# MECHANICAL SYMBOLS LIST

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|---|---|
| AC – 1 / TXF-1 | EQUIPMENT SYMBOL |
| XX / X | RISER SYMBOL |
| **AIR DEVICES** | |
| | CEILING DIFFUSER SUPPLY |
| | CEILING DIFFUSER RETURN |
| | CEILING DIFFUSER EXHAUST |
| **DUCT ACCESSORIES** | |
| GD | BACKDRAFT DAMPER |
| VD VD | VOLUME DAMPER W/ ACCESS DOOR |
| **HVAC PIPING** | |
| CP | NEW CONDENSATE PIPING |
| **CONTROLS AND SENSORS** | |
| T | THERMOSTAT |
| T | TEMPERATURE SENSOR |
| S | DUCT MOUNTED SMOKE DETECTOR |
| **DUCTWORK** | |
| | AIR DUCT W/ 1.5" ACOUSTICAL LINING |
| | FLEXIBLE DUCT |
| FC FC | FLEXIBLE CONNECTION |
| 24X12 | RECTANGULAR DUCT (WIDTH X DEPTH) |
| ø12 | ROUND DUCT (DIAMETER) |
| | ROUND DUCT CROSS SECTION |
| | SUPPLY AIR RECTANGULAR DUCT CROSS SECTION |
| | RETURN AIR RECTANGULAR DUCT CROSS SECTION |
| -- CFM -- NECK | CFM/AIRFLOW TAG |

## MECHANICAL ABBREVIATIONS

| | |
|---|---|
| AC | AIR CONDITIONING UNIT |
| AL | ACOUSTIC LINING |
| GD | GRAVITY DAMPER |
| BOD | BOTTOM OF DUCT |
| BOE | BOTTOM OF EQUIPMENT |
| CFM | CUBIC FEET OF AIR PER MINUTE |
| COP | COEFFICIENT OF PERFORMANCE |
| CP | CONDENSATE PUMP |
| CD | CONDENSATE DRAIN PIPE |
| DN | DOWN |
| EER | ENERGY EFFICIENCY RATIO |
| EG | EXHAUST GRILLE |
| FC | FLEXIBLE CONNECTION |
| FD/AD | FIRE DAMPER W/ACCESS DOOR |
| FD | FIRE DAMPER W/FUSIBLE LINK |
| FSD | FIRE SMOKE DAMPER |
| HSPF | HEATING SEASONAL PERFORMANCE FACTOR |
| IEER | INTEGRATED ENERGY EFFICIENCY RATIO |
| RG | RETURN GRILLE |
| SEER | SEASONAL ENERGY EFFICIENCY RATIO |
| SG | SUPPLY GRILLE |
| VD | VOLUME DAMPER |
| W.M.S. | WIRE MESH SCREEN |
| FCU | FAN COIL UNIT |
| CU | CONDENSING UNIT |
| OAF | OUTSIDE AIR INTAKE FAN |
| ACCU | AIR COOLED CONDENSER UNIT |

## BUILDING CODE COMPLIANCE

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

a. NEW JERSEY BUILDING CODE 2021.

b. NEW JERSEY MECHANICAL CODE 2021.

c. ENERGY CODE ASHRAE 90.1 (2019)

d. NEW JERSEY FIRE CODE 2021.

e. NEW JERSEY PLUMBING CODE 2021.

f. NEW JERSEY FUEL GAS CODE 2021.

## MECHANICAL DRAWING LIST

| DWG. NO. | DRAWING NAME |
|---|---|
| M001 | MECHANICAL SYMBOLS LIST, ABBREVIATIONS & GENERAL NOTES |
| M002 | MECHANICAL NOTES & SPECIFICATIONS |
| M101 | MECHANICAL FLOOR PLAN |
| M102 | MECHANICAL ROOF PLAN |
| M201 | MECHANICAL SCHEDULES (01 OF 02) |
| M202 | MECHANICAL SCHEDULES (02 OF 02) |
| M401 | MECHANICAL DETAILS (01 OF 02) |
| M402 | MECHANICAL DETAILS (02 OF 02) |

## FAIRLAWN, NJ BUILDING DEPARTMENT NOTES

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

1. THE CONTRACTOR SHALL ENGAGE THE THE SERVICES OF A PROFESSIONAL ENGINEER TO PROVIDE THE REQUIRED SPECIAL INSPECTIONS AND TESTS.
2. TESTS WILL BE CONDUCTED UNDER DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, ARCHITECT OR OTHER PERSON HAVING NOT LESS THAN FIVE (5) YEARS EXPERIENCE SUPERVISING THE INSTALLATION OF SUCH MECHANICAL SYSTEMS.
3. THE LICENSED PROFESSIONAL ENGINEER, ARCHITECT OR OTHER PERSON HAVING NOT LESS THAN FIVE (5) YEARS EXPERIENCE SUPERVISING THE INSTALLATION OF SUCH MECHANICAL SYSTEMS AND CONDUCTING SUCH TESTS WILL FILE DOCUMENTATION AND REPORTS OF TESTS THAT THE SYSTEM COMPLIES WITH THE CONSTRUCTION DOCUMENTS AND APPLICABLE LAWS.
4. TESTS OF MECHANICAL SYSTEMS SHALL BE PERFORMED IN ACCORDANCE WITH 2021 INTERNATIONAL MECHANICAL CODE:
   A. VENTILATION SYSTEM BALANCING 2021 IMC 401.
7. THE FOLLOWING WORK ITEMS, COMPONENTS, MATERIALS, CAPACITIES, ETC. SHALL COMPLY WITH THE 2021 INTERNATIONAL MECHANICAL CODE:
   A. STANDARDS OF HEATING
   B. DUCT CONSTRUCTION AND INSTALLATION- 2021 IMC 603
   C. AIR INTAKES, EXHAUSTS AND RELIEF- 2021 IMC 401.5, 401.5, 501.3.1
   D. SMOKE DETECTORS AND FIRE AND SMOKE DAMPERS - 2021 IMC 606 & 607 RESPECTIVELY
   E. MANUAL AUTOMATIC FIRE AND SMOKE CONTROLS FOR AIR DISTRIBUTION SYSTEMS - 2021 IMC 513
   F. AIR FILTERS - 2021 IMC 605
8. 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 2021 IMC 403.3
9. ALL FIRE DAMPERS SHALL BE ACCEPTED FOR USE BY THE NEW JERSEY BUILDING DEPARTMENTS. FIRE DAMPERS SHALL BE MANUFACTURED AND INSTALLED IN ACCORDANCE WITH UL 555, STANDARDS FOR FIRE DAMPERS AND CEILING DAMPERS.
10. COMBINATION FIRE/SMOKE DAMPERS AND SMOKE DAMPERS SHALL BE ACCEPTED FOR USE BY NEW JERSEY BUILDING DEPARTMENTS AND SHALL BE MANUFACTURED AND INSTALLED IN ACCORDANCE WITH UL 555S.
11. SMOKE DETECTION SYSTEMS SHALL BE INSTALLED AND SEQUENCED TO FOLLOW CONTROLS OPERATIONS WITH THE REQUIREMENTS OF SECTION 2021 IMC 606 TO CLOSE DAMPERS AND AUTOMATICALLY STOP THE FAN.
12. 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 2021 IMC 607.
13. REFER TO ARCHITECTURAL DRAWINGS FOR REQUIRED FIRE-RATED WALL AND SMOKE WALL CONSTRUCTION AND LOCATION.
14. 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.
15. SMOKE DETECTOR SHALL MEET UL268A
16. ALL HEATING AND COOLING LOADS CALCULATED PER ASHRAE/ACCA 183.

## NOTE TO CONTRACTOR

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

## GENERAL NOTES

1. CONTRACTOR SHALL SURVEY THE AREA OF THIS WORK BEFORE SUBMITTING A BID AND SHALL BE RESPONSIBLE FOR NOTIFYING THE ARCHITECT OF ANY CONDITIONS WHICH WOULD PREVENT THE INSTALLATION OF THE WORK AS SHOWN ON DRAWINGS.
2. ALL APPLICABLE CODES, LAWS AND REGULATIONS GOVERNING OR RELATING TO ANY PORTION OF THIS WORK ARE HEREBY INCORPORATED INTO AND MADE A PART OF THESE SPECIFICATIONS, AND THEIR PROVISIONS SHALL BE CARRIED OUT BY THE CONTRACTOR WHO SHALL INFORM THE OWNER, PRIOR TO SUBMITTING A PROPOSAL, OF ANY WORK OR MATERIALS WHICH VIOLATE ANY OF THE ABOVE LAWS AND REGULATIONS. ANY WORK DONE BY THE CONTRACTOR CAUSING SUCH VIOLATION SHALL BE CORRECTED BY THE CONTRACTOR.
3. BEFORE PROCEEDING WITH ANY WORK IN OCCUPIED OR USED AREAS, THE CONTRACTOR SHALL APPLY TO OWNER FOR PERMISSION TO ENTER SUCH AREAS. THE CONTRACTOR IS OBLIGED TO PERFORM HIS WORK ONLY AT THE TIMES DESIGNATED BY OWNER. THERE WILL BE NO ADDITIONAL COMPENSATION FOR THE WORK PERFORMED AFTER HOURS OR ON OFF-DAYS WITHOUT PRIOR WRITTEN APPROVAL.
4. THE WORK IN THE BUILDING SHALL BE DONE WHEN AND AS DIRECTED, AND IN A MANNER SATISFACTORY TO THE OWNER. THE WORK SHALL BE PERFORMED SO AS TO CAUSE THE LEAST POSSIBLE INCONVENIENCE AND DISTURBANCE TO THE PRESENT OCCUPANTS.
5. THE CONTRACTOR'S PROPOSAL FOR ALL WORK SHALL BE PREDICATED ON THE PERFORMANCE OF THE WORK DURING REGULAR WORKING HOURS. WHEN SO DIRECTED, HOWEVER, THE CONTRACTOR SHALL INSTALL WORK IN OVERTIME AND THE ADDITIONAL COST TO BE CHARGED THEREFORE SHALL BE ONLY THE "PREMIUM" PORTION OF THE WAGES PAID.
6. CONTRACTOR SHALL ASCERTAIN THE APPROPRIATE METHOD FOR BRINGING THE UNITS INTO AND THROUGH THE BUILDING TO POSITION UNIT IN LOCATION SHOWN ON THE PLANS. WHERE NECESSARY, EQUIPMENT SHALL BE SHIPPED FROM MANUFACTURER IN SECTIONS OF SIZE SUITABLE FOR MOVING THROUGH RESTRICTIVE SPACES. COORDINATE WITH BUILDING OWNER APPROPRIATE TIMES OF THE DAY SUCH THAT EQUIPMENT MAY BE MOVED THROUGH AREAS.
7. DUCTWORK 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 TO AVOID OBSTRUCTIONS. EXACT LOCATIONS ARE SUBJECT TO APPROVAL OF ARCHITECT. COORDINATION WITH THE OTHER TRADES IS REQUIRED.
8. SUPPORT ALL DUCTWORK 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.
9. PROVIDE ALL NECESSARY FLASHING AND COUNTER FLASHING TO MAINTAIN THE WATERPROOFING INTEGRITY OF THIS BUILDING AS REQUIRED BY THE INSTALLATION OR REMOVAL OF PIPES, DUCTS, LOUVERS, CONDUIT AND EQUIPMENT. PROVIDE EQUIPMENT CURBS AND DUNNAGE STEEL AS REQUIRED.
10. 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).
11. 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.
12. 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.
13. 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.
14. 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.
15. MATERIALS AND WORKMANSHIP, UNLESS OTHERWISE NOTED, SHALL BE IN ACCORDANCE WITH BUILDING STANDARDS.
16. ALL EQUIPMENT SHALL BE PROVIDED WITH ONE YEAR WARRANTY PARTS AND LABOR AND FIVE YEARS ON COMPRESSORS. WARRANTY PERIOD BEGINS UPON PROJECT ACCEPTANCE
17. ALL MATERIAL AND EQUIPMENT TO BE NEW UNLESS OTHERWISE NOTED AND SHALL BE IN ACCORDANCE WITH BUILDING STANDARDS.
18. 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 HVAC NOTES

GENERAL:

1. PROVIDE ALL MATERIAL AND EQUIPMENT AND PERFORM ALL LABOR REQUIRED TO INSTALL COMPLETE AND OPERABLE MECHANICAL SYSTEMS AS INDICATED ON THE DRAWINGS, AS SPECIFIED AND AS REQUIRED BY CODE.
2. CONTRACT DOCUMENT DRAWINGS FOR MECHANICAL WORK (HVAC, PLUMBING, AND FIRE PROTECTION) ARE DIAGRAMMATIC AND ARE INTENDED TO CONVEY SCOPE AND GENERAL ARRANGEMENT ONLY.
3. THE LOCATIONS OF ALL ITEMS SHOWN ON THE DRAWINGS OR CALLED FOR IN THE SPECIFICATIONS THAT ARE NOT FIXED BY DIMENSIONS ARE APPROXIMATE ONLY. THE EXACT LOCATIONS NECESSARY TO SECURE THE BEST CONDITIONS AND RESULTS MUST BE DETERMINED BY THE PROJECT SITE CONDITIONS AND SHALL HAVE THE APPROVAL OF THE ENGINEER BEFORE BEING INSTALLED. DO NOT SCALE DRAWINGS.
4. WHEN MECHANICAL WORK (HVAC, PLUMBING, SHEET METAL, FIRE PROTECTION, ETC.) IS SUBCONTRACTED, IT SHALL BE THE MECHANICAL CONTRACTOR'S RESPONSIBILITY TO COORDINATE SUBCONTRACTORS AND THE ASSOCIATED CONTRACTS. WHEN DISCREPANCIES ARISE PERTAINING TO WHICH CONTRACTOR PROVIDES A PARTICULAR ITEM OF THE MECHANICAL CONTRACT OR WHICH CONTRACTOR PROVIDES FINAL CONNECTIONS FOR A PARTICULAR ITEM OF THE MECHANICAL CONTRACT, IT SHALL BE BROUGHT TO THE ATTENTION OF THE MECHANICAL CONTRACTOR, WHOSE DECISION SHALL BE FINAL.
5. COORDINATE CONSTRUCTION OF ALL MECHANICAL WORK WITH ARCHITECTURAL, STRUCTURAL, CIVIL, ELECTRICAL WORK, ETC., SHOWN ON OTHER CONTRACT DOCUMENT DRAWINGS.
6. INSTALL ALL MECHANICAL EQUIPMENT AND APPURTENANCES IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS, CONTRACT DOCUMENTS, AND APPLICABLE CODES AND REGULATIONS.
7. WHERE TWO OR MORE ITEMS OF THE SAME TYPE OF EQUIPMENT ARE REQUIRED, THE PRODUCT OF ONE MANUFACTURER SHALL BE USED.
8. COORDINATE ALL EQUIPMENT CONNECTIONS WITH MANUFACTURERS' CERTIFIED DRAWINGS. COORDINATE AND PROVIDE ALL DUCT TRANSITIONS REQUIRED FOR FINAL EQUIPMENT CONNECTIONS TO FURNISHED EQUIPMENT. FIELD VERIFY AND COORDINATE ALL DUCT DIMENSIONS BEFORE FABRICATION.
9. ALL CONTROL WIRE AND CONDUIT SHALL COMPLY WITH THE NATIONAL ELECTRIC CODE AND ELECTRICAL DIVISION OF THE SPECIFICATION.
10. PROVIDE VIBRATION ISOLATION FOR ALL MECHANICAL EQUIPMENT TO PREVENT TRANSMISSION OF VIBRATION TO BUILDING STRUCTURE.
11. LOCATE ALL TEMPERATURE, PRESSURE, AND FLOW MEASURING DEVICES IN ACCESSIBLE LOCATIONS WITH THE STRAIGHT SECTION OF DUCT UP- AND DOWNSTREAM AS RECOMMENDED BY THE MANUFACTURER FOR GOOD ACCURACY.
12. 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.
13. 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.
14. MECHANICAL EQUIPMENT, DUCTWORK, SHALL NOT BE SUPPORTED FROM A METAL DECK.
15. ALL EQUIPMENT, DUCTWORK, ETC., SHALL BE SUPPORTED AS DETAILED, SPECIFIED AND REQUIRED TO PROVIDE A VIBRATION-FREE INSTALLATION.
16. 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.
17. 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.
18. LOCATIONS AND SIZES OF ALL FLOOR, WALL, AND ROOF OPENINGS SHALL BE COORDINATED WITH ALL OTHER TRADES INVOLVED.
19. ALL OPENINGS IN FIRE WALLS DUE TO DUCTWORK, CONDUIT, ETC., SHALL BE FIRE STOPPED WITH A PRODUCT SIMILAR TO 3M OR APPROVED EQUAL.
20. ALL AIR CONDITIONING CONDENSATE DRAIN LINES FROM EACH ROOF TOP 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.
21. REFER TO TYPICAL DETAILS FOR DUCTWORK, AND EQUIPMENT INSTALLATION.
22. 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.
23. ALL TESTS SHALL BE COMPLETED BEFORE ANY MECHANICAL EQUIPMENT INSULATION IS APPLIED.
24. 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

1. 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.
2. ALL NEW DUCTWORK WILL COMPLY WITH THE LATEST SMACNA GUIDELINES AND CONFORM WITH REQUIREMENTS OF THE LATEST HANDBOOKS PUBLISHED BY ASHRAE.
3. PROVIDE VOLUME DAMPER AT EACH TAP TO MAIN DUCT AND WHERE NECESSARY TO PROPERLY BALANCE SYSTEM.
4. SUPPLY AND RETURN DUCTWORK 10' FROM ALL AC UNITS SHALL BE LINED WITH 1.5" ACOUSTICAL LINING.
5. RE-INSULATE ALL DUCTWORK IN WHICH INSULATION HAS BEEN REMOVED OR DAMAGED WITH INSULATION EQUAL TO THE EXISTING INSULATION.
6. 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.
7. 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.
8. 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.
9. ALL DUCTWORK SHALL CLEAR DOORS AND WINDOWS.
10. ALL DUCTWORK DIMENSIONS, AS SHOWN ON THE DRAWINGS, ARE INTERNAL CLEAR DIMENSIONS AND DUCT SIZE SHALL BE INCREASED TO COMPENSATE FOR DUCT LINING THICKNESS.
11. 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.
12. COORDINATE DIFFUSER, REGISTER, AND GRILL LOCATIONS WITH ARCHITECTURAL REFLECTED CEILING PLANS, LIGHTING, AND OTHER CEILING ITEMS AND MAKE MINOR DUCT MODIFICATIONS TO SUIT.
13. 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.
14. ALL AIR HANDLING UNITS SHALL OPERATE WITHOUT MOISTURE CARRYOVER.
15. 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 UNIT ACCESS PANELS, CONTROLS, AND VALVING.
16. 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.
17. UNLESS OTHERWISE NOTED, ALL DUCTWORK IS OVERHEAD, TIGHT TO THE UNDERSIDE OF THE STRUCTURE, WITH SPACE FOR INSULATION IF NEEDED.
18. RUNS OF FLEXIBLE DUCT SHALL NOT EXCEED 5 FT.
19. 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.
20. 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.
21. PROVIDE ACCESS DOORS IN DUCTWORK FOR THE OPERATION, ADJUSTMENT, AND MAINTENANCE OF ALL FANS, VALVES, AND MECHANICAL EQUIPMENT.
22. 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.
23. 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.
24. SEE SPECIFICATIONS FOR DUCTWORK GAUGES, BRACING, HANGERS, AND OTHER REQUIREMENTS.



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CONTRACTOR'S NOTES:
WRITTEN DIMENSIONS HOLD PREFERENCE OVER SCALED DIMENSIONS. DO NOT SCALE THE DRAWINGS. THE CONTRACTORS MUST VISIT JOB SITE TO VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS BEFORE SUBMITTING BIDS. REPORT ANY DISCREPANCIES OF ANY CONDITIONS WHICH MAY INTERFERE WITH THE PROPER EXECUTION OF, THE CONTRACT TO THE TENANT'S REPRESENTATIVE. REPORT DISCREPANCIES DURING BIDDING PROCESS AND BEFORE START OF CONSTRUCTION. CHANGE ORDERS NEED TO BE APPROVED BY **TOWNSQUARE** CONSTRUCTION MANAGER FOR ISSUES ARISING FROM THE FIELD CONDITIONS OR CONFLICTS BETWEEN THE PLANS AND THE EXISTING CONDITIONS PRIOR TO THE COMMENCEMENT OF WORK.

| | DATE | ISSUE |
|---|---|---|
| | 10.31.24 | LL/CLIENT REVIEW SET |
| | 11.15.24 | LL/CLIENT REVIEW SET |
| | 11.22.24 | BD SUBMISSION |
| 1 | 11.15.24 | CLIENT COMMENTS |
| △ | DATE | REVISION |

TITLE:
MECHANICAL SYMBOLS LIST, ABBREVIATIONS & GENERAL NOTES

SHEET NUMBER:
M001

# SPECIFICATIONS

## SECTION 0001 - NOTICE TO BIDDERS

1.1 BIDDERS REPRESENTATIONS

A. THE BIDDER BY MAKING A BID REPRESENTS THAT:

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

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

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

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

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

1.2 EXISTING CONDITIONS AND COORDINATION

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

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

1.3 RESPONSIBILITIES

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

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

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

END OF SECTION 0001

## SECTION 0101 - QUALITY OF WORK

1.1 WORKMANSHIP

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

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

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

1.2 CODE COMPLIANCE

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

END OF SECTION 0101

## SECTION 0102 -REQUIRED DOCUMENTS

1.1 SHOP DRAWINGS

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

1.2 SUBMITTALS

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

1.3 RECORD DRAWINGS

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

1.4 EQUIPMENT OPERATING INSTRUCTIONS

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

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

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

END OF SECTION 0102

## SECTION 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 UL'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 BELLOWS.
2. RESTRAINED AIR MOUNTS: HOUSED COMPRESSED-AIR BELLOWS.

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

D. VIBRATION ISOLATION EQUIPMENT BASES:

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

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:

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

1. ACE MOUNTINGS CO., INC.
2. AMBER/BOOTH COMPANY, INC.
3. CALIFORNIA DYNAMICS CORPORATION.
4. 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 ASTME 84.

1.2 FIELD QUALITY CONTROL

A. FIELD INSPECTIONS: BY OWNER-ENGAGED AGENCY.

1.3 INDOOR DUCT AND PLENUM INSULATION SCHEDULE;

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

B. FLEXIBLE ELASTOMERIC, MINERAL-FIBER BLANKET, MINERAL-FIBER BOARD OR POLYOLEFIN WITH MINIMUM INSTALLED THERMAL RESISTANCE AS FOLLOWS:

| | |
|---|---|
| UNCONDITIONED SPACES WITHIN BUILDING: | R-6 |
| WITHIN BUILDING ENVELOPE ASSEMBLY: | R-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 | 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.

1.3 SEISMIC-RESTRAINT DEVICES

A. CHANNEL SUPPORT SYSTEM.

B. STAINLESS-STEEL RESTRAINT CABLES.

C. 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

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

B. CLEAN THE FOLLOWING ITEMS:

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

1.5 DUCT SCHEDULE

A. ALL DUCTS SHALL BE GALVANIZED STEEL EXCEPT AS FOLLOWS:

MOIST ENVIRONMENT DUCT MATERIAL: ALUMINUM.

END OF SECTION 233113

SHEET METAL WORK

A. 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.

B. DUCTWORK STATIC PRESSURE CLASSIFICATION:
   a. 2 IN OF W.G. UP TO 2 IN OF W.G.
   b. 6 IN OF W.G. ABOVE 2 IN & UP TO 6 IN WG

C. 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.

D. VOLUME DAMPERS: GALVANIZED STEEL, PER SMACNA "LOW VELOCITY MANUAL," EXCEPT PROVIDE BEARING AT ONE END OF DAMPER ROD AND QUADRANT LOCKSCREW AT OTHER END. FOR INSULATED DUCTS, QUADRANTS MOUNTED ON COLLAR TO CLEAR INSULATION. INSTALL WITH LEVERS ACCESSIBLE.

E. ACCESS DOORS: INSULATED OR UNINSULATED, SAME AS DUCT.

1) 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.

2) 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.).

3) 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.

4) 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

5) ALL ACCESS DOORS TO BE HINGED, WITH LATCH SIMILAR TO VENTLOCK NO. 100.

F. 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.

G. TURNING VANES: GALVANIZED STEEL SMALL DOUBLE-THICKNESS VANES WITH 2 IN. INSIDE RADIUS.

H. 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.

I. 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.

J. ALL DUCT DIMENSIONS INDICATED ON PLANS ARE INSIDE CLEAR DIMENSIONS.

K. 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.

L. WIRE MESH SCREEN (WMS): NO. 16 USSG, 3/4 SQUARE MESH, 1 IN WIDE GALVANIZED STEEL ENCLOSING FRAME. FLANGED DUCT OPENING TO RECEIVE FRAME.

M. 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 UL555 AND UL555S WITH LEAKAGE CLASS I 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.

2. NOISE CONTROL

A. ALL ROOM NC LEVELS SHALL BE 35 OR LESS.

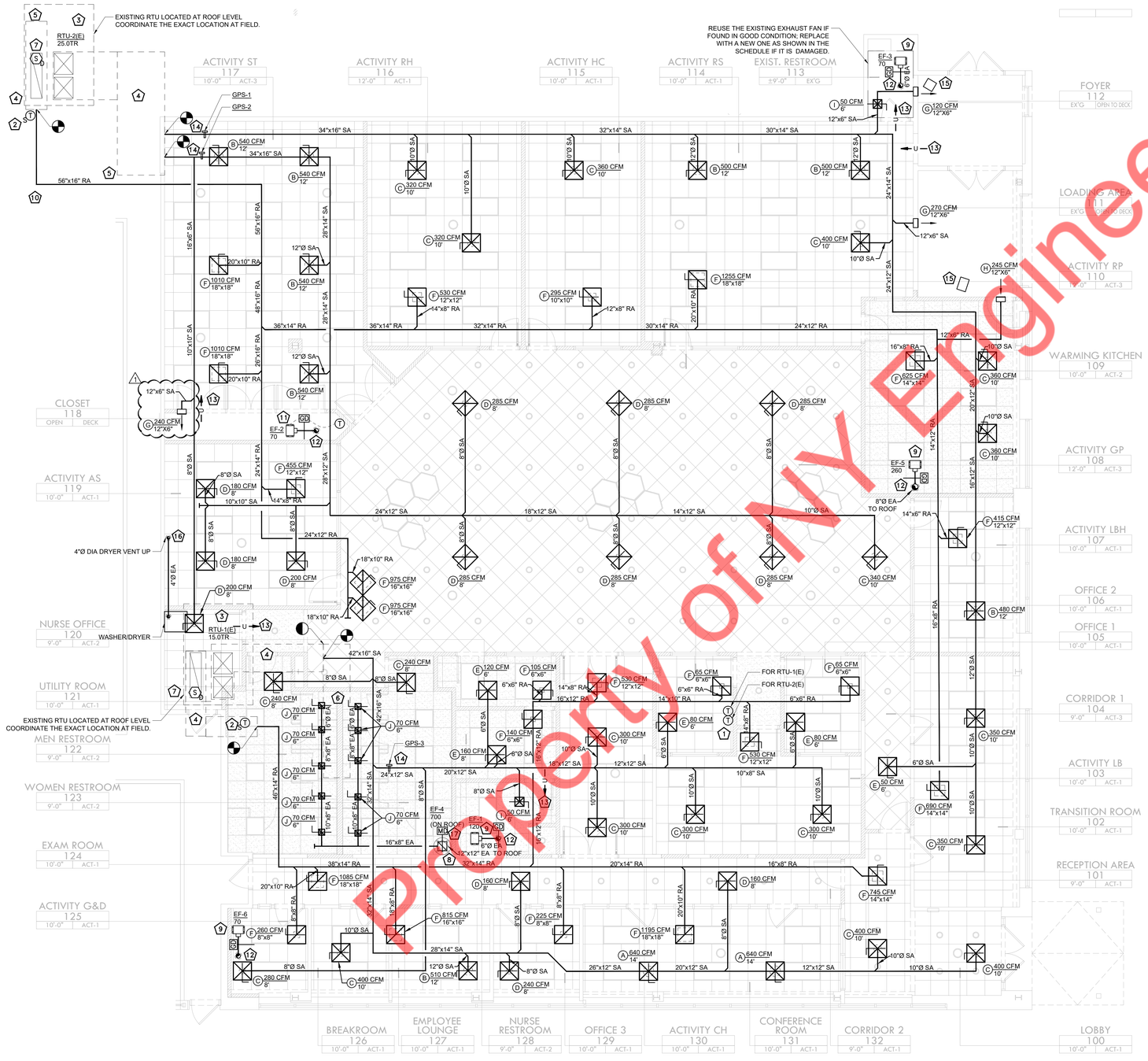
B. PROVIDE SOUND LINING FOR THE FOLLOWING DUCTWORK:

1) ALL DUCTWORK WITHIN MECHANICAL ROOMS AND NOT LESS THAN 20 FT ON EACH SIDE OF ALL FANS AND AC UNITS.

2) AIR TRANSFER DUCTS.

3) DOWNSTREAM OF ALL VARIABLE AIR VOLUME AND CONSTANT VOLUME BOXES FOR A MINIMUM OF 15 FT.

4) ALL MIXED AIR PLENUMS, EXCEPT WHERE MOISTURE CAR




## GENERAL NOTES:

A. DUCTWORK SHOWN ON PLAN ARE SCHEMATIC ONLY. CONTRACTOR SHALL COORDINATE WITH OTHER TRADES FOR PIPING AND DUCTWORK ROUTING, OFFSET AND RUN PIPING, DUCTWORK INSIDE THE STRUCTURE IF REQUIRED. PROVIDE ANY EXTRA PIPING, DUCTWORK, FITTINGS, INSULATIONS AND OTHER ACCESSORIES IN ORDER TO COMPLETE THE INSTALLATION.
B. EQUIPMENT SIZES, DIMENSIONS AND REQUIRED CONNECTIONS SHALL BE VERIFIED WITH THE ACTUAL EQUIPMENT SELECTED VENDOR DRAWINGS BEFORE FABRICATION OF DUCTWORK, PIPING ETC.
C. DUCT SIZES SHOWN ON PLANS ARE CLEAR INSIDE AIR STREAM DIMENSIONS.
D. CONTRACTOR SHALL COORDINATE ALL ELECTRICAL REQUIREMENTS FOR ALL HVAC BASED ON ACTUAL EQUIPMENT SELECTED PRIOR TO INSTALLATION.
E. CONTRACTOR SHALL COORDINATE EQUIPMENT WEIGHTS AND SUPPORTS BASED ON ACTUAL EQUIPMENT SELECTED.
F. MOUNT DUCTWORK AS HIGH AS POSSIBLE.
G. TEST AND BALANCE AIR SYSTEMS. PROVIDE REPORT TO G.C AND OWNER. CONTRACTOR SHALL BALANCE EACH DEVICE WITH THE CFM SHOWN ON PLAN.
H. PROVIDE DUCT INSULATION REQUIRED AS PER THE CODE MINIMUM.
I. 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.
J. 2" DOOR UNDER CUT TO BE PROVIDED FOR ALL THE DOORS WHEREVER SHOWN ON PLAN.
K. DUCT GOING UP TO ROOF TO BE TERMINATED WITH APPROVED TERMINATION CAP.
L. NEW CEILING MOUNTED SUPPLY AIR DIFFUSER/GRILLE, RETURN AIR DIFFUSER/GRILLE, EXHAUST DIFFUSER/GRILLE INCLUDING ALL DUCTWORK, CONTROL DAMPERS, HANGERS, SUPPORTS, ETC. AND BALANCE THE CFM AS SHOWN ON PLAN.
M. NEW SUPPLY & RETURN DUCTWORK TO SPACE. CONTRACTOR TO ACOUSTICALLY LINE THE FIRST 10' OF BOTH SUPPLY & RETURN MAIN DUCTS.
N. PROVIDE CABLE OPERATED DAMPER IN INACCESSIBLE CEILINGS.

## KEYED NOTES: (#)

1. LOCATION OF DIGITAL THERMOSTAT CONTROL. INSTALL AND WIRE NEW 7-DAY PROGRAMMABLE THERMOSTAT. COORDINATE EXACT LOCATION WITH ARCHITECT AND OWNER PRIOR TO ROUGH-IN. PROVIDE LOCKABLE COVER.
2. PROVIDE REMOTE TEMP./HUMIDITY SENSOR MOUNTED IN RETURN DUCT AND WIRE BACK TO T-STAT LOCATED IN OFFICE 2.
3. EXISTING MECHANICAL ROOF TOP UNIT TO REMAIN ALONG WITH ALL ASSOCIATED ACCESSORIES, ALL OTHER SENSORS & CONTROLS. CLEAN & REFURBISH TO LIKE NEW CONDITION REPAIR/REPLACE ANY ACCESSORIES AS REQUIRED TO PROVIDE A FULLY FUNCTIONING UNIT. VERIFY IN FIELD PRIOR TO BID. ENSURE UNIT OA INTAKE IS BALANCED AS SHOWN IN THE AIR BALANCING SCHEDULE ON SHEET M201.
4. EXISTING DUCTWORK TO REMAIN SAME. CLEAN AND REFURBISH TO LIKE NEW CONDITION. REPAIR/ REPLACE IF REQUIRED.
5. PATCH AND SEAL THE DUCTWORK AIR TIGHT REPAIR/REPLACE INSULATION AS REQUIRED.
6. REMOVE AND SCRAP THE EXISTING DUCTWORK.
7. CONTRACTOR SHALL CLEAN AND REFURBISH EXISTING DUCT SMOKE DETECTOR IN RETURN DUCTWORK TO LIKE NEW CONDITION. ENSURE SMOKE DETECTOR IS IN GOOD WORKING ORDER. PROVIDE NEW IF REQUIRED.
8. ROUTE EXHAUST 12"X12" DUCT UP TO THE ROOF & CONNECT TO ROOF MOUNTED EXHAUST FAN EF-4. CONTRACTOR TO FIELD VERIFY FIRE RATING OF ROOF. PROVIDE FIRE DAMPER AT ROOF PENETRATION AS/IF REQUIRED BY LOCAL CODES.
9. PROVIDE AND INSTALL NEW CEILING MOUNTED EXHAUST FAN ASSEMBLY. INCLUDING ALL DUCTWORK, SUPPORTS, CONTROLS, ETC. SEE DETAILS.
10. INSTALL NEW DUCTS AS SHOWN IN THE PLAN. FIELD VERIFY & COORDINATE WITH LL FOR THE ROUTING OUTSIDE OF THE TENANT SPACE BEFORE THE BASE BID.
11. CEILING MOUNTED EXHAUST FAN INCLUDING ALL DUCTWORK, SUPPORTS ETC. INTERCONNECT EXHAUST FAN WITH T-STAT AND SET CUT ON TEMP TO 80'F.
12. EXHAUST AIR DUCT UP THROUGH ROOF. TERMINATE ON ROOF WITH GOOSENECK AND BIRD SCREEN.
13. PROVIDE 2" DOOR UNDERCUT FOR AIR TRANSFER. COORDINATE WITH ARCHITECT.
14. PROVIDE ELECTRICAL POWER FOR EACH GPS, COORDINATE WITH ELECTRICAL CONTRACTOR.
15. EXISTING HEATER TO REMAIN SAME. COORDINATE WITH ARCH FOR THE FINAL REQUIREMENT.
16. Ø4" DRYER VENT UP TO ROOF AS SHOWN. TERMINATE IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS AND SECTION 504 OF THE 2021 INTERNATIONAL MECHANICAL CODE. SCREEN SHALL NOT BE INSTALLED IN THE DUCT TERMINATION. FIRE/SMOKE DAMPERS & ANY SIMILAR DEVICE THAT WILL OBSTRUCT THE EXHAUST FLOW SHALL BE PROHIBITED IN EXHAUST DUCT.
17. INTERLOCK MOTORIZED DAMPER WITH EF-4.



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CONTRACTOR'S NOTES:
WRITTEN DIMENSIONS HOLD PREFERENCE OVER SCALED DIMENSIONS. DO NOT SCALE THE DRAWINGS. THE CONTRACTORS MUST VISIT JOB SITE TO VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS BEFORE SUBMITTING BIDS. REPORT ANY DISCREPANCIES OF ANY CONDITIONS WHICH MAY INTERFERE WITH THE PROPER EXECUTION OF, THE CONTRACT TO THE TENANT'S REPRESENTATIVE. REPORT DISCREPANCIES DURING BIDDING PROCESS AND BEFORE START OF CONSTRUCTION. CHANGE ORDERS NEED TO BE APPROVED BY **TOWNSQUARE** CONSTRUCTION MANAGER FOR ISSUES ARISING FROM THE FIELD CONDITIONS OR CONFLICTS BETWEEN THE PLANS AND THE EXISTING CONDITIONS PRIOR TO THE COMMENCEMENT OF WORK.

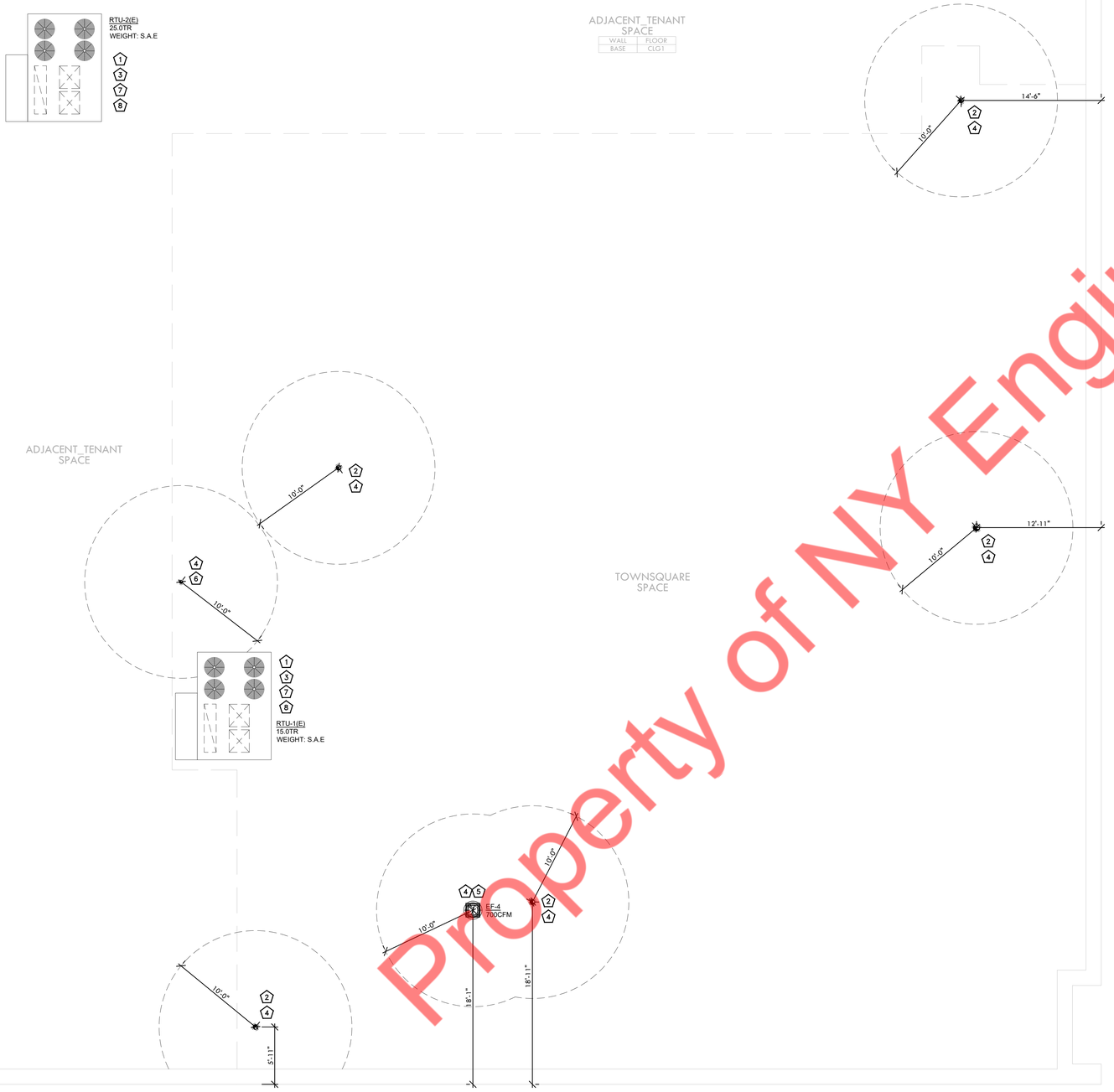
| | DATE | ISSUE |
|---|---|---|
| | 10.31.24 | LL/CLIENT REVIEW SET |
| | 11.15.24 | LL/CLIENT REVIEW SET |
| | 11.22.24 | BD SUBMISSION |
| 1 | 11.15.24 | CLIENT COMMENTS |
| △ | DATE | REVISION |

Town SQUARE

TITLE:
MECHANICAL FLOOR PLAN

SHEET NUMBER:
M101

1 | SCALE 3 / 16" = 1' - 0" | MECHANICAL FLOOR PLAN






## GENERAL NOTES:

A. COORDINATE LOCATIONS AND SIZES OF SLAB/ROOF WALL OPENINGS WITH OWNER AND STRUCTURAL ENGINEERS.
B. EQUIPMENT SIZES, DIMENSIONS AND REQUIRED CONNECTIONS SHALL BE VERIFIED WITH THE ACTUAL EQUIPMENT SELECTED VENDOR DRAWINGS BEFORE FABRICATION OF DUCTWORK, PIPING ETC.
C. CONTRACTOR SHALL COORDINATE ALL ELECTRICAL REQUIREMENTS FOR ALL HVAC BASED ON ACTUAL EQUIPMENT SELECTED PRIOR TO INSTALLATION.
D. CONTRACTOR SHALL COORDINATE EQUIPMENT WEIGHTS AND SUPPORTS BASED ON ACTUAL EQUIPMENT SELECTED.
E. 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.
F. DUCT COMING UP TO ROOF TO BE TERMINATED WITH APPROVED TERMINATION CAP.

## KEYED NOTES: (#)

1. CONTRACTOR SHALL ENSURE THAT FRESH AIR INTAKES ARE AT LEAST 10'-0" AWAY FROM EXHAUST SOURCES (PLUMBING VENTS, EXHAUST FANS, COMBUSTION EXHAUST, ETC.)
2. EXHAUST AIR TERMINATE ON ROOF WITH GOOSE NECK & WIRE MESH.
3. EXISTING MECHANICAL ROOF TOP UNIT TO REMAIN ALONG WITH ALL ASSOCIATED ACCESSORIES, ALL OTHER SENSORS & CONTROLS. CLEAN & REFURBISH TO LIKE NEW CONDITION REPAIR/REPLACE ANY ACCESSORIES AS REQUIRED TO PROVIDE A FULLY FUNCTIONING UNIT. VERIFY IN FIELD PRIOR TO BID. ENSURE UNIT OA INTAKE IS BALANCED AS SHOWN IN THE AIR BALANCING SCHEDULE ON SHEET M201.
4. ALL EXHAUST AIR TERMINATIONS ON ROOF SHALL BE MINIMUM 10 FEET AWAY & 3FT ABOVE FROM ANY OUTSIDE AIR INATKE SOURCE, 3 FEET FROM PROPERTY LINES, 3 FEET FROM OPERABLE OPENINGS.
5. COORDINATE WITH ELECTRICAL CONTRACTOR FOR POWER CONNECTION TO ALL MECHANICAL EQUIPMENT.
6. DRYER EXHAUST VENT. TERMINATE IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS AND SECTION 504 OF THE 2021 INTERNATIONAL MECHANICAL CODE. SCREEN SHALL NOT BE INSTALLED IN THE DUCT TERMINATION. FIRE/SMOKE DAMPERS & ANY SIMILAR DEVICE THAT WILL OBSTRUCT THE EXHAUST FLOW SHALL BE PROHIBITED IN EXHAUST DUCT.
7. CONTRACTOR TO FIELD VERIFY EXACT LOCATION OF THE EXISTING ROOF TOP UNITS & PENETRATIONS.
8. CONTRACTOR TO CLEAN REPAIR AND REUSE EXISTING CONDENSATE DRAIN LINE. CONTRACTOR TO REPAIR AND REPLACE WITH SIMILAR MATERIAL IF FOUND DAMAGED.

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CONTRACTOR'S NOTES:

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| | DATE | ISSUE |
|---|---|---|
| | 10.31.24 | LL/CLIENT REVIEW SET |
| | 11.15.24 | LL/CLIENT REVIEW SET |
| | 11.22.24 | BD SUBMISSION |
| 1 | 11.15.24 | CLIENT COMMENTS |
| △ | DATE | REVISION |

TITLE:

MECHANICAL ROOF PLAN

SHEET NUMBER:

M102

1 | SCALE 3 / 16" = 1' - 0" | MECHANICAL ROOF PLAN

## EXISTING ROOF TOP UNIT SCHEDULE

| UNIT ID | MANUFACTURER | MODEL | AREA SERVED | NOMINAL TONS | SUPPLY FAN (V.I.F) | | | GAS HEAT (V.I.F) | | | | COOLING (V.I.F) | | | | | | | ELECTRICAL (V.I.F) | | | | APPROX.WEIGHT LBS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | TOTAL | OUTSIDE | ESP | TYPE | INPUT | OUTPUT | EFFIECIENCY | TOTAL | SENSIBLE | AMBIENT | ENTERING | LEAVING | EER | IEER | VOLTS | PHASE | MCA(A) | MOCP(A) | |
| | | | | | CFM | AIR CFM | IN OF WC | | MBH | MBH | % | MBH | MBH | DB (°F) | DB / WB(°F) | DB / WB(°F) | | | | | | | |
| RTU-1(E) | LENNOX (SAE) | LGH180H4BM2G (SAE) | SEE PLAN | 15 | 6000 | 500 | 1.5 | NATURAL GAS | 360 | 288 | S.A.E | S.A.E | S.A.E | 95 | 80/67 | S.A.E | S.A.E | S.A.E | 480 | 3 | 50 | 60 | S.A.E |
| RTU-2(E) | LENNOX (SAE) | KGA300S4BH2G (SAE) | SEE PLAN | 25 | 10000 | 1520 | 1.5 | NATURAL GAS | 480 | 384 | | S.A.E | S.A.E | 95 | 80/67 | S.A.E | | | 480 | 3 | 62 | 70 | |

**NOTES / ACCESSORIES - SAE: SAME AS EXISTING, VIF: VERIFY IN FIELD.**

1. EXISTING RTUs WITH ALL ACCESSORIES TO REMAIN SAME AND TO BE REUSED.
2. CONTRACTOR TO FIELD VERIFY IF ALL RTUs ARE WORKING AT THEIR 100% RATED CAPACITY. INFORM TO DESIGN ENGINEER IF ANY DISCREPANCIES ARE FOUND IN PERFORMANCE PRIOR TO CONSTRUCTION.
3. REPLACE FILTERS, IF REQUIRED.
4. CONTRACTOR TO FIELD VERIFY EXACT LOCATION AND CONFIGURATION OF RTUs ON SITE
5. BALANCE OUTSIDE AIR DAMPER AS PER CFM SHOWN ON SCHEDULE.
6. REMOTE SENSORS SHALL BE PROVIDED IN RETURN AIR DUCT & WIRED BACK TO PROGRAMMABLE, 24 HOUR, 7 DAY, THERMOSTATS
7. RETURN AIR SMOKE DETECTOR - UNIT MOUNTED.
8. CONTRACTOR TO ENSURE THE EXISTING UNIT HAS A MINIMUM OF 1.5 IN OF WC EXTERNAL STATIC PRESSURE. IF ANY DISCREPANCY FOUND CONTACT ENGINEER BEFORE THE BASE BID.

## VENTILATION CALCULATION

| ROOM NAME | AREA (SQ.FT.) | NUMBER OF PEOPLE/1000sq.ft AS PER IMC 2021 | NUMBER OF PEOPLE AS PER IMC 2021 | FINAL PEOPLE NO. | MIN OUTSIDE AIR AS PER IMC 2021 | | CALCULATED VENT CFM | ZONE EFFECTIVENESS | PROVIDED OUTSIDE AIR (OA) CFM | PROVIDED EXHAUST AIR (EA) CFM |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | CFM/PEOPLE | CFM/SQ.FT | | | | |
| **RTU-1** | | | | | | | | | | |
| Lobby & Reception area | 218 | 30 | 7 | 6 | 5 | 0.06 | 43 | 0.8 | 55 | 0 |
| Corridor 2 | 330 | 0 | 0 | 0 | 0 | 0.06 | 20 | 0.8 | 25 | 0 |
| Conference room | 298 | 50 | 15 | 10 | 5 | 0.06 | 68 | 0.8 | 85 | 0 |
| Activity room LB | 259 | 5 | 1 | 8 | 5 | 0.06 | 56 | 0.8 | 70 | 0 |
| Activity room CH | 224 | 5 | 1 | 8 | 5 | 0.06 | 53 | 0.8 | 70 | 0 |
| Office 1 | 90 | 5 | 0 | 1 | 5 | 0.06 | 10 | 0.8 | 15 | 0 |
| Office 2 | 90 | 5 | 0 | 1 | 5 | 0.06 | 10 | 0.8 | 15 | 0 |
| Office 3 | 100 | 5 | 1 | 1 | 5 | 0.06 | 11 | 0.8 | 15 | 0 |
| Nurse Office | 68 | 5 | 0 | 1 | 5 | 0.06 | 9 | 0.8 | 15 | 0 |
| Exam Room | 84 | 5 | 0 | 2 | 5 | 0.06 | 15 | 0.8 | 20 | 0 |
| Nurse Restroom | 88 | 0 | 0 | 0 | 0 | 0 | 0 | - | 0 | 120 |
| Employee Lounge | 113 | 70 | 8 | 4 | 7.5 | 0.18 | 50 | 0.8 | 65 | 0 |
| Break Room | 90 | 50 | 5 | 2 | 5 | 0.12 | 21 | 0.8 | 30 | 0 |
| Activity room G&D | 83 | 5 | 0 | 2 | 5 | 0.06 | 15 | 0.8 | 20 | 70 |
| Women Restroom | 234 | 0 | 0 | 0 | 0 | 0 | 0 | - | 0 | 350 |
| Men Restroom | 234 | 0 | 0 | 0 | 0 | 0 | 0 | - | 0 | 350 |
| **TOTAL** | **2603** | - | - | **46** | - | - | **382** | - | **500** | **890** |
| **RTU-2** | | | | | | | | | | |
| Activity room AS | 340 | 5 | 2 | 12 | 5 | 0.06 | 80 | 0.8 | 105 | 0 |
| Activity room LBH | 200 | 5 | 1 | 8 | 5 | 0.06 | 52 | 0.8 | 65 | 0 |
| Activity room GP & RP | 2085 | 5 | 10 | 20 | 5 | 0.06 | 225 | 0.8 | 285 | 0 |
| Warming Kitchen | 364 | 20 | 7 | 4 | 7.5 | 0.12 | 74 | 0.8 | 95 | 260 |
| Loading area | 152 | 0 | 0 | 0 | 0 | 0.12 | 18 | 0.8 | 25 | 0 |
| Foyer | 115 | 30 | 3 | 0 | 5 | 0.06 | 7 | 0.8 | 10 | 0 |
| Closet | 58 | 0 | 0 | 0 | 0 | 0.12 | 7 | 0.8 | 10 | 70 |
| Activity room ST | 712 | 5 | 4 | 50 | 5 | 0.06 | 293 | 0.8 | 370 | 0 |
| Activity room RH | 422 | 5 | 2 | 12 | 5 | 0.06 | 85 | 0.8 | 110 | 0 |
| Activity room HC | 318 | 5 | 2 | 6 | 5 | 0.06 | 49 | 0.8 | 65 | 0 |
| Activity room RS | 705 | 5 | 4 | 40 | 5 | 0.06 | 242 | 0.8 | 305 | 0 |
| Exist. Restroom | 43 | 0 | 0 | 0 | 0 | 0 | 0 | - | 0 | 70 |
| Transition Room | 323 | 0 | 0 | 0 | 0 | 0.12 | 39 | 0.8 | 50 | 0 |
| Corridor 1 | 96 | 0 | 0 | 0 | 0 | 0.06 | 6 | 0.8 | 10 | 0 |
| Utility Room | 89 | 0 | 0 | 0 | 0 | 0.12 | 11 | 0.8 | 15 | 0 |
| **TOTAL** | **6022** | - | - | **152** | - | - | **1188** | - | **1520** | **400** |

## BUILDING AIR BALANCE

| UNIT | SUPPLY AIR | OUTSIDE AIR | RETURN AIR | EXHAUST AIR |
|---|---|---|---|---|
| RTU-1(E) | 6000 | 500 | 5500 | - |
| RTU-2(E) | 10000 | 1520 | 8480 | - |
| EF-1 | - | - | - | 120 CFM |
| EF-2 | - | - | - | 70 CFM |
| EF-3 | - | - | - | 70 CFM |
| EF-4 | - | - | - | 700 CFM |
| EF-5 | - | - | - | 260 CFM |
| EF-6 | - | - | - | 70 CFM |
| **TOTAL:** | **16000 CFM** | **2020 CFM** | **13980 CFM** | **1290 CFM** |
| **BUILDING PRESSURE:** | | | **730 CFM** | **POSITIVE** |

## GLOBAL PLASMA AIR DUCT TUBE SCHEDULE

| TAG | MANUFACTURER | MODEL | QUANTITY | LOCATION | ELECTRICAL | | | | WEIGHT (LBS) |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | POWER (W) | INPUT VOLTAGE | PHASE | HZ | |
| GPS-1 | GLOBAL PLASMA SOLUTIONS | DM48-AC | 1 | RTU-1(E) | 14 | 24 /110-240 VAC | 1 | 60 | 4 |
| GPS-2 | | DM48-AC | 1 | RTU-1(E) | 14 | 24 /110-240 VAC | 1 | 60 | 4 |
| GPS-3 | | DM48-AC | 1 | RTU-2(E) | 14 | 24 /110-240 VAC | 1 | 60 | 4 |

NOTES:
1. ALL TUBES SHALL BE MOUNTED ON THE SUPPLY DUCTWORK AS PER PLANS & MANUFACTURER-INSTRUCTIONS
2. COORDINATE WITH ELECTRICAL FOR POWER REQUIREMENTS.

## FANS

| TAG | MANUFACTURER | MODEL | LOCATION | AREA SERVED | FAN PERFORMANCE | | | MOTOR DATA | | | | | | WEIGHT LBS | CONTROL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | CFM | ESP | FAN RPM | WATTS | MCA | MOP | VOLTS | PHASE | HZ | | |
| EF-1 | GREENHECK | SP-A390-VG | SEE PLAN | NURSE RESTROOM | 120 | 0.5 | 1213 | 26 | - | - | 115 | 1 | 60 | 25 | MOTION SENSOR |
| EF-2 | GREENHECK | SP-A390-VG | SEE PLAN | IT CLOSET | 70 | 0.5 | 1172 | 21 | - | - | 115 | 1 | 60 | 25 | ROOM THERMOSTAT |
| EF-3 | GREENHECK | SP-A390-VG | SEE PLAN | EXISTING RESTROOM | 70 | 0.5 | 1172 | 21 | - | - | 115 | 1 | 60 | 25 | MOTION SENSOR |
| EF-4 | GREENHECK | G-100-VG | ROOF | MEN'S, WOMENS RESTROOM | 700 | 0.8 | 1460 | - | 4 | 15 | 115 | 1 | 60 | 70 | MOTION SENSOR |
| EF-5 | GREENHECK | SQ-98-VG | SEE PLAN | WARMING KITCHEN | 260 | 0.8 | 1527 | - | 4 | 15 | 115 | 1 | 60 | 50 | MOTION SENSOR |
| EF-6 | GREENHECK | SP-A390-VG | SEE PLAN | ACTIVITY G&D | 70 | 0.5 | 1172 | 21 | - | - | 115 | 1 | 60 | 25 | MOTION SENSOR |

NOTES
1. PROVIDE FACTORY MOUNTED AND INSTALLED DISCONNECT. PROVIDE NEMA 3R DISCONNECT FOR ROOF MOUNTED FANS.
2. PROVIDE CURB FOR ROOF MOUNTED FANS.
3. INSTALL ALL FANS AS PER MANUFACTURER RECOMMENDATIONS.
4. ALL EQUIPMENT NORMAL POWER WIRING BY ELECTRICAL CONTRACTOR. COORDINATE EXACT POWER REQUIREMENT WITH ELECTRICAL CONTRACTOR.
5. ALL DIRECT DRIVE FANS TO HAVE ECM MOTORS.
6. PROVIDE FAN WITH A BACKDRAFT DAMPER, AND SPEED CONTROLLER FOR BALANCING PURPOSE.
7. REFER TO DETAILS,PROVIDE VIBRATION ISOLATORS FAN SHALL BE MOUNTED W/SUPPORT FRAMING BY OTHERS. PROVIDE FLEXIBLE CONNECTION AT DUCT CONNECTION TO FAN.

| TAGS | MODULE | NECK | CFM RANGE | MAX NC | DEFLECTION | MOUNTING TYPE | MAKE & MODEL |
|---|---|---|---|---|---|---|---|
| Ⓐ | 24'x24' | 14" | 601-800 | =<25 | - | CEILING | TITUS TMS |
| Ⓑ | 24'x24' | 12" | 401-600 | =<25 | - | CEILING | TITUS TMS |
| Ⓒ | 24'x24' | 10" | 301-400 | =<25 | - | CEILING | TITUS TMS |
| Ⓓ | 24'x24' | 8" | 121-300 | =<25 | - | CEILING | TITUS TMS |
| Ⓔ | 24'x24' | 6" | 0-120 | =<25 | - | CEILING | TITUS TMS |
| Ⓕ | 24'x24' | SEE PLAN | 375-1900 | =<25 | 35° | CEILING | TITUS 350RL |
| Ⓖ | 12'x6' | SEE PLAN | 120-280 | =<25 | 35° | DUCT/WALL | TITUS 300FL |
| Ⓗ | 12'x6' | SEE PLAN | 120-350 | =<25 | 35° | DUCT/WALL | TITUS 350RL |
| Ⓘ | 12'x12' | SEE PLAN | 50-150 | =<25 | 35° | CEILING | TITUS 300FL |
| Ⓙ | 12'x12' | SEE PLAN | 50-250 | =<25 | 35° | CEILING | TITUS 350RL |

NOTES:
1. ALL DIFFUSERS : CONTRACTOR SHALL COORDINATE WITH LATEST ARCHITECTURAL REFLECTED CEILING PLANS TO ENSURE PROPER AIR DEVICE BORDER SELECTION.
2. REFER ARCHITECTURAL DRAWINGS FOR CEILING TYPE.
3. COORDINATE COLOR/FINISH WITH ARCHITECT.
4. NOISE CRITERIA: <=20 dBA
5. PROVIDE VOLUME CONTROL DAMPER AS ACCESSARY FOR ALL AIR TERMINAL FOR AIR BALANCING.



CONSULTANTS (ENGINEER):

NY ENGINEERS
NEARBY ENGINEERS
382 NE 191ST STREET SUITE 49674,
MIAMI, FL 33179
PH-914.257.3455
WWW.NY-ENGINEERS.COM

CONTRACTOR'S NOTES:
WRITTEN DIMENSIONS HOLD PREFERENCE OVER SCALED DIMENSIONS. DO NOT SCALE THE DRAWINGS. THE CONTRACTORS MUST VISIT JOB SITE TO VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS BEFORE SUBMITTING BIDS. REPORT ANY DISCREPANCIES OF ANY CONDITIONS WHICH MAY INTERFERE WITH THE PROPER EXECUTION OF, THE CONTRACT TO THE TENANT'S REPRESENTATIVE. REPORT DISCREPANCIES DURING BIDDING PROCESS AND BEFORE START OF CONSTRUCTION. CHANGE ORDERS NEED TO BE APPROVED BY **TOWNSQUARE** CONSTRUCTION MANAGER FOR ISSUES ARISING FROM THE FIELD CONDITIONS OR CONFLICTS BETWEEN THE PLANS AND THE EXISTING CONDITIONS PRIOR TO THE COMMENCEMENT OF WORK.

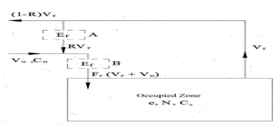
| | DATE | ISSUE |
|---|---|---|
| | 10.31.24 | LL/CLIENT REVIEW SET |
| | 11.15.24 | LL/CLIENT REVIEW SET |
| | 11.22.24 | BD SUBMISSION |
| 1 | 11.15.24 | CLIENT COMMENTS |
| △ | DATE | REVISION |

TITLE:
MECHANICAL SCHEDULE
( 01 OF 02 )

SHEET NUMBER:
M201

| Zone Tag | Facility Type | Zone Use | Zone Floor Area (square ft) Az | Zone Max Occupancy Pz | Table 6.1 OA per Occupant Rp | Table 6.1 cfm/ft2 Ra | Pz * Rp | Az * Ra | Table 6.2 Ventilation Effectiveness Ez | Outdoor Air to Zone (CFM) with Ez correction (Vbz/Ez) |
|---|---|---|---|---|---|---|---|---|---|---|
| RTU-1 ( E ) | General | Daycare sickroom | 2,738.0 | 70.0 | 10.0 | 0.18 | 700 | 493 | 0.8 | 1491 OA required per VRP |

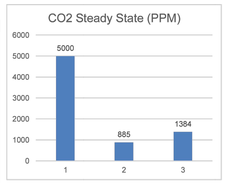
| | |
|---|---|
| Zone Height (feet) | 10.0 |
| Desired Outside Air (Vo) IAQP (C | 735 |
| Supply Air (Vs) (CFM) | 4,780 |
| Return Air (Vr) | 4055 |
| Recirc. Flow Factor (R) | 0.85 |
| Ventilation Effectiveness (Ez) | 0.8 |
| Level of Physical Activity | **Sedentary** |
| Filter Location | B |
| HVAC Flow Type | Constant |
| Outdoor Air Flow Type | Constant |




| | | | |
|---|---|---|---|
| Air Changes Per Hour | 10.5 | VRP OA CFM per person | 21.3 |
| Outside Air Per VRP | 1491 CFM | IAQ OA CFM per person | 10.5 |
| Outside Air Per IAQ | 735 CFM | | |
| Outside Air Savings | 756 CFM | Winter Heating Savings | |
| OA Summer Drybulb | 92.6 | OA Winter Design DB (F) | 11.4 |
| OA Summer Wetbulb | 74.1 | Supply Air DB Setpoint (F) | 95 |
| Coil Leaving Air Drybulb (F | 56.0 | MBH Saved Winter | 68.6 |
| Coil Leaving Air Wetbulb (F | 54.0 | KW Saved Winter | 20.1 |
| OA MBH Saved Summer* | 51.1 | | |
| OA Tons Saved Summer* | 4.3 | | |

*OA = Outside Air
***OSHA, NIOSH & WHO most conservative values used
http://www.cdc.gov/niosh/npg/npgsyn-a.html

| Indoor Contaminants Generated By People & From Outdoors | Maximum Threshold Value Based on OSHA or NIOSH (PPM) | Steady State (lb/ft3) Using the VRP* (Prescribed OA) Ionization Off | Steady State (lb/ft3) Using the IAQ Method (Reduced OA) Ionization On | Is Steady State Level Acceptable at Reduced OA Levels? | Contaminant Generation Rate lb/person/min | Filtration Effectiveness | Cognizant Authority*** |
|---|---|---|---|---|---|---|---|
| Acetaldehyde | 100.0 | 2.0063E-09 | 6.4782E-10 | Yes | 1.2903E-08 | 50% | OSHA |
| Acetone | 250.0 | 7.8122E-09 | 4.6659E-09 | Yes | 1.2993E-07 | 50% | NIOSH |
| Ammonia | 25.00 | 1.7919E-07 | 1.0896E-07 | Yes | 3.0522E-06 | 50% | NIOSH |
| Benzene | 1.0 | 9.0686E-09 | 5.2869E-09 | Yes | 1.4602E-07 | 50% | OSHA |
| 2- Butanone (MEK) | 200.0 | 5.1876E-07 | 3.1552E-07 | Yes | 8.8396E-06 | 50% | NIOSH |
| Carbon dioxide** | 5000 | 4.6405E-05 | 4.7895E-05 | Yes | 2.4692E-05 | 0% | NIOSH |
| Chloroform | 2.0 | 1.6108E-08 | 9.7688E-09 | Yes | 2.7342E-07 | 50% | NIOSH |
| Dioxane | 100.0 | 0.0000E+00 | 0.0000E+00 | Yes | 0.0000E+00 | 50% | OSHA |
| Hydrogen Sulfide | 10.0 | 0.0000E+00 | 0.0000E+00 | Yes | 0.0000E+00 | 50% | NIOSH |
| Methane | NA | 6.8698E-08 | 6.8698E-08 | Yes | 0.0000E+00 | 0% | NA |
| Methanol | 200.0 | 6.5507E-09 | 1.3289E-08 | Yes | 1.1163E-07 | 0% | NIOSH |
| Methylene Chloride | 25.0 | 4.7116E-07 | 2.8651E-07 | Yes | 8.0262E-06 | 50% | OSHA |
| Propane | 1000.0 | 1.1242E-09 | 1.1242E-09 | Yes | 0.0000E+00 | 0% | NIOSH |
| Tetrachloroethane | 5.0 | 0.0000E+00 | 0.0000E+00 | Yes | 0.0000E+00 | 50% | OSHA |
| Tetrachloroethylene | 100.0 | 5.3500E-07 | 3.2534E-07 | Yes | 9.1140E-06 | 50% | OSHA |
| Toluene | 100.0 | 2.5874E-09 | 1.0013E-09 | Yes | 2.2806E-08 | 50% | NIOSH |
| 1,1,1 - Trichloroethane | 350.0 | 2.2487E-05 | 1.3677E-05 | Yes | 3.8318E-04 | 50% | NIOSH |
| Xylene | 100.0 | 6.2453E-10 | 9.3626E-11 | Yes | 0.0000E+00 | 50% | OSHA |




1 = NIOSH CO2 Limit
2 = CO2 Level at Ventilation Rate OA Flow Rate
3 = CO2 Level at IAQ Procedure OA Flow Rate

**Carbon dioxide has been provided for reference only for gathering demand control ventilation (DCV) setpoints. The National Research Council was commissioned by the US Navy to prove CO2 is not a contaminant of concern when using air cleaning devices to control the other contaminants of concern, as found on submarines.

The University of Denmark conducted a study to confirm CO2 levels at 5,000 PPM had no impact on cognitive function. Zhang X, Wargocki P, Lian Z, Human Responses to Carbon Dioxide, a Follow-up Study at Recommended Exposure Limits in

Building materials and furnishings assumed to have no VOCs and off-gassing is complete
All yellow shaded boxes require user input or review

Is IAQ acceptable at reduced outside air levels? **Yes**

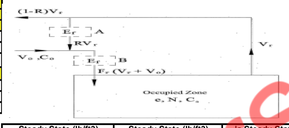


**IMC 2006 & later allows for ASHRAE 62 IAQP through the engineered exception found in Section 403.2**
**Exhaust flow rates may differ from Table 6.5 based on ASHRAE 62 IAQP via Section 6.5.2**

| | |
|---|---|
| Date | 16-10-2024 |
| Job Name | |
| Representative | - |
| Engineer | NY Engineers |
| Contractor | - |

| Zone Tag | Facility Type | Zone Use | Zone Floor Area (square ft) Az | Zone Max Occupancy Pz | Table 6.1 OA per Occupant Rp | Table 6.1 cfm/ft2 Ra | Pz * Rp | Az * Ra | Table 6.2 Ventilation Effectiveness Ez | Outdoor Air to Zone (CFM) with Ez correction (Vbz/Ez) |
|---|---|---|---|---|---|---|---|---|---|---|
| RTU-1 ( E ) | General | Daycare sickroom | 3,137.0 | 82.0 | 10.0 | 0.18 | 820 | 565 | 0.8 | 1731 OA required per VRP |

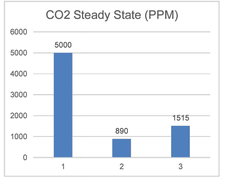
| | |
|---|---|
| Zone Height (feet) | 10.0 |
| Desired Outside Air (Vo) IAQP (C | 760 |
| Supply Air (Vs) (CFM) | 4,770 |
| Return Air (Vr) | 4010 |
| Recirc. Flow Factor (R) | 0.84 |
| Ventilation Effectiveness (Ez) | 0.8 |
| Level of Physical Activity | **Sedentary** |
| Filter Location | B |
| HVAC Flow Type | Constant |
| Outdoor Air Flow Type | Constant |




| | | | |
|---|---|---|---|
| Air Changes Per Hour | 9.1 | VRP OA CFM per person | 21.1 |
| Outside Air Per VRP | 1731 CFM | IAQ OA CFM per person | 9.3 |
| Outside Air Per IAQ | 760 CFM | | |
| Outside Air Savings | 971 CFM | Winter Heating Savings | |
| OA Summer Drybulb | 92.6 | OA Winter Design DB (F) | 11.4 |
| OA Summer Wetbulb | 74.1 | Supply Air DB Setpoint (F) | 95 |
| Coil Leaving Air Drybulb (F | 56.0 | MBH Saved Winter | 88.1 |
| Coil Leaving Air Wetbulb (F | 54.0 | KW Saved Winter | 25.8 |
| OA MBH Saved Summer* | 65.7 | | |
| OA Tons Saved Summer* | 5.5 | | |

*OA = Outside Air
***OSHA, NIOSH & WHO most conservative values used
http://www.cdc.gov/niosh/npg/npgsyn-a.html

| Indoor Contaminants Generated By People & From Outdoors | Maximum Threshold Value Based on OSHA or NIOSH (PPM) | Steady State (lb/ft3) Using the VRP* (Prescribed OA) Ionization Off | Steady State (lb/ft3) Using the IAQ Method (Reduced OA) Ionization On | Is Steady State Level Acceptable at Reduced OA Levels? | Contaminant Generation Rate lb/person/min | Filtration Effectiveness | Cognizant Authority*** |
|---|---|---|---|---|---|---|---|
| Acetaldehyde | 100.0 | 2.0132E-09 | 7.3488E-10 | Yes | 1.2903E-08 | 50% | OSHA |
| Acetone | 250.0 | 7.8820E-09 | 5.4749E-09 | Yes | 1.2993E-07 | 50% | NIOSH |
| Ammonia | 25.00 | 1.8083E-07 | 1.2794E-07 | Yes | 3.0522E-06 | 50% | NIOSH |
| Benzene | 1.0 | 9.1470E-09 | 6.1978E-09 | Yes | 1.4602E-07 | 50% | OSHA |
| 2- Butanone (MEK) | 200.0 | 5.2350E-07 | 3.7080E-07 | Yes | 8.8396E-06 | 50% | NIOSH |
| Carbon dioxide** | 5000 | 4.6418E-05 | 4.8286E-05 | Yes | 2.4692E-05 | 0% | NIOSH |
| Chloroform | 2.0 | 1.6254E-08 | 1.1470E-08 | Yes | 2.7342E-07 | 50% | NIOSH |
| Dioxane | 100.0 | 0.0000E+00 | 0.0000E+00 | Yes | 0.0000E+00 | 50% | OSHA |
| Hydrogen Sulfide | 10.0 | 0.0000E+00 | 0.0000E+00 | Yes | 0.0000E+00 | 50% | NIOSH |
| Methane | NA | 6.8698E-08 | 6.8698E-08 | Yes | 0.0000E+00 | 0% | NA |
| Methanol | 200.0 | 6.6106E-09 | 1.5055E-08 | Yes | 1.1163E-07 | 0% | NIOSH |
| Methylene Chloride | 25.0 | 4.7546E-07 | 3.3642E-07 | Yes | 8.0262E-06 | 50% | OSHA |
| Propane | 1000.0 | 1.1242E-09 | 1.1242E-09 | Yes | 0.0000E+00 | 0% | NIOSH |
| Tetrachloroethane | 5.0 | 0.0000E+00 | 0.0000E+00 | Yes | 0.0000E+00 | 50% | OSHA |
| Tetrachloroethylene | 100.0 | 5.3989E-07 | 3.8202E-07 | Yes | 9.1140E-06 | 50% | OSHA |
| Toluene | 100.0 | 2.5996E-09 | 1.1499E-09 | Yes | 2.2806E-08 | 50% | NIOSH |
| 1,1,1 - Trichloroethane | 350.0 | 2.2692E-05 | 1.6060E-05 | Yes | 3.8318E-04 | 50% | NIOSH |
| Xylene | 100.0 | 6.2453E-10 | 9.7042E-11 | Yes | 0.0000E+00 | 50% | OSHA |




1 = NIOSH CO2 Limit
2 = CO2 Level at Ventilation Rate OA Flow Rate
3 = CO2 Level at IAQ Procedure OA Flow Rate

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Building materials and furnishings assumed to have no VOCs and off-gassing is complete
All yellow shaded boxes require user input or review

Is IAQ acceptable at reduced outside air levels? **Yes**

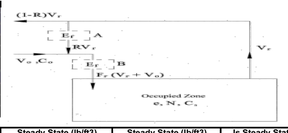


**IMC 2006 & later allows for ASHRAE 62 IAQP through the engineered exception found in Section 403.2**
**Exhaust flow rates may differ from Table 6.5 based on ASHRAE 62 IAQP via Section 6.5.2**

| | |
|---|---|
| Date | 16-10-2024 |
| Job Name | |
| Representative | - |
| Engineer | NY Engineers |
| Contractor | - |

| Zone Tag | Facility Type | Zone Use | Zone Floor Area (square ft) Az | Zone Max Occupancy Pz | Table 6.1 OA per Occupant Rp | Table 6.1 cfm/ft2 Ra | Pz * Rp | Az * Ra | Table 6.2 Ventilation Effectiveness Ez | Outdoor Air to Zone (CFM) with Ez correction (Vbz/Ez) |
|---|---|---|---|---|---|---|---|---|---|---|
| RTU-2 ( E ) | General | Daycare sickroom | 986.0 | 23.0 | 10.0 | 0.18 | 230 | 177 | 0.8 | 509 OA required per VRP |

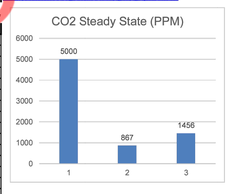
| | |
|---|---|
| Zone Height (feet) | 10.0 |
| Desired Outside Air (Vo) IAQP (C | 225 |
| Supply Air (Vs) (CFM) | 1,970 |
| Return Air (Vr) | 1745 |
| Recirc. Flow Factor (R) | 0.89 |
| Ventilation Effectiveness (Ez) | 0.8 |
| Level of Physical Activity | **Sedentary** |
| Filter Location | B |
| HVAC Flow Type | Constant |
| Outdoor Air Flow Type | Constant |




| | | | |
|---|---|---|---|
| Air Changes Per Hour | 12.0 | VRP OA CFM per person | 22.1 |
| Outside Air Per VRP | 509 CFM | IAQ OA CFM per person | 9.8 |
| Outside Air Per IAQ | 225 CFM | | |
| Outside Air Savings | 284 CFM | Winter Heating Savings | |
| OA Summer Drybulb | 92.6 | OA Winter Design DB (F) | 11.4 |
| OA Summer Wetbulb | 74.1 | Supply Air DB Setpoint (F) | 95 |
| Coil Leaving Air Drybulb (F | 56.0 | MBH Saved Winter | 25.8 |
| Coil Leaving Air Wetbulb (F | 54.0 | KW Saved Winter | 7.6 |
| OA MBH Saved Summer* | 19.2 | | |
| OA Tons Saved Summer* | 1.6 | | |

*OA = Outside Air
***OSHA, NIOSH & WHO most conservative values used
http://www.cdc.gov/niosh/npg/npgsyn-a.html

| Indoor Contaminants Generated By People & From Outdoors | Maximum Threshold Value Based on OSHA or NIOSH (PPM) | Steady State (lb/ft3) Using the VRP* (Prescribed OA) Ionization Off | Steady State (lb/ft3) Using the IAQ Method (Reduced OA) Ionization On | Is Steady State Level Acceptable at Reduced OA Levels? | Contaminant Generation Rate lb/person/min | Filtration Effectiveness | Cognizant Authority*** |
|---|---|---|---|---|---|---|---|
| Acetaldehyde | 100.0 | 1.9774E-09 | 5.1259E-10 | Yes | 1.2903E-08 | 50% | OSHA |
| Acetone | 250.0 | 7.5213E-09 | 3.7647E-09 | Yes | 1.2993E-07 | 50% | NIOSH |
| Ammonia | 25.00 | 1.7236E-07 | 8.7949E-08 | Yes | 3.0522E-06 | 50% | NIOSH |
| Benzene | 1.0 | 8.7416E-09 | 4.2635E-09 | Yes | 1.4602E-07 | 50% | OSHA |
| 2- Butanone (MEK) | 200.0 | 4.9897E-07 | 2.5469E-07 | Yes | 8.8396E-06 | 50% | NIOSH |
| Carbon dioxide** | 5000 | 4.6350E-05 | 4.8111E-05 | Yes | 2.4692E-05 | 0% | NIOSH |
| Chloroform | 2.0 | 1.5496E-08 | 7.8848E-09 | Yes | 2.7342E-07 | 50% | NIOSH |
| Dioxane | 100.0 | 0.0000E+00 | 0.0000E+00 | Yes | 0.0000E+00 | 50% | OSHA |
| Hydrogen Sulfide | 10.0 | 0.0000E+00 | 0.0000E+00 | Yes | 0.0000E+00 | 50% | NIOSH |
| Methane | NA | 6.8698E-08 | 6.8698E-08 | Yes | 0.0000E+00 | 0% | NA |
| Methanol | 200.0 | 6.3008E-09 | 1.4264E-08 | Yes | 1.1163E-07 | 0% | NIOSH |
| Methylene Chloride | 25.0 | 4.5318E-07 | 2.3127E-07 | Yes | 8.0262E-06 | 50% | OSHA |
| Propane | 1000.0 | 1.1242E-09 | 1.1242E-09 | Yes | 0.0000E+00 | 0% | NIOSH |
| Tetrachloroethane | 5.0 | 0.0000E+00 | 0.0000E+00 | Yes | 0.0000E+00 | 50% | OSHA |
| Tetrachloroethylene | 100.0 | 5.1459E-07 | 2.6261E-07 | Yes | 9.1140E-06 | 50% | OSHA |
| Toluene | 100.0 | 2.5363E-09 | 7.9790E-10 | Yes | 2.2806E-08 | 50% | NIOSH |
| 1,1,1 - Trichloroethane | 350.0 | 2.1629E-05 | 1.1040E-05 | Yes | 3.8318E-04 | 50% | NIOSH |
| Xylene | 100.0 | 6.2453E-10 | 7.0411E-11 | Yes | 0.0000E+00 | 50% | OSHA |

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2 = CO2 Level at Ventilation Rate OA Flow Rate
3 = CO2 Level at IAQ Procedure OA Flow Rate

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Building materials and furnishings assumed to have no VOCs and off-gassing is complete
All yellow shaded boxes require user input or review

Is IAQ acceptable at reduced outside air levels? **Yes**



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**Exhaust flow rates may differ from Table 6.5 based on ASHRAE 62 IAQP via Section 6.5.2**

| | |
|---|---|
| Date | 16-10-2024 |
| Job Name | |
| Representative | - |
| Engineer | NY Engineers |
| Contractor | - |



CONSULTANTS (ENGINEER):
NY ENGINEERS
NEARBY ENGINEERS
382 NE 191ST STREET SUITE 49674,
MIAMI, FL 33179
PH-914.257.3455
WWW.NY-ENGINEERS.COM

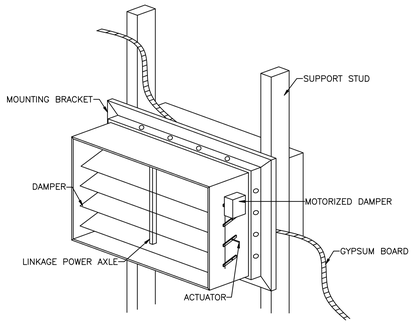
CONTRACTOR'S NOTES:
WRITTEN DIMENSIONS HOLD PREFERENCE OVER SCALED DIMENSIONS. DO NOT SCALE THE DRAWINGS. THE CONTRACTORS MUST VISIT JOB SITE TO VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS BEFORE SUBMITTING BIDS. REPORT ANY DISCREPANCIES OF ANY CONDITIONS WHICH MAY INTERFERE WITH THE PROPER EXECUTION OF, THE CONTRACT TO THE TENANT'S REPRESENTATIVE. REPORT DISCREPANCIES DURING BIDDING PROCESS AND BEFORE START OF CONSTRUCTION. CHANGE ORDERS NEED TO BE APPROVED BY **TOWNSQUARE** CONSTRUCTION MANAGER FOR ISSUES ARISING FROM THE FIELD CONDITIONS OR CONFLICTS BETWEEN THE PLANS AND THE EXISTING CONDITIONS PRIOR TO THE COMMENCEMENT OF WORK.

| | DATE | ISSUE |
|---|---|---|
| | 10.31.24 | LL/CLIENT REVIEW SET |
| | 11.15.24 | LL/CLIENT REVIEW SET |
| | 11.22.24 | BD SUBMISSION |
| ⚠1 | 11.15.24 | CLIENT COMMENTS |
| △ | DATE | REVISION |

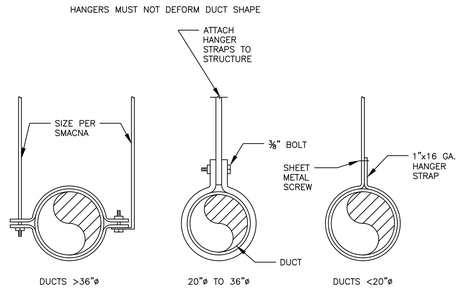
Town SQUARE

TITLE:
MECHANICAL SCHEDULE
( 02 OF 02 )

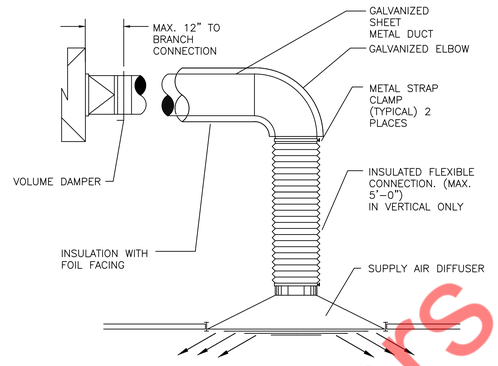
SHEET NUMBER:
M202



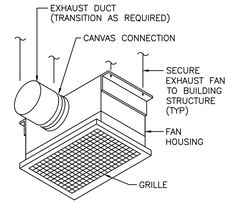

1 M401 MOTORIZED DAMPER DETAILS
N.T.S



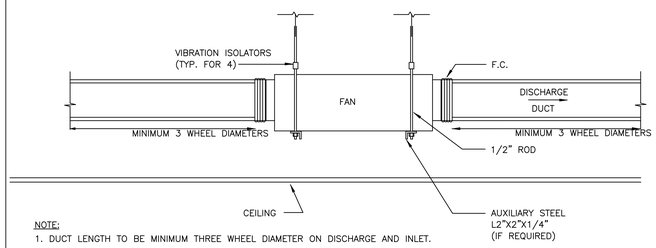

2 M401 ROUND DUCT SUPPORT DETAIL
N.T.S




3 M401 DIFFUSER DETAILS
N.T.S

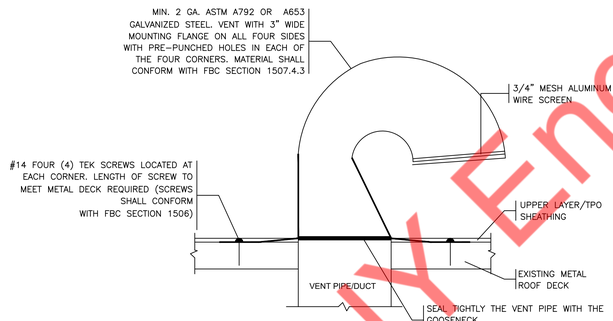



4 M401 CEILING EXHAUST FAN
N.T.S




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

5 M401 INLINE FAN HANGING DETAIL
N.T.S



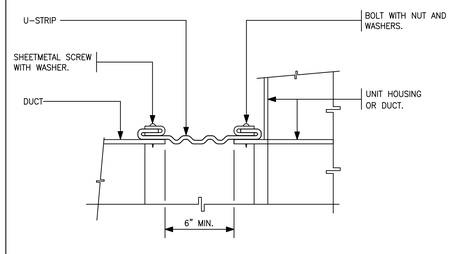

ATTACHMENT METHOD:
CUT OUT THE GOOSENECK VENT OPENING IN THE ROOF SHEATHING ACCORDING WITHIN MAXIMUM DIMENSIONS. DO NOT CUT INTO TRUSSES OR RAFTERS WHEN CUTTING OPENING IN THE ROOF.

REMOVE INTERFERING SHINGLE NAILS AROUND THE PERIMETER OF THE OPENING AND ANY DEBRIS SO THAT THE NAILING FLANGE OF THE VENT LAYS FLAT TO THE ROOF SHEATHING. SLIDE THE TOP AND SIDE FLANGES OF THE VENT UNDERNEATH THE SHINGLES AND ALLOW THE BOTTOM FLANGE TO LIE ON THE TOP OF THE SHINGLES. CARE SHOULD BE TAKEN IN KEEPING THE VENT PROPERLY ALIGNED. VENT PIPE IS SEALED IF UTILIZED. SCREW IN PLACE USING FOUR (4) TEK SCREWS LOCATED AT EACH CORNER (SCREWS SHALL CONFORM WITH FBC SECTION 1506). ROOFING CEMENT SHOULD BE APPLIED TO ALL SHINGLE EDGES NEAR THE OUTER EDGE AND AROUND THE ENTIRE PERIMETER.

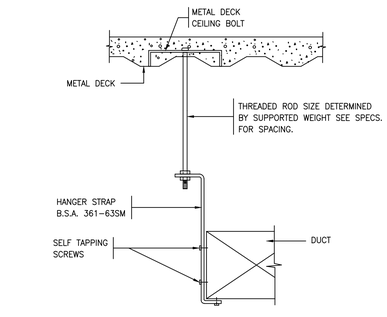
ALLOWABLE ROOF COVERINGS: ASPHALT SHINGLES

MAXIMUM DESIGN PRESSURE:
-52.5 PSF FOR INSTALLATIONS OVER PLYWOOD DECK
-22.5 PSF FOR INSTALLATION OVER OSB DECK
PRESSURES CALCULATED USING 2.1 MARGIN OF SAFELY PER 1504.9.

6 M401 TYPIAL GOOSENECK DETAIL
N.T.S

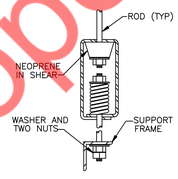



7 M401 FLEXIBLE CONNECTION (DUCT-EQUIPMENT)
N.T.S

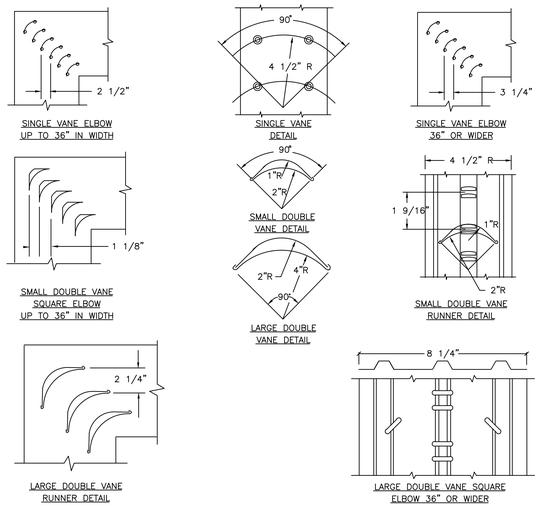



NOTES:
1. DUCTS SHALL NOT BE HUNG FROM OR SUPPORTED BY HUNG CEILING.
2. FOR DUCTS NOT EXCEEDING 2 SQ. FT. IN CROSS-SECTIONAL AREA, HANGERS SHALL BE OF METAL NOT LESS THAN 1/16".
3. FOR DUCTS LARGER THAN 2 SQ. FT. IN CROSS-SECTIONAL AREA, HANGERS SHALL BE OF METAL NOT LESS THAN 1" BY 1/8".
4. FOR ALL DUCTS, HANGERS SHALL BE TURNED UNDER AND FASTENED TO THE BOTTOM OF DUCT AS SHOWN ABOVE.
5. WHERE CROSS-SECTIONAL AREA OF DUCT EXCEEDS 8 SQ. FT. , HANGERS SHALL BE NOT MORE THAN 4 FT. ON CENTER.

8 M401 DUCT HANGING DETAILS
N.T.S




9 M401 VIBRATION ISOLATOR
N.T.S




10 M401 LOW VELOCITY DUCTWORK ELBOWS
N.T.S



CONSULTANTS (ENGINEER):
NY ENGINEERS
NEARBY ENGINEERS
382 NE 191ST STREET SUITE 49674,
MIAMI, FL 33179
PH-914.257.3455
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CONTRACTOR'S NOTES:
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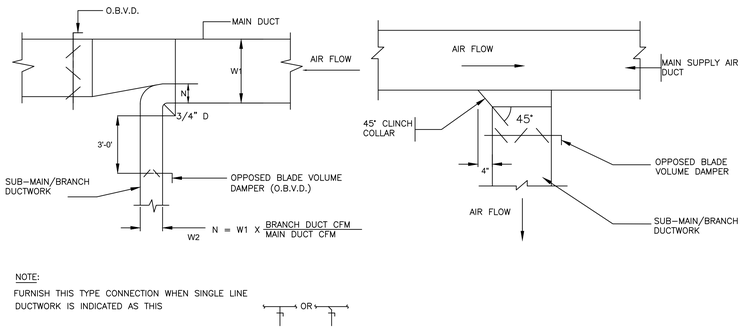
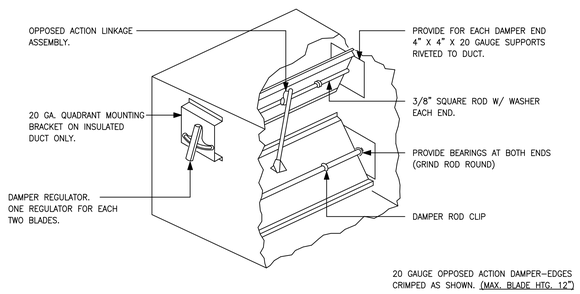
| | DATE | ISSUE |
|---|---|---|
| | 10.31.24 | LL/CLIENT REVIEW SET |
| | 11.15.24 | LL/CLIENT REVIEW SET |
| | 11.22.24 | BD SUBMISSION |
| 1 | 11.15.24 | CLIENT COMMENTS |
| △ | DATE | REVISION |

TITLE:
MECHANICAL DETAILS (01 OF 02)

SHEET NUMBER:
M401

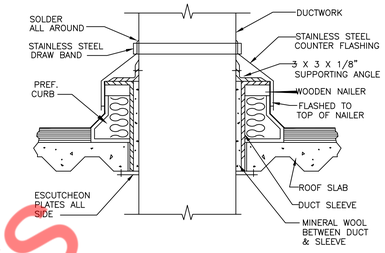



1 / M402 SUPPLY AIR DUCTWORK SUB-MAIN/BRANCH DUCT CONNECTION
N.T.S




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

2 / M402 LOW PRESSURE BALANCING DAMPER
N.T.S




3 / M402 DUCT PENETRATION THRU ROOF
N.T.S

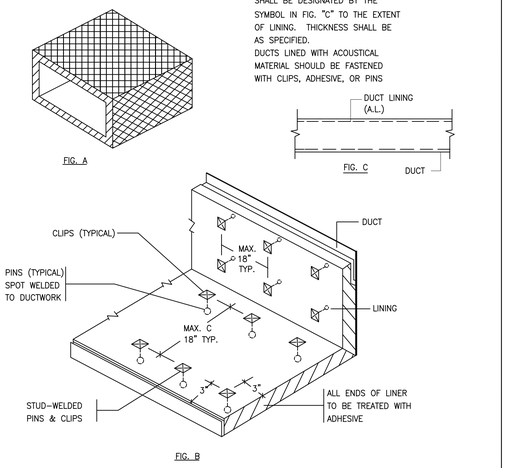
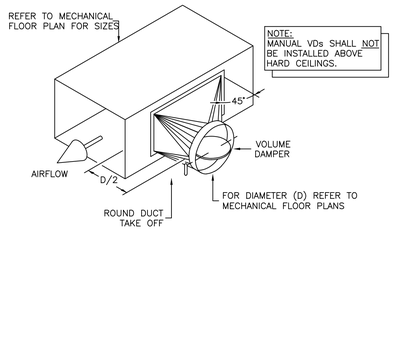
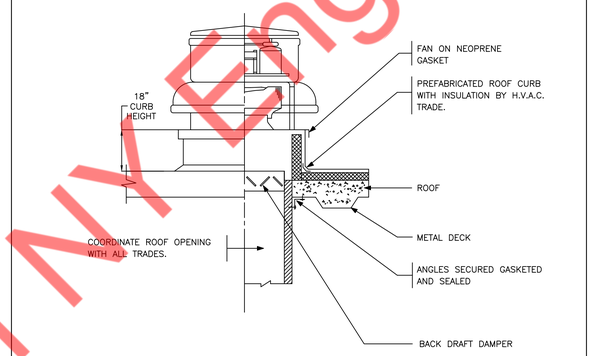



FIG. B

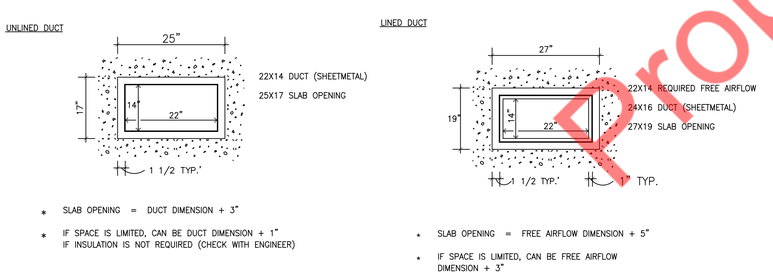
4 / M402 ACOUSTICAL TREATMENT DUCT LINING
N.T.S



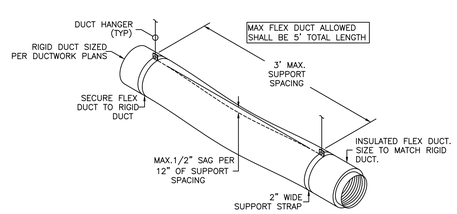

5 / M402 ROUND DUCGT TAKE OFF DETAIL
N.T.S




6 / M402 ROOF MOUNTED EXHAUST FAN DETAIL
N.T.S




7 / M402 DUCT SIZE/SLAB OPENING CONVENTION
N.T.S




8 / M402 FLEXIBLE DUCT INSTALLATION SUPPORT DETAIL
N.T.S



CONSULTANTS (ENGINEER):
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NEARBY ENGINEERS
382 NE 191ST STREET SUITE 49674,
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| 1 | 11.15.24 | CLIENT COMMENTS |
| △ | DATE | REVISION |

TITLE:
MECHANICAL DETAILS (02 OF 02)

SHEET NUMBER:
M402

# ELECTRICAL SYMBOLS LIST

( NOTE: NOT ALL SYMBOLS MAY APPEAR ON DRAWINGS.)

## LIGHTING

| | |
|---|---|
| | LIGHTING FIXTURE AND OUTLET BOX. HALF SHADED FIXTURE OR "EM" INDICATES FIXTURES WITH INTEGRAL BATTERY PACK FOR EMERGENCY SERVICE, U.O.N. (REFER LIGHTING FIXTURE SCHEDULE FOR MORE DETAILS) |
| A, O, 2, a | LUMINAIRE TYPE : INDICATE BY UPPERCASE LETTER SEE LIGHTING FIXTURE SCHEDULE.<br>CIRCUIT NUMBER : INDICATED BY NUMBER<br>SWITCHING INDICATED BY LOWER CASE LETTERS. |
| EM | DENOTES LUMINAIRE ON EMERGENCY CIRCUIT. |
| NL | DENOTES FIXTURES DESIGNATED AS NIGHTLIGHT, WIRED TO 24 HOURS UNSWITCHED CIRCUIT. |
| | RECESSED (REFER LIGHTING FIXTURE SCHEDULE FOR MORE DETAILS) |
| | EXIT LIGHT WITH ARROWS AND NUMBERS OF FACES AS INDICATED ON PLANS. 90 MIN BATTERY BACKUP. SEE LIGHTING FIXTURE SCHEDULE. |
| | EMERGENCY BATTERY UNIT WITH ATTACHED EMERGENCY FIXTURES AND OUTLET BOX. |
| $S_a$ | SINGLE POLE SWITCH, 20 AMP, 120/277 VOLT, COOPER, OR EQUAL BY HUBBELL, LEVITON, AND PASS & SEYMOUR. "a" DENOTES LIGHTING FIXTURE CONTROLLED. |
| $S_{3D}$ | 3-WAY DIMMER SWITCH. VERIFY LOAD ON CIRCUIT AND MATCH DIMMER SIZE TO LOAD. PROVIDE DIMMING SWITCH AS RECOMMENDED BY LIGHTING MANUFACTURER. MATCH SWITCH TYPE TO SOURCE (LED, FLUORESCENT, OR INCANDESCENT), WATTAGE, AND QUANTITY. COOPER, OR EQUAL BY HUBBELL, LEVITON, AND PASS & SEYMOUR. |
| $S_D$ | DIMMER SWITCH. VERIFY LOAD ON CIRCUIT AND MATCH DIMMER SIZE TO LOAD. PROVIDE DIMMING SWITCH AS RECOMMENDED BY LIGHTING MANUFACTURER. MATCH SWITCH TYPE TO SOURCE (LED, FLUORESCENT, OR INCANDESCENT), WATTAGE, AND QUANTITY. COOPER, OR EQUAL BY HUBBELL, LEVITON, AND PASS & SEYMOUR. |
| $S_3$ | THREE WAY SWITCH, 20 AMP, 120/277 VOLT, COOPER, OR EQUAL BY HUBBELL, LEVITON, AND PASS & SEYMOUR. |
| $S_{OS}$ | WALLBOX OCCUPANCY SWITCH. PIR TECHNOLOGY, AUTO-ON, 120/277V RATED. COOPER, OR EQUAL BY HUBBELL, LEVITON, AND PASS & SEYMOUR. |
| $S_{OS/D}$ | WALLBOX OCCUPANCY SWITCH WITH DIMMER. PIR TECHNOLOGY, AUTO-ON, 120/277V RATED. COOPER, OR EQUAL BY HUBBELL, LEVITON, AND PASS & SEYMOUR. |
| OS | CEILING MOUNTED OCCUPANCY SENSOR, AUTO-ON, DUAL TECHNOLOGY. COOPER, OR EQUAL BY HUBBELL, LEVITON, AND WATTSTOPPER. |
| PP | OCCUPANCY/VACANCY SENSOR POWER PACK. COOPER, OR EQUAL BY HUBBELL, LEVITON, AND WATTSTOPPER. |
| | TIME CLOCK |

## DEVICES PATHWAYS

| | |
|---|---|
| | CONDUIT AND/OR WIRING SYSTEM CONCEALED BEHIND WALL OR ABOVE CEILING. |
| | CONDUIT AND/OR WIRING SYSTEM CONCEALED IN SLAB, UNDER SLAB, OR UNDERGROUND. |
| | CIRCUIT HOMERUN TO PANEL CALLED OUT ON PLANS. EACH ARROWHEAD REPRESENTS (1) CIRCUIT. |
| | DUPLEX RECEPTACLE MOUNTED 18"AFF UNLESS NOTED OTHERWISE. SEE SPECIFICATIONS FOR TYPE AND EQUALS. |
| | DUPLEX RECEPTACLE MOUNTED ABOVE COUNTER OR AT HEIGHT NOTED. MOUNT 48" TO CENTER OF DEVICE IF NO HEIGHT NOTED AND/OR NOT SHOWN AT A COUNTER TOP. |
| | QUAD RECEPTACLE, (2) 5-20R DUPLEX RECEPTACLES. |
| EWC | QUAD RECEPTACLE FOR ELECTRIC WATER COOLER. EXACT LOCATION SHALL BE COORDINATED WITH PLUMBING CONTRACTOR. PROVIDE CIRCUIT WITH GFI (CLASS-A 6mA, PERSONNEL) BREAKER. |
| GFI | DUPLEX GROUND FAULT CIRCUIT INTERRUPTER RECEPTACLE. NEMA 5-20R. |
| WGFI | DUPLEX RECEPTACLE WITH GFI AT BREAKER. NEMA 5-20R. REFER TO PANEL SCHEDULES. |
| | FLOOR MOUNTED QUAD RECEPTACLE |
| | CEILING MOUNTED DUPLEX RECEPTACLE |
| WPGFI | WEATHERPROOF AND GROUND FAULT CIRCUIT INTERRUPTER RECEPTACLE. COVER BASED ON INTERMATIC #WP1020 (CLEAR). |
| J | JUNCTION BOX. 4" SQUARE BOX WITH SINGLE GANG OPENING AND PLASTER RING, UNLESS NOTED OTHERWISE. |
| J | WALL MOUNTED JUNCTION BOX. 4" SQUARE BOX WITH SINGLE GANG OPENING AND PLASTER RING, UNLESS NOTED OTHERWISE. BOX SHALL BE RECESSED IN WALL WITH NOT EXPOSED CONDUIT, UNLESS NOTED OTHERWISE. |
| | SPECIAL RECEPTACLE; SEE PLANS FOR TYPE. |
| TV | TV POWER AND DATA CONNECTION, SEE DETAIL. MOUNT 72"AFF UNLESS NOTED OTHERWISE. |
| | TELE/DATA OUTLET. 1" EC TO ABOVE NEAREST ACCESSIBLE CEILING FOR J-HOOK SYSTEM OR TO LOCAL CABLE TRAY (WITHIN 6") AS APPLICABLE WITH PULL STRING. 4" SQUARE BOX WITH A SINGLE-GANG OPENING AND PLASTER RING. |
| | TELE/DATA OUTLET ABOVE COUNTER OR HEIGHT SPECIFIED. 1" EC TO ABOVE NEAREST ACCESSIBLE CEILING FOR J-HOOK SYSTEM OR TO LOCAL CABLE TRAY (WITHIN 6") AS APPLICABLE WITH PULL STRING. 4" SQUARE BOX WITH A SINGLE-GANG OPENING AND PLASTER RING. |
| WAP | ABOVE CEILING, STRUCTURE MOUNTED JUNCTION BOX FOR WIRELESS ACCESS LOW VOLTAGE CABLING. 4" SQUARE BOX WITH A TWO-GANG OPENING. STUB 1" EC FROM BOX TO J-HOOKS OR CABLE TRAY ABOVE ACCESSIBLE CEILING. PROVIDE CABLING, TERMINATIONS, AND FACEPLATE PER SPECIFICATIONS. |
| CR | CARD READER, MINIMUM 1/2" CONDUIT. PROVIDE SINGLE GANG JUNCTION BOX AND PULL STRING. SEE CARD READER DETAIL FOR ADDITIONAL REQUIREMENTS OF PATHWAYS AND CABLING. |
| S | FLUSH-MOUNTED CEILING SPEAKER. |

## ELECTRICAL EQUIPMENTS

| | |
|---|---|
| | PANELBOARD. REFER TO POWER RISER DIAGRAM AND PANEL SCHEDULES FOR DETAILS. TOP OF PANEL AT 6'-6" AFF. (ELECTRICAL PANEL / ENCLOSURE AS NOTED ON PLAN DRAWINGS, SURFACE/RECESSED) |
| | FUSED HEAVY DUTY DISCONNECT SWITCH. NUMERALS INDICATE SWITCH RATING/FUSE SIZE. NEMA 1 ENCLOSURE, UNLESS OTHERWISE NOTED. |
| | NON FUSED HEAVY DUTY DISCONNECT SWITCH. NUMERALS INDICATE SWITCH RATING. NEMA 1 ENCLOSURE, UNLESS OTHERWISE NOTED. |
| $S_M$ | AC INDOOR UNIT MOTOR AS NOTED WITH LIQUID TIGHT FLEXIBLE CONNECTION WITH JUNCTION BOX AND MOTOR SWITCH. |
| M WP | AC OUTDOOR UNIT MOTOR AS NOTED WITH CONTROLLER AND DISCONNECT SWITCH WITH WEATHER PROOF. |
| $S_M$ | MOTOR RATED SWITCH WITH OVERLOAD PROTECTION. |
| $S_T$ | THERMAL OVERLOAD SWITCH AT MOTOR. PROVIDE THERMAL ELEMENTS AS PER MOTOR RATING. |
| 1.5KW | ELECTRICAL HEATER, NUMBER DENOTES HEATER RATING |
| MD | MOTORIZED DAMPER |

## FIRE ALARM

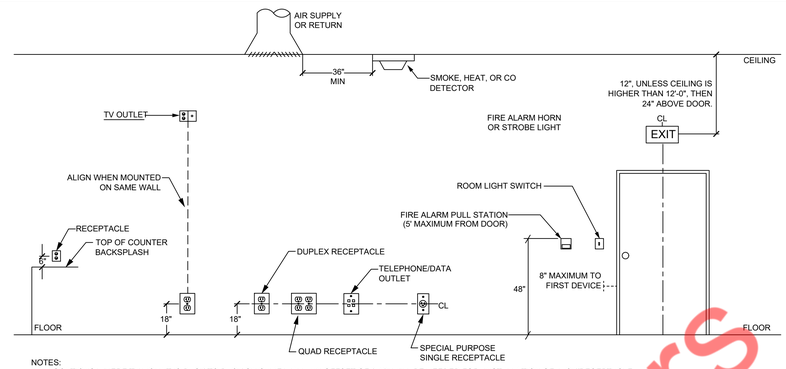
| | |
|---|---|
| FACP | FIRE ALARM CONTROL PANEL |
| RAP | FIRE ALARM REMOTE ANNUNCIATOR. PROVIDE BOX AS REQUIRED PER MANUFACTURER RECOMMENDATION. PROVIDE 1"C CONDUIT FOR CABLING. |
| F | FIRE ALARM MANUAL STATION. PROVIDE PROTECTION DEVICE. |
| S | CEILING MOUNTED SMOKE DETECTOR. FA VENDOR PROVIDED. |
| MC | MULTI-CRITERIA DETECTOR (SMOKE/CO/HEAT). |
| D | DUCT MOUNTED SMOKE DETECTOR. FURNISHED AND CONNECTED BY ELECTRICAL CONTRACTOR, INSTALLED BY MECHANICAL CONTRACTOR. CUTTING OF DUCT, INSTALLATION OF DETECTOR. AND DETERMINATION OF SAMPLING TUBE LENGTH SHALL BE THE MECHANICAL CONTRACTOR. PROVIDE REMOTE INDICATING LIGHT WITH EACH DETECTOR. |
| F | ADA COMPLIANT WALL MOUNTED FIRE ALARM STROBE LIGHT, 15cd, UNLESS OTHERWISE NOTED. WHITE FINISH WITH RED LETTERING. |
| F | ADA COMPLIANT CEILING MOUNTED FIRE ALARM STROBE LIGHT, 15cd, UNLESS OTHERWISE NOTED. WHITE FINISH WITH RED LETTERING. |
| F | ADA COMPLIANT WALL MOUNTED FIRE ALARM SPEAKER STROBE LIGHT, 15cd, UNLESS OTHERWISE NOTED. WHITE FINISH WITH RED LETTERING. |
| F | ADA COMPLIANT CEILING MOUNTED FIRE ALARM SPEAKER STROBE LIGHT, 15cd, UNLESS OTHERWISE NOTED. WHITE FINISH WITH RED LETTERING. |

## ANNOTATION

| | |
|---|---|
| +24" | INDICATES MOUNTING HEIGHT, CENTER LINE TO FINISHED FLOOR. |
| X | KEYED NOTE REFERENCE |
| 1 / E/2-1 | DETAIL REFERENCE: DETAIL NUMBER INDICATED ON TOP; DRAWING NUMBER INDICATED ON BOTTOM |
| | EXISTING |
| | NEW |

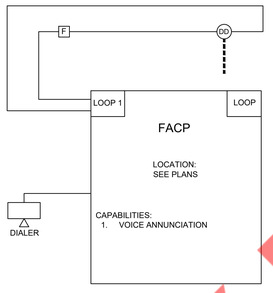
## ABBREVIATIONS

| | | | |
|---|---|---|---|
| A | AMPERE | MCCB | MOLDED CASE CIRCUIT BREAKER |
| AFF | ABOVE FINISHED FLOOR | MCP | MOTOR CIRCUIT PROTECTOR |
| AFG | ABOVE FINISHED GRADE | MDP | MAIN DISTRIBUTION PANEL |
| AHJ | AUTHORITY HAVING JURISDICTION | MFS | MAXIMUM FUSE SIZE |
| AFC | AVAILABLE FAULT CURRENT | MLO | MAIN LUG ONLY |
| AIC | AMPERE INTERRUPTING CAPACITY | MOCP | MAXIMUM OVERCURRENT PROTECTION |
| ATS | AUTOMATIC TRANSFER SWITCH | MTD | MOUNTED |
| BLDG | BUILDING | MTS | MANUAL TRANSFER SWITCH |
| BRKR | BREAKER | N.C. | NORMALLY CLOSED |
| C | CONDUIT | N.O. | NORMALLY OPEN |
| CKT | CIRCUIT | NTS | NOT TO SCALE |
| CLG | CEILING. | OCPD | OVERCURRENT PROTECTION DEVICE |
| CT | CURRENT TRANSFORMER | OH | OVERHEAD |
| CU | COPPER | P | POLE |
| CTR | CENTER | PH | PHASE |
| EA | EACH | PNL | PANEL |
| EGC | EQUIPMENT GROUNDING CONDUCTOR | PWR | POWER |
| EOL | ELECTRONIC OVERLOAD | RECEP | RECEPTACLE |
| FDR | FEEDER | RM | ROOM |
| FLA | FULL LOAD AMPS | SW | SWITCH |
| GEC | GROUNDING ELECTRODE CONDUCTOR | SWBR | SWITCHBOARD |
| GFI | GROUND FAULT INTERRUPTER | SWGR | SWITCHGEAR |
| GND | GROUND | TBB | TELECOM BACKBOARD |
| GRS | GALVANIZED RIGID STEEL | TELE | TELEPHONE |
| HOA | HAND-OFF-AUTO | TYP | TYPICAL |
| IG | ISOLATED GROUND | UG | UNDERGROUND |
| JB | JUNCTION BOX | UNO | UNLESS NOTED OTHERWISE |
| KVA | KILOVOLT-AMPERE | UPS | UNINTERRUPTIBLE POWER SUPPLY |
| KW | KILOWATT | V | VOLT |
| L.S.I.G. | LONG, SHORT, INSTANTANEOUS, GROUND FAULT TRIP | VIF | VERIFY IN FIELD |
| | | W/ | WITH |
| LTG | LIGHTING | W | WIRE |
| MCA | MINIMUM CIRCUIT AMPS | WP | WEATHER PROOF |
| MCB | MAIN CIRCUIT BREAKER | XFMR | TRANSFORMER |
| MCC | MOTOR CONTROL CENTER | | |



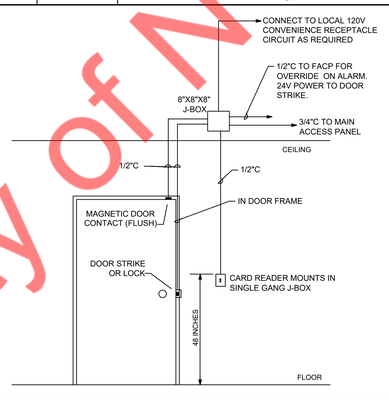

NOTES:
1. LOCATIONS WHERE TV MOUNT IS BACK TO BACK ON SAME WALL, AN OFFSET OF 8-12" WILL BE NEEDED FOR INSTALLATION OF JACK/RECEPTACLE.
2. DEVICES ABOVE COUNTER TOPS SHALL BE A MAXIMUM OF 48" TO TOP OF DEVICE.

1 | SCALE N.T.S. | MOUNTING HEIGHTS OF DEVICES - ELEVATIONS




1. FACP SHALL BE FULLY ANALOG ADDRESSABLE.
2. FACP IS SHALL BE TO A UL APPROVED CENTRAL STATION.
3. ZONE PER NFPA 72, 2019 AND MANUFACTURER'S RECOMMENDATIONS WITH NO ONE ZONE EXCEEDING 15,000 S.F. PER FLOOR.
4. COORDINATE QUANTITY AND LOCATIONS OF DEVICES WITH CONTRACT DRAWINGS.
5. LOCATE FIRE ALARM PULL STATION WITHIN 5' OF THE EXIT DOOR.
6. LOCATE SMOKE/HEAT DETECTOR WITHIN 5' OF THE FA EQUIPMENT (FACP, FATC).
7. LOCATION OF CEILING-MOUNTED SMOKE/HEAT DETECTOR SHALL BE FIELD COORDINATED PRIOR TO ROUGH IN. THE DETECTOR SHALL BE A MINIMUM OF 2' AWAY FROM LIGHT FIXTURE AND A MINIMUM OF 3' AWAY FROM AIR DISTRIBUTION DEVICES.
8. ACTIVATION OF AN ALARM ZONE SHALL CAUSE ALL AIR HANDLING EQUIPMENT TO SHUT DOWN (ALL DAMPERS, AIR HANDLERS AND EXHAUST FANS MUST STOP).
9. ELECTRICAL CONTRACTOR SHALL COORDINATE EXACT LOCATIONS OF ALL FLOW, PRESSURE, & TAMPER SWITCHES WITH FIRE PROTECTION CONTRACTOR PRIOR TO INSTALLATION.
10. ALL VISUAL DEVICES WITHIN THE SAME AREA SHALL BE SYNCHRONIZED. IT SHALL BE A THREE BEAT TEMPORAL PATTERN.
11. FIRE ALARM CABLING SHALL BE PLENUM RATED.
12. ALL NOTIFICATION DEVICES SHALL BE SPEAKER TYPE AND VOICE CAPABLE. NAC SHALL BE VOICE CAPABLE.
13. THE FIRE ALARM SYSTEM MANUFACTURER SHALL PROVIDE NOTIFICATION APPLIANCE CIRCUIT (NAC) POWER EXTENDERS AS REQUIRED.
14. THE CIRCUIT FEEDING THE FIRE ALARM PANEL IS DEDICATED FOR THE FIRE ALARM ONLY. BREAKER SHALL BE PROVIDED WITH A LABEL "FIRE ALARM CIRCUIT" AND SHALL BE RED.
15. CONTRACTOR SHALL INCLUDE IN BID LABOR AND MATERIAL FOR UP TO (2) DUCT DETECTORS. (5) ANNUNCIATION DEVICES, (2) SMOKE DETECTORS AND (2) PULL STATIONS 100' FROM LOCAL PANEL (IN WALL) AS REQUIRED BY LOCAL AHJ/ENGINEER.
16. CONTRACTOR RESPONSIBLE FOR SHOP DRAWINGS AS REQUIRED BY LOCAL AHJ.
17. THIS SYSTEM SHALL EMPLOY A SINGLE TELEPHONE LINE (NUMBER) AS WELL AS AN ADDITIONAL TELEPHONE LINE (NUMBER) THAT IS CAPABLE OF THE FOLLOWING:
    A. THE DACT IS PROGRAMMED TO CALL A SECOND DACR LINE (NUMBER) WHEN THE SIGNAL TRANSMISSION SEQUENCE TO THE FIRST CALLED LINE (NUMBER) IS UNSUCCESSFUL.
    B. THE DACT IS CAPABLE OF SELECTING THE OPERABLE MEANS OF TRANSMISSION IN THE EVENT OF FAILURE OF THE OTHER MEANS.
    C. EACH TELEPHONE LINE IS TESTED IN ACCORDANCE WITH 26.6.4.1.4(B) OR AT ALTERNATING 6-HOUR INTERVALS.

2 | SCALE N.T.S. | FIRE ALARM RISER DIAGRAM




3 | SCALE N.T.S. | CARD READER/DOOR LOCK

**GENERAL NOTES:**

1. ALL WORK SHALL BE PERFORMED IN STRICT ACCORDANCE WITH THE CURRENT VERSION OF THE UCC ELECTRICAL SUBCODE (ADOPTS NFPA 70, 2020 WITH AMENDMENTS), LOCAL JURISDICTION REQUIREMENTS, AND ALL GOVERNING LOCAL CODES, LAWS, AND REGULATIONS.
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.
3. CONTRACTOR SHALL OBTAIN AND PAY FOR ALL PERMITS, TEST REPORTS, AND CERTIFICATIONS FOR TEMPORARY AND FINAL CERTIFICATE OF OCCUPANCY.
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.
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, RAWL 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.
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.
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.
8. CONTRACTOR SHALL PROVIDE A WARRANTY ON ALL MATERIALS, EQUIPMENT, AND WORKMANSHIP FOR A PERIOD OF ONE YEAR FROM THE DATE OF FINAL ACCEPTANCE.
9. ALL UNUSED MATERIALS AND DEBRIS SHALL BE LEGALLY REMOVED AND DISPOSED OF AWAY FROM THE PREMISES ON A DAILY BASIS.
10. CONTRACTOR SHALL PATCH, PAINT, AND RESTORE EXISTING SURFACES DAMAGED DURING THE COURSE OF THIS CONSTRUCTION TO PRE-EXISTING CONDITIONS OR BETTER.
11. MINIMUM SIZE OF CONDUIT SHALL BE ¾", AND TYPE SHALL BE ELECTRICAL METALLIC TUBING (EMT), UNLESS OTHERWISE NOTED. PROVIDE NYLON DRAG LINE AND CONDUIT CAP FOR ALL EMPTY CONDUITS.
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.
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 CANCEALED IN FINISHED AREAS, AND ALL COVERS TO PULL & JUNCTION BOXES SHALL BE READILY ACCESSIBLE.
14. SUPPORT PANEL, JUNCTION AND PULLBOXES INDEPENDENTLY TO BUILDING STRUCTURE WITH NO WEIGHT BEARING ON RACEWAYS.
15. FOR EXACT LOCATION AND MOUNTING HEIGHT OF LIGHTING FIXTURES AND SWITCH/RECEPTACLE OUTLETS, REFER TO ARCHITECTURAL REFLECTED CEILING AND POWER PLANS.
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 RAINTIGHT INSTALLATION. ALL BUILDING EXTERIOR MOUNTED RECEPTACLES SHALL BE GFCI RATED AND MOUNTED IN WEATHERPROOF ENCLOSURE.
17. ALL ACCESS PANEL LOCATIONS SHALL BE REVIEWED BY ARCHITECT PRIOR TO INSTALLATION.
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.
19. ALL CONDUITS AND EQUIPMENT TO BE CONCEAL ED IN FINISHED SPACES UNLESS OTHERWISE NOTED. CONDUITS SHALL BE ENCASED IN THE CONCRETE FLOOR SLAB.
20. ALL EQUIPMENT AND MATERIALS INSTALLED IN PLENUM CEILINGS SHALL BE APPROVED FOR THAT APPLICATION.
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.
22. COORDINATE ALL FLOOR PENETRATIONS WITH THE STRUCTURAL AND ARCHITECTURAL DRAWINGS. CONFIRM PENETRATION LOCATIONS WITH THE ENGINEER AND OWNER BEFORE INSTALLATION.
23. COORDINATE THE MOUNTING HEIGHT AND LOCATION OF RACEWAYS, COMMUNICATIONS OUTLETS, AND RECEPTACLES WITH THE ARCHITECTURAL CASEWORK DRAWINGS AND DETAILS. COORDINATE LOCATIONS OF LIGHT FIXTURES, SWITCHES, AND RELATED DEVICES WITH THE ARCHITECTURAL DRAWINGS AND DETAILS.
24. REFER TO ARCHITECTURAL PLANS FOR FINAL LOCATIONS OF ALL LUMINARIES AND SWITCHES, AND FOR ALL FINISHED CEILING HEIGHTS.
25. REFER TO ARCHITECTURAL PLANS FOR FINAL LOCATIONS OF ALL ELECTRICAL DEVICES, AND FOR FINAL CEILING AND WALL HEIGHTS AND LAYOUTS.
26. LIGHTING FIXTURES DESIGNATED AS EMERGENCY TYPE OR PROVIDED WITH EMERGENCY BATTERY PACKS AND INDICATED WITH SWITCH CONTROL SHALL BE WIRED WITH BATTERY CHARGING/SENSING CIRCUIT WIRED AHEAD OF SWITCH CONTROL DEVICE.
27. 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.
28. 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 CONSULTANT'S DRAWING FOR EXACT REQUIREMENTS AND LOCATIONS OF DEVICES.
29. PROVIDE HANDLE TIES TO ALLOW FOR SIMULTANEOUS DISCONNECTION OF CONDUCTORS IN ANY MULTI-BRANCH CIRCUITS WITH A SHARED NEUTRAL.

SYSTEM OUTPUTS / INDICATING/CONTROLLED DEVICES / SYSTEM INPUTS INITIATING DEVICES

| | | CONTROL UNIT ANNUNCIATION | | | | | | | NOTIFICATIONS | | | | CONTROL FUNCTIONS | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | ACTIVATE COMMON ALARM SIGNAL | ACTIVATE AUDIBLE/VISUAL ALARM SIGNAL | ACTIVATE COMMON SUPERVISORY SIGNAL | ACTIVATE AUDIBLE SUPERVISORY SIGNAL | ACTIVATE COMMON TROUBLE SIGNAL | ACTIVATE AUDIBLE COMMON TROUBLE SIGNAL | | ACTIVATE ALL EVACUATION SIGNALS | TRANSMIT FIRE ALARM SIGNAL TO THIRD PARTY | TRANSMIT SUPERVISORY SIGNAL TO THIRD PARTY | TRANSMIT TROUBLE SIGNAL TO THIRD PARTY | RELEASE MAGNETIC DOOR HOLD OPEN DEVICES | |
| | | A | B | C | D | E | F | | G | H | I | J | K | |
| 1 | MANUAL PULL STATION | ● | ● | | | | | | ● | ● | | | ● | 1 |
| 2 | SMOKE, CO AND HEAT DETECTOR | ● | ● | | | | | | ● | ● | | | ● | 2 |
| 3 | SPRINKLER WATER FLOW SWITCH | ● | ● | | | | | | ● | ● | | | ● | 3 |
| 4 | SPRINKLER TAMPER SWITCH | | | ● | ● | | | | | | ● | | | 4 |
| 5 | FACP PANELS AC POWER FAILURE | | | | | ● | ● | | | | | ● | | 5 |
| 6 | FACP PANELS SYSTEM LOW BATTERY | | | | | ● | ● | | | | | ● | | 6 |
| 7 | OPEN CIRCUIT | | | | | ● | ● | | | | | ● | | 7 |
| 8 | GROUND FAULT | | | | | ● | ● | | | | | ● | | 8 |
| 9 | NOTIFICATION APPLIANCE CIRCUIT SHORT | | | | | ● | ● | | | | | ● | | 9 |
| | | A | B | C | D | E | F | | G | H | I | J | K | |

FIRE ALARM SYSTEM SHALL BE A PUBLIC, PARTIAL, FULLY SUPERVISED, MANUAL, AUTOMATIC, SYSTEM

SINGLE AND MULTI STATION SMOKE ALARMS ARE NOT ALLOWED

PRIVATE FIRE ALARM SYSTEM IS NOT ALLOWED

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CONTRACTOR'S NOTES:

WRITTEN DIMENSIONS HOLD PREFERENCE OVER SCALED DIMENSIONS. DO NOT SCALE THE DRAWINGS. THE CONTRACTORS MUST VISIT JOB SITE TO VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS BEFORE SUBMITTING BIDS. REPORT ANY DISCREPANCIES OF ANY CONDITIONS WHICH MAY INTERFERE WITH THE PROPER EXECUTION OF, THE CONTRACT TO THE TENANT'S REPRESENTATIVE. REPORT DISCREPANCIES DURING BIDDING PROCESS AND BEFORE START OF CONSTRUCTION. CHANGE ORDERS NEED TO BE APPROVED BY **TOWNSQUARE** CONSTRUCTION MANAGER FOR ISSUES ARISING FROM THE FIELD CONDITIONS OR CONFLICTS BETWEEN THE PLANS AND THE EXISTING CONDITIONS PRIOR TO THE COMMENCEMENT OF WORK.

| | DATE | ISSUE |
|---|---|---|
| | 10.31.24 | LL/CLIENT REVIEW SET |
| | 11.15.24 | LL/CLIENT REVIEW SET |
| | 11.22.24 | BD SUBMISSION |
| △1 | 11.15.24 | CLIENT COMMENTS |
| △ | DATE | REVISION |

TITLE:

ELECTRICAL SYMBOL LIST, ABBREVIATIONS & GENERAL NOTES

SHEET NUMBER:

E001

1. **GENERAL:**

A. THE WORK COVERED BY THESE SPECIFICATIONS CONSISTS OF FURNISHING ALL LABOR, A. EQUIPMENT, MATERIALS AND SUPPLIES AS NECESSARY FOR THE COMPLETE AND SATISFACTORY OPERATING ELECTRICAL SYSTEMS AS SHOWN ON THE PLANS.
B. ALL WORK SHALL BE IN ACCORDANCE WITH UCC ELECTRICAL SUBCODE (ADOPTS NFPA 70, 2020 WITH AMENDMENTS),STATE BUILDING CODE, AND ANY OTHER LOCAL REQUIREMENTS THAT MAY APPLY.
C. CONTRACTOR SHALL OBTAIN AND PAY FOR ALL ELECTRICAL PERMITS AND INSPECTION FEES. ALL MATERIALS AND EQUIPMENT SHALL BE NEW AND SHALL BE LISTED BY THE UNDERWRITER'S
D. LABORATORIES, INC. OR BY A STATE APPROVED THIRD PARTY TESTING AGENCY FOR THE USE INTENDED WHERE A STANDARD FOR SUCH MATERIALS AND USE EXISTS. ALL ITEMS OF THE SAME TYPE AND RATING SHALL BE IDENTICAL AND OF THE SAME MANUFACTURER.
E. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS AND CATALOG DATA IN ELECTRONIC FORMAT (PDF) FOR ALL ELECTRICAL ITEMS IN THE SCOPE OF WORK, INCLUDING, BUT NOT LIMITED TO, RACEWAYS, BOXES, FITTINGS, CONDUCTORS, LUMINAIRES, LAMPS, BALLASTS, WIRING DEVICES, SAFETY SWITCHES, DISCONNECTS, TRANSFORMERS, PANELBOARDS, FIRE ALARM, TELECOMMUNICATIONS, ETC. FOR APPROVAL AS APPLICABLE FOR THE PROJECT. ONE COMPLETE SET OF APPROVED SUBMITTALS SHALL BE MAINTAINED AT THE JOB SITE.
F. ALL COST ASSOCIATED WITH SUBSTITUTED EQUIPMENT TO COMPLY WITH THE BASIS OF DESIGN, INCLUDING PROVIDING MAINTENANCE ACCESS, CLEARANCE, CONDUIT, WIRING, REPLACEMENT OF OTHER SYSTEM COMPONENTS, BUILDING ALTERATIONS, METHODS, ETC., SHALL BE INCLUDED IN THE ORIGINAL BASE BID. NO ADDITIONAL COSTS ASSOCIATED WITH SUBSTITUTED EQUIPMENT WILL BE APPROVED AFTER BIDS HAVE BEEN ACCEPTED AND ALL COSTS WILL BE THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR. CREDITS SHALL BE GIVEN TO THE OWNER WHERE SUCH EQUIPMENT AND METHODS RESULT IN LESS EXPENSE TO THE CONTRACTOR.
G. ONE COMPLETE SET OF THE LATEST CONSTRUCTION PLANS OF ALL TRADES SHALL BE MAINTAINED AT THE JOB SITE. IN ADDITION, ALL ADDENDUMS, BULLETINS, AND/OR SKETCHES SHALL BE INCORPORATED INTO THE ON-SITE CONSTRUCTION PLANS AS THE JOB PROGRESSES.
H. COMPLETELY ADEQUATE HOUSING SHALL BE PROVIDED FOR ALL MATERIALS STORED ON JOB SITE. ONLY CONDUIT MAY BE STORED OUTSIDE, BUT NOT IN CONTACT WITH THE GROUND. THE CONDUIT AND NEUTRAL SYSTEM SHALL BE GROUNDED AT THE MAIN SERVICE EQUIPMENT.
I. GROUNDING ELECTRODE SYSTEM SHALL BE INSTALLED PER NEC 250.
J. PROVIDE AN INTERSYSTEM BONDING TERMINATION DEVICE AT THE MAIN ELECTRICAL SERVICE PER NEC 250.94.
K. WIRING SHALL BE TESTED FOR CONTINUITY AND GROUNDS BEFORE BEING ENERGIZED. FAULTY WIRING SHALL BE REPLACED AT NO ADDITIONAL EXPENSE TO THE OWNER.
L. PROVIDE ALL CUTTING AND PATCHING FOR INSTALLATION OF WORK AND REPAIR ANY DAMAGE DONE.
M. THE ELECTRICAL CONTRACTOR SHALL CONNECT ALL EQUIPMENT REQUIRING ELECTRICAL CONNECTIONS (UNLESS OTHERWISE NOTED), EXCEPT FOR CONTROL WIRING FOR EQUIPMENT NOT PROVIDED BY THE ELECTRICAL CONTRACTOR. CONTROL WIRING FOR SUCH EQUIPMENT SHALL BE PROVIDED BY THE RESPECTIVE DISCIPLINE.
N. ALL ELECTRICAL JUNCTION BOXES, SWITCHGEAR, CABLING, VOICE/DATA OUTLETS, LOW VOLTAGE CABINETS, EMERGENCY RECEPTACLES, ETC. SHALL BE LABELED ACCORDING TO PANEL/RACK AND CIRCUIT NUMBER.
O. UPON COMPLETION OF WORK, CONTRACTOR SHALL PRESENT ENGINEER WITH CERTIFICATE OF APPROVAL FROM LOCAL INSPECTOR AND/OR AUTHORITY HAVING JURISDICTION BEFORE WORK WILL BE APPROVED FOR FINAL PAYMENT.
P. CONTRACTOR SHALL GUARANTEE ALL WORK AND MATERIALS FOR A PERIOD OF ONE YEAR EFFECTIVE THE DATE THE PROJECT IS ACCEPTED BY THE OWNER. ANY IMPERFECT MATERIALS OR WORKMANSHIP SHALL BE REPLACED WITHOUT ADDED COST TO THE PROJECT.
Q. IT SHALL NOT BE THE INTENT OF ISSUED PLANS AND/OR SPECIFICATIONS TO SHOW EVERY MINOR DETAIL OF CONSTRUCTION. THE ELECTRICAL CONTRACTOR IS EXPECTED TO FURNISH AND INSTALL ALL NECESSARY ITEMS FOR A COMPLETE AND OPERATING SYSTEM.
R. THE WORD "PROVIDE" MEANS THAT THIS CONTRACTOR SHALL FURNISH, FABRICATE, ERECT, CONNECT, AND COMPLETELY INSTALL SYSTEMS IN PROPER OPERATING CONDITION. ALL LABOR, PRODUCT OPTIONS, ACCESSORIES AND INCIDENTAL MATERIALS REQUIRED SHALL BE INCLUDED AS PART OF THIS WORK TO COMPLETE THE INSTALLATION.
S. THE WORD "CONNECT" MEANS THAT THIS CONTRACTOR SHALL PROVIDE (SEE DEFINITION ABOVE) ALL DISCONNECTING MEANS, OVERCURRENT PROTECTION AND WIRING REQUIRED TO PLACE THE EQUIPMENT AND SYSTEMS IN PROPER OPERATING CONDITION AND TO COMPLY WITH CODE REQUIREMENTS.
T. CONTRACTOR SHALL COORDINATE THE ROUGH-IN OF ALL OUTLET LOCATIONS WITH ARCHITECTURAL FLOOR PLANS, ELEVATIONS, AND MILLWORK SHOP DRAWINGS PRIOR TO ROUGH-IN.
U. ELECTRICAL CONTRACTOR SHALL NOT SCALE PLANS CONTRACTOR SHALL REFER TO ARCHITECTURAL PLANS AND ELEVATIONS FOR EXACT LOCATIONS OF ALL EQUIPMENT, UNLESS OTHERWISE NOTED.
V. CONTRACTOR SHALL TEST ALL "LIFE SAFETY" EQUIPMENT AND SYSTEMS FOR PROPER FUNCTION V. AND OPERATION. UPON SUCCESSFUL COMPLETION OF TESTS, CONFIRMATION SHALL BE SENT TO THE ENGINEER OF RECORD IN THE FORM OF A LETTER STATING THE TESTS PERFORMED, THE RESULTS, AND THE DATE TESTS WERE SUCCESSFULLY COMPLETE. "LIFE SAFETY" EQUIPMENT AND SYSTEMS CONSIST OF THOSE AS SPECIFIED IN THE STATE BUILDING CODE, THE NATIONAL ELECTRICAL CODE (NEC), NFPA 101, AND ANY OTHER LOCAL REQUIREMENTS THAT MAY APPLY.
W. IF DURING THE COURSE OF WORK, THE CONTRACTOR DISCOVERS A PROBLEM WITH THE PERFORMANCE OF THE INSTALLATION RELATIVE TO THE PLANS AND SPECIFICATIONS, THE NEC, OR OTHER CODES OR REQUIREMENTS, THE CONTRACTOR SHALL IMMEDIATELY BRING THE PROBLEM TO THE ATTENTION OF THE ARCHITECT AND/OR ENGINEER FOR RESOLUTION PRIOR TO THE EXECUTION OF THE WORK.
X. WHERE THERE ARE CONFLICTS BETWEEN THE PLANS AND SPECIFICATIONS, THE CONTRACTOR SHALL BRING THE ISSUE TO THE ATTENTION OF THE ENGINEER FOR RESOLUTION PRIOR TO THE EXECUTION OF THE WORK OR ORDERING ANY MATERIALS. NO ADDITIONAL COSTS SHALL BE WARRANTED WITHOUT A CHANGE TO THE PROJECT SCOPE.

2. **RACEWAY:**

A. CONDUIT SHALL BE MANUFACTURED BY ALLIED, WHEATLAND, REPUBLIC CONDUIT, WESTERN TUBE, OR APPROVED EQUIVALENT.
B. FOR INTERIOR WORK, CONDUIT SHALL BE ZINC COATED EMT EXCEPT WHERE NOT PERMITTED BY CODE. USE SCHEDULE 40 PVC BELOW CONCRETE SLAB, IN DUCTBANKS, AND FOR EXTERIOR WORK WHERE NOT SUBJECT TO DAMAGE. USE IMC WHERE SUBJECT TO PHYSICAL DAMAGE.
C. EMT FITTINGS SHALL BE COMPRESSION GLAND TYPE, OF MALLEABLE STEEL. CONNECTORS SHALL HAVE INSULATED THROATS. CAST, SET SCREW, OR INDENTER TYPE FITTINGS ARE NOT ACCEPTABLE. ALL FITTINGS FOR EMT SHALL BE MADE OF STEEL.
D. ALL RACEWAY SHALL BE RUN CONCEALED, UNLESS OTHERWISE NOTED. FISH ALL NEW OUTLETS IN EXISTING WALLS, WHERE POSSIBLE. ALL RUNS SHALL BE NEAT AND SQUARE.
E. LOW VOLTAGE CABLING NOT SPECIFIED TO BE INSTALLED IN CONDUIT, SHALL BE INSTALLED IN A E. CABLE TRAY SYSTEM OR J-HOOK SYSTEM CONSISTING OF MINIMUM 2" DIAMETER HOOKS LOCATED ON 3'-0" CENTERS IN ALL ACCESSIBLE CEILINGS. WHERE THERE ARE INACCESSIBLE CEILINGS, PROVIDE CONDUIT FOR ENTIRE LENGTH OF INACCESSIBILITY.
F. RACEWAYS USED FOR LOW VOLTAGE SYSTEMS SUCH AS TELECOMMUNICATIONS, FIRE ALARM, SECURITY, CCTV, CONTROLS, AND SIMILAR CONDUITS ABOVE THE CEILING AND BACKBOARD(S) SHALL BE PROVIDED WITH INSULATED THROAT BUSHINGS AT EACH CONDUIT TERMINATION. THESE BUSHINGS SHALL BE BE INSTALLED PRIOR TO PULLING LOW-VOLTAGE CABLES.
G. RACEWAY PENETRATIONS THROUGH FLOOR SLABS AND FIRE-RATED WALLS SHALL BE FILLED WITH IMPERVIOUS, NON-SHRINK GROUT SUFFICIENTLY TIGHT TO PREVENT THE TRANSFER OF SMOKE, WATER, AND DUST. ROOF PENETRATIONS SHALL BE WITHIN THE EQUIPMENT ROOF CURB.
H. SUPPORT ALL CONDUIT WITH STRAPS AND CLAMPS.
I. ALL CONDUIT SHALL BE RUN PARALLEL OR PERPENDICULAR TO BUILDING LINES, WHETHER EXPOSED OR NOT AND SUPPORTED FROM STRUCTURE AND PROPERLY SECURED.
J. WHERE CONDUITS PASS THROUGH A BUILDING EXPANSION JOINT, PROVIDE GALVANIZED EXPANSION FITTINGS WITH BONDING JUMPERS.
K. MINIMUM CONDUIT SIZE SHALL BE 3/4" FOR INTERIOR WORK, 1" FOR EXTERIOR WORK.
L. PROVIDE MINIMUM 210# TEST NYLON PULL CORD AND NYLON BUSHINGS IN ALL EMPTY RACEWAYS.
M. LIQUID-TIGHT METAL CONDUIT SHALL ONLY BE USED FOR FINAL CONNECTIONS TO EQUIPMENT AND ALL OTHER ROTATING AND VIBRATING EQUIPMENT, MAXIMUM LENGTH OF 3'-0".
N. FLEXIBLE METAL CONDUIT, MINIMUM SIZE 3/8", SHALL ONLY BE USED FOR FINAL CONNECTION TO N. LIGHTING FIXTURES, MAXIMUM LENGTH OF 6'-0".
O. PROVIDE PULL BOXES, SUCH THAT NO SINGLE CONDUIT RUN HAS BENDS IN EXCESS OF 360°. PULL O. BOXES SHALL BE SUITABLE AND APPROVED FOR THE INTENDED USE. WHERE CONDUITS PASS UNDER PAVED AREAS, THEY SHALL BE RGS.
P. ALL CONDUIT BENDS/ELBOWS EMERGING FROM UNDERGROUND SHALL BE IMC AND SHALL EXTEND A MINIMUM OF 18" BELOW GRADE.
Q. ALL UNDERGROUND RACEWAYS SHALL BE THOROUGHLY COATED WITH TWO COATS OF ASPHALTUM BITUMASTIC.
R. ALL CONDUITS INSTALLED UNDERGROUND OR IN CONCRETE SHALL HAVE JOINTS MADE WATERTIGHT BY USE OF POLYETRA-FLUOROETHYLENE TAPE.
S. THE USE OF AC OR NM CABLE IS NOT PERMITTED.

3. **OUTLET BOXES:**

A. JUNCTION AND PULL BOXES SHALL BE CODE GAUGE GALVANIZED STEEL. ACCEPTED MANUFACTURERS SHALL BE STEEL CITY (THOMAS & BETTS), RACO, CROUSE-HINDS, APPLETON (EMERSON), OR APPROVED EQUIVALENT.
B. OUTLET BOXES SHALL NOT BE MOUNTED BACK TO BACK IN COMMON WALLS.
C. ATTACH EMT WITH CONNECTORS HAVING INSULATED THROAT.
D. ATTACH BOXES TO STUD WORK USING CADDY BAR STRAPS THAT CONNECT TO TWO ADJACENT STUDS TO PREVENT TWISTING OF BOX IN WALL.
E. ALL OUTLET BOXES (INCLUDING TELEPHONE, CABLE TV, AND COMPUTER) SHALL HAVE COVER PLATES, BLANK IF NOT USED.
F. ALL EXTERIOR BOXES SHALL BE WATER-TIGHT.

4. **CONDUCTORS:**

A. CONDUCTORS SHALL BE MANUFACTURED BY SOUTHWIRE (SIMPULL), ENCORE (SUPERSLICK), A. UNITED COPPER (SLK), CERRO (SLP), OR APPROVED EQUAL. "PRE-LUBRICATED" BY THE MANUFACTURER.
B. ALL CONDUCTORS SHALL BE COPPER, RATED 75° C WET/DRY EXCEPT WHERE OTHERWISE NOTED B. OR REQUIRED BY U.L. OR OTHER CODES.
C. ALL CONDUCTORS SHALL BE SINGLE INSULATED CONDUCTOR, THHN/THWN-2. SIZES #10 AWG C. AND SMALLER SHALL BE SOLID, SIZES #8 AWG AND LARGER SHALL BE STRANDED.
D. BRANCH CIRCUITS SHALL NOT BE SMALLER THAN #12 AWG. CONTROL WIRING MAY BE #14 AWG.
E. CONDUCTORS SHALL BE COLOR CODED BLACK/RED/BLUE FOR 120/208 VOLT SYSTEMS AND BROWN/ORANGE/YELLOW FOR 277/480 VOLT SYSTEMS FOR A, B, AND C PHASES, RESPECTIVELY. NEUTRAL SHALL BE WHITE FOR 120/208 VOLT SYSTEMS AND NATURAL GRAY FOR 277/480 VOLT SYSTEMS. GROUND CONDUCTOR SHALL BE GREEN ON ALL SYSTEMS. ALL CONDUCTOR SIZES SHALL HAVE COLOR-CODED INSULATION. THE USE OF COLORED TAPE ON LARGER WIRE SIZES SHALL NOT BE ALLOWED.
F. INSULATION SHALL BE DUAL RATED TYPE THHN/THWN-2 FOR FEEDERS AND BRANCH CIRCUITS. FIXTURE TAPS SHALL BE #12 THHN/THWN-2 IN FLEX WITH GREEN #12 AWG GROUNDING CONDUCTOR.
G. ALL CONDUCTORS SHALL BE IN CONDUIT.
H. WIRING TO LIGHTING FIXTURES SHALL BE AS REQUIRED BY UL LABEL.
I. MULTI-WIRE BRANCH CIRCUITS SHALL NOT BE ALLOWED, UNLESS EXPLICITLY INDICATED ON THE I. DRAWINGS. WHERE EXPLICITLY INDICATED ON THE DRAWINGS:
   - 1) ALL 20A MULTI-WIRE RECEPTACLE CIRCUITS SHALL UTILIZE A #10 AWG NEUTRAL CONDUCTOR. OR
   - 2) ONLY WHERE PERMITTED UNDER "RACEWAYS", MC CABLE ASSEMBLIES CAN BE AFC "SUPER NEUTRAL" OR EQUAL, UNLESS OTHERWISE INDICATED ON THE DRAWINGS. WHERE MULTI-WIRE BRANCH CIRCUITS ARE EXPLICITLY INDICATED ON THE DRAWINGS, THEY SHALL BE INSTALLED PER NEC 210.4. MEANS SHALL BE PROVIDED TO SIMULTANEOUSLY DISCONNECT ALL UNGROUNDED CONDUCTORS AT THE POINT WHERE THE BRANCH CIRCUIT ORIGINATES IN ADDITION TO OTHER REQUIREMENTS PER NEC 210.4.
J. JOINTS IN #10 AWG AND SMALLER SHALL BE MADE UP WITH CRIMPED CONNECTORS WITH INSULATING CAPS (NO TAPE) OR WIRENUTS (MAXIMUM OF 3 CONDUCTORS UNDER ANY CONNECTOR OR WIRENUT). LARGER WIRE SHALL USE SPLIT BOLTS OR BOLTED CLAMPS.
K. ALL WIRING LUGS THROUGHOUT THE PROJECT, INCLUDING, BUT NOT LIMITED TO, BREAKERS, PANELBOARD/SWITCHBOARD LUGS, SAFETY SWITCH LUGS, MOTOR STARTER LUGS, TRANSFORMERS LUGS, WIRING DEVICE TERMINALS, AND ALL EQUIPMENT LUGS/TERMINALS SHALL BE RATED FOR USE WITH 75 DEGREE INSULATED CONDUCTORS AT THEIR 75 DEGREE AMPACITY AND SHALL BE SIZED AND SELECTED TO MATCH THE CONDUCTOR SIZE AND MATERIAL.
L. CIRCUIT JOINTS SHALL NOT BE MADE ON DEVICE TERMINALS.
M. WIRE WITHIN PANELBOARDS SHALL BE NEATLY TRAINED, SQUARED, BUNCHED, AND TAGGED.
N. ALL SYSTEM FURNITURE CONNECTIONS SHALL COMPLY WITH NEC 605.
O. GROUND ALL EQUIPMENT PER NEC ARTICLE 250. BOND WHERE CONDUITS ENTER ENCLOSURES O. THROUGH CONCENTRIC KNOCKOUTS. ALL FLEX, INCLUDING FIXTURE TAPS, SHALL INCLUDE GREEN GROUNDING CONDUCTOR, #12 AWG MINIMUM. PROVIDE GREEN INSULATED EQUIPMENT GROUNDING CONDUCTOR IN EACH CONDUIT AND FOR EACH CIRCUIT, SIZED PER NEC 250-122.
P. ALL CONDUCTORS INSTALLED IN VERTICAL RACEWAYS SHALL BE SUPPORTED AT INTERVALS AS REQUIRED PER NEC 300-19.
Q. THE ELECTRICAL CONTRACTOR SHALL FOLLOW AND APPLY THE TABLE BELOW, REGARDLESS WHAT THE PANEL SCHEDULE INDICATES, FOR SIZING ALL 120V & 277V, 20 AMP BRANCH CIRCUITS (COPPER CONDUCTORS) TO ALLOW A MAXIMUM OF 3% VOLTAGE DROP FROM THE CIRCUIT BREAKER TO THE FIRST DEVICE ON THE BRANCH CIRCUIT AND ACHIEVE A MAXIMUM OF 5% VOLTAGE DROP ACROSS THE ENTIRE BRANCH CIRCUIT:

| VOLTAGE | CONDUCTOR LENGTH * | BRANCH CIRCUIT |
|---|---|---|
| 120 | 0' - 50' | #12 |
| 120 | 51' - 90' | #10 |
| 120 | 91' - 140' | #8 |
| 120 | 141' - 225' | #6 |

* - THE LENGTH IS MEASURED FROM THE CIRCUIT BREAKER TO THE FIRST DEVICE WHICH THE BRANCH CIRCUIT SERVES. WHERE THE DISTANCE EXCEEDS ABOVE, CONSULT WITH THE ENGINEER.

5. **WIRING DEVICES:**

A. WIRING DEVICES SHALL BE SPECIFICATION GRADE, MINIMUM, EQUAL TO COOPER QUALITY A. INDICATED BELOW OR AS MANUFACTURED BY HUBBELL, LEGRAND-PASS & SEYMOUR, LEVITON, OR APPROVED EQUAL, UNLESS OTHERWISE NOTED:
DUPLEX RECEPTACLES SHALL HAVE A NYLON FACE AND SHALL BE AS FOLLOWS:

SWITCHES (120/277V) SHALL BE AS FOLLOWS:

| | |
|---|---|
| SINGLE-POLE 20 AMP | COOPER AH1221 |
| DOUBLE-POLE 20 AMP | COOPER AH1222 |
| THREE-WAY 20 AMP | COOPER AH1223 |
| FOUR-WAY 20 AMP | COOPER AH1224 |

DUPLEX RECEPTACLES SHALL HAVE A NYLON FACE AND SHALL BE AS FOLLOWS:

| | |
|---|---|
| 15 AMP DUPLEX | COOPER 5252 |
| 20 AMP DUPLEX | COOPER 5352 |
| 15 AMP DUPLEX GFCI | COOPER SGF15F |
| 20 AMP DUPLEX GFCI | COOPER SGF20F |

THE PART NUMBERS ABOVE ARE FOR WIRING DEVICE TYPE ONLY. SEE BELOW FOR WIRING DEVICE COLOR AND PLATE MATERIAL/COLOR.

B. SEE MOUNTING HEIGHT ELEVATION DETAIL FOR STANDARD MOUNTING HEIGHTS OF ALL DEVICES, B. UNLESS OTHERWISE NOTED.
C. THE COLOR OF ALL WIRING DEVICES (SWITCHES AND RECEPTACLES) SHALL BE AS DIRECTED BY THE ARCHITECT, UNLESS OTHERWISE NOTED. ALL COVER PLATES SHALL BE 302 STAINLESS STEEL. COVER PLATES IN MASONRY WALLS SHALL BE JUMBO SIZE.
D. EACH DUPLEX RECEPTACLE INDICATED TO BE ON A DEDICATED CIRCUIT SHALL BE 20 AMP TYPE.
E. ADJACENT DEVICES SHALL HAVE A COMMON WALL PLATE.
F. WEATHERPROOF COVERS SHALL BE "WHILE-IN-USE" SO PLUGS MAY BE INSTALLED WITHOUT COMPROMISING THE WP FUNCTION. COOPER #WIU-2 DOUBLE-GANG WITH CLEAR COVER OR APPROVED EQUAL.
G. A MAXIMUM OF 10 GENERAL PURPOSE RECEPTACLES SHALL BE ON EACH BRANCH CIRCUIT.
H. DIMMERS SHALL BE LINEAR SLIDE, PRESENT ON/OFF, SQUARE LAW DIMMING, W/RFI FILTERING AND VOLTAGE COMPENSATION CIRCUITING.
I. ALL WALL MOUNTED OCCUPANCY/VACANCY SENSORS/SWITCHES SHALL BE INSTALLED WITH AN EQUIPMENT GROUNDING CONDUCTOR.
J. GROUND-FAULT CIRCUIT-INTERRUPTER (GFCI) PROTECTION FOR PERSONNEL SHALL BE PROVIDED FOR ALL LOCATIONS PER NEC 210.8, INSTALLED IN A READILY ACCESSIBLE LOCATION. WHERE A DEVICE LOCATION IS NOT ACCESSIBLE, THE GFCI PROTECTION SHALL BE PROVIDED WITH THE BREAKER SERVING THE DEVICE.
K. ALL GFCI RECEPTACLES SHALL HAVE AUTO-MONITORING / SELF-TEST FUNCTION AND REVERSE LINE-LOAD MISFIRE FUNCTION AND MEET ALL REQUIREMENTS OF UL 943 (LATEST EDITION).

6. **SUPPORTS:**

A. ALL EQUIPMENT SHALL BE ADEQUATELY SUPPORTED FROM STRUCTURE.
B. INSERTS IN MASONRY SHALL BE LEAD OR FIBER IN DRILLED HOLES, OR CAST IN PLACE.
C. NAILS OR POWDER ACTUATED FASTENERS SHALL NOT BE USED.
D. EMT/IMC/RGS SUPPORTS SHALL BE A MAXIMUM OF 8'-0" APART AND A MAXIMUM OF 3'-0" FROM BOXES.
E. LIGHTING FIXTURES MOUNTED IN OR ON CEILING SHALL BE SUPPORTED FROM STRUCTURE VIA 12 GAUGE STEEL WIRE. PROVIDE A MINIMUM OF FOUR WIRES, ONE ATTACHED TO EACH CORNER OF LAY-IN FIXTURES. RECESSED DOWNLIGHT FIXTURES SHALL BE SUPPORTED THE SAME. DO NOT SUPPORT RACEWAY OR FIXTURES FROM CEILING GRID OR DUCT WORK. USE U.L. LISTED GRID CLIPS ON ALL LAY-IN FIXTURES.

7. **PAINTING:**

A. SUITABLE FINISH COAT SHALL BE PROVIDED FOR ALL EQUIPMENT. PANEL TUBS, COVERS, ETC. SHALL BE PRIMED AND ENAMELED TO BLEND WITH ADJACENT SURFACES, OR SHALL BE MANUFACTURER'S STANDARD COLOR BAKED ENAMEL FINISH, OR AS DIRECTED BY THE ARCHITECT.

8. **TELECOMMUNICATIONS:**

A. FURNISH A COMPLETE TELEPHONE CONDUIT SYSTEM AS INDICATED ON THE DRAWINGS.
B. TELECOMMUNICATION OUTLETS SHALL CONSIST OF A 4" SQUARE DEEP BOX WITH SINGLE GANG PLASTER RING. PROVIDE BLANK PLATE WITH KNOCKOUTS FOR OUTLETS, AS PERMANENT COVERS WILL BE PROVIDED BY A SEPARATE INSTALLER.
C. PROVIDE MINIMUM 1" RACEWAY, UNLESS OTHERWISE NOTED, FROM EACH BOX TO ABOVE NEAREST ACCESSIBLE CEILING SPACE FOR J-HOOK SYSTEM OR TO CABLE TRAY AS APPLICABLE. PROVIDE MINIMUM 210# TEST NYLON PULL CORD AND NYLON BUSHINGS IN ALL EMPTY RACEWAYS.
D. PROVIDE RACEWAYS FOR ALL EXTERIOR AND/OR EXPOSED LOCATIONS.
E. PROVIDE GROUNDING FOR ALL TELEPHONE/DATA SYSTEMS AND EQUIPMENT PER REQUIREMENTS AND SPECIFICATIONS PROVIDED BY THE OWNERS DESIGNATED VENDOR.
F. ALL LOW-VOLTAGE CABLING SHALL BE PLENUM-RATED.

9. **LIGHTING FIXTURES:**

A. TYPES AND MANUFACTURERS ARE SCHEDULED ON THE PLANS. EQUIVALENT FIXTURES BY OTHERS MAY BE SUBMITTED ONLY AS INDICATED ON THE PLANS AND ARE SUBJECT TO THE APPROVAL OF THE OWNER AND ENGINEER.
B. ALL FIXTURES SHALL BE U.L. LISTED AND LABELED.
C. LAMPS SHALL BE GENERAL ELECTRIC, PHILIPS, OR OSRAM/SYLVANIA EXCEPT WHERE OTHERWISE NOTED IN THE LIGHTING FIXTURE SCHEDULE OR OTHERWISE NOTED. ALL FIXTURES SHALL BE PROVIDED WITH LAMPS.
D. BALLASTS SHALL BE AS INDICATED IN THE LIGHTING FIXTURE SCHEDULE OR AS OTHERWISE NOTED.
E. ALL FIXTURES SHALL BE PROVIDED FOR PROPER VOLTAGE BASED ON THE CIRCUIT ASSIGNMENT INDICATED ON THE PLANS.
F. CATALOG NUMBERS ARE FOR GENERAL IDENTIFICATION OF FIXTURES ONLY. ALL RELATED PARTS, SUCH AS PLASTER RINGS, JUNCTION BOXES, LOUVERS, SHIELDS, MOUNTING STEMS, CANOPIES, CONNECTORS, STRAPS, NIPPLES, HARDWARE, ACCESSORIES, ETC., TO FIT THEM PROPERLY TO THE CONSTRUCTION, SHALL BE FURNISHED AND INSTALLED BY THIS CONTRACTOR. CONTRACTOR SHALL PROVIDE SUITABLE TRIM AND APPURTENANCES TO MOUNT FIXTURES IN TYPE OF CEILING OR WALL AS SPECIFIED IN ARCHITECTURAL FINISH SCHEDULES REGARDLESS OF CATALOG NUMBER GIVEN.
G. ALL FIXTURES SHALL BE GROUNDED PER THE NEC.
H. FIXTURES CONNECTED WITH FLEX TO THE RIGID RACEWAY PORTION OF THE WIRING SYSTEM SHALL CARRY A GREEN BONDING JUMPER WITHIN THE FLEX. THE JUMPER SHALL BE FASTENED TO BOTH THE FIXTURE AND THE RACEWAY SYSTEM WITH A STEEL CITY "G" CLIP OR APPROVED EQUIVALENT. PHASE AND GROUND CONDUCTORS RUN IN FLEX SHALL BE #12 AWG MINIMUM. MAXIMUM FLEX LENGTH SHALL BE 6'-0".
I. MOUNT ALL FIXTURES PLUMB AND SQUARE WITH ROWS ALIGNED.
J. SEE ARCHITECTURAL REFLECTED CEILING PLANS FOR EXACT LOCATION OF FIXTURES.
K. CONTRACTOR SHALL COORDINATE FIXTURE TYPE AND TRIM WITH CEILING CONSTRUCTION AND ADJUST ACCORDINGLY WITHOUT ADDITIONAL EXPENSE.
L. ALL LIGHTING FIXTURES SHALL BE THERMALLY PROTECTED PER THE NEC.

10. **EQUIPMENT IDENTIFICATION:**

A. PROVIDE ENGRAVED PHENOLIC NAMEPLATES FOR ALL ELECTRICAL EQUIPMENT SUPPLIED FOR THE PROJECT, INCLUDING BUT NOT LIMITED TO, WIRING TROUGHS, SAFETY SWITCHES, DISCONNECTS, TRANSFORMERS, PANELBOARDS, ETC. NAMEPLATE SHALL INDICATE THE DEVICE NAME, SYSTEM VOLTAGE (VOLTAGE/PHASE/WIRE), AND UPSTREAM DEVICE AND CIRCUIT. PROVIDE NAMEPLATES FOR CIRCUIT BREAKERS IN SWITCHGEARS, SWITCHBOARDS AND DISTRIBUTION PANELS.
B. NAMEPLATE COLORS SHALL BE AS FOLLOWS:

| | |
|---|---|
| 120/208V EQUIPMENT | BLUE SURFACE WITH WHITE CORE |
| EMERGENCY SYSTEMS | GREEN SURFACE WITH WHITE CORE |
| FIRE ALARM SYSTEM | BRIGHT RED SURFACE WITH WHITE CORE |
| SECURITY SYSTEMS | BURGUNDY SURFACE WITH WHITE CORE |
| TELEPHONE SYSTEMS | ORANGE SURFACE WITH WHITE CORE |
| DATA SYSTEMS | BROWN SURFACE WITH WHITE CORE |
| TV SYSTEMS | PURPLE SURFACE WITH WHITE CORE |
| PAGING SYSTEMS | WHITE SURFACE WITH BLACK CORE |

C. NAMEPLATES UP TO 8 SQUARE INCHES SHALL NOT BE LESS THAN 1/16" THICK. NAMEPLATES LARGER THAN 8 SQUARE INCHES SHALL NOT LESS THAN 1/8" THICK.
D. LETTERING HEIGHT SHALL BE 1/2" MINIMUM.
E. NAMEPLATES SHALL BE ATTACHED WITH SELF-DRILLING/SELF-TAPPING SCREWS, EXCEPT RIVETS SHALL BE USED WHERE END OF SCREW IS NOT PROTECTED. QUANTITY AS FOLLOWS:

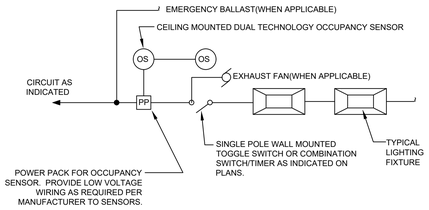
| | |
|---|---|
| UP TO 5 SQUARE INCHES: | 2 SCREWS. |
| 5 TO 12 SQUARE INCHES: | 4 SCREWS. |
| ABOVE 12 SQUARE INCHES: | 6 SCREWS. |

11. **DISCONNECTS:**

A. DISCONNECT SWITCHES SHALL BE HEAVY-DUTY TYPE IN NEMA 1 ENCLOSURES, UNLESS OTHERWISE NOTED, FUSED OR NON-FUSED AS INDICATED. SWITCHES SHALL HAVE REJECTION-TYPE FUSE CLIPS. SWITCHES SHALL BE BY EATON, SQUARE-D, GENERAL ELECTRIC, OR APPROVED EQUAL. WHERE FED FROM A LOAD CENTER, GENERAL-DUTY SWITCHES SHALL BE PERMITTED.
B. FUSES LESS THAN 60A SHALL BE CLASS RK5, DUAL-ELEMENT, TIME-DELAY WITH INDICATION
C. FUSES GREATER THAN 60A SHALL BE CLASS J, DUAL-ELEMENT, TIME-DELAY WITH INDICATION.
D. A SET OF 3 SPARE FUSES OF EACH SIZE AND TYPE SHALL BE FURNISHED TO THE OWNER

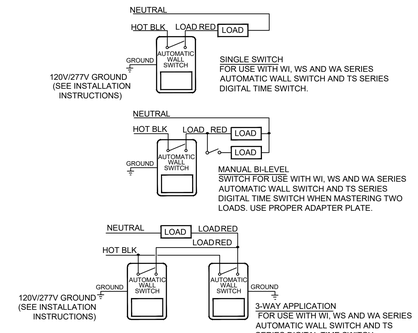
12. **PANELBOARDS:**

A. PANELBOARDS SHALL BE PROVIDED AS MANUFACTURED BY EATON, SQUARE-D, GENERAL A. ELECTRIC, OR APPROVED EQUAL. ALL NEW EQUIPMENT FOR THE PROJECT SHALL BE BY THE SAME MANUFACTURER. LOAD CENTER TYPE PANELBOARDS SHALL BE USED WHERE THE PANELBOARD SERVES A DWELLING UNIT.
B. ALL BUSSING, INCLUDING NEUTRAL AND GROUND, SHALL BE COPPER.
C. ALL BREAKERS SHALL BE AUTOMATIC THERMAL-MAGNETIC TYPE MOLDED CASE BOLT-ON TYPE, CALIBRATED FOR 40 DEGREE C, OR AMBIENT COMPENSATION, UNLESS OTHERWISE NOTED.
D. PANELS SHALL BE FULLY RATED (AIC). NO SERIES AIC RATINGS ARE ALLOWED.
E. PANELS SHALL HAVE FULL SIZE EQUIPMENT GROUNDING BARS AND NEUTRAL BARS, EXCEPT WHERE INDICATED TO BE 200%.
F. ALL PANELBOARD AND BREAKER LUGS SHALL BE SIZED AND RATED PER THE CONDUCTOR SIZE AND MATERIAL.
G. LIGHTING AND APPLIANCE PANELS (100A-600A) SHALL HAVE FRONT ACCESSIBLE HINGED DOOR-IN-DOOR COVERS WITH DEAD FRONT, SHALL BE 20" WIDE MINIMUM WITH MINIMUM 4" WIDE WIRING GUTTERS.
H. DISTRIBUTION PANELS (600A-1200A) SHALL HAVE FRONT ACCESSIBLE DEAD FRONT COVERS.
I. PROVIDE HANDLE LOCK-ON DEVICES FOR ALL CIRCUIT BREAKERS CONNECTED TO EMERGENCY, EXIT, NIGHT LIGHTING, FIRE ALARM, TELEPHONE BOARDS, AND SECURITY SYSTEMS.
J. BREAKERS USED FOR SWITCHING SHALL BE SWITCHING DUTY (SWD) RATED.
K. BREAKERS USED FOR HEATING, AIR-CONDITIONING AND/OR REFRIGERATION SHALL BE HACR RATED.
L. GROUND-FAULT CIRCUIT-INTERRUPTER (GFCI) PROTECTION FOR PERSONNEL SHALL BE PROVIDED FOR ALL LOCATIONS PER NEC 210.8, INSTALLED IN A READILY ACCESSIBLE LOCATION. WHERE A DEVICE LOCATION IS NOT ACCESSIBLE, THE GFCI PROTECTION SHALL BE PROVIDED WITH THE BREAKER SERVING THE DEVICE.
M. ARC-FAULT CIRCUIT-INTERRUPTER (AFCI) PROTECTION SHALL BE PROVIDED FOR ALL LOCATIONS PER NEC 210.12, INSTALLED IN A READILY ACCESSIBLE LOCATION. THIS INCLUDES ALL 120V, 15A AND 20A BRANCH CIRCUITS IN DWELLING UNITS, DORMITORY/STUDENT HOUSING UNITS AND HOTEL/MOTEL GUEST ROOMS/SUITES AS DEFINED BY THE NEC.
N. ALL OVERCURRENT DEVICES WHICH COMP



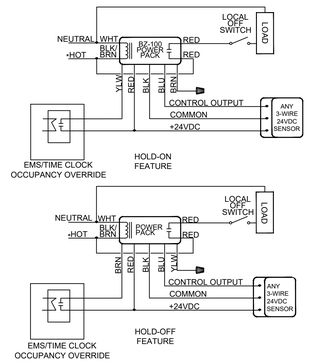

NOTES:
1. OCCUPANCY SENSORS SHALL BE SET TO TIME OUT AFTER 15 MINUTES AND THE TRIM POTENTIOMETER IS SET TO 90% FOR SENSITIVITY.
2. OCCUPANCY SENSORS SHALL BE PLACED AS TO NOT FUNCTION UPON SOMEONE JUST PASSING BY THE ROOM DOOR BUT BY ACTUALLY ENTERING THE ROOM IN AS MUCH AS POSSIBLE.

| 1 | SCALE | TYPICAL CEILING MOUNTED OCCUPANCY SENSOR WIRING DIAGRAM |
|---|---|---|
| | N.T.S. | |



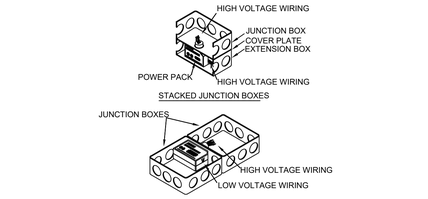

*WHEN THESE SWITCHES ARE WIRED IN A THREE-WAY WIRING CONFIGURATION THEY WILL ONLY OPERATE AS THREE-WAY SWITCHES IF THEY ARE LEFT IN AUTOMATIC MODE. IF ONE SWITCH IS TURNED OFF, THE LIGHTS WILL NOT COME AUTOMATICALLY ON UNTIL THAT SWITCH IS TURN BACK TO THE AUTOMATIC POSITION.

| 2 | SCALE | SINGLE POLE OCC. SENSOR SWITCH |
|---|---|---|
| | N.T.S. | |



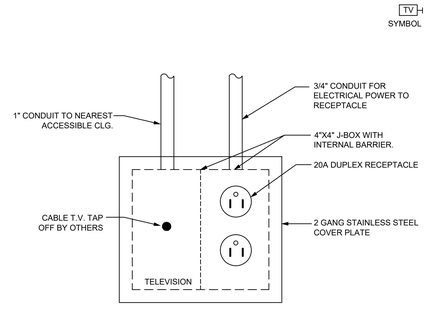

NOTE: CONNECT ONLY THE SUPPLY FOR THE VOLTAGE BEING USED. CAP UNUSED POWER SUPPLY WIRE.

| 3 | SCALE | POWER PACK WIRING DIAGRAM |
|---|---|---|
| | N.T.S. | |

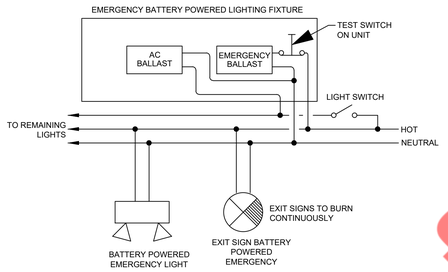



NOTE:
DO NOT MOUNT POWER PACKS CLOSER THAN 6-1/2 INCHES FROM SENSOR. PROVIDE DOUBLE STACKED JUNCTION BOX FOR MAXIMUM VENTILATION OF POWER PACK. PROVIDE BLANK COVER. WHERE PERMITTED BY CODE AND AHJ, LEAVE (2) OPENINGS IN CONDUIT KNOCKOUT FOR VENTING OF POWER PACK. VERIFY WITH AHJ PRIOR TO KNOCKOUT REMOVAL.

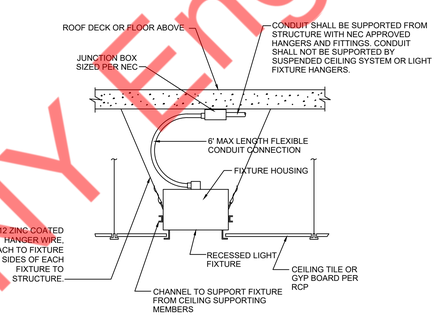
| 4 | SCALE | POWER PACK INSTALLATION |
|---|---|---|
| | N.T.S. | |




| 5 | SCALE | TYPICAL TELEVISION OUTLET DETAIL |
|---|---|---|
| | N.T.S. | |

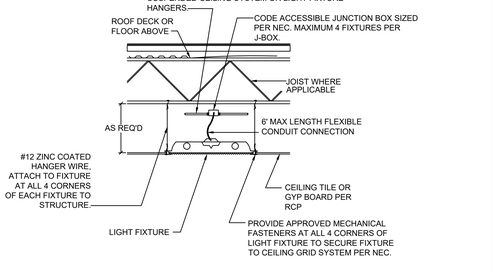



| 6 | SCALE | SWITCHED EMERGENCY LIGHTING WIRING |
|---|---|---|
| | N.T.S. | |



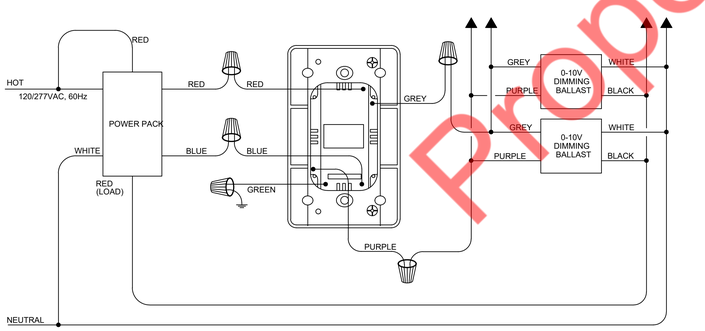

NOTES:
WHERE ROOF DECKING IS THE IS THE ALLOWABLE SUPPORT STRUCTURE, AND PATHWAY SYSTEM IS NOT IMC OR RMC, THE MINIMUM DISTANCE FROM ROOF DECKING SHALL BE 1.5" FOR ALL BOXES AND CONDUIT.

| 7 | SCALE | TYPICAL RECESSED DOWN LIGHT FIXTURE INSTALLATION DIAGRAM |
|---|---|---|
| | N.T.S. | |



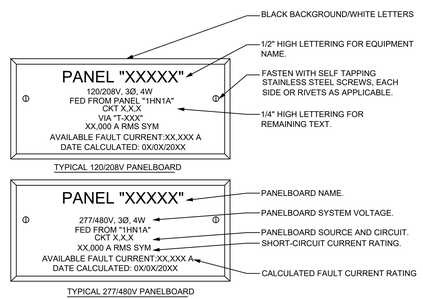

NOTES:
1. WHERE ROOF DECKING IS THE IS THE ALLOWABLE SUPPORT STRUCTURE, AND PATHWAY SYSTEM IS NOT IMC OR RMC, THE MINIMUM DISTANCE FROM ROOF DECKING SHALL BE 1.5" FOR ALL BOXES AND CONDUIT.

| 8 | SCALE | TYPICAL LAY-IN FIXTURE DIAGRAM |
|---|---|---|
| | N.T.S. | |




NOTE:
1. PROVIDE POWER PACK WITH SWITCH

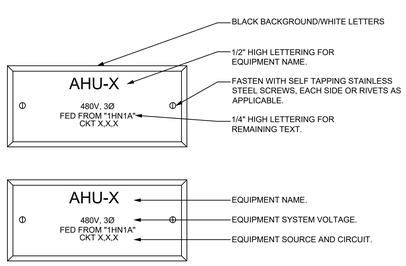
| 9 | SCALE | DIMMING CONTROL AND ON/OFF WIRING DIAGRAM |
|---|---|---|
| | N.T.S. | |




## PANELBOARD NAMEPLATES

NOTES:
1. SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS, COLORS, ETC.
2. PROVIDE SHORT-CIRCUIT CURRENT RATING AND AVAILABLE FAULT CURRENT ON EACH NON-DWELLING SERVICE EQUIPMENT NAMEPLATE.

| 10 | SCALE | TYPICAL NAMEPLATE DIAGRAM |
|---|---|---|
| | N.T.S. | |




## EQUIPMENT NAMEPLATES

| 11 | SCALE | EQUIPMENT NAMEPLATE DIAGRAM |
|---|---|---|
| | N.T.S. | |



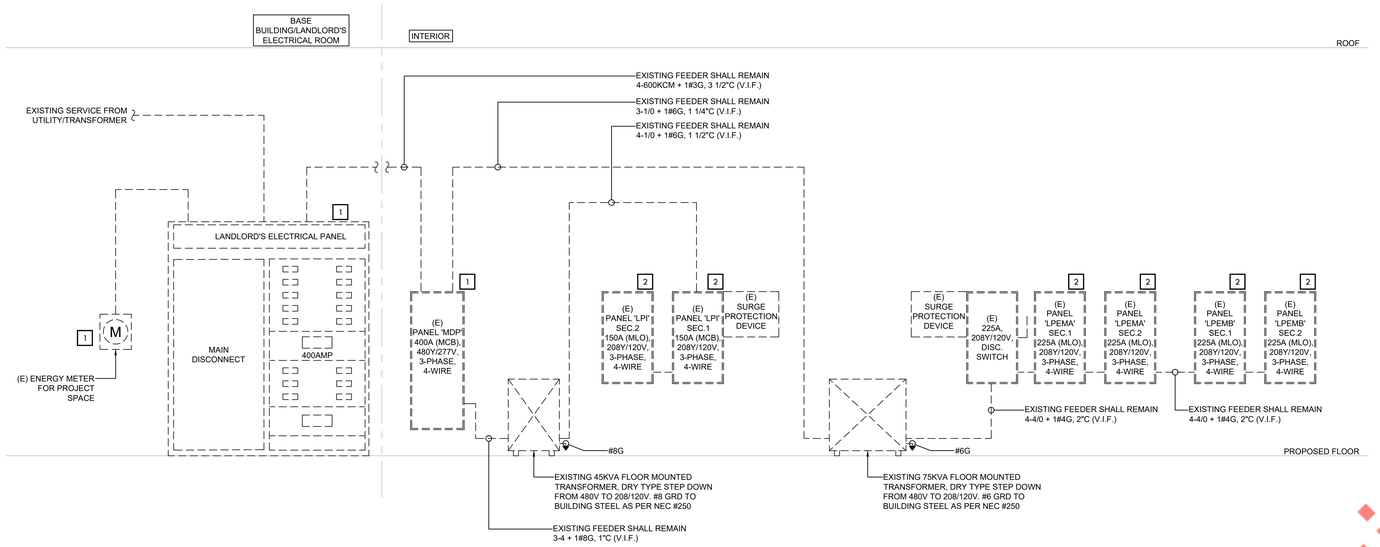
CONSULTANTS (ENGINEER):
NY ENGINEERS
NEARBY ENGINEERS
382 NE 191ST STREET SUITE 49674,
MIAMI, FL 33179
PH-914.257.3455
WWW.NY-ENGINEERS.COM

CONTRACTOR'S NOTES:
WRITTEN DIMENSIONS HOLD PREFERENCE OVER SCALED DIMENSIONS. DO NOT SCALE THE DRAWINGS. THE CONTRACTORS MUST VISIT JOB SITE TO VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS BEFORE SUBMITTING BIDS. REPORT ANY DISCREPANCIES OF ANY CONDITIONS WHICH MAY INTERFERE WITH THE PROPER EXECUTION OF, THE CONTRACT TO THE TENANT'S REPRESENTATIVE. REPORT DISCREPANCIES DURING BIDDING PROCESS AND BEFORE START OF CONSTRUCTION. CHANGE ORDERS NEED TO BE APPROVED BY **TOWNSQUARE** CONSTRUCTION MANAGER FOR ISSUES ARISING FROM THE FIELD CONDITIONS OR CONFLICTS BETWEEN THE PLANS AND THE EXISTING CONDITIONS PRIOR TO THE COMMENCEMENT OF WORK.

| | DATE | ISSUE |
|---|---|---|
| | 10.31.24 | LL/CLIENT REVIEW SET |
| | 11.15.24 | LL/CLIENT REVIEW SET |
| | 11.22.24 | BD SUBMISSION |
| 1 | 11.15.24 | CLIENT COMMENTS |
| △ | DATE | REVISION |

TITLE:
ELECTRICAL DETAILS

SHEET NUMBER:
E003




LEGEND:
NEW
EXISTING

## GENERAL NOTES:

1. HVAC CIRCUIT BREAKERS TO BE "HACR" TYPE WHERE REQUIRED BY EQUIPMENT NAMEPLATE PER N.E.C.
2. BALANCE ALL PANELS AND ELECTRICAL EQUIPMENT, UNDER LOAD CONDITIONS, TO ±7% BETWEEN PHASES: A/B, B/C, C/A REGARDLESS OF CIRCUITING INDICATED. PROVIDE BALANCE SHEET TO CONSTRUCTION MANAGER AT PUNCHLIST.
3. PROPER CLEARANCE MUST BE MAINTAINED ABOUT ELECTRICAL EQUIPMENT PER N.E.C. FIELD VERIFY EXACT MOUNTING SPACE AVAILABLE IN ELECTRICAL ROOM/AREA PRIOR TO INSTALLATION OF ELECTRICAL EQUIPMENT.
4. MAKE ALL FINAL ELECTRICAL CONNECTIONS FOR A COMPLETE ELECTRICAL DISTRIBUTION SYSTEM. ALL CONNECTIONS/DISCONNECTIONS TO LANDLORDS/UTILITIES SERVICE EQUIPMENT SHALL BE AS DIRECTED BY LANDLORDS/UTILITIES SITE REPRESENTATIVE. TENANT GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TERMINATION/DETERMINATION EXPENSES.
5. SYSTEM SHALL BE GROUNDED TO THE MAIN BUILDING'S GROUNDING SYSTEM.
6. DISCONNECT SWITCHES AND PANELS SHALL BE INSTALLED ON PLYWOOD BACKERBOARDS.
7. TENANT CONTRACTOR MUST VERIFY ELECTRICAL SERVICE, SUB-FEED WIRING AND PANELS PRIOR TO START OF TENANT'S ELECTRICAL WORK. TENANT GENERAL CONTRACTOR SHALL MAKE APPLICATION TO THE LOCAL UTILITY FOR CONTINUED METERED ELECTRIC SERVICE IN THE TENANT'S NAME. TENANT GENERAL CONTRACTOR SHALL CONFIRM ALL LOCAL UTILITY GUIDELINES AND REQUIREMENTS PRIOR TO BID, SHALL INCLUDE THE COSTS OF THESE REQUIREMENTS IN THE BID, AND SHALL COMPLY WITH THEM DURING CONSTRUCTION . AVAILABLE FAULT CURRENT AT SERVICE EQUIPMENT SHALL BE LEGIBLY MARKED IN THE FIELD WITH THE MAXIMUM AVAILABLE FAULT CURRENT PER NATIONAL ELECTRICAL CODE ARTICLE 110.24.
8. CONTRACTOR SHALL VERIFY INCOMING SERVICE AMPERAGE, WIRE SIZING AND DISTRIBUTION.
9. CONTRACTOR SHALL COORDINATE WITH BASE BUILDING FOR THE EXACT LOCATION OF THE EXISTING SWITCH GEAR AND EXACT POWER DISTRIBUTION .
10. CONTRACTOR SHALL VERIFY OPERABLE CONDITION INFIELD OF ALL EXISTING TO REMAIN ELECTRICAL DEVICES/EQUIPMENTS AND REPLACE WITH NEW IF FOUND INOPERABLE.

## KEYED NOTES: #

1. EXISTING SERVICE AND EQUIPMENTS FOR THE PROJECT SPACE SHALL REMAIN. CONTRACTOR SHALL COORDINATE THE EXACT LOCATION, RATING, VOLTAGE, PHASE, ELECTRICAL DISTRIBUTION AND OPERABLE CONDITION WITH ARCHITECT/OWNER IN FIELD. PROVIDE NEW IF FOUND INOPERABLE. BASE BID ACCORDINGLY.
2. EXISTING ELECTRICAL PANELS FOR THE PROJECT SPACE TO REMAIN. CONTRACTOR SHALL VERIFY THE EXACT RATING, VOLTAGE, PHASE & OPERABLE CONDITION & LOCATION WITH ARCHITECT/OWNER IN FIELD. INFORM ENGINEER IF FOUND ANY DISCREPANCY. BASE BID ACCORDINGLY.

VERIFY THE FOLLOWING PRIOR TO BID/ PRICING:

- EXISTING CONDUIT AND FEEDERS SIZE BETWEEN TENANT SPACE AND LANDLORD SWITCHBOARD.
- EXISTING MAIN SERVICE DISCONNECT RATING.
- EXISTING METER.

IF THE EXISTING SERVICE DISCONNECT AND FEEDERS ARE RATED FOR LESS THAN THE RATING SHOWN ON THIS RISER. NOTIFY THE PROJECT MANAGER AND ENGINEER IMMEDIATELY PRIOR TO SUBMITTING BID/ PRICING PACKAGE SO DRAWINGS CAN BE REVISED AND UPDATED ACCORDINGLY

## ELECTRICAL PANEL SCHEDULE

| PANELBOARD | | | MDP | VOLTAGE | 277 / 480 V | PHASE | 3 | WIRE | 4 | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PANEL TYPE | | | MCB | MAINS | 400 AMP | BUS RATING | 400 AMP | AIC RATING | V.I.F. | | | | | | | | | |
| NEMA TYPE ENCLOSURE | | | 1 | MOUNTING | SURFACE MOUNT | OPTIONS | | NOTE | EXISTING PANEL | | | | | | | | | |
| CKT. NO. | EQT TAG | CKT TAG | DESCRIPTION | POLE | WIRE SIZE | BKR. SIZE | TOTAL WATTS | PHASE | TOTAL WATTS | BKR. SIZE | WIRE SIZE | POLE | DESCRIPTION | CKT TAG | EQT TAG | CKT. NO. |
| 1 | | | | | | | 13,856 | A | 20,936 | | | | | | | 2 |
| 3 | | (E) | EXIST. RTU #1 | 3 | 6 | 50 | 13,856 | B | 17,136 | 150 | 1/0 | 3 | EXIST. 75 KVA TRANSFORMER | (E) | | 4 |
| 5 | | | | | | | 13,856 | C | 16,424 | | | | | | | 6 |
| 7 | | | | | | | 12,980 | A | | | | | | | | 8 |
| 9 | | (E) | EXIST. 45KVA TRANSFORMER | 3 | 4 | 70 | 10,210 | B | | 100 | | 3 | SPARE | (E) | | 10 |
| 11 | | | | | | | 8,360 | C | | | | | | | | 12 |
| 13 | | | | | | | 17,181 | A | | | | | | | | 14 |
| 15 | | (E) | EXIST. RTU #2 | 3 | 4 | 70 | 17,181 | B | | 15 | | 3 | SPARE | (E) | | 16 |
| 17 | | | | | | | 17,181 | C | | | | | | | | 18 |

ALL PHASES TO BE BALANCED T0 WITHIN 7%
A= 64,953 WATTS
B= 58,383 WATTS
C= 55,821 WATTS

(E) EXISTING TO REMAIN
(N) NEW CIRCUIT
GFCI GROUND FAULT CURRENT INTERRUPTER
IG CIRCUITS WITH ISOLATED GROUND
TC CIRCUITS ON TIMECLOCK
EMS ROUTING TO THE EMS PANEL
C BREAKER LOCK
a,b,c SWITCHES CONTROLLING LIGHTS

| | | | |
|---|---|---|---|
| TOTAL CONNECTED LOAD | 179,157 | WATTS | 215 AMPS |
| TOTAL DEMAND LOAD | 172,241 | WATTS | 207 AMPS |

## ELECTRICAL PANEL SCHEDULE

| PANELBOARD | | | LPI SEC.1 | VOLTAGE | 120 / 208 V | PHASE | 3 | WIRE | 4 | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PANEL TYPE | | | MCB | MAINS | 150 AMP | BUS RATING | 150 AMP | AIC RATING | V.I.F. | | | | | | | | | |
| NEMA TYPE ENCLOSURE | | | 1 | MOUNTING | SURFACE MOUNT | OPTIONS | | NOTE | EXISTING PANEL | | | | | | | | | |
| CKT. NO. | EQT TAG | CKT TAG | DESCRIPTION | POLE | WIRE SIZE | BKR. SIZE | TOTAL WATTS | PHASE | TOTAL WATTS | BKR. SIZE | WIRE SIZE | POLE | DESCRIPTION | CKT TAG | EQT TAG | CKT. NO. |
| 1 | | (N) | REC_RECEPTION (RM 101) | 1 | 12 | 20 | 540 | A | 1,200 | 20 | 12 | 1 | STOREFRONT SIGN | (N) | | 2 |
| 3 | | (N) | REC_RM 102, 104 | 1 | 12 | 20 | 900 | B | 1,200 | 20 | 12 | 1 | RECEPTION SIGN | (N) | | 4 |
| 5 | | (N) | REC_OFFICE-1 (RM 105) | 1 | 12 | 20 | 720 | C | 360 | 20 | 12 | 1 | REC_CLOSET (RM 118) | (N) | | 6 |
| 7 | | (N) | REC_OFFICE-2 (RM 106) | 1 | 12 | 20 | 900 | A | 360 | 20 | 12 | 1 | REC_CLOSET (RM 118) | (N) | | 8 |
| 9 | | (N) | REC_ACTIVITY LB (RM 120) | 1 | 12 | 20 | 540 | B | 360 | 20 | 12 | 1 | REC_CLOSET (RM 118) | (N) | | 10 |
| 11 | | (N) | REC_RM 130, 132 | 1 | 12 | 20 | 1,080 | C | 1,080 | 20 | 12 | 1 | REC_ACTIVITY ST (RM 117) | (N) | | 12 |
| 13 | | (N) | REC_ CoolSnackBar (RM 101) | 1 | 12 | 20 | 360 | A | 320 | 20 | 12 | 1 | REC_POPCORN MACHINE (RM 117) | (N) | | 14 |
| 15 | | (N) | REC_OFFICE-3 (RM 128) | 1 | 12 | 20 | 720 | B | 180 | 20 | 12 | 1 | REC_PROJECTOR (RM 117) | (N) | | 16 |
| 17 | | (N) | REC_BREAK_LOUNGE (RM 125, 127) | 1 | 12 | 20 | 900 | C | 900 | 20 | 12 | 1 | REC_ACTIVITY RH (RM 116) | (N) | | 18 |
| 19 | | (N) | GFI REC_ACTIVITY G&D (RM 125) | 1 | 12 | 20 | 540 | A | 1,080 | 20 | 12 | 1 | REC_ACTIVITY HG (RM 115) | (N) | | 20 |
| 21 | | (N) | GFI REC_RM 126,126 | 1 | 12 | 20 | 360 | B | 720 | 20 | 12 | 1 | REC_ACTIVITY RS (RM 114) | (N) | | 22 |
| 23 | | (N) | REC_NURSE_EXAM (RM 120, 124) | 1 | 12 | 20 | 540 | C | 180 | 20 | 12 | 1 | GFI REC_EXISTING RR (RM 113) | (N) | | 24 |
| 25 | | (N) | GFI REC_(RM 124,123,) | 1 | 12 | 20 | 540 | A | 540 | 20 | 12 | 1 | REC_ (RM 111, 112) | (N) | | 26 |
| 27 | | (N) | GFI REC_RESTRM (RM 122,123,) | 1 | 12 | 20 | 360 | B | 720 | 20 | 12 | 1 | GFI REC_KITCHEN (RM 109) | (N) | | 28 |
| 29 | | (N) | GFI REC_DRINKING FOUNTAIN | 1 | 12 | 20 | 720 | C | 540 | 20 | 12 | 1 | REC_ACTIVITY LBH (RM 107) | (N) | | 30 |
| 31 | | (N) | GFI REC_(RM 119,121) | 1 | 12 | 20 | 360 | A | 900 | 20 | 12 | 1 | REC_ACTIVITY RP (RM 110) | (N) | | 32 |
| 33 | | (N) | REC_ACTIVITY AS (RM 119) | 1 | 12 | 20 | 1,080 | B | 720 | 20 | 12 | 1 | REC_ACTIVITY RP (RM 110) | (N) | | 34 |
| 35 | | | SPARE | 1 | | 20 | | C | | 20 | | 1 | SPARE | | | 36 |
| 37 | | | SPARE | 1 | | 20 | | A | | 20 | | 1 | SPARE | | | 38 |
| 39 | | | SPARE | 1 | | 20 | | B | | 20 | | 1 | SPARE | | | 40 |
| 41 | | | SPARE | 1 | | 20 | | C | | 20 | | 1 | SPARE | | | 42 |

ALL PHASES TO BE BALANCED T0 WITHIN 7%
A= 7,460 WATTS
B= 7,860 WATTS
C= 6,550 WATTS

(E) EXISTING TO REMAIN
(N) NEW CIRCUIT
GFCI GROUND FAULT CURRENT INTERRUPTER
IG CIRCUITS WITH ISOLATED GROUND
TC CIRCUITS ON TIMECLOCK
EMS ROUTING TO THE EMS PANEL
C BREAKER LOCK
a,b,c SWITCHES CONTROLLING LIGHTS

| | | | |
|---|---|---|---|
| TOTAL CONNECTED LOAD | 31,550 | WATTS | 88 AMPS |
| TOTAL DEMAND LOAD | 28,315 | WATTS | 79 AMPS |

## ELECTRICAL PANEL SCHEDULE

| PANELBOARD | | | LPI SEC.2 | VOLTAGE | 120 / 208 V | PHASE | 3 | WIRE | 4 | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PANEL TYPE | | | MLO | MAINS | NA | BUS RATING | 150 AMP | AIC RATING | V.I.F. | | | | | | | | | |
| NEMA TYPE ENCLOSURE | | | 1 | MOUNTING | SURFACE MOUNT | OPTIONS | | NOTE | EXISTING PANEL | | | | | | | | | |
| CKT. NO. | EQT TAG | CKT TAG | DESCRIPTION | POLE | WIRE SIZE | BKR. SIZE | TOTAL WATTS | PHASE | TOTAL WATTS | BKR. SIZE | WIRE SIZE | POLE | DESCRIPTION | CKT TAG | EQT TAG | CKT. NO. |
| 43 | | (N) | REC_ACTIVITY RS (RM 114) | 1 | 12 | 20 | 540 | A | 1,200 | 20 | 12 | 1 | MORQUEE SIGN | (N) | | 44 |
| 45 | | (N) | REC_ACTIVITY RP/GP FLOOR | 1 | 12 | 20 | 720 | B | 1,200 | 20 | 12 | 1 | MORQUEE SIGN | (N) | | 46 |
| 47 | | (N) | REC_ACTIVITY RP/GP FLOOR | 1 | 12 | 20 | 360 | C | 1,200 | 20 | 12 | 1 | MORQUEE SIGN | (N) | | 48 |
| 49 | | (N) | GFI REC_ACTIVITY HC (RM 116) | 1 | 12 | 20 | 180 | A | 1,200 | 20 | 12 | 1 | ACTIVITY LBH SIGN | (N) | | 50 |
| 51 | | (N) | LOBBY TV | 1 | 12 | 20 | 180 | B | 250 | 20 | 12 | 1 | FIRE ALARM PANEL | (N) | | 52 |
| 53 | | | SPARE | 1 | | 20 | | C | 250 | 20 | 12 | 1 | NAC | (N) | | 54 |
| 55 | | | SPARE | 1 | | 20 | | A | 2,400 | 30 | 10 | 1 | INSTANT HOT WATER HEATER | (N) | | 56 |
| 57 | | | SPARE | 1 | | 20 | | B | | 20 | | 1 | SPARE | | | 58 |
| 59 | | | SPARE | 1 | | 20 | | C | | 20 | | 1 | SPARE | | | 60 |
| 61 | | | SPARE | 1 | | 20 | | A | | 20 | | 1 | SPARE | | | 62 |
| 63 | | | SPARE | 1 | | 20 | | B | | 20 | | 1 | SPARE | | | 64 |
| 65 | | | SPARE | 1 | | 20 | | C | | 20 | | 1 | SPARE | | | 66 |
| 67 | | | SPARE | 1 | | 20 | | A | | 20 | | 1 | SPARE | | | 68 |
| 69 | | | SPARE | 1 | | 20 | | B | | 20 | | 1 | SPARE | | | 70 |
| 71 | | | SPARE | 1 | | 20 | | C | | 20 | | 1 | SPARE | | | 72 |
| 73 | | | SPARE | 1 | | 20 | | A | | 20 | | 1 | SPACE | | | 74 |
| 75 | | | SPACE | | | | | B | | 20 | | 1 | SPACE | | | 76 |
| 77 | | | SPACE | | | | | C | | | | | SPACE | | | 78 |
| 79 | | | SPACE | | | | | A | | | | | SPACE | | | 80 |
| 81 | | | SPACE | | | | | B | | | | | SPACE | | | 82 |
| 83 | | | SPACE | | | | | C | | | | | SPACE | | | 84 |

ALL PHASES TO BE BALANCED T0 WITHIN 7%
A= 5,520 WATTS
B= 2,350 WATTS
C= 1,810 WATTS

(E) EXISTING TO REMAIN
(N) NEW CIRCUIT
GFCI GROUND FAULT CURRENT INTERRUPTER
IG CIRCUITS WITH ISOLATED GROUND
TC CIRCUITS ON TIMECLOCK
EMS ROUTING TO THE EMS PANEL
C BREAKER LOCK
a,b,c SWITCHES CONTROLLING LIGHTS

| | | | |
|---|---|---|---|
| TOTAL CONNECTED LOAD | 9,680 | WATTS | 27 AMPS |
| TOTAL DEMAND LOAD | 10,580 | WATTS | 30 AMPS |

## ELECTRICAL PANEL SCHEDULE

| PANELBOARD | | | LPEMA SEC.1 | VOLTAGE | 120 / 208 V | PHASE | 3 | WIRE | 4 | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PANEL TYPE | | | MLO | MAINS | NA | BUS RATING | 225 AMP | AIC RATING | V.I.F. | | | | | | | | | |
| NEMA TYPE ENCLOSURE | | | 1 | MOUNTING | SURFACE MOUNT | OPTIONS | | NOTE | EXISTING PANEL | | | | | | | | | |
| CKT. NO. | EQT TAG | CKT TAG | DESCRIPTION | POLE | WIRE SIZE | BKR. SIZE | TOTAL WATTS | PHASE | TOTAL WATTS | BKR. SIZE | WIRE SIZE | POLE | DESCRIPTION | CKT TAG | EQT TAG | CKT. NO. |
| 1 | | (N) | #2 ICED TEA BREWER | 1 | 12 | 20 | 1,730 | A | 770 | 20 | 12 | 1 | LTG_RM 100,101,102,104,125,126,127,128,131,132 | (N) | | 2 |
| 3 | | (N) | #3 COFFEE TEA BREWER | 1 | 12 | 20 | 1,670 | B | 740 | 20 | 12 | 1 | LTG_RM 103,105,106,120,121,122,123,124,128,130 | (N) | | 4 |
| 5 | | (N) | #4 REACH-IN-REFRIGERATOR | 1 | 12 | 20 | 250 | C | 860 | 20 | 12 | 1 | LTG_RM 117,119 | (N) | | 6 |
| 7 | | (N) | #4 REACH-IN-REFRIGERATOR | 1 | 12 | 20 | 250 | A | 580 | 20 | 12 | 1 | LTG_RM 113,114,115,116 | (N) | | 8 |
| 9 | | (N) | #5 REACH-IN-FREEZER | 1 | 12 | 20 | 760 | B | 370 | 20 | 12 | 1 | LTG_RM 107,109 | (N) | | 10 |
| 11 | | (N) | #5 REACH-IN-FREEZER | 1 | 12 | 20 | 760 | C | 1,024 | 20 | 12 | 1 | LTG_RM 104 - A3 LIGHTS | (N) | | 12 |
| 13 | | (N) | #15 FOOD PAN WARMER | 1 | 12 | 20 | 1,200 | A | 1,800 | 30 | 10 | 1 | LTG_RM 104 - A4 LIGHTS | (N) | | 14 |
| 15 | | (N) | #15 FOOD PAN WARMER | 1 | 12 | 20 | 1,200 | B | 300 | 20 | 12 | 1 | EXIST. LTG_EXTERIOR | (N) | | 16 |
| 17 | | (N) | WASHER | 1 | 12 | 20 | 180 | C | 8,000 | | | | | | | 18 |
| 19 | | (N) | DRYER | 2 | 10 | 30 | 2,496 | A | 8,000 | 80 | 4 | 3 | HOT WATER HEATER (WH-1) | (N) | | 20 |
| 21 | | | | | | | 2,496 | B | 8,000 | | | | | | | 22 |
| 23 | | (N) | #10 DISHWASHER | 2 | 8 | 50 | 3,650 | C | 100 | 20 | 12 | 1 | RCP-1 | (N) | | 24 |
| 25 | | | | | | | 3,650 | A | 100 | 20 | 12 | 1 | MOTORIZED DAMPER | (N) | | 26 |
| 27 | | | SPARE | 1 | | 20 | | B | 1,600 | 20 | 12 | 1 | EXIST. SPACE HEATER-1 | (N) | | 28 |
| 29 | | | SPARE | 1 | | 20 | | C | 1,600 | 20 | 12 | 1 | EXIST. SPACE HEATER-2 | (N) | | 30 |
| 31 | | | SPARE | 1 | | 20 | | A | 360 | 20 | 12 | 1 | EXIST. GFI REC_ROOF | (N) | | 32 |
| 33 | | | SPARE | 1 | | 20 | | B | | 20 | | 1 | SPARE | | | 34 |
| 35 | | | SPARE | 1 | | 20 | | C | | 20 | | 1 | SPARE | | | 36 |
| 37 | | | SPARE | 1 | | 20 | | A | | 20 | | 1 | SPARE | | | 38 |
| 39 | | | SPARE | 1 | | 20 | | B | | 20 | | 1 | SPARE | | | 40 |
| 41 | | | SPARE | 1 | | 20 | | C | | 20 | | 1 | SPARE | | | 42 |

ALL PHASES TO BE BALANCED T0 WITHIN 7%
A= 20,936 WATTS
B= 17,136 WATTS
C= 16,424 WATTS

(E) EXISTING TO REMAIN
(N) NEW CIRCUIT
GFCI GROUND FAULT CURRENT INTERRUPTER
IG CIRCUITS WITH ISOLATED GROUND
TC CIRCUITS ON TIMECLOCK
EMS ROUTING TO THE EMS PANEL
C BREAKER LOCK
a,b,c SWITCHES CONTROLLING LIGHTS

| | | | |
|---|---|---|---|
| TOTAL CONNECTED LOAD | 54,496 | WATTS | 152 AMPS |
| TOTAL DEMAND LOAD | 50,815 | WATTS | 142 AMPS |

## ELECTRICAL PANEL SCHEDULE

| PANELBOARD | | | LPEMA SEC.2 | VOLTAGE | 120 / 208 V | PHASE | 3 | WIRE | 4 | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PANEL TYPE | | | MLO | MAINS | NA | BUS RATING | 225 AMP | AIC RATING | V.I.F. | | | | | | | | | |
| NEMA TYPE ENCLOSURE | | | 1 | MOUNTING | SURFACE MOUNT | OPTIONS | | NOTE | EXISTING PANEL | | | | | | | | | |
| CKT. NO. | EQT TAG | CKT TAG | DESCRIPTION | POLE | WIRE SIZE | BKR. SIZE | TOTAL WATTS | PHASE | TOTAL WATTS | BKR. SIZE | WIRE SIZE | POLE | DESCRIPTION | CKT TAG | EQT TAG | CKT. NO. |
| 43 | | | SPARE | 1 | | 20 | | A | | 20 | | 1 | SPARE | | | 44 |
| 45 | | | SPARE | 1 | | 20 | | B | | 20 | | 1 | SPARE | | | 46 |
| 47 | | | SPARE | 1 | | 20 | | C | | 20 | | 1 | SPARE | | | 48 |
| 49 | | | SPARE | 1 | | 20 | | A | | 20 | | 1 | SPARE | | | 50 |
| 51 | | | SPARE | 1 | | 20 | | B | | 20 | | 1 | SPARE | | | 52 |
| 53 | | | SPARE | 1 | | 20 | | C | | 20 | | 1 | SPARE | | | 54 |
| 55 | | | SPARE | 1 | | 20 | | A | | 20 | | 1 | SPARE | | | 56 |
| 57 | | | SPARE | 1 | | 20 | | B | | 20 | | 1 | SPARE | | | 58 |
| 59 | | | SPARE | 1 | | 20 | | C | | 20 | | 1 | SPARE | | | 60 |
| 61 | | | SPARE | 1 | | 20 | | A | | 20 | | 1 | SPARE | | | 62 |
| 63 | | | SPARE | 1 | | 20 | | B | | | | | SPACE | | | 64 |
| 65 | | | SPARE | 1 | | 20 | | C | | | | | SPACE | | | 66 |
| 67 | | | SPACE | | | | | A | | | | | SPACE | | | 68 |
| 69 | | | SPACE | | | | | B | | | | | SPACE | | | 70 |
| 71 | | | SPACE | | | | | C | | | | | SPACE | | | 72 |

ALL PHASES TO BE BALANCED T0 WITHIN 7%
A= 0 WATTS
B= 0 WATTS
C= 0 WATTS

(E) EXISTING TO REMAIN
(N) NEW CIRCUIT
GFCI GROUND FAULT CURRENT INTERRUPTER
IG CIRCUITS WITH ISOLATED GROUND
TC CIRCUITS ON TIMECLOCK
EMS ROUTING TO THE EMS PANEL
C BREAKER LOCK
a,b,c SWITCHES CONTROLLING LIGHTS

| | | | |
|---|---|---|---|
| TOTAL CONNECTED LOAD | 0 | WATTS | 0 AMPS |
| TOTAL DEMAND LOAD | 0 | WATTS | 0 AMPS |

## ELECTRICAL LOAD SUMMARY

| DESCRIPTION | NEC CONNECTED kW | VOLT | PHASE | NEC DEMAND FACTOR | NEC DEMAND kW |
|---|---|---|---|---|---|
| LIGHTING- 120V | 6.4 | 120 | 1 | 1.25 | 8.1 |
| INTERIOR SIGN | 4.8 | 120 | 1 | 1.25 | 6.0 |
| RECEPTACLES | 23.8 | 120 | 1 | >10kW=10+[0.5*(kW-10)] | 16.9 |
| STOREFRONT SIGN | 1.2 | 120 | 1 | 1.25 | 1.5 |
| MOTORIZED DAMPER | 0.1 | 120 | 1 | 1.00 | 0.1 |
| OTHER EQUIPMENT | 5.0 | 208 | 1 | 1.00 | 5.0 |
| KITCHEN EQUIPMENT | 15.1 | 208 | 1 | 0.65 | 9.8 |
| SPACE HEATER | 3.2 | 120 | 1 | 1.00 | 3.2 |
| ROOFTOP UNITS | 93.1 | 480 | 3 | 1.00 | 93.1 |
| HOT WATER HEATER | 26.4 | 208 | 3 | 1.00 | 26.4 |
| TOTALS | 179.2 | | | | 170.1 |

NOTES:
* USE GREATER VALUE OF THE TWO CATEGORIES.
** 125% OF THE LARGEST MOTOR OR COMPRESSOR IN SYSTEM APPLIED ONLY ON ONE UNIT.
*** N.E.C. ARTICLE 220-12 REQUIREMENT (200 VA PER FOOT OF SHOW WINDOW)
MINUS ACTUAL SHOW WINDOW LIGHTING kVA.

N.E.C. DEMAND kVA x 1,000 / SYSTEM VOLTAGE x 1.732

MINIMUM FEEDER AMPERAGE

170.1 x 1000 = 170,081
480 x 1.732 = 831

1 204.6 AMPS USE (EXISTING) 400AMP SERVICE.

## ELECTRICAL PANEL SCHEDULE

| PANELBOARD | | | LPEMB SEC.1 | VOLTAGE | 120 / 208 V | PHASE | 3 | WIRE | 4 | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PANEL TYPE | | | MLO | MAINS | NA | BUS RATING | 225 AMP | AIC RATING | V.I.F. | | | | | | | | | |
| NEMA TYPE ENCLOSURE | | | 1 | MOUNTING | SURFACE MOUNT | OPTIONS | | NOTE | EXISTING PANEL | | | | | | | | | |
| CKT. NO. | EQT TAG | CKT TAG | DESCRIPTION | POLE | WIRE SIZE | BKR. SIZE | TOTAL WATTS | PHASE | TOTAL WATTS | BKR. SIZE | WIRE SIZE | POLE | DESCRIPTION | CKT TAG | EQT TAG | CKT. NO. |
| 1 | | | SPARE | | | | | A | | | | | SPARE | | | 2 |
| 3 | | | SPARE | | | | | B | | | | | SPARE | | | 4 |
| 5 | | | SPARE | | | | | C | | | | | SPARE | | | 6 |
| 7 | | | SPARE | | | | | A | | | | | SPARE | | | 8 |
| 9 | | | SPARE | | | | | B | | | | | SPARE | | | 10 |
| 11 | | | SPARE | | | | | C | | | | | SPARE | | | 12 |
| 13 | | | SPARE | | | | | A | | | | | SPARE | | | 14 |
| 15 | | | SPARE | | | | | B | | | | | SPARE | | | 16 |
| 17 | | | SPARE | | | | | C | | | | | SPARE | | | 18 |
| 19 | | | SPARE | | | | | A | | | | | SPARE | | | 20 |
| 21 | | | SPARE | | | | | B | | | | | SPARE | | | 22 |
| 23 | | | SPARE | | | | | C | | | | | SPARE | | | 24 |
| 25 | | | SPARE | | | | | A | | | | | SPARE | | | 26 |
| 27 | | | SPARE | | | | | B | | | | | SPARE | | | 28 |
| 29 | | | SPARE | | | | | C | | | | | SPARE | | | 30 |
| 31 | | | SPARE | | | | | A | | | | | SPARE | | | 32 |
| 33 | | | SPARE | | | | | B | | | | | SPARE | | | 34 |
| 35 | | | SPARE | | | | | C | | | | | SPARE | | | 36 |
| 37 | | | SPARE | | | | | A | | | | | SPARE | | | 38 |
| 39 | | | SPARE | | | | | B | | | | | SPARE | | | 40 |
| 41 | | | SPARE | | | | | C | | | | | SPARE | | | 42 |

ALL PHASES TO BE BALANCED T0 WITHIN 7%
A= 0 WATTS
B= 0 WATTS
C= 0 WATTS

(E) EXISTING TO REMAIN
(N) NEW CIRCUIT
GFCI GROUND FAULT CURRENT INTERRUPTER
IG CIRCUITS WITH ISOLATED GROUND
TC CIRCUITS ON TIMECLOCK
EMS ROUTING TO THE EMS PANEL
C BREAKER LOCK
a,b,c SWITCHES CONTROLLING LIGHTS

| | | | |
|---|---|---|---|
| TOTAL CONNECTED LOAD | 0 | WATTS | 0 AMPS |
| TOTAL DEMAND LOAD | 0 | WATTS | 0 AMPS |

## ELECTRICAL PANEL SCHEDULE

| PANELBOARD | | | LPEMB SEC.2 | VOLTAGE | 120 / 208 V | PHASE | 3 | WIRE | 4 | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PANEL TYPE | | | MLO | MAINS | NA | BUS RATING | 225 AMP | AIC RATING | V.I.F. | | | | | | | | | |
| NEMA TYPE ENCLOSURE | | | 1 | MOUNTING | SURFACE MOUNT | OPTIONS | | NOTE | EXISTING PANEL | | | | | | | | | |
| CKT. NO. | EQT TAG | CKT TAG | DESCRIPTION | POLE | WIRE SIZE | BKR. SIZE | TOTAL WATTS | PHASE | TOTAL WATTS | BKR. SIZE | WIRE SIZE | POLE | DESCRIPTION | CKT TAG | EQT TAG | CKT. NO. |
| 43 | | | SPARE | 1 | | 20 | | A | | 20 | | 1 | SPARE | | | 44 |
| 45 | | | SPARE | 1 | | 20 | | B | | 20 | | 1 | SPARE | | | 46 |
| 47 | | | SPARE | 1 | | 20 | | C | | 20 | | 1 | SPARE | | | 48 |
| 49 | | | SPARE | 1 | | 20 | | A | | 20 | | 1 | SPARE | | | 50 |
| 51 | | | SPARE | 1 | | 20 | | B | | 20 | | 1 | SPARE | | | 52 |
| 53 | | | SPARE | 1 | | 20 | | C | | 20 | | 1 | SPARE | | | 54 |
| 55 | | | SPARE | 1 | | 20 | | A | | 20 | | 1 | SPARE | | | 56 |
| 57 | | | SPARE | 1 | | 20 | | B | | 20 | | 1 | SPARE | | | 58 |
| 59 | | | SPARE | 1 | | 20 | | C | | 20 | | 1 | SPARE | | | 60 |
| 61 | | | SPARE | 1 | | 20 | | A | | 20 | | 1 | SPARE | | | 62 |
| 63 | | | SPARE | 1 | | 20 | | B | | 20 | | 1 | SPARE | | | 64 |
| 65 | | | SPARE | 1 | | 20 | | C | | 20 | | 1 | SPARE | | | 66 |
| 67 | | | SPARE | 1 | | 20 | | A | | 20 | | 1 | SPARE | | | 68 |
| 69 | | | SPARE | 1 | | 20 | | B | | 20 | | 1 | SPARE | | | 70 |
| 71 | | | SPARE | 1 | | 20 | | C | | 20 | | 1 | SPARE | | | 72 |

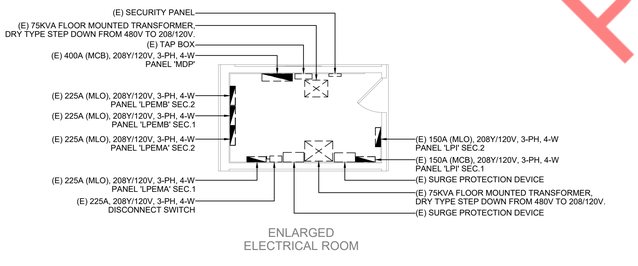
ALL PHASES TO BE BALANCED T0 WITHIN 7%
A= 0 WATTS
B= 0 WATTS
C= 0 WATTS

(E) EXISTING TO REMAIN
(N) NEW CIRCUIT
GFCI GROUND FAULT CURRENT INTERRUPTER
IG CIRCUITS WITH ISOLATED GROUND
TC CIRCUITS ON TIMECLOCK
EMS ROUTING TO THE EMS PANEL
C BREAKER LOCK
a,b,c SWITCHES CONTROLLING LIGHTS

| | | | |
|---|---|---|---|
| TOTAL CONNECTED LOAD | 0 | WATTS | 0 AMPS |
| TOTAL DEMAND LOAD | 0 | WATTS | 0 AMPS |

EXISTING PANELBOARD KEYED NOTE: #

1. NEW BREAKERS MAY BE REQUIRED FOR USE IN THE EXISTING PANELBOARD TO MATCH RATING INDICATED IN THE PANEL SCHEDULE. PRIOR TO BID/PRICING, THE ELECTRICAL CONTRACTOR SHALL VERIFY ALL EXISTING-TO-REMAIN PANELBOARD MANUFACTURER AND MODEL NUMBER TO ENSURE THAT REPLACEMENT BREAKERS ARE AVAILABLE. WHERE BREAKER AVAILABILITY ISSUES ARISE, NOTIFY THE PROJECT MANAGER PRIOR TO BID/PRICING.
2. DESIGNATED CIRCUIT NUMBER SHOWN ON THE PANEL SCHEDULE FOR A CERTAIN LOAD, MAY BE DIFFERENT THAN THE ACTUAL CIRCUIT NUMBER IN THE EXISTING PANELBOARD. ALL EXISTING-TO-REMAIN ELECT


ENLARGED ELECTRICAL ROOM

NOTE:
ALL LIGHTING CONTROLS SHALL BE AS PER ASHRAE 90.1-2019, TABLE 9.6.1.

## GENERAL NOTES:

1. REFER TO DWG. E001 FOR ELECTRICAL GENERAL NOTES, SYMBOL LIST & ABBREVIATIONS.
2. REFER TO DWG. E002 FOR ELECTRICAL SPECIFICATIONS.
3. REFER TO DWG. E004 FOR ELECTRICAL RISER DIAGRAM.
4. CIRCUITING FOR LIGHTING FIXTURES IN ROOMS/AREA WITH SWITCHES SHALL BE CONTROLLED BY DESIGNATED SWITCHES. IF SPECIFIC DESIGNATION IS NOT INDICATED, ALL LIGHTING FIXTURES IN ROOM/AREA SHALL BE CONTROLLED BY THE SWITCH INDICATED.
5. CONTRACTOR SHALL PROVIDE DETAILED AS-BUILT DRAWINGS. PROVIDE COPY OF AS-BUILT DRAWINGS TO OWNER AND ENGINEER AT PROJECT COMPLETION.
6. ALL DEVICES ARE NEW UNLESS NOTED OTHERWISE.
7. CONTRACTOR SHALL COORDINATE LIGHT FIXTURE LOCATION WITH MECHANICAL CONTRACTOR AND NEW DUCTWORK PRIOR TO ROUGH-IN. RELOCATION OF DUCTWORK FOR CONFLICT WITH NEW LIGHTING WILL BE AT EXPENSE OF CONTRACTOR.
8. ELECTRICAL CONTRACTOR TO COORDINATE EXACT LOCATION AND MOUNTING HEIGHTS OF FIXTURES WITH ARCHITECT.
9. SWITCHES LOCATIONS SHOWN IN THE DRAWINGS ARE DIAGRAMMATIC, FOR ACTUAL LOCATION AND MOUNTING HEIGHTS OF SWITCHES REFER TO ARCHITECTURAL PLANS.

## KEYED NOTES: #

1. 'A3' FIXTURE WALL SWITCH FOR ACTIVITY GP (108) & ACTIVITY RP (110) AREA.
2. 'A4' FIXTURE WALL SWITCH FOR ACTIVITY GP (108) & ACTIVITY RP (110) AREA.
3. ALL 'A3' FIXTURES WITHIN THIS AREA SHALL BE ON ONE CIRCUIT, A1-12. ALL 'A4' FIXTURES WITHIN THIS AREA SHALL BE ON ONE CIRCUIT, A1-14.
4. CONNECT EACH 'A4' FIXTURE TO JUNCTION BOX CENTERED ABOVE FIXTURE. JUNCTION BOX TO BE SUPPORTED BY STRUCTURE AND NOT CEILING GRID.
5. FIXTURE SHALL BE PROVIDED WITH INTEGRAL 90-MINUTE MINIMUM BATTERY BACKUP. WIRE ALL EMERGENCY & EXIT LIGHT TO LIGHTING CIRCUIT AHEAD OF ALL CONTROL & SWITCHING FOR CONTINUOUS OPERATIONS.
6. JUNCTION BOX FOR LIGHT FIXTURE. ELECTRICAL CONTRACTOR SHALL COORDINATE EXACT LOCATION AND REQUIREMENTS WITH ARCHITECT PRIOR TO ROUGH IN. BASE BID ACCORDINGLY.
7. EXISTING LIGHT FIXTURES AND THEIR CONTROLS SHALL REMAIN. RETROFIT WITH LED LIGHTS. E.C. TO VERIFY THE OPERABLE CONDITION OF EXISTING LIGHTING FIXTURES, EXISTING LIGHTING CONTROLS, EXACT BRANCH CIRCUITS. PROVIDE AND INSTALL NEW AS SHOWN IF FOUND INOPERABLE. BASE BID ACCORDINGLY.

## LIGHT FIXTURE SCHEDULE

| STYLE | TAG | QTY | MANUF. | DESCRIPTION | MODEL | COLOR TEMP | PROV. BY | INSTAL L BY | REMARKS |
|---|---|---|---|---|---|---|---|---|---|
| A1 | A1 | 64 | LITHONIA | 2X4 LENSED TROFFER | 2BTL2 | 3500K | GC | GC | DLC LISTED LENSED, RIBBED REFLECTOR |
| A2 | A2 | 14 | LITHONIA | 2X2 LENSED TROFFER | 2BTL2 | 3500K | GC | GC | DLC LISTED LENSED, RIBBED REFLECTOR |
| A3 | A3 | 78 | PORTFOLIO | 4" RECESSED LED DOWNLIGHT | LD4C | 3500K | GC | GC | MINIMUM 10% DIMMING DLC/ENERGY STAR LISTED BLACK TRIM WET LOCATION LISTED |
| A4 | A4 | 12 | LITFAD | 39" HEXAGON PENDANT LIGHT FIXTURE | SKU: 225167796 | 3500K | GC | GC | COORDINATE FINISH WITH ARCHITECT/OWNER CONFIRM FIXTURE IS DIMMABLE W/ MANUF. |
| A5 | A5 | 10 | PORTFOLIO | 4" RECESSED LED DOWNLIGHT | LD4C | 3500K | GC | GC | MINIMUM 10% DIMMING DLC/ENERGY STAR LISTED WHITE TRIM WET LOCATION LISTED |
| A6 | A6 | 11 | JADEMAR | 2X4 BACKLIT TROFFER | JFP24 | 3500K | GC | GC | ETL LISTED DAMP LOCATIONS A6 SHALL BE WHITE TRIM A6A SHALL BE BLACK TRIM |
| A6A | A6A | 15 | JADEMAR | 2X4 BACKLIT TROFFER | JFP24 | 3500K | GC | GC | ETL LISTED DAMP LOCATIONS A6 SHALL BE WHITE TRIM A6A SHALL BE BLACK TRIM |
| A7 | A7 | 2 | MULE | INTERIOR/EXTERIOR EMERGENCY EGRESS (LOW PROFILE) | MERU | 3500K | GC | GC | UL LISTED WET LOCATION LS CODE 101 COMPLIANT PROVIDE 90 MIN. REMOTE BATTERY |
| E1 | E1 | PER CODE | SURE-LITES | INTERIOR EMERGENCY BATTERY EGRESS LIGHT AIMABLE | SEL25 | 3500K | GC | GC | TEST SWITCH PROVIDED SEALED 90 MIN. BATTERY |
| E2 | E2 | PER CODE | SURE-LITES | INTERIOR EMERGENCY BATTERY EGRESS LIGHT AND EXIT COMBO | LPXC | 3500K | GC | GC | TEST SWITCH PROVIDED SEALED 90 MIN. BATTERY |
| EX1 | EX1 | PER CODE | SURE-LITES | BATTERY THERMOPLASTIC EXIT SIGN | LPX | 3500K | GC | GC | NICKEL CADMIUM BATTERY EXIT SIGN 90 MIN. OPERATION TEST SWITCH PROVIDED UL LISTED FOR DAMP LOCATIONS |
| (E1) | (E1) | 1 | EXISTING | EXISTING | EXISTING | - | - | - | - |
| (E2) | (E2) | 2 | EXISTING | EXISTING | EXISTING | - | - | - | - |
| (E3) | (E3) | 2 | EXISTING | EXISTING | EXISTING | - | - | - | - |
| (E4) | (E4) | 1 | EXISTING | EXISTING | EXISTING | - | - | - | - |

## CIRCUIT ABBREVATIONS

| PANEL | CIRCUIT PREFIX | CIRCUIT NUMBER |
|---|---|---|
| LPI - SEC1 | P1 | 1 |
| LPI -SEC2 | P2 | 1 |
| LPEMA - SEC1 | A1 | 1 |
| LPEMA - SEC2 | A2 | 1 |
| LPEMB - SEC1 | B1 | 1 |
| LPEMB - SEC2 | B2 | 1 |

## NOTES:

1. ALL FIXTURES SHALL BE LED UNLESS OTHERWISE SPECIFIED. COLOR TEMPERATURE SHALL BE 3500K UNLESS OTHERWISE NOTED.
2. LED DRIVERS SHALL BE PROVIDED AS PER MANUFACTURER RECOMMENDATIONS.
3. COORDINATE WITH ARCHITECTURAL REFLECTED CEILING PLAN FOR EXACT FIXTURE LOCATIONS.
4. FIXTURES IN FIRE RATED CEILING SHALL BE PROVIDED WITH FIRE RATED TENTS AS REQUIRED.
5. SUSPEND ALL FOUR CORNERS WITH WIRE TO STRUCTURE. DO NOT ALLOW GRID ALONE TO SUPPORT FIXTURE.
6. FIXTURES WITH EMERGENCY BATTERY PACKS SHALL BE SUPPLIED WITH 1100 LUMEN INVERTERS.
7. SUSPEND ALL FOUR CORNERS WITH WIRE TO STRUCTURE. DO NOT ALLOW GRID ALONE TO SUPPORT FIXTURE.
8. DIMMING OF FIXTURES SHALL BE WITH A SWITCH AS RECOMMENDED BY THE DRIVER MANUFACTURER. COORDINATE COMPATIBILITY OF ALL SWITCHES WITH APPROVED FIXTURES PRIOR TO ORDERING.
9. THE CONTRACTOR SHALL VERIFY THE LEAD TIME OF ALL PRODUCTS SPECIFIED IN THIS SCHEDULE AT THE TIME OF PACKAGE QUOTE.
10. DURING THE BID PROCESS, THE CONTRACTOR SHALL NOTIFY THE ARCHITECT/ENGINEER OF ANY DELIVERY/SCHEDULING ISSUES.
11. NO SUBSTITUTIONS WILL BE ALLOWED DUE TO LACK OF COORDINATION OF DELIVERY DATES AND CONSTRUCTION SCHEDULE AFTER BID.
12. ALL EXPEDITED EXPENSES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
13. FIXTURES TO BE INSTALLED IN CEILINGS, INDICATED ON ARCHITECTURAL PLANS AS HAVING INSULATION IN CONTACT WITH CEILING SURFACE, SHALL BE IC RATED BY MANUFACTURER.
14. LED DRIVERS LOCATED IN UNCONDITIONED SPACES SHALL BE RATED FOR 90 DEGREES F.
15. PROVIDE 90 MINUTE EMERGENCY BATTERY BACK UP. EMERGENCY BACK UP SHALL BE BASED ON TYPE OF FIXTURE, LED DRIVER, BALLAST, ETC. EMERGENCY BACKUP SHALL BE DUAL INPUT FOR BOTH SWITCHING AND CHARGING. PROVIDE UN SWITCHED "HOT" FROM LOCAL CIRCUIT UNLESS OTHERWISE INDICATED ON PLANS. PROVIDE WITH INDICATOR LIGHT. INSTALL LED INDICATOR ON LIGHT FIXTURE UNLESS DECORATIVE. DECORATIVE FIXTURES SHALL HAVE INDICATOR PLACED AT LOCAL CEILING. BODINE, PHILLIPS, POWER SENTRY OR EQUAL.



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| | DATE | ISSUE |
|---|---|---|
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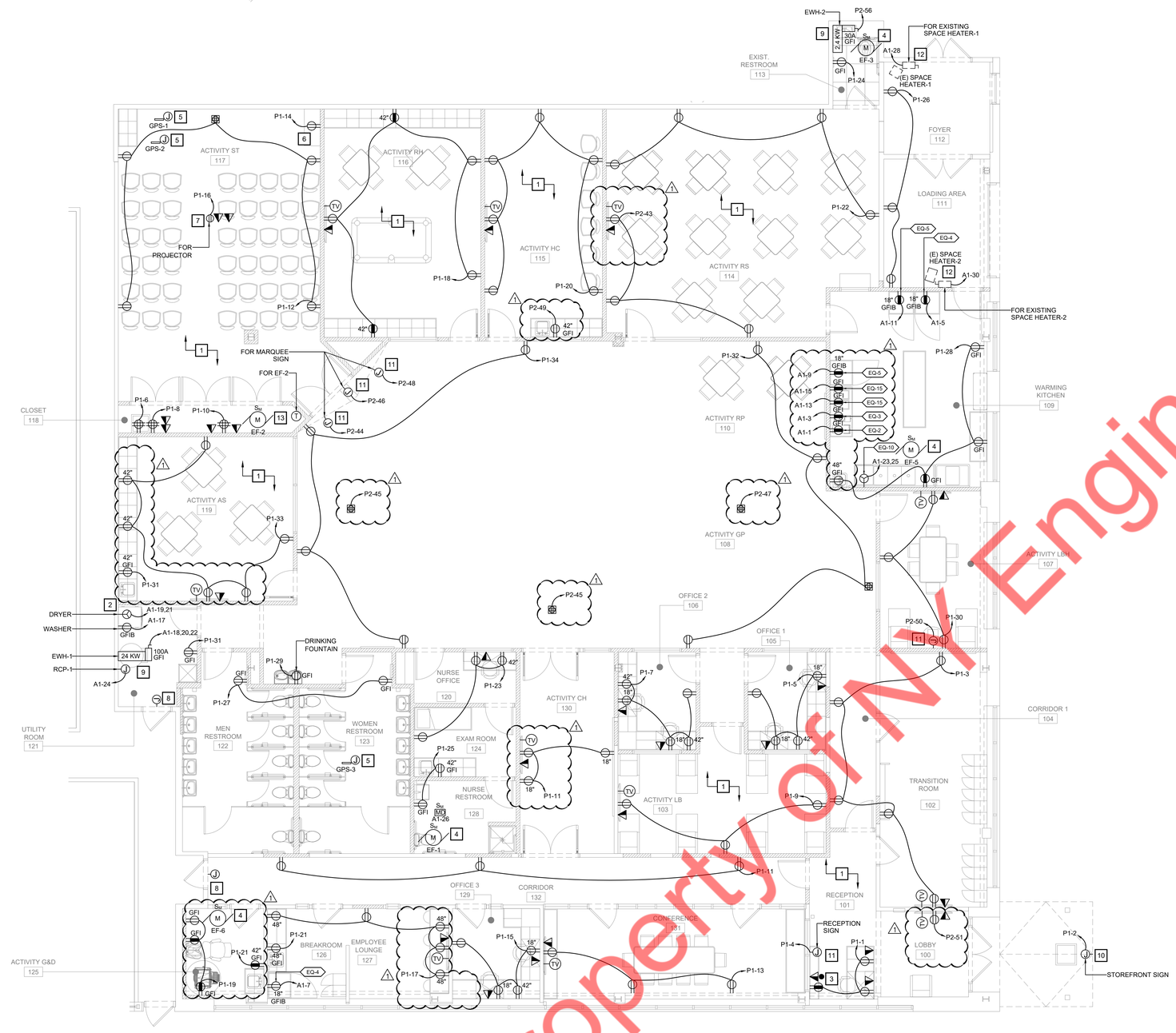
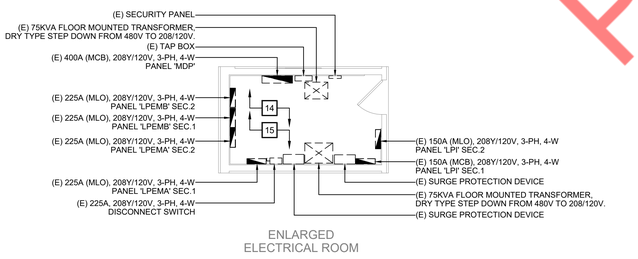
| | 11.15.24 | LL/CLIENT REVIEW SET |
| | 11.22.24 | BD SUBMISSION |
| 1 | 11.15.24 | CLIENT COMMENTS |
| 1 | DATE | REVISION |

TITLE:
LIGHTING PLAN

SHEET NUMBER:
E101

1 | SCALE 3 / 16" = 1' - 0" | LIGHTING PLAN




ENLARGED ELECTRICAL ROOM

## GENERAL NOTES:

1. REFER TO DWG. E001 FOR ELECTRICAL GENERAL NOTES, SYMBOL LIST & ABBREVIATIONS.
2. REFER TO DWG. E002 FOR ELECTRICAL SPECIFICATIONS.
3. REFER TO DWG. E004 FOR ELECTRICAL RISER DIAGRAM.
4. CONTRACTOR SHALL PROVIDE DETAILED AS-BUILT DRAWINGS. PROVIDE COPY OF AS-BUILT DRAWINGS TO OWNER AND ENGINEER AT PROJECT COMPLETION.
5. ALL DEVICES ARE NEW UNLESS NOTED OTHERWISE.
6. ALL CONDUIT SHALL BE CONCEALED BEHIND WALLS AND ABOVE CEILINGS. NO EXPOSED CONDUIT PERMITTED.
7. COORDINATE FLOOR BOX LOCATIONS WITH FURNITURE PRIOR TO ROUGH-IN AND CUTTING OF FLOOR TILES.
8. LABEL ALL RECEPTACLES WITH CIRCUIT AND PANEL INFORMATION.
9. PROVIDE PLASTIC BUSHINGS ON CONDUIT ENDS FOR ALL CONDUITS STUBBED ABOVE CEILING.
10. FINAL CONDUIT/CABLE ROUTING SHALL BE DETERMINED IN-FIELD, AND PRIOR TO THE COMMENCEMENT OF WORK, COORDINATED WITH OTHER TRADE CONTRACTORS AND THE TENANT.
11. OUTLETS' LOCATION SHOWN IN THE DRAWING ARE DIAGRAMMATIC, FOR ACTUAL LOCATION AND MOUNTING HEIGHT REFER ARCHITECTURAL PLAN.
12. CONTRACTOR SHALL COORDINATE EXACT RECEPTACLE TYPE FOR EQUIPMENT WITH EQUIPMENT VENDOR/MANUFACTURER.
13. ALL WIRING TO BE #12AWG WITH #12AWG GND IN 3/4" CONDUIT UNLESS OTHERWISE NOTED OR REQUIRED.

## KEYED NOTES: #

1. RECEPTACLE INSTALLED WITHIN THIS ROOM SHALL BE TAMPER-RESISTANT PER NEC 406.12(5).
2. INSTALL L6-30 RECEPTACLE FOR DRYER. CONFIRM DRYER SPECIFICATIONS BEFORE ORDERING RECEPTACLE.
3. POWER FOR AUDIO-VISUAL MASTER STATION FOR SIGNAL SYSTEM. COORDINATE ALL REQUIREMENTS WITH OWNER AND EQUIPMENT SUPPLIER PRIOR TO ROUGH-IN.
4. CONNECT TO LOCAL LIGHTING CIRCUIT. FAN TO BE CONTROLLED WITH ROOM LIGHTING CONTROLS. E.C. SHALL COORDINATE THE EXACT LOCATION IN FIELD AND PROVIDE THE ELECTRICAL CONNECTION ACCORDINGLY.
5. INSTALL JUNCTION BOX IN CEILING FOR AIR IONIZATION DEVICE IN MECHANICAL EQUIPMENT. CONNECT TO LOCAL RECEPTACLE CIRCUIT. COORDINATE EXACT LOCATION WITH M.C.
6. INSTALL RECEPTACLE FOR POPCORN MACHINE. COORDINATE EXACT REQUIREMENTS AND LOCATION WITH OWNER.
7. PROJECTOR POWER AND DATA MOUNTED TO 2x2 PLYWOOD. COORDINATE EXACT LOCATION WITH ARCHITECTURAL DRAWINGS PRIOR TO ROUGH-IN.
8. INSTALL JUNCTION BOX FOR DELAYED EGRESS DOOR HARDWARE. PROVIDE CONDUIT TO CEILING FOR FIRE ALARM WIRING TO NAC PANEL. COORDINATE JUNCTION BOX MOUNTING LOCATION WITH HARDWARE MANUFACTURER DOCUMENTS.
9. ALL MECHANICAL/PLUMBING EQUIPMENT SHALL BE PROVIDED WITH THE REQUIRED ROUGH-INS, MOCP, AND WIRE SIZE REQUIREMENTS. THE ELECTRICAL CONTRACTOR MUST COORDINATE WITH THE MANUFACTURER FOR THE EXACT TYPE OF ROUGH-INS AND WIRE SIZE THE COMMENCEMENT OF WORK. E.C. SHALL COORDINATE THE EXACT LOCATION IN FIELD AND PROVIDE THE ELECTRICAL CONNECTION ACCORDINGLY.
10. JUNCTION BOX WITH TOGGLE DISCONNECT PER NEC FOR CONNECTION TO BUILDING-MOUNTED SIGNAGE. THE ELECTRICAL CONTRACTOR SHALL VERIFY THE EXACT LOCATION, MOUNTING HEIGHT AND CONNECT TO THE SIGN PER THE MANUFACTURER'S INSTRUCTIONS. ROUTE CIRCUIT TO PANEL VIA EXTERIOR LIGHTING/SIGNAGE'S TIME CLOCK AS REQUIRED
11. JUNCTION BOX WITH TOGGLE DISCONNECT PER NEC FOR CONNECTION TO SIGNAGE. THE ELECTRICAL CONTRACTOR SHALL VERIFY THE EXACT LOCATION, MOUNTING HEIGHT AND CONNECT TO THE SIGN PER THE MANUFACTURER'S INSTRUCTIONS.
12. E.C. SHALL VERIFY THE EXACT ELECTRICAL REQUIREMENT, LOCATION & OPERABLE CONDITION OF EXISTING SPACE HEATER IN FIELD. E.C. SHALL REROUTE THE EXISTING ELECTRICAL CONNECTION TO THE RESPECTIVE PANEL OR PROVIDE NEW CIRCUIT AS REQUIRED/AS SHOWN. BASE BID ACCORDINGLY.
13. CONNECT TO LOCAL LIGHTING CIRCUIT. FAN TO BE CONTROLLED WITH THERMOSTAT. E.C. SHALL COORDINATE THE EXACT LOCATION IN FIELD AND PROVIDE THE ELECTRICAL CONNECTION ACCORDINGLY.
14. EXISTING ELECTRICAL PANELS FOR THE PROJECT SPACE TO REMAIN. CONTRACTOR SHALL VERIFY THE EXACT RATING, VOLTAGE, PHASE, OPERABLE CONDITION & LOCATION WITH ARCHITECT/OWNER IN FIELD. INFORM ENGINEER IF FOUND ANY DISCREPANCY. BASE BID ACCORDINGLY.
15. EXISTING ELECTRICAL PANELS AND TRANSFORMERS ASSOCIATED WITH THE PROJECT SPACE ARE LOCATED IN THE ADJACENT AREA ELECTRICAL ROOM, CONTRACTOR TO COORDINATE WITH ARCHITECT/OWNER AND RUN ALL NEW BRANCH CIRCUITS THROUGH THE ADJOINING SPACE TO PROJECT SPACE.

## KITCHEN EQUIPMENT SCHEDULE:

| TAG | QTY | DESCRIPTION | VOLTAGE | PHASE | AMPS | KW | DIRECT | PLUG | NEMA | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|
| 2 | 1 | ICED TEA BREWER | 120 | 1 | 14.4 | 1.73 | | X | 5-15R | |
| 3 | 1 | COFFEE BREWER | 120 | 1 | 14 | 1.67 | | X | 5-15R | |
| 4 | 2 | REACH-IN-REFRIGERATOR | 115 | 1 | 2.1 | 0.25 | | X | 5-15R | |
| 5 | 2 | REACH-IN-FREEZER | 115 | 1 | 6.3 | 0.76 | | X | 5-15R | |
| 15 | 2 | FOOD PAN WARMER | 120 | 1 | 10 | 1.2 | | X | 5-15R | |
| 10 | 1 | DISHWASHER | 208 | 1 | 35 | 6.5 | | X | 6-50R | |

## NOTES:

1. COORDINATE ALL LOCATIONS, MOUNTING HEIGHTS, CONNECTION TYPES, BREAKER SIZES, ETC. WITH APPROVED KITCHEN EQUIPMENT SUBMITTALS PRIOR TO ROUGH-IN AND INSTALLATION. ALL ROUGH-INS SHALL BE REVIEWED AND APPROVED BY KITCHEN EQUIPMENT SUPPLIER, OWNER, AND ARCHITECT IN FIELD PRIOR TO COVERING OF WALLS.
2. ELECTRICAL CONTRACTOR SHALL PULL A GROUND AND NEUTRAL WITH ALL CIRCUITS, WHETHER DESIGNATED OR NOT.
3. GROUND FAULT CIRCUIT-INTERRUPTER PROTECTION FOR PERSONNEL SHALL BE PROVIDED AS REQUIRED IN NEC 210.8(A) THROUGH (E). THE GROUND-FAULT CIRCUIT INTERRUPTER SHALL BE INSTALLED IN A READILY ACCESSIBLE LOCATION. ALL SINGLE PHASE RECEPTACLES RATED 150 VOLTS TO GROUND OR LESS, 50 AMPERES OR LESS INSTALLED IN THE KITCHEN SHALL BE GFCI PROTECTED, WHETHER DESIGNATED OR NOT ON THIS PLAN.

## CIRCUIT ABBREVATIONS

| PANEL | CIRCUIT PREFIX | CIRCUIT NUMBER |
|---|---|---|
| LPI - SEC1 | P1 | 1 |
| LPI -SEC2 | P2 | 1 |
| LPEMA - SEC1 | A1 | 1 |
| LPEMA - SEC2 | A2 | 1 |
| LPEMB - SEC1 | B1 | 1 |
| LPEMB - SEC2 | B2 | 1 |



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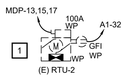
| | 11.22.24 | BD SUBMISSION |
| 1 | 11.15.24 | CLIENT COMMENTS |
| △ | DATE | REVISION |

TITLE:
ELECTRICAL POWER PLAN

SHEET NUMBER:
E201

1 | SCALE 3 / 16" = 1' - 0" | ELECTRICAL POWER PLAN

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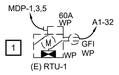






## GENERAL NOTES:

1. REFER TO DWG. E001 FOR ELECTRICAL GENERAL NOTES, SYMBOL LIST & ABBREVIATIONS.
2. REFER TO DWG. E002 FOR ELECTRICAL SPECIFICATIONS.
3. REFER TO DWG. E004 FOR ELECTRICAL RISER DIAGRAM.
4. CONTRACTOR SHALL PROVIDE DETAILED AS-BUILT DRAWINGS. PROVIDE COPY OF AS-BUILT DRAWINGS TO OWNER AND ENGINEER AT PROJECT COMPLETION.
5. ALL DEVICES ARE NEW UNLESS NOTED OTHERWISE.
6. ALL CONDUIT SHALL BE CONCEALED BEHIND WALLS AND ABOVE CEILINGS. NO EXPOSED CONDUIT PERMITTED.
7. COORDINATE FLOOR BOX LOCATIONS WITH FURNITURE PRIOR TO ROUGH-IN AND CUTTING OF FLOOR TILES.
8. LABEL ALL RECEPTACLES WITH CIRCUIT AND PANEL INFORMATION.
9. PROVIDE PLASTIC BUSHINGS ON CONDUIT ENDS FOR ALL CONDUITS STUBBED ABOVE CEILING.
10. FINAL CONDUIT/CABLE ROUTING SHALL BE DETERMINED IN-FIELD, AND PRIOR TO THE COMMENCEMENT OF WORK, COORDINATED WITH OTHER TRADE CONTRACTORS AND THE TENANT.
11. OUTLETS' LOCATION SHOWN IN THE DRAWING ARE DIAGRAMMATIC, FOR ACTUAL LOCATION AND MOUNTING HEIGHT REFER ARCHITECTURAL PLAN.
12. CONTRACTOR SHALL COORDINATE EXACT RECEPTACLE TYPE FOR EQUIPMENT WITH EQUIPMENT VENDOR/MANUFACTURER.
13. ALL WIRING TO BE #12AWG WITH #12AWG GND IN 3/4" CONDUIT UNLESS OTHERWISE NOTED OR REQUIRED.

## KEYED NOTES: #

1. EXISTING RTU AND ITS ASSOCIATED CIRCUITS TO REMAIN. UTILIZE EXISTING DISCONNECT IF ITS IN OPERABLE CONDITION, OTHERWISE PROVIDE NEW. E.C SHALL COORDINATE WITH LANDLORD IN FIELD FOR EXACT POWER DISTRIBUTION. BASE BID ACCORDINGLY.
2. ALL OUTDOOR ELECTRICAL EQUIPMENT SHALL BE NEMA 3R RATED.
3. CONTRACTOR TO VERIFY IN FIELD ANY RECEPTACLE IS PRESENT WITHIN 25FT OF HVAC UNITS. IF YES, EXISTING RECEPTACLES TO REMAIN. WIRE TO NEW AVAILABLE CIRCUIT IF NEEDED. VERIFY EXACT LOCATION. ELSE PROVIDE NEW WEATHER PROOF, GFI, 120V, 20A RECEPTACLE WITHIN 25FT OF THE HVAC UNITS AS SHOWN. FEED FROM AVAILABLE SPARE CIRCUIT.
4. CONNECT TO LOCAL LIGHTING CIRCUIT. FAN TO BE CONTROLLED WITH ROOM LIGHTING CONTROLS. E.C. SHALL COORDINATE THE EXACT LOCATION IN FIELD AND PROVIDE THE ELECTRICAL CONNECTION ACCORDINGLY.

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| 1 | 11.15.24 | CLIENT COMMENTS |
| 1 | DATE | REVISION |

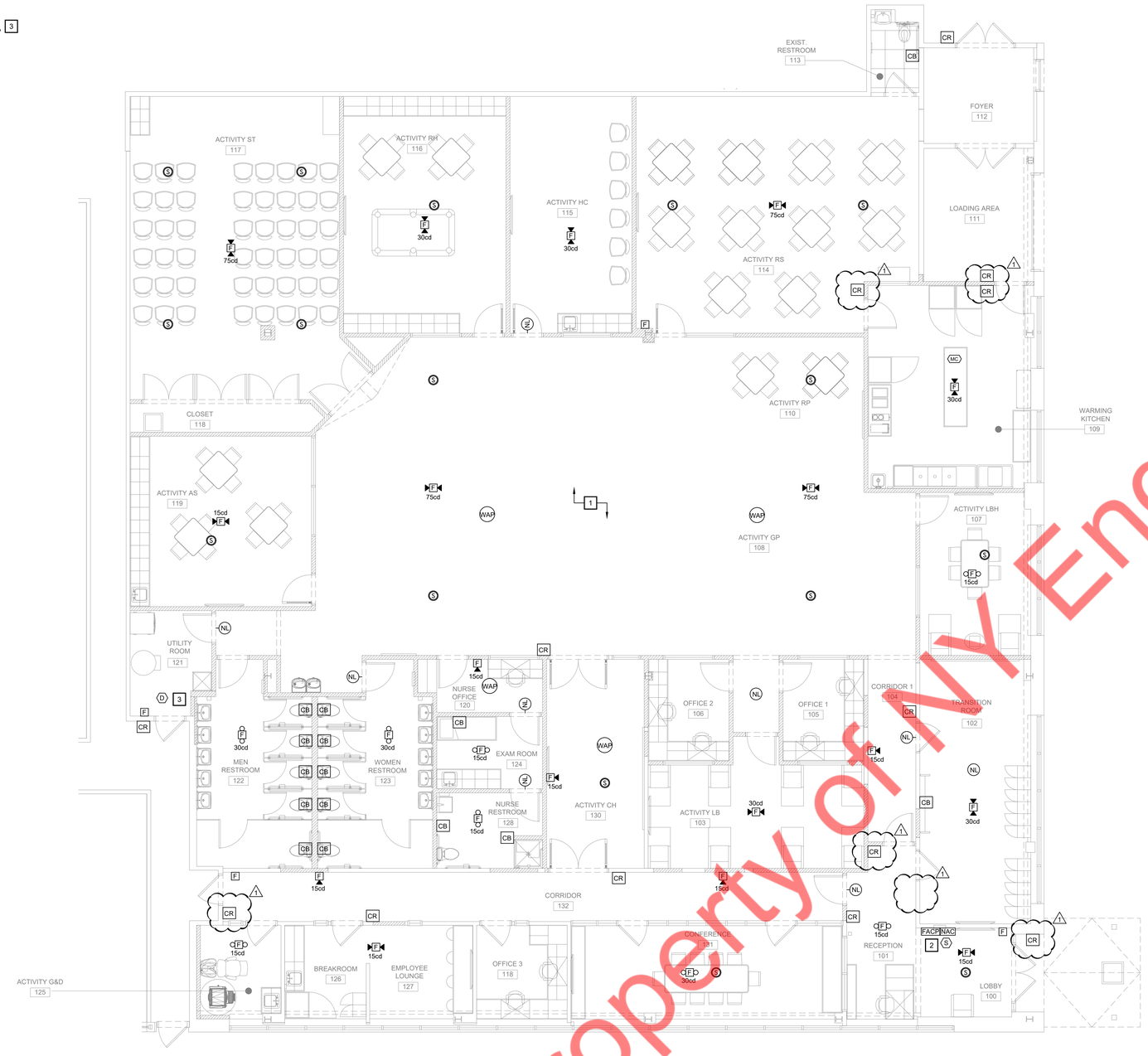
TITLE:

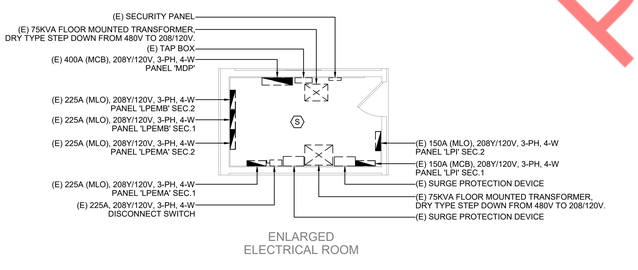
ELECTRICAL ROOF POWER PLAN

SHEET NUMBER:

E202

1 SCALE 3 / 16" = 1' - 0" ROOF POWER PLAN




ENLARGED ELECTRICAL ROOM

## SPECIAL SYMBOLS:

- CB — BED, BATH, TOILET CALL BUTTON. PROVIDE FLUSH MOUNT, DOUBLE GANG JUNCTION BOX WITH 3/4"C ROUTED TO ABOVE LOCAL CEILING. STUB UP MINIMUM 12" AND PROVIDE PULL STRING. LABEL AND PROVIDE PLASTIC BUSHING FOR CONDUIT END. MOUNT BOX 48"AFF, COORDINATE EXACT LOCATION WITH OWNER
- NL — CEILING MOUNTED NURSE CALL LIGHT. PROVIDE DOUBLE GANG BOX, LIGHT BY OTHERS. COORDINATE EXACT MOUNTING LOCATION AND HEIGHT WITH OWNER.
- NL — CEILING MOUNTED NURSE CALL LIGHT. PROVIDE DOUBLE GANG BOX, LIGHT BY OTHERS. COORDINATE EXACT MOUNTING LOCATION AND HEIGHT WITH OWNER.

## GENERAL NOTES:

1. CONTRACTOR SHALL PROVIDE DETAILED AS-BUILT DRAWINGS. PROVIDE COPY OF AS-BUILT DRAWINGS TO OWNER AND ENGINEER AT PROJECT COMPLETION.
2. ALL DEVICES ARE NEW UNLESS NOTED OTHERWISE.
3. SMOKE/HEAT DETECTORS SHALL NOT BE LOCATED WITHIN 3' OF MECHANICAL AIR TERMINALS AND DIFFUSERS. COORDINATE LOCATIONS WITH MECHANICAL CONTRACTOR PRIOR TO INSTALLATION.
4. COORDINATE LOCATION OF SECURITY DEVICES WITH SECURITY VENDOR AND OWNER PRIOR TO INSTALLATION.
5. COORDINATE ALL CEILING MOUNTING DEVICES WITH OTHER TRADES

## KEYED NOTES: #

1. FIRE ALARM CONTRACTOR SHALL COORDINATE THE EXACT LOCATION OF TAMPER AND WATER FLOW SWITCHES IN FIELD. COORDINATE THE EXACT QUANTITY OF TAMPER AND WATER FLOW SWITCHES WITH SPRINKLER CONTRACTOR IN FIELD. BASE BID ACCORDINGLY.
2. CONTRACTOR TO COORDINATE WITH OWNER AND CONNECT PROJECT SPACE'S NEW FIRE ALARM CONTROL PANEL WITH BASE BUILDING EXISTING FACP IF REQUIRED, BASE BID ACCORDINGLY.
3. DUCT MOUNTED SMOKE DETECTOR LOCATED ON ROOF COORDINATE EXACT LOCATION ON FIELD PRIOR TO ROUGH INS.



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CONTRACTOR'S NOTES:
WRITTEN DIMENSIONS HOLD PREFERENCE OVER SCALED DIMENSIONS. DO NOT SCALE THE DRAWINGS. THE CONTRACTORS MUST VISIT JOB SITE TO VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS BEFORE SUBMITTING BIDS. REPORT ANY DISCREPANCIES OF ANY CONDITIONS WHICH MAY INTERFERE WITH THE PROPER EXECUTION OF, THE CONTRACT TO THE TENANT'S REPRESENTATIVE. REPORT DISCREPANCIES DURING BIDDING PROCESS AND BEFORE START OF CONSTRUCTION. CHANGE ORDERS NEED TO BE APPROVED BY **TOWNSQUARE** CONSTRUCTION MANAGER FOR ISSUES ARISING FROM THE FIELD CONDITIONS OR CONFLICTS BETWEEN THE PLANS AND THE EXISTING CONDITIONS PRIOR TO THE COMMENCEMENT OF WORK.

| | DATE | ISSUE |
|---|---|---|
| | 10.31.24 | LL/CLIENT REVIEW SET |
| | 11.15.24 | LL/CLIENT REVIEW SET |
| | 11.22.24 | BD SUBMISSION |
| 1 | 11.15.24 | CLIENT COMMENTS |
| △ | DATE | REVISION |

TITLE:
SYSTEM PLAN

SHEET NUMBER:
E301

| 1 | SCALE | SYSTEM PLAN |
|---|---|---|
| | 3 / 16" = 1' - 0" | |

## PLUMBING SYMBOLS LIST

| | |
|---|---|
| | VENT PIPING |
| SAN | WASTE PIPE UNDERGROUND |
| GSAN | GREASE WASTE UNDERGROUND |
| | COLD WATER PIPING |
| | HOT WATER PIPING |
| | HOT WATER RETURN PIPING |
| | FILTER WATER PIPING |
| | EXISTING COLD WATER PIPING |
| | P-TRAP |
| | PIPE UP |
| | PIPE DROP |
| | PIPE CAP |
| | CONTROL VALVE |
| | BACKFLOW PREVENTER |
| | POINT OF CONNECTION |
| | CLEANOUT |
| | BALANCING VALVE |
| | FLOOR SINK |
| | FLOOR DRAIN |

## PLUMBING ABBREVIATIONS

| | |
|---|---|
| FCO | CLEANOUT |
| W | WASTE |
| V | VENT |
| GSAN | GREASE WASTE |
| FFD | FUNNEL FLOOR DRAIN |
| HD | HUB DRAIN |
| EX. | EXISTING |
| FD | FLOOR DRAIN |
| CW | COLD WATER |
| HW | HOT WATER |
| HWR | HOT WATER RETURN |
| TYP. | TYPICAL |
| DN | DOWN |
| AFF | ABOVE FINISH FLOOR |
| BFP | BACK FLOW PREVENTER |
| M | WATER METER |
| PRV | PRESSURE REDUCING VALVE |
| UNGD | UNDERGROUND |
| S | HAND SINK |
| 3-CS | THREE COMPARTMENT SINK |
| 1-CS | ONE COMPARTMENT SINK |
| FS | FLOOR SINK |
| IM | ICE MAKER / MACHINE |
| FW | FILTERED WATER |
| AAV | AIR ADMITTANCE VALVE |
| WCO | WALL CLEANOUT |
| EWH-1 | ELECTRIC WATER HEATER |
| RCP-1 | RECIRCULATION PUMP |
| ET-1 | EXPANSION TANK |
| SB | SHAMPOO BOWL |
| HT | HAIR TRAP |

1

## PLUMBING MATERIALS AND NOTES

DOMESTIC WATER PIPING:

1. DOMESTIC WATER PIPING AND JOINTS ABOVE GRADE: PROVIDE TYPE 'L' HARD DRAWN SEAMLESS COPPER TUBING (ASTM B 88) AND COPPER ALLOY FITTINGS (ASME B16.18). JOINTS 2" AND SMALLER SHALL BE LEAD FREE 95-5 TIN/SILVER SOLDER JOINTS (ASTM B 32).
2. DOMESTIC WATER SERVICE BELOW GRADE: PROVIDE TYPE 'K' OR 'L' WATER PIPE, AS PER ASTM B88 OR CPVC ASTM D2846
3. STERILIZE THE DOMESTIC WATER SYSTEM IN ACCORDANCE WITH THE AMERICAN WATER WORKS ASSOCIATION'S SPECIFICATIONS AND LOCAL HEALTH DEPARTMENT REGULATIONS.
4. INSULATE DOMESTIC WATER PIPING ABOVE GRADE (EXCEPT EXPOSED CONNECTIONS TO PLUMBING FIXTURES) WITH GLASS FIBER INSULATION HAVING A VAPOR BARRIER AND JACKET. PIPE INSULATION SHALL HAVE A CONDUCTIVITY NOT EXCEEDING 0.27 BTUH x SQ. FT. FOLLOW SCHEDULE BELOW

| | | |
|---|---|---|
| DOMESTIC HOT WATER & CIRCULATION DOMESTIC HOT | 1/2" - 1-1/2" | 1" |
| | 1-1/2" - 4" | 1-1/2" |
| WATER & CIRCULATION DOMESTIC | 1/2" - 1-1/4" | 1/2" |
| COLD WATER DOMESTIC COLD WATER | 1-1/2" - 4" | 1" |

5. DOMESTIC WATER PIPING INSULATION, JACKETS, COVERINGS, SEALERS, MASTICS AND ADHESIVES ARE REQUIRED TO MEET A FLAME-SPREAD RATING OF 25 OR LESS AND A SMOKE-DEVELOPED RATING OF 50 OR LESS, AS TESTED BY ASTM E84 (NFPA 255) METHOD AND SHALL BE PLENUM RATED. PROVIDE PVC JACKET FOR EXPOSED PIPING IN MECHANICAL ROOMS. INSULATION SHALL BE CONTINUOUS AT ALL HANGERS. PROVIDE GALVANIZED STEEL SHIELD BETWEEN PIPE HANGER AND INSULATION. ALL PIPE INSULATION ABOVE ACT CEILINGS ARE TO HAVE A 1HR FIRE RATED COVERING.
6. PROVIDE TWO-PIECE, BRONZE OR BRASS BODY, FULL PORT, 600 PSI WOG, BALL TYPE SHUT-OFF VALVES WITH BLOW-OUT PROOF STEMS AND ADJUSTABLE PACKING GLANDS. VALVES SHALL BE LEAD FREE PER NSF 61, ANNEX G REQUIREMENTS. INSTALL VALVES IN A LOCATION THAT PERMITS ACCESS FOR SERVICE WITHOUT DAMAGE TO THE BUILDING OR FINISHED MATERIALS.
7. PROTECT COPPER PIPING AGAINST CONTACT WITH DISSIMILAR METALS. ALL HANGERS, SUPPORTS, ANCHORS AND CLIPS SHALL BE COPPER OR COPPER PLATED. WHERE COPPER PIPING IS CARRIED ON TRAPEZE HANGERS WITH OTHER PIPING, PROVIDE A PERMANENT ELECTROLYTIC ISOLATION MATERIAL TO PREVENT CONTACT WITH DISSIMILAR OTHER METALS.
8. PROTECT COPPER PIPING AGAINST CONTACT WITH ALL MASONRY. WHERE COPPER IS SLEEVED THROUGH MASONRY, PROVIDE COPPER OR RED BRASS SLEEVES. WHERE COPPER MUST BE CONCEALED IN OR AGAINST MASONRY PARTITIONS, PROVIDE A HEAVY COATING OF ASPHALTIC ENAMEL ON THE COPPER PIPING AND 15# ASPHALT SATURATED FELT BETWEEN THE PIPING AND THE MASONRY PARTITION.
9. DOMESTIC WATER SUPPLY PIPING SHALL BE TESTED AND PROVED WATERTIGHT UNDER A WATER PRESSURE OF NO LESS THAN THE WORKING PRESSURE OF THE SYSTEM, OR AN AIR TEST OF NO LESS THAN ONE-HUNDRED (100) PSI. THIS PRESSURE SHALL BE HELD FOR AT LEAST FIFTEEN (15) MINUTES. WATER USED IN TESTING SHALL BE OBTAINED FROM A POTABLE SOURCE OF SUPPLY.

SANITARY WASTE / VENT AND STORM DRAINAGE PIPING:

1. SANITARY WASTE/VENT AND STORM DRAINAGE: PROVIDE SERVICE WEIGHT CAST IRON NO-HUB PIPE AND FITTINGS (CISPI 301) WITH NEOPRENE GASKET AND STAINLESS STEEL CLAMP JOINTS (CISPI 310).
2. SLOPE WASTE PIPING AT 1/4" PER FOOT MINIMUM FOR PIPING 2-1/2" AND SMALLER AND 1/8" PER FOOT MINIMUM FOR PIPING 3" AND LARGER UNLESS NOTED OTHERWISE.
3. SLOPE GREASE WASTE PIPING AT 1/4" PER LINEAR FOOT MINIMUM FOR ALL PIPE SIZES.
4. WHERE WASTE PIPING IS EXPOSED IN REST ROOM AREAS, PROVIDE CHROME PLATED BRASS PIPING, REMOVABLE P-TRAPS, MATCHING STOPS AND ESCUTCHEONS FOR ALL LAVATORIES.
5. SANITARY WASTE AND VENT SYSTEMS SHALL BE TESTED AND PROVED WATER TIGHT UNDER A HEAD PRESSURE OF NO LESS THAN 10 FT. THIS PRESSURE SHALL BE HELD FOR A PERIOD OF NO LESS THAN 15 MINUTES.
6. INSULATE MECHANICAL ROOM FLOOR DRAIN BODIES, P-TRAP AND HORIZONTAL DRAIN PIPING ABOVE GRADE WITH 1" THICK GLASS FIBER INSULATION WITH VAPOR BARRIER AND JACKET.
7. INSULATE ROOF DRAIN BODIES AND HORIZONTAL PRIMARY AND SECONDARY STORM DRAIN PIPING ABOVE GRADE WITH 1" THICK GLASS FIBER INSULATION WITH VAPOR BARRIER AND JACKET.
8. PIPING INSULATION, JACKETS, COVERINGS, SEALERS, MASTICS AND ADHESIVES ARE REQUIRED TO MEET A FLAME-SPREAD RATING OF 25 OR LESS AND A SMOKE-DEVELOPED RATING OF 50 OR LESS, AS TESTED BY ASTM E84 (NFPA 255) METHOD. INSULATION SHALL BE CONTINUOUS AT ALL HANGERS. PROVIDE GALVANIZED STEEL SHIELD BETWEEN PIPE HANGER AND INSULATION.

## PLUMBING DRAWING LIST

| | |
|---|---|
| P001 | PLUMBING SYMBOLS, ABBREVIATIONS, NOTES AND SPECIFICATIONS |
| P002 | PLUMBING SPECIFICATIONS |
| P100 | PLUMBING SANITARY AND VENT PLAN |
| P200 | PLUMBING WATER SUPPLY PLAN |
| P300 | PLUMBING DETAILS |
| P400 | PLUMBING SCHEDULE |
| P500 | PLUMBING RISER DIAGRAM |

## CODE COMPLIANCE

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

| | |
|---|---|
| 1 | INTERNATIONAL BUILDING CODE 2021 FOR NEW JERSEY. |
| 2 | INTERNATIONAL MECHANICAL CODE 2021. |
| 3 | NATIONAL STANDARD PLUMBING CODE 2021 (NSPC) FOR NEW JERSEY. |
| 4 | ENERGY CODE ASHRAE 90.1 (2019) |
| 5 | INTERNATIONAL FUEL GAS CODE 2021. |
| 6 | NATIONAL ELECTRICAL CODE 2020 FOR NEW JERSEY. |

## PLUMBING GENERAL NOTES

GENERAL REQUIREMENTS:

1. PLUMBING WORK SHALL BE INSTALLED IN ACCORDANCE WITH THE NATIONAL STANDARD PLUMBING CODE 2021 (NSPC) FOR NEW JERSEY AND WITH THE REQUIREMENTS OF THE LOCAL AUTHORITY HAVING JURISDICTION.
2. SCOPE: PROVIDE ALL LABOR, MATERIAL AND EQUIPMENT REQUIRED FOR THE COMPLETION AND OPERATION OF ALL PLUMBING SYSTEMS IN ACCORDANCE WITH ALL APPLICABLE CODES.
3. PERMITS: APPLY AND PAY FOR ALL NECESSARY PERMITS, FEES AND INSPECTIONS REQUIRED BY ANY PUBLIC AUTHORITY HAVING JURISDICTION. ACREAGE CHARGES, FACILITIES CHARGES AND BOND PROPERTY ASSESSMENTS ARE NOT TO BE CONSTRUED TO BE A PART OF THIS CONTRACT.
4. WARRANTY: PROVIDE A ONE YEAR WARRANTY, FROM THE DATE OF ACCEPTANCE OF WORK BY THE OWNER, FOR ALL PLUMBING MATERIALS AND EQUIPMENT.
5. COORDINATE ALL PLUMBING PIPING LOCATIONS, ROUGH-IN LOCATIONS AND EQUIPMENT.LOCATIONS WITH OTHER TRADES TO AVOID CONFLICTS AND INTERFERENCES. FINAL PIPING AND EQUIPMENT LOCATIONS SHALL BE A CODE COMPLIANT INSTALLATION FOR ALL TRADES.
6. FIELD VERIFY PROPER OPERATION OF EXISTING SYSTEMS BEFORE STARTING CONSTRUCTION. NOTIFY THE ARCHITECT / ENGINEER OF RECORD OF ANY PROBLEMS OR DISCREPANCIES BETWEEN THE CONSTRUCTION DOCUMENTS AND EXISTING CONDITIONS AND/OR ANY POTENTIAL PROBLEMS OBSERVED BEFORE CONTINUING WORK IN THE AFFECTED AREAS.
7. WHERE DISCREPANCIES ARE FOUND IN THE DRAWINGS AND SPECIFICATIONS THE MORE STRINGENT SHALL APPLY. CONTACT ENGINEER FOR CLARIFICATION.
8. ALL PIPING SHALL BE MANUFACTURED IN THE UNITED STATES OF AMERICA.
9. ALL VALVES, BACKFLOW PREVENTERS, BOOSTER PUMPS, ETC. SERVING THE DOMESTIC WATER SYSTEM SHALL MEET LEAD FREE STANDARDS PER ANSI/NSF 372 AND NSF 61.
10. CUT WALLS, FLOORS AND CEILINGS AS REQUIRED FOR INSTALLATION OF PLUMBING WORK. ALL CUTTING SHALL BE HELD TO A MINIMUM. PATCH AND FINISH SURFACES TO MATCH ADJOINING SURFACES.
11. PLUMBING PLANS SHALL NOT BE SCALED. REFERENCE THE ARCHITECTURAL PLANS FOR ALL LOCATIONS OF PLUMBING FIXTURES, WALLS, DOORS, WINDOWS, ETC.
12. PLUMBING PIPING AND SPECIALTIES SHALL BE LOCATED CONCEALED IN WALLS, PARTITIONS OR ABOVE CEILINGS UNLESS NOTED OTHERWISE. PLUMBING PIPING IN EXPOSED AREAS SHALL BE RUN TIGHT TO UNDERSIDE OF STRUCTURE. PROVIDE ACCESS DOORS FOR CONCEALED SPECIALTIES.
13. DO NOT INSTALL PLUMBING PIPING IN AREAS SUBJECT TO FREEZING TEMPERATURES. INSTALL PLUMBING PIPING SHOWN IN EXTERIOR WALLS ON THE CONDITIONED SIDE OF THE WALL INSULATION.
14. PROVIDE NON-CONDUCTING DIELECTRIC UNIONS WHENEVER CONNECTING DISSIMILAR METALS.
15. ATTACH HANGERS TO STRUCTURE, HANGERS SHALL NOT ATTACH TO THE DECK.
16. PROVIDE ACCESS DOORS FOR VALVES, WATER HAMMER ARRESTORS, TRAP PRIMERS, ETC. CONCEALED IN MASONRY WALLS, GYPBOARD WALLS AND/OR CEILINGS THAT WILL REQUIRE MAINTENANCE ACCESS.
17. CORE DRILL THROUGH MASONRY (CMU BLOCK) WALLS FOR ALL PIPE PENETRATIONS. WHEN DRILLING OPENINGS FOR INSULATED PIPES THE OPENING'S DIAMETER SHALL BE LARGE ENOUGH FOR PIPE INSULATION TO REMAIN CONTINUOUS PASSING THROUGH THE OPENING. SEAL WATER TIGHT. PROVIDE ESCUTCHEONS IN AREAS. EXPOSED FINISHED AREAS
18. PLUMBING SYSTEMS INCLUDE, BUT ARE NOT LIMITED TO: PLUMBING FIXTURES, DOMESTIC WATER SYSTEM, SANITARY WASTE AND VENT SYSTEM, GREASE WASTE SYSTEM.

PLUMBING FIXTURES AND EQUIPMENT:

1. PROVIDE COMPLETE PLUMBING FIXTURES AND EQUIPMENT, INCLUDE SUPPLIES, STOPS, VALVES, FAUCETS, DRAINS, TRAPS, TAIL PIECES, ESCUTCHEONS, ETC.
2. PLUMBING FIXTURES AND EQUIPMENT SHALL BE INSTALLED PER THE MANUFACTURER'S RECOMMENDATIONS AND INSTALLATION INSTRUCTIONS.
3. NO PRIVATE LABELED MATERIALS WILL BE ACCEPTED AS EQUALS TO PRODUCTS SPECIFIED HEREIN.
4. REFER TO KITCHEN DRAWINGS AND INSTALL REQUIRED CONDUIT AS SHOWN ON PLANS FOR PIPE RUNS CONNECTING EQUIPMENT.
5. THE PLUMBING CONTRACTOR IS RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH SUBSTITUTIONS TO SPECIFIED PLUMBING FIXTURES AND EQUIPMENT INCLUDING BUT NOT LIMITED TO; PROVIDING MAINTENANCE ACCESS CLEARANCE, PIPING, ELECTRICAL, REPLACEMENT OF OTHER SYSTEM COMPONENTS, BUILDING ALTERATIONS, ETC. AND ANY MODIFICATIONS TO ASSOCIATED MECHANICAL, ELECTRICAL OR PLUMBING SYSTEMS REQUIRED BY THE EQUIPMENTS INSTALLATION INSTRUCTIONS. ALL COSTS ASSOCIATED WITH SUBSTITUTIONS SHALL BE INCLUDED IN THE ORIGINAL BASE BID.

WATER HAMMER ARRESTOR REQUIREMENTS

1. PROVIDE WATER HAMMER ARRESTORS CONFORMING TO PDI-WH201 OR ASSE 1010, INSTALLED PER MANUFACTURER'S SPECIFICATIONS.
2. INSTALL WHERE QUICK CLOSING VALVES ARE UTILIZED.
3. PROVIDE WATER HAMMER ARRESTOR ON ALL SUPPLY PIPES SERVING LAVATORIES WITH SENSOR OPERATED VALVES.
4. AT MINIMUM, PROVIDE ONE WATER HAMMER ARRESTOR FOR EACH BRANCH LINE TO EACH TOILET ROOM, LOCATED BETWEEN LAST TWO FIXTURES SERVED.
5. INSTALL ADDITIONAL SHOCK ARRESTORS IF BRANCH PIPING SERVING WATER CLOSETS IS 20'-0 IN LENGTH OR LONGER. SEE MANUFACTURER'S INSTRUCTIONS FOR DETAILED INSTALLATION INFORMATION.

## BUILDING DEPARTMENT PLUMBING NOTES

1. ALL PLUMBING SYSTEMS (SANITARY, WASTE, VENT, WATER) AND ASSOCIATED EQUIPMENT SHALL BE INSTALLED, OPERATED AND MAINTAINED IN ACCORDANCE WITH THE REQUIREMENTS OF 2021 NATIONAL STANDARD PLUMBING CODE (NSPC) FOR NEW JERSEY AND LOCAL LAWS.
2. PROTECTION OF PIPING AND PLUMBING SYSTEM COMPONENTS AS PER SECTION 2.9.
3. TRENCHING, EXCAVATION AND BACKFILL AS PER SECTION 2.6.
4. RODENT PROOFING AS PER 2021 NATIONAL STANDARD PLUMBING CODE 2021 (NSPC) FOR NEW JERSEY.
5. MATERIALS USED IN PLUMBING SYSTEMS SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION 3.4, 3.5, 3.6 AND 3.7.
6. EQUIPMENT CONNECTIONS AND JOINING OF PIPING SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF CHAPTERS 7, 10, 11 AND 12.
7. DRAINAGE PIPE CLEAN-OUTS SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION 5.4.
8. VERTICAL AND HORIZONTAL PIPING SHALL BE SUPPORTED IN ACCORDANCE WITH THE REQUIREMENTS OF CHAPTER 8.
9. WATER SUPPLY SYSTEMS SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE REQUIREMENTS OF CHAPTER 10 SECTION 10.1, 10.3, 10.4, 10.6, 10.14 AND 10.15.
10. THE SANITARY DRAINAGE SYSTEM SHALL BE SIZED AND INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF CHAPTER 11.
11. VENT PIPING FOR THE SANITARY DRAINAGE SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF CHAPTER 12 SECTIONS 12.1, 12.2, 12.10 AND APPENDIX E SECTION E.7.
12. INSPECTION AND TESTING OF PLUMBING SYSTEMS SHALL BE IN ACCORDANCE WITH SECTION 1.2, 10.5 AND CHAPTER 15.
13. INSPECTION AND TESTING OF GAS PIPING SYSTEM SHALL BE IN ACCORDANCE WITH SECTION 406 OF 2021 IFGC.

## PLUMBING SPECIFICATIONS

1. BASIC PLUMBING REQUIREMENTS, MATERIALS AND METHODS

1.01 SCOPE

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

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

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

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

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

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

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

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

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

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

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

1.02 SUBMITTALS

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

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

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

B. PROVIDE: TO FURNISH AND INSTALL.

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

D. 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 NO. OF BANDS PER COUPLING AS PER CISPI 301.
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 ASHRAE 90.1 2019 SECTION ENERGY CONSERVATION CODE SECTION 7.4.3 REFER BELOW TABLE.

| FLUID OPERATING TEMPERATURE RANGE AND USAGE (°F) | INSULATION CONDUCTIVITY | | NOMINAL PIPE OR TUBE SIZE (INCHES) | | | | |
|---|---|---|---|---|---|---|---|
| | CONDUCTIVITY BTU· IN / (H. FT2. °F) | MEAN RATING TEMPERATURE, °F | <1 | 1 to < 1½ | 1½ to < 4 | 4 to < 8 | ≥8 |
| 141-200 | 0.25-0.29 | 125 | 1.5 | 1.5 | 2.0 | 2.0 | 2.0 |
| 105-140 | 0.21-0.28 | 100 | 1.0 | 1.0 | 1.5 | 1.5 | 1.5 |
| 40-60 | 0.21-0.27 | 75 | 0.5 | 0.5 | 1.0 | 1.0 | 1.0 |

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

C. MIXING VALVES

1. VALVE BODY SHALL BE MADE OF CAST BRASS. THE INTERNAL COMPONENTS SHALL BE MADE OF BRASS OR STAINLESS STEEL.
2. THE TEMPERATURE SETTING IS AS PER THE REQUIREMENT OF THE PLUMBING FIXTURE FOR LOCALIZED MIXING OF WATER.

D. HANGERS AND SUPPORTS:

1. HANGERS SHALL BE STANDARD STEEL, MALLEABLE OR WROUGHT IRON, AS MANUFACTURED BY GRINNELL OR APPROVED EQUAL, SUITABLE FOR THE TYPE OF CONSTRUCTION. PIPING SHALL NOT BE HUNG FROM OTHER PIPE.
2. SECTIONS OF INDIVIDUAL PIPE RUNS SHALL BE SUPPORTED BY CLEVIS HANGERS.
3. ALL EQUIPMENT SHALL BE PROVIDED WITH APPROVED SUPPORTS.
4. PROVIDE SEISMIC RESTRAINTS IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE AND LOCAL CODES AND STANDARDS AND THE REQUIREMENTS OF AUTHORITIES HAVING JURISDICTION.
5. UNLESS OTHERWISE INDICATED OR REQUIRED BY AUTHORITIES HAVING JURISDICTION, THE FOLLOWING SHALL BE PROVIDED WITH SEISMIC RESTRAINTS AS REQUIRED BY THE 2021 INTERNATIONAL BUILDING CODE FOR NEW JERSEY, 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 LEN

F. 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 SEAT. 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-BEARING, 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.

G. VALVES:

1. PROVIDE GATE VALVES, BUTTERFLY OR BALL VALVES FOR SHUT-OFF DUTY ON MAIN AND BRANCH SUPPLY LINES. FOR ALL PIPE RUNS 2" AND SMALLER, PROVIDE BALL FOR ALL PIPE RUNS LARGER THAN 2" AND SMALLER THAN 4", PROVIDE GATE VALVES. PIPING 4" AND LARGER, PROVIDE BUTTERFLY VALVES FOR SHUT-OFF DUTY.

2. ALL FIXTURES WITH THE EXCEPTION O FLUSHOMETER-EQUIPPED WATER CLOSETS AND URINALS SHALL HAVE STOP VALVES TO CONTROL SUPPLY TO THE FIXTURE. WHERE SUPPLIES ARE EXPOSED PROVIDE CHROME-PLATED STOPS WITH CHROME-PLATED ESCUTCHEONS ON PIPING PENETRATIONS.

3. ALL PLUMBING FIXTURES AND EQUIPMENT TO HAVE SHUT-OFF VALVES ON SUPPLY LINES.

4. ALL BRANCH LINES TO HAVE SHUT-OFF VALVES.

5. ALL VALVES SHALL BE ACCESSIBLE. PROVIDE ACCESS DOORS WHERE REQUIRED FOR VALVE ACCESS.

6. PROVIDE GLOBE VALVES FOR THROTTLING/BALANCING OF THE HOT WATER CIRCULATING SYSTEM.

H. SLEEVES AND ESCUTCHEONS:

1. SLEEVES THROUGH STRUCTURAL CONCRETE MEMBERS AND SLEEVES FOR WALLS BELOW GRADE AND FLOORS ON GRADE SHALL BE STANDARD WEIGHT GALVANIZED SCHEDULE 40 STEEL PIPE. SLEEVES THROUGH OTHER THAN STRUCTURAL COMPONENTS OF THE BUILDING SHALL BE 20 GAGE GALVANIZED SHEET METAL WITH LOCK SEAM JOINTS. USG THERMAFIBER SAFING INSULATION SHALL BE INSTALLED BETWEEN PIPE AND SLEEVE.

2. PIPE ESCUTCHEON PLATES SHALL BE INSTALLED WHERE EXPOSED PIPING PASSES THROUGH WALLS, CEILINGS, AND FLOORS AND SHALL BE MINIMUM 20 GAGE STEEL. PROVIDE CHROME PLATED ESCUTCHEON PLATES IN FINISHED AREAS.

I. 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.

J. DEVICES:

   a. CLEANOUT & CLEANOUT PLUG

   - THREADED PIPE FITTING OR CAST IRON FERRULE WITH GAS TIGHT CLEANOUT PLUG
   - PLUG SHOULD BE CAST BRASS OR BRONZE, WITH THREADED END, AND RAISED OR COUNTERSUNK HEAD.
   - LUBRICATE THREADS OF CLEANOUT PLUG WITH ANTI-SEIZE LUBRICANT BEFORE FINAL INSTALLATION.

   b. CLEANOUT WALL PLATE

   - IT SHOULD BE ROUND, STAINLESS STEEL OR POLISHED CHROME PLATED BRONZE COVER PLATE WITH STAINLESS STEEL VANDAL RESISTANT FASTENER TO SECURE TO CLEANOUT PLUG.

   c. CLEANOUT DECK PLATE

   - IT SHOULD BE STANDARD DUTY FLOOR CLEANOUT FITTING WITH COATED CAST IRON BODY; ROUND, POLISHED NICKEL BRONZE SCORIATED TOP SECURED TO CLEANOUT PLUG WITH STAINLESS STEEL VANDAL RESISTANT FASTENER; THREADED HEIGHT ADJUSTMENT, CAST IRON HEAD, GAS TIGHT CLEANOUT PLUG, AND CONNECTION TO MATCH PIPING OPTION SELECTED.
   - GRILLE FREE AREA SHOULD BE AT LEAST EQUAL TO CROSS-SECTION AREA OF PIPE TO WHICH CONNECTION MADE AND MADE OF POLISHED NICKEL BRONZE, WITH REMOVABLE GRATE, EITHER PERFORATED OR BAR TYPE. GRATE ATTACHED TO GRILLE BODY WITH VANDAL RESISTANT FASTENER.

K. 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.

L. 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.

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

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

O. VENT PENETRATIONS THROUGH THE ROOF SHALL BE FLASHED.

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

Q. PROVIDE DIELECTRIC FITTINGS BETWEEN DISSIMILAR METALS.

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

S. 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.

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

W. 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.

X. 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.

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

Z. 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.

AA. PROVIDE WATER HAMMER ARRESTERS ON SUPPLY PIPING TO ALL FLUSHOMETER VALVES AND QUICK-CLOSING VALVES.

AB. UNLESS OTHERWISE INDICATED, TRAPS SEALS AT ALL FLOOR DRAINS SHALL BE MAINTAINED BY AN APPROVED TRAP PRIMING DEVICE.

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

AD. MAINTAIN MINIMUM 10'-0" CLEARANCE BETWEEN ALL PLUMBING V.T.R.S AND ALL OUTDOOR AIR INTAKES. OFFSET VENT STACKS AND STACK VENTS IF AND AS REQUIRED BELOW ROOF TO MAINTAIN SUCH CLEARANCE WHETHER OR NOT SUCH OFFSET IS INDICATED ON THE DRAWINGS. PROVIDE ALL REQUIRED SEISMIC SUPPORTS.

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 (PIPE AND FITTINGS)

A. PIPING

COVER ALL HOT WATER PIPE WITH 1" THICK FOR PIPE SIZE UP TO 1¼" AND 1½" THICK FOR PIPE SIZE 1½" AND GREATER WITH MANVILLE MICRO-LOK AP-T PLUS FIBERGLASS INSULATION. COVER ALL COLD WATER PIPE WITH ½" THICK FOR PIPE SIZE UP TO 1½" AND 1" THICK FOR PIPE SIZE 1½" AND GREATER WITH 1" MANVILLE MICRO-LOK AP-T PLUS FIBERGLASS INSULATION. FITTINGS AND VALVES SHALL BE INSULATED. INSTALL ALL INSULATION AS PER MANUFACTURERS RECOMMENDATIONS. ALL INSULATION MATERIAL SHALL COMPLY WITH THE 2021 INTERNATIONAL BUILDING CODE, NEW JERSEY 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 ASHRAE 90.1 2019 ENERGY CONSERVATION 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 NECESSARY TO CONDUCT 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.

4. WARRANTY

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.

L. TESTING REQUIREMENTS

H. ALL REQUIRED TESTS SHALL BE WITNESSED BY LOCAL AUTHORITIES AND THE OWNER'S REPRESENTATIVE.

I. ALL EQUIPMENT WILL BE FACTORY TESTED.

J. 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.

   a. TEST ALL DOMESTIC WATER PIPING HYDROSTATICALLY TO 125 PSIG.
   b. HYDROSTATIC TEST PRESSURES SHALL REMAIN CONSTANT WITH NO
   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.

O. INSPECTION & TESTING SHALL BE AS PER INTERNATIONAL BUILDING CODE 2021, NEW JERSEY, NATIONAL PLUMBING CODE 2021 (NSPC) FOR NEW JERSEY.

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.



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CONTRACTOR'S NOTES:
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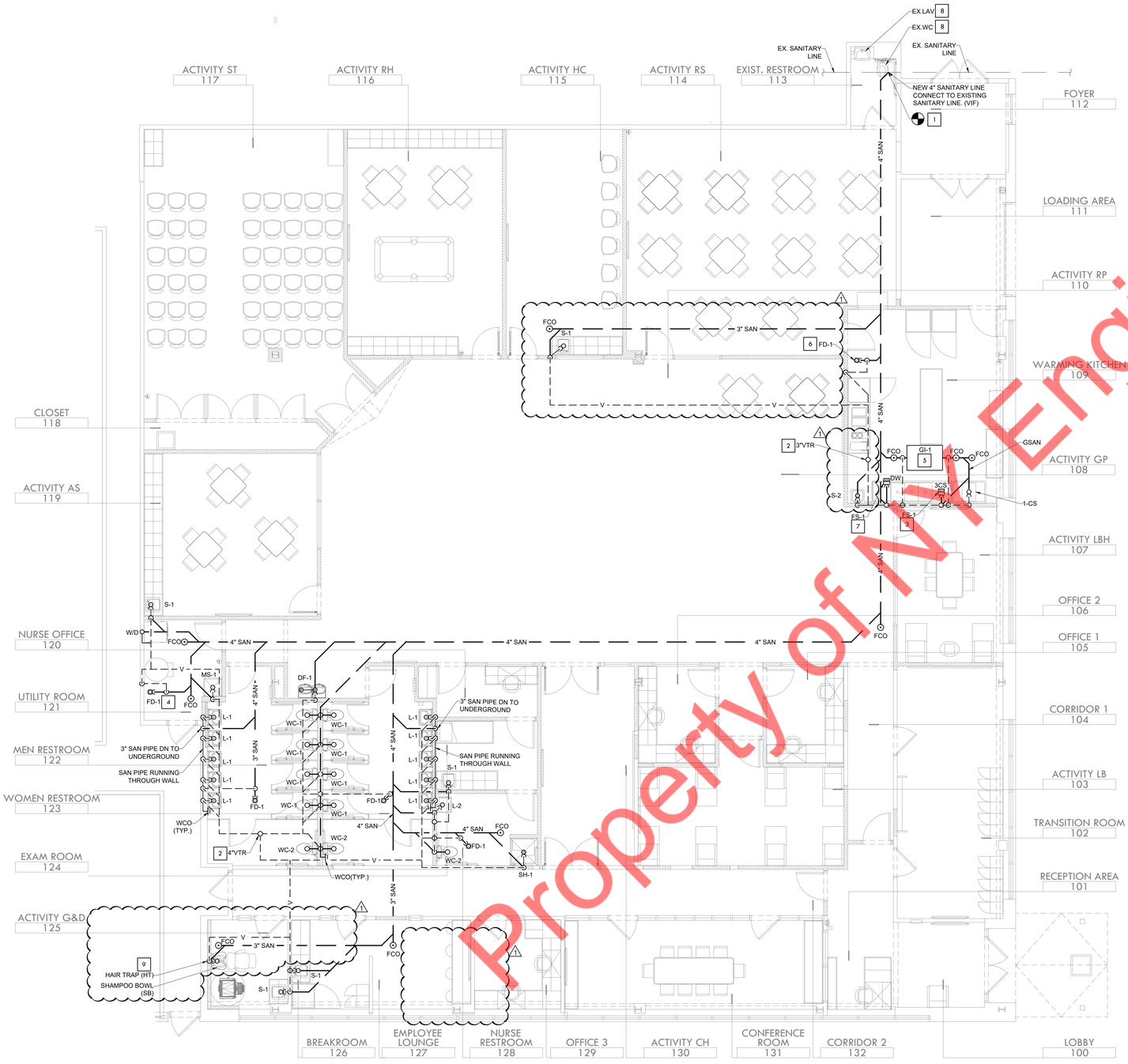
| | DATE | ISSUE |
|---|---|---|
| | 10.31.24 | LL/CLIENT REVIEW SET |
| | 11.15.24 | LL/CLIENT REVIEW SET |
| | 11.22.24 | BD SUBMISSION |
| 1 | 11.15.24 | CLIENT COMMENTS |
| △ | DATE | REVISION |

TITLE:
PLUMBING SPECIFICATIONS

SHEET NUMBER:
P002






## GENERAL NOTES:

1. ALL PIPING SHALL BE SNAKE CLEAN PRIOR TO CONNECTION.
2. 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.
3. PLUMBING IS NOT PERMITTED IN ANY DEMISING PARTITIONS. FURROUT THE WALL AS NECESSARY.
4. 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.
5. ALL FLOOR DRAINS ARE REQUIRED TO HAVE TRAP PRIMERS.
6. ALL FLOOR PENETRATIONS MUST BE CORE BORED, SLEEVED, GROUTED, SEALED AND MADE WATERPROOF. SLEEVES MUST EXTEND A MINIMUM OF 4"AFF.
7. IF NOT ALREADY EXISTING, INSTALL A SHUT OFF VALVE ON DOMESTIC WATER LINE INSIDE SPACE.
8. 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.
9. SLOPE OF DRAINAGE SYSTEM SHALL BE 1/8" PER FOOT FOR SANITARY & ½" PER FOOT OF RUN FOR GREASE WASTE FOR PIPE 3" AND ABOVE. 1/4" PER FOOT OF RUN FOR PIPE LESS THAN 3". VENT PIPING SHALL BE PITCHED TO DRAIN.
10. PROVIDE ACCESS PANEL FOR CLEANOUTS AND ALL CONCEALED EQUIPMENTS THAT REQUIRE MAINTENANCE ACCESS. CONTRACTOR TO COORDINATE WITH ARCHITECT FOR LOCATION.
11. PROVIDE WALL CLEANOUTS WHEREVER POSSIBLE FOR EACH CHANGE IN DIRECTION OF MORE THAN 45DEG.
12. REFER RISER DIAGRAMS FOR PIPE SIZES.

## SANITARY AND PLAN KEYED NOTES

1. CONNECT NEW 4" SANITARY WASTE PIPING TO EXISTING SANITARY LINE. CONTRACTOR TO FIELD VERIFY EXISTING SANITARY SIZE, LOCATION AND INVERT PRIOR TO BID. NOTIFY ARCHITECT/ENGINEER WITH ANY DISCREPANCIES PRIOR TO BID.
2. NEW 4" & 3" VENT THROUGH ROOF. CONTRACTOR TO VERIFY LOCATION AS PER SITE CONDITION.
3. INDIRECT WASTE FROM 3-COMPARTMENT SINK TO FLOOR SINK WITH APPROVED AIR GAP.
4. ROUTE T&P RELIEF DRAIN FROM THE WATER HEATER TO FLOOR DRAIN WITH APPROVED AIR GAP.
5. GI-1: GREASE INTERCEPTOR SCHIER GB-75 OR EQUIVALENT. CONTRACTOR TO INSTALL GREASE INTERCEPTOR AS PER MANUFACTURER RECOMMENDATION AND LOCAL GUIDELINES.
6. ROUTE INDIRECT DISCHARGE FROM THE SECONDARY BFP TO FLOOR DRAIN WITH APPROVED AIR GAP.
7. INDIRECT WASTE FROM DISHWASHER TO FLOOR SINK WITH APPROVED AIR GAP.
8. EXISTING WATER CLOSET AND LAVATORY TO BE REMAIN IN THE EXISTING LOCATIONS WITH THE EXISTING SANITARY AND VENT LINES WITH ASSOCIATED ACCESSORIES AND FITTINGS TO REMAIN. CONTRACTOR TO VERIFY IN FIELD, CONDITION OF EXISTING PIPING AND REPLACE IF PIPES ARE NOT IN GOOD CONDITION.
9. CONTRACTOR TO INSTALL HAIR TRAP (HT) TO SHAMPOO BOWL(SB) AS PER MANUFACTURER RECOMMENDATION.

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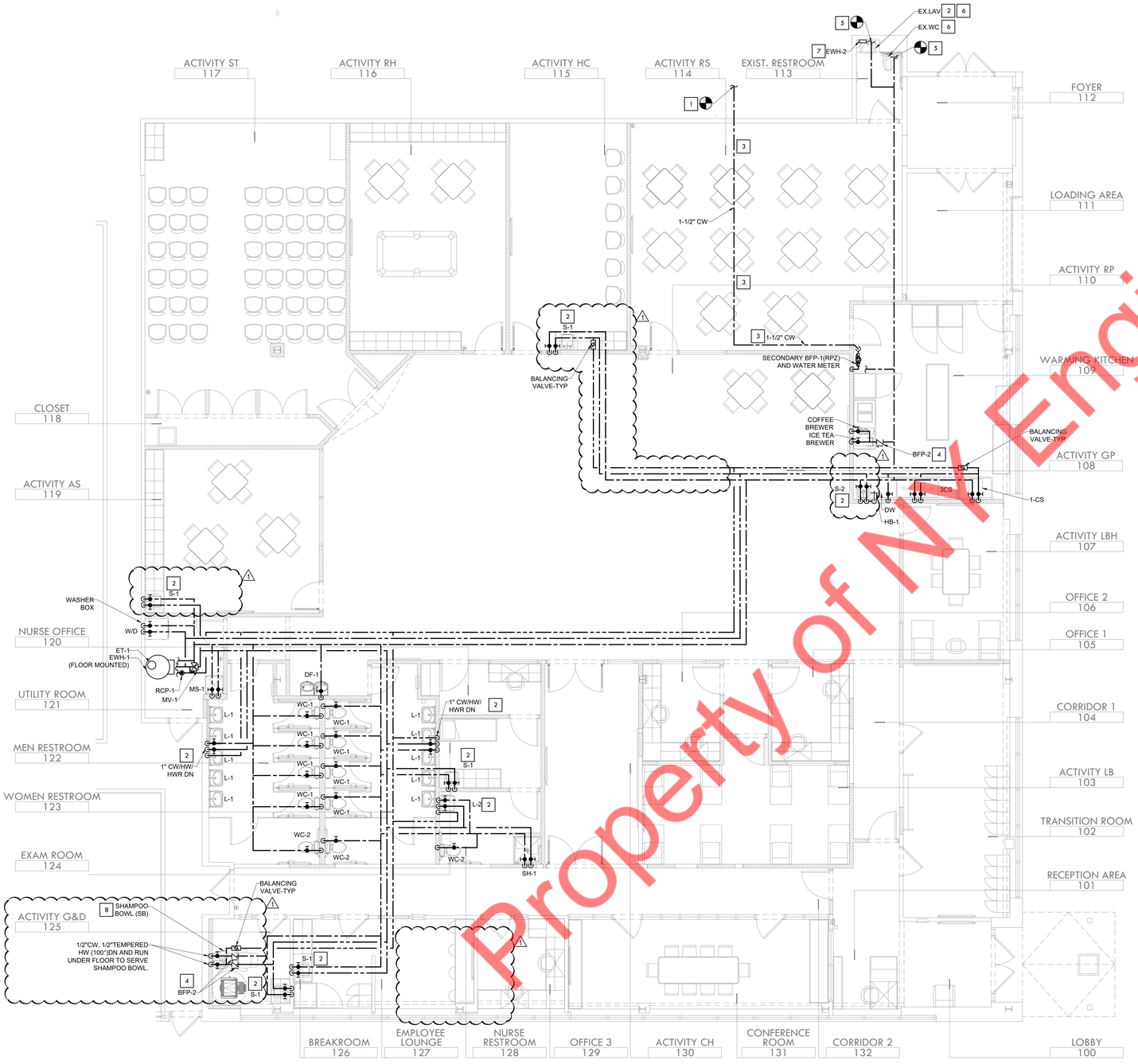
TITLE:
PLUMBING SANITARY AND VENT PLAN

SHEET NUMBER:
P100

1 | SCALE 3 / 16" = 1' - 0" | PLUMBING SANITARY AND VENT PLAN




## GENERAL NOTES:

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 ENERGY CODE ASHRAE 90.1 (2021), TABLE 7.4.3.
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, CLEANOUTS & SHUT-OFF VALVES AS REQUIRED.
6. FOR SINK PROVIDE HOT WATER AT 110°F. PROVIDE POINT OF USE MIXING VALVE IF REQUIRED.
7. PROVIDE BRANCH PRV IF PRESSURE INCREASES 80 PSI.
8. PROVIDE HOT WATER RETURN AS PER MAXIMUM PIPE LENGTH TABLE FROM ENERGY CODE ASHRAE 90.1 (2021).

## WATER SUPPLY KEYED NOTES

1. EXTEND AND CONNECT NEW 1-1/2" CW LINE TO EXISTING CW LINE WITH EXISTING WATER METER AND BFP. CONTRACTOR SHALL VERIFY EXACT LOCATION AND SIZE. UPDATE EXISTING WATER SERVICE LINE IF NOT SUFFICIENT. BASE BID ACCORDINGLY.
2. PROVIDE APPROVED ASSE 1070 TEMPERING VALVE FOR HAND SINK AND LAVATORIES. SET TEMPERATURE MAXIMUM AT 110°F.
3. NO TAP OFF TO BE TAKEN BEFORE BFP.
4. PROVIDE APPROVED ASSE 1022 WATTS SD-3 OR EQUIVALENT BACKFLOW PREVENTER FOR ICE TEA, COFFEE BREWER AND SHAMPOO BOWL.
5. EXTEND AND CONNECT NEW CW LINE TO THE EXISTING WATER SUPPLY LINE. CONTRACTOR TO FIELD VERIFY THE SIZE, LOCATION AND CONDITION OF EXISTING PIPING AND UPGRADE/REPLACE IF REQUIRED.
6. EXISTING WATER CLOSET AND LAVATORY TO REMAIN WITH EXISTING CW/HW PIPING CONNECTIONS. ASSOCIATED ACCESSORIES AND FITTINGS. CONTRACTOR TO FIELD VERIFY THE CONDITION OF EXISTING PIPING AND UPGRADE/REPLACE IF REQUIRED. CW LINE EXTEND AND CONNECT TO THE NEAREST WATER SUPPLY LINE.
7. NEW INSTANTANEOUS WATER HEATER (EWH-1) WITH ASSOCIATED ACCESSORIES AND FITTINGS. CONTRACTOR TO EXTEND AND CONNECT WATER SUPPLY CONNECTION TO NEAREST WATER SUPPLY LINE.
8. PROVIDE APPROVED ASSE 1070 TEMPERING VALVE FOR SHAMPOO BOWL (SB). SET TEMPERATURE MAXIMUM AT 100°F.



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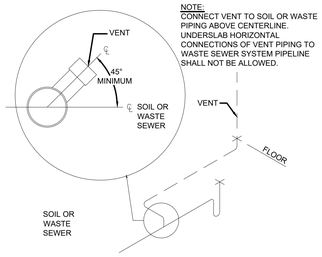
| | DATE | ISSUE |
|---|---|---|
| | 10.31.24 | LL/CLIENT REVIEW SET |
| | 11.15.24 | LL/CLIENT REVIEW SET |
| | 11.22.24 | BD SUBMISSION |
| 1 | 11.15.24 | CLIENT COMMENTS |
| 1 | DATE | REVISION |

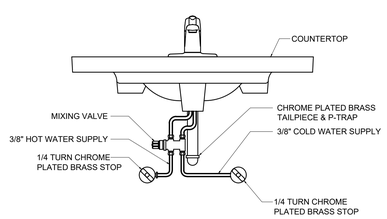
TITLE:
PLUMBING WATER SUPPLY PLAN

SHEET NUMBER:
P200

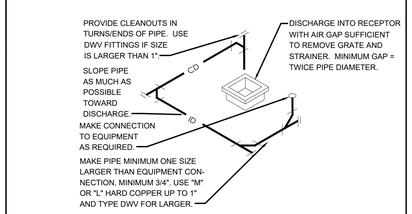
1 | SCALE 3 / 16" = 1' - 0" | PLUMBING WATER SUPPLY PLAN




| 1 | SCALE | VENT PIPING INSTLLATION |
|---|---|---|
| | N.T.S. | |

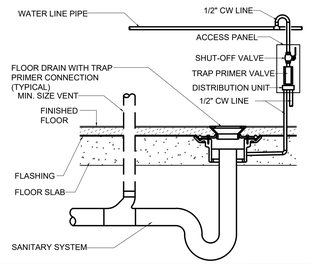



| 2 | SCALE | MIXING VALVE DETAILS |
|---|---|---|
| | N.T.S. | |

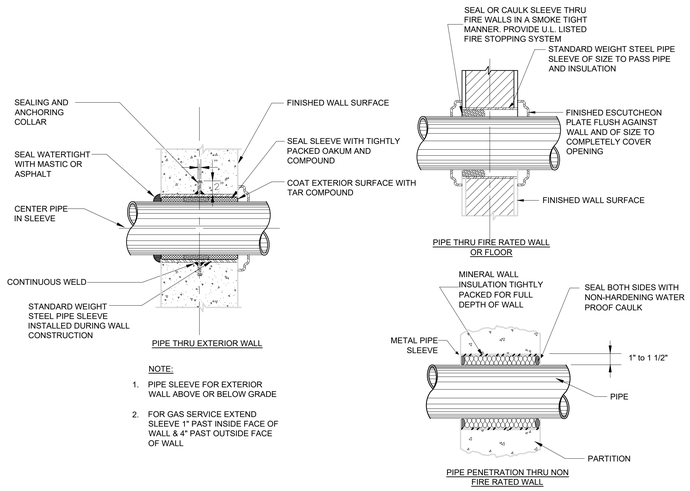



ROUTE PIPE INCONSPICUOUSLY AND UNOBTRUSIVELY. HANG PIPE AS REQUIRED. DO NOT INSULATE INDIRECT DRAIN PIPE WHEN INSTALLED EXPOSED IN FOOD SERVICE FACILITY.
REFER TO LOCAL CODES.

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



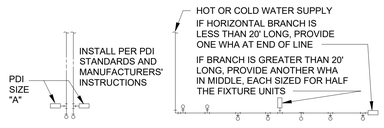

| 4 | SCALE | FLOOR DRAIN WITH TRAP PRIMER |
|---|---|---|
| | N.T.S. | |




NOTE:

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

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




SINGLE FIXTURE

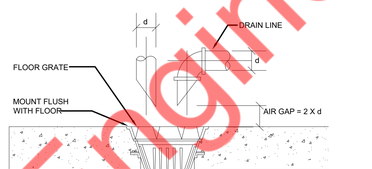
| PDI SIZE | PIPE SIZE | FIXTURE UNIT LOAD |
|---|---|---|
| A | 1/2" | 1-11 |
| B | 3/4" | 12-32 |
| C | 1" | 33-60 |
| D | 1-1/4" | 61-113 |
| E | 1-1/2" | 114-154 |
| F | 2" | 155-330 |

MULTIPLE FIXTURES

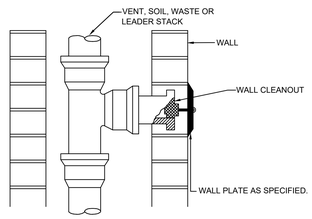
| FIXTURE UNIT TABULATION | | |
|---|---|---|
| FIXTURE | COLD | HOT |
| VALVE WATER CLOSET | 5 | -- |
| URINAL | 5 | -- |
| COUNTER SINK | 1.5 | 1.5 |
| LAVATORY | 1.5 | 1.5 |
| MOP BASIN | 2.25 | 2.25 |
| WATER COOLER | .25 | -- |

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

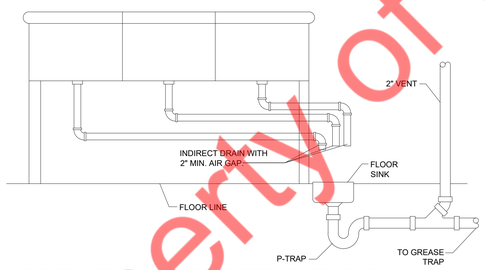
| 6 | SCALE | WATER HAMMER ARRESTOR |
|---|---|---|
| | N.T.S. | |




| 7 | SCALE | FLOOR SINK DETAILS |
|---|---|---|
| | N.T.S. | |

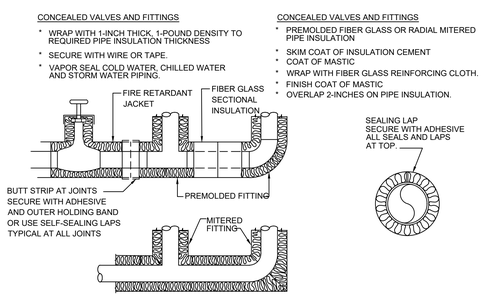



| 8 | SCALE | WALL CLEAN OUT DETAIL |
|---|---|---|
| | N.T.S. | |

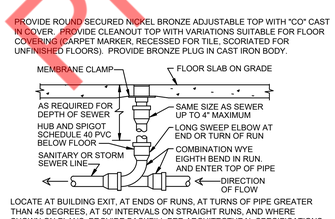



ROUTE DRAIN LINE TO WALL, ROUTE VENT UP, AND GREASE SANITARY DOWN AS SHOWN ON PLANS. ARRANGEMENT SHOWN IS SCHEMATIC. ADJUST TO SUIT FIELD CONDITIONS OR MEET LOCAL CODE REQUIREMENTS.

| 9 | SCALE | 3-COMPARTMENT SINK DETAILS |
|---|---|---|
| | N.T.S. | |

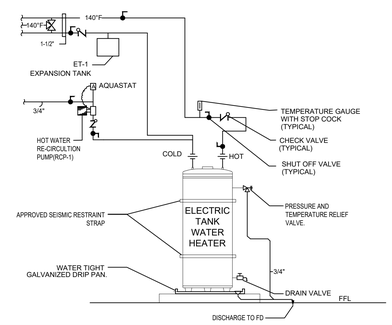



| 10 | SCALE | PIPE INSULATION DETAILS |
|---|---|---|
| | N.T.S. | |




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

| 11 | SCALE | FLOOR CLEAN OUT DETAIL |
|---|---|---|
| | N.T.S. | |




| 12 | SCALE | ELECTRIC WATER HEATER (FLOOR MOUNTED) |
|---|---|---|
| | N.T.S. | |



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| | 11.15.24 | LL/CLIENT REVIEW SET |
| | 11.22.24 | BD SUBMISSION |
| ⚠1 | 11.15.24 | CLIENT COMMENTS |
| △ | DATE | REVISION |

TITLE:
PLUMBING DETAILS

SHEET NUMBER:
P300

## EQUIPMENT SCHEDULE

| TAG | NAME | LOCATION | DESCRIPTION |
|---|---|---|---|
| EWH-1 | WATER HEATER (FLOOR MOUNTED) | UTILITY ROOM (121) | RHEEM ES120-24G, 24KW/208/60HZ, RECOVERY RATE 110 GPH @90°F, TYPE-STORAGE ELECTRIC, DIMENSION 30-1/4" X 58-3/4" |
| EWH-2 | INSTANTANEOUS WATER HEATER | EXISTING RESTROOM (113) | EEMAX SPEX 2412 , 2.4KW/120/60HZ, RECOVERY RATE 0.3 GPH @90°F, INSTANTANEOUS TYPE-ELECTRIC, DIMENSION 5-1/4" X 10-3/4" |
| RCP-1 | RECIRCULATING PUMP | UTILITY ROOM (121) | GRUNDFOS UPS 15-42 FC, 2GPM, HEAD 10 FEET, 87W,115V /1PH /60HZ |
| ET-1 | EXPANSION TANK | UTILITY ROOM (121) | AMTROL THERM-X-TROL ST-8, CAPACITY 3.2 GALLON, DIMENSION 9"D X 15"H |
| GI-1 | GREASE INTERCEPTOR | WARMING KITCHEN (109) (UNDERGROUND) | SCHIER GB-75, GREASE CAPACITY 861 @75GPM, LIQUID 125 GALLONS. PROVIDE FCR2 FILED CUT RISER IF REQUIRED. |

NOTES:
1. APPROVED EQUALS ONLY.
2. AQUA-STAT & NIGHT TIMER.
3. BALANCING VALVE & CHECK VALVE.
4. MAINTENANCE BALL VALVE ON BOTH SIDE OF PUMP.
5. SET AQUA -STAT WITH SET 10 DEGREE BELOW SYSTEM SUPPLY TEMP.
6. INSTALL RECIRCULATION PUMP AND WATER HEATER AS PER MANUFACTURER RECOMMENDATION.

## KITCHEN EQUIPMENT SCHEDULE

| SR. NO. | QTY. | DESCRIPTION | SUPPLY | | | WASTE | | PLUMBING REMARKS |
|---|---|---|---|---|---|---|---|---|
| | | | CW SIZE | HW (140°) SIZE | HW (110°) SIZE | DIRECT WASTE SIZE | INDIRECT WASTE SIZE | |
| 1 | 1 | TEA BREWER | 3/8" | | | | | CONNECT FILTERED C.W. SUPPLY LINE TO UNIT. PROVIDE BFP-2 AND SOV UPSTREAM OF FILTER. FILTER BY OWNER. SPILL DRAINS INDIRECTLY INTO FLOOR DRAIN. |
| 2 | 1 | COFFEE BREWER | 3/8" | | | | | CONNECT FILTERED C.W. SUPPLY LINE TO UNIT. PROVIDE BFP-2 AND SOV UPSTREAM OF FILTER. FILTER BY OWNER. SPILL DRAINS INDIRECTLY INTO FLOOR DRAIN. |
| 3 | 1 | HAND SINK, WALL MOUNT | 1/2" | | 1/2" | 1-1/2" | | CONNECT C.W. AND H.W. SUPPLY LINES AND CONNECT TO FAUCET. P.C. TO CONNECT DIRECT DRAIN. |
| 4 | 1 | 3-COMPARTMENT SINK | 3/4" | 3/4" | | | 2" | CONNECT C.W. AND H.W. SUPPLY LINES AND CONNECT TO FAUCET. SPILL 2" DRAIN FROM EACH BOWL INDIRECTLY INTO FLOOR SINK. DO NOT MANIFOLD, SPILL EACH DRAIN SEPARATELY |
| 5 | 1 | UNDERCOUNTER DISHWASHER | - | 3/4" | | | 3/4" | CONNECT H.W. SUPPLY TO UNIT. PROVIDE PRESSURE REGULATOR, SHOCK ARRESTOR AND SOV. INSTALL DRAIN TEMPERING KIT (OWNER PROVIDED KIT) SPILL TEMPERED DRAIN INDIRECTLY INTO FLOOR SINK. ( MODEL EURODIB USA F99 EKDPS) |
| 6 | 1 | 1 -COMPARTMENT SINK | 1/2" | | 1/2" | 2" | 3/4" | CONNECT C.W. AND H.W. SUPPLY LINES AND CONNECT TO FAUCET. P.C. TO CONNECT DIRECT DRAIN. |

NOTES
1. PROVIDE REQUIRED AIR GAP FOR INDIRECT DRAINS SPILLING INTO FLOOR DRAIN RECEPTACLES.
2. ALL EQUIPMENT BRAND NAMES, SPECIFIC HARDWARE AND CONNECTION DETAILS SHALL BE VERIFIED WITH THE EQUIPMENT DEALER AND OWNER PRIOR TO BIDDING, PURCHASE OR INSTALLATION. GENERAL CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS PRIOR TO EQUIPMENT ROUGH-IN.
3. CONTRACTOR SHALL PROVIDE AND INSTALL TRAPS, SUPPLIES AND ALL REQUIRED FITTINGS, VALVES AND SPECIALTY EQUIPMENT NEEDED FOR COMPLETE AND OPERATIONAL INSTALLATION. FINAL CONNECTIONS TO EQUIPMENT BY PLUMBING CONTRACTOR.
4. ALL REQUIRED BACKFLOW PREVENTER DEVICES SHALL BE INSTALLED UPSTREAM OF ANY FILTRATION UNITS. FILTRATION UNITS PROVIDED BY OWNER OR KITCHEN SUPPLIER

## PLUMBING FIXTURE LOAD SUMMARY

| TAG | QTY. | FIXTURE | COLD AND HOT WATER FIXTURE UNIT PER FIXTURE | TOTAL COLD AND HOT WATER FIXTURE UNIT | HOT WATER GPH PER UNIT | TOTAL HOT WATER GPH | DRAINAGE FIXTURE UNIT PER FIXTURE | TOTAL DRAINAGE FIXTURE UNITS |
|---|---|---|---|---|---|---|---|---|
| WC-1 | 8 | WATER CLOSET | 2.5 | 20 | - | - | 4 | 32 |
| WC-2 | 3 | WATER CLOSET (ADA) | 2.5 | 7.5 | - | - | 4 | 12 |
| EX.WC | 1 | EXISTING WATER CLOSET | 8.0 | 8.0 | - | - | 4 | 4 |
| LAV-1,2 | 11 | LAVATORY | 1 | 11 | 6 | 66 | 1 | 11 |
| EX. LAV. | 1 | EXISTING LAVATORY | 1 | 1 | 6 | 6 | 1 | 1 |
| HB-1 | 1 | HOSE BIB | 2.5 | 2.5 | - | - | - | - |
| S-1 & 2 | 6 | HAND SINK | 1 | 6 | 2 | 12 | 1 | 6 |
| SH-1 | 1 | SHOWER | 2 | 2 | 60 | 60 | 3 | 3 |
| DF-1 | 1 | DRINKING FOUNTAIN | 0.5 | 0.5 | | | 0.5 | 0.5 |
| 3-CS | 1 | 3-COMPARTMENT SINK | 3.0 | 3.0 | 45 | 45 | | |
| W/D | 1 | WASHER/DRYER | 1.5 | 1.5 | 30 | 30 | 2 | 2 |
| MS-1 | 1 | MOP SINK | 3 | 3 | 20 | 20 | 3 | 3 |
| DW | 1 | DISHWASHER | 1.5 | 1.5 | 50 | 50 | | |
| - | 2 | COFFEE AND TEA BREWER | 0.5 | 1 | - | | | |
| 1-CS | 1 | 1 COMP. SINK | 3 | 3 | 6 | 6 | 3 | 3 |
| SB | 1 | SHAMPOO BOWL | 1 | 1 | 6 | 6 | 1 | 1 |
| FS-1 | 2 | FLOOR SINK | - | - | - | - | 5 | 10 |
| FD-1 | 5 | FLOOR DRAIN | - | - | - | - | 5 | 25 |
| | | TOTAL CW & HW FIXTURE UNITS | | 72.5 | TOTAL HW GPH | 391 | TOTAL DRAINAGE FIXTURE UNIT | 113.5 |
| | | FLUSH TANK GPM | | 36 | | | | |

NOTE:
1. WATER PIPE SIZING AS PER NATIONAL STANDARD PLUMBING CODE 2021 (NSPC) FOR NEW JERSEY.
2. SIZE OF THE COLD BRANCH PIPE OR BOTH THE HOT AND COLD BRANCH PIPE.
3. THE LISTED FIXTURE UNIT VALUES REPRESENT THEIR TOTAL LOAD ON THE COLD WATER BUILDING SUPPLY.
4. THE SEPARATE COLD WATER AND HOT WATER FIXTURE UNIT VALUE FOR FIXTURES HAVING BOTH COLD AND HOT WATER CONNECTION SHALL BE PERMITTED TO THREE QUARTER OF THE TOTAL VALUE OF THE FIXTURE.

## GREASE INTERCEPTOR CALCULATIONS

Project Name: Town Square

Step 1: Flow rate to grease interceptor

*Fixture flow rate: (cu in / 231) = gal x 0.5 / 2 min = 2 min flow rate*

| NAME | TYPE | DIMENSIONS | QTY. | CU.IN | FLOW RATE |
|---|---|---|---|---|---|
| 3-Comp Sink | 3 Compartment Sink | 25" x 18" x 14" (3) | 1 | 18,144 | 29.45 GPM |
| Mop Sink | Mop Sink | 22" x 22" x 10" | 1 | 4,840 | 7.86 GPM |
| Floor Drain | Floor Drain | N/A | 0 | N/A | 0.0 GPM |
| Total | | | | | 37.31 GPM |

Step 2: Grease Production

*Servings per day x Grease production value x Days between pump-outs = Grease output*

Number of meals served per day: 200
Grease production value: 0.035 lbs per serving (Cafeteria - Full Serve: High / No flatware)
Days between pump-outs: 90 days

200 x 0.035 x 90 = 630 lbs of FOG

| SCHIER MODEL | Description: Polyethylene Grease Interceptor<br>Dimensions: Length: 47", Width: 33", Height: 39.75"<br>Flow Rates/Grease Capacities: 75 GPM / 861 lbs<br>Liquid Capacity: 125 gal |
|---|---|
| GB-75 | |

## PLUMBING FIXTURES SCHEDULE

| SYMBOL | FIXTURE | CONNECTION SIZES C.W. | H.W. | W. | V. | DESCRIPTION |
|---|---|---|---|---|---|---|
| WC-1 | WATER CLOSET | 3/4" | --- | 4" | 2" | AMERICAN STANDARD 16-1/2" HIGH "CADET" MODEL# 2467.016 VITREOUS CHINA, TANK TYPE, PRESSURE ASSIST (1.6 GPF) FLUSH. ELONGATED BOWL. PROVIDE COMMERCIAL OPEN FRONT SEAT AND MCGUIRE 2166CC ANGLE SUPPLY. |
| WC-2 | WATER CLOSET (ADA) | 3/4" | --- | 4" | 2" | AMERICAN STANDARD 16-1/2" HIGH "CADET" MODEL# 2467.016 VITREOUS CHINA, TANK TYPE, PRESSURE ASSIST (1.6 GPF) FLUSH. ELONGATED BOWL. PROVIDE COMMERCIAL OPEN FRONT SEAT AND MCGUIRE 2166CC ANGLE SUPPLY. |
| L-1 | LAVATORY (ADA) | 1/2" | 1/2" | 2" | 1-1/2" | AMERICAN STANDARD "LUCERNE" 0356.421.020 (20"X18") WALL HUNG LAVATORY, VITREOUS CHINA, SINGLE HOLE. AMERICAN STANDARD "SELECTRONIC" MODEL 7025.305.295 FAUCET (0.5 GPM), ABOVE DECK MIXING, INTEGRAL TEMPERATURE LIMITER THAT MEETS ASSE 1070. PROVIDE MCGUIRE 2165CC SUPPLIES AND "PROWRAP" KIT PW-2150WC, INCLUDES PREWRAPPED OFFSET DRAIN, PREWRAPPED CAST BRASS "P" TRAP, TAILPIECE COVER, SUPPLY COVERS, AND CHROME PLATED FLANGE. INSTALL IN ACCORDANCE WITH ANSI 117.1 AND NC PLUMBING CODE. |
| L-2 | LAVATORY (ADA) | 1/2" | 1/2" | 2" | 1-1/2" | AMERICAN STANDARD "LUCERNE" 0356.421.020 (20"X18") WALL HUNG LAVATORY, VITREOUS CHINA, SINGLE HOLE. AMERICAN STANDARD "SELECTRONIC" MODEL 7025.305.295 FAUCET (0.5 GPM), ABOVE DECK MIXING, INTEGRAL TEMPERATURE LIMITER THAT MEETS ASSE 1070. PROVIDE MCGUIRE 2165CC SUPPLIES AND "PROWRAP" KIT PW-2150WC, INCLUDES PREWRAPPED OFFSET DRAIN, PREWRAPPED CAST BRASS "P" TRAP. TAILPIECE COVER, SUPPLY COVERS, AND CHROME PLATED FLANGE. INSTALL IN ACCORDANCE WITH ANSI 117.1 AND NC PLUMBING CODE. |
| DF-1 | WATER COOLER (ADA) | 1/2" | --- | 2" | 2" | ELECTRIC WATER COOLER, DUAL LEVEL. ELKAY EZSTL8C, BARRIER FREE. (8 GPH, 4.5F.I.A, 120-1-60) PROVIDE APRON. McGUIRE 165 ANGLE SUPPLY AND 8872 CAST BRASS "P" TRAP. |
| S-1 | BREAK SINK (ADA) | 1/2" | 1/2" | 2" | 2" | ELKAY ELUHAD211555 18 GAUGE 304 STAINLESS STEEL SINGLE COMPARTMENT UNDERMOUNT ADA SINK (23-1/2X18-1/4"X5-3/8") WITH KOHLER "SIMPLICE" MODEL K-596 (1.5 GPM) GOOSENECK FAUCET WITH PULL-DOWN SPRAY. FINISH: VIBRANT STAINLESS. LK-99 BASKET STRAINER. MCGUIRE 2165CC SUPPLIES, 8912 CAST BRASS "P" TRAP. PROVIDE MV2 UNDER SINK ON HOT WATER SUPPLY LINE. INSULATE EXPOSED PIPING TRAP AND PIPING BELOW SINK PER ANSI 117.1 |
| S-2 | SINK (ADA) | 1/2" | 1/2" | 2" | 2" | ELKAY ELUHAD211555 18 GAUGE 304 STAINLESS STEEL SINGLE COMPARTMENT UNDERMOUNT ADA SINK (23-1/2X18-1/4"X5-3/8") WITH KOHLER "SIMPLICE" MODEL K-596 (1.5 GPM) GOOSENECK FAUCET WITH PULL-DOWN SPRAY. FINISH: VIBRANT STAINLESS. LK-99 BASKET STRAINER. MCGUIRE 2165CC SUPPLIES, 8912 CAST BRASS "P" TRAP, PROVIDE MV2 UNDER SINK ON HOT WATER SUPPLY LINE. INSULATE EXPOSED PIPING TRAP AND PIPING BELOW SINK PER ANSI 117.1 |
| MS-1 | MOP SINK | 1/2" | 1/2" | 3" | 2" | MOLDED MOP RECEPTOR, FIAT MODEL MSB-2424 (24"x24") WITH INTERGRAL DRAIN & CHROME STRAINER,PROVIDE T&S BRASS B-0665-BSTP SERVICE SINK FAUCET WITH INTEGRAL STOPS, VACUUM BREAKER, HOSE THREAD OUTLET & PAIL HOOK. PROVIDE MOP HANGER & HOSE & BRACKET, WALL GUARDS. |
| SH-1 | SHOWER (ADA) | 3/4" | 3/4" | 2" | 1-1/2" | LIBERTY LINE MODEL 11383834 (36"X36"), GEL COAT, BARRIER FREE TRANSFER TYPE WITH L-SHAPED FOLD-UP SEAT, L-SHAPED GRAB BAR, SOAP DISH, STAINLESS STEEL CURTAIN ROD AND DRAIN. PROVIDE SYMMONS ALLURA MODEL 4705 SHOWER SYSTEM WITH HAND SHOWER, PRESSURE BALANCING MIXING VALVE WITH STOP SCREW TO LIMIT HANDLE TURN, SEPARATE DUAL OUTLET LEVER DIVERTER VALVE, WALL/HAND SHOWER WITH FLEXIBLE METAL HOSE, IN-LINE VACUUM BREAKER, WALL CONNECTION AND MOUNTING CRADLE, FIXED SHOWER HEAD WITH BRACKET, 1.5 GPM FLOW RESTRICTOR. PROVIDE SHOWER DRAIN SD |
| WD | WASHING MACHINE BOX | 1/2" | 1/2" | 2" | 2" | WASHING MACHINE BOX. 1/4 TURN BRASS BALL HAMMER VALVES, 2" OUTLET |
| SB | SHAMPOO BOWL | 1/2" | 1/2" | 2" | 1-1/2" | SHAMPOO BOWL BY TENANT. INSTALL PER MANUFACTURER'S INSTRUCTIONS. PROVIDE BACKFLOW PREVENTER BFP-2 AND SOV AND SHOCK ARRESTOR IN SUPPLY LINES. PROVIDE MIXING VALVE MV2 ON HOT WATER SUPPLY. PROVIDE HAIR TRAP HT IN DRAIN LINE. |

NOTES:
1. ALL FIXTURE MAY BE SUBSTITUTED WITH APPROVED EQUAL. CONTACT OWNER FOR APPROVAL.
2. SEE ARCHITECTURAL PLANS FOR EXACT MANUFACTURER AND MODEL, LOCATION AND MOUNTING HEIGHTS OF ALL FIXTURES.
3. FLUSH VALVE HANDLES SHALL BE LOCATED OPPOSITE OF HAND RAIL AS PER ADA REQUIREMENT.
4. PROVIDE CARRIERS FOR ALL WALL MOUNTED FIXTURES.

## PLUMBING SPECIALITIES SCHEDULE

| SYMBOL | NAME | DESCRIPTION |
|---|---|---|
| BFP-1 | BACKFLOW PREVENTER | ASSE 1013 APPROVED WATTS LF009-QT-S. LEAD FREE, REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTER WITH QUARTER TURN.FULL PORT, RESILIENT SEATED, BRONZE BALL VALVE SHUTOFFS AND AIR GAP FITTING |
| BFP-2 | BACKFLOW PREVENTER | BACKFLOW PREVENTER EQUAL: ASSE 1022 WATTS SD-3, LEAD FREE, DUAL CHECK VALVE WITH ATMOSPHERIC PORT AND STRAINER FOR COFFEE,TEA BREWER AND SHAMPOO BOWL. |
| BALANCING VALVE | BALANCING VALVE | WATTS LFCSM 61-S OR EQUIVALENT. LEAD FREE, NSF-61 ANNEX G CERTIFIED. BI-DIRECTIONAL, BALL DESIGN, POSITION INDICATOR, MEMORY DEVICE, CHECKED METERING PORTS WITH DRIP CAPS AND INTEGRAL DRAIN PORTS. |
| FD-1 | FLOOR DRAIN (GENERAL/TOILETS) | J.R. SMITH FIG#2005-B-NB. CAST IRON, ADJUSTABLE, WITH NICKEL BRONZE TOP. PROVIDE TRAP GUARD ON ALL FLOOR DRAINS |
| FS-1 | FLOOR SINK (KITCHEN) | J.R. SMITH / ZURN OR EQUAL |
| FCO | FLOOR CLEANOUT | J.R.SMITH MODEL 4429. PROVIDE NICKEL-BRONZE ADJUSTABLE TOP. |
| WCO | WALL CLEANOUT | J.R. SMITH / ZURN OR EQUAL |
| GI-1 | GREASE INTERCEPTOR | SCHIER GB-75 OR EQUIVALENT, CAPACITY: LIQUID 125 GAL. & GREASE 861LBS @ 75GPM. PROVIDE FCR2 FILED CUT RISER IF REQUIRED. |
| HB-1 | HOSE BIBB | WOODFORD MODEL 24 P3/4 WITH VACUUM BREAKER AND THREADED SPOUT. LOOSE KEY. |
| HT | HAIR TRAP | ZURN Z1175. CAST IRON HAIR INTERCEPTOR, WITH STAINLESS STEEL STRAINER SCREEN AND CAST IRON, COUNTER-SUNK, FLANGED CLEANOUT COVER, GAS TIGHT, REMOVABLE FOR SCHEDULED PERIODIC CLEANING. |
| MV-1 | MIXING VALVE (WATER HEATER) | WATTS LFN170 LEAD FREE MASTER TEMPERING VALVE. LEAD FREE BRASS BODY, THERMOSTAT ASSEMBLY, LOCKABLE TEMPERATURE ADJUSTMENT, SINGLE SEAT DESIGN FOR TIGHT SHUT-OFF IN EVENT OF COLD WATER SUPPLY LOSS. ASSE 1017 LISTED. |
| MV-2 | MIXING VALVE (FIXTURE) | ZURN ZW1070XL LEAD FREE THERMOSTATIC MIXING VALVE. LEAD FREE BRASS BODY, INTEGRAL CHECK VALVES, ADJUSTMENT CAP WITH LOCKING FEATURE, ASSE 1070. MINIMUM FLOW RATE 0.25 GPM |
| LD | LEAK DETECTOR | "WATERCOP" LEAK DETECTION SYSTEM TO INCLUDE SOLENOID VALVE: (LEAD FREE) ANSI NSF 372, WITH VISUAL AND AUDIBLE ALARM PANEL AND HARD-WIRED SENSOR. |
| SA | SHOCK ABSORBER | SIOUX CHIEF, A=652-A, B=653-B, C=654-C, D=655-D |

NOTES: 1. EQUALS BY ZURN, JR SMITH, LAWLER, WATTS



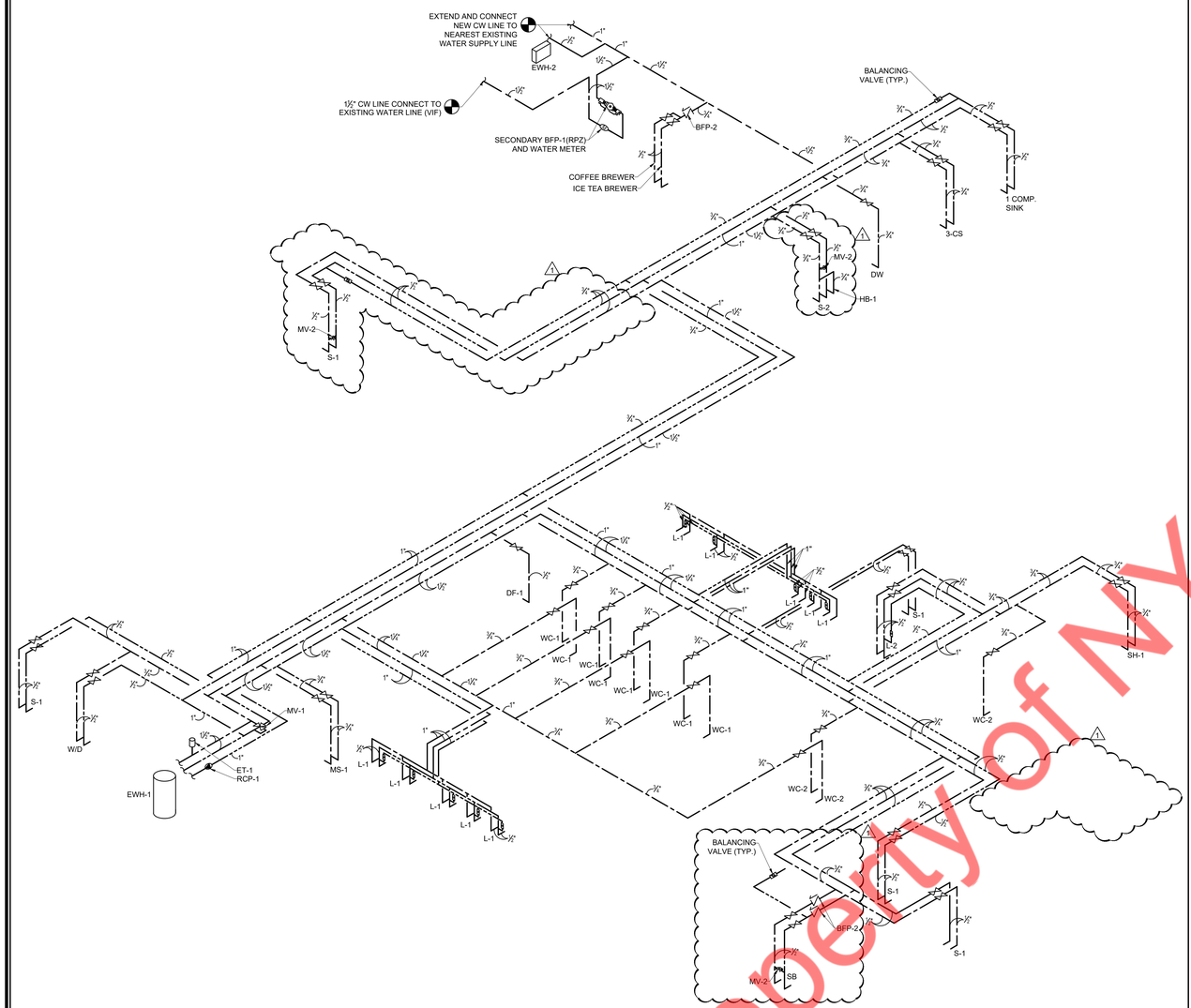
CONSULTANTS (ENGINEER):
NY ENGINEERS
NEARBY ENGINEERS
382 NE 191ST STREET SUITE 49674,
MIAMI, FL 33179
PH-914.257.3455
WWW.NY-ENGINEERS.COM

CONTRACTOR'S NOTES:
WRITTEN DIMENSIONS HOLD PREFERENCE OVER SCALED DIMENSIONS. DO NOT SCALE THE DRAWINGS. THE CONTRACTORS MUST VISIT JOB SITE TO VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS BEFORE SUBMITTING BIDS. REPORT ANY DISCREPANCIES OF ANY CONDITIONS WHICH MAY INTERFERE WITH THE PROPER EXECUTION OF, THE CONTRACT TO THE TENANT'S REPRESENTATIVE. REPORT DISCREPANCIES DURING BIDDING PROCESS AND BEFORE START OF CONSTRUCTION. CHANGE ORDERS NEED TO BE APPROVED BY **TOWNSQUARE** CONSTRUCTION MANAGER FOR ISSUES ARISING FROM THE FIELD CONDITIONS OR CONFLICTS BETWEEN THE PLANS AND THE EXISTING CONDITIONS PRIOR TO THE COMMENCEMENT OF WORK.

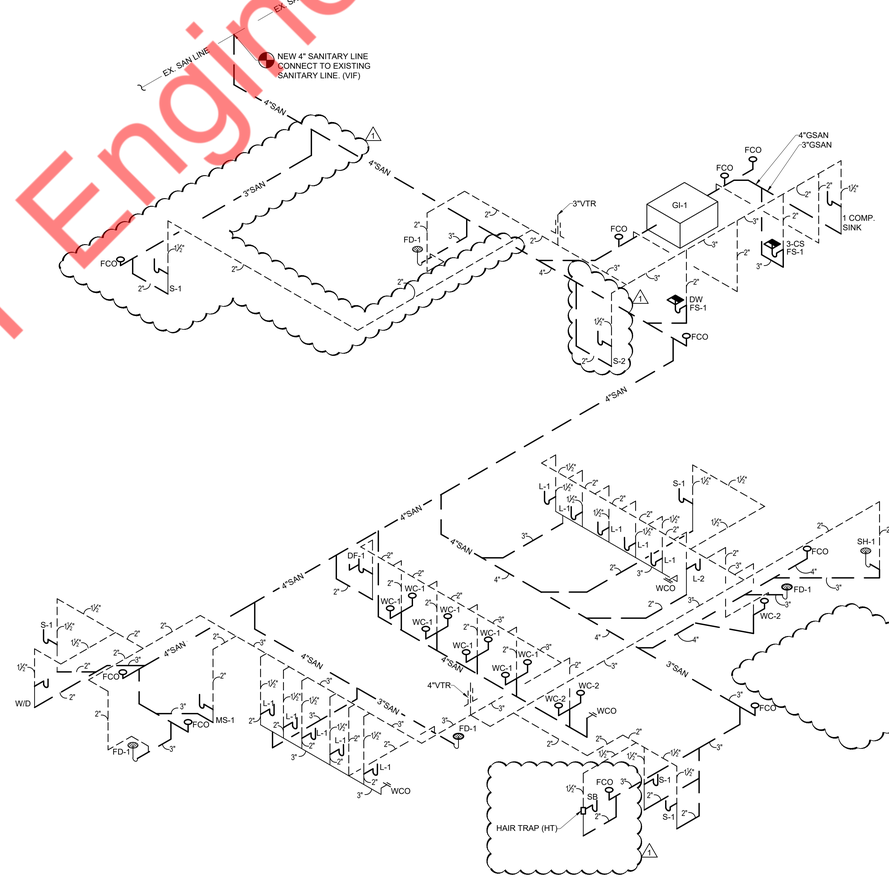
| | DATE | ISSUE |
|---|---|---|
| | 10.31.24 | LL/CLIENT REVIEW SET |
| | 11.15.24 | LL/CLIENT REVIEW SET |
| | 11.22.24 | BD SUBMISSION |
| 1 | 11.15.24 | CLIENT COMMENTS |
| △ | DATE | REVISION |

TITLE:
PLUMBING SCHEDULES

SHEET NUMBER:
P400




1 | SCALE: NTS | DOMESTIC WATER ISOMETRIC DIAGRAM




2 | SCALE: NTS | SANITARY AND VENT ISOMETRIC DIAGRAM



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| 1 | 11.15.24 | CLIENT COMMENTS |
| △ | DATE | REVISION |

TITLE:
PLUMBING RISER DIAGRAMS

SHEET NUMBER:
P500

## SPRINKLER GENERAL NOTES

1. ALL SPRINKLER WORK SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF NFPA-13 2019, INTERNATIONAL FIRE CODE 2021 AND ALL LOCAL LAWS AND AUTHORITIES.
2. CONTRACTOR SHALL COORDINATE WITH OTHER TRADES AND SHALL INSTALL NEW WORK TO CLEAR DUCTWORK AND LIGHTING FIXTURES.
3. ALL SPRINKLER WORK SHALL COMPLY WITH BUILDING STANDARDS AND REQUIREMENTS.
4. ALL SPRINKLER HEADS SHALL BE INSTALLED AT CENTER OF TILE WHEREVER APPLICABLE.
5. 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.
6. PIPES SIZES SHOWN ARE BASED ON DESIGN PIPING LAYOUTS ONLY. ACTUAL PIPE SIZES SHALL BE DETERMINED BY CONTRACTORS HYDRAULIC CALCULATIONS BASED ON HIS INSTALLATION DRAWINGS. CONTRACTOR SHALL ALLOW FOR THIS AND INCLUDE THIS IN HIS CONTRACT PRICE.
7. DRAWING INDICATES SPRINKLER SYSTEM DESIGN ONLY. CONTRACTOR RESPONSIBLE FOR OFFSETS, DROPS AND RISES FOR COORDINATION WITH OTHER TRADES.
8. G.C. SHALL BE RESPONSIBLE FOR ALL FINAL TESTS AND INSPECTIONS OF COMPLETED WORK REQUIRED BY THE BUILDING MANAGEMENT PRIOR TO OCCUPANCY OF SPACE.
9. ALL SPRINKLER WORK SHALL BE TESTED AND MADE OPERATIONAL PRIOR TO CARPET AND FURNITURE INSTALLATION. G.C. SHALL REPAIR AND/OR REPLACE ALL FINISHES DAMAGED BY DEFECTIVE SPRINKLER WORK AT HIS EXPENSE.
10. ALL BURNING, CUTTING, SOLDERING AND WELDING SHALL BE COORDINATED WITH BUILDING FIRE SYSTEMS WITH BUILDING MANAGEMENT, AS REQUIRED.
11. REFER TO ENGINEERING DRAWINGS FOR SPRINKLER HEADS AND FIRE DETECTION DEVICES.
12. ALL WORK TO BE DONE DURING THE HOURS DESIGNATED BY OWNER.
13. 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.
14. UPON SUCCESSFUL COMPLETION OF ALL TESTING, CONTRACTOR SHALL PRIME AND PAINT ALL EXPOSED SPRINKLER PIPING. COLOR AND FINISH SHALL BE AS PER ARCHITECT.
15. CONTRACTOR SHALL INCLUDE IN HIS BID THE COST TO PROVIDE (10) TEN ADDITIONAL SPRINKLERS INSTALLED. EXACT LOCATIONS OF THESE SPRINKLER HEADS SHALL BE DETERMINED IN FIELD.
16. THE SPRINKLER SYSTEMS ARE TO BE HYDROSTATIC TESTED FOR A (2) HOUR MINIMUM AT 200 LBS. PRESSURE AND ARE TO BE WITNESSED BY AUTHORIZED BUILDING PERSONNEL. COORDINATE ALL TESTING WITH BUILDING MANAGER.
17. ALL SERVICE SHUTDOWNS SHALL BE BY BASE BUILDING ENGINEERS. MINIMUM OF 48 HOURS NOTICE IS REQUIRED TO THE BUILDING OFFICE PRIOR TO SHUT DOWN.
18. ALL SPRINKLER WORK SHALL COMPLY WITH BUILDING STANDARDS AND REQUIREMENTS.
19. 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.
20. PROVIDE AUXILIARY DRAINS AT TRAPPED SECTIONS OF PIPING AS REQUIRED BY NFPA-13-2019.
21. 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.

### SPRINKLER DRAWING LIST

SP001 SPRINKLER NOTES, SYMBOLS & SPECIFICATIONS

SP100 SPRINKLER PLAN

SP200 SPRINKLER DETAILS

### SPACING BETWEEN SPRINKLER HEADS

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

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

### PROTECTION AREA OF SPRINKLER HEADS

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

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

## BUILDING DEPARTMENT SPRINKLER NOTES

1. THE INSTALLATION, COMPONENTS, SIZING, SPACING, CLEARANCES, POSITION AND TYPE OF SYSTEMS SHALL CONFORM TO THE 2021 INTERNATIONAL BUILDING CODE, AND 2021 INTERNATIONAL FIRE CODE OF NEW JERSEY.
2. DIRECT CONNECTION OF SPRINKLERS TO THE PUBLIC WATER SYSTEM SHALL CONFORM TO SECTION 903.3.5 OF 2021 INTERNATIONAL BUILDING CODE FOR NEW JERSEY.
3. AUTOMATIC SPRINKLER SYSTEMS SHALL COMPLY WITH SECTION 903 OF 2021 INTERNATIONAL BUILDING CODE OF NEW JERSEY.
4. INSPECTION AND TESTS OF SPRINKLERS SHALL BE CONDUCTED AS SEC. 903.5 OF 2021 INTERNATIONAL BUILDING CODE OF NEW JERSEY & 2021 INTERNATIONAL FIRE CODE.
5. THE OCCUPANCY OF THE AREAS TO BE SPRINKLER IN ACCORDANCE WITH 903.2 OF 2021 INTERNATIONAL BUILDING CODE OF NEW JERSEY.
6. FIRE HOSE THREADS AND FITTINGS USED IN CONNECTION WITH AUTOMATIC SPRINKLER SYSTEMS SHALL BE IN ACCORDANCE WITH 903.3.6 OF 2021 INTERNATIONAL BUILDING CODE OF NEW JERSEY.
7. STOCK OF EXTRA SPRINKLERS WILL BE FURNISHED AS REQUIRED BY 2021 INTERNATIONAL FIRE CODE OF NEW JERSEY (REQUIRED FOR EACH TEMPERATURE RATING).
8. SPRINKLER ALARM SHALL BE IN ACCORDANCE WITH CHAPTER 9 OF 2021 INTERNATIONAL FIRE CODE OF NEW JERSEY.
9. ALL BLIND SPACES EXCEEDING 6" IN WIDTH OR DEPTH WHICH CONTAIN COMBUSTIBLE MATERIAL WILL BE SPRINKLERED.
10. ALL PIPE PASSING THROUGH WALLS WILL COMPLY WITH SECTION SEC. 714 2021 INTERNATIONAL FIRE CODE OF NEW JERSEY.
11. PROVIDE DEPARTMENT OF WATER SUPPLY LETTER WITH FLOW TEST DATE IF THERE IS A DIRECT CONNECTION TO THE STREET WATER SUPPLY.
12. ALL VALVES ON CONNECTIONS TO WATER SUPPLIES TO SPRINKLER SHALL BE APPROVED O.S. & Y. OR APPROVED INDICATOR TYPE.
13. 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 2021 INTERNATIONAL FIRE CODE OF NEW JERSEY.
14. MINIMUM BRANCH PIPE SIZE TO BE ONE INCH (1").
15. 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.
16. FIRE PROTECTION SYSTEM SHALL BE MAINTAINED IN ACCORDANCE WITH SECTION 901.2 OF 2021 INTERNATIONAL FIRE CODE OF NEW JERSEY.
17. FIRE PROTECTION SYSTEMS SHALL BE INSPECTED, TESTED AND MAINTAINED IN ACCORDANCE WITH THE REFERENCED STANDARDS LISTED IN TABLE 901.6.2 OF 2021 INTERNATIONAL FIRE CODE OF NEW JERSEY.
18. AUTOMATIC SPRINKLER SYSTEMS SHALL BE DESIGNED AND INSTALLED IN ACCORDANCE WITH SECTIONS 903.3.1 THROUGH 903.3.5 OF 2021 INTERNATIONAL FIRE CODE OF NEW JERSEY..
19. SHOP DRAWINGS FOR THE FIRE PROTECTION SYSTEM SHALL BE SUBMITTED TO INDICATE CONFORMANCE TO CHAPTER 9, ANY OTHER APPLICABLE PROVISION OF THE UNIFORM CODE, AND THE CONSTRUCTION DOCUMENTS PER WSBC SECTION 106.2.2 & CHAPTER 23, NFPA 13-2019. SUCH SHOP DRAWINGS SHALL BE APPROVED PRIOR TO THE START OF SYSTEM INSTALLATION. SHOP DRAWINGS SHALL CONTAIN ALL INFORMATION AS REQUIRED BY THE REFERENCED INSTALLATION STANDARDS IN CHAPTER 9 OR IN ANY OTHER APPLICABLE PROVISION OF THE UNIFORM CODE.
20. PROVIDE FLUSHING TO SPRINKLER SYSTEM AS PER NFPA 13-2019 SECTION 8.16.3 AND TESTING PER NFPA 13-2019 SECTION 10.10.2.2 WITNESSED BY THE AHJ. FLUSHING & TESTING SHALL BE DOCUMENTED ON THE REQUIRED NFPA FORMS AND A COPY PROVIDED TO THE AHJ. CO-ORDINATE FLUSHING DRAIN REQUIREMENT WITH PLUMBING CONTRACTOR.

| SPRINKLER LEGENDS AND ABBREVATIONS | |
|---|---|
| ● (N) | NEW CONCEALED PENDENT SPRINKLER HEAD |
| ◉ (N) | NEW UPRIGHT SPRINKLER HEAD |

| HAZARD CLASSIFICATION AND DESIGN DENSITY |
|---|
| OCCUPANCY: LIGHT HAZARD<br>MINIMUM DESIGN DENSITY: 0.10 GPM/SQ. FT. |
| OCCUPANCY: ORDINARY HAZARD<br>MINIMUM DESIGN DENSITY: 0.15 GPM/SQ. FT. |

## SPRINKLER SPECIFICATIONS

PART 1 - GENERAL

1.01 REQUIREMENTS

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

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

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

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

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

1.02 WORK INCLUDED

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

1. ALL WORK SHALL COMPLY WITH REQUIREMENTS OF THE . CITY BUILDING CODE, N.F.P.A. STANDARD 13-2019, INTERNATIONAL FIRE CODE 2021. 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 2021 INTERNATIONAL BUILDING CODE OF NEW JERSEY OR LOCAL AHJ. BUILDING DEPARTMENT AND NFPA STANDARDS.

1.03 SHOP DRAWINGS AND SUBMITTALS

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

1. PIPE AND FITTINGS
2. VALVES
3. HANGERS AND SUPPORTS
4. SPRINKLER PIPING LAYOUT
5. TESTS
6. SPRINKLER HEADS
7. 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 13-2019, AND 2021 INTERNATIONAL FIRE CODE OF NEW JERSEY.

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, PIPE OR TUBE USED IN SPRINKLER SYSTEMS SHALL BE OF THE MATERIALS SPECIFIED IN SECTION 16.3.

D. AS PER NFPA 13, FITTINGS USED IN SPRINKLER SYSTEMS SHALL BE OF THE MATERIALS LISTED IN TABLE 6.4.1. 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, IT'S CONTENTS ETC. CAUSED BY LEAKS IN THE EQUIPMENT, BY UNPLUGGED OR DISCONNECTED PIPES, FITTINGS ETC., OR BY OVERFLOW, AND SHALL PAY FOR THE NECESSARY REPLACEMENTS OR REPAIRS TO THE WORK OF OTHERS, DAMAGED BY SUCH LEAKAGE.

2.08 INSERTS, HANGERS, ETC.

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

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

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

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

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

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

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

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

2.09 ESCUTCHEONS

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

2.10 AS-BUILT DRAWINGS

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

2.11 SPRINKLER HEADS

A. SPRINKLERS SHALL BE RATED FOR ORDINARY TEMPERATURES (155 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. MANUFACTURE OR APPROVED EQUAL, UL AND FM APPROVED, AS FOLLOWS:

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

2.12 PRESSURE GAUGE

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

PART 3 - EXECUTION

3.01 GUARANTEE

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

3.02 INSTALLATION

A. PIPING

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

B. PIPE JOINTS

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

### SPRINKLER SCHEDULE

| SYMBOL | NAME | COVERAGE | AREA | METAL | TEMPERATURE (°F) | RESPONSE | K-FACTOR | NPT | MFG | MODEL# | APPROVALS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ● | CONCEALED PENDENT | STANDARD | LH/OH OPEN AREAS | BRASS | 155 | QUICK | 5.6 | ½" | TYCO | SERIES RF-II TY3531 | FM APPROVED |
| ◉ | UPRIGHT | STANDARD | LH OPEN AREAS | BRASS | 155 | QUICK | 5.6 | ½" | TYCO | SERIES TY-FRB TY313 | FM APPROVED |

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



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CONTRACTOR'S NOTES:
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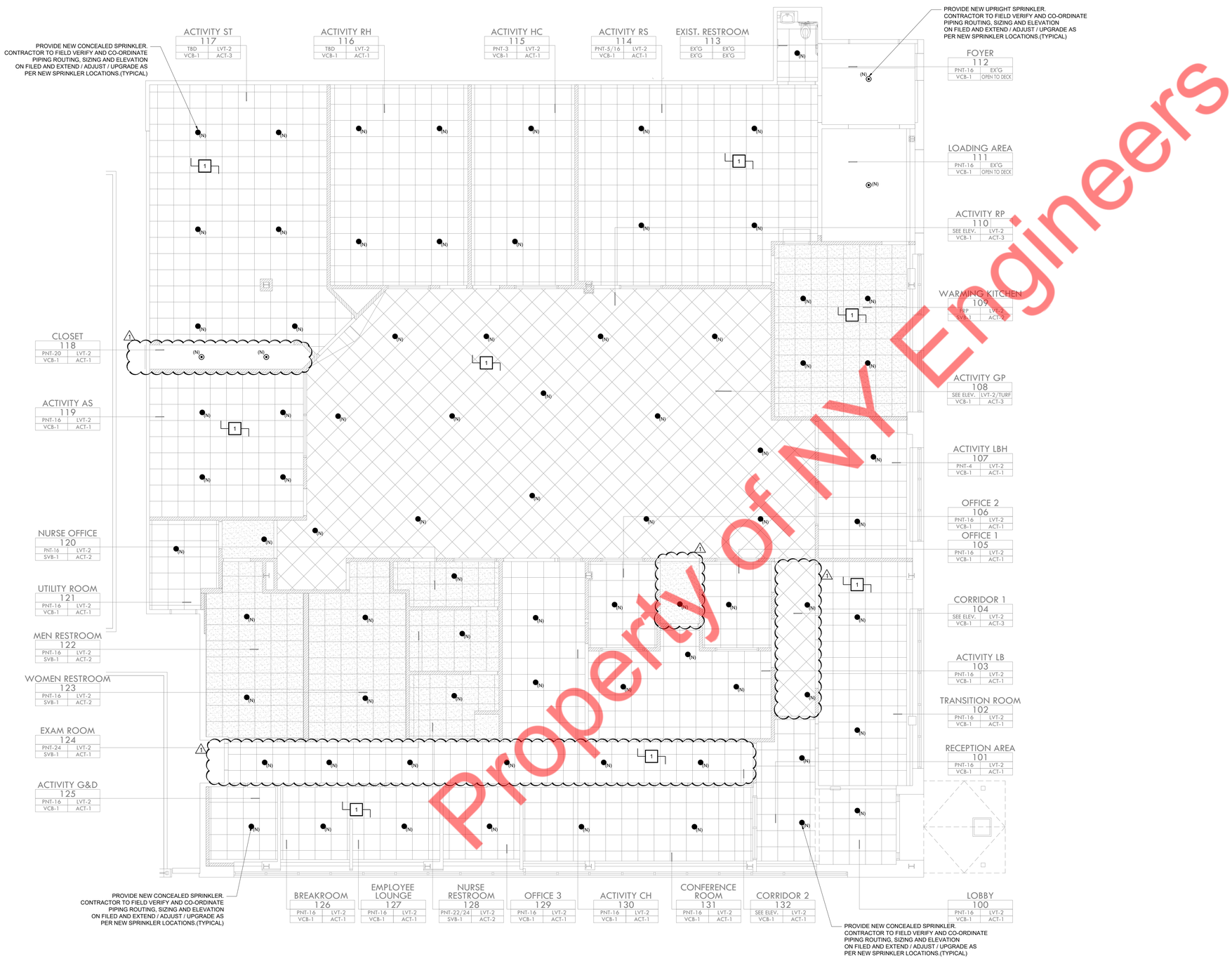
| | DATE | ISSUE |
|---|---|---|
| | 10.31.24 | LL/CLIENT REVIEW SET |
| | 11.15.24 | LL/CLIENT REVIEW SET |
| | 11.22.24 | BD SUBMISSION |
| 1 | 11.15.24 | CLIENT COMMENTS |
| | DATE | REVISION |

TITLE:
SPRINKLER NOTES, SYMBOLS AND SPECIFICATIONS

SHEET NUMBER:
SP001






## GENERAL NOTES:

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

   MAXIMUM 7.5' FROM WALL
   MAXIMUM DISTANCE BETWEEN 2 SPRINKLER HEADS IS 15'.
   MINIMUM DISTANCE BETWEEN 2 SPRINKLER HEADS IS 6'.
6. COVERAGE AREA PER SPRINKLER SHALL BE MAX. 225 SQ.FT FOR LIGHT HAZARD AND 130 SQ.FT. FOR ORDINARY HAZARD.
7. ALL SPRINKLER HEADS MEET DESIGN CRITERIA PER COVERAGE.
8. AUXILIARY DRAIN SHALL BE PROVIDED AT THE TRAPPED SECTIONS.
9. FOR SPRINKLER WORK ONLY.

## KEYED NOTES: [#]

1. CONNECT NEW PIPING FOR THE NEW SPRINKLER FROM THE EXISTING SPRINKLER MAIN RUNNING IN THE SPACE. CONTRACTOR TO FILED VERIFY AND ENSURE THE PIPE CONNECTION SHOULD BE TAKEN AFTER THE FCVA.

## CONTRACTOR'S NOTE:

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

## HAZARD CLASSIFICATION AND DESIGN DENSITY

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

## SPRINKLER HEAD COUNT

| | 1 |
|---|---|
| NEW CONCEALED PENDENT SPRINKLER | 77 |
| NEW UPRIGHT SPRINKLER | 04 |
| TOTAL SPRINKLER | 81 |

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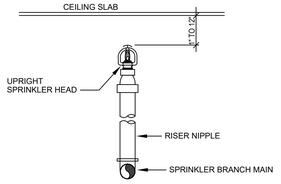
| | 11.15.24 | LL/CLIENT REVIEW SET |
| | 11.22.24 | BD SUBMISSION |
| 1 | 11.15.24 | CLIENT COMMENTS |
| △ | DATE | REVISION |

TITLE:
SPRINKLER PLAN

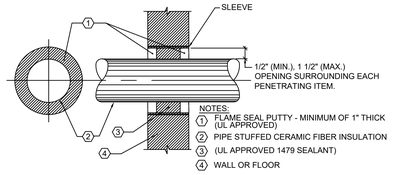
SHEET NUMBER:
SP100

1 SCALE 3 / 16" = 1' - 0"

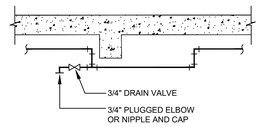
SPRINKLER PLAN



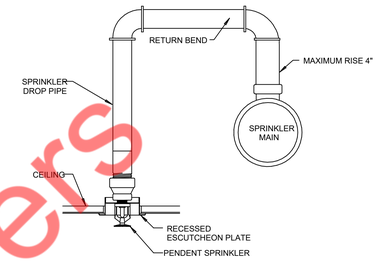

| 1 | SCALE | UPRIGHT SPRINKLER HEAD DETAIL |
|---|---|---|
| | N.T.S. | |



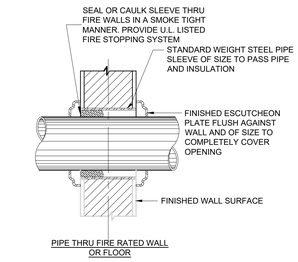

| 2 | SCALE | FIRE STOPPING DETAIL FOR FIRE/ SMOKE RATED WALL/FLOOR OPENINGS |
|---|---|---|
| | N.T.S. | |



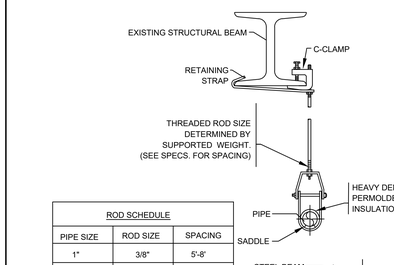

| 3 | SCALE | TYPICAL DRAIN CONNECTION FOR TRAPPED LINES ON WET PIPE SPRINKLER SYSTEMS |
|---|---|---|
| | N.T.S. | |




| 4 | SCALE | RECESSED PENDENT SPRINKLER HEAD DETAIL |
|---|---|---|
| | N.T.S. | |

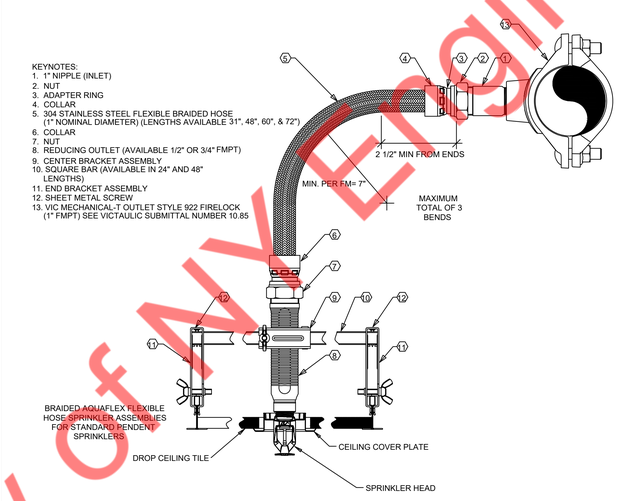



| 5 | SCALE | PIPE SLEEVE THRU WALL SECTION |
|---|---|---|
| | N.T.S. | |

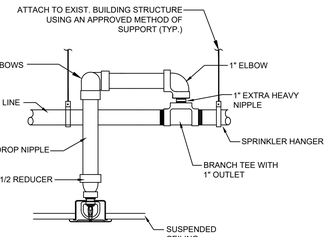



| ROD SCHEDULE | | |
|---|---|---|
| PIPE SIZE | ROD SIZE | SPACING |
| 1" | 3/8" | 5'-8' |
| 1 1/4" | 3/8" | 6'-10' |
| 1 1/2" | 3/8" | 8'-10' |
| 2" | 3/8" | 10'-12' |

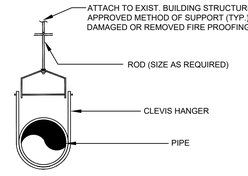
| 6 | SCALE | TYPICAL HANGER DETAIL AND ROD SCHEDULE |
|---|---|---|
| | N.T.S. | |




| 7 | SCALE | TYPICAL HANGER DETAIL AND ROD SCHEDULE |
|---|---|---|
| | N.T.S. | |




| 8 | SCALE | NEW CONCEALED PENDENT SPRINKLER HEAD DETAIL |
|---|---|---|
| | N.T.S. | |




| 9 | SCALE | HANGER DETAILS TYPICAL |
|---|---|---|
| | N.T.S. | |



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| 1 | 11.15.24 | CLIENT COMMENTS |
| 1 | DATE | REVISION |

TITLE:
SPRINKLER DETAILS

SHEET NUMBER:
SP200