

# MECHANICAL SYMBOLS LIST

AC-1 (TXF-1)	EQUIPMENT SYMBOL	CONTROLS AND SENSORS
	POINT OF NEW CONNECTION TO EXISTING	① THERMOSTAT ② HUMIDISTAT ③ MANUAL ON/OFF SWITCH ④ DUCT SMOKE DETECTOR ⑤ CO DETECTOR ⑥ TEMPERATURE SENSOR
<b>AIR DEVICES</b>		
	CEILING DIFFUSER SUPPLY	
	CEILING DIFFUSER RETURN	
	SIDEWALL GRILLE-SUPPLY	
	SIDEWALL GRILLE-RETURN	
<b>DUCT ACCESSORIES</b>		
	VOLUME DAMPER W/ ACCESS DOOR	
	FIRE DAMPER W/ ACCESS DOOR	
	MOTORIZED DAMPER W/ ACCESS DOOR	
	BACKDRAFT DAMPER	

## MECHANICAL ABBREVIATIONS

AF	ABOVE FINISHED FLOOR
AL	ACOUSTIC LINING
BOB	BOTTOM OF BEAM
BOD	BOTTOM OF DUCT
BOE	BOTTOM OF EQUIPMENT
CDS	CEILING DIFFUSER SUPPLY
CDR	CEILING DIFFUSER RETURN
CFM	CUBIC FEET OF AIR PER MINUTE
EXF	EXHAUST FAN
DN	DOWN
EG	EXHAUST GRILLE
FC	FLEXIBLE CONNECTION
FD/AD	FIRE DAMPER W/ACCESS DOOR
MD	MOTORIZED DAMPER
RTU	ROOF TOP UNIT
RG	RETURN GRILLE
RA	RETURN AIR
SEER	SEASONAL ENERGY EFFICIENCY RATIO
SG	SUPPLY GRILLE
SA	SUPPLY AIR
VD	VOLUME DAMPER
BD	BACKDRAFT DAMPER
EF	EXHAUST FAN
MAF	MAKE-UP AIR FAN
SPF	SMOKE PURGE FAN
EW	ELECTRIC WALL HEATER

## MECHANICAL DRAWING LIST

M0.1	MECHANICAL GENERAL NOTES, SYMBOLS LIST & ABBREVIATIONS
M0.2	MECHANICAL SPECIFICATIONS
M1.1	MECHANICAL GROUND FLOOR PLAN
M1.2	MECHANICAL MEZZANINE FLOOR PLAN
M1.3	MECHANICAL ROOF PLAN
M2.1	MECHANICAL DETAILS (1 OF 2)
M2.2	MECHANICAL DETAILS (2 OF 2)
M3.1	MECHANICAL SCHEDULES

## ENERGY CONSERVATION CODE 2015 COMPLIANCE

TO THE BEST OF MY PROFESSIONAL KNOWLEDGE AND JUDGEMENT, THESE PLANS AND SPECIFICATION ARE IN COMPLIANCE WITH THE INTERNATIONAL ENERGY CONSERVATION CODE 2015.

## GEORGIA BUILDING DEPARTMENT NOTES

ALL WORK SHALL COMPLY WITH APPLICABLE SECTIONS OF 2018-IBC AND RULES AND REGULATIONS OF THE DEPARTMENT OF BUILDINGS TO DATE.

- 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.
- 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:
  - MECHANICAL VENTILATION – SECTION 403.
- THE FOLLOWING WORK ITEMS, COMPONENTS, MATERIALS, CAPACITIES, ETC. SHALL COMPLY WITH THE REFERENCED CODE OR STANDARD:
  - STANDARDS OF HEATING – 2018 IMC 309.1
  - DUCT CONSTRUCTION AND INSTALLATION – 2018 IMC 603
  - AIR INTAKES, EXHAUSTS AND RELIEFS – 2018 IMC 401.5
  - AIR FILTERS – 2018 IMC 605
  - GAS FIRED EQUIPMENT – FUEL GAS CODE
- MINIMUM TEMPERATURE TO BE MAINTAINED IN OCCUPIED SPACES DURING HEATING SEASON: 68 DEG. FAHRENHEIT.
- VENTILATION FOR ALL AREA SHALL COMPLY WITH 2018 IMC 401.
- 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 403.3.
- REFER TO ARCHITECTURAL DRAWINGS FOR REQUIRED FIRE-RATED WALL AND SMOKE WALL CONSTRUCTION AND LOCATION.
- THESE PLANS ARE APPROVED ONLY FOR THE WORK INDICATED ON THE APPLICATION SPECIFICATION SHEET. ALL OTHER MATTERS SHOWN ARE NOT TO BE RELIED UPON OR TO BE CONSIDERED AS EITHER BEING APPROVED OR IN ACCORDANCE WITH APPLICABLE CODES.
- MECHANICAL SYSTEMS SHALL BE COMMISSIONED PER IECC 2015 C408.2.2, C408.2.1, C408.2.5 FINAL COMMISSIONING REPORT SHALL BE DUE WITHIN 90 DAYS OF RECEIPT OF CERTIFICATE OF OCCUPANCY.
- A COMMISSIONING PLAN SHALL BE DEVELOPED BY A LICENSED DESIGN PROFESSIONAL MECHANICAL ENGINEER OR APPROVED AGENCY.
- A PRELIMINARY REPORT OF COMMISSIONING TEST PROCEDURES AND RESULTS SHALL BE COMPLETED AND CERTIFIED BY THE LICENSED DESIGN PROFESSIONAL MECHANICAL ENGINEER, MECHANICAL ENGINEER OR APPROVED AGENCY AND PROVIDED TO THE BUILDING OWNER OR OWNER'S AUTHORIZED AGENT AS PER IECC 2015, C408.2.4.
- A WRITTEN REPORT DESCRIBING THE ACTIVITIES AND MEASUREMENTS COMPLETED IN ACCORDANCE WITH SECTION IECC 2015, C408.2.2.
- ALL HEATING AND COOLING LOADS CALCULATED PER ASHRAE/ACCA 183.
- SMOKE DETECTOR SHALL MEET UL268A.
- SMOKE DETECTION SYSTEMS SHALL BE INSTALLED AND SEQUENCED TO FOLLOW CONTROLS OPERATIONS WITH THE REQUIREMENTS OF SECTION 606, 2018 INTERNATIONAL MECHANICAL CODE TO CLOSE DAMPERS AND AUTOMATICALLY STOP THE FAN.

## GENERAL NOTES

- CONTRACTOR SHALL SURVEY THE AREA OF THIS WORK BEFORE SUBMITTING A BID AND SHALL BE RESPONSIBLE FOR NOTIFYING THE ARCHITECT OF ANY CONDITIONS WHICH WOULD PREVENT THE INSTALLATION OF THE WORK AS SHOWN ON DRAWINGS.
- ALL APPLICABLE CODES, LAWS AND REGULATIONS GOVERNING OR RELATING TO ANY PORTION OF THIS WORK ARE HEREBY INCORPORATED INTO AND MADE A PART OF THESE SPECIFICATIONS, AND THEIR PROVISIONS SHALL BE CARRIED OUT BY THE CONTRACTOR WHO SHALL INFORM THE OWNER PRIOR TO SUBMITTING A PROPOSAL OF ANY WORK OR MATERIALS WHICH VIOLATE ANY OF THE ABOVE LAWS AND REGULATIONS. ANY WORK DONE BY THE CONTRACTOR CAUSING SUCH VIOLATION SHALL BE CORRECTED BY THE CONTRACTOR.
- BEFORE PROCEEDING WITH ANY WORK IN OCCUPIED OR USED AREAS, THE CONTRACTOR SHALL APPLY TO OWNER FOR PERMISSION TO ENTER SUCH AREAS. THE CONTRACTOR IS OBLIGED TO PERFORM HIS WORK ONLY AT THE TIMES DESIGNATED BY OWNER. THERE WILL BE NO ADDITIONAL COMPENSATION FOR THE WORK PERFORMED AFTER HOURS OR ON OFF-DAYS WITHOUT PRIOR WRITTEN APPROVAL.
- THE WORK IN THE BUILDING SHALL BE DONE WHEN AND AS DIRECTED, AND IN A MANNER SATISFACTORY TO THE OWNER. THE WORK SHALL BE PERFORMED SO AS TO CAUSE THE LEAST POSSIBLE INCONVENIENCE AND DISTURBANCE TO THE PRESENT OCCUPANTS.
- THE CONTRACTOR'S PROPOSAL FOR ALL WORK SHALL BE PREDICATED ON THE PERFORMANCE OF THE WORK DURING REGULAR WORKING HOURS. WHEN SO DIRECTED, HOWEVER, THE CONTRACTOR SHALL INSTALL WORK IN OVERTIME AND THE ADDITIONAL COST TO BE CHARGED THEREFORE SHALL BE ONLY THE "PREMIUM" PORTION OF THE WAGES PAID.
- CONTRACTOR SHALL ASCERTAIN THE APPROPRIATE METHOD FOR BRINGING THE UNITS INTO AND THROUGH THE BUILDING TO POSITION UNITS 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.
- DISCONNECT, REMOVE AND/OR RELOCATE EXISTING MATERIAL EQUIPMENT AND OTHER WORK AS NOTED OR REQUIRED FOR PROPER INSTALLATION OF NEW SYSTEM.
- WHERE PENETRATIONS THROUGH FIRE RATED WALLS ARE NOT FIRE PROOFED THIS CONTRACTOR SHALL BE RESPONSIBLE TO SEAL SAME TO MAINTAIN THE RATED INTEGRITY.
- 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.

- 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 SYSTEM. PROVIDE TEMPORARY DUCT CAPS AND/OR CONNECTIONS TO MINIMIZE SHUTDOWN TIME.
- 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. MULTI-ROD SHALL BE SIMILAR TO FEE & MASON SERIES 9000 WITH END CAPS AND TWSURE STRIPS. MAXIMUM LOADING INCLUDING PIPES, DUCTWORK, CONTENTS AND COVERING SHALL NOT EXCEED 75% OF RATED INSET CAPABILITY. WHEN SUPPORTING FROM BUILDING USE BEAM CLAMPS IN APPROVED MANNER.
- PROVIDE ALL NECESSARY FLASHING AND COUNTER FLASHING TO MAINTAIN THE WATERPROOFING INTEGRITY OF THIS BUILDING AS REQUIRED BY THE INSTALLATION OR REMOVAL OF PIPES, DUCTS, LOUVERS, CONDUIT, AND EQUIPMENT. PROVIDE EQUIPMENT CURBS AND DUNNAGE STEEL AS REQUIRED.
- SEAL OPENINGS AROUND DUCTS AND PIPING THROUGH PARTITIONS, WALLS AND FLOORS WITH MINERAL WOOL OR OTHER NONCOMBUSTIBLE MATERIAL (FIBERGLASS INSULATION IS NOT ACCEPTABLE).
- INSTALL WORK SO AS TO BE READILY ACCESSIBLE FOR OPERATION, MAINTENANCE AND REPAIR. MINOR DEVIATIONS FROM DRAWINGS MAY BE MADE TO ACCOMPLISH THIS, BUT CHANGES WHICH INVOLVE EXTRA COST SHALL NOT BE MADE WITHOUT APPROVAL.
- ACCESS DOORS ARE REQUIRED FOR ALL BUILDING SERVICE VALVES THAT RUN THROUGH THE SPACE, AND ACCESS DOOR SHALL HAVE THE EQUAL RATED CAPACITY (1HR, 2HR, ETC.) AS WALL. COORDINATE ALL LOCATIONS OF ACCESS DOORS WITH THE ARCHITECT.
- REMOVABLE ACCESS TILE AND/OR ACCESS DOOR ARE REQUIRED IN HUNG CEILING, SHUTS AND JOISTS FOR ALL VOLUME AND FIRE DAMPERS, AUTOMATIC DAMPERS AND ALL OTHER MECHANICAL EQUIPMENT AND DEVICES. HVAC CONTRACTOR TO FURNISH ACCESS LOCATION REQUIREMENTS TO GENERAL CONTRACTOR. ACCESS TILE IDENTIFICATION PROVIDE BUTTONS, TABS, AND MARKERS TO IDENTIFY LOCATION OF CONCEALED VALVES, DAMPERS AND EQUIPMENT.
- THE CONTRACTOR SHALL KEEP ALL EQUIPMENT AND MATERIALS, AND ALL PARTS OF THE BUILDING, EXTERIOR SPACES AND ADJACENT STREETS, SIDEWALKS AND PAVEMENTS, FREE FROM MATERIAL AND DEBRIS RESULTING FROM THE EXECUTION OF THIS WORK. EXCESS MATERIALS WILL NOT BE PERMITTED TO ACCUMULATE EITHER ON THE INTERIOR OR THE EXTERIOR.
- UNLESS OTHERWISE SPECIFICALLY SPECIFIED, INCLUDE ALL CUTTING AND PATCHING OF EXISTING FLOORS, WALLS, PARTITIONS AND OTHER MATERIALS IN THE EXISTING BUILDING. THE CONTRACTOR SHALL RESTORE THESE AREAS TO ORIGINAL CONDITION.
- MATERIALS AND WORKMANSHIP, UNLESS OTHERWISE NOTED, SHALL BE IN ACCORDANCE WITH BUILDING STANDARDS.
- ALL EQUIPMENT SHALL BE PROVIDED WITH ONE YEAR WARRANTY PARTS AND LABOR AND FIVE YEARS WARRANTY COMPRESSORS. WARRANTY PERIOD BEGINS UPON PROJECT ACCEPTANCE.
- ALL MATERIAL AND EQUIPMENT TO BE NEW UNLESS OTHERWISE NOTED AND SHALL BE IN ACCORDANCE WITH BUILDING STANDARDS.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR HIS WORK WITH ITS COMPLETION AND FINAL ACCEPTANCE AND SHALL REPLACE ANY OF THE SAME WHICH MAY BE DAMAGED, LOST, OR STOLEN WITHOUT ADDITIONAL COST TO THE OWNER.
- 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.
- SUBMIT SHOP DRAWING OF ALL WORK WHICH MUST BE APPROVED BY THE ARCHITECT AND ENGINEER BEFORE WORK COMMENCES.
- ALL MATERIAL AND EQUIPMENT TO BE NEW UNLESS OTHERWISE NOTED AND SHALL BE IN ACCORDANCE WITH BUILDING STANDARDS.
- SUBMISSION OF A CAREFUL EXAMINATION OF THE PORTIONS OF THE EXISTING BUILDING, EQUIPMENT, ETC., WHICH AFFECT THIS WORK, AND THE ACCESS TO SUCH SPACES, HAS BEEN MADE AND THAT THE CONTRACTOR IS FAMILIAR WITH EXISTING CONDITIONS AND DIFFICULTIES THAT WILL AFFECT THE EXECUTION OF THE WORK. LATER CLAIMS SHALL NOT BE MADE FOR LABOR, EQUIPMENT OR MATERIALS REQUIRED BECAUSE OF DIFFICULTIES ENCOUNTERED WHICH COULD HAVE BEEN FORESEEN DURING SUCH AN EXAMINATION. THE ON-SITE INSPECTION SHALL VERIFY EXISTING DUCTWORK, PIPING (SIZES, CLEARANCES, ETC) AND CONDITIONS.
- INSURANCE: IN ACCORDANCE WITH BUILDING REQUIREMENTS THE CONTRACTOR SHALL INCLUDE A HOLD HARMLESS CLAUSE FOR OWNER AND ENGINEER.
- 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.
- 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.
- 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 OTHERWISE NOTED.
- "INSTALL": TO ERECT, MOUNT AND CONNECT COMPLETE WITH RELATED ACCESSORIES.
- "FURNISH" OR "SUPPLY": TO PURCHASE, PROCURE, ACQUIRE AND DELIVER COMPLETE WITH RELATED ACCESSORIES.

## SCOPE OF WORK

### SCOPE OF WORK

- THE WORK UNDER CONTRACT INCLUDES ALL LABOR, MATERIALS AND APPLIANCES NECESSARY FOR THE FURNISHING, INSTALLING AND TESTING, COMPLETE AND READY FOR SAFE OPERATION OF THE SYSTEMS AS DESCRIBED IN THE SPECIFICATIONS, FLOOR PLAN(S) DESIGN, DETAIL DRAWINGS, NOTES, RFIS, ETC. FOR THIS PROJECT. WORK SHALL BE INSTALLED IN A NEAT, WORKMANLIKE MANNER.

- THE CONTRACTOR SHALL GIVE NECESSARY NOTICE, FILE DRAWINGS AND SPECIFICATIONS WITH THE DEPARTMENT HAVING JURISDICTION, OBTAIN PERMITS OR LICENSES NECESSARY TO CARRY OUT THE WORK AND PAY ALL FEES THEREFOR. THE CONTRACTOR SHALL ARRANGE FOR INSPECTION AND TESTS OF ANY OR ALL PARTS OF THE WORK IF SO REQUIRED BY THE DEPARTMENT. THE CONTRACTOR SHALL PAY ALL COSTS FOR, AND FURNISH TO THE OWNER BEFORE FINAL BILLING, ALL CERTIFICATES NECESSARY AS EVIDENCE THAT THE WORK INSTALLED CONFORMS WITH ALL REGULATIONS WHERE THEY APPLY TO THIS WORK.
- THE CONTRACTOR SHALL FURNISH A WRITTEN GUARANTEE TO REPLACE OR REPAIR PROMPTLY AND ASSUME RESPONSIBILITY FOR ALL EXPENSES INCURRED FOR ANY WORKMANSHIP AND EQUIPMENT IN WHICH DEFECTS DEVELOP WITHIN ONE YEAR FROM THE DATE OF FINAL CERTIFICATE FOR PAYMENT AND/OR FROM DATE OR ACTUAL USE OF EQUIPMENT OR OCCUPANCY OF SPACES, BY OWNER, INCLUDED UNDER THE VARIOUS PARTS OF THE WORK, WHICHEVER DATE IS EARLIER. THIS GUARANTEE SHALL BE DONE AS DIRECTED BY THE OWNER. THIS GUARANTEE SHALL ALSO PROVIDE THAT WHERE DEFECTS OCCUR, THE CONTRACTOR WILL ASSUME RESPONSIBILITY FOR ALL EXPENSES INCURRED IN REPAIRING AND REPLACING WORK OF OTHER TRADES AFFECTED BY DEFECTS, REPAIRS OR REPLACEMENTS IN EQUIPMENT SUPPLIED BY THE CONTRACTOR.

## GENERAL HVAC NOTES

### GENERAL:

- PROVIDE ALL MATERIAL AND EQUIPMENT AND PERFORM ALL LABOR REQUIRED TO INSTALL COMPLETE AND OPERABLE MECHANICAL SYSTEMS AS INDICATED ON THE DRAWINGS, AS SPECIFIED AND AS REQUIRED BY CODE.
- CONTRACT DOCUMENT DRAWINGS FOR MECHANICAL WORK (HVAC, PLUMBING, AND FIRE PROTECTION) ARE DIAGRAMMATIC AND ARE INTENDED TO CONVEY SCOPE AND GENERAL ARRANGEMENT ONLY.
- THE LOCATIONS OF ALL ITEMS SHOWN ON THE DRAWINGS OR CAPTIONED IN THE SPECIFICATIONS THAT ARE NOT DIMENSIONED ARE APPROXIMATE ONLY. THE EXACT LOCATIONS NECESSARY TO SECURE THE BEST CONDITIONS AND RESULTS MUST BE DETERMINED BY THE PROJECT SITE CONDITIONS AND SHALL HAVE THE APPROVAL OF THE ENGINEER BEFORE BEING INSTALLED. DO NOT SCALE DRAWINGS.
- WHEN MECHANICAL WORK (HVAC, PLUMBING, SHEET METAL, FIRE PROTECTION, ETC.) IS SUBCONTRACTED, IT SHALL BE THE MECHANICAL CONTRACTOR'S RESPONSIBILITY TO COORDINATE SUBCONTRACTORS AND THE ASSOCIATED CONTRACTS. WHEN DISCREPANCIES ARISE PERTAINING TO WHICH CONTRACTOR PROVIDES A PARTICULAR ITEM OF THE MECHANICAL CONTRACT OR WHICH CONTRACTOR PROVIDES FINAL CONNECTIONS FOR A PARTICULAR ITEM OF THE MECHANICAL CONTRACT, IT SHALL BE BROUGHT TO THE ATTENTION OF THE MECHANICAL CONTRACTOR, WHOSE DECISION SHALL BE FINAL.
- COORDINATE CONSTRUCTION OF ALL MECHANICAL WORK WITH ARCHITECTURAL, STRUCTURAL, CIVIL, ELECTRICAL WORK, ETC., SHOWN ON OTHER CONTRACT DOCUMENT DRAWINGS.
- INSTALL ALL MECHANICAL EQUIPMENT AND APPURTENANCES IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS, CONTRACT DOCUMENTS, AND APPLICABLE CODES AND REGULATIONS.
- WHERE TWO OR MORE ITEMS OF THE SAME TYPE OF EQUIPMENT ARE REQUIRED, THE PRODUCT OF ONE MANUFACTURER SHALL BE USED.
- COORDINATE ALL EQUIPMENT CONNECTIONS WITH MANUFACTURER'S 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.
- ALL CONTROL WIRE AND CONDUIT SHALL COMPLY WITH THE NATIONAL ELECTRIC CODE AND ELECTRICAL DIVISION OF THE SPECIFICATION.
- PROVIDE VIBRATION ISOLATION FOR ALL MECHANICAL EQUIPMENT TO PREVENT TRANSMISSION OF VIBRATION TO BUILDING STRUCTURE.
- LOCATE ALL TEMPERATURE, 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.
- 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.
- ALL MISCELLANEOUS STEEL REQUIRED TO ENSURE PROPER INSTALLATION AND AS SHOWN IN THE DETAILS FOR DUCTWORK AND EQUIPMENT (UNLESS OTHERWISE NOTED) SHALL BE FURNISHED AND INSTALLED BY THE MECHANICAL CONTRACTOR.
- PROVIDE ACCESS PANELS FOR INSTALLATION IN WALLS AND CEILING, WHERE REQUIRED, TO SERVICE DAMPERS, VALVES, SMOKE DETECTORS, AND OTHER CONCEALED MECHANICAL EQUIPMENT. ACCESS PANELS SHALL BE TURNED OVER TO THE GENERAL CONTRACTOR FOR INSTALLATION. ACCESS PANELS SHALL HAVE THE EQUAL RATED CAPACITY (1HR, 2HR, ETC.) AS WALL.
- MECHANICAL EQUIPMENT, DUCTWORK, AND PIPING SHALL NOT BE SUPPORTED FROM A METAL DECK.
- ALL EQUIPMENT, PIPING, DUCTWORK, ETC., SHALL BE SUPPORTED AS DETAILED, SPECIFIED AND REQUIRED TO PROVIDE A VIBRATION-FREE INSTALLATION.
- ALL DUCTWORK, PIPING, AND EQUIPMENT SUPPORTED FROM STRUCTURAL STEEL SHALL BE COORDINATED WITH THE GENERAL CONTRACTOR. ALL ATTACHMENTS TO STEEL BAR JOISTS, TRUSSES, OR JOIST GIRDERS SHALL BE AT PANEL POINTS. PROVIDE BEAM CLAMPS MEETING MSS STANDARDS. WELDING TO STRUCTURAL MEMBERS SHALL NOT BE PERMITTED. THE USE OF C-CLAMPS SHALL NOT BE PERMITTED.
- LOCATIONS AND SIZES OF ALL FLOOR, WALL, AND ROOF OPENINGS SHALL BE COORDINATED WITH ALL OTHER TRADES INVOLVED.
- ALL OPENINGS IN FIRE WALLS DUE TO DUCTWORK, PIPING, CONDUIT, ETC., SHALL BE FIRE STOPPED WITH A PRODUCT SIMILAR TO 3M OR APPROVED EQUAL.
- ALL CONDENSATE DRAIN LINES FROM EACH ROOF TOP UNIT SHALL BE PIPED FULL SIZE OF THE UNIT DRAIN OUTLET, WITH "P" TRAP, AND PIPED TO THE NEAREST DRAIN. SEE THE DETAILS SHOWN IN THE DRAWINGS OR THE CONTRACT SPECIFICATIONS FOR THE DEPTH OF THE AIR CONDITIONING CONDENSATE TRAP.
- REFER TO TYPICAL DETAILS FOR DUCTWORK, PIPING, AND EQUIPMENT INSTALLATION.
- ALL TESTS SHALL BE COMPLETED BEFORE ANY MECHANICAL EQUIPMENT OR PIPING INSULATION IS APPLIED.
- TESTING, ADJUSTING, AND BALANCING AGENCY SHALL BE A MEMBER OF THE ASSOCIATED AIR BALANCE COUNCIL (AABC) OR THE NATIONAL ENVIRONMENTAL BALANCING BUREAU (NEBB). TESTING, ADJUSTING, AND BALANCING SHALL BE PERFORMED IN ACCORDANCE WITH THE AABC STANDARDS.

## HVAC DUCTWORK – SHEET METAL

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

SECTION 0101 - QUALITY OF WORK

- 1.1 WORKMANSHIP
A. ALL WORK SHALL BE FREE FROM DEFECTS IN MATERIALS AND WORKMANSHIP FOR A PERIOD OF ONE YEAR FROM DATE OF FINAL ACCEPTANCE.
B. ALL DEFECTS WHICH DEVELOP OR ARE DISCOVERED WITHIN THIS PERIOD SHALL BE REPAIRED BY THE CONTRACTOR TO THE SATISFACTION OF THE ARCHITECT OR BUILDING MANAGER AT NO ADDITIONAL COST TO THE OWNER.
C. UPON COMPLETION OF THE WORK THE CONTRACTOR SHALL REMOVE FROM THE SITE, ALL TOOLS, DEMOLISHED APPLIANCES AND ANY SURPLUS MATERIAL.
1.2 CODE COMPLIANCE
A. ALL WORK SHALL MEET ALL STATE AND LOCAL CODES HAVING JURISDICTION.
END OF SECTION 0101
SECTION 0102 - REQUIRED DOCUMENTS
1.1 SHOP DRAWINGS
A. A SET OF PRINTS FOR ANY MECHANICAL WORK INCLUDING BUT NOT LIMITED TO, DUCTWORK AND PIPING LAYOUT SHALL BE SUBMITTED FOR APPROVAL TO THE ENGINEER PRIOR TO CONSTRUCTION OR PURCHASE OF MATERIALS.
1.2 SUBMITTALS
A. EQUIPMENT SUBMITTALS OF ALL PROPOSED MECHANICAL AND ANQUIARY EQUIPMENT INCLUDING ALL ACCESSORIES SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW. ALL PERTINENT MODELS, SIZES, ACCESSORIES AND CHOICES SHALL BE CLEARLY CHECKED, PRINTED OR OTHERWISE INDICATED ON THE SUBMITTALS.
1.3 RECORD DRAWINGS
A. UPON COMPLETION OF THE WORK, A RECORD DRAWING SHALL BE SUBMITTED TO THE OWNER DEPICTING ALL SUBSEQUENT CHANGES, ADDITIONS AND OR CORRECTIONS TO THE CONTRACT DRAWINGS AND OR CONTRACT SCOPE MADE DURING CONSTRUCTION. THIS DRAWING SHALL REPRESENT A COMPLETE RECORD OF THE WORK INSTALLED.
1.4 EQUIPMENT OPERATING INSTRUCTIONS
A. ON COMPLETION AND ACCEPTANCE OF WORK, THIS CONTRACTOR SHALL FURNISH WRITTEN INSTRUCTIONS, EQUIPMENT MANUALS AND DEMONSTRATE TO THE OWNER THE PROPER OPERATION AND MAINTENANCE OF ALL EQUIPMENT AND APPARATUS FURNISHED UNDER THIS CONTRACT.
B. THESE INSTRUCTIONS SHALL BE TYPED ON 8-1/2 IN. X 11 IN. PAPER AND BOUND IN THREE-RING BINDERS WITH CLEAR ACETATE COVERS. THE CONTRACTOR SHALL GIVE THREE COPIES OF THE INSTRUCTIONS TO THE OWNER AND ONE ELECTRONIC COPY TO THE ENGINEER.
C. THE INSTRUCTION BOOKLET SHALL BE ORGANIZED IN SECTIONS, WITH ONE SECTION PER SYSTEM. THE COVER OF THE INSTRUCTION BOOKLET SHALL BEAR THE NAME, ADDRESS AND PHONE NUMBER OF THE PROJECT, ARCHITECT, ENGINEER, MECHANICAL CONTRACTOR AND SUBCONTRACTORS.
END OF SECTION 0102

SECTION 078413 - PENETRATION FIRE - STOPPING

- 1.1 QUALITY ASSURANCE
A. INSTALLER QUALIFICATIONS: AN FM GLOBAL-APPROVED FIRE-STOP CONTRACTOR OR A UL-QUALIFIED FIRE-STOP CONTRACTOR.
B. FIRE-TEST-RESPONSE CHARACTERISTICS: UL, INTERTEK ETL, SEMKO OR FM GLOBAL
1.2 PENETRATION FIRESTOPPING
A. PENETRATIONS IN FIRE-RESISTANCE-RATED WALLS: F-RATINGS PER ASTM E 814 OR UL 1479;
B. PENETRATIONS IN HORIZONTAL ASSEMBLIES: F- AND T-RATINGS PER ASTM E 814 OR UL 1479;
C. PENETRATIONS IN SMOKE BARRIERS: L-RATINGS PER UL 1479.
D. W-RATINGS: PER UL 1479.
1.3 INSTALLATION
A. IDENTIFICATION: PREPRINTED METAL OR PLASTIC LABELS.
1.4 FIELD QUALITY CONTROL
A. INSPECTION OF INSTALLED FIRE-STOPPING: BY OWNER-ENGAGED AGENCY ACCORDING TO ASTM E 2174.
1.5 THROUGH-PENETRATION FIRESTOP SYSTEM SCHEDULE
WHERE UL-CLASSIFIED SYSTEMS ARE INDICATED, THEY REFER TO SYSTEM NUMBERS IN UL'S "FIRE RESISTANCE DIRECTORY" UNDER PRODUCT CATEGORY XHEZ.

- FOR THE FOLLOWING SYSTEMS:
METALLIC AND NON-METALLIC PIPES, CONDUIT, OR TUBING, ELECTRICAL CABLES, CABLE TRAYS WITH ELECTRIC CABLES, MISCELLANEOUS ELECTRICAL PENETRANTS, INSULATED PIPES, GROUPINGS OF PENETRANTS, USE ON OR MORE THE FOLLOWING MATERIALS:
a. LATEX SEALANT
b. SILICONE SEALANT
c. INTUMESCENT PUTTY
d. MORTAR
h. SILICONE FOAM
i. PILLIOWS/BAGS
j. INTUMESCENT WRAP STRIPS
k. INTUMESCENT COMPOSITE SHEET
1.6 MANUFACTURERS
1. HLT1 CONSTRUCTION CHEMICAL, INC
2. TREMCO INC.
3. 3M FIRE PROTECTION PRODUCTS

SECTION 230517 - SLEEVES AND SLEEVE SEALS FOR HVAC PIPING

- 1.1 SLEEVE-SEAL SYSTEMS
A. FIELD-ASSEMBLED, MODULAR SEALING-ELEMENT UNIT FOR FILLING ANNULAR SPACE BETWEEN PIPING AND SLEEVE.
1. SEALING ELEMENTS: EPDM RUBBER OR NBR.
2. PRESSURE PLATES: CARBON STEEL, PLASTIC, STAINLESS STEEL.
3. CONNECTING BOLTS AND NUTS: CARBON STEEL WITH CORROSION-RESISTANT COATING, STAINLESS STEEL.
B. MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, AVAILABLE MANUFACTURERS OFFERING PRODUCTS THAT MAY BE INCORPORATED INTO THE WORK INCLUDE, BUT ARE NOT LIMITED TO, THE FOLLOWING:
1. ADVANCE PRODUCTS & SYSTEMS, INC.
2. CALPICO, INC.
3. METRAFLEX COMPANY (THE).
4. PIPELINE SEAL AND INSULATOR, INC.

- 1.2 SLEEVE-SEAL FITTINGS
A. MANUFACTURED PLASTIC, SLEEVE-TYPE, PLASTIC OR RUBBER WATER-STOP ASSEMBLY MADE FOR IMBEDDING IN CONCRETE SLAB OR WALL.
1.3 GROUT
A. NON-SHRINK, FACTORY PACKAGED.
1.4 SLEEVE AND SLEEVE-SEAL SCHEDULE
A. USE SLEEVES AND SLEEVE SEALS FOR THE FOLLOWING PIPING-PENETRATION APPLICATIONS:
1. INTERIOR PARTITIONS:
a. PIPING SMALLER THAN NPS 6 (DN 150): GALVANIZED-STEEL-PIPE SLEEVES, PVC-PIPE SLEEVES.
b. PIPING NPS 6 (DN 150) AND LARGER: GALVANIZED-STEEL-SHEET SLEEVES.

SECTION 230517
SECTION 230518 - ESCUTCHEONS FOR HVAC PIPING

- PART 2 - PRODUCTS
2.1 ESCUTCHEONS
A. ONE-PIECE, CAST-BRASS TYPE: WITH POLISHED, CHROME-PLATED AND ROUGH-BRASS FINISH AND SETSCREW FASTENER.
2.2 FLOOR PLATES
A. ONE-PIECE FLOOR PLATES: CAST-IRON FLANGE WITH HOLES FOR FASTENERS.
PART 3 - EXECUTION
3.1 INSTALLATION
A. INSTALL ESCUTCHEONS FOR PIPING PENETRATIONS OF WALLS, CEILINGS, AND FINISHED FLOORS.
B. INSTALL ESCUTCHEONS WITH ID TO CLOSELY FIT AROUND PIPE, TUBE, AND INSULATION OF PIPING AND WITH OD THAT COMPLETELY COVERS OPENING.
1. ESCUTCHEONS FOR NEW PIPING:
a. PIPING WITH FITTING OR SLEEVE PROTRUDING FROM WALL: ONE-PIECE, DEEP-PATTERN TYPE.
b. INSULATED PIPING: ONE-PIECE, STAMPED-STEEL TYPE.
c. BARE PIPING AT WALL AND FLOOR PENETRATIONS IN FINISHED SPACES: ONE-PIECE, CAST-BRASS TYPE WITH POLISHED, CHROME-PLATED FINISH OR STAMPED-STEEL TYPE.
d. BARE PIPING AT CEILING PENETRATIONS IN FINISHED SPACES: ONE-PIECE, CAST-BRASS TYPE WITH POLISHED, CHROME-PLATED FINISH OR STAMPED-STEEL TYPE.
3.2 FIELD QUALITY CONTROL
A. REPLACE BROKEN AND DAMAGED ESCUTCHEONS AND FLOOR PLATES USING NEW MATERIALS.
END OF SECTION 230518

SECTION 230529 - HANGERS AND SUPPORTS FOR HVAC PIPING AND EQUIPMENT

- 1.1 PERFORMANCE REQUIREMENTS
A. DELEGATED DESIGN: DESIGN TRAPEZE PIPE HANGERS AND EQUIPMENT SUPPORTS, INCLUDING COMPREHENSIVE ENGINEERING ANALYSIS BY A QUALIFIED PROFESSIONAL ENGINEER, USING PERFORMANCE REQUIREMENTS AND DESIGN CRITERIA INDICATED.
B. STRUCTURAL PERFORMANCE: HANGERS AND SUPPORTS FOR HVAC PIPING AND EQUIPMENT SHALL WITHSTAND THE EFFECTS OF GRAVITY LOADS AND STRESSES WITHIN LIMITS AND UNDER CONDITIONS INDICATED ACCORDING TO ASCE/SEI 7.
1. DESIGN SUPPORTS FOR MULTIPLE PIPES CAPABLE OF SUPPORTING COMBINED WEIGHT OF SUPPORTED SYSTEMS, SYSTEM CONTENTS, AND TEST WATER.
DESIGN OPERATING SUPPORTS CAPABLE OF SUPPORTING COMBINED OPERATING WEIGHT OF SUPPORTED EQUIPMENT AND CONNECTED SYSTEMS AND 3. DESIGN SEISMIC-RESTRAINT HANGERS AND SUPPORTS FOR PIPING AND EQUIPMENT AND OBTAIN APPROVAL FROM AUTHORITIES HAVING JURISDICTION.
1.2 SUBMITTALS
A. SHOP DRAWINGS: SIGNED AND SEALED BY A PROFESSIONAL ENGINEER
1.3 QUALITY ASSURANCE
A. AWS D1.1/D1.1M, "STRUCTURAL WELDING CODE - STEEL"
1.4 COMPONENTS
A. METAL PIPE HANGERS AND SUPPORTS: CARBON OR STAINLESS STEEL
B. FIBERGLASS PIPE HANGERS: -CLEVIS, CENTURY COMPOSITES, COOPER B-LINE
D. METAL FRAMING SYSTEMS: MFMA MANUFACTURER
E. FIBERGLASS STRUT SYSTEMS: COOPER B-LINE
F. THERMAL-HANGER SHIELD INSERTS:
G. FASTENER SYSTEMS: POWDER-ACTUATED FASTENERS OR MECHANICAL-EXPANSION ANCHORS
H. PIPE STANDS: COMPACT, LOW TYPE, SINGLE PIPE, HIGH TYPE, SINGLE PIPE, HIGH TYPE, MULTIPLE PIPES, CURB-MOUNTED TYPE
I. EQUIPMENT SUPPORTS.
END OF SECTION 230529

SECTION 230548 - VIBRATION CONTROLS FOR HVAC PIPING AND EQUIPMENT

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

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

- 1.2 FIELD QUALITY CONTROL
A. TESTING: BY EITHER: OWNER-ENGAGED AGENCY, CONTRACTOR-ENGAGED AGENCY, OR CONTRACTOR.

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

SECTION 230593 - TESTING, ADJUSTING, AND BALANCING FOR HVAC

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

- END OF SECTION 230548
END OF SECTION 230593

SECTION 230713 - DUCT INSULATION

- 1.1 QUALITY ASSURANCE
SURFACE-BURNING CHARACTERISTICS: ALL INSULATION SHALL HAVE COMPOSITE (INSULATION JACKET OR FACING AND ADHESIVE USED TO ADHERE THE FACING OR JACKET TO THE INSULATION) A FLAME-SPREAD INDEX OF 25, AND SMOKE-DEVELOPED INDEX OF 50 FOR INSULATION INSTALLED INDOOR, 75, AND SMOKE-DEVELOPED INDEX OF 150 FOR INSULATION INSTALLED OUTDOORS; ACCORDING TO ASTM E 84.
1.2 FIELD QUALITY CONTROL
A. FIELD INSPECTIONS: BY OWNER-ENGAGED AGENCY.
1.3 INDOOR DUCT AND PLENUM INSULATION SCHEDULE:
A. CONCEALED, RECTANGULAR, ROUND AND FLAT-OVAL, SUPPLY-RETURN, OUTDOOR-AND EXHAUST-AIR DUCT AND AIR PLENUM INSULATION:
B. FLEXIBLE ELASTOMERIC, MINERAL-FIBER BLANKET, MINERAL-FIBER BOARD OR POLYOLEFIN WITH MINIMUM INSTALLED THERMAL RESISTANCE AS FOLLOWS: UNCONDITIONED SPACES WITHIN BUILDING: R-6

- WITHIN BUILDING ENVELOPE ASSEMBLY: R-8
OUTSIDE OF BUILDING: R-8
1.4 ITEMS NOT INSULATED:
1. FIBROUS-GLASS DUCTS.
2. METAL DUCTS WITH DUCT LINER OR SUFFICIENT THICKNESS TO COMPLY WITH ENERGY CODE ANDASHRAE/IESNA 90.1.
3. FACTORY-INSULATED FLEXIBLE DUCTS.
4. FACTORY-INSULATED PLENUMS AND CASINGS.
5. FLEXIBLE CONNECTORS.
6. VIBRATION-CONTROL DEVICES.
7. FACTORY-INSULATED ACCESS PANELS AND DOORS.
8. DUCTS THAT HAVE INTERNAL ACOUSTICAL LINING.

- 1.5 PRODUCTS
A. THE FOLLOWING INSULATION MANUFACTURERS WILL BE ACCEPTABLE:
1. JOHNS-MANVILLE
2. OWENS-CORNING

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

SECTION 233113 - METAL DUCTS

- 1.1 CONSTRUCTION
A. EACH DUCT SYSTEM SHALL BE CONSTRUCTED FOR THE SPECIFIC SMACNA DUCT PRESSURE CLASSIFICATIONS SHOWN ON THE CONTRACT DRAWINGS. WHERE NO PRESSURE CLASSES ARE SPECIFIED BY THE DESIGNER, THE SMACNA 2-1/2 INCH WG PRESSURE CLASS IS THE BASIS OF COMPLIANCE WITH THESE STANDARDS, REGARDLESS OF THE VELOCITY IN THE DUCT.
B. ALL DUCTWORK SHALL BE CONSTRUCTED TO SMACNA 2" WG DESIGN AND NOT LESS THAN THE FOLLOWING STANDARDS:
1. DUCTWORK SHALL BE TRANSVERSELY JOINTED BY CONNECTING SEAMS OF COMPANION ANGLES, FORMED FROM 1-1/2"x1-1/2"x1/8" GALVANIZED WITH SEALING, TACK-WELDED OR RIVETED TO THE DUCT. THE ANGLE FRAME SHALL BE CONTINUOUSLY FLANGED UP INTO UPRIGHT OF ANGLE AND EACH CORNER SHALL BE FILLED IN AND GROUND SMOOTH. JOINTS SHALL BE GASKETED WITH 1/8" THICK REINFORCED GASKET OVERLAPPED AT CORNERS. GASKET SIMILAR TO 3M-1202 OR APPROVED EQUAL.
2. RECTANGULAR FITTINGS AND ALL TRANSITION PIECES FROM RECTANGULAR TO ROUND SHALL BE NO. 16 GAUGE ALL WELDED CONSTRUCTION.
3. HORIZONTAL DUCTS SHALL BE SUPPORTED ON NOT MORE THAN 6' CENTERS. VERTICAL RISERS SHALL BE SUPPORTED AT EACH FLOOR.
4. LONGITUDINAL SEAMS FOR RECTANGULAR DUCTWORK SHALL BE PITTSBURGH-CORNER SEAMS WITH SEALING, EQUAL TO BENJAMIN FOSTER NO. 30-03 INSERTED INTO SEAM. ALL SEAMS SHALL BE BRUSHED WITH NO. 30-02 AND COVERED WITH APPROVED SEALING TAPE.
5. RECTANGULAR DUCTWORK 18 GAUGE AND HEAVIER, FILLER RODS SHALL BE IN ACCORDANCE WITH SPECIFICATIONS FOR IRON AND STEEL GAS WELDING RODS, ASTM 215; ANG 45.2.
6. ALL FITTINGS SUCH AS ELBOWS, TEES, ETC., SHALL BE NO. 20 GAUGE ZINC COATED STEEL. ELBOWS SHALL BE OF FIVE (5) PIECE WELDED AIRTIGHT CONSTRUCTION.
C. WHERE LATEST EDITION OF SMACNA DOES NOT CLEARLY STATE GAUGES AND/OR STIFFENERS TO BE USED OR, WHERE SMACNA STANDARDS REQUIRE INTERPRETATION, THE FOLLOWING MINIMUM METAL GAUGES AND BRACING SHALL BE USED:

Table with 3 columns: USG, MAX. SIDE INCHES, TRANSVERSE JOINTS AND BRACING. Rows include 22 UP TO 12 S SLIP, DRIVE SLIP, ONE INCH POCKET LOCK ON 8 FOOT CENTERS; 22 13 TO 24 1"x1"x1/8" ANGLES ON 4 FOOT CENTERS; 20 25 TO 35 1"x1"x1/8" ANGLES ON 2 FOOT CENTERS.

- D. PROVIDE TAPPING IN DUCTS FOR THERMOMETERS WHERE SPECIFIED. IN ADDITION, PROVIDE AN AIRTIGHT PLUGGED TAPPING LOCATED AS FOLLOWS:
1. UPSTREAM OF EACH REHEAT COIL AND VAV BOX.
2. DOWNSTREAM OF EACH REHEAT COIL AND VAV BOX.
E. FLAT OVAL OR ROUND DUCTWORK MAY BE PROVIDED IN LEU RECTANGULAR DUCTWORK WITH THE REINFORCEMENT FOR FLAT SIDES SAME AS SPECIFIED FOR THE RECTANGULAR DUCTWORK, AND AS PER SMACNA FLAT OVAL DUCT CONSTRUCTION STANDARDS SHOWN IN FIG. 3-6 AND AS SHOWN IN FIG. 3-1 AND 3-2 FOR ROUND DUCTWORK.

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

- 1.2 MATERIALS
A. SINGLE-WALL RECTANGULAR DUCTS AND FITTINGS.
B. SINGLE-WALL ROUND AND FLAT-OVAL DUCTS AND FITTINGS.
C. SHEET METAL MATERIALS:
1. GALVANIZED SHEET STEEL.
2. STAINLESS-STEEL SHEETS.
3. ALUMINUM SHEETS.
4. FACTORY-APPLIED ANTI-MICROBIAL COATING.
D. DUCT LINER:
1. FIBROUS GLASS, TYPE I, FLEXIBLE.
a. WITH ANTI-MICROBIAL EROSION-RESISTANT COATING.
2. FLEXIBLE ELASTOMERIC.
3. NATURAL FIBER.
E. SEALANT MATERIALS:

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

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

- 1.1 PRODUCTS
A. DIFFUSERS, REGISTERS 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. METALAIR, INC.
e. NAILOR INDUSTRIES INC.
f. RUSKIN
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:

- A. GENERAL:
THE SUPPLY OF HEATING AND COOLING ENERGY TO EACH ZONE SHALL BE INDIVIDUALLY CONTROLLED BY THERMOSTATIC CONTROLS RESPONDING TO TEMPERATURE WITHIN THE ZONE. FOR THE PURPOSES OF SECTION 6-4.3.1, A DWELLING UNIT SHALL BE PERMITTED TO BE CONSIDERED A SINGLE ZONE.
B. DEAD BAND:
WHERE USED TO CONTROL BOTH HEATING AND COOLING, ZONE THERMOSTATIC CONTROLS SHALL BE CAPABLE OF PROVIDING A TEMPERATURE RANGE OR DEAD BAND OF AT LEAST 5°F WITHIN WHICH THE SUPPLY OF HEATING AND COOLING ENERGY TO THE ZONE IS SHUT OFF OR REDUCED TO A MINIMUM.
C. SETBACK CONTROLS:
THERMOSTATIC SETBACK CONTROLS SHALL BE CONFIGURED TO SET BACK OR TEMPORARILY OPERATE THE SYSTEM TO MAINTAIN ZONE TEMPERATURES DOWN TO 55°F (13°C) OR UP TO 85°F (29°C).
D. AUTOMATIC SETBACK AND SHUTDOWN.
AUTOMATIC TIME CLOCK OR PROGRAMMABLE CONTROLS SHALL BE CAPABLE OF STARTING AND STOPPING THE SYSTEM FOR SEVEN DIFFERENT DAILY SCHEDULES PER WEEK AND RETAINING THEIR PROGRAMMING AND TIME SETTING DURING A LOSS OF POWER FOR NOT FEWER THAN 10 HOURS. ADDITIONALLY, THE CONTROLS SHALL HAVE A MANUAL OVERRIDE THAT ALLOWS TEMPORARY OPERATION OF THE SYSTEM FOR UP TO 2 HOURS; A MANUALLY OPERATED TIMER CONFIGURED TO OPERATE THE SYSTEM FOR UP TO 2 HOURS; OR AN OCCUPANCY SENSOR.

SEQUENCE OF OPERATIONS

- 1) FANS: TURNED ON OR OFF THROUGH ON-OFF SWITCH AND SHALL OPERATE CONTINUOUSLY. WHERE THERE ARE DAMPERS (MOTORIZED OR FSD) IN THE DUCTWORK SYSTEM SERVED BY THE FAN, THEY SHALL BE INTERLOCKED WITH THE FAN TO OPEN WHEN THE FAN IS OPERATING ONLY. IF FSD IS INSTALLED IN THE SYSTEM, THE FAN SHALL SHUT DOWN WHENEVER THE FSD CLOSSES ON AN ALARM CONDITION.
o. TRANSFER FANS: FANS SHALL BE CONTROLLED BY A LOCAL WALL MOUNTED SWITCH.
2) RTUS: UNIT SHALL BE STARTED AND STOPPED BY WALL MOUNTED PROGRAMMABLE THERMOSTAT. DURING "ON" MODE UNIT THERMOSTAT SHALL ENERGIZE COMPRESSOR(S) AND SUPPLY FAN TO MAINTAIN ROOM SET POINT OF 75°F ADJUSTABLE; WHEN ROOM TEMPERATURE DROPS BELOW SET POINT COMPRESSOR(S) SHALL DE-ENERGIZE AND FAN SHALL REMAIN ON.

**MECHANICAL GENERAL NOTES**

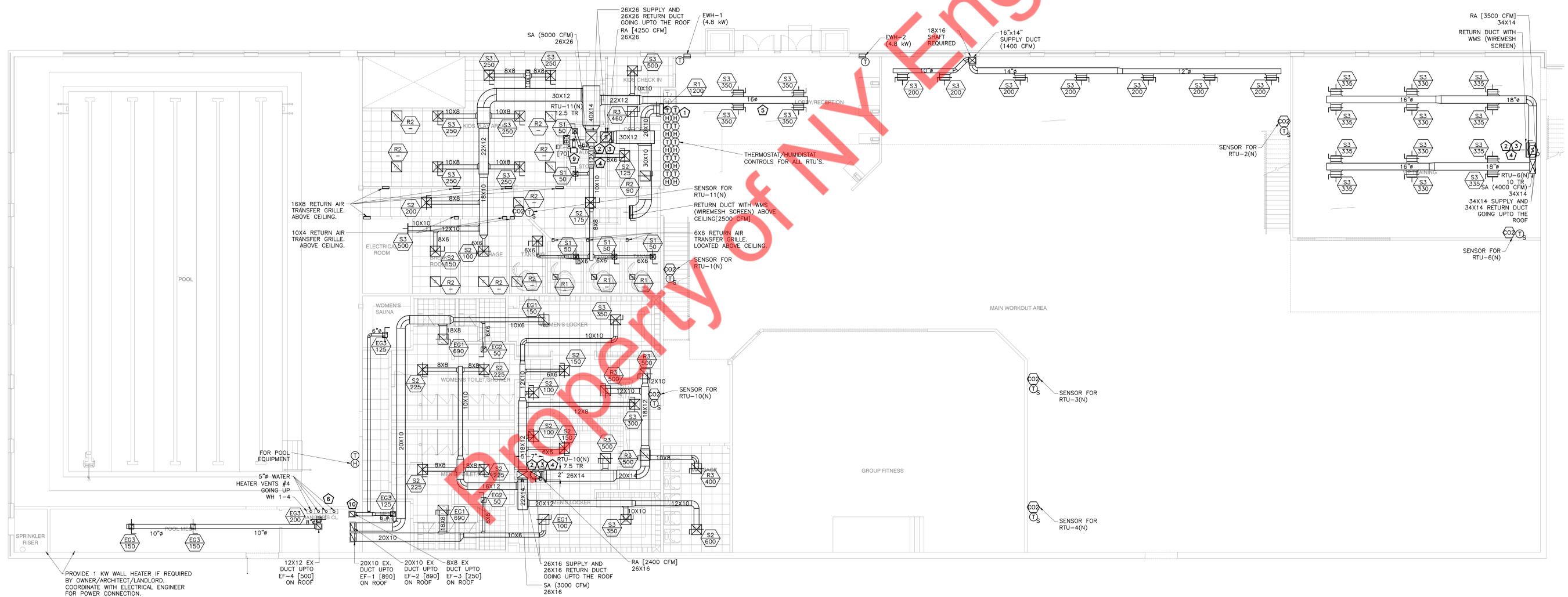
- A. CONTRACTOR SHALL BALANCE EACH DEVICE WITH THE CFM SHOWN ON PLAN.
- B. NEW DUCTWORK SHOWN ON PLAN ARE SCHEMATIC ONLY. CONTRACTOR SHALL COORDINATE WITH OTHER TRADES FOR PIPING AND DUCTWORK ROUTING, OFFSET AND RUN PIPING, DUCTWORK INSIDE THE STRUCTURE IF REQUIRED. PROVIDE ANY EXTRA PIPING, DUCTWORK, FITTINGS, INSULATIONS AND OTHER ACCESSORIES IN ORDER TO COMPLETE THE INSTALLATION.
- C. COORDINATE LOCATIONS AND SIZES OF ROOF OPENINGS WITH OWNER AND STRUCTURAL ENGINEERS.
- D. EQUIPMENT SIZES, DIMENSIONS AND REQUIRED CONNECTIONS SHALL BE VERIFIED WITH THE ACTUAL EQUIPMENT SELECTED. VENDOR DRAWINGS BEFORE FABRICATION OF DUCTWORK, PIPING ETC.
- E. DUCT SIZES SHOWN ON PLANS ARE CLEAR INSIDE AIR STREAM DIMENSIONS.
- F. CONTRACTOR SHALL COORDINATE ALL ELECTRICAL REQUIREMENTS FOR ALL HVAC BASED ON ACTUAL EQUIPMENT SELECTED PRIOR TO INSTALLATION.
- G. CONTRACTOR SHALL COORDINATE EQUIPMENT WEIGHTS AND SUPPORTS BASED ON ACTUAL EQUIPMENT SELECTED.
- H. COORDINATE WITH ALL TRADES FOR MATERIALS IN RATED AND PLENUM SPACES.
- I. 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.
- J. MOUNT DUCTWORK AS HIGH AS POSSIBLE.
- K. TEST AND BALANCE AIR SYSTEMS. PROVIDE REPORT TO G.C AND OWNER.
- L. MECHANICAL CONTRACTOR TO COORDINATE INSTALLATION OF WATER HEATER EXHAUST FLUE WITH PLUMBING CONTRACTOR.
- M. ALL EXPOSED ROUND DUCTWORK SHALL BE INTERNALLY LINED. ALL DUCTWORK DIMENSIONS ARE INSIDE CLEAR.
- N. NEW DUCTWORK IN CONCEALED AREAS MAY BE RECTANGULAR WITH EQUIVALENT CROSS SECTIONAL FLOW AREA.
- O. CONTRACTOR TO FIELD VERIFY EXISTING DUCTWORK, ASSOCIATED ACCESSORIES AND EXISTING HVAC EQUIPMENT. ALL EXISTING DUCTWORK, ASSOCIATED ACCESSORIES AND EXISTING HVAC EQUIPMENT TO BE DEMOLISHED.
- P. PROVIDE MINIMUM R-8 INSULATION (EXTERNAL) FOR OUTSIDE AIR INTAKE DUCTS. PROVIDE MINIMUM R-6 INSULATION (INTERNAL FOR EXPOSED DUCTS AND EXTERNAL FOR CONCEALED DUCTS) FOR SUPPLY & RETURN AIR DUCTS. PROVIDE ACOUSTIC INSULATION ON MAIN SUPPLY AND RETURN DUCTS UP TO 10 FT. FROM HVAC UNIT.
- Q. 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.

**CO2 SENSOR AND INSTALLATION NOTES**

- MODULATING OUTSIDE AIR DAMPER:
1. UNOCCUPIED MODE: REMAINS SHUT AT ALL TIMES DURING UNOCCUPIED MODE.
  2. OCCUPIED MODE: ENERGIZED WHEN FAN IS RUNNING, CLOSED WHEN FAN IS NOT RUNNING. DAMPER SHALL MODULATE BASED ON SIGNAL FROM CO2 SENSORS TO MAINTAIN LEVEL AT OR BELOW 600 PPM ABOVE AMBIENT LEVEL. THE AMBIENT LEVEL CAN BE ASSUMED TO BE 400 PPM. RECOMMENDED LEVEL IS 400 PPM.
  3. COMMERCIAL SENSOR UTILIZES A SIGNAL BEAM ABSORPTION INFRARED DIFFUSION SAMPLE METHOD FOR CO2 DETECTION. USING CO2 AS AN INDICATOR OF OCCUPANCY WILL ALLOW VENTILATION BASED ON ACTUAL OCCUPANCY WHILE MAINTAINING CODE MINIMUM VENTILATION.
  4. SENSOR WILL MODULE OUTSIDE AIR QUANTITIES THROUGH ECONOMIZER DAMPER ACTUATOR AND WILL CONTROL AMOUNT BETWEEN 0 AND 100% OUTSIDE AIR.
  5. SENSOR SHALL BE PROVIDED WITH ROOFTOP AIR CONDITIONING UNIT AND INSTALL PER MANUFACTURERS REQUIREMENTS.
  6. CO2 SENSORS SHALL BE LOCATED WITHIN THE BREATHING ZONE BETWEEN 3' TO 6' ABOVE FINISHED FLOOR.

**MECHANICAL PLAN KEY NOTES:**

1. NEAR FRONT DESK MECHANICAL CONTRACTOR TO COORDINATE T-STAT LOCATION WITH TENANT. INSTALL AND WIRE NEW 7-DAY PROGRAMMABLE THERMOSTAT WITH RESPECTIVE RTU.
2. EXTEND FULL SIZE SUPPLY & RETURN DUCTWORK FROM ROOFTOP UNITS TO SPACE. EXTEND AS SHOWN. ACOUSTICALLY LINE THE FIRST 10'-0" OF BOTH SUPPLY AND RETURN MAIN DUCTS.
3. SMOKE DETECTOR SHALL BE FURNISHED/INSTALLED BY MECHANICAL CONTRACTOR AND WIRED BY ELECTRICAL CONTRACTOR TO SHUT DOWN CORRESPONDING RTU UNDER ALARM CONDITIONS. ALL WIRING SHALL BE IN CONDUIT PER N E C SMOKE DETECTOR SHALL BE SYSTEM SENSOR MODEL DH100ACDCLP OR EQUAL.
4. PROVIDE REMOTE TEMP SENSOR MOUNTED IN RETURN DUCT AND WIRE BACK TO T-STAT NEAR FRONT DESK.
5. SUPPLY DIFFUSER LOCATED JUST BELOW ROOF BAR JOIST. PROVIDE VOLUME DAMPER IN SA AND RA DUCTS. PROVIDE MINIMUM OF 4'-0" RA DUCT WITH FULL SIZE OPENING WITH 1/4"x1/4" HARD WIRE SCREEN. COORDINATE LOCATION AND ELEVATION OF SUPPLY AND RETURN WITH THE FINAL LOCATION OF SUSPENDED LIGHTING FIXTURES. TYPICAL FOR ALL RTU'S.
6. GAS FIRED WATER HEATERS BY PLUMBING CONTRACTOR.
7. 5" EXHAUST VENT FOR HOT WATER HEATERS. TERMINATE VENT AT LEAST 36" ABOVE ROOF. INSTALL AS PER MANUFACTURERS RECOMMENDATIONS.
8. MD TO INTERLOCK WITH EXHAUST FANS.
9. CEILING MOUNTED EXHAUST FAN. INTERCONNECT EXHAUST FAN WITH LIGHTS IN THIS ROOM. REFER TO ELECTRICAL LIGHTING PLAN. FAN SHALL BE SUSPENDED FROM STRUCTURE ABOVE. VERIFY EXACT LOCATION OF STRUCTURAL MEMBERS PRIOR TO INSTALLATION.
10. ROOF MOUNTED EXHAUST FAN. INTERCONNECT EXHAUST FAN WITH SAUNA EQUIPMENT IN THIS ROOM. VERIFY EXACT LOCATION OF STRUCTURAL MEMBERS PRIOR TO INSTALLATION.



**MECHANICAL GENERAL NOTES**

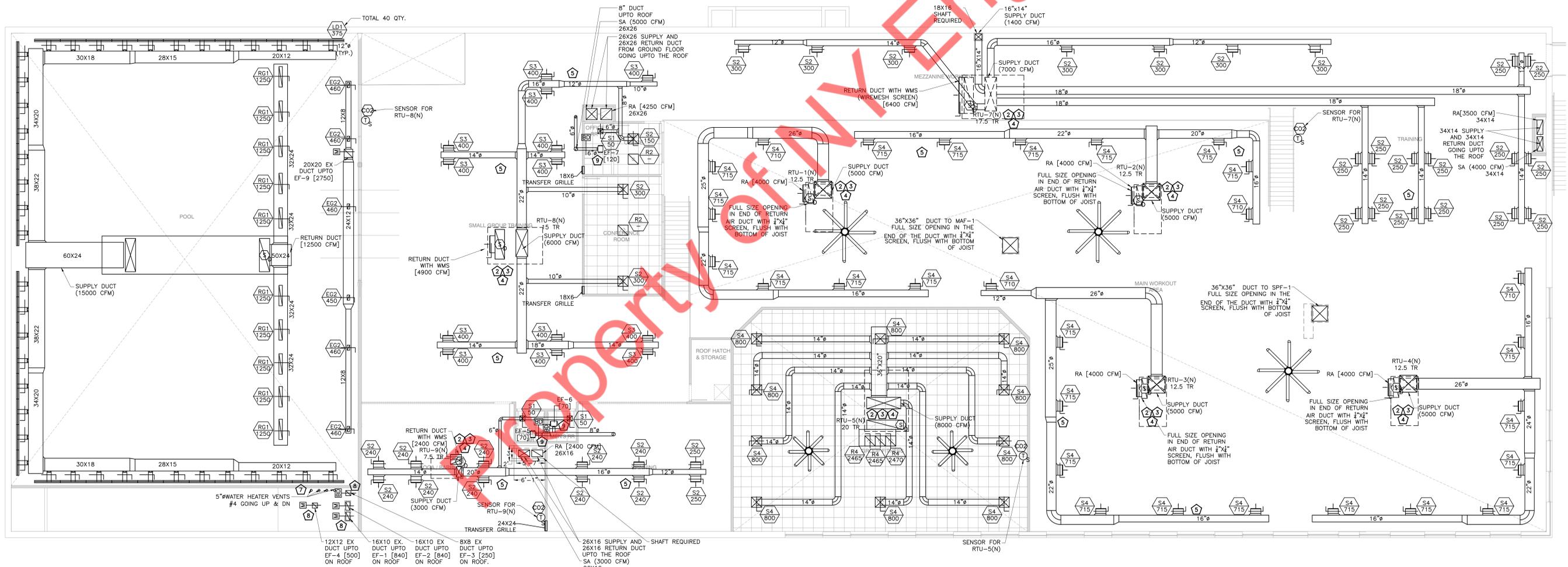
- A. CONTRACTOR SHALL BALANCE EACH DEVICE WITH THE CFM SHOWN ON PLAN.
- B. NEW DUCTWORK SHOWN ON PLAN ARE SCHEMATIC ONLY. CONTRACTOR SHALL COORDINATE WITH OTHER TRADES FOR PIPING AND DUCTWORK ROUTING, OFFSET AND RUN PIPING, DUCTWORK INSIDE THE STRUCTURE IF REQUIRED, PROVIDE ANY EXTRA PIPING, DUCTWORK, FITTINGS, INSULATIONS AND OTHER ACCESSORIES IN ORDER TO COMPLETE THE INSTALLATION.
- C. COORDINATE LOCATIONS AND SIZES OF ROOF OPENINGS WITH OWNER AND STRUCTURAL ENGINEERS.
- D. EQUIPMENT SIZES, DIMENSIONS AND REQUIRED CONNECTIONS SHALL BE VERIFIED WITH THE ACTUAL EQUIPMENT SELECTED VENDOR DRAWINGS BEFORE FABRICATION OF DUCTWORK, PIPING ETC.
- E. DUCT SIZES SHOWN ON PLANS ARE CLEAR INSIDE AIR STREAM DIMENSIONS.
- F. CONTRACTOR SHALL COORDINATE ALL ELECTRICAL REQUIREMENTS FOR ALL HVAC BASED ON ACTUAL EQUIPMENT SELECTED PRIOR TO INSTALLATION.
- G. CONTRACTOR SHALL COORDINATE EQUIPMENT WEIGHTS AND SUPPORTS BASED ON ACTUAL EQUIPMENT SELECTED.
- H. COORDINATE WITH ALL TRADES FOR MATERIALS IN RATED AND PLENUM SPACES.
- I. 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.
- J. MOUNT DUCTWORK AS HIGH AS POSSIBLE.
- K. TEST AND BALANCE AIR SYSTEMS. PROVIDE REPORT TO G.C AND OWNER.
- L. MECHANICAL CONTRACTOR TO COORDINATE INSTALLATION OF WATER HEATER EXHAUST FLUE WITH PLUMBING CONTRACTOR.
- M. ALL EXPOSED ROUND DUCTWORK SHALL BE INTERNALLY LINED. ALL DUCTWORK DIMENSIONS ARE INSIDE CLEAR.
- N. NEW DUCTWORK IN CONCEALED AREAS MAY BE RECTANGULAR WITH EQUIVALENT CROSS SECTIONAL FLOW AREA.
- O. CONTRACTOR TO FIELD VERIFY EXISTING DUCTWORK, ASSOCIATED ACCESSORIES AND EXISTING HVAC EQUIPMENT. ALL EXISTING DUCTWORK, ASSOCIATED ACCESSORIES AND EXISTING HVAC EQUIPMENT TO BE DEMOLISHED.
- P. PROVIDE MINIMUM R-8 INSULATION (EXTERNAL) FOR OUTSIDE AIR INTAKE DUCTS. PROVIDE MINIMUM R-6 INSULATION (INTERNAL FOR EXPOSED DUCTS AND EXTERNAL FOR CONCEALED DUCTS) FOR SUPPLY & RETURN AIR DUCTS. PROVIDE ACOUSTIC INSULATION ON MAIN SUPPLY AND RETURN DUCTS UP TO 10 FT. FROM HVAC UNIT.
- Q. 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.

**CO2 SENSOR AND INSTALLATION NOTES**

- MODULATING OUTSIDE AIR DAMPER:
1. UNOCCUPIED MODE: REMAINS SHUT AT ALL TIMES DURING UNOCCUPIED MODE.
  2. OCCUPIED MODE: ENERGIZED WHEN FAN IS RUNNING, CLOSED WHEN FAN IS NOT RUNNING. DAMPER SHALL MODULATE BASED ON SIGNAL FROM CO2 SENSORS TO MAINTAIN LEVEL AT OR BELOW 600 PPM ABOVE AMBIENT LEVEL. THE AMBIENT LEVEL CAN BE ASSUMED TO BE 400 PPM. RECOMMENDED LEVEL IS 400 PPM.
  3. COMMERCIAL SENSOR UTILIZES A SIGNAL BEAM ABSORPTION INFRARED DIFFUSION SAMPLE METHOD FOR CO2 DETECTION. USING CO2 AS AN INDICATOR OF OCCUPANCY WILL ALLOW VENTILATION BASED ON ACTUAL OCCUPANCY WHILE MAINTAINING CODE MINIMUM VENTILATION.
  4. SENSOR WILL MODULATE OUTSIDE AIR QUANTITIES THROUGH ECONOMIZER DAMPER ACTUATOR AND WILL CONTROL AMOUNT BETWEEN 0 AND 100% OUTSIDE AIR.
  5. SENSOR SHALL BE PROVIDED WITH ROOFTOP AIR CONDITIONING UNIT AND INSTALL PER MANUFACTURERS REQUIREMENTS.
  6. CO2 SENSORS SHALL BE LOCATED WITHIN THE BREATHING ZONE BETWEEN 3' TO 6' ABOVE FINISHED FLOOR.

**MECHANICAL PLAN KEY NOTES:**

1. NEAR FRONT DESK MECHANICAL CONTRACTOR TO COORDINATE T-STAT LOCATION WITH TENANT. INSTALL AND WIRE NEW 7-DAY PROGRAMMABLE THERMOSTAT WITH RESPECTIVE RTU.
2. EXTEND FULL SIZE SUPPLY & RETURN DUCTWORK FROM ROOFTOP UNITS TO SPACE. EXTEND AS SHOWN. ACOUSTICALLY LINE THE FIRST 10'-0" OF BOTH SUPPLY AND RETURN MAIN DUCTS.
3. SMOKE DETECTOR SHALL BE FURNISHED/INSTALLED BY MECHANICAL CONTRACTOR AND WIRED BY ELECTRICAL CONTRACTOR TO SHUT DOWN CORRESPONDING RTU UNDER ALARM CONDITIONS. ALL WIRING SHALL BE IN CONDUIT PER N E C SMOKE DETECTOR SHALL BE SYSTEM SENSOR MODEL D1100ACDCLP OR EQUAL.
4. PROVIDE REMOTE TEMP SENSOR MOUNTED IN RETURN DUCT AND WIRE BACK TO T-STAT NEAR FRONT DESK.
5. SUPPLY DIFFUSER LOCATED JUST BELOW ROOF BAR JOIST. PROVIDE VOLUME DAMPER IN SA AND RA DUCTS. PROVIDE MINIMUM OF 4"-0" RA DUCT WITH FULL SIZE OPENING WITH 1/4"x1/4" HARD WIRE SCREEN. COORDINATE LOCATION AND ELEVATION OF SUPPLY AND RETURN WITH THE FINAL LOCATION OF SUSPENDED LIGHTING FIXTURES. TYPICAL FOR ALL RTU'S.
6. GAS FIRED WATER HEATERS BY PLUMBING CONTRACTOR.
7. 5" EXHAUST VENT FOR HOT WATER HEATERS. TERMINATE VENT AT LEAST 36" ABOVE ROOF. INSTALL AS PER MANUFACTURERS RECOMMENDATIONS.
8. MD TO INTERLOCK WITH EXHAUST FANS.
9. CEILING MOUNTED EXHAUST FAN. INTERCONNECT EXHAUST FAN WITH LIGHTS IN THIS ROOM. REFER TO ELECTRICAL LIGHTING PLAN. FAN SHALL BE SUSPENDED FROM STRUCTURE ABOVE. VERIFY EXACT LOCATION OF STRUCTURAL MEMBERS PRIOR TO INSTALLATION.

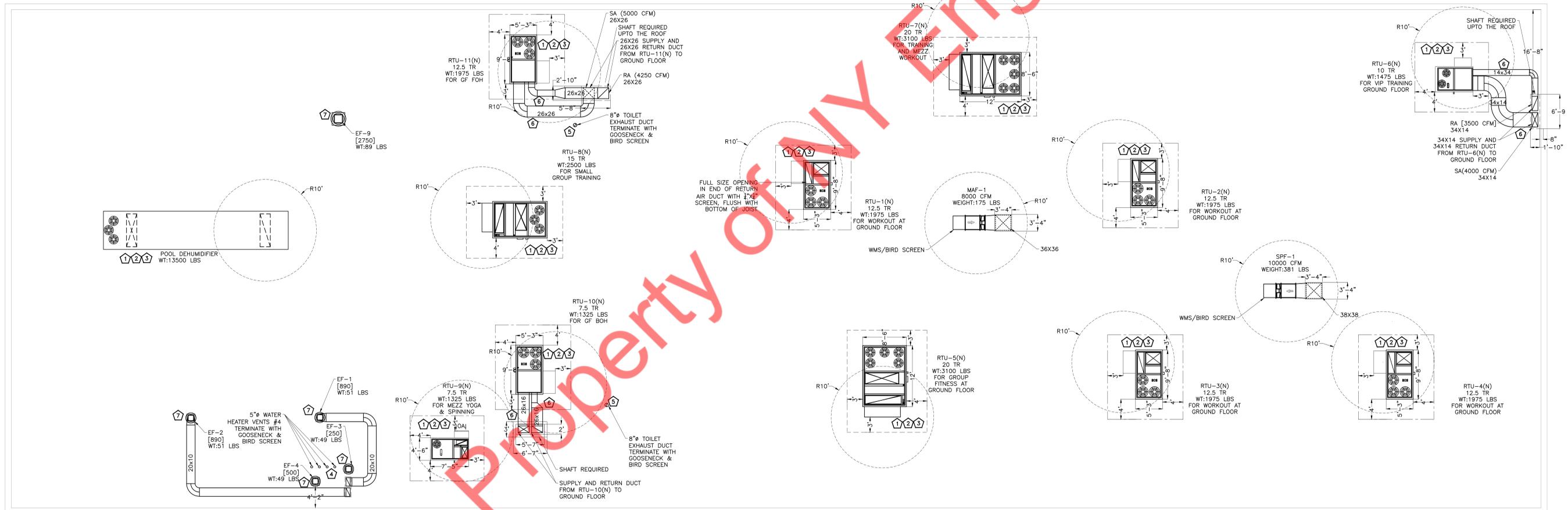


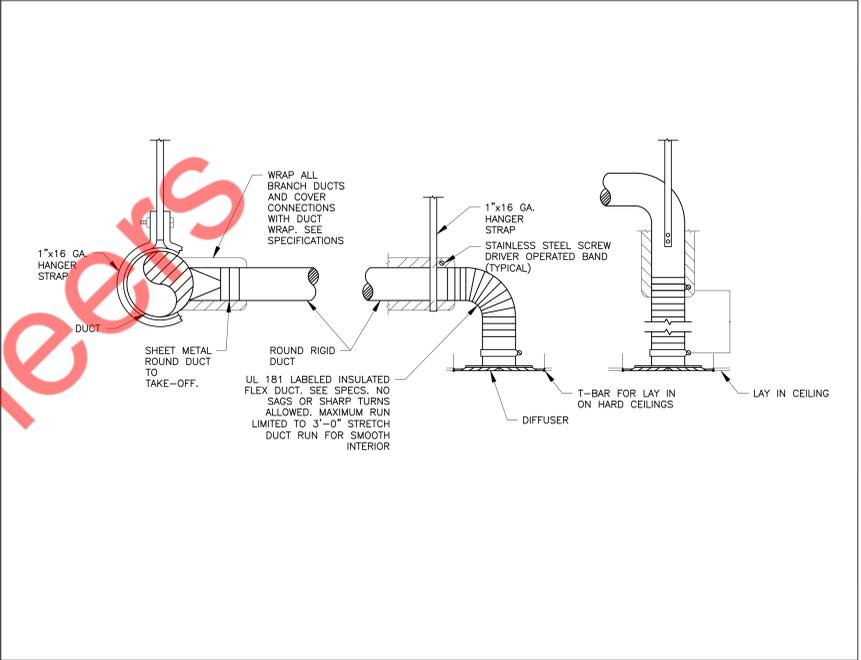
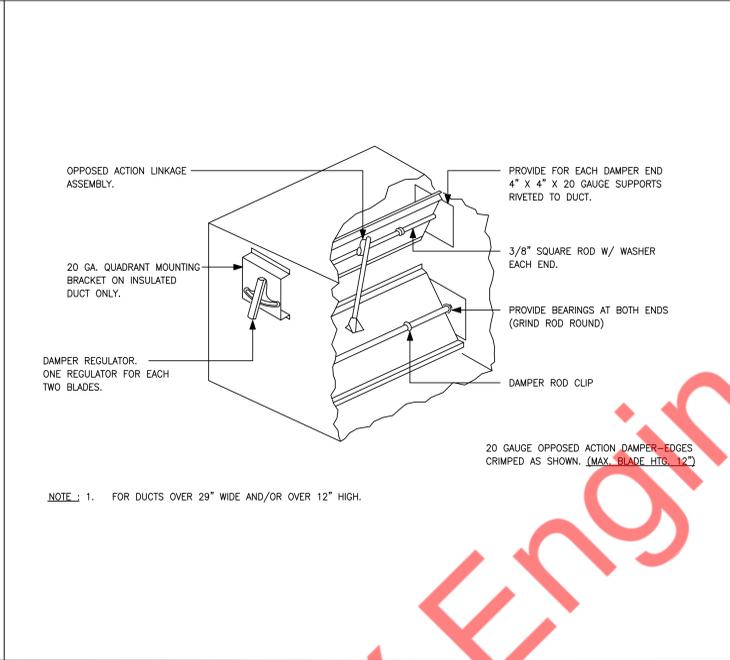
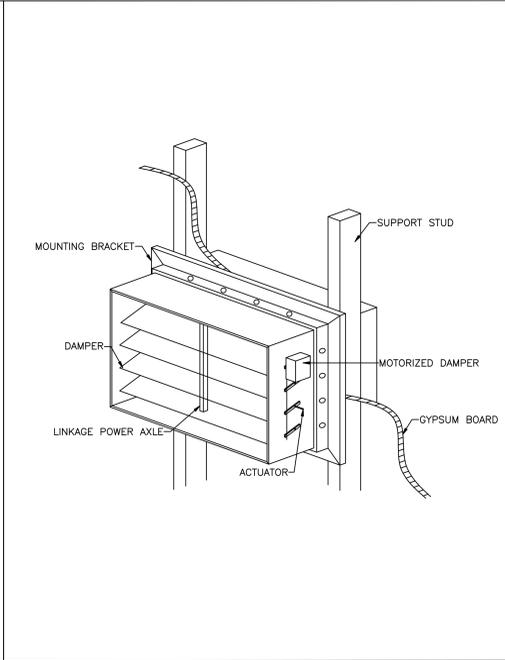
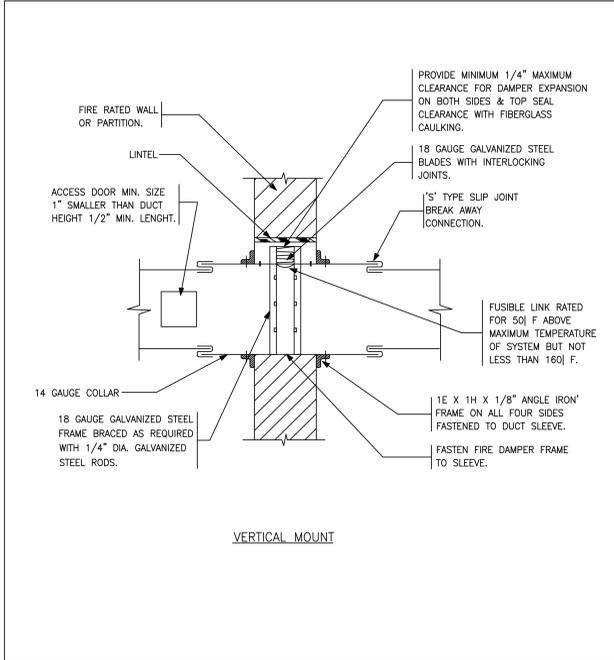
**MECHANICAL GENERAL NOTES**

- A. COORDINATE LOCATIONS AND SIZES OF ROOF OPENINGS WITH OWNER AND STRUCTURAL ENGINEERS.
- B. EQUIPMENT SIZES, DIMENSIONS AND REQUIRED CONNECTIONS SHALL BE VERIFIED WITH THE ACTUAL EQUIPMENT SELECTED. VENDOR DRAWINGS BEFORE FABRICATION OF DUCTWORK, PIPING ETC.
- C. DUCT SIZES SHOWN ON PLANS ARE CLEAR INSIDE AIR STREAM DIMENSIONS.
- D. CONTRACTOR SHALL COORDINATE ALL ELECTRICAL REQUIREMENTS FOR ALL HVAC BASED ON ACTUAL EQUIPMENT SELECTED PRIOR TO INSTALLATION.
- E. COORDINATE WITH ALL TRADES FOR MATERIALS IN RATED AND PLENUM SPACES.
- F. 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.
- G. TEST AND BALANCE AIR SYSTEMS. PROVIDE REPORT TO GENERAL CONTRACTOR AND OWNER.
- H. M.C TO COORDINATE INSTALLATION OF WATER HEATER EXHAUST FLUE WITH PLUMBING CONTRACTOR.

**MECHANICAL ROOF PLAN KEY NOTES:**

- 1 CONTRACTOR TO CONNECT CONDENSATE DRAIN FROM ALL RTUS TO NEAREST ROOF DRAIN OR DOWN SPOUTS.
- 2 COORDINATE FINAL LOCATION OF EQUIPMENT WITH STRUCTURAL DRAWINGS.
- 3 EXHAUST TERMINATION TO BE 10' AWAY FROM ANY OUTDOOR INTAKE OPENING.
- 4 5" EXHAUST VENTS FROM THE HOT WATER HEATERS BELOW. TERMINATE AT LEAST 36" ABOVE ROOF WITH ALL REQUIRED ACCESSORIES RECOMMENDED BY MANUFACTURER.
- 5 8" EXHAUST DUCT UP THROUGH ROOF WITH WITH GOOSENECK, WEATHER SKIRT, AND BIRD SCREEN. MAINTAIN A MINIMUM OF 10'-0" FROM ALL OUTSIDE AIR INTAKES AND TERMINATE 36" ABOVE ROOF.
- 6 ALL SUPPLY & RETURN DUCT EXPOSED TO AMBIENT TO BE INSULATED ALONG WITH WEATHER PROOF COATING/PANTING.
- 7 ROOF MOUNTED EXHAUST FAN. VERIFY EXACT LOCATION OF STRUCTURAL MEMBERS PRIOR TO INSTALLATION.



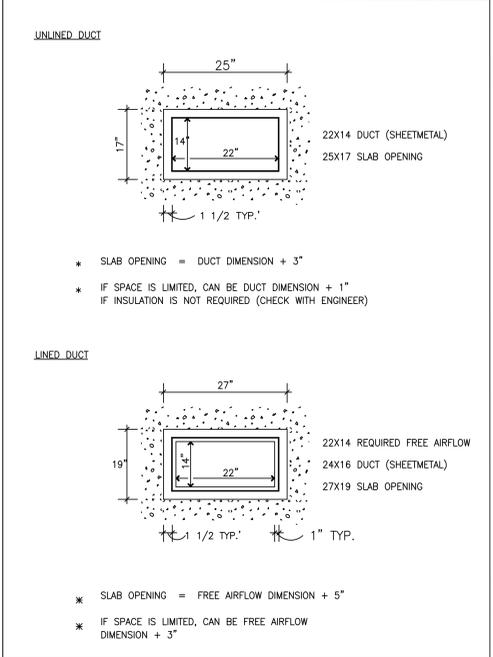
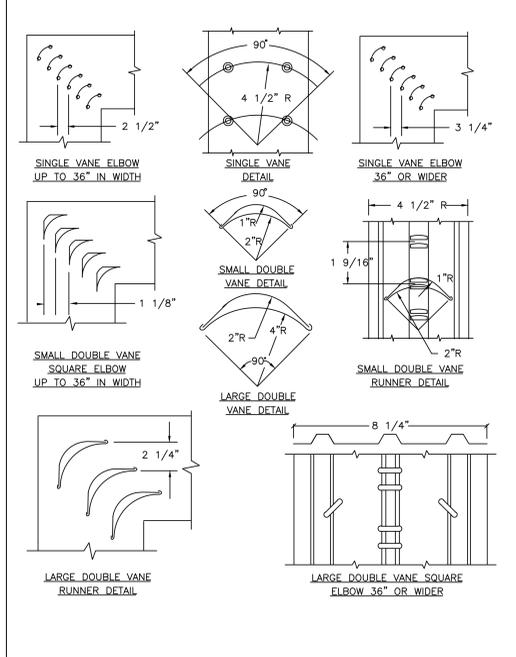
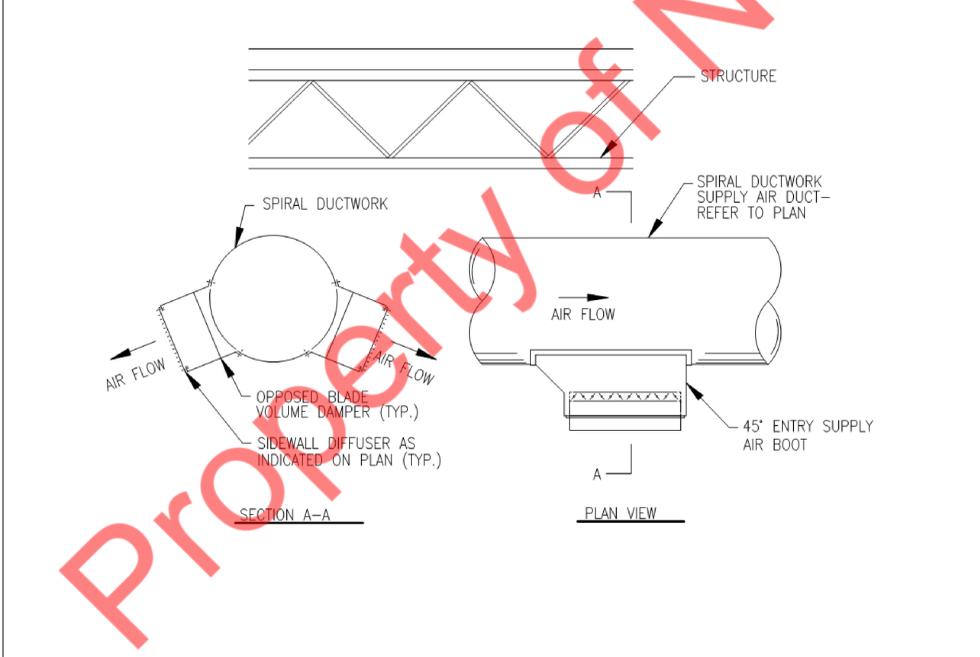
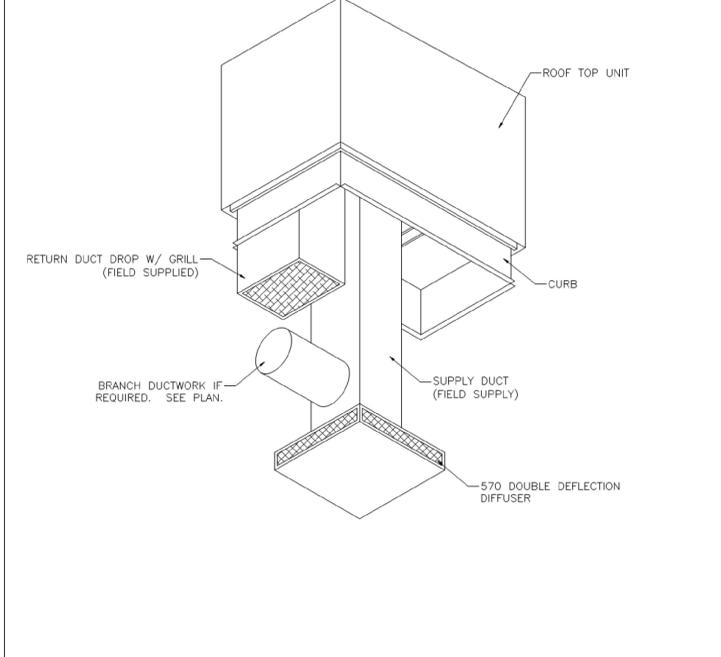


1 DAMPER LOW PRESSURE SYSTEM  
M2.1 N.T.S. DETAIL OF SHUTTER TYPE FIRE

2 MOTORIZED DAMPER DETAIL  
M2.1 N.T.S.

3 LOW PRESSURE BALANCING DAMPER  
M2.1 N.T.S.

4 TYPICAL DIFFUSER CONNECTION DETAIL  
M2.1 N.T.S.

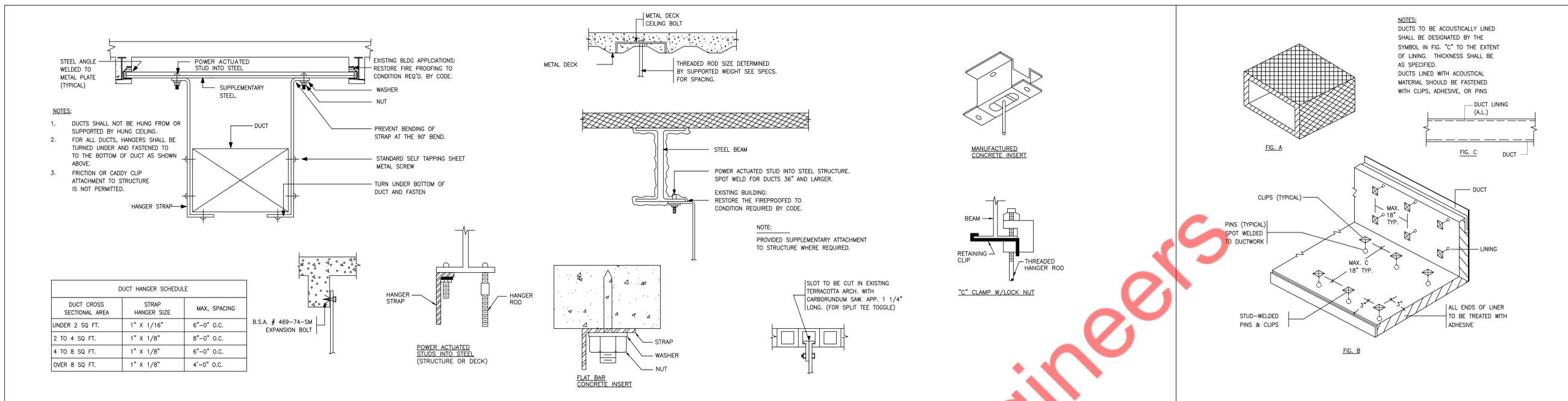


5 570 DIFFUSER DETAIL  
M2.1 N.T.S.

6 SIDE WALL DIFFUSER DETAIL  
M2.1 N.T.S.

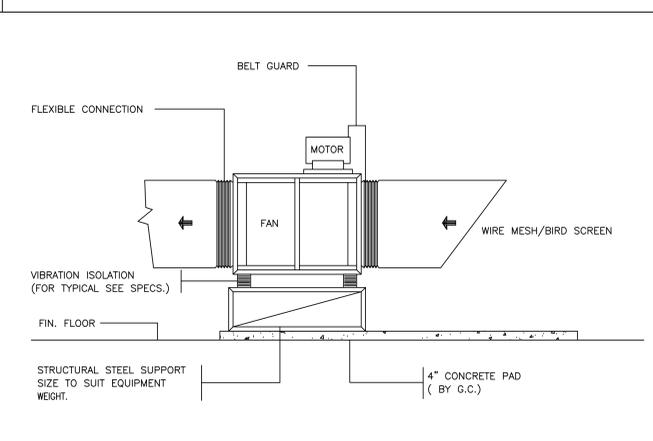
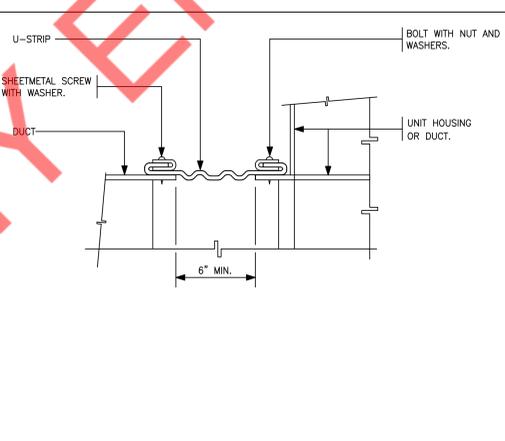
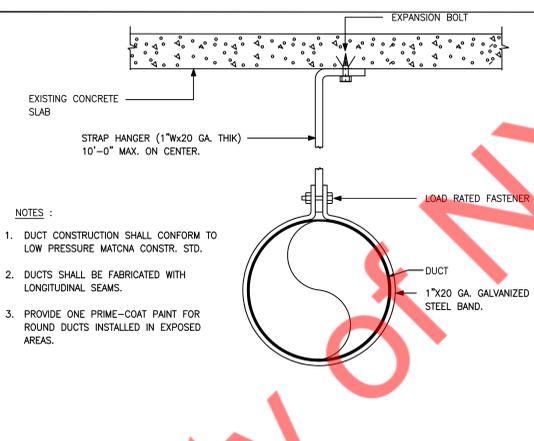
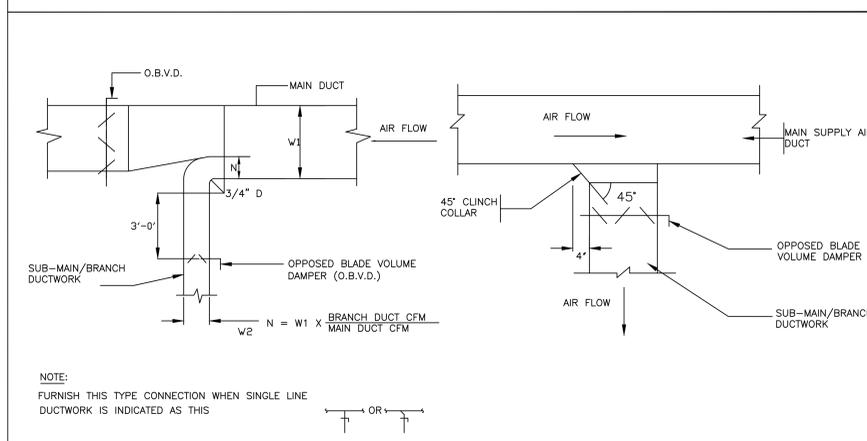
7 LOW VELOCITY DUCTWORK ELBOWS  
M2.1 N.T.S.

8 DUCT SIZE/SLAB OPENING CONVENTION  
M2.1 N.T.S.



1 DUCT HANGING DETAILS  
M2.2 N.T.S

2 ACUSTICAL TREATMENT DUCT LINING  
M2.2 N.T.S

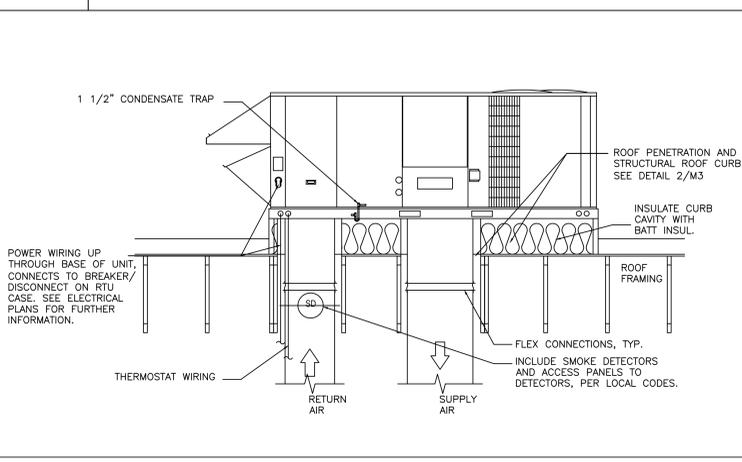
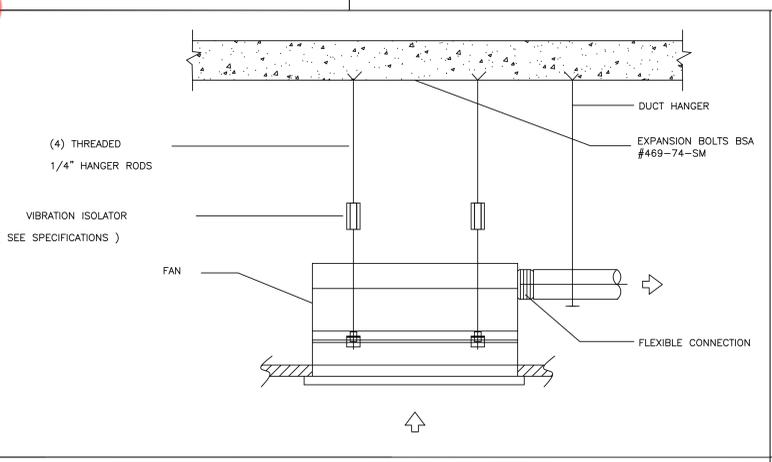
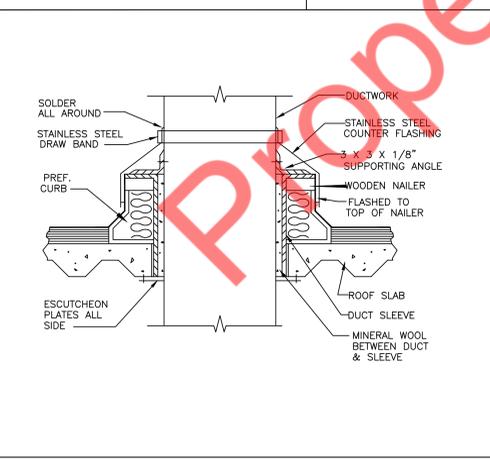
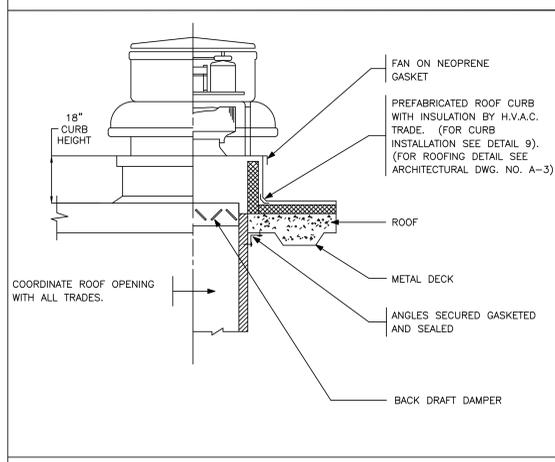


3 SUPPLY AIR DUCTWORK SUB-MAIN/BRANCH DUCT CONNECTION  
M2.2 N.T.S

4 METHOD OF HANGING DUCTWORK  
M2.2 N.T.S

5 FLEXIBLE CONNECTION (DUCT-EQUIPMENT)  
M2.2 N.T.S

6 FLOOR MOUNTED AXIAL FAN  
M2.2 N.T.S



7 DOWN BLAST FAN  
M2.2 N.T.S

8 DUCT PENETRATION DETAIL THROUGH ROOF  
M2.2 N.T.S

9 CEILING FAN HANGING SUPPORT DETAIL  
M2.2 N.T.S

10 TYPICAL ROOF TOP UNIT DETAILS  
M2.2 N.T.S

ROOF TOP UNIT SCHEDULE																						
UNIT ID	MANUFACTURER	MODEL	AREA SERVED	NOMINAL TONS	SUPPLY FAN			HEATING CAPACITY		STEADY STATE EFFICIENCY	COOLING CAPACITY				ELECTRICAL			EER/EEER	OPERATING WEIGHT (LBS.)	REMARKS		
					SUPPLY CFM	OUTSIDE AIR CFM	MAX. ESP (IN. OF W.G.)	INPUT MBH	OUTPUT MBH		TOTAL MBH	SENSIBLE MBH	AMBIENT TEMP. DB (°F)	ENTERING TEMP. DB / WB (°F)	STAGES	VOLTS	PHASE				MCA (A)	MCB (A)
RTU-1 (N)	CARRIER	48HCDE14	SEE PLAN	12.5	5000	1000	1	150	120	80%	151.5	118.5	95	80/67	2	460	3	28	35	12.2/13.9	1975	1-19
RTU-2 (N)	CARRIER	48HCDE14	SEE PLAN	12.5	5000	1000	1	150	120	80%	151.5	118.5	95	80/67	2	460	3	28	35	12.2/13.9	1975	1-19
RTU-3 (N)	CARRIER	48HCDE14	SEE PLAN	12.5	5000	1000	1	150	120	80%	151.5	118.5	95	80/67	2	460	3	28	35	12.2/13.9	1975	1-19
RTU-4 (N)	CARRIER	48HCDE14	SEE PLAN	12.5	5000	1000	1	150	120	80%	151.5	118.5	95	80/67	2	460	3	28	35	12.2/13.9	1975	1-19
RTU-5 (N)	CARRIER	48HCDE24	SEE PLAN	20	8000	600	1	220	178	81%	249.6	187.1	95	80/67	2	460	3	51.5	60	12.0/13.8	3100	1-19
RTU-6 (N)	CARRIER	48HCDE11	SEE PLAN	10	4000	500	1	180	148	82%	119.8	92.5	95	80/67	2	460	3	27	30	12.0/14.3	1475	1-19
RTU-7 (N)	CARRIER	48HCDE20	SEE PLAN	17.5	7000	600	1	220	178	81%	244.6	175.2	95	80/67	2	460	3	51.5	60	12.0/13.6	3100	1-19
RTU-8 (N)	CARRIER	48HCDE17	SEE PLAN	15	6000	1100	1	220	178	81%	183.4	138.5	95	80/67	2	460	3	43	50	12.0/13.5	2700	1-19
RTU-9 (N)	CARRIER	48HDEE08	SEE PLAN	7.5	3000	600	1	125	103	82%	93.3	72.2	95	80/67	2	460	3	21	25	12.0/13.8	1325	1-19
RTU-10 (N)	CARRIER	48HDEE08	SEE PLAN	7.5	3000	600	1	125	103	82%	93.3	72.2	95	80/67	2	460	3	21	25	12.0/13.8	1325	1-19
RTU-11 (N)	CARRIER	48HCDE14	SEE PLAN	12.5	5000	750	1	150	120	80%	151.5	118.5	95	80/67	2	460	3	28	35	12.2/13.9	1975	1-19

**NOTES:**  
1. ALL EQUIPMENT MUST BE HIGH EFFICIENT, MEETING OR EXCEEDING THE BRANDS MINIMUM REQUIREMENTS.  
2. ELECTRICAL CONNECTION TO BE SINGLE POINT AND TO BE THROUGH THE BOTTOM OF THE UNIT.  
3. DRY BULB & ENTHALPY ECONOMIZER WITH BAROMETRIC RELIEF / 25% MANUAL OUTSIDE AIR DAMPER ASSEMBLY WITH HOOD ( ZONE "E" ONLY ) PROVIDE FDD.  
4. PROVIDE DISCONNECT SWITCH AND AN UNPOWERED GFC RECEPTACLE.  
5. 14" ROOF CURB - CONTRACTOR SHALL FIELD INSULATE. SHIP ASAP AHEAD OF THE UNIT.  
6. CONDENSATE DRAIN WITH 2" DEEP VENTED TRAP DISCHARGE TO SPLASH BLOCK ON ROOF.  
7. CABINET WITH 1/2" FIBERGLASS INSULATION.  
8. UNIT SHALL BE COMPLETE WITH GAS HEATING SECTION. GAS REGULATOR TO RECEIVE (4.5-14") GAS PRESSURE FROM MAIN.  
9. WIRE, 24 VAC, AUTOMATIC CHANGEVER, 2-STAGE HEAT / COOL, REMOTELY PROGRAMMABLE THERMOSTAT.  
10. REMOTE SENSORS SHALL BE PROVIDED IN SPACE WIRED BACK TO PROGRAMMABLE, 24 HOUR, 7 DAY, THERMOSTATS.  
11. ANTI SHORT CYCLE TIMER.  
12. THROWAWAY 2" FILTERS (MERV 8).  
13. WHERE REQUIRED, PROVIDE LOW AMBIENT COOLING CAPABILITY DOWN TO 0 DEGREES F.  
14. ALL COMPRESSORS WITH 5 YEAR WARRANTY.  
15. RETURN AND / OR SUPPLY AIR SMOKE DETECTOR - UNIT MOUNTED  
16. VFD SUPPLY FAN  
17. UNIT INSTALLED WITH "HUMIDI-MIZER" DEHUMIDIFICATION SYSTEM. PROVIDE HUMIDITY SENSOR NEXT TO THERMOSTAT.  
18. PLUMBING CONTRACTOR TO COORDINATE EXACT GAS REQUIREMENTS OF RTU'S INSTALLED ON SITE.  
19. PROVIDE CO2 SENSOR, DEMAND CONTROL VENTILATION AND POWER EXHAUST.

SMOKE PURGE FAN SCHEDULE																					
TAG	QTY	LOCATION	AREA SERVED	MAKE	MODEL	TYPE	DRIVE	AIRFLOW (CFM)	EXTERNAL STATIC PRESSURE (IN. WG)	FAN RPM	WHEEL DIAMETER (IN.)	WEIGHT (LBS)	SOUND DATA			MOTOR DATA				REMARKS / NOTES	
													INLET DB	BHP	HP	FLA (AMPS)	ENCLOSURE	VOLTS	PHASE		HZ
MAF-1	1	ROOF	WORKOUT	GREENHECK	AX-63-160-0423	TUBE AXIAL INLINE	DIRECT	8,000	0.5	1,770	25	175	74	1.55	2	3.4	TEFC	460	3	60	NEMA-3R DISCONNECT, PERMATECTOR COATING, BOLTED INSPECTION DOOR, 12" CURB, ALUMINIUM BUTTERFLY DAMPER BLADES
SPF-1	1	ROOF	WORKOUT	GREENHECK	AX-80-190-0418	TUBE AXIAL INLINE	DIRECT	10,000	0.5	1,170	33	381	71	1.43	1.5	3	TEFC	460	3	60	NEMA-3R DISCONNECT, PERMATECTOR COATING, BOLTED INSPECTION DOOR, 12" CURB, ALUMINIUM BUTTERFLY DAMPER BLADES

**NOTES:**  
1. FANS SELECTED SPECIFICALLY BASED ON SOUND AND UPWARD MOBILITY OF 25% IN CLASS, FAN RPM, AND MOTOR HP (WHERE POSSIBLE).  
2. ALL FANS SHALL BE UL/CUL-705 LISTED "POWER VENTILATORS."  
3. ALL MOTORS 1 HP AND LARGER SHALL BE NEMA PREMIUM EFFICIENCY - MEETS NEMA TABLE 12-12.  
4. MOTOR VOLTAGE SHALL BE COORDINATED BY CONTRACTOR PRIOR TO RELEASE.  
5. MOTORS SHALL BE PROVIDED WITH DISCONNECT SWITCHES AND APPROPRIATE ENCLOSURE BASED ON LOCATION AND APPLICATION.  
6. ORIENTATION INCLUDING ARRANGEMENT, ROTATION AND/OR DISCHARGE SHALL BE COORDINATED BY CONTRACTOR PRIOR TO RELEASE.  
7A. FAN CONTROLLED BY YASKAWA HV600 VFD WITH KEYPAD IN UL 1 [3R] ENCLOSURE. VFD & FAN SHALL BE PACKAGED TO VERIFY COMPATIBILITY.  
7B. FAN CONTROLLED BY YASKAWA HV600 VFD WITH INPUT CIR. BREAKER & 3 CONTRACTOR BYPASS (SERVICE SWITCH WILL NOT BE ACCEPTED). SEE FAN SCHEDULE REFERENCE SHEET FOR MORE INFO.  
8. ALL VFD RATED MOTORS SHALL BE PROVIDED WITH CLASS F INSULATION  
9. VFD START-UP TO BE PERFORMED BY FACTORY AUTHORIZED YASKAWA TECHNICIAN TO VERIFY COMPATIBILITY WITH GREENHECK FAN.  
10. FANS SHALL BE TIED WITH FIRE ALARM SYSTEM. CO-ORDINATE WITH FIRE ALARM CONTRACTOR FOR SIGNAL.  
11. MAF SHALL BE SELECTED FOR MAKE-UP AIR APPLICATION IN CASE OF FIRE. SPF SHALL BE SELECTED FOR SMOKE PURGE APPLICATION IN CASE OF FIRE.

AIR TERMINAL DEVICES SCHEDULE					
TAG	SIZE (IN.)	DESCRIPTION	BASIS OF DESIGN		NOTES
			MANUFACTURER	MODEL	
S1	12X12	SUPPLY AIR DIFFUSER	TITUS	TDC-AA	1,2,3,4,5,6,7
S2	24X24	SUPPLY AIR DIFFUSER	TITUS	TDC-AA	1,2,3,4,5,6,7
S3	24X10	DOUBLE DEFLECTION DUCT MOUNTED GRILLE	TITUS	S300FL	1,2,3,4,5,6,7,8
S4	12X10	DOUBLE DEFLECTION WALL MOUNTED GRILLE	TITUS	300FL	1,2,3,4,5,6,7,8
S5	60X60	COCENTRIC DIFFUSER	RUSKIN	001-570-4030B	1,2,3,4,5,6,7
R1	24X24	RETURN AIR DIFFUSER	TITUS	350FS	1,2,3,4,5,6,7
R2	12X10	DOUBLE DEFLECTION WALL MOUNTED GRILLE	TITUS	350FS	1,2,3,4,5,6,7,8
R3	48X48	DOUBLE DEFLECTION DUCT MOUNTED GRILLE	TITUS	350FL	1,2,3,4,5,6,7,8
EG1	24X24	PERFORATED FACE EXHAUST DIFFUSER	TITUS	PAR	1,2,3,4,5,6,7
EG2	12X12	PERFORATED FACE EXHAUST DIFFUSER	TITUS	PAR	1,2,3,4,5,6,7
LD1	5' 12" INLET	2" SLOT HIGHTHROW PATTERN LINEAR DIFFUSER 1-SLOT, WITH SUPPLY	TITUS	FL-20	1,2,3,4,5,6,7
RG1	48X8	DOUBLE DEFLECTION DUCT MOUNTED GRILLE	TITUS	350FL	1,2,3,4,5,6,7

**NOTES:-**  
1) PROVIDE STANDARD WHITE FINISH FOR ALL AIR DEVICES UNLESS NOTED OTHERWISE ON PLAN.  
2) PAINT ALL SURFACES VISIBLE THROUGH FACE OF RETURN AIR GRILLE FLAT BLACK. THIS SHALL INCLUDE PIPING.  
3) PROVIDE FRAME FOR MOUNTING AIR DEVICE IN LAY-IN GRID CEILING UNLESS REFLECTED CEILING PLAN INDICATES HARD CEILING. IN AREAS WITH HARD CEILINGS, PROVIDE FRAMES FOR SURFACE MOUNTING.  
4) UNLESS OTHERWISE NOTED, BRANCH DUCTS SERVING AIR DEVICES SHALL BE SAME SIZE AS NECK OF AIR DEVICE.  
5) COORDINATE FINAL COLOR/FINISH WITH ARCHITECT/OWNER.  
6) AIR DEVICE SHALL BE OF GALVANIZED FINISH WHEN INSTALLED ON EXPOSED DUCTWORK.  
7) MAXIMUM NOISE CRITERION RATING < 35 DBA.  
8) PROVIDE MODEL ASD-AIR SCOOP DEVICE.  
FOR ROUND NECK DIFFUSERS: NECK SIZES SHALL BE:-  
15" DIA: 901-1100 CFM  
14" DIA: 601-900 CFM  
12" DIA: 376-600 CFM  
10" DIA: 226-375 CFM  
8" DIA: 101-225 CFM  
6" DIA: 0-100 CFM

MECHANICAL FAN SCHEDULE													
TAG	QUANTITY	FLOW RATE CFM	STATIC PRESSURE		ELECTRIC DATA				MAXIMUM LOUDNESS DBA	BASIS OF DESIGN		WEIGHT LBS	REMARK
			EXTERNAL IN W.G.	SPEED RPM	HP	FLA (AMPS)	V/PH/HZ	MANUFACTURER		MODEL			
EF-1	1	890	0.75	1542	1/4	1.1	460/60/3	56	GREENHECK	GB-100	51	2,3,4,5,6,7	
EF-2	1	890	0.75	1542	1/4	1.1	460/60/3	56	GREENHECK	GB-100	51	2,3,4,5,6,7	
EF-3	1	250	0.75	1725	1/4	1.1	460/60/3	59	GREENHECK	G-097-A	49	1,3,4,5,7	
EF-4	1	500	0.5	1725	1/4	1.1	460/60/3	59	GREENHECK	G-100HP-A	49	2,3,4,5,6,7	
EF-5 & 8	3	70	0.3	808	-	0.29	115/60/1	33	GREENHECK	SP-A50-30-VG	33	1,3,4,5	
EF-7	1	120	0.3	976	-	1.5	115/60/1	40	GREENHECK	SP-A390-VG	24	1,3,4,5	
EF-9	1	2750	0.25	616	1/3	1.1	460/60/3	55	GREENHECK	GB-100	89	2,3,4,5,6,7	

**NOTES:**  
1. INTERCONNECT WITH LIGHTS IN ROOM. REFER TO ELECTRICAL LIGHTING PLAN.  
2. PROVIDE TIME CLOCK.  
3. PROVIDE FACTORY MOUNTED AND INSTALLED DISCONNECT.  
4. PROVIDE ACCESS DOOR TO SERVICE UNIT IF IN HARD CEILING.  
5. INSTALL AS PER MANUFACTURERS RECOMMENDATION.  
6. HIGH EFFICIENCY MOTOR WITH THERMAL OVERLOAD PROTECTION.  
7. PROVIDE 18" HIGH ROOF CURB, ALUMINIUM BIRD SCREEN, ALUMINIUM SUB-BASE.

ELECTRIC WALL HEATER SCHEDULE											
UNIT ID	MAKE	MODEL	SERVING	TYPE	Kw	BTUH	ELECTRICAL			WEIGHT (LBS.)	
							HZ	VOLTS	PHASE		
EWH-1&2	QMARK	SSAR4808	VESTIBULE	FAN FORCED WALL HEATER	4.8	16,378	60	208	1	23.1	25

**NOTES:**  
1. PROVIDE DISCONNECTION SWITCH  
2. "HEATER ON" PILOT LIGHT.  
3. THREE-POSITION SELECTOR SWITCH ( HEATER-STANDBY-FAN)  
4. BUILT-IN THERMOSTAT 40°F TO 85°F RANGE.  
5. ALL UNIT HEATERS SHALL BE INSTALLED IN ACCORDANCE WITH THE LISTING AND MANUFACTURER'S INSTALLATION INSTRUCTIONS.  
6. SUPPOSED-TYPE UNIT HEATER SHALL BE SUPPORTED BY ELEMENTS THAT ARE DESIGNED AND CONSTRUCTED TO ACCOMMODATE THE WEIGHT AND DYNAMIC LOADS.

**Max Fitness Macon**  
CWT-030-GB-X-P4FBE153G2E4AF31H

**Unit Data**

Refrigerant Charge (compared to all DX systems) . . .14lbs vs 342lbs
Outdoor Air (CFM) . . . . . 2500
ESP (Conditions ("FDB%/RH) . . . . . 0.0 inches
Room Conditions ("FDB%/RH) . . . . . 80/60
Unit Total Airflow (CFM) . . . . . 15000

**Design Data**

Refrigerant Charge (compared to all DX systems) . . .13750
Type . . . . . Axial
ESP . . . . . 0.0 inches
Number of Motors . . . . . 2
Motor HP . . . . . 5.3
Motor FLA (A) . . . . . 4.7

**Compressor**

Type . . . . . Scroll
Number of compressors . . . . . 4
Refrigerant . . . . . R410A
Motor RLALRA (A) . . . . . 12.8/100.0

**Evaporator Coil**

Sensible Capacity (MBH) . . . . . 191.7
Total Capacity (MBH) . . . . . 378.3
Latent Capacity (Lbs/h) . . . . . 172.8
Circuits . . . . . 4
Condensate Drain Connection . . . . . 1.25

**Reheat Coil**

Total Heat Rejection (MBH) . . . . . 472.9
Control Type . . . . . Full Modulation

**Exhaust Fans**

Exhaust Air (CFM) . . . . . 2750
Type . . . . . Plenum
ESP . . . . . 0.0 inches
ESP Supply Air . . . . . 0.75 inches
ESP Return Air . . . . . 0.25 inches
Number of Motors . . . . . 2
Motor HP . . . . . 2.4
Motor FLA (A) . . . . . 2.3

**Protocol Pump**

Number of Motors . . . . . 1
Motor HP . . . . . 0.75
Motor FLA (A) . . . . . 1.8

**Pool Heating**

Type . . . . . Titanium gasketed plate
Capacity (MBH) . . . . . 450.0
Water Flow Rate (GPM) . . . . . 60
Water Pressure Drop (PSI) . . . . . 6.0
Number of Linesets . . . . . 1
Connection Size (in) . . . . . 2
Connection Type . . . . . Stub
Connection Stub Material . . . . . PVC
Maximum Circuit Pressure Rating (PSI) . . . . . 100.0

**Auxiliary Heat**

Location . . . . . Unit Mounted
Type . . . . . Gas Heater: Unit mounted gas heater (Furnace)
Capacity, Input (MBH) . . . . . 500
Capacity, Output (MBH) . . . . . 400
Max/Min Gas Pressure (in WC) . . . . . 14/7
Connection Size (in) . . . . . 1
Connection Type . . . . . FPT
Control . . . . . Modulated

**Packaged Outdoor Air Dry Cooler**

Model . . . . . NG-V-12
Design Air On Temp (°F) . . . . . 95 F
Capacity (MBH) . . . . . 472.9
Number of Motors . . . . . 2
Motor HP . . . . . 3.9
Motor FLA (A) . . . . . 4.3

**ELECTRICAL SYMBOLS LEGEND**

SYMBOL	DESCRIPTION
⊕	ELECTRICAL JUNCTION BOX
⊕	DUPLEX RECEPTACLE, 3 WIRE GROUND TYPE, 20A
⊕WP	DUPLEX RECEPTACLE, WEATHERPROOF, 20A
⊕	QUADRAPLEX WALL RECEPTACLE, 20A
⊕	DEDICATED RECEPTACLE
⊕T	230V TWIST LOCK RECEPTACLE PER TANNING BED SPECS
△	SIGNAL VIA COAXIAL CABLE
△	DATA OUTLET-CATEGORY 5
▲	TELEPHONE OUTLET
▲	TELE/DATA COMBO
⊕	ELECTRICAL DISCONNECT SWITCH, CONFIRM # OF POLES & SIZE WITH MANUFACTURER OF EQUIPMENT BEING SERVED PRIOR TO PULLING WIRE.
TV	COAXIAL CABLE FOR TELEVISION - VERIFY MOUNTING HEIGHTS WITH ARCHITECTURAL PLANS
⊕	PROVIDE RECEPTACLE FOR SECURITY CAMERA - VERIFY RECEPTACLE REQUIREMENTS WITH TENANT
⊕	DUCT MOUNTED SMOKE DETECTOR

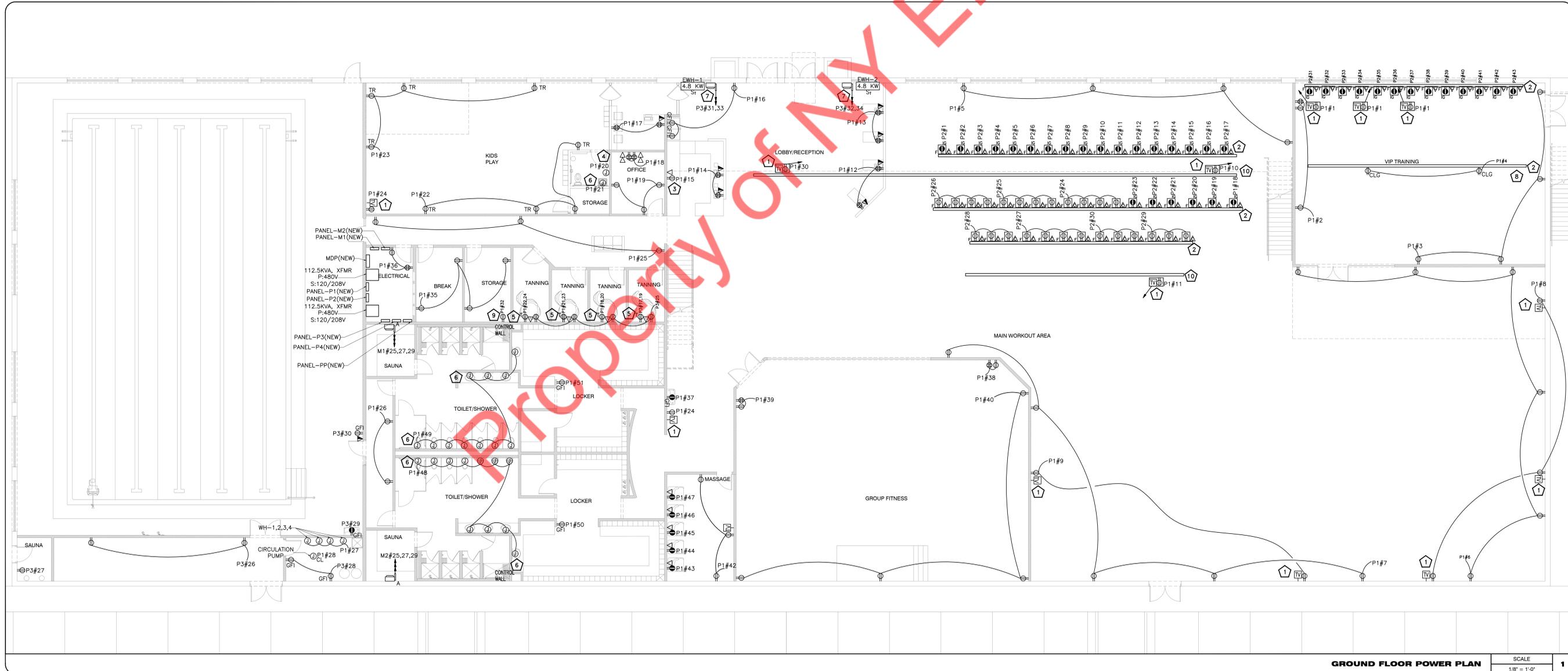
NOTE:  
ALL SYMBOLS DO NOT NECESSARILY APPLY  
MOUNTING HEIGHT TO CENTERLINE-U.N.O.  
IN HANDICAPPED AREAS, THE RECEPTACLES AND TELEPHONE OUTLETS SHALL BE MOUNTED AT 24" A.F.F.; THE TOGGLE SWITCHES, THERMOSTATS AND MANUAL MOTOR STARTERS SHALL BE MOUNTED AT 42" A.F.F.

**ELECTRICAL POWER GENERAL NOTES:**

1. GENERAL USE CABLING SHALL BE OF #12 AWG MINIMUM AT 120V FOR CABLE UP TO 80 FEET. FOR CABLE ABOVE 80 FEET USE #10 AWG CABLES. ADJUST WIRE SIZE FOR A MAXIMUM VOLTAGE DROP OF 3%.
2. CONTRACTOR TO COORDINATE WITH ARCHITECT FOR EXACT HEIGHT OF OUTLETS.
3. E.C SHALL VERIFY ANY THIRD PARTY INSPECTION REQUIRED BY THE LOCAL JURISDICTION PRIOR TO BIDDING THIS PROJECT.
4. ALL LOW VOLTAGE WIRING TO BE IN CONDUIT U.N.O BY AHJ.
5. E.C TO COORDINATE WITH MECHANICAL CONTRACTOR FOR RTU SENSOR AND THERMOSTAT LOCATION.

**ELECTRICAL POWER PLAN KEYED WORK NOTES:**

1. ELECTRICAL POWER PROVISION FOR TV'S. E.C SHALL COORDINATE WITH ARCHITECT FOR EXACT LOCATION AND MOUNTING HEIGHT PRIOR TO ROUGH IN.
2. PROVIDE CHASE/RACEWAY WITH SEPARATION FOR POWER AND COAXIAL CABLE FROM WIREMOLD TO ACCESSIBLE SPACE.
3. ELECTRICAL POWER PROVISION FOR PRINTER. E.C SHALL COORDINATE WITH ARCHITECT FOR EXACT LOCATION AND MOUNTING HEIGHT PRIOR TO ROUGH IN.
4. PROVIDE AND INSTALL J-BOX FOR POWER TO HAND DRYER AT 42" A.F.F. CIRCUIT AS INDICATED.
5. TO COORDINATE BREAKER SIZE & PLACEMENT AND WIRE SIZE WITH ACTUAL TANNING BED SPECIFICATIONS AND TANNING BED MANUFACTURER PRIOR TO INSTALL. VERIFY MANUFACTURER, MODEL NUMBER AND QUANTITY WITH TENANT PRIOR TO INSTALL. CONTRACTOR SHALL VERIFY TWIST-LOCK RECEPTACLE SIZE & PLACEMENT WITH OWNER PRIOR TO INSTALLATION. CONTRACTOR SHALL ADJUST WIRE SIZE TO LARGER SIZE IF NECESSARY. PROVIDE BUCK BOOSTER TRANSFORMERS AT TANNING BED FOR 240V OPERATION. THE ELECTRICAL SUB CONTRACTOR IS RESPONSIBLE TO MAKE SPECIFICATION SUBMITTALS TO ARCHITECT, VIA GENERAL CONTRACTOR, REGARDING THE TANNING BEDS AND SUBSEQUENT WIRING PRIOR TO BIDDING AND INSTALLATION.
6. J-BOX FOR AUTOMATIC SENSORS AND SOAP DISPENSERS.
7. ELECTRICAL CONTRACTOR SHALL COORDINATE DISCONNECT AND FUSE REQUIREMENT FOR MECHANICAL UNIT WITH MECHANICAL CONTRACTOR AND EQUIPMENT MANUFACTURER PRIOR TO ROUGH-IN AND PROVIDE AS REQUIRED. COORDINATE LOCATION OF DISCONNECT WITH OWNER AND MECHANICAL CONTRACTOR PRIOR TO ROUGH-IN. LOCATE AS REQUIRED TO MAINTAIN NEC CLEARANCES.
8. ELECTRICAL POWER PROVISION FOR SCI-FIT-PRO. E.C. SHALL COORDINATE WITH MANUFACTURER FOR POWER PROVISION.
9. ELECTRICAL POWER PROVISION FOR TV PANEL. COORDINATE WITH LV VENDOR.
10. ELECTRICAL CONTRACTOR HAS TO VERIFY THE EXACT QUANTITY & POWER REQUIREMENT FOR TELEVISIONS TO BE MOUNTED FROM TRUSSES WITH OWNER PRIOR TO INSTALLATION IN FIELD.

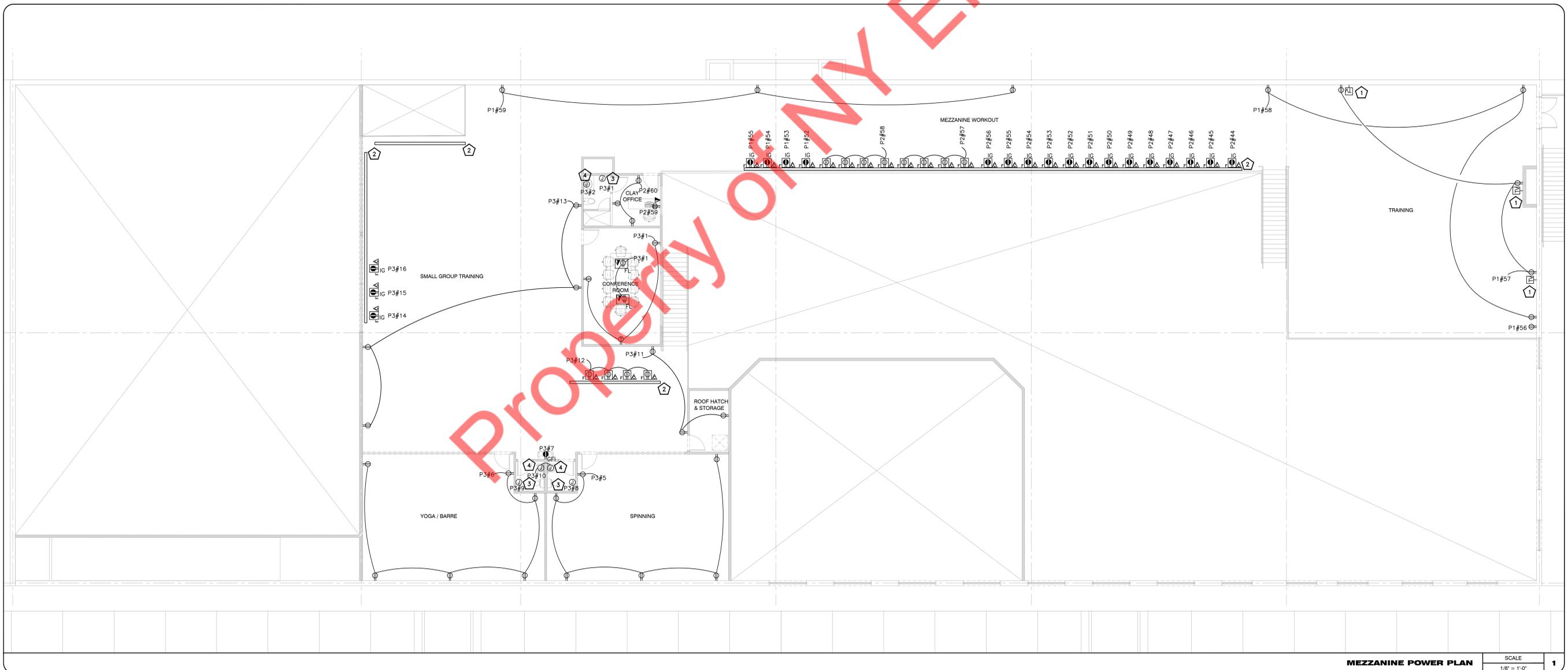


**ELECTRICAL POWER GENERAL NOTES:**

1. GENERAL USE CABLING SHALL BE OF #12 AWG MINIMUM AT 120V FOR CABLE UP TO 80 FEET. FOR CABLE ABOVE 80 FEET USE #10 AWG CABLES. ADJUST WIRE SIZE FOR A MAXIMUM VOLTAGE DROP OF 3%.
2. CONTRACTOR TO COORDINATE WITH ARCHITECT FOR EXACT HEIGHT OF OUTLETS.
3. E.C SHALL VERIFY ANY THIRD PARTY INSPECTION REQUIRED BY THE LOCAL JURISDICTION PRIOR TO BIDDING THIS PROJECT.
4. ALL LOW VOLTAGE WIRING TO BE IN CONDUIT U.N.O BY AHJ.
5. E.C TO COORDINATE WITH MECHANICAL CONTRACTOR FOR RTU SENSOR AND THERMOSTAT LOCATION.

**ELECTRICAL MEZZANINE PLAN KEYED WORK NOTES:**

1. ELECTRICAL POWER PROVISION FOR TV'S. E.C SHALL COORDINATE WITH ARCHITECT FOR EXACT LOCATION AND MOUNTING HEIGHT PRIOR TO ROUGH IN.
2. PROVIDE CHASE WITH SEPARATION FOR POWER AND COAXIAL CABLE FROM WIREMOLD TO ACCESSIBLE SPACE.
3. PROVIDE AND INSTALL J-BOX FOR POWER TO HAND DRYER AT 42" A.F.F. CIRCUIT AS INDICATED.
4. J-BOX FOR AUTOMATIC SENSORS AND SOAP DISPENSERS.



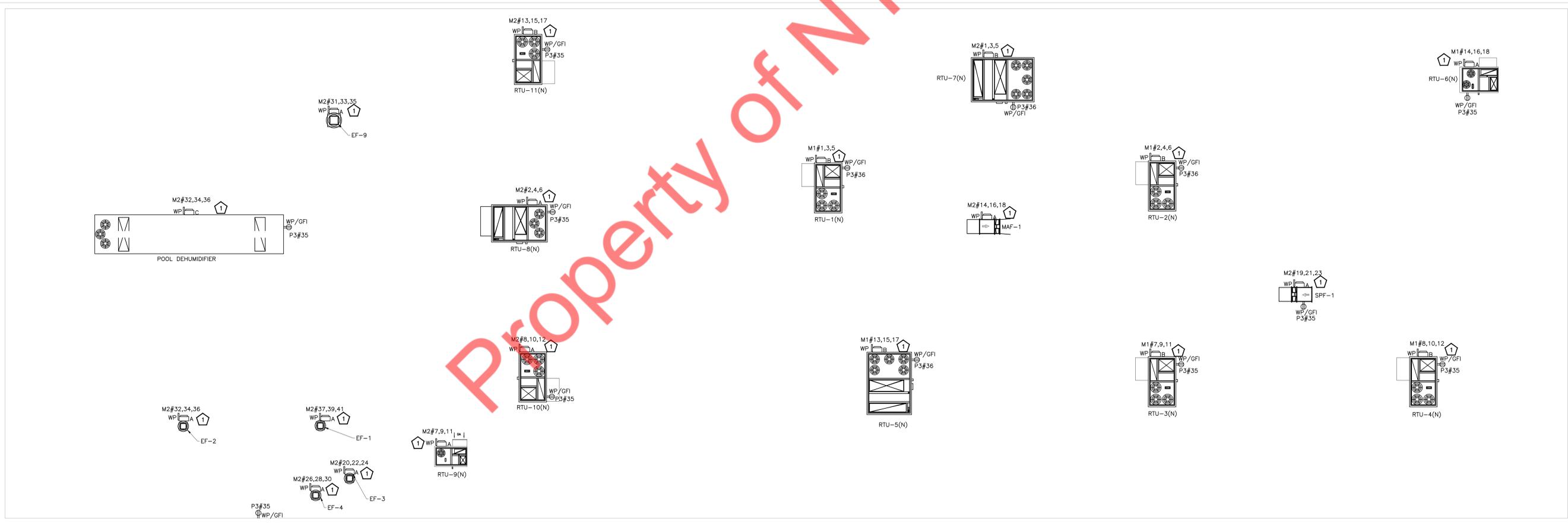
**ELECTRICAL POWER GENERAL NOTES:**

1. GENERAL USE CABLING SHALL BE OF #12 AWG MINIMUM AT 120V FOR CABLE UP TO 80 FEET. FOR CABLE ABOVE 80 FEET USE #10 AWG CABLES. ADJUST WIRE SIZE FOR A MAXIMUM VOLTAGE DROP OF 3%.
2. CONTRACTOR TO COORDINATE WITH ARCHITECT FOR EXACT HEIGHT OF OUTLETS.
3. E.C SHALL VERIFY ANY THIRD PARTY INSPECTION REQUIRED BY THE LOCAL JURISDICTION PRIOR TO BIDDING THIS PROJECT.
4. ALL LOW VOLTAGE WIRING TO BE IN CONDUIT U.N.O BY AHJ.
5. E.C TO COORDINATE WITH MECHANICAL CONTRACTOR FOR RTU SENSOR AND THERMOSTAT LOCATION.

**ELECTRICAL ROOF PLAN KEYED WORK NOTES:**

1. ELECTRICAL CONTRACTOR SHALL COORDINATE DISCONNECT AND FUSE REQUIREMENT FOR MECHANICAL UNIT WITH MECHANICAL CONTRACTOR AND EQUIPMENT MANUFACTURER PRIOR TO ROUGH-IN AND PROVIDE AS REQUIRED. COORDINATE LOCATION OF DISCONNECT WITH OWNER AND MECHANICAL CONTRACTOR PRIOR TO ROUGH-IN. LOCATE AS REQUIRED TO MAINTAIN NEC CLEARANCES.

Property of NY Engineers



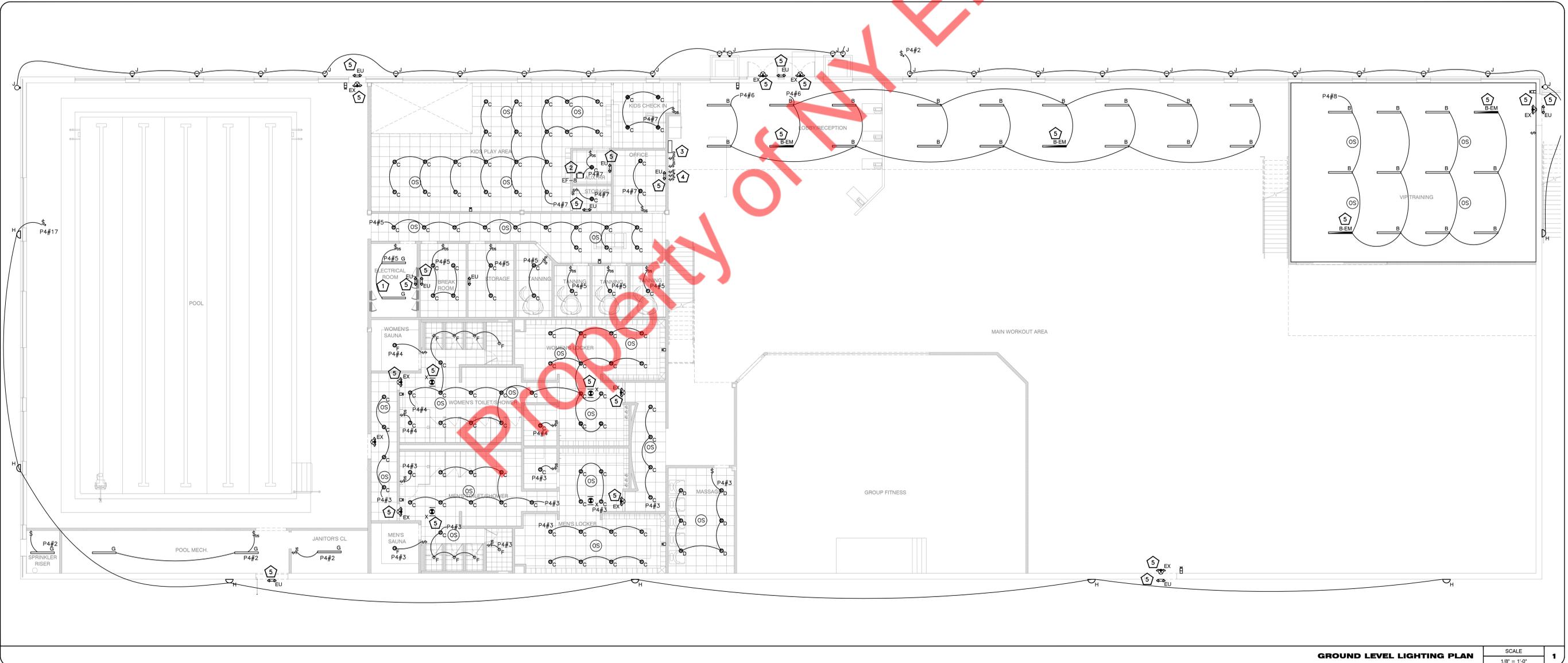
LIGHTING SCHEDULE					
SYMBOL	TYPE	DESCRIPTION AND MODEL NUMBER	REMARKS	MODEL	VOLTAGE WATTAGE
□	A	ORACLE LED HIGH BAY	WORKOUT AREA, POOL AREA	CLI-00MXFSA CB2-LED-1800L-DIM10-MVOLT-WD-35K-85	347-480V 139W
▣	A-EM	ORACLE LED HIGH BAY	WORKOUT AREA, POOL AREA	CLI-00MXFSA CB2-LED-1800L-DIM10-MVOLT-WD-35K-85-0-EMG-LED-20W	347-480V 20W
—	B	LINEAR FIXTURE-WHITE	MEZZANINE WORKOUT AREAS	CLI-00MXFSB 4-OEC-LED-500L-DIM10-MVOLT-35K-85	120/277V 39W
—	B-EM	LINEAR FIXTURE-WHITE	MEZZANINE WORKOUT AREAS	CLI-00MXFSB 4-OEC-LED-500L-DIM10-MVOLT-35K-85-EMG-LED-10W	120/277V 10W
●	C	4" ARCHITECTURAL HIGH LUMEN LED DOWNLIGHT	TRAINING, LOCKER ROOM, BATHROOM	CLI-00MXFSC #HHR4-LED-1500L-DIM10-MVOLT-WD-35K-90-HH4-4501-SHZ-WH	120/277V 20W
●	C-EM	4" ARCHITECTURAL HIGH LUMEN LED DOWNLIGHT	TRAINING, LOCKER ROOM, BATHROOM	CLI-00MXFSC #HHR4-LED-1500L-DIM10-MVOLT-WD-35K-90-EMG-LED-10WHH4-4501-SHZ-WH	120/277V 10W
●	D	JUNO 6" LED RECESSED DOWNLIGHT	MASSAGE	MODEL #TC922LG3-3K-6-WWH W/ WHITE BAFFLE AND WHITE TRIM	120V 14.5W
◆	F	4" ARCHITECTURAL HIGH LUMEN LED DOWNLIGHT	SHOWER STALLS	CATALOG #CLI-00MXFSF HHR4-LED-900L-DIM10-MVOLT-WD-35K-90-HH4-4501-SHZWH	120/277V 12W
◆	F-EM	4" ARCHITECTURAL HIGH LUMEN LED DOWNLIGHT	SHOWER STALLS	CATALOG #CLI-00MXFSF HHR4-LED-900L-DIM10-MVOLT-WD-35K-90-EMG-LED-10WHH4-4501-SHZWH	120/277V 10W
D	H	HALF MOON LED WALL SCONCE WITH DOWNLIGHT	EXTERIOR LIGHT	CATALOG# CLI-00MXFSH OWS-FC-202-LED-2000L-DIM10-MVOLT-40K-BZ	120/277V 20W
○	J	CYLINDER WALL SCONCE UPLIGHT/DOWNLIGHT	CINEMA CARDIO	CATALOG # CLI-00MXFSJ OWS-CLY-UD-101-LED-1500L-MVOLT-40K-BZ	120/277V 18W
—	G	TBD	TBD	TBD	120/277V 20W (ASSUMED)
★	FAN	SKYBADE FAN, SHOPPROP SERIES	GROUP FITNESS	SP-0824-5, 8FT	120V
★	FAN	SKYBADE FAN, SHOPPROP SERIES	WORKOUT AREA	SP-1030, 10FT	120V
⊕	EX	EXIT SIGN-EMERGENCY LIGHT COMBO			120V

LIGHTING SCHEDULE					
SYMBOL	TYPE	DESCRIPTION AND MODEL NUMBER	REMARKS	MODEL	VOLTAGE WATTAGE
⊕	X	EXIT SIGN			277V
↔	EU	WALL MOUNTED EMERGENCY LIGHT			120V

**ELECTRICAL LIGHTING PLAN GENERAL NOTE:**  
ALL LIGHT FIXTURE EXCEPT "A" LIGHT SHALL BE SELECTED TO OPERATE ON 120V. COORDINATE WITH ARCHITECT FOR FINAL FINISH

LIGHTING CONTROLS:	
AREA	CONTROLS
KIDS PLAY AREA, LOCKERS, SHOWER/TOILET, MASSAGE, CONFERENCE ROOM, SMALL GROUP TRAINING, YOGA, SPINNING, GROUP FITNESS, PASSAGE.	LIGHTING IN THESE AREAS SHALL BE CONTROLLED VIA CEILING MOUNTED OCCUPANCY SENSOR. FIXTURES DESIGNATED 'EM' (EMERGENCY) TO REMAIN ENERGIZED AT ALL TIMES.
KID'S CHECK-IN, OFFICE, RESTROOM, TANNING ROOM, STORAGE, BREAK ROOM, ELECTRICAL ROOM, LOCKER, POOL MECH, JANITOR'S CL.	LIGHTING IN THESE AREAS SHALL BE CONTROLLED VIA WALL MOUNTED OCCUPANCY SENSOR. FIXTURES DESIGNATED 'EM' (EMERGENCY) TO REMAIN ENERGIZED AT ALL TIMES.
MAIN WORKOUT AREA, LOBBY/RECEPTION, MEZZANINE WORKOUT, TRAINING, POOL.	LIGHTING IN THESE AREAS SHALL BE CONTROLLED VIA TIMELOCK. FIXTURES DESIGNATED 'EM' (EMERGENCY) TO REMAIN ENERGIZED AT ALL TIMES.

- ELECTRICAL LIGHTING PLAN KEYED WORK NOTES:**
- E.C. SHALL COORDINATE EXACT LOCATION OF THE LIGHTING PANEL "P4" WITH ARCHITECT/OWNER.
  - EXHAUST FANS SHALL BE CIRCUITED AND CONTROLLED ALONG WITH THE LIGHT FIXTURES IN THE SAME ROOM.
  - MASTER SWITCH BANK LOCATION. E.C TO COORDINATE FINAL LOCATION WITH ARCHITECT/OWNER.
  - PROVIDE APPROPRIATE VARIABLE SPEED SWITCHES FOR CONTROLLING SPEED OF CEILING FANS AS SHOWN. VERIFY WITH THE CEILING FAN MANUFACTURER TYPE OF VARIABLE SPEED SWITCH AND QUANTITY NEEDED. COORDINATE LOCATION OF SWITCHES WITH ARCHITECT/OWNER PRIOR TO ROUGH-IN.
  - CONNECT ALL EMERGENCY & EGRESS FIXTURES TO THE NEAREST LIGHTING BRANCH CIRCUIT AHEAD OF ALL SWITCHING AND CONTROLS PER STATE AND LOCAL CODES.



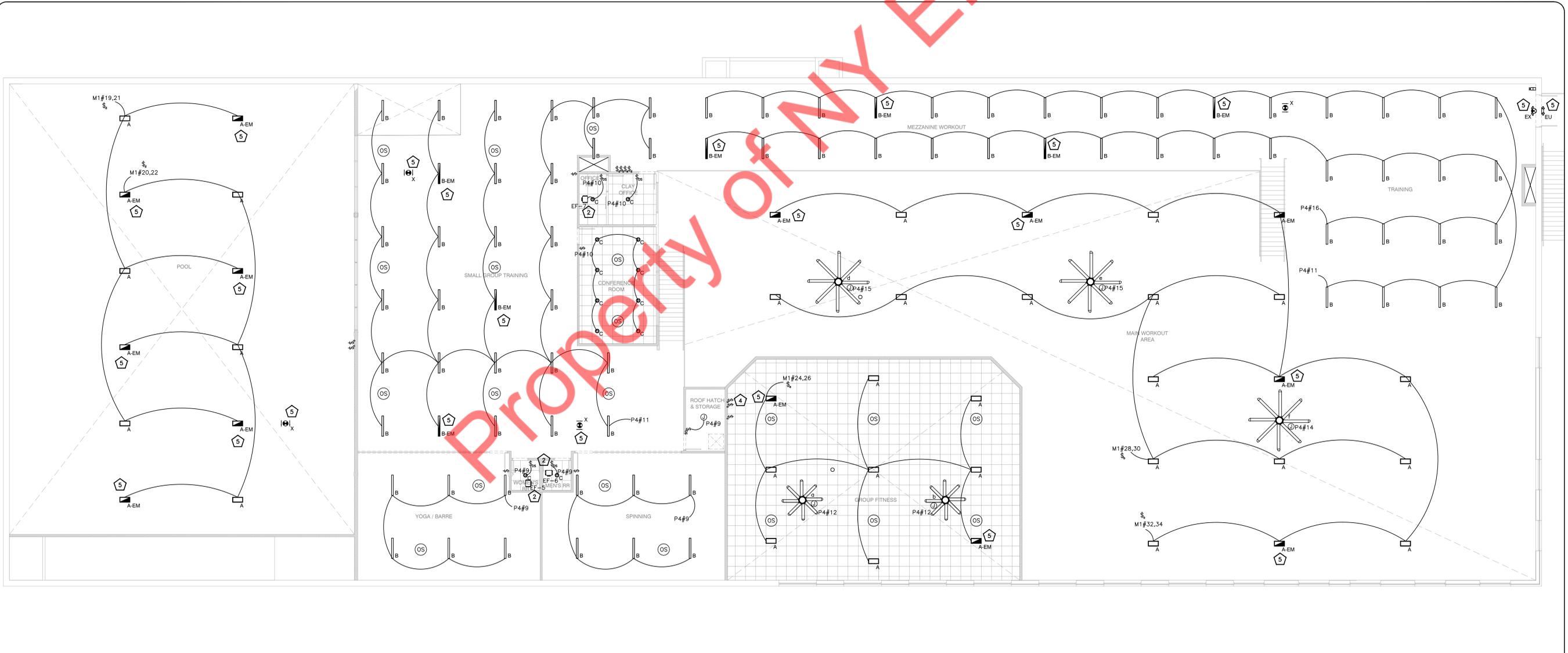
LIGHTING SCHEDULE					
SYMBOL	TYPE	DESCRIPTION AND MODEL NUMBER	REMARKS	MODEL	VOLTAGE WATTAGE
[Symbol]	A	ORACLE LED HIGH BAY	WORKOUT AREA, POOL AREA	CLI-00MXFSA CB2-LED-1800L-DIM10-MVOLT-WD-35K-85	347-480V 139W
[Symbol]	A-EM	ORACLE LED HIGH BAY	WORKOUT AREA, POOL AREA	CLI-00MXFSA CB2-LED-1800L-DIM10-MVOLT-WD-35K-85-0-EMG-LED-20W	347-480V 20W
[Symbol]	B	LINEAR FIXTURE-WHITE	MEZZANINE WORKOUT AREAS	CLI-00MXFSB 4-OEC-LED-500L-DIM10-MVOLT-35K-85	120/277V 39W
[Symbol]	B-EM	LINEAR FIXTURE-WHITE	MEZZANINE WORKOUT AREAS	CLI-00MXFSB 4-OEC-LED-500L-DIM10-MVOLT-35K-85-EMG-LED-10W	120/277V 10W
[Symbol]	C	4" ARCHITECTURAL HIGH LUMEN LED DOWNLIGHT	TRAINING, LOCKER ROOM, BATHROOM	CLI-00MXFSC #HHR4-LED-1500L-DIM10-MVOLT-WD-35K-90-HH4-4501-SHZ-WH	120/277V 20W
[Symbol]	C-EM	4" ARCHITECTURAL HIGH LUMEN LED DOWNLIGHT	TRAINING, LOCKER ROOM, BATHROOM	CLI-00MXFSC #HHR4-LED-1500L-DIM10-MVOLT-WD-35K-90-EMG-LED-10WHH4-4501-SHZ-WH	120/277V 10W
[Symbol]	D	JUNO 6" LED RECESSED DOWNLIGHT	MASSAGE	MODEL #TC922LG3-3K-6-WWH W/ WHITE BAFFLE AND WHITE TRIM	120V 14.5W
[Symbol]	F	4" ARCHITECTURAL HIGH LUMEN LED DOWNLIGHT	SHOWER STALLS	CATALOG #CLI-00MXFSF HHR4-LED-900L-DIM10-MVOLT-WD-35K-90-HH4-4501-SHZWH	120/277V 12W
[Symbol]	F-EM	4" ARCHITECTURAL HIGH LUMEN LED DOWNLIGHT	SHOWER STALLS	CATALOG #CLI-00MXFSF HHR4-LED-900L-DIM10-MVOLT-WD-35K-90-EMG-LED-10WHH4-4501-SHZWH	120/277V 10W
[Symbol]	H	HALF MOON LED WALL SCONCE WITH DOWNLIGHT	EXTERIOR LIGHT	CATALOG# CLI-00MXFSH OWS-FC-202-LED-2000L-DIM10-MVOLT-40K-BZ	120/277V 20W
[Symbol]	J	CYLINDER WALL SCONCE UPLIGHT/DOWNLIGHT	CINEMA CARDIO	CATALOG # CLI-00MXFSJ OWS-CLY-UD-101-LED-1500L-MVOLT-40K-BZ	120/277V 18W
[Symbol]	G	TBD	TBD	TBD	120/277V 20W (ASSUMED)
[Symbol]	FAN	SKYBADE FAN, SHOPPROP SERIES	GROUP FITNESS	SP-0824-5, 8FT	120V
[Symbol]	FAN	SKYBADE FAN, SHOPPROP SERIES	WORKOUT AREA	SP-1030, 10FT	120V
[Symbol]	EX	EXIT SIGN-EMERGENCY LIGHT COMBO			120V

LIGHTING SCHEDULE					
SYMBOL	TYPE	DESCRIPTION AND MODEL NUMBER	REMARKS	MODEL	VOLTAGE WATTAGE
[Symbol]	X	EXIT SIGN			277V
[Symbol]	EU	WALL MOUNTED EMERGENCY LIGHT			120V

**ELECTRICAL LIGHTING PLAN GENERAL NOTE:**  
ALL LIGHT FIXTURE EXCEPT "A" LIGHT SHALL BE SELECTED TO OPERATE ON 120V. COORDINATE WITH ARCHITECT FOR FINAL FINISH

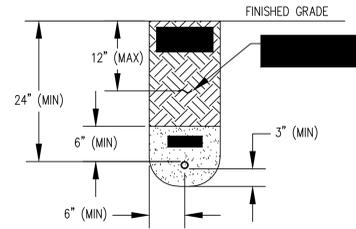
LIGHTING CONTROLS:	
AREA	CONTROLS
KIDS PLAY AREA, LOCKERS, SHOWER/TOILET, MASSAGE, CONFERENCE ROOM, SMALL GROUP TRAINING, YOGA, SPINNING, GROUP FITNESS, PASSAGE.	LIGHTING IN THESE AREAS SHALL BE CONTROLLED VIA CEILING MOUNTED OCCUPANCY SENSOR. FIXTURES DESIGNATED 'EM' (EMERGENCY) TO REMAIN ENERGIZED AT ALL TIMES.
KID'S CHECK-IN, OFFICE, RESTROOM, TANNING ROOM, STORAGE, BREAK ROOM, ELECTRICAL ROOM, LOCKER, POOL MECH, JANITOR'S CL.	LIGHTING IN THESE AREAS SHALL BE CONTROLLED VIA WALL MOUNTED OCCUPANCY SENSOR. FIXTURES DESIGNATED 'EM' (EMERGENCY) TO REMAIN ENERGIZED AT ALL TIMES.
MAIN WORKOUT AREA, LOBBY/RECEPTION, MEZZANINE WORKOUT, TRAINING, POOL.	LIGHTING IN THESE AREAS SHALL BE CONTROLLED VIA TIMELOCK. FIXTURES DESIGNATED 'EM' (EMERGENCY) TO REMAIN ENERGIZED AT ALL TIMES.

- ELECTRICAL LIGHTING PLAN KEYED WORK NOTES:**
- E.C. SHALL COORDINATE EXACT LOCATION OF THE LIGHTING PANEL "P4" WITH ARCHITECT/OWNER.
  - EXHAUST FANS SHALL BE CIRCUITED AND CONTROLLED ALONG WITH THE LIGHT FIXTURES IN THE SAME ROOM.
  - MASTER SWITCH BANK LOCATION. E.C TO COORDINATE FINAL LOCATION WITH ARCHITECT/OWNER.
  - PROVIDE APPROPRIATE VARIABLE SPEED SWITCHES FOR CONTROLLING SPEED OF CEILING FANS AS SHOWN. VERIFY WITH THE CEILING FAN MANUFACTURER TYPE OF VARIABLE SPEED SWITCH AND QUANTITY NEEDED. COORDINATE LOCATION OF SWITCHES WITH ARCHITECT/OWNER PRIOR TO ROUGH-IN.
  - CONNECT ALL EMERGENCY & EGRESS FIXTURES TO THE NEAREST LIGHTING BRANCH CIRCUIT AHEAD OF ALL SWITCHING AND CONTROLS PER STATE AND LOCAL CODES.



# ELECTRICAL SYMBOLS AND NOMENCLATURE

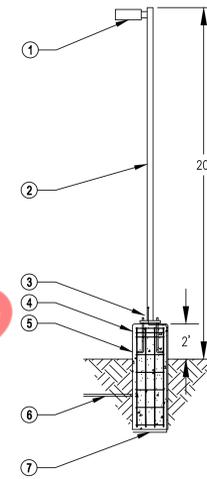
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	DOUBLE-OUTLET "DUPLEX" RECEPTACLE		CIRCUIT BREAKER (AMPS/POLES AS NOTED)
	DOUBLE-OUTLET "DUPLEX" OFI-TYPE RECEPTACLE		FUSE (AMPS/POLES AS NOTED)
	DOUBLE-OUTLET "DUPLEX" RECEPTACLE CEILING		SHEET NOTE INDICATOR
	DOUBLE-OUTLET "DUPLEX" RECEPTACLE WITH USB CONNECTIONS		SHEET/EQUIPMENT NOTE INDICATOR
	QUADRUPLE-OUTLET "QUAD" RECEPTACLE		EQUIPMENT NOTE INDICATOR
	SPECIAL RECEPTACLE (VOLTAGE/CONFIGURATION AS NOTED)		REVISION "DELTA" NOTE INDICATOR
	JUNCTION BOX		FEEDER NOTE INDICATOR
	THERMOSTAT		DETAIL/SHEET NOTE INDICATOR
	FLOOR MOUNT RECEPTACLE		48" MOUNTING HEIGHT A.F.F. (ACTUAL HEIGHT AS NOTED)
	SAFETY DISCONNECT SWITCH (SIZE/VOLTAGE/CONFIGURATION AS NOTED)		A.F.F. ABOVE FINISHED FLOOR
	COMBINATION SAFETY SWITCH/MAGNETIC STARTER		A.F.G. ABOVE FINISHED GRADE
	TELEPHONE/DATA JUNCTION BACKBOX		A.T.S. AUTOMATIC TRANSFER SWITCH
	SINGLE-POLE TOGGLE SWITCH (VOLTAGE AS REQUIRED)		C CONDUIT
	MULTI-STATION "THREE-WAY" TOGGLE SWITCH (VOLTAGE AS REQUIRED)		CB CIRCUIT BREAKER
	SOLID STATE TIMING SWITCH (VOLTAGE AS REQUIRED)		CL CEILING
	MOTOR-RATED TOGGLE SWITCH (VOLTAGE AS REQUIRED)		(E) EXISTING
	KEYPAD TOGGLE SWITCH (VOLTAGE AS REQUIRED)		(F) FUTURE
	OCCUPANCY SENSING (MOTION SENSOR) SWITCH		F.B.O. FURNISHED BY OTHERS
	[*] CONDUIT INTO ACCESSIBLE CEILING SPACE		GFI GROUND FAULT INTERRUPTING TYPE
	PANELBOARD (NAME/AMP/PHASE/VOLTAGE/CONFIGURATION AS NOTED)		HID HIGH INTENSITY DISCHARGE LIGHTING
	AUXILIARY SYSTEM EQUIPMENT (KEYPAD/FGB)		LV LOW VOLTAGE
	MULTI-OUTLET ASSEMBLY (PLUG MOLD)		MCB MAIN CIRCUIT BREAKER
	TRANSFORMER (NAME/KVA RATING/VOLTAGE AS NOTED)		MSB MAIN SWITCH BOARD
	MECHANICAL EQUIPMENT INDICATOR		(N) NEW
	PHOTO ELECTRIC CELL		NL NIGHT LIGHT
	TIME CLOCK		TYP TYPICAL
	DUCT DETECTOR FIRE ALARM SYSTEM COMPONENT		UG UNDER GROUND
	SMOKE DETECTOR FIRE ALARM SYSTEM COMPONENT		UON UNLESS OTHERWISE NOTED
	HEAT DETECTOR FIRE ALARM SYSTEM COMPONENT		WP WEATHER PROOF
	CONTACTOR		XFMR TRANSFORMER
	MOTOR (HORSEPOWER AS NOTED)		



TYPICAL BRANCH CIRCUIT TRENCHING DETAIL 1"=1'-0" A

## POLE & LUMINAIRE NOTES:

- POLE MOUNTED AREA LUMINAIRE WITH SPECIFIED DISTRIBUTION AND OPTIONS AS NOTED. (LUMINAIRE EPA = 1.2 SQ.FT. EACH)
- SQUARE STRAIGHT STEEL POLE WITH ANCHOR BOLT MOUNTING, FLANGE AND POLE RATED FOR 100 MPH WINDS, WITH 1.3 GUST FACTOR, WITH LUMINAIRE(S) ATTACHED.
- INSTALL DRY-PACK CONCRETE BETWEEN POLE MOUNTING FLANGE AND CONCRETE FOUNDATION TACK WELD ATTACHMENT NUTS. PROVIDE AND INSTALL MATCHING BASE BOLT COVER
- STEEL REINFORCED CONCRETE POLE BASE. CONTRACTOR SHALL RETAIN STRUCTURAL ENGINEER TO DESIGN POLE BASE AND SPECIFICATIONS.
- ALL POLE BASES SHALL BE LOCATED NOT LESS THAN TWO FEET BACK FROM THE EDGE OF ANY CURB OR SIDEWALK EDGE.
- UNDERGROUND ELECTRICAL LIGHTING SYSTEM CONDUITS AND WIRING SHALL BE MINIMUM 24" BELOW FINISHED GRADE.
- 15" - #4 BARE SOLID Cu COILED IN BOTTOM OF FOUNDATION HOLE FOR LIGHTNING GROUND. EXTEND LIGHTNING GROUND CONDUCTOR UP ALONG INSIDE EDGE OF FOUNDATION AND SECURELY BOND LIGHTNING GROUND CONDUCTOR TO POLE SHAFT.

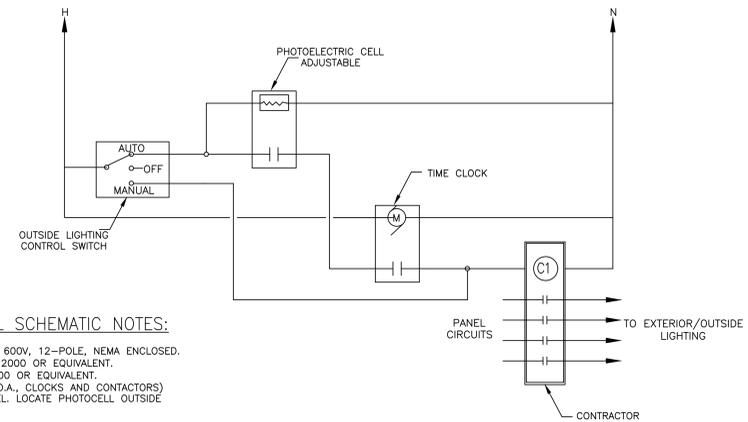


POLE LUMINAIRE ELEVATION DETAIL 1/4"=1'-0" B

## GENERAL ELECTRICAL NOTES

- IT IS THE INTENT OF THESE DRAWINGS TO REQUIRE A COMPLETE AND FINISHED ELECTRICAL SYSTEM IN EVERY WAY. FURNISH ALL LABOR, MATERIALS, TOOLS, ACCESSORIES, ETC. REQUIRED FOR A COMPLETE ELECTRICAL INSTALLATION.
- ALL ELECTRICAL WORK SHALL COMPLY WITH ALL APPLICABLE STATE, COUNTY AND LOCAL CODES AND ORDINANCES, AS WELL AS ALL CURRENT STANDARDS, CODES AND PRACTICES AS REQUIRED BY: 2011 NEC, 2012 IBC, 2012 IECC, AND UTILITY COMPANY STANDARDS.
- CONTRACTOR SHALL THOROUGHLY FAMILIARIZE HIMSELF WITH ALL EXISTING CONDITIONS, AT THE PROJECT SITE, PRIOR TO SUBMITTING A BID. NO EXTRA PAYMENT WILL BE MADE FOR CONDITIONS THAT WOULD HAVE BEEN EVIDENT DURING A SITE INSPECTION. PAYMENT WILL BE MADE FOR CONDITIONS THAT WOULD HAVE BEEN EVIDENT DURING A SITE INSPECTION.
- APPEARANCE AND WORKMANSHIP SHALL BE OF THE HIGHEST STANDARDS OF QUALITY. ONLY LICENSED ELECTRICIANS AND TECHNICIANS SHALL BE USED TO ACCOMPLISH THE ELECTRICAL WORK.
- ELECTRICAL CONTRACTOR SHALL GUARANTEE THE ELECTRICAL WORK TO BE FREE FROM DEFECTS IN MATERIALS AND WORKMANSHIP FOR A PERIOD OF ONE YEAR FROM THE DATE OF FINAL ACCEPTANCE. LIGHTING LAMPS SHALL BE EXEMPT FROM THIS REQUIREMENT BUT SHALL BE NEW AND IN PERFECT WORKING ORDER AT THE TIME OF FINAL ACCEPTANCE.
- VERIFY THE EXACT LOCATION AND ELEVATION OF ALL ELECTRICAL EQUIPMENT AND OUTLETS PRIOR TO ROUGHING-IN. FINAL CONNECTIONS TO EQUIPMENT SHALL BE MADE ACCORDING TO THE EQUIPMENT MANUFACTURERS APPROVED WIRING DIAGRAMS, DETAILS AND INSTRUCTIONS.
- ELECTRICAL CONTRACTOR SHALL PROVIDE A NEAT AND COMPLETE SET OF "AS-BUILT" DRAWINGS WITHIN 30 DAYS OF FINAL ACCEPTANCE OF WORK.
- CONDUIT/CONDUCTOR RUNS SHOWN ARE DIAGRAMMATICAL ONLY. THE BEST FINAL CONDUIT ROUTING SHALL BE AS DETERMINED BY THE ELECTRICAL CONTRACTOR AT THE TIME OF INSTALLATION.
- ALL CONDUCTORS SHALL BE COPPER TYPE THHN/THWN 90° C. RATED.

FIXTURE SYMBOL	FIXTURE TYPE	FIXTURE TYPE	MANUFACTURER		INPUT VA	VOLATGE
			NAME	CATALOG NO.		
	A	LED	COOPER LIGHTING SOLUTIONS-STREETWORKS	ARCH-L-PA3-210-740-U-T4W	210VA	120-277V
	B	LED	COOPER LIGHTING SOLUTIONS-STREETWORKS	ARCH-L-PA3-210-740-U-5WQ	210VA	120-277V



## OUTSIDE LIGHTING CONTROL SCHEMATIC NOTES:

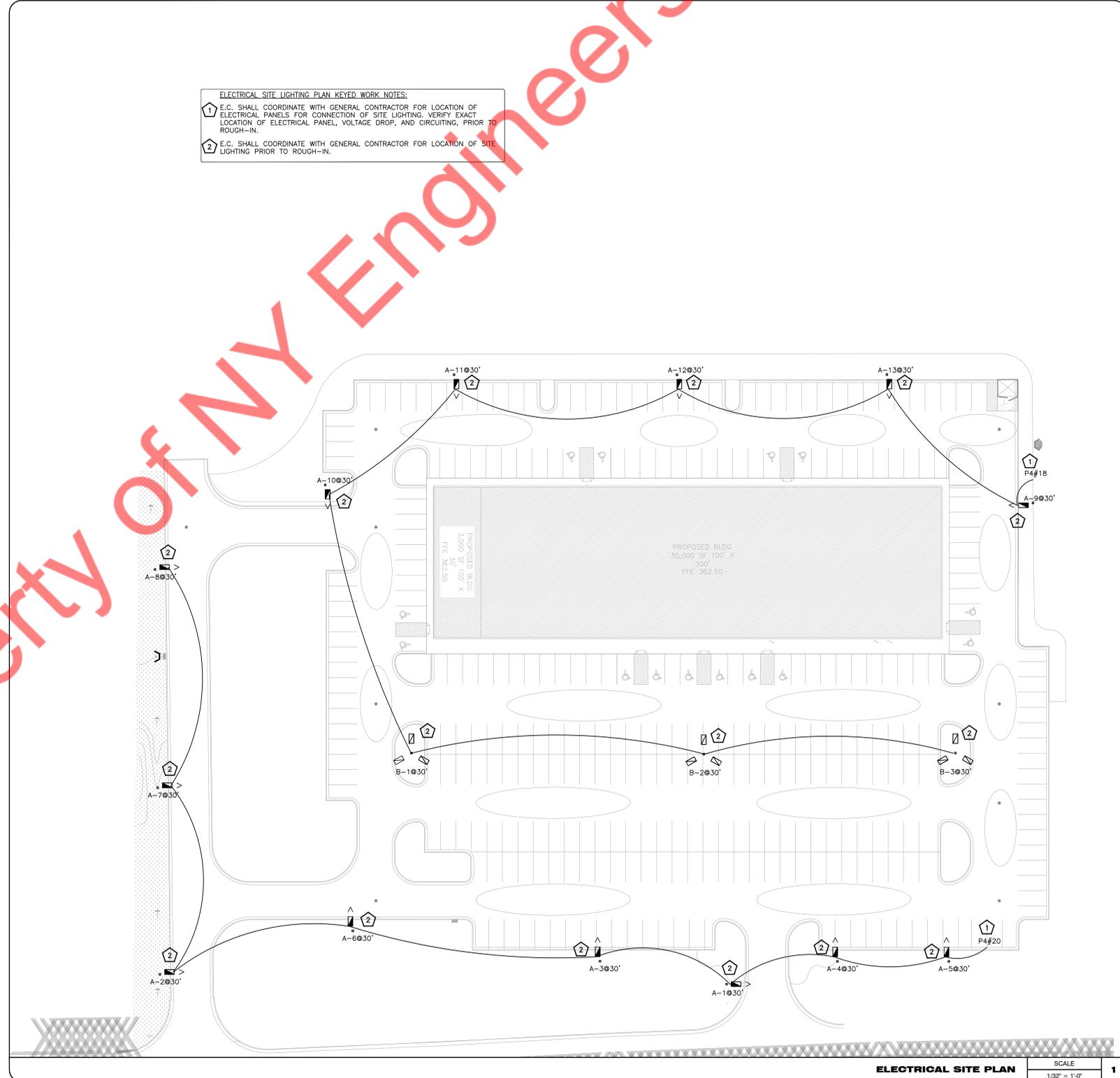
- LIGHTING CONTACTOR(S) SHALL BE 20A, 600V, 12-POLE, NEMA ENCLOSED.
- TIME CLOCK SHALL BE INTERMATIC #ET 2000 OR EQUIVALENT.
- PHOTOCELL SHALL BE INTERMATIC #K4100 OR EQUIVALENT.
- LOCATE OUTSIDE LIGHTING CONTROL (H.O.A., CLOCKS AND CONTACTORS) ADJACENT TO FEEDING ELECTRICAL PANEL. LOCATE PHOTOCELL OUTSIDE ON ROOF FACING NORTH.

EXTERIOR LIGHTING CONTROL DIAGRAM 1"=1'-0" C

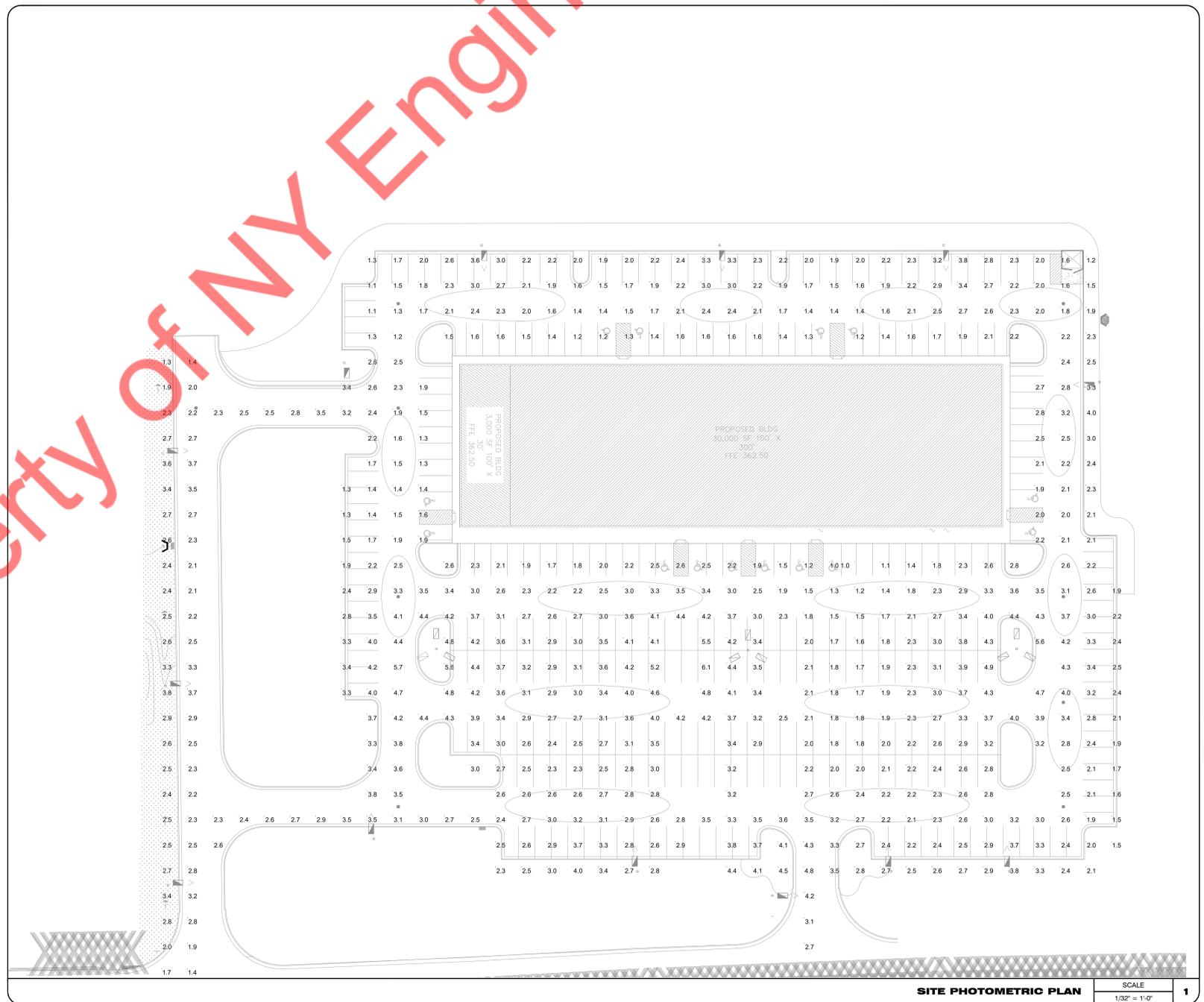
SCALE: NOT TO SCALE

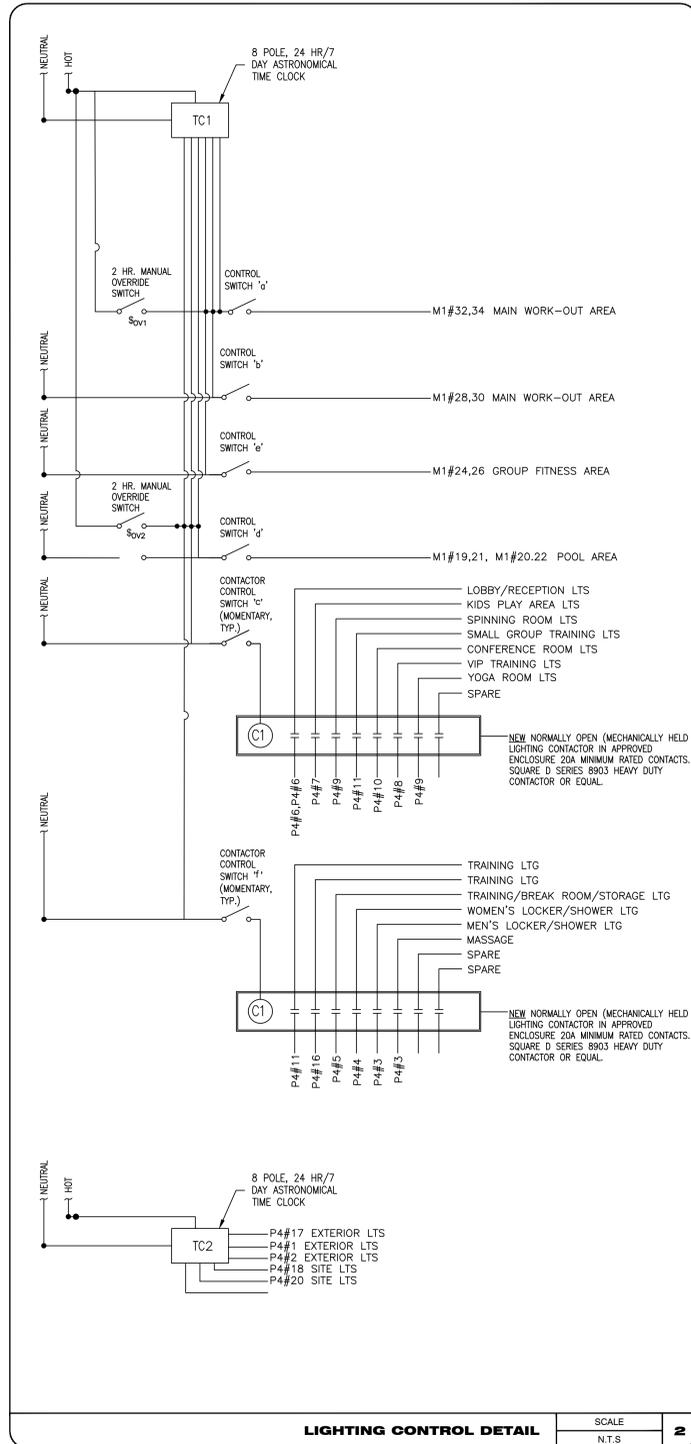
Property of NY Engineers

ELECTRICAL SITE LIGHTING PLAN KEYED WORK NOTES:  
1 E.C. SHALL COORDINATE WITH GENERAL CONTRACTOR FOR LOCATION OF ELECTRICAL PANELS FOR CONNECTION OF SITE LIGHTING. VERIFY EXACT LOCATION OF ELECTRICAL PANEL, VOLTAGE DROP, AND CIRCUITING, PRIOR TO ROUGH-IN.  
2 E.C. SHALL COORDINATE WITH GENERAL CONTRACTOR FOR LOCATION OF SITE LIGHTING PRIOR TO ROUGH-IN.



Property of NY Engineers



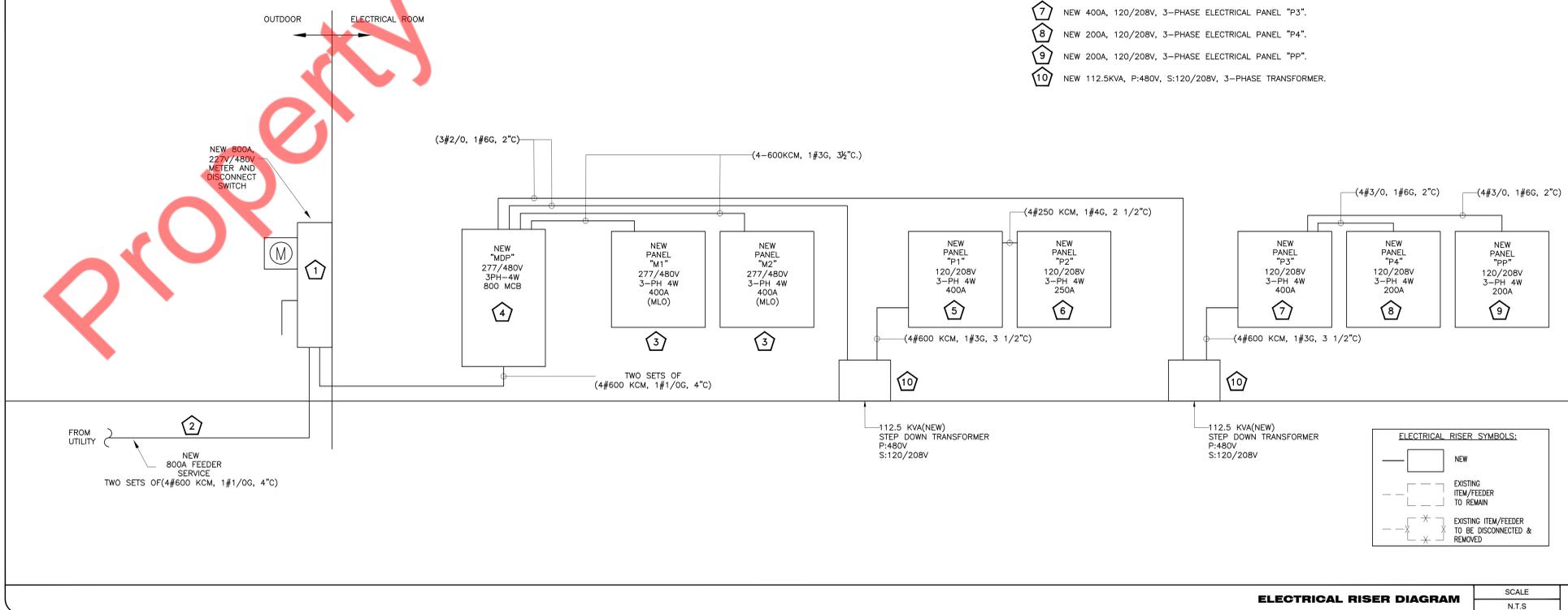


**ELECTRICAL GENERAL NOTES:**

- ELECTRICAL CONTRACTOR TO COORDINATE FAULT CURRENT (isc) RATING WITH UTILITY COMPANY AND AHU PRIOR TO COMMENCING ANY WORK
- ELECTRICAL CONTRACTOR TO FIELD VERIFY EXACT POWER DISTRIBUTION SYSTEM AND SHALL COORDINATE WITH BASE BUILDING FOR EXACT LOCATION OF SWITCHGEAR.
- ALL METHODS OF GROUNDING/BONDING SHOULD BE SIZED AND INSTALLED AS PER NEC ARTICLE 250.

**ELECTRICAL RISER KEYED WORK NOTES:**

- NEW 800A, 277/480V, 3-PHASE ELECTRICAL METER AND DISCONNECT SWITCH.
- NEW 800A, 277/480V, 3-PHASE ELECTRICAL INCOMING FEEDER FOR OUR SPACE.
- NEW 250A, 277/480V, 3-PHASE ELECTRICAL PANEL "M1 & M2".
- NEW 800A, 277/480V, 3-PHASE MAIN DISTRIBUTION PANEL "MDP". "GE PANELBOARDS A SERIES II TYPE AEP "OR APPROVED EQUAL.
- NEW 400A, 120/208V, 3-PHASE ELECTRICAL PANEL "P1".
- NEW 250A, 120/208V, 3-PHASE ELECTRICAL PANEL "P2".
- NEW 400A, 120/208V, 3-PHASE ELECTRICAL PANEL "P3".
- NEW 200A, 120/208V, 3-PHASE ELECTRICAL PANEL "P4".
- NEW 200A, 120/208V, 3-PHASE ELECTRICAL PANEL "PP".
- NEW 112.5KVA, P:480V, S:120/208V, 3-PHASE TRANSFORMER.



PANEL: MDP (NEW)													MOUNTING: SURFACE					
480Y/277 VOLTS, 3 PHASE, 4 WIRE													PANEL LOCATION: ELECTRICAL ROOM					
MAIN CB: MLO: 800A BUS: 800A MIN.													FED FROM: CT CABINET					
NOTE:																		
CKT NO.	TRIP AMPS	DESCRIPTION OF LOAD	LOAD TYPE	LOAD (KVA)	MINIMUM BRANCH CIRCUIT	PER PHASE (KVA)			MINIMUM BRANCH CIRCUIT	LOAD (KVA)	LOAD TYPE	DESCRIPTION OF LOAD	TRIP AMPS	CKT NO.				
						A	B	C										
1	400/3P	PANEL-M1(NEW)	O	80.47	4#600KCM, #3G, 3 1/2" C	129.92			4#600KCM, #3G, 3 1/2" C	49.45	O	PANEL-M2(NEW)	400/3P	2				
3	O		80.47	129.92		49.45	O	4										
5	O		80.47			129.92	49.45	O		6								
7	O		36.94	65.20			28.26	O		8								
9	200/3P	PANEL-P1(NEW) VIA 112.5 KVA TRANSFORMER	O	33.17	4#3/0, #6G, 2" C		58.49		4#3/0, #6G, 2" C	25.33	O	PANEL-P3(NEW) VIA 112.5 KVA TRANSFORMER	200/3P	10				
11	O		39.67			73.85	34.18	O		12								
13	20			0.00													20	14
15	20						0.00											20
17	20						0.00							20	18			
19	20				0.00									20	20			
21		SPACE					0.00					SPACE		20	22			
23		SPACE						0.00				SPACE		20	24			
25		SPACE				0.00						SPACE		20	26			
27		SPACE					0.00					SPACE		20	28			
29		SPACE						0.00				SPACE		20	30			
TOTAL CONNECTED LOAD (KVA)						195.11	188.41	203.77										
LOAD CLASSIFICATION			CONNECTED LOAD (KVA)		DEMAND FACTOR		DEMAND LOAD (KVA)		PANEL TOTAL LOAD									
TOTAL LIGHTING	L		0.00		125%		0.00	TOTAL CONNECTED LOAD 587.29 KVA										
TOTAL RECEPTACLE	R		0.00		100%		0.00	TOTAL DEMAND LOAD 587.29 KVA										
TOTAL HVAC	H		0.00		100%		0.00	TOTAL CONNECTED CURRENT 707.24 AMP										
TOTAL MOTOR	M		0.00		100%		0.00	TOTAL DEMAND CURRENT 707.24 AMP										
TOTAL KITCHEN/EQUIPMENTS	E		0.00		100%		0.00	TOTAL DEMAND CURRENT 707.24 AMP										
TOTAL OTHER/MISCELLANEOUS	O		587.29		100%		587.29	MAIN C.B. RATING 800.00										

PANEL: P2 (NEW)													MOUNTING: SURFACE	
208Y/120 VOLTS, 3 PHASE, 4 WIRE													PANEL LOCATION: ELECTRICAL ROOM	
MAIN CB: MLO: 250A BUS: 250A MIN.													FED FROM: P1	
NOTE:														
CKT NO.	TRIP AMPS	DESCRIPTION OF LOAD	LOAD TYPE	LOAD (KVA)	MINIMUM BRANCH CIRCUIT	PER PHASE (KVA)			MINIMUM BRANCH CIRCUIT	LOAD (KVA)	LOAD TYPE	DESCRIPTION OF LOAD	TRIP AMPS	CKT NO.
						A	B	C						
1	20	TREADMILL-T7xi	E	1.40	2#12, #12G, 3/4" C	2.80			2#12, #12G, 3/4" C	1.40	E	TREADMILL-T7xi	20	2
3	20	TREADMILL-T7xi	E	1.40	2#12, #12G, 3/4" C		2.80		2#12, #12G, 3/4" C	1.40	E	TREADMILL-T7xi	20	4
5	20	TREADMILL-T7xi	E	1.40	2#12, #12G, 3/4" C			2.80	2#12, #12G, 3/4" C	1.40	E	TREADMILL-T7xi	20	6
7	20	TREADMILL-T7xi	E	1.40	2#12, #12G, 3/4" C	2.80			2#12, #12G, 3/4" C	1.40	E	TREADMILL-T7xi	20	8
9	20	TREADMILL-T7xi	E	1.40	2#12, #12G, 3/4" C		2.80		2#12, #12G, 3/4" C	1.40	E	TREADMILL-T7xi	20	10
11	20	TREADMILL-T7xi	E	1.40	2#12, #12G, 3/4" C			2.80	2#12, #12G, 3/4" C	1.40	E	TREADMILL-T7xi	20	12
13	20	TREADMILL-T7xi	E	1.40	2#12, #12G, 3/4" C	2.80			2#12, #12G, 3/4" C	1.40	E	TREADMILL-T7xi	20	14
15	20	TREADMILL-T7xi	E	1.40	2#12, #12G, 3/4" C		2.80		2#12, #12G, 3/4" C	1.40	E	TREADMILL-T7xi	20	16
17	20	TREADMILL-T7xi	E	1.40	2#12, #12G, 3/4" C			2.80	2#12, #12G, 3/4" C	1.40	E	CLIMB MILL-C7xi	20	18
19	20	CLIMB MILL-C7xi	E	1.40	2#12, #12G, 3/4" C	2.80			2#12, #12G, 3/4" C	1.40	E	CLIMB MILL-C7xi	20	20
21	20	CLIMB MILL-C7xi	E	1.40	2#12, #12G, 3/4" C		2.80		2#12, #12G, 3/4" C	1.40	E	CLIMB MILL-C7xi	20	22
23	20	CLIMB MILL-C7xi	E	1.40	2#12, #12G, 3/4" C			1.54	2#12, #12G, 3/4" C	0.14	E	ELLIPTICAL-A7xi 1,2,3,4	20	24
25	20	ELLIPTICAL-A7xi 5,6,7,8	E	0.14	2#12, #12G, 3/4" C	0.29			2#12, #12G, 3/4" C	0.14	E	ELLIPTICAL-A7xi 9,10,11,12	20	26
27	20	RECURRENT CYCLE-R7xi 1,2,3,4	E	0.14	2#12, #12G, 3/4" C		0.25		2#12, #12G, 3/4" C	0.11	E	RECURRENT CYCLE-R7xi 5,6,7	20	28
29	20	UPRIGHT CYCLE-U7xi 1,2,3	E	0.04	2#12, #12G, 3/4" C			0.08	2#12, #12G, 3/4" C	0.04	E	UPRIGHT CYCLE-U7xi 4,5,6	20	30
31	20	TREADMILL-T5x	E	1.40	2#12, #12G, 3/4" C	2.80			2#12, #12G, 3/4" C	1.40	E	TREADMILL-T5x	20	32
33	20	TREADMILL-T5x	E	1.40	2#12, #12G, 3/4" C		2.80		2#12, #12G, 3/4" C	1.40	E	TREADMILL-T5x	20	34
35	20	TREADMILL-T5x	E	1.40	2#12, #12G, 3/4" C			2.80	2#12, #12G, 3/4" C	1.40	E	TREADMILL-T5x	20	36
37	20	TREADMILL-T5x	E	1.40	2#12, #12G, 3/4" C	2.80			2#12, #12G, 3/4" C	1.40	E	TREADMILL-T5x	20	38
39	20	TREADMILL-T5x	E	1.40	2#12, #12G, 3/4" C		2.80		2#12, #12G, 3/4" C	1.40	E	TREADMILL-T5x	20	40
41	20	TREADMILL-T5x	E	1.40	2#12, #12G, 3/4" C			2.80	2#12, #12G, 3/4" C	1.40	E	TREADMILL-T5x	20	42
43	20	TREADMILL-T5x	E	1.40	2#12, #12G, 3/4" C	2.80			2#12, #12G, 3/4" C	1.40	E	TREADMILL-T5x - MEZZANINE	20	44
45	20	TREADMILL-T5x - MEZZANINE	E	1.40	2#12, #12G, 3/4" C		2.80		2#12, #12G, 3/4" C	1.40	E	TREADMILL-T5x - MEZZANINE	20	46
47	20	TREADMILL-T5x - MEZZANINE	E	1.40	2#12, #12G, 3/4" C			2.80	2#12, #12G, 3/4" C	1.40	E	TREADMILL-T5x - MEZZANINE	20	48
49	20	TREADMILL-T5x - MEZZANINE	E	1.40	2#12, #12G, 3/4" C	2.80			2#12, #12G, 3/4" C	1.40	E	TREADMILL-T5x - MEZZANINE	20	50
51	20	TREADMILL-T5x - MEZZANINE	E	1.40	2#12, #12G, 3/4" C		2.80		2#12, #12G, 3/4" C	1.40	E	TREADMILL-T5x - MEZZANINE	20	52
53	20	TREADMILL-T5x - MEZZANINE	E	1.40	2#12, #12G, 3/4" C			2.80	2#12, #12G, 3/4" C	1.40	E	TREADMILL-T5x - MEZZANINE	20	54
55	20	TREADMILL-T5x - MEZZANINE	E	1.40	2#12, #12G, 3/4" C	2.80			2#12, #12G, 3/4" C	1.40	E	TREADMILL-T5x - MEZZANINE	20	56
57	20	ELLIPTICAL-ESx 1,2,3,4 - MEZZANINE	E	0.14	2#12, #12G, 3/4" C		0.29		2#12, #12G, 3/4" C	0.14	E	ELLIPTICAL-ESx 5,6,7,8 - MEZZANINE	20	58
59	20	CLAY OFFICE MEZZANINE - COMPUTER	E	0.36	2#12, #12G, 3/4" C			0.90	2#12, #12G, 3/4" C	0.54	E	CLAY OFFICE MEZZANINE - REC	20	60
TOTAL CONNECTED LOAD (KVA)						25.49	22.94	22.12						
LOAD CLASSIFICATION			CONNECTED LOAD (KVA)		DEMAND FACTOR		DEMAND LOAD (KVA)		PANEL TOTAL LOAD					
TOTAL LIGHTING	L		0.00		125%		0.00	TOTAL CONNECTED LOAD 70.55 KVA						
TOTAL RECEPTACLE	R		0.00		100%		0.00	TOTAL DEMAND LOAD 70.55 KVA						
TOTAL HVAC	H		0.00		100%		0.00	TOTAL CONNECTED CURRENT 196.06 AMP						
TOTAL MOTOR	M		0.00		100%		0.00	TOTAL DEMAND CURRENT 196.06 AMP						
TOTAL KITCHEN/EQUIPMENTS	E		70.55		100%		70.55	TOTAL DEMAND CURRENT 196.06 AMP						
TOTAL OTHER/MISCELLANEOUS	O		0.00		100%		0.00	MAIN C.B. RATING 245.08						

PANEL: P1 (NEW)													MOUNTING: SURFACE	
208Y/120 VOLTS, 3 PHASE, 4 WIRE													PANEL LOCATION: ELECTRICAL ROOM	
MAIN CB: MLO: 400A BUS: 400A MIN.													FED FROM: STEP DOWN TRANSFORMER	
NOTE:														
CKT NO.	TRIP AMPS	DESCRIPTION OF LOAD	LOAD TYPE	LOAD (KVA)	MINIMUM BRANCH CIRCUIT	PER PHASE (KVA)			MINIMUM BRANCH CIRCUIT	LOAD (KVA)	LOAD TYPE	DESCRIPTION OF LOAD	TRIP AMPS	CKT NO.
						A	B	C						
1	20	VIP TRAINING - TV CKT	E	0.70	2#12, #12G, 3/4" C	1.42			2#12, #12G, 3/4" C	0.72	R	VIP TRAINING - REC 1	20	2
3	20	VIP TRAINING - REC 2	R	0.72	2#12, #12G, 3/4" C		1.08		2#12, #12G, 3/4" C	0.36	R	VIP TRAINING - CEILING REC	20	4
5	20	MAIN WORK OUT AREA - REC 1	R	0.72	2#12, #12G, 3/4" C			1.80	2#12, #12G, 3/4" C	1.08	R	MAIN WORK OUT AREA - REC 2	20	6
7	20	MAIN WORK OUT AREA - REC 3	R	0.90	2#12, #12G, 3/4" C	1.60			2#12, #12G, 3/4" C	0.70	E	MAIN WORK OUT AREA - TV CKT 1	20	8
9	20	MAIN WORK OUT AREA - TV CKT 2	E	0.70	2#12, #12G, 3/4" C		1.40		2#12, #12G, 3/4" C	0.70	E	MAIN WORK OUT AREA - TV CKT 3	20	10
11	20	MAIN WORK OUT AREA - TV CKT 4	E	0.70	2#12, #12G, 3/4" C			1.42	2#12, #12G, 3/4" C	0.72	E	LOBBY / RECEPTION - COMPUTER CKT 1	20	12
13	20	LOBBY / RECEPTION - COMPUTER CKT 2	R	0.72	2#12, #12G, 3/4" C	1.44			2#12, #12G, 3/4" C	0.72	E	LOBBY / RECEPTION - COMPUTER CKT 3	20	14
15	20	PRINTER	E	1.00	2#12, #12G, 3/4" C		1.54		2#12, #12G, 3/4" C	0.54	R	LOBBY / RECEPTION - REC	20	16
17	20	KIDS CHECK IN - COMPUTER CKT	E	0.72	2#12, #12G, 3/4" C			1.44	2#12, #12G, 3/4" C	0.72	R	OFFICE REC 1	20	18
19	20	OFFICE REC 2	E	0.54	2#12, #12G, 3/4" C	1.54			2#12, #12G, 3/4" C	1.00	E	REST ROOM - HAND DRYER	20	20
21	20	REST ROOM - AUTOMATIC SENSOR CKT	E	1.00	2#12, #12G, 3/4" C		1.72		2#12, #12G, 3/4" C	0.72	R	KIDS PLAY AREA - REC	20	22
23	20	KIDS PLAY AREA - REC	E	0.72	2#12, #12G, 3/4" C			2.12	2#12, #12G, 3/4" C	1.40	E	KIDS PLAY & PASSAGE AREA - TV	20	24
25	20	TANNING CORRIDOR	E	0.54	2#12, #12G, 3/4" C	0.90			2#12, #12G, 3/4" C	0.36	R	TOILET CORRIDOR - REC	20	26
27	20	GAS WATER HEATER	E	0.40	2#12, #12G, 3/4" C		0.43		2#12, #12G, 3/4" C	0.03	M	CIRCULATION PUMP	20	28
29			O	25.49				26.19	2#12, #12G, 3/4" C	0.70	E	MEZZANINE WORK OUT AREA - TV CKT 1	20	30
31	250/3P	PANEL P2(NEW)	O	22.94	4#250KCM, #4G, 2 1/2" C		23.12		2#12, #12G, 3/4" C	0.18	R	TV PANEL	20	32
33			O	22.12				22.12				SPARE	20	34
35	20	STORAGE & BREAK ROOM - REC	R	0.72	2#12, #12G, 3/4" C			1.26	2#12, #12G, 3/4" C	0.54	R	ELECTRICAL ROOM - REC	20	36
37	20	WATER FOUNTAIN	E	1.50	2#12, #12G, 3/4" C	2.04			2#12, #12G, 3/4" C	0.54	E	GROUP FITNESS - REC	20	38
39	20	GROUP FITNESS - REC	R	0.54	2#12, #12G, 3/4" C		1.26		2#12, #12G, 3/4" C	0.72	E	GROUP FITNESS - REC	20	40
41	20	SPARE						0.70	2#12, #12G, 3/4" C	0.70	R	MASSAGE TV &		

PANEL: P4 (NEW)													MOUNTING: SURFACE	
208Y/120 VOLTS, 3 PHASE, 4 WIRE													PANEL LOCATION: ELECTRICAL ROOM	
MAIN CB: MLO: 200A BUS: 200A MIN,													FED FROM: P3	
NOTE:														
CKT NO.	TRIP AMPS	DESCRIPTION OF LOAD	LOAD TYPE	LOAD (KVA)	MINIMUM BRANCH CIRCUIT	PER PHASE (KVA)			MINIMUM BRANCH CIRCUIT	LOAD (KVA)	LOAD TYPE	DESCRIPTION OF LOAD	TRIP AMPS	CKT NO.
						A	B	C						
1	20	LIGHTING - EXTERIOR ENTRY 1	L	0.25	2#12, #12G, 3/4"C	0.43			2#12, #12G, 3/4"C	0.18	L	LIGHTING - EXTERIOR ENTRY 2	20	2
3	20	LIGHTING - MASSAGE, MEN'S TOILET & LOCKER,	L	0.77	2#12, #12G, 3/4"C		1.29		2#12, #12G, 3/4"C	0.52	L	LIGHTING - WOMEN'S TOILET & LOCKER	20	4
5	20	LIGHTING - TANNING AREA	L	0.80	2#12, #12G, 3/4"C			1.27	2#12, #12G, 3/4"C	0.47	L	LIGHTING - LOBBY	20	6
7	20	LIGHTING - KIDS PLAY,RR	L	0.43	2#12, #12G, 3/4"C	0.90			2#12, #12G, 3/4"C	0.47	L	LIGHTING - VIP TRAINING	20	8
9	20	LIGHTING - YOGA, SPINNING	L	0.43	2#12, #12G, 3/4"C		0.76		2#12, #12G, 3/4"C	0.33	L	LIGHTING - CLAY OFFICE & CONFERENCE, RR	20	10
11	20	LIGHTING - SMALL G. TRAINING	L	1.17	2#12, #12G, 3/4"C			2.17	2#12, #12G, 3/4"C	1.00	L	GROUP FITNESS - FANS	20	12
13	20	LIGHTING - WORKOUT & TRAINING 1	L	0.74	2#12, #12G, 3/4"C	1.24			2#12, #12G, 3/4"C	0.50	L	MAIN WORKOUT - FAN.	20	14
15	20	MAIN WORKOUT - FANS.	L	1.00	2#12, #12G, 3/4"C		1.74		2#12, #12G, 3/4"C	0.74	L	LIGHTING - WORKOUT & TRAINING 2	20	16
17	20	LIGHTING - EXTERIOR	L	0.20	2#12, #12G, 3/4"C			1.88	2#12, #12G, 3/4"C	1.68	L	LIGHTING - SITE LIGHTING	20	18
19	20	TIMECLOCK TC1/TC2	L	1.00	2#12, #12G, 3/4"C	2.68			2#12, #12G, 3/4"C	1.68	L	LIGHTING - SITE LIGHTING	20	20
21	20	SPARE					0.00					SPARE	20	22
23	20	SPARE						0.00				SPARE	20	24
25	20	SPARE					0.00					SPARE	20	26
27	20	SPARE						0.00				SPARE	20	28
29	20	SPARE						0.00				SPARE	20	30
31	20	SPARE					0.00					SPARE	20	32
33	20	SPARE						0.00				SPARE	20	34
35	20	SPARE							0.00			SPARE	20	36
37	20	SPARE					0.00					SPARE	20	38
39	20	SPARE						0.00				SPARE	20	40
41	20	SPARE							0.00			SPARE	20	42
TOTAL CONNECTED LOAD (KVA)						5.26	3.79		5.32					
LOAD CLASSIFICATION		CONNECTED LOAD (KVA)		DEMAND FACTOR		DEMAND LOAD (KVA)		PANEL TOTAL LOAD						
TOTAL LIGHTING	L	14.36	125%	17.95										
TOTAL RECEPTACLE	R	0.00	100%	0.00										
TOTAL HVAC	H	0.00	100%	0.00										
TOTAL MOTOR	M	0.00	100%	0.00										
TOTAL KITCHEN/EQUIPMENTS	E	0.00	100%	0.00										
TOTAL OTHER/MISCELLANEOUS	O	0.00	100%	0.00										
				TOTAL CONNECTED LOAD		14.36		KVA						
				TOTAL DEMAND LOAD		17.95		KVA						
				TOTAL CONNECTED CURRENT		39.90		AMP						
				TOTAL DEMAND CURRENT		49.87		AMP						
				MAIN C.B. RATING		62.34								

PANEL: M1 (NEW)													MOUNTING: SURFACE	
480Y/277 VOLTS, 3 PHASE, 4 WIRE													PANEL LOCATION: ELECTRICAL ROOM	
MAIN CB: MLO: 400A BUS: 400A MIN,													FED FROM: MDP	
NOTE:														
CKT NO.	TRIP AMPS	DESCRIPTION OF LOAD	LOAD TYPE	LOAD (KVA)	MINIMUM BRANCH CIRCUIT	PER PHASE (KVA)			MINIMUM BRANCH CIRCUIT	LOAD (KVA)	LOAD TYPE	DESCRIPTION OF LOAD	TRIP AMPS	CKT NO.
						A	B	C						
1			H	7.44		14.87			7.44	H				2
3	35/3P	RTU-1(N)	H	7.44	3#8, #10G, 3/4"C		14.87		7.44	H	RTU-2(N)	35/3P	4	
5			H	7.44			14.87		7.44	H			6	
7			H	7.44		14.87			7.44	H			8	
9	35/3P	RTU-3(N)	H	7.44	3#8, #10G, 3/4"C		14.87		7.44	H	RTU-4(N)	35/3P	10	
11			H	7.44			14.87		7.44	H			12	
13			H	13.68		20.85			7.17	H			14	
15	60/3P	RTU-5(N)	H	13.68	3#6, #10G, 3/4"C		20.85		7.17	H	RTU-6(N)	30/3P	16	
17			H	13.68			20.85		7.17	H			18	
19	20/2P	POOL LIGHTING LOAD 1	L	0.42	2#12, #12G, 3/4"C	0.83			0.42	L	POOL LIGHTING LOAD 2	20/2P	20	
21			L	0.42		0.83			0.42	L			22	
23							0.63		0.63	L	GROUP FITNESS LIGHTING LOAD	20/2P	24	
25			E	4.00		4.63			0.63	L			26	
27	40/3P	WOMEN'S SAUNA	E	4.00	3#8, #10G, 3/4"C		4.76		0.76	L	MAIN WORKOUT LIGHTING LOAD 1	20/2P	28	
29			E	4.00			4.76		0.76	L			30	
31			H	24.96		25.52			0.56	L	MAIN WORKOUT LIGHTING LOAD 2	20/2P	32	
33	100/3P	POOL DEHUMIDIFIER	H	24.96	3#3, #8G, 1"C		25.52		0.56	L			34	
35			H	24.96			24.96						36	
37	20					0.00							38	
39	20						0.00						40	
41	20							0.00					42	
TOTAL CONNECTED LOAD (KVA)						81.57	81.71		80.94					
LOAD CLASSIFICATION		CONNECTED LOAD (KVA)		DEMAND FACTOR		DEMAND LOAD (KVA)		PANEL TOTAL LOAD						
TOTAL LIGHTING	L	5.56	125%	6.95										
TOTAL RECEPTACLE	R	0.00	100%	0.00										
TOTAL HVAC	H	226.67	100%	226.67										
TOTAL MOTOR	M	0.00	100%	0.00										
TOTAL KITCHEN/EQUIPMENTS	E	12.00	65%	7.80										
TOTAL OTHER/MISCELLANEOUS	O	0.00	100%	0.00										
				TOTAL CONNECTED LOAD		244.22		KVA						
				TOTAL DEMAND LOAD		241.41		KVA						
				TOTAL CONNECTED CURRENT		294.11		AMP						
				TOTAL DEMAND CURRENT		290.72		AMP						
				MAIN C.B. RATING		363.40								

PANEL: PP (NEW)													MOUNTING: SURFACE			
208Y/120 VOLTS, 3 PHASE, 4 WIRE													PANEL LOCATION: ELECTRICAL ROOM			
MAIN CB: MLO: 200A BUS: 200A MIN,													FED FROM: P3			
NOTE:																
CKT NO.	TRIP AMPS	DESCRIPTION OF LOAD	LOAD TYPE	LOAD (KVA)	MINIMUM BRANCH CIRCUIT	PER PHASE (KVA)			MINIMUM BRANCH CIRCUIT	LOAD (KVA)	LOAD TYPE	DESCRIPTION OF LOAD	TRIP AMPS	CKT NO.		
						A	B	C								
1	20	SPARE				0.00						SPARE	20	2		
3	20	SPARE					0.00					SPARE	20	4		
5	20	SPARE						0.00				SPARE	20	6		
7	20	SPARE							0.00			SPARE	20	8		
9	20	SPARE								0.00		SPARE	20	10		
11	20	SPARE									0.00	SPARE	20	12		
13	20	SPARE										0.00	SPARE	20	14	
15	20	SPARE									0.00	SPARE	20	16		
17	20	SPARE										0.00	SPARE	20	18	
19	20	SPARE									0.00	SPARE	20	20		
21	20	SPARE										0.00	SPARE	20	22	
23	20	SPARE											0.00	SPARE	20	24
25	20	SPARE											0.00	SPARE	20	26
27	20	SPARE											0.00	SPARE	20	28
29	20	SPARE											0.00	SPARE	20	30
31	20	SPACE											0.00	SPACE	20	32
33	20	SPACE											0.00	SPACE	20	34
35	20	SPACE											0.00	SPACE	20	36
37	20	SPACE											0.00	SPACE	20	38
39	20	SPACE											0.00	SPACE	20	40
41	20	SPACE											0.00	SPACE	20	42
TOTAL CONNECTED LOAD (KVA)						0.00	0.00		0.00							
LOAD CLASSIFICATION		CONNECTED LOAD (KVA)		DEMAND FACTOR		DEMAND LOAD (KVA)		PANEL TOTAL LOAD								
TOTAL LIGHTING	L	0.00	125%	0.00												
TOTAL RECEPTACLE	R	0.00	100%	0.00												
TOTAL HVAC	H	0.00	100%	0.00												
TOTAL MOTOR	M	0.00	100%	0.00												
TOTAL KITCHEN/EQUIPMENTS	E	0.00	100%	0.00												
TOTAL OTHER/MISCELLANEOUS	O	0.00	100%	0.00												
				TOTAL CONNECTED LOAD		0.00		KVA								
				TOTAL DEMAND LOAD		0.00		KVA								
				TOTAL CONNECTED CURRENT		0.00		AMP								
				TOTAL DEMAND CURRENT		0.00		AMP								
				MAIN C.B. RATING		0.00										

PANEL: M2 (NEW)													MOUNTING: SURFACE	
480Y/277 VOLTS, 3 PHASE, 4 WIRE													PANEL LOCATION: ELECTRICAL ROOM	
MAIN CB: MLO: 400A BUS: 400A MIN,													FED FROM: MDP	
NOTE:														
CKT NO.	TRIP AMPS	DESCRIPTION OF LOAD	LOAD TYPE	LOAD (KVA)	MINIMUM BRANCH CIRCUIT	PER PHASE (KVA)			MINIMUM BRANCH CIRCUIT	LOAD (KVA)	LOAD TYPE	DESCRIPTION OF LOAD	TRIP AMPS	CKT NO.
						A	B	C						
1			H	13.68		25.10			11.42	H				2
3	60/3P	RTU-7(N)	H	13.68	3#6, #10G, 3/4"C		25.10		11.42	H	RTU-8(N)	50/3P	4	
5			H	13.68			25.10		11.42	H			6	
7			H	5.58		11.15			5.58	H			8	
9	25/3P	RTU-9(N)	H	5.58	3#10, #10G, 3/4"C		11.15		5.58	H	RTU-10(N)	25/3P	10	
11			H	5.58			11.15		5.58	H			12	
13			H	7.44		8.34			0.90	H			14	
15	35/3P	RTU-11(N)	H	7.44	3#8, #10G, 3/4"C		8.34		0.90	H	MAF-1	20/3P	16	
17			H	7.44			8.34		0.90	H			18	
19	20/3P	SPF-1	H	0.80	3#12, #12G, 3/4"C	1.09			0.29	M	EF-3	20/3P	20	
21			H	0.80		1.09			0.29	M			22	
23			H	0.80			1.09		0.29	M			24	
25			E	4.00		4.29			0.29	M			26	
27	40/3P	MEN'S SAUNA	E	4.00	3#8, #10G, 3/4"C		4.29		0.29	M	EF-4	20/3P	28	
29			E	4.00			4.29		0.29	M			30	
31			M	0.29	3#12, #12G, 3/4"C		0.58		0.29	M			32	
33	20/3P	EF-9	M	0.29			0.58		0.29	M	EF-2	20/3P	34	
35			M	0.29				0.58	0.29	M			36	
37			M	0.29			0.29						38	
39	20/3P	EF-1	M	0.29	3#12, #12G, 3/4"C		0.29						40	
41			M	0.29				0.29	</					

PLUMBING SPECIFICATIONS

- TENANT'S PLUMBING SHALL NOT BE CHASED OR CUT INTO OR THROUGH THE DEMISION WALLS (SEPARATING TENANT'S LEASE SPACE FROM ADJOINING TENANT SPACES ETC) OR EXTERIOR WALLS.
- VENTS SHALL NOT BE LOCATED WITHIN 25'0" OF AN EXTERIOR WALL ROOF FLASHING SERVICES MUST BE INSTALLED AS PER LANDLORD EQUIREMENTS (EXISTING VENTS)
- LANDLORD FURNISHED SANITARY OUTLET BELOW SLAB; LOCATION SHOWN ON PLUMBING SHEETS
- LANDLORD INSTALLED COLD WATER LINE; LOCATION SHOWN ON PLUMBING SHEETS
- PLUMBING CONTRACTOR IS RESPONSIBLE TO VERIFY ALL EXISTING CONDITIONS IN THE FIELD AND REPORT ALL DISCREPANCIES TO THE TENANT'S REPRESENTATIVE.
- PROVIDE MINIMUM 1" INSULATION ON ALL HOT WATER AND COLD WATER PIPING.
- HOT/COLD WATER PIPING AND WASTE LINE BELOW LAVATORY SHALL BE INSULATED AS REQUIRED BY LOCAL CODE.
- ALL PIPE INSULATION SHALL BE NONCOMBUSTIBLE MATERIALS AS REQUIRED BY LOCAL CODE.
- WATER METER IF REQUIRED SHALL HAVE SHUT OFF VALVES ON BOTH SIDES OF METER.
- GAS LINES AND REFRIGERATION LINES ON ROOF SHALL BE SUPPORTED BY TREATED WOODS BLOCKS ON ROOF PADS BY LANDLORD. ROUTING OF LINES SHALL BE COORDINATED WITH LANDLORDS PROJECT MANAGER.
- FOR ADDITIONAL PLUMBING INFORMATION, REFER TO THE SPECIFICATIONS AND DETAILS ON PLUMBING DRAWINGS.
- FIXTURES SHALL BE AS SCHEDULED ON SHEET A3.0 & P1.0. REPORT ANY DISCREPANCIES TO ARCHITECT PRIOR TO BID.
- MATERIALS
  - SANITARY SEWER--CAST IRON OR COPPER PIPING MAY BE USED EXCEPT THAT ALL PIPING BELOW GRADE SHALL BE CAST IRON VENT TWO (2") IN SIZE AND SMALLER MAY BE EITHER SCHEDULE 40 GALVANISED STEEL OR COPPER PIPING PVC IS ALLOWED FOR WASTE/VENT WHERE APPROVED BY A.H.J.
  - DOMESTIC WATER AND HOT WATER PIPING SHALL BE COPPER TYPE "L" WITH WROUGHT COPPER FITTINGS. ALL HOT WATER PIPING SHALL BE INSULATED WITH ARMAFLEX OR EQUIVALENT INSULATING TO A THICKNESS OF 1".
  - GAS PIPING SHALL BE BLACK STEEL SCHEDULE 40 WITH SCREWED FITTINGS.
  - CHILLED WATER SUPPLY AND RETURN PIPING SHALL BE GALVANISED STEEL PIPE (STANDARD WALL) OR TYPE "M" HARD COPER TUBING. ALL PIPING SHALL BE INSULATED WITH 1" THICK OWENS CORING FIBERGLASS 25 AS/SSL OR EQUAL.
- MAKING UP PIPE
  - SCREWED PIPE SHALL BE MADE WITH PIPE COMPOUND APPLIED TO THE MALE THREAD WITH NOT MORE THAN TWO THREADS LEFT EXPOSED, PIPE SHALL BE RENAMED AFTER THREADING.
  - BELOW GRADE SANITARY PIPING THAT IS CAST IRON SHALL BE MADE UP WITH ONE THIRD OF THE HUB CAULKED WITH FIRST QUALITY OAKUM AND THE REMAINDER FILLED WITH FIRST QUALITY OALKUM AT ONE FOURING AND CAULKED TIGHT.
  - COPPER JOINTS SHALL BE MADE UP WITH 95-5 SOLDER
- HANGERS AND SUPPORTS
 

HORIZONTAL PIPING SHALL BE SUPPORTED AT INTERVALS NOT TO EXCEED 10'0" WITH SWIVEL SPLIT PIPE HANGERS EQUAL TO CRANE NO. 199F OR GRINNEL NO. 104; VERTICAL PIPING SHALL BE SUPPORTED BY MEANS OF WROUGHT IRON CLAMPS SUSPENDED FROM THE UNDERSIDE OF STRUCTURE WITH HANGER RODS.
- CLEANOUTS
 

CLEANOUTS SHALL BE MANUFACTURED BY TYLER, MILWAKEE OR EQUAL AND SHALL BE INSTALLED AT ALL BENDS, ANGLES AND ENDS OF ALL WASTE AND SEWER LINES AS CALLED FOR THE DRWINGS AND AS REQUIRED BY THE LOCAL CODES. ALL CLEANOUTS SHALL BE BROUGHT TO GRADE AND IN ALL CASES, SHALL BE PROVIDED WITH SUFFICIENT SPACE FOR RODDING.

PLUMBING NOTES

- ALL WORKMANSHIP AND MATERIALS SHALL BE IN STRICT ACCORDANCE WITH APPLICABLE LOCAL CODES, RULES AND ORDINANCES.
- PLUMBING CONTRACTOR SHALL REVIEW ALL DRAWINGS OF THIS SET. CONTRACTOR TO VERIFY THAT ALL EQUIPMENT SHOWN AS EXISTING MATCHES THE DESCRIPTIONS AND SPECIFICATIONS SHOWN ON DRAWINGS AND SCHEDULES. IF DIFFERENT NOTIFY ARCHITECT/ENGINEER BEFORE BIDDING, ORDERING OR PROCEEDING WITH WORK.
- ALL EQUIPMENT WHICH IS TO REMAIN MUST BE REFURBISHED TO A LIKE NEW CONDITION.
- PLUMBING CONTRACTOR SHALL VISIT THE JOB SITE AND THOROUGHLY FAMILIARIZE HIMSELF WITH ALL EXISTING CONDITIONS.
- ALL MATERIALS SHALL BE NEW.
- ALL WORK SHALL BE PERFORMED BY A LICENSED PLUMBING CONTRACTOR IN A FIRST CLASS WORKMANLIKE MANNER. THE COMPLETED SYSTEM SHALL BE FULLY OPERATIVE. ALL EXCAVATION AND BACKFILL AS REQUIRED FOR THIS PHASE OF CONSTRUCTION SHALL BE A PART OF THIS CONTRACT.
- REQUIRED INSURANCE SHALL BE PROVIDED BY THE PLUMBING CONTRACTOR FOR PROTECTION AGAINST PUBLIC LIABILITY AND PROPERTY DAMAGE FOR THE DURATION OF THE WORK.
- PLUMBING CONTRACTOR SHALL SECURE AND PAY FOR ALL PERMITS, FEES, INSPECTION AND TESTS. PLUMBING CONTRACTOR TO OBTAIN PERMIT AND APPROVED SUBMITTALS PRIOR TO BEGINNING WORK OR ORDERING EQUIPMENT. PLUMBING CONTRACTOR MUST BE PRESENT FOR ALL INSPECTIONS OF HIS WORK BY REGULATORY AUTHORITIES.
- DRAWINGS ARE DIAGRAMMATIC, DO NOT SCALE FOR THE EXACT LOCATION OF FIXTURES, PIPING, EQUIPMENT, ETC.
- ALL WORK SHALL BE COORDINATED WITH OTHER TRADES TO AVOID INTERFERENCE WITH THE PROGRESS OF CONSTRUCTION. REPORT ANY DISCREPANCY TO ENGINEER/ARCHITECT PRIOR TO BEGINNING CONSTRUCTION.
- VERIFY LOCATION, SIZE, DIRECTION OF FLOW AND INVERTS OF ALL EXISTING UTILITIES PRIOR TO BEGINNING OF CONSTRUCTION. ADVISE ENGINEER OF ANY DISCREPANCIES.
- SOIL, WASTE, VENT AND RAINWATER PIPING SHALL BE PVC BUT MAY NOT RUN THRU RATED ASSEMBLIES OR IN PLENUMS.
- ALL FIXTURES MUST BE PROVIDED WITH READILY ACCESSIBLE STOPS AND APPROPRIATELY MARKED ACCESS PANELS. COORDINATE LOCATIONS WITH GENERAL CONTRACTOR PRIOR TO INSTALLATION.
- FURNISH AND INSTALL APPROVED AIR CHAMBERS AT EACH PLUMBING FIXTURE GROUP AS PER CODE AND WITH GOOD ENGINEERING PRACTICE.
- ELECTRIC COUPLINGS ARE REQUIRED BETWEEN ALL DISSIMILAR METAL IN PIPING AND EQUIPMENT CONNECTIONS; EXCEPT AT WATER HEATER AS PER CODE.
- ISOLATE COPPER PIPE FROM HANGER OR SUPPORTS WITH ISOLATOR PAD.
- ALL FIRE RATED FLOOR AND WALL PENETRATIONS SHALL BE PROPERLY PROTECTED FROM FIRE, SMOKE AND WATER PENETRATION BY FILLING VOIDS BETWEEN PIPE AND WALL/FLOOR SLEEVES WITH FIRE RATED FOAM, TO ACHIEVE THE SAME RATING AS WALLS OR FLOORS AS PART OF THE PLUMBER'S WORK.
- PLUMBING CONTRACTOR SHALL GUARANTEE ALL MATERIALS AND WORKMANSHIP FREE FROM DEFECTS FOR A PERIOD OF NOT LESS THAN ONE (1) YEAR FROM DATE OF CERTIFICATE OF OCCUPANCY. CORRECTION OF ANY DEFECTS SHALL BE COMPLETED WITHOUT ADDITIONAL CHARGE WITHIN 72 HOURS OF NOTIFICATION AND SHALL INCLUDE REPLACEMENT OR REPAIR OF ANY OTHER PHASE OF THE INSTALLATION WHICH MAY HAVE BEEN DAMAGED. PROVIDE COPY TO LL.
- STUDOR MINI/MAXI AIR ADMITTANCE VALVES MAY NOT BE USED AS AN ALTERNATE TO VENT PIPING THRU ROOF.
- PROVIDE CHROME PLATED COMBINATION COVER PLATE AND CLEAN OUT PLUG OR ACCESS PANEL FOR ALL CLEANOUTS.
- NO COMBUSTIBLE MATERIAL TO BE USED IN MECHANICAL ROOMS OR IN CEILING SPACES WHERE USED AS RETURN AIR PLENUMS.
- NO WATER, SANITARY OR DRAINAGE PIPING PERMITTED IN ELECTRICAL OR ELEVATOR EQUIPMENT ROOMS.
- WATER PIPING INSULATION SHALL BE 1" THICK ARMAFLEX INSTALLED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS FOR ALL HOT WATER PIPING. WHERE DOMESTIC WATER TEMPERATURES CAN CAUSE SWEATING, ALL COLD WATER PIPING SHALL BE INSULATED WITH 1/2" THICK ARMAFLEX INSULATION.
- CONDENSATE DRAIN LINES TO BE RUN UNDER SLAB IN PVC SCH40 PIPE AND STUBBED OUT OF WALL TO UNIT. TIE-IN OF A/C TO BE BY OTHERS. PVC PIPING WITH 1/2" THICK ARMAFLEX INSULATION MAY BE USED IN LOCATIONS WHERE ALLOWED BY LOCAL CODES. SEE PLUMBING DRAWINGS FOR SIZE AND LOCATION OF PIPING. PVC WILL BE MIN. SCHEDULE 40 FOR SIZE AND
- PROVIDE ANGLE STOPS ON ALL WATER SERVICE LINES TO FIXTURES FOR INDIVIDUAL SHUT-OFF.
- NO JOINTS UNDERGROUND FOR COPPER.
- PLUMBING FIXTURES SHALL COMPLY WITH NC STATE PLUMBING CODE.
- WATER HAMMER ARRESTORS AS PER NC STATE PLUMBING CODE.
- PLUMBING CONTRACTOR TO PROVIDE ANTI-SCALDING VALVE FOR TUBS AND SHOWERS.
- PLUMBING CONTRACTOR SHALL REVIEW ALL BID DOCUMENTATION.
- PLUMBING CONTRACTOR SHALL REVIEW WALL FINISHES @ LOCATION REQUIRING BARRIER-FREE COMPLIANCE (EXAMPLE: CENTER LINE TO TOILET).
- CONSTRUCTION "AS BUILT" DRAWINGS AND DOCUMENTS SHALL BE PROVIDED TO THE OWNER WITHIN 30 DAYS AFTER THE DATE OF ACCEPTANCE. PROVIDE A COPY TO LL.
- OPERATION MANUALS AND MAINTENANCE MANUALS SHALL BE PROVIDED TO THE BUILDING OWNER. PROVIDE A COPY TO LL.

ENERGY CONSERVATION NOTES

- AS PER 2015 INTERNATIONAL ENERGY CONSERVATION CODE(IECC) WITH GEORGIA AMMENDMENTS C484.4, PIPING FROM A WATER HEATER TO THE TERMINATION OF HEATED WATER FIXTURE SUPPLY PIPE SHALL BE INSULATED IN ACCORDANCE WITH TABLE C403.2.10 OF MINIMUM PIPE INSULATION THICKNESS.
- HOT WATER SYSTEM PIPING IS DESIGNED AS PER MAXIMUM ALLOWED PIPE LENGTH METHOD AS PER 2015 INTERNATIONAL ENERGY CONSERVATION CODE C404.5.1. THE HOT WATER VOLUME FROM THE NEAREST SOURCE OF HEATED WATER TO THE TERMINATION OF THE FIXTURE SUPPLY PIPE SHALL BE AS PER MAXIMUM PIPING LENGTH TABLE C404.5.1.
- AS PER 2015 INTERNATIONAL ENERGY CONSERVATION CODE AUTOMATIC CONTROLS SHALL BE INSTALLED THAT LIMITS THE OPERATION OF A RECIRCULATING PUMP AND THE SYSTEM RETURN PIPE SHALL BE A DEDICATED RETURN PIPE OR A COLD WATER SUPPLY PIPE.
  - 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 UE OF A FIXTURE OR SENSING THE FLOW OF HOT OR TEMPERED WATER TO A FIXTURE FITTING OR APPLIANCE.
  - THE CONTROL SHALL LIMIT THE TEMPERATURE OF THE WATER ENTERING THE COLD WATER PIPING TO 104°F (40°C)

SCOPE OF WORK

PROVIDE ALL PLUMBING FOR NEW FIXTURE INCLUDING ALL WATER & SANITARY LINES AND CONNECT TO EXISTING UTILITIES. CONNECT 4" NEW GAS TANKLESS WATER HEATERS & RTU'S. COORDINATE WITH GC AND MECHANICAL CONTRACTOR FOR ANY REQUIRED CONDENSATE LINES AND GAS FLEU OR WATER HEATER.

EXISTING CONTIDITONS NOTES

**STOP AND READ**  
THE CONTRACTOR AND SUB-CONTRACTORS SHALL NOT INITIATE ANY WORK UNTIL EXISTING FIELD CONDITIONS ARE PROPERLY VERIFIED. THIS SHALL HOLD TRUE FOR FIRST GENERATION AND 2ND GENERATION SPACES. WHEN DEMOLITION IS REQUIRED, THAT WILL BE PERMITTED TO EXPOSE CONDITIONS. THESE VERIFICATIONS SHALL INCLUDE BUT NOT LIMITED TO: DIMENSIONS BOTH HORIZONTALLY AND VERTICAL, ELECTRICAL SERVICE /PANELS LOCATION AND VOLTS/PHASE, LOCATION/QTY OF ROOF MOUNTED HVAC EQUIPMENT, CONFIRM THAT INTERIOR HVAC HUNG UNITS HAVE PROPER SUPPORT CONNECTIONS FOR EXISTING STRUCTURE, FIRE SPRINKLER MAIN RUNS, TOILET ROOM DIMENSIONS, DOOR SWING FOR DOORS TO REMAIN AND ETC. IF NOT VERIFIED AND DISCOVERED AT A LATER TIME, THE CONTRACTOR SHALL REIMBURSE THE ARCHITECT FOR THE REDESIGN FEE. THIS DOES NOT INCLUDE HIDDEN WORK I.E. PITCH OF SANITARY LINES, ACTUAL CONDITIONS OF EXISTING HVAC EQUIPMENT, STRUCTURAL COLUMNS/BEARING WALLS ETC.

PLUMBING LEGEND

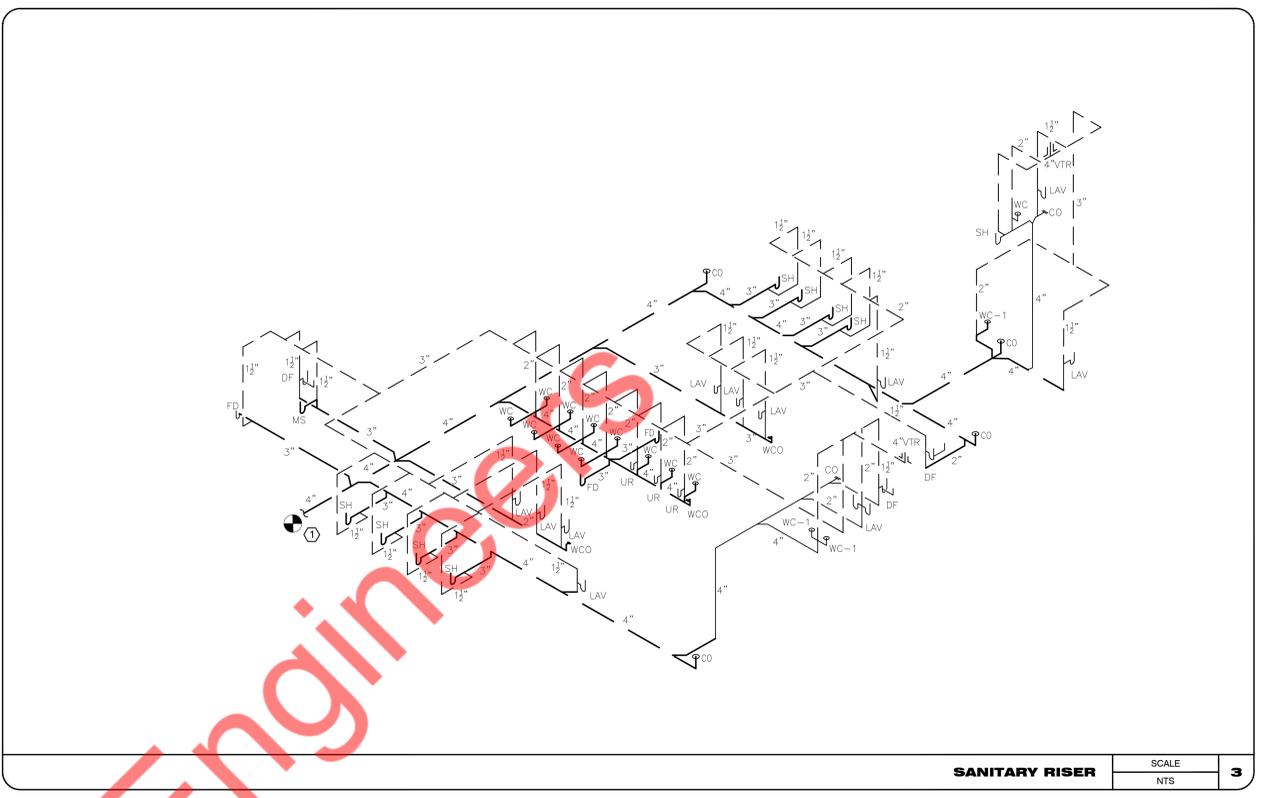
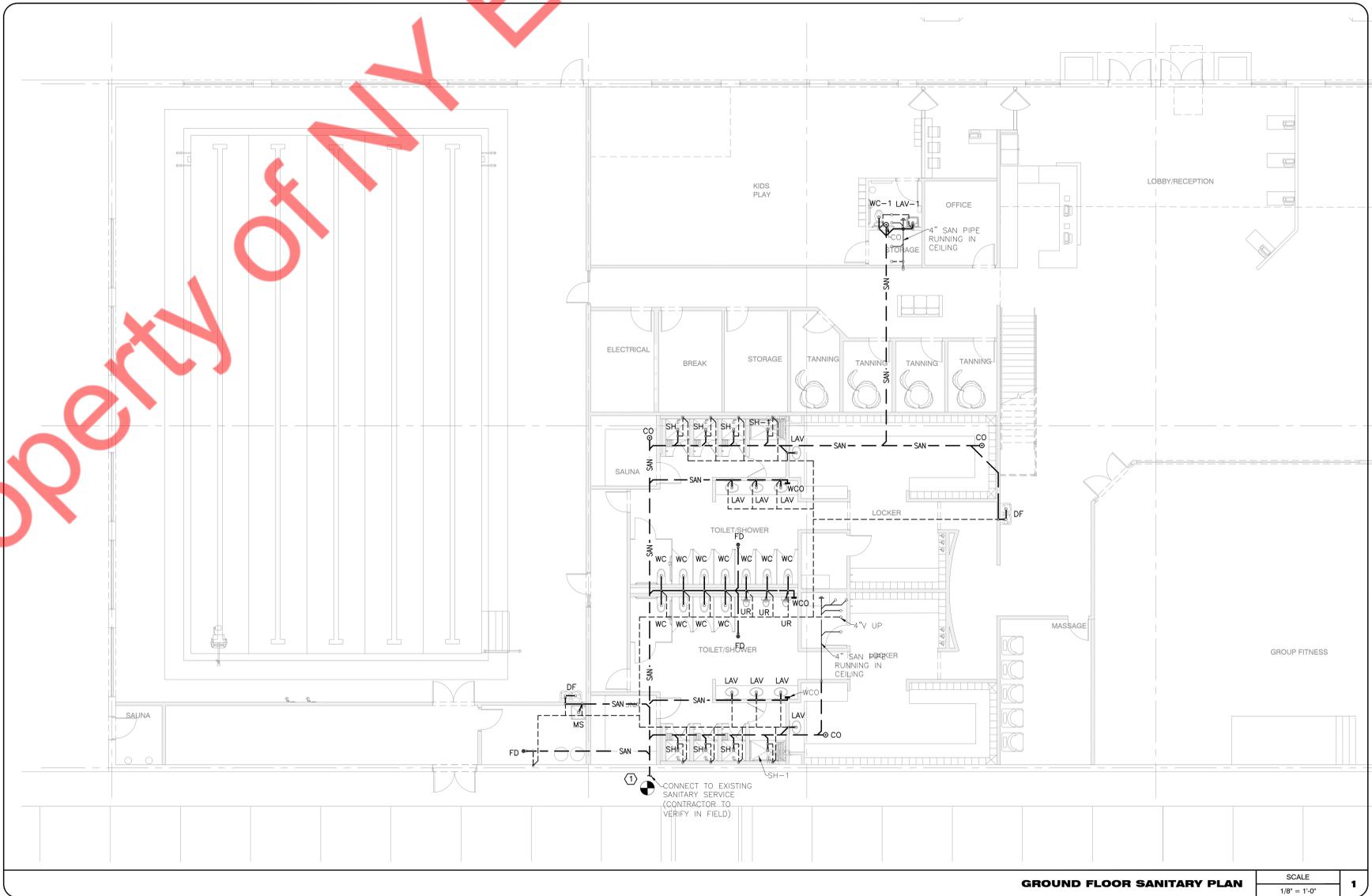
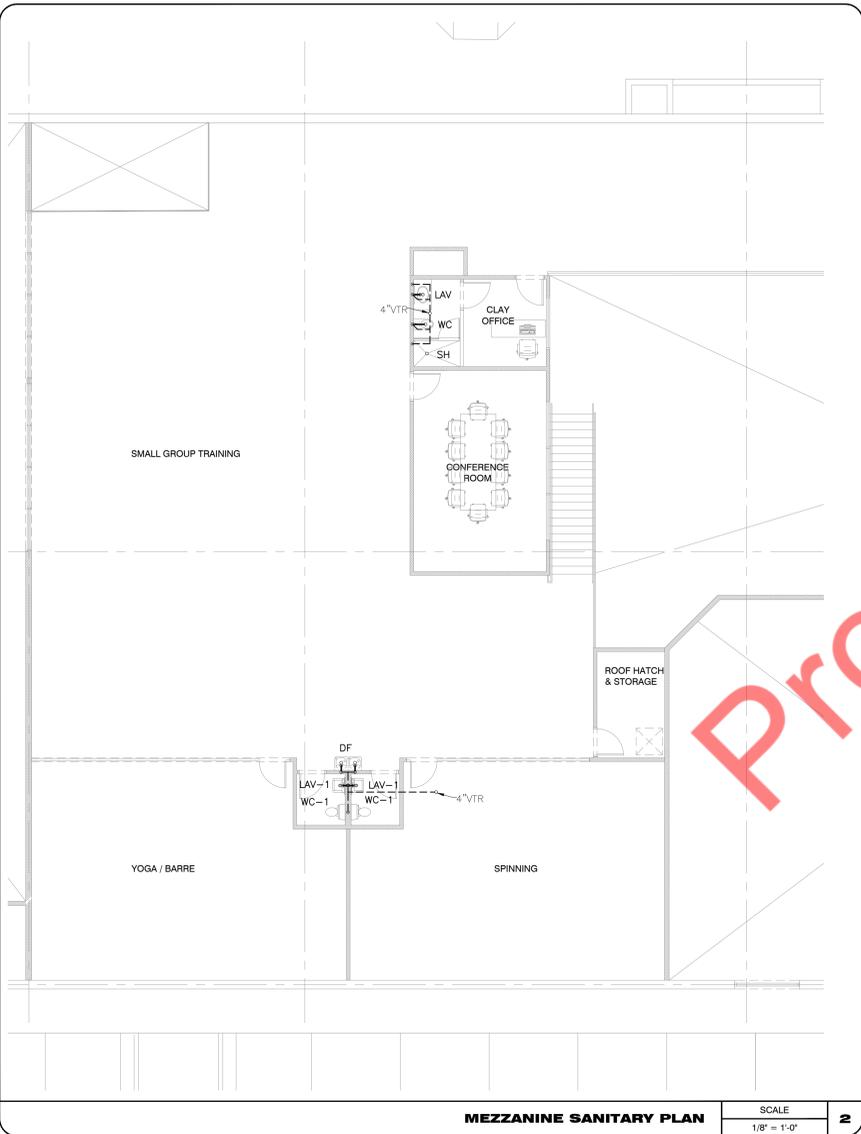
	SANITARY SEWER PIPING
	VENT PIPING
	DOMESTIC COLD WATER PIPING
	HOT WATER PIPING
	HOT WATER RETURN PIPING
	PIPE RISE OR DROP
	PIPE RISER UP
	GAS PIPING
	BALANCING VALVE
	CAPPED END OF PIPE
	CLEAN OUT
	P-TRAP
	S.O.V. SHUT-OFF VALVE
	COTC CLEAN OUT TO GRADE
	CW DOMESTIC COLD WATER
	HW DOMESTIC HOT WATER
	HWR DOMESTIC HOT WATER RETURN
	VTR VENT THRU ROOF
	RF REFRIGERATOR
	GATE VALVE
	CHECK VALVE
	BALANCING VALVE
	WATER HAMMER ARRESTER
	FD FLOOR DRAIN
	GAS SHUT OFF VALVE
	THERMOSTATIC MIXING VALVE

Property of NY Engineers

PLUMBING EQUIPMENT SCHEDULE (IMPORTANT NOTE: EQUIPMENT SUBJECT TO CHANGE G.C TO CONFIRM EQUIPMENT WITH TENANT PRIOR TO CONSTRUCTION)										
MARK	QUANTITY	ITEM DESCRIPTION	MANUFACTURER	MODEL NUMBER	FURNISHED BY	INSTALLED BY	SIZE			REMARKS
							WIDTH	DEPTH	HEIGHT	
PLUMBING FIXTURES										
WC	15	ADA ELONGATED WATER CLOSET (WALL MOUNT)	KOHLER	K-4325-0 (VERIFY W/TENANT)	GC	GC				SLOAN OPTIMA 111-1.28 ES-S SEE PLUMBING WHITE FIXTURE W/HARDENED 120V AUTOFLUSH, G.C. TO PROVIDE HEAVY DUTY 500# CARRIER.
WC-1	3	ELONGATED WATER CLOSET	KOHLER		GC	GC				
UR	3	URINAL(WALL HUNG)	KOHLER	K-5016-ET-0	GC	GC				SLOAN ROYAL OPTIMA 186-0.13 W/OPTIMA-EL-1500 SENSOR, SEE PLUMBING
LAV	9	LAVATORY (UNDERMOUNT) ADA OVAL,STAINLESS STEEL	KOHLER	K-2602-SU-NA	GC	GC	23.2"	15.25"	6.25"	FAUCET: SLOAN EAF-100-P-ISM, W/ADAPTOR TO HARDWIRE,G.C TO VERIFY SIZE, VOLTAGE ORDER AS ACCESSORY W/SINK.
LAV-1	3	LAVATORY (SINGLE COMPARTMENT) ADA SQUARE,VITEROUS CHINA	KOHLER	K-1997-0	GC	GC	19.75"	21"	6"	FAUCET: SLOAN EAF-100-ISM, TMV, W/ADAPTOR TO HARDWIRE,G.C TO VERIFY SIZE, VOLTAGE ORDER AS ACCESSORY W/SINK.
SH-1	2	ACCESSIBLE SHOWER	CUSTOM	CUSTOM	GC	GC	36"	37"	3.75"	SHOWER HEAD: DELTA T13H153 SEE PLUMBING GC TO VERIFY ROUGH OPENING WITH MANUFACTURER PRIOR TO FRAMING OPENING
SH	9	SHOWER	CUSTOM	CUSTOM	GC	GC	36"	39"	5.5"	SHOWER HEAD: DELTA T17230 SEE PLUMBING GC TO VERIFY ROUGH OPENING WITH MANUFACTURER PRIOR TO FRAMING OPENING
MS	1	MOP SINK (FLOOR MOUNT)	FLORESTONE	MSR 2424	GC	GC	24"	24"	10"	FAUCET: SPEAKMEN SC-5811
DF	3	HI LOW DRINKING FOUNTAIN(STAINLESS STEEL)	ELKAY	EZSTL8WSLK	GC	GC				ADA COMPLAINT
FD	3	FLOOR DRAIN	-	-	GC	GC	-	-	-	
WH	4	GAS WATER HEATERS	RINNAI	C1991	GC	GC	18.5"	11.4"	26.4"	(4) RINNAI MODEL NO. CU1991 CONDENSING TANKLESS INDOOR COMMERCIAL WALL MOUNTED CONTINUOUS FLOW WATER HEATER ,19900BTU/HR INPUT EA. 59700 BTU/HR TOTAL OR EQUIVALENT COMPLETE WITH WALL MOUNTED REMOTE CONTROL UNIT,SET HEATER @140°F- SEE SHEET P-2.1 FOR LOCATION OF WATER HEATERS, THERMAL EFFICIENCY : UP TO 97%
CP	1	CIRCULATION PUMP	GRUNDFOS	UP15-10B5	GC	GC				GRUNDFOS MODEL NO. UP15-10B5 RE-CIRCULATION PUMP, 10GPM @1 FOOT OF HEAD,115 (ELECTRICAL CONNECTION), 115-120 VAC (TIMER CONTROL), 60HZ(TIMER CONTROL),16 AMP(S/TIME CONTROL-CONTACT RATING) OR EQUIVALENT -SEE ELECTRICAL DRAWINGS FOR ELECTRICAL REQUIREMENTS.

NOTES BY SYMBOLS

① CONTINUE WASTE PIPING AT REAR SPACE EXPECTED AT NORTH EAST OF THE BUILDING. PLUMBING CONTRACTOR SHALL FIELD VERIFY THE SIZE, LOCATION, DEPTH OF INVERT, AND DIRECTION OF FLOW PRIOR TO BID.



NOTES BY SYMBOLS

- ① INSTALL WATER HEATERS PER MANUFACTURER'S RECOMMENDATIONS. ROUTE DISCHARGE TO MOP SINK.
- ② INSTALL TRAP PRIMERS ABOVE CEILING, OR PROVIDE ACCESS WALL PANEL.
- ③ PLUMBING CONTRACTOR TO PROVIDE NEW STREET SERVICE AND METER. POINT OF CONNECTION EXPECTED AT NORTH WEST OF THE BUILDING. PLUMBING CONTRACTOR TO PROVIDE 2" BUILDING SERVICES FROM TO FIXTURE. PLUMBING CONTRACTOR SHALL FIELD VERIFY LOCATION OF MAIN WATER SUPPLY LINE.
- ④ PROVIDE MASTER SHUT OFF VALVE, LOCATE IN WALL AT 48 A.F.F. IF POSSIBLE.
- ⑤ PROVIDE RPZ BACK FLOW PREVENTER AT 2' BEYOND METER.
- ⑥ THIS IS A 365 DAY, 24/7 FACILITY WHERE HOT WATER IS IN DEMAND AT ALL TIMES. FOR HOT WATER CIRCULATION CONTROLS PROVIDE AUTOMATIC SHUT DOWN OF PUMPS WHEN DESIRED WATER TEMPERATURE IS ACHIEVED IN THE RETURN PIPING.

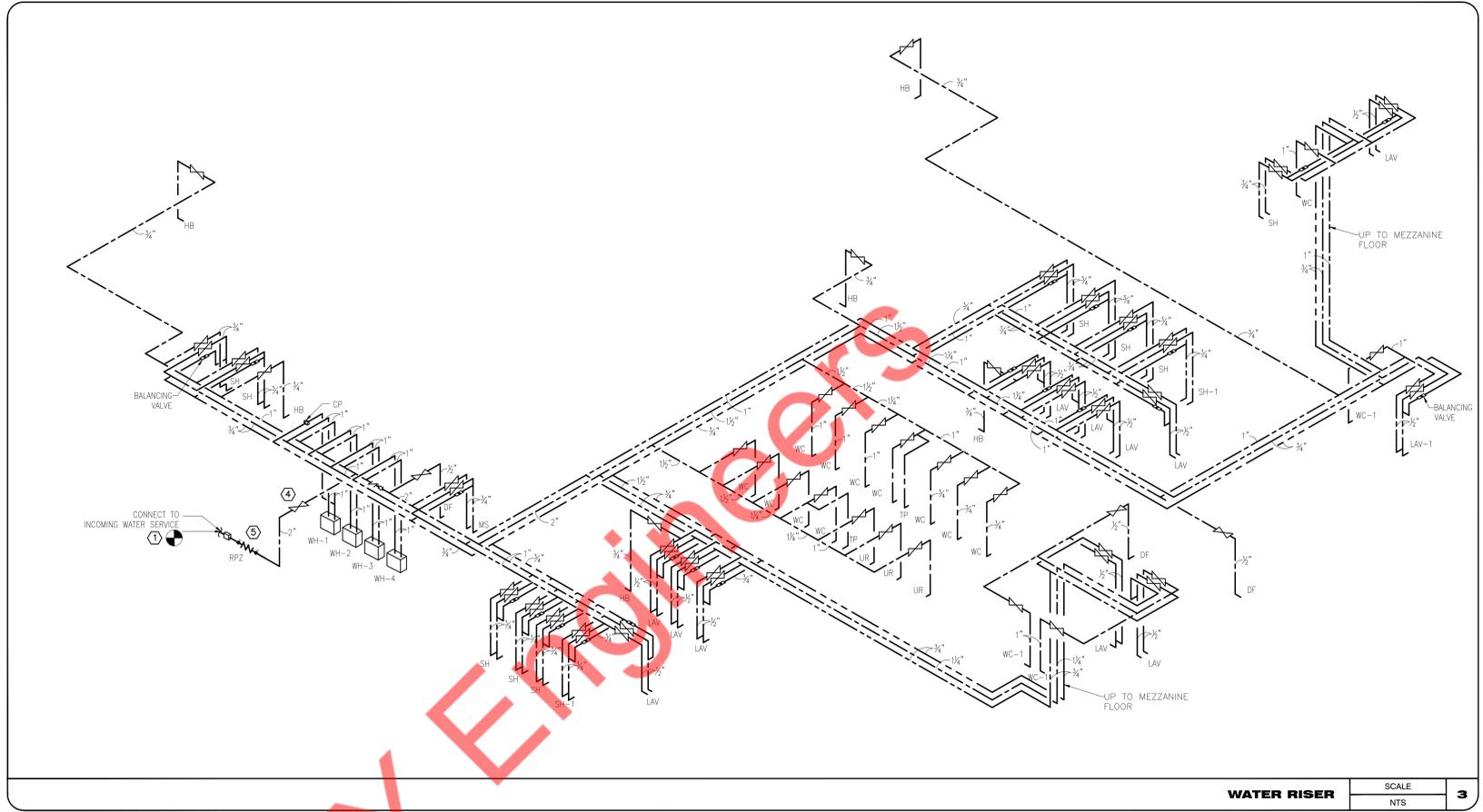
PLUMBING ABBREVIATIONS

- WC WATER CLOSET FLUSHMETER VALVE
- UR URINAL-FLUSHMETER VALVE
- LAV LAVATORY
- SH SHOWER
- DF DRINKING FOUNTAIN
- WH WATER HEATER
- MS MOP SINK

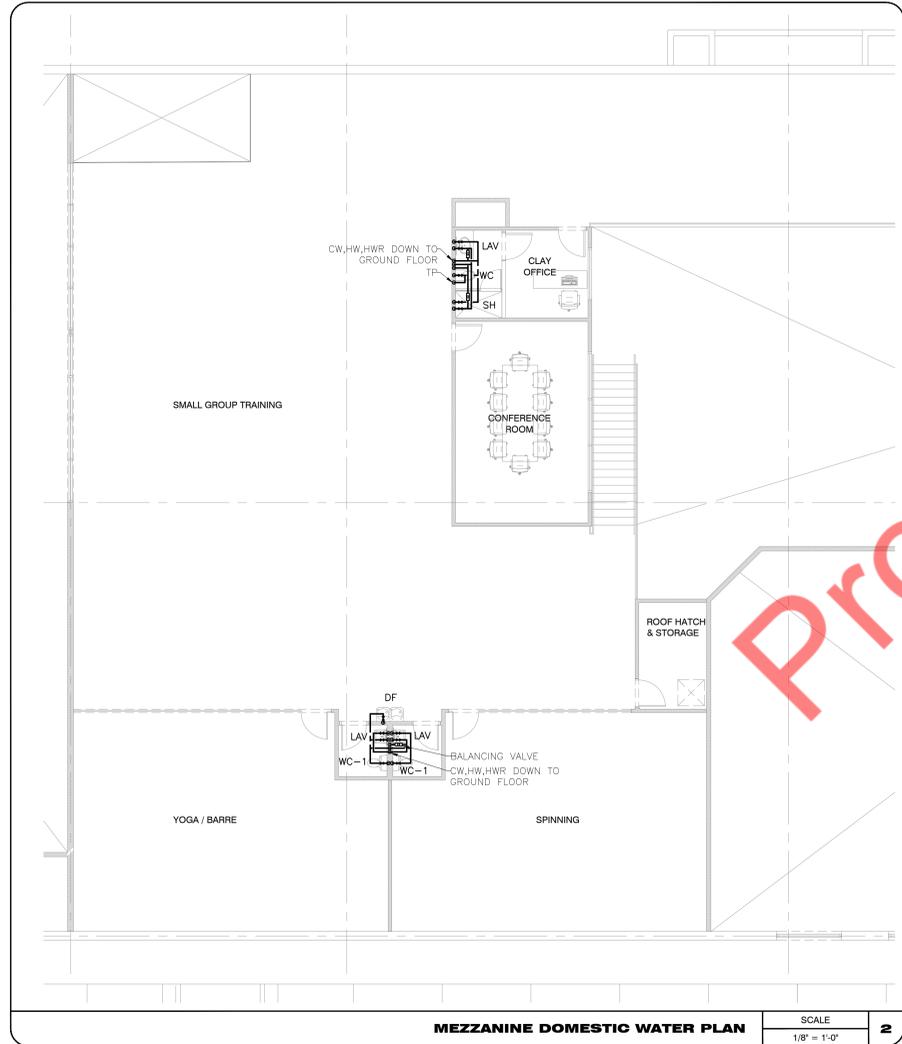
SANITARY SEWER AND WASTE SERVICE PLUMBING CALCULATION

PROJECT: MAXFITNESS, GA

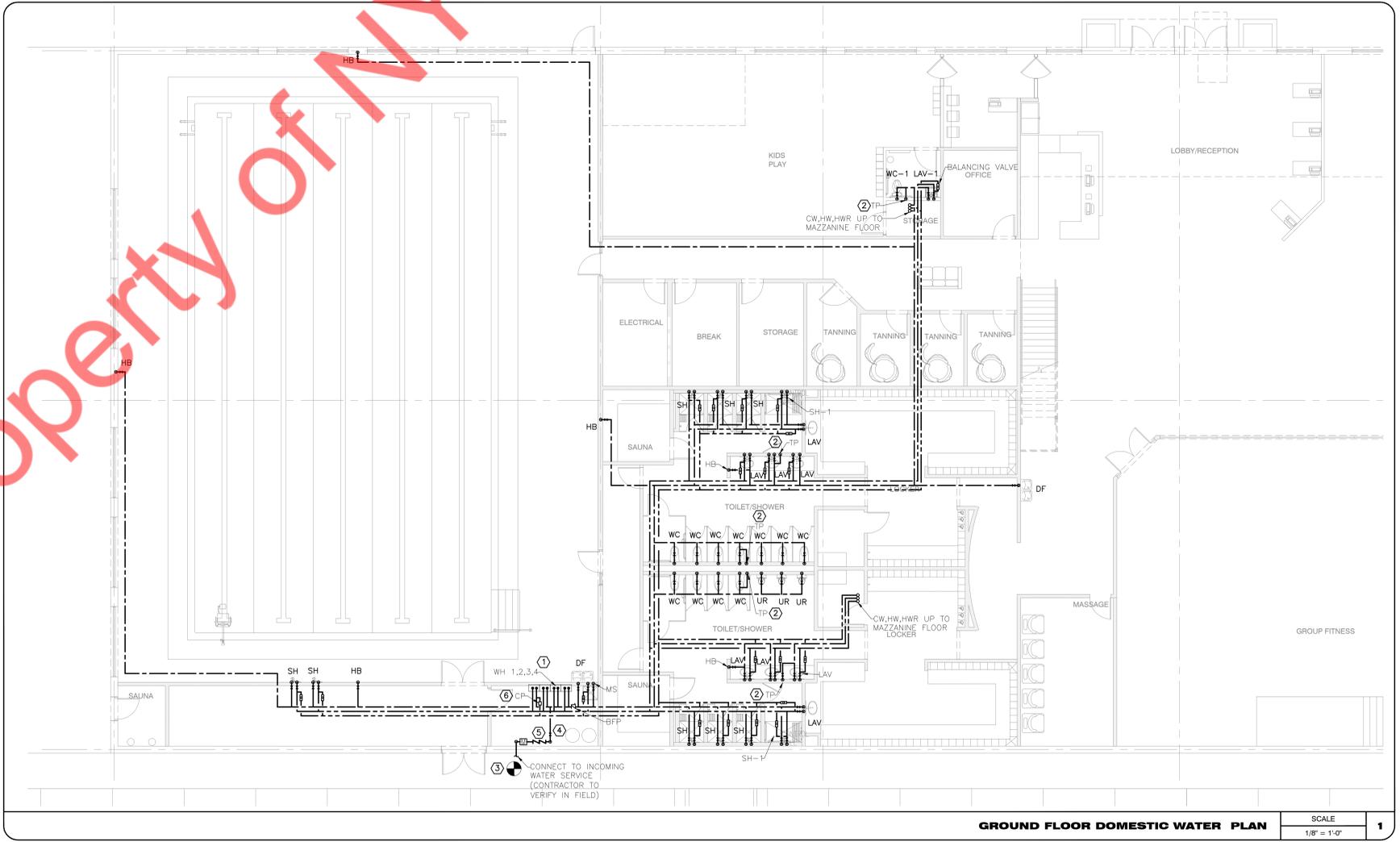
FIXTURE TYPE	QUANTITY	WASTE FIXTURE UNITS PER FIXTURE	TOTAL WASTE FIXTURE UNITS FOR FIXTURE TYPE	WATER FIXTURE UNITS PER FIXTURE	TOTAL WATER FIXTURE UNITS FOR FIXTURE TYPE
WATER CLOSET (FLUSH VALVE)	12	6	72	10	120
WATER CLOSET (FLUSH TANK)	3	6	18	5	15
URINALS	3	3	9	5	15
LAVATORY	12	2	24	1	12
HOSE BIB	6	-	-	1.5	9
FLOOR DRAIN	3	5	15	-	-
SHOWER	11	2	22	3	33
DRINKING FOUNTAIN	3	1	3	0.25	0.75
MOP SINK	1	4	4	3	3
TOTAL FIXTURE UNITS:			167		207.75
SERVICE PIPE SIZE			4"		2"
DISTANCE FROM METER TO REMOTE FIXTURE (FEET)					150'
FIXTURE UNIT AS PER 2018 INTERNATIONAL PLUMBING CODE TABLE E103.3(2) AND TABLE 604.3					



**WATER RISER** SCALE NTS **3**



**MEZZANINE DOMESTIC WATER PLAN** SCALE 1/8" = 1'-0" **2**



**GROUND FLOOR DOMESTIC WATER PLAN** SCALE 1/8" = 1'-0" **1**

**PLUMBING KEYED NOTES**

- ① CONNECT NEW 5" GAS LINE TO NEW GAS METER. CONTRACTOR TO FIELD VERIFY EXISTING AVAILABLE GAS PRESSURE AND MAKE SURE TO PROVIDE ADEQUATE INLET PRESSURE REQUIRED FOR GAS FIRED WATER HEATERS, GAS FURNACE HEATER AND RTU-1 TO RTU-11.
- ② NEW GAS METER EXPECTED AT THE NORTH EAST CORNER OF THE BUILDING AT APPROXIMATE LOCATION SHOWN. CONTRACTOR TO VERIFY SERVICE IS SUITABLE FOR LOADS SHOWN.

**NAT. GAS DESIGN**

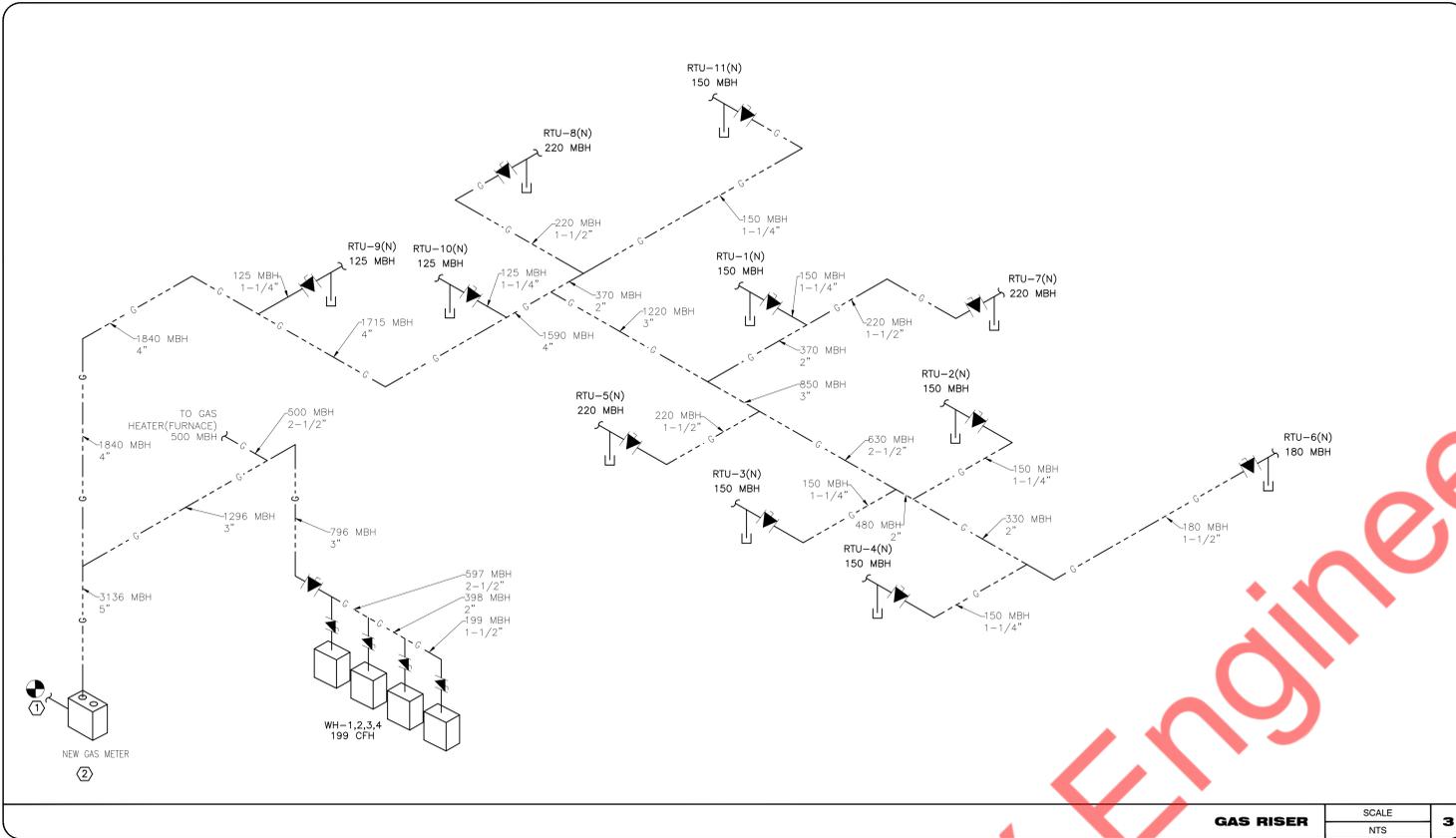
INLET PRESSURE < 2.0PSI  
 PRESSURE DROP = 0.5 IN. W.C.  
 LONGEST LENGTH = APPROX. 470'

CONTRACTOR TO VERIFY EXACT TOTAL DEVELOPED LENGTH AND GAS SUPPLY PRESSURE IN FIELD AND NOTIFY ENGINEER IF DIFFERENT THAN SHOWN ON THIS PLAN.

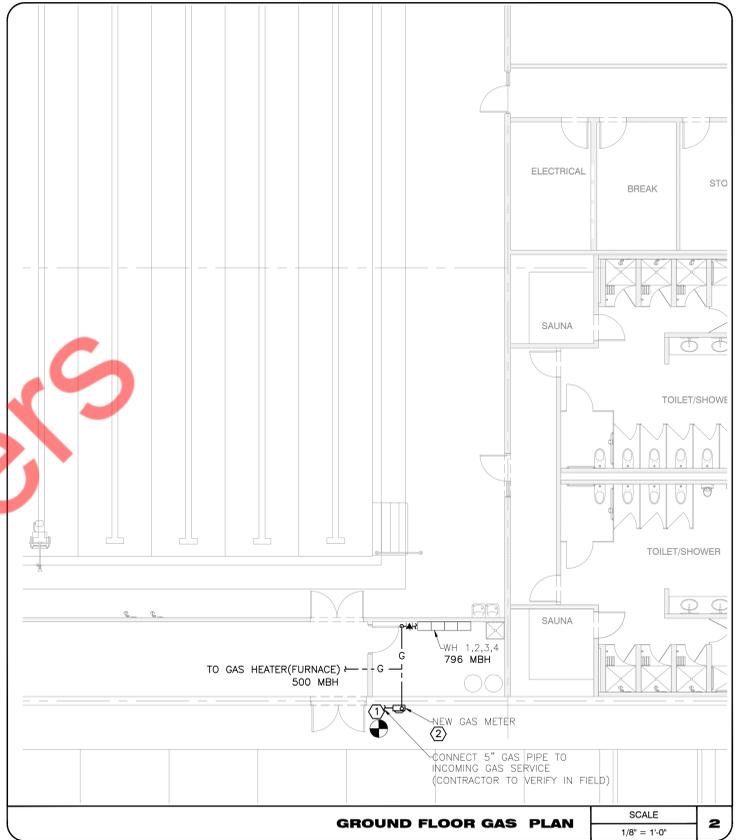
**GAS LOAD SUMMARY**

EQUIPMENT TAG	MBH LOAD
WH-1(N)	796
RTU-1(N)	150
RTU-2(N)	150
RTU-3(N)	150
RTU-4(N)	150
RTU-5(N)	220
RTU-6(N)	180
RTU-7(N)	220
RTU-8(N)	220
RTU-9(N)	125
RTU-10(N)	125
RTU-11(N)	150
GAS HEATER(FURNACE)	500
<b>TOTAL LOAD</b>	<b>3136</b>

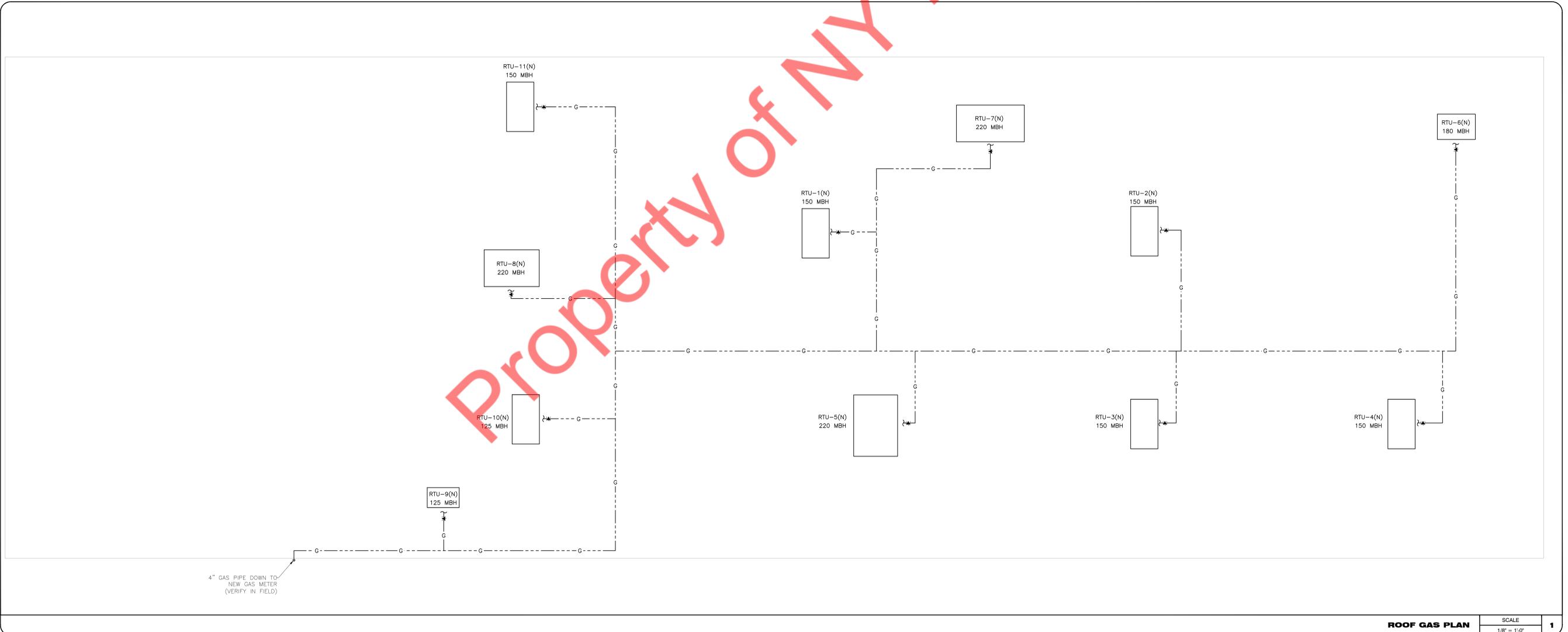
GAS PIPE SIZING BASED ON TABLE 402.4(2), 2018 INTERNATIONAL FUEL GAS CODE WITH GEORGIA STATE AMENDMENTS(2020)



**GAS RISER** SCALE: NTS 3



**GROUND FLOOR GAS PLAN** SCALE: 1/8" = 1'-0" 2



**ROOF GAS PLAN** SCALE: 1/8" = 1'-0" 1

CONDENSING TANKLESS  
FOUR UNIT CIRCULATION

RINNAI EQUIPMENT LIST	QTY
RINNAI CONDENSING WATER HEATER	4
ELECTRONIC CONNECTION	

NOTE:

ALL CONDENSATE MUST DRAIN AND DISPOSE OF ACCORDING TO LOCAL CODES. USE ONLY CORROSION RESISTANT MATERIALS FOR THE CONDENSATE DRAIN LINES SUCH AS PVC PIPE OR PLASTIC HOSE. THE CONDENSATE DRAIN PIPE (ALONG ITS ENTIRE LENGTH) MUST BE AT LEAST THE SAME DIAMETER AS THE DRAIN LINE (1/2 INCH NPT).

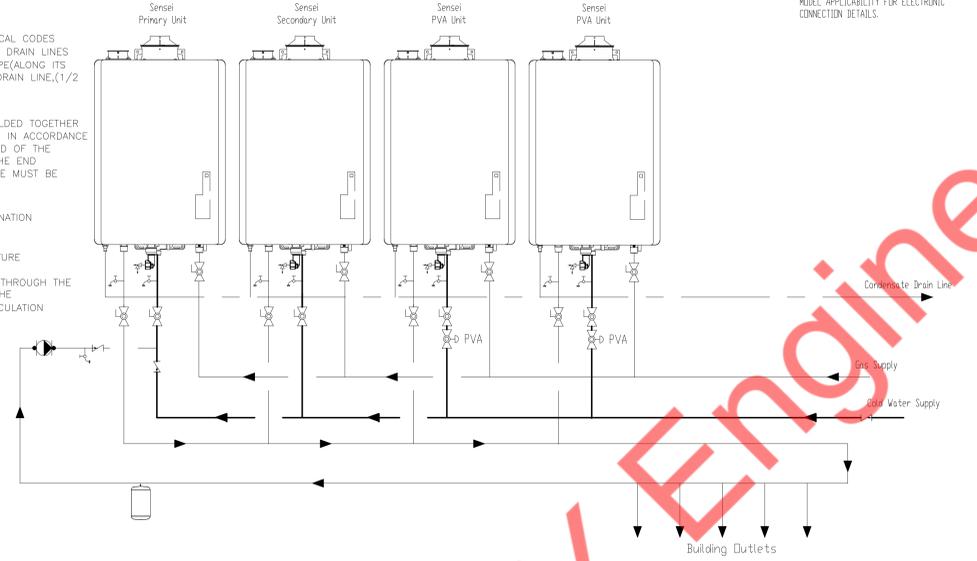
WHERE THE DRAIN PIPES FROM MORE THAN ONE UNIT ARE MANIFOLDED TOGETHER FOR CONDENSATE DRAINAGE, THE PIPE OR TUBING SHALL BE SIZED IN ACCORDANCE WITH AN APPROVED METHOD AS DICTATED BY LOCAL CODES. THE END OF THE CONDENSATE DRAIN PIPE SHOULD BE OPEN TO THE ATMOSPHERE. THE END SHOULD NOT BE UNDER WATER OR OTHER SUBSTANCES. CONDENSATE MUST BE DISPOSED OF ACCORDING TO LOCAL CODES.

PUMP SHOULD BE CONTROLLED BY AN AQUASTAT, TIMER OR COMBINATION AQUASTAT AND TIMER.

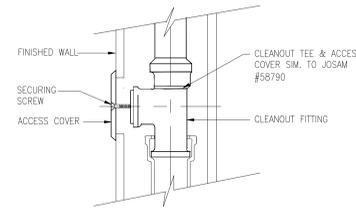
PUMP SHOULD BE SIZED TO MAINTAIN CIRCULATION LOOP TEMPERATURE.

THE PUMP SHOULD BE SIZED TO OVERCOME THE PRESSURE LOSS THROUGH THE TANKLESS WATER HEATER, SUPPLY AND RETURN PLUMBING. REFER TO THE RINNAI HOT WATER SYSTEM DESIGN MANUAL, PUMP SIZING FOR CIRCULATION.

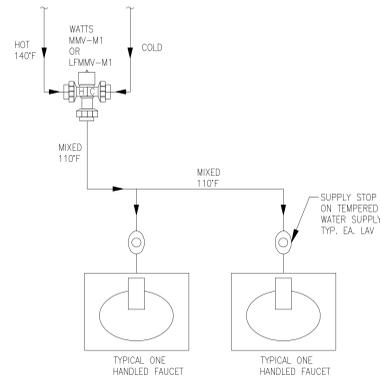
PUMP SHOULD BE OF BRONZE OR STAINLESS CONSTRUCTION.



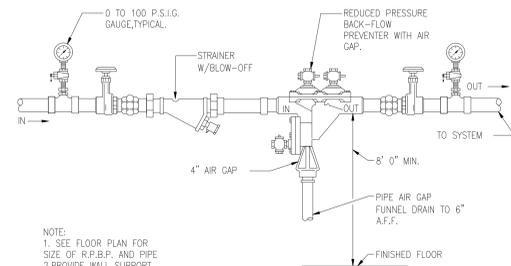
5 WATER HEATER INSTALLATION DETAIL  
NOT TO SCALE



8 WALL CLEANOUT DETAIL  
NOT TO SCALE



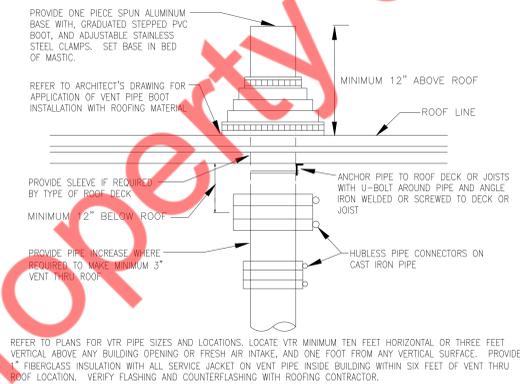
7 TEMPERATURE MIXING VALVE DETAIL  
NOT TO SCALE



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

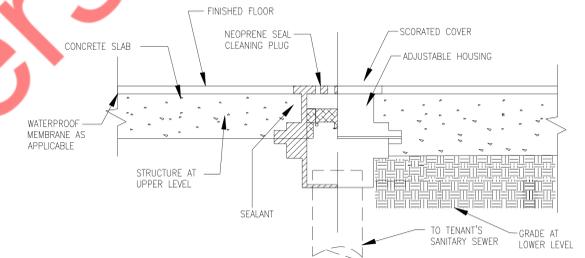
6 RPZ BACKFLOW PREVENTER DETAIL  
NOT TO SCALE

TYPICAL ASSE 1070 APPLICATION

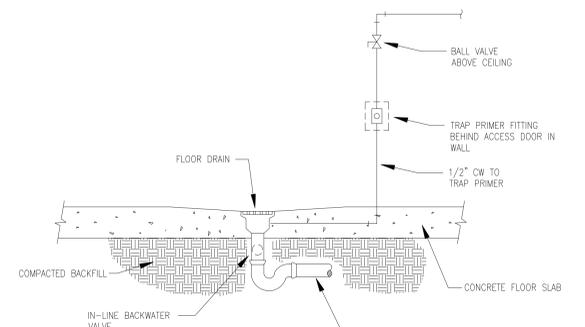


REFER TO PLANS FOR VTR PIPE SIZES AND LOCATIONS. LOCATE VTR MINIMUM TEN FEET HORIZONTAL OR THREE FEET VERTICAL ABOVE ANY BUILDING OPENING OR FRESH AIR INTAKE, AND ONE FOOT FROM ANY VERTICAL SURFACE. PROVIDE 1" FIBERGLASS INSULATION WITH ALL SERVICE JACKET ON VENT PIPE INSIDE BUILDING WITHIN SIX FEET OF VENT THRU ROOF LOCATION. VERIFY FLASHING AND COUNTERFLASHING WITH ROOFING CONTRACTOR.

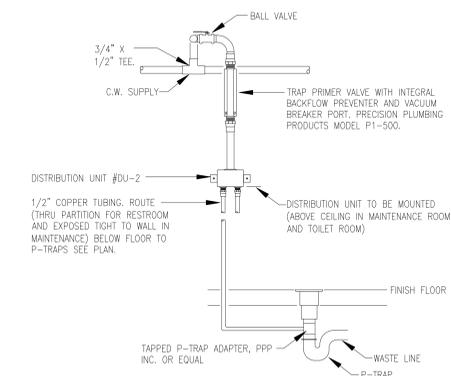
4 VENT THRU ROOF DETAIL  
NOT TO SCALE



3 FLOOR CLEAN OUT DETAIL  
NOT TO SCALE



2 FLOOR DRAIN DETAIL  
NOT TO SCALE



1 TRAP PRIMER DETAIL  
NOT TO SCALE

Property of NY Engineers