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**REVISIONS**

| NUMBER | REMARKS    | DATE     |
|--------|------------|----------|
| 1      | PERMIT SET | 05.29.24 |
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**MECHANICAL DRAWING LIST**

|       |  |
|-------|--|
| M-100 | MECHANICAL LEGENDS, SYMBOLS & SCHEDULES      |
| M-101 | MECHANICAL NOTES & SPECIFICATIONS (01 OF 03) |
| M-102 | MECHANICAL NOTES & SPECIFICATIONS (02 OF 03) |
| M-103 | MECHANICAL NOTES & SPECIFICATIONS (03 OF 03) |
| M-200 | MECHANICAL FLOOR PLAN                        |
| M-400 | MECHANICAL DETAILS (01 OF 02)                |
| M-401 | MECHANICAL DETAILS (02 OF 02)                |

**MECHANICAL FAN SCHEDULE (PROVIDED BY LL)**

| TAG       | FLOW RATE<br>CFM | STATIC PRESSURE     |              | ELECTRIC DATA |     |          | WEIGHT<br>LBS | BASIS OF DESIGN |        | REMARKS |
|-----------|------------------|---------------------|--------------|---------------|-----|----------|---------------|-----------------|--------|---------|
|           |                  | EXTERNAL<br>IN W.G. | SPEED<br>RPM | MOTOR SIZE    |     | V/HZ/PH  |               | MANUFACTURER    | MODEL  |         |
| KEF-1 (N) | 400              | 2                   | 1854         | 1.1           | 1/2 | 460/60/3 | 100           | GREENHECK       | USF-07 | -       |

**NOTES:**

- REUSE THE EXISTING EXHAUST FAN IF THE FAN CAN BE DIAL DOWN TO 400 CFM. IF NOT, PROVIDE NEW FAN AS PER THE SCHEDULE OR EQUIVALENT (PROVIDED BY LL). ENSURE MAINTAINING 2" W.G EXTERNAL STATIC FOR THE FAN.
- PROVIDE FACTORY MOUNTED AND INSTALLED DISCONNECT.
- INSTALL AS PER MANUFACTURERS RECOMMENDATION.
- COORDINATE WITH ELECTRICAL CONTRACTOR.
- CONTRACTOR TO PROVIDE MOUNTING FRAMES AND VIBRATION ISOLATORS FOR FAN MOUNTING. ALSO PROVIDE FLEXIBLE CONNECTION AT DUCT CONNECTION TO FAN.
- ALL DIRECT DRIVE FANS TO HAVE ECM MOTORS.
- FAN SPEED SHALL BE FIELD ADJUSTIBLE.
- PROVIDE MOTOR STARTERS, DISCONNECTS WITH NEMA-3R (IF NOT FACTORY PROVIDED). ALL EQUIPMENT NORMAL POWER WIRING BY ELECTRICAL CONTRACTOR. COORDINATE REQUIREMENTS.
- INTERLOCK KEF-1 (N) WITH AH-1

**SCHEDULE OF AIR REGISTERS**

| TAG  | TYPE            | CFM RANGE | NECK SIZE<br>(IN) | FRAME SIZE<br>(IN) | TYPE                        | MAX NC | MANUFACTURE | MODEL NO |
|------|-----------------|-----------|-------------------|--------------------|-----------------------------|--------|-------------|----------|
| SD-1 | SUPPLY DIFFUSER | 200-400   | 10"               | 24X24              | 4 WAY SQUARE DIFFUSER       | 25     | TITUS       | OMNI     |
| RG-1 | RETURN GRILLE   | 500-1800  | 22X22             | 24X24              | DUCT/CEILING MOUNTED GRILLE | 25     | TITUS       | 350 RL   |
| EG-1 | EXHAUST GRILLE  | 100-450   | 10X10             | 12X12              | CEILING MOUNTED GRILLE      | 25     | TITUS       | 350 RL   |

**NOTES:**

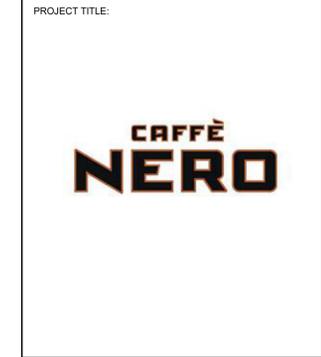
- CONTRACTOR SHALL COORDINATE WITH LATEST ARCHITECTURAL REFLECTED CEILING PLANS TO ENSURE PROPER AIR DEVICE BORDER SELECTION.
- COORDINATE COLOR/FINISH WITH ARCHITECT.
- PROVIDE AIR SCOOP DAMPER TO DUCT MOUNTED GRILLES.

**AIR BALANCE SCHEDULE**

| UNIT                      | AREA SERVED | SUPPLY AIR | OUTSIDE AIR | RETURN AIR | EXHASUT AIR |
|---------------------------|-------------|------------|-------------|------------|-------------|
| AH-1 (E)                  | SEE PLAN    | 1800       | 750         | 1050       | -           |
| KEF-1 (N)                 | KITCHEN     | -          | -           | -          | 400         |
| <b>TOTAL:</b>             |             | 1800       | 750         | 1050       | 400         |
| <b>BUILDING PRESSURE:</b> |             |            |             | 350        | POSITIVE    |

| SYMBOL & ABBREV. | DESCRIPTION  | SYMBOL & ABBREV. | DESCRIPTION                                |
|------------------|--|------------------|--|
|                  | SA/SUP SUPPLY AIR (RISE/DROP)  | A/C, AC          | AIR CONDITIONING                           |
|                  | RA/RET RETURN AIR DUCT (RISE/DROP)   | A.F.F.           | ABOVE FINISHED FLOOR                       |
|                  | EA/EXH EXHAUST AIR DUCT (RISE/DROP)  | BDD              | BACK DRAFT DAMPER                          |
|                  | SG DUCT MOUNTED SUPPLY GRILLE WITH AIR SCOOP DAMPER                          | CB               | CIRCUIT BREAKER                            |
|                  | SG SUPPLY GRILLE   | CLG.             | CEILING                                    |
|                  | RG/EG RETURN GRILLE/EXHAUST GRILLE   | CONN.            | CONNECT/CONNECTION                         |
|                  | SD/SR SUPPLY DIFFUSER/SUPPLY REGISTER (ARROWHEAD REPRESENTS NUMBER OF THROW) | CONT.            | CONTINUATION                               |
|                  | FLEX FLEXIBLE DUCT (14' 0" MAXIMUM)  | CFM              | CUBIC FEET PER MINUTE                      |
|                  | RDE ROUND DUCT ELBOW   | DISC.            | DISCONNECT                                 |
|                  | RDW ROUND DUCTWORK   | EA               | EXHAUST AIR                                |
|                  | BDD BACK DRAFT DAMPER  | EF               | EXHAUST FAN                                |
|                  | VCD VOLUME CONTROL DAMPER  | GA.              | GAGE/GAUGE                                 |
|                  | COD CABLE OPERATED DAMPER  | GC               | GENERAL CONTRACTOR                         |
|                  | DTR DUCT TRANSITION (RECTANGULAR TO ROUND)                                   | HVAC             | HEATING, VENTILATING, AND AIR CONDITIONING |
|                  | T-STAT PROGRAMMABLE THERMOSTAT, PROVIDED WITH HVAC PACKAGE                   | MFR.             | MANUFACTURER                               |
|                  | TEMP SENS TEMPERATURE SENSOR (REMOTE), PROVIDED WITH HVAC PACKAGE            | MECH.            | MECHANICAL                                 |
|                  | HUMID SENS HUMIDITY SENSOR (REMOTE), PROVIDED WITH HVAC PACKAGE              | OA               | OUTSIDE AIR                                |
|                  | SD SMOKE DETECTOR, PROVIDED WITH HVAC PACKAGE, MOUNTED IN UNIT               | OBD              | OPPOSED BLADE DAMPER                       |
|                  | D CONDENSATE DRAIN   | RA               | RETURN AIR                                 |
|                  | DIA DIAMETER   | SA               | SUPPLY AIR                                 |
|                  | DU DOOR UNDERCUT   | S/S              | STAINLESS STEEL                            |
|                  |  | TYP.             | TYPICAL                                    |
|                  |  | RTU              | ROOF TOP UNIT                              |
|                  |  | WH               | WATER HEATER                               |

ISSUED FOR: \_\_\_\_\_ DATE ISSUED: 08/11/23



DRAWING TITLE:  
**MECHANICAL LEGENDS, SYMBOLS & SCHEDULES**

PERMIT DWG DATE: 05-29-24 PROJECT NUMBER:  
 DRAWN BY: NYE CHECKED BY: NYE

DRAWING NUMBER:  
M100

MA BUILDING DEPARTMENT NOTES

ALL WORK SHALL COMPLY WITH APPLICABLE SECTIONS OF MASSACHUSETTS STATE BUILDING CODE, CMR 780-9TH EDITION BASED ON 2015 AND ALL AMENDMENTS AND RULES AND REGULATIONS OF THE DEPARTMENT OF BUILDINGS TO DATE.

- THE CONTRACTOR SHALL ENGAGE THE THE SERVICES OF A PROFESSIONAL ENGINEER TO PROVIDE THE REQUIRED SPECIAL INSPECTIONS AND TESTS.
- 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 2015 BUILDING CODE REQUIREMENTS AS OUTLINES IN SECTION [BC 1704].
- 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.
- TESTS OF MECHANICAL SYSTEMS SHALL BE PERFORMED IN ACCORDANCE WITH SECTION MC 107 AND THE FOLLOWING SECTIONS OF THE 2015 MASSACHUSETTS CITY MECHANICAL CODE:
  - VENTILATION SYSTEM BALANCING MC 403.3
  - COMMERCIAL KITCHEN HOOD PERFORMANCE TEST: MC 507.6
  - GREASE DUCT TEST: MC 506.3.2.5
- THE FOLLOWING WORK ITEMS, COMPONENTS, MATERIALS, CAPACITIES, ETC. SHALL COMPLY WITH THE REFERENCED CODE OR STANDARD:
  - DUCT CONSTRUCTION AND INSTALLATION- MC 603
  - AIR INTAKES, EXHAUSTS AND RELIEFS - MC 401.5
  - AIR FILTERS - MC 605
  - PIPING AND INSULATION - MC 1201-1203 & 1204
- MINIMUM TEMPERATURE TO BE MAINTAINED IN OCCUPIED SPACES DURING HEATING SEASON: 68 DEG. FAHRENHEIT.
- VENTILATION SYSTEM PROVIDED IN ACCORDANCE WITH CHAPTER 4 OF IMC 2015
- A STATEMENT SHALL BE FILED BY THE OWNER OR TENANT IN POSSESSION THAT THE VENTILATION SYSTEM WILL BE KEPT IN CONTINUOUS OPERATION AT ALL TIMES DURING THE NORMAL OCCUPANCY OF THE STRUCTURE AS REQUIRED BY MC 403.3
- ALL FIRE DAMPERS SHALL BE ACCEPTED FOR USE BY THE DEPARTMENT OF BUILDINGS. FIRE DAMPERS SHALL BE MANUFACTURED AND INSTALLED IN ACCORDANCE WITH UL 555, STANDARDS FOR FIRE DAMPERS AND CEILING DAMPERS.
- COMBINATION FIRE/SMOKE DAMPERS AND SMOKE DAMPERS SHALL BE ACCEPTED FOR USE BY DEPARTMENT OF BUILDINGS AND SHALL BE MANUFACTURED AND INSTALLED IN ACCORDANCE WITH UL 555S.
- SMOKE DETECTION SYSTEMS SHALL BE INSTALLED AND SEQUENCED TO FOLLOW CONTROLS OPERATIONS WITH THE REQUIREMENTS OF SECTION MC 606 TO CLOSE DAMPERS AND AUTOMATICALLY STOP THE FAN.
- FIRE DAMPERS, SMOKE DAMPERS, COMBINATION FIRE/SMOKE DAMPERS AND CEILING DAMPERS LOCATED WITHIN THE AIR DISTRIBUTION AND SMOKE CONTROL SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION MC 607.
- REFER TO ARCHITECTURAL DRAWINGS FOR REQUIRED FIRE-RATED WALL AND SMOKE WALL CONSTRUCTION AND LOCATION.
- 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.
- SMOKE DETECTOR SHALL MEET UL268A.
- ALL HEATING AND COOLING LOADS CALCULATED PER ASHRAE/ACCA 183
- CERTIFICATE OF COMPLIANCE SHALL BE OBTAINED FOR EQUIPMENT PER BC110.6.
- 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.
- MECHANICAL SYSTEMS SHALL BE COMMISSIONED PER 2020 MASSACHUSETTS ENERGY CODE FINAL COMMISSIONING REPORT SHALL BE DUE WITHIN 90 DAYS OF RECEIPT OF CERTIFICATE OF OCCUPANCY.
- MATERIALS AND WORKMANSHIP, UNLESS OTHERWISE NOTED, SHALL BE IN ACCORDANCE WITH BUILDING STANDARDS.
- ALL EQUIPMENT SHALL BE PROVIDED WITH ONE YEAR WARRANTY PARTS AND LABOR AND FIVE YEARS ON COMPRESSORS. WARRANTY PERIOD BEGINS UPON PROJECT ACCEPTANCE
- ALL MATERIAL AND EQUIPMENT TO BE NEW UNLESS OTHERWISE NOTED AND SHALL BE IN ACCORDANCE WITH BUILDING STANDARDS.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR HIS WORK WITH ITS COMPLETION AND FINAL ACCEPTANCE. THE CONTRACTOR SHALL REPLACE ITEMS/MATERIAL WHICH WERE DAMAGED, LOST, OR STOLEN, WITHOUT ADDITIONAL COST TO THE OWNER.

GENERAL NOTES

- 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.
- 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.
- 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.
- THE WORK IN THE BUILDING SHALL BE DONE WHEN AND AS DIRECTED, AND IN A MANNER CONSISTENT TO THE OWNER. THE WORK SHALL BE PERFORMED SO AS TO CAUSE THE LEAST POSSIBLE INCONVENIENCE AND DISTURBANCE TO THE PRESENT OCCUPANTS.
- 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.
- 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 THE DAY SUCH THAT EQUIPMENT MAY BE MOVED THROUGH AREAS.
- 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 OTHER TRADES IS REQUIRED.
- 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.
- 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, COULVERS, CONDUIT, AND EQUIPMENT. PROVIDE EQUIPMENT CURBS AND DUNNAGE STEEL AS REQUIRED.
- 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).
- WHERE PENETRATIONS THROUGH FIRE RATED WALLS ARE NOT FIRE STOPPED THIS CONTRACTOR SHALL BE RESPONSIBLE TO SEAL SAME TO MAINTAIN THE RATED INTEGRITY. 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.
- 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 OR CEILING. COORDINATE ALL LOCATIONS OF ACCESS DOORS WITH THE ARCHITECT.
- 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.
- 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.
- MATERIALS AND WORKMANSHIP, UNLESS OTHERWISE NOTED, SHALL BE IN ACCORDANCE WITH BUILDING STANDARDS.
- ALL EQUIPMENT SHALL BE PROVIDED WITH ONE YEAR WARRANTY PARTS AND LABOR AND FIVE YEARS ON COMPRESSORS. WARRANTY PERIOD BEGINS UPON PROJECT ACCEPTANCE
- ALL MATERIAL AND EQUIPMENT TO BE NEW UNLESS OTHERWISE NOTED AND SHALL BE IN ACCORDANCE WITH BUILDING STANDARDS.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR HIS WORK WITH ITS COMPLETION AND FINAL ACCEPTANCE. THE CONTRACTOR SHALL REPLACE ITEMS/MATERIAL WHICH WERE DAMAGED, LOST, OR STOLEN, WITHOUT ADDITIONAL COST TO THE OWNER.

SCOPE OF WORK

- EXISTING CEILING SUSPENDED AHU TO BE USED FOR HEATING AND COOLING REQUIREMENT OF BUILDING.
- DEDICATED ROOF EXHAUST FAN TO BE USED FOR KITCHEN VENTILATION.
- ALL HVAC WORKS SHALL BE IN ACCORDANCE WITH THE DRAWINGS AND SPECIFICATION.

NOTE TO CONTRACTOR

- 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, RFIS, ETC. FOR THIS PROJECT. WORK SHALL BE INSTALLED IN A NEAT, WORKMANLIKE MANNER.
- 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.
- 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 OF 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 REPAIRS AND REPLACING WORK OF OTHER TRADES AFFECTED BY DEFECTS, REPAIRS OR REPLACEMENTS IN EQUIPMENT SUPPLIED BY THE CONTRACTOR.

GENERAL HVAC NOTES

GENERAL:

- 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.
- CONTRACT DOCUMENT DRAWINGS FOR MECHANICAL WORK (HVAC, PLUMBING, AND FIRE PROTECTION) ARE DIAGRAMMATIC AND ARE INTENDED TO CONVEY SCOPE AND GENERAL ARRANGEMENT ONLY.
- 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.
- 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.
- COORDINATE CONSTRUCTION OF ALL MECHANICAL WORK WITH ARCHITECTURAL, STRUCTURAL, CIVIL, ELECTRICAL WORK, ETC., SHOWN ON OTHER CONTRACT DOCUMENT DRAWINGS.
- INSTALL ALL MECHANICAL EQUIPMENT AND APPURTENANCES IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS, CONTRACT DOCUMENTS, AND APPLICABLE CODES AND REGULATIONS.
- WHERE TWO OR MORE ITEMS OF THE SAME TYPE OF EQUIPMENT ARE REQUIRED, THE PRODUCT OF ONE MANUFACTURER SHALL BE USED.
- COORDINATE ALL EQUIPMENT CONNECTIONS WITH MANUFACTURERS' CERTIFIED DRAWINGS. COORDINATE AND PROVIDE ALL DUCT TRANSITIONS REQUIRED FOR FINAL EQUIPMENT CONNECTIONS TO FURNISHED EQUIPMENT. FIELD VERIFY AND COORDINATE ALL DUCT DIMENSIONS BEFORE FABRICATION.
- ALL CONTROL WIRE AND CONDUIT SHALL COMPLY WITH THE NATIONAL ELECTRIC CODE AND ELECTRICAL DIVISION OF THE SPECIFICATION.
- PROVIDE VIBRATION ISOLATION FOR ALL MECHANICAL EQUIPMENT TO PREVENT TRANSMISSION OF VIBRATION TO BUILDING STRUCTURE.
- LOCATE ALL TEMPERATURE, PRESSURE, AND FLOW MEASURING DEVICES IN ACCESSIBLE LOCATIONS WITH THE STRAIGHT SECTION OF DUCT UP- AND DOWNSTREAM AS RECOMMENDED BY THE MANUFACTURER FOR GOOD ACCURACY.
- ALL MISCELLANEOUS STEEL REQUIRED TO ENSURE PROPER INSTALLATION AND AS SHOWN IN THE DETAILS FOR DUCTWORK, AND EQUIPMENT (UNLESS OTHERWISE NOTED) SHALL BE FURNISHED AND INSTALLED BY THE MECHANICAL CONTRACTOR.
- 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.
- MECHANICAL EQUIPMENT, DUCTWORK, SHALL NOT BE SUPPORTED FROM A METAL DECK.
- ALL EQUIPMENT, DUCTWORK, ETC., SHALL BE SUPPORTED AS DETAILED, SPECIFIED AND REQUIRED TO PROVIDE A VIBRATION-FREE INSTALLATION.
- ALL DUCTWORK, 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.
- ALL ROOF-MOUNTED EQUIPMENT CURBS FOR EQUIPMENT PROVIDED BY THE MECHANICAL CONTRACTOR SHALL BE FURNISHED BY THE MECHANICAL CONTRACTOR AND INSTALLED BY THE GENERAL CONTRACTOR.
- LOCATIONS AND SIZES OF ALL FLOOR, WALL, AND ROOF OPENINGS SHALL BE COORDINATED WITH ALL OTHER TRADES INVOLVED.
- ALL OPENINGS IN FIRE WALLS DUE TO DUCTWORK, CONDUIT, ETC., SHALL BE FIRE STOPPED WITH A PRODUCT SIMILAR TO 3M OR APPROVED EQUAL.
- ALL AIR CONDITIONING CONDENSATE DRAIN LINES FROM EACH AIR HANDLING UNIT AND ROOFTOP UNIT SHALL BE FULL SIZE OF THE UNIT DRAIN OUTLET, WITH "P" TRAP, AND PIPED TO THE NEAREST DRAIN. SEE THE DETAILS SHOWN IN THE DRAWINGS OR THE CONTRACT SPECIFICATIONS FOR THE DEPTH OF THE AIR CONDITIONING CONDENSATE TRAP.
- REFER TO TYPICAL DETAILS FOR DUCTWORK, AND EQUIPMENT INSTALLATION.
- 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.
- ALL TESTS SHALL BE COMPLETED BEFORE ANY MECHANICAL EQUIPMENT INSULATION IS APPLIED.
- 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.

HVAC DUCTWORK - SHEET METAL

- CERTAIN ITEMS SUCH AS RISES AND DROPS IN DUCTWORK, ACCESS DOORS, VOLUME DAMPERS, ETC., ARE INDICATED ON THE CONTRACT DOCUMENT DRAWINGS FOR CLARITY FOR A SPECIFIC LOCATION REQUIREMENT AND SHALL NOT BE INTERPRETED AS THE EXTENT OF THE REQUIREMENTS FOR THESE ITEMS.
- CONTRACTOR TO CHECK AND CORRECT ANY AND ALL DEFICIENCIES IN EXISTING DUCTS. ALL NEW DUCTWORK WILL COMPLY WITH THE LATEST SMACNA GUIDELINES AND CONFORM WITH REQUIREMENTS OF THE LATEST HANDBOOKS PUBLISHED BY ASHRAE.
- PROVIDE VOLUME DAMPER AT EACH TAP TO MAIN DUCT AND WHERE NECESSARY TO PROPERLY BALANCE SYSTEM.
- SUPPLY AND RETURN DUCTWORK 20' FROM ALL AC UNITS SHALL BE LINED WITH 1.5" ACOUSTICAL LINING.
- RE-INSULATE ALL DUCTWORK IN WHICH INSULATION HAS BEEN REMOVED OR DAMAGED WITH INSULATION EQUAL TO THE EXISTING INSULATION.
- CONTRACTOR SHALL SUPPLY AND INSTALL ALL NECESSARY SUPPLY DIFFUSERS AND RETURN AIR REGISTERS WHERE INDICATED ON THE DRAWING. COORDINATE LOCATION OF DIFFUSERS AND REGISTERS WITH REFLECTED CEILING PLAN.
- IN CORRIDORS WHERE CEILING SPEAKERS AND AIR DIFFUSERS ARE INDICATED BETWEEN THE SAME LIGHT FIXTURES, INSTALL BOTH DEVICES AT THE QUARTER POINTS BETWEEN THE FIXTURES.
- UNLESS OTHERWISE SHOWN, LOCATE ALL ROOM THERMOSTATS AND HUMIDISTAT 4'-0" (CENTER LINE) ABOVE THE FINISHED FLOOR. NOTIFY THE ENGINEER OF ANY ROOMS WHERE THE PRECEDING LOCATION CANNOT BE MAINTAINED OR WHERE THERE IS A QUESTION ON LOCATION.
- ALL DUCTWORK SHALL CLEAR DOORS AND WINDOWS.
- ALL DUCTWORK DIMENSIONS, AS SHOWN ON THE DRAWINGS, ARE INTERNAL CLEAR DIMENSIONS AND DUCT SIZE SHALL BE INCREASED TO COMPENSATE FOR DUCT LINING THICKNESS.
- PROVIDE ALL 90-DEGREE SQUARE ELBOWS WITH DOUBLE RADIUS TURNING VANES UNLESS OTHERWISE INDICATED. ELBOWS IN DISHWASHER, KITCHEN, AND LAUNDRY EXHAUSTS SHALL BE OF UN-VANED SMOOTH RADIUS CONSTRUCTION WITH A RADIUS EQUAL TO 1-1/2 TIMES THE WIDTH OF THE DUCT. PROVIDE ACCESS DOORS UPSTREAM OF ALL ELBOWS WITH TURNING VANES.
- COORDINATE DIFFUSER, REGISTER, AND GRILL LOCATIONS WITH ARCHITECTURAL REFLECTED CEILING PLANS, LIGHTING, AND OTHER CEILING ITEMS AND MAKE MINOR DUCT MODIFICATIONS TO SUIT.
- FIELD-ERECTED AND FACTORY-ASSEMBLED AIR HANDLING UNIT COILS SHALL BE ARRANGED FOR REMOVAL FROM THE UPSTREAM SIDE WITHOUT DISMANTLING SUPPORTS. PROVIDE GALVANIZED STRUCTURAL STEEL SUPPORTS FOR ALL COILS (EXCEPT THE LOWEST COIL) IN BANKS OVER TWO COILS HIGH TO PERMIT THE INDEPENDENT REMOVAL OF ANY COIL.
- ALL AIR HANDLING UNITS SHALL OPERATE WITHOUT MOISTURE CARRYOVER.
- LOCATE ALL MECHANICAL EQUIPMENT (SINGLE DUCT, DUAL DUCT, VARIABLE VOLUME, CONSTANT VOLUME, AND FAN-POWERED BOXES, FAN COIL UNITS, CABINET HEATERS, UNIT HEATERS, UNIT VENTILATORS, COILS, STEAM HUMIDIFIERS, ETC.) FOR UNOBSTRUCTED ACCESS TO INSTALL ACCESS PANELS, CONTROLS, AND VALVING.
- PROVIDE FLEXIBLE CONNECTIONS IN ALL DUCTWORK SYSTEMS (SUPPLY, RETURN, AND EXHAUST) CONNECTED TO AIR HANDLING UNITS, FANS, AND OTHER EQUIPMENT THAT REQUIRE VIBRATION ISOLATION. FLEXIBLE CONNECTIONS SHALL BE PROVIDED AT THE POINT OF CONNECTION TO THE EQUIPMENT UNLESS OTHERWISE INDICATED.
- UNLESS OTHERWISE NOTED, ALL DUCTWORK IS OVERHEAD, TIGHT TO THE UNDERSIDE OF THE STRUCTURE, WITH SPACE FOR INSULATION IF NEEDED.
- RUNS OF FLEXIBLE DUCT SHALL NOT EXCEED 5 FT.
- ALL DUCTWORK SHALL BE COORDINATED WITH ALL TRADES INVOLVED. OFFSETS IN DUCTS, INCLUDING DIVIDED DUCTS AND TRANSITIONS AROUND OBSTRUCTIONS, SHALL BE PROVIDED AT NO ADDITIONAL COST TO THE OWNER.
- PROVIDE ACCESS DOORS IN DUCTWORK TO PROVIDE ACCESS FOR ALL SMOKE DETECTORS, FIRE DAMPERS, SMOKE DAMPERS, VOLUME DAMPERS, HUMIDIFIERS, COILS, AND OTHER ITEMS LOCATED IN THE DUCTWORK THAT REQUIRE SERVICE AND/OR INSPECTION.
- PROVIDE ACCESS DOORS IN DUCTWORK FOR THE OPERATION, ADJUSTMENT, AND MAINTENANCE OF ALL FANS, VALVES, AND MECHANICAL EQUIPMENT.
- ALL DUCTS SHALL BE GROUNDED ACROSS FLEXIBLE CONNECTIONS WITH FLEXIBLE COPPER GROUNDING STRAPS. GROUNDING STRAPS SHALL BE BOLTED OR SOLDERED TO BOTH THE EQUIPMENT AND THE DUCT.
- SMOKE DETECTORS SHALL BE FURNISHED AND WIRED BY THE ELECTRICAL CONTRACTOR. THE MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR MOUNTING THE SMOKE DETECTOR IN DUCTWORK AS SHOWN ON THE DRAWINGS AND IN ACCORDANCE WITH THE MANUFACTURER'S PRINTED INSTRUCTIONS.
- SEE SPECIFICATIONS FOR DUCTWORK GAUGES, BRACING, HANGERS, AND OTHER REQUIREMENTS.

SPECIFICATIONS

SECTION 0001 - NOTICE TO BIDDERS

- BIDDERS REPRESENTATIONS
    - THE BIDDER BY MAKING A BID REPRESENTS THAT: THE BIDDER HAS READ AND UNDERSTANDS THE BIDDING DOCUMENTS, TO THE EXTENT THAT SUCH DOCUMENTATION RELATES TO THE WORK FOR WHICH THE BID IS SUBMITTED, AND FOR OTHER PORTIONS OF THE PROJECT, IF ANY, BEING BID CONCURRENTLY OR PRESENTLY UNDER CONSTRUCTION.
    - THE BID IS MADE IN COMPLIANCE WITH THE BIDDING DOCUMENTS.
    - THE SPECIFICATIONS AND DRAWINGS ARE INTENDED TO SERVE JOINTLY AS A BASIS FOR THE BIDDER TO SUBMIT A CONTRACT PRICE FOR THE MATERIAL AND LABOR.
    - SHOULD CONFLICTS OR DISCREPANCIES OCCUR WITHIN THE BIDDING DOCUMENTS, THE ITEM OR ITEMS IN DISPUTE THAT REPRESENT THE GREATER COST SHALL PREVAIL IN THE FINAL BID.
    - THE BID IS BASED UPON THE MATERIALS, EQUIPMENT AND SYSTEMS REQUIRED BY THE BIDDING DOCUMENTS WITHOUT EXCEPTION.
  - EXISTING CONDITIONS AND COORDINATION
    - THE BIDDER HAS VISITED THE SITE, BECOME FAMILIAR WITH LOCAL CONDITIONS UNDER WHICH THE WORK IS TO BE PERFORMED AND HAS CORRELATED THE BIDDER'S PERSONAL OBSERVATIONS WITH THE REQUIREMENTS OF THE PROPOSED BIDDING DOCUMENTS.
    - THE BIDDER SHALL PROPOSE COORDINATION OF WORK SUCH THAT CONFLICTS WITH OTHER TRADES AND SPACE ALLOCATIONS ARE AVOIDED.
  - RESPONSIBILITIES
    - THE BIDDER UNDERSTANDS THAT ANY CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR THE TIMELY COMPLETION AND ACCEPTANCE OF THEIR WORK AND THAT ANY ITEMS DAMAGED, LOST OR STOLEN DURING TIME OF CONSTRUCTION SHALL BE REPAIRED OR REPLACED WITHOUT ANY ADDITIONAL COST TO THE OWNER.
    - THE BIDDER UNDERSTANDS THAT ANY PROPOSED WORK IN OCCUPIED TENANT SPACES SHALL BE PERFORMED DURING TIMES OF NON-TENANT OCCUPANCY OR AS SCHEDULED OR DIRECTED BY THE BUILDING MANAGER.
    - THE BIDDER UNDERSTANDS THAT ANY PROPOSED SHUT-DOWN OF EXISTING SYSTEMS DURING CONSTRUCTION SHALL BE PRE-ARRANGED WITH THE BUILDING MANAGER AND THAT SUCH SHUT-DOWNS ARE TO BE KEPT TO A MINIMUM.
- END OF SECTION 0001

SECTION 0101 - QUALITY OF WORK

- WORKMANSHIP
    - ALL WORK SHALL BE FREE FROM DEFECTS IN MATERIALS AND WORKMANSHIP FOR A PERIOD OF ONE YEAR FROM DATE OF FINAL ACCEPTANCE.
    - ALL DEFECTS WHICH DEVELOP OR ARE DISCOVERED WITHIN THIS PERIOD SHALL BE REPAIRED BY THE CONTRACTOR TO THE SATISFACTION OF THE ARCHITECT OR BUILDING MANAGER AT NO ADDITIONAL COST TO THE OWNER.
    - UPON COMPLETION OF THE WORK THE CONTRACTOR SHALL REMOVE FROM THE SITE, ALL TOOLS, DEMOLISHED APPLIANCES AND ANY SURPLUS MATERIAL.
  - CODE COMPLIANCE
    - ALL WORK SHALL MEET ALL STATE AND LOCAL CODES HAVING JURISDICTION.
- END OF SECTION 0101

SECTION 0102 -REQUIRED DOCUMENTS

- SHOP DRAWINGS
  - A SET OF PRINTS FOR ANY MECHANICAL WORK INCLUDING BUT NOT LIMITED TO, DUCTWORK LAYOUT SHALL BE SUBMITTED FOR APPROVAL TO THE ENGINEER PRIOR TO CONSTRUCTION OR PURCHASE OF MATERIALS.
- SUBMITTALS
  - EQUIPMENT SUBMITTALS OF ALL PROPOSED MECHANICAL AND ANCILLARY EQUIPMENT INCLUDING ALL ACCESSORIES SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW. ALL PERTINENT MODELS, SIZES, ACCESSORIES AND CHOICES SHALL BE CLEARLY CHECKED, PRINTED OR OTHERWISE INDICATED ON THE SUBMITTALS.
- RECORD DRAWINGS
  - UPON COMPLETION OF THE WORK, A RECORD DRAWING SHALL BE SUBMITTED TO THE OWNER DEPICTING ALL SUBSEQUENT CHANGES, ADDITIONS AND OR CORRECTIONS TO THE CONTRACT DRAWINGS AND OR CONTRACT SCOPE MADE DURING CONSTRUCTION. THIS DRAWING SHALL REPRESENT A COMPLETE RECORD OF THE WORK INSTALLED.
- EQUIPMENT OPERATING INSTRUCTIONS
  - ON COMPLETION AND ACCEPTANCE OF WORK, THIS CONTRACTOR SHALL FURNISH WRITTEN INSTRUCTIONS, EQUIPMENT MANUALS AND DEMONSTRATE TO THE OWNER THE PROPER OPERATION AND MAINTENANCE OF ALL EQUIPMENT AND APPARATUS FURNISHED UNDER THIS CONTRACT.

DISCLAIMER

OWNERSHIP AND USE OF DOCUMENTS, DRAWINGS AND SPECIFICATIONS ARE INSTRUMENTS OF PROFESSIONAL SERVICE AND SHALL REMAIN THE PROPERTY OF THE ARCHITECT. THESE DOCUMENTS ARE NOT TO BE USED, IN WHOLE OR IN PART, FOR ANY OTHER PROJECTS OR PURPOSES OR BY ANY OTHER PARTIES THAN THOSE PROPERLY AUTHORIZED BY CONTRACT WITHOUT THE EXPRESS WRITTEN AUTHORIZATION OF THE ARCHITECT.

NY ENGINEERS

NEARBY ENGINEERS  
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MIAMI, FL 33179  
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REVISIONS

| NUMBER | REMARKS    | DATE     |
|--------|------------|----------|
| 1      | PERMIT SET | 05.29.24 |
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| ISSUED FOR: | DATE ISSUED: |
| -           | 08/11/23     |

PROJECT TITLE:



MECHANICAL NOTES & SPECIFICATIONS (01 OF 03)

|                              |                    |
|------------------------------|--------------------|
| PERMIT DWG DATE:<br>05-29-24 | PROJECT NUMBER:    |
| DRAWN BY:<br>NYE             | CHECKED BY:<br>NYE |

DRAWING NUMBER:

M101

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

C. THE INSTRUCTION BOOKLET SHALL BE ORGANIZED IN SECTIONS, WITH ONE SECTION PER SYSTEM. THE COVER OF THE INSTRUCTION BOOKLET SHALL BEAR THE NAME, ADDRESS AND PHONE NUMBER OF THE PROJECT, ARCHITECT, ENGINEER, MECHANICAL CONTRACTOR AND SUBCONTRACTORS. END OF SECTION 0102

### SECTION 078413-PENETRATION FIRE-STOPPING

- 1.1 QUALITY ASSURANCE
- A. INSTALLER QUALIFICATIONS: AN FM GLOBAL-APPROVED FIRE-STOP CONTRACTOR OR A UL-QUALIFIED FIRE-STOP CONTRACTOR.
- B. FIRE-TEST-RESPONSE CHARACTERISTICS: UL, INTERTEK ETL SEMKO OR FM GLOBAL
- 1.2 PENETRATION FIRESTOPPING
- A. PENETRATIONS IN FIRE-RESISTANCE-RATED WALLS: F-RATINGS PER ASTM E 814 OR UL 1479.
- B. PENETRATIONS IN HORIZONTAL ASSEMBLIES: F- AND T-RATINGS PER ASTM E 814 OR UL 1479.
- C. PENETRATIONS IN SMOKE BARRIERS: L-RATINGS PER UL 1479.
- D. W-RATINGS: PER UL 1479.
- 1.3 INSTALLATION
- A. IDENTIFICATION: PREPRINTED METAL OR PLASTIC LABELS.
- 1.4 FIELD QUALITY CONTROL
- A. INSPECTION OF INSTALLED FIRE-STOPPING: BY OWNER-ENGAGED AGENCY ACCORDING TO ASTM E 2174.
- 1.5 THROUGH-PENETRATION FIRESTOP SYSTEM SCHEDULE

WHERE UL-CLASSIFIED SYSTEMS ARE INDICATED, THEY REFER TO SYSTEM NUMBERS IN U.L.S "FIRE RESISTANCE DIRECTORY" UNDER PRODUCT CATEGORY XHEZ.

FOR THE FOLLOWING SYSTEMS:

- METALLIC AND NON-METALLIC CONDUIT, OR TUBING, ELECTRICAL CABLES, CABLE TRAYS WITH ELECTRIC CABLES, MISCELLANEOUS ELECTRICAL PENETRANTS, INSULATED GROUPINGS OF PENETRANTS, USE ONE OR MORE THE FOLLOWING MATERIALS:
- a. LATEX SEALANT
- b. SILICONE SEALANT
- c. INTUMESCENT PUTTY
- d. MORTAR
- h. SILICONE FOAM
- i. PILLOWS/BAGS
- j. INTUMESCENT WRAP STRIPS
- k. INTUMESCENT COMPOSITE SHEET

- 1.6 MANUFACTURERS
1. HILTI CONSTRUCTION CHEMICAL, INC
2. TREMCO INC.
3. 3M FIRE PROTECTION PRODUCTS

END OF SECTION 078413

### SECTION 230529 - HANGERS AND SUPPORTS FOR HVAC EQUIPMENT

- 1.1 PERFORMANCE REQUIREMENTS
- A. DELEGATED DESIGN: DESIGN EQUIPMENT SUPPORTS, INCLUDING COMPREHENSIVE ENGINEERING ANALYSIS BY A QUALIFIED PROFESSIONAL ENGINEER, USING PERFORMANCE REQUIREMENTS AND DESIGN CRITERIA INDICATED.
- B. STRUCTURAL PERFORMANCE: HANGERS AND SUPPORTS FOR HVAC EQUIPMENT SHALL WITHSTAND THE EFFECTS OF GRAVITY LOADS AND STRESSES WITHIN LIMITS AND UNDER CONDITIONS INDICATED ACCORDING TO ASCE/SEI 7.
1. DESIGN EQUIPMENT SUPPORTS CAPABLE OF SUPPORTING COMBINED OPERATING WEIGHT OF SUPPORTED EQUIPMENT AND CONNECTED SYSTEMS AND COMPONENTS.
2. DESIGN SEISMIC-RESTRAINT HANGERS AND SUPPORTS FOR EQUIPMENT AND OBTAIN APPROVAL FROM AUTHORITIES HAVING JURISDICTION.
- 1.2 SUBMITTALS
- A. SHOP DRAWINGS: SIGNED AND SEALED BY A PROFESSIONAL ENGINEER
- 1.3 QUALITY ASSURANCE
- A. AWS D1.1/D1.1M, "STRUCTURAL WELDING CODE - STEEL."
- 1.4 COMPONENTS
- A. METAL FRAMING SYSTEMS: MFMA MANUFACTURER
- B. FIBERGLASS STRUT SYSTEMS: COOPER B-LINE
- C. THERMAL-HANGER SHIELD INSERTS:
- D. FASTENER SYSTEMS: POWDER-ACTUATED FASTENERS OR MECHANICAL-EXPANSION ANCHORS
- E. EQUIPMENT SUPPORTS.
- END OF SECTION 230529

### SECTION 230548 - VIBRATION AND SEISMIC CONTROLS FOR HVAC EQUIPMENT

PART 1 - GENERAL

- 1.1 PERFORMANCE REQUIREMENTS
- A. SEISMIC-RESTRAINT LOADING:
1. SITE CLASS AS DEFINED IN THE IBC: A, B
2. ASSIGNED SEISMIC USE GROUP OR BUILDING CATEGORY AS DEFINED IN THE IBC: I, II, III
- a. COMPONENT IMPORTANCE FACTOR: 1.0
- b. COMPONENT RESPONSE MODIFICATION FACTOR: 2.5
- c. COMPONENT AMPLIFICATION FACTOR: 2.5.
3. DESIGN SPECTRAL RESPONSE ACCELERATION AT SHORT PERIODS (0.2 SECOND) 18%
4. DESIGN SPECTRAL RESPONSE ACCELERATION AT 1-SECOND PERIOD: 8%
- 1.2 COMPONENTS
- A. VIBRATION ISOLATORS:
1. ISOLATOR PADS: NEOPRENE, RUBBER, HERMETICALLY AND/OR SEALED COMPRESSED FIBERGLASS
2. MOUNTS: DOUBLE-DEFLECTION TYPE.
3. RESTRAINED MOUNTS: ALL DIRECTIONAL MOUNTINGS WITH SEISMIC RESTRAINT; CAST-DUCTILE-IRON HOUSING.
4. SPRING ISOLATORS: FREESTANDING, LATERALLY STABLE, OPEN-SPRING TYPE.
5. RESTRAINED SPRING ISOLATORS: FREESTANDING, STEEL, OPEN-SPRING TYPE WITH SEISMIC RESTRAINT.
6. HOUSED SPRING MOUNTS: DUCTILE-IRON OR STEEL HOUSING, WITH INTEGRAL, VERTICALLY ADJUSTABLE SEISMIC SNUBBERS.
7. ELASTOMERIC HANGERS: DOUBLE-DEFLECTION TYPE.
8. SPRING HANGERS: COMBINATION COIL-SPRING AND ELASTOMERIC-INSERT HANGERS WITH SPRING AND INSERT IN COMPRESSION.
9. SPRING HANGERS WITH VERTICAL-LIMIT STOP: COMBINATION COIL-SPRING AND ELASTOMERIC-INSERT HANGERS WITH SPRING AND INSERT IN COMPRESSION AND WITH VERTICAL-LIMIT STOP.
- B. AIR-MOUNTING SYSTEMS:
1. AIR MOUNTS: FREESTANDING, SINGLE OR MULTIPLE, COMPRESSED-AIR BELLOW.
2. RESTRAINED AIR MOUNTS: HOUSED COMPRESSED-AIR BELLOW.
- C. RESTRAINED VIBRATION ISOLATION ROOF-CURB RAILS: FACTORY-ASSEMBLED, FULLY ENCLOSED, INSULATED, AIR- AND WATER-TIGHT CURB RAIL, WITH SPRING ISOLATORS MOUNTED ON ELASTOMERIC ISOLATION PADS, AND SNUBBER BUSHINGS.
- D. VIBRATION ISOLATION EQUIPMENT BASES:
1. STEEL BASE: FACTORY-FABRICATED, WELDED, STRUCTURAL-STEEL BASES AND RAILS.
2. INERTIA BASE: FACTORY-FABRICATED, WELDED, STRUCTURAL-STEEL BASES AND RAILS READY FOR FIELD-APPLIED, CAST-IN-PLACE CONCRETE.
- E. SEISMIC-RESTRAINT DEVICES:
1. SNUBBERS: WELDED STRUCTURAL-STEEL SHAPES AND REPLACEABLE RESILIENT ISOLATION WASHERS AND BUSHINGS.
2. CHANNEL SUPPORT SYSTEM: MFMA-3 SLOTTED STEEL CHANNELS.
3. RESTRAINT CABLES: GALVANIZED OR STAINLESS STEEL CABLES.
4. ANCHOR BOLTS: MECHANICAL OR ADHESIVE TYPE, SEISMIC RATED.
5. RESILIENT ISOLATION WASHERS AND BUSHINGS: MOLDED NEOPRENE.
- 1.3 FIELD QUALITY CONTROL
- A. TESTING: BY EITHER: OWNER-ENGAGED AGENCY, CONTRACTOR-ENGAGED AGENCY, OR CONTRACTOR.
- PART-2 PRODUCTS
- 1.4 VIBRATION ISOLATORS & SEISMIC-RESTRAINT DEVICES
- A. AVAILABLE MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, MANUFACTURERS OFFERING PRODUCTS THAT MAY BE INCORPORATED INTO THE WORK INCLUDE, BUT ARE NOT LIMITED TO, THE FOLLOWING:
1. ACE MOUNTINGS CO., INC.
2. AMBER/BOOTH COMPANY, INC.
3. CALIFORNIA DYNAMICS CORPORATION.
4. COOPER B-LINE, INC.; A DIVISION OF COOPER INDUSTRIES.
5. HILTI, INC.
6. ISOLATION TECHNOLOGY, INC.
7. KINETICS NOISE CONTROL.
8. LOOS & CO.; CABLEWARE DIVISION.
9. MASON INDUSTRIES.
10. TOLCO INCORPORATED; A BRAND OF NIBCO INC.
11. UNISTRUT; TYCO INTERNATIONAL, LTD.
12. VIBRATION ELIMINATOR CO., INC.
13. VIBRATION ISOLATION.
14. VIBRATION MOUNTINGS & CONTROLS, INC.
- END OF SECTION 230548

### SECTION 230593 - TESTING, ADJUSTING, AND BALANCING FOR HVAC

1.1 SUMMARY

- A. TESTING, ADJUSTING, AND BALANCING FOR THE FOLLOWING:
1. AIR SYSTEMS: CONSTANT-VOLUME, DUAL-DUCT, VARIABLE-AIR-VOLUME, MULTI-ZONE AND INDUCTION-UNIT SYSTEMS.
2. EXISTING SYSTEMS.
- 1.2 QUALITY ASSURANCE
- A. THE CONTRACTOR SHALL PROCURE THE SERVICES OF A TESTING, ADJUSTING AND BALANCING (TAB) SPECIALIST WHO SPECIALIZES IN HEATING, VENTILATION AND AIR CONDITIONING SYSTEMS. THE TAB AGENT SHALL HAVE THE FOLLOWING QUALIFICATIONS: AABC, NEBB OR TABB CERTIFIED.
- 1.3 EXECUTION
- A. THE TAB SPECIALIST SHALL PERFORM FLOW MEASUREMENTS OF ALL EXISTING AIR SYSTEMS THAT ARE TO REMAIN OR TO BE INCORPORATED INTO NEW WORK PRIOR TO THE STARTING OF WORK IN THE PROJECT SCOPE. A REPORT OF THESE MEASUREMENTS, INDICATING ANY AND ALL DEFICIENCIES SHALL BE SUBMITTED FOR OWNER REVIEW.
- B. THE TAB SPECIALIST SHALL PERFORM FLOW MEASUREMENTS OF ALL NEW AIR SYSTEMS AS LISTED ABOVE IN THE PROJECT SCOPE. A REPORT OF THESE MEASUREMENTS, INDICATING ANY AND ALL DEFICIENCIES SHALL BE SUBMITTED FOR OWNER REVIEW.
- C. THE REPORT SHALL INDICATE A SCHEMATIC DIAGRAM INDICATING LOCATIONS OF ALL EQUIPMENT TESTED AND MEASUREMENT LOCATIONS.
- D. PRIOR TO FINAL INSPECTION OF THE WORK, THE TAB SPECIALIST SHALL BALANCE ALL SYSTEMS AS INDICATED ABOVE TO THE REQUIREMENTS OF THE DESIGN.
- E. THE CONTRACTOR SHALL FURNISH AND INSTALL ALL ADDITIONAL BALANCING EQUIPMENT, PRESSURE TAPS, GAUGES AND OTHER EQUIPMENT AS REQUIRED FOR A PROPERLY BALANCED SYSTEM AT NO ADDITIONAL COST TO THE OWNER. SUCH ADDITIONAL EQUIPMENT SHALL ADHERE IN STRICT ACCORDANCE WITH THE RESPECTIVE EQUIPMENT MANUFACTURER'S RECOMMENDATIONS.
- F. THE CONTRACTOR SHALL HAVE THE TESTING AND BALANCING SPECIALIST COORDINATE ALL WORK OF THIS SECTION WITH THE BUILDING MANAGER. BALANCING WORK SHALL NOT CONFLICT WITH OTHER WORK SO AS TO MAINTAIN COMPLETION WITHIN THE SPECIFIED TIME.
- G. ALL INSTRUMENTS USED FOR TAB SHALL BE MAINTAINED IN GOOD WORKING CONDITION AND ACCURATELY CALIBRATED.
- H. TOLERANCES: PLUS OR MINUS 5 PERCENT OF DESIGN VALUES.
- I. INSPECTIONS: RANDOM CHECKS BY OWNER OR ARCHITECT TO VERIFY FINAL TESTING, ADJUSTING, AND BALANCING REPORT.
- J. ADDITIONAL TESTS: RANDOM TESTS WITHIN 90 DAYS OF COMPLETING TAB TO VERIFY BALANCE CONDITIONS AND SEASONAL TESTS.
- END OF SECTION 230593

E. SEISMIC-RESTRAINT DEVICES:

1. SNUBBERS: WELDED STRUCTURAL-STEEL SHAPES AND REPLACEABLE RESILIENT ISOLATION WASHERS AND BUSHINGS.
2. CHANNEL SUPPORT SYSTEM: MFMA-3 SLOTTED STEEL CHANNELS.
3. RESTRAINT CABLES: GALVANIZED OR STAINLESS STEEL CABLES.
4. ANCHOR BOLTS: MECHANICAL OR ADHESIVE TYPE, SEISMIC RATED.
5. RESILIENT ISOLATION WASHERS AND BUSHINGS: MOLDED NEOPRENE.

1.3 FIELD QUALITY CONTROL

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

PART-2 PRODUCTS

- 1.4 VIBRATION ISOLATORS & SEISMIC-RESTRAINT DEVICES
- A. AVAILABLE MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, MANUFACTURERS OFFERING PRODUCTS THAT MAY BE INCORPORATED INTO THE WORK INCLUDE, BUT ARE NOT LIMITED TO, THE FOLLOWING:
1. ACE MOUNTINGS CO., INC.
2. AMBER/BOOTH COMPANY, INC.
3. CALIFORNIA DYNAMICS CORPORATION.
4. COOPER B-LINE, INC.; A DIVISION OF COOPER INDUSTRIES.
5. HILTI, INC.
6. ISOLATION TECHNOLOGY, INC.
7. KINETICS NOISE CONTROL.
8. LOOS & CO.; CABLEWARE DIVISION.
9. MASON INDUSTRIES.
10. TOLCO INCORPORATED; A BRAND OF NIBCO INC.
11. UNISTRUT; TYCO INTERNATIONAL, LTD.
12. VIBRATION ELIMINATOR CO., INC.
13. VIBRATION ISOLATION.
14. VIBRATION MOUNTINGS & CONTROLS, INC.
- END OF SECTION 230548

### SECTION 230593 - TESTING, ADJUSTING, AND BALANCING FOR HVAC

1.1 SUMMARY

- A. TESTING, ADJUSTING, AND BALANCING FOR THE FOLLOWING:
1. AIR SYSTEMS: CONSTANT-VOLUME, DUAL-DUCT, VARIABLE-AIR-VOLUME, MULTI-ZONE AND INDUCTION-UNIT SYSTEMS.
2. EXISTING SYSTEMS.
- 1.2 QUALITY ASSURANCE
- A. THE CONTRACTOR SHALL PROCURE THE SERVICES OF A TESTING, ADJUSTING AND BALANCING (TAB) SPECIALIST WHO SPECIALIZES IN HEATING, VENTILATION AND AIR CONDITIONING SYSTEMS. THE TAB AGENT SHALL HAVE THE FOLLOWING QUALIFICATIONS: AABC, NEBB OR TABB CERTIFIED.
- 1.3 EXECUTION
- A. THE TAB SPECIALIST SHALL PERFORM FLOW MEASUREMENTS OF ALL EXISTING AIR SYSTEMS THAT ARE TO REMAIN OR TO BE INCORPORATED INTO NEW WORK PRIOR TO THE STARTING OF WORK IN THE PROJECT SCOPE. A REPORT OF THESE MEASUREMENTS, INDICATING ANY AND ALL DEFICIENCIES SHALL BE SUBMITTED FOR OWNER REVIEW.
- B. THE TAB SPECIALIST SHALL PERFORM FLOW MEASUREMENTS OF ALL NEW AIR SYSTEMS AS LISTED ABOVE IN THE PROJECT SCOPE. A REPORT OF THESE MEASUREMENTS, INDICATING ANY AND ALL DEFICIENCIES SHALL BE SUBMITTED FOR OWNER REVIEW.
- C. THE REPORT SHALL INDICATE A SCHEMATIC DIAGRAM INDICATING LOCATIONS OF ALL EQUIPMENT TESTED AND MEASUREMENT LOCATIONS.
- D. PRIOR TO FINAL INSPECTION OF THE WORK, THE TAB SPECIALIST SHALL BALANCE ALL SYSTEMS AS INDICATED ABOVE TO THE REQUIREMENTS OF THE DESIGN.
- E. THE CONTRACTOR SHALL FURNISH AND INSTALL ALL ADDITIONAL BALANCING EQUIPMENT, PRESSURE TAPS, GAUGES AND OTHER EQUIPMENT AS REQUIRED FOR A PROPERLY BALANCED SYSTEM AT NO ADDITIONAL COST TO THE OWNER. SUCH ADDITIONAL EQUIPMENT SHALL ADHERE IN STRICT ACCORDANCE WITH THE RESPECTIVE EQUIPMENT MANUFACTURER'S RECOMMENDATIONS.
- F. THE CONTRACTOR SHALL HAVE THE TESTING AND BALANCING SPECIALIST COORDINATE ALL WORK OF THIS SECTION WITH THE BUILDING MANAGER. BALANCING WORK SHALL NOT CONFLICT WITH OTHER WORK SO AS TO MAINTAIN COMPLETION WITHIN THE SPECIFIED TIME.
- G. ALL INSTRUMENTS USED FOR TAB SHALL BE MAINTAINED IN GOOD WORKING CONDITION AND ACCURATELY CALIBRATED.
- H. TOLERANCES: PLUS OR MINUS 5 PERCENT OF DESIGN VALUES.
- I. INSPECTIONS: RANDOM CHECKS BY OWNER OR ARCHITECT TO VERIFY FINAL TESTING, ADJUSTING, AND BALANCING REPORT.
- J. ADDITIONAL TESTS: RANDOM TESTS WITHIN 90 DAYS OF COMPLETING TAB TO VERIFY BALANCE CONDITIONS AND SEASONAL TESTS.
- END OF SECTION 230593

### SECTION 230713 - DUCT INSULATION

1.1 QUALITY ASSURANCE

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

1.2 FIELD QUALITY CONTROL

- A. FIELD INSPECTIONS: BY OWNER-ENGAGED AGENCY.

1.3 INDOOR DUCT AND PLENUM INSULATION SCHEDULE:

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

- B. FLEXIBLE ELASTOMERIC, MINERAL-FIBER BLANKET, MINERAL-FIBER BOARD OR POLYOLEFIN WITH MINIMUM INSTALLED THERMAL RESISTANCE AS FOLLOWS:
- |                                       |      |
|---------------------------------------|------|
| UNCONDITIONED SPACES WITHIN BUILDING: | R-6  |
| WITHIN BUILDING ENVELOPE ASSEMBLY:    | R-12 |
| OUTSIDE OF BUILDING:                  | R-12 |

1.4 ITEMS NOT INSULATED:

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

1.5 PRODUCTS

THE FOLLOWING INSULATION MANUFACTURERS WILL BE ACCEPTABLE:

1. JOHNS-MANVILLE
2. OWENS-CORNING

1.6 ACOUSTICAL TREATMENT

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

END OF SECTION 230713

### SECTION 233113 - METAL DUCTS

1.1 CONSTRUCTION

- A. EACH DUCT SYSTEM SHALL BE CONSTRUCTED FOR THE SPECIFIC SMACNA DUCT PRESSURE CLASSIFICATIONS SHOWN ON THE CONTRACT DRAWINGS. WHERE NO PRESSURE CLASSES ARE SPECIFIED BY THE DESIGNER, THE SMACNA 2-1/2 INCH WG PRESSURE CLASS IS THE BASIS OF COMPLIANCE WITH THESE STANDARDS, REGARDLESS OF THE VELOCITY IN THE DUCT.

- B. ALL DUCTWORK SHALL BE CONSTRUCTED TO SMACNA 2" WG DESIGN AND NOT LESS THAN THE FOLLOWING STANDARDS:

1. DUCTWORK SHALL BE TRANSVERSELY JOINTED BY CONNECTING SEAMS OF COMPANION ANGLES FORMED FROM 1-1/2"x1-1/2"x1/8" GALVANIZED ANGLES, TACK-WELDED OR RIVETED TO THE DUCT. THE ANGLE FRAME SHALL BE CONTINUOUSLY FLANGED UP INTO UPRIGHT OF ANGLE AND EACH CORNER SHALL BE FILLED IN AND GROUND SMOOTH. JOINTS SHALL BE GASKETED WITH 1/8" THICK REINFORCED GASKET, OVERLAPPED AT CORNERS, GASKET SIMILAR TO 3M-1202 OR APPROVED EQUAL.

2. RECTANGULAR FITTINGS AND ALL TRANSITION PIECES FROM RECTANGULAR TO ROUND SHALL BE NO. 16 GAUGE ALL WELDED CONSTRUCTION.
3. HORIZONTAL DUCTS SHALL BE SUPPORTED ON NOT MORE THAN 6' CENTERS. VERTICAL RISERS SHALL BE SUPPORTED AT EACH FLOOR.
4. LONGITUDINAL SEAMS FOR RECTANGULAR DUCTWORK SHALL BE PITTSBURGH LOCK SEAMS WITH SEALING COMPOUND, EQUAL TO BENJAMIN FOSTER NO. 30-03 INSERTED INTO SEAM. ALL SEAMS SHALL BE BRUSHED WITH NO. 30-02 AND COVERED WITH APPROVED SEALING TAPE.
5. RECTANGULAR DUCTWORK 18 GAUGE AND HEAVIER, FILLER RODS SHALL BE IN ACCORDANCE WITH SPECIFICATIONS FOR IRON AND STEEL GAS WELDING RODS, ASTM 215; AWG A5.2.
6. ALL FITTINGS SUCH AS ELBOWS, TEES, ETC., SHALL BE NO. 20 GAUGE ZINC COATED STEEL. ELBOWS SHALL BE OF FIVE (5) PIECE WELDED AIRTIGHT CONSTRUCTION.

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

| USG | MAX. SIDE INCHES | TRANSVERSE JOINTS AND BRACING                              |
|-----|------------------|--|
| 22  | UP TO 12         | S SLIP, DRIVE SLIP, ONE INCH POCKET LOCK ON 8 FOOT CENTERS |
| 22  | 13 TO 24         | 1"x1"x1/8" ANGLES ON 4 FOOT CENTERS                        |
| 20  | 25 TO 35         | 1"x1"x1/8" ANGLES ON 2 FOOT CENTERS                        |

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

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

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

1.2 MATERIALS

- A. SINGLE-WALL RECTANGULAR DUCTS AND FITTINGS.
- B. DOUBLE-WALL RECTANGULAR DUCTS AND FITTINGS.

1. FIBROUS-GLASS OR FLEXIBLE ELASTOMERIC DUCT LINER FOR INTERSTITIAL INSULATION.
2. PERFORATED INNER DUCT.
- C. SINGLE-WALL ROUND AND FLAT-OVAL DUCTS AND FITTINGS.
- D. DOUBLE-WALL ROUND AND FLAT-OVAL DUCTS AND FITTINGS.

1. FIBROUS-GLASS OR FLEXIBLE ELASTOMERIC DUCT LINER FOR INTERSTITIAL INSULATION.
2. PERFORATED INNER DUCT.

E. SHEET METAL MATERIALS:

1. GALVANIZED SHEET STEEL.
2. PVC-COATED, GALVANIZED SHEET STEEL.
3. CARBON-STEEL SHEETS.
4. STAINLESS-STEEL SHEETS.
5. ALUMINUM SHEETS.
6. FACTORY-APPLIED ANTI-MICROBIAL COATING.

F. DUCT LINER:

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

G. SEALANT MATERIALS:

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

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#### REVISIONS

| NUMBER | REMARKS    | DATE     |
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| 1      | PERMIT SET | 05.29.24 |
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| -           | 08/11/23     |

PROJECT TITLE:

## CAFFÈ NERO

DRAWING TITLE:  
**MECHANICAL NOTES & SPECIFICATIONS (02 OF 03)**

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| PERMIT DWG DATE:<br>05-29-24 | PROJECT NUMBER: |
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DRAWING NUMBER:

# M102

- 1.3 SEISMIC-RESTRAINT DEVICES
- CHANNEL SUPPORT SYSTEM.
  - STAINLESS-STEEL RESTRAINT CABLES.
  - HANGER ROD STIFFENER: STEEL TUBE OR STEEL SLOTTED-SUPPORT-SYSTEM SLEEVE WITH INTERNALLY BOLTED CONNECTIONS OR REINFORCING STEEL ANGLE CLAMPED TO HANGER ROD.
- 1.4 DUCT CLEANING
- CLEAN EXISTING DUCT SYSTEM(S) BEFORE TESTING, ADJUSTING, AND BALANCING.
  - CLEAN THE FOLLOWING ITEMS:
    - AIR OUTLETS AND INLETS.
    - SUPPLY, RETURN, AND EXHAUST FANS.
    - AIR-HANDLING UNITS.
    - COILS AND RELATED COMPONENTS.
    - RETURN-AIR DUCTS, DAMPERS, ACTUATORS, AND TURNING VANES.
    - SUPPLY-AIR DUCTS, DAMPERS, ACTUATORS, AND TURNING VANES.
    - DEDICATED EXHAUST AND VENTILATION COMPONENTS AND MAKEUP AIR SYSTEMS.
- 1.5 DUCT SCHEDULE
- ALL DUCTS SHALL BE GALVANIZED STEEL EXCEPT AS FOLLOWS:
- MOIST ENVIRONMENT DUCT MATERIAL: ALUMINUM.  
END OF SECTION 233113

SHEET METAL WORK

- EXCEPT AS OTHERWISE SHOWN OR NOTED, ALL DUCTWORK AND OTHER SHEET METAL WORK SHALL BE GALVANIZED SHEET STEEL AND SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST EDITION OF SHEET METAL AND AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION, INC. DUCT CONSTRUCTION STANDARDS, PRESSURE CLASSIFICATION 2 IN. W.G.
- DUCTWORK STATIC PRESSURE CLASSIFICATION:
  - 2 IN OF W.G. UP TO 2 IN OF W.G.
  - 6 IN OF W.G. ABOVE 2 IN & UP TO 6 IN W.G
- SEALING OF DUCTWORK SHALL COMPLY WITH SECTION 603.9 OF THE MECHANICAL CODE OF MASSACHUSETTS STATE OR IN MASSACHUSETTS STATE, THE MASSACHUSETTS STATE CONSTRUCTION CODES.
- VOLUME DAMPERS: GALVANIZED STEEL, PER SMACNA "LOW VELOCITY MANUAL," EXCEPT PROVIDE BEARING AT ONE END OF DAMPER ROD AND QUADRANT, WITH LEVER AND LOCKSCREW AT OTHER END. FOR INSULATED DUCTS, QUADRANTS MOUNTED ON COLLAR TO CLEAR INSULATION. INSTALL WITH LEVERS ACCESSIBLE.
- ACCESS DOORS: INSULATED OR UNINSULATED, SAME AS DUCT.
  - PROVIDE MINIMUM 20 IN. X 20 IN. (OR EQUIVALENT) ON ALL DUCTS, UNLESS OTHERWISE APPROVED, AT FIRE DAMPERS, AND AT ALL DUCT ACCESSORIES SUCH AS HUMIDIFIERS, DUCT SMOKE DETECTORS, AUTO DAMPERS, AND LOUVERS.
  - ACCESS DOORS SHALL BE LOCATED AT THE BOTTOM OF THE DUCT OR ON THE SIDE, AND NOT MORE THAN 16 INCHES FROM THE DUCT ACCESSORY THAT IT SERVES (FIRE DAMPER, FSD, ETC.).
  - WHERE DUCT SIZE DOES NOT PERMIT A 20 IN. X 20 IN. (OR EQUIVALENT AREA) ACCESS DOOR, THE ACCESS DOOR SHALL BE FABRICATED OF AN AREA EQUIVALENT TO A 20 IN. X 20 IN. WITH THE SMALLER DIMENSION BEING 2 INCHES SMALLER THAN THE DUCT SIZE WHERE IT WILL BE LOCATED, AND LOCATED NOT LESS THAN 1" FROM ANY DUCT EDGE.
  - FOR DUCTS WHICH LARGEST DIMENSION IS 12 INCHES (WIDTH AND OR HEIGHT), IT IS PERMISSIBLE TO PROVIDE A 10 IN. X 10 IN. (OR EQUIVALENT AREA) ACCESS DOOR LOCATED AT THE BOTTOM OR THE SIDE OF THE DUCT. THAN
  - ALL ACCESS DOORS TO BE HINGED, WITH LATCH SIMILAR TO VENTLOCK NO. 100.
- KITCHEN RANGE HOOD EXHAUST DUCT INCLUDING FAN DISCHARGE TO ATMOSPHERE SHALL BE PROVIDED AS FOLLOWS:
 

NOTE: IF ALL DUCTWORK IS INSIDE BUILDING.

  - NO. 10 USSG BLACK STEEL.
 

NOTE: MASSACHUSETTS STATE CODE REQUIRES THAT ALL DUCTWORK MUST BE WELDED AND THICKER BLACK STEEL IF SOME DUCTWORK IS OUTDOORS. CHECK LOCAL CODE FOR OTHER AREAS.
  - BLACK STEEL OF FOLLOWING GAUGES AND THICKNESSES. INSIDE BUILDING SHALL BE NO. 10 USSG. OUTDOOR DUCTWORK TO 7 SQ FT SHALL BE 1/8 INCH, ABOVE 7 SQ FT TO 12.5 SQ FT SHALL BE 3/16 INCH, AND OVER 12.5 SQ FT SHALL BE 1/4 INCH.
  - ALL SEAMS, JOINTS AND PENETRATIONS SHALL BE LIQUIDTIGHT CONTINUOUS EXTERNAL ARC WELDED, EXCEPT WHERE THE DUCT STUB COLLAR OF THE HOOD IS CONNECTED TO THE EXHAUST DUCT. CONNECTION TO THE HOOD SHALL BE CONTINUOUS LIQUIDTIGHT EXTERNAL ARC WELDED OR IN ACCORDANCE WITH NFPA 96, 1984.
  - ANGLE REINFORCING SHALL BE MINIMUM 1-1/2 INCH X 1-1/2 INCH X 3/16 INCH AT MAXIMUM 4 FT ON CENTERS AND IN ACCORDANCE WITH SMACNA RECTANGULAR INDUSTRIAL DUCT CONSTRUCTION STANDARDS SHALL BE MOUNTED.

- CLEANOUT DOORS ON HORIZONTAL DUCTS SHALL BE MOUNTED MAXIMUM 12 FT APART AND IN CHARGE OF DIRECTION. CLEANOUT DOORS ON HORIZONTAL DUCT SHALL BE MOUNTED ON SIDE OF DUCT. BOTTOM EDGE SHALL BE NOT LESS THAN 2 INCH ABOVE THE BOTTOM OF DUCT. CLEANOUT DOORS AT VERTICAL DUCTS SHALL BE MOUNTED AT BASE. DOOR AND FRAME SHALL BE SAME GAUGE AS DUCT. HINGES SHALL BE VENTLOCK NO. 280, EXTRA HEAVY ZINC PLATED. LATCHES SHALL BE VENTLOCK NO. 140, CAST ZINC. GASKETS SHALL BE BETWEEN DOOR AND FRAME. GASKETS SHALL BE 1/8 INCH DOUBLE THICKNESS RATED FOR 2000PSI. CLEANOUT DOOR SIZE SHALL BE MAXIMUM 24 INCH X 24 INCH AND MINIMUM SHALL BE 24 INCH ONE SIDE, AND OTHER SIDE SHALL BE 2 INCH LESS THAN DUCT HEIGHT.
- FLEXIBLE CONNECTIONS: NEOPRENE-COATED GLASS FABRIC, 30 OZ PER SQ YD WITH SEWED AND CEMENTED SEAMS, SIMILAR TO VENT FABRICS. PROVIDE WITH METAL COLLARS. ALLOW MINIMUM MOVEMENT OF 1 IN.
- TURNING VANES: GALVANIZED STEEL SMALL DOUBLE-THICKNESS VANES WITH 2 IN. INSIDE RADIUS.
- FIRE DAMPERS: UL LISTED, GALVANIZED STEEL CONSTRUCTION, MULTIBLADED TYPE, SPRING LOADED, EQUIPPED WITH FUSIBLE LINK, CONFORMING TO NFPA STANDARD 90A AND APPROVED BY MASSACHUSETTS STATE BOARD OF STANDARDS AND APPEALS FOR MASSACHUSETTS STATE CAL-100-65-5M. SIMILAR TO AIR BALANCE MODEL 319-P, RATED AS REQUIRED. SEE INSTALLATION ON DRAWING.
- DUCTWORK FOR AREAS WITH HIGH HUMIDITY SHALL BE ALUMINUM FABRICATED ONE GAGE LARGER THAN GALVANIZED FOR THE SAME PRESSURE CLASSIFICATION. THESE DUCTS INCLUDE SHOWERS, OUTDOOR AIR INTAKE, HUMIDIFIERS, ETC.
- ALL DUCT DIMENSIONS INDICATED ON PLANS ARE INSIDE CLEAR DIMENSIONS.
- AUTOMATIC DAMPERS: COMPLETE WITH LINKAGE AND ELECTRIC OPERATOR. OPPOSED BLADE DAMPER OR GALVANIZED STEEL MIN. 4 IN., MAX. 8 IN. WIDE WITH COMPRESSIBLE EDGE SEALS TO PREVENT LEAKAGE. FACTORY-ASSEMBLE STEEL LINKAGE AND SHAFT WITH NYLON OR OIL-IMPREGNATED BRONZE BEARINGS. MOTOR WITH SUFFICIENT POWER TO LIMIT LEAKAGE TO 10 CFM PER SQ FT. LINKAGE TO WITHSTAND LOAD EQUAL TO TWICE MAXIMUM OPERATING FORCE WITHOUT DEFLECTION. DAMPER MOUNTED IN WELDED STEEL CHANNEL FRAME.
- WIRE MESH SCREEN (WMS): NO. 16 USSG, 3/4 SQUARE MESH, 1 IN. WIDE GALVANIZED STEEL ENCLOSING FRAME. FLANGED DUCT OPENING TO RECEIVE FRAME.
- COMBINATION FIRE AND SMOKE DAMPERS: UL LISTED, GALVANIZED STEEL CONSTRUCTION MULTI-BLADED TYPE. BLADES SHALL BE AIRFOIL SHAPED, DOUBLE SKIN, SINGLE PIECE CONSTRUCTION. EQUIPPED WITH FUSIBLE LINK CONFORMING TO NFPA STANDARD 90A, 92A & 92B, AND COMPLY WITH LATEST STANDARD UL565 AND UL565S WITH LEAKAGE CLASS 1 SMOKE DAMPERS, BLADE SEALS. SIMILAR TO RUSKIN MODEL FSD 60, MASSACHUSETTS STATE BSA LISTING# 176-82-SM. ACTUATOR SHALL BE ELECTRICALLY POWERED, 120 V/1 PH, AND MOUNTED IN THE FACTORY AT THE TIME OF FABRICATION.
- NOISE CONTROL
  - ALL ROOM NC LEVELS SHALL BE 35 OR LESS.
  - PROVIDE SOUND LINING FOR THE FOLLOWING DUCTWORK:
    - ALL DUCTWORK WITHIN MECHANICAL ROOMS AND NOT LESS THAN 20 FT ON EACH SIDE OF ALL FANS AND AC UNITS.
    - AIR TRANSFER DUCTS.
    - DOWNSTREAM OF ALL VARIABLE AIR VOLUME AND CONSTANT VOLUME BOXES FOR A MINIMUM OF 15 FT.
    - ALL MIXED AIR PLENUMS, EXCEPT WHERE MOISTURE CARRYOVER FROM OUTDOOR AIR LOUVER WILL OCCUR.
    - FULL EXTENT OF SUPPLY DUCTS SERVING CONFERENCE ROOMS.
    - ALL EXPOSED INTERIOR SUPPLY DUCTWORK.
    - ALSO WHERE NOTED ON A DRAWING.
  - SOUND LINING IN DUCTWORK: FIBROUS GLASS, MINIMUM 3 LB DENSITY, 1 IN. THICKNESS, MAXIMUM 0.25 K FACTOR AT 75 DEG F MEAN TEMPERATURE WITH ACRYLIC COATED FINISH FACTORY APPLIED EDGE COATING AND STENCILED IN ACCORDANCE WITH NFPA 90. FLAMESPREAD SHALL BE A MAXIMUM OF 25. LINING SHALL NOT SUPPORT MICROBIAL GROWTH AND SHALL BE TESTED IN ACCORDANCE WITH ASTM C 1071 AND ASTM G21/G22. SIMILAR TO MANVILLE PERMACOTE LINA COUSTIC.
  - ALL SOUND LINING, ADHESIVES, FACES AND ACCESSORIES TO BE APPLIED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS, EXCEPT AS OTHERWISE NOTED.

THERMOSTATIC CONTROLS:

- THERMOSTATIC CONTROLS (MANDATORY)
 

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:
  - 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).
  - THE PERIMETER SYSTEM HEATING AND COOLING SUPPLY IS CONTROLLED BY THERMOSTATS LOCATED WITHIN THE ZONES SERVED BY THE SYSTEM.
- DEADBAND (MANDATORY)
 

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:

  - THERMOSTATS REQUIRING MANUAL CHANGEOVER BETWEEN HEATING AND COOLING MODES.
  - OCCUPANCIES OR APPLICATIONS REQUIRING PRECISION IN INDOOR TEMPERATURE CONTROL AS APPROVED BY THE CODE OFFICIAL.
- SETPPOINT OVERLAP RESTRICTION (MANDATORY)
 

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 DEADBAND.
- OFF-HOUR CONTROLS (MANDATORY)
 

EACH ZONE SHALL BE PROVIDED WITH THERMOSTATIC SETBACK CONTROLS THAT ARE CONTROLLED BY EITHER AN AUTOMATIC TIME CLOCK OR PROGRAMMABLE CONTROL SYSTEM.

EXCEPTIONS:

  - ZONES THAT WILL BE OPERATED CONTINUOUSLY.
  - 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.
- THERMOSTATIC SETBACK (MANDATORY)
 

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).
- AUTOMATIC SETBACK AND SHUTDOWN (MANDATORY)
 

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.
- AUTOMATIC START (MANDATORY)
 

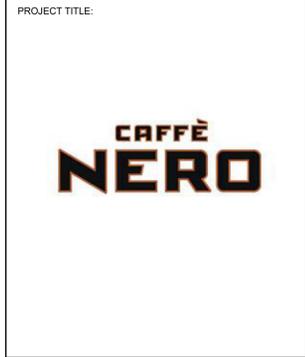
AUTOMATIC START CONTROLS SHALL BE PROVIDED FOR EACH HVAC SYSTEM. THE CONTROLS SHALL BE CONFIGURED TO AUTOMATICALLY ADJUST THE DAILY START TIME OF THE HVAC SYSTEM IN ORDER TO BRING EACH SPACE TO THE DESIRED OCCUPIED TEMPERATURE IMMEDIATELY PRIOR TO SCHEDULED OCCUPANCY.

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| 1         | PERMIT SET | 05.29.24 |
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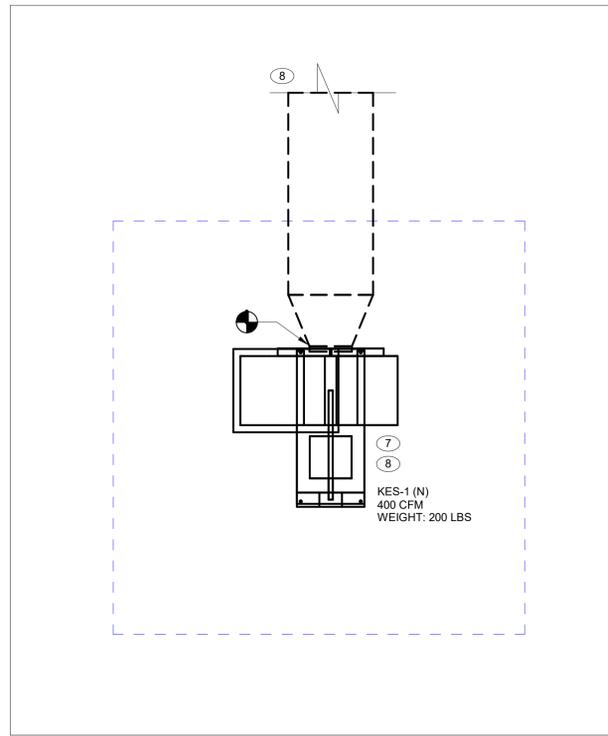
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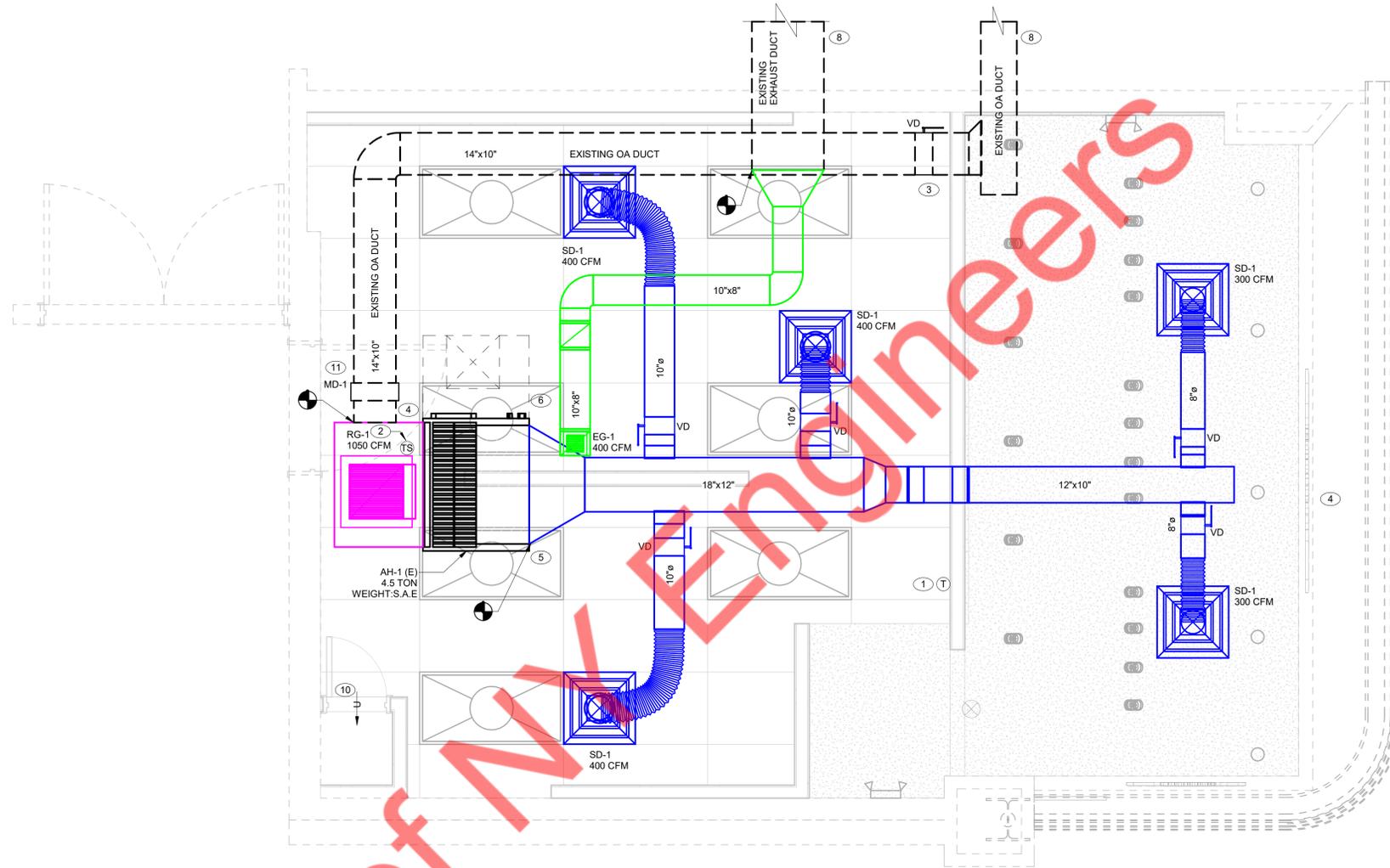
DRAWING TITLE:  
**MECHANICAL NOTES & SPECIFICATIONS (03 OF 03)**

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| PERMIT DWG DATE:<br>05-29-24 | PROJECT NUMBER:    |
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DRAWING NUMBER:  
**M103**



2 ROOF PART PLAN  
1/2" = 1'-0"



1 MECHANICAL FLOOR PLAN  
1/2" = 1'-0"

**HVAC FLOOR PLAN** 1/2" = 1'-0" **A**

1. CONTRACTOR SHALL COORDINATE EQUIPMENT /DUCT LOCATIONS WITH STRUCTURAL DRAWINGS.
2. PROVIDE WEATHER PROOF COATING FOR EXPOSED REFRIGERANT PIPING AND DUCTS.
3. PROVIDE FIRE OR FIRE+SMOKE DAMPER WHEREVER DUCTS ARE CROSSING FIRE/SMOKE RATED WALLS/BARRIERS. COORDINATE WITH ARCHITECTURAL DRAWINGS FOR FIRE RATINGS OF THE WALLS COORDINATE WITH ELECTRICAL ENGINEER FOR POWER REQUIREMENT FOR FSD.
4. THE SUSPENSION OF ANY ITEMS FROM BASE BUILDING STRUCTURE BY MEANS OF DRILLING, WELDING, SHOOTING ARE PROHIBITED. CONTRACTOR TO MAKE SURE ALL THE EQUIPMENTS, DUCTS TO BE SUPPORTED BY MEANS OF THE BEAM CLAMPS.

- 1 LOCATE THERMOSTAT CONTROLS ON WALL AT 48" A.F.F. COORDINATE LOCATION WITH LIGHT SWITCHES AND OTHER WALL MOUNTED ACCESSORIES. RUN 24 VAC POWER AND SIGNAL CONDUCTORS IN TWO (2) SEPARATE (2) CONDUCTOR CABLES, 18 AWG.
- 2 CONTRACTOR TO PROVIDE NEW REMOTE TEMPERATURE SENSOR IN RETURN AIR PATH AND WIRE BACK TO T-STAT.
- 3 CONTRACTOR TO BALANCE THE OA CFM TO 750.
- 4 CONNECT THE EXISTING DUCT WITH THE RETURN AIR DUCT PLENUM. EXTENT/ MODIFY THE DUCT ROUTING AS PER THE SITE CONDITION.
- 5 EXISTING CEILING MOUNTED AIR HANDLER INDOOR UNIT TO REMAIN SAME ALONG WITH ALL ASSOCIATED SUPPORTS. VERIFY IN FIELD THE LOCATION AND ENSURE THE UNIT IS DELIVERING 1800 CFM SUPPLY AIR.
- 6 1" CD WITH CONDENSATE DRAIN PUMP TO NEAREST SINK OR LAV. COORDINATE W/PLUMBING CONTRACTOR.
- 7 FAN PROVIDED BY LL. CONTRACTOR TO COORDINATE WITH LL FOR THE FINAL LOCATION, DISTANCE & CONNECTION POINT IN FILED. EXTENT/ MODIFY THE DUCTWORK AS REQUIRED.
- 8 EXISTING DUCTWORK TO REMAIN SAME. CONTRACTOR TO EXTENT/ MODIFY THE EXISTING DUCTING IF REQUIRED.
- 9 REUSE THE EXISTING EXHAUST FAN IF THE FAN CAN BE DIAL DOWN TO 400 CFM. IF NOT, PROVIDE NEW FAN AS PER THE SCHEDULE OR EQUIVALENT (PROVIDED BY LL). ENSURE MAINTAINING 2" W.G. EXTERNAL STATIC FOR THE FAN.
- 10 PROVIDE MINIMUM 1" DOOR UNDERCUT.
- 11 MD-1 TO BE INTERLOCKED WITH AH-1(E). COORDINATE WITH ELECTRICAL CONTRACTOR.

**GENERAL NOTES - HVAC** NTS **C**

**KEY NOTES - HVAC** NTS **B**

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PROJECT TITLE:

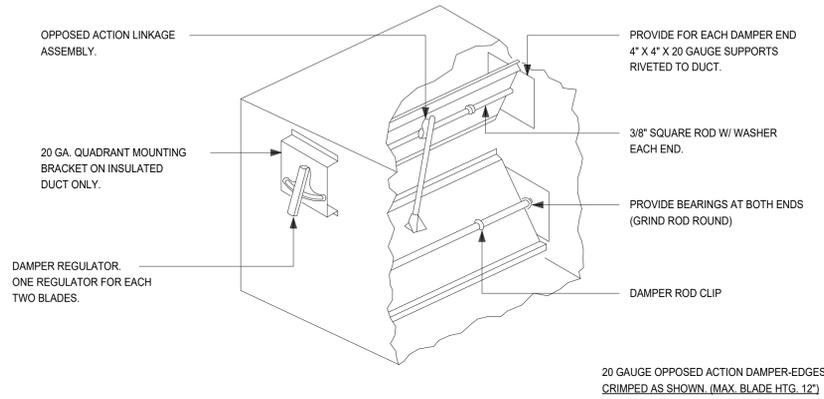
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DRAWING TITLE:  
**MECHANICAL FLOOR PLAN**

|                              |                    |
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| PERMIT DWG DATE:<br>05-29-24 | PROJECT NUMBER:    |
| DRAWN BY:<br>NYE             | CHECKED BY:<br>NYE |

DRAWING NUMBER:  
**M200**

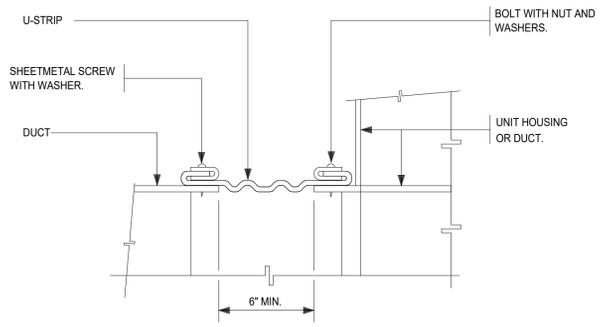




NOTE: 1. FOR DUCTS OVER 28\"/>

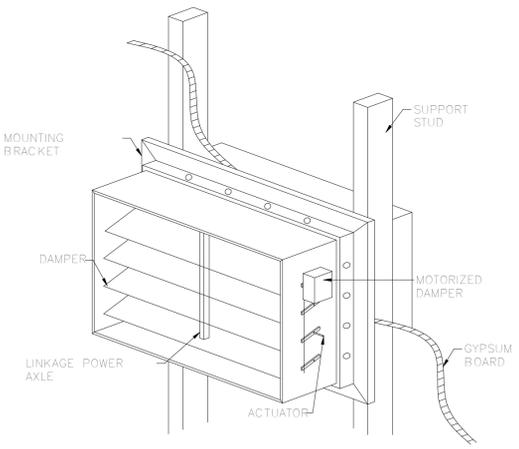
LOW PRESSURE BALANCING DAMPER

|       |   |
|-------|---|
| SCALE | 1 |
| NTS   |   |



FLEXIBLE CONNECTION (DUCT EQUIPMENT)

|       |   |
|-------|---|
| SCALE | 2 |
| NTS   |   |



MOTORIZED DAMPER

|       |   |
|-------|---|
| SCALE | 3 |
| NTS   |   |

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|             | 08/11/23     |

PROJECT TITLE:



DRAWING TITLE:  
**MECHANICAL DETAILS (02 OF 02)**

|                              |                    |
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| PERMIT DWG DATE:<br>05-29-24 | PROJECT NUMBER:    |
| DRAWN BY:<br>NYE             | CHECKED BY:<br>NYE |

DRAWING NUMBER:

**M402**

## ELECTRICAL SYMBOLS LIST

| LIGHTING                       |   | POWER AND TELECOMMUNICATION |  | ELECTRICAL ABBREVIATIONS |                                |        |  | GENERAL NOTES<br>(APPLY TO ALL "E" DRAWINGS)   |  |
|--------------------------------|---|-----------------------------|--|--------------------------|--------------------------------|--------|--|--|--|
|                                | LIGHTING FIXTURE, HALF SHADED FIXTURE OR "EM" INDICATES EMERGENCY FIXTURES WITH INTEGRAL BATTERY PACK FOR EMERGENCY SERVICE, U.O.N.   |                             | JUNCTION BOX WITH BLANK COVER PLATE  | A                        | AMPERES                        | EA     | EACH   | <ol style="list-style-type: none"> <li>1. ALL WORK SHALL BE PERFORMED IN STRICT ACCORDANCE WITH THE CURRENT VERSION OF THE NATIONAL ELECTRICAL CODE, 2023 NEC WITH 527 CMR 12.00 (MASSACHUSETTS ELECTRICAL CODE BASED ON THE 2023 EDITION OF NFPA 70 NEC) AMENDMENTS, LOCAL JURISDICTION REQUIREMENTS, AND ALL GOVERNING LOCAL CODES, LAWS, AND REGULATIONS.</li> <li>2. CONTRACTOR SHALL VISIT THE SITE AND BECOME FAMILIAR WITH ALL EXISTING CONDITIONS THAT MAY AFFECT THE WORK. NO ADDITIONAL COMPENSATION WILL BE CONSIDERED FOR FAILURE TO DO SO.</li> <li>3. CONTRACTOR SHALL OBTAIN AND PAY FOR ALL PERMITS, TEST REPORTS, AND CERTIFICATIONS FOR TEMPORARY AND FINAL CERTIFICATE OF OCCUPANCY.</li> <li>4. FIRE STOP ALL PENETRATIONS OF FIRE RATED CONSTRUCTION IN A CODE APPROVED MANNER IN ORDER TO MAINTAIN FIRE RATING. ALL PENETRATIONS SHALL BE SLEEVED AND SEALED WATERTIGHT.</li> <li>5. SECURE ALL SUPPORTS TO BUILDING STRUCTURE UTILIZING TOGGLE BOLTS (HOLLOW MASONRY), EXPANSION SHIELDS OR INSERTS (CONCRETE AND BRICK), MACHINE SCREWS (METAL), BEAM CLAMPS (FRAMEWORK), WOOD SCREWS (WOOD) OR PAN THRU STRAPS (METAL DECK), NAILS, RAW PLUGS AND WOOD PLUGS ARE NOT PERMITTED. WHERE REQUIRED BY STRUCTURE, PROVIDE THRU BOLTS AND FISH PLATES. SUPPORT HORIZONTAL RUNS OF METALLIC RACEWAYS NOT MORE THAN 10 FT APART. SUPPORT RACEWAY RISERS AT EACH FLOOR LEVEL. RUN EXPOSED RACEWAYS PARALLEL WITH OR AT RIGHT ANGLES TO WALLS.</li> <li>6. LEAVE WIRES WITH SUFFICIENT SLACK TO PERMIT MAKING FINAL CONNECTIONS. RACEWAYS OVER 10 FT LONG IN WHICH WIRING IS NOT INSTALLED. FURNISH FISH WIRE.</li> <li>7. VERIFY LOCATIONS OF OUTLETS AND SWITCHES IN FINISHED ROOMS WITH ARCHITECTURAL DRAWINGS OF INTERIOR DETAILS AND FINISH. IN CENTERING OUTLETS AND LOCATING BOXES AND OUTLETS, ALLOW FOR OVERHEAD PIPES, DUCTS AND MECHANICAL EQUIPMENT, EQUIPMENT, VARIATIONS IN FIREPROOFING AND PLASTERING, WINDOW AND DOOR TRIM, PANELING, HUNG CEILINGS AND THE LIKE. CORRECT ANY INACCURACY RESULTING FROM FAILURE TO DO SO WITHOUT EXPENSE TO OWNER.</li> <li>8. CONTRACTOR SHALL PROVIDE A WARRANTY ON ALL MATERIALS, EQUIPMENT, AND WORKMANSHIP FOR A PERIOD OF ONE YEAR FROM THE DATE OF FINAL ACCEPTANCE.</li> <li>9. ALL UNUSED MATERIALS AND DEBRIS SHALL BE LEGALLY REMOVED AND DISPOSED OF AWAY FROM THE PREMISES ON A DAILY BASIS.</li> <li>10. CONTRACTOR SHALL PATCH, PAINT, AND RESTORE EXISTING SURFACES DAMAGED DURING THE COURSE OF THIS CONSTRUCTION TO PRE-EXISTING CONDITIONS OR BETTER.</li> <li>11. MINIMUM SIZE OF CONDUIT SHALL BE 3/4", AND TYPE SHALL BE ELECTRICAL METALLIC TUBING (EMT), UNLESS OTHERWISE NOTED. PROVIDE NYLON DRAG LINE AND CONDUIT CAP FOR ALL EMPTY CONDUITS.</li> <li>12. CONNECT CONDUIT TO MOTOR CONDUIT TERMINAL BOXES WITH FLEXIBLE CONDUIT (MINIMUM 18 IN. LENGTH AND 50% SLACK). DO NOT TERMINATE IN OR FASTEN RACEWAYS TO MOTOR FOUNDATION.</li> <li>13. PULL AND JUNCTION BOXES WHERE INDICATED ON THE DRAWINGS, SHALL BE CONSIDERED SHOWN AT THEIR APPROXIMATE LOCATION. THE CONTRACTOR SHALL LOCATE THEM AS FIELD CONDITIONS DICTATE. ADDITIONAL PULL AND JUNCTION BOXES NOT SHOWN ON DRAWINGS SHALL BE PROVIDED WHERE REQUIRED BY APPLICABLE CODE PROVISIONS OR WHERE CALLED FOR BY FIELD CONDITIONS. PULL AND JUNCTION BOXES SHALL BE SURFACE TYPE IN UNFINISHED AREAS AND INSTALLED CONCEALED IN FINISHED AREAS, AND ALL COVERS TO PULL &amp; JUNCTION BOXES SHALL BE READILY ACCESSIBLE.</li> <li>14. SUPPORT PANEL, JUNCTION AND PULLBOXES INDEPENDENTLY TO BUILDING STRUCTURE WITH NO WEIGHT BEARING ON RACEWAYS.</li> <li>15. FOR EXACT LOCATION AND MOUNTING HEIGHT OF LIGHTING FIXTURES AND SWITCH/RECEPTACLE OUTLETS, REFER TO ARCHITECTURAL REFLECTED CEILING AND POWER PLANS.</li> <li>16. ALL ELECTRICAL ACCESSORIES AND EQUIPMENT INSTALLED OUTSIDE OR EXPOSED TO WEATHER SHALL HAVE NEMA 3R ENCLOSURES AND SHALL BE TIGHTLY GASKETED FOR A COMPLETE RAIN-TIGHT INSTALLATION. ALL BUILDING EXTERIOR MOUNTED RECEPTACLES SHALL BE GFCI RATED AND MOUNTED IN WEATHERPROOF ENCLOSURE.</li> <li>17. ALL ACCESS PANEL LOCATIONS SHALL BE REVIEWED BY ARCHITECT PRIOR TO INSTALLATION.</li> <li>18. ELECTRICAL CONTRACTOR SHALL COORDINATE THE LOCATION AND INSTALLATION OF NEW WORK WITH THE GENERAL CONTRACTOR AND OTHER ASSOCIATED TRADES IN A TIMELY MANNER. THE CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFYING ALL DIMENSIONS AND CONDITIONS PRIOR TO CONSTRUCTION. REFER TO ALL GENERAL, MECHANICAL, AND ELECTRICAL, DRAWINGS AND SPECIFICATIONS FOR THIS PROJECT.</li> <li>19. ALL CONDUITS AND EQUIPMENT TO BE CONCEALED IN FINISHED SPACES UNLESS OTHERWISE NOTED.</li> <li>20. ALL EQUIPMENT AND MATERIALS INSTALLED IN PLENUM CEILINGS SHALL BE APPROVED FOR THAT APPLICATION.</li> <li>21. OUTLET BOXES AND JUNCTION BOXES ON OPPOSITE SIDES OF FIRE-RATED WALLS SHALL BE SEPARATED BY A HORIZONTAL DISTANCE OF NOT LESS THAN 24 INCHES, UNLESS FIRE-RATED BOXES OR PUTTY PADS ARE UTILIZED.</li> <li>22. COORDINATE ALL FLOOR PENETRATIONS WITH THE STRUCTURAL AND ARCHITECTURAL DRAWINGS. CONFIRM PENETRATION LOCATIONS WITH THE ENGINEER AND OWNER BEFORE INSTALLATION.</li> <li>23. LIGHTING FIXTURES DESIGNATED AS EMERGENCY TYPE SHALL BE WIRED AHEAD OF ANY CONTROL DEVICES.</li> <li>24. NUMBER(S) SHOWN AT RECEPTACLES, JUNCTION BOXES AND EQUIPMENT INDICATES CIRCUIT NUMBERS IN PANELBOARD. PROVIDE WIRE AND CONDUIT TO INTERCONNECT EQUIPMENT AND DEVICES WITH SAME CIRCUIT NUMBERS AND RUN TO PANELBOARD.</li> <li>25. PROVIDE RACEWAY, BACK-BOXES, GROUNDING PROVISIONS AND 120V POWER AS NECESSARY FOR LOW VOLTAGE SYSTEMS (SECURITY, TELEPHONE DATA, CABLE TELEVISION, PAGING, INTERCOM, ETC. AS APPLICABLE TO PROJECT). REFER TO ASSOCIATED CONSULTANTS DRAWING FOR EXACT REQUIREMENTS AND LOCATIONS OF DEVICES.</li> <li>26. PROVIDE HANDLE TIES TO ALLOW FOR SIMULTANEOUS DISCONNECTION OF CONDUCTORS IN ANY MULTI-BRANCH CIRCUITS WITH A SHARED NEUTRAL.</li> </ol> |  |
|                                | LUMINAIRE TYPE : INDICATE BY UPPERCASE LETTER SEE LIGHTING FIXTURE SCHEDULE.  |                             | DUPLEX CONVENIENCE RECEPTACLE  | A/C, AC                  | AIR CONDITIONING UNIT          | EC     | EMPTY CONDUIT/<br>ELECTRICAL CONTRACTOR      |  |  |
|                                | CIRCUIT NUMBER : INDICATED BY NUMBER  |                             | DUPLEX DEDICATED RECEPTACLE  | AF                       | AMPERE FRAME/AMP FUSE          | EF     | EXHAUST FAN                                  |  |  |
|                                | SWITCHING INDICATED BY LOWER CASE LETTERS.  |                             | DATA OUTLET - (1) PORT U.O.N. TEL / DATA OUTLET TO BE PROVIDED WITH 1" CONDUIT U.O.N. TO H.C. AND TERMINATED WITH 90 DEGREE ELBOW AND BUSHING. TEL / DATA OUTLET PLATE SHALL BE PROVIDED WITH 1 1/4" DIAMETER GROMMETED OPENING. | AFF                      | ABOVE FINISHED FLOOR           | EM     | EMERGENCY                                    |  |  |
|                                | EM DENOTES LUMINAIRE ON EMERGENCY CIRCUIT.  | <b>MOTORS AND CONTROLS</b>  |  | AS                       | AMP SWITCH                     | EMT    | ELECTRICAL METALLIC TUBING                   |  |  |
|                                | NL DENOTES FIXTURES DESIGNATED AS NIGHTLIGHT, WIRED TO 24 HOURS UNSWITCHED CIRCUIT.   |                             | FUSED DISCONNECT SWITCH  | AIC                      | AMPS INTERRUPTING CAPACITY     | EQUIP  | EQUIPMENT                                    |  |  |
| <b>SWITCHES AND CONTROLS</b>   |   | <b>ANNOTATION</b>           |  | AT                       | AMP TRIP                       | ER     | EXISTING TO BE RELOCATED                     |  |  |
|                                | LIGHT SWITCH U.O.N. "g" DENOTES LIGHTING FIXTURE CONTROLLED.  |                             | KEYED NOTE REFERENCE   | ATS                      | AUTOMATIC TRANSFER SWITCH      | ETR    | EXISTING TO REMAIN                           |  |  |
|                                | TIME CLOCK/LIGHTING CONTACTOR   | <b>POWER DISTRIBUTION</b>   |  | AUTO                     | AUTOMATIC                      | EFW    | ELECTRIFIED WORKSTATION FURNITURE            |  |  |
| <b>WIRING SYSTEMS</b>          |   |                             | ELECTRICAL STEP DOWN TRANSFORMER   | AWG                      | AMERICAN WIRE GAUGE            | EWH    | ELECTRIC WATER HEATER                        |  |  |
|                                | 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. |                             | DISTRIBUTION PANELBOARD, SURFACE OR FLUSH MOUNTED  | C                        | CONDUIT                        | FA     | FIRE ALARM                                   |  |  |
|                                | POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION. NUMBER WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSISTS OF 2#12 Ø, 2#12 N. & 2#12 G. IN 3/4"C, UNLESS OTHERWISE NOTED. |                             |  | C/B,CB                   | CIRCUIT BREAKER                | FBO    | FURNISHED BY OTHERS, INSTALLED & WIRED BY EC |  |  |
|                                | POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION. NUMBER WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSISTS OF 3#12 Ø, 3#12 N. & 3#12 G. IN 3/4"C, UNLESS OTHERWISE NOTED. |                             |  | CKT                      | CIRCUIT                        | FDR    | FEEDER                                       |  |  |
|                                | CONDUIT AND WIRE TO BUILDING GROUND.  |                             |  | CLG                      | CEILING                        | FIBO   | FURNISHED & INSTALLED BY OTHERS, WIRED BY EC |  |  |
|                                | EXISTING  |                             |  | COMM                     | COMMUNICATION                  | FIXT   | FIXTURE                                      |  |  |
|                                | NEW   |                             |  | CT                       | CURRENT TRANSFORMER            | FL     | FLOOR  |  |  |
| <b>ELECTRICAL DRAWING LIST</b> |   |                             |  | CU                       | COPPER                         | FLUOR  | FLUORESCENT                                  |  |  |
| E100                           | ELECTRICAL SYMBOL LIST, ABBREVIATIONS & GENERAL NOTES   |                             |  | *C                       | DEGREE CELSIUS                 | G      | GROUND                                       |  |  |
| E101                           | ELECTRICAL SPECIFICATIONS (1 OF 2)  |                             |  | *F                       | DEGREE FAHRENHEIT              | GFI    | GROUND FAULT INTERRUPTER                     |  |  |
| E102                           | ELECTRICAL SPECIFICATIONS (2 OF 2)  |                             |  | DIA                      | DIAMETER                       | GP     | GENERAL PURPOSE                              |  |  |
| E200                           | ELECTRICAL POWER PLAN   |                             |  | DISC                     | DISCONNECT                     | HG     | HUNG CEILING                                 |  |  |
| E300                           | ELECTRICAL LIGHTING PLAN  |                             |  | DN                       | DOWN                           | HP     | HORSEPOWER                                   |  |  |
| E400                           | ELECTRICAL DETAILS  |                             |  | DP                       | DISTRIBUTION PANEL             | HWH    | HOT WATER HEATER                             |  |  |
| E500                           | ELECTRICAL RISER DIAGRAM & PANEL SCHEDULES  |                             |  | 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                          | VP     | VAPORPROOF                                   |  |  |
|                                |   |                             |  | W                        | WATT                           | WP     | WEATHERPROOF                                 |  |  |
|                                |   |                             |  | W                        | WIRE                           | XFMR   | TRANSFORMER                                  |  |  |
|                                |   |                             |  | WH                       | WALL HEATER                    | ZRT    | ZONE REGISTER TERMINALS                      |  |  |
|                                |   |                             |  | E                        | EXISTING                       | IG     | ISOLATED GROUND                              |  |  |

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PROJECT TITLE: \_\_\_\_\_



DRAWING TITLE:  
**ELECTRICAL SYMBOLS & ABBREVIATIONS**

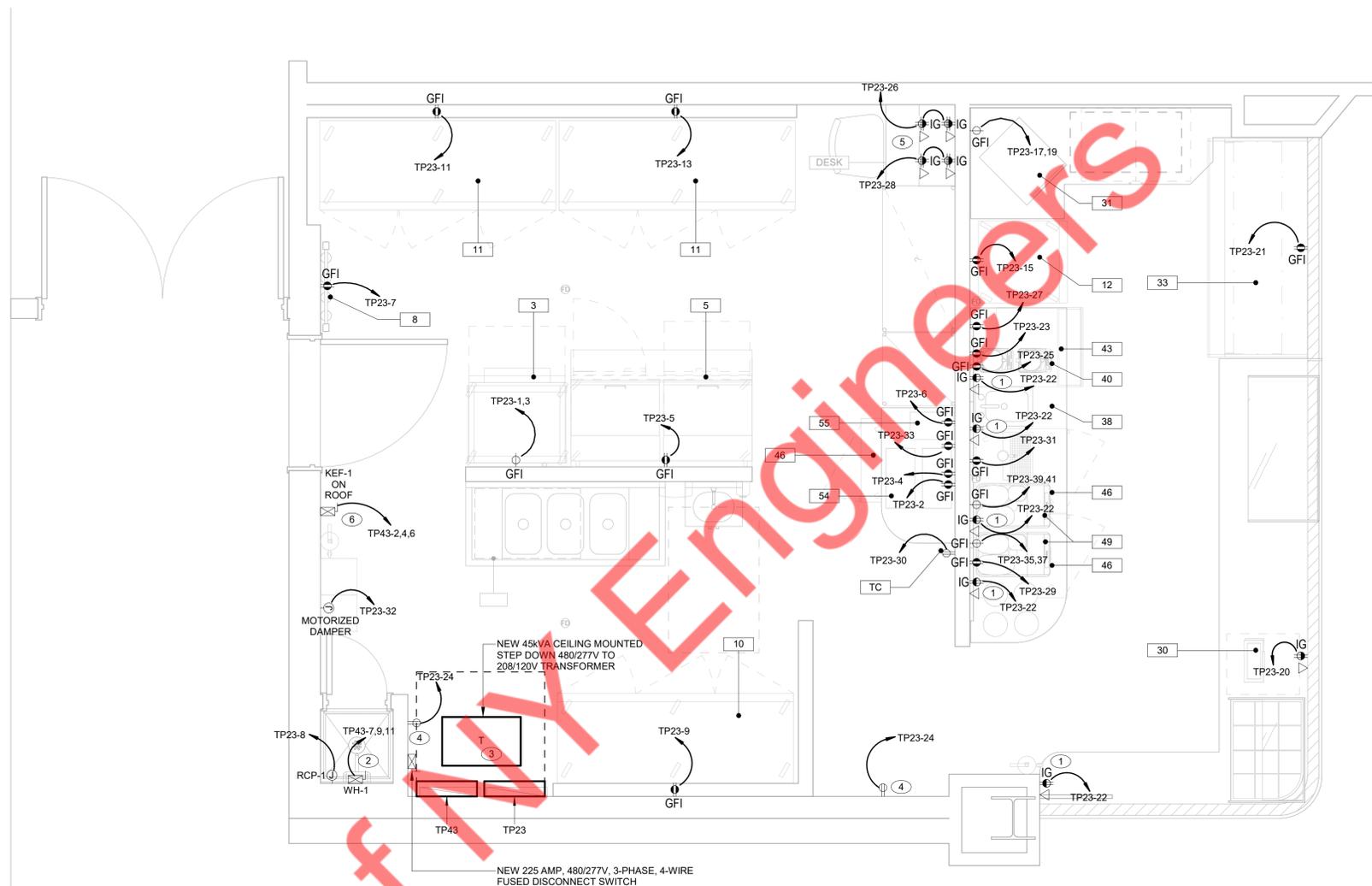
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| DRAWN BY:<br>NYE             | CHECKED BY:<br>NYE |

DRAWING NUMBER:  
**E100**





- NOTES:**
- 5mA GFCI BREAKERS MUST BE USED WHERE OUTLETS REQUIRING GFCI PROTECTION ARE NOT ACCESSIBLE FOR COMPLIANCE WITH NEC 210.8. WHERE GFCI PROTECTION SHUNT TRIP IS REQUIRED, THE CIRCUIT SHALL HAVE A GFCI BREAKER.
  - ALL SINGLE PHASE RECEPTACLE 50A OR LESS AND THREE PHASE RECEPTACLES RATED 100A OR LESS INSTALLED WITHIN THE KITCHEN AREA SHALL BE PROVIDED WITH GFCI PROTECTION AS PER NEC 210.8.
  - E.C. SHALL COORDINATE WITH EQUIPMENT SUPPLIER FOR EXACT LOCATION, MOUNTING DETAILS AND POWER REQUIREMENT AND ACCORDINGLY PROVIDE THE ELECTRICAL POWER CONNECTION TO EQUIPMENTS.



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**ELECTRICAL POWER PLAN 1/2" = 1'-0" A**

- ALL CONDUIT DROPS ARE INSIDE WALLS U.O.N. SEE ARCH. DWGS FOR WALL DIMS.
- FOR EXACT LOCATIONS OF KITCHEN EQUIPMENT, MECHANICAL EQUIPMENT AND POINTS OF CONNECTION, REFER TO KITCHEN & MECHANICAL DRAWINGS AND MANUFACTURER'S SHOP DRAWINGS.
- ALL CIRCUIT FEEDERS AND DISCONNECTS SHALL BE SIZED BY NEC.
- CONTRACTOR SHALL VERIFY CIRCUIT BREAKER, DISCONNECT SWITCH, STARTER AND FUSE SIZES WITH SELECTED EQUIPMENT MANUFACTURER'S SHOP DRAWINGS/SPECIFICATION SHEET PRIOR TO PLACING ORDER AND PROVIDE AS REQUIRED.
- ELECTRICAL EQUIPMENT ENCLOSURES SHALL BE NEMA-1 FOR INTERIOR AND NEMA 3R FOR EXTERIOR. IN COASTAL REGIONS THE STANDARD FOR OUTSIDE SHALL BE NEMA-4X.
- PER SECTION 210.8(B)(2) NEC, ALL 15 AND 20A, 120V RECEPTACLES IN COMMERCIAL KITCHEN ARE REQUIRED TO BE GFCI PROTECTED. THIS INCLUDES ISOLATED GROUND RECEPTACLES.
- E.C. SHALL PROVIDE A PREPRINTED SELF-ADHESIVE LABEL ON ALL POS RECEPTACLES STATING "POS USE ONLY".
- G.C. TO COORDINATE ALL LOW VOLTAGE LOCATIONS AND REQUIREMENTS WITH TENANT & TENANT LV SUBCONTRACTOR.
- COORDINATE FOR THE MECHANICAL SCHEME WITH ARCHITECT/OWNER IN FIELD.

- PROVIDE WALL MOUNTED ISOLATED GROUND RECEPTACLE & DATA FOR DIGITAL SCREENS. COORDINATE EXACT LOCATION, MOUNTING HEIGHT AND ELECTRICAL REQUIREMENTS WITH ARCHITECT/OWNER.
- E.C. SHALL COORDINATE THE EXACT LOCATION OF WATER HEATER (WH-1) AND RCP WITH PLUMBING CONTRACTOR IN FIELD. PROVIDE ELECTRICAL CONNECTION FOR WATER HEATER AND RCP PER MANUFACTURER'S REQUIREMENTS. COORDINATE THE EXACT MOUNTING HEIGHT OF OUTLET WITH PLUMBING CONTRACTOR/OWNER IN FIELD.
- LOCATION OF NEW ELECTRICAL PANELS & CEILING MOUNTED TRANSFORMER. REFER TO ELECTRICAL RISER DIAGRAM & PANEL SCHEDULES FOR ADDITIONAL INFORMATION. E.C. SHALL COORDINATE WITH ARCHITECT/OWNER FOR THE EXACT LOCATION IN FIELD. MAINTAIN CLEARANCE AS PER NEC 110.26.
- E.C. SHALL COORDINATE EXACT LOCATION FOR CONVENIENCE OUTLETS WITH ARCHITECT AND CONSTRUCTION MANAGER.
- E.C. SHALL COORDINATE EXACT ELECTRICAL REQUIREMENTS, PLACEMENT AND MOUNTING HEIGHT FOR THE OFFICE WITH ARCHITECT/OWNER PRIOR TO ROUGH-IN. PROVIDE ELECTRICAL OUTLET/DATA OUTLETS AS REQUIRED IN FIELD.
- E.C. SHALL COORDINATE THE EXACT LOCATION OF KEF-1 WITH MECHANICAL CONTRACTOR/OWNER IN FIELD. PROVIDE ELECTRICAL CONNECTION FOR KEF-1 PER MANUFACTURER'S REQUIREMENTS. COORDINATE THE EXACT MOUNTING HEIGHT OF DISCONNECT SWITCH WITH MECHANICAL CONTRACTOR/OWNER IN FIELD.

**ELECTRICAL LEGENDS & ABBREVIATIONS**

|  |  |
|--|--|
|  | 120V DUPLEX OUTLET                     |
|  | 120V ISOLATED GROUND QUADPLEX OUTLET   |
|  | 120V ISOLATED GROUND DUPLEX OUTLET     |
|  | 208V HIGH VOLT DEDICATED SINGLE OUTLET |
|  | 120V DEDICATED DUPLEX OUTLET           |
|  | JUNCTION BOX                           |
|  | ELECTRICAL DISCONNECT SWITCH           |
|  | DATA OUTLET                            |
|  | GFI GROUND FAULT INTERRUPTER           |
|  | IG ISOLATED GROUND                     |
|  | WH WATER HEATER                        |
|  | RCP RECIRCULATION PUMP                 |
|  | TC TIME CLOCK                          |

**ELECTRICAL EQUIPMENT SCHEDULE**

| ITEM NO. | QTY | ITEM DESCRIPTION  | MFR                 | MODEL            | ELECTRICAL |       |      |      |       |       |      |       |
|----------|-----|---|---------------------|------------------|------------|-------|------|------|-------|-------|------|-------|
|          |     |   |                     |                  | VOLTS      | PHASE | AMPS | KW   | HP    | CONN. | NEMA |       |
| 3        | 1   | CONVECTION OVEN   | MOFFAT              | E27M2            | 208        | 1     | 13.0 | 2.7  |       |       | SP   | 6-15P |
| 5        | 1   | REFRIGERATED SANDWICH PREP TABLE                              | BEVERAGE AIR        | SPED60HC-24M2    | 115        | 1     | 4.8  |      | 1/3   |       | DR   | 5-15P |
| 8        | 1   | WATER FILTER SYSTEM   | CUSTOM              | SLB-4PL          |            |       |      |      |       |       |      |       |
| 10       | 1   | UPRIGHT REFRIGERATOR  | TRUE                | 598 T7Z          | 115        | 1     | 1.6  |      |       |       |      | 5-15P |
| 11       | 2   | UPRIGHT FREEZER   | TRUE                | 598 T7ZF         | 115        | 1     | 3.7  |      |       |       |      | 5-15P |
| 12       | 1   | UPRIGHT REFRIGERATOR (BOTTLE FRIDGE)                          | TRUE                | T-19             | 115        |       |      |      |       |       |      |       |
| 15       | 1   | SELF-SERVE CONDIMENT STATION RECESSED IN COUNTER W/SEEZEGUARD | CUSTOM              |                  |            |       |      |      |       |       |      |       |
| 30       | 1   | POS SYSTEM  |                     |                  | 120        | 1     | 15.0 |      |       |       | SP   |       |
| 31       | 1   | CONVECTION OVEN ELECTRIC                                      | PHANASONIC          | NE-SCV2NAPR      | 208/240    | 1     | 20.0 | 1.15 |       |       | SP   | 6-20P |
| 33       | 1   | SELF-SERVICE REFRIGERATED OPEN AIR SCREEN CASE                | STRUCTURAL CONCEPTS | NR7240RSV        |            |       |      |      |       |       |      |       |
| 40       | 2   | BAR BLENDER   | BLENDETEC           | S880C2901-81G81D | 120        | 1     | 15.0 | 1.8  | 3-4/5 |       | DR   | 5-15P |
| 43       | 1   | ICE CUBER WITH BIN  | MAINTOWOC           | UY-0316A         | 115        | 1     | 10.0 |      |       |       | DR   | 5-15P |
| 46       | 3   | REACH-IN UNDERCOUNTER REFRIGERATOR (LEFT HAND)                | TRUE                | TUC-27-LP-HC-LH  | 115        | 1     | 2.0  |      | 1/6   |       | DR   | 5-15P |
| 49       | 2   | ESPRESSO MAKER  | LACIMBALI           | S30 (B2C)        | 208/240    | 1     | 23.0 | 5.7  |       |       | JBW  |       |
| 51       | 4   | COFFEE DISPENSER  | FETCO LAS-10 LUXUS  | D451             |            |       |      |      |       |       |      |       |
| 54       | 2   | COFFEE BREWERS  | FETCO               | CBS-2131-XTS     | 100-120    | 1     | 19.7 | 2.4  |       |       | DR   | 5-20P |
| 55       | 1   | COFFEE GRINDER  | FETCO               | GR-2.2 (G02012)  | 120        | 1     | 5.7  | 0.37 | 1/2   |       | DR   | 5-20P |

ISSUED FOR: DATE ISSUED:

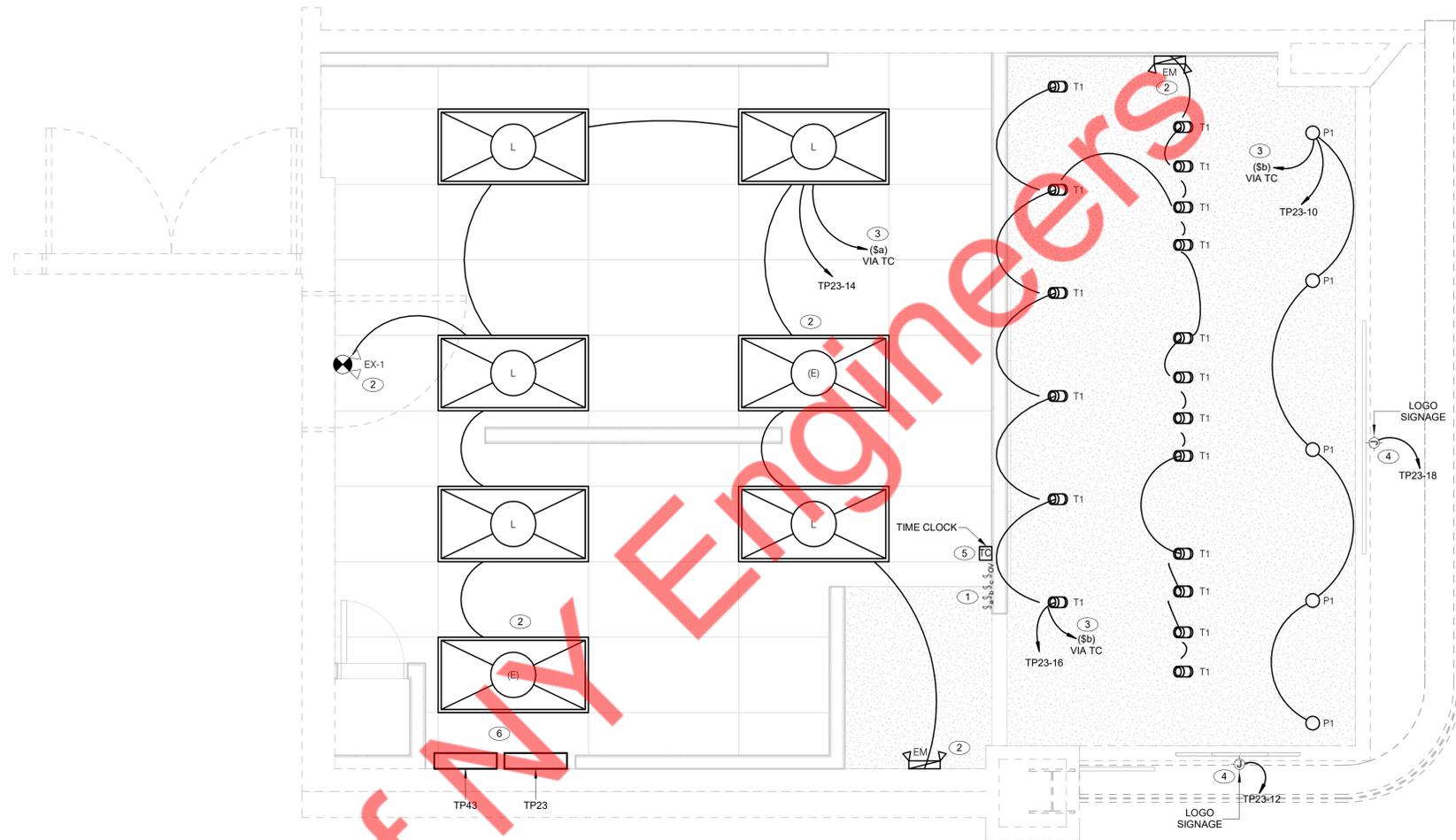
PROJECT TITLE:



DRAWING TITLE:  
**ELECTRICAL POWER PLAN**

PERMIT DWG DATE: 05-29-24 PROJECT NUMBER:  
 DRAWN BY: NYE CHECKED BY: NYE

DRAWING NUMBER:  
**E200**



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**REVISIONS**

| NUMBER | REMARKS    | DATE     |
|--------|------------|----------|
| 1      | PERMIT SET | 05.29.24 |
|        |            |          |
|        |            |          |
|        |            |          |
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|        |            |          |

**ELECTRICAL LIGHTING PLAN 1/2" = 1'-0" A**

ISSUED FOR: \_\_\_\_\_ DATE ISSUED: \_\_\_\_\_

PROJECT TITLE: \_\_\_\_\_



DRAWING TITLE:  
**ELECTRICAL LIGHTING PLAN**

PERMIT DWG DATE: 05-29-24 PROJECT NUMBER: \_\_\_\_\_

DRAWN BY: NYE CHECKED BY: NYE

DRAWING NUMBER: \_\_\_\_\_

**E300**

| LIGHTING FIXTURE SCHEDULE |  |       |         |          |
|---------------------------|--|-------|---------|----------|
| TYPE                      | DESCRIPTION                                | WATTS | VOLTAGE | QUANTITY |
| (E)                       | 2X4 LED TROFFER - (EMERGENCY BATTERY PACK) | 38 VA | 120 V   | 2        |
| EM                        | WALL MOUNT EMERGENCY LIGHT                 | 5 VA  | 120 V   | 2        |
| EX-1                      | NEW EXIT SIGN - MATCH EXISTING             | 5 VA  | 120 V   | 1        |
| L                         | 2X4 LED TROFFER                            | 38 VA | 120 V   | 5        |
| P1                        | PENDANT LIGHTING                           | 11 VA | 120 V   | 5        |
| T1                        | LED TRACK LIGHT                            | 10 VA | 120 V   | 18       |

- 1 E.C. TO VERIFY FINAL LOCATION OF SWITCH BANK WITH ARCHITECT/OWNER.
- 2 WIRE ALL EMERGENCY AND EXIT LIGHT TO THE NEAREST CIRCUIT AHEAD OF ALL CONTROLS & SWITCHING FOR CONTINUOUS OPERATION.
- 3 LIGHTING CONTROL VIA TIME CLOCK/LIGHTING CONTACTOR.
- 4 PROVIDE ACCESSIBLE WEATHERPROOF JUNCTION WITH SERVICE DISCONNECT SWITCH FOR LOGO SIGN. FINAL LOCATION AND NUMBER OF JUNCTION BOX TO BE COORDINATED WITH SIGN VENDOR PRIOR TO START OF WORK. VERIFY MOUNTING HEIGHT FOR SIGN POWER WITH ARCHITECTURAL ELEVATIONS AND SIGN VENDOR.
- 5 E.C. SHALL COORDINATE THE EXACT LOCATION OF TIME CLOCK/LIGHTING CONTACTOR WITH ARCHITECT/OWNER IN FIELD.
- 6 PROVIDE CEILING MOUNTED ISOLATED GROUND RECEPTACLE & DATA FOR DIGITAL SCREEN. COORDINATE EXACT LOCATION AND ELECTRICAL REQUIREMENTS WITH ARCHITECT/OWNER.
- 7 REFER TO RISER DIAGRAM ON SHEET E500 FOR ADDITIONAL INFORMATION OF ELECTRICAL PANELS.

- A. CONFIRM LIGHTING FIXTURE QUANTITIES WITH SUPPLIER.
- B. EMERGENCY 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 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. E.C. SHALL COORDINATE WITH ARCHITECT/OWNER FOR FINAL LIGHT FIXTURE AND MODEL PRIOR TO ROUGH-IN.
- G. E.C. 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. REFER TO DRAWING E100 FOR GENERAL NOTES, SYMBOL LIST AND ABBREVIATIONS AND E101 & E102 FOR ELECTRICAL SPECIFICATIONS.



| Branch Panel: TP43                     |  |           |           |                    |       |          |          |                             |       |      |           |           |           |     |
|--|--|-----------|-----------|--------------------|-------|----------|----------|-----------------------------|-------|------|-----------|-----------|-----------|-----|
| Location: BOH AREA                     |  |           |           | Volts: 480/277 Wye |       |          |          | A.I.C. Rating: FEILD VERIFY |       |      |           |           |           |     |
| Supply From: 225 AMP DISCONNECT SWITCH |  |           |           | Phases: 3          |       |          |          | Mains Type: MLO             |       |      |           |           |           |     |
| Mounting: SURFACE                      |  |           |           | Wires: 4           |       |          |          | Mains Rating: 225 AMP       |       |      |           |           |           |     |
| Enclosure: TYPE 1                      |  |           |           |                    |       |          |          | MCB Rating: N/A             |       |      |           |           |           |     |
| Notes:                                 |  |           |           |                    |       |          |          |                             |       |      |           |           |           |     |
| CKT                                    | Load Name                                      | Load Type | Wire Size | Trip               | Poles | A        | B        | C                           | Poles | Trip | Wire Size | Load Type | Load Name | CKT |
| 1                                      | 45kVA CEILING MOUNTED TRANSFORMER (PANEL TP23) | O         | 60 A      | 3                  | 12771 | 387      |          |                             | 3     | 20 A | 12        | M         | KEF-1     | 2   |
| 3                                      | --   | --        | --        | --                 |       |          | 12771    | 387                         | --    | --   | --        | --        | --        | 4   |
| 5                                      | --   | --        | --        | --                 |       |          |          | 12771                       | 387   | --   | --        | --        | --        | 6   |
| 7                                      | WATER HEATER (WH-1)                            | O         | 12        | 20 A               | 3     | 4100     | --       |                             | 1     | --   | --        | --        | SPACE     | 8   |
| 9                                      | --   | --        | --        | --                 |       |          | 4100     | --                          | 1     | --   | --        | --        | SPACE     | 10  |
| 11                                     | --   | --        | --        | --                 |       |          |          | 4100                        | --    | 1    | --        | --        | SPACE     | 12  |
| 13                                     | SPARE  | --        | 20 A      | 1                  | 0     | --       |          |                             | 1     | --   | --        | --        | SPACE     | 14  |
| 15                                     | SPARE  | --        | 20 A      | 1                  | 0     | --       |          |                             | 1     | --   | --        | --        | SPACE     | 16  |
| 17                                     | SPARE  | --        | 20 A      | 1                  | 0     | --       |          |                             | 1     | --   | --        | --        | SPACE     | 18  |
| 19                                     | SPARE  | --        | 20 A      | 1                  | 0     | --       |          |                             | 1     | --   | --        | --        | SPACE     | 20  |
| 21                                     | SPARE  | --        | 20 A      | 1                  | 0     | --       |          |                             | 1     | --   | --        | --        | SPACE     | 22  |
| 23                                     | SPARE  | --        | 20 A      | 1                  | 0     | --       |          |                             | 1     | --   | --        | --        | SPACE     | 24  |
| 25                                     | SPARE  | --        | 20 A      | 1                  | 0     | --       |          |                             | 1     | --   | --        | --        | SPACE     | 26  |
| 27                                     | SPARE  | --        | 20 A      | 1                  | 0     | --       |          |                             | 1     | --   | --        | --        | SPACE     | 28  |
| 29                                     | SPARE  | --        | 20 A      | 1                  | 0     | --       |          |                             | 1     | --   | --        | --        | SPACE     | 30  |
| 31                                     | SPARE  | --        | 20 A      | 1                  | 0     | --       |          |                             | 1     | --   | --        | --        | SPACE     | 32  |
| 33                                     | SPARE  | --        | 20 A      | 1                  | 0     | --       |          |                             | 1     | --   | --        | --        | SPACE     | 34  |
| 35                                     | SPARE  | --        | 20 A      | 1                  | 0     | --       |          |                             | 1     | --   | --        | --        | SPACE     | 36  |
| 37                                     | SPARE  | --        | 20 A      | 1                  | 0     | --       |          |                             | 1     | --   | --        | --        | SPACE     | 38  |
| 39                                     | SPARE  | --        | 20 A      | 1                  | 0     | --       |          |                             | 1     | --   | --        | --        | SPACE     | 40  |
| 41                                     | SPARE  | --        | 20 A      | 1                  | 0     | --       |          |                             | 1     | --   | --        | --        | SPACE     | 42  |
| <b>Total Load:</b>                     |  |           |           |                    |       | 17258 VA | 17258 VA | 17258 VA                    |       |      |           |           |           |     |
| <b>Total Amps:</b>                     |  |           |           |                    |       | 62 A     | 62 A     | 62 A                        |       |      |           |           |           |     |

Legend:  
O = OTHER, M = MOTOR

| Load Classification | Connected Load | Demand Factor | Estimated Demand | Panel Totals                       |
|---------------------|----------------|---------------|------------------|------------------------------------|
| Motor               | 1160 VA        | 100.00%       | 1160 VA          |                                    |
| Other               | 50614 VA       | 100.00%       | 50614 VA         |                                    |
|                     |                |               |                  | <b>Total Conn. Load:</b> 51774 VA  |
|                     |                |               |                  | <b>Total Est. Demand:</b> 51774 VA |
|                     |                |               |                  | <b>Total Conn.:</b> 62 A           |
|                     |                |               |                  | <b>Total Est. Demand:</b> 62 A     |

Notes:

| Branch Panel: TP23             |  |           |           |                    |       |          |          |                             |       |      |           |           |           |                            |    |
|--------------------------------|--|-----------|-----------|--------------------|-------|----------|----------|-----------------------------|-------|------|-----------|-----------|-----------|----------------------------|----|
| Location: BOH AREA             |  |           |           | Volts: 120/208 Wye |       |          |          | A.I.C. Rating: FEILD VERIFY |       |      |           |           |           |                            |    |
| Supply From: 45kVA TRANSFORMER |  |           |           | Phases: 3          |       |          |          | Mains Type: MCB             |       |      |           |           |           |                            |    |
| Mounting: SURFACE              |  |           |           | Wires: 4           |       |          |          | Mains Rating: 225 AMP       |       |      |           |           |           |                            |    |
| Enclosure: TYPE 1              |  |           |           |                    |       |          |          | MCB Rating: 175 AMP         |       |      |           |           |           |                            |    |
| Notes:                         |  |           |           |                    |       |          |          |                             |       |      |           |           |           |                            |    |
| CKT                            | Load Name                                | Load Type | Wire Size | Trip               | Poles | A        | B        | C                           | Poles | Trip | Wire Size | Load Type | Load Name | CKT                        |    |
| 1                              | 3_CONVEXION OVEN                         | K         | 12        | 20 A               | 2     | 1350     | 2370     |                             |       |      | 30 A      | 10        | K         | 54_COFFEE BREWER           | 2  |
| 3                              | --                                       | --        | --        | --                 |       |          |          | 1350                        | 2370  |      | 30 A      | 10        | K         | 54_COFFEE BREWER           | 4  |
| 5                              | 5_REFRIGERATED SANDWICH PREP TABLE       | K         | 12        | 20 A               | 1     |          |          | 576                         | 690   |      | 20 A      | 12        | K         | 55_COFFEE GRINDER          | 6  |
| 7                              | 8_WATER FILTER SYSTEM                    | K         | 12        | 20 A               | 1     | 180      | 180      |                             |       |      | 20 A      | 12        | M         | RECIRCULATION PUMP (RCP-1) | 8  |
| 9                              | 10_UPRIGHT FREEZER                       | K         | 12        | 20 A               | 1     |          |          | 190                         | 375   |      | 20 A      | 12        | L         | PENDANT LIGHTING           | 10 |
| 11                             | 11_UPRIGHT FREEZER                       | K         | 12        | 20 A               | 1     |          |          | 444                         | 1200  |      | 20 A      | 12        | L         | LOGO SIGNAGE (LEFT)        | 12 |
| 13                             | 11_UPRIGHT FREEZER                       | K         | 12        | 20 A               | 1     | 444      | 266      |                             |       |      | 20 A      | 12        | L         | BOH AREA LIGHTING          | 14 |
| 15                             | 12_UPRIGHT FREEZER                       | K         | 12        | 20 A               | 1     |          |          | 180                         | 180   |      | 20 A      | 12        | L         | TRACK LIGHTING             | 16 |
| 17                             | 31_CONVEXION OVEN (ELECTRIC)             | K         | 10        | 30 A               | 2     |          |          | 1875                        | 1200  |      | 20 A      | 12        | L         | LOGO SIGNAGE (FRONT)       | 18 |
| 19                             | --                                       | --        | --        | --                 |       |          |          | 1875                        | 360   |      | 20 A      | 12        | R         | 30_POS SYSTEM              | 20 |
| 21                             | 33_SELF SERVICE REFRIGERATED SCREEN CASE | K         | 12        | 20 A               | 1     |          |          | 1200                        | 900   |      | 20 A      | 12        | R         | DIGITAL SCREEN             | 22 |
| 23                             | 40_BAR BLENDER                           | K         | 12        | 20 A               | 1     |          |          | 1600                        | 360   |      | 20 A      | 12        | R         | CONVENIENCE RECEPTACLES    | 24 |
| 25                             | 40_BAR BLENDER                           | K         | 12        | 20 A               | 1     | 1800     | 720      |                             |       |      | 20 A      | 12        | R         | OFFICE QUAD RECEPTACLE     | 26 |
| 27                             | 43_ICE CUBER                             | K         | 12        | 20 A               | 1     |          |          | 1200                        | 720   |      | 20 A      | 12        | R         | OFFICE QUAD RECEPTACLE     | 28 |
| 29                             | 46_REACH-IN UC REFRIGERATOR              | K         | 12        | 20 A               | 1     |          |          | 240                         | 180   |      | 20 A      | 12        | R         | TIME CLOCK                 | 30 |
| 31                             | 46_REACH-IN UC REFRIGERATOR              | K         | 12        | 20 A               | 1     | 240      | 180      |                             |       |      | 20 A      | 12        | L         | MOTORIZED DAMPER           | 32 |
| 33                             | 46_REACH-IN UC REFRIGERATOR              | K         | 12        | 20 A               | 1     |          |          | 240                         | 0     |      | 20 A      | --        | --        | SPARE                      | 34 |
| 35                             | 49_ESPRESSO MAKER                        | K         | 10        | 30 A               | 2     |          |          | 2395                        | 0     |      | 20 A      | --        | --        | SPARE                      | 36 |
| 37                             | --                                       | --        | --        | --                 |       |          |          | 2395                        | 0     |      | 20 A      | --        | --        | SPARE                      | 38 |
| 39                             | 49_ESPRESSO MAKER                        | K         | 10        | 30 A               | 2     |          |          | 2395                        | 0     |      | 20 A      | --        | --        | SPARE                      | 40 |
| 41                             | --                                       | --        | --        | --                 |       |          |          | 2395                        | 0     |      | 20 A      | --        | --        | SPARE                      | 42 |
| <b>Total Load:</b>             |  |           |           |                    |       | 12347 VA | 11282 VA | 13355 VA                    |       |      |           |           |           |                            |    |
| <b>Total Amps:</b>             |  |           |           |                    |       | 104 A    | 94 A     | 113 A                       |       |      |           |           |           |                            |    |

Legend:  
K = KITCHEN EQUIPMENT, M = MOTOR, O = OTHER, R = RECEPTACLE, L = LIGHTING

| Load Classification | Connected Load | Demand Factor | Estimated Demand | Panel Totals                       |
|---------------------|----------------|---------------|------------------|------------------------------------|
| Kitchen Equipment   | 30194 VA       | 65.00%        | 19626 VA         |                                    |
| Motor               | 180 VA         | 100.00%       | 180 VA           |                                    |
| Receptacle          | 3240 VA        | 100.00%       | 3240 VA          |                                    |
| Lighting            | 3374 VA        | 125.00%       | 4217 VA          |                                    |
|                     |                |               |                  | <b>Total Conn. Load:</b> 36984 VA  |
|                     |                |               |                  | <b>Total Est. Demand:</b> 27259 VA |
|                     |                |               |                  | <b>Total Conn.:</b> 103 A          |
|                     |                |               |                  | <b>Total Est. Demand:</b> 76 A     |

Notes:

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**REVISIONS**

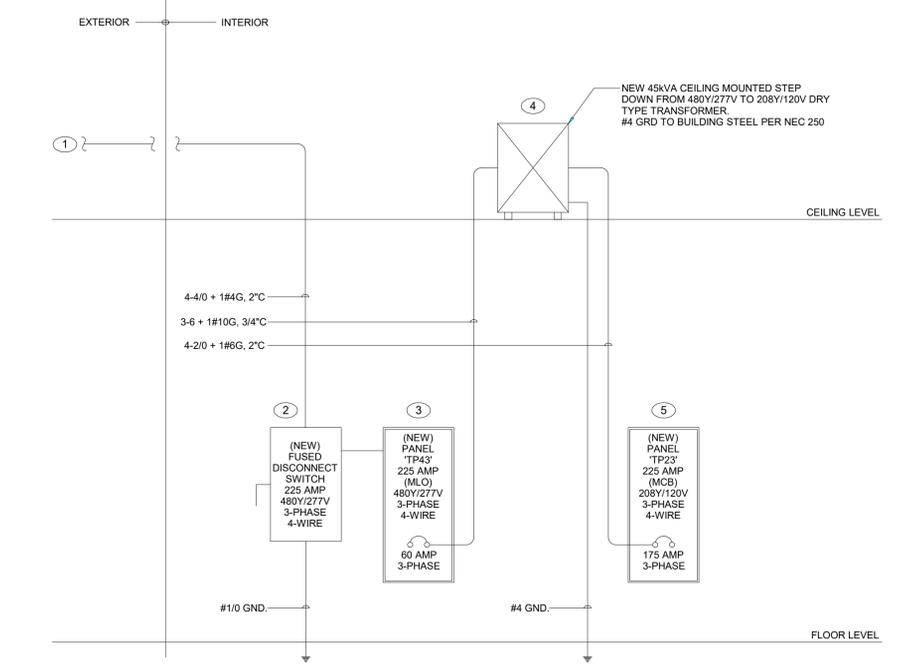
| NUMBER | REMARKS    | DATE     |
|--------|------------|----------|
| 1      | PERMIT SET | 05.29.24 |

**ELECTRICAL PANEL SCHEDULES** NTS **A**

- ALL CIRCUITING SHOWN IS FOR REFERENCE PURPOSE ONLY. INFORM ENGINEER FOR ANY DISCREPANCY BEFORE PURCHASE OF ANY EQUIPMENTS/WIRES OR DIVECES.
- ELECTRICAL CONTRACTOR TO VERIFY THE EXACT PANEL SIZES AND INCOMING FEEDER SIZE.
- 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.
- E.C. SHALL COORDINATE WITH PLUMBING CONTRACTOR/EQUIPMENT MANUFACTURER FOR EXACT ELECTRICAL REQUIREMENTS FOR CABLE AND BREAKERS. PROVIDE THE ELECTRICAL BREAKER AND CABLES IN FIELD AS REQUIRED. BASE BID ACCORDINGLY.
- 5mA GFCI BREAKERS MUST BE USED WHERE OUTLETS REQUIRING GFCI PROTECTION ARE NOT ACCESSIBLE FOR COMPLIANCE WITH NEC 210.8.

- LANDLORD SHALL PROVIDE NEW 225 AMPS, 480/277V, 3-PHASE ELECTRICAL SERVICE FOR THE PROJECT. E.C. SHALL COORDINATE WITH LANDLORD FOR THE EXACT LOCATION OF EXISTING SPLICE/CONNECTION IN FIELD. E.C. SHALL MAKE THE ELECTRICAL CONNECTION & PROVIDE THE FEEDER UP TO THE ELECTRICAL PANEL. BASE BID ACCORDINGLY.
- E.C. SHALL PROVIDE NEW 225 AMPS, 480/277V, 3-PHASE FUSED DISCONNECT SWITCH FOR THE PROJECT SPACE. COORDINATE EXACT LOCATION WITH ARCHITECT/OWNER IN FIELD.
- E.C. SHALL PROVIDE NEW 225 AMPS (MLO), 480/277V, 3-PHASE ELECTRICAL PANEL "TP43" FOR THE PROJECT SPACE. COORDINATE EXACT LOCATION WITH ARCHITECT/OWNER IN FIELD.
- E.C. SHALL PROVIDE NEW 225 AMPS (175 AMP BREAKER), 208/120V, 3-PHASE ELECTRICAL PANEL "TP23" FOR THE PROJECT SPACE. COORDINATE EXACT LOCATION WITH ARCHITECT/OWNER IN FIELD.
- E.C. SHALL PROVIDE NEW CEILING MOUNTED 45kVA, 480/277V TO 208/120V STEP DOWN DRY TYPE TRANSFORMER FOR THE PROJECT SPACE. E.C. SHALL COORDINATE THE EXACT LOCATION WITH ARCHITECT/OWNER IN FIELD.

- ABOVE RISER DIAGRAM IS FOR REFERENCE PURPOSE ONLY. E.C. TO VERIFY EXACT POWER DISTRIBUTION IN FIELD. INFORM ENGINEER FOR ANY DISCREPANCY.
- E.C. SHALL VERIFY THE INCOMING SERVICE AMPERAGE, VOLTAGE, NUMBER OF PHASES, WIRE SIZE AND DISTRIBUTION IN FIELD.
- E.C. TO COORDINATE FAULT CURRENT (ISC) RATING WITH UTILITY COMPANY AND AHJ PRIOR TO COMMENCING ANY WORK.
- E.C. SHALL VERIFY THE EXACT POWER DISTRIBUTION & INCOMING CONNECTION TO ALL PANELS IN FIELD. INFORM ENGINEER FOR ANY DISCREPANCY FOUND.



ISSUED FOR: DATE ISSUED:

PROJECT TITLE:



DRAWING TITLE:  
**ELECTRICAL RISER DIAGRAM & PANEL SCHEDULES**

PERMIT DWG DATE: 05-29-24 PROJECT NUMBER:

DRAWN BY: NYE CHECKED BY: NYE

DRAWING NUMBER:

**E500**

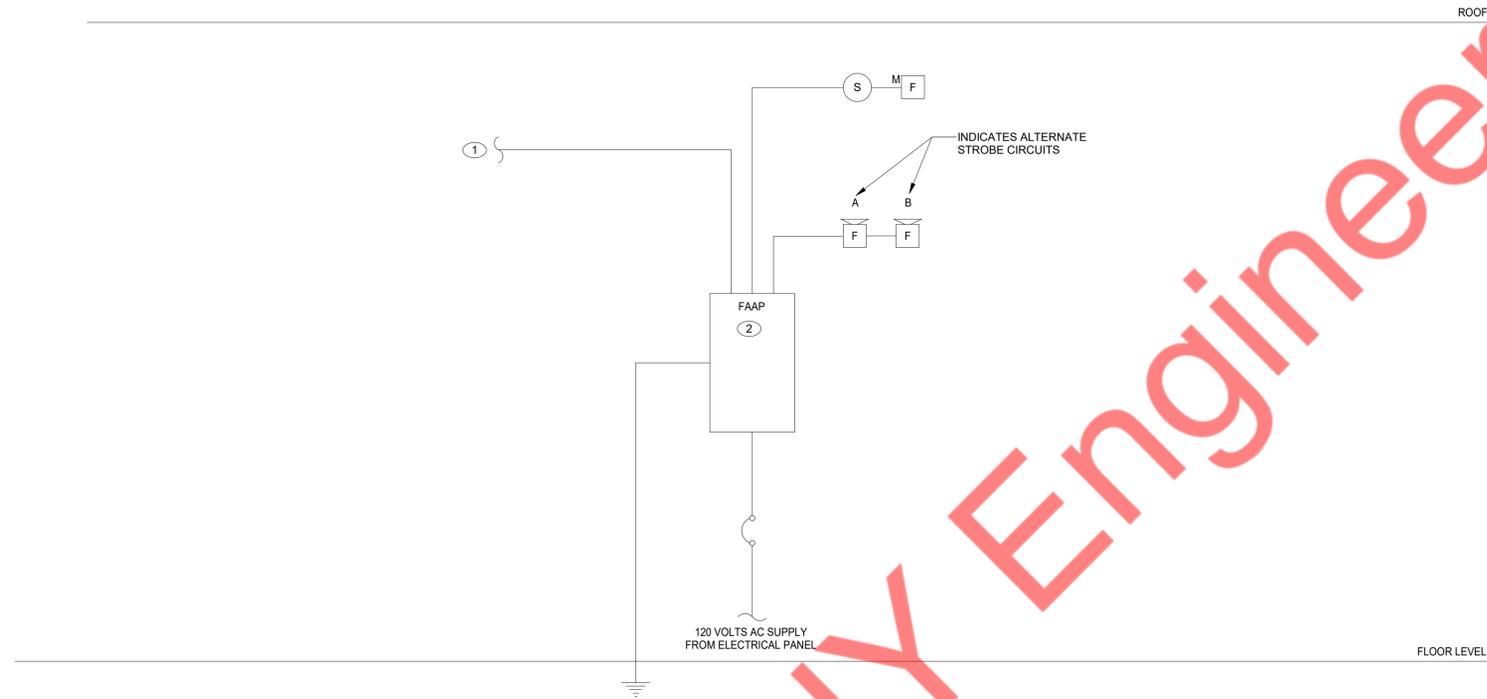
**PANEL SCHEDULES GENERAL NOTES** NTS **E**

**RISER DIAGRAM KEY NOTES** NTS **D**

**RISER DIAGRAM GENERAL NOTES** NTS **C**

**ELECTRICAL RISER DIAGRAM** NTS **B**





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**FIRE ALARM RISER DIAGRAM** N.T.S **A**

| SYMBOL | DESCRIPTION                                  |
|--------|--|
|        | WALL MOUNTED HORN/STROBE COMBINATION DEVICE  |
|        | FIRE ALARM MANUAL PULL STATION, WALL MOUNTED |
|        | CEILING MOUNTED AREA SMOKE DETECTOR          |
|        | FIRE ALARM ANNUNCIATOR PANEL                 |

- ALL COMPONENTS REQUIRED TO MAKE SYSTEM WORKABLE SHALL BE INCLUDED IN BID PRICE.
- EACH FA RELAY SHALL HAVE MINIMUM OF THREE SETS OF 2 CONTACT 10A RATED @ 120V (TYPICAL), APPLICABLE IF ANY UPDATE IS REQUIRED.
- COORDINATE WIRING DIAGRAM WITH FIRE ALARM VENDOR SHOP DRAWINGS. FOR STROBES MAXIMUM CURRENT PER ZONE SHALL NOT EXCEED 1.5A. ZONES FOR STROBES & STROBEHORNS AS PER FIRE ALARM VENDOR SHOP DRAWINGS (TYPICAL).
- ALL FIRE ALARM WIRING SHALL BE INSTALLED IN CONDUIT WHERE REQUIRED BY AHJ.
- THIS RISER DIAGRAM IS A SCHEMATIC REPRESENTATION OF THE FIRE ALARM SYSTEM. ALL WIRING SHALL BE AS PER APPROVED MANUFACTURER SHOP DRAWINGS.
- EACH FIRE ALARM INDICATING DEVICES CIRCUIT TO HAVE A MAXIMUM OF 14 DEVICES PER CIRCUIT. CONTRACTOR TO SUPPLY REQUIRING NUMBER OF INDICATING CIRCUIT TO PROVIDE REDUNDANT CIRCUITING (A,B) SCHEME.
- ALL FIRE ALARM CONDUITS SHALL BE MINIMUM 3/4".
- ALL WATER FLOW AND TAMPER SWITCH DEVICES SHALL BE CONNECTED TO EXISTING FIRE ALARM CONTROL PANEL (FACP), COORDINATE EXACT LOCATION AND QUANTITIES WITH FIRE PROTECTION CONTRACTOR.
- ALL STROBES, PULL STATIONS AND DETECTORS SHALL CONNECTED TO NEW FIRE ALARM ANNUNCIATOR PANEL (FAAP), COORDINATE EXACT REQUIREMENT IN FIELD.

- EXISTING FIRE ALARM SYSTEM OF BASE BUILDING SHALL REMAIN. CONNECT THE NEW FIRE ALARM ANNUNCIATOR PANEL WITH BASE BUILDING FIRE ALARM SYSTEM. COORDINATE THE EXACT LOCATION AND ROUTING IN FIELD IN COORDINATION WITH ARCHITECT/OWNER. BASE BID ACCORDINGLY.
- PROVIDE NEW FIRE ALARM ANNUNCIATOR PANEL AND CONNECT TO BASE BUILDING FIRE ALARM SYSTEM. COORDINATE THE EXACT LOCATION OF BASE BUILDING FIRE ALARM SYSTEM WITH LANDLORD IN FIELD. COORDINATE EXACT LOCATION AND MOUNTING HEIGHT OF FIRE ALARM ANNUNCIATOR PANEL PRIOR TO ROUGH-IN. THE FIRE ALARM ANNUNCIATOR PANEL SHALL BE COMPATIBLE WITH EXISTING FIRE ALARM SYSTEM. VERIFY THE EXACT REQUIREMENT WITH BASE BUILDING OWNER.

ISSUED FOR: \_\_\_\_\_ DATE ISSUED: \_\_\_\_\_

PROJECT TITLE: \_\_\_\_\_



DRAWING TITLE:  
**FIRE ALARM RISER DIAGRAM**

PERMIT DWG DATE: 05-29-24 PROJECT NUMBER: \_\_\_\_\_

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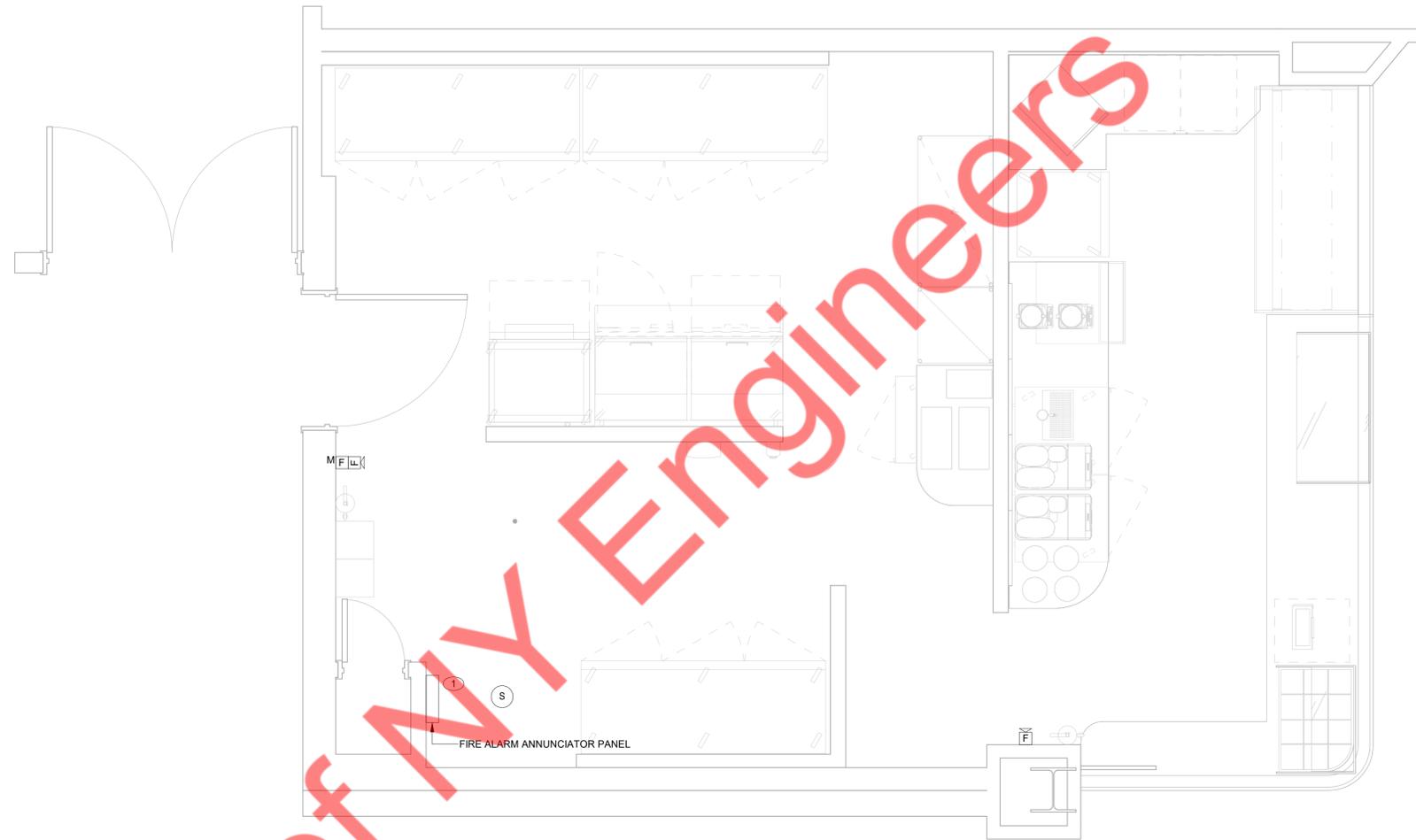
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**FA200**

**FIRE ALARM LEGENDS** N.T.S **D**

**GENERAL NOTES - FIRE ALARM RISER DIAGRAM** N.T.S **C**

**KEY NOTES - FIRE ALARM RISER DIAGRAM** N.T.S **B**



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**FIRE ALARM PLAN** 1/2" = 1'-0" **A**

① PROVIDE NEW FIRE ALARM ANNUCIATOR PANEL AND CONNECT TO BASE BUILDING FIRE ALARM SYSTEM. COORDINATE THE EXACT LOCATION OF BASE BUILDING FIRE ALARM SYSTEM WITH LANDLORD IN FIELD. COORDINATE EXACT LOCATION AND MOUNTING HEIGHT OF FIRE ALARM ANNUCIATOR PANEL PRIOR TO ROUGH-IN. THE FIRE ALARM ANNUCIATOR PANEL SHALL BE COMPATIBLE WITH EXISTING FIRE ALARM SYSTEM. VERIFY THE EXACT REQUIREMENT WITH BASE BUILDING OWNER.

DRAWING TITLE:  
**FIRE ALARM PLAN**

PERMIT DWG DATE: 05-29-24 PROJECT NUMBER:

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DRAWING NUMBER:  
**FA300**

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

- SOIL AND WASTE PIPE SHALL SLOPE 2% MINIMUM, UNLESS OTHERWISE NOTED OR REQUIRED BY CODE.
- ALL DRAWN WATER & GAS LINES SHALL BE KEPT TIGHT TO UNDERSIDE OF EQUIPMENT & SECURED IN PLACE.
- VERIFY LOCATION OF SANITARY SEWER ON SITE PLAN AND REVISE SEWER SYSTEM AS REQUIRED.
- PROVIDE TRAP PRIMERS FOR FLOOR DRAINS IN RESTROOMS, WHERE REQUIRED BY CODE. PROVIDE DEEP SEAL TRAPS FOR FLOOR DRAINS WITHOUT TRAP PRIMERS.
- CLEANOUTS SHALL BE INSTALLED WHERE READILY ACCESSIBLE. COORDINATE ALL CLEANOUT LOCATIONS WITH EQUIPMENT, CABINETS, ETC. AND OWNERS REPRESENTATIVE PRIOR TO INSTALLATION.
- VALVES, TRAP PRIMERS, WATER HAMMER ARRESTORS AND OTHER EQUIPMENT SHOWN IN WALLS OR ABOVE NON-ACCESSIBLE CEILING SHALL BE INSTALLED BEHIND AN ACCESS PANEL.
- PLUMBING FIXTURE VENTS SHALL TERMINATE MINIMUM OF 12 INCHES FROM VERTICAL SURFACES AND 10 FEET FROM OUTSIDE AIR INTAKES.
- PROVIDE GAS PIPING TO UNITS AND MAKE FINAL CONNECTIONS REQUIRED FOR OPERATION.
- PROVIDE SHUT-OFF VALVES ON HOT & COLD WATER LINES TO FIXTURES AND APPLIANCES. ALL EXPOSED WATER AND WASTE LINES SHALL BE CHROME PLATED.
- PROVIDE LEVER HANDLE GAS SHUT-OFF VALVE IN BRACH PIPING OF EACH APPLIANCE. INSTALL OWNER FURNISHED QUICK DISCONNECT, FLEXIBLE PIPE (IF ALLOWED BY CODE) AND RESTRAINING DEVICE. PROVIDE PRESSURE REDUCING VALVES AT EACH PIECE OF EQUIPMENT OR APPLIANCE IF GAS PRESSURE IS GREATER THAN 10" WC DOWSTREAM OF THE GAS METER.
- VALVES, UNIONS, ETC. SHALL BE SAME SIZE AS PIPE UNLESS OTHERWISE INDICATED.
- REFER TO KITCHEN EQUIPMENT DRAWINGS FOR PLUMBING ROUGH-IN REQUIREMENTS. MAKE ALL ROUGH-IN AND FINAL CONNECTIONS TO KITCHEN EQUIPMENT UNLESS OTHERWISE NOTED.
- REFER TO MECHANICAL DRAWINGS FOR HVAC AND HOOD PLUMBING REQUIREMENTS.
- GAS LINES SHALL BE SUPPORTED.
- FLOOR SINKS AND FLOOR DRAINS IN TRAFFIC AREAS SHALL BE INSTALLED FLUSH WITH FLOOR SURFACE.
- PROVIDE WATER HAMMER ARRESTOR FOR ALL HAND SINKS AND WATER CLOSET WATER LINES
- PROVIDE AIR GAPS FOR INDIRECT DRAINS AS REQUIRED BY CODE. AIR GAP SHALL BE MINIMUM 2 TIMES DIAMETER OF INDIRECT DRAIN.
- VERIFY DEPTH, SIZE, LOCATION, AND CONDITION OF ALL EXISTING UTILITIES IN THE FIELD PRIOR TO COMMENCING WORK ON PROJECT. NOTIFY OWNER IMMEDIATELY OF CONDITIONS THAT EXIST WHICH WOULD CAUSE THE DESIGN TO BE ALTERED..
- COORDINATE INSTALLATION OF PLUMBING WORK WITH OTHER TRADES SO AS TO AVOID UNNECESSARY DELAY OR INTERFERENCES.REVIEW ARCHITECTURAL AND EQUIPMENT SHEETS.
- PROVIDE BACKFLOW PROTECTION DEVICES REQUIRED BY AGENCIES HAVING JURISDICTION. BACKFLOW DEVICES REQUIRING TESTING SHALL BE INSTALLED NO HIGHER THAN 5'-0" A.F.F.
- PROVIDE CONDENSATE DRAIN FROM A/C UNITS TO APPROVED DRAIN. PROVIDE GAS PIPING TO UNITS. MAKE FINAL CONNECTIONS REQUIRED FOR OPERATION.
- THE OWNER OR KITCHEN EQUIPMENT SUPPLIER MAY SUBSTITUTE EQUIPMENT OR EQUIPMENT MAY VARY FROM WHAT IS SHOWN. THEREFORE, VERIFY ALL CRITICAL DIMENSIONS WITH OWNER PRIOR TO CONSTRUCTION. FAILURE OF CONTRACTOR TO VERIFY THESE DIMENSIONS SHALL PLACE RESPONSIBILITY FOR SUBSEQUENT RELOCATION DIRECTLY UPON CONTRACTOR.
- ALL WATER LINES SHALL BE RUN OVERHEAD UNLESS OTHERWISE NOTED.
- ALL WATER LINES SHALL BE FLUSHED PRIOR TO CONNECTING FIXTURES OR EQUIPMENT.
- PROVIDE ESCUTCHEON PLATES AND SILICONE SEALANT AT UTILITY PENETRATIONS INTO WALLS, CEILINGS, AND FLOORS. DO NOT USE CAULKS OR EXPANDING FOAMS FOR SEALANT.
- PVC SCHEDULE 40 WASTE PIPE CAN BE SUBSTITUTED FOR BLACK IRON WASTE PIPE WHERE ALLOWED BY LOCAL MUNICIPALITIES.

**GENERAL NOTES - PLUMBING NTS 5**

| SYMBOLS | ABBREV.  | DESCRIPTION  |
|---------|----------|--|
|         | A.P.     | ACCESS PANEL   |
|         | C.I.     | CAST IRON  |
|         | (TYP.)   | TYPICAL  |
|         | (N)      | NEW  |
|         | (E)      | EXISTING   |
|         | F.D.     | FLOOR DRAIN  |
|         | A.F.F.   | ABOVE FINISHED FLOOR   |
|         | F.S.     | FLOOR SINK   |
|         | X 00     | PLUMBING EQUIPMENT DESIGNATION   |
|         | XXX      | KITCHEN EQUIPMENT NUMBER- REFER TO KITCHEN EQUIPMENT DRAWINGS FOR DESCRIPTION. |
|         | W.C.O.   | WALL CLEANOUT  |
|         |          | SHUT- OFF VALVE  |
|         | GW       | SOIL OR WASTE (GREASE WASTE)/WASTE STUB-UNDERGROUND                            |
|         | CW       | COLD WATER/ CW STUB  |
|         | HW       | HOT WATER / HW STUB  |
|         | HWR      | HOT WATER RETURN   |
|         | FW       | FILTERED WATER   |
|         | V        | SANITARY VENT  |
|         | TW       | PREMIXED TEMPERATURE WATER   |
|         | S.O.V.   | SHUT-OFF GATE VALVE  |
|         | S.O.C.   | SHUT-OFF GAS COCK  |
|         | C.V.     | CHECK VALVE  |
|         | P.T.R.V. | PRESS-TEMPERATURE RELIEF VALVE   |
|         | B.V.     | BALL VALVE   |
|         | C.W.     | COLD WATER BELOW GRADE   |
|         | BFP      | BACK FLOW PREVENTER  |
|         | FU       | FIXTURE UNIT   |
|         |          | BALANCING VALVE  |
|         |          | POINT OF CONNECTION  |
|         | HS       | HAND SINK  |
|         | 3-CS     | 3-COMPARTMENT SINK   |
|         | 1-CS     | 1-COMPARTMENT SINK   |
|         | MS       | MOP SINK   |
|         | MV       | MIXING VALVE   |

**PLUMBING LEGEND NTS 3**

| FIXTURE               | NO. | DRAIN  |              | COLD WATER |            | HOT WATER |            |
|-----------------------|-----|--------|--------------|------------|------------|-----------|------------|
|                       |     | D.F.U. | TOTAL D.F.U. | F.U. C.W.  | TOTAL C.W. | F.U. H.W. | TOTAL H.W. |
| DROP-IN SINK *        | 1   | --     | --           | 2.0        | 2.0        | 2.0       | 2.0        |
| 3 - COMPARTMENT SINK  | 1   | 6      | 6            | 6.0        | 6.0        | 6.0       | 6.0        |
| 3" FLOOR DRAIN        | 1   | 5      | 5            | --         | --         | --        | --         |
| 3" FUNNEL FLOOR DRAIN | 1   | 5      | 5            | --         | --         | --        | --         |
| FLOOR SINK            | 1   | 5      | 5            | --         | --         | --        | --         |
| MOP SINK              | 1   | 5      | 5            | 2          | 2          | 2         | 2          |
| HAND SINK             | 1   | 1      | 1            | 1.0        | 1.0        | 1.0       | 1.0        |
| MISCELLANEOUS**       | 5   | --     | --           | 0.5        | 2.5        | --        | --         |
| <b>TOTAL</b>          | --  | --     | 27           | --         | 13.5       | --        | 11         |

|   |            |           |                       |
|---|------------|-----------|-----------------------|
| PROBABLE DEMANDS/ AND PIPE SIZING REQUIREMENTS: | DRAIN: GW  | 22 DFU    | USE 4" GREASE WASTE   |
|   | TOTAL      | 13.5 WSFU | USE 1" WATER SUPPLY   |
|   | SUPPLY: CW | 11 WSFU   | USE 1" WATER SUPPLY   |
|   | SUPPLY: HW | 11WSFU    | USE 3/4" WATER SUPPLY |

BASED ON MASSACHUSETTS PLUMBING CODE. \*FIXTURE HAS INDIRECT WASTE TO FLOOR SINK  
\*\*ICE CUBER, COFFEE BREWER & ESPRESSO MAKER

**PLUMBING FIXTURE COUNT NTS 4**

| ITEM  | FIXTURE            | SOIL OR WASTE | VENT   | COLD WATER | HOT WATER | TEMP'D WATER | WASTE FU | WATER FU | DESCRIPTION  | MANUFACTURER / MODEL NUMBER                                      |
|-------|--------------------|---------------|--------|------------|-----------|--------------|----------|----------|--|--|
| FS 1  | FLOOR SINK         | 3"            | 2"     | --         | --        | --           | 5        | --       | PVC 12" SQUARE FLOOR SINK, 8" DEEP, WITH ALUMINUM OR PVC DOME STRAINER AND LOOSE SET PVC SLOTTED TOP GRATE. SET FLOOR SINK LIP FLUSH WITH FLOOR TILE   | SIoux CHIEF / MODEL: 861<br>ZURN / MODEL: Z-1901 OR Z-1900       |
| FD 1  | FLOOR DRAIN        | 3"            | 2"     | --         | --        | --           | 5        | --       | CAST IRON FLOOR DRAIN WITH FLANGE, INTEGRAL REVERSIBLE CLAMPING COLLAR, SEEPAGE OPENINGS, AND 6" DIA. NICKEL BRONZE STRAINER WITH VANDAL PROOF SCREWS, TRAP PRIMER CONNECTION. SUPPLY WITH DEEP SEAL TRAP. SIZE AS INDICATED ON FLOOR PLANS. PROVIDE (TP) TRAP PRIMER OR (TS) PROSET TAP SEAL AS NOTED.        | ZURN / MODEL: ZN415-NH-6H-P                                      |
| FFD 1 | FUNNEL FLOOR DRAIN | 3"            | 2"     | --         | --        | --           | 5        | --       | CAST IRON FUNNEL FLOOR DRAIN WITH FLANGE, INTEGRAL REVERSIBLE CLAMPING COLLAR, SEEPAGE OPENINGS, AND 6" DIA. NICKEL BRONZE STRAINER WITH VANDAL PROOF SCREWS, TRAP PRIMER CONNECTION. SUPPLY WITH DEEP SEAL TRAP. SIZE AS INDICATED ON FLOOR PLANS. PROVIDE (TP) TRAP PRIMER OR (TS) PROSET TAP SEAL AS NOTED. | ZURN / MODEL: Z415E  |
| HS 1  | HAND SINK          | 2"            | 1-1/2" | 1/2"       | --        | 1/2"         | 1        | 1.0      | SINK, FAUCET & DRAIN, INSTALL OWNER PROVIDE FIXTURE AND ACCESSORIES.   | CENTAUR MODEL: SSHAND-2SSNO                                      |
| MS 1  | MOP SINK           | 3"            | 2"     | 3/4"       | 3/4"      | --           | 5        | 2        |  | --   |
| MV 1  | MIXING VALVE       | --            | --     | 1/2"       | 1/2"      | --           | --       | --       | THERMOSTATIC, 125 P516, 200VF BRONZE BODY, STAINLESS STEEL PISTON LINER. CHECK VALVES SIZE PER PIPE CONNECTIONS.   | POWERS SERIES LFLM495<br>LAWLER SERIES 310<br>LEONARD SERIES 170 |
| WH 1  | WATER HEATER       | --            | --     | 3/4"       | 3/4"      | --           | --       | --       | ELECTRIC STORAGE WATER HEATER, 40 GAL. STORAGE TANK, 55 GPH @ 90 DEG. RISE, DIMENSIONS: 54.75" H X 22" DIA.<br>ELECTRICAL DATA: 12.3 KW, 3-PHASE, 480 V, 14.8 AMPS   | MODEL: STATE WATER HEATER SSE-40A<br>--<br>AMTROL SERIES ST-5    |
| ET 1  | EXPANSION TANK     | --            | --     | 3/4"       | --        | --           | --       | --       | EXPANSION TANK, STEEL, EXPANSION MEMBRANE 150 PSI, 180" F.   |  |
| 3 CS  | 3-COMP. SINK       | DIRECT        |        | 3/4"       | 3/4"      | --           | --       | 6        | SINK, FAUCET & DRAIN, INSTALL OWNER PROVIDE FIXTURE AND ACCESSORIES.   | EAGLE GROUP / MODEL: 312-12-3-12<br>--                           |
| 1 CS  | DROP-IN SINK       | INDIRECT      | --     | 1/2"       | 1/2"      | --           | --       | 2        | SINK, FAUCET & DRAIN, INSTALL OWNER PROVIDE FIXTURE AND ACCESSORIES.   | EAGLE GROUP / MODEL: SR10-14-9-5-1<br>--                         |
| RCP 1 | RECIRCULATION PUMP | --            | --     | 3/4"       | --        | --           | --       | --       | RE-CIRCULATION PUMP, BRONZE, FLOW RATE 2 GPM @ 10 FT HEAD.<br>ELECTRICAL - 85W, 1PH / 115V   | GRUNDFOS UP15-18 B7  |
| GI 1  | GREASE INTERCEPTOR | 3"            | 2"     | --         | --        | --           | --       | --       | GREASE INTERCEPTOR 20 GPM / 70 LBS.<br>PROVIDE RISER AS PER FIELD AND PIPE INVERT.   | SCHIER GB-1  |

**PLUMBING FIXTURE SCHEDULE NTS 1**

| ITEM NUMBER | COUNT | EQUIPMENT DESCRIPTION                           | CONNECTION DESCRIPTION         | PLUMBING SCHEDULE |                |                     |                     |                   | ITEM NUMBER |  |    |
|-------------|-------|---|--------------------------------|-------------------|----------------|---------------------|---------------------|-------------------|-------------|--|----|
|             |       |   |                                | COLD WATER SIZE   | HOT WATER SIZE | FILTERED WATER SIZE | INDIRECT WASTE SIZE | DIRECT WASTE SIZE |             |  |    |
| 1           | 1     | HAND SINK                                       | DIRECT DRAIN                   |                   |                |                     |                     |                   | 1 1/2"      | G.C. SHALL PROVIDE WALL BLOCKING AS REQUIRED.  | 1  |
| 1A          | 1     | WALL / SPLASH MOUNT FAUCET                      | HOT & COLD                     | 1/2"              | 1/2"           |                     |                     |                   |             |  | 1A |
| 4           | 1     | 3 COMPARTMENT SINK (SMALLER SINKS W/ ZDRAINBDS) | DIRECT DRAIN                   |                   |                |                     |                     |                   | 2"          |  | 4  |
| 4A          | 1     | 3 BAY FAUCET                                    | HOT & COLD                     | 3/4"              | 3/4"           |                     |                     |                   |             | PRERINSE UNIT COMPLETE SPLASH MOUNT W/ BRACKET B-0156-CR ADD-ON FAUCET, FOR PRE-RINSE UNITS, 12" NOZZLE, INCLUDES 3"NIPPLE | 4A |
| 6           | 1     | MOP SINK  | DIRECT DRAIN, HOT & COLD       | 3/4"              | 3/4"           |                     |                     |                   | 3"          |  | 6  |
| 8           | 1     | WATER FILTER SYSTEM                             | COLD WATER, DRAIN INDIRECT     | 3/4"              |                | 3/4"                | 1/2"                |                   |             | INDIRECT WASTE, MAINTAIN APPROVED AIR GAP AS PER CODE  | 8  |
| 38          | 1     | DROP-IN SINK                                    | INDIRECT DRAIN, HOT & COLD     |                   | 1/2"           |                     | 1-1/2"              |                   |             | INDIRECT WASTE, MAINTAIN APPROVED AIR GAP AS PER CODE  | 38 |
| 43          | 1     | ICE CUBER WITH BIN                              | INDIRECT DRAIN, FILTERED WATER |                   |                | 1/2"                | 1/2"                |                   |             | INDIRECT WASTE, MAINTAIN APPROVED AIR GAP AS PER CODE  | 43 |
| 49          | 2     | ESPRESSO MAKER                                  | INDIRECT DRAIN, FILTERED WATER |                   |                | 1/2"                | 1/2"                |                   |             | INDIRECT WASTE, MAINTAIN APPROVED AIR GAP AS PER CODE  | 49 |
| 54          | 2     | COFFEE BREWER                                   | INDIRECT DRAIN, FILTERED WATER |                   |                | 1/2"                | 1/2"                |                   |             | INDIRECT WASTE, MAINTAIN APPROVED AIR GAP AS PER CODE  | 54 |

**KITCHEN EQUIPMENT PLUMBING SCHEDULE NTS 2**

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ISSUED FOR: \_\_\_\_\_ DATE ISSUED: 05/28/24

PROJECT TITLE: \_\_\_\_\_



**DRAWING TITLE: PLUMBING ABBREVIATIONS & SCHEDULES**

|                           |                 |
|---------------------------|-----------------|
| PERMIT DWG DATE: 05-29-24 | PROJECT NUMBER: |
| DRAWN BY: NYE             | CHECKED BY: NYE |

DRAWING NUMBER: \_\_\_\_\_

**P100**

PLUMBING DRAWING LIST

- P100 PLUMBING ABBREVIATIONS AND SCHEDULES
P101 PLUMBING NOTES AND SPECIFICATIONS
P200 WATER SUPPLY PIPING PLAN
P201 WASTE AND VENT PIPING PLAN
P300 PLUMBING DETAILS
P400 PLUMBING RISER DIAGRAM

BUILDING DEPARTMENT PLUMBING NOTES

ALL PLUMBING SYSTEMS (SANITARY, WASTE, VENT WATER DISTRIBUTION PIPING SYSTEMS) AND ASSOCIATED EQUIPMENT SHALL BE INSTALLED, OPERATED AND MAINTAINED IN ACCORDANCE WITH THE REQUIREMENTS OF 248 CMR UNIFORM STATE PLUMBING CODE

- 1. INSTALLATION OF UNDERGROUND PIPING SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION 248 CMR 10.05 AND 10.06
2. PROTECTION OF PIPING AND PLUMBING SYSTEM COMPONENTS AS PER 248 CMR 10.05, SECTION 8.
3. TRENCHING, EXCAVATION AND BACKFILL AS PER 248 CMR 10.05, SECTION 5.
4. RODENT PROOFING AS PER PER 248 CMR 10.05, SECTION 8.
5. MATERIALS USED IN PLUMBING SYSTEMS SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF PER 248 CMR 10.06
6. EQUIPMENT CONNECTIONS AND JOINING OF PIPING SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF PER 248 CMR 10.07
7. DEEP SEAL TRAPS FOR FLOOR DRAINS SHALL BE PROVIDED AS PER PC 1002, AND CLEAN-OUTS SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF PER 248 CMR 10.08
8. DRAINAGE PIPE CLEANOUTS AS PER 248 CMR 10.08
9. VERTICAL AND HORIZONTAL PIPING SHALL BE SUPPORTED IN ACCORDANCE WITH THE REQUIREMENTS PER 248 CMR 10.11
10. WATER SUPPLY SYSTEMS SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE REQUIREMENTS PER 248 CMR 10.14
11. THE SANITARY DRAINAGE SYSTEM SHALL BE SIZED AND INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS PER 248 CMR 10.15
12. VENT PIPING FOR THE SANITARY DRAINAGE SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS PER 248 CMR 10.16

PLUMBING SPECIFICATIONS:

- 1. BASIC PLUMBING REQUIREMENTS, MATERIALS AND METHODS.
1.01 SCOPE
A. PROVIDE ALL MATERIAL, TOOLS, SUPERVISION AND LABOR INCLUDING ALL MISCELLANEOUS AND INCIDENTAL ITEMS REQUIRED FOR COMPLETE AND OPERABLE PLUMBING INSTALLATIONS AS SHOWN OR DESCRIBED ON THE DRAWINGS AND IN THESE SPECIFICATIONS.
B. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING AND NEW CONDITIONS AND MATERIALS WITHIN THE CONSTRUCTION AREA. ANY DAMAGE CAUSED BY THE CONTRACTOR SHALL BE REPAIRED TO THE OWNER'S SATISFACTION.
C. OBTAIN ALL PERMITS, PAY ALL PERMIT FEES AND SCHEDULE ALL REQUIRED INSPECTIONS. COPIES OF ALL PERMITS AND INSPECTION CERTIFICATES SHALL BE FORWARDED TO THE OWNER FOR RECORD.
D. THE GENERAL CONDITIONS OF THE CONTRACT AND ALL DIVISION 1 REQUIREMENTS APPLY TO THE WORK OF THIS SECTION.
E. THE CONTRACTOR SHALL VISIT THE SITE PRIOR TO SUBMITTING BID TO DETERMINE CONDITIONS AND THE EXTENT OF THE WORK. BY COMMENCING WORK, THE CONTRACTOR ACKNOWLEDGES HIS CONFIRMATION OF ALL CONDITIONS AS ACCEPTABLE WITH REFERENCE TO HIS CONTRACT, SCOPE OF WORK AND BID PRICE SUCH THAT NO ADDITIONAL COMPENSATION SHALL BE FORTHCOMING FOR UNFORESEEN EXISTING CONDITIONS.
F. IN ALL AREAS SUBJECT TO FREEZING CONDITIONS, THE CONTRACTOR SHALL PROVIDE FREEZE PROTECTION FOR ALL DOMESTIC WATER PIPING INSTALLED UNDER HIS CONTRACT.
G. ALL ELECTRICAL REQUIREMENTS SHALL BE COORDINATED WITH THE CONTRACTOR FOR ELECTRICAL WORK. THIS CONTRACTOR IS RESPONSIBLE FOR ALL LOW VOLTAGE WIRING FOR EQUIPMENT INSTALLED UNDER HIS CONTRACT. THE CONTRACTOR FOR ELECTRICAL WORK IS RESPONSIBLE FOR LINE VOLTAGE POWER WIRING ONLY.
H. COLOR AND FINISH SELECTIONS FOR ALL MATERIALS, INCLUDING PAINTING OF PIPING, SHALL BE AS DIRECTED AND/OR APPROVED BY THE ARCHITECT.
I. MINOR DETAILS NOT SHOWN OR SPECIFIED, BUT NECESSARY FOR THE PROPER AND ACCEPTABLE CONSTRUCTION, INSTALLATION OR OPERATION OF ANY PART OF THE WORK AS DETERMINED BY THE ENGINEER SHALL BE INCLUDED AS IF SPECIFIED OR INDICATED ON THE DRAWINGS.
J. THIS CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING ALL REQUIREMENTS FOR THE INSTALLATION, CONNECTION, EXTENSION OR MODIFICATION TO ALL UTILITY SERVICES WITH RESPECTIVE PROVIDERS INCLUDING PAYMENT OF ALL ASSOCIATED FEES.
K. THE CONTRACTOR IS RESPONSIBLE FOR ALL PAINTING ASSOCIATED WITH CUTTING AND PATCHING. ALL PAINTING IN AREAS WITH COMPLETE FINISH RENOVATIONS SHALL BE PROVIDED BY THE GENERAL CONTRACTOR.

1.02 SUBMITTALS

- A. SUBMITTAL REQUIREMENTS SHALL BE COORDINATED WITH THE ARCHITECT AND AUTHORITIES HAVING JURISDICTION. UNLESS OTHERWISE DIRECTED, CONTRACTOR SHALL PROVIDE SUBMITTALS AS LISTED BELOW.
1. PIPE AND FITTINGS
2. VALVES
3. HANGERS AND SUPPORTS
4. PLUMBING PIPING LAUNCH
5. TESTS
6. PLUMBING FIXTURES
7. MIXING VALVES
8. WATER HEATER & ACCESSORIES.
9. ALL SCHEDULED PLUMBING EQUIPMENT
10. GREASE INTERCEPTOR
B. SUBMITTALS FROM SUPPLIERS OR MANUFACTURERS WHICH DO NOT BEAR THE STAMP OF THE SUBMITTING CONTRACTOR INDICATING THAT THE CONTRACTOR HAS REVIEWED THE SUBMITTAL FOR CONFORMANCE WITH THE PROJECT REQUIREMENTS WILL BE RETURNED REJECTED.
C. THE ENGINEER'S REVIEW OF SUBMITTALS IS A COURTESY WHICH DOES NOT RELIEVE THE CONTRACTOR FROM CONFORMING WITH THE CONSTRUCTION DOCUMENTS, REGARDLESS OF THE ACTION INDICATED BY THE SHOP DRAWINGS STAMP.
D. REVIEW OF SHOP DRAWINGS BY THE ENGINEER SHALL BE LIMITED TO THE INITIAL REVIEW, AND A SECOND REVIEW OF ANY REQUIRED RESUBMITTED DATA. IF THE ENGINEER IS REQUIRED TO REVIEW SHOP DRAWINGS FOR A THIRD (OR MORE) SUBMISSION OF THE SAME ITEM, THE CONTRACTOR SHALL BE LIABLE FOR COMPENSATING THE ENGINEER FOR THESE SUBSEQUENT REVIEWS AS PER THE ENGINEER'S CURRENT HOURLY RATE SCHEDULE.
E. SUBMIT PROOF OF APPROVAL AND/OR CONFIRMATION OF SATISFACTORY TEST RESULTS TO THE OWNER AND THE ARCHITECT.
F. SUBMIT TO THE OWNER'S MAINTENANCE PERSONNEL OPERATION AND MAINTENANCE DATA FOR ALL SYSTEM COMPONENTS, SERVICING REQUIREMENTS, INSPECTION DATA, REPLACEMENT PART NUMBERS AND AVAILABILITY AND CONTACT INFORMATION FOR SERVICE/SUPPLY COMPANY.
G. FOR ALL BELOW GRADE PIPING WHERE ACTUAL INSTALLATION DEVIATES FROM CONSTRUCTION DRAWINGS, THE CONTRACTOR SHALL PROVIDE AS-BUILT DRAWINGS INDICATING BELOW GRADE PIPE LOCATIONS DIMENSIONED TO NEAREST COLUMN LINES.
H. RECORD AS-BUILT DRAWINGS SHALL BE SUPPLIED TO THE OWNER/TENANT AFTER COMPLETION OF THE WORK SHOWING ANY ALTERATIONS, ADDITIONS AND/OR DELETIONS TO THE SYSTEM(S) INSTALLED.

1.03 SUBSTITUTIONS

- A. ALL EQUIPMENT SHALL BE PRODUCTS OF THE SPECIFIED MANUFACTURER OR MANUFACTURERS. ALL BIDS SHALL BE BASED ON THE SPECIFIED MANUFACTURER OR MANUFACTURER'S EQUIPMENT. FOR SUBSTITUTIONS OF OTHER MANUFACTURER'S EQUIPMENT TO BE CONSIDERED, THE SUBSTITUTION MUST BE INDICATED PRIOR TO BIDDING WITH THE REASON FOR THE PROPOSED SUBSTITUTION IDENTIFIED, AND THE PROPOSED CREDIT TO THE OWNER INDICATED. THE ENGINEER SHALL DETERMINE THE ACCEPTABILITY OF ANY PROPOSED SUBSTITUTIONS.
B. THE CONTRACTOR ASSUMES ALL RESPONSIBILITY FOR COORDINATING THE WORK OF OTHER TRADES WHICH MAY BE AFFECTED BY SUBSTITUTIONS, INCLUDING ALL RELATED COSTS.

1.04 DEFINITIONS

- A. FURNISH: TO PURCHASE, PROCURE, ACQUIRE AND DELIVER, COMPLETE WITH RELATED ACCESSORIES.
B. INSTALL: TO ERECT, MOUNT AND CONNECT, COMPLETE WITH RELATED ACCESSORIES.
C. PROVIDE: TO FURNISH AND INSTALL.
D. PLUMBING CONTRACTOR, THE CONTRACTOR, THIS CONTRACTOR: THE CONTRACTOR FOR PLUMBING WORK WHICH IS SPECIFIED HEREIN AND SHOWN ON THESE DRAWINGS.
E. REFER TO THE NATIONAL STANDARD PLUMBING CODE FOR ADDITIONAL DEFINITIONS.

1.05 DRAWINGS

- A. THE DRAWINGS ARE DIAGRAMMATIC AND ARE INTENDED TO ILLUSTRATE THE GENERAL ARRANGEMENT AND ROUTING OF PIPING AND GENERAL LOCATIONS OF EQUIPMENT. PRECISE LOCATIONS OF EQUIPMENT, RISERS AND STACKS, AND ROUTING AND ELEVATION OF ALL PIPING SYSTEMS SHALL BE COORDINATED IN THE FIELD WITH THE ARCHITECT, ARCHITECTURAL DRAWINGS, THE WORK OF OTHER TRADES, EXISTING AND NEW BUILDING CONDITIONS AND/OR THE PREFERENCES OF THE OWNER/TENANT AS CONSTRUCTION PROCEEDS. ALL PIPING SHALL BE INSTALLED CONCEALED IN FINISHED SPACES, UNLESS NOTED OTHERWISE.
B. PROVIDE ALL NECESSARY INCIDENTAL MATERIALS AND ACCESSORIES REQUIRED TO MAKE THE WORK COMPLETE IN ALL RESPECTS, EVEN IF NOT PARTICULARLY SHOWN OR SPECIFIED.
C. REFER TO PLUMBING EQUIPMENT/FIXTURE SCHEDULE ON THE DRAWINGS FOR ALL FIXTURE AND EQUIPMENT SPECIFICATIONS.
D. REFER TO FIXTURE CONNECTION SIZE SCHEDULE FOR ALL FIXTURE ROUGHING SIZE REQUIREMENTS.
E. VERIFY ALL INDICATED CONDITIONS BEFORE STARTING WORK AND REPORT ANY DISCREPANCIES. THE DRAWINGS REFLECT CONDITIONS WHICH CAN BE REASONABLY INTERPRETED FROM THE EXISTING VISIBLE CONDITIONS OR FROM DRAWINGS AND INFORMATION FURNISHED BY THE OWNER.
F. LOCATE ALL FIXTURES AND EQUIPMENT AS PER THE FINAL ARCHITECTURAL DRAWINGS.

1.06 PRODUCTS

- A. SANITARY AND VENT PIPING:
1. ABOVE GRADE PIPING SHALL BE HUBLESS CAST IRON PIPE WITH STAINLESS STEEL COUPLINGS AND ELASTOMERIC GASKETS WITH A MINIMUM 4 BANDS PER COUPLING.
2. SLOPE OF DRAINAGE SYSTEM SHALL BE 1/8" PER FOOT OF RUN FOR PIPE OVER 3" (I.D.) AND 1/4" PER FOOT OF RUN FOR PIPE 3" AND SMALLER (I.D.). VENT PIPING SHALL BE PITCHED TO DRAIN.
3. ALL CAST IRON SOIL PIPE AND FITTINGS SHALL BE MARKED WITH THE COLLECTIVE TRADEMARK OF THE CAST IRON SOIL PIPE INSTITUTE (CISPI) AND BE LISTED BY NSF INTERNATIONAL.

B. DOMESTIC WATER PIPING:

- 1. ABOVE GRADE WATER PIPING SHALL BE TYPE 'L' HARD-DRAWN COPPER TUBE.
2. FITTINGS IN DOMESTIC WATER PIPING SHALL BE WROUGHT COPPER OR CAST BRASS.
3. JOINTS SHALL BE MADE WITH LEAD-FREE SOLDER.
4. THE ENTIRE DOMESTIC WATER DISTRIBUTION SYSTEM SHALL BE INSULATED INCLUDING ALL VALVES, FITTINGS, ETC.
5. COMPLY WITH NSF 61 FOR MATERIALS FOR WATER-SERVICE PIPING AND SPECIALTIES FOR DOMESTIC WATER.
6. ALL DOMESTIC WATER PIPING ABOVE GRADE SHALL BE INSULATED WITH FIRE-RETARDANT, FACTORY-APPLIED JACKET. PROVIDE COLD WATER PIPING WITH FACTORY-APPLIED VAPOR BARRIER. INSULATION REQUIREMENT SHOULD COMPLY WITH INTERNATIONAL ENERGY CONSERVATION CODE 2018 SECTION C403.11.3 REFER BELOW TABLE.

Table with 3 columns: FLUID OPERATING TEMPERATURE RANGE AND USAGE (°F), INSULATION CONDUCTIVITY (BTU-IN/ (H·FT2·°F)), and NOMINAL PIPE OR TUBE SIZE (INCHES). Rows include 105-140 and 40-60 temperature ranges.

- 7. AS PER 2020 MASSACHUSETTS ENERGY CODE C404.6.1, HEATED-WATER CIRCULATION SYSTEMS SHALL BE PROVIDED WITH A CIRCULATION PUMP. THE SYSTEM RETURN PIPE SHALL BE A DEDICATED RETURN PIPE OR A COLD WATER SUPPLY PIPE. CONTROLS FOR CIRCULATING HOT WATER SYSTEM PUMPS SHALL START THE PUMP BASED ON THE IDENTIFICATION OF A DEMAND FOR HOT WATER WITHIN THE OCCUPANCY. THE CONTROLS SHALL AUTOMATICALLY TURN OFF THE PUMP WHEN THE WATER IN THE CIRCULATION LOOP IS AT THE DESIRED TEMPERATURE AND WHEN THERE IS NO DEMAND FOR HOT WATER.
8. AS PER 2020 MASSACHUSETTS ENERGY CODE C404.7, PUMPS SHALL HAVE CONTROLS THAT COMPLY WITH BOTH OF THE FOLLOWING:
A. THE CONTROL SHALL START THE PUMP UPON RECEIVING A SIGNAL FROM THE ACTION OF A USER OF A FIXTURE OR APPLIANCE, SENSING THE PRESENCE OF A USER OF A FIXTURE OR SENSING THE FLOW OF HOT OR TEMPERED WATER TO A FIXTURE FITTING OR APPLIANCE.
B. THE CONTROL SHALL LIMIT THE TEMPERATURE OF THE WATER ENTERING THE COLD-WATER PIPING TO 104°F (40°C).
9. HW SYSTEM PIPING IS DESIGNED AS PER MAXIMUM ALLOWED PIPE LENGTH METHOD AS PER 2020 MASSACHUSETTS ENERGY CODE C404.5.1. THE HW PIPE LENGTH FROM THE NEAREST SOURCE OF HEATED WATER TO THE TERMINATION OF THE FIXTURE SUPPLY PIPE SHALL BE AS PER FOLLOWING TABLE C404.5.1.

Table with 2 columns: NOMINAL PIPE SIZE (INCHES) and MAXIMUM PIPING LENGTH (FEET). Sub-columns for PUBLIC LAV and OTHER FIXTURES. Rows include 1/2, 3/4, 1, 1 1/4, 1 1/2, and 2" OR LARGER.

- 9. SEAL ALL JOINTS BETWEEN SEGMENTS OF INSULATION.
10. PROVIDE SHIELDS BETWEEN HANGERS AND INSULATION.

C. HANGERS AND SUPPORTS:

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

D. VALVES:

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

E. SLEEVES AND ESCUTCHEONS:

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

F. DOMESTIC WATER HEATER (ELECTRIC)

- 6. TANKS SHALL 40 GALLONS CAPACITY, 55 GPH RECOVERY @ 90 DEG F TEMP. RISE AND SHALL HAVE 160 PSI WORKING PRESSURE AND BE EQUIPPED WITH EXTRUDED HIGH DENSITY ANODE.
7. ALL INTERNAL SURFACES OF THE HEATER(S) EXPOSED TO WATER SHALL BE GLASS-LINED.
8. EACH ELEMENT IS CONSTANTLY MONITORED AND CURRENT ON/OFF STATE IS DISPLAYED. ANY ELEMENT FAILURE IS REPORTED AND ITS EXACT LOCATION IS SHOWN, ELIMINATES A NEED FOR FIELD TESTING OF ELEMENTS.

G. HOT WATER RE-CIRCULATING PUMP

- 1. IN-LINE PUMP: SINGLE STAGE VOLUTE TYPE PUMP SHALL BE MADE OF CAST IRON OR FORGED LEAD-FREE BRONZE IMPELLER.
2. THE PUMP SHALL HAVE A GROUND AND POLISHED STEEL SHAFT WITH A HARDENED INTEGRAL THRUST COLLAR. THE SHAFT SHALL BE SUPPORTED BY TWO HORIZONTAL SLEEVE BEARINGS DESIGNED TO CIRCULATE OIL. THE PUMPS ARE TO BE EQUIPPED WITH A MECHANICAL SEAL WITH CARBON SEAL FACE ROTATING AGAINST CERAMIC SEAL. THE MOTOR SHALL BE NON-OVERLOADING AT ANY POINT ON PUMP CURVE.
3. DIRECT CONNECT PUMP TO ELECTRIC MOTOR WITH FLEXIBLE COUPLING. THE MOTOR SHALL BE OF THE DRIP-PROOF, SLEEVE-BEARINGS, QUIET OPERATING, RUBBER-MOUNTED CONSTRUCTION. EQUIPMENT MOTOR WITH BUILT-IN THERMAL OVERLOAD PROTECTION.
4. INSTALL IN-LINE CIRCULATING PUMPS BETWEEN PIPE FLANGES IN PIPING SYSTEMS. INSTALL OVERHEAD PIPE SUPPORTS, BOTH SIDES OF IN-LINE PUMPS, INSTALLED IN HORIZONTAL PIPING RUNS.

H. DRAINAGE ACCESSORIES

- 1. GENERAL:
a. INSTALL THE WORK OF THIS SECTION IN ACCORDANCE WITH THE MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS, UNLESS OTHERWISE SPECIFIED.
b. SECURE EXTERNAL COMPONENTS IN PLACE WITH VANDAL RESISTANT FASTENERS OR DEVICES WHICH CANNOT BE REMOVED WITHOUT SPECIAL TOOLS.
I. INSTALL PIPING TO CONSERVE BUILDING SPACE. DO NOT INTERFERE WITH USE OF BUILDING SPACE AND THE WORK OF OTHER TRADES. ALL PIPING RUN IN CEILING SHALL BE INSTALLED TIGHT TO THE STRUCTURE ABOVE.
J. INSTALL PIPING TO ALLOW FOR EXPANSION AND CONTRACTION WITHOUT STRESSING PIPE, JOINTS OR CONNECTED EQUIPMENT. PROVIDE PIPE ANCHORS, GUIDES AND EXPANSION JOINTS OR LOOPS IN ALL HOT WATER AND HOT WATER CIRCULATING MAIN SUPPLY PIPING AND SEGMENTS OF SUCH PIPE THAT EXCEED 30'-0" IN LENGTH.
K. IN ALL AREAS WITH FINISHED SURFACES, SYSTEM PIPING AND COMPONENTS SHALL BE CONCEALED ABOVE OR WITHIN FINISHED SURFACES.
L. REDUCTIONS IN PIPE SIZES SHALL BE MADE WITH ONE-PIECE REDUCING FITTINGS. BUSHINGS ARE NOT ACCEPTABLE. USE FLANGED FITTINGS AT THE BASE OF RISERS.
M. VENT PENETRATIONS THROUGH THE ROOF SHALL BE FLASHED.
N. IF WATER PRESSURE EXCEEDS 80 PSI, A WATER PRESSURE REDUCING VALVE SHALL BE INSTALLED IN WATER PIPING AT CONNECTION TO MAIN.
O. PROVIDE DIELECTRIC FITTINGS BETWEEN DISSIMILAR METALS.
P. PIPE BACKFLOW PREVENTER DRAINS TO FLOOR DRAIN OR OTHER APPROVED INDIRECT WASTE SOURCE.
Q. PROVIDE ACCESS DOORS/PANELS FOR SERVICE AND ACCESS TO ALL VALVES AND OTHER SYSTEM COMPONENTS ENCLOSED IN WALLS AND CEILINGS. ACCESS DOORS SHALL BE FURNISHED BY THIS CONTRACTOR, INSTALLED BY THE GENERAL CONTRACTOR.
R. ALL FIXTURES REQUIRING VACUUM BREAKERS SHALL BE EQUIPPED WITH INTEGRAL VACUUM BREAKERS.

- S. ANY PENETRATIONS THROUGH FIRE RATED PARTITIONS, FLOORS, OR CEILINGS SHALL BE STEEL SLEEVED AND SEALED WITH 3M BRAND UL RATED FIRE BARRIER CAULK OR APPROVED EQUAL.
T. WHEN THE WATER PIPING SYSTEM IS COMPLETE, THOROUGHLY FLUSH ALL DIRT, SEDIMENT, SOLDER, ETC., OUT OF THE SYSTEM, REMOVING ALL STRAINERS, VALVE STEM SEATS, ETC., REQUIRED TO ACCOMPLISH THE FLUSHING.
U. AT ALL INDIRECT WASTE DRAINS, MAINTAIN AIR GAP AS REQUIRED BY CODE.
V. INSTALL SLEEVES FOR ALL PIPES WHICH PASS THROUGH WALLS, FLOORS, AND CEILINGS, WHERE PIPES ARE TO BE INSULATED, THE SLEEVE SHALL BE LARGE ENOUGH TO ACCOMMODATE INSULATION. SLEEVES SHALL BE FLUSH WITH FINISHED SURFACES AT BOTH ENDS ON FINISHED SURFACES IN EXPOSED AREAS PROVIDE ESCUTCHEONS COMPATIBLE WITH FINISH.
W. PROVIDE WATER HAMMER ARRESTERS ON SUPPLY PIPING TO ALL FLOWSHOMETER VALVES AND QUICK-CLOSING VALVES.
X. MAINTAIN ALL REQUIRED AND RECOMMENDED CLEARANCES FOR ALL PLUMBING SYSTEM COMPONENTS AND EQUIPMENT.

2. INSTALLATION

2.01 GENERAL

- A. ALL WORK WHICH REQUIRES DISRUPTION OF THE ROOFING SHALL BE DONE BY A CONTRACTOR CERTIFIED BY THE ROOFING MANUFACTURER AS REQUIRED TO MAINTAIN ANY EXISTING ROOF WARRANTIES.
B. EXTERIOR INSTALLATIONS TO BE WEATHER PROOF IN ALL RESPECTS.
C. EXTERIOR MATERIALS AND EQUIPMENT SHALL BE PAINTED TO PREVENT CORROSION, COLOR PER ARCHITECT.
D. COORDINATE THE PLUMBING WORK WITH ALL OTHER AFFECTED WORK AND THE CONSTRUCTION SCHEDULE.
E. REAM PIPE AND TUBE ENDS. REMOVE BURRS. BEVEL PLAIN AND FERROUS END PIPE.
F. REMOVE SCALE AND FOREIGN MATERIAL, FROM INSIDE AND OUTSIDE, BEFORE ASSEMBLY.
G. PREPARE PIPING CONNECTIONS TO EQUIPMENT WITH FLANGES AND UNIONS.
H. COORDINATION WITH THE WORK OF OTHER TRADES IS REQUIRED. PROVIDE OFFSETS IN PIPING SYSTEMS OR MINOR DEVIATIONS TO THE INDICATED PIPE ROUTING IN ORDER TO COORDINATE THE PLUMBING WORK WITH THE WORK OF ALL OTHER TRADES AND THE GENERAL BUILDING CONDITIONS.
I. NO DOMESTIC WATER PIPING SHALL BE INSTALLED IN UNHEATED SPACES.
J. PRIOR TO DISCONNECTING AND CONNECTING NEW WORK TO EXISTING SYSTEMS, THE PLUMBING CONTRACTOR SHALL NOTIFY THE PROPERTY MANAGER AND OFFER A PROPOSED SCHEDULE OF WORK. ESB WILL AUTHORIZE CONNECTIONS AND COORDINATE NECESSARY SHUT DOWNS AND DRAIN DOWNS AS REQUIRED. SHUT DOWNS AND DRAIN DOWNS MAY BE PERFORMED BY THE PLUMBING CONTRACTOR ONLY AFTER RECEIVING ESB AUTHORIZATION, AND SHOULD BE PERFORMED UNDER SUPERVISION OF ESB PERSONNEL. THREE (3) DAYS ADVANCE NOTICE TO THE PROPERTY MANAGER IS REQUIRED.
K. THE PLUMBING CONTRACTOR IS ADVISED THAT DUE TO THE NATURE OF THE OPERATIONS AND TENANT REQUIREMENTS, CONNECTIONS TO EXISTING SYSTEMS MAY HAVE TO BE MADE AFTER REGULAR WORKING HOURS. THE PROPERTY MANAGER WILL ADVISE THE PLUMBING CONTRACTOR OF THE TIME CONSTRAINTS UPON RECEIPT AND APPROVAL OF THE PLUMBING CONTRACTOR'S REQUEST FOR SHUT DOWN AND CONNECTION TO EXISTING SYSTEMS.
L. WHEN CONNECTING TO EXISTING STACKS AND RISERS, PROVISION IS TO BE MADE FOR FUTURE CONNECTIONS BY PROVIDING CAPPED AND VALVED OUTLETS ON DOMESTIC WATER RISERS AND PLUGGED OUTLETS ON THE SANITARY AND VENT STACKS.

2.02 ABOVE GRADE

- a. INSTALL PLUMBING PIPING IN ACCORDANCE WITH RECOGNIZED INDUSTRY PRACTICES TO ENSURE THAT PIPING COMPLIES WITH REQUIREMENTS AND SERVES INTENDED PURPOSES.
b. ROUTE PIPING IN AN ORDERLY MANNER, PLUMB AND PARALLEL TO BUILDING STRUCTURE. MAINTAIN GRADIENT. SLOPE PIPING AND ARRANGE SYSTEMS TO DRAIN. IN DOMESTIC WATER SYSTEMS, PROVIDE DRAIN VALVES AT MAIN SHUT-OFF VALVES AND ALL LOW POINTS IN PIPING.
c. USE EXISTING CONNECTIONS AT MAINS WHERE AVAILABLE FOR NEW BRANCH PIPING. LOCATE ALL RISERS AND PIPING BEFORE CONSTRUCTION COMMENCES AND TAKE CARE NOT TO DAMAGE SAME. ANY DAMAGE OCCURRING TO THE EXISTING PIPING WILL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.

2.03 INSULATION

COVER ALL HOT WATER AND HOT WATER RECIRCULATION PIPE WITH 1" THICK FOR PIPE SIZE UP TO 1 1/2" AND 1 1/2" THICK FOR PIPE SIZE 1 1/2" AND GREATER WITH MANVILLE MICRO-LOK AP-T PLUS FIBERGLASS INSULATION. COVER ALL COLD WATER PIPE WITH 1/2" THICK FOR PIPE SIZE UP TO 1 1/2" AND 1" THICK FOR PIPE SIZE 1 1/2" AND GREATER WITH 1" MANVILLE MICRO-LOK AP-T PLUS FIBERGLASS INSULATION. FITTINGS AND VALVES SHALL BE INSULATED WITH MANVILLE ZESTON 2000 PVC INSULATED-FITTING COVERS. INSTALL ALL INSULATION AS PER MANUFACTURERS RECOMMENDATIONS. ALL INSULATION MATERIAL SHALL COMPLY WITH THE 248 CMR UNIFORM STATE PLUMBING CODE REQUIREMENT OF A FLAME SPREAD RATING NOT TO EXCEED 25 AND A SMOKE DEVELOPED RATING NOT TO EXCEED 50. ALL PIPE INSULATION SHALL COMPLY WITH 2020 MA ENERGY CODE.

3. TESTING

- A. AT THE COMPLETION OF THE PLUMBING WORK, COMPLETELY TEST THE ENTIRE INSTALLATION OF ALL SYSTEMS FOR PROPER OPERATION AND COMPLIANCE WITH APPLICABLE CODES AND LOCAL REQUIREMENTS. CORRECT ALL DEFICIENCIES FOUND.
B. TESTING OF THE INSTALLED SYSTEMS SHALL BE MADE BY THE CONTRACTOR IN THE PRESENCE OF A REPRESENTATIVE OF THE OWNER.
C. THE CONTRACTOR SHALL NOT COVER UP OR PERMANENTLY CONCEAL PIPING, DEVICES OR ANY PORTION OF NEWLY CONSTRUCTED PLUMBING SYSTEM(S) UNTIL SUCH SYSTEM, OR PORTION OF THE SYSTEM, HAS BEEN TESTED IN THE PRESENCE OF A REPRESENTATIVE OF THE OWNER AND INSPECTED BY THE LOCAL INSPECTOR AND APPROVED IN WRITING, EXCEPT PIPING PASSING THROUGH FLOORS, WALLS, PARTITIONS, OR BEAMS, FOR DISTANCES EQUAL TO THE THICKNESS OF SUCH FLOOR, WALL, PARTITION OR BEAM.

- D. THIS CONTRACTOR SHALL NOTIFY THE VARIOUS DEPARTMENTS, BUREAUS AND INDIVIDUALS AT LEAST TWO WEEKS IN ADVANCE OF THE TIME THAT THE TESTS ARE TO BE CONDUCTED.
E. ALL DEFECTIVE PARTS SHALL BE REPLACED OR CORRECTED BY THIS CONTRACTOR AND AN EXTRA TEST OR TESTS SHALL BE MADE UNTIL THE OPERATION IS SATISFACTORY. ALL ARRANGEMENTS AND EXPENSES TO CONTACT ALL TESTS REQUIRED BY THESE SPECIFICATIONS AND THE VARIOUS AGENCIES HAVING JURISDICTION OVER THE WORK INSTALLED UNDER THIS CONTRACT SHALL BE MADE BY THIS CONTRACTOR. NO EXTRA COMPENSATION WILL BE ALLOWED FOR THESE TESTS, THE COST THEREOF BEING INCLUDED IN THE LUMP SUM BID FOR THIS CONTRACT.

- F. WHERE ANY EVIDENCE OF STOPPAGE IS FOUND IN PIPING OR EQUIPMENT, THIS CONTRACTOR SHALL DISCONNECT, CLEAN, REPAIR AND RECONNECT ALL OBSTRUCTED PIPING OR EQUIPMENT AND SHALL ALSO PAY FOR ALL NECESSARY CUTTING AND REPAIRS TO ADJOINING WORK.
G. ALL PIPING AND EQUIPMENT SHALL BE THOROUGHLY CLEANED INSIDE AND OUT, OF DIRT, CUTTINGS, OILS AND OTHER FOREIGN SUBSTANCES AND SHALL BE LEFT CLEAN.
H. ALL REQUIRED TESTS SHALL BE WITNESSED BY LOCAL AUTHORITIES AND THE OWNER'S REPRESENTATIVE.

- J. ALL EQUIPMENT WILL BE FACTORY TESTED.
I. CONTRACTOR SHALL IDENTIFY TO THE OWNER'S REPRESENTATIVE ANY LEAKS OR DAMAGE THAT OCCURS AS A RESULT OF SYSTEM TESTING. CONTRACTOR SHALL TAKE NECESSARY PRECAUTIONS TO LIMIT ANY POTENTIAL DAMAGE. CORRECTIVE ACTION REQUIRED AS A RESULT OF TESTING SHALL BE PERFORMED IMMEDIATELY AND AT THE CONTRACTOR'S EXPENSE.
K. REPORT IN WRITING TO AUTHORITIES HAVING JURISDICTION, THE ARCHITECT AND THE OWNER THE RESULTS OF ALL TESTING.

- L. TESTING REQUIREMENTS
a. TEST ALL DOMESTIC WATER PIPING HYDROSTATICALLY TO 125 PSIG.
b. HYDROSTATIC TEST PRESSURES SHALL REMAIN CONSTANT WITH NO VARIATION FOR 120 MINUTES.
c. TESTS SHALL BE WITNESSED BY THE BUILDING ENGINEER.
d. THE PLUMBING CONTRACTOR WILL BE HELD RESPONSIBLE FOR ALL DAMAGE DUE TO TEST FAILURES AND LEAKAGE IN THE TEST AREA AND ADJACENT TENANT OR ESB SPACES.
M. REFILL ENTIRE POTABLE HOT AND COLD WATER SUPPLY SYSTEM WITH CHLORINE SOLUTION (HTH OLIN CHEMICAL CORP) AT A STRENGTH TO MEET STANDARDS OF THE DEPARTMENT OF HEALTH, AND FOR A PERIOD OF RETENTION AS STIPULATED.
N. THOROUGHLY FLUSH PIPING SYSTEM WITH FRESH WATER IMMEDIATELY PRIOR TO FINAL ACCEPTANCE.

4. WARRANTY

- A. EQUIPMENT, MATERIALS AND WORKMANSHIP FURNISHED UNDER THIS CONTRACT SHALL BE GUARANTEED BY THE CONTRACTOR FOR A PERIOD OF ONE YEAR FROM THE DATE OF FINAL ACCEPTANCE OF THE WORK BY THE OWNER. THE CONTRACTOR SHALL KEEP THE WORK IN GOOD REPAIR FOR ONE YEAR AFTER THE DATE OF FINAL APPROVAL. THE CONTRACTOR SHALL, AT HIS OWN EXPENSE, PROMPTLY CORRECT AND REPAIR ANY AND ALL BREAKS, FAILURES OR WEAR DUE TO FAULTY MATERIALS, WORKMANSHIP OR EQUIPMENT. ALL SETTLEMENTS OF SURFACES THAT MAY OCCUR WITHIN THAT PERIOD SHALL ALSO BE PROMPTLY REPAIRED.

DISCLAIMER

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Table with 2 columns: ISSUED FOR, DATE ISSUED. Row 1: , 05/28/24

PROJECT TITLE:

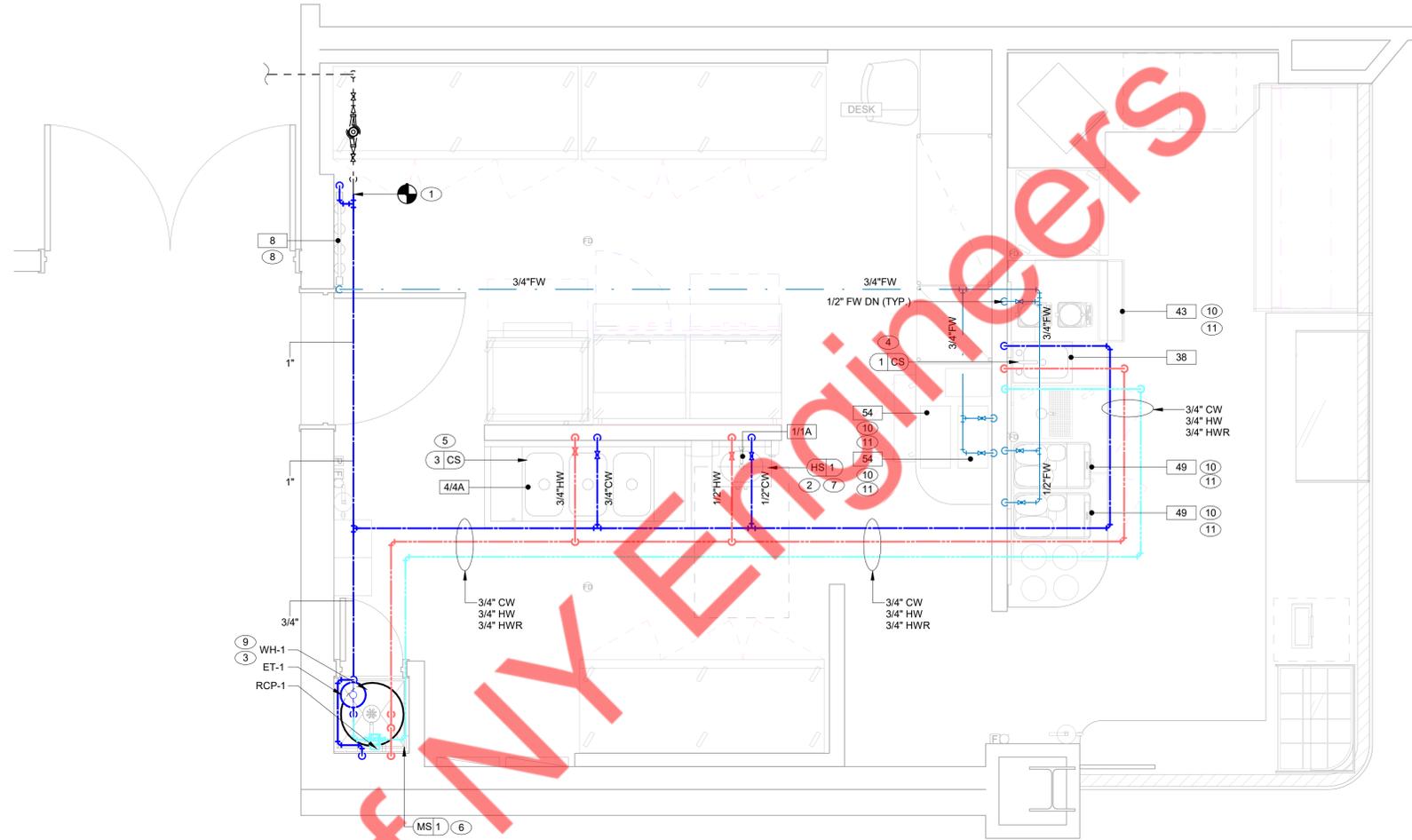


DRAWING TITLE: PLUMBING NOTES & SPECIFICATIONS

Table with 2 columns: PERMIT DWG DATE: 05-29-24, PROJECT NUMBER:

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DRAWING NUMBER:



1 PLUMBING WATER PLAN  
1/2" = 1'-0"

**WATER SUPPLY PIPING PLAN** 1/2" = 1'-0" **A**

1. 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.
2. CW/ HW PIPING TO BE PROVIDED WITH INSULATION AS PER INTERNATIONAL ENERGY CONSERVATION CODE.
3. CONTRACTOR TO FIELD VERIFY FEASIBILITY OF FLOOR SLAB PENETRATION AS PER STRUCTURAL REQUIREMENT.
4. REFER RISER DIAGRAMS FOR ALL PIPE SIZES.
5. PROVIDE ACCESS PANELS FOR WATER HAMMER ARRESTOR.
6. CLEANOUTS & SHUT-OFF VALVES AS REQUIRED.
7. FOR SINK PROVIDE HOT WATER AT 110°F. PROVIDE POINT OF USE MIXING VALVE IF REQUIRED.
8. PROVIDE BRANCH PRV IF PRESSURE INCREASES 80 PSI.
9. PROVIDE HOT WATER RETURN AS PER MAXIMUM PIPE LENGTH.
10. EXISTING STORM WATER SYSTEM WITH ALL ASSOCIATED PIPING & EQUIPMENT TO REMAIN.

**GENERAL NOTES - WATER SUPPLY** NTS **C**

1. CONNECT NEW 1" CW LINE TO EXISTING COLD WATER IN THE SPACE. CONTRACTOR TO FIELD VERIFY EXACT POINT OF CONNECTION & LOCATION OF WATER METER.
2. PROVIDE THERMOSTATIC MIXING VALVE SET TO 110 F AT EACH HAND SINK.
3. CONNECT 3/4" HW/CW & 3/4" HWR WATER LINES TO STORAGE WATER HEATER WH-1.
4. 1/2" HOT AND COLD WATER LINES DOWN IN WALL 1-COMPARTMENT SINK
5. 3/4" COLD AND HOT WATER LINES DOWN IN WALL TO THREE COMPARTMENT SINK. PROVIDE MIXING VALVE ABOVE SUSPENDED CEILING
6. 3/4" COLD AND HOT WATER DOWN IN WALL TO MOP SINK.
7. 1/2" HOT AND COLD WATER DOWN IN WALL TO HANDSINK.
8. 3/4" COLD WATER PIPE DOWN IN WALL TO FILTER AND 3/4" FILTER WATER SUPPLY FROM THE FILTRATION.
9. T&P RELIEF VALVE AND DRAIN LINE. EXTEND DRAIN LINE TO MOP SINK AND SPILL. DRAIN LINE TO BE MIN OF 2" ABOVE THE FLOOD RIM LEVEL OF MOP SINK
10. 1/2" FILTER WATER DN TO ICE MAKER, ESPRESSO MAKER & COFFEE DISPENSER.
11. PROVIDE APPROVED SECONDARY BACKFLOW PREVENTER FOR COFFEE MACHINE, ESPRESSO MAKER & ICE MACHINE

**KEY NOTES - WATER SUPPLY** NTS **B**

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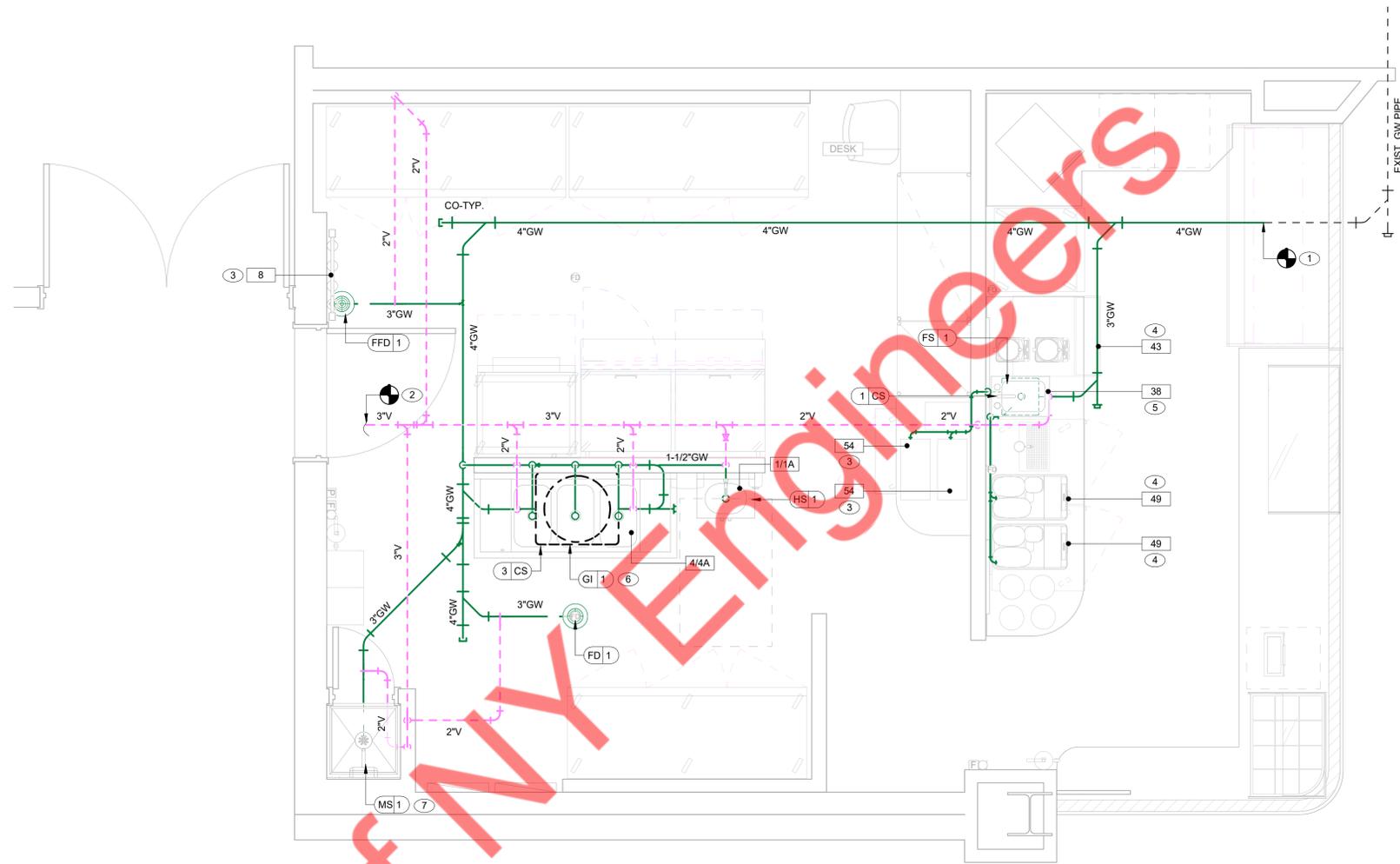
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DRAWING TITLE:  
**WATER SUPPLY PIPING PLAN**

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**P200**



1 PLUMBING DRAINAGE PLAN  
1/2" = 1'-0"

**WASTE AND VENT PIPING PLAN** 1/2" = 1'-0" **A**

- ALL PIPING SHALL BE SNAKE CLEAN PRIOR TO CONNECTION.
- ANY CHANGES AND/OR UPGRADES TO TENANT'S EXISTING PLUMBING SYSTEMS SHALL COMPLY WITH ALL CODES. EXISTING SYSTEMS SHALL POSSESS THE CAPACITY TO HANDLE ANY AND ALL CHANGES IN LOAD.
- PLUMBING IS NOT PERMITTED IN ANY DEMISING PARTITIONS. FURROUT THE WALL AS NECESSARY.
- 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.
- ALL FLOOR PENETRATIONS MUST BE CORE BORED, SLEEVED, GROUTED, SEALED AND MADE WATERPROOF. SLEEVES MUST EXTEND A MINIMUM OF 4" AFF.
- TENANT IS REQUIRED TO INSTALL A WATERPROOF MEMBRANE IN ALL WET AREAS OF THE SPACE. TENANT SHALL USE A 30 MIL.
- POLYETHYLENE CLEAVAGE MEMBRANE (EQUAL TO NOBLESEAL TS) INSTALLED PER MANUFACTURERS RECOMMENDATIONS AND ANSI A108. MEMBRANE MUST BE EXTENDED UP THE WALL A MINIMUM OF 6" OR EQUAL TO THE HEIGHT OF THE FLOOR BASE.
- SLOPE OF DRAINAGE SYSTEM SHALL BE 1/8" PER FOOT OF RUN FOR PIPE 3" AND ABOVE. 1/4" PER FOOT OF RUN FOR PIPE LESS THAN 3". VENT PIPING SHALL BE PITCHED TO DRAIN.
- PROVIDE ACCESS PANEL FOR CLEANOUTS AND ALL CONCEALED EQUIPMENTS THAT REQUIRE MAINTENANCE ACCESS. CONTRACTOR TO COORDINATE WITH ARCHITECT FOR LOCATION.
- PROVIDE WALL CLEANOUTS WHEREVER POSSIBLE FOR EACH CHANGE IN DIRECTION OF MORE THAN 45DEG.
- EXISTING STORM WATER SYSTEM WITH ALL ASSOCIATED PIPING & EQUIPMENT TO REMAIN.

- CONTRACTOR SHALL CONNECT NEW 4" GREASE WASTE LINE TO THE EXISINTG GREASE WASTE PIPE. VERIFY EXACT LOCATION, SIZE, INVERT, DIRECTION OF FLOW AND CONNECTION POINT PRIOR TO BID.
- CONTRACTOR SHALL CONNECT NEW 3" VENT LINE TO THE EXISINTG 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.
- ROUTE INDIRECT DRAIN LINES FROM COFFEE BREWER TO FLOOR SINK WITH APPROVED AIR GAP AS PER LOCAL CODE.
- ROUTE INDIRECT DRAIN LINES FROM ESPRESSO MACHING AND ICE MAKER TO FLOOR SINK WITH APPROVED AIR GAP AS PER LOCAL CODE.
- PIPE 1-COMPARTMENT SINK TO FLOOR SINK WITH AIR GAP PER CODE
- SCHIER GB-1 FLOOR MOUNTED GREASE INTERCEPTOR. CONTRACTOR TO FILED VERIFY INTALLATION REQUIREMENTS AS PER MANUFACTURERS RECOMMENDATIONS.
- SPILL WATER HEATER (WH-1) T&P DISCHARGE AND DRAIN PAN TO MOP SINK WITH AIR GAP.
- ROUTE INDIRECT DRAIN LINES FROM FILTRATION UNIT TO FUNNEL FLOOR DRAIN WITH APPROVED AIR GAP AS PER LOCAL CODE.

**GENERAL NOTES - WASTE AND VENT** NTS **C**

**KEY NOTES - WASTE AND VENT** NTS **B**

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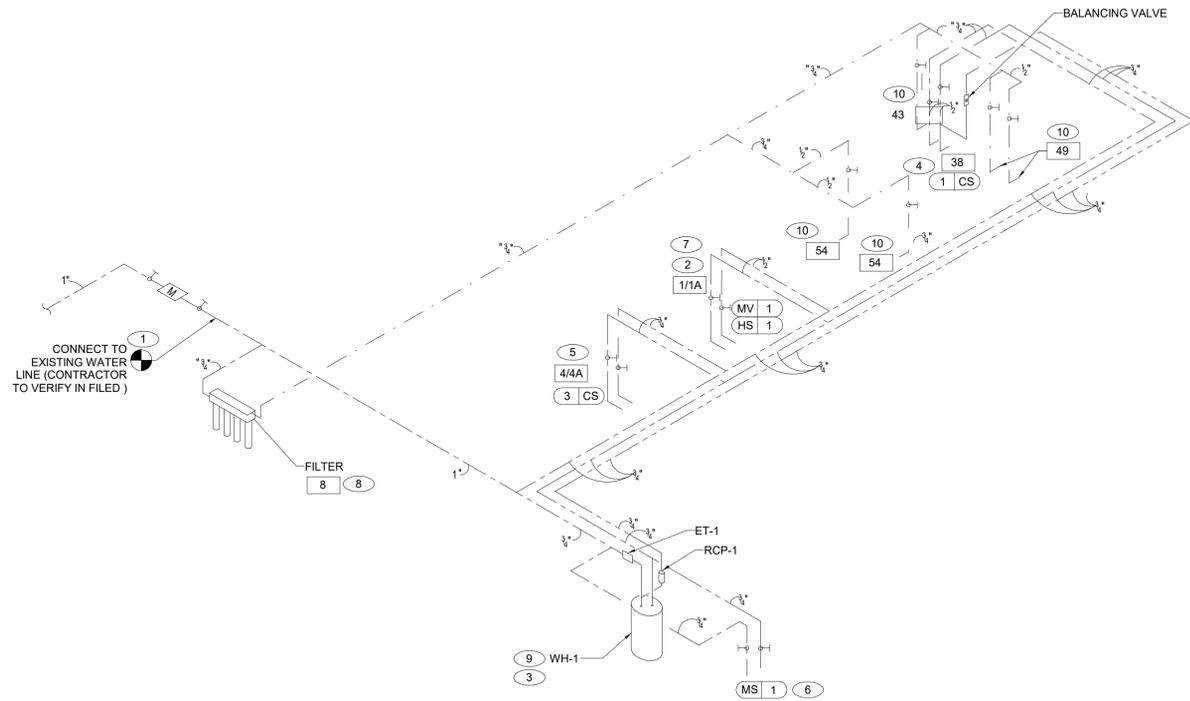


DRAWING TITLE:  
**WASTE AND VENT PIPING PLAN**

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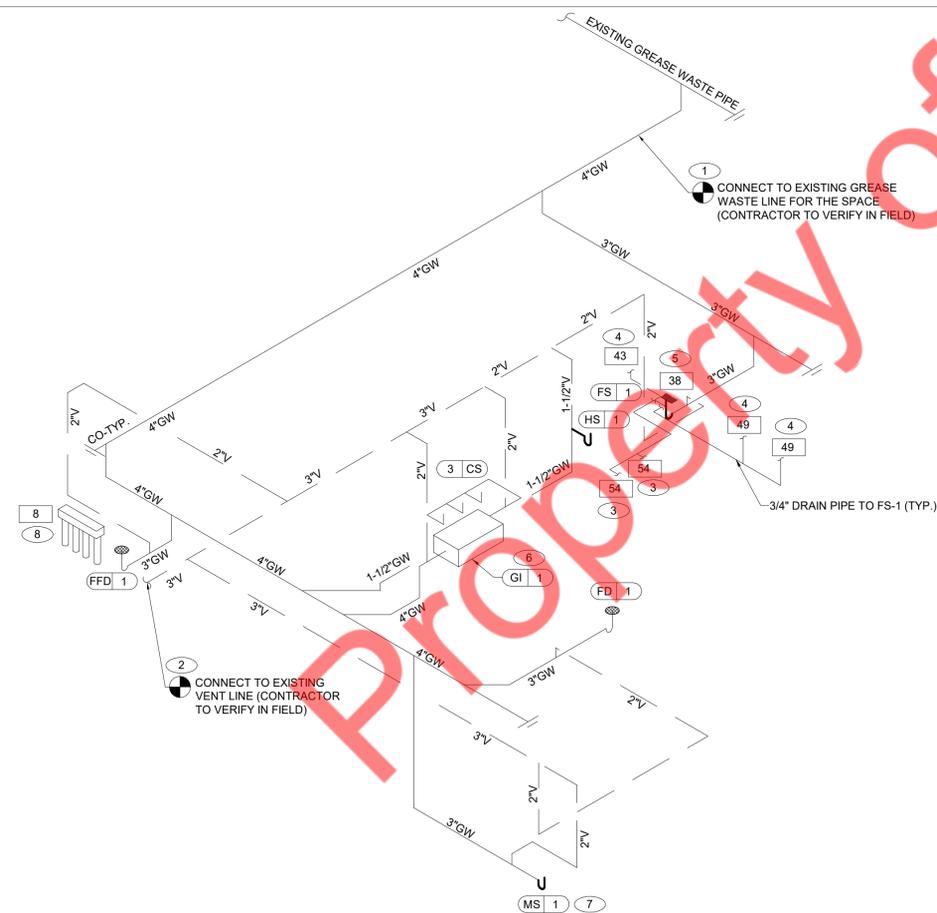




**WATER ISOMETRIC** NTS 1

- 1 CONNECT NEW 1" CW LINE TO EXISTING COLD WATER IN THE SPACE. PROVIDE BFP. CONTRACTOR TO TO FIELD VERIFY EXACT POINT OF CONNECTION & LOCATION OF WATER METER.
- 2 PROVIDE THERMOSTATIC MIXING VALVE SET TO 110 F AT EACH HAND SINK.
- 3 CONNECT 3/4" HW/CW & 3/4" HWR WATER LINES TO STORAGE WATER HEATER WH-1.
- 4 1/2" HOT AND COLD WATER LINES DOWN IN WALL 1-COMPARTMENT SINK
- 5 3/4" COLD AND HOT WATER LINES DOWN IN WALL TO THREE COMPARTMENT SINK. PROVIDE MIXING VALVE ABOVE SUSPENDED CEILING
- 6 3/4" COLD AND HOT WATER DOWN IN WALL TO MOP SINK.
- 7 1/2" HOT AND COLD WATER DOWN IN WALL TO HANDSINK.
- 8 3/4" COLD WATER PIPE DOWN IN WALL TO FILTER AND 3/4" FILTER WATER SUPPLY FROM THE FILTRATION.
- 9 T&P RELIEF VALVE AND DRAIN LINE. EXTEND DRAIN LINE TO MOP SINK AND SPILL. DRAIN LINE TO BE MIN OF 2" ABOVE THE FLOOD RIM LEVEL OF MOP SINK
- 10 1/2" FILTER WATER DN TO ICE MAKER, ESPRESSO MAKER & COFFEE DISPENSER .

**KEYNOTES - WATER SUPPLY4** NTS 2



**WASTE AND VENT ISOMETRIC** NTS 3

- 1 CONTRACTOR SHALL CONNECT NEW 4" GREASE WASTE LINE TO THE EXISINTG GREASE WASTE PIPE. VERIFY EXACT LOCATION, SIZE, INVERT, DIRECTION OF FLOW AND CONNECTION POINT PRIOR TO BID.
- 2 CONTRACTOR SHALL CONNECT NEW 3" VENT LINE TO THE EXISINTG 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 ROUTE INDIRECT DRAIN LINES FROM COFFEE BREWER TO FLOOR SINK WITH APPROVED AIR GAP AS PER LOCAL CODE.
- 4 ROUTE INDIRECT DRAIN LINES FROM ESPRESSO MACHING AND ICE MAKER TO FLOOR SINK WITH APPROVED AIR GAP AS PER LOCAL CODE.
- 5 PIPE 1-COMPARTMENT SINK TO FLOOR SINK WITH AIR GAP PER CODE
- 6 SCHIER GB-1 FLOOR MOUNTED GREASE INTERCEPTOR. CONTRACTOR TO FILED VERIFY INTALLATION REQUIREMENTS AS PER MANUFACTURERS RECOMMENDATIONS.
- 7 SPILL WATER HEATER (WH-1) T&P DISCHARGE AND DRAIN PAN TO MOP SINK WITH AIR GAP.
- 8 ROUTE INDIRECT DRAIN LINES FROM FILTRATION UNIT TO FUNNEL FLOOR DRAIN WITH APPROVED AIR GAP AS PER LOCAL CODE.

**KEYNOTES - WASTE AND VENT** NTS 4

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**CAFFÈ NERO**

DRAWING TITLE:  
**PLUMBING RISER DIAGRAMS**

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**P400**

**SPRINKLER GENERAL NOTES**

- ALL SPRINKLER WORK SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF N.F.P.A.-13 AND ALL LOCAL AUTHORITIES.
- ALL SPRINKLER WORK SHALL COMPLY WITH BUILDING STANDARDS AND REQUIREMENTS.
- ALL SPRINKLER HEADS SHALL BE INSTALLED AT CENTER OF TILE IF CEILING IS PROVIDED.
- 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.
- THE SPRINKLER SYSTEMS ARE TO BE HYDROSTATIC TESTED FOR A (1) HOUR MINIMUM AT 200 PSI. PRESSURE AND ARE TO BE WITNESSED BY AUTHORIZED BUILDING PERSONNEL. COORDINATE ALL TESTING WITH BUILDING MANAGER.
- 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.
- DRAWING INDICATES SPRINKLER SYSTEM DESIGN ONLY. CONTRACTOR RESPONSIBLE FOR OFFSETS, DROPS AND RISES FOR COORDINATION WITH OTHER TRADES.
- G.C. SHALL BE RESPONSIBLE FOR ALL FINAL TESTS AND INSPECTIONS OF COMPLETED WORK REQUIRED BY THE BUILDING MANAGEMENT PRIOR TO OCCUPANCY OF SPACE.
- 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.
- ALL BURNING, CUTTING, SOLDERING AND WELDING SHALL BE COORDINATED WITH BUILDING FIRE SYSTEMS WITH BUILDING MANAGEMENT, AS REQUIRED.
- 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.
- REFER TO ENGINEERING DRAWINGS FOR SPRINKLER HEADS, LIGHT SENSORS AND FIRE DETECTION DEVICES.
- ALL WORK TO BE DONE DURING THE HOURS DESIGNATED BY OWNER.
- 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.
- UPON SUCCESSFUL COMPLETION OF ALL TESTING, CONTRACTOR SHALL PRIME AND PAINT ALL EXPOSED SPRINKLER PIPING. COLOR AND FINISH SHALL BE AS PER ARCHITECT.
- 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.
- FOR SPRINKLER WORK DONE IN ACCORDANCE WITH THE REQUIREMENTS OF N.F.P.A.-13, HYDROSTATIC TESTS IN ACCORDANCE WITH REFERENCE STANDARD NFPA 13-2013, AS MODIFIED FOR COMMONWEALTH OF MASSACHUSETTS, ARE NECESSARY.
- CONTRACTOR SHALL COORDINATE WITH OTHER TRADES AND SHALL INSTALL NEW WORK TO CLEAR DUCTWORK AND LIGHTING FIXTURES.
- ALL SPRINKLER WORK SHALL COMPLY WITH BUILDING STANDARDS AND REQUIREMENTS.
- DRAWING INDICATES SPRINKLER SYSTEM DESIGN ONLY. CONTRACTOR RESPONSIBLE FOR OFFSETS, DROPS AND RISES FOR COORDINATION WITH OTHER TRADES.
- PIPES SIZES SHOWN ARE BASED ON SCHEDULE OF PIPE SIZE 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.
- PROVIDE AUXILIARY DRAINS AT TRAPPED SECTIONS OF PIPING AS REQUIRED BY NFPA.
- 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 PRIOR TO INSTALLATION.
- 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.
- 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.
- WET SPRINKLER SYSTEM SUBJECTED TO FREEZING SHOULD COMPLY WITH CMR 780 MASSACHUSETTS STATE BUILDING CODE, 9TH EDITION AMENDED TO 2015 INTERNATIONAL BUILDING CODE, SECTION 903.

**BUILDING DEPARTMENT SPRINKLER NOTES**

- THE INSTALLATION, COMPONENTS, SIZING, SPACING, CLEARANCES, POSITION AND TYPE OF SYSTEMS SHALL CONFORM TO THE CMR 780 MASSACHUSETTS STATE BUILDING CODE, 9TH EDITION AMENDED TO 2015 INTERNATIONAL BUILDING CODE, SECTION 903.
- ONLY APPROVED MATERIALS SHALL BE USED AS PER 527 CMR 1.00 MASSACHUSETTS COMPREHENSIVE FIRE SAFETY CODE SECTION 1.05.
- DIRECT CONNECTION OF SPRINKLERS TO THE PUBLIC WATER SYSTEM SHALL CONFORM TO 527 CMR 1.00 MASSACHUSETTS COMPREHENSIVE FIRE SAFETY CODE SECTION 1.05.
- SPRINKLER SHALL BE PROTECTED AGAINST FREEZING AND INJURY AS PER 527 CMR 1.00 MASSACHUSETTS COMPREHENSIVE FIRE SAFETY CODE SECTION 1.05.
- INSPECTION AND TESTS OF SPRINKLERS SHALL BE CONDUCTED AS SEC. 901.5 AND 527 CMR 1.00 MASSACHUSETTS COMPREHENSIVE FIRE SAFETY CODE, SECTION 1.05.
- THE OCCUPANCY OF THE AREAS TO BE SPRINKLER IN ACCORDANCE WITH 527 CMR 1.00 MASSACHUSETTS COMPREHENSIVE FIRE SAFETY CODE SECTION 1.05, CHAPTER 4.
- WATER SUPPLY TEST PIPES AND GAUGES SHALL BE PROVIDED AS PER 527 CMR 1.00 MASSACHUSETTS COMPREHENSIVE FIRE SAFETY CODE SECTION 1.05.
- PIPING, FITTINGS, SPECIFICATIONS, PIPE SCHEDULES, SYSTEM TEST PIPES, PROTECTION AGAINST CORROSION, DAMAGE, VALVES, HANGERS, SPRINKLERS GUARDS AND SHIELDS SHALL BE AS PER 527 CMR 1.00 MASSACHUSETTS COMPREHENSIVE FIRE SAFETY CODE SECTION 1.05.
- STOCK OF EXTRA SPRINKLERS WILL BE FURNISHED AS PER 527 CMR 1.00 MASSACHUSETTS COMPREHENSIVE FIRE SAFETY CODE SECTION 1.05. (REQUIRED FOR EACH TEMPERATURE RATING).
- SPRINKLER ALARM SHALL BE IN ACCORDANCE WITH 527 CMR 1.00 MASSACHUSETTS COMPREHENSIVE FIRE SAFETY CODE SECTION 1.05.
- SPACING, LOCATION AND POSITION OF SPRINKLER WILL BE AS PER 527 CMR 1.00 MASSACHUSETTS COMPREHENSIVE FIRE SAFETY CODE SECTION 1.05.
- ALL BLIND SPACES EXCEEDING 6" IN WIDTH OR DEPTH WHICH CONTAIN COMBUSTIBLE MATERIAL WILL BE SPRINKLERED.
- ALL PIPE PASSING THROUGH WALLS WILL COMPLY WITH SECTION BC711.2
- THERE IS NO HIGH PILED STORAGE AS DEFINED IN 527 CMR 1.00 MASSACHUSETTS COMPREHENSIVE FIRE SAFETY CODE SECTION 1.05.
- THIS APPLICATION IS NOT FILED AS A RESULT OF ACTION BY THE FIRE COMMISSIONER AS AUTHORIZED BY BS & A TO MODIFY THE CERTIFICATE OF OCCUPANCY NOR IS SUCH ACTION PENDING.
- ALL VALVES SHALL BE IDENTIFIED AS REQUIRED BY 527 CMR 1.00 MASSACHUSETTS COMPREHENSIVE FIRE SAFETY CODE SECTION 1.05.
- DRAINAGE SHALL CONFORM TO 527 CMR 1.00 MASSACHUSETTS COMPREHENSIVE FIRE SAFETY CODE SECTION 1.05.
- A ONE PIECE REDUCING FITTING OF GOOD DESIGN SHOULD BE USED WHEREVER A CHANGE IS MADE IN THE SIZE OF PIPE, AS PER 527 CMR 1.00 MASSACHUSETTS COMPREHENSIVE FIRE SAFETY CODE SECTION 1.05.
- ALL VALVES ON CONNECTIONS TO WATER SUPPLIES TO SPRINKLER SHALL BE APPROVED O.S. & Y. OR APPROVED INDICATOR TYPE.
- DRAIN VALVES AND TEST VALVES SHALL BE APPROVED TYPE AS PER 527 CMR 1.00 MASSACHUSETTS COMPREHENSIVE FIRE SAFETY CODE SECTION 1.05.
- 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 CHAPTER 9.
- PROVISIONS SHOULD BE MADE TO FACILITATE FLUSHING SYSTEM PIPING BY PROVIDING FLUSHING CONNECTIONS CONSISTING OF A CAPPED NIPPLE 4" LONG ON END OF A CROSS MAIN AS PER 527 CMR 1.00 MASSACHUSETTS COMPREHENSIVE FIRE SAFETY CODE SECTION 1.05.
- SPRINKLER SHALL BE AN APPROVED TYPE AS PER 527 CMR 1.00 MASSACHUSETTS COMPREHENSIVE FIRE SAFETY CODE SECTION 1.05.
- TEMPERATURE RATING SHALL COMPLY WITH 527 CMR 1.00 MASSACHUSETTS COMPREHENSIVE FIRE SAFETY CODE SECTION 1.05.
- 18" MINIMUM CLEARANCE TO BELOW SPRINKLER DEFLECTOR AS PER 527 CMR 1.00 MASSACHUSETTS COMPREHENSIVE FIRE SAFETY CODE SECTION 1.05.
- SPACING AND LOCATION OF SPRINKLERS SHALL COMPLY WITH 527 CMR 1.00 MASSACHUSETTS COMPREHENSIVE FIRE SAFETY CODE SECTION 1.05.
- SPRINKLER SYSTEM COMPLIES WITH NFPA 13-2013 AS MODIFIED BY 527 CMR 1.00 MASSACHUSETTS COMPREHENSIVE FIRE SAFETY CODE SECTION 1.05.
- SOURCES OF WATER SUPPLY FOR SPRINKLER SYSTEMS AS PER 527 CMR 1.00 MASSACHUSETTS COMPREHENSIVE FIRE SAFETY CODE SECTION 1.05.
- PIPE SCHEDULE SYSTEMS SHALL BE IN ACCORDANCE WITH CHAPTER 9, SECTION 903.3.
- HYDRAULICALLY DESIGNED SYSTEMS SHALL BE IN ACCORDANCE WITH CHAPTER 9 SECTION 903.3.
- MINIMUM BRANCH PIPE SIZE TO BE ONE INCH (1").
- 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.

**SPRINKLER LEGEND**

- EXISTING SPRINKLER PIPE
- SPRINKLER PIPE
- CONCEALED SPRINKLER HEAD
- UPRIGHT SPRINKLER HEAD
- (RL) RELOCATED SPRINKLER HEAD
- (E) EXISTING SPRINKLER HEAD
- (N) NEW SPRINKLER HEAD
- SP SPRINKLER PIPE

| SPRINKLER DRAWING LIST  |
|---|
| SP100 SPRINKLER NOTES, ABBREVIATIONS, SYMBOLS, AND SPRINKLER SPECIFICATIONS |
| SP200 SPRINKLER PLAN  |
| SP300 SPRINKLER DETAILS   |

| SPACING BETWEEN SPRINKLER HEADS   |
|---|
| LIGHT HAZARD: 15' MAX.<br>ORDINARY HAZARD: 15' MAX  |
| NOTE: MAXIMUM DISTANCE BETWEEN SPRINKLER HEADS & WALLS IS 1/2 THE DISTANCE BETWEEN HEADS. |

| PROTECTION AREA OF SPRINKLER HEADS                          |
|---|
| LIGHT HAZARD : 225 SQ. FT.<br>ORDINARY HAZARD : 130 SQ. FT. |

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

**MASSACHUSETTS THREE TIER PROCESS**

THIS PROJECT SHALL BE DESIGNED AND CONSTRUCTED UNDER THE THREE TIER SYSTEM, PER THE MASSACHUSETTS BUILDING CODE, 780 CMR, CHAPTER 9.  
A. TIER ONE, CONSTRUCTION DOCUMENTS

1. PRIOR TO ISSUANCE OF A BUILDING PERMIT, CONSTRUCTION DOCUMENTS FOR THE FIRE PROTECTION SYSTEM MUST BE SUBMITTED AND A BUILDING PERMIT OBTAINED PRIOR TO THE INSTALLATION OF FIRE PROTECTION SYSTEMS OR MODIFICATIONS, ALTERATIONS, ADDITIONS OR DELETIONS TO AN EXISTING FIRE PROTECTION SYSTEM.

2. THE CONSTRUCTION DOCUMENTS SHALL CONTAIN CONFORM TO ALL REQUIREMENTS LISTED IN THE BUILDING CODE.

B. TIER TWO, SHOP DRAWINGS  
1. PRIOR TO INSTALLATION OF FIRE PROTECTION SYSTEMS, SHOP DRAWINGS AND HYDRAULIC CALCULATIONS SHALL BE PREPARED BY THE CONTRACTOR.

2. DRAWINGS AND HYDRAULIC CALCULATIONS SHALL CONFORM TO ALL REQUIREMENTS LISTED IN THE BUILDING CODE. THE SHOP DRAWINGS AND HYDRAULIC CALCULATIONS SHALL THEN BE SUBMITTED TO THE ENGINEER OF RECORD, WHEN THE ENGINEER OF RECORD IS SATISFIED WITH THE DRAWINGS AND HYDRAULIC CALCULATIONS, THEY WILL BE SEALED.

3. THE CONTRACTOR SHALL THEN SUBMIT DRAWINGS AND HYDRAULIC CALCULATIONS TO THE BUILDING OFFICIAL AND FIRE OFFICIAL, AND OBTAIN APPROVAL.

C. TIER THREE, RECORD DRAWINGS

1. AS BUILT PLANS SHALL BE PROVIDED TO THE BUILDING OWNER FOR ALL FIRE PROTECTION AND LIFE SAFETY SYSTEMS THAT ARE SEALED AS REVIEWED AND APPROVED BY THE ENGINEER OF RECORD, PERFORMING CONSTRUCTION CONTROL.

2. SHOP DRAWINGS SHALL BE MODIFIED AS NECESSARY, WITH ANY FIELD CHANGES IDENTIFIED BY CLOUDS ON THE DRAWINGS.

3. WHEN THE ENGINEER OF RECORD IS SATISFIED WITH THE DRAWINGS AND HYDRAULIC CALCULATIONS, THEY WILL BE SEALED. THESE COMPLETED DOCUMENTS WILL THEN BE INCORPORATED INTO THE OPERATION & MAINTENANCE MANUALS, AND DELIVERED TO THE OWNER.

**FIRE PROTECTION SYSTEM INTENT**

ALL WORK SHALL BE INSTALLED IN CONFORMANCE WITH NFPA 13.

PERFORM A NEW FLOW TEST OR OBTAIN A RECENT FLOW TEST AND USE THE RESULTS WHEN PREPARING HYDRAULIC CALCULATIONS.

PREPARE SHOP DRAWINGS AND HYDRAULIC CALCULATIONS AS PRESCRIBED BY NFPA 13. SHOP DRAWINGS AND HYDRAULIC CALCULATIONS SHALL BE SEALED BY AN ENGINEER REGISTERED IN MASSACHUSETTS.

SHOP DRAWINGS AND HYDRAULIC CALCULATIONS SHALL BE SUBMITTED BY A STATE LICENSED CONTRACTOR AND A PERMIT OBTAINED FROM THE BOSTON FIRE DEPARTMENT PRIOR TO THE COMMENCEMENT OF WORK.

PROVIDE A COMPLETE WET SPRINKLER SYSTEM, IN ACCORDANCE WITH NFPA 13.

**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 13-2013, MASSACHUSETTS 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 MASSACHUSETTS 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:

- PIPE AND FITTINGS
- VALVES
- HANGERS AND SUPPORTS
- SPRINKLER PIPING LAYOUT
- TESTS
- SPRINKLER HEADS
- HYDRAULIC CALCULATIONS

A. THE SPRINKLER SYSTEM SHALL BE HYDRAULICALLY DESIGNED. CONTRACTOR SHALL SUBMIT CALCULATIONS WITH SHOP DRAWINGS. CALCULATIONS SHALL BE PERFORMED IN ACCORDANCE WITH REQUIREMENTS OF NFPA 13-2013, AND MASSACHUSETTS BUILDING CODE.

B. ADD APPROPRIATE HOSE ALLOWANCE.

C. 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.

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 MODIFIED BY APPENDIX G, PIPE OR TUBE USED IN SPRINKLER SYSTEMS SHALL BE OF THE MATERIALS SPECIFIED IN TABLE 6.3.1.1.

D. AS PER NFPA 13, FITTINGS USED IN SPRINKLER SYSTEMS SHALL BE OF THE MATERIALS LISTED IN TABLE 6.4.1. 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 WITHSTAND A WORKING PRESSURE OF NOT LESS THAN 130PSI 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, ITS 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 DEG. 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. MANUFACTURED OR APPROVED EQUAL, UL AND FM APPROVED, AS FOLLOWS:

1. SPRINKLER HEADS IN FINISHED CEILINGS WITH CONCEALED PIPING SHALL BE SAME AS EXISTING OR AUTOMATIC TYCO MODEL TY351.

2. UPRIGHT SPRINKLER HEADS SHOULD BE AUTOMATIC TYCO MODEL TY3121.

4. PROVIDE SPARE SPRINKLER EMERGENCY CABINETS CONFORMING TO NFPA 13.

5. SPRINKLER EMERGENCY CABINETS SHALL BE OF TYCO SPRINKLER CO., INC. OR APPROVED EQUAL, UL AND FM APPROVED.

6. CABINET SHALL BE CONSTRUCTED OF 22 GAUGE STEEL WITH PRIME COAT AND MANUFACTURER'S BAKED ENAMEL FINISH IN COLOR SELECTED BY THE ARCHITECT.

7. 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 FROM 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.

**DISCLAIMER**

OWNERSHIP AND USE OF DOCUMENTS, DRAWINGS AND SPECIFICATIONS ARE INSTRUMENTS OF PROFESSIONAL SERVICE AND SHALL REMAIN THE PROPERTY OF THE ARCHITECT. THESE DOCUMENTS ARE NOT TO BE USED, IN WHOLE OR IN PART, FOR ANY OTHER PROJECTS OR PURPOSES OR BY ANY OTHER PARTIES THAN THOSE PROPERLY AUTHORIZED BY CONTRACT WITHOUT THE EXPRESS WRITTEN AUTHORIZATION OF THE ARCHITECT.

**NY ENGINEERS**

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382 NE 191ST STREET SUITE 49674,  
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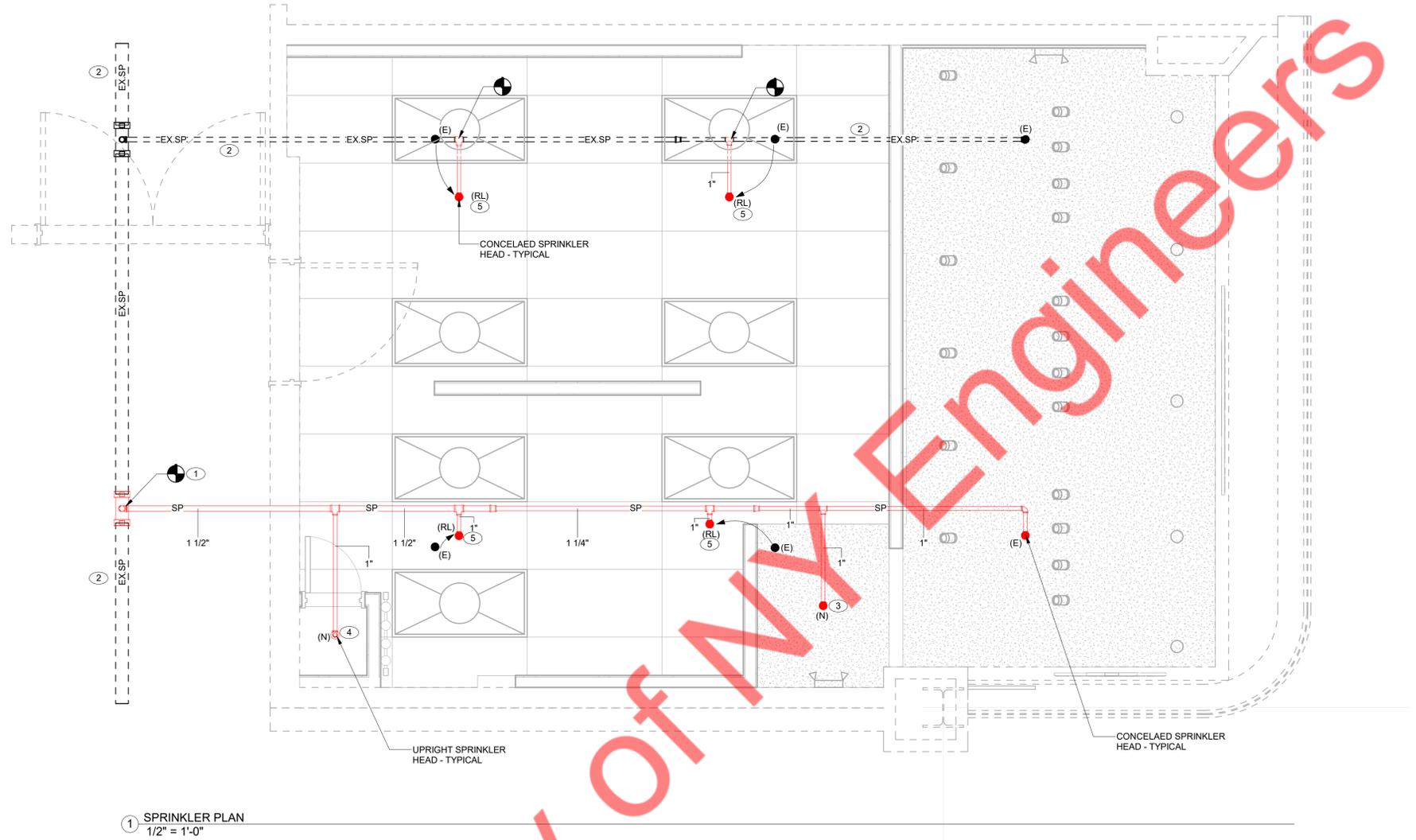
**REVISIONS**

| NUMBER | REMARKS    | DATE     |
|--------|------------|----------|
| 1      | PERMIT SET | 05.29.24 |
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|        |            |          |
|        |            |          |

| ISSUED FOR: | DATE ISSUED: |
|-------------|--------------|
|-------------|--------------|

HAZARD CLASSIFICATION AND DESIGN DENSITY:  
 AREA : KITCHEN AREA AND SERVICE AREA.  
 OCCUPANCY: ORDINARY HAZARD  
 MINIMUM DESIGN DENSITY: 0.15 GPM/SQ. FT.

| SPRINKLER HEAD COUNTS       |      |
|-----------------------------|------|
| SPRINKLER HEAD TYPE         | QTY. |
| NEW CONCEALED PENDENT       | 01   |
| NEW UPRIGHT                 | 01   |
| EXISTING CONCEALED PENDENT  | 02   |
| RELOCATED CONCEALED PENDENT | 04   |
| TOTAL                       | 08   |



1 SPRINKLER PLAN  
 1/2" = 1'-0"

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**REVISIONS**

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|--------|------------|----------|
| 1      | PERMIT SET | 05.29.24 |
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|             |              |
|-------------|--------------|
| ISSUED FOR: | DATE ISSUED: |
|             | 08/11/23     |

PROJECT TITLE:



**SPRINKLER FLOOR PLAN 1/2" = 1' 0" A**

**GENERAL NOTES:**

- CONTRACTOR TO FIELD VERIFY TO INSTALL ALL SPRINKLER HEADS TO BE MAX. 12" FROM CEILING.
- ALL NEW SPRINKLER HEADS LOCATION TO BE COORDINATED WITH LIGHTING AND DIFFUSERS TO AVOID CONFLICT.
- ALL SPRINKLER HEADS & PIPING TO BE COORDINATED OTHER TRADES.
- 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.
- FOR PURPOSES OF CLEARNESS AND LEGIBILITY, SPRINKLER DRAWINGS ARE ESSENTIALLY DIAGRAMMATIC AND SIZE AND LOCATION OF EQUIPMENT ARE DRAWN TO SCALE WHEREVER POSSIBLE. THE DRAWINGS 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'.
- COVERAGE AREA PER SPRINKLER SHALL BE MAX. 225 SQ.FT FOR LIGHT HAZARD AND 130 SQ.FT. FOR ORDINARY HAZARD.
- ALL SPRINKLER HEADS MEET DESIGN CRITERIA PER COVERAGE.
- AUXILIARY DRAIN SHALL BE PROVIDED AT THE TRAPPED SECTIONS.
- FOR SPRINKLER WORK ONLY.

**SPRINKLER KEYED NOTES:**

- CONNECT NEW 1-1/2" SPRINKLER BRANCH PIPE TO EXISTING SPRINKLER MAIN PIPING IN THE SPACE. CONTRACTOR TO FIELD VERIFY AND MODIFY THE EXISTING PIPE AS REQUIRED TO MAKE NEW BRANCH PIPE CONNECTION PRIOR TO BID.
- EXISTING SPRINKLER PIPING TO REMAIN. CONTRACTOR TO FIELD VERIFY AND COORDINATE EXACT ROUTING, SIZING AND PIPE ELEVATION ON FIELD AND ADJUST/UPGRADE AS PER NEW PROPOSED CEILING.
- PROVIDE NEW CONCEALED PENDENT SPRINKLER AS PER THE NEW CEILING LAYOUT. CONTRACTOR TO FIELD VERIFY AND CO-ORDINATE EXISTING PIPING ROUTING, SIZING AND ELEVATION ON FILED.
- PROVIDE NEW UPRIGHT SPRINKLER AS PER THE NEW CEILING LAYOUT. CONTRACTOR TO FIELD VERIFY AND CO-ORDINATE THE PIPE ROUTING, SIZING AND ELEVATION ON FILED.
- EXISTING RELOCATED CONCEALED PENDENT SPRINKLER HEAD. EXTEND PIPING AS REQUIRED. COLOR TO MATCH AS PER EXISTING (TYPICAL).

**SPRINKLER GENERAL NOTES NTS C**

**KEY NOTES - SPRINKLER PLAN NTS B**

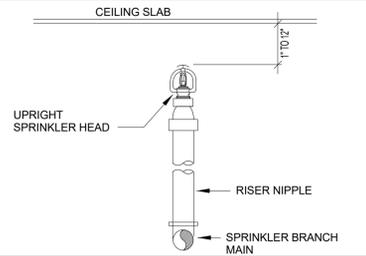
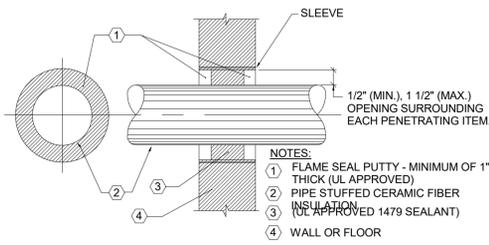
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**SPRINKLER PLAN**

PERMIT DWG DATE: 05-29-24 PROJECT NUMBER:

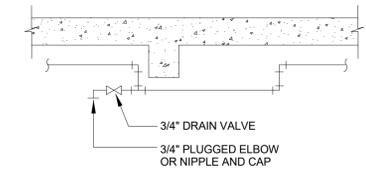
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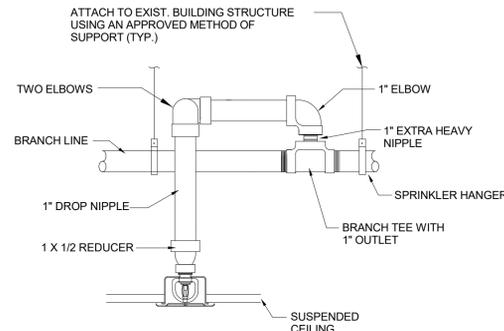
**SP200**



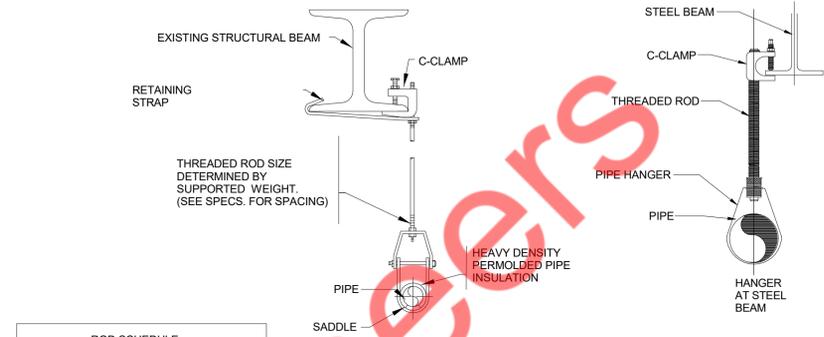
2 SPRINKLER HEAD DETAIL UPRIGHT  
SP300 N.T.S.



3 TYPICAL DRAIN CONNECTION FOR TRAPPED LINES ON WET PIPE SPRINKLER SYSTEMS  
SP300 N.T.S.

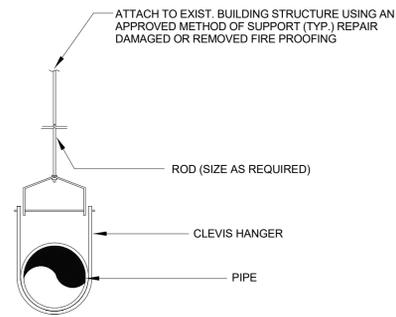


4 SPRINKLER HEAD IN SUSPENDED CEILING DETAIL  
SP300 N.T.S.

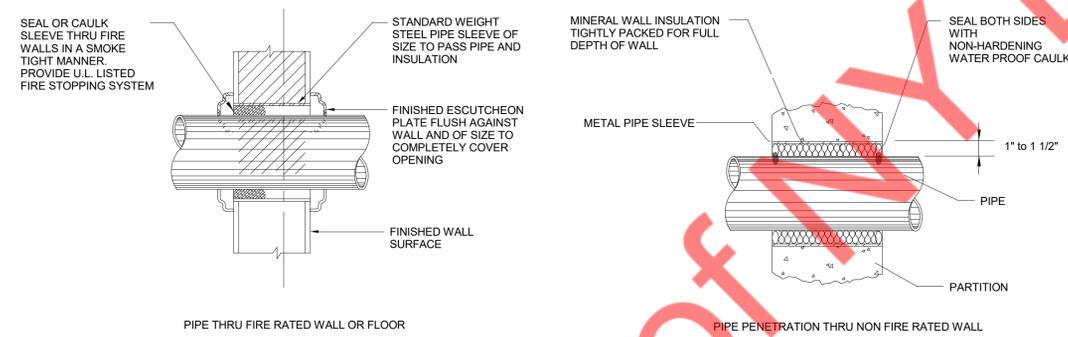


| ROD SCHEDULE |          |         |
|--------------|----------|---------|
| PIPE SIZE    | ROD SIZE | SPACING |
| 1"           | 3/8"     | 5'-8"   |
| 1 1/4"       | 3/8"     | 6'-10"  |
| 1 1/2"       | 3/8"     | 8'-10"  |
| 2"           | 3/8"     | 10'-12" |

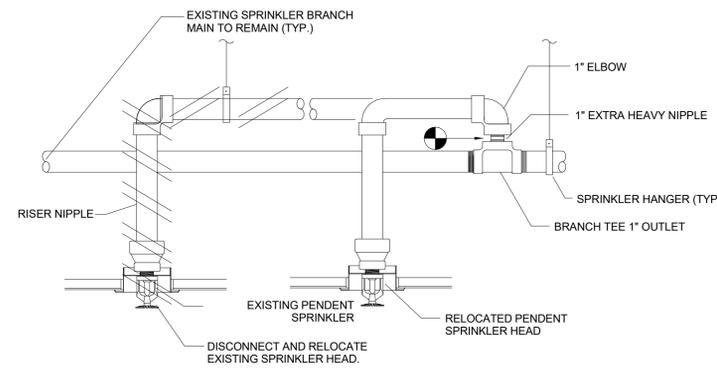
5 TYPICAL HANGER DETAIL AND ROD SCHEDULE  
SP300 N.T.S.



6 HANGER DETAILS TYPICAL  
SP300 N.T.S.



7 PIPE SLEEVE THRU WALL SECTION  
SP300 N.T.S.



8 RELOCATED PENDENT SPRINKLER HEAD DETAIL  
SP300 N.T.S.

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