MECHANICAL SYMBOLS LIST

RTU-1 (N) (3000 CFM)	EQUIPMENT SYMBOL
XX X	RISER SYMBOL

AIR DEVICES

	CEILING DIFFUSER SUPPLY
	CEILING DIFFUSER RETURN

DUCT ACCESSORIES

	FIRE DAMPER W/ ACCESS DOOR
M	MOTORIZED DAMPER W/ ACCESS DOOR
VD VD	VOLUME DAMPER W/ ACCESS DOOR

CONTROLS AND SENSORS

T	THERMOSTAT
TS	TEMPERATURE SENSOR
S	SMOKE DETECTOR

DUCTWORK

	AIR DUCT W/ 1.5" ACOUSTICAL LINING
	FLEXIBLE DUCT
FC FC	FLEXIBLE CONNECTION
24X12	RECTANGULAR DUCT (WIDTH X DEPTH)
Ø12	ROUND DUCT (DIAMETER)
	ROUND DUCT CROSS SECTION
	SUPPLY AIR RECTANGULAR DUCT CROSS SECTION
	RETURN AIR RECTANGULAR DUCT CROSS SECTION

MECHANICAL ABBREVIATIONS

AC	AIR CONDITIONING UNIT
ACC	AIR COOLED CONDENSING UNIT
AL	ACOUSTIC LINING
AD	ACCESS DOOR
GD	GRAVITY DAMPER
CFM	CUBIC FEET OF AIR PER MINUTE
COP	COEFFICIENT OF PERFORMANCE
CP	CONDENSATE PUMP
CD	CONDENSATE DRAIN PIPE
DN	DOWN
DX	DRYER EXHAUST RISER
DXF	DRYER EXHAUST FAN
EDH	ELECTRIC DUCT HEATER
EER	ENERGY EFFICIENCY RATIO
EUH	ELECTRIC UNIT HEATER
EG	EXHAUST GRILLE
EN	ENERGY ANALYSIS
FC	FLEXIBLE CONNECTION
FD/AD	FIRE DAMPER W/ACCESS DOOR
FD	FIRE DAMPER W/FUSIBLE LINK
FSD	FIRE SMOKE DAMPER
GXF	GENERAL EXHAUST FAN
HSPF	HEATING SEASONAL PERFORMANCE FACTOR
IEER	INTEGRATED ENERGY EFFICIENCY RATIO
OAI	OUTSIDE AIR INTAKE RISER
OAF	OUTSIDE AIR INTAKE FAN
REF	REFRIGERANT PIPING
RG	RETURN GRILLE
SEER	SEASONAL ENERGY EFFICIENCY RATIO
SG	SUPPLY GRILLE
TR	TRANSFER DUCT
TX	TOILET EXHAUST RISER
TXF	TOILET EXHAUST FAN
VD	VOLUME DAMPER
W.M.S.	WIRE MESH SCREEN
COD	CABLE OPERATED DAMPER
BD	BACK DRAFT DAMPER
SD	SUPPLY DIFFUSER
RD	RETURN DIFFUSER

MECHANICAL DRAWING LIST

M001	MECHANICAL SYMBOLS, ABBREVIATIONS & GENERAL NOTES
M002	MECHANICAL SPECIFICATIONS
M100	MECHANICAL FLOOR PLAN
M101	MECHANICAL ROOF PLAN
M200	MECHANICAL SCHEDULES
M300	MECHANICAL DETAILS (01 OF 02)
M301	MECHANICAL DETAILS (02 OF 02)

MANSFIELD, MA BUILDING DEPARTMENT NOTES

ALL WORK SHALL COMPLY WITH APPLICABLE SECTIONS OF MASSACHUSETTS BUILDING CODE 10TH ED., AND ALL RULES AND REGULATIONS OF THE DEPARTMENT OF BUILDINGS TO DATE.

1. ALL HEATING AND COOLING LOADS CALCULATED PER ASHRAE/ACCA 183.
2. VENTILATION FOR ALL AREA SHALL COMPLY WITH MASSACHUSETTS MECHANICAL CODE 2021, CHAPTER 4.
3. AS PER C408.2.5 OF MASSACHUSETTS ENERGY CODE 2024, CONSTRUCTION DOCUMENT SHALL REQUIRE THAT, WITHIN 90 DAYS AFTER THE DATE OF SYSTEM ACCEPTANCE, RECORD DRAWINGS OF THE ACTUAL INSTALLATION BE PROVIDED TO THE BUILDING OWNER OR THE DESIGNATED REPRESENTATIVE OF THE BUILDING OWNER.
4. AS PER C408.3.2 OF MASSACHUSETTS ENERGY CODE 2024; CONSTRUCTION DOCUMENT SHALL REQUIRE THAT AN OPERATING MANUAL AND A MAINTAINED MANUAL BE PROVIDED TO THE BUILDING OWNER WITHIN 90 DAYS AFTER THE DATE OF SYSTEM ACCEPTANCE THE CONTRACTOR SHALL ENGAGE THE SERVICES OF A PROFESSIONAL ENGINEER TO PROVIDE THE REQUIRED SPECIAL INSPECTIONS AND TESTS.
5. 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 2018 VIRGINIA CONSTRUCTION CODE, REQUIREMENTS AS OUTLINES IN SECTION.
6. 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.
7. TESTS OF MECHANICAL SYSTEMS SHALL BE PERFORMED IN ACCORDANCE WITH THE FOLLOWING SECTIONS OF MASSACHUSETTS MECHANICAL CODE 2021:
   A. MECHANICAL VENTILATION - SECTION 403.
8. THE FOLLOWING WORK ITEMS, COMPONENTS, MATERIALS, CAPACITIES, ETC. SHALL COMPLY WITH THE REFERENCED CODE OR STANDARD:
   A. STANDARDS OF HEATING - SECTION 309.1 OF MASSACHUSETTS MECHANICAL CODE 2021.
   B. DUCT CONSTRUCTION AND INSTALLATION-SECTION 603 OF MASSACHUSETTS MECHANICAL CODE 2021.
   C. AIR INTAKES, EXHAUSTS AND RELIEF-SECTIONS 401.4, 401.5, 501.3 OF MASSACHUSETTS MECHANICAL CODE 2021.
   D. AIR FILTERS -SECTION 605 OF MASSACHUSETTS MECHANICAL CODE 2021.
9. MINIMUM TEMPERATURE TO BE MAINTAINED IN OCCUPIED SPACES DURING HEATING SEASON: 68 DEG. FAHRENHEIT.
10. 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 MASSACHUSETTS MECHANICAL CODE 2021, CHAPTER 4 - SECTION 403.3.
11. SMOKE DETECTION SYSTEMS SHALL BE INSTALLED AND SEQUENCED TO FOLLOW CONTROLS OPERATIONS WITH THE REQUIREMENTS OF SECTION 606 OF MASSACHUSETTS MECHANICAL CODE 2021 TO CLOSE DAMPERS AND AUTOMATICALLY STOP THE FAN.
12. REFER TO ARCHITECTURAL DRAWINGS FOR REQUIRED FIRE-RATED WALL AND SMOKE WALL CONSTRUCTION AND LOCATION.
13. 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.

NOTE TO CONTRACTOR

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.

APPLICABLE CODES

ALL WORK AND MATERIAL SHALL BE PERFORMED AND INSTALLED IN COMPLIANCE WITH THE FOLLOWING CODES AS ADOPTED AND AMENDED BY THE INSPECTING AUTHORITY. NOTHING IN THESE DRAWINGS IS TO BE CONSTRUCTED TO PERMIT WORK NOT CONFORMING TO THESE CODES OR OTHERS APPLICABLE TO THESE PROJECT:

1. 2021 INTERNATIONAL BUILDING CODE WITH MASSACHUSETTS AMENDMENTS
2. 248 CMR 2017 PLUMBING CODE WITH MASSACHUSETTS AMENDMENTS
3. 2021 INTERNATIONAL MECHANICAL CODE WITH MASSACHUSETTS AMENDMENTS
4. 2021 INTERNATIONAL ENERGY CONSERVATION CODE WITH MASSACHUSETTS AMENDMENTS
5. NEC 2017 / 527-12 CMR ELECTRICAL CODE.

GENERAL NOTES

1. CONTRACTOR SHALL SURVEY THE AREA OF THIS WORK BEFORE SUBMITTING A BID AND SHALL BE RESPONSIBLE FOR NOTIFYING THE ARCHITECT OF ANY CONDITIONS WHICH WOULD PREVENT THE INSTALLATION OF THE WORK AS SHOWN ON DRAWINGS.
2. ALL APPLICABLE CODES, LAWS AND REGULATIONS GOVERNING OR RELATING TO ANY PORTION OF THIS WORK ARE HEREBY INCORPORATED INTO AND MADE A PART OF THESE SPECIFICATIONS, AND THEIR PROVISIONS SHALL BE CARRIED OUT BY THE CONTRACTOR WHO SHALL INFORM THE OWNER, PRIOR TO SUBMITTING A PROPOSAL, OF ANY WORK OR MATERIALS WHICH VIOLATE ANY OF THE ABOVE LAWS AND REGULATIONS. ANY WORK DONE BY THE CONTRACTOR CAUSING SUCH VIOLATION SHALL BE CORRECTED BY THE CONTRACTOR.
3. BEFORE PROCEEDING WITH ANY WORK IN OCCUPIED OR USED AREAS, THE CONTRACTOR SHALL APPLY TO OWNER FOR PERMISSION TO ENTER SUCH AREAS. THE CONTRACTOR IS OBLIGED TO PERFORM HIS WORK ONLY AT THE TIMES DESIGNATED BY OWNER. THERE WILL BE NO ADDITIONAL COMPENSATION FOR THE WORK PERFORMED AFTER HOURS OR ON OFF-DAYS WITHOUT PRIOR WRITTEN APPROVAL.
4. THE WORK IN THE BUILDING SHALL BE DONE WHEN AND AS DIRECTED, AND IN A MANNER SATISFACTORY TO THE OWNER. THE WORK SHALL BE PERFORMED SO AS TO CAUSE THE LEAST POSSIBLE INCONVENIENCE AND DISTURBANCE TO THE PRESENT OCCUPANTS.
5. THE CONTRACTOR'S PROPOSAL FOR ALL WORK SHALL BE PREDICATED ON THE PERFORMANCE OF THE WORK DURING REGULAR WORKING HOURS. WHEN SO DIRECTED, HOWEVER, THE CONTRACTOR SHALL INSTALL WORK IN OVERTIME AND THE ADDITIONAL COST TO BE CHARGED THEREFORE SHALL BE ONLY THE "PREMIUM" PORTION OF THE WAGES PAID.
6. CONTRACTOR SHALL ASCERTAIN THE APPROPRIATE METHOD FOR BRINGING THE UNITS INTO AND THROUGH THE BUILDING TO POSITION UNIT IN LOCATION SHOWN ON THE PLANS. WHERE NECESSARY, EQUIPMENT SHALL BE SHIPPED FROM MANUFACTURER IN SECTIONS OF SIZE SUITABLE FOR MOVING THROUGH RESTRICTIVE SPACES. COORDINATE WITH BUILDING OWNER APPROPRIATE TIMES OF DAY SUCH EQUIPMENT MAY BE MOVED THROUGH ALL AREAS.
7. DUCTWORK AND PIPING IS SHOWN DIAGRAMMATICALLY AND DOES NOT SHOW ALL OFFSETS, DROPS AND RISES OF RUNS. THE CONTRACTOR SHALL MAKE ALLOWANCE IN PRICING FOR ROUTING OF DUCTWORK AND PIPING TO AVOID OBSTRUCTIONS. EXACT LOCATIONS ARE SUBJECT TO APPROVAL OF ARCHITECT. COORDINATION WITH THE EXISTING SERVICES, INCLUDING THOSE OF OTHER TRADES IS REQUIRED.
8. REMOVAL AND RELOCATION OF CERTAIN EXISTING WORK WILL BE NECESSARY FOR THE PERFORMANCE OF THE GENERAL WORK. ALL EXISTING CONDITIONS CANNOT BE COMPLETELY DETAILED ON THE DRAWINGS. THE CONTRACTOR SHALL SURVEY THE SITE AND INCLUDE ALL CHANGES IN MAKING UP THE WORK PROPOSAL.
9. DISCONNECT, REMOVE AND/OR RELOCATE EXISTING MATERIAL, EQUIPMENT AND OTHER WORK AS NOTED OR REQUIRED FOR PROPER INSTALLATION OF NEW SYSTEM.
10. SUPPORT ALL DUCTWORK AND PIPING FROM BUILDING STRUCTURE AND/OR FRAMING IN AN APPROVED MANNER. WHERE OVERHEAD CONSTRUCTION DOES NOT PERMIT FASTENING OR SUPPORTS FOR EQUIPMENT, FURNISH ADDITIONAL FRAMING. INSERTS SHALL BE STEEL, SLOTTED TYPE AND FACTORY PAINTED. SINGLE ROD SHALL BE SIMILAR TO GRINNELL FIG. 281. MULTI-ROD SHALL BE SIMILAR TO FEE & MASON SERIES 9000 WITH END CAPS AND CLOSURE STRIPS. MAXIMUM LOADING INCLUDING PIPES, DUCTWORK CONTENTS AND COVERING SHALL NOT EXCEED 75% OF RATED INSERT CAPABILITY. WHEN SUPPORTING FROM BUILDING USE BEAM CLAMPS IN APPROVED MANNER.
11. PROVIDE ALL NECESSARY FLASHING AND COUNTER FLASHING TO MAINTAIN THE WATERPROOFING INTEGRITY OF THIS BUILDING AS REQUIRED BY THE INSTALLATION OR REMOVAL OF PIPES, DUCTS, LOUVERS, CONDUIT, AND EQUIPMENT. PROVIDE EQUIPMENT CURBS AND DUNNAGE STEEL AS REQUIRED.
12. SEAL OPENINGS AROUND DUCTS AND PIPING THROUGH PARTITIONS, WALLS AND FLOORS (NOT IN SHAFTS) WITH MINERAL WOOL OR OTHER NONCOMBUSTIBLE MATERIAL (FIBERGLASS INSULATION IS NOT ACCEPTABLE).
13. WHERE PENETRATIONS THROUGH FIRE RATED WALLS ARE NOT FIRE PROOFED THIS CONTRACTOR SHALL BE RESPONSIBLE TO SEAL SAME TO MAINTAIN THE RATED INTEGRITY.
14. INSTALL WORK SO AS TO BE READILY ACCESSIBLE FOR OPERATION, MAINTENANCE AND REPAIR. MINOR DEVIATIONS FROM DRAWINGS MAY BE MADE TO ACCOMPLISH THIS, BUT CHANGES WHICH INVOLVE EXTRA COST SHALL NOT BE MADE WITHOUT APPROVAL.
15. ACCESS DOORS ARE REQUIRED FOR ALL BUILDING SERVICE VALVES THAT RUN THROUGH THE SPACE, AND ACCESS DOOR SHALL HAVE THE EQUAL RATED CAPACITY (1HR, 2HR, ETC.) AS WALL. COORDINATE ALL LOCATIONS OF ACCESS DOORS WITH THE ARCHITECT.
16. REMOVABLE ACCESS TILE AND/OR ACCESS DOOR ARE REQUIRED IN HUNG CEILINGS, SHAFTS AND WALLS FOR ALL VOLUME AND FIRE DAMPERS, AUTOMATIC DAMPERS AND ALL OTHER MECHANICAL EQUIPMENT AND DEVICES. HVAC CONTRACTOR TO FURNISH ACCESS LOCATION REQUIREMENTS TO GENERAL CONTRACTOR. ACCESS TILE IDENTIFICATION: PROVIDE BUTTONS, TABS, AND MARKERS TO IDENTIFY LOCATION OF CONCEALED VALVES, DAMPERS AND EQUIPMENT.
17. THE CONTRACTOR SHALL KEEP ALL EQUIPMENT AND MATERIALS, AND ALL PARTS OF THE BUILDING, EXTERIOR SPACES AND ADJACENT STREETS, SIDEWALKS AND PAVEMENTS, FREE FROM MATERIAL AND DEBRIS RESULTING FROM THE EXECUTION OF THIS WORK. EXCESS MATERIALS WILL NOT BE PERMITTED TO ACCUMULATE EITHER ON THE INTERIOR OR THE EXTERIOR.
18. UNLESS OTHERWISE SPECIFICALLY SPECIFIED, INCLUDE ALL CUTTING AND PATCHING OF EXISTING FLOORS, WALLS, PARTITIONS AND OTHER MATERIALS IN THE EXISTING BUILDING. THE CONTRACTOR SHALL RESTORE THESE AREAS TO ORIGINAL CONDITION.
19. MATERIALS AND WORKMANSHIP, UNLESS OTHERWISE NOTED, SHALL BE IN ACCORDANCE WITH BUILDING STANDARDS.
20. ALL EQUIPMENT SHALL BE PROVIDED WITH ONE YEAR WARRANTY PARTS AND LABOR AND FIVE YEARS ON COMPRESSORS. WARRANTY PERIOD BEGINS UPON PROJECT ACCEPTANCE
21. ALL MATERIAL AND EQUIPMENT TO BE NEW UNLESS OTHERWISE NOTED AND SHALL BE IN ACCORDANCE WITH BUILDING STANDARDS.
22. THE CONTRACTOR SHALL BE RESPONSIBLE FOR HIS WORK WITH ITS COMPLETION AND FINAL ACCEPTANCE AND SHALL REPLACE ANY OF THE SAME WHICH MAY BE DAMAGED, LOST, OR STOLEN WITHOUT ADDITIONAL COST TO THE OWNER.
23. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE FAILURE OF ANY DUCTWORK SYSTEM OR EQUIPMENT TO FUNCTION PROPERLY UPON COMPLETION OF HIS WORK UPON SAID SYSTEM OR EQUIPMENT.
24. SUBMIT SHOP DRAWING OF ALL WORK WHICH MUST BE APPROVED BY THE ARCHITECT AND ENGINEER BEFORE WORK COMMENCES.
25. SUBMISSION OF A PROPOSAL SHALL BE CONSTRUED AS EVIDENCE THAT A CAREFUL EXAMINATION OF THE PORTIONS OF THE EXISTING BUILDING, EQUIPMENT, ETC., WHICH AFFECT THIS WORK, AND THE ACCESS TO SUCH SPACES, HAS BEEN MADE AND THAT THE CONTRACTOR IS FAMILIAR WITH EXISTING CONDITIONS AND DIFFICULTIES THAT WILL AFFECT THE EXECUTION OF THE WORK. LATER CLAIMS SHALL NOT BE MADE FOR LABOR, EQUIPMENT OR MATERIALS REQUIRED BECAUSE OF DIFFICULTIES ENCOUNTERED WHICH COULD HAVE BEEN FORESEEN DURING SUCH AN EXAMINATION. THE ON-SITE INSPECTION SHALL VERIFY EXISTING DUCTWORK, PIPING (SIZES, CLEARANCES, ETC) AND CONDITIONS.
26. INSURANCE: IN ACCORDANCE WITH BUILDING REQUIREMENTS THE CONTRACTOR SHALL INCLUDE A HOLD HARMLESS CLAUSE FOR OWNER AND ENGINEER.
27. THE FINAL ACCEPTANCE WILL BE MADE AFTER THE CONTRACTOR HAS ADJUSTED HIS EQUIPMENT, BALANCED THE VARIOUS SYSTEMS, DEMONSTRATED THAT IT FULFILLS THE REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS AND HAS FURNISHED ALL THE REQUIRED CERTIFICATES OF INSPECTION AND APPROVAL.
28. SPECIFICATIONS ARE OF SIMPLIFIED FORM AND INCLUDE INCOMPLETE SENTENCES. WORDS OR PHRASES SUCH AS "THE CONTRACTOR SHALL," "SHALL BE," "FURNISH," "PROVIDE," "A," "THE," AND "ALL" HAVE BEEN OMITTED FOR BREVITY.
29. WHERE A CONFLICT EXISTS BETWEEN THE DRAWINGS, THE SPECIFICATIONS OR ANY OTHER CONSTRUCTION DOCUMENT, THE ONE WITH THE MOST STRINGENT REQUIREMENT(S) SHALL APPLY.

   DEFINITIONS:

   1) "PROVIDE": TO SUPPLY, INSTALL AND CONNECT UP COMPLETE AND READY FOR SAFE AND REGULAR OPERATION THE PARTICULAR WORK REFERRED TO UNLESS SPECIFICALLY OTHERWISE NOTED.
   2) "INSTALL": TO ERECT, MOUNT AND CONNECT COMPLETE WITH RELATED ACCESSORIES.
   3) "FURNISH" OR "SUPPLY": TO PURCHASE, PROCURE, ACQUIRE AND DELIVER COMPLETE WITH RELATED ACCESSORIES.

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, PRESSURE, 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 PIPING, 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. ALL NEW ROOF-MOUNTED EQUIPMENT CURBS FOR EQUIPMENT PROVIDED BY THE MECHANICAL CONTRACTOR SHALL BE FURNISHED BY THE MECHANICAL CONTRACTOR AND INSTALLED BY THE GENERAL CONTRACTOR. USE THE EXISTING ROOF CURBS WHEREVER POSSIBLE.
19. LOCATIONS AND SIZES OF ALL FLOOR, WALL, AND ROOF OPENINGS SHALL BE COORDINATED WITH ALL OTHER TRADES INVOLVED.
20. ALL OPENINGS IN FIRE WALLS DUE TO DUCTWORK, PIPING, CONDUIT, ETC., SHALL BE FIRE STOPPED WITH A PRODUCT SIMILAR TO 3M OR APPROVED EQUAL.
21. ALL AIR CONDITIONING CONDENSATE DRAIN SHOULD BE WITH 2" DEEP VENTED TRAP DISCHARGE TO SPLASH BLOCK ON ROOF.
22. REFER TO TYPICAL DETAILS FOR DUCTWORK, PIPING, AND EQUIPMENT INSTALLATION.
23. REINFORCEMENT, DETAILING, AND PLACEMENT OF CONCRETE SHALL CONFORM TO ASTM 315 AND ACI 318. CONCRETE SHALL CONFORM TO ASTM C94. CONCRETE WORK SHALL CONFORM TO ACI 318 PART ENTITLED "CONSTRUCTION REQUIREMENTS".COMPRESSIVE STRENGTH IN 28 DAYS SHALL BE 3,000 PSI. TOTAL AIR CONTENT OR EXTERIOR CONCRETE SHALL BE BETWEEN 5 AND 7 PERCENT BY VOLUME. SLUMP SHALL BE BETWEEN 3 AND 4 IN. CONCRETE SHALL BE CURED FOR 7 DAY AFTER PLACEMENT.
24. CONCRETE HOUSEKEEPING PADS TO SUIT MECHANICAL EQUIPMENT SHALL BE SIZED AND LOCATED BY THE MECHANICAL CONTRACTOR. MINIMUM CONCRETE PAD THICKNESS SHALL BE 6 IN. PAD SHALL EXTEND BEYOND THE EQUIPMENT A MINIMUM OF 6 IN. ON EACH SIDE. CONCRETE HOUSEKEEPING PADS SHALL BE PROVIDED BY THE GENERAL CONTRACTOR. IT SHALL BE THE RESPONSIBILITY OF THE MECHANICAL CONTRACTOR TO COORDINATE THE SIZE AND LOCATION OF CONCRETE HOUSEKEEPING PADS WITH THE GENERAL CONTRACTOR.
25. ALL TESTS SHALL BE COMPLETED BEFORE ANY MECHANICAL EQUIPMENT OR PIPING INSULATION IS APPLIED.
26. 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.

THERMOSTATIC CONTROLS NOTES

A. C403.4.1 THERMOSTATIC CONTROLS
THE SUPPLY OF HEATING AND COOLING ENERGY TO EACH ZONE SHALL BE CONTROLLED BY INDIVIDUAL THERMOSTATIC CONTROLS CAPABLE OF RESPONDING TO TEMPERATURE WITHIN THE ZONE. WHERE HUMIDIFICATION OR DEHUMIDIFICATION OR BOTH IS PROVIDED, NOT FEWER THAN ONE HUMIDITY CONTROL DEVICE SHALL BE PROVIDED FOR EACH HUMIDITY CONTROL SYSTEM.

EXCEPTION: INDEPENDENT PERIMETER SYSTEMS THAT ARE DESIGNED TO OFFSET ONLY BUILDING ENVELOPE HEAT LOSSES, GAINS OR BOTH SERVING ONE OR MORE PERIMETER ZONES ALSO SERVED BY AN INTERIOR SYSTEM PROVIDED THAT BOTH OF THE FOLLOWING CONDITIONS ARE MET:
1. THE PERIMETER SYSTEM INCLUDES NOT FEWER THAN ONE THERMOSTATIC CONTROL ZONE FOR EACH BUILDING EXPOSURE HAVING EXTERIOR WALLS FACING ONLY ONE ORIENTATION (WITHIN ±45 DEGREES) (0.8 RAD) FOR MORE THAN 50 CONTIGUOUS FEET (15 240 MM).
2. THE PERIMETER SYSTEM HEATING AND COOLING SUPPLY IS CONTROLLED BY THERMOSTATS LOCATED WITHIN THE ZONES SERVED BY THE SYSTEM.

B. C403.4.1.2 DEADBAND
WHERE USED TO CONTROL BOTH HEATING AND COOLING, ZONE THERMOSTATIC CONTROLS SHALL BE CONFIGURED TO PROVIDE A TEMPERATURE RANGE OR DEADBAND OF NOT LESS THAN 5°F (2.8°C) WITHIN WHICH THE SUPPLY OF HEATING AND COOLING ENERGY TO THE ZONE IS SHUT OFF OR REDUCED TO A MINIMUM.
EXCEPTIONS:
1. THERMOSTATS REQUIRING MANUAL CHANGEOVER BETWEEN HEATING AND COOLING MODES.
2. OCCUPANCIES OR APPLICATIONS REQUIRING PRECISION IN INDOOR TEMPERATURE CONTROL AS APPROVED BY THE CODE OFFICIAL.

C. C403.4.1.3 SETPOINT OVERLAP RESTRICTION
WHERE A ZONE HAS A SEPARATE HEATING AND A SEPARATE COOLING THERMOSTATIC CONTROL LOCATED WITHIN THE ZONE, A LIMIT SWITCH, MECHANICAL STOP OR DIRECT DIGITAL CONTROL SYSTEM WITH SOFTWARE PROGRAMMING SHALL BE CONFIGURED TO PREVENT THE HEATING SETPOINT FROM EXCEEDING THE COOLING SETPOINT AND TO MAINTAIN A DEADBAND IN ACCORDANCE WITH SECTION C403.4.1.2.

D. C403.4.2 OFF-HOUR CONTROLS
EACH ZONE SHALL BE PROVIDED WITH THERMOSTATIC SETBACK CONTROLS THAT ARE CONTROLLED BY EITHER AN AUTOMATIC TIME CLOCK OR PROGRAMMABLE CONTROL SYSTEM.
EXCEPTIONS:
1. ZONES THAT WILL BE OPERATED CONTINUOUSLY.
2. ZONES WITH A FULL HVAC LOAD DEMAND NOT EXCEEDING 6,800 BTU/H (2 KW) AND HAVING A MANUAL SHUTOFF SWITCH LOCATED WITH READY ACCESS.

E. C403.4.2.1 THERMOSTATIC SETBACK
THERMOSTATIC SETBACK CONTROLS SHALL BE CONFIGURED TO SET BACK OR TEMPORARILY OPERATE THE SYSTEM TO MAINTAIN ZONE TEMPERATURES DOWN TO 55°F (13°C) OR UP TO 85°F (29°C).

F. C403.4.2.2 AUTOMATIC SETBACK AND SHUTDOWN
AUTOMATIC TIME CLOCK OR PROGRAMMABLE CONTROLS SHALL BE CAPABLE OF STARTING AND STOPPING THE SYSTEM FOR SEVEN DIFFERENT DAILY SCHEDULES PER WEEK AND RETAINING THEIR PROGRAMMING AND TIME SETTING DURING A LOSS OF POWER FOR NOT FEWER THAN 10 HOURS. ADDITIONALLY, THE CONTROLS SHALL HAVE A MANUAL OVERRIDE THAT ALLOWS TEMPORARY OPERATION OF THE SYSTEM FOR UP TO 2 HOURS; A MANUALLY OPERATED TIMER CONFIGURED TO OPERATE THE SYSTEM FOR UP TO 2 HOURS; OR AN OCCUPANCY SENSOR.

G. C403.4.2.3 AUTOMATIC START AND STOP
AUTOMATIC START AND STOP CONTROLS SHALL BE PROVIDED FOR EACH HVAC SYSTEM. THE AUTOMATIC START CONTROLS SHALL BE CONFIGURED TO AUTOMATICALLY ADJUST THE DAILY START TIME OF THE HVAC SYSTEM IN ORDER TO BRING EACH SPACE TO THE DESIRED OCCUPIED TEMPERATURE IMMEDIATELY PRIOR TO SCHEDULED OCCUPANCY. AUTOMATIC STOP CONTROLS SHALL BE PROVIDED FOR EACH HVAC SYSTEM WITH DIRECT DIGITAL CONTROL OF INDIVIDUAL ZONES. THE AUTOMATIC STOP CONTROLS SHALL BE CONFIGURED TO REDUCE THE HVAC SYSTEM'S HEATING TEMPERATURE SETPOINT AND INCREASE THE COOLING TEMPERATURE SETPOINT BY NOT LESS THAN 2°F (1.11°C) BEFORE SCHEDULED UNOCCUPIED PERIODS BASED ON THE THERMAL LAG AND ACCEPTABLE DRIFT IN SPACE TEMPERATURE THAT IS WITHIN COMFORT LIMITS.

Property of NY Engineers

PROJECT TITLE:

MiniLuxe

DRAWING TITLE:
MECHANICAL SYMBOLS, ABBREVIATIONS & GENERAL NOTES

PERMIT DWG DATE: 01/30/26	PROJECT NUMBER: 25-01-020
DRAWN BY: NYE	CHECKED BY: NYE

DRAWING NUMBER:

M001

DIVISION 15 - MECHANICAL

SECTION 15000
MECHANICAL GENERAL PROVISIONS

A. GENERAL CONDITIONS

1. DRAWINGS AND GENERAL PROVISIONS OF CONTRACT, INCLUDING GENERAL AND SUPPLEMENTARY CONDITIONS AND ALL OTHER SPECIFICATION SECTIONS ARE A PART OF THIS CONTRACT AND APPLY TO THIS AND THE OTHER SECTIONS OF DIVISION 15.

2. THE CONTRACTOR FOR THIS WORK IS REQUIRED TO READ THE ENTIRE SPECIFICATIONS AND REVIEW DRAWINGS FOR ALL OTHER TRADES.

3. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING HIS SUBCONTRACTORS WITH A FULL SET OF BID SET DOCUMENTS (INCLUDING SPECIFICATIONS) AND THE COORDINATION OF HIS WORK AND INSPECTIONS AND THE WORK AND INSPECTIONS OF HIS SUBCONTRACTORS WITH ALL OTHER TRADES ON SITE CONFORMING TO THE GENERAL CONTRACTOR'S TIME SCHEDULE.

4. THE CONTRACTOR SHALL VISIT THE SITE PRIOR TO SUBMITTING HIS BID TO DETERMINE CONDITIONS AFFECTING THE WORK. BIDS SHALL SERVE AS EVIDENCE OF KNOWLEDGE OF EXISTING CONDITIONS AND ANY MODIFICATIONS WHICH ARE REQUIRED TO MEET THE INTENT OF THE DRAWINGS AND SPECIFICATIONS. FAILURE TO VISIT THE SITE DOES NOT RELIEVE THE CONTRACTOR OF RESPONSIBILITY IN PERFORMANCE OF WORK.

5. WHEN USED, THE TERM "PROVIDED BY CONTRACTOR" SHALL BE INTERPRETED AS MEANING "FURNISHED AND INSTALLED" WITH THE EXCEPTION WHERE ITEMS ARE "PROVIDED BY OWNER" WHICH MEANS "FURNISHED ONLY" (INSTALLED BY CONTRACTOR), EXCEPT AS SPECIFICALLY NOTED OTHERWISE.

B. GENERAL REQUIREMENTS

1. THE CONTRACTOR SHALL PROVIDE ALL LABOR, MATERIALS, EQUIPMENT, SERVICES, TOOLS, TRANSPORTATION, INCIDENTALS AND DETAILS NECESSARY TO PROVIDE A COMPLETE AND FULLY FUNCTIONAL MECHANICAL SYSTEM AS SHOWN ON THE DRAWINGS, CALLED FOR IN THE SPECIFICATIONS, AND AS REQUIRED BY JOB CONDITIONS. FIELD VERIFY THE EXACT TYPE, SIZE AND LOCATION, ETC. OF EXISTING PIPE AND DUCTS IN THE OWNER SPACE PRIOR TO BID.

2. THE DRAWINGS AND SPECIFICATIONS ARE INTENDED TO SUPPLEMENT EACH OTHER AND ANY MATERIAL OR LABOR CALLED FOR IN ONE SHALL BE PROVIDED EVEN THOUGH NOT SPECIFICALLY MENTIONED IN BOTH. ANY MATERIAL OR LABOR WHICH IS NEITHER SHOWN ON THE DRAWINGS NOR CALLED FOR IN THE SPECIFICATIONS, BUT WHICH IS OBVIOUSLY NECESSARY TO COMPLETE THE WORK, AND WHICH IS USUALLY INCLUDED IN WORK OF SIMILAR CHARACTER, SHALL BE PROVIDED AS PART OF CONTRACT.

3. WHERE THE DRAWINGS OR SPECIFICATIONS CALL FOR ITEMS WHICH EXCEED CODES OR THE OWNER CRITERIA, THE CONTRACTOR IS STILL RESPONSIBLE FOR PROVIDING THE SYSTEM AS DESIGNED AND DESCRIBED ON THESE DRAWINGS, UNLESS SPECIFICALLY NOTED OTHERWISE.

4. ALL MECHANICAL WORK SHALL BE INSTALLED SO AS TO BE READILY ACCESSIBLE FOR OPERATING, SERVICING, MAINTAINING, AND REPAIRING. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING SUFFICIENT ACCESS TO ALL EQUIPMENT FOR SERVICE.

5. THE CONTRACTOR SHALL DO ALL CUTTING, CORE DRILLING, CHASING OR CHANNELING AND PATCHING REQUIRED FOR ANY WORK UNDER THIS DIVISION. CUTTING SHALL HAVE PRIOR APPROVAL BY THE OWNER'S CONSTRUCTION MANAGER. PATCHING SHALL MATCH FINISH OF SURROUNDING AREA.

C. CODES

1. ALL WORK SHALL BE PERFORMED IN A NEAT PROFESSIONAL MANNER USING GOOD ENGINEERING PRACTICES. ALL WORK SHALL CONFORM TO THE STATE'S, COUNTY'S, CITY'S AND LOCAL CODES AND ORDINANCES, SAFETY AND HEALTH CODES, NFPA CODES, ENERGY CODES AND ALL OTHER APPLICABLE CODES AND REQUIREMENTS. THE C0NTRACT0R SHALL INQUIRE INTO AND COMPLY WITH ALL APPLICABLE CODES, ORDINANCES, AND REGULATIONS. AFTER CONTRACT IS ISSUED, NO ADDITIONAL COST DUE TO CODE ISSUES SHALL BE REIMBURSED BY THE OWNER TO THE CONTRACTOR.

D. LICENSES, PERMITS, INSPECTIONS & FEES

1. THE CONTRACTOR SHALL OBTAIN AND PAY FOR ALL LICENSES, PERMITS, INSPECTIONS, AND FEES REQUIRED OR RELATED TO HIS WORK.

2. FURNISH TO THE OWNER'S CONSTRUCTION MANAGER ALL CERTIFICATES OF INSPECTION AND FINAL INSPECTION APPROVAL AT SUBSTANTIAL COMPLETION DATE OF PROJECT.

E. DRAWINGS

1. DRAWINGS (PLANS, SPECIFICATIONS, AND DETAILS) ARE DIAGRAMMATIC AND INDICATE THE GENERAL LOCATION AND INTENT OF THE MECHANICAL SYSTEMS. BECAUSE OF THE SMALL SCALE OF THE DRAWINGS, IT IS NOT POSSIBLE TO INDICATE ALL DUCT AND PIPING OFFSETS, FITTINGS AND ACCESSORIES THAT MAY BE REQUIRED.

2. THE LAYOUT SHOWN ON THE DRAWINGS IS BASED ON A PARTICULAR MAKE OF EQUIPMENT. IF ANOTHER MAKE OF EQUIPMENT IS USED WHICH REQUIRES MODIFICATION OR CHANGE OF ANY DESCRIPTION FROM THE DRAWINGS OR SPECIFICATIONS, THE CONTRACTOR SHALL BE RESPONSIBLE AS PART OF THIS WORK, FOR MAKING ALL SUCH MODIFICATIONS AND CHANGES, INCLUDING THOSE INVOLVING OTHER TRADES WITH THE COST THEREOF INCLUDED IN HIS BID IN SUCH CASE, CONTRACTOR SHALL SUBMIT DRAWINGS AND SPECIFICATIONS PRIOR TO STARTING WORK SHOWING ALL SUCH MODIFICATIONS AND CHANGES. HIS PROPOSAL SHALL BE SUBJECT TO THE APPROVAL OF THE OWNER'S CONSTRUCTION MANAGER.

F. DISCREPANCIES IN DOCUMENTS

1. DRAWINGS (PLANS, SPECIFICATIONS, AND DETAILS) ARE DIAGRAMMATIC AND INDICATE THE GENERAL LOCATION AND INTENT OF THE MECHANICAL SYSTEMS. WHERE DRAWINGS, EXISTING SITE CONDITIONS, SPECIFICATIONS OR OTHER TRADES CONFLICT OR ARE UNCLEAR, ADVISE THE GENERAL CONTRACTOR IN WRITING, PRIOR TO SUBMITTAL OF BID THE GENERAL CONTRACTOR IS RESPONSIBLE TO ADVISE THE OWNER'S CONSTRUCTION MANAGER, IN WRITING, OF VARIATIONS TO CONTRACT DOCUMENTS PRIOR TO SUBMISSION OF BID. OTHERWISE, OWNER'S CONSTRUCTION MANAGER'S INTERPRETATION OF CONTRACT DOCUMENTS OR CONDITIONS SHALL BE FINAL WITH NO ADDITIONAL COMPENSATION PERMITTED.

G. TRADE NAMES AND MANUFACTURERS

1. WHERE TRADE NAMES AND MANUFACTURERS ARE USED ON THE DRAWINGS OR IN THE SPECIFICATIONS, THE EXACT EQUIPMENT SHALL BE USED AS A MINIMUM STANDARD FOR THE BASE BID. MANUFACTURERS CONSIDERED AS AN EQUAL OR BETTER IN ALL ASPECTS TO THAT SPECIFIED WILL BE SUBJECT TO APPROVAL IN WRITING BY THE OWNER'S CONSTRUCTION MANAGER PRI0R T0 ACCEPTANCE. THE USE 0F ANY UNAUTH0RIZED EQUIPMENT SHALL BE SUBJECT TO REMOVAL AND REPLACEMENT AT THE CONTRACTOR'S EXPENSE.

H. SHOP DRAWINGS

1. SUBMIT SIX COPIES OF MATERIAL LISTS AND SHOP DRAWINGS FOR ALL EQUIPMENT AND DUCT FABRICATION DRAWINGS TO THE OWNER'S CONSTRUCTION MANAGER FOR APPROVAL PRIOR TO ORDERING EQUIPMENT. SUBMISSIONS MUST BE EARLY ENOUGH TO ALLOW THE OWNER'S CONSTRUCTION MANAGER EIGHT WORKING DAYS FOR REVIEW WITHOUT CAUSING DELAYS OR CONFLICTS TO THE JOB'S PROGRESS. SUBMITTALS SHALL BE IN ACCORDANCE WITH THE GENERAL CONDITIONS USING THE MANUFACTURER'S LISTED ON THE DRAWINGS. SHOP DRAWINGS SHALL INCLUDE ALL DATA THAT PERTAINS TO THE REQUIREMENTS SET FORTH ON THE DRAWINGS AND IN THE SPECIFICATIONS. THE SUBMITTAL SHALL INCLUDE BUT NOT LIMITED TO CUTS OR CATALOGS INCLUDING DESCRIPTIVE LITERATURE AND CHARACTERISTICS OF EQUIPMENT SHALL SHOW MAJOR DIMENSIONS, ROUGHING-IN DATA, CAPACITY, CURVES, PRESSURE DROP, CODE COMPLIANCE, MOTOR AND DRIVE DATA AND ELECTRICAL DATA. OBSERVE SPECIAL INSTRUCTIONS WHEN REQUIRED. SUBMITTALS SHALL BEAR THE STAMP OF THE GENERAL AND SUB-CONTRACTOR SHOWING THAT HE HAS REVIEWED AND CONFIRMED THAT THEY ARE IN CONFORMANCE WITH THE CONTRACT DRAWINGS AND SPECIFICATIONS OR INDICATE WHERE EXCEPTIONS TAKE PLACE. LACK OF SUCH CONTRACTOR'S REVIEW AND APPROVAL WILL BE CAUSE FOR REJECTION WITHOUT REVIEW BY OWNER'S CONSTRUCTION MANAGER. ALL SHOP DRAWINGS MUST APPEAR IN THE OPERATION AND MAINTENANCE MANUALS LEFT ON SITE AT JOB COMPLETION.

2. OWNER'S CONSTRUCTION MANAGER'S REVIEW OF SHOP DRAWINGS OR SCHEDULES SHALL NOT RELIEVE THE CONTRACTOR FROM RESPONSIBILITY FOR ERRORS, OMISSIONS OR OTHER DEFICIENCIES OR DEVIATIONS IN THE SHOP DRAWING FROM THE CONTRACT DRAWINGS AND SPECIFICATIONS.

I. RECORD DRAWINGS

1. THE CONTRACTOR SHALL MAINTAIN ONE COPY OF DRAWINGS AND SPECIFICATIONS ON THE JOB SITE TO RECORD DEVIATIONS FROM CONTRACT DRAWINGS, SUCH AS:
   a. LOCATION OF CONCEALED PIPING VALVES AND DUCTS.
   b. REVISIONS, ADDENDUMS, AND CHANGE ORDERS.
   c. SIGNIFICANT DEVIATIONS MADE NECESSARY BY FIELD CONDITIONS, APPROVED EQUIPMENT SUBSTITUTIONS, AND CONTRACTOR'S COORDINATION WITH OTHER TRADES.
   d. EXACT ROUTING OF ALL SANITARY AND DOMESTIC WATER PIPING UNDER FLOOR.

2. AT COMPLETION OF THE PROJECT AND BEFORE FINAL APPROVAL, THE CONTRACTOR SHALL MAKE ANY FINAL CORRECTIONS TO DRAWINGS AND CERTIFY THE ACCURACY OF EACH PRINT BY SIGNATURE THEREON. THE DRAWINGS ARE TO BE TURNED OVER TO THE OWNER.

J. GUARANTEE

1. THE CONTRACTOR SHALL GUARANTEE ALL MATERIALS AND WORK UNDER HIS CONTRACT AND SHALL MAKE GOOD, REPAIR OR REPLACE AT HIS OWN EXPENSE, ANY DEFECTIVE WORK, MATERIAL, OR EQUIPMENT WHICH MAY BE DISCOVERED WITHIN A PERIOD OF 12 MONTHS FROM THE DATE OF ACCEPTANCE (IN WRITING) OF THE INSTALLATION BY THE OWNER'S CONSTRUCTION MANAGER. PROVIDE EXTENDED WARRANTIES AS SPECIFIED WITH INDIVIDUAL EQUIPMENT. IN CASE OF REPLACEMENT OR REPAIR OF EQUIPMENT DUE TO FAILURE WITHIN GUARANTEE PERIOD, GUARANTEE ON THAT PORTION OF WORK SHALL BE EXTENDED FOR A PERIOD OF ONE (1) YEAR FROM DATE OF SUCH REPLACEMENT OR REPAIR.

K. OPERATIONS MANUALS

1. ONE COPY OF EACH OPERATION AND MAINTENANCE MANUAL FOR ALL EQUIPMENT FURNISHED ON JOB SHALL BE COLLECTED AND INSERTED IN A 3" THREE RING BINDER AND TURNED OVER TO THE OWNER. EACH NOTEBOOK SHALL INCLUDE BUT NOT BE LIMITED TO INSTALLATION, MAINTENANCE AND OPERATING INSTRUCTIONS, PAMPHLETS OR BROCHURES APPROVED SHOP DRAWINGS AND WARRANTIES OBTAINED FROM EACH MANUFACTURER OF PRINCIPAL ITEMS OF EQUIPMENT.

L. SLEEVES

1. THE CONTRACTOR SHALL PROVIDE SLEEVES TO PROTECT EQUIPMENT OR FACILITIES IN THE INSTALLATION. EACH SLEEVE SHALL EXTEND THROUGH IT'S RESPECTIVE FLOOR, WALL OR PARTITION AND SHALL BE CUT FLUSH WITH EACH SURFACE EXCEPT SLEEVES THAT PENETRATE THE FLOOR, WHICH SHALL EXTEND 2" ABOVE THE FLOOR.

2. ALL SLEEVES AND OPENINGS THROUGH FIRE RATED WALLS AND/OR FLOORS SHALL BE FIRE SEALED WITH CALCIUM SILICATE, SILICONE "RTV" FOAM, "3M" FIRE RATED SEALANTS OR EQUAL, SO AS TO RETAIN THE FIRE RATING OF THE FLOOR OR WALL. CONFORM TO U.L. ASSEMBLY RATING OF FLOOR OR WALL.

3. SLEEVES IN BEARING AND MASONRY WALLS, FLOORS, AND PARTITIONS SHALL BE STANDARD WEIGHT STEEL PIPE FINISHED WITH SMOOTH EDGES. FOR OTHER THAN MASONRY PARTITIONS, THROUGH SUSPENDED CEILINGS, OR FOR CONCEALED VERTICAL PIPING, SLEEVES SHALL BE NO 22 U.S G. GALVANIZED STEEL MINIMUM.

4. DUCT SLEEVES TO BE MINIMUM 14 GAUGE STEEL.

M. HANGERS

1. HANGERS SHALL INCLUDE ALL MISCELLANEOUS STEEL SUCH AS ANGLE IRON, BANDS, C-CLAMPS WITH RETAINING CLIPS, CHANNELS, HANGER RODS, ETC., NECESSARY FOR THE INSTALLATION OF WORK.

2. HANGERS SHALL BE FASTENED TO BUILDING STEEL, CONCRETE, OR MASONRY, BUT NOT TO PIPING OR DUCTWORK. HANGING FROM METAL DECK IS NOT PERMITTED. HANGERS MUST BE ATTACHED TO UPPER CHORD OF BAR JOIST. WHERE INTERFERENCES OCCUR, IN ORDER TO SUPPORT DUCTWORK OR PIPING, THE CONTRACTOR MUST INSTALL TRAPEZE TYPE HANGERS OR SUPPORTS WHICH SHALL BE LOCATED WHERE THEY DO NOT INTERFERE WITH ACCESS TO FIRE DAMPERS, VALVES, ACCESS DOORS AND OTHER EQUIPMENT SERVICE REQUIREMENTS AND/OR OTHER TRADES.

3. HANGERS FOR ALL INSULATED PIPING SHALL BE SIZED AND INSTALLED FOR THE OUTER DIAMETER OF INSULATION. INSTALL 6" LONG SPLIT CIRCLE GALVANIZED SADDLE BETWEEN THE HANGER AND THE PIPE INSULATION.

4. HANGERS AND PIPING OF DISSIMILAR METALS SHALL BE DI-ELECTRICALLY SEPARATED FROM ONE ANOTHER.

N. ACCESS DOORS

1. FURNISH STEEL ACCESS DOORS AND FRAMES, MIN. 16" X 20" OR AS SHOWN ON DRAWINGS, TO GENERAL CONTRACTOR FOR ALL LOCATIONS WHERE NECESSARY TO PROVIDE ACCESS TO CONCEALED VALVES, AND OTHER EQUIPMENT REQUIRING SERVICE OR INSPECTION. LOCATION, TYPE, SIZE AND NUMBER AS DETERMINED BY CONTRACTOR AND APPROVED BY OWNER CONSTRUCTION MANAGER TO SUIT EQUIPMENT REQUIREMENTS. GENERAL CONTRACTOR WILL INSTALL ACCESS DOORS AND FRAMES.

2. ACCESS DOORS LOCATED IN FIRE-RATED WALLS, FLOORS, CEILING-FLOOR OR CEILING-ROOF ASSEMBLIES SHALL BE FIRE RATED, UNDERWRITER'S LABORATORIES INC LISTED AND LABELED.

3. ACCESS DOORS SHALL BE FLUSH TYPE, MANUFACTURED FROM NO. 14 GAUGE STEEL, COMPLETE WITH FLUSH FLANGE TYPE FRAMES MANUFACTURED FROM NO. 16 GAUGE STEEL, PROVIDED WITH ANCHORS. ACCESS DOORS SHALL BE SUITABLE FOR INSTALLATION IN WALL OR CEILING MATERIALS SHOWN IN ROOM FINISH SCHEDULES.

O. ELECTRICAL MOTORS

1. FURNISH, INSTALL AND ALIGN ALL MOTORS REQUIRED FOR THIS EQUIPMENT. ASSOCIATED WIRING AND SAFETY SWITCHES FOR SUCH MOTORS SHALL BE FURNISHED AND INSTALLED BY THE ELECTRICAL CONTRACTOR. STARTERS SHALL MEET ALL REQUIREMENTS AS DEFINED IN THE ELECTRICAL DIVISION OF THE SPECIFICATIONS UNLESS THEY ARE FACTORY INSTALLED ON THE UNIT.

2. DESIGN, CONSTRUCTION AND PERFORMANCE CHARACTERISTICS OF MOTORS SHALL CONFORM TO ALL APPLICABLE PROVISIONS OF LATEST NEMA, ANSI, ISEE STANDARDS FOR ELECTRICAL EQUIPMENT. ALL MOTORS SHALL BE SUITABLE FOR OPERATION ON VOLTAGE VARIATION OF PLUS OR MINUS 10%, 40 DEGREES C AMBIENT TEMPERATURE; HAVE A SERVICE FACTOR OF NOT LESS THAN 1.15.

P. LOW VOLTAGE (24 VOLT) WIRING

1. THE CONTRACTOR IS TO INSTALL ALL LOW VOLTAGE WIRING REQUIRED FOR HIS EQUIPMENT. THIS WORK INCLUDES ALL TRANSFORMERS AND DEVICES TO MAKE THIS A COMPLETE FUNCTIONAL SYSTEM.

2. ALL WORK IS TO CONFORM TO THE LATEST ADDITION N.E.C AND TO DIVISION 16 ELECTRICAL SPECIFICATIONS.

3. ANY CONDUIT REQUIRED BY CODE WILL BE INSTALLED BY THE ELECTRICAL SUBCONTRACTOR.

DIVISION 15 - MECHANICAL

SECTION 15200
PLUMBING

A. SCOPE OF WORK

1. THIS CONTRACTOR SHALL FURNISH ALL LABOR, MATERIALS, EQUIPMENT, SERVICES, TOOLS, TRANSPORTATION AND FACILITIES NECESSARY FOR, REASONABLY IMPLIED AND INCIDENTAL TO, THE FURNISHING, INSTALLATION, COMPLETION AND TESTING OF ALL THE WORK FOR THE PLUMBING SYSTEMS AS SHOWN ON THE DRAWINGS, CALLED FOR IN THE SPECIFICATIONS, AND AS REQUIRED BY JOB CONDITIONS, TO INCLUDE, BUT NOT BE LIMITED TO THE FOLLOWING:
   a. COMPLETE SANITARY PIPING SYSTEMS OF WASTE, DRAINS, AND VENTS.
   b. COMPLETE COLD AND HOT WATER PIPING SYSTEMS, APPURTENANCES AND INSULATION.
   c. PLUMBING FIXTURES AND EQUIPMENT AS SCHEDULED.
   d. COMPLETE NATURAL GAS PIPING SYSTEMS (AS APPLICABLE, REFER TO PLANS). TESTS AND ADJUSTMENTS.

2. BEFORE STARTING WORK, THIS CONTRACTOR SHALL EXAMINE THE ARCHITECTURAL, STRUCTURAL, MECHANICAL AND ELECTRICAL PLANS AND SPECIFICATIONS TO SEQUENCE, COORDINATE, AND INTEGRATE THE VARIOUS ELEMENTS OF THE PLUMBING SYSTEM, MATERIALS, AND EQUIPMENT WITH OTHER CONTRACTORS TO AVOID INTERFERENCES AND CONFRONTATIONS.

3. RELOCATION OF EXISTING WATER, GAS, WASTE, VENT, AND/OR DRAINAGE LINES TO FACILITATE STORE DESIGN CRITERIA MUST BE INCLUDED IN BID PROPOSAL.

B. PLUMBING EQUIPMENT 1

1. SEE SCHEDULES ON OTHER SHEETS FOR EQUIPMENT SPECIFICATIONS.

C. GENERAL PIPING REQUIREMENTS

1. GENERALLY, SANITARY AND POTABLE WATER CONNECTIONS WILL BE PROVIDED BY THE SITE CONTRACTOR. FIELD VERIFY EXACT CONNECTION POINTS PRIOR TO SUBMITTING BID AND NOTIFY THE OWNER'S CONSTRUCTION MANAGER IF CONDITIONS ARE NOT AS SHOWN ON THE PLANS OR AS STATED IN THE SPECIFICATIONS. CONTRACTOR MUST VERIFY THE OPERABILITY OF ENTIRE SYSTEM PRIOR TO TIE IN AS FOLLOWS:
   a. SNAKE SANITARY FOR A DISTANCE OF 100 FEET AND REPORT ANY BLOCKAGE.
   b. TEST WATER PRESSURE TO INSURE MINIMUM OF 50 PSI.

2. INSTALL ALL NECESSARY PIPE HANGERS, SADDLES, AND CARRIERS TO PROPERLY SUPPORT ALL PIPING AND FIXTURES. HANGERS SHALL SUIT TYPE OF PIPING PROVIDED AND BE SPACED AT A MAXIMUM SPAN OF 5 FEET. PROVIDE SWAY AND SEISMIC BRACING WHERE REQUIRED BY CODES.

3. ESCUTCHEONS SHALL BE CHROME PLATED, SIZE AS REQUIRED AND PLACED AT ALL PIPE PENETRATIONS AT WALLS, FLOORS, AND CEILINGS IN FINISHED AREAS.

D. PIPING

1. SANITARY PIPING

a. PLASTIC PIPING MAY BE USED WHERE PRE-APPROVED WITH JURISDICTIONAL BUILDING DEPARTMENT AUTHORITY. PLASTIC PIPING TO BE EITHER PVC OR ABS AS REQUIRED BY CODE AND SHALL UTILIZE DRAINAGE PATTERN FITTINGS. PVC PIPE AND FITTINGS SHALL CONFORM TO ASTM D2665 AND SHALL CONSIST OF SCHEDULE 40 PIPE WITH DWV PATTERN FITTINGS. ABS PIPE AND FITTINGS SHALL CONFORM TO ASTM D2661 AND SHALL CONSIST OF SCHEDULE 40 PIPE WITH DWV PATTERN FITTINGS.

b. JOINTS: BELOW FLOOR SLAB - COMPRESSION TYPE PLASTIC SEAL (HUB AND SPIGOT). ABOVE FLOOR SLAB - NEOPRENE SEALING SLEEVE WITH STAINLESS STEEL SHIELD AND CLAMP WITH APPROVED NEOPRENE - BASED LUBRICANT, (HUBLESS) GALVANIZED VENT - SCREWED JOINTS WITH TEFLON TAPE ON MALE THREADS.

c. PITCH WASTE LINES 2 1/2" AND SMALLER NOT LESS THAN 1/4" PER FOOT. PITCH LARGER MAINS NOT LESS THAN 1/8" PER FOOT.

d. INSTALL A CLEAN-OUT AT BASE OF EACH SOIL STACK, AT INTERVALS NOT OVER 50 FEET, AND ELSEWHERE AS SHOWN ON DRAWINGS OR REQUIRED BY LOCAL CODE. CLEAN-OUTS SHALL NOT BE INSTALLED IN PUBLIC AREAS WITHOUT SPECIFIC PERMISSION BY OWNER'S CONSTRUCTION MANAGER; BUT WHERE NECESSARY, THE WALL COVERS ARE TO BE STAINLESS STEEL AND THE FLOOR COVERS ARE TO BE BRASS (FLUSH WITH FINISHED FLOOR). PROVIDE COVERS WITH INSET AREA FOR CARPETED FLOOR LOCATIONS. ALL CLEAN-OUT LOCATIONS SHALL BE APPROVED BY THE OWNER'S CONSTRUCTION MANAGER.

e. INSULATE ALL HORIZONTAL RUNS OF PIPING LOCATED IN CEILING SPACES WHEN APPLICABLE. INSULATION TO BE AS SPECIFIED FOR WATER PIPING.

f. INSULATE THE TRAP, SANITARY AND SUPPLY PIPES UNDER LAVATORY WITH 1/2" ARMSTRONG "ARMAFLEX" PIPING INSULATION OR TRUEBRO "LAV GUARD 2" INSULATION KIT.

2. CONDENSATE PIPING SHALL BE TYPE "L" DRAWN COPPER TUBE WITH 95-5 TIN-ANTIMONY SOLDERED JOINTS AND WROUGHT COPPER FITTINGS WITH DIELECTRIC SEPARATION BETWEEN DISSIMILAR METALS.

3. POTABLE WATER PIPING:

a. BELOW GRADE: TYPE 'K', ANNEALED TEMPERED COPPER TUBE FOR PIPE SIZES 2 INCHES AND SMALLER BRAZE ALL JOINTS.
b. ABOVE GRADE: TYPE 'L' DRAWN COPPER TUBE WITH WROUGHT COPPER FITTINGS AND 95-5 TIN-ANTIMONY SOLDER.
c. INSTALL AIR CHAMBER SHOCK ABSORBERS IN PIPING SYSTEM TO PREVENT NOISE AND DAMAGE DUE TO WATER HAMMER.
d. ALL BRANCH PIPING SYSTEM SHALL HAVE ACCESSIBLE SERVICE VALVE. PROVIDE SHUT OFF VALVES IN THE SUPPLY PIPING TO EVERY FIXTURE. PROVIDE ACCESS DOORS WHERE NECESSARY.
e. PROVIDE WATER METER AND REMOTE READER PER LOCAL UTILITIES REQUIREMENTS IF APPLICABLE. REFER TO PLANS TO DETERMINED IF WATER METER IS REQUIRED.
f. SECURE PIPE AT ANGLE STOPS.
g. PROVIDE FLEXIBLE INSERTS AT ALL PIPE PENETRATIONS THROUGH FRAMING TO KEEP PIPES FROM HITTING FRAME WHEN IN OPERATION.

4. GAS PIPING

a. PROVIDE A COMPLETE GAS PIPING SYSTEM IF APPLICABLE. REFER TO PLANS TO DETERMINE IF A GAS SYSTEM IS REQUIRED.
b. LOW PRESSURE (14" W.C AND BELOW) GAS LINES SHALL BE BLACK STEEL, SCHEDULE 40, ASTM A-53/53M, WITH MALLEABLE THREADED FITTINGS FOR 2" AND SMALLER, AND WITH WELDED JOINTS FOR 2-1/2" AND LARGER. MEDIUM PRESSURE (ABOVE 14" W.C.) SHALL HAVE WELDED JOINTS.
c. PROVIDE A GAS COCK, DIRT LEG, AND UNION CONNECTION TO EACH PIECE OF EQUIPMENT. PROVIDE GAS METER AND/OR REGULATOR AS REQUIRED. REGULATOR TO BE VENTED TO THE EXTERIOR.
d. PITCH PIPING AT A UNIFORM GRADE OF 1/4" IN 15 FEET UPWARD IN DIRECTION OF FLOW. SUPPORT PIPING EVERY 5 FEET. SUPPORT AS DETAILED ON DRAWINGS, OR BY STANDARD INDUSTRY PRACTICE, WHICHEVER IS MORE STRINGENT.
e. GAS PIPING EXPOSED ON ROOF MUST BE PAINTED WITH RUST-INHIBITING PAINT.
f. INSTALLATION, TESTING AND PURGING OF GAS PIPING SHALL BE DONE PER THE REQUIREMENTS OF THE LOCAL GAS COMPANY, LOCAL CODES, AND APPLICABLE INTERNATIONAL FUEL GAS CODE.
g. CONTACT AND COORDINATE GAS SERVICE AND METER REQUIREMENTS WITH THE LOCAL GAS COMPANY AND THE BUILDING'S MANAGER PRIOR TO BID.

5. INSULATION

a. INSULATE ALL WATER AND INTERIOR CONDENSATE PIPING WITH 1" THICK (K=0.23 @ 75 F) SNAP-ON FIBERGLASS PIPE INSULATION WITH AN ALL SERVICE JACKET TO MEET LOCAL CODES AND UL FLAME SPREAD RATING OF 25 AND SMOKE DEVELOPED RATINGS OF 50. APPROVED MANUFACTURER: ARMACELL "ARMAFLEX", MANVILLE "MICRO-LOK".

6. TEST & STERILIZATION

a. LEAKAGE TESTS SHALL BE PER LOCAL CODES, MINIMUM AS FOLLOWS:
   1. TEST POTABLE WATER PIPING AT 125 PSIG FOR SIX HOURS.
   2. TEST DRAIN, WASTE, VENT PIPING BY A 10' WATER COLUMN FOR TWO HOURS. ALL JOINTS SHALL BE GAS AND WATER TIGHT.
   3. TEST GAS PIPING PER INTERNATIONAL FUEL GAS CODES.
   4. STERILIZE POTABLE HOT & COLD WATER LINES UPON COMPLETION OF SYSTEM. STERILIZE WATER SYSTEM IN ACCORDANCE WITH LOCAL CODES.

DIVISION 15 - MECHANICAL
SECTION 15500
HEATING, VENTILATION, AND , AIR CONDITIONING

A. SCOPE OF WORK

1. THE CONTRACTOR SHALL FURNISH ALL LABOR, MATERIALS, EQUIPMENT, SERVICES, TOOLS, TRANSPORTATION AND FACILITIES NECESSARY FOR, REASONABLY IMPLIED AND INCIDENTAL TO, THE FURNISHING, INSTALLATION, COMPLETION AND TESTING OF ALL THE WORK FOR THE MECHANICAL SYSTEMS AS SHOWN ON THE DRAWINGS, CALLED FOR IN THE SPECIFICATIONS, AND AS REQUIRED BY JOB CONDITIONS, TO INCLUDE, BUT NOT BE LIMITED TO THE FOLLOWING:
   a. HVAC UNITS, EQUIPMENT, AND APPURTENANCES.
   b. DUCTWORK, FITTINGS, DAMPERS, AND INSULATION.
   c. HYDRONIC PIPING AND INSULATION (AS APPLICABLE, REFER TO PLANS).
   d. REFRIGERANT PIPING (AS APPLICABLE, REFER TO PLANS).
   e. DIFFUSERS, GRILLES, AND REGISTERS.
   f. CURBS AND STEEL FRAMING FOR SUPPORT (AS APPLICABLE, REFER TO PLANS).
   g. TESTING, ADJUSTING, AND BALANCING.
   h. OPERATIONS MANUALS.
   i. TEMPERATURE CONTROLS AND RELATED DIAGRAMS.
   j. SEQUENCES OF OPERATION.

2. BEFORE STARTING WORK, THIS CONTRACTOR SHALL EXAMINE THE ARCHITECTURAL, STRUCTURAL, MECHANICAL AND ELECTRICAL PLANS AND SPECIFICATIONS TO SEQUENCE, COORDINATE, AND INTEGRATE THE VARIOUS ELEMENTS OF THE HVAC SYSTEM, MATERIALS, AND EQUIPMENT WITH OTHER CONTRACTORS TO AVOID INTERFERENCES AND CONFRONTATIONS.

B. HVAC EQUIPMENT

1. PRIMARY HEATING, VENTILATION AND AIR CONDITIONING UNITS.

   a. PRIMARY HEATING, VENTILATION, AND AIR CONDITIONING UNITS ARE TO BE BY AS SHOWN ON DRAWING. ALL COMPRESSORS ARE TO INCLUDE A 5 YEAR EXTENDED WARRANTY.
   b. ALL EQUIPMENT SHALL BE COMPLETE IN EVERY RESPECT WITH ALL DEVICES, APPURTENANCES, AND ACCESSORIES PROVIDED TO MEET THE DESIGN INTENT AND OPERATION OF THE SYSTEMS SHOWN ON THE DRAWINGS AND SPECIFIED HEREIN.
   c. EQUIPMENT SHALL BE INSTALLED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS. ALL AIR CONDITIONING EQUIPMENT MUST HAVE A CONDENSATE DRAIN AND BE TRAPPED IN ACCORDANCE WITH MANUFACTURERS DATA. SEE DRAWINGS FOR ADDITIONAL DETAILS.
   d. SECONDARY DRAIN PANS ARE REQUIRED TO BE INSTALLED BENEATH ALL INDOOR AIR CONDITIONING EQUIPMENT WITH THE EXCEPTION OF VAV BOXES. SECONDARY PANS ARE TO PROTECT ENTIRE UNIT PROVIDE CONDENSATE PUMPS, AS REQUIRED. CONDENSATE SHALL BE DIRECTED TO MOP SINK OR AS SPECIFIED ON PLANS.

2. TOILET EXHAUST FANS
   a. WHERE SHOWN ON DRAWINGS, PROVIDE A TOILET EXHAUST FAN UNIT COMPLETE WITH GRAVITY BACK DRAFT DAMPERS. ALL DUCTWORK, ROOF OPENINGS AND CAPS NECESSARY TO PROVIDE A COMPLETE EXHAUST SYSTEM SHALL BE PROVIDED BY THE CONTRACTOR. REFER TO PLANS FOR APPLICABILITY.

3. VIBRATION ISOLATION DEVICES
   a. VIBRATION ISOLATION DEVICES SHALL BE PROVIDED IN ALL SUPPORTS BETWEEN VIBRATING EQUIPMENT (FANS, ROOFTOP UNITS, AIR HANDLERS, FAN POWERED VAV BOXES, ETC.) AND STRUCTURE.
   b. VIBRATING EQUIPMENT HUNG FROM STRUCTURE SHALL BE ISOLATED WITH RUBBER AND SPRING DEVICES. VIBRATING EQUIPMENT SUPPORTED FROM FLOOR OR DECK SHALL BE ISOLATED WITH HOUSED SPRING MOUNT DEVICES.
   c. EXAMINE DEAD LOAD AND OPERATING LOAD CONDITIONS WHEN SELECTING DEVICES. ADJUST FOR PROPER ALIGNMENT AND LOADING. AVOID "GROUNDING" THE ISOLATOR.
   d. CHECK HANGER ROD SIZE FOR ALLOWABLE LOADS AT THE ISOLATING DEVICE AND AT THE UPPER AND LOWER ATTACHMENTS TO STRUCTURES, DUCTS, EQUIPMENT, ETC.
   e. CONSULT MANUFACTURER FOR APPLICATION DATA.

4. CURBS AND STEEL FRAMING FOR SUPPORT
   a. THIS CONTRACTOR WILL PROVIDE ALL NECESSARY CURBS AND STEEL FRAMING REQUIRED TO INSTALL ALL HVAC EQUIPMENT AS DESCRIBED OR IMPLIED ON THE DRAWINGS. CURBS SHALL BE A MINIMUM OF 14" HIGH OF THE SAME MANUFACTURER OF THE EQUIPMENT SUPPORTED. INSULATE UNDER THE COMPRESSOR SECTION TO PREVENT CONDENSATION. ALL CURBS MUST BE INSTALLED SO THAT TOP OF CURBS ARE "DEAD" LEVEL.

C. METAL DUCTWORK - NO FIBERGLASS DUCT ALLOWED

1. NO DUCTWORK SHALL BE FABRICATED PRIOR TO APPROVAL BY THE OWNER'S CONSTRUCTION MANAGER. SIGNIFICANT DEVIATIONS FROM DESIGN MUST BE APPROVED BY OWNER'S CONSTRUCTION MANAGER PRIOR TO FABRICATION OR INSTALLATION ALL DUCT MAINS ARE TO BE RECTANGULAR UNLESS NOTES OTHERWISE. ALL DUCT BRANCHES TO DIFFUSERS ARE TO BE ROUND RIGID DUCT, UNLESS NOTED OTHERWISE. FLEXIBLE DUCT CONNECTIONS TO THE DIFFUSER ARE NOT TO EXCEED 5'-0".

2. EXCEPT AS OTHERWISE INDICATED, FABRICATE AND INSTALL RECTANGULAR DUCTS WITH GALVANIZED SHEET STEEL, IN ACCORDANCE WITH SMACNA "HVAC DUCT CONSTRUCTION STANDARDS" OF THE LATEST EDITION. CONFORM TO THE REQUIREMENTS IN THE REFERENCED STANDARD FOR METAL THICKNESS, REINFORCING TYPES AND INTERVALS, TIE ROD APPLICATIONS, AND JOINT TYPES AND INTERVALS

3. EXCEPT WHERE OTHERWISE INDICATED, CONSTRUCT DUCT SYSTEMS TO THE FOLLOWING PRESSURE CLASSIFICATIONS: (VERIFY WHETHER RETURN OR EXHAUST DUCT IS POSITIVE OR NEGATIVE PRESSURE).
   a. SUPPLY DUCTS: 2 INCHES WATER GAUGE, POSITIVE PRESSURE RETURN AND EXHAUST DUCTS: 2 INCHES WATER GAUGE, NEGATIVE PRESSURE. PRESSURE TEST DUCTS FOR LEAKAGE. REMAKE LEAKING JOINTS AND APPLY SEALANTS AS REQUIRED TO FABRICATE A SYSTEM THAT DOES NOT EXCEED 5% LEAKAGE OR LESS AS STATED BY PRESSURE CLASS RATINGS IN SMACNA STANDARDS.

4. AS A MINIMUM, CROSSBREAK ALL FLAT SURFACES OR REINFORCE WITH A BEAD APPROXIMATELY 3/8" WIDE x 3/16" DEEP ON 12" CENTERS TO PREVENT VIBRATIONS.

5. ALL SUPPLY, RETURN AND NON-GREASE EXHAUST DUCT WITH RECTANGULAR ELBOWS GREATER THAN 144 SQUARE INCHES TO HAVE DOUBLE THICKNESS TURNING VANES.

6. INSTALL RIGID ROUND AND RECTANGULAR METAL DUCT WITH SUPPORT SYSTEMS INDICATED IN SMACNA STANDARDS. SUPPORT HORIZONTAL DUCTS WITHIN 2 FEET OF EACH ELBOW AND WITHIN 4 FEET OF EACH BRANCH INTERSECTION USING DOUBLE STRAP HANGERS ON EACH SIDE OF FITTING. SUPPORT VERTICAL DUCTS AT A MAXIMUM INTERVAL OF 16 FEET AND AT EACH FLOOR. NO WOOD SHALL BE USED TO SUPPORT OR BRACE DUCTS. PROVIDE SWAY AND SEISMIC BRACING AS REQUIRED BY STATE AND LOCAL CODES.

7. WHERE DUCTS PASS THROUGH ROOFS AND FLOORS, PROVIDE AS MINIMUM 1-1/2"x1-1/2"x1/8" STEEL ANGLE FRAMES AT EACH SIDE OF OPENING. THE ANNULAR SPACE BETWEEN DUCT AND ANGLE FRAMES SHALL BE CAULKED WITH SILICONE SEALANT OR FIREPROOFED AS REQUIRED BY ASSEMBLY FIRE RATING.

8. ALL TRAVERSE JOINTS AND SEAMS IN SUPPLY AIR DUCT SHALL BE SEALED AIR TIGHT WITH DAP CMC DUCT SEALER. JOINTS ALSO SHALL BE RIVETED OR CONNECTED WITH SHEET METAL SCREWS.

9. SOFT ELASTOMER BUTYL GASKET WITH ADHESIVE BACKING SHALL BE USED TO SEAL FLANGED JOINTS.

10. DUCT TRANSITIONS SHALL NOT EXCEED 30 DEGREES SLOPE EXCEPT AS SPECIFICALLY NOTED OTHERWISE.

11. PROVIDE ACCESS TO ALL MOTORIZED DAMPERS, FIRE DAMPERS, CONTROLS, AND OTHER ITEMS IN DUCTWORK THAT REQUIRE SERVICE OR INSPECTION. IF THE ACCESS PANEL LOCATION IS EXPOSED TO THE SALES AREA, IT MUST BE APPROVED BY THE OWNER'S CONSTRUCTION MANAGER PRIOR TO INSTALLATION LAY-IN SUPPLY AND RETURN AIR DIFFUSERS, GRILLES AND REGISTERS WITH PLASTER FRAMES MAY BE USED AS ACCESS LOCATIONS.

12. FLEXIBLE CONNECTIONS
   a. FLEXIBLE COLLARS SHALL BE PROVIDED IN ALL CONNECTIONS BETWEEN VIBRATING EQUIPMENT (FANS, ROOFTOP UNITS, AIR HANDLERS, ETC.) AND DUCTS OR CASINGS. ALSO, PROVIDE FLEXIBLE CONNECTIONS WHERE DUCTS CROSS BUILDING EXPANSION JOINTS.
   b. FLEXIBLE CONNECTIONS SHALL CONSTRUCTED OF NEOPRENE-COATED FLAMEPROOF FABRIC. PROVIDE ADEQUATE JOINT FLEXIBILITY TO ALLOW FOR MOVEMENT AND PREVENT THE TRANSMISSION OF VIBRATION.
   c. FLEXIBLE CONNECTION IS TO BE RATED FOR THE OPERATING PRESSURE OF THE SYSTEM.

13. FIRE DAMPERS (WHERE APPLICABLE)
   a. PROVIDE PRIMARY FIRE DAMPERS WHERE INDICATED OR REQUIRED BY CODES. DAMPERS SHALL BE DESIGNED FOR HORIZONTAL OR VERTICAL FLOW OF AIR AS REQUIRED. FIRE DAMPERS SHALL BE UL LABELED.
   b. FIRE DAMPERS SHALL HAVE THE BLADES OUT OF THE AIR STREAM AND A 165°F FUSIBLE LINK, TYPE A, AS MINIMUM.
   c. PROVIDE ALL NECESSARY FRAMING AND SLEEVES FOR DAMPER MOUNTING PER UL AND C0DE REQUIREMENTS.
   d. PROVIDE DUCT ACCESS DOORS IN AN ACCESSIBLE LOCATION FOR ALL FIRE DAMPERS DOOR IS TO BE 20 GA GALVANIZED DOOR WITH QUICK-OPENING LATCH AND PIANO HINGE.

14. FLEXIBLE AIR DUCT
   a. FLEXIBLE AIR DUCT SHALL BE 1" INSULATED CLASS 1 AND RATED FOR THE OPERATING PRESSURE OF THE SYSTEM. DUCT CONSTRUCTION MATERIAL (PLASTIC, CLOTH, ALUMINUM) MUST ADHERE TO LOCAL CODES AND AND BE INCLUDED AS SUCH IN THE BID.
   b. FLEXIBLE AIR DUCTS SHALL BE SUPPORTED EVERY 3'-0" WITH 2" WIDE GALVANIZED STEEL BANDS. MINIMUM ONE PER EACH SECTION OF FLEXIBLE DUCT.
   c. FLEXIBLE DUCT SHALL NOT EXTEND OVER 5'-0" IN LENGTH AT ANY ONE LOCATION.

15. SUPPLY AIR TAKE-OFF FITTINGS
   a. PROVIDE CONICAL OR "BELL-MOUTH" TAKE-OFFS FROM MAIN DUCTWORK TO ROUND BRANCHES. INSTALL PER MANUFACTURER'S INSTRUCTIONS.
   b. PROVIDE 45° RECTANGULAR TAKE-OFFS FROM MAIN DUCTWORK TO RECTANGULAR BRANCHES.

16. DAMPERS
   a. PROVIDE MANUAL LOCKING QUADRANT VOLUME CONTROL DAMPERS WITH HANDLE OPERATORS IN EACH BRANCH DUCT AND AS SHOWN ON PLANS TO FACILITATE AIR BALANCING.
   b. WHERE ACCESS TO BALANCING DAMPER IS RESTRICTED, YOUNG'S REGULATORS SHALL BE USED.
   c. ALL RECTANGULAR DAMPERS IN OUTSIDE AIR, RELIEF AIR, OR RETURN AIR DUCTS ARE TO BE OF OPPOSED BLADE TYPE. ALL OUTSIDE AIR DUCT DAMPERS MUST ALSO BE OF THE LOW LEAKAGE TYPE.
   d. ALL MOTORIZED DAMPERS NOT FURNISHED WITH EQUIPMENT ARE TO BE HONEYWELL DAMPERS.

16. DIFFUSERS, GRILLES, AND REGISTERS
   a. PROVIDE DIFFUSERS GRILLES AND REGISTERS AS SCHEDULED. DEVICES TO BE COMPLETE WITH DAMPERS, FRAMES AND ALL ACCESSORIES. FINISH AS INDICATED.
   b. INSTALL ALL AIR DEVICES AS LOCATED ON THE ARCHITECTURAL REFLECTED CEILING PLAN.
   c. APPROVED MANUFACTURERS: TITUS, PRICE, KRUEGER

17. MEDIUM PRESSURE DUCT
   a. WHERE DUCTWORK IS SPECIFICALLY NOTED AS MEDIUM PRESSURE, IT SHALL BE CONSTRUCTED IN ACCORDANCE WITH SMACNA STANDARDS FOR A PRESSURE RATING OF 3 INCHES WATER COLUMN MINIMUM OR LARGER AS REQUIRED BY ________.
   b. ALL GAUGES AND REINFORCEMENT MUST MEET WITH THE LATEST EDITION OF SMACNA STANDARDS FOR MEDIUM PRESSURE DUCT AND WITH THE ________'S CRITERIA.
   c. ALL OTHER ITEMS FROM METAL DUCTWORK SPECIFICATION SECTION APPLY TO THIS SECTION

18. DUCTWORK INSULATION
   a. INSTALL INSULATION PRODUCTS IN ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS, AND IN ACCORDANCE WITH RECOGNIZED INDUSTRY PRACTICES. INSULATION MUST COMPLY WITH NFPA 90A.
   b. DUCT SIZES SHOWN ON DRAWINGS ARE INSIDE CLEAR DIMENSIONS. INSULATE SUPPLY AND RETURN AIR RECTANGULAR DUCTWORK. DUCTWORK SHALL BE INTERNALLY INSULATED LINER (MIN. R-6).
   c. ALL DUCTWORK OUTSIDE OF THE BUILDING INSULATION ENVELOPE AND OUTSIDE AIR DUCTWORK ABOVE THE CEILING SHALL BE EXTERNALLY INSULATED WITH A MINIMUM OF R-12 DUCT WRAP WITH VAPOR BARRIER. VAPOR BARRIER IS TO BE MAINTAINED THROUGHOUT DUCT SYSTEM. ALL JOINTS MUST BE TAPED SO THAT NO INSULATION FIBER IS VISIBLE. EXTEND DUCTWORK INSULATION WITHOUT INTERRUPTION THROUGH WALLS, FLOORS, AND SIMILAR PENETRATIONS.
   d. ALL INSULATION SHALL HAVE A FLAME SPREAD RATING OF NOT MORE THAN 25 AND A SMOKE DEVELOPED RATING OF NO HIGHER THAT 50 WHEN TESTED IN ACCORDANCE WITH ASTM C 411, OR AS REQUIRED BY LOCAL CODES.

19. SYSTEM CLEAN-OUT
   a. DUCTWORK AND AIR HANDLING EQUIPMENT IS TO BE CLEANED OUT AND BLOWN OUT BEFORE PAINTING IS STARTED BY THE GENERAL CONTRACTOR.
   b. FILTERS MUST BE IN UNITS AT ANY TIME FANS ARE OPERATED.

D. SYSTEM TESTING, ADJUSTING, AND BALANCING

1. TESTING, ADJUSTING AND BALANCING OF ALL WORK SHALL BE MADE BY AN INDEPENDENT CONTRACTOR WHO IS CURRENTLY LICENSED ASSOCIATED AIR BALANCING COUNCIL (AABC) OR NATIONAL ENVIRONMENTAL BALANCING BUREAU (NEBB) BALANCING CONTRACTOR. NO OTHER BALANCE REPORTS WILL BE REVIEWED OR ACCEPTED. ALL BALANCING WORK MUST BE COMPLETE AND DONE IN ACCORDANCE WITH THE MOST RECENT STANDARDS OF THEIR SOCIETY. PAYMENT OF ALL COSTS FOR TESTING SHALL BE MADE BY THE HVAC CONTRACTOR

2. THE HVAC CONTRACTOR SHALL INSTALL NEW FILTERS IN ALL UNITS PRIOR TO THE AIR BALANCE. THE COMPLETE AIR BALANCE SHALL TAKE PLACE WITH OUTSIDE AIR DAMPERS IN MINIMUM POSITION.

3. BALANCE AIR AND WATER QUANTITIES TO WITHIN + 5% OF THAT INDICATED ON THE DRAWINGS. ANY REQUIRED CHANGES IN SHEAVES, BELTS, PULLEYS, OR THE ADDITION OF DAMPERS REQUIRED TO ACHIEVE SPECIFIED FLOW RATES SHALL BE PERFORMED BY THE HVAC CONTRACTOR WITH NO ADDITIONAL COST TO THE OWNER.

4. THE BALANCE REPORT SHALL INCLUDE AS A MINIMUM THE FOLLOWING INFORMATION:
   a. AABC OR NEBB CERTIFICATION NUMBER AND SIGNATURE OF BALANCING CONTRACTOR.
   b. INSTRUMENTATION LIST WITH LAST CALIBRATION DATES.
   c. MAKE AND MODEL NUMBERS OF ALL HVAC EQUIPMENT TESTED.
   d. AIR CFM AND STATIC PRESSURE READINGS (DISCHARGE AND SUCTION) AS MEASURED BY PITOT TUBE DUCT TRAVERSE AT THE UNIT.
   e. MOTOR NAMEPLATE DATA WITH ACTUAL FIELD VOLTAGE AND AMPERAGE READINGS FOR EACH LEG.
   f. MOTOR AND FAN RPMS, SHEAVE SIZES AND BELT SIZES.
   g. OUTSIDE, RETURN, MIXED AND SUPPLY AIR TEMPERATURES AT FULL COOLING.
   h. WATER BALANCE DATA INCLUDING GPM WITH INLET AND OUTLET TEMPERATURE AND PRESSURE READINGS (WHERE APPLICABLE).
   i. MAKE AND MODEL NUMBERS OF ALL AIR DISTRIBUTION EQUIPMENT.
   j. FINAL BALANCED AIR VOLUMES AT ALL OUTLETS (INCLUDING RETURNS WHERE DUCTED).
   k. INDEXED PLAN WITH DIFFUSER AND RETURN LOCATIONS.

5. ALL CONTROL SEQUENCES SHALL BE TESTED (INTERLOCKED EQUIPMENT, SMOKE DETECTORS, SMOKE EVACUATION, ECONOMIZER, ETC.) AND OPERATING STATUS RECORDED IN THE REPORT.

6. THREE COPIES OF THE BALANCE REPORT SHALL BE SUBMITTED THROUGH THE GENERAL CONTRACTOR TO THE OWNER'S CONSTRUCTION MANAGER FOR APPROVAL.

7. THE BALANCING CONTRACTOR SHALL PERFORM ALL APPLICABLE TESTING AND BALANCING FUNCTIONS REQUIRED FOR THE SYSTEM DESIGNED IN THESE DRAWINGS. THE BALANCING CONTRACTOR SHALL RECHECK ANY ITEMS THAT THE OWNER DEEMS NECESSARY AT NO ADDITIONAL COST TO THE OWNER.

8. FINAL BALANCE REPORT SHALL BE INCLUDED IN THE OPERATION & MAINTENANCE MANUALS.

E. FINAL HVAC INSPECTIONS
1. ASIDE FROM NORMAL INTERIM INSPECTIONS OF WORK IN PLACE, THE OWNER SHALL HAVE THE RIGHT TO AN INDEPENDENT HVAC CONTRACTOR INSPECT THE FINISHED HVAC INSTALLATION UPON COMPLETION FOR COMPLIANCE WITH THE PLANS, SPECIFICATIONS, AND CODES. THE INSTALLING CONTRACTOR WILL BE RESPONSIBLE TO BRING ALL ITEMS REPORTED BY THE INDEPENDENT HVAC CONTRACTOR UP TO PLANS AND SPECIFICATION REQUIREMENTS AT NO COST TO OWNER.

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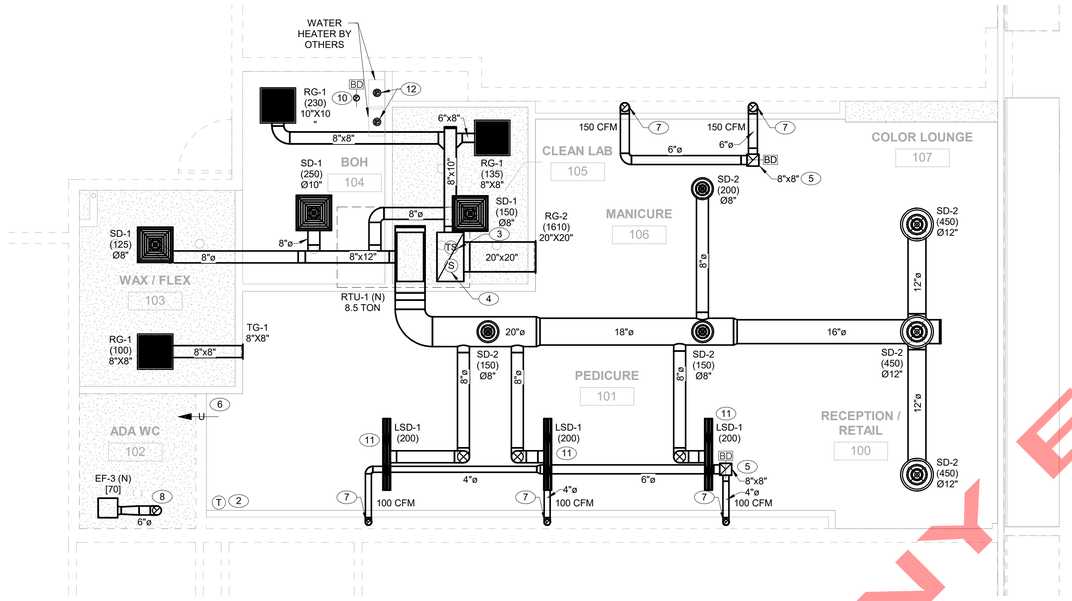
DRAWING TITLE:
MECHANICAL SPECIFICATIONS

PERMIT DWG DATE:	PROJECT NUMBER:
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DRAWING NUMBER:

M002

Property of NY Engineers



1 MECHANICAL FLOOR PLAN
1/4" = 1'-0"

Property of NYE Engineers

MECHANICAL FLOOR PLAN 1/4" = 1'-0" A

GENERAL NOTES NTS C

1. EXACT LOCATION OF ALL AIR DISTRIBUTION DEVICES SHALL BE COORDINATED WITH THE ARCHITECTURAL RCP & LIGHTING LAYOUT.
2. COORDINATE ALL WORK ON OTHER FLOORS AND IN OTHER TENANT SPACES WITH OWNERS REP. SO THAT WORK DOES NOT INTERFERE WITH OTHER TENANTS.
3. COORDINATE THE EXACT LOCATION OF ALL THERMOSTATS WITH FINAL FURNITURE LAYOUT, EQUIPMENT LAYOUT, ARCH AND OWNER'S REPRESENTATIVE. CONTRACTOR SHALL TIE NEW T-STATS INTO BUILDING EMS AND UPDATE IT ACCORDINGLY.
4. PROVIDE ALL MANUFACTURER AND NEC REQUIRED CLEARANCE FOR ALL EQUIPMENT.
5. ENSURE ALL NEW BUILDING VENTS ARE FITTED WITH ANIMAL SCREENS EXCEPT OTHERWISE NOTED.
6. CONTRACTOR SHALL BALANCE EACH DEVICE WITH THE CFM SHOWN ON PLAN.
7. 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.
8. COORDINATE LOCATIONS AND SIZES OF ROOF OPENINGS WITH OWNER AND STRUCTURAL ENGINEERS.
9. EQUIPMENT SIZES, DIMENSIONS AND REQUIRED CONNECTIONS SHALL BE VERIFIED WITH THE ACTUAL EQUIPMENT SELECTED VENDOR DRAWINGS BEFORE FABRICATION OF DUCTWORK, PIPING ETC.
10. DUCT SIZES SHOWN ON PLANS ARE CLEAR INSIDE AIR STREAM DIMENSIONS.
11. CONTRACTOR SHALL COORDINATE ALL ELECTRICAL REQUIREMENTS FOR ALL HVAC BASED ON ACTUAL EQUIPMENT SELECTED PRIOR TO INSTALLATION.
12. CONTRACTOR SHALL COORDINATE EQUIPMENT WEIGHTS AND SUPPORTS BASED ON ACTUAL EQUIPMENT SELECTED.
13. MOUNT DUCTWORK AS HIGH AS POSSIBLE.
14. TEST AND BALANCE AIR SYSTEMS. PROVIDE REPORT TO G.C AND OWNER.
15. NEW DUCTWORK IN CONCEALED AREAS MAY BE RECTANGULAR WITH EQUIVALENT CROSS SECTIONAL FLOW AREA.
16. PROVIDE FIRE OR FIRE+SMOKE DAMPER WHEREVER DUCTS ARE CROSSING FIRE/SMOKE RATED WALLS/BARRIERS/ROOF PENETRATIONS. COORDINATE WITH ARCHITECTURAL DRAWINGS FOR FIRE RATINGS OF THE WALLS.
17. R-12 INSULATION (INTERNAL FOR EXPOSED DUCTS AND EXTERNAL FOR CONCEALED DUCTS) FOR SUPPLY & RETURN AIR DUCTS. PROVIDE ACOUSTIC INSULATION ON MAIN SUPPLY AND RETURN DUCTS UP TO 10 FT. FROM HVAC UNIT.
18. PROVIDE CABLE OPERATED DAMPER IN INACCESSIBLE CEILINGS.

(11) SLOT DIFFUSER TO BE INSTALLED IN WOOD PLANK CEILING. COORDINATE EXACT LOCATION AND REQUIREMENTS WITH GENERAL CONTRACTOR.

(12) Ø3"/Ø5" CONCENTRIC VENT LINE FOR COMBUSTION AIR INTAKE / EXHAUST FROM GAS FIRED EQUIPMENT TO ROOF TERMINATION KIT. ROUTE PIPING FROM RESPECTIVE UNIT TO LOCATION INDICATED ON ROOF PLAN. ROUTE PIPING WITH MINIMAL AMOUNT OF BENDS AND MINIMUM LENGTH AS REQUIRED BY RESPECTIVE UNIT MANUFACTURER'S REQUIREMENTS.

KEY NOTES - MECHANICAL PLAN NTS B

(1) EXTEND FULL SIZE SUPPLY & RETURN DUCTWORK FROM HVAC EQUIPMENT AS SHOWN. ACOUSTICALLY LINE THE FIRST 10-0" OF BOTH SUPPLY AND RETURN MAIN DUCTS.

(2) PROVIDE NEW 7-DAY PROGRAMMABLE THERMOSTAT AND WIRE BACK TO THE TEMPERATURE SENSORS MOUNTED ON THE RETURN AIR DUCT. COORDINATE EXACT LOCATION WITH ARCHITECT AND OWNER PRIOR TO ROUGH-IN. PROVIDE LOCKABLE COVER.

(3) PROVIDE NEW REMOTE TEMP./HUMIDITY SENSOR MOUNTED ON RETURN DUCT. WIRE-BACK TO T-STAT.

(4) CONTRACTOR SHALL PROVIDE DUCT SMOKE DETECTOR IN RETURN AIR DUCTWORK. UPON DETECTION OF SMOKE, EQUIPMENT WILL SHUTDOWN AND ACTIVATE ALARM. COORDINATE INSTALLATION LOCATION WITH ACCESS REQUIREMENT.

(5) ROUTE 8"X8" EXHAUST DUCT UP TO THE ROOF & CONNECT TO ROOF MOUNTED EXHAUST FAN. CONTRACTOR TO FIELD VERIFY FIRE RATING OF ROOF. PROVIDE FIRE DAMPER AT ROOF PENETRATION AS/IF REQUIRED BY LOCAL CODES.

(6) PROVIDE 1" DOOR UNDERCUT FOR AIR TRANSFER AS SHOWN ON THE PLAN.

(7) CONNECT EXHAUST DUCTWORK TO MILLWORK AS REQUIRED. BALANCE TO CFM SHOWN. FIELD VERIFY EXACT REQUIREMENTS AND LOCATIONS. EXHAUST INLETS FOR THE MANICURE TABLES AND PEDICURE STATIONS SHALL BE WITHIN 12 INCHES HORIZONTALLY AND VERTICALLY FROM THE POINT OF CHEMICAL APPLICATION.

(8) ROUTE Ø6" EXHAUST DUCT UP TO ROOF AS SHOWN & TERMINATE WITH GOOSE NECK & WIRE MESH, TERMINATION SHALL BE AT LEAST 3FT ABOVE & 10 FT AWAY FROM ANY FRESH AIR INTAKE. CONTRACTOR TO FIELD VERIFY FIRE RATING OF ROOF. PROVIDE FIRE DAMPER AT ROOF PENETRATION AS/IF REQUIRED BY LOCAL CODES.

(9) PROVIDE NEW CEILING MOUNTED EXHAUST FAN AS SHOWN ON THE PLAN AND TERMINATE THE VENT ABOVE THE ROOF AS SHOWN ON THE PLAN.

(10) Ø4" DRYER VENT UP TO ROOF AS SHOWN. TERMINATE IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS AND APPLICABLE SECTIONS OF SECTION 504 OF THE 2021 INTERNATIONAL MECHANICAL CODE. SCREEN SHALL NOT BE INSTALLED IN THE DUCT TERMINATION. FIRE/SMOKE DAMPERS AND ANY SIMILAR DEVICE THAT WILL OBSTRUCT THE EXHAUST FLOW SHALL BE PROHIBITED IN EXHAUST DUCT.

PROJECT TITLE:

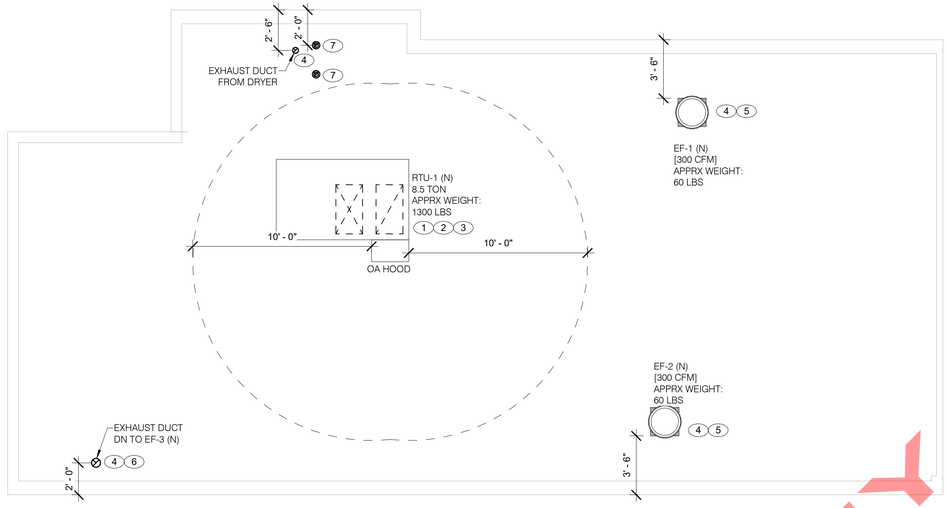
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DRAWING TITLE:
MECHANICAL FLOOR PLAN

PERMIT DWG DATE:	PROJECT NUMBER:
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DRAWING NUMBER:

M100



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

Property of NYE Engineers

MECHANICAL ROOF PLAN 1/4" = 1'-0" A

GENERAL NOTES NTS C

1. COORDINATE LOCATIONS AND SIZES OF ROOF OPENINGS ON FIELD.
2. EQUIPMENT SIZES, DIMENSIONS AND REQUIRED CONNECTIONS SHALL BE VERIFIED WITH THE ACTUAL EQUIPMENT SELECTED VENDOR DRAWINGS BEFORE FABRICATION OF DUCTWORK, PIPING ETC.
3. CONTRACTOR SHALL COORDINATE ALL ELECTRICAL REQUIREMENTS FOR ALL HVAC BASED ON ACTUAL EQUIPMENT SELECTED PRIOR TO INSTALLATION.
4. 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.

KEY NOTES - MECHANICAL PLAN NTS B

1. NEW PACKAGED ROOF TOP UNITS RTU-1 (N) TO BE INSTALLED ON THE EXISTING ROOF CURB WITH SUITABLE CURB ADAPTERS AS/IF REQUIRED. EXACT LOCATION, CURB OPENING TO BE VERIFIED IN THE FIELD. COORDINATE WITH STRUCTURAL FOR UNIT WEIGHTS. PROVIDE FLEXIBLE CONNECTORS ON SUPPLY AND RETURN DUCT CONNECTIONS. SET OUTSIDE AIR AS INDICATED ON ROOFTOP UNIT SCHEDULES. MECHANICAL CONTRACTOR SHALL SCRIBE INTO UNIT POSITION OF OUTSIDE AIR DAMPER AND LABEL OUTSIDE AIR VOLUME AND PERCENT OF OUTSIDE AIR. TRANSITION AND CONNECT SUPPLY AND RETURN DUCTWORK FROM BELOW.
2. ROUTE CONDENSATE DRAIN FROM RTU ON THE ROOF AND TERMINATE THE DRAIN ON THE NEAREST APPROVED PLACE OF DISPOSAL. PROVIDE HORIZONTAL SLOPE IN THE DIRECTION OF DISCHARGE OF NOT LESS THAN 1/8 UNIT VERTICAL IN 12 UNIT HORIZONTAL.
3. COORDINATE FINAL LOCATIONS OF EQUIPMENT WITH STRUCTURE.
4. ALL EXHAUST AIR TERMINATION SHALL NOT LESS THAN 3 FEET FROM A PROPERTY LINE, 10 FEET AWAY AND 3 FEET ABOVE FROM A FORCED AIR INLET AND , 10 FEET ABOVE A PUBLIC WALKWAY, AND 3 FEET FROM OPENINGS INTO THE BUILDING.
5. PROVIDE NEW EXHAUST FAN WITH GRAVITY DAMPER.
6. ENSURE TERMINATION OF THE EXHAUST DUCT AT ROOF PROVIDED WITH GOOSENECK AND INSECT SCREEN.
7. Ø3"/Ø5" CONCENTRIC VENT LINE FOR COMBUSTION AIR INTAKE / EXHAUST FROM GAS FIRED EQUIPMENT TO ROOF TERMINATION KIT. ROUTE PIPING FROM RESPECTIVE UNIT TO LOCATION INDICATED ON ROOF PLAN. ROUTE PIPING WITH MINIMAL AMOUNT OF BENDS AND MINIMUM LENGTH AS REQUIRED BY RESPECTIVE UNIT MANUFACTURER'S REQUIREMENTS.

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DRAWING TITLE:
MECHANICAL ROOF PLAN

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NYE	NYE

DRAWING NUMBER:

M101

ROOF TOP UNIT SCHEDULE

UNIT ID	MANUFACTURER	MODEL	AREA SERVED	NOMINAL TONS	REFRIGERANT	SUPPLY FAN			GAS HEAT		COOLING				ELECTRICAL				EER	IEER	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)	VOLTS	PHASE	MCA(A)	MOCP(A)				
RTU-1 (N)	TRANE	YHK102A4S0M	SEE PLAN	8.5	R-454B	2975	800	1	150	121.5	110.61	79.77	95	80/67	460	3	26	35	12.1	16.3	1300	1-18
NOTES FOR EXISTING (N) RTU-3																						
1	ALL EQUIPMENT MUST BE HIGH EFFICIENT, MEETING OR EXCEEDING THE BRANDS MINIMUM REQUIREMENTS.																					
2	BOTTOM DISCHARGE & RETURN CONFIGURATION. ELECTRICAL CONNECTION TO BE SINGLE POINT AND TO BE THROUGH THE BOTTOM OF THE UNIT.																					
3	UNIT TO BE PROVIDED WITH LOW LEAKAGE VOLUME CONTROL DAMPER, NEMA 3R DISCONNECT, FAN WITH VFD, VIBRATION ISOLATION SPRING SUPPORTED BLOWER, INTAKE HOOD, SCREEN INTAKE.																					
4	DISCHARGE CONDENSATE DRAIN TO APPROVED LOCATION.																					
5	CONTRACTOR TO BALANCE OUTSIDE AIR DAMPER ON RTU TO MATCH VALUE MENTIONED IN EQUIPMENT SCHEDULE.																					
6	PROVIDE 8-WIRE, 24 VAC, AUTOMATIC CHANGEOVER, 2-STAGE HEAT / COOL, REMOTELY PROGRAMMABLE THERMOSTAT.																					
7	REMOTE TEMPERATURE SENSORS SHALL BE PROVIDED IN RETURN DUCT & WIRED BACK TO PROGRAMMABLE, 24 HOUR, 7 DAY, THERMOSTATS.																					
8	ANTI SHORT CYCLE TIMER.																					
9	THROWAWAY 2" FILTERS (MERV 8).																					
10	PROVIDE ALL COMPRESSORS WITH 5 YEAR WARRANTY.																					
11	STAINLESS STEEL DRIP PAN.																					
12	PROVIDE FLEXIBLE CONNECTION AT DUCT CONNECTION TO UNIT.																					
13	PROVIDE 14" HIGH ROOF CURB TO INSTALL UNIT AS PER MANUFACTURERS RECOMMENDATIONS. COORDINATE WITH STRUCTURAL ENGINEERS FOR LOAD.																					
14	PROVIDE VIBRATION ISOLATOR FOR UNIT MOUNTING.																					
15	UNIT SHALL INCLUDE HOT GAS RE-HEAT WITH ASSOCIATED CONTROLS AND SENSORS FOR DEHUMIDIFICATION CONTROL.																					
16	COORDINATE FINAL LOCATION WITH STRUCTURAL ENGINEER.																					
17	PROVIDE ENTHALPY ECONOMIZER FOR NEW RTU WITH BAROMETRIC RELIEF & FDD.																					
18	PROVIDE THE RTU WITH R-454B REFRIGERANT.																					

AIR BALANCE TABLE

UNIT TAG	SUPPLY AIR	OUTSIDE AIR	RETURN AIR	EXHAUST AIR
RTU-1 (N)	2975 CFM	800 CFM	2175 CFM	-
EF-1 (N)	-	-	-	300 CFM
EF-2 (N)	-	-	-	300 CFM
EF-3 (N)	-	-	-	70 CFM
TOTAL:	2975 CFM	800 CFM	2175 CFM	670 CFM
BUILDING PRESSURE:			130 CFM	**POSITIVE**

FAN SCHEDULE

TAG	MANUFACTURER	MODEL	LOCATION	AREA SERVED	FAN PERFORMANCE			ELECTRICAL				WEIGHT LBS	CONTROL	REMARKS
					CFM	ESP	FAN RPM	FLA/WATT	VOLTS	PHASE	HZ			
EF-1 (N)	GREENHECK	CUE-090-D	SEE PLAN	SEE PLAN	300	0.6	1550	-/0.067	115	1	60	60	TIME CLOCK	2-5
EF-2 (N)	GREENHECK	CUE-090-D	SEE PLAN	SEE PLAN	300	0.6	1550	-/0.067	115	1	60	60	TIME CLOCK	2-5
EF-3 (N)	GREENHECK	SP-B150	SEE PLAN	SEE PLAN	70	0.8	939	1.8/-	115	1	60	15	LIGHT SWITCH	1 & 3-6
NOTES:														
1. MANUFACTURE TO PROVIDE WITH DECORATIVE GRILLE.														
2. PROVIDE CURB FOR ROOF MOUNTED FAN.														
3. PROVIDE FACTORY MOUNTED AND INSTALLED DISCONNECT.														
4. COORDINATE EXACT POWER REQUIREMENT WITH ELECTRICAL CONTRACTOR.														
5. PROVIDE FAN WITH A BACKDRAFT DAMPER, AND SPEED CONTROLLER FOR BALANCING PURPOSE.														
6. DIRECT DRIVE FAN TO HAVE ECM MOTOR.														

AIR TERMINAL DEVICE SCHEDULE

TAG	MANUFACTURER	MODEL	TYPE	CFM RANGE	NECK SIZE(IN.)	FRAME SIZE	REMARKS
SD-1	TITUS	TMS	SUPPY AIR DIFFUSER/LAY-IN	101-225	8"	24"X24"	1-5
				226-400	10"	24"X24"	
SD-2		TMR	ROUND SUPPLY AIR DIFFUSER	130-210	8"	-	1-6
				330-470	12"	-	
LSD-1		ML-38	3/4"-2 SLOT LINEAR DIFUSER SUPPLY	20-50 CFM/FT	8"	48"X4"	1-5,7
RG-1		350RL	RETURN AIR GRILLE/SURFACE MOUNTED	SEE PLAN	SEE PLAN	24"X24"	1-5
RG-2		350RL	RETURN AIR WALL MOUNTED GRILLE	SEE PLAN	SEE PLAN	-	1-5
TG-1		350RL	TRANSFER AIR GRILLE	SEE PLAN	SEE PLAN	-	1-5
NOTES:							
1) CONTRACTOR SHALL COORDINATE WITH LATEST ARCHITECTURAL REFLECTED CEILING PLANS TO ENSURE PROPER AIR DEVICE BORDER SELECTION.							
2) REFER ARCHITECTURAL DRAWINGS FOR CEILING TYPE.							
3) COORDINATE FINAL COLOR/FINISH WITH ARCHITECT.							
4) NOISE CRITERIA: <25 Dba							
5) PROVIDE VOLUME CONTROL DAMPER AS ACCESSARY FOR ALL AIR TERMINAL FOR AIR BALANCING. PROVIDE CABLE OPERATED DAMPERS IN INACCESIBLE CEILINGS.							
6) DIFFUSER/GRILLES NEED TO BE PAINTED TO MATCH CEILING COLOR IN THE EXPOSED AREA.							
7) PROVIDE WITH PLENUM AS PER MANUFACTURERS RECOMMENDETION.							

VENTILATION CALCULATION AS PER INTERNATIONAL MECHANICAL CODE 2021

S.NO	ROOM NAME	AREA (SQ.FT.)	NUMBER OF PEOPLE/1000sq.ft AS PER IMC 2021	NUMBER OF PEOPLE AS PER IMC 2021	NUMBER OF PEOPLE AS PER ARCH LAYOUT	FINAL NUMBER OF PEOPLE	MIN OUTSIDE AIR AS PER IMC 2021		OA CFM	EFFECTIVENESS	REQUIRED OA CFM	PROVIDED OA CFM	EXHAUST AIRFLOW RATE CFM OR (CFM)/SQFT)	PROVIDED EXHAUST AIR CFM
							CFM/PEOPLE	CFM/SQ.FT						
1	100 RECEPTION	190	30	6	0	6	5	0.06	42	0.8	53	55	0	0
2	101 PEDICURE/ MANICURE	600	25	15	24	24	20	0.12	552	0.8	690	690	600	600
3	102 RESTROOM	54	0	0	0	0	0	0	0	0.8	0	0	70	70
4	103 WAX/FLEX	87	5	1	0	2	5	0.06	16	0.8	20	20	0	0
5	104 BOH	106	0	0	0	0	0	0.12	13	0.8	16	20	0	0
6	105 CLEAN LAB	76	5	1	0	1	5	0.06	10	0.8	13	15	0	0
	TOTAL	**1113**	**-**	**23**	**-**	**33**	**-**	**-**	**633**	**-**	**-**	**800**	**-**	**670**

Property of NY Engineers

PROJECT TITLE:

MiniLuxe

DRAWING TITLE:

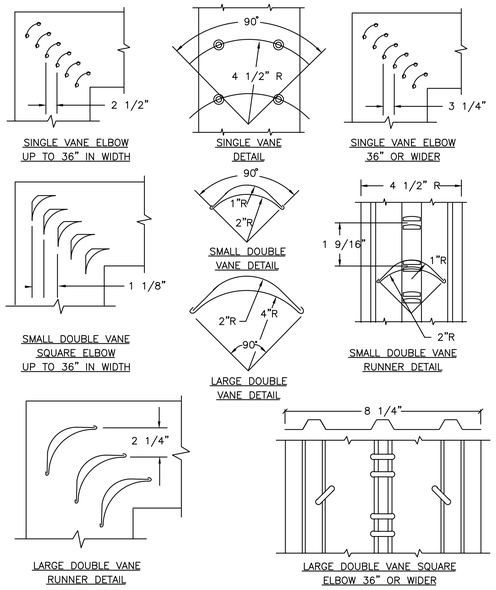
MECHANICAL SCHEDULE

PERMIT DWG DATE:	PROJECT NUMBER:
01/30/26	25-01-020
DRAWN BY:	CHECKED BY:
NYE	NYE

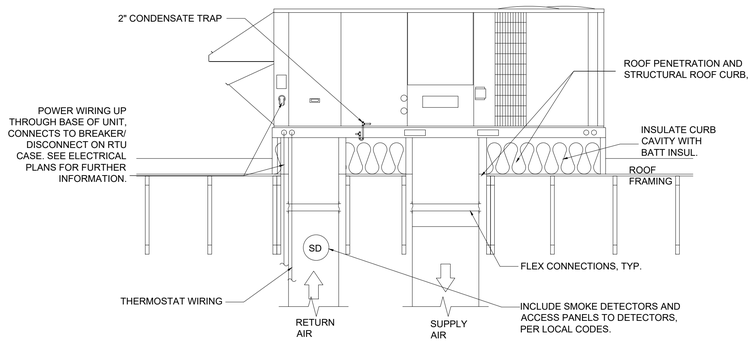
DRAWING NUMBER:

M200

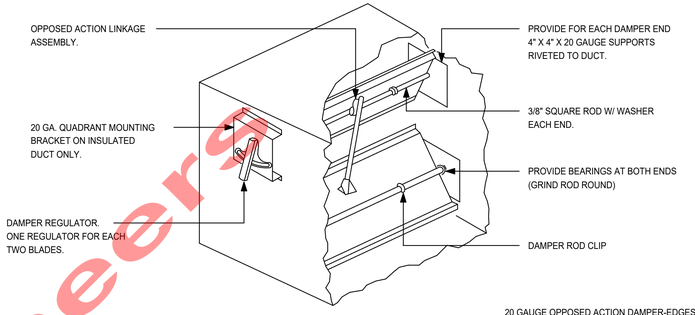
1	SCALE	MECHANICAL SCHEDULES
	N.T.S.	



1 | SCALE N.T.S. | LOW VELOCITY DUCTWORK ELBOWS



2 | SCALE N.T.S. | RTU INSTALLATION DETAILS



NOTE : 1. FOR DUCTS OVER 29" WIDE AND/OR OVER 12" HIGH.

3 | SCALE N.T.S. | LOW PRESSURE BALANCING DAMPER

NOTES :

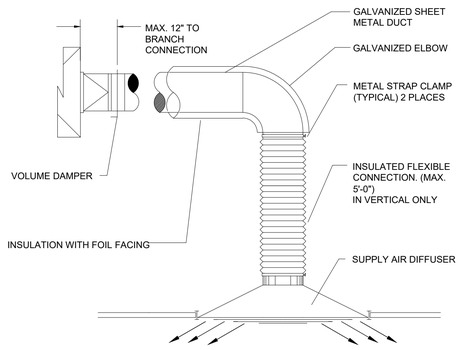
1. DUCT CONSTRUCTION SHALL CONFORM TO LOW PRESSURE MATCNA CONSTR. STD.
2. DUCTS SHALL BE FABRICATED WITH LONGITUDINAL SEAMS.
3. PROVIDE ONE PRIME-COAT PAINT FOR ROUND DUCTS INSTALLED IN EXPOSED AREAS.

4 | SCALE N.T.S. | METHOD OF HANGING ROUND DUCTWORK

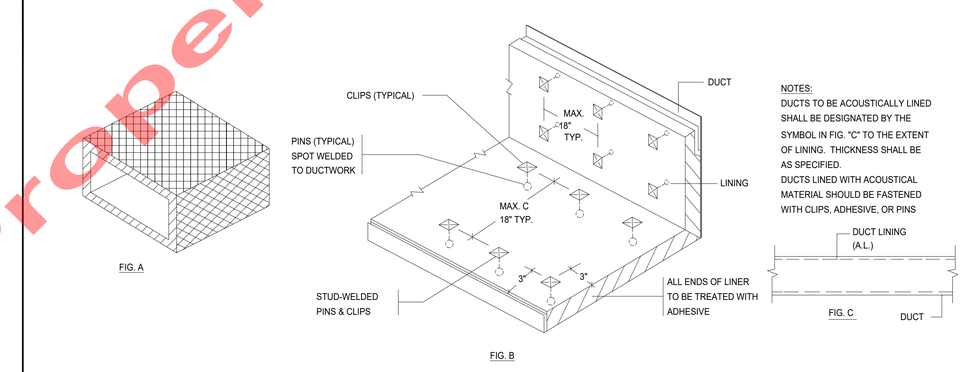
NOTE:
FURNISH THIS TYPE CONNECTION WHEN SINGLE LINE DUCTWORK IS INDICATED AS THIS

5 | SCALE N.T.S. | SUPPLY AIR DUCTWORK SUB-MAIN/BRANCH DUCT CONNECTION

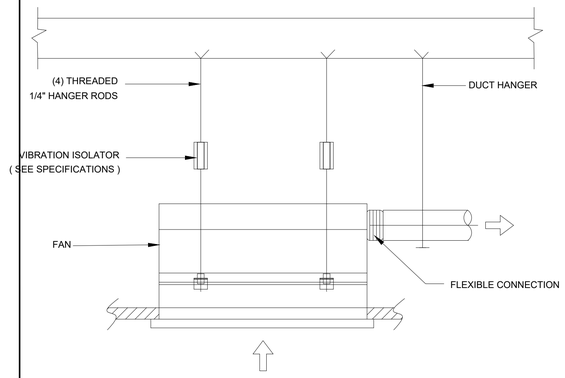
6 | SCALE N.T.S. | ROOF EXHAUST FAN DETAIL



7 | SCALE N.T.S. | CEILING MOUNTED SUPPLY AIR DIFFUSER DETAIL



8 | SCALE N.T.S. | ACOUSTICAL TREATMENT DUCT LINING



9 | SCALE N.T.S. | CEILING FAN HANGING SUPPORT DETAIL

Property of NYC Engineers

PROJECT TITLE:

MiniLuxe

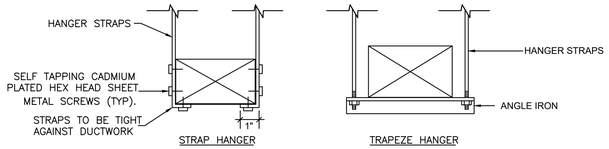
DRAWING TITLE:

MECHANICAL DETAILS (01 OF 02)

PERMIT DWG DATE: 01/30/26	PROJECT NUMBER: 25-01-020
DRAWN BY: NYE	CHECKED BY: NYE

DRAWING NUMBER:

M300

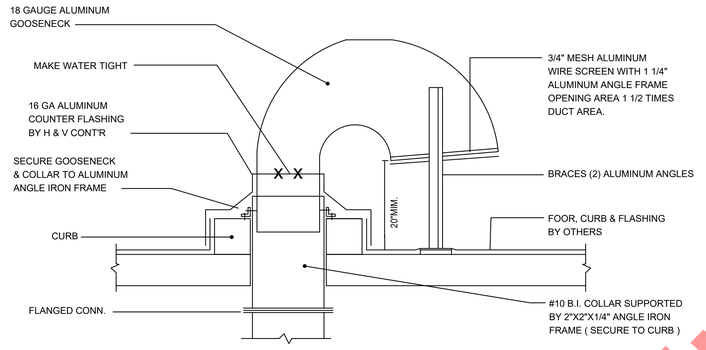


NOTE:
NO POP RIVETS ALLOWED, USE SELF–TAPPING SHEETMETAL SCREWS ONLY.

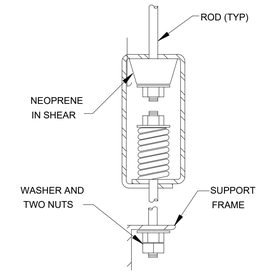
HANGER SIZES*			
MAX. SIDE	HANGER	HORIZONTAL SUPPORT ANGLE	MAXIMUM SPACING
30"	1"x18" GAUGE STRAP	NONE REQUIRED	10'–0"
36"	1/4" ROD	1–1/2"x1–1/2"x1/8"	8'–0"
48"	1/4" ROD	2"x2"x1/8"	8'–0"
60"	5/16" ROD	2"x2"x1/8"	8'–0"
84"	3/8" ROD	2"x2"x1/8"	8'–0"

* FOR RECTANGULAR DUCTS

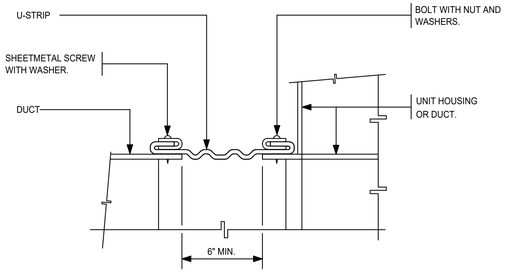
1	SCALE	METHOD OF HANGING DUCTWORK
	N.T.S.	



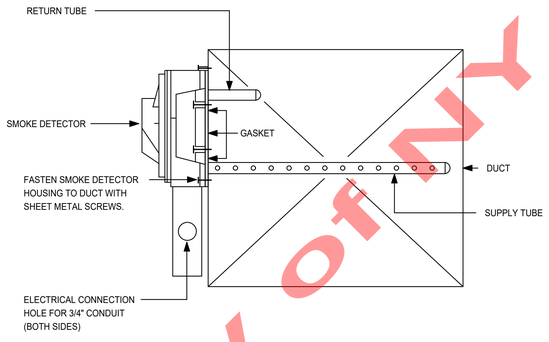
2	SCALE	TYPICAL DETAIL OF ROOF GOOSENECK
	N.T.S.	



3	SCALE	VIBRATION ISOLATOR DETAIL
	N.T.S.	



4	SCALE	FLEXIBLE CONNECTION (DUCT-EQUIPMENT)
	N.T.S.	



5	SCALE	SMOKE DETECTOR MOUNTING DETAIL
	N.T.S.	

Property of NY Engineers

PROJECT TITLE:

MiniLuxe

DRAWING TITLE:

MECHANICAL DETAILS
(02 OF 02)

PERMIT DWG DATE:	PROJECT NUMBER:
01/30/26	25-01-020
DRAWN BY:	CHECKED BY:
NYE	NYE

DRAWING NUMBER:

M301

ELECTRICAL SYMBOLS LIST

LIGHTING

	LIGHTING FIXTURE, HALF SHADED FIXTURE OR "NL" INDICATES NIGHT LIGHT FIXTURES, U.O.N.
A 2 a	LUMINAIRE TYPE : INDICATE BY UPPERCASE LETTER SEE LIGHTING FIXTURE SCHEDULE. CIRCUIT NUMBER : INDICATED BY NUMBER SWITCHING INDICATED BY LOWER CASE LETTERS.
EM	DENOTES LUMINAIRE ON EMERGENCY CIRCUIT.
NL	DENOTES FIXTURES DESIGNATED AS NIGHTLIGHT, WIRED TO 24 HOURS UNSWITCHED CIRCUIT.
	CEILING/WALL MOUNTED EXIT SIGN WITH DIRECTIONAL ARROWS AS INDICATED. SHADED AREA DENOTES FACE(S).
	EMERGENCY BATTERY UNIT

SWITCHES AND CONTROLS

$D	DIMMER SWITCH
VS	CEILING MOUNTED VACANCY SENSOR
OS	CEILING MOUNTED OCCUPANCY SENSOR
$VS	WALL MOUNTED VACANCY SENSOR SWITCH, WATTSTOPPER CS-50PIR SERIES.
TC	TIME CLOCK
PC	WALL MOUNTED PHOTOCELL IN NEMA 3R ENCLOSURE.
LC	LIGHTING CONTACTOR
$OS	WALL MOUNTED OCCUPANCY SENSOR
$	MANUAL SWITCH

WIRING SYSTEMS

3 UP-	POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSISTS OF 1#12 Ø, 1#12 N. & 1#12 G. IN 3/4"C, UNLESS OTHERWISE NOTED.
3, 5 UP-	POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSISTS OF 2#12 Ø, 1#12 N. & 1#12 G. IN 3/4"C, UNLESS OTHERWISE NOTED.
3, 5, 7 UP-	POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSISTS OF 3#12 Ø, 1#12 N. & 1#12 G. IN 3/4"C, UNLESS OTHERWISE NOTED.
	CONDUIT TURNING UP, SEE FLOOR PLANS FOR CONDITIONS.
	CONDUIT TUIRNING DOWN, SEE FLOOR PLANS FOR CONDITION.
	CONDUIT AND WIRE TO BUILDING GROUND.
	EXISTING
	NEW

NOTES:
1. NOT ALL SYMBOLS MAY APPEAR ON DRAWINGS.
2. COORDINATE EXACT LOCATION AND SPECIFIC MOUNTING HEIGHT OF OUTLETS WITH ARCHITECT.
3. MOUNTING HEIGHTS SHALL BE 18" AFF FOR THE OUTLETS, 42" AFF FOR THE LIGHTING SWITCHES OR AS INDICATED IN THE LEGEND UNLESS, OTHERWISE NOTED ON THE PLANS

ELECTRICAL DRAWING LIST

E001	ELECTRICAL SYMBOL LIST, ABBREV. & GENERAL NOTES
E002	ELECTRICAL SPECIFICATIONS (01 OF 02)
E003	ELECTRICAL SPECIFICATIONS (02 OF 02)
E100	LIGHTING PLAN
E200	ELECTRICAL POWER PLAN
E201	ELECTRICAL POWER PLAN - ROOF
E300	ELECTRICAL RISER DIAGRAM
E301	ELECTRICAL PANEL SCHEDULES
E400	ELECTRICAL DETAILS

POWER AND TELECOMMUNICATION

J	JUNCTION BOX
	SIMPLEX RECEPTACLE, +18" AFF OR AS NOTED.
	DUPLEX CONVENIENCE RECEPTACLE
	DUPLEX GFI RECEPTACLE
	DUPLEX IG RECEPTACLE
	SPECIAL PURPOSE RECEPTACLE
	DUPLEX CEILING MOUNTED CONVENIENCE RECEPTACLE
	DUPLEX FLOOR MOUNTED CONVENIENCE RECEPTACLE,
	QUAD RECEPTACLE
	QUAD IG RECEPTACLE
	TELEPHONE/DATA OUTLET
	CEILING TELEPHONE/DATA OUTLET

MOTORS AND CONTROLS

M SM	AC INDOOR UNIT MOTOR AS NOTED WITH LIQUID TIGHT FLEXIBLE CONNECTION WITH JUNCTION BOX AND MOTOR SWITCH.
SM	MOTORIZED SWITCH
	NON FUSED DISCONNECT SWITCH
	FUSED DISCONNECT SWITCH

ANNOTATION

+24"	INDICATES MOUNTING HEIGHT, CENTER LINE TO FINISHED FLOOR.
0	KEYED NOTE REFERENCE
1 E200	DETAIL REFERENCE: DETAIL NUMBER INDICATED ON TOP; DRAWING NUMBER INDICATED ON BOTTOM

POWER DISTRIBUTION

	BRANCH PANELBOARD, SURFACE MOUNTED U.N.O. SIZE AS NOTED.
	TRANSFORMER

ELECTRICAL ABBREVIATIONS

A	AMPERES	EA	EACH
A/C, AC	AIR CONDITIONING UNIT	EC	EMPTY CONDUIT/ ELECTRICAL CONTRACTOR
AF	AMPERE FRAME/AMP FUSE	EF	EXHAUST FAN
AFF	ABOVE FINISHED FLOOR	EM	EMERGENCY
AS	AMP SWITCH	EMT	ELECTRICAL METALLIC TUBING
AIC	AMPS INTERRUPTING CAPACITY	EQUIP	EQUIPMENT
AT	AMP TRIP	ER	EXISTING TO BE RELOCATED
ATS	AUTOMATIC TRANSFER SWITCH	ETR	EXISTING TO REMAIN
AUTO	AUTOMATIC	EWF	ELECTRIFIED WORKSTATION FURNITURE
AWG	AMERICAN WIRE GAUGE	EWH	ELECTRIC WATER HEATER
C	CONDUIT	FA	FIRE ALARM
C/B,CB	CIRCUIT BREAKER	FBO	FURNISHED BY OTHERS, INSTALLED & WIRED BY EC
CKT	CIRCUIT	FDR	FEEDER
CLG	CEILING	FIBO	FURNISHED & INSTALLED BY OTHERS, WIRED BY EC
COMM	COMMUNICATION	FIXT	FIXTURE
CT	CURRENT TRANSFORMR	FL	FLOOR
CU	COPPER	FLUOR	FLUORESCENT
°C	DEGREE CELSIUS	G	GROUND
°F	DEGREE FAHRENHEIT	GFI	GROUND FAULT INTERRUPTER
DIA	DIAMETER	GP	GENERAL PURPOSE
DISC	DISCONNECT	HC	HUNG CEILING
DN	DOWN	HP	HORSEPOWER
DP	DISTRIBUTION PANEL	HWH	HOT WATER HEATER
DWH	DOMESTIC WATER HEATER	HZ	HERTZ
DWG	DRAWING	IC	INTERRUPTING CAPACITY
JB	JUNCTION BOX	PP	POWER PANEL
KCMIL	ONE THOUSAND CIRCULAR MILS	PVC	POLYVINYL CHLORIDE
KV	KILOVOLT	PWR	POWER
KVA	KILOVOLT-AMPERES	R	REMOVE
KW	KILOWATTS	RE	RELOCATED EXISTING
LP	LIGHTING PANEL	REC	RECEPTACLE
LTG	LIGHTING	RGS	RIGID GALVANIZED STEEL
MAX	MAXIMUM	RR	REMOVE & RELOCATE
MC	MOTOR CONTROLLER	SECT	SECTION
MCB	MAIN CIRCUIT BREAKER	SPDT	SINGLE POLE DOUBLE THROW
MER	MECHANICAL EQUIPMENT ROOM	SPST	SINGLE POLE SINGLE THROW
MIN	MINIMUM	SPEC	SPECIFICATION
MLO	MAIN LUGS ONLY	SW	SWITCH
MTD	MOUNTED	SWBD	SWITCHBOARD
MTS	MANUAL TRANSFER SWITCH	SYM	SYMMETRICAL
N	NEUTRAL	SYS	SYSTEMS
NE	NEW DEVICE TO REPLACE EXISTING	TELE	TELEPHONE
NIC	NOT IN CONTRACT	TEMP	TEMPERATURE
NL	NIGHT LIGHT	TXF	TOILET EXHAUST FAN
NTS	NOT TO SCALE	TYP	TYPICAL
OC	ON CENTER	U.O.N.	UNLESS OTHERWISE NOTED
P	POLES	V	VOLT/VOLTAGE
PB	PULLBOX	VA	VOLT AMPERE
PC	PERSONAL COMPUTER	VAV	VARIABLE AIR VOLUME
Ø	PHASE	VFD	VARIABLE FREQUENCY DRIVE
PNL	PANEL	D, GFCI	GROUND FOULT CURRENT INTERRUPTER BREAKER
W	WATT	WP	WEATHERPROOF
W	WIRE	XFMR	TRANSFORMER
WH	WALL HEATER	GFCI	GROUND FOULT CURRENT INTERRUPTER
E	EXISTING	IG	ISOLATED GROUND

GENERAL NOTES
(APPLY TO ALL "E" DRAWINGS)

1. DRAWINGS ARE SCHEMATIC IN NATURE AND MAY NOT BE DRAWN EXACTLY TO SCALE. CONTRACTOR IS RESPONSIBLE FOR COORDINATING EXACT ROUTING OF ALL SERVICES WITH EXISTING CONDITIONS AND WITH ALL OTHER TRADES.
2. REFER TO ARCHITECTURAL REFLECTED CEILING PLAN FOR CEILING TYPES AND EXACT LOCATION OF ALL FIXTURES. VERIFY CEILING TYPES WITH ARCHITECT PRIOR TO ORDERING LIGHT FIXTURES TO ENSURE COMPATIBLE FIXTURE TRIMS AND MOUNTING HARDWARE.
3. ALL WORK SHALL COMPLY WITH THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE, AND ALL APPLICABLE LOCAL AND STATE CODES.
4. ALL CIRCUITS SHALL INCLUDE A GREEN GROUND CONDUCTOR SIZED IN ACCORDANCE WITH 250-95, OR LARGER IF NOTED.
5. ALL PENETRATIONS OF FIRE RATED PARTITIONS DUE TO THE INSTALLATION OF ELECTRICAL SYSTEMS SHALL BE SEALED TO MAINTAIN THE FIRE RATING OF THE WALL.
6. ALL CONDUITS EXPOSED TO PUBLIC VIEW SHALL BE PAINTED. VERIFY COLOR WITH OWNER AND ARCHITECT.
7. CONTRACTOR SHALL CONNECT ALL LIGHTS AND POWER FOR ALL OWNER FURNISHED CASEWORK. REFER TO OWNER'S FURNITURE AND FIXTURE LAYOUT FOR EXACT HEIGHTS AND LOCATIONS.
8. NO MORE THAN (9) CURRENT CARRYING CONDUCTORS SHALL BE INSTALLED IN ANY CONDUIT.
9. ALL CONDUIT PENETRATIONS OF THE ROOF SHALL OCCUR WITHIN THE MECHANICAL CURBS, EXCEPT WHERE SPECIFICALLY INDICATED OTHERWISE.
10. NO CONDUIT SHALL BE ROUTED IN ANY PARTITION WITH A TILE FINISH.
11. UNDERGROUND PVC CONDUITS SHALL CONVERT TO RIGID GALVANIZED STEEL ELBOW AND CONTINUE AS RIGID GALVANIZED STEEL CONDUIT UNTIL EMERGENCE FROM SLAB OR CONCRETE ENCASEMENT. PROVIDE THREADED CAPS AT BOTH ENDS OF SPARE OR UNUSED CONDUITS. EXCEPTION: ALL PARTS OF UNDERGROUND LIGHTING BRANCH CIRCUIT CONDUITS MAY BE PVC WITH GROUND WIRE.
12. ALL WALL LIGHT SWITCHES SHALL BE RATED AT 20A. ALL DEDICATED RECEPTACLES SHALL BE RATED 20A. U.N.O.
13. ALL JUNCTION BOXES MOUNTED ABOVE CEILING SHALL BE MOUNTED 1'-0" AFC.
14. ALL EXIT/EMERGENCY SHALL BE ON SAME BRANCH CIRCUIT AS THAT SERVING NORMAL LIGHTING IN THE AREA AND CONNECTED AHEAD OF ANY SWITCH, UNLESS NOTED OTHERWISE.
15. MINIMUM WIRE SIZE TO BE 2#12, 1#12, 3/4"C UNLESS NOTED OTHERWISE. CONTRACTOR SHALL USE #10 WIRING FOR OVER 100FT (10AMPS).
16. EXIT SIGNS AND EMERGENCY EGRESS LIGHTS MUST BE APPROVED BY FIELD INSPECTOR. ADDITIONAL FIXTURES MAY BE REQUIRED BY FIELD INSPECTOR.
17. REFER TO MECHANICAL DRAWINGS AND COORDINATE WITH MECHANICAL CONTRACTOR FOR THE EXACT LOCATION AND ELECTRICAL REQUIREMENTS OF MECHANICAL EQUIPMENT.
18. REFER TO PLUMBING DRAWINGS AND COORDINATE WITH PLUMBING CONTRACTOR FOR THE EXACT LOCATION AND ELECTRICAL REQUIREMENTS OF PLUMBING EQUIPMENT.
19. ALL RECEPTACLES IN BATHROOM AND KITCHEN SHALL BE GFI RATED.
20. ALL RECEPTACLES ON ROOF AND EXTERIOR SHALL BE WEATHERPROOF AND GFI RATED.
21. REFER TO OWNER EQUIPMENT MANUALS AND COORDINATE WITH SUPPLIER FOR EXACT LOCATION AND ELECTRICAL REQUIREMENTS OF EQUIPMENT.
22. ALL GFCI RECEPTACLES SHALL BE INSTALLED IN A READILY ACCESSIBLE LOCATION OR A DEAD FRONT GFI DEVICE INSTALLED IN A READILY ACCESSIBLE LOCATION. OR A GFCI CIRCUIT BREAKER SHALL USED TO FEED THE CIRCUIT NOTED.

Property of NYE Engineers

PROJECT TITLE:

MiniLuxe

DRAWING TITLE:
ELECTRICAL SYMBOL LIST, ABBREV. & GENERAL NOTES

PERMIT DWG DATE: -/-/-	PROJECT NUMBER: 25-01-020
DRAWN BY: NYE	CHECKED BY: NYE

DRAWING NUMBER:

E001

ELECTRICAL SPECIFICATIONS:

1.1. SUMMARY:

A. ELECTRICAL SYSTEMS REQUIRED FOR THIS WORK INCLUDES LABOR, MATERIALS, EQUIPMENT, AND SERVICES NECESSARY TO COMPLETE INSTALLATION OF ELECTRICAL WORK SHOWN ON DRAWINGS, SPECIFIED HEREIN OR REQUIRED FOR A COMPLETE OPERABLE FACILITY AND NOT SPECIFICALLY DESCRIBED IN OTHER SECTIONS OF THESE SPECIFICATIONS. AMONG THE ITEMS REQUIRED ARE:

1. SERVICE AND DISTRIBUTION EQUIPMENT SHOWN ON DRAWINGS.
2. FEEDERS TO SWITCHBOARDS, DISTRIBUTION PANELS, HEATING-VENTILATING AND AIR CONDITIONING(HVAC) EQUIPMENT, OWNER PROVIDED EQUIPMENT AND OTHER EQUIPMENT AS DETAILED.
3. BRANCH CIRCUIT WIRING FROM THE DISTRIBUTION PANELS FOR LIGHTING, RECEPTACLES, MOTORS, SIGNAL SYSTEMS AND OTHER DETAILED CIRCUIT WIRING.
4. LUMINAIRES, CONTROL SWITCHES, RECEPTACLES, RELAYS, SUPPORTS AND OTHER ACCESSORY ITEMS.
5. WIRING AND POWER CONNECTIONS FOR MOTORS INSTALLED FOR HEATING, COOLING AND VENTILATION.

B. FEES:

1. PAY FEES LEVIED BY SERVING ELECTRIC UTILITY TO PROVIDE SERVICE TO THIS PROJECT.
2. OBTAIN FEES FROM SERVING ELECTRIC UTILITY PRIOR TO SUBMITTING A BID.
3. OBTAIN AND PAY FOR ELECTRICAL PERMITS, PLAN REVIEW, AND INSPECTIONS FROM LOCAL AUTHORITIES HAVING JURISDICTION (AHJ).

1.2 DEFINITIONS

A. PROVIDE: TO FURNISH AND INSTALL, COMPLETE AND READY FOR THE INTENDED USE.

B. FURNISH: SUPPLY AND DELIVER TO THE PROJECT SITE, READY FOR UNPACKING, ASSEMBLY AND INSTALLATION.

C. INSTALL: INCLUDES UNLOADING, UNPACKING, ASSEMBLING, ERECTING, INSTALLATION, APPLYING, FINISHING, PROTECTING, CLEANING AND SIMILAR OPERATIONS AT THE PROJECT SITE AS REQUIRED TO COMPLETE ITEMS OF WORK FURNISHED BY OTHERS.

1.3 SUBMITTALS

A. OPERATION AND MAINTENANCE DOCUMENTATION: PROVIDE COPIES OF CERTIFICATES OF CODE AUTHORITY ACCEPTANCE, TEST DATA, PRODUCT DATA, GUARANTEES, WARRANTIES, ETC.

B. SHOP DRAWINGS: PROVIDE SHOP DRAWINGS WHICH INCLUDE PHYSICAL CHARACTERISTICS, ELECTRICAL CHARACTERISTICS, DEVICE LAYOUT PLANS, WIRING DIAGRAMS, ETC.

C. RECORD DRAWINGS: SHOW CHANGES AND DEVIATIONS FROM THE DRAWINGS. INCLUDE WRITTEN ADDENDUM AND CHANGE ORDER ITEMS. MAKE CHANGES TO DRAWINGS IN A NEAT, CLEAN, AND LEGIBLE MANNER.

1.4 QUALITY ASSURANCE

A. CONFORM TO REQUIREMENTS OF THE NATIONAL ELECTRIC CODE (NEC), LATEST ADOPTED VERSION WITH AMENDMENTS BY LOCAL AHJ.

B. CONFORM TO LATEST ADOPTED VERSION OF THE UNIFORM BUILDING CODE (UBC) WITH AMENDMENTS BY LOCAL AHJ.

C. FURNISH PRODUCTS LISTED BY UNDERWRITERS' LABORATORIES, INC. (UL) OR OTHER TESTING FIRM ACCEPTABLE TO AHJ.

D. CONFORM TO REQUIREMENTS OF THE SERVING ELECTRIC, AND TELEPHONE/DATA UTILITIES.

1.5 SEQUENCING AND SCHEDULING

A. COOPERATE WITH OTHER CRAFTS AND CONTRACTS AS NEEDED FOR THE PROPER EXECUTION OF THE WORK.

B. THOROUGHLY EXAMINE THE COMPLETE SET OF CONTRACT DOCUMENTS. RESOLVE CONFLICTS PRIOR TO INSTALLATION.

C. PRIOR TO INSTALLATION OF FEEDERS TO EQUIPMENT REQUIRING ELECTRICAL CONNECTIONS, EXAMINE THE MANUFACTURER'S SHOP DRAWINGS, WIRING DIAGRAMS, PRODUCT DATA, AND INSTALLATION INSTRUCTIONS. VERIFY THAT THE ELECTRICAL CHARACTERISTICS DETAILED IN THE CONTRACT DOCUMENTS ARE CONSISTENT WITH THE ELECTRICAL CHARACTERISTICS OF THE ACTUAL EQUIPMENT BEING INSTALLED.

1.6 WARRANTY

A. MANUFACTURER'S WARRANTY: 5 YEARS FOR ELECTRONIC TYPE BALLASTS, BASED ON DATE OF MANUFACTURER EMBOSSED ON DRIVERS, CURRENT WITH INSTALLATION DATE. WARRANTY INCLUDES NORMAL COST OF LABOR FOR REPLACEMENT OF DRIVER.

B. LED WARRANTY: MINIMUM OF 3 YEARS.

2.1 MATERIALS

A. PROVIDE NEW ELECTRICAL MATERIALS OF THE TYPE AND QUALITY DETAILED, LISTED BY UL, BEARING THEIR LABEL WHEREVER STANDARDS HAVE BEEN ESTABLISHED. INDICATED BRAND NAMES AND CATALOG NUMBERS ARE USED TO ESTABLISH STANDARDS OF PERFORMANCE AND QUALITY. THE DESCRIPTION OF MATERIALS LISTED HEREIN GOVERNS IN THE EVENT THAT CATALOG NUMBERS DO NOT CORRESPOND TO MATERIALS DESCRIBED HEREIN.

B. INCLUDE SPECIAL FEATURES, FINISHES, ACCESSORIES, AND OTHER REQUIREMENTS AS DESCRIBED IN THE CONTRACT DOCUMENTS REGARDLESS OF THE ITEM'S LISTED CATALOG NUMBER.

C. PROVIDE INCIDENTALS NOT SPECIFICALLY MENTIONED HEREIN OR NOTED ON DRAWINGS, BUT NEEDED TO COMPLETE THE SYSTEM OR SYSTEMS, IN A SAFE AND SATISFACTORY WORKING CONDITION.

D. FIRESTOPPING FOAM SEALANT: FOAM SEALANT FOR USE AROUND CONDUIT PENETRATIONS TO PREVENT PASSAGE OF SMOKE, FIRE, TOXIC GAS OR WATER. MAINTAIN SEAL BEFORE, DURING AND AFTER FIRE. IN AND AROUND CONDUIT FOR THERMAL BREAK AT PENETRATION OF BARRIER BETWEEN HEATED AND UNHEATED SPACES. CHASE TECHNOLOGY CORPORATION CTC PR-855, FIRE FOAM, THOMAS & BETTS.

2.2 RACEWAYS

A. GALVANIZED RIGID STEEL CONDUIT (GRC): FEDERAL SPECIFICATION WWC-581 AND AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI) C80.1.

B. INTERMEDIATE METAL CONDUIT (IMC): FEDERAL SPECIFICATION WWC-581.

C. ELECTRICAL METALLIC TUBING (EMT): FEDERAL SPECIFICATION WWC-563 AND ANSI C80.3.

D. FLEXIBLE CONDUIT: REDUCED WALL FLEXIBLE STEEL CONDUIT. FEDERAL SPECIFICATION WWC-566.

E. FLEXIBLE CONDUIT, PVC COATED: PVC CHEMICAL RESISTANT JACKET.

F. PVC: CLASS 40 HEAVY WALL RIGID PVC, FEDERAL SPECIFICATION WC1094A AND NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION (NEMA) TC-2.

G. CONDUIT FITTINGS:

1. BUSHINGS: MALLEABLE IRON WITH PLASTIC INSULATOR LINING, 150C RATED.
2. GROUND BUSHINGS: MALLEABLE IRON WITH PLASTIC INSULATING LINER AND ALUMINUM GROUNDING LUG RATED FOR COPPER OR ALUMINIUM CONDUCTOR, 150C RATED.
3. EMT CONNECTORS AND COUPLING:
   a. SET SCREW TYPE: ZINC PLATED STEEL, INSULATED THROAT CONNECTORS.
   b. COMPRESSION TYPE: ZINC PLATED STEEL, INSULATED THROAT CONNECTORS, RAINTIGHT UP TO 2-INCH.

H. TYPE "MC" CABLE SHALL BE APPROVED FOR CONCEALED BRANCH CIRCUITING AND FOR FINAL CONNECTIONS TO LIGHT FIXTURES, MOTORS, AND VIBRATING EQUIPMENT, AND WHERE USED, TO BE GROUNDED WITH FULL SIZES GREEN GROUNDING CONDUCTOR. EXPOSED FINAL MC CONNECTIONS SHALL BE LIMITED TO 10'-0" IN LENGTH.

2.3 WIRES AND CABLES

A. DCOPPER, 600 VOLT RATED THROUGHOUT. CONDUCTORS 14AWG TO 10AWG, SOLID OR STRANDED. CONDUCTORS 8AWG AND LARGER STRANDED. PHASE COLOR TO BE CONSISTENT AT FEEDER TERMINATIONS; A-B-C, TOP TO BOTTOM, LEFT TP RIGHT, FRONT TO BACK. CONDUCTORS 3AWG AND LARGER, MINIMUM INSULATION RATING OF 750C. INSULATION TYPES THWN, THHN OR MINIMUM INSULATION RATING OF 90C FOR BRANCH CIRCUITS.

B. SERVICE ENTRANCE CABLE: COPPER CONDUCTOR, 600 VOLT INSULATION, XHHW, TYPE SE.

2.4 BOXES

A. LUMINAIRE OUTLET: 4-INCH OCTAGONAL BOX, 1-1/2-INCHES DEEP WITH 3/8-INCH LUMINAIRE STUD IF REQUIRED. PROVIDE RAISED COVERS ON BRACKET OUTLETS AND ON CEILING OUTLETS.

B. DEVICE OUTLET: MINIMUM 4-INCH SQUARE, MINIMUM 1-1/2-INCHES DEEP. SINGLE OR 2-GANG FLUSH DEVICE RAISED COVERS. RACO SERIES 681 AND 686 OR BOWERS.

C. MULTIPLE DEVICES: THREE OR MORE DEVICES AT COMMON LOCATION. INSTALL 1-PIECE GANG BOXES WITH 1-PIECE DEVICE COVER, ONE DEVICE PER GANG.

D. MASONRY BOXES: OUTLETS IN CONCRETE, RACO SERIES 690 OR BOWERS.

E. WEATHERPROOF OUTLET BOXES: CORROSION-RESISTANT CAST METAL WEATHERPROOF OUTLET WIRING BOXES OF THE TYPE WATERPROOF CAP SUITABLY CONFIGURED FOR EACH APPLICATION, INCLUDING FACE PLATE GASKET, BLANK PLUGS SHAPE AND SIZE, INCLUDING DEPTH OF BOX, WITH THREADED CONDUIT ENDS, CAST METAL FACE PLATE WITH SPRING-HINGED AND CORROSION PROOF FASTENERS AND GRAY FINISH. PROVIDE IN-USE COVERS FOR RECEPTACLES.

F. JUNCTION AND PULL BOXES: GALVANIZED SHEET STEEL JUNCTION AND PULL BOXES, WITH SCREW-ON COVERS; OF THE TYPE SHAPE AND SIZE, TO SUIT EACH RESPECTIVE LOCATION AND INSTALLATION; WITH WELDED SEAMS AND EQUIPPED WITH STEEL NUTS, BOLTS, SCREWS AND WASHERS.

2.5 WIRING DEVICES

A. FINISH: AS DIRECTED BY ARCHITECT.

B. WALL SWITCHES: TOGGLE TYPE, QUIET ACTING, 20 AMP, 120/277 VOLT, UL LISTED FOR MOTOR LOADS UP TO 80 PERCENT OF RATED AMPERAGE. ARROW-HART 1221, LEVITON 1221, PASS & SEYMOUR 20ACI, BRYANT 4901, HUBBELL 1221.

C. PILOT LIGHT SWITCHES: LIGHTED HANDLE, TOGGLE TYPE, RED, NEON PILOT LAMP. PILOT LAMP ENERGIZED WHEN LOAD IS ENERGIZED. 20 AMP/120 VOLT, ARROW-HART 1991-PL, LEVITON 1221-PL, PASS & SEYMOUR 20ACI-PL, BRYANT 4901-PL, HUBBELL 1221-PL.

D. RECEPTACLES: STRAIGHT PARALLEL BLADE 15 AMP, 125 VOLT, 2-POLE - 3 WIRE GROUNDING. ARROW-HART 5352, LEVITON 5352, PASS & SEYMOUR 5352, BRYANT 5352, HUBBELL 5352.

E. GROUND FAULT INTERRUPTER RECEPTACLE: FEED THROUGH TYPE, 20 AMP, 125VAC. HUBBELL IG-5362, ARROW-HART IG-5362, LEVITON, PASS & SEYMOUR, BRYANT.

F. FINISH PLATES: SMOOTH THERMOPLASTIC.

2.6 SAFETY DISCONNECT

A. TOGGLE TYPE DISCONNECT SWITCHES: 120 VOLT, 1-POLE, 20 AMP, 1 HP MAXIMUM. NEMA 1 ENCLOSURE FOR INDOORS, NEMA 3R ENCLOSURE FOR OUTDOORS.

B. MANUAL MOTOR STARTERS: QUICK-MAKE, QUICK-BREAK. THERMAL OVERLOAD PROTECTION. DEVICE LABELED WITH MAXIMUM VOLTAGE, CURRENT AND HORSEPOWER. SQUARE-D CLASS 2510, SIEMENS, GENERAL ELECTRIC, OR EATON. PROVIDE NEMA 1 ENCLOSURE FOR INDOORS, NEMA 3R ENCLOSURE FOR OUTDOORS.

C. SAFETY SWITCHES: HEAVY DUTY, FUSED TYPE, DUAL RATED, QUICK-MAKE, QUICK-BREAK WITH FUSE REJECTION FEATURE FOR USE WITH CLASS R FUSES ONLY. PROVIDE NEMA 1 ENCLOSURE FOR INDOORS, NEMA 3R ENCLOSURE FOR OUTDOORS. MANUFACTURERS: SQUARE-D, SIEMENS, GENERAL ELECTRIC, OR EATON.

2.7 SUPPORTING DEVICES

A. HANGERS: KINDORF B-905-2A CHANNEL, H-119-D WASHER, C105 STRAP, 3/8-INCH ROD WITH CEILING FLANGE.

B. PIPE STRAPS: TWO-HOLE GALVANIZED OR MALLEABLE IRON.

2.8 ELECTRICAL IDENTIFICATION

A. ENGRAVED LABELS: MELAMINE PLASTIC LAMINATE, WHITE WITH BLACK CORE, 1/16-INCH THICK, MANUFACTURED BY LAMICOID. ENGRAVERS STANDARD LETTER STYLE, MINIMUM 3/16-INCH HIGH LETTERS. DRILL OR PUNCH LABELS FOR MECHANICAL FASTENING EXCEPT WHERE ADHESIVE MOUNTING IS NECESSARY BECAUSE OF SUBSTRATE. USE SELF-TAPPING STAINLESS STEEL SCREWS.

B. CONDUCTOR NUMBERS: MANUFACTURERS STANDARD VINYL-CLOTH SELF-ADHESIVE CABLE AND CONDUCTOR MARKERS OF THE WRAPAROUND TYPE.

C. BRANCH CIRCUIT SCHEDULES: PROVIDE BRANCH CIRCUIT IDENTIFICATION SCHEDULES, TYPEWRITTEN, CLEARLY FILLED OUT, TO IDENTIFY LOAD CONNECTED TO EACH CIRCUIT AND LOCATION OF LOAD.

2.9 GROUNDING MATERIALS

A. GROUND RODS: COPPERCLAD STEEL, 3/4-INCH DIAMETER, 10-FEET LONG, TAPERED POINT, CHAMFERED TOP.

B. GROUNDING CONNECTORS: HYDRAULIC COMPRESSION TOOL APPLIED CONNECTORS OR EXOTHERMIC WELDING PROCESS CONNECTORS OR POWDER ACTUATED COMPRESSION TOOL APPLIED CONNECTORS. MECHANICAL TYPE OF CONNECTORS ARE NOT ACCEPTABLE. MANUFACTURERS: BURNDY HYGROUND COMPRESSION SYSTEM, ERICO/CADWELD, AMP AMPACT GROUNDING SYSTEM OR APPROVED.

C. PIPE GROUNDING CLAMP: MECHANICAL GROUND CONNECTOR WITH CABLE PARALLEL OR PERPENDICULAR TO PIPE.

D. TELECOMMUNICATIONS GROUNDING BAR: 1/4-INCH THICK BY 4-INCH HIGH BY 20-INCH LONG COPPER GROUND BAR WITH INSULATORS.

2.10 METERING EQUIPMENT (NOT APPLICABLE)

A. METER BASE: SURFACE MOUNTED METER SOCKET ENCLOSURE. PROVIDE METER BASE(S) FOR ENERGY/DEMAND AND REACTIVE ENERGY/DEMAND BASES AS REQUIRED BY SERVING ELECTRIC UTILITY.

B. C.T. ENCLOSURE: MEET SERVING UTILITY COMPANY'S REQUIREMENTS.

2.11 SWITCHBOARD AND DISTRIBUTION PANELBOARD CONSTRUCTION

A. MANUFACTURERS: SIEMENS, SQUARE-D, EATON, GENERAL ELECTRIC, OR APPROVED.

B. STANDARDS: COMPLY WITH REQUIREMENTS OF UL 891, NEMA PB2 AND NEC 384 IN CONSTRUCTION OF SWITCHBOARDS. PROVIDE SHORT CIRCUIT CURRENT RATING (INTEGRATED EQUIPMENT RATING, IER) FOR PANELBOARD, AND SWITCHBOARDS.

C. LUGS: COMPRESSION TYPE.

D. SWITCHBOARD:

1. ENCLOSURE: FREE STANDING, DEAD FRONT WITH FRONT ACCESSIBILITY. FRAMEWORK CONSTRUCTED OF FORMED, CODE GAUGE STEEL, RIGIDLY WELDED AND BOLTED TOGETHER SUPPORT COVER PLATES, BUSSING AND COMPONENT DEVICES DURING SHIPMENT AND INSTALLATION BOLT STEEL BASE CHANNELS TO THE FRAME TO RIGIDLY SUPPORT THE ENTIRE SHIPPING SECTION FOR MOVING ON ROLLERS AND FLOOR MOUNTING.
2. BUSSING: EXTRUDED ALUMINUM PLATED BY ALTAN 70 OR 80 PROCESS. BUS SUPPORTS, CONNECTIONS AND JOINTS BOLTED TOGETHER WITH HEX-HEAD BOLTS AND BELLEVILLE WASHERS. FULL LENGTH OF SWITCHBOARD GROUND BUS, 50 PERCENT OF PHASE BUS CAPACITY.

E. PROVIDE FULLY RATED INTEGRATED EQUIPMENT RATING GREATER THAN THE AVAILABLE FAULT CURRENT. SERIES RATED SWITCHBOARDS ARE NOT ACCEPTABLE. SEE DRAWINGS FOR AVAILABLE FAULT CURRENT, IF DRAWINGS DO NOT HAVE THE AVAILABLE FAULT CURRENTS THEN COORDINATE WITH SERVING ELECTRIC UTILITY.

1. ENCLOSURE: SURFACE OR FLUSH PANEL BOARDS RATED 600 AMP OR LESS PROVIDE MAXIMUM ENCLOSURE DEPTH OF 5-3/4-INCHES. PROVIDE GALVANIZED METAL FINISH.
2. BUSSING: ALUMINUM BAR WITH SUITABLE ELECTROPLATING (TIN) FOR CORROSION CONTROL AT CONNECTION. PROVIDE GROUND BAR TO ACCOMMODATE SPECIFIED TERMINAL LUGS.
3. PROVIDE SERIES RATED INTEGRATED EQUIPMENT RATING GREATER THAN THE AVAILABLE FAULT CURRENT. SEE DRAWINGS FOR AVAILABLE FAULT CURRENT, IF DRAWINGS DO NOT HAVE THE AVAILABLE FAULT CURRENTS THEN COORDINATE WITH SERVING ELECTRIC UTILITY.
4. BREAKERS: BOLT-ON TYPE.
5. COVER: HINGED DOOR, FLUSH LIFT LATCH AND LOCK, TWO KEYS PER PANEL. KEY BRANCH CIRCUIT PANELBOARDS ALIKE. MEDIUM LIGHT GREY FINISH SUITABLE FOR FIELD PAINTING TO MATCH WALL FINISH.

2.12 OVERCURRENT PROTECTIVE DEVICES

A. FUSES: DUAL ELEMENT, TIME DELAY, CURRENT LIMITING, NONRENEWABLE TYPE, REJECTION FEATURE. UL CLASS RK1, 1/10 TO 600 AMP, UL CLASS L, ABOVE 600 AMPS. PROVIDE FUSE PULLERS FOR COMPLETE RANGE OF FUSES. MANUFACTURERS: BUSSMANN, GOULD-SHAWMUT, LITTELFUSE, OR APPROVED.

B. MOLDED CASE CIRCUIT BREAKERS: ONE, TWO OR THREE-POLE BOLT ON, SINGLE HANDLE COMMON TRIP, RATED 15 TO 800 AMP,AS INDICATED ON DRAWINGS. OVERCENTER TOGGLE-TYPE MECHANISM, QUICK-MAKE, QUICK-BREAK ACTION. TRIP INDICATION IS BY HANDLE POSITION. CALIBRATE FOR OPERATION IN 40C AMBIENT TEMPERATURE.

2.13 CONTROL DEVICES

A. LIGHTING CONTACTORS:

1. CONTINUOUSLY RATED 20 AMP PER POLE FOR ALL TYPES OF LED LIGHTING AND RESISTANCE LOADS, DO NOT DERATE FOR USE ON HIGH-INRUSH LOADS.
2. CONTACTS: DOUBLE BREAK, SILVER-CADMIUM-OXIDE. AUXILIARY ARCING CONTACTS NOT ACCEPTABLE. CONVERTIBLE CONTACTS, N.O. OR N.C. CONTACT STATUS, N.O. OR N.C., CLEARLY VISIBLE.
3. APPROVED PER UL 508. DESIGN IN ACCORDANCE WITH NEMA ICS2-211B, RATED FOR APPLICATION TO 600 VOLT.
4. MECHANICALLY HELD CONTACTOR COIL: CONTINUOUSLY RATED AND ENCAPSULATED.
5. CONTACTOR ENCLOSURES: PROVIDE NEMA ENCLOSURE SUITABLE FOR LOCATION AND USE, FLUSH OR SURFACE MOUNT AS INDICATED ON DRAWINGS.

B. ELECTRONIC TIME SWITCHES: DOUBLE POLE, SINGLE THROW; ONE N.O. CONTACT, ONE N.C. CONTACT. 24-HOUR DIGITAL. BATTERY POWER SOURCE TO PROVIDE MINIMUM OF 3 YEARS OF MEMORY BACK-UP. EIGHT EVENT SETPOINTS. PROVIDE ENCLOSURE WITH SEPARATE HINGED DOOR, RECESSED OR SURFACE AS INDICATED ON DRAWINGS. INTERMATIC, PARAGON, TORK, SANGAMO, OR APPROVED.

C. PHOTOELECTRIC SWITCHES: HERMETICALLY SEALED LIGHT SENSITIVE ELEMENT INSTALLED IN DIECAST WEATHERPROOF ENCLOSURE. ADJUSTABLE EXTERNAL LIGHT LEVEL SLIDE. SWIVEL ADJUSTABLE ENCLOSURE. 20VAC, 1800VA, CONNECTED FOR PILOT DUTY UNLESS OTHERWISE INDICATED. PARAGON, TORK, PRECISION, OR APPROVED.

2.14 LUMINAIRES

A. LUMINAIRES: REFER TO DESCRIPTION AND MANUFACTURERS IN LUMINAIRE SCHEDULE.

B. WHERE RECESSED LUMINAIRES ARE INSTALLED IN CAVITIES INTENDED TO BE INSULATED, PROVIDE IC RATED LUMINAIRES OR OTHER CODE APPROVED INSTALLATION.

C. RECESSED LUMINAIRES: FRAME COMPATIBLE WITH THE CEILING MATERIAL INSTALLED AT THE PARTICULAR LUMINAIRE LOCATION.

D. LIGHT TRANSMITTING COMPONENTS: PRISMATIC ACRYLIC, EXTRUDED, FLAT DIFFUSERS, 0.125-INCH OVERALL THICKNESS, UNLESS OTHERWISE NOTED.

E. ALL FIXTURES TO HAVE A MINIMUM CRI OF 85.

F. ALL FIXTURES TO HAVE A MINIMUM WARRANTY OF 3 YEARS.

G. ALL FIXTURES TO BE LISTED FOR A MIN. 25 DEG C ENVIRONMENT.

2.15 LAMPS

A. LED LAMPS: SPECIFIED IN LUMINAIRE SCHEDULE, GENERAL ELECTRIC, OSRAM/SYLVANIA, PHILIPS, VENTURE OR EQUAL.

PART 3 - EXECUTION

3.1 EXAMINATION

A. DRAWINGS ARE DIAGRAMMATIC WITH SYMBOLS REPRESENTING ELECTRICAL EQUIPMENT, OUTLETS, LUMINAIRES, AND WIRING. EXAMINE THE ENTIRE SET OF DRAWINGS TO AVOID CONFLICTS WITH OTHER SYSTEMS. DETERMINE EXACT ROUTE AND INSTALLATION OF ELECTRICAL WIRING AND EQUIPMENT WITH CONDITIONS OF CONSTRUCTION.

B. CLARIFICATION:

1. THE DRAWINGS GOVERN IN MATTERS OF QUANTITY, THE SPECIFICATION IN MATTERS OF QUALITY. IN EVENT OF CONFLICT ON DRAWINGS OR IN THE SPECIFICATIONS, THE GREATER QUANTITY AND THE HIGHER QUALITY APPLY.
2. SHOULD THE ELECTRICAL DOCUMENTS INDICATE A CONDITION CONFLICTING WITH THE GOVERNING CODES AND REGULATIONS, REFRAIN FROM INSTALLING THAT PORTION OF THE WORK UNTIL CLARIFIED BY ARCHITECT.

3.2 MOTORS/APPLIANCE/UTILIZATION BRANCH CIRCUIT WIRING

A. ELECTRICAL CONNECTIONS: CONNECT EQUIPMENT, WHETHER FURNISHED BY OWNER OR OTHER DIVISIONS OF THE CONTRACT, ELECTRICALLY COMPLETE.

B. CONNECT MOTOR BRANCH CIRCUITS COMPLETE FROM PANEL TO MOTOR AS REQUIRED BY CODE AND MANNER HEREIN DESCRIBED.

C. APPLIANCE/UTILIZATION EQUIPMENT: PROVIDE APPROPRIATE CABLE AND CORD CAP FOR FINAL CONNECTION UNLESS EQUIPMENT IS PROVIDED WITH SAME. VERIFY SPECIAL PURPOSE OUTLET NEMA CONFIGURATION AND AMPERE RATING WITH EQUIPMENT SUPPLIER PRIOR TO ORDERING DEVICES AND COVERPLATES.

3.3 INSTALLATION

A. INSTALL ELECTRICAL EQUIPMENT COMPLETE AS DIRECTED BY MANUFACTURER'S INSTALLATION INSTRUCTIONS. OBTAIN INSTALLATION INSTRUCTIONS FROM MANUFACTURER PRIOR TO ROUGH-IN OF THE ELECTRICAL EQUIPMENT, EXAMINE THE INSTRUCTIONS THOROUGHLY.

B. EARTHWORK: PERFORM EXCAVATION AND BACKFILL FOR THE INSTALLATION OF ELECTRICAL WORK.

C. NOISE CONTROL: DO NOT PLACE OUTLET BOXES AT OPPOSITE SIDE OF PARTITIONS OR WALLS. BACK TO BACK. DO NOT PLACE CONTACTORS, TRANSFORMERS, STARTERS OR SIMILAR NOISE PRODUCING DEVICES ON WALLS WHICH ARE COMMON TO OCCUPIED SPACES UNLESS SPECIFICALLY CALLED FOR ON DRAWINGS. WHERE SUCH DEVICES MUST BE MOUNTED ON WALLS COMMON TO OCCUPIED SPACES, MOUNT OR ISOLATE IN SUCH A MANNER AS TO EFFECTIVELY PREVENT THE TRANSMISSION OF THEIR INHERENT NOISE TO THE OCCUPIED SPACE.

D. FIRESTOPPING: COORDINATE WITH THE DRAWINGS THE LOCATION OF FIRE RATED WALLS, CEILINGS, FLOORS, ETC. WHEN THESE ASSEMBLIES ARE PENETRATED BY ELECTRICAL EQUIPMENT, SEAL AROUND THE EQUIPMENT WITH APPROVED FIRESTOPPING MATERIAL. INSTALL FIRESTOPPING MATERIAL COMPLETE AS DIRECTED BY THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.

E. CONDUIT:

1. CONCEAL CONDUITS. EXPOSED CONDUITS ARE PERMITTED ONLY IN THE FOLLOWING AREAS: MECHANICAL ROOMS, ELECTRICAL ROOMS OR SPACES WHERE WALLS, CEILINGS AND FLOORS WILL NOT BE COVERED WITH FINISHED MATERIALS, EXISTING WALLS THAT ARE CONCRETE OR BLOCK CONSTRUCTION AND WHERE SPECIFICALLY NOTED ON THE DRAWINGS.
2. DO NOT INSTALL CONDUITS ON SURFACE OF BUILDING EXTERIOR, ACROSS ROOF, ON TOP OF PARAPET WALLS, OR ACROSS FLOORS.
3. BELOW GRADE CONDUIT AND CABLES: PLACE A MINIMUM 3-INCH COVER OF SAND OR CLEAN EARTH FILL AROUND THE CABLE OR CONDUIT ON A LEVELED TRENCH BOTTOM. LAY CONDUIT ON A SMOOTH LEVEL TRENCH BOTTOM, SO THAT CONTACT IS MADE FOR ITS ENTIRE LENGTH. REMOVE WATER FROM TRENCH BEFORE ELECTRICAL CONDUIT IS INSTALLED.
4. CONDUIT TERMINATIONS: PROVIDE CONDUITS SHOWN ON DRAWINGS WHICH TERMINATE WITHOUT BOX, PANEL, CABINET OR CONDUIT FITTING WITH CONDUIT CONNECTOR OR BUSHING.
5. CONDUIT SIZE: MINIMUM TRADE SIZE 1/2-INCH.
6. PROVIDE PULL CORD IN EMPTY CONDUITS.
7. CONDUIT USE LOCATIONS:
   a. UNDERGROUND: PVC.
   b. CAST-IN-PLACE CONCRETE, MASONRY, DAMP LOCATIONS AND SUBJECT TO MECHANICAL DAMAGE GRC OR IMC.
   c. DRY, PROTECTED: GRC, IMC, EMT.
   d. SHARP BENDS AND ELBOWS: GRC, EMT USE FACTORY ELBOWS.
   e. MOTORS, RECESSED LUMINAIRES AND EQUIPMENT CONNECTIONS SUBJECT TO MOVEMENT OR VIBRATION, USE FLEXIBLE METALLIC CONDUIT.
   f. MOTORS AND EQUIPMENT CONNECTIONS SUBJECT TO MOVEMENT OR VIBRATION AND SUBJECTED TO THE FOLLOWING CONDITIONS; EXTERIOR LOCATION, MOIST OR HUMID ATMOSPHERE, WATER SPRAY, OIL OR GREASE USE PVC COATED LIQUID TIGHT FLEXIBLE METALLIC CONDUIT.
8. BRANCH CIRCUITS: BRANCH CIRCUITS: DO NOT CHANGE THE INTENT OF THE BRANCH CIRCUITS OR CONTROLS WITHOUT APPROVAL. HOMERUNS FOR 20 AMP BRANCH CIRCUITS MAY BE COMBINED TO A MAXIMUM OF SIX CONDUCTORS IN A HOMERUN. APPLY DERATING FACTORS AS REQUIRED BY NEC 310. INCREASE CONDUCTOR SIZE AS NEEDED.

F. WIRES AND CABLES:

1. CONDUCTOR INSTALLATION: INSTALL CONDUCTORS WITH CARE TO AVOID DAMAGE TO INSULATION. DO NOT APPLY GREATER TENSION ON CONDUCTORS THAN RECOMMENDED BY MANUFACTURER DURING INSTALLATION.
2. CONDUCTOR SIZE AND QUANTITY: INSTALL NO CONDUCTORS SMALLER THAN 12AWG UNLESS OTHERWISE SHOWN. PROVIDE REQUIRED CONDUCTORS FOR A FULLY OPERABLE SYSTEM.
3. THE USE OF SHARED NEUTRALS IS NOT ACCEPTABLE FOR LIGHTING AND RECEPTACLE CIRCUITS PER THE NEC 200.4(a) UNLESS SPECIFICALLY PERMITTED IN THE NEC.

G. BOXES:

1. ANCHORING: SECURE BOXES RIGIDLY TO THE SUBSTRATE UPON WHICH THEY ARE BEING MOUNTED, OR SOLIDLY EMBED BOXES IN CONCRETE OR MASONRY.
2. PROVIDE WEATHERPROOF OUTLETS FOR LOCATIONS EXPOSED TO WEATHER OR MOISTURE.
3. CODE COMPLIANCE: COMPLY WITH NEC AS APPLICABLE TO CONSTRUCTION AND INSTALLATION OF ELECTRICAL BOXES AND FITTINGS AND SIZE BOXES ACCORDING TO NEC 370, EXCEPT AS NOTED OTHERWISE.
4. MOUNT CENTER OF OUTLET BOXES AS REQUIRED BY AMERICANS WITH DISABILITIES ACT (ADA), OR NOTED ON DRAWINGS, THE FOLLOWING DISTANCE ABOVE THE FLOOR:
   a. CONTROL SWITCHES: 48-INCHES.
   b. RECEPTACLES: 18-INCHES.
   c. TELECOM OUTLETS: 18-INCHES.
   d. OTHER OUTLETS: AS INDICATED IN OTHER SECTIONS OF SPECIFICATIONS OR AS DETAILED ON DRAWINGS.

H. PROVIDE NEC-REQUIRED DISCONNECT SWITCHES WHETHER SPECIFICALLY SHOWN ON DRAWINGS OR NOT. PROVIDE DISCONNECT SWITCH AT EACH MOTOR LOCATION WITHIN 5-FEET UNLESS OTHERWISE NOTED. COORDINATE FUSE AMPERE RATING WITH INSTALLED EQUIPMENT. FUSE AMPERE RATING VARIANCE BETWEEN ORIGINAL DESIGN INFORMATION AND INSTALLED EQUIPMENT, SIZE IN ACCORDANCE WITH BUSSMANN FUSETRON 40C RECOMMENDATIONS.

I. SUPPORTING DEVICES:

1. SAFETY FACTOR OF 4 REQUIRED FOR EVERY FASTENING DEVICE OR SUPPORT FOR ELECTRICAL EQUIPMENT INSTALLED. SUPPORT TO WITHSTAND FOUR TIMES WEIGHT OF EQUIPMENT IT SUPPORTS. BRACING TO COMPLY WITH THE SEISMIC ZONE REQUIREMENTS.
2. PROVIDE VERTICAL SUPPORT MEMBERS FOR EQUIPMENT AND LUMINAIRES, STRAIGHT AND PARALLEL TO BUILDING WALLS. PROVIDE INDEPENDENT SUPPORTS TO STRUCTURAL MEMBER FOR ELECTRICAL LUMINAIRES, MATERIALS, OR EQUIPMENT INSTALLED IN OR ON CEILING, WALLS OR IN VOID SPACES OR OVER FURRED OR SUSPENDED CEILINGS.

J. ELECTRICAL IDENTIFICATION:

1. CONDUCTOR IDENTIFICATION: APPLY MARKERS ON EACH CONDUCTOR FOR POWER, CONTROL, SIGNALING AND COMMUNICATIONS CIRCUITS.
2. PROVIDE AN ENGRAVED LABEL ON EACH MAJOR UNIT OF ELECTRICAL EQUIPMENT, INCLUDING BUT NOT LIMITED TO THE FOLLOWING ITEMS: DISCONNECT SWITCHES, RELAYS, CONTACTORS, TIME SWITCHES, OVERRIDE SWITCHES, SERVICE DISCONNECTS, DISTRIBUTION SWITCHES, BRANCH CIRCUIT PANELBOARDS, AND CENTRAL OR MASTER UNIT OF EACH ELECTRICAL SYSTEM INCLUDING COMMUNICATION/SIGNAL SYSTEMS.
3. PROVIDE ARC-FLASH HAZARD WARNING LABELS ON ALL ELECTRICAL EQUIPMENT INCLUDING SWITCHBOARDS, PANELBOARDS, MOTOR CONTROLLER, AND ANY OTHER EQUIPMENT LIKELY TO REQUIRE EXAMINATION, ADJUSTMENT, SERVICING OR MAINTENANCE WHILE ENERGIZED. THE LABELS SHALL BE LOCATED SO AS TO BE CLEARLY VISIBLE TO QUALIFIED PERSONS PRIOR TO EXAMINATION.

K. SERVICE AND DISTRIBUTION: VERIFY UTILITY REQUIREMENTS PRIOR TO BIDDING AND PROVIDE ASSOCIATED WORK REQUIRED BY LOCAL UTILITY INCLUDING BUT NOT LIMITED TO: SERVICE UNDERGROUND PRIMARY INCLUDING CONDUIT, PULL CORD, EXCAVATION AND BACKFILL. UNDERGROUND PULL VAULTS. POLE RISERS. TRANSFORMER PADS, VAULTS, ETC. SECONDARY SERVICE LATERAL INCLUDING CONDUIT, AND CONDUCTORS. GROUNDING OF TRANSFORMERS. SERVICE METERING EQUIPMENT.

L. GROUNDING:

1. PERFORMANCE REQUIREMENTS: SUPPLEMENT THE GROUNDED NEUTRAL OF THE SECONDARY DISTRIBUTION SYSTEM WITH AN EQUIPMENT GROUNDING SYSTEM TO PROPERLY SAFEGUARD THE EQUIPMENT AND PERSONNEL. INSTALL EQUIPMENT GROUNDING SUCH THAT METALLIC STRUCTURES, ENCLOSURES, RACEWAYS, JUNCTION BOXES, OUTLET BOXES, CABINETS, MACHINE FRAMES, PORTABLE EQUIPMENT AND OTHER CONDUCTIVE ITEMS IN CLOSE PROXIMITY WITH ELECTRICAL CIRCUITS OPERATE CONTINUOUSLY AT GROUND POTENTIAL AND PROVIDE A LOW IMPEDANCE PATH FOR POSSIBLE GROUND FAULT CURRENTS.
2. CONCRETE ENCASED GROUND ELECTRODE: FROM THE SERVICE EQUIPMENT GROUND BUS INSTALL GROUNDING ELECTRODE CONDUCTOR TO FOOTING FOUNDATION REBAR. BOND THE GROUNDING ELECTRODE CONDUCTOR TO TWO INDEPENDENT STEEL REBARS. EACH REBARS MINIMUM LENGTH IS 20-FEET. PROTECT GROUNDING ELECTRODE CONDUCTOR EXTENSION FROM FOOTING/FOUNDATION TO SERVICE EQUIPMENT WITH RIGID PVC CONDUIT.
3. GROUND ROD ELECTRODE: FURNISH & INSTALL 3/4" X 10' DRIVEN GROUND RODS WIRED WITH CU SIZE PER DRAWINGS MAIN PANEL OR METER CENTER PER RISER DIAGRAM.
4. WATER SERVICE GROUNDING: BOND BUILDING GROUND ELECTRODE AND WATER SERVICE PIPE TO SERVICE GROUND BUS. CONNECT TO WATER PIPE ON UTILITY SIDE OF ISOLATING FITTINGS OR METERS.
5. RACEWAY GROUNDING: GROUND METALLIC RACEWAY SYSTEMS. BOND TO GROUND TERMINAL WITH CODE SIZE JUMPER EXCEPT WHERE CODE SIZE OR LARGER GROUNDING CONDUCTOR IS INCLUDED WITH CIRCUIT, USE GROUNDING BUSHING WITH LAY-IN LUG. INSTALL GROUND BUSHINGS ON METALLIC RACEWAY TERMINATIONS IN PULL BOXES, PANELBOARDS, ETC. FOR CIRCUITS WITH OVERCURRENT PROTECTION SET AT 60 AMP AND GREATER.
6. INSTALL EQUIPMENT GROUNDING CONDUCTOR, CODE SIZE MINIMUM IN NONMETALLIC AND METALLIC RACEWAY SYSTEMS.
7. TELECOMMUNICATIONS BACKBOARD: PROVIDE TELECOMMUNICATIONS GROUNDING BAR AT EACH TELECOMMUNICATIONS BACKBOARD. BOND THE GROUNDING BAR TO SERVICE GROUNDING BAR IN THE MAIN SERVICE EQUIPMENT WITH A 6AWG COPPER EQUIPMENT GROUNDING CONDUCTOR.
8. MOTORS, EQUIPMENT AND APPLIANCES: INSTALL CODE SIZED EQUIPMENT GROUNDING CONDUCTOR FROM OUTLET BOX TO (MOTOR) EQUIPMENT FRAME OR MANUFACTURER'S DESIGNATED GROUND TERMINAL.
9. RECEPTACLES: CONNECT GROUND TERMINAL OF RECEPTACLE TO EQUIPMENT GROUND SYSTEM BY NO. 14 CONDUCTOR BOLTED TO OUTLET BOX. SELF GROUNDING NATURE OF RECEPTACLE DEVICES DOES NOT ELIMINATE CONDUCTOR BOLTED TO OUTLET BOX.

PROJECT TITLE:

MiniLuxe

DRAWING TITLE:
ELECTRICAL SPECIFICATIONS
(01 OF 02)

PERMIT DWG DATE:	PROJECT NUMBER:
-/--/-	25-01-020
DRAWN BY: NYE	CHECKED BY: NYE

DRAWING NUMBER:

E002

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ELECTRICAL SPECIFICATIONS:

M. SWITCHBOARDS:

1. INSTALL EQUIPMENT COMPLETE AS DIRECTED BY MANUFACTURER'S INSTALLATION INSTRUCTIONS.

2. INSTALL EQUIPMENT IN CONFORMANCE WITH WORK SPACE REQUIREMENTS OF NEC 110-26. LOCATE EQUIPMENT IN ROOMS OR SPACES DEDICATED TO SUCH EQUIPMENT, NEC 408.2. COORDINATE WITH OTHER DIVISIONS OF WORK.

3. FLUSH PANELS; VERIFY AVAILABLE RECESSING DEPTH AND COORDINATE WALL FRAMING WITH OTHER DIVISIONS. PROVIDE ONE SPARE CONDUIT FROM PANEL TO ACCESSIBLE SPACE ABOVE AND BELOW THE PANEL. MAINTAIN FIRE RATING OF WALL.

N. FUSES: FOR EACH CLASS AND AMPERE RATING OF FUSE INSTALLED, PROVIDE 3 SPARE FUSES.

O. CONTROL DEVICES:

1. INSTALL TIME SWITCHES AND OTHER AUTOMATIC CONTROL DEVICES IN ACCESSIBLE LOCATIONS NEAR THE SOURCE OF POWER OR GROUPED AT A COMMON LOCATION IN MECHANICAL ROOMS OR SIMILAR SPACES.

2. INSTALL PHOTOELECTRIC CONTROL DEVICES AT SUCH LOCATIONS AS NECESSARY TO BE MOST EFFECTIVE. AVOID LOCATING PHOTOELECTRIC DEVICES IN OR AT LOCATIONS WHERE THEY CAN BE INFLUENCED BY OTHER THAN NATURAL LIGHT OR UNDER EAVES. VERIFY LOCATION OF EQUIPMENT WITH ARCHITECT.

P. LIGHTING:

1. INSTALL LUMINAIRE OF TYPES INDICATED WHERE SHOWN AND AT INDICATED HEIGHTS; IN ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS AND WITH RECOGNIZED INDUSTRY PRACTICES.

2. AVOID INTERFERENCE WITH AND PROVIDE CLEARANCE FOR EQUIPMENT. WHERE THE INDICATED LOCATIONS FOR THE LUMINAIRES CONFLICT WITH THE LOCATIONS FOR EQUIPMENT, CHANGE THE LOCATIONS FOR THE LUMINAIRE AS DIRECTED BY ARCHITECT.

3. SUSPENDED LUMINAIRES: MOUNTING HEIGHTS INDICATE THE CLEARANCES BETWEEN THE BOTTOM OF THE LUMINAIRE AND THE FINISHED FLOORS.

4. SUPPORT LUMINAIRES: ANCHOR SUPPORTS TO THE STRUCTURAL SLAB OR TO STRUCTURAL MEMBERS WITHIN A PARTITION, OR ABOVE A SUSPENDED CEILING.

5. PROVIDE RECESSED LUMINAIRES WITH TWO SUPPORT WIRES AS REQUIRED BY IBC.

6. PROVIDE LIGHTING INDICATED ON DRAWINGS WITH A LUMINAIRE OF THE TYPE DESIGNATED AND APPROPRIATE FOR THE LOCATION. WHERE OUTLET SYMBOLS APPEAR ON DRAWINGS WITHOUT A TYPE DESIGNATION PROVIDE A LUMINAIRE THE SAME AS THOSE USED IN SIMILAR OR LIKE LOCATIONS.

3.4 FIELD QUALITY CONTROL

A. TESTS: CONDUCT TESTS OF EQUIPMENT AND SYSTEMS TO DEMONSTRATE COMPLIANCE WITH REQUIREMENTS. REFER TO INDIVIDUAL SPECIFICATION SECTIONS FOR REQUIRED TESTS. DOCUMENT TESTS AND INCLUDE IN CLOSEOUT DOCUMENTS.

B. VERIFY ELECTRICAL CHARACTERISTICS OF EQUIPMENT PRIOR TO INSTALLATION OF CONDUITS AND WIRING FOR EQUIPMENT.

C. COORDINATE HVAC VOLTAGE REQUIREMENTS WITH DRAWINGS AND EQUIPMENT SUBMITTALS PRIOR TO ROUGH-IN.

D. WIRING DEVICE TESTS: TEST WIRING DEVICES TO ENSURE ELECTRICAL CONTINUITY OF GROUNDING CONNECTIONS AND AFTER ENERGIZING CIRCUITRY, TO DEMONSTRATE COMPLIANCE WITH REQUIREMENTS. TEST RECEPTACLES NEUTRAL, LINE TO GROUND AND NEUTRAL TO GROUND FAULTS. CORRECT DEFECTIVE WIRING.

E. VERIFICATION OF CONDITIONS: VERIFY CEILING CONSTRUCTION, RECESSING DEPTH AND OTHER CONSTRUCTION DETAILS PRIOR TO RELEASE OF LUMINAIRE FOR SHIPMENT.

3.5 CLEANING

A. REMOVE DIRT AND DEBRIS CAUSED BY THE EXECUTION OF THE ELECTRICAL WORK. LEAVE THE ENTIRE ELECTRICAL SYSTEM INSTALLED IN CLEAN, DUST-FREE AND PROPER WORKING ORDER.

B. THOROUGHLY CLEAN THE EXTERIOR AND THE INTERIOR OF EACH SWITCHBOARD AND PANELBOARD IN ACCORDANCE WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS.

C. WHERE FINISH OF LUMINAIRES OR ENCLOSURES IS DAMAGED, TOUCH UP FINISH WITH MATCHING PAINT IN ACCORDANCE TO MANUFACTURER'S SPECIFICATIONS AND INSTALLATION INSTRUCTIONS.

D. CLEAN PAINT SPLATTERS, DIRT, DUST, FINGERPRINTS, AND DEBRIS FROM LUMINAIRES.

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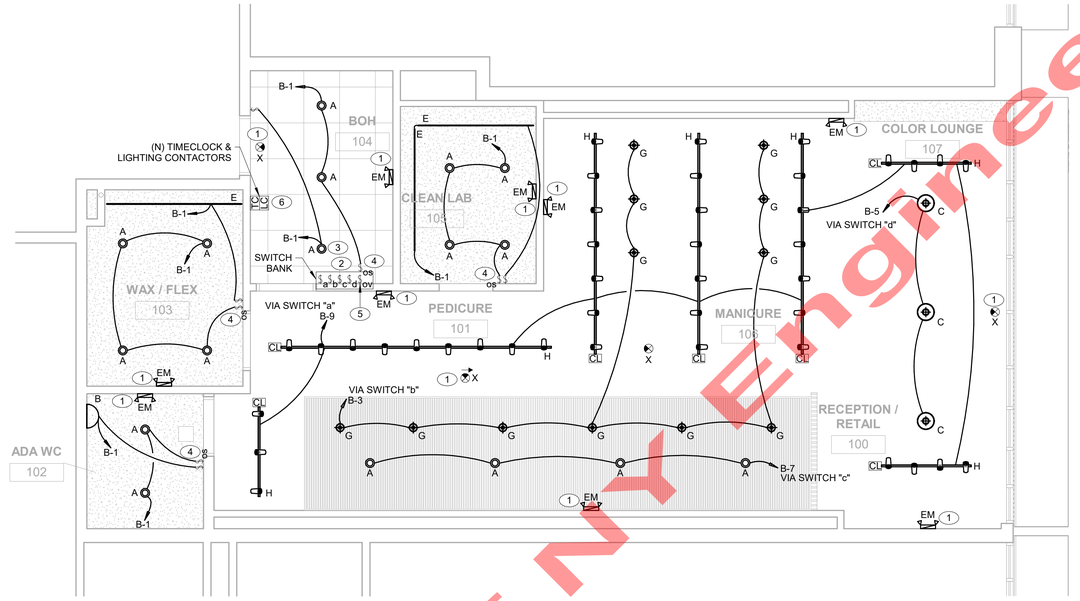
DRAWING TITLE:
ELECTRICAL SPECIFICATIONS
(02 OF 02)

PERMIT DWG DATE:	PROJECT NUMBER:
-/--/-	25-01-020
DRAWN BY:	CHECKED BY:
NYE	NYE

DRAWING NUMBER:

E003

LEGEND:
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LIGTHING PLAN 1/4" = 1'-0" A

TAG	MANUFACTURER	CATALOG NUMBER	DESCRIPTION	LAMP TYPE	VOLTAGE	WATT
A	LUMENTURE	TBD	RECESSED DOWNLIGHT	LED	120 V	12 VA
B	REJUVENATION	TRASK LED LINEAR SCONCE	RESTROOM WALL SCONCE	LED	120 V	20 VA
C	TOM DIXON	45CM COPPER ROUND PENDANT	LARGER PENDANT	E26	120 V	40 VA
E	COLUMBIA LIGHTING	TBD	MULTPURPOSE LINEAR STRIP	LED	120 V	5 VA/FT
EM	COMPASS	CU2HL	EMERGENCY LIGHT	LED	120 V	5 VA
G	LINDSLEY	TBD	PENDANT DECORATIVE	LED	120 V	10 VA
H	CONTEC	CTL84C2M27CD-P	TRACK LIGHT	LED	120 V	14 VA
X	COMPASS	CCESRE	EXIT SIGN	LED	120 V	3 VA

LIGHTING FIXTURE SCHEDULE NTS D

LIGHTING FIXTURE SCHEDULE NOTES:

1. REFER TO ARCHITECTURAL DRAWINGS FOR FINAL LIGHTING FIXTURE SCHEDULES AND EXACT FIXTURE LOCATIONS.
2. ALL COLOURS, TRIMS, AND FINISH SHALL BE APPROVED BY ARCHITECT/INTERIOR DESIGNER(S).
3. ALL TRIMS AND INSTALLATION REQUIREMENTS SHALL BE COORDINATED WITH THE CEILING TYPE IN WHICH IT IS TO BE INSTALLED. REFER TO ARCHITECTURAL REFLECTED CEILING PLANS FOR EXACT CEILING TYPE FOR WHICH THE FIXTURE IS TO BE INSTALLED.
4. ALL LIGHT FIXTURE SHALL BE ON 120V.
5. ALL ILLUMINATED EXIT SIGNS TO HAVE A MAX WATTAGE OF 5 PER SIDE.

GENERAL NOTES - LIGTHING PLAN NTS C

A. CONFIRM LIGHTING FIXTURE QUANTITIES WITH SUPPLIER.

B. EMERGENCY AND NORMAL LIGHTING MARKED WITH LIGHT TAG "EM" SUBSCRIPT SHALL OPERATE CONTINUOUSLY.

C. CONTRACTOR TO FIELD VERIFY CEILING TYPE AND PROVIDE PROPER MOUNTING HARDWARE.

D. ALL EXTERIOR NON-EMERGENCY LIGHT FIXTURES, BUILDING SIGNS, AND EXTERIOR SIGNS SHALL BE CONTROLLED THROUGH TIME CLOCK/PHOTO CELL.

E. CONTRACTOR SHALL PROVIDE DIMMING SYSTEM WHEN REQUIRED BY LOCAL ENERGY CODE. BASE BID ACCORDINGLY.

F. ELECTRICAL CONTRACTOR SHALL COORDINATE WITH ARCHIECT/OWNER FOR FINAL LIGHT FIXTURE AND MODEL PRIOR TO ROUGH-IN.

G. ELECTRICAL CONTRACTOR SHALL PROVIDE ADDITIONAL LIGHTING CONTROLS AS PER AHJ REQUIREMENTS IF ANY TO COMPLETE THE PERMIT REQUIREMENTS.

H. ALL DIMMING SWITCHES SHALL BE 0-10V.

I. THE SUSPENSION OF ANY ITEMS FROM BASE BUILDING STRUCTURE BY MEANS OF DRILLING, WELDING, SHOOTING ARE PROHIBITED. CONTRACTOR TO MAKE SURE ALL THE EQUIPMENTS, CONDUITS, CABLE TRAYS TO BE SUPPORTED BY MEANS OF THE BEAM CLAMPS.

J. COORDINATE EXACT LOCATION AND MOUNTING HEIGHTS WITH ARCHITECTURAL PLANS. REFER TO ARCHITECTURAL REFLECTED CEILING PLANS, DETAILS, AND LIGHTING NOTES FOR FURTHER INFORMATION OF DEVICE PLACEMENT AND OTHER RELEVANT INFORMATION.

K. EMERGENCY AND EXIT LIGHTS SHALL BE INSTALLED AND CIRCUITED PER THE LATEST NATIONAL ELECTRIC CODE AND ALL LOCAL CODES UNSWITCHED AHEAD OF ALL LIGHTING CONTROLS. ALL EMERGENCY AND EXIT FIXTURES SHALL BE DUAL VOLTAGE (120/277 VOLT INPUT) WITH 90 MINUTE BATTERY BACK UP.

L. LOWER CASE LETTERS IN LIGHTING FIXTURES AND ADJACENT TO SWITCHES IN EACH INDIVIDUAL ROOM/AREA INDICATE WHICH LIGHT FIXTURE IS TO BE CONTROLLED FROM EACH CORRESPONDING SWITCH IN THAT ROOM/AREA.

M. ALL CONTROL CABLING PROVIDED AS A PART OF ANY LIGHTING CONTROL SYSTEM SHALL BE PLENUM RATE.

N. PROVIDE ALL LIGHTING CONTROLS COMPLYING WITH ALL APPLICABLE CODES AND LOCAL AUTHORITY REQUIREMENTS.

O. COORDINATE FINAL FIXTURE MAKE, WATTAGE, AND MODEL WITH ARCHITECT.

P. ALL ILLUMINATED EXIT SIGNS TO HAVE A MAX WATTAGE OF 5 PER SIDE.

Q. AUTOMATIC LIGHTING CONTROLS: OCCUPANCY SENSOR SHALL BE CAPABLE OF TURNING OFF LIGHTS WITHIN 20 MINUTES OF ALL OCCUPANTS LEAVING THE SPACE.

KEY NOTES - LIGHTING PLAN NTS B

1. EMERGENCY FIXTURE SHALL BE PROVIDED WITH INTEGRAL 90-MINUTE MINIMUM BATTERY BACKUP. WIRE ALL NEW EMERGENCY AND EXIT LIGHT TO LIGHTING CIRCUIT AHEAD OF ALL CONTROL & SWITCHING FOR CONTINUOUS OPERATIONS. PROVIDE CIRCUITING FROM NEARBY LIGHTING CIRCUIT.
2. ELECTRICAL CONTRACTOR TO COORDINATE THE FINAL LOCATION OF DIMMER SWITCH BANK WITH ARCHITECT/OWNER. DIMMER SWITCHES SHALL BE RATED FOR A TOTAL LOAD OF SWITCHED CIRCUIT AND LAMP TYPE AS REQUIRED. DIMMERS SHALL BE PROVIDED WITH AN ON/OFF SWITCH. CONFIRM SWITCHBANK WILL FIT WITHIN THIS DESIGNATED AREA AND STACK MULTIPLE SWITCHBANK AT THIS LOCATION IF A SINGLE SWITCHBANK WILL NOT FIT WITHIN THIS DESIGNATED AREA.
3. THIS LIGHT FIXTURE SHALL NOT BE CONTROLLED BY AUTOMATIC MEANS ONLY AS PER NEC 110.26(D).
4. PROVIDE WALL MOUNTED DUAL TECHNOLOGY OCCUPANCY SENSOR SWITCH. CONTRACTOR TO COORDINATE WITH OWNER/EQUIPMENT VENDOR FOR EXACT LOCATION AND REQUIREMENTS PRIOR TO ROUGH-INS.
5. COORDINATE THE EXACT LOCATION OF OVERRIDE SWITCH WITH ARCHITECT/OWNER IN FIELD.
6. ELECTRICAL CONTRACTOR SHALL FIELD VERIFY OPERABLE CONDITION AND EXACT LOCATION OF EXISTING TIME CLOCK AND LIGHTING CONTACTOR. REUSE IF POSSIBLE OTHEWISE PROVIDE NEW AS SHOWN/AS REQUIRED. COORDINATE EXACT REQUIREMENT WITH ARCHITECT/OWNER PRIOR TO ROUGH-IN. BASE BID ACCORDINGLY.

FIELD VERIFY ALL CONDITIONS

THESE DRAWINGS ARE SCHEMATIC AND BASED ON INFORMATION PROVIDED TO APPLIED ENGINEERING AT THE TIME OF DESIGN.

THEREFORE, VERIFY ALL EXISTING CONDITIONS INCLUDING BUT NOT LIMITED TO; SERVICE LOCATION, SERVICE LAYOUTS, SECONDARY FEEDER LENGTH, TELEPHONE SERVICE LOCATION, ETC. AND REPORT AND DISCREPANCIES TO THE ARCHITECT PRIOR TO BID. FAILURE TO DO SO MAY CONSTITUTE THAT THE CONTRACTOR PROVIDE AT NO COST TO THE OWNER ANY AND ALL ADDITIONAL EQUIPMENT, LABOR, ETC. TO MEET THE INTENDED DESIGN PARAMETERS.

THE CONTRACT SHALL INCLUDE ALL LABOR AND MATERIALS NECESSARY FOR FIELD MODIFICATIONS DUE TO EXISTING CONDITIONS.

CONTACT THE ARCHITECT, ENGINEER OR OWNER PRIOR TO BIDDING FOR INTERPRETATIONS AND CLARIFICATIONS OF THE DESIGN AND INCLUDE IN BID ALL COSTS TO MEET THE DESIGN INTENT.CLARIFICATIONS MADE BY THE ARCHITECT, ENGINEER OR OWNER AFTER BIDDING WILL BE FINAL AND SHALL BE IMPLEMENTED AT CONTRACTOR'S COST.

BIDDING CONTRACTORS SHALL HAVE A WORKING KNOWLEDGE OF LOCAL CODES AND ORDINANCES AND SHALL INCLUDE IN THEIR BIDS THE COSTS FOR ALL WORK INSTALLED IN STRICT ACCORDANCE WITH GOVERNING CODES, THE PLANS AND SPECIFICATIONS NOT WITHSTANDING. THE CONTRACTOR SHALL ALERT ARCHITECT, ENGINEER OR OWNER OF ANY APPARENT DISCREPANCIES BETWEEN GOVERNING CODES AND DESIGN INTENT.

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PROJECT TITLE:

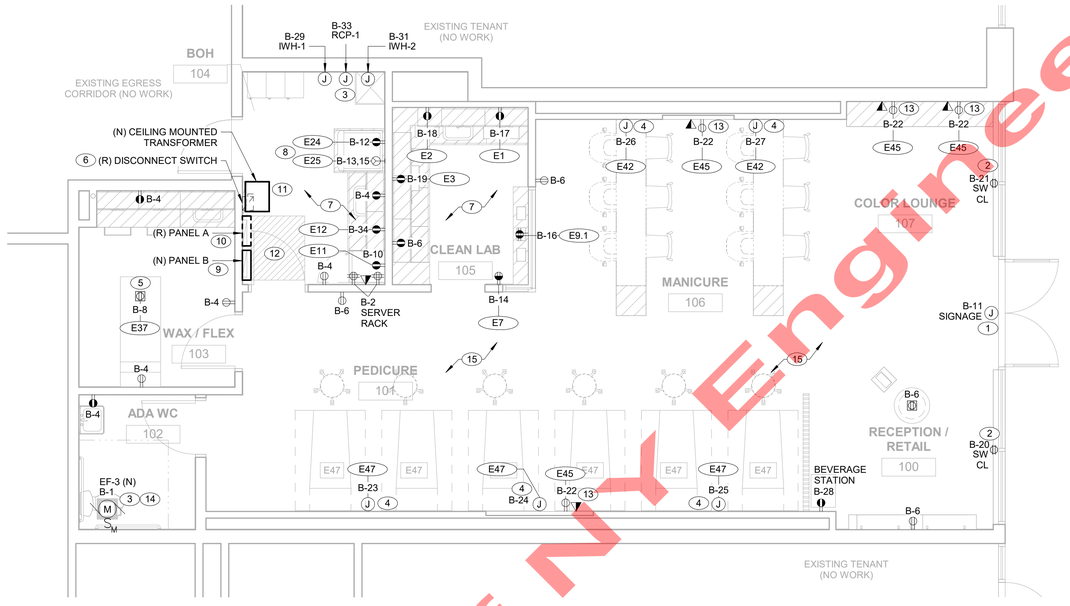
MiniLuxe

DRAWING TITLE:
LIGHTING PLAN

PERMIT DWG DATE:	PROJECT NUMBER:
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NYE	NYE

DRAWING NUMBER:

E100



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FIELD VERIFY ALL CONDITIONS

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ELECTRICAL POWER PLAN 1/4" = 1'-0" A

ELECTRICAL EQUIPMENT SCHEDULE

ITEM NO.	QTY.	EQUIPMENT DISCRIPTION	ELECRTICAL					MANUFACTURER/SUPPLIER	MODEL NUMBER
			VOLTS	PHASE	AMPS	KW	NEMA		
E1	1	ULTRASONIC CLEANER	120	1	1.5	0.18	NEMA 5-15P	SONICLEAN	M250
E2	1	SPA TOWEL WARMER	120	1	2.67	0.32	NEMA 5-15P	PARAGON	HC202
E3	1	STEAM STERILIZER	120	1	12	1.44	NEMA 5-15P	RITTER	M11
E7	1	TABLET	120	1	1.5	0.18	NEMA 5-15P	WALL-SMART	002-1-616-BL
E9.1	3	GEL SHAKERS	120	1	12.5	1.5	-	EM DESIGN	-
E11	1	EMPLOYEE FRIDGE	120	1	1.5	0.18	NEMA 5-15P	SUMMIT	FF83PL
E12	1	MICROWAVE	120	1	6.67	0.8	NEMA 5-15P	GE	PEM31DF (WHITE)
E24	1	WASHER	120	1	7	0.84	NEMA 5-15P	LG ELECTRONICS	GCWM1069
E25	1	DRYER	208	1	21	4.37	NEMA 6-30P	LG ELECTRONICS	GDL1329CES7
E37	1	WAX BED	120	1	2.7	0.32	-	OAKWORKS	PROLUXE LIFT ASSIST SALONTOP
E42	2	MANICURE STATION	120	1	4.5	0.54	-	DESIGNX	-
E45	4	TV MONITOR	120	1	1.5	0.18	NEMA 5-15P	SAMSUNG	6401722
E47	3	PEDICURE BENCHES (DOUBLE)	120	1	9.5	1.14	-	DESIGNX	-

NOTES:

1. THE CONTRACTOR SHALL COORDINATE THE EXACT RECEPTACLE TYPE AND POWER REQUIREMENT FOR EQUIPMENT WITH THE VENDOR/MANUFACTURER AND THE EXACT MOUNTING HEIGHT WITH THE ARCHITECT.
2. ALL EQUIPMENT SHALL BE PROVIDED WITH THE REQUIRED ROUGH-INS, MOCP, AND WIRE SIZE REQUIREMENTS. THE ELECTRICAL CONTRACTOR MUST COORDINATE WITH THE MANUFACTURER FOR THE EXACT TYPE OF ROUGH-INS AND WIRE SIZE FOR THE WORK COMMENCEMENT.

ELECTRICAL EQUIPMENT SCHEDULE NTS D

1. COORDINATE ALL DEVICE LOCATIONS AND MOUNTING HEIGHTS WITH THE FURNITURE VENDOR PRIOR TO INSTALLATION. RECEPTACLES SHALL BE INSTALLED PER ANSI A117.1.
2. ELECTRICAL CONTRACTOR SHALL COORDINATE WITH OTHER TRADE CONTRACTORS FOR EXACT LOCATION AND POWER REQUIREMENT OF THE EQUIPMENT FROM OTHER TRADES. PROVIDE WIRING AND CONTROLS AS REQUIRED (IF NOT PROVIDED BY THEM), PRIOR TO BID. BASE BID ACCORDINGLY.
3. ALL THE RECEPTACLES SHALL BE RATED PER CIRCUIT. E.C. SHALL VERIFY AND MAKE FINAL CONNECTIONS ACCORDINGLY.
4. ELECTRICAL CONTRACTOR SHALL PROVIDE TYPED PANEL DIRECTORY FOR ALL THE ELECTRICAL PANELS AS PER NEC 408.4(A).
5. THE ENTIRE ELECTRICAL INSTALLATION SHALL COMPLY WITH THE NEC AND ALL STATE AND LOCAL CODES.
6. ALL 125-VOLT RECEPTACLES SUPPLIED BY SINGLE-PHASE BRANCH CIRCUITS RATED 150 VOLTS OR LESS TO GROUND, 50 AMPERES OR LESS, AND ALL RECEPTACLES SUPPLIED BY THREE-PHASE BRANCH CIRCUITS RATED AT 150 VOLTS OR LESS TO GROUND, 100 AMPERES OR LESS, INSTALLED IN THE LOCATIONS SPECIFIED IN 210.8(B) SHALL HAVE GFI PROTECTION. IF GFI RECEPTACLE IS NOT READILY ACCESSIBLE THEN PROVIDE THE GFI BREAKER IN PANELS.
7. ELECTRICAL CONTRACTOR SHALL VERIFY ALL CONNECTION REQUIREMENTS FOR ALL EQUIPMENT SUPPLIED BY OTHERS PRIOR TO ROUGH-IN. COORDINATE NEMA PLUG CONFIGURATION FOR EQUIPMENT AND PROVIDE MATCHING RECEPTACLE WHERE APPLICABLE.
8. ALL EXTERIOR DISCONNECTS SHALL BE WEATHERPROOF.
9. PROVIDE GROUNDING IN ACCORDANCE WITH NEC 250. PROVIDE A #6 CU GROUND TO ANY NEW METAL GAS PIPING SYSTEMS. FINAL CONNECTION TO ALL HARD-WIRED EQUIPMENT SHALL BE MADE WITH LIQUID-TITE FLEXIBLE CONDUIT.
10. ELECTRICAL CONTRACTOR SHALL PROVIDE ROUGH-IN FOR ALL LOW VOLTAGE CABLING. COORDINATE WITH LOW VOLTAGE CONTRACTOR.
11. ALL SLAB AND WALL PENETRATION TO USE FM APPROVED FIRE CAULK.
12. ALL BUILDING CORE ELECTRIC ROOMS AND PANELBOARDS SHALL BE CLEANED OF ALL DUST AND DEBRIS UPON COMPLETION OF WORK.
13. ALL ELECTRICAL OUTLETS WITHIN THE LEASED PREMISE WILL BE PROPERLY LABELED TO REFLECT ELECTRICAL PANEL AND BREAKER NUMBERS FROM ELECTRICAL ROOM.
14. TAMPER RESISTANT RECEPTACLES SHALL BE PROVIDED FOR RECEPTION DESK AS PER NEC 406.12.
15. PROVIDE PLENUM RATED WIRING WHERE REQUIRED. COMPLY WITH NEC 300.22.
16. ELECTRICAL CONTRACTOR TO VERIFY THAT ALL GFCI RECEPTACLES SHALL BE INSTALLED IN A READILY ACCESSIBLE LOCATION IF NOT A GFCI CIRCUIT BREAKER SHALL USED TO FEED THE CIRCUIT AS NOTED. PROVIDE THE PROVISION ACCORDINGLY.
17. PROVIDE A LOCAL DISCONNECT WITHIN SIGHT OF APPLIANCES OVER 300 VA OR 1/8 HP FOR HARD WIRED CONNECTIONS, OR USE A LOCKABLE BRANCH CIRCUIT BREAKER PER NEC 422.31(B) AND 110.25.

GENERAL NOTES - ELECTRICAL POWER PLAN NTS C

1. JUNCTION BOX WITH TOGGLE DISCONNECT PER NEC FOR EXTERIOR SIGNAGE. THE ELECTRICAL CONTRACTOR SHALL VERIFY THE EXACT LOCATION, MOUNTING HEIGHT AND CONNECT TO THE SIGN PER THE MANUFACTURER'S INSTRUCTIONS. ROUTE CIRCUIT TO PANEL VIA EXTERIOR LIGHTING/SIGNAGE'S TIME CLOCK AS REQUIRED.
2. ELECTRICAL CONTRACTOR SHALL FIELD VERIFY THE OPERABLE CONDITION OF EXISTING SHOW WINDOW RECEPTACLE, REUSE IF POSSIBLE OTHERWISE PROVIDE NEW SHOW WINDOW RECEPTACLE AS PER NEC 210.62 AS REQUIRED. ELECTRICAL CONTRACTOR TO COORDINATE WITH ARCHITECT/OWNER FOR EXACT HEIGHT AND LOCATION PRIOR TO ROUGH-IN.
3. ALL PLUMBING & MECHANICAL EQUIPMENT SHALL BE PROVIDED WITH THE REQUIRED ROUGH-INS, MOCP, AND WIRE SIZE REQUIREMENTS. THE ELECTRICAL CONTRACTOR MUST COORDINATE WITH THE MANUFACTURER FOR THE EXACT TYPE OF ROUGH-INS AND WIRE SIZE BEFORE THE COMMENCEMENT OF WORK.
4. PROVIDE JUNCTION BOX FOR MANICURE/PEDICURE STATIONS. ELECTRICAL CONTRACTOR SHALL COORDINATE WITH THE VENDOR/ OWNER/ FOR THE EXACT LOCATION AND POWER REQUIREMENT BEFORE COMMENCING ANY WORK. GET THE FINAL CUT-SHEET OF THE PEDICURE/MANICURE STATIONS EQUIPMENTS AND MAKE POWER PROVISION PER CUT-SHEET. BASE BID ACCORDINGLY.
5. FLOOR MOUNTED OUTLET FOR WAX TABLE. ELECTRICAL CONTRACTOR SHALL COORDINATE WITH THE VENDOR/OWNER FOR THE EXACT LOCATION AND POWER REQUIREMENT OF MOTORIZED WAX TABLE BEFORE COMMENCING ANY WORK. GET THE FINAL CUT-SHEET OF THE WAX TABLE AND MAKE POWER PROVISION PER CUT-SHEET. BASE BID ACCORDINGLY.
6. EXISTING 100A, 277/480V, 3-PHASE, 4-WIRE DISCONNECT SWITCH TO REMAIN. ELECTRICAL CONTRACTOR SHALL RELOCATE TO NEW LOCATION AS SHOWN ON PLAN AND RUN/EXTEND ALL EXISTING WIRING AND CONDUIT TO NEW LOCATION. ELECTRICAL CONTRACTOR TO FIELD VERIFY THE EXACT RATING, VOLTAGE, PHASE, LOCATION & OPERABLE CONDITION OF DISCONNECT SWITCH; PROVIDED NEW IF FOUND INOPERABLE. BASE BID ACCORDINGLY.
7. ELECTRICAL CONTRACTOR SHALL VERIFY EXACT POWER REQUIREMENTS WITH THE OWNER/ARCHITECT/MANUFACTURER PRIOR TO ROUGH-IN. PROVIDE THE OUTLET AS PER EQUIPMENT CUTSHEET. BASE BID ACCORDINGLY.
8. WASHER AND DRYER. ELECTRICAL CONTRACTOR SHALL VERIFY EXACT LOCATION AND POWER REQUIREMENTS WITH THE OWNER/ARCHITECT/MANUFACTURER PRIOR TO ROUGH-IN. PROVIDE THE OUTLET AS PER EQUIPMENT CUT SHEET. BASE BID ACCORDINGLY.
9. NEW 100A (MCB), 120/208V, 3-PHASE, 4-WIRE ELECTRICAL PANEL "B" FOR THE PROJECT SPACE. ELECTRICAL CONTRACTOR TO COORDINATE WITH ARCHITECT/ OWNER FOR EXACT LOCATION. BASE BID ACCORDINGLY.
10. EXISTING 125A (MLO), 277/480V, 3-PHASE, 4-WIRE ELECTRICAL PANEL "A" TO REMAIN. ELECTRICAL CONTRACTOR SHALL RELOCATE TO NEW LOCATION AS SHOWN ON PLAN AND RUN/EXTEND ALL EXISTING WIRING AND CONDUIT TO NEW LOCATION. ELECTRICAL CONTRACTOR TO FIELD VERIFY THE EXACT RATING, VOLTAGE, PHASE, LOCATION & OPERABLE CONDITION OF THE PANEL; PROVIDED NEW IF FOUND INOPERABLE. BASE BID ACCORDINGLY.
11. NEW 30KVA CEILING MOUNTED STEP-DOWN TRANSFORMER FOR THE PROJECT SPACE. ELECTRICAL CONTRACTOR SHALL VERIFY IN FIELD EXACT LOCATION WITH ARCHITECT/OWNER PRIOR TO ROUGH IN. BASE BID ACCORDINGLY.
12. ELECTRICAL CONTRACTOR SHALL MAINTAIN CLEARANCE FOR ELECTRICAL PANEL AND TRASNFORER PER NEC 110.26 (A) (1).
13. INSTALL RECEPTACLE AND DATA OUTLET BOX WITH PULL STRING FOR AUDIO/VISUALDISPLAY. COORDINATE EXACT LOCATION AND MOUNTING HEIGHT WITH G.C. PRIOR TO ROUGH-IN.
14. NEW EXHAUST FAN EF-3 (N) INTERLOCKED WITH LIGHT SWITCH/OCCUPANCY SENSRO. SEE MECHANICAL DRAWINGS FOR MORE INFORMATION AND SPECIFICATIONS.
15. CONTRACTOR TO COORDINATE WITH LOW VOLTAGE VENDOR FOR EXACT LV DEVICE LOCATIONS AND REQUIREMENTS PRIOR TO ROUGH-INS. PROVIDE CONNECTIONS AS REQUIRED. BASE BID ACCORDINGLY.

KEY NOTES - ELECTRICAL POWER PLAN NTS B

PROJECT TITLE:

MiniLuxe

DRAWING TITLE:
ELECTRICAL POWER PLAN

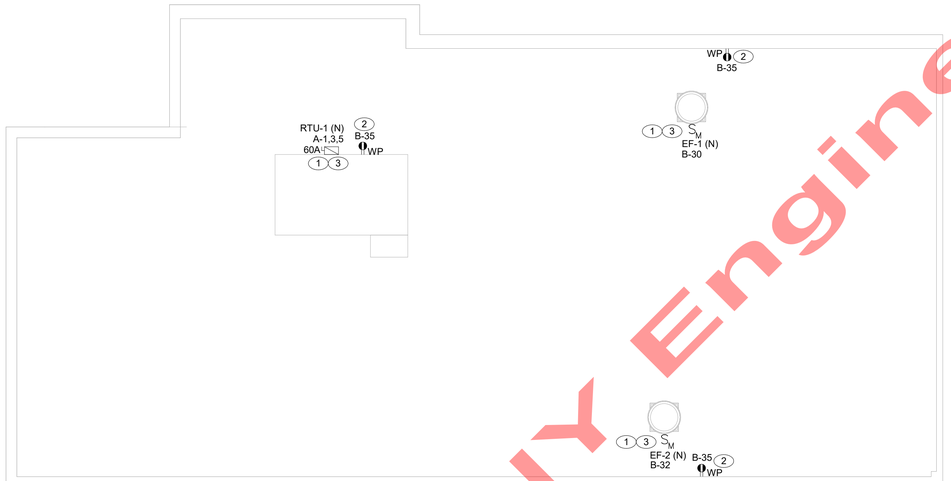
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NYE	NYE

DRAWING NUMBER:

E200

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LEGEND:
———— NEW
- - - - - EXISTING



FIELD VERIFY ALL CONDITIONS

THESE DRAWINGS ARE SCHEMATIC AND BASED ON INFORMATION PROVIDED TO APPLIED ENGINEERING AT THE TIME OF DESIGN.

THEREFORE, VERIFY ALL EXISTING CONDITIONS INCLUDING BUT NOT LIMITED TO; SERVICE LOCATION, SERVICE LAYOUTS, SECONDARY FEEDER LENGTH, TELEPHONE SERVICE LOCATION, ETC. AND REPORT AND DISCREPANCIES TO THE ARCHITECT PRIOR TO BID. FAILURE TO DO SO MAY CONSTITUTE THAT THE CONTRACTOR PROVIDE AT NO COST TO THE OWNER ANY AND ALL ADDITIONAL EQUIPMENT, LABOR, ETC. TO MEET THE INTENDED DESIGN PARAMETERS.

THE CONTRACT SHALL INCLUDE ALL LABOR AND MATERIALS NECESSARY FOR FIELD MODIFICATIONS DUE TO EXISTING CONDITIONS.

CONTACT THE ARCHITECT, ENGINEER OR OWNER PRIOR TO BIDDING FOR INTERPRETATIONS AND CLARIFICATIONS OF THE DESIGN AND INCLUDE IN BID ALL COSTS TO MEET THE DESIGN INTENT.CLARIFICATIONS MADE BY THE ARCHITECT, ENGINEER OR OWNER AFTER BIDDING WILL BE FINAL AND SHALL BE IMPLEMENTED AT CONTRACTOR'S COST.

BIDDING CONTRACTORS SHALL HAVE A WORKING KNOWLEDGE OF LOCAL CODES AND ORDINANCES AND SHALL INCLUDE IN THEIR BIDS THE COSTS FOR ALL WORK INSTALLED IN STRICT ACCORDANCE WITH GOVERNING CODES, THE PLANS AND SPECIFICATIONS NOT WITHSTANDING. THE CONTRACTOR SHALL ALERT ARCHITECT, ENGINEER OR OWNER OF ANY APPARENT DISCREPANCIES BETWEEN GOVERNING CODES AND DESIGN INTENT.

ELECTRICAL POWER PLAN - ROOF 1/4" = 1'-0" **A**

1. COORDINATE ALL DEVICE LOCATIONS AND MOUNTING HEIGHTS WITH THE FURNITURE VENDOR PRIOR TO INSTALLATION. RECEPTACLES SHALL BE INSTALLED PER ANSI A117.1.
2. ELECTRICAL CONTRACTOR SHALL COORDINATE WITH OTHER TRADE CONTRACTORS FOR EXACT LOCATION AND POWER REQUIREMENT OF THE EQUIPMENT FROM OTHER TRADES. PROVIDE WIRING AND CONTROLS AS REQUIRED (IF NOT PROVIDED BY THEM), PRIOR TO BID. BASE BID ACCORDINGLY.
3. ALL THE RECEPTACLES SHALL BE RATED PER CIRCUIT. ELECRICAL CONTRACTOR SHALL VERIFY AND MAKE FINAL CONNECTIONS ACCORDINGLY.
4. ELECTRICAL CONTRACTOR SHALL PROVIDE TYPED PANEL DIRECTORY FOR ALL THE ELECTRICAL PANELS AS PER NEC 408.4(A).
5. THE ENTIRE ELECTRICAL INSTALLATION SHALL COMPLY WITH THE NEC AND ALL STATE AND LOCAL CODES.
6. ELECTRICAL CONTRACTOR SHALL VERIFY ALL CONNECTION REQUIREMENTS FOR ALL EQUIPMENT SUPPLIED BY OTHERS PRIOR TO ROUGH-IN. COORDINATE NEMA PLUG CONFIGURATION FOR EQUIPMENT AND PROVIDE MATCHING RECEPTACLE WHERE APPLICABLE.
7. ALL EXTERIOR DISCONNECTS SHALL BE WEATHERPROOF.

GENERAL NOTES - ELECTRICAL POWER PLAN - ROOF NTS **C**

(1) ALL MECHANICAL EQUIPMENT SHALL BE PROVIDED WITH THE REQUIRED ROUGH-INS, MOCP, AND WIRE SIZE EQUIREMENTS. THE ELECTRICAL CONTRACTOR MUST COORDINATE WITH THE MANUFACTURER FOR THE EXACT TYPE OF ROUGH-INS AND WIRE SIZE BEFORE THE COMMENCEMENT OF WORK.

(2) ELECTRICAL CONTRACTOR SHALL VERIFY THAT THERE IS A POWERED 120V 20A GFI WEATHERPROOF WITHIN 25 FEET OF EACH HVAC UNIT. THE ELECTRICAL CONTRACTOR SHALL ENSURE THAT THE FACTORY-MOUNTED CONVENIENCE OUTLET IS POWERED AND WIRE IT TO THE CIRCUIT AS SHOWN. COORDINATE FINAL HVAC PLACEMENT AND ADD EXTRA RECEPTACLES AS NEEDED.

(3) ALL OUTDOOR ELECTRICAL EQUIPMENT SHALL BE NEMA 3R RATED. COORDINATE EXACT ELECTRICAL REQUIREMENT WITH MECHANICAL CONTRACTOR PRIOR TO ROUGH-IN. CIRCUIT FACTORY INSTALLED RECEPTACLE AS REQUIRED. OTHERWISE PROVIDE NEW AS SHOWN.

KEY NOTES - ELECTRICAL POWER PLAN - ROOF NTS **B**

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PROJECT TITLE:

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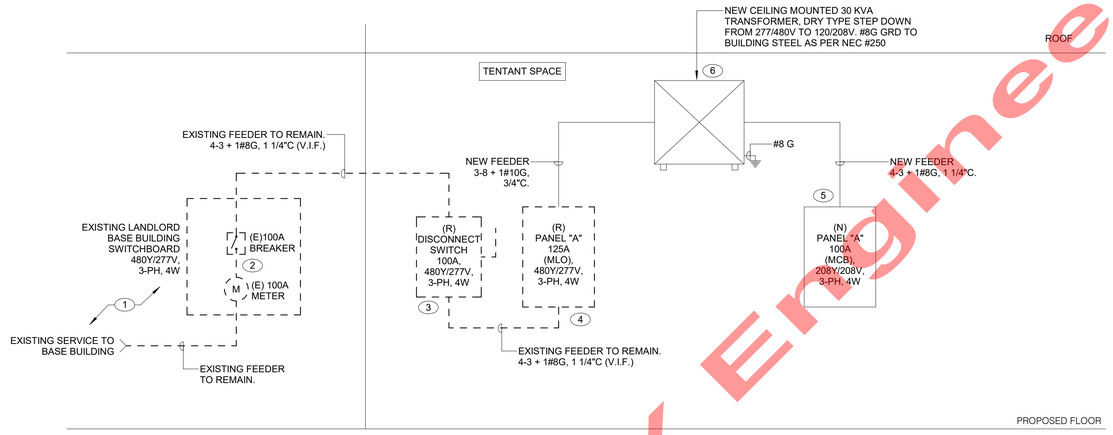
DRAWING TITLE:
ELECTRICAL POWER PLAN - ROOF

PERMIT DWG DATE:	PROJECT NUMBER:
-/--/-	25-01-020
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NYE	NYE

DRAWING NUMBER:

E201

LEGEND:
——— NEW
- - - - - EXISTING



ELECTRICAL RISER DIAGRAM NTS A

GENERAL NOTES - ELECTRICAL RISER DIAGRAM NTS C

1. ELECTRICAL CONTRACTOR SHALL VERIFY INCOMING SERVICE AMPERAGE, WIRE SIZING AND DISTRIBUTION.
2. ELECTRICAL CONTRACTOR TO COORDINATE FAULT CURRENT (Isc) RATING WITH UTILITY COMPANY AND AHJ PRIOR TO COMMENCING ANY WORK.
3. ABOVE RISER DIAGRAM IS FOR REFERENCE PURPOSE ONLY. E.C. SHALL VERIFY THE EXACT DISRIBUTION AND RATINGS OF ALL EQUIPMENTS/PANELS IN FIELD. INFORM ENGINEER FOR ANY DISCREPANCY FOUND. BASE BID ACCORDINGLY

KEY NOTES - ELECTRICAL RISER DIAGRAM NTS B

(1) ELECTRICAL CONTRACTOR SHALL COORDINATE WITH BASE BUILDING/LANDLORD/OWNER FOR EXACT POWER DISTRIBUTION PRIOR TO COMMENCING ANY WORK. INFORM ENGINEER ON RECORD FOR ANY DISCREPANCIES. BASE BID ACCORDINGLY.

(2) ELECTRICAL CONTRACTOR SHALL COORDINATE WITH BASE BUILDING/LANDLORD/OWNER/UTILITY COMPANY FOR EXACT LOCATION OF ELECTRICAL METERS & BREAKER FOR PROJECT SPACE PRIOR TO COMMENCING ANY WORK. BASE BID ACCORDINGLY.

(3) EXISTING 100A, 277/480V, 3-PHASE, 4-WIRE DISCONNECT SWITCH TO REMAIN. ELECTRICAL CONTRACTOR SHALL RELOCATE TO NEW LOCATION AS SHOWN ON PLAN AND RUN/EXTEND ALL EXISTING WIRING AND CONDUIT TO NEW LOCATION. ELECTRICAL CONTRACTOR TO FIELD VERIFY THE EXACT RATING, VOLTAGE, PHASE, LOCATION & OPERABLE CONDITION OF DISCONNECT SWITCH; PROVIDED NEW IF FOUND INOPERABLE. BASE BID ACCORDINGLY.

(4) EXISTING 125A (MLO), 277/480V, 3-PHASE, 4-WIRE ELECTRICAL PANEL "A" TO REMAIN. ELECTRICAL CONTRACTOR SHALL RELOCATE TO NEW LOCATION AS SHOWN ON PLAN AND RUN/EXTEND ALL EXISTING WIRING AND CONDUIT TO NEW LOCATION. ELECTRICAL CONTRACTOR TO FIELD VERIFY THE EXACT RATING, VOLTAGE, PHASE, LOCATION & OPERABLE CONDITION OF THE PANEL; PROVIDED NEW IF FOUND INOPERABLE. BASE BID ACCORDINGLY.

(5) NEW 100A (MCB), 120/208V, 3-PHASE, 4-WIRE ELECTRICAL PANEL "B" FOR THE PROJECT SPACE. ELECTRICAL CONTRACTOR TO COORDINATE WITH ARCHITECT/OWNER FOR EXACT LOCATION. BASE BID ACCORDINGLY.

(6) NEW 30KVA CEILING MOUNTED STEP-DOWN TRANSFORMER FOR THE PROJECT SPACE. ELECTRICAL CONTRACTOR SHALL VERIFY IN FIELD EXACT LOCATION WITH ARCHITECT/OWNER PRIOR TO ROUGH IN. BASE BID ACCORDINGLY.

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PROJECT TITLE:

MiniLuxe

DRAWING TITLE:
ELECTRICAL RISER DIAGRAM

PERMIT DWG DATE:	PROJECT NUMBER:
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DRAWN BY:	CHECKED BY:
NYE	NYE

DRAWING NUMBER:

E300

Branch Panel: A (EXISTING)

(1) (2)

Location: BOH 104
Supply From: EXISTING SERVICE
Mounting: SURFACE
Enclosure: TYPE 1

Volts: 480/277 Wye
Phases: 3
Wires: 4

A.I.C. Rating: V.I.F.
Mains Type: MLO
Mains Rating: 125 A
MCB Rating: -

Notes:

CKT	Load Name	Wire Size	Trip	Poles	A	B	C	Poles	Trip	Wire Size	Load Name	CKT
1	RTU-1 (N)	8	35 A	3	7205 9417			3	50 A	8	(N) 30KVA TRANSFORMER	2
3	--	--	--	--		7205 9778		--	--	--	--	4
5	--	--	--	--			7205 6927	--	--	--	--	6
7	SPARE		20 A	1	0 0			1	20 A		SPARE	8
9	SPARE		20 A	1		0 0		1	20 A		SPARE	10
11	SPARE		20 A	1			0 0	1	20 A		SPARE	12
13	SPARE		20 A	1	0 0			1	20 A		SPARE	14
15	SPARE		20 A	1		0 0		1	20 A		SPARE	16
17	SPARE		20 A	1			0 0	1	20 A		SPARE	18
19	SPARE		20 A	1	0 0			1	20 A		SPARE	20
21	SPARE		20 A	1		0 0		1	20 A		SPARE	22
23	SPARE		20 A	1			0 0	1	20 A		SPARE	24
25	SPARE		20 A	1	0 0			1	20 A		SPARE	26
27	SPARE		20 A	1		0 0		1	20 A		SPARE	28
29	SPARE		20 A	1			0 0	1	20 A		SPARE	30
31	SPARE		20 A	1	0 0			1	20 A		SPARE	32
33	SPARE		20 A	1		0 0		1	20 A		SPARE	34
35	SPACE		--	1			-- --	1	--		SPACE	36
37	SPACE		--	1	-- --			1	--		SPACE	38
39	SPACE		--	1		-- --		1	--		SPACE	40
41	SPACE		--	1			-- --	1	--		SPACE	42
			Total Load:		16622 VA	16983 VA	14132 VA					
			Total Amps:		61 A	63 A	51 A					

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Equipment	14448 VA	100.00%	14448 VA		
HVAC	21615 VA	100.00%	21615 VA	**Total Conn. Load:**	47737 VA
Motor	350 VA	100.00%	350 VA	**Total Est. Demand:**	48637 VA
Other	1060 VA	100.00%	1060 VA	**Total Conn.:**	57 A
Receptacle	4320 VA	100.00%	4320 VA	**Total Est. Demand:**	59 A
Lighting	2344 VA	100.00%	2344 VA		
Show Window Receptacle	3600 VA	125.00%	4500 VA		

Notes:

Branch Panel: B (NEW)

Location: BOH 104
Supply From: EXISTING PANEL A
Mounting: SURFACE
Enclosure: TYPE 1

Volts: 120/208 Wye
Phases: 3
Wires: 4

A.I.C. Rating: V.I.F.
Mains Type: MCB
Mains Rating: 100 A
MCB Rating: 100 A

Notes:

CKT	Load Name	Wire Size	Trip	Poles	A	B	C	Poles	Trip	Wire Size	Load Name	CKT
1	BOH/ADA WC/WAX/CLEAN LAB LIGHTING & EF-...	12	20 A	1	498 720			1	20 A	12	SERVER RACK	2
3	CYLINDER PENDANT LIGHTING	12	20 A	1		120 1080		1	20 A	12	GENERAL RECEPTACLE	4
5	PENDANT LIGHTING	12	20 A	1			120 900	1	20 A	12	GENERAL RECEPTACLE	6
7	DOWNLIGHT LIGHTING	12	20 A	1	48 320			1	20 A	12	E37_WAX BED	8
9	TRACK LIGHTING	12	20 A	1		574 180		1	20 A	12	E11_EMPLOYEE FRIDGE	10
11	EXTERIOR SIGNAGE	12	20 A	1			1200 840	1	20 A	12	E24_WASHER	12
(3) 13	E25_DRYER	10	30 A	2	2184 180			1	20 A	12	E7_TABLET	14
15	--	--	--	--		2184 1500		1	20 A	12	E9.1_(3) GEL SHAKERS	16
17	E1_ULTRASONIC CLEANER	12	20 A	1			180 320	1	20 A	10	E2_SPA TOWEL WARMER	18
19	E3_STEAM STERILIZER	12	20 A	1	1440 1800			1	20 A	12	SHOW WINDOW RECEPTACLE	20
21	SHOW WINDOW RECEPTACLE	12	20 A	1		1800 720		1	20 A	12	E45_TV MONITOR	22
23	E47_PEDICURE BENCHES (DOUBLE)	12	20 A	1			1140 1140	1	20 A	12	E47_PEDICURE BENCHES (DOUBLE)	24
25	E47_PEDICURE BENCHES (DOUBLE)	12	20 A	1	1140 540			1	20 A	12	E42_MANICURE STATION	26
27	E42_MANICURE STATION	12	20 A	1		540 180		1	20 A	12	BEVERAGE STATION	28
29	IWH-1	12	20 A	1			480 67	1	20 A	12	EF-1 (N)	30
31	IWH-2	12	20 A	1	480 67			1	20 A	12	EF-2 (N)	32
33	RCP-1	12	20 A	1		100 800		1	20 A	12	E12_MICROWAVE	34
35	MAINTENCE RECEPTACLE	12	20 A	1			540 0	1	20 A		SPARE	36
37	SPARE		20 A	1	0 0			1	20 A		SPARE	38
39	SPARE		20 A	1		0 0		1	20 A		SPARE	40
41	SPARE		20 A	1			0 0	1	20 A		SPARE	42
			Total Load:		9417 VA	9778 VA	6927 VA					
			Total Amps:		82 A	85 A	58 A					

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Equipment	14448 VA	100.00%	14448 VA		
Motor	350 VA	100.00%	350 VA	**Total Conn. Load:**	26122 VA
Other	1060 VA	100.00%	1060 VA	**Total Est. Demand:**	27022 VA
Receptacle	4320 VA	100.00%	4320 VA	**Total Conn.:**	73 A
Lighting	2344 VA	100.00%	2344 VA	**Total Est. Demand:**	75 A
Show Window Receptacle	3600 VA	125.00%	4500 VA		

Notes:

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PANEL SCHEDULE GENERAL NOTES:

1. ALL CIRCUITING SHOWN IS FOR REFERENCE PURPOSE ONLY. INFORM ENGINEER FOR ANY DISCREPANCY BEFORE PURCHASE OF ANY EQUIPMENTS/WIRES OR DEVICES.
2. ELECTRICAL CONTRACTOR TO VERIFY THE EXACT PANEL SIZES AND INCOMING FEEDER SIZE.
3. REFER TO ARCHITECTURAL SHEET FOR KITCHEN EQUIPMENT PLAN & SCHEDULE. E.C. SHALL VERIFY THE BREAKER, CABLE, ELECTRICAL LOAD, PLUG, CORD, RECEPTACLES AND CONDUIT REQUIREMENTS/SIZES/RATING FOR ALL THE KITCHEN EQUIPMENTS WITH EQUIPMENT SUPPLIER/MANUFACTURER AND PROVIDE THE ELECTRICAL CONNECTION PER MANUFACTURER RECOMMENDATIONS/REQUIREMENTS. BASE BID ACCORDINGLY.
4. E.C. SHALL COORDINATE WITH MECHANICAL, PLUMBING AND WALK-IN COOLER/FREEZER CONTRACTOR/EQUIPMENT MANUFACTURER FOR EXACT ELECTRICAL REQUIREMENTS FOR CABLE AND BREAKERS. PROVIDE THE ELECTRICAL BREAKER AND CABLES IN FIELD AS REQUIRED. BASE BID ACCORDINGLY.

PANEL SCHEDULE KEYNOTES

(1) NEW BREAKERS MAY BE REQUIRED FOR USE IN THE EXISTING PANELBOARD TO MATCH RATING INDICATED IN THE PANEL SCHEDULE. PRIOR TO BID/PRICING, THE ELECTRICAL CONTRACTOR SHALL VERIFY ALL EXISTING-TO-REMAIN PANELBOARD MANUFACTURER AND MODEL NUMBER TO ENSURE THAT REPLACEMENT BREAKERS ARE AVAILABLE. WHERE BREAKER AVAILABILITY ISSUES ARISE, NOTIFY THE PROJECT MANAGER PRIOR TO BID/PRICING.

(2) DESIGNATED CIRCUIT NUMBER SHOWN ON THE PANEL SCHEDULE FOR A CERTAIN LOAD, MAY BE DIFFERENT THAN THE ACTUAL CIRCUIT NUMBER IN THE EXISTING PANELBOARD. ALL EXISTING-TO-REMAIN ELECTRICAL LOADS SHALL REMAIN CONNECTED TO THE SAME BREAKER AND CIRCUIT DESIGNATION. AVAILABLE SPARES AND SPACES SHALL BE UTILIZED TO FEED THE NEW LOADS.

(3) PROVIDE GFI BREAKER TO CIRCUIT.

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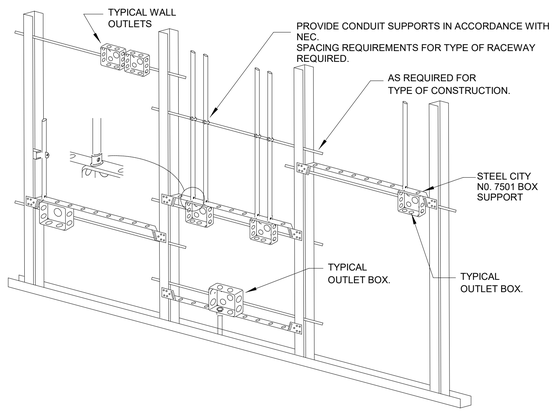
MiniLuxe

DRAWING TITLE:
ELECTRICAL PANEL SCHEDULES

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E301

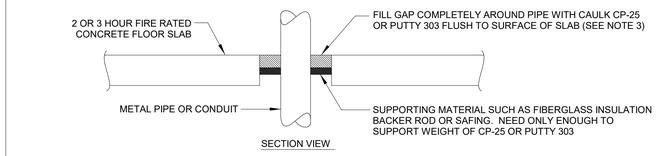


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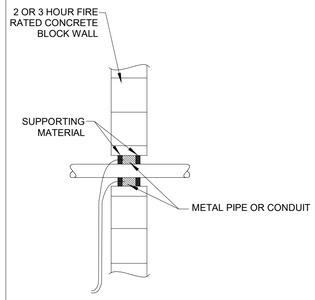
1. TYPICAL FOR WOOD AND METAL STUD ROUGH-IN
2. PLASTER RINGS NOT SHOWN
3. LOCATE ALL OUTLET BOXES IN ACCORDANCE WITH ARCHITECTURAL DRAWINGS, AND WITH ALL APPLICABLE SHOP DRAWINGS.
4. OUTLETS ON OPPOSITE SIDES OF WALLS OR PARTITIONS IN THE SAME STUD SPACE MUST BE SEPARATED BY A MIN. OF 24" HORIZONTAL DISTANCE.

1 TYPICAL ROUGH-IN REQUIREMENTS

SCALE: NOT TO SCALE



SECTION VIEW



COVER CAULK SURFACE WITH MASKING TAPE OR BACKER ROD UNTIL CURED (24-72 HOURS) (TO PREVENT SAGGING OF CAULK IF IT OCCURS) (SEE NOTE 5)

SECTION VIEW

NOTES:

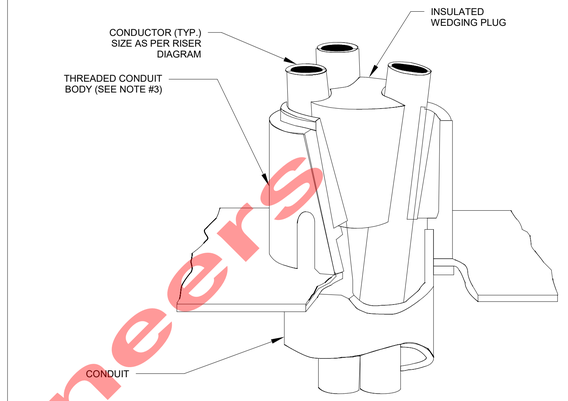
1. FOR CONCRETE BLOCK WALLS, CENTER CAULK CP-25 OR PUTTY 303 WITHIN WALL WITH DAMMING ON BOTH SIDES.
2. RECOMMENDATIONS BASED ON PRODUCT PERFORMANCE PER ASTM E-814 (UL 1479) FIRE TEST AND UL CLASSIFICATION FIRE STOP SYSTEMS 49, 33 AND 91.
3. UP TO 40% SHRINKAGE OF CP-25 OR PUTTY 303 IS ACCEPTABLE AFTER WET DEPTH INSTALLATION.
4. WHEN ANNULAR SPACE EXCEEDS 3/4" (19mm). A 28 AWG METAL COVER PLATE MUST BE MECHANICALLY SECURED ATOP THE 3M FIRE BARRIER APPLICATION, OR TIGHTLY PACK A NON-COMBUSTIBLE DAMMING MATERIAL ATOP INSTALLED CAULK OR PUTTY.
5. OPTIONS TO MASKING TAPE TO PREVENT SAGGING:
   - A.A. INSTALL ADDITIONAL DAMMING MATERIAL OVER PRODUCT TO HOLD WITHIN OPENING.
   - A.B. REMOVE PRODUCT FROM CONTAINER AND ALLOW TO AIR CURE IN SMALL BATCHES FOR 12 HRS. THEN HAND FORM INTO OPENING.
6. WET INSTALLED DEPTH OF CAULK CP-25 OR PUTTY 303 DEPENDS ON TYPE AND SIZE OF PIPE:

WET DEPTH	PIPE SIZE	FIRE RATING
1/2" (13mm)	MAX. 8" (203mm)	2 HRS.
2" (25mm)	MAX. 6" (152mm)	3 HRS.

1" (25mm) DEPTH CAULK CP-25 OR PUTTY 303 WITHIN WALL

2 FIRE STOP DETAIL

SCALE: NOT TO SCALE



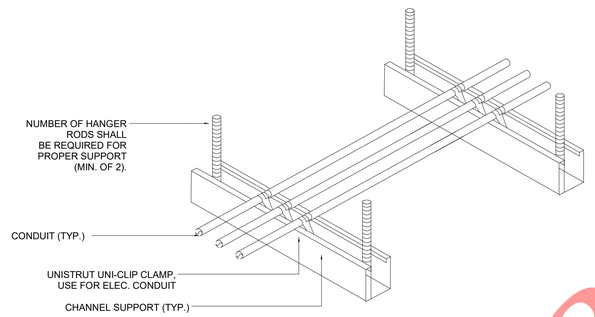
NOTES:

1. ALL CONDUCTORS IN VERTICAL RACEWAYS SHALL BE SUPPORTED IN ACCORDANCE WITH ARTICLE 300.19 OF NEC. CABLE SUPPORTS SHALL BE LOCATED AT THE INTERVALS REQUIRED BY THE NEC.
2. CABLE SUPPORT SYSTEM SHALL BE AS MANUFACTURED BY O-Z GEDNEY WITH pOZi-GRIP "S-STYLE" WEDGING PLUG OR APPROVED EQUAL.
3. FOR THREADLESS CONDUIT (RIGID, IMC OR EMT), ATTACH CONDUIT BODY TO MALE THREADS OF A SET SCREW OR COMPRESSION CONNECT, AS PERMITTED BY SPECIFICATIONS.
4. PROVIDE PULL BOX AT EACH LOCATION OF CABLE SUPPORTS. PULL BOX SHALL BE SIZED AS PER CODE TO ACCOMMODATE ALL CONDUITS.

3 VERTICAL CABLE SUPPORT DETAIL

SCALE: NOT TO SCALE

NOTE:
THIS INFORMATION MAY NOT CONTAIN ALL DETAILS REQUIRED FOR CONSTRUCTION. APPROPRIATE MODIFICATION MAY BE REQUIRED TO ENSURE SUITABILITY OF THESE DRAWINGS FOR THE SPECIFIC APPLICATION. IT IS THE USER'S RESPONSIBILITY TO ENSURE INSTALLATION OF THE EQUIPMENT/SYSTEM IS IN ACCORDANCE WITH BUILDING/PROJECT SPECIFICATIONS, APPLICABLE CODES AND STANDARDS.

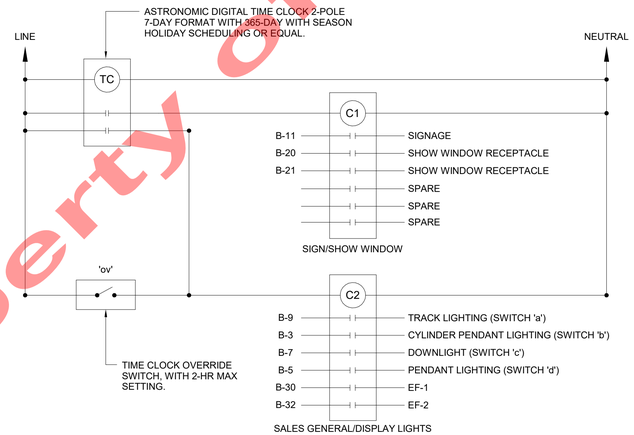


NOTES:

1. ALL CONDUIT MAY BE COMBINED ON SAME SUPPORT CHANNEL WHERE PRACTICAL.
2. SUPPORT CHANNEL LENGTH SHALL NOT BE DETERMINED UNTIL ALL PIPING, CONDUIT, ETC. TO BE SUPPORTED IS COORDINATED.
3. SUPPORT CHANNEL SPACING SHALL BE NO MORE THAN 10'-0".
4. UNISTRUT AND CONDUIT INSTALLATION MAY BE REVERSED.

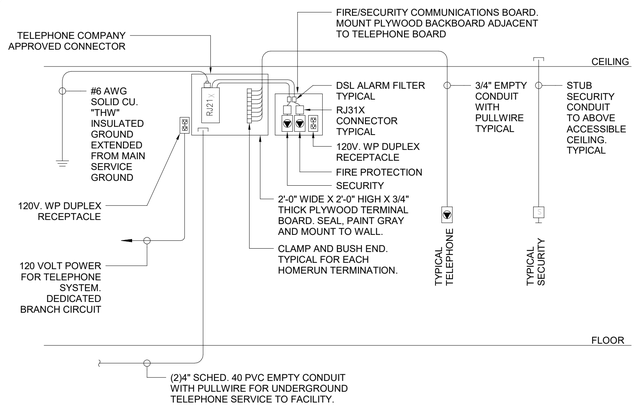
4 CONDUIT SUPPORT DETAIL

SCALE: NOT TO SCALE



5 EXTERIOR LIGHTING CONTROL DIAGRAM

SCALE: NOT TO SCALE



TELEPHONE SYSTEM RISER DIAGRAM NOTES:

1. VERIFY, COORDINATE AND INCORPORATE THE REQUIREMENTS OF THE TELE. CO. AND ALL GOVERNING CODES IN FORCE, PRIOR TO COMMENCEMENT OF WORK.
2. FURNISH AND INSTALL A RACEWAY SYSTEM OF CABLE AND 3/4" CONDUIT AND PROPERLY SIZED JUNCTION BOXES WITH COVER PLATES FOR THE TELEPHONE SYSTEM AS SHOWN ON THE DRAWINGS AND IN THE DIAGRAM.
3. ALL CONDUIT SHALL ORIGINATE AT THE JUNCTION BOXES, BE NO SMALLER THAN 3/4" ELECTRICAL TRADE SIZE, BE CONTINUOUS AND TERMINATE AT THE SYSTEM TERMINAL BOARD NEATLY CLAMPED AND WITH BUSHED ENDS. HOME RUNS SHALL BE LIMITED TO ONE (1) TELEPHONE OUTLET IN ONE 3/4" CONDUIT.
4. THERE ARE MULTIPLE DEDICATED TELEPHONE LINES AND THEY SHALL BE SEGREGATED FROM EACH OTHER AND SHALL BE SEGREGATED FROM THE STANDARD TELEPHONE LINES.
5. FURNISH AND INSTALL A 200 LB'Z TEST NYLON PULL LINE IN ANY EMPTY CONDUIT. TAG EACH END OF PULL LINE AS TO SERVICE AND THE LOCATION OF THE OPPOSITE TERMINUS OF THE CONDUIT.
6. ALL CONDUITS SHALL CONTAIN ONE (1) HIGH QUALITY 4 PAIR CAT III PLENUM CABLE TELEPHONE LINES PULLED WITH PROPER INSTALLED JACKS. LINES MUST BE LABELED AT TELEPHONE BOARD.

6 TELEPHONE SYSTEM RISER DIAGRAM

SCALE: NOT TO SCALE

Property of NY Engineers

PROJECT TITLE:

MiniLuxe

DRAWING TITLE:
ELECTRICAL DETAILS

PERMIT DWG DATE:	PROJECT NUMBER:
-/--/-	25-01-020
DRAWN BY:	CHECKED BY:
NYE	NYE

DRAWING NUMBER:

E400

PROJECT DATA

PROJECT DESCRIPTION		BUILDING OCCUPANCY			PROJECT DESCRIPTION						FIRE ALARM SYSTEM FEATURES	
	NEW BUILDING		ASSEMBLY GROUP A (A1,A2,A3,A4 AND A5)		RESIDENTIAL GROUP R (R1,R2 AND R3)	1	TOTAL NUMBER OF LEVELS		ATRIUM		STAIR PRESSURIZATION		NON-VOICE EVACUATION
	FIRE ALARM SYSTEM UPGRADE	X	BUSINESS GROUP B		STORAGE GROUP S (S1 AND S2)	1	ABOVE GROUND LEVELS		FIRE DEPARTMENT ACCESS		POST FIRE SMOKE PURGE		VOICE EVACUATION
	LIFE SAFETY SYSTEM UPGRADE		EDUCATIONAL GROUP E		UTILITY AND MISCELLANEOUS GROUP U	0	BELOW GROUND LEVELS	X	FULLY SPRINKLERED		GENERATOR		PARTIAL/SELECTIVE EVACUATION
X	RENOVATION		FACTORY INDUSTRIAL GROUP F (F1 AND F2)		OTHER:	0	NUMBER OF ELEVATOR BANKS		PARTIALLY SPRINKLERED		FIRE PUMP	X	GENERAL EVACUATION
	EMERGENCY REPAIR		HIGH-HAZARD GROUP H (H1,H2,H3,H4 AND H5)			0	NUMBER OF EGRESS STAIRS		NON-SPRINKLERED		OTHER:		DIGITAL ALARM COMMUNICATOR
	TENANT ADDITION		INSTITUTIONAL GROUP I (I1,I2 AND I3)						PRE-ACTION SPRINKLER		OTHER:		PRE-SIGNAL SYSTEM
	OTHER:		MERCANTILE GROUP M										FIRE FIGHTER'S TELEPHONE SYSTEM

FIRE ALARM I/O MATRIX

		CONTROL UNIT ANNUNCIATION					NOTIFICATION							REQUIRED FIRE SAFETY CONTROL			
		ACTIVATE COMMON ALARM SIGNAL INDICATOR ON LCD OF FIRE ALARM CONTROL PANEL & OUTLYING ANNUNCIATORS	ACTIVATE COMMON SUPERVISORY SIGNAL INDICATOR ON LCD OF FIRE ALARM CONTROL PANEL & OUTLYING ANNUNCIATORS.	ACTIVATE COMMON TROUBLE SIGNAL INDICATOR ON LCD OF FIRE ALARM CONTROL PANEL & OUTLYING ANNUNCIATORS.	SOUND INTERNAL BUZZER AT FIRE ALARM CONTROL PANEL & OUTLYING ANNUNCIATORS.	TEXT MESSAGE DISPLAY DEVICE TYPE & LOCATION OF THE ACTIVATING DEVICES ON LCD OF FIRE ALARM CONTROL PANEL & OUTLYING ANNUNCIATORS.	DISPLAY/PRINT THE TEXT MESSAGE VIA THE SYSTEM PRINTER.	ACTIVATE EVACUATION SIGNAL THROUGH HORN AND FLASH THE STROBES ON ALARM	TRANSMIT "MANUAL" ALARM SIGNAL TO FIRE DEPARTMENT VIA AN APPROVED CENTRAL STATION MONITORING COMPANY.	TRANSMIT "SMOKE" ALARM SIGNAL TO FIRE DEPARTMENT VIA AN APPROVED CENTRAL STATION MONITORING COMPANY.	TRANSMIT "WATERFLOW" ALARM SIGNAL TO FIRE DEPARTMENT VIA AN APPROVED CENTRAL STATION MONITORING COMPANY.	TRANSMIT "SUPERVISORY" ALARM SIGNAL TO FIRE DEPARTMENT VIA AN APPROVED CENTRAL STATION MONITORING COMPANY.	TRANSMIT "TROUBLE" ALARM SIGNAL TO FIRE DEPARTMENT VIA AN APPROVED CENTRAL STATION MONITORING COMPANY.	INITIATE THE AUTOMATIC FIRE MODE CONDITIONS FOR FAN (HC UNIT) OPERATION. PROCEED (HC UNIT) SHUTDOWN SEQUENCE.	RELEASE ALL ELECTRICALLY HELD OPEN FIRE & SMOKE DOORS.	RELEASE ALL ELECTRIC STRIKES ON STAIRWAY REENTRY DOORS, ALLOWING ACCESS TO THE BUILDING IN THE PATHS OF EGRESS TO THE EXIT STAIRWAYS.	
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	
1	MANUAL PULL STATION	●			●	●	●	●	●						●	●	1
2	WATERFLOW SWITCH	●			●	●	●	●			●			●	●	●	2
3	AREA SMOKE DETECTOR	●			●	●	●	●		●				●	●	●	3
4	SPRINKLER CONTROL VALVE/TAMPER SWITCH		●		●	●	●					●					4
5	FIRE ALARM AC POWER FAILURE			●	●	●	●						●				5
6	FIRE ALARM SYSTEM LOW BATTERY			●	●	●	●						●				6
7	OPEN CIRCUIT			●	●	●	●						●				7
8	GROUND CIRCUIT			●	●	●	●						●				8
9	NOTIFICATION APPLIANCE CIRCUIT SHORT			●	●	●	●						●				9
10	DUCT SMOKE DETECTOR	●			●	●	●	●		●				●	●	●	10
11	ALARM ACTIVATION OF OTHER SUBSYSTEM	●			●	●	●	●		●				●	●		11
12	TROUBLE ACTIVATION OF OTHER SUBSYSTEM			●	●	●	●						●				12

ABBREVIATIONS

AFF	ABOVE FINISHED FLOOR	HC	HUNG CEILING
C	CONDUIT	HC	HUNG CEILING
DGP	DATA GATHERING PANEL	NE	NEW TO REPLACE EXISTING
E	EXISTING	NTS	NOT TO SCALE
EL	EXISTING TO BE LOWERED	R	REMOVE
ELV	ELEVATOR LOBBY	RCU	REMOTE COMPUTER UNIT
EMT	ELECTRIC METALLIC TUBING	RE	RELOCATED EXISTING
ER	EXISTING TO BE RELOCATED	RGS	RIGID GALVANIZED STEEL
FA	FIRE ALARM	RP	RELOCATED POSITION
FCS	FIRE COMMAND STATION	UON	UNLESS OTHERWISE NOTED
FDS	FUSED DISCONNECT SWITCH	W	WIRE
G	GROUND		

TYPE OF DESIGN:

INSTALLATION OF NEW FIRE ALARM DEVICES, INCLUDING AUTOMATIC SMOKE DETECTION, NOTIFICATION SYSTEMS, CONNECTED TO A EXISTING FIRE ALARM CONTROL PANEL (FACP). INCLUDES MODIFICATIONS RELATED TO OCCUPANCY USE OR EGRESS.

DRAWINGS LIST

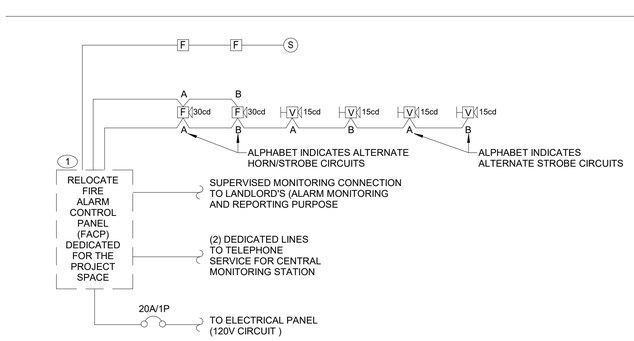
FA001	FIRE ALARM NOTES, BUILDING DATA, ABBREVIATIONS, PLOT PLAN, I/O MATRIX & RISER DIAGRAM
FA100	FIRE ALARM PLAN

APPLICABLE CODES

01	2021 INTERNATIONAL BUILDING CODE & 2021 INTERNATIONAL EXISTING BUILDING CODE
02	2021 INTERNATIONAL ENERGY CONSERVATION CODE
03	2017 NATIONAL ELECTRICAL CODE
04	2019 MASSACHUSETTS FIRE ALARM CODE (NFPA 72, 2019)

FIRE ALARM SYMBOL LIST

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
H(V)	STROBE LIGHT DEVICE, WALL MOUNTED (80" AFF)	F	FIRE ALARM MANUAL PULL STATION, WALL MOUNTED (48" AFF)
F(V)	WALL MOUNTED HORN/STROBE COMBINATION DEVICE (80" AFF)	TS	TAMPER SWITCH
S	CEILING MOUNTED AREA SMOKE DETECTOR	WF	WATER FLOW SWITCH
FACP	FIRE ALARM CONTROL PANEL		SOLID THICK LINE INDICATES NEW DEVICE OR WIRING
D	DUCT MOUNTED SMOKE DETECTOR		DOTTED LINE INDICATES EXISTING DEVICE OR WIRING
MM	MONITOR MODULE	CM	CONTROL MODULE



FIRE ALARM SYSTEM RISER DIAGRAM
N.T.S

FIRE ALARM RISER NOTES:

A. ALL COMPONENTS REQUIRED TO MAKE SYSTEM WORKABLE SHALL BE INCLUDED IN BID PRICE.

B. EACH FA RELAY SHALL HAVE MINIMUM OF THREE SETS OF 2 CONTACT 10A RATED @ 120V (TYPICAL).

C. ALL DUCT SMOKE DETECTORS INSTALLED IN HUNG CEILING AREA AND IN OUT OF SIGHT AREA SHALL HAVE REMOTELY INSTALLED STATUS INDICATOR LAMPS. COORDINATE EXACT LOCATION WITH ARCHITECT AND GENERAL CONTRACTOR.

D. FOR WALL MOUNTED F.A. DEVICES PROVIDE 3/4" CONDUIT TERMINATED IN NEAREST ACCESSIBLE CEILING.

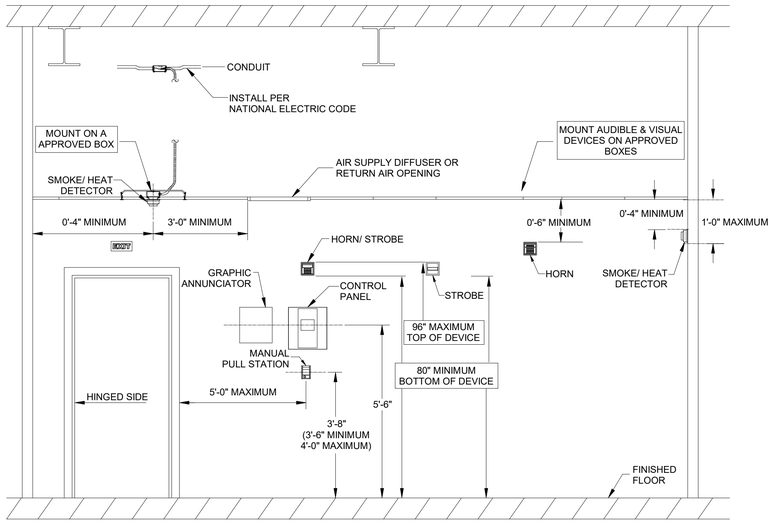
E. THIS RISER DIAGRAM IS A SCHEMATIC REPRESENTATION OF THE FIRE ALARM SYSTEM. REFER TO FLOOR PLANS FOR EXACT QUANTITY OF DEVICES.

F. ALL FIRE ALARM CONDUITS SHALL BE MINIMUM 3/4".

G. ALL FIRE ALARM CIRCUITS SHALL BE WIRED NFPA STYLE 4/Y/B (CLASS B) WITH THE EXCEPTION OF THE NETWORK CIRCUIT WHICH SHALL BE NFPA STYLE 7 (CLASS A WITH ISOLATION). DUAL CLASS B NETWORKING IS NOT STYLE 7 AND WILL NOT BE APPROVED.

FIRE ALARM RISER KEY NOTES:

(1) EXISTING FIRE ALARM PANEL SHALL REMAIN. ELECTRICAL CONTRACTOR SHALL RELOCATE TO NEW LOCATION AS SHOWN ON PLAN AND RUN/EXTEND ALL EXISTING WIRING AND CONDUIT TO NEW LOCATION AS REQUIRED. CONTRACTOR SHALL FIELD VERIFY OPERABLE CONDITION AND EXACT LOCATION OF EXISTING FIRE ALARM CONTROL PANEL. REUSE IF POSSIBLE OTHERWISE PROVIDE NEW AS REQUIRED. BASE BID ACCORDINGLY.



TYPICAL DEVICE MOUNTING DETAIL
N.T.S

FIRE ALARM NOTES:

1. ALL EQUIPMENT AND WIRING INDICATED ON THESE PLANS IS NEW (U.O.N.).
2. PROVIDE WIRING AS REQUIRED BETWEEN ALL DEVICES AND EQUIPMENT AS REQUIRED TO PERFORM FIRE ALARM SYSTEM FUNCTIONS.
3. WIRING FOR FIRE ALARM DEVICES IN FINISHED SPACES WITHOUT HUNG CEILING SHALL BE INSTALLED IN EMT CONDUIT.
4. ALL STROBES AND HORN/STROBES SHALL BE FLUSH WALL MOUNTED FINISH BY ARCHITECT.
5. ALL DUCT SMOKE DETECTORS INSTALLED IN HUNG CEILING AREA AND IN OUT OF SIGHT AREA SHALL HAVE REMOTELY INSTALLED STATUS INDICATOR LAMPS. COORDINATE EXACT LOCATION WITH ARCHITECT AND GENERAL CONTRACTOR.
6. FOR WALL MOUNTED F.A. DEVICES PROVIDE 3/4" CONDUIT TERMINATED IN NEAREST ACCESSIBLE CEILING.
7. WIRING FOR FIRE ALARM DEVICES IN UNFINISHED SPACES SHALL BE INSTALLED IN RGS CONDUIT UP TO 8'-0" AFF AND THEN IN EMT CONDUIT ABOVE 8'-0" AFF.
8. FOR LOCATIONS AND QUANTITIES OF DEVICES REFER TO FIRE ALARM FLOOR PLANS. WHERE THERE ARE DISCREPANCIES BETWEEN THE PLANS AND THE RISER DIAGRAM, THE GREATER QUANTITY SHALL BE USED.
9. CONTRACTOR SHALL VERIFY ALL WIRING WITH FIRE ALARM VENDOR AND OBTAIN WIRING DIAGRAMS BEFORE PROCEEDING WITH THE START OF ANY WORK.
10. ALL WIRING SHALL BE IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE 2017.
11. PROVIDE FAN SHUT DOWN CAPABILITY FOR FANS WITH A RATING LARGER THAN 2,000 CFM. SHUT DOWN SHALL BE ACCOMPLISHED BY ONE OR MORE OUTPUT CONTROL POINTS FROM THE FIRE ALARM SYSTEM TO RELAYS FOR SHUTDOWN. PROVIDE CONTROL AND MONITORING FOR ALL RELAYS. PROVIDE POWER, CONTROL RELAYS, MONITORING AND WIRING FOR ALL FIRE/SMOKE DAMPERS.
12. DUCT DETECTORS SHALL BE FURNISHED AND INSTALLED BY THE ELECTRICAL CONTRACTOR ALONG WITH FURNISHING OF THE SAMPLING TUBES. DUCTWORK MODIFICATIONS AND INSTALLATION OF SAMPLING TUBES SHALL BE BY THE MECHANICAL CONTRACTOR. FOR FANS RATED LARGER THAN 2,000 CFM PROVIDE DUCT DETECTORS IN SUPPLY AND RETURN DUCTWORK.
13. PROVIDE ALL REQUIRED EXPANSION PANELS, PC BOARDS, POWER SUPPLIES, BATTERIES, FUSE CUTOUTS AND BRANCH CIRCUITS, ETC, FOR A COMPLETE AND OPERATIONAL FIRE ALARM SYSTEM.
14. STROBES AND HORNS SHALL BE WIRED ON ALTERNATING A-B CIRCUITING IN ALL AREAS, AS INDICATED ON THE RISER DIAGRAM.
15. CONTRACTOR SHALL PERFORM ALL BUILDING DEPT. FILINGS AND OBTAIN ALL APPROVALS. CONTRACTOR SHALL OBTAIN ALL REQUIRED SIGNED & SEALED BUILDING DEPT. FORMS AND ALL REQUIRED SETS OF DRAWINGS FROM ENGINEER OF RECORD AND BUILDING DEPT. EXPEDITOR.
16. UPON COMPLETION OF INSTALLATION THE SYSTEM SHALL BE 100% PRE-TESTED BY THE FIRE ALARM VENDOR AND THE LICENSED ELECTRICAL CONTRACTOR PRIOR TO FDNY INSPECTION.
17. CONTRACTOR SHALL SUBMIT TO THE ENGINEER A MARKUP OF FA DRAWINGS INDICATING "AS-BUILT" CONDITIONS FOR ENGINEER'S REFERENCE. IN PREPARING "AS-BUILT" DRAWINGS FOR FILING, CONTRACTOR SHALL SIGN "AS-BUILT" STATING A FUNCTIONAL TEST HAS BEEN CONDUCTED OF THE FIRE ALARM SYSTEM AND THE SYSTEM OPERATES AS DESIGNED AND IN ACCORDANCE WITH THE INPUT/OUTPUT PROGRAMMING MATRIX.

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PROJECT TITLE:

MiniLuxe

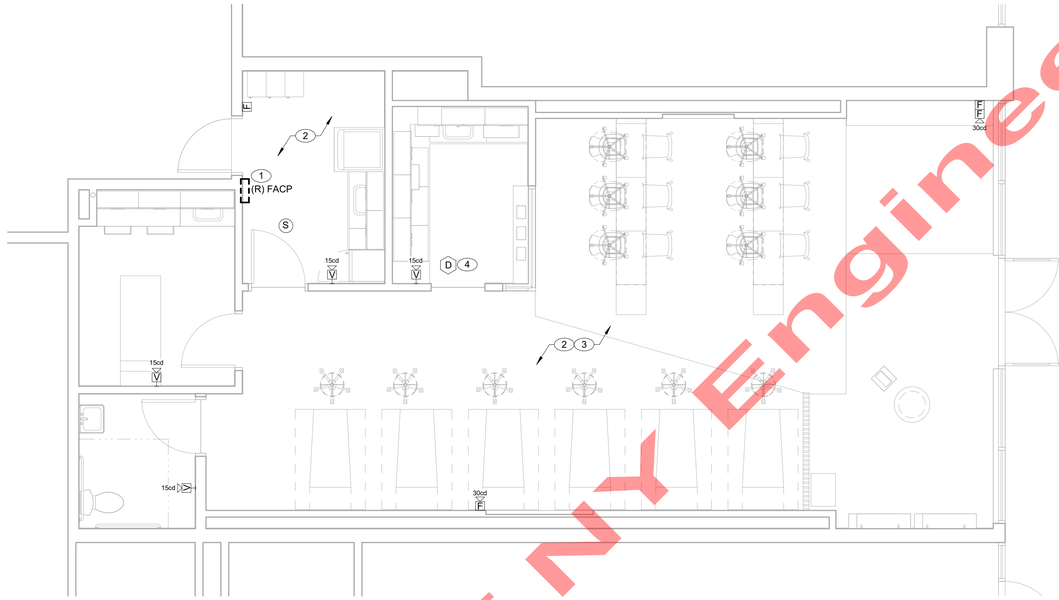
DRAWING TITLE:
FIRE ALARM NOTES AND SPECIFICATIONS

PERMIT DWG DATE:	PROJECT NUMBER:
-/--/-	25-01-020
DRAWN BY: NYE	CHECKED BY: NYE

DRAWING NUMBER:

FA001

LEGEND:
———— NEW
- - - - - EXISTING



FIRE ALARM PLAN 1/4" = 1'-0" **A**

1. ALL WORK TO THE FIRE ALARM SYSTEM SHALL COMPLY WITH ALL LOCAL FIRE CODES, LAWS, REGULATIONS, ORDINANCES, AND THE REQUIREMENTS OF 2019 MASSACHUSETTS FIRE ALARM CODE (NFPA 72, 2019 EDITION).
2. ALL NEW FIRE ALARM DEVICES SHALL BE ADA APPROVED. COORDINATE COLOR WITH ARCHITECT AND BASE BUILDING. DEVICES TO MATCH BASE BUILDING SYSTEM MANUFACTURER. PROVIDE ANY ADDITIONAL POWER AMPLIFIERS REQUIRED FOR INSTALLATION OF NEW ADA APPROVED DEVICES.
3. ALL FIRE ALARM DEVICES, INCLUDING SPEAKERS, VISUALS, SMOKE DETECTORS, ETC... SHALL BE CONNECTED TO THE BASE BUILDING FIRE ALARM SYSTEM BY A LICENSED FIRE ALARM CONTRACTOR. COORDINATE CONNECTIONS WITH SYSTEM MANUFACTURER.
4. ALL DEVICES SHALL BE 110 CANDELA, UNLESS OTHERWISE NOTED.
5. THE ENTIRE LENS OF WALL MOUNTED VISUAL FIRE ALARM DEVICES SHALL BE MOUNTED AT LEAST 80" AFF.
6. COORDINATE FIRE ALARM SYSTEM SHUTDOWNS AND REPROGRAMMING WITH LANDLORD.
7. ALL FIRE ALARM DEVICES SHALL BE WHITE UNLESS OTHERWISE NOTED OR REQUIRED.
8. EVACUATION SIGNAL SHALL BE 3 PULSE TEMPORAL.
9. THE FIRE ALARM SYSTEM APPLIANCE LAYOUT INDICATES NEW DEVICE PLACEMENT REQUIREMENTS FOR THIS TENANT UPFIT. NEW DEVICES SHALL BE INSTALLED INTO THE BASE BUILDING FIRE ALARM SYSTEM. PROVIDE ALL PROGRAMMING REQUIRED TO MAKE THE NEW DEVICES FUNCTIONAL AND ANY PROGRAMMING OR NEW EQUIPMENT REQUIRED TO MAKE ALL OF THE VISIBLE NOTIFICATION APPLIANCES ON THE FLOOR FLASH IN SYNCHRONIZATION.
10. FIRE ALARM CONTRACTOR SHALL COORDINATE ALL DEVICE LOCATIONS AND MOUNTING HEIGHTS WITH THE ARCHITECT & FURNITURE VENDOR ALONG WITH REFLECTED CEILING PLAN PRIOR TO INSTALLATION.
11. ALL FIRE ALARM CABLING SHALL BE IN EMT WHERE EXPOSED. ANY FIRE ALARM CABLING ABOVE THE CEILING SHALL BE PLENUM RATED.
12. FOR EXISTING AND/OR RELOCATED DEVICES ADJUST STROBE LEVELS TO APPROPRIATE RATING SHOWN. IF ADJUSTABILITY IS UNAVAILABLE REPLACE WITH NEW.
13. FIRE ALARM SOUND LEVELS AND INTELLIGIBILITY SHALL COMPLY WITH CHAPTER 9 OF THE APPLICABLE STATE BUILDING CODE.
14. VERIFY PROPER FUNCTIONALITY OF ALL EXISTING AND RELOCATED FIRE ALARM DEVICES, INCLUDING THEIR HOUSING, LENSES, ETC.... PROVIDE REPLACEMENTS AS REQUIRED IF ANY ARE NOT OPERATING AS INTENDED OR HAVE ABOVE NORMAL WEAR OR DEFECTS.
15. ALL DEVICES SHALL BE COMPATIBLE WITH AND MAINTAIN THE UL LISTING OF EXISTING FA SYSTEM.
16. G.C. SHALL FIELD VERIFY EXACT REQUIREMENTS FOR FIRE ALARM SYSTEM PRIOR TO BID. SUPPLY AND INSTALL ALL NECESSARY EQUIPMENT AS REQUIRED.
17. REFER TO DRAWING. FA001 FOR FIRE ALARM SYMBOL LIST, ABBREVIATIONS.
18. FINAL CONDUIT/CABLE ROUTING SHALL BE DETERMINED IN-FIELD, AND PRIOR TO THE COMMENCEMENT OF WORK, COORDINATED WITH OTHER TRADE CONTRACTORS AND THE OWNER.
19. CONFIRM REQUIRED DEVICES AND SEQUENCE OF OPERATION WITH FIRE ALARM CONTRACTOR.
20. HATCHED AREA NOT IN THIS SCOPE OF WORK. (IF APPLICABLE)
21. "E" DENOTES EXISTING DEVICE TO REMAIN. 'R' DENOTES EXISTING DEVICE TO BE RELOCATED.

GENERAL NOTES - FIRE ALARM PLAN NTS **C**

1. EXISTING FIRE ALARM PANEL SHALL REMAIN. ELECTRICAL CONTRACTOR SHALL RELOCATE TO NEW LOCATION AS SHOWN ON PLAN AND RUN/EXTEND ALL EXISTING WIRING AND CONDUIT TO NEW LOCATION AS REQUIRED. CONTRACTOR SHALL FIELD VERIFY OPERABLE CONDITION AND EXACT LOCATION OF EXISTING FIRE ALARM CONTROL PANEL. REUSE IF POSSIBLE OTHERWISE PROVIDE NEW AS REQUIRED. BASE BID ACCORDINGLY.
2. ALL DEVICES SHALL BE COMPATIBLE WITH AND MAINTAIN THE UL LISTING OF THE EXISTING FA SYSTEM. CONNECT ALL NEW FIRE ALARM SYSTEM DEVICES TO EXISTING FIRE ALARM CONTROL PANEL AS REQUIRED. BASE BID ACCORDINGLY.
3. CONTRACTOR SHALL COORDINATE THE EXACT LOCATION OF NEW TAMPER AND WATER FLOW SWITCHES IN FIELD IN COORDINATION WITH SPRINKLER CONTRACTOR. PROVIDE THE PROVISION ACCORDINGLY.
4. CONTRACTOR SHALL COORDINATE THE EXACT LOCATION OF DUCT SMOKE DETECTOR IN FIELD WITH MECHANICAL CONTRACTOR.

KEY NOTES - FIRE ALARM PLAN NTS **B**

Property of NY Engineers

PROJECT TITLE:

MiniLuxe

DRAWING TITLE:
FIRE ALARM PLAN

PERMIT DWG DATE:	PROJECT NUMBER:
-/--/-	25-01-020
DRAWN BY:	CHECKED BY:
NYE	NYE

DRAWING NUMBER:

FA100

PLUMBING SYMBOLS LIST

PLUMBING LEGENDS		PLUMBING ABBREVIATIONS	
SAN	SANITARY SEWER	CW	COLD WATER
V	VENT PIPING	HW	HOT WATER
EX.CW	EXISTING COLD WATER	HWR	HOT WATER RETURN
CW	COLD WATER	W	WASTE SANITARY
HW	HOT WATER	VTR	VENT THRU ROOF
HWR	RECIRCULATING HOT WATER	V	VENT
G	GAS PIPING	AFF/AFG	ABOVE FINISHED FLOOR/GRADE
	SECONDARY BFP	AHJ	AUTHORITY HAVING JURISDICTION
	BALANCING VALVE	BFP	BACKFLOW PREVENTER
	PIPE UP OR DOWN	ETR	EXISTING TO REMAIN
	PIPE UP	CO	CLEANOUT
	UNION	GC	GENERAL CONTRACTOR
	ISOLATION VALVE	IW	INDIRECT WASTE
FCO	FLOOR CLEANOUT	PC	PLUMBING CONTRACTOR
	BACKFLOW PREVENTER	WCO	WALL CLEANOUT
	POINT OFF CONNECTION	WH	WATER HEATER
	RE-CIRCULATION PUMP	ET	EXPANSION TANK
	HUB / FLOOR DRAIN	RCP	RECIRCULATION PUMP
	WATER HAMMER ARRESTOR	FD	FLOOR DRAIN
		HD	HUB DRAIN
LL	LANDLORD	TYP	TYPICAL
F	FRANCHISE	CD	CONDENSATE DRAIN
EV	EQUIPMENT VENDOR	VLL	VERIFY WITH LANDLORD
CC	CONTRACTORS CHOICE	SPS	SEE PLUMBING SCHDULE
OC	OWNERS CHOICE	WHA	WATER HAMMER ARRESTOR
	ACCESS PANEL	VIF	VERIFY IN FIELD

PLUMBING DRAWING LIST

P001	PLUMBING SYMBOLS, ABBREVIATIONS, NOTES & SCHEDULE.
P002	PLUMBING SPECIFICATIONS (01 OF 03)
P003	PLUMBING SPECIFICATIONS (02 OF 03)
P004	PLUMBING SPECIFICATIONS (03 OF 03)
P200	WASTE AND VENT PIPING PLAN
P201	WATER AND GAS PLAN
P202	ROOF GAS PLAN
P300	PLUMBING RISERS
P400	PLUMBING DETAILS (1 OF 2)
P401	PLUMBING DETAILS (2 OF 2)

PLUMBING FIXTURE SCHEDULE

TAG	FIXTURE	QUANTITY	SAN / WASTE	VENT	COLD WATER	HOT WATER	WASTE FU	WATER FU	FLOW RATE
P-1	WATER CLOSET	1	4"	2"	1/2"	--	4	2.5	1.28 GPF
BASIS OF DESIGN: FIXTURES P-1 SHALL BE COMFORT HEIGHT, FLOOR MOUNTED WC. FLOOR OUTLET STYLE. TOTO #CST454CEF(R)(G) ELONGATED TOILET, VITREOUS CHINA, WHITE FINISH, SEAT SHAPE IS ELONGATED TYPE. FLUSH TANK SHALL BE #ST454ER, 1.28 GPF.									
P-2	LAVATORY	2	1-1/2"	1-1/2"	1/2"	1/2"	1	1	1.4 GPM
BASIS OF DESIGN: FIXTURE P-2 SHALL BE ADA COMPLIANT NAMEEK'S CERASTYLE #037000-U WALL MOUNT BATHROOM SINK, VITREOUS CHINA, LAVATORY COMPLETE WITH FRONT OVERFLOW AND 1-1/2" DRAIN. FITTINGS SHALL INCLUDE AMERICAN STANDARD #7075.100-295 (1-HOLE FAUCET). FITTING SHALL NEED AERATOR, CHROME-PLATED TAILPIECES, STRAINERS, P-TRAP, SUPPLY STOPS, ANCHORING CLIPS AND ALL OTHER TRIM. WALL SUPPLY STOPS, DRAINS AND TAILPIECES SHALL BE OFFSET WHEELCHAIR-TYPE. PROVIDE ADA SINK PROTECTOR & DRAIN. FAUCET SHALL BE TOUCHLESS SINGLE HOLE FAUCET AMERICAN STANDARD #7075.100-295, COLONY PRO SINGLE CONTROL LAVATORY FAUCET 0.5 GPM. METAL CONSTRUCTION SPOUT, CAST BRASS VALVE. INCLUDES SPOUT ASSEMBLY, GRID DRAIN, CONTROL BOX ASSEMBLY, SUPPLY HOSE, MIXER AND STANDARD MOUNTING HARDWARE. PROVIDE APPROVED ASSE 1070 THERMOSTATIC MIXING VALVE SET TO 110 °F AT LAVATORY.									
P-3	HAND SINK	6	2"	1-1/2"	1/2"	1/2"	1	1	1.0 GPM
BASIS OF DESIGN: FIXTURE SELECTION AS PER ARCHITECT / OWNER. PROVIDE ASSE 1070 TMV.									
P-4	SINK	2	2"	1-1/2"	1/2"	1/2"	1	1	1.4 GPM
BASIS OF DESIGN: FIXTURES P-4 SHALL BE ELKAY SINGLE BOWL UNDER MOUNT SINK, MODEL #ECTRU21179TC 304 STAINLESS STEEL, REAR CENTER DRAIN PLACEMENT, FITTINGS SHALL INCLUDE ELKAY #LK406GN04T4 (2-HOLE FAUCET). PROVIDE ASSE 1070 TMV.									
P-6	SINK	1	2"	1-1/2"	1/2"	--	0.5	0.5	1.4 GPM
BASIS OF DESIGN: FIXTURES P-6 SHALL BE ELKAY INGLE BOWL DUAL MOUNT ADA SINK, MODEL #ECTSRAD25226TBG 304 STAINLESS STEEL, REAR CENTER DRAIN PLACEMENT, FITTINGS SHALL INCLUDE ELKAY #LK406GN04T4 (2-HOLE FAUCET). PROVIDE ASSE 1070 TMV.									
MS-1	MOP SINK	1	3"	2"	3/4"	3/4"	2.0	3.0	0.5 GPM
BASIS OF DESIGN: FIXTURES P-6 SHALL BE SINGLE COMPARTMENT, MOP SINK E.L. MUSTEE 63M MOP SINK WITH REGENCY WALL MOUNTED MOP SINK FAUCET. PROVIDE HOSE THREAD FITTING FOR GARDEN HOSE CONNECTION.									
WASHER	WASHER	1	IW	--	--	1/2"	3		3 GPM
BASIS OF DESIGN: WASHER SHALL BE LG ELECTRONICS , MODEL # GCWM1069 PLATINUM SERIES 27" W X 29.8 D X 38.7 H									
FD-1	FLOOR DRAIN	3	3"	2"	1/2" TP	-	5	-	SIOUX CHIEF "832 PNR" ADJUSTABLE FLOOR DRAIN, PVC BODY, ROUND NICKEL-BRONZE STRAINER, PROVIDE TRAP PRIMER CONNECTION
FCO	FLOOR CLEANOUT	SEE PLANS	LINE SIZED	-	-	-	-	-	ZURN #1400 ADJUSTABLE FLOOR CLEANOUT, DURA-COATED CAST IRON BODY, GAS AND WATER TIGHT TAPERED THREAD PLUG, AND 5"Ø ROUND POLISHED NICKEL BRONZE TOP.
WB	WASHER BOX	1	2"	1-1/2"	3/4"	3/4"	3	4	WASHER BOX: GUY GRAY "B200" BOX WITH CENTER SAN & TOP MOUNTED WATER STAINLESS STEEL. COORDINATE WITH WASHER TO CONFIRM COMPATIBILITY CONNECTION: 2" SAN, 1-1/2" VENT, 1/2"CW & 1/2" HW.

NOTES:
1. PROVIDE WITH ½" TRAP PRIMER TO FLOOR DRAIN (TP), WATTS TP300 OR EQUIVALENT.
2. CONTRACTOR TO CROSS REFERENCE ALL LISTED PLUMBING FIXTURES WITH OWNER PROVIDED DIP (DESIGN INTENT PACKAGE) TO ENSURE ALL PLUMBING RELATED ITEMS ARE COORDINATED PROPERLY.
3. ALL PLUMBING FIXTURE MAKE, MODEL, COLOR AND INSTALLATION HEIGHT SHALL BE COORDINATE WITH ARCHITECT.

GENERAL NOTES

1. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ALL NECESSARY FITTINGS AS REQUIRED BY ALL APPLICABLE CODES AND GOVERNING AUTHORITIES.
2. CONTRACTOR SHALL VERIFY AND CORRECT AS REQUIRED TO MEET ALL CODES AND REGULATIONS ANY POSSIBLE DISCREPANCIES BETWEEN TYPE AND SIZE OF CONNECTION SPECIFIED IN PLUMBING FIXTURE SCHEDULE AND FIXTURES ACTUALLY INSTALLED ON THE SITE.
3. SANITARY PIPE SLOPE SHALL BE NOT LESS THAN 1/4" PER FOOT FOR PIPE DIAMETER 1-1/2" TO 2" AND NOT LESS THAN 1/8" PER FOOT FOR PIPE DIAMETER 3" TO 6".
4. VENT PIPING SHOWN ON FLOOR PLANS IS ONLY INDICATIVE EXCEPT FOR VTR LOCATIONS.
5. VALVES AND FITTINGS SHALL BE OF SAME SIZE OF LINE ON WHICH THEY ARE LOCATED, UNLESS OTHERWISE INDICATED ON DRAWINGS.
6. CONTRACTOR SHALL COORDINATE ALL WORK WITH OTHER TRADES.
7. CONTRACTOR SHALL FIELD VERIFY ALL GIVEN MEASUREMENTS PRIOR TO LAYING AND CONNECTING ALL SANITARY AND WASTE PIPING AND NOTIFY ARCHITECT OF ANY DISCREPANCIES.
8. AIR CHAMBERS SHALL NOT BE CONSIDERED AN EQUAL TO WATER ARRESTORS AS SPECIFIED.
9. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING FIRE RATING AND WEATHERPROOFING INTEGRITY OF ALL PIPING AND PENETRATIONS.
10. ALL WATER SUPPLY AND SANITARY LINES SHALL BE RUN AS CLOSE TO PLANS AS POSSIBLE WITH NO CHANGES IN SIZING.
11. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ALL NECESSARY SUPPORTING DEVICES FOR ALL FIXTURES INCLUDED IN CONTRACT OR HEREIN SPECIFIED OR OTHERWISE.
12. CHANGES IN THE DIRECTION OF SANITARY PIPING SHALL NOT BE MADE WITH FITTINGS WHICH WILL CAUSE EXCESSIVE REDUCTION IN THE VELOCITY OF FLOW OR CREATE ANY OTHER ADVERSE EFFECT UNLESS PHYSICALLY IMPOSSIBLE (IE: USE OF SANITARY TEE IN A HORIZONTAL CONNECTION, USE OF A DOUBLE SANITARY TEE IN A VERTICAL STACK, IN GENERAL, USE OF SHORT-RADIUS FITTINGS FOR BRANCH TO HOUSE DRAIN OR STACK CONNECTION).
13. ALL DRAINAGE PIPING SHALL BE MARKED WITH THE SEAL OF APPROVAL OF THE NATIONAL SANITATION FOUNDATION.
14. PROVIDE ACCESS PANELS TO ALL VALVES WITHIN CHASES OR ABOVE NONACCESSIBLE CEILINGS. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING TYPES.
15. SEE ARCHITECTURAL DRAWINGS FOR EXACT LOCATIONS OF PLUMBING FIXTURE MOUNTING HEIGHTS, AND DIMENSIONS.
16. ALL VENTS THROUGH ROOF SHALL BE MIN. 10'-0" FROM ANY AIR INTAKES.
17. CONTRACTOR SHALL INSTALL DIELECTRIC UNIONS AT CONNECTIONS OF DISSIMILAR METALS.
18. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS (INCLUDING PIPE ROUTING AND EQUIPMENT LOCATIONS) TO ARCHITECT/ENGINEER FOR REVIEW AND APPROVAL PRIOR TO THE INSTALLATION OR PURCHASING OF ANY PIPING AND/OR EQUIPMENT.
19. CLEANOUTS SHALL BE PROVIDED AT THE LOCATIONS INDICATED AND A MINIMUM WHERE REQUIRED BY CODE . FLOOR CLEANOUTS SHALL BE A MINIMUM OF 4" AND SHALL BE COMPLETE WITH A FLUSH PLUG AND REMOVABLE SCORIATED BRONZE FLOOR PLATE, PROVIDE CARPET BUTTONS IN CARPETED AREAS.
20. PROVIDE BACKFLOW PROTECTION DEVICES REQUIRED BY AGENCIES HAVING JURISDICTION. BACKFLOW DEVICES REQUIRING TESTING SHALL BE INSTALLED NO HIGHER THAN 5'-0" A.F.F.
21. COORDINATE INSTALLATION OF PLUMBING WORK WITH OTHER TRADES SO AS TO AVOID UNNECESSARY DELAY OR INTERFERENCES.REVIEW ARCHITECTURAL AND EQUIPMENT SHEETS.
22. ALL PROPOSED POKE-THRU AND TRENCHING LOCATIONS TO BE REVIEWED AND APPROVED BY LANDLORD'S STRUCTURAL ENGINEER BEFORE CUTTING OR DRILLING IS PERMITTED.
23. PROVIDE QUARTER-TURN ISOLATION VALVES FOR ALL PLUMBING EQUIPMENTS.
24. ANY ROOF PENETRATION FOR PLUMBING MUST BE MADE AND SEALED BY LANDLORD'S PREFERRED ROOFING CONTRACTOR.

EXPANSION TANK SCHEDULE

ITEM	QUANTITY	LOCATION	SERVICE	TYPE	CONNECTION SIZE	MAX WORKING PRESSURE(PSI)	SHIPPING WEIGHT(LBS)	TANK VOLUME (GAL)	MAKE	REMARKS
EXPANSION TANK (ET-1)	01	HOT WATER HEATER	HOT WATER	DIAPHRAGM	¾"	150	10	2.0	AMTROL ST-5C-DD	AMTROL- THERMXTROL ASME APPROVED ST-5C-DD DIMENSIONS- 14"(H)x8"(DIA.)

GAS TYPE TANKLESS HOT WATER HEATER

TAG	TOTAL NO. OF HEATERS	LOCATION	TYPE	MANUFACTURER & MODEL NO.	GAS OPERATING PRESSURE	RECOVERY CAP. (GPM/GPH) @ RISE	REMARKS
IWH-1 & IWH-2	2	BOH (104)	GAS TANKLESS TYPE WATER HEATER	RINNAI: CU160i	7" WC	4.4 GPM RECOVERY AT 70°F RISE. 120V, 60HZ, 160,000 BTU/H	-DIMENSIONS 18.5"W X 31.35"H -WATER HEATER MUST BE DIRECT VENTED WITH FORCED COMBUSTION. -PROVIDE EXPANSION TANK (ET-1), HOT WATER & RE-CIRCULATION PUMP (RCP-1). -MAINTAIN CLEARANCE AS PER MANUFACTURER RECOMMENDATION -CSA CERTIFIED AND ASME RATED T&P RELIEF VALVE

GAS LOAD SUMMERY

ITEM NO.	QTY.	DESCRIPTION	MBH
RTU-1(N)	1	ROOF TOP UNIT	150
IWH-1	1	WATER HEATER	160
IWH-2	1	WATER HEATER	160
		TOTAL LOAD	470

GAS PIPE SIZING PER NFPA 54, 2020 TABLE 6.2.1.(b)

GAS INLET PRESSURE- LESS THAN 2 PSI.
PRESSURE DROP- 0.5" WC

TOTAL EQUIVALENT LENGTH OF PIPE =150 FEET (VIF)

REQUIRED GAS SUPPLY MAIN PIPE SIZE : 1-1/2"
REQUIRED GAS METER CAPACITY : 470 MBH
MINIMUM (IF NOT PROVIDE NEW GAS METER)

RE-CIRCULATION PUMP SCHEDULE

TAG	QUANTITY	SERVICE	LOCATION	PERFORMANCE DATA/PUMP			PUMP CONSTRUCTION DATA		MOTOR DATA/PUMP						WEIGHT (LBS)	MFGR MODEL	REMARKS
				GPM	TDH (FT)	WATER TEMP. (°F)	PUMP TYPE	IMPELLER MATERIAL	POWER INPUT	STARTER TYPE	V/PH/HZ	RPM	F.L.A.	SERVICE FACTOR			
RCP-1	01	HWR CIRC. SYSTEM	WATER HEATER HW LINE	2	7	120	INLINE	NORYL	39 WATTS	AQUA STAT	115/1/60	2800	0.38	1.0	10	BELL & GOSSETT NBF-8S	INLINE ON HW RETURN LINE AT WATER HEATER WITH NEMA 1 RATED MOTOR

PROJECT TITLE:

MiniLuxe

DRAWING TITLE:
PLUMBING SYMBOLS, ABBREVIATIONS, NOTES & SCHEDULE.

PERMIT DWG DATE:	PROJECT NUMBER:
01/30/26	25-01-020
DRAWN BY: NYE	CHECKED BY: NYE

DRAWING NUMBER:

P001

Property of Engineers

SECTION 22 05 00

COMMON WORK RESULTS FOR PLUMBING

1.0 GENERAL

1.01 DESCRIPTION

A. THIS DIVISION 22 AND THE ACCOMPANYING DRAWINGS COVER THE PROVISION OF ALL LABOR, EQUIPMENT, APPLIANCES, AND MATERIALS AND PERFORMING ALL OPERATIONS IN CONNECTION WITH THE CONSTRUCTION OF THE PLUMBING SYSTEMS AS SPECIFIED HEREIN AND AS SHOWN.

B. ALL WORK SPECIFIED IN THIS SECTION IS GOVERNED BY THE COMMON WORK RESULTS FOR PLUMBING 22 05 00.

C. THE GENERAL PROVISIONS AND DIVISION 1, INCLUDING THE GENERAL, SUPPLEMENTARY AND OTHER CONDITIONS AND OTHER DIVISIONS, AS APPROPRIATE, APPLY TO WORK SPECIFIED IN THIS DIVISION.

1. 02 EXISTING CONDITIONS

A. ATTENTION IS CALLED TO THE FACT THAT THE WORK IS TO BE PERFORMED WITHIN AN EXISTING, OPERATIONAL FACILITY. PRIOR TO THE SUBMISSION OF BIDS, EACH BIDDER SHALL VISIT THE PROJECT SITE, THOROUGHLY INVESTIGATE AND BE FAMILIAR WITH ALL EXISTING CONDITIONS WHICH WILL AFFECT THE WORK; ESPECIALLY THE WORK TO BE PERFORMED ABOVE THE EXISTING CEILINGS.

B. CONNECT NEW WORK TO EXISTING WORK IN A NEAT AND WORKMANLIKE MANNER. WHERE AN EXISTING STRUCTURE MUST BE CUT OR EXISTING UTILITIES INTERFERE, SUCH OBSTRUCTIONS SHALL BE BYPASSED, REMOVED, REPLACED OR RELOCATED, PATCHED AND REPAIRED. WORK DISTURBED OR DAMAGED SHALL BE REPLACED OR REPAIRED TO ITS PRICE CONDITION.

C. PRIOR TO THE START OF ANY DEMOLITION OR CONSTRUCTION, SECURE THE SERVICES OF A QUALIFIED, EPA CERTIFIED ASBESTOS ABATEMENT AGENCY TO CHECK THE EXISTING INSULATION, ETC. FOR ASBESTOS. SHOULD ASBESTOS BE FOUND, DO NOT PROCEED WITH DEMOLITION OR CONSTRUCTION; NOTIFY THE ARCHITECT IN ANY CASE IN WRITING OF THE AGENCY'S FINDINGS.

1.03 INTENT OF DRAWINGS AND SPECIFICATIONS

A. THE IMPLIED AND STATED INTENT OF THE DRAWINGS AND SPECIFICATIONS IS TO ESTABLISH MINIMUM ACCEPTABLE STANDARDS FOR MATERIALS, EQUIPMENT AND WORKMANSHIP, AND TO PROVIDE OPERABLE PLUMBING SYSTEMS COMPLETE IN EVERY RESPECT.

B. THE ENGINEERING DRAWINGS ARE DIAGRAMMATIC, INTENDED TO SHOW GENERAL ARRANGEMENT AND SIZES OF SYSTEM COMPONENTS, AND SHALL NOT BE SCALED. RATHER, THE ARCHITECTURAL AND STRUCTURAL DRAWINGS SHALL GOVERN SPACE CONSTRAINTS, DIMENSIONS AND FINISHES. AN OFFSETS AND FITTINGS WHICH WILL BE NECESSARY TO ACCOMPLISH THE FINISHED INSTALLATION SHALL BE PROVIDED AT NO ADDITIONAL COST OR INCREASE IN THE CONTRACT.

1.04 SPACE PRIORITY

A. ENSURE OPTIMUM USE OF AVAILABLE SPACE FOR MATERIALS AND EQUIPMENT INSTALLED ABOVE CEILINGS, ALLOCATE SPACE IN THE ORDER OF PRIORITY AS LISTED BELOW EXCEPT AS OTHERWISE DETAILED. ITEMS ARE LISTED IN THE ORDER OF PRIORITY, WITH ITEMS OF EQUAL IMPORTANCE LISTED UNDER A SINGLE PRIORITY NUMBER.

1. GRAVITY FLOW PIPING SYSTEMS
2. VENT PIPING SYSTEMS.
3. RECESSED LIGHTING FIXTURES
4. CONCEALED HVAC TERMINALS AND EQUIPMENT
5. AIR DUCT SYSTEMS
6. SPRINKLER PIPING SYSTEMS
7. PRESSURIZED PIPING SYSTEMS
8. ELECTRICAL CONDUIT, WIRING, CONTROL AIR TUBING

B. ORDER OF SPACE PRIORITY DOES NOT DICTATE INSTALLATION SEQUENCE. INSTALLATION SEQUENCE SHALL BE AS REQUIRED TO INSTALL ALL AFFECTED THREADS.

C. THE WORK OF THIS DIVISION 22 SHALL NOT OBSTRUCT ACCESS FOR INSTALLATION, OPERATION AND MAINTENANCE OF THE WORK OF ANY OTHER DIVISION.

D. ALL MAJOR ITEMS OF EQUIPMENT SHALL BE ARRANGED SO AS TO PROVIDE A MINIMUM OF 28" CLEAR AISLE SPACE. ADDITIONAL SPACE SHALL BE PROVIDED BETWEEN AND AROUND EQUIPMENT FOR MAINTENANCE AND PROPER OPERATION AS SHOW IN THE EQUIPMENT MANUFACTURER'S LITERATURE.

1. 05 COORDINATION

A. COORDINATE ALL WORK UNDER THIS DIVISION 22 WITH WORK UNDER AL OTHER DIVISIONS, PROVIDING ADJUSTMENT AS NECESSARY.

B. COORDINATION OF SPACE REQUIREMENTS WITH RESPECT TO DIVISION 26 SHALL BE PERFORMED SUCH THAT.

1. NO EQUIPMENT, PIPING OR DUCTWORK, OTHER THAN ELECTRICAL, SHALL BE INSTALLED WITHIN 42" OF SWITCHBOARDS OR PANEL BOARDS.
2. NO PIPING OR DUCTWORK WHICH EVER OPERATES AT A TEMPERATURE IN EXCESS OF 120°F SHALL BE INSTALLED WITHIN 3" OF ANY ELECTRICAL CONDUCTOR.

C. ALL ITEMS MOUNTED IN OR BELOW THE CEILING, AND AIL ITEMS PENETRATING THE CEILING, SHALL BE COORDINATED WITH THE ARCHITECTURAL REFLECTED CEILING PLANS. IF ANY ITEMS ARE NOT SHOWN ON THESE PLANS, OR ANY ITEMS NEED TO BE RELOCATED FOR COORDINATION PURPOSES, PREPARE A REFLECTED CEILING PLAN AND SUBMIT IT TO THE ARCHITECT FOR APPROVAL.

1.06 CODE COMPLIANCE

A. ALL WORKMANSHIP AND MATERIALS PROVIDED UNDER THIS DIVISION 22 SHALL COMPLY WITH ALL LAWS, ORDINANCES, CODES AND REGULATIONS OF ALL FEDERAL, STATE AND LOCAL AUTHORITIES HAVING JURISDICTION.

B. ALL FIRE SUPPRESSION, PLUMBING, HEATING, VENTILATION, AND A CONDITIONING MATERIALS AND WORKMANSHIP SHALL COMPLY WITH ALL LOCAL, STATE, AND FEDERAL CODES AND THE FOLLOWING STANDARDS AS MINIMUM REQUIREMENTS:

1. INTERNATIONAL BUILDING CODE 2021.
2. 248 CMR 10.00: UNIFORM STATE PLUMBING CODE.
3. INTERNATIONAL MECHANICAL CODE 2021.
4. FUEL GAS CODE 2024 (NFPA 54,2020).
5. INTERNATIONAL ENERGY CONSERVATION CODE 2021.
6. NEC 2017 / 527-12 CMR ELECTRICAL CODE.
7. INTERNATIONAL EXISTING BUILDINGS CODE 2021.
8. NFPA 13 / 527 CMR 1 FIRE CODE

C. SECURE AND PAY ALL FEES ASSOCIATED WITH ALL PERMITS AND LICENSES REQUIRED FOR EXECUTION OF THE CONTRACT. ARRANGE FOR ALL INSPECTIONS REQUIRED BY CITY, COUNTY, STATE AND OTHER AUTHORITIES HAVING JURISDICTION, AND DELIVER CERTIFICATES OF APPROVAL TO THE ARCHITECT.

D. THE CODE REQUIREMENTS ARE STRICTLY A MINIMUM AND SHALL BE MET WITHOUT INCURRING ADDITIONS TO THE CONTRACT. WHERE REQUIREMENTS OF THE DRAWINGS OR SPECIFICATIONS EXCEED THE CODE REQUIREMENTS, THE WORK SHALL BE PROVIDED IN ACCORDANCE WITH THESE DRAWINGS OR SPECIFICATIONS. IN THE EVENT OF CONFLICT OR AMBIGUITY BETWEEN THE VARIOUS CODES, THE MOST STRINGENT REQUIREMENT SHALL GOVERN.

1.07 ELECTRICAL REQUIREMENTS AND INTERFACE

A. ALL ELECTRICAL EQUIPMENT AND WIRING PROVIDED UNDER THIS DIVISION 22 SHALL COMPLY WITH THE ELECTRICAL SYSTEM CHARACTERISTICS INDICATED ON THE ELECTRICAL DRAWINGS AND SPECIFIED IN DIVISION 26.

B. ELECTRIC CONTROLS, CONTRACTORS, STARTERS, PILOT LIGHTS, PUSH BUTTONS, ETC., SHALL BE PROVIDED COMPLETE AS PORT OF THE MOTOR, HEATER OR OTHER EQUIPMENT WHICH IT OPERATES. AM ELECTRICAL COMPONENTS SHALL BE IN CONFORMANCE WITH THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE AND DIVISION 26. STARTERS SHALL BE WYE-DELTA, CLOSED TRANSITION TYPE. REFERENCE DIVISION 26 AND THE ELECTRICAL ENGINEERING DRAWINGS FOR THOSE MOTOR STARTERS PROVIDED UNDER DIVISION 26. ALL STARTERS NOT SHOWN SHALL BE PROVIDED UNDER THIS DIVISION 22, UNLESS SPECIFIED OTHERWISE UNDER OTHER INDIVIDUAL EQUIPMENT SECTIONS, MOTOR STARTERS SHALL CONFORM TO THE FOLLOWING MINIMUM REQUIREMENTS:

1. STARTERS FOR MOTORS 1/3 HORSEPOWER OR SMALLER SHALL BE MANUAL UNLESS REMOTE OR AUTOMATIC STARTING IS REQUIRED, IN WHICH CASE THE STARTERS SHALL BE MAGNETIC, FULL VOLTAGE, NON--REVERSING, SINGLE--SPEED, UNLESS OTHERWISE INDICATED. ALL OTHER STARTERS SHALL BE MAGNETIC.
2. EACH STARTER FOR A THREE-PHASE MOTOR SHALL BE FURNISHED WITH THREE (3) OVERLOAD RELAYS SIZED FOR THE FULL-LOAD RUNNING CURRENT OF THE MOTOR PROVIDED. PROVIDE AN EXTERNAL "HAND-OFF-AUTO" SELECTOR SWITCH WITH RED "RUNNING" LIGHT. PROVIDE A GREEN PILOT LIGHT TO INDICATE MOTOR "STOPPED. EACH PILOT LIGHT SHALL HAVE A LEGEND PLATE INDICATING REASON FOR SIGNAL.
3. EACH OVERLOAD RELAY SHALL HAVE A NORMALLY OPEN ALARM CONTACT, WHICH WILL CLOSE ONLY WHEN ACTUATED BY ON OVERLOAD (NOT TO BE CONFUSED WITH N.O. OR N.C. AUXILIARY CONTACTS). THESE CONTACTS SHALL BE PROPERLY WIRED TO THEIR RESPECTIVE BLUE PILOT LIGHT PROVIDED ON THE STARTER FRONT COVER AND HAVE 0 "TRIPPED" LEGEND PLATE.
4. INDIVIDUALLY MOUNTED MOTOR STARTERS SHALL BE IN A NEMA TYPE 1 GENERAL PURPOSE ENCLOSURE IN UNFINISHED AREAS AND SHALL BE FLUSH MOUNTED IN ALL FINISHED AREAS. ALL STARTERS MOUNTED IN EXTERIOR AREAS SHALL HAVE A NEMA 3R ENCLOSURE. EACH STARTER SHALL HAVE A LAMINATED NAMEPLATE TO 'INDICATE EQUIPMENT UNIT NUMBER, FUNCTION, AND CIRCUIT NUMBER.
5. ALL MOTOR STARTERS, PUSH BUTTONS AND PILOT LIGHTS SHALL BE OF THE SAME MANUFACTURER AS THE SWITCHBOARD AND SHALL BE GENERAL ELECTRIC, SQUARED, SIEMENS, OR WESTINGHOUSE.
6. MOTOR STARTERS FOR THE FOLLOWING EQUIPMENT SHALL BE PROVIDED UNDER DIVISION 22 BY THE MANUFACTURER OF THE EQUIPMENT:
7. PUMPS WITHOUT VFDS.
8. OTHER EQUIPMENT HEREIN AFTER SPECIFIED IN OTHER SECTIONS TO BE PROVIDED WITH INTEGRAL STARTERS.

C. UNLESS OTHERWISE NOTED OR SPECIFIED IN INDIVIDUAL SECTIONS, ALL 3-PHASE MOTORS SHALL BE STANDARD NEMA CONTINUOUS DUTY "B" TYPE, WITH CLASS 8 INSULATION, OPEN DRIP--PROOF FRAME FOR INDOOR SERVICE, TEFC FOR OUTDOOR SERVICE, AND A SERVICE FACTOR OF 1.15. ALL MOTORS 5 HP AND LARGER SHALL BE U.S. MOTORS HI-EFFICIENCY MODEL OR RELIANCE XE HI-EFFICIENCY MODEL.

D. ALL POWER WIRING AND FINAL CONNECTIONS TO EQUIPMENT SHALL BE PROVIDED UNDER DIVISION 26.

E. CONTROL COMPONENTS, ALL INTERLOCKS (CONTROL! VALVES, LEAK SENSORS, ETC.) AND CONTROL WIRING (120 VOLTS, SINGLE PHASE OR LESS) SHALL BE PROVIDED UNDER DIVISION 22 AS REQUIRED TO ACHIEVE THE SPECIFIED CONTROL SEQUENCES.

F. ALL CONTROL WIRING OVER 30 VOLTS SHALL BE INSTALLED BY A LICENSED ELECTRICIAN WORKING UNDER THIS DIVISION 22.

1.08 SLEEVES, SEALS, AND ESCUTCHEONS

A. SLEEVES SHALL BE PROVIDED THROUGH ALL PIPE PENETRATIONS OF CONCRETE OR MASONRY WALLS, ELEVATED FLOORS, AND ROOFS, EXCEPT THOSE PLUMBING PIPING PENETRATIONS FOR FIXTURES, VENTS, ETC.

B. SLEEVES SHALL BE FABRICATED FROM SCHEDULE 40 STEEL PIPE THROUGH 10" AND STANDARD WALL STEEL PIPE FOR SLEEVE SIZES 12" AND LARGER. ALL SLEEVES PENETRATING EXTERIOR WELLS, UNDERGROUND WALLS, PIT OR VAULT WALLS SHALL BE PROVIDED WITH A 3" X 3/8" THICK WATERSTOP RING WELDED COMPLETELY TO THE MIDPOINT OF THE SLEEVE.

C. ALL SLEEVES PENETRATING EXTERIOR WALLS, UNDERGROUND WALLS, PIT OR VAULT WALLS, AND ELEVATED FLOORS SHALL BE PACKED AND SEALED WATERTIGHT.

D. SLEEVES THROUGH ROOFS SHALL EXTEND ABOVE THE ROOF SURFACE AND BE FLASHED WATERTIGHT.

E. SLEEVES THROUGH WALLS SHALL BE CUT AND FINISHED FLUSH WITH EACH SURFACE OF THE WALL IN WHICH THEY ARE INSTALLED.

F. SLEEVES THROUGH ELEVATED FLOORS SHALL EXTEND AT LEAST 4" ABOVE THE FINISHED FLOOR AND BE SEALED WATERPROOF BETWEEN THE SLEEVE AND SLAB.

G. SLEEVES SHALL BE SIZED TO PROVIDE A MINIMUM OF 1/2" CLEARANCE BETWEEN THE INSIDE SURFACE OF THE SLEEVE AND THE OUTSIDE FINISHED SURFACE OF THE PIPE PLUS ANY INSULATION SPECIFIED.

H. FIRE--STOPS SHALL BE PROVIDED AS SPECIFIED HEREIN. ALL ANNULAR SPACES BETWEEN PIPING AND SLEEVES THAT DO NOT REQUIRE FIRE--STOPS SHALL BE PACKED WITH MINERAL WOOL AND CAULKED.

I. FIRE--STOPPING OR PACKING AT ELEVATED FLOOR PENETRATIONS SHALL BE LEVEL WITH OR ABOVE THE ELEVATION OF THE TOP OF THE SLEEVE TO PREVENT ANY WATER PONDING ON TOP OF THE SLEEVE.

J. PROVIDES ROUND, CHROME-PLATED ESCUTCHEONS ON ALL EXPOSED PIPING PENETRATIONS PASSING THROUGH WALLS, FLOORS, PARTITIONS AND CEILINGS.

K. ALL PENETRATIONS THROUGH RATED SLABS, WALLS, ETC. SHALL BE UNDER UL-LISTED SYSTEMS. PROVIDE RATED BOX--OUT, FIRE CAULKING, ETC. AS NEEDED TO ENSURE FIRE RATING IS MAINTAINED IN COMPLIANCE WITH UL-LISTED SYSTEMS.

1.09 FIRE STOPS

A. WHERE PIPING, CONDUIT, ETC. PASS THROUGH FIRE PARTITIONS, FIRE WALLS, AND FLOORS, A FIRESTOP SHALL BE PROVIDED THAT WILL ENSURE AN EFFECTIVE BARRIER AGAINST THE SPREAD OF FIRE, SMOKE, AND GASES. FIRESTOP MATERIAL SHALL BE PACKED TIGHT AND COMPLETELY FILL GAPS BETWEEN THE DUCTWORK, PIPING, CONDUITS, ETC. AND THE PERIMETER OF THEIR ROUGH OPENINGS.

B. ALL PENETRATIONS SHALL BE IN ACCORDANCE WITH UL 1479 OR ASTM E 814 LISTED SYSTEMS, AND PRODUCTS USED SHALL BE SPECIFICALLY APPLICABLE FOR THE APPROPRIATE INSTALLATION CONDITIONS. ASSEMBLIES SHALL PROVIDE A MINIMUM RATING EQUAL TO THE CONSTRUCTION PENETRATED. PRODUCTS SHALL BE BY HILTI, 3M, OR PROSET.

C. INSTALLATION SHALL BE BY A QUALIFIED INSTALLER. THE INSTALLER SHALL BE CERTIFIED, LICENSED, OR OTHERWISE QUALIFIED BY THE FIRES TOPPING MANUFACTURER AS HAVING THE NECESSARY TRAINING TO INSTALL THE MANUFACTURER-SPECIFIC PRODUCT. A MANUFACTURER OR VENDOR'S WILLINGNESS TO SELL THE FIRES TOPPING PRODUCT TO THE CONTRACTOR OR INSTALLER DOES NOT IN ITSELF CONFER QUALIFICATION.

D. INSTALLER SHALL HAVE AT LEAST ONE OF THE FOLLOWING QUALIFICATIONS:

1. FA 4991 APPROVED CONTRACTOR
2. UL APPROVED CONTRACTOR
3. HILT, 3M, OR PROSET ACCREDITED FIRE STOP SPECIALTY CONTRACTOR

E. INSTALLING FIRM SHALL HAVE NO LESS THAN 3 YEARS OF EXPERIENCE WITH FIRESTOP INSTALLATION.

F. A MANUFACTURER'S DIRECT REPRESENTATIVE (NOT DISTRIBUTOR OR AGENT) SHALL BE ON SITE DURING THE INITIAL INSTALLATION OF FIRESTOP SYSTEMS TO TRAIN APPROPRIATE CONTRACTOR PERSONNEL IN PROPER SELECTION AND INSTALLATION PROCEDURES.

G. THE FIRESTOP CONTRACTOR OR INSTALLER SHALL SUPPLY AS--BUILT DOCUMENTATION OF EACH INDIVIDUAL PENETRATION LOCATION ON THE PROJECT. DOCUMENTATION SHALL INCLUDE A SEQUENTIAL LOCATION NUMBER, DETAILED DESCRIPTION OF THE PENETRATION LOCATION, SIZE, AND TYPE, TESTED SYSTEM NUMBER, TYPE OF ASSEMBLY PENETRATED, AND RATING TO BE ACHIEVED. AS--BUILT DOCUMENTATION SHALL BE INCLUDED WITH THE CLOSE-OUT MATERIALS.

H. IDENTIFY THROUGH--PENETRATION FIRESTOP SYSTEMS WITH PRESSURE--SENSITIVE, SELF--ADHESIVE, PREPRINTED VINYL LABELS. ATTACH LABEL PERMANENTLY ON BOTH SIDES OF THE PENETRATED CONSTRUCTION IN A VISIBLE LOCATION. THE LABEL SHALL INCLUDE THE FOLLOWING:

1. THE WORDS "WARNING -- THROUGH PENETRATION FIRESTOP SYSTEM--DO NOT DISTURB"
2. THROUGH PENETRATION FIRESTOP SYSTEM DESIGNATION AND MANUFACTURER
3. DATE OF INSTALLATION

1.10 CORE DRILLING

A. CUTTING OF HOLES THROUGH CONCRETE AND MASONRY SHALL BE BY DIAMOND CORE OR CONCRETE SOW. PNEUMATIC HAMMER, IMPACT ELECTRIC AND HAND OR MANUAL HAMMER TYPE DRILLS WILL NOT BE ALLOWED, EXCEPT AS PERMITTED BY THE ARCHITECT WHERE REQUIRED BY LIMITED WORKING SPACE. LOCATE HOLES SUCH THAT THEY WILL NOT AFFECT STRUCTURAL SECTIONS SUCH AS RIBS OR BEAMS. HOLES SHALL BE LAID OUT WELL IN ADVANCE OF THE INSTALLATION. THESE LAYOUT LOCATIONS SHALL BE APPROVED BY THE ARCHITECT PRIOR TO DRILLING.

1.11 IDENTIFICATION OF PIPING

A. ALL ABOVEGROUND PLUMBING SYSTEMS PIPING AND VALVES SIZED 3/4" AND LARGER WHICH ARE INSTALLED INACCESSIBLE LOCATIONS (INCLUDING PIPING ABOVE REMOVABLE CEILINGS AND BEHIND ACCESS PANELS} SHALL BE IDENTIFIED IN STRICT CONFORMANCE WITH THE "SCHEME FOR THE IDENTIFICATION OF PIPING SYSTEMS" (ANSI A13.1-2015)

B. PIPING LABELS IN EXPOSED AREAS SHALL BE ORIENTED AND LOCATED IN COORDINATION WITH THE ARCHITECT.

C. SYSTEM AMES SHALL, AT MINIMUM, UNIQUELY IDENTIFY THE SYSTEM AND PERFORMANCE CATEGORY I.E 140% HOT WATER SUPPLY, HIGH PRESSURE COLD WATER, ETC.

D. SPECIALIZED PIPING (GREASE WASTE, ACID WASTE, FUEL PIPING, ETC.) INSTALLED UNDERGROUND SHALL BE LABELED. THE LABEL SHALL BE CORROSION-RESISTANT OR SHALL BE PERMANENTLY MARKED.

E. EACH IDENTIFICATION MARKER SHALL INCLUDE THE FOLLOWING:

-PROPER COLOR-CODED BACKGROUND

-PROPER COLOR OF LEGEND IN RELATION TO BACKGROUND COLOR

-PROPER LEGEND LETTER SIZE

-PROPER MARKER LENGTH

-DIRECTION OF THE FLOW ARROW SHALL BE INCLUDED ON EACH MARKER

F. LOCATIONS FOR PIPE MARKERS SHALL BE AS FOLLOWS:

WATER, REFRIGERANT AND GAS PIPE LABELS, INDICATING THE SERVICE AND DIRECTION OF FLOW, SHALL BE APPLIED AT APPROXIMATELY 20-FEET INTERVALS AS WELL NEAR EQUIPMENT AND MAJOR BRANCH CONNECTIONS. THE COLORS OF BANDS SHALL CONFORM TO ASME A13.1 STANDARDS.

- ADJACENT TO EACH VALVE AND FITTING
- AT EACH BRANCH AND RISER TAKE OFF
- AT EACH PIPE PASSAGE THROUGH WALLS, FLOORS AND CEILINGS
- UNDERGROUND REQUIRED TO BE LABELED SHALL BE LABELED EVERY 10 FEET OR MORE OFTEN AS REQUIRED BY THE AHU

G. IDENTIFICATION MARKERS MAY BE STENCILED OR SHALL BE SET MARK PIPE MARKERS, AS MANUFACTURED BY SETON NAME PLATE CORPORATION.

H. ALL VALVES SHALL BE IDENTIFIED WITH THE APPROPRIATE SERVICE DESIGNATION AND VIVE NUMBER BRASS VALVE TAGS. EACH VALVE TAG SHALL BE 19 GAUGE BRASS WITH 1/4" BLOCK--FILED LETTERS OVER 1/2" BLACK--FILLED NUMBERS. TAGS SHALL BE FASTENED TO VALVES WITH BRASS "S" HOOKS OR BRASS JACK CHAIN. BRASS TAGS AND FASTENERS SHALL BE AS MANUFACTURED BY SETON NAME PLATE CORPORATION,

PROVIDE CHARTS OF ALL VALVES. VALVE CHARTS SHALL INCLUDE THE FOLLOWING ITEMS:

VALVE IDENTIFICATION NUMBER

LOCATION

PURPOSE / MATERIAL

2.0 PRODUCTS

2.01 BASIS AND SUBSTITUTION PROCEDURES

A. MANUFACTURER NAMES, SERIES, AND MODEL NUMBERS, AS NOTED OR SPECIFIED, ARE FOR THE PURPOSE OF DESCRIBING TYPE, CAPACITY, AND QUALITY OF EQUIPMENT, MATERIALS, AND PRODUCTS TO BE USED. UNLESS "OR EQUAL" IS SPECIFICALLY STATED, BIDS SHALL BE BASED ONLY ON THE SPECIFIED "BASIS OF DESIGN" MANUFACTURER. THE LISTING OF A PARTICULAR MANUFACTURER AS AN "EQUAL" OR "ACCEPTABLE SUBSTITUTE" MANUFACTURER SHALL NOT BE MISCONSTRUED AS APPROVING, NOR ALLOWING THE SUBSTITUTION OF, THAT MANUFACTURER'S STANDARD PRODUCT IN PLACE OF THE BASIS OF DESIGN. NO CONSIDERATION WILL BE GIVEN TO A PRODUCT THAT WOULD REQUIRE DIMENSIONAL, SPATIAL, OR AESTHETIC CHANGES TO THE PROJECT. "ACCEPTABLE SUBSTITUTE" AND "EQUAL" MANUFACTURERS SHALL ONLY BID THOSE PRODUCTS THAT EXACTLY MATCH THE SIZE AND OTHER CHARACTERISTICS OF THE SPECIFIED BASIS OF DESIGN. ANY CHANGES TO OTHER DISCIPLINES AND TRADES OF WORK REQUIRED BY AN "OR EQUAL" OR "SUBSTITUTE" PRODUCT SHALL BE DULY CONSIDERED AND PRICED ACCORDINGLY BEFORE BIDDING OR PRICING. THE DECISION AS TO WHETHER OR NOT A PROPOSED SUBSTITUTE OR "EQUAL" PRODUCT IS EQUAL TO THAT SPECIFIED SHALL REST SOLELY WITH THE ARCHITECT.

B. REQUESTS TO PROVIDE "EQUAL" PRODUCTS IN LIEU OF THOSE SPECIFIED SHALL BE SUBMITTED TO THE ARCHITECT IN WRITING AT LEAST TEN (10) DAYS PRIOR TO FINAL PRICING AND EXECUTION OF THE CONTRACT. NO CONSIDERATION WILL BE GIVEN TO SUBSTITUTE PRODUCTS AFTER FINAL PRICING AND EXECUTION OF THE CONTRACT.

C. ANY "OR EQUAL" PRODUCT OR PROPOSED PRODUCT SUBSTITUTION WHICH WILL CAUSE A CHANGE IN THE APPEARANCE, DIMENSIONS, OR DESIGN OF ANY PART OF THE BUILDING, STRUCTURE, ELECTRICAL SYSTEM, OR ANY OTHER ENGINEERED SYSTEM SHALL BE ACCOMPANIED BY A SCALED DRAWING AND WRITTEN DESCRIPTION OF THE REQUIRED CHANGE(S) FOR APPROVAL BY THE ARCHITECT. IF DEEMED NECESSARY BY THE ARCHITECT, DESIGN CHANGES SHALL BE SIGNED AND SEALED BY A REGISTERED PROFESSIONAL ENGINEER, CURRENTLY LICENSED IN THIS STATE. THIS SHALL BE PERFORMED UNDER THE CONTRACTOR SELECTING THE SUBSTITUTION'S SCOPE.

D. ANY AND ALL CHANGES DUE TO THE SUBSTITUTION OF BASIS OF DESIGN EQUIPMENT INCLUDING BUT NOT LIMITED TO ELECTRICAL CONNECTION, PHYSICAL SIZE, ACCESS, PIPING CONNECTIONS, CONTROLS, ETC. SHALL BE SOLELY THE RESPONSIBILITY OF THE CONTRACTOR SELECTING THE SUBSTITUTION.

2.02 MINIMUM STANDARDS

A. EVERY PIECE OF ENERGY-CONSUMING EQUIPMENT, ALL FIRE SUPPRESSION PRODUCTS, AND LIFE SAFETY EQUIPMENT SHALL COMPLY WITH THE FOLLOWING STANDARDS AS APPLICABLE; ESPECIALLY REGARDING PREVAILING CODES:

1. FACTORY MUTUAL LABORATORIES (FM)
2. INDUSTRIAL RISK INSURERS (IRI)
3. UNDERWRITERS LABORATORIES, INC. (UL)
4. ADC: AIR DIFFUSION COUNCIL
5. AGA: AMERICAN GAS ASSOCIATION
6. AMCA: AIR MOVING AND CONDITIONING ASSOCIATION, INC.
7. ANSI: AMERICAN NATIONAL STANDARDS INSTITUTE
8. API: AMERICAN PETROLEUM INSTITUTE
9. AHRI: AIR CONDITIONING, HEATING, AND REFRIGERATION INSTITUTE
10. ASHRAE: AMERICAN SOCIETY OF HEATING, REFRIGERATING AND AIR CONDITIONING ENGINEERS
11. ASME: AMERICAN SOCIETY OF MECHANICAL ENGINEERS
12. ASTM: AMERICAN SOCIETY OF TESTING AND MATERIALS
13. AWWA: AMERICAN WATER WORKS ASSOCIATION
14. IBR: INSTITUTE OF BOILER AND RADIATOR MANUFACTURERS
15. MSS: MANUFACTURERS STANDARDIZATION SOCIETY
16. NBBPVI; NATIONAL BOARD OF BOARD AND PRESSURE VESSEL INSPECTORS
17. NEMA: NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION
18. OSHA: OCCUPATIONAL SAFETY & HEALTH ADMINISTRATION
19. PDI: PLUMBING DRAINAGE INSTITUTE
20. PP: PLASTIC PIPE INSTITUTE
21. CISPI: CAST IRON SOIL PIPING INSTITUTE

2.03 PIPE HANGERS AND SUPPORTS

A. PIPE HANGERS, HANGER RODS, TRAPEZE TYPE HANGERS, UPPER ATTACHMENTS AND OTHER SUPPORTS SHALL BE SELECTED BASED ON PIPE SIZE (PLUS INSULATION OF PIPES SPECIFIED TO BE INSULATED) AND THE WEIGHT OF THE MEDIUM BEING TRANSPORTED OR THE MEDIUM USED FOR TESTING, WHICHEVER IS GREATER, PROVIDE ALL HANGERS AND RODS, TURNBUCKLES, ANGLES, CHANNELS, AND OTHER STRUCTURAL SUPPORTS TO SUPPORT THE PIPING SYSTEMS. RODS FOR PIPE HANGERS SHALL BE FULL SIZE OF THE HANGER MANUFACTURER'S CATALOG LISTED ROD SIZE FOR EACH TYPE HANGER SPECIFIED. HANGERS 'AND SUPPORTS SHALL BE MICHIGAN, ITT GRINNELL OR B-LINE.

B. ALL MATERIAL UTILIZED FOR THE HANGING AND SUPPORT OF THE PIPING SYSTEMS SHALL BE MANUFACTURED PRODUCTS WHICH ARE SPECIFICALLY INTENDED FOR THE PURPOSE OF HANGING PIPING SYSTEMS. THE USE OF WIRE, STEEL STRAPS, PLASTIC TIES, ETC. IS STRICTLY PROHIBITED.

C. PIPE HANGERS SELECTED FOR SUPPORTING HORIZONTAL INSULATED PIPING SHALL BE SIZED TO FIT AROUND THE OUTSIDE OF THE PIPE INSULATION. INSULATED PIPING SHALL BE SUPPORTED ON GALVANIZED SHIELDS.

1. SHIELDS SHALL BE AS FOLLOWS:
   A. PIPES 2" AND SMALLER: 18 GAUGE X 12" LONG PIPES
   B. 2 1/2" AND LARGER: 16 GAUGE X 18" LONG
2. SHIELDS SHALL BE 180 DEGREES AROUND THE LOWER HALF OF THE PIPE AT ALL PIPE HANGERS, EXCEPT THAT ON TRAPEZE HANGERS, PIPE RACKS AND FLOOR SUPPORTED HORIZONTAL PIPES, SHIELDS SHALL BE 360 DEGREES AROUND THE ENTIRE PIPE.

A. PIPE HANGERS TOUCHING COPPER PIPING SHALL BE COPPER PLATED OR THE PIPING SHALL BE DIELECTRICALLY ISOLATED FROM ANY STEEL HANGERS OR CLAMPS THAT ARE USED. NOTE THE REQUIREMENT FOR DOMESTIC WATER PIPING REQUIRES THE HANGERS TO BE INSTALLED OVER THE INSULATION.

B. STEEL RODS, FRAMING, AND CLAMPS SHALL BE PLATED OR PRIMED TO PREVENT RUST FORMATION.

3.0 EXECUTION,

3.01 GENERAL

C. ALL PIPING, VALVES, AND FITTINGS SHALL BE PRODUCTS OF A DOMESTIC MANUFACTURER AND MADE IN THE USA.

D. FLEXIBLE PIPING CONNECTIONS SHALL BE PROVIDED AND INSTALLED AT ALL SUCTION AND DISCHARGE CONNECTIONS OF PACKAGED BOOSTER PUMPS AND AT ANY PUMP 2.0 HP AND ABOVE. FLEXIBLE PIPING CONNECTIONS SHALL BE SUITABLE FOR 150 PSI WORKING PRESSURE OR THE SYSTEM PRESSURE AT THE INSTALLATION LOCATION, WHICHEVER IS GREATER, AND BE SUITABLE FOR THE TEMPERATURE OF THE SYSTEM. FLEXIBLE CONNECTIONS SHALL BE STAINLESS STEEL BRAIDED HOSE TYPE, WITH A LENGTH NOT LESS THAN THEIR PIPE DIAMETER. PROVIDE AND INSTALL RESTRAINING RODS IF RECOMMENDED BY THE MANUFACTURER FOR THE INSTALLATION LOCATION AND APPLICATION.

E. PROVIDE AND INSTALL SHUT-OFF VALVES AT ANY AND ALL EQUIPMENT INCLUDING WATER HEATERS, DOMESTIC BOOSTER PUMPS, RE-CIRCULATION PUMPS, STORAGE AND PRESSURE TANKS, ETC, AND AT ANY LOCATIONS REQUIRED BY CODE, SUCH AS BRANCH LINES FROM RISERS SERVING MORE THAN ONE FIXTURE. SHUT-OFFS SHALL BE IN ADDITION TO THE SPECIFICALLY SHOWN OR NOTED IN THE CONTRACT DOCUMENTS.

3.02 SUBMITTALS

A. BEFORE PREPARING SUBMITTALS, STUDY ALL CONTRACT DRAWINGS AND SPECIFICATIONS IN DETAIL, OBTAIN MANUFACTURER'S RECOMMENDED INSTRUCTIONS, AND HAVE SUBMITTALS PREPARED BASED ON SPECIFIC EQUIPMENT AND MATERIAL PROPOSED FOR INSTALLATION. AN OFFICER OF THE CONTRACTING FIRM SHALL SIGN ALL SHOP DRAWINGS (CERTIFYING CONFORMANCE WITH PLANS AND SPECIFICATIONS) BEFORE SUBMITTING TO THE ARCHITECT OR RELEASING TO THE FIELD.

B. THE SUBMITTAL PROCESS SHALL NOT BE UTILIZED AS AN AVENUE TO SUBSTITUTE PRODUCTS AFTER THE EXECUTION OF THE CONTRACT. SHOULD ON UNSPECIFIED OR UNEQUAL PRODUCT BE SUBMITTED, IT WILL BE REJECTED. IF A SECOND ATTEMPT AT SUBSTITUTION IS MADE DURING THE RE-SUBMITTAL OF THE SAME PRODUCT, THEN NO MORE REVIEWS OF THAT PRODUCT WILL BE PERFORMED WITHOUT DIRECT COMPENSATION TO THE ENGINEER BEING PAID FOR THE ADDITIONAL SERVICES REQUIRED FOR THE THIRD REVIEW AND ANY FURTHER REVIEWS.

C. ALL SUBMITTALS SHALL BE SUBMITTED AND RETURNED ELECTRONICALLY.

D. SUBMITTALS WILL NOT BE ACCEPTED FOR REVIEW UNLESS THEY:

1. COMPLY WITH THE REQUIREMENTS OF DIVISION 1.
2. INCLUDE COMPLETE INFORMATION PERTAINING TO ALL APPURTENANCES AND ACCESSORIES.
3. ARE SUBMITTED CS COMPLETE PACKAGES WHICH PERTAIN TO ALL RELATED ITEMS IN DIVISION 22.
4. SEPARATE PACKAGES SHALL BE SUBMITTED AS FOLLOWS:
5. ALL PLUMBING EQUIPMENT, PIPING, SPECIALTIES, AND COMPONENTS ALL PLUMBING FIXTURES
6. ARE PROPERLY MARKED WITH EQUIPMENT, SERVICE OR FUNCTION IDENTIFICATION AS RELATED TO THE PROJECT AND ARE MARKED WITH PERTINENT SPECIFICATION PARAGRAPH NUMBER.

E. SUBMIT CATALOG INFORMATION, FACTORY ASSEMBLY DRAWINGS, FIELD INSTALLATION DRAWINGS, AND CERTIFICATIONS AS REQUIRED FOR A COMPLETE EXPLANATION AND DESCRIPTION OF ALL ITEMS OF EQUIPMENT. THE SUBMITTAL DATA SHALL PROVIDE AMPLE, UNQUESTIONABLE COMPLIANCE WITH THE CONTRACT DOCUMENTS.

F. REVIEW OF SUBMITTALS SHALL NOT BE CONSTRUED AS AUTHORIZING ANY DEVIATIONS FROM THE PLANS AND SPECIFICATIONS UNLESS SUCH DEVIATIONS ARE CLEARLY IDENTIFIED AND SEPARATELY SUBMITTED IN THE FORM OF A LETTER THAT IS ENCLOSED WITH THE SUBMITTALS.

G. SUBMITTALS ARE REQUIRED ON ALL MANUFACTURED EQUIPMENT, ESPECIALLY ENERGY CONSUMING EQUIPMENT. SUBMITTALS SHALL INCLUDE, BUT ARE NOT LIMITED TO, THE FOLLOWING ITEMS OF EQUIPMENT:

7. PIPING AND PIPING SPECIALITIES
8. INSULATION
9. WATER HEATERS
10. PUMPS
11. PLUMBING FIXTURES
12. PIPING SHOP DRAWINGS
13. FIRE-STOPPING PRODUCTS AND APPLICABLE UL FIRE-STOP DETAILS

3.03 EXCAVATION, TRENCHING, AND BACKFILLING

A. PERFORM ALL EXCAVATION, TRENCHING AND BACKFILLING FOR UNDERGROUND WORK UNDER THIS DIVISION 22. DURING EXCAVATION, THE EXCAVATED MATERIAL SHALL BE PILED BACK FROM THE BANKS OF THE TRENCH TO AVOID OVERLOADING, SLIDES OR COVE-INS. DO NOT EXCEED THE ANGLE OF REPOSE UNLESS WRITTEN APPROVAL IS OBTAINED IN ADVANCE FROM THE ARCHITECT FOR SHORING, BRACING OR OTHER ALTERNATE EXCAVATION METHODS. ALL EXCAVATED MATERIAL NOT USED FOR BACKFILLING SHALL BE REMOVED FROM THE BUILDING AND DISPOSED OF AS INDICATED OR DIRECTED BY THE ARCHITECT. TAKE MEASURES TO PREVENT SURFACE WATER FROM FLOWING INTO TRENCHES AND OTHER EXCAVATIONS AND ANY WATER ACCUMULATING THEREIN SHALL BE REMOVED BY PUMPING. ALL EXCAVATION SHALL BE MADE BY OPEN CUT. TUNNELING SHALL NOT BE ALLOWED.

B. THE BOTTOM OF ALL TRENCHES SHALL BE EVENLY GRADED TO PROVIDE FIRM SUPPORT AND AN EVEN BEARING SURFACE. PIPE SHALL BE LAID ON FIRM SOIL, LAID IN STRAIGHT LINES, AND ON UNIFORM GRADES. PROVIDE BELL HOLES SO THAT THE BARREL OF THE PIPE RESTS EVENLY ON THE BOTTOM OF THE TRENCH ALONG THE ENTIRE LENGTH OF THE PIPE.

C. PIPE SHALL BE INSPECTED AND TESTED PRIOR TO BACKFILLING. TRENCH SHALL BE HAND FILLED TO A MINIMUM OF 12" ABOVE THE TOP OF THE PIPE WITH SUITABLE EARTH (FREE OF ROCKS, TRASH, LARGE CLODS AND ORGANIC MATERIAL) AND COMPACTED TO A MINIMUM 95% PROCTOR. AFTER THE FIRST LAYER IS COMPLETED, SUBSEQUENT LAYERS SHALL BE FILLED AND COMPACTED THE SOME AS THE FIRST LAYER. SETTLING THE BACKFILL WITH WATER SHALL NOT BE PERMITTED.

Property of My Engineers

PROJECT TITLE:

MiniLuxe

DRAWING TITLE:

PLUMBING SPECIFICATIONS (01 OF 03)

PERMIT DWG DATE: 01/30/26	PROJECT NUMBER: 25-01-020
DRAWN BY: NYE	CHECKED BY: NYE

DRAWING NUMBER:

P002

3.04 INSTALLATION REQUIREMENTS

A. ALL EQUIPMENT SHALL BE INSTALLED IN STRICT CONFORMANCE WITH THE RECOMMENDATIONS OF THE EQUIPMENT MANUFACTURER, AS INDICATED ON THE DRAWINGS, AND AS SPECIFIED.

B. PROVIDE INSTALLATION MANUALS FOR EACH PIECE OF EQUIPMENT. SUBMIT IN SEPARATELY BOUND VOLUMES AFTER REVIEW OF SUBMITTALS.

C. PROVIDE SUPPLEMENTARY STEEL FRAMING AND WELDED STEEL EQUIPMENT SUPPORT STANDS AS REQUIRED FOR PROPER HANGING AND SUPPORT OF THE PLUMBING SYSTEMS. STEEL ANGLES, CHANNELS AND TUBING UTILIZED FOR SUCH FRAMING SHALL BE SELECTED TOR A MAXIMUM DEFLECTION OF 1/360TH OF THE SPAN.

D. ALL ROOF CURBS SHALL BE A MINIMUM OF 12" HIGH AND SELECTED FOR THE VARIOUS ROOF PITCHES. CURBS INSTALLED ON ROOFS HAVING PITCHES OF NOT MORE THAN 1/4" PER FOOT MAY BE STANDARD CURBS SHIMMED LEVEL WITH STEEL CHANNELS OR ZS TO PROVIDE SUITABLE SUPPORT AND FLASHING SURFACES.

3.05 CLEANING, LUBRICATION AND ADJUSTMENT

A. THE EXTERIOR SURFACES OF PLUMBING EQUIPMENT, PIPING, CONDUIT, ETC., SHALL BE CLEANED AND FREE OF ALL DIRT, GREASE, OIL, PAINT SPLATTER, AND OTHER CONSTRUCTION DEBRIS.

B. BEARINGS THAT REQUIRE LUBRICATION SHALL BE LUBRICATED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

C. ALL CONTROL EQUIPMENT, VALVES, EQUIPMENT SETTINGS, PRESSURE TANKS, ETC. SHALL BE ADJUSTED TO THE SETTINGS REQUIRED FOR THE PERFORMANCE SPECIFIED.

D. DO ALL MATERIALS, EQUIPMENT, ETC. SUBJECT TO WEATHER, CORROSION, DUST, DEBRIS, WATER ETC. TO BE INSTALLED OR UTILIZED FOR THE PROJECT SHALL BE FULLY PROTECTED. THIS IS INCLUSIVE OF PIPING AND DUCT OPENINGS AND INTERNAL NON VENTILATION INTAKES AND DISCHARGES. THIS DIVISION'S SCOPE INCLUDES PROTECTION AND REMEDIATION OF ANY AND ALL DIVISION MATERIALS, ETC. INCLUDING CLEANING, VACUUMING, DUSTING, ETC. REQUIRED FOR A CLEAN SYSTEM AND OPERATION. INSULATION AND EQUIPMENT WITH ELECTRICAL CONNECTIONS SUBJECT TO WATER SHALL BE REPLACED IN THEIR ENTIRETY. COORDINATE WITH ALL OTHER TRADES AND SCHEDULES.

3.06 PAINTING

A. ALL UNCOATED AND UN-INSULATED STEEL SURFACES EXPOSED TO SIGHT INSIDE THE BUILDING, SUCH AS PIPING, EQUIPMENT HANGERS AND SUPPORTS, WHICH ARE NOT PROVIDED WITH FACTORY PRIME COAT OR GALVANIZING, SHALL BE CLEANED AND POINTED WITH ONE COAT OF RUST INHIBITING PRIMER. IN ADDITION, ALL SURFACES IN FINISHED SPACES SHALL ALSO BE PAINTED WITH TWO COOTS OF FINISH PAINT IN A COLOR SELECTED BY THE ARCHITECT.

B. STEEL ITEMS EXPOSED OUTSIDE THE BUILDING, SUCH AS EQUIPMENT SUPPORTS, UN-INSULATED PIPING AND HANGERS WHICH ARE NOT FACTORY POINTED OR GALVANIZED SHALL BE CLEANED AND PAINTED WITH ONE COAT OF RUST INHIBITING PRIMER AND TWO COATS OF ASPHALTIC BASE ALUMINUM PAINT. INSULATED STEEL PIPES OUTSIDE THE BUILDING SHALL BE CLEANED AND PAINTED WITH ONE COAT OF RUST INHIBITING PRIMER BEFORE INSTALLING INSULATION.

C. FACTORY PAINTED EQUIPMENT THAT HAS BEEN SCRATCHED OR MARRED SHALL BE REPAINTED TO MATCH THE ORIGINAL FACTORY COLOR.

3.07 PIPING LEAK TESTING

A. SANITARY, WASTE, STORM, AND VENT PIPING SHALL BE TESTED WITH WATER BEFORE INSTALLING FIXTURES. WATER TEST SHALL BE APPLIED TO THE SYSTEM EITHER IN ITS ENTIRETY OR TO THE INDIVIDUAL SECTIONS. EACH OPENING EXCEPT THE HIGHEST OPENING OF THE SECTION UNDER TEST SHALL BE PLUGGED, AND THE SECTION SHALL BE FILLED WITH WATER AND TESTED WITH A HEED OF WATER OF AT LEAST TEN (10) FEET ABOVE THE HIGHEST POINT IN THE SYSTEM. THE WATER SHALL BE KEPT IN THE PORTION UNDER TEST, FOR AT LEAST THIRTY (30) MINUTES; NO DROP IN THE WATER LEVEL WILL BE ACCEPTABLE.

B. TEST ALL PIPING, EXCEPT DRAINAGE CONNECTIONS, INCLUDING VALVES, FITTINGS, AND JOINTS, HYDROSTATICALLY TESTED AT A PRESSURE EQUAL TO AT LEAST 1.5 TIMES THE SYSTEM OPERATING PRESSURE, FOR A MINIMUM (4) HOURS. BLANK OFF OR REMOVE ANY ELEMENTS OR EQUIPMENT, WHICH MAY BE DAMAGED BY THE PRESSURE. OPEN BUT DO NOT BACK SEAT VALVES. INSPECT ALL JOINTS AND CONNECTIONS. CONFIRM THAT THERE IS NO VISIBLE LEAKAGE AND NEGLIGIBLE DROP IN PRESSURE. CONTRACTOR TO USE NIST-CERTIFIED GAUGES.

C. ALL COMPRESSED AIR PIPING SHALL BE TESTED PNEUMATICALLY AND PROVED TIGHT AT A PRESSURE OF NOT LESS THAN 100 PSI FOR A PERIOD OF NOT LESS THAN TWO (2) HOURS. NO LOGS IN PRESSURE WILL BE PERMITTED.

D. ALL LEAKS SHALL BE REPAIRED BY TIGHTENING, REMAKING JOINTS, OR REPLACING PIPE AND FITTINGS. CAULKING OF JOINTS SHALL NOT BE PERMITTED.

E. SEE SPECIFICATION SECTION 23 11 23 FOR TESTING REQUIREMENTS OF NATURAL GAS AND LIQUID PROPANE GAS PIPING. SYSTEM SHALL BE PORT OF DIVISION 22 SCOPE UNLESS OTHERWISE ARRANGED WITHIN THE CONTRACT. COORDINATE WITH DIVISION 23.

3.08 RECORD (AS-BUILT) DRAWINGS

A. AT THE COMPLETION OF THE PROJECT. PROVIDE A SET OF REPRODUCIBLE PRINTS TO THE ARCHITECT WHICH REFLECTS ALL CHANGES, DEVIATIONS AND REVISIONS MODE TO THE ORIGINAL DESIGN DOCUMENTS. LOCATIONS OF ALL UNDERGROUND PIPING AND UTILITIES SHALL BE CLEARLY SHOWN AND DIMENSIONED FROM PERMANENT REFERENCE POINTS SUCH AS BUILDING COLUMN LINES. RECORD DRAWINGS SHALL BE PRODUCED IN ELECTRONIC FORMAT COMPATIBLE WITH AUTOCAD. FURNISH ELECTRONIC COPIES OF ALL DRAWINGS IN DWG. FORMAT, AND TWO (2) BAND COPIES OF ALL DRAWING SHEETS. AS-BUILTS FOR ELECTRONIC INCORPORATION BY THE DESIGN TEAM, AS APPLICABLE SHALL BE REDLINE MARK-UPS OF THE CONSTRUCTION DOCUMENTS.

3.09 OPERATING AND MAINTENANCE MANUALS AND INSTRUCTIONS

A. COMPLETE OPERATING AND MAINTENANCE MANUALS SHALL BE PROVIDED TO THE OWNER. FOUR COPIES SHALL BE PROVIDED. EACH COPY SHALL BE BOUND IN A SEPARATE 3-RING, LOOSE LEAF NOTEBOOK. OPERATING INSTRUCTIONS SHALL BE PROVIDED FOR EACH PLUMBING SYSTEM, AND SHALL EACH INCLUDE A BRIEF SYSTEM DESCRIPTION, A SIMPLE SCHEMATIC AND A SEQUENCE OF OPERATION. OPERATING AND MAINTENANCE INSTRUCTIONS SHALL BE PROVIDED FOR EACH PIECE OF EQUIPMENT. A CONTROL SYSTEM WIRING DIAGRAM SHALL BE INCLUDED IN EACH OPERATING AND MAINTENANCE MANUAL.

B. PRIOR TO FINAL ACCEPTANCE OR BENEFICIAL OCCUPANCY, PROVIDE THE SERVICES OF A COMPETENT TECHNICIAN FOR NOT LESS THAN ONE {1} DAY TO INSTRUCT THE OWNER IN THE OPERATION OF THE PLUMBING SYSTEMS.

3.10 MINIMUM HANGER SPACING

A. PIPE HANGERS OR SUPPORTS SHALL BE PROVIDED WITHIN 18" OF EACH HORIZONTAL FITTING, EQUIPMENT CONNECTION, VALVE, ETC. AND WITHIN 18° OF THE CENTERLINE OF HORIZONTAL OF VERTICAL CHANGES IN DIRECTION SUMMING TO 90° OR MORE. SPECIFIC ATTENTION IS CALLED TO TURNS INTO VERTICAL RISERS.

B. PIPING SUPPORTS SHALL BE PROVIDED, AT A MINIMUM, IN ACCORDANCE WITH THE GREATER OF THE BELOW OR CODE MINIMUM. WHERE THE BELOW OR CODE DOES NOT ADDRESS SUPPORT FOR SPECIFIC PIPING, SUPPORTS SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S REQUIREMENTS.

PIPING MATERIAL	MAX. HORZ. SPACING	MAX. VERT. SPACING
CAST IRON PIPE	5'	15'
COPPER PIPE	12'	10'
COPPER TUBING ≤ 1-1/4" DIA	6'	10'
COPPER TUBING ≥ 1-1/2" DIA	10'	10'
CPVC PIPE ≤ 1" DIA	3'	10'
CPVC PIPE ≥ 1-1/4" DIA	4'	10'
PVC PIPE	4'	10'
PEX PIPE	32'	10'

MIDSTORY GUIDE REQUIRED FOR PIPING 2" DIAMETER AND SMALLER.

C. RISER CLAMPS SHALL BE PROVIDED AT EACH FLOOR PENETRATION. FOR PRESSURIZED PIPING SYSTEMS, PROVIDE VIBRATION ISOLATION AT ALL RISER CLAMPS WITH TWO (2) PAD--TYPE MOUNTINGS CONSISTING OF A MINIMUM 3/8" THICK RIBBED OR WAFFLED ELASTOMERIC PADS BONDED BETWEEN MINIMUM 16-GOUGE GALVANIZED STEEL SEPARATOR PLATES. PODS SHALL BE SIZED FOR A DEFLECTION OF 0.12" TO 0.16". PADS SHALL BE MINIMUM 3"X3" SQUARE.

3.11 WARRANTY

A. ALL WORK PROVIDED UNDER THIS DIVISION 22 SHALL BE SUBJECT TO A MINIMUM ONE YEAR WARRANTY, THE WARRANTY SHALL INCLUDE PROMPT REPAIR OR REPLACEMENT OF EQUIPMENT OR SYSTEM FAILURES AND SHALL INCLUDE ALL PARTS AND LABOR. IN ADDITION, AIL COMPRESSORS SHALL CARRY AN ADDITIONAL FOUR YEAR PARTS--ONLY WARRANTY. EXTENDED WARRANTIES SHALL BE PROVIDED ON ALL OTHER EQUIPMENT SO SPECIFIED IN OTHER SECTIONS.

3.12 SHOP DRAWINGS.

A. SHOP DRAWINGS PER THE SUBMITTAL REQUIREMENTS SHALL BE SUBMIT TO THE DESIGN TEAM WITH ADEQUATE TIME FOR MULTIPLE ROUNDS OF REVIEW. SHOP DRAWINGS SHALL SHOW "AS--BUILT" CONDITIONS INCLUDING ELEVATIONS, OFFSETS, TRANSITIONS, AND ACCESSORIES. SHOP DRAWINGS SHALL INDICATE ALL CODE AND MANUFACTURER'S RECOMMENDED CLEARANCES, ACCESS, AND COORDINATE THE CLEARANCE AND ACCESS REQUIREMENTS WITH ALL OTHER TRADES.

B. SHOP DRAWINGS THAT USE KEYNOTES DIRECT FROM THE DESIGN DOCUMENTS SHALL NOT BE ACCEPTABLE AS THEY DO NOT DEMONSTRATE COORDINATION WITH AM OTHER TRADES, NECESSARY TRANSITIONS, ETC.

C. SHOP DRAWINGS SHALL BE PROVIDED AS COMPLETE PACKAGES IN PARALLEL WITH ALL TRADES TO DOCUMENT COORDINATION. FLOOR-BY-FLOOR OR OTHERWISE PIECEMEAL SHOP DRAWINGS ARE GENERALLY NOT ACCEPTABLE.

3.13 OWNER TRAINING

A. OWNER TRAINING SHALL BE PROVIDED FOR ALL SYSTEMS AND EQUIPMENT AND SHALL INCLUDE THE FOLLOWING:
   1. 8-HOURS OF TRAINING FOR EACH TYPE OF EQUIPMENT.
   2. 16-HOURS FOR OVERALL SYSTEM OPERATIONAL TRAINING.

B. A TRAINING SUMMARY AND SCHEDULE SHALL BE SUBMITTED TO THE ARCHITECT FOR APPROVAL WITHIN NINETY (90) DAYS OF THE DATE OF SUBSTANTIAL COMPLETION.

C. TRAINING TIMING WILL VARY AND SHALL BE ASSUMED TO INCLUDE MULTIPLE SESSIONS AS REQUIRED BY THE OWNER.

3.14 BID REQUIREMENTS

A. THE CONTRACTOR SHALL INCLUDE ALL SYSTEMS, EQUIPMENT AND ACCESSORIES SHOWN ON THE PLANS AND SPECIFICATIONS.

B. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL CONTRACT DOCUMENTS TO ALL SUBCONTRACTORS. ALL SYSTEMS, EQUIPMENT AND ACCESSORIES SHALL BE INCLUDED IN THE BID, WHETHER SHOWN ON THE SUBCONTRACTOR APPLICABLE PLANS OR OTHER DESIGN DOCUMENTS.

C. SHOULD ANY DISCREPANCY OCCUR IN THE CONTRACT DOCUMENTS, THE CONTRACTOR SHALL PROVIDE A REQUEST FOR CLARIFICATION PRIOR TO BID OR NOTE THE DISCREPANCY IN THE BID AND PROVIDE AN APPROPRIATE COST ALLOWANCE IN THE BID.

D. THE CONTRACTOR SHALL ACKNOWLEDGE THAT THE CONTRACT DOCUMENTS ARE DIAGRAMMATIC AND SHALL PROVIDE ALL SYSTEMS, EQUIPMENT AND ACCESSORIES REQUIRED FOR A COMPLETE FACILITY. ANY AREAS THAT APPEAR TO BE VOID OF SYSTEMS OR INAPPROPRIATE SYSTEMS SHALL BE NOTED IN THE BID. NO POST BID CHANGE ORDER SHALL BE CONSIDERED FOR AREAS OR DISCREPANCIES NOT NOTED IN THE BID.

E. ALL INSTALLATION COORDINATION AND MEANS AND METHODS AND LABOR AND MATERIALS REQUIRED FOR PROPER SYSTEM INSTALLATION SHALL BE INCLUDED.

F. THESE REQUIREMENTS ARE IN ADDITION TO BID PROCEDURES AND REQUIREMENTS OF THE RFP OR GENERAL SPECIFICATIONS.

SECTION 22 07 00

PLUMBING INSULATION

1.0 GENERAL

1.01 DESCRIPTION

A. ALL WORK SPECIFIED IN THIS SECTION IS GOVERNED BY THE COMMON WORK RESULTS FOR PLUMBING SECTION 22 05 00.

B. THIS SECTION 22 07 00 AND THE ACCOMPANYING DRAWINGS COVER THE PROVISION OF ALL OTHER, EQUIPMENT, APPLIANCES, AND MATERIALS AND PERFORMING ALL OPERATIONS IN CONNECTION WITH THE INSULATION OF THE PLUMBING SYSTEMS AS SPECIFIED HEREIN AND AS SHOWN. THESE SYSTEMS INCLUDE, BUT ARE NOT LIMITED TO, THE FOLLOWING:
   1. SANITARY WASTE AND VENT SYSTEMS
   2. DOMESTIC WATER SYSTEMS

1.02 INTENT

A. IT I THE INTENT OF THIS SECTION OF THE SPECIFICATIONS TO PROVIDE COMPLETE AND OPERABLE PLUMBING SYSTEMS COMPLETE WITH INSULATION, WHICH ARE FREE OF UNREASONABLE NOISE, VIBRATION, AND SWEATING, AND FABRICATED SO AS TO FIT THE SPACE ALLOTTED.

B. THE WORD "PIPING" IS DEFINED TO MEAN ALL PIPING, FITTINGS, JOINTS, HANGERS, COATINGS, VALVES, COCKS, INSULATION AND ACCESSORIES NECESSARY FOR THE PLUMBING SYSTEMS DESCRIBED, SHOWN AND SPECIFIED.

1.03 ACCEPTABLE MANUFACTURERS

A. INSULATION PRODUCTS SHALL BE AS MANUFACTURED BY OWENS CORNING, KNAUF, MANVILLE, CERTAIN TEED, DOW, ARMACELL, OR ARMSTRONG.

2.0 PRODUCTS

2.01 PLUMBING INSULATION

A. ALL PIPE INSULATION PRODUCTS SHALL HAVE A PERMANENT COMPOSITE INSULATION, JOCKEY AND ADHESIVE FIRE AND SMOKE HAZARD RATING AS TESTED BY PROCEDURE ASTM-84, NFPA 255 AND UL 723 NOT EXCEEDING FLAME SPREAD 25 OR SMOKE DEVELOPED 50.

B. BLANKET---TYPE INSULATION ON STORM DRAINS SHALL HAVE ON OVERAGE THERMAL CONDUCTIVITY {K---VALUE) NOT TO EXCEED 0.27 BTU PER INCH/H.SQFT AT A MEAN TEMPERATURE OF 75 DEG F. INSULATION SHALL HAVE A MINIMUM DENSITY OF 1 LB/CU.FT, AND SHALL BE 2" THICK.

C. PREFORMED INSULATION FOR ALL DOMESTIC HOT WATER PIPING SHALL BE A MINIMUM 1-1/2" THICK FOR PIPING LESS THAN OR EQUAL TO 1-1/2" DIAMETER, 2" THICK FOR PIPING ABOVE 1-1/2" IN DIAMETER, PREFORMED FIBERGLASS PIPE INSULATION WITH WHITE ALL-SERVICE JACKET. ALL LONGITUDINAL JOINTS SHALL BE LAPPED, SELF-STICKING TYPE WITH ALL BUTT JOINTS, TEARS, ETC. SEATED WITH A MATCHING WHITE VAPOR BARRIER TAPE. ELBOWS SHALL BE MITERED OR MAY BE ZESTON COVERS FILLED WITH EQUIVALENT FIBERGLASS INSULATION. THE MAXIMUM CONDUCTIVITY (K-VALUE)} OF THE INSULATION SHALL BE 0.23 BTU PER INCH/SQ.F AT 75 DEG F.

D. PREFORMED INSULATION FOR ALL DOMESTIC COLD WATER PIPING, EXCEPT TRAP PRIMER PIPING UNDERGROUND, SHALL BE MINIMUM 1" THICK. PREFORMED FIBERGLASS PIPE INSULATION WITH WHITE ALL-SERVICE JACKET. ALL LONGITUDINAL JOINTS SHALL BE LOPPED, SELF--STICKING TYPE WITH OF BUTT JOINTS, TEARS, ETC. SEALED WITH A MATCHING WHITE VAPOR BARRIER TAPE. ELBOWS SHALL BE MITERED OR MAY BE ZESTON COVERS FILED WITH EQUIVALENT FIBERGLASS INSULATION. THE MAXIMUM CONDUCTIVITY (K-VALUE} OF THE INSULATION SHALL BE 0.23 BTU PER INCH/H.SQ.FT AT 75 DEG F.

E. INSULATION SHALL BE CONTINUOUS OVER ALL VALVE BODIES, FITTINGS, AND WALL AND FLOOR PENETRATIONS. DO NOT INSULATE UNIONS ON HOT WATER PIPING, NOR INSTRUMENTS, GOUGES, VALVE HAND WHEELS, ETC. ON ANY PIPER,

F. ALL PIPING INSULATION COVERING WATER*CARRYING PIPING THAT IS EXPOSED TO THE WEATHER AND SUBJECT TO BURSTING FROM FREEZING TEMPERATURES SHALL HAVE OVERSIZED INSULATION TO ACCOMMODATE HEATING CABLE. SEE SPECIFICATION 23 05 33.

G. PIPING INSTALLED OUTSIDE THE BUILDING AND EXPOSED TO WEATHER SHALL HAVE POLYISOCYANURATE INSULATION IN ACCORDANCE WITH SPECIFICATION 23 07 19. PROVIDE A CONTINUOUS WATERTIGHT ALUMINUM JACKET AND FITTING COVERS FOR ALL POLYISOCYANURATE INSULATION PIPING EXPOSED TO THE WEATHER.

H. CLOSED-CELL INSULATION SHALL BE PROVIDED OVER ALL PING CALLED TO HAVE INSULATION THAT IS INSTALLED BELOW GROUND. CLOSED-CELL PIPING INSULATION SHALL MATCH THE THICKNESS FOR ABOVE-GROUND PING, 25/50 ARMAFLEX OR RUBATEX. ALL GLUES AND COATINGS SHALL BE PRODUCTS OF THE SOME MANUFACTURER AS THE INSULATION. THE INSULATION SHALL BE INSTALLED BY THE SLIP--ON METHOD; SLITTING OF THE INSULATION IS PROHIBITED AND SHALL BE CAUSE FOR REJECTION.

3.0 EXECUTION

3.01 ARRANGEMENT

A. FOLLOW THE GENERAL PIPING LAYOUT, ARRANGEMENT, SCHEMATICS AND DETAILS. PROVIDE ALL OFFSETS, VENTS, DRAINS, AND CONNECTIONS NECESSARY TO ACCOMPLISH THE INSTALLATION. FABRICATE PIPING ACCURATELY TO MEASUREMENTS ESTABLISHED AT THE PROJECT SITE TO AVOID INTERFERENCE WITH DUCTWORK, OTHER PIPING, EQUIPMENT, OPENINGS, ELECTRICAL CONDUITS AND LIGHT FIXTURES. MAKE SUITABLE PROVISION FOR EXPANSION AND CONTRACTION WITH EXPANSION LOOPS AND OFFSETS.

3.02 INSULATION INSTALLATION

A. PROVIDE BLANKET INSULATION OVER ALL HORIZONTAL ROOF DRAIN PIPING WHICH IS WITHIN THE BUILDING INCLUDING THE VERTICAL RISERS TO THE ROOF DRAINS AND THE UNDERBODY OF THE ROOF DRAINS.
   1. BLANKET INSULATION SHALL BE WRAPPED AROUND THE PIPING AND UNDERBODIES OF ROOF DRAINS, ENDS OF INSULATION SHALL OVERLAP AT LEAST 2" AND THE BOTTOM OF INSULATION SHALL OVERLAP PIPE INSULATION AT PIPE CONNECTION TO ROOF DRAIN AT LEAST 3", ADHERE INSULATION TO ROOF DRAIN UNDERBODIES WITH 100% COVERAGE OF FIRE RETARDANT ADHESIVE AND TAPE ALL JOINTS WITH 3" WIDE FOIL REINFORCED KRAFT TAPE.

B. PROVIDE INSULATION OVER ALL ABOVE GROUND HOT AND COLD WATER PIPING, EXCEPT THAT NO INSULATION IS REQUIRED ON COLD WATER LINES INSTALLED INSIDE INTERIOR PLUMBING CHASES (THOSE CHASES WITH NO EXTERIOR WALL). IN ADDITION, NO INSULATION IS REQUIRED FOR COLD WATER PIPING OUTSIDE THE BUILDING VAPOR BARRIER. AND DESIGNED TO BE DRAINED DOWN FOR FREEZE-PROTECTION, SUCH AS PARKING DECK HOSE BIBS FOR WASH DOWN. ALL JOINTS AND TEARS SHALL BE SEALED WITH MATCHING WHITE VAPOR BARRIER TAPE.

C. SEE SPECIFICATION 23 07 19 FOR HVAC PIPING INSULATION REQUIREMENTS.

END OF SECTION

SECTION 22 10 00

PLUMBING PIPING

1.0 GENERAL

1.01 DESCRIPTION

A. ALL WORK SPECIFIED IN THIS SECTION IS GOVERNED BY THE COMMON WORK RESULTS FOR PLUMBING SECTION 22 05 00.

B. THIS SECTION 22 10 60 AND THE ACCOMPANYING DRAWINGS COVER THE PROVISION OF ALL LABOR, EQUIPMENT, APPLIANCES, AND MATERIALS AND PERFORMING ALL OPERATIONS IN CONNECTION WITH THE CONSTRUCTION OF THE PLUMBING SYSTEMS AS SPECIFIED HEREIN AND AS SHOWN. THESE SYSTEMS INCLUDE, BUT ARE NOT LIMITED TO, THE FOLLOWING:
   -SANITARY, WASTE, AND VENT SYSTEMS
   -DOMESTIC WATER SYSTEMS

C. PROVIDE ALL FINAL PLUMBING CONNECTIONS TO ALL EQUIPMENT FURNISHED BY THE OWNER.

D. PROVIDE ISOLATION VALVE AND REDUCED PRESSURE BACKFLOW PREVENTER OR VACUUM BREAKER AT THE SERVICE ENTRANCE AND AT THOSE CONNECTIONS (ESPECIALLY TO KITCHEN EQUIPMENT) REQUIRED BY LOCAL PLUMBING CODE.

E. NOTE: SEE SPECIFICATION SECTION 23 11 23 FOR NATURAL GAS PIPING. NATURAL GAS PIPING SHALL BE PART OF THIS DIVISION'S SCOPE UNLESS OTHERWISE COORDINATED. COORDINATE WITH ALL TRADES.

1.02 INTENT

A. IT IS THE INTENT OF THIS SECTION OF THE SPECIFICATIONS TO PROVIDE COMPLETE AND OPERABLE PLUMBING SYSTEMS AS SHOWN AND SPECIFIED WHICH ARE FREE OF LEAKS, PROPERLY VENTED, FREE OF UNREASONABLE NOISE, VIBRATION, AND SWEATING, AND FABRICATED SO AS TO FIT THE SPACE ALLOTTED AND TO EXHIBIT A MINIMUM RESISTANCE TO FLUID FLOW.

B. THE WORD "PIPING" IS DEFINED TO MEAN ALL PIPING, FITTINGS, JOINTS, HANGERS, COATINGS, VALVES, COCKS, INSULATION AND ACCESSORIES NECESSARY FOR THE PLUMBING SYSTEMS DESCRIBED, SHOWN AND SPECIFIED.

1.03 GENERAL REQUIREMENTS

A. PROVIDE ALL REDUCING FITTINGS, FLANGES, COUPLINGS, AND UNIONS OF THE SIZE AND TYPE OF MATERIAL TO MATCH THE PIPING CONNECTIONS AT EACH FIXTURE, PIECE OF EQUIPMENT, VALVE, AND ACCESSORY.

B. UNION JOINTS, COUPLINGS, OR FLANGES SHALL BE PROVIDED IN EACH PIPE LINES CONNECTED TO EACH PIECE OF EQUIPMENT, FIXTURE, AND ELSEWHERE AS INDICATED AND SPECIFIED. UNIONS SHALL MATCH THE PIPING SYSTEM IN WHICH THEY ARE INSTALLED.

C. UNIONS OR FLANGES SHALL BE PROVIDED BETWEEN ALL COPPER-TO-STEEL CONNECTIONS. THESE UNIONS SHALL BE DIELECTRIC, INSULATING TYPE.

D. ALL CHANGES IN DIRECTION AND BRANCHES SHALL BE MADE WITH MANUFACTURED FITTINGS.

E. THE USE OF OFFSET-TYPE REDUCERS IS STRICTLY PROHIBITED IN ANY PIPING SYSTEM.

F. IN ALL WATER PIPING SYSTEMS, CHANGES IN HORIZONTAL PIPE LINE SIZES SHALL BE MADE WITH ECCENTRIC REDUCERS INSTALLED FLAT ON TOP FOR PROPER AIR VENTING. REDUCING TEES, REDUCING ELBOWS AND CONCENTRIC REDUCERS SHALL ONLY BE ALLOWED IN WATER PIPING SYSTEMS FOR CHANGING PIPE SIZES IN VERTICAL RISERS AND TOR MAKING CONNECTIONS TO EQUIPMENT AND ACCESSORIES FROM VERTICAL RISERS.

G. ALL PIPE JOINTS SHALL BE CUT SQUARE AND ALL BURRS SHALL BE REMOVED.

H. OPEN ENDS OF PIPELINES NOT CURRENTLY BEING HANDLED SHALL BE PLUGGED DURING INSTALLATION TO KEEP DIRT, WATER, AND FOREIGN MATERIAL OUT OF THE SYSTEM.

I. SANITARY WASTE AND STORM DRAINAGE PIPING SHALL SLOPE DOWN IN THE DIRECTION OF FLOW A3 SHOWN ON THE DRAWINGS OR AS PRESCRIBED BY CODE, OUT NOT LESS THAN 1 PERCENT.

J. ALL VENTS THROUGH THE ROOF (VTR) SHALL BE OFFSET JUST BELOW THE ROOF SUCH THAT THEIR TERMINATION POINTS ARE AT LEAST 15 FT FROM ANY OUTSIDE AIR INTAKE OF ANY HVAC UNIT: SPECIAL ATTENTION IS CALLED TO PACKAGED ROOF TOP AND DEDICATED MAKE=-P AIR UNITS.

K. TRAP PRIMERS SHALL BE PROVIDED AT ALL FLOOR DRAINS, FLOOR SINKS, TRENCH DRAINS, AND HUB DRAINS EXCEPT TRAP PRIMERS MAY BE OMITTED WHERE DRAIN ROUTES TO THE STORM SYSTEM. ROUTE WATER PIPING FROM THE NEAREST COLD WATER LINE AS ALLOWED BY CODE.

L. ALL PIPING, VALVES, AND FITTINGS SHALL BE PROVIDED BY A DOMESTIC MANUFACTURER AND MANUFACTURED IN THE USA.

2.0 PRODUCTS

2.01 SANITARY WASTE AND VENT SYSTEMS

A. ALL UNDERGROUND SANITARY WASTE AND VENT PIPING SHALL BE PVC, DWV SOLID WALL SCHEDULE 40 WITH SOCKET-TYPE (OPTIONAL PIPE MATERIAL SHALL BE CAST IRON / AS SPECIFIED BY LOCAL AUTHORITY), SOLVENT WELDED JOINTS IN SIZES UP TO 12"; 14" AND LARGER PIPING SHALL BE PVC, DWV SOLID WALL SCHEDULE 80 WITH SOCKET-TYPE, SOLVENT WELDED JOINTS. ALL PVC PIPING SHALL BE INSTALLED IN ACCORDANCE TO ASTM.

B. ALL ABOVEGROUND SANITARY, WASTE, AND VENT PIPING SHALL BE HUBLESS CAST IRON SOIL PIPE (OPTIONAL PIPE MATERIAL SHALL BE PVC / AS SPECIFIED BY LOCAL AUTHORITY). ALL CAST IRON SOIL PIPE AND FITTINGS SHALL BEAR THE COLLECTIVE TRADEMARK OF THE CAST IRON SOIL PIPE INSTITUTE AND SHALL BE LISTED BY NSF INTERNATIONAL OR RECEIVE PRIOR APPROVAL BY THE **ARCHITECT/ENGINEER. ALL HUBLESS CAST IRON PIPE SHALL CONFORM TO ASTM A 888 AND CISPI STANDARD 301.
   1. SANITARY, WASTE, AND VENT PIPING LESS THAN OR EQUAL TO 2.5" MAY BE COPPER DWV WITH BRAZED JOINTS. PIPING SHALL MEET ASTM B 75, B 88, B 251, AND B 306.
   2. DRAIN PIPING FROM EQUIPMENT WITH HIGH-TEMPERATURE DISCHARGE, SUCH AS KITCHEN WARE WASHERS, POT SINKS, ETC. SHALL BE TYPE L HARD-DRAWN COPPER TUBING WITH WROUGHT COPPER FITTINGS AND SOLDERED JOINTS.
   3. SANITARY AND WASTE PIPING IN PRESSURIZED PIPING SYSTEMS, SUCH AS FOR ELEVATOR SUMP PUMPS OR SANITARY SUMP PUMPS, SHALL BE COPPER DWV WITH WROUGHT COPPER FITTINGS. ALL JOINTS SHALL BE BRAZED.

C. JOINTS ON HUBLESS COST IRON SOIL PIPE SHALL BE MADE WITH NEOPRENE COUPLINGS AND STAINLESS STEEL CLAMPS. GASKETS SHALL CONFORM TO ASTM C 564. COUPLINGS AND GASKETS SHALL BE PRODUCED BY THE SAME MANUFACTURER AND SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS, INCLUDING BAND TIGHTENING SEQUENCE AND TORQUE. ALL COUPLINGS SHALL BE MANUFACTURED TO THE CISP1 310 STANDARD, ASTM C 1277, ASTM C 150, FM STANDARD 1680 CLASS | AND CERTIFIED BY NSF INTERNATIONAL. COUPLING SHALL BE AS FOLLOWS:
   1. 1" TO 3" - TWO (2) STAINLESS STEEL BANDS
   2. 4" TO 8" -- FOUR (4) STAINLESS STEEL BANDS
   3. 10" TO 15" - HEAVY DUTY COUPLING WITH SIX (6) STAINLESS STEEL BANDS. HEAVY-DUTY COUPLINGS SHALL CONFORM TO ASTM C 1540.

D. ALL OFFSETS ON 8" PIPE AND LARGER SHALL HAVE METAL RESTRAINING STROPS BY HOLDRITE OR APPROVED EQUAL.

E. CLEANOUTS SHALL BE PROVIDED AT THE LOCATIONS INDICATED AND, A3 A MINIMUM, WHERE REQUIRED BY CODE. FLOOR CLEANOUTS SHALL BE A MINIMUM OF 4" AND SHALL BE COMPLETE WITH A FLUSH PLUG AND REMOVABLE, SCORIATED BRONZE FLOOR PLATE. PROVIDE CARPET BUTTONS IN CARPETED AREAS. WALL CLEANOUTS SHALL BE THREADED CLEANOUT TEES AND PLUGS WITH POLISHED STAINLESS STEEL COVER PLATE WITH CENTER SET SCREW.

F. FLOOR DRAINS IN TOILETS AND FINISHED AREAS SHALL BE JR SMITH 2000 SERIES WITH 6" TYPE B SQUARE ADJUSTABLE STRAINERS FINISHED IN SATIN NICKEL BRONZE; OR EQUAL PRODUCTS BY JOSAM OR ZURN. PROVIDE VANDOLPROOF SECURED TOPS.

G. FLOOR DRAINS IN MECHANICAL ROOMS AND UNFINISHED CONCRETE FLOORS SHALL BE JR SMITH 2131 SERIES WITH ROUND 11 3/4" CAST IRON GRATE, SEDIMENT BUCKET AND DEEP-SEAL P-TROP; OR EQUAL PRODUCTS BY JOSAM OR ZURN. PROVIDE VANDAL-PROOF SECURED TOPS.

H. HUB DRAINS (HD) SHALL BE MADE WITH A REDUCER FITTING WITH OPENING AT LEAST ONE NOMINAL SIZE LARGER THAN THE CONNECTED PIPING AS SCHEDULED. HD SHALL BE SIZED TO RECEIVE ALL DISCHARGES WITHOUT SPLASHING.

2.02 DOMESTIC WATER PIPING

A. UNDERGROUND DOMESTIC WATER SERVICE ENTRANCE PIPING 3" AND SMALLER IN SIZE SHALL BE TYPE K HARD-DRAWN COPPER TUBING WITH WROUGHT COPPER FITTINGS (OPTIONAL PIPE MATERIAL SHALL BE DUCTILE IRON / AS SPECIFIED BY LOCAL AUTHORITY). ALL JOINTS SHALL BE BRAZED.

B. UNDERGROUND DOMESTIC WATER SERVICE ENTRANCE PIPING ABOVE 3" IN SIZE SHALL BE CLASS 150 DUCTILE IRON PIPE WITH MECHANICAL JOINTS.

C. ALL UNDERGROUND COPPER BRANCH LINES (1/2" AND 3/4" ONLY) SHALL BE CONTINUOUS LENGTHS OF SOFT TYPE K COPPER TUBING WITH NO JOINTS ALLOWED UNDERGROUND.

D. ABOVEGROUND DOMESTIC WATER SYSTEM PIPING 3" IN SIZE AND SMALLER SHALL BE TYPE L HARD-DRAWN COPPER TUBING WITH WROUGHT COPPER FITTINGS AND SOLDERED POINTS. (OPTIONAL PIPE MATERIAL SHALL BE CPVC / PEX)

E. ABOVEGROUND DOMESTIC WATER PIPING 4" AND LARGER SHALL BE TYPE L HARD-DRAWN COPPER TUBING WITH ROLLED GROOVED JOINTS AND FITTINGS. INSTALLATION-READY COPPER FITTINGS SHALL MEET THE SAME GASKET MATERIAL SPECIFICATIONS AS COUPLINGS. FITTINGS SHALL BE AS FOLLOWS, OR EQUAL, AND SHALL BE PROVIDED BY THE MANUFACTURER WITH THE GASKET INCLUDED IN THE COUPLER ASSEMBLY:
   1. COUPLING: RIGID, VICTAULIC STYLE 607 (8" AND SMALLER)
   2. GASKETS: GRADE EHP EPDM (8° AND SMALLER)

F. ALL VALVES IN POTABLE WATER SYSTEMS SHALL BE "LEAD-FREE" TYPE.

G. ALL VALVES 3/4" AND SMALLER SHALL BE "FULL-PORT" TYPE, AND GREATER THAN 3/4" MAYBE "REDUCED-PORT" TYPE.

H. GATE VALVES (WATER ENTRANCES ONLY) SHALL BE CONSTRUCTED WITH A GRAY IRON, NON-RISING STEM, OUTSIDE SCREW AND YOKE (OS&Y), FULL PORT. STEM TO BE ADJUSTABLE GRAPHITE PACKING, ANSI 372 LEAD FREE, BRONZE MOUNTED SEAT RINGS, SOLID WEDGE, BOCK SEAT PROTECTION, WITH MALLEABLE IRON HAND WHEELS. VALVE SHALL MEET MSS-SP70, APOLLO VALVES 611F OF APPROVED EQUALS BY HAMMOND/MILWAUKEE, NIBCO, OR STOCKHAM.

I. BALL VALVES:
   1. VALVES 2 INCH AND SMALLER SHALL BE TWO-PIECE BRONZE BODY, FULL PORT WITH SOLID, SMOOTH BORE CHROME PLATED BRASS BALL, MEETING MSS-SP1l0 AND RATED FOR NO LESS THAN 300 PSI. SEATS SHALL BE REINFORCED TFE WITH TEFLON PACKING RING AND THREADED ADJUSTABLE PACKING NUT. VALVES ON INSULATED LINES WILL BE PROVIDED WITH STEM EXTENSIONS TO PROVIDE CLEARANCE FOR TWO INCHES OF PIPE INSULATION. VALVES TO BE APOLLO VALVES 77C, HAMMOND/MILWAUKEE UP8301, OR WATTS B-6080.
   2. VALVES LARGER THAN 2 INCH AND UP TO 4 INCHES SHALL BE TWO-PIECE BRONZE BODY, STANDARD PORT WITH SOLID, SMOOTH BORE CHROME PLATED BRASS BOLL, MEETING MSS-SP110, AND RATED FOR NO LESS THAN 300 PSI. SEATS SHALL BE REINFORCED TFE (OR TFM FOR 4") WITH TEFLON PACKING RING AND THREADED ADJUSTABLE PACKING NUT. VALVES ON INSULATED LINES WILL BE PROVIDED WITH STEM EXTENSIONS TO PROVIDE CLEARANCE FOR TWO INCHES OF PIPE INSULATION. VALVES TO BE APOLLO VALVES 70-100, HAMMOND/MILWAUKEE UP&S01, OR WATTS B-6000.

PROJECT TITLE:

MiniLuxe

DRAWING TITLE:

PLUMBING SPECIFICATIONS (02 OF 03)

PERMIT DWG DATE: 01/30/26	PROJECT NUMBER: 25-01-020
DRAWN BY: NYE	CHECKED BY: NYE

DRAWING NUMBER:

P003

Property of NY Engineers

J. BALANCING VALVES:

1. VALVES SHALL BE NSF/ANSI 61/372 CERTIFIED AND SUITABLE FOR POTABLE WATER APPLICATIONS, VALVE SHALL BE SUITABLE FOR THE GREATER OF 125 PSIG PRESSURE AND 40F TO 250F TEMPERATURE OR THE SYSTEM'S OPERATING CONDITIONS. VALVE SHALL PROVIDE POSITIVE SHUT-OFF AND BE RATED FOR 300 PSIG. EACH BALANCING VALVE SHALL BE EQUIPPED WITH TWO GOUGE TAPS WITH CHECK VALVES AND DRIP CAPS. PROVIDE PREFORMED INSULATION AT ENCASE VALVE ASSEMBLY IN INSULATED PIPING.
2. VALVES UP TO 3" SHALL HAVE LEAD-FREE BRASS BODY, FULL-PORT BALL CONSTRUCTED OF 304 STAINLESS STEEL, AND SHALL HAVE CALIBRATED NAMEPLATE WITH MEMORY STOP. BALANCING VALVES SHALL BE BELL AND GOSSETT CIRCUIT-SETTER PLUS OR EQUAL BY NEXUS, FLOW DESIGN, OR WATTS. AFTER THE TEST AND BALANCE IS COMPLETE, PROVIDE TO THE OWNER WITH A DIFFERENTIAL PRESSURE GAUGE TO MATCH THE BALANCING VALVES. AUTO FLOW VALVES ARE ACCEPTABLE AS A SUBSTITUTION PROVIDED THE FLOW CARTRIDGE IS REPLACEABLE AND THE FLOW RATE IS DEARLY AND PERMANENTLY LABELED.

K. CHECK VALVES:

1. VALVES IN WATER SYSTEMS SHALL BE NSF/ANSI 61/372 CERTIFIED AND SUITABLE FOR POTABLE WATER APPLICATIONS. VALVE SHALL BE SWING-TYPE, BRASS BODY, BRONZE SEAT, APOLLO VALVES 161S-LF UP TO 200 PSI CWP, OR EQUAL BY MILWAUKEE UP968 OR HAMMOND.
2. IN GROOVED PIPING SYSTEMS, CHECK VALVES MAY BE STAINLESS STEEL BODY, DISC SHAFT AND SPRING, GRADE P FLUORO ELASTOMER SEAT, 300 PSI CWP; VICTAULIC 816 OR EQUAL.
3. VALVES IN WASTE SYSTEMS BELOW GROUND SHALL MATCH THE MATERIAL OF THE PIPING. VALVES SHALL BE CAST IRON WITH GASKETED BOLTED COVER OR PVC ANSI 14 WITH INNER RISER ASSEMBLY. VALVES SHALL HAVE HINGED FLAPPERS.
4. VALVES IN WASTE SYSTEMS ABOVE GROUND, SUCH AS ELEVATOR SUMP PUMP DISCHARGES, SHALL BE NON-SLAM TYPE WITH IRON BODY, GLOBE-TYPE SILENT CHECKS WITH BRONZE TRIM, STAINLESS STEEL SPRING AND FLANGED END CONNECTIONS. FLOW AREA THROUGH THE VALVE SHALL EXCEED THE CROSS-SECTIONAL AREA OF THE PIPE IN WHICH THE VALVE IS INSTALLED BY NOT LESS THAN 10% VALVES SHALL BE APOLLO VALVES 910F UP TO 200 PSI OR 2" AND UNDER, 169T UP TO 600 PSI OR EQUAL BY MUELLER CO., APCO, METRAFLEX GLOBE STYLE SILENT CHECK VALVE, HAMMOND IR 9354, OR MILWAUKEE 1800. IN GROOVED PIPING SYSTEMS, VALVES SHALL BE VICTAULIC 716, 779, OR W715 AS APPROPRIATE.
5. ALL CHECK VALVES ON PUMP DISCHARGES SHALL BE NON-SLAM TYPE.
6. ALL CHECK VALVES SHALL BE INSTALLED IN AN ORIENTATION ALLOWED BY THE MANUFACTURER'S RECOMMENDATIONS.
7. ALL CHECK VALVES INSTALLED IN INSULATED PIPING SYSTEMS SHALL HAVE THE CHECK VALVE LOCATION EXPLICITLY LABELED ON THE OUTSIDE OF THE INSULATION.

L. WATER CONNECTIONS TO APPLIANCES SHALL BE MADE WITH FLEXIBLE COPPER TUBING OR COMMERCIAL GRADE DOUBLE-REINFORCED STAINLESS STEEL BRAIDED HOSE, NO LESS THAN 3/8" IN SIZE, OR THE CONNECTIONS SIZE OF THE APPLIANCE, WHICHEVER IS GREATER.

M. POINT OF USE MIXING VALVES SHALL BE LEONARD 170-LF OR AN APPROVED EQUAL WITH LEAD-FREE CONSTRUCTION, VANDAL RESISTANT ADJUSTMENT COP, AND INTEGRAL INLET CHECK VALVES. MIXING VALVE SHALL BE ASSE 1070 RATED. THE MIXING VALVE SHALL BE SIZED BY THE MANUFACTURER FOR THE FIXTURE(S) SERVED. MIXING VALVE SHALL HAVE FOR MORE THAN 0.25 GPM MINIMUM FLOW RATE REQUIRED.

N. ALL WATER HAMMER ARRESTERS (WHA) SHALL BE PDI CERTIFIED, SIZE A, B, C, D, E OR F, AS INDICATED FOR THE FIXTURE UNITS SERVED; JOSAM, JR SMITH, WATTS, OR ZURN. WHA's THAT ARE NOT PDI-CERTIFIED ARE DISALLOWED. WHA's IN POTABLE WATER APPLICATIONS SHALL BE LEAD-FREE.

O. THE HOSE BIBBS (HB) SHALL BE COMPLETE WITH VACUUM BREAKER AND **VANDAL RESISTANT HANDLE; WATTS, APOLLO VALVES, JR SMITH, OR ZURN.

P. SOLDERED JOINTS SHALL BE MODE WITH TIN--ANTIMONY/SILVER SOLDER. SOLDER CONTAINING LEAD SHALL NOT BE PERMITTED.

Q. SADDLE VALVES, AND "T" FITTINGS THAT RELY ON PUNCTURING THE PIPING MAIN ARE DISALLOWED.

R. THERMOMETERS AND PRESSURE GAUGES SHALL BE PRODUCTS OF TRERICE, WESKLER, OR WEISS. SELECT ALL DEVICES TO OPERATE WITHIN 20% OF THE MIDPOINT OF THEIR SCALES UNDER NORMAL OPERATING CONDITIONS. GAUGES PROVIDED ON PUMPS SHALL BE COMPOUND TYPE.

S. PRESSURE AND TEMPERATURE (P&T) TEST PLUGS SHALL BE CONSTRUCTED OF BRASS WITH TWO (2) SELF-CLOSING NORDEL CORES AND BE COMPLETE WITH COP AND GASKET. PLUGS SHALL BE MANUFACTURED BY PETERSON OR LANCASTER. PROVIDE A COMPLETE TEST KIT TO THE OWNER AT THE TIME OF FINAL INSPECTION. TEST KIT SHALL BE COMPLETE WITH A PRESSURE GAUGE, THERMOMETER, PROBES, AND CARRYING CASE.

3.0 EXECUTION -

3.01 ARRANGEMENT

A. FOLLOW THE GENERAL PIPING LAYOUT, ARRANGEMENT, SCHEMATICS AND DETAILS. PROVIDE ALL OFFSETS, VENTS, DRAINS AND CONNECTIONS NECESSARY TO ACCOMPLISH THE INSTALLATION. FABRICATE PIPING ACCURATELY TO MEASUREMENTS ESTABLISHED AT THE PROJECT SITE TO AVOID INTERFERENCE WITH DUCTWORK, OTHER PIPING, EQUIPMENT, OPENINGS, ELECTRICAL CONDUITS AND LIGHT FIXTURES. MAKE SUITABLE PROVISIONS FOR EXPANSION AND CONTRACTION WITH EXPANSION LOOPS AND OFFSETS.

B. WATER HAMMER ARRESTERS SHALL BE INSTALLED AT THE TOP OF EACH RISER AND ON EACH FIXTURE BRANCH IN ACCORDANCE WITH PLUMBING AND DRAINAGE INSTITUTE STANDARD WH201. WHA's SHALL ALSO BE INSTALLED AT ALL WATER SERVICE TO APPLIANCES WITH QUICK-CLOSING VALVES, SUCH AS CLOTHES WASHERS, KITCHEN WARE WASHERS, ICE MAKERS, ETC.

C. CLEANOUTS SHALL BE PROVIDED AT THE BASE OF ALL SANITARY AND STORM RISERS AND AS REQUIRED BY CODE.

D. FITTINGS, UNIONS, JOINTS, COUPLINGS (INCLUDING NO-HUB COUPLINGS), ETC. SHALL NOT BE WITHIN SLABS.

E. ALL POTABLE DOMESTIC WATER CONNECTIONS TO EQUIPMENT SHALL BE PROVIDED WITH BACKFLOW PREVENTION AS REQUIRED BY THE SPECIFICATION SECTION AND CODE.

F. PRESSURE GAUGES AND THERMOMETERS CALLED TO BE PERMANENTLY INSTALLED SHALL BE EASILY VISIBLE FROM A STANDING POSITION ON THE GROUND.

3.02 UNDERGROUND WATER PIPING

A. ALL DOMESTIC WATER PIPING SHALL HAVE A MINIMUM COVER OF 3'-0", OF BELOW THE FROST LINE, WHICHEVER IS DEEPER, EXCEPT PIPING AT LEAST 20" FROM THE EXTERIOR WALL MAY BE INSTALLED 3" OR MORE BELOW THE BOTTOM OF THE SLAB.

B. FOR WATER PIPING 2" AND ABOVE, PROVIDE CONCRETE THRUST BLOCKS AT ALL CHANGES OF DIRECTION AND SECURE ALL MECHANICAL JOINTS WITH RESTRAINING RODS.

C. ALL COPPER WATER LINES, OR OTHER MATERIAL SUBJECT TO CORROSION, SHALL BE PROTECTED FROM CORROSION WITH A CONTINUOUS PLASTIC SHEATHING OR COATING AND WRAPPING. THIS SHEATHING OR COATING AND WRAPPING SHALL BE EXTENDED 6" TO 12" ABOVE THE FINISHED FLOOR. THE PROTECTION SHALL BE INSTALLED ON THE OUTSIDE OF ANY INSULATION REQUIRED.

3.03 PIPING INSTALLATION ABOVE CEILINGS

A. ALL DOMESTIC HOT AND COLD WATER PIPING INSTALLED ABOVE THE INSULATED CEILINGS SHALL BE INSTALLED JUST ABOVE (WITHIN 2") OF THE TOP OF THE FINISHED CEILING WITH THE BUILDING INSULATION OVER THE PIPING TO AVOID FREEZE--UP.

3.04 DISINFECTION

A. ALL DOMESTIC WATER PIPING INSTALLED UNDER THIS DIVISION SHALL BE DISINFECTED WITH CHLORINE BEFORE IT IS PLACED INTO OPERATION. THE CHLORINATING MATERIAL SHALL BE LIQUID CHLORINE CONFORMING TO FEDERAL SPECIFICATION B8-C-120 AND SHALL BE INTRODUCED TO THE SYSTEM BY EXPERIENCED OPERATORS ONLY. THE CHLORINE SOLUTION APPLIED TO THE PIPING SECTIONS OR SYSTEM SHALL CONTAIN AT LEAST FIFTY PARTS PER MILLION OF AVAILABLE CHLORINE AND SHALL REMAIN IN THE SECTIONS OR SYSTEM FOR A PERIOD OF NOT LESS THAN SIXTEEN (16) HOURS. DURING THE DISINFECTION PERIOD, ALL VALVES SHALL BE OPENED AND CLOSED AT LEAST FOUR TIMES. AFTER THE DISINFECTION PERIOD, THE CHLORINATED WATER SHALL BE FLUSHED FROM THE SYSTEM WITH CLEAR WATER UNTIL THE RESIDUAL CHLORINE CONTENT IS NOT GREATER THAN TWO-TENTHS PORTS PER MILLION (0.2 PPM). SUBMIT CERTIFICATION TO THE ARCHITECT THAT THE SYSTEM WAS DISINFECTED.

END OF SECTION

SECTION 22 30 00

PLUMBING EQUIPMENT

1.0 GENERAL

1.01 DESCRIPTION

A. ALL WORK SPECIFIED IN THIS SECTION IS GOVERNED BY THE COMMON WORK RESULTS FOR PLUMBING SECTION 22 05 00.

B. THIS SECTION 22 30 00 AND THE ACCOMPANYING DRAWINGS COVER THE PROVISIONS OF ALL LABOR, EQUIPMENT, APPLIANCES, AND MATERIALS AND PERFORMING ALL OPERATIONS IN CONNECTION WITH THE CONSTRUCTION OF THE WATER HEATING SYSTEMS AS SPECIFIED HEREIN AND AS SHOWN. THESE SYSTEMS INCLUDE, BUT ARE NOT LIMITED TO, THE FOLLOWING:

1. WATER HEATERS
2. HOT WATER CIRCULATOR

1.02 GENERAL REQUIREMENTS

A. ALL PLUMBING EQUIPMENT INSTALLED IN LOCATIONS WITH A WATER HARDNESS OF 25 GRAINS PER GALLON OR MORE, SHALL BE RESISTANT TO CORROSION. WHERE COPPER MATERIALS ARE IN THE WATER STREAM, IT SHALL BE CUPRO-NICKEL OF NOT MORE THAN 90% COPPER.

B. ALL WATER HEATERS SHALL BE NSF/ANSI 61 CERTIFIED TEOD FREE" FOR POTABLE WATER SERVICE.

C. ALL WATER HEATERS SHALL HAVE ASME-RATED TEMPERATURE AND PRESSURE RELIEF VALVE(S). VALVE(S) SHALL BE PROVIDED BY THE MANUFACTURER AND SIZED FOR THE DISCHARGE LOCATION NOTED IN THE PLANS.

D. ALL WATER HEATERS AND TANKS SHALL BE GLASS--LINED, 1600F FIRED, WITH A WORKING PRESSURE OF 150 PSI, A TEST PRESSURE OF 300 PSI, OR THE SYSTEM PRESSURE AT THE INSTALLATION LOCATION, WHICHEVER IS GREATER, AND SHALL HAVE MAGNESIUM ANODES FOR ELECTROLYTIC PROTECTION. SEPARATE STORAGE TANKS MAY ALSO BE CEMENT---LINED. TANKS SHALL BE ASTM STAMPED.

E. ALL WATER HEATERS SHALL MEET OR EXCEED THE ENERGY EFFICIENCY REQUIREMENTS OF THE LATEST VERSION OF ASHRAE 90.1.

F. ALL WATER HEATERS AND PUMPS SHALL BE UL APPROVED AND LABELED, AND BE AGA-CERTIFIED WHERE APPLICABLE.

G. ALL WATER HEATERS AND PUMPS SHALL BE NEMA-RATED APPROPRIATE FOR THE INSTALLATION LOCATION IN WHICH THEY ARE INSTALLED.

H. WATER HEATER CONTROLS SHALL INCLUDE AN OPERATING THERMOSTAT AND MANUAL RESET HIGH LIMIT CONTROL FOR EACH HEATING ELEMENT OR BURNER. THE SAFETY HIGH LIMIT CONTROL SHALL PREVENT OVERHEATING IN THE EVENT OF A THERMOSTAT FAILURE.

I. ALL CONTROLS SHALL BE FACTORY--WIRED AND REQUIRE NO EXTERNAL POWER SOURCE.

J. WATER HEATERS AND TANKS SHALL HAVE DRAINS WITH EXTERNAL ACCESS AND HOSE END CONNECTION.

K. ALL WATER HEATER CONDENSATE LINES SHALL BE PROTECTED FROM FREEZING OR SHALL BE HEAT TRACED IN ACCORDANCE WITH SPECIFICATION 23 05 93.

L. THE WATER HEATER SHALL BE CERTIFIED BY AN INDEPENDENT LABORATORY FOR OXIDES OF NITROGEN (NOX) OF LESS THAN 10 PPM CORRECTED TO 3% 02 OR BETTER OS REQUIRED BY THE AHJ.

M. WHERE CLASSIFIED AS A BOILER BY THE DEPARTMENT OF LABOR, AH, OR APPLICABLE CODES, THE SYSTEM SHALL ADDITIONALLY MEET ALL REQUIREMENTS. AN EMERGENCY POWER OFF {EPO} SWITCH SHALL BE PROVIDED OT LOCATIONS REQUIRED BY THE AHJ. THE EPO(S) SHALL BE ACCESSIBLE, CLEARLY LABELED, AND SHALL SHUT OFF ALL POWER TO THE BOILERS AND CAUSE THE EQUIPMENT TO BE DISENGAGED. EPO(S) SHALL BE COORDINATED WITH CONTROLS AND DIVISION 26 AND SHALL BE INSTALLED AND WIRED UNDER THIS SCOPE.

2.0 EXECUTION

2.01 INSTALLATION

A. THE WATER HEATERS AND ACCESSORIES SHALL BE INSTALLED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND THE CONTRACT DOCUMENTS.

B. ALL TEMPERATURE AND PRESSURE RELIEF VALVES SHALL BE PIPED FULL SIZE TO ON INDIRECT WASTE SUCH AS THE NEAREST FLOOR DRAIN, SERVICE SINK, SINK TAILPIECE, ETC. PIPING SHALL BE IN ACCORDANCE WITH SPECIFICATION 22 10 00 FOR DWV SERVICES. SIZE SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S REQUIREMENTS.

C. ALL WATER HEATERS SHALL HAVE INTERNAL HEAT TRAPS OR SHALL HAVE HEAT TRAPS INSTALLED IN THE COLD WATER AND HOT WATER PIPING. INSTANTANEOUS WATER HEATERS SHALL BE PROVIDED WITH HEAT TRAPS UNLESS MANUFACTURER DOCUMENTATION SPECIFICALLY ALLOWS EXCLUSION.

D. WATER HEATERS SHALL BE COMPLETELY ENCASED IN HIGH-DENSITY INSULATION OF SUFFICIENT VALUE TO MEET THE ENERGY EFFICIENCY STANDARDS OF THE LATEST VERSION OF ASHRAE 90.1, OR SHALL BE FACTORY INSULATED WITH NON-CFC POLYURETHANE CLOSED--CELL FOAM INSULATION. PROVIDE REMOVABLE INSULATION PANELS TO MAINTAIN ACCESS TO ALL REQUIRED COMPONENTS.

E. ALL WATER HEATERS OR BOILERS SUBJECT TO CONDENSING UNDER NORMAL STEADY-STATE OPERATING CONDITIONS SHALL BE PROVIDED AND INSTALLED WITH ACCESSORY CONDENSATE NEUTRALIZATION KITS.

2.02 WARRANTY

A. PROVIDE 5-YEAR LIMITED WARRANTY ON ALL TANKS AND HEAT EXCHANGERS, AND 1-YEAR LIMITED WARRANTY ON PARTS UNLESS OTHERWISE NOTED.

END OF SECTION

SECTION 15200

PLUMBING

1.01 SCOPE OF WORK

A. THE WORK REQUIRED UNDER THIS DIVISION SHALL CONSIST OF ALL LABOR, MATERIALS, TOOLS, EQUIPMENT, POWER, TRANSPORTATION, HOISTING IMPLEMENTS, SERVICES, ETC. OF EVERY DESCRIPTION NECESSARY FOR THE ENTIRE COMPLETION OF THE PLUMBING WORK OF THE CONTRACT, ALL AS SPECIFIED HEREIN, SHOWN ON THE DRAWINGS, OR REASONABLY IMPLIED BY EITHER, COMPLETE IN EVERY RESPECT UNLESS SPECIFICALLY EXPECTED HEREIN.

1.02 EXCAVATION AND BACKFILLING

A. PLUMBING CONTRACTOR SHALL DO ALL EXCAVATING AND BACKFILLING NECESSARY TO INSTALL HIS WORK. HE SHALL DIG ALL TRENCHES TO EXACT GRADE AND DEPTH WITH ONLY SUFFICIENT DIRT REMOVED TO PROVIDE WORKING SPACE. ANY TRENCHES DUG BELOW REQUIRED DEPTH SHALL BE FILLED TO PROPER DEPTH WITH SAND. TRENCHES SHALL NOT BE MORE THAN 18" WIDER THAN EXTERNAL DIAMETER OF PIPE, AND SIDES SHALL BE PRACTICALLY PERPENDICULAR. SHORING OR SHEET PILING SHALL BE USED IF NECESSARY TO PREVENT CAVING OF TRENCH SIDES.

1.03 INSPECTION AND TESTS

A. ALL TESTS SHALL COMPLY WITH THESE SPECIFICATIONS AND FURTHER WITH THE REQUIREMENTS OF THE GOVERNING AUTHORITY OR SERVING UTILITY AS THE CASE MAY BE. ARCHITECT AND PLUMBING INSPECTOR SHALL BE NOTIFIED IN ADVANCE OF ALL TESTS AND SHALL BE PRESENT AT SUCH TESTS AND SHALL NOT BACKFILL OR COVER UP ANY WORK UNTIL INSPECTED AND APPROVED. FURNISH FINAL INSPECTION CERTIFICATE BEFORE FINAL PAYMENT.

1.04 PIPING MATERIALS

A. MATERIALS SHALL BE ALL NEW AND ADAPTED TO USE INTENDED, BE FREE FROM DEFECTS, CLEAN, AND PROTECTED FROM WEATHERING OR DAMAGE AS INSTALLED, AND, UNLESS SPECIFICALLY OTHERWISE NOTED, SHALL BE SPECIFIED FOR EACH ITEM.

B. SOIL, STORM, WASTE, VENT AND DRAIN PIPING (INSTALLED ABOVE GROUND): SHALL BE NO-HUB CAST IRON PIPE AND FITTINGS MADE IN ACCORDANCE WITH CAST IRON SOIL PIPE INSTITUTE STANDARD 301-72, WITH NEOPRENE GASKET AND STAINLESS STEEL CLAMP AND AS MANUFACTURED BY GLAMORGAN, TYLER, OR BUFFALO. SCHEDULE 40 POLYVINYL CHLORIDE (PVC) PER ASTM D2665, ASTM F1488 IS ACCEPTABLE IF AREAS NOT USED AS A RETURN AIR PLENUM. SEE ARCHITECTURAL AND MECHANICAL DRAWINGS FOR ADDITIONAL INFORMATION. CONTRACTOR TO USE CAST IRON IN ALL OPEN PLENUM AREAS (IF APPLICABLE).

C. WATER PIPING: ALL HOT WATER PIPING AND COLD WATER PIPING, INCLUDING HOT WATER RETURN PIPING ABOVE GROUND, SHALL BY TYPE "L" COPPER PIPE WITH WROUGHT COPPER SWEAT SOLDER TYPE FITTINGS. CROSS-LINKED POLYETHYLENE (PEX) IS ACCEPTABLE FOR WATER LINES 3/4" AND SMALLER. PEX PIPING TO BE COLOR CODED AND APPROVED FOR DOMESTIC WATER DISTRIBUTION PER ASTM F877.

D. GAS PIPING: SCHEDULE 40 BLACK STEEL PIPE AND FITTINGS.

E. FLOOR DRAINS, JOSAM 3000-A, WITH 6" ROUND STRAINER AND NICKLE BRONZE TOP.

F. BUILDING CLEANOUTS, "JOSAM" 586000 SERIES WALL MOUNTED CLEANOUT WITH STAINLESS STEEL WALL ACCESS COVER AND SCREW.

1.05 INSULATION

A. PROVIDE 1" FIBERGLASS INSULATION ON ALL WATER PIPING. EXCEPTION: WATER LINES LOCATED WITHIN WALL CAVITIES ARE TO NOT BE INSULATED.

1.06 VALVES

A. FURNISH AND INSTALL NIBCO, CRANE, FAIRBANKS, POWELL, MILWAUKEE, OR LUNDENHEIMER VALVES SHOWN ON DRAWINGS AND VALVES REQUIRED FOR PROPER OPERATION OF VARIOUS PARTS OF WORK. VALVES HEREINAFTER SCHEDULED ARE TAKEN FROM NIBCO OR DEZURIK DRAIN VALVES WITH HOSE CONNECTING ENDS AND PROTECTIVE CAPS AND SHALL BE INSTALLED AT LOW POINTS ON ALL LINES CARRYING LIQUIDS.

1.07 SANITARY DRAINAGE SYSTEMS

A. ARRANGE AND PROVIDE FOR CONNECTION TO SANITARY SEWER FACILITIES AS SHOWN ON DRAWINGS. ALL SOIL, WASTE, VENT, SEWER AND DRAINAGE PIPING SHALL BE INSTALLED SO AS TO BE CONCEALED IN ALL OCCUPIED SPACES, EXCEPT AS OTHERWISE SPECIFICALLY NOTED ON THE DRAWINGS AND EXCEPT AS SHOWN IN THE EQUIPMENT ROOMS. ALL OFFSETS AROUND BEAMS, COLUMNS, ETC. SHALL BE MADE AS CLOSE AS POSSIBLE, USING SPECIAL FITTINGS IF NECESSARY.

1.08 WATER SUPPLY SYSTEM

A. PROVIDE PRECISION PLUMBING PRODUCTS, INC. SYSTEM-RATED WATER HAMMER ARRESTORS ON ALL COLD AND HOT WATER LINES AT EACH GROUP OF FIXTURES, AT ISOLATED INDIVIDUAL FIXTURES, AND BEFORE ALL QUICK-CLOSING VALVES. WATER HAMMER ARRESTORS SHALL BE SIZED AND INSTALLED IN ACCORDANCE WITH MANUFACTURER'S PUBLISHED DATA. MANUFACTURED WATER HAMMER ARRESTORS OF OTHER MAKES WILL BE CONSIDERED.

1.09 PLUMBING FIXTURES

A. EXCEPT AS SPECIFICALLY OTHERWISE NOTED OR SHOWN, THE PLUMBING CONTRACTOR SHALL FURNISH AND INSTALL ALL PLUMBING FIXTURES SHOWN ON THE DRAWINGS COMPLETE AND READY FOR USE.

B. ALL FIXTURE SUPPORTS TO BE OF TYPE AND TO PERMIT ADJUSTMENT TO FIT VARIATIONS IN CONSTRUCTION. ALL GROUNDS OR SPECIAL SUPPORTS NECESSARY FOR SETTING FIXTURES SHALL BE FURNISHED AND INSTALLED BEFORE PLASTERING OR OTHER FINISHED CONSTRUCTION WORK IS BEGUN. ALL FIXTURES SHALL BE HUNG AT HEIGHT DIRECTED BY ARCHITECT. ACCESSORIES IN GENERAL ARE LISTED FOR EACH FIXTURE. PLUMBING CONTRACTOR SHALL, HOWEVER, SUPPLY ALL STOPS, TRAPS, ESUTCHEONS, CONNECTIONS, ETC. AS NECESSARY TO COMPLETE INSTALLATION OF EACH FIXTURE, WHETHER OR NOT SUCH ITEMS ARE LISTED.

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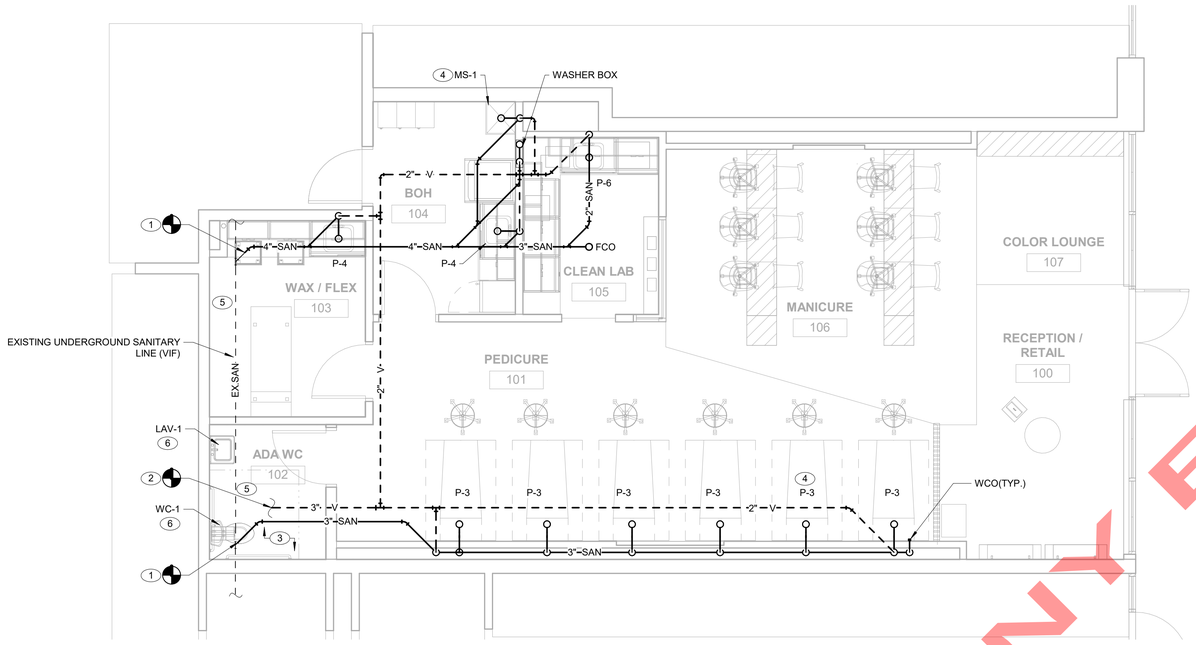
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PLUMBING SPECIFICATIONS (03 OF 03)

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P004



WASTE AND VENT PIPING PLAN 1/4" = 1'-0" A

1. PLUMBING CONTRACTOR IS TO VERIFY ALL EXISTING CONDITIONS IN FIELD TO GREATEST EXTENT POSSIBLE PRIOR TO BIDDING. CONTRACTOR IS TO DETERMINE ALL TIE-IN LOCATIONS AND EXISTING CONDITIONS AS REQUIRED TO DETERMINE FULL SCOPE OF WORK. BID IS TO INCLUDE ALL WORK NECESSARY FOR COMPLETION OF PROJECT AND LACK OF KNOWLEDGE OF EXISTING CONDITIONS WILL NOT BE CONSIDERED ACCEPTABLE FOR ADDITIONAL SCOPE(S) OF WORK BEYOND CONTRACTED BID.
2. ROUTING OF EXISTING SANITARY, WATER & GAS LINES IS UNKNOWN. CONTRACTOR IS TO VERIFY ROUTING OF LINES DURING DEMOLITION AND ADJUST SCOPE OF WORK (DEMOLITION AND NEW INSTALLATION) AS DICTATED BY EXISTING CONDITIONS. CONTRACTOR TO ADJUST ROUTING OF NEW SANITARY LINES BASED UPON EXISTING CONDITIONS AS REQUIRED TO MINIMIZE SAW CUTTING OF EXISTING FLOOR AND MEET ELEVATION/SLOPE REQUIREMENTS.
3. PLUMBING CONTRACTOR TO INSTALL A ASSE 1070 COMPLIANT MANUAL MIXING VALVE IN THE WATER LINES BELOW ALL PUBLIC LAVATORIES AND SINKS WITH A MAXIMUM DISCHARGE TEMPERATURE OF 110° F.
4. SEE ARCHITECTURAL DETAILS FOR EXACT LOCATIONS AND DIMENSIONS OF EQUIPMENT, FIXTURES, OPENINGS AND OUTLETS. COMMUNICATE WITH ARCHITECT ANY DISCREPANCIES.
5. COORDINATE WATER , SANITARY AND GAS SERVICES WITH THE LOCAL UTILITY COMPANIES.
6. PLUMBING CONTRACTOR SHALL FIELD VERIFY ALL INVERTS/HEIGHTS PRIOR TO START OF WORK.
7. ALL NON-VENTED FLOOR DRAINS TO BE WITHIN 10'-0" OF MAIN VENTED WASTE LINE.
8. ALL SANITARY WASTE AND VENT PIPE SHALL BE PVC SCHEDULE 40 ASTM D2665-82 ABOVE GRADE AND SCH. 40 ASTM D-1785-83 BELOW GRADE.
9. PLUMBING SHOWN IS DIAGRAMMATIC IN NATURE AND MAY BE ROUTED DIFFERENTLY BY THE PLUMBING CONTRACTOR DUE TO EXISTING FIELD CONDITIONS PROVIDING LOCATIONS OF ALL FIXTURES REMAIN AND ALLOWED WORK COMPLIES WITH THE 248 CMR 10.00: UNIFORM STATE PLUMBING CODE.
10. ALL WASTE PIPE TO HAVE MINIMUM SLOPE OF 1.00% (1/8" / LINEAL FOOT).
11. PLUMBING CONTRACTOR IS TO MODIFY ROUTING AND TIE-IN LOCATIONS OF NEW SANITARY LINE AS REQUIRED BY SITE UTILITIES.
12. CONTRACTOR TO PROVIDE ALL OPENINGS IN STRUCTURE AS REQUIRED FOR NEW WORK INCLUDING FLASHING AND REPAIRS FOR ROOF OPENINGS AND CAULKING AND SEALING FOR WALL OPENINGS. LEAVE ALL OPENINGS IN A WEATHER-PROOF CONDITION.
13. COORDINATE ALL WORK WITH OTHER TRADES.
14. COORDINATE ALL INSTALLATIONS OF MATERIAL AND EQUIPMENT WHICH IS EXPOSED TO VIEW INSIDE AND OUTSIDE OF STRUCTURE WITH OWNER AND ARCHITECT BEFORE PURCHASE. ALL MUST BE REVIEWED AND APPROVED BEFORE HAND.
15. ALL ROOF PENETRATIONS ARE TO BE SLEEVED, FLASHED & SEALED PER ROOFING MANUFACTURER REQUIREMENTS.
16. EXHAUST AND PLUMBING VENTS SHALL BE LOCATED A MINIMUM OF 10'-0" AWAY FROM ANY OUTSIDE AIR INTAKE, AND 5'-0" FROM ANY DEMISING WALL VERTICAL PLANE.
17. ALL FLOOR DRAINS ARE REQUIRED TO HAVE TRAP PRIMERS.
18. ANY UNUSED PLUMBING EQUIPMENT, PIPING, ETC., WITHIN OR SERVING THE PREMISES MUST BE COMPLETELY REMOVED TO POINT OF ORIGIN. DO NOT ABANDON IN PLACE.
19. REFER TO RISER DIAGRAM FOR ALL WASTE & VENT SIZES.
20. VERIFY WITH THE LOCAL BUILDING AUTHORITY THAT CONDENSATE DRAINAGE CAN BE ROUTED TO THE TO APPROVED PLUMBING FIXTURE.
21. NO 90° HORIZONTAL TURNS SHALL BE USED IN THE SANITARY PIPING SYSTEM. ALL HORIZONTAL TURNS SHALL BE MADE WITH 45° ELBOWS WITH PIPE IN BETWEEN THE TWO ELBOWS.

GENERAL NOTES - WASTE AND VENT PLAN NTS C

(1) CONTRACTOR SHALL CONNECT NEW 4" SANITARY WASTE LINE TO THE EXISTING SANITARY WASTE LINE OF ADEQUATE CAPACITY IN SPACE. VERIFY EXACT LOCATION, SIZE, INVERT, DIRECTION OF FLOW AND CONNECTION POINT PRIOR TO BID.

(2) CONTRACTOR SHALL CONNECT NEW 3" VENT LINE TO THE EXISTING VENT LINE IN THE SPACE. VERIFY EXACT LOCATION, SIZE, ROUTING AND CONNECTION POINT PRIOR TO BID. NOTIFY THE ENGINEER / ARCHITECT WITH ANY DISCREPANCIES PRIOR TO BID.

(3) CONTRACTOR TO COORDINATE WITH CLIENT/LANDLORD AND FIELD VERIFY THE EXISTING SANITARY AND VENT LINES IN THE SPACE ARE IN GOOD CONDITION. REPLACE THE PIPES IF NOT IN GOOD CONDITION AND NOTIFY THE ENGINEER IF ANY DISCREPANCIES IN THE FIELD PRIOR TO BID.

(4) ROUTE T & P RELIEF DRAIN FROM WATER HEATERS (IWH-1 & 2) TO MOP SINK (#MS-1) WITH APPROVED AIR GAP.

(5) EXISTING SANITARY LOCATION SHOWN IN THE DRAWING APPROX. CONTRACTOR TO COORDINATE AND FIELD VERIFY THE EXCAT LOCAION, SIZE, ROUTING, DIRECTION OF FLOW AND INVERT OF EXISTING SANITARY LINE. PROVIDE NEW IF EXISTING IS NOT IN GOOD CONDITION.

(6) EXISTING WATER CLOSET & LAVATORY TO BE REPLACED WITH NEW WATER CLOSET & LAVATORY IN THE EXISTING LOCATIONS WITH THE EXISTING SANITARY, VENT LINES WITH ASSOCIATED ACCESSORIES AND FITTINGS TO REMAIN. CONTRACTOR TO VERIFY IN FIELD, CONDITION OF EXISTING SANITARY, VENT PIPING AND REPLACE IF PIPES ARE NOT IN GOOD CONDITION .

KEY NOTES - WASTE AND VENT NTS B

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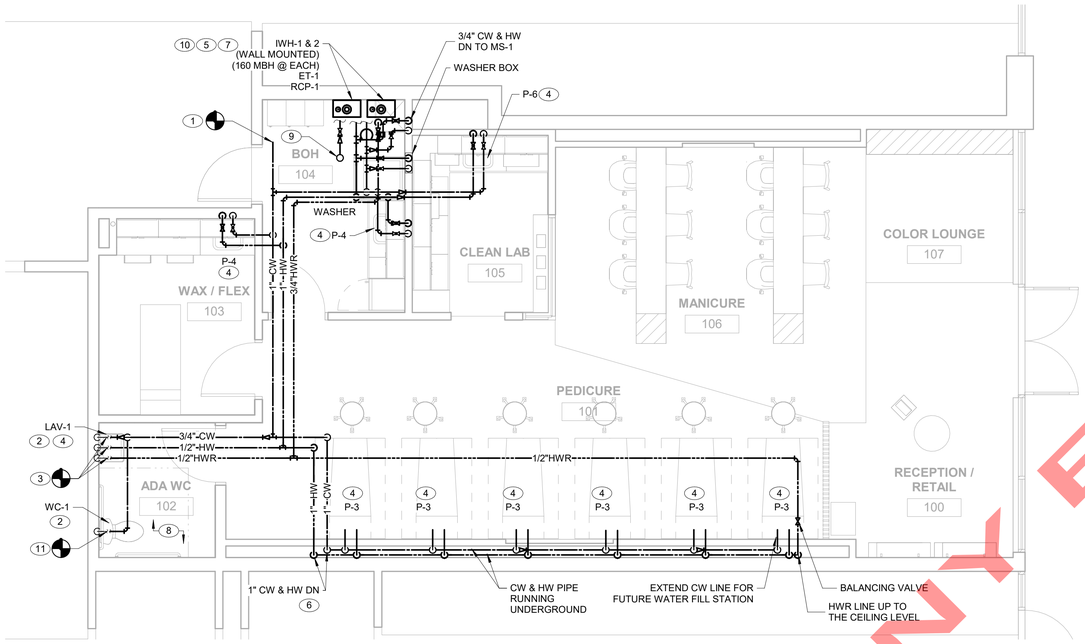
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WASTE AND VENT PIPING PLAN

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P200



WATER AND GAS PLAN 1/4" = 1'-0" A

GENERAL NOTES - WATER AND GAS NTS C

1. PLUMBING CONTRACTOR IS TO VERIFY ALL EXISTING CONDITIONS IN FIELD TO GREATEST EXTENT POSSIBLE PRIOR TO BIDDING. CONTRACTOR IS TO DETERMINE ALL TIE-IN LOCATIONS AND EXISTING CONDITIONS AS REQUIRED TO DETERMINE FULL SCOPE OF WORK. BID IS TO INCLUDE ALL WORK NECESSARY FOR COMPLETION OF PROJECT AND LACK OF KNOWLEDGE OF EXISTING CONDITIONS WILL NOT BE CONSIDERED ACCEPTABLE FOR ADDITIONAL SCOPE(S) OF WORK BEYOND CONTRACTED BID.
2. ROUTING OF EXISTING SANITARY, WATER & GAS LINES IS UNKNOWN. CONTRACTOR IS TO VERIFY ROUTING OF LINES DURING DEMOLITION AND ADJUST SCOPE OF WORK (DEMOLITION AND NEW INSTALLATION) AS DICTATED BY EXISTING CONDITIONS. CONTRACTOR TO ADJUST ROUTING OF NEW SANITARY LINES BASED UPON EXISTING CONDITIONS AS REQUIRED TO MINIMIZE SAW CUTTING OF EXISTING FLOOR AND MEET ELEVATION/SLOPE REQUIREMENTS.
3. PLUMBING CONTRACTOR TO INSTALL A ASSE 1070 COMPLIANT MANUAL MIXING VALVE IN THE WATER LINES BELOW ALL PUBLIC LAVATORIES AND SINKS WITH A MAXIMUM DISCHARGE TEMPERATURE OF 110° F.
4. SEE ARCHITECTURAL DETAILS FOR EXACT LOCATIONS AND DIMENSIONS OF EQUIPMENT, FIXTURES, OPENINGS AND OUTLETS. COMMUNICATE WITH ARCHITECT ANY DISCREPANCIES.
5. COORDINATE WATER , SANITARY AND GAS SERVICES WITH THE LOCAL UTILITY COMPANIES.
6. PLUMBING CONTRACTOR SHALL FIELD VERIFY ALL INVERTS/HEIGHTS PRIOR TO START OF WORK.
7. PLUMBING SHOWN IS DIAGRAMMATIC IN NATURE AND MAY BE ROUTED DIFFERENTLY BY THE PLUMBING CONTRACTOR DUE TO EXISTING FIELD CONDITIONS PROVIDING LOCATIONS OF ALL FIXTURES REMAIN AND ALLOWED WORK COMPLIES WITH THE 248 CMR 10.00: UNIFORM STATE PLUMBING CODE.
8. ALL WASTE PIPE TO HAVE MINIMUM SLOPE OF 1.00% (1/8" / LINEAL FOOT).
9. PLUMBING CONTRACTOR IS TO MODIFY ROUTING AND TIE-IN LOCATIONS OF NEW SANITARY LINE AS REQUIRED BY SITE UTILITIES.
10. CONTRACTOR TO PROVIDE ALL OPENINGS IN STRUCTURE AS REQUIRED FOR NEW WORK INCLUDING FLASHING AND REPAIRS FOR ROOF OPENINGS AND CAULKING AND SEALING FOR WALL OPENINGS. LEAVE ALL OPENINGS IN A WEATHER-PROOF CONDITION.
11. COORDINATE ALL WORK WITH OTHER TRADES.
12. COORDINATE ALL INSTALLATIONS OF MATERIAL AND EQUIPMENT WHICH IS EXPOSED TO VIEW INSIDE AND OUTSIDE OF STRUCTURE WITH OWNER AND ARCHITECT BEFORE PURCHASE. ALL MUST BE REVIEWED AND APPROVED BEFORE HAND.
13. ALL ROOF PENETRATIONS ARE TO BE SLEEVED, FLASHED & SEALED PER ROOFING MANUFACTURER REQUIREMENTS.
14. ALL FLOOR DRAINS ARE REQUIRED TO HAVE TRAP PRIMERS.
15. ANY UNUSED PLUMBING EQUIPMENT, PIPING, ETC., WITHIN OR SERVING THE PREMISES MUST BE COMPLETELY REMOVED TO POINT OF ORIGIN. DO NOT ABANDON IN PLACE.
16. REFER TO RISER DIAGRAM FOR ALL WATER SUPPLY SIZES.
17. VERIFY WITH THE LOCAL BUILDING AUTHORITY THAT CONDENSATE DRAINAGE CAN BE ROUTED TO THE APPROVED PLUMBING FIXTURE.
18. NO 90° HORIZONTAL TURNS SHALL BE USED IN THE SANITARY PIPING SYSTEM. ALL HORIZONTAL TURNS SHALL BE MADE WITH 45° ELBOWS WITH PIPE IN BETWEEN THE TWO ELBOWS.

KEY NOTES - WATER AND GAS NTS B

1. CONNECT NEW 1" CW LINE TO EXISTING COLD WATER MAIN LINE RUNNING IN THE SPACE. PROVIDE BFP & WATER METER IF EXISTING IS NOT SUFFICIENT OR AVAILABLE. CONTRACTOR TO VERIFY THE CONDITION, SIZE, LOCATION, ROUTING AND POINT OF CONNECTION OF EXISTING WATER MAIN PIPE RUNNING IN THE SPACE, UPGRADE IF REQUIRED.
2. EXISTING WATER CLOSET & LAVATORY TO BE REPLACED WITH NEW WATER CLOSET & LAVATORY IN THE EXISTING LOCATIONS WITH THE EXISTING WATER LINES WITH ASSOCIATED ACCESSORIES AND FITTINGS TO REMAIN. CONTRACTOR TO VERIFY IN FIELD, CONDITION OF EXISTING WATER PIPING AND REPLACE IF PIPES ARE NOT IN GOOD CONDITION.
3. CONNECT NEW 1/2" CW/HW/HWR PIPING TO EXISTING LAVATORY CW/HW/HWR ROUGH-IN WITHIN THE SPACE. CONTRACTOR SHALL FIELD VERIFY LOCATION AND REROUTE AS REQUIRED.
4. PROVIDE ASSE 1070 APPROVED THERMOSTATIC MIXING VALVE SET TO 110°F AT EXISTING LAVATORY (IF EXISTING NOT AVAILABLE) & SINKS.
5. PROVIDE NEW GAS INSTANTANEOUS WATER HEATER (IWH-1 & 2) WITH THERMAL EXPANSION TANK (ET-1) & RECIRCULATION PUMP (RCP-1) WITH ASSOCIATED ACCESSORIES AND FITTINGS. TERMINATE THE T & P RELIEF DRAIN FORM THE WATER HEATER TO THE NEAREST FLOOR DRAIN, PROVIDING AN APPROVED AIR GAP. REFER PLUMBING SCHEDULE ON SHEET #P001 FOR MORE DETAILS.
6. ROUTE THE 1" CW & HW LINES DOWN IN WALL FOR UNDER SLAB EXTENSION TO THE PEDICURE STATION MILLWORK AS SHOWN. EXTEND THE PIPING IN THE MILLWORK FOR FINAL CONNECTIONS TO SINK. COORDINATE INSTALLATION WITH FIELD CONDITIONS.
7. CONNECT 1" HW/CW & 3/4" HWR WATER LINES TO INSTANTANEOUS WATER HEATER (IWH-1 & 2). REFER TO DETAIL #4/P402 FOR EXACT ROUTING.
8. CONTRACTOR TO COORDINATE WITH CLIENT/LANDLORD AND FIELD VERIFY THE EXISTING WATER SUPPLY LINES IN THE SPACE ARE IN GOOD CONDITION. REPLACE THE PIPES IF NOT IN GOOD CONDITION AND NOTIFY THE ENGINEER IF ANY DISCREPANCIES IN THE FIELD PRIOR TO BID.
9. 1-1/4" GAS DOWN TO INSTANTANEOUS WATER HEATERS (IWH-1 & 2) VERTICAL GAS PIPING IN WALL SHALL NOT BE RIGIDLY SECURED AND ADEQUATE PIPE PROTECTION SHALL BE PROVIDED.
10. CONTRACTOR SHALL PROVIDE NEW DIRT LEG, SHUT-OFF PLUG COCK, AND UNION. VERIFY EXACT SIZE, LOCATION, AND DISTANCE IN FIELD PRIOR TO BID. ALSO PROVIDE SHUT-OFF VALVE AN ACCESSIBLE LOCATION.
11. CONNECT NEW 1/2" COLD WATER (CW) PIPING TO EXISTING WATER CLOSET (WC) COLD WATER ROUGH-IN WITHIN THE SPACE. CONTRACTOR SHALL FIELD VERIFY LOCATION AND REROUTE AS REQUIRED.

PROJECT TITLE:

MiniLuxe

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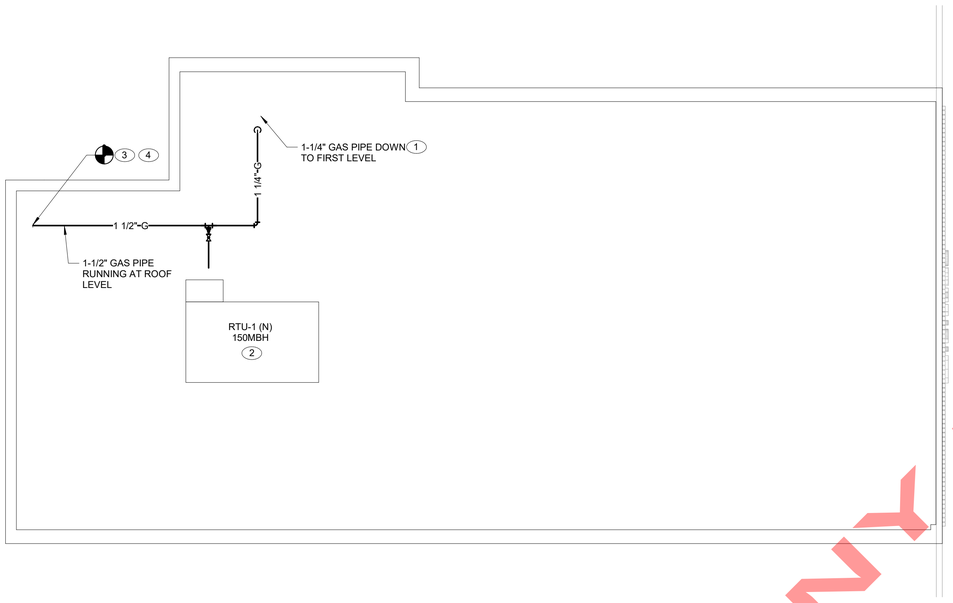
WATER AND GAS PLAN

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ROOF GAS PLAN 1/4" = 1'-0" **A**

1. GAS PIPING OPERATING AT PRESSURE HIGHER THAN 1LB. WHERE INSTALLED IN BUILDING SHALL HAVE WELDED JOINTS, PIPING BELOW 1LB. PRESSURE SHALL HAVE THREADED CONNECTION.
2. GAS PIPING SHALL BE STANDARD WEIGHT SCHEDULE 40 BLACK STEEL PIPE. PIPE SHALL BE THREADED OR WELDED AS DIRECTED BY LOCAL GAS COMPANY AND STATE AND LOCAL PLUMBING CODES.
3. PROVIDE GAS PIPING COMPLETE WITH ALL REQUIRED FITTINGS, STRAPS, HANGERS, SUPPORTS, ETC. OBTAIN ALL REQUIRED INSPECTIONS AND APPROVALS. GAS PIPING SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST EDITION OF NFPA 54 AND ANY APPLICABLE STATE AND LOCAL CODES OR REGULATIONS.
4. GAS PIPING ROUTED ON ROOF SHALL BE SUPPORTED BY ROOF PIPE SUPPORT AS PER CODE.
5. PAINT GAS PIPING EXPOSED TO WEATHER WITH (2) COATS OF "RUSTOLEUM" OR EQUAL PAINT. COLOR TO BE SELECTED BY OWNER OR GENERAL CONTRACTOR AND PER REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION.
6. MAKE FINAL CONNECTIONS TO GAS FIRED EQUIPMENT. PROVIDE GAS SHUT-OFF VALVE AND 6" DIRT LEG AT EACH CONNECTION.
7. PAINT GAS PIPING EXPOSED IN STORE BELOW CEILING SILVER.

GENERAL NOTES - ROOF GAS PLAN NTS **C**

(1) 1-1/4" GAS DOWN TO INSTANTANEOUS WATER HEATERS (IWH-1 & 2) VERTICAL GAS PIPING IN WALL SHALL NOT BE RIGIDLY SECURED AND ADEQUATE PIPE PROTECTION SHALL BE PROVIDED.

(2) CONTRACTOR SHALL PROVIDE NEW DIRT LEG, SHUT-OFF PLUG COCK, AND UNION. VERIFY EXACT SIZE, LOCATION, AND DISTANCE IN FIELD PRIOR TO BID. ALSO PROVIDE SHUT-OFF VALVE AN ACCESSIBLE LOCATION.

(3) CONTRACTOR SHALL FIELD VERIFY THE EXACT LOCATION, CAPACITY, AND OUTLET PRESSURE OF THE EXISTING GAS METER AND GAS SERVICE AT THE POINT OF CONNECTION. EXISTING GAS METER SHALL HAVE A MINIMUM CAPACITY OF 470 MBH AND AN OUTLET PRESSURE OF NOT LESS THAN 14" W.C.

(4) EXTEND AND CONNECT NEW 1-1/2" GAS LINE TO THE EXISTING GAS LINE AT THE EXISTING METER. CONTRACTOR SHALL FIELD VERIFY THE SIZE OF THE EXISTING GAS SERVICE. PROVIDE A NEW GAS METER IF THE EXISTING METER CAPACITY IS LESS THAN 470 MBH, IF OUTLET PRESSURE IS BELOW 14" W.C., OR IF NO EXISTING METER IS AVAILABLE. COORDINATE ALL WORK WITH THE GAS UTILITY COMPANY. BASE BID ACCORDINGLY.

KEY NOTES - GAS NTS **B**

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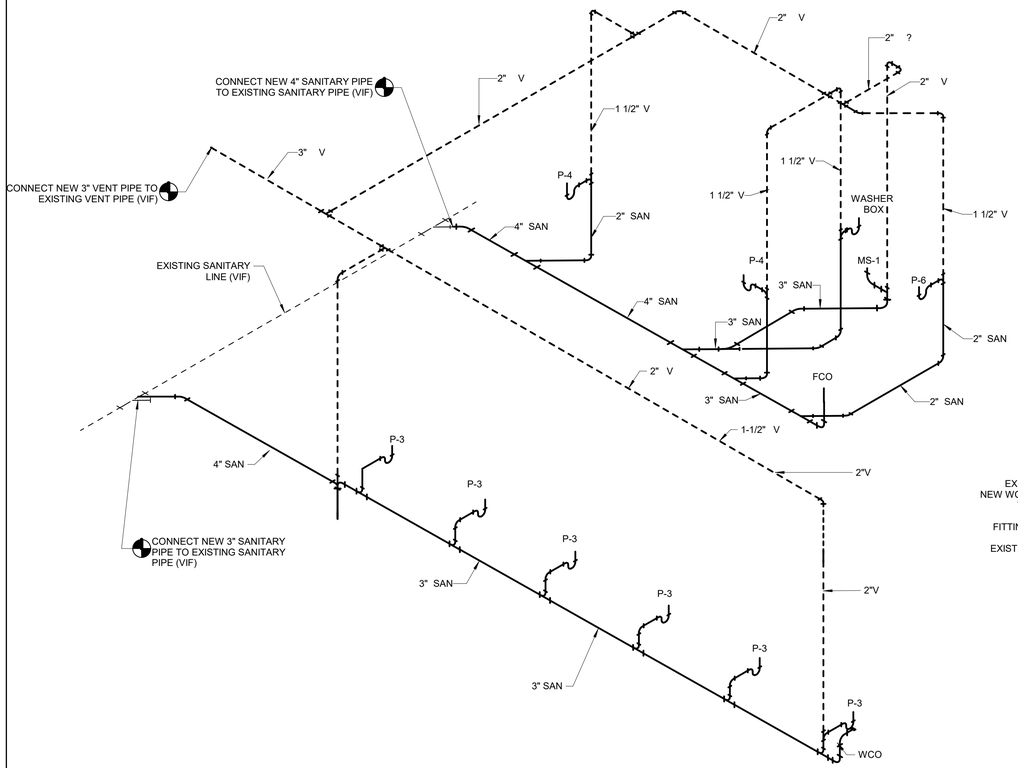
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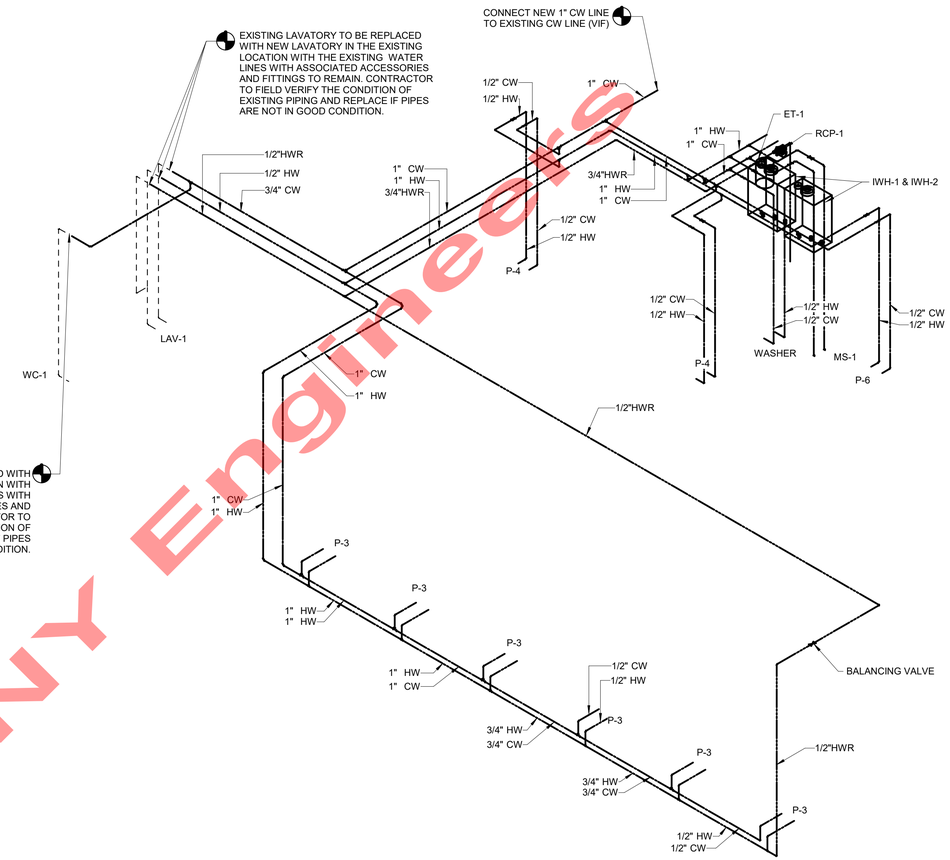
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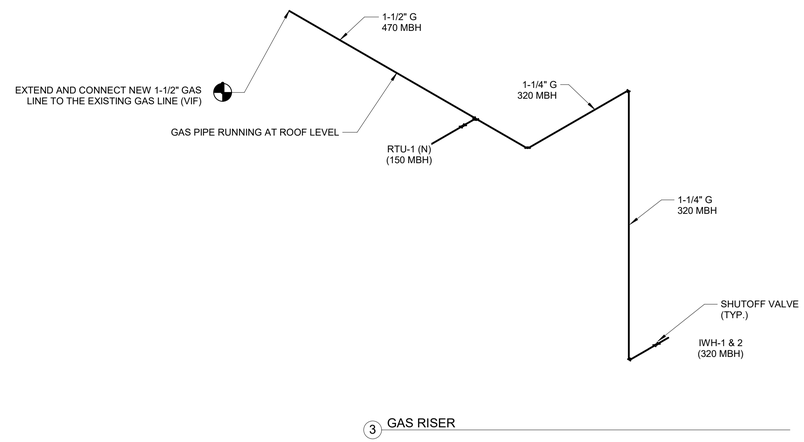
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1 SANITARY AND VENT RISER



2 WATER SUPPLY RISER



3 GAS RISER

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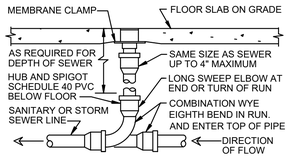
PLUMBING RISERS

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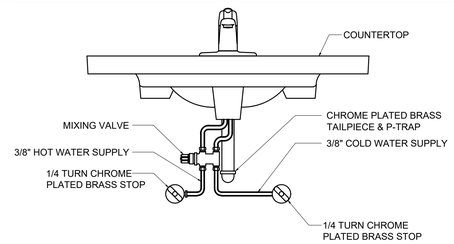
P300

PROVIDE ROUND SECURED NICKEL BRONZE ADJUSTABLE TOP WITH "CO" CAST IN COVER. PROVIDE CLEANOUT TOP WITH VARIATIONS SUITABLE FOR FLOOR COVERING (CARPET MARKER, RECESSED FOR TILE, SCORIATED FOR UNFINISHED FLOORS). PROVIDE BRONZE PLUG IN CAST IRON BODY.

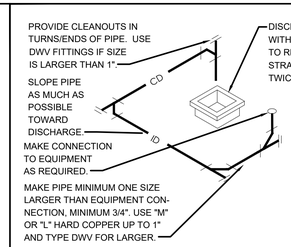


LOCATE AT BUILDING EXIT, AT ENDS OF RUNS, AT TURNS OF PIPE GREATER THAN 45 DEGREES, AT 50' INTERVALS ON STRAIGHT RUNS, AND WHERE SHOWN ON PLANS. PROVIDE BACKFILL PER ARCHITECTURAL SPECIFICATIONS. LOCATE CLEANOUTS WHERE THERE IS 18" CLEAR AROUND. CONSULT LOCAL CODES FOR OTHER FCO REQUIREMENTS.

1	SCALE	FLOOR CLEAN OUT DETAIL
	N.T.S.	

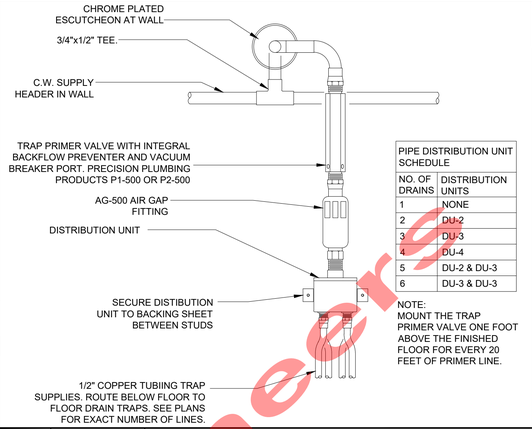


2	SCALE	MIXING VALVE DETAILS
	N.T.S.	



ROUTE PIPE INCONSPICUOUSLY AND UNOBTRUSIVELY. HANG PIPE AS REQUIRED. DO NOT INSULATE INDIRECT DRAIN PIPE WHEN INSTALLED EXPOSED IN FOOD SERVICE FACILITY.
REFER TO LOCAL CODES.

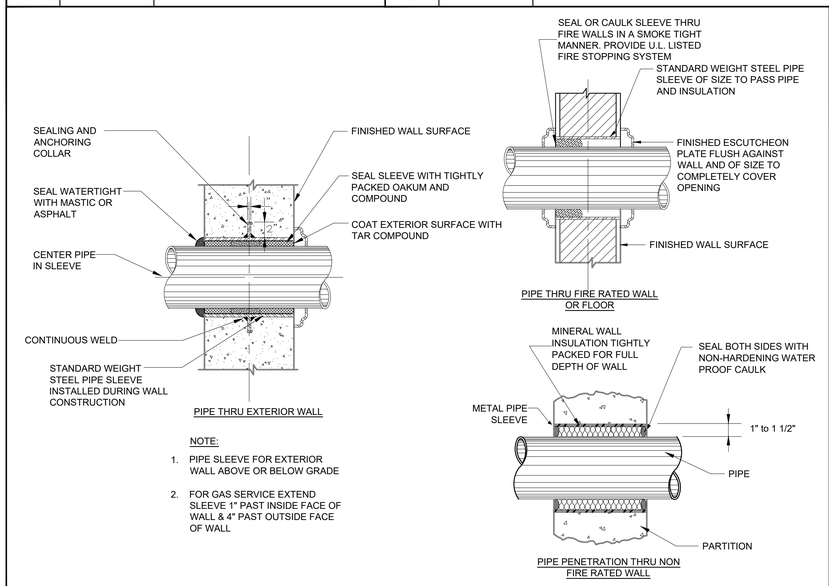
3	SCALE	INDIRECT CONDENSATE DRAIN DETAILS
	N.T.S.	



PIPE DISTRIBUTION UNIT SCHEDULE	
NO. OF DRAINS	DISTRIBUTION UNITS
1	NONE
2	DU-2
3	DU-3
4	DU-4
5	DU-2 & DU-3
6	DU-3 & DU-3

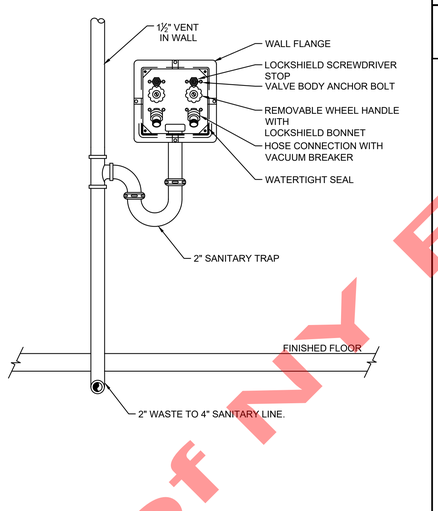
NOTE:
MOUNT THE TRAP PRIMER VALVE ONE FOOT ABOVE THE FINISHED FLOOR FOR EVERY 20 FEET OF PRIMER LINE.

4	SCALE	TRAP PRIMER DETAIL
	N.T.S.	

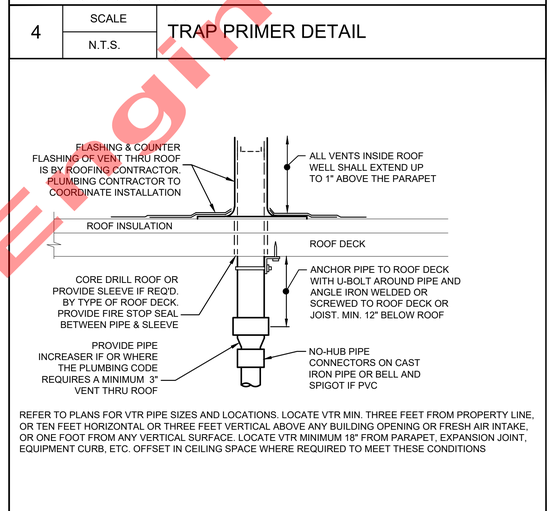


NOTE:
1. PIPE SLEEVE FOR EXTERIOR WALL ABOVE OR BELOW GRADE
2. FOR GAS SERVICE EXTEND SLEEVE 1" PAST INSIDE FACE OF WALL & 4" PAST OUTSIDE FACE OF WALL

5	SCALE	PIPE SLEEVE THROUGH WALL SECTION
	N.T.S.	

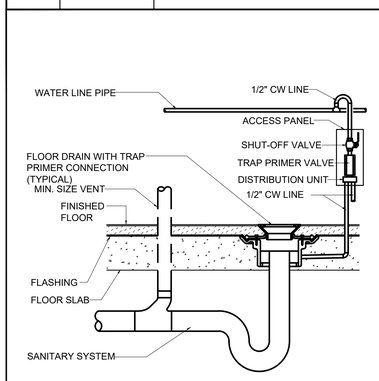


6	SCALE	TYPICAL WASHER BOX DETAIL
	N.T.S.	

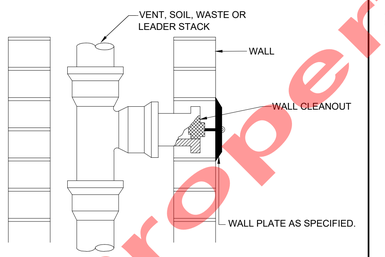


REFER TO PLANS FOR VTR PIPE SIZES AND LOCATIONS. LOCATE VTR MIN. THREE FEET FROM PROPERTY LINE, OR TEN FEET HORIZONTAL OR THREE FEET VERTICAL ABOVE ANY BUILDING OPENING OR FRESH AIR INTAKE, OR ONE FOOT FROM ANY VERTICAL SURFACE. LOCATE VTR MINIMUM 18" FROM PARAPET, EXPANSION JOINT, EQUIPMENT CURB, ETC. OFFSET IN CEILING SPACE WHERE REQUIRED TO MEET THESE CONDITIONS

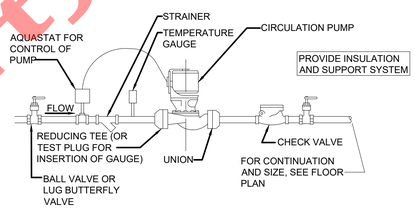
7	SCALE	VENT THROUGH ROOF DETAIL
	N.T.S.	



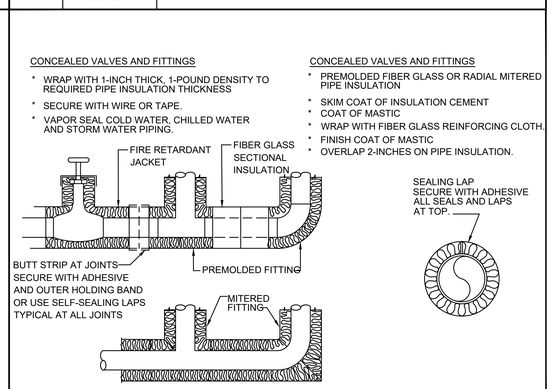
8	SCALE	FLOOR DRAIN WITH TRAP PRIMER
	N.T.S.	



9	SCALE	WALL CLEAN OUT DETAIL
	N.T.S.	



10	SCALE	INLINE RE-CIRCULATION PUMP DETAIL
	N.T.S.	



11	SCALE	PIPE INSULATION DETAIL
	N.T.S.	

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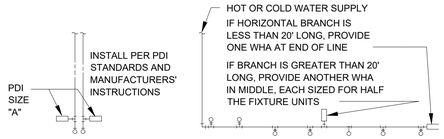
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SINGLE FIXTURE

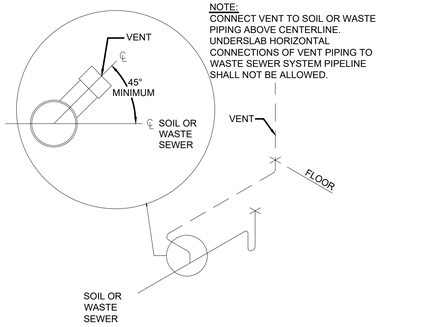
PDI SIZE	PIPE SIZE	FIXTURE UNIT LOAD
A	1/2"	1-11
B	3/4"	12-32
C	1"	33-60
D	1-1/4"	61-113
E	1-1/2"	114-154
F	2"	155-330

MULTIPLE FIXTURES

FIXTURE UNIT TABULATION		
FIXTURE	COLD	HOT
VALVE WATER CLOSET	5	--
URINAL	5	--
COUNTER SINK	1.5	1.5
LAVATORY	1.5	1.5
MOP BASIN	2.25	2.25
WATER COOLER	.25	--

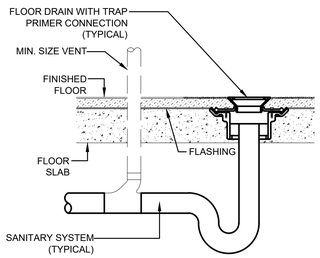
PROVIDE WATER HAMMER ARRESTERS BY SIOUX CHIEF. PRECISION PLUMBING PRODUCTS, WATTS OR APPROVED EQUAL WITH PISTON AND O-RING CONSTRUCTION HAVING PDI #WH-201, ASSE #1010 AND ANSI #A112.26.1M CERTIFICATION. INSTALL IN HORIZONTAL OR VERTICAL POSITION, BUT NEVER UPSIDE DOWN. INSTALL INLINE WITH WATER FLOW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

1	SCALE N.T.S.	WATER HAMMER ARRESTOR

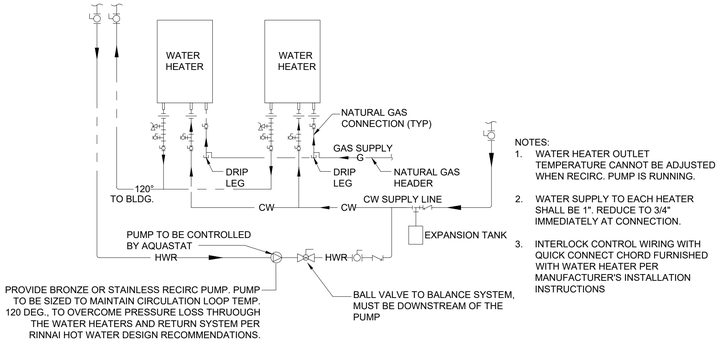


NOTE:
CONNECT VENT TO SOIL OR WASTE PIPING ABOVE CENTERLINE. UNDERSLAB HORIZONTAL CONNECTIONS OF VENT PIPING TO WASTE SEWER SYSTEM PIPELINE SHALL NOT BE ALLOWED.

2	SCALE N.T.S.	VENT PIPING INSTALLATION

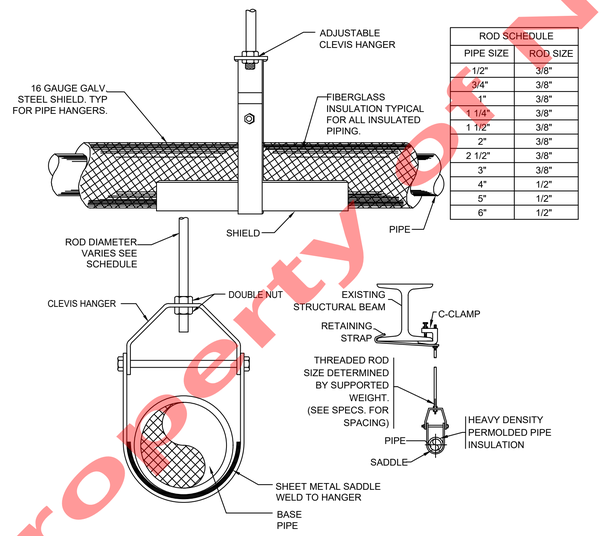


3	SCALE N.T.S.	FLOOR DRAIN DETAIL



NOTES:
1. WATER HEATER OUTLET TEMPERATURE CANNOT BE ADJUSTED WHEN RECIRC. PUMP IS RUNNING.
2. WATER SUPPLY TO EACH HEATER SHALL BE 1". REDUCE TO 3/4" IMMEDIATELY AT CONNECTION.
3. INTERLOCK CONTROL WIRING WITH QUICK CONNECT CHORD FURNISHED WITH WATER HEATER PER MANUFACTURER'S INSTALLATION INSTRUCTIONS

4	SCALE N.T.S.	TANKLESS GAS FIRED WATER HEATER DETAIL



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	SCALE N.T.S.	PIPE HANGER DETAIL

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DRAWING NUMBER:

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SPRINKLER GENERAL NOTES

1. ALL SPRINKLER WORK SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF N.F.P.A.-13-2019 AND ALL LOCAL AUTHORITIES.
2. ALL SPRINKLER WORK SHALL COMPLY WITH BUILDING STANDARDS AND REQUIREMENTS.
3. ALL SPRINKLER HEADS SHALL BE INSTALLED AT CENTER OF TILE IF CEILING IS PROVIDED.
4. GENERAL CONTRACTOR SHALL COORDINATE FINAL FURNITURE/ EQUIPMENT HEIGHT ELEVATIONS AND LOCATIONS WITH SPRINKLER INSTALLATION. ENGINEER SHALL BE NOTIFIED WHEN FURNITURE/ EQUIPMENT IS LESS THAN 18" TO UNDERSIDE OF CEILING.
5. THE SPRINKLER SYSTEMS ARE TO BE HYDROSTATIC TESTED FOR A (2) HOUR MINIMUM AT 200 PSI. PRESSURE AND ARE TO BE WITNESSED BY AUTHORIZED BUILDING PERSONNEL. COORDINATE ALL TESTING WITH BUILDING MANAGER.
6. PIPES SIZES SHOWN ARE BASED ON DESIGN PIPING LAYOUTS ONLY. ACTUAL PIPE SIZES SHALL BE DETERMINED BY CONTRACTORS HYDRAULIC CALCULATIONS BASED ON HIS INSTALLATION DRAWINGS. CONTRACTOR SHALL ALLOW FOR THIS AND INCLUDE THIS IN HIS CONTRACT PRICE.
7. DRAWING INDICATES SPRINKLER SYSTEM DESIGN ONLY. CONTRACTOR RESPONSIBLE FOR OFFSETS, DROPS AND RISES FOR COORDINATION WITH OTHER TRADES.
8. G.C. SHALL BE RESPONSIBLE FOR ALL FINAL TESTS AND INSPECTIONS OF COMPLETED WORK REQUIRED BY THE BUILDING MANAGEMENT PRIOR TO OCCUPANCY OF SPACE.
9. ALL SPRINKLER WORK SHALL BE TESTED AND MADE OPERATIONAL PRIOR TO CARPET AND FURNITURE INSTALLATION. G.C. SHALL REPAIR AND/OR REPLACE ALL FINISHES DAMAGED BY DEFECTIVE SPRINKLER WORK AT HIS EXPENSE.
10. ALL BURNING, CUTTING, SOLDERING AND WELDING SHALL BE COORDINATED WITH BUILDING FIRE SYSTEMS WITH BUILDING MANAGEMENT, AS REQUIRED.
11. G.C. SHALL BE RESPONSIBLE FOR OBTAINING PERMITS AND APPROVALS REQUIRED BY BUILDING INSPECTOR AND FIRE MARSHALL IN CONJUNCTION WITH CHANGES TO EXISTING SPRINKLER SYSTEM.
12. REFER TO ENGINEERING DRAWINGS FOR SPRINKLER HEADS, LIGHT SENSORS AND FIRE DETECTION DEVICES.
13. ALL WORK TO BE DONE DURING THE HOURS DESIGNATED BY OWNER.
14. UPON COMPLETION OF ALL SPRINKLER WORK, CONTRACTOR SHALL TEST AND INSPECT ENTIRE SPRINKLER SYSTEM, ENTIRE SYSTEM SHALL BE FULLY OPERATIONAL AND APPROVED IN COMPLIANCE WITH ALL AHJ.
15. UPON SUCCESSFUL COMPLETION OF ALL TESTING, CONTRACTOR SHALL PRIME AND PAINT ALL EXPOSED SPRINKLER PIPING. COLOR AND FINISH SHALL BE AS PER ARCHITECT.
16. CONTRACTOR SHALL INCLUDE IN HIS BID THE COST TO PROVIDE (5) FIVE ADDITIONAL SPRINKLERS INSTALLED. EXACT LOCATIONS OF THESE SPRINKLER HEADS SHALL BE DETERMINED IN FIELD.
17. FOR SPRINKLER WORK DONE IN ACCORDANCE WITH THE REQUIREMENTS OF N.F.P.A.-13-2019, HYDROSTATIC TESTS IN ACCORDANCE WITH REFERENCE STANDARD NFPA 13-2019, AS MODIFIED FOR MANFIELDS, MASSACHUSETTS STATE ARE NECESSARY.
18. CONTRACTOR SHALL COORDINATE WITH OTHER TRADES AND SHALL INSTALL NEW WORK TO CLEAR DUCTWORK AND LIGHTING FIXTURES.
19. ALL SPRINKLER WORK SHALL COMPLY WITH BUILDING STANDARDS AND REQUIREMENTS.
20. DRAWING INDICATES SPRINKLER SYSTEM DESIGN ONLY. CONTRACTOR RESPONSIBLE FOR OFFSETS, DROPS AND RISES FOR COORDINATION WITH OTHER TRADES.
21. PROVIDE AUXILIARY DRAINS AT TRAPPED SECTIONS OF PIPING AS REQUIRED BY NFPA.
22. COMPOSITE DRAWINGS
    CONTRACTOR SHALL BE GIVEN A SEPIA TRANSPARENCIES TO IMPOSE THEIR WORK FOR A COORDINATED ALLOCATION OF SPACE. PROCEDURE SHALL INCLUDE HVAC CONTRACTOR TO INDICATE DUCT WORK, PIPING, STRUCTURAL AND ARCHITECTURAL DETAILS. SEPIAS SHALL BE GIVEN TO PLUMBING, SPRINKLER AND ELECTRICAL TRADES WHO WILL DRAW HIS WORK ON DRAWINGS. HVAC CONTRACTORS SHALL HOLD A COORDINATION MEETING WITH ALL CONTRACTORS TO ELIMINATE INTERFERENCE OR CONFLICTS IN INSTALLING WORK. IF UNABLE TO EACH AGREEMENT ISSUE, ARCHITECT SHALL MAKE BINDING DECISION.
23. CONTRACTOR SHALL COORDINATE SPRINKLER MAIN AND BRANCHES WITH NEW CONSTRUCTION TO AVOID CONFLICTS WITH CEILING HEIGHTS, DUCTWORK, LIGHTING FIXTURES, BEAMS. CONTRACTOR TO ADJUST PIPING ACCORDINGLY TO ACCOMMODATE NEW CONSTRUCTION.

SPRINKLER DRAWING LIST

SP001 SPRINKLER NOTES, SYMBOLS & SPECIFICATIONS

SP100 SPRINKLER FLOOR PLAN

SP200 SPRINKLER DETAILS

SPACING BETWEEN SPRINKLER HEADS

LIGHT HAZARD: 15' MAX.
ORDNIARY HAZARD: 15' MAX

NOTE: MAXIMUM DISTANCE BETWEEN SPRINKLER HEADS & WALLS IS ½ THE DISTANCE BETWEEN HEADS.

PROTECTION AREA OF SPRINKLER HEADS

LIGHT HAZARD : 225 SQ. FT.
ORDINARY HAZARD : 130 SQ. FT.

GENERAL NOTES:
1. FOR SPRINKLER WORK ONLY.
2. ALL SPRINKLER HEADS MEET DESIGN CRITERIA PER COVERAGE.

BUILDING DEPARTMENT SPRINKLER NOTES

1. THE INSTALLATION, COMPONENTS, SIZING, SPACING, CLEARANCES, POSITION AND TYPE OF SYSTEMS SHALL CONFORM TO 780 CMR: MASSACHUSETTS STATE BOARD OF BUILDING AND STANDARDS AND AMENDMENTS TO THE INTERNATIONAL BUILDING CODE 2021.
2. ONLY APPROVED MATERIALS SHALL BE USED AS PER THE INTERNATIONAL BUILDING CODE 2021, SECTION 104.9.
3. DIRECT CONNECTION OF SPRINKLERS TO THE PUBLIC WATER SYSTEM SHALL CONFORM TO THE INTERNATIONAL BUILDING CODE 2021, SECTION 903.3.5.
4. SPRINKLER SHALL BE PROTECTED AGAINST FREEZING AND INJURY AS PER NFPA 13-2019 CHAPTER 16 SECTION 16.4.
5. THE OCCUPANCY OF THE AREAS TO BE SPRINKLERED IN ACCORDANCE WITH THE INTERNATIONAL BUILDING CODE 2021, SECTION 903.2.
6. PIPING, FITTINGS, SPECIFICATIONS, PIPE SCHEDULES, SYSTEM TEST PIPES, PROTECTION AGAINST CORROSION, DAMAGE, VALVES, HANGERS, SPRINKLERS GUARDS AND SHIELDS SHALL BE AS PER WITH THE INTERNATIONAL BUILDING CODE 2021, SECTION 903.
7. STOCK OF EXTRA SPRINKLERS WILL BE FURNISHED AS PER NFPA 13-2019 SECTION 16.2.7 (REQUIRED FOR EACH TEMPERATURE RATING).
8. SPRINKLER ALARM SHALL BE IN ACCORDANCE WITH THE INTERNATIONAL BUILDING CODE 2021, SECTION 907.
9. SPACING, LOCATION AND POSITION OF SPRINKLER WILL BE AS PER THE INTERNATIONAL BUILDING CODE 2021, SECTION 903.3.
10. ALL BLIND SPACES EXCEEDING 6" IN WIDTH OR DEPTH WHICH CONTAIN COMBUSTIBLE MATERIAL WILL BE SPRINKLERED.
11. ALL PIPE PASSING THROUGH WALLS WILL COMPLY WITH SECTION THE INTERNATIONAL BUILDING CODE 2021, SECTION 714.
12. THERE IS NO HIGH PILED STORAGE AS DEFINED IN THE INTERNATIONAL BUILDING CODE 2021, SECTION 311.
13. DISTANCE OF SPRINKLERS FROM HEAT SOURCE SHALL BE AS PER NFPA 13-2019, SECTION 9.4.2.5.
14. THIS APPLICATION IS NOT FILLED AS A RESULT OF ACTION BY THE FIRE COMMISSIONER AS AUTHORIZED BY BS & TO MODIFY THE CERTIFICATE OF OCCUPANCY NOR IS SUCH ACTION PENDING.
15. ALL VALVES SHALL BE IDENTIFIED AS REQUIRED BY NFPA 13-2019, SECTION 16.9.
16. A ONE PIECE REDUCING FITTING OF GOOD DESIGN SHOULD BE USED WHEREVER A CHANGE IS MADE IN THE SIZE OF PIPE, AS PER NFPA 13-2019, SECTION 16.8.5
17. ALL VALVES ON CONNECTIONS TO WATER SUPPLIES TO SPRINKLER SHALL BE APPROVED O.S. & Y. OR APPROVED INDICATOR TYPE.
18. DRAIN VALVES AND TEST VALVES SHALL BE APPROVED TYPE AS PER NFPA-13-2019, SECTION 16.9.1.
19. HANGERS SHOULD BE SUPPORTED BY WROUGHT IRON U TYPE OR APPROVED ADJUSTABLE HANGERS. HANGERS SHALL BE OF THE TYPE APPROVED FOR USE WITH THE PIPE OR TUBE INVOLVED, AS PER NFPA-13-2019, SECTION 17.
20. TEMPERATURE RATING SHALL COMPLY WITH NFPA-13-2019, SECTION 9.4.2.
21. 18" MINIMUM CLEARANCE TO BELOW SPRINKLER DEFLECTOR AS PER NFPA-13-2019, SECTION 9.5.5.2.
22. MINIMUM BRANCH PIPE SIZE TO BE ONE INCH (1").
23. THIS APPLICATION IS MADE ONLY FOR WORK INDICATED ON THE 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.
24. WET SPRINKLER SYSTEM SUBJECTED TO FREEZING SHOULD COMPLY WITH NFPA 13-2019, SECTION 16.4.1.
25. INSPECTION AND TESTS OF SPRINKLERS SHALL BE CONDUCTED AS PER INTERNATIONAL BUILDING CODE 2021, SECTION 903.5.

SPRINKLER LEGENDS AND ABBREVIATIONS

●	NEW CONCEALED PENDENT SPRINKLER HEAD

HAZARD CLASSIFICATION AND DESIGN DENSITY

OCCUPANCY: LIGHT HAZARD
MINIMUM DESIGN DENSITY: 0.10 GPM/SQ. FT.

OCCUPANCY: ORDINARY HAZARD
MINIMUM DESIGN DENSITY: 0.15 GPM/SQ. FT.

SCOPE OF WORK

1. FOR AUTOMATIC SPRINKLER WORK. THE SPRINKLER SYSTEM IS DESIGNED AS PER NFPA 13.
2. SCOPE IS FOR MINILUX PROJECT SPACE.

DESIGN CRITERIA SUMMARY

PROJECT DESIGNED BY HYDRAULIC CALCULATION AND NFPA13.

PART 1 - GENERAL

1.01 REQUIREMENTS

A. THE SPRINKLER CONTRACTOR SHALL BE A LICENSED, AUTHORIZED INSTALLER OF SPRINKLER SYSTEMS AND SHALL HAVE HAD A MINIMUM OF FIVE YEARS EXPERIENCE IN THE INSTALLATION OF SPRINKLER SYSTEMS IN THE CITY CODE.

B. BEFORE SUBMITTING HIS BID, THE SPRINKLER CONTRACTOR SHALL VISIT THE SITE AND SHALL FULLY FAMILIARIZE HIMSELF WITH, AND BECOME FAMILIAR WITH THE DIFFICULTIES THAT WILL ATTEND THE EXECUTION OF THIS WORK. CONTRACTOR SHALL PERFORM THIS PRIOR TO SUBMITTING HIS PROPOSAL. SUBMISSION OF A PROPOSAL WILL BE CONSTRUED AS EVIDENCE THAT SUCH AN EXAMINATION HAS BEEN MADE, AND LATER CLAIMS WILL NOT BE RECOGNIZED FOR EXTRA LABOR, EQUIPMENT OR MATERIALS REQUIRED BECAUSE OF DIFFICULTIES ENCOUNTERED WHICH COULD HAVE BEEN FORESEEN HAD SUCH AN EXAMINATION BEEN MADE.

C. UPON REVIEW OF THE DRAWINGS AND SPECIFICATIONS, PRIOR TO SUBMITTING HIS PROPOSAL, THE SPRINKLER CONTRACTOR SHALL INFORM ARCHITECT AND/OR ENGINEER OF ANY DISCREPANCIES OR REQUEST CLARIFICATION IN WRITING, IF NECESSARY, CONCERNING THE INTENT OF THE PLANS AND SPECIFICATIONS TO PROVIDE A COMPLETE SPRINKLER SYSTEM INSTALLATION. LATER CLAIMS WILL NOT BE RECOGNIZED FOR EXTRA LABOR, EQUIPMENT OF MATERIALS SHOULD SUCH PROCEDURE NOT BE FOLLOWED.

D. THE SCHEDULING OF THE SPRINKLER WORK SHALL BE COORDINATED WITH BUILDING MANAGEMENT, WITH OTHER CONTRACTORS AND WITH THE ENGINEER.

E. NECESSARY SHUT-DOWNS OF BASE BUILDING SPRINKLER SYSTEM MUST BE COORDINATED WITH BUILDING MANAGEMENT. SHUT-DOWNS OF BASE BUILDING SYSTEMS SHALL TAKE PLACE AFTER OR BEFORE NORMAL BUSINESS HOURS AND SHALL BE CONSIDERED OVERTIME WORK. THE CONTRACTOR MUST GIVE BUILDING MANAGEMENT AND CITY FIRE DEPARTMENT 48 HOURS NOTICE PRIOR TO SHUT-DOWN OF SPRINKLER, OR OTHER SYSTEMS.

1.02 WORK INCLUDED

A. WORK SHALL INCLUDE ALL SPRINKLER WORK FURNISHED AND INSTALLED AS INDICATED ON THE PLANS AND AS SPECIFIED HEREIN.

1. ALL WORK SHALL COMPLY WITH REQUIREMENTS OF THE CITY BUILDING CODE, N.F.P.A. STANDARD 13-2019, CITY FIRE DEPARTMENT AND OWNERS INSURANCE RATING ORGANIZATION.
2. PROVIDE COMPLETE NEW SPRINKLER SYSTEM CONNECTING TO EXISTING SPRINKLER SYSTEM ALARM CHECK VALVE ASSEMBLY.
3. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL LOCATION OF WORK. SCALED DIMENSIONS SHALL NOT BE USED. ANY DIMENSIONS NOT SHOWN SHALL BE OBTAINED FROM FIELD MEASUREMENTS.
4. PROVIDE COMPUTER GENERATED HYDRAULIC CALCULATIONS IN ACCORDANCE WITH MASACHUSSETS BUILDING CODE OR LOCAL AHJ. BUILDING DEPARTMENT AND NFPA STANDARDS.

1.03 SHOP DRAWINGS AND SUBMITTALS

A. THE CONTRACTOR SHALL SUBMIT, FOR APPROVAL, FULLY COORDINATED SHOP DRAWINGS, CAPACITY, DATA, AND CATALOG CUTS OF THE FOLLOWING:

1. PIPE AND FITTINGS
2. VALVES
3. HANGERS AND SUPPORTS
4. SPRINKLER PIPING LAYOUT
5. TESTS
6. SPRINKLER HEADS

B. THE SPRINKLER SYSTEM SHALL BE HYDRAULICALLY DESIGNED. CONTRACTOR SHALL SUBMIT CALCULATIONS WITH SHOP DRAWINGS. CALCULATIONS SHALL BE PERFORMED IN ACCORDANCE WITH REQUIREMENTS OF NFPA 13-2019, AND INTERNATIONAL BUILDING CODE 2021.

C. ADD APPROPRIATE HOSE ALLOWANCE.

D. THE SPRINKLER CONTRACTOR SHALL OBTAIN THE LATEST FIRE PUMP TEST AT THE SITE TO VERIFY THE AVAILABLE WATER SUPPLY.

1.04 BUILDING DEPARTMENT FILING, PERMITS AND CERTIFICATES

A. THE SPRINKLER CONTRACTOR SHALL FILE ALL REQUIRED DRAWINGS AND HYDRAULIC CALCULATIONS WITH THE BUILDING DEPARTMENT AND BE RESPONSIBLE FOR OBTAINING FINAL APPROVAL.

B. ARRANGE FOR INSPECTION AND TESTS OF ANY AND ALL PARTS OF THE WORK AS REQUIRED BY AUTHORITIES HAVING JURISDICTION AND PAY ALL CHARGES FOR SAME.

1.05 INSPECTION AND TESTING

A. THE SPRINKLER SYSTEM SHALL BE INSPECTED AND TESTED IN ACCORDANCE WITH THE REQUIREMENTS OF THE CITY BUILDING CODE FIRE DEPARTMENT INSPECTOR.

B. THE SPRINKLER SYSTEM SHALL BE SUBJECTED TO A HYDROSTATIC PRESSURE TEST FOR A PERIOD OF TWO HOURS AT A PRESSURE OF AT LEAST 200 PSIG OR 50 PSI IN EXCESS OF THE MAXIMUM PRESSURE TO BE MAINTAINED WHEN THE MAXIMUM PRESSURE IN THE SYSTEM IS IN EXCESS OF 150 PSI AS PER NFPA.

C. THE BUILDING DEPARTMENT SHALL BE NOTIFIED THAT THE SYSTEM IS READY FOR REINSPECTION AND TESTING. THE BUILDING DEPARTMENT INSPECTOR SHALL WITNESS THE TEST. FINAL APPROVAL OF THE SPRINKLER SYSTEM SHALL BE OBTAINED FROM BUILDING DEPARTMENT, AND FIRE DEPARTMENT.

PART 2 - MATERIALS

2.01 GENERAL

A. THE SPRINKLER SYSTEM SHALL BE COMPLETE WITH ALL PIPE, FITTINGS, VALVES, DRAINAGE SYSTEM AND VALVES, HANGERS AND SUPPORTS. ALSO, MISCELLANEOUS WORK ITEMS, SUCH AS, SIGNS AS REQUIRED, VALVE TAGS, ETC., AND ALL OTHER RELATED EQUIPMENT, APPARATUS AND MATERIAL ITEMS NECESSARY FOR COMPLETE, APPROVED TYPE SYSTEM, READY FOR FUTURE EXTENSION.

SPRINKLER SPECIFICATIONS

B. ALL PIPE, FITTINGS, HANGERS, SUPPORTS, SPRINKLER HEADS, ETC., SHALL CONFORM TO THE CITY BUILDING CODE AND NATIONAL FIRE PROTECTION ASSOCIATION'S REQUIREMENTS AS TO TYPES OF MATERIALS, ARRANGEMENT, SIZES AND INSTALLATION. PIPING PENETRATING FIRE RATED PARTITIONS SHALL HAVE OPENING SEALED WITH U.L. APPROVED FIREPROOF SEALANT.

2.02 SPRINKLER PIPING

A. ALL SPRINKLER PIPING SHALL BE SCHEDULE 40 IN ACCORDANCE WITH NFPA 13. PIPE SHALL BE UL/FM APPROVED.

B. STEEL PIPE SHALL BE BETHLEHEM STEEL CO., ALLIED TUBE, BERGER INDUSTRIES OR APPROVED.

C. AS PER NFPA 13, PIPE OR TUBE USED IN SPRINKLER SYSTEMS SHALL BE OF THE MATERIALS SPECIFIED IN SECTION 16.3.

D. AS PER NFPA 13, FITTINGS USED IN SPRINKLER SYSTEMS SHALL BE OF THE MATERIALS LISTED IN TABLE 6.2.1 FITTING SHALL BE UL/FM APPROVED. CONTRACTOR.

E. NONMETALLIC PIPES & FITTINGS USED IN MULTIPURPOSE PIPING SYSTEMS NOT EQUIPPED WITH A FIRE DEPARTMENT CONNECTION SHALL BE DESIGNED TO WITH STAND A WORKING PRESSURE OF NOT LESS THAN 130 PSI AT 120°F.

2.03 CUTTING AND PATCHING

DO ALL CUTTING AND CORE DRILLING NECESSARY FOR THE INSTALLATION OF SPRINKLER WORK. ACCURATELY LAYOUT WORK FOR WHICH CUTTING IS REQUIRED. PATCH AND RESTORE ANY DAMAGE WORK TO LIKE NEW CONDITION.

2.04 CUTTING AND PATCHING

1. DO ALL CUTTING AND CORE DRILLING NECESSARY FOR THE INSTALLATION OF SPRINKLER WORK. ACCURATELY LAYOUT WORK FOR WHICH CUTTING IS REQUIRED. PATCH AND RESTORE ANY DAMAGE WORK TO LIKE NEW CONDITION.
2. FOR REPLACEMENT OF THE WORK REMOVED, MATCH EXISTING IN NATURE, CONSTRUCTION AND FINISH.
3. MAINTAIN THE PREMISES FREE FROM ACCUMULATION OF WASTE MATERIAL OR RUBBISH COVERED BY THE WORK, REMOVE ALL SURPLUS MATERIALS, TOOLS ETC. AND LEAVE PREMISES CLEAN.

2.05 FIRE STOPPING

INSTALLATION SHALL BE IN STRICT ACCORDANCE WITH THE MANUFACTURERS PUBLISHED DIRECTIONS AND PER FIRE TESTED DESIGNS THAT HAVE BEEN ACCEPTED BY THE APPROPRIATE CODE AUTHORITY HAVING JURISDICTION.

2.06 PHASING

PHASING SHALL BE COORDINATED BETWEEN THE SPRINKLER CONTRACTOR AND GENERAL CONTRACTOR. SPRINKLER INSTALLATION SHALL BE PHASED IN A MANNER WHICH WILL ALLOW FULL OCCUPANCY OF THE EXISTING FACILITY WHILE THE INSTALLATION IS IN PROGRESS.

2.06 ALTERNATES/SUBSTITUTIONS

CONTRACTOR SHALL STATE IN THEIR PROPOSAL ANY CONTRACTOR PROPOSED SUBSTITUTIONS OF THE MATERIALS OR METHODS OF INSTALLATION FROM THAT SPECIFIED. THESE ALTERATIONS SHALL BE LISTED ON THE PROPOSAL AS CONTRACTOR ALTERNATIVE.

2.07 LEAK DAMAGE

THE SPRINKLER CONTRACTOR SHALL BE RESPONSIBLE DURING THE INSTALLATION AND TESTING PERIODS OF THE SPRINKLER SYSTEM FOR ANY LOSS OR DAMAGE TO THE WORK OF OTHERS, TO THE BUILDING, IT'S CONTENTS ETC. CAUSED BY LEAKS IN THE EQUIPMENT. BY UNPLUGGED OR DISCONNECTED PIPES, FITTINGS ETC. OR BY OVERFLOW, AND SHALL PAY FOR THE NECESSARY REPLACEMENTS OR REPAIRS TO THE WORK OF OTHERS, DAMAGED BY SUCH LEAKAGE.

2.08 INSERTS, HANGERS, ETC.

A. ALL SPRINKLER PIPING SHALL BE SUBSTANTIALLY SUPPORTED AND SHALL COMPLY WITH THE STANDARDS FOR THE NATIONAL FIRE PROTECTION ASSOCIATION FOR THE INSTALLATION OF SPRINKLER SYSTEMS AND AS REQUIRED BY THE CITY BUILDING CODE.

B. HANGERS AND THEIR COMPONENTS SHALL BE FERROUS. HANGERS SHALL BE ADJUSTABLE FLAT IRON TYPE OF CLEVIS TYPE.

C. SPRINKLER PIPING OR HANGERS SHALL NOT BE USED TO SUPPORT NON-SYSTEM COMPONENTS.

D. SPRINKLER PIPING SHALL BE SUBSTANTIALLY SUPPORTED FROM THE BUILDING STRUCTURE WHICH MUST SUPPORT THE ADDED LOAD OF THE WATER-FILLED PIPE PLUS A MINIMUM OF 250 LBS. APPLIED AT THE POINT OF HANGING. CONTRACTOR SHALL SUBMIT DETAIL OF SUPPORT FOR REVIEW AND APPROVAL.

E. SPRINKLER PIPING SHALL BE SUPPORTED INDEPENDENTLY OF THE CEILING SHEATHING.

F. WHEN SPRINKLER PIPING IS INSTALLED BELOW DUCTWORK, PIPING SHALL BE SUBSTANTIALLY SUPPORTED FROM THE BUILDING STRUCTURE, NOT FROM THE DUCTWORK.

G. MAXIMUM DISTANCE BETWEEN HANGERS SHALL NOT EXCEED 12 FT. FOR 1 AND 1-1/4" SIZES NOR 15' FOR SIZES 1-1/2" AND LARGER.

H. EXPANSION SHIELDS FOR SUPPORTING PIPES UNDER CONCRETE CONSTRUCTION MAYBE USED IN A HORIZONTAL POSITION IN THE SIDES OF BEAMS. IN CONCRETE HAVING GRAVEL OR CRUSHED STONE AGGREGATE, EXPANSION SHIELDS MAY BE USED IN THE VERTICAL POSITION TO SUPPORT PIPES 4" OR LESS IN DIAMETER.

2.09 ESCUTCHEONS

PROVIDE ESCUTCHEONS ON ALL EXPOSED PIPING PASSING THROUGH WALLS, PARTITIONS, FLOORS AND CEILINGS. ESCUTCHEON SHALL BE HELD IN PLACE BY INTERNAL TENSION OR SET SCREW.

2.10 AS-BUILT DRAWINGS

PREPARE AND SUBMIT "AS BUILT" DRAWINGS AT THE COMPLETION OF THE PROJECT.

2.11 SPRINKLER HEADS

A. SPRINKLERS SHALL BE RATED FOR ORDINARY TEMPERATURES (155°F) EXCEPT AS REQUIRED NEAR HEATERS OR LOCATIONS WHERE ELEVATED TEMPERATURES MAY NORMALLY BE EXPECTED OR AS OTHERWISE INDICATED ON THE CONTRACT DRAWINGS.

B. SPRINKLER HEADS SHALL BE BY TYCO SPRINKLER CO., INC. MANUFACTURE OR APPROVED EQUAL, UL AND FM APPROVED, AS FOLLOWS:

1. SPRINKLER HEADS IN FINISHED CEILINGS WITH CONCEALED PIPING SHALL BE SAME AS EXISTING SPRINKLER MODEL.
2. CONCEALED SPRINKLER HEADS SHOULD BE AUTOMATIC TYCO MODEL TY3531.
3. PROVIDE SPARE SPRINKLER EMERGENCY CABINETS CONFORMING TO NFPA 13.
4. SPRINKLER EMERGENCY CABINETS SHALL BE OF TYCO SPRINKLER CO., INC. OR APPROVED EQUAL, UL AND FM APPROVED.
5. CABINET SHALL BE CONSTRUCTED OF 22 GAUGE STEEL WITH PRIME COAT AND MANUFACTURER'S BAKED ENAMEL FINISH IN COLOR SELECTED BY THE ARCHITECT.
6. CABINET SHALL CONTAIN A MINIMUM OF 6 SPRINKLER HEADS OF EACH TYPE EMPLOYED.

2.12 PRESSURE GAUGE

A. ASHCROFT SERIES 1079, OR APPROVED OTHER, 4-1/2" DIAMETER, 0-300 P.S.I. RANGE, 5 P.S.I. INTERVALS.

PART 3 - EXECUTION

3.01 GUARANTEE

A. GUARANTEE FOR A PERIOD OF ONE (1) YEAR FORM THE DATE OF ACCEPTANCE BY THE OWNER, ALL MATERIALS, APPARATUS AND WORKMANSHIP WHETHER FURNISHED BY HIMSELF OR BY HIS SUBCONTRACTORS AND HE SHALL REPLACE OR REPAIR IN A MANNER APPROVED BY THE ARCHITECTS, WITHOUT COST TO THE OWNER, ANY PART OR PARTS OF THE WORK WHICH MAY PROVE DEFECTIVE OR UNSATISFACTORY WITH IN THE PERIOD OF THE GUARANTEE.

3.02 INSTALLATION

A. PIPING

1. INSTALL PIPING AS SHOWN ON THE CONTRACT DRAWINGS AND STRAIGHT AND DIRECT AS POSSIBLE, FORMING RIGHT ANGLES OR PARALLEL LINES WITH BUILDING WALLS, NEATLY SPACED, WITH RISERS PLUMB AND TRUE.
2. SPRINKLER PIPING SHALL BE INSTALLED SO THAT THE SYSTEM CAN BE DRAINED.
3. PIPE SHALL BE REMOVED BY REAMING.
4. BEFORE INSTALLING PIPE, THOROUGHLY CLEAN THE INSIDE FREE OF CUTTING AND FOREIGN MATTER. CUT ALL PIPE SQUARE AND SMOOTH AND MAKE UP ALL JOINTS TO REQUIRED LIMITS.

B. PIPE JOINTS

1. THREADED JOINTS SHALL BE MADE UP OF TIGHT USING PIPE JOINT TEFLON COMPOUND OR TAPE, APPLIED ON THE MALE THREADS ONLY.

SPRINKLER SCHEDULE

SYMBOL	NAME	COVERAGE	AREA	METAL	TEMPERATURE (°F)	RESPONSE	K-FACTOR	NPT	MFG	MODEL#	APPROVALS
●	CONCEALED PENDENT	STANDARD	LH/OH CEILING	BRASS	155	QUICK	5.6	½"	TYCO	SERIES RF-II TY3531	FM APPROVED

NOTE: 1. COORDINATE ALL SPRINKLER COLOR FINISHES WITH ARCHITECT.

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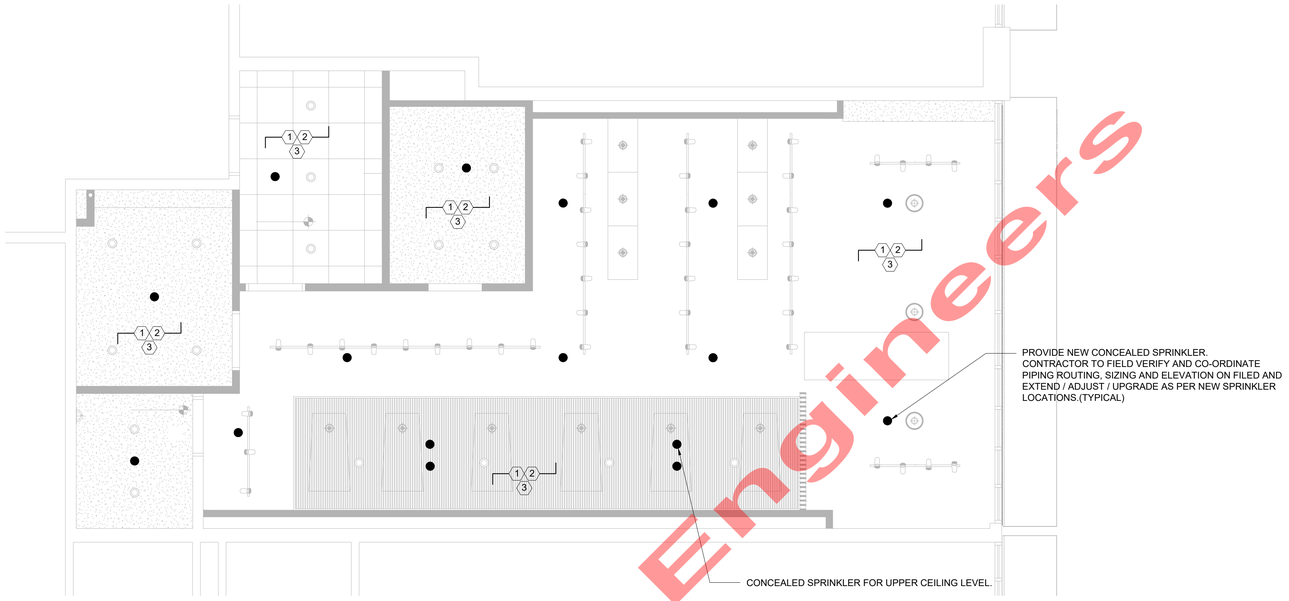
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SPRINKLER NOTES, SYMBOLS AND SPECIFICATIONS

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SPRINKLER FLOOR PLAN 1/4" = 1'-0" A

1. CONTRACTOR TO FIELD VERIFY TO INSTALL ALL SPRINKLER HEADS TO BE MAX. 12" FROM CEILING.
2. ALL NEW SPRINKLER HEADS LOCATION TO BE COORDINATED WITH LIGHTING AND DIFFUSERS TO AVOID CONFLICT.
3. ALL SPRINKLER HEADS & PIPING TO BE COORDINATED OTHER TRADES.
4. ANY WORK SHOWN ON THE DRAWINGS AND NOT PARTICULARLY DESCRIBED IN THE SPECIFICATIONS OR DETAILS, OR ANY WORK WHICH MAY BE DEEMED NECESSARY TO COMPLETE THE CONTRACT SHALL BE PROVIDED BY THE CONTRACTOR AS PART OF THIS CONTRACT.
5. FOR PURPOSES OF CLEARNESS AND LEGIBILITY, SPRINKLER DRAWINGS ARE ESSENTIALLY DIAGRAMMATIC AND SIZE AND LOCATION OF EQUIPMENT ARE DRAWN TO SCALE WHEREVER POSSIBLE. THE DRAWING INDICATE SIZE, CONNECTION POINTS, AND ROUTED OF PIPES. IT IS NOT INTENDED, HOWEVER, THAT ALL OFFSETS, RISES AND DROPS ARE SHOWN. PROVIDE PIPING AS REQUIRED TO FIT STRUCTURE, AVOID OBSTRUCTIONS, AND RETAIN CLEARANCES, HEADROOM OPENINGS AND PASSAGEWAYS.
   ALL PENDANT SPRINKLERS MUST BE SPACED AS FOLLOWS -

   MAXIMUM 7.5' FROM WALL.
   MAXIMUM DISTANCE BETWEEN 2 SPRINKLER HEADS IS 15'.
   MINIMUM DISTANCE BETWEEN 2 SPRINKLER HEADS IS 6'.
6. COVERAGE AREA PER SPRINKLER SHALL BE MAX. 225 SQ.FT FOR LIGHT HAZARD AND 130 SQ.FT. FOR ORDINARY HAZARD.
7. ALL SPRINKLER HEADS MEET DESIGN CRITERIA PER COVERAGE.
8. AUXILIARY DRAIN SHALL BE PROVIDED AT THE TRAPPED SECTIONS.
9. FOR SPRINKLER WORK ONLY.
10. ALL BRANCH TAKE-OFF FOR EACH SPRINKLER TO BE MIN. 1".
11. ALL WORK IN OTHER TENANT SPACES/BASE BUILDING SPACES SHALL BE COORDINATED WITH THE LANDLORD FOR ACCESS AND COORDINATED WITH BUILDING STAFF.
12. ALL WORK WITH EXISTING BUILDING RISERS SHALL BE COORDINATED WITH BUILDING STAFF AND ALL TENANTS AFFECTED BY SUCH WORK.
13. COORDINATE ALL SERVICE SHUTDOWNS WITH THE LANDLORD, BUILDING STAFF, AND ALL OTHER TENANTS AFFECTED BY IT.
14. THE SPRINKLER SYSTEM SHALL BE DESIGNED TO MEET THE BUILDING CODE AND NFPA-13-2019 REQUIREMENTS.
15. ALL CONSTRUCTION INCLUDING EQUIPMENT AND PIPING SHOULD COMPLY WITH RETURN AIR PLENUM STANDARDS.
16. ALL SPRINKLER HEADS IN AREA OF WORK TO BE FULLY COORDINATED WITH ALL CEILING ELEMENTS AND ROOF TRUSS IN ADDITION TO WORK FROM OTHER TRADES. CONTRACTOR TO VERIFY PIPE LAYOUT INCLUDING PIPE ROUTING, SIZE, AND SPRINKLER HEAD LOCATIONS.
17. CONTRACTOR TO PROVIDE SHOP DRAWINGS FOR REVIEW AND APPROVAL.
18. CONTRACTOR TO FIELD VERIFY THE CONDITION OF EXISTING SPRINKLER HEAD AND REUSE WHEREVER POSSIBLE.

GENERAL NOTES - SPRINKLER NTS D

HAZARD CLASSIFICATION AND DESIGN DENSITY

OCCUPANCY:	LIGHT HAZARD
MINIMUM DESIGN DENSITY:	0.10 GPM/SQ. FT.
OCCUPANCY:	ORDINARY HAZARD
MINIMUM DESIGN DENSITY:	0.15 GPM/SQ. FT.

SPRINKLER HEAD COUNT

NEW CONCEALED SPRINKLER HEAD	16
TOTAL SPRINKLER	16

1. CONTRACTOR SHALL ENSURE THERE ARE NO COMBUSTIBLE MATERIALS IN THE ABOVE CEILING SPACE TO PREVENT THE NEED FOR SPRINKLERS IN THAT AREA AS PER NFPA 13.
2. CONTRACTOR TO PROVIDE NEW SPRINKLER PIPING WHEREVER REQUIRED AS NEW SPRINKLER LOCATION. CONTRACTOR TO MAKE SURE SPRINKLER PIPE SIZING AS PER NFPA 13.
3. CONTRACTOR SHALL FIELD-VERIFY THE EXISTING SPRINKLER PIPING AND AVAILABLE CONNECTION POINTS. EXTEND AND CONNECT NEW SPRINKLER HEADS TO THE EXISTING SYSTEM AS REQUIRED. CONTRACTOR SHALL FIELD-VERIFY PIPE SIZES AND MODIFY EXISTING PIPING AND SPRINKLER HEAD LOCATIONS AS NECESSARY TO ACCOMMODATE THE NEW LAYOUT.

KEY NOTES - SPRINKLER NTS B

THE SPRINKLER SUBCONTRACTOR IS REQUIRED TO VISIT THE SITE DURING BIDDING AND VERIFY LOCATION(S) OF WHERE SPRINKLER PIPING/EQUIPMENT IS INDICATED TO BE PLACED, THEIR ROUTE(S) AND POSSIBLE INTERSECTION(S) WITH OTHER EQUIPMENT / WORK / STRUCTURE (I.E. STEEL BEAMS, ETC.) TO BE INSTALLED AND/OR "EXISTING TO REMAIN". THIS SUBCONTRACTOR IS TO VERIFY HEIGHTS "TO BE INSTALLED" TO MAINTAIN DESIGNED CEILING HEIGHTS AND HEAD ROOM. ANY DISCREPANCIES BETWEEN DESIGNED AND ACTUAL TO BE TOLD TO THE GENERAL CONTRACTOR AND INDICATED ON THE BID FORM.

CONTRACTOR'S NOTES - SPRINKLER NTS C

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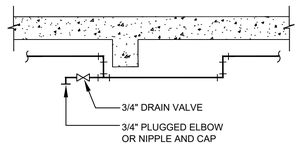
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SPRINKLER FLOOR PLAN

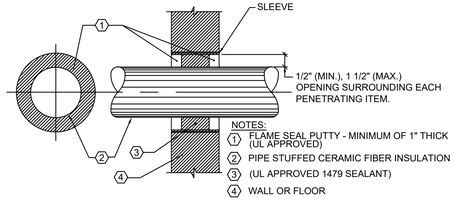
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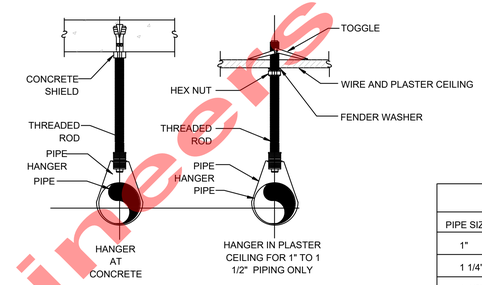
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1	SCALE	TYPICAL DRAIN CONNECTION FOR TRAPPED LINES ON WET PIPE SPRINKLER SYSTEMS
	N.T.S.	

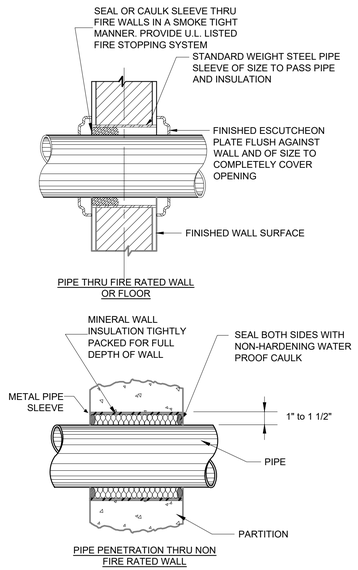


2	SCALE	FIRE STOPPING DETAIL FOR FIRE/ SMOKE RATED WALL/FLOOR OPENINGS
	N.T.S.	

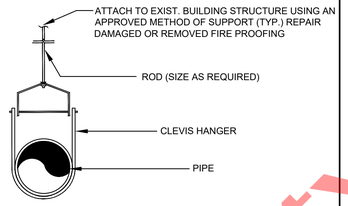


ROD SCHEDULE		
PIPE SIZE	ROD SIZE	SPACING
1"	3/8"	5'-8'
1 1/4"	3/8"	6'-10'
1 1/2"	3/8"	8'-10'
2"	3/8"	10'-12'

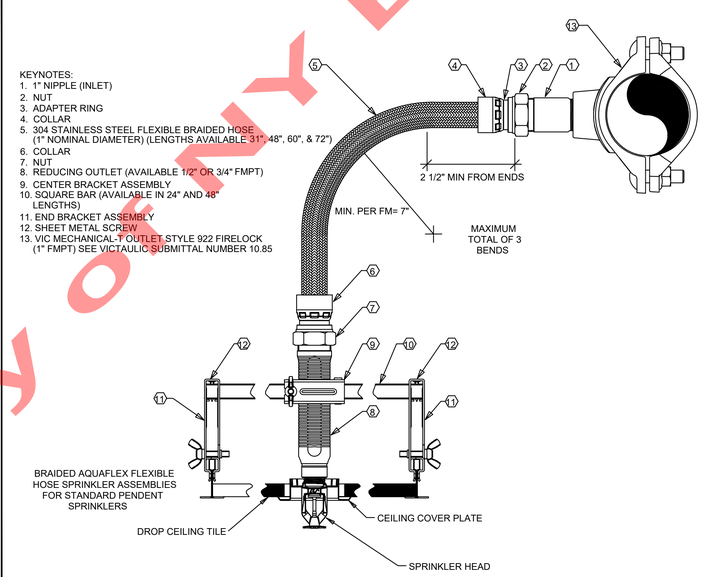
3	SCALE	TYPICAL HANGER DETAIL AND ROD SCHEDULE
	N.T.S.	



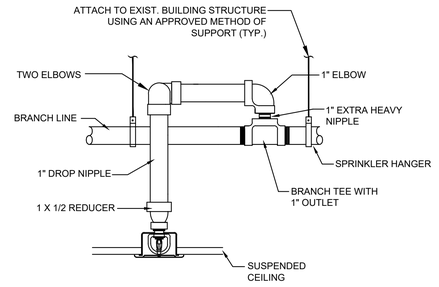
4	SCALE	PIPE SLEEVE THRU WALL SECTION
	N.T.S.	



5	SCALE	HANGER DETAILS TYPICAL
	N.T.S.	



6	SCALE	FLEXIBLE HOSE SPRINKLER ASSEMBLY DETAIL
	N.T.S.	



7	SCALE	NEW CONCEALED PENDENT SPRINKLER HEAD DETAIL
	N.T.S.	

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SPRINKLER DETAILS

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