

MECHANICAL SYMBOLS LIST

	ROOF TOP UNIT
	EXHAUST FAN
	CEILING DIFFUSER SUPPLY
	CEILING DIFFUSER RETURN/EXHAUST
	DUCT / WALL MOUNTED GRILLE
	THERMOSTAT
	DUCT MOUNTED SMOKE DETECTOR
	RECTANGULAR DUCT (WIDTH X DEPTH)
	ROUND DUCT (DIAMETER)
	ROUND DUCT CROSS SECTION
	POINT OF NEW CONNECTION
	SUPPLY AIR RECTANGULAR DUCT GOING UP/DOWN
	RETURN AIR RECTANGULAR DUCT GOING UP/DOWN
	BACKDRAFT DAMPER
	VOLUME DAMPER W/ ACCESS DOOR

BUILDING DEPARTMENT NOTES

ALL WORK SHALL COMPLY WITH APPLICABLE SECTIONS OF INTERNATIONAL BUILDING CODE 2021 WITH ALL AMENDMENTS 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 INSPECTION 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 INTERNATIONAL BUILDING CODE 2021.
- 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 THE FOLLOWING SECTIONS OF THE INTERNATIONAL MECHANICAL CODE 2021:
 - VENTILATION SYSTEM IMC 2021 - 401
- THE FOLLOWING WORK ITEMS, COMPONENTS, MATERIALS, CAPACITIES, ETC. SHALL COMPLY WITH THE REFERENCED CODE OR STANDARD:
 - STANDARDS OF HEATING IMC 2021 - 309.1
 - DUCT CONSTRUCTION AND INSTALLATION IMC 2021 - 603
 - AIR INTAKES, EXHAUSTS AND RELIEF IMC 2021 - 401.5
 - AIR FILTERS IMC 2021 - 605
- MINIMUM TEMPERATURE TO BE MAINTAINED IN OCCUPIED SPACES DURING HEATING SEASON: 68 DEG. FAHRENHEIT.
- VENTILATION FOR ALL AREA SHALL COMPLY WITH INTERNATIONAL MECHANICAL CODE 2021, CHAPTER 4.
- VENTILATION SYSTEM SHALL BE BALANCED TO MAINTAIN THE MINIMUM VENTILATION AIRFLOW RATES AS SHOWN IN VENTILATION REQUIREMENT TABLE. THE SYSTEM SHALL BE BALANCED BY APPROVED METHOD. CONTRACTOR TO SUBMIT THE AIR BALANCE REPORT TO INSPECTOR OF RESPECTIVE BUILDING DEPARTMENT PRIOR TO FINAL INSPECTION.
- 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 INTERNATIONAL MECHANICAL CODE 2021 - 403.
- 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.
- ALL HEATING AND COOLING LOADS CALCULATED PER ASHRAE/ACCA 183.
- SMOKE DETECTOR SHALL MEET UL268A.

MECHANICAL ABBREVIATIONS

ACCU	AIR COOLED CONDENSING UNIT
AFF	ABOVE FINISHED FLOOR
AHU	AIR HANDLING UNIT
AL	ACOUSTIC LINING
BD	GRAVITY DAMPER
CD	CONDENSATE DRAIN
CFM	CUBIC FEET OF AIR PER MINUTE
DN	DOWN
DU	DEHUMIDIFIER
EER	ENERGY EFFICIENCY RATIO
EF	EXHAUST FAN
FC	FLEXIBLE CONNECTION
FD/AD	FIRE DAMPER W/ACCESS DOOR
FD	FIRE DAMPER W/FUSIBLE LINK
FSD	FIRE SMOKE DAMPER
IEER	INTEGRATED ENERGY EFFICIENCY RATIO
OA	OUTSIDE AIR
RA	RETURN AIR
RAD	RETURN AIR DUCT
RTU	ROOF TOP UNIT
SA	SUPPLY AIR
SAD	SUPPLY AIR DUCT
SEER	SEASONAL ENERGY EFFICIENCY RATIO
VD	VOLUME CONTROL DAMPER

MECHANICAL DRAWING LIST

M-001	MECHANICAL GENERAL SHEET
M-002	MECHANICAL SPECIFICATIONS
M-100	MECHANICAL FLOOR PLAN
M-101	MECHANICAL ROOF PLAN
M-200	MECHANICAL DETAILS
M-300	MECHANICAL SCHEDULES

THERMOSTATIC CONTROL NOTES

A. 6.4.3.1.1 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 THIS SECTION, A DWELLING UNIT SHALL BE PERMITTED TO BE CONSIDERED A SINGLE ZONE.

B. 6.4.3.1.2 DEAD BAND
WHERE USED TO CONTROL BOTH HEATING AND COOLING, ZONE THERMOSTATIC CONTROLS SHALL BE CAPABLE OF AND CONFIGURED TO PROVIDE 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. 6.4.3.2 SET-POINT OVERLAP RESTRICTION
WHERE HEATING AND COOLING TO A ZONE ARE CONTROLLED BY SEPARATE ZONE THERMOSTATIC CONTROLS LOCATED WITHIN THE ZONE, MEANS (SUCH AS LIMIT SWITCHES, MECHANICAL STOPS, OR, FOR DDC SYSTEMS, SOFTWARE PROGRAMMING) SHALL BE PROVIDED TO PREVENT THE HEATING SET POINT FROM EXCEEDING THE COOLING SET POINT, MINUS ANY APPLICABLE PROPORTIONAL BAND.

D. 6.4.3.3 OFF-HOUR CONTROLS
HVAC SYSTEMS SHALL HAVE THE OFF-HOUR CONTROLS REQUIRED BY SECTIONS 6.4.3.3.1 THROUGH 6.4.3.3.5.

E. 6.4.3.3.1 AUTOMATIC SHUTDOWN
HVAC SYSTEMS SHALL BE EQUIPPED WITH AT LEAST ONE OF THE FOLLOWING:

- CONTROLS THAT CAN START AND STOP THE SYSTEM UNDER DIFFERENT TIME SCHEDULES FOR SEVEN DIFFERENT DAY TYPES PER WEEK, ARE CAPABLE OF RETAINING PROGRAMMING AND TIME SETTING DURING LOSS OF POWER FOR A PERIOD OF AT LEAST TEN HOURS, AND INCLUDE AN ACCESSIBLE MANUAL OVERRIDE OR EQUIVALENT FUNCTION THAT ALLOWS TEMPORARY OPERATION OF THE SYSTEM FOR UP TO TWO HOURS.
- AN OCCUPANCY SENSOR THAT IS CAPABLE OF SHUTTING THE SYSTEM OFF WHEN NO OCCUPANT IS SENSED FOR A PERIOD OF UP TO 30 MINUTES.
- A MANUALLY OPERATED TIMER CAPABLE OF BEING ADJUSTED TO OPERATE THE SYSTEM FOR UP TO TWO HOURS.
- AN INTERLOCK TO A SECURITY SYSTEM THAT SHUTS THE SYSTEM OFF WHEN THE SECURITY SYSTEM IS ACTIVATED.

F. 6.4.3.3.2 SETBACK CONTROLS
HEATING SYSTEMS SHALL BE EQUIPPED WITH CONTROLS CAPABLE OF AND CONFIGURED TO AUTOMATICALLY RESTART AND TEMPORARILY OPERATE THE SYSTEM AS REQUIRED TO MAINTAIN ZONE TEMPERATURES ABOVE AN ADJUSTABLE HEATING SET POINT AT LEAST 10°F BELOW THE OCCUPIED HEATING SET POINT. COOLING SYSTEMS SHALL BE EQUIPPED WITH CONTROLS CAPABLE OF AND CONFIGURED TO AUTOMATICALLY RESTART AND TEMPORARILY OPERATE THE MECHANICAL COOLING SYSTEM AS REQUIRED TO MAINTAIN ZONE TEMPERATURES BELOW AN ADJUSTABLE COOLING SET POINT AT LEAST 5°F ABOVE THE OCCUPIED COOLING SET POINT OR TO PREVENT HIGH SPACE HUMIDITY LEVELS.

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 THEREFOR SHALL BE ONLY THE "PREMIUM" PORTION OF THE WAGES PAID.
- CONTRACTOR SHALL ASCERTAIN THE APPROPRIATE METHOD FOR BRINGING THE UNITS INTO AND THROUGH THE BUILDING TO POSITION UNIT IN LOCATION SHOWN ON THE PLANS. WHERE NECESSARY, EQUIPMENT SHALL BE SHIPPED FROM MANUFACTURER IN SECTIONS OF SIZE SUITABLE FOR MOVING THROUGH RESTRICTIVE SPACES. COORDINATE WITH BUILDING OWNER APPROPRIATE TIMES OF DAY SUCH EQUIPMENT MAY BE MOVED THROUGH ALL AREAS.
- DUCTWORK AND PIPING IS SHOWN DIAGRAMMATICALLY AND DOES NOT SHOW ALL OFFSETS, DROPS AND RISERS OF RUNS. THE CONTRACTOR SHALL MAKE ALLOWANCE IN PRICING FOR ROUTING OF DUCTWORK AND PIPING TO AVOID OBSTRUCTIONS. EXACT LOCATIONS ARE SUBJECT TO APPROVAL OF ARCHITECT, COORDINATION WITH THE OTHER TRADES IS REQUIRED.
- SUPPORT ALL DUCTWORK AND PIPING FROM BUILDING STRUCTURE AND/OR FRAMING IN AN APPROVED MANNER. WHERE OVERHEAD CONSTRUCTION DOES NOT PERMIT FASTENING OR SUPPORTS FOR EQUIPMENT, FURNISH ADDITIONAL FRAMING. INSERTS SHALL BE STEEL, SLOTTED TYPE AND FACTORY PAINTED. SINGLE ROD SHALL BE SIMILAR TO GRINNELL FIG. 281. MULTI-ROD SHALL BE SIMILAR TO FEE & MASON SERIES 9000 WITH END CAPS AND CLOSURE STRIPS. MAXIMUM LOADING INCLUDING PIPES, DUCTWORK CONTENTS AND COVERING SHALL NOT EXCEED 75% OF RATED INSERT CAPABILITY, WHEN SUPPORTING FROM BUILDING USE BEAM CLAMPS IN APPROVED MANNER.
- PROVIDE ALL NECESSARY FLASHING AND COUNTER FLASHING TO MAINTAIN THE WATERPROOFING INTEGRITY OF THIS BUILDING AS REQUIRED BY THE INSTALLATION OR REMOVAL OF PIPES, DUCTS, LOUVERS, CONDUIT, AND EQUIPMENT. PROVIDE EQUIPMENT CURBS AND DUNNAGE STEEL AS REQUIRED.
- SEAL OPENINGS AROUND DUCTS AND PIPING THROUGH PARTITIONS, WALLS AND FLOORS (NOT IN SHAFTS) WITH MINERAL WOOL OR OTHER NONCOMBUSTIBLE MATERIAL (FIBERGLASS INSULATION IS NOT ACCEPTABLE).
- WHERE PENETRATIONS THROUGH FIRE RATED WALLS ARE NOT FIRE PROOFED THIS CONTRACTOR SHALL BE RESPONSIBLE TO SEAL SAME TO MAINTAIN THE RATED INTEGRITY.
- INSTALL WORK SO AS TO BE READILY ACCESSIBLE FOR OPERATION, MAINTENANCE AND REPAIR. MINOR DEVIATIONS FROM DRAWINGS MAY BE MADE TO ACCOMPLISH THIS, BUT CHANGES WHICH INVOLVE EXTRA COST SHALL NOT BE MADE WITHOUT APPROVAL.
- 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 CEILINGS, SHAFTS AND WALLS FOR ALL VOLUME AND FIRE DAMPERS, AUTOMATIC DAMPERS AND ALL OTHER MECHANICAL EQUIPMENT AND DEVICES. HVAC CONTRACTOR TO FURNISH ACCESS LOCATION REQUIREMENTS TO GENERAL CONTRACTOR. ACCESS TILE IDENTIFICATION, PROVIDE BUTTONS, TABS, AND MARKERS TO IDENTIFY LOCATION OF CONCEALED VALVES, DAMPERS AND EQUIPMENT.
- THE CONTRACTOR SHALL KEEP ALL EQUIPMENT AND MATERIALS, AND ALL PARTS OF THE BUILDING, EXTERIOR SPACES AND ADJACENT STREETS, SIDEWALKS AND PAVEMENTS, FREE FROM MATERIAL AND DEBRIS RESULTING FROM THE EXECUTION OF THIS WORK. EXCESS MATERIALS WILL NOT BE PERMITTED TO ACCUMULATE EITHER ON THE INTERIOR OR THE EXTERIOR.
- MATERIALS AND WORKMANSHIP, UNLESS OTHERWISE NOTED, SHALL BE IN ACCORDANCE WITH BUILDING STANDARDS.
- ALL EQUIPMENT SHALL BE PROVIDED WITH ONE YEAR WARRANTY PARTS AND LABOR AND FIVE YEARS ON COMPRESSORS. WARRANTY PERIOD BEGINS UPON PROJECT ACCEPTANCE.
- ALL MATERIAL AND EQUIPMENT TO BE NEW UNLESS OTHERWISE NOTED AND SHALL BE IN ACCORDANCE WITH BUILDING STANDARDS.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR HIS WORK WITH ITS COMPLETION AND FINAL ACCEPTANCE 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.
- 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.

GENERAL HVAC NOTES

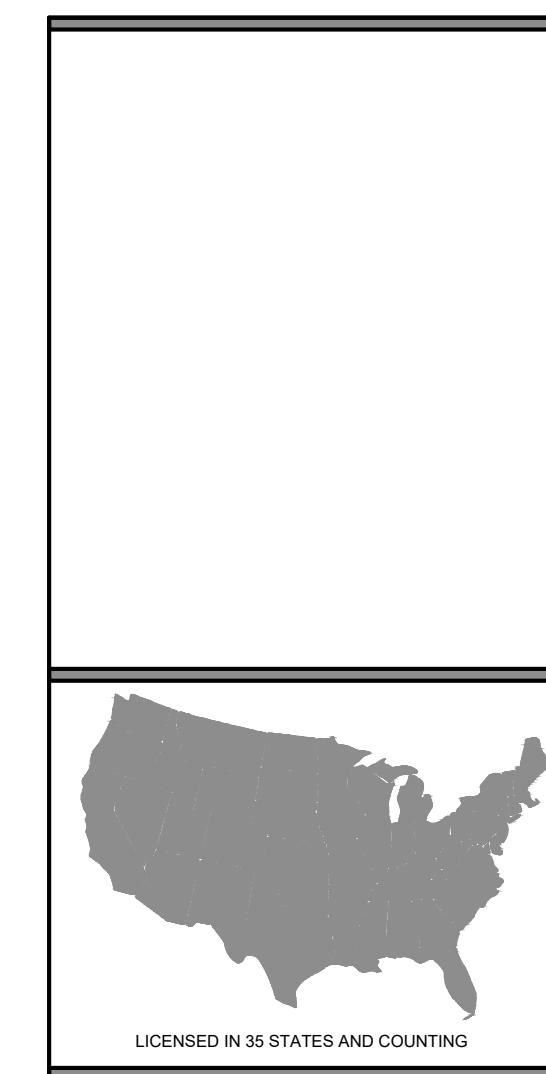
- PROVIDE ALL MATERIAL AND EQUIPMENT AND PERFORM ALL LABOR REQUIRED TO INSTALL COMPLETE AND OPERABLE MECHANICAL SYSTEMS AS INDICATED ON THE DRAWINGS, AS SPECIFIED AND AS REQUIRED BY CODE.
- CONTRACT DOCUMENT DRAWINGS FOR MECHANICAL WORK (HVAC, PLUMBING, AND FIRE PROTECTION) ARE DIAGRAMMATIC AND ARE INTENDED TO CONVEY SCOPE AND GENERAL ARRANGEMENT ONLY.
- THE LOCATIONS OF ALL ITEMS SHOWN ON THE DRAWINGS OR CALLED FOR IN THE SPECIFICATIONS THAT ARE NOT FIXED BY DIMENSIONS ARE APPROXIMATE ONLY. THE EXACT LOCATIONS NECESSARY TO SECURE THE BEST CONDITIONS AND RESULTS MUST BE DETERMINED BY THE PROJECT SITE CONDITIONS AND SHALL HAVE THE APPROVAL OF THE ENGINEER BEFORE BEING INSTALLED. DO NOT SCALE DRAWINGS.
- WHEN MECHANICAL WORK (HVAC, PLUMBING, SHEET METAL, FIRE PROTECTION, ETC.) IS SUBCONTRACTED, IT SHALL BE THE MECHANICAL CONTRACTOR'S RESPONSIBILITY TO COORDINATE SUBCONTRACTORS AND THE ASSOCIATED CONTRACTS. WHEN DISCREPANCIES ARISE PERTAINING TO WHICH CONTRACTOR PROVIDES A PARTICULAR ITEM OF THE MECHANICAL CONTRACT OR WHICH CONTRACTOR PROVIDES FINAL CONNECTIONS FOR A PARTICULAR ITEM OF THE MECHANICAL CONTRACT, IT SHALL BE BROUGHT TO THE ATTENTION OF THE MECHANICAL CONTRACTOR, WHOSE DECISION SHALL BE FINAL.
- COORDINATE CONSTRUCTION OF ALL MECHANICAL WORK WITH ARCHITECTURAL, STRUCTURAL, CIVIL, ELECTRICAL WORK, ETC., SHOWN ON OTHER CONTRACT DOCUMENT DRAWINGS.
- INSTALL ALL MECHANICAL EQUIPMENT AND APPURTENANCES IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS, CONTRACT DOCUMENTS, AND APPLICABLE CODES AND REGULATIONS.
- WHERE TWO OR MORE ITEMS OF THE SAME TYPE OF EQUIPMENT ARE REQUIRED, THE PRODUCT OF ONE MANUFACTURER SHALL BE USED.
- COORDINATE ALL EQUIPMENT CONNECTIONS WITH MANUFACTURERS' CERTIFIED DRAWINGS. COORDINATE AND PROVIDE ALL DUCT 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, PRESSURE, AND FLOW MEASURING DEVICES IN ACCESSIBLE LOCATIONS WITH THE STRAIGHT SECTION OF PIPE OR DUCT UP- AND DOWNSTREAM AS RECOMMENDED BY THE MANUFACTURER FOR GOOD ACCURACY.
- 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 PIPING, DUCTWORK, AND EQUIPMENT (UNLESS OTHERWISE NOTED) SHALL BE FURNISHED AND INSTALLED BY THE MECHANICAL CONTRACTOR.
- PROVIDE ACCESS PANELS FOR INSTALLATION IN WALLS AND CEILINGS, WHERE REQUIRED, TO SERVICE DAMPERS, VALVES, SMOKE DETECTORS, AND OTHER CONCEALED MECHANICAL EQUIPMENT. ACCESS PANELS SHALL BE TURNED OVER TO THE GENERAL CONTRACTOR FOR INSTALLATION. ACCESS PANELS SHALL HAVE THE EQUAL RATED CAPACITY (1HR, 2HR, ETC.) AS WALL.
- MECHANICAL EQUIPMENT, DUCTWORK, 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.
- ALL ROOF-MOUNTED EQUIPMENT CURBS/STEEL RAILS FOR EQUIPMENT PROVIDED BY THE MECHANICAL CONTRACTOR SHALL BE FURNISHED BY THE MECHANICAL CONTRACTOR AND INSTALLED BY THE GENERAL CONTRACTOR.
- LOCATIONS AND SIZES OF ALL FLOOR, WALL, AND ROOF OPENINGS SHALL BE COORDINATED WITH ALL OTHER TRADES INVOLVED.
- ALL OPENINGS IN FIRE WALLS DUE TO DUCTWORK, PIPING, CONDUIT, ETC., SHALL BE FIRE STOPPED WITH A PRODUCT SIMILAR TO 3M OR APPROVED EQUAL.
- ALL AIR CONDITIONING CONDENSATE DRAIN LINES FROM EACH AIR HANDLING UNIT 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.

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

Proprietary



LICENSED IN 35 STATES AND COUNTING

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SPECIFICATIONS

SECTION 0001 - NOTICE TO BIDDERS

A. THE BIDDER BY MAKING A BID REPRESENTS THAT:
 B. THE BIDDER HAS READ AND UNDERSTANDS THE BIDDING DOCUMENTS, TO THE EXTENT THAT SUCH DOCUMENTATION RELATES TO THE WORK FOR WHICH THE BID IS SUBMITTED, AND FOR OTHER PORTIONS OF THE PROJECT, IF ANY, BEING BID CONCURRENTLY OR PRESENTLY UNDER CONSTRUCTION.
 C. THE BID IS MADE IN COMPLIANCE WITH THE BIDDING DOCUMENTS.
 D. THE SPECIFICATIONS AND DRAWINGS ARE INTENDED TO SERVE JOINTLY AS A BASIS FOR THE BIDDER TO SUBMIT A CONTRACT PRICE FOR THE MATERIAL AND LABOR.
 E. SHOULD CONFLICTS OR DISCREPANCIES OCCUR WITHIN THE BIDDING DOCUMENTS, THE ITEM OR ITEMS IN DISPUTE THAT REPRESENT THE GREATER COST SHALL PREVAIL IN THE FINAL BID.

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

1.2 EXISTING CONDITIONS AND COORDINATION

A. THE BIDDER HAS VISITED THE SITE, BECOME FAMILIAR WITH LOCAL CONDITIONS UNDER WHICH THE WORK IS TO BE PERFORMED, AND HAS CORRELATED THE BIDDER'S OBSERVATIONS WITH THE REQUIREMENTS OF THE PROPOSED BIDDING DOCUMENTS.
 B. THE BIDDER SHALL PROPOSE COORDINATION OF WORK SUCH THAT CONFLICTS WITH OTHER TRADES AND SPACE ALLOCATIONS ARE AVOIDED.

1.3 RESPONSIBILITIES

A. THE BIDDER UNDERSTANDS THAT ANY CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR THE TIMELY COMPLETION AND ACCEPTANCE OF THEIR WORK AND THAT ANY ITEMS DAMAGED, LOST, OR STOLEN DURING TIME OF CONSTRUCTION SHALL BE REPAIRED OR REPLACED WITHOUT ANY ADDITIONAL COST TO THE OWNER.
 B. THE BIDDER UNDERSTANDS THAT ANY PROPOSED WORK IN OCCUPIED TENANT SPACES SHALL BE PERFORMED DURING TIMES OF NON-TENANT OCCUPANCY OR AS SCHEDULED OR DIRECTED BY THE BUILDING MANAGER.
 C. THE BIDDER UNDERSTANDS THAT ANY PROPOSED SHUTDOWN OF EXISTING SYSTEMS DURING CONSTRUCTION SHALL BE PRE-ARRANGED WITH THE BUILDING MANAGER AND THAT SUCH SHUTDOWNS ARE TO BE KEPT TO A MINIMUM.

END OF SECTION 0001

SECTION 0101 - QUALITY OF WORK

1.1 WORKMANSHIP
 A. ALL WORK SHALL BE FREE FROM DEFECTS IN MATERIALS AND WORKMANSHIP FOR A PERIOD OF ONE YEAR FROM DATE OF FINAL ACCEPTANCE.
 B. ALL DEFECTS WHICH DEVELOP OR ARE DISCOVERED WITHIN THIS PERIOD SHALL BE REPAIRED BY THE CONTRACTOR TO THE SATISFACTION OF THE ARCHITECT OR BUILDING MANAGER AT NO ADDITIONAL COST TO THE OWNER.
 C. UPON COMPLETION OF THE WORK THE CONTRACTOR SHALL REMOVE FROM THE SITE, ALL TOOLS, DEMOLISHED APPLIANCES AND ANY SURPLUS MATERIAL.

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

END OF SECTION 0101

SECTION 0102 - REQUIRED DOCUMENTS

1.1 SHOP DRAWINGS
 A. A SET OF PRINTS FOR ANY MECHANICAL WORK INCLUDING BUT NOT LIMITED TO, DUCTWORK AND PIPING LAYOUT SHALL BE SUBMITTED FOR APPROVAL TO THE ENGINEER PRIOR TO CONSTRUCTION OR PURCHASE OF MATERIALS.
 1.2 SUBMITTALS
 A. EQUIPMENT SUBMITTALS OF ALL PROPOSED MECHANICAL AND ANCILLARY EQUIPMENT INCLUDING ALL ACCESSORIES SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW. ALL PERTINENT MODELS, SIZES, ACCESSORIES, AND CHOICES SHALL BE 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.
 B. FIELD QUALITY CONTROL
 A. INSPECTION OF INSTALLED FIRE-STOPPING: BY OWNER-ENGAGED AGENCY ACCORDING TO ASTM E 2174.
 C. THROUGH-PENETRATION FIRESTOP SYSTEM SCHEDULE:
 A. WHERE UL-CLASSIFIED SYSTEMS ARE INDICATED, THEY REFER TO SYSTEM NUMBERS IN UL'S "FIRE RESISTANCE DIRECTORY" UNDER PRODUCT CATEGORY XHEZ.
 B. 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 ONE OR MORE OF THE FOLLOWING MATERIALS:

a. LATEX SEALANT
 b. SILICONE SEALANT
 c. MORTAR
 d. SILICONE FOAM
 e. PILLOWS/BAGS
 f. INTUMESCENT WRAP STRIPS
 g. MANUFACTURERS
 A. HILTI CONSTRUCTION CHEMICAL, INC
 B. 3M FIRE PROTECTION PRODUCTS
 END OF SECTION 078413

SECTION 230517 - SLEEVES AND SLEEVE SEALS FOR HVAC PIPING

1.1 SLEEVE-SEAL SYSTEMS
 A. FIELD-ASSEMBLED MODULAR SEALING-ELEMENT UNIT FOR FILLING ANNUAL SPACE BETWEEN PIPING AND SLEEVE.
 B. SEALING ELEMENTS: EPDM RUBBER OR NBR.
 C. PRESSURE PLATES: CARBON STEEL, PLASTIC, STAINLESS STEEL.
 D. CONNECTING BOLTS AND NUTS: CARBON STEEL WITH CORROSION-RESISTANT COATING, STAINLESS STEEL.
 E. 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-NEUTRALITY 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.

END OF SECTION 230517

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.

2. DESIGN EQUIPMENT SUPPORTS CAPABLE OF SUPPORTING COMBINED 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.
 C. METAL FRAMING SYSTEMS: MFMA MANUFACTURER.
 D. FIBERGLASS STRUT SYSTEMS: COOPER B-LINE.
 E. THERMAL-HANGER SHIELD INSERTS.
 F. 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, CURE-MOUNTED TYP EQUIPMENT SUPPORTS.

END OF SECTION 230529

SECTION 230548 - VIBRATION CONTROLS FOR PIPING AND HVAC EQUIPMENT

PART 1 - GENERAL

1.1 PERFORMANCE REQUIREMENTS

A. SEISMIC-RESTRAINT LOADING:

1. SITE CLASS AS DEFINED IN THE IBC: A, B

2. ASSIGNED USE GROUP OR BUILDING CATEGORY AS DEFINED IN THE IBC: I II III

a. COMPONENT IMPORTANCE FACTOR: 1.0

b. COMPONENT RESPONSE MODIFICATION FACTOR: 2.5

c. COMPONENT AMPLIFICATION FACTOR: 2.5

d. DESIGN SPECTRAL RESPONSE ACCELERATION AT SHORT PERIODS (0.2 SECOND) 18%

e. DESIGN SPECTRAL RESPONSE ACCELERATION AT 1-SECOND PERIOD: 8%

1.2 COMPONENTS

A. VIBRATION ISOLATORS:

1. ISOLATOR PADS: NEOPRENE, RUBBER, HERMETICALLY AND/OR SEALED COMPRESSED FIBERGLASS

2. MOUNTS: DOUBLE-DEFLECTION TYPE

3. RESTRAINED MOUNTS: ALL DIRECTIONAL MOUNTINGS WITH SEISMIC RESTRAINT; CAST-DUCTILE-IRON HOUSING.

4. SPRING ISOLATORS: FREESTANDING, LATERALLY STABLE, OPEN-SPRING TYPE

5. RESTRAINED SPRING ISOLATORS: FREESTANDING, STEEL, OPEN-SPRING TYPE WITH SEISMIC RESTRAINT.

6. HOUSED SPRING MOUNTS: DUCTILE-IRON OR STEEL HOUSING, WITH INTEGRAL, VERTICALLY ADJUSTABLE SEISMIC SNUBBERS.

7. ELASTOMERIC HANGERS: DOUBLE-DEFLECTION TYPE.

8. SPRING HANGERS: COMBINATION COIL-SPRING AND ELASTOMERIC-INSERT HANGERS WITH SPRING AND INSERT IN COMPRESSION.

9. SPRING HANGERS WITH VERTICAL-LIMIT STOP: COMBINATION COIL-SPRING AND ELASTOMERIC-INSERT HANGERS WITH SPRING AND INSERT IN COMPRESSION AND WITH VERTICAL-LIMIT STOP.

10. PIPE RISER RESTRAINT 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.

3. 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

1.3 FIELD QUALITY CONTROL

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

PART-2 PRODUCTS

1.4 VIBRATION ISOLATORS & SEISMIC-RESTRAINT DEVICES

A. AVAILABLE MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, MANUFACTURERS OFFERING PRODUCTS THAT MAY BE INCORPORATED INTO THE WORK INCLUDE, BUT ARE NOT LIMITED TO, THE FOLLOWING:

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

1. ACE MOUNTINGS CO., INC.

2. AMBER/BOOTH COMPANY, INC.

3. CALPICO, INC.

4. COOPER B-LINE, INC; A DIVISION OF COOPER INDUSTRIES.

5. HILTI, INC.

6. ISOLATION TECHNOLOGY, INC.

7. KINETICS NOISE CONTROL.

END OF SECTION 230548

SECTION 230593 - TESTING, ADJUSTING, AND BALANCING FOR HVAC

1.1 SUMMARY

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

1. MOTORS.

2. CONDENSING UNITS.

3. AIR SYSTEM: CONSTANT VOLUME

1.2 QUALITY ASSURANCE

A. THE CONTRACTOR SHALL PROCUER 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. ADD

A

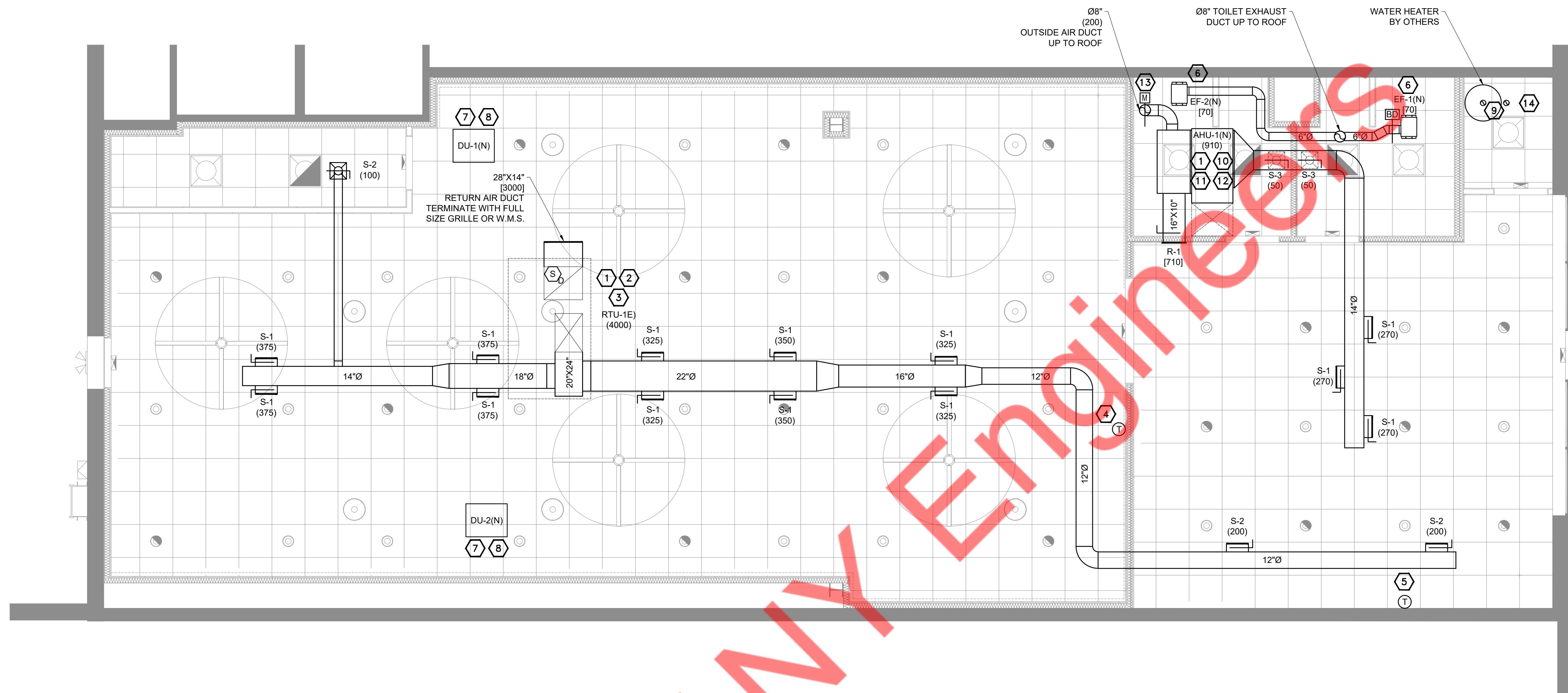
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1 MECHANICAL FLOOR PLAN

SCALE: 1/4" = 1'-0"

MECHANICAL GENERAL NOTE

- A. ALL WORK SHALL COMPLY WITH ALL LOCAL AND STATE CODES AND AUTHORITIES HAVING JURISDICTION.
- B. THE CONTRACTOR SHALL SECURE AND PAY FOR ALL REQUIRED PERMITS AND ARRANGE ALL REQUIRED INSPECTIONS.
- C. THE CONTRACTOR SHALL COORDINATE HIS WORK WITH OTHER CONTRACTORS AND TRADES.
- D. THESE DRAWINGS, AS PREPARED, ARE DIAGRAMMATIC BUT SHALL BE FOLLOWED AS CLOSELY AS CONSTRUCTION OF THE PROJECT AND THE WORK OF THE TRADES WILL PERMIT. EQUIPMENT LOCATIONS INDICATED ARE APPROXIMATE. COORDINATE EXACT LOCATIONS AND REQUIRED CLEARANCES WITH EQUIPMENT SUPPLIER AND ALL TRADES PRIOR TO INSTALLATION.
- E. THE CONTRACTOR SHALL FURNISH AND INSTALL ALL THE EQUIPMENT INDICATED WITHIN THE MECHANICAL DRAWINGS UNLESS OTHERWISE NOTED. ALL EQUIPMENT SHALL BE UL LISTED. VERIFY LOCATION AND DIMENSIONS IN THE FIELD PRIOR TO FABRICATION AND / OR INSTALLATION.
- F. 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.
- G. NEW DUCTWORK IN CONCEALED AREAS MAY BE RECTANGULAR WITH EQUIVALENT CROSS SECTIONAL FLOW AREA. PROVIDE INTERNAL INSULATION FOR ALL EXPOSED DUCTWORK AND EXTERNAL FOR ALL DUCTWORK IN CONCEALED AREAS.
- H. ALL DUCTWORK SHALL BE FABRICATED, INSTALLED, SEALED, AND INSULATED PER THE LATEST ISSUE OF SMACNA LOW-VELOCITY DUCT MANUAL.
- I. ALL FLEX DUCT SHALL BE TESTED IN ACCORDANCE WITH UL 181. AND DUCT SHALL BE LISTED AND LABELED AS CLASS 1. MAXIMUM LENGTH TO BE 5'-0" PER DROP OR PER LOCAL CODE.
- J. CONTRACTOR SHALL BALANCE EACH DEVICE WITH THE CFM SHOWN ON PLAN.
- K. DUCT SIZES SHOWN ON PLANS ARE CLEAR INSIDE AIR STREAM DIMENSIONS.
- L. COORDINATE WITH ALL TRADES FOR MATERIALS IN RATED AND PLENUM SPACES.
- M. PROVIDE VOLUME DAMPER IN ACCESSIBLE CEILING AND PROVIDE CORD OPERATED DAMPER IN INACCESSIBLE CEILING.
- N. FLEXIBLE CONNECTION SHALL BE INSTALLED BETWEEN EQUIPMENT AND CONNECTING DUCTWORK.
- O. CONTRACTOR SHALL COORDINATE ALL ELECTRICAL REQUIREMENTS FOR ALL HVAC BASED ON ACTUAL EQUIPMENT SELECTED PRIOR TO INSTALLATION.
- P. 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.
- Q. THE ENTIRE INSTALLATION SHALL BE GUARANTEED FREE OF DEFECTS AND CONTRACTOR SHALL REPAIR AND / OR REPLACE ANY DEFECTIVE MATERIALS OR EQUIPMENT AT NO COST TO THE OWNER FOR A MINIMUM PERIOD OF ONE YEAR FROM THE DATE OF ACCEPTANCE BY ARCHITECT OR ENGINEER.
- R. ALL WORK SHALL BE SUBJECT TO THE ACCEPTANCE AND APPROVAL OF THE ARCHITECT AND OWNER. THE ARCHITECT SHALL BE NOTIFIED OF ANY AND ALL DISCREPANCIES BETWEEN FIELD CONDITIONS AND THE CONTRACT DOCUMENTS BEFORE PROCEEDING WITH THAT PORTION OF THE WORK. FAILURE OF PROPER NOTIFICATION DOES NOT RELIEVE THE CONTRACTOR. THE CONTRACTOR SHALL CORRECT ANY AND ALL WORK ARISING FROM SUCH FAILURE TO COORDINATE DISCREPANCIES TO THE SATISFACTION OF THE ARCHITECT WITHOUT ADDITIONAL COST TO THE OWNER.
- S. THE CONTRACTOR SHALL, UPON COMPLETION OF PROJECT, PERFORM A COMPLETE TEST AND BALANCE OF ALL EQUIPMENT. PROVIDE A WRITTEN REPORT TO THE ARCHITECT. ALL CAPACITIES MUST BE SET TO WITHIN $\pm 10\%$ OF AMOUNTS INDICATED ON THE FLOOR PLAN AND SCHEDULES.

MECHANICAL KEY NOTES:

1. CONNECT AIR DISTRIBUTION DUCT TO AC UNIT EQUIPMENT AS NECESSARY. EXTEND FULL SIZE SUPPLY & RETURN DUCTWORK FROM AC UNITS TO SPACE. ACOUSTICALLY LINE THE FIRST 10 FEET OF BOTH SUPPLY AND RETURN MAIN DUCTS.
2. PROVIDE REMOTE TEMP SENSOR MOUNTED IN RETURN DUCT AND WIRE BACK TO T-STAT.
3. EXISTING SMOKE DETECTOR TO REMAIN AND REUSED. IF NOT FOUND OR NOT REUSABLE, PROVIDE SMOKE DETECTOR TO SHUT DOWN CORRESPONDING UNIT UNDER ALARM CONDITION. SMOKE DETECTOR SHALL BE FURNISH/INSTALL BY MECHANICAL CONTRACTOR AND WIRED BY ELECTRICAL CONTRACTOR. ALL WIRING SHALL BE IN CONDUIT PER NEC. SMOKE DETECTOR SHALL BE SYSTEM SENSOR MODEL DH100ACDCLP.
4. CONTRACTOR TO REUSE EXISTING THERMOSTAT AND RELOCATION TO LOCATION AS SHOWN ON PLAN. IF THERMOSTAT IS NOT REUSABLE OR DAMAGED, PROVIDE NEW 7-DAY PROGRAMMABLE THERMOSTAT. MOUNT ON WALL AT 48" A.F.F. COORDINATE EXACT LOCATION WITH ARCHITECT AND OWNER PRIOR TO ROUGH-IN. PROVIDE LOCKABLE COVER.
5. PROVIDE NEW 7-DAY PROGRAMMABLE THERMOSTAT. MOUNT ON WALL AT 48" A.F.F. COORDINATE EXACT LOCATION WITH ARCHITECT AND OWNER PRIOR TO ROUGH-IN. PROVIDE LOCKABLE COVER.
6. CEILING MOUNTED EXHAUST FAN. INTERCONNECT EXHAUST FAN WITH ROOM LIGHTS. FAN SHALL BE SUSPENDED FROM STRUCTURE ABOVE. VERIFY EXACT LOCATION OF STRUCTURAL MEMBER PRIOR TO INSTALLATION.
7. CONTRACTOR TO INSTALL DEHUMIDIFIER AS PER MANUFACTURER RECOMMENDATION. REFER TO MANUFACTURERS INSTALLATION INSTRUCTIONS FOR MORE DETAILS. FIELD COORDINATE EXACT LOCATION AND UNIT ORIENTATION PRIOR TO STARTING WORK.
8. CONDENSATE DRAIN FROM UNIT SHALL BE CONVEYED TO AN APPROVED PLACE OF DISPOSAL. SUCH PIPING SHALL MAINTAIN A MINIMUM HORIZONTAL SLOPE IN THE DIRECTION OF DISCHARGE OF NOT LESS THAN THE 1/8TH UNIT VERTICAL IN 12 UNITS HORIZONTAL (1% SLOPE). CONDENSATE SHALL NOT DISCHARGE INTO A STREET, ALLEY OR OTHER AREAS SO AS TO CAUSE A NUISANCE
9. Ø5" DIRECT VENT PIPE FOR COMBUSTION AIR INTAKE AND EXHAUST FROM GAS FIRED EQUIPMENT TO ROOF TERMINATION KIT. ROUTE PIPING WITH MINIMAL AMOUNT OF BENDS AND MINIMUM LENGTH AS REQUIRED BY MANUFACTURER'S REQUIREMENTS.
10. CONNECT 1-1/4" CD FROM AC TO NEAREST PLUMBING DRAIN WITH AIR GAP FITTING. INSTALL CONDENSATE DRAIN WITH 1% TOWARD SINK. PROVIDE CONDENSATE PUMP AS/IF REQUIRED.
11. PROVIDE AN AUXILIARY DRAIN PAN WITH WATER LEAKAGE SENSOR IN ORDER TO SHUT-OFF THE UNIT IN CASE OF WATER LEAKAGE. THE PAN SHALL HAVE A DEPTH OF NOT LESS THAN 1.5 INCHES, SHALL BE NOT LESS THAN 3 INCHES LARGER THAN THE UNIT, OR THE COIL DIMENSIONS IN WIDTH AND LENGTH AND SHALL BE CONSTRUCTED OF CORROSION-RESISTANT MATERIAL.
12. INSTALL REFRIGERANT PIPING BETWEEN INDOOR AND OUTDOOR UNIT AS PER MANUFACTURERS RECOMMENDATIONS. PROVIDE INSULATION TO REF PIPING AS PER ENERGY CONSERVATION CODE. COORDINATE WITH BASE BUILDING ENGINEER FOR PIPE ROUTING AND RISER LOCATION. NOTIFY THE ENGINEER OF ANY DISCREPANCY BEFORE COMMENCING BID.
13. MD TO INTERLOCK WITH RESPECTIVE UNIT.
14. MECHANICAL CONTRACTOR SHALL PROVIDE DRIER VENT AS PER SELECTED DRYER AND ITS MANUFACTURER RECOMMENDATION. COORDINATE WITH ARCHITECT OR OWNER FOR FINAL REQUIREMENT.



LICENSED IN 35 STATES AND COUNTING

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RELEASE TYPE:	DATE:
EXISTING CONDITIONS	
SCHEMATIC DESIGN	
DESIGN DEVELOPMENT	
PROGRESS PRINT	
FULL RELEASE	06/20/2025

ISSUED TO:

DESIGNED BY:	NYE	DRAWN BY:	NY
CHECKED BY:	NYE	APPROVED BY:	SM
PROJECT #:	STD-1057-022		

JECT:
**ALPHA FIT CLUB —
WOODBRIDGE, NJ**

DRAWING TITLE:
**MECHANICAL
FLOOR PLAN**

SHEET: 1 2 3

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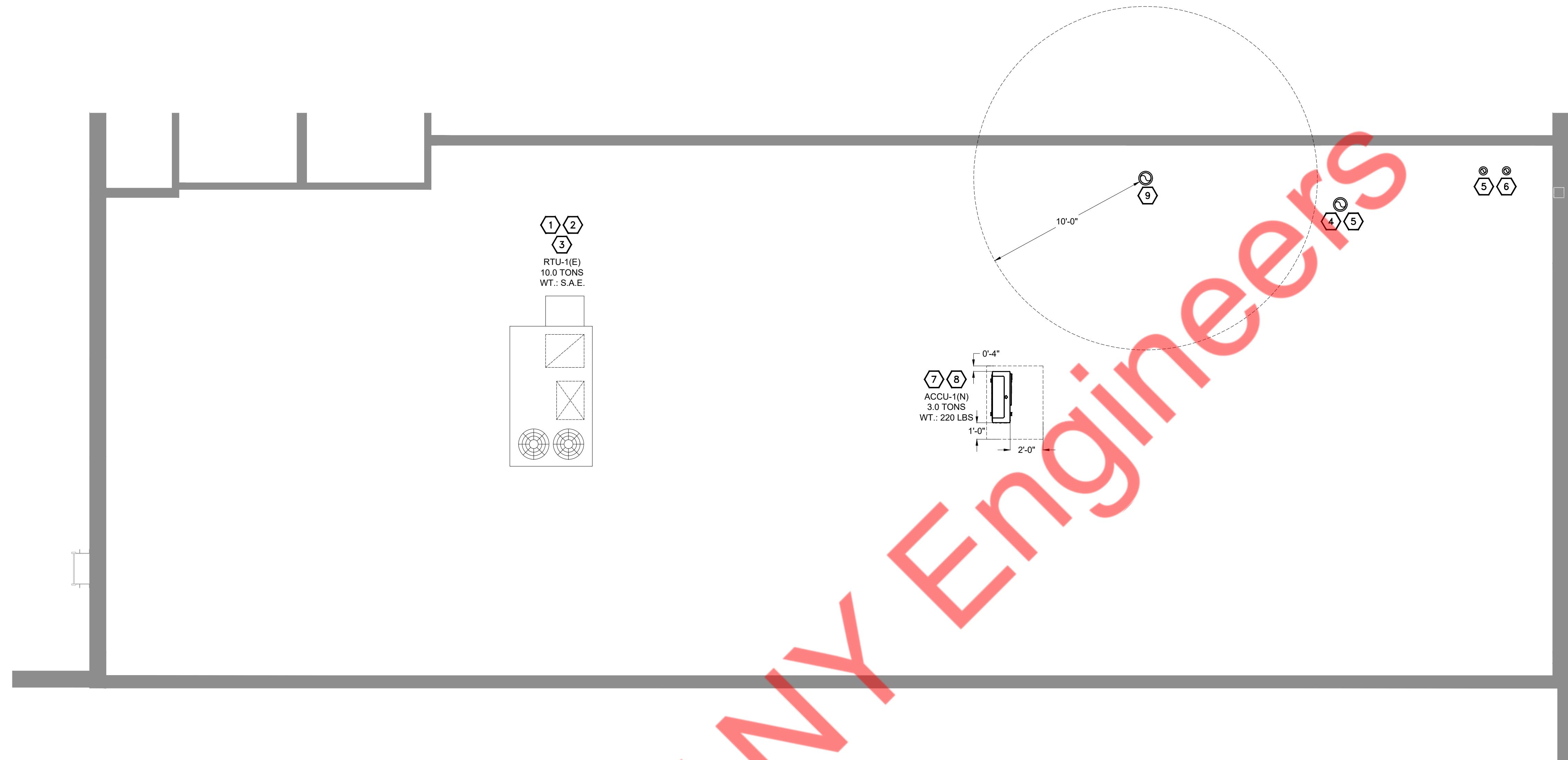
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1 MECHANICAL ROOF PLAN

11. *What is the primary purpose of the following statement?*

- A. COORDINATE LOCATIONS AND SIZES OF ROOF OPENINGS WITH OWNER AND LL ROOFING CONTRACTOR. PROVIDE NEW OPENING IF REQUIRED AND CLOSE USED OPENINGS.
- B. THESE DRAWINGS, AS PREPARED, ARE DIAGRAMMATIC BUT SHALL BE FOLLOWED AS CLOSELY AS CONSTRUCTION OF THE PROJECT AND THE WORK OF THE TRADES WILL PERMIT. EQUIPMENT LOCATIONS INDICATED ARE APPROXIMATE. COORDINATE EXACT LOCATIONS AND REQUIRED CLEARANCES WITH EQUIPMENT SUPPLIER AND ALL TRADES PRIOR TO INSTALLATION.
- C. THE CONTRACTOR SHALL FURNISH AND INSTALL ALL THE EQUIPMENT INDICATED WITHIN THE MECHANICAL DRAWINGS UNLESS OTHERWISE NOTED. ALL EQUIPMENT SHALL BE UL LISTED. VERIFY LOCATION AND DIMENSIONS IN THE FIELD PRIOR TO FABRICATION AND / OR INSTALLATION.
- D. EQUIPMENT SIZES, DIMENSIONS AND REQUIRED CONNECTIONS SHALL BE VERIFIED WITH THE ACTUAL EQUIPMENT SELECTED VENDOR DRAWINGS AND SITE BEFORE FABRICATION OF DUCTWORK, PIPING ETC.
- E. CONTRACTOR SHALL COORDINATE ALL ELECTRICAL REQUIREMENTS FOR ALL HVAC BASED ON ACTUAL EQUIPMENT SELECTED PRIOR TO INSTALLATION.
- F. CONTRACTOR SHALL COORDINATE EQUIPMENT WEIGHTS AND SUPPORTS BASED ON ACTUAL EQUIPMENT SELECTED.
- G. MAINTAIN ALL CODE AND MANUFACTURERS RECOMMENDED CLEARANCE AROUND ALL ROOF EQUIPMENT.
- H. 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.
- I. ALL ROOF PENETRATION AND MEMBRANE ROOF REPAIRS ARE TO BE ACCOMPLISHED BY THE LANDLORD'S ROOFING CONTRACTOR FOR WARRANTY PURPOSES.
- J. CONTRACTOR SHALL ENSURE THAT ALL NEW ROOFTOP MOUNTED EQUIPMENT IS INSTALLED WITHIN ANY EXISTING REINFORCED STRUCTURAL AREA OR ZONE THAT ARE DESIGNATED FOR FUTURE MECHANICAL EQUIPMENT. COORDINATE WITH ALL EXISTING STRUCTURAL CONDITIONS PRIOR TO BEGINNING ANY WORK. GENERAL CONTRACTOR NEEDS TO COORDINATE WITH STRUCTURAL ENGINEER/ARCHITECT FOR ADDITIONAL BRACING OR SUPPORTS FOR NEW UNITS.

MECHANICAL KEY NOTES:

1. EXISTING GAS FIRED ROOF TOP UNIT PROVIDED BY LL. PROVIDE FLEXIBLE CONNECTORS ON SUPPLY AND RETURN DUCT CONNECTIONS. TRANSITION AND CONNECT SUPPLY AND RETURN DUCTWORK FROM BELOW. COORDINATE ROUTING THROUGH STRUCTURAL TRUSSES AND OFFSET AS REQUIRED IN CURB SPACE. CONTRACTOR TO COORDINATE EXACT LOCATION OF EQUIPMENT ON FIELD. COORDINATE ROUTING THROUGH STRUCTURAL TRUSSES AND OFFSET AS REQUIRED IN CURB SPACE.
2. CONDENSATE DRAIN FROM UNIT SHALL BE CONVEYED TO AN APPROVED PLACE OF DISPOSAL. SUCH PIPING SHALL MAINTAIN A MINIMUM HORIZONTAL SLOPE IN THE DIRECTION OF DISCHARGE OF NOT LESS THAN THE 1/8TH UNIT VERTICAL IN 12 UNITS HORIZONTAL (1% SLOPE). CONDENSATE SHALL NOT DISCHARGE INTO A STREET, ALLEY OR OTHER AREAS SO AS TO CAUSE A NUISANCE.
3. SET OUTSIDE AIR AS INDICATED ON ROOFTOP UNIT SCHEDULES. MECHANICAL CONTRACTOR SHALL SCRIBE INTO UNIT POSITION OF OUTSIDE AIR DAMPER AND LABEL OUTSIDE AIR VOLUME AND PERCENT OF OUTSIDE AIR.
4. Ø8" EXHAUST DUCT FROM FIRST FLOOR TERMINATE WITH GOOSENECK AND BIRD SCREEN.
5. CONTRACTOR TO ENSURE THAT EXHAUST OUTLETS SHALL MAINTAIN MINIMUM 10' HORIZONTALLY DISTANCE FROM OUTSIDE AIR INTAKE SOURCE ON ROOF.
6. TERMINATE VENT AS PER MANUFACTURER RECOMMENDATION WITH MANUFACTURER RECOMMENDED TERMINATION KIT.
7. INSTALL REFRIGERANT PIPING BETWEEN INDOOR AND OUTDOOR UNIT AS PER MANUFACTURERS RECOMMENDATIONS. PROVIDE INSULATION TO REF PIPING AS PER ENERGY CONSERVATION CODE. COORDINATE WITH BASE BUILDING ENGINEER OR ARCHITECT FOR PIPE ROUTING AND RISER LOCATION. NOTIFY THE ENGINEER OF ANY DISCREPANCY BEFORE COMMENCING BID.
8. CONTRACTOR TO INSTALL OUTDOOR CONDENSING UNIT ON NEW DUNNAGE AS PER MANUFACTURERS RECOMMENDATION. COORDINATE WITH ARCHITECT/LL FOR FINAL LOCATION OF EQUIPMENT.
9. Ø8" OUTSIDE AIR DUCT FROM FIRST FLOOR TERMINATE WITH GOOSENECK AND BIRD SCREEN.

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BASE TYPE:	DATE:
XISTING CONDITIONS	
CHEMATIC DESIGN	
EIGN DEVELOPMENT	
ROGRESS PRINT	

ULL RELEASE	06/20/2025
ED TO:	

11. **What is the primary purpose of the *biopesticide*?**

SENDED BY:	NYE	DRAWN BY:	
KEPT BY:	NYE	APPROVED BY:	
ECT #:	STO-1057-6		

AWING TITLE:
**MECHANICAL
OOF PLAN**

EET: M-101

OUTDOOR AIR VENTILATION SCHEDULE (IMC 2021) CONSTANT VOLUME SYSTEM														
ROOM	OCCUPANCY DESCRIPTION	OCCUPANT DENSITY (#/1000 SQFT.)	Az	Pz	Rp	Ra	Ez	ZONE AIR DISTANCE EFFECTIVENESS	CODE TOTAL EXHAUST (CFM)	EXHAUST SPECIFIED ON DRAWINGS	Voz=(Ro*Pz+Ra*Az)/Ez	MINIMUM OUTSIDE AIR REQUIRED	MINIMUM CFM REQUIRED BASED ON PERCENT OUTSIDE AIR	CFM SPECIFIED ON DRAWINGS
			SQFT.	# PEOPLE	CFM/PERSON	CFM/AREA								
GYM	GYM	7	1820	25	20	0.06	0.8	-	-	-	762	3116	3600	
RECEPTION	LOBBY	30	620	19	5	0.06	0.8	-	-	-	163	666	1500	
RESTROOM1	TOILET ROOMS - PUBLIC	-	90	-	-	-	0.8	70	70	-	-	-	50	
RESTROOM2	TOILET ROOMS - PUBLIC	-	90	-	-	-	0.8	70	70	-	-	-	50	
PERCENT OUTSIDE AIR FOR EQUIPMENT:										24.44%	TOTAL CFM OUTSIDE AIR REQUIRED	924	TOTAL UNIT CFM: 4910	
PERCENT OUTSIDE AIR FOR EQUIPMENT:										24.44%	TOTAL CFM OUTSIDE AIR SPECIFIED	1200		

ROOF TOP UNIT SCHEDULE																			
UNIT ID	MANUFACTURER	MODEL	AREA SERVED	NOMINAL TONS	SUPPLY FAN DATA			HEATING DATA		COOLING DATA		ELECTRICAL DATA				EER	IEER/SEER	THERMAL EFFICIENCY	OPERATING WEIGHT (LBS)
					TOTAL CFM	OUTSIDE AIR CFM	E.S.P. (IN. W.G.)	INPUT MBH	OUTPUT MBH	TOTAL MBH	SENSIBLE MBH	VOLTS & V.I.F.	PHASE	MCA(A)	MOCP(A)				
RTU-1(E)	LENNOX & V.I.F.	LGX120S5MM1Y & V.I.F.	SEE PLAN	10.0 & V.I.F.	4000 & V.I.F.	1000	S.A.E.	180 & V.I.F.	146 & V.I.F.	127.7 & V.I.F.	93.22 & V.I.F.	208-230 & V.I.F.	3	49 & V.I.F.	60 & V.I.F.	S.A.E.	S.A.E.	S.A.E.	S.A.E.

NOTES FOR EXISTING UNIT:

- 1 RTU PROVIDED BY WITH ALL ACCESSORIES TO REMAIN SAME AND TO BE REUSED.
- 2 S.A.E : SAME AS EXISTING , V.I.F.: VERIFY IN FIELD
- 3 CONTRACTOR TO FIELD VERIFY EXACT LOCATION AND CONFIGURATION OF UNIT ON SITE.
- 4 IF REQUIRED, PROVIDE NEW THERMOSTAT AND TEMPERATURE SENSOR COMPATIBLE WITH EXISTING RTU. CO-ORDINATE FINAL LOCATION OF T-SENSOR WITH ARCHITECT/OWNER.
- 5 CONTRACTOR TO BALANCE OUTSIDE AIR & RETURN AIR DAMPER ON EXISTING RTU TO MATCH VALUES MENTIONED IN ABOVE TABLES.
- 6 REPLACE FILTERS, IF REQUIRED.
- 7 CONTRACTOR SHALL VERIFY EXACT ELECTRICAL CONNECTIONS, WIRE SIZES, BREAKER, DISCONNECT ETC. PRIOR TO ORDERING AND BID.

INDOOR UNIT SCHEDULE														
UNIT TAG	MANUFACTURER	MODEL NO.	AREA SERVED	CAP. (TON)	COOLING MBH	HEATING MBH	TOTAL SUPPLY CFM	OUTSIDE AIR (CFM)	ESP (IN. W.G)	MAX. SOUND PRESS. (DBA)	ELECTRICAL DATA	PIPE SIZE (INCH)	WEIGHT (LBS.)	
AHU-1(N)	BLUERIDGE	BM36MCD	SEE PLAN	3.0	36.0	40.0	910	200	0.64	49.5	UNIT POWERED BY OUTDOOR	3/8	5/8	106

NOTES: INDOOR UNITS

- 1 SUPPLY AIR CFM BASED ON HIGH SPEED.
- 2 REFRIGERANT R-410A SHALL BE PROVIDED.
- 3 PROVIDE MOUNTING BRACKETS AND ALL ASSOCIATED ACCESSORIES.
- 4 ALL REFRIGERANT PIPING TO BE SIZED PER MANUFACTURERS RECOMMENDATIONS.
- 5 CONTRACTOR SHALL PROVIDE A LONG LINE SET FOR REFRIGERANT PIPING IN THE EVENT THAT TOTAL REFRIGERANT LENGTH EXCEEDS THE MANUFACTURER'S STANDARD RECOMMENDED LENGTH.
- 6 CONTRACTOR SHALL ALL CONTROL AND POWER WIRING FROM OUTDOOR UNIT TO INDOOR UNIT, WIRE SHALL BE SIZED AS PER MANUFACTURER RECOMMENDATIONS.

AIR-COOLED OUTDOOR UNIT SCHEDULE																	
UNIT TAG	MANUFACTURER	MODEL NO.	UNIT SERVED	LOCATION	CAP. TON	COOLING MBH	HEATING MBH	WEIGHT (LBS)	LIQUID	PIPING	ELECTRICAL	SOUND LEVEL (Dba)	NON-DUCTED				
ACCU-1(N)	BLUERIDGE	BM36MCD	AHU-1(N)	SEE PLAN	3.0	36.0	40.0	220	3/8	5/8	208-230/60/1	41.0	50	63	9.0	17.5	11.5

NOTES: OUTDOOR UNITS (HEAT PUMP)

- 1 UNIT SHALL HAVE TEN YEAR EXTENDED WARRANTY FOR COMPRESSORS/PARTS.
- 2 PROVIDE LOW AMBIENT CONTROL FOR CONDENSING UNIT OPERATION DOWN TO -4°F.
- 3 PROVIDE COMPRESSOR CYCLE PROTECTOR.
- 4 PROVIDE STEEL RAILS FOR CONDENSER MOUNTING.
- 5 STEEL RAILS TO BE PROVIDED BY MECH. CONTRACTOR.
- 6 CONTRACTOR SHALL PROVIDE A LONG LINE SET FOR REFRIGERANT PIPING IN THE EVENT THAT TOTAL REFRIGERANT LENGTH EXCEED THE MANUFACTURER'S STANDARD RECOMMENDED LENGTH.
- 7 UNIT TO BE MOUNTED OFF THE GROUND WITH VIBRATION ISOLATION.
- 8 OUTDOOR REFRIGERANT LINESETS TO BE WRAPPED IN UV RESISTANT, FIRE RATED, AND ANTI MICROBIAL INSULATION PROTECTION.
- 9 OUTDOOR HEAT PUMPS TO BE LOCATED WITH PROPER CLEARANCES AND MUST PREVENT RE-CIRCULATION OF AIR. COORDINATE WITH MANUFACTURER AND ARCHITECT.
- 10 REFRIGERANT R-410A SHALL BE PROVIDED.
- 11 CONTRACTOR SHALL ALL CONTROL AND POWER WIRING FROM OUTDOOR UNIT TO INDOOR UNIT, WIRE SHALL BE SIZED AS PER MANUFACTURER RECOMMENDATIONS.

FAN SCHEDULE											
UNIT ID	MANUFACTURER	MODEL	CFM	RPM	E.S.P. (IN. W.G)	PHASE	FLA (A)	WEIGHT (LBS)	VOLTS (V)	FLA (A)	WEIGHT (LBS)
EF-1(N)	GREENHECK	SP-B110ES	70	650	0.5	115	1	0.27	10		
EF-2(N)	GREENHECK	SP-B110ES	70	650	0.5	115	1	0.27	10		

NOTES / ACCESSORIES:

- 1 DIRECT DRIVE, GALVANIZED STEEL FORWARD CURVE FAN, ECM MOTOR, LOW SOUND CONSTRUCTION, HEAVY GAUGE CABINET INTERNALLY LINED WITH 1/2" ACOUSTICAL LINER, CEILING GRILLE, BACKDRAFT DAMPER, ELECTRICAL DISCONNECT, INTERNAL SPEED CONTROLLER, INTERLOCK WITH LIGHTS.

DIFFUSER AND REGISTER SCHEDULE											
UNIT ID	MANUFACTURER	MODEL	SIZE	NECK SIZE	DESCRIPTION	UNIT	AREA SERVED	SUPPLY AIR (CFM)	OUTSIDE AIR (CFM)	RETURN AIR (CFM)	EXHAUST AIR(CFM)
S-1	TITUS	272FS	18X8	16X6	DOUBLE DEFLECTION GRILLE	RTU-1(E)	SEE PLAN	4000	1000	3000	-
S-2	TITUS	272FS	14X8	12X6	DOUBLE DEFLECTION GRILLE	AHU-1(N)	SEE PLAN	910	200	710	-
S-3	TITUS	TDC-AA	12X12	6" DIA	4-WAY LOVERED DIFFUSER	EF-1(N)	SEE PLAN	-	-	70	-
R-1	TITUS	4F	18X12	16X10	LOUVERED GRILLE	EF-2(N)	SEE PLAN	-	-	70	-

NOTES / ACCESSORIES:

- 1 MAXIMUM NOISE CRITERION RATING < 35 DBA.
- 2 BAKED ENAMEL FINISH, COLOR TO BE SELECTED BY ARCHIT

SWITCHES AND CONTROLS		POWER AND TELECOMMUNICATION		ELECTRICAL ABBREVIATIONS		GENERAL NOTES (APPLY TO ALL "E" DRAWINGS)	
\$	20A SPST SWITCH.	(J)	JUNCTION BOX WITH BLANK COVER PLATE, LOCATION AS PER REQUIREMENTS.	A	AMPERES	EA	EACH
\$ ^T	WALL MOUNTED TIMER SWITCH.	(P)	DUPLEX CONVENIENCE RECEPTACLE, +18" AFF OR AS NOTED.	A/C, AC	AIR CONDITIONING UNIT	EC	EMPTY CONDUIT/ ELECTRICAL CONTRACTOR
\$ _{OC}	WALL MOUNTED OCCUPANCY SENSOR	(GFI)	GFCI DUPLEX RECEPTACLE, +18" AFF OR AS NOTED.	AF	AMPERE FRAME/AMP FUSE	EF	EXHAUST FAN
TC	TIMECLOCK	(D)	DOUBLE DUPLEX RECEPTACLE.	AFF	ABOVE FINISHED FLOOR	EM	EMERGENCY
(S)	SPECIAL PURPOSE RECEPTACLE	(USB)	DUPLEX USB RECEPTACLE.	AS	AMP SWITCH	EMT	ELECTRICAL METALLIC TUBING
WIRING SYSTEMS		MOTORS AND CONTROLS		AIC	AMPS INTERRUPTING CAPACITY	EQUIP	EQUIPMENT
EXISTING		MOTOR AS NOTED WITH LIQUID TIGHT FLEXIBLE CONNECTION WITH JUNCTION BOX AND MOTOR SWITCH.		AUTO	AUTOMATIC	ER	EXISTING TO BE RELOCATED
NEW		(M)		AWG	AMERICAN WIRE GAUGE	ETR	EXISTING TO REMAIN
ANNOTATION		(S)		C	CONDUIT	EWF	ELECTRIFIED WORKSTATION
+24"	INDICATES MOUNTING HEIGHT CENTER LINE TO FINISHED FLOOR.	30A NON FUSED DISCONNECT SWITCH, POLES AS NOTED.		C/B,CB	CIRCUIT BREAKER	EWH	FURNITURE
#	EQUIPMENT TAGS	60A NON FUSED DISCONNECT SWITCH, POLES AS NOTED.		CKT	CIRCUIT	FA	ELECTRIC WATER HEATER
#	KEY NOTES	100A NON FUSED DISCONNECT SWITCH, POLES AS NOTED.		CLG	CEILING	FBO	FIRE ALARM
POWER DISTRIBUTION		200A NON FUSED DISCONNECT SWITCH, POLES AS NOTED.		COMM	COMMUNICATION	FDR	FURNISHED BY OTHERS, INSTALLED & WIRED BY EC
DISTRIBUTION PANELBOARD, SURFACE OR FLUSH MOUNTED.		\$		CT	CURRENT TRANSFORMER	FIXT	FEEDER
ELECTRICAL DRAWING LIST		MANUAL MOTOR SWITCH		CU	COPPER	FL	FURNITURE
E-001	ELECTRICAL LEGENDS, ABBREVIATIONS & GENERAL NOTES	MOTOR AS NOTED WITH LIQUID TIGHT FLEXIBLE CONNECTION WITH JUNCTION BOX AND MOTOR SWITCH.		°C	DEGREE CELSIUS	FLUOR	EXISTING
E-002	ELECTRICAL SPECIFICATIONS (1 OF 2)	(M)		°F	DEGREE FAHRENHEIT	G	ELECTRIFIED WORKSTATION
E-003	ELECTRICAL SPECIFICATIONS (2 OF 2)	30A NON FUSED DISCONNECT SWITCH, POLES AS NOTED.		DIA	DIAMETER	GFI	FURNITURE
E-100	LIGHTING PLAN	60A NON FUSED DISCONNECT SWITCH, POLES AS NOTED.		DISC	DISCONNECT	GP	GROUND
E-101	ELECTRICAL POWER PLAN	100A NON FUSED DISCONNECT SWITCH, POLES AS NOTED.		DN	DOWN	HC	GENERAL PURPOSE
E-102	ELECTRICAL ROOF PLAN	200A NON FUSED DISCONNECT SWITCH, POLES AS NOTED.		DWG	DRAWING	HP	HUNG CEILING
E-200	ELECTRICAL DETAILS SHEET	\$		JB	JUNCTION BOX	HWH	HORSEPOWER
E-300	ELECTRICAL PANEL SCHEDULE & RISER DIAGRAM	MANUAL MOTOR SWITCH		KCMIL	ONE THOUSAND CIRCULAR MILS	HZ	HOW WATER HEATER
ELECTRICAL DRAWING LIST		MOTOR AS NOTED WITH LIQUID TIGHT FLEXIBLE CONNECTION WITH JUNCTION BOX AND MOTOR SWITCH.		KV	KILOVOLT	IC	INTERRUPTING CAPACITY
E-001	ELECTRICAL LEGENDS, ABBREVIATIONS & GENERAL NOTES	(M)		KVA	KILOVOLT-AMPERES	PP	INTERRUPTING CAPACITY
E-002	ELECTRICAL SPECIFICATIONS (1 OF 2)	30A NON FUSED DISCONNECT SWITCH, POLES AS NOTED.		KW	KILOWATTS	PVC	POWER
E-003	ELECTRICAL SPECIFICATIONS (2 OF 2)	60A NON FUSED DISCONNECT SWITCH, POLES AS NOTED.		LP	LIGHTING PANEL	R	POLYVINYL CHLORIDE
E-100	LIGHTING PLAN	100A NON FUSED DISCONNECT SWITCH, POLES AS NOTED.		LTG	LIGHTING	RE	POWER
E-101	ELECTRICAL POWER PLAN	200A NON FUSED DISCONNECT SWITCH, POLES AS NOTED.		MAX	MAXIMUM	REC	REMOVED
E-102	ELECTRICAL ROOF PLAN	\$		MC	MOTOR CONTROLLER	RR	RELOCATED EXISTING
E-200	ELECTRICAL DETAILS SHEET	MANUAL MOTOR SWITCH		MCB	MAIN CIRCUIT BREAKER	SECT	RECEPTACLE
E-300	ELECTRICAL PANEL SCHEDULE & RISER DIAGRAM	MOTOR AS NOTED WITH LIQUID TIGHT FLEXIBLE CONNECTION WITH JUNCTION BOX AND MOTOR SWITCH.		MER	MECHANICAL EQUIPMENT ROOM	SPDT	RELOCATED EXISTING
ELECTRICAL DRAWING LIST		(M)		MIN	MINIMUM	SPST	REMOVED & RELOCATE
E-001	ELECTRICAL LEGENDS, ABBREVIATIONS & GENERAL NOTES	30A NON FUSED DISCONNECT SWITCH, POLES AS NOTED.		MLD	MAIN LUGS ONLY	SPEC	SECTION
E-002	ELECTRICAL SPECIFICATIONS (1 OF 2)	60A NON FUSED DISCONNECT SWITCH, POLES AS NOTED.		MTD	MOUNTED	SW	POWER
E-003	ELECTRICAL SPECIFICATIONS (2 OF 2)	100A NON FUSED DISCONNECT SWITCH, POLES AS NOTED.		N	NEUTRAL	SPBD	REMOVED & RELOCATE
E-100	LIGHTING PLAN	200A NON FUSED DISCONNECT SWITCH, POLES AS NOTED.		NF	NON FUSED	SYM	SECTION
E-101	ELECTRICAL POWER PLAN	\$		NIC	NOT IN CONTRACT	SYS	POWER
E-102	ELECTRICAL ROOF PLAN	MANUAL MOTOR SWITCH		NL	NIGHT LIGHT	TELE	REMOVED & RELOCATE
E-200	ELECTRICAL DETAILS SHEET	MOTOR AS NOTED WITH LIQUID TIGHT FLEXIBLE CONNECTION WITH JUNCTION BOX AND MOTOR SWITCH.		NTS	NOT TO SCALE	TEMP	REMOVED & RELOCATE
E-300	ELECTRICAL PANEL SCHEDULE & RISER DIAGRAM	(M)		OC	ON CENTER	TXF	REMOVED & RELOCATE
ELECTRICAL DRAWING LIST		30A NON FUSED DISCONNECT SWITCH, POLES AS NOTED.		P	POLES	TYP	REMOVED & RELOCATE
E-001	ELECTRICAL LEGENDS, ABBREVIATIONS & GENERAL NOTES	60A NON FUSED DISCONNECT SWITCH, POLES AS NOTED.		PB	PULLBOX	UON	REMOVED & RELOCATE
E-002	ELECTRICAL SPECIFICATIONS (1 OF 2)	100A NON FUSED DISCONNECT SWITCH, POLES AS NOTED.		PC	PERSONAL COMPUTER	V	REMOVED & RELOCATE
E-003	ELECTRICAL SPECIFICATIONS (2 OF 2)	200A NON FUSED DISCONNECT SWITCH, POLES AS NOTED.		Ø	PHASE	VA	REMOVED & RELOCATE
E-100	LIGHTING PLAN	\$		PNL	PANEL	VFD	REMOVED & RELOCATE
E-101	ELECTRICAL POWER PLAN	MANUAL MOTOR SWITCH		W	WATT	WP	REMOVED & RELOCATE
E-102	ELECTRICAL ROOF PLAN	MOTOR AS NOTED WITH LIQUID TIGHT FLEXIBLE CONNECTION WITH JUNCTION BOX AND MOTOR SWITCH.		WH	WALL HEATER	XFMR	REMOVED & RELOCATE
E-200	ELECTRICAL DETAILS SHEET	(M)		E	EXISTING	IG	REMOVED & RELOCATE
E-300	ELECTRICAL PANEL SCHEDULE & RISER DIAGRAM	30A NON FUSED DISCONNECT SWITCH, POLES AS NOTED.		TC	TIME CLOCK	TR	REMOVED & RELOCATE



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RELEASE TYPE:	DATE:
EXISTING CONDITIONS	
SCHEMATIC DESIGN	
DESIGN DEVELOPMENT	
PROGRESS PRINT	
FULL RELEASE	06/20/2025

SUED TO:	

DESIGNED BY:	NYE	DRAWN BY:	NYE
CHECKED BY:	NYE	APPROVED BY:	SM
PROJECT #:	STQ-1057-0225		

PROJECT:
**ALPHA FIT CLUB –
WOODBRIDGE, NJ**

DRAWING TITLE:
**ELECTRICAL LEGENDS,
ABBREVIATIONS &
GENERAL NOTES**

SHEET:

E-001

ELECTRICAL SPECIFICATION

A

1. GENERAL:
 A. REQUIREMENTS:
 1) PRODUCTS AND EXECUTION SHALL BE PROVIDED FOR A COMPLETE AND FULLY OPERATIONAL ELECTRICAL SYSTEM THROUGHOUT THE EXTENT OF THE PROJECT, IN CONFORMANCE WITH APPLICABLE CODES, LAWS, ORDINANCES AND AGENCY STANDARDS OF GOVERNING BODIES HAVING JURISDICTION, AND IN STRICT ACCORDANCE WITH THE CONTRACT DOCUMENTS, AND BUILDING STANDARDS.
 2) PRODUCTS, INCLUDING EQUIPMENT, DEVICES, FIXTURES, AND MATERIALS SHALL BE NEW, UNLESS NOTED OTHERWISE, UL LISTED, AND BEAR APPROPRIATE LABELS.
 3) EXECUTION, INCLUDING PREPARATION, INSTALLATION, STARTING, AND TESTING SHALL BE PERFORMED BY SKILLED TRADES PERSONNEL, IN COMPLIANCE WITH THE ASSOCIATED MANUFACTURERS' RECOMMENDATIONS, AND COORDINATED WITH THE OTHER CONSTRUCTION TRADES.

B. APPLICABLE CODES:
 1) NATIONAL ELECTRICAL CODE NEC
 2) NATIONAL BUILDING CODE NBC

C. APPLICABLE LAWS AND AGENCY STANDARDS:
 1) AMERICAN NATIONAL STANDARDS INSTITUTE ANSI
 2) AMERICAN SOCIETY FOR TESTING AND MATERIALS ASTM
 3) AMERICANS WITH DISABILITIES ACT ADA
 4) ASSOCIATION OF EDISON ILLUMINATING COMPANIES AEIC
 5) CERTIFIED BALLAST MANUFACTURERS CBM
 6) ELECTRICAL TESTING LABORATORIES ETL
 7) ELECTRONIC/TELECOMMUNICATIONS INDUSTRIES ASSOCIATION EIA/TIA
 8) ENERGY POLICY ACT OF 1992 EPACT
 9) FEDERAL AVIATION ADMINISTRATION FAA
 10) ILLUMINATING ENGINEERING SOCIETY OF NORTH AMERICA IESNA
 11) INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS IEEE
 12) INSULATED CABLE ENGINEERS ASSOCIATION ICEA
 13) NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION NEMA
 14) NATIONAL FIRE PROTECTION ASSOCIATION NFPA
 15) UNDERWRITERS' LABORATORIES UL

D. APPROVALS:
 1) EMERGENCY AND EXIT LIGHTING DOCUMENTS SHALL BE PREPARED AND SUBMITTED TO THE LOCAL FIRE DEPARTMENT FOR THEIR APPROVAL OF SYSTEM LAYOUT, CIRCUITING, AND FIXTURE TYPE. APPROVED DRAWINGS SHALL BE SUBMITTED FOR REVIEW PRIOR TO CONSTRUCTION.
 2) FIRE ALARM AND LIFE SAFETY DOCUMENTS SHALL BE PREPARED AND SUBMITTED TO THE LOCAL FIRE DEPARTMENT FOR THEIR APPROVAL OF SYSTEM LAYOUT, CIRCUITING, EQUIPMENT AND REVIEW THAT THE BUILDING BULLETIN, FIRE ALARM AND LIFE SAFETY SYSTEM MANUFACTURER/INSTALLER SHALL BE RETAINED TO PRODUCE OR UPDATE THE BUILDING FIRE ALARM AND LIFE SAFETY DOCUMENTS, AND TO MAKE FINAL CONNECTIONS AND ALTERATIONS TO THE EXISTING SYSTEM. APPROVED DRAWINGS SHALL BE SUBMITTED FOR REVIEW PRIOR TO CONSTRUCTION. OTHER SYSTEM REQUIRING SPECIFIC APPROVAL.

E. THE "GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION," AIA DOCUMENT A201, LATEST EDITION, AND THESE SPECIFICATIONS AS APPLICABLE ARE PART OF THIS CONTRACT.

F. DRAWINGS ARE DIAGRAMMATIC AND INDICATE GENERAL ARRANGEMENT OF SYSTEMS AND WORK CONDUIT ROUTING IS SHOWN DIAGRAMMATICALLY AND DOES NOT SHOW ALL OFFSETS, DROPS AND RISES OF RUNS. THE CONTRACTOR SHALL ALLOW IN HIS PRICE FOR ROUTING OF CONDUIT TO AVOID OBSTRUCTIONS, COORDINATION WITH EXISTING SERVICES, INCLUDING THOSE OF OTHER TRADES, IS REQUIRED, MAINTAIN HEADROOM AND SPACE CONDITIONS.

G. BIDDERS, BEFORE SUBMITTING PROPOSALS, SHALL VISIT AND CAREFULLY EXAMINE THE AREA AFFECTED BY THIS WORK TO FAMILIARIZE THEMSELVES WITH THE EXISTING CONDITIONS AND THE DIFFICULTIES THAT WILL ATTEND THE EXECUTION OF THIS WORK. SUBMISSION OF A PROPOSAL WILL BE CONSTRUED AS EVIDENCE THAT SUCH AN EXAMINATION HAS BEEN MADE, AND LATER CLAIMS WILL NOT BE RECOGNIZED FOR EXTRA LABOR, EQUIPMENT, OR MATERIALS, REQUIRED BECAUSE OF DIFFICULTIES ENCOUNTERED WHICH COULD HAVE BEEN FORESEEN HAD SUCH AN EXAMINATION BEEN MADE.

H. INSTALL WORK SO AS TO BE READILY ACCESSIBLE FOR OPERATION, MAINTENANCE AND REPAIR. MINOR DEVIATIONS FROM DRAWING MAY BE MADE TO ACCOMPLISH THIS, BUT CHANGES WHICH INVOLVE EXTRA COST SHALL NOT BE MADE WITHOUT APPROVAL.

I. REMOVAL AND RELOCATION OF CERTAIN EXISTING WORK MAY BE NECESSARY FOR THE PERFORMANCE OF THE GENERAL WORK. ALL EXISTING CONDITIONS CANNOT BE COMPLETELY DETAILED ON THE DRAWINGS. THE CONTRACTOR SHALL SURVEY THE SITE AND INCLUDE ALL CHANGES AND CHARGES IN MAKING OF THE WORK PROPOSAL.

J. CONNECTIONS TO EXISTING WORK: INSTALL NEW WORK AND CONNECT TO EXISTING WORK WITH MINIMUM INTERFERENCE TO EXISTING FACILITIES. TEMPORARY SHUTDOWNS OF EXISTING SERVICES SHALL BE PERFORMED AT NO ADDITIONAL CHARGES AT TIMES NOT TO INTERFERE WITH NORMAL OPERATION OF EXISTING FACILITIES AND ON A WRITTEN CONSENT OF OWNER. ALL CONNECTIONS TO EXISTING FACILITIES SHALL NOT INTERRUPT MAINTAIN CONTINUOUS OPERATION OF EXISTING FACILITIES AS REQUIRED WITH NECESSARY TEMPORARY CONNECTIONS BETWEEN NEW AND EXISTING WORK. CONNECT NEW WORK TO EXISTING WORK IN NEAT AND ACCEPTABLE MANNER. RESTORE EXISTING DISTURBED WORK TO ORIGINAL CONDITION, INCLUDING MAINTENANCE OF WIRING CONTINUITY AS REQUIRED.

K. 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.

L. SEAL OPENINGS THROUGH PARTITIONS, WALLS AND FLOORS WITH MINERAL WOOL OR OTHER NONCOMBUSTIBLE MATERIAL, UNLESS OTHERWISE NOTED.

M. PROVIDE ALL NECESSARY FLASHING AND COUNTER FLASHING TO MAINTAIN THE WATERPROOFING INTEGRITY OF THE BUILDING AS REQUIRED BY THE INSTALLATION OR REMOVAL OF CONDUIT AND EQUIPMENT. PROVIDE EQUIPMENT CURBS AS REQUIRED.

N. ALL EXISTING MATERIAL, EQUIPMENT AND CONSTRUCTION DEBRIS TO BE REMOVED UNDER THIS CONTRACT SHALL BECOME THE PROPERTY OF THE CONTRACTOR, WITH THE EXCEPTION OF SPECIFIC EQUIPMENT AND APPARATUS REQUESTED BY THE BUILDING REPRESENTATIVE, ARCHITECT OR AS NOTED TO BE RELOCATED ON THE DRAWINGS. REMOVED EQUIPMENT SHALL BE PROPERLY DISPOSED OF BY THIS CONTRACTOR.

O. THE CONTRACTOR'S PROPOSAL FOR ALL WORK SHALL BE PREDICATED ON THE PERFORMANCE OF THE WORK DURING REGULAR WORKING HOURS, WHEN SO DIRECTED. HOWEVER, THE CONTRACTOR SHALL INSTALL WORK DURING OVERTIME HOURS AND THE ADDITIONAL COST TO BE CHARGED THEREFORE SHALL BE ONLY THE "PREMIUM" PORTION OF THE WAGES PAID.

P. UNLESS OTHERWISE SPECIFICALLY NOTED OR SPECIFIED, INCLUDE ALL CUTTING AND PATCHING EXISTING FLOORS, WALLS, PARTITIONS AND OTHER MATERIALS IN THE EXISTING BUILDING. THE CONTRACTOR SHALL RESTORE THESE AREAS TO ORIGINAL CONDITION.

Q. ALL MATERIAL AND EQUIPMENT SHALL BE NEW UNLESS OTHERWISE NOTED AND SHALL BE IN ACCORDANCE WITH BUILDING STANDARDS.

R. INSURANCE: PROVIDE IN ACCORDANCE WITH OWNER/BUILDING REQUIREMENTS AND SHALL INCLUDE A HOLD HARMLESS CLAUSE FOR OWNER AND ENGINEER.

S. THE FINAL ACCEPTANCE SHALL BE MADE AFTER THE CONTRACTOR HAS ADJUSTED HIS EQUIPMENT, TESTED THE VARIOUS SYSTEMS, DEMONSTRATED THAT IT FULFILLS THE REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS AND HAS FURNISHED ALL THE REQUIRED CERTIFIED OF INSPECTION AND APPROVAL.

2. GENERAL PROVISIONS FOR ELECTRICAL WORK:

A. DEFINITIONS:
 1) "PROVIDE": TO FURNISH, INSTALL AND CONNECT UP COMPLETE AND READY FOR SAFE AND REGULAR OPERATION THE PARTICULAR WORK REFERRED TO UNLESS SPECIFICALLY OTHERWISE NOTED.

2) "INSTALL": TO ERECT, MOUNT AND CONNECT COMPLETE WITH RELATED ACCESSORIES.

3) "FURNISH" OR "SUPPLY": TO PURCHASE, PROCURE, ACQUIRE, AND DELIVER COMPLETE WITH RELATED ACCESSORIES.

4) "WORK": LABOR, MATERIALS, EQUIPMENT, APPARATUS, CONTROLS, ACCESSORIES AND OTHER ITEMS REQUIRED FOR PROPER AND COMPLETE INSTALLATION.

5) "WIRING": RACEWAY, FITTINGS, WIRE, BOXES, AND RELATED ITEMS.

6) "CONCEALED": EMBEDDED IN MASONRY OR OTHER CONSTRUCTION, INSTALLED IN FURRED SPACES, WITHIN DOUBLE PARTITIONS OR HUNG CEILINGS, IN TRENCHES, IN CRAWL SPACES, OR IN ENCLOSURES.

7) "EXPOSED": NOT INSTALLED UNDERGROUND OR "CONCEALED" AS DEFINED ABOVE.

8) "SIMILAR" OR "EQUAL": EQUAL IN MATERIALS, WEIGHT, SIZE, DESIGN AND EFFICIENCY OF SPECIFIED PRODUCT.

B. TEMPORARY LIGHT AND POWER: PROVIDE TEMPORARY LIGHT AND POWER SYSTEMS AT EARLIEST POSSIBLE DATE WITHIN THE CONSTRUCTION AREAS FOR THE REQUIREMENTS OF ALL TRADES AS HEREIN DESCRIBED. EXTEND SYSTEMS TO NEW CONSTRUCTION AS SOON AS PHYSICALLY POSSIBLE. MAINTAIN SYSTEM DURING WORKING HOURS. PROVIDE ALL REQUIRED MAINTENANCE, INCLUDING LAMPS AND SOCKETS.

C. QUALITY ASSURANCE

1) QUALITY OF MATERIALS: ALL EQUIPMENT SHALL BE NEW SPECIFICATION GRADE, FREE FROM DEFECTS AND LISTED BY APPROVED TESTING AGENCY AND BEARING THEIR LABEL MATERIALS AND EQUIPMENT OF SIMILAR APPLICATION SHALL BE OF SAME MANUFACTURER, EXCEPT AS NOTED.

2) GUARANTEE: ALL MATERIALS AND WORKMANSHIP SHALL BE GUARANTEED AS DEFINED IN PARAGRAPH 2.C.

3) HEIGHTS OF OUTLETS:

REFER TO ARCHITECTURAL AND/OR INTERIOR DESIGNER'S PLANS FOR DEVICE HEIGHTS IN NON BOH SPACES.

a. FROM FINISHED FLOOR TO CENTERLINE OF OUTLETS FOR:

- RECEPTACLES AND TELEPHONES: 1 FT-6 IN.
 - WALL SWITCHES: 4 FT-0 IN.

- WALL FIXTURES: 7 FT-0 IN.

- MOTOR CONTROLLERS: 5 FT-0 IN.

- CLOCKS: 7 FT-6 IN

b. EXCEPTIONS: AT JUNCTION OF DIFFERENT WALL FINISH MATERIALS, ON MOLDING OR BREAK IN WALL SURFACE, IN VIOLATION OF CODE, OR AS NOTED OR DIRECTED.

c. REFER TO ARCHITECTURAL AND/OR INTERIOR DESIGNER'S PLANS FOR DEVICE HEIGHTS IN NON BOH SPACES

D. PRODUCT DELIVERY, STORAGE AND HANDLING

4) MOVING OF EQUIPMENT: WHERE NECESSARY, SHIP IN CARTED SECTIONS OF SIZE TO PERMIT PASSING THROUGH AVAILABLE SPACES.

5) ACCESSIBILITY: FOR OPERATION, MAINTENANCE AND REPAIR, MINOR DEVIATIONS SHALL BE PERMITTED, CHANGES OF MAGNITUDE OR INVOLVING EXTRA COST ARE NOT PERMISSIBLE WITHOUT REVIEW. GROUP CONCEALED ELECTRICAL EQUIPMENT REQUIRING ACCESS WITH EQUIPMENT FREELY ACCESSIBLE THROUGH ACCESS DOORS.

E. MATERIALS

1) NAMEPLATES: PROVIDE BLACK LAMACOID SHEET WITH 3/4 IN. WHITE LETTERING, FASTENED WITH EPOXY CEMENT FOR EACH DISCONNECT SWITCH, CIRCUIT BREAKER, PANEL, CABINET, TRANSFORMER, MOTOR CONTROLLER AND THE LIKE. NAMEPLATES SHALL DESCRIBE THE NAME AND NUMBER OF EACH COMPONENT.

2) CABLE TAGS: TAG EACH CONDUCTOR PASSING THROUGH SPICE OR PULLBOX WITH A WHITE LINEN TAG, INDICATING POINT OF ORIGIN AND TERMINATION OF THE CIRCUIT.

3) INSERTS AND SUPPORTS:

a. INSERTS: STEEL, SLOTTED TYPE, FACTORY PAINTED.

- SINGLE ROD: SIMILAR TO GRINNELL FIG. 281.

- MULTI-ROD: SIMILAR TO FEE AND MASON SERIES 9000 WITH END CAPS AND CLOSURE STRIPS.

- CLIP FORM NAILS FLUSH WITH INSERTS.

- MAXIMUM LOADING 75 PERCENT OF RATING.

b. SUPPORTS: FROM BUILDING CONSTRUCTION: INSERTS, BEAM CLAMPS, STEEL FISHPLATES (IN CONCRETE FILL ONLY), CANTILEVER BRACKETS OR OTHER MEANS. SUBMIT FOR REVIEW.

c. GROUPED LINES AND SERVICES: TRAPEZE HANGERS OF BOLTED ANGLES OR CHANNELS WHERE BUILDING CONSTRUCTION IS INADEQUATE: PROVIDE ADDITIONAL FRAMING. SUBMIT FOR REVIEW.

F. SUBMIT ELECTRICAL POWER SYSTEM STUDIES INCLUDING SUPPORTING DATA AND RECOMMENDATIONS FOR THE FOLLOWING:

1) SHORT CIRCUIT CURRENT AND PROTECTIVE DEVICE COMBINATION.

2) ARC FLASH HAZARD ANALYSIS.

EQUIPMENT SHOP DRAWINGS SHALL NOT BE SUBMITTED UNTIL THESE

STUDIES HAVE BEEN COMPLETED.

G. PAINT SHALL BE THE BEST GRADE FOR ITS PURPOSE. DELIVER IN ORIGINAL SEALED CONTAINERS AND APPLY IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. COLORS SHALL BE AS SELECTED BY ARCHITECT OR ENGINEER. UTILIZE GALVANIZED IRON PRIMER ON PANEL AND PULL BOXES, AFTER FABRICATION. UTILIZE HOT DIP GALVANIZED OR DIPPED IN ZINC BASED PRIMER ON CONDUIT, BOXES, BODIES, CONDUIT HANGERS, RODS, INSERTS AND SUPPORTS. ZINC BASED PRIMER WITH FILM TO MATCH SURROUNDINGS SHALL BE USED FOR MARRED SURFACES OF STEEL EQUIPMENT AND RACEWAYS. A FIELD-APPLIED ZINC BASED PRIMER COAT SHALL BE UTILIZED FOR STEEL OR IRONWORK.

H. BRUSH AND CLEAN WORK PRIOR TO CONCEALING, PAINTING AND REPAIR. PAINTED EXPOSED WORK SOILED OR DAMAGED; CLEAN AND REPAIR TO MATCH ADJOINING WORK BEFORE FINAL ACCEPTANCE. REMOVE DEBRIS FROM INSIDE AND OUTSIDE OF MATERIAL AND EQUIPMENT.

I. FINAL LOCATIONS AND MOUNTING ORIENTATIONS OF ALL SWITCHES, RECEPTACLES AND LIGHT FIXTURES SHALL BE VERIFIED WITH ARCHITECT.

J. ALL ACCESS DOOR LOCATIONS SHALL BE REVIEWED BY ARCHITECT PRIOR TO INSTALLATION.

3. SCOPE OF WORK:

G. SCOPE OF WORK SHALL CONSIST OF PROVIDING LABOR, MATERIALS, EQUIPMENT, SERVICES AND FEES NECESSARY FOR COMPLETE AND SAFE INSTALLATION IN CONFORMING WITH THE NATIONAL ELECTRICAL CODE 2020, AND ALL OTHER APPLICABLE INDUSTRY, NATIONAL AND LOCAL CODES AND AUTHORITIES HAVING JURISDICTION, AS INDICATED ON DRAWINGS AND HEREIN SPECIFIED.

H. ALL DRAWINGS, PLANS, DETAILS, SPECIFICATIONS AND OPERATION ADDENDA ARE MADE PART OF THIS CONTRACT AND SHALL APPLY TO ALL WORK UNDER THE CONTRACT UNLESS OTHERWISE AMENDED, MODIFIED, SUPPLIED OR SPECIFIED HEREIN.

I. THE CONTRACTOR SHALL FURNISH A WRITTEN GUARANTEE TO REPLACE OR REPAIR, PROMPTLY AND ASSUME RESPONSIBILITY FOR ALL EXPENSES INCURRED FOR ANY WORKMANSHIP AND EQUIPMENT IN WHICH DEFECTS DEVELOP WITHIN ONE YEAR FROM THE DATE OF FINAL CERTIFICATE FOR PAYMENT AND/OR FROM DATE OF ACTUAL USE OF EQUIPMENT OR OCCUPANCY OF SPACES BY BUILDING OWNER. THE DATE OF THE WORK IS THE DATE OF PAYMENT. THIS WORK SHALL BE DONE AT THE OWNER'S EXPENSE. THE CONTRACTOR SHALL ALSO PROVIDE THAT WHERE DEFECTS OCCUR, THE CONTRACTOR WILL ASSUME RESPONSIBILITY OF OTHER TRADES AFFECTED BY DEFECTS, REPAIRS OR REPLACEMENTS IN EQUIPMENT SUPPLIED BY THE CONTRACTOR.

J. THE CONTRACTOR SHALL GIVE NECESSARY NOTICE, FILE DRAWINGS AND SPECIFICATIONS WITH ALL APPLICABLE JURISDICTIONS 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 AUTHORITIES AND PAY ALL CHARGES FOR SAME. THE CONTRACTOR SHALL PAY ALL COSTS FOR AND FURNISH TO THE OWNER BEFORE FINAL BILLING, ALL CERTIFICATES NECESSARY AS EVIDENCE THAT THE WORK INSTALLED CONFORMS WITH ALL REGULATIONS WHERE THEY APPLY TO THIS WORK.

K. CONTRACTOR SHALL PERFORM ALL CONTROLLED INSPECTIONS IN ACCORDANCE WITH THE NATIONAL BUILDING CODE. SECURE ALL REQUIRED PERMITS AND APPROVALS AND TRANSMIT SAME TO OWNER. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL FEES.

L. AREAS WITH NO ELECTRICAL WORK SHALL REMAIN AS IS. CONTRACTOR SHALL MAINTAIN CONTINUITY OF ALL ELECTRICAL SYSTEMS TO ALL AREAS NOT COVERED BY THIS RENOVATION AND SHALL PROVIDE 48 HOUR NOTICE TO LANDLORD OF ANY PLANNED POWER INTERRUPTIONS OR SIGNAL SYSTEM OUTAGES.

4. SHOP DRAWINGS

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

B. INDICATE ON EACH SHOP DRAWINGS SUBMITTED:

1) PROJECT NAME AND LOCATION

2) NAME OF ARCHITECT AND ENGINEER

3) ITEM IDENTIFICATION

4) APPROVAL STAMP OF PRIME CONTRACTOR

C. SUBMISSIONS:

1) SUBMISSIONS 11 IN. X 17 IN. OR SMALLER: IF THE SUBMISSION IS A CATALOG CUT, THEN THE CONTRACTOR SHALL SUBMIT ONE ORIGINAL AND TWO COPIES. OTHERWISE, HE SHALL SUBMIT THREE COPIES. THE ARCHITECT WILL FORWARD THE ORIGINAL AND ONE COPY (WHEN NO ORIGINAL IS RECEIVED) TO THE ENGINEER. ALL CATALOG CUTS SHALL BE COMPLETE.

2) SUBMISSIONS LARGER THAN 11 IN. X 17 IN.: SUBMIT TWO PRINTS AND ONE PAPER, SEPIA, TO THE ARCHITECT. THE ARCHITECT WILL FORWARD ONE PRINT AND THE PAPER SEPIA TO THE ENGINEER.

D. SUBMIT SHOP DRAWINGS FOR THE FOLLOWING:

1) SAFETY/DISCONNECT SWITCHES

2) FUSES

3) CIRCUIT BREAKERS

4) DISTRIBUTION EQUIPMENT INCLUDING SWITCHBOARDS, TRANSFORMERS, PANELBOARDS AND LOAD CENTERS.

5) RACEWAYS

6) WIRE AND CABLE

7) LIGHTING CONTROL DEVICES

8) INSERTION RECEPTACLES

9) MOMENTARY CONTACT SWITCHES

10) TIME SWITCHES

11) LIGHTING FIXTURES, BALLASTS AND LAMPS.

12) FIRE ALARM EQUIPMENT AND DEVICES.

13) MOTOR STARTERS.

SUBMIT ELECTRICAL POWER SYSTEM STUDIES INCLUDING SUPPORTING DATA AND RECOMMENDATIONS FOR THE FOLLOWING:

1) SHORT CIRCUIT CURRENT AND PROTECTIVE DEVICE COORD

ELECTRICAL SPECIFICATION (CONT.)

A

3) BOXES:
A. OUTLET BOXES, EXCEPT AS OTHERWISE REQUIRED BY CONSTRUCTION SERVICES, OUTLET BOXES SHALL BE CHAMFERED STEEL, 1/2 IN. DEEP, FOR FIXTURE BOXES ABOVE CEILING SHALL BE 1-1/2 IN. DEEP, BOXES IN CEILING OR SLAB SHALL BE 3 IN. DEEP, BOXES IN WALL FOR FIXTURES SHALL BE 2-3/4 IN. DEEP, BOXES IN WALL FOR RECEPTACLES AND SWITCHES SHALL BE 1-1/2 IN. DEEP, FURNISH WITH RAISED COVERS AND FIXTURE STUDS WHERE REQUIRED, WITHOUT FIXTURE OR DEVICE; FURNISH BLANK COVER, OFFSET BACK-TO-BACK, OUTLETS WITH MINIMUM 6 IN. SEPARATION. MANUFACTURER SHALL BE APPLTON, RACO OR STEEL CITY.

B. JUNCTION AND PULL BOXES: GALVANIZED SHEET STEEL WITH SCREW-ON COVERS, EXCEPT AS NOTED, FURNISH WITH INSULATED SUPPORTS FOR CABLES. OUTLET BOXES SHALL BE 1-1/2 IN. DEEP, FOR FIXTURE BOXES, PROVIDE BARRIERS. NEW AND RENOVATED BOXES BETWEEN 120/208 VOLT AND 265/460 VOLT, FLOOR BOXES SHALL BE ADJUSTABLE CONCRETE TIGHT PRESSED STEEL WITH BRASS FLANGE AND COVERS. FLUSH FLOOR BOXES SHALL INCLUDE BRASS TRIM AND HINGED OUTLET OPENING COVERS. FIRE RATED POKE-THROUGH FLOOR FITTINGS SHALL BE UL LISTED AND APPROVED. THE FIRE RATED FLOOR FITTINGS SHALL BE FLUSH MOUNTED. FLUSH FITTING FOR SERVICE FITTINGS FOR CONNECTION TO UNDER-FLOOR ELECTRIFIED METAL DECK, SHALL BE COMPATIBLE WITH THE DECK MANUFACTURER. ACCESS FLOOR MOUNTED FITTINGS FOR USE WITH RAISED FLOOR SHALL BE FLUSH TYPE WITH SPACE FOR EQUIPMENT CORD PLUG DEVICES AND SUITABLE FLIP TYPE COVER. MANUFACTURER SHALL BE HUBBELL, WIREMOLD, OR STEEL CITY.

C. PROVIDE RACEWAYS ONLY AS HEREIN SPECIFIED, EXCEPT AS NOTED. RACEWAYS SHALL BE RUN CONCEALED, EXCEPT AS NOTED. PROVIDE RACEWAY SUPPORT UTILIZING CEILING TRAPEZOID STRAIGHT HANGERS OR WALL BRACKETS, PROVIDED BY THE CONTRACTOR. FLUSH LEVER ARM RISER RACEWAYS CONNECTED TO ACCEPTABLE SUPPORTS. PROVIDE RISER CLAMPS AT EACH FLOOR LEVEL OF RISER RACEWAYS AND RESTING ON SLAB FOR THROUGH-THE-FLOOR SYSTEMS. UTILIZE AN ASSEMBLY SIMILAR TO HUBBELL FIRE RATED POKE-THROUGH-FLOOR BOX SYSTEM. FOR ABOVE FLOOR LEVELS, USE CONCEALED HOLLOW CONDUIT AND POWER CABLE BE DURALEX, ACCEPTABLE OR OTHER AS NOTED. PROVIDE SEPARATION BARRIER BETWEEN POWER AND TELEPHONE COMPARTMENTS. PROVIDE JUNCTION BOX ON UNDERSIDE OF FLOOR, PACK FITTING TO RESTORE FIRE RATING OF FLOOR.

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

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

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

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

RIGID STEEL CONDUIT SHALL BE USED FOR FEEDERS AND BRANCH CIRCUITS. PAINT, MALE THREADS OF FIELD-THREADED CONDUIT, WITH GRAPHITE-BASE PIPE COMPOUND AND BUTT CONDUIT ENDS, TOUCH UP MARRIED SURFACES AND FIELD-CUT THREADS. CRC-COLD GALVANIZED EMT SHALL BE PERMITTED FOR BRANCH CIRCUITS ONLY, IN DRY LOCATIONS, DRY WALLS, CEILINGS, AND DRY WOOD WALLS AND FURRING SPACES. EMT SHALL NOT BE PERMITTED IN PAINTED, POLYESTER, FLEXIBLE, OR PVC CONDUIT SHALL BE USED FOR SHORT CONNECTIONS WHERE RIGID CONDUIT IS IMPRACTICAL. FROM OUTLET BOX TO RECESSED LIGHTING FIXTURE: PROVIDE MINIMUM 4 FT AND MAXIMUM 6 FT LENGTHS. FOR FINAL CONNECTIONS TO MOTOR TERMINAL BOX, TRANSFORMERS, AND OTHER VIBRATING EQUIPMENT, USE SWIVEL, WIRE, POLYPROPYLENE, SHEATHING AND GROUND CONDUCTOR, MINIMUM LENGTH: 18 IN. WITH SLACK, CONNECT GROUND CONDUCTOR TO ENCLOSURE OR RACEWAY AT EACH END. FOR EXPANSION JOINT CROSSINGS, CROSS AT RIGHT ANGLES AND ANCHOR ENDS.

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

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

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

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

D. PROVIDE CABLE SUPPORTS IN ACCORDANCE WITH NATIONAL ELECTRIC CODE ARTICLE 300.19. CABLE SUPPORTS SHALL UTILIZE A ONE-PIECE PLUG WITH POZI-GROUT WHEELING PLUG AS MANUFACTURED BY OZ-GEDNEY. TYPE SF SHALL BE USED FOR ARMORED CABLE.

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

E. ERECT WALL AND SWITCH OUTLETS IN ADVANCE OF FUZZING AND FIREPROOFING. OUTLET BOXES SHALL BE SET SQUARED AND TRUE WITH BUILDING STRUCTURE. SECURE OUTLET BOXES BY ARMSTRONG, IRON OR GROUT IN MASONRY. VERIFY OUTLET LOCATIONS IN FINISHED SPACES, WITH ARCHITECTURAL DRAWINGS OF INTERIOR DETAILS AND FINISHES. PROVIDE BARRIERS BETWEEN SWITCHES CONNECTED TO DIFFERENT PHASES FOR VOLTAGES EXCEEDING 150 VOLTS TO GROUND.

PANEL, JUNCTION AND PULL BOXES SHALL BE LOCATED CLEAR OF OTHER TRADES CONCEAL JUNCTION AND PULL BOXES IN FINISHED SPACES. WHERE NECESSARY, REROUTE RACEWAYS OR MAKE OTHER ADJUSTMENTS FOR CONCEALMENT. BOXES SHALL BE ACCESSIBLE. SUPPORT BOXES FROM BUILDING STRUCTURE, INDEPENDENT OF CONDUIT. PROVIDE FLUSH-TO-CEILING CHANNELS FOR MOUNTING IN DRYWALL AND LIGHTWEIGHT CONSTRUCTION. OUTLET BOXES FOR FIXTURES RECESSED IN HUNG CEILINGS SHALL BE ACCESSIBLE THROUGH OPENING CREATED BY REMOVAL OF FIXTURE. SECURE TO BLACK IRON SUPPORT. MOTOR TERMINAL BOXES: COORDINATE WITH MOTOR BRANCH CIRCUIT CONDUIT AND WIRING; ADD BOX VOLUME WHERE REQUIRED.

F. FIRE SEALANTS: PROVIDE FOR RACEWAYS AND WIRE PASSING THROUGH FLOOR SLOTS, SLEEVES OR OPENINGS IN FIRE-PARTITION ROOMS.

G. PERFORM CONTINUITY TESTS OF RESISTANCE OF FEEDER CONDUCTORS FROM SERVICE TO POINT OF FINAL DISTRIBUTION USING 1 CONDUCTOR RETURN. MAXIMUM RESISTANCE SHALL BE 25 OHMS.

10. WIRE AND CABLE:
A. PROVIDE WIRE AND CABLE COMPLETE WITH ACCESSORIES. SIZE REFERENCE SHALL BE AWG EXCEPT AS NOTED.

F

B. CONDUCTORS SHALL BE COPPER, ASTM STANDARD SOLID (NO. 10 AND SMALLER) OR STRANDED (NO. 8 AND LARGER) GENERAL USE CABLE SHALL BE NO. 12 MINIMUM. AT 120 VOLTS AND OVER 100 FT CIRCUIT LENGTH PROVIDE NO. 10 MINIMUM. AT 265 VOLTS AND OVER 200 FT CIRCUIT LENGTH PROVIDE NO. 10 MINIMUM. MANUFACTURER SHALL BE AMERICAN INSULATED WIRE CORP., CERRO, COLLYER, CAPITOL WIRE AND CABLE, OKONITE, SENETOR, SOUTH WIRE OR TRIANGLE.

C. CONTROL AND ALARM CABLEING, EXCEPT AS NOTED, SHALL BE NO. 14 MINIMUM. AT 120 VOLTS AND OVER 200 FT CIRCUIT LENGTH PROVIDE NO. 12 MINIMUM. OTHER VOLTAGES AND PHASES: ADJUST CABLE SIZING AS REQUIRED TO MAINTAIN VOLTAGE DROP. INCREASE RACEWAY SIZES FOR LARGER WIRE AS REQUIRED.

14. PANELBOARDS:
A. PANELBOARDS SHALL BE OF THE DEAD FRONT TYPE. MANUFACTURED IN CODE GAUGE AND SIZE BOXES FOR MOUNTING AS INDICATED ON PLANS COMPLETE WITH TRIM, DOORS AND LOCKS. ALL LOCKS SHALL BE KEYED ALIKE.

B. CIRCUIT BREAKERS SHALL BE OF THE BOLT-ON THERMAL MAGNETIC MOLDED CASE TYPE, AND SHALL HAVE THE TRIP RATINGS AND NUMBER OF POLES SHOWN IN SCHEDULES ON THE CONTRACT DRAWINGS. FOR BLANK (SPACE) CONTRACT DRAWINGS, PROVIDED BY THE CONTRACTOR. GROUNDED SPACES SHALL BE 5-3/4 IN. TOP AND BOTTOM. INCREASE FOR HIGH FEEDERS. PROVIDE 25% COPPER GROUND BUS AND 100% COPPER NEUTRAL BUS AND INCREASE NEUTRAL BUS INDICATED.

C. LOCKING TABS SHALL BE PROVIDED ON ALL CIRCUIT BREAKERS SERVING EMERGENCY LIGHTING, FIRE ALARM SYSTEM, SECURITY SYSTEMS AND OTHER EMERGENCY OR CRITICAL EQUIPMENT, AND AS NOTED ON THE CONTRACT DRAWINGS. A TOTAL OF 5 SPARE LOCKING TABS SHALL BE FURNISHED TO THE OWNER.

D. BUSES SHALL BE HARD DRAWN COPPER OF 98 PERCENT CONDUCTIVITY AND SHALL HAVE CROSS SECTIONAL AREAS LARGE ENOUGH TO LIMIT THE TEMPERATURE RISE, WHEN CARRYING FULL LOAD, TO 35 DEGREES C ABOVE AN AMBIENT INSIDE THE ENCLOSURE OF 55 DEGREES C AS DEFINED IN IEEE STANDARD RULES. MAIN BUS CAPACITY SHALL BE AS SHOWN ON THE CONTRACT DRAWINGS.

E. ENCLOSURES SHALL BE SURFACE OR FLUSH AS INDICATED. TRIMS SHALL BE SECURED TO PANEL WITH MACHINE SCREWS. COVERS SHALL BE HINGED DOOR-IN-DOOR CONSTRUCTION WITH CYLINDER LOCKS AND CATCHES. LOCK MUST BE COMPATIBLE WITH BUILDING STANDARD KEY SYSTEM AND WHEN NONE EXISTS, THEY SHALL BE SIMILAR TO A VALE NO. 911 KEY.

F. DISTRIBUTION AND SUB-DISTRIBUTION PANELBOARD SHALL BE A MINIMUM OF 30" WIDE AND 10" DEEP.

G. ALL STANDARD PANELBOARDS SHALL BE A MINIMUM OF 20" WIDE AND 5 3/4" DEEP.

H. FURNISH ALL PANELBOARDS WITH FEED-THRU LUGS UNLESS OTHERWISE INDICATED ON THE DRAWINGS.

I. ALL NEW PANELBOARDS SHALL BE PROVIDED WITH AN ENGRAVED WHITE CORE LAMACOID NAMEPLATE, WITH 3/4 IN. WHITE LETTERING ON A BLACK BACKGROUND, WITH DESIGNATION LISTED (PANELBOARD NAME), FASTENED WITH EPOXY CEMENT OR OVAL HEAD CHROME PLATED MACHINE SCREWS.

J. THE CIRCUIT DIRECTORY SHALL BE TYPEWRITTEN AND PROVIDED INSIDE EACH PANEL DOOR TO INDICATE EQUIPMENT AND/OR AREA SERVED. DIRECTORY HOLDER SHALL BE METAL FRAME WITH CLEAR PLASTIC TRANSPARENT COVER. THE TYPEWRITTEN LIST INDICATING CIRCUIT NUMBERS, OUTLETS SUPPLIED AND THEIR LOCATIONS SHALL BE PROVIDED.

K. TIE-BARS SHALL NOT BE USED TO CREATE MULTI-POLE CIRCUITS. MAXIMUM 42 CIRCUITS ALLOWED.

L. ONLY ONE WIRE SHALL BE INSTALLED UNDER EACH CIRCUIT BREAKER LUG.

M. SHORT CIRCUIT RATING OF PANELBOARDS SHALL NOT BE LESS THAN AS INDICATED ON THE CONTRACT DRAWINGS OR SPECIFIED HEREIN. WHERE NOT INDICATED OR SPECIFIED, THE MINIMUM SHORT CIRCUIT RATING SHALL BE EQUAL TO THE INTERRUPTING CAPACITY OF THE LOWEST RATED CIRCUIT BREAKER IN THE PANELBOARD, BUT IN NO CASE LESS THAN 10,000 AMPERES RMS. ASYMMETRICAL FOR 208Y/120 VOLT SYSTEM AND 14,000 AMPERES RMS. SYMMETRICAL FOR 480Y/277 VOLT SYSTEM. SERIES RATED PANELBOARDS SHALL BE USED TO ACHIEVE REQUIRED SHORT CIRCUIT RATINGS.

N. FOR ALL EXISTING PANELBOARDS, CONTRACTOR SHALL PROVIDE NEW CIRCUIT BREAKERS TO REPLACE EXISTING AS REQUIRED AS INDICATED ON DRAWINGS.

11. WIRING DEVICES:
A. WIRING DEVICES SHALL BE SPECIFICATION GRADE UNLESS OTHERWISE SPECIFIED. ALL DEVICES SHALL BE FLUSH MOUNTED UNLESS OTHERWISE NOTED. PROVIDE COMPLETE MATERIAL AND ACCESSORIES AS NOTED.

B. LOCAL WALL SWITCHES SHALL BE ROCKER TYPE, QUIET OPERATING, RATED 20 AMP, 120/277 VOLT, AC, SIMILAR TO LEVITON DECORA SERIES M621 (SINGLE POLE), M623 (3-WAY) AND M624 (4-WAY).

C. STRAIGHT BLADE RECEPTACLES SHALL BE COMMERCIAL SPECIFICATION GRADE DUPLEX CONVENIENCE 125 VOLTS, 2 POLE, 3 WIRE, U GROUND SLOT, DECORA SERIES BY LEVITON, GROUNDED, EXCEPT AS NOTED.

1) SINGLE GANG, RECESSED, DUPLEX RECEPTACLE: TAMPER RESISTANT, 2-POLE, 3-WIRE GROUNDING, 15A, 125V, NEMA 5-20R; LEVITON 889 SERIES (COLOR AS SPECIFIED BY ARCHITECT).

2) USB CHARGER, DUPLEX TAMPER-RESISTANT RECEPTACLE: TAMPER RESISTANT.

D. GROUND FAULT INTERRUPTER RECEPTACLES:
a. 20 AMP DUPLEX FEED-THROUGH TYPE, SIMILAR TO NO. GF8300.

E. DEVICE PLATES: SEE ARCHITECT FOR TYPE. FOR RECEPTACLES WITH OTHER THAN 120 VOLT, INSCRIBED VOLTAGE AVAILABLE.

F. COLORS: COORDINATE COLORS WITH ARCHITECT.

G. MOUNTING ORIENTATION OF RECEPTACLES (HORIZONTAL OR VERTICAL): COORDINATE WITH ARCHITECT.

12. LIGHTING FIXTURES:
A. FIXTURES TO BE AS SPECIFIED BY ARCHITECT U.O.N. AND SHALL BE COMPLETELY FACTORY ASSEMBLED, WIRED AND EQUIPPED WITH ALL NECESSARY SOCKETS, BALLASTS, SUPPORTING HARDWARE AND ACCESSORIES. REFER TO DRAWINGS FOR INDIVIDUAL FIXTURE DESCRIPTIONS.

B. FIXTURE CATALOG NUMBERS USED TO ILLUSTRATE EQUIPMENT TYPE DO NOT NECESSARILY DENOTE REQUIRED MOUNTING EQUIPMENT OR ACCESSORIES. PROVIDE ACCESSORIES TO SUIT.

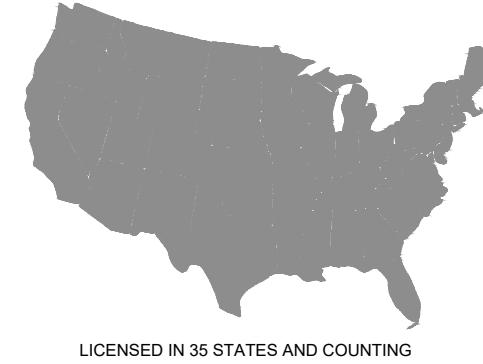
C. BALLAST: CLASS P, HIGH POWER FACTOR, LOWEST AVAILABLE NEMA RATED NOISE LEVEL, ETI AND CCM APPROVED. ENERGY SAVING TYPE, TRIGGER START FOR 24-INCH LAMPS AND RAPID START FOR 48-INCH TO 70 LAMP BALLASTS: NO THREE LAMP BALLASTS. BALLASTS SHALL BE ADVANCE MAGNETIC UNIVERSAL OR EQUAL.

D. LED DRIVERS SHALL BE ELECTRONIC TYPE, LABELED AS COMPLIANT WITH RADIO FREQUENCY INTERFERENCE (RFI) REQUIREMENTS OF FOC TITLE 47, PART 15 AND COMPLY WITH NEMA SSL 1. ELECTRONIC DRIVERS FOR LED DEVICES, ARRAYS OR SYSTEMS. LED DRIVERS SHALL HAVE A SOUND RATING OF "A", HAVE A MINIMUM EFFICIENCY OF 85% AND BE RATED FOR A THD OF LESS THAN 20% AT ALL INPUT VOLTAGES.

E. DIMMABLE LED DRIVERS SHALL BE CAPABLE OF DIMMING WITHOUT LED STROBING OR FLICKER ACROSS THEIR FULL DIMMING RANGE. PROVIDE TYPE OF LED DRIVER AS PER LIGHTING FIXTURE SCHEDULE. DIMMABLE LED DRIVERS SHALL BE 0-10V WHERE NOT INDICATED.

13. VOICE/DATA CONDUIT SYSTEM:
A. PROVIDE COMPLETE SYSTEM OF: RACEWAYS AND ACCESSORIES, OUTLET BOXES, SLEEVES AND FISHWIRES.

B. OUTLETS SHALL BE:
1) PROVIDE A TWO-GANG J-BOX AND SINGLE OR DOUBLE GANG FLUSH WALL



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RELEASE TYPE:	DATE:
EXISTING CONDITIONS	
SCHEMATIC DESIGN	
DESIGN DEVELOPMENT	
PROGRESS PRINT	
FULL RELEASE	06/20/2025

ISSUED TO:

NO. DESCRIPTION DATE

DESIGNED BY: **NYE** DRAWN BY: **NYE**
CHECKED BY: **NYE** APPROVED BY: **SM**
PROJECT #: **STC-1067-0225**

PROJECT:
ALPHA FIT CLUB – WOODBRIDGE, NJ

DRAWING TITLE:
ELECTRICAL SPECIFICATIONS (2 OF 2)

SHEET:
E-003

1 2 3 4 5 6 7 8

A

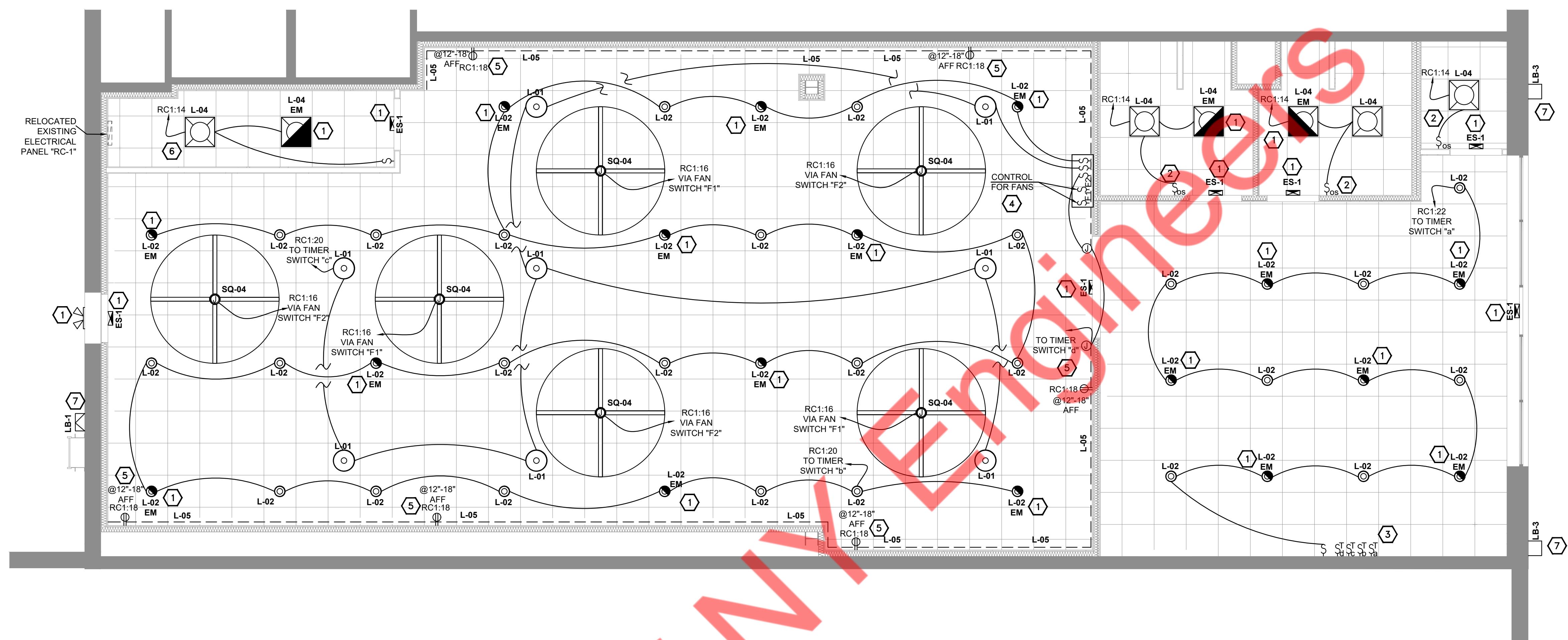
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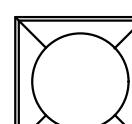
1 LIGHTING PLAN
SCALE: 1/4" = 1'-0"

SCALE: 1/4

LEGEND

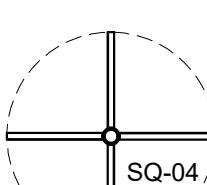
L-01  L-01 EM NEW PHILIP HUE HIGH BAY - PENDANT LED LIGHTS. SEE SPEC

L-02  L-02 EM LIGHTS. SEE SPEC

L-04  L-04 EM 2X2 CEILING LIGHTS OR OWNER SELECTED

— — — — L-05 LED ROPE LIGHTING

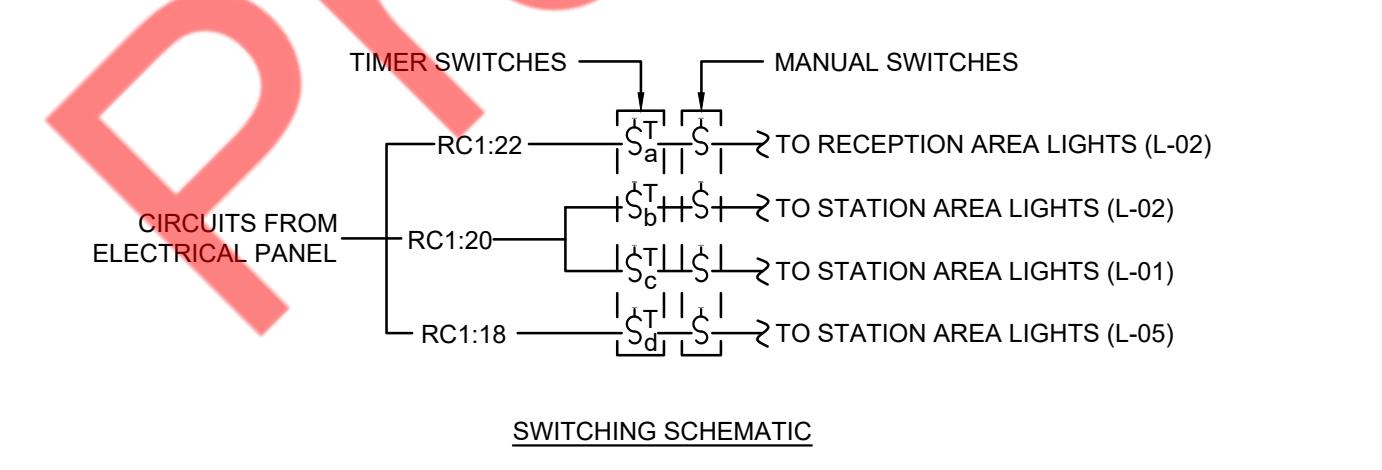
ES-1  EXIT SIGN

SQ-04  FAN

LIGHTING FIXTURE SCHEDULE

TAG	NAME	MANUFACTURER/MODEL#	POWER (WATTS)	QUANTITIES	MOUNTING
L-01	UFO LIGHTS	HIGH BAY LED SHOP LIGHTS 14,000 DIMMABLE, 6' CABLE US PLUG, HANGING HOOK, SAFE ROPE, ETL	100 W	8	PENDANT
L-02	PHILIP HUE SPOT LIGHT	PHILIP : 046677579784	19.2 W	25	PENDANT
L-02 EM	PHILIP HUE SPOT LIGHT	PHILIP : 046677579784 (EMERGENCY)	19.2 W	17	PENDANT
L-04	PHILIP HUE SPOT LIGHT	PHILIP : 2FGXG38B835	33.5 W	4	LAY-IN
L-04 EM	PHILIP HUE SPOT LIGHT	PHILIP : 2FGXG38B835 (EMERGENCY)	33.5 W	3	LAY-IN
L-05	PHILIP LED ROPE LIGHTING	PHILIP : 555912	37.5 W	131(FT)	SURFACE
Q-04	CANARM FANS	CANARM : CP60DW10N 60"	85 W	6	DOWN ROD
ES-1	EXIT SIGN	TBD	0.75	7	WALL

OTE: C. SHALL COORDINATE EXACT MAKE/MODEL/COLOR/FINISH/CCT OF LIGHTING FIXTURES WITH ARCHITECT/FIELD PRIOR TO PURCHASE & BID.



LIGHTING PLAN KEY NOTES:

1. WIRE ALL EMERGENCY, NIGHT LIGHT AND EXIT LIGHT TO THE NEAREST CIRCUIT AHEAD OF ALL CONTROLS & SWITCHING FOR CONTINUOUS OPERATION.
2. WALL/CEILING MOUNTED OCCUPANCY SENSOR. E.C. SHALL COORDINATE EXACT MAKE/MODEL OF WALL/CEILING MOUNTED OCCUPANCY SENSOR WITH ARCHITECT/OWNER IN FIELD. SET OFF TIME TO 20 MINUTES AND SHOULD BE AUTOMATIC ON.
3. DIGITAL IN WALL TIMER SWITCH. COORDINATE EXACT LOCATION & MAKE/MODEL OF WALL TIMER SWITCH WITH ARCHITECT/OWNER. TIMER SWITCH SHALL HAVE MINIMUM 7 DAY CLOCKS, CAPABLE OF BEING SET FOR SEVEN DIFFERENT DAY TYPES PER WEEK. TIMER SWITCH SHALL INCORPORATE AUTOMATIC HOLIDAY SHUT OFF FEATURE AND HAVE PROGRAM BACK-UP WHICH PREVENT LOSS OF PROGRAM AND TIME SETTING FOR AT LEAST 10 HOURS IF POWER IS INTERRUPTED. PROVIDE MANUAL OVERRIDE SWITCHES THAT SHALL TURN ON POWER FOR NOT MORE THAN 2 HOURS
4. WALL MOUNTED FAN CONTROLS (RREM-DCQ014-W OR EQUAL). E.C. SHALL PROVIDE ALL THE ADDITIONAL ACCESSORIES REQUIRED FOR THE PROPER FUNCTIONING OF CEILING MOUNTED FAN. COORDINATE EXACT REQUIREMENT WITH EQUIPMENT MANUFACTURER IN FIELD. FINAL CONTROLS OF FANS SHALL BE COORDINATED WITH OWNER/ARCHITECT IN FIELD. BASE BID ACCORDINGLY.
5. E.C. SHALL COORDINATE EXACT ELECTRICAL OUTLET REQUIREMENT AND QUANTITIES INCLUDING J-BOX/RECEPTACLE FOR ROPE LIGHT (L-05) IN FIELD WITH MANUFACTURER, ALSO SHALL PROCURE ALL THE ADDITIONAL ACCESSORIES REQUIRED FOR THE PROPER FUNCTIONING OF ROPE LIGHT. COORDINATE EXACT MOUNTING DETAILS OF OUTLETS WITH ARCHITECT/OWNER. MAKE POWER PROVISION AND BASE BID ACCORDINGLY.
6. LIGHT IN THIS AREA SHALL NOT BE CONTROLLED BY ANY AUTOMATIC MEANS AND SHALL BE COMPLIED AS PER NEC 110.26(D).
7. EXISTING LIGHT FIXTURE, ITS ELECTRICAL CONNECTION SHALL REMAIN. E.C. SHALL VERIFY THE OPERABLE CONDITION OF EXISTING LIGHT FIXTURE & IT'S ELECTRICAL CONNECTION IN FIELD

LIGHTING PLAN GENERAL NOTES:

1. CONTRACTOR IS ADVISED THAT ADJUSTMENTS TO EMERGENCY, NIGHT LIGHT AND EXIT LIGHT FIXTURE LOCATIONS/QUANTITIES MAY BE REQUIRED BY AHJ UPON FINAL INSPECTION.
2. ALL EMERGENCY, NIGHT LIGHT AND EXIT LIGHT FIXTURES SHALL BE CONNECTED AHEAD OF SWITCHED LIGHTING CIRCUIT.
3. ALL EXTERIOR LIGHTS/SIGNS SHALL BE CONTROLLED VIA PHOTOCELL/TIME-CLOCK. E.C. SHALL PROVIDE ALL THE LIGHTING CONTROL COMPLYING WITH ASHRAE 90.1-2019.
4. FINAL CONDUIT/CABLE ROUTING SHALL BE DETERMINED IN-FIELD, AND PRIOR TO THE COMMENCEMENT OF WORK, COORDINATED WITH OTHER TRADE CONTRACTORS AND THE TENANT.
5. SWITCHES LOCATIONS SHOWN IN THE DRAWINGS ARE DIAGRAMMATIC, FOR ACTUAL LOCATION AND MOUNTING HEIGHTS OF SWITCHES REFER TO ARCHITECTURAL PLANS ALSO SHALL COORDINATE WITH ARCHITECT/OWNER.
6. THE LIGHTING FIXTURE CATALOG NUMBERS IDENTIFY THE SERIES OF LIGHTING FIXTURE ONLY. PROVIDE ALL FIELD FABRICATION, MOUNTING HARDWARE, ACCESSORIES AND OPTIONS REQUIRED TO ADAPT TO THE CONDITIONS AND MEET THE INTENT OF THE FIXTURE DESCRIPTION.
7. LAY-IN TYPE FIXTURES SHALL BE SUPPORTED FROM THE STRUCTURE INDEPENDENT FROM THE CEILING SYSTEM AND BE CLIPPED TO THE GRID WITH EARTHQUAKE/HURRICANE CLIPS.
8. ALL LIGHT FIXTURES SHALL MEET THE SFISMIC REQUIREMENTS OF ASCE 7.

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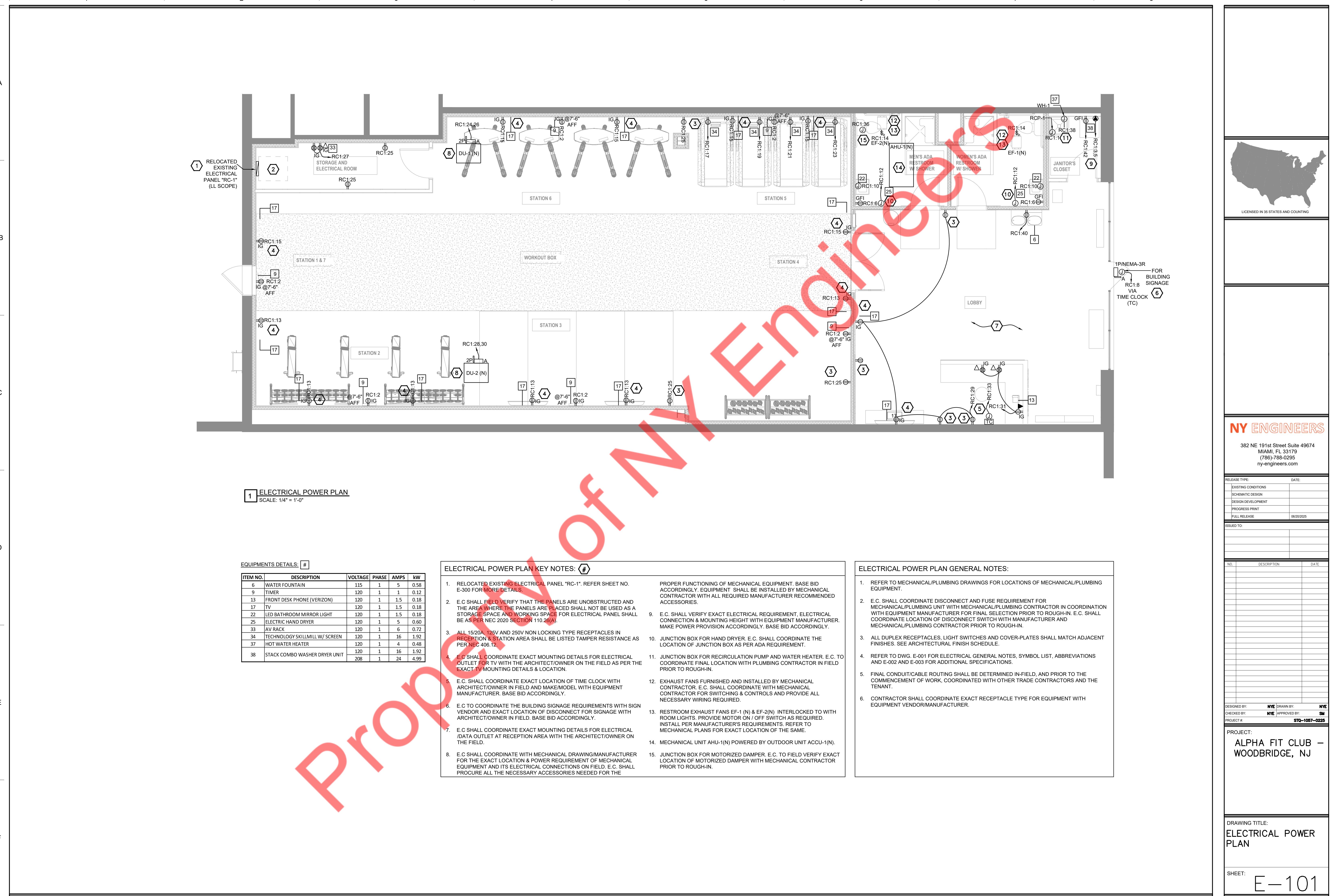
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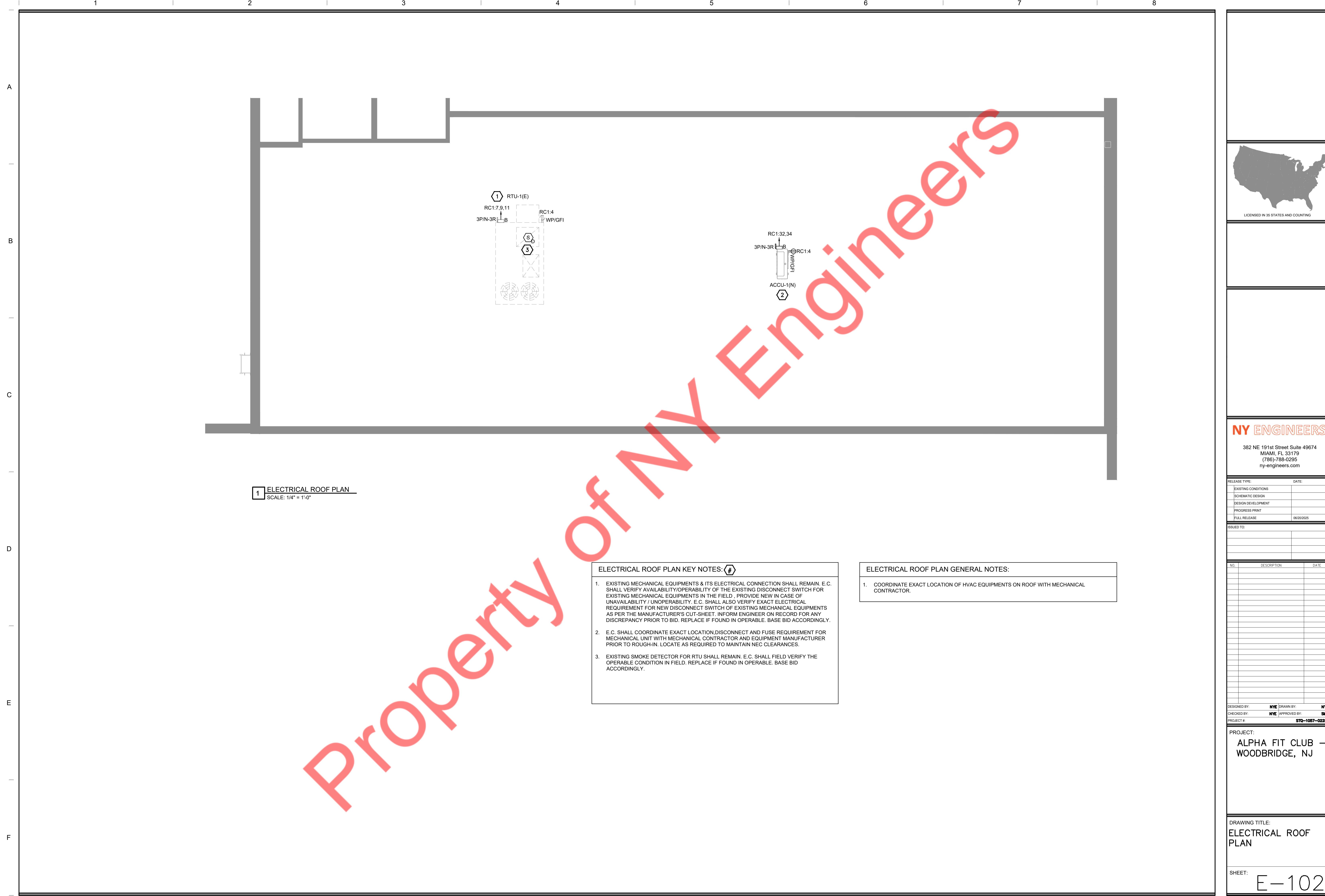
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SCHEMATIC DESIGN	
DESIGN DEVELOPMENT	
PROGRESS PRINT	
FULL RELEASE	06/20/2025

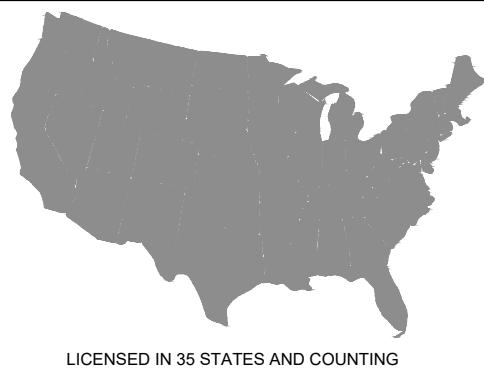
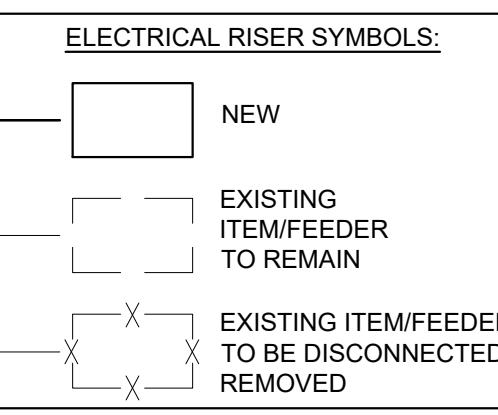
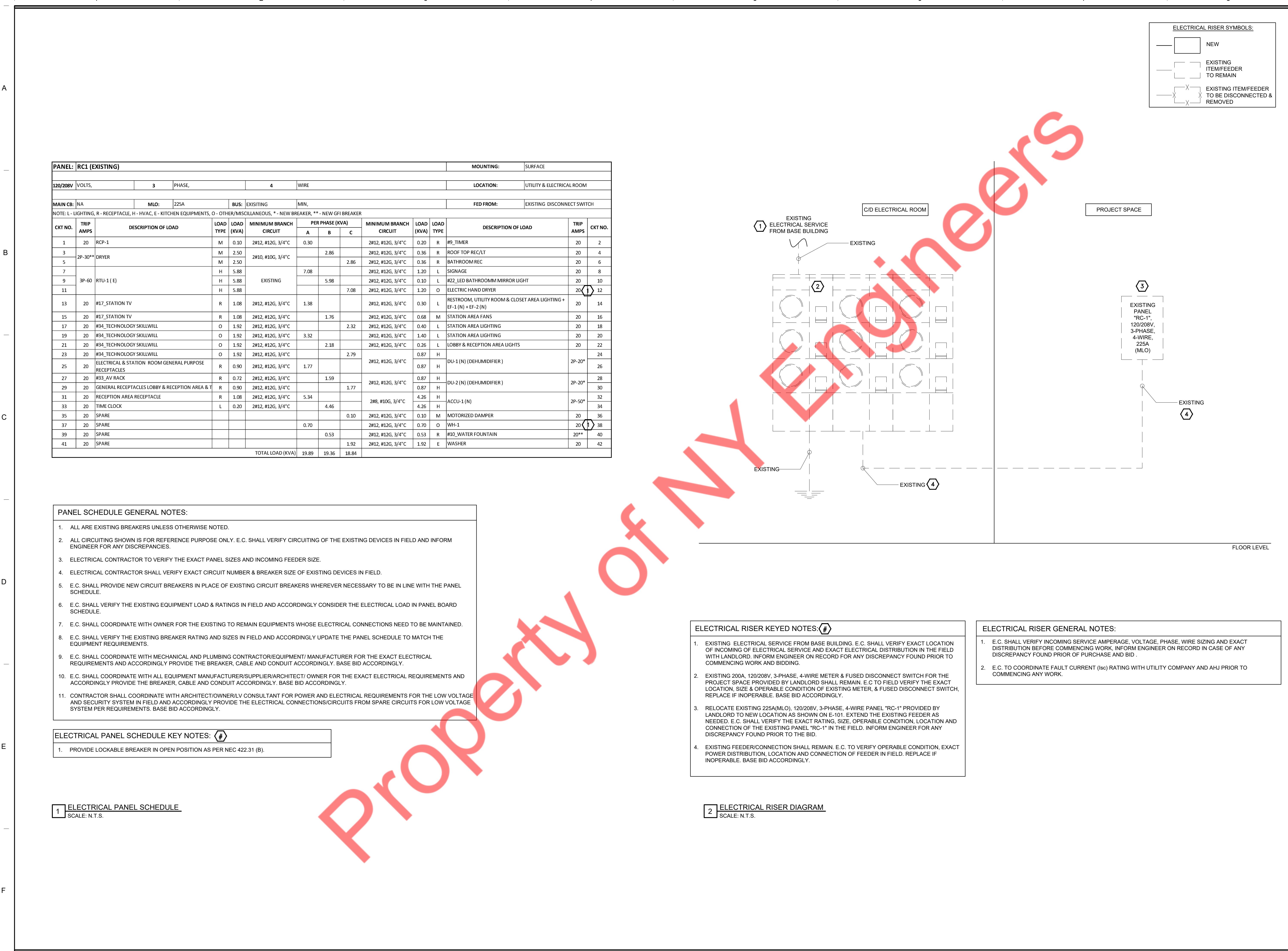
CHECKED BY:	NYE	APPROVED BY: SM
PROJECT #:	STQ-1057-022	
<p>PROJECT:</p> <p>ALPHA FIT CLUB —</p> <p>WOODBRIDGE, NJ</p>		

DRAWING TITLE:
LIGHTING PLAN

SHEET: 100







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RELEASE TYPE: DATE:
EXISTING CONDITIONS
SCHEMATIC DESIGN
DESIGN DEVELOPMENT
PROGRESS PRINT
FULL RELEASE 06/20/2025

ISSUED TO:
NO. DESCRIPTION DATE

DESIGNED BY: NYE DRAWN BY: NYE
CHECKED BY: NYE APPROVED BY: SM
PROJECT #: STQ-1057-0225

PROJECT:
ALPHA FIT CLUB -
WOODBRIDGE, NJ

DRAWING TITLE:
ELECTRICAL PANEL
SCHEDULE & RISER
DIAGRAM

SHEET: E-300

PLUMBING SYMBOL LIST

— SAN —	SANITARY SEWER PIPING (ABOVE FLOOR)
— SAN —	SANITARY SEWER PIPING (UNDERGROUND)
— G —	GAS PIPING
— — —	VENT PIPING
— — —	COLD WATER PIPING
— — —	HOT WATER PIPING
— — —	HOT WATER RETURN PIPING
— O —	P-TRAP
— O —	PIPE UP
— O —	PIPE DROP
— O —	CLEANOUT
— II —	PLUGGED OUTLET/CLEANOUT
— T —	WATER HAMMER ARRESTOR
— ● —	SHUT-OFF VALVE
— ○ —	EXPANSION TANK
— □ —	ANGLE VALVE
— ○ —	RECIRCULATION PUMP
— □ —	BALANCING VALVE
— ▶ —	GAS SHUT-OFF VALVE
— ○ —	POINT OF CONNECTION

PLUMBING SPECIFICATIONS

1. BASIC PLUMBING REQUIREMENTS, MATERIALS AND METHODS

1.01 SCOPE

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

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

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

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

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

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

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

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

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

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

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

1.02 SUBMITTALS

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

1. PIPE AND FITTINGS

2. VALVES

3. HANGERS AND SUPPORTS

4. PLUMBING PIPING LAYOUT

5. TESTS

6. PLUMBING FIXTURES

7. MIXING VALVES

8. ALL SCHEDULED PLUMBING EQUIPMENT

B. SUBMITTALS FROM SUPPLIERS OR MANUFACTURERS WHICH DO NOT BEAR THE STAMP OF THE SUBMITTING CONTRACTOR INDICATING THAT THE CONTRACTOR HAS REVIEWED THE SUBMITTAL FOR CONFORMANCE WITH THE PROJECT REQUIREMENTS WILL BE RETURNED REJECTED.

C. THE ENGINEER'S REVIEW OF SUBMITTALS IS A COURTESY WHICH DOES NOT RELIEVE THE CONTRACTOR FROM CONFORMING WITH THE CONSTRUCTION DOCUMENTS, REGARDLESS OF THE ACTION INDICATED BY THE SHOP DRAWINGS STAMP.

D. REVIEW OF SHOP DRAWINGS BY THE ENGINEER SHALL BE LIMITED TO THE INITIAL REVIEW, AND A SECOND REVIEW OF ANY REQUIRED RESUBMITTED DATA. IF THE ENGINEER IS REQUIRED TO REVIEW SHOP DRAWINGS FOR A THIRD (OR MORE) SUBMISSION OF THE SAME ITEM, THE CONTRACTOR SHALL BE LIABLE FOR COMPENSATING THE ENGINEER FOR THESE SUBSEQUENT REVIEWS AS PER THE ENGINEER'S CURRENT HOURLY RATE SCHEDULE.

E. SUBMIT PROOF OF APPROVAL AND/OR CONFIRMATION OF SATISFACTORY TEST RESULTS TO THE OWNER AND THE ARCHITECT.

F. SUBMIT TO THE OWNER'S MAINTENANCE PERSONNEL OPERATION AND MAINTENANCE DATA FOR ALL SYSTEM COMPONENTS, SERVICING REQUIREMENTS, INSPECTION DATA, REPLACEMENT PART NUMBERS AND AVAILABILITY AND CONTACT INFORMATION FOR SERVICE/SUPPLY COMPANY.

G. FOR ALL BELOW GRADE PIPING WHERE ACTUAL INSTALLATION DEVIATES FROM CONSTRUCTION DRAWINGS, THE CONTRACTOR SHALL PROVIDE AS-BUILT DRAWINGS INDICATING BELOW GRADE PIPE LOCATIONS DIMENSIONED TO NEAREST COLUMN LINES.

H. RECORD AS-BUILT DRAWINGS SHALL BE SUPPLIED TO THE OWNER/TENANT AFTER COMPLETION OF THE WORK SHOWING ANY ALTERATIONS, ADDITIONS AND/OR DELETIONS TO THE SYSTEM(S) INSTALLED.

1.03 SUBSTITUTIONS

A. ALL EQUIPMENT SHALL BE PRODUCTS OF THE SPECIFIED MANUFACTURER OR MANUFACTURERS. ALL BIDS SHALL BE BASED ON THE SPECIFIED MANUFACTURER OR MANUFACTURER'S EQUIPMENT. FOR SUBSTITUTIONS OF OTHER MANUFACTURER'S EQUIPMENT TO BE CONSIDERED, THE SUBSTITUTION MUST BE INDICATED PRIOR TO BIDDING WITH THE REASON FOR THE PROPOSED SUBSTITUTION IDENTIFIED, AND THE PROPOSED CREDIT TO THE OWNER INDICATED. THE ENGINEER SHALL DETERMINE THE ACCEPTABILITY OF ANY PROPOSED SUBSTITUTIONS.

B. THE CONTRACTOR ASSUMES ALL RESPONSIBILITY FOR COORDINATING THE WORK OF OTHER TRADES WHICH MAY BE AFFECTED BY SUBSTITUTIONS, INCLUDING ALL RELATED COSTS.

PLUMBING ABBREVIATIONS

CO	CLEANOUT
CW	COLD WATER
HW	HOT WATER
HWR	HOT WATER RETURN
SAN	SANITARY
V	VENT
LAV	LAVATORY
WC	WATER CLOSET
TYP.	TYPICAL
DN	DOWN
FD	FLOOR DRAIN
N.I.C.	NOT IN SCOPE
G	GAS
WHA	WATER HAMMER ARRESTOR

PLUMBING DRAWING LIST

P-001 PLUMBING SYMBOLS LIST, ABBREVIATION, GENERAL NOTES & SPECIFICATION

P-002 PLUMBING SPECIFICATION

P-100 PLUMBING WATER SUPPLY FLOOR PLAN & RISER

P-101 PLUMBING WASTE WATER FLOOR PLAN & RISER

P-102 PLUMBING GAS SUPPLY PLAN & RISER

P-200 PLUMBING DETAILS

P-300 PLUMBING SCHEDULES

BUILDING DEPARTMENT PLUMBING NOTES

1. ALL PLUMBING SYSTEMS (SANITARY, WASTE, VENT, WATER) AND ASSOCIATED EQUIPMENT SHALL BE INSTALLED, OPERATED AND MAINTAINED IN ACCORDANCE WITH THE REQUIREMENTS OF 2021 NEW JERSEY PLUMBING CODE (NSPC 2021).

2. INSTALLATION OF UNDERGROUND PIPING SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION 2.6.

3. PROTECTION OF PIPING AND PLUMBING SYSTEM COMPONENTS AS PER SECTION 2.9

4. TRENCHING, EXCAVATION AND BACKFILL AS PER SECTION PC 2.6.

5. MATERIALS USED IN PLUMBING SYSTEMS SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF CHAPTER 3.

6. EQUIPMENT CONNECTIONS AND JOINING OF PIPING SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF CHAPTER 4

7. DEEP SEAL TRAPS FOR FLOOR DRAINS AND CLEAN-OUTS SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF CHAPTER 5.

8. DRAINAGE PIPE CLEANOUTS AS PER SECTION 5.4.

9. VERTICAL AND HORIZONTAL PIPING SHALL BE SUPPORTED IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION 8.2 AND 8.3.

10. WATER SUPPLY SYSTEMS SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE REQUIREMENTS OF CHAPTER 10.

11. THE SANITARY DRAINAGE SYSTEM SHALL BE SIZED AND INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF CHAPTER 11.

12. VENT PIPING FOR THE SANITARY DRAINAGE SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF CHAPTER 12.

13. INSPECTION AND TESTING OF PLUMBING SYSTEMS SHALL BE IN ACCORDANCE WITH CHAPTER 15.

14. ALL GAS PIPING SHALL BE INSTALLED, OPERATED AND MAINTAINED IN ACCORDANCE WITH THE REQUIREMENTS OF 2021 INTERNATIONAL FUEL GAS CODE (IFGC 2021).

15. INSPECTION AND TESTING OF GAS PIPING SYSTEMS SHALL BE IN ACCORDANCE WITH IFGC 2021 SECTION 406.

1.05 DEFINITIONS

A. FURNISH: TO PURCHASE, PROCURE, ACQUIRE AND DELIVER, COMPLETE WITH RELATED ACCESSORIES.

B. INSTALL: TO ERECT, MOUNT AND CONNECT, COMPLETE WITH RELATED ACCESSORIES.

C. PROVIDE: TO FURNISH AND INSTALL.

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

E. DRAWINGS

A. THE DRAWINGS ARE DIAGRAMMATIC AND ARE INTENDED TO ILLUSTRATE THE GENERAL ARRANGEMENT AND ROUTING OF PIPING AND GENERAL LOCATIONS OF EQUIPMENT. PRECISE LOCATIONS OF EQUIPMENT, RISERS AND STACKS, AND ROUTING AND ELEVATION OF ALL PIPING SYSTEMS SHALL BE COORDINATED IN THE FIELD WITH THE ARCHITECT, ARCHITECTURAL DRAWINGS, THE WORK OF OTHER TRADES, EXISTING AND NEW BUILDING CONDITIONS AND/OR THE PREFERENCES OF THE OWNER/TENANT AS CONSTRUCTION PROCEEDS. ALL PIPING SHALL BE INSTALLED CONCEALED IN FINISHED SPACES, UNLESS NOTED OTHERWISE.

B. PROVIDE ALL NECESSARY INCIDENTAL MATERIALS AND ACCESSORIES REQUIRED TO MAKE THE WORK COMPLETE IN ALL RESPECTS, EVEN IF NOT PARTICULARLY SHOWN OR SPECIFIED.

C. REFER TO PLUMBING EQUIPMENT/FIXTURE SCHEDULE ON THE DRAWINGS FOR ALL FIXTURE AND EQUIPMENT SPECIFICATIONS.

D. REFER TO FIXTURE CONNECTION SIZE SCHEDULE FOR ALL FIXTURE ROUGHING SIZE REQUIREMENTS.

E. VERIFY ALL INDICATED CONDITIONS BEFORE STARTING WORK AND REPORT ANY DISCREPANCIES. THE DRAWINGS REFLECT CONDITIONS WHICH CAN BE REASONABLY INTERPRETED FROM THE EXISTING VISIBLE CONDITIONS OR FROM DRAWINGS AND INFORMATION FURNISHED BY THE OWNER.

F. LOCATE ALL FIXTURES AND EQUIPMENT AS PER THE FINAL ARCHITECTURAL DRAWINGS.

1.07 PRODUCTS

A. SANITARY AND VENT PIPING:

1. GRAVITY SEWERS SHALL BE REINFORCED CONCRETE PIPE.

2. SLOPE OF DRAINAGE SYSTEM SHALL BE 1/8" PER FOOT OF RUN FOR PIPE OVER 3" (I.D.) AND 1/4" PER FOOT OF RUN FOR PIPE 3" AND SMALLER (I.D.). VENT PIPING SHALL BE PITCHED TO DRAIN.

B. DOMESTIC WATER PIPING:

1. ABOVE GRADE WATER PIPING SHALL BE TYPE 'L' HARD-DRAWN COPPER TUBE.

2. FITTINGS IN DOMESTIC WATER PIPING SHALL BE COPPER OR COPPER ALLOY.

3. JOINTS SHALL BE MADE WITH LEAD-FREE SOLDER.

4. THE ENTIRE DOMESTIC WATER DISTRIBUTION SYSTEM SHALL BE INSULATED INCLUDING ALL VALVES, FITTINGS, ETC.

5. COMPLY WITH NSF 61 FOR MATERIALS FOR WATER-SERVICE PIPING AND SPECIALTIES FOR DOMESTIC WATER.

6. ALL DOMESTIC WATER PIPING ABOVE GRADE SHALL BE INSULATED WITH FIRE RETARDANT, FACTORY-APPLIED JACKET. PROVIDE COLD WATER PIPING WITH FACTORY-APPLIED VAPOR BARRIER. INSULATION REQUIREMENT SHOULD COMPLY WITH ASHRAE 90.1 2019 SECTION ENERGY CONSERVATION CODE 7.3.3 BELOW TABLE.

F. VALVES:

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

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

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

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

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

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

G. SLEEVES AND ESCUTCHEONS:

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

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

MINIMUM PIPE INSULATION THICKNESS

FLUID OPERATING TEMPERATURE RANGE AND USAGE (°F)	INSULATION CONDUCTIVITY	NOMINAL PIPE OR TUBE SIZE (INCHES)					
		CONDUCTIVITY BTUIN./(H·FT2°F)	MEAN RATING TEMP., °F	<1	1 to <4	1/2 to <4	4 to <8
141-200	0.25-0.29	125	1.5	1.5	2	2	2
105-140	0.210-0.28	100	1.0	1.0	1.5	1.5	1.5
40-60	0.21-0.27	75	0.5	0.5	1.0	1.0	1.0

7. AS PER ASHRAE 90.1 2019 SECTION 7.4.4.1, TEMPERATURE CONTROLS SHALL BE PROVIDED THAT ALLOW FOR STORAGE TEMPERATURE ADJUSTMENT FROM 120° F OR LOWER TO A MAXIMUM TEMPERATURE COMPATIBLE WITH THE INTENDED USE.

8. AS PER ASHRAE 90.1 2019 SECTION 7.4.4.2, SYSTEM DESIGNED TO MAINTAIN USAGE TEMPERATURE IN HOT WATER PIPES, SUCH AS RECIRCULATING HOT WATER SYSTEMS OR HEAT TRAPS, SHALL BE EQUIPPED WITH AUTOMATIC TIME SWITCHES OR OTHER CONTROLS THAT CAN BE USED TO SWITCH THE USAGE TEMPERATURE MAINTAINANCE SYSTEM DURING EXTENDED PERIOD WHEN HOT WATER IS NOT REQUIRED.

9. AS PER ASHRAE 90.1 2019 SECTION 7.4.4.3, TEMPERATURE CONTROLLING MEANS SHALL BE PROVIDED TO LIMIT THE MAXIMUM TEMPERATURE OF WATER DELIVERED FROM LAVATORY FAUCETS IN PUBLIC FACILITY RESTROOMS TO 110° F.

10. SEAL ALL JOINTS BETWEEN SEGMENTS OF INSULATION.

11. PROVIDE SHIELDS BETWEEN HANGERS AND INSULATION.

C. GAS FIRED WATER HEATER (WH-1)

1. TANKS SHALL 100 GALLON CAPACITY AND SHALL HAVE 140 PSI WORKING PRESSURE AND BE EQUIPPED WITH EXTRUDED HIGH DENSITY ANODE.

2. ALL INTERNAL SURFACES OF THE HEATER(S) EXPOSED TO WATER SHALL BE GLASS-LINED WITH AN ALKALINE BORO SILICATE COMPOSITION THAT HAS BEEN FUSED-TO-STEEL BY FIRING AT A TEMPERATURE RANGE OF 1400°F TO 1600°F.

3. ELECTRIC HEATING ELEMENTS SHALL BE LOW WATT DENSITY GOLDENROD 1" SCREW-IN TYPE.

4. EACH ELEMENT SHALL BE CONTROLLED BY AN INDIVIDUALLY MOUNTED THERMOSTAT AND HIGH TEMPERATURE CUT-OFF SWITCH. ALL INTERNAL CIRCUITS SHALL BE FUSED. THE OUTER JACKET SHALL BE OF BAKED ENAMEL FINISH AND SHALL BE PROVIDED WITH FULL SIZE CONTROL COMPARTMENT FOR PERFORMANCE OF SERVICE AND MAINTENANCE THROUGH HINGED FRONT PANEL AND SHALL ENCLOSE THE TANK WITH FOAM INSULATION. ELECTRICAL JUNCTION BOX WITH HEAVY DUTY TERMINAL BLOCK SHALL BE PROVIDED. THE DRAIN VALVE SHALL BE LOCATED IN THE FRONT FOR EASE OF SERVICING.

D. HOT WATER RE-CIRCULATING PUMP

1. IN-LINE PUMP: SINGLE STAGE VOLUTE TYPE PUMP SHALL BE MADE OF CAST IRON OR FORGED LEAD-FREE BRONZE IMPELLER.

2. THE PUMP SHALL HAVE A GROUND AND POLISHED STEEL SHAFT WITH A HARDENED INTEGRAL THRUST COLLAR. THE SHAFT SHALL BE SUPPORTED BY TWO HORIZONTAL SLEEVE BEARINGS DESIGNED TO CIRCULATE OIL. THE PUMPS ARE TO BE EQUIPPED WITH A MECHANICAL SEAL WITH CARBON SEAL FACE ROTATING AGAINST CERAMIC SEAT. THE MOTOR SHALL BE NON-OVERLOADING AT ANY POINT ON PUMP CURVE.

3. DIRECT CONNECT PUMP TO ELECTRIC MOTOR WITH FLEXIBLE COUPLING. THE MOTOR SHALL BE OF THE Drip-Proof SLEEVE BEARING, QUIET OPERATING, RUBBER-MOUNTED CONSTRUCTION. EQUIPMENT MOTOR WITH BUILT-IN THERMAL OVERLOAD PROTECTION.

4. INSTALL IN-LINE CIRCULATING PUMPS BETWEEN PIPE FLANGES IN PIPING SYSTEMS. INSTALL OVERHEAD PIPE SUPPORTS, BOTH SIDES OF IN-LINE PUMPS, INSTALLED IN HORIZONTAL PIPING RUNS.

E. HANGERS AND SUPPORTS:

1. HANGERS SHALL BE STANDARD STEEL, MALLEABLE OR WROUGHT IRON, AS MANUFACTURED BY GRINNELL OR APPROVED EQUAL, SUITABLE FOR THE TYPE OF CONSTRUCTION. PIPING SHALL NOT BE HUNG FROM OTHER PIPE.

2. SECTIONS OF INDIVIDUAL PIPE RUNS SHALL BE SUPPORTED BY CLEVIS HANGERS.

3. ALL EQUIPMENT SHALL BE PROVIDED WITH APPROVED SUPPORTS.

4. PROVIDE SEISMIC RESTRAINTS IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE AND LOCAL CODES AND STANDARDS AND THE REQUIREMENTS OF AUTHORITIES HAVING JURISDICTION.

5. UNLESS OTHERWISE INDICATED OR REQUIRED BY AUTHORITIES HAVING JURISDICTION, THE FOLLOWING SHALL BE PROVIDED WITH SEISMIC RESTRAINTS AS REQUIRED BY THE BOCA NATIONAL BUILDING CODE, SECTION 1610.6.4: ALL EQUIPMENT AND MACHINERY, ALL NEW PIPING 2-1/2" AND LARGER (1-1/4" AND LARGER INSIDE/MECHANICAL ROOMS) WITH HANGERS GREATER THAN 12" IN LENGTH FROM THE TOP OF PIPE TO THE STRUCTURE.

T. WHEN THE WATER PIPING SYSTEM IS COMPLETE, THOROUGHLY FLUSH ALL DIRT, SEDIMENT, SOLDER, ETC., OUT OF THE SYSTEM, REMOVING ALL STRAINERS, VALVE STEM SEATS, ETC., REQUIRED TO ACCOMPLISH THE FLUSHING.

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

V. INSTALL SLEEVES FOR ALL PIPES WHICH PASS THROUGH WALLS, FLOORS, AND CEILINGS. WHERE PIPES ARE TO BE INSULATED, THE SLEEVE SHALL BE LARGE ENOUGH TO ACCOMMODATE INSULATION. SLEEVES SHALL BE FLUSH WITH FINISHED SURFACES AT BOTH ENDS. ON FINISHED SURFACES IN EXPOSED AREAS PROVIDE ESCUTCHEONS COMPATIBLE WITH FINISH.

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

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

2. INSTALLATION

A. ALL WORK WHICH REQUIRES DISRUPTION OF THE ROOFING SHALL BE DONE BY A CONTRACTOR CERTIFIED BY THE ROOFING MANUFACTURER AS REQUIRED TO MAINTAIN ANY EXISTING ROOF WARRANTIES.

B. EXTERIOR INSTALLATIONS TO BE WEATHER PROOF IN ALL RESPECTS.

C. EXTERIOR MATERIALS AND EQUIPMENT SHALL BE PAINTED TO PREVENT CORROSION, COLOR PER ARCHITECT.

D. COORDINATE THE PLUMBING WORK WITH ALL OTHER AFFECTED WORK AND THE CONSTRUCTION SCHEDULE.

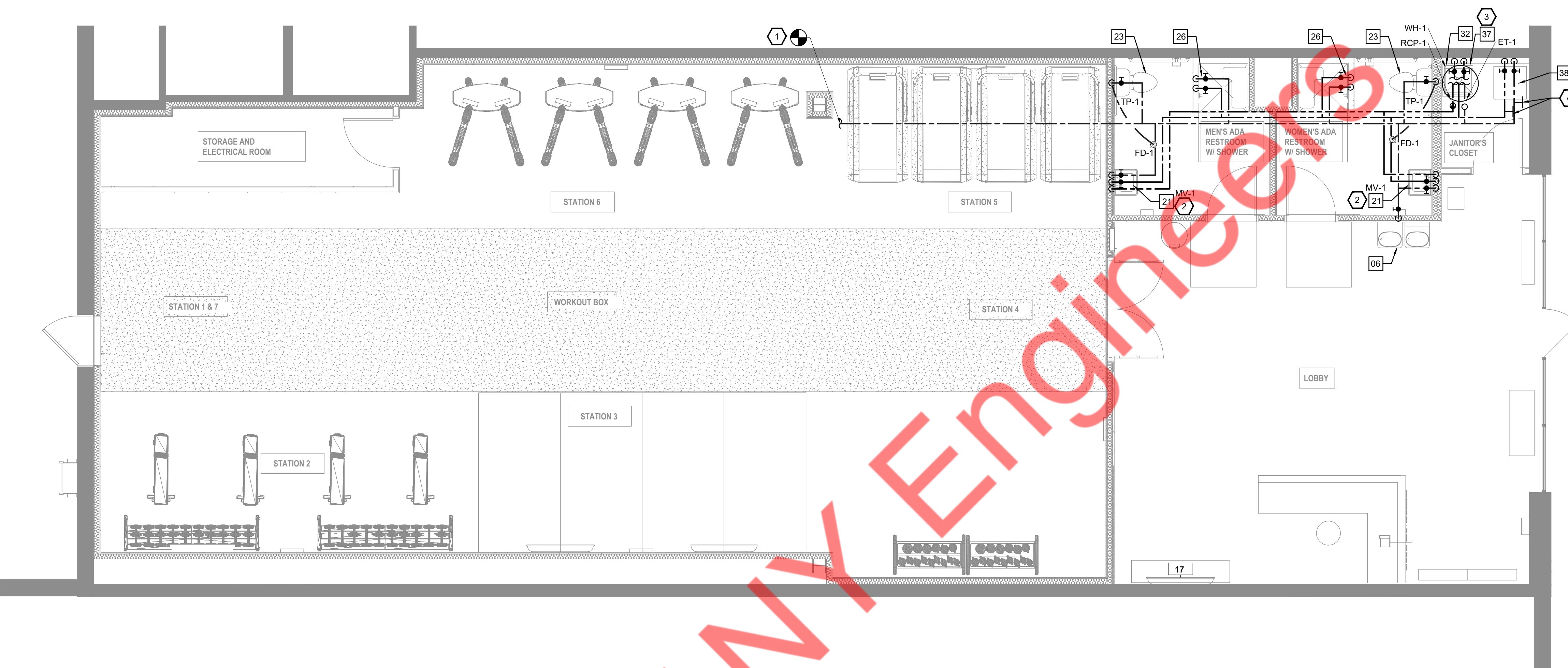
E. REAM PIPE AND TUBE ENDS. REMOVE BURRS, BEVEL PLAIN AND FERROUS END PIPE.

F. REMOVE SCALE AND FOREIGN MATERIAL, FROM INSIDE AND OUTSIDE, BEFORE ASSEMBLY.

G. PREPARE PIPING CONNECTIONS TO EQUIPMENT WITH FLANGES AND UNIONS.

H. COORDINATION WITH THE WORK OF OTHER TRADES IS REQUIRED. PROVIDE OFFSETS IN PIPING SYSTEMS OR MINOR DEVIATIONS TO THE INDICATED PIPE ROUTING IN ORDER TO COORDINATE THE PLUMBING WORK WITH THE WORK OF ALL OTHER TRADES AND THE GENERAL BUILDING CONDITIONS.

A



1 PLUMBING WATER SUPPLY FLOOR PLAN
SCALE: 1/4" = 1'-0"

B

WATER GENERAL NOTES:					
1. CW/HW PIPING TO BE PROVIDED WITH INSULATION AS PER ASHRAE 90.1-2019.					
2. PROVIDE BRANCH PRV IF PRESSURE EXCEEDS 80 PSI.					
3. PROVIDE WATER HAMMER ARRESTOR & SHUT-OFF VALVES AS REQUIRED PER CODE WITH ACCESS PANEL.					
4. REFER RISER DIAGRAMS FOR ALL PIPE SIZES.					
5. WATER HEATER DRAIN SPILLS TO THE MOP SINK.					
6. CONTRACTOR SHALL CONFIRM EXISTING CONDITIONS PRIOR TO BID.					
7. COORDINATE ALL MECHANICAL CONSTRUCTION WITH OTHER TRADES TO AVOID CONFLICTS.					
8. CONFIRM LOCATIONS OF ALL EXISTING UTILITIES AND ADJUST ROUTING OF TENANT SYSTEMS AS REQUIRED.					
9. EXISTING PLUMBING SERVICES (COLD WATER, HOT WATER, WASTE AND VENT) WHICH ARE NOT TO BE REUSED SHALL BE REMOVED BACK TO ACTIVE MAINS AND CAPPED. THERE SHALL BE NO "DEAD ENDS" LEFT IN PIPING SYSTEM.					

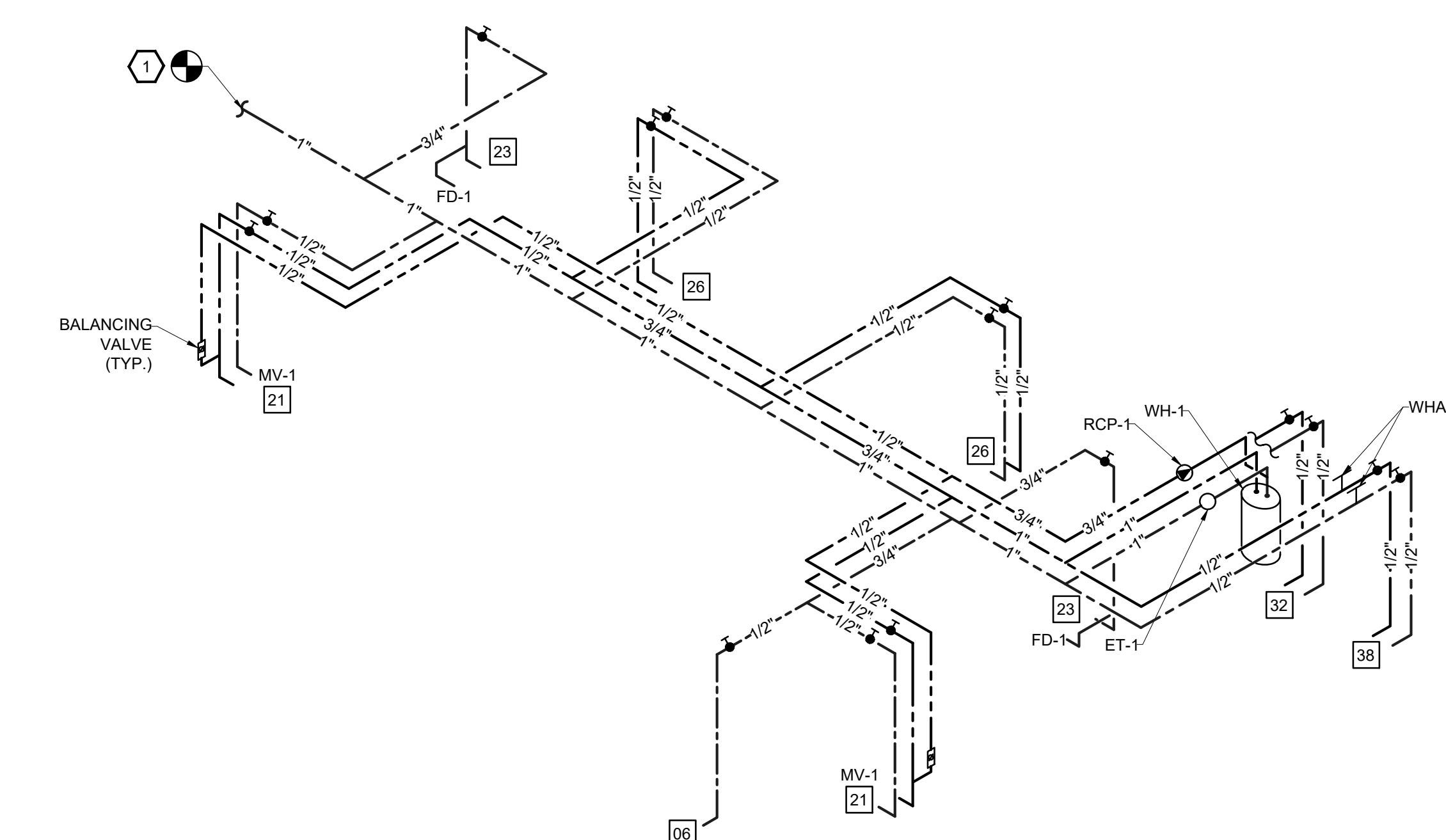
WATER KEY NOTES:					
1. CONNECT NEW 1" CW PIPING TO THE EXISTING COLD WATER LINE WITH EXISTING WATER METER. CONTRACTOR TO FIELD VERIFY THE SIZE, ROUTING AND LOCATION OF EXISTING CW LINE.					
2. PROVIDE AN ASSE 1070 TEMPERATURE MIXING VALVE FOR LAVATORY. SET TEMPERATURE TO A MAXIMUM OF 110°F.					
3. NEW WATER HEATER TO BE INSTALLED ABOVE MOP SINK WITH ASSOCIATED ACCESSORIES AND FITTINGS. REFER SHEET 8/P-301 FOR MODEL NO.					
4. PROVIDE AND INSTALL WATER HAMMER ARRESTORS ON ALL QUICK CLOSING VALVES AND OTHER LOCATIONS AS REQUIRED PER LOCAL CODE					

C

D

E

F



2 PLUMBING WATER SUPPLY RISER DIAGRAM
N.T.S.



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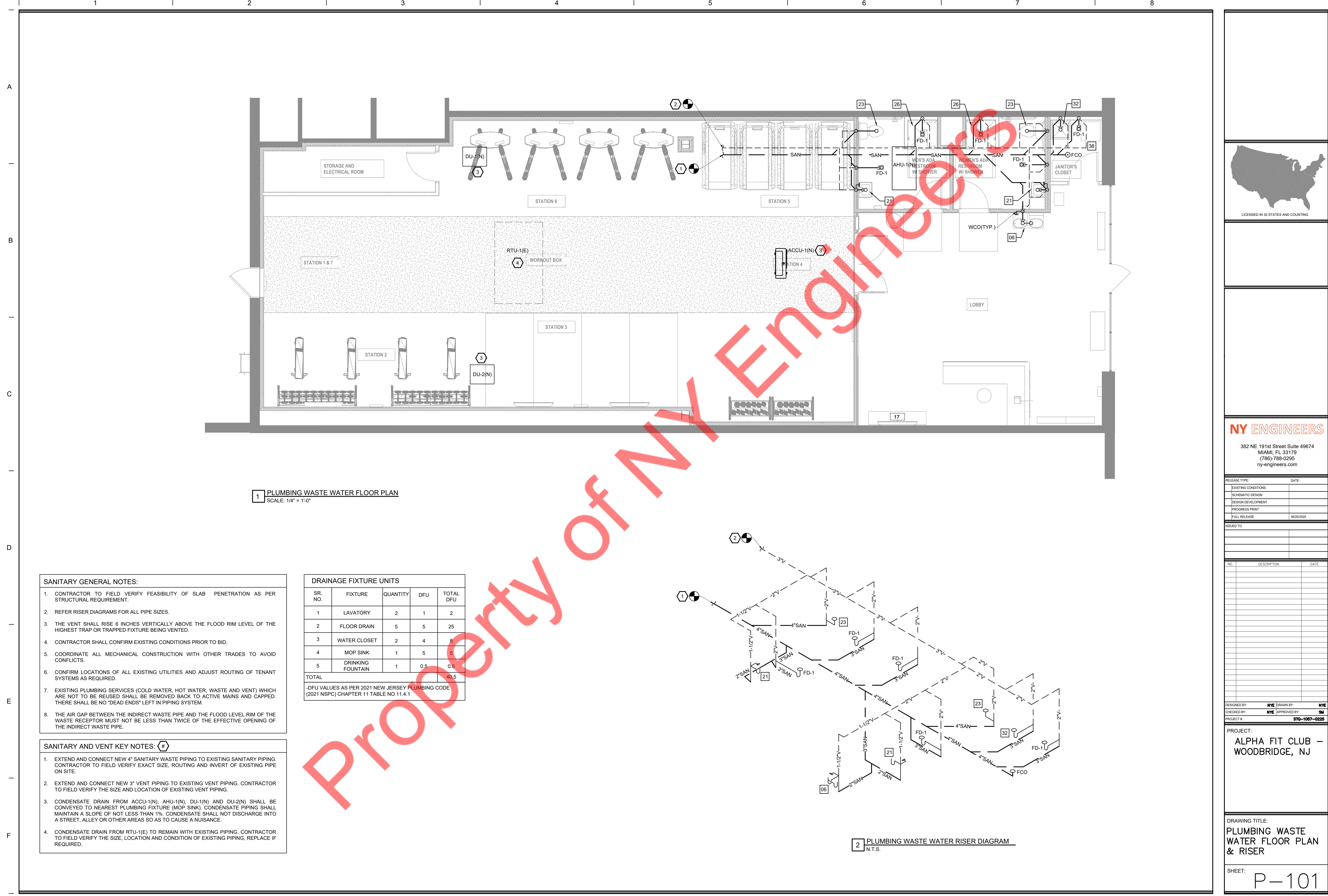
DESIGNED BY: NYE DRAWN BY: NYE
CHECKED BY: NYE APPROVED BY: SM
PROJECT #: STQ-1067-0225

PROJECT:
ALPHA FIT CLUB –
WOODBRIDGE, NJ

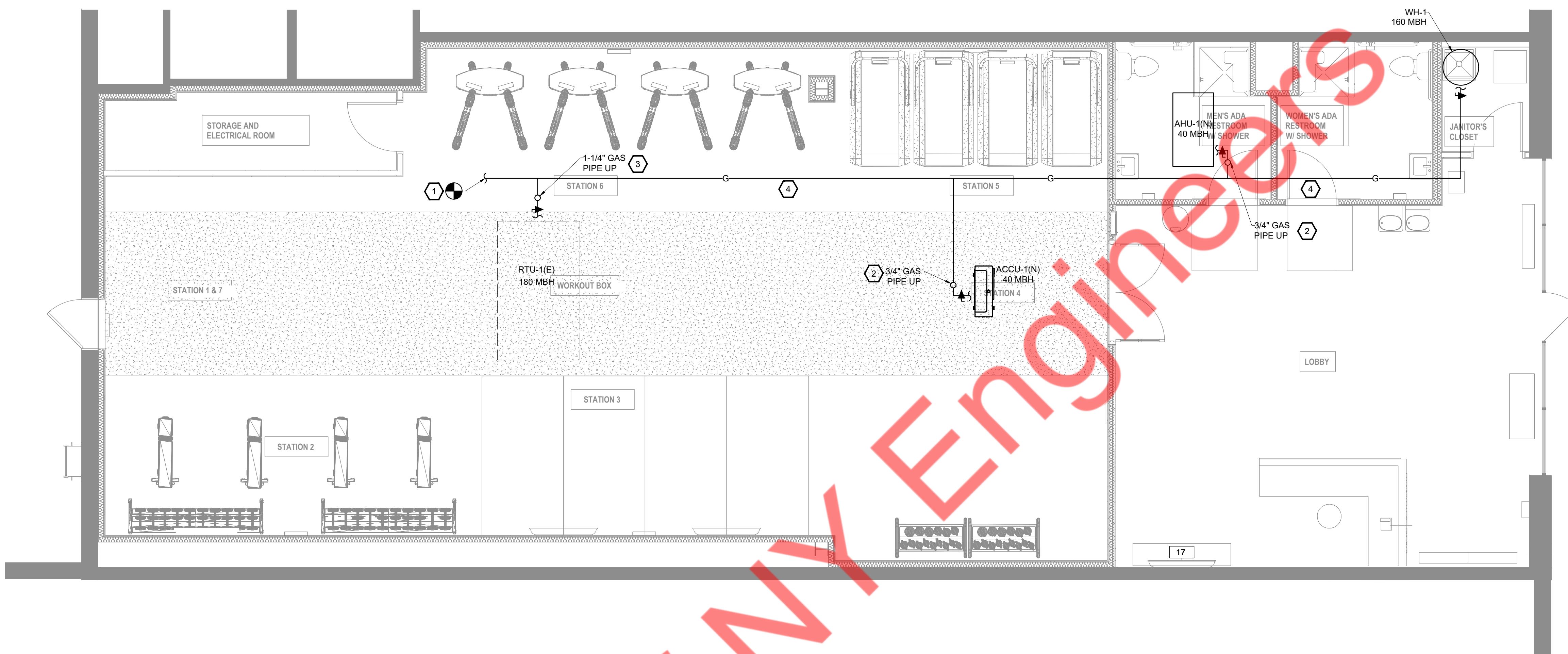
DRAWING TITLE:
PLUMBING WATER
SUPPLY FLOOR PLAN
& RISER

SHEET:

P-100



A



1 PLUMBING GAS SUPPLY PLAN

SCALE: 1/4" = 1'-0"

D

GAS LOAD AND SIZING SUMMARY:	
1. LOAD SUMMARY	
ROOF TOP UNIT (RTU-1(E))	180 MBH
AIR COOLED CONDENSING UNIT (ACCU-1(N))	40 MBH
WATER HEATING (WH-1)	160 MBH
AIR HANDLING UNIT (AHU-1(N))	40 MBH
TOTAL	420 MBH
2. PIPE SIZING SUMMARY:	
• 14" W.C. INLET PRESSURE	
• 0.5" W.C. PRESSURE DROP	
• 200 FT TOTAL EQUIV. LENGTH	
• IFGC 2021 TABLE 402.4(2) SCHEDULE 40 METALLIC PIPE IS USED.	
3. CONTRACTOR TO VERIFY PRESSURE AND PIPING LENGTHS ON SITE AND ADJUST PIPE SIZES IN ACCORDANCE WITH IFGC 2021 CHAPTER 4.	

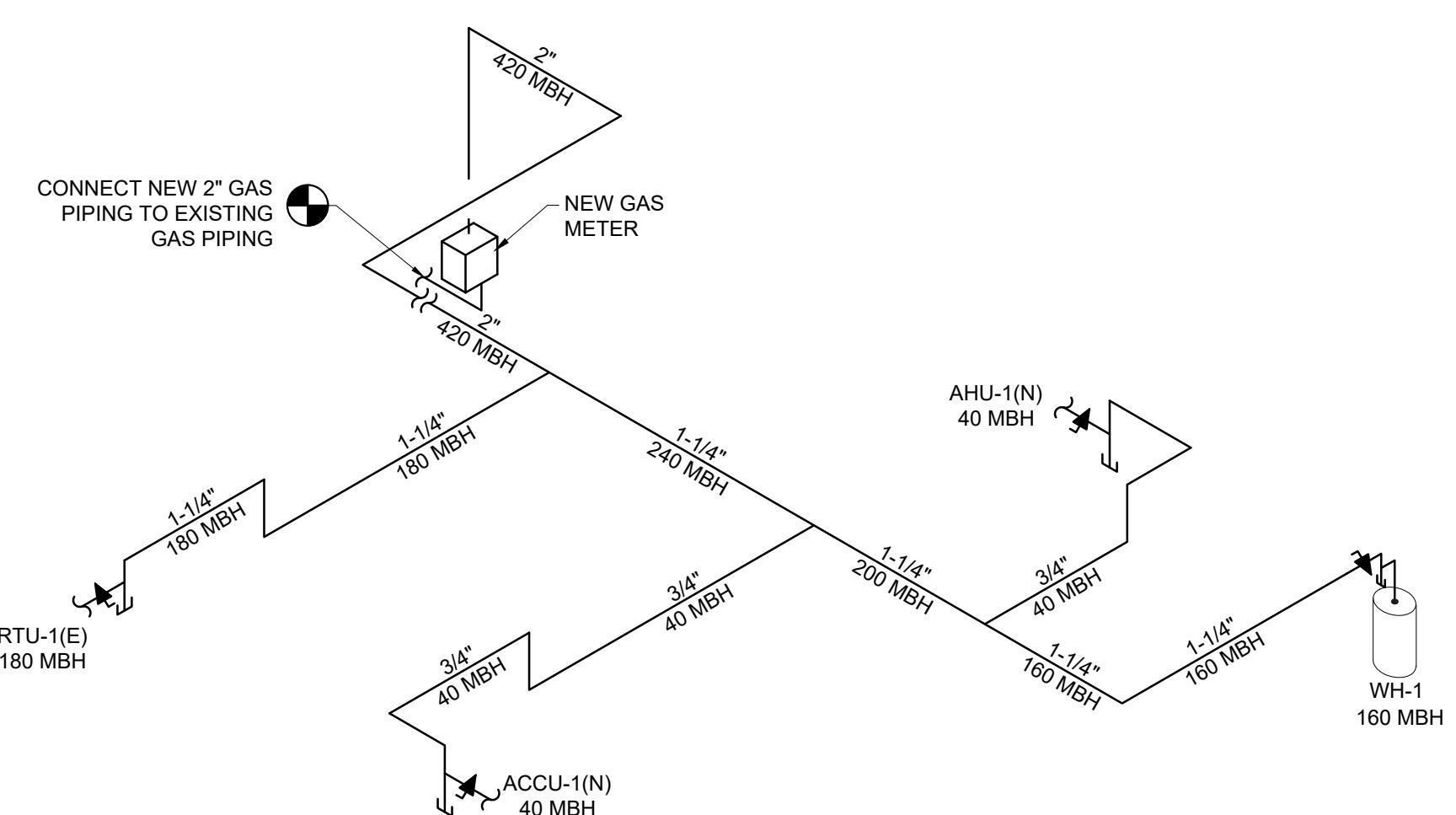
GAS GENERAL NOTES:	
1.	VERIFY GAS SERVICE PRESSURE. IF HIGHER THAN 14" W.C., PROVIDE VENTLESS PRESSURE REGULATOR AT EACH APPLIANCE, SET OUTLET PRESSURE PER APPLIANCE MANUFACTURER'S INSTRUCTIONS.
2.	GAS PIPING TO BE SCHEDULE 40 STEEL PIPE W/125 CAST IRON SCREWED FITTINGS.
3.	GAS SYSTEM TO BE INSTALLED BY QUALIFIED LICENSED CONTRACTOR.
4.	VERIFY ALL EQUIPMENT BTU'S PRIOR TO INSTALLATION.
5.	EXISTING GAS METER NEAR GAS METER BANK WITH EXISTING GAS PIPING IN SPACE. CONTRACTOR TO FIELD VERIFY THE LOCATION, CAPACITY AND PRESSURE OF EXISTING GAS PIPING. CONNECT NEW GAS PIPING TO EXISTING GAS PIPING IN SPACE.

E

NATURAL GAS PIPING SYSTEM	
PROVIDE A COMPLETE GAS PIPING SYSTEM TO SERVE GAS EQUIPMENT FURNISHED BY OTHERS, AS NOTED ON THE DRAWINGS. PROVIDE EITHER THREADED STEEL OR MALLEABLE IRON PIPE WITH MALLEABLE FITTINGS OR WELDED STEEL PIPE WITH UNION, AUTOMATIC VALVE, AND DIRT TRAP AS REQUIRED BY NFPA-54 AND GOVERNING LOCAL CODES AND AT EACH GAS APPLIANCE CONNECTION. PROVIDE ALL TESTS, METERS, INSPECTIONS, HANGERS AND EQUIPMENT CONNECTIONS REQUIRED FOR A COMPLETE AND OPERATING SYSTEM.	

GAS KEY NOTES: #	
1.	CONNECT NEW 2" GAS PIPING TO NEW GAS METER PROVIDED BY LANDLORD. CONTRACTOR TO FIELD VERIFY THE CAPACITY, LOCATION AND PRESSURE OF GAS PIPING.
2.	3/4" GAS PIPE UP TO ROOF UNIT ACCU-1(N) & AHU-1(N).
3.	1-1/4" GAS PIPE UP TO ROOF UNIT RTU-1(E).
4.	GAS PIPING RUNNING THROUGH CEILING, SHOWN ON PLAN FOR REFERENCE

F



2 PLUMBING GAS SUPPLY RISER DIAGRAM



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NO. DESCRIPTION DATE

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DRAWING TITLE:
PLUMBING GAS SUPPLY PLAN &
RISER

SHEET: P-102

P-102

PLUMBING FIXTURE SCHEDULE											
TAG	PLUMBING FIXTURE	MANUFACTURER	MODEL	CONNECTION SIZE - INCHES					REMARKS		
				TRAP	SOIL/WASTE	VENT	COLD WATER	HOT WATER			
23	WATER CLOSET	--	--	-	4"	2"	3/4"	-	1.28 GPF, FURNISH WITH OPEN FRONT. FLUSH TRIP LEVER SHALL BE ON WIDE SIDE OF WATER CLOSET.		
21	LAVATORY	--	--	2"	2"	1-1/2"	1/2"	1/2"	0.5 GPM FLOW RESTRICTER, WATTS ASSE 1070 MIXING VALVE, SET TO 110°F OUTLET.		
32	MOP SINK	--	--	3"	3"	2"	1/2"	1/2"	PROVIDE A FAUCET W/VACUUM BREAKER, WALL BRACE, INTERGRAL STOPS, FINAL HOOK UPS BY P.C. PROVIDE HOOKS OR HANG-UP BRACKETS AT THE MOP SINK FOR STORAGE OF MOPS AND BROOMS.		
26	BUILT IN SHOWER BASE 3' X 3'	--	--	2"	3"	2"	1/2"	1/2"	-		
06	WATER FOUNTAIN	--	--	2"	2"	1-1/2"	1/2"	-	-		
38	STACK COMBO WASHER DRYER UNIT	--	--	2"	3"	2"	1/2"	1/2"	VACUUM BREAKER ASSE 1011		
FD-1	FLOOR DRAIN	JONES STEPHENS	#D53	3"	3"	2"	-	-	BRASS GRATE, TRAP PRIMER CONNECTION WHERE REQUIRED; VANDAL PROOF SCREWS		
FCO	FLOOR CLEANOUT	JONES STEPHENS	#C60	--	AS NOTED	--	--	-	PVC SPUD WITH 6" ROUND SCORIATED TOP W/ POLISHED BRONZE FINISH, ADJUSTABLE TOP.		

NOTE: CONTRACTOR TO COORDINATE WITH ARCHITECTURAL DRAWINGS ALL PLUMBING FIXTURES SPECIFICATIONS AND MOUNTING HEIGHT INSTALLATION.

RECIRCULATING PUMP SCHEDULE					
TAG	SERVICE	GPM	TOTAL HEAD FT.	MOTOR HP	MANUFACTURER & REMARK
RCP-1	HOT WATER RECIRCULATION	2	10	0.115	GRUNDFOS UP 15-18 BUC5 W/AQUASTAT + TIMER

EXPANSION TANK SCHEDULE					
ITEM	SERVICE	QTY.	GALLONS	MAKE	REMARKS
EXPANSION TANK (ET-1)	HOT WATER	1	6.2	AMTROL ST-12C-DD	DIMENSIONS- 18"(H) x 12"(DIA.) SHIPPING WEIGHT- 10 LBS

GAS STORAGE WATER HEATER SCHEDULE										
TAG	MANUFACTURER AND MODEL NO.	STORAGE CAPACITY	RECOVERY GPH	TEMP. RISE °F	INPUT RATING BTU/H	THERMAL EFFICIENCY	APPROX. WEIGHT (LBS)	TANK DIA.	TANK HEIGHT	REMARKS
WH-1	RHEEM GHE100SU/SS-160(A)	100	209	90	160 MBH	97%	725	26-3/8"	77"	-PROVIDE Drip PAN AND ALL ACCESSORIES REQUIRED FOR SATISFACTORILY WORKING.

THERMOSTATIC MIXING VALVE											
ITEM	QTY.	LOCATION	SERVICE	CAPACITY (GPM)	PRESSURE DROP (PSI)	MINIMUM FLOW (GPM)	MAKE & MODEL	CW INLET	HIGH TEMP. INLET	LOW TEMP. OUTLET	REMARKS
MV-1	02	REFER PLAN	HOT WATER	17	5	1	WATTS LFUSG-B OR EQUAL	1/2"	1/2" (140°F)	1/2" (110°F)	-BRASS BODY AND LEAD FREE CONSTRUCTION ASSE CERTIFIED

BALANCING VALVE						
ITEM	QUANTITY	LOCATION	WORKING TEMP.	MAKE	MODEL	REMARKS
BALANCING VALVE	02	REFER PLAN	250°F	WATTS OR EQUAL	LSCSM-61-S	-BRASS BODY AND LEAD FREE CONSTRUCTION

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PROJECT: ALPHA FIT CLUB – WOODBRIDGE, NJ		
DRAWING TITLE: PLUMBING SCHEDULES		
SHEET: P-300		