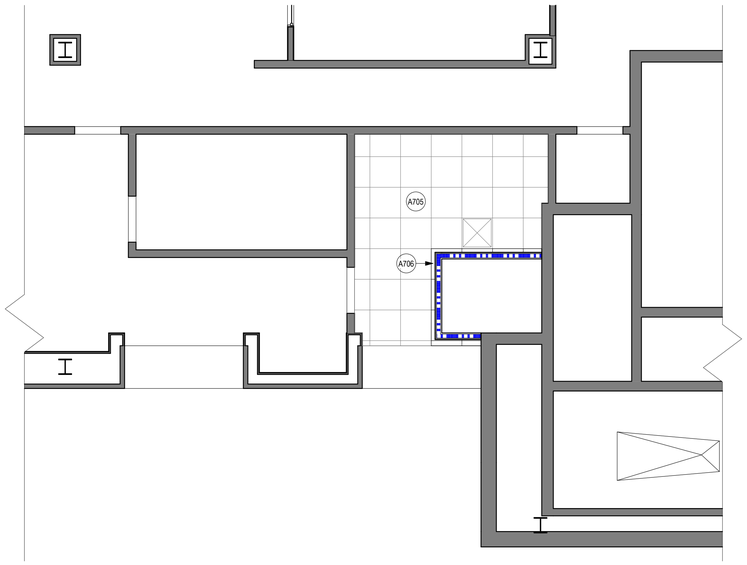
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JOHN G. CRUMP
ARC100840
LICENSED
ARCHITECT

SHEET TITLE
ENLARGED FLOOR PLANS - FOURTH LEVEL

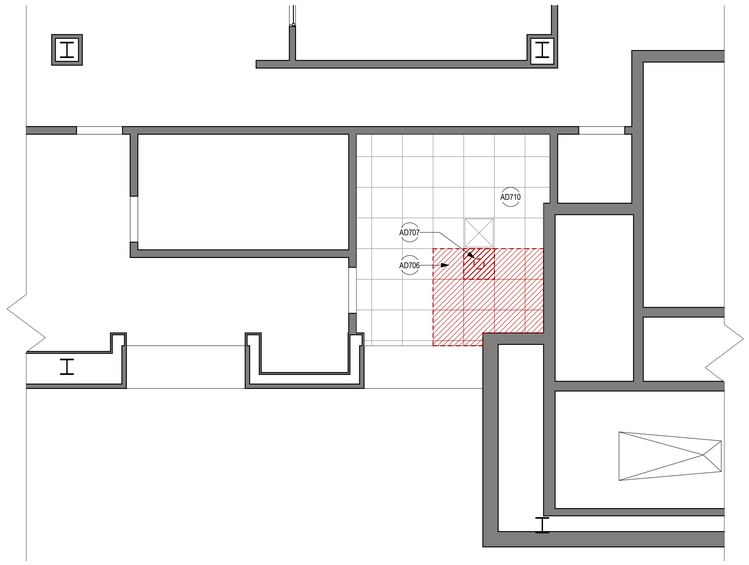
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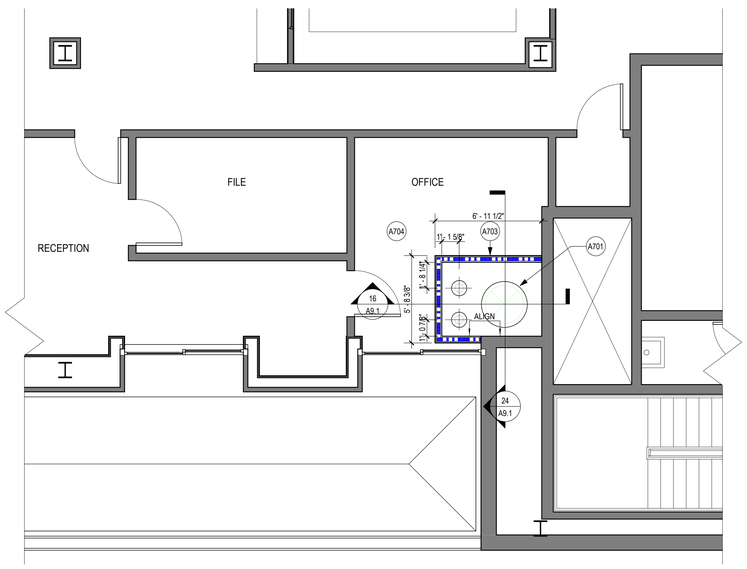
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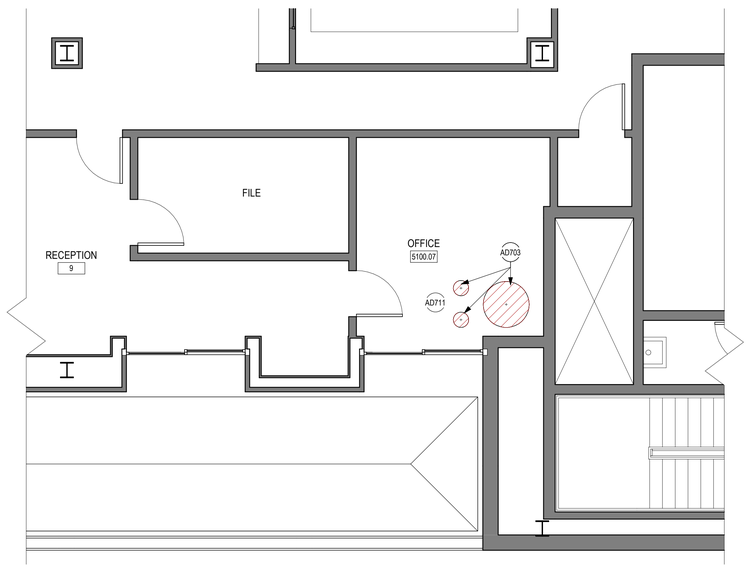
68 FIFTH LEVEL - RCP
SCALE: 1/4" = 1'-0"



36 FIFTH LEVEL - DEMO RCP
SCALE: 1/4" = 1'-0"



72 FIFTH LEVEL - ENLARGED PLAN
SCALE: 1/4" = 1'-0"



40 FIFTH LEVEL - DEMO PLAN
SCALE: 1/4" = 1'-0"

GRAPHIC LEGEND

GENERAL SHEET NOTES

A. REFER TO THE A0.X SERIES SHEETS FOR ARCHITECTURAL GENERAL NOTES, DRAWING, REFERENCE AND MATERIAL SYMBOLS, ABBREVIATIONS, AS WELL AS DIMENSIONING CONVENTIONS USED ON THIS SHEET.

B. FOR BASIC LIFE SAFETY AND CODE INFORMATION APPLYING TO THIS PROJECT, REFER TO THE G2.X SERIES SHEETS LOCATED PER THE PROJECT SHEET INDEX.

C. REFER TO AND COORDINATE WITH STRUCTURAL, MECHANICAL, PLUMBING, AND ELECTRICAL FOR ADDITIONAL INFORMATION NOT SHOWN ON THIS SHEET.

D. REFER TO THE LIFE SAFETY PLANS IN THE G2.X SERIES SHEETS FOR FIRE RESISTIVE CONSTRUCTION REQUIREMENTS.

REFERENCE KEYNOTES

SHEET KEYNOTES

A701	MECH FLUE AND PIPE SLAB OPENINGS
A703	NEW WALL TO BE FINISHED TO MATCH EXISTING, INCLUDING PAINT AND BASEBOARD
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A705	EXISTING ACT
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AD703	DEMO SLAB FOR MECH FLUE AND PIPE PENETRATION. SLAB OPENINGS TO BE ALIGNED AT SAME PLACE FROM C ST LVL UP TO 5TH LVL. SEE DET 36/A7.1 FOR DIMENSIONS. RE MECH DRAWINGS.
AD706	REMOVE AND SALVAGE EXISTING ACT; ACT TO BE RE-INSTALLED DURING BASE DESIGN
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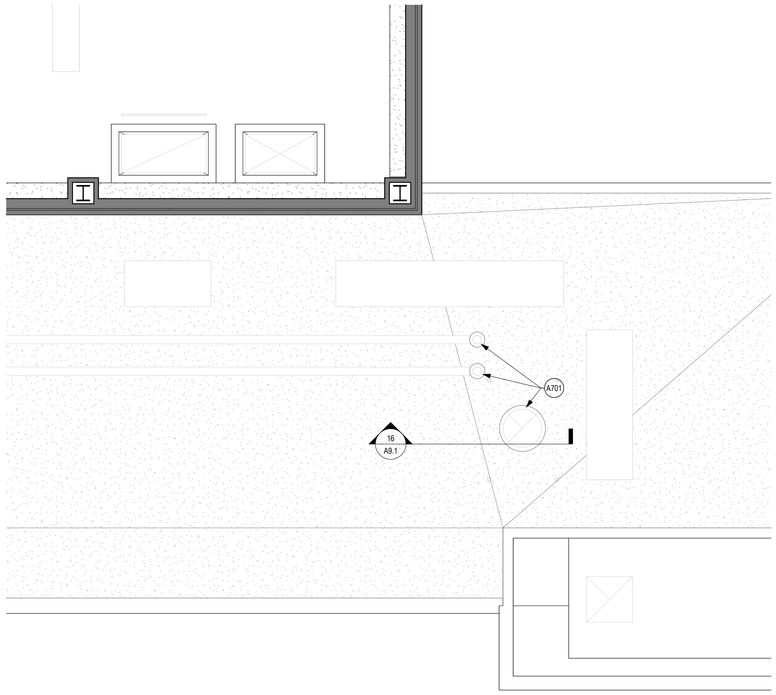
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ARCHITECT

SHEET TITLE
ENLARGED FLOOR PLANS - FIFTH LEVEL

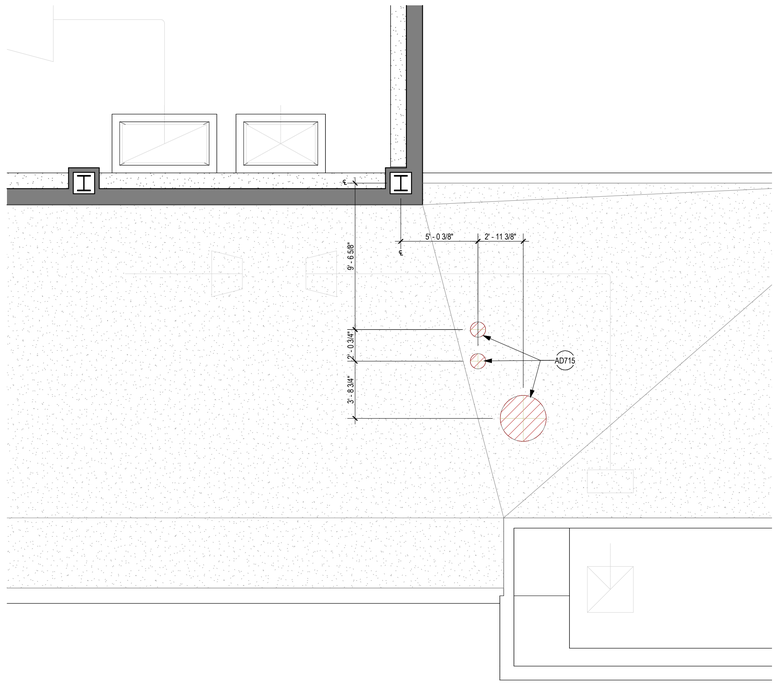
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PROJECT NUMBER

A7.8
SHEET NUMBER

Author
Plot Date: 7/3/2025 9:47:46 AM



72 ROOF LEVEL - ENLARGED PLAN
SCALE: 1/4" = 1'-0"



40 ROOF LEVEL - DEMO PLAN
SCALE: 1/4" = 1'-0"

GRAPHIC LEGEND

GENERAL SHEET NOTES

A. REFER TO THE A0.X SERIES SHEETS FOR ARCHITECTURAL GENERAL NOTES, DRAWING, REFERENCE AND MATERIAL SYMBOLS, ABBREVIATIONS, AS WELL AS DIMENSIONING CONVENTIONS USED ON THIS SHEET.

B. REFER TO THE A9.4.X SERIES SHEETS FOR CEILING DETAILS.

REFERENCE KEYNOTES

SHEET KEYNOTES

A701	MECH FLUE AND PIPE SLAB OPENINGS
AD703	DEMO SLAB FOR MECH FLUE AND PIPE PENETRATION. SLAB OPENINGS TO BE ALIGNED AT SAME PLACE FROM C ST LVL UP TO 5TH LVL. SEE DET 36/A7.1 FOR DIMENSIONS. RE MECH DRAWINGS.
AD715	DEMO SLAB FOR MECH FLUE AND PIPE PENETRATION.

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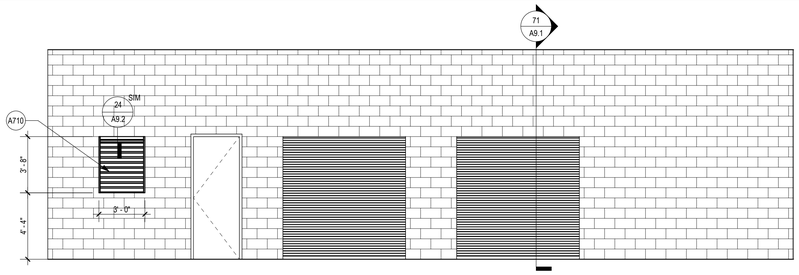
DISTRICT OF COLUMBIA JOHN G. CRUMP ARC100840 LICENSED ARCHITECT

SHEET TITLE
ENLARGED FLOOR PLANS - ROOF PLANS

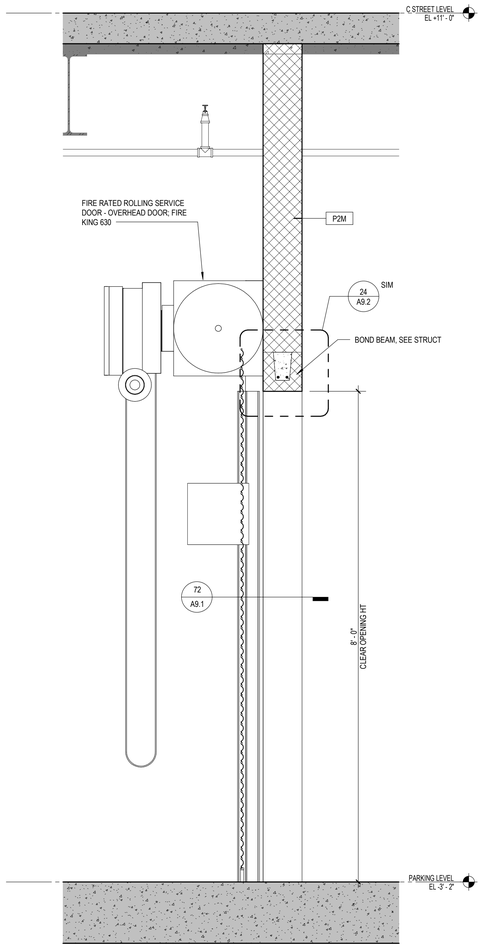
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A7.9
SHEET NUMBER

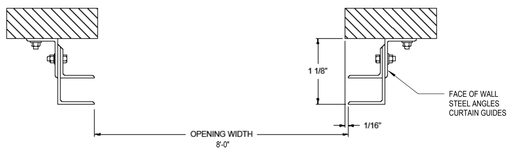
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Plot Date:



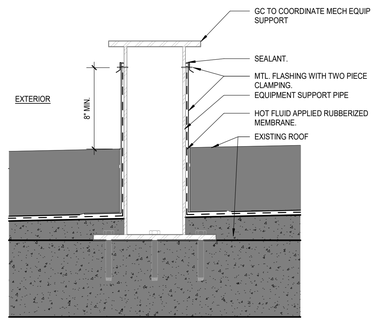
66 MECH ROOM - INTERIOR ELEVATION
SCALE: 1/4" = 1'-0"



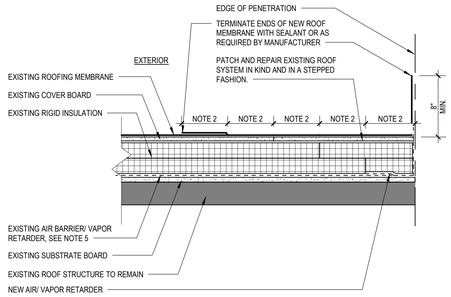
71 OVERHEAD DOOR SECTION DETAIL
SCALE: 1" = 1'-0"



72 OVERHEAD DOOR PLAN DETAIL
SCALE: 3" = 1'-0"

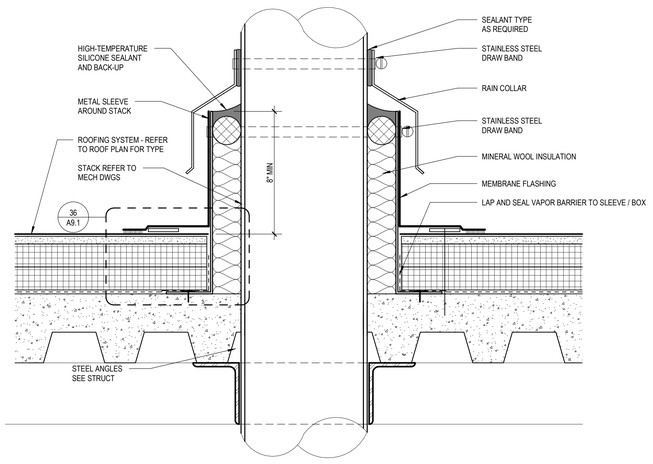


52 EQUIP STAND POST FLASHING DET
SCALE: 1 1/2" = 1'-0"

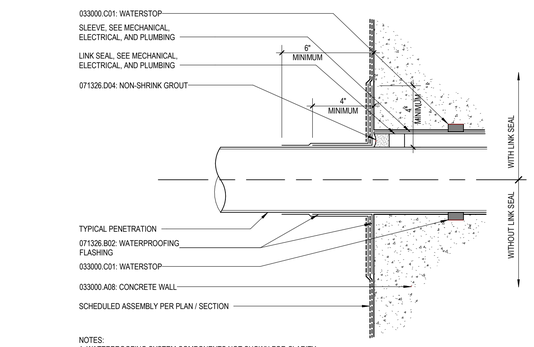


NOTES:
1. LAP MEMBRANE OVER EXISTING MEMBRANE PER MANUFACTURER'S RECOMMENDED DIMENSION. PREPARE EXISTING MEMBRANE PER MANUFACTURER'S REQUIREMENTS. PROVIDE COMPATIBILITY LETTER FROM ROOF MANUFACTURER FOR CHEMICAL AND ADHESION COMPATIBILITY WITH EXISTING MEMBRANE.
2. LAP COVER BOARD, TAPERED INSULATION, RIGID INSULATION, AND VAPOR RETARDER MINIMUM 6" AND AS REQUIRED BY MANUFACTURER OVER EXISTING COMPONENTS IN A STEPPED FASHION.
3. CONTRACTOR TO FIELD VERIFY EXISTING ROOF COMPONENTS.
4. PATCH AND REPAIR OF EXISTING ROOF MEMBRANE IS NOT TO IMPEDE EXISTING ROOF DRAINAGE.
5. IF EXISTING ROOF SYSTEM DOES NOT INCLUDE AIR/VAPOR RETARDER LAYER, PROVIDE SELF-ADHERED SHEET AIR/VAPOR RETARDER AND TERMINATE AIR/VAPOR RETARDER TO TOP OF INSULATION BELOW COVER BOARD.

36 ROOF SYSTEM PATCH AND REPAIR DETAIL
SCALE: 1 1/2" = 1'-0"

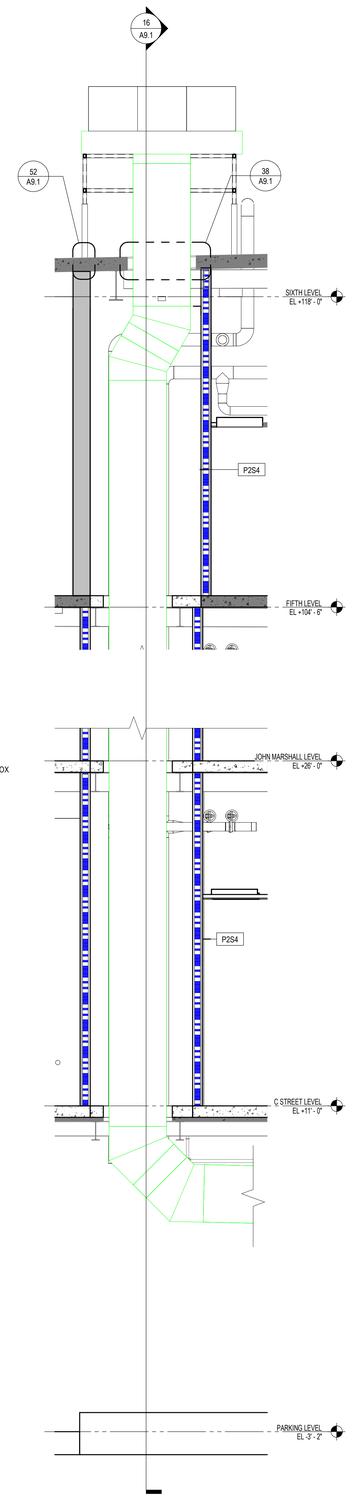


38 STACK FLASHING
SCALE: 3" = 1'-0"

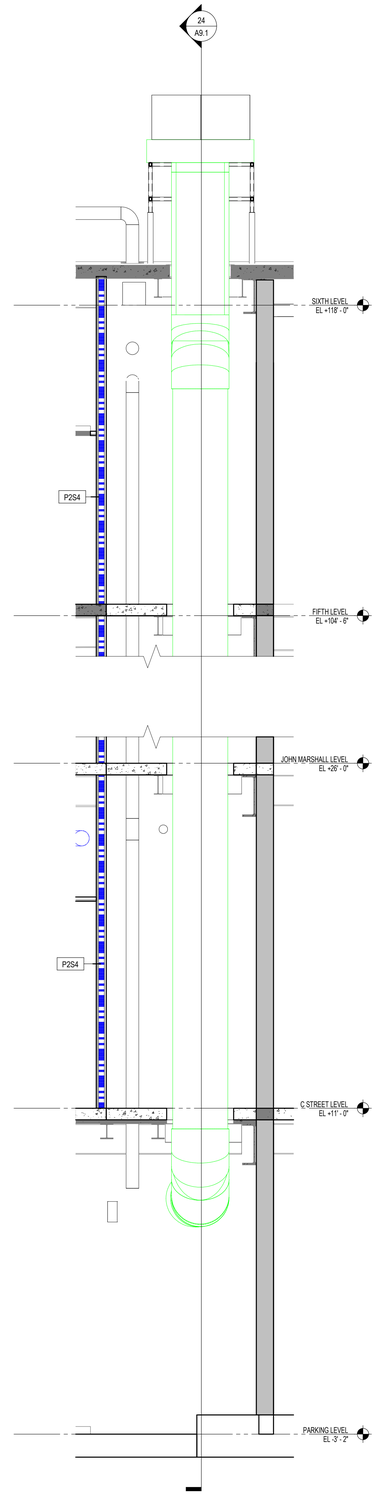


NOTES:
1. WATERPROOFING SYSTEM COMPONENTS NOT SHOWN FOR CLARITY

48 POST-APPLIED WATERPROOFING PIPE PENETRATION
SCALE: 3" = 1'-0"



24 SHAFT NORTH/SOUTH SECTION
SCALE: 3/8" = 1'-0"



16 SHAFT EAST/WEST SECTION
SCALE: 3/8" = 1'-0"

Mechanical Room 1000 Heating System Upgrade
500 Indiana Avenue N.W.
Washington, DC 20001

SMITHGROUP
1700 NEW YORK AVENUE NW
SUITE 100
WASHINGTON, DC 20006
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www.smithgroup.com

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ISSUE FOR BID		03 JULY 2025

SEALS AND SIGNATURES

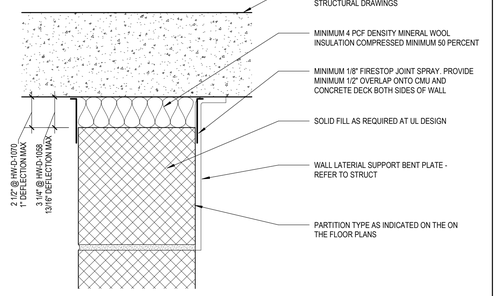
DISTRICT OF COLUMBIA
JOHN G. CRUMP
ARC100840
LICENSED ARCHITECT

SHEET TITLE
SHAFT SECTION DETAILS

15749.000
PROJECT NUMBER

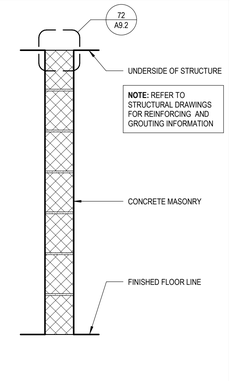
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Plot Date:

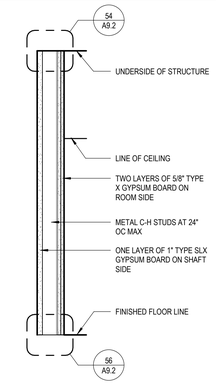


AT CMU WALL AND CONCRETE DECK - (UL DESIGN NO. HW-D-1058, HW-D-1070)

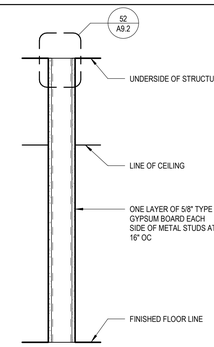
66 FIRE-RATED PARTITION HEAD DETAIL (CMU) - 1 AND 2 HOUR RATED
SCALE: 3" = 1'-0"



P2M CONCRETE MASONRY ASSEMBLY
2 HOUR RATED (UL - U905)
SCALE: NTS



P2S SHAFT WALL ASSEMBLY
2 HOUR RATED (UL- U438)
SCALE: NTS



P0A TWO SIDED ASSEMBLY
NON-COMBUSTIBLE
SCALE: NTS

DOOR AND INTERIOR OPENING SCHEDULE

NUMBER	FIRE RATING	SIZE WIDTH	SIZE HEIGHT	DOOR ELEVATION	DOOR MATERIAL	DOOR FINISH	FRAME ELEVATION	FRAME MATERIAL	FRAME FINISH	HARDWARE SET
PARKING LEVEL										
P1-01	90 MIN	3' - 0"	8' - 0"	F	HM	TO MATCH EXISTING	A	HM	TO MATCH EXISTING	HW SET 01
P1-02	90 MIN	8' - 0"	8' - 0"	CD		GRAY	CD		GRAY	OH ROLLING FIRE DOOR - FIREKING 630 W/ ELEC MOTOR RHX
P1-03	90 MIN	8' - 0"	8' - 0"	CD		GRAY	CD		GRAY	OH ROLLING FIRE DOOR - FIREKING 630 W/ ELEC MOTOR RHX
C STREET LEVEL										
C-01		3' - 0"	7' - 0"	F	HM	TO MATCH EXISTING	A	HM	TO MATCH EXISTING	HW SET 02
JOHN MARSHALL LEVEL										
JM-01		3' - 0"	7' - 0"	F	HM	TO MATCH EXISTING	A	HM	TO MATCH EXISTING	HW SET 02
INDIANA AVE LEVEL										
IND-01		3' - 0"	7' - 0"	F	HM	TO MATCH EXISTING	A	HM	TO MATCH EXISTING	HW SET 02

HARDWARE SETS

Set.01
Doors: P1-01

2 Hinges	T4A3786 4-1/2" x 4-1/2" US26D MK
1 Hinges	T4A3786 4-1/2" x 4-1/2" x QC8 US26D MK
1 Electrified Mortise Lockset	ED5200A N9905 M92 US26D CR
1 Rim Cylinder/Core	MATCH EXISTING FACILITY KEY SYSTEM
1 Closer	4040XP SCUSH 689 LC
1 Gasketing	S88BL PE
1 Wiring Harness	QC-C x LENGTH REQ'D MK
1 Wiring Harness	QC-C1500P MK
1 Power Supply	AQD SERIES SU
1 Card Reader	BY SECURITY CONTRACTOR
1 Door Contact	BY SECURITY CONTRACTOR
1 Wiring Diagram	ELEVATION & POINT-TO-POINT

Operational Description: Door is normally closed, latched, and latched; active leaf is electronically locked. Presenting a valid card to the card reader will momentarily unlock outside lever of exit device trim allowing entry. Entry also by key in cylinder. Manual egress at all times by pressing rail of exit device and exiting. Pressing rail of exit device will shunt door contacts (RX) for authorized egress.
Door contact monitors the position of the door and reports this status to the security system.

Set.02
Doors: C-01, JM-01, IND-01

2 Hinges	T4A3786 4-1/2" x 4-1/2" US26D MK
1 Hinges	T4A3786 4-1/2" x 4-1/2" x QC8 US26D MK
1 Electrified Mortise Lockset	ML20906 M92 NSA LESS CYL/CORE US26D CR
1 Mortise Cylinder/Core	MATCH EXISTING FACILITY KEY SYSTEM
1 Closer	4040XP EDA 689 LC
1 Wall Stop	409 US32D RO
1 Wiring Harness	QC-C x LENGTH REQ'D MK
1 Wiring Harness	QC-C1500P MK
1 Power Supply	AQD SERIES SU
1 Card Reader	BY SECURITY CONTRACTOR
1 Door Contact	BY SECURITY CONTRACTOR
1 Wiring Diagram	ELEVATION & POINT-TO-POINT

CR – Corbin Russwin
LC – LCN
MK – McKinney
PE - Pemko
RO - Rockwood
SU - Securitron

Operational Description: Door is normally closed, latched, and locked. Presenting a valid card to the card reader will momentarily unlock outside lever of lockset allowing entry. Entry also by key in cylinder. Manual egress at all times by operating inside lever and exiting. Operating inside lever will shunt door contact (RX) for authorized egress.
Door contact monitors the position of the door and reports this status to the security system.

GENERAL SHEET NOTES

A. GENERAL OPENING SCHEDULE HEADINGS:
   1. DOOR TYPE: CODE IN SCHEDULE REFERS TO ELEVATION. REFER TO SHEET A9.2 FOR ELEVATIONS
   2. FRAME TYPE: CODE IN SCHEDULE REFERS TO ELEVATION. REFER TO SHEET A9.2 FOR ELEVATIONS
   3. HARDWARE GROUP: REFER TO SPECIFICATION SECTION 087100 FOR SPECIFIC REQUIREMENTS.

B. WOOD AND HOLLOW METAL DOORS ARE 1-3/4" THICK, TYP. UNLESS NOTED OTHERWISE. FOR ALL OTHER DOORS SEE INDICATED DETAILS AND SPECIFICATIONS.

C. UNDERCUT OF FIRE RATED OPENINGS SHALL BE NO GREATER THAN 3/4" ABOVE THE TOP OF THE FINISH FLOOR SURFACE OR APPLIED THRESHOLD PER NFPA 80.

D. ALL DOORS TO PROVIDE A MINIMUM CLEAR OPENING WIDTH OF 32" WITH DOOR OPEN AT 90°.

E. DOOR OPENING FORCE NOT TO EXCEED 5 LBS. AT INTERIOR HINGED, SLIDING, OR FOLDING DOORS AND FATES; WITH THE EXCEPTION OF FIRE DOORS.

F. FIRE DOORS SHALL BE SUBJECT TO THE FOLLOWING OPENING FORCES: THE LATCH SHALL RELEASE AT 15 LBS; SET IN MOTION AT 30 KBS.; SWING TO A FULL-OPEN POSITION AT 15 LBS.

G. ALL EGRESS DOORS SHALL BE READILY OPENABLE FROM THE EGRESS SIDE WITHOUT THE USE OF A KEY OR SPECIAL KNOWLEDGE OR EFFORT, UNLESS OTHERWISE APPROVED BY THE AHJ.

H. GROUTING OR FRAMES IS PROHIBITED, EXCEPT WHERE SPECIFICALLY IDENTIFIED BY DETAIL OR SPECIFICATION.

I. DOOR SWING AT FULL OPEN POSITION IS AS INDICATED ON THE PLANS.

SCHEDULE ABBREVIATIONS

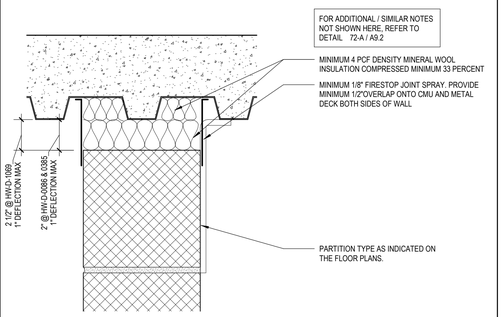
REFER TO A0.1 FOR ADDITIONAL PROJECT ABBREVIATIONS

ABBREVIATIONS USED IN THE OPENING MATERIAL AND FRAME MATERIAL COLUMNS IN THE SCHEDULE:

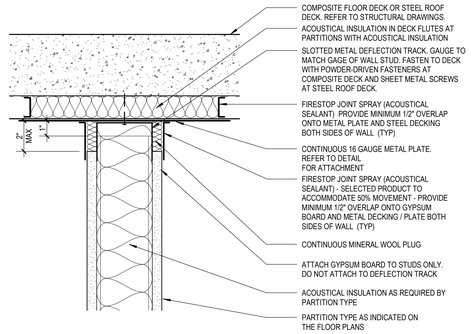
ALUM	ALUMINUM
GL	GLASS
HM	HOLLOW METAL
SST	STAINLESS STEEL
STL	STEEL
WD	WOOD

ABBREVIATIONS USED IN THE "DOOR FINISH" AND THE "FRAME FINISH" COLUMNS IN THE SCHEDULE

ANOD	ANODIZED
NA	NOT APPLICABLE
PLAM	PLASTIC LAMINATE
P	PAINT
PREFIN	PREFINISHED



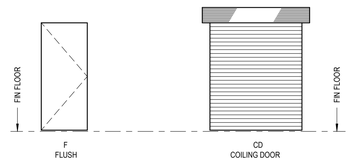
C PARALLEL TO STEEL DECK FLUTES
AT CMU WALL AND STEEL DECK -
(UL DESIGN NO. HW-D-0086, HW-D-0385, HW-D-1069)

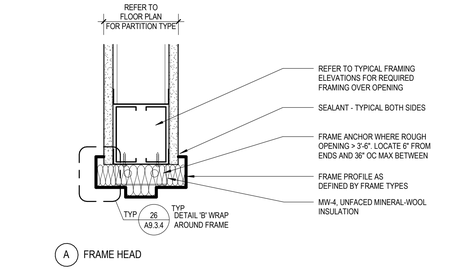


A PERPENDICULAR TO STEEL DECK FLUTES: AT BOTTOM OF FLUTES AT METAL STUD WALL AND STEEL DECK W/ ACOUSTICAL INSULATION

52 NON-FIRE-RATED PARTITION HEAD DETAIL (METAL STUD)
SCALE: 3" = 1'-0"

DOOR TYPES

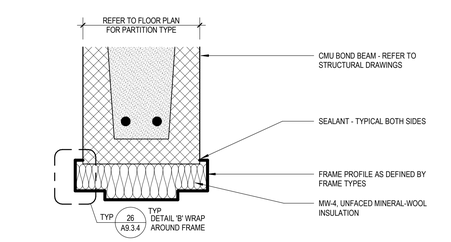




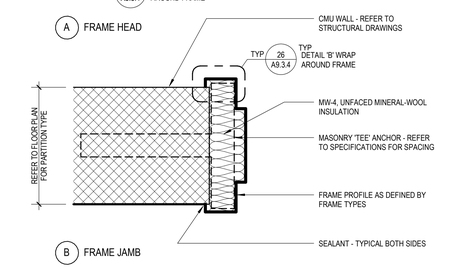
A FRAME HEAD

B FRAME JAMB

22 TYPICAL INTERIOR OPENING - WRAP-AROUND HOLLOW METAL FRAME
SCALE: 3" = 1'-0"
AT METAL STUD PARTITION

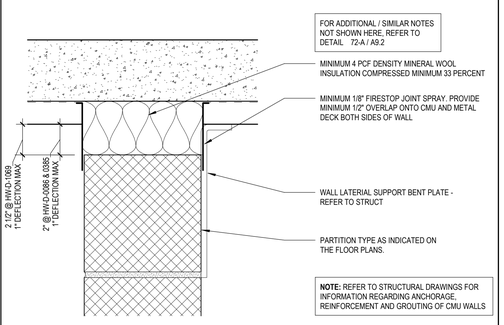


A FRAME HEAD

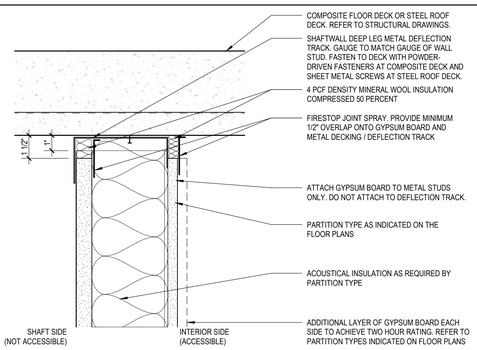


B FRAME JAMB

24 TYPICAL INTERIOR OPENING - WRAP-AROUND HOLLOW METAL FRAME
SCALE: 3" = 1'-0"
AT CMU PARTITION

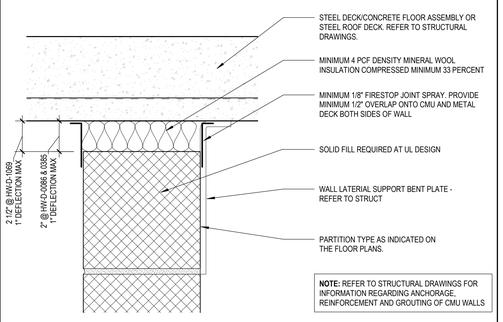


B PERPENDICULAR TO STEEL DECK FLUTES: BETWEEN FLUTES
AT CMU WALL AND STEEL DECK - (UL DESIGN NO. HW-D-0086, HW-D-0385, HW-D-1069)



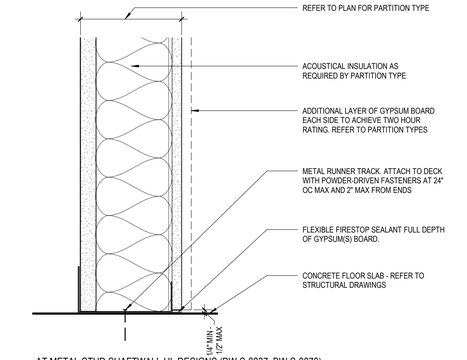
A PERPENDICULAR TO METAL DECK FLUTES: AT BOTTOM OF FLUTES AT METAL STUD SHAFTWALL AND STEEL DECK - UL DESIGNS (HW-D-0548, HW-D-0570)

54 FIRE-RATED SHAFTWALL HEAD DETAIL (METAL STUD) - 1 AND 2 HOUR RATED
SCALE: 3" = 1'-0"



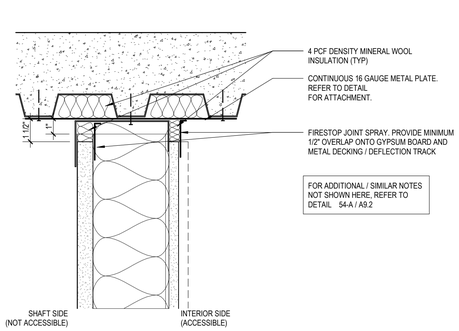
A PERPENDICULAR TO STEEL DECK FLUTES: AT BOTTOM OF FLUTES
AT CMU WALL AND STEEL DECK - (UL DESIGN NO. HW-D-0086, HW-D-0385, HW-D-1069)

72 FIRE-RATED PARTITION HEAD CONDITIONS (CMU) - 1 AND 2 HOUR RATED
SCALE: 3" = 1'-0"



AT METAL STUD SHAFTWALL UL DESIGNS (BW-S-0037, BW-S-0070)

56 FIRE-RATED SHAFTWALL BASE DETAIL (METAL STUD) - 1 AND 2 HOUR RATED
SCALE: 3" = 1'-0"



C PARALLEL TO STEEL DECK FLUTES: AT BOTTOM OF FLUTES AT METAL STUD SHAFTWALL AND STEEL DECK - UL DESIGNS (HW-D-0548, HW-D-0570)

40 FIRE-RATED SHAFTWALL HEAD DETAIL (METAL STUD) - 1 AND 2 HOUR RATED
SCALE: 3" = 1'-0"

Mechanical Room 1000 Heating System Upgrade
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SEALS AND SIGNATURES

DISTRICT OF COLUMBIA JOHN G. CRUMPACKER ARC100840 LICENSED ARCHITECT

SHEET TITLE
DOOR SCHEDULE & PARTITION DETAILS

PROJECT NUMBER 15749.000

SHEET NUMBER A9.2

START Sheet
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Plot Date:

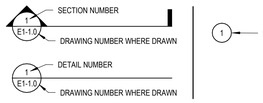
FIRE SUPPRESSION ABBREVIATIONS

A	
ABBR	ABBREVIATION
ADA	AMERICAN WITH DISABILITIES ACT
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AMB	AMBIENT
ANSI	AMERICAN NATIONAL STANDARDS
AP	ACCESS PANEL
APPROX	APPROXIMATE
B	
BFP	BACKFLOW PREVENTER (TYPE AS INDICATED)
BHP	BRAKE HORSEPOWER
BOP	BOTTOM OF PIPE
BTU/H	BRITISH THERMAL UNITS PER HOUR
BV	BALL VALVE
C	
CAP	CAPACITY
CFM	CUBIC FEET PER MNUTE
CI	CAST IRON
COMP	COMPRESSOR
COND	CONDENSATE
CONT	CONTINUATION
CV	CHECK VALVE
D	
DIA	DIAMETER
DN	DOWN
DOM	DOMESTIC
DWG	DRAWING
E	
(E)	EXISTING MATERIAL OR EQUIPMENT
EA	EACH
EFF	EFFICIENCY
EL	ELEVATION
EQ	EQUIVALENT
ET	EXPANSION TANK
EWT	ENTERING WATER TEMPERATURE
EXP	EXPANSION
EXT	EXTERNAL
F	
F	FIRE
FCU	FAN COIL UNIT
FHV	FIRE HOSE VALVE
FL	FLOOR
FPM	FEET PER MINUTE
FPS	FEET PER SECOND
FS	FLOW SWITCH
FT	FEET OR FOOT
°F	DEGREES IN FAHRENHEIT
G	
GAL	GALLON
GPD	GALLONS PER DAY
GPH	GALLONS PER HOUR
GPM	GALLONS PER MNUTE
GV	GATE VALVE
H	
HG	MERCURY
HGL	HYDRAULIC GRADE LINE
HGT	HEIGHT
HP	HORSE POWER
HPS	HIGH PRESSURE STEAM
HR	HOUR
I	
ID	INSIDE DIAMETER
IE	INVERT ELEVATION
IN	INCHES
K	
kW	KILOWATTS
L	
LGT	LENGTH
LWT	LEAVING WATER TEMPERATURE
M	
MAX	MAXIMUM
MBH	1000 BTU/HR
MECH	MECHANICAL
MIN	MINIMUM
MISC	MISCELLANEOUS
MTG	MOUNTING
N	
N.C.	NORMALLY CLOSED
N.O.	NORMALLY OPEN
NA	NOT APPLICABLE
NIC	NOT IN CONTRACT
NO	NUMBER
NOM	NOMINAL
NTS	NOT TO SCALE
O	
OD	OUTSIDE DIAMETER
OS&Y	OUTSIDE SCREW AND YOKE
P	
PH	PHASE (ELECTRICAL)
PPM	PARTS PER MILLION
PRESS	PRESSURE
PRV	PRESSURE REDUCING VALVE
PSI	POUNDS PER SQUARE INCH
PSIG	POUNDS PER SQUARE INCH - GAUGE
R	
REF	REFERENCE
RL	RELOCATED MATERIAL OR EQUIPMENT
RPM	REVOLUTIONS PER MINUTE
S	
SCFM	STANDARD CUBIC FEET PER MINUTE
SE	SEWAGE EJECTOR
SF	SQUARE FEET
SG	SPECIFIC GRAVITY
SPEC	SPECIFICATION
SPR	SPRINKLER
SPR/STP	SPRINKLER/STANDPIPE
SQ. FT.	SQUARE FEET
SS	STAINLESS STEEL
STD	STANDARD
STM	STEAM
T	
TEMP	TEMPERATURE
TS	TAMPER SWITCH
TYP	TYPICAL
U	
UON	UNLESS OTHERWISE NOTED
V	
V	VOLT
VEL	VELOCITY
W	
W	WITH
W/O	WITHOUT
WG	WATER GAUGE
Y	
YD	YARD
Z	
ZCA	ZONE CONTROL ASSEMBLY

FIRE SUPPRESSION LEGENDS AND SYMBOLS

NEW FIRE PROTECTION PIPING	2.5" FIRE HOSE VALVE CONNECTION
EXISTING FIRE PROTECTION PIPING TO REMAIN	2.5" FIRE HOSE VALVE IN CABINET
FIRE PROTECTION PIPING TO BE DEMOLISHED	HOSE STATION
RECESSED PENDENT SPRINKLER	WATER FLOW SWITCH
CONCEALED SPRINKLER	VALVE SUPERVISORY SWITCH
PENDENT SPRINKLER	INSPECTOR'S TEST CONNECTION
SIDEWALL SPRINKLER	AIR COMPRESSOR
UPRIGHT SPRINKLER	NITROGEN GENERATOR
ELBOW	RISER MOUNTED AIR COMPRESSOR
CAP OR PLUG	POINT OF CONNECTION
TEE	POINT OF DISCONNECTION
TEE DOWN	HYDRAULIC CALCULATION AREA
ELBOW - TURNED DOWN	HYDRAULIC NODE
PIPE CONTINUATION	FDC, WALL MOUNTED
CONCENTRIC REDUCER	FDC, FREESTANDING
ECCENTRIC REDUCER	PRESSURE GAUGE
OS&Y VALVE	WATER MOTOR GONG
CHECK VALVE	MATERIAL OR EQUIPMENT TO BE DEMOLISHED
BUTTERFLY VALVE	MATERIAL OR EQUIPMENT EXISTING TO REMAIN
ALARM CHECK VALVE	CONTINUATION TO EXISTING
DRY PIPE VALVE	
PRE-ACTION VALVE	
DELUGE VALVE	
PRESSURE REDUCING VALVE	
PRESSURE RELIEF VALVE	
GATE VALVE - NON RISING STEM	
WALL MOUNTED POST INDICATOR VALVE	
BACKFLOW PREVENTER ASSEMBLY	
FIRE PUMP	
JOCKEY PUMP	
PUMP/BACKFLOW TEST CONNECTION, WALL MOUNTED	
PUMP/BACKFLOW TEST CONNECTION, FREESTANDING	
FIRE PUMP FLOW METER	
ZCA — ZONE CONTROL ASSEMBLY CONSISTING OF CHECK VALVE, BUTTERFLY VALVE, PRESSURE GAGE, WATER FLOW SWITCH, VALVE SUPERVISORY SWITCH, PRESSURE RELIEF VALVE, AND INSPECTORS TEST AND DRAIN.	

REFRENCE SYMBOLS



SPRINKLER HAZARD CLASSIFICATION CRITERIA

NFPA 13 HAZARD CLASSIFICATION

OCCUPANCY CLASSIFICATION.....LIGHT HAZARD
DESIGN DENSITY.....0.10GPM/SF
REMOTE HYDRAULIC AREA 1500SF

OCCUPANCY CLASSIFICATION.....ORDINARY HAZARD 1
DESIGN DENSITY.....0.15GPM/SF
REMOTE HYDRAULIC AREA 1500SF

NOT IN SCOPE (EXISTING TO REMAIN)

FIRE SUPPRESSION GENERAL NOTES

A. SCOPE OF WORK: MODIFY EXISTING FIRE SPRINKLER SYSTEM TO PROVIDE A COMPLETE HYDRAULICALLY- CALCULATED AUTOMATIC SPRINKLER SYSTEM AND AUTOMATIC WET STANDPIPE SYSTEM THROUGHOUT THE AREA OF WORK, INCLUDING BUT NOT LIMITED TO ZONE CONTROL ASSEMBLY, WATER FLOW ALARM SWITCHES, VALVE SUPERVISORY SWITCHES, CHECK VALVES, CONTROL VALVES, PIPING, HANGERS, SPRINKLERS, ALL ASSOCIATED EQUIPMENT, WIRING AND APPURTENANCES, NORMALLY AND CUSTOMARILY REQUIRED, WHETHER INDICATED OR INHERENTLY NECESSARY DUE TO THE NATURE OF THE WORK, FOR A COMPLETE AND OPERATIONAL SYSTEM.

B. ALL WORK SHALL CONFORM TO THE APPLICABLE PROVISIONS OF THE APPLICABLE BUILDING AND FIRE CODES AND THE REFERENCED EDITIONS OF NFPA 13, 14, 20, 70 AND 72.

C. WHERE ANY CONFLICT AND/OR DISCREPANCY BETWEEN THESE GENERAL NOTES AND ANY OTHER INFORMATION CONTAINED IN THE CONTRACT DOCUMENTS EXISTS, THE MORE STRINGENT REQUIREMENT SHALL PREVAIL AND BE A REQUIREMENT OF THE WORK. ANY SUCH CONFLICT AND/OR DISCREPANCY SHALL PROMPTLY BE BROUGHT TO THE ATTENTION OF THE OWNER, ARCHITECT AND ENGINEER.

D. A WET PIPE SPRINKLER SYSTEM SHALL BE INSTALLED IN ALL HEATED SPACES. A DRY PIPE SYSTEM WILL BE INSTALLED IN ALL SPACES REQUIRING A SPRINKLER(S) WHERE EXPOSED TO AMBIENT TEMPERATURES.

E. THE TERM "PROVIDE" SHALL MEAN FURNISH, INSTALL AND CONNECT EQUIPMENT/DEVICE FOR A COMPLETE AND OPERATIONAL SYSTEM. THE TERM "REMOVE" SHALL MEAN DISCONNECT AND CLEAR EQUIPMENT/DEVICE FROM SITE, AS WELL AS MAINTAINING UPSTREAM AND DOWNSTREAM EQUIPMENT/DEVICES AS REQUIRED.

F. THE CONTRACT DOCUMENTS ARE DIAGRAMMATIC AND INTENDED TO SHOW DESIGN INTENT ONLY. RUN ALL PIPING STRAIGHT AND TIGHT TO THE FACE OF STRUCTURAL MEMBERS AND WALLS, PARALLEL AND AT RIGHT ANGLES TO STRUCTURAL STEEL OR CONCRETE ELEMENTS.

G. CONTRACTOR SHALL FIELD VERIFY ALL CONDITIONS AND DIMENSIONS ON DRAWINGS PRIOR TO EXECUTION OF THIS CONTRACT. IT SHALL BE THE RESPONSIBILITY OF CONTRACTOR TO VERIFY JOB CONDITIONS AND COORDINATE ALL SYSTEM COMPONENTS. CONTRACTOR SHALL REPORT ANY DISCREPANCIES WITH THESE DRAWINGS TO THE ENGINEER IMMEDIATELY.

H. COORDINATE ALL WORK AND AVOID ALL CONFLICTS WITH LIGHTING FIXTURES, DIFFUSERS, GRILLS, DUCTS, STRUCTURAL MEMBERS, PIPES AND OTHER OBSTRUCTIONS.

I. NO STRUCTURAL MEMBERS SHALL BE CUT, DRILLED OR BURNED UNLESS PREVIOUSLY APPROVED BY THE STRUCTURAL ENGINEER. FURTHER, ANY APPROVED CUTTING OR PATCHING OF ANY STRUCTURAL WORK SHALL NOT RESULT IN A REDUCTION OF LOAD-CARRYING AND/OR LOAD-DEFLECTION RATIO. PRIOR TO SUCH WORK, OBTAIN APPROVAL FROM THE ENGINEER OF RECORD.

J. ALL WALL AND FLOOR PENETRATIONS SHALL BE CORE-DRILLED. PROVIDE PIPE SLEEVES FOR WALL AND FLOOR PENETRATIONS AS INDICATED IN THE SPECIFICATIONS. ALL PENETRATIONS IN WALLS, CEILINGS AND FLOORS SHALL BE PROVIDED WITH A UL-LISTED PENETRATION SEAL ASSEMBLY, WITH A FIRE RATING EQUIVALENT TO OR GREATER THAN THE FIRE RATING OF THE BARRIER PENETRATED STAIRWAY, SHAFT ENCLOSURES, AND FLOOR SLABS SHALL BE CONSIDERED 2-HOUR FIRE RESISTIVE RATED CONSTRUCTION UNLESS OTHERWISE NOTED.

K. PRIOR TO CORE DRILLING, CONTRACTOR SHALL VERIFY EXISTING CONDITION NOT TO DAMAGE ANY STRUCTURAL ELEMENT, CONDUIT, REBAR, AND ETC. ANY DAMAGE RESULTING FROM THE WORK, WHETHER INTENTIONAL OR NOT, SHALL BE REPAIRED AT NO ADDITIONAL COST TO, AND TO THE SATISFACTION OF THE OWNER.

L. ALL DAMAGE TO WALLS, CEILINGS, FLOORS, AND STRUCTURAL MEMBERS FROM THE WORK SHALL BE PATCHED, REPAIRED AND PAINTED WITH NEW MATERIALS TO MATCH ADJACENT WORK, WHETHER SPECIFICALLY NOTED OR NOT.

M. WHERE POSSIBLE, SPRINKLERS SHALL BE ALIGNED WITH OTHER SPRINKLERS INSTALLED IN THE SAME ROOM OR AREA.

N. AS A MINIMUM, MAINTAIN 6-FT 8-INCH HEAD ROOM CLEARANCE BETWEEN BOTTOM OF SPRINKLER PIPE AND FINISHED FLOOR, INCLUDING STAIRWELLS.

O. CONTRACTOR SHALL PAY ALL REQUIRED FEES AND OBTAIN ALL NECESSARY PERMITS AND LICENSES FOR INSTALLATION OF THE WORK.

P. COORDINATE AND SEQUENCE THE WORK PRIOR TO FABRICATION AND INSTALLATION OF EQUIPMENT. MAKE NECESSARY ACCOMMODATIONS TO MEET THE INTENT OF THE DRAWINGS AND ENSURE A COORDINATED INSTALLATION.

Q. RUN ALL EXPOSED ELEMENTS NEATLY, TIGHT TO THE STRUCTURE (EXCEPT WHERE NOTED), PARALLEL TO WALLS, AND AS INCONSPICUOUSLY AS POSSIBLE.

R. INSTALL ALL CEILING DEVICES IN 2 FT X 2 FT ACOUSTICAL PANEL CEILINGS IN THE CENTER OF THE PANELS; AND IN 2 FT X 4 FT PANELS, INSTALL DEVICE IN THE CENTER OF THE 2 FT X 4 FT OR 2 FT X 2 FT SQUARE AREAS.

S. PROVIDE SPRINKLER(S) UNDER ALL OBSTRUCTIONS GREATER THAN 48 INCHES IN WIDTH AND AS NEEDED TO PROVIDE PROPER COVERAGE AS REQUIRED BY NFPA 13.

T. PROVIDE LISTED GUARDS FOR SPRINKLER PROTECTION WHEN INSTALLED BELOW 7 FT AFF.

U. CONTRACTOR SHALL PROVIDE AN AUTOMATIC AIR VENTING DEVICE NEAR THE HIGHEST POINT WET PIPE SPRINKLER SYSTEM(S) PER NFPA 13.

V. CONTRACTOR SHALL PROVIDE AUXILIARY LOW POINT DRAINS WHERE REQUIRED PER NFPA 13. WHERE AUXILIARY DRAINS ARE INSTALLED BEHIND HARD CEILINGS, PROVIDE AN ACCESSIBLE PANEL DIRECTLY BENEATH THE DRAIN.

W. CONTRACTOR SHALL OBTAIN WATER FLOW TEST DATA CONDUCTED NO MORE THAN 12 MONTHS PRIOR TO SHOP DRAWING PLAN SUBMITTAL TO AUTHORITY HAVING JURISDICTION (AHJ).

X. ALL EQUIPMENT SHALL BEAR UL LISTING LABEL AT MINIMUM, OR IF UL LABEL IS NOT AVAILABLE, THE ITEM SHALL BE TESTED AND LABELED BY A NATIONALLY RECOGNIZED TESTING AGENCY THAT MEETS UL AND AHJ REQUIREMENTS FOR TESTING FACILITIES. ALL EQUIPMENT SHALL BE INSTALLED PER THE LISTING AND MANUFACTURER'S INSTALLATION INSTRUCTIONS.

Y. SPRINKLER SYSTEM WATERFLOW AND CONTROL VALVE SUPERVISORY SWITCHES SHALL BE MONITORED BY BUILDING FIRE ALARM SYSTEM. COORDINATE WITH FIRE ALARM CONTRACTOR SO THAT ELECTRICAL CONNECTION CAN BE MADE BETWEEN THESE DEVICES AND BUILDING FIRE ALARM SYSTEM.

Z. CONTRACTOR SHALL TAKE NECESSARY MEASURES TO KEEP THE PREMISES DRY AT ALL TIMES AND PREVENT WATER DAMAGE TO SURFACES. REPAIR WATER DAMAGE RESULTING FROM THE WORK, WHETHER INTENTIONAL OR NOT, AT NO ADDITIONAL COST TO, AND TO THE SATISFACTION OF THE OWNER.

AA. CONTRACTOR SHALL COORDINATE WITH OWNER TO AVOID FREEZING CONDITIONS DURING CONSTRUCTION ONCE WATER IS FILLED IN THE SPRINKLER SYSTEM.

BB. HYDROSTATIC TESTING OF FIRE SUPPRESSION SYSTEMS SHALL BE WITNESSED BY ENGINEER AND/OR AHJ, BEFORE CEILING CLOSE IN. CONTRACTOR SHALL COORDINATE WITH ENGINEER AND/OR AHJ PRIOR TO TESTING.

FIRE SUPPRESSION GENERAL DEMOLITION NOTES

A. THE CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS DURING THE CONTRACTOR'S PRE-BID SITE VISIT(S) AND BRING TO THE ATTENTION OF THE ARCHITECT/ENGINEER ANY DISCREPANCIES BETWEEN THE CONTRACT DOCUMENTS AND THE ACTUAL SITE CONDITION PRIOR TO BID FOR CLARIFICATION. AFTER A CONTRACT IS EXECUTED, THE CONTRACTOR SHALL SUBMIT A "REQUEST FOR INFORMATION".

B. THE REQUIRED DEMOLITION IS NOT LIMITED TO THAT PORTION INDICATED ON THE PLANS ALONE, BUT SHALL INCLUDE ALL NECESSARY WORK COINCIDENTAL THERETO AND WORK INDICATED ELSEWHERE IN THE DRAWINGS AND SPECIFICATIONS WHICH IS NECESSARY TO ACCOMPLISH THE INTENT OF THE CONTRACT DOCUMENTS.

C. THE CONTRACTOR SHALL NOT VIOLATE THE PHYSICAL SECURITY OF THE BUILDING DURING DEMOLITION OR ASSOCIATED OPERATIONS. COORDINATED SECURITY CLOSELY WITH THE OWNER.

D. THE CONTRACTOR SHALL SCHEDULE ALL WORK, INCLUDING INTERRUPTIONS OF THE EXISTING UTILITIES, WITH THE OWNER. PRIOR TO STARTING WORK CONTRACTOR SHALL NOTE THAT THE BUILDING WILL BE OCCUPIED AND IN USE DURING PERIODS OF TIME THAT WORK UNDER THIS CONTRACT IS BEING PERFORMED.

E. THE CONTRACTOR SHALL ARRANGE DEMOLITION TO AGREE WITH THE ACCOMPLISHMENT OF WORK UNDER THE VARIOUS PHASES AND IN COORDINATION WITH THE REQUIRED MODIFICATIONS.

F. DO NOT ALTER THE EXISTING SYSTEMS WHICH ARE LOCATED IN AREAS DESIGNATED "NIC" UNLESS SPECIFICALLY INDICATED. PROTECT EXISTING SYSTEMS WITHIN THE LIMITS OF WORK WHICH ARE TO BE RETAINED. CONTRACTOR SHALL REPAIR AND/OR REPLACE ANY DAMAGED EQUIPMENT OR SYSTEMS DUE TO CONTRACTOR NEGLIGENCE TO ITS ORIGINAL CONDITION AND TO THE COMPLETE SATISFACTION OF THE OWNER, AND AT NO COST TO THE OWNER.

G. ALL SPRINKLERS AND EQUIPMENT INDICATED TO BE REMOVED SHALL HAVE ALL ASSOCIATED PIPING REMOVED BACK TO THE NEAREST BRANCH, MAIN, RISER OR STANDPIPE AND CAPPED IN A CONCEALED LOCATION.

H. "CONCEALED LOCATION" IS DEFINED AS BEING ABOVE FINISHED CEILING, BELOW FINISHED FLOOR OR WITHIN FINISHED WALL OR PARTITION. SEE ARCHITECTURAL PLANS FOR FINISH INFORMATION.

I. IN A CONCEALED LOCATION CAP OR MAKE READY FOR CONNECTION WITH NEW ANY EXISTING PIPING TO REMAIN. IN AREAS THAT WILL HAVE NO CEILING CAP OR MAKE READY FOR CONNECTION WITH NEW IN A LOCATION TO PROVIDE THE MAXIMUM POSSIBLE HEADROOM. UNDER NO CIRCUMSTANCE MAY AN EXISTING PIPE BE LEFT OPEN.

J. ALL FIXTURES, SPRINKLERS, EQUIPMENT, PIPING AND ACCESSORIES WHICH HAVE BEEN REMOVED SHALL BECOME THE PROPERTY OF THE CONTRACTOR. THE CONTRACTOR SHALL REMOVE FROM THE PROJECT SITE. REMOVE SPRINKLERS, EQUIPMENT, PIPING AND ACCESSORIES AS SOON AS POSSIBLE. A CREDIT SHALL BE INCLUDED IN THE BID FOR THE SALVAGE VALUE OF ALL REMOVED ITEMS.

K. CAP ALL PIPING USING COMMERCIALLY MANUFACTURED "CAPS". CAP INSTALLATIONS SHALL BE IN ACCORDANCE WITH NEW WORK INSTALLATION PROCEDURES. CRIMPING OF TUBING IS NOT ACCEPTABLE.

L. SPRINKLERS REMOVED FROM EXISTING PIPES SHALL NOT BE REUSED.

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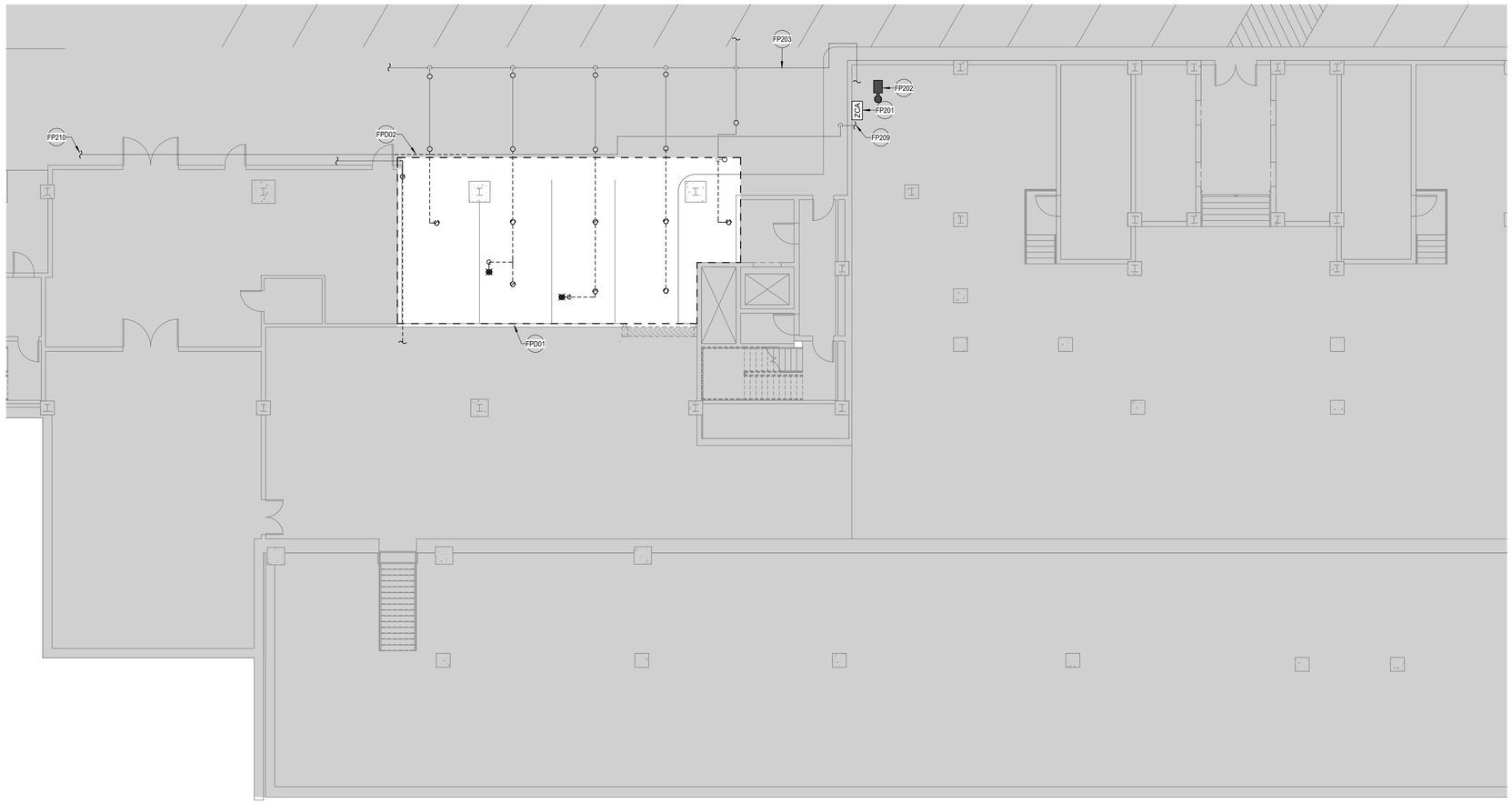
DISTRICT OF COLUMBIA
DANIEL CHUCHMAN
No. PE40001004
LICENSED
PROFESSIONAL ENGINEER

SHEET TITLE
FIRE PROTECTION ABBREVIATIONS AND SYMBOLS

15749.000
PROJECT NUMBER

FP0.1
SHEET NUMBER

Author
7/3/2025 9:50:30 AM
Plot Date:



1 PARKING LEVEL FIRE PROTECTION DEMOLITION PLAN
SCALE: 1/8" = 1'-0"

GENERAL SHEET NOTES

A. SEE SHEET FP0.1 FOR FIRE PROTECTION ABBREVIATIONS AND SYMBOLS.

B. EXISTING CONDITIONS SHOWN ARE BASED ON PRIOR-PROJECT AS-BUILT DRAWINGS AND LIMITED SITE INVESTIGATION. FIELD VERIFY ALL EXISTING CONDITIONS PRIOR TO THE START OF ANY WORK.

C. ALL WORK INDICATED ON THE CONTRACTOR DOCUMENTS IS INTENDED AS A GUIDE ONLY. THE CONTRACTOR IS RESPONSIBLE FOR PRODUCING THE NECESSARY DOCUMENTS SIGNED AND SEALED BY A NICET LEVEL III OR IV TECHNICIAN OR A PROFESSIONAL FIRE PROTECTION ENGINEER. DOCUMENTS ARE TO BE SUBMITTED TO THE AHJ FOR APPROVAL.

D. BRING TO THE ATTENTION OF THE ARCHITECT/ENGINEER ANY DISCREPANCIES BETWEEN THE DRAWINGS AND SPECIFICATIONS.

E. AREAS IN GRAY ARE OUT OF SCOPE. FIRE PROTECTION SYSTEMS IN THESE AREAS ARE TO REMAIN FULLY FUNCTIONAL AT ALL TIMES. CONTRACTOR IS TO NOTIFY ARCHITECT AND THE OWNER PRIOR TO ANY SHUT DOWN OF SPRINKLER SYSTEM.

F. SURVEY THE AREA OF WORK AND MODIFY (RELOCATE, DEMOLISH, ADD NEW) EXISTING SPRINKLER SYSTEM ABOVE AND BELOW CEILINGS AS NECESSARY TO CORRECT DEFICIENCIES AND TO PROVIDE A NFPA 13 COMPLIANT SYSTEM. SPRINKLERS SHALL NOT BE REUSED ONCE REMOVED FROM THEIR ORIGINAL LOCATION.

G. DEVICES INSTALLED BUT NOT YET PLACED IN SERVICE SHALL BE PROTECTED FROM CONSTRUCTION DUST, DEBRIS, DIRT, MOISTURE, AND DAMAGE ACCORDING TO MANUFACTURER'S WRITTEN STORAGE INSTRUCTIONS.

SHEET KEYNOTES

FP201	EXISTING 6-INCH RISER AND 3 1/2-INCH ZONE CONTROL ASSEMBLY SERVING THE PARKING GARAGE.
FP202	EXISTING HORIZONTAL SPLIT CASE FIRE PUMP FLOWING 1,000 GPM AT 100 PSI.
FP203	EXISTING 2 1/2-INCH SPRINKLER MAIN.
FP209	EXISTING 6-INCH LINE FROM FIRE PUMP TEST HEADER.
FP210	EXISTING 6-INCH LINE TO FIRE PUMP TEST HEADER.
FPD01	DEMOLISH ALL EXISTING PIPE, SPRINKLERS, AND ASSOCIATED FITTINGS IN THE FOOTPRINT OF THE NEW BOILER ROOM. REFER TO SHEET FP2.1 FOR NEW SPRINKLER SCOPE.
FPD02	DEMOLISH EXISTING 6-INCH FIRE PUMP TEST HEADER PIPE SEGMENT.

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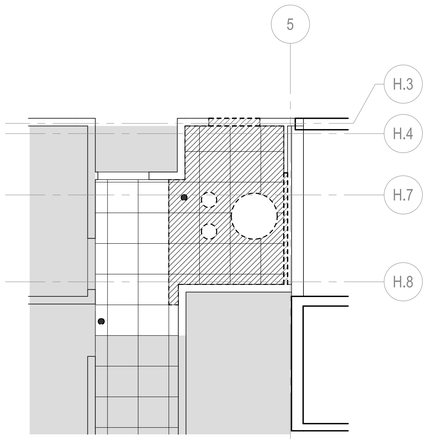
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SHEET TITLE
PARKING LEVEL FIRE PROTECTION DEMOLITION PLAN

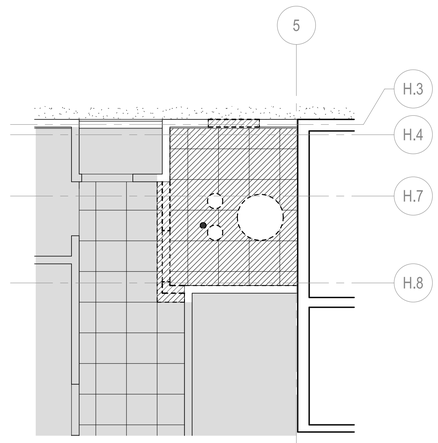
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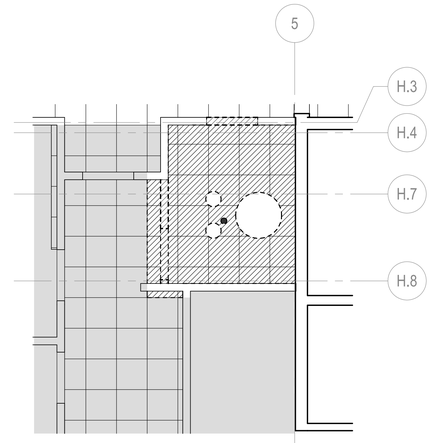
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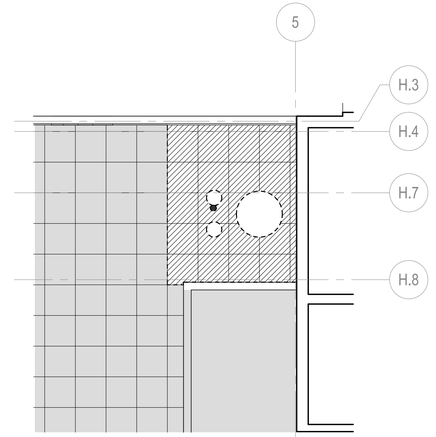
1 C STREET LEVEL FIRE PROTECTION DEMOLITION
SCALE: 1/4" = 1'-0"



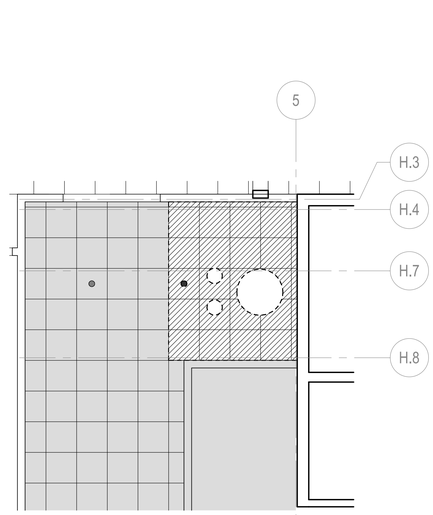
2 JOHN MARSHALL LEVEL FIRE PROTECTION DEMOLITION
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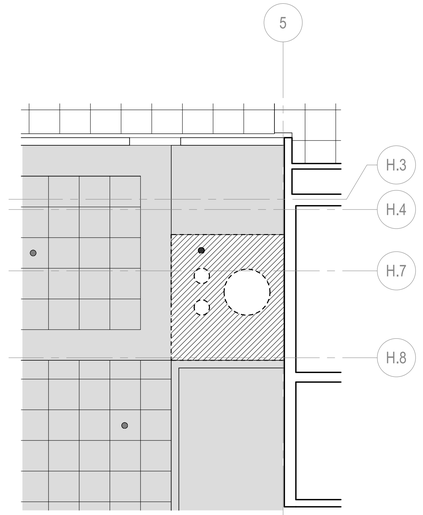
3 INDIANA AVENUE LEVEL FIRE PROTECTION DEMOLITION
SCALE: 1/4" = 1'-0"



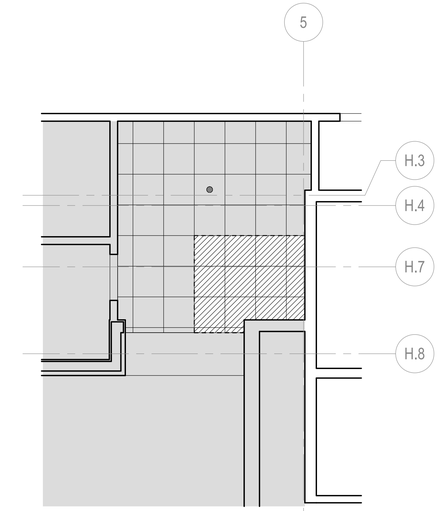
4 SECOND LEVEL FIRE PROTECTION DEMOLITION
SCALE: 1/4" = 1'-0"



5 THIRD LEVEL FIRE PROTECTION DEMOLITION
SCALE: 1/4" = 1'-0"



6 FOURTH LEVEL FIRE PROTECTION DEMOLITION
SCALE: 1/4" = 1'-0"



7 FIFTH LEVEL FIRE PROTECTION DEMOLITION
SCALE: 1/4" = 1'-0"

GENERAL SHEET NOTES

A. SEE SHEET FP0.1 FOR FIRE PROTECTION ABBREVIATIONS AND SYMBOLS.

B. EXISTING CONDITIONS SHOWN ARE BASED ON PRIOR-PROJECT AS-BUILT DRAWINGS AND LIMITED SITE INVESTIGATION. FIELD VERIFY ALL EXISTING CONDITIONS PRIOR TO THE START OF ANY WORK.

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D. BRING TO THE ATTENTION OF THE ARCHITECT/ENGINEER ANY DISCREPANCIES BETWEEN THE DRAWINGS AND SPECIFICATIONS.

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F. SURVEY THE AREA OF WORK AND MODIFY (RELOCATE, DEMOLISH, ADD NEW) EXISTING SPRINKLER SYSTEM ABOVE AND BELOW CEILINGS AS NECESSARY TO CORRECT DEFICIENCIES AND TO PROVIDE A NFPA 13 COMPLIANT SYSTEM. SPRINKLERS SHALL NOT BE REUSED ONCE REMOVED FROM THEIR ORIGINAL LOCATION.

G. DEVICES INSTALLED BUT NOT YET PLACED IN SERVICE SHALL BE PROTECTED FROM CONSTRUCTION DUST, DEBRIS, DIRT, MOISTURE, AND DAMAGE ACCORDING TO MANUFACTURER'S WRITTEN STORAGE INSTRUCTIONS.

SHEET KEYNOTES

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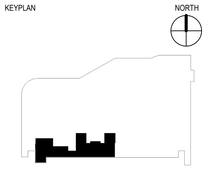
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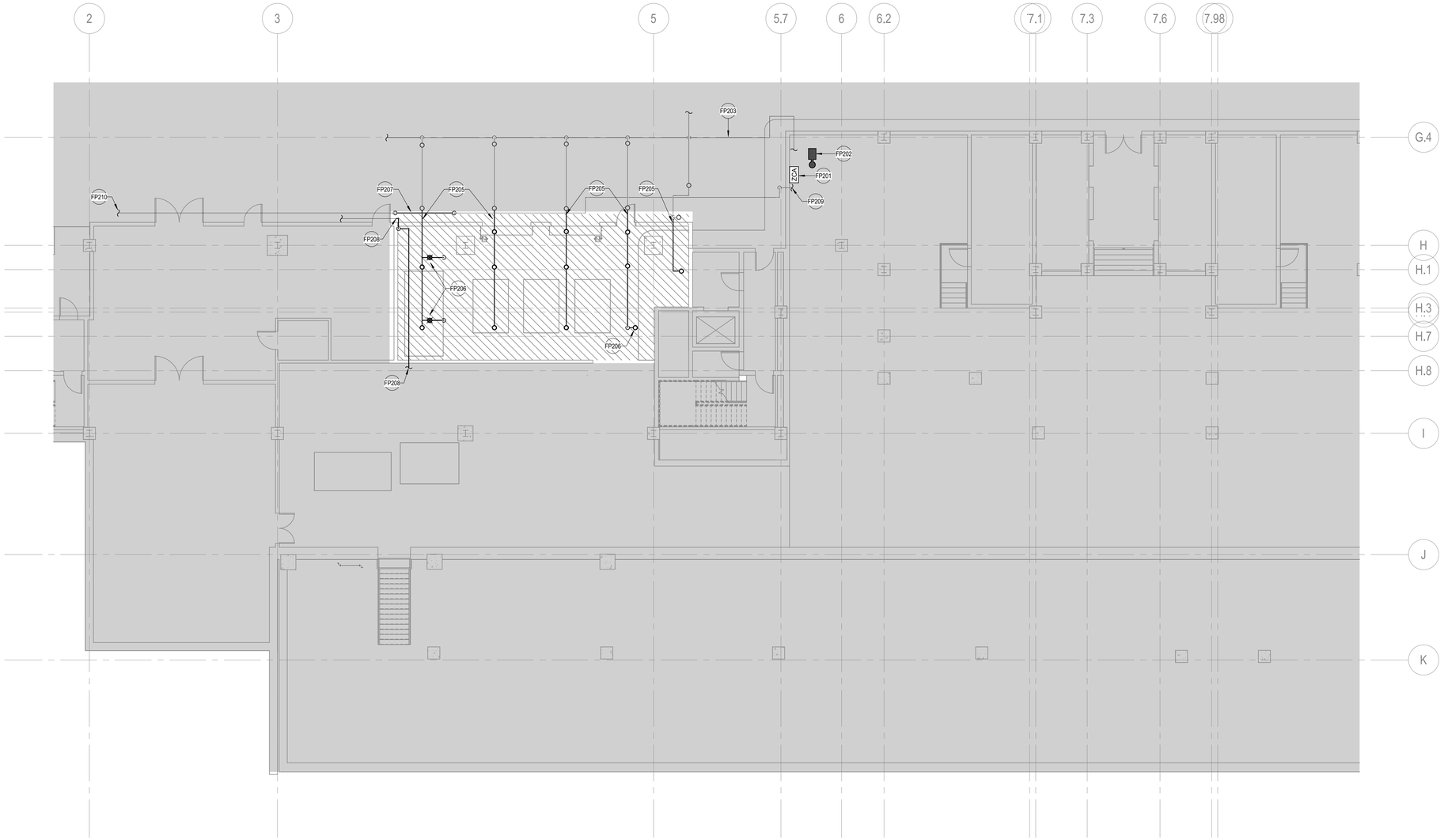
SHEET TITLE

C STREET THROUGH 5TH LEVEL FIRE PROTECTION DEMOLITION PLANS

15749.000
PROJECT NUMBER

FPD2.2
SHEET NUMBER

Author
7/3/2025 9:50:44 AM
Plot Date:



1 PARKING LEVEL FIRE PROTECTION PLAN
SCALE: 1/8" = 1'-0"

GENERAL SHEET NOTES

A. SEE SHEET FP0.1 FOR FIRE PROTECTION ABBREVIATIONS AND SYMBOLS.

B. EXISTING CONDITIONS SHOWN ARE BASED ON PRIOR-PROJECT AS-BUILT DRAWINGS AND LIMITED SITE INVESTIGATION. FIELD VERIFY ALL EXISTING CONDITIONS PRIOR TO THE START OF ANY WORK.

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D. DESIGN, FABRICATE, INSTALL AND TEST THE FIRE SPRINKLER SYSTEM IN ACCORANCE WITH THE FOLLOWING CRITERIA: A. AUTHORITY HAVING JURSIDICITION, B. OWNERS INSURANCE CARRIER, C. NFPA 13.

E. BRING TO THE ATTENTION OF THE ARCHITECT/ENGINEER ANY DISCREPANCIES BETWEEN THE DRAWINGS AND SPECIFICATIONS.

F. AREAS IN GRAY ARE OUT OF SCOPE. FIRE PROTECTION SYSTEMS IN THESE AREAS ARE TO REMAIN FULLY FUNCTIONAL AT ALL TIMES. CONTRACTOR IS TO NOTIFY ARCHITECT AND THE OWNER PRIOR TO ANY SHUT DOWN OF SPRINKLER SYSTEM.

G. SURVEY THE AREA OF WORK AND MODIFY (RELOCATE, DEMOLISH, ADD NEW) EXISTING SPRINKLER SYSTEM ABOVE AND BELOW CEILINGS AS NECESSARY TO CORRECT DEFICIENCIES AND TO PROVIDE A NFPA 13 COMPLIANT SYSTEM. SPRINKLERS SHALL NOT BE REUSED ONCE REMOVED FROM THEIR ORIGINAL LOCATION.

H. MATCH NEW SPRINKLER PIPE SIZES WITH EXISTING PIPES THAT HAVE THE SAME QUANTITY OF SPRINKLERS.

I. DEVICES INSTALLED BUT NOT YET PLACED IN SERVICE SHALL BE PROTECTED FROM CONSTRUCTION DUST, DEBRIS, DIRT, MOISTURE, AND DAMAGE ACCORDING TO MANUFACTURER'S WRITTEN STORAGE INSTRUCTIONS.

J. PROVIDE UPRIGHT AND PENDENT SPRINKLERS WITH LISTED GUARDS AS NOTED IN AREAS WITHOUT FINISHED CEILINGS. CONCEALED SPRINKLERS WITH WHITE-FINISHED COVER PLATES SHALL BE PROVIDED IN ALL OTHER AREAS.

K. INSTALL PIPING SO THAT IT DRAINS BACK TO DRAIN VALVES AS REQUIRED BY NFPA 13.

L. MAINTAIN A MINIMUM CLEAR HEADROOM OF 7 FT. AFF.

M. PROVIDE SUPERVISORY SWITCHES AT LOCATIONS REQUIRED BY AHJ AND NFPA.

N. PERFORM ALL REQUIRED ACCEPTANCE TESTS AS INDICATED IN NFPA 13. SUBMIT A RECORD OF THE TEST TO THE AHJ ON THE APPROPRIATE NFPA FORM.

SHEET KEYNOTES

FP201	EXISTING 6-INCH RISER AND 3 1/2-INCH ZONE CONTROL ASSEMBLY SERVING THE PARKING GARAGE.
FP202	EXISTING HORIZONTAL SPLIT CASE FIRE PUMP FLOWING 1,000 GPM AT 100 PSI.
FP203	EXISTING 2 1/2-INCH SPRINKLER MAIN.
FP205	CONNECT TO EXISTING BRANCH LINE.
FP206	PROVIDE SPRINKLER FOR COVERAGE UNDERNEATH DUCT.
FP207	RELOCATE 6-INCH PIPE SEGMENT TO AVOID DUCT.
FP208	CONNECT TO EXISTING 2-INCH SPRINKLER DRAIN LINE.
FP209	EXISTING 6-INCH LINE FROM FIRE PUMP TEST HEADER.
FP210	EXISTING 6-INCH LINE TO FIRE PUMP TEST HEADER.

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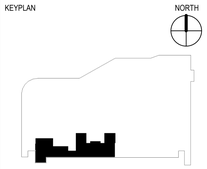
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SEALS AND SIGNATURES

DISTRICT OF COLUMBIA
DANIEL CHUCHMAN
No. PE40001004
LICENSED
PROFESSIONAL ENGINEER

KEYPLAN

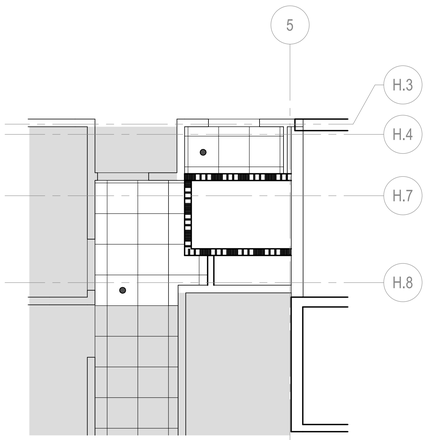


SHEET TITLE
PARKING LEVEL FIRE PROTECTION PLAN

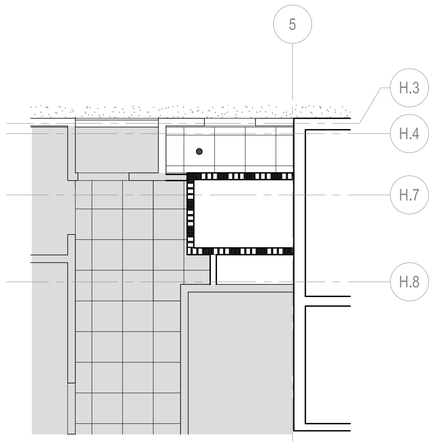
15749.000
PROJECT NUMBER

FP2.1
SHEET NUMBER

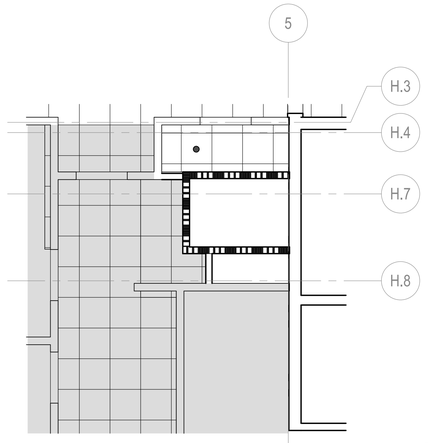
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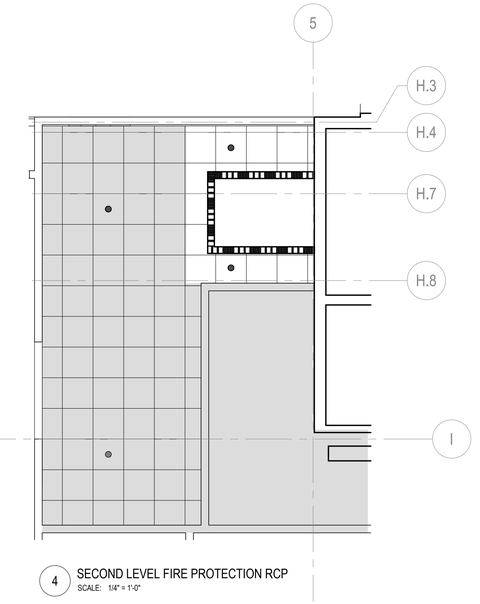
1 C STREET LEVEL FIRE PROTECTION RCP
SCALE: 1/4" = 1'-0"



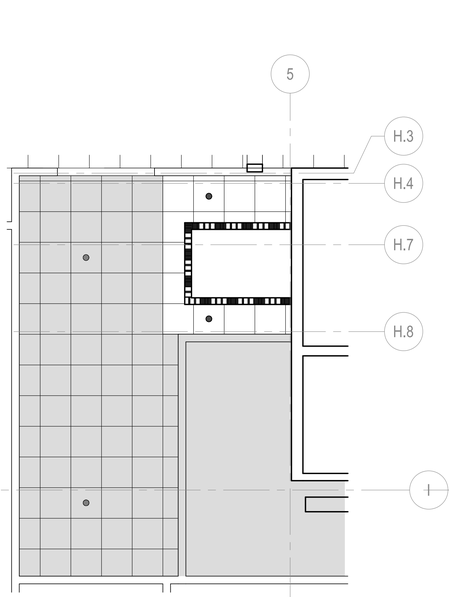
2 JOHN MARSHALL LEVEL FIRE PROTECTION RCP
SCALE: 1/4" = 1'-0"



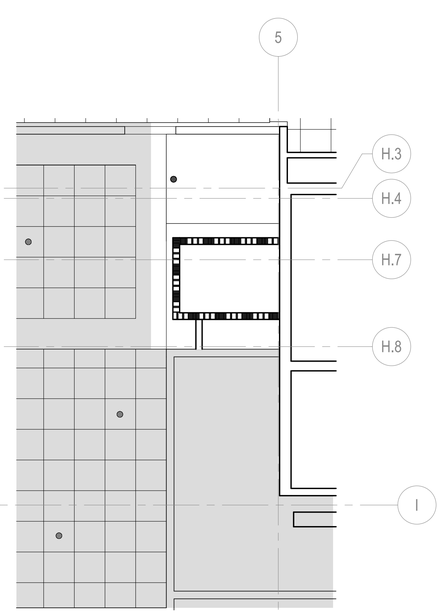
3 INDIANA AVENUE LEVEL FIRE PROTECTION RCP
SCALE: 1/4" = 1'-0"



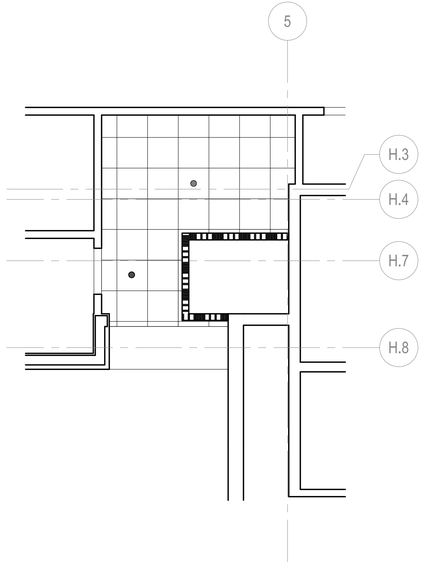
4 SECOND LEVEL FIRE PROTECTION RCP
SCALE: 1/4" = 1'-0"



5 THIRD LEVEL FIRE PROTECTION RCP
SCALE: 1/4" = 1'-0"



6 FOURTH LEVEL FIRE PROTECTION RCP
SCALE: 1/4" = 1'-0"



7 FIFTH LEVEL FIRE PROTECTION RCP
SCALE: 1/4" = 1'-0"

GENERAL SHEET NOTES

A. SEE SHEET FP0.1 FOR FIRE PROTECTION ABBREVIATIONS AND SYMBOLS.

B. EXISTING CONDITIONS SHOWN ARE BASED ON PRIOR-PROJECT AS-BUILT DRAWINGS AND LIMITED SITE INVESTIGATION. FIELD VERIFY ALL EXISTING CONDITIONS PRIOR TO THE START OF ANY WORK.

C. ALL WORK INDICATED ON THE CONTRACTOR DOCUMENTS IS INTENDED AS A GUIDE ONLY. THE CONTRACTOR IS RESPONSIBLE FOR PRODUCING THE NECESSARY DOCUMENTS SIGNED AND SEALED BY A NICET LEVEL III OR IV TECHNICIAN OR A PROFESSIONAL FIRE PROTECTION ENGINEER. DOCUMENTS ARE TO BE SUBMITTED TO THE AHJ FOR APPROVAL.

D. DESIGN, FABRICATE, INSTALL AND TEST THE FIRE SPRINKLER SYSTEM IN ACCORANCE WITH THE FOLLOWING CRITERIA: A. AUTHORITY HAVING JURSIDICITION, B. OWNERS INSURANCE CARRIER, C. NFPA 13.

E. BRING TO THE ATTENTION OF THE ARCHITECT/ENGINEER ANY DISCREPANCIES BETWEEN THE DRAWINGS AND SPECIFICATIONS.

F. AREAS IN GRAY ARE OUT OF SCOPE. FIRE PROTECTION SYSTEMS IN THESE AREAS ARE TO REMAIN FULLY FUNCTIONAL AT ALL TIMES. CONTRACTOR IS TO NOTIFY ARCHITECT AND THE OWNER PRIOR TO ANY SHUT DOWN OF SPRINKLER SYSTEM.

G. SURVEY THE AREA OF WORK AND MODIFY (RELOCATE, DEMOLISH, ADD NEW) EXISTING SPRINKLER SYSTEM ABOVE AND BELOW CEILINGS AS NECESSARY TO CORRECT DEFICIENCIES AND TO PROVIDE A NFPA 13 COMPLIANT SYSTEM. SPRINKLERS SHALL NOT BE REUSED ONCE REMOVED FROM THEIR ORIGINAL LOCATION.

H. MATCH NEW SPRINKLER PIPE SIZES WITH EXISTING PIPES THAT HAVE THE SAME QUANTITY OF SPRINKLERS.

I. DEVICES INSTALLED BUT NOT YET PLACED IN SERVICE SHALL BE PROTECTED FROM CONSTRUCTION DUST, DEBRIS, DIRT, MOISTURE, AND DAMAGE ACCORDING TO MANUFACTURER'S WRITTEN STORAGE INSTRUCTIONS.

J. PROVIDE UPRIGHT AND PENDENT SPRINKLERS WITH LISTED GUARDS AS NOTED IN AREAS WITHOUT FINISHED CEILINGS. CONCEALED SPRINKLERS WITH WHITE-FINISHED COVER PLATES SHALL BE PROVIDED IN ALL OTHER AREAS.

K. INSTALL PIPING SO THAT IT DRAINS BACK TO DRAIN VALVES AS REQUIRED BY NFPA 13.

L. MAINTAIN A MINIMUM CLEAR HEADROOM OF 7 FT. AFF.

M. PROVIDE SUPERVISORY SWITCHES AT LOCATIONS REQUIRED BY AHJ AND NFPA.

N. PERFORM ALL REQUIRED ACCEPTANCE TESTS AS INDICATED IN NFPA 13. SUBMIT A RECORD OF THE TEST TO THE AHJ ON THE APPROPRIATE NFPA FORM.

SHEET KEYNOTES

Mechanical Room 1000 Heating System Upgrade
500 Indiana Avenue N.W.
Washington, DC 20001

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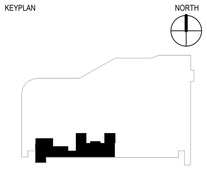
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KEYPLAN



SHEET TITLE

C STREET THROUGH 5TH LEVEL FIRE PROTECTION PLANS

15749.000
PROJECT NUMBER

FP2.2
SHEET NUMBER

Author
7/3/2025 9:50:38 AM
Plot Date:

MECHANICAL ABBREVIATIONS

A

AC	AIR CONDITIONING
ACB	ACTIVE CHILLED BEAM
ACC	AIR COOLED CHILLER
ACCU	AIR COOLED CONDENSING UNIT
ACU	AIR CONDITIONING UNIT
ACFM	ABSOLUTE CUBIC FEET PER MINUTE
AD	ACCESS DOOR
AFF	ABOVE FINISHED FLOOR
AFM	AIRFLOW MEASURING DEVICE
AFMS	AIRFLOW MEASURING STATION
AHU	AIR HANDLING UNIT
AMB	AMBIENT
AP	ACCESS PANEL
APPROX	APPROXIMATE
AS	AIR SEPARATOR

B

B	BOILER
BHP	BRAKE HORSEPOWER
BOD	BOTTOM OF DUCT
BOP	BOTTOM OF PIPE
BTU(H)	BRITISH THERMAL UNIT (PER HOUR)

C

CAP	CAPACITY
CC	COOLING COIL
CDSR	CONDENSER
CFH	CUBIC FEET PER HOUR
CFM	CUBIC FEET PER MINUTE
CH	CHILLER
CI	CAST IRON
COMP	COMPRESSOR
COND	CONDENSATE
CONT	CONTINUATION
CP	CONDENSATE PUMP
CS	CLEAN STEAM
CT	COOLING TOWER
CUH	CABINET UNIT HEATER
CV	CONSTANT VOLUME/CONTROL VALVE
CW	COLD WATER

D

DB	DECIBELS
DBA	DECIBELS (A-WEIGHTED SCALE)
DB	DRY BULB TEMPERATURE °F
DDC	DIRECT DIGITAL CONTROL
DIA	DIAMETER
DN	DOWN
DP	DIFFERENTIAL PRESSURE
DPS	DIFFERENTIAL PRESSURE SENSOR
DPT	DEW POINT TEMPERATURE °F
DWG	DRAWING
DX	DIRECT EXPANSION
D&T	DRIP & TRAP

E

EA	EACH/EXHAUST AIR
EAT	ENTERING AIR TEMPERATURE
EVAV	EXHAUST AIR VALVE
EER	ENERGY EFFICIENCY RATIO
EF	EXHAUST FAN
EFF	EFFICIENCY
EG	ETHYLENE GLYCOL WATER SOLUTION
EL	ELEVATION
ELEC	ELECTRICAL
ENT	ENTERING
EQ	EQUIVALENT
ERU	ENERGY RECOVERY UNIT
ESP	EXTERNAL STATIC PRESSURE
ET	EXPANSION TANK
EWC	ELECTRIC WATER COOLER
EWT	ENTERING WATER TEMPERATURE
EXH	EXHAUST
EXP	EXPANSION
EXT	EXTERNAL
EV	EXHAUST VALVE
(E)	EXISTING

F

F	FAHRENHEIT
FCU	FAN COIL UNIT
FD	FIRE DAMPER
FH	FUME HOOD
FLA	FULL LOAD AMPERES
FLEX	FLEXIBLE CONNECTION
FLR	FLOOR
FM	FLOW METER
FPM	FEET PER MINUTE
FS	FLOW SWITCH
FSD	FIRE & SMOKE DAMPER
FT	FEET or FOOT
FTR	FIN TUBE RADIATION

G

G	GLYCOL
GAL	GALLONS
GPM	GALLONS PER MINUTE
GPH	GALLONS PER HOUR
GR	GRAINS

H

HB	HOSE BIBB
HC	HEATING COIL
HEX	HEAT EXCHANGER
HG	MERCURY
H	HEIGHT
HO	HUB OUTLET
HP	HORSE POWER
HR	HOUR
HUM	HUMIDIFIER
HZ	HERTZ

I

ID	INSIDE DIAMETER
IE	INVERT ELEVATION
IFB	INTEGRAL FACE AND BY-PASS
IN	INCHES
IPLV	INTEGRATED PART LOAD VALUE

K

KW	KILOWATTS
KWH	KILOWATT HOURS

L

L	LENGTH
LAT	LEAVING AIR TEMPERATURE
LBS	POUNDS
LBS/HR	POUNDS PER HOUR
LEF	LAB EXHAUST FAN
LP	LOW POINT
LRA	LOCKED ROTOR AMPERES
LVG	LEAVING
LWT	LEAVING WATER TEMPERATURE

M

MAX	MAXIMUM
MCA	MAXIMUM CURRENT AMPACITY
MBH	1000 BTU/HR
MCC	MOTOR CONTROL CENTER
MD	MOTORIZED DAMPER
MECH	MECHANICAL
MER	MECHANICAL EQUIPMENT ROOM
MIN	MINIMUM
MISC	MISCELLANEOUS
MOCP	MAXIMUM OVER CURRENT PROTECTION
MTG	MOUNTING

N

NC	NOISE CRITERIA
N.C.	NORMALLY CLOSED
NIC	NOT IN CONTRACT
NO.	NUMBER
N.O.	NORMALLY OPEN
NOM	NOMINAL
NPLV	NON STANDARD PART LOAD VALUE
NPSH	NET POSITIVE SUCTION HEAD
(NRL)	NEW LOCATION OF RELOCATED MATERIAL OR EQUIPMENT
NTS	NOT TO SCALE

O

OA	OUTSIDE AIR
OAD	OUTSIDE AIR DAMPER
OD	OUTSIDE DIAMETER
OPR	OPERATING
OV	OUTLET VELOCITY

P

P	PUMP
PCB	PASSIVE CHILLED BEAM
PCHW	PROCESS CHILLED WATER
PD	PRESSURE DROP (FEET OF WATER)
PG	PROPYLENE GLYCOL WATER SOLUTION
PH	PHASE
PRESS	PRESSURE
PRV	PRESSURE REGULATING VALVE
PSI	POUNDS PER SQUARE INCH
PSIG	POUNDS PER SQUARE INCH - GAUGE

Q

QTY	QUANTITY

R

RA	RETURN/RELIEF AIR
RVAV	RETURN AIR VALVE
RC	ROOF CONDUCTOR
RE	REFERENCE
RET	RETURN
RF	RETURN FAN
RH	RELATIVE HUMIDITY
RHC	REHEAT COIL
(RL)	RELOCATED MATERIAL OR EQUIPMENT
RLA	RUNNING LOAD AMPS
RPM	REVOLUTIONS PER MINUTE
RTU	ROOFTOP UNIT

S

SA	SUPPLY AIR
SA	SHOCK ABSORBER
SA	SOUND ATTENUATOR
SAN	SANITARY WASTE
SVAV	SUPPLY AIR VALVE
SCFM	STANDARD CUBIC FEET PER MINUTE
SD	SMOKE DAMPER/SMOKE DETECTOR
SD	SMOKE DAMPER
SEER	SEASONAL ENERGY EFFICIENCY RATIO
SENS	SENSIBLE
SF	SQUARE FEET
SG	SPECIFIC GRAVITY
SL	SOUND LINING
SP	STATIC PRESSUR (INCHES OF WATER)
SPD	SPEED
SPL	SOUND POWER LEVEL
SPS	STATIC PRESSURE SENSOR
SS	STAINLESS STEEL
STM	STEAM
SV	SUPPLY VALVE

T

T	TEMPERATURE
TAB	TESTING, ADJUSTING AND BALANCING
TEF	TOILET EXHAUST FAN
TOD	TOP OF DUCT
TOP	TOP OF PIPE
TP	TOTAL PRESSURE
TYP	TYPICAL

U

UH	UNIT HEATER
UON	UNLESS OTHERWISE NOTED

V

V	VOLTAGE/VENT
VAC	VACUUM
VAV	VARIABLE AIR VOLUME
VEL	VELOCITY
VFD	VARIABLE FREQUENCY DRIVE
VIFB	VERTICAL INTEGRAL FACE AND BYPASS
VTR	VENT THRU ROOF

W

W	WATTS/WIDTH
W/	WITH
W/O	WITHOUT
WB	WET BULB TEMPERATURE
WG	WATER GAUGE
WMS	WIRE MESH SCREEN

SEE MECHANICAL SYMBOLS, LEGENDS AND EQUIPMENT SCHEDULES FOR ADDITIONAL ABBREVIATIONS. ALL ABBREVIATIONS, SYMBOLS, AND LEGENDS SHOWN ON THIS DRAWING ARE NOT NECESSARILY USED.

MECHANICAL FLOOR PLAN SYMBOLS

- ISOLATION VALVE
- THROTTLING VALVE
- ANGLE VALVE
- CHECK VALVE
- 2-WAY PNEUMATIC CONTROL VALVE
- 3-WAY PNEUMATIC CONTROL VALVE
- 2-WAY ELECTRIC CONTROL VALVE
- 3-WAY ELECTRIC CONTROL VALVE
- SOLENOID VALVE
- AUTOMATIC FLOW CONTROL VALVE
- PLUG VALVE (ISOLATION OR THROTTLING)
- SELF ACTUATING TYPE DIFFERENTIAL PRESSURE CONTROL VALVE (DPCV)
- AUTOMATIC DPCV
- PRESSURE REGULATING VALVE, FLANGED
- PRESSURE REGULATING VALVE, THREADED
- PRESSURE REDUCING VALVE
- FLOW INDICATING BALANCE VALVE
- SAFETY RELIEF VALVE
- AIR SEPARATOR
- BASKET STRAINER
- STRAINER
- MECHANICAL EXPANSION JOINT
- FLEXIBLE CONNECTION
- ORIFICE PLATE
- REDUCER - CONCENTRIC
- REDUCER - ECCENTRIC
- PIPE UNION
- PIPE ANCHOR
- ALIGNMENT GUIDE
- PRESSURE GAUGE WITH COCK
- THERMOMETER
- QUICK COUPLING
- CAP OR PLUG
- ELBOW - TURNED UP/RISER CONNECTION
- ELBOW - TURNED DOWN
- TEE OUTLET - DOWN
- TEE OUTLET - UP
- CONNECT OUT OF TOP
- DROP OR RISE
- DIRECTION OF FLOW
- DIRECTION OF PIPE PITCH (UP or DN)
- REDUCED PRESSURE BACKFLOW PREVENTER
- MANUAL AIR VENT WITH VALVE
- VACUUM RELIEF VALVE
- AUTOMATIC AIR VENT
- FLOW METER

- ROOM THERMOSTAT/SENSOR (T)
- DUCT MOUNTED THERMOSTAT/SENSOR (T D)
- CARBON DIOXIDE SENSOR (CO_2)
- CARBON MONOXIDE SENSOR (CO)
- HUMIDITY SENSOR/HUMIDISTAT (H)
- SMOKE DETECTOR (SD)
- FLOW SWITCH (FS)
- STATIC PRESSURE SENSOR (SP)
- HOSE CONNECTION (HC)
- STEAM TRAP (ST)
- TEST PORT (PRESSURE / TEMPERATURE)
- FLEXIBLE DUCT OF SIZE AS SHOWN
- FLEXIBLE DUCT CONNECTION
- AUTOMATIC DAMPER (MOTORIZED) (M)
- VOLUME DAMPER (MANUAL)
- FIRE DAMPER
- SMOKE DAMPER
- COMBINATION FIRE & SMOKE DAMPER
- RFI SHIELD DAMPER
- SECURITY BARS
- DIRECTION OF FLOW
- ACOUSTICALLY LINED DUCT
- HUMIDIFIER
- VERTICAL DUCT RISE
- VERTICAL DUCT DROP

- SUPPLY
- RETURN
- EXHAUST

(SUPPLY, RETURN, EXHAUST: AIR SYSTEMS)

- SIDE WALL SUPPLY DIFFUSER
- SIDE WALL RETURN or EXHAUST GRILLE/REGISTER
- LINEAR DIFFUSER & PLENUM
- MATERIAL OR EQUIPMENT EXISTING TO REMAIN
- MATERIAL OR EQUIPMENT TO BE DEMOLISHED
- DUCT RISE (R) OR DROP (D) IN DIRECTION OF AIRFLOW 45° OFFSETS (R)
- UNIT HEATER
- CIRCULATING/SUPPLY/EXHAUST FAN
- RETURN OR EXHAUST AIRFLOW
- SUPPLY OR OUTSIDE AIRFLOW
- POINT OF CONNECTION
- POINT OF DISCONNECT
- PUMP
- FAN

- 18x6 — INDICATES RECTANGULAR DUCT WITH DUCT SIZE 18 INCHES WIDE (IN PLANE OF DRAWING) AND 6 INCHES DEEP. SIZE PERTAINS TO THE ENTIRE RUN OF DUCT UNLESS OTHERWISE NOTED.
- 18x6~ — INDICATES FLAT OVAL DUCT WITH DUCT SIZE 18 INCHES WIDE (IN PLANE OF DRAWING) AND 6 INCHES DEEP. SIZE PERTAINS TO THE ENTIRE RUN OF DUCT UNLESS OTHERWISE NOTED.
- 18Ø — INDICATES ROUND DUCT WITH DUCT SIZE OF 18 INCHES IN DIAMETER. SIZE PERTAINS TO THE ENTIRE RUN OF DUCT (FROM DUCT ORIGIN AT TAP TO END OF DUCT) UNLESS OTHERWISE NOTED.

HVAC & PIPING LEGEND

CHWS	CHILLED WATER SUPPLY
CHWR	CHILLED WATER RETURN
CWS	CONDENSER WATER SUPPLY
CWR	CONDENSER WATER RETURN
RL	REFRIGERANT LIQUID
RS	REFRIGERANT SUCTION
RHG	REFRIGERANT HOT GAS
HHWS	HEATING HOT WATER SUPPLY
HHWR	HEATING HOT WATER RETURN
PHWS	PERIMETER HEATING WATER SUPPLY
PHWR	PERIMETER HEATING WATER RETURN
PCWS	PROCESS COOLING WATER SUPPLY
PCWR	PROCESS COOLING WATER RETURN
HTWS	HIGH TEMPERATURE WATER SUPPLY
HTWR	HIGH TEMPERATURE WATER RETURN
ERF	ENERGY RECOVERY FLUID
ATV	ATMOSPHERIC VENT (ATV)
(G)-SYSTEM	(G) PREFIX INDICATES A GLYCOL SOLUTION

HPS (PSIG)	HIGH PRESSURE STEAM
LPS (PSIG)	LOW PRESSURE STEAM
HPR (PSIG)	HIGH PRESSURE CONDENSATE RETURN
LPR (PSIG)	LOW PRESSURE CONDENSATE RETURN
CS (PSIG)	CLEAN STEAM
PC	PUMPED CONDENSATE
D	CONDENSATE DRAIN
FOS	FUEL OIL SUPPLY
FOR	FUEL OIL RETURN
FOV	FUEL OIL VENT
FOG	FUEL OIL GAUGE
DFOR	DIESEL or TYPE 1 FUEL OIL RETURN (DFOR)
DFOS	DIESEL or TYPE 1 FUEL OIL SUPPLY (DFOS)
FOT	FUEL OIL TRANSFER (FOT)
FPOP	FUEL OIL PUMP OUT (FOPO)

BFWS	BOILER FEED WATER SUPPLY
BFWR	BOILER FEED WATER RETURN
CBD	CONTINUOUS BLOWDOWN
FWPD	FEED WATER PUMP DISCHARGE
FWPS	FEED WATER PUMP SUCTION
BBO	BOILER BLOWOFF
FWS	FEEDWATER SAMPLE
BWS	BOILER WATER SAMPLE
CF	CHEMICAL FEED
BBBD	BOILER BOTTOM BLOWDOWN
CTPD	CONDENSATE TRANSFER PUMP DISCHARGE
CTPS	CONDENSATE TRANSFER PUMP SUCTION
SA	SUPPLY AIR
RA	RETURN AIR
TE	TOILET EXHAUST
GE	GENERAL EXHAUST
FHE	FUME HOOD EXHAUST
PHE	PERCHLORIC HOOD EXHAUST
RHE	RADIATION HOOD EXHAUST
BCSE	BIOSAFETY CABINET EXHAUST
ETOE	ETHELYNE OXIDE EXHAUST
KHE	KITCHEN HOOD EXHAUST

REFERENCE SYMBOLS

- SECTION NUMBER / DRAWING NUMBER WHERE DRAWN
- HHWS / 4 — RISER DESIGNATION (TYPE AS INDICATED)
- DETAIL NUMBER / DRAWING NUMBER WHERE DRAWN
- KEY NOTE (MXX)
- DEMO KEY NOTE (4)

MECHANICAL GENERAL NOTES

1. INSTALL ALL WORK IN ACCORDANCE WITH THE INTERNATION MECHANICAL CODE 2015, INTERNATIONAL ENERGY CONSERVATION CODE, INTERNATIONAL FUEL GAS CODE, AND THE REGULATIONS OF ALL ATHOURITIES HAVING JURISDICTION.
2. TO OBTAIN ALL CONSTRUCTION INFORMATION, ALL SPECIFICATION AND DRAWINGS (E.G. ARCHITECTURAL, STRUCTURAL, CIVIL, MECHANICAL, ELECTRICAL, PLUMBING AND FIRE PROTECTION) MUST BE USED.
3. BRING TO THE ATTENTION OF THE ARCHITECT/ENGINEER ANY INFORMATIONAL CONFLICTS WITHIN THE SPECIFICATIONS AND DRAWINGS. THE CONTRACTOR(S) SHALL NOT PROCEED WITH ANY WORK, EXCEPT AT ITS OWN RISK, UNTIL ALL CONFLICTS ARE RESOLVED AND THE CLARIFYING INFORMATION IS ISSUED TO THE CONTRACTOR(S) BY THE ARCHITECT/ENGINEER.
4. PROVIDE OFFSETS AND TRANSITIONS IN DUCTWORK AND PIPING AS REQUIRED TO AVOID INTERFERENCE AT NO ADDITIONAL COST TO THE OWNER. THOUGH SOME OFFSETS & TRANSITIONS ARE SHOWN IN PIPING & SHEET METAL TO HELP INDICATE THE PHYSICAL RELATIONSHIP BETWEEN THEM, IT IS NOT THE INTENT OF THE DRAWINGS TO SHOW ALL PIPING & SHEET METAL OFFSETS & TRANSITIONS REQUIRED. THE CONTRACTOR SHALL FULLY COORDINATE THE MECHANICAL WORK WITHIN ITSELF & WITH THE WORK OF ALL TRADES TO PROVIDE COMPLETE & OPERABLE SYSTEMS WITHOUT INTERFERENCES.
5. INSTALL ALL EQUIPMENT LEVEL AND PLUMB. PROVIDE BLOCKING AND HARDWARE AS REQUIRED.
6. VERIFY ALL EQUIPMENT CONNECTIONS WITH MANUFACTURER'S CERTIFIED DRAWINGS. FIELD VERIFY ALL DIMENSIONS BEFORE FABRICATION OF WORK. PROVIDE TRANSITIONS AND MAKE FINAL CONNECTIONS TO EQUIPMENT, UNLESS OTHERWISE INDICATED.
7. INSTALL ALL EQUIPMENT REQUIRING PERIODIC SERVICE NOT LESS THAN 10 FEET FROM ROOF EDGE OR OPENING, UNLESS PROTECTIVE RAILING OR PARAPET OF 42 INCHES AFF. HAS BEEN PROVIDED. VERIFY WITH OTHER TRADES TO CONFIRM IF PROTECTIVE RAILING OR PARAPET OF 42 INCHES AFF IS PROVIDED.
8. CONCENTRATE LOADS AT JOIST AND/OR BEAM LOCATIONS. WHERE CONCENTRATED LOADS DUE TO EQUIPMENT, RISERS, OR SPECIAL DUCT CONSTRUCTION OCCUR AT OTHER LOCATIONS, PROVIDE ADDITIONAL SUPPORT FRAMING AND/OR ANGLE BRACING.
9. DUCT CONSTRUCTION SHALL COMPLY WITH THE LATEST VERSION OF SMACNA CONSTRUCTION STANDARDS FOR THE SPECIFIC PRESSURE CLASSIFICATIONS INDICATED BELOW. ALL 90 DEGREE ELBOWS SHALL BE LONG RADIUS TYPE UNLESS SPACE IS LIMITED. SHORT RADIUS AND RECTANGULAR ELBOWS SHALL HAVE TURNING VANES. UNLESS OTHERWISE NOTED FOR BRANCH CONNECTIONS, PROVIDE CONICAL TAPS FOR ROUND DUCTS AND 45 DEGREE TAPS FOR RECTANGULAR DUCTS.
10. FLEXIBLE DUCTWORK SHALL NOT BE USED IN RETURN OR EXHAUST DUCT SYSTEM. FLEXIBLE DUCTWORK MAY BE USED IN THE SUPPLY SYSTEM PROVIDED THE LENGTH IS LIMITED TO A TOTAL LENGTH OF FIVE (5) FEET.
11. INSTALL DUCTWORK AS CLOSE AS POSSIBLE TO UNDERSIDE OF BEAMS AND/OR JOISTS.
12. ALL DUCTWORK SIZES INDICATED ARE INSIDE CLEAR DIMENSIONS.
13. PROVIDE DUCTWORK TO TERMINAL AIR DEVICES AT SCHEDULED INLET SIZE UNLESS OTHERWISE INDICATED.
14. PROVIDE DUCTWORK FROM TERMINAL AIR BOXES AT MANUFACTURER'S OUTLET DIMENSION SIZE UNLESS OTHERWISE INDICATED. PROVIDE TRANSITIONS AS REQUIRED.
15. DUCTWORK PENETRATIONS OF ALL FIRE RATED AND SMOKE RESISTIVE CONSTRUCTION. COORDINATE WITH LIFE SAFETY PLANS FOR LOCATIONS. PENETRATION ASSEMBLY TO BE U.L. LISTED.
16. PAINT FLAT BLACK THE INSIDE OF ALL DUCTWORK VISIBLE THROUGH DIFFUSERS, GRILLES AND REGISTERS.
17. PROVIDE OPEN END DUCTWORK (OED) WITH 2X2 MESH (1/2"X 1/2") ALUMINUM SCREEN WITH REMOVABLE FRAMES.
18. FURNISH AND INSTALL ALL MANUALLY OPERATED VOLUME CONTROL (BALANCING) DAMPERS NECESSARY TO PERFORM THE BALANCING WORK, AT EACH BRANCH TAKEOFF, AT EACH AIR TERMINAL DEVICE AND WHERE INDICATED.
19. DUCT SYSTEMS SHALL BE BALANCED TO AIRFLOWS INDICATED ON DRAWINGS. FANS SHALL BE FIELD TESTED TO ENSURE COMPLIANCE WITH SCHEDULED FAN PERFORMANCE AND SCHEDULED AIRFLOW AT THE DESIGN STATIC PRESSURES LISTED.
20. PROVIDE FLEXIBLE CONNECTIONS BETWEEN DUCTWORK AND ALL FANS AND ALL AIR HANDLING EQUIPMENT.
21. COORDINATE EXACT LOCATION OF DIFFUSERS, GRILLES AND REGISTERS WITH THE REFLECTED CEILING PLANS BEFORE INSTALLATION. PROVIDE SYMMETRY WITH THE ROOM LIGHTING SYSTEMS.
22. VERIFY DIFFUSER, GRILLE AND REGISTER MOUNTING FRAME TYPES WITH THE CEILING TYPES. PROVIDE FRAME TYPE THAT MATCHES CEILING CONFIGURATION.
23. PROVIDE CONCRETE HOUSEKEEPING PADS FOR FLOOR MOUNTED MECHANICAL EQUIPMENT. COORDINATE SIZE AND LOCATION WITH ALL TRADES.
24. PROVIDE ACCESS DOORS AND/OR PANELS FOR DUCT MOUNTED FIRE, SMOKE, AND FIRE/SMOKE DAMPERS AND SMOKE DETECTORS.
25. PROVIDE ACCESS DOORS AND/OR PANELS IN HARD CEILINGS AND WALLS TO PERMIT SERVICE TO DAMPERS, VALVES, AND CONCEALED EQUIPMENT.
26. REFER TO ARCHITECTURAL GENERAL INFORMATION SHEETS FOR MOUNTING HEIGHTS OF DEVICES. WHERE THIS INFORMATION IS NOT PROVIDED, MOUNT ROOM THERMOSTATS AT 48 INCHES AFF AND OCCUPANCY SENSORS AT 84 INCHES AFF UNLESS OTHERWISE INDICATED.
27. COORDINATE ALL WALL MOUNTED DEVICES SUCH AS THERMOSTATS AND CONTROL PANELS WITH ARCHITECTURAL INTERIOR ELEVATIONS.
28. COORDINATE ALL DOOR UNDER CUTS INDICATED AND AS REQUIRED WHERE RETURN/TRANSFER OPENS ARE NOT PROVIDED.
29. WHERE SIZE OF MOTORIZED DAMPER EXCEEDS THE LIMITS OF A SINGLE OPERATOR, PROVIDE MULTIPLE OPERATORS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
30. PROVIDE RUNOUT PIPING AS SCHEDULED OR AS OTHERWISE INDICATED.

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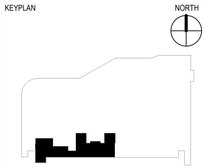
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SHEET TITLE

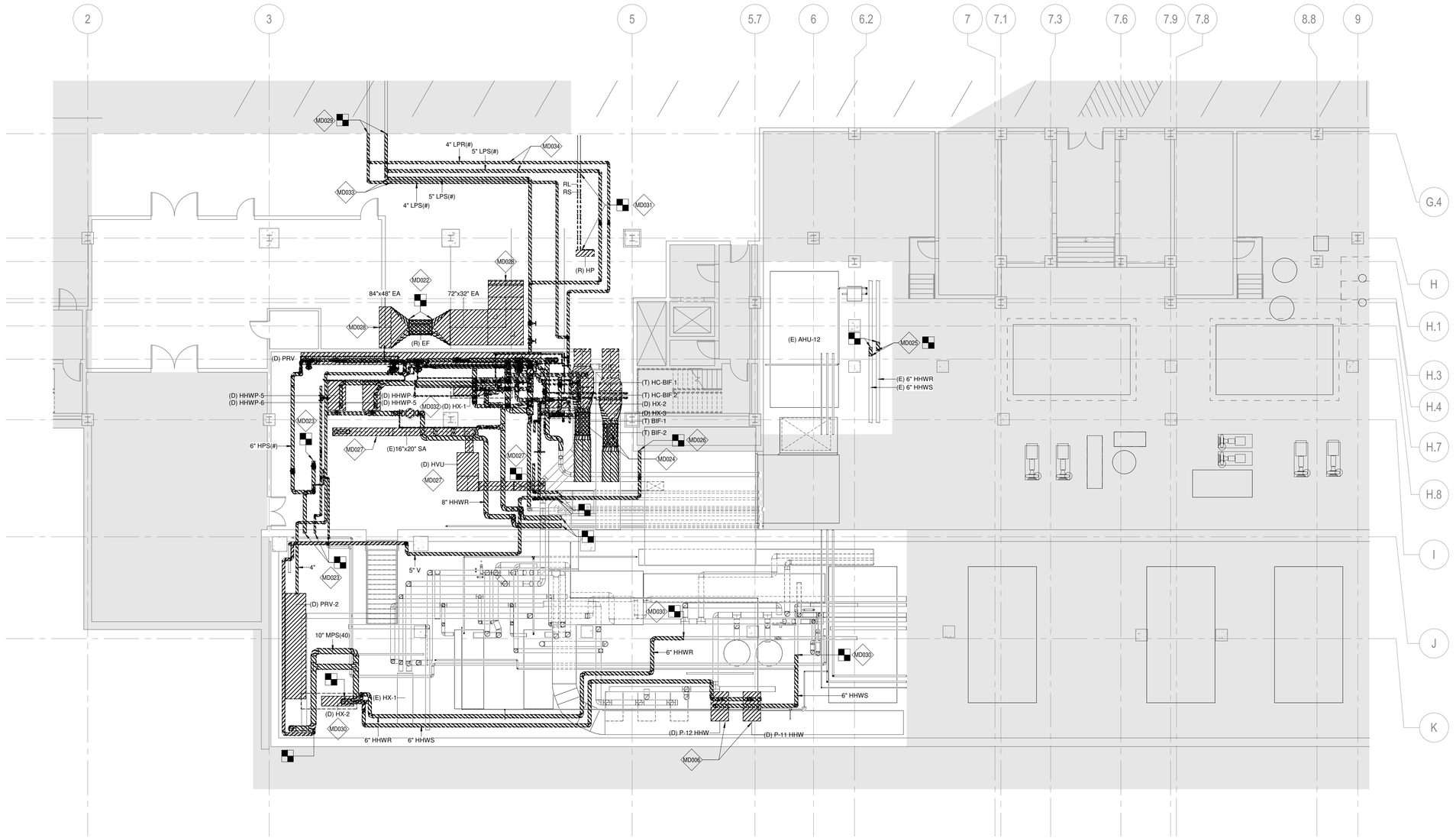
MECHANICAL ABBREVIATIONS AND SYMBOL

15749.000
PROJECT NUMBER

M0.1
SHEET NUMBER

Author

Plot Date: 7/3/2025 2:22:15 PM



1 PARKING LEVEL FLOOR PLAN - MECHANICAL DEMOLITION PLAN
SCALE: 1/8" = 1'-0"

GENERAL SHEET NOTES

A. SEE DRAWING M0.1 FOR ABBREVIATIONS, SYMBOLS, GENERAL NOTES.
B. SYSTEMS WITH AN '(E)' SUBSCRIPT ARE EXISTING TO REMAIN. MAINTAIN ALL CONDUIT, WIRING, CIRCUIT CONTINUITY. PROTECT FROM DAMAGE DURING CONSTRUCTION.
C. WHERE EXISTING BUILDING SERVICES AND/OR EQUIPMENT THAT IS TO REMAIN IN USE ARE REQUIRED TO BE SHUT DOWN, COORDINATE WITH THE OWNER 14 DAYS PRIOR TO SHUT DOWN. INCLUDE ALL ASSOCIATED OVERTIME COSTS TO PERFORM THIS WORK DURING WEEKENDS AND EVENINGS. INCLUDE ALL COSTS FOR PROVIDING TEMPORARY POWER WHERE SHUT DOWN MUST OCCUR FOR PERIODS LONGER THAN THESE HOURS.
D. FOR ALL WORK ON OR WITHIN EXISTING EQUIPMENT, CONTRACTOR TO COORDINATE WITH EQUIPMENT MANUFACTURER TO MAINTAIN WARRANTIES AND UL LISTINGS OF EQUIPMENT AND SYSTEMS.
E. THE CONTRACTOR SHALL COORDINATE EXACT LOCATION OF EQUIPMENT, PANELS, AND CONTROLLERS WITH EQUIPMENT INSTALLER PRIOR TO ROUGH-IN.
F. ISOLATION VALVES ARE NORMALLY OPEN (N.O.) UNLESS SPECIFIED TO BE NORMALLY CLOSED (N.C.)
G. PRIOR TO ANY DEMOLITION AND NEW WORK, PERFORM TESTING AND BALANCING OF THE EXISTING HEATING HOT WATER HYDRONIC PUMPING SYSTEMS SERVING THE MOULTRIE BUILDIGN AND THE C-STREET ADDITION. MEASURE PUMP FLOW, PUMP SUCTION PRESSURE, PUMP DISCHARGE PRESSURE, AND TOTAL SYSTEM FLOW AT EXISTING OPERATING PUMP SPEED. SUBMIT TAB REPORT TO OWNER AND EOR FOR REVIEW. DO NOT PROCEED WITH ANY WORK WITHOUT PRIOR TO FORMAL DIRECTION FROM THE OWNER.

SHEET KEYNOTES

MD006 DEMOLISH AND REMOVE C-STREET EXISTING HHW SERVICE PUMPS P-11 AND P-12, PIPING, PIPING ACCESSORIES AND HOUSEKEEPING PADS.
MD022 DISCONNECT AND RELOCATE EXISTING EXHAUST FAN. SEE NEW WORK PLAN AND PHASING FOR ADDITIONAL DETAIL.
MD023 DISCONNECT AND REMOVE EXISTING STEAM PIPING AND ASSOCIATED APPURTENANCES. SEE PHASING PLANS FOR ADDITIONAL INFORMATION.
MD024 BOILER MAKEUP FANS WILL BE TEMPORARILY INSTALLED IN A TEMPORARY LOCATION DURING PHASE 3 AND WILL BE RELOCATED TO A NEW LOCATION DURING PHASE 4. THIS CONDITION APPLIES TO ASSOCIATED HEATING COIL, DUCTWORK, AND WALL LOUVERS. PLEASE REFER TO SHEET G1.1 FOR PHASE 3 LOCATION AND SHEET G1.2 FOR PHASE 4 LOCATION.
MD025 DEMOLISH EXISTING STEAM PREHEAT COIL. DISCONNECT AND REMOVE ASSOCIATED EXISTING LOW PRESSURE STEAM PIPING, LOW PRESSURE CONDENSATE RETURN PIPING, AND ACCESSORIES. DISCONNECT AND REMOVE EXISTING HHWS/R PIPING BETWEEN POINTS OF DISCONNECTION.
MD026 REMOVE EXISTING VENT PIPING GOING THROUGH SHAFT WALL. PATCH SHAFT WALL AFTER PIPE REMOVAL.
MD027 DISCONNECT AND REMOVE EXISTING HEAVING AND VENTILATING UNIT. REMOVE ALL ASSOCIATED APPURTENANCES AND BRANCH PIPING.
MD028 DISCONNECT EXISTING EXHAUST DUCT AS INDICATED. EXISTING EXHAUST LOUVER SHALL REMAIN IN PLACE AND SHALL BE RELOCATED AND REUSED. SEE NEW WORK PLANS FOR ADDITIONAL INFORMATION.
MD029 DISCONNECT EXISTING PIPING AS INDICATED. EXISTING PIPING SHALL REMAIN IN PLACE AND RECONNECT TO NEW WORK PIPING. SEE NEW WORK PLANS FOR ADDITIONAL INFORMATION.
MD030 DISCONNECT AND REMOVE EXISTING PIPING TO HEAT EXCHANGER DURING OR AFTER THE REMOVAL OF HX-2. CAP OPEN ENDS OF PIPING THAT REMAIN.
MD031 DISCONNECT AND RELOCATE EXISTING HEAT PUMP. DISCONNECT REFRIGERANT SUCTION AND REFRIGERANT LIQUID PIPING AT POINTS OF DISCONNECTION. REMOVE AND RELOCATE PIPING ACCESSORIES. SEE NEW WORK PLAN AND PHASING FOR ADDITIONAL DETAIL.
MD032 DISCONNECT AND REMOVE HX-1 AND ALL ASSOCIATED APPURTENANCES. REMOVE EXISTING PLATFORM SUSPENDING HX-1 AND ANY CONCRETE PADDING TO CREATE FLAT CONCRETE FLOOR IN PLACE OF REMOVED COMPONENTS.
MD033 STEAM AND CONDENSATE PIPING DEMOLISHED IN OPTION 1. SEE OPTION PLANS (G SERIES) FOR ADDITIONAL INFORMATION.
MD034 STEAM AND CONDENSATE PIPING INSTALLED IN OPTION 1 AND DEMOLISHED IN OPTION 3. SEE OPTION PLANS (G SERIES) FOR ADDITIONAL INFORMATION.

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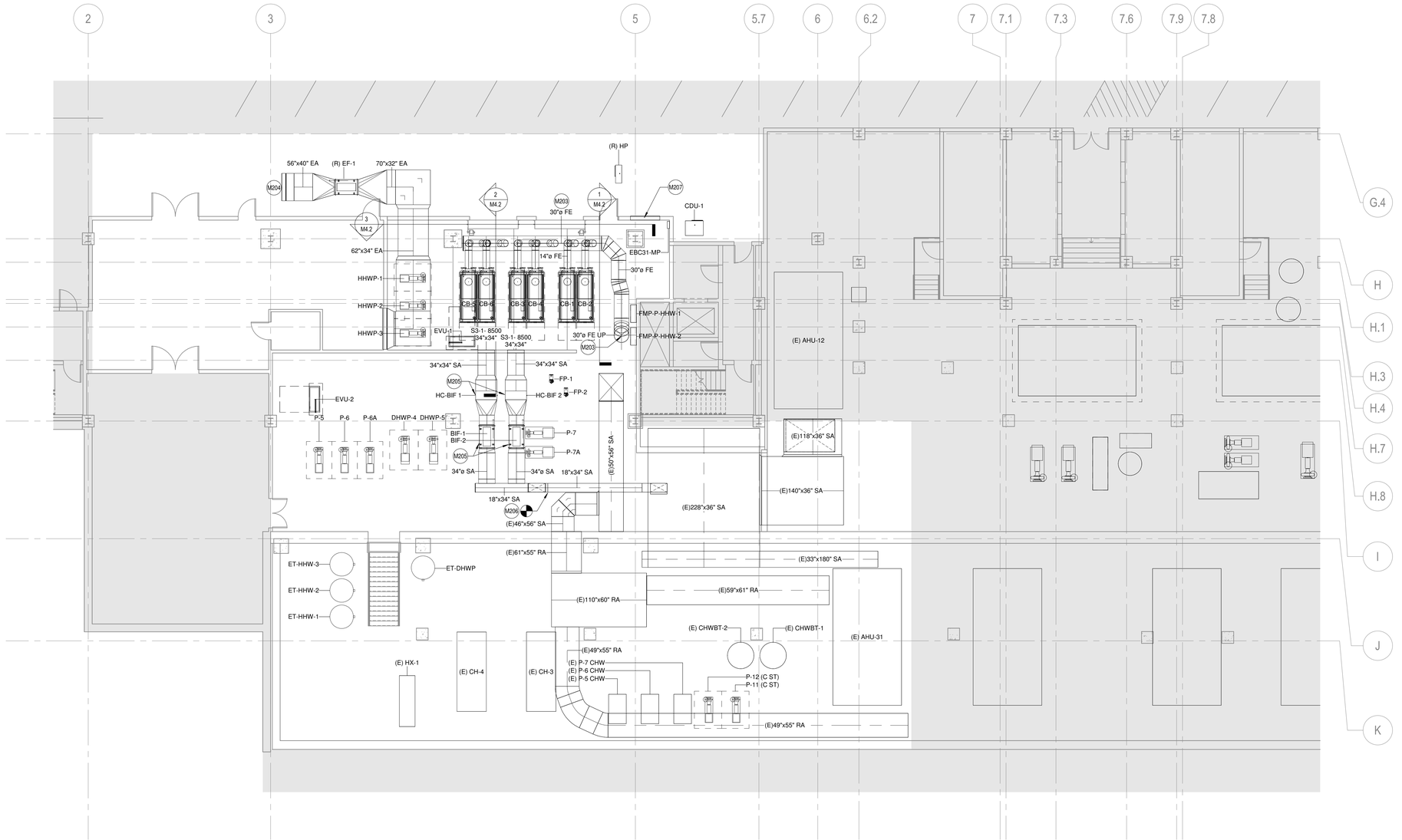
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SHEET TITLE
PARKING LEVEL FLOOR PLAN - MECHANICAL DEMOLITION

PROJECT NUMBER
15749.000

SHEET NUMBER
MD2.1

Author
7/3/2025 12:48:06 PM
Plot Date:



1 PARKING LEVEL FLOOR PLAN - HVAC NEW WORK
SCALE: 1/8" = 1'-0"

GENERAL SHEET NOTES

A. SEE DRAWING M0.1 FOR ABBREVIATIONS, SYMBOLS, GENERAL NOTES.
B. SYSTEMS WITH AN '(E)' SUBSCRIPT ARE EXISTING TO REMAIN. MAINTAIN ALL CONDUIT, WIRING, CIRCUIT CONTINUITY. PROTECT FROM DAMAGE DURING CONSTRUCTION.
C. WHERE EXISTING BUILDING SERVICES AND/OR EQUIPMENT THAT IS TO REMAIN IN USE ARE REQUIRED TO BE SHUT DOWN, COORDINATE WITH THE OWNER 14 DAYS PRIOR TO SHUT DOWN. INCLUDE ALL ASSOCIATED OVERTIME COSTS TO PERFORM THIS WORK DURING WEEKENDS AND EVENINGS. INCLUDE ALL COSTS FOR PROVIDING TEMPORARY POWER WHERE SHUT DOWN MUST OCCUR FOR PERIODS LONGER THAN THESE HOURS.
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E. THE CONTRACTOR SHALL COORDINATE EXACT LOCATION OF EQUIPMENT, PANELS, AND CONTROLLERS WITH EQUIPMENT INSTALLER PRIOR TO ROUGH-IN.
F. ISOLATION VALVES ARE NORMALLY OPEN (N.O.) UNLESS SPECIFIED TO BE NORMALLY CLOSED (N.C.)
G. PRIOR TO ANY DEMOLITION AND NEW WORK, PERFORM TESTING AND BALANCING OF THE EXISTING HEATING HOT WATER HYDRONIC PUMPING SYSTEMS SERVING THE MOULTRIE BUILDIGN AND THE C-STREET ADDITION. MEASURE PUMP FLOW, PUMP SUCTION PRESSURE, PUMP DISCHARGE PRESSURE, AND TOTAL SYSTEM FLOW AT EXISTING OPERATING PUMP SPEED. SUBMIT TAB REPORT TO OWNER AND EOR FOR REVIEW. DO NOT PROCEED WITH ANY WORK WITHOUT PRIOR TO FORMAL DIRECTION FROM THE OWNER.

SHEET KEYNOTES

M203 30" FLUE EXHAUST UP THROUGH NEWLY CONSTRUCTED SHAFT TO ROOF. SLOPE TOWARD EQUIPMENT AT 1/4" PER FOOT AND TERMINATE A MINIMUM OF 2 FEET ABOVE TOP OF TALLEST COMPONENT ON ROOF NEAR PENETRATION. REFER TO MECHANICAL SPECIFICATIONS, MANUFACTURER INSTALLATION MANUAL, MECHANICAL SECTIONS, AND MECHANICAL DETAILS FOR ADDITIONAL INFORMATION.
M204 TERMINATE RELOCATED EXHAUST FAN DUCT 9'-9" AFF IN GARAGE. TERMINATE WITH DUCT END GRILLE.
M205 BOILER INTAKE FAN WITH A DUCT MOUNTED HYDRONIC REHEAT COIL. BOILER INTAKE FAN SHALL BE INTERLOCKED WITH BOILERS.
M206 NEW CONSTRUCTION 18" X 34" DUCTWORK WILL CONNECT AT SAME ELEVATION AS EXISTING DUCTWORK AND THEN RISE TO A BOTTOM ELEVATION HEIGHT OF 4'-9" AFF.
M207 INSTALL MOTORIZED LOUVER FOR BOILER ROOM PRESSURE CONTROL, FITTED WITH FACTORY-PROVIDED AND INSTALLED ACTUATOR. COORDINATE FINAL INSTALLATION LOCATION WITH ARCHITECTURE.

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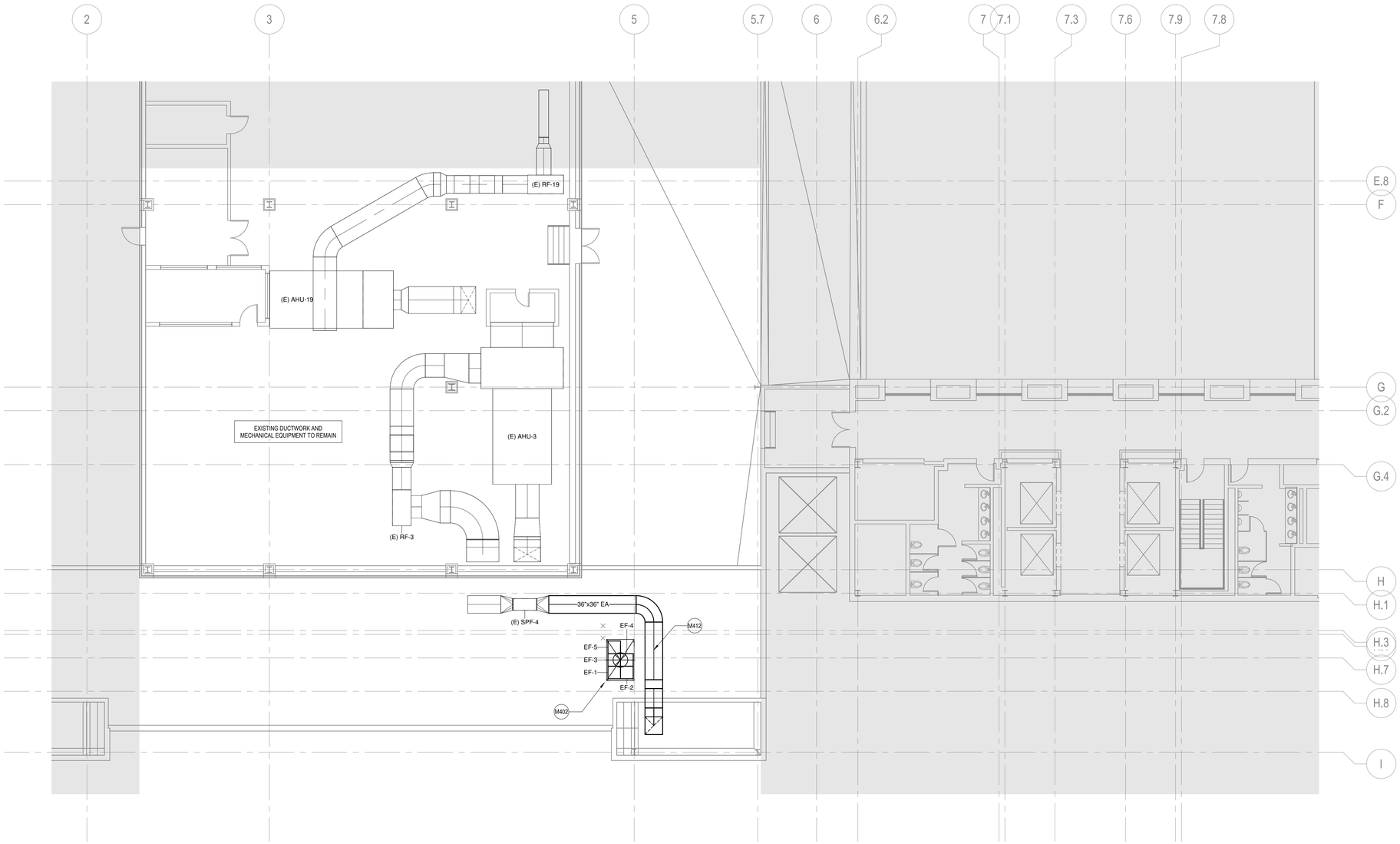
KEYPLAN NORTH

SHEET TITLE
PARKING LEVEL FLOOR PLAN - HVAC NEW WORK

15749.000
PROJECT NUMBER

M2.1
SHEET NUMBER

Plot Date: 7/3/2025 12:48:06 PM
Author



1 09 SIXTH LEVEL HVAC NEW CONSTRUCTION
SCALE: 1/8" = 1'-0"

GENERAL SHEET NOTES

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B. SYSTEMS WITH AN '(E)' SUBSCRIPT ARE EXISTING TO REMAIN. MAINTAIN ALL CONDUIT, WIRING, CIRCUIT CONTINUITY. PROTECT FROM DAMAGE DURING CONSTRUCTION.
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SHEET KEYNOTES

M402 DELEGATED DESIGN: ENGAGE A REGISTERED DESIGN PROFESSIONAL, AS DEFINED IN SECTION 013573 "DELEGATED DESIGN REQUIREMENTS AND PROCEDURES" TO DESIGN THE STEEL SUPPORTS FOR THE BOILER FLUE EXHAUST FANS. FOR ADDITIONAL INFORMATION, SEE STRUCTURAL CONSTRUCTION DOCUMENTS, SHEET A 9.1 AND SECTION 230529 - HANGERS AND SUPPORTS FOR HVAC PIPING AND EQUIPMENT. PROVIDE A DELEGATED-DESIGN SUBMITTAL. REFER TO SECTION 013573 "DELEGATED DESIGN REQUIREMENTS AND PROCEDURES" FOR DELEGATED DESIGN SUBMITTAL PROCEDURES AND REQUIREMENTS.

M412 TEMPORARILY DISCONNECT AND REMOVE DUCTWORK AS REQUIRED FOR THE INSTALLATION FOR THE BOILER FLUE AND ASSOCIATED EXHAUST FANS. RECONNECT AFTER COMPLETING THE FLUE WORK. COORDINATE SHUTDOWN WITH THE OWNER BEFORE DISCONNECTING.

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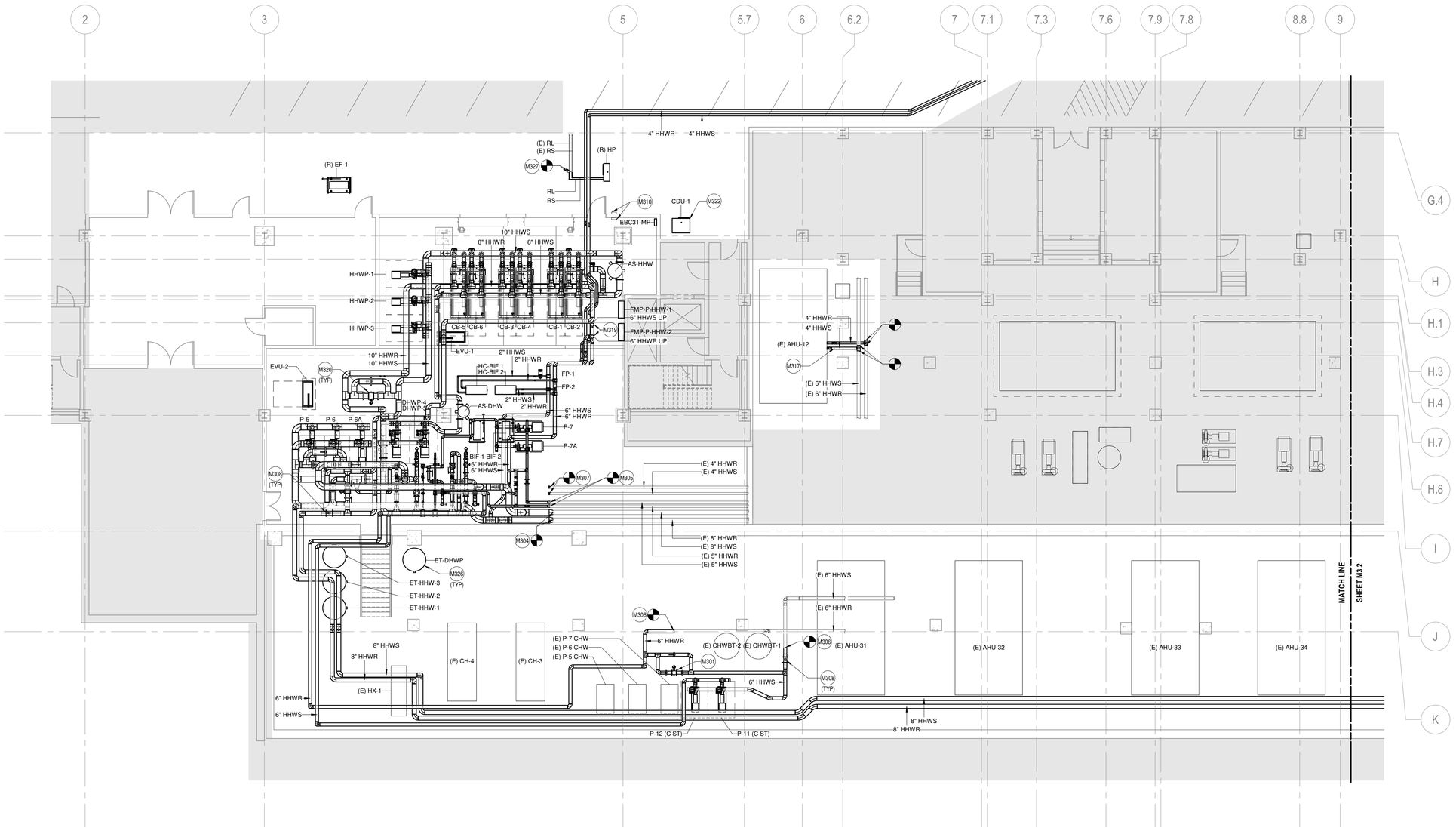
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SHEET TITLE
SIXTH LEVEL FLOOR PLAN - HVAC NEW WORK

15749.000
PROJECT NUMBER

M2.2
SHEET NUMBER

Author
7/3/2025 12:46:09 PM
Plot Date:



1 PARKING LEVEL FLOOR PLAN WEST - HVAC PIPING NEW WORK
SCALE: 1/8" = 1'-0"

GENERAL SHEET NOTES

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SHEET KEYNOTES

M301 PROVIDE HIGH PERFORMANCE SEGMENTED BALL VALVE WITH A TURNDOWN RATIO OF 300:1. BASIS OF DESIGN: VSI, SERIES V 1000/S-X WITH MODULATING ELECTRONIC ACTUATOR. VALVE SIZE INDICATED BELOW KEYNOTE. BUTTERFLY VALVES ARE NOT ACCEPTABLE FOR THIS APPLICATION.
M304 CONNECT NEW HHWS/R TO EXISTING HHWS/R PIPING FOR SECONDARY LOOP SERVING ORIGINAL REHEAT COIL LOOP AT POINT OF CONNECTION.
M305 CONNECT NEW HHWS/R TO EXISTING HHWS/R PIPING FOR SECONDARY LOOP SERVING ORIGINAL NORTH FIN TUBE RADIATOR LOOP AT POINT OF CONNECTION.
M306 CONNECT NEW HHWS/R TO EXISTING HHWS/R PIPING FOR SECONDARY LOOP SERVING C-STREET HHW LOOP AT POINT OF CONNECTION.
M307 CAP EXISTING HHWS/R PIPING FOR SECONDARY LOOP SERVING ORIGINAL SOUTH FIN TUBED RADIATOR LOOP AT POINT OF CONNECTION.
M308 PROVIDE INLINE ELECTROMAGNETIC FLOWMETER EQUIPPED WITH REMOTE WALL-MOUNTED TRANSMITTER, BOD: FT-3200. TYPICAL FOR ALL FLOW METERS ON PROJECT.
M310 WALL-MOUNTED BOILER EMERGENCY POWER-OFF BUTTON, WITH SAFETY COVERING. REFER TO M8 SERIES FOR CONNECTION TO BOILER SEQUENCING SYSTEM.
M317 PROVIDE NEW HHW PREHEAT COIL TO REPLACE EXISTING AHU PREHEAT STEAM COIL. FIELD MEASURE THE DIMENSIONS OF EXISTING STEAM COIL. PROVIDE A COIL SUBMITTAL TO THE EOR FOR REVIEW. DO NOT PROCEED WITH ANY WORK UNTIL PRIOR APPROVAL FROM THE OWNER SEE DETAIL 6 ON M6.1 FOR COIL PIPING CONNECTIONS.
M319 CONNECT HHWS/R RISER INSTALLED IN PHASE 1 TO ORIGINAL REHEAT COIL LOOP.
M320 PROVIDE HIGH PERFORMANCE SEGMENTED BALL VALVE WITH A TURNDOWN RATIO OF 300:1. BASIS OF DESIGN: VSI, SERIES V 1000/S-X WITH MODULATING ELECTRONIC ACTUATOR. BUTTERFLY VALVES ARE NOT ACCEPTABLE FOR THIS APPLICATION. REFER TO M5 SERIES FOR ALL LOCATIONS AND VALVE SIZES.
M322 INSTALL NEW CONDENSING UNIT ON NEW CONCRETE PAD. NEW PAD TO MATCH HEIGHT OF ADJACENT EXISTING CONCRETE.
M326 REFER TO M5.2 AND M6.1 FOR ADDITIONAL INFORMATION REGARDING EXPANSION TANK CONNECTIONS. REFER TO PLUMBING DRAWINGS FOR NEAREST DOMESTIC COLD WATER LINE.
M327 REROUTE AND RECONNECT EXISTING REFRIGERANT LIQUID AND REFRIGERANT SUCTION LINES TO SUPPORT RELOCATION OF EXISTING HEAT PUMP.

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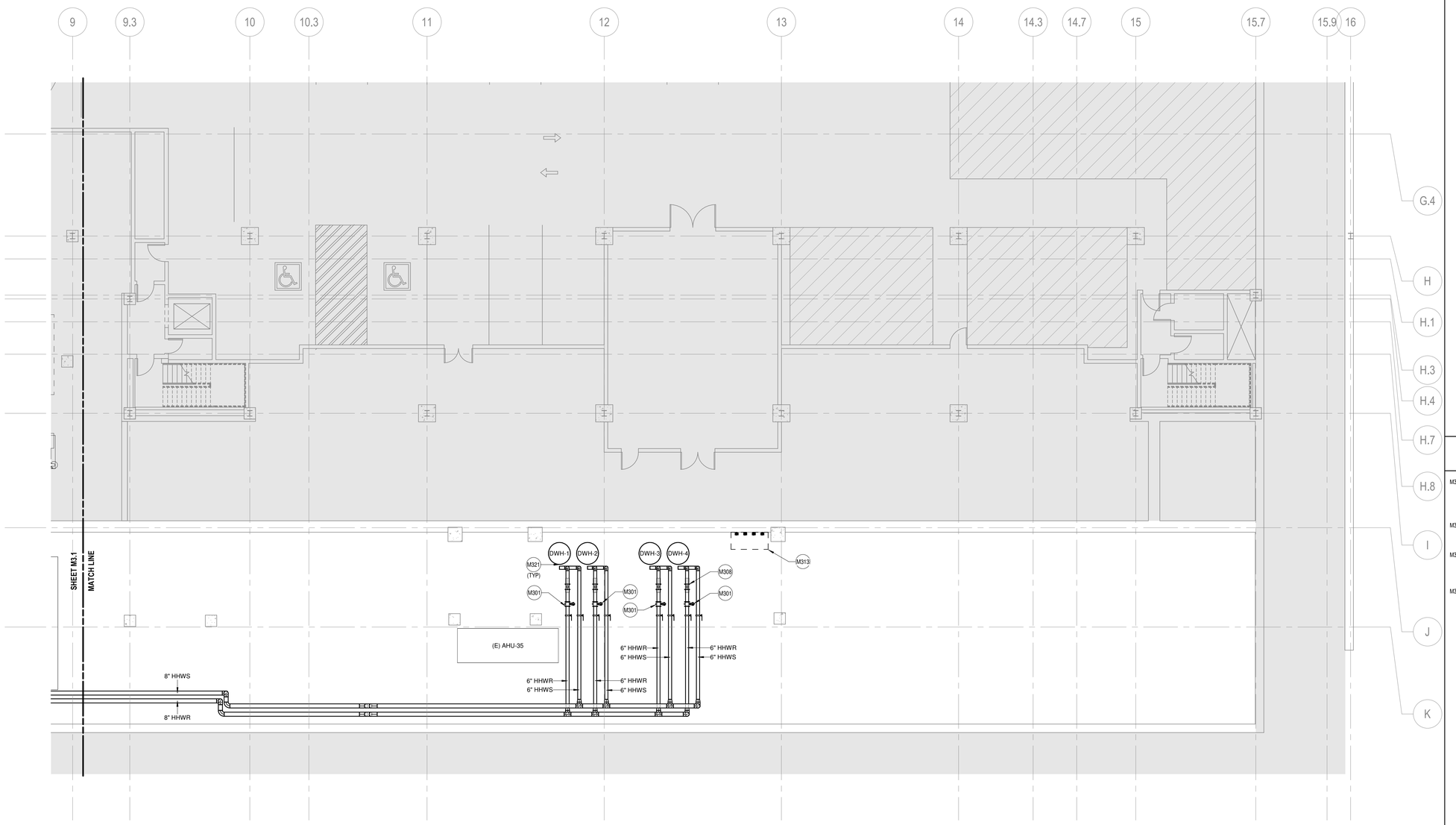
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SHEET TITLE
PARKING LEVEL FLOOR PLAN WEST - HVAC PIPING NEW WORK

15749.000
PROJECT NUMBER

M3.1
SHEET NUMBER

Author
7/3/2025 12:48:33 PM
Plot Date:



1 PARKING LEVEL FLOOR PLAN WEST - HVAC PIPING NEW WORK
SCALE: 1/8" = 1'-0"

GENERAL SHEET NOTES

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SHEET KEYNOTES

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M308 PROVIDE INLINE ELECTROMAGNETIC FLOWMETER EQUIPPED WITH REMOTE WALL-MOUNTED TRANSMITTER, BOD: FT-3200. TYPICAL FOR ALL FLOW METERS ON PROJECT.
M313 WALL-MOUNTED REMOTE TRANSMITTERS FOR INLINE ELECTROMAGNETIC FLOW METERS, BOD: FT-3200. COORDINATE FINAL LOCATION WITH FACILITIES. EXAMPLE INSTALLATION SHOWN, TYPICAL FOR ALL FLOW METERS IN PROJECT.
M321 REFER TO PLUMBING DRAWINGS FOR ADDITIONAL DETAILS ON HEATING HOT WATER AND DOMESTIC HOT WATER CONNECTIONS.

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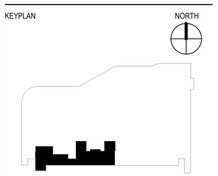
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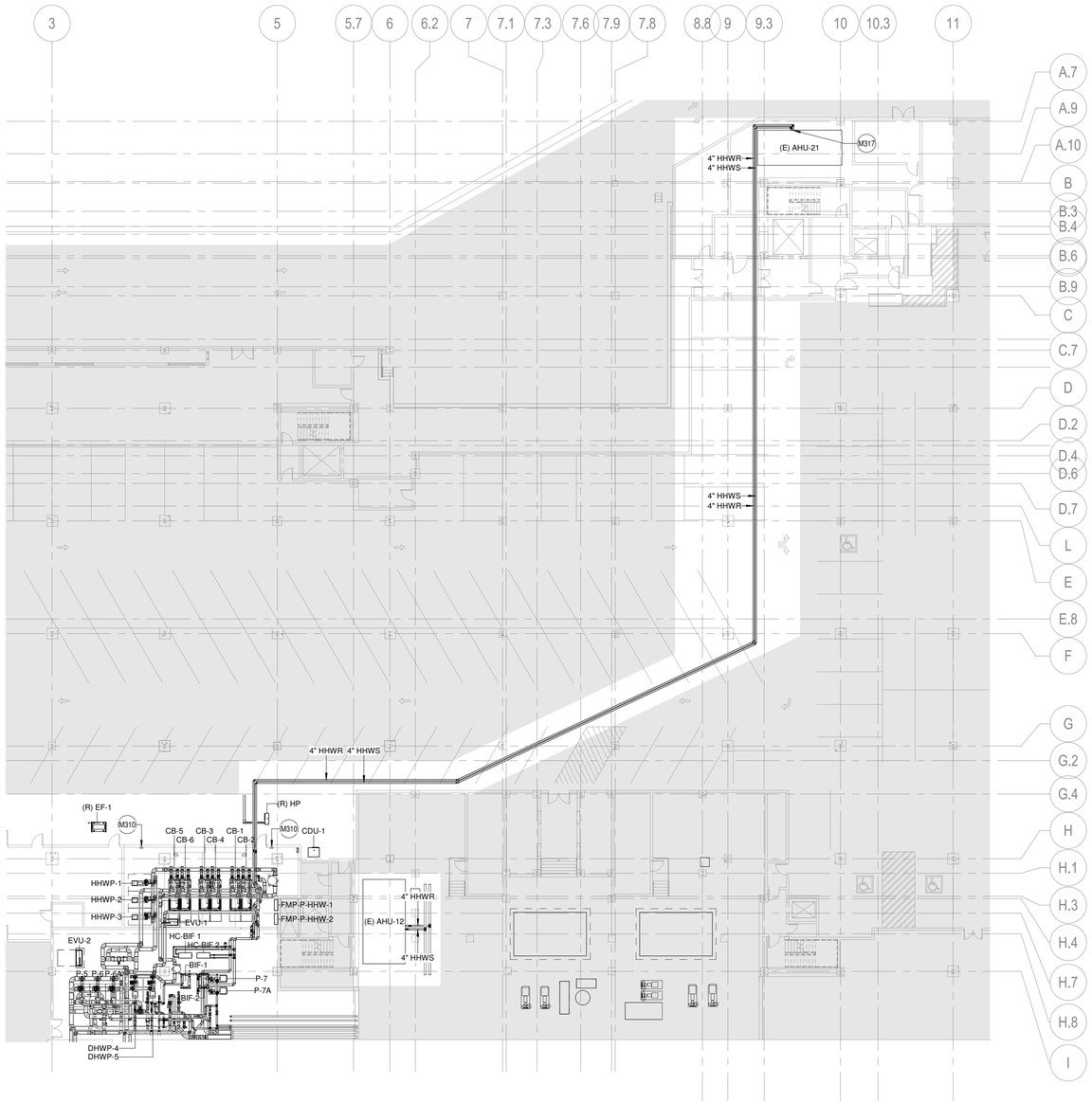


SHEET TITLE
PARKING LEVEL FLOOR PLAN EAST - HVAC PIPING NEW WORK

PROJECT NUMBER
15749.000

SHEET NUMBER
M3.2

Author
Plot Date: 7/3/2025 12:48:36 PM



1 PARKING LEVEL FLOOR PLAN NORTH - HVAC PIPING NEW WORK
SCALE: 1/16" = 1'-0"

GENERAL SHEET NOTES

A. SEE DRAWING M0.1 FOR ABBREVIATIONS, SYMBOLS, GENERAL NOTES.
B. SYSTEMS WITH AN '(E)' SUBSCRIPT ARE EXISTING TO REMAIN. MAINTAIN ALL CONDUIT, WIRING, CIRCUIT CONTINUITY. PROTECT FROM DAMAGE DURING CONSTRUCTION.
C. WHERE EXISTING BUILDING SERVICES AND/OR EQUIPMENT THAT IS TO REMAIN IN USE ARE REQUIRED TO BE SHUT DOWN, COORDINATE WITH THE OWNER 14 DAYS PRIOR TO SHUT DOWN. INCLUDE ALL ASSOCIATED OVERTIME COSTS TO PERFORM THIS WORK DURING WEEKENDS AND EVENINGS. INCLUDE ALL COSTS FOR PROVIDING TEMPORARY POWER WHERE SHUT DOWN MUST OCCUR FOR PERIODS LONGER THAN THESE HOURS.
D. FOR ALL WORK ON OR WITHIN EXISTING EQUIPMENT, CONTRACTOR TO COORDINATE WITH EQUIPMENT MANUFACTURER TO MAINTAIN WARRANTIES AND UL LISTINGS OF EQUIPMENT AND SYSTEMS.
E. THE CONTRACTOR SHALL COORDINATE EXACT LOCATION OF EQUIPMENT, PANELS, AND CONTROLLERS WITH EQUIPMENT INSTALLER PRIOR TO ROUGH-IN.
F. ISOLATION VALVES ARE NORMALLY OPEN (N.O.) UNLESS SPECIFIED TO BE NORMALLY CLOSED (N.C.)
G. PRIOR TO ANY DEMOLITION AND NEW WORK, PERFORM TESTING AND BALANCING OF THE EXISTING HEATING HOT WATER HYDRONIC PUMPING SYSTEMS SERVING THE MOULTRIE BUILDIGN AND THE C-STREET ADDITION. MEASURE PUMP FLOW, PUMP SUCTION PRESSURE, PUMP DISCHARGE PRESSURE, AND TOTAL SYSTEM FLOW AT EXISTING OPERATING PUMP SPEED. SUBMIT TAB REPORT TO OWNER AND EOR FOR REVIEW. DO NOT PROCEED WITH ANY WORK WITHOUT PRIOR TO FORMAL DIRECTION FROM THE OWNER.

SHEET KEYNOTES

M310 WALL-MOUNTED BOILER EMERGENCY POWER-OFF BUTTON, WITH SAFETY COVERING. REFER TO M8 SERIES FOR CONNECTION TO BOILER SEQUENCING SYSTEM.
M317 PROVIDE NEW HHW PREHEAT COIL TO REPLACE EXISTING AHU PREHEAT STEAM COIL. FIELD MEASURE THE DIMENSIONS OF EXISTING STEAM COIL. PROVIDE A COIL SUBMITTAL TO THE EOR FOR REVIEW. DO NOT PROCEED WITH ANY WORK UNTIL PRIOR APPROVAL FROM THE OWNER SEE DETAIL 6 ON M6.1 FOR COIL PIPING CONNECTIONS.

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PROFESSIONAL ENGINEER

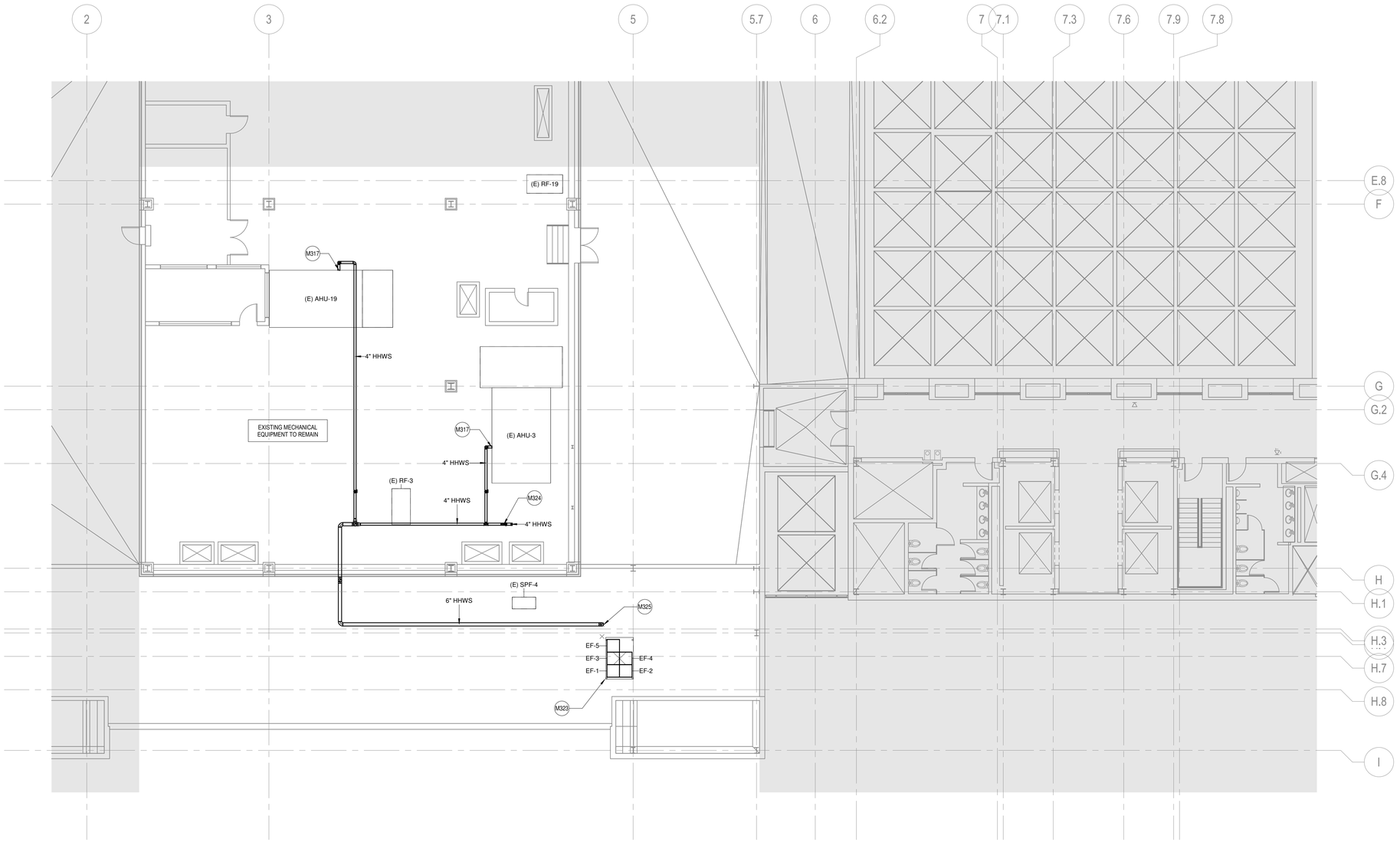
KEYPLAN NORTH

SHEET TITLE
PARKING LEVEL FLOOR PLAN NORTH - HVAC PIPING NEW WORK

15749.000
PROJECT NUMBER

M3.3
SHEET NUMBER

Plot Date: 7/3/2025 12:48:56 PM Author



1 SIXTH LEVEL FLOOR PLAN - HVAC PIPING NEW WORK
SCALE: 1/8" = 1'-0"

GENERAL SHEET NOTES

A. SEE DRAWING M0.1 FOR ABBREVIATIONS, SYMBOLS, GENERAL NOTES.
B. SYSTEMS WITH AN '(E)' SUBSCRIPT ARE EXISTING TO REMAIN. MAINTAIN ALL CONDUIT, WIRING, CIRCUIT CONTINUITY. PROTECT FROM DAMAGE DURING CONSTRUCTION.
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SHEET KEYNOTES

M317 PROVIDE NEW HHW PREHEAT COIL TO REPLACE EXISTING AHU PREHEAT STEAM COIL. FIELD MEASURE THE DIMENSIONS OF EXISTING STEAM COIL. PROVIDE A COIL SUBMITTAL TO THE EOR FOR REVIEW. DO NOT PROCEED WITH ANY WORK UNTIL PRIOR APPROVAL FROM THE OWNER SEE DETAIL 6 ON M6.1 FOR COIL PIPING CONNECTIONS.

M323 DELEGATED DESIGN: ENGAGE A REGISTERED DESIGN PROFESSIONAL, AS DEFINED IN SECTION 013573 "DELEGATED DESIGN REQUIREMENTS AND PROCEDURES" TO DESIGN THE STEEL SUPPORTS FOR THE BOILER FLUE EXHAUST FANS. FOR ADDITIONAL INFORMATION, SEE STRUCTURAL CONSTRUCTION DOCUMENTS, SHEET A 9.1 AND SECTION 230529 - HANGERS AND SUPPORTS FOR HVAC PIPING AND EQUIPMENT. PROVIDE A DELEGATED-DESIGN SUBMITTAL. REFER TO SECTION 013573 "DELEGATED DESIGN REQUIREMENTS AND PROCEDURES" FOR DELEGATED DESIGN SUBMITTAL PROCEDURES AND REQUIREMENTS.

M324 PROVIDE ISOLATION VALVES AND CAPPED ENDS FOR 4" HHWS AND 4" HHWR PIPING FOR FUTURE CONNECTIONS.

M325 6" HHWS RISER AND 6" HHWR RISER ROUTED FROM PARKING LEVEL. SEE MECHANICAL SECTIONS AND PARKING LEVEL MECHANICAL PIPING PLANS FOR ADDITIONAL INFORMATION.

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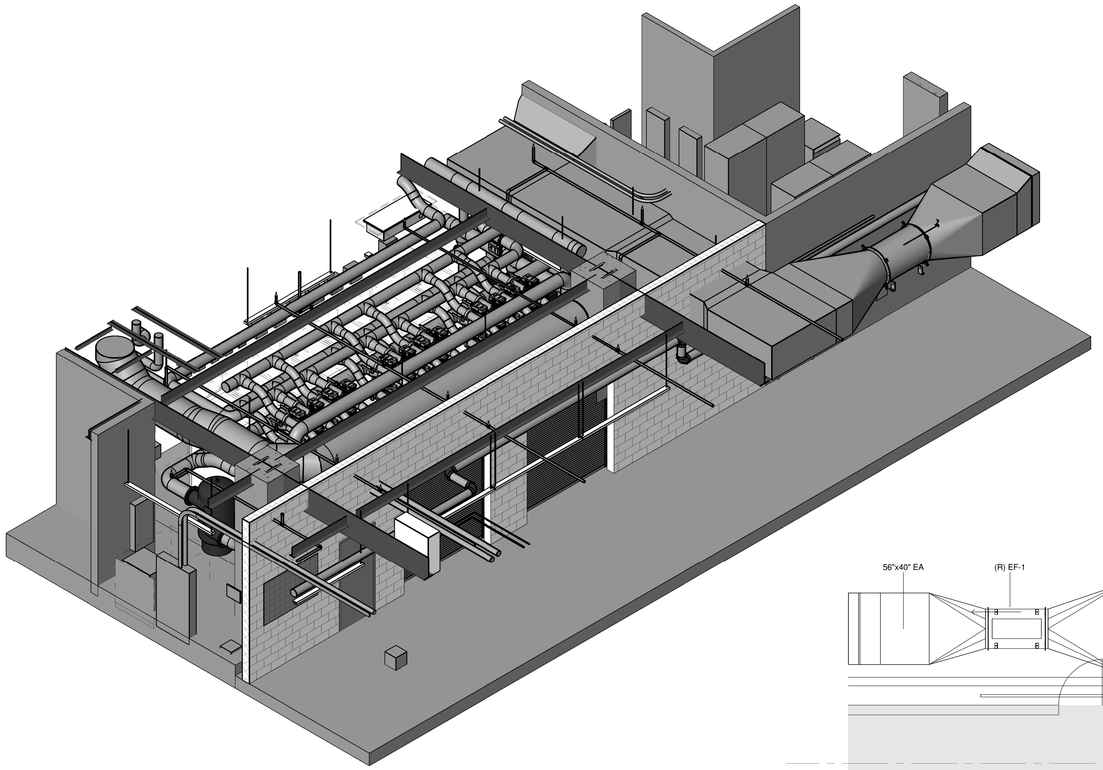
KEYPLAN NORTH

SHEET TITLE
SIXTH LEVEL FLOOR PLAN - PIPING NEW WORK

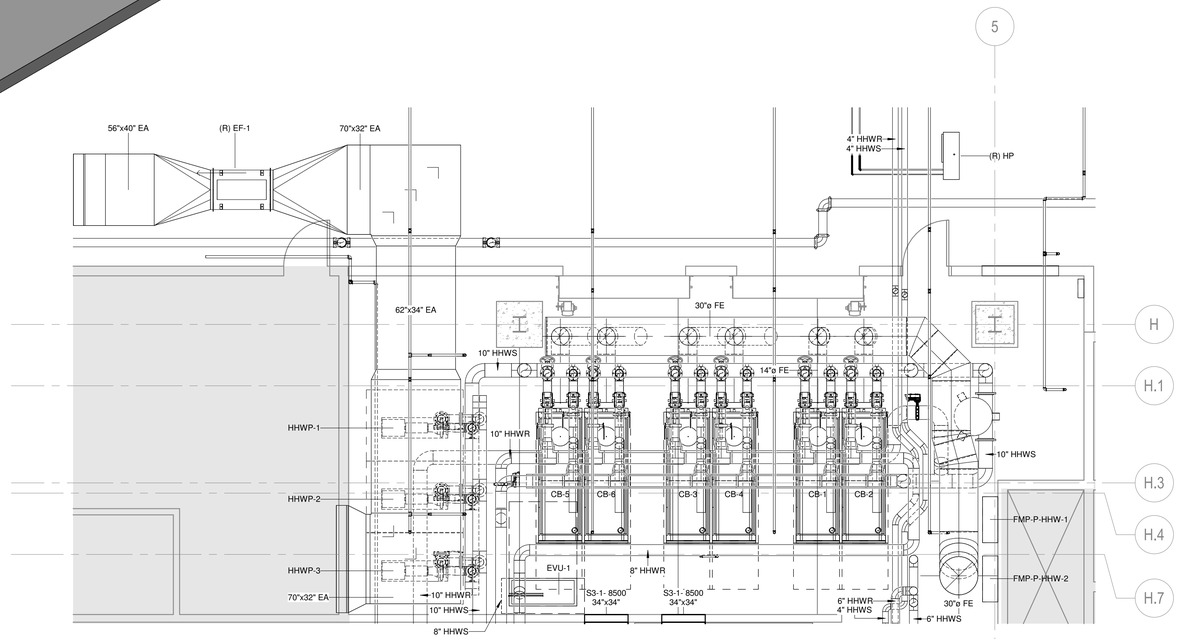
15749.000
PROJECT NUMBER

M3.4
SHEET NUMBER

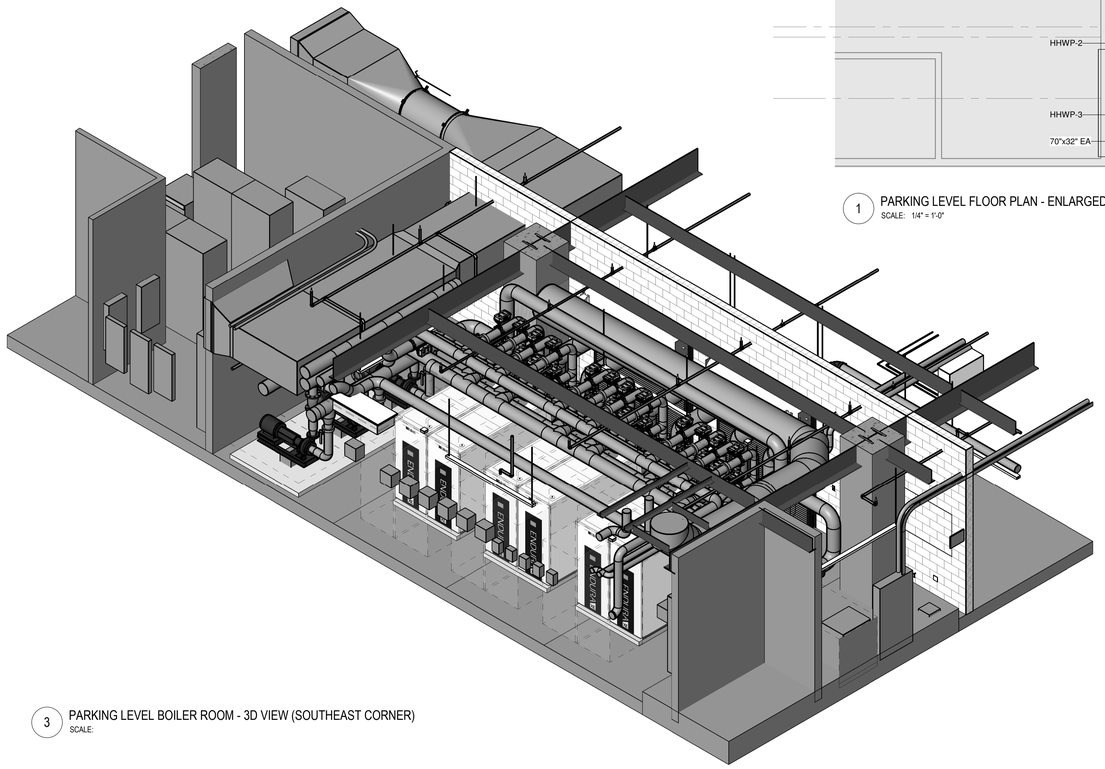
Author
7/3/2025 12:46:59 PM
Plot Date:



2 PARKING LEVEL BOILER ROOM - 3D VIEW (NORTHEAST CORNER)
SCALE:



1 PARKING LEVEL FLOOR PLAN - ENLARGED VIEW
SCALE: 1/4" = 1'-0"



3 PARKING LEVEL BOILER ROOM - 3D VIEW (SOUTHEAST CORNER)
SCALE:

GENERAL SHEET NOTES

A. SEE DRAWING M0.1 FOR ABBREVIATIONS, SYMBOLS, GENERAL NOTES.
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SHEET KEYNOTES

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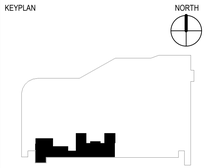
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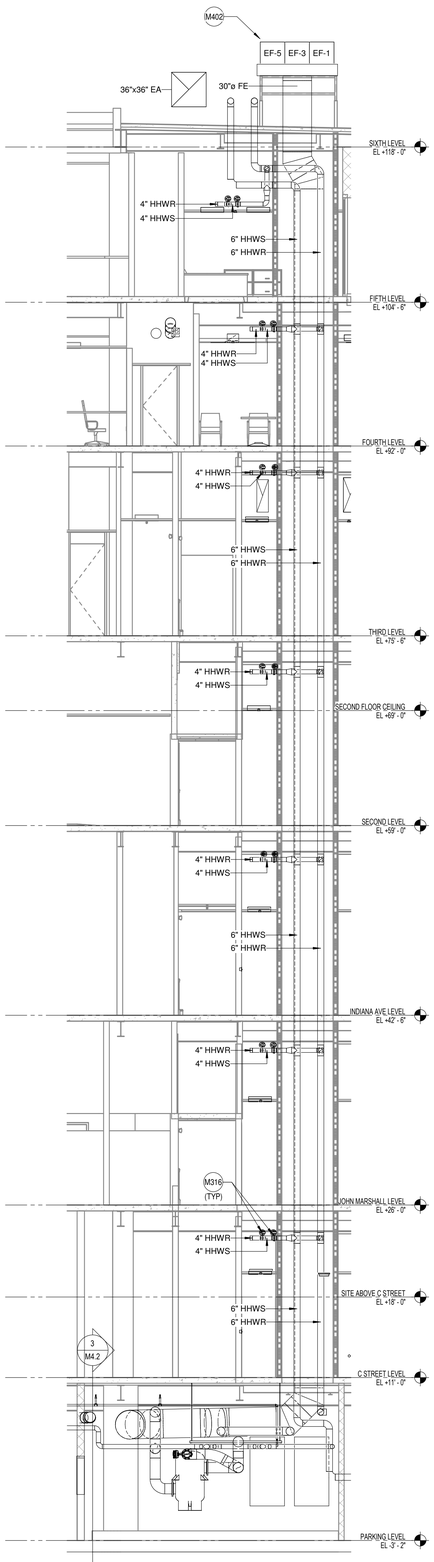


SHEET TITLE
PARKING LEVEL BOILER ROOM - ENLARGED VIEW

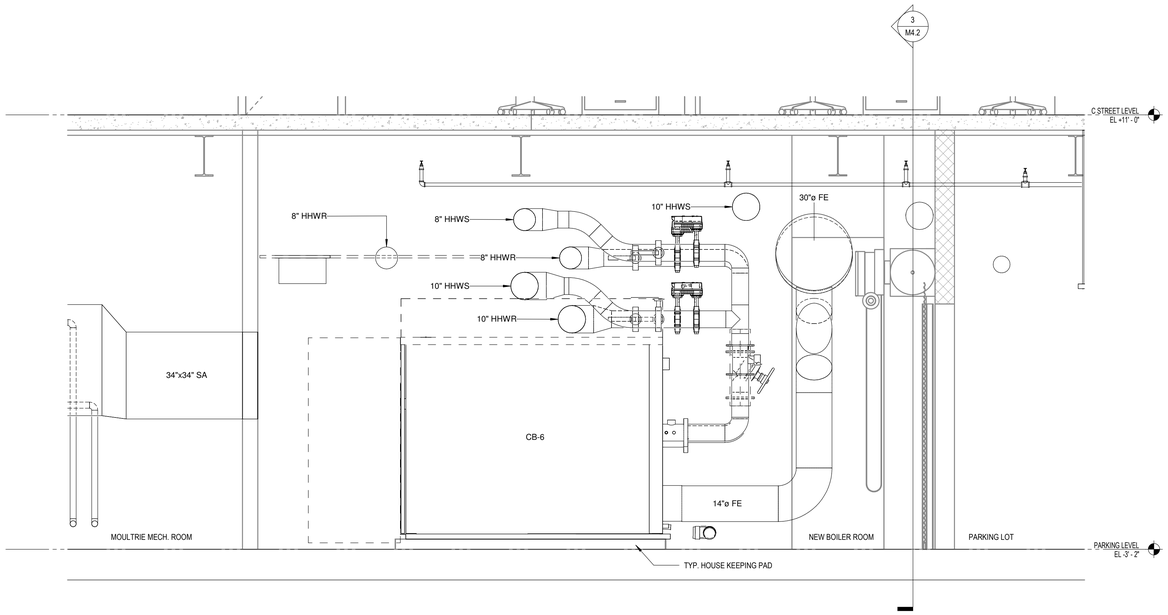
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PROJECT NUMBER

M4.1
SHEET NUMBER

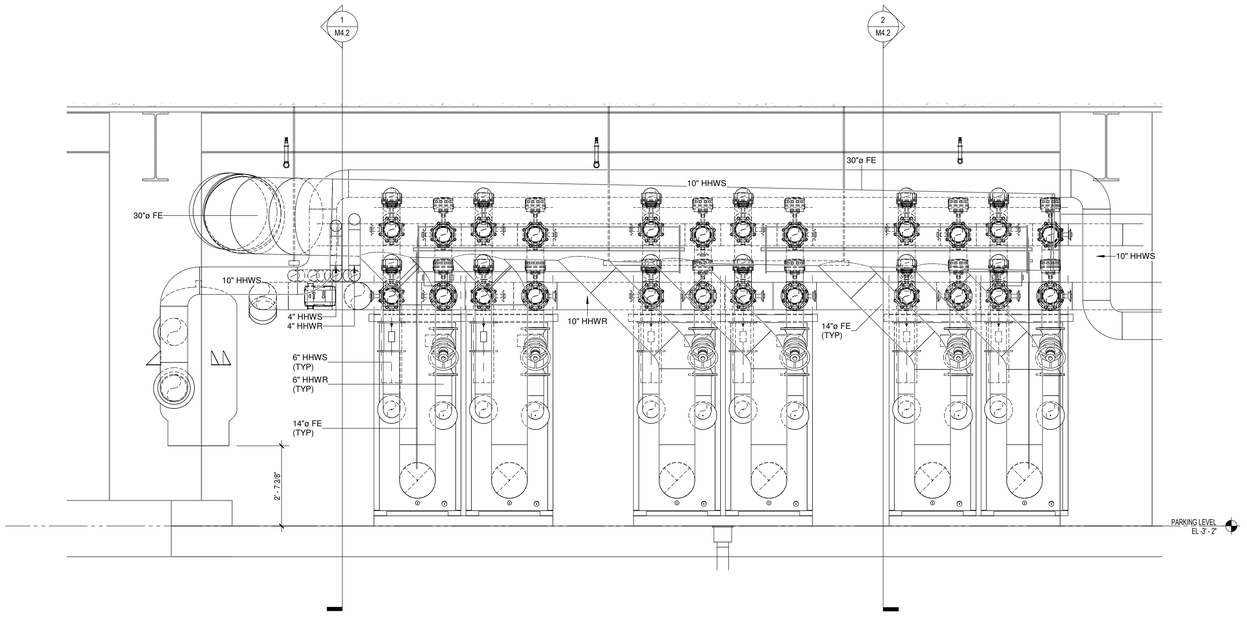
Author
7/3/2025 12:49:23 PM
Plot Date:



1 BOILER COMMON FLUE TO SHAFT SECTION
SCALE: 3/16" = 1'-0"



2 TYPICAL BOILER INSTALLATION
SCALE: 1/2" = 1'-0"



3 BOILER COMMON FLUE BRANCH CONNECTION SECTION
SCALE: 1/2" = 1'-0"

GENERAL SHEET NOTES

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SHEET KEYNOTES

M316 PROVIDE ISOLATION VALVES AND CAPPED ENDS PER 4" HHWS AND 4" HHWR BRANCH PIPING ON EACH FLOOR FOR FUTURE CONNECTIONS.
M402 DELEGATED DESIGN: ENGAGE A REGISTERED DESIGN PROFESSIONAL, AS DEFINED IN SECTION 013573 "DELEGATED DESIGN REQUIREMENTS AND PROCEDURES" TO DESIGN THE STEEL SUPPORTS FOR THE BOILER FLUE EXHAUST FANS. FOR ADDITIONAL INFORMATION, SEE STRUCTURAL CONSTRUCTION DOCUMENTS, SHEET A.9.1 AND SECTION 230529 - HANGERS AND SUPPORTS FOR HVAC PIPING AND EQUIPMENT. PROVIDE A DELEGATED-DESIGN SUBMITTAL: REFER TO SECTION 013573 "DELEGATED DESIGN REQUIREMENTS AND PROCEDURES" FOR DELEGATED DESIGN SUBMITTAL PROCEDURES AND REQUIREMENTS.

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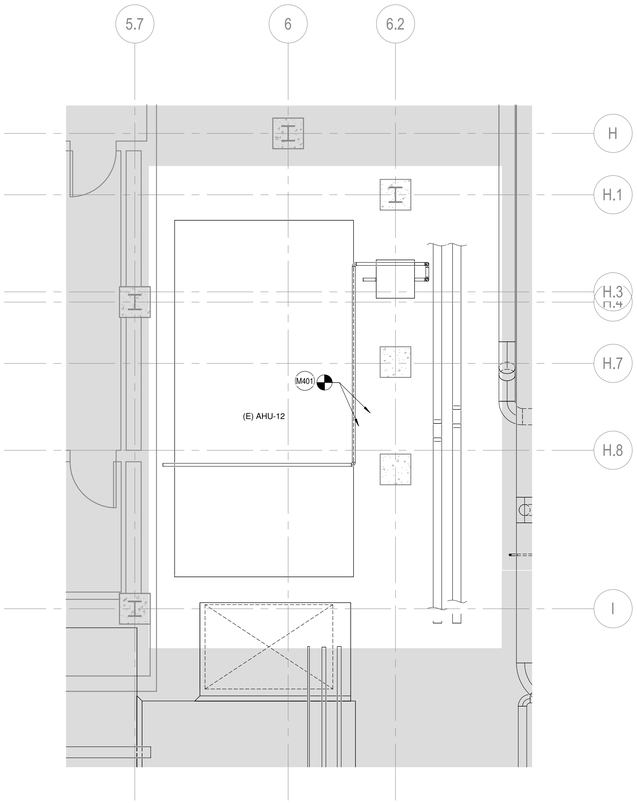
KEYPLAN NORTH

SHEET TITLE
MECHANICAL SECTIONS

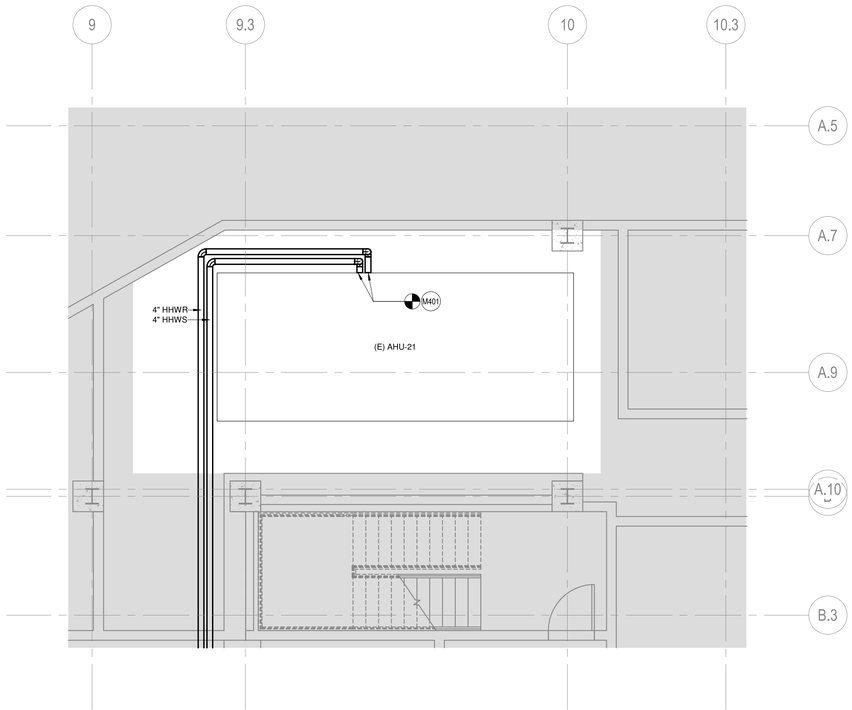
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PROJECT NUMBER

M4.2
SHEET NUMBER

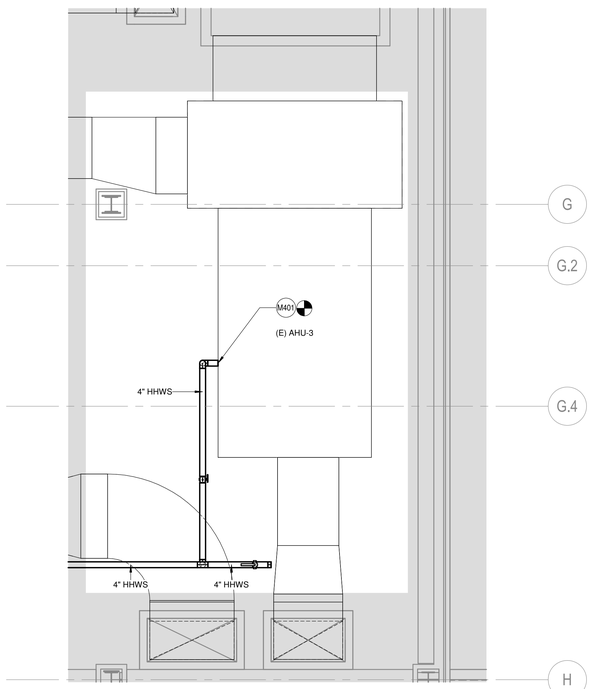
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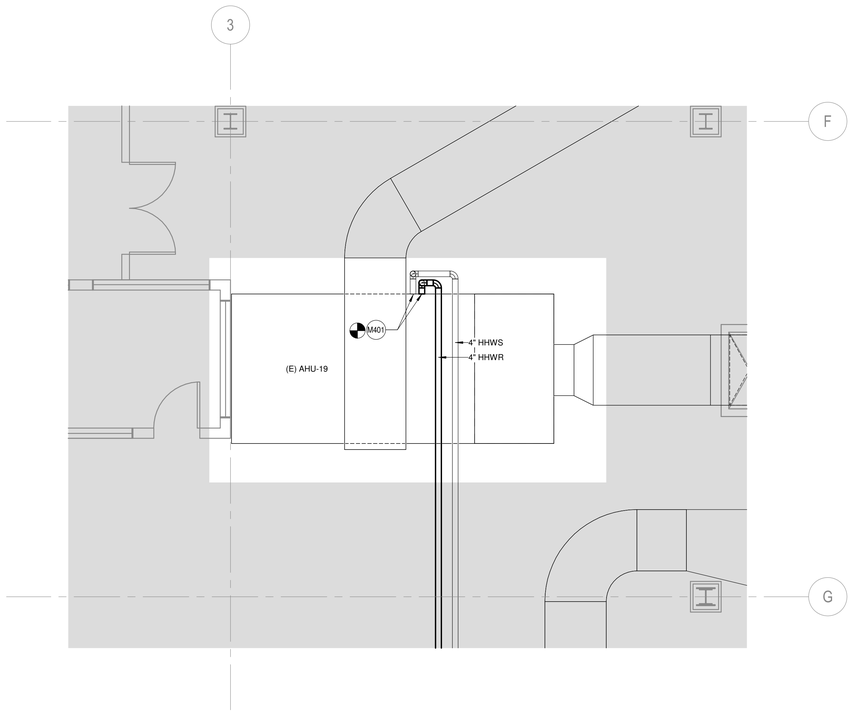
1 AHU 12 MECHANICAL EQUIPMENT PLAN ENLARGED VIEW
SCALE: 1/4" = 1'-0"



2 AHU 21 MECHANICAL EQUIPMENT PLAN ENLARGED VIEW
SCALE: 1/4" = 1'-0"



3 AHU 3 MECHANICAL EQUIPMENT PLAN ENLARGED VIEW
SCALE: 1/4" = 1'-0"



4 AHU 19 MECHANICAL EQUIPMENT PLAN ENLARGED VIEW
SCALE: 1/4" = 1'-0"

SHEET KEYNOTES

M401 CONNECT NEW HHWS/R TO EXISTING HHWS/R PIPING AT POINT OF CONNECTION. PROVIDE NEW AHU PREHEAT COIL. REFER TO M6.2 FOR AHU COIL CONNECTION DETAIL.

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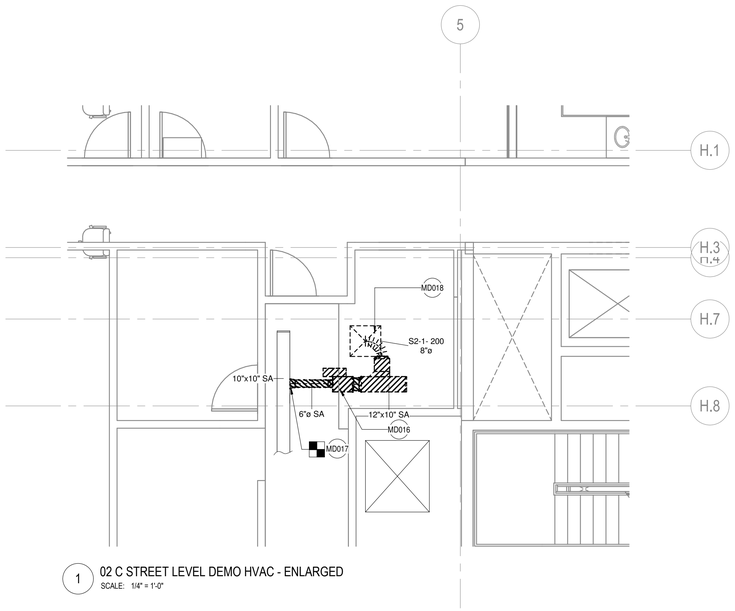
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AHU NEW WORK - HVAC - ENLARGED VIEW

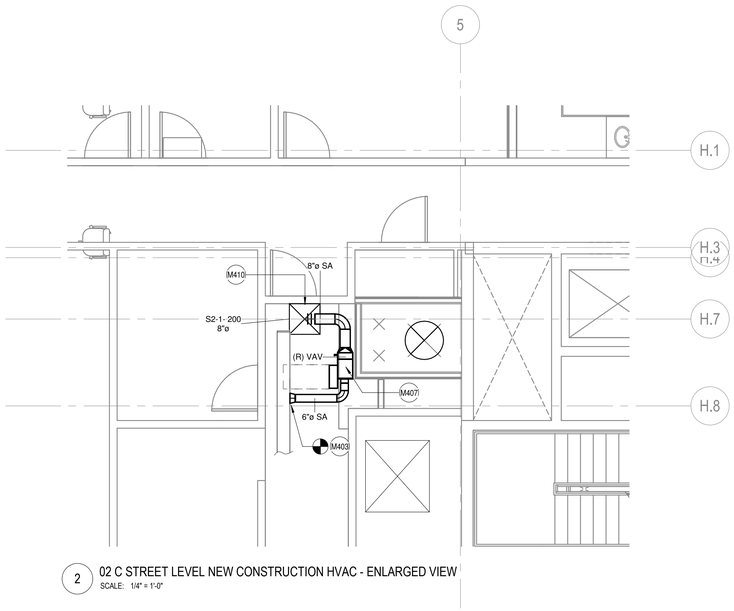
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M4.3
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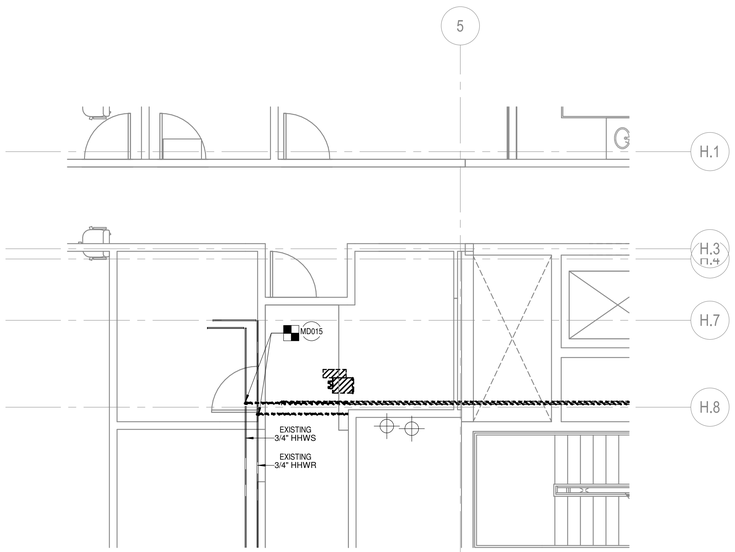
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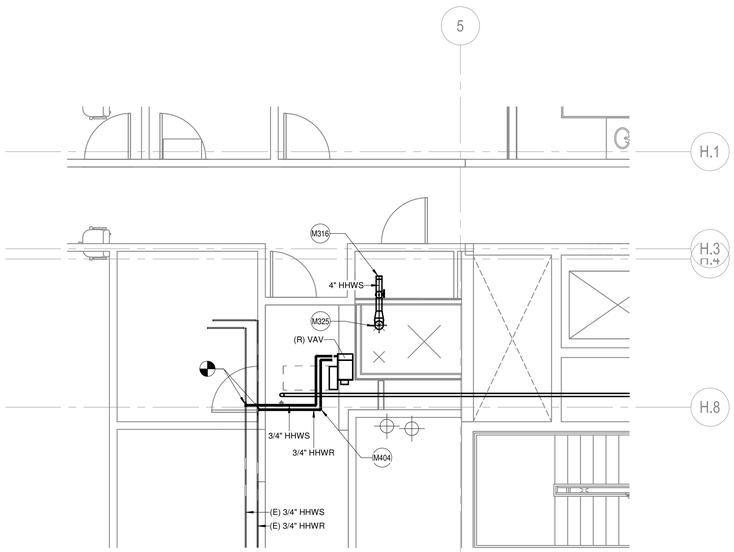
1 02 C STREET LEVEL DEMO HVAC - ENLARGED
SCALE: 1/4" = 1'-0"



2 02 C STREET LEVEL NEW CONSTRUCTION HVAC - ENLARGED VIEW
SCALE: 1/4" = 1'-0"



3 02 C STREET LEVEL DEMO PIPING - ENLARGED VIEW
SCALE: 1/4" = 1'-0"



4 02 C STREET LEVEL NEW CONSTRUCTION PIPING - ENLARGED VIEW
SCALE: 1/4" = 1'-0"

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SHEET KEYNOTES

M316 PROVIDE ISOLATION VALVES AND CAPPED ENDS PER 4" HHWS AND 4" HHWR BRANCH PIPING ON EACH FLOOR FOR FUTURE CONNECTIONS.
M325 6" HHWS RISER AND 6" HHWR RISER ROUTED FROM PARKING LEVEL. SEE MECHANICAL SECTIONS AND PARKING LEVEL MECHANICAL PIPING PLANS FOR ADDITIONAL INFORMATION.
M403 PROVIDE NEW 6" AND 8" ROUND SUPPLY DUCT AS INDICATED. CONNECT TO EXISTING SUPPLY DUCT MAIN.
M404 PROVIDE NEW 3/4" HHWS AND 3/4" HHWR PIPING AS INDICATED AND CONNECT TO EXISTING 3/4" HHWS AND 3/4" HHWR PIPING.
M407 REUSE EXISTING VAV BOX AS INDICATED.
M410 REUSE EXISTING DIFFUSER AS INDICATED.
MD015 DISCONNECT AND REMOVE EXISTING 3/4"HHWS AND 3/4"HHWR PIPING AS INDICATED.
MD016 DISCONNECT EXISTING VAV BOX AS INDICATED. SAVE BOX FOR FUTURE REUSE. SEE NEW WORK PLAN FOR ADDITIONAL INFORMATION.
MD017 DISCONNECT AND REMOVE EXISTING SUPPLY DUCT AS INDICATED.
MD018 REMOVE EXISTING DIFFUSER AS INDICATED. SAVE DIFFUSER FOR FUTURE REUSE. SEE NEW WORK PLAN FOR ADDITIONAL INFORMATION.

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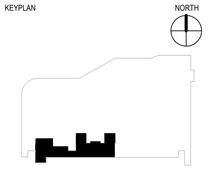
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KEYPLAN

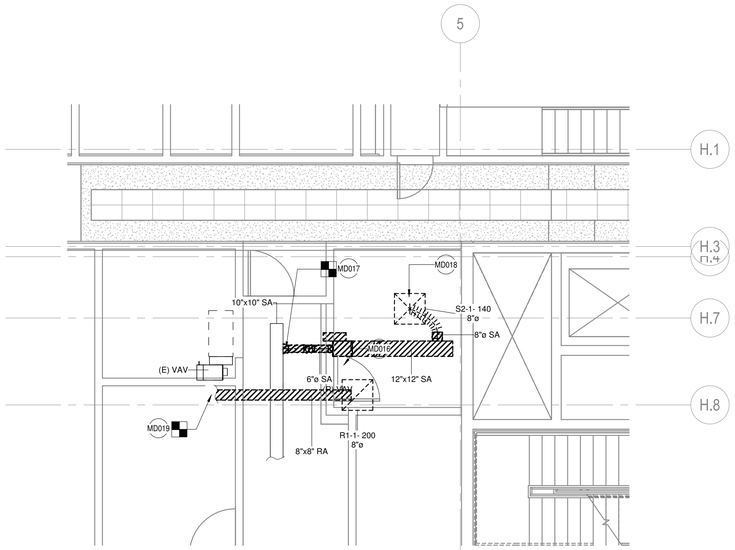


SHEET TITLE
C STREET LEVEL PLAN - ENLARGED VIEW

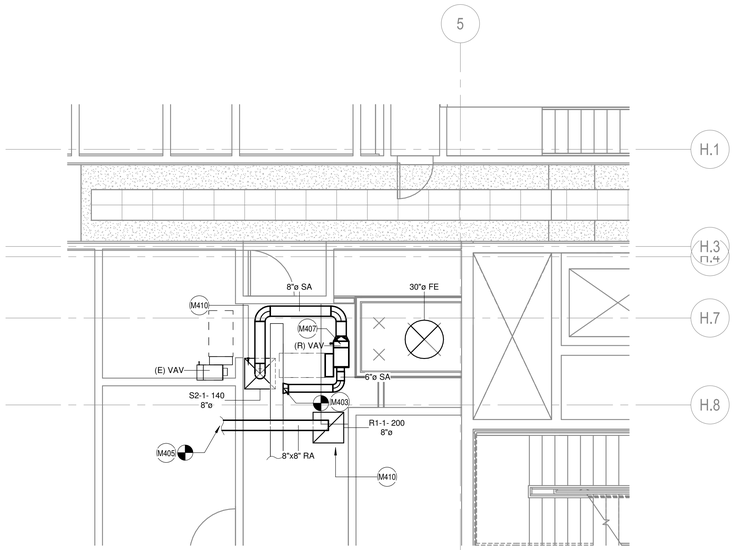
PROJECT NUMBER 15749.000

SHEET NUMBER **M4.4**

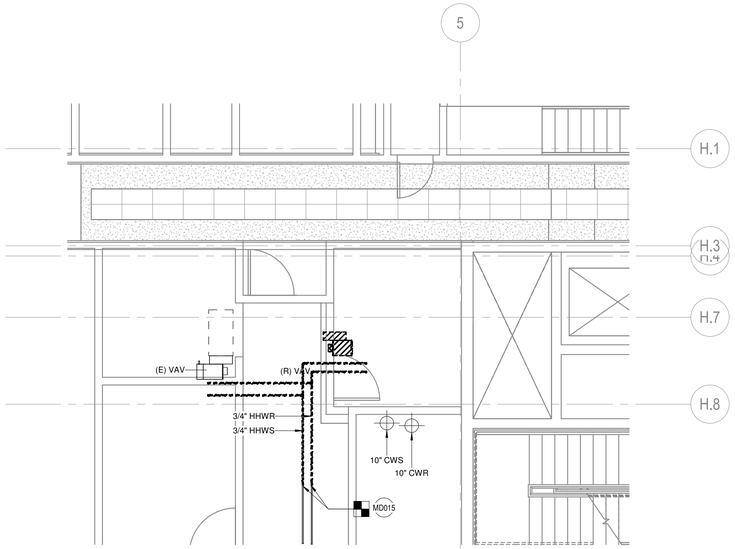
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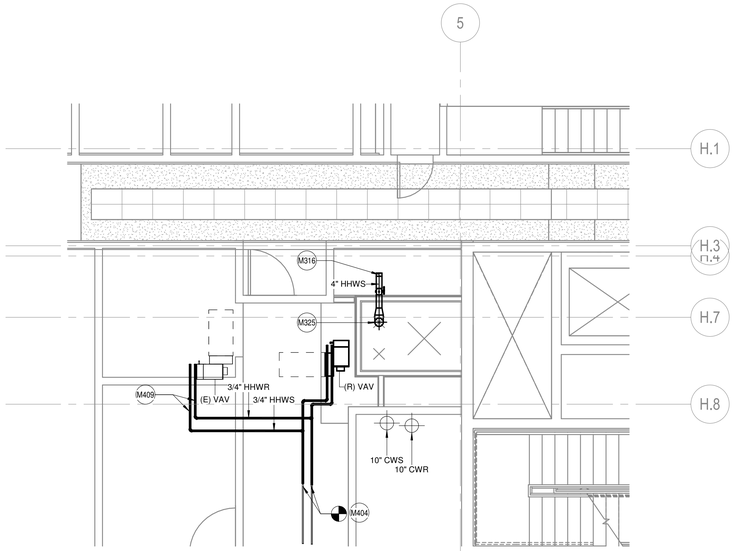
1 JOHN MARSHALL LEVEL DEMO HVAC - ENLARGED VIEW
SCALE: 1/4" = 1'-0"



2 JOHN MARSHALL LEVEL NEW CONSTRUCTION HVAC- ENLARGED VIEW
SCALE: 1/4" = 1'-0"



3 JOHN MARSHALL LEVEL DEMO PIPING - ENLARGED VIEW
SCALE: 1/4" = 1'-0"



4 JOHN MARSHALL LEVEL NEW CONSTRUCTION PIPING - ENLARGED VIEW
SCALE: 1/4" = 1'-0"

GENERAL SHEET NOTES

A. SEE DRAWING M0.1 FOR ABBREVIATIONS, SYMBOLS, GENERAL NOTES.
B. SYSTEMS WITH AN '(E)' SUBSCRIPT ARE EXISTING TO REMAIN. MAINTAIN ALL CONDUIT, WIRING, CIRCUIT CONTINUITY. PROTECT FROM DAMAGE DURING CONSTRUCTION.
C. WHERE EXISTING BUILDING SERVICES AND/OR EQUIPMENT THAT IS TO REMAIN IN USE ARE REQUIRED TO BE SHUT DOWN, COORDINATE WITH THE OWNER 14 DAYS PRIOR TO SHUT DOWN. INCLUDE ALL ASSOCIATED OVERTIME COSTS TO PERFORM THIS WORK DURING WEEKENDS AND EVENINGS. INCLUDE ALL COSTS FOR PROVIDING TEMPORARY POWER WHERE SHUT DOWN MUST OCCUR FOR PERIODS LONGER THAN THESE HOURS.
D. FOR ALL WORK ON OR WITHIN EXISTING EQUIPMENT, CONTRACTOR TO COORDINATE WITH EQUIPMENT MANUFACTURER TO MAINTAIN WARRANTIES AND UL LISTINGS OF EQUIPMENT AND SYSTEMS.
E. THE CONTRACTOR SHALL COORDINATE EXACT LOCATION OF EQUIPMENT, PANELS, AND CONTROLLERS WITH EQUIPMENT INSTALLER PRIOR TO ROUGH-IN.
F. ISOLATION VALVES ARE NORMALLY OPEN (N.O.) UNLESS SPECIFIED TO BE NORMALLY CLOSED (N.C.)
G. PRIOR TO ANY DEMOLITION AND NEW WORK, PERFORM TESTING AND BALANCING OF THE EXISTING HEATING HOT WATER HYDRONIC PUMPING SYSTEMS SERVING THE MOULTRIE BUILDIGN AND THE C-STREET ADDITION. MEASURE PUMP FLOW, PUMP SUCTION PRESSURE, PUMP DISCHARGE PRESSURE, AND TOTAL SYSTEM FLOW AT EXISTING OPERATING PUMP SPEED. SUBMIT TAB REPORT TO OWNER AND EOR FOR REVIEW. DO NOT PROCEED WITH ANY WORK WITHOUT PRIOR TO FORMAL DIRECTION FROM THE OWNER.

SHEET KEYNOTES

M316	PROVIDE ISOLATION VALVES AND CAPPED ENDS PER 4" HHWS AND 4" HHWR BRANCH PIPING ON EACH FLOOR FOR FUTURE CONNECTIONS.
M325	6" HHWS RISER AND 6" HHWR RISER ROUTED FROM PARKING LEVEL. SEE MECHANICAL SECTIONS AND PARKING LEVEL MECHANICAL PIPING PLANS FOR ADDITIONAL INFORMATION.
M403	PROVIDE NEW 6" AND 8" ROUND SUPPLY DUCT AS INDICATED. CONNECT TO EXISTING SUPPLY DUCT MAIN.
M404	PROVIDE NEW 3/4" HHWS AND 3/4" HHWR PIPING AS INDICATED AND CONNECT TO EXISTING 3/4" HHWS AND 3/4" HHWR PIPING.
M405	PROVIDE NEW RETURN DUCT AS INDICATED.
M407	REUSE EXISTING VAV BOX AS INDICATED.
M409	CONNECT NEW 3/4" HHWS AND 3/4" HHWR PIPING TO EXISTING VAV.
M410	REUSE EXISTING DIFFUSER AS INDICATED.
MD015	DISCONNECT AND REMOVE EXISTING 3/4"HHWS AND 3/4"HHWR PIPING AS INDICATED.
MD016	DISCONNECT EXISTING VAV BOX AS INDICATED. SAVE BOX FOR FUTURE REUSE. SEE NEW WORK PLAN FOR ADDITIONAL INFORMATION.
MD017	DISCONNECT AND REMOVE EXISTING SUPPLY DUCT AS INDICATED.
MD018	REMOVE EXISTING DIFFUSER AS INDICATED. SAVE DIFFUSER FOR FUTURE REUSE. SEE NEW WORK PLAN FOR ADDITIONAL INFORMATION.
MD019	DISCONNECT AND REMOVE EXISTING RETURN DUCT AS INDICATED.

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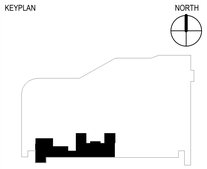
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KEYPLAN

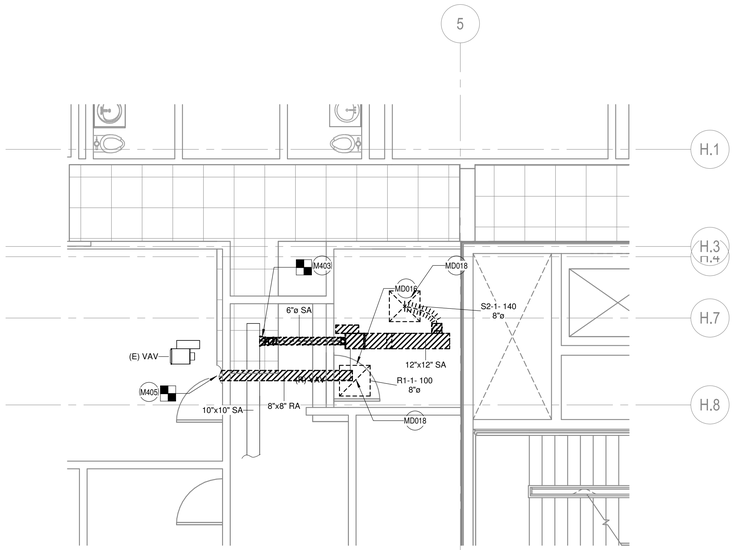


SHEET TITLE
JOHN MARSHALL LEVEL PLAN - ENLARGED VIEW

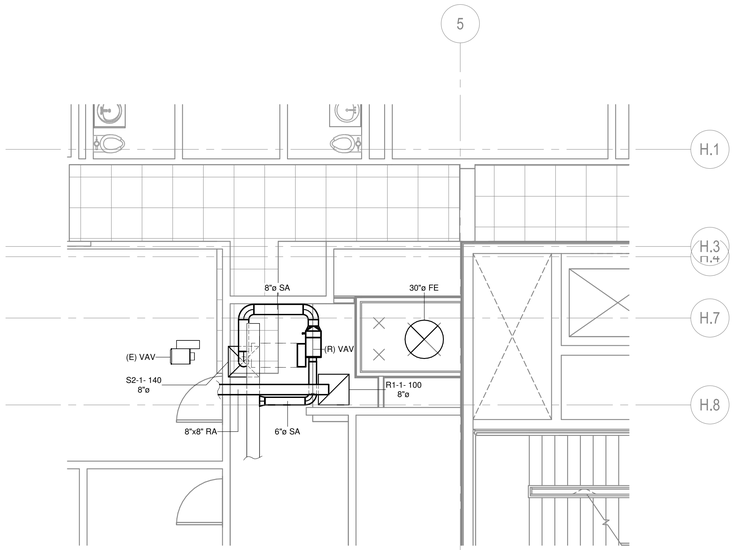
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PROJECT NUMBER

M4.5
SHEET NUMBER

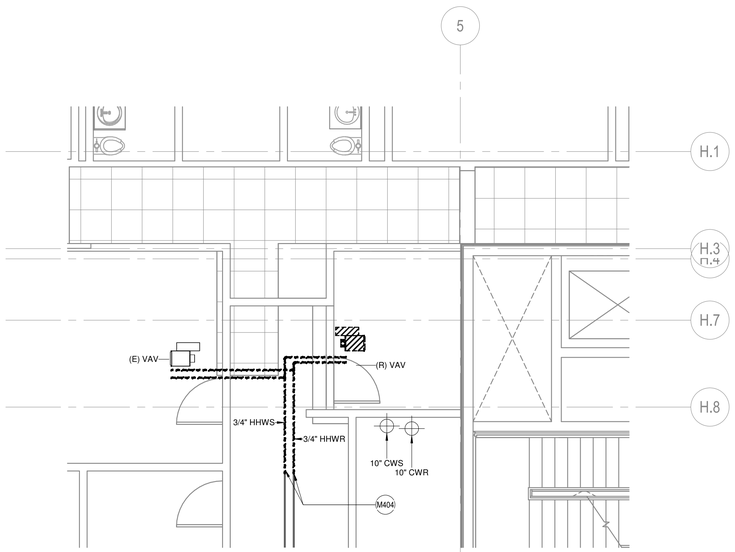
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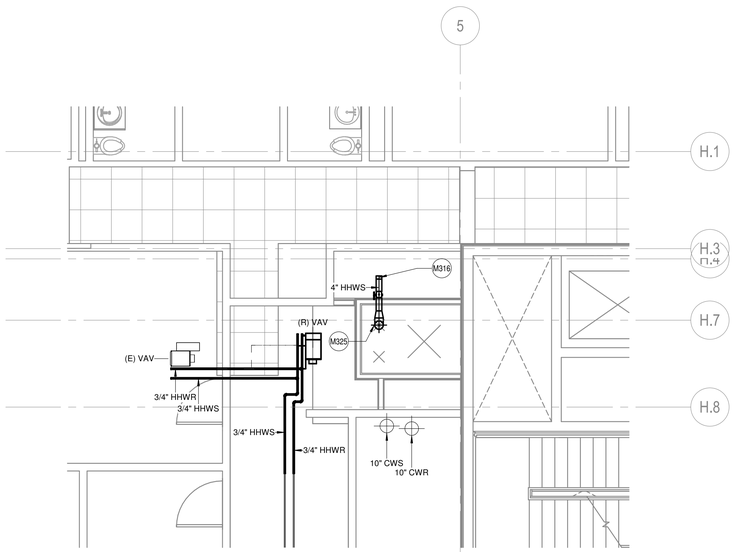
1 INDIANA AVENUE LEVEL DEMO HVAC - ENLARGED VIEW
SCALE: 1/4" = 1'-0"



2 INDIANA AVENUE LEVEL NEW CONSTRUCTION HVAC- ENLARGED VIEW
SCALE: 1/4" = 1'-0"



3 INDIANA AVENUE LEVEL DEMO PIPING - ENLARGED VIEW
SCALE: 1/4" = 1'-0"



4 INDIANA AVENUE LEVEL NEW CONSTRUCTION PIPING - ENLARGED VIEW
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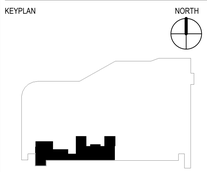
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KEYPLAN

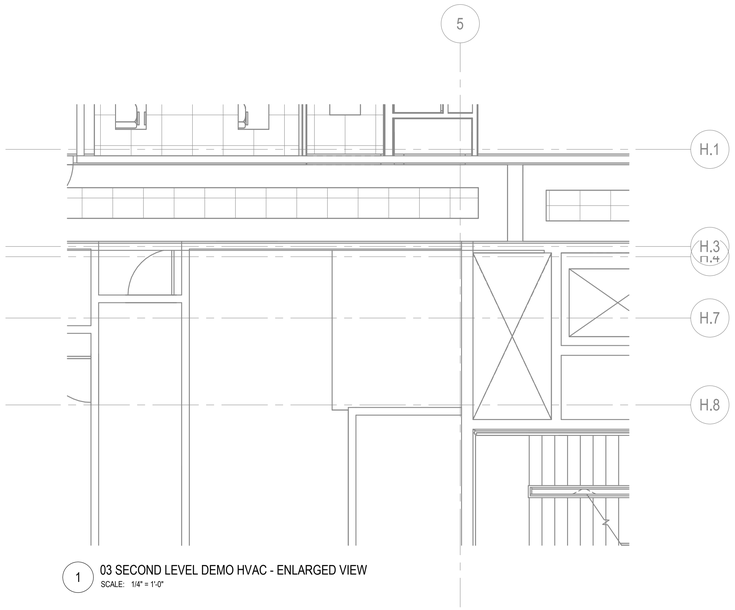


SHEET TITLE
INDIANA AVENUE LEVEL PLAN - ENLARGED VIEW

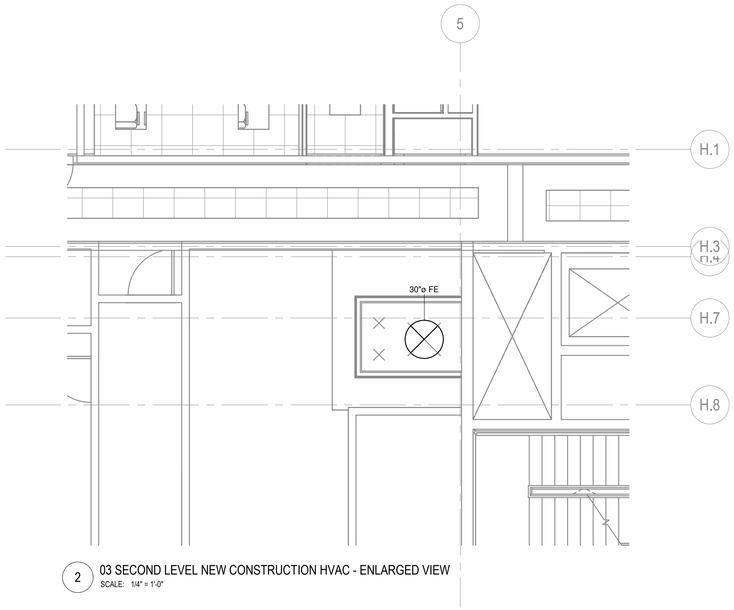
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PROJECT NUMBER

M4.6
SHEET NUMBER

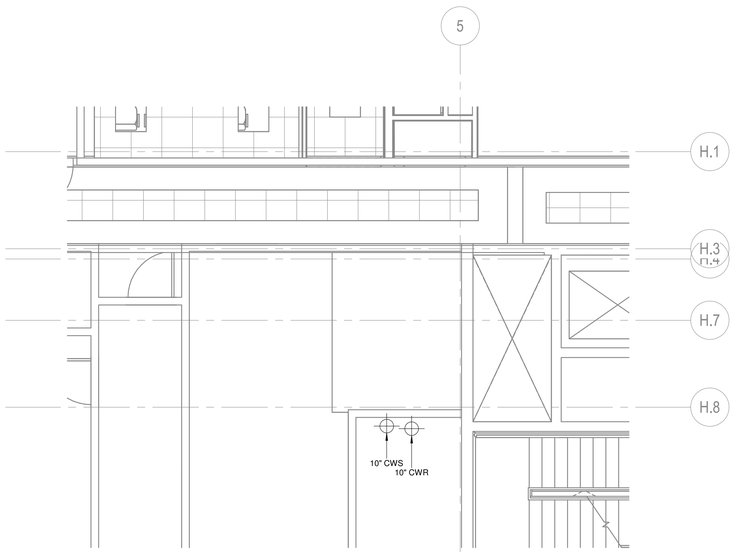
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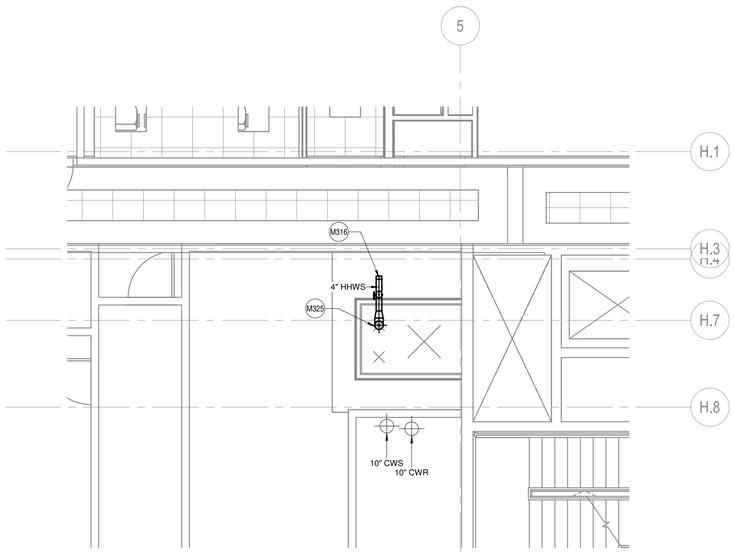
1 03 SECOND LEVEL DEMO HVAC - ENLARGED VIEW
SCALE: 1/4" = 1'-0"



2 03 SECOND LEVEL NEW CONSTRUCTION HVAC - ENLARGED VIEW
SCALE: 1/4" = 1'-0"



3 03 SECOND LEVEL DEMO PIPING - ENLARGED VIEW
SCALE: 1/4" = 1'-0"



4 03 SECOND LEVEL NEW CONSTRUCTION PIPING - ENLARGED VIEW
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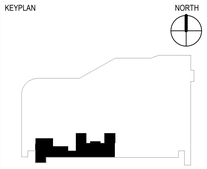
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SEALS AND SIGNATURES

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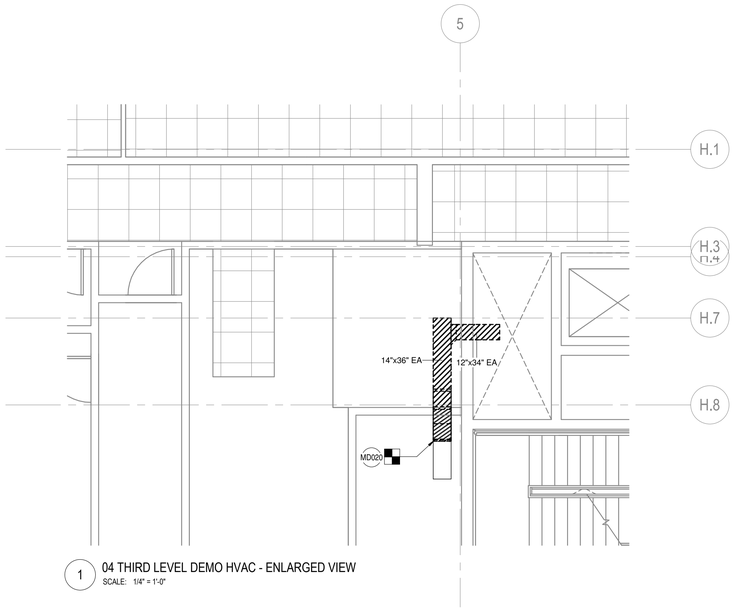


SHEET TITLE
SECOND LEVEL FLOOR PLAN - ENLARGED VIEW

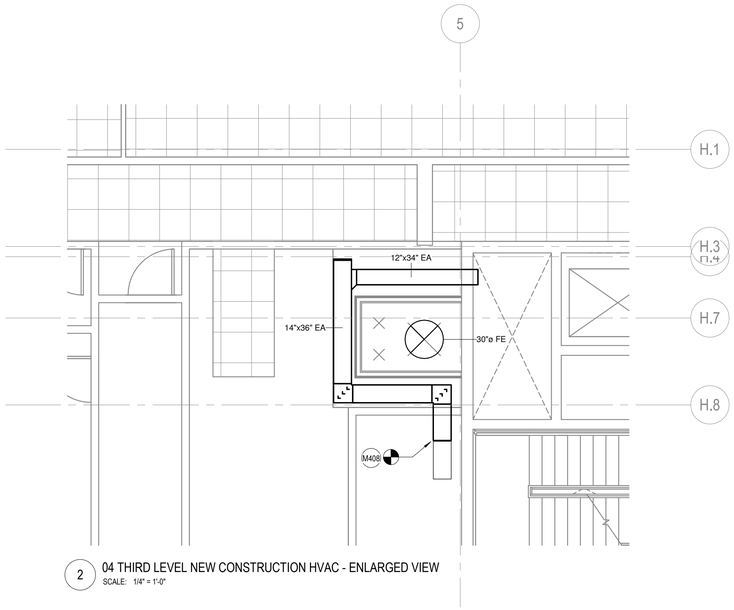
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SHEET NUMBER
M4.7

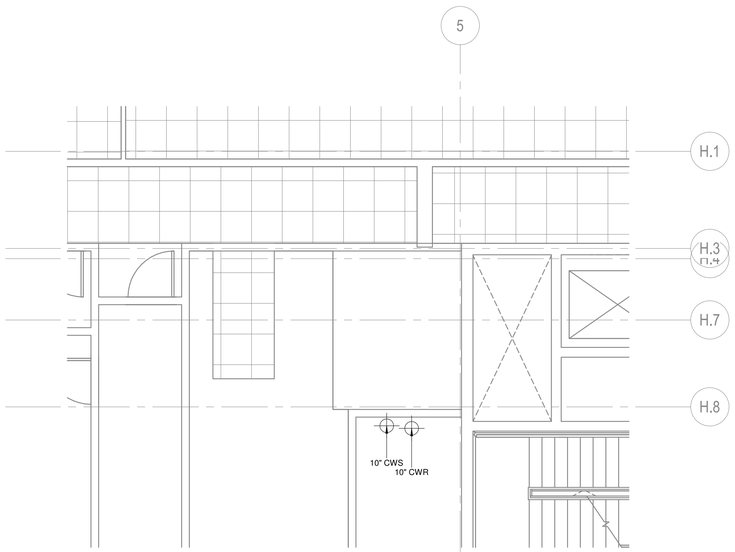
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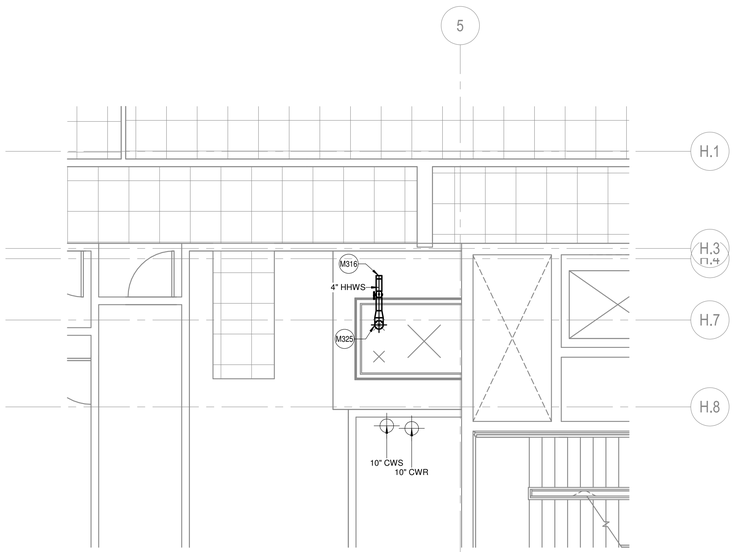
1 04 THIRD LEVEL DEMO HVAC - ENLARGED VIEW
SCALE: 1/4" = 1'-0"



2 04 THIRD LEVEL NEW CONSTRUCTION HVAC - ENLARGED VIEW
SCALE: 1/4" = 1'-0"



3 04 THIRD LEVEL DEMO PIPING - ENLARGED VIEW
SCALE: 1/4" = 1'-0"



4 04 THIRD LEVEL NEW CONSTRUCTION PIPING - ENLARGED VIEW
SCALE: 1/4" = 1'-0"

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M408	PROVIDE NEW EXHAUST DUCT AS INDICATED. CONNECT TO EXISTING EXHAUST DUCT.
MD020	DISCONNECT AND REMOVE EXISTING EXHAUST DUCT

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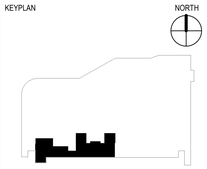
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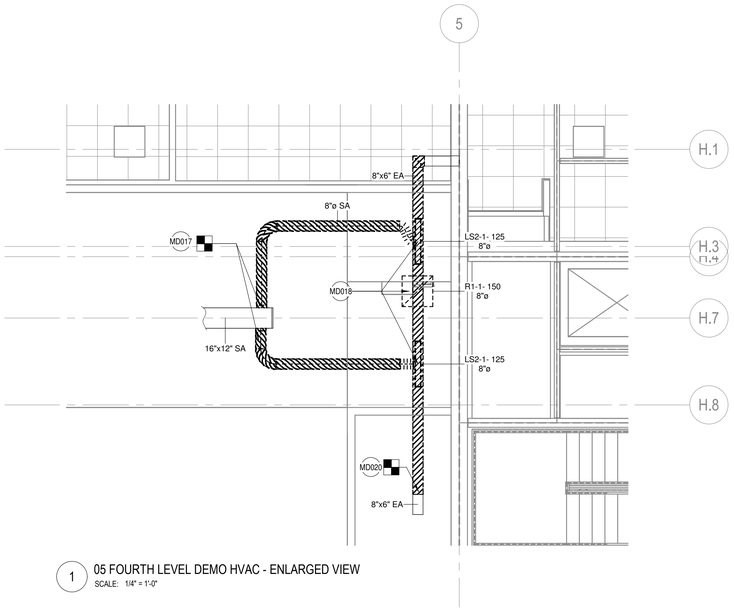


SHEET TITLE
THIRD LEVEL FLOOR PLAN - ENLARGED VIEW

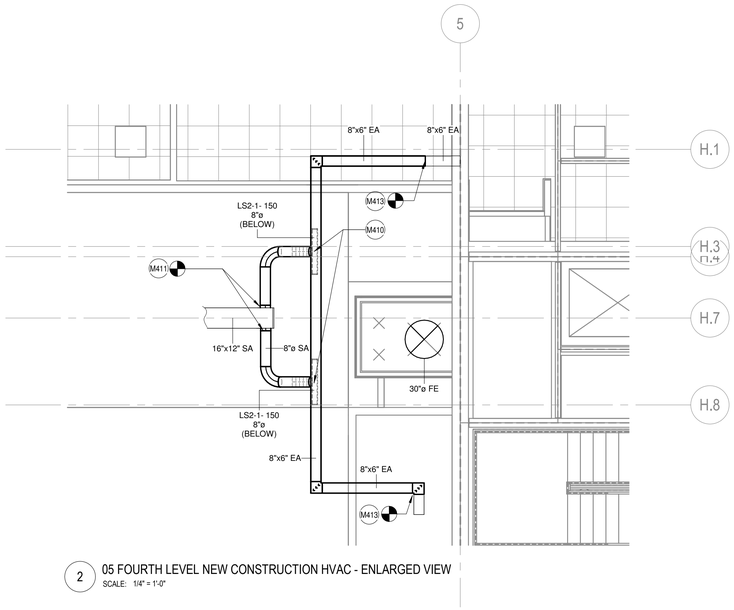
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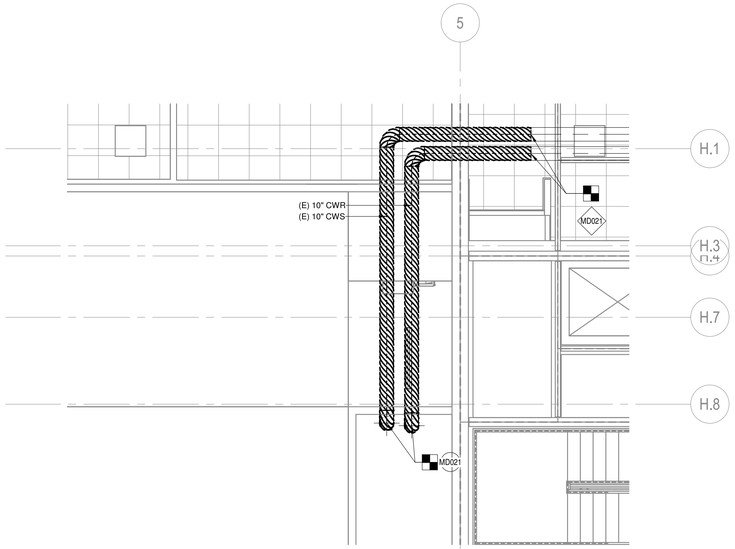
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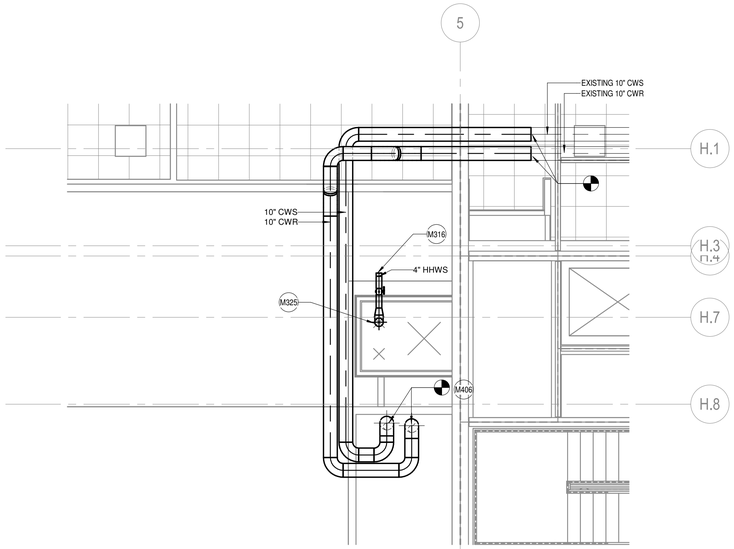
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SCALE: 1/4" = 1'-0"



2 05 FOURTH LEVEL NEW CONSTRUCTION HVAC - ENLARGED VIEW
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3 05 FOURTH LEVEL DEMO PIPING - ENLARGED VIEW
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D. FOR ALL WORK ON OR WITHIN EXISTING EQUIPMENT, CONTRACTOR TO COORDINATE WITH EQUIPMENT MANUFACTURER TO MAINTAIN WARRANTIES AND UL LISTINGS OF EQUIPMENT AND SYSTEMS.
E. THE CONTRACTOR SHALL COORDINATE EXACT LOCATION OF EQUIPMENT, PANELS, AND CONTROLLERS WITH EQUIPMENT INSTALLER PRIOR TO ROUGH-IN.
F. ISOLATION VALVES ARE NORMALLY OPEN (N.O.) UNLESS SPECIFIED TO BE NORMALLY CLOSED (N.C.)
G. PRIOR TO ANY DEMOLITION AND NEW WORK, PERFORM TESTING AND BALANCING OF THE EXISTING HEATING HOT WATER HYDRONIC PUMPING SYSTEMS SERVING THE MOULTRIE BUILDIGN AND THE C-STREET ADDITION. MEASURE PUMP FLOW, PUMP SUCTION PRESSURE, PUMP DISCHARGE PRESSURE, AND TOTAL SYSTEM FLOW AT EXISTING OPERATING PUMP SPEED. SUBMIT TAB REPORT TO OWNER AND EOR FOR REVIEW. DO NOT PROCEED WITH ANY WORK WITHOUT PRIOR TO FORMAL DIRECTION FROM THE OWNER.

SHEET KEYNOTES

M316	PROVIDE ISOLATION VALVES AND CAPPED ENDS PER 4" HHWS AND 4" HHWR BRANCH PIPING ON EACH FLOOR FOR FUTURE CONNECTIONS.
M325	6" HHWS RISER AND 6" HHWR RISER ROUTED FROM PARKING LEVEL. SEE MECHANICAL SECTIONS AND PARKING LEVEL MECHANICAL PIPING PLANS FOR ADDITIONAL INFORMATION.
M406	PROVIDE NEW CONDENSER WATER PIPING. CONNECT TO EXISITNG CONDENSER WATER PIPING.
M410	REUSE EXISTING DIFFUSER AS INDICATED.
M411	PROVIDE NEW 8" ROUND SUPPLY DUCT AS INDICATED. CONNECT TO EXISTING SUPPLY DUCT MAIN.
M413	INSTALL NEW EXHAUST DUCTWORK AND CONNECT TO EXISTING EXHAUST DUCTWORK AT POINT OF CONNECTION AS INDICATED.
MD017	DISCONNECT AND REMOVE EXISTING SUPPLY DUCT AS INDICATED.
MD018	REMOVE EXISTING DIFFUSER AS INDICATED. SAVE DIFFUSER FOR FUTURE REUSE. SEE NEW WORK PLAN FOR ADDITIONAL INFORMATION.
MD020	DISCONNECT AND REMOVE EXISTING EXHAUST DUCT
MD021	DISCONNECT AND REMOVE EXISTING CONDENSER WATER SUPPLY AND CONDENSER WATER RETURN PIPING BETWEEN POINTS OF DISCONNECTION AS INDICATED TO SUPPORT CONSTRUCTION OF NEW SHAFT.

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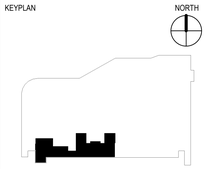
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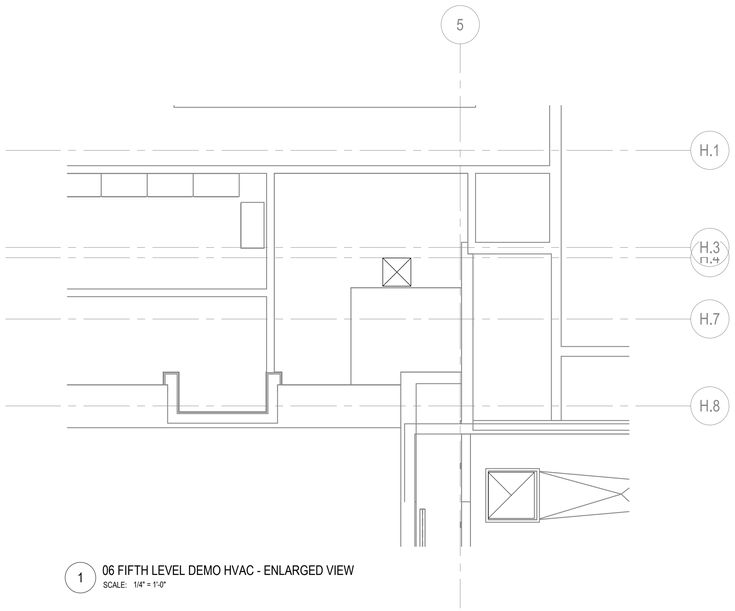


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FOURTH LEVEL FLOOR PLAN - ENLARGED VIEW

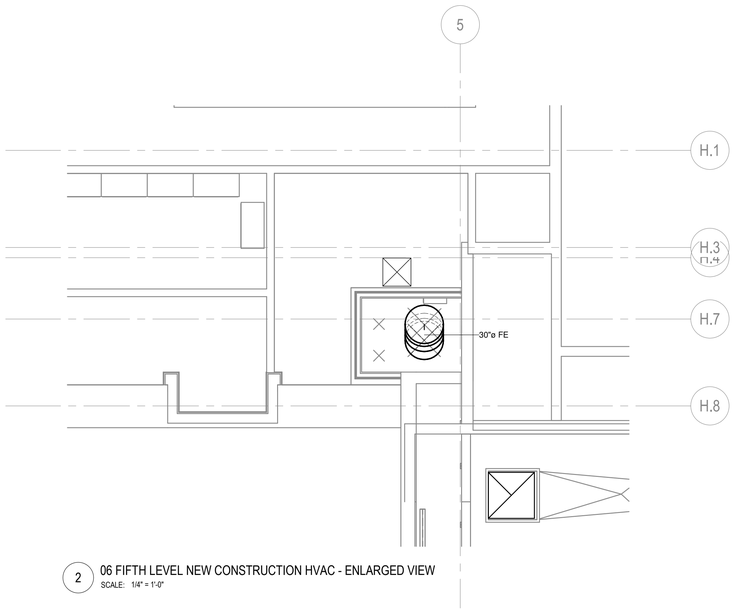
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PROJECT NUMBER

M4.9
SHEET NUMBER

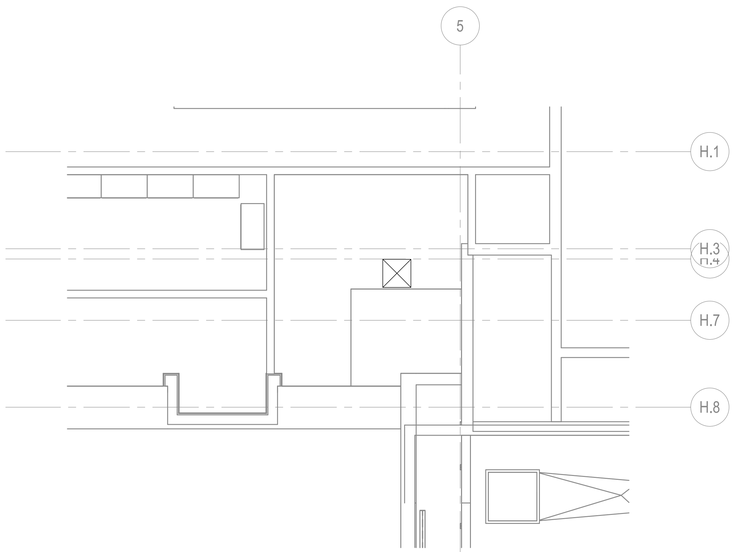
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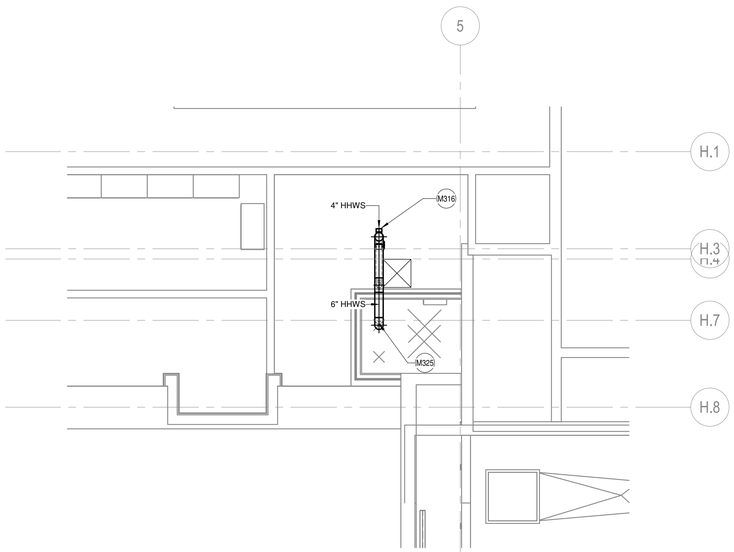
1 06 FIFTH LEVEL DEMO HVAC - ENLARGED VIEW
SCALE: 1/4" = 1'-0"



2 06 FIFTH LEVEL NEW CONSTRUCTION HVAC - ENLARGED VIEW
SCALE: 1/4" = 1'-0"



3 06 FIFTH LEVEL DEMO PIPING - ENLARGED VIEW
SCALE: 1/4" = 1'-0"



4 06 FIFTH LEVEL NEW CONSTRUCTION PIPING - ENLARGED VIEW
SCALE: 1/4" = 1'-0"

GENERAL SHEET NOTES

A. SEE DRAWING M0.1 FOR ABBREVIATIONS, SYMBOLS, GENERAL NOTES.
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SHEET KEYNOTES

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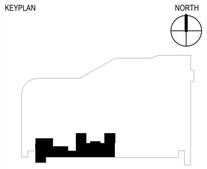
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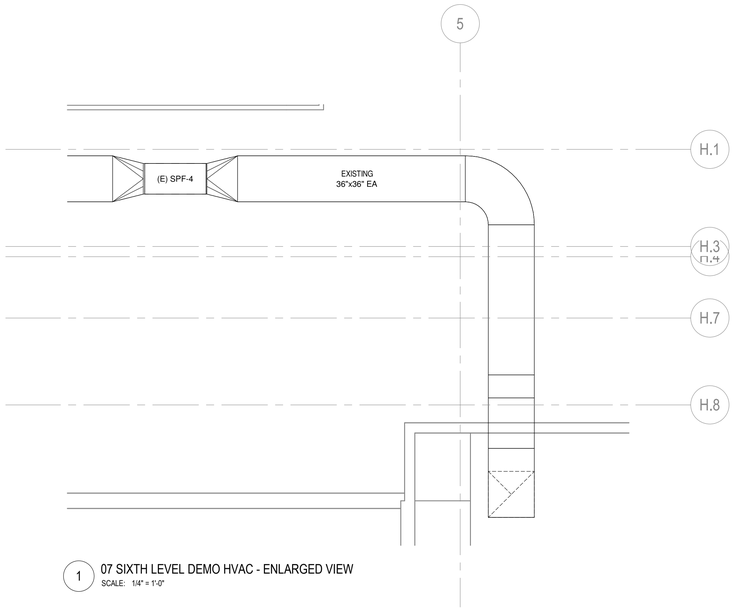


SHEET TITLE
FIFTH LEVEL FLOOR PLAN - ENLARGED VIEW

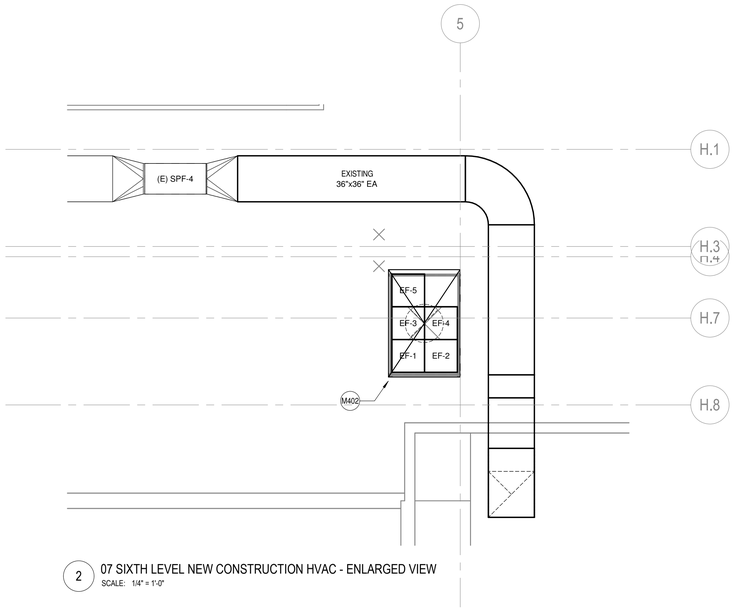
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PROJECT NUMBER

M4.10
SHEET NUMBER

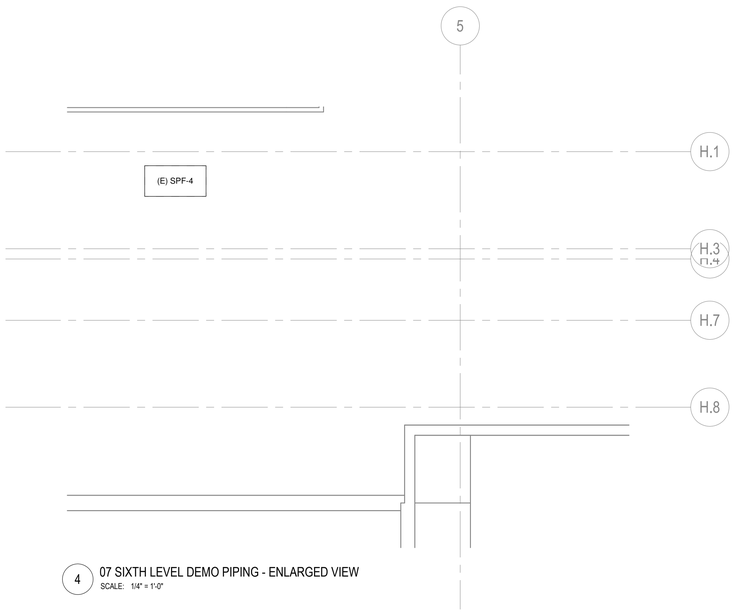
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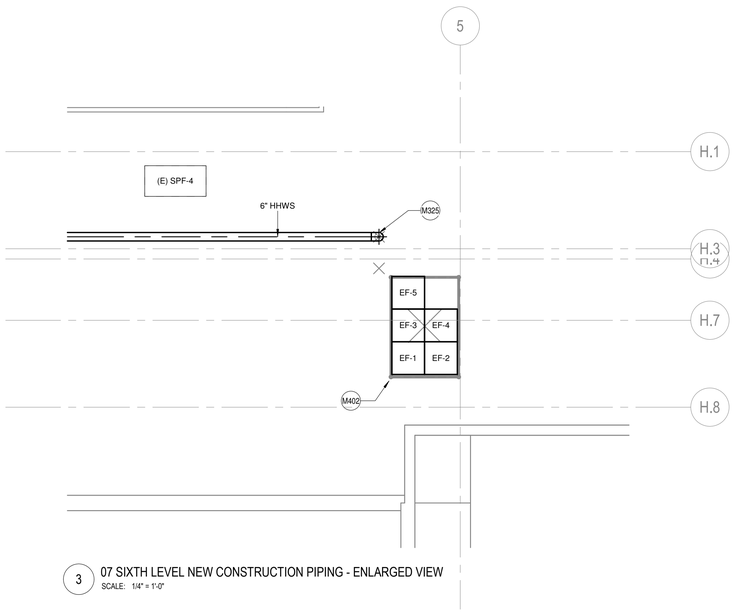
1 07 SIXTH LEVEL DEMO HVAC - ENLARGED VIEW
SCALE: 1/4" = 1'-0"



2 07 SIXTH LEVEL NEW CONSTRUCTION HVAC - ENLARGED VIEW
SCALE: 1/4" = 1'-0"



4 07 SIXTH LEVEL DEMO PIPING - ENLARGED VIEW
SCALE: 1/4" = 1'-0"



3 07 SIXTH LEVEL NEW CONSTRUCTION PIPING - ENLARGED VIEW
SCALE: 1/4" = 1'-0"

GENERAL SHEET NOTES

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SHEET KEYNOTES

M325 6" HHWS RISER AND 6" HHWR RISER ROUTED FROM PARKING LEVEL. SEE MECHANICAL SECTIONS AND PARKING LEVEL MECHANICAL PIPING PLANS FOR ADDITIONAL INFORMATION.

M402 DELEGATED DESIGN: ENGAGE A REGISTERED DESIGN PROFESSIONAL, AS DEFINED IN SECTION 013573 "DELEGATED DESIGN REQUIREMENTS AND PROCEDURES" TO DESIGN THE STEEL SUPPORTS FOR THE BOILER FLUE EXHAUST FANS. FOR ADDITIONAL INFORMATION, SEE STRUCTURAL CONSTRUCTION DOCUMENTS, SHEET A.9.1 AND SECTION 230529 - HANGERS AND SUPPORTS FOR HVAC PIPING AND EQUIPMENT. PROVIDE A DELEGATED-DESIGN SUBMITTAL: REFER TO SECTION 013573 "DELEGATED DESIGN REQUIREMENTS AND PROCEDURES" FOR DELEGATED DESIGN SUBMITTAL PROCEDURES AND REQUIREMENTS.

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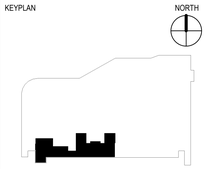
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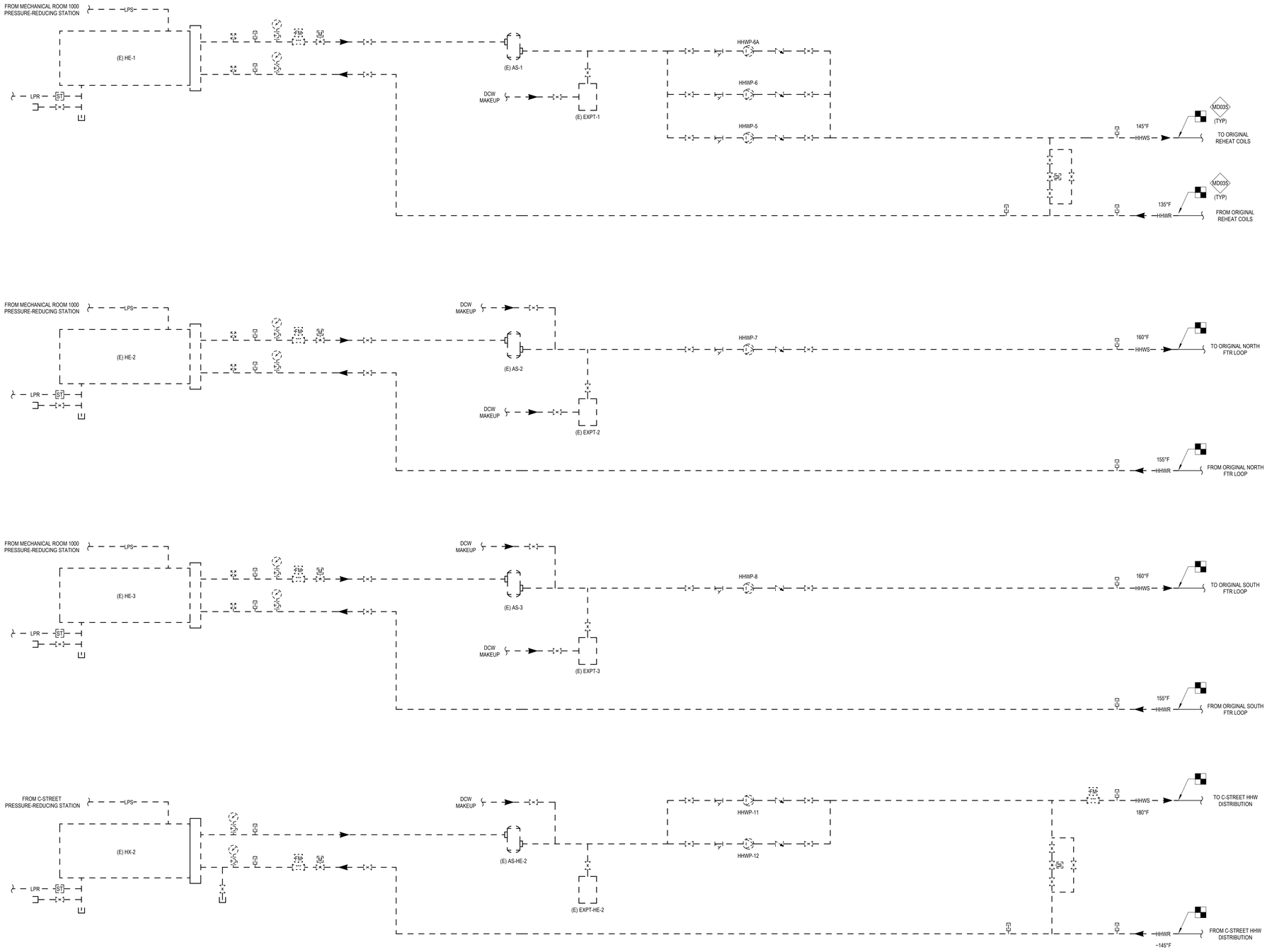


SHEET TITLE
SIXTH LEVEL FLOOR PLAN - ENLARGED VIEW

15749.000
PROJECT NUMBER

M4.11
SHEET NUMBER

Plot Date: 7/3/2025 12:50:19 PM
Author



1 EXISTING HEATING HOT WATER SYSTEM PIPING DIAGRAM
SCALE: 12" = 1'-0"

GENERAL SHEET NOTES

A. SEE DRAWING M0.1 FOR ABBREVIATIONS, SYMBOLS, GENERAL NOTES.
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SHEET KEYNOTES

MD035 DISCONNECT FROM EXISTING HHWS/R DISTRIBUTION LOOP. IF ALL OPTIONS ARE EXERCISED, ALL EQUIPMENT UPSTREAM OF POINT OF DISCONNECTION SHALL BE DEMOLISHED. REFER TO DEMOLITION PLAN AND OPTION PLANS (G SERIES) FOR ADDITIONAL INFORMATION. REFER TO FOLLOWING PAGE FOR NEW WORK AND CONNECTIONS TO EXISTING DISTRIBUTION.

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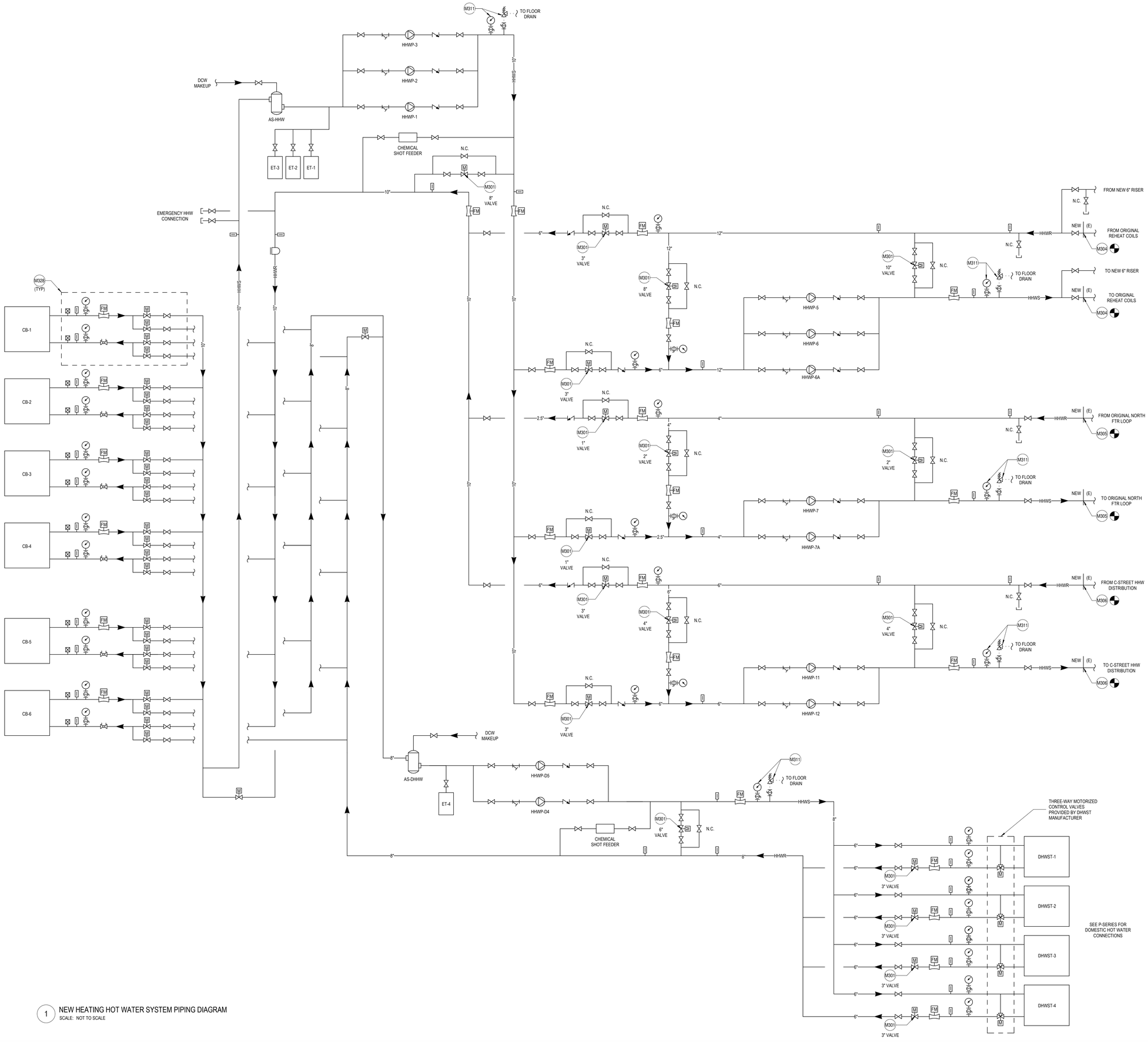
SEALS AND SIGNATURES

SHEET TITLE
EXISTING HEATING HOT WATER SYSTEM PIPING DIAGRAM

15749.000
PROJECT NUMBER

M5.1
SHEET NUMBER

Author
Plot Date: 7/3/2025 12:50:20 PM



1 NEW HEATING HOT WATER SYSTEM PIPING DIAGRAM
SCALE: NOT TO SCALE

GENERAL SHEET NOTES

A. SEE DRAWING M0.1 FOR ABBREVIATIONS, SYMBOLS, GENERAL NOTES.
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SHEET KEYNOTES

M301 PROVIDE HIGH PERFORMANCE SEGMENTED BALL VALVE WITH A TURNDOWN RATIO OF 300:1. BASIS OF DESIGN: VSI, SERIES V 1000/S-X WITH MODULATING ELECTRONIC ACTUATOR. VALVE SIZE INDICATED BELOW KEYNOTE. BUTTERFLY VALVES ARE NOT ACCEPTABLE FOR THIS APPLICATION.
M304 CONNECT NEW HHWS/R TO EXISTING HHWS/R PIPING FOR SECONDARY LOOP SERVING ORIGINAL REHEAT COIL LOOP AT POINT OF CONNECTION.
M305 CONNECT NEW HHWS/R TO EXISTING HHWS/R PIPING FOR SECONDARY LOOP SERVING ORIGINAL NORTH FIN TUBE RADIATOR LOOP AT POINT OF CONNECTION.
M306 CONNECT NEW HHWS/R TO EXISTING HHWS/R PIPING FOR SECONDARY LOOP SERVING C-STREET HHW LOOP AT POINT OF CONNECTION.
M311 INSTALL FULL PORT BALL VALVE AND BLIND FLANGE. DO NOT ORDER PRESSURE RELIEF VALVE UNTIL SYSTEM OPERATING PRESSURE IS DETERMINED BY TAB CONTRACTOR. UPON DETERMINATION OF SYSTEM OPERATING PRESSURE AT INDICATED PRESSURE GAUGE, ORDER PRESSURE RELIEF VALVE AND SET PRESSURE RELIEF VALVE AT 5 PSIG ABOVE THE SYSTEM OPERATING PRESSURE.
M328 REFER TO DETAIL 3 ON M6.1 FOR ADDITIONAL INFORMATION REGARDING PIPE ACCESSORIES AT BOILER CONNECTION.

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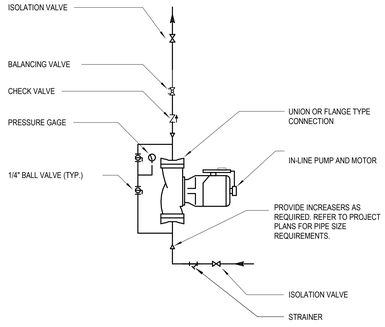
SEALS AND SIGNATURES

SHEET TITLE
NEW HEATING HOT WATER SYSTEM PIPING DIAGRAM

15749.000
PROJECT NUMBER

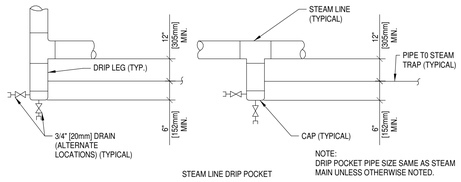
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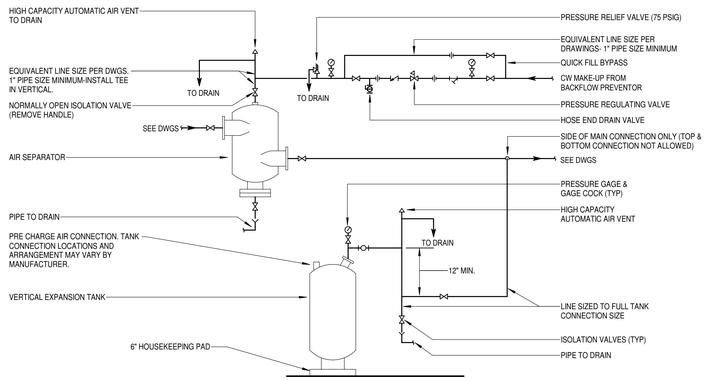


NOTES:
1. SUPPORT PUMP AND PIPING FROM SUITABLE VIBRATION ISOLATION SUPPORTS. REFER TO SPECIFICATIONS.
2. PIPING SHALL BE INSTALLED SUCH THAT PUMP MAY BE COMPLETELY REMOVED WITHOUT DISMANTLING PIPE OR FITTINGS, AND WITHOUT FORCING OR SPRINGING THE PIPING.

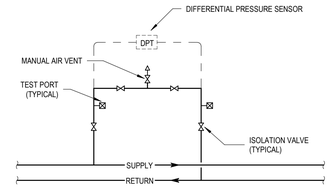
7 FREEZE PUMP DETAIL
SCALE: NOT TO SCALE



4 STEAM LINE DRIP POCKET AND STEAM TRAM ASSEMBLY
SCALE: NOT TO SCALE

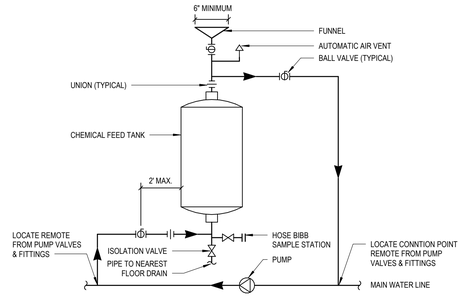


1 VERTICAL EXPANSION TANK AND AIR SEPARATOR
SCALE: NOT TO SCALE

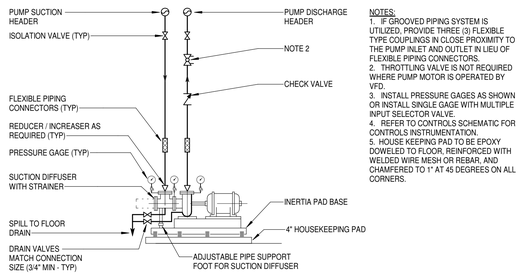


NOTES:
1. MAINTAIN UPSTREAM AND DOWNSTREAM DISTANCES AS RECOMMENDED BY SENSOR MANUFACTURER.
2. SENSOR SHOULD BE SECURED TO A WALL, PIPE STAND OR OTHER STATIONARY NON-VIBRATING SURFACE.

8 DIFFERENTIAL PRESSURE SENSOR
SCALE: NOT TO SCALE

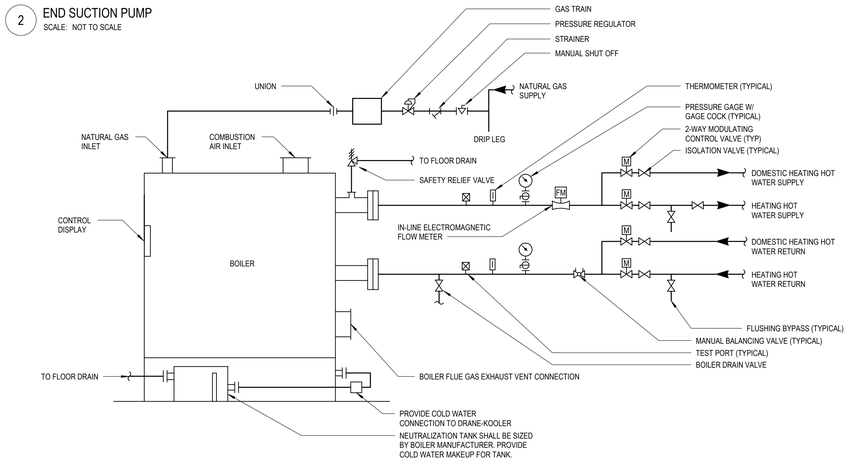


5 SHOT FEEDER
SCALE: NOT TO SCALE

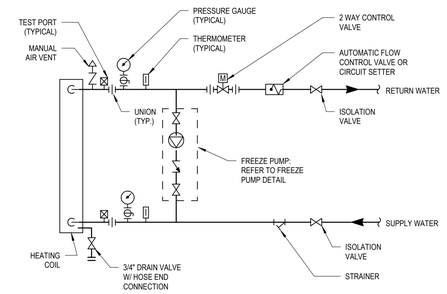


NOTES:
1. IF GROOVED PIPING SYSTEM IS UTILIZED, PROVIDE THREE (3) FLEXIBLE TYPE COUPLINGS IN CLOSE PROXIMITY TO THE PUMP INLET AND OUTLET IN LIEU OF FLEXIBLE PIPING CONNECTORS.
2. THROTTLING VALVE IS NOT REQUIRED WHERE PUMP MOTOR IS OPERATED BY VFD.
3. INSTALL PRESSURE GAGES AS SHOWN OR INSTALL SINGLE GAGE WITH MULTIPLE INPUT SELECTOR VALVE.
4. REFER TO CONTROLS SCHEMATIC FOR CONTROLS INSTRUMENTATION.
5. HOUSE KEEPING PAD TO BE EPOXY DOWELED TO FLOOR, REINFORCED WITH WELDED WIRE MESH OR REBAR, AND CHAMFERED TO 1" AT 45 DEGREES ON ALL CORNERS.

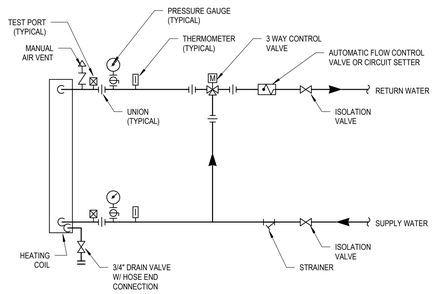
2 END SUCTION PUMP
SCALE: NOT TO SCALE



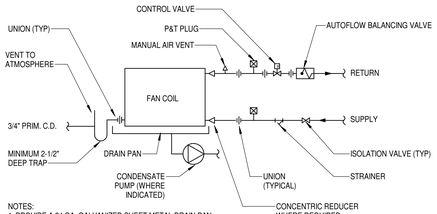
3 PRIMARY/SECONADARY HIGH EFFICIENCY HEATING HOT WATER CONDENSING BOILER
SCALE: NOT TO SCALE



9 HOT WATER HEATING COIL 2-WAY CONTROL VALVE WITH FREEZE PUMP
SCALE: NOT TO SCALE



6 AHU HEATING HOT WATER COIL CONNECTION
SCALE: NOT TO SCALE



NOTES:
1. PROVIDE A 24 GA. GALVANIZED SHEET METAL DRAIN PAN UNDER UNIT WITH 3/4" SECONDARY DRAIN CONNECTION.
2. COIL CONNECTIONS SHOWN TYPICAL FOR HEATING AND COOLING PIPING.

10 FAN COIL PIPING
SCALE: NOT TO SCALE

GENERAL SHEET NOTES

A. SEE DRAWING M0.1 FOR ABBREVIATIONS, SYMBOLS, GENERAL NOTES.
B. SYSTEMS WITH AN '(E)' SUBSCRIPT ARE EXISTING TO REMAIN. MAINTAIN ALL CONDUIT, WIRING, CIRCUIT CONTINUITY. PROTECT FROM DAMAGE DURING CONSTRUCTION.
C. WHERE EXISTING BUILDING SERVICES AND/OR EQUIPMENT THAT IS TO REMAIN IN USE ARE REQUIRED TO BE SHUT DOWN, COORDINATE WITH THE OWNER 14 DAYS PRIOR TO SHUT DOWN. INCLUDE ALL ASSOCIATED OVERTIME COSTS TO PERFORM THIS WORK DURING WEEKENDS AND EVENINGS. INCLUDE ALL COSTS FOR PROVIDING TEMPORARY POWER WHERE SHUT DOWN MUST OCCUR FOR PERIODS LONGER THAN THESE HOURS.
D. FOR ALL WORK ON OR WITHIN EXISTING EQUIPMENT, CONTRACTOR TO COORDINATE WITH EQUIPMENT MANUFACTURER TO MAINTAIN WARRANTIES AND UL LISTINGS OF EQUIPMENT AND SYSTEMS.
E. THE CONTRACTOR SHALL COORDINATE EXACT LOCATION OF EQUIPMENT, PANELS, AND CONTROLLERS WITH EQUIPMENT INSTALLER PRIOR TO ROUGH-IN.
F. ISOLATION VALVES ARE NORMALLY OPEN (N.O.) UNLESS SPECIFIED TO BE NORMALLY CLOSED (N.C.)
G. PRIOR TO ANY DEMOLITION AND NEW WORK, PERFORM TESTING AND BALANCING OF THE EXISTING HEATING HOT WATER HYDRONIC PUMPING SYSTEMS SERVING THE MOULTRIE BUILDIGN AND THE C-STREET ADDITION. MEASURE PUMP FLOW, PUMP SUCTION PRESSURE, PUMP DISCHARGE PRESSURE, AND TOTAL SYSTEM FLOW AT EXISTING OPERATING PUMP SPEED. SUBMIT TAB REPORT TO OWNER AND EOR FOR REVIEW. DO NOT PROCEED WITH ANY WORK WITHOUT PRIOR TO FORMAL DIRECTION FROM THE OWNER.

SHEET KEYNOTES

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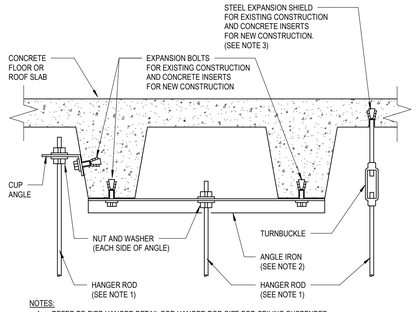
SEALS AND SIGNATURES

SHEET TITLE
MECHANICAL DETAILS

PROJECT NUMBER
15749.000

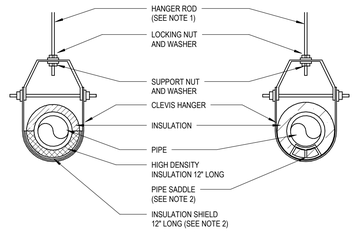
SHEET NUMBER
M6.1

Author
Plot Date: 7/3/2025 12:50:22 PM



NOTES:
1. REFER TO PIPE HANGER DETAIL FOR HANGER ROD SIZE FOR CEILING SUSPENDED EQUIPMENT PROVIDE MIN. 3/8" DIA. HANGER ROD (REFER TO MANUFACTURERS INSTALLATION INSTRUCTIONS).
2. FOR PIPES UNDER 2" USE 1-1/2" X 1-1/2" X 1/4" ANGLE IRON. FOR PIPES 2" AND LARGER USE 3" X 3" X 1/4" ANGLE IRON.
3. EXPANSION SHIELDS SHALL BE ONLY USED IN SLABS OR BEAMS OF 4" MIN. DEPTH.

4 TYPICAL METHOD OF SECURING HANGER RODS TO CONCRETE DECK DETAIL
SCALE: NOT TO SCALE

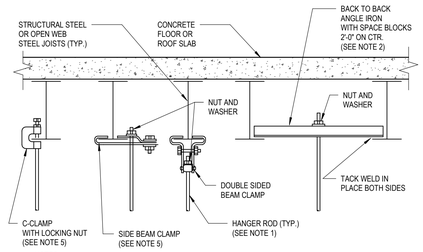


HANGER ROD SCHEDULE	
PIPE SIZE	ROD SIZE
UP TO 2"	3/8" DIA.
2 1/2" THRU 3"	1/2" DIA.

HANGER ROD SPACING	
PIPE SIZE	MAX. ALLOWABLE SPACING
1"	7'
1 1/4"	8'
1 1/2"	9'
2"	10'
2 1/2"	10'
3"	10'

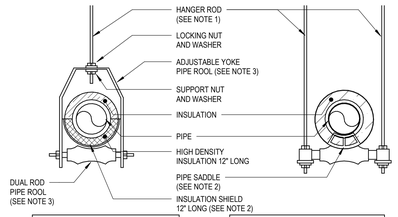
NOTES:
1. REFER TO "TYPICAL METHOD OF SECURING HANGER RODS DETAIL" FOR ATTACHING HANGERS TO THE STRUCTURE.
2. PROVIDE INSULATION SHIELD OR PIPE SADDLE BASED ON THE PIPING SYSTEM AND PIPE SIZE AS INDICATED IN THE SPECIFICATIONS.
3. CLEVIS TYPE PIPE HANGER SHALL BE USED ON ALL PIPING 3" AND SMALLER.

1 CLEVIS TYPE PIPE HANGER INSTALLATION DETAIL
SCALE: NOT TO SCALE



NOTES:
1. REFER TO PIPE HANGER DETAIL FOR HANGER ROD SIZE FOR CEILING SUSPENDED EQUIPMENT PROVIDE MIN. 3/8" DIA. HANGER ROD (REFER TO MANUFACTUERS INSTALLATION INSTRUCTIONS).
2. FOR PIPES UNDER 2" USE A SINGLE 1-1/2" X 1-1/2" X 1/4" ANGLE IRON WITH C-CLAMP FOR PIPES 2-1/2" AND LARGER USE 3" X 3" X 1/4" ANGLE IRON BACK TO BACK AS SHOWN.
3. REFER TO "TYPICAL METHOD OF SECURING HANGER RODS TO CONCRETE DECK DETAIL" FOR ATTACHING HANGER RODS TO CONCRETE DECK.
4. REPAIR OF FIREPROOFING IN ORDER TO FACILLITATE THE INSTALLATION OF HANGER RODS IN EXISTING CONSTRUCTION SHALL BE BY THE G.C.
5. USE OF C-CLAMPS AND SIDE BEAM CLAMPS IS LIMITED TO PIPING 2-1/2" AND UNDER.

5 TYPICAL METHODS OF SECURING HANGER RODS TO STRUCTURAL STEEL DETAIL
SCALE: NOT TO SCALE

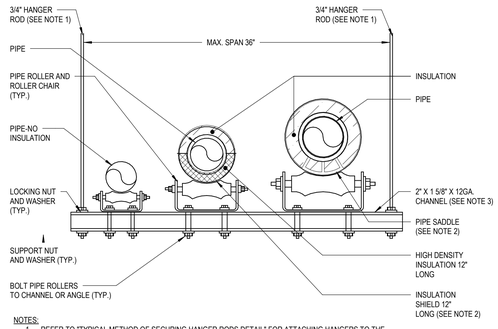


HANGER ROD SCHEDULE	
PIPE SIZE	ROD SIZE
4"	5/8" DIA.
5"	5/8" DIA.
6"	3/4" DIA.
8"	7/8" DIA.
10"	7/8" DIA.
12"	7/8" DIA.

HANGER ROD SPACING	
PIPE SIZE	MAX. ALLOWABLE SPACING
4"	10'
5"	10'
6"	10'
8"	10'
10"	10'
12"	10'

NOTES:
1. REFER TO "TYPICAL METHOD OF SECURING HANGER RODS DETAIL" FOR ATTACHING HANGERS TO THE STRUCTURE.
2. PROVIDE INSULATION SHIELD OR PIPE SADDLE BASED ON THE PIPING SYSTEM AND PIPE SIZE AS INDICATED IN THE SPECIFICATIONS.
3. ADJUSTABLE YOKE PIPE ROLL SHALL BE USED ON 4" AND 5" PIPING. ON ALL PIPING 6" AND LARGER USE DUAL ROD PIPE ROLL.

2 PIPE ROLL TYPE PIPE HANGER INSTALLATION DETAIL
SCALE: NOT TO SCALE



NOTES:
1. REFER TO "TYPICAL METHOD OF SECURING HANGER RODS DETAIL" FOR ATTACHING HANGERS TO THE STRUCTURE.
2. PROVIDE INSULATION SHIELD OR PIPE SADDLE BASED ON THE PIPING SYSTEM AND PIPE SIZE AS INDICATED IN THE SPECIFICATIONS.
3. TRAPEZE TYPE HANGER SHALL BE USED FOR A MAXIMUM 1000 LB. UNIFORM LOAD.

3 TRAPEZE TYPE PIPE HANGER INSTALLATION DETAIL
SCALE: NOT TO SCALE

GENERAL SHEET NOTES

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SEALS AND SIGNATURES

SHEET TITLE
MECHANICAL DETAILS

PROJECT NUMBER
15749.000

SHEET NUMBER
M6.2

Plot Date: 7/3/2025 12:50:23 PM Author

HOT WATER BOILER SCHEDULE

TAG	SYSTEM	LOCATION	TYPE	MAXIMUM INPUT AT 100% FIRING RATE (MBH)	MAXIMUM OUTPUT AT 100% FIRING RATE (MBH)	MINIMUM EFFICIENCY AT DESIGN LWT (%)	NET OUTPUT CAPACITY				FIRING RATE	ELECTRICAL DATA		VENT STACK	OPERATING WEIGHT	MANUFACTURER	MODEL	REMARKS
							FLOW	EWT	LWT	MAX PD	NATURAL GAS (CFH)	VOLTAGE	PHASE					
CB-1	CENTRAL HVAC HHW PLANT	NEW BOILER ROOM	CONDENSING	6,000	5,300	89	290.0 GPM	140 °F	180 °F	1.50 psi	5882	460 V	3	14"	6600.00 lb	FULTON	ENDURA EXE	
CB-2	CENTRAL HVAC HHW PLANT	NEW BOILER ROOM	CONDENSING	6,000	5,300	89	290.0 GPM	140 °F	180 °F	1.50 psi	5882	460 V	3	14"	6600.00 lb	FULTON	ENDURA EXE	
CB-3	CENTRAL HVAC HHW PLANT	NEW BOILER ROOM	CONDENSING	6,000	5,300	89	290.0 GPM	140 °F	180 °F	1.50 psi	5882	460 V	3	14"	6600.00 lb	FULTON	ENDURA EXE	
CB-4	CENTRAL HVAC HHW PLANT	NEW BOILER ROOM	CONDENSING	6,000	5,300	89	290.0 GPM	140 °F	180 °F	1.50 psi	5882	460 V	3	14"	6600.00 lb	FULTON	ENDURA EXE	
CB-5	CENTRAL PLUMBING HHW PLANT	NEW BOILER ROOM	CONDENSING	6,000	5,300	89	580.0 GPM	160 °F	180 °F	6.00 psi	5882	460 V	3	14"	6600.00 lb	FULTON	ENDURA EXE	
CB-6	CENTRAL PLUMBING HHW PLANT	NEW BOILER ROOM	CONDENSING	6,000	5,300	89	580.0 GPM	160 °F	180 °F	6.00 psi	5882	460 V	3	14"	6600.00 lb	FULTON	ENDURA EXE	

NEW PUMP SCHEDULE

TAG	SYSTEM	LOCATION	TYPE	FLUID	TEMPERATURE	BASIS OF DESIGN DUTY POINT					PUMP CONSTRUCTION			MOTOR				OPERATING WEIGHT	MANUFACTURER	MODEL	REMARKS
						FLOW	DISCHARGE HEAD (DYNAMIC)	BHP	RPM	EFFICIENCY	MINIMUM NPSH REQ'D	PIPE CONNECTIONS		HP	MAX RPM	VOLTAGE	PHASE				
												SUCTION	DISCHARGE								
DHWP-4	DOMESTIC HHW LOOP	MECHANICAL ROOM 1000	END SUCTION BASE MOUNTED CENTRIFUGAL	100% WATER	180 °F	850.0 GPM	125.00 ftH2O	33	1734	78	13.2 ft	5"	4"	40	1800	460 V	3	520.00 lb	BELL & GOSSETT	e-1510	
DHWP-5	DOMESTIC HHW LOOP	MECHANICAL ROOM 1000	END SUCTION BASE MOUNTED CENTRIFUGAL	100% WATER	180 °F	850.0 GPM	125.00 ftH2O	33	1734	78	13.2 ft	5"	4"	40	1800	460 V	3	520.00 lb	BELL & GOSSETT	e-1510	
FP-1	HEATING HOT WATER	MECHANICAL ROOM 1000	CLOSE COUPLED IN-LINE CENTRIFUGAL	100% WATER	145 °F	69.0 GPM	25.00 ftH2O	0.6	1675	71	4.1 ft	2"	2"	1	1800	115 V	1	70.00 lb	BELL & GOSSETT	e-90	FREEZE PUMP SERVING HC-BIF-1
FP-2	HEATING HOT WATER	MECHANICAL ROOM 1000	CLOSE COUPLED IN-LINE CENTRIFUGAL	100% WATER	145 °F	69.0 GPM	25.00 ftH2O	0.6	1675	71	4.1 ft	2"	2"	1	1800	115 V	1	70.00 lb	BELL & GOSSETT	e-90	FREEZE PUMP SERVING HC-BIF-2
HHWP-1	PRIMARY HHW LOOP	NEW BOILER ROOM	END SUCTION BASE MOUNTED CENTRIFUGAL	100% WATER	180 °F	625.0 GPM	200.00 ftH2O	43.5	3300	72	16.1 ft	5"	4"	50	3600	460 V	3	420.00 lb	BELL & GOSSETT	e-1510	
HHWP-2	PRIMARY HHW LOOP	NEW BOILER ROOM	END SUCTION BASE MOUNTED CENTRIFUGAL	100% WATER	180 °F	625.0 GPM	200.00 ftH2O	43.5	3300	72	16.1 ft	5"	4"	50	3600	460 V	3	420.00 lb	BELL & GOSSETT	e-1510	
HHWP-3	PRIMARY HHW LOOP	NEW BOILER ROOM	END SUCTION BASE MOUNTED CENTRIFUGAL	100% WATER	180 °F	625.0 GPM	200.00 ftH2O	43.5	3300	72	16.1 ft	5"	4"	50	3600	460 V	3	420.00 lb	BELL & GOSSETT	e-1510	
P-5	ORIGINAL REHEAT COIL LOOP	MECHANICAL ROOM 1000	END SUCTION BASE MOUNTED CENTRIFUGAL	100% WATER	180 °F	1,200.0 GPM	180.00 ftH2O	63.5	3425	83	25.7 ft	5"	4"	75	3600	460 V	3	420.00 lb	BELL & GOSSETT	e-1510	
P-6	ORIGINAL REHEAT COIL LOOP	MECHANICAL ROOM 1000	END SUCTION BASE MOUNTED CENTRIFUGAL	100% WATER	180 °F	1,200.0 GPM	180.00 ftH2O	63.5	3425	83	25.7 ft	5"	4"	75	3600	460 V	3	420.00 lb	BELL & GOSSETT	e-1510	
P-6A	ORIGINAL REHEAT COIL LOOP	MECHANICAL ROOM 1000	END SUCTION BASE MOUNTED CENTRIFUGAL	100% WATER	180 °F	1,200.0 GPM	180.00 ftH2O	63.5	3425	83	25.7 ft	5"	4"	75	3600	460 V	3	420.00 lb	BELL & GOSSETT	e-1510	
P-7	ORIGINAL NORTH FTR LOOP	MECHANICAL ROOM 1000	END SUCTION BASE MOUNTED CENTRIFUGAL	100% WATER	180 °F	250.0 GPM	100.00 ftH2O	8.54	1744	73	8.8 ft	3"	2"	10	1800	460 V	3	285.00 lb	BELL & GOSSETT	e-1510	
P-7A	ORIGINAL NORTH FTR LOOP	MECHANICAL ROOM 1000	END SUCTION BASE MOUNTED CENTRIFUGAL	100% WATER	180 °F	250.0 GPM	100.00 ftH2O	8.54	1744	73	8.8 ft	3"	2"	10	1800	460 V	3	285.00 lb	BELL & GOSSETT	e-1510	
P-11 (C ST)	C-STREET HHW LOOP	C-STREET MECHANICAL ROOM	END SUCTION BASE MOUNTED CENTRIFUGAL	100% WATER	180 °F	650.0 GPM	180.00 ftH2O	37.9	3420	75	18.5 ft	4"	3"	50	3600	480 V	3	380.00 lb	BELL & GOSSETT	e-1510	
P-12 (C ST)	C-STREET HHW LOOP	C-STREET MECHANICAL ROOM	END SUCTION BASE MOUNTED CENTRIFUGAL	100% WATER	180 °F	650.0 GPM	180.00 ftH2O	37.9	3420	75	18.5 ft	4"	3"	50	3600	480 V	3	380.00 lb	BELL & GOSSETT	e-1510	

EXPANSION TANK SCHEDULE

TAG	SYSTEM	LOCATION	TYPE	TEMPERATURE		TANK VOLUME	MIN ACCEPTANCE VOLUME	AIR CHARGE PRESSURE	OPERATING WEIGHT	MANUFACTURER	MODEL	REMARKS
				MIN	MAX							
ET-DHWP	DOMESTIC HEATING HOT WATER	C-STREET MECHANICAL ROOM	BLADDER TYPE	40 °F	180 °F	792.0 gal	792.0 gal	85.00 psi	8255.00 lb	BELL & GOSSETT	B-3000	NOTE 1
ET-HHW-1	HEATING HOT WATER	C-STREET MECHANICAL ROOM	BLADDER TYPE	40 °F	180 °F	792.0 gal	792.0 gal	85.00 psi	8255.00 lb	BELL & GOSSETT	B-3000	NOTE 1
ET-HHW-2	HEATING HOT WATER	C-STREET MECHANICAL ROOM	BLADDER TYPE	40 °F	180 °F	792.0 gal	792.0 gal	85.00 psi	8255.00 lb	BELL & GOSSETT	B-3000	NOTE 1
ET-HHW-3	HEATING HOT WATER	C-STREET MECHANICAL ROOM	BLADDER TYPE	40 °F	180 °F	792.0 gal	792.0 gal	85.00 psi	8255.00 lb	BELL & GOSSETT	B-3000	NOTE 1

AIR SEPARATOR SCHEDULE

TAG	SYSTEM	LOCATION	TYPE	CONNECTION SIZE	FLOW	STRAINER	MAX WATER PD	OPERATING PRESSURE	OPERATING WEIGHT	MANUFACTURER	MODEL	REMARKS
AS-DHW	DOMESTIC HHW	MECHANICAL ROOM 1000	CENTRIFUGAL	8"	1,200.0 GPM	Yes	1.01 ftH2O	150.00 psi	579.00 lb	BELL & GOSSETT	R-8FB	
AS-HHW	PRIMARY HHW	NEW BOILER ROOM	CENTRIFUGAL	10"	1,250.0 GPM	Yes	1.03 ftH2O	150.00 psi	2097.00 lb	BELL & GOSSETT	R-10FB	

FAN SCHEDULE

TAG	SYSTEM	LOCATION	TYPE	OPERATING POINT			VOLUME CONTROL	MOTOR DATA				MANUFACTURER	MODEL	REMARKS
				DESIGN CFM	DESIGN ESP	BHP		MOTOR HP	MAX RPM	VOLTAGE	PHASE			
EF-1	FLUE EXHAUST FAN	FIFTH LEVEL ROOF	CENTRIFUGAL IMPELLER	2,500 CFM	0.00 in-wg	2	VFD	2	1720	208 V	3	ENERVEX	RSV 450	NOTE 3
EF-2	FLUE EXHAUST FAN	FIFTH LEVEL ROOF	CENTRIFUGAL IMPELLER	2,500 CFM	0.00 in-wg	2	VFD	2	1720	208 V	3	ENERVEX	RSV 450	NOTE 3
EF-3	FLUE EXHAUST FAN	FIFTH LEVEL ROOF	CENTRIFUGAL IMPELLER	2,500 CFM	0.00 in-wg	2	VFD	2	1720	208 V	3	ENERVEX	RSV 450	NOTE 3
EF-4	FLUE EXHAUST FAN	FIFTH LEVEL ROOF	CENTRIFUGAL IMPELLER	2,500 CFM	0.00 in-wg	2	VFD	2	1720	208 V	3	ENERVEX	RSV 450	NOTE 3
EF-5	FLUE EXHAUST FAN	FIFTH LEVEL ROOF	CENTRIFUGAL IMPELLER	2,500 CFM	0.00 in-wg	2	VFD	2	1720	208 V	3	ENERVEX	RSV 450	NOTE 3
BIF-1	MAKEUP AIR	MECHANICAL ROOM 1000	MIXED FLOW INLINE	9,500 CFM	2.50 in-wg	6.6	VFD	7.5	2362	460 V	3	GREENHECK	QEID-22-75	NOTE 4
BIF-2	MAKEUP AIR	MECHANICAL ROOM 1000	MIXED FLOW INLINE	9,500 CFM	2.50 in-wg	6.6	VFD	7.5	2362	460 V	3	GREENHECK	QEID-22-75	NOTE 4

NOTES:
1. INTERLOCK BIF-1 AND BIF-2 WITH BOILER OPERATION. SEE M8 SERIES.
2. PROVIDE DUCT MOUNTED HEATING COIL - HC-BIF-1 FOR BIF-1 AND HC-BIF-2 FOR BIF-1.
3. FLUE EXHAUST FANS (EF-1, EF-2, EF-3, EF-4) SHALL OPERATE AT N+1 WITH FOUR (4) FANS RUNNING AT ALL TIMES.
4. BOILER MAKEUP AIR FANS (BIF-1, BIF-2) SHALL OPERATE AT N+1 WITH ONE (1) FAN RUNNING AT ALL TIMES.

DUCT MOUNTED HEATING COIL

TAG	SYSTEM	LOCATION	TYPE	AIRFLOW	HEATING CAPACITY (MBH)	QTY OF COILS IN BANK	MIN ROWS	STANDARD FACE VELOCITY	COIL SIZE DATA			AIRSIDE DATA			WATERSIDE DATA				MANUFACTURER	REMARKS
									FACE AREA	LENGTH	HEIGHT	EAT DB	LAT DB	MAX AIR PD	EWT	LWT	FLOW	WATER MAX PD		
HC-BIF 1	PREHEAT COIL	MECHANICAL ROOM 1000	HYDRONIC	9,500 CFM	502	2	2	486.4	19.50 SF	3' - 7 1/2"	3' - 7 1/2"	11 °F	60 °F	0.12 in-wg	145 °F	130 °F	69.0 GPM	3.60 ftH2O	AEROFIN	
HC-BIF 2	PREHEAT COIL	MECHANICAL ROOM 1000	HYDRONIC	9,500 CFM	502	2	2	486.4	19.50 SF	3' - 7 1/2"	3' - 7 1/2"	11 °F	60 °F	0.12 in-wg	145 °F	130 °F	69.0 GPM	3.60 ftH2O	AEROFIN	

EVAPORATOR UNIT SCHEDULE (VARIABLE REFRIGERANT FLOW SYSTEM)

TAG	SYSTEM	LOCATION	TYPE	REFRIGERANT	AIRSIDE DATA	EVAPORATOR SIDE DATA						ELECTRICAL				MANUFACTURER	MODEL	REMARKS
					AIRFLOW	TOTAL CAPACITY	SENSIBLE CAPACITY	EAT DB	EAT WB	LAT DB	LAT WB	MCA	MOCP	VOLTAGE	PHASE			
EVU-1	CDU-1	NEW BOILER ROOM	COOLING ONLY	R-32	1,130 CFM	33,974 Btu/h	24,000 Btu/h	80 °F	65 °F	59 °F	59 °F	3 A	15 A	208 V	1	DAIKIN	FXSA	
EVU-2	CDU-1	MECHANICAL ROOM 1000	COOLING ONLY	R-32	1,130 CFM	33,974 Btu/h	24,000 Btu/h	80 °F	65 °F	59 °F	59 °F	3 A	15 A	208 V	1	DAIKIN	FXSA	

CONDENSER UNIT SCHEDULE (VARIABLE REFRIGERANT FLOW SYSTEM)

TAG	SYSTEM	LOCATION	TYPE	REFRIGERANT	CONDENSER SIDE DATA			ELECTRICAL				MANUFACTURER	MODEL	REMARKS
					TOTAL CAPACITY	EAT DB	EAT WB	MCA	MOCP	VOLTAGE	PHASE			
CDU-1	EVU-1 AND EVU-2	PARKING GARAGE	COOLING ONLY	R-32	64,837 Btu/h	66 °F	50 °F	33 A	35 A	208 V	3	DAIKIN	RXYA	

GRILLE, REGISTER, AND DIFFUSER SCHEDULE

TAG	SYSTEM	TYPE	NECK SIZE	LINEAR DIFFUSER DATA			MATERIAL	BASIS OF DESIGN		REMARKS
				SLOT QUANTITY	SLOT WIDTH	SLOT LENGTH		MANUFACTURER	MODEL	
S1-1	SUPPLY AIR	SQUARE PLAQUE DIFFUSER, 24" x 24"	8"	-	-	-		TITUS	OMNI	
LS2-1	SUPPLY AIR	LINEAR DIFFUSER	8"	1	1"	3'		TITUS	FL-10	
S3-1	SUPPLY AIR	GRILLE, 34" x 34"	34" x 34"	-	-	-		TITUS	AGR-35-AAS	NOTE 5
				-	-	-				
R1-1	RETURN AIR	SQUARE PLAQUE DIFFUSER, 24" x 24"	8"	-	-	-		TITUS	OMNI	

NOTES:
1. REFER TO REFLECTED CEILING PLANS FOR CEILING TYPES, COORDINATE REQUIRED BORDER WITH INSTALLED LOCATION.
2. COORDINATE COLOR AND FINISH WITH ARCHITECT.
3. WHERE GRILLE IS MOUNTED DIRECTLY TO EXPOSED DUCTWORK, PROVIDE EXTRACTOR.
4. WHERE GRILLE IS MOUNTED WITH NO ACCESS TO DUCTWORK BEHIND, PROVIDE INTEGRAL DAMPER.
5. TWO SUPPLY AIR GRILLES PROVIDED, ONE PER BOILER INTAKE FAN

LOUVER SCHEDULE

TAG	SYSTEM	TYPE	DESIGN CFM	MAXIMUM AIR PD	DIMENSIONS			MATERIAL	BASIS OF DESIGN		REMARKS
					WIDTH	HEIGHT	BLADE DEPTH		MANUFACTURER	MODEL	
MLV-1	BOILER ROOM PRESSURIZATION	ADJUSTABLE OPERABLE	1200	0.01 in. w.g.	3' - 0"	3' - 8"	0' - 6"	ALUMINUM	GREENHECK	EAD-635	NOTE 1

NOTES:
1. PROVIDE WITH FACTORY-SUPPLIED AND INSTALLED ELECTRIC ACTUATOR

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SEALS AND SIGNATURES

SHEET TITLE
MECHANICAL SCHEDULES

PROJECT NUMBER
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CONTROL ABBREVIATIONS

#	
2-D	TWO-DIMENSIONAL
3-D	THREE-DIMENSIONAL
A	
AAC	ADVANCED APPLICATION CONTROLLER
AFMS	AIRFLOW MEASURING STATION
AHU	AIR HANDLING UNIT
AI	ANALOG INPUT
ALT	ALTERNATOR
AO	ANALOG OUTPUT
AR	ADDRESSIBLE RELAY (FIRE ALARM)
ASC	APPLICATION SPECIFIC CONTROLLER
AX	AUXILIARY CONTACT
B	
B	BOILER
BC	BUILDING CONTROLLER
BD	BACKDRAFT DAMPER
BMS	BUILDING MANAGEMENT SYSTEM
C	
CB	CHILLED BEAM
CBCHW	CHILLED BEAM CHILLED WATER
CBHW	CHILLED BEAM HOT WATER
CC	COOLING COIL
CCDT	COOLING COIL DISCHARGE TEMPERATURE
CH	CHILLER
CHW	CHILLED WATER
CHWR	CHILLED WATER RETURN
CHWS	CHILLED WATER SUPPLY
CI	CURRENT INPUT
CO	CARBON MONOXIDE
CO2	CARBON DIOXIDE
CSR	CURRENT SWITCH OR CURRENT SENSING RELAY
CR	CONTROL RELAY
CT	COOLING TOWER
CW	CONDENSER WATER
CWR	CONDENSER WATER RETURN
CWS	CONDENSER WATER SUPPLY
D	
D	DAMPER
DDC	DIRECT DIGITAL CONTROL
DF	DIESEL FUEL
DI	DIGITAL INPUT
DO	DIGITAL OUTPUT
DP	PRESSURE DIFFERENCE
DPS	DIFFERENTIAL PRESSURE SWITCH
DPT	DIFFERENTIAL PRESSURE SENSOR
DX	DIRECT EXPANSION
E	
EA	EXHAUST AIR
ED	ENABLE / DISABLE
EF	EXHAUST FAN
EP	ELECTRIC / PNEUMATIC RELAY
ES	END SWITCH
F	
F	DEGREES FAHRENHEIT
FA	FIRE ALARM
FACP	FIRE ALARM CONTROL PANEL
FD	FIRE DAMPER
FDAT	FAN DISCHARGE AIR TEMPERATURE
FDSD	COMBINATION FIRE AND SMOKE DAMPER
FM	FLOW METER
FR	FIELD RELAY
FS	FLOW SWITCH
FZ	FREEZESTAT
G	
GCF	GARAGE CIRCULATION FAN
GEF	GARAGE EXHAUST FAN
GIF	GARAGE INTAKE FAN
H	
H	HUMIDITY
HC	HEATING COIL
HHW	HEATING HOT WATER
HHWR	HEATING HOT WATER RETURN
HHWS	HEATING HOT WATER SUPPLY
HI	HIGH
HL	HIGH LEVEL
HX	HEAT EXCHANGER
K	
KW	KILOWATTS
L	
LO	LOW
LL	LOW LEVEL
LV	LEVEL
M	
MAX	MAXIMUM
MAT	MIXED AIR TEMPERATURE
MIN	MINIMUM
MS	MOTOR STARTER
N	
N.C.	NORMALLY CLOSED
N.O.	NORMALLY OPEN
O	
OA	OUTDOOR AIR
OAH	OUTDOOR AIR HUMIDITY
OAT	OUTDOOR AIR TEMPERATURE
OWS	OPERATOR WORK STATION
P	
P	PUMP
PH	PENTHOUSE
PHDT	PREHEAT DISCHARGE TEMPERATURE
PMCS	POWER MONITORING & CONTROL SYSTEM
PPM	PARTS PER MILLION
PS	PRESSURE SWITCH
PSI	POUNDS PER SQUARE INCH
R	
RA	RETURN AIR; REFRIGERANT ALARM
RAH	RETURN AIR HUMIDITY
RAT	RETURN AIR TEMPERATURE
RET	RETURN
RF	RETURN FAN
RH	RELATIVE HUMIDITY
RLMS	REFRIGERANT LEAK MONITORING SYSTEM
RLF	RELIEF
ROT	ROTATION MONITORING SENSOR
S	
S	SOLENOID
SA	SUPPLY AIR
SC	SELF CONTAINED UNIT
SD	SMOKE DAMPER; SMOKE DETECTOR
SF	SUPPLY FAN
SP	STATIC PRESSURE
SS	START / STOP
SV	SOLENOID VALVE
SW	SWITCH
T	
T	TEMPERATURE SENSOR
TEF	TOILET EXHAUST FAN
TH	THERMOSTAT
V	
V	VALVE
VAV	VARIABLE AIR VOLUME
VFD	VARIABLE FREQUENCY DRIVE
VO	VOLTAGE OUTPUT
VS	VIBRATION SWITCH
W	
WC	WATER COLUMN

SEE CONTROL SYMBOLS, LEGENDS AND EQUIPMENT SCHEDULES FOR ADDITIONAL ABBREVIATIONS. ALL ABBREVIATIONS, SYMBOLS, AND LEGENDS SHOWN ON THIS DRAWINGS ARE NOT NECESSARILY USED.

CONTROL SYMBOLS

SENSING COMPONENTS

- AIR FLOW MEASURING STATION (DUCT)
- FAN INLET BELL HOUSING AIR FLOW MEASURING STATION
- T — TEMPERATURE SENSOR
- T — TEMPERATURE SENSOR (AVERAGING)
- FT — FREEZESTAT
- PS — PRESSURE SWITCH
- P — PRESSURE SENSOR OR PRESSURESTAT
- FS — FLOW SWITCH
- H — RELATIVE HUMIDITY SENSOR (DUCT)
- SD — SMOKE DETECTOR (DUCT) INSTALL BY MECHANICAL. PURCHASE AND CONNECTION TO FIRE ALARM SYSTEM BY OTHERS
- CO2 — CARBON DIOXIDE SENSOR (DUCT)
- CO — CARBON MONOXIDE SENSOR (DUCT)
- FM — FLOW METER
- L — LEVEL SENSOR
- R — REFRIGERANT LEAK SENSING POINT
- LOW / SP / HIGH — STATIC PRESSURE SENSOR
- DPS — DIFFERENTIAL PRESSURE SWITCH
- DPT — DIFFERENTIAL PRESSURE SENSOR
- WALL SWITCH
- S — SPACE TEMPERATURE SENSOR
- THERMOSTAT
- H — SPACE HUMIDITY SENSOR
- HU — HUMIDISTAT
- H — HYDROGEN SENSOR (WALL)
- CO2 — CARBON DIOXIDE SENSOR (WALL)
- CO — CARBON MONOXIDE SENSOR (WALL)
- G — AIR FILTER WITH DIFFERENTIAL PRESSURE SENSOR AND PRESSURE GAUGE

CONTROL COMPONENTS

- M — 2-WAY ELECTRIC CONTROL VALVE
- M — 3-WAY ELECTRIC CONTROL VALVE
- TH / M — 2-WAY CONTROL VALVE WITH INTEGRAL THERMOSTAT
- TH / M — 3-WAY CONTROL VALVE WITH INTEGRAL THERMOSTAT
- M — BUTTERFLY VALVE ELECTRIC ACTUATOR
- M — SEGMENTED BALL VALVE ELECTRIC ACTUATOR
- 2-WAY PNEUMATIC CONTROL VALVE
- 3-WAY PNEUMATIC CONTROL VALVE
- BUTTERFLY VALVE PNEUMATIC ACTUATOR
- SEGMENTED BALL VALVE PNEUMATIC ACTUATOR
- S — 2-WAY SOLENOID VALVE
- S — 3-WAY SOLENOID VALVE
- M — OPPOSED BLADE DAMPER - ELECTRIC ACTUATOR
- M — PARALLEL BLADE DAMPER - ELECTRIC ACTUATOR
- M — OPPOSED BLADE DAMPER WITH END SWITCH - ELECTRIC ACTUATOR
- ES / M — PARALLEL BLADE DAMPER WITH END SWITCH - ELECTRIC ACTUATOR
- ES — OPPOSED BLADE DAMPER - PNEUMATIC ACTUATOR
- PARALLEL BLADE DAMPER - PNEUMATIC ACTUATOR
- OPPOSED BLADE DAMPER WITH END SWITCH - PNEUMATIC ACTUATOR
- ES — PARALLEL BLADE DAMPER WITH END SWITCH - PNEUMATIC ACTUATOR
- ES — OPPOSED BLADE DAMPER- PNEUMATIC ACTUATOR WITH POSITIONER
- PARALLEL BLADE DAMPER- PNEUMATIC ACTUATOR WITH POSITIONER

CONTROL ELECTRICAL COMPONENTS

- M — INTEGRAL FACE & BYPASS STEAM HEATING COIL
- H / C — HOT WATER OR STEAM HEATING COIL
- C / C — CHILLED WATER COOLING COIL
- D / X — DIRECT EXPANSION HEATING & COOLING COIL
- E / C — WATERSIDE ECONOMIZER COOLING COIL
- R / C — ENERGY RECOVERY COIL
- DH — ELECTRIC DUCT HEATER
- GFH — GAS FIRED DUCT HEATER
- ELECTRIC HUMIDIFIER
- STEAM HUMIDIFIER
- GFH — GAS FIRED HUMIDIFIER
- UV — ULTRAVIOLET LIGHT AIR PURIFIER
- CENTRIFUGAL FAN OR PUMP
- FAN WITH PNEUMATIC VARIABLE INLET VANES
- PROPELLER TYPE FAN
- M — ROOF MOUNTED EXHAUST FAN (SINGLE PHASE)
- M — ROOF MOUNTED EXHAUST FAN (3 PHASE)
- PLATE AND FRAME HEAT EXCHANGER
- SHELL AND TUBE HEAT EXCHANGER

- AX — AUXILIARY CONTACT
- CI — CURRENT INPUT
- CSR — CURRENT SENSING RELAY
- CT — CURRENT TRANSDUCER
- EN — ENABLE / DISABLE
- SP — SET POINT
- SS — START / STOP
- VI — VOLTAGE INPUT
- VO — VOLTAGE OUTPUT
- VS — VIBRATION SWITCH
- CS — CURRENT SWITCH
- AR — ADDRESSIBLE RELAY (FIRE ALARM) SHOWN FOR REFERENCE ONLY
- TDR — TIME DELAY RELAY
- MS — MOTOR STARTER
- FA — FIRE ALARM INTERFACE
- VFD — VARIABLE FREQUENCY DRIVE
- ECM — ELECTRONICALLY COMMUTATED MOTOR
- EPS — ELECTRIC TO PNEUMATIC SWITCH
- EPV — ELECTRIC TO PNEUMATIC VALVE
- ROT — ROTATION MONITORING SENSOR
- UMCP — UNIT MANUFACTURER'S CONTROL PANEL
- RLMS — REFRIGERANT LEAK MONITORING SYSTEM
- FACP — FIRE ALARM CONTROL PANEL
- EPB — EMERGENCY PUSH BUTTON
- SW — WALL MOUNTED SWITCH
- OR — OCCUPANCY OVER RIDE SWITCH
- OS — OCCUPANCY SENSOR
- R — REFRIGERANT LEAK MONITORING SYSTEM COMBINATION HORN/STROBE
- HORN OR SIREN
- BELL
- ALT — ALTERNATOR
- R — RELAY
- T-1 — POINT NAME'S INDENIFICATION (CORRESPONDS TO CONTROL ABBREVIATIONS)
- 1 — POINT NAME'S NUMBER (CONSECUTIVELY COUNTED IN RESPECT TO CONTROL ABBREVIATIONS) POINT NUMBER (CONSECUTIVELY COUNTED)

FILTER TYPE DIAGRAMS

- FILTER
- BAG FILTER
- ROLL FILTER

BMS POINT FUNCTION DESCRIPTIONS

HVAC CONTROLS - BMS POINT FUNCTION SCHEDULE

POINT NAME	TAG	(1) HARDWARE: POINT TYPE	(2) FAIL MODE: FAIL ON (OPEN)	FAIL OFF (CLOSED)	LAST COMMANDED STATE	LOCAL DEFAULT	(3) SOFTWARE: NETWORK POINT	CALCULATED POINT	MAINTENANCE ALARM	CRITICAL ALARM	24 HOUR OPERATION	PROGRAM START/STOP	OPTIMUM START	MORNING WARM/COOL	UNOCCUPIED SET POINT	DEMAND LIMIT	DIRECT DIGITAL CONTROL	SET POINT ADJUSTMENT	TOTALIZER	RUN TIME	ALARM INSTRUCTIONS	MAINTENANCE WORK ORDER	ALARM LIMITS	SOFTWARE INTERLOCKS	TREND	(4) ALARM LIMITS: LOW LIMIT	HIGH LIMIT	NOTES

POINT NAME: UNIQUE MORE DISCRIPTIVE VERSION OF TAG (POINT TAG).

(1) HARDWARE

TAG (POINT TAG): UNIQUE SENSOR/DEVICE IDENTIFICATION DESIGNATION.

POINT TYPE: TYPE OF INPUT OR OUTPUT CONNECTED TO A BMS CONTROL PANEL. EACH OF THE 4 TYPES (AI, AO, DI, DO) ARE DISCRIPBED BELOW:

AI (ANALOG INPUT): A SIGNAL INPUT TO THE BUILDING MANAGEMENT SYSTEM WHICH HAS A VARIABLE RANGE OF VALUES. ANALOG INPUTS PROVIDE NUMERIC DATA RATHER THAN SIMPLE "ON/OFF" STATES. EXAMPLES OF ANALOG INPUTS FROM SENSORS INCLUDE TEMPERATURE, PRESSURE, HUMIDITY, AND CHEMICAL CONCENTRATION.

AO (ANALOG OUTPUT): A SIGNAL OUTPUT FROM THE BUILDING MANAGEMENT SYSTEM WHICH HAS A VARIABLE RANGE OF VALUES. ANALOG OUTPUTS PROVIDE PROPORTIONAL CONTROL COMMANDS TO EQUIPMENT. EXAMPLES OF ANALOG OUTPUTS INCLUDE SET POINT ADJUSTMENT AND MOTOR SPEED.

DI (DIGITAL INPUT): A SIGNAL INPUT TO THE BUILDING MANAGEMENT SYSTEM WHICH HAS A BINARY (1 OR 0) VALUE. DIGITAL INPUTS PROVIDE DATA ABOUT THE STATUS OF A SPACE OR EQUIPMENT. EXAMPLES OF DIGITAL INPUTS INCLUDE MOTOR STATUS ("ON/OFF"), VALVE POSITION ("OPEN/CLOSED"), OCCUPANCY ("OCCUPIED/UNOCCUPIED"), OR LIMIT ALARMS SUCH AS HIGH VOLTAGE OR LOW FUEL.

DO (DIGITAL OUTPUT): A SIGNAL OUTPUT FROM THE BUILDING MANAGEMENT SYSTEM WHICH HAS A BINARY (1 OR 0) VALUE. THESE OUTPUTS CONTROL EQUIPMENT WHICH OPERATES IN TWO MAIN STATES (SUCH AS "ON" AND "OFF"). EXAMPLES OF THESE OUTPUTS INCLUDE MOTOR START/STOP AND DAMPER OR VALVE POSITION CONTROL ("OPEN/CLOSE").

(2) FAIL MODE

FAIL ON (OPEN): CONTROLLED DEVICE REVERTS TO THE OPEN POSITION OR THE ENGAGED STATE WHEN POWER OR CONTROL SIGNAL IS LOST.

FAIL OFF (CLOSED): CONTROLLED DEVICE REVERTS TO THE CLOSED POSITION OR THE DISENGAGED STATE WHEN POWER OR CONTROL SIGNAL IS LOST.

LAST COMMANDED STATE: CONTROLLED DEVICE REMAINS IN THE SAME POSITION OR STATE, WHEN POWER OR CONTROL SIGNAL IS LOST.

(3) SOFTWARE

NETWORK POINT: POINT IS EITHER DIRECTLY OR INDIRECTLY CONNECTED TO THE BMS. IT IS COMMUNICATED TO THE BMS THROUGH A COMMUNICATION GATEWAY FROM ANOTHER INTELLIGENT PIECE OF EQUIPMENT OR PROVIDED BY A COMMUNICATION PROTOCOL (I.E. BACNET, LONWORKS, OR MODBUS).

CALCULATED POINT: A POINT NOT CONNECTED DIRECTLY TO THE BMS, BUT ITS VALUE IS CALCULATED BY THE DDC USING INPUT DATA. DEFINED IN POINT SCHEDULE WHEN SPECIAL CALCULATED VALUES ARE REQUIRED BY SYSTEM DESIGN.

MAINTENANCE ALARM: NOTIFIES PERSONNEL OF REQUIRED MAINTENANCE.

CRITICAL ALARM: ALARM FOR FAILURES WHICH WOULD PROVE PARTICULARLY DAMAGING TO SYSTEMS OR ARCHITECTURE.

24 HOUR OPERATION: SPECIFIES PROCEDURE FOR RUNNING SYSTEM AT ALL HOURS OF DAY AND NIGHT.

PROGRAM START/STOP: BEGINS/ENDS SYSTEM CONTROL PROGRAM.

OPTIMUM START: USES PAST HISTORY TO DETERMINE ENERGY EFFICIENT TIMES TO ACTIVATE EQUIPMENT.

MORNING WARM/COOL: PROCEDURE FOR BRINGING SPACE TO OCCUPIED SET POINTS FROM UNOCCUPIED SET POINTS.

UNOCCUPIED SET POINT: SET POINT WHICH ALLOWS SYSTEM TO SAVE ENERGY BY DRIFTING FROM NORMAL TARGETS WHILE SPACE IS UNOCCUPIED.

DEMAND LIMIT: ELECTRICAL ENERGY CONSERVATION STRATEGY WHICH REDUCES KW DEMAND DURING PEAK UTILITY RATE PERIODS.

DIRECT DIGITAL CONTROL: MICRO PROCESSOR BASED DIGITAL CONTROLLER.

CONTROL POINT ADJUSTMENT: MODIFIES SET POINT.

TOTALIZER: PERFORMS A SUMMATION OF AN ANALOG INPUT.

RUN TIME: MONITORS HOW LONG A DIGITAL INPUT OR 2-STATE DIGITAL OUTPUT HAS REGISTERED A SPECIFIC STATE.

ALARM INSTRUCTIONS: PROVIDES INSTRUCTIONS FOR RESPONSE TO A GIVEN ALARM CONDITION.

MAINTENANCE WORK ORDER: CREATES WORK ORDER FOR USE BY MAINTENANCE PERSONNEL OR CONTRACTOR.

ALARM LIMITS: DETERMINES AT WHAT POINTS THE SYSTEM MUST REACH BEFORE ALARM IS INDICATED.

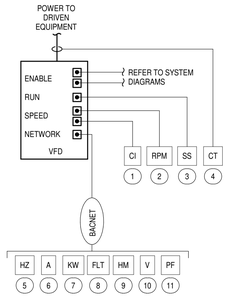
SOFTWARE INTERLOCKS: TRIGGERS AN EVENT TO TAKE PLACE IN THE SYSTEM.

TREND: TRACKS AND DISPLAYS POINT VALUES (ANALOG OR DIGITAL) OVER TIME.

(4) ALARM LIMITS

LOW LIMIT: USER DEFINED MINIMUM VALUE BEFORE ALARMING.

HIGH LIMIT: USER DEFINED MAXIMUM .



TYPICAL MOTOR/DRIVE POINTS

VFD NOTES

A. UNLESS OTHERWISE NOTED, THIS DIAGRAM SHALL APPLY TO VFDs ON THE ENTIRE PROJECT SERVING PUMPS AND FANS WITH THE EXCEPTION OF VFDs THAT ARE INTEGRAL TO A PIECE OF EQUIPMENT SUCH AS A CHILLER COMPRESSOR VARIABLE SPEED DRIVE.
B. PROVIDE INTEGRATION VIA BACNET IP. INTEGRATION VIA BACNET MS/TP SHALL ONLY BE ACCEPTABLE IF BACNET IP IS NOT AN OPTION FOR THE SELECTED VFD MANUFACTURER.
C. ALL VFDs ON THE ENTIRE PROJECT SHALL BE PROVIDED BY A SINGLE MANUFACTURER UNLESS OTHERWISE INDICATED.
D. REFER TO SPECIFIC DIAGRAMS FOR SAFETY AND RUN-ONLY REQUIREMENTS FOR EACH VFD.
E. PROVIDE A CURRENT TRANSDUCER TO MEASURE ACTUAL AMPERAGE. CREATE AND MAP A DIGITAL POINT TO THE INPUT OF THE CT FOR USE IN PROVE-ON/PROVE-OFF ALARM LOGIC, I.E. IF AMPERAGE GREATER THAN X, THE DIGITAL POINT SHALL READ: ON = TRUE, AND VICE VERSA IF AMPERAGE IS LESS THAN X. THE AMPERAGE VALUE "X" SHALL BE USER ADJUSTABLE AND DETERMINED DURING THE TESTING AND BALANCING PROCESS IN CONJUNCTION WITH THE DETERMINATION OF THE MINIMUM VFD SPEED. THE VALUE "X" SHALL BE SET TO A VALUE SLIGHTLY BELOW THE MEASURED AMPERAGE AT THE MINIMUM VFD SPEED. REFER TO TAB SPECIFICATION FOR ADDITIONAL INFORMATION.
F. VFD SPEED POINTS
   1. THE SPEED AO SENT TO VFDs SHALL BE CONFIGURED SUCH THAT 0% SPEED CORRESPONDS TO 0 HZ, AND 100% SPEED CORRESPONDS TO MAXIMUM SPEED CONFIGURED IN THE VFD.
   2. FOR EACH PIECE OF EQUIPMENT, THE MINIMUM SPEED SHALL BE STORED IN A SINGLE SOFTWARE POINT; IN THE CASE OF A HARD-WIRED VFD INTERFACE, THE MINIMUM SPEED SHALL BE THE LOWEST SPEED COMMAND SENT TO THE DRIVE BY THE BAS. THE ACTIVE MINIMUM SPEED PARAMETER SHALL BE READ EVERY 60 MINUTES VIA THE DRIVE'S NETWORK INTERFACE. WHEN A MISMATCH BETWEEN THE DRIVE'S ACTIVE MINIMUM SPEED AND THE MINIMUM SPEED STORED IN THE SOFTWARE POINT IS DETECTED, THE MINIMUM SPEED STORED IN THE SOFTWARE POINT SHALL BE WRITTEN TO THE VFD VIA THE NETWORK INTERFACE TO RESTORE THE ACTIVE MINIMUM SPEED PARAMETER TO ITS DEFAULT VALUE, AND GENERATE A LEVEL 4 ALARM.
G. HAND-OFF-AUTO (HOA) OPERATION
   1. PROVIDE HOA SETTINGS AS PART OF THE VARIABLE FREQUENCY DRIVE (VFD) THROUGH THE DRIVES KEYPAD FOR THE SUPPLY FAN.
   2. WHEN IN HAND MODE, THE MOTOR CONTROLLED BY THE VFD WILL START.
   3. WHEN IN OFF MODE, THE MOTOR CONTROLLED BY THE VFD WILL BE OFF.
   4. WHEN IN AUTO MODE, THE MOTOR CONTROLLED BY THE VFD WILL BE STARTED AND STOPPED THROUGH THE BAS.
   5. UPON ACTIVATION, SAFTIES WILL STOP THE MOTOR IN AUTO OR HAND MODES.
H. LOCAL-REMOTE SPEED CONTROL
   1. LOCAL-REMOTE SETTINGS WILL BE PROVIDED AS PART OF THE VFD THROUGH THE DRIVES KEYPAD.
   2. IN LOCAL MODE THE MOTOR SPEED WILL BE CONTROLLED THROUGH A MANUAL SPEED CONTROL LOCATED AT THE DRIVES CONTROL PANEL.
   3. IN REMOTE MODE, THE MOTOR SPEED WILL BE CONTROLLED BY THE BAS.

HVAC CONTROLS - BMS POINT FUNCTION SCHEDULE - MOTOR/DRIVE POINTS

	POINT NAME	POINT TYPE	FAIL MODE: FAIL ON (OPEN)	FAIL OFF (CLOSED)	LAST COMMANDED STATE	NETWORK POINT	NOTES
EC MOTOR							
18	START/STOP	DO			■		VERIFY WITH MOTOR MANUFACTURER WHETHER SEPARATE START/STOP POINT IS REQUIRED
19	SPEED CONTROL	AO			■		
20	RUN STATUS	DI					
ECM FAN ARRAY CONTROLLER							
13	FAN ARRAY START/STOP	DO			■		
14	FAN ARRAY SPEED CONTROL	AO			■		
15	FAN ARRAY STATUS	DI					
16	INDIVIDUAL FAN START/STOP	DO			■		TYPICAL OF ALL FANS IN ARRAY
17	INDIVIDUAL FAN STATUS	DI					TYPICAL OF ALL FANS IN ARRAY
VFD							
1	<varies>	<varies>			<varies>		
2	<varies>	<varies>			<varies>	<varies>	
3	START/STOP	DO			■		
4	RUN STATUS	DI					
5	<varies>	AI				■	
6	<varies>	AI				■	
7	<varies>	AI				■	
8	<varies>	<varies>				■	
9	<varies>	DI				■	
10	<varies>	DI				■	
11	<varies>	DI				■	
12	POWER FACTOR	DI				■	

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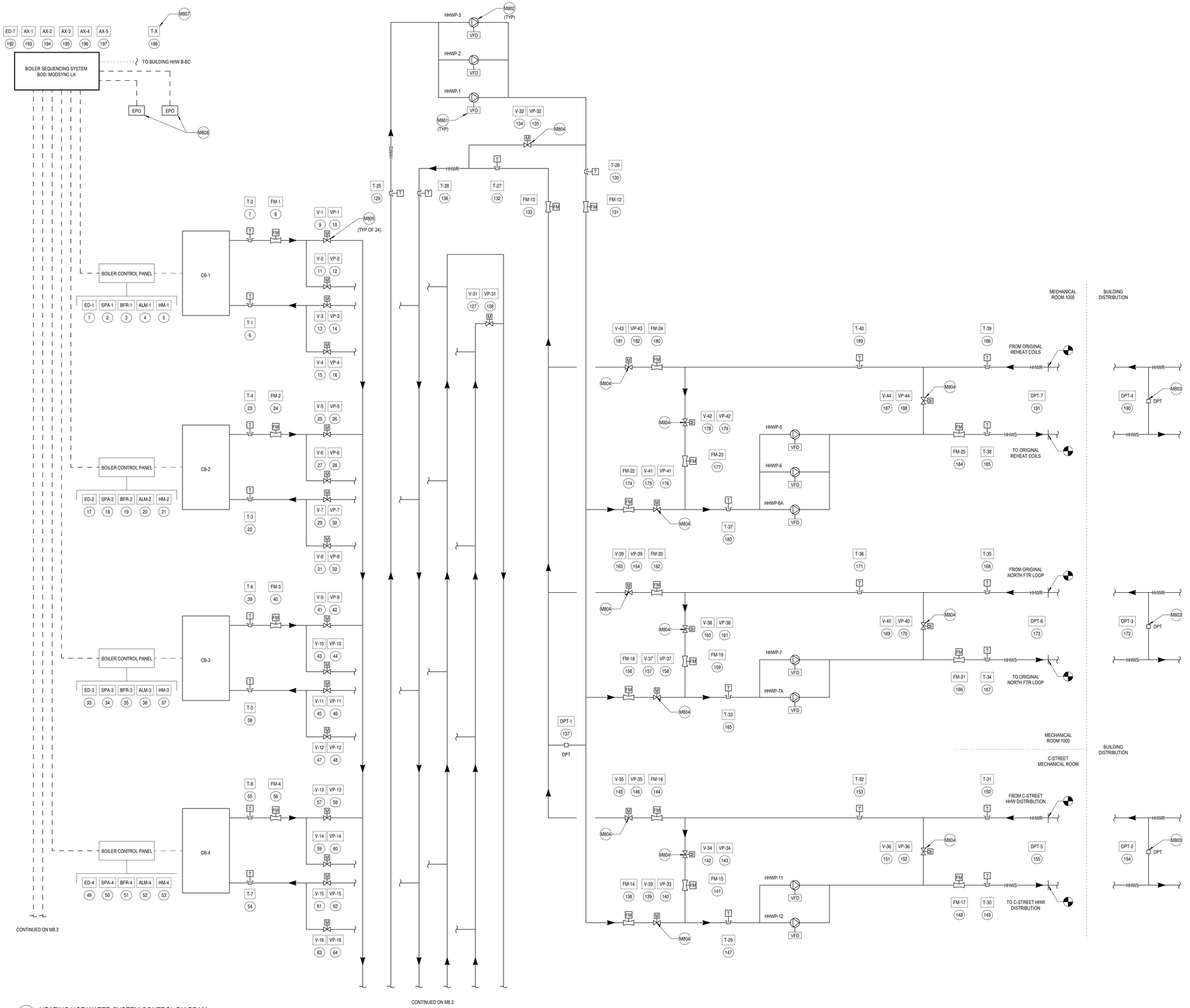
SEALS AND SIGNATURES

SHEET TITLE
MECHANICAL CONTROLS - LEGEND

PROJECT NUMBER
15749.000

SHEET NUMBER
M8.1

Author
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1 HEATING HOT WATER SYSTEM CONTROL DIAGRAM
SCALE: NOT TO SCALE

GENERAL SHEET NOTES

A. SEE DRAWING M0.1 FOR ABBREVIATIONS, SYMBOLS, GENERAL NOTES.
B. SYSTEMS WITH AN '(E)' SUBSCRIPT ARE EXISTING TO REMAIN. MAINTAIN ALL CONDUIT, WIRING, CIRCUIT CONTINUITY. PROTECT FROM DAMAGE DURING CONSTRUCTION.
C. WHERE EXISTING BUILDING SERVICES AND/OR EQUIPMENT THAT IS TO REMAIN IN USE ARE REQUIRED TO BE SHUT DOWN, COORDINATE WITH THE OWNER 14 DAYS PRIOR TO SHUT DOWN. INCLUDE ALL ASSOCIATED OVERTIME COSTS TO PERFORM THIS WORK DURING WEEKENDS AND EVENINGS. INCLUDE ALL COSTS FOR PROVIDING TEMPORARY POWER WHERE SHUT DOWN MUST OCCUR FOR PERIODS LONGER THAN THESE HOURS.
D. FOR ALL WORK ON OR WITHIN EXISTING EQUIPMENT, CONTRACTOR TO COORDINATE WITH EQUIPMENT MANUFACTURER TO MAINTAIN WARRANTIES AND UL LISTINGS OF EQUIPMENT AND SYSTEMS.
E. THE CONTRACTOR SHALL COORDINATE EXACT LOCATION OF EQUIPMENT, PANELS, AND CONTROLLERS WITH EQUIPMENT INSTALLER PRIOR TO ROUGH-IN.
F. ISOLATION VALVES ARE NORMALLY OPEN (N.O.) UNLESS SPECIFIED TO BE NORMALLY CLOSED (N.C.)
G. PRIOR TO ANY DEMOLITION AND NEW WORK, PERFORM TESTING AND BALANCING OF THE EXISTING HEATING HOT WATER HYDRONIC PUMPING SYSTEMS SERVING THE MOULTRIE BUILDIGN AND THE C-STREET ADDITION. MEASURE PUMP FLOW, PUMP SUCTION PRESSURE, PUMP DISCHARGE PRESSURE, AND TOTAL SYSTEM FLOW AT EXISTING OPERATING PUMP SPEED. SUBMIT TAB REPORT TO OWNER AND EOR FOR REVIEW. DO NOT PROCEED WITH ANY WORK WITHOUT PRIOR TO FORMAL DIRECTION FROM THE OWNER.

SHEET KEYNOTES

M801 REFER TO M8.1 FOR TYPICAL VFD CONTROLS DIAGRAM
M802 PROVIDE A DEDICATED MS/TP LOOP CONNECTING ALL NEW HEATING HOT WATER PUMPS AND TIE INTO NEW BUILDING CONTROLLER.
M803 DP SENSOR TO BE LOCATED 2/3 OF THE WAY DOWNSTREAM OF DISTRIBUTION PUMPS. FINAL LOCATION TO BE FIELD DETERMINED BY TAB CONTRACTOR AND CONTROLS CONTRACTOR. SUBMIT RFI FOR FINAL APPROVAL BY EOR.
M804 PROVIDE MODULATING HIGH PERFORMANCE SEGMENTED BALL VALVE WITH A TURNDOWN RATIO 300:1. BASIS OF DESIGN: VSI, SERIES V 1000S-X WITH MODULATING ELECTRONIC ACTUATOR. BUTTERFLY VALVES OR ON/OFF VALVES ARE NOT ACCEPTABLE FOR THIS APPLICATION. THE HIGH PERFORMANCE SEGMENTED BALL VALVE SHALL BE PROVIDED BY ALBERIO AND INSTALLED BY CONTRACTOR.
M805 MOTORIZED LINE SIZE ON/OFF BUTTERFLY BOILER ISOLATION VALVE. VALVE SHALL BE PROVIDED AND INSTALLED BY THE CONTRACTOR AND CONTROLLED BY THE BOILER SEQUENCING SYSTEM.
M807 OUTDOOR AIR TEMPERATURE POINT SHALL BE MADE AVAILABLE THROUGH THE BMS.
M808 WALL-MOUNTED EMERGENCY POWER OFF STATION SHALL IMMEDIATELY SHUNT TRIP BREAKER AT DISTRIBUTION PANEL. SEE ELECTRICAL DETAILS FOR ADDITIONAL INFORMATION. UPON DETECTION OF EPO ACTIVATION (ONCE ELECTRONIC TRIP IS AVAILABLE AT THE BAS IN FUTURE PROJECT) COMMON GAS SUPPLY VALVE TO BE CLOSED. BOILER CONTROL SYSTEM TO REQUIRE MANUAL RESET. TYPICAL OF TWO LOCATIONS.

Mechanical Room 1000 Heating System Upgrade
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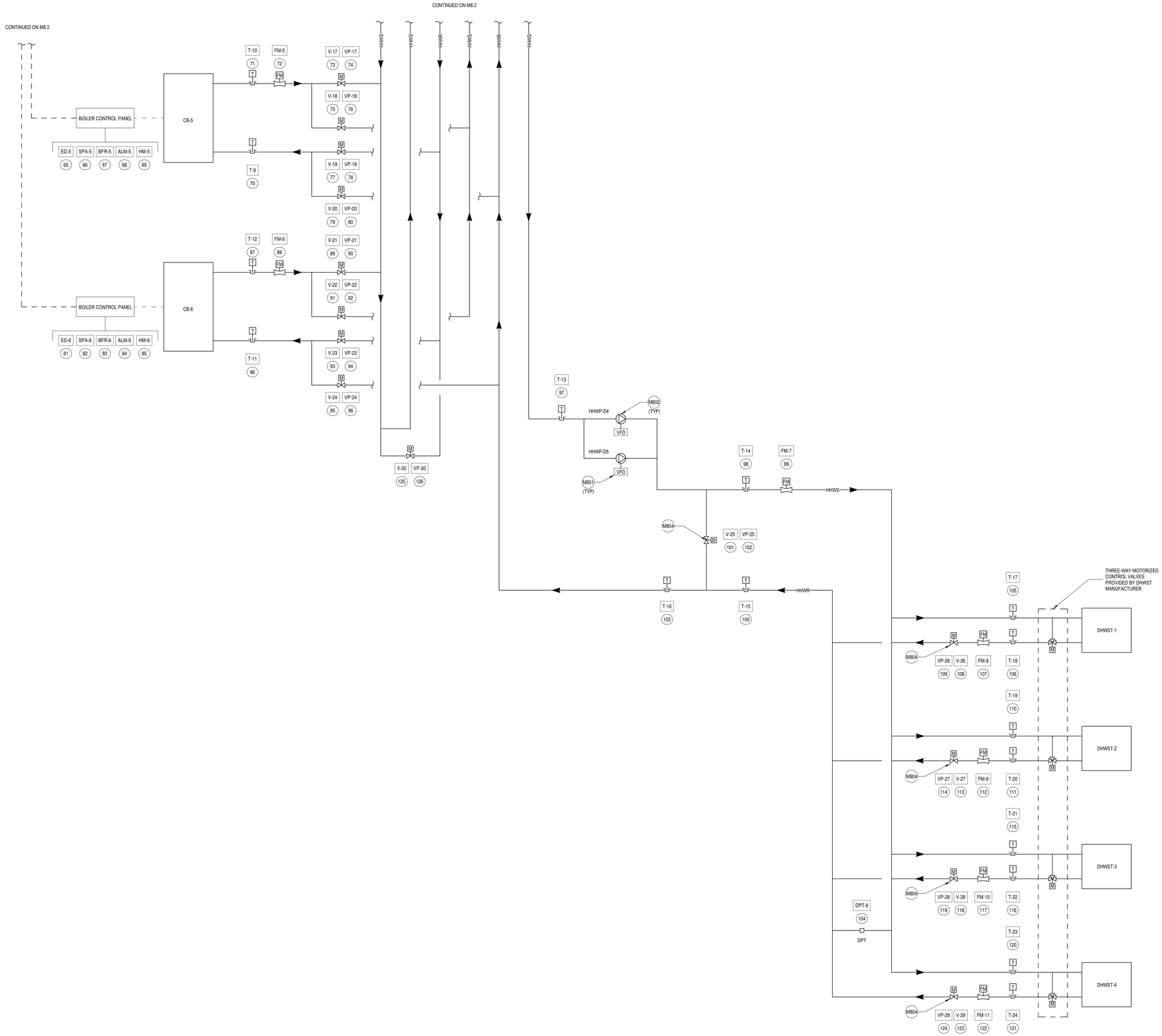
SEALS AND SIGNATURES

SHEET TITLE
MECHANICAL CONTROLS - HEATING HOT WATER CONTROLS DIAGRAM - 1/2

15749.000
PROJECT NUMBER

M8.2
SHEET NUMBER

Author
Plot Date: 7/3/2025 12:50:33 PM



1 DOMESTIC HEATING HOT WATER SYSTEM CONTROL DIAGRAM
SCALE: NOT TO SCALE

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SEALS AND SIGNATURES

SHEET TITLE
MECHANICAL CONTROLS - HEATING HOT WATER CONTROLS DIAGRAM - 2/2

15749.000
PROJECT NUMBER

M8.3
SHEET NUMBER

Plot Date: 7/3/2025 12:50:35 PM Author

HVAC CONTROLS - BMS POINT FUNCTION SCHEDULE (HEATING HOT WATER)

	POINT NAME	TAG	HARDWARE				SOFTWARE									NOTES
				FAIL MODE										ALARM LIMITS		
			POINT TYPE	FAIL ON (OPEN)	FAIL OFF (CLOSED)	LAST COMMANDED STATE	LOCAL DEFAULT	NETWORK POINT	CALCULATED POINT	MAINTENANCE ALARM	CRITICAL ALARM	ALARM LIMITS	SOFTWARE INTERLOCKS	TREND	LOW LIMIT	HIGH LIMIT	
CB-1																	
1	CB-1 ENABLE/DISABLE	ED-1	DO														DI ON BOILER CONTROL PANEL
2	CB-1 SET POINT ADJUSTMENT	SPA-1	AO					■									AI ON BOILER CONTROL PANEL
3	CB-1 FIRING RATE	BFR-1	AI					■						■			
4	CB-1 ALARM STATUS	ALM-1	DI					■		■							
5	CB-1 HAND MODE STATUS	HM-1	DI					■						■			
6	CB-1 HHW RETURN TEMPERATURE	T-1	AI											■			
7	CB-1 HHW SUPPLY TEMPERATURE	T-2	AI											■			
8	CB-1 HHW FLOW	FM-1	AI											■			
9	BOILER HHW VALVE CONTROL	V-1	AO		■												
10	BOILER HHW VALVE POSITION FEEDBACK	VP-1	AI											■			
11	BOILER DHHW VALVE CONTROL	V-2	AO		■												
12	BOILER DHHW VALVE POSITION FEEDBACK	VP-2	AI											■			
13	BOILER HHW VALVE CONTROL	V-3	AO		■												
14	BOILER HHW VALVE POSITION FEEDBACK	VP-3	AI											■			
15	BOILER DHHW VALVE CONTROL	V-4	AO		■												
16	BOILER DHHW VALVE POSITION FEEDBACK	VP-4	AI											■			
CB-2																	
17	CB-2 ENABLE/DISABLE	ED-2	DO														DI ON BOILER CONTROL PANEL
18	CB-2 SET POINT ADJUSTMENT	SPA-2	AO					■									AI ON BOILER CONTROL PANEL
19	CB-2 FIRING RATE	BFR-2	AI					■						■			
20	CB-2 ALARM STATUS	ALM-2	DI					■		■							
21	CB-2 HAND MODE STATUS	HM-2	DI					■						■			
22	CB-2 HHW RETURN TEMPERATURE	T-3	AI											■			
23	CB-2 HHW SUPPLY TEMPERATURE	T-4	AI											■			
24	CB-2 HHW FLOW	FM-2	AI											■			
25	BOILER HHW VALVE CONTROL	V-5	AO		■												
26	BOILER HHW VALVE POSITION FEEDBACK	VP-5	AI											■			
27	BOILER DHHW VALVE CONTROL	V-6	AO		■												
28	BOILER DHHW VALVE POSITION FEEDBACK	VP-6	AI											■			
29	BOILER HHW VALVE CONTROL	V-7	AO		■												
30	BOILER HHW VALVE POSITION FEEDBACK	VP-7	AI											■			
31	BOILER DHHW VALVE CONTROL	V-8	AO		■												
32	BOILER DHHW VALVE POSITION FEEDBACK	VP-8	AI											■			
CB-3																	
33	CB-3 ENABLE/DISABLE	ED-3	DO														DI ON BOILER CONTROL PANEL
34	CB-3 SET POINT ADJUSTMENT	SPA-3	AO					■									AI ON BOILER CONTROL PANEL
35	CB-3 FIRING RATE	BFR-3	AI					■						■			
36	CB-3 ALARM STATUS	ALM-3	DI					■		■							
37	CB-3 HAND MODE STATUS	HM-3	DI					■						■			
38	CB-3 HHW RETURN TEMPERATURE	T-5	AI											■			
39	CB-3 HHW SUPPLY TEMPERATURE	T-6	AI											■			
40	CB-3 HHW FLOW	FM-3	AI											■			
41	BOILER HHW VALVE CONTROL	V-9	AO		■												
42	BOILER HHW VALVE POSITION FEEDBACK	VP-9	AI											■			
43	BOILER DHHW VALVE CONTROL	V-10	AO		■												
44	BOILER DHHW VALVE POSITION FEEDBACK	VP-10	AI											■			
45	BOILER HHW VALVE CONTROL	V-11	AO		■												
46	BOILER HHW VALVE POSITION FEEDBACK	VP-11	AI											■			
47	BOILER DHHW VALVE CONTROL	V-12	AO		■												
48	BOILER DHHW VALVE POSITION FEEDBACK	VP-12	AI											■			
CB-4																	
49	CB-4 ENABLE/DISABLE	ED-4	DO														DI ON BOILER CONTROL PANEL
50	CB-4 SET POINT ADJUSTMENT	SPA-4	AO					■									AI ON BOILER CONTROL PANEL
51	CB-4 FIRING RATE	BFR-4	AI					■						■			
52	CB-4 ALARM STATUS	ALM-4	DI					■		■							
53	CB-4 HAND MODE STATUS	HM-4	DI					■						■			
54	CB-4 HHW RETURN TEMPERATURE	T-7	AI											■			
55	CB-4 HHW SUPPLY TEMPERATURE	T-8	AI											■			
56	CB-4 HHW FLOW	FM-4	AI											■			
57	BOILER HHW VALVE CONTROL	V-13	AO		■												
58	BOILER HHW VALVE POSITION FEEDBACK	VP-13	AI											■			
59	BOILER DHHW VALVE CONTROL	V-14	AO		■												
60	BOILER DHHW VALVE POSITION FEEDBACK	VP-14	AI											■			
61	BOILER HHW VALVE CONTROL	V-15	AO		■												
62	BOILER HHW VALVE POSITION FEEDBACK	VP-15	AI											■			
63	BOILER DHHW VALVE CONTROL	V-16	AO		■												
64	BOILER DHHW VALVE POSITION FEEDBACK	VP-16	AI											■			
127	BOILER BYPASS VALVE CONTROL	V-31	AO		■												
128	BOILER BYPASS VALVE POSITION FEEDBACK	VP-31	AI											■			
CB-5																	
65	CB-5 ENABLE/DISABLE	ED-5	DO														DI ON BOILER CONTROL PANEL
66	CB-5 SET POINT ADJUSTMENT	SPA-5	AO					■									AI ON BOILER CONTROL PANEL
67	CB-5 FIRING RATE	BFR-5	AI					■						■			
68	CB-5 ALARM STATUS	ALM-5	DI					■		■							
69	CB-5 HAND MODE STATUS	HM-5	DI					■						■			
70	CB-5 DHHW RETURN TEMPERATURE	T-9	AI											■			
71	CB-5 DHHW SUPPLY TEMPERATURE	T-10	AI											■			
72	CB-5 DHHW FLOW	FM-5	AI											■			
73	BOILER HHW VALVE CONTROL	V-17	AO		■												
74	BOILER HHW VALVE POSITION FEEDBACK	VP-17	AI											■			
75	BOILER DHHW VALVE CONTROL	V-18	AO		■												
76	BOILER DHHW VALVE POSITION FEEDBACK	VP-18	AI											■			
77	BOILER HHW VALVE CONTROL	V-19	AO		■												
78	BOILER HHW VALVE POSITION FEEDBACK	VP-19	AI											■			
79	BOILER DHHW VALVE CONTROL	V-20	AO		■												
80	BOILER DHHW VALVE POSITION FEEDBACK	VP-20	AI											■			
CB-6																	
81	CB-6 ENABLE/DISABLE	ED-6	DO														DI ON BOILER CONTROL PANEL
82	CB-6 SET POINT ADJUSTMENT	SPA-6	AO					■									AI ON BOILER CONTROL PANEL
83	CB-6 FIRING RATE	BFR-6	AI					■						■			
84	CB-6 ALARM STATUS	ALM-6	DI					■		■							
85	CB-6 HAND MODE STATUS	HM-6	DI					■						■			
86	CB-6 DHHW RETURN TEMPERATURE	T-11	AI											■			
87	CB-6 DHHW SUPPLY TEMPERATURE	T-12	AI											■			
88	CB-6 DHHW FLOW	FM-6	AI											■			
89	BOILER HHW VALVE CONTROL	V-21	AO		■												
90	BOILER HHW VALVE POSITION FEEDBACK	VP-21	AI											■			
91	BOILER DHHW VALVE CONTROL	V-22	AO		■												
92	BOILER DHHW VALVE POSITION FEEDBACK	VP-22	AI											■			
93	BOILER HHW VALVE CONTROL	V-23	AO		■												
94	BOILER HHW VALVE POSITION FEEDBACK	VP-23	AI											■			
95	BOILER DHHW VALVE CONTROL	V-24	AO		■												
96	BOILER DHHW VALVE POSITION FEEDBACK	VP-24	AI											■			

HVAC CONTROLS - BMS POINT FUNCTION SCHEDULE (HEATING HOT WATER)

	POINT NAME	TAG	HARDWARE				SOFTWARE									NOTES
				FAIL MODE										ALARM LIMITS		
			POINT TYPE	FAIL ON (OPEN)	FAIL OFF (CLOSED)	LAST COMMANDED STATE	LOCAL DEFAULT	NETWORK POINT	CALCULATED POINT	MAINTENANCE ALARM	CRITICAL ALARM	ALARM LIMITS	SOFTWARE INTERLOCKS	TREND	LOW LIMIT	HIGH LIMIT	
DHHW COMMON																	
97	DHHW SUPPLY TEMPERATURE	T-13	AI									■		■		180	
98	DHHW SUPPLY TEMPERATURE	T-14	AI									■		■		180	
99	DHHW FLOW	FM-7	AI											■			
100	DHHW RETURN TEMPERATURE (PRE-BYPASS)	T-15	AI											■			
101	DHHW BYPASS VALVE CONTROL	V-25	AO		■												
102	DHHW BYPASS VALVE POSITION FEEDBACK	VP-25	AI											■			
103	DHHW RETURN TEMPERATURE (POST-BYPASS)	T-16	AI											■			
104	DHHW DIFFERENTIAL PRESSURE	DPT-8	AI									■		■	DET BY TAB	DET BY TAB	
DHWST-1																	
105	DHWST-1 ENTERING DHHW TEMPERATURE	T-17	AI											■			
106	DHWST-1 LEAVING DHHW TEMPERATURE	T-18	AI											■			
107	DHWST-1 DHHW FLOW	FM-8	AI											■			
108	DHWST-1 DHHW VALVE CONTROL	V-26	AO			■											
109	DHWST-1 DHHW VALVE POSITION FEEDBACK	VP-26	AI											■			
DHWST-2																	
110	DHWST-2 ENTERING DHHW TEMPERATURE	T-19	AI											■			
111	DHWST-2 LEAVING DHHW TEMPERATURE	T-20	AI											■			
112	DHWST-2 DHHW FLOW	FM-9	AI											■			
113	DHWST-2 DHHW VALVE CONTROL	V-27	AO			■											
114	DHWST-2 DHHW VALVE POSITION FEEDBACK	VP-27	AI											■			
DHWST-3																	
115	DHWST-3 ENTERING DHHW TEMPERATURE	T-21	AI											■			
116	DHWST-3 LEAVING DHHW TEMPERATURE	T-22	AI											■			
117	DHWST-3 DHHW FLOW	FM-10	AI											■			
118	DHWST-3 DHHW VALVE CONTROL	V-28	AO			■											
119	DHWST-3 DHHW VALVE POSITION FEEDBACK	VP-28	AI											■			
DHWST-4																	
120	DHWST-4 ENTERING DHHW TEMPERATURE	T-23	AI											■			
121	DHWST-4 LEAVING DHHW TEMPERATURE	T-24	AI											■			
122	DHWST-4 DHHW FLOW	FM-11	AI											■			
123	DHWST-4 DHHW VALVE CONTROL	V-29	AO			■											
124	DHWST-4 DHHW VALVE POSITION FEEDBACK	VP-29	AI											■			
HHW COMMON																	
125	BOILER BYPASS VALVE CONTROL	V-30	AO			■											
126	BOILER BYPASS VALVE POSITION FEEDBACK	VP-30	AI											■			
129	COMMON HHW SUPPLY HEADER TEMPERATURE	T-25	AI											■			
130	COMMON HHW SUPPLY TEMPERATURE	T-26	AI									■		■		180	
131	COMMON HHW SUPPLY FLOW	FM-12	AI											■			
132	COMMON HHW RETURN TEMPERATURE (PRE-BYPASS)	T-27	AI											■			
133	COMMON HHW RETURN FLOW	FM-13	AI											■			
134	COMMON HHW BYPASS VALVE CONTROL	V-32	AO		■												
135	COMMON HHW BYPASS VALVE POSITION FEEDBACK	VP-32	AI											■			
136	COMMON HHW RETURN TEMPERATURE (POST-BYPASS)	T-28	AI											■			
137	COMMON HHW DIFFERENTIAL PRESSURE	DPT-1	AI									■		■	DET BY TAB	DET BY TAB	
HHW DISTRIBUTION - C-STREET																	
138	CS COMMON HHW SUPPLY FLOW	FM-14	AI											■			
139	CS COMMON HHW SUPPLY VALVE CONTROL	V-33	AO			■											
140	CS COMMON HHW SUPPLY VALVE POSITION FEEDBACK	VP-33	AI											■			
141	CS HHW MIXING BRANCH FLOW	FM-15	AI											■			
142	CS HHW MIXING BRANCH VALVE CONTROL	V-34	AO	■													
143	CS HHW MIXING BRANCH VALVE POSITION FEEDBACK	VP-34	AI											■			
144	CS COMMON HHW SUPPLY FLOW	FM-16	AI											■			
145	CS COMMON HHW RETURN VALVE CONTROL	V-35	AO			■											
146	CS COMMON HHW RETURN VALVE POSITION FEEDBACK	VP-35	AI											■			
147	CS HHW MIXED SUPPLY TEMPERATURE	T-29	AI											■			
148	CS HHW SUPPLY FLOW	FM-17	AI											■			
149	CS HHW SUPPLY TEMPERATURE	T-30	AI											■			
150	CS HHW RETURN TEMPERATURE (PRE-BYPASS)	T-31	AI											■			
151	CS HHW BYPASS VALVE CONTROL	V-36	AO		■												
152	CS HHW BYPASS VALVE POSITION FEEDBACK	VP-36	AI											■			
153	CS HHW RETURN TEMPERATURE (POST-BYPASS)	T-32	AI											■			
154	CS DIFFERENTIAL PRESSURE	DPT-2	AI									■		■	DET BY TAB	DET BY TAB	
155	CS DIFFERENTIAL PRESSURE LOCAL	DPT-5	AI									■		■	DET BY TAB	DET BY TAB	
HHW DISTRIBUTION - ORIGINAL NORTH FTR																	
156	NFTR COMMON HHW SUPPLY FLOW	FM-18	AI											■			
157	NFTR COMMON HHW SUPPLY VALVE CONTROL	V-37	AO			■											
158	NFTR COMMON HHW SUPPLY VALVE POSITION FEEDBACK	VP-37	AI											■			
159	NFTR HHW MIXING BRANCH FLOW	FM-19	AI											■			
160	NFTR HHW MIXING BRANCH VALVE CONTROL	V-38	AO	■													
161	NFTR HHW MIXING BRANCH VALVE POSITION FEEDBACK	VP-38	AI											■			
162	NFTR COMMON HHW SUPPLY FLOW	FM-20	AI											■			
163	NFTR COMMON HHW RETURN VALVE CONTROL	V-39	AO			■											
164	NFTR COMMON HHW RETURN VALVE POSITION FEEDBACK	VP-39	AI											■			
165	NFTR HHW MIXED SUPPLY TEMPERATURE	T-33	AI											■			
166	NFTR HHW SUPPLY FLOW	FM-21	AI											■			
167	NFTR HHW SUPPLY TEMPERATURE	T-34	AI											■			
168	NFTR HHW RETURN TEMPERATURE (PRE-BYPASS)	T-35	AI											■			
169	NFTR HHW BYPASS VALVE CONTROL	V-40	AO			■											
170	NFTR HHW BYPASS VALVE POSITION FEEDBACK	VP-40	AI											■			
171	NFTR HHW RETURN TEMPERATURE (POST-BYPASS)	T-36	AI											■			
172	NFTR DIFFERENTIAL PRESSURE	DPT-3	AI									■		■	DET BY TAB	DET BY TAB	
173	NFTR DIFFERENTIAL PRESSURE LOCAL	DPT-6	AI									■		■	DET BY TAB	DET BY TAB	
HHW DISTRIBUTION - ORIGINAL REHEAT COILS																	
174	RHC COMMON HHW SUPPLY FLOW	FM-22	AI											■			
175	RHC COMMON HHW SUPPLY VALVE CONTROL	V-41	AO			■											
176	RHC COMMON HHW SUPPLY VALVE POSITION FEEDBACK	VP-41	AI											■			
177	RHC HHW MIXING BRANCH FLOW	FM-23	AI											■			
178	RHC HHW MIXING BRANCH VALVE CONTROL	V-42	AO	■													
179	RHC HHW MIXING BRANCH VALVE POSITION FEEDBACK	VP-42	AI											■			
180	RHC COMMON HHW SUPPLY FLOW	FM-24	AI											■			
181	RHC COMMON HHW RETURN VALVE CONTROL	V-43	AO			■											
182	RHC COMMON HHW RETURN VALVE POSITION FEEDBACK	VP-43	AI											■			
183	RHC HHW MIXED SUPPLY TEMPERATURE	T-37	AI											■			
184	RHC HHW SUPPLY FLOW	FM-25	AI											■			
185	RHC HHW SUPPLY TEMPERATURE	T-38	AI											■			
186	RHC HHW RETURN TEMPERATURE (PRE-BYPASS)	T-39	AI											■			
187	RHC HHW BYPASS VALVE CONTROL	V-44	AO		■												
188	RHC HHW BYPASS VALVE POSITION FEEDBACK	VP-44	AI											■			
189	RHC HHW RETURN TEMPERATURE (POST-BYPASS)	T-40	AI											■			
190	RHC DIFFERENTIAL PRESSURE	DPT-4	AI									■		■	DET BY TAB	DET BY TAB	
191	RHC DIFFERENTIAL PRESSURE LOCAL	DPT-7	AI									■		■	DET BY TAB	DET BY TAB	
MODSYNC CONTROLLER																	
192	HHW REMOTE ENABLE/DISABLE	ED-7	DO														
193	HHW LEAD BOILER POSITION	AX-1	AI					■						■			READ ONLY
194	HHW SUPPLY PRESSURE	AX-2	AI			■		■						■			
195	HHW SETPOINT ADJUSTMENT	AX-3	AI			■		■						■			
196	MODSYNC SETPOINT MODE	AX-4	AI					■									
197	MODSYNC ALARM CODE	AX-5	AI					■			■						
UNIVERSAL POINTS																	
198	OUTDOOR AIR TEMPERATURE	T-X	AI											■			

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A. SEE DRAWING M0.1 FOR ABBREVIATIONS, SYMBOLS, GENERAL NOTES.
B. SYSTEMS WITH AN '(E)' SUBSCRIPT ARE EXISTING TO REMAIN. MAINTAIN ALL CONDUIT, WIRING, CIRCUIT CONTINUITY. PROTECT FROM DAMAGE DURING CONSTRUCTION.
C. WHERE EXISTING BUILDING SERVICES AND/OR EQUIPMENT THAT IS TO REMAIN IN USE ARE REQUIRED TO BE SHUT DOWN, COORDINATE WITH THE OWNER 14 DAYS PRIOR TO SHUT DOWN. INCLUDE ALL ASSOCIATED OVERTIME COSTS TO PERFORM THIS WORK DURING WEEKENDS AND EVENINGS. INCLUDE ALL COSTS FOR PROVIDING TEMPORARY POWER WHERE SHUT DOWN MUST OCCUR FOR PERIODS LONGER THAN THESE HOURS.
D. FOR ALL WORK ON OR WITHIN EXISTING EQUIPMENT, CONTRACTOR TO COORDINATE WITH EQUIPMENT MANUFACTURER TO MAINTAIN WARRANTIES AND UL LISTINGS OF EQUIPMENT AND SYSTEMS.
E. THE CONTRACTOR SHALL COORDINATE EXACT LOCATION OF EQUIPMENT, PANELS, AND CONTROLLERS WITH EQUIPMENT INSTALLER PRIOR TO ROUGH-IN.
F. ISOLATION VALVES ARE NORMALLY OPEN (N.O.) UNLESS SPECIFIED TO BE NORMALLY CLOSED (N.C.)
G. PRIOR TO ANY DEMOLITION AND NEW WORK, PERFORM TESTING AND BALANCING OF THE EXISTING HEATING HOT WATER HYDRONIC PUMPING SYSTEMS SERVING THE MOULTRIE BUILDIGN AND THE C-STREET ADDITION. MEASURE PUMP FLOW, PUMP SUCTION PRESSURE, PUMP DISCHARGE PRESSURE, AND TOTAL SYSTEM FLOW AT EXISTING OPERATING PUMP SPEED. SUBMIT TAB REPORT TO OWNER AND EOR FOR REVIEW. DO NOT PROCEED WITH ANY WORK WITHOUT PRIOR TO FORMAL DIRECTION FROM THE OWNER.

◯ SHEET KEYNOTES

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SEALS AND SIGNATURES

SHEET TITLE
MECHANICAL CONTROLS - HEATING HOT WATER POINTS LIST

PROJECT NUMBER
15749.000

SHEET NUMBER
M8.4

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GENERAL

A. ALL SETPOINTS, TIMERS, DEADBANDS, PID GAINS, ETC. LISTED IN SEQUENCES SHALL BE CAPABLE OF BEING ADJUSTED BY THE USER WITH APPROPRIATE ACCESS LEVEL THROUGH THE NORMAL BAS USER INTERFACE WHETHER INDICATED AS ADJUSTABLE IN SEQUENCES OR NOT. SOFTWARE (VIRTUAL) POINTS SHALL BE USED FOR THESE VARIABLES. FIXED SCALAR NUMBERS SHALL NOT BE EMBEDDED IN PROGRAMS EXCEPT FOR PHYSICAL CONSTANTS AND CONVERSION FACTORS.

B. VALUES FOR ALL POINTS, INCLUDING REAL (HARDWARE) POINTS USED IN CONTROL SEQUENCES SHALL BE CAPABLE OF BEING OVERRIDDEN BY THE USER WITH APPROPRIATE ACCESS LEVEL (E.G. FOR TESTING AND COMMISSIONING). IF HARDWARE DESIGN PREVENTS THIS FOR HARDWARE POINTS, THEY SHALL BE EQUATED TO A SOFTWARE POINT AND THE SOFTWARE POINT SHALL BE USED IN ALL SEQUENCES. EXCEPTIONS SHALL BE MADE FOR MACHINE OR LIFE SAFETY.

C. ALL HARDWARE AND SOFTWARE POINTS NOTED IN THE FOLLOWING SEQUENCES/POINTS LISTS SHALL BE TRENDED, LOGGED IN 5 MINUTE INCREMENTS UNLESS OTHERWISE NOTED.

HEATING HOT WATER PLANT SETPOINTS

A. TEMPERATURE SETPOINTS
   1. $HWST_{max}$, THE HIGHEST HOT WATER SUPPLY TEMPERATURE SETPOINT: **180 °F**
   2. HW-LOT, THE OUTDOOR AIR TEMPERATURE ABOVE WHICH THE BOILER PLANT IS PREVENTED FROM OPERATING: **75 °F**

B. BOILER FLOW SETPOINTS
   1. HW-MinFlow1, THE DESIGN MINIMUM BOILER WATER FLOWRATE AS RECOMMENDED BY THE MANUFACTURER FOR EACH BOILER ASSIGNED TO THE HHW LOOP, IN GPM: **75 GPM**
   2. HW-DesFlow1, THE DESIGN BOILER HOT WATER FLOWRATE FOR EACH BOILER ON THE HHW LOOP, IN GPM: **300 GPM**
   3. HW-MinFlow2, THE DESIGN MINIMUM BOILER WATER FLOWRATE AS RECOMMENDED BY THE MANUFACTURER FOR EACH BOILER ASSIGNED TO THE DOMESTIC HHW LOOP, IN GPM: **75 GPM**
   4. HW-DesFlow2, THE DESIGN BOILER HOT WATER FLOWRATE FOR EACH BOILER ON THE DOMESTIC HHW LOOP, IN GPM: **600 GPM**

C. MINIMUM BOILER FIRING RATE
   1. B-FiringMin1, THE LOWEST ⅝-FIRING RATE OF EACH BOILER ASSIGNED TO THE HHW LOOP BEFORE CYCLING, E.G. 20% FOR A BOILER WITH 5 TO 1 TURNDOWN: **25%**
   2. B-FiringMin2, THE LOWEST ⅝-FIRING RATE OF EACH BOILER ASSIGNED TO THE DOMESTIC HHW LOOP BEFORE CYCLING, E.G. 20% FOR A BOILER WITH 5 TO 1 TURNDOWN: **12.5%**

D. CAPACITY
   1. QbX, DESIGN OUTPUT CAPACITY OF BOILER X: **5300 KBTU / HR**
   2. $HWP_{design}1$, DESIGN PRIMARY HHW LOOP FLOW: **1250 GPM**
   3. $HWP_{design}2$, DESIGN C-STREET HHW LOOP FLOW: **650 GPM**
   4. $HWP_{design}3$, DESIGN ORIGINAL NORTH FTR HHW LOOP FLOW: **250 GPM**
   5. $HWP_{design}4$, DESIGN ORIGINAL RHC HHW LOOP FLOW: **2400 GPM**
   6. $HWP_{design}D$, DESIGN DOMESTIC HHW LOOP FLOW: **600 GPM**

E. HEADERED PUMP DESIGN QUANTITIES
   1. N-HHWP1, THE NUMBER OF PRIMARY HEATING HOT WATER PUMPS THAT OPERATE AT DESIGN CONDITIONS: **QTY = 2**
   2. N-HHWP2, THE NUMBER OF C-STREET DISTRIBUTION HEATING HOT WATER PUMPS THAT OPERATE AT DESIGN CONDITIONS: **QTY = 1**
   3. N-HHWP3, THE NUMBER OF NORTH FTR DISTRIBUTION HEATING HOT WATER PUMPS THAT OPERATE AT DESIGN CONDITIONS: **QTY = 1**
   4. N-HHWP4, THE NUMBER OF RHC DISTRIBUTION HEATING HOT WATER PUMPS THAT OPERATE AT DESIGN CONDITIONS: **QTY = 2**
   5. N-HHWPD, THE NUMBER OF DOMESTIC HEATING HOT WATER PUMPS THAT OPERATE AT DESIGN CONDITIONS: **QTY = 2**

F. SETPOINTS TO BE PROVIDED BY TAB CONTRACTOR
   1. HHW-$DP_{min}1$, THE MAXIMUM HEATING HOT WATER DIFFERENTIAL PRESSURE SETPOINT FOR THE PRIMARY HEATING HOT WATER PUMPS, IN PSI
   2. HHW-$DP_{min}2$, THE MAXIMUM HEATING HOT WATER DIFFERENTIAL PRESSURE SETPOINT FOR THE C-STREET DISTRIBUTION PUMPS, IN PSI
   3. HHW-$DP_{min}3$, THE MAXIMUM HEATING HOT WATER DIFFERENTIAL PRESSURE SETPOINT FOR THE NORTH FTR DISTRIBUTION PUMPS, IN PSI
   4. HHW-$DP_{min}4$, THE MAXIMUM HEATING HOT WATER DIFFERENTIAL PRESSURE SETPOINT FOR THE RHC DISTRIBUTION PUMPS, IN PSI
   5. HHW-$DP_{min}D$, THE MAXIMUM DOMESTIC HEATING HOT WATER DIFFERENTIAL PRESSURE SETPOINT, IN PSI
   6. MINIMUM SPEEDS: WHERE MINIMUM SPEEDS ARE NOT REQUIRED FOR FLOW CONTROL PER OTHER BALANCER-PROVIDED SETPOINTS ABOVE, MINIMUM SPEED SETPOINTS FOR ALL VFD-DRIVEN HOT WATER PUMPS SHALL BE DETERMINED.

PLANT ENABLE/DISABLE

A. THE BOILER PLANT SHALL INCLUDE AN ENABLING SCHEDULE THAT ALLOWS OPERATORS TO LOCK OUT THE PLANT DURING OFF-HOURS, E.G. TO ALLOW OFF-HOUR OPERATION OF HVAC SYSTEMS EXCEPT THE BOILER PLANT. THE DEFAULT SCHEDULE SHALL BE 24/7 (ADJUSTABLE).

B. THE BMS SHALL ENABLE THE PLANT IN THE LOWEST STAGE WHEN THE PLANT HAS BEEN DISABLED FOR AT LEAST 15 MINUTES AND:
   1. OAT < HW-LOT, AND
   2. THE BOILER PLANT ENABLE SCHEDULE IS ACTIVE.

C. THE BMS SHALL DISABLE THE PLANT WHEN IT HAS BEEN ENABLED FOR AT LEAST 15 MINUTES AND:
   1. OAT > HW-LOT + 1°F, OR
   2. THE BOILER PLANT ENABLE SCHEDULE IS INACTIVE.

D. WHEN THE PLANT IS ENABLED:
   1. THE BOILER SEQUENCING SYSTEM SHALL BEGIN STAGING BOILERS ON, REFER TO BOILER STAGING SECTION BELOW.
   2. STAGE ON THE LEAD PRIMARY PUMP FOR WHICH ONE IS REQUESTED FOR HEATING.
   3. ONCE THE LEAD PRIMARY PUMP HAS PROVEN ON, AND THE FLOW THROUGH THE LEAD BOILER HAS BEEN DETERMINED TO BE GREATER THAN HW-MinFlow1 OR HW-MinFlow2, DEPENDING ON WHICH LOOP THE BOILER IS ASSIGNED TO, ENABLE THE LEAD BOILER AS DESCRIBED IN THE BOILER STAGING SECTION BELOW.

E. WHEN THE PLANT IS DISABLED:
   1. SHUT OFF THE ENABLED BOILER(S).
   2. FOR EACH ENABLED BOILER WITH HEADERED PRIMARY HW PUMPS, CLOSE THE HW ISOLATION VALVE(S) AFTER 3 MINUTES AND DISABLE THE OPERATING HW PUMP(S).

PACKAGED BOILER CONTROLLER (PROVIDED BY BOILER MANUFACTURER) - STAGING:

A. GENERAL:
   1. THE MODSYNC SHALL CONTROL TWO SEPARATE LOOPS, A HYDRONIC HEATING HOT WATER LOOP (HHW) AND A HYDRONIC INDIRECT DOMESTIC HOT WATER LOOP (DHHW). EACH LOOP WILL OPERATE OFF OF A SINGLE SUPPLY HEADER TEMPERATURE SENSOR IN THEIR RESPECTIVE LOOPS AS THE PROCESS VARIABLE. THE BMS SHALL ASSIGN EACH INDIVIDUAL BOILER TO EITHER THE HHW LOOP OR THE DHHW LOOP, IF NO SIGNAL IS SENT, THE MODSYNC SHALL ASSUME THAT THE BOILER IS PART OF THE HHW LOOP.

B. SUPPLY MOTORIZED ISOLATION VALVE LOGIC:
   1. THE OUTLET OF EACH BOILER WILL HAVE A MOTORIZED TWO POSITION ISOLATION VALVE FOR THE HHW LOOP AND A MOTORIZED TWO POSITION ISOLATION VALVE FOR THE DHHW LOOP. WHEN THE MODSYNC DETERMINES A BOILER HAS A CALL FOR HEAT, IT WILL OPEN THE VALVE CORRESPONDING TO THAT BOILERS CURRENT ASSIGNED LOOP. WHEN THAT CALL FOR HEAT IS SATISFIED, THE VALVE WILL BE CLOSED.

C. RETURN MOTORIZED ISOLATION VALVE LOGIC:
   1. THE RETURN OF EACH BOILER WILL HAVE A MOTORIZED TWO POSITION ISOLATION VALVE FOR THE HHW LOOP AND A MOTORIZED TWO POSITION ISOLATION VALVE FOR THE DHHW LOOP. WHEN A BOILER IS ASSIGNED TO A LOOP, THE RETURN MOTORIZED VALVE CORRESPONDING TO THAT LOOP WILL BE COMMANDED OPEN, THE OTHER RETURN MOTORIZED VALVE WILL BE COMMANDED CLOSED. WHEN SWITCHING FROM ONE LOOP TO ANOTHER THE RETURN VALVE OF THE NEW LOOP SHALL OPEN BEFORE THE RETURN VALVE OF THE CURRENT LOOP IS COMMANDED CLOSED TO PROVIDE A PATH TO THE EXPANSION TANK.

D. BYPASS MOTORIZED ISOLATION VALVE LOGIC:
   1. A BYPASS MOTORIZED ISOLATION VALVE WILL BE INSTALLED IN BOTH THE HHW AND DHHW LOOPS TO ALLOW A PATH OF FLOW WHEN ALL SUPPLY MOTORIZED VALVES ON THE BOILERS ARE CLOSED. THE BYPASS VALVE SHALL BE CONTROLLED BY THE BMS. THIS VALVE SHALL BE OPENED WHENEVER ALL SUPPLY SIDE MOTORIZED VALVE IN THAT GIVEN LOOP ARE BEING COMMANDED CLOSED AND SHALL BE CLOSED WHENEVER ONE OR MORE VALVES ARE BEING COMMANDED OPEN.

E. LEAD/LAG OPERATION:
   1. THE MODSYNC SHALL MONITOR THE OUTDOOR AIR TEMPERATURE AND SHALL DETERMINE THE HEATING HOT WATER LOOP TEMPERATURE SETPOINT BASED ON THE BELOW HEATING HOT WATER SUPPLY TEMPERATURE RESET SCHEDULE.
   2. A PID CONTROL VARIABLE SHALL DETERMINE WHEN THE BOILERS SHALL BEGIN SEQUENCING BASED ON THE DIFFERENCE BETWEEN THE LOOP'S HEATING HOT WATER SUPPLY TEMPERATURE SETPOINT AND THE LOOP'S HEATING HOT WATER RETURN TEMPERATURE (THE LOOP'S ACTUAL TEMPERATURE).
   3. WHEN THE MODSYNC DETERMINES A BOILER HAS A CALL FOR HEAT, AND THE MOTORIZED ISOLATION VALVES HAVE OPENED, THE LEAD BOILER SHALL BE ENERGIZED.
   4. IF THE LOOP'S HEATING HOT WATER RETURN TEMPERATURE CONTINUES TO FALL, THE CONTROL VARIABLE VALUE FOR THAT LOOP WILL INCREASE. THE LOOP'S LEAD BOILER'S FIRING RATE SHALL TRACK THE CONTROL VARIABLE VALUE AND INCREASE IN RESPONSE.
   5. THE MODSYNC WILL ENABLE A LAG BOILER ON A GIVEN LOOP ONCE THAT LAG BOILER START CONTROL VARIABLE VALUE HAS BEEN REACHED AND THE LAG BOILER START DELAY HAS EXPIRED. THE LEAD AND LAG BOILER'S FIRING RATES WILL MODULATE TOGETHER AT THE LOWEST FIRING RATE NECESSARY TO MAINTAIN THE LOOP'S HEATING HOT WATER SUPPLY TEMPERATURE SETPOINT.
   6. IF ADDITIONAL HEAT IS REQUIRED, THE MODSYNC WILL ENABLE ADDITIONAL LAG BOILERS IN A SIMILAR FASHION UNTIL ALL LAG BOILERS AVAILABLE TO A GIVEN LOOP ARE ENERGIZED.
   7. IF ALL BOILERS ARE ENABLE AND ADDITIONAL HEAT IS REQUIRED TO MAINTAIN THE LOOP'S HEATING HOT WATER TEMPERATURE SETPOINT, ALL BOILERS SHALL INCREASE THEIR FIRING RATES IN TANDEM TO KEEP THE SYSTEM AT THE LOWEST POSSIBLE FIRING RATE.
   8. IF THE HEATING HOT WATER SUPPLY TEMPERATURE INCREASES BEYOND SETPOINT, THE MODSYNC WILL BEGIN TO DECREASE THE FIRING RATE FOR ALL BOILERS TO MAINTAIN THE HEATING HOT WATER SUPPLY TEMPERATURE SETPOINT.
   9. IF ALL OF THE BOILERS ARE OPERATING AT LOW FIRE THE CONTROL VARIABLE VALUE CONTINUES TO DECREASE THE MODSYNC WILL BEGIN TO STAGE BOILERS OFF. ONCE A BOILER IS STAGED OFF, ITS CORRESPONDING SUPPLY MOTORIZED ISOLATION VALVE WILL BE COMMANDED CLOSED
   10. AS THE CONTROL VARIABLE VALUE CONTINUES TO DECREASE, BOILERS WILL BE STAGED OFF IN A SIMILAR MANNER AS ABOVE.
   11. THE LEAD BOILER SHALL BE DISABLED WHEN THE HEATING HOT WATER RETURN TEMPERATURE REACHES A SELECTABLE HYSTERESIS VALUE REFERENCED AROUND THE LOOP'S HEATING HOT WATER SUPPLY TEMPERATURE SETPOINT.

F. BMS CONSTRAINTS:
   1. BMS SHALL CONSTRAIN THE MAXIMUM NUMBER OF BOILERS ASSIGNED TO THE HHW LOOP TO FIVE BOILERS.
   2. BMS SHALL CONSTRAIN THE MAXIMUM NUMBER OF BOILERS ASSIGNED TO THE DHHW LOOP TO TWO BOILERS.

HEATING HOT WATER SUPPLY TEMPERATURE RESET

A. THE PLANT'S COMMON HEADERED HHW SUPPLY TEMPERATURE SHALL HAVE A DEFAULT OF 180°F (ADJ.)

B. THE DEFAULT HHW SUPPLY TEMPERATURE SETPOINT, FOR EACH DISTRIBUTION LOOP SHALL BE AS FOLLOWS:
   a. ORIGINAL REHEAT COILS: 145°F (ADJ.)
   b. ORIGINAL NORTH FINNED TUBE RADIATOR (FTR) : 160°F (ADJ.)
   c. C-STREET HHW: 180°F (ADJ.)

C. THE HHW SUPPLY TEMPERATURE SETPOINTS FOR THE PLANT AND FOR EACH DISTRIBUTION LOOP SHALL BE RESET DOWNWARD BASED ON THE OUTDOOR AIR TEMPERATURE, ACCORDING TO THE SCHEDULE BELOW.

D. ALL TEMPERATURE SETPOINTS SHALL BE USER ADJUSTABLE.

E. THE OPERATOR SHALL BE ABLE TO MANUALLY ENABLE AND DISABLE THE HEATING HOT WATER TEMPERATURE RESET STRATEGY VIA THE BMS USING A VIRTUAL "TOGGLE SWITCH".

OAT (°F)	PLANT HEATING HOT WATER SUPPLY TEMPERATURE SETPOINT (°F)	ORIGINAL REHEAT COILS HEATING HOT WATER SUPPLY TEMPERATURE SETPOINT (°F)	ORIGINAL NORTH FTR PLANT HEATING HOT WATER SUPPLY TEMPERATURE SETPOINT (°F)	C-STREET HEATING HOT WATER SUPPLY TEMPERATURE SETPOINT (°F)
20	180	145	160	180
25	175	140	155	175
30	170	135	150	170
35	165	130	145	165
40	160	125	140	160
45	155	120	135	155
50	150	115	130	150
55	145	110	125	145
60	140	105	120	140

HEATING HOT WATER PUMP STAGING

A. FOR EACH HEATING HOT WATER PUMP TWO RUNTIME POINTS SHALL BE DEFINED:
   1. LIFETIME RUNTIME: THE CUMULATIVE RUNTIME OF THE EQUIPMENT SINCE EQUIPMENT START-UP. THIS POINT SHALL NOT BE READILY RESETTABLE BY OPERATORS.
   2. STAGING RUNTIME: AN OPERATOR RESETTABLE RUNTIME POINT THAT STORES CUMULATIVE RUNTIME SINCE THE LAST OPERATOR RESET.

B. THE HEATING HOT WATER PUMPS FOR THE FOLLOWING LOOPS SHALL BE LEAD/LAG/STANDBY CONTROLLED:
   1. PRIMARY HEATING HOT WATER PUMPS (HHWP-1, HHWP-2, HHWP-3)
      a. PUMPS SHALL BE LEAD/LAG/STANDBY ALTERNATED WHEN MORE THAN ONE PUMP IS OFF OR MORE THAN ONE PUMP IS ON SO THAT THE PUMP WITH THE MOST OPERATING HOURS, AS DETERMINED BY STAGING RUNTIME IS ASSIGNED TO BE THE STANDBY PUMP, THE PUMP WITH THE SECOND MOST OPERATING HOURS IS ASSIGNED TO BE THE LAG PUMP, AND THE PUMP WITH THE LEAST OPERATING HOURS IS ASSIGNED TO BE THE LEAD PUMP.
      b. IF PUMP ASSIGNMENTS HAVE RUN CONTINUOUSLY FOR OVER A WEEK, LEAD/LAG/STANDBY POSITIONS SHALL SWITCH AT AN ADJUSTABLE DAY OF THE WEEK AND TIME (E.G. TUESDAY AT 10:00 AM) BASED ON STAGING RUNTIME. STANDBY EQUIPMENT SHALL FIRST BE STARTED AND PROVEN ON BEFORE FORMER LAG PUMP IS CHANGED TO LEAD AND FORMER LEAD PUMP IS CHANGED TO STANDBY AND SHUT OFF. PUMPS SHALL HAVE A DECELERATION RATE OF 1 HZ/SECOND OR SLOWER SET IN BAS LOGIC WHEN DISABLE TO PREVENT NUISANCE TRIPS OF OPERATING EQUIPMENT.
   2. ORIGINAL REHEAT COIL HHW DISTRIBUTION PUMPS (HHWP-5, HHWP-6, AND HHWP-6A)
      a. PUMPS SHALL BE LEAD/LAG/STANDBY ALTERNATED WHEN MORE THAN ONE PUMP IS OFF OR MORE THAN ONE PUMP IS ON SO THAT THE PUMP WITH THE MOST OPERATING HOURS, AS DETERMINED BY STAGING RUNTIME IS ASSIGNED TO BE THE STANDBY PUMP, THE PUMP WITH THE SECOND MOST OPERATING HOURS IS ASSIGNED TO BE THE LAG PUMP, AND THE PUMP WITH THE LEAST OPERATING HOURS IS ASSIGNED TO BE THE LEAD PUMP.
      b. IF PUMP ASSIGNMENTS HAVE RUN CONTINUOUSLY FOR OVER A WEEK, LEAD/LAG/STANDBY POSITIONS SHALL SWITCH AT AN ADJUSTABLE DAY OF THE WEEK AND TIME (E.G. TUESDAY AT 10:00 AM) BASED ON STAGING RUNTIME. STANDBY EQUIPMENT SHALL FIRST BE STARTED AND PROVEN ON BEFORE FORMER LEAD PUMP IS CHANGED TO LEAD AND FORMER LEAD PUMP IS CHANGED TO STANDBY AND SHUT OFF. PUMPS SHALL HAVE A DECELERATION RATE OF 1 HZ/SECOND OR SLOWER SET IN BAS LOGIC WHEN DISABLE TO PREVENT NUISANCE TRIPS OF OPERATING EQUIPMENT.

C. THE HEATING HOT WATER PUMPS FOR THE FOLLOWING LOOPS SHALL BE LEAD/STANDBY CONTROLLED:
   1. ORIGINAL NORTH FTR HHW DISTRIBUTION PUMPS (HHWP-7, HHWP-7A)
      a. PUMPS SHALL BE LEAD/STANDBY ALTERNATED SO THAT THE PUMP WITH THE MOST OPERATING HOURS, AS DETERMINED BY STAGING RUNTIME IS ASSIGNED TO BE THE STANDBY PUMP AND THE PUMP WITH THE LEAST OPERATING HOURS IS ASSIGNED TO BE THE LEAD PUMP.
      b. IF PUMP ASSIGNMENTS HAVE RUN CONTINUOUSLY FOR OVER A WEEK, LEAD/STANDBY POSITIONS SHALL SWITCH AT AN ADJUSTABLE DAY OF THE WEEK AND TIME (E.G. TUESDAY AT 10:00 AM) BASED ON STAGING RUNTIME. STANDBY EQUIPMENT SHALL FIRST BE STARTED AND PROVEN ON BEFORE THE FORMER STANDBY PUMP IS CHANGED TO THE LEAD PUMP AND THE FORMER LEAD PUMP IS CHANGED TO THE STANDBY PUMP AND SHUT OFF. PUMPS SHALL HAVE A DECELERATION RATE OF 1 HZ/SECOND OR SLOWER SET IN BAS LOGIC WHEN DISABLE TO PREVENT NUISANCE TRIPS OF OPERATING EQUIPMENT.
   2. C-STREET HHW DISTRIBUTION PUMPS (HHWP-11, HHWP-12)
      a. PUMPS SHALL BE LEAD/STANDBY ALTERNATED SO THAT THE PUMP WITH THE MOST OPERATING HOURS, AS DETERMINED BY STAGING RUNTIME IS ASSIGNED TO BE THE STANDBY PUMP AND THE PUMP WITH THE LEAST OPERATING HOURS IS ASSIGNED TO BE THE LEAD PUMP.
      b. IF PUMP ASSIGNMENTS HAVE RUN CONTINUOUSLY FOR OVER A WEEK, LEAD/STANDBY POSITIONS SHALL SWITCH AT AN ADJUSTABLE DAY OF THE WEEK AND TIME (E.G. TUESDAY AT 10:00 AM) BASED ON STAGING RUNTIME. STANDBY EQUIPMENT SHALL FIRST BE STARTED AND PROVEN ON BEFORE THE FORMER STANDBY PUMP IS CHANGED TO THE LEAD PUMP AND THE FORMER LEAD PUMP IS CHANGED TO THE STANDBY PUMP AND SHUT OFF. PUMPS SHALL HAVE A DECELERATION RATE OF 1 HZ/SECOND OR SLOWER SET IN BAS LOGIC WHEN DISABLE TO PREVENT NUISANCE TRIPS OF OPERATING EQUIPMENT.

D. THE HEATING HOT WATER PUMPS FOR THE FOLLOWING LOOPS SHALL BE LEAD/STANDBY CONTROLLED:
   1. DOMESTIC HHW PUMPS (DHWP-4 AND DHWP-5)
      a. PUMPS SHALL BE LEAD/LAG ALTERNATED WHEN ONE PUMP IS OFF OR ONE PUMP IS ON SO THAT THE PUMP WITH THE MOST OPERATING HOURS, AS DETERMINED BY STAGING RUNTIME IS ASSIGNED TO BE THE LAG PUMP AND THE PUMP WITH THE LEAST OPERATING HOURS IS ASSIGNED TO BE THE LEAD PUMP.
      b. IF PUMP ASSIGNMENTS HAVE RUN CONTINUOUSLY FOR OVER A WEEK, LEAD/LAG POSITIONS SHALL SWITCH AT AN ADJUSTABLE DAY OF THE WEEK AND TIME (E.G. TUESDAY AT 10:00 AM) BASED ON STAGING RUNTIME. LAG EQUIPMENT SHALL FIRST BE STARTED AND PROVEN ON BEFORE THE FORMER LAG PUMP IS CHANGED TO THE LEAD PUMP AND THE FORMER LEAD PUMP IS CHANGED TO THE LAG PUMP.

E. EXCEPTIONS TO LEAD LAG ROTATION:
   a. IF STATUS POINT IS NOT MATCHING COMMANDED STATE WITHIN A PERIOD OF 1 MINUTE (ADJ.) OF COMMAND, THE EQUIPMENT SHALL BE DETERMINED TO BE FAULTED AND A LEVEL 2 ALARM SHALL BE GENERATED AT THE BAS.
   b. THE NEXT AVAILABLE PUMP SHALL BE COMMANDED ON. SET FAULTED EQUIPMENT TO THE LAST POSITION IN ITS STAGING SEQUENCE.

PRIMARY HEATING HOT WATER PUMP SPEED CONTROL

A. THE FOLLOWING PUMPS ARE CONSIDERED PRIMARY HEATING HOT WATER PUMPS:
   1. PRIMARY HHW PUMPS (HHWP-1, HHWP-2, HHWP-3)

B. ENABLE LEAD PRIMARY HHW PUMP WHEN ANY BOILER ISOLATION VALVE IS COMMANDED OPEN. DISABLE THE LEAD HOT WATER PUMP WHEN ALL BOILER ISOLATION VALVES ARE COMMANDED CLOSED.

C. PRIMARY HHW PUMPS SHALL BE STAGED AS A FUNCTION OF THE RATIO OF CURRENT HOT WATER FLOW, $FLOW_R$, TO DESIGN FLOW, $HWF_{design}1$, AND THE NUMBER OF PUMPS, N-HHWP1, THAT OPERATE AT DESIGN CONDITIONS. PUMPS ARE ASSUMED TO BE EQUALLY SIZED.
   1. HWFR = $FLOW_R$ / $HWF_{design}1$
   2. START THE NEXT LAG PUMP WHENEVER THE FOLLOWING IS TRUE FOR 10 MINUTES:
      a. HWFR > (NUMBER OF OPERATING PUMPS / N-HHWP1) - 0.03
   3. SHUT OFF THE LAST LAG PUMP WHENEVER THE FOLLOWING IS TRUE FOR 10 MINUTES:
      a. HWFR < ((NUMBER OF OPERATING PUMPS - 1) / N-HHWP1) - 0.03

D. WHEN ANY PUMP IS PROVEN ON, PUMP SPEED SHALL BE CONTROLLED BY A REVERSE ACTING PID LOOP MAINTAINING DIFFERENTIAL PRESSURE AT HHW-DP_{min}1. ALL OPERATING PRIMARY PUMPS SHALL RECEIVE THE SAME SPEED SIGNAL. PID LOOP OUTPUT SHALL BE MAPPED FROM MINIMUM PUMP SPEED AT 0% TO MAXIMUM PUMP SPEED AT 100%.

E. HARDWIRE DP SENSOR TO NEW HEATING HOT WATER BUILDING CONTROLLER.

PRIMARY HEATING HOT WATER PUMP DIFFERENTIAL PRESSURE SETPOINT RESET

A. PRIMARY HEATING HOT WATER PUMP DIFFERENTIAL PRESSURE SETPOINT RESET SHALL BE ENABLED WHENEVER THE PLANT IS ENABLED AND DISABLED WHENEVER THE PLANT IS DISABLED.

B. WHEN AN ADDITIONAL BOILER IS ENABLED OR DISABLED ON ANY LOOP, THE RESET LOGIC SHALL BE FIXED AT ITS LATEST SETPOINT FOR THE LONGER OF 15 MINUTES (ADJ.) AND THE AMOUNT OF TIME IT TAKES FOR THE BOILER STAGING OPERATION TO OCCUR.

C. THE HEATING HOT WATER PUMP DIFFERENTIAL PRESSURE SETPOINT SHALL BE RESET AS FOLLOWS:
   1. THE INITIAL VALUE FOR THE PRIMARY HEATING HOT WATER PUMP DIFFERENTIAL PRESSURE SETPOINT, HHW-DP_{min}1 SHALL BE DETERMINED BY THE TAB CONTRACTOR.
   2. IF ALL THREE DISTRIBUTION HEATING HOT WATER LOOPS ARE OPERATING, THEN THE PRIMARY HEATING HOT WATER DIFFERENTIAL PRESSURE SETPOINT SHALL EQUAL HHW-DP_{min}1.
   3. IF THE COMMON HHW SUPPLY VALVE (AND COMMON HHW RETURN VALVE IF LOOP IS OFF) FOR A GIVEN DISTRIBUTION LOOP BOTH ACTUATE CLOSED, INDICATING A REDUCTION IN DEMAND IN THAT DISTRIBUTION LOOP, AND THE REMAINING OPERATING LOOPS ARE UNABLE TO MEET THEIR SUPPLY HEATING HOT WATER TEMPERATURE SETPOINT DUE TO INSUFFICIENT PRESSURE AT THE MIXED RETURN, THEN:
      A. EVERY 5 MINUTES (ADJ.) RESET THE PRIMARY HEATING HOT WATER PUMP DIFFERENTIAL PRESSURE SETPOINT DOWN BY 5% (ADJ.), BUT NOT BELOW 5 PSI.
      B. LIMIT ADJUSTMENT TO 20% (ADJ.) WITHIN A PERIOD OF 30 MINUTES (ADJ.).
      C. IF AFTER A 30 MINUTE PERIOD (ADJ.) THE OPERATING DISTRIBUTION HEATING HOT WATER LOOPS ARE UNABLE TO MAINTAIN THEIR HEATING HOT WATER SUPPLY TEMPERATURE SETPOINTS, GENERATE A LEVEL 2 ALARM AT THE BAS.
   4. IF THE COMMON HHW SUPPLY VALVE (AND COMMON HHW RETURN VALVE IF LOOP IS OFF) FOR A GIVEN DISTRIBUTION LOOP BOTH ACTUATE OPEN, INDICATING AN INCREASE IN DEMAND IN THAT DISTRIBUTION LOOP, AND THE REMAINING OPERATING LOOPS ARE UNABLE TO MEET THEIR SUPPLY HEATING HOT WATER TEMPERATURE SETPOINT DUE TO INSUFFICIENT PRESSURE AT THE MIXED RETURN, THEN:
      A. EVERY 5 MINUTES (ADJ.) RESET THE PRIMARY HEATING HOT WATER PUMP DIFFERENTIAL PRESSURE SETPOINT UP BY 3% (ADJ.), BUT NOT ABOVE HHW-DP_{max}X.
      B. LIMIT ADJUSTMENT TO 20% (ADJ.) WITHIN A PERIOD OF 30 MINUTES (ADJ.).
      C. IF AFTER A 30 MINUTE PERIOD (ADJ.) THE OPERATING DISTRIBUTION HEATING HOT WATER LOOPS ARE UNABLE TO MAINTAIN THEIR HEATING HOT WATER SUPPLY TEMPERATURE SETPOINTS, GENERATE A LEVEL 2 ALARM AT THE BAS.

DISTRIBUTION HEATING HOT WATER PUMP SPEED CONTROL

A. THE FOLLOWING PUMPS ARE CONSIDERED DISTRIBUTION HEATING HOT WATER PUMPS:
   1. ORIGINAL REHEAT COIL HHW DISTRIBUTION PUMPS (HHWP-5, HHWP-6, AND HHWP-6A)
   2. ORIGINAL NORTH FTR HHW DISTRIBUTION PUMPS (HHWP-7, HHWP-7A)
   3. C-STREET HHW DISTRIBUTION PUMPS (HHWP-11, HHWP-12)
   4. DOMESTIC HHW PUMPS (DHWP-4 AND DHWP-5)

B. ENABLE LEAD DISTRIBUTION HEATING HOT WATER PUMP WHEN THERE IS A CALL FOR HEATING PERCEIVED IN THE DISTRIBUTION LOOP, AS MEASURED BY THE DIFFERENCE IN THE HHWRT AND HHWST, AND THERE IS AT LEAST ONE BOILER OPERATING.

C. FOR EACH DISTRIBUTION LOOP HHW PUMPS SHALL BE STAGED AS A FUNCTION OF THE RATIO OF CURRENT HOT WATER FLOW, $FLOW_R$, TO DESIGN FLOW, HWF_{design}X, AND THE NUMBER OF PUMPS, N-HHWPX, THAT OPERATE AT DESIGN CONDITIONS. PUMPS ARE ASSUMED TO BE EQUALLY SIZED.
   1. FLOW, MEASURED BY THE FLOW METER LOCATED DOWNSTREAM OF THE DISTRIBUTION PUMPS (*FM-7* FOR DOMESTIC HEATING HOT WATER LOOP, *FM-17* FOR C-STREET DISTRIBUTION LOOP, *FM-21* FOR NORTH FTR DISTRIBUTION LOOP, AND *FM25* FOR RHC DISTRIBUTION PUMPS).
   2. HWFR = $FLOW_R$ / HWF_{design}X
   3. START THE NEXT LAG PUMP, IF APPLICABLE, WHENEVER THE FOLLOWING IS TRUE FOR 10 MINUTES:
      a. HWFR > (NUMBER OF OPERATING PUMPS / N-HHWPX) - 0.03
   4. SHUT OFF THE LAST LAG PUMP, IF APPLICABLE, WHENEVER THE FOLLOWING IS TRUE FOR 10 MINUTES:
      a. HWFR < ((NUMBER OF OPERATING PUMPS - 1) / N-HHWPX) - 0.03

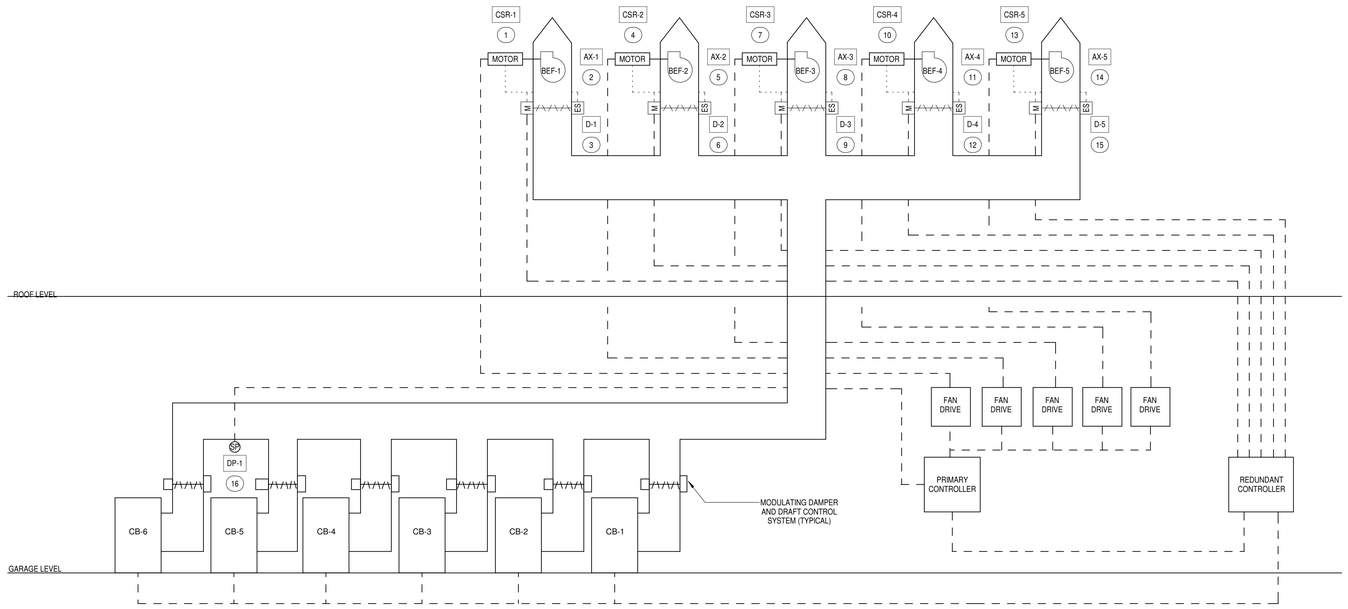
D. WHEN ANY PUMP IS PROVEN ON, PUMP SPEED SHALL BE CONTROLLED BY A REVERSE ACTING PID LOOP MAINTAINING DIFFERENTIAL PRESSURE AT HHW-DP_{min}X. ALL OPERATING PUMPS ON THAT DISTRIBUTION LOOP SHALL RECEIVE THE SAME SPEED SIGNAL. PID LOOP OUTPUT SHALL BE MAPPED FROM MINIMUM PUMP SPEED AT 0% TO MAXIMUM PUMP SPEED AT 100%. HHW-DP_{max}X SHALL BE ALLOWED TO BE RESET BY TRIM & RESPOND LOGIC DESCRIBED BELOW.

E. WHERE MULTIPLE DP SENSORS EXIST, A PID LOOP SHALL RUN FOR EACH SENSOR. HHW PUMPS SHALL BE CONTROLLED TO THE HIGH SIGNAL OUTPUT OF ALL DP SENSOR LOOPS.

F. WHERE REMOTE DP SENSORS ARE NOT HARDWIRED, THE FOLLOWING THREE SECTIONS SHALL BE IMPLEMENTED FOR LOCAL DP SENSORS THAT ARE HARDWIRED TO THE PLANT CONTROLLER.
   1. REMOTE LOOP DP SHALL BE MAINTAINED AT A SETPOINT OF HHW-DP_{min}X. HHW-DP_{min}X SHALL BE MAINTAINED BY A REVERSE ACTING PID LOOP RUNNING IN THE CONTROLLER TO WHICH THE REMOTE SENSOR IS WIRED; THE LOOP OUTPUT SHALL BE A DP SETPOINT FOR THE LOCAL DISTRIBUTION LOOP DP SENSOR HARDWIRED TO THE PLANT CONTROLLER. RESET LOCAL DP FROM 5 PSI AT 0% LOOP OUTPUT TO LOCALHHW-DP_{max}X AT 100% LOOP OUTPUT.
   2. WHEN ANY PUMP IS PROVEN ON, PUMP SPEED WILL BE CONTROLLED BY A REVERSE ACTING PID LOOP MAINTAINING THE LOCAL DISTRIBUTION DP SIGNAL AT THE DP SETPOINT OUTPUT FROM THE REMOTE SENSOR CONTROL LOOP. ALL PUMPS RECEIVE THE SAME SPEED SIGNAL. PID LOOP OUTPUT SHALL BE MAPPED FROM MINIMUM PUMP SPEED AT 0% TO MAXIMUM PUMP SPEED AT 100%.
   3. WHERE MULTIPLE REMOTE DP SENSORS EXIST, A PID LOOP SHALL RUN FOR EACH SENSOR. THE DP SETPOINT FOR THE LOCAL DP SENSOR SHALL BE THE HIGHEST DP SETPOINT OUTPUT FROM EACH OF THE REMOTE LOOPS.

DISTRIBUTION HEATING HOT WATER PUMP TRIM & RESPOND DIFFERENTIAL PRESSURE SETPOINT RESET LOGIC

A.



BEF ARRAY OPERATION

A. SYSTEM OPERATION
   1. BOILER EXHAUST FAN ARRAY IS N+1
   2. THE DRAFT FAN SHALL BE ENGAGED FOR OPERATION AND CONTROLLED BY THE MANUFACTURER CONTROL PANEL. WHILE PRIMARY FAN IS ENGAGED FOR OPERATION, AT ANY GIVE POINT ONE STANDBY EXHAUST FAN AND ASSOCIATED DAMPER SHALL BE OFF AND CLOSED TO PREVENT BACKFLOW THROUGH THE DE-ENERGIZED FAN. FAN SPEED SHALL BE MONITORED, THROUGH THE MANUFACTURER CONTROL PANEL,THROUGH THE FANS RESPECTIVE DRIVE.
   3. THE MANUFACTURER CONTROL PANEL SHALL BE CAPABLE OF BAS INTEGRATION TO INFORM CONDENSING BOILER STATUS, FAN STATUS, AND ALL FAULTS AND ALARMS.

B. FAN SPEED CONTROL
   1. EXHAUST FANS SHALL BE STAGED AND SPEED CONTROLLED VIA THE MANUFACTURER CONTROL PANEL, BOD: ENERVEX CASV 450 MULTI-SYSTEM.
   2. DRAFT FAN SPEED SHALL BE MODULATED BY FANS RESPECTIVE DRIVE, THROUGH THE MANUFACTURER CONTROL PANEL, TO MEET THE DRAFT EXHAUST DUCTWORK STATIC PRESSURE SETPOINT.

C. IF EXHAUST FAN FAILS GENERATE AN ALARM TO THE BAS.

D. REFER TO THE HEATING HOT WATER SUPPLY TEMPERATURE RESET SECTION FOR EACH LOOP'S HEATING HOT WATER SUPPLY TEMPERATURE SETPOINT SCHEDULE.

BEF ALARMS/SAFETIES

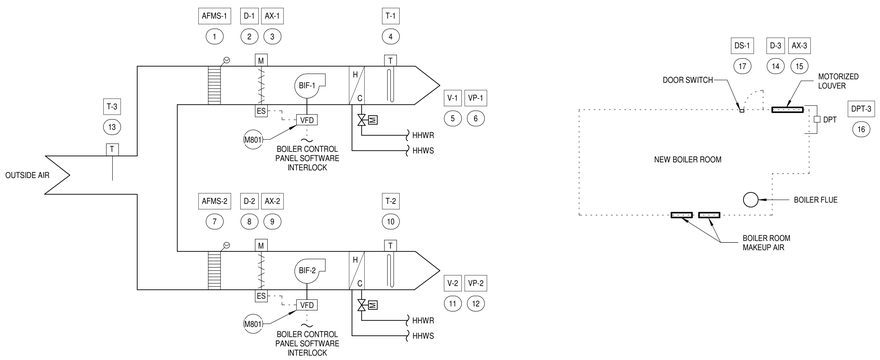
A. SAFETY SHUTDOWNS:
   1. SAFETY INTERLOCK WITH HEATING APPLIANCE
   2. HIGH AND LOW STATIC SHUTDOWN: THE FANS SHALL SHUT DOWN AND GENERATE AN ALARM UPON RECEIVING EITHER A HARD-WIRED OR LOW STATIC SHUTDOWN SIGNAL.
      a. LOW STATIC SHUTDOWN LOCATED AT EXHAUST FAN SUCTION
   3. EMERGENCY SHUTDOWN: UPON ACTIVATION OF EITHER ONE OF THE EMERGENCY SHUTDOWN SWITCHES, AND IF NOT ALREADY SHUT DOWN BY EMERGENCY POWER OFF BUTTON, THE BMS SHALL AUTOMATICALLY SHUT DOWN THE ENTIRE HEATING HOT WATER BOILER SYSTEM.
   4. FAN STATUS MONITORING AND ALARMS SHALL BE PROVIDED AS FOLLOWS:
      - FAN FAILURE: COMMANDED ON BUT THE STATUS IS OFF.
      - FAN IN HAND: COMMANDED OFF, BUT STATUS IS ON.
      - FAN DRIVE FAULT

1 BOILER FLUE FAN - CONTROL DIAGRAM

SCALE: NOT TO SCALE

HVAC CONTROLS - BMS POINT FUNCTION SCHEDULE (BOILER FLUE)

	POINT NAME	TAG	HARDWARE: POINT TYPE	HARDWARE: FAIL MODE: FAIL ON (OPEN)	HARDWARE: FAIL MODE: FAIL OFF (CLOSED)	HARDWARE: FAIL MODE: LAST COMMANDED STATE	HARDWARE: FAIL MODE: LOCAL DEFAULT	SOFTWARE: NETWORK POINT	SOFTWARE: CALCULATED POINT	SOFTWARE: MAINTENANCE ALARM	SOFTWARE: CRITICAL ALARM	SOFTWARE: ALARM LIMITS	SOFTWARE: SOFTWARE INTERLOCKS	SOFTWARE: TREND	SOFTWARE: ALARM LIMITS: LOW LIMIT	SOFTWARE: ALARM LIMITS: HIGH LIMIT	NOTES
BEF-1																	
1	EXHAUST FAN STATUS	CSR-1	DI							■							
2	END SWITCH STATUS	AX-1	DI		■					■							
3	MOTORIZED DAMPER CONTROL	D-1	AO		■												
BEF-2																	
4	EXHAUST FAN STATUS	CSR-2	DI							■							
5	END SWITCH STATUS	AX-2	DI		■					■							
6	MOTORIZED DAMPER CONTROL	D-2	AO		■												
BEF-3																	
7	EXHAUST FAN STATUS	CSR-3	DI							■							
8	END SWITCH STATUS	AX-3	DI		■					■							
9	MOTORIZED DAMPER CONTROL	D-3	AO		■												
BEF-4																	
10	EXHAUST FAN STATUS	CSR-4	DI							■							
11	END SWITCH STATUS	AX-4	DI		■					■							
12	MOTORIZED DAMPER CONTROL	D-4	AO		■												
BEF-5																	
13	EXHAUST FAN STATUS	CSR-5	DI							■							
14	END SWITCH STATUS	AX-5	DI		■					■							
15	MOTORIZED DAMPER CONTROL	D-5	AO		■												
DRAFT MONITORING																	
16	PRIMARY DIFFERENTIAL PRESSURE SENSOR	DP-1	AI									■					



BIF ARRAY OPERATION

A. GENERAL
   1. BOILER MAKEUP AIR FAN ARRAY IS N+1
   2. BOILER MAKEUP AIR FANS SHALL BE INTERLOCKED WITH BOILER MANUFACTURER CONTROL PANEL.
   3. BOILER MAKEUP AIR FANS SHALL ROTATE LEAD/STANDBY POSITIONS BASED ON RUNTIME. LEAD FAN SHALL BE THE FAN WITH THE FEWEST RUNTIME HOURS AT THE TIME OF OPERATION START.

B. FAN SPEED CONTROL
   1. UPON A CALL FOR HEAT LEAD BOILER MAKEUP AIR FAN MOTORIZED ISOLATION DAMPER SHALL ACTUATE OPEN. IF OPEN, THE STANDBY BOILER MAKEUP AIR FAN MOTORIZED ISOLATION DAMPER SHALL ACTUATE CLOSED. MOTORIZED ISOLATION DAMPER VALVE POSITION SHALL BE CONFIRMED BY END SWITCHES, SEE ALARMS.
   2. LEAD BOILER MAKEUP AIR FAN SHALL BE ENABLED WHEN THE FIRST OPERATING BOILER STARTS TO STAGE ON VIA A SOFTWARE INTERLOCK WITH THE BOILER MANUFACTURER CONTROL PANEL.
   3. THE LEAD BOILER MAKEUP AIR FAN SPEED SHALL MODULATE UP/DOWN BASED ON THE NUMBER OF BOILERS OPERATING AND RUN AT A CONSTANT SPEED TO SUPPLY SUFFICIENT MAKEUP AIR FOR THE NUMBER OF BOILERS OPERATING, AS MEASURED BY THE OPERATING FAN'S AIR FLOW MEASURING STATION.
      A. FOR EACH BOILER OPERATING, BOILER MAKEUP AIR FAN SHALL BE CAPABLE OF PROVIDING 1,400 CFM OF MAKEUP AIR.
   4. ONCE BOILER OPERATION HAS CEASED, LEAD BOILER MAKEUP AIR FAN WILL SHUT DOWN AFTER THE BOILER EXHAUST FANS HAVE DE-ENERGIZED AND ASSOCIATED MOTORIZED ISOLATION VALVE SHALL CLOSE.

C. BOILER MAKEUP AIR TEMPERATURE CONTROL
   1. OUTSIDE AIR TEMPERATURE SHALL BE MONITORED BY THE COMMON OUTSIDE AIR TEMPERATURE SENSOR
   2. UPON BOILER MAKEUP AIR FAN OPERATION, IF COMMON OUTSIDE AIR TEMPERATURE IS BELOW BOILER MAKEUP AIR MINIMUM DISCHARGE AIR TEMPERATURE SETPOINT: **50 °F** (ADJ.):
      a. MODULATE ASSOCIATED BOILER MAKEUP AIR FAN REHEAT COIL VALVE OPEN TO MAINTAIN MINIMUM DISCHARGE AIR TEMPERATURE.

D. BOILER ROOM PRESSURIZATION
   1. UPON CALL FOR BOILER MAKEUP AIR FAN OPERATION, MODULATE MOTORIZED LOUVER MAINTAIN ROOM NEUTRAL PRESSURE (ADJ.) WITH RESPECT TO THE ADJOINING PARKING GARAGE, AS MEASURED BY THE ASSOCIATED DIFFERENTIAL PRESSURE SENSOR.
   2. IF DOOR SWITCH SENSES THAT BOILER ROOM DOOR HAS BEEN HELD OPEN FOR MORE THAN 5 MINUTES (ADJ.) AND ANY BOILERS ARE OPERATING, MODULATE LOUVER CLOSED AND ISSUE AN ALARM AT THE BAS.

BIF ALARMS/SAFETIES

A. SAFETY SHUTDOWNS:
   1. SAFETY INTERLOCK WITH HEATING APPLIANCE
   2. EMERGENCY SHUTDOWN: UPON ACTIVATION OF EITHER ONE OF THE EMERGENCY SHUTDOWN SWITCHES, AND IF NOT ALREADY SHUT DOWN BY EMERGENCY POWER OFF BUTTON, THE BMS SHALL AUTOMATICALLY SHUT DOWN THE ENTIRE HEATING HOT WATER BOILER SYSTEM.
   3. FAN STATUS MONITORING AND ALARMS SHALL BE PROVIDED AS FOLLOWS:
      - FAN FAILURE: COMMANDED ON BUT THE STATUS IS OFF.
      - FAN IN HAND: COMMANDED OFF, BUT STATUS IS ON.
      - FAN DRIVE FAULT

2 BOILER ROOM MAKEUP AIR FAN - CONTROL DIAGRAM

SCALE: NOT TO SCALE

HVAC CONTROLS - BMS POINT FUNCTION SCHEDULE (BOILER MAKEUP AIR FAN)

	POINT NAME	TAG	HARDWARE: POINT TYPE	HARDWARE: FAIL MODE: FAIL ON (OPEN)	HARDWARE: FAIL MODE: FAIL OFF (CLOSED)	HARDWARE: FAIL MODE: LAST COMMANDED STATE	HARDWARE: FAIL MODE: LOCAL DEFAULT	SOFTWARE: NETWORK POINT	SOFTWARE: CALCULATED POINT	SOFTWARE: MAINTENANCE ALARM	SOFTWARE: CRITICAL ALARM	SOFTWARE: ALARM LIMITS	SOFTWARE: SOFTWARE INTERLOCKS	SOFTWARE: TREND	SOFTWARE: ALARM LIMITS: LOW LIMIT	SOFTWARE: ALARM LIMITS: HIGH LIMIT	NOTES
BIF-1																	
1	BIF-1 AIR FLOW	AFMS-1	AI									■		■			
2	BIF-1 ISOLATION DAMPER CONTROL	D-1	AO			■				■				■			
3	BIF-1 ISOLATION DAMPER POSITION	AX-1	DI							■							
4	BIF-1 SUPPLY AIR TEMPERATURE	T-1	AI									■		■			
5	BIF-1 RHC VALVE CONTROL	V-1	AO			■				■							
6	BIF-1 RHC VALVE POSITION	VP-1	AI											■			
BIF-2																	
7	BIF-2 AIRFLOW	AFMS-2	AI									■		■			
8	BIF-2 ISOLATION DAMPER CONTROL	D-2	AO			■				■				■			
9	BIF-2 ISOLATION DAMPER POSITION	AX-2	DI							■							
10	BIF-2 SUPPLY AIR TEMPERATURE	T-2	AI									■		■			
11	BIF-2 RHC VALVE CONTROL	V-2	AO			■				■							
12	BIF-2 RHC VALVE POSITION	VP-2	AI											■			
COMMON OA SENSOR																	
13	BIF-1 ISOLATION DAMPER POSITION	T-3	AI											■			
NEW BOILER ROOM																	
14	NEW BOILER ROOM PRESSURIZATION LOUVER CONTROL	D-3	AO	■						■							
15	NEW BOILER ROOM PRESSURIZATION LOUVER POSITOIN	AX-3	AI							■				■			
16	NEW BOILER ROOM DIFFERENTIAL PRESURE	DPT-3	AI							■				■			
17	NEW BOILER ROOM DOOR SWITCH	DS-1	DI							■							

GENERAL SHEET NOTES

A. SEE DRAWING M0.1 FOR ABBREVIATIONS, SYMBOLS, GENERAL NOTES.
B. SYSTEMS WITH AN '(E)' SUBSCRIPT ARE EXISTING TO REMAIN. MAINTAIN ALL CONDUIT, WIRING, CIRCUIT CONTINUITY. PROTECT FROM DAMAGE DURING CONSTRUCTION.
C. WHERE EXISTING BUILDING SERVICES AND/OR EQUIPMENT THAT IS TO REMAIN IN USE ARE REQUIRED TO BE SHUT DOWN, COORDINATE WITH THE OWNER 14 DAYS PRIOR TO SHUT DOWN. INCLUDE ALL ASSOCIATED OVERTIME COSTS TO PERFORM THIS WORK DURING WEEKENDS AND EVENINGS. INCLUDE ALL COSTS FOR PROVIDING TEMPORARY POWER WHERE SHUT DOWN MUST OCCUR FOR PERIODS LONGER THAN THESE HOURS.
D. FOR ALL WORK ON OR WITHIN EXISTING EQUIPMENT, CONTRACTOR TO COORDINATE WITH EQUIPMENT MANUFACTURER TO MAINTAIN WARRANTIES AND UL LISTINGS OF EQUIPMENT AND SYSTEMS.
E. THE CONTRACTOR SHALL COORDINATE EXACT LOCATION OF EQUIPMENT, PANELS, AND CONTROLLERS WITH EQUIPMENT INSTALLER PRIOR TO ROUGH-IN.
F. ISOLATION VALVES ARE NORMALLY OPEN (N.O.) UNLESS SPECIFIED TO BE NORMALLY CLOSED (N.C.)
G. PRIOR TO ANY DEMOLITION AND NEW WORK, PERFORM TESTING AND BALANCING OF THE EXISTING HEATING HOT WATER HYDRONIC PUMPING SYSTEMS SERVING THE MOULTRIE BUILDIGN AND THE C-STREET ADDITION. MEASURE PUMP FLOW, PUMP SUCTION PRESSURE, PUMP DISCHARGE PRESSURE, AND TOTAL SYSTEM FLOW AT EXISTING OPERATING PUMP SPEED. SUBMIT TAB REPORT TO OWNER AND EOR FOR REVIEW. DO NOT PROCEED WITH ANY WORK WITHOUT PRIOR TO FORMAL DIRECTION FROM THE OWNER.

SHEET KEYNOTES

M801 REFER TO M8.1 FOR TYPICAL VFD CONTROLS DIAGRAM

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SEALS AND SIGNATURES

SHEET TITLE

MECHANICAL CONTROLS - FAN CONTROLS

15749.000
PROJECT NUMBER

M8.6
SHEET NUMBER

Author

Plot Date: 7/3/2025 12:50:40 PM

ELECTRICAL ABBREVIATIONS

(A)		(M)	
A	AMPERES	MCA	MINIMUM CIRCUIT AMPACITY
AC	ALTERNATING CURRENT	MCB	MAIN CIRCUIT BREAKER
AF	AMPERE FRAME (BREAKER RATING)	MCC	MOTOR CONTROL CENTER
AFF	ABOVE FINISHED FLOOR	MECH	MECHANICAL
AHU	AIR HANDLING UNIT	MFR	MANUFACTURER
AIC	AMPERE INTERRUPTING CAPACITY	MIN	MINIMUM
ALT	ALTERNATE	MISC	MISCELLANEOUS
ARCH	ARCHITECT	MLO	MAIN LUGS ONLY
AT	AMPERES TRIP	MOCP	MAXIMUM OVERCURRENT PROTECTION
ATS	AUTOMATIC TRANSFER SWITCH	MTD	MOUNTED
AUX	AUXILIARY	MTG	MOUNTING
AWG	AMERICAN WIRE GAUGE	MTS	MANUAL TRANSFER SWITCH
		MV	MEDIUM VOLTAGE (OVER 600V LESS THAN 35KV)
(B)			
BAS / BMS	BUILDING AUTOMATION SYSTEM	(N)	
BLDG	BUILDING	N	NEUTRAL
BRKR, BKR	BREAKER	NC	NORMALLY CLOSED
		NEC	NATIONAL ELECTRICAL CODE
(C)		NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
C	CONDUIT		
CB	CIRCUIT BREAKER	NIC	NOT IN CONTRACT
CKT	CIRCUIT	NO	NORMALLY OPEN
CLG	CEILING	NO., NUM. #	NUMBER
COM, COMM	COMMUNICATIONS	NTS	NOT TO SCALE
CP	CONTROL PANEL		
CPT	CONTROL POWER TRANSFORMER	(O)	
CT	CURRENT TRANSFORMER	OC	ON CENTER
CU	COPPER	OCPD	OVERCURRENT PROTECTION DEVICE
(D)		(P)	
(D)	EXISTING TO BE DEMOLISHED	PF	POWER FACTOR
D/S	DISCONNECT	PH, Ø	PHASE
DC	DIRECT CURRENT	PLC	PROGRAMMABLE LOGIC CONTROLLER
DIV	DIVISION	PNL	PANEL
DN	DOWN	PRI	PRIMARY
DP	DISTRIBUTION PANEL	PSG	PARALLELING SWITCHGEAR
DPDT	DOUBLE POLE DOUBLE THROW	PT	POTENTIAL TRANSFORMER
DPST	DOUBLE POLE SINGLE THROW		
DWG	DRAWING	(Q)	
		QTY	QUANTITY
(E)			
(E)	EXISTING TO REMAIN	(R)	
EG	EQUIPMENT GROUND	(R)	EXISTING TO BE RELOCATED
EGB	ELECTRICAL GROUND BAR	RCPT	RECEPTACLE
ELEC	ELECTRIC, ELECTRICAL	REF	REFRIGERATOR
ELEV	ELEVATOR	RLA	RATED (RUNNING) LOAD AMPS
EM, EMEG	EMERGENCY	RM	ROOM
EMT	ELECTRIC METALLIC CONDUIT	RSC	RIGID STEEL CONDUIT
ENCL	ENCLOSURE		
EPO	EMERGENCY POWER OFF	(S)	
EQ, EQIP	EQUIPMENT	SCH, SCHED	SCHEDULE
		SEC	SECONDARY
(F)		SF	SQUARE FOOT
F	FUSE	SPD	SURGE PROTECTIVE DEVICE
FL, FLR	FLOOR	SPDT	SINGLE POLE DOUBLE THROW
FT	FOOT / FEET (')	SPEC(S)	SPECIFICATION(S)
		SPST	SINGLE POLE SINGLE THROW
(G)		STD	STANDARD
G, GND, GRD	GROUND	SW	SWITCH
GEN	GENERATOR	SWBD	SWITCHBOARD
GFCI	GROUND FAULT INTERRUPTER	SWGR	SWITCHGEAR
		SYM	SYMMETRICAL
(H)			
H	HORIZONTAL MOUNTING	(T)	
HMI	HUMAN MACHINE INTERFACE	TYP	TYPICAL
HP	HORSEPOWER		
HR	HOUR	(U)	
HVAC	HEATING VENTILATION AND AIR CONDITIONING	UL	UNDERWRITER'S LABORATORY
		UON	UNLESS OTHERWISE NOTED
(I)		UPS	UNINTERRUPTIBLE POWER SUPPLY
IN	INCH / INCHES (")		
		(V)	
(J)		V	VOLTS
JB, JBOX	JUNCTION BOX	VA	VOLT-AMPERES
		VFD	VARIABLE FREQUENCY DRIVE/ VARIABLE FREQUENCY MOTOR CONTROLLER
(K)			
Kcmil	1000 CIRCULAR mils	(W)	
KV	KILOVOLTS (THOUSAND VOLTS)	W	WIRE
KVA	KILOVOLTS-AMPERES (THOUSAND VOLT-AMPS)	W/	WITH
		W/O	WITHOUT
kW	KILOWATTS (THOUSAND WATTS)	WP	WEATHERPROOF
KWH	KILOWATT-HOURS		
		(X)	
(L)		XFMR	TRANSFORMER
LB	LOAD BANK		
LSI	LONG-TIME, SHORT-TIME, INSTANTANEOUS	(Z)	
LSIA	LONG-TIME, SHORT-TIME, INSTANTANEOUS,GROUND-FAULT ALARM ONLY	%Z	PERCENT IMPEDANCE
LSIG	LONG-TIME, SHORT-TIME, INSTANTANEOUS,GROUND-FAULT		
LTG	LIGHTING		
LV	LOW VOLTAGE (BELOW 50 VOLTS)		

ALL ABBREVIATIONS, SYMBOLS AND LEGENDS SHOWN ON THIS DRAWING ARE NOT NECESSARILY USED.

GENERAL NOTES

A. PROVIDE 1#12 + 1#12N + 1#12G FOR 20A BRANCH CIRCUITING, UON; MAXIMUM OF THREE CIRCUITS PER CONDUIT; MINIMUM CONDUIT SIZE OF 3/4" C, UON.

B. PROVIDE A DEDICATED NEUTRAL WIRE FOR EACH BRANCH CIRCUIT.

C. COORDINATE DEVICE LOCATIONS AND MOUNTING HEIGHTS WITH ARCHITECTURAL DRAWINGS PRIOR TO ROUGH-IN.

D. PROVIDE FIRE STOPPING FOR CONDUITS AND ELECTRICAL EQUIPMENT FOR FLOOR SLABS, WALLS AND CEILINGS TO MAINTAIN FIRE RATING.

E. INSTALL ELECTRICAL WORK IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE AND LOCAL BUILDING AND FIRE CODES, IN A NEAT AND WORKMANLIKE MANNER.

F. LIMIT VOLTAGE DROP TO 2% FOR FEEDERS AND 3% FOR BRANCH CIRCUITS. INCLUDE DERATING FACTOR FOR ROOF-MOUNTED CONDUITS.

G. WHERE EXISTING BUILDING SERVICES AND/OR EQUIPMENT THAT IS TO REMAIN IN USE ARE REQUIRED TO BE SHUT DOWN, COORDINATE WITH THE OWNER 14 DAYS PRIOR TO SHUT DOWN. INCLUDE ALL ASSOCIATED OVERTIME COSTS TO PERFORM THIS WORK DURING WEEKENDS AND EVENINGS. INCLUDE ALL COSTS FOR PROVIDING TEMPORARY POWER WHERE SHUT DOWN MUST OCCUR FOR PERIODS LONGER THAN THESE HOURS.

H. WHERE MULTIPLE SWITCHES, RECEPTACLES, AND OTHER OUTLETS ARE INDICATED PROVIDE MULTI-GANG BACK BOXES WITH GANG BARRIERS AND A COMMON FACEPLATE.

I. WHERE DIFFERENT RECESSED ELECTRICAL DEVICES WITH THE SAME MOUNTING HEIGHTS ARE INDICATED SIDE-BY-SIDE, MOUNT THE DEVICES SO THAT THERE IS FOUR INCHES BETWEEN ADJACENT VERTICAL EDGES OF THE FACEPLATES, UON.

J. WHERE ELECTRICAL DEVICES WITH DIFFERENT MOUNTING HEIGHTS ARE LOCATED IN THE SAME AREA ALIGN DEVICES VERTICALLY THROUGH THEIR CENTERLINES, UON.

K. PROVIDE FEEDERS AND BRANCH CIRCUITS WHICH HAVE AN AMPACITY EQUAL TO OR GREATER THAN THE CIRCUIT OVERCURRENT PROTECTIVE DEVICE RATING, U.O.N.

L. MOUNT DEVICES FLUSH WITH CONCEALED CONDUIT, EXCEPT AS NOTED ON THE DRAWINGS AND IN MECHANICAL AND ELECTRICAL EQUIPMENT ROOMS.

M. THE DRAWINGS REPRESENT ELECTRICAL DESIGN INTENT. THEY ARE DIAGRAMMATIC. PROVIDE ALL COMPONENTS NECESSARY FOR COMPLETE OPERATING ELECTRICAL SYSTEMS.

N. CONNECT ALL NEW EQUIPMENT THAT MUST BE GROUNDED INTO THE EXISTING GROUNDING SYSTEM AND TO BUILDING STEEL. COORDINATE ALL REQUIREMENTS FOR GROUNDING WITH NFPA 70 (NEC) AND DIVISION 26 SPECIFICATIONS.

MOUNTING HEIGHTS

DISCONNECT SWITCHES	5'-6" AFF
INDIVIDUAL CIRCUIT BREAKERS	5'-6" AFF
MOTOR STARTERS	5'-6" AFF
PANELBOARDS & CABINETS	6'-0" AFF TO TOP
VARIABLE FREQUENCY DRIVES	6'-0" AFF TO TOP

MOUNTING HEIGHT NOTES:

1. ALL ELEVATIONS ARE TO CENTER LINE OF DEVICE, UNLESS OTHERWISE NOTED.
2. REFER TO EQUIPMENT ELEVATION DRAWINGS FOR COORDINATION WITH CASEWORK.
3. MOUNT MANUAL MOTOR STARTER ADJACENT TO OR ON UNIT.
4. REFER TO ARCHITECTURAL A0 SERIES FOR ADDITIONAL ELECTRICAL DEVICE MOUNTING HEIGHTS AND DEVICE ALIGNMENT RULES.

ELECTRICAL POWER SYMBOLS

- SINGLE RECEPTACLE, 20A, 125V, 2P, 3W. (SLASH INDICATES MOUNTING ABOVE FINISH COUNTER)
- DUPLEX RECEPTACLE, 20A, 125V, 2P, 3W. (SLASH INDICATES MOUNTING ABOVE FINISH COUNTER)
- GFI, DUPLEX RECEPTACLE, 20A, 125V, 2P, 3W. (SLASH INDICATES MOUNTING ABOVE FINISH COUNTER)
- WP — GFCI, WEATHER-RESISTANT, DUPLEX RECEPTACLE, 20A, 125V, 2P, 3W. RECEPTACLE TO BE IN RECESSED DIE-CAST ALUMINUM BOX WITH A HEAVY CAST ALUMINUM CONSTRUCTION, CORROSION-RESISTANT, WHILE-IN-USE COVER WITH NEMA 3R AND UL RATING, WET LOCATION APPROVAL, EXTRA DUTY RATING, LOCKABLE, AND FACTORY-INSTALLED CORD FLAP GASKETS. COVER TO MOUNT WITH A GASKET AND STAINLESS STEEL SCREWS.
- QUADRUPLEX RECEPTACLE, (2)20A, 125V, 2P, 3W, DUPLEX RECEPTACLES WITH A COMMON FACEPLATE. (SLASH INDICATES MOUNTING ABOVE FINISH COUNTER)
- EMERGENCY DUPLEX RECEPTACLE, 20A, 125V, 2P, 3W. (SHADING INDICATING EMERGENCY RECEPTACLE TYPICAL FOR ALL OTHER RECEPTACLE TYPES)
- 6-30R — SPECIAL PURPOSE RECEPTACLE. TYPE AS INDICATED ON DRAWINGS. COORDINATE RECEPTACLE TYPE WITH ACTUAL EQUIPMENT PRIOR TO INSTALLATION.
- J J H J — JUNCTION BOX (CEILING, FLOOR OR WALL MOUNTED) INDICATED IN POWER, LIGHTING & FIRE ALARM SYSTEMS PLANS.
- V — MECHANICAL CONTROL JUNCTION BOX CONNECTION. PROVIDE WIRING AND CONNECTIONS AS REQUIRED PER MANUFACTURER AND CONFIRM FINAL LOCATIONS AND QUANTITIES WITH MECHANICAL CONTRACTOR. PROVIDE ADDITIONAL CONNECTIONS AND CIRCUITS AS REQUIRED BY FINAL CONTROLS DESIGN.
- R — SWITCH FOR OVERHEAD ROLL-UP DOOR. PROVIDE WIRING AND CONNECTIONS AS REQUIRED PER MANUFACTURER (INCLUDING BUT NOT LIMITED TO THE WIRING BETWEEN THE SWITCH AND THE MOTORIZED COMPONENT). MANUFACTURER OF THE MOTORIZED COMPONENT TO PROVIDE SWITCH. MANUFACTURER TO MATCH LOCATION OF SWITCH SHOWN IN E2 SERIES AND TO REFLECT LOCATION IN SUBMITTAL.

ELECTRICAL EQUIPMENT SYMBOLS

- MOTOR AND CONNECTION
- DISCONNECT SWITCH, NON-FUSED. PROVIDE SWITCH AMPACITY EQUAL TO OR GREATER THAN FEEDER AMPACITY, UON
- DISCONNECT SWITCH, FUSED. PROVIDE SWITCH AND FUSE AMPACITY EQUAL TO OR GREATER THAN FEEDER AMPACITY, UON
- CB — CIRCUIT BREAKER IN NEMA 1 ENCLOSURE (FLUSH/SURFACE)
- COMBINATION MOTOR STARTER WITH DISCONNECT SWITCH. PROVIDE SWITCH AND FUSE AMPACITY EQUAL TO OR GREATER THAN FEEDER AMPACITY, UON
- HAND-OFF-AUTO SELECTOR SWITCH WITH PILOT LIGHT
- VFD — VARIABLE FREQUENCY DRIVE/VARIABLE FREQUENCY MOTOR CONTROLLER
- EMERGENCY POWER OFF
- GROUNDING BUS BAR

DISTRIBUTION AND DIAGRAM SYMBOLS

- T — TRANSFORMER - TYPE AND RATING AS INDICATED
- ATS — AUTOMATIC TRANSFER SWITCH
- BUS DUCT PLUG-IN UNIT
- LIGHTNING ARRESTOR
- GROUND
- M — INTEGRAL ELECTRONIC METERING UNIT WITH CONNECTION TO EXISTING ASCO POWER MONITORING SYSTEM AND EXISTING BUILDING AUTOMATION SYSTEM
- SPD — SURGE PROTECTIVE DEVICE
- DISTRIBUTION PANELBOARD
- PANELBOARD - (FLUSH/SURFACE)
- LCP — LIGHTING CONTROL PANEL, SURFACE MTD. UON. B.O.D.: LUTRON QSN-4T20-S.
- RP-XXXX — SYMBOL INDICATES PANELBOARD AND CIRCUIT NUMBER DEVICES ARE TO BE CONNECTED TO
- GAP — GENERATOR ANNUNCIATOR (DERANGEMENT) PANEL
- G — GENERATOR

ELECTRICAL WIRING SYMBOLS

- DIAGRAMMATIC CONDUIT RUN CONCEALED IN FINISHED AREAS. EXPOSED IN UNFINISHED AREAS OR BELOW ACCESS FLOORS. CONTRACTOR TO PROVIDE ALL TYPES AND QUANTITIES OF CONDUIT, CONDUIT LENGTHS, FITTINGS, PULL AND JUNCTION BOXES, AND ACCESSORIES AS REQUIRED FOR A COMPLETE SYSTEM AT NO ADDITIONAL COST TO THE OWNER. THOUGH CONDUIT ROUTING FOR BRANCH CIRCUITING IS SHOWN TO HELP INDICATE PHYSICAL RELATIONSHIPS BETWEEN PANELS, FEEDERS, AND LOADS, IT IS NOT THE INTENT OF THE DRAWINGS TO SHOW ALL BENDS, CONDUIT LENGTHS, TRANSITIONS, PULL AND JUNCTION BOXES, FITTINGS, AND ACCESSORIES REQUIRED. THE CONTRACTOR SHALL FULLY COORDINATE THE REQUIRED COMPONENTS FOR ALL BRANCH CIRCUIT FEEDERS AND SHALL FULLY COORDINATE THE ELECTRICAL WORK WITHIN ITSELF , WITH THE EXISTING CONDITIONS, AND WITH THE WORK OF ALL TRADES TO PROVIDE COMPLETE AND OPERABLE SYSTEMS WITHOUT INTERFERENCES.
- DEMOLITION WORK
- CONDUIT TURNED UP
- CONDUIT TURNED DOWN
- G — GROUND CABLE
- AIR TERMINAL, ROOF MOUNT

ELECTRICAL LIGHTING SYMBOLS

- a — LIGHTING FIXTURE - TYPE AS INDICATED (SUBSCRIPT INDICATES SWITCH CONTROL)
- LIGHTING FIXTURE - TYPE AS INDICATED
- SHADING INDICATES FIXTURE CONNECTED TO LIFE SAFETY BRANCH
- XX — LIGHTING FIXTURE TYPE DESIGNATION - "XX" INDICATES SPECIFIC TYPE
- S_a — SINGLE POLE SWITCH (SUBSCRIPT INDICATES FIXTURES CONTROLLED)
- S_L — LOW VOLTAGE SWITCH
- S_D — DIMMER SWITCH
- S_{OS} — OCCUPANCY/VACANCY SENSOR WALL SWITCH

REFERENCE SYMBOLS

- 1 / E0.1 — SECTION NUMBER; DRAWING NUMBER WHERE DRAWN
- DETAIL NUMBER; DRAWING NUMBER WHERE DRAWN
- XXXX — KEY NOTE

ELECTRICAL CIRCUIT SIZING AND CIRCUIT LENGTH TABLES

FEEDER & BRANCH CIRCUIT SIZING SCHEDULE - GENERAL PURPOSE

(NOTES 1 & 2)

OVERCURRENT DEVICE RATING (AMPERES)	WIRE SIZE - AWG OR KCMIL		CONDUIT SIZE			NOTE
	PHASE & NEUTRAL	E.G.	2 WIRE	3 WIRE	4 WIRE	
15-20	12	12	3/4"	3/4"	3/4"	
25-30	10	10	3/4"	3/4"	3/4"	
35-40	8	10	3/4"	3/4"	3/4"	
45-50	8(6)	10	3/4"	3/4"	3/4"(1")	
60	6(4)	10	3/4"(1")	3/4"(1")	1"(1 1/4")	
70	6(4)	8	3/4"(1")	3/4"(1")	1"(1 1/4")	
80-90	4(2)	8	1"	1"(1 1/4")	1 1/4"	
100	3(2)	8	1"(1 1/4")	1 1/4"	1 1/4"	
110	2(1)	6	1 1/4"	1 1/4"(1 1/2")	1 1/4"(1 1/2")	
125	1(1/0)	6	1 1/4"	1 1/2"	1 1/2"(2")	
150	1/0	6	1 1/4"	1 1/2"	2"	
175	2/0	6	1 1/2"	2"	2"	
200	3/0	6	1 1/2"	2"	2"	
225	4/0	4	2"	2"	2 1/2"	
250	250	4	2"	2 1/2"	2 1/2"	
300	350	4	2 1/2"	3"	3"	
350	500	3	3"	3"	3 1/2"	
400	2-3/0	2-3	2-2"	2-2"	2-2"	
450	2-4/0	2-2	2-2"	2-2"	2-2 1/2"	
500	2-250	2-2	2-2"	2-2 1/2"	2-2 1/2"	
600	2-350	2-1	2-2 1/2"	2-3"	2-3"	
700	2-500	2-1/0	2-3"	2-3"	2-3 1/2"	
800	3-300	3-1/0	3-2 1/2"	3-3"	3-3"	
1000	3-400	3-2/0	3-2 1/2"	3-3"	3-3"	
1200	4-350	4-3/0	4-2 1/2"	4-3"	4-3"	
1600	5-400	5-4/0	5-2 1/2"	5-3"	5-3"	
2000	6-400	6-250	6-2 1/2"	6-3"	6-3"	

TRANSFORMER CIRCUIT SIZING SCHEDULE - GENERAL PURPOSE TYPE

(NOTE 6)

TRANSF. KVA	PRIMARY CIRCUIT (480V.)		SECONDARY CIRCUIT (208/120V.)		
	SWITCH/FUSE OR CIRCUIT BREAKER	PRIMARY FEEDER	SWITCH/FUSE OR CIRCUIT BREAKER	SYSTEM/EQUIPMENT BONDING JUMPER (GROUND WIRE)	SECONDARY FEEDER
9	30/20A.	20A., 3W.	30/30A.	#8	30A., 4W.
15	30/25A.	25A., 3W.	60/60A.	#8	60A., 4W.
30	60/45A.	45A., 3W.	100/100A.	#8	100A., 4W.
45	100/70A.	70A., 3W.	200/175A.	#4	175A., 4W.
75	200/125A.	125A., 3W.	400/300A.	#2	300A., 4W.
112 1/2	200/175A.	175A., 3W.	400/400A.	#1/0	400A., 4W.
150	400/225A.	225A., 3W.	600/600A.	#2/0	600A., 4W.
225	400/350A.	350A., 3W.	800/800A.	#3/0	800A., 4W.
300	600/500A.	500A., 3W.	1200/1000A.	#3/0	1000A., 4W.

MOTOR CIRCUIT SIZING SCHEDULE

(FOR 208V, 3 PHASE MOTORS NOTES 3,4,5)

MOTOR HP	SWITCH/FUSE	CIRCUIT BREAKER	STARTER	CONDUIT & WIRE			
			SIZE/TYPE	PHASE	E.G.	CONDUIT
1/2	30/4A.	15A	1	12	12	3/4"
3/4	30/6.25A.	15A	1	12	12	3/4"
1	30/8A.	15A	1	12	12	3/4"
1 1/2	30/15A.	20A	1	12	12	3/4"
2	30/15A.	20A	1	12	12	3/4"
3	30/20A.	25A	1	12	12	3/4"
5	30/30A.	40A	1	10	10	3/4"
7 1/2	60/45A.	60A	1	8	10	3/4"
10	60/60A.	70A	2	8	8	3/4"
15	100/90A.	110A	3	4	6	1"
20	200/110A.	125A	3	3	6	1 1/4"
25	200/150A.	175A	3	2	6	1 1/4"
30	200/175A.	200A	4	1	6	1 1/4"
40	200/200A.	250A	4	1/0	4	1 1/2"
50	400/250A.	350A	5	3/0	3	2"
60	400/300A.	400A	5	4/0	3	2"
75	400/400A.	500A	5	300	2	2 1/2"
100	600/500A.	600A	6	500	1	3"
125	800/700A.	800A	6	2-4/0	2-1/0	2-2"
150	800/700A.	800A	6	2-250	2-1/0	2-2"
200	1200/1000A	1200A	7	2-400	2-3/0	2-2 1/2"

MOTOR CIRCUIT SIZING SCHEDULE

(FOR 460V, 3 PHASE MOTORS) (NOTES 3,4,5)

MOTOR HP	SWITCH/FUSE	CIRCUIT BREAKER	STARTER	CONDUIT & WIRE			
			SIZE/TYPE	PHASE	E.G.	CONDUIT
1/2	30/3A.	15A	1	12	12	3/4"
3/4	30/3A.	15A	1	12	12	3/4"
1	30/6A.	15A	1	12	12	3/4"
1 1/2	30/6A.	15A	1	12	12	3/4"
2	30/6A.	15A	1	12	12	3/4"
3	30/10A.	15A	1	12	12	3/4"
5	30/15A.	20A	1	12	12	3/4"
7 1/2	30/20A.	25A	1	12	12	3/4"
10	30/25A.	35A	1	12	12	3/4"
15	60/40A.	50A	2	10	10	3/4"
20	60/50A.	60A	2	8	10	3/4"
25	60/60A.	80A	2	6	8	3/4"
30	100/70A.	100A	3	6	8	3/4"
40	100/100A.	125A	3	4	6	1"
50	200/125A.	150A	3	3	6	1 1/4"
60	200/150A.	175A	4	1	6	1 1/4"
75	200/175A.	225A	4	1/0	4	1 1/2"
100	400/225A.	300A	4	2/0	4	2"
125	400/300A.	350A	5	3/0	3	2"
150	400/350A.	450A	5	4/0	2	2"
200	600/450A.	600A	5	350	1	2 1/2"

480V., THREE PHASE CIRCUIT LENGTH TABLE

BREAKER AMPACITY (AMPS)	MAX. CIRCUIT LOAD (AMPS)	MAXIMUM LENGTH IN FEET																						
		NO.12	NO.10	NO.8	NO.6	NO.4	NO.2	NO.1	1/0	2/0	3/0	4/0	250	350	500	2-3/0	2-4/0	2-250	2-350	2-500	3-300	3-400	4-350	5-400	6-400	6-500
20	16	253	403	642	1019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30	24	-	269	428	679	1079	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
40	32	-	-	321	509	809	1293	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
50	40	-	-	-	408	648	1034	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
60	48	-	-	-	-	540	862	1083	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
70	56	-	-	-	-	-	739	928	1169	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
80	64	-	-	-	-	-	646	812	1023	1286	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
90	72	-	-	-	-	-	574	722	909	1143	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
100	80	-	-	-	-	-	-	650	818	1029	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
125	100	-	-	-	-	-	-	-	655	823	1043	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
150	120	-	-	-	-	-	-	-	546	689	869	1107	-	-	-	-	-	-	-	-	-	-	-	-	-	-
175	140	-	-	-	-	-	-	-	-	588	745	949	1110	-	-	-	-	-	-	-	-	-	-	-	-	-
200	160	-	-	-	-	-	-	-	-	-	652	830	971	1360	-	-	-	-	-	-	-	-	-	-	-	-
225	180	-	-	-	-	-	-	-	-	-	-	738	863	1209	1743	-	-	-	-	-	-	-	-	-	-	-
250	200	-	-	-	-	-	-	-	-	-	-	-	777	1088	1569	1043	-	-	-	-	-	-	-	-	-	-
300	240	-	-	-	-	-	-	-	-	-	-	-	-	907	1307	869	1107	-	-	-	-	-	-	-	-	-
350	280	-	-	-	-	-	-	-	-	-	-	-	-	-	1120	745	949	1110	-	-	-	-	-	-	-	-
400	320	-	-	-	-	-	-	-	-	-	-	-	-	-	-	652	830	971	1360	-	-	-	-	-	-	-
450	360	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	738	863	1209	-	-	-	-	-	-	-
500	400	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	777	1088	1569	-	-	-	-	-	-
600	480	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	907	1307	1165	-	-	-	-	-
700	560	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1120	999	1346	-	-	-	-
800	640	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	874	1177	1360	-	-	-
1000	800	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	942	1088	1569	-	-
1200	960	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	907	1307	-	-
1600	1200	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	980	1226	1307
1800	1440	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1089	1177
2000	1600	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	980	1137

120V. SINGLE PHASE CIRCUIT LENGTH TABLE

BREAKER AMPACITY (AMPS)	MAX. CIRCUIT CURRENT (AMPS)	MAX. CIRCUIT LOAD (VA)	MAXIMUM LENGTH IN FEET				
			NO.12	NO.10	NO.8	NO.6	NO.4
20	4	480	220	349	556	882	-
	8	960	110	174	278	441	701
	12	1440	73	116	185	294	467
	16	1920	55	87	139	221	350
30	24	2880	-	58	93	147	234
40	32	3840	-	-	70	110	175
50	40	4800	-	-	-	88	140
60	48	5760	-	-	-	-	117

208V. SINGLE PHASE CIRCUIT LENGTH TABLE

BREAKER AMPACITY (AMPS)	MAX. CIRCUIT CURRENT (AMPS)	MAX. CIRCUIT LOAD (VA)	MAXIMUM LENGTH IN FEET				
			NO.12	NO.10	NO.8	NO.6	NO.4
20	4	832	380	605	964	-	-
	8	1664	190	302	482	765	-
	12	2496	127	202	321	510	810
	16	3328	95	151	241	382	607
30	24	4992	-	101	161	255	405
40	32	6656	-	-	121	191	304
50	40	8320	-	-	-	153	243
60	48	9984	-	-	-	-	202

208V. THREE PHASE CIRCUIT LENGTH TABLE

BREAKER AMPACITY (AMPS)	MAX. CIRCUIT CURRENT (AMPS)	MAX. CIRCUIT LOAD (VA)	MAXIMUM LENGTH IN FEET				
			NO.12	NO.10	NO.8	NO.6	NO.4
20	4	1440	439	698	1113	-	-
	8	2880	220	349	557	883	-
	12	4320	127	233	371	589	935
	16	5760	95	175	278	442	701
30	24	8640	-	116	186	294	468
40	32	11520	-	-	139	221	351
50	40	14400	-	-	-	177	281
60	48	17280	-	-	-	-	234

277V. SINGLE PHASE CIRCUIT LENGTH TABLE

BREAKER AMPACITY (AMPS)	MAXIMUM LENGTH IN FEET		
	NO.12	NO.10	
20	200	300	

CIRCUIT MAXIMUM DISTANCE TABLES

NOTES:

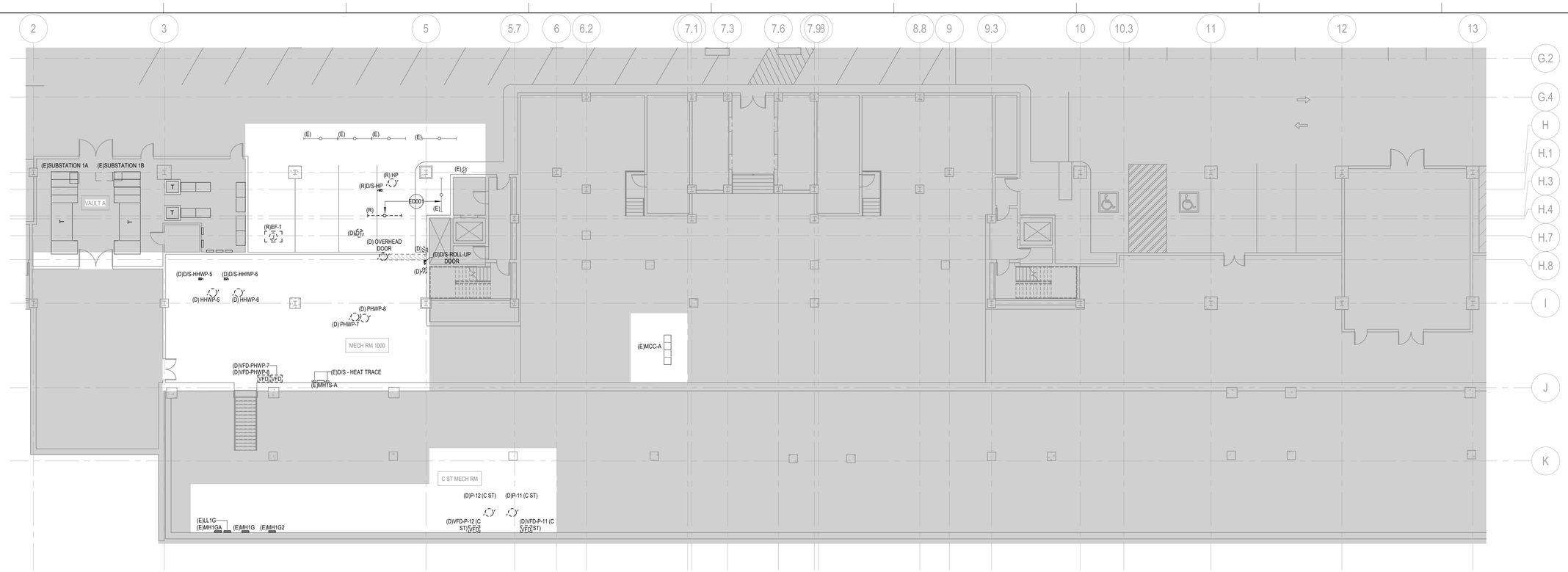
A. CIRCUIT MAXIMUM DISTANCE IS BASED ON NEC CHAPTER 9, TABLE 8 CONDUCTOR PROPERTIES FOR COATED COPPER CONDUCTORS AT 75 DEGREES CELSIUS.

DRAWING NOTES

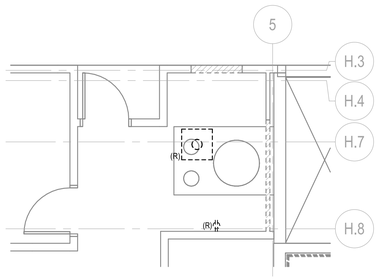
CIRCUIT SIZING SCHEDULES NOTES:

1. BASED ON THHN/THWN, 90°., 600V., INSULATED, COPPER WIRE APPLIED AT 75°FOR TERMINATIONS RATED AT 60°C/75°C AND 75°C. FOR TERMINATIONS RATED AT 60°C PROVIDE WIRE AND CONDUIT SIZES INDICATED IN PARENTHESIS.
2. BASED ON WIRE OUTSIDE DIAMETERS AND RIGID METALLIC CONDUIT INSIDE DIAMETERS AS PROVIDED IN THE NEC. DO NOT REDUCE CONDUIT SIZE FOR NON-RIGID METALLIC APPLICATION. REFER TO NEC FOR CONDUIT TYPES MORE RESTRICTIVE THAN RIGID METALLIC.
3. BASED ON MOTOR FULL LOAD AMPERES AS PROVIDED BY THE NEC.
4. BASED ON MOTOR RUNNING OVERLOAD PROTECTION PROVIDED BY THERMAL OVERLOAD RELAYS.
5. MOTOR STARTING TYPE BASED ON 460V., 3 PHASE. FULL VOLTAGE NON-REVERSING EXCEPT FOR MOTORS SIZED 75HP OR GREATER WHICH ARE BASED ON 460V., 3 PHASE, PART WINDING REDUCED VOLTAGE STARTING.
6. TRANSFORMER CIRCUITS BASED ON 480V TO 208/120V., 3 PHASE, 4 WIRE,DRY TYPE.

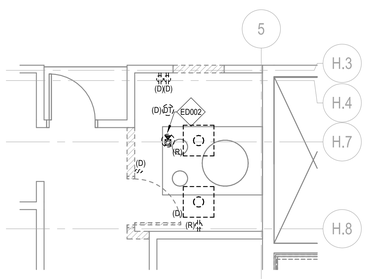
H Car



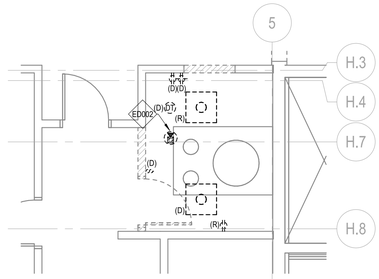
1 PARKING LEVEL FLOOR PLAN - ELECTRICAL DEMOLITION
SCALE: 3/32" = 1'-0"



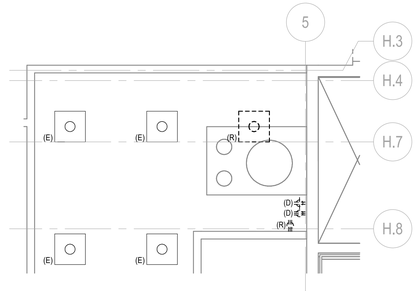
2 C STREET LEVEL ELECTRICAL DEMOLITION PLAN
SCALE: 1/4" = 1'-0"



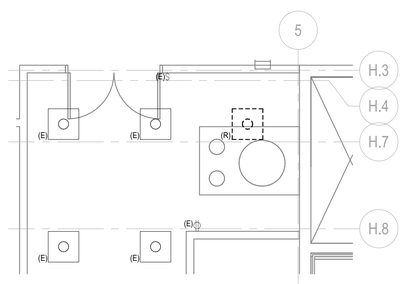
3 JOHN MARSHALL LEVEL ELECTRICAL DEMOLITION PLAN
SCALE: 1/4" = 1'-0"



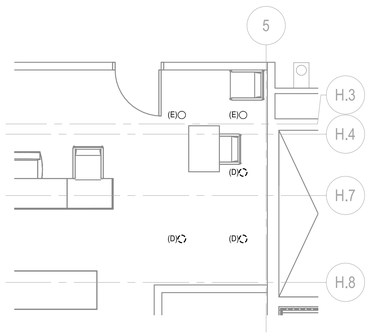
4 INDIANA AVENUE LEVEL ELECTRICAL DEMOLITION PLAN
SCALE: 1/4" = 1'-0"



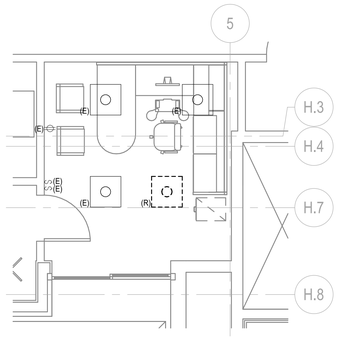
5 SECOND LEVEL ELECTRICAL DEMOLITION PLAN
SCALE: 1/4" = 1'-0"



6 THIRD LEVEL FLOOR PLAN - ELECTRICAL DEMOLITION
SCALE: 1/4" = 1'-0"



7 FOURTH LEVEL ELECTRICAL DEMOLITION PLAN
SCALE: 1/4" = 1'-0"



8 FIFTH LEVEL ELECTRICAL DEMOLITION PLAN
SCALE: 1/4" = 1'-0"

GENERAL SHEET NOTES

A. SEE ELECTRICAL COVER SHEET FOR ABBREVIATIONS, SYMBOLS, GENERAL NOTES AND DEVICE MOUNTING HEIGHT OF WALL MOUNTED DEVICES, U.O.N.
B. ALL EQUIPMENT/DEVICES WITH A '(D)' SUBSCRIPT, INDICATED WITH HEAVY WEIGHT DASHED LINES, AND/OR INDICATED WITH KEYNOTES SHALL BE DEMOLISHED. REMOVE ALL ASSOCIATED EXISTING ELECTRICAL DEVICES, EQUIPMENT, BRANCH CIRCUITS AND FEEDERS IN THEIR ENTIRETY BACK TO THEIR POINT OF ORIGIN UNLESS OTHERWISE INDICATED. TURN OFF AND LABEL CIRCUIT BREAKERS AS SPARES FOR NEW WORK.
C. ALL EQUIPMENT/DEVICES WITH AN '(E)' SUBSCRIPT ARE EXISTING TO REMAIN. MAINTAIN ALL CONDUIT, WIRING, CIRCUIT CONTINUITY, UNLESS OTHERWISE NOTED. PROTECT FROM DAMAGE DURING CONSTRUCTION. FOR EXISTING TO REMAIN RECEPTACLES, DEMOLISH WIRING AND MAINTAIN CONDUIT FOR REUSE WHERE FEASIBLE.
D. OUT OF SCOPE AREA IS INDICATED BY GRAY HATCH. MAINTAIN AND PRESERVE OUT OF SCOPE EXISTING SYSTEMS AND THEIR OPERATIONS.
E. SEE DRAWING SERIES E5 FOR POWER RISER DIAGRAM AND DRAWING SERIES E7 FOR ALL SCHEDULES.
F. QUANTITY AND LOCATION OF DEVICES SHOWN ON PLANS ARE APPROXIMATE. FIELD VERIFY DEVICES AND LOCATIONS.
G. PROTECT EXISTING-TO-REMAIN CEILING, FLOORS, WALLS AND PANELS AND DEVICES.
H. SELECT DEMOLITION MAY BE REQUIRED FOR NEW CONSTRUCTION AND MAY NOT BE DELINEATED ON THIS DRAWING. CAREFULLY COORDINATE DEMOLITION WITH NEW CONSTRUCTION (PARTITION AND REFLECTED CEILING) PLANS TO VERIFY ACTUAL EXTENT OF DEMOLITION.
I. EXAMINE THE DRAWINGS OF OTHER TRADES AND BE FAMILIAR WITH THE DEMOLITION REQUIRED BY OTHER TRADES. PERFORM INCIDENTAL ELECTRICAL DEMOLITION WORK AND/OR RELOCATION REQUIRED TO FACILITATE THE DEMOLITION WORK OF OTHER TRADES, WHETHER OR NOT SPECIFICALLY INDICATED
J. THOROUGHLY SURVEY THE EXISTING BUILDING AND SYSTEMS PRIOR TO SUBMITTING THE BID PRICE. INCLUDE A REMOVAL OF ALL ASSOCIATED COMPONENTS OF SYSTEMS INDICATED TO BE REMOVED. DEMOLISHED ELECTRICAL COMPONENTS SHALL NOT BE ABANDONED IN PLACE.
K. PROVIDE BLANK COVER PLATES THAT WILL MATCH THE WALL FINISH WHERE DEVICES ARE REMOVED BUT EXISTING WALLS REMAIN INTACT.
L. PROVIDE NEW TYPED DIRECTORIES FOR EXISTING PANELBOARDS AFFECTED BY THIS ALTERATION WITH BRANCH CIRCUIT LOAD VALUES INDICATED.
M. FOR ALL EXISTING TO REMAIN MECHANICAL EQUIPMENT SHOWN ON THE MECHANICAL DRAWINGS, MAINTAIN ALL ASSOCIATED ELECTRICAL DEVICES AND CIRCUIT CONTINUITY. COORDINATE ALL MECHANICAL CONNECTIONS TO BE DEMOLISHED WITH THE MECHANICAL DRAWINGS. FOR DEMOLISHED EQUIPMENT, REMOVE ALL WIRING AND CONDUIT BACK TO PANEL.
N. RECYCLE OR DISPOSE MATERIALS OFF SITE AND INCLUDE ALL COSTS IN BID. HANDLE ALL MATERIALS IN ACCORDANCE WITH LEED REQUIREMENTS, ALL FEDERAL, STATE, AND LOCAL REGULATIONS.
O. WHERE EXISTING BUILDING SERVICES AND/OR EQUIPMENT THAT IS TO REMAIN IN USE ARE REQUIRED TO BE SHUT DOWN, COORDINATE WITH THE OWNER. INCLUDE ALL ASSOCIATED OVERTIME COSTS TO PERFORM THIS WORK DURING WEEKENDS AND EVENINGS. INCLUDE ALL COSTS FOR PROVIDING TEMPORARY POWER WHERE SHUT DOWN MUST OCCUR FOR PERIODS LONGER THAN THESE HOURS. COORDINATE ELECTRICAL SHUT DOWNS WITH THE OWNER ONE WEEK PRIOR TO SHUT DOWN.
P. PROVIDE CODE-COMPLIANT SUPPORT TO EXISTING-TO-REMAIN UNSUPPORTED CONDUITS AND BOXES WHERE CEILINGS ARE TO BE REMOVED. RE-ROUTE BRANCH CIRCUITS AND RELOCATE JUNCTION BOXES AS REQUIRED TO FACILITATE INSTALLATION OF NEW EQUIPMENT AND SYSTEMS IN CEILING SPACES.
Q. MAINTAIN ELECTRICAL SERVICE TO LIGHTING FIXTURES AND DEVICES THAT ARE TO REMAIN. EXTEND CONDUIT AND WIRE AS REQUIRED WHERE DEMOLITION WORK AFFECTS ELECTRICAL SERVICE TO DOWNSTREAM DEVICES THAT ARE TO REMAIN.

SHEET KEYNOTES

ED001 DISCONNECT EXISTING LIGHTING FIXTURE FROM EXISTING CIRCUIT. LIGHTING FIXTURE IS TO BE REUSED IN NEW DESIGN BUT TIED INTO NEW CIRCUIT IN NEW BOILER ROOM.
ED002 DEMOLISH EXISTING FIRE ALARM DEVICE.

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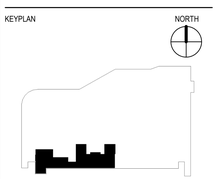
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SEALS AND SIGNATURES

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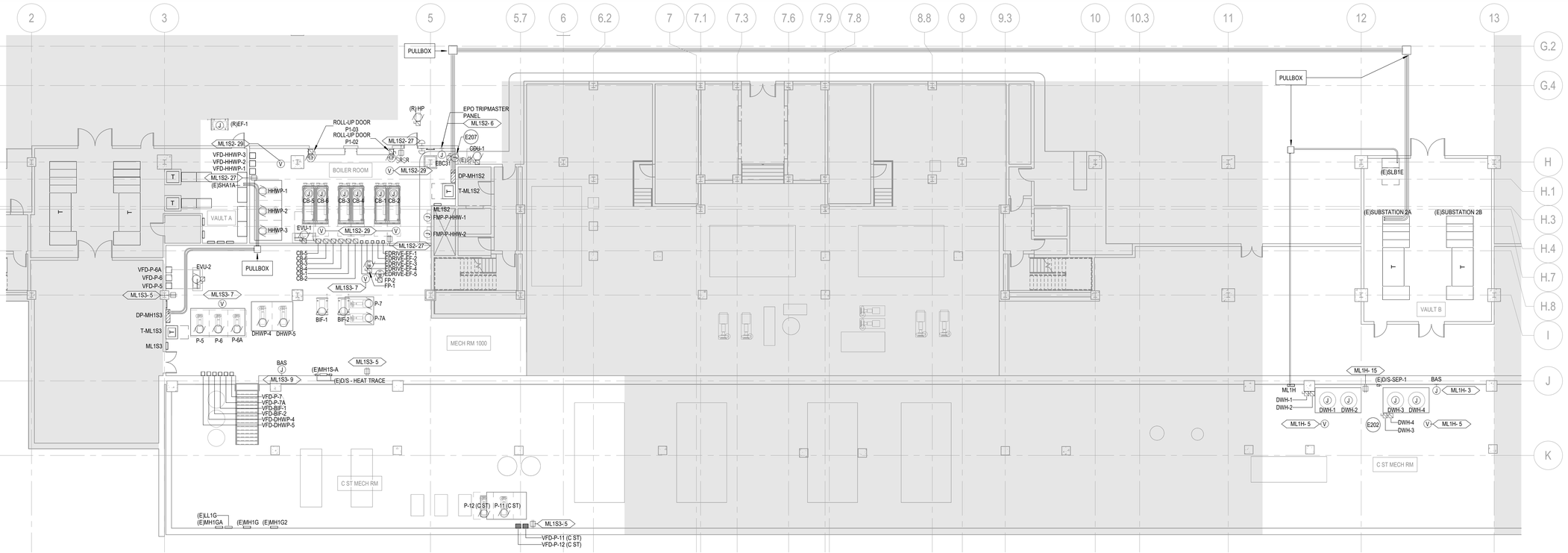
KEYPLAN



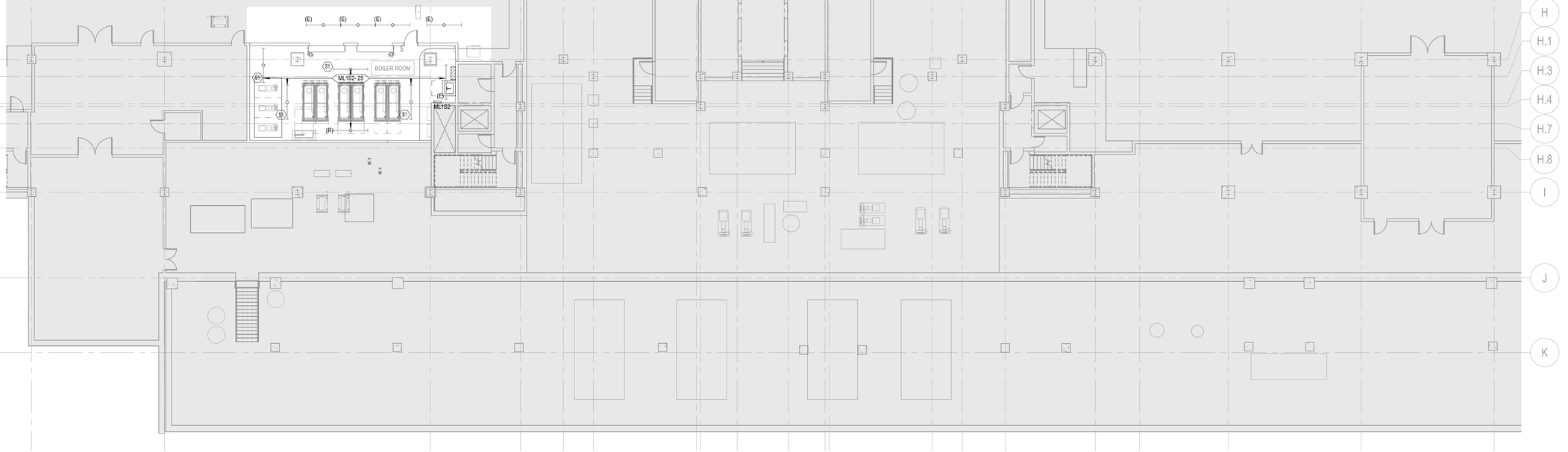
SHEET TITLE
PARKING LEVEL THROUGH FIFTH LEVEL FLOOR PLANS - ELECTRICAL DEMOLITION

15749.000
PROJECT NUMBER

ED2.1
SHEET NUMBER



1 PARKING LEVEL FLOOR PLAN - POWER NEW WORK
SCALE: 3/32" = 1'-0"



2 PARKING LEVEL FLOOR PLAN - LIGHTING NEW WORK
SCALE: 3/32" = 1'-0"

GENERAL SHEET NOTES

A. SEE ELECTRICAL DRAWING COVER SHEET FOR ABBREVIATIONS, SYMBOLS, GENERAL NOTES AND DEVICE MOUNTING HEIGHT OF WALL MOUNTED DEVICES, UON.
B. BOLD LINEWEIGHT INDICATES NEW WORK. FINE LINEWEIGHT INDICATES EXISTING TO REMAIN EQUIPMENT AND CABLING.
C. ALL MECHANICAL, ELECTRICAL, AND FIRE ALARM EQUIPMENT/DEVICES WITH AN 'E/' SUBSCRIPT ARE EXISTING TO REMAIN. MAINTAIN ALL CONDUIT, WIRING, CIRCUIT CONTINUITY. PROTECT FROM DAMAGE DURING CONSTRUCTION. FOR EXISTING TO REMAIN RECEPTACLES, DEMOLISH WIRING AND MAINTAIN CONDUIT FOR REUSE WHERE FEASIBLE.
D. OUT OF SCOPE AREA IS INDICATED BY GRAY HATCH. MAINTAIN AND PRESERVE OUT OF SCOPE EXISTING SYSTEMS AND THEIR OPERATIONS.
E. THE CONTRACTOR SHALL COORDINATE EXACT LOCATION OF EQUIPMENT POWER CONNECTIONS WITH EQUIPMENT INSTALLER PRIOR TO ROUGH-IN.
F. HANGER SUPPORT SYSTEMS AND RACEWAYS INSALLED IN THE PARKING GARAGE SHALL BE AT A MINIMUM HEIGHT THAT IS NOT LESS THAN THE ADJACENT EXISTING HANGER SUPPORT SYSTEMS AND RACEWAYS TO PRESERVE CLEARANCE BETWEEN THE GARAGE FLOOR AND THE ELECTRICAL SYSTEMS.
G. FOR ALL MECHANICAL EQUIPMENT, PROVIDE ADDITIONAL 120V CIRCUITS FOR CONTROL PANELS AS REQUIRED BY CONTROL VENDOR. CIRCUIT TO MECHANICAL PANEL WITHIN THE SPACE.
H. PAINT ALL EXPOSED ELECTRICAL WORK (I.E. CONDUIT, BOXES, HANGERS, SUPPORTS, ETC.) TO MAINTAIN ADJACENT FINISH. CONFIRM ALL ELECTRICAL DEVICES AND EQUIPMENT CAN BE PAINTED WITHOUT THE WARRANTY BEING VOIDED. REFER TO ARCHITECTURAL PLANS FOR FINISHES.
I. CONTRACTOR IS REPONSIBLE FOR ALL WIRING FROM VFDS, DISCONNECT SWITCHES, AND CONTROLLERS' ASSOCIATED MOTOR/EQUIPMENT. PROVIDE LOCAL DISCONNECTING MEANS AT MOTOR WHEN OUT OF SIGHT (NEMA 3R FOR EXTERIOR) AND LOCAL OCPD AND WIRING AS REQUIRED. COORDINATE WITH EQUIPMENT MANUFACTURER AND INSTALLATION INSTRUCTIONS.
J. CONTRACTOR TO PROVIDE ADDITIONAL JUNCTION BOXES AND CIRCUITS FOR VAVS AS REQUIRED BY FINAL EQUIPMENT PROVIDED. COORDINATE WITH MECHANICAL CONTROLS CONTRACTOR FOR LOCATIONS AND QUANTITIES OF CIRCUITS.
K. FOR EACH AIR HANDLING UNIT, PROVIDE (1)120V CONNECTION FOR LIGHTING AND RECEPTACLES. CIRCUIT TO MECHANICAL PANEL WITHIN THE SPACE.
L. CONTRACTOR SHALL COORDINATE AND FIELD VERIFY REQUIREMENT OF NEUTRAL CONDUCTOR FOR ALL EQUIPMENT AND PROVIDE NEUTRAL CONDUCTOR AS NECESSARY.
M. TRIPPING OF GFCI RECEPTACLES SHALL NOT AFFECT THE DOWNSTREAM RECEPTACLES.
N. SEE ANY COMMUNICATIONS PATHWAY PLAN AND AV DRAWINGS, FOR ADDITIONAL CONDUIT TO BE PROVIDED BY ELECTRICAL CONTRACTOR.
O. ALL CONDUIT ROUTED WITHIN SLAB SHALL COMPLY WITH GUIDELINES LISTED IN STRUCTURAL DRAWINGS.
P. WHERE MILLWORK/CASEWORK IS NOT LOCATED DIRECTLY ADJACENT TO A WALL, ALL CIRCUITING TO BE ROUTED WITHIN THE SLAB AND STUB UP DIRECTLY INTO MILLWORK/CASEWORK TO CONCEAL ALL CIRCUIT ROUTING FROM VIEW.
Q. COORDINATE FINAL LOCATION OF MECHANICAL AND PLUMBING EQUIPMENT AND ASSOCIATED DISCONNECT SWITCHES, STARTERS, VFDS, CONTROL POWER AND OTHER POWER REQUIREMENTS WITH DIV 22 AND 23.
R. PROVIDE UNISTRUT MOUNTING FRAMES AS REQUIRED FOR ANY ELECTRICAL EQUIPMENT AND DEVICES NOT LOCATED ON A FULL WALL.
S. FINAL DESIGN TO HAVE NO WATER PIPING DIRECTLY ABOVE ELECTRICAL EQUIPMENT. PIPING TO BE REROUTED.
T. COORDINATE ALL DEVICE LOCATIONS AND MOUNTING HEIGHTS WITH ARCHITECTURAL DRAWINGS PRIOR TO ROUGH-IN.
U. REFER TO ARCHITECTURAL REFLECTED CEILING PLANS FOR EXACT LOCATION OF LIGHT FIXTURES AND OTHER CEILING MOUNTED DEVICES.
V. LIMIT THE VOLTAGE DROP TO 3% FOR ALL LIGHTING BRANCH CIRCUITS AND 2% FOR ALL FEEDERS.
W. PROVIDE DEDICATED NEUTRALS FOR EACH DIMMING CIRCUIT.
X. ALL LIGHTING BRANCH CIRCUIT WIRING SHALL BE A MINIMUM SIZE OF #10 AWG. COORDINATE FINAL WIRE SIZE REQUIRED WITH SCHEDULES ON COVER SHEET.
Y. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING PROPER WIRE TYPE AND QUANTITY WITH MANUFACTURER.
Z. WHERE MORE THAN ONE SWITCH IS SHOWN AT ANY ONE LOCATION, GANG ALL SWITCHES UNDER ONE PLATE. PROVIDE BARRIERS BETWEEN SWITCHES CONNECTED TO DIFFERENT CIRCUITS. WHERE MORE THAN ONE DIMMER IS SHOWN AT ANY ONE LOCATION, MOUNT IN A MANNER TO GIVE THE APPEARANCE OF GANG MOUNTED UNDER ONE PLATE. FOLLOW MANUFACTURERS INSTRUCTIONS FOR DISTANCES AND DERATING.
AA. COORDINATE ALL WALL MOUNTED WIRING DEVICE LOCATIONS WITH ARCHITECTURAL ELEVATIONS AND LIGHTING FIXTURE LOCATIONS WITH ARCHITECTURAL REFLECTED CEILING PLAN ON SHEET. REFER TO ARCH. REFLECTED CEILING PLANS FOR EXACT LOCATION OF LIGHT FIXTURES AND OTHER CEILING MOUNTED DEVICES.
BB. COORDINATE FIXTURES WITH ARCHITECTURAL CEILING AND WALL TYPES.
CC. FOR ALL AREAS WITHIN THE SCOPE OF WORK WHERE LIGHTING IS NOT SHOWN, PROVIDE TEMPORARY LIGHT FIXTURES TO MAINTAIN 1 FC OF EMERGENCY LIGHTING ALONG THE PATH OF EGRESS. FINAL NORMAL AND EMERGENCY EGRESS LIGHTING DESIGN TO BE PROVIDED WITH FUTURE CORRESPONDING INTERIOR DESIGN PACKAGE SUBMISSIONS.
DD. WHERE GENERAL PURPOSE RECEPTACLES ARE SHOWN WITHIN 2' OF A LIGHTING CONTROL DEVICE, ALIGN DEVICES VERTICALLY IN ELEVATION. COORDINATE LOCATIONS OF MECHANICAL THERMOSTATS AND ALIGN WITH LIGHTING CONTROL.
EE. FOR ALL LIGHTING CONTROL DEVICE SYMBOLS SHOWN ON PLANS, SEE ELECTRICAL COVER SHEET FOR LIGHTING CONTROL DESCRIPTION AND TYPE/FUNCTIONALITY OF DEVICE(S) TO BE PROVIDED WITHIN ROOM. FOR ALL LOW VOLTAGE WALL SWITCH DIMMERS, PROVIDE SEPARATE BUTTONS FOR EACH DIMMING ZONE TO ALLOW FULL RANGE DIMMING OF EACH ZONE.
FF. FIELD COORDINATE LIGHT FIXTURE LOCATIONS IN ELECTRICAL, MECHANICAL AND TELECOM ROOMS WITH EQUIPMENT, DUCTS, PIPING, TELECOM, SECURITY, AND ALL UTILITIES IN SPACE. LIGHTING FIXTURES SHALL BE BELOW ALL OTHER DISCIPLINES IN SPACES WITH NO FINISHED CEILING SO LIGHT DISTRIBUTION IS NOT OBSTRUCTED.

SHEET KEYNOTES

E202 PROVIDE UNISTRUT SUPPORT SYSTEM COMPLYING WITH SECTION 260529 "HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS" FOR ELECTRICAL EQUIPMENT.
E207 PROVIDE THE FOLLOWING WIRING IN MINIMUM 3/4" CONDUIT (CONDUIT TYPE PER SPECIFICATIONS): MAX 10VDC SHIELDED CABLE FOR XTP CONTROL CIRCUIT BETWEEN EBC31 AND XTP; APPLIANCE CONTROL INTERLOCK WIRING BETWEEN EBC31 AND BOILERS; EDRIVE CONTROL CIRCUIT SHIELDED CABLE BETWEEN EBC31 AND EDRIVES; 480V WIRING BETWEEN CB-1 THROUGH CB-6 DISCONNECT SWITCHES AND EDRIVES; 480V WIRING BETWEEN EDRIVES AND ROOFTOP-MOUNTED DISCONNECT SWITCHES FOR EXHAUST FANS; 480V WIRING BETWEEN ROOFTOP-MOUNTED DISCONNECT SWITCHES AND EXHAUST FAN MOTORS. SEE MANUFACTURER WIRING DIAGRAM AND REQUIREMENTS FOR MORE INFORMATION.

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SEALS AND SIGNATURES

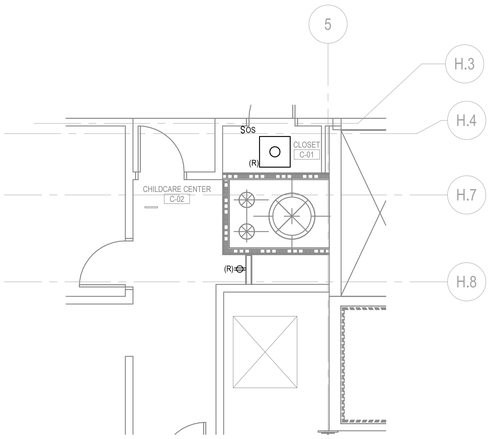
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KEYPLAN NORTH

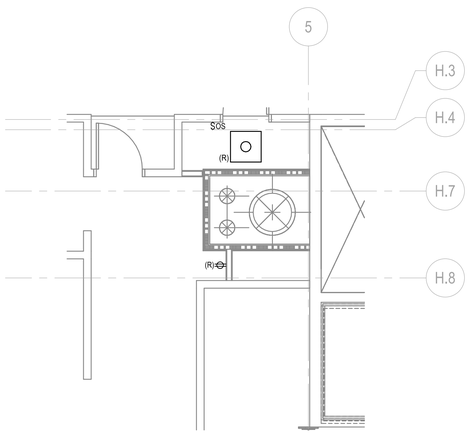
SHEET TITLE
PARKING LEVEL FLOOR PLAN - ELECTRICAL NEW WORK

15749.000
PROJECT NUMBER

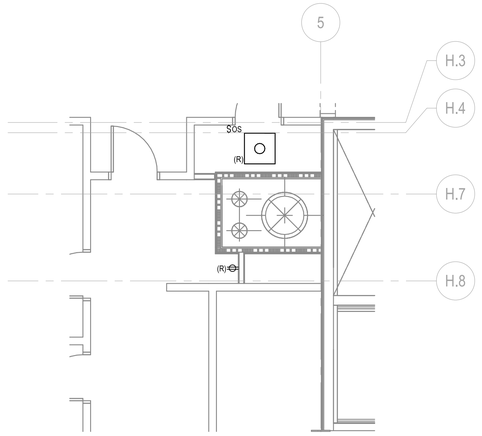
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SHEET NUMBER



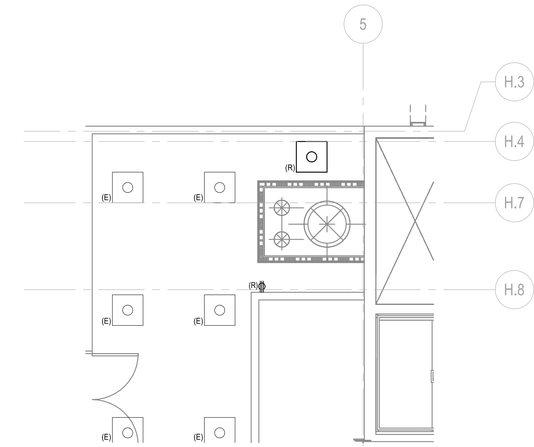
1 C STREET LEVEL ELECTRICAL POWER AND LIGHTING PLAN
SCALE: 1/4" = 1'-0"



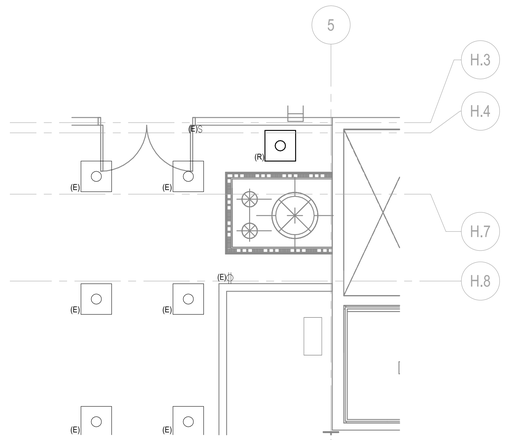
2 JOHN MARSHALL LEVEL ELECTRICAL POWER AND LIGHTING PLAN
SCALE: 1/4" = 1'-0"



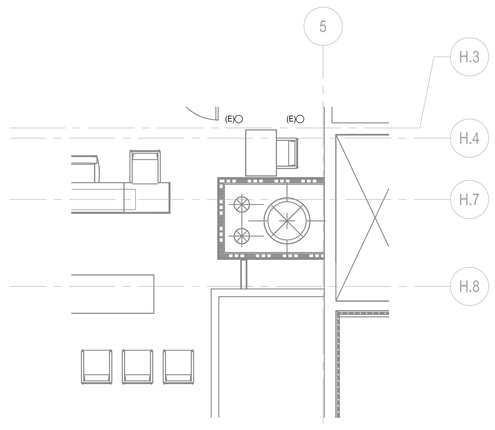
3 INDIANA AVENUE LEVEL ELECTRICAL POWER AND LIGHTING PLAN
SCALE: 1/4" = 1'-0"



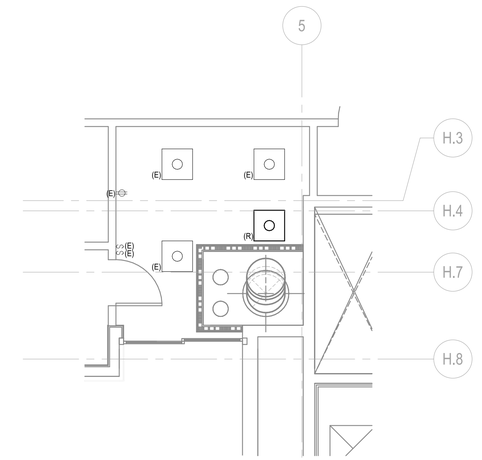
4 SECOND LEVEL ELECTRICAL POWER AND LIGHTING PLAN
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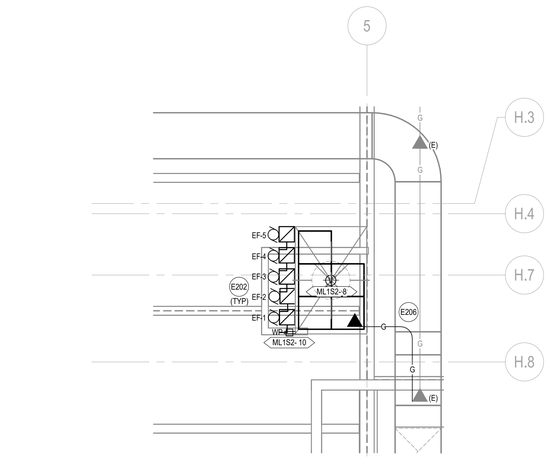
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SCALE: 1/4" = 1'-0"



6 FOURTH LEVEL ELECTRICAL POWER AND LIGHTING PLAN
SCALE: 1/4" = 1'-0"



7 FIFTH LEVEL ELECTRICAL POWER AND LIGHTING PLAN
SCALE: 1/4" = 1'-0"



8 SIXTH LEVEL ELECTRICAL POWER AND LIGHTING PLAN
SCALE: 1/4" = 1'-0"

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V. LIMIT THE VOLTAGE DROP TO 3% FOR ALL LIGHTING BRANCH CIRCUITS AND 2% FOR ALL FEEDERS.
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X. ALL LIGHTING BRANCH CIRCUIT WIRING SHALL BE A MINIMUM SIZE OF #10 AWG. COORDINATE FINAL WIRE SIZE REQUIRED WITH SCHEDULES ON COVER SHEET.
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AA. COORDINATE ALL WALL MOUNTED WIRING DEVICE LOCATIONS WITH ARCHITECTURAL ELEVATIONS AND LIGHTING FIXTURE LOCATIONS WITH ARCHITECTURAL REFLECTED CEILING PLAN ON SHEET. REFER TO ARCH. REFLECTED CEILING PLANS FOR EXACT LOCATION OF LIGHT FIXTURES AND OTHER CEILING MOUNTED DEVICES.
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CC. FOR ALL AREAS WITHIN THE SCOPE OF WORK WHERE LIGHTING IS NOT SHOWN, PROVIDE TEMPORARY LIGHT FIXTURES TO MAINTAIN 1 FC OF EMERGENCY LIGHTING ALONG THE PATH OF EGRESS. FINAL NORMAL AND EMERGENCY EGRESS LIGHTING DESIGN TO BE PROVIDED WITH FUTURE CORRESPONDING INTERIOR DESIGN PACKAGE SUBMISSIONS.
DD. WHERE GENERAL PURPOSE RECEPTACLES ARE SHOWN WITHIN 2' OF A LIGHTING CONTROL DEVICE, ALIGN DEVICES VERTICALLY IN ELEVATION. COORDINATE LOCATIONS OF MECHANICAL THERMOSTATS AND ALIGN WITH LIGHTING CONTROL.
EE. FOR ALL LIGHTING CONTROL DEVICE SYMBOLS SHOWN ON PLANS, SEE ELECTRICAL COVER SHEET FOR LIGHTING CONTROL DESCRIPTION AND TYPE/FUNCTIONALITY OF DEVICE(S) TO BE PROVIDED WITHIN ROOM. FOR ALL LOW VOLTAGE WALL SWITCH DIMMERS, PROVIDE SEPARATE BUTTONS FOR EACH DIMMING ZONE TO ALLOW FULL RANGE DIMMING OF EACH ZONE.
FF. FIELD COORDINATE LIGHT FIXTURE LOCATIONS IN ELECTRICAL, MECHANICAL AND TELECOM ROOMS WITH EQUIPMENT, DUCTS, PIPING, TELECOM, SECURITY, AND ALL UTILITIES IN SPACE. LIGHTING FIXTURES SHALL BE BELOW ALL OTHER DISCIPLINES IN SPACES WITH NO FINISHED CEILING SO LIGHT DISTRIBUTION IS NOT OBSTRUCTED.

○ SHEET KEYNOTES

E202 PROVIDE UNISTRUT SUPPORT SYSTEM COMPLYING WITH SECTION 260529 "HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS" FOR ELECTRICAL EQUIPMENT.
E206 EXISTING DUCTWORK MAY NEED TO BE TEMPORARILY DISCONNECTED AS REQUIRED FOR THE INSTALLATION OF THE BOILER FLUE AND ASSOCIATED EXHAUST FANS. IF THIS OCCURS, LOWER EXISTING LIGHTNING PROTECTION SYSTEM AND TEMPORARILY ATTACH TO THE EXISTING ROOF AWAY FROM CONSTRUCTION SO EXISTING LIGHTNING PROTECTION SYSTEM IS NOT ALTERED DURING BOILER FLUE INSTALLATION. ONCE DUCTWORK IS REINSTALLED, REATTACH EXISTING LIGHTNING PROTECTION SYSTEM TO THE TOP OF THE DUCTWORK WITH ALL ACCESSORIES AND ATTACHMENTS IN THE SAME LOCATION AS THE EXISTING CONDITIONS.

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SEALS AND SIGNATURES

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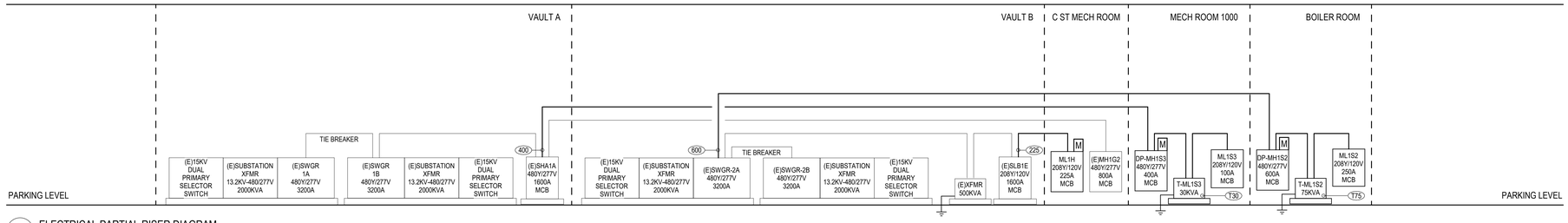
06 JUNE 2025

KEYPLAN NORTH

SHEET TITLE
C ST LEVEL THROUGH SIXTH LEVEL FLOOR PLANS - ELECTRICAL NEW WORK

PROJECT NUMBER 15749.000

SHEET NUMBER **E2.2**



1 ELECTRICAL PARTIAL RISER DIAGRAM

SCALE: NOT TO SCALE

MECHANICAL EQUIPMENT SCHEDULE

TAG	PANEL	CIRCUIT NUMBER	MOTOR HP1	MOTOR HP2	VOLTAGE	PHASE	TOTAL POWER LOAD	VFD	VFD DRIVE TYPE	DISC. SWITCH AMPS	DISC. SWITCH POLES	DISC. SWITCH FUSED	PHASE & NEUTRAL SETS	PHASE & NEUTRAL NO. OF WIRES	PHASE & NEUTRAL AWG	GROUND NO. OF WIRES	GROUND AWG	CONDUIT SETS	CONDUIT SIZE	COMMENTS
BIF-1	DP-MH1S2	12	7 1/2		480 V	3	8767 VA	Yes	6-PULSE WITH 5% IMPEDANCE IP54 / UL TYPE 12				1	3	#12	1	#12	1	3/4"	
BIF-2	DP-MH1S2	13	7 1/2		480 V	3	8767 VA	Yes	6-PULSE WITH 5% IMPEDANCE IP54 / UL TYPE 12				1	3	#12	1	#12	1	3/4"	N+1 REDUNDANCY
CB-1	DP-MH1S3	5			480 V	3	17534 VA	No		60 A	3	50 A	1	3	#10	1	#10	1	3/4"	
CB-2	DP-MH1S3	6			480 V	3	17534 VA	No		60 A	3	50 A	1	3	#10	1	#10	1	3/4"	
CB-3	DP-MH1S3	7			480 V	3	17534 VA	No		60 A	3	50 A	1	3	#10	1	#10	1	3/4"	
CB-4	DP-MH1S2	7			480 V	3	17534 VA	No		60 A	3	50 A	1	3	#10	1	#10	1	3/4"	
CB-5	DP-MH1S2	8			480 V	3	17534 VA	No		60 A	3	50 A	1	3	#10	1	#10	1	3/4"	
CB-6	DP-MH1S2	9			480 V	3	17534 VA	No		60 A	3	50 A	1	3	#10	1	#10	1	3/4"	
CDU-1	MLI1S2	1,3,5			208 V	3	8820 VA	No		60 A	3	35 A	1	3	#8	1	#10	1	3/4"	
DHWP-4	DP-MH1S2	5	40		480 V	3	41444 VA	Yes	6-PULSE WITH 5% IMPEDANCE IP54 / UL TYPE 12				1	3	#4	1	#6	1	1"	
DHWP-5	DP-MH1S2	6	40		480 V	3	41444 VA	Yes	6-PULSE WITH 5% IMPEDANCE IP54 / UL TYPE 12				1	3	#4	1	#6	1	1"	
DWH-1	MLI1H	7			120 V	1	1800 VA	No		30 A	2	20 A	1	2	#12	1	#12	1	3/4"	
DWH-2	MLI1H	9			120 V	1	1800 VA	No		30 A	2	20 A	1	2	#12	1	#12	1	3/4"	
DWH-3	MLI1H	11			120 V	1	1800 VA	No		30 A	2	20 A	1	2	#12	1	#12	1	3/4"	
DWH-4	MLI1H	13			120 V	1	1800 VA	No		30 A	2	20 A	1	2	#12	1	#12	1	3/4"	
EBC31	MLI1S2	23			120 V	1	500 VA	No		30 A	2	6 A	1	2	#12	1	#12	1	3/4"	
EF-1	DP-MH1S3	5	2		480 V	3	2710 VA	No		30 A	3	6 A	1	3	#10	1	#10	1	3/4"	PROVIDE EDRIVE, MODEL MSC VFD'S.
EF-2	DP-MH1S3	6	2		480 V	3	2710 VA	No		30 A	3	6 A	1	3	#10	1	#10	1	3/4"	PROVIDE EDRIVE, MODEL MSC VFD'S.
EF-3	DP-MH1S3	7	2		480 V	3	2710 VA	No		30 A	3	6 A	1	3	#10	1	#10	1	3/4"	PROVIDE EDRIVE, MODEL MSC VFD'S.
EF-4	DP-MH1S2	7	2		480 V	3	2710 VA	No		30 A	3	6 A	1	3	#10	1	#10	1	3/4"	PROVIDE EDRIVE, MODEL MSC VFD'S.
EF-5	DP-MH1S2	8	2		480 V	3	2710 VA	No		30 A	3	6 A	1	3	#10	1	#10	1	3/4"	PROVIDE EDRIVE, MODEL MSC VFD'S. N+1 REDUNDANCY
EVU-1	MLI1S2	15,17			208 V	1	562 VA	No		30 A	2	15 A	1	2	#12	1	#12	1	3/4"	
EVU-2	MLI1S3	1,3			208 V	1	562 VA	No		30 A	2	15 A	1	2	#12	1	#12	1	3/4"	
FMP-P-HHW-1	MLI1S2	2			120 V	1	500 VA	No					1	2	#12	1	#12	1	3/4"	
FMP-P-HHW-2	MLI1S2	4			120 V	1	500 VA	No					1	2	#12	1	#12	1	3/4"	
FP-1	MLI1S2	19	1		120 V	1	1840 VA	No		30 A	2	30 A	1	2	#12	1	#12	1	3/4"	
FP-2	MLI1S2	21	1		120 V	1	1840 VA	No		30 A	2	30 A	1	2	#12	1	#12	1	3/4"	
HHWP-1	DP-MH1S3	1	50		480 V	3	51805 VA	Yes	6-PULSE WITH 5% IMPEDANCE IP54 / UL TYPE 12				1	3	#3	1	#6	1	1 1/4"	
HHWP-2	DP-MH1S3	2	50		480 V	3	51805 VA	Yes	6-PULSE WITH 5% IMPEDANCE IP54 / UL TYPE 12				1	3	#3	1	#6	1	1 1/4"	
HHWP-3	DP-MH1S3	3	50		480 V	3	51805 VA	Yes	6-PULSE WITH 5% IMPEDANCE IP54 / UL TYPE 12				1	3	#3	1	#6	1	1 1/4"	N+1 REDUNDANCY
P-5	DP-MH1S2	1	75		480 V	3	76512 VA	Yes	6-PULSE WITH 5% IMPEDANCE IP54 / UL TYPE 12				1	3	#1/0	1	#4	1	1 1/2"	
P-6	DP-MH1S2	2	75		480 V	3	76512 VA	Yes	6-PULSE WITH 5% IMPEDANCE IP54 / UL TYPE 12				1	3	#1/0	1	#4	1	1 1/2"	
P-6A	DP-MH1S2	3	75		480 V	3	76512 VA	Yes	6-PULSE WITH 5% IMPEDANCE IP54 / UL TYPE 12				1	3	#1/0	1	#4	1	1 1/2"	N+1 REDUNDANCY
P-7	DP-MH1S2	10	10		480 V	3	11158 VA	Yes	6-PULSE WITH 5% IMPEDANCE IP54 / UL TYPE 12				1	3	#12	1	#12	1	3/4"	
P-7A	DP-MH1S2	11	10		480 V	3	11158 VA	Yes	6-PULSE WITH 5% IMPEDANCE IP54 / UL TYPE 12				1	3	#12	1	#12	1	3/4"	N+1 REDUNDANCY
P-11 (C ST)	(E)MH1G2	1,3,5	50		480 V	3	51805 VA	Yes	6-PULSE WITH 5% IMPEDANCE IP54 / UL TYPE 12				1	3	#3	1	#6	1	1 1/4"	
P-12 (C ST)	(E)MH1G2	2,4,6	50		480 V	3	51805 VA	Yes	6-PULSE WITH 5% IMPEDANCE IP54 / UL TYPE 12				1	3	#3	1	#6	1	1 1/4"	N+1 REDUNDANCY
ROLL-UP DOOR P1-02	MLI1S2	7,9	1		208 V	1	1830 VA	No		30 A	2	20 A	1	2	#12	1	#12	1	3/4"	
ROLL-UP DOOR P1-03	MLI1S2	11,13	1		208 V	1	1830 VA	No		30 A	2	20 A	1	2	#12	1	#12	1	3/4"	

LIGHTING FIXTURE SCHEDULE

TYPE	DESCRIPTION	MANUFACTURER	MODEL	LAMP	DIMMING	VOLTAGE	MOUNTING	COMMENTS
S1	8'L X 7"W X 5"H LED ENCLOSED AND GASKETED INDUSTRIAL STRIP FIXTURE WITH DUAL PENDANT MOUNT BRACKETS FOR SUSPENSION MOUNT WITH 3/8" THREADED ROD, NEMA TYPE 4X RATING, IP65 RATING, AND WET LOCATION FITTINGS.	LITHONIA	FEM-L96-9000LM-IMAFL-MD-M VOLT-GZ10-35K-80CRI	53W, 9000LM, 80CRI, 3500K CCT LED	0-10V	120 V	PENDANT	FIXTURE MUST BE MOUNTED BELOW ALL OTHER TRADES.

GENERAL SHEET NOTES

A. SEE ELECTRICAL COVER SHEET FOR ABBREVIATIONS, SYMBOLS, GENERAL NOTES.
B. BOLD LINEWEIGHT INDICATES NEW WORK. FINE LINEWEIGHT INDICATES EXISTING TO REMAIN EQUIPMENT AND CABLING.
C. SYSTEMS WITH AN '(E)' SUBSCRIPT ARE EXISTING TO REMAIN. MAINTAIN ALL CONDUIT, WIRING, CIRCUIT CONTINUITY. PROTECT FROM DAMAGE DURING CONSTRUCTION. FOR (E) RECEPTACLES, DEMOLISH WIRING AND MAINTAIN CONDUIT FOR REUSE WHERE FEASIBLE.
D. DISRUPTION TO GENERATOR BACKUP AND BUILDING POWER SHALL BE LIMITED TO NON-BUSINESS HOURS.
E. WHERE EXISTING BUILDING SERVICES AND/OR EQUIPMENT THAT IS TO REMAIN IN USE ARE REQUIRED TO BE SHUT DOWN, COORDINATE WITH THE OWNER 14 DAYS PRIOR TO SHUT DOWN. INCLUDE ALL ASSOCIATED OVERTIME COSTS TO PERFORM THIS WORK DURING WEEKENDS AND EVENINGS. INCLUDE ALL COSTS FOR PROVIDING TEMPORARY POWER WHERE SHUT DOWN MUST OCCUR FOR PERIODS LONGER THAN THESE HOURS.
F. MAINTAIN WARRANTIES AND UL LISTINGS OF EXISTING EQUIPMENT UPGRADED AS PART OF THIS WORK.
G. THE CONTRACTOR SHALL COORDINATE EXACT LOCATION OF EQUIPMENT POWER CONNECTIONS WITH EQUIPMENT INSTALLER PRIOR TO ROUGH-IN.
H. COORDINATE ALL FINAL LOCATIONS, LOADS, AND CONNECTION REQUIREMENTS WITH MECHANICAL DRAWINGS AND FINAL EQUIPMENT SELECTION.
I. CONTRACTOR TO VERIFY THAT LUGS ON ALL MECHANICAL AND ELECTRICAL EQUIPMENT CAN ACCEPT THE WIRE SIZES INDICATED ON SCHEDULE AND PLANS.
J. CONTRACTOR TO VERIFY WIRE SIZES WITH FINAL EQUIPMENT LOCATIONS TO ACCOUNT FOR VOLTAGE DROP ON ALL MECHANICAL EQUIPMENT.
K. FOR ALL MECHANICAL EQUIPMENT, PROVIDE ADDITIONAL 120V CONNECTIONS AS REQUIRED BY MANUFACTURER.
L. COORDINATE ALL MECHANICAL DISCONNECT, VFD, STARTER AND CONTROLLER REQUIREMENTS WITH MANUFACTURER.
M. INTEGRAL DISTRIBUTION BOARD AND PANELBOARD METERS SHOWN IN PARTIAL RISER DIAGRAM ARE TO BE NAMED AND GIVEN ADDRESSES FOR FUTURE TIE-IN TO EXISTING ASCO POWER MONITORING AND CONTROL SYSTEM AND EXISTING BUILDING AUTOMATION SYSTEM.

SHEET KEYNOTES

FEEDER SCHEDULE

225	4#4/0 + 1#4 G, 2 1/2" C
400	2 SETS OF 4#3/0 + 1#3 G, (2) 2" C
600	2 SETS OF 4#350KCMIL + 1#1 G, (2) 3" C
T30	30KVA TRANSFORMER, 480-208Y/120V, 3PH PRIMARY FEEDER: 3#6 + 1#10 G, 3/4" C SECONDARY FEEDER: 4#1 + 1#6 G, 1 1/2" C BONDING JUMPERS & GROUNDING ELECTRODE CONDUCTOR: #6
T75	75KVA TRANSFORMER, 480-208Y/120V, 3PH PRIMARY FEEDER: 3#1 + 1#6 G, 1 1/2" C SECONDARY FEEDER: 4#350KCMIL + 1#2 G, 3" C BONDING JUMPERS & GROUNDING ELECTRODE CONDUCTOR: #2

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SEALS AND SIGNATURES

DISTRICT OF COLUMBIA
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No. PE 40001940
ELECTRICAL
PROFESSIONAL ENGINEER

06 JUNE 2025

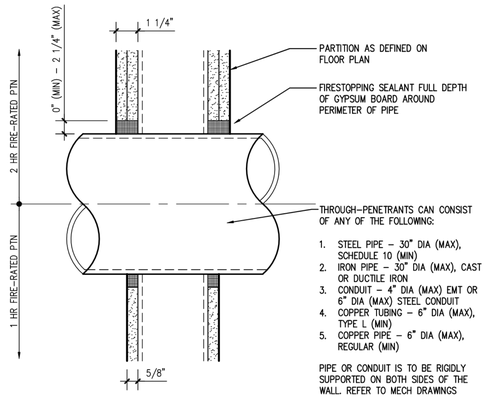
SHEET TITLE

ELECTRICAL PARTIAL RISER DIAGRAM, MECHANICAL EQUIPMENT SCHEDULE, AND LIGHTING FIXTURE SCHEDULE

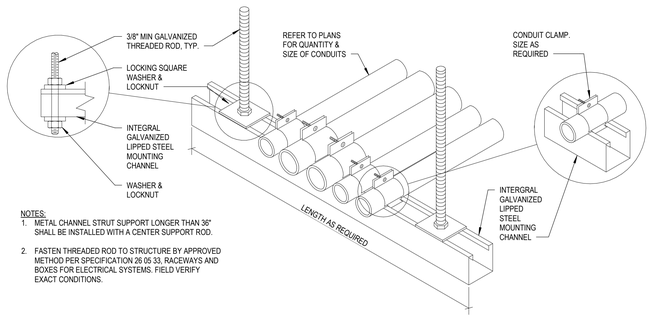
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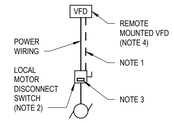


1 METAL PIPES OR CONDUIT PENETRATION DETAIL
SCALE: NOT TO SCALE



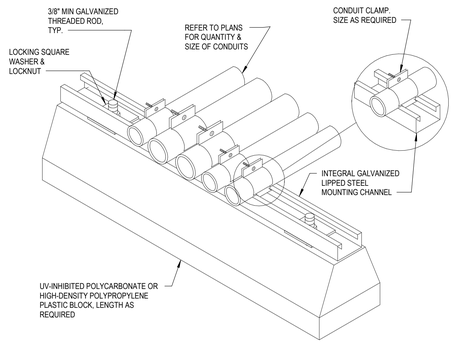
NOTES:
1. METAL CHANNEL STRUT SUPPORT LONGER THAN 36" SHALL BE INSTALLED WITH A CENTER SUPPORT ROD.
2. FASTEN THREADED ROD TO STRUCTURE BY APPROVED METHOD PER SPECIFICATION 26 05 33, RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS. FIELD VERIFY EXACT CONDITIONS.

2 CONDUIT TRAPEZE MOUNTING DETAIL
SCALE: NOT TO SCALE

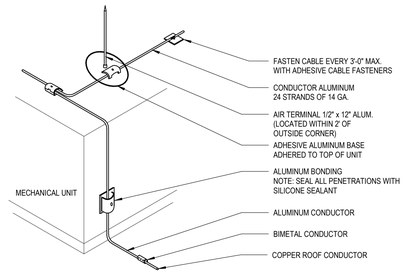


NOTES :
1. PROVIDE INTERCONNECTING WIRING AND VFD PROGRAMMING AS REQUIRED TO INTERLOCK VFD AND DISCONNECT SWITCH SUCH THAT VFD CANNOT ENERGIZE LOAD CONDUCTORS WHEN LOCAL MOTOR DISCONNECT SWITCH IS IN THE OPEN POSITION.
2. PROVIDE DISCONNECT SWITCH WITH NO/NC AUXILLIARY CONTACTS WHICH CHANGE STATE WHEN SWITCH IS OPENED/CLOSED.
3. PROVIDE LABEL WHICH READS THE FOLLOWING: "MOTOR MUST BE PROPERLY SHUT DOWN FROM THE VARIABLE FREQUENCY DRIVE BEFORE OPENING THIS DISCONNECT. DO NOT OPEN THIS DISCONNECT WHILE THE MOTOR IS RUNNING."
4. WHERE VFD IS LOCATED MORE THAN 100' FROM MOTOR, PROVIDE 5% REACTOR ON THE LOAD SIDE OF THE VFD.

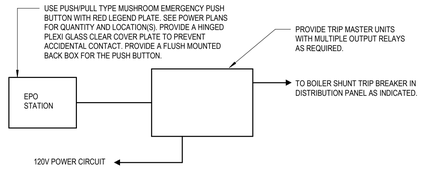
3 REMOTE VFD REQUIREMENTS
SCALE: NOT TO SCALE



4 ROOF CONDUIT SUPPORT DETAIL
SCALE: N.T.S.



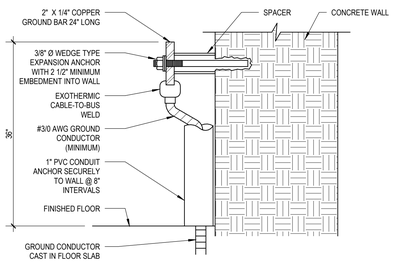
5 AIR TERMINAL ROOF TOP UNIT DETAIL
SCALE: NONE



SEQUENCE OF OPERATION:

THE WIRING DIAGRAM SHOWN IS DIAGRAMMATIC IN NATURE AND IS MEANT TO SHOW INTENT ONLY. EXACT WIRING DIAGRAM SHALL BE PROVIDED AS A SHOP DRAWING FOR APPROVAL. THE MOMENT THE EPO STATION IS ACTIVATED BY PRESSING THE MUSHROOM TYPE PUSH BUTTON, POWER TO THE RELAY PANEL WILL BE SHUTDOWN IMMEDIATELY. THE SHUNT TRIP BREAKERS AND BOILERS HAVE TO BE MANUALLY RESET TO GET POWER BACK ON.

6 EPO OPERATION DIAGRAM
SCALE: NONE



NOTES:
1. NEW GROUND BAR(S) SHOWN IN PLAN ARE TO TIE NEW EQUIPMENT INTO THE EXISTING GROUNDING SYSTEM.
2. COPPER GROUND BAR SHALL BE ANCHORED TO THE WALL WITHIN 6" OF EACH END.

7 ELECTRICAL ROOM GROUND BAR MOUNTING DETAIL
SCALE: N.T.S.

GENERAL SHEET NOTES

A. COORDINATE WITH ELECTRICAL AND MECHANICAL DRAWINGS TO DETERMINE THE NUMBER OF ALL CONTROLS, MODULES, AND DEVICES. DO NOT PROVIDE QUANTITIES BASED SOLELY ON DIAGRAMS.
B. PROVIDE ADDITIONAL 120V OR 277V CONTROL CIRCUITS AS REQUIRED PER MANUFACTURER.
C. PROVIDE COMPLETE SHOP DRAWINGS FOR REVIEW AND APPROVAL OF ALL SYSTEMS.

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SEALS AND SIGNATURES

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KENZ MELIANI
No. PE 40001940
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06 JUNE 2025

SHEET TITLE
ELECTRICAL DETAILS

15749.000
PROJECT NUMBER

E6.1
SHEET NUMBER

Author
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Plot Date:

Substation: (E)SUBSTATION 2A

Location: VAULT B
Supply From: (E)UTILITY TRANSFORMER
Mounting: EXISTING
Enclosure: EXISTING
Volts: 480Y/277
Phases: 3
Wires: 4
A.I.C. Rating: 100,000 A
Mains Type: MCB
Mains Rating: 3200 A
MCB Rating: 3200 A

CKT	Circuit Description	# of Poles	Frame Size	Trip Rating	Load	Remarks
1	(E)SPARE	3	1600 A	800 A	0 VA	
2	(E)500KVA TRANSFORMER FOR SWBD SLB1E "RISER E"	3	1600 A	800 A	70365 VA	
3	(E)SWBD SHB1E	3	1600 A	1600 A	131298 VA	
4	(E)CHILLER #1	3	1600 A	1400 A	230187 VA	
5	(E)SPARE	3	1600 A	800 A	0 VA	
6	**PARKING LEVEL BOILER ROOM - DISTRIBUTION BOARD DP-MH1S2 (*)**	**3**	**1600 A**	**600 A**	**430256 VA**	
7	(E)GENERATOR STANDBY BACKUP SUPPLY	3	2000 A	2000 A	0 VA	
8	(E)TIE BREAKER	3	3200 A	3200 A	0 VA	
				Total Conn. Load:	862106 VA	
				Total Amps:	1037 A	

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Existing Load	4318S0 VA	125.00%	539813 VA		
Lighting	318 VA	125.00%	398 VA	**Total Conn. Load:**	862106 VA
Power	700 VA	100.00%	700 VA	**Total Est. Demand:**	872635 VA
Receptacle	720 VA	100.00%	720 VA	**Total Conn.:**	1037 A
Mechanical Equipment	153712 VA	100.00%	153712 VA	**Total Est. Demand:**	1050 A
Mechanical Equipment (80%, N+1)	5420 VA	80.00%	4336 VA		

Notes:
METERING DATA FROM JUNE 2023 INDICATED AN AVERAGE TOTAL AMPERAGE ON EXISTING SUBSTATION 2A OF 494A, WITH INDIVIDUAL BREAKERS METERED AS WELL. THE EXISTING LOADS (VA) CORRESPOND TO THE METERING DATA COLLECTED ON JUNE 2023 FOR EACH INDIVIDUAL EXISTING BREAKER.

(*)UTILIZE EXISTING SPARE BREAKER, ADJUSTING THE LONG-TIME PICKUP SETTING FROM 800A TO 600A.

DistributionPanel: DP-MH1S2

Location: BOILER ROOM
Supply From: (E)SUBSTATION 2A
Mounting: WALL-MOUNTED
Enclosure: TYPE 12
Volts: 480Y/277
Phases: 3
Wires: 4
A.I.C. Rating: 65,000 A
Mains Type: MCB
Mains Rating: 600 A
MCB Rating: 600 A

CKT	Circuit Description	# of Poles	Frame Size	Trip Rating	Load	Remarks
1	PARKING LEVEL MECHANICAL ROOM 1000 - P-5	3	250 A	225 A	76512 VA	NOTE 1.
2	PARKING LEVEL MECHANICAL ROOM 1000 - P-6	3	250 A	225 A	76512 VA	NOTE 1.
3	PARKING LEVEL MECHANICAL ROOM 1000 - P-6A	3	250 A	225 A	76512 VA	NOTE 1.
4	PARKING LEVEL BOILER ROOM - TRANSFORMER T-ML1S2	3	150 A	125 A	19960 VA	
5	PARKING LEVEL MECHANICAL ROOM 1000 - DHWP-4	3	150 A	125 A	41444 VA	
6	PARKING LEVEL MECHANICAL ROOM 1000 - DHWP-5	3	150 A	125 A	41444 VA	
7	PARKING LEVEL BOILER ROOM - CB-4	3	60 A	50 A	20244 VA	PROVIDE INTEGRAL SHUNT TRIP.
8	PARKING LEVEL BOILER ROOM - CB-5	3	60 A	50 A	20244 VA	PROVIDE INTEGRAL SHUNT TRIP.
9	PARKING LEVEL BOILER ROOM - CB-6	3	60 A	50 A	17534 VA	PROVIDE INTEGRAL SHUNT TRIP.
10	PARKING LEVEL MECHANICAL ROOM 1000 - P-7	3	60 A	35 A	11158 VA	NOTE 1.
11	PARKING LEVEL MECHANICAL ROOM 1000 - P-7A	3	60 A	35 A	11158 VA	NOTE 1.
12	PARKING LEVEL MECHANICAL ROOM 1000 - BIF-1	3	60 A	20 A	8767 VA	NOTE 2.
13	PARKING LEVEL MECHANICAL ROOM 1000 - BIF-2	3	60 A	20 A	8767 VA	NOTE 2.
14	INTEGRAL PANELBOARD METER DISCONNECT	3	15 A	15 A	0 VA	
15	SPARE	3	250 A	250 A	0 VA	
16	SPARE	3	150 A	150 A	0 VA	
17	SPARE	3	60 A	60 A	0 VA	
				Total Conn. Load:	430256 VA	
				Total Amps:	518 A	

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Lighting	318 VA	125.00%	398 VA		
Power	700 VA	100.00%	700 VA	**Total Conn. Load:**	430256 VA
Receptacle	720 VA	100.00%	720 VA	**Total Est. Demand:**	332822 VA
Mechanical Equipment	153712 VA	100.00%	153712 VA	**Total Conn.:**	518 A
Mechanical Equipment (50%, N+1)	39850 VA	50.00%	19925 VA	**Total Est. Demand:**	400 A
Mechanical Equipment (67%, N+1)	229536 VA	66.67%	153032 VA		
Mechanical Equipment (80%, N+1)	5420 VA	80.00%	4336 VA		

Notes:
(1) PUMPS RUN AND MANAGED IN N+1 CONFIGURATION. TOTAL CAPACITY IS N+1 REDUNDANT.
(2) FANS RUN AND MANAGED IN N+1 CONFIGURATION. TOTAL CAPACITY IS N+1 REDUNDANT.

Branch Panel: ML1S2

Location: BOILER ROOM
Supply From: T-ML1S2
Mounting: Surface
Enclosure: Type 12
Volts: 208Y/120
Phases: 3
Wires: 4
A.I.C. Rating: 25,000 A
Mains Type: MCB
Mains Rating: 250 A

CKT	Circuit Description	Trip	Poles	A (VA)		B (VA)		C (VA)		Poles	Trip	Circuit Description	CKT
1	PARKING LEVEL - CDU-1	35 A	3	2940	500					1	20 A	P LVL BOILER RM - CTRL PNL FMP-P-NEW 1	2
3						2940	500			1	20 A	P LVL BOILER RM - CTRL PNL FMP-P-NEW 2	4
5								2940	100	1	20 A	P LVL BOILER RM - EPO TRIPMASTER PANEL	6
7	PARKING LEVEL BOILER ROOM - ROLL-UP DOOR	20 A	2	915	100					1	20 A	ROOF - ADF DAMPER POWER	8
9						915	180			1	20 A	ROOF - WEATHERPROOF RECEPTACLE	10
11	PARKING LEVEL BOILER ROOM - ROLL-UP DOOR	20 A	2					915	--	1	--	SPACE	12
13				915	--					1	--	SPACE	14
15	PARKING LEVEL BOILER ROOM - EVU-1	15 A	2			281	--			1	--	SPACE	16
17								281	--	1	--	SPACE	18
19	PARKING LEVEL MECH RM 1000 - FP-1	40 A	1	1840	--					1	--	SPACE	20
21	PARKING LEVEL MECH RM 1000 - FP-2	40 A	1			1840	--			1	--	SPACE	22
23	PARKING LEVEL BOILER ROOM - EBC31	20 A	1					500	--	1	--	SPACE	24
25	PARKING LEVEL BOILER ROOM - LIGHTING	20 A	1	318	--					1	--	SPACE	26
27	PARKING LEVEL BOILER ROOM - RCPT	20 A	1			540	--			1	--	SPACE	28
29	PARKING LEVEL BOILER ROOM - SENSORS	20 A	1					500	--	1	--	SPACE	30
31	SPACE	--	1	--	--					1	--	SPACE	32
33	SPARE	20 A	1			0	0			1	20 A	SPARE	34
35	SPARE	20 A	1					0	0	1	20 A	SPARE	36
37	SPARE	20 A	1	0	0					1	20 A	SPARE	38
39	SPARE	20 A	1			0	0			1	20 A	SPARE	40
41	SPARE	20 A	1					0	0	1	20 A	SPARE	42
				Total Load:	7528 VA		7196 VA		5236 VA				
				Total Amps:	65 A		62 A		44 A				

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Receptacle	720 VA	100.00%	720 VA		
Power	700 VA	100.00%	700 VA	**Total Conn. Load:**	19960 VA
Lighting	318 VA	125.00%	398 VA	**Total Est. Demand:**	20040 VA
Mechanical Equipment	18222 VA	100.00%	18222 VA	**Total Conn.:**	55 A
				Total Est. Demand:	56 A

Notes:

Switchboard: (E)SHA1A

Location: VAULT A
Supply From: (E)SUBSTATION 1B
Mounting: EXISTING
Enclosure: EXISTING
Volts: 480Y/277
Phases: 3
Wires: 4
A.I.C. Rating: 65,000 A
Mains Type: MCB
Mains Rating: 1600 A
MCB Rating: 1600 A

CKT	Circuit Description	# of Poles	Frame Size	Trip Rating	Load	Remarks
1	(E)PANEL AC-COMP ROOM	3	400 A	400 A	24000 VA	
2	(E)PANELBOARDS LH5A, LH6A	3	400 A	400 A	24000 VA	
3	(E)PANELBOARDS LH2A, LH3A, LH4A	3	400 A	400 A	24000 VA	
4	(E)PANELBOARDS LH7A, LH8A	3	400 A	400 A	24000 VA	
5	(E)PANELBOARD MH1S	3	400 A	400 A	24000 VA	
6	**PARKING LEVEL MECH ROOM 1000 - DISTRIBUTION BOARD DP-MH1S3**	**3**	**400 A**	**400 A**	**217748 VA**	UTILIZE EXISTING SPARE BREAKER.
7	(E)SPARE	3	400 A	400 A	0 VA	
8	(E)SPACE	3	--	--	--	
9	(E)MOTOR CONTROL CENTER MCC-B	3	400 A	400 A	24000 VA	
10	(E)SPARE	3	400 A	400 A	0 VA	
11	(E)UPS PANELS VIA XFMR ROOM 2300	3	250 A	250 A	18000 VA	
12	(E)SPACE	3	--	--	--	
13	(E)ELEVATOR 6	3	400 A	400 A	24000 VA	
14	(E)PANELBOARD MH1G2	3	800 A	800 A	75750 VA	
				Total Conn. Load:	479498 VA	
				Total Amps:	577 A	

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Existing Load	261750 VA	125.00%	327188 VA		
Power	500 VA	100.00%	500 VA	**Total Conn. Load:**	479498 VA
Receptacle	540 VA	100.00%	540 VA	**Total Est. Demand:**	491510 VA
Mechanical Equipment	53164 VA	100.00%	53164 VA	**Total Conn.:**	577 A
Mechanical Equipment (67%, N+1)	155415 VA	66.67%	103615 VA	**Total Est. Demand:**	591 A
Mechanical Equipment (80%, N+1)	8129 VA	80.00%	6504 VA		

Notes:

Distribution Panel: DP-MH1S3

Location: MECH RM 1000
Supply From: (E)SHA1A
Mounting: WALL-MOUNTED
Enclosure: TYPE 12
Volts: 480Y/277
Phases: 3
Wires: 4
A.I.C. Rating: 65,000 A
Mains Type: MCB
Mains Rating: 400 A
MCB Rating: 400 A

CKT	Circuit Description	# of Poles	Frame Size	Trip Rating	Load	Remarks
1	PARKING LEVEL BOILER ROOM - HHWP-1	3	150 A	150 A	51805 VA	NOTE 1.
2	PARKING LEVEL BOILER ROOM - HHWP-2	3	150 A	150 A	51805 VA	NOTE 1.
3	PARKING LEVEL BOILER ROOM - HHWP-3	3	150 A	150 A	51805 VA	NOTE 1.
4	PARKING LEVEL MECHANICAL ROOM 1000 - TRANSFORMER T-ML1S3	3	60 A	45 A	1602 VA	
5	PARKING LEVEL BOILER ROOM - CB-1	3	60 A	50 A	20244 VA	PROVIDE INTEGRAL SHUNT TRIP.
6	PARKING LEVEL BOILER ROOM - CB-2	3	60 A	50 A	20244 VA	PROVIDE INTEGRAL SHUNT TRIP.
7	PARKING LEVEL BOILER ROOM - CB-3	3	60 A	50 A	20244 VA	PROVIDE INTEGRAL SHUNT TRIP.
8	INTEGRAL PANELBOARD METER DISCONNECT	3	15 A	15 A	0 VA	
9	SPACE	3	--	--	--	
10	SPACE	3	--	--	--	
11	SPACE	3	--	--	--	
12	SPARE	3	250 A	150 A	0 VA	
13	SPARE	3	150 A	150 A	0 VA	
14	SPARE	3	60 A	60 A	0 VA	
				Total Conn. Load:	217748 VA	
				Total Amps:	262 A	

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Power	500 VA	100.00%	500 VA		
Receptacle	540 VA	100.00%	540 VA	**Total Conn. Load:**	217748 VA
Mechanical Equipment	53164 VA	100.00%	53164 VA	**Total Est. Demand:**	164322 VA
Mechanical Equipment (67%, N+1)	155415 VA	66.67%	103615 VA	**Total Conn.:**	262 A
Mechanical Equipment (80%, N+1)	8129 VA	80.00%	6504 VA	**Total Est. Demand:**	198 A

Notes:
(1) PUMPS RUN AND MANAGED IN N+1 CONFIGURATION. TOTAL CAPACITY IS N+1 REDUNDANT.

Branch Panel: ML1S3

Location: MECH RM 1000
Supply From: T-ML1S3
Mounting: WALL-MOUNTED
Enclosure: TYPE 12
Volts: 208Y/120
Phases: 3
Wires: 4
A.I.C. Rating: 25,000 A
Mains Type: MCB
Mains Rating: 100 A
MCB Rating: 100 A

CKT	Circuit Description	Trip	Poles	A (VA)		B (VA)		C (VA)		Poles	Trip	Circuit Description	CKT
1	PARKING LEVEL MECHANICAL ROOM 1000 - EVU-2	20 A	2	281	--					1	--	SPACE	2
3						281	--			1	--	SPACE	4
5	MECH ROOM 1000 - CONVENIENCE RCPT	20 A	1					540	--	1	--	SPACE	6
7	MECH ROOM 1000 - SENSORS AND VALVES	20 A	1	0	--					1	--	SPACE	8
9	MECH ROOM 1000 - BAS POWER	20 A	1			500	--			1	--	SPACE	10
11	SPACE	--	1					--	--	1	--	SPACE	12
13	SPACE	--	1	--	--					1	--	SPACE	14
15	SPACE	--	1			--	--			1	--	SPACE	16
17	SPACE	--	1					--	--	1	--	SPACE	18
19	SPACE	--	1	--	--					1	--	SPACE	20
21	SPACE	--	1			--	--			1	--	SPACE	22
23	SPACE	--	1					--	--	1	--	SPACE	24
25	SPACE	--	1	--	--					1	--	SPACE	26
27	SPACE	--	1			--	--			1	--	SPACE	28
29	SPACE	--	1					--	--	1	--	SPACE	30
31	SPACE	--	1	--	--					1	--	SPACE	32
33	SPACE	--	1			--	--			1	--	SPACE	34
35	SPACE	--	1					--	--	1	--	SPACE	36
37	SPARE	20 A	1	0	0					1	20 A	SPARE	38
39	SPARE	20 A	1			0	0			1	20 A	SPARE	40
41	SPARE	20 A	1					0	0	1	20 A	SPARE	42
				Total Load:	281 VA		781 VA		540 VA				
				Total Amps:	2 A		7 A		5 A				

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Receptacle	540 VA	100.00%	540 VA		
Power	500 VA	100.00%	500 VA	**Total Conn. Load:**	1602 VA
Mechanical Equipment	562 VA	100.00%	562 VA	**Total Est. Demand:**	1602 VA
				Total Conn.:	4 A
				Total Est. Demand:	4 A

Notes:

Switchboard: (E)SLB1E

Location: VAULT B
Supply From: (E)XFMR
Mounting: EXISTING
Enclosure: EXISTING
Volts: 208Y/120
Phases: 3
Wires: 4
A.I.C. Rating: 65,000 A
Mains Type: MCB
Mains Rating: 1600 A
MCB Rating: 800 A

CKT	Circuit Description	# of Poles	Frame Size	Trip Rating	Load	Remarks
1	(E)PANEL LL1E	3	400 A	400 A	20000 VA	
2	(E)PANEL LL5E	3	400 A	400 A	20000 VA	
3	(E)PANEL LL4E	3	400 A	400 A	20000 VA	
4	(E)PANEL LL9E	3	400 A	400 A	20000 VA	
5	(E)PANEL LL1H	3	400 A	400 A	20000 VA	
6	(E)PANEL LL6E	3	400 A	400 A	20000 VA	
7	(E)PANELS LL2E, LL3E	3	400 A	400 A	20000 VA	
8	(E)PANELS LL7E, LL8E	3	400 A	400 A	20000 VA	
9	**PARKING LEVEL C STREET ADDITION - PANELBOARD ML1H**	**3**	**400 A**	**225 A**	**7880 VA**	UTILIZE EXISTING SPARE BREAKER.
10	SPACE	3	--	--	--	
11	SPACE	3	--	--	--	
12	SPACE	3	--	--	--	
13	SPACE	3	--	--	--	
14	SPACE	3	--	--	--	
				Total Conn. Load:	167880 VA	
				Total Amps:	466 A	

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Existing Load	160000 VA	125.00%	200000 VA		
Power	500 VA	100.00%	500 VA	**Total Conn. Load:**	167880 VA
Receptacle	180 VA	100.00%	180 VA	**Total Est. Demand:**	207880 VA
Mechanical Equipment	7200 VA	100.00%	7200 VA	**Total Conn.:**	466 A
				Total Est. Demand:	577 A

Notes:

Branch Panel: ML1H

Location: C ST MECH RM
Supply From: (E)SLB1E
Mounting: Surface
Enclosure: Type 12
Volts: 208Y/120
Phases: 3
Wires: 4
A.I.C. Rating: 25,000 A
Mains Type: MCB
Mains Rating: 225 A
MCB Rating: 225 A

CKT	Circuit Description	Trip	Poles	A (VA)		B (VA)		C (VA)		Poles	Trip	Circuit Description	CKT
1	INTEGRAL PANELBOARD METER DISCONNECT	15 A	1	0	--					1	--	SPACE	2
3	PARKING LEVEL C STREET ADDITION - BAS	20 A	1			500	--			1	--	SPACE	4
5	PARKING LEVEL C STREET ADDITION - CTRL	20 A	1					0	--	1	--	SPACE	6
7	PARKING LEVEL C STREET ADDITION - DWH-1	20 A	1	1800	--					1	--	SPACE	8
9	PARKING LEVEL C STREET ADDITION - DWH-2	20 A	1			1800	--			1	--	SPACE	10
11	PARKING LEVEL C STREET ADDITION - DWH-3	20 A	1					1800	--	1	--	SPACE	12
13	PARKING LEVEL C STREET ADDITION - DWH-4	20 A	1	1800	--					1	--	SPACE	14
15	PARKING LEVEL C STREET ADDITION - RCPT	20 A	1			180	--			1	--	SPACE	16
17	SPACE	--	1					--	--	1	--	SPACE	18
19	SPACE	--	1	--	--					1	--	SPACE	20
21	SPACE	--	1			--	--			1	--	SPACE	22
23	SPACE	--	1					--	--	1	--	SPACE	24
25	SPACE	--	1	--	--					1	--	SPACE	26
27	SPACE	--	1			--	--			1	--	SPACE	28
29	SPACE	--	1					--	--	1	--	SPACE	30
31	SPACE	--	1	--	--					1	--	SPACE	32
33	SPARE	20 A	1			0	0			1	20 A	SPARE	34
35	SPARE	20 A	1					0	0	1	20 A	SPARE	36
37	SPARE	20 A	1	0	0					1	20 A	SPARE	38
39	SPARE	20 A	1			0	0			1	20 A	SPARE	40
41	SPARE	20 A	1					0	0	1	20 A	SPARE	42
				Total Load:	3600 VA		2480 VA		1800 VA				
				Total Amps:	31 A		22 A		15 A				

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Receptacle	180 VA	100.00%	180 VA		
Power	500 VA	100.00%	500 VA	**Total Conn. Load:**	7880 VA
Mechanical Equipment	7200 VA	100.00%	7200 VA	**Total Est. Demand:**	7880 VA
				Total Conn.:	22 A
				Total Est. Demand:	22 A

Notes:

Panelboard: (E)MH1G2

Location: C ST MECH RM
Supply From: (E)SHA1A
Mounting: Surface
Enclosure: Type 1
Volts: 480Y/277
Phases: 3
Wires: 4
A.I.C. Rating: 65,000 A
Mains Type: MCB
Bus Rating: 800 A
MCB Rating: 800 A

CKT	Circuit Description	Trip	Poles	A (VA)		B (VA)		C (VA)		Poles	Trip	Circuit Description	CKT
1				17268	17268								
3	**PARKING LEVEL C STREET ADDITION - P-11**	**150 A**	**3**			17268	17268			**3**	**150 A**	**PARKING LEVEL C STREET ADDITION - P-12 (N+1 REDUNDANCY)**	4
5								17268	17268				6
7	SPACE	--	1	--	--					1	--	SPACE	8
9	SPACE	--	1			--	--			1	--	SPACE	10
11	SPACE	--	1					--	--	1	--	SPACE	12
13	SPACE	--	1	--	--					1	--	SPACE	14
15	SPACE	--	1			--	--			1	--	SPACE	16
17	SPACE	--	1					--	--	1	--	SPACE	18
19	SPACE	--	1	--	--					1	--	SPACE	20
21	SPACE	--	1			--	--			1	--	SPACE	22
23	SPACE	--	1					--	--	1	--	SPACE	24
25	SPACE	--	1	--	--					1	--	SPACE	26
27	SPACE	--	1			--	--			1	--	SPACE	28
29	SPACE	--	1					--	--	1	--	SPACE	30
31	SPACE	--	1	--	--					1	--	SPACE	32
33	SPACE	--	1			--	--			1	--	SPACE	34
35	SPACE	--	1					--	--	1	--	SPACE	36
37	SPARE			40000	40000							SPARE	38
39	(E)CHILLER - CH-3	500 A	3			40000	40000			**3**	**500 A**	(E)CHILLER - CH-4	40
41								40000	40000				42
				Total Load:	114537 VA		114537 VA		114537 VA				
				Total Amps:	413 A		413 A		413 A				

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Existing Load	240000 VA	125.00%	300000 VA		
Mechanical Equipment (50%, N+1)	103610 VA	50.00%	51805 VA	**Total Conn. Load:**	343610 VA
				Total Est. Demand:	351805 VA
				Total Conn.:	413 A
				Total Est. Demand:	423 A

Notes:

GENERAL SHEET NOTES

A. SEE ELECTRICAL COVER SHEET FOR ABBREVIATIONS, SYMBOLS, GENERAL NOTES AND DEVICE MOUNTING HEIGHT OF WALL MOUNTED DEVICES, U.O.N.
B. SEE DRAWING SERIES E5 FOR POWER RISER DIAGRAM.
C. PROVIDE A MINIMUM OF 20% SPARE CIRCUIT BREAKERS ON EACH NEW PANEL.
D. CONTRACTOR TO VERIFY EXISTING AVAILABLE CIRCUITS. COORDINATE LOCATION OF AVAILABLE CIRCUITS WITH THOSE INDICATED IN PANEL SCHEDULES.
E. BOLD CIRCUIT DESCRIPTIONS INDICATE NEW CIRCUITS ON EXISTING PANELBOARD. NEW CIRCUIT BREAKERS TO MATCH MODEL NUMBER AND AIC RATING OF EXISTING CIRCUIT BREAKERS TO ENSURE PANEL IS FULLY RATED. UTILIZE EXISTING SPARE BREAKERS FOR BOLD CIRCUITS IF TRIP RATINGS INDICATED MATCH EXISTING TRIP RATINGS IN-FIELD.
F. EXISTING LOAD VALUES ARE ASSUMPTIONS, UNLESS OTHERWISE NOTED. CONTRACTOR TO METER AND VERIFY EXISTING PANEL LOADS AND AVAILABLE PANEL CAPACITY PRIOR TO ADDING CIRCUITS.
G. PROVIDE PERMANENT PANEL NAMEPLATES AND COMPUTER-GENERATED PANEL SCHEDULES AFTER ALL WORK IS COMPLETE. SCHEDULES AND NAMEPLATES MUST MATCH PANEL INFORMATION, CIRCUIT BREAKERS, AND CONNECTED LOADS. PANEL SCHEDULES TO INCLUDE BRANCH CIRCUIT LOADS.
H. CONTRACTOR TO PROVIDE 3 PHASE CIRCUIT FOR ALL NEW SURGE PROTECTION DEVICES. COORDINATE FINAL CIRCUIT BREAKER SIZE WITH DEVICE.
I. CONTRACTOR TO PROVIDE 3P, 15A BREAKER AS REQUIRED FOR ALL NEW INTEGRAL METERS. ELECTRICAL ENERGY USAGE FOR TOTAL ELECTRICAL ENERGY, HVAC SYSTEMS, INTERIOR LIGHTING, EXTERIOR LIGHTING, AND RECEPTACLE CIRCUITS SHALL BE RECORDED A MINIMUM OF EVERY 15 MINUTES AND REPORTED AT LEAST HOURLY, DAILY, MONTHLY AND ANNUALLY. THE DATA MUST BE READILY AVAILABLE FOR THE OWNER. THE SYSTEM SHALL BE CAPABLE OF MAINTAINING ALL DATA COLLECTED FOR A MINIMUM OF 36 MONTHS.
J. ALL FINAL PANEL LOADS SHALL BE BALANCED AMONG PHASES.
K. EQUIPMENT TAGS WITH "(E)" NOTATION INDICATES EXISTING TO REMAIN EQUIPMENT.
L. ALL CIRCUIT BREAKERS WITHIN NEW DISTRIBUTION BOARDS ARE TO BE ELECTRONIC TRIP UNIT CIRCUIT BREAKERS SO FUTURE TIE-IN TO EXISTING ASCO POWER MONITORING AND CONTROL SYSTEM, AND EXISTING BUILDING AUTOMATION SYSTEM CAN BE COMPLETED.

Author
Plot Date: 7/3/2025 12:38:44 PM

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ISSUED FOR	REV	DATE
ISSUE FOR BID		03 JULY 2025

SEALS AND SIGNATURES

DISTRICT OF COLUMBIA · KENZ MELIANI · No. PE 40001940 · ELECTRICAL · PROFESSIONAL ENGINEER

06 JUNE 2025

(E)SUBSTATION 2A	DP-MH1S2	ML1S2
(E)SHA1A	DP-MH1S3	ML1S3
(E)SLB1E	ML1H	(E)MH1G2

SHEET TITLE
ELECTRICAL PANELBOARD SCHEDULES

15749.000
PROJECT NUMBER

E7.1
SHEET NUMBER

COM*check* Software Version 4.1.5.5

Interior Lighting Compliance Certificate

Project Information

Energy Code: 90.1 (2013) Standard
Project Title:
Project Type: Alteration

Construction Site: Owner/Agent: Designer/Contractor:

Allowed Interior Lighting Power

A Area Category	B Floor Area (ft2)	C Allowed Watts / ft2	D Allowed Watts (B X C)
1-Common Space Types:Electrical/Mechanical	1009	0.42	424
		Total Allowed Watts =	424

Proposed Interior Lighting Power

A Fixture ID : Description / Lamp / Wattage Per Lamp / Ballast	B Lamps/ Fixture	C # of Fixtures	D Fixture Watt.	E (C X D)
Common Space Types:Electrical/Mechanical (1009 sq.ft.)				
LED 1: LED Linear 8W:	1	6	53	318
			Total Proposed Watts =	318

Interior Lighting PASSES

Interior Lighting Compliance Statement

Compliance Statement: The proposed interior lighting alteration project represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed interior lighting systems have been designed to meet the 90.1 (2013) Standard requirements in COM*check* Version 4.1.5.5 and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

ANGELA PERETTI, PE, WELL AP, LEED AP — Name - Title
Signature
06.05.2025 — Date

COM*check* Software Version 4.1.5.5

Inspection Checklist

Energy Code: 90.1 (2013) Standard

Requirements: 36.0% were addressed directly in the COM*check* software

Text in the "Comments/Assumptions" column is provided by the user in the COMcheck Requirements screen. For each requirement, the user certifies that a code requirement will be met and how that is documented, or that an exception is being claimed. Where compliance is itemized in a separate table, a reference to that table is provided.

Section # & Req.ID	Plan Review	Complies?	Comments/Assumptions
4.2.2, 8.4.1.1, 8.4.1.2, 8.7 [PR6][2]	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the electrical systems and equipment and document where exceptions are claimed. Feeder connectors sized in accordance with approved plans and branch circuits sized for maximum drop of 3%.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
4.2.2, 9.4.3, 9.7 [PR4][3]	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the interior lighting and electrical systems and equipment and document where exceptions to the standard are claimed. Information provided should include interior lighting power calculations, wattage of bulbs and ballasts, transformers and control devices.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	

Additional Comments/Assumptions:

1 High Impact (Tier 1) | 2 Medium Impact (Tier 2) | 3 Low Impact (Tier 3)

Section # & Req.ID	Rough-In Electrical Inspection	Complies?	Comments/Assumptions
8.4.2 [EL10][2]	At least 50% of all 125 volt 15- and 20-Amp receptacles are controlled by an automatic control device.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
9.4.1.1 [EL1][2]	Automatic control requirements prescribed in Table 9.6.1, for the appropriate space type, are installed. Mandatory lighting controls (labeled as 'REQ') and optional choice controls (labeled as 'ADD1' and 'ADD2') are implemented.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
9.4.1.1 [EL2][2]	Independent lighting controls installed per approved lighting plans and all manual controls readily accessible and visible to occupants.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
9.4.1.2 [EL11][2]	Parking garage lighting is equipped with required lighting controls and daylight transition zone lighting.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
9.4.1.1f [EL13][1]	Daylight areas under skylights and roof monitors that have more than 150 W combined input power for general lighting are controlled by photocontrols.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
9.4.1.3 [EL4][1]	Separate lighting control devices for specific uses installed per approved lighting plans.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
9.6.2 [EL8][1]	Additional interior lighting power allowed for special functions per the approved lighting plans and is automatically controlled and separated from general lighting.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	

Additional Comments/Assumptions:

1 High Impact (Tier 1) | 2 Medium Impact (Tier 2) | 3 Low Impact (Tier 3)

Section # & Req.ID	Final Inspection	Complies?	Comments/Assumptions
8.7.1 [FI16][1]	Furnished as-built drawings for electric power systems within 30 days of system acceptance.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
8.7.2 [FI17][1]	Furnished O&M instructions for systems and equipment to the building owner or designated representative.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
9.2.2.3 [FI18][1]	Interior installed lamp and fixture lighting power is consistent with what is shown on the approved lighting plans, demonstrating proposed watts are less than or equal to allowed watts.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	*See the Interior Lighting fixture schedule for values.*

Additional Comments/Assumptions:

1 High Impact (Tier 1) | 2 Medium Impact (Tier 2) | 3 Low Impact (Tier 3)

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SEALS AND SIGNATURES

DISTRICT OF COLUMBIA
KENZ MELIANI
No. PE 40001940
ELECTRICAL
PROFESSIONAL ENGINEER

06 JUNE 2025

SHEET TITLE

LIGHTING POWER DENSITY CALCULATIONS

15749.000
PROJECT NUMBER

E7.2
SHEET NUMBER

Plot Date: 7/3/2025 12:38:49 PM Author

PLUMBING ABBREVIATIONS

A		O	
ABBR	ABBREVIATION	OD	OUTSIDE DIAMETER
ADA	AMERICANS WITH DISABILITIES ACT	OD	OVERFLOW ROOF DRAIN
AFF	ABOVE FINISHED FLOOR	OFL	OVERFLOW
AG	ABOVE GRADE	OSD	OPEN SITE DRAIN
AHJ	AUTHORITY HAVING JURISDICTION		
AMB	AMBIENT	P	
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE	P	PUMP
AP	ACCESS PANEL	PC	PUMPED CONDENSATE
APPROX	APPROXIMATE	PD	PUMPED DISCHARGE (TYPE AS INDICATED)
B		PDI	PLUMBING DRAINAGE INSTITUTE
BFP	BACKFLOW PREVENTOR (TYPE AS INDICATED)	PH	PHASE (ELECTRICAL)
BFV	BUTTERFLY VALVE	PPM	PARTS PER MILLION
BHP	BRAKE HORSEPOWER	PRESS	PRESSURE
BLV	BALANCING VALVE	PRV	PRESSURE REDUCING VALVE
BTUH	BRITISH THERMAL UNIT PER HOUR	PSI	POUNDS PER SQUARE INCH
BV	BALL VALVE	PSIG	POUNDS PER SQUARE INCH - GAUGE
		PV	PLUG VALVE
C		PW	PROCESS WATER
CA	UTILITY COMPRESSED AIR (PRESSURE AS INDICATED)		
CAP	CAPACITY	R	
CFM	CUBIC FEET PER MINUTE	RD	ROOF DRAIN
CI	CAST IRON	RE	REMOVE EXISTING
CO	CLEANOUT	REF	REFERENCE
COMP	COMPRESSOR	RPM	REVOLUTIONS PER MINUTE
COND	CONDENSATE	RV	PRESSURE RELIEF VALVE
CONT	CONTINUATION		
CV	CHECK VALVE	S	
CW	DOMESTIC COLD WATER	SAN	SANITARY OR WASTE
		SCFM	STANDARD CUBIC FEET PER MINUTE
D		SCW	SOFTENED COLD WATER
DF	DRINKING FOUNTAIN	SE	SEWAGE EJECTOR
DIA	DIAMETER	SG	SPECIFIC GRAVITY
DN	DOWN	SP	SUMP PUMP
DOM	DOMESTIC	SPEC	SPECIFICATION
DWG	DRAWING	SQ. FT.	SQUARE FEET
DWH	DOMESTIC WATER HEATER	SS	STAINLESS STEEL
DWR	DRINKING WATER RETURN	SSD	SUB-SOIL DRAINAGE
DWS	DRINKING WATER SUPPLY	ST	STORM (RAINWATER)
		STD	STANDARD
E		STM	STEAM
(E)	EXISTING MATERIAL OR EQUIPMENT	SV	SOLENOID VALVE
EA	EACH		
ECO	EXTERIOR CLEANOUT	T	
EEW	EMERGENCY EYE WASH	TEMP	TEMPERATURE
EFF	EFFICIENCY	TP	TRAP PRIMER
EL	ELEVATION	TPU	TRAP PRIMER UNIT
EQ	EQUIVALENT	TPV	TEMPERATURE AND PRESSURE RELIEF VALVE
ESH	EMERGENCY SHOWER	TW	TEMPERED WATER
ET	EXPANSION TANK	TYP	TYPICAL
ETR	EXISTING TO REMAIN		
EWC	ELECTRIC WATER COOLER	U	
EWT	ENTERING WATER TEMPERATURE	UON	UNLESS OTHERWISE NOTED
EXP	EXPANSION		
EXT	EXTERNAL	V	
		V	VOLTAGE/VENT
F		VAC	VACUUM
F	DEGREES FAHRENHEIT	VEL	VELOCITY
FCO	FLOOR CLEANOUT	VTR	VENT THRU ROOF
FD	FLOOR DRAIN		
FL	FLOOR	W	
FPM	FEET PER MINUTE	W/	WITH
FPS	FEET PER SECOND	W/O	WITHOUT
FS	FLOOR SINK	WC	WATER CLOSET
FT	FEET OR FOOT	WCO	WALL CLEAN OUT
FTD	FOOTER DRAINAGE	WG	WATER GAUGE
		WH	WALL HYDRANT
G		WHA	WATER HAMMER ARRESTOR
G	NATURAL GAS (PRESSURE AS INDICATED)		
GAL	GALLON	Y	
GC	GAS COCK	YD	YARD
GPD	GALLONS PER DAY		
GPH	GALLONS PER HOUR		
GPM	GALLONS PER MINUTE		
GV	GATE VALVE		
GW	GREASE WASTE		
H			
HB	HOSE BIBB		
HG	MERCURY		
HGT	HEIGHT		
HP	HORSE POWER		
HPS	HIGH PRESSURE STEAM		
HR	HOUR		
HW	DOMESTIC HOT WATER		
HWR	DOMESTIC HOT WATER RETURN		
I			
ID	INSIDE DIAMETER		
IE	INVERT ELEVATION		
IN.	INCHES		
K			
kW	KILOWATTS		
L			
LAV	LAVATORY		
LGT	LENGTH		
LPG	LIQUID PETROLEUM GAS		
LPS	LOW PRESSURE STEAM		
LWT	LEAVING WATER TEMPERATURE		
M			
MAX	MAXIMUM		
MBH	1000 BTU/HR		
MCA	MINIMUM CURRENT AMPACITY		
MIN	MINIMUM		
MISC	MISCELLANEOUS		
MOCP	MINIMUM OVER CURRENT PROTECTION		
MPS	MEDIUM PRESSURE STEAM		
MTG	MOUNTING		
N			
NA	NOT APPLICABLE		
NC	NORMALLY CLOSED		
NIC	NOT IN CONTRACT		
NO	NORMALLY OPEN/ NUMBER		
NOM	NOMINAL		
NTS	NOT TO SCALE		

SEE PLUMBING SYMBOLS, LEGENDS AND EQUIPMENT SCHEDULES FOR ADDITIONAL ABBREVIATIONS. ALL ABBREVIATIONS, SYMBOLS, AND LEGENDS SHOWN ON THIS DRAWINGS ARE NOT NECESSARILY USED.

SYMBOL SHEET NOTES

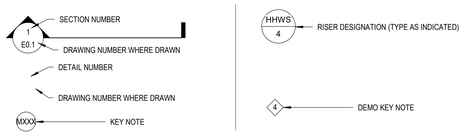
A. THE PURPOSE OF THIS SHEET IS TO ILLUSTRATE AND DEFINE TYPICAL GRAPHIC SYMBOLS WHICH MAY TYPICALLY OCCUR ON THE PLUMBING DRAWINGS.

B. THIS SHEET MAY ILLUSTRATE ABBREVIATIONS, SYMBOLS AND LEGENDS WHICH DO NOT OCCUR AS PART OF THIS PROJECT. REFER TO THE DRAWINGS TO DETERMINE WHICH ITEMS APPLY TO THE WORK OF THIS PROJECT.

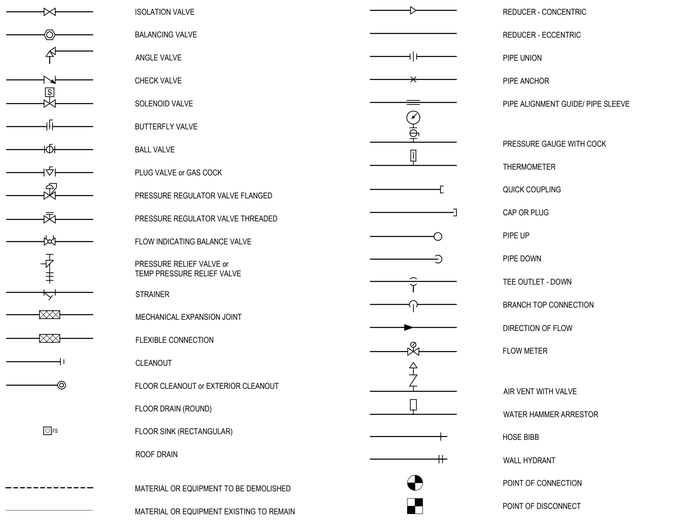
C. ADDITIONAL SYMBOLS NOT SHOWN OR DEFINED ON THIS SHEET MAY BE USED ON THE PLUMBING DRAWINGS AND ARE TYPICALLY DEFINED ON OTHER SHEETS.

D. SYMBOLS ARE NOT DRAWN TO SCALE. TO DETERMINE THE ACTUAL SIZES OF ELEMENTS REPRESENTED BY SYMBOLS, REFER TO THE SPECIFICATIONS AND OTHER SHEETS, AS MAY APPLY.

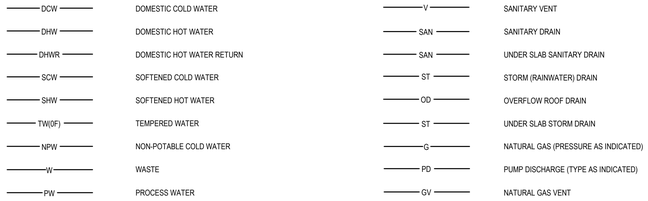
REFERENCE SYMBOLS



PIPING SYMBOLS



PIPING LEGEND



PLUMBING GENERAL NOTES

1. INSTALL PLUMBING IN ACCORDANCE WITH THE 2017 DISTRICT OF COLUMBIA PLUMBING CODE AND REGULATIONS OF ALL AUTHORITIES HAVING JURISDICTION.
2. OBTAIN COMPLETE CONSTRUCTION DOCUMENTS WHICH INCLUDE BUT ARE NOT LIMITED TO ARCHITECTURAL, STRUCTURAL, MECHANICAL, PLUMBING, ELECTRICAL, AND FIRE PROTECTION DRAWINGS. ALSO OBTAIN A COMPLETE SET OF SPECIFICATIONS.
3. DURING THE COORDINATION PROCESS BRING TO THE ATTENTION OF THE ARCHITECT AND ENGINEER(S) ANY CONFLICTS. THE CONTRACTOR SHALL NOT PROCEED WITH ANY INSTALLATION EXCEPT AT HIS OWN RISK UNTIL ALL CONFLICTS ARE RESOLVED AND THE CLARIFYING INFORMATION ISSUED TO THE CONTRACTOR BY THE ARCHITECT.
4. THE CONTRACTOR SHALL VERIFY AND COORDINATE THE LOCATION OF ALL STRUCTURAL MEMBERS FOR CONFLICTS WITH PIPING. THE CONTRACTOR SHALL NOTIFY THE ARCHITECT IMMEDIATELY IF A CONFLICT IS DETERMINED.
5. PROVIDE CLEANOUTS WHERE INDICATED ON DRAWINGS AND WHERE REQUIRED BY THE APPLICABLE CODES.
6. FIRE STOP ALL OPENINGS IN COMPLIANCE WITH THE U.L. LISTING OF THE METHOD USED TO MAINTAIN THE APPROPRIATE FIRE RATING AS REQUIRED BY CODE.
7. COORDINATE ALL PIPING INSTALLED WITH ALL OTHER TRADES (I.E. STRUCTURAL, MECHANICAL, ELECTRICAL, AND FIRE PROTECTION) TO ENSURE THAT ALL SYSTEMS ARE INSTALLED ABOVE THE CEILING OR IN A CONCEALED LOCATION. ALL CEILING HEIGHTS ARE INDICATED ON THE ARCHITECTURAL AND/OR INTERIOR DESIGN DRAWINGS. MAINTAIN MINIMUM CLEARANCES REQUIRED BY THE APPLICABLE CODES THROUGHOUT OUT THE BUILDING.
8. EACH FIXTURE TRAP SHALL HAVE A LIQUID TRAP SEAL, AS REQUIRED BY CODE. LIQUID TRAP SEALS SHALL BE MAINTAINED WITH A TRAP PRIMER, WHERE REQUIRED.
9. PROVIDE WATER HAMMER ARRESTORS WHERE QUICK CLOSING VALVES ARE UTILIZED. LOCATE ARRESTORS PER MANUFACTURER'S INSTRUCTIONS. ARRESTOR SHALL BE ACCESSIBLE.
10. INSULATE ALL STORM DRAIN BODIES AND HORIZONTAL PIPING. THE HORIZONTAL STORM PIPING SHALL BE INSULATED AT THE UPPER MOST LEVEL.
11. INSULATE ALL DRAINAGE PIPING RECEIVING CONDENSATE.
12. INSULATE ALL DRAINAGE AND WATER PIPING IN COMPLIANCE WITH ANSI 117.1, LOCAL CODES AND SPECIFICATIONS.
13. INSTALL VALVES AND OR ACCESSORIES SERVING EQUIPMENT TO ALLOW FOR THE REMOVAL OR SERVICING OF THE VALVES, ACCESSORIES AND EQUIPMENT.
14. WHEN PROVIDING UNIONS, VACUUM BREAKERS, STRAINERS, ETC. AS INDICATED ON DRAWINGS AND ALL EQUIPMENT, PROVIDE FOR MAINTENANCE CLEARANCE AS REQUIRED BY CODE.
15. REFER TO THE ARCHITECTURAL DRAWINGS FOR EXACT LOCATIONS OF ALL PLUMBING FIXTURES.
16. SEE THE PLUMBING FIXTURE CONNECTION SCHEDULE FOR CONNECTION SIZES.
17. ALL ABOVE CEILING WATER/LIQUID 1/4 TURN VALVES SHALL BE HORIZONTAL WITH THEIR VALVE HANDLE. PULL DOWN TOWARDS OPERATOR FOR SHUTOFF.

DEMOLITION GENERAL NOTES

1. THE CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS DURING THE CONTRACTOR'S PRE-BID SITE VISIT(S) AND BRING TO THE ATTENTION OF THE ARCHITECT/ENGINEER ANY DISCREPANCIES BETWEEN THE CONTRACT DOCUMENTS AND THE ACTUAL SITE CONDITIONS PRIOR TO BID FOR CLARIFICATION VIA PRE-BID RFI.
2. THE REQUIRED DEMOLITION IS NOT LIMITED TO THAT PORTION INDICATED ON THE PLANS ALONE, BUT SHALL INCLUDE ALL NECESSARY WORK INDICATED ELSEWHERE IN THE SPECIFICATIONS WHICH ARE NECESSARY TO COMPLETE THE INTENT OF THE CONTRACT DOCUMENTS.
3. THE CONTRACTOR SHALL NOT VIOLATE THE PHYSICAL SECURITY OF THE BUILDING DURING DEMOLITION OR ASSOCIATED OPERATIONS. COORDINATE DEMOLITION WITH OWNER/AGENT.
4. THE CONTRACTOR SHALL SCHEDULE WITH THE OWNER/AGENT ANY INTERRUPTIONS OF EXISTING UTILITIES. PRIOR TO STARTING WORK THE CONTRACTOR SHALL HAVE OBTAINED WRITTEN PERMISSION TO PROCEED. THE CONTRACTOR SHALL ASSUME THE BUILDING IS OCCUPIED AND OPERATIONAL AT ALL TIMES.
5. THE CONTRACTOR SHALL COORDINATE WITH ALL OTHER TRADES.
6. IT IS UNDERSTOOD THAT WORK UNDER THESE CONTRACT DOCUMENTS MAY EXTEND PAST THE LIMITS OF WORK. THE OWNER SHALL BE NOTIFIED PRIOR TO WORK STARTING IN THESE AREAS AND PROVIDE A SCHEDULE.
7. ALL FIXTURES AND EQUIPMENT INDICATED TO BE REMOVED SHALL HAVE ALL ASSOCIATED PIPING REMOVED BACK TO THE NEAREST BRANCH, MAIN, RISER AND CAPPED IN A CONCEALED LOCATION.
8. "CONCEALED LOCATION" IS DEFINED AS BEING ABOVE, BELOW OR BEHIND A FINISHED PLANE.
9. ALL FIXTURES, EQUIPMENT, PIPING AND APPURTENANCES SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED IN A TIMELY MANNER. THE SALVAGE VALUE SHALL APPEAR AS A CREDIT IN THE BID.
10. ANY PIPE SHALL BE CAPPED USING A COMMERCIALLY PURCHASED CAP. A VALVE OR CRIMPING SHALL NOT CONSTITUTE A CAP AND IS UNACCEPTABLE.

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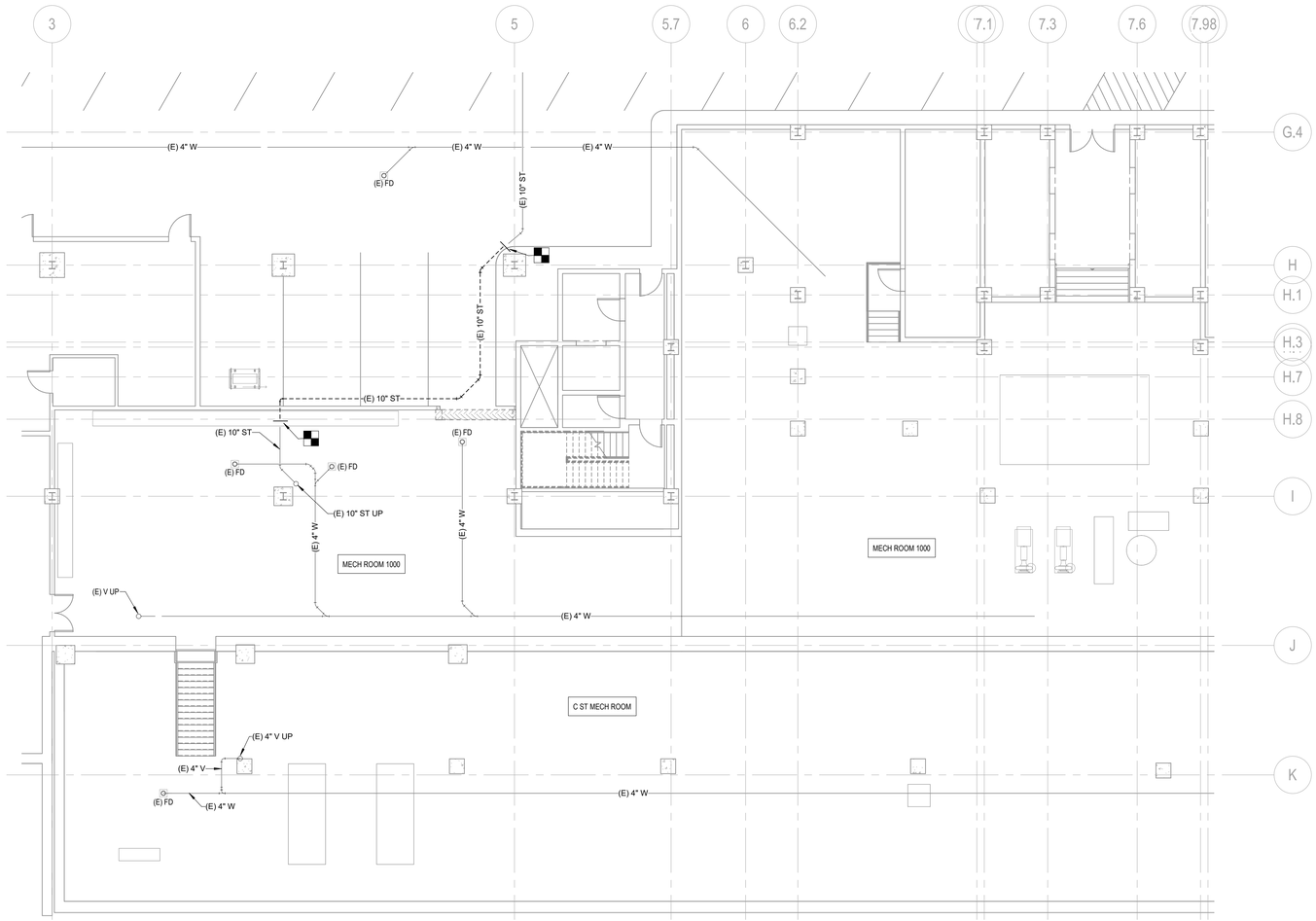
PLUMBING LEGENDS, SYMBOLS & ABBREVIATIONS

15749.000
PROJECT NUMBER

P1.0
SHEET NUMBER

Author

7/3/2025 12:51:24 PM
Plot Date:



1 PLUMBING DRAINAGE, WASTE & VENT DEMOLITION PLAN
SCALE: 1/8" = 1'-0"

GENERAL SHEET NOTES

A. SLOPE ALL WASTE PIPE AT 1/4" PER FOOT (2 PERCENT) UNLESS NOTED OTHERWISE.
B. SLOPE CONDENSATE DRAIN PIPE AT 1/8" PER FOOT (1 PERCENT) UNLESS NOTED OTHERWISE.
C. SLOPE STORM AND OVERFLOW DRAIN PIPE AT 1/8" PER FOOT (1 PERCENT) UNLESS NOTED OTHERWISE.
D. CLEANOUTS SHALL BE INSTALLED AT THE BASE OF ALL STACKS AND AT EACH CHANGE OF DIRECTION GREATER THAN 135 DEGREES. WHERE MORE THAN ONE CHANGE IN DIRECTION OCCURS IN A RUN OF PIPING, ONLY ONE CLEANOUT SHALL BE REQUIRED FOR EACH 40 FEET OF DEVELOPED LENGTH OF DRAINAGE PIPING.
E. REFER TO PLUMBING FIXTURE SCHEDULE FOR PIPE SIZE CONNECTION TO EACH FIXTURE.
F. PROVIDE TRAP PRIMER CONNECTIONS FOR ALL FLOOR DRAINS AND FLOOR SINKS WITHIN BUILDING.

SHEET KEYNOTES

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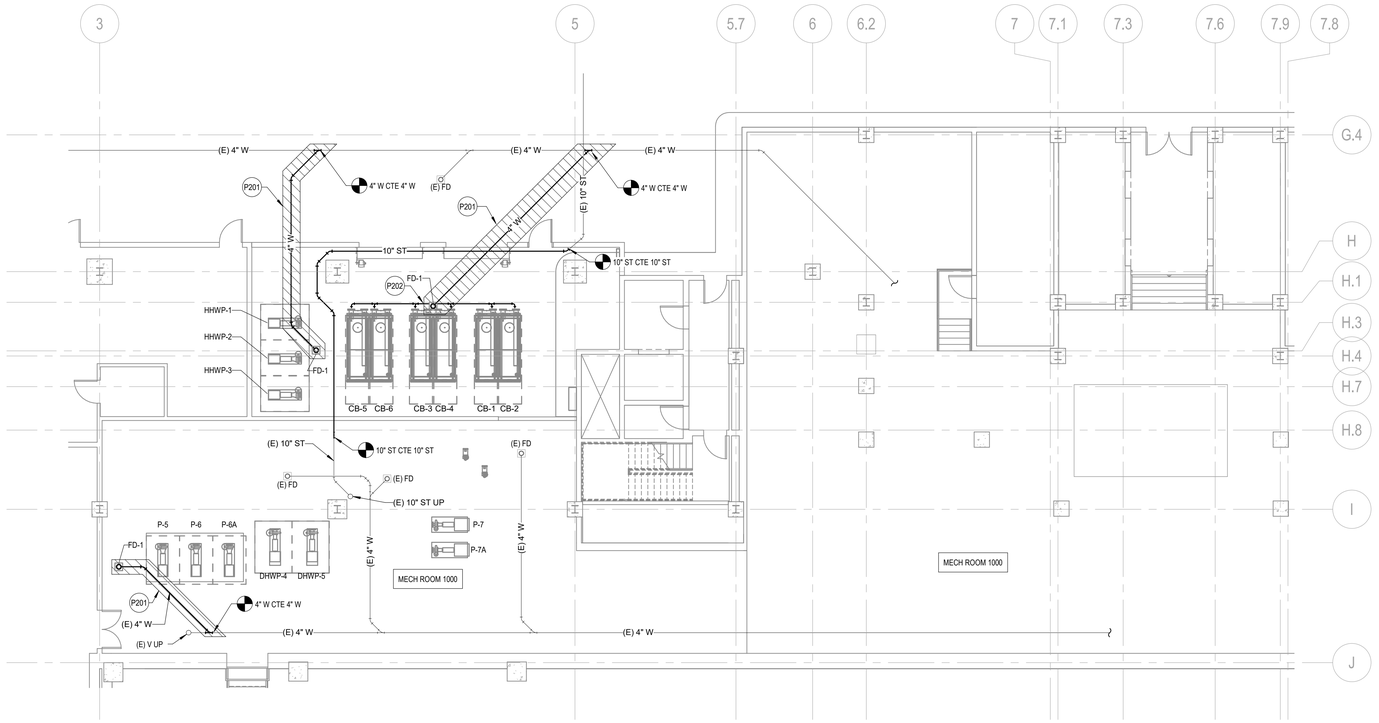
KEYPLAN

SHEET TITLE
PLUMBING DRAINAGE, WASTE & VENT DEMOLITION PLAN

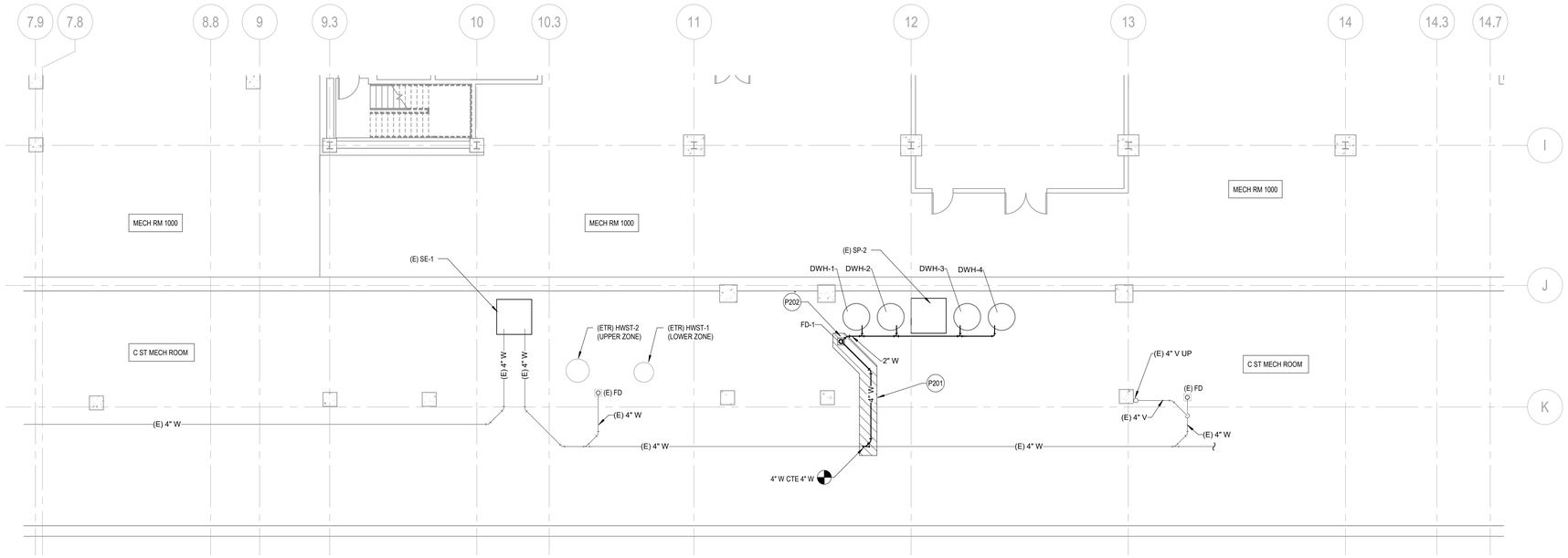
15749.000
PROJECT NUMBER

PD2.1
SHEET NUMBER

Author
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Plot Date:



1 PLUMBING DRAINAGE, WASTE & VENT PLAN WEST
SCALE: 1/8" = 1'-0"



2 PLUMBING DRAINAGE, WASTE & VENT PLAN EAST
SCALE: 1/8" = 1'-0"

GENERAL SHEET NOTES

A. SLOPE ALL WASTE PIPE AT 1/4" PER FOOT (2 PERCENT) UNLESS NOTED OTHERWISE.
B. SLOPE CONDENSATE DRAIN PIPE AT 1/8" PER FOOT (1 PERCENT) UNLESS NOTED OTHERWISE.
C. SLOPE STORM AND OVERFLOW DRAIN PIPE AT 1/8" PER FOOT (1 PERCENT) UNLESS NOTED OTHERWISE.
D. CLEANOUTS SHALL BE INSTALLED AT THE BASE OF ALL STACKS AND AT EACH CHANGE OF DIRECTION GREATER THAN 135 DEGREES. WHERE MORE THAN ONE CHANGE IN DIRECTION OCCURS IN A RUN OF PIPING, ONLY ONE CLEANOUT SHALL BE REQUIRED FOR EACH 40 FEET OF DEVELOPED LENGTH OF DRAINAGE PIPING.
E. REFER TO PLUMBING FIXTURE SCHEDULE FOR PIPE SIZE CONNECTION TO EACH FIXTURE.
F. PROVIDE TRAP PRIMER CONNECTIONS FOR ALL FLOOR DRAINS AND FLOOR SINKS WITHIN BUILDING.

SHEET KEYNOTES

P201 SAW CUT EXISTING SLAB FOR NEW WASTE PIPING INSTALLATION AND REPAIR SLAB TO MATCH EXISTING.
P202 DISCHARGE WASTE INTO FLOOR DRAIN WITH INDIRECT CONNECTION.

Author
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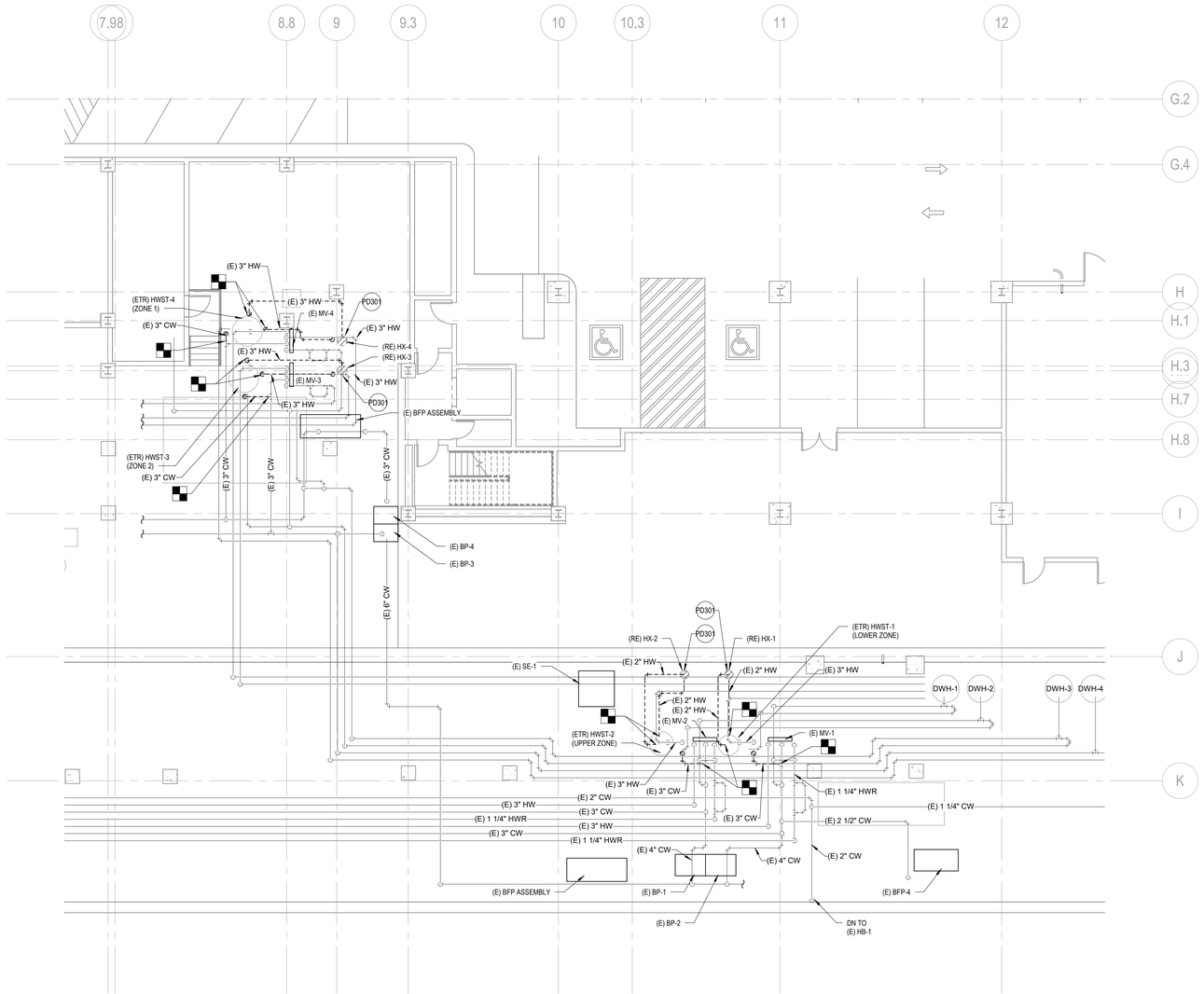
SEALS AND SIGNATURES

DISTRICT OF COLUMBIA
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SHEET TITLE
PLUMBING DRAINAGE, WASTE & VENT PLAN

15749.000
PROJECT NUMBER

P2.1
SHEET NUMBER



1 PLUMBING WATER DEMOLITION PLAN
SCALE: 1/8" = 1'-0"

DEMOLITION SHEET NOTES

1. PLUMBING CONTRACTOR SHALL PROVIDE PLANS INDICATING EXISTING ROUTING, INVERT ELEVATION, AND SIZE OF UNDERSLAB DRAINAGE PIPING WITHIN THE GARAGE.
2. PLUMBING CONTRACTOR SHALL OPEN, CLEAN, INSPECT, AND DIMENSION INTERIOR OF EXISTING SUMP PUMP AND SEWAGE EJECTOR BASINS AND REPORT FINDINGS BACK TO ENGINEERING TEAM
3. PLUMBING CONTRACTOR SHALL INSPECT EXISTING ELEVATOR PITS TO FIELD VERIFY EXISTENCE OF ELEVATOR SUMP PUMPS WITHIN AN EXISTING ELEVATOR PIT AND REPORT FINDINGS BACK TO ENGINEERING TEAM.
4. PLUMBING CONTRACTOR TO INSPECT CONDITION OF EXISTING TO REMAIN PIPING FOR LEAKS AND DEFICIENCIES. REPORT ALL FINDINGS BACK TO ENGINEER AND OWNER.
5. ALL EXISTING TO REMAIN PIPING SHALL BE CLEANED AND PROTECTED DURING CONSTRUCTION AND TESTED PRIOR TO BUILDING REOPENING.
6. ALL FIXTURES TO BE REMOVED SHALL BE REMOVED IN THEIR ENTIRETY INCLUDING ALL COLD, HOT, WASTE, AND VENT SUPPLIES.
7. ALL EXISTING COLD, HOT, WASTE, AND VENT RISERS SHALL BE REMOVED.
8. EXISTING STORM RISERS SHALL BE MAINTAINED TO GREATEST EXTENT POSSIBLE. CONTRACTOR TO FIELD VERIFY ROUTING OF EXISTING STORM PIPING THROUGH BUILDING AND REPORT MARKED UP LOCATIONS BACK TO ENGINEER FOR INCORPORATION INTO DOCUMENTS. ADDITIONAL DEMOLITION SHALL BE NECESSARY TO ACCOMMODATE NEW BUILDING PROGRAM.
9. EXISTING FLOOR DRAINS WITHIN EXISTING MECHANICAL ROOMS AND ALL ASSOCIATED DRAINAGE PIPING SHALL BE INSPECTED FOR REUSE. REPORT CONDITION OF DRAIN BODY AND ASSOCIATED PIPING BACK TO ENGINEERING TEAM. ACCOUNT FOR A MINIMUM OF REMOVAL OF EXISTING PIPING TO EXISTING DRAIN BODIES.

SHEET KEYNOTES

PD301 REMOVE EXISTING STEAM HEAT EXCHANGER.

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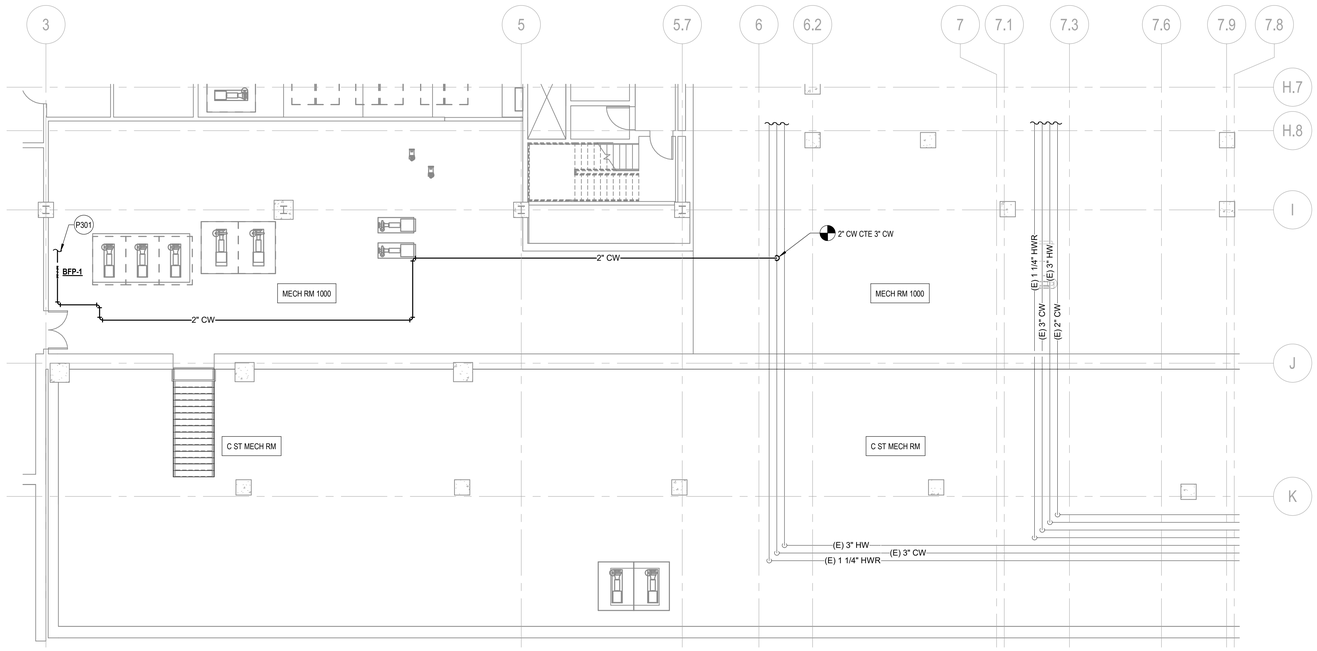
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KEYPLAN

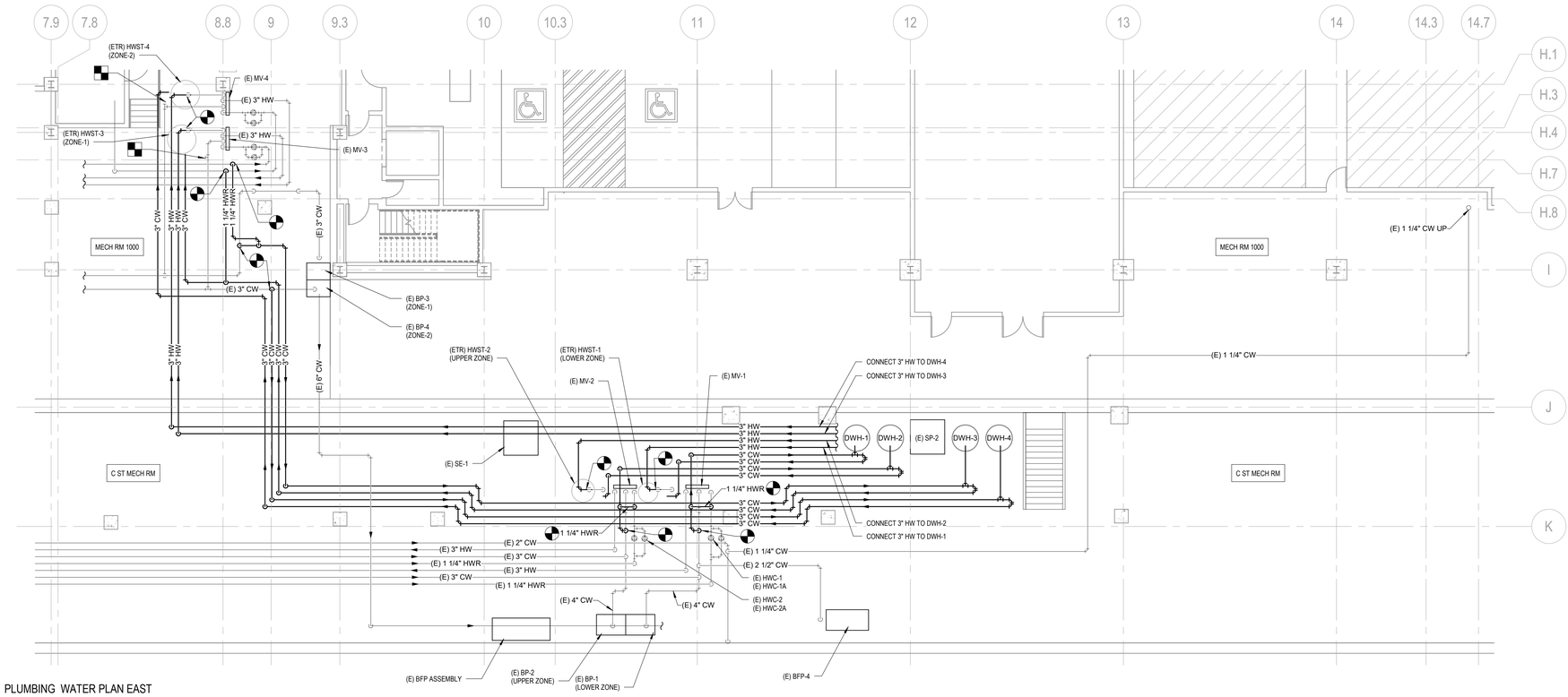
SHEET TITLE
PLUMBING WATER DEMOLITION PLAN

15749.000
PROJECT NUMBER

PD3.1
SHEET NUMBER



1 PLUMBING WATER PLAN WEST
SCALE: 1/8" = 1'-0"



2 PLUMBING WATER PLAN EAST
SCALE: 1/8" = 1'-0"

GENERAL SHEET NOTES

A. SLOPE ALL WASTE PIPE AT 1/4" PER FOOT (2 PERCENT) UNLESS NOTED OTHERWISE.
B. SLOPE CONDENSATE DRAIN PIPE AT 1/8" PER FOOT (1 PERCENT) UNLESS NOTED OTHERWISE.
C. SLOPE STORM AND OVERFLOW DRAIN PIPE AT 1/8" PER FOOT (1 PERCENT) UNLESS NOTED OTHERWISE.
D. CLEANOUTS SHALL BE INSTALLED AT THE BASE OF ALL STACKS AND AT EACH CHANGE OF DIRECTION GREATER THAN 135 DEGREES. WHERE MORE THAN ONE CHANGE IN DIRECTION OCCURS IN A RUN OF PIPING, ONLY ONE CLEANOUT SHALL BE REQUIRED FOR EACH 40 FEET OF DEVELOPED LENGTH OF DRAINAGE PIPING.
E. REFER TO PLUMBING FIXTURE SCHEDULE FOR PIPE SIZE CONNECTION TO EACH FIXTURE.
F. PROVIDE TRAP PRIMER CONNECTIONS FOR ALL FLOOR DRAINS AND FLOOR SINKS WITHIN BUILDING.

SHEET KEYNOTES

P301	2" BOILER MAKE-UP WATER. SEE HVAC DRAWINGS FOR CONTINUATION.

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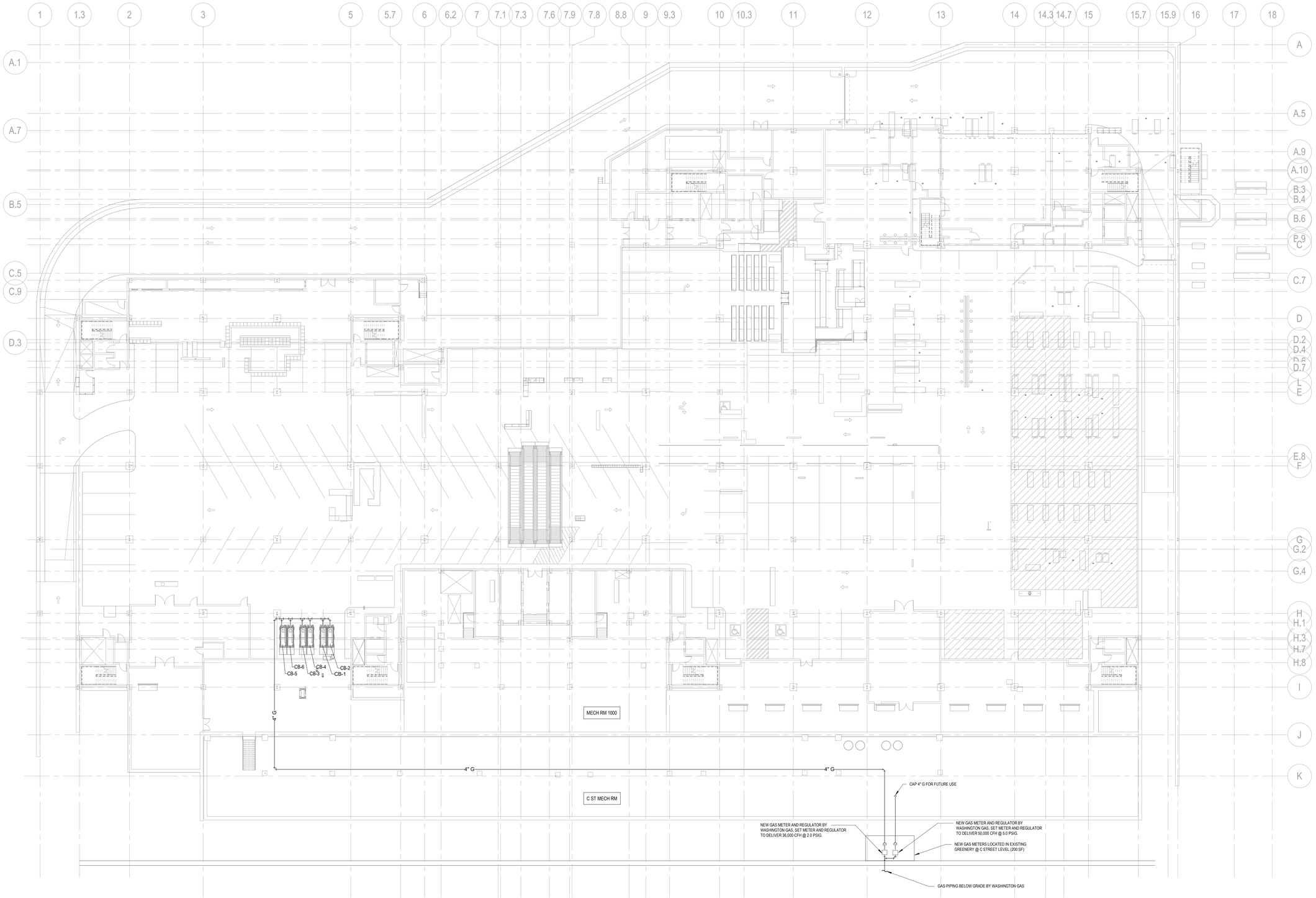
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No. PE907217
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SHEET TITLE
PLUMBING WATER PLAN

15749.000
PROJECT NUMBER

P3.1
SHEET NUMBER

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Plot Date:



1 PLUMBING NATURAL GAS PLAN
SCALE: 1/16" = 1'-0"

GENERAL SHEET NOTES

A. SLOPE ALL WASTE PIPE AT 1/4" PER FOOT (2 PERCENT) UNLESS NOTED OTHERWISE.
B. SLOPE CONDENSATE DRAIN PIPE AT 1/8" PER FOOT (1 PERCENT) UNLESS NOTED OTHERWISE.
C. SLOPE STORM AND OVERFLOW DRAIN PIPE AT 1/8" PER FOOT (1 PERCENT) UNLESS NOTED OTHERWISE.
D. CLEANOUTS SHALL BE INSTALLED AT THE BASE OF ALL STACKS AND AT EACH CHANGE OF DIRECTION GREATER THAN 135 DEGREES. WHERE MORE THAN ONE CHANGE IN DIRECTION OCCURS IN A RUN OF PIPING, ONLY ONE CLEANOUT SHALL BE REQUIRED FOR EACH 40 FEET OF DEVELOPED LENGTH OF DRAINAGE PIPING.
E. REFER TO PLUMBING FIXTURE SCHEDULE FOR PIPE SIZE CONNECTION TO EACH FIXTURE.
F. PROVIDE TRAP PRIMER CONNECTIONS FOR ALL FLOOR DRAINS AND FLOOR SINKS WITHIN BUILDING.

SHEET KEYNOTES

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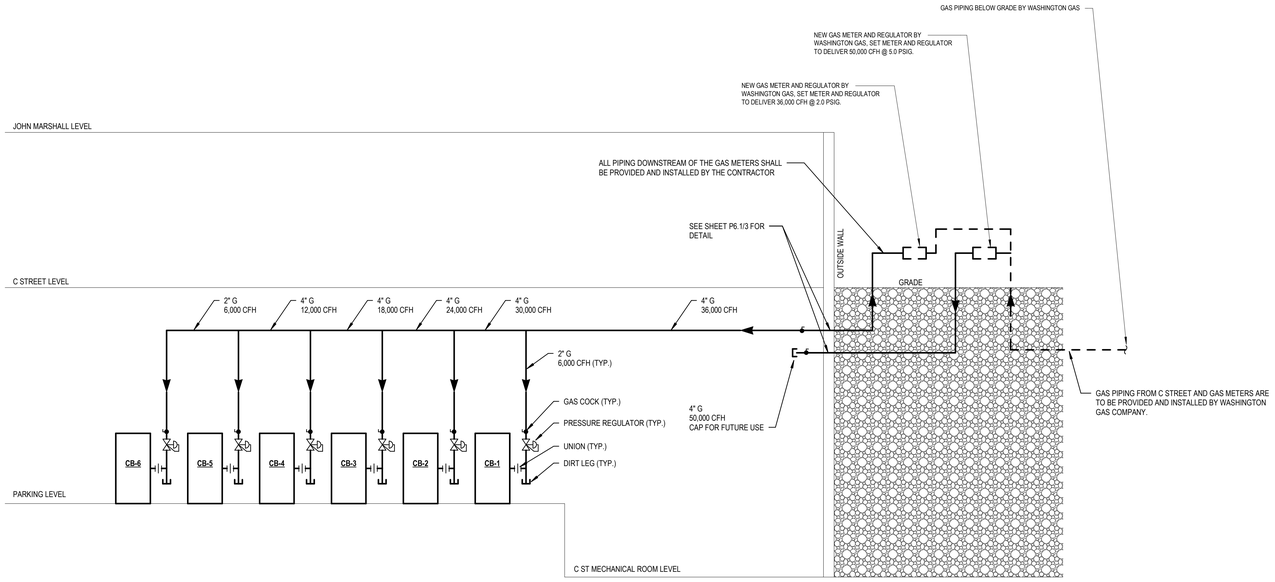
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SHEET TITLE
PLUMBING NATURAL GAS PLAN

15749.000
PROJECT NUMBER

P4.1
SHEET NUMBER



1 NATURAL GAS RISER DIAGRAM
SCALE: NOT TO SCALE

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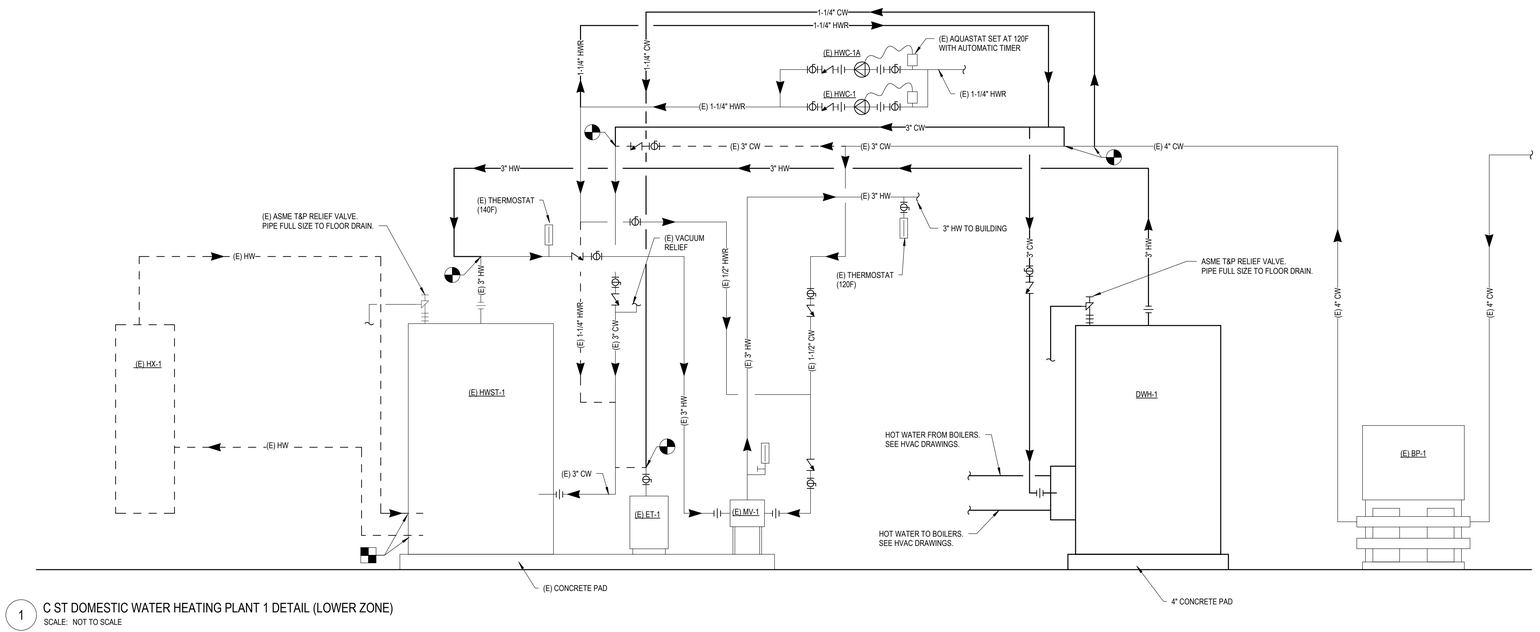
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SHEET TITLE
PLUMBING NATURAL GAS RISER DIAGRAM

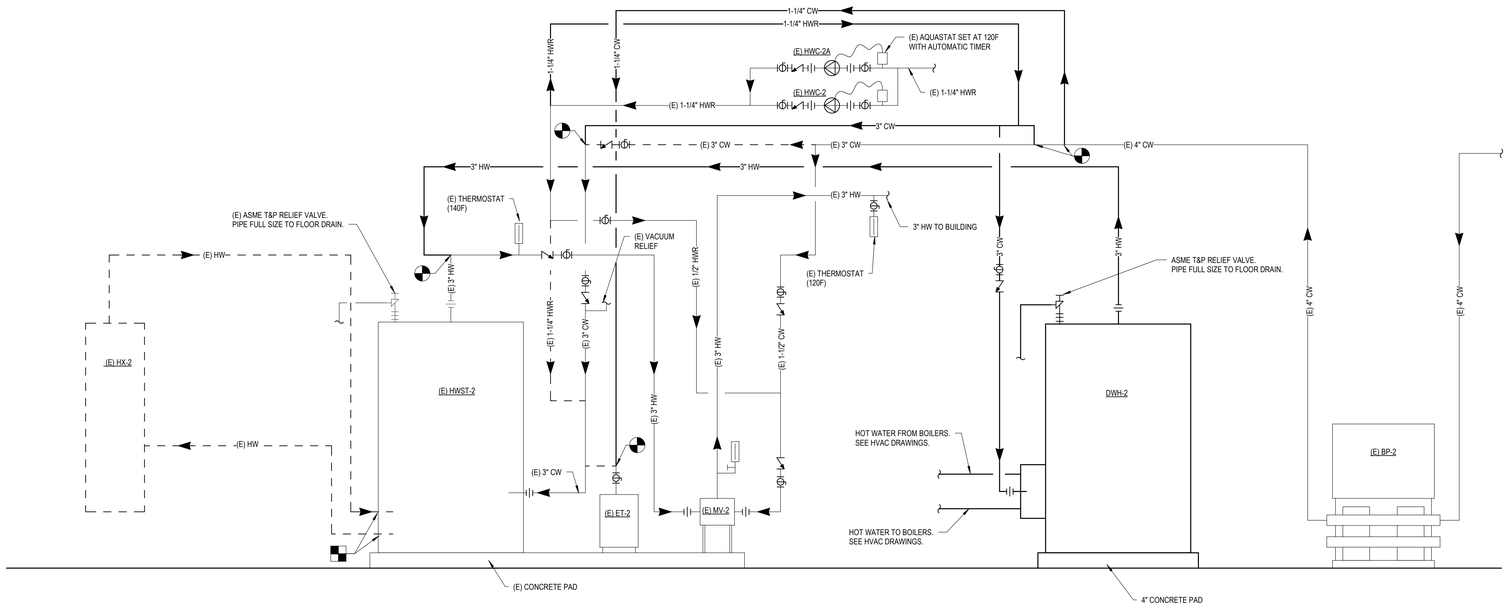
15749.000
PROJECT NUMBER

P5.1
SHEET NUMBER

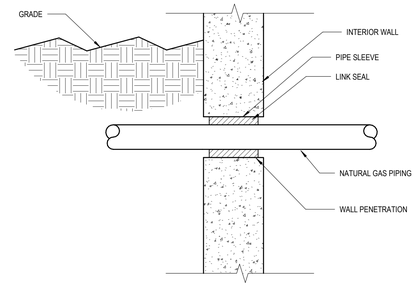
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1 C ST DOMESTIC WATER HEATING PLANT 1 DETAIL (LOWER ZONE)
SCALE: NOT TO SCALE



2 C ST DOMESTIC WATER HEATING PLANT 2 DETAIL (UPPER ZONE)
SCALE: NOT TO SCALE



NOTE:
1. FIRESTOP SEALANTS AND PIPING PENETRATIONS THROUGH FIRE RATED ASSEMBLIES SHALL COMPLY WITH THE UL FIRE RESISTANCE DIRECTORY.

3 WATER PROOF SLEEVE THROUGH INTERIOR WALL
SCALE: 12" = 1'-0"

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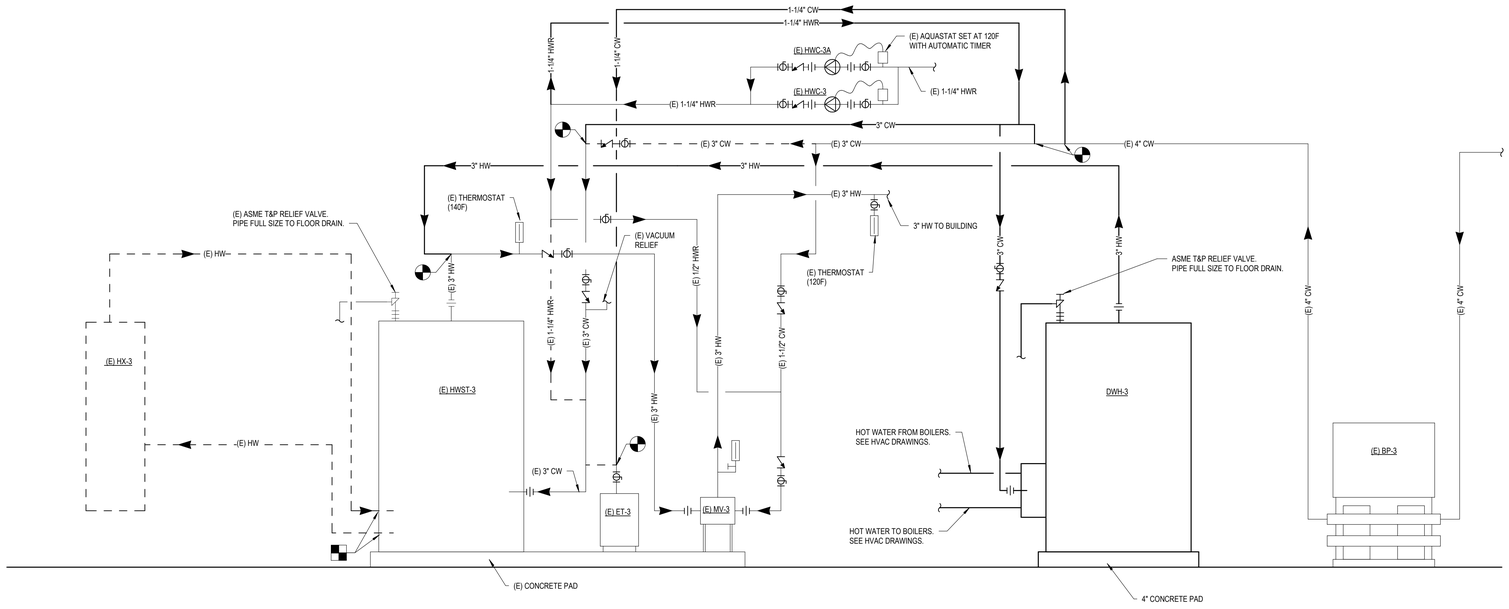
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SHEET TITLE
PLUMBING DETAILS I

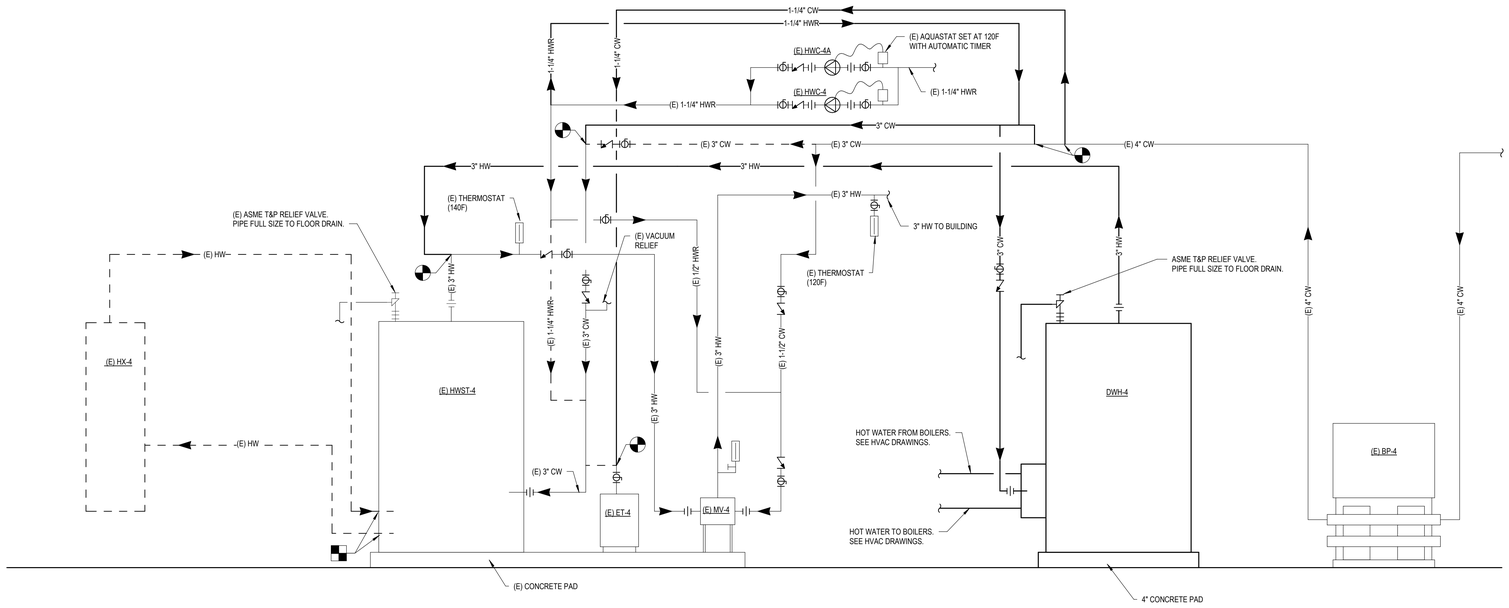
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PROJECT NUMBER

P6.1
SHEET NUMBER

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Plot Date:



1 MOULTRIE BUILDING DOMESTIC WATER HEATING PLANT 1 DETAIL (ZONE-1)
SCALE: NOT TO SCALE



2 MOULTRIE BUILDING DOMESTIC WATER HEATING PLANT 2 DETAIL (ZONE-2)
SCALE: NOT TO SCALE

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SHEET TITLE
PLUMBING DETAILS II

15749.000
PROJECT NUMBER

P6.2
SHEET NUMBER

PE - DOMESTIC WATER HEATER SCHEDULE

TAG	SYSTEM	LOCATION	TYPE	STORAGE CAPACITY	BOILER RECOVERY			RECOVERY				ELECTRICAL		OPERATING WEIGHT	MANUFACTURER	MODEL	REMARKS
					GPM	EWT	LWT	GPH	DELTA T	EWT	LWT	VOLTAGE	PHASE				
DWH-1	DOMESTIC HOT WATER	C STREET MECH. ROOM	INDIRECT FIRED WATER HEATER	300.0 gal	286.0 GPM	180 °F	160 °F	3370	100 °F	40 °F	140 °F	120 V	1	4780.00 lb	PVI	6900 L 300A-QWD	
DWH-2	DOMESTIC HOT WATER	C STREET MECH. ROOM	INDIRECT FIRED WATER HEATER	300.0 gal	286.0 GPM	180 °F	160 °F	3370	100 °F	40 °F	140 °F	120 V	1	4780.00 lb	PVI	6900 L 300A-QWD	
DWH-3	DOMESTIC HOT WATER	C STREET MECH. ROOM	INDIRECT FIRED WATER HEATER	300.0 gal	286.0 GPM	180 °F	160 °F	3370	100 °F	40 °F	140 °F	120 V	1	4780.00 lb	PVI	6900 L 300A-QWD	
DWH-4	DOMESTIC HOT WATER	C STREET MECH. ROOM	INDIRECT FIRED WATER HEATER	300.0 gal	286.0 GPM	180 °F	160 °F	3370	100 °F	40 °F	140 °F	120 V	1	4780.00 lb	PVI	6900 L 300A-QWD	

PE - DRAIN SCHEDULE

TAG	DESCRIPTION	MANUFACTURER	MODEL	REMARKS
FD-1	4" FLOOR DRAIN	JR SMITH	2250	LARGE CAPACITY MECHINCAL ROOM DRAIN WITH SEDIMENT BUCKET. PROVIDE PROSET TRAP GUARD IN FLOOR DRAIN

PE - BACKFLOW PREVENTER SCHEDULE

TAG	DESCRIPTION	CONNECTION SIZE	MODEL	MANUFACTURER	REMARKS
BFP-1	REDUCED PRESSURE ZONE BACKFLOW PREVENTER	0" - 2"	LF009-QT	WATTS	BFP DRAIN DISCHARGE SHALL EXTEND AND TERMINATE INTO NEAREST FLOOR DRAIN WITH INDIRECT CONNECTION.

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P7.1
SHEET NUMBER

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