MECHANICAL SYMBOLS AND ABBREVIATIONS

GRILLES/DIFFUSERS & DAMPER:

- VOLUME CONTROL DAMPER
- MOTORISED DAMPER
- FIRE DAMPER
- BACKDRAFT DAMPER

DUCT SYMBOLS:

- NEW SHEET METAL DUCTWORK
- EXISTING DUCT/PIPE TO BE REMOVED
- EXISTING DUCT/PIPE TO REMAIN
- SUPPLY OR OUTSIDE AIR DUCT
- RETURN AIR DUCT
- EXHAUST AIR DUCT
- DUCTWORK TRANSITION
- SUPPLY DUCT ELBOW UP OR DOWN
- RETURN DUCT ELBOW UP OR DOWN
- EXHAUST DUCT ELBOW UP OR DOWN
- DUCT ELBOW WITH FIXED TURNING VANES
- DUCT BRANCH TAKE-OFF
- ROUND SPIN-IN TAKEOFF
- FLEXIBLE DUCTWORK

EQUIPMENT:

- ROOF MOUNTED EXHAUST FAN
- CEILING MOUNTED EXHAUST FAN
- IN-LINE CABINET FAN
- FAN TERMINAL UNIT
- VAV TERMINAL UNIT
- ROOFTOP UNIT
- UNIT HEATER
- ELECTRIC DUCT HEATER IN DUCT

- (R) SMOKE DETECTOR TEST STATION
- (S) PUSH BUTTON
- (T) THERMOSTAT
- (TS) TEMPERATURE SENSOR
- (H) HUMIDITY SENSOR
- (P) PRESSURE SENSOR
- DUCT SMOKE DETECTOR

GENERAL REFERENCES/NOTATIONS:

- CONNECT TO EXISTING
- (?) NOTE DESIGNATION
- (?) REVISION DESIGNATION
- MARK — MECHANICAL EQUIPMENT DESIGNATION
- MARK / CFM — DIFFUSER DESIGNATION AND CFM
- (N) NEW EQUIPMENT/SERVICE
- (E) EXISTING EQUIPMENT/SERVICE

ABBREVIATIONS:

AD	ACCESS DOOR
AFF	ABOVE FINISHED FLOOR
AHJ	AUTHORITY HAVING JURISDICTION
BOD	BOTTOM OF DUCT
BHP	BRAKE HORSEPOWER
BTU	BRITISH THERMAL UNIT
CFM	CUBIC FEET PER MINUTE
DB	DRY BULB
EC	ELECTRICAL CONTRACTOR
EA	EXHAUST AIR
EAT	ENTERING AIR TEMPERATURE
ESP	EXTERNAL STATIC PRESSURE
EWT	ENTERING WATER TEMPERATURE
FPC	FIRE PROTECTION CONTRACTOR
FOB	FLAT ON BOTTOM
FOT	FLAT ON TOP
GPM	GALLONS PER MINUTE
GC	GENERAL CONTRACTOR
HP	HEAT PUMP
HZ	FREQUENCY
LAT	LEAVING AIR TEMPERATURE
LWT	LEAVING WATER TEMPERATURE
MA	MIXED AIR
MC	MECHANICAL CONTRACTOR
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
NC	NOISE CRITERIA
OA	OUTSIDE AIR
PC	PLUMBING CONTRACTOR
POD	PNEUMATIC OPERATED DAMPER
PD	PRESSURE DROP
PSI	POUNDS PER SQUARE INCH
RA	RETURN AIR
RLF	RELIEF AIR
RTU	ROOFTOP UNIT
SA	SUPPLY AIR
TSP	TOTAL STATIC PRESSURE
TYP	TYPICAL
UNO	UNLESS NOTED OTHERWISE
WC	WATER COLUMN
WB	WET BULB
UH	UNIT HEATER
OAF	OUTSIDE AIR FAN
W.M.S	WIRE MESH SCREEN
E.U.H	ELECTRIC UNIT HEATER

SYMBOLS LEGEND NOTES:

1. REFER TO SPECIFICATIONS AND PLAN NOTES FOR DETAILED DESCRIPTION OF ALL DEVICES SHOWN IN THIS LEGEND, PROVIDED BY CONTRACTOR.

NEW JERSEY BUILDING DEPARTMENT NOTES

ALL WORK SHALL COMPLY WITH APPLICABLE SECTIONS OF NEW JERSEY BUILDING CODE 2021 AND ALL AMENDMENTS AND RULES AND REGULATIONS OF THE DEPARTMENT OF BUILDINGS TO DATE.

1. THE CONTRACTOR SHALL ENGAGE THE THE SERVICES OF A PROFESSIONAL ENGINEER TO PROVIDE THE REQUIRED SPECIAL INSPECTIONS AND TESTS.
2. TESTS WILL BE CONDUCTED UNDER DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, ARCHITECT OR OTHER PERSON HAVING NOT LESS THAN FIVE (5) YEARS EXPERIENCE SUPERVISING THE INSTALLATION OF SUCH MECHANICAL SYSTEMS. THE TESTS WILL SHOW COMPLIANCE WITH 2021 NEW JERSEY BUILDING CODE REQUIREMENTS AS OUTLINES IN SECTION [CHAPTER 17].
3. THE LICENSED PROFESSIONAL ENGINEER, ARCHITECT OR OTHER PERSON HAVING NOT LESS THAN FIVE (5) YEARS EXPERIENCE SUPERVISING THE INSTALLATION OF SUCH MECHANICAL SYSTEMS AND CONDUCTING SUCH TESTS WILL FILE DOCUMENTATION AND REPORTS OF TESTS THAT THE SYSTEM COMPLIES WITH THE CONSTRUCTION DOCUMENTS AND APPLICABLE LAWS.
4. ALL HEATING AND COOLING LOADS CALCULATED PER ASHRAE/ACCA 183.
5. INDOOR DUCT AND PLENUM INSULATION SCHEDULE; (SECTION 230713)
   A. CONCEALED, RECTANGULAR, ROUND AND FLAT-OVAL, SUPPLY-RETURN, OUTDOOR-AND EXHAUST-AIR DUCT AND AIR PLENUM INSULATION:
   B. FLEXIBLE ELASTOMERIC, MINERAL-FIBER BLANKET, MINERAL-FIBER BOARD OR POLYOLEFIN WITH MINIMUM INSTALLED THERMAL RESISTANCE AS FOLLOWS:

UNCONDITIONED SPACES WITHIN BUILDING:	R-6
WITHIN BUILDING ENVELOPE ASSEMBLY:	R-6
OUTSIDE OF BUILDING:	R-8

6. THE FOLLOWING WORK ITEMS, COMPONENTS, MATERIALS, CAPACITIES, ETC. SHALL COMPLY WITH THE REFERENCED CODE OR STANDARD:
   C. STANDARDS OF HEATING - MC 309.1
   D. DUCT CONSTRUCTION AND INSTALLATION- MC 603
   E. AIR INTAKES, EXHAUSTS AND RELIEF - MC 401.5
   F. AIR FILTERS - MC 605
   G. GAS FIRED EQUIPMENT - FUEL GAS CODE
7. MINIMUM TEMPERATURE TO BE MAINTAINED IN OCCUPIED SPACES DURING HEATING SEASON: 68 DEG. FAHRENHEIT.
8. VENTILATION FOR ALL AREA SHALL COMPLY WITH MC 401.
9. A STATEMENT SHALL BE FILED BY THE OWNER OR TENANT IN POSSESSION THAT THE VENTILATION SYSTEM WILL BE KEPT IN CONTINUOUS OPERATION AT ALL TIMES DURING THE NORMAL OCCUPANCY OF THE STRUCTURE AS REQUIRED BY MC 403.3
10. REFER TO ARCHITECTURAL DRAWINGS FOR REQUIRED FIRE-RATED WALL AND SMOKE WALL CONSTRUCTION AND LOCATION.
11. THESE PLANS ARE APPROVED ONLY FOR THE WORK INDICATED ON THE APPLICATION SPECIFICATION SHEET. ALL OTHER MATTERS SHOWN ARE NOT TO BE RELIED UPON OR TO BE CONSIDERED AS EITHER BEING APPROVED OR IN ACCORDANCE WITH APPLICABLE CODES.

APPLICABLE INTERNATIONAL CODES:

- 2021 INTERNATIONAL BUILDING CODE
- 2021 INTERNATIONAL MECHANICAL CODE
- 2021 INTERNATIONAL ENERGY CONSERVATION CODE OR ASHRAE 90.1-2019
- 2020 NATIONAL ELECTRIC CODE
- 2021 NATIONAL PLUMBING CODE

GENERAL HVAC NOTES

GENERAL:

1. PROVIDE ALL MATERIAL AND EQUIPMENT AND PERFORM ALL LABOR REQUIRED TO INSTALL COMPLETE AND OPERABLE MECHANICAL SYSTEMS AS INDICATED ON THE DRAWINGS, AS SPECIFIED AND AS REQUIRED BY CODE.
2. CONTRACT DOCUMENT DRAWINGS FOR MECHANICAL WORK (HVAC, PLUMBING, AND FIRE PROTECTION) ARE DIAGRAMMATIC AND ARE INTENDED TO CONVEY SCOPE AND GENERAL ARRANGEMENT ONLY.
3. THE LOCATIONS OF ALL ITEMS SHOWN ON THE DRAWINGS OR CALLED FOR IN THE SPECIFICATIONS THAT ARE NOT FIXED BY DIMENSIONS ARE APPROXIMATE ONLY. THE EXACT LOCATIONS NECESSARY TO SECURE THE BEST CONDITIONS AND RESULTS MUST BE DETERMINED BY THE PROJECT SITE CONDITIONS AND SHALL HAVE THE APPROVAL OF THE ENGINEER BEFORE BEING INSTALLED. DO NOT SCALE DRAWINGS.
4. WHEN MECHANICAL WORK (HVAC, PLUMBING, SHEET METAL, FIRE PROTECTION, ETC.) IS SUBCONTRACTED, IT SHALL BE THE MECHANICAL CONTRACTOR'S RESPONSIBILITY TO COORDINATE SUBCONTRACTORS AND THE ASSOCIATED CONTRACTS. WHEN DISCREPANCIES ARISE PERTAINING TO WHICH CONTRACTOR PROVIDES A PARTICULAR ITEM OF THE MECHANICAL CONTRACT OR WHICH CONTRACTOR PROVIDES FINAL CONNECTIONS FOR A PARTICULAR ITEM OF THE MECHANICAL CONTRACT, IT SHALL BE BROUGHT TO THE ATTENTION OF THE MECHANICAL CONTRACTOR, WHOSE DECISION SHALL BE FINAL.
5. COORDINATE CONSTRUCTION OF ALL MECHANICAL WORK WITH ARCHITECTURAL, STRUCTURAL, CIVIL, ELECTRICAL WORK, ETC., SHOWN ON OTHER CONTRACT DOCUMENT DRAWINGS.
6. INSTALL ALL MECHANICAL EQUIPMENT AND APPURTENANCES IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS, CONTRACT DOCUMENTS, AND APPLICABLE CODES AND REGULATIONS.
7. WHERE TWO OR MORE ITEMS OF THE SAME TYPE OF EQUIPMENT ARE REQUIRED, THE PRODUCT OF ONE MANUFACTURER SHALL BE USED.
8. COORDINATE ALL EQUIPMENT CONNECTIONS WITH MANUFACTURERS' CERTIFIED DRAWINGS. COORDINATE AND PROVIDE ALL DUCT AND PIPING TRANSITIONS REQUIRED FOR FINAL EQUIPMENT CONNECTIONS TO FURNISHED EQUIPMENT. FIELD VERIFY AND COORDINATE ALL DUCT AND PIPING DIMENSIONS BEFORE FABRICATION.
9. ALL CONTROL WIRE AND CONDUIT SHALL COMPLY WITH THE NATIONAL ELECTRIC CODE AND ELECTRICAL DIVISION OF THE SPECIFICATION.
10. PROVIDE VIBRATION ISOLATION FOR ALL MECHANICAL EQUIPMENT TO PREVENT TRANSMISSION OF VIBRATION TO BUILDING STRUCTURE.
11. LOCATE ALL TEMPERATURE, AND FLOW MEASURING DEVICES IN ACCESSIBLE LOCATIONS WITH THE STRAIGHT SECTION OF PIPE OR DUCT UP- AND DOWNSTREAM AS RECOMMENDED BY THE MANUFACTURER FOR GOOD ACCURACY.
12. WHERE BEAMS ARE INDICATED TO BE PENETRATED WITH DUCTWORK OR PIPING, COORDINATE DUCTWORK AND PIPING LAYOUT WITH BEAM OPENING SIZE AND OPENING LOCATIONS. COORDINATION SHALL BE DONE PRIOR TO THE FABRICATION OF DUCTWORK, CUTTING OF PIPING, OR FABRICATION OF BEAMS.
13. ALL MISCELLANEOUS STEEL REQUIRED TO ENSURE PROPER INSTALLATION AND AS SHOWN IN THE DETAILS FOR DUCTWORK, AND EQUIPMENT (UNLESS OTHERWISE NOTED) SHALL BE FURNISHED AND INSTALLED BY THE MECHANICAL CONTRACTOR.
14. PROVIDE ACCESS PANELS FOR INSTALLATION IN WALLS AND CEILINGS, WHERE REQUIRED, TO SERVICE DAMPERS, VALVES, SMOKE DETECTORS, AND OTHER CONCEALED MECHANICAL EQUIPMENT. ACCESS PANELS SHALL BE TURNED OVER TO THE GENERAL CONTRACTOR FOR INSTALLATION. ACCESS PANELS SHALL HAVE THE EQUAL RATED CAPACITY (1HR, 2HR, ETC.) AS WALL.
15. MECHANICAL EQUIPMENT, DUCTWORK, AND PIPING SHALL NOT BE SUPPORTED FROM A METAL DECK.
16. ALL EQUIPMENT, PIPING, DUCTWORK, ETC., SHALL BE SUPPORTED AS DETAILED, SPECIFIED AND REQUIRED TO PROVIDE A VIBRATION-FREE INSTALLATION.
17. ALL DUCTWORK, PIPING, AND EQUIPMENT SUPPORTED FROM STRUCTURAL STEEL SHALL BE COORDINATED WITH THE GENERAL CONTRACTOR. ALL ATTACHMENTS TO STEEL BAR JOISTS, TRUSSES, OR JOIST GIRDERS SHALL BE AT PANEL POINTS. PROVIDE BEAM CLAMPS MEETING MSS STANDARDS. WELDING TO STRUCTURAL MEMBERS SHALL NOT BE PERMITTED. THE USE OF C-CLAMPS SHALL NOT BE PERMITTED.
18. LOCATIONS AND SIZES OF ALL FLOOR, WALL, AND ROOF OPENINGS SHALL BE COORDINATED WITH ALL OTHER TRADES INVOLVED.
19. ALL OPENINGS IN FIRE WALLS DUE TO DUCTWORK, PIPING, CONDUIT, ETC., SHALL BE FIRE STOPPED WITH A PRODUCT SIMILAR TO 3M OR APPROVED EQUAL.
20. ALL CONDENSATE DRAIN LINES FROM EACH ROOF TOP UNIT SHALL BE PIPED FULL SIZE OF THE UNIT DRAIN OUTLET, WITH "P" TRAP, AND PIPED TO THE NEAREST DRAIN OR GUTTER OR DOWN SPOUT PROVIDED THAT DOWNSPOUT DOES NOT DISCHARGE ONTO PAVEMENT. SEE THE DETAILS SHOWN IN THE DRAWINGS OR THE CONTRACT SPECIFICATIONS FOR THE DEPTH OF THE AIR CONDITIONING CONDENSATE TRAP.
21. REFER TO TYPICAL DETAILS FOR DUCTWORK, PIPING, AND EQUIPMENT INSTALLATION.
22. ALL TESTS SHALL BE COMPLETED BEFORE ANY MECHANICAL EQUIPMENT OR PIPING INSULATION IS APPLIED.
23. TESTING, ADJUSTING, AND BALANCING AGENCY SHALL BE A MEMBER OF THE ASSOCIATED AIR BALANCE COUNCIL (AABC) OR THE NATIONAL ENVIRONMENTAL BALANCING BUREAU (NEBB). TESTING, ADJUSTING, AND BALANCING SHALL BE PERFORMED IN ACCORDANCE WITH THE AABC STANDARDS.

SCOPE OF WORK

SCOPE OF WORK

1. THE WORK UNDER CONTRACT INCLUDES ALL LABOR, MATERIALS AND APPLIANCES NECESSARY FOR THE FURNISHING, INSTALLING AND TESTING, COMPLETE AND READY FOR SAFE OPERATION OF THE SYSTEMS AS DESCRIBED IN THE SPECIFICATIONS, FLOOR PLAN(S) DESIGN, DETAIL DRAWINGS, NOTES, RFI'S, ETC. FOR THIS PROJECT. WORK SHALL BE INSTALLED IN A NEAT, WORKMANLIKE MANNER.
2. THE CONTRACTOR SHALL GIVE NECESSARY NOTICE, FILE DRAWINGS AND SPECIFICATIONS WITH THE DEPARTMENT HAVING JURISDICTION, OBTAIN PERMITS OR LICENSES NECESSARY TO CARRY OUT THIS WORK AND PAY ALL FEES THEREFORE. THE CONTRACTOR SHALL ARRANGE FOR INSPECTION AND TESTS OF ANY OR ALL PARTS OF THE WORK IF SO REQUIRED BY AUTHORITIES AND PAY ALL CHARGES FOR SAME. THE CONTRACTOR SHALL PAY ALL COSTS FOR, AND FURNISH TO THE OWNER BEFORE FINAL BILLING, ALL CERTIFICATES NECESSARY AS EVIDENCE THAT THE WORK INSTALLED CONFORMS WITH ALL REGULATIONS WHERE THEY APPLY TO THIS WORK.
3. THE CONTRACTOR SHALL FURNISH A WRITTEN GUARANTEE TO REPLACE OR REPAIR PROMPTLY AND ASSUME RESPONSIBILITY FOR ALL EXPENSES INCURRED FOR ANY WORKMANSHIP AND EQUIPMENT IN WHICH DEFECTS DEVELOP WITHIN ONE YEAR FROM THE DATE OF FINAL CERTIFICATE FOR PAYMENT AND/OR FROM DATE OR ACTUAL USE OF EQUIPMENT OR OCCUPANCY OF SPACES, BY OWNER, INCLUDED UNDER THE VARIOUS PARTS OF THE WORK, WHICHEVER DATE IS EARLIER. THIS WORK SHALL BE DONE AS DIRECTED BY THE OWNER. THIS GUARANTEE SHALL ALSO PROVIDE THAT WHERE DEFECTS OCCUR, THE CONTRACTOR WILL ASSUME RESPONSIBILITY FOR ALL EXPENSES INCURRED IN REPAIRING AND REPLACING WORK OF OTHER TRADES AFFECTED BY DEFECTS, REPAIRS OR REPLACEMENTS IN EQUIPMENT SUPPLIED BY THE CONTRACTOR.

THERMOSTATIC CONTROL NOTES:

6.4.3.1 ZONE THERMOSTATIC CONTROLS
6.4.3.1.1 GENERAL :
THE SUPPLY OF HEATING AND COOLING ENERGY TO EACH ZONE SHALL BE INDIVIDUALLY CONTROLLED BY THERMOSTATIC CONTROLS RESPONDING TO TEMPERATURE WITHIN THE ZONE. FOR THE PURPOSES OF SECTION 6.4.3.1, A DWELLING UNIT SHALL BE PERMITTED TO BE CONSIDERED A SINGLE ZONE.

EXCEPTIONS:
INDEPENDENT PERIMETER SYSTEMS THAT ARE DESIGNED TO OFFSET ONLY BUILDING ENVELOPE LOADS SHALL BE PERMITTED TO SERVE ONE OR MORE ZONES ALSO SERVED BY AN INTERIOR SYSTEM PROVIDED.
1. THE PERIMETER SYSTEM INCLUDES AT LEAST ONE THERMOSTATIC CONTROL ZONE FOR EACH BUILDING EXPOSURE HAVING EXTERIOR WALLS FACING ONLY ONE ORIENTATION FOR 50 CONTIGUOUS FEET OR MORE, AND
2. THE PERIMETER SYSTEM HEATING AND COOLING SUPPLY IS CONTROLLED BY A THERMOSTATIC CONTROL(S) LOCATED WITHIN THE ZONES(S) SERVED BY THE SYSTEM.
EXTERIOR WALLS ARE CONSIDERED TO HAVE DIFFERENT ORIENTATIONS IF THE DIRECTIONS THEY FACE DIFFER BY MORE THAN 45 DEGREES.

6.4.3.1.2 DEAD BAND:
WHERE USED TO CONTROL BOTH HEATING AND COOLING, ZONE THERMOSTATIC CONTROLS SHALL BE CAPABLE OF PROVIDING A TEMPERATURE RANGE OR DEAD BAND OF AT LEAST 5°F WITHIN WHICH THE SUPPLY OF HEATING AND COOLING ENERGY TO THE ZONE IS SHUT OFF OR REDUCED TO A MINIMUM.

EXCEPTIONS:
1. THERMOSTATS THAT REQUIRE MANUAL CHANGEOVER BETWEEN HEATING AND COOLING MODES.
2. SPECIAL OCCUPANCY OR SPECIAL APPLICATIONS WHERE WIDE TEMPERATURE RANGES ARE NOT ACCEPTABLE (SUCH AS RETIREMENT HOMES, PROCESS APPLICATIONS, MUSEUMS, SOME AREAS OF HOSPITALS) AND ARE APPROVED BY THE AUTHORITY HAVING JURISDICTION.

6.4.3.2 SET POINT OVERLAP RESTRICTION:
WHERE HEATING AND COOLING TO A ZONE ARE CONTROLLED BY SEPARATE ZONE THERMOSTATIC CONTROLS LOCATED WITHIN THE ZONE, MEANS (SUCH AS LIMIT SWITCHES, MECHANICAL STOPS, OR, FOR DDC SYSTEMS, SOFTWARE PROGRAMMING) SHALL BE PROVIDED TO PREVENT THE HEATING SET POINT FROM EXCEEDING THE COOLING SET POINT MINUS ANY APPLICABLE PROPORTIONAL BAND.

6.4.3.3 OFF-HOUR CONTROLS:
HVAC SYSTEMS SHALL HAVE THE OFF-HOUR CONTROLS REQUIRED BY SECTIONS 6.4.3.3.1 THROUGH 6.4.3.3.2.

EXCEPTIONS:
1. HVAC SYSTEMS INTENDED TO OPERATE CONTINUOUSLY.
2. HVAC SYSTEMS HAVING A DESIGN HEATING CAPACITY AND COOLING CAPACITY LESS THAN 15,000 BTU/H THAT ARE EQUIPPED WITH READILY ACCESSIBLE MANUAL ON/ OFF CONTROLS.

6.4.3.3.1 AUTOMATIC SHUTDOWN:
HVAC SYSTEMS SHALL BE EQUIPPED WITH AT LEAST ONE OF THE FOLLOWING:
a. A. CONTROLS THAT CAN START AND STOP THE SYSTEM UNDER DIFFERENT TIME SCHEDULES FOR SEVEN DIFFERENT DAY-TYPES PER WEEK, ARE CAPABLE OF RETAINING PROGRAMMING AND TIME SETTING DURING LOSS OF POWER FOR A PERIOD OF AT LEAST TEN HOURS, AND INCLUDE AN ACCESSIBLE MANUAL OVERRIDE, OR EQUIVALENT FUNCTION, THAT ALLOWS TEMPORARY OPERATION OF THE SYSTEM FOR UP TO TWO HOURS.
b. AN OCCUPANT SENSOR THAT IS CAPABLE OF SHUTTING THE SYSTEM OFF WHEN NO OCCUPANT IS SENSED FOR A PERIOD OF UP TO 30 MINUTES.
c. A MANUALLY OPERATED TIMER CAPABLE OF BEING ADJUSTED TO OPERATE THE SYSTEM FOR UP TO TWO HOURS.
d. AN INTERLOCK TO A SECURITY SYSTEM THAT SHUTS THE SYSTEM OFF WHEN THE SECURITY SYSTEM IS ACTIVATED.

EXCEPTION:
RESIDENTIAL OCCUPANCIES MAY USE CONTROLS THAT CAN START AND STOP THE SYSTEM UNDER TWO DIFFERENT TIME SCHEDULES PER WEEK.

6.4.3.3.2 SETBACK CONTROLS:
HEATING SYSTEMS LOCATED IN CLIMATE ZONES 2-8 SHALL BE EQUIPPED WITH CONTROLS THAT HAVE THE CAPABILITY TO AUTOMATICALLY RESTART AND TEMPORARILY OPERATE THE SYSTEM AS REQUIRED TO MAINTAIN ZONE TEMPERATURES ABOVE A HEATING SET POINT ADJUSTABLE DOWN TO 55°F OR LOWER. COOLING SYSTEMS LOCATED IN CLIMATE ZONES 1B, 2B, AND 3B SHALL BE EQUIPPED WITH CONTROLS THAT HAVE THE CAPABILITY TO AUTOMATICALLY RESTART AND TEMPORARILY OPERATE THE SYSTEM AS REQUIRED TO MAINTAIN ZONE TEMPERATURES BELOW A COOLING SET POINT ADJUSTABLE UP TO 90°F OR HIGHER OR TO PREVENT HIGH SPACE HUMIDITY LEVELS.

No.	Drawing Issues / Revisions	Date
	Issue for Foundation Permit	
	Issue for Building Permit	

Drawing Title:
GENERAL NOTES, SPECIFICATIONS AND LEGENDS

Date: 03/14/25	*Dwg No.* M 0.1
Drawn By: NYE	
Checked By: NYE	
Job No: 23-052	1 of 6

SPECIFICATIONS

SECTION 0001 - NOTICE TO BIDDERS

1.1 BIDDERS REPRESENTATIONS

A. THE BIDDER BY MAKING A BID REPRESENTS THAT:

THE BIDDER HAS READ AND UNDERSTANDS THE BIDDING DOCUMENTS, TO THE EXTENT THAT SUCH DOCUMENTATION RELATES TO THE WORK FOR WHICH THE BID IS SUBMITTED, AND FOR OTHER PORTIONS OF THE PROJECT, IF ANY, BEING BID CONCURRENTLY OR PRESENTLY UNDER CONSTRUCTION.

B. THE BID IS MADE IN COMPLIANCE WITH THE BIDDING DOCUMENTS.

C. THE SPECIFICATIONS AND DRAWINGS ARE INTENDED TO SERVE JOINTLY AS A BASIS FOR THE BIDDER TO SUBMIT A CONTRACT PRICE FOR THE MATERIAL AND LABOR.

D. SHOULD CONFLICTS OR DISCREPANCIES OCCUR WITHIN THE BIDDING DOCUMENTS, THE ITEM OR ITEMS IN DISPUTE THAT REPRESENT THE GREATER COST SHALL PREVAIL IN THE FINAL BID.

E. THE BID IS BASED UPON THE MATERIALS, EQUIPMENT AND SYSTEMS REQUIRED BY THE BIDDING DOCUMENTS WITHOUT EXCEPTION.

1.2 EXISTING CONDITIONS AND COORDINATION

A. THE BIDDER HAS VISITED THE SITE, BECOME FAMILIAR WITH LOCAL CONDITIONS UNDER WHICH THE WORK IS TO BE PERFORMED AND HAS CORRELATED THE BIDDER'S PERSONAL OBSERVATIONS WITH THE REQUIREMENTS OF THE PROPOSED BIDDING DOCUMENTS.

B. THE BIDDER SHALL PROPOSE COORDINATION OF WORK SUCH THAT CONFLICTS WITH OTHER TRADES AND SPACE ALLOCATIONS ARE AVOIDED.

1.3 RESPONSIBILITIES

A. THE BIDDER UNDERSTANDS THAT ANY CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR THE TIMELY COMPLETION AND ACCEPTANCE OF THEIR WORK AND THAT ANY ITEMS DAMAGED, LOST OR STOLEN DURING TIME OF CONSTRUCTION SHALL BE REPAIRED OR REPLACED WITHOUT ANY ADDITIONAL COST TO THE OWNER.

B. THE BIDDER UNDERSTANDS THAT ANY PROPOSED WORK IN OCCUPIED TENANT SPACES SHALL BE PERFORMED DURING TIMES OF NON-TENANT OCCUPANCY OR AS SCHEDULED OR DIRECTED BY THE BUILDING MANAGER.

C. THE BIDDER UNDERSTANDS THAT ANY PROPOSED SHUT-DOWN OF EXISTING SYSTEMS DURING CONSTRUCTION SHALL BE PRE-ARRANGED WITH THE BUILDING MANAGER AND THAT SUCH SHUT-DOWNS ARE TO BE KEPT TO A MINIMUM.

END OF SECTION 0001

SECTION 0101 - QUALITY OF WORK

1.1 WORKMANSHIP

A. ALL WORK SHALL BE FREE FROM DEFECTS IN MATERIALS AND WORKMANSHIP FOR A PERIOD OF ONE YEAR FROM DATE OF FINAL ACCEPTANCE.

B. ALL DEFECTS WHICH DEVELOP OR ARE DISCOVERED WITHIN THIS PERIOD SHALL BE REPAIRED BY THE CONTRACTOR TO THE SATISFACTION OF THE ARCHITECT OR BUILDING MANAGER AT NO ADDITIONAL COST TO THE OWNER.

C. UPON COMPLETION OF THE WORK THE CONTRACTOR SHALL REMOVE FROM THE SITE, ALL TOOLS, DEMOLISHED APPLIANCES AND ANY SURPLUS MATERIAL.

1.2 CODE COMPLIANCE

A. ALL WORK SHALL MEET ALL STATE AND LOCAL CODES HAVING JURISDICTION.

END OF SECTION 0101

SECTION 0102 -REQUIRED DOCUMENTS

1.1 SHOP DRAWINGS

A. A SET OF PRINTS FOR ANY MECHANICAL WORK INCLUDING BUT NOT LIMITED TO, DUCTWORK AND PIPING LAYOUT SHALL BE SUBMITTED FOR APPROVAL TO THE ENGINEER PRIOR TO CONSTRUCTION OR PURCHASE OF MATERIALS.

1.2 SUBMITTALS

A. EQUIPMENT SUBMITTALS OF ALL PROPOSED MECHANICAL AND ANCILLARY EQUIPMENT INCLUDING ALL ACCESSORIES SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW. ALL PERTINENT MODELS, SIZES, ACCESSORIES AND CHOICES SHALL BE CLEARLY CHECKED, PRINTED OR OTHERWISE INDICATED ON THE SUBMITTALS.

1.3 RECORD DRAWINGS

A. UPON COMPLETION OF THE WORK, A RECORD DRAWING SHALL BE SUBMITTED TO THE OWNER DEPICTING ALL SUBSEQUENT CHANGES, ADDITIONS AND OR CORRECTIONS TO THE CONTRACT DRAWINGS AND OR CONTRACT SCOPE MADE DURING CONSTRUCTION. THIS DRAWING SHALL REPRESENT A COMPLETE RECORD OF THE WORK INSTALLED.

1.4 EQUIPMENT OPERATING INSTRUCTIONS

A. ON COMPLETION AND ACCEPTANCE OF WORK, THIS CONTRACTOR SHALL FURNISH WRITTEN INSTRUCTIONS,EQUIPMENT MANUALS AND DEMONSTRATE TO THE OWNER THE PROPER OPERATION AND MAINTENANCE OF ALL EQUIPMENT AND APPARATUS FURNISHED UNDER THIS CONTRACT.

B. THESE INSTRUCTIONS SHALL BE TYPED ON 8-1/2 IN. X 11 IN. PAPER AND BOUND IN THREE-RING BINDERS WITH CLEAR ACETATE COVERS. THE CONTRACTOR SHALL GIVE THREE COPIES OF THE INSTRUCTIONS TO THE OWNER AND ONE ELECTRONIC COPY TO THE ENGINEER.

C. THE INSTRUCTION BOOKLET SHALL BE ORGANIZED IN SECTIONS, WITH ONE SECTION PER SYSTEM. THE COVER OF THE INSTRUCTION BOOKLET SHALL BEAR THE NAME, ADDRESS AND PHONE NUMBER OF THE PROJECT, ARCHITECT, ENGINEER, MECHANICAL CONTRACTOR AND SUBCONTRACTORS.

END OF SECTION 0102

SECTION 230517 - SLEEVES AND SLEEVE SEALS FOR HVAC PIPING

1.1 SLEEVE-SEAL SYSTEMS

A. FIELD-ASSEMBLED, MODULAR SEALING-ELEMENT UNIT FOR FILLING ANNULAR SPACE BETWEEN PIPING AND SLEEVE.

1. SEALING ELEMENTS: EPDM RUBBER OR NBR.
2. PRESSURE PLATES: CARBON STEEL, PLASTIC, STAINLESS STEEL.
3. CONNECTING BOLTS AND NUTS: CARBON STEEL WITH CORROSION-RESISTANT COATING, STAINLESS STEEL.

B. MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, AVAILABLE MANUFACTURERS OFFERING PRODUCTS THAT MAY BE INCORPORATED INTO THE WORK INCLUDE, BUT ARE NOT LIMITED TO, THE FOLLOWING:

1. ADVANCE PRODUCTS & SYSTEMS, INC.
2. CALPICO, INC.
3. METRAFLEX COMPANY (THE).
4. PIPELINE SEAL AND INSULATOR, INC.
5. PROCO PRODUCTS, INC.

1.2 SLEEVE-SEAL FITTINGS

A. MANUFACTURED PLASTIC, SLEEVE-TYPE, PLASTIC OR RUBBER WATER-STOP ASSEMBLY MADE FOR IMBEDDING IN CONCRETE SLAB OR WALL.

1.3 GROUT

A. NON-SHRINK, FACTORY PACKAGED.

1.4 SLEEVE AND SLEEVE-SEAL SCHEDULE

A. USE SLEEVES AND SLEEVE SEALS FOR THE FOLLOWING PIPING-PENETRATION APPLICATIONS.

1. INTERIOR PARTITIONS:
   a. PIPING SMALLER THAN NPS 6 (DN 150): GALVANIZED-STEEL-PIPE SLEEVES, PVC-PIPE SLEEVES.
   b. PIPING NPS 6 (DN 150) AND LARGER: GALVANIZED-STEEL-SHEET SLEEVES.

END OF SECTION 230517

SECTION 230518 - ESCUTCHEONS FOR HVAC PIPING

PART 2 - PRODUCTS

2.1 ESCUTCHEONS

A. ONE-PIECE, CAST-BRASS TYPE: WITH POLISHED, CHROME-PLATED AND ROUGH-BRASS FINISH AND SETSCREW FASTENER.

B. ONE-PIECE, DEEP-PATTERN TYPE: DEEP-DRAWN, BOX-SHAPED BRASS WITH CHROME-PLATED FINISH AND SPRING-CLIP FASTENERS.

C. ONE-PIECE, STAMPED-STEEL TYPE: WITH CHROME-PLATED FINISH AND SPRING-CLIP FASTENERS.

2.2 FLOOR PLATES

A. ONE-PIECE FLOOR PLATES: CAST-IRON FLANGE WITH HOLES FOR FASTENERS.

PART 3 - EXECUTION

3.1 INSTALLATION

A. INSTALL ESCUTCHEONS FOR PIPING PENETRATIONS OF WALLS, CEILINGS, AND FINISHED FLOORS.

B. INSTALL ESCUTCHEONS WITH ID TO CLOSELY FIT AROUND PIPE, TUBE, AND INSULATION OF PIPING AND WITH OD THAT COMPLETELY COVERS OPENING.

1. ESCUTCHEONS FOR NEW PIPING:
   a. PIPING WITH FITTING OR SLEEVE PROTRUDING FROM WALL: ONE-PIECE, DEEP-PATTERN TYPE.
   b. INSULATED PIPING: ONE-PIECE, STAMPED-STEEL TYPE.
   c. BARE PIPING AT WALL AND FLOOR PENETRATIONS IN FINISHED SPACES: ONE-PIECE, CAST-BRASS TYPE WITH POLISHED, CHROME-PLATED FINISH OR STAMPED-STEEL TYPE.
   d. BARE PIPING AT CEILING PENETRATIONS IN FINISHED SPACES: ONE-PIECE, CAST-BRASS TYPE WITH POLISHED, CHROME-PLATED FINISH OR STAMPED-STEEL TYPE.

3.2 FIELD QUALITY CONTROL

A. REPLACE BROKEN AND DAMAGED ESCUTCHEONS AND FLOOR PLATES USING NEW MATERIALS.

END OF SECTION 230518

SECTION 230529 - HANGERS AND SUPPORTS FOR HVAC PIPING AND EQUIPMENT

1.1 PERFORMANCE REQUIREMENTS

A. DELEGATED DESIGN: DESIGN TRAPEZE PIPE HANGERS AND EQUIPMENT SUPPORTS, INCLUDING COMPREHENSIVE ENGINEERING ANALYSIS BY A QUALIFIED PROFESSIONAL ENGINEER, USING PERFORMANCE REQUIREMENTS AND DESIGN CRITERIA INDICATED.

B. STRUCTURAL PERFORMANCE: HANGERS AND SUPPORTS FOR HVAC PIPING AND EQUIPMENT SHALL WITHSTAND THE EFFECTS OF GRAVITY LOADS AND STRESSES WITHIN LIMITS AND UNDER CONDITIONS INDICATED ACCORDING TO ASCE/SEI 7.

1. DESIGN SUPPORTS FOR MULTIPLE PIPES CAPABLE OF SUPPORTING COMBINED WEIGHT OF SUPPORTED SYSTEMS, SYSTEM CONTENTS, AND TEST WATER.

DESIGN EQUIPMENT SUPPORTS CAPABLE OF SUPPORTING COMBINED OPERATING WEIGHT OF SUPPORTED EQUIPMENT AND CONNECTED SYSTEMS AND 3.DESIGN SEISMIC-RESTRAINT HANGERS AND SUPPORTS FOR PIPING AND EQUIPMENT AND OBTAIN APPROVAL FROM AUTHORITIES HAVING JURISDICTION.

1.2 SUBMITTALS

A. SHOP DRAWINGS: SIGNED AND SEALED BY A PROFESSIONAL ENGINEER

1.3 QUALITY ASSURANCE

A. AWS D1.1/D1.1M, "STRUCTURAL WELDING CODE - STEEL."

1.4 COMPONENTS

A. METAL PIPE HANGERS AND SUPPORTS: CARBON OR STAINLESS STEEL

B. TRAPEZE PIPE HANGERS: CARBON OR STAINLESS STEEL

C. FIBERGLASS PIPE HANGERS: -CLEVIS, CENTURY COMPOSITES, COOPER B-LINE

D. METAL FRAMING SYSTEMS: MFMA MANUFACTURER

E. FIBERGLASS STRUT SYSTEMS: COOPER B-LINE

F. THERMAL-HANGER SHIELD INSERTS:

G. FASTENER SYSTEMS: POWDER-ACTUATED FASTENERS OR MECHANICAL-EXPANSION ANCHORS

H. PIPE STANDS: COMPACT, LOW TYPE, SINGLE PIPE, HIGH TYPE, SINGLE PIPE, HIGH TYPE, MULTIPLE PIPES, CURB-MOUNTED TYPE

I. EQUIPMENT SUPPORTS.

END OF SECTION 230529

SECTION 230548 - VIBRATION CONTROLS FOR HVAC PIPING AND EQUIPMENT

PART 1 - GENERAL

1.1 COMPONENTS

A. VIBRATION ISOLATORS:

1. ISOLATOR PADS: NEOPRENE, RUBBER, HERMETICALLY AND/OR SEALED COMPRESSED FIBERGLASS
2. MOUNTS: DOUBLE-DEFLECTION TYPE.
3. RESTRAINED MOUNTS: ALL DIRECTIONAL MOUNTINGS WITH SEISMIC RESTRAINT; CAST-DUCTILE-IRON HOUSING.
4. SPRING ISOLATORS: FREESTANDING, LATERALLY STABLE, OPEN-SPRING TYPE.
5. RESTRAINED SPRING ISOLATORS: FREESTANDING, STEEL, OPEN-SPRING TYPE WITH SEISMIC RESTRAINT.
6. HOUSED SPRING MOUNTS: DUCTILE-IRON OR STEEL HOUSING, WITH INTEGRAL, VERTICALLY ADJUSTABLE SEISMIC SNUBBERS.
7. ELASTOMERIC HANGERS: DOUBLE-DEFLECTION TYPE.
8. SPRING HANGERS: COMBINATION COIL-SPRING AND ELASTOMERIC-INSERT HANGERS WITH SPRING AND INSERT IN COMPRESSION.
9. SPRING HANGERS WITH VERTICAL-LIMIT STOP: COMBINATION COIL-SPRING AND ELASTOMERIC-INSERT HANGERS WITH SPRING AND INSERT IN COMPRESSION AND WITH VERTICAL-LIMIT STOP.
10. PIPE RISER RESILIENT SUPPORT:
    ALL-DIRECTIONAL, ACOUSTICAL PIPE ANCHOR.
11. RESILIENT PIPE GUIDES.

B. AIR-MOUNTING SYSTEMS:

1. AIR MOUNTS: FREESTANDING, SINGLE OR MULTIPLE, COMPRESSED-AIR BELLOWS.
2. RESTRAINED AIR MOUNTS: HOUSED COMPRESSED-AIR BELLOWS.

C. RESTRAINED VIBRATION ISOLATION ROOF-CURB RAILS: FACTORY-ASSEMBLED, FULLY ENCLOSED, INSULATED, AIR- AND WATERTIGHT CURB RAIL; WITH SPRING ISOLATORS MOUNTED ON ELASTOMERIC ISOLATION PADS, AND SNUBBER BUSHINGS.

D. VIBRATION ISOLATION EQUIPMENT BASES:

1. STEEL BASE: FACTORY-FABRICATED, WELDED, STRUCTURAL-STEEL BASES AND RAILS.
2. INERTIA BASE: FACTORY-FABRICATED, WELDED, STRUCTURAL-STEEL BASES AND RAILS READY FOR FIELD-APPLIED, CAST-IN-PLACE CONCRETE

1.2 FIELD QUALITY CONTROL

A. TESTING: BY EITHER: OWNER-ENGAGED AGENCY, CONTRACTOR-ENGAGED AGENCY, OR CONTRACTOR.

PART-2 PRODUCTS

1.1 VIBRATION ISOLATORS & SEISMIC-RESTRAINT DEVICES

A. AVAILABLE MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, MANUFACTURERS OFFERING PRODUCTS THAT MAY BE INCORPORATED INTO THE WORK INCLUDE, BUT ARE NOT LIMITED TO, THE FOLLOWING:

B. MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY ONE OF THE FOLLOWING:

1. ACE MOUNTINGS CO., INC.
2. AMBER/BOOTH COMPANY, INC.
3. CALIFORNIA DYNAMICS CORPORATION.
4. HILTI, INC.
5. ISOLATION TECHNOLOGY, INC.
6. KINETICS NOISE CONTROL.
7. LOOS & CO.; CABLEWARE DIVISION.
8. MASON INDUSTRIES.
9. TOLCO INCORPORATED; A BRAND OF NIBCO INC.
10. UNISTRUT; TYCO INTERNATIONAL, LTD.

END OF SECTION 230548

SECTION 230593 - TESTING, ADJUSTING, AND BALANCING FOR HVAC

1.1 SUMMARY

A. TESTING, ADJUSTING, AND BALANCING FOR THE FOLLOWING:

1. AIR SYSTEMS: CONSTANT VOLUME.

1.2 QUALITY ASSURANCE

A. THE CONTRACTOR SHALL PROCURE THE SERVICES OF A TESTING, ADJUSTING AND BALANCING (TAB) SPECIALIST WHO SPECIALIZES IN HEATING, VENTILATION AND AIR CONDITIONING SYSTEMS. THE TAB AGENT SHALL HAVE THE FOLLOWING QUALIFICATIONS: AABC, NEBB OR TABB CERTIFIED.

1.3 EXECUTION

A. THE TAB SPECIALIST SHALL PERFORM FLOW MEASUREMENTS OF ALL EXISTING AIR AND HYDRONIC SYSTEMS THAT ARE TO REMAIN OR TO BE INCORPORATED INTO NEW WORK PRIOR TO THE STARTING OF WORK IN THE PROJECT SCOPE. A REPORT OF THESE MEASUREMENTS, INDICATING ANY AND ALL DEFICIENCIES SHALL BE SUBMITTED FOR OWNER REVIEW.

B. THE TAB SPECIALIST SHALL PERFORM FLOW MEASUREMENTS OF ALL NEW AIR AND HYDRONIC SYSTEMS AS LISTED ABOVE IN THE PROJECT SCOPE. A REPORT OF THESE MEASUREMENTS, INDICATING ANY AND ALL DEFICIENCIES SHALL BE SUBMITTED FOR OWNER REVIEW.

C. THE REPORT SHALL INDICATE A SCHEMATIC DIAGRAM INDICATING LOCATIONS OF ALL EQUIPMENT TESTED AND MEASUREMENT LOCATIONS.

D. PRIOR TO FINAL INSPECTION OF THE WORK, THE TAB SPECIALIST SHALL BALANCE ALL SYSTEMS AS INDICATED ABOVE TO THE REQUIREMENTS OF THE DESIGN.

E. THE CONTRACTOR SHALL HAVE FURNISH AND INSTALL ALL ADDITIONAL BALANCING EQUIPMENT, PRESSURE TAPS, GAUGES AND OTHER EQUIPMENT AS REQUIRED FOR A PROPERLY BALANCED SYSTEM AT NO ADDITIONAL COST TO THE OWNER. SUCH ADDITIONAL EQUIPMENT SHALL ADHERE IN STRICT ACCORDANCE WITH THE RESPECTIVE EQUIPMENT MANUFACTURER'S RECOMMENDATIONS.

F. THE CONTRACTOR SHALL HAVE THE TESTING AND BALANCING SPECIALIST COORDINATE ALL WORK OF THIS S3ECTION WITH THE BUILDING MANAGER. BALANCING WORK SHALL NOT CONFLICT WITH OTHER WORK SO AS TO MAINTAIN COMPLETION WITHIN THE SPECIFIED TIME.

G. ALL INSTRUMENTS USED FOR TAB SHALL BE MAINTAINED IN GOOD WORKING CONDITION AND ACCURATELY CALIBRATED.

H. TOLERANCES: PLUS OR MINUS 5 PERCENT OF DESIGN VALUES.

I. INSPECTIONS: RANDOM CHECKS BY OWNER OR ARCHITECT TO VERIFY FINAL TESTING, ADJUSTING, AND BALANCING REPORT.

J. ADDITIONAL TESTS: RANDOM TESTS WITHIN 90 DAYS OF COMPLETING TAB TO VERIFY BALANCE CONDITIONS AND SEASONAL TESTS.

END OF SECTION 230593

SECTION 230713 - DUCT INSULATION

1.1 QUALITY ASSURANCE

SURFACE-BURNING CHARACTERISTICS: ALL INSULATION SHALL HAVE COMPOSITE (INSULATION JACKET OR FACING AND ADHESIVE USED TO ADHERE THE FACING OR JACKET TO THE INSULATION) A FLAME-SPREAD INDEX OF 25, AND SMOKE-DEVELOPED INDEX OF 50 FOR INSULATION INSTALLED INDOOR, 75, AND SMOKE-DEVELOPED INDEX OF 150 FOR INSULATION INSTALLED OUTDOORS; ACCORDING TO ASTME 84.

1.2 FIELD QUALITY CONTROL

A. FIELD INSPECTIONS: BY OWNER-ENGAGED AGENCY.

1.3 INDOOR DUCT AND PLENUM INSULATION SCHEDULE;

A. CONCEALED, RECTANGULAR, ROUND AND FLAT-OVAL, SUPPLY-RETURN, OUTDOOR-AND EXHAUST-AIR DUCT AND AIR PLENUM INSULATION:

B. FLEXIBLE ELASTOMERIC, MINERAL-FIBER BLANKET,

MINERAL-FIBER BOARD OR POLYOLEFIN WITH MINIMUM INSTALLED THERMAL RESISTANCE AS FOLLOWS:

UNCONDITIONED SPACES WITHIN BUILDING:	R-6
WITHIN BUILDING ENVELOPE ASSEMBLY:	R-6
OUTSIDE OF BUILDING:	R-8

1.4 ITEMS NOT INSULATED:

1. FIBROUS-GLASS DUCTS.
2. METAL DUCTS WITH DUCT LINER OR SUFFICIENT THICKNESS TO COMPLY WITH ENERGY CODE ANDASHRAE/IESNA 90.1.
3. FACTORY-INSULATED FLEXIBLE DUCTS.
4. FACTORY-INSULATED PLENUMS AND CASINGS.
5. FLEXIBLE CONNECTORS.
6. VIBRATION-CONTROL DEVICES.
7. FACTORY-INSULATED ACCESS PANELS AND DOORS.
8. DUCTS THAT HAVE INTERNAL ACOUSTICAL LINING.

1.5 PRODUCTS

A. THE FOLLOWING INSULATION MANUFACTURERS WILL BE ACCEPTABLE:

1. JOHNS-MANVILLE
2. OWENS-CORNING

1.6 ACOUSTICAL TREATMENT

1. WHERE SHOWN ON THE DRAWINGS, LOW PRESSURE DUCTWORK SHALL BE LINED WITH 1.5" THICK R-6 AS MANUFACTURED BY DUCTMATE, 1-1/2 POUND MINIMUM DENSITY, NEOPRENE COATED, FLEXIBLE FIBERGLASS DUCT LINER. LINING SHALL COMPLY WITH NFPA 90A AND SHALL HAVE A FLAME SPREAD CLASSIFICATION OF NOT MORE THAN 25 AND A SMOKE DEVELOPED RATING NOT MORE THAN 50. DUCT SIZES WHERE LINING IS INDICATED ON PLANS ARE MINIMUM INSIDE CLEAR DIMENSIONS REQUIRED,

END OF SECTION 230713

SECTION 233113 - METAL DUCTS

1.1 CONSTRUCTION

A. EACH DUCT SYSTEM SHALL BE CONSTRUCTED FOR THE SPECIFIC SMACNA DUCT PRESSURE CLASSIFICATIONS SHOWN ON THE CONTRACT DRAWINGS. WHERE NO PRESSURE CLASSES ARE SPECIFIED BY THE DESIGNER, THE SMACNA 1 INCH WG PRESSURE, SEAL CLASS "A".

B. ALL DUCTWORK SHALL BE CONSTRUCTED TO SMACNA 1" WG DESIGN AND NOT LESS THAN THE FOLLOWING STANDARDS:

1. CONSTRUCT SO THAT ALL INTERIOR SURFACES ARE SMOOTH. USE SLIP AND DRIVE OR FLANGED AND BOLTED CONSTRUCTION WHEN FABRICATING RECTANGULAR DUCTWORK. USE SPIRAL LOCK SEAM CONSTRUCTION WHEN FABRICATING ROUND SPIRAL DUCTWORK. SHEET METAL SCREWS MAY BE USED ON DUCT HANGERS, TRANSVERSE JOINTS AND OTHER SMACNA APPROVED LOCATIONS IF THE SCREW DOES NOT EXTEND MORE THAN 1/2 INCH INTO THE DUCT.
2. SHEET STEEL SHALL COMPLY WITH ASTMA653 STANDARD SPECIFICATION FOR STEEL SHEET METAL, ZINC COATED (GALVANIZED) OR ZINC IRON ALLOY-COATED (GALVANINEALED) BY HOT DIP PROCESS, AND A924 STANDARD SPECIFICATION FOR GENERAL REQUIREMENT FOR SHEET METALLIC-COATED BY HOT DIP PROCESS. ALL ANGLE IRON USED FOR SUPPORT SHALL BE GALVANIZED. CONNECTIONS TO WALLS OR FLOOR SHALL BE AIR TIGHT WITH ANGLE IRON AND CAULKING. SEAL ALL DUCT SEAMS, TRANSVERSE AND LONGITUDINAL, AIR TIGHT. PROVIDE TURNING VANES ALL 90° ELBOWS.
3. LONGITUDINAL SEAMS FOR RECTANGULAR DUCTWORK SHALL BE PITTSBURGH LOCK SEAMS WITH SEALING COMPOUND, EQUAL TO BENJAMIN FOSTER NO. 30-03 INSERTED INTO SEAM. ALL SEAMS SHALL BE BRUSHED WITH NO. 30-02 AND COVERED WITH APPROVED SEALING TAPE.
4. RECTANGULAR DUCTWORK 18 GAUGE AND HEAVIER, FILLER RODS SHALL BE IN ACCORDANCE WITH SPECIFICATIONS FOR IRON AND STEEL GAS WELDING RODS, ASTM 215; AWG A5.2.

C. WHERE LATEST EDITION OF SMACNA DOES NOT CLEARLY STATE GAUGES AND/OR STIFFENERS TO BE USED OR, WHERE SMACNA STANDARDS REQUIRE INTERPRETATION, THE FOLLOWING MINIMUM METAL GAUGES AND BRACING SHALL BE USED:

USG	MAX. SIDE INCHES	TRANSVERSE JOINTS AND BRACING
22	UP TO 12	S SLIP, DRIVE SLIP, ONE INCH POCKET LOCK ON 8 FOOT CENTERS
22	13 TO 24	1"X1"X1/8" ANGLES ON 4 FOOT CENTERS
20	25 TO 35	1"X1"X1/8" ANGLES ON 2 FOOT CENTERS

D. PROVIDE TAPPING IN DUCTS FOR THERMOMETERS WHERE SPECIFIED. IN ADDITION, PROVIDE AN AIRTIGHT PLUGGED TAPPING LOCATED AS FOLLOWS:

1. UPSTREAM OF EACH REHEAT COIL AND VAV BOX.
2. DOWNSTREAM OF EACH REHEAT COIL AND VAV BOX.

E. FLAT OVAL OR ROUND DUCTWORK MAY BE PROVIDED IN LIEU RECTANGULAR DUCTWORK WITH THE REINFORCEMENT FOR FLAT SIDES SAME AS SPECIFIED FOR THE RECTANGULAR DUCTWORK, AND AS PER SMACNA FLAT OVAL DUCT CONSTRUCTION STANDARDS SHOWN IN FIG. 3-6 AND AS SHOWN IN FIG. 3-1 AND 3-2 FOR ROUND DUCTWORK.

F. ALL DUCTWORK SHALL BE SEALED TO CLASS "A" AND LEAK TESTED TO MEAT SMACNA CLASS 6 FOR RECTANGULAR AND CLASS 3 FOR ROUND DUCTS.

1.2 MATERIALS

A. SINGLE-WALL RECTANGULAR DUCTS AND FITTINGS.

B. SINGLE-WALL ROUND AND FLAT-OVAL DUCTS AND FITTINGS.

C. SHEET METAL MATERIALS:

1. GALVANIZED SHEET STEEL.
2. STAINLESS-STEEL SHEETS.
3. ALUMINUM SHEETS.
4. FACTORY-APPLIED ANTI-MICROBIAL COATING.

D. DUCT LINER:

1. FIBROUS GLASS, TYPE I, FLEXIBLE.
   a. WITH ANTI-MICROBIAL EROSION-RESISTANT COATING.
2. FLEXIBLE ELASTOMERIC.
3. NATURAL FIBER.

E. SEALANT MATERIALS:

1. TWO-PART TAPE SEALING SYSTEM.
2. WATER-BASED JOINT AND SEAM SEALANT.
3. SOLVENT-BASED JOINT AND SEAM SEALANT.
4. FLANGED JOINT SEALANT.
5. FLANGE GASKETS.
6. ROUND DUCT JOINT O-RING SEALS.

1.3 DUCT CLEANING

A. CLEAN EXISTING DUCT SYSTEM(S) BEFORE TESTING, ADJUSTING, AND BALANCING.

B. CLEAN THE FOLLOWING ITEMS:

1. AIR OUTLETS AND INLETS.
2. SUPPLY, RETURN, AND EXHAUST FANS.
3. AIR HANDLING UNIT.
4. COILS AND RELATED COMPONENTS.
5. RETURN-AIR DUCTS, DAMPERS, ACTUATORS, AND TU VANES.
6. SUPPLY-AIR DUCTS, DAMPERS, ACTUATORS, AND TU VANES.
7. DEDICATED EXHAUST AND VENTILATION COMPONENTS MAKEUP AIR SYSTEMS.

1.4 DUCT SCHEDULE

A. ALL DUCTS SHALL BE GALVANIZED STEEL EXCEPT AS FOLLOW

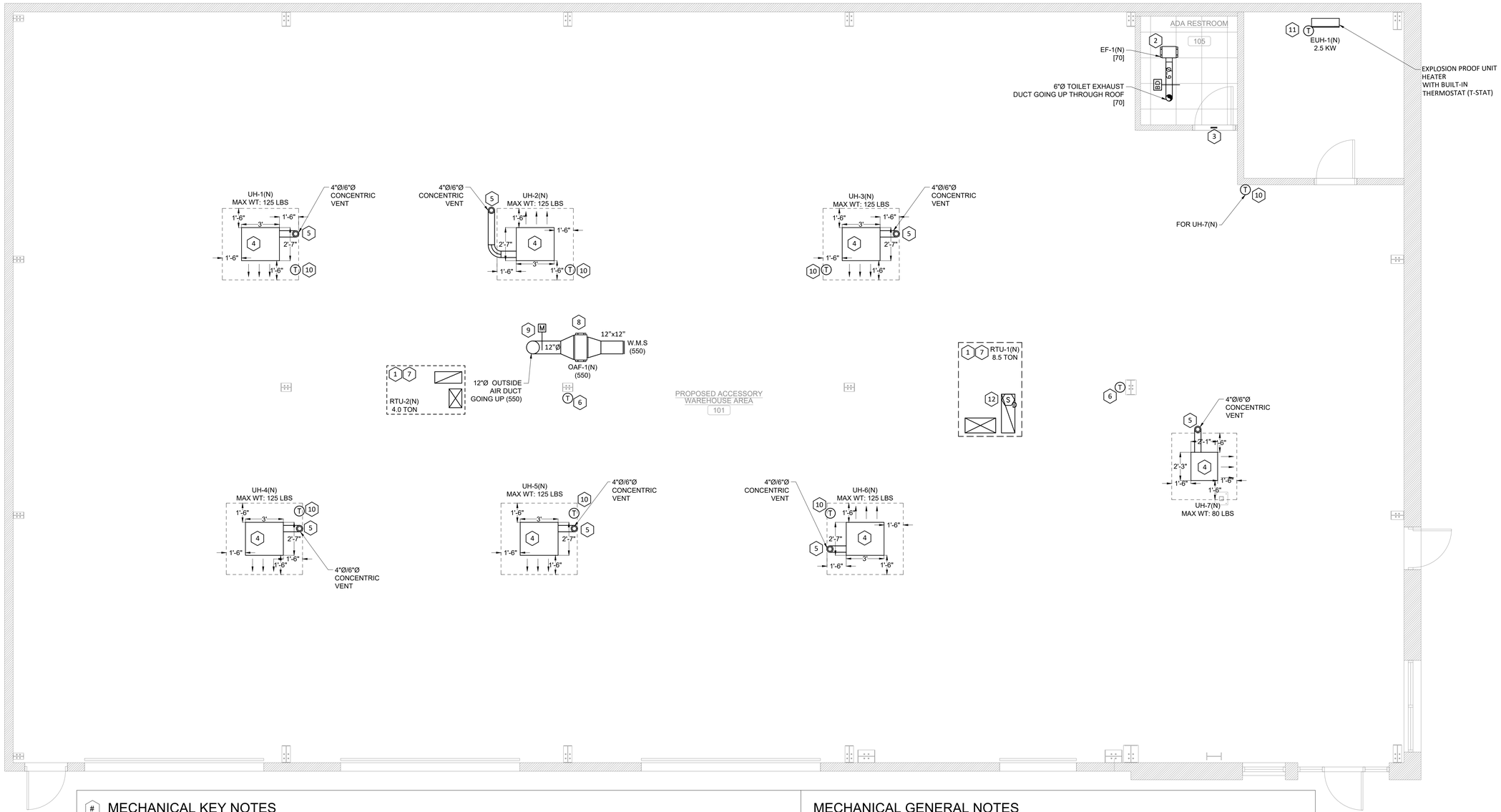
1. MOIST ENVIRONMENT DUCT MATERIAL: ALUMINUM.

END OF SECTION 233113

No.	Drawing Issues / Revisions	Date
	Issue for Foundation Permit	
	Issue for Building Permit	

Drawing Title:
MECHANICAL SPECIFICATIONS

Date: 03/14/25
Drawn By: NYE
Checked By: NYE
Job No: 23-052
Dwg No. M 0.2
2 of 6



MECHANICAL KEY NOTES

1. CONTRACTOR TO PROVIDE NEW RTUs FOR FUTURE OFFICE SPACE. FIELD VERIFY THE EXACT LOCATION ON SITE. EXTEND FULL SIZE SUPPLY & RETURN DUCTWORK FROM ROOFTOP UNITS TO FUTURE OFFICE SPACE FOR FUTURE TIE-INS. PROVIDE END CAPS. EXTEND AS SHOWN. TRANSITION DUCT AS NECESSARY TO MAKE CONNECTION. ACOUSTICALLY LINE THE FIRST 10'-0" OF BOTH SUPPLY AND RETURN MAIN DUCTS.
2. CEILING MOUNTED EXHAUST FAN. TRANSITION FROM FAN DISCHARGE TO DUCT SIZE SHOWN AND ROUTE 6"Ø EXHAUST DUCT UP THROUGH ROOF WITH TALL CONE FLASHING, WEATHER SKIRT, AND GOOSE NECK. MAINTAIN A MINIMUM OF 10'-0" FROM ALL OUTSIDE AIR INTAKES.
3. UNDERCUT DOOR 1/2" FOR TRANSFER AIR.
4. PROVIDE A NEW CEILING SUSPENDED MODINE UNIT HEATER. PROVIDE STRUCTURE SUPPORT AS REQUIRED .CONTRACTOR TO COORDINATE THE EXACT LOCATION OF THE UNIT HEATER ON SITE AND INSTALL AS PER THE MANUFACTURER'S INSTRUCTIONS.
5. PROVIDE AND INSTALL 4"Ø/6"Ø CONCENTRIC VENT KIT FOR UNIT HEATER INTAKE & EXHAUST VENT PIPE UP THROUGH ROOF. INSTALL AS PER MANUFACTURER'S INSTRUCTIONS.
6. INSTALL AND WIRE A NEW 7-DAY PROGRAMMABLE THERMOSTAT FOR RTU-1(N) & RTU-2(N). COORDINATE EXACT LOCATION WITH ARCHITECT AND OWNER PRIOR TO ROUGH-IN.
7. PROVIDE TEMPERATURE SENSOR IN THE RETURN AIR DUCT OF THE RTUs.
8. PROVIDE CEILING SUSPENDED OUTSIDE AIR FAN. TRANSITION FROM FAN TO DUCT SIZE SHOWN AND ROUTE 12"Ø OUTSIDE AIR DUCT UP THROUGH ROOF WITH TALL CONE FLASHING, WEATHER SKIRT, AND GOOSE NECK. MAINTAIN A MINIMUM OF 10'-0" FROM ALL EXHAUST AIR TERMINATIONS.
9. M.D TO BE INTERLOCKED WITH THE OUTSIDE AIR FAN.
10. THERMOSTAT SHOULD BE MOUNTED ON AN INTERIOR WALL ABOUT 5 FT. ABOVE FLOOR LEVEL WHERE IT WILL NOT BE AFFECTED BY HEAT FROM THE UNIT OR OTHER SOURCES, OR DRAFTS FROM FREQUENTLY OPENED DOORS. INSTALL AS PER MANUFACTURER'S INSTRUCTIONS.
11. WALL MOUNTED UNIT HEATER PROVIDED. INSTALL AS PER MANUFACTURERS RECOMMENDATIONS.
12. PROVIDE SMOKE DETECTOR. SMOKE DETECTOR SHALL BE FURNISHED/INSTALLED BY MECHANICAL CONTRACTOR AND WIRED BY ELECTRICAL CONTRACTOR TO SHUT DOWN CORRESPONDING RTU UNDER ALARM CONDITIONS. ALL WIRING SHALL BE IN CONDUIT PER N E C SMOKE DETECTOR SHALL BE SYSTEM SENSOR MODEL DH100ACDCLP OR EQUAL.

MECHANICAL GENERAL NOTES

A. CONTRACTOR SHALL BALANCE EACH DEVICE WITH THE CFM SHOWN ON PLAN.
B. NEW DUCTWORK SHOWN ON PLAN ARE SCHEMATIC ONLY. CONTRACTOR SHALL COORDINATE WITH OTHER TRADES FOR PIPING AND DUCTWORK ROUTING. OFFSET AND RUN PIPING, DUCTWORK INSIDE THE STRUCTURE IF REQUIRED. PROVIDE ANY EXTRA PIPING, DUCTWORK, FITTINGS, INSULATIONS AND OTHER ACCESSORIES IN ORDER TO COMPLETE THE INSTALLATION.
C. COORDINATE LOCATIONS AND SIZES OF ROOF OPENINGS WITH OWNER AND STRUCTURAL ENGINEERS.
D. EQUIPMENT SIZES, DIMENSIONS AND REQUIRED CONNECTIONS SHALL BE VERIFIED WITH THE ACTUAL EQUIPMENT SELECTED VENDOR DRAWINGS BEFORE FABRICATION OF DUCTWORK, PIPING ETC.
E. DUCT SIZES SHOWN ON PLANS ARE CLEAR INSIDE AIR STREAM DIMENSIONS.
F. CONTRACTOR SHALL COORDINATE ALL ELECTRICAL REQUIREMENTS FOR ALL HVAC BASED ON ACTUAL EQUIPMENT SELECTED PRIOR TO INSTALLATION.
G. CONTRACTOR SHALL COORDINATE EQUIPMENT WEIGHTS AND SUPPORTS BASED ON ACTUAL EQUIPMENT SELECTED.
H. ALL SOURCE OF MECHANICAL INTAKE SHALL MAINTAIN 10 LINEAR FEET SEPARATION BETWEEN IT AND ANY SOURCE OF EXHAUST. CONTRACTOR IS RESPONSIBLE TO ADJUST DUCT LENGTH AS NEEDED.
I. MOUNT DUCTWORK AS HIGH AS POSSIBLE.
J. TEST AND BALANCE AIR SYSTEMS. PROVIDE REPORT TO G.C AND OWNER.
K. NEW DUCTWORK IN CONCEALED AREAS MAY BE RECTANGULAR WITH EQUIVALENT CROSS SECTIONAL FLOW AREA.
L. PROVIDE FIRE OR FIRE+SMOKE DAMPER WHEREVER DUCTS ARE CROSSING FIRE/SMOKE RATED WALLS/BARRIERS. COORDINATE WITH ARCHITECTURAL DRAWINGS FOR FIRE RATINGS OF THE WALLS.
M. PROVIDE MINIMUM R-6 INSULATION FOR SUPPLY & RETURN AIR DUCTS & MINIMUM R-8INSULATION FOR DUCTS LOCATED OUTSIDE BUILDING BLANKET TYPE INSULATION WITH VAPOR BARRIER. PROVIDE ACOUSTIC INSULATION ON MAIN SUPPLY AND RETURN DUCTS UP TO 10 FT. FROM HVAC UNIT.

1 MECHANICAL FIRST FLOOR PLAN
SCALE: 1/4" = 1'-0"

No.	Drawing Issues / Revisions	Date
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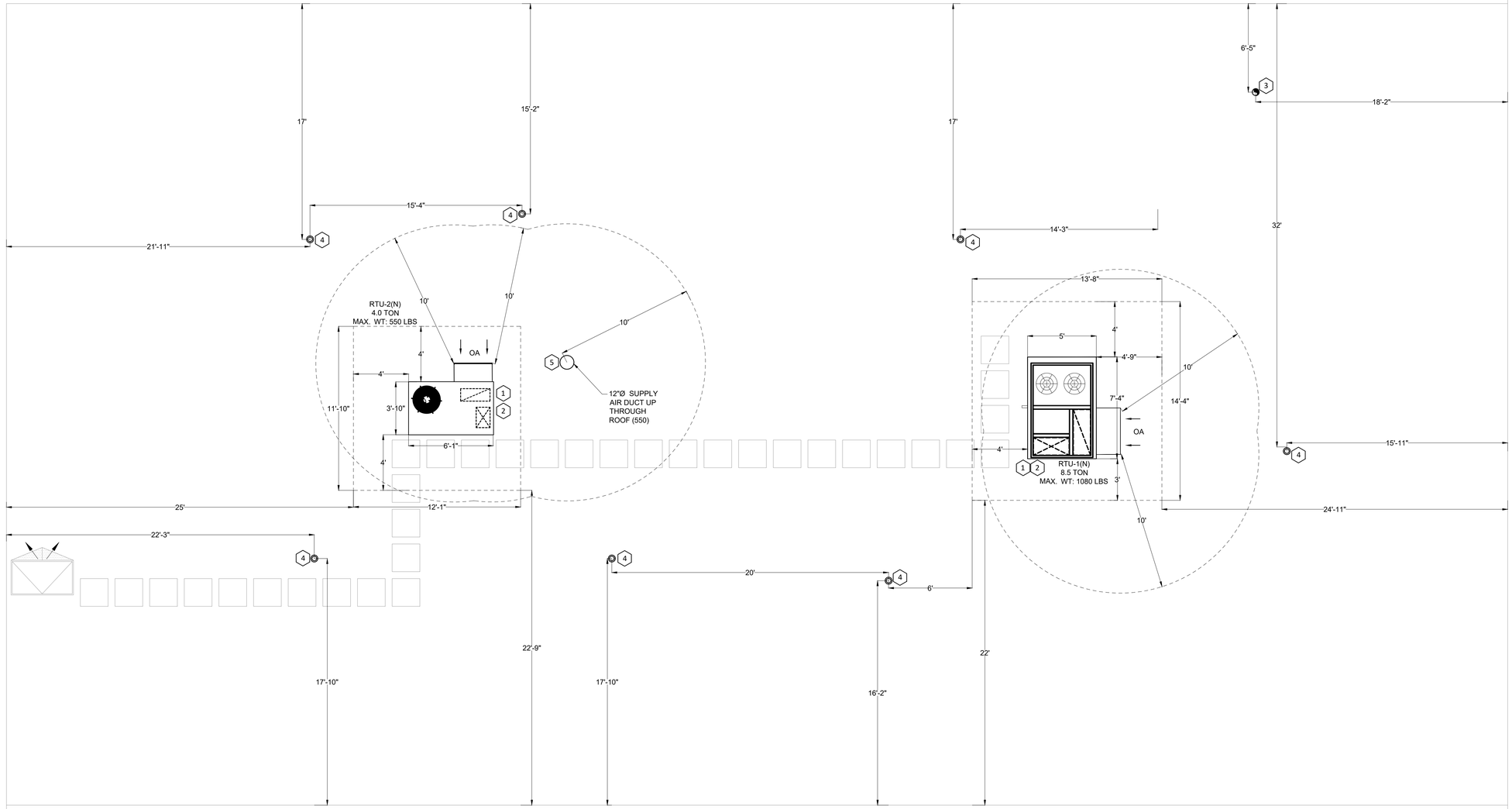
	Issue for Building Permit	

Drawing Title:
MECHANICAL
FIRST FLOOR PLAN

Date: 03/14/25	*Dwg No.* M 1.1
Drawn By: NYE	
Checked By: NYE	
Job No: 23-052	3 of 6



#	MECHANICAL ROOF PLAN KEY NOTES
1.	PROVIDE NEW ROOF TOP UNITS RTU-1(N) & RTU-2(N). FURNISH AND INSTALL FLEXIBLE CONNECTION ON THE SUPPLY & RETURN DUCT CONNECTION TRANSITION TO DUCT SIZE INDICATED.
2.	CONDENSATE DRAIN FROM RTU-1(N) & RTU-2(N) SHALL BE CONVEYED TO AN APPROVED PLACE OF DISPOSAL. SUCH PIPING SHALL MAINTAIN A MINIMUM HORIZONTAL SLOPE IN THE DIRECTION OF DISCHARGE OF NOT LESS THAN THE 1/8TH UNIT VERTICAL IN 12 UNITS HORIZONTAL (1% SLOPE). CONDENSATE SHALL NOT DISCHARGE INTO A STREET, ALLEY OR OTHER AREAS SO AS TO CAUSE A NUISANCE.
3.	Ø6" EXHAUST DUCT UP THROUGH ROOF WITH GOOSE NECK, BIRD SCREEN, ROOF JACK, STORM COLLAR, AND ALL-WEATHER CAP. MAINTAIN A MINIMUM OF 10'-0" FROM ALL OUTSIDE AIR INTAKES.
4.	4"Ø/6"Ø CONCENTRIC VENT FOR UNIT HEATER INTAKE & EXHAUST VENT PIPE UP THROUGH ROOF. TERMINATE AS PER MANUFACTURERS RECOMMENDATION.
5.	12"Ø OUTSIDE AIR DUCT FROM OAF-1(N), TERMINATE WITH GOOSE NECK, BIRD SCREEN, ROOF JACK, STORM COLLAR, AND ALL-WEATHER CAP. MAINTAIN A MINIMUM OF 10'-0" FROM ALL EXHAUST AIR TERMINATIONS.

MECHANICAL GENERAL NOTES

A. COORDINATE LOCATIONS AND SIZES OF ROOF OPENINGS WITH OWNER AND STRUCTURAL ENGINEERS.
B. EQUIPMENT SIZES, DIMENSIONS AND REQUIRED CONNECTIONS SHALL BE VERIFIED WITH THE ACTUAL EQUIPMENT SELECTED VENDOR DRAWINGS BEFORE FABRICATION OF DUCTWORK, PIPING ETC.
C. CONTRACTOR SHALL COORDINATE ALL ELECTRICAL REQUIREMENTS FOR ALL HVAC BASED ON ACTUAL EQUIPMENT SELECTED PRIOR TO INSTALLATION.
D. ALL SOURCE OF MECHANICAL INTAKE SHALL MAINTAIN 10 LINEAR FEET SEPARATION BETWEEN ANY SOURCE OF EXHAUST. CONTRACTOR IS RESPONSIBLE TO ADJUST DUCT LENGTH AS NEEDED.
E. TEST AND BALANCE AIR SYSTEMS. PROVIDE REPORT TO GENERAL CONTRACTOR AND OWNER.
F. ALL RTUs WEIGHTS ARE INCLUDING ROOF CURBS AND/OR ADAPTORS.
G. CONTRACTOR SHALL COORDINATE ALL ELECTRICAL REQUIREMENTS FOR ALL HVAC BASED ON ACTUAL EQUIPMENT SELECTED PRIOR TO INSTALLATION.

1 MECHANICAL ROOF PLAN
SCALE: 1/4" = 1'-0"

No.	Drawing Issues / Revisions	Date
	Issue for Foundation Permit	
	Issue for Building Permit	

Drawing Title:
MECHANICAL
ROOF PLAN

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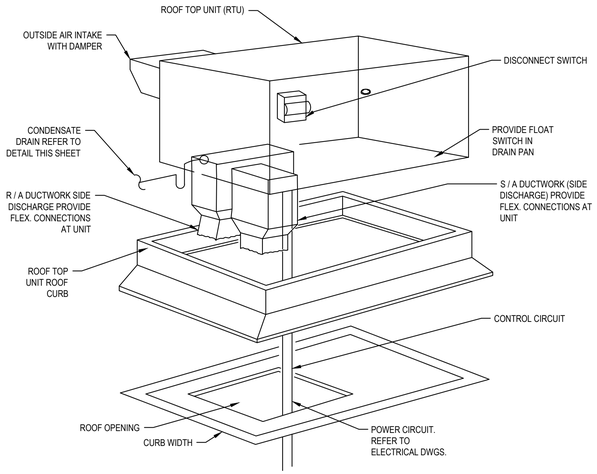
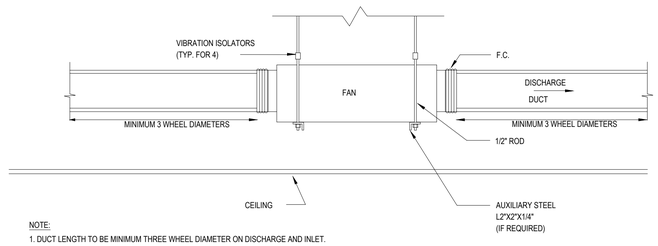
Job No: 23-052	4 of 6



NOTES:
1. DUCT TRANSITION FROM RTU TO DUCT SIZE SHOWN ON MECH. FLOOR PLAN SHALL BE MADE BETWEEN RTU & TOP OF ROOF WITHIN CURB.
2. SIZE OF OPENING IN ROOF DECK TO BE AS SMALL AS POSSIBLE. COORDINATE W / STRUCT. DWGS (6" MIN. LARGER THAN DUCT SIZE SHOWN)
3. INSTALL PER MANUFACTURER'S RECOMMENDATION AND INSTALLATION MANUAL.

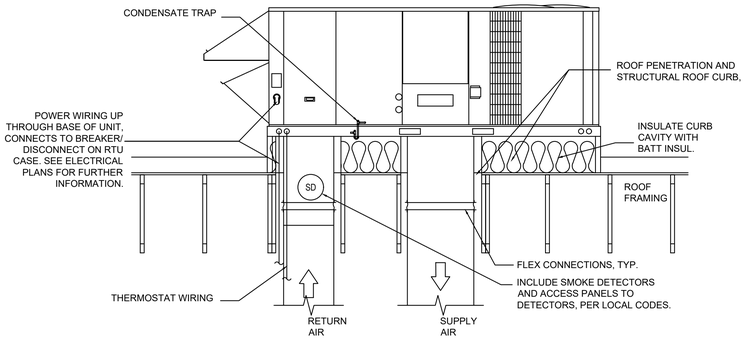
GC TO COORDINATE WITH TITAN STRUCTURES FOR ALL ROOFTOP EQUIPMENT MOUNTING.

1 / M3.1 ROOF TOP UNIT INSTALLATION DETAILS
N.T.S

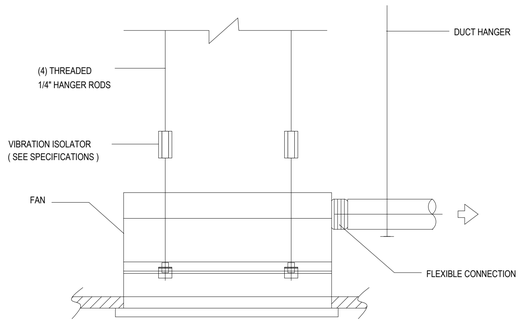


NOTE:
1. DUCT LENGTH TO BE MINIMUM THREE WHEEL DIAMETER ON DISCHARGE AND INLET.

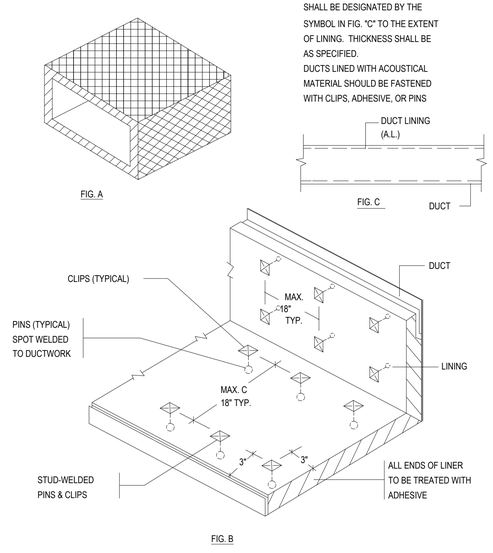
2 / M3.1 INLINE FAN SUPPORT DETAIL
N.T.S



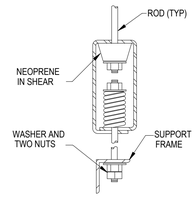
3 / M3.1 TYPICAL ROOF TOP UNIT DETAILS
N.T.S



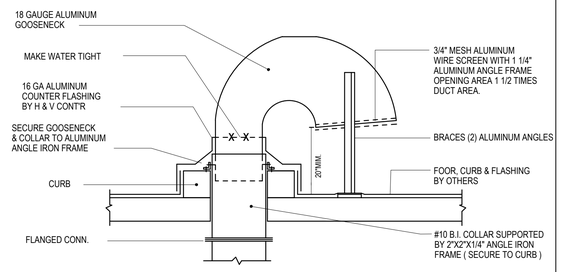
4 / M3.1 CEILING FAN HANGING SUPPORT DETAIL
N.T.S



5 / M3.1 ACOUSTICAL TREATMENT DUCT LINING
N.T.S



6 / M3.1 VIBRATION ISOLATOR
N.T.S



7 / M3.1 TYPICAL DETAIL OF ROOF GOOSENECK
N.T.S

No.	Drawing Issues / Revisions		Date
	Issue for Foundation Permit		
	Issue for Building Permit		

Drawing Title:
MECHANICAL DETAILS
(1 OF 2)

Date:	Dwg No.
03/14/25	M 3.1
Drawn By: NYE	
Checked By: NYE	
Job No: 23-052	5 of 6

ROOF TOP UNIT SCHEDULE

UNIT ID	MANUFACTURER	MODEL	AREA SERVED	NOMINAL TONS	SUPPLY FAN			GAS HEAT		COOLING					ELECTRICAL							OPERATING WEIGHT (LBS)	NOTES
					TOTAL CFM	OUTSIDE AIR CFM	EXTERNAL STATIC PRESSURE(IN. W.G.)	INPUT MBH	OUTPUT MBH	TOTAL MBH	SENSIBLE MBH	AMBIENT DB (°F)	ENTERING DB / WB(°F)	STAGES	VOLTS	PHASE	MCA(A)	MOCP(A)	EER/EER2	IEER/SEER2	THERMAL EFFICIENCY (%)		
RTU-1(N)	CARRIER	48FCEN09	MEZZANINE FLOOR	8.5	3400	250	1.0	180	148	101.8	79	95	80/67	2	208	3	41	50	11.2	15.0	82.0	1080	1-19
RTU-2(N)	CARRIER	48GCEJ05	FIRST FLOOR	4.0	1600	100	1.0	67	54	49.9	37.8	95	80/67	2	208	3	26	30	12.0	16.0	81.0	550	1-16

NOTES / ACCESSORIES -

1. ALL EQUIPMENT MUST BE MEETING OR EXCEEDING THE BRANDS MINIMUM REQUIREMENTS.
2. ELECTRICAL CONNECTION TO BE SINGLE POINT AND TO BE THROUGH THE BOTTOM OF THE UNIT.
3. PROVIDE DISCONNECT SWITCH AND AN UNPOWERED GFIC RECEPTACLE.
4. 14" ROOF CURB - CONTRACTOR SHALL FIELD INSULATE. SHIP ASAP AHEAD OF THE UNIT.
5. CONDENSATE DRAIN WITH 2" DEEP VENTED TRAP DISCHARGE TO SPLASH BLOCK ON ROOF.
6. CABINET WITH 1/2" FIBERGLASS INSULATION.
7. UNIT SHALL BE COMPLETE WITH NATURAL GAS HEATING SECTION WITH LP KIT. GAS REGULATOR TO RECEIVE (4-13)" GAS PRESSURE FROM MAIN.
8. PROVIDE 8-WIRE, 24 VAC, AUTOMATIC CHANGEOVER, 2-STAGE HEAT / COOL, REMOTELY PROGRAMMABLE THERMOSTAT.
9. REMOTE SENSORS SHALL BE PROVIDED IN SPACE WIRED BACK TO PROGRAMMABLE, 24 HOUR, 7 DAY, THERMOSTATS.
10. ANTI SHORT CYCLE TIMER.
11. THROWAWAY 2" FILTERS (MERV 8).
12. WHERE REQUIRED, PROVIDE LOW AMBIENT COOLING CAPABILITY DOWN TO 0 DEGREES F.
13. PROVIDE ALL COMPRESSORS WITH 5 YEAR WARRANTY.
14. VFD SUPPLY FAN
15. PROVIDE HOT-GAS BY PASS.
16. PLUMBING CONTRACTOR TO COORDINATE EXACT GAS REQUIREMENTS OF RTU'S INSTALLED ON SITE.
17. RETURN AIR SMOKE DETECTOR - UNIT MOUNTED
18. PROVIDE HOT GAS REHEAT WITH ASSOCIATED CONTROLS AND SENSORS FOR DEHUMIDIFICATION CONTROL.
19. DRY BULB ECONOMIZER WITH BAROMETRIC RELIEF / 25% MANUAL OUTSIDE AIR DAMPER ASSEMBLY WITH HOOD (ZONE 'E' ONLY). PROVIDE ECONOMIZER WITH FDD.

EXHAUST FAN SCHEDULE

TAG	QUANTITY	FLOW RATE	EXTERNAL STATIC PRESSURE	SPEED	ELECTRIC DATA			MAXIMUM LOUDNESS	BASIS OF DESIGN		WEIGHTS (LBS)	REMARK
		CFM	IN W.G.	RPM	V/PH/HZ	MCA (A)	FLA (AMPS)	DBA	MANUFACTURER	MODEL		
EF-1 (N)	1	70	0.7	900	115/1/60	0.6(MCA)	0.46	48	GREENHECK	SP-A200	40	1,2,3,4
EF-2 (N) (FUTURE OFFICE SPACE)	1	70	0.7	900	115/1/60	0.6(MCA)	0.46	48	GREENHECK	SP-A200	40	1,2,3,4
EF-3 (N) (FUTURE OFFICE SPACE)	1	70	0.7	900	115/1/60	0.6(MCA)	0.46	48	GREENHECK	SP-A200	40	1,2,3,4
OAF-1 (N)	1	550	0.7	1035	115/1/60	4.1(MCA)	3.3	38	GREENHECK	CSP-A700	50	1,2,4,5

NOTES:

1) PROVIDE ALL NECESSARY ACCESSORIES AS PER MANUFACTURER'S RECOMMENDATIONS.
2) PROVIDE THERMAL OVERLOAD PROTECTION, AMCA SEAL & UL CERTIFIED.
3) INTERLOCK TOILET EXHAUST FANS WITH RESPECTIVE RTUs. COORDINATE WITH ELECTRICAL CONTRACTOR.
4) PROVIDE FACTORY MOUNTED AND INSTALLED DISCONNECT SWITCH.
5) PROVIDE FAN WITH FILTER AND VIBRATION ISOLATOR.

GAS FIRED UNIT HEATER SCHEDULE

UNIT	QUANTITY	AREA SERVED	SUPPLY AIR @ 70 DEG. F (CFM)	ELECTRICAL			GAS HEATING SECTION				MAX MOUNTING HEIGHT (FT)	DIMENSIONS (HxWxL)	MANUFACTURER	MODEL NO.	WEIGHT (LBS)
				MOTOR (HP)	MOTOR (RPM)	V/P/H	GAS TYPE	INPUT (MBH)	OUTPUT (MBH)	EFFICIENCY (%)					
UH-1(N) TO UH-6(N)	6	WAREHOUSE	1980	1/8	1625	115/1/60	NATURAL GAS	125	102.5	82	16	21"X31"X36"	MODINE	HD-125	125
UH-7(N)	1	WAREHOUSE	990	1/12	1625	115/1/60	NATURAL GAS	60	49.8	83	12	18"X25"X27"	MODINE	HD-60	80

NOTES:

1. INSTALL UNIT HEATER AS PER MANUFACTURER'S RECOMMENDATION.
2. GAS REGULATOR TO RECEIVE (6-13)" GAS PRESSURE FROM MAIN.
3. PROVIDE MOUNTING BRACKET.

ELECTRIC UNIT HEATER SCHEDULE

BASIS OF DESIGN: QMARK OR EQUIVALENT

UNIT TAG	LOCATION	QUANTITY	TYPE	ELECTRICAL SELECTION					WEIGHT	UNIT DIMENSIONS (INCH)			MODEL	NOTES
				kW	AMPs	V	PH	HZ	LBS	W	H	D		
EUH-1(N)	SEE PLAN	1	EXPLOSION PROOF CONVECTOR	2.5	12.0	208	1	60	30	26	16	8	QX-254-F0320252C	1,2,3

1. INSTALL ELECTRIC UNIT HEATER AS PER MANUFACTURER'S RECOMMENDATION.
2. PROVIDE T-STAT AND WIRE TO UNIT HEATER.
3. PROVIDE DISCONNECT SWITCH, VAPOR BARRIER, DUST TIGHT BOX & FAN INTERLOCK SWITCH.

VENTILATION CALCULATION

ROOM NAME	AREA (SQ.FT.)	NUMBER OF PEOPLE/1000sq.ft AS PER IMC 2021	NUMBER OF PEOPLE AS PER IMC 2021	NUMBER OF CHAIR	FINAL PEOPLE NO.	MIN OUTSIDE AIR AS PER IMC 2021		REQ. OA (CFM)	PROVIDED OA (CFM)	EXHAUST AIRFLOW RATE (CFM/SQ.FT OR /FIXT.)	TOTAL EXHAUST (CFM)	PROVIDED EXHAUST (CFM)
						CFM/PEOPLE	CFM/SQ.FT					
WAREHOUSE AREA	5586	-	-	-	20	10	0.06	535	900	0	0	0
VESTIBULE	55	10	1	0	1	5	0.06	8		0	0	0
RECEPTION AREA	198	30	6	4	10	5	0.06	62		0	0	0
KITCHENETTE	113	5	1	13	2	5	0.06	17		0	0	0
ADA UNISEX RESTROOM	58	0	0	0	0	0	0	0		70	70	70
OPEN OFFICE SPACE	250	5	2	1	5	5	0.06	40		-	-	-
OFFICE-1	113	5	1	1	2	5	0.06	17		-	-	-
OFFICE-2	113	5	1	1	2	5	0.06	17		-	-	-
OFFICE-3	110	5	1	1	2	5	0.06	17		-	-	-
CONFERENCE ROOM	157	50	8	1	8	5	0.06	49		-	-	-
HALLWAY	180	5	1	0	1	5	0.06	16		-	-	-
MEN'S RESTROOM	57	0	0	0	0	0	0	0		70	70	70
WOMEN'S RESTROOM	57	0	0	0	0	0	0	0		70	70	70
							TOTAL	**778**	**900**	-	-	**210**

AIR BALANCE SCHEDULE

UNIT	AREA SERVED	SUPPLY AIR (CFM)	OUTSIDE AIR (CFM)	RETURN AIR (CFM)	EXHAUST AIR(CFM)
RTU-1(N)	SEE PLAN	3400	250	3150	0
RTU-2(N)	SEE PLAN	1600	100	1500	0
EF-1 (N)	SEE PLAN	0	0	0	70
EF-2 (N)	SEE PLAN	0	0	0	70
EF-3 (N)	SEE PLAN	0	0	0	70
OAF-1(N)	SEE PLAN	0	550	0	0
TOTAL:	-	5000	900	4650	210
BUILDING PRESSURE:			690	POSITIVE	

NOTES:

1. CONTRACTOR TO ADJUST MOTORIZED DAMPER ON FRESH AIR TAP ON RTU's TO PROVIDE OUTSIDE AIR AS MENTIONED IN ABOVE TABLE.

No.	Drawing Issues / Revisions	Date
	Issue for Foundation Permit	
	Issue for Building Permit	

Drawing Title: MECHANICAL SCHEDULES

Date: 03/14/25
Drawn By: NYE
Checked By: NYE
Job No: 23-052
Dwg No. M 4.1
6 of 6

ELECTRICAL SYMBOLS LEGEND

5 3 1	HOME RUN TO PANEL. CIRCUIT NUMBERS, PHASE, NEUTRAL, AND GROUND CONDUCTORS INDICATED ALONG WITH ISOLATED GROUND CONDUCTOR IF APPLICABLE.
1	PARTIAL CIRCUIT.
	CONDUIT INSTALLED CONCEALED ABOVE CEILING OR IN WALL.
	CONDUIT INSTALLED CONCEALED BELOW FLOOR SLAB OR UNDERGROUND.
	GROUND CONNECTION.
$	SINGLE POLE SWITCH
$PS	SINGLE POLE SWITCH WITH OCCUPANCY SENSOR
$3	THREE-WAY SWITCH
	DOOR JAMB SWITCH
OS	WALL MOUNTED OCCUPANCY SENSOR
OS	CEILING MOUNTED OCCUPANCY SENSOR.
	SIMPLEX RECEPTACLE
	DUPLEX RECEPTACLE, +18" OR AS NOTED.
	GFI DUPLEX RECEPTACLE, +18" OR AS NOTED.
	QUADAPLEX RECEPTACLE +18" OR AS NOTED.
	RECEPTACLE LETTER DESIGNATION DEFINITION: G GROUND FAULT INTERRUPTING DEVICE IG ISOLATED GROUND USB DEVICE WITH USB PORT WP WEATHERPROOF GROUND FAULT INTRUPTING DEVICE CR CORD REEL TR TAMPER RESISTANT
	SPECIAL RECEPTACLE, NEMA STYLE AS NOTED, +18" OR AS NOTED.
J	JUNCTION BOX.
	DISCONNECT SWITCH, TOP AT +6'-0" OR AS NOTED.
A	30A/240V NON FUSED DISCONNECT SWITCH
B	60A/240V NON FUSED DISCONNECT SWITCH
PC	EXTERIOR PHOTOCELL, INSTALLED ON ROOF FACING NORTH.
	BRANCH CIRCUIT PANELBOARD, TOP AT +6'-0" OR AS NOTED.
	DISTRIBUTION PANEL, TOP AT +6'-0" OR AS NOTED.
	DATA OUTLET
	TELEPHONE/DATA OUTLET
	AREA TYPE PHOTOELETRIC SMOKE DETECTOR, CEILING MOUNTED, OR AS NOTED.
$_M$	MANUAL MOTOR SWITCH

GENERAL REFERENCES/NOTATIONS

AC	MOUNT DEVICE +6" ABOVE TOP OF COUNTER TO BOTTOM OF DEVICE.
+48"	MOUNTING HEIGHT ABOVE FINISHED FLOOR TO CENTERLINE OF DEVICE.
03/E5	DETAIL OR SECTION REFERENCE.
???	FOODSERVICE EQUIPMENT DESIGNATION.
#	REVISION DESIGNATION.
TYPE ?	EQUIPMENT DESIGNATION.

ABBREVIATIONS

AFF/AFG	ABOVE FINISHED FLOOR/GRADE.	NEC	NATIONAL ELECTRICAL CODE.
AHJ	AUTHORITY HAVING JURISDICTION.	NFPA	NATIONAL FIRE PROTECTION ASSOCIATION.
BAS	BUILDING AUTOMATION SYSTEM.	NL	NIGHT LIGHT.
DNR	DEPARTMENT OF NATURAL RESOURCES.	NF	NON-FUSED.
EC	ELECTRICAL CONTRACTOR.	O	OWNER PROVIDED.
EM	EMERGENCY.	PA	PUBLIC ADDRESS.
ETR	EXISTING TO REMAIN.	PC	PLUMBING CONTRACTOR.
FA	FIRE ALARM.	SPD	SURGE PROTECTION DEVICE.
FPC	FIRE PROTECTION CONTRACTOR.	TYP	TYPICAL.
FSEC	FOOD SERVICE EQUIPMENT CONTRACTOR.	UL	UNDERWRITERS LABORATORIES.
GC	GENERAL CONTRACTOR.	UNO	UNLESS NOTED OTHERWISE.
MC	MECHANICAL CONTRACTOR.	UPS	UNINTERRUPTIBLE POWER SUPPLY.
TR	TAMPER RESISTANT	WP	WEATHERPROOF.

SYMBOLS LEGEND NOTES

1. REFER TO LIGHT FIXTURE SCHEDULE FOR SPECIFICATION AND INFORMATION ON ALL LUMINARIES.
2. REFER TO SPECIFICATIONS AND PLAN NOTES FOR DETAILED DESCRIPTION OF ALL DEVICES SHOWN IN THIS SCHEDULE, PROVIDED BY CONTRACTOR.
3. MOUNTING HEIGHTS INDICATED ARE MEASURED FROM FINISHED FLOOR TO THE CENTERLINE OF THE DEVICE UNLESS NOTED OTHERWISE.

ELECTRICAL SPECIFICATIONS

LIGHTING FIXTURES

A. PROVIDE LIGHTING FIXTURES, OF SIZES, TYPES AND RATINGS INDICATED-COMPLETE WITH ALL COMPONENTS AND ACCESSSORIES. SHIP FIXTURES FACTORY ASSEMBLED, WITH THOSE COMPONENTS REQUIRED FOR A COMPLETE INSTALLATION. DESIGN FIXTURES WITH CONCEALED HINGES AND CATCHES, WITH METAL PARTS GROUNDED AS COMMON UNIT, AND SO CONSTRUCTED AS TO DAMPEN DRIVER GENERATED NOISE.

B. ALL LIGHTING SHALL BE U.L LISTED.

C. INSTALL INTERIOR LIGHTING FIXTURES AT LOCATIONS AS INDICATED, IN ACCORDANCE WITH FIXTURE MANUFACTURER'S WRITTEN INSTRUCTIONS, APPLICABLE REQUIREMENTS OF NEC, NECA'S "STANDARD OF INSTALLATION", NEMA STANDARDS, AND WITH RECOGNIZED INDUSTRY PRACTICES TO ENSURE THAT LIGHTING FIXTURES FULFILL REQUIREMENTS.

D. FASTEN LIGHTING FIXTURES SECURELY TO STRUCTURAL SUPPORTS, AND ENSURE THAT FIXTURES ARE PLUMB AND LEVEL.

E. LIGHT FIXTURES INSTALLED IN LAY-IN CEILINGS SHALL BE SUPPORTED BY ADDITIONAL WIRE SUPPORT AT TWO CORNERS. ATTACHED TO CEILING GRID, AND ANCHORED TO STRUCTURAL MEMBER. THIS ADDITIONAL WIRE SUPPORT SHALL BE THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR AND IS NOT CONSIDERED PART OF GENERAL GRID LAYOUT.

F. PROVIDE EQUIPMENT GROUNDING CONNECTIONS FOR INTERIOR LIGHTING FIXTURES AS INDICATED. TIGHTEN CONNECTION TO COMPLY WITH TIGHTENING TORQUES SPECIFIED IN UL STD 486A TO ASSURE PERMANENT AND EFFECTIVE GROUNDS.

FIRE RATED WALL PENETRATIONS

A. PROVIDE U.L. LISTED FIRESTOP SYSTEM SEALANTS AROUND ALL CONDUITS PASSING THROUGH ALL RATED WALLS OR FLOORS IN ACCORDANCE WITH THE U.L. FIRE RESISTANCE DIRECTORY.

B. THE SELECTED SYSTEM MUST BEAR AN APPROVED U.L. PENETRATION SYSTEM NUMBER AND BE INSTALLED IN ACCORDANCE WITH THE SELECTED SYSTEM TAKING INTO ACCOUNT THE CONSTRUCTION AND THE RATING OF THE RATED ASSEMBLY BEING PENETRATED AND THE TYPE OF PENETRATION BEING MADE.

C. THE ELECTRICAL CONTRACTOR SHALL REVIEW ARCHITECTURAL DRAWINGS TO CONFIRM NUMBER AND EXTENT OF ALL FIRE RATED PARTITIONS IN THE FACILITY.

D. APPROVED PRODUCTS:
1. HILTI CS240
2. TERMCO FYRESHIELD
3. 3M CP-25

RACEWAY SYSTEMS

A. THE ELECTRICAL CONTRACTOR SHALL REVIEW ARCHITECTURAL DRAWINGS TO CONFIRM NUMBER AND EXTENT OF ALL FIRE RATED PARTITIONS IN THE FACILITY.

B. CONDUIT SHALL BE SUPPORTED AT INTERVALS PER NEC REQUIREMENTS AND SHALL BE SECURELY FASTENED TO BUILDING WITH AN APPROVED FASTENING SYSTEM.

C. MINIMUM CONDUIT SIZE IS 1/2". MINIMUM CONDUIT SIZE FOR HOMERUNS IS 3/4". MINIMUM CONDUIT SIZE FOR UNDERGROUND IS 1".

D. MC CABLE MAY BE USED IN CONCEALED LOCATIONS ABOVE CEILINGS OR IN WALLS WHERE ALLOWED BY LOCAL LODES. MC CABLE SHALL NOT BE USED TO ENTER PANEL BOARDS.

WIRING, WIRING DEVICES, PLATES AND GROUNDING

A. ALL WIRING SHALL CONSIST OF COPPER CONDUCTORS WITH THERMOPLASTIC INSULATION RATED FOR SIX HUNDRED (600) VOLTS. ALL WIRING INSULATION SHALL BE HEAT AND MOISTURE RESISTANT TYPES THW, THWN, OR THHN FOR INTERNAL AND DRIVE LOCATIONS.

B. MINIMUM CONDUCTOR SIZE SHALL BE NO. 12 AWG FOR ALL POWER CIRCUITS (I.E. RECEPTACLES, LIGHTING, EQUIPMENT POWER, ETC.). NUMBER 14 AWG SHALL BE MINIMUM SIZE PERMITTED FOR EQUIPMENT CONTROL CIRCUIT WIRING.

C. ALL SPLICES AND CONNECTIONS SHALL BE MADE IN OUTLET BOXES, JUNCTION BOXES OR EQUIPMENT WHERE ACCESSIBLE.

D. CONDUCTORS SHALL BE PULLED WITHOUT THE USE OF OIL OR GREASE. WIRE PULLING LUBRICANTS WHICH ARE APPROVED FOR USE WITH CONDUCTOR INSULATION MAY BE USED. CARE SHALL BE TAKEN IN PULLING WIRE TO ASSURE THAT MAXIMUM ALLOWABLE PULLING TENSION OF WIRE IS NOT EXCEEDED. WIRING WITH DAMAGED CONDUCTORS OR INSULATION WILL NOT BE ACCEPTED.

E. ALL PLUG-IN DEVICES TO BE GROUNDED TYPE.

F. INSTALL INSULATED GREEN GROUNDING CONDUCTOR (NO.12 AWG MINIMUM) IN ALL RACEWAYS.

G. WIRING DEVICES SHALL BE INDUSTRIAL GRADE. FINISH SHALL BE PER ARCHITECT.

H. PLATES SHALL BE PROVIDED FOR ALL WIRING DEVICES, DATA OUTLETS, JUNCTION BOXES, ETC.

I. PLATES FOR FLUSH MOUNTED DEVICES SHALL BE STAINLESS STEEL. PLATES FOR SURFACE MOUNTED BOXES SHALL BE GALVANIZED STEEL. PLATE COLOR SHALL BE WHITE WHEN MOUNTED IN CEILING.

GENERAL ELECTRICAL NOTES

1. INCLUDE ALLOWANCE FOR UNFORSEEN CONDITIONS THAT MAY AFFECT THE SCOPE OF WORK. MINOR DEVIATIONS REQUIRED FOR ACCOMPLISHING THE INTENT OF THIS DESIGN ARE TO BE INCLUDED IN THIS ALLOWANCE.
2. COORDINATE WORK ABOVE THE CEILING WITH OTHER TRADES TO PROVIDE THE GREATEST POSSIBLE CLEARANCE. CONDUIT RUNS SHALL BE RUN THROUGH TRUSSES WHERE POSSIBLE. ANY RELOCATING OR REROUTING OF EQUIPMENT, PIPES, CONDUITS, DUCTS OR MATERIAL RESULTING FROM A LACK OF COORDINATION BETWEEN CONTRACTORS WILL BE AT THE CONTRACTOR'S EXPENSE.
3. VERIFY PLACEMENT OF ALL DEVICES SHOWN ON CONSTRUCTION DOCUMENT PRIOR TO FINAL PLACEMENT.
4. PROVIDE ALL REQUIRED DISCONNECT SWITCHES AND MOTOR STARTERS TO ALL EQUIPMENT.
5. ELECTRICAL DESIGN IS BASED ON THE INSTALLATION OF 75°C CONDUCTORS CONNECTED TO TERMINAL LUGS AND EQUIPMENT U.L. LISTED FOR A MINIMUM 75°C CONDUCTORS TERMINATED. ON EQUIPMENT WITH A LOWER RATING 60°C OR NO RATING SHOWN, CONDUCTOR SIZE SHALL BE INCREASED TO CONFORM TO ADOPTED ELECTRICAL CODE AND UL/CUL NO. 489 REQUIREMENTS.
6. CONTROL VOLTAGE WIRING SHALL BE PLENUM RATED OR INSTALL IN CONDUIT.
7. DATA WIRING SHALL BE ROUTED IN 3/4" CONDUIT BACK TO DEMARC AREA FROM DEVICE LOCATION.
8. CONDUIT SHALL BE SUPPORTED AT INTERVALS PER NEC REQUIREMENTS AND SHALL BE SECURELY FASTENED TO BUILDING WITH AN APPROVED FASTENING SYSTEM.
9. ALL BRANCH CIRCUT WIRING SHALL BE ELECTRICAL METALLIC TUBING (EMT), MINIMUM 3/4" OR AS NOTED. USE COMPRESSION TYPE FITTINGS ON ALL EMT. SET SCREW OR CRIMP FITTINGS ARE NOT ALLOWED.
10. BRANCH CIRCUITS SHOWN WITH TWO GROUNDING CONDUCTORS SHALL HAVE ONE EQUIPMENT GROUND CONDUCTOR (GREEN) AND ONE ISOLATED GROUND CONDUCTOR (GREEN W/ YELLOW STRIP)INSTALLED IN RACEWAY.
11. CONDUCTORS SHALL BE A MINIMUM OF #12 THHN/THWN COPPER UNLESS NOTED OTHERWISE ON PLANS OR IN SPECIFICATIONS. BRANCH CIRCUITS SHALL BE PROVIDED WITH (2) #12 CONDUCTORS AND (1) #12 EQUIPMENT GROUND CONDUCTOR UNLESS NOTED OTHERWISE.
12. THERMOSTATS, TEMPERATURE SENSORS, CARBON DIOXIDE SENSORS AND HUMIDISTATS: UNLESS NOTED OTHERWISE, PROVIDE WALL BOX AT +3'-10' AFF WITH 3/4" CONDUIT STUBBED OUT TO ABOVE ACCESSIBLE CEILING WITH NYLON BUSHINGS AND PULLSTRINGS.
13. ALL EMPTY CONDUIT SHALL BE PROVIDE WITH A PULL STRING.
14. ALL RACEWAYS SHALL CONTAIN A GROUNDING ELECTRODE OR CONDUCTOR SIZED PER THE ADOPTED ELECTRICAL CODE.
15. SWITCHBOARDS, PANELBOARDS, DISCONNECT SWITCHES, TRANSFORMERS AND CONTACTORS SHALL BE "LISTED" AND "IDENTIFIED" AS RATED FOR A MINIMUM OF 75°C CONDUCTOR TERMINATION.
16. PROVIDE FLEXIBLE CONNECTIONS ONLY FOR FINAL CONNECTION TO EQUIPMENT (6'-0" MAXIMUM LENGTH). PROVIDE LIQUID TIGHT FLEXIBLE CONNECTION (6'-0" MAXIMUM LENGTH) AT EXTERIOR LOCATIONS AND WHERE EXPOSURE TO MOISTURE IS POSSIBLE.
17. ALL PANELBOARDS, SWITCHBOARDS AND LINE VOLTAGE CONTROL EQUIPMENT SHALL BE FIELD MARKED TO WARN QUALIFIED PERSONS OF POTENTIAL ELECTRIC ARC FLASH HAZARDS. MARKING SHALL BE LOCATED SO AS TO BE CLEARLY VISIBLE TO QUALIFIED PERSONS BEFORE EXAMINATION, ADJUSTING, SERVICING OR MAINTENANCE OF EQUIPMENT. MARKING SHALL BE SELF ADHESIVE, COMMERCIAL LABEL CONFORMING TO ADOPTED CODES.
18. LIGHT SWITCHES, CONVENIECE ELECTRICAL OUTLETS, THERMOSTATS AND OTHER ENVIRONMENTAL CONTROLS SHALL BE LOCATED NO HIGHER THAN 48" AND NO LOWER THAN 15" ABOVE THE FLOOR. IF THE REACH IS OVER AN OBSTRUCTION BETWEEN 20" AND 25" IN DEPTH, THE MAXIMUM HEIGHT IS TO BE REDUCED TO 44" FOR FORWARD APPROACH OR 46" FOR SIDE APPROACH, PROVIDED THE OBSTRUCTION IS NO MORE THAN 24" IN DEPTH. OBSTRUCTIONS SHALL NOT EXTEND MORE THAN 25" FROM THE WALL BENEATH A CONTROL.
19. PROVIDE AS-BUILTS DRAWING AT JOB COMPELTION TO OWNER.
20. ALL WORK SHALL BE INSTALLED PER ALL GOVERING CODES.
21. PROVIDE STARTERS FOR ROOF MOUNTED EXHAUST FAN (EF), SUPPLY FANS (MUA) AND START-STOP SWITCH. BOTH MAU AND EF SHALL RUN AND STOP TOGETHER AND SHALL BE CONTROLLED FROM THE SAME SWITCH.
22. ALL JUNCTION BOXES INSTALLED ABOVE OR DIRECTLY BELOW SUSPENDED CEILING SHALL BE SUPPORTED IN ACCORDANCE WITH NEC.
23. PORCELIAN WIRE NUTS SHALL BE USED WITH THE HEAT LAMP. THE USE OF PLASTIC WIRE NUTS WILL VOID THE MANUFACTURERS' WARRANTY. CONTRACTOR SHALL USE 90°C WIRE FOR CONNECTION TO HEAT STRIP UNITS PER MANUFACTURER'S RECOMMENDATION.
24. MC CABLE MAY BE USED IN CONCEALED LOCATIONS ABOVE CEILINGS OR IN WALLS WHERE ALLOWED BY LOCAL CODES. MC CABLE SHALL NOT BE USED TO ENTER PANEL BAORDS.

TERMS:
SHALL - ACTION THAT IS REQUIRED WITHOUT OPTION OR QUALIFICATION.
FURNISH - CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING.
INSTALL - CONTRACTOR SHALL BE RESPONSIBLE FOR LABOR AND CONSTRUCTION EQUIPMENT NECESSARY TO SET IN PLACE, CONNECT, CALIBRATE AND/OR TEST EQUIPMENT FURNISHED BY CONTRACTOR.
PROVIDE - CONTRACTOR SHALL FURNISH AND INSTALL.

LIGHTING GENERAL NOTES

1. CONNECT EXIT SIGNS, EMERGENCY TO AN UNSWITCHED LIGHTING CIRCUIT, NOT CONTROLLED BY ANY OCCUPANCY SENSORS, SWITCHES OR CONTACTORS.
2. REFER TO "TYPICAL RECESSED FIXTURE INSTALLATION DETAIL," FOR INFORMATION ON SUPPORT OF ALL RECESSED LIGHT FIXTURES.
3. REFER TO ARCHITECTURAL REFLECTED CEILING PLAN AND DETAILS FOR THE LOCATION OF ALL LIGHTING FIXTURES AND ALL OTHER EQUIPMENT INSTALLED IN THE CEILING SYSTEM. VERIFY MOUNTING HEIGHTS AND FINISHES WITH ARCHITECT PRIOR TO ROUGH IN.
4. REFER TO THE POWER PLANS FOR LOCATIONS OF ELECTRICAL EQUIPMENT.

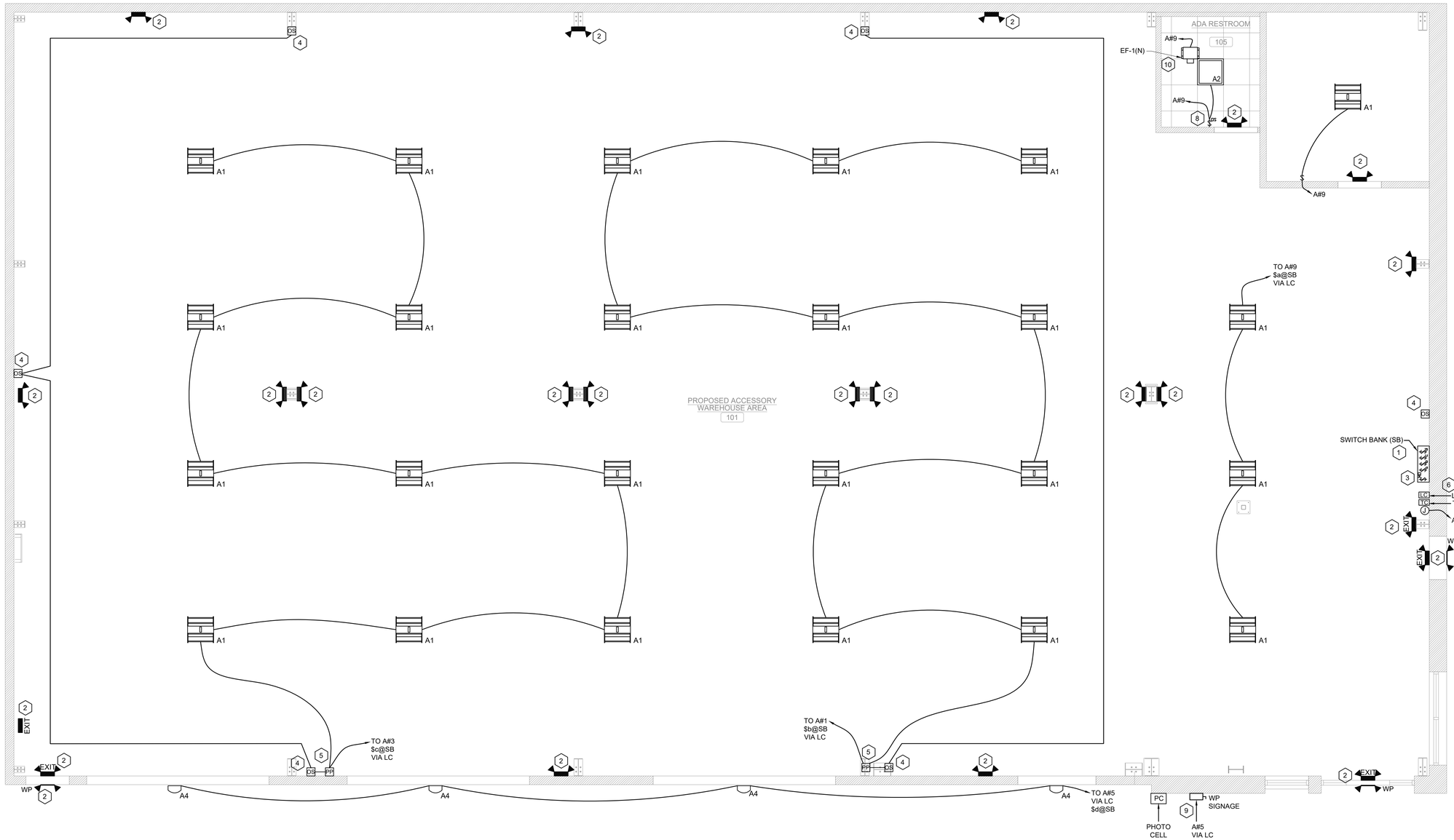
POWER GENERAL NOTES

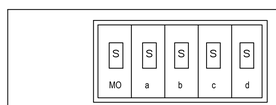
1. VERIFY EXACT LOCATION IF HVAC AND PLUMBING EQUIPMENT CONDUIT STUB-UPS AND POWER CONNECTION PRIOR TO ROUGH-IN.
2. REFER TO MECHANICAL AND PLUMBING DRAWINGS FOR ADDITIONAL ELECTRICAL REQUIREMENTS. COORDINATE PROVISIONS FOR ALL CONTROLS CONDIUT AND WIRING AS REQUIRED FOR INTERLOCKING OF FANS, MOTORS, ETC. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
3. MOUNT DEVICES INSTALLED ON EQUIPMENT ON A NON-REMOVEABLE PANEL. COORDINATE LOCATION PRIOR TO COMMENCING ROUGH-IN WORK.

No.	Drawing Issues / Revisions	Date
	Issue for Foundation Permit	
	Issue for Building Permit	

Drawing Title:
GENERAL NOTES AND LEGEND

Date: 03/14/25	Dwg No. E 0.1
Drawn By: NYE	
Checked By: NYE	
Job No: 23-052	1 of 8





SWITCHBANK DETAIL
N.T.S.

INDICATES PANEL NAME — A#1
INDICATES CIRCUIT NO.

SWITCH d — $d@SB
SWITCH BANK
LOCATED AT

LIGHTING PLAN KEYED NOTES

1. E.C. SHALL COORDINATE EXACT LOCATION OF THE SWITCH BANK IN THE FIELD. ALL THE SWITCHES TAGGED AS ($ @ SB) IN THE PLAN SHALL BE INSTALLED IN THE SWITCH BANK. REFER TO THE LIGHTING PLAN FOR NUMBER OF THE SWITCHES REQUIRED. REFER DETAIL SHEET FOR THE TYPICAL ARRANGEMENT OF THE TIME CLOCK, SWITCHES.
2. LOOP ALL EMERGENCY LIGHT FIXTURES, AND EXIT SIGNS AND WIRE THEM BACK TO THE EMERGENCY LIGHTING CIRCUIT A#7 IN THE PANEL BOARD A. THE CIRCUIT BREAKER SHALL HAVE A LOCKOUT.
3. MANUAL OVERRIDE SWITCH. THE OVERRIDE SWITCH, WHEN INITIATED, SHALL PERMIT THE CONTROLLED LIGHTING TO REMAIN ON FOR NOT MORE THAN 2 HOURS.
4. WALL MOUNTED OCCUPANCY SENSOR. LOOP SENSORS AS INDICATED ON THE PLAN. PROVIDE COMMON MANUAL CONTROL SWITCH AT SWITCH BANK.
5. PROVIDE POWER PACK FOR OCCUPANCY SENSORS AS REQUIRED.
6. COORDINATE EXACT LOCATION OF THE TIME CLOCK (TC) & LIGHTING CONTACTORS (LC) WITH THE ARCHITECT / OWNER.
7. NOT USED.
8. WALL MOUNTED OCCUPANCY SENSOR WITH SWITCH.
9. COORDINATE WITH ARCHITECT/OWNER FOR EXACT LOCATION OF DISCONNECT SWITCH FOR EXTERIOR BUILDING SIGNAGE.
10. E.C. SHALL COORDINATE WITH THE MECHANICAL CONTRACTOR FOR THE EXACT LOCATION AND ELECTRICAL CONNECTION REQUIREMENT OF THE UNIT IN THE FIELD. PROVIDE CIRCUIT AND CONTROL AS REQUIRED.

LIGHTING PLAN GENERAL NOTES

A. SOME 24 HOUR, 7 DAY-A-WEEK OPERATIONAL FACILITIES DO NOT REQUIRE AUTOMATIC SHUT OFF (TIME CLOCK CONTROLLED) LIGHTING. VERIFY WITH OWNER AND AUTHORITY HAVING JURISDICTION.

B. COORDINATE WITH ARCHITECT/OWNER FOR MOUNTING HEIGHT OF SWITCHES IN FIELD.

C. COORDINATE SWITCH BANK LOCATION WITH OWNER/ ARCHITECT.

D. ALL WIRING SHALL BE THWN RATED FOR 75°C, COPPER.

E. ALL LIGHT FIXTURES NOT ON TIME CLOCK OR OCCUPANCY SENSOR SHALL BE CONTROLLED BY LIGHTING CONTACTOR(S). E.C. SHALL PROVIDE ADDITIONAL CONTACTORS AS REQUIRED.

F. ALL SECURITY AND EMERGENCY LIGHTING CIRCUITS, SMOKE DETECTORS, FIRE PROTECTION CIRCUITS AND OTHER CRITICAL SYSTEM CIRCUITS SHALL BE PROVIDED WITH A LOCK-ON DEVICE.

G. MINIMUM #12 AWG COPPER WIRING SHALL BE USED FOR THE LIGHTING CIRCUIT.

H. THE NEUTRAL AND GROUNDING ARE NOT SHOWN ON THE DRAWING. E.C. TO PROVIDE AS REQUIRED.

I. EMERGENCY LIGHT SHALL TURN ON DURING POWER FAILURE WHEREAS ALL EXIT SIGNS SHALL BE PERMANENTLY ON.

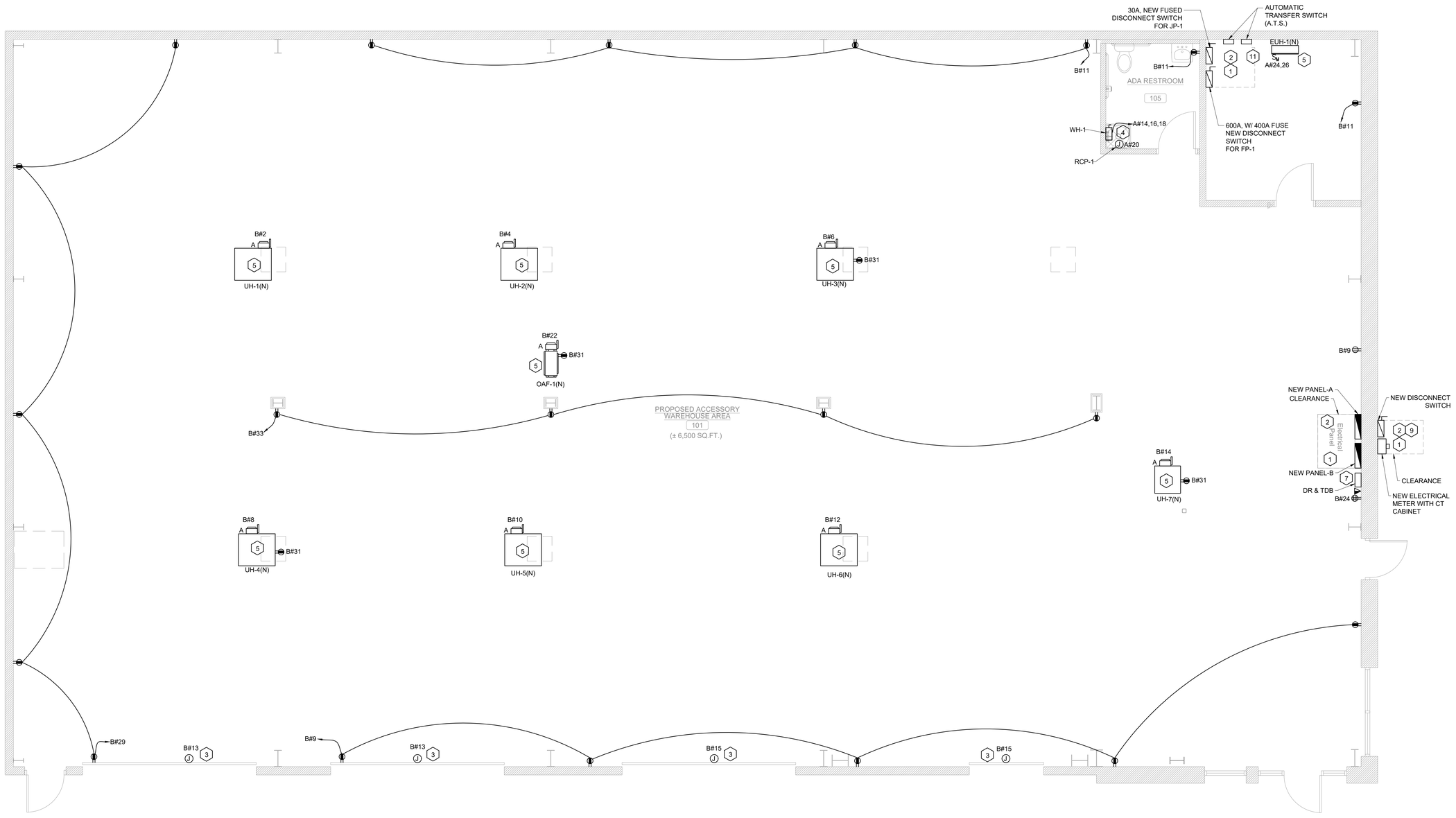
J. IN WAREHOUSES, THE LIGHTING IN AISLEWAYS AND OPEN AREAS SHALL BE CONTROLLED WITH OCCUPANT SENSORS THAT AUTOMATICALLY REDUCE LIGHTING POWER BY NOT LESS THAN 50 PERCENT WHEN THE AREAS ARE UNOCCUPIED. THE OCCUPANT SENSORS SHALL CONTROL LIGHTING IN EACH AISLEWAY INDEPENDENTLY AND SHALL NOT CONTROL LIGHTING BEYOND THE AISLEWAY BEING CONTROLLED BY THE SENSOR.

1 ELECTRICAL LIGHTING PLAN - FIRST FLOOR
SCALE: 1/4" = 1'-0"

No.	Drawing Issues / Revisions	Date
	Issue for Foundation Permit	
	Issue for Building Permit	

Drawing Title: ELECTRICAL LIGHTING PLAN

Date: 03/14/25	Dwg No. E 1.0
Drawn By: NYE	
Checked By: NYE	
Job No: 23-052	2 of 6



POWER PLAN KEYED NOTES

1. E.C. SHALL ENSURE CLEAR WORKING SPACE OF 3 FEET IN FRONT OF THE ELECTRICAL EQUIPMENTS.
2. E.C. SHALL COORDINATE WITH THE ARCHITECT/OWNER FOR THE EXACT LOCATION OF THE ELECTRICAL EQUIPMENTS IN THE FIELD.
3. JUNCTION BOX FOR DOOR OPENER. COORDINATE REQUIREMENT WITH ARCHITECT/OWNER.
4. E.C. SHALL COORDINATE WITH THE PLUMBING CONTRACTOR FOR THE EXACT LOCATION AND ELECTRICAL CONNECTION REQUIREMENT OF THE UNIT IN THE FIELD. PROVIDE CIRCUIT AND CONTROL AS REQUIRED.
5. E.C. SHALL COORDINATE WITH THE MECHANICAL CONTRACTOR FOR THE EXACT LOCATION AND ELECTRICAL CONNECTION REQUIREMENT OF THE UNIT IN THE FIELD. PROVIDE CIRCUIT AND CONTROL AS REQUIRED.
6. E.C. SHALL COORDINATE WITH THE ARCHITECT/OWNER FOR THE EXACT LOCATION OF QUAD RECEPTACLES AND DATA, TELEPHONE IN THE FIELD.
7. DATA RACK (DR) AND TELEPHONE DISTRIBUTION BOARD (TDB). COORDINATE EXACT LOCATION IN FIELD.
8. INTERLOCK TOILET EXHAUST FANS WITH THE RTUs. E.C. SHALL COORDINATE WITH MECHANICAL CONTRACTOR AND PROVIDE WIRING AS REQUIRED.
9. E.C. SHALL PROVIDE EXTERIOR WEATHER PROOF (NEMA-4R) ELECTRICAL EQUIPMENT IN THE FIELD.

POWER PLAN GENERAL NOTES

A. ALL 125V-250V RECEPTACLES SUPPLIED BY SINGLE-PHASE CIRCUITS RATED 150V OR LESS TO GROUND, 50A OR LESS, AND ALL RECEPTACLES SUPPLIED BY THREE PHASE BRANCH CIRCUIT RATED 150V OR LESS TO GROUND, 100A OR LESS INSTALLED IN THE LOCATIONS SPECIFIED IN NEC 210.8(B)(1) THROUGH (12) SHALL HAVE GFCI PROTECTION.

B. GFI MARKED ON THE PLAN INDICATES THAT THE CIRCUIT SHALL BE GFI PROTECTED. E.C. SHALL PROVIDE A GFI RECEPTACLE IN THE READILY ACCESSIBLE LOCATION. PROVIDE GFI BREAKER IN THE PANEL IF EITHER THE RECEPTACLE IS NOT AVAILABLE OR NOT ACCESSIBLE WHEN INSTALLED IN THE DESIRED LOCATION.

C. THE DISCONNECT SWITCHES SHOWN ON THE PLAN SHALL BE RATED EQUAL OR HIGHER THAN THE BREAKER RATING. REFER BREAKER RATING IN THE PANEL SCHEDULE AND PROVIDE DISCONNECT AS NEEDED.

D. ELECTRICAL OUTLETS PLACED ON BOTH SIDES OF THE WALL PARTITION TO BE LOCATED OFFSET OF EACH OTHER.

E. ELECTRICAL OUTLETS AND DEVICES LOCATED IN DEMISING WALLS TO HAVE FIRE PUTTY AROUND THE BOX TO MAINTAIN PARTITION FIRE RATING.

F. COORDINATE EXACT LOCATION AND ELECTRICAL CONNECTION REQUIREMENTS OF THE MOTORIZED DAMPERS AND THERMOSTATS IN THE FIELD. PROVIDE WIRING AS REQUIRED.

1 ELECTRICAL POWER PLAN - FIRST FLOOR

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

No.	Drawing Issues / Revisions	Date
	Issue for Foundation Permit	
	Issue for Building Permit	

Drawing Title:

ELECTRICAL POWER PLAN
SHEET 1 OF 2

Date: 03/14/25	*Dwg No.* E 2.0
Drawn By: NYE	
Checked By: NYE	
Job No: 23-052	3 of 6

ROOF POWER PLAN KEYED NOTES

1. E.C. SHALL COORDINATE WITH THE MECHANICAL CONTRACTOR FOR THE EXACT LOCATION AND ELECTRICAL CONNECTION REQUIREMENT OF THE UNIT IN THE FIELD. PROVIDE CIRCUIT AND CONTROL AS REQUIRED.

1 ELECTRICAL POWER PLAN - ROOF FLOOR

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

No.	Drawing Issues / Revisions	Date
	Issue for Foundation Permit	
	Issue for Building Permit	

Drawing Title:
ELECTRICAL POWER PLAN
SHEET 2 OF 2

Date:	Dwg No.
03/14/25	E 2.1
Drawn By: NYE	
Checked By: NYE	
Job No: 23-052	4 of 6

LIGHT FIXTURE SCHEDULE

TAG	QTY.	DESCRIPTION	MANUFACTURER	MODEL	TYPE	WATTAGE	COMMENTS
A1	24	HIGH BAY LED LIGHT FIXTURE	DAY-BRITE CFI BY SIGNIFY	FBX24LL40K-UNV	LED	156	
A2	1	2x2 RECESS MOUNTED LED LIGHT FIXTURE TYP.	ORACLE LIGHTING	22-OD1V-LED	LED	46	
A4	4	EXTERIOR LED WALL PACK LIGHT FIXTURE	NLS LIGHTING	NV-W-T4-16L-7-40K7-UNV	LED	37	
EM	20	EMERGENCY LIGHTING	TBD	TBD	LED	-	
EXIT	1	EXIT SIGN	TBD	TBD	LED	-	
EM/EX	4	COMBO EMERGENCY LIGHT / EXIT SIGN	TBD	TBD	LED	-	

NOTE:

1. COORDINATE WITH THE ARCHITECT FOR THE FINAL FINISH, COLOR AND QTY. OF THE LIGHT FIXTURE.
2. ALL LIGHTING CONTROLS SHALL BE PER AHJ AND CODE COMPLIANCE.

LIGHT FIXTURE LEGEND

- A3 — 2x4 RECESS MOUNTED LED LIGHT FIXTURE TYP.
- A2 — 2x2 RECESS MOUNTED LED LIGHT FIXTURE TYP.
- A1 — HIGH BAY LED LIGHT FIXTURE
- A4 — EXTERIOR LED WALL PACK LIGHT FIXTURE
- A2L — 4'X4" PENDANT LIGHT
- EXIT — EXIT SIGN
- EM — EMERGENCY LIGHTING
- EXIT EM/EX — COMBO EMERGENCY LIGHT / EXIT SIGN

MECHANICAL EQUIPMENT SCHEDULE

1. ADJACENT TO WH-1. DO NOT INSTALL BELOW WH-1.

TAG	VOLTAGE	PHASE	LOAD			DISCONNECT	REMARK
			KW	HP	FLA		
RTU-1 (N)	208	3	14.76	-	-	INTERGRAL	
RTU-2 (N)	208	3	9.37	-	-	INTERGRAL	
UH-1 (N)	115	1	-	1/8	-	INTERGRAL	
UH-2 (N)	115	1	-	1/8	-	INTERGRAL	
UH-3 (N)	115	1	-	1/8	-	INTERGRAL	
UH-4 (N)	115	1	-	1/8	-	INTERGRAL	
UH-5 (N)	115	1	-	1/8	-	INTERGRAL	
UH-6 (N)	115	1	-	1/8	-	INTERGRAL	
UH-7 (N)	115	1	-	1/12	-	INTERGRAL	
EF-1 (N)	115	1	-	-	0.46	INTERGRAL	
EF-2 (N)	115	1	-	-	0.46	INTERGRAL	
EF-3 (N)	115	1	-	-	0.46	INTERGRAL	
OAF-1 (N)	115	1	-	-	3.3	INTERGRAL	
EUH-1 (N)	208	1	2.5	-	-	INTERGRAL	
WH-1	208	3	6	-	-	INTERGRAL	1
RCP-1	115	1	0.1	-	-	HARDWIRE	

NOTE:- REFER TO THE PANEL SCHEDULE FOR CIRCUIT NUMBER AND BRANCH CIRCUIT SIZE.

PANEL: A (NEW) — **MOUNTING:** SURFACE

208Y/120 VOLTS — PHASE **3** — DEMAND LOAD 47.27 — **PANEL LOCATION:** KITCHENETTE AREA

200A **MCB** — WIRE **4** — DEMAND CURRENT 131.36 — **FED FROM:** ELE. METER VIA D.S.

NOTE: L : LIGHTING, H : HVAC LOAD, M : MOTOR LOAD, R : RECEPTACLES, O : OTHER/MISC. (TYPICAL)

CKT NO.	TRIP AMPS	DESCRIPTION OF LOAD	LOAD TYPE	LOAD (KVA)	MINIMUM BRANCH CIRCUIT	PER PHASE (KVA) A	B	C	MINIMUM BRANCH CIRCUIT	LOAD (KVA)	LOAD TYPE	DESCRIPTION OF LOAD	TRIP AMPS	CKT NO.
1	20	INDOOR LIGHTING	L	1.72	2#12 + 1#12G, 3/4"C	6.64			3#8 + 1#10G, 3/4"C	4.92	H			2
3	20	INDOOR LIGHTING	L	1.72	2#12 + 1#12G, 3/4"C		6.64			4.92	H	RTU-1 (N)	50/3P	4
5	20	EXTERIOR LIGHITNG	L	0.20	2#12 + 1#12G, 3/4"C			5.12		4.92	H			6
7	20	EMERGENCY LIGHTING	L	1.00	2#12 + 1#12G, 3/4"C	4.12			3#10 + 1#10G, 3/4"C	3.12	H			8
9	20	INDOOR LIGHTING	L	0.67	2#12 + 1#12G, 3/4"C		3.79			3.12	H	RTU-2 (N)	30/3P	10
11	20	SPARE						3.12		3.12	H			12
13	20	TIME CLOCK	O	0.50	2#12 + 1#12G, 3/4"C	1.83			3#12 + 1#12G, 3/4"C	1.33	O			14
15	20	SPARE					1.33			1.33	O	WH-1	20/3P	16
17	20	SPARE						1.33		1.33	O			18
19	20	SPARE				0.10			2#12 + 1#12G, 3/4"C	0.10	O	RCP-1	20	20
21	20	SPARE					0.36		2#12 + 1#12G, 3/4"C	0.36	R	ROOF SERVICE RECEPTACLE	20	22
23	20	SPARE						1.25	2#12 + 1#12G, 3/4"C	1.25	H	EUH-1 (N)	20/2P	24
25	20	SPARE				1.25				1.25	H			26
27	20	SPARE					0.00					SPARE	20	28
29	20	SPARE						0.00				SPARE	20	30
31	20	SPARE				0.00						SPARE	20	32
33	20	SPARE					0.00					SPARE	20	34
35	20	SPARE						0.00				SPARE	20	36
37	20	SPARE				3.02			4#3 + 1#8G, 1 1/4"C	3.02	O			38
39	20	SPARE					3.02			3.02	O	PANEL-B	100/3P	40
41	20	SPARE						3.02		3.02	O			42
						16.96	**15.14**	**13.84**						

PANEL: B (NEW) — **MOUNTING:** SURFACE

208Y/120 VOLTS — PHASE **3** — DEMAND LOAD 9.06 — **PANEL LOCATION:** KITCHENETTE AREA

100A **MLO** — WIRE **4** — DEMAND CURRENT 25.18 — **FED FROM:** PANEL-A

NOTE: L : LIGHTING, H : HVAC LOAD, M : MOTOR LOAD, R : RECEPTACLES, O : OTHER/MISC. (TYPICAL)

CKT NO.	TRIP AMPS	DESCRIPTION OF LOAD	LOAD TYPE	LOAD (KVA)	MINIMUM BRANCH CIRCUIT	PER PHASE (KVA) A	B	C	MINIMUM BRANCH CIRCUIT	LOAD (KVA)	LOAD TYPE	DESCRIPTION OF LOAD	TRIP AMPS	CKT NO.
1	20	SPARE				0.15			2#12 + 1#12G, 3/4"C	0.15	H	UH-1 (N)	20	2
3	20	SPARE					0.15		2#12 + 1#12G, 3/4"C	0.15	H	UH-2 (N)	20	4
5	20	SPARE						0.15	2#12 + 1#12G, 3/4"C	0.15	H	UH-3 (N)	20	6
7	20	SPARE				0.15			2#12 + 1#12G, 3/4"C	0.15	H	UH-4 (N)	20	8
9	20	WAREHOUSE AREA RECEPTACLES	R	1.08	2#12 + 1#12G, 3/4"C		1.23		2#12 + 1#12G, 3/4"C	0.15	H	UH-5 (N)	20	10
11	20	WAREHOUSE AREA RECEPTACLES	R	1.08	2#12 + 1#12G, 3/4"C			1.23	2#12 + 1#12G, 3/4"C	0.15	H	UH-6 (N)	20	12
13	20	JB FOR DOOR OPENER	R	1.00	2#12 + 1#12G, 3/4"C	1.10			2#12 + 1#12G, 3/4"C	0.10	H	UH-7 (N)	20	14
15	20	JB FOR DOOR OPENER	R	1.00	2#12 + 1#12G, 3/4"C		1.10		2#12 + 1#12G, 3/4"C	0.10	M	EF-1 (N)	20	16
17	20	SPARE						0.00				SPARE	20	18
19	20	SPARE				0.15			2#12 + 1#12G, 3/4"C	0.15	M	EF-2 (N) & EF-3(N) FUTURE USE	20	20
21	20	SPARE					0.95		2#12 + 1#12G, 3/4"C	0.95	H	OAF-1 (N)	20	22
23	20	SPARE						0.36	2#12 + 1#12G, 3/4"C	0.36	R	DR & TDB QUAD RECEPTACLE	20	24
25	20	SPARE				0.00						SPARE	20	26
27	20	SPARE					0.00					SPARE	20	28
29	20	WAREHOUSE AREA RECEPTACLES	R	0.90	2#12 + 1#12G, 3/4"C			0.90				SPARE	20	30
31	20	SERVICE RECETPACLES	R	0.72	2#12 + 1#12G, 3/4"C	0.72						SPARE	20	32
33	20	WAREHOUSE AREA RECEPTACLES	R	0.72	2#12 + 1#12G, 3/4"C		0.72					SPARE	20	34
35	20	SPARE						0.00				SPARE	20	36
37	20	SPARE				0.00						SPARE	20	38
39	20	SPARE					0.00					SPARE	20	40
41	20	SPARE						0.00				SPARE	20	42
						2.27	**4.15**	**2.64**						

ELECTRICAL SERVICE LOAD CALCULATION

LOAD TYPE	PANEL-A & B	FIRE PUMP (FP-1) 98 HP	JOCKEY PUMP (JP-1) 2 HP	GRAND TOTAL LOAD
TOTAL CONNECTED LOAD (KVA)	45.94	98.35	2.7	**146.99**
TOTAL DEMAND LOAD (KVA)	47.27	98.35	2.7	**148.32**
TOTAL CONNECTED CURRENT (AMP)	127.67	273	7.5	**408.01**
TOTAL DEMAND CURRENT (AMP)	131.36	273	7.5	**411.69**

ELECTRICAL PANEL GENERAL NOTES:

A. THE ELECTRICAL LOAD IS BALANCED WITHIN 10% FOR ALL 3 PHASES.

B. THE VOLTAGE DROP FOR THE BRANCH CIRCUIT SHALL NOT EXCEED 3%.

C. GFI MARKED ON THE PLAN INDICATES THAT THE CIRCUIT SHALL BE GFI PROTECTED. E.C. SHALL PROVIDE A GFCI BREAKER IN THE PANEL FOR THE INDICATED CIRCUIT IF EITHER THE RECEPTACLE IS NOT AVAILABLE OR NOT READILY ACCESSIBLE.

D. COORDINATE AVAILABLE FAULT CURRENT (AIC RATING) WITH UTILITY/LANDLORD/OWNER. CALCULATE THE EXACT AIC RATING OF EACH PANEL IN THE FIELD. AIC RATING SHALL BE WRITTEN ON EACH PANEL AS PER STANDARD.

E. PROVIDE BREAKER LOCKING DEVICES IN THE PANELS, WHERE EVER REQUIRED BY CODE. INCLUDING BUT NOT LIMITED TO EMERGENCY LIGHTING, HARD-WIRED EQUIPMENT AND FIRE ALARM CIRCUITS.

F. THE BREAKER FEEDING HVAC UNITS SHALL BE HACR TYPE.

G. E.C. TO PROVIDE A CIRCUIT DIRECTORY FOR EACH PANEL BOARD.

H. ALL SECURITY AND EMERGENCY LIGHTING CIRCUITS, SMOKE DETECTORS, FIRE PROTECTION CIRCUITS, AND OTHER CRITICAL SYSTEM CIRCUITS SHALL BE PROVIDED WITH A LOCK-ON DEVICE.

RISER DIAGRAM GENERAL NOTES

A. COORDINATE AVAILABLE FAULT CURRENT WITH THE UTILITY/LANDLORD/OWNER. CALCULATE THE EXACT AIC RATING OF EACH EQUIPMENT IN THE FIELD. PROVIDE THE EQUIPMENT ACCORDINGLY. AIC RATING SHALL BE WRITTEN ON EACH EQUIPMENT PER STANDARD.

B. ENSURE THE COMBINED VOLTAGE DROP OF THE FEEDER AND BRANCH CIRCUIT SHALL NOT EXCEED 5% PER CODE.

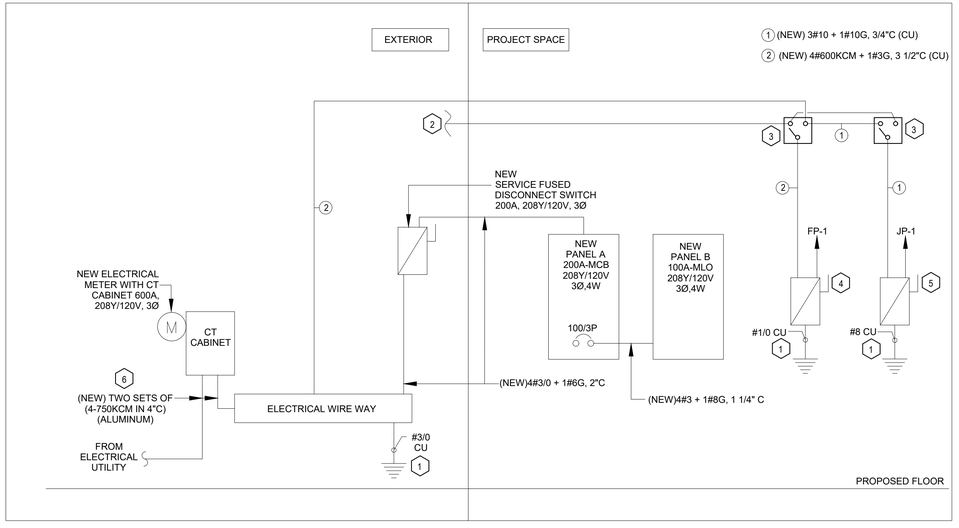
C. PROVIDE GEC AND EGC AS PER 250.66 & 250.122 RESPECTIVELY, AS NEEDED. PROVIDE SEPARATE GROUND CONDUCTORS IN ALL CONDUITS.

D. REFER POWER PLAN FOR THE PROPOSED LOCATION OF THE ELECTRICAL METER, SERVICE DISCONNECT & PANELS. INFORM EOR OF ANY DISCREPANCY.

E. THE ELECTRICAL WORK SHALL BE PERFORMED IN COMPLIANCE WITH THE NEC, LOCAL CODES AND AHJ.

RISER DIAGRAM KEY NOTES

1. REFER TO THE DETAIL SHEET FOR TYPICAL SERVICE GROUNDING DETAIL. PROVIDE CODE COMPLIANT GROUND FOR THE PROJECT SPACE AS NEEDED.
2. INCOMING EMERGENCY POWER. E.C. SHALL COORDINATE WITH OWNER AND PROVIDE WIRING ACCORDINGLY.
3. AUTOMATIC TRANSFER SWITCH. E.C. SHALL COORDINATE WITH OWNER AND PROVIDE ACCORDINGLY.
4. E.C. SHALL COORDINATE WITH THE SPRINKLER CONTRACTOR FOR THE EXACT LOCATION AND ELECTRICAL CONNECTION REQUIREMENT OF THE AUTOMATIC FIRE PUMP (FP-1) IN THE FILED. PROVIDE FUSED DISCONNECT SWITCH (400AF & 600AS) AS REQUIRED.
5. E.C. SHALL COORDINATE WITH THE SPRINKLER CONTRACTOR FOR THE EXACT LOCATION AND ELECTRICAL CONNECTION REQUIREMENT OF THE JOCKEY PUMP (JP-1) IN THE FILED. PROVIDE FUSED DISCONNECT SWITCH (15AF & 30AS) AS REQUIRED.
6. ADJUSTED FEEDER SIZE BASED ON THE PERMISSIBLE VOLTAGE DROP.



1 E3.0 **RISER DIAGRAM**
NTS

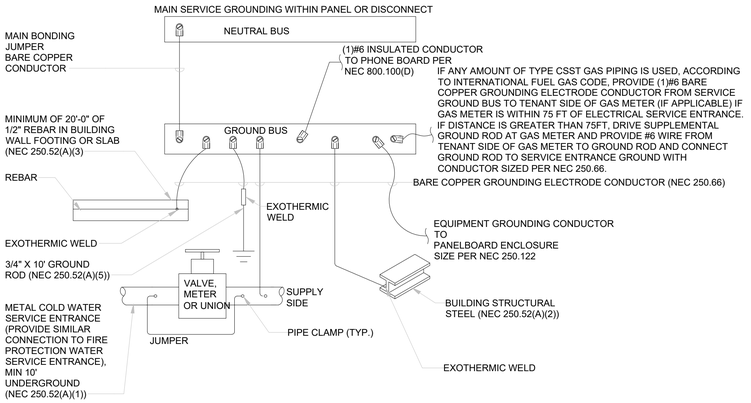
No.	Drawing Issues / Revisions	Date
	Issue for Foundation Permit	
	Issue for Building Permit	

Drawing Title: ELECTRICAL SCHEDULES AND RISER DIAGRAM

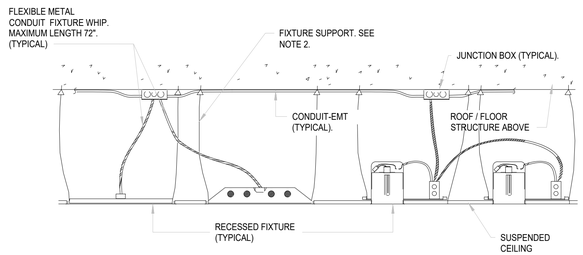
Date: 03/14/25
Dwg No. E 3.0
Drawn By: NYE
Checked By: NYE
Job No: 23-052

GROUNDING NOTES:

1. ALL GROUNDING SHALL BE INSTALLED IN ACCORDANCE WITH ARTICLE 250 OF THE NATIONAL ELECTRICAL CODE.
2. REFER TO ELECTRICAL SPECIFICATIONS FOR ADDITIONAL GROUNDING REQUIREMENTS.

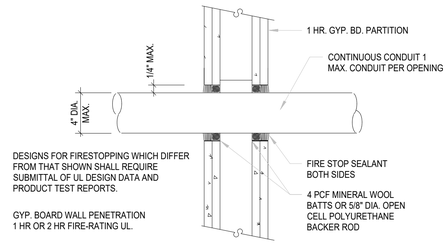


1 E4.0 SERVICE GROUNDING DETAIL
NOT TO SCALE



NOTES:
MC CABLE IS ACCEPTABLE WHERE CONCEALED ABOVE CEILINGS OR IN WALLS. MC CABLE SHALL NOT ENTER PANELBOARDS.
SUPPORT FIXTURES DIRECTLY FROM STRUCTURE.
FOR LINEAR FIXTURES: MINIMUM TWO 2.5MM (0.1") #10AWG GALVANIZED STEEL WIRES AT DIAGONAL CORNERS (WITHIN 4" OF FIXTURE CORNER) DIRECTLY FROM STRUCTURE.
FOR DOWNLIGHTS: WIRE FROM STRUCTURE.

2 E4.0 TYPICAL RECESSED FIXTURE INSTALLATION DETAIL
NOT TO SCALE



DESIGNS FOR FIRESTOPPING WHICH DIFFER FROM THAT SHOWN SHALL REQUIRE SUBMITTAL OF UL DESIGN DATA AND PRODUCT TEST REPORTS.

GYP. BOARD WALL PENETRATION
1 HR OR 2 HR FIRE-RATING UL.

NOTE:

THIS DETAIL USED IN BOTH 1 HR. AND 2 HR. PARTITIONS. THIS DETAIL USED FOR BOTH DRYWALL AND PLASTER/STUD PARTITIONS, DESIGNATED AS IF. FIELD VERIFY CONDITIONS.

3 E4.0 FIRE RATED - CONDUIT PENETRATION DETAIL
NOT TO SCALE

COORDINATE NUMBER OF POLES REQUIRED ON EACH CONTACTOR WITH PANEL SCHEDULES.
MINIMUM INTERRUPTING RATING FOR ALL RELAYS AND CONTACTORS SHALL BE 10,000 A.I.C.

4 E4.0 LIGHTING CONTROL DIAGRAM
NOT TO SCALE

No.	Drawing Issues / Revisions	Date
	Issue for Foundation Permit	
	Issue for Building Permit	

Drawing Title: ELECTRICAL DETAILS

Date: 03/14/25
Drawn By: NYE
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Job No: 23-052
Dwg No. E 4.0
8 of 8

PLUMBING SYMBOLS LIST

- SANITARY SEWER (UNDERFLOOR)
- SANITARY SEWER (ABOVE FLOOR)
- VENT PIPING
- COLD WATER PIPING
- HOT WATER PIPING
- HOT WATER RETURN PIPING
- G — GAS PIPING
- P—TRAP
- PIPE UP
- PIPE DROP
- CLEANOUT
- SHUT OFF VALVE
- GAS PLUG VALVE
- POINT OF CONNECTION

PLUMBING ABBREVIATIONS

CO	CLEANOUT
FCO	FLOOR CLEANOUT
CW	COLD WATER
HW	HOT WATER
HWR	HOT WATER RETURN
SAN	SANITARY
S	SOIL
V	VENT
W	WASTE
LAV	LAVATORY
WC	WATER CLOSET
TYP.	TYPICAL
DN	DOWN
EXIST.	EXISTING
FD	FLOOR DRAIN
BFP	BACK FLOW PREVENTER
WH	WATER HEATER
KS	KITCHEN SINK
ET	EXPANSION TANK

PLUMBING DRAWING LIST

BUILDING DEPARTMENT PLUMBING NOTES

1. ALL PLUMBING SYSTEMS (SANITARY, WASTE, VENT, WATER, GAS) AND ASSOCIATED EQUIPMENT SHALL BE INSTALLED, OPERATED AND MAINTAINED IN ACCORDANCE WITH THE REQUIREMENTS OF 2021 NATIONAL STANDARD PLUMBING CODE (NSPC 2021), IFGC 2021.
2. INSTALLATION OF UNDERGROUND PIPING SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION 2.6.6.
3. PROTECTION OF PIPING AND PLUMBING SYSTEM COMPONENTS AS PER SECTION 2.9
4. TRENCHING, EXCAVATION AND BACKFILL AS PER SECTION PC 2.6.
5. MATERIALS USED IN PLUMBING SYSTEMS SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS CHAPTER 3.
6. EQUIPMENT CONNECTIONS AND JOINING OF PIPING SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF CHAPTER 4
7. DEEP SEAL TRAPS FOR FLOOR DRAINS AND CLEAN–OUTS SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF CHAPTER 5.
8. DRAINAGE PIPE CLEANOUTS AS PER SECTION 5.4.
9. VERTICAL AND HORIZONTAL PIPING SHALL BE SUPPORTED IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION 8.2 AND 8.3.
10. WATER SUPPLY SYSTEMS SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE REQUIREMENTS OF CHAPTER 10.
11. THE SANITARY DRAINAGE SYSTEM SHALL BE SIZED AND INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF CHAPTER 11.
12. VENT PIPING FOR THE SANITARY DRAINAGE SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF CHAPTER 12.
13. INSPECTION AND TESTING OF PLUMBING AND GAS PIPING SYSTEMS SHALL BE IN ACCORDANCE WITH CHAPTER 15.
14. GAS PIPING INSTALLATION SHALL BE IN ACCORDANCE WITH INTERNATIONAL FUEL GAS CODE 2021.

PLUMBING SPECIFICATIONS

1. BASIC PLUMBING REQUIREMENTS, MATERIALS AND METHODS

1.01 SCOPE

A. PROVIDE ALL MATERIAL, TOOLS, SUPERVISION AND LABOR INCLUDING ALL MISCELLANEOUS AND INCIDENTAL ITEMS REQUIRED FOR COMPLETE AND OPERABLE PLUMBING INSTALLATIONS AS SHOWN OR DESCRIBED ON THE DRAWINGS AND IN THESE SPECIFICATIONS.

B. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL NEW CONDITIONS AND MATERIALS WITHIN THE CONSTRUCTION AREA. ANY DAMAGE CAUSED BY THE CONTRACTOR SHALL BE REPAIRED TO THE OWNER'S SATISFACTION.

C. OBTAIN ALL PERMITS, PAY ALL PERMIT FEES AND SCHEDULE ALL REQUIRED INSPECTIONS. COPIES OF ALL PERMITS AND INSPECTION CERTIFICATES SHALL BE FORWARDED TO THE OWNER FOR RECORD.

D. THE GENERAL CONDITIONS OF THE CONTRACT AND ALL DIVISION 1 REQUIREMENTS APPLY TO THE WORK OF THIS SECTION.

E. THE CONTRACTOR SHALL VISIT THE SITE PRIOR TO SUBMITTING BID TO DETERMINE CONDITIONS AND THE EXTENT OF THE WORK. BY COMMENCING WORK, THE CONTRACTOR ACKNOWLEDGES HIS CONFIRMATION OF ALL CONDITIONS AS ACCEPTABLE WITH REFERENCE TO HIS CONTRACT, SCOPE OF WORK AND BID PRICE SUCH THAT NO ADDITIONAL COMPENSATION SHALL BE FORTHCOMING FOR UNFORESEEN EXISTING CONDITIONS.

F. IN ALL AREAS SUBJECT TO FREEZING CONDITIONS, THE CONTRACTOR SHALL PROVIDE FREEZE PROTECTION FOR ALL DOMESTIC WATER PIPING INSTALLED UNDER HIS CONTRACT.

G. ALL ELECTRICAL REQUIREMENTS SHALL BE COORDINATED WITH THE CONTRACTOR FOR ELECTRICAL WORK. THIS CONTRACTOR IS RESPONSIBLE FOR ALL LOW VOLTAGE WIRING FOR EQUIPMENT INSTALLED UNDER HIS CONTRACT. THE CONTRACTOR FOR ELECTRICAL WORK IS RESPONSIBLE FOR LINE VOLTAGE POWER WIRING ONLY.

H. COLOR AND FINISH SELECTIONS FOR ALL MATERIALS, INCLUDING PAINTING OF PIPING, SHALL BE AS DIRECTED AND/OR APPROVED BY THE ARCHITECT.

I. MINOR DETAILS NOT SHOWN OR SPECIFIED, BUT NECESSARY FOR THE PROPER AND ACCEPTABLE CONSTRUCTION, INSTALLATION OR OPERATION OF ANY PART OF THE WORK AS DETERMINED BY THE ENGINEER SHALL BE INCLUDED AS IF SPECIFIED OR INDICATED ON THE DRAWINGS.

J. THIS CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING ALL REQUIREMENTS FOR THE INSTALLATION, CONNECTION, EXTENSION OR MODIFICATION TO ALL UTILITY SERVICES WITH RESPECTIVE PROVIDERS INCLUDING PAYMENT OF ALL ASSOCIATED FEES.

K. THE CONTRACTOR IS RESPONSIBLE FOR ALL PAINTING ASSOCIATED WITH CUTTING AND PATCHING. ALL PAINTING IN AREAS WITH COMPLETE FINISH RENOVATIONS SHALL BE PROVIDED BY THE GENERAL CONTRACTOR.

1.02 SUBMITTALS

A. SUBMITTAL REQUIREMENTS SHALL BE COORDINATED WITH THE ARCHITECT AND AUTHORITIES HAVING JURISDICTION. UNLESS OTHERWISE DIRECTED, CONTRACTOR SHALL PROVIDE SUBMITTALS AS LISTED BELOW.

1. PIPE AND FITTINGS
2. VALVES
3. HANGERS AND SUPPORTS
4. PLUMBING PIPING LAYOUT
5. TESTS
6. PLUMBING FIXTURES
7. WATER HEATERS & ACCESSORIES
8. FLOOR DRAINS
9. MIXING VALVES
10. HOSE BIBB
11. BACKFLOW PREVENTER
12. ALL SCHEDULED PLUMBING EQUIPMENT

B. SUBMITTALS FROM SUPPLIERS OR MANUFACTURERS WHICH DO NOT BEAR THE STAMP OF THE SUBMITTING CONTRACTOR INDICATING THAT THE CONTRACTOR HAS REVIEWED THE SUBMITTAL FOR CONFORMANCE WITH THE PROJECT REQUIREMENTS WILL BE RETURNED REJECTED.

C. THE ENGINEER'S REVIEW OF SUBMITTALS IS A COURTESY WHICH DOES NOT RELIEVE THE CONTRACTOR FROM CONFORMING WITH THE CONSTRUCTION DOCUMENTS, REGARDLESS OF THE ACTION INDICATED BY THE SHOP DRAWINGS STAMP.

D. REVIEW OF SHOP DRAWINGS BY THE ENGINEER SHALL BE LIMITED TO THE INITIAL REVIEW, AND A SECOND REVIEW OF ANY REQUIRED RESUBMITTED DATA. IF THE ENGINEER IS REQUIRED TO REVIEW SHOP DRAWINGS FOR A THIRD (OR MORE) SUBMISSION OF THE SAME ITEM, THE CONTRACTOR SHALL BE LIABLE FOR COMPENSATING THE ENGINEER FOR THESE SUBSEQUENT REVIEWS AS PER THE ENGINEER'S CURRENT HOURLY RATE SCHEDULE.

E. SUBMIT PROOF OF APPROVAL AND/OR CONFIRMATION OF SATISFACTORY TEST RESULTS TO THE OWNER AND THE ARCHITECT.

F. SUBMIT TO THE OWNER'S MAINTENANCE PERSONNEL OPERATION AND MAINTENANCE DATA FOR ALL SYSTEM COMPONENTS, SERVICING REQUIREMENTS, INSPECTION DATA, REPLACEMENT PART NUMBERS AND AVAILABILITY AND CONTACT INFORMATION FOR SERVICE/SUPPLY COMPANY.

G. FOR ALL BELOW GRADE PIPING WHERE ACTUAL INSTALLATION DEVIATES FROM CONSTRUCTION DRAWINGS, THE CONTRACTOR SHALL PROVIDE AS–BUILT DRAWINGS INDICATING BELOW GRADE PIPE LOCATIONS DIMENSIONED TO NEAREST COLUMN LINES.

H. RECORD AS–BUILT DRAWINGS SHALL BE SUPPLIED TO THE OWNER/TENANT AFTER COMPLETION OF THE WORK SHOWING ANY ALTERATIONS, ADDITIONS AND/OR DELETIONS TO THE SYSTEM(S) INSTALLED.

1.03 SUBSTITUTIONS

A. ALL EQUIPMENT SHALL BE PRODUCTS OF THE SPECIFIED MANUFACTURER OR MANUFACTURERS. ALL BIDS SHALL BE BASED ON THE SPECIFIED MANUFACTURER OR MANUFACTURER'S EQUIPMENT. FOR SUBSTITUTIONS OF OTHER MANUFACTURER'S EQUIPMENT TO BE CONSIDERED, THE SUBSTITUTION MUST BE INDICATED PRIOR TO BIDDING WITH THE REASON FOR THE PROPOSED SUBSTITUTION IDENTIFIED, AND THE PROPOSED CREDIT TO THE OWNER INDICATED. THE ENGINEER SHALL DETERMINE THE ACCEPTABILITY OF ANY PROPOSED SUBSTITUTIONS.

B. THE CONTRACTOR ASSUMES ALL RESPONSIBILITY FOR COORDINATING THE WORK OF OTHER TRADES WHICH MAY BE AFFECTED BY SUBSTITUTIONS, INCLUDING ALL RELATED COSTS.

1.04 DEFINITIONS

A. FURNISH: TO PURCHASE, PROCURE, ACQUIRE AND DELIVER, COMPLETE WITH RELATED ACCESSORIES.

B. INSTALL: TO ERECT, MOUNT AND CONNECT, COMPLETE WITH RELATED ACCESSORIES.

C. PROVIDE: TO FURNISH AND INSTALL.

D. PLUMBING CONTRACTOR, THE CONTRACTOR, THIS CONTRACTOR: THE CONTRACTOR FOR PLUMBING WORK WHICH IS SPECIFIED HEREIN AND SHOWN ON THESE DRAWINGS.

E. REFER TO THE NATIONAL STANDARD PLUMBING CODE 2021 FOR ADDITIONAL DEFINITIONS.

1.05 DRAWINGS

A. THE DRAWINGS ARE DIAGRAMMATIC AND ARE INTENDED TO ILLUSTRATE THE GENERAL ARRANGEMENT AND ROUTING OF PIPING AND GENERAL LOCATIONS OF EQUIPMENT. PRECISE LOCATIONS OF EQUIPMENT, RISERS AND STACKS, AND ROUTING AND ELEVATION OF ALL PIPING SYSTEMS SHALL BE COORDINATED IN THE FIELD WITH THE ARCHITECT, ARCHITECTURAL DRAWINGS, THE WORK OF OTHER TRADES, EXISTING AND NEW BUILDING CONDITIONS AND/OR THE PREFERENCES OF THE OWNER/TENANT AS CONSTRUCTION PROCEEDS. ALL PIPING SHALL BE INSTALLED CONCEALED IN FINISHED SPACES, UNLESS NOTED OTHERWISE.

B. PROVIDE ALL NECESSARY INCIDENTAL MATERIALS AND ACCESSORIES REQUIRED TO MAKE THE WORK COMPLETE IN ALL RESPECTS, EVEN IF NOT PARTICULARLY SHOWN OR SPECIFIED.

C. REFER TO PLUMBING EQUIPMENT/FIXTURE SCHEDULE ON THE DRAWINGS FOR ALL FIXTURE AND EQUIPMENT SPECIFICATIONS.

D. REFER TO FIXTURE CONNECTION SIZE SCHEDULE FOR ALL FIXTURE ROUGHING SIZE REQUIREMENTS.

E. VERIFY ALL INDICATED CONDITIONS BEFORE STARTING WORK AND REPORT ANY DISCREPANCIES. THE DRAWINGS REFLECT CONDITIONS WHICH CAN BE REASONABLY INTERPRETED FROM THE EXISTING VISIBLE CONDITIONS OR FROM DRAWINGS AND INFORMATION FURNISHED BY THE OWNER.

F. LOCATE ALL FIXTURES AND EQUIPMENT AS PER THE FINAL ARCHITECTURAL DRAWINGS.

1.06 PRODUCTS

A. SANITARY AND VENT PIPING:

1. ABOVE GRADE PIPING SHALL BE HUBLESS CAST IRON PIPE WITH STAINLESS STEEL COUPLINGS AND ELASTOMERIC GASKETS WITH A MINIMUM NO. OF BANDS PER COUPLING AS PER CISPI 310–12.
2. SLOPE OF DRAINAGE SYSTEM SHALL BE 1/8" PER FOOT OF RUN FOR PIPE OVER 3" (I.D.) AND 1/4" PER FOOT OF RUN FOR PIPE 3" AND SMALLER (I.D.). VENT PIPING SHALL BE PITCHED TO DRAIN.
3. PVC OR OTHER COMBUSTIBLE PLASTIC PIPING SHALL NOT BE INSTALLED IN CEILING PLENUM SPACES.
4. ALL CAST IRON SOIL PIPE AND FITTINGS SHALL BE MARKED WITH THE COLLECTIVE TRADEMARK OF THE CAST IRON SOIL PIPE INSTITUTE (CISPI) AND BE LISTED BY NSF INTERNATIONAL.

B. DOMESTIC WATER PIPING:

1. ABOVE GRADE WATER PIPING SHALL BE TYPE 'L' HARD–DRAWN COPPER TUBE.
2. FITTINGS IN DOMESTIC WATER PIPING SHALL BE WROUGHT COPPER OR CAST BRASS.
3. JOINTS SHALL BE MADE WITH LEAD–FREE SOLDER.
4. THE ENTIRE DOMESTIC WATER DISTRIBUTION SYSTEM SHALL BE INSULATED INCLUDING ALL VALVES, FITTINGS, ETC.
5. COMPLY WITH NSF 61 FOR MATERIALS FOR WATER–SERVICE PIPING AND SPECIALTIES FOR DOMESTIC WATER.
6. ALL DOMESTIC WATER PIPING ABOVE GRADE SHALL BE INSULATED WITH FIRE RETARDANT, FACTORY–APPLIED JACKET. PROVIDE COLD WATER PIPING WITH FACTORY–APPLIED VAPOR BARRIER. INSULATION REQUIREMENT SHOULD COMPLY WITH ASHRAE 90.1 SECTION 7 ENERGY CONSERVATION CODE 7.4.3 TABLE 6.8.3–1.

MINIMUM PIPE INSULATION THICKNESS							
FLUID OPERATING TEMPERATURE RANGE AND USAGE (°F)	INSULATION CONDUCTIVITY		NOMINAL PIPE OR TUBE SIZE (INCHES)				
	CONDUCTIVITY BTU· IN./ (H· FT2· °F)	MEAN RATING TEMPERATURE, °F	<1	1 to < 1½	1½ to < 4	4 to < 8	≥8
141–200	0.25–0.29	125	1.5	1.5	2	2	2
105–140	0.21–0.28	100	1.0	1.0	1.5	1.5	1.5
40–60	0.21–0.27	75	0.5	0.5	1.0	1.0	1.0

7. AS PER ASHRAE 90.1 2019 SECTION 7.4.4.3 TEMPERATURE CONTROLLING MEANS SHALL BE PROVIDED TO LIMIT THE MAXIMUM TEMPERATURE OF WATER DELIVERED FROM LAVATORY FAUCETS IN PUBLIC FACILITY RESTROOMS TO 110°F..
8. AS PER ASHRAE 90.1 2019 EDITION, 7.4.4.2, SYSTEMS DESIGNED TO MAINTAIN USAGE TEMPERATURES IN HOT WATER PIPES, SUCH AS RECIRCULATING HOT WATER SYSTEM OR HEAT TRACE, SHALL BE EQUIPPED WITH AUTOMATIC TIME SWITCHES OR OTHER CONTROLS THAT CAN BE SET TO SWITCH OFF THE USAGE TEMPERATURE MAINTENANCE SYSTEM DURING EXTENDED PERIODS WHEN HOT WATER IS NOT REQUIRED.
9. AS PER ASHRAE 90.1 2019 EDITION, 7.4.4.1, TEMPERATURE CONTROLS MEANS SHALL BE PROVIDED THAT ALLOW FOR STORAGE TEMPERATURE ADJUSTMENT FROM 120°F OR LOWER TO MAXIMUM COMPATIBLE WITH THE INTERNED USE.
10. AS PER ASHRAE 90.1 2019 EDITION, 7.4.4.4, WHEN USED TO MAINTAIN STORAGE TANK WATER TEMPERATURE, RECIRCULATING PUMPS SHALL BE EQUIPPED WITH CONTROLS LIMITING OPERATION TO A PERIOD FROM THE START OF HEATING CYCLE TO A MAXIMUM OF 5 MINUTES AFTER THE END OF HEATING CYCLE.
11. SEAL ALL JOINTS BETWEEN SEGMENTS OF INSULATION.
12. PROVIDE SHIELDS BETWEEN HANGERS AND INSULATION.

C. GAS PIPING

a PROVIDE A COMPLETE GAS PIPING SYSTEM TO SERVE GAS FIRED EQUIPMENT AND EQUIPMENT FURNISHED BY OTHERS, AS NOTED ON DRAWINGS

b NATURAL GAS PIPING SHALL BE AS FOLLOWS:

1. ASTM A–53 SCHEDULE 40 STEEL PIPE PAINTED WITH YELLOW ANTI–CORROSIVE PAINT, SCREWED OR WELDED IN ACCORDANCE WITH CODE REQUIREMENT (FITTINGS FOR LINES LARGER THAN 2" SHALL BE WELDED STEEL FITTINGS FOR LINES 2" AND SMALLER, EXCEPT WHEN LOCATED IN AIR PLENUMS, SHALL BE SCREWED STANDARD WEIGHT BLACK MALLEABLE).
2. PROVIDE ALL UNIONS, SHUT–OFF VALVES AND DIRT LEGS REQUIRED BY NFPA–54 AND GOVERNING LOCAL CODES AND AT EACH GAS APPLIANCE CONNECTION.
3. PROVIDE ALL TESTS, METERS, INSPECTIONS, HANGERS AND EQUIPMENT CONNECTIONS REQUIRED FOR A COMPLETE AND OPERATING SYSTEM.
4. PAINT ALL GAS PIPING EXPOSED TO WEATHER WITH ONE COAT OF PRIMER, AND TWO COATS OF RUST–PROOF PAINT. COLOR OF PIPE ON ROOF SHALL BE YELLOW. COORDINATE COLOR OF PIPE ON EXTERIOR OF BUILDING WITH GC TO MATCH BUILDING COLORS.
5. GAS COCKS 1–1/2" AND SMALLER SHALL BE ALL BRONZE, SCREWED, FLAT HEAD, BRASS PLUG AND WASHER 200 LB NOG PROVIDE LINE SIZE 6" LONG DIRT LEG DOWN STREAM OF GAS COCK AT ALL EQUIPMENT CONNECTIONS.
6. NO VALVES ARE TO BE LOCATED IN AIR PLENUMS.
7. PROVIDE GAS PIPE SUPPORTS IN ACCORDANCE WITH CODE REQUIREMENTS.

D. HANGERS AND SUPPORTS:

1. HANGERS SHALL BE STANDARD STEEL, MALLEABLE OR WROUGHT IRON, AS MANUFACTURED BY GRINNELL OR APPROVED EQUAL, SUITABLE FOR THE TYPE OF CONSTRUCTION. PIPING SHALL NOT BE HUNG FROM OTHER PIPE.
2. SECTIONS OF INDIVIDUAL PIPE RUNS SHALL BE SUPPORTED BY CLEVIS HANGERS.
3. ALL EQUIPMENT SHALL BE PROVIDED WITH APPROVED SUPPORTS.
4. PROVIDE SEISMIC RESTRAINTS IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE AND LOCAL CODES AND STANDARDS AND THE REQUIREMENTS OF AUTHORITIES HAVING JURISDICTION.
5. UNLESS OTHERWISE INDICATED OR REQUIRED BY AUTHORITIES HAVING JURISDICTION, THE FOLLOWING SHALL BE PROVIDED WITH SEISMIC RESTRAINTS AS REQUIRED BY THE BOCA NATIONAL BUILDING CODE, SECTION 1610.6.4: ALL EQUIPMENT AND MACHINERY, ALL NEW PIPING 2–1/2" AND LARGER (1–1/4" AND LARGER INBOILER/MECHANICAL ROOMS) WITH HANGERS GREATER THAN 12" IN LENGTH FROM THE TOP OF PIPE TO THE STRUCTURE.
6. SUPPORTS SHALL BE PROVIDED IN STRICT ACCORDANCE WITH THE RECOMMENDATIONS OF THE PIPING MANUFACTURER.

E. VALVES:

1. PROVIDE GATE VALVES, BUTTERFLY OR BALL VALVES FOR SHUT–OFF DUTY ON MAIN AND BRANCH SUPPLY LINES. FOR ALL PIPE RUNS 2" AND SMALLER, PROVIDE BALL FOR ALL PIPE RUNS LARGER THAN 2" AND SMALLER THAN 4", PROVIDE GATE VALVES. PIPING 4" AND LARGER, PROVIDE BUTTERFLY VALVES FOR SHUT–OFF DUTY.
2. ALL FIXTURES WITH THE EXCEPTION O FLUSHOMETER–EQUIPPED WATER CLOSETS AND URINALS SHALL HAVE STOP VALVES TO CONTROL SUPPLY TO THE FIXTURE. WHERE SUPPLIES ARE EXPOSED PROVIDE CHROME–PLATED STOPS WITH CHROME–PLATED ESCUTCHEONS ON PIPING PENETRATIONS.
3. ALL PLUMBING FIXTURES AND EQUIPMENT TO HAVE SHUT–OFF VALVES ON SUPPLY LINES.
4. ALL BRANCH LINES TO HAVE SHUT–OFF VALVES.
5. ALL VALVES SHALL BE ACCESSIBLE. PROVIDE ACCESS DOORS WHERE REQUIRED FOR VALVE ACCESS.
6. PROVIDE GLOBE VALVES FOR THROTTLING/BALANCING OF THE HOT WATER CIRCULATING SYSTEM.

F. SLEEVES AND ESCUTCHEONS:

1. SLEEVES THROUGH STRUCTURAL CONCRETE MEMBERS AND SLEEVES FOR WALLS BELOW GRADE AND FLOORS ON GRADE SHALL BE STANDARD WEIGHT GALVANIZED SCHEDULE 40 STEEL PIPE. SLEEVES THROUGH OTHER THAN STRUCTURAL COMPONENTS OF THE BUILDING SHALL BE 20 GAGE GALVANIZED SHEET METAL WITH LOCK SEAM JOINTS. USG THERMAFIBER SAFING INSULATION SHALL BE INSTALLED BETWEEN PIPE AND SLEEVE.
2. PIPE ESCUTCHEON PLATES SHALL BE INSTALLED WHERE EXPOSED PIPING PASSES THROUGH WALLS, CEILINGS, AND FLOORS AND SHALL BE MINIMUM 20 GAGE STEEL. PROVIDE CHROME PLATED ESCUTCHEON PLATES IN FINISHED AREAS.

G. DRAINAGE ACCESSORIES

1.GENERAL:

a. INSTALL THE WORK OF THIS SECTION IN ACCORDANCE WITH THE MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS, UNLESS OTHERWISE SPECIFIED.

b. SECURE EXTERNAL COMPONENTS IN PLACE WITH VANDAL RESISTANT FASTENERS OR DEVICES WHICH CANNOT BE REMOVED WITHOUT SPECIAL TOOLS.

H. INSTALL PIPING TO CONSERVE BUILDING SPACE. DO NOT INTERFERE WITH USE OF BUILDING SPACE AND THE WORK OF OTHER TRADES. ALL PIPING RUN IN CEILING SHALL BE INSTALLED TIGHT TO THE STRUCTURE ABOVE.

I. INSTALL PIPING TO ALLOW FOR EXPANSION AND CONTRACTION WITHOUT STRESSING PIPE, JOINTS OR CONNECTED EQUIPMENT. PROVIDE PIPE ANCHORS, GUIDES AND EXPANSION JOINTS OR LOOPS IN ALL HOT WATER AND HOT WATER CIRCULATING MAIN SUPPLY PIPING AND SEGMENTS OF SUCH PIPE THAT EXCEED 30'–0" IN LENGTH.

J. IN ALL AREAS WITH FINISHED SURFACES, SYSTEM PIPING AND COMPONENTS SHALL BE CONCEALED ABOVE OR WITHIN FINISHED SURFACES.

K. REDUCTIONS IN PIPE SIZES SHALL BE MADE WITH ONE–PIECE REDUCING FITTINGS. BUSHINGS ARE NOT ACCEPTABLE. USE FLANGED FITTINGS AT THE BASE OF RISERS.

L. VENT PENETRATIONS THROUGH THE ROOF SHALL BE FLASHED.

M. IF WATER PRESSURE EXCEEDS 80 PSI, A WATER PRESSURE REDUCING VALVE SHALL BE INSTALLED IN WATER PIPING AT CONNECTION TO MAIN.

N. PROVIDE DIELECTRIC FITTINGS BETWEEN DISSIMILAR METALS.

O. PIPE BACKFLOW PREVENTER DRAINS TO FLOOR DRAIN OR OTHER APPROVED INDIRECT WASTE SOURCE.

P. PROVIDE ACCESS DOORS/PANELS FOR SERVICE AND ACCESS TO ALL VALVES AND OTHER SYSTEM COMPONENTS ENCLOSED IN WALLS AND CEILINGS. ACCESS DOORS SHALL BE FURNISHED BY THIS CONTRACTOR, INSTALLED BY THE GENERAL CONTRACTOR.

Q. ALL FIXTURES REQUIRING VACUUM BREAKERS SHALL BE EQUIPPED WITH INTEGRAL VACUUM BREAKERS.

R. ANY PENETRATIONS THROUGH FIRE RATED PARTITIONS, FLOORS, OR CEILINGS SHALL BE STEEL SLEEVED AND SEALED WITH 3M BRAND UL RATED FIRE BARRIER CAULK OR APPROVED EQUAL.

S. WHEN THE WATER PIPING SYSTEM IS COMPLETE, THOROUGHLY FLUSH ALL DIRT, SEDIMENT, SOLDER, ETC., OUT OF THE SYSTEM, REMOVING ALL STRAINERS, VALVE STEM SEATS, ETC., REQUIRED TO ACCOMPLISH THE FLUSHING.

T. AT ALL INDIRECT WASTE DRAINS, MAINTAIN AIR GAP AS REQUIRED BY CODE.

U. INSTALL SLEEVES FOR ALL PIPES WHICH PASS THROUGH WALLS, FLOORS, AND CEILINGS. WHERE PIPES ARE TO BE INSULATED, THE SLEEVE SHALL BE LARGE ENOUGH TO ACCOMMODATE INSULATION. SLEEVES SHALL BE FLUSH WITH FINISHED SURFACES AT BOTH ENDS. ON FINISHED SURFACES IN EXPOSED AREAS PROVIDE ESCUTCHEONS COMPATIBLE WITH FINISH.

V. PROVIDE WATER HAMMER ARRESTERS ON SUPPLY PIPING TO ALL FLUSHOMETER VALVES AND QUICK–CLOSING VALVES.

W. MAINTAIN ALL REQUIRED AND RECOMMENDED CLEARANCES FOR ALL PLUMBING SYSTEM COMPONENTS AND EQUIPMENT.

2. INSTALLATION

2.01 GENERAL

A. ALL WORK WHICH REQUIRES DISRUPTION OF THE ROOFING SHALL BE DONE BY A CONTRACTOR CERTIFIED BY THE ROOFING MANUFACTURER AS REQUIRED TO MAINTAIN ANY EXISTING ROOF WARRANTIES.

B. EXTERIOR INSTALLATIONS TO BE WEATHER PROOF IN ALL RESPECTS.

C. EXTERIOR MATERIALS AND EQUIPMENT SHALL BE PAINTED TO PREVENT CORROSION, COLOR PER ARCHITECT.

D. COORDINATE THE PLUMBING WORK WITH ALL OTHER AFFECTED WORK AND THE CONSTRUCTION SCHEDULE.

E. REAM PIPE AND TUBE ENDS. REMOVE BURRS. BEVEL PLAIN AND FERROUS END PIPE.

F. REMOVE SCALE AND FOREIGN MATERIAL, FROM INSIDE AND OUTSIDE, BEFORE ASSEMBLY.

G. PREPARE PIPING CONNECTIONS TO EQUIPMENT WITH FLANGES AND UNIONS.

H. COORDINATION WITH THE WORK OF OTHER TRADES IS REQUIRED. PROVIDE OFFSETS IN PIPING SYSTEMS OR MINOR DEVIATIONS TO THE INDICATED PIPE ROUTING IN ORDER TO COORDINATE THE PLUMBING WORK WITH THE WORK OF ALL OTHER TRADES AND THE GENERAL BUILDING CONDITIONS.

I. NO DOMESTIC WATER PIPING SHALL BE INSTALLED IN UNHEATED SPACES.

J. PRIOR TO DISCONNECTING AND CONNECTING NEW WORK TO EXISTING SYSTEMS, THE PLUMBING CONTRACTOR SHALL NOTIFY THE PROPERTY MANAGER AND OFFER A PROPOSED SCHEDULE OF WORK. ESB WILL AUTHORIZE CONNECTIONS AND COORDINATE NECESSARY SHUT DOWNS AND DRAIN DOWNS AS REQUIRED. SHUT DOWNS AND DRAIN DOWNS MAY BE PERFORMED BY THE PLUMBING CONTRACTOR ONLY AFTER RECEIVING ESB AUTHORIZATION, AND SHOULD BE PERFORMED UNDER SUPERVISION OF ESB PERSONNEL. THREE (3) DAYS ADVANCE NOTICE TO THE PROPERTY MANAGER IS REQUIRED.

K. THE PLUMBING CONTRACTOR IS ADVISED THAT DUE TO THE NATURE OF THE OPERATIONS AND TENANT REQUIREMENTS, CONNECTIONS TO EXISTING SYSTEMS MAY HAVE TO BE MADE AFTER REGULAR WORKING HOURS. THE PROPERTY MANAGER WILL ADVISE THE PLUMBING CONTRACTOR OF THE TIME CONSTRAINTS UPON RECEIPT AND APPROVAL OF THE PLUMBING CONTRACTOR'S REQUEST FOR SHUT DOWN AND CONNECTION TO EXISTING SYSTEMS.

L. WHEN CONNECTING TO EXISTING STACKS AND RISERS, PROVISION IS TO BE MADE FOR FUTURE CONNECTIONS BY PROVIDING CAPPED AND VALVED OUTLETS ON DOMESTIC WATER RISERS AND PLUGGED OUTLETS ON THE SANITARY AND VENT STACKS.

No.	Drawing Issues / Revisions	Date
	Issue for Foundation Permit	
	Issue for Building Permit	

Drawing Title:
PLUMBING NOTES, SYMBOLS, ABBREVIATIONS & SPECIFICATIONS

Date: 03/14/25	*Dwg No.* P 0.1
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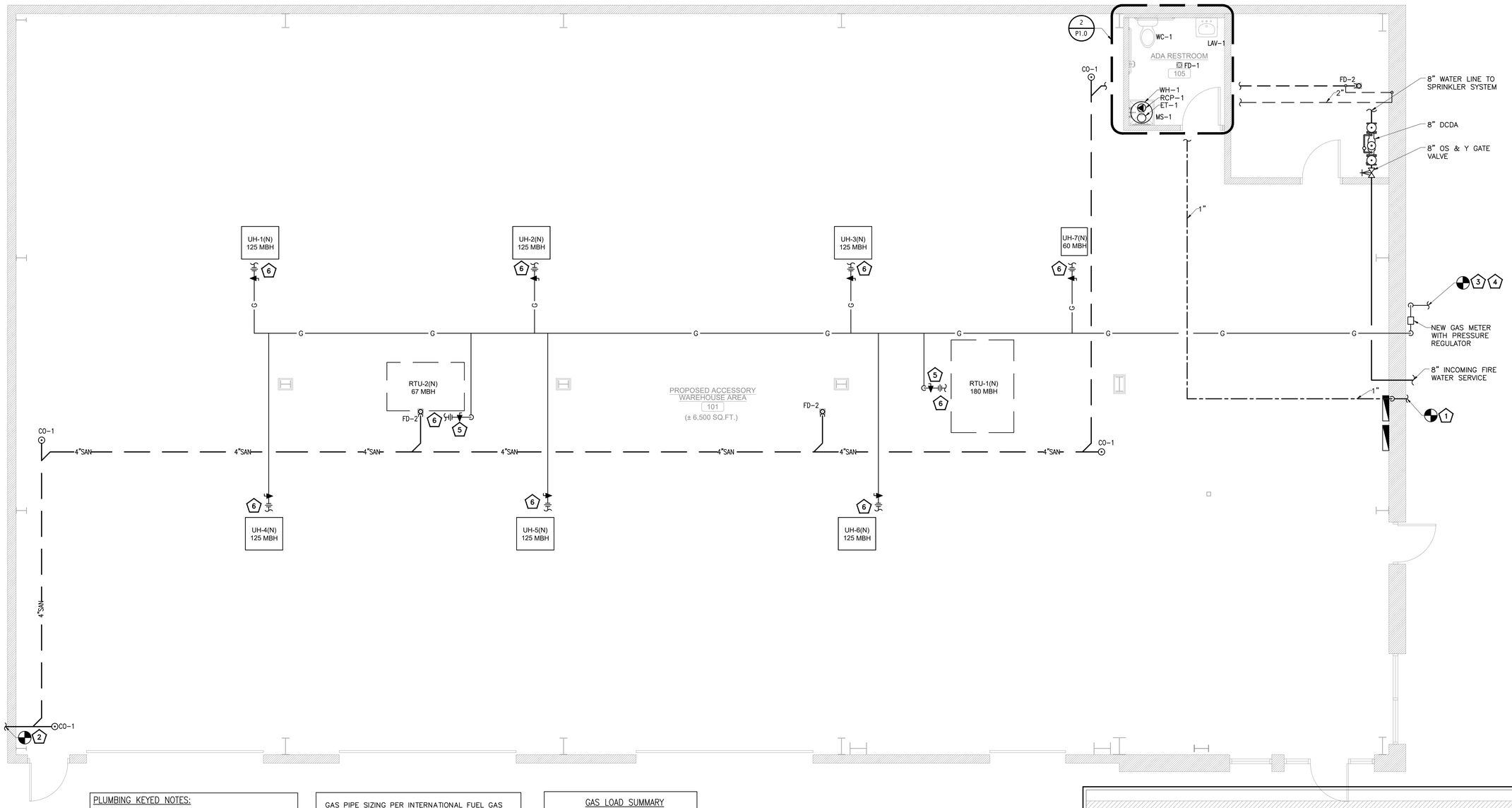
Checked By: NYE	
Job No: 23-052	1 of 6



PLUMBING KEYED NOTES:

1. CONNECT NEW 1" CW PIPING WITH THE EXISTING WATER SERVICE LINE IN SPACE. CONTRACTOR TO FIELD VERIFY AVAILABILITY OF EXISTING WATER METER. PROVIDE NEW BFP AND REROUTE PIPE ACCORDINGLY.
2. CONNECT NEW 4" SANITARY PIPE TO EXISTING SANITARY PIPE. CONTRACTOR TO FIELD VERIFY EXISTING SANITARY PIPE SIZE, LOCATION, INVERT AND REROUTE PIPE ACCORDINGLY.
3. CONNECT NEW 2½" GAS PIPE TO UTILITY SERVICE LINE WITH NEW GAS METER. REFER SITE PLAN FOR CONTINUATION AND MORE DETAILS.
4. CONTRACTOR TO PROVIDE NEW PRESSURE REGULATOR PROVIDING OUTLET PRESSURE 14" WC.
5. GAS PIPING TO BE ROUTED ON THE ROOF.
6. CONNECTION GAS PIPING TO AC UNIT PER MANUFACTURERS REQUIREMENTS WITH GAS REGULATOR, VALVE AND UNION.
7. ROUTE WATER HEATER T&P DRAIN FROM TO THE MOP SINK WITH APPROVED AIR GAP.
8. PROVIDE NEW WATER HEATER (WH-1) WITH RE-CIRCULATION PUMP (RCP-1), THERMAL EXPANSION TANK (ET-1). CONTRACTOR TO INSTALL WATER HEATER AS PER INSTALLATION GUIDELINE. PROVIDE CLEARANCE AS REQUIRED.
9. PROVIDE ASSE 1070 OR SIMILAR THERMOSTATIC MIXING VALVE AT ALL HAND SINK AND LAVATORIES IF NOT ALREADY PROVIDED WITH THEM. SET AT 110°F MAXIMUM.

GAS PIPE SIZING PER INTERNATIONAL FUEL GAS CODE 2021, SECTION 402.2, TABLE 402.4(2)

INLET PRESSURE– LESS THAN 2 PSI
SPECIFIC GRAVITY – 0.6
PRESSURE DROP – 0.5" WC

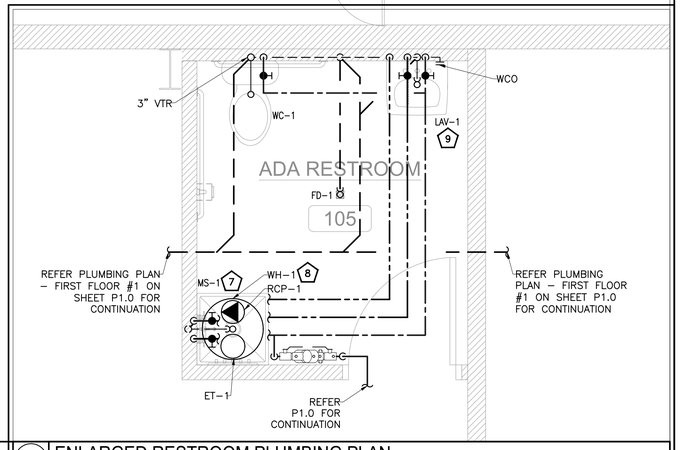
EQUIVALENT LENGTH OF PIPE =
125 + FITTINGS (+40%) = 175 FEET

GAS PIPING GENERAL NOTES:

1. PROVIDE SHUT-OFF VALVE AN ACCESSIBLE LOCATION. PROVIDE GAS PRESSURE REGULATOR FOR GAS EQUIPMENT IF REQUIRED.
2. CONTRACTOR SHALL VERIFY ACTUAL GAS PRESSURE AND LONGEST LENGTH OF RUN TO FARTHEST APPLIANCE PRIOR TO INSTALLATION AND NOTIFY ENGINEER IF CONDITION DIFFER THAN SHOWN ON THIS PLAN.

GAS LOAD SUMMARY

EQUIPMENT TAG	CFH LOAD
RTU-1(N)	180
RTU-2(N)	67
UH-1(N)	125
UH-2(N)	125
UH-3(N)	125
UH-4(N)	125
UH-5(N)	125
UH-6(N)	125
UH-7(N)	60
TOTAL	1057



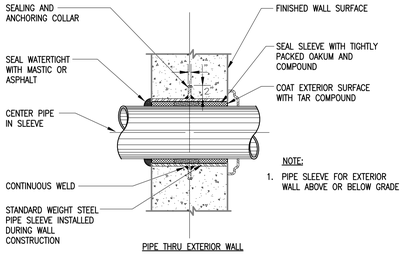
1 PLUMBING PLAN - FIRST FLOOR
SCALE: 1/4" = 1'-0"

2 ENLARGED RESTROOM PLUMBING PLAN
SCALE: 1/2" = 1'-0"

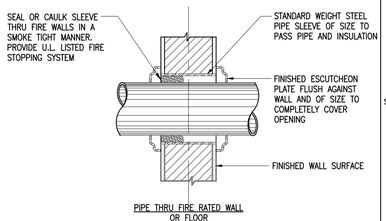
No.	Drawing Issues / Revisions	Date
	Issue for Foundation Permit	
	Issue for Building Permit	

Drawing Title: PLUMBING FLOOR PLANS

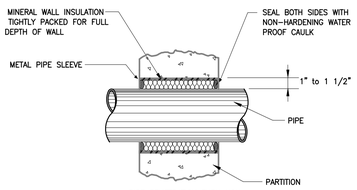
Date: 03/14/25
Drawn By: NYE
Checked By: NYE
Job No: 23-052
Dwg No. P 1.0
2 of 6



PIPE THRU EXTERIOR WALL

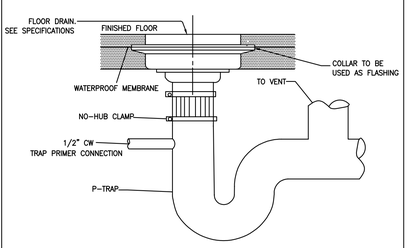


PIPE THRU FIRE RATED WALL OR FLOOR

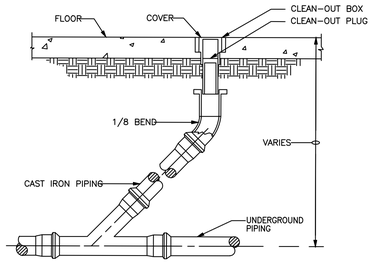


PIPE PENETRATION THRU NON FIRE RATED WALL

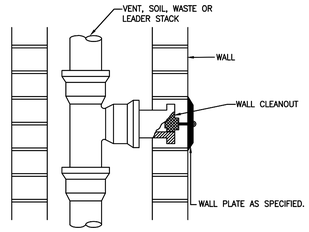
1 P5.0 PIPE SLEEVE THRU WALL SECTION N.T.S



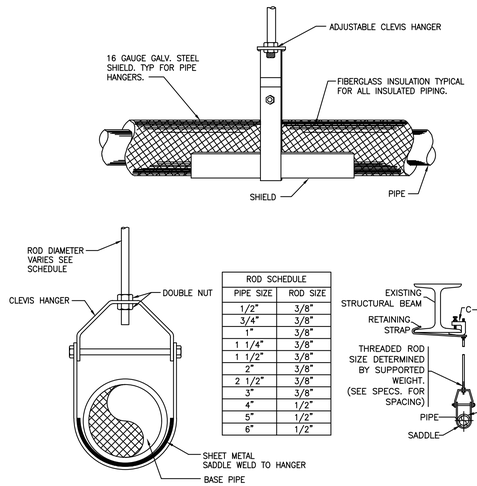
2 P5.0 FLOOR DRAIN DETAILS N.T.S



3 P5.0 FLOOR CLEANOUT DETAIL N.T.S



4 P5.0 WALL CLEANOUT DETAIL N.T.S



ROD SCHEDULE	
PIPE SIZE	ROD SIZE
1/2"	3/8"
3/4"	3/8"
1"	3/8"
1 1/4"	3/8"
1 1/2"	3/8"
2"	3/8"
2 1/2"	3/8"
3"	3/8"
4"	1/2"
5"	1/2"
6"	1/2"

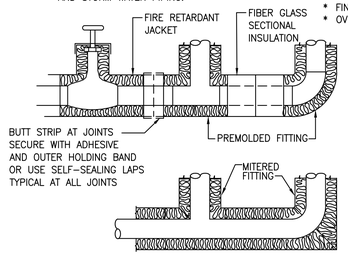
5 P5.0 HANGER DETAIL N.T.S

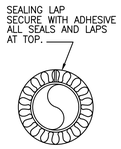
CONCEALED VALVES AND FITTINGS

* WRAP WITH 1-INCH THICK, 1-POUND DENSITY TO REQUIRED PIPE INSULATION THICKNESS
* SECURE WITH WIRE OR TAPE.
* VAPOR SEAL COLD WATER, CHILLED WATER AND STORM WATER PIPING.

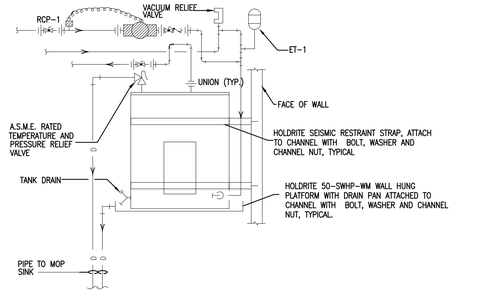
CONCEALED VALVES AND FITTINGS

* PREMOLDED FIBER GLASS OR RADIAL MITERED PIPE INSULATION
* SKIM COAT OF INSULATION CEMENT
* COAT OF MASTIC
* WRAP WITH FIBER GLASS REINFORCING CLOTH.
* FINISH COAT OF MASTIC
* OVERLAP 2-INCHES ON PIPE INSULATION.

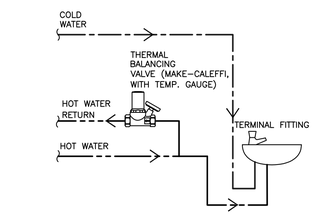




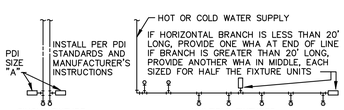
6 P5.0 INSULATION OF PIPING, VALVES AND FITTINGS FOR EXPOSED AND CONCEALED LOCATIONS N.T.S



7 P5.0 HOT WATER HEATER INSTALLATION (SHELF MOUNTED) N.T.S



8 P5.0 HOT WATER HEATER BALANCING VALVE PIPING DETAIL N.T.S

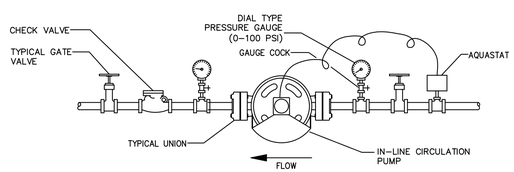


PDI SIZE	PIPE SIZE	FIXTURE UNIT LOAD
A	1/2"	1-11
B	3/4"	12-32
C	1"	33-60
D	1-1/4"	61-113
E	1-1/2"	114-154
F	2"	154-330

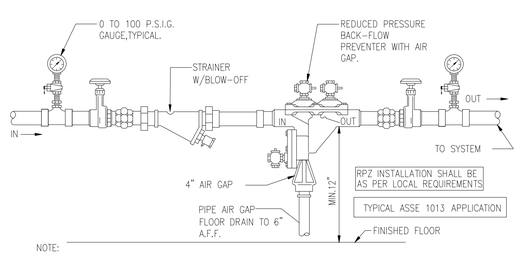
FIXTURE UNIT TABULATION		
FIXTURE	COLD	HOT
VALVE WATER CLOSET	10	--
TANK WATER CLOSET	5	--
URINAL	5	--
LAVATORY/SINK	1.5	1.5
JANITOR'S SINK	3	3
SHOWER/BATHTUB	2	2

PC TO PROVIDE WATER HAMMER ARRESTERS BY SIOUX CHIEF, PRECISION PLUMBING PRODUCTS, WATTS OR APPROVED EQUIVALENT WTH PISTON AND O-RING CONSTRUCTION, HAVING PDI #WH-201, ASSE #1010 AND ANSI #A112.26.1M CERTIFICATION. INSTALL IN HORIZONTAL OR VERTICAL POSITION, BUT NEVER UPSIDE DOWN. INSTALL IN LINE WITH WATER FLOW DIRECTION IF POSSIBLE. SIZE THE UNITS AS SHOWN ON THE DRAWINGS AND/OR PER THE TABLES SHOWN ABOVE.

9 P5.0 WATER HAMMER ARRESTORS N.T.S

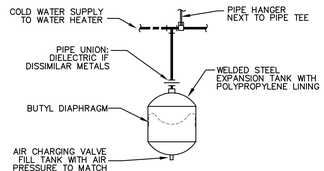


10 P5.0 INLINE RECIRCULATING PUMP DETAIL N.T.S



NOTE:
1. SEE FLOOR PLAN FOR SIZE OF R.P.B.P. AND PIPE
2.PROVIDE WALL SUPPORT FOR R.P.B.P.

11 P5.0 RPZ BACKFLOW PREVENTER DETAILS N.T.S



PIPING ARRANGEMENT SHOWN IS SCHEMATIC. ADJUST TO SUIT FIELD CONDITIONS. MAKE PIPE SAME SIZE AS TANK FITTING. FOLLOW MANUFACTURER'S INSTRUCTIONS FOR INSTALLATION PROCEDURE. VERIFY PROPER OPERATION WHEN INSTALLED.

EXPANSION TANK INSTALLATION SHALL OCCUR ONLY WHEN THERE IS A BACKFLOW PREVENTION DEVICE INSTALLED WITHIN THE BUILDING WATER SYSTEM.

12 P5.0 EXPANSION TANK N.T.S

No.	Drawing Issues / Revisions	Date
	Issue for Foundation Permit	
	Issue for Building Permit	

Drawing Title: PLUMBING DETAILS

Date:	Dwg No.
03/14/25	P 5.0
Drawn By: NYE	
Checked By: NYE	
Job No: 23-052	4 of 6

PLUMBING FIXTURE SCHEDULE

LEGEND	PLUMBING FIXTURE	CONNECTION SIZE – INCHES						REMARKS	MANUFACTURER AND MODEL
		TRAP	SOIL/WASTE	VENT	COLD WATER	HOT WATER	THERMOSTATIC MIXING VALVE		
WC–1	WATER CLOSET	–	4"	2"	½"	–	–	FLUSH TANK	ZURN – Z5555–K OR EQUIVALENT.
LAV–1	LAVATORY	1½"	1½"	1½"	½"	½"	PROVIDE	P–TRAP	AMERICAN STANDARD 0355.912.020 OR EQUIVALENT.
MS–1	MOP SINK	3"	3"	2"	¾"	¾"	–	P–TRAP	STERN WILLIAMS MTB – MTB2424 OR EQUIVALENT.
TP–1	TRAP PRIMER	–	–	–	½"	–	–	–	–
FD–1	FLOOR DRAIN	3"	3"	2"	–	–	–	P–TRAP	ZURN Z415N–3NL OR EQUIVALENT.
FD–2	FLOOR DRAIN	4"	4"	2"	–	–	–	P–TRAP	ZURN Z415N–3NL OR EQUIVALENT.

NOTE: CONTRACTOR TO COORDINATE WITH ARCHITECTURAL DRAWINGS ALL PLUMBING FIXTURES SPECIFICATIONS AND MOUNTING HEIGHT INSTALLATION.

DOMESTIC WATER HEATER SCHEDULE (ELECTRIC)

TAG No.	LOCATION	QUANTITY	NO. OF ELEMENTS	SERVING	RATED STORAGE GALLONS	RECOVERY CAP. (GPM @ RISE)	TYPE	ELECTRICAL				MANUFACTURER & MODEL NO.	REMARKS
								VOLTS	PHASE	HERTZ	INPUT KW		
WH–1	ABOVE MOP SINK	1	1	SEE PLAN	10	18 GPH @ 90°F	ELECTRIC STORAGE TYPE	208	3	60	4	A O SMITH DEL–10 (ELECTRIC WATER HEATER)	–DIMENSIONS 18" DIA X 18.25"H –HEATERS SHALL HAVE 150PSI WORKING PRESSURE.

NOTES: 1. PROVIDE NECESSARY ACCESSORIES AS PER THE MANUFACTURE GUIDE LINE

PUMP SCHEDULE

TAG	QTY	SERVICE	LOCATION	PERFORMANCE DATA			PUMP CONSTRUCTION DATA	MOTOR DATA					MFGR MODEL	REMARKS
				GPM PER PUMP	TDH PER PUMP (FT)	WATER TEMP. (°F)	PUMP TYPE	MHP PER PUMP	STARTER TYPE	V/PH/HZ	RPM	ROTATION		
RCP–1	1	HWR CIRC. SYSTEM	REFER PLANS	2	10	120	INLINE, NORYL	39 WATTS	AQUA STAT	115/1/60	2800	PER MFG	BELL & GOSSETT NBF 8S/LW	–INLINE ON HW RETURN LINE AT WATER HEATER NEMA 1 RATED MOTOR –PUMP SHOULD BE LEAD FREE

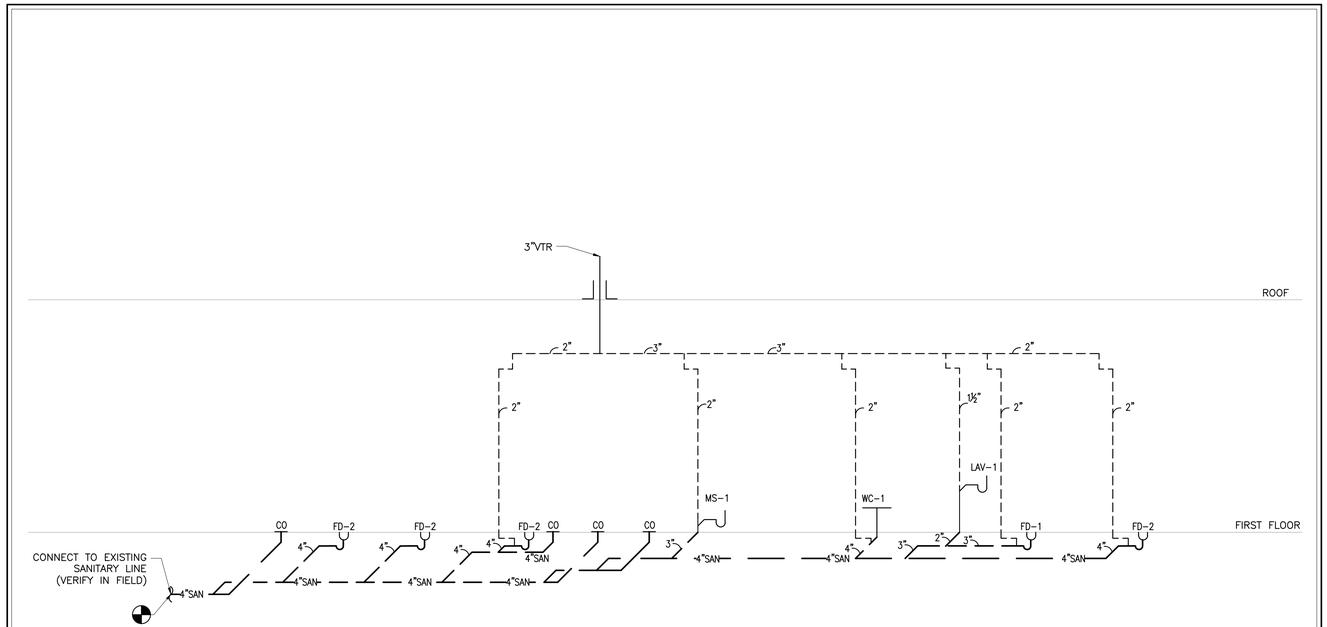
EXPANSION TANK

UNIT	QUANTITY	MANUFACTURER & MODEL NUMBER	SERVICE	TANK VOLUME (GAL)	ACCEPTANCE VOLUME (GAL)	PRESSURE RATING (PSI)	DIMENSIONS		OPERATING WEIGHT (LBS)	MOUNTING	NOTES
							DIAMETER (INCH)	HEIGHT (INCH)			
ET–1	1	AMTROL	ST–5C–DD	2.0	0.9	150	8	14	10	NEAR WH–1	1,2

GENERAL NOTES:
1. SET THE TANK PRESSURE TO EQUAL THE SYSTEM OPERATING PRESSURE. TANK MUST BE DRAINED BEFORE ADJUSTING SET PRESSURE.
2. INSTALL PER MANUFACTURER'S RECOMMENDATIONS ON INCOMING COLD WATER LINE.

REDUCED PRESSURE BACKFLOW PREVENTER

UNIT	QUANTITY	MANUFACTURER	SERVICE	REMARK
BFP	1	ZURN WILKINS	975XL	BRONZE BODY WITH SHUT–OFF VALVES, Y STRAINER AND TEST COCKS.

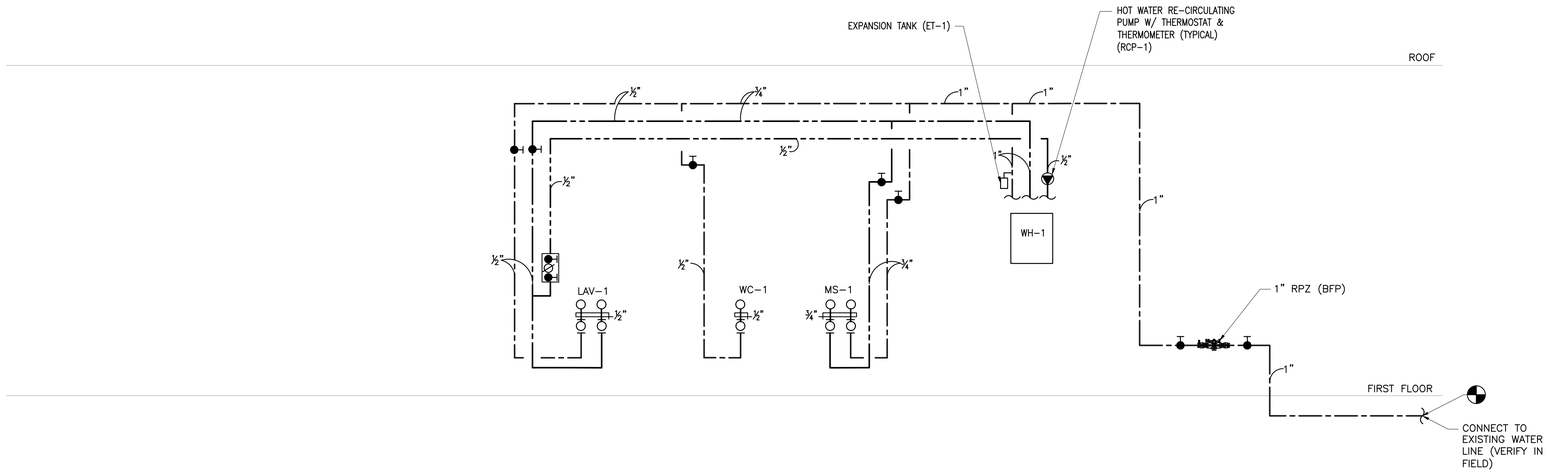


1 PLUMBING SANITARY RISER
SCALE: N.T.S

No.	Drawing Issues / Revisions	Date
	Issue for Foundation Permit	
	Issue for Building Permit	

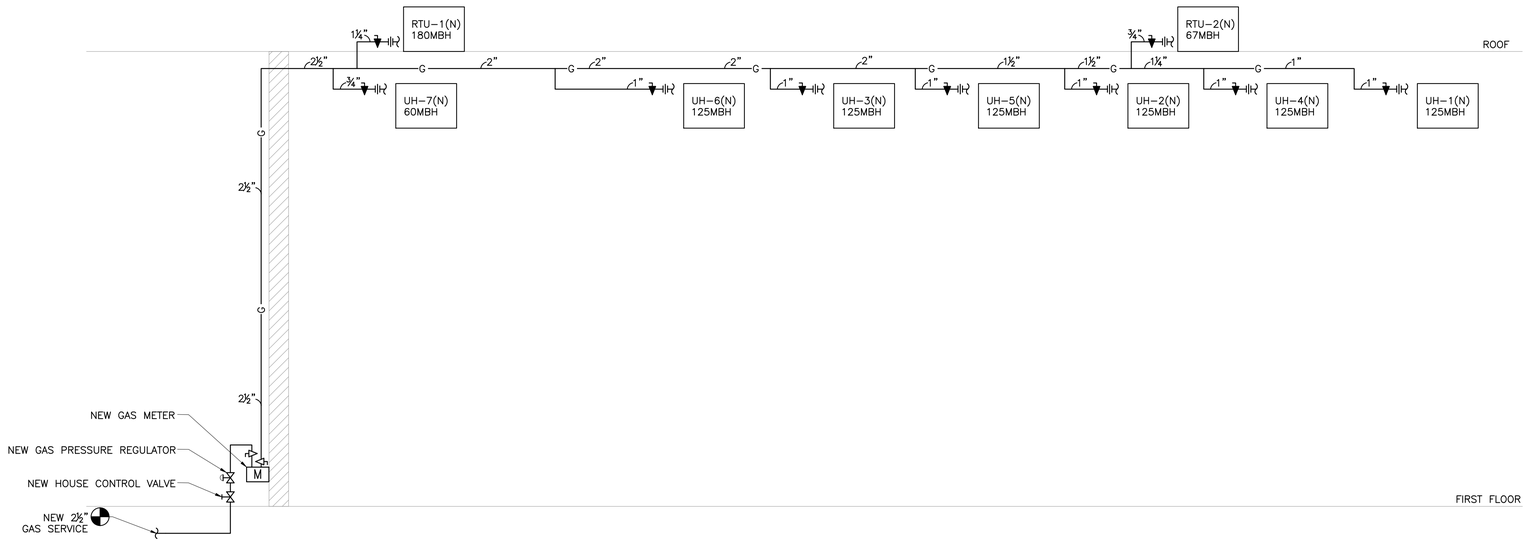
Drawing Title: PLUMBING SCHEDULES AND RISERS

Date:	Dwg No.
03/14/25	P 6.0
Drawn By: NYE	
Checked By: NYE	
Job No: 23-052	5 of 6



1 PLUMBING WATER RISER

SCALE: N.T.S



2 PLUMBING GAS RISER

SCALE: N.T.S

GAS PIPING GENERAL NOTES:

1. PROVIDE SHUT-OFF VALVE AN ACCESSIBLE LOCATION. PROVIDE GAS PRESSURE REGULATOR FOR GAS EQUIPMENT IF REQUIRED.
2. CONTRACTOR SHALL VERIFY ACTUAL GAS PRESSURE AND LONGEST LENGTH OF RUN TO FARTHEST APPLIANCE PRIOR TO INSTALLATION AND NOTIFY ENGINEER IF CONDITION DIFFER THAN SHOWN ON THIS PLAN.

GAS PIPE SIZING PER INTERNATIONAL FUEL GAS CODE 2021, SECTION 402.2, TABLE 402.4(2)

INLET PRESSURE- LESS THAN 2 PSI
SPECIFIC GRAVITY – 0.6
PRESSURE DROP – 0.5" WC

EQUIVALENT LENGTH OF PIPE =
125 + FITTINGS (+40%) = 175 FEET

GAS LOAD SUMMARY	
EQUIPMENT TAG	CFH LOAD
RTU-1(N)	180
RTU-2(N)	67
UH-1(N)	125
UH-2(N)	125
UH-3(N)	125
UH-4(N)	125
UH-5(N)	125
UH-6(N)	125
UH-7(N)	60
TOTAL	1057

No.	Drawing Issues / Revisions	Date
	Issue for Foundation Permit	
	Issue for Building Permit	

Drawing Title:
PLUMBING RISERS

Date:	Dwg No.
03/14/25	P 6.1
Drawn By: NYE	
Checked By: NYE	
Job No: 23-052	6 of 6