MECHANICAL SYMBOLS LIST ACOUSTIC LINING -(AC-1)(TXF-1)EQUIPMENT SYMBOL BACKDRAFT DAMPER BD CDS CEILING DIFFUSER SUPPLY POINT OF NEW CONNECTION TO EXISTING CEILING DIFFUSER RETURN CDR AIR DEVICES CUBIC FEET OF AIR PER MINUTE CFM CD CONDENSATE DRAIN PIPE \boxtimes CEILING DIFFUSER SUPPLY DN DOWN ENERGY EFFICIENCY RATIO EER CEILING DIFFUSER RETURN FC FLEXIBLE CONNECTION DUCT ACCESSORIES INTEGRATED ENERGY IEER EFFICIENCY RATIO ROOF TOP UNIT RTU BACKDRAFT DAMPER REF REFRIGERANT PIPING RETURN GRILLE RG SEASONAL ENERGY VOLUME DAMPER W/ ACCESS DOOR SEER EFFICIENCY RATIO **VOLUME DAMPER** VD CONTROLS AND SENSORS CEF CEILING EXHAUST FAN EF EXHAUST FAN (T) THERMOSTAT \bigcirc TEMPERATURE SENSOR DUCTWORK ======= AIR DUCT W/ 1.5" ACOUSTICAL LINING **—** FLEXIBLE DUCT FLEXIBLE CONNECTION 24X12 RECTANGULAR DUCT (WIDTH X DEPTH) SUPPLY AIR RECTANGULAR DUCT \boxtimes CROSS SECTION RETURN AIR RECTANGULAR DUCT

	MECHANICAL DRAWING LIST
M1.0	MECHANICAL GENERAL NOTES, SYMBOLS LIST & ABBREVIATIONS
M1.1	MECHANICAL SPECIFICATIONS (1 OF 2)
M1.2	MECHANICAL SPECIFICATIONS (2 OF 2)
M2.0	MECHANICAL FLOOR & ROOF PLANS
М3.0	MECHANICAL DETAILS (1 OF 2)
M3.1	MECHANICAL DETAILS (2 OF 2)
M4.0	MECHANICAL SCHEDULES
M5.0	HOOD DETAILS (1 OF 3)
M5.1	HOOD DETAILS (2 OF 3)
M5.2	HOOD DETAILS (3 OF 3)

CROSS SECTION

ROUND DUCT (DIAMETER)

ROUND DUCT CROSS SECTION

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BETHLEHEM BUILDING DEPARTMENT NOTES

- ALL WORK SHALL COMPLY WITH APPLICABLE SECTIONS OF 2018-IBC AND RULES AND REGULATIONS OF THE DEPARTMENT OF BUILDINGS TO DATE.
- 1. THE CONTRACTOR SHALL ENGAGE THE SERVICES OF A PROFESSIONAL ENGINEER TO PROVIDE THE REQUIRED SPECIAL INSPECTIONS AND TESTS.
- TESTS WILL BE CONDUCTED UNDER DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, ARCHITECT OR OTHER PERSON HAVING NOT LESS THAN FIVE (5) YEARS EXPERIENCE SUPERVISING THE INSTALLATION OF SUCH MECHANICAL SYSTEMS. THE TESTS WILL SHOW COMPLIANCE WITH 2018 INTERNATIONAL BUILDING CODE REQUIREMENTS AS OUTLINES IN SECTION [BC 1704].
- 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.
- TESTS OF MECHANICAL SYSTEMS SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 2018 IMC 107 AND THE FOLLOWING SECTIONS OF THE 2018 IMC:
- A. VENTILATION SYSTEM SERVING COMMERCIAL COOKING
- APPLIANCES 2018 IMC 506,507. B. REFRIGERATION SYSTEMS -2018 IMC 1108.
- 5. THE FOLLOWING WORK ITEMS, COMPONENTS, MATERIALS, CAPACITIES, ETC. SHALL COMPLY WITH THE REFERENCED CODE OR STANDARD:
- A. STANDARDS OF HEATING 2018 IMC 309.1
- B. DUCT CONSTRUCTION AND INSTALLATION— 2018 IMC 603 C. AIR INTAKES, EXHAUSTS AND RELIEFS - 2018 IMC 401.5 D. AIR FILTERS - 2018 IMC 605
- E. GAS FIRED EQUIPMENT FUEL GAS CODE
- 6. MINIMUM TEMPERATURE TO BE MAINTAINED IN OCCUPIED SPACES DURING HEATING SEASON: 68 DEG. FAHRENHEIT.
- 7. VENTILATION FOR ALL AREA SHALL COMPLY WITH 2018 IMC
- 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 2018 IMC
- 9. REFER TO ARCHITECTURAL DRAWINGS FOR REQUIRED FIRE-RATED WALL AND SMOKE WALL CONSTRUCTION AND LOCATION.
- 10. 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.
- 11. MECHANICAL SYSTEMS SHALL BE COMMISSIONED PER VIECC 2018 C403.2.2, C408.2.1, C408.2.5 FINAL COMMISSIONING REPORT SHALL BE DUE WITHIN 90 DAYS OF RECEIPT OF CERTIFICATE OF OCCUPANCY
- 12. A WRITTEN REPORT DESCRIBING THE ACTIVITIES MEASUREMENTS COMPLETED IN ACCORDANCE WITH SECTION IECC 2018, C408.2.2.
- 13. ALL HEATING AND COOLING LOADS CALCULATED PER ASHRAE/ACCA 183.
- 14. SMOKE DETECTOR SHALL MEET UL268A.

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.
- 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.
- CONTRACTOR SHALL ASCERTAIN THE APPROPRIATE METHOD FOR BRINGING THE UNITS INTO AND THROUGH THE BUILDING TO POSITION UNIT IN LOCATION SHOWN ON THE PLANS. WHERE NECESSARY, EQUIPMENT SHALL BE SHIPPED FROM MANUFACTURER IN SECTIONS OF SIZE SUITABLE FOR MOVING THROUGH RESTRICTIVE SPACES. COORDINATE WITH BUILDING OWNER APPROPRIATE TIMES OF DAY SUCH EQUIPMENT MAY BE MOVED THROUGH ALL AREAS.
- 7. DISCONNECT, REMOVE AND/OR RELOCATE EXISTING MATERIAL, EQUIPMENT AND OTHER WORK AS NOTED OR REQUIRED FOR PROPER INSTALLATION OF NEW SYSTEM.
- 8. CONNECT NEW WORK TO EXISTING WORK IN NEAT AND APPROVED MANNER. RESTORE EXISTING WORK DISTURBED WHILE INSTALLING NEW WORK TO ACCEPTABLE CONDITION AS DETERMINED BY ARCHITECT.
- 9. PLAN INSTALLATION OF NEW WORK AND CONNECTIONS TO EXISTING WORK TO INSURE MINIMUM INTERFERENCE WITH REGULAR OPERATION OF EXISTING FACILITIES. ALL SYSTEM SHUTDOWNS AFFECTING OTHER AREAS SHALL BE COORDINATED WITH BUILDING OWNER. INSTALL ISOLATION VALVES AT POINT OF CONNECTION TO THE EXISTING PIPING. PROVIDE TEMPORARY DUCT CAPS AND/OR CONNECTIONS TO MINIMIZE SHUTDOWN
- 10. SUPPORT ALL DUCTWORK AND PIPING FROM BUILDING STRUCTURE AND/OR FRAMING IN AN APPROVED MANNER. WHERE OVERHEAD CONSTRUCTION DOES NOT PERMIT FASTENING OR SUPPORTS FOR EQUIPMENT, FURNISH ADDITIONAL FRAMING. INSERTS SHALL BE STEEL, SLOTTED TYPE AND FACTORY PAINTED. SINGLE ROD SHALL BE SIMILAR TO GRINNELL FIG. 281. MULTI-ROD SHALL BE SIMILAR TO FEE & MASON SERIES 9000 WITH END CAPS AND CLOSURE STRIPS. MAXIMUM LOADING INCLUDING PIPES, DUCTWORK CONTENTS AND COVERING SHALL NOT EXCEED 75% OF RATED INSERT CAPABILITY. WHEN SUPPORTING FROM BUILDING USE BEAM CLAMPS IN APPROVED MANNER.
- 11. PROVIDE ALL NECESSARY FLASHING AND COUNTER FLASHING TO MAINTAIN THE WATERPROOFING INTEGRITY OF THIS BUILDING AS REQUIRED BY THE INSTALLATION OR REMOVAL OF PIPES, DUCTS, LOUVERS, CONDUIT, AND EQUIPMENT. PROVIDE EQUIPMENT CURBS AND DUNNAGE STEEL AS REQUIRED.
- 12. SEAL OPENINGS AROUND DUCTS AND PIPING THROUGH PARTITIONS, WALLS AND FLOORS (NOT IN SHAFTS) WITH MINERAL WOOL OR OTHER NONCOMBUSTIBLE MATERIAL (FIBERGLASS INSULATION IS NOT ACCEPTABLE).
- 13. WHERE PENETRATIONS THROUGH FIRE RATED WALLS ARE NOT FIRE PROOFED THIS CONTRACTOR SHALL BE RESPONSIBLE TO SEAL SAME TO MAINTAIN THE RATED INTEGRITY.
- INSTALL WORK SO AS TO BE READILY ACCESSIBLE FOR OPERATION, MAINTENANCE AND REPAIR. MINOR DEVIATIONS FROM DRAWINGS MAY BE MADE TO ACCOMPLISH THIS, BUT CHANGES WHICH INVOLVE EXTRA COST SHALL NOT BE MADE WITHOUT APPROVAL.
- 15. ACCESS DOORS ARE REQUIRED FOR ALL BUILDING SERVICE VALVES THAT RUN THROUGH THE SPACE, AND ACCESS DOOR SHALL HAVE THE EQUAL RATED CAPACITY (1HR, 2HR, ETC.) AS WALL. COORDINATE ALL LOCATIONS OF ACCESS DOORS WITH THE ARCHITECT.
- 16. REMOVABLE ACCESS TILE AND/OR ACCESS DOOR ARE REQUIRED IN HUNG CEILINGS, SHAFTS AND WALLS FOR ALL VOLUME AND FIRE DAMPERS, AUTOMATIC DAMPERS AND ALL OTHER MECHANICAL EQUIPMENT AND DEVICES, HVAC CONTRACTOR TO FURNISH ACCESS LOCATION REQUIREMENTS TO GENERAL CONTRACTOR. ACCESS TILE IDENTIFICATION: PROVIDE BUTTONS, TABS, AND MARKERS TO IDENTIFY LOCATION OF CONCEALED VALVES, DAMPERS AND EQUIPMENT.
- 17. THE CONTRACTOR SHALL KEEP ALL EQUIPMENT AND MATERIALS, AND ALL PARTS OF THE BUILDING, EXTERIOR SPACES AND ADJACENT STREETS, SIDEWALKS AND PAVEMENTS. FREE FROM MATERIAL AND DEBRIS RESULTING FROM THE EXECUTION OF THIS WORK. EXCESS MATERIALS WILL NOT BE PERMITTED TO ACCUMULATE EITHER ON THE INTERIOR OR THE EXTERIOR.
- 18. UNLESS OTHERWISE SPECIFICALLY SPECIFIED, INCLUDE ALL CUTTING AND PATCHING OF EXISTING FLOORS, WALLS, PARTITIONS AND OTHER MATERIALS IN THE EXISTING BUILDING. THE CONTRACTOR SHALL RESTORE THESE AREAS TO ORIGINAL
- 19. MATERIALS AND WORKMANSHIP, UNLESS OTHERWISE NOTED, SHALL BE IN ACCORDANCE WITH BUILDING STANDARDS.
- 20. ALL EQUIPMENT SHALL BE PROVIDED WITH ONE YEAR WARRANTY PARTS AND LABOR AND FIVE YEARS ON COMPRESSORS. WARRANTY PERIOD BEGINS UPON PROJECT ACCEPTANCE
- 21. THE CONTRACTOR SHALL BE RESPONSIBLE FOR HIS WORK WITH ITS COMPLETION AND FINAL ACCEPTANCE AND SHALL REPLACE ANY OF THE SAME WHICH MAY BE DAMAGED, LOST, OR STOLEN WITHOUT ADDITIONAL COST TO THE OWNER.
- 22. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE FAILURE OF ANY DUCTWORK SYSTEM OR EQUIPMENT TO FUNCTION PROPERLY UPON COMPLETION OF HIS WORK UPON SAID SYSTEM OR EQUIPMENT.
- 23. SUBMIT SHOP DRAWING OF ALL WORK WHICH MUST BE APPROVED BY THE ARCHITECT AND ENGINEER BEFORE WORK
- 24. ALL MATERIAL AND EQUIPMENT TO BE NEW UNLESS OTHERWISE NOTED AND SHALL BE IN ACCORDANCE WITH BUILDING STANDARDS.
- 25. SUBMISSION OF A PROPOSAL SHALL BE CONSTRUED AS EVIDENCE THAT A CAREFUL EXAMINATION OF THE PORTIONS OF THE EXISTING BUILDING, EQUIPMENT, ETC., WHICH AFFECT THIS

- AND THAT THE CONTRACTOR IS FAMILIAR WITH EXISTING CONDITIONS AND DIFFICULTIES THAT WILL AFFECT THE EXECUTION OF THE WORK. LATER CLAIMS SHALL NOT BE MADE FOR LABOR, EQUIPMENT OR MATERIALS REQUIRED BECAUSE OF DIFFICULTIES ENCOUNTERED WHICH COULD HAVE BEEN FORESEEN DURING SUCH AN EXAMINATION. ON-SITE INSPECTION SHALL VERIFY EXISTING DUCTWORK, PIPING (SIZES, CLEARANCES, ETC) AND CONDITIONS.
- 26. INSURANCE: IN ACCORDANCE WITH BUILDING REQUIREMENTS THE CONTRACTOR SHALL INCLUDE A HOLD HARMLESS CLAUSE FOR OWNER AND ENGINEER.
- 27. THE FINAL ACCEPTANCE WILL BE MADE AFTER THE CONTRACTOR HAS ADJUSTED HIS EQUIPMENT, BALANCED THE VARIOUS SYSTEMS, DEMONSTRATED THAT IT FULFILLS THE REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS AND HAS FURNISHED ALL THE REQUIRED CERTIFICATES OF INSPECTION AND APPROVAL.
- 28. SPECIFICATIONS ARE OF SIMPLIFIED FORM AND INCLUDE INCOMPLETE SENTENCES. WORDS OR PHRASES SUCH AS "THE CONTRACTOR SHALL," "SHALL BE," "FURNISH," "PROVIDE," "A," "THE," AND "ALL" HAVE BEEN OMITTED FOR BREVITY.
- 29. WHERE A CONFLICT EXISTS BETWEEN THE DRAWINGS, THE SPECIFICATIONS OR ANY OTHER CONSTRUCTION DOCUMENT, THE ONE WITH THE MOST STRINGENT REQUIREMENT(S) SHALL APPLY.

DEFINITIONS:

- PROVIDE": TO SUPPLY, INSTALL AND CONNECT UP COMPLETE AND READY FOR SAFE AND REGULAR OPERATION THE PARTICULAR WORK REFERRED TO UNLESS SPECIFICALLY 13. ALL MISCELLANEOUS STEEL REQUIRED TO ENSURE PROPER OTHERWISE NOTED.
- 2) "INSTALL": TO ERECT, MOUNT AND CONNECT COMPLETE WITH RELATED ACCESSORIES.
- AND DELIVER COMPLETE WITH RELATED ACCESSORIES.

SCOPE OF WORK

SCOPE OF WORK

- 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 17. ALL DUCTWORK, PIPING, AND EQUIPMENT SUPPORTED FROM 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 AUTHORITIES AND PAY ALL CHARGES FOR SAME. CONTRACTOR SHALL PAY ALL COSTS FOR, AND FURNISH TO THE OWNER BEFORE FINAL BILLING, ALL CERTIFICATES NECESSARY AS REGULATIONS WHERE THEY APPLY TO THIS WORK.
- 3.THE CONTRACTOR SHALL FURNISH A WRITTEN GUARANTEE TO REPLACE OR REPAIR PROMPTLY AND ASSUME RESPONSIBILITY 20. ALL CONDENSATE DRAIN LINES FROM EACH ROOF TOP UNIT 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 SHALL ALSO PROVIDE THAT WHERE DEFECTS OCCUR, THE 21. REFER TO TYPICAL DETAILS FOR DUCTWORK, PIPING, AND BE DONE AS DIRECTED BY THE OWNER. THIS GUARANTEE CONTRACTOR WILL ASSUME RESPONSIBILITY FOR ALL EXPENSES INCURRED IN REPAIRING AND REPLACING WORK OF OTHER TRADES AFFECTED BY DEFECTS, REPAIRS OR REPLACEMENTS IN 22. ALL TESTS SHALL BE COMPLETED BEFORE ANY MECHANICAL EQUIPMENT SUPPLIED BY THE CONTRACTOR.

GENERAL HVAC NOTES

- 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.
- 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.

- WORK, AND THE ACCESS TO SUCH SPACES, HAS BEEN MADE 6. INSTALL ALL MECHANICAL EQUIPMENT AND APPURTENANCES IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. CONTRACT DOCUMENTS, AND APPLICABLE CODES AND REGULATIONS.
 - WHERE TWO OR MORE ITEMS OF THE SAME TYPE OF EQUIPMENT ARE REQUIRED, THE PRODUCT OF ONE MANUFACTURER SHALL BE USED.

COORDINATE ALL EQUIPMENT CONNECTIONS WITH MANUFACTURERS' CERTIFIED DRAWINGS. COORDINATE AND PROVIDE ALL DUCT AND PIPING TRANSITIONS REQUIRED FOR FINAL EQUIPMENT CONNECTIONS TO FURNISHED EQUIPMENT. FIELD VERIFY AND COORDINATE ALL DUCT AND PIPING DIMENSIONS BEFORE FABRICATION.

- 9. ALL CONTROL WIRE AND CONDUIT SHALL COMPLY WITH THE NATIONAL ELECTRIC CODE AND ELECTRICAL DIVISION OF THE SPECIFICATION.
- 10. PROVIDE VIBRATION ISOLATION FOR ALL MECHANICAL EQUIPMENT TO PREVENT TRANSMISSION OF VIBRATION TO BUILDING STRUCTURE.
- 11. LOCATE ALL TEMPERATURE, AND FLOW MEASURING DEVICES IN ACCESSIBLE LOCATIONS WITH THE STRAIGHT SECTION OF PIPE OR DUCT UP- AND DOWNSTREAM AS RECOMMENDED BY THE MANUFACTURER FOR GOOD ACCURACY.
- 12. WHERE BEAMS ARE INDICATED TO BE PENETRATED WITH DUCTWORK OR PIPING, COORDINATE DUCTWORK AND PIPING LAYOUT WITH BEAM OPENING SIZE AND OPENING LOCATIONS. COORDINATION SHALL BE DONE PRIOR TO THE FABRICATION OF DUCTWORK, CUTTING OF PIPING, OR FABRICATION OF BEAMS.
- INSTALLATION AND AS SHOWN IN THE DETAILS FOR DUCTWORK, AND EQUIPMENT (UNLESS OTHERWISE NOTED) SHALL BE FURNISHED AND INSTALLED BY THE MECHANICAL CONTRACTOR.
- "FURNISH" OR "SUPPLY": TO PURCHASE, PROCURE, ACQUIRE 14. PROVIDE ACCESS PANELS FOR INSTALLATION IN WALLS AND CEILINGS, WHERE REQUIRED, TO SERVICE DAMPERS, VALVES, SMOKE DETECTORS, AND OTHER CONCEALED MECHANICAL EQUIPMENT. ACCESS PANELS SHALL BE TURNED OVER TO THE GENERAL CONTRACTOR FOR INSTALLATION. ACCESS PANELS SHALL HAVE THE EQUAL RATED CAPACITY (1HR, 2HR, ETC.) AS WALL.
 - 15. MECHANICAL EQUIPMENT, DUCTWORK, AND PIPING SHALL NOT BE SUPPORTED FROM A METAL DECK.
- 1. THE WORK UNDER CONTRACT INCLUDES ALL LABOR, MATERIALS 16. ALL EQUIPMENT, PIPING, DUCTWORK, ETC., SHALL BE SUPPORTED AS DETAILED, SPECIFIED AND REQUIRED TO PROVIDE A VIBRATION-FREE INSTALLATION.
 - 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.
- ANY OR ALL PARTS OF THE WORK IF SO REQUIRED BY 18. LOCATIONS AND SIZES OF ALL FLOOR, WALL, AND ROOF OPENINGS SHALL BE COORDINATED WITH ALL OTHER TRADES INVOLVED.
- EVIDENCE THAT THE WORK INSTALLED CONFORMS WITH ALL 19. ALL OPENINGS IN FIRE WALLS DUE TO DUCTWORK, PIPING, CONDUIT, ETC., SHALL BE FIRE STOPPED WITH A PRODUCT SIMILAR TO 3M OR APPROVED EQUAL.
 - SHALL BE PIPED 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.
 - EQUIPMENT INSTALLATION.
 - EQUIPMENT OR PIPING INSULATION IS APPLIED.
 - 23. TESTING. ADJUSTING. AND BALANCING AGENCY SHALL BE A MEMBER OF THE ASSOCIATED AIR BALANCE COUNCIL (AABC) OR THE NATIONAL ENVIRONMENTAL BALANCING BUREAU (NEBB). TESTING. ADJUSTING. AND BALANCING SHALL BE PERFORMED IN ACCORDANCE WITH THE AABC STANDARDS.

CONSULTANTS (ENGINEER):

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

ISSUE FOR PERMIT DESCRIPTION DATE

REVISIONS

ALL FIELD CONDITIONS AND DIMENSIONS ARE TO BE FIELD VERIFIED PRIOR TO COMMENCEMENT OF THE WORK. ALL DISCREPANCIES ARE TO BE BROUGHT TO THE ATTENTION OF THE ARCHITECT BEFORE PROCEEDING WITH THE WORK THESE DRAWINGS ARE THE PROPERTY OF JOHN WILLIAM LISTER ARCHITECT. THEY ARE NOT TO BE REPRODUCED IN PART OR IN WHOLE WITHOUT THE CONSENT OF JOHN WILLIAM LISTER ARCHITECT. THEY ARE TO BE USED ON THE PROJECT NOTED HEREON ONLY.

SOFRESH

SHEET TITLE MECHANICAL GENERAL NOTES & SYMBOLS SHEET NUMBER 08/24/23 DATE

AS NOTED SCALE NYE DRAWN BY NYE CHECKED BY 23126 PROJECT #

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 1.1 BIDDERS REPRESENTATIONS CLARITY FOR A SPECIFIC LOCATION REQUIREMENT AND SHALL NOT BE INTERPRETED AS THE EXTENT OF THE REQUIREMENTS FOR THESE ITEMS.
- 2. CONTRACTOR TO CHECK AND CORRECT ANY AND ALL DEFICIENCIES IN EXISTING DUCTS. ALL NEW DUCTWORK WILL COMPLY WITH THE LATEST SMACNA GUIDELINES AND CONFORM WITH REQUIREMENTS OF THE LATEST HANDBOOKS PUBLISHED BY ASHRAE.
- 3. PROVIDE VOLUME DAMPER AT EACH TAP TO MAIN DUCT AND WHERE NECESSARY TO PROPERLY BALANCE SYSTEM
- 4. SUPPLY AND RETURN DUCTWORK 20' FROM ALL HVAC UNITS SHALL BE LINED WITH 1.5" ACOUSTICAL LINING.
- 5. RE-INSULATE ALL DUCTWORK AND PIPING 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 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. LOCATE ALL MECHANICAL EQUIPMENT FOR UNOBSTRUCTED SECTION 0101 QUALITY OF WORK ACCESS TO UNIT ACCESS PANELS, CONTROLS, AND VALVING.
- 14. 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.
- 15. UNLESS OTHERWISE NOTED, ALL DUCTWORK IS OVERHEAD, TIGHT TO THE UNDERSIDE OF THE STRUCTURE, WITH SPACE FOR INSULATION IF NEEDED.
- 16. RUNS OF FLEXIBLE DUCT SHALL NOT EXCEED 5 FT.
- 17. 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.
- 18. PROVIDE ACCESS DOORS IN DUCTWORK FOR THE OPERATION, SECTION 0102 REQUIRED DOCUMENTS ADJUSTMENT, AND MAINTENANCE OF ALL FANS, VALVES, AND MECHANICAL EQUIPMENT.
- 19. 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.
- 20. 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.
- 21. SEE SPECIFICATIONS FOR DUCTWORK GAUGES, BRACING, HANGERS, AND OTHER REQUIREMENTS.

SPECIFICATIONS

SECTION 0001 - NOTICE TO BIDDERS

- 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 1.2 SLEEVE-SEAL FITTINGS 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

- 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 3.1 INSTALLATION HAVING JURISDICTION.

END OF SECTION 0101

1.1 SHOP DRAWINGS

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

1.2 SUBMITTALS

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

1.3 RECORD DRAWINGS

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

1.4 EQUIPMENT OPERATING INSTRUCTIONS

- A. ON COMPLETION AND ACCEPTANCE OF WORK, THIS CONTRACTOR SHALL FURNISH WRITTEN 1.1 PERFORMANCE REQUIREMENTS 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.

SECTION 230517 - SLEEVES AND SLEEVE SEALS FOR HVAC

1.1 SLEEVE-SEAL SYSTEMS

- A. FIELD-ASSEMBLED, MODULAR SEALING-ELEMENT UNIT FOR FILLING ANNULAR SPACE BETWEEN PIPING AND SLEEVE.
- 1. SEALING ELEMENTS: EPDM RUBBER OR NBR.
- 2. PRESSURE PLATES: CARBON STEEL, PLASTIC, STAINLESS 1.2 SUBMITTALS STEEL.

PRODUCTS THAT MAY BE INCORPORATED INTO THE WORK

3. CONNECTING BOLTS AND NUTS: CARBON STEEL WITH CORROSION-RESISTANT COATING, STAINLESS STEEL. MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, AVAILABLE MANUFACTURERS OFFERING

INCLUDE, BUT ARE NOT LIMITED TO, THE FOLLOWING:

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

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

1.3 GROUT

A. NON-SHRINK, FACTORY PACKAGED. 1.4 SLEEVE AND SLEEVE-SEAL SCHEDULE

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

1. INTERIOR PARTITIONS:

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

END OF SECTION 230517

ESCUTCHEONS FOR HVAC

PRODUCTS

2.1 ESCUTCHEONS

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

DEEP-DRAWN,

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

B. ONE-PIECE, DEEP-PATTERN TYPE:

FINISH AND SPRING-CLIP FASTENERS.

2.2 FLOOR PLATES

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

PART 3 - EXECUTION

- A. INSTALL ESCUTCHEONS FOR PIPING PENETRATIONS OF WALLS, CEILINGS, AND FINISHED FLOORS.
- B. INSTALL ESCUTCHEONS WITH ID TO CLOSELY FIT AROUND PIPE, TUBE, AND INSULATION OF PIPING AND WITH OD THAT COMPLETELY COVERS OPENING.

1. ESCUTCHEONS FOR NEW PIPING:

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

.2 FIELD QUALITY CONTROL

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

END OF SECTION 230518

SECTION 230529 - HANGERS AND SUPPORTS FOR HVAC PIPING AND EQUIPMENT

- A. DELEGATED DESIGN: DESIGN TRAPEZE PIPE HANGERS AND EQUIPMENT SUPPORTS, INCLUDING COMPREHENSIVE ENGINEERING ANALYSIS BY A QUALIFIED PROFESSIONAL ENGINEER, USING PERFORMANCE REQUIREMENTS AND DESIGN CRITERIA INDICATED.
- STRUCTURAL PERFORMANCE: HANGERS AND SUPPORTS FOR HVAC PIPING AND EQUIPMENT SHALL WITHSTAND THE EFFECTS OF GRAVITY LOADS AND STRESSES WITHIN LIMITS AND UNDER CONDITIONS INDICATED ACCORDING TO ASCE/SEI 7.

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

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

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

1.3 QUALITY ASSURANCE

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

A. METAL PIPE HANGERS AND SUPPORTS: CARBON OR

STAINLESS STEEL

B. TRAPEZE PIPE HANGERS: CARBON OR STAINLESS STEEL

- C. FIBERGLASS PIPE HANGERS: -CLEVIS, COMPOSITES, COOPER B-LINE
- D. METAL FRAMING SYSTEMS: MFMA MANUFACTURER
- E. FIBERGLASS STRUT SYSTEMS: COOPER B-LINE
- F. THERMAL-HANGER SHIELD INSERTS:
- G. FASTENER SYSTEMS: POWDER-ACTUATED FASTENERS OR MECHANICAL-EXPANSION ANCHORS
- H. PIPE STANDS: COMPACT, LOW TYPE, SINGLE PIPE, HIGH TYPE, SINGLE PIPE, HIGH TYPE, MULTIPLE PIPES, CURB-MOUNTED TYPE
- I. EQUIPMENT SUPPORTS.

END OF SECTION 230529

SECTION 230548 - VIBRATION CONTROLS FOR HVAC PIPING AND EQUIPMENT

PART 1 — GENERAL 1.1 COMPONENTS

A. VIBRATION ISOLATORS:

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

ALL-DIRECTIONAL, ACOUSTICAL PIPE ANCHOR. 11.RESILIENT PIPE GUIDES.

B. AIR-MOUNTING SYSTEMS:

- 1. AIR MOUNTS: FREESTANDING, SINGLE OR MULTIPLE, COMPRESSED-AIR BELLOWS.
- 2. RESTRAINED AIR MOUNTS: HOUSED COMPRESSED-AIR BELLOWS.
- C. RESTRAINED VIBRATION ISOLATION ROOF-CURB RAILS: FACTORY-ASSEMBLED, FULLY ENCLOSED, INSULATED, AIR-AND WATERTIGHT CURB RAIL; WITH SPRING ISOLATORS MOUNTED ON ELASTOMERIC ISOLATION PADS, AND SNUBBER
- BUSHINGS. D. VIBRATION ISOLATION EQUIPMENT BASES:
- 1. STEEL BASE: FACTORY—FABRICATED. WELDED. STRUCTURAL-STEEL BASES AND RAILS.
- 2. INERTIA BASE: FACTORY-FABRICATED, WELDED, STRUCTURAL-STEEL BASES AND RAILS READY FOR FIELD-APPLIED, CAST-IN-PLACE CONCRETE

1.2 FIELD QUALITY CONTROL

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

PART-2 PRODUCTS

- 1.1 VIBRATION ISOLATORS & SEISMIC-RESTRAINT DEVICES A. AVAILABLE MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, MANUFACTURERS OFFERING PRODUCTS THAT MAY BE INCORPORATED INTO THE WORK INCLUDE, BUT ARE NOT LIMITED TO, THE FOLLOWING:
- B. MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY ONE OF THE 1.4 ITEMS NOT INSULATED: FOLLOWING:
- 1. ACE MOUNTINGS CO., INC.
- 2. AMBER/BOOTH COMPANY, INC.
- 3. CALIFORNIA DYNAMICS CORPORATION.
- 4. HILTI, INC.

- 5. ISOLATION TECHNOLOGY, INC.
- KINETICS NOISE CONTROL.
- 7. LOOS & CO.; CABLEWARE DIVISION.
- 8. MASON INDUSTRIES.
- 9. TOLCO INCORPORATED; A BRAND OF NIBCO INC.
- 10. UNISTRUT; TYCO INTERNATIONAL, LT

END OF SECTION 230548

SECTION 230593 — TESTING, ADJUSTING, AND BALANCING FOR HVAC 1.1 SUMMARY

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

1. AIR SYSTEMS: CONSTANT VOLUME

1.2 QUALITY ASSURANCE A. THE CONTRACTOR SHALL PROCURE THE SERVICES OF A TESTING, ADJUSTING AND BALANCING (TAB) SPECIALIST WHO

SPECIALIZES IN HEATING, VENTILATION AND AIR CONDITIONING SYSTEMS. THE TAB AGENT SHALL HAVE THE FOLLOWING QUALIFICATIONS: AABC, NEBB OR TABB CERTIFIED.

1.3 EXECUTION

- THE TAB SPECIALIST SHALL PERFORM FLOW MEASUREMENTS END OF SECTION 230713 OF ALL EXISTING AIR AND HYDRONIC SYSTEMS THAT ARE TO REMAIN OR TO BE INCORPORATED INTO NEW WORK PRIOR SECTION 233113 - METAL DUCTS TO THE STARTING OF WORK IN THE PROJECT SCOPE. A REPORT OF THESE MEASUREMENTS, INDICATING ANY AND 1.1 CONSTRUCTION ALL DEFICIENCIES SHALL BE SUBMITTED FOR OWNER REVIEW.
- THE TAB SPECIALIST SHALL PERFORM FLOW MEASUREMENTS OF ALL NEW AIR AND HYDRONIC SYSTEMS AS LISTED ABOVE IN THE PROJECT SCOPE. A REPORT OF THESE MEASUREMENTS, INDICATING ANY AND ALL DEFICIENCIES SHALL BE SUBMITTED FOR OWNER REVIEW.
- C. THE REPORT SHALL INDICATE A SCHEMATIC DIAGRAM INDICATING LOCATIONS OF ALL EQUIPMENT TESTED AND MEASUREMENT LOCATIONS.
- D. PRIOR TO FINAL INSPECTION OF THE WORK, THE TAB SPECIALIST SHALL BALANCE ALL SYSTEMS AS INDICATED ABOVE TO THE REQUIREMENTS OF THE DESIGN. E. THE CONTRACTOR SHALL HAVE FURNISH AND INSTALL ALL

ADDITIONAL BALANCING EQUIPMENT, PRESSURE TAPS,

- GAUGES AND OTHER EQUIPMENT AS REQUIRED FOR A PROPERLY BALANCED SYSTEM AT NO ADDITIONAL COST TO THE OWNER. SUCH ADDITIONAL EQUIPMENT SHALL ADHERE IN STRICT ACCORDANCE WITH THE RESPECTIVE EQUIPMENT MANUFACTURER'S RECOMMENDATIONS. F. THE CONTRACTOR SHALL HAVE THE TESTING AND BALANCING
- 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

SPECIALIST COORDINATE ALL WORK OF THIS SZECTION WITH

- 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
- 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

- 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.

VIBRATION—CONTROL DEVICES.

5. FLEXIBLE CONNECTORS.

- 7. FACTORY-INSULATED ACCESS PANELS AND
- 8. DUCTS THAT HAVE INTERNAL ACOUSTICAL

1.5 PRODUCTS

A. THE FOLLOWING INSULATION MANUFACTURERS WILL BE ACCEPTABLE:

1. JOHNS-MANVILLE

2. OWENS-CORNING

LINING.

1.6 ACOUSTICAL TREATMENT

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.

- 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 GASKETED WITH 1/8" THICK REINFORCED GASKET, OVERLAPPÉD AT CORNERS, GASKET
- SIMILAR TO 3M-1202 OR APPROVED EQUAL. RECTANGULAR FITTINGS AND ALL TRANSITION PIECES FROM RECTANGULAR TO ROUND SHALL BE NO. 16 GAUGE ALL WELDED

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

CONSTRUCTION.

AWG A5.2.

USED:

- WITH NO. 30-02 AND COVERED WITH APPROVED SEALING TAPE. 5. RECTANGULAR DUCTWORK 18 GAUGE AND ARE TO BE BROUGHT TO THE HEAVIER. FILLER RODS SHALL BE IN ATTENTION OF THE ARCHITECT ACCORDANCE WITH SPECIFICATIONS FOR IRON BEFORE PROCEEDING WITH THE WORK
- 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

CONSULTANTS (ENGINEER):

NEARBY ENGINEERS 49674, MIAMI, FL 33179 PH-914.257.3455

382 NE 191ST STREET SUITE WWW.NY-ENGINEERS.COM

BENJAMIN FOSTER NO. 30-03 INSERTED INTO SEAM. ALL SEAMS SHALL BE BRUSHED ALL FIELD CONDITIONS AND DIMENSIONS ARE TO BE FIELD VERIFIED PRIOR TO COMMENCEMENT OF THE WORK, ALL DISCREPANCIES AND STEEL GAS WELDING RODS, ASTM 215; | THESE DRAWINGS ARE THE PROPERTY OF JOHN WILLIAM LISTER ARCHITECT. THEY ARE NOT TO BE 6. ALL FITTINGS SUCH AS ELBOWS, TEES, ETC., REPRODUCED IN PART OR IN WHOLE SHALL BE NO. 20 GAUGE ZINC COATED WITHOUT THE CONSENT OF STEEL. ELBOWS SHALL BE OF FIVE (5) JOHN WILLIAM LISTER ARCHITECT. THEY ARE TO BE USED ON THE PROJECT NOTED

HEREON ONLY.

ISSUE FOR PERMIT

DESCRIPTION DATE

REVISIONS

MECHANICAL

SPECIFICATIONS

SHEET TITLE

SOFRESH

08/24/23 DATE SHEET NUMBER AS NOTED SCALE NYE DRAWN BY NYE CHECKED BY 23126 PROJECT #

- USG MAX. SIDE INCHES TRANSVERSE JOINTS AND
- UP TO 12 S SLIP, DRIVE SLIP, ONE INCH POCKET LOCK ON 8 FOOT
- 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
- TAPPING LOCATED AS FOLLOWS:

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

SPECIFIED. IN ADDITION, PROVIDE AN AIRTIGHT PLUGGED

- E. FLAT OVAL OR ROUND DUCTWORK MAY BE PROVIDED IN LIEU RECTANGULAR DUCTWORK WITH THE REINFORCEMENT FOR FLAT SIDES SAME AS SPECIFIED FOR THE RECTANGULAR DUCTWORK, AND AS PER SMACNA FLAT OVAL DUCT CONSTRUCTION STANDARDS SHOWN IN FIG. 3—6 AND AS SHOWN IN FIG. 3—1 AND 3—2 FOR ROUND DUCTWORK.
- F. ALL DUCTWORK SHALL BE SEALED TO CLASS "A" AND LEAK TESTED TO MEAT SMACNA CLASS 6 FOR RECTANGULAR AND CLASS 3 FOR ROUND DUCTS.

1.2 MATERIALS

- A. SINGLE-WALL RECTANGULAR DUCTS AND FITTINGS.
- B. SINGLE-WALL ROUND AND FLAT-OVAL DUCTS AND FITTINGS.
- C. SHEET METAL MATERIALS:
 - 1. GALVANIZED SHEET STEEL.
- 2. STAINLESS-STEEL SHEETS.
- 3. ALUMINUM SHEETS.
- J. ALOMINOM SHEETS.
- 4. FACTORY-APPLIED ANTI-MICROBIAL COATING.

D. DUCT LINER:

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

E. SEALANT MATERIALS:

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

1.3 DUCT CLEANING

- A. CLEAN EXISTING DUCT SYSTEM(S) BEFORE TESTING, ADJUSTING, AND BALANCING.
- B. CLEAN THE FOLLOWING ITEMS:
- 1. AIR OUTLETS AND INLETS.
- 2. SUPPLY, RETURN, AND EXHAUST FANS.
- 3. AIR-HANDLING 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.

1.4 DUCT SCHEDULE

- A. ALL DUCTS SHALL BE GALVANIZED STEEL EXCEPT AS FOLLOWS:
 - 8. MOIST ENVIRONMENT DUCT MATERIAL: ALUMINUM.

END OF SECTION 233113

SECTION 233713 - DIFFUSERS AND GRILLES

1.1 PRODUCTS

- A. DIFFUSERS AND GRILLES SHALL BE FURNISHED AND INSTALLED FOR CAPACITIES AND IN LOCATIONS INDICATED ON DRAWINGS. ALL REGISTERS AND DIFFUSERS SHALL BE PRIME COATED STEEL OR EXTRUDED ALUMINUM FINISHED UNLESS OTHERWISE NOTED IN BAKED WHITE ENAMEL.
- B. MANUFACTURERS: TITUS
- 1. SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCT BY ONE OF THE FOLLOWING:
- a. CARNES.
- b. HART & COOLEY INC.
- c. KRUEGER.
- d. METALAIRE, INC.
- e. NAILOR INDUSTRIES INC.

- C. ALL DIFFUSERS SHALL HAVE CONTROLLING/EQUALIZING GRID AND OPPOSED BLADE DAMPER UNLESS OTHERWISE NOTED.
- D. ALL DUCTED RETURN REGISTERS SHALL HAVE AN OPPOSED BLADE DAMPER UNLESS OTHERWISE NOTED.

END OF SECTION 233713

THERMOSTATIC CONTROLS:

C403.4.1 THERMOSTATIC CONTROLS (MANDATORY)

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

EXCEPTION: INDEPENDENT PERIMETER SYSTEMS THAT ARE DESIGNED TO OFFSET ONLY BUILDING ENVELOPE HEAT LOSSES, GAINS OR BOTH SERVING ONE OR MORE PERIMETER ZONES ALSO SERVED BY AN INTERIOR SYSTEM PROVIDED THAT BOTH OF THE FOLLOWING CONDITIONS ARE MET:.

- 1. THE PERIMETER SYSTEM INCLUDES NOT FEWER THAN ONE THERMOSTATIC CONTROL ZONE FOR EACH BUILDING EXPOSURE HAVING EXTERIOR WALLS FACING ONLY ONE ORIENTATION (WITHIN ± 45 DEGREES) (0.8 RAD) FOR MORE THAN 50 CONTIGUOUS FEET (15 240 MM).
- 2. THE PERIMETER SYSTEM HEATING AND COOLING SUPPLY IS CONTROLLED BY THERMOSTATS LOCATED WITHIN THE ZONES SERVED BY THE SYSTEM.

C403.4.1.2 DEADBAND (MANDATORY)

WHERE USED TO CONTROL BOTH HEATING AND COOLING, ZONE THERMOSTATIC CONTROLS SHALL BE CONFIGURED TO PROVIDE A TEMPERATURE RANGE OR DEADBAND OF NOT LESS THAN 5°F (2.8°C) WITHIN WHICH THE SUPPLY OF HEATING AND COOLING ENERGY TO THE ZONE IS SHUT OFF OR REDUCED TO A MINIMUM. EXCEPTIONS:

- 1. THERMOSTATS REQUIRING MANUAL CHANGEOVER BETWEEN HEATING AND COOLING MODES.
- 2. REQUIRING PRECISION IN INDOOR TEMPERATURE CONTROL AS APPROVED BY THE CODE OFFICIAL.

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

C403.4.2 OFF—HOUR CONTROLS (MANDATORY)
EACH ZONE SHALL BE PROVIDED WITH THERMOSTATIC
SETBACK CONTROLS THAT ARE CONTROLLED BY EITHER AN
AUTOMATIC TIME CLOCK OR PROGRAMMABLE CONTROL
SYSTEM.
EXCEPTIONS:

- 1. ZONES THAT WILL BE OPERATED CONTINUOUSLY.
- 2. ZONES WITH A FULL HVAC LOAD DEMAND NOT EXCEEDING 6,800 BTU/H (2 KW) AND HAVING A MANUAL SHUTOFF SWITCH LOCATED WITH READY ACCESS.

C403.2.4.2.1 THERMOSTATIC SETBACK (MANDATORY)
THERMOSTATIC SETBACK CONTROLS SHALL BE CONFIGURED
TO SET BACK OR TEMPORARILY OPERATE THE SYSTEM TO
MAINTAIN ZONE TEMPERATURES DOWN TO 55°F (13°C) OR

MAINTAIN ZONE TEMPERATURES DOWN TO 55°F (13°C) OR UP TO 85°F (29°C).

C403.4.2.2 AUTOMATIC SETBACK AND SHUTDOWN

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

C403.4.2.3 AUTOMATIC START (MANDATORY)
AUTOMATIC START CONTROLS SHALL BE PROVIDED FOR
EACH HVAC SYSTEM. THE CONTROLS SHALL BE CONFIGURED
TO AUTOMATICALLY ADJUST THE DAILY START TIME OF THE
HVAC SYSTEM IN ORDER TO BRING EACH SPACE TO THE
DESIRED OCCUPIED TEMPERATURE IMMEDIATELY PRIOR TO
SCHEDULED OCCUPANCY.

HOURS; OR AN OCCUPANCY SENSOR.

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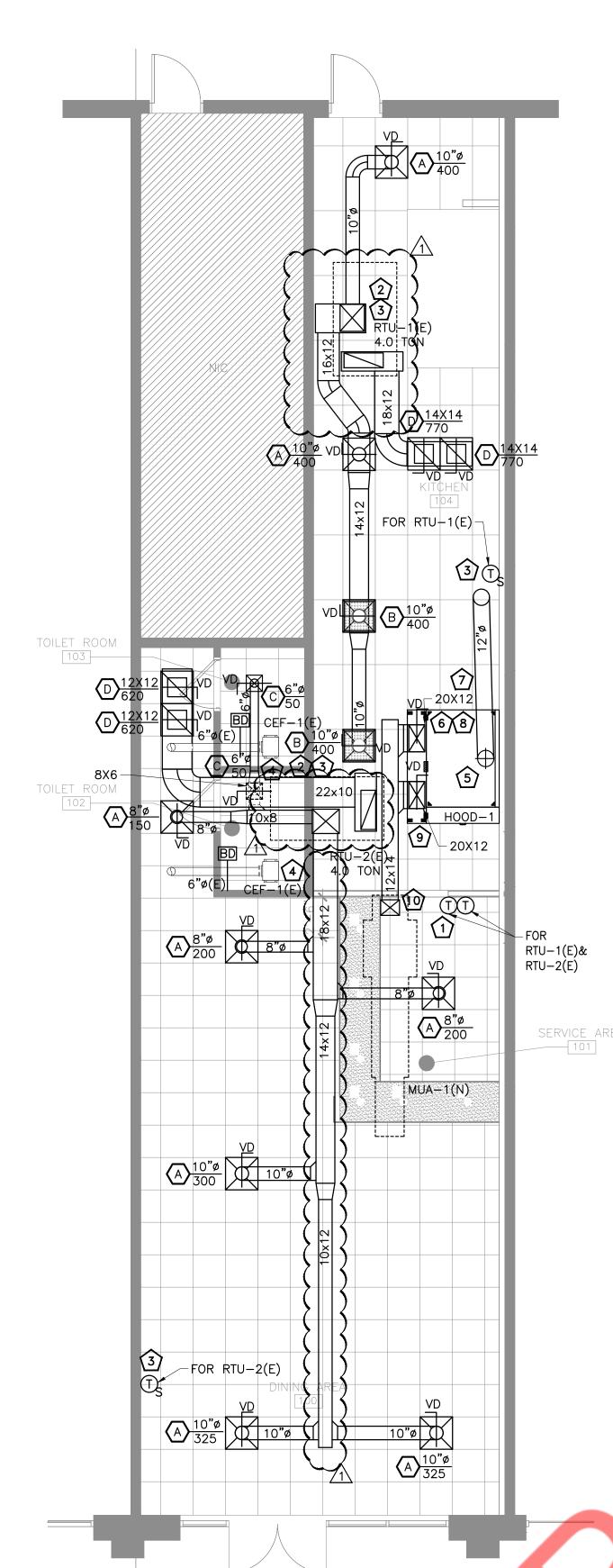
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MECHANICAL SPECIFICATIONS (2 OF 2)

08/24/23 DATE SHEET NUMBER
AS NOTED SCALE
NYE DRAWN BY
NYE CHECKED BY
23126 PROJECT #

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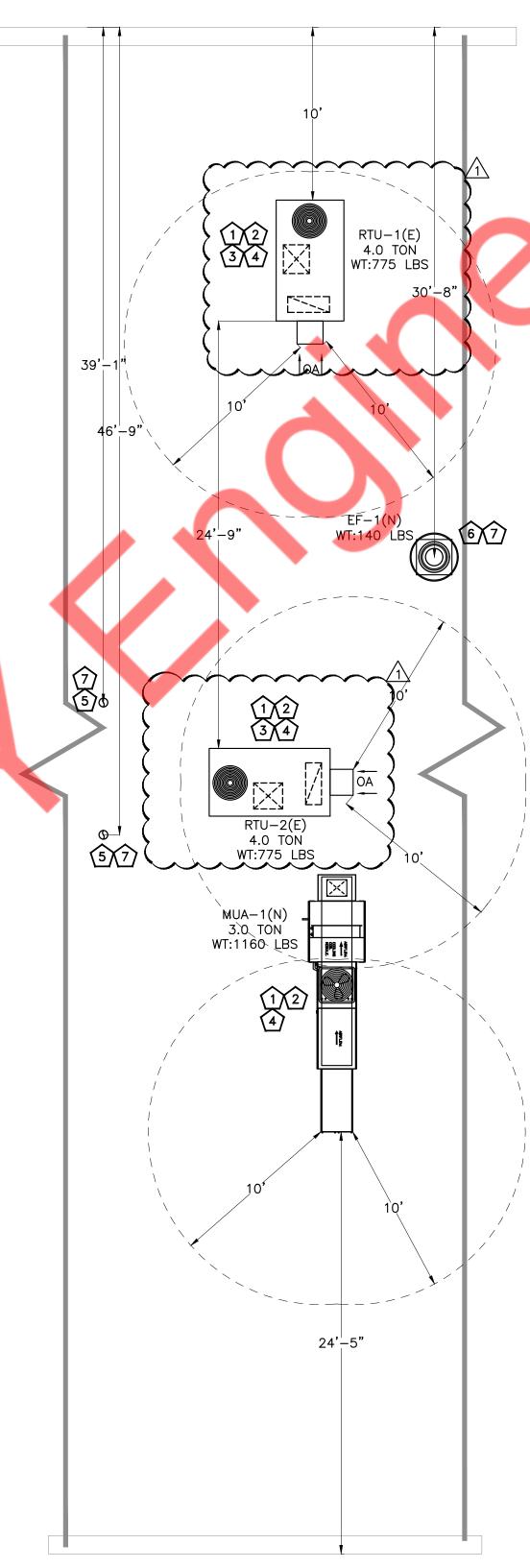
MECHANICAL GENERAL NOTES

- CONTRACTOR SHALL BALANCE EACH DEVICE WITH THE CFM SHOWN ON PLAN. NEW DUCTWORK SHOWN ON PLAN ARE SCHEMATIC ONLY. CONTRACTOR SHALL COORDINATE WITH OTHER TRADES FOR PIPING AND DUCTWORK ROUTING. OFFEST 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.
- EQUIPMENT SIZES, DIMENSIONS AND REQUIRED CONNECTIONS SHALL BE VERIFIED WITH THE ACTUAL EQUIPMENT SELECTED VENDOR DRAWINGS BEFORE FABRICATION OF DUCTWORK, PIPING ETC.
- DUCT SIZES SHOWN ON PLANS ARE CLEAR INSIDE AIR STREAM DIMENSIONS. CONTRACTOR SHALL COORDINATE ALL ELECTRICAL REQUIREMENTS FOR ALL HVAC BASED ON ACTUAL EQUIPMENT SELECTED PRIOR TO INSTALLATION.
- CONTRACTOR SHALL COORDINATE EQUIPMENT WEIGHTS AND SUPPORTS BASED ON ACTUAL EQUIPMENT SELECTED.
- MOUNT DUCTWORK AS HIGH AS POSSIBLE. 8. TEST AND BALANCE AIR SYSTEMS. PROVIDE REPORT TO G.C AND OWNER.
- 9. NEW DUCTWORK IN CONCEALED AREAS MAY BE RECTANGULAR WITH EQUIVALENT CROSS SECTIONAL FLOW AREA.
- 10. PROVIDE R-6 INSULATION FOR SUPPLY AND RETURN DUCT.
- 11. PROVIDE FIRE OR FIRE+SMOKE DAMPER WHEREVER DUCTS ARE CROSSING FIRE/SMOKE RATED WALLS/BARRIERS. COORDINATE WITH ARCHITECTURAL DRAWINGS FOR FIRE RATINGS OF THE WALLS COORDINATE WITH ELECTRICAL ENGINEER FOR POWER REQUIREMENT FOR FSD.
- 12. ALL EQUIPMENT SHALL MAINTAIN MINIMUM CLEARANCE FROM THE COMBUSTIBLE MATERIAL AS PER MANUFACTURE RECOMMENDATION.
- 13. PROVIDE CLEAN OUT AT ALL ELBOWS AND BOTTOM OF RISER AND EVERY 15 FEET HORIZONTAL KITCHEN EXHAUST DUCT.
- 14. COMMERCIAL KITCHEN GREASE DUCTS SHALL BE DESIGNED FOR THE TYPE-1 OF COOKING APPLIANCE AND HOOD SERVED.
- 15. KITCHEN EXHAUST DUCT SHALL BE CONSTRUCTED OF 0.0575-INCH NO.16 GAUGE
- 16. JOINTS, SEAMS AND PENETRATIONS OF GREASE DUCTS SHALL BE MADE WITH A CONTINUOUS LIQUID TIGHT WELD OR BRAZE MADE IN THE EXTERNAL SURFACE IF
- THE DUCT SYSTEMS 17. DUCT TO EXHAUST FAN CONNECTIONS SHALL BE FLANGED, GASKETED AND BOLTED TO THE INLET OF THE FAN FOR SIDE-INLET UTILITY FANS APPROVED FLEXIBLE
- CONNECTIONS MAY BE PROVIDED. 18. A VIBRATION ISOLATION CONNECTOR FOR CONNECTING A DUCT TO A FAN SHALL CONSIST OF NON-COMBUSTIBLE PACKING IN A METAL SLEEVE JOINT OF APPROVED DESIGN OR SHALL BE A COATED-FABRIC FLEXIBLE DUCT CONNECTOR LISTED AND
- LABELED FOR THE APPLICATION. VIBRATION ISOLATION CONNECTORS SHALL BE INSTALLED ONLY AT THE CONNECTION OF A DUCT TO A FAN INLET OR OUTLET. 19. GREASE DUCT BRACING AND SUPPORTS SHALL BE OF NON-COMBUSTIBLE MATERIAL SECURELY ATTACHED TO THE STRUCTURE AND DESIGNED TO CARRY GRAVITY AND SEISMIC LADS WITHIN THE STREET LIMITATIONS OF THE NEW YORK CITY BUILDING CODE. BOLTS, SCREWS, RIVETS AND OTHER MECHANICAL FASTENERS SHALL NOT
- PENETRATE DUCT WALLS. 20. THE CLEANOUTS FOR HORIZONTAL GREASE DUCT SHALL BE LOCATED ON THE SIDE OF THE DUCT WITH THE OPENING NOT LESS THAN 1.5" ABOVE THE BOTTOM OF THE DUCT AND NOT LESS THAN 1" BELOW THE TOP OF THE DUCT.
- 21. EXHAUST DUCT FROM VENT MUST BE FIRE WRAPPED WITH MINIMUM 2 HOUR PROTECTION BOARD TO THE ROOF DECK AND MEET ALL APPLICABLE CITY CODES. 22. PROVIDE VIBRATION ISOLATORS TO EXHAUST FAN.
- 23. PROVIDE 2 LAYERS OF 1.5" THICK FIRE WRAP TO KITCHEN EXHAUST DUCTS AS PER MANUFACTURER'S RECOMMENDATIONS.

MECHANICAL FLOOR PLAN KEY NOTES:

- MECHANICAL CONTRACTOR TO COORDINATE T-STAT LOCATION WITH TENANT. INSTALL AND WIRE NEW 7-DAY PROGRAMMABLE THERMOSTAT WITH RESPECTIVE RTUS.
- EXTEND FULL SIZE SUPPLY & RETURN DUCTWORK FROM RTUS UNITS TO SPACE EXTEND AS SHOWN. ACOUSTICALLY LINE THE FIRST 10'-0" OF BOTH SUPPLY AND RETURN MAIN DUCTS.
- TEMPERATURE SENSOR TIED INTO DESIGNATED RTUS UNIT. COORDINATE FINAL REQUIREMENT/LOCATION WITH ARCHITECT / OWNER.
- EXISTING TOILET EXHAUST SYSTEM TO REMAIN. INTERCONNECT EXHAUST FANS WITH RTU-2(E).
- KITCHEN EXHAUST INSTALLATION SHALL BE ACCORDING TO SECTION 506 OF 2018
- 6 TYPE-I HOOD. RUN SHEET METAL DUCT FROM CONNECTION ON HOOD TO RESPECTIVE EXHAUST FAN. OFFSET AND TRANSITION AT CONNECTIONS AS NEEDED. VERIFY DIMENSIONS PRIOR TO FABRICATION OR INSTALLATION. USE FACTORY-MANUFACTURED PIPE AND FITTINGS ONLY. VERIFY LOCATION ON SITE WITH MOST RECENT KITCHEN PLANS.
- DUCT SHALL BE SLOPED 1/4" UNIT VERTICAL IN 12" UNIT HORIZONTAL TOWARD
- 8 COMMERCIAL KITCHEN GREASE DUCTS SHALL BE DESIGNED FOR THE TYPE-1 HOOD SERVED.
- EXTEND MAKE-UP AIR DUCT FROM HOOD COLLAR UP TO MOUNTED MAKE-UP AIR UNIT ON ROOF MUA-1(N).
- 10 MAKEUP DUCT UP THRU ROOF TO MUA-1(N)





MECHANICAL GENERAL NOTES

- COORDINATE LOCATIONS AND SIZES OF ROOF OPENINGS
- WITH OWNER AND STRUCTURAL ENGINEERS. EQUIPMENT SIZES, DIMENSIONS AND REQUIRED CONNECTIONS SHALL BE VERIFIED WITH THE ACTUAL EQUIPMENT SELECTED VENDOR DRAWINGS BEFORE FABRICATION OF DUCTWORK, PIPING ETC.

CONTRACTOR SHALL COORDINATE ALL ELECTRICAL

- REQUIREMENTS FOR ALL HVAC BASED ON ACTUAL EQUIPMENT SELECTED PRIOR TO INSTALLATION. ALL SOURCE OF MECHANICAL INTAKE SHALL MAINTAIN 10 LINEAR FEET SEPARATION BETWEEN ANY SOURCE OF EXHAUST. CONTRACTOR IS RESPONSIBLE TO ADJUST
- DUCT LENGTH AS NEEDED. TEST AND BALANCE AIR SYSTEMS. PROVIDE REPORT TO GENERAL CONTRACTOR AND OWNER.
- ALL RTU WEIGHTS ARE INCLUDING ROOF CURBS AND/OR
- PROVIDE NECESSARY PROTECTIVE DEVICES WHERE REQUIRED AND IN STRICT ACCORDANCE WITH OSHA AND ICRA REGULATIONS.
- AVOID FREE DUST MOVEMENT AND DIRT MIGRATING TO OCCUPIED AREAS OF THE BUILDING. BLANK OFF ANY RETURN AIR GRILLES/ DUCTS IN THE WORK AREA. PROVIDE TEMPORARY EXHAUST FANS, DUCTED DIRECTLY TO OUTDOORS, TO MAINTAIN NEGATIVE PRESSURE WITHIN THE WORK AREA.
- KEEP ALL ADJOINING AREAS ADJACENT TO THE WORK AREAS CLEAN AND FREE OF DEBRIS. COORDINATE CUTTING, PATCHING OF EXISTING ROOF,
- WALLS, CEILINGS, AND FLOORS AFFECTED BY MECHANICAL DEMOLITION WITH G.C.

MECHANICAL ROOF PLAN KEY NOTES:

- (1) CONTRACTOR TO CONNECT CONDENSATE DRAIN FROM ALL RTUS & MUA-1(N) TO NEAREST ROOF DRAIN OR DOWN
- COORDINATE FINAL LOCATION OF EQUIPMENT WITH STRUCTURAL DRAWINGS.
- PROVIDE FLEXIBLE CONNECTORS ON SUPPLY AND RETURN DUCT CONNECTIONS. SET OUTSIDE AIR AS INDICATED ON ROOFTOP UNIT SCHEDULES. MECHANICAL CONTRACTOR SHALL SCRIBE INTO UNIT POSITION OF OUTSIDE AIR DAMPER AND LABEL OUTSIDE AIR VOLUME AND PERCENT OF OUTSIDE AIR. TRANSITION AND CONNECT SUPPLY AND RETURN DUCTWORK FROM BELOW. COORDINATE ROUTING THROUGH STRUCTURAL TRUSSES AND OFFSET AS REQUIRED IN CURB SPACE.
- CONTRACTOR TO FIELD VERIFY THAT THE LOCATION OF ANY EXHAUST SOURCE FROM ADJACENT TENANTS SHOULD BE AT LEAST 10' AWAY FROM ALL RTUS AND
- (5) EXISTING TOILET EXHAUST SYSTEM TO REMAIN. CONTRACTOR TO CLEAN EXHAUST SYSTEM.
- (6) THE KITCHEN EXHAUST DUCT TERMINATING ABOVE THE ROOF SHALL HAVE DISCHARGE OPENING LOCATED NOT LESS THAN 40 INCHES ABOVE THE ROOF LEVEL. THE DISCHARGE FLOW SHALL BE DIRECTED AWAY FROM THE STRUCTURE OF THE ROOF.
- (7) CONTRACTOR TO FILED VERIFY THAT THE LOCATION OF ANY EXHAUST TERMINATIONS SHOULD BE AT LEAST 10' AWAY FROM ADJACENT TENANTS OUTSIDE AIR INTAKES.

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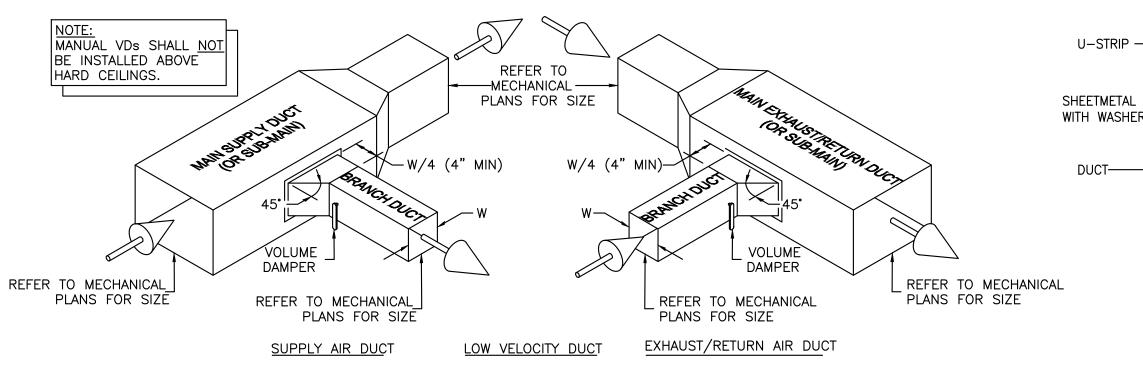
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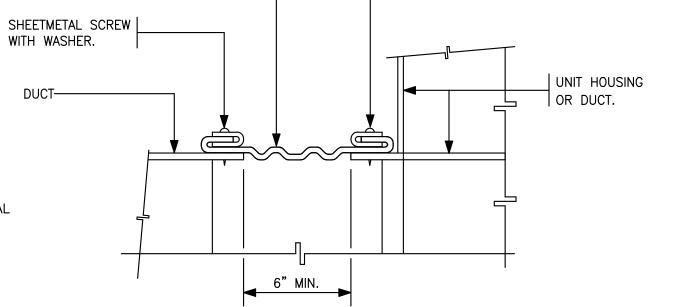
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SHEET TITLE MECHANICAL FLOOR & ROOF PLANS

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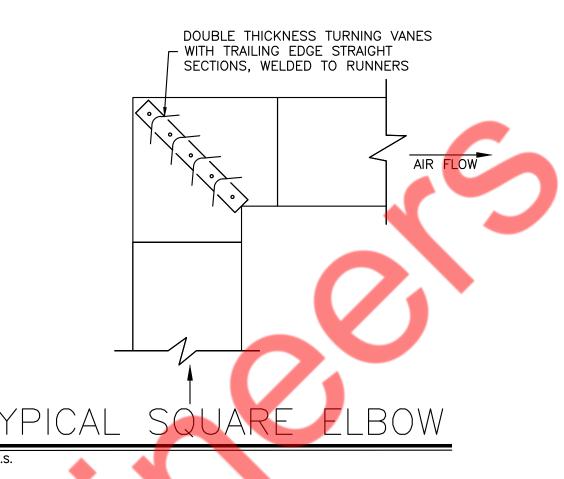






BOLT WITH NUT AND

WASHERS.

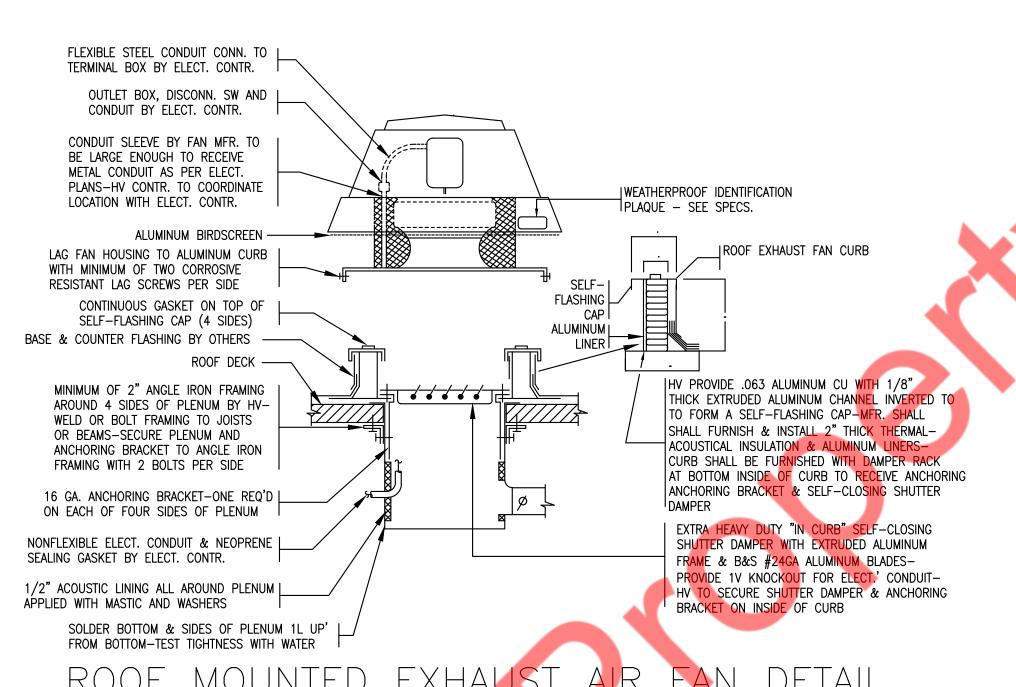


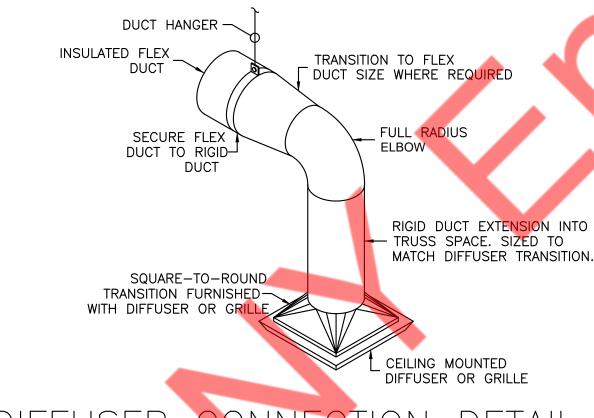
BRANCH DUCT CONNECTIONS

EXIBLE CONNECTION

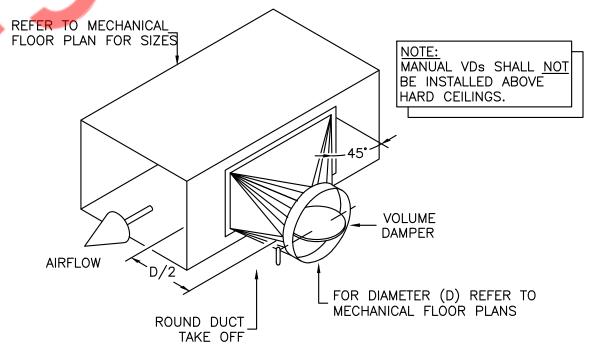
WRAP ALL BRANCH DUCTS AND COVER – 1"x16 GA. CONNECTIONS WITH DUCT HANGER WRAP. SEE STRAP **SPECIFICATIONS** STAINLESS STEEL SCREW 1"x16 GA. DRIVER OPERATED BAND HANGER STRAP SHEET METAL ROUND RIGID -ROUND DUCT UL 181 LABELED INSULATED -FLEX DUCT. SEE SPECS. NO SAGS OR SHARP TURNS TAKE-OFF. T-BAR FOR LAY IN — LAY IN CEILING ON HARD CEILINGS ALLOWED. MAXIMUM RUN DIFFUSER LIMITED TO 3'-0" STRETCH DUCT RUN FOR SMOOTH

TYPICAL DIFFUSER CONNECTION DETAIL

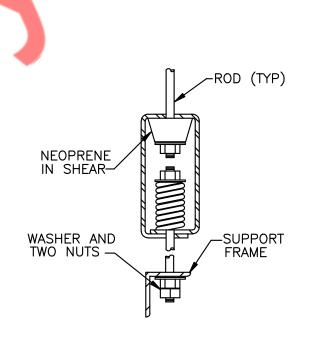




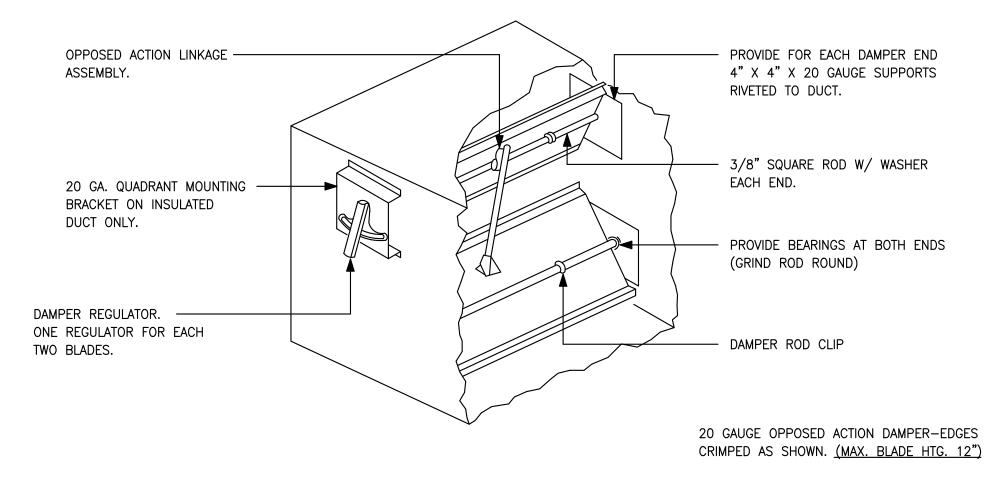
CONNECTION DETAIL



ROUND DUCT TAKE OFF DETAIL



VIBRATION ISOLATOR



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

LOW PRESSURE CONTROL DAMPER

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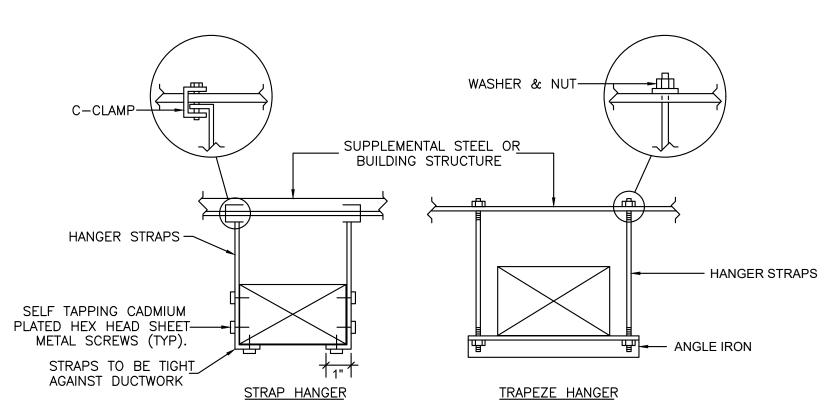
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MECHANICAL DETAILS (1 OF 2) 08/24/23 DATE SHEET NUMBER

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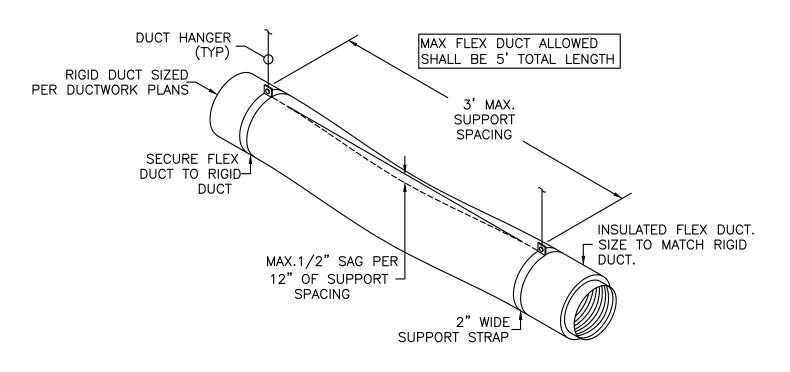
NOTE:
NO POP RIVETS ALLOWED, USE SELF—TAPPING SHEETMETAL SCREWS ONLY.

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

* FOR RECTANGULAR DUCTS

DUCT HANGER DETAIL

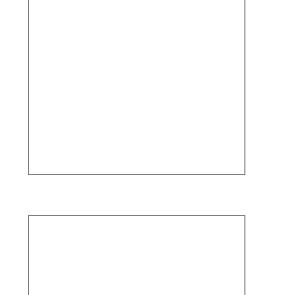
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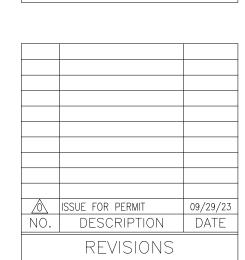


FLEX DUCT SUPPORT DETAIL

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									EXISTING	ROOF TO	OP UNI	T SCHEDUL	E							,	~~	
			AREA	NOMINAL		SUPPLY FAN			TING CAP			C	COOLING CAPACI	TY		ELECTF	RICAL DA	ATA		(THERMAL	MAX
UNITID	MANUFACTURER	MODEL	SERVED	TONS	SUPPLY AIR	OUTSIDE AIR	MAX. ESP	INPUT	OUTPUT	STAGES	TOTAL	SENSIBLE	AMBIENT TEMP.	. ENTERING TEMP.	VOLTS	PHΔSF	ΜCΔ (Δ	MOCP (A)	EER	SEER	EFFICIENCY	OPERATING
					CFM	CFM	(IN. OF W.G.)	MBH	MBH (J T T T T T T T T T T T T T T T T T T T	MBH	MBH	DB (°F)	DB / WB (°F)	VOLIS	111/132	Wex (x	1, 1410 01 (71)			(%)	WEIGHT (LBS.)
RTU-1(E)	LENNOX	KGB048A4B	SEE PLAN	4	1600	60	0.5	150	120	2	48	34.6	95	80/67	208	3	(21	30	11.5	14	80	775 1
RTU-2 (E)	LENNOX	KGB048A4B	SEE PLAN	4	1600	360	0.5	(150	120	2	48	34.6	95	80/67	208	3	(21	30	11.5	14	80	775
NOTES FOI	REXISTING RTU		\								<u> </u>		1					1	\mathcal{I}			
1	RTU TO BE PROVIE	DED AND INS	TALLED BY	LANDLORD).															_		
2	ALL EQUIPMENT N	/IUST BE MEE	TING OR EX	CEEDING T	HE BRANDS I	MINIMUM REQ	UIREMENTS.															
3	LEQUIPMENT MUST BE MEETING OR EXCEEDING THE BRANDS MINIMUM REQUIREMENTS. ECTRICAL CONNECTION TO BE SINGLE POINT AND TO BE THROUGH THE BOTTOM OF THE UNIT. ROVIDE DISCONNECT SWITCH AND AN POWERED GFIC RECEPTACLE. 1																					
4	PROVIDE DISCONI	NECT SWITCH	H AND AN	POWERED (FIC RECEPTA	CLE. 1																
5	14"ROOF CURB - C	CONTRACTOR	R SHALL FIÈ	LD INSULAT	TE. SHIP ASAF	AHEAD OF TH	E UNIT.															
6	CONDENSATE DRA	AIN WITH 2"	DEEP VENT	ED TRAP DI	ISCHARGE TO	SPLASH BLOCI	ON ROOF.															
7	CABINET WITH 1/2	2" FIBERGLAS	SS INSULAT	ION.				<u> </u>		\sim												
	UNIT SHALL BE CO							RESSUR	E FROM N	ΛÀIN.	_											
10	PROVIDE 8-WIRE,	24 VAC, AUT	OMATIC CI	HANGEOVE	R, 2-STAGE H	EAT / COOL, RI	EMOTELY PROG	RAMM	ABLE THE	RMOSTA ⁻	Ī											
11	REMOTE SENSORS	SHALL BE PF	ROVIDED IN	I SPACE AN	D WIRED BAC	CK TO PROGRA	MMABLE, 24 H	OUR, 7	DAY, THEF	RMOSTAT	S.											
12	ANTI SHORT CYCLI	E TIMER.																				
13	PROVIDE THROWA	AWAY 2" FILT	TERS MERV	8.																		
14	WHERE REQUIRED	, PROVIDE LO	OW AMBIE	NT COOLIN	G CAPABILIT	DOWN TO 0 E	DEGREES F.															
15	PROVIDE ALL COM	/IPRESSORS V	VITH 5 YEA	R WARRAN	TY.																	

								MA	KE UP AIR UN	IIT SCHEDUL	E - GAS HEAT									
				550/5				COOLING DA	\TA			HEATING	i DATA		FA	λN	ELEC	TRICAL DATA		MAX WEIGH
MARK	MANUFACTURER	MODEL	SERVICE	DRIVE TYPE	MOTOR HP	ENTERING DBT DEG F	TONS	TOTAL CAPACITY MBH	SENSIBLE CAPACITY MBH	SEER	FUEL TYPE	INPUT CAPACITY MBH	OUTPUT CAPACITY MBH	EFFICIENCY	AIR (CFM)	E.S.P (IN. W.G.)	V/P	MCA (A)	MOCP (A)	(LBS)
MUA-1(N)	CAPTIVEAIRE	A1-D.250-15D-MPU	HOOD-1	DIRECT	0.75	88	3	25	16.9	14	NATURAL GAS	79.49	73.73	92%	1100	0.50	208/3	14.50	20.00	1160
NOTES:																		·	·	
1. PROVID	E WITH MOTORIZI	ED BACKDRAFT DAM	PER.																	
2. PROVID	E WITH WEATHER	HOOD AND BIRDSCF	REEN.																	
3. PROVID	E WITH DOWNFLO	OW DISCHARGE.																		
4. PROVID	E WITH MANUFAC	TURER FABRICATED	20" HIGH R	OOF CURB	3.															
5. PROVID	E WITH 3 TON SIN	GLE CIRCUIT CONDE	NSING UNI	Γ. CONDEN	ISING UNIT	SHALL HAVE	SEPARAT	E POWER CO	NNECTION AT	208V-3PH, 1	4.5A MCA, AND M	OCP OF 20A	ı							
6. PROVID	E WITH COOLING	HEATING INTERLOC	RELAY FO	R MUA-1(N	٧).															
7.REFER TO	CAPTIVE-AIRE D	EAWINGS FOR SPECI	FICATIONS	AND MOF	RE DETAILS.	SCHEDULES S	SHOWN FO	OR REFERENC	E ONLY.											

				HOOD SCH	EDULE								
						COOKING	EXHAUST		WEIGHT				
UNITID	MANUFACTURER	LENGTH (FT. INCH.)	TYPE	MODEL	SERVICE	TEMPERATURE (DEG F)	AIR (CFM)	CONSTRUCTION	(LBS)				
HOOD-1	CAPTIVEAIRE	6'- 0''	1	5424ND-2-PSP-F	KITCHEN	450	1200	430 SS WHERE EXPOSED	723				
NOTES:													
1. REFER T	1. REFER TO CAPTIVE-AIRE DEAWINGS FOR SPECIFICATIONS AND MORE DETAILS. SCHEDULES SHOWN FOR REFERENCE ONLY.												

				KITCHEN	EXHAUST	FAN SCHED	ULE				
					DRIVE	MOTOR	EXHAUS	T AIR DATA	ELECTRIC	CAL DATA	MAX WEIGHT
MARK	MANUFACTURER	MODEL	TYPE	SERVICE	TYPE	НР	AIR (CFM)	E.S.P (IN. W.G.)	VOLTAGE	PHASE	(LBS)
EF-1(N)	CAPTIVEAIRE	DU85HFA	UPBLAST	HOOD-1	DIRECT	0.75	1200	1.00	208	3	140
NOTES:											-

1. FAN SHALL BE CONTROLLED BY HOOD CONTROLS. INTERLOCK RTU-1(E) TO OPERATE IN OCCUPIED MODE WHILE KITCHEN EXHAUST FAN IS ENERGIZED.

2. REFER TO CAPTIVE-AIRE DEAWINGS FOR SPECIFICATIONS AND MORE DETAILS. SCHEDULES SHOWN FOR REFERENCE ONLY.

<u></u>														
	EXHAUST FAN SCHEDULE													
		FLOW	EXTERNAL	SPEED	ELECTF	RIC DATA	BASIS OF I	DESIGN						
TAG	QUANTITY	RATE	STATIC PRESSURE	SPLLD	V/PH/HZ	AMP	BASIS OF DESIGN		REMARK					
		CFM	IN W.G.	RPM	V/FN/NZ	AIVIP	MANUFACTURER	MODEL						
CEF-1 (E)	2	100 (VIF)	0.25 (VIF)	1050 (VIF)	120/1/60	1.1 (VIF)	GREENHECK (VIF)	SP-B150 (VIF)	EXISTING					

1) SAE : SAME AS EXISTING.

2) INTERLOCK TOILET EXHAUST FANS CEF-1(E) WITH RTU-2(E). COORDINATE WITH ELECTRICAL CONTRACTOR.

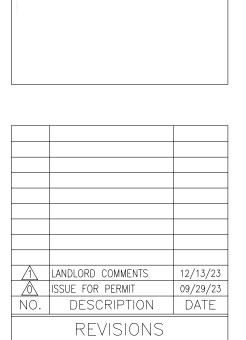
		AIR BA	LANCE										
UNIT	AREA SERVED	SUPPLY AIR	OUTSIDE AIR	RETURN AIR	EXHAUST AIR								
RTU-1 (E)	SEE PLAN	1600 CFM	60 CFM	1540 CFM	0 CFM								
RTU-2 (E)	SEE PLAN	1600 CFM	360 CFM	1240 CFM	0 CFM								
EF-1 (N) SEE PLAN 1200 CFM													
MUA-1(N)	SEE PLAN	1100 CFM	1100 CFM	•	0 CFM								
CEF-1 (E)	RESTROOM	-	-	1	100 CFM								
CEF-1 (E)	RESTROOM	-	-	-	100 CFM								
	TOTAL:	4300 CFM	1520 CFM	2780 CFM	1400 CFM								
BU	ILDING PRESSURE:			120 CFM	POSITIVE								
1) CONTRAC	1) CONTRACTOR TO BALANCE OUTSIDE AIR & RETURN AIR DAMPERS ON RTUS TO												
MATCH VAL	UES MENTIONED I	N ABOVE TA	ABLE.										

			AID:	TERMINAL DEVICE	ES SCHEDILLE				
T1.0	G175 (INL.)	DECORIDE					NEON (175 (N.)	BASIS OF DES	IGN
TAG	SIZE (IN.)	DESCRIPTION	SERVICE	CONSTRUCTION	PATTERN	FRAME	NECK SIZE (IN.)	MANUFACTURER	MODEL
Α	24X24	SQUARE CEILING DIFFUSER	SUPPLY	STEEL	4-WAY	LAY-IN	PER PLAN	TITUS (OR EQUIVALENT)	TMS
В	24X24	SQUARE CONE DIFFUSER	SUPPLY	STEEL	PERFORATED	LAY-IN	PER PLAN	TITUS (OR EQUIVALENT)	PAS
С	12X12	SQUARE CEILING DIFFUSER	SUPPLY	STEEL	4-WAY	LAY-IN	PER PLAN	TITUS (OR EQUIVALENT)	TMS
D	24X24	RETURN AIR GRILLE	RETURN	STEEL	-	LAY-IN	PER PLAN	TITUS (OR EQUIVALENT)	350 RL
NOTES:-									
1) PAINT A	LL SURFACES	S VISIBLE THROUGH FACE OF RETURN AII	GRILLE FLAT BLA	ACK. THIS SHALL IN	ICLUDE PIPING, C	CONDUIT, DUCTWO	RK AND STRUCTURAL	MEMBERS.	
2) PROVIDE	E FRAME FOI	R MOUNTING AIR <mark>DE</mark> VICE IN LAY-IN GRID	CEILING UNLESS	REFLECTED CEILIN	NG PLAN INDICAT	TES HARD CEILING.	IN AREAS WITH HARD	CEILINGS, PROVIDE	FRAMES
3) UNLESS (OTHERWISE	NOTED, BRANCH DUCTS SERVING AIR D	EVICES SHALL BE	SAME SIZE AS NEC	K OF AIR DEVICE.	•			
4) COORDII	NATE FINAL	COLOR/FINISH WITH ARCHITECT/OWNE	R.						
5) MAXIMU	JM NOISE CF	RITERION RATING < 35 DBA.							
		USERS: NECK SIZES SHALL BE:-							
15" DIA: 90)1-1100 CFM								
14" DIA: 60	1-900 CFM								
12" DIA: 40)1-600 CFM								
10" DIA: 20)1-400 CFM								
8" DIA: 101	L-200 CFM								
6" DIA: 0-10	00 CFM								

				VE	NTILATION CALCUL	ATION					
ROOM NAME	AREA (SQ.FT.)	NUMBER OF PEOPLE/1000 sq. AS PER IMC 2018	ft NUMBER OF PEOPLE AS PER IMC 2018	NUMBER OF CHAIR	FINAL PEOPLE NO.	MIN OUTSIDE A	IR AS PER IMC 2018	REQ. OA (CFM)	PROVIDED. OA (CFM)	EXHAUST AIRFLOW RATE (CFM/FIXTURE)	TOTAL EXHAUST
	(3Q.F1.)	AS PER IIVIC 2018	PER IIVIC 2016			CFM/PEOPLE	CFM/SQ.FT	(CFIVI)	(CFIVI)	(CFIVI) FIX TOKE)	(CFM)
DINING	796	70	56	24	24	7.5	0.18	323		0	0
SALES	136	15	3	3	3	7.5	0.12	39		0	0
KITCHEN	563	0	0	0	4	0	0	50	420	0	1200
TOILET-102	39	0	0	0	0	0	0	0] 420	70	100
TOILET-103	48	0	0	0	0	0	0	0		70	100
							TOTAL	412			1400

CONSULTANTS (ENGINEER):

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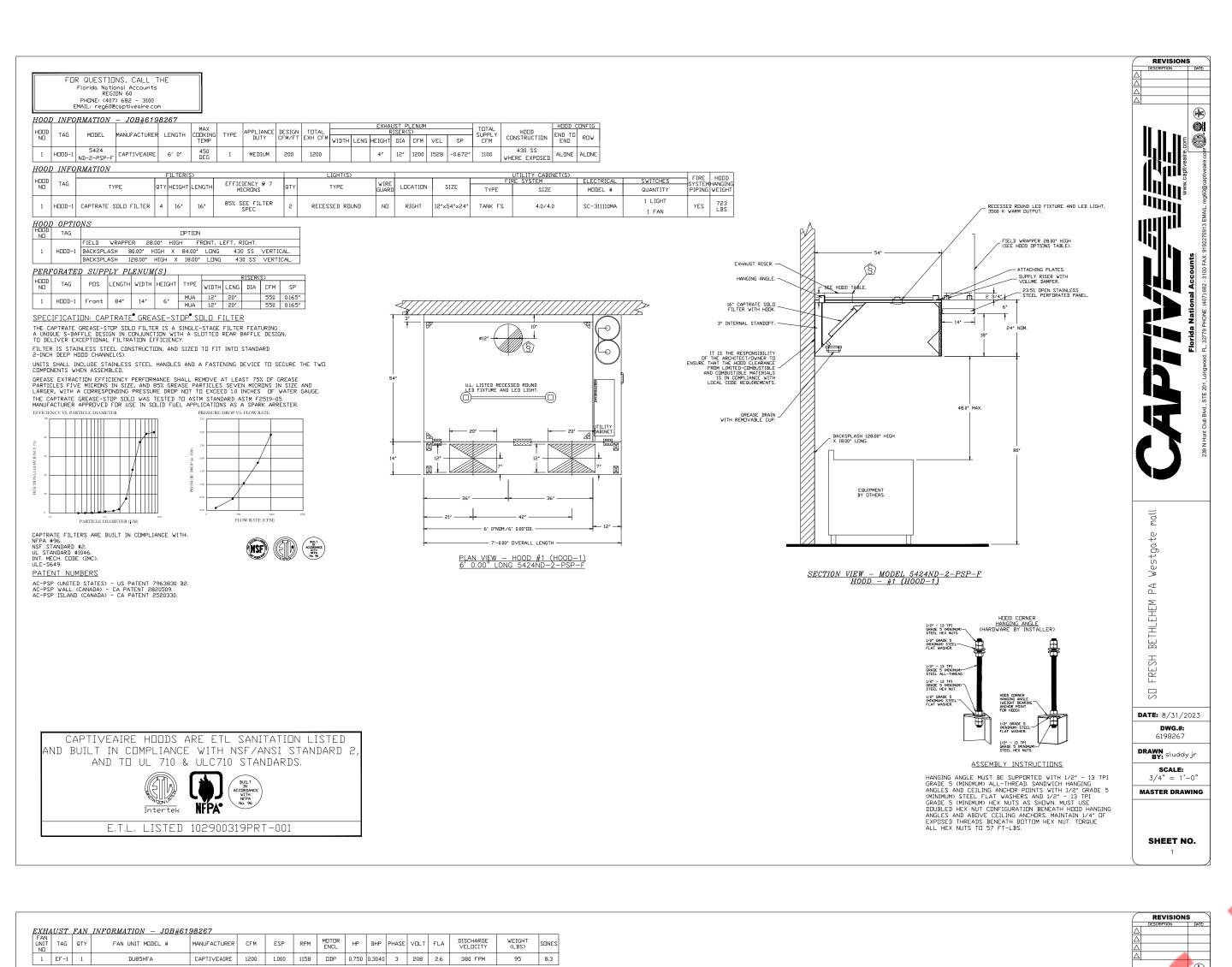


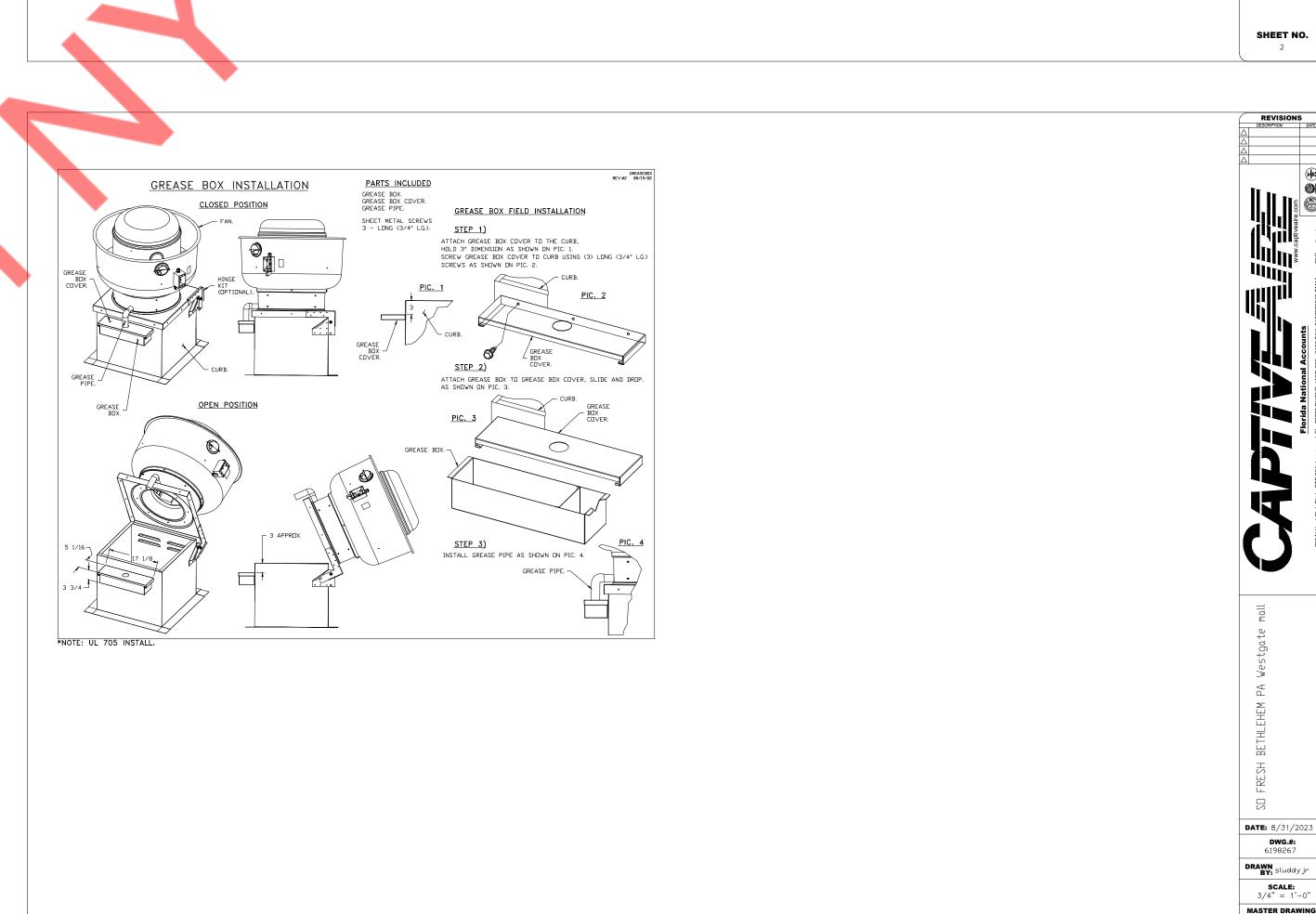
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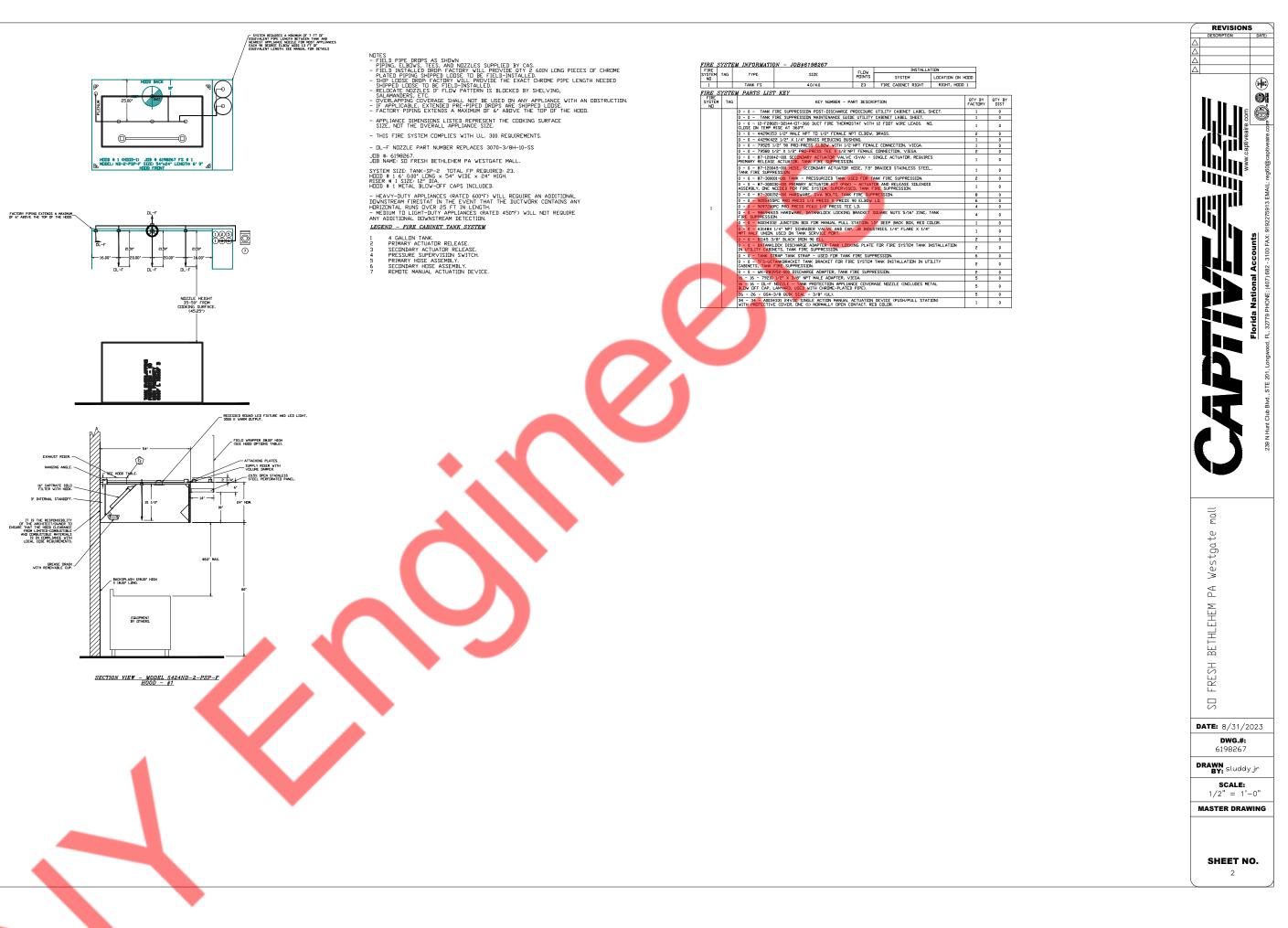
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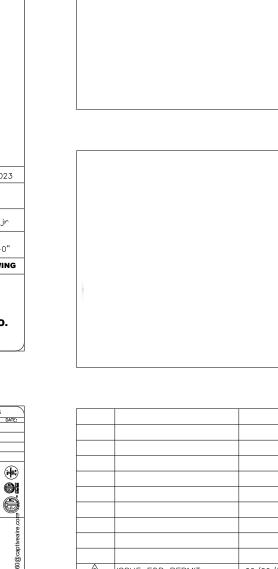
MECHANICAL

08/24/23 DATE SHEET NUMBER AS NOTED SCALE NYE DRAWN BY M4.0 NYE CHECKED BY 23126 PROJECT #









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SHEET TITLE HOOD DETAILS (1 OF 3)

08/24/23 DATE SHEET NUMBER AS NOTED SCALE M5.0 NYE DRAWN BY NYE CHECKED BY 23126 PROJECT #

DWG.#: 6198267

SHEET NO.

CONDENSER DETAILS

GAS FIRED MAKE-UP AIR UNIT(S) FAN UNIT TAG INPUT DUTPUT TEMP RISE NO

2 MUA-1 79499 73139 63°F

COILS - JOB#6198267

FAN OPTIONS

FAN ACCESSORIES

CURB ASSEMBLIES ND DN TAG

TZUAHX3

WEIGHT

REQUIRED INPUT GAS PRESSURE

7 IN. W.C. - 14 IN. W.C.

FAN OPTIONS

FAN UNIT TAG OTY DESCRIPTION

1 EF-1 1 GREASE BOX

1 2 YEAR PARTS WARRANTY

1 INLET PRESSURE GAUGE, 0-35'

1 MANIFOLD PRESSURE GAUGE, 0-5 TO 15' WC

1 SHIP LODSE GAS STRAINER 3/4'

1 CASLINK BUILDING MONITORING SYSTEM - INTERNET OR CELLULAR CONNECTION REQUIRED

1 MOTORIZED BACKDRAFT DAMPER FOR A1-D HOUSING - MEETS AMCA CLASS IA RATING

2 MUA-1 1 TO 1,800 CFM), 208V/230V, 3 PHASE. CODILING OPTION FOR SIZE 1 DF/EH MUA (1,100)

1 TO 1,800 CFM), 208V/230V, 3 PHASE. CODILING OFTION FOR SIZE 1 DF/EH MUA (1,100)

1 DOWNTURN PLENUM FOR SIZE 1 DX COTIL MODILING PROGRAMMABLE STAT REQUIRED

ITEM

1 # 1 EF-1 44 LBS CURB 23.000°W X 23.000°L X 26.000°H VENTED HINGED.
2 # 2 MUA-1 107 LBS CURB 21.000°W X 131.000°L X 20.000°H INSULATED.

FUR PRUPER DPERATION

1 DDWNTURN PLENUM FOR SIZE 1 DX CDIL MODULE

1 SEPARATE 120V WIRING PACKAGE (REQUIRED AND USED ONLY FOR DCV OR PREWIRE WITH VFD) - THREE PHASE ONLY

1 2 YEAR PARTS WARRANTY

MUA FAN INFORMATION - JOB#6198267

FAN UNIT TAG OTY FAN UNIT MODEL # BLOWER HOUSING MIN CFM CFM CFM ENCL HP BHP PHASE VOLT FLA MCA MOCP (LBS) SONES

2 MUA-1 1 A1-D.250-15D-MPU 15MF-1-MDD A1-D.250 1100 1100 0.500 1477 DDP 0.750 0.4740 3 208 2.5 3.2A 15A 1047 11.1

NATURAL 92

FAN UNIT TAG | PART | P

FAN #1 DU85HFA - EXHAUST FAN (EF-1)

14 7/8"

22 1/2"

FEATURES:

DIRECT DRIVE CONSTRUCTION (ND BELTS/PULLEYS). ROOF MOUNTED FANS.

- RODF MOUNTED FANS.
- RESTAURANT MODEL.
- ULTOS AND ULTGE AND ULC-S645
- VARIABLE SPEED CONTROL.
- INTERNAL WIRING.
- THERMAL OVERLOAD PROTECTION (SINGLE PHASE).
- HIGH HEAT DEPRATION 300°F (149°C).
- GREASE CLASSIFICATION TESTING.
- NEMA 3R SAFETY DISCONNECT SWITCH.

NORMAL TEMPERATURE TEST
EXHAUST FAN MUST DPERATE CONTINUOUSLY
WHILE EXHAUSTING AIR AT 300°F (149°C)
UNTIL ALL FAN PARTS HAVE REACHED
THERMAL EQUILIBRIUM, AND WITHOUT ANY
DETERLIBRATING EFFECTS TO THE FAN WHICH
WOULD CAUSE UNSAFE OPERATION.

ABNORMAL FLARE-UP TEST
EXHAUST FAN MUST OPERATE CONTINUOUSLY
WHILE EXHAUSTING BURNING GREASE VAPOR
AT 600°F (316°C) FOR A PERIOD OF
15 MINUTES WITHOUT THE FAN BECOMING
DAMAGED TO ANY EXTENT THAT COULD CAUS
AN UNSAFE CONDITION.

DATE: 8/31/2023

DWG.#: 6198267

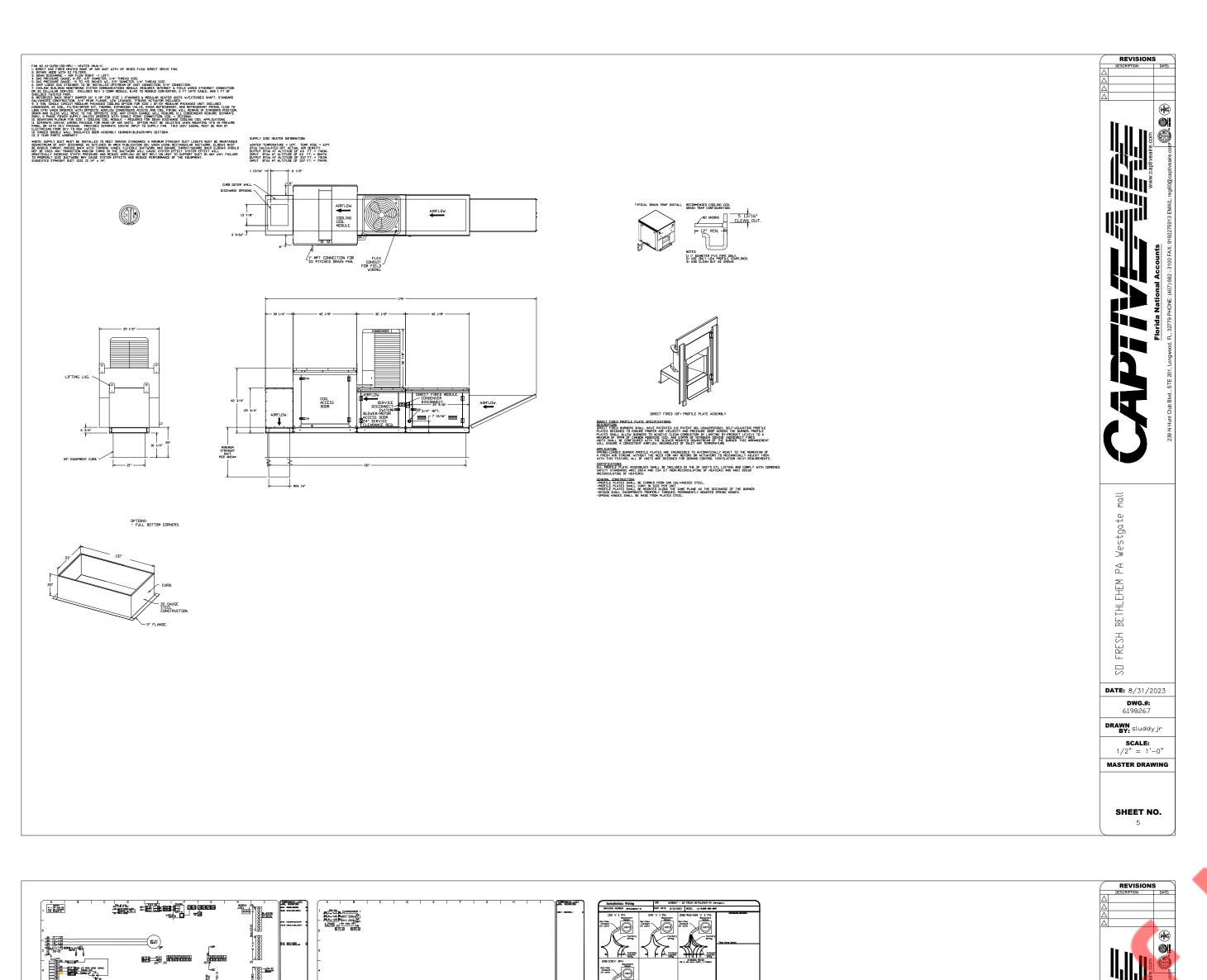
DRAWN BY: sluddy jr

SCALE: 3/4" = 1'-0

MASTER DRAWING

SHEET NO.

- GREASE BOX. - 2 YEAR PARTS WARRANT



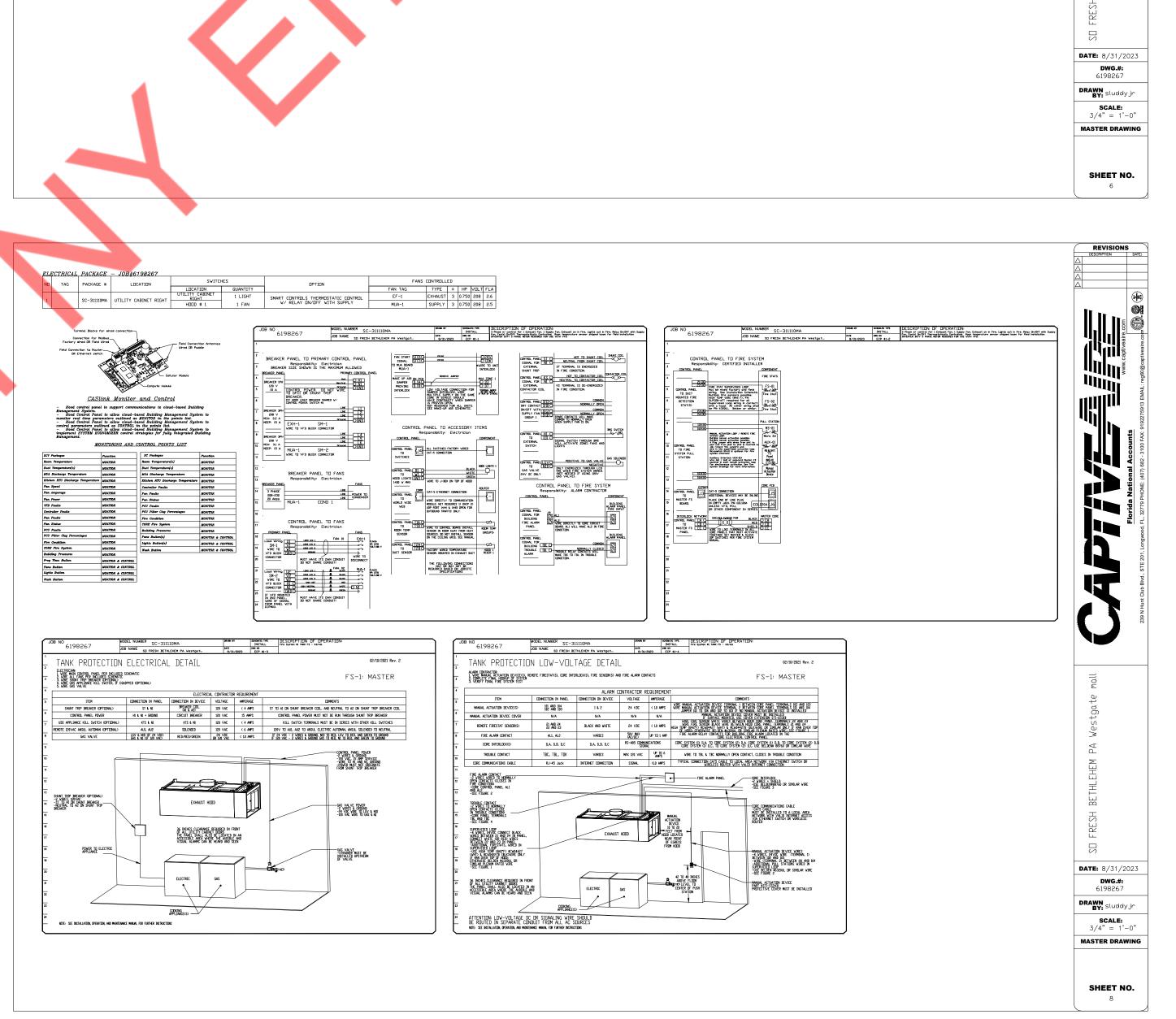
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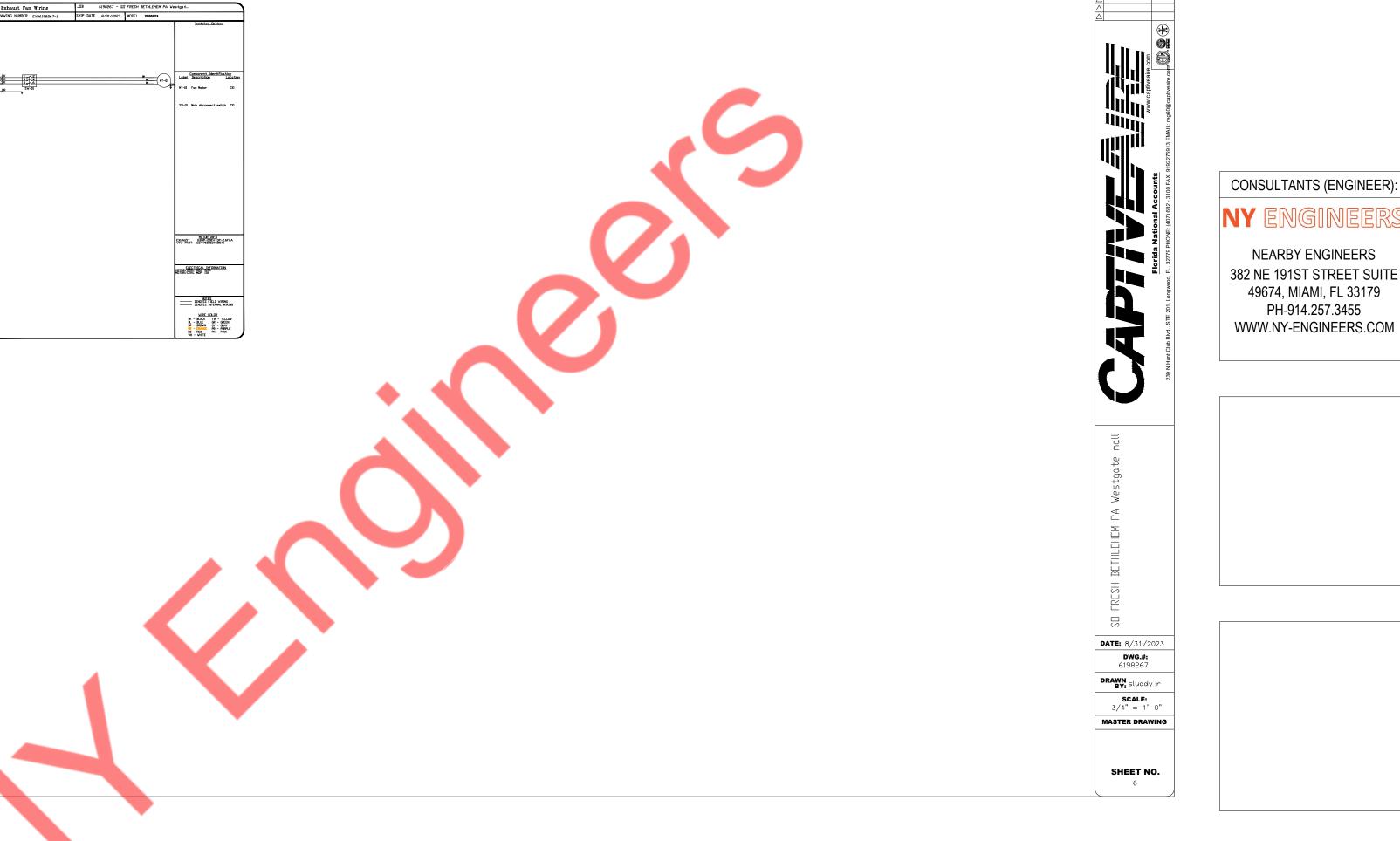
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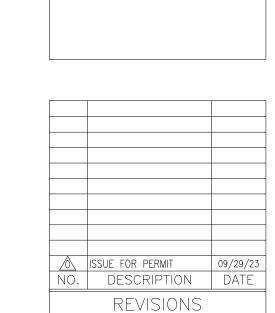
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MASTER DRAWING

SHEET NO.







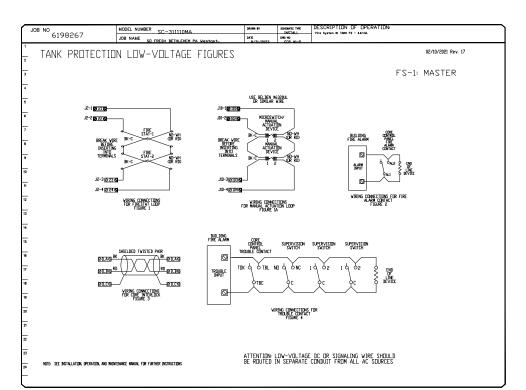
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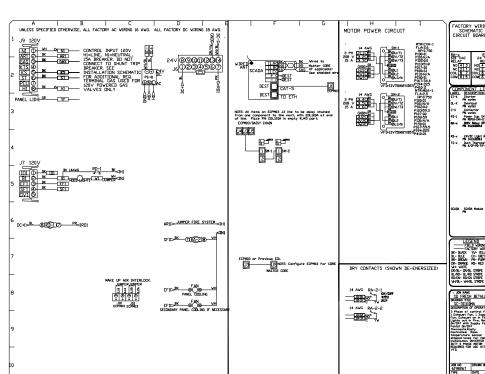
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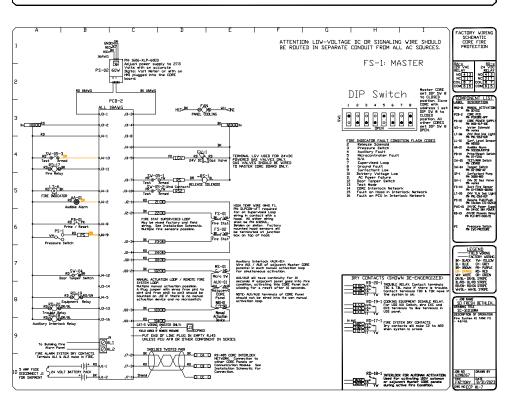
HOOD DETAILS
(2 OF 3)

08/24/23 DATE
AS NOTED SCALE
NYE DRAWN BY
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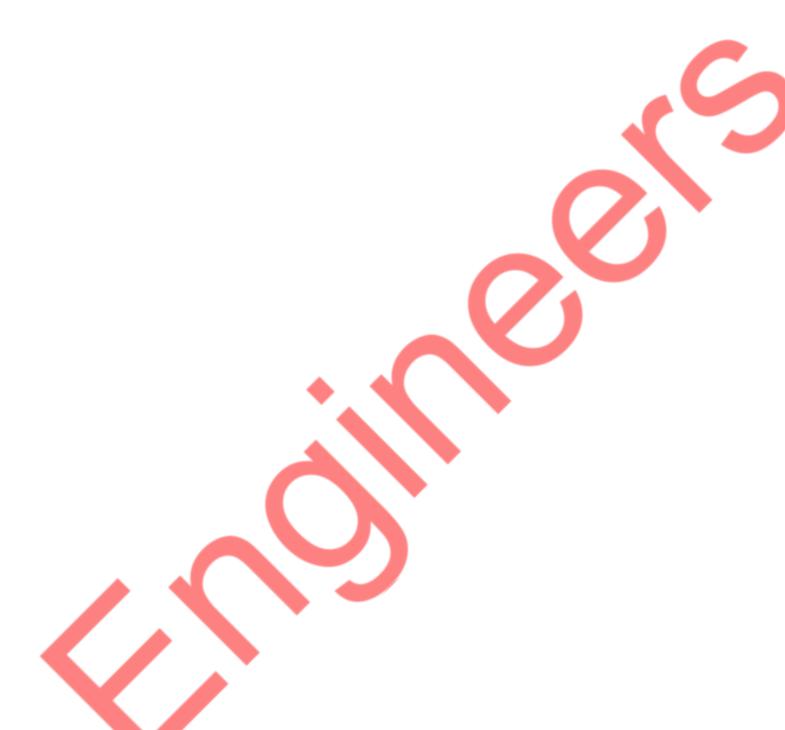








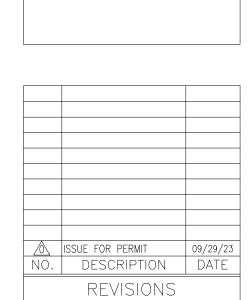
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(3 OF 3)

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			LECTRICAL SYMBOLS LIST					GENERAL NOTES
	LIGHTING		POWER AND TELECOMMUNICATION		ELECTRICAL AB	BREVIA	TIONS	ALL WORK SHALL BE PERFORMED IN STRICT ACCORDANCE WITH THE CURREI VERSION OF THE NEC, LOCAL JURISDICTION REQUIREMENTS, AND ALL
	LIGHTING FIXTURE AND OUTLET BOX. HALF SHADED FIXTURE OR		JUNCTION BOX WITH BLANK COVER PLATE, FLUSH IN FLOOR.	А	AMPERES	EA	EACH	GOVERNING LOCAL CODES, LAWS, AND REGULATIONS. 2. CONTRACTOR SHALL VISIT THE SITE AND BECOME FAMILIAR WITH ALL EXISTIN
	"EM" INDICATES FIXTURES WITH INTEGRAL BATTERY PACK FOR EMERGENCY SERVICE, U.O.N.	Φ	SIMPLEX RECEPTACLE, +18" AFF OR AS NOTED.	A/C, AC	AIR CONDITIONING UNIT	ЕМ	EMERGENCY	CONDITIONS THAT MAY AFFECT THE WORK. NO ADDITIONAL COMPENSATION WILL BE CONSIDERED FOR FAILURE TO DO SO.
	LUMINAIRE TYPE : INDICATE BY LIPPERCASE LETTER SEE LIGHTING EXTURE SCHEDULE.	I A	SUFFIXE DENOTES FOLLOWING: A— NEMA 5—15R	AF	AMPERE FRAME/AMP FUSE	EMT	ELECTRICAL METALLIC TUBING	3. CONTRACTOR SHALL OBTAIN AND PAY FOR ALL PERMITS, TEST REPORTS, AN CERTIFICATIONS FOR TEMPORARY AND FINAL CERTIFICATE OF OCCUPANCY.
	CIRCUIT NUMBER : INDICATED BY NUMBER		B- NEMA 6-15R C- NEMA 14-30R	AFF	ABOVE FINISHED FLOOR	EQUIP	EQUIPMENT	4. FIRE STOP ALL PENETRATIONS OF FIRE RATED CONSTRUCTION IN A CODE
O _g 2	SWITCHING INDICATED BY LOWER CASE LETTERS.		D- NEMA 14-50R DUPLEX GFI RECEPTACLE	AS	AMP SWITCH	ER	EXISTING TO BE RELOCATED	APPROVED MANNER IN ORDER TO MAINTAIN FIRE RATING. ALL PENETRATIONS SHALL BE SLEEVED AND SEALED WATERTIGHT.
o _a ∕ ⊘EM —	DENOTES LUMINAIRE ON EMERGENCY CIRCUIT.	P _{GFI}	DUPLEX CONVENIENCE RECEPTACLE, +18" AFF OR AS NOTED.	AIC	AMPS INTERRUPTING CAPACITY	FA	FIRE ALARM	5. SECURE ALL SUPPORTS TO BUILDING STRUCTURE UTILIZING TOGGLE BOLTS (HOLLOW MASONRY), EXPANSION SHIELDS OR INSERTS (CONCRETE AND
ONL —	DENOTES FIXTURES DESIGNATED AS NIGHTLIGHT, WIRED TO 24 HOURS	Ψ •	DEDICATED DUPLEX CONVENIENCE RECEPTACLE, +18" AFF OR AS NOTED.	AT ATS	AMP TRIP AUTOMATIC TRANSFER SWITCH	E E	EXISTING FLOOR	BRICK), MACHINE SCREWS (METAL), BEAM CLAMPS (FRAMEWORK), WOOD SCREWS (WOOD) OR PAN THRU STRAPS (METAL DECK). NAILS, RAWL PLUG AND WOOD PLUGS ARE NOT PERMITTED. WHERE REQUIRED BY STRUCTURE,
	UNSWITCHED CIRCUIT.		, , , , , , , , , , , , , , , , , , ,	AUTO	AUTOMATIC TRANSFER SWITCH AUTOMATIC	G	GROUND	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
३ ₹ ₹	CEILING/WALL MOUNTED SELF POWERED EXIT LIGHT FIXTURE WITH DIRECTIONALARROWS AS INDICATED. SHADED AREA DENOTES FACE(S).	lacksquare	TELEPHONE/DATA OUTLET, 4"SQUARE OUTLET BOX WITH SINGLE GANG COLLAR AND BLANK PLATE. PROVIDE 3/4" E.C., U.O.N., UP TO HUNG CEILING AND	AWG	AMERICAN WIRE GAUGE	GFI	GROUND FAULT INTERRUPTER	RISERS AT EACH FLOOR LEVEL. RUN EXPOSED RACEWAYS PARALLEL WITH C AT RIGHT ANGLES TO WALLS.
	ISOLITE ELITE SERIES LED EXIT SIGN		TERMINATE WITH 90° ELBOW, BUSHING AND DRAG WIRE. QUAD RECEPTACLE	C	CONDUIT	GP	GENERAL PURPOSE	6. LEAVE WIRES WITH SUFFICIENT SLACK TO PERMIT MAKING FINAL CONNECTIONS. RACEWAYS OVER 10 FT LONG IN WHICH WIRING IS NOT
	SWITCHES AND CONTROLS	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\		C/B,CB	CIRCUIT BREAKER	HP	HORSEPOWER	INSTALLED: FURNISH FISH WIRE.
\$ _a	20A SPST TOGGLE SWITCH U.O.N. "a" DENOTES LIGHTING FIXTURE/SWITCHED RECEPTACLE CONTROLLED.	$\overline{}$	DATA OUTLET	CKT	CIRCUIT	HWH	HOW WATER HEATER	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
ф3		─	TELEPHONE OUTLET	CLG	CEILING	HZ	HERTZ	DUCTS AND MECHANICAL EQUIPMENT, EQUIPMENT, VARIATIONS IN FIREPROOFING AND PLASTERING, WINDOW AND DOOR TRIM, PANELING, HUN
⊅a	20A 3-WAY TOGGLE SWITCH U.O.N. "a" DENOTES LIGHTING FIXTURE CONTROLLED		FLOOR MOUNTED DUPLEX RECEPTACLE	СОММ	COMMUNICATION	IC	INTERRUPTING CAPACITY	CEILINGS AND THE LIKE. CORRECT ANY INACCURACY RESULTING FROM FAILURE TO DO SO WITHOUT EXPENSE TO OWNER.
(OS) _A	CEILING OCCUPANCY SENSOR, NUMBER INDICATES TYPE; SEE OCCUPANCY SENSOR SCHEDULE. 'A' LETTER REFERES TO WIRING DIAGRAM.		CEILING MOUNTED DUPLEX RECEPTACLE	СТ	CURRENT TRANSFORMER	PP	POWER PANEL	8. CONTRACTOR SHALL PROVIDE A WARRANTY ON ALL MATERIALS, EQUIPMENT, AND WORKMANSHIP FOR A PERIOD OF ONE YEAR FROM THE DATE OF FINA
\$ _{os}	WALL MOUNT OCCUPANCY SENSOR SWITCH	H	SPECIAL RECEPTACLE	CU	COPPER	PWR	POWER	ACCEPTANCE.
<u></u>	MANUAL OVERRIDE OWITCH			DIA	DIAMETER	R	REMOVE	9. ALL UNUSED MATERIALS AND DEBRIS SHALL BE LEGALLY REMOVED AND DISPOSED OF AWAY FROM THE PREMISES ON A DAILY BASIS.
⊅ _{мо}	MANUAL OVERRIDE SWITCH		MOTORS AND CONTROLS	DISC	DISCONNECT	RE	RELOCATED EXISTING	10. CONTRACTOR SHALL PATCH, PAINT, AND RESTORE EXISTING SURFACES DAMAGED DURING THE COURSE OF THIS CONSTRUCTION TO PRE—EXISTING
	WIRING SYSTEMS		AC INDOOR UNIT MOTOR AS NOTED WITH LIQUID TIGHT FLEXIBLE CONNECTION	DN	DOWN	REC	RECEPTACLE	CONDITIONS OR BETTER. 11. MINIMUM SIZE OF CONDUIT SHALL BE 34", AND TYPE SHALL BE ELECTRICAL
7.5	POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION,	M S _M	WITH JUNCTION BOX AND MOTOR SWITCH.	DP	DISTRIBUTION PANEL	RGS	RIGID GALVANIZED STEEL	METALLIC TUBING (EMT), UNLESS OTHERWISE NOTED. PROVIDE NYLON DRAG LINE AND CONDUIT CAP FOR ALL EMPTY CONDUITS.
3 5 JP-	NUMBER WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSISTS OF 2#12 Ø, 2#12 N. & 2#12 G. IN 3/4"C, UNLESS OTHERWISE NOTED.	WP	AC OUTDOOR UNIT MOTOR AS NOTED WITH CONTROLLER AND DISCONNECT SWITCH WITH WEATHER PROOF.	DWG	DRAWING	RR	REMOVE & RELOCATE	12. CONNECT CONDUIT TO MOTOR CONDUIT TERMINAL BOXES WITH FLEXIBLE
3 5 7	POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSISTS OF		NON FUSED DISCONNECT SWITCH AMPERAGE, AND NUMBER OF POLES	JB	JUNCTION BOX	SECT	SECTION	CONDUIT (MINIMUM 18 IN. LENGTH AND 50% SLACK). DO NOT TERMINATE OR FASTEN RACEWAYS TO MOTOR FOUNDATION.
D_	3#12 ø, 3#12 N. & 3#12 G. IN 3/4"C, UNLESS OTHERWISE NOTED.		AS NOTED.	KCMIL	ONE THOUSAND CIRCULAR MILS	SPDT	SINGLE POLE DOUBLE THROW	13. PULL AND JUNCTION BOXES WHERE INDICATED ON THE DRAWINGS, SHALL FOR CONSIDERED SHOWN AT THEIR APPROXIMATE LOCATION. THE CONTRACTOR
`			30A/240V NON FUSED DISCONNECT SWITCH	KV	KILOVOLT	SPST	SINGLE POLE SINGLE THROW	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
<u> </u>	CONDUIT AND WIRE TO BUILDING GROUND.		60A/240V NON FUSED DISCONNECT SWITCH	KVA	KILOVOLT-AMPERES	SPEC	SPECIFICATION	FIELD CONDITIONS. PULL AND JUNCTION BOXES SHALL BE SURFACE TYPE UNFINISHED AREAS AND INSTALLED CANCEALED IN FINISHED AREAS, AND AL
	UNDERGROUND		100A/240V NON FUSED DISCONNECT SWITCH	KW	KILOWATTS	SW	SWITCH	COVERS TO PULL & JUNCTION BOXES SHALL BE READILY ACCESSIBLE.
	EXISTING		200A/240V NON FUSED DISCONNECT SWITCH	LTG	LIGHTING	SWBD	SWITCHBOARD	14. SUPPORT PANEL, JUNCTION AND PULLBOXES INDEPENDENTLY TO BUILDING STRUCTURE WITH NO WEIGHT BEARING ON RACEWAYS.
	NEW		COMBINATION MAGNETIC STARTER AND DISCONNECT SWITCH, FURNISHED BY	MAX MC	MAXIMUM MOTOR CONTROLLER	SYM	SYMMETRICAL SYSTEMS	15. FOR EXACT LOCATION AND MOUNTING HEIGHT OF LIGHTING FIXTURES AND SWITCH/RECEPTACLE OUTLETS, REFER TO ARCHITECTURAL REFLECTED CEILIN
	NEW		HVAC/CONTRACTOR, INSTALLED AND WIRED BY ELECTRICAL CONTRACTOR.	MCB	MAIN CIRCUIT BREAKER	TELE	TELEPHONE	AND POWER PLANS. 16. ALL ELECTRICAL ACCESSORIES AND EQUIPMENT INSTALLED OUTSIDE OR
		└ <u> 400</u> 350	FUSED DISCONNECT SWITCH AND FUSE AMPERAGE AS INDICATED. TOP NUMBER DENOTS SWITCH SIZE AND BOTTOM NUMBER DENOTES FUSE.	MLO	MAIN LUGS ONLY	TEMP	TEMPERATURE	EXPOSED TO WEATHER SHALL HAVE NEMA 3R ENCLOSURES AND SHALL BE TIGHTLY GASKETED FOR A COMPLETE RAINTIGHT INSTALLATION. ALL BUILDING
	ELECTRICAL DRAWING LIST		DUPLEX PUMP. NUMBER INDICATES HP RATING OF PUMP.	MTD	MOUNTED	TXF	TOILET EXHAUST FAN	EXTERIOR MOUNTED RECEPTACLES SHALL BE GFCI RATED AND MOUNTED IN WEATHERPROOF ENCLOSURE.
E0.1	ELECTRICAL SYMBOLS AND GENERAL NOTES	\(\text{M}\setm\)		MTS	MANUAL TRANSFER SWITCH	TYP	TYPICAL	17. ALL ACCESS PANEL LOCATIONS SHALL BE REVIEWED BY ARCHITECT PRIOR INSTALLATION.
0.2	ELECTRICAL SPECIFICATIONS SHEET 1 OF 2	1.5 kW	ELECTRICAL HEATER, NUMBER DENOTES HEATER RATING	N	NEUTRAL	UON	UNLESS OTHERWISE NOTED	18. ELECTRICAL CONTRACTOR SHALL COORDINATE THE LOCATION AND INSTALLATION A
10.3 11.0	ELECTRICAL SPECIFICATIONS SHEET 2 OF 2 ELECTRICAL LIGHTING PLAN	<u> </u>		NIC	NOT IN CONTRACT	V	VOLT/VOLTAGE	OF NEW WORK WITH THE GENERAL CONTRACTOR AND OTHER ASSOCIATED TRADES IN A TIMELY MANNER. THE CONTRACTOR IS RESPONSIBLE FOR FIEL VERIFYING ALL DIMENSIONS AND CONDITIONS PRIOR TO CONSTRUCTION. REF
2.0	ELECTRICAL POWER PLAN	S _T	THERMAL OVERLOAD SWITCH AT MOTOR. PROVIDE THERMAL ELEMENTS AS PER MOTOR RATING.	NTS	NOT TO SCALE	VA	VOLT AMPERE	TO ALL GENERAL, MECHANICAL, AND ELECTRICAL, DRAWINGS AND SPECIFICATIONS FOR THIS PROJECT.
2.1	ELECTRICAL ROOF PLAN	S _M	MANUAL MOTOR SWITCH	PNL	PANEL	WP	WEATHER PROOF	19. ALL CONDUITS AND EQUIPMENT TO BE CONCEAL ED IN FINISHED SPACES UNLESS OTHERWISE NOTED. CONDUITS SHALL BE ENCASED IN THE CONCRE
3.0	ELECTRICAL RISER & PANEL SCHEDULE		ANNOTATION	W	WATT	Ø	PHASE	FLOOR SLAB.
4.0	ELECTRICAL DETAILS	$\overline{\langle \chi \rangle}$	KEYED NOTE REFERENCE					20. ALL EQUIPMENT AND MATERIALS INSTALLED IN PLENUM CEILINGS SHALL BE APPROVED FOR THAT APPLICATION.
		+24"	INDICATES MOUNTING HEIGHT, CENTER LINE TO FINISHED FLOOR.					21. OUTLET BOXES AND JUNCTION BOXES ON OPPOSITE SIDES OF FIRE—RATED WALLS SHALL BE SEPARATED BY A HORIZONTAL DISTANCE OF NOT LESS
		+24	INDICATES MOUNTING HEIGHT, CENTER LINE TO FINISHED FLOOR.					THAN 24 INCHES, UNLESS FIRE-RATED BOXES OR PUTTY PADS ARE UTILIZ
		1 E0.1	DETAIL REFERENCE: DETAIL NUMBER INDICATED ON TOP; DRAWING NUMBER INDICATED ON BOTTOM					22. COORDINATE ALL FLOOR PENETRATIONS WITH THE STRUCTURAL AND ARCHITECTURAL DRAWINGS. CONFIRM PENETRATION LOCATIONS WITH THE ENGINEER AND OWNER BEFORE INSTALLATION.
			CODES & STANDARDS					23. COORDINATE THE MOUNTING HEIGHT AND LOCATION OF RACEWAYS, COMMUNICATIONS OUTLETS, AND RECEPTACLES WITH THE ARCHITECTURAL
		ELECTRICAL						CASEWORK DRAWINGS AND DETAILS. COORDINATE LOCATIONS OF LIGHT FIXTURES, SWITCHES, AND RELATED DEVICES WITH THE ARCHITECTURAL
		& ENERGY	2017 NATIONAL ELECTRICAL CODE 2018 INTERNATIONAL ENERGY CONSERVATION CODE					DRAWINGS AND DETAILS. 24. REFER TO ARCHITECTURAL PLANS FOR FINAL LOCATIONS OF ALL LUMINARIE
		CODES						AND SWITCHES, AND FOR ALL FINISHED CEILING HEIGHTS.
		W						25. REFER TO ARCHITECTURAL PLANS FOR FINAL LOCATIONS OF ALL ELECTRICAL DEVICES, AND FOR FINAL CEILING AND WALL HEIGHTS AND LAYOUTS.
								26. LIGHTING FIXTURES PROVIDED WITH EMERGENCY BATTERY PACKS AND INDICATED WITH SWITCH CONTROL SHALL BE WIRED WITH BATTERY CHARGING/SENSING CIRCUIT WIRED AHEAD OF SWITCH CONTROL.
			₹					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.

CONSULTANTS (ENGINEER):

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NEARBY ENGINEERS 382 NE 191ST STREET SUITE 49674, MIAMI, FL 33179

NO. DESCRIPTION DATE

ALL FIELD CONDITIONS AND
DIMENSIONS ARE TO BE FIELD
VERIFIED PRIOR TO COMMENCEMENT
OF THE WORK. ALL DISCREPANCIES
ARE TO BE BROUGHT TO THE
ATTENTION OF THE ARCHITECT
BEFORE PROCEEDING WITH THE WORK THESE DRAWINGS ARE THE PROPERTY OF JOHN WILLIAM LISTER ARCHITECT. THEY ARE NOT TO BE REPRODUCED IN PART OR IN WHOLE WITHOUT THE CONSENT OF JOHN WILLIAM LISTER ARCHITECT. THEY ARE TO BE USED ON THE PROJECT NOTED HEREON ONLY.

REVISIONS

SOFRESH

ELECTRICAL
SYMBOLS &
GENERAL NOTES

08/24/23 DATE SHEET NUMBER AS NOTED SCALE NYE DRAWN BY EO.1 NYE CHECKED BY 23126 PROJECT #

ELECTRICAL SPECIFICATIONS

GENERAL:

- A. THE "GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION," AIA DOCUMENT A201, LATEST EDITION, AND THESE SPECIFICATIONS AS APPLICABLE ARE PART OF THIS CONTRACT.
- B. DRAWING ARE DIAGRAMMATIC AND INDICATE GENERAL ARRANGEMENT OF SYSTEMS AND WORK. CONDUIT ROUTING IS SHOWN DIAGRAMMATICALLY AND DOES NOT SHOW ALL OFFSETS, DROPS AND RISES OF RUNS. THE CONTRACTOR SHALL ALLOW IN HIS PRICE FOR ROUTING OF CONDUIT TO AVOID OBSTRUCTIONS. COORDINATION WITH EXISTING SERVICES, INCLUDING THOSE OF OTHER TRADES, IS REQUIRED, MAINTAIN HEADROOM AND SPACE CONDITIONS.
- BIDDERS, BEFORE SUBMITTING PROPOSALS, SHALL VISIT AND CAREFULLY EXAMINE THE AREA AFFECTED BY THIS WORK TO FAMILIARIZE THEMSELVES WITH THE EXISTING CONDITIONS AND THE DIFFICULTIES THAT WILL ATTEND THE EXECUTION OF THIS WORK. 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 RFFN MADE.
- D. DISCONNECT, REMOVE AND/OR RELOCATE EXISTING MATERIAL EQUIPMENT AND OTHER WORK AS NOTED OR REQUIRED FOR PROPER INSTALLATION OF NEW WORK.
- E. 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.
- F. SEAL OPENINGS THROUGH PARTITIONS, WALLS AND FLOORS WITH MINERAL WOOL OR OTHER NONCOMBUSTIBLE MATERIAL, UNLESS OTHERWISE NOTED.
- G. PROVIDE ALL NECESSARY FLASHING AND COUNTER FLASHING TO MAINTAIN THE WATERPROOFING INTEGRITY OF THE BUILDING AS REQUIRED BY THE INSTALLATION OR REMOVAL OF CONDUIT AND EQUIPMENT, PROVIDE EQUIPMENT CURBS AS REQUIRED.
- H. ALL EXISTING MATERIAL, EQUIPMENT AND CONSTRUCTION DEBRIS TO BE REMOVED UNDER THIS CONTRACT SHALL BECOME THE PROPERTY OF THE CONTRACTOR WITH THE EXCEPTION OF SPECIFIC FOLIPMENT ND APPARATUS REQUESTED BY THE BUILDING REPRESENTATIVE. ARCHITECT OR AS NOTED TO BE RELOCATED ON THE DRAWINGS. REMOVED EQUIPMENT SHALL BE PROPERLY DISPOSED OF BY THIS
- 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 DURING OVERTIME HOURS AND THE ADDITIONAL COST TO BE CHARGED THEREFORE SHALL BE ONLY THE "PREMIUM" PORTION OF THE WAGES PAID.
- J. UNLESS OTHERWISE SPECIFICALLY NOTED OR SPECIFIED, INCLUDE ALL CUTTING AND PATCHING OF EXISTING FLOORS, WALLS, PARTITIONS AND OTHER MATERIALS IN THE EXISTING BUILDING. THE CONTRACTOR SHALL RESTORE THESE AREAS TO ORIGINAL CONDITION.
- K. ALL MATERIAL AND EQUIPMENT SHALL BE NEW UNLESS OTHERWISE NOTED AND SHALL BE IN ACCORDANCE WITH BUILDING STANDARDS.
- INSURANCE: PROVIDE IN ACCORDANCE WITH OWNER/BUILDING REQUIREMENTS AND SHALL INCLUDE A HOLD HARMLESS CLAUSE FOR OWNER AND ENGINEER.
- M. THE FINAL ACCEPTANCE SHALL BE MADE AFTER THE CONTRACTOR HAS ADJUSTED HIS EQUIPMENT. TESTED THE VARIOUS SYSTEMS. DEMONSTRATED THAT IT FULFILLS THE REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS AND HAS FURNISHED ALL THE REQUIRED CERTIFICATED OF INSPECTION AND APPROVAL.
- GENERAL PROVISIONS FOR ELECTRICAL WORK:
- A. DEFINITIONS:
 - 1) "PROVIDE": TO FURNISH, INSTALL AND CONNECT UP COMPLETE AND READY FOR SAFE AND REGULAR OPERATION THE PARTICULAR WORK REFERRED TO UNLESS SPECIFICALLY OTHERWISE NOTED.
 - 2) "INSTALL": TO ERECT, MOUNT AND CONNECT COMPLETE WITH RELATED ACCESSORIES.
 - 3) "FURNISH" OR "SUPPLY": TO PURCHASE, PROCURE, ACQUIRE. AND DELIVER COMPLETE WITH RELATED ACCESSORIES.
 - 4) "WORK": LABOR, MATERIALS, EQUIPMENT, APPARATUS, CONTROLS, ACCESSORIES AND OTHER ITEMS REQUIRED FOR PROPER AND COMPLETE INSTALLATION.
 - 5) "WIRING": RACEWAY. FITTINGS, WIRE, BOXES, AND RELATED ITEMS.
 - 6) "CONCEALED": EMBEDDED IN MASONRY OR OTHER CONSTRUCTION. INSTALLED IN FURRED SPACES, WITHIN DOUBLE PARTITIONS OR HUNG CEILINGS, IN TRENCHES, IN CRAWL SPACES, OR IN ENCLOSURES.
- 7) "EXPOSED": NOT INSTALLED UNDERGROUND OR "CONCEALED" AS DEFINED ABOVE.
- 8) "SIMILAR" OR "EQUAL": EQUAL IN MATERIALS, WEIGHT, SIZE, DESIGN AND EFFICIENCY OF SPECIFIED PRODUCT.
- TEMPORARY LIGHT AND POWER: PROVIDE TEMPORARY LIGHT AND POWER SYSTEMS AT EARLIEST POSSIBLE DATE WITHIN THE CONSTRUCTION AREAS FOR THE REQUIREMENTS OF ALL TRADES AS HEREIN DESCRIBED. EXTEND SYSTEMS TO NEW CONSTRUCTION AS SOON AS PHYSICALLY POSSIBLE. MAINTAIN SYSTEM DURING WORKING OWNER. PROVIDE ALL REQUIRED MAINTENANCE, INCLUDING LAMPS AND SOCKETS.
- C. QUALITY ASSURANCE
- 1) QUALITY OF MATERIALS: ALL EQUIPMENT SHALL BE NEW SPECIFICATION GRADE, FREE FROM DEFECTS AND LISTED BY APPROVED TESTING AGENCY AND BEARING THEIR LABEL MATERIALS AND EQUIPMENT OF SIMILAR APPLICATION SHALL BE OF SAME MANUFACTURER, EXCEPT AS NOTED.
- 2) GUARANTEE: ALL MATERIALS AND WORKMANSHIP SHALL BE GUARANTEED AS DEFINED IN PARAGRAPH 2.C.
- 3) CURRENT CHARACTERISTICS:
- a. SERVICE: 120/208 VOLT, 3 PHASE, 4 WIRE, 60 HERTZ WITH GROUNDED NEUTRAL
- b. DISTRIBUTION: 120/208 VOLT, 3 PHASE, 4 WIRE, 60 HERTZ WITH GROUNDED NEUTRAL

4) HEIGHTS OF OUTLETS:

- a. FROM FINISHED FLOOR TO CENTERLINE OF OUTLETS FOR:
- RECEPTACLES AND TELEPHONES: 1 FT-6 IN.
- WALL SWITCHES: 4 FT-0 IN.
- WALL FIXTURES: 7 FT-0 IN.
- MOTOR CONTROLLERS: 5 FT-0 IN.
- CLOCKS: 7 FT 6 IN
- b. EXCEPTIONS: AT JUNCTION OF DIFFERENT WALL FINISH MATERIALS, ON MOLDING OR BREAK IN WALL SURFACE, IN VIOLATION OF CODE, OR AS NOTED OR DIRECTED.
- D. PRODUCT DELIVERY, STORAGE AND HANDLING
 - 1) MOVING OF EQUIPMENT: WHERE NECESSARY, SHIP IN CARTED SECTIONS OF SIZE TO PERMIT PASSING THROUGH AVAILABLE
 - 2) ACCESSIBILITY: FOR OPERATION, MAINTENANCE AND REPAIR, MINOR DEVIATIONS SHALL BE PERMITTED, CHANGES OF MAGNITUDE OR INVOLVING EXTRA COST ARE NOT PERMISSIBLE WITHOUT REVIEW. GROUP CONCEALED ELECTRICAL EQUIPMENT REQUIRING ACCESS WITH EQUIPMENT FREELY ACCESSIBLE THROUGH ACCESS DOORS.
- MATERIALS
- 1) NAMEPLATES: PROVIDE BLACK LAMICOID SHEET WITH 3/4 IN. WHITE LETTERING, FASTENED WITH EPOXY CEMENT FOR EACH DISCONNECT SWITCH, CIRCUIT BREAKER, PANEL, CABINET, TRANSFORMER, ENCLOSURE, MOTOR CONTROLLER AND THE LIKE. NAMEPLATES SHALL DESCRIBE THE NAME AND NUMBER OF EACH COMPONENT.
- 2) CABLE TAGS: TAG EACH CONDUCTOR PASSING THROUGH SPLICE OR PULLBOX WITH A WHITE LINEN TAG, INDICATING POINT OF ORIGIN AND TERMINATION OF THE CIRCUIT.

3) INSERTS AND SUPPORTS:

- a. INSERTS: STEEL, SLOTTED TYPE, FACTORY PAINTED.
- SINGLE ROD: SIMILAR TO GRINNELL FIG. 281.
- MULTI-ROD: SIMILAR TO FEE AND MASON SERIES 9000 WITH END CAPS AND CLOSURE STRIPS.
- CLIP FORM NAILS FLUSH WITH INSERTS.
- MAXIMUM LOADING 75 PERCENT OF RATING.
- b. SUPPORTS FROM BUILDING CONSTRUCTION: INSERTS, BEAM CLAMPS, STEEL FISHPLATES (IN CONCRETE FILL ONLY), CANTILEVER BRACKETS OR OTHER MEANS. SUBMIT FOR
- c. GROUPED LINES AND SERVICES: TRAPEZE HANGERS OF BOLTED ANGLES OR CHANNELS.
- d. WHERE BUILDING CONSTRUCTION IS INADEQUATE: PROVIDE ADDITIONAL FRAMING. SUBMIT FOR REVIEW.
- F. PAINT SHALL BE THE BEST GRADE FOR ITS PURPOSE. DELIVER IN ORIGINAL SEALED CONTAINERS AND APPLY IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. COLORS SHALL BE AS SELECTED BY ARCHITECT OR ENGINEER. UTILIZE GALVANIZED IRON PRIMER ON PANEL AND PULL BOXES, AFTER FABRICATION. UTILIZE HOT DIPPED GALVANIZED OR DIPPED IN ZINC BASED PRIMER FOR: OUTLET BOXES, JUNCTION BOXES, CONDUIT HANGERS, RODS, INSERTS AND SUPPORTS. ZINC BASED PRIMER WITH FINISH TO MATCH SURROUNDINGS SHALL BE USED FOR MARRED SURFACES OF STEEL EQUIPMENT AND RACEWAYS. A FIELD-APPLIED ZINC BASED PRIME COAT SHALL BE UTILIZED FOR STEEL OR IRONWORK.
- G. BRUSH AND CLEAN WORK PRIOR TO CONCEALING, PAINTING CLEAN AND REPAIR TO MATCH ADJOINING WORK BEFORE FINAL ACCEPTANCE. REMOVE DEBRIS FROM INSIDE AND OUTSIDE OF MATERIAL AND EQUIPMENT.
- H. FINAL LOCATIONS AND MOUNTING ORIENTATIONS OF ALL SWITCHES, RECEPTACLES AND LIGHT FIXTURES SHALL BE VERIFIED WITH
- ALL ACCESS DOOR LOCATIONS SHALL BE REVIEWED BY ARCHITECT PRIOR TO INSTALLATION.

SCOPE OF WORK:

- A. SCOPE OF WORK SHALL CONSIST OF PROVIDING LABOR, MATERIALS, EQUIPMENT, SERVICES AND FEES NECESSARY FOR COMPLETE AND SAFE INSTALLATION IN CONFORMING WITH NATIONAL AND LOCAL CODES AND AUTHORITIES HAVING JURISDICTION, AS INDICATED ON DRAWINGS AND HEREIN SPECIFIED.
- ALL DRAWINGS, PLANS, DETAILS, SPECIFICATIONS AND SPECIFICATION ADDENDA ARE MADE PART OF THIS CONTRACT AND SHALL APPLY TO ALL WORK UNDER THE CONTRACT UNLESS OTHERWISE AMENDED, MODIFIED, SUPPLIED OR SPECIFIED HEREIN.
- C. THE CONTRACTOR SHALL FURNISH A WRITTEN GUARANTEE TO REPLACE OR REPAIR PROMPTLY AND ASSUME RESPONSIBILITY FOR ALL EXPENSES INCURRED FOR ANY WORKMANSHIP AND EQUIPMENT IN WHICH DEFECTS DEVELOP WITHIN ONE YEAR FROM THE DATE OF FINAL CERTIFICATE FOR PAYMENT AND/OR FROM DATE OR ACTUAL USE OF EQUIPMENT OR OCCUPANCY OF SPACES BY OWNER INCLUDED UNDER THE VARIOUS PARTS OF THE WORK, WHICHEVER, DATE IS EARLIER, THIS WORK SHALL BE DONE AS DIRECTED BY THE OWNER. THIS GUARANTEE SHALL ALSO PROVIDED THAT WHERE DEFECTS OCCUR, THE CONTRACTOR WILL ASSUME RESPONSIBILITY OF OTHER TRADES AFFECTED BY DEFECTS, REPAIRS OR REPLACEMENTS IN EQUIPMENT SUPPLIED BY THE CONTRACTOR
- D. THE CONTRACTOR SHALL GIVE NECESSARY NOTICE, FILE DRAWINGS AND SPECIFICATIONS WITH ALL DEPARTMENTS HAVING JURISDICTION, 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
- CONTRACTOR SHALL PERFORM ALL CONTROLLED INSPECTIONS IN ACCORDANCE WITH THE FLORIDA BUILDING CODE. SECURE ALL REQUIRED PERMITS AND APPROVALS AND TRANSMIT SAME TO OWNER. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL FEES.
- AREAS WITH NO ELECTRICAL WORK SHALL REMAIN AS IS. CONTRACTOR SHALL MAINTAIN CONTINUITY OF ALL ELECTRICAL SYSTEMS TO ALL AREAS NOT COVERED BY THIS RENOVATION AND SHALL PROVIDE 48 HOUR NOTICE TO LANDLORD OF ANY PLANNED POWER INTERRUPTIONS OR SIGNAL SYSTEM OUTAGES.

- SHOP DRAWINGS
- A. PRIOR TO THE INSTALLATION OF ANY WORK AND PROCUREMENT OF EQUIPMENT, CONTRACTOR SHALL PROVIDE COMPLETE SETS OF COORDINATED SHOP DRAWINGS OF ALL NEW AND EXISTING EQUIPMENT, INDICATING CAPACITY, DIMENSIONS AND SEQUENCE OF OPERATION FOR WRITTEN APPROVAL BY THE ARCHITECT AND
- B. INDICATE ON EACH SHOP DRAWINGS SUBMITTED:

1) PROJECT NAME AND LOCATION

2) NAME OF ARCHITECT AND ENGINEER

3) ITEM IDENTIFICATION

4) APPROVAL STAMP OF PRIME CONTRACTOR

- SUBMISSIONS:
- 1) SUBMISSIONS 11 IN. X 17 IN. OR SMALLER: IF THE SUBMISSION IS A CATALOG CUT, THEN THE CONTRACTOR SHALL SUBMIT ONE ORIGINAL AND TWO COPIES. OTHERWISE, HE SHALL SUBMIT THREE COPIES. THE ARCHITECT WILL FORWARD THE ORIGINAL AND ONE COPY (TWO COPIES WHEN NO ORIGINAL IS RECEIVED) TO THE ENGINEER. ALL CATALOG CUTS SHALL BE COMPLETE.
- 2) SUBMISSIONS LARGER THAN 11 IN. X 17 IN.: SUBMIT TWO PRINTS AND ONE PAPER SEPIA TO THE ARCHITECT. THE ARCHITECT WILL FORWARD ONE PRINT AND THE PAPER SEPIA TO THE ENGINEER.
- D. SUBMIT SHOP DRAWINGS FOR THE FOLLOWING:
- 1) SAFETY/DISCONNECT SWITCHES
- 2) FUSES
- 3) CIRCUIT BREAKERS
- 4) PANELBOARDS/LOADCENTER (INCLUDING DIMENSIONS, SCHEDULES, AND CATALOG CUTS).
- 5) RACEWAYS
- 6) WIRE AND CABLE
- 7) WALL SWITCHES
- 8) INSERTION RECEPTACLES
- 9) MOMENTARY CONTACT SWITCHES
- 10) TIME SWITCHES
- 11) LIGHTING FIXTURES.
- ASSIST AND PROVIDE ALL NECESSARY INFORMATION, DIAGRAMS, SKETCHES, ETC. TO THE HVAC CONTRACTOR, FOR THE PREPARATION OF COORDINATED SHOP DRAWINGS INDICATING ROUTING OF FEEDER CONTROL CONDUITS, RECESSED FIXTURES AND ADJACENT NEARBY PIPING AND DUCTWORK WHERE APPLICABLE, CERTIFIED BY ALL TRADES THAT COORDINATION HAS BEEN ESTABLISHED. SUBMIT FOUR(4) BOOKBOUND OPERATING AND SERVICE MANUALS WHICH SHALL INCLUDE COPIES OF ALL SHOP DRAWING. PROVIDE SHOP DRAWINGS FOR PANELS, FIXTURES, WIRING DEVICES, CONDUIT, CABLE, DISCONNECT SWITCH, RELAYS, CONTRACTORS, AND OTHER SYSTEMS AS DIRECTED BY THE ENGINEER.
- AS-BUILT DRAWINGS AND EQUIPMENT OPERATIONAL INSTRUCTIO
- A. UPON COMPLETION AND ACCEPTANCE OF WORK, CONTRACTOR SHALL FURNISH WRITTEN INSTRUCTIONS AND 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. CONTRACTOR SHALL GIVE THREE COPIES OF THE INSTRUCTIONS TO THE OWNER AND ONE COPY TO THE ENGINEER.
- C. THE INSTRUCTION BOOKLET SHALL BEAR THE NAME, ADDRESS AND TELEPHONE NUMBER OF THE PROJECT, ARCHITECT AND ENGINEER.
- D. REPRODUCIBLE "AS-BUILT" DRAWINGS SHALL BE PROVIDED INDICATING THE AS INSTALLED CONDITIONS OF THE WORK. "AS-BUILT" DRAWINGS SHALL BE PROVIDED TO THE ARCHITECT AFTER COMPLETION OF THE INSTALLATION.
- LOW-VOLTAGE DISTRIBUTION EQUIPMENT:
 - A. PROVIDE COMPLETE EQUIPMENT INCLUDING: SWITCHES, FUSES, CIRCUIT BREAKERS, PANELS AND TRANSFORMERS.
 - ALL EQUIPMENT SHALL CONFORM TO NEMA, ANSI AND IEEE STANDARDS.
- DISCONNECT SWITCHES SHALL BE FUSED OR NONFUSED AS NOTED. VOLTAGE SHALL BE AS REQUIRED. SWITCHES SHALL BE HEAVY DUTY. EXCEPT AS NOTED, AND HORSEPOWER RATED FOR MOTOR LOADS. TOGGLE TYPE SWITCHES SHALL BE NONFUSED, LOAD BREAK, HAVING MAXIMUM RATINGS OF 20 AMP AT 600 VOLTS AND 30 AMP AT 240 VOLTS. TWO-POLE SWITCHES SHALL BE SIMILAR TO HART AND HEGEMAN NO. 6808F. THREE-POLE SWITCHES SHALL BE SIMILAR TO HART AND HEGEMAN NO. 7810F. KNIFE-BLADE TYPE SWITCHES SHALL BE LOAD BREAK, QUICK-MAKE- QUICK-BREAK, UL CLASS R UP TO 600 AMP. MAXIMUM RATING EXCEPT AS NOTED SHALL BE 800 AMP. ARC QUENCHERS SHALL BE PROVIDED. SWITCHES SHALL BE SIMILAR TO GENERAL ELECTRIC QMR. ALL SWITCH ENCLOSURES SHALL BE DEAD FRONT, NEMA TYPE 1, EXCEPT AS NOTED.

7. FUSES:

- A. CIRCUITS 0 TO 600 AMPERES SHALL BE PROTECTED BY FUSES SIMILAR TO CURRENT LIMITING BUSSMAN LOW-PEAK DUAL-ELEMENT TIME-DELAY LPN-RK (AMP)SP (250V) /LPS-RK (AMP)SP (600V) OR LPJ (AMP)SP (600V) (UL CLASS RK1 OR CLASS J), AND BE LISTED BY UL WITH AN INTERRUPTING RATING OF 300,000 AMPERES RMS SYMMETRICAL.
- B. MOTOR CIRCUITS ALL INDIVIDUAL MOTOR CIRCUITS WITH FULL LOAD AMPERE RATINGS (FLA) OF 480 AMPERES OR LESS SHALL BE PROTECTED BY FUSES SIMILAR TO CURRENT LIMITING BUSSMANN LOW-PEAK DUAL-ELEMENT TIME-DELAY LPN-RK (AMP)SP (250V) /LPS-RK (AMP)SP (600V) OR LPJ (AMP)SP (600V) (UL CLASS RK1 OR CLASS J), AND BE LISTED BY UL WITH AN INTERRUPTING RATING OF 300,000 AMPERES RMS SYMMETRICAL.
- C. ALL FUSES SHALL BE PROVIDED BY SAME MANUFACTURER.
- D. PROVIDE 1 SPACE MATCHING FUSE FOR EACH SET OF 3.

- CIRCUIT BREAKERS: MOLDED CASE BREAKERS SHALL BE THERMAL-MAGNETIC, QUICK-MAKE-QUICK-BREAK, BOLT-ON TYPE, MANUALLY OPERATED WITH INSULATED TRIP-FREE HANDLE. MULTI-POLE TYPE BREAKERS SHALL CONTAIN INTERNAL TRIP BAR. TERMINALS SHALL BE SUITABLE FOR COPPER OR ALUMINUM CABLE. FURNISH AUXILIARY DEVICES WHERE REQUIRED FOR SHUNT-TRIPPING, OPEN A ND CLOSE MOTOR OPERATOR AND ALARM INDICATION. ENCLOSURES SHALL BE DEAD FRONT. NEMA TYPE 1, EXCEPT AS NOTED. FRAMES, IC AND INTERCHANGEABLE TRIPS SHALL BE AS FOLLOWS, UNLESS OTHERWISE NOTED:
- 1) 120 VOLTS, 100-AMP FRAME: 10,000 AMPS, 1 POLE.
- 2) 120/240 VOLTS, 225-AMP FRAME: 22,000 AMPS MINIMUM
- DISTRIBUTION PANELBOARDS, SWITCH AND FUSE:
- THREE PHASE, 3 OR 4 WIRE WITH COPPER BUS BARS, ALL THROUGH BUS SHALL BE INSULATED.
- NEMA CLASS 1 CONSTRUCTION TO ACCOMMODATE FUSIBLE, INDIVIDUALLY ENCLOSED SWITCHES, FRONT REMOVABLE, SWITCH AND DOOR INTERLOCKS. COVERS TO BE PAD-LOCKABLE.
- PANELBOARD SHALL BE CONSTRUCTED OF CODE—GAUGE STEEL GRAY FINISH OVER RUST INHIBITOR, FOR SURFACE MOUNTING. BOX AND PANEL FRAME SHALL BE FLANGED AND REINFORCED FOR RIGID SUPPORT OF INTERIOR AND ACCURATE ALIGNMENT OF INTERIOR WITH FRONT. TRIMS TO BE FASTENED TO BACK BOX WITH SCREWS.
- K. ALL BRANCH SWITCHES SHALL HAVE INDIVIDUAL ENGRAVED LAMICOID NAMEPLATES (BLACK WITH WHITE CORE).
- DISTRIBUTION PANELBOARD CONSTRUCTION MINIMUM SHORT CIRCUIT RATING 25,000 AMPERES, REMS SYMMETRICAL FOR ALL 120/208V APPLICATIONS. APPLICATIONS.
- M. DISCONNECTS
 - 1) DISCONNECT SWITCHES SHALL CONFORM TO NEMA AND UL STANDARDS, AND SHALL BE HORSEPOWER RATED.
 - 2) SWITCHING MECHANISM SHALL BE QUICK-MAKE, QUICK-BREAK, SINGLE THROW WITH EXTERNAL OPERATING HANDLE MECHANCIALLY INTERLOCKED WITH ENCLOSURE COVER TO PROVIDE ACCESS TO INTERIOR WHEN DISCONNECT IS IN OFF POSITION ONLY. PROVIDE MEANS TO LOCK OPERATING HANDLE IN THE OPEN AND CLOSED POSITION. DESIGNATE ON THE ENCLOSURE THE OPEN AND CLOSED POSITION OF THE OPERATING HANDLE.
 - SWITCHES SHALL BE OF THE DOUBLE STATIONARY CONTACT TYPE.
- SWITCHES SHALL BE EQUIPPED WITH REJECTION TYPE FUSE HOLDERS, FUSIBLE AS SHOWN ON THE DRAWINGS; PROVIDE COMPLETE WITH FUSES AS SCHEDULED.
- DISTRIBUTION PANELBOARD SHALL BE MOUNTED TO STRUCTURAL STEEL CHANNEL (KINDORF) WHICH SHALL BE BOLTED TO THE WALL USING EXPANSION ANCHORS FOR LARGE PANELS.
- H. IDENTIFICATION
 - 1) PROVIDE NAMEPLATE AT EACH SWITCH IDENTIFYING THE LOAD
 - 2) NAMEPLATES SHALL BE MOUNTED ON THE FRONT COVER SECURED WITH SELF-TAPPING SCREWS OR NUTS AND BOLTS. NAMEPLATES SHALL BE LAMINATED PHENOLIC, BLACK WITH A MINIMUM OF 1/4" HIGH WHITE LETTERING.
- DISTRIBUTION AND SUB-DISTRIBUTION PANELBOARDS SHALL BE A MINIMUM OF 30" WIDE AND 10" DEEP.
- POWER PANELBOARDS SHALL BE SIMILAR TO GENERAL ELECTRIC TYPE "OMR". AS MANUFACTURED BY ATLAS SWITCH COMPANY. ELECTRIC SWITCHBOARD COMPANY OR APPROVED EQUAL.
- K. PANELBOARD SHALL HAVE MAIN CIRCUIT BREAKER OR MAIN LUGS AS INDICATED ON THE DRAWINGS. QUANTITY, POLES AND TRIP RATINGS OF BRANCH CIRCUIT BREAKERS TO BE AS INDICATED ON DRAWINGS.
- PANELBOARD SHALL HAVE ENGRAVED WHITE CORE, BLACK LAMACOID NAMEPLATE SCREWED ONTO PANE TRIM WITH DESIGNATION LISTED (PANELBOARD NAME, VOLTAGE, RATING OR MAINS IN AMPS).

B. MATERIALS

1) RACEWAYS:

- a. RIGID STEEL CONDUIT: FULL-WEIGHT PIPE, GALVANIZED,
- b. ELECTROMETALLIC TUBING (EMT): THIN WALL PIPE, GALVANIZED,
- c. FLEXIBLE STEEL CONDUIT: CONTINUOUS SINGLE STRIP,
- d. WIREWAYS: WIRE SHALL BE AS NOTED, MINIMUM NO. 16 GAUGE STEEL WITH GROUND CONTINUITY. FINISH SHALL BE BAKED ENAMEL. COVERS SHALL BE SCREW-ON.
- e. SURFACE METAL RACEWAY: SIZE AS NOTED. BASE 0.04 IN., COVER 0.25 IN. MATERIAL SHALL BE STEEL. FINISH SHALL BE BAKED ENAMEL. COVERS SHALL BE SCREW-ON.

2) FITTINGS AND ACCESSORIES:

INSULATED THROAT.

GALVANIZED.

- a. RIGID STEEL: NONSPLIT, THREADED, STEEL OR MALLEABLE IRON. ZINC DIE CAST NOT PERMITTED.
- b. ELECTROMETALLIC TUBING: COMPRESSION TYPE. GALVANIZED
- RIGID STEEL ELBOWS, 2 IN. OR LARGER. c. FLEXIBLE METALLIC CONDUIT: ANGLE WEDGE TYPE WITH
- d. BUSHINGS: METALLIC INSULATED TYPE.

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NEARBY ENGINEERS

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23126 PROJECT

ELECTRICAL SPECIFICATIONS (CONT.)

3) BOXES:

- a. OUTLET BOXES: EXCEPT AS OTHERWISE REQUIRED BY CONSTRUCTION, DEVICES OR WIRING, BOXES SHALL BE STAMPED STEEL, 4 IN. SQUARE OR OCTAGON FOR FIXTURES. BOXES ABOVE CEILING SHALL BE 1-1/2 IN. DEEP. BOXES IN CEILING OR SLAB SHALL BE 3 IN. DEEP. BOXES IN WALL FOR FIXTURES SHALL BE 2-3/4 IN. DEEP. BOXES IN WALL FOR RECEPTACLES AND SWITCHES SHALL BE 1-1/2 IN. DEEP. FURNISH WITH RAISED COVERS AND FIXTURE STUDS WHERE REQUIRED. WITHOUT FIXTURE OR DEVICE: FURNISH BLANK COVER. OFFSET BACK-TO-BACK OUTLETS WITH MINIMUM 6 IN. SEPARATION
- b. JUNCTION AND PULL BOXES: GALVANIZED SHEET STEEL WITH SCREW-ON COVERS, EXCEPT AS NOTED. FURNISH WITH INSULATED SUPPORTS FOR CABLES. LOCATIONS SHALL BE AS NOTED OR REQUIRED AND ACCESSIBLE. PROVIDE BARRIERS IN NEW AND RENOVATED BOXES BETWEEN 120/208 VOLT AND 265/460 VOLT WIRING AND BETWEEN EMERGENCY AND NORMAL WIRING. FLOOR BOXES SHALL BE SUITABLE FOR CONDUIT AND DEVICES NOTED. RAISED OUTLETS SHALL BE HUBBELL #B2414 SERIES WITH ABOVE FLOOR FITTING. TELEPHONE: BUSHED HOLE. POWER: DUPLEX RECEPTACLE OR OTHER AS NOTED. INCREASE SIZE TO SUIT AS NECESSARY. FLUSH OUTLETS SHALL BE HUBBELL #B2414 SERIES WITH FLUSH FLOOR FITTING FOR TELEPHONE AND FLUSH DUAL FLAP COVER WITH DUPLEX RECEPTACLE FOR POWER AS NOTED. INCREASE SIZE TO SUIT AS NECESSARY.
- PROVIDE RACEWAYS ONLY AS HEREIN SPECIFIED, EXCEPT AS NOTED. RACEWAYS SHALL BE RUN CONCEALED, EXCEPT AS NOTED.

PROVIDE RACEWAY SUPPORT UTILIZING CEILING TRAPEZE, STRAP HANGERS, OR WALL BRACKETS. PROVIDE U-BOLTS AT EACH FLOOR LEVEL OF RISER RACEWAYS AND CONNECTED TO ACCEPTABLE SUPPORTS. PROVIDE RISER CLAMPS AT EACH FLOOR LEVEL OF RISER RACEWAYS AND RESTING ON SLAB. FOR THROUGH-THE-FLOOR SYSTEMS, UTILIZE AN ASSEMBLY SIMILAR TO HUBBELL FIRE RATED POKE-THROUGH-FLOOR BOX SYSTEM. FOR ABOVE FLOOR FITTINGS TELEPHONE SHALL BE BUSHED HOLE AND POWER SHALL BE DUPLEX RECEPTACLE OR OTHER AS NOTED. PROVIDE SEPARATION BARRIER BETWEEN POWER AND TELEPHONE COMPARTMENTS. PROVIDE JUNCTION BOX ON UNDERSIDE OF FLOOR. PACK FITTING TO RESTORE FIRE RATING OF FLOOR.

SECURE ALL RACEWAYS TO SUPPORTS WITH PIPE STRAPS OR U-BOLTS. SPACING OF SUPPORTS SHALL BE A MINIMUM OF 10 FT ON CENTER FOR METALLIC RACEWAY AND AS REQUIRED FOR NONMETALLIC RACEWAY. SPACING SHALL BE 5 FT ON CENTER FOR WIREWAYS AND PER CODE AND AS NOTED FOR OTHERS. MOUNT SUPPORTS TO STRUCTURE MASONRY WITH TOGGLE BOLTS ON HOLLOW MASONRY, EXPANSION SHIELDS OR INSERTS IN CONCRETE AND BRICK, MACHINE SCREWS ON METAL, BEAM CLAMPS ON FRAMEWORK, WOOD SCREWS ON WOOD, AND PAN THROUGH STRAPS IN METAL DECK. NAILS, RAWL PLUGS OR WOOD PLUGS SHALL NOT BE PERMITTED. WHERE REQUIRED BY STRUCTURE, FURNISH THROUGH BOLTS AND FISHPLATES.

EXPOSED RACEWAYS SHALL BE RUN PARALLEL WITH OR AT RIGHT ANGLES TO WALLS. PROVIDE CLEARANCE WITH WATER, STEAM OR OTHER PIPING (MINIMUM 3 IN. SEPARATION FROM STEAM AND HOT WATER PIPES, EXCEPT 1 IN. FROM PIPE COVER AT CROSSINGS AND 18 IN. FOR PARALLEL RUNS). FOR HUNG CEILING OUTLETS, RUN IN HUNG CEILING AND CONNECT TO CEILING SUPPORT CHANNELS. IN MASONRY AND POURED CONCRETE, RUN VERTICALLY ONLY.

MAINTAIN GROUNDING CONTINUITY OF INTERRUPTED METALLIC RACEWAYS WITH GROUND CONDUCTOR, AND IN FLEXIBLE CONDUIT FOR FEEDERS AND MOTOR TERMINAL CONNECTIONS.

EMPTY RACEWAYS OVER 10 FT LONG: PROVIDE FISH OR PULL WIRE, GALVANIZED OR NYLON ROPE.

RIGID STEEL CONDUIT SHALL BE PERMITTED FOR FEEDERS AND BRANCH CIRCUITS. PAINT MALE THREADS OF FIELD-THREADED CONDUIT WITH GRAPHITE-BASE PIPE COMPOUND AND BUTT CONDUIT ENDS. TOUCH UP MARRED SURFACES AND FIELD-CUT THREADS, CRC—COLD GALVANIZED. EMT SHALL BE PERMITTEI FOR BRANCH CIRCUITS ONLY, IN DRY LOCATIONS, DRY WALLS, HUNG CEILINGS, HOLLOW BLOCK WALLS AND FURRED SPACES. EMT SHALL NOT BE PERMITTED IN RAISED FLOORS. FLEXIBLE STEEL CONDUIT SHALL BE UTILIZED FOR SHORT CONNECTIONS WHERE RIGID CONDUIT IS IMPRACTICAL. FROM OUTLET BOX TO RECESSED LIGHTING FIXTURE: PROVIDE MINIMUM 4 FT AND MAXIMUM 6 FT LENGTHS. FOR FINAL CONNECTION TO MOTOR TERMINAL BOX, TRANSFORMER AND OTHER VIBRATING EQUIPMENT: PROVIDE WITH POLYVINYL SHEATHING AND GROUND CONDUCTOR. MINIMUM LENGTH: 18 IN. WITH SLACK. CONNECT GROUND CONDUCTOR TO ENCLOSURE OR RACEWAY AT EACH END. FOR EXPANSION JOINT CROSSINGS, CROSS AT RIGHT ANGLES AND ANCHOR ENDS.

CUT CONDUIT ENDS SQUARE. REAM SMOOTH. PAINT MALE THREADS OF FIELD THREADED RACEWAYS WITH GRAPHITE BASE PIPE COMPOUND. DRAW UP TIGHT WITH RACEWAY COUPLING.

ALL COUPLINGS SHALL BE COMPRESSION TYPE. NO SET SCREW FITTINGS.

EXPANSION FITTINGS SHALL BE INSTALLED AT RIGHT ANGLES WITH CLIP JOINT CENTERED IN EXPANSION JOINT. PROVIDE A LENGTH OF RUN IN ACCORDANCE MANUFACTURER'S RECOMMENDATIONS. PRESET FITTINGS SHALL ALLOW FOR TEMPERATURE VARIATION.

RACEWAYS PASSING THROUGH FIRE—RATED CONSTRUCTION: SEAL OPENING WITH FIRE SEALANT.

D. PROVIDE CABLE SUPPORTS IN ACCORDANCE WITH NATIONAL ELECTRIC CODE ARTICLE 300.19. CABLE SUPPORTS SHALL UTILIZE A ONE—PIECE PLUG WITH POZI—GRIP WEDGING PLUG AS MANUFACTIURED BY OZ—GEDNEY. TYPE SF SHALL BE USED FOR ARMORED CABLE.

INSTALL CABLE SUPPORTS AT THE TOP OF A VERTICAL RISE AND PROVIDE INTERMEDIATE ADDITIONAL SUPPORTS AS REQUIRED TO LIMIT SUPPORTED CONDUCTOR LENGTHS TO NOT GREATER THAN THOSE SPECIFIED IN TABLE 300.19(A).

- A. ERECT WALL AND SWITCH OUTLETS IN ADVANCE OF FURRING AND FIREPROOFING. OUTLET BOXES SHALL BE SET SQUARE AND TRUE WITH BUILDING FINISH. SECURE TO BUILDING STRUCTURE BY ADJUSTABLE STRAP IRON OR GROUT IN WITH MASONRY. VERIFY OUTLET LOCATIONS IN FINISHED SPACES WITH ARCHITECTURAL DRAWINGS OF INTERIOR DETAILS AND FINISHES. PROVIDE BARRIERS BETWEEN SWITCHES CONNECTED TO DIFFERENT PHASES FOR VOLTAGES EXCEEDING 150 VOLTS TO GROUND.
- D. PANEL, JUNCTION AND PULL BOXES SHALL BE LOCATED CLEAR OF OTHER TRADES. CONCEAL JUNCTION AND PULL BOXES IN FINISHED SPACES. WHERE NECESSARY, REROUTE RACEWAYS OR MAKE OTHER ARRANGEMENTS FOR CONCEALMENT. BOXES SHALL BE ACCESSIBLE. SUPPORT BOXES FROM BUILDING STRUCTURE, INDEPENDENT OF CONDUIT. PROVIDE FLOOR—TO—CEILING CHANNELS FOR MOUNTING ON DRYWALL AND LIGHTWEIGHT CONSTRUCTION. OUTLET BOXES FOR FIXTURES RECESSED IN HUNG CEILINGS SHALL BE ACCESSIBLE THROUGH OPENING CREATED BY REMOVAL OF FIXTURE. SECURE TO BLACK IRON SUPPORT. MOTOR TERMINAL BOXES: COORDINATE WITH MOTOR BRANCH CIRCUIT CONDUIT AND WIRING; ADD BOX VOLUME WHERE REQUIRED.
- E. FIRE SEALANTS: PROVIDE FOR RACEWAYS AND WIRE PASSING THROUGH FLOOR SLOTS, SLEEVES OR OPENINGS IN FIRE—PARTITIONS ROOMS.
- F. PERFORM CONTINUITY TESTS OF RESISTANCE OF FEEDER CONDUITS FROM SERVICE TO POINT OF FINAL DISTRIBUTION USING 1 CONDUCTOR RETURN. MAXIMUM RESISTANCE SHALL BE 25 OHMS.

9. WIRE AND CABLE:

- A. PROVIDE WIRE AND CABLE COMPLETE WITH ACCESSORIES. SIZE REFERENCE SHALL BE AWG EXCEPT AS NOTED.
- B. CONDUCTORS SHALL BE COPPER, ASTM STANDARD SOLID (NO. 10 AND SMALLER) OR STRANDED (NO. 8 AND LARGER). GENERAL USE CABLING SHALL BE NO. 12 MINIMUM. AT 120 VOLTS AND OVER 100 FT CIRCUIT LENGTH PROVIDE NO. 10 MINIMUM. AT 265 VOLTS AND OVER 200 FT CIRCUIT LENGTH PROVIDE NO. 10 MINIMUM.
- C. CONTROL AND ALARM CABLING, EXCEPT AS NOTED, SHALL BE NO. 14 MINIMUM. AT 120 VOLTS AND OVER 200 FT CIRCUIT LENGTH PROVIDE NO. 12 MINIMUM. OTHER VOLTAGES AND PHASES: ADJUST CABLE SIZING AS REQUIRED TO MAINTAIN VOLTAGE DROP. INCREASE RACEWAY SIZES FOR LARGER WIRE AS REQUIRED.
- D. INSULATION SHALL BE RUBBER AND THERMOPLASTIC MEETING ASTM AND IPCEA STANDARDS. TYPE THW OR THWN SHALL BE UTILIZED FOR FEEDERS AND BRANCH CIRCUITS EXCEPT AS NOTED. TYPE SFF-2 SHALL BE UTILIZED FOR BRANCH CIRCUITS LOCATED IN WIRING CHANNELS OF CONTINUOUS FLUORESCENT FIXTURES AND IN AMBIENT TEMPERATURES OVER 90 DEG C. FOR UNGROUNDED ISOLATED BRANCH CIRCUITS PROVIDE CROSS-LINKED POLYETHYLENE INSULATION (TYPE XHHW).
- E. ARMORED CABLE (BX) SHALL BE UTILIZED FOR BRANCH CIRCUITS IN DRY HOLLOW LOCATIONS, HUNG CEILINGS, AND BLOCK WALLS. WHEN USED IN LIEU OF WIRING IN CONDUIT, STATE IN PROPOSAL THAT PRICE IS BASED UPON THE USE OF HOSPITAL GRADE 'BX'.
- F. COLOR CODING SHALL BE AS FOLLOWS:

120/208 VOLT SYSTEM: BLACK FOR A PHASE RED FOR B PHASE BLUE FOR C PHASE

1) NEUTRAL WIRE SHALL UTILIZE WHITE OUTER COVERING THROUGHOUT. EQUIPMENT GROUND WIRE SHALL UTILIZE GREEN OUTER COVERING THROUGHOUT.

WHERE COLOR-CODED CABLE IS NOT AVAILABLE, CERTIFY IN WRITING AND REQUEST PERMISSION TO OVERLAP CONDUCTORS WITH 6 IN. OF COLOR TAPING IN ACCESSIBLE LOCATIONS.

- G. PROVIDE FLAMEPROOF LINEN OR FIBER TAGS IN ACCESSIBLE LOCATIONS. FOR FEEDERS INDICATE FEEDER NUMBER, SIZE, PHASE AND POINTS OF ORIGIN AND TERMINATIONS. FOR CONTROL AND ALARM WIRING INDICATE TYPE (CONTROL OR ALARM), SIZE OF WIRE, AND POINTS OF ORIGIN AND TERMINATIONS
- H. TERMINATIONS, SPLICES AND TAPS UNDER 600 VOLTS: COPPER CONDUCTORS NO. 10 AND SMALLER SHALL UTILIZE COMPRESSION—TYPE OF TWIST—ON SPRING—LOADED CONNECTORS AND CLEAR NYLON—INSULATED COVERING. COPPER CONDUCTORS NO. 8 AND LARGER SHALL UTILIZE MECHANICAL BOLTED PRESSURE OR HYDRAULIC COMPRESSION TYPE USING MANUFACTURER'S RECOMMENDED TOOLING. CABLE LUGS AND CONNECTORS SHALL UTILIZE COMPRESSION TYPE OF SAME METAL AS CONDUCTOR. PROVIDE TO MATCH CABLE, WITH MARKING INDICATING SIZE AND TYPE. COPPER LUG CONNECTIONS TO BUS BARS: USE ANTISEIZE COMPOUND ON
- I. NOT MORE THAN 3 LIGHTING OR CONVENIENCE OUTLET CIRCUITS SHALL BE INSTALLED IN ONE CONDUIT UNLESS OTHERWISE INDICATED. PULL NO THERMOPLASTIC WIRES AT TEMPERATURES LOWER THAN 32 DEG F. PROVIDE SEPARATE RACEWAYS FOR CONDUCTORS OF 120/208 AND 265/460 VOLT SYSTEMS, EXCEPT 460 VOLT MOTOR BRANCH CIRCUIT WIRING AND RELATED 120 VOLT CONTROL WIRING. THERMOPLASTIC WIRES SHALL NOT BE INSTALLED IN COMPUTER AREA RAISED
- J. LEAVE WIRES WITH SUFFICIENT SLACK TO PERMIT MAKING FINAL CONNECTIONS.
- K. PERFORM CONTINUITY AND INSULATION TESTS. MEGGER TEST
 100 PERCENT OF FEEDERS, 10 PERCENT OF BRANCH CIRCUITS
 AND ALL MOTOR BRANCH CIRCUITS OVER 25 HP.

PERFORM TESTS PRIOR TO CONNECTING EQUIPMENT AND IN PRESENCE OF AUTHORIZED REPRESENTATIVES. SUBMIT WRITTEN REPORT OF RESULTS. CORRECT OR REPLACE CABLE TESTING BELOW MANUFACTURER'S STANDARDS.

11. WIRING DEVICES:

- A. WIRING DEVICES SHALL BE SPECIFICATION GRADE UNLESS OTHERWISE SPECIFIED. ALL DEVICES SHALL BE FLUSH MOUNTED, UNLESS OTHERWISE NOTED. PROVIDE COMPLETE MATERIAL AND ACCESSORIES AS NOTED.
- B. LOCAL WALL SWITCHES SHALL BE ROCKER TYPE, QUIET OPERATING, RATED 20 AMP, 120/208 VOLT, AC. SIMILAR TO LEVITON DECORA SERIES A5621 (SINGLE POLE), A5623 (3-WAY) AND A5624 (4-WAY).
- C. STRAIGHT BLADE RECEPTACLES SHALL BE COMMERCIAL SPECIFICATION GRADE DUPLEX CONVENIENCE 125 VOLTS, 2 POLE, 3 WIRE, U GROUND SLOT, DECORA SERIES BY LEVITON. GROUNDED, EXCEPT AS NOTED.
- 1)SINGLE GANG, RECESSED, DUPLEX RECEPTACLE: TAMPER RESISTANT, 2-POLE, 3-WIRE GROUNDING, 15A, 125V, NEMA 5-20R; LEVITON 689 SERIES (COLOR AS SPECIFIED BY ARCHITECT).
- 2) USB CHARGER/ DUPLEX TAMPER-RESISTANT RECEPTACLE: TAMPER RESISTANT,
- E. DEVICE PLATES: SEE ARCHITECT FOR TYPE. FOR RECEPTACLES WITH OTHER THAN 120 VOLT, INSCRIBED VOLTAGE AVAILABLE.
- F. COLORS: COORDINATE COLORS WITH ARCHITECT.
- G. MOUNTING ORIENTATION OF RECEPTACLES (HORIZONTAL OR VERTICAL): COORDINATE WITH ARCHITECT.

12. LIGHTING FIXTURES:

- A. FIXTURES TO BE AS SPECIFIED BY ARCHITECT AND SHALL BE COMPLETELY FACTORY ASSEMBLED, WIRED AND EQUIPPED WITH ALL NECESSARY SOCKETS, BALLASTS, SUPPORTING HARDWARE AND ACCESSORIES. REFER TO DRAWINGS FOR INDIVIDUAL FIXTURE DESCRIPTIONS.
- B. FIXTURE CATALOG NUMBERS USED TO ILLUSTRATE EQUIPMENT TYPE DO NOT NECESSARILY DENOTE REQUIRED MOUNTING EQUIPMENT OR ACCESSORIES. PROVIDE ACCESSORIES TO SUIT.
- C. BALLAST: CLASS P, HIGH POWER FACTOR, LOWEST AVAILABLE NEMA RATED NOISE LEVEL, ET1 AND CBM APPROVED. ENERGY SAVING TYPE. TRIGGER START FOR 24—INCH LAMPS AND RAPID START FOR 48—INCH. TWO LAMP BALLASTS; NO THREE LAMP BALLASTS. BALLASTS SHALL BE ADVANCE MAGNETEK, UNIVERSAL OR EQUAL.
- D. LED DRIVERS SHALL BE ELECTRONIC TYPE, LABELED AS COMPLIANT WITH RADIO FREQUENCY INTERFERENCE (RFI) REQUIREMENTS OF FCC TITLE 47, PART 15 AND COMPLY WITH NEMA SSL 1 "ELECTRONIC DRIVERS FOR LED DEVICES, ARRAYS OR SYSTEMS". LED DRIVERS SHALL HAVE A SOUND RATING OF "A", HAVE A MINIMUM EFFICIENCY OF 85% AND BE RATED FOR A THD OF LESS THAN 20% AT ALL INPUT VOLTAGES.
- E. DIMMABLE LED DRIVERS SHALL BE CAPABLE OF DIMMING WITHOUT LED STROBING OR FLICKER ACROSS THEIR FULL DIMMING RANGE. PROVIDE TYPE OF LED DRIVER AS PER LIGHTING FIXTURE SCHEDULE, DIMMABLE LED DRIVERS SHALL BE 0-10V WHERE NOT INDICATED.
- F. CONTINUOUS ROW, TWO LAMP STRIP FIXTURES SHALL BE STAGGERED TYPE.
- G. FLUORESCENT LIGHTING FIXTURES, INCLUDING GENERAL CONSTRUCTION, LAMPS AND BALLASTS SHALL CONFORM TO THE ENERGY EFFICIENCY REQUIREMENTS OF CONSOLIDATED EDISON CO. AND QUALITY FOR A UTILITY REBATE TO OWNER UNDER CON EDISON'S ENLIGHTENED ENERGY LIGHTING REBATE PROGRAM. CONTRACTOR SHALL COORDINATE REBATE PROGRAM WITH CON EDISON AND ARRANGE FOR CON EDISON TO PERFORM A SURVEY TO INVENTORY ALL EXISTING FIXTURES PRIOR TO DEMOLITION.
- H. EXIT SIGNS SHALL BE PRECISION DIE—CAST ALUMINUM HOUSING WITH LASER—FORMED ACRYLIC LEGEND. EXIT SIGNS SHALL COMPLY WITH UL 924 AND BE MEA APPROVED. AC POWERED WITH PREMIUM LONG—LIFE NICKEL CADMIUM BATTERY WITH STANDARD UL LISTED 3—HOUR RUN TIME. PROVIDE WITH INTEGRAL AUTOMATIC CHARGER IN A SELF CONTAINED POWER PACK. LED INDICATOR WITH PUSH TO TEST SWITCH.

13. TELEPHONE CONDUIT SYSTEM:

- A. PROVIDE COMPLETE SYSTEM OF: RACEWAYS AND ACCESSORIES, OUTLET BOXES, SLEEVES AND FISHWIRES.
- B. EQUIPMENT SHALL CONFORM TO REQUIREMENTS OF TELEPHONE COMPANY.
- C. OUTLETS SHALL BE:
 - 1) WALL: 4 IN. SQUARE WITH BUSHED COVER PLATE.
- D. PROVIDE FISHWIRES, IN RACEWAYS OVER 10 FT LONG.
- CONDUIT SHALL BE 3/4 IN. MINIMUM. FURNISH EMPTY CONDUIT FROM OUTLET BOX TO BUSHED END THRU WALL 6" BELOW THE PLASTER CEILING.
- F. FACE RACEWAYS IN ROOMS SHALL HUBBELL HBL500, HBL750 OR HBL2000 SERIES OR AS ACCEPTABLE.

14. GROUNDING AND BONDING:

- A. PROVIDE GROUNDING SYSTEM IN ACCORDANCE WITH (2017)
 NATIONAL ELECTRICAL CODE), AND THESE SPECIFICATIONS. THE
 WIRING SYSTEM SHALL BE INSTALLED AS REQUIRED TO PROVIDE A
 CONTINUOUSLY GROUNDED SYSTEM. WHERE FLEXIBLE CONDUIT IS
 USED FOR PART OF A CONDUIT RUN, EXCEPT LIGHTING BRANCH
 CIRCUITS, AN INSULATED GROUNDING CONDUCTOR SHALL BE
 PROVIDED IN THE CONDUIT AND CONNECTED TO GROUNDING
 BUSHINGS AT EACH END OF THE RUN.
- B. USE EXOTHERMIC WELDING PROCESS FOR INACCESSIBLE CONNECTIONS.
- C. EXTEND EXISTING SYSTEM GROUND TO INCLUDE ALL THE ELECTRICAL EQUIPMENT IN THE SCOPE OF WORK.
- D. WHERE FLEXIBLE METALLIC CONDUIT IS USED AN INTERNAL BONDING CONDUCTOR SHALL BE INSTALLED.

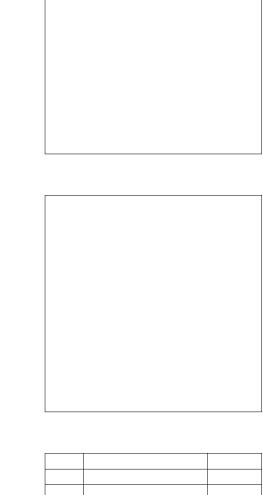
- E. IN ADDITION, FURNISH A SEPARATE INSULATED GREEN EQUIPMENT GROUND CONDUCTOR WHERE INDICATED ON DRAWINGS AND FOR THE FOLLOWING BRANCH CIRCUITS:
 1) CIRCUITS SERVING ANY WALL BOX DIMMER.
 - 2) CIRCUITS SERVING ANY ISOLATED GROUND RECEPTACLES.
 TERMINATE GROUND DIRECTLY AT AN EQUIPMENT GROUNDING
 CONDUCTOR TERMINAL OF THE SOURCE AT THE SOURCE, OR
 AS OTHER WISE NOTED ON DRAWINGS.
 - 3) CIRCUITS SERVING ANY DUPLEX OR SIMPLEX COMPUTER
 - 4) ANY CIRCUIT SERVED VIA AN ISOLATION TRANSFORMER OR COMPUTER POWER DISTRIBUTION UNIT.

15. PANELBOARDS:

- A. PANELBOARDS SHALL BE OF THE DEAD FRONT TYPE
 MANUFACTURED IN CODE GAUGE AND SIZE BOXES FOR MOUNTING
 AS INDICATED ON PLANS COMPLETE WITH TRIM, DOORS AND LOCKS.
 ALL LOCKS SHALL BE KEYED ALIKE.
- B. CIRCUIT BREAKERS SHALL BE OF THE BOLT—ON THERMAL MAGNETIC MOLDED CASE TYPE, AND SHALL HAVE THE TRIP RATINGS AND NUMBER OF POLES SHOWN IN SCHEDULES ON THE CONTRACT DRAWINGS. FOR BLANK (SPACE) COMPARTMENTS, PROVIDE FULL RATED BUS. MINIMUM GUTTER SPACES SHALL BE 5-3/4". SIDES, TOP AND BOTTOM, INCREASE FOR THROUGH FEEDERS. PROVIDE 25% COPPER GROUND BUS AND 100% COPPER NEUTRAL BUS AND INCREASE NEUTRAL BUS INDICATED.
- C. LOCKING TABS SHALL BE PROVIDED ON ALL CIRCUIT BREAKERS SERVING EMERGENCY LIGHTING, FIRE ALARM SYSTEM, SECURITY SYSTEMS AND OTHER EMERGENCY OR CRITICAL EQUIPMENT AND AS NOTED ON THE CONTRACT DRAWINGS. A TOTAL OF 5 SPARE LOCKING TABS SHALL BE FURNISHED TO THE OWNER.
- BUSES SHALL BE HARD DRAWN COPPER OF 98 PERCENT CONDUCTIVITY AND SHALL HAVE CROSS SECTIONAL AREAS LARGE ENOUGH TO LIMIT THE TEMPERATURE RISE, WHEN CARRYING FULL LOAD, TO 35 DEGREES C. ABOVE AN AMBIENT INSIDE THE ENCLOSURE OF 55 DEGREES C. AS DEFINED IN IEEE STANDARD RULES. MAIN BUS CAPACITY SHALL BE AS SHOWN ON THE CONTRACT DRAWINGS.
- E. ENCLOSURES SHALL BE SURFACE OR FLUSH AS INDICATED. TRIMS SHALL BE SECURED TO PANEL WITH MACHINE SCREWS. COVERS SHALL BE HINGED DOOR—IN—DOOR CONSTRUCTION WITH CYLINDER LOCKS AND CATCHES. LOCKS MUST BE COMPATIBLE WITH BUILDING STANDARD KEY SYSTEM AND WHEN NONE EXISTS, THEY SHALL BE SIMILAR TO A YALE NO. 911 KEY.
- F. DISTRIBUTION AND SUB-DISTRIBUTION PANELBOARD SHALL BE A MINIMUM OF 30" WIDE AND 10" DEEP.
- . ALL STANDARD PANELBOARDS SHALL BE A MINIMUM OF 20" WIDE AND 5 3/4" DEEP.
- . FURNISH ALL PANELBOARDS WITH FEED-THRU LUGS UNLESS OTHERWISE INDICATED ON THE DRAWINGS.
- ALL NEW PANELBOARDS SHALL BE PROVIDED WITH AN ENGRAVED WHITE CORE LAMACOID NAMEPLATE, WITH 3/4 IN. WHITE LETTERING ON A BLACK BACKGROUND, WITH DESIGNATION LISTED (PANELBOARD NAME), FASTENED WITH EPOXY CEMENT OR OVAL HEAD CHROME PLATED MACHINE SCREWS.
- J. THE CIRCUIT DIRECTORY SHALL BE TYPEWRITTEN AND PROVIDED INSIDE EACH PANEL DOOR TO INDICATE EQUIPMENT AND/OR AREA SERVED. DIRECTORY HOLDER SHALL BE METAL FRAME WITH CLEAR PLASTIC, TRANSPARENT COVER. THE TYPEWRITTEN LIST INDICATING CIRCUIT NUMBERS, OUTLETS SUPPLIED AND THEIR LOCATIONS SHALL BE PROVIDED.
- K. TIE-BARS SHALL NOT BE USED TO CREATE MULTI-POLE CIRCUITS. MAXIMUM 42 CIRCUITS ALLOWED.
- L. ONLY ONE WIRE SHALL BE INSTALLED UNDER EACH CIRCUIT BREAKER LUG.
- M. SHORT CIRCUIT RATING OF PANELBOARDS SHALL NOT BE LESS THAN AS INDICATED ON THE CONTRACT DRAWINGS OR SPECIFIED HEREIN. WHERE NOT INDICATED OR SPECIFIED THE MINIMUM SHORT CIRCUIT RATING SHALL BE EQUAL TO THE INTERRUPTING CAPACITY OF THE LOWEST RATED CIRCUIT BREAKER IN THE PANELBOARD, BUT IN NO CASE LESS THAN 10,000 AMPERES R.M.S. SYMMETRICAL FOR 208Y/120 VOLT SYSTEM. SERIES RATED PANELBOARDS SHALL BE USED TO ACHIEVE REQUIRED SHORT CIRCUIT RATINGS.
- FOR ALL EXISTING PANELBOARDS, CONTRACTOR SHALL PROVIDE NEW CIRCUIT BREAKERS TO REPLACE EXISTING AS REQUIRED AS INDICATED ON DRAWINGS.

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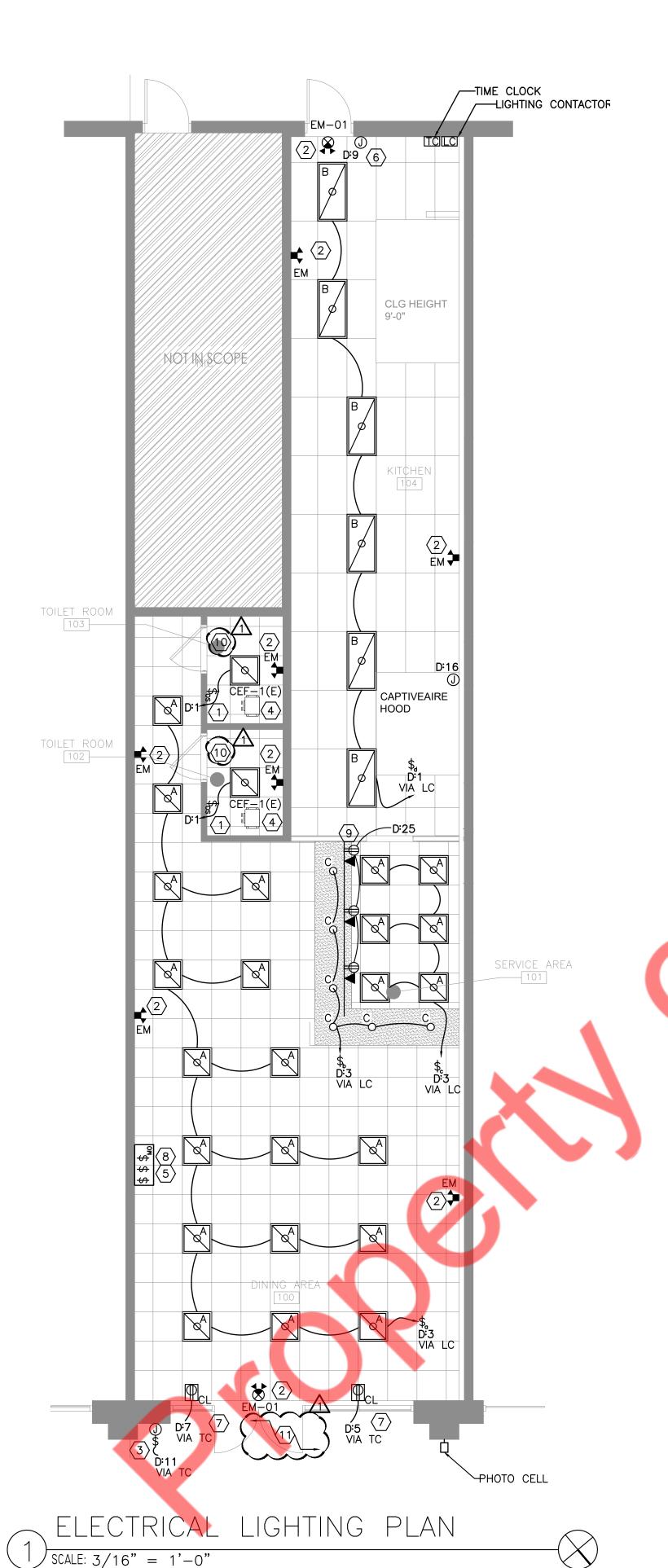
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		IGHTING FIXTURE	SCHEDULE		
TYPE	DESCRIPTION	MANUFACTURER	MODEL	TYPE	WATTAGE
Α	2X2 LED DT SERIES	LITHONIA	EPANL-2X2-4000LM-ZT-MVOLT-EM	LED	46 W
В	2X4 LED DT SERIES	LITHONIA	EPANL-2X2-4000LM-ZT-MVOLT-EM	LED	46 W
С	6" RECCESSED LIGHT FIXTURE	LITHONIA	LDN6-35/20-L06-AR-LSS-MVOLT-GZ10	LED	-
EM-01	EXIT SIGN WITH EM LIGHT	-	NEL-12PMR2-LD9	LED	-
EM	2-HEAD EMERGENCY HEADS (WHITE)	EXITRONIX	EBU-W-LED-51-52	LED	-



- A. VERIFY ALL LUMINAIRE COLORS, TRIMS, LENGTHS, ETC. WITH THE ARCHITECT PRIOR TO PLACING FINAL PURCHASE ORDERS. SUBMISSION PF SHOP DRAWINGS WILL BE INTERPRETED AS HAVING BEEN COORDINATED WITH THE ARCHITECTURAL DRAWINGS
- B. PROVIDE ALL LENGTHS, FEEDS, ACCESSORIES, CONNECTORS, WIRING, POWER SUPPLIES, DRIVERS ETC. FOR A COMPLETE INSTALLATION. THE E.C. SHALL VERIFY THE COMPLETE BILL OF MATERIAL WITH MANUFACTURER'S REPRESENTATIVE AND ENSURE ALL EQUIPMENT ARE INCLUDED IN BID PRICE. COORDINATE INSTALLATION WITH ARCHITECTURAL DETAILS.
- C. VERIFY FINAL LUMINAIRE LOCATIONS WITH OTHER CEILING MOUNTED EQUIPMENTS SUCH AS DIFFUSER WITH ARCHITECTURAL REFLECTED CEILING PLANS.
- D. VERIFY EXACT MOUNTING HEIGHT AND LOCATIONS OF ALL WALL MOUNTED LUMINAIRE WITH ARCHITECTURAL PLANS AND ELEVATIONS PRIOR TO ROUGH—IN.
- E. ANY PROPOSED ALTERNATE LUMINAIRES SHALL BE APPROVED BY THE ARCHITECT PRIOR TO FINAL BID PRICING.
- F. SHOULD THE CONTRACTOR PROPOSE TO FURNISH MATERIALS, EQUIPMENT AND DEVICES OTHER THAN THOSE SPECIFIED AND LISTED, THE CONTRACTOR SHALL SUBMIT A WRITTEN REQUEST FOR SUBSTITUTIONS, TO THE ENGINEERS AT LEAST TEN (10) BUSINESS DAYS PRIOR TO BID OPENING. THE REQUEST SHALL BE AN ALTERNATE TO THE ORIGINAL BID AND SHALL INCLUDE A COMPLETE SPECIFICATIONS CUTSHEET SUBMITTAL AS OUTLINED IN THE SPECIFICATIONS, COMPLETE WITH DESCRIPTIVE (MANUFACTURER, BRAND NAME, CATALOG NUMBER, ETC.) AND TECHNICAL DATA FOR ALL ITEMS. INDICATE ANY ADDITIONS OR DEDUCTIONS TO THE CONTRACT PRICE WITH THE SUBSTITUTION SUBMITTAL AND ON THE BID FORM.
- G. VERIFY FINAL SELECTION OF LIGHT FIXTURE WITH ARCHITECT.
- H. ALL LIGHT FIXTURES ARE THROUGH A NATIONAL ACCOUNT WITH SPECIALTY LIGHTING GROUP. FOR MORE DETAILS CONTACT: JEANNETTE ALVARADO, PROJECT MANAGER, (860)767-0110 x235. Jeannette.Alvarado@sslighting.com

LIGHTING PLAN GENERAL NOTES:

- A. CONTRACTOR IS ADVISED THAT ADJUSTMENTS TO EMERGENCY AND EXIT LIGHT FIXTURE LOCATIONS/QUANTITIES MAY BE REQUIRED BY AHJ UPON FINAL INSPECTION.
- B. ALL NIGHT LIGHT, EMERGENCY AND EXIT LIGHT FIXTURES SHALL BE CONNECTED AHEAD OF SWITCHED LIGHTING CIRCUIT.
- C. UNLESS OTHERWISE NOTED, LIGHT SWITCHES SHALL BE GANGED TOGETHER UNDER A COMMON FACEPLATE.

LIGHTING KEYED NOTES:

- 1. WALL MOUNTED OCCUPANCY SENSOR. SET OFF TIME TO 15 MINUTES FOR RESTROOM, SET DIP SWITCH TO AUTOMATIC ON.
- 2. ALL THE EMERGENCY LIGHTS, EXIT SIGNS SHALL BE CONNECTED TO THE NEAREST LIGHTING CIRCUIT AHEAD OF SWITCHING FOR CONTINUOUS OPERATIONS.
- 3. E.C. SHALL COORDINATE EXACT LOCATION OF THE SIGNAGE, AND PROVIDE JUNCTION BOX AND TOGGLE SWITCH FOR EXTERIOR SIGNAGE. CONNECT TO THE INDICATED CIRCUIT VIA TIME CLOCK. COORDINATE WITH THE OWNER FOR TIME SETTING.
- . EXHAUST FAN FURNISHED AND INSTALL BY MECHANICAL CONTRACTOR. E.C. TO COORDINATE WITH MECHANICAL DRAWINGS FOR EXACT LOCATION AND POWER REQUIREMENT. PROVIDE ACCORDINGLY..
- 5. COORDINATE EXACT LOCATION OF SWITCH BANK WITH ARCHITECT/OWNER.
- 6. COORDINATE EXACT LOCATION OF TIME CLOCK WITH ARCHITECT/OWNER.
- 7. E.C. TO PROVIDE SHOW WINDOW RECEPTACLES AS PER 210.62.
- 8. MANUAL OVERRIDE SWITCH.
- 9. DUPLEX RECEPTACLE AND DATA OUTLET FOR TVs. COORDINATE EXACT MOUNTING IN FIELD.
- 10. CEILING LIGHTING FIXTURE UNDER SEPARATE PERMIT BY OTHERS.
- 1. TENANT E.C. TO INSTALL JUNCTION AND ELECTRICAL IN CANOPY RATHER THAN ON EXTERIOR FACADE. COORDINATE WITH THE LANDLORD/OWNER PRIOR TO ROUGH—IN.

CONSULTANTS (ENGINEER):

NEARBY ENGINEERS
382 NE 191ST STREET SUITE
49674, MIAMI, FL 33179
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<u> </u>	LANDLORD COMMENTS	12/13/23
\triangle	ISSUE FOR PERMIT	09/29/23
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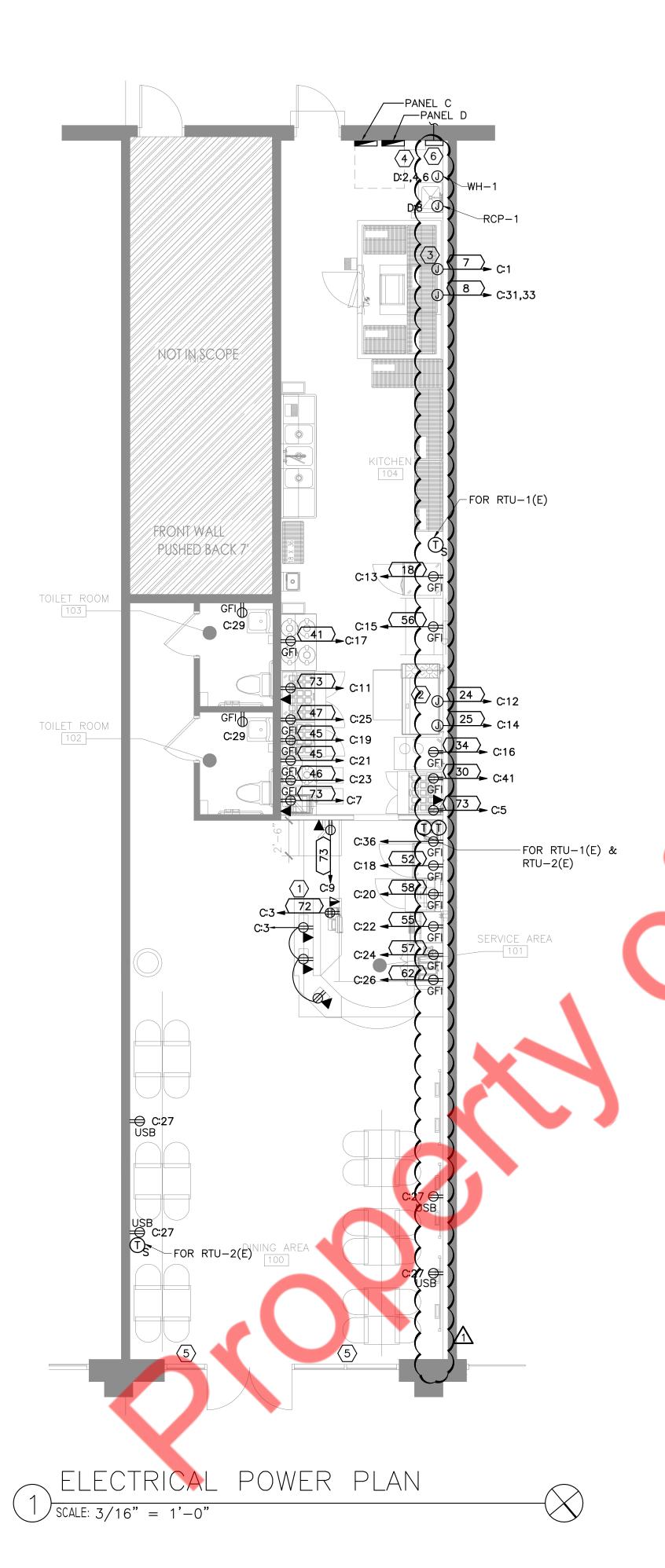
REVISIONS

ALL FIELD CONDITIONS AND DIMENSIONS ARE TO BE FIELD VERIFIED PRIOR TO COMMENCEMENT OF THE WORK. ALL DISCREPANCIES ARE TO BE BROUGHT TO THE ATTENTION OF THE ARCHITECT BEFORE PROCEEDING WITH THE WORK THESE DRAWINGS ARE THE PROPERTY OF JOHN WILLIAM LISTER ARCHITECT. THEY ARE NOT TO BE REPRODUCED IN PART OR IN WHOLE WITHOUT THE CONSENT OF JOHN WILLIAM LISTER ARCHITECT. THEY ARE TO BE USED ON THE PROJECT NOTED HEREON ONLY.

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ELECTRICAL LIGHTING PLAN

08/24/23 DATE
AS NOTED SCALE
NYE DRAWN BY
NYE CHECKED BY
23126 PROJECT #



	KITCHEN EQUIPMENT S	CHEDULE			
ITME NO.	EQUIPMENT DESCRIPTION	VOLTAGE	PHASE	AMPERE	DISCONNECTING MEANS
7	WALK-IN COOLER	120	1	20	
8	MEDIUM TEMPERATURE BLOWER COIL & COMPRESSOR	208	1	9.3	
18	REACH-IN FREEZER	115	1	6.3	
24	HOOD SYSTEM	120	1	20	
25	FIRE SUPPRESSION SYSTEM	120	1	20	
26	EXHAUST FAN - EF - 1	208	3	2.6	
27	SUPPLY FAN - MUA-1	208	3	2.5	
28	CONDENSER - PART OF THE SUPPLY FAN	208	3	11.9	
30	MEGA TOP SANDWICH / SALAD PREPARATION REFRIGERATOR	115	1	2.3	
34	UNDERCOUNTER REFRIGERATOR WITH DRAWERS	115	1	2.3	
41	RICE COOKER (2 EA) FUTURE	120	1	18	FOR CONNECTIONS DETAILS COORDINATE WITH
45	FREE STANDING DRAWER WARMER WITH CASTER KIT	120	1	12	THE EQUIPMENT MANUFACTURER AND MAKE
46	SANDWICH PANNI GRILL	120	1	15	PROVISIONS ACCORDINGLY.
47	MEGA TOP REFRIGERATED SANDWICH / SALAD PREP UNIT	115	1	2.8	
52	REACH-IN MERCHANDISER - NIKEC - BY VENDOR	115	1	7	
55	UNDER COUNTER ICE MAKER	115	1	5	
56	WATER FILTER				
57	BAR BLENDER	120	1	15	
58	MEGA TOP SANDWICH / SALAD PREP REFRIGERATOR	115	1	2.3	
62	ICE MAKER	120	1	8.5	
69	AIR CURTAIN - FUTURE	120	1	7.5	
72	POS SYSTEM WITH PRINTER - BY OWNER - VERIFY ALL REQUIREMENTS - DATA LINES BY GC	120	1	20	
73	POS SCREENS - BY OWNER - VERIFY ALL UTILITY REQUIREMENTS - DATA LINES BY GC	120	1	15	

<u>DRAWING NOTES</u>:

- a. ALL BRANCH CIRCUITS HOMERUNS ASSIGN INDICATED ON THIS PLAN SHALL BE CIRCUITED TO THERE RESPECTIVE PANELS, CIRCUIT NUMBER INDICATED, U.O.N.
- b. REFER TO DWG. E-0.1 FOR ELECTRICAL GENERAL NOTES, SYMBOL LIST & ABBREVIATIONS.
- c. REFER TO DWG. E-0.2 & E-0.3 FOR ADDITIONAL ELECTRICAL SPECIFICATIONS.
- d. CONTRACTOR TO COORDINATE WITH ARCHITECT FOR EXACT HEIGHT OF OUTLETS.

KITCHEN EQUIPMENT CONNECTION SCHEDULE GENERAL NOTES

- A. THIS SCHEDULE SHOWS ALL CIRCUITING INFORMATION FOR KITCHEN / FOOD SERVICE EQUIPMENT. REFER TO KITCHEN DESIGNER'S / FOOD SERVICE DRAWINGS FOR ADDITIONAL INFORMATION SUCH AS ROUGH—IN INFORMATION AND OTHER REQUIREMENTS.
- B. NEMA X-XX DESIGNATES NEMA PLUG TYPE AND AMPERAGE, 'HPRS' DESIGNATES HORSEPOWER-RATED SWITCH, 'FD' DESIGNATES A FUSED DISCONNECT, 'NF' DESIGNATES A NON-FUSED DISCONNECT, 'L' DESIGNATES LOCKABLE CIRCUIT BREAKER.
- C. VERIFY ALL INSTALLATION REQUIREMENTS WITH FOOD SERVICE CONSULTANT AND EQUIPMENT MANUFACTURER PRIOR TO ROUGH-IN.
- D. VERIFY ALL MCA AND MOCP REQUIREMENTS WITH SUBMITTED AND APPROVED EQUIPMENT PRIOR TO ELECTRICAL ROUGH-IN.
- E. VERIFY NEMA RECEPTACLE CONFIGURATIONS WITH EQUIPMENT VENDOR PRIOR TO ELECTRICAL ROUGH-IN.
- F. WHERE A CONFLICT OCCURS BETWEEN FOOD SERVICE / KITCHEN DESIGNER'S DRAWINGS AND THESE DRAWINGS, THE FOOD SERVICE / KITCHEN DESIGNER'S DRAWINGS SHALL GOVERN.
- G. CONTRACTOR IS RESPONSIBLE FOR FURNISHING AND INSTALLING ALL CONDUIT, WIRE, SUPPORT SYSTEM, DISCONNECTS, AND OUTLETS TO ALLOW FOR A COMPLETE CODE COMPLIANT KITCHEN INSTALLATION AS INDICATED BY ALL ELECTRICAL AND FOOD SERVICE / KITCHEN DESIGNER'S DRAWINGS AND SPECIFICATIONS UNLESS NOTED OTHERWISE.
- H. ALL ELECTRICAL EQUIPMENT LOCATED ON WALLS OF PRODUCTION KITCHEN AREAS SHALL BE A MINIMUM OF 48" AFF UNLESS NOTED OTHERWISE. ALL ELECTRICAL EQUIPMENT LOCATED ABOVE COUNTERS OF KITCHEN AREAS SHALL BE 6" ABOVE COUNTER UNLESS NOTED OTHERWISE. ALL ELECTRICAL EQUIPMENT LOCATED BELOW COUNTERS AND WITHIN CASEWORK OF KITCHEN AREAS SHALL BE 6" BELOW THE TOP OF COUNTERS UNLESS NOTED
- I. REFER TO KITCHEN DESIGNER'S / FOOD SERVICE DRAWINGS FOR ADDITIONAL ROUGH—IN INFORMATION INCLUDING EXACT ROUGH—IN LOCATION AND MOUNTING HEIGHTS OF ELECTRICAL ROUGH—INS AND DEVICES. ANY DIMENSIONS NOTED ON THE KITCHEN DESIGNER'S / FOOD SERVICE DRAWINGS TAKE PRECEDENCE.
- J. CONTRACTOR SHALL INSURE THAT ALL CONDUIT ROUTED THROUGH OR NEAR CASEWORK SHALL NOT INTERFERE IN ANY WAY WITH INTENDED USE OR SERVICING OF EQUIPMENT OR COUNTERS.
- K. ALL RECEPTACLES IN KITCHEN AREA SHALL BE GFCI PROTECTED. E.C. SHALL PROVIDE AND INSTALL GFCI CIRCUIT BREAKERS FOR ALL CIRCUITS FEEDING KITCHEN EQUIPMENT REQUIRING GFCI PROTECTION THAT ARE INACCESSIBLE, BEFORE OR AFTER APPLIANCE HAS BEEN INSTALLED, IF RECEPTACLE DOESNT PROVIDE GFCI PROTECTION. NEC 210.8 AND 422.5(A).
- L. LOCATIONS OF DISCONNECTS FOR EACH PIECE OF EQUIPMENT MAY NOT BE SHOWN ON PLANS. IF DISCONNECT FOR EQUIPMENT IS NOT SHOWN, CONTRACTOR TO FIELD COORDINATE LOCATION IN ACCORDANCE WITH CODE.
- M. CONTRACTOR SHALL LIMIT THE AMOUNT OF EXPOSED CONDUIT. ANY EXPOSED CONDUIT SHALL BE LIQUID TIGHT FLEXIBLE METAL CONDUIT OR RIGID GALVANIZED STEEL CONDUIT.
- N. COORDINATE EXACT LOCATION OF ALL REMOTE CONDENSING UNITS WITH HVAC AND FOOD SERVICE DRAWINGS.
- O. ALL ENERGIZED EQUIPMENT AND ALL WIRING DEVICES LOCATED UNDER A HOOD SHALL SHUNT TRIP UNPON ACTIVATION OF HOOD FIRE SUPPRESSION SYSTEM.
- P. FUSED DISCONNECTS SHALL HAVE FUSES SIZED AS LISTED ON EQUIPMENT NAMEPLATE, OTHERWISE MATCH UPSTREAM OVERCURRENT DEVICE IF NO MAXIMUM OVER CURRENT SIZE LISTED ON EQUIPMENT, UNLESS NOTED OTHERWISE.
- Q. REFER TO FEEDER SCHEDULES FOR FEEDER WIRE SIZES FOR ALL 3 PHASE EQUIPMENT.

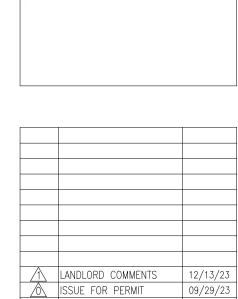
FLOOR POWER KEYED NOTES:

- 1. (1) QUAD & (1) DATA OUTLET POS DESK & PRINTER. E.C. TO VERIFY FINAL LOCATION AND MOUNTING HEIGHT OF OUTLETS WITH ARCHITECT PRIOR TO ROUGH-IN.
- 2. JUNCTION BOX FOR KITCHEN HOOD CONTROL PANEL. E.C. TO COORDINATE EXACT LOCATION AND DETAILS OF KITCHEN HOOD CONTROL PANEL WITH KITCHEN HOOD SUPPLIER PRIOR TO BID.
- 3. E.C. TO COORDINATE EXACT POWER REQUIREMENT WITH WALK-IN COOLER MANUFACTURER AND MAKE POWER PROVISION ACCORDINGLY.
- 4. LOCATION FOR THE TIME CLOCK AND LIGHTING CONTACTORS. REFER LIGHTING PLAN FOR MORE DETAILS.
- 5. REFER TO THE LIGHTING PLAN FOR SHOW WINDOW RECEPTACLES.

 6. TENANT E.C. TO COORDINATE WITH TELECOM CONDUITS TO SPACE PER LANDLORD PLANS.
- 12 IVAN 2.5. TO GOOD INVITE WITH TELEGOM CONDONS TO STAGE PERCENTIONS.

CONSULTANTS (ENGINEER):

NEARBY ENGINEERS
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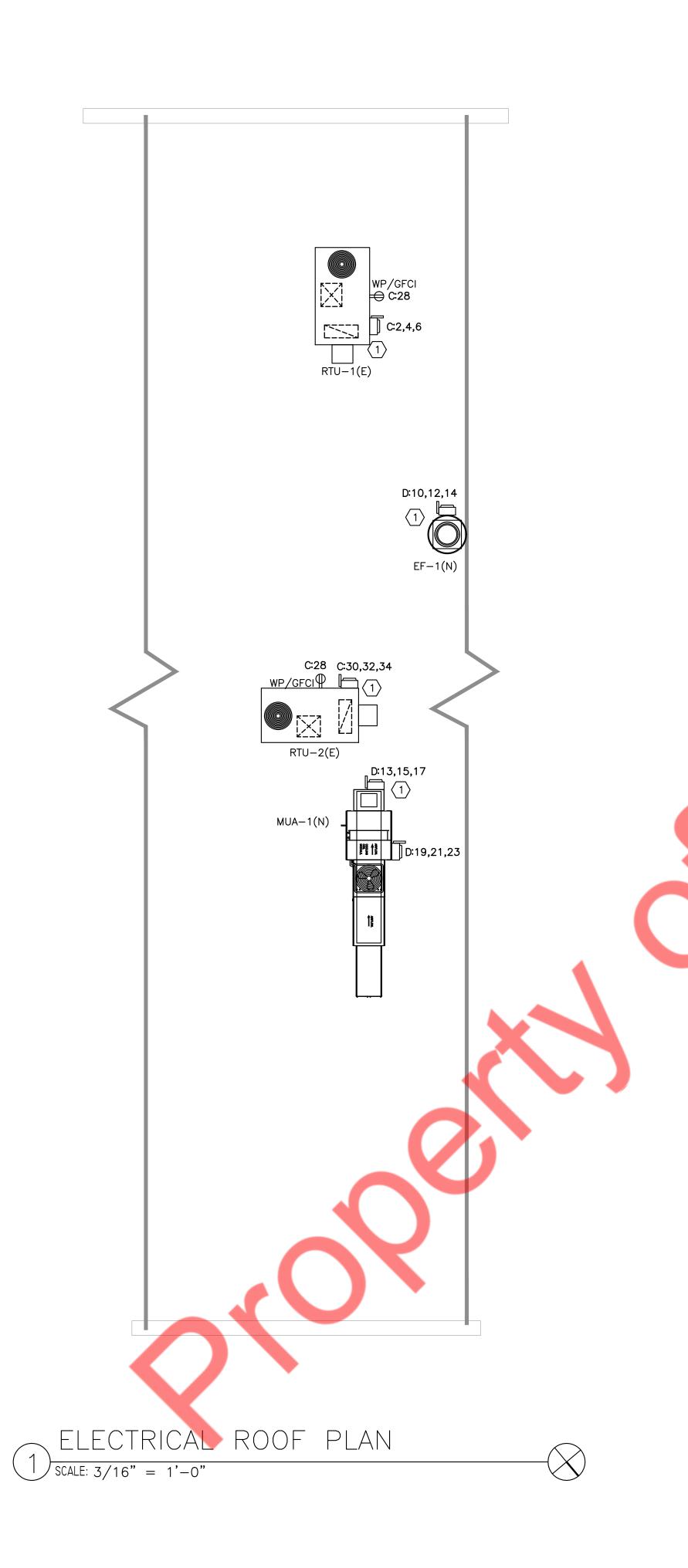
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ELECTRICAL POWER PLAN

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ROOF POWER KEYED NOTES:

1. PROVIDED BY LANDLORD. E.C TO COORDINATE THE EXACT LOCATION AND ELECTRICAL REQUIREMENT OF MECHANICAL EQUIPMENTS WITH MECHANICAL CONTRACTOR IN FIELD. PROVIDE THE ELECTRICAL CONNECTION AS PER MECHANICAL EQUIPMENTS.

CONSULTANTS (ENGINEER):

NY ENGII

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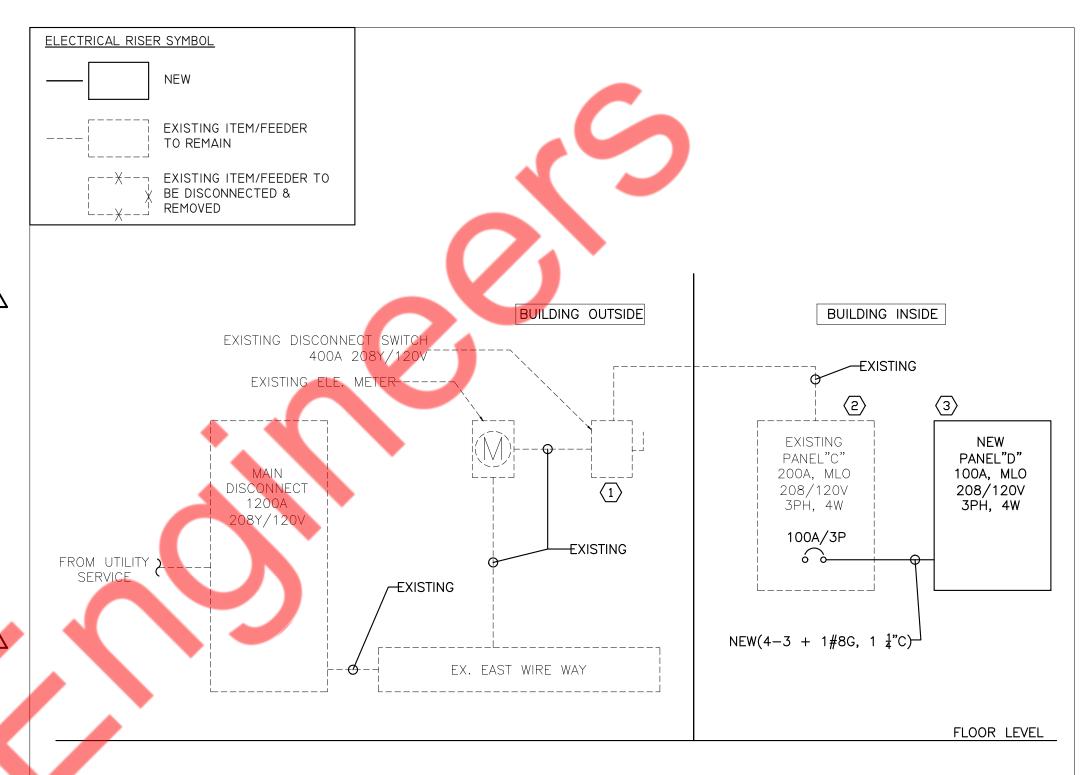
ELECTRICAL ROOF PLAN

08/24/23 DATE
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NYE CHECKED BY
23126 PROJECT #

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PANEL:	С	(EXISTING)										MOUNTING	: SURFACE		
08Y/120	VOLTS		3	PHASE	4	WIRE						PANEL LOCATION	: ВОН		
/ILO	200A	AIC - 25kA	BUS:	EXISTING	MINIMUM							FED FROM	I: DISCONNECT SWITCH		
IOTE:	•		•			•							•		
CKT NO.	TRIP AMPS	DESCRIPTION OF LOAD	LOAD TYPE	LOAD (KVA)	MINIMUM BRANCH CIRCUIT	PER A	PHASE (I	(VA)	MINIMUM BRANCH CIRCUIT	LOAD (KVA)	LOAD TYPE	DESCRIPTION OF LOAD	TRIP AMPS	CKT NO	
1	30**	7-WALK-IN COOLER	Е	2.40	2-12 + 1#10G, 3/4"C	4.92			(~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	2.52	Н	· · · · · · · · · · · · · · · · · · ·		2	
3	20	72-POS SYSTEM	R	1.50	2-12 + 1#12G, 3/4"C		2.04		3-10 + 1#10G, 3/4"C	2.52	Н	RTU-1 (E)	30/3P**	4	
5	20	73-POS SCREEN	R	1.80	2-12 + 1#12G, 3/4"C			4.32		2.52	Н			6.	
7	20**	73-POS SCREEN	R	1.80	2-12 + 1#12G, 3/4"C	4.20			EXISTING	2.40	0	EX. WH	30	8	
9	20	73-POS SCREEN	R	1.80	2-12 + 1#12G, 3/4"C		4.20		EXISTING	2.40	0	EX. WH	30	10	
11	20**	73-POS SCREEN	R	1.80	2-12 + 1#12G, 3/4"C			4.20	2-12 + 1#10G, 3/4"C	2.40	Е	24-HOOD SYSTEM	30**	12	
13	20**	18-REACH IN FREEZER	E	0.72	2-12 + 1#12G, 3/4"C	3.12			2-12 + 1#10G, 3/4"C	2.40	Е	25-FIRE SUPPRESSION SYSTEM	30**	14	
15	20**	56-WATER FILTER	E	0.18	2-12 + 1#12G, 3/4"C		0.48		2-12 + 1#12G, 3/4"C	0.30	Е	34-UNDERCOUNTER REFRIGIRATOR WITH DRAWER	20**	16	
17	20**	41-RICE COOKER (2EA) FUTURE	Е	2.16	2-12 + 1#12G, 3/4"C			2.60	2-12 + 1#12G, 3/4"C	0.80	Е	52-REACH IN MERCHANDISER	20**	18	
19	20**	45-FREE STANDING DRAWER WARMER WITH CASTER KIT	Е	1.44	2-12 + 1#12G, 3/4"C	1.74			2-12 + 1#12G, 3/4"C	0.30	E	58-MEGA TOP SANDWICH / SALAD PREP REFRIGERATOR	20**	20	
21	20**	45-FREE STANDING DRAWER WARMER WITH CASTER KIT	Е	1.44	2-12 + 1#12G, 3/4"C				2-12 + 1#12G, 3/4"C	0.60	E	55-UNDERGROUND ICE MAKER	20**	22	
23	20**	46-SANDWICH PANNI GRILL	Е	1.80	2-12 + 1#12G, 3/4"C			3.60	2-12 + 1#12G, 3/4"C	1.80	E	57-BAR BLENDER	20**	24	
25	20**	47-MEGA TOP REFRIGIRATED SANDWICH / SALAD PREP UNIT	E	0.40	2-12 + 1#12G, 3/4"C	1.50			2-12 + 1#12G, 3/4"C	1.10	E	62-FROZEN BEVERAGE DISPENSER	20**	26	
27	20**	GENERAL RECEPTACLE	R	0.72	2-12 + 1#12G, 3/4"C		1.08		2-12 + 1#12G, 3/4"C	0.36	R	SERVICE RECEPTACLE	20**	28	
29	20**	RESTROOM RECEPTACLE	R	0.36	2-12 + 1#12G, 3/4"C			2.88		2.52		· · · · · · · · · · · · · · · · · · ·		30	
31	20/2P**	8-MEDIUM TEMPERATURE REMOTE	Е	0.96	2-12 + 1#12G, 3/4"C	4.02			3-10 + 1#10G, 3/4"C	2.52	Ι	RTU-2 (E)	30/3P**	32	
33	20/27	CONDENSER	E	0.96	Z-1Z T 1#1ZU, 3/4 C		4.32			2.52	H			34	
35			0	9.67				9.85	2-12 + 1#12G, 3/4"C	0.18) R)	GENERAL RECEPTACLE	20**	36	
37	100/3P**	PANEL D	0	9.67	4-3 + 1#8G, 1-1/4"C	9.67						SPARE	20**	38	
39			0	9.67			9.67					SPARE	20**	40	
41	20**	30-MEGA TOP SANDWICH / SALAD PREPARATION REFRIGERATOR	E	0.28	2-12 + 1#12G, 3/4"C			0.28				SPARE	20**	42	
			•			29.17	21.79	27.73		•		•		•	

PANEL:	D	(NEW)											MOUNTING: SURFACE	
.08Y/120	VOLTS		3	PHASE	4	WIRE							PANEL LOCATION: BOH	
	100A		BUS:	125A	MINIMUM								FED FROM: EX. PANEL	C
IOTE:		1		122071									122	
CKT NO.	TRIP AMPS	DESCRIPTION OF LOAD	LOAD TYPE	LOAD (KVA)	MINIMUM BRANCH CIRCUIT	PER A	PHASE (I	(VA)	MINIMUM BRANCH CIRCUIT	LOAD (KVA)	LOAD TYF	PE DESCRIPTION OF LO	AD TRIP AMP	S CKT NO
1	20	LIGHTING	L	0.37	2-12 + 1#12G, 3/4"C	3.04	Б	C		2.67	0			2
3	20	LIGHTING	L	1.09	2-12 + 1#12G, 3/4"C		3.76		3-10 + 1#10G, 3/4"C	2.67	0	WH-1	30/3P	4
5	20	SHOW WINDOW RECEPTACLE	R	1.00	2-12 + 1#12G, 3/4"C			3.67	, ,	2.67	0			6
7	20	SHOW WINDOW RECEPTACLE	R	1.00	2-12 + 1#12G, 3/4"C	1.50			2-12 + 1#12G, 3/4"C	0.50	М	RCP-1	20	8
9	20	TIME CLOCK	L	0.50	2-12 + 1#12G, 3/4"C		1.35			0.85	Н			10
11	20	EXTERIOR SIGNAGE	L	1.00	2-12 + 1#12G, 3/4"C			1.85	3-12 + 1#12G, 3/4"C	0.85	Н	EF-1 (N)	20/3P	12
13			Н	1.74		2.59				0.85	Н			14
15	20/3P	MUA-1 (N)	Н	1.74	3-12 + 1#12G, 3/4"C		2.24		2-12 + 1#12G, 3/4"C	0.50	L	HOOD LIGHTING	20	16
17			Н	1.74				1.74				SPARE	20	18
19			Н	1.74		1.74						SPARE	20	20
21	20/3P	MUA-1 (N)	Н	1.74	3-12 + 1#12G, 3/4"C		1.74				_	SPARE	20	22
23			Н	1.74				1.74				SPARE	20	24
25	20	SERVICE AREA TV RECEPTACLES	R	1.20	2-12 + 1#12G, 3/4"C	1.20						SPARE	20	26
27	20	SPARE					0.00					SPARE	20	28
29	20	SPARE						0.00				SPARE	20	30
31	20	SPARE				0.00				A		SPARE	20	32
33	20	SPARE					0.00			Y		SPARE	20	34
35	20	SPARE						1.00				SPARE	20	36
37	20	SPARE				1.00	4.00					SPARE	20	38
39	20	SPARE					1.00	0.00				SPARE	20	40
41	20	SPARE				11.07	10.09	0.00 10.00				SPARE	20	42



ELECTRICAL RISER DIAGRAM GENERAL NOTES:

- A. ELECTRICAL CONTRACTOR (E.C.) SHALL PROVIDE AND INSTALL ALL THE DEVICES IN FIELD IN COORDINATION WITH THE OWNER AND UTILITY. ALL THE INSTALLATIONS SHALL BE IN COMPLIANCE WITH THE NEC AND LOCAL CODES.
- B. E.C. SHALL COORDINATE WITH THE UTILITY COMPANY AND AHJ FOR EXACT FAULT CURRENT (Isc) RATING AVAILABLE IN THE FIELD. PRIOR TO BID.
- C. E.C. SHALL COORDINATE EXACT LOCATION AND MOUNTING HEIGHT OF ALL THE DEVICES SHOWN, WITH THE ARCHITECT/OWNER AND UTILITY.
- D.
 E. PROVIDE SEPARATE GROUND CONDUCTOR IN ALL CONDUITS.
- F. E.C. SHALL COORDINATE WITH THE ARCHITECT / OWNER / FOR EXACT SCOPE OF WORK PRIOR TO BID.
- G. E.C. SHALL COORDINATE WITH THE ARCHITECT / OWNER / LANDLORD FOR ANY TYPE OF ADDITION / ALTERATION TO THE EXISTING SYSTEM PRIOR TO BID. NO WORK SHALL BE PERFORMED WITHOUT THEIR CONSENT.
- H. ALL THE FEEDERS SHALL BE NEW (U.N.O.). SIZE SHALL BE AS
- I. E.C. SHALL VERIFY OPERABLE CONDITION OF ALL THE EXISTING & RELOCATED EXISTING EQUIPMENT PRIOR TO BID. REPLACE EQUIPMENT WITH NEW ONE. KEEPING ALL THE PARAMETERS

ELECTRICAL RISER DIAGRAM KEY NOTES: (#)

- 1. PER EXISTING DRAWINGS EXISTING 400A, 3PH DISCONNECT SWITCH TO REMAIN. E.C. TO VERIFY OPERABLE CONDITION, RATING AND EXACT LOCATION IN FIELD. REPLACE IF FOUND INOPERABLE. BASE BID ACCORDINGLY.
- 2. EXISTING PANEL TO REMAIN. E.C. TO FIELD VERIFY OPERABLE CONDITION, RATING AND EXACT LOCATION OF THE EXISTING PANEL IN FIELD. REPLACE IF FOUND INOPERABLE BASE BID ACCORDINGLY.
- 3. NEW PANEL FOR THE PROJECT SPACE. E.C. TO COORDINATE WITH ARCHITECT/OWNER FOR EXACT LOCATION.

PANEL SCHEDULE GENERAL NOTES:

- A. ELECTRICAL CONTRACTOR SHALL VERIFY THE BREAKER AND CABLE RATING WITH EQUIPMENT SUPPLIER/OWNER AND ACCORDINGLY UPDATE THE BREAKER RATING CABLE SIZE IN FIELD.
- B. GFI MARKED ON THE POWER PLAN INDICATES THAT THE CIRCUIT SHALL BE GFCI PROTECTED. E.C. SHALL PROVIDE GFCI BREAKER FOR THE GFI MARKED RECEPTACLES, IF EITHER RECEPTACLE IS NOT ACCESSIBLE OR NOT AVAILABLE.
- C. PROVIDE HACR BREAKER FOR HAVC UNITS. COORDINATE WITH HVAC DRAWINGS.
- D. PROVIDE LOCKING DEVICES ON CIRCUIT BREAKER WHERE EVER
- E. E.C. TO VERIFY SCOPE OF WORK WITH OWNER/ARCHITECT. PRIOR
- F. VERIFY EXACT POWER DISTRIBUTION IN FIELD.

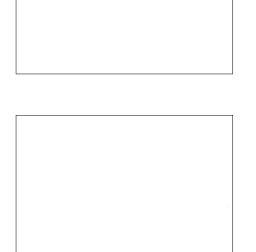
PANEL SCHEDULE ABBREVIATIONS:

L=LIGHTING R=RECEPTACLE H=HVAC M=MOTOR O=OTHER

(*) GFCI BREAKER
(**) NEW BREAKER IN EXISTING PANEL
(***) PROVIDE HACR BREAKER

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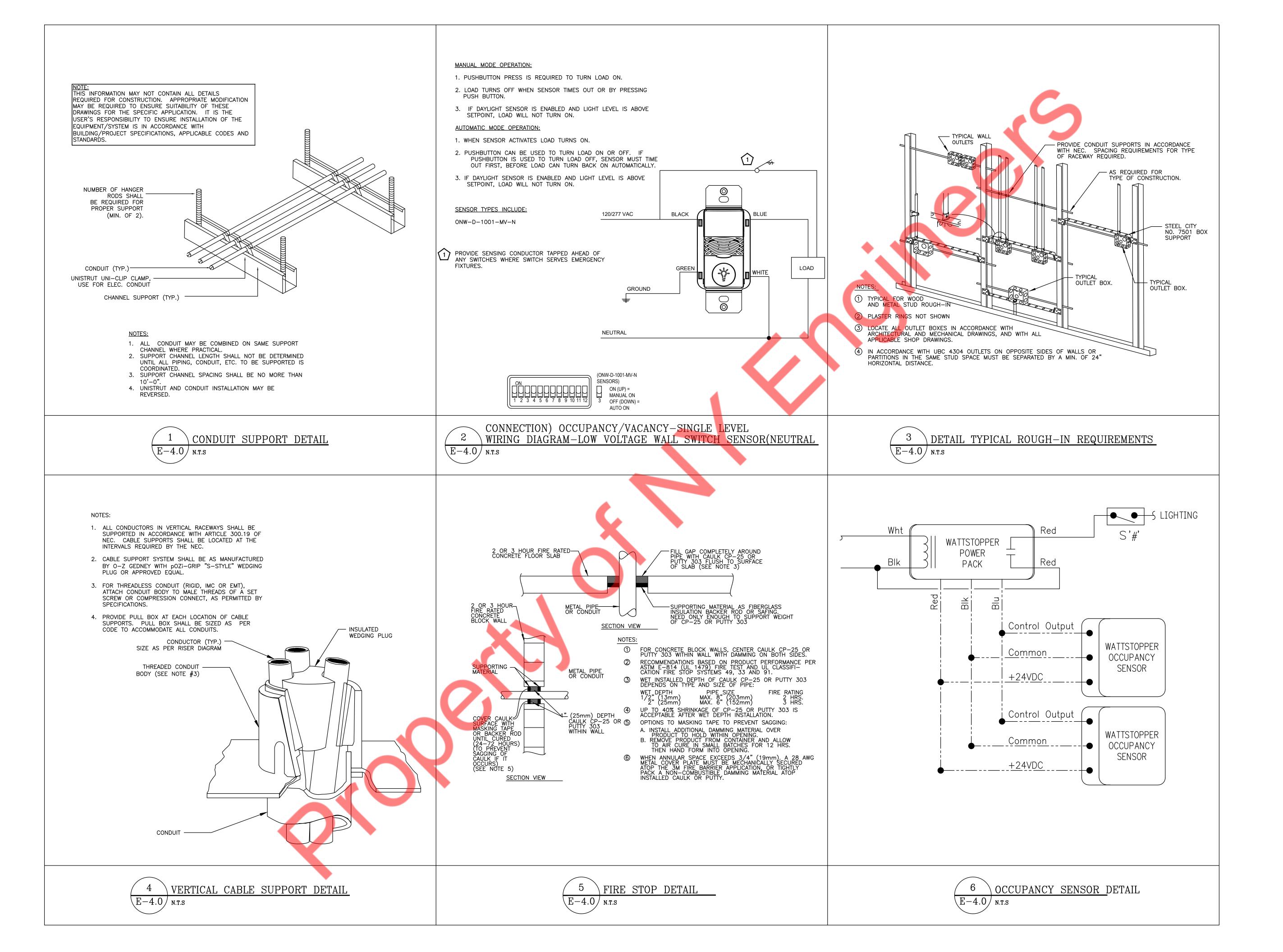
REVISIONS

ALL FIELD CONDITIONS AND DIMENSIONS ARE TO BE FIELD VERIFIED PRIOR TO COMMENCEMENT OF THE WORK. ALL DISCREPANCIES ARE TO BE BROUGHT TO THE ATTENTION OF THE ARCHITECT BEFORE PROCEEDING WITH THE WORK THESE DRAWINGS ARE THE PROPERTY OF JOHN WILLIAM LISTER ARCHITECT. THEY ARE NOT TO BE REPRODUCED IN PART OR IN WHOLE WITHOUT THE CONSENT OF JOHN WILLIAM LISTER ARCHITECT. THEY ARE TO BE USED ON THE PROJECT NOTED HEREON ONLY.

SOFRESH

ELECTRICAL RISER & PANEL SCHEDULE

08/24/23 DATE SHEET NUMBER
AS NOTED SCALE
NYE DRAWN BY
NYE CHECKED BY
23126 PROJECT #



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ELECTRICAL DETAILS

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PLUMBING SYMBOLS LIST

— GSAN —	GREASE SANITARY SEWER (UNDERFLOOR)
— SAN —	SANITARY SEWER (UNDERFLOOR)
— EX.GSAN —	EXISTING GREASE SANITARY SEWER (UNDERFLO
— EX.SAN — — — — — —	EXISTING SANITARY SEWER (UNDERFLOOR) VENT PIPING

COLD WATER PIPING

HOT WATER PIPING HOT WATER RETURN PIPING

EXISTING COLD WATER PIPING

P-TRAP

- PIPE UP
- PIPE DROP
- CLEANOUT

PLUGGED OUTLET/CLEANOUT POINT OF CONNECTION

	PLUMBING ABBREVIATIONS
CO	CLEANOUT
CW	COLD WATER
HW	HOT WATER
HWR	HOT WATER RETURN

- SANITARY
- LAVATORY
- WATER CLOSET TYPICAL
- ABOVE FINISH FLOOR
- FLOOR DRAIN SQUARE FEET SQ. FT.
- BACK FLOW PREVENTER WATER HEATER
- N.I.C. NOT IN SCOPE ET-1
- EXPANSION TANK HOT WATER CIRCULATION PUMP RCP-1

PLUMBING DRAWING LIST

- PO.1 PLUMBING SYMBOLS & SPECIFICATIONS
- P1.0 PLUMBING FLOOR PLAN
- P2.0 PLUMBING DETAILS
- P3.0 PLUMBING RISERS
- P4.0 PLUMBING SCHEDULE

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 2018 INTERNATIONAL PLUMBING CODE.
- 2. INSTALLATION OF UNDERGROUND PIPING SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION PC 702.2
- 3. PROTECTION OF PIPING AND PLUMBING SYSTEM COMPONENTS AS PER SECTION PC 305.
- 4. TRENCHING, EXCAVATION AND BACKFILL AS PER SECTION PC
- 5. RODENT PROOFING AS PER PC 304
- 6. MATERIALS USED IN PLUMBING SYSTEMS SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION PC 303, PC 605, PC 702, PC 902,PC 1102.
- 7. EQUIPMENT CONNECTIONS AND JOINING OF PIPING SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF CHAPTERS 4, 5, 6, 7 AND 9.
- 8. DEEP SEAL TRAPS FOR FLOOR DRAINS SHALL BE PROVIDED AS PER PC 1002, AND CLEAN-OUTS SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION PC 708
- 9. DRAINAGE PIPE CLEANOUTS AS PER SECTION PC 708.
- 10. VERTICAL AND HORIZONTAL PIPING SHALL BE SUPPORTED IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION PC 308
- 11. WATER SUPPLY SYSTEMS SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE REQUIREMENTS OF CHAPTER 6 SECTION PC 601-603, 604, 606, 607, 608, 610
- 12. THE SANITARY DRAINAGE SYSTEM SHALL BE SIZED AND INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF CHAPTER 7 SECTION PC 701, 704, 705, 706, 707, 708,
- 13. VENT PIPING FOR THE SANITARY DRAINAGE SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF CHAPTER 9 SECTIONS PC 901 THROUGH PC 912 THROUGH
- 14. INSPECTION AND TESTING OF PLUMBING SYSTEMS SHALL BE IN ACCORDANCE WITH SECTION PC 107.

PLUMBING SPECIFICATIONS:

1. BASIC PLUMBING REQUIREMENTS, MATERIALS AND METHODS

1.01 SCOPE

- A. PROVIDE ALL MATERIAL, TOOLS, SUPERVISION AND LABOR OOR) INCLUDING ALL MISCELLANEOUS AND INCIDENTAL ITEMS REQUIRED FOR COMPLETE AND OPERABLE PLUMBING INSTALLATIONS AS SHOWN OR DESCRIBED ON THE DRAWINGS AND IN THESE SPECIFICATIONS.
- B. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING AND NEW CONDITIONS AND MATERIALS WITHIN THE CONSTRUCTION AREA. ANY DAMAGE CAUSED BY THE CONTRACTOR SHALL BE REPAIRED TO THE OWNER'S SATISFACTION.
- C. OBTAIN ALL PERMITS, PAY ALL PERMIT FEES AND SCHEDULE ALL REQUIRED INSPECTIONS. COPIES OF ALL PERMITS AND INSPECTION CERTIFICATES SHALL BE FORWARDED TO THE OWNER FOR RECORD.
- D. THE GENERAL CONDITIONS OF THE CONTRACT AND ALL DIVISION 1 REQUIREMENTS APPLY TO THE WORK OF THIS SECTION.
- E. THE CONTRACTOR SHALL VISIT THE SITE PRIOR TO SUBMITTING BID TO DETERMINE CONDITIONS AND THE EXTENT OF THE WORK. BY COMMENCING WORK, THE CONTRACTOR ACKNOWLEDGES HIS CONFIRMATION OF ALL CONDITIONS AS ACCEPTABLE WITH REFERENCE TO HIS CONTRACT, SCOPE OF WORK AND BID PRICE SUCH THAT NO ADDITIONAL COMPENSATION SHALL BE FORTHCOMING FOR UNFORESEEN EXISTING CONDITIONS.
- F. IN ALL AREAS SUBJECT TO FREEZING CONDITIONS, THE CONTRACTOR SHALL PROVIDE FREEZE PROTECTION FOR ALL DOMESTIC WATER PIPING INSTALLED UNDER HIS CONTRACT.
- G. ALL ELECTRICAL REQUIREMENTS SHALL BE COORDINATED WITH THE CONTRACTOR FOR ELECTRICAL WORK. THIS CONTRACTOR IS RESPONSIBLE FOR ALL LOW VOLTAGE WIRING FOR EQUIPMENT INSTALLED UNDER HIS CONTRACT. THE CONTRACTOR FOR ELECTRICAL WORK IS RESPONSIBLE FOR LINE VOLTAGE POWER WIRING ONLY.
- H. COLOR AND FINISH SELECTIONS FOR ALL MATERIALS, INCLUDING PAINTING OF PIPING, SHALL BE AS DIRECTED AND/OR APPROVED BY THE ARCHITECT.
- I. MINOR DETAILS NOT SHOWN OR SPECIFIED, BUT NECESSARY FOR THE PROPER AND ACCEPTABLE CONSTRUCTION, INSTALLATION OR OPERATION OF ANY PART OF THE WORK AS DETERMINED BY THE ENGINEER SHALL BE INCLUDED AS IF SPECIFIED OR INDICATED ON THE DRAWINGS.
- J. THIS CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING ALL REQUIREMENTS FOR THE INSTALLATION, CONNECTION, EXTENSION OR MODIFICATION TO ALL UTILITY SERVICES WITH RESPECTIVE PROVIDERS INCLUDING PAYMENT OF ALL ASSOCIATED
- 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 HANGERS AND SUPPORTS
- 4. PLUMBING PIPING LAYOUT
- 5. TESTS PLUMBING FIXTURES
- WATER HEATERS & ACCESSORIES
- MIXING VALVES
- 9. ALL SCHEDULED PLUMBING EQUIPMENT
- B. SUBMITTALS FROM SUPPLIERS OR MANUFACTURERS WHICH DO NOT BEAR THE STAMP OF THE SUBMITTING CONTRACTOR INDICATING THAT THE CONTRACTOR HAS REVIEWED THE SUBMITTAL FOR CONFORMANCE WITH THE PROJECT REQUIREMENTS WILL BE RETURNED REJECTED.
- C. THE ENGINEER'S REVIEW OF SUBMITTALS IS A COURTESY WHICH DOES NOT RELIEVE THE CONTRACTOR FROM CONFORMING WITH THE CONSTRUCTION DOCUMENTS, REGARDLESS OF THE ACTION INDICATED BY THE SHOP DRAWINGS STAMP.
- D. REVIEW OF SHOP DRAWINGS BY THE ENGINEER SHALL BE LIMITED TO THE INITIAL REVIEW, AND A SECOND REVIEW OF ANY REQUIRED RESUBMITTED DATA. IF THE ENGINEER IS REQUIRED TO REVIEW SHOP DRAWINGS FOR A THIRD (OR MORE) SUBMISSION OF THE SAME ITEM, THE CONTRACTOR SHALL BE LIABLE FOR COMPENSATING THE ENGINEER FOR THESE SUBSEQUENT REVIEWS AS PER THE ENGINEER'S CURRENT HOURLY RATE SCHEDULE.
- E. SUBMIT PROOF OF APPROVAL AND/OR CONFIRMATION OF SATISFACTORY TEST RESULTS TO THE OWNER AND THE ARCHITECT.
- F. SUBMIT TO THE OWNER'S MAINTENANCE PERSONNEL OPERATION AND MAINTENANCE DATA FOR ALL SYSTEM COMPONENTS, SERVICING REQUIREMENTS, INSPECTION DATA, REPLACEMENT PART NUMBERS AND AVAILABILITY AND CONTACT INFORMATION FOR SERVICE/SUPPLY COMPANY.
- G. FOR ALL BELOW GRADE PIPING WHERE ACTUAL INSTALLATION DEVIATES FROM CONSTRUCTION DRAWINGS, THE CONTRACTOR SHALL PROVIDE AS-BUILT DRAWINGS INDICATING BELOW GRADE PIPE LOCATIONS DIMENSIONED TO NEAREST COLUMN LINES.
- H. RECORD AS-BUILT DRAWINGS SHALL BE SUPPLIED TO THE OWNER/TENANT AFTER COMPLETION OF THE WORK SHOWING ANY ALTERATIONS, ADDITIONS AND/OR DELETIONS TO THE SYSTEM(S) INSTALLED.

1.03 SUBSTITUTIONS

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

1.05 DEFINITIONS

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

1.06 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 1.08 GAS PIPING 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.

A. SANITARY AND VENT PIPING:

- ABOVE GRADE AND UNDERGROUND PIPING SHALL BE POLYVINYL CHLORIDE (PVC) PIPE AS PER ASTM D2665, ASTM F891, ASTM F1488, CSA B181.2 AS PER IPC 2018, TABLE 702.1 AND TABLE 702.2. OR PIPING SHALL BE HUBLESS CAST IRON PIPE WITH STAINLESS STEEL COUPLINGS AND ELASTOMERIC GASKETS WITH A MINIMUM 4 BANDS PER COUPLING.
- 2. SLOPE OF DRAINAGE SYSTEM SHALL BE 1/8" PER FOOT OF RUN FOR PIPE OVER 3" (I.D.) AND 1/4" PER FOOT OF RUN FOR PIPE 3" AND SMALLER (I.D.). VENT PIPING SHALL BE PITCHED TO DRAIN.
- 3. ALL CAST IRON SOIL PIPE AND FITTINGS SHALL BE MARKED WITH THE COLLECTIVE TRADEMARK OF THE CAST IRON SOIL PIPE INSTITUTE (CISPI) AND BE LISTED BY NSF INTERNATIONAL.

B. DOMESTIC WATER PIPING:

- ABOVE GRADE WATER PIPING SHALL BE TYPE 'L' HARD-DRAWN COPPER TUBE. PEX PIPING IS AN ACCEPTABLE SUBSTITUTE AS PER ASTM F876 AWWA C904 AND CSA B137.5
- 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 SPECIALITIES FOR DOMESTIC WATER.
- 6. ALL DOMESTIC WATER PIPING ABOVE GRADE SHALL INSULATED WITH FIRE-RETARDANT, FACTORY-APPLIED JACKET PROVIDE COLD WATER PIPING WITH FACTORY-APPLIED VAPOR BARRIER. INSULATION REQUIREMENT SHOULD COMPLY WITH INTERNATIONAL ENERGY CONSERVATION CODE 2018, SECTION C403.11.3 REFER BELOW TABLE.

MINIMUM PIPE INSULATION THICKNESS OMINAL PIPE OR TUBE INSULATION CONDUCTIVITY SIZE (INCHES) **OPERATING** TEMPERATURE CONDUCTIVITY MEAN RATING RANGE AND BTU?IN./ TEMPERATURE, <1 < 1½ | ~ 4 | < 8 | < 8 USAGE (°F) (H?FT2?*F) 0.25 - 0.29141-200 11.0 1.0 1.5 1.5 1.5 105-140 | 0.21-0.28 100 |0.5| 0.5| 1.0| 1.0|1.0 40-60 0.21-0.27 75

- WATER DISTRIBUTION SYSTEM AS PER INTERNATIONAL ENERGY CONSERVATION CODE 2018 C404.7, HAVING ONE OR MORE RECIR<mark>culati</mark>on p<mark>um</mark>ps that pump water from a HEATED-WATER SUPPLY PIPE BACK TO THE HEATED-WATER SOURCE THROUGH A COLD-WATER SUPPLY PIPE SHALL BE A DEMAND RECIRCULATION WATER SYSTEM. PUMPS SHALL HAVE CONTROLS THAT COMPLY WITH BOTH OF THE FOLLOWING:
- a. THE CONTROL SHALL START THE PUMP UPON RECEIVING A SIGNAL FROM THE ACTION OF A USER OF A FIXTURE OR APPLIANCE, SENSING THE PRESENCE OF A USER OF A FIXTURE OR SENSING THE FLOW OF HOT OR TEMPERED ATER TO A FIXTURE FITTING OR APPLIANCE.
- . THE CONTROL SHALL LIMIT THE TEMPERATURE OF THE WATER ENTERING THE COLD-WATER PIPING TO 104°F
- 8. AS PER INTERNATIONAL ENERGY CONSERVATION CODE 2018, C404.6.1 HEATED-WATER CIRCULATION SYSTEMS SHALL BE PROVIDED WITH A CIRCULATION PUMP. THE SYSTEM RETURN PIPE SHALL BE A DEDICATED RETURN PIPE OR A COLD WATER SUPPLY PIPE. CONTROLS FOR CIRCULATING HOT WATER SYSTEM PUMPS SHALL START THE PUMP BASED ON THE IDENTIFICATION OF A DEMAND FOR HOT WATER WITHIN THE OCCUPANCY. THE CONTROLS SHALL AUTOMATICALLY TURN OFF THE PUMP WHEN THE WATER IN THE CIRCULATION LOOP IS AT THE DESIRED TEMPERATURE AND WHEN THERE IS NO DEMAND FOR HOT
- 9. HW SYSTEM PIPING IS DESIGNED AS PER MAXIMUM ALLOWED PIPE LENGTH METHOD AS PER INTERNATIONAL ENERGY CONSERVATION CODE 2018 C404.5.1. THE HW PIPE LENGTH FROM THE NEAREST SOURCE OF HEATED WATER TO THE TERMINATION OF THE FIXTURE SUPPLY PIPE SHALL BE AS PER FOLLOWING TABLE.

MIXIMUM PIPING LENGTH (FEET)					
PUBLIC LAV	OTHER FIXTURES				
2'	43'				
0.5'	21'				
0.5'	13'				
0.5'	8'				
0.5'	6'				
0.5'	4'				
	PUBLIC LAV 2' 0.5' 0.5' 0.5' 0.5'				

10. SEAL ALL JOINTS BETWEEN SEGMENTS OF INSULATION. 11. PROVIDE SHIELDS BETWEEN HANGERS AND INSULATION.

- 1. GAS PIPING SHALL BE SIZED IN ACCORDANCE WITH PIPE SIZING TABLES OR SIZING EQUATIONS IN ACCORDANCE WITH SECTION 402.4.
- 2. METALLIC PIPE SHALL COMPLY WITH SECTIONS 403.4.1 THROUGH
- 3. PIPING SYSTEM INSTALLATION SHALL COMPLY WITH REQUIREMENTS OF 2018 INTERNATIONAL FUEL GAS CODE, SECTION 404.
- 4. AS PER 2018 INTERNATIONAL FUEL GAS CODE, SECTION 404.6; GAS PIPING SHALL NOT PENETRATE FOUNDATION WALL OF A BUILDING, GAS PIPING SHALL ENTER AND EXIST A BUILDING AT A POINT ABOVE GRADE AND THE ANNULAR SPACE BETWEEN THE PIPE AND THE WALL SHALL BE SEALED.
- 5. PIPING INSTALLED UNDERGROUND BENEATH BUILDINGS IS PROHIBITED EXCEPT WHERE THE PIPING IS ENCASED IN A CONDUIT OF WROUGHT IRON OR STEEL PIPE DESIGNED TO WITHSTAND THE SUPERIMP<mark>OS</mark>ED LOADS. THE CONDUIT SHALL BE PROTECTED FROM CORROSION IN ACCORDANCE WITH SECTION 404.11 AND SHALL BE INSTALLED ACCORDANCE WITH SECTION 404.11.1 OR 404.11.2 OF 2021 INTERNATIONAL FUEL GAS CODE.
- 6. AS PER 2018 INTERNATIONAL FUEL GAS CODE, SECTION 404.1 UNDERGROUND PIPING SYSTEMS SHALL BE INSTALLED A MINIMUM DEPTH OF 12 INCHES BELOW GRADE.
- 7. THE GAS PIPING IS ENCASED IN A CONDUIT OF WROUGHT IRON OR STEEL PIPE TO WITH STAND THE SUPERIMPOSED LOADS.
- SHUTOFF VALVES SHALL BE LOCATED IN PLACES SO AS TO PROVIDE ACCESS FOR OPERATION AND SHALL BE INSTALLED SO AS TO BE PROTECTED FROM DAMAGE.

C. HANGERS AND SUPPORTS

- 1. HANGERS SHALL BE STANDARD STEEL, MALLEABLE OR WROUGHT IRON, AS MANUFACTURED BY GRINNELL OR APPROVED EQUAL, SUITABLE FOR THE TYPE OF CONSTRUCTION. PIPING SHALL NOT BE HUNG FROM OTHER
- 2. SECTIONS OF INDIVIDUAL PIPE RUNS SHALL BE SUPPORTED BY CLEVIS HANGERS.
- ALL EQUIPMENT SHALL BE PROVIDED WITH APPROVED
- 4. PROVIDE SEISMIC RESTRAINTS IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE AND LOCAL CODES AND STANDARDS AND THE REQUIREMENTS OF AUTHORITIES HAVING **JURISDICTION**
- SUPPORTS SHALL BE PROVIDED IN STRICT ACCORDANCE THE RECOMMENDATIONS OF THE PIPING MANUFACTURER.

D. VALVES:

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

BUTTERFLY VALVES FOR SHUT-OFF DUTY.

- 5. ALL VALVES SHALL BE ACCESSIBLE. PROVIDE ACCESS DOORS WHERE REQUIRED FOR VALVE ACCESS.
- 6. PROVIDE GLOBE VALVES FOR THROTTLING/BALANCING OF THE HOT WATER CIRCULATING SYSTEM.
- E. 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.
- F. 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.
- G. IN ALL AREAS WITH FINISHED SURFACES, SYSTEM PIPING AND COMPONENTS SHALL BE CONCEALED ABOVE OR WITHIN FINISHED SURFACES.
- H. REDUCTIONS IN PIPE SIZES SHALL BE MADE WITH ONE-PIECE REDUCING FITTINGS. BUSHINGS ARE NOT ACCEPTABLE. USE FLANGED FITTINGS AT THE BASE OF RISERS.

- I. VENT PENETRATIONS THROUGH THE ROOF SHALL BE FLASHED.
- J. IF WATER PRESSURE EXCEEDS 80 PSI, A WATER PRESSURE A. AT THE COMPLETION OF THE PLUMBING WORK, COMPLETELY REDUCING VALVE SHALL BE INSTALLED IN WATER PIPING AT CONNECTION TO MAIN.
- K. PROVIDE DIELECTRIC FITTINGS BETWEEN DISSIMILAR METALS.
- L. PIPE BACKFLOW PREVENTER DRAINS TO FLOOR DRAIN OR OTHER APPROVED INDIRECT WASTE SOURCE.
- M. 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.
- N. ALL FIXTURES REQUIRING VACUUM BREAKERS SHALL BE EQUIPPED WITH INTEGRAL VACUUM BREAKERS.
- O. ANY PENETRATIONS THROUGH FIRE RATED PARTITIONS FLOORS, OR CEILINGS SHALL BE STEEL SLEEVED AND SEALED D. THIS CONTRACTOR SHALL NOTIFY THE VARIOUS WITH 3M BRAND UL RATED FIRE BARRIER CAULK OR APPROVED EQUAL.
- P. 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
- Q. AT ALL INDIRECT WASTE DRAINS, MAINTAIN AIR GAP AS REQUIRED BY CODE.
- . INSTALL SLEEVES FOR ALL PIPES WHICH PASS THROUGH WALLS, FLOORS, AND CEILINGS. WHERE PIPES ARE TO BE ISULATED, THE SLEEVE SHALL BE LARGE ENOUGH TO COMMODATE INSULATION. SLEEVES SHALL BE FLUSH WITH FINISHED SURFACES AT BOTH ENDS. ON FINISHED SURFACES IN EXPOSED AREAS PROVIDE ESCUTCHEONS COMPATIBLE WITH FINISH.

INSTALLATION

FLANGES AND UNIONS.

BUILDING CONDITIONS.

UNHEATED SPACES.

MANAGER IS REQUIRED.

2.01 GENERAL

- 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.
- U. EXTERIOR INSTALLATIONS TO BE WEATHER PROOF IN ALL
- V. EXTERIOR MATERIALS AND EQUIPMENT SHALL BE PAINTED TO PREVENT CORROSION, COLOR PER ARCHITECT.
- W. COORDINATE THE PLUMBING WORK WITH ALL OTHER AFFECTED WORK AND THE CONSTRUCTION SCHEDULE.
- X. REAM PIPE AND TUBE ENDS. REMOVE BURRS. BEVEL PLAIN AND FERROUS END PIPE.

Y. REMOVE SCALE AND FOREIGN MATERIAL, FROM INSIDE AND

- OUTSIDE, BEFORE ASSEMBLY. Z. PREPARE PIPING CONNECTIONS TO EQUIPMENT WITH
- AA. 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
- AB. NO DOMESTIC WATER PIPING SHALL BE INSTALLED IN
- AC. 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
- AD. 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
- AE. 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

SYSTEMS.

- 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.

- TEST THE ENTIRE INSTALLATION OF ALL SYSTEMS FOR PROPER OPERATION AND COMPLIANCE WITH APPLICABLE CODES AND LOCAL REQUIREMENTS. CORRECT ALL DEFICIENCIES FOUND.
- TESTING OF THE INSTALLED SYSTEMS SHALL BE MADE BY THE CONTRACTOR IN THE PRESENCE OF A REPRESENTATIVE OF THE OWNER.
- . THE CONTRACTOR SHALL NOT COVER UP OR PERMANENTL' 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.
- 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.
- OTHER FOREIGN SUBSTANCES AND SHALL BE LEFT CLEAN. H. ALL REQUIRED TESTS SHALL BE WITNESSED BY LOCAL

AUTHORITIES AND THE OWNER'S REPRESENTATIVE.

G. ALL PIPING AND EQUIPMENT SHALL BE THOROUGHLY

CLEANED INSIDE AND OUT, OF DIRT, CUTTINGS, OILS AND

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

TESTING.

- L. TESTING REQUIREMENTS a. TEST ALL DOMESTIC WATER
 - HYDROSTATICALLY TO 125 PSIG. b. HYDROSTATIC TEST PRESSURES SHALL REMAIN CONSTANT WITH NO VARIATION FOR 120 MINUTES.
 - c. TESTS SHALL BE WITNESSED BY THE BUILDING ENGINEER. d. THE PLUMBING CONTRACTOR WILL BE HELD RESPONSIBLE FOR ALL DAMAGE DUE TO TEST FAILURES AND LEAKAGE IN THE TEST AREA AND
- 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.

M. REFILL ENTIRE POTABLE HOT AND COLD WATER SUPPLY

ADJACENT TENANT OR ESB SPACES.

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

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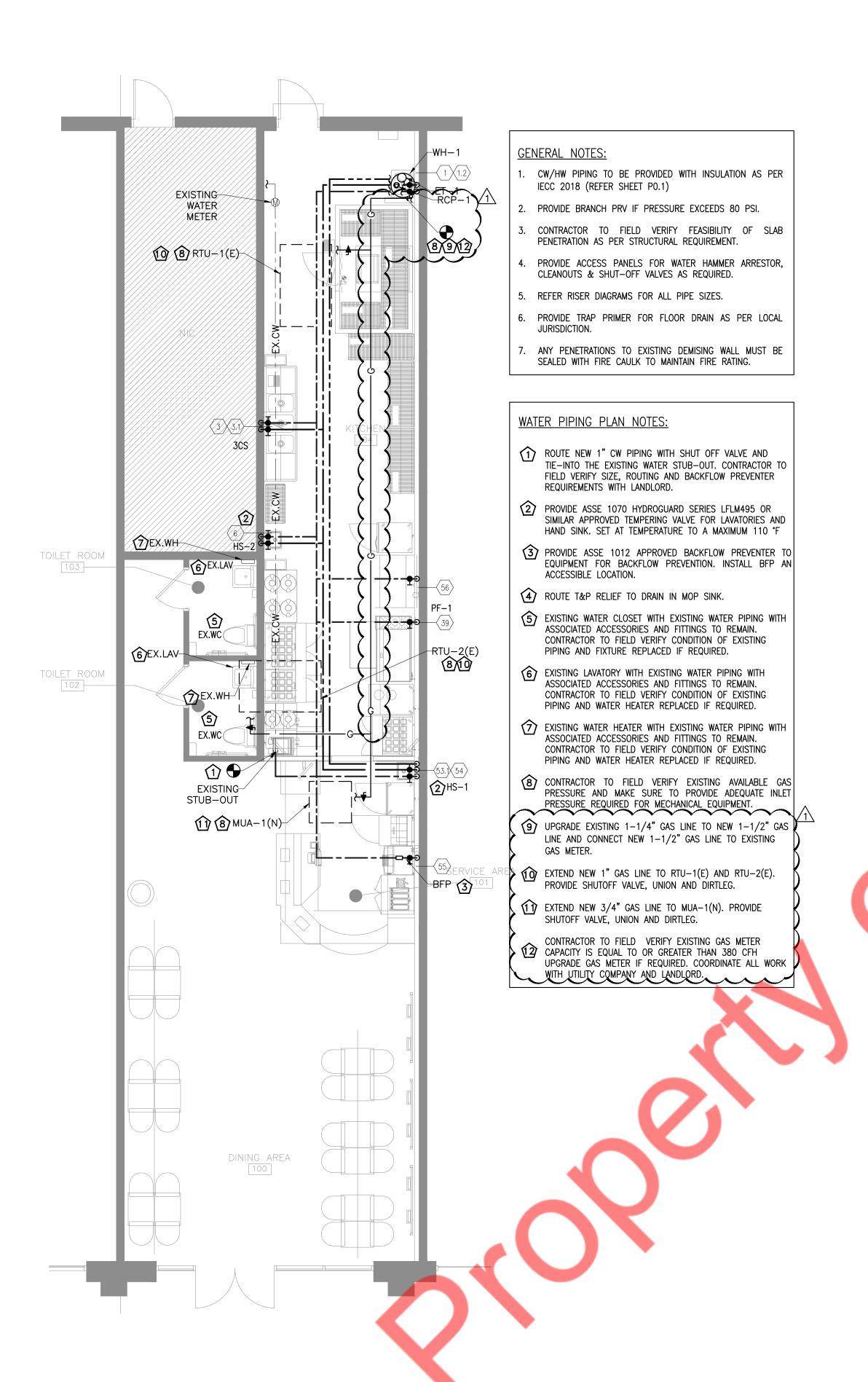
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1 WATER AND GAS PIPING PLAN SCALE: 3/16"=1'-0"

4"EX.GSAN _ _ _ _ _ <u>EX.CO</u> _ **6** /30\$/ NEW/3"VTR-X **(5)** /HS-2\\6 TOILET ROOM EX.LAV ~CO−1

GENERAL NOTES:

- 1. CONTRACTOR TO FIELD VERIFY FEASIBILITY OF SLAB PENETRATION AS PER STRUCTURAL REQUIREMENT.
- REFER RISER DIAGRAMS FOR ALL PIPE SIZES.
- ANY PENETRATIONS TO EXISTING DEMISING WALL MUST BE SEALED WITH FIRE CAULK TO MAINTAIN FIRE RATING.

SANITARY KEYED NOTES:

- CONNECT NEW 4" GREASE SANITARY LINE TO EXISTING GREASE SANITARY WASTE LINE IN SPACE. CONTRACTOR TO FIELD VERIFY EXISTING SANITARY SIZE, ROUTING AND INVERT.
- EXISTING 2" VTR REPLACE WITH NEW 3" VTR. CONTRACTOR TO FIELD VERIFY EXISTING VTR LOCATION AND SIZE.
- (3) INDIRECT WASTE FROM 3-COMP SINK TO FLOOR SINK WITH APPROVED AIR GAP.
- EXISTING WATER CLOSET WITH EXISTING SANITARY, VENT AND ASSOCIATED ACCESSORIES AND FITTINGS TO REMAIN.
 CONTRACTOR TO FIELD VERIFY CONDITION OF PIPING AND FIXTURE, REPLACED IF REQUIRED.
- EXISTING LAVATORY WITH EXISTING SANITARY, VENT AND ASSOCIATED ACCESSORIES AND FITTINGS TO REMAIN.
 CONTRACTOR TO FIELD VERIFY EXISTING CONDITION OF PIPING REPLACED IF REQUIRED.
- CONNECT NEW 3" SANITARY LINE TO EXISTING 4" SANITARY WASTE LINE IN SPACE. CONTRACTOR TO FIELD VERIFY EXISTING SANITARY SIZE, ROUTING AND INVERT.
- CONNECT NEW 2"SANITARY LINE TO EXISTING 4" SANITARY WASTE LINE IN SPACE. CONTRACTOR TO FIELD VERIFY EXISTING SANITARY SIZE, ROUTING AND INVERT.
- © CONNECT NEW 4" SANITARY LINE TO EXISTING 4" SANITARY WASTE LINE IN SPACE. CONTRACTOR TO FIELD VERIFY EXISTING SANITARY SIZE, ROUTING AND INVERT.
- 1 INDIRECT WASTE FROM ICE MAKER TO FLOOR SINK WITH APPROVED AIR GAP.
- CONDENSATE DRAIN PIPE FROM WALK IN COOLER EVAPORATOR DISCHARGE TO FLOOR SINK WITH APPROVED AIR GAP.

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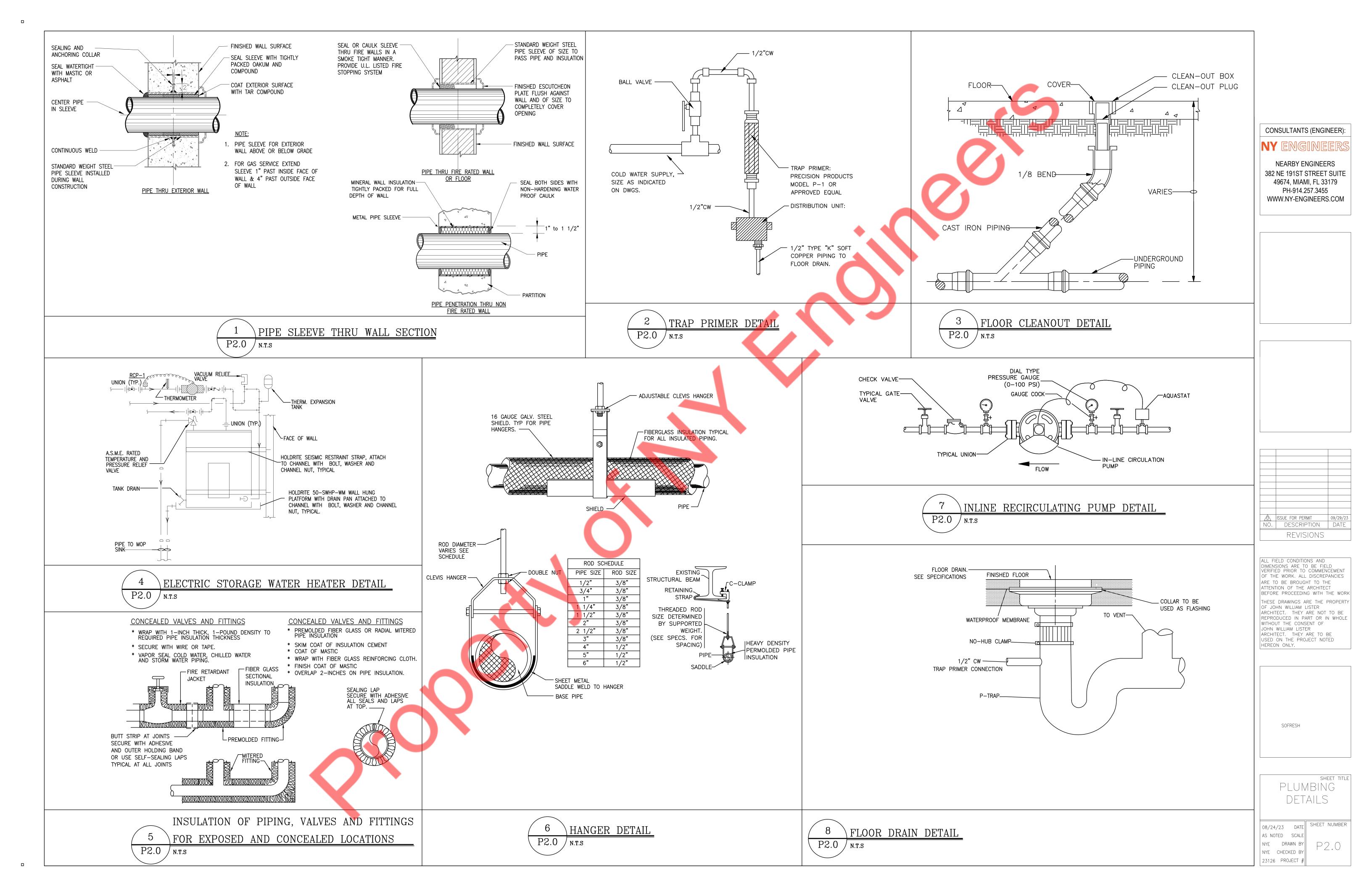
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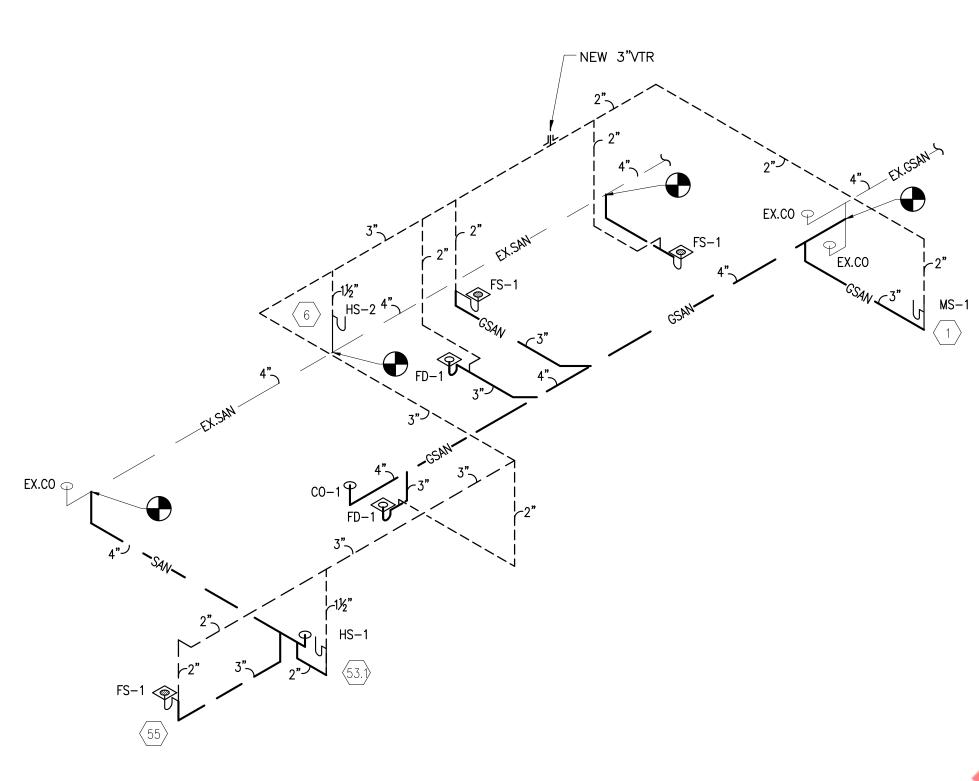
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PLUMBING FLOOR PLAN

08/24/23 DATE
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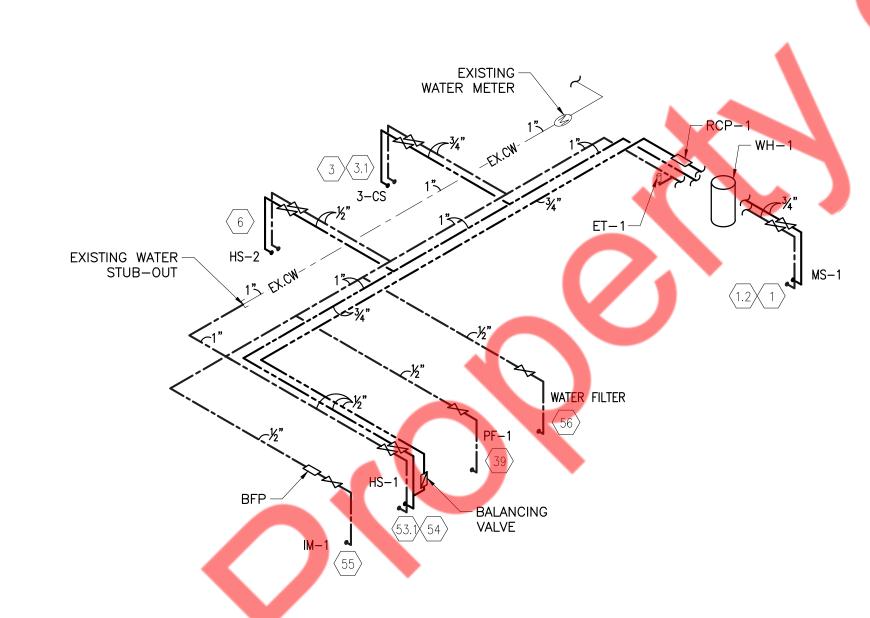
2 SANITRAY PIPING PLAN SCALE: 3/16"=1'-0"





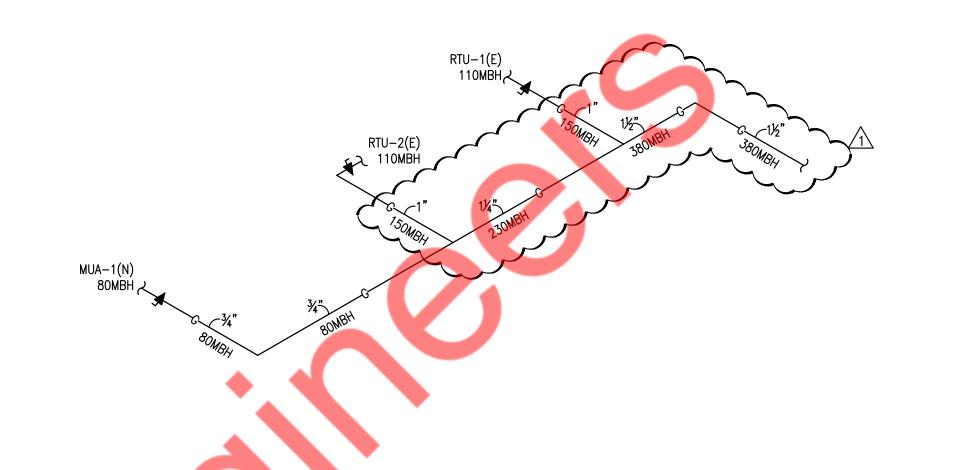
SANITRAY RISER DIAGRAM

SCALE: N.T.S.



WATER RISER DIAGRAM

SCALE: N.T.S



						,				
GAS DEMAND LOAD SUMMARY										
MARK	FIXTURE/EQUIPMENT	QUANTITY	UNIT DEMAND BTUH	TOTAL DEMAND BTUH	TOTAL CFH					
RTU-1(E)	ROOFTOP UNIT	1 (150,000	150,000	150	<u> </u>				
RTU-2(E)	ROOFTOP UNIT	1 (150,000	150,000	150	P				
MUA-1(N)	MAKE UP AIR UNIT	1	80,000	80,000	80	Λ				
	TOTAL		(380,000	380					
						ſ				

GAS PIPE SIZING PER INTERNATIONAL FUEL GAS CODE 2018

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

<u>EQUIVALENT LENGTH OF PIPE =</u> 105 + FITTINGS (+40%) = 150 FEET

GAS NOTE:

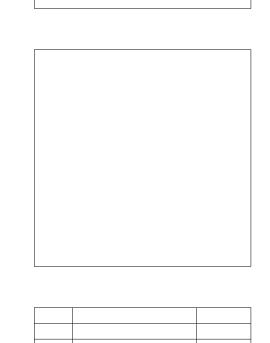
- 1. PROVIDE SHUT-OFF VALVE AN ACCESSIBLE LOCATION. PROVIDE GAS PRESSURE REGULATOR FOR ALL GAS EQUIPMENT IF REQUIRED.
- 2. CONTRACTOR SHALL VERIFY ACTUAL GAS PRESSURE AND LONGEST LENGTH OF RUN TO FARTHEST APPLIANCE PRIOR TO INSTALLATION AND NOTIFY ENGINEER IF CONDITION DIFFER THAN SHOWN ON THIS PLAN.



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ELECTRIC STORAGE WATER HEATER										
TAG NO	MANUFACTURER	MODEL	STORAGE CAPACITY	INPUT KW	VOLTAGE	GPH @ 100F RISE	REMARK			
<u>WH-1</u>	A.O SMITH	DEL-50	50 GALLONS	8	208/3/60	32	DIMENSION 26.5" DIA. X 32.25"H			

	MIXING VALVE SCHEDULE											
TAG	DESCRIPTION	MAXIMUM	MINIMUM	PRESSURE	SELECTION BASED		N BASED ON	REMARKS/OPTIONS				
IAG	DESCRIPTION	GPM	GPM	LOSS	MANUFA	CTURER MODEL NUMBER						
MV-1	THERMOSTATIC MIXING VALVE	3.5	.25	5	LEO	NARD	270-LF	NOTE 1, A				
• LEAD FR	OPTIONS (ALL UNITS) • LEAD FREE NSF APPROVED • PROVIDE T'STAT ON TEMPERED LINE ADDITIONAL OPTIONS (UNITS AS NOTED) A: ASSE 1070 APPROVED, SET @ 110° F. 1/2 "INLETS/ 1/2 " OUTLET, MOUNT BELOW FIXTURE											
NOTES: 1. INSTALL	NOTES: 1. INSTALL MIXING VALVE PER MANUFACTURERS REQUIREMENTS. PROVIDE ALL PIPING AND VALVES PER O&M MANUAL.											

	EXPANSION TANK SCHEDULE										
UNIT	NUMBER	MANUFACTURER & MODEL NUMBER	SERVICE		ACCEPTANCE VOLUME (GAL)		DIMENSI DIAMETER (INCH)		OPERATING WEIGHT (LBS)	NOTES	
ET-1	1	AMTROL	ST-5	2	0.9	150	8	12.5	25	1	

GENERAL NOTES: 1. SET THE TANK PRESSURE TO EQUAL THE SYSTEM OPERATING PRESSURE. TANK MUST BE DRAINED BEFORE ADJUSTING SET PRESSURE.

2. INSTALL PER MANUFACTURER'S RECOMMENDATIONS ON INCOMING COLD WATER LINE.

	RECIRCULATING PUMP SCHEDULE									
MARK	MANUFACTURER	MODEL	GPM	TOTAL HEAD FT.	MOTOR HP	REMARK				
RCP-1	GRUNDFOS	UP-15-10 B5	2	7	0.115	PROVIDE AQUA-STAT & TIMER				

TAG	PLUMBING FIXTURE	MANUFACTURER	MODEL	CONNECTION SIZE - INCHES							
				TRAP SOIL		WASTE	VENT	COLD	нот	THERMOSTATIC	REMARKS
					DIRECT	INDIRECT		WATER	WATER	MIXING VALVE	KLIMAKKS
EX.WC	EXISTING WATER CLOSET	E	E	_	E	-	E	E		7	FLUSH VALVE
EX.LAV	EXISTING LAVATORY	Е	E	Е	E	_	E	E	E	E	EXISTING TO REMAIN
1,1.2	MOP SINK	-	_	3"	2"	_	2"	3/4"	3/4"	_	P-TRAP
3,3.1	3-COMPARTMENT SINK	_	-	_	_	2"	-	3/4"	3/4"	_	INDIRCT DRAIN TO FLOOR SINK
6	HAND SINK	-	_	1½"	2"	_	1½"	1/2"	1/2"	PROVIDE	P-TRAP
39	POT FILLER	-	_	_	_	-		<i>y</i> ₂ "	_	_	_
53.1,54	HAND SINK	_	_	1½"	2"	4	1½"	1/2"	1/2"	PROVIDE	P-TRAP
55	ICE MAKER	-	_	_	-	1"	_	1/2"	_	_	INDIRCT DRAIN TO FLOOR SINK
FD-1	FLOOR DRAIN	FLOOR DRAIN	_	3"	3"		2"	_	_	_	_
FS-1	FLOOR SINK	FLOOR SINK	_	3"	3"		2"	_	_	_	_

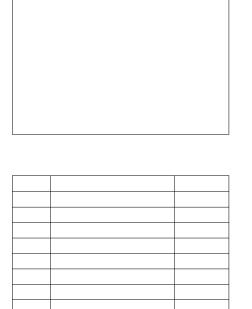
GREASE INTERCEPTOR CALCULATIONS						
SR.NO	QTY.	FIXTURE	DFU	TOTAL DFU'S		
1.	1	3-COMPARTMENT SINK	5	5		
2.	1	MOP SINK	5	51		
3.	2	FLOOR DRAIN	5	10		
	20					

AS PER IPC 2018, SECTION 1003.7, FOR 20 DFU'S. A 750 GALLONS GREASE
INTERCEPTOR IS REQUIRED.
THE EXISTING GREASE INTERCEPTOR IS 2500 GALLONS.

GRAVITY GREASE	INTERCEPTOR SIZING
DRAINAGE FIXTURE UNITS (DFU'S)	INTERCEPTOR VOLUME (GALLONS)
8	500
21	750
35	1000
90	1250
172	1500
216	2000
307	2500
342	3000
428	4000
576	5000
720	7500
2112	10000
2640	15000

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