MECHANICAL SYMBOLS LIST

ROOF TOP UNIT

CEILING MOUNTED FAN

ROOF MOUNTED EXHAUST FAN

AIR DEVICES

CEILING DIFFUSER SUPPLY

CEILING DIFFUSER RETURN/EXHAUST

SIDEWALL/DUCT MOUNTED GRILLE-SUPPLY

DUCT ACCESSORIES

VD

VOLUME DAMPER W/ ACCESS DOOR

BD

BACKDRAFT DAMPER

CONTROLS AND SENSORS

T

THERMOSTAT

TS

TEMPERATURE SENSOR

S

DUCT SMOKE DETECTOR

DUCTWORK

24"X12"

RECTANGULAR DUCT (WIDTH X DEPTH)

FC FC

FLEXIBLE CONNECTION

Ø12

FLEXIBLE DUCT

ROUND DUCT CROSS SECTION

SUPPLY AIR RECTANGULAR DUCT GOING UP/DOWN

RETURN AIR RECTANGULAR DUCT GOING UP/DOWN

APPLICABLE CODES

A. 2018 INTERNATIONAL BUILDING CODE

B. 2018 INTERNATIONAL MECHANICAL CODE

C. 2018 INTERNATIONAL FIRE CODE

D. 2018 INTERNATIONAL ENERGY CONSERVATION CODE.

MECHANICAL DRAWING LIST

MECHANICAL ABBREVIATIONS

AFF	ABOVE FINISHED FLOOR
AL	ACOUSTIC LINING
BD	GRAVITY DAMPER
CD	CONDENSATE DRAIN
CFM	CUBIC FEET OF AIR PER MINUTE
DN	DOWN
E	EXISTING
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
MD	MOTORIZED DAMPER
N	NEW
RA	RETURN AIR
RAD	RETURN AIR DUCT
RTU	ROOF TOP UNIT
SA	SUPPLY AIR
SAD	SUPPLY AIR DUCT
SEER	SEASONAL ENERGY EFFICIENCY RATIO
TEF	TOILET EXHAUST FAN
VD	VOLUME CONTROL DAMPER

FIELD VERIFY ALL CONDITIONS

DESIGN DRAWINGS ARE SCHEMATIC. THIS CONTRACTOR SHALL VISIT THE SITE PRIOR TO BIDDING OR AWARD OF CONTRACT TO INSPECT EXISTING FIELD CONDITIONS. THIS CONTRACT SHALL INCLUDE ALL LABOR AND MATERIALS NECESSARY FOR FIELD MODIFICATIONS DUE TO EXISTING CONDITIONS. THE CONTRACTOR SHALL CONTACT THE ARCHITECT, ENGINEER OR OWNER PRIOR TO BIDDING FOR INTERPRETATIONS AND CLARIFICATIONS OF THE DESIGN AND INCLUDE IN HIS BID ALL COSTS TO MEET THE DESIGN INTENT CLARIFICATIONS MADE BY THE ARCHITECT, ENGINEER OR OWNER AFTER BIDDING WILL BE FINAL AND SHALL BE IMPLEMENTED AT CONTRACTORS COST. BIDDING CONTRACTORS SHALL HAVE A WORKING KNOWLEDGE OF LOCAL CODES AND ORDINANCES AND SHALL INCLUDE IN THEIR BIDS THE COSTS FOR ALL WORK INSTALLED IN STRICT ACCORDANCE WITH GOVERNING CODES, THE PLANS AND SPECIFICATIONS NOT WITHSTANDING THE CONTRACTOR SHALL ALERT ARCHITECT, ENGINEER OR OWNER OF ANY APPARENT DISCREPANCIES BETWEEN GOVERNING CODES AND DESIGN INTENT.

BUILDING DEPARTMENT NOTES

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

1. 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.
2. SMOKE DETECTOR SHALL MEET UL268A.
3. TESTS OF MECHANICAL SYSTEMS SHALL BE PERFORMED IN ACCORDANCE WITH THE FOLLOWING SECTIONS OF THE 2018 IMC:
   A. VENTILATION SYSTEM MC 403.3.1.1
   B. VENTILATION SYSTEM SERVING COMMERCIAL COOKING APPLIANCES - MC 507.6
   C. GREASE DUCT TEST: MC 506.3.2.5
4. THE FOLLOWING WORK ITEMS, COMPONENTS, MATERIALS, CAPACITIES, ETC. SHALL COMPLY WITH THE REFERENCED CODE OR STANDARD:
   A. DUCT CONSTRUCTION AND INSTALLATION- 2018 INTERNATIONAL MECHANICAL CODE, 603
   B. STANDARDS OF HEATING 2018 INTERNATIONAL MECHANICAL CODE - 309.1
   C. AIR INTAKES, EXHAUSTS AND RELIEF - 2018 INTERNATIONAL MECHANICAL CODE 401.5
   D. AIR FILTERS - 2018 INTERNATIONAL MECHANICAL CODE 605
   E. MANUAL AND AUTOMATIC FIRE AND SMOKE CONTROLS FOR AIR DISTRIBUTION SYSTEMS -2018 INTERNATIONAL MECHANICAL CODE - 606
5. MINIMUM TEMPERATURE TO BE MAINTAINED IN OCCUPIED SPACES DURING HEATING SEASON: 68 DEG. FAHRENHEIT.
6. VENTILATION FOR ALL AREA SHALL COMPLY WITH 2018 INTERNATIONAL MECHANICAL CODE 401.
7. A STATEMENT SHALL BE FILED BY THE OWNER OR TENANT IN POSSESSION THAT THE VENTILATION SYSTEM WILL BE KEPT IN CONTINUOUS OPERATION AT ALL TIMES DURING THE NORMAL OCCUPANCY OF THE STRUCTURE AS REQUIRED BY 2018 INTERNATIONAL MECHANICAL CODE 403.
8. REFER TO ARCHITECTURAL DRAWINGS FOR REQUIRED FIRE-RATED WALL AND SMOKE WALL CONSTRUCTION AND LOCATION.
9. 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 BEING APPROVED OR IN ACCORDANCE WITH APPLICABLE CODES.
10. ALL HEATING AND COOLING LOADS CALCULATED PER ASHRAE/ACCA 183.
11. VENTILATION SYSTEMS SHALL BE BALANCED TO MAINTAIN THE MINIMUM VENTILATION AIRFLOW RATE AS SHOWN IN VENTILATION REQUIREMENT TABLE. THIS SYSTEM SHALL BE BALANCED BY APPROVED CONTRACTOR. CONTRACTOR TO SUBMIT THE AIR BALANCE REPORT TO INSPECTOR OF RESPECTIVE BUILDING DEPARTMENT PRIOR TO FINAL INSPECTION.
13. MECHANICAL SYSTEM COMMISSIONING SHALL BE DONE AS PER 2018 INTERNATIONAL ENERGY CONSERVATION CODE SECTION C408 IF TOTAL INSTALLED MECHANICAL EQUIPMENT CAPACITY IS MORE THEN 480,000 BTU/H COOLING CAPACITY AND 600,000 BTU/H HEATING CAPACITY.

THERMOSTATIC CONTROL NOTES

C403.4.1 THERMOSTATIC CONTROLS
THE SUPPLY OF HEATING AND COOLING ENERGY TO EACH ZONE SHALL BE CONTROLLED BY INDIVIDUAL THERMOSTATIC CONTROLS CAPABLE OF RESPONDING TO TEMPERATURE WITHIN THE ZONE. WHERE HUMIDIFICATION OR DEHUMIDIFICATION OR BOTH IS PROVIDED, NOT FEWER THAN ONE HUMIDITY CONTROL DEVICE SHALL BE PROVIDED FOR EACH HUMIDITY CONTROL SYSTEM.

C403.4.1.2 DEADBAND
WHERE USED TO CONTROL BOTH HEATING AND COOLING, ZONE THERMOSTATIC CONTROLS SHALL BE CONFIGURED TO PROVIDE A TEMPERATURE RANGE OR DEADBAND OF NOT LESS THAN 5°F (2.8°C) WITHIN WHICH THE SUPPLY OF HEATING AND COOLING ENERGY TO THE ZONE IS SHUT OFF OR REDUCED TO A MINIMUM.

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

C403.4.2 OFF-HOUR CONTROLS
EACH ZONE SHALL BE PROVIDED WITH THERMOSTATIC SETBACK CONTROLS THAT ARE CONTROLLED BY EITHER AN AUTOMATIC TIME CLOCK OR PROGRAMMABLE CONTROL SYSTEM.

C403.4.2.1 THERMOSTATIC SETBACK
THERMOSTATIC SETBACK CONTROLS SHALL BE CONFIGURED TO SET BACK OR TEMPORARILY OPERATE THE SYSTEM TO MAINTAIN ZONE TEMPERATURES DOWN TO 55°F (13°C) OR UP TO 85°F (29°C).

C403.4.2.2 AUTOMATIC SETBACK AND SHUTDOWN
AUTOMATIC TIME CLOCK OR PROGRAMMABLE CONTROLS SHALL BE CAPABLE OF STARTING AND STOPPING THE SYSTEM FOR SEVEN DIFFERENT DAILY SCHEDULES PER WEEK AND RETAINING THEIR PROGRAMMING AND TIME SETTING DURING A LOSS OF POWER FOR NOT FEWER THAN 10 HOURS. ADDITIONALLY, THE CONTROLS SHALL HAVE A MANUAL OVERRIDE THAT ALLOWS TEMPORARY OPERATION OF THE SYSTEM FOR UP TO 2 HOURS; A MANUALLY OPERATED TIMER CONFIGURED TO OPERATE THE SYSTEM FOR UP TO 2 HOURS; OR AN OCCUPANCY SENSOR.

C403.4.2.3 AUTOMATIC START AND STOP
AUTOMATIC START AND STOP CONTROLS SHALL BE PROVIDED FOR EACH HVAC SYSTEM. THE AUTOMATIC START CONTROLS SHALL BE CONFIGURED TO AUTOMATICALLY ADJUST THE DAILY START TIME OF THE HVAC SYSTEM IN ORDER TO BRING EACH SPACE TO THE DESIRED OCCUPIED TEMPERATURE IMMEDIATELY PRIOR TO SCHEDULED OCCUPANCY. AUTOMATIC STOP CONTROLS SHALL BE PROVIDED FOR EACH HVAC SYSTEM WITH DIRECT DIGITAL CONTROL OF INDIVIDUAL ZONES. THE AUTOMATIC STOP CONTROLS SHALL BE CONFIGURED TO REDUCE THE HVAC SYSTEM'S HEATING TEMPERATURE SETPOINT AND INCREASE THE COOLING TEMPERATURE SETPOINT BY NOT LESS THAN 2°F (-16.6°C) BEFORE SCHEDULED UNOCCUPIED PERIODS BASED ON THE THERMAL LAG AND ACCEPTABLE DRIFT IN SPACE TEMPERATURE THAT IS WITHIN COMFORT LIMITS.

GENERAL NOTES

1. CONTRACTOR SHALL SURVEY THE AREA OF THIS WORK BEFORE SUBMITTING A BID AND SHALL BE RESPONSIBLE FOR NOTIFYING THE ARCHITECT OF ANY CONDITIONS WHICH WOULD PREVENT THE INSTALLATION OF THE WORK AS SHOWN ON DRAWINGS.
2. ALL APPLICABLE CODES, LAWS AND REGULATIONS GOVERNING OR RELATING TO ANY PORTION OF THIS WORK ARE HEREBY INCORPORATED INTO AND MADE A PART OF THESE SPECIFICATIONS, AND THEIR PROVISIONS SHALL BE CARRIED OUT BY THE CONTRACTOR WHO SHALL INFORM THE OWNER, PRIOR TO SUBMITTING A PROPOSAL, OF ANY WORK OR MATERIALS WHICH VIOLATE ANY OF THE ABOVE LAWS AND REGULATIONS. ANY WORK DONE BY THE CONTRACTOR CAUSING SUCH VIOLATION SHALL BE CORRECTED BY THE CONTRACTOR.
3. BEFORE PROCEEDING WITH ANY WORK IN OCCUPIED OR USED AREAS, THE CONTRACTOR SHALL APPLY TO OWNER FOR PERMISSION TO ENTER SUCH AREAS. THE CONTRACTOR IS OBLIGED TO PERFORM HIS WORK ONLY AT THE TIMES DESIGNATED BY OWNER. THERE WILL BE NO ADDITIONAL COMPENSATION FOR THE WORK PERFORMED AFTER HOURS OR ON OFF-DAYS WITHOUT PRIOR WRITTEN APPROVAL.
4. THE WORK IN THE BUILDING SHALL BE DONE WHEN AND AS DIRECTED, AND IN A MANNER SATISFACTORY TO THE OWNER. THE WORK SHALL BE PERFORMED SO AS TO CAUSE THE LEAST POSSIBLE INCONVENIENCE AND DISTURBANCE TO THE PRESENT OCCUPANTS.
5. THE CONTRACTOR'S PROPOSAL FOR ALL WORK SHALL BE PREDICATED ON THE PERFORMANCE OF THE WORK DURING REGULAR WORKING HOURS. WHEN SO DIRECTED, HOWEVER, THE CONTRACTOR SHALL INSTALL WORK IN OVERTIME AND THE ADDITIONAL COST TO BE CHARGED THEREFORE SHALL BE ONLY THE "PREMIUM" PORTION OF THE WAGES PAID.
6. CONTRACTOR SHALL ASCERTAIN THE APPROPRIATE METHOD FOR BRINGING THE UNITS INTO AND THROUGH THE BUILDING TO POSITION UNIT IN LOCATION SHOWN ON THE PLANS. WHERE NECESSARY, EQUIPMENT SHALL BE SHIPPED FROM MANUFACTURER IN SECTIONS OF SIZE SUITABLE FOR MOVING THROUGH RESTRICTIVE SPACES. COORDINATE WITH BUILDING OWNER APPROPRIATE TIMES OF DAY SUCH EQUIPMENT MAY BE MOVED THROUGH ALL AREAS.
7. DUCTWORK AND PIPING IS SHOWN DIAGRAMMATICALLY AND DOES NOT SHOW ALL OFFSETS, DROPS AND RISES OF RUNS. THE CONTRACTOR SHALL MAKE ALLOWANCE IN PRICING FOR ROUTING OF DUCTWORK AND PIPING TO AVOID OBSTRUCTIONS. EXACT LOCATIONS ARE SUBJECT TO APPROVAL OF ARCHITECT. COORDINATION WITH THE OTHER TRADES IS REQUIRED.
8. 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.
9. PROVIDE ALL NECESSARY FLASHING AND COUNTER FLASHING TO MAINTAIN THE WATERPROOFING INTEGRITY OF THIS BUILDING AS REQUIRED BY THE INSTALLATION OR REMOVAL OF PIPES, DUCTS, LOUVERS, CONDUIT, AND EQUIPMENT. PROVIDE EQUIPMENT CURBS AND DUNNAGE STEEL AS REQUIRED.
10. SEAL OPENINGS AROUND DUCTS AND PIPING THROUGH PARTITIONS, WALLS AND FLOORS (NOT IN SHAFTS) WITH MINERAL WOOL OR OTHER NONCOMBUSTIBLE MATERIAL (FIBERGLASS INSULATION IS NOT ACCEPTABLE).
11. WHERE PENETRATIONS THROUGH FIRE RATED WALLS ARE NOT FIRE PROOFED THIS CONTRACTOR SHALL BE RESPONSIBLE TO SEAL SAME TO MAINTAIN THE RATED INTEGRITY.
12. 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.
13. 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.
14. 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.
15. 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.
16. MATERIALS AND WORKMANSHIP, UNLESS OTHERWISE NOTED, SHALL BE IN ACCORDANCE WITH BUILDING STANDARDS.
17. ALL EQUIPMENT SHALL BE PROVIDED WITH ONE YEAR WARRANTY PARTS AND LABOR AND FIVE YEARS ON COMPRESSORS. WARRANTY PERIOD BEGINS UPON PROJECT ACCEPTANCE
18. ALL MATERIAL AND EQUIPMENT TO BE NEW UNLESS OTHERWISE NOTED AND SHALL BE IN ACCORDANCE WITH BUILDING STANDARDS.
19. 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.
20. 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.
21. SUBMIT SHOP DRAWING OF ALL WORK WHICH MUST BE APPROVED BY THE ARCHITECT AND ENGINEER BEFORE WORK COMMENCES.
22. INSURANCE: IN ACCORDANCE WITH BUILDING REQUIREMENTS THE CONTRACTOR SHALL INCLUDE A HOLD HARMLESS CLAUSE FOR OWNER AND ENGINEER.
23. 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.
24. 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.
25. 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:

1) "PROVIDE": TO SUPPLY, 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.

GENERAL HVAC NOTES

1. PROVIDE ALL MATERIAL AND EQUIPMENT AND PERFORM ALL LABOR REQUIRED TO INSTALL COMPLETE AND OPERABLE MECHANICAL SYSTEMS AS INDICATED ON THE DRAWINGS, AS SPECIFIED AND AS REQUIRED BY CODE.
2. CONTRACT DOCUMENT DRAWINGS FOR MECHANICAL WORK (HVAC, PLUMBING, AND FIRE PROTECTION) ARE DIAGRAMMATIC AND ARE INTENDED TO CONVEY SCOPE AND GENERAL ARRANGEMENT ONLY.
3. THE LOCATIONS OF ALL ITEMS SHOWN ON THE DRAWINGS OR CALLED FOR IN THE SPECIFICATIONS THAT ARE NOT FIXED BY DIMENSIONS ARE APPROXIMATE ONLY. THE EXACT LOCATIONS NECESSARY TO SECURE THE BEST CONDITIONS AND RESULTS MUST BE DETERMINED BY THE PROJECT SITE CONDITIONS AND SHALL HAVE THE APPROVAL OF THE ENGINEER BEFORE BEING INSTALLED. DO NOT SCALE DRAWINGS.
4. WHEN MECHANICAL WORK (HVAC, PLUMBING, SHEET METAL, FIRE PROTECTION, ETC.) IS SUBCONTRACTED, IT SHALL BE THE MECHANICAL CONTRACTOR'S RESPONSIBILITY TO COORDINATE SUBCONTRACTORS AND THE ASSOCIATED CONTRACTS. WHEN DISCREPANCIES ARISE PERTAINING TO WHICH CONTRACTOR PROVIDES A PARTICULAR ITEM OF THE MECHANICAL CONTRACT OR WHICH CONTRACTOR PROVIDES FINAL CONNECTIONS FOR A PARTICULAR ITEM OF THE MECHANICAL CONTRACT, IT SHALL BE BROUGHT TO THE ATTENTION OF THE MECHANICAL CONTRACTOR, WHOSE DECISION SHALL BE FINAL.
5. COORDINATE CONSTRUCTION OF ALL MECHANICAL WORK WITH ARCHITECTURAL, STRUCTURAL, CIVIL, ELECTRICAL WORK, ETC., SHOWN ON OTHER CONTRACT DOCUMENT DRAWINGS.
6. INSTALL ALL MECHANICAL EQUIPMENT AND APPURTENANCES IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS, CONTRACT DOCUMENTS, AND APPLICABLE CODES AND REGULATIONS.
7. WHERE TWO OR MORE ITEMS OF THE SAME TYPE OF EQUIPMENT ARE REQUIRED, THE PRODUCT OF ONE MANUFACTURER SHALL BE USED.
8. COORDINATE ALL EQUIPMENT CONNECTIONS WITH MANUFACTURERS' CERTIFIED DRAWINGS. COORDINATE AND PROVIDE ALL DUCT AND PIPING TRANSITIONS REQUIRED FOR FINAL EQUIPMENT CONNECTIONS TO FURNISHED EQUIPMENT. FIELD VERIFY AND COORDINATE ALL DUCT AND PIPING DIMENSIONS BEFORE FABRICATION.
9. ALL CONTROL WIRE AND CONDUIT SHALL COMPLY WITH THE NATIONAL ELECTRIC CODE AND ELECTRICAL DIVISION OF THE SPECIFICATION.
10. PROVIDE VIBRATION ISOLATION FOR ALL MECHANICAL EQUIPMENT TO PREVENT TRANSMISSION OF VIBRATION TO BUILDING STRUCTURE.
11. LOCATE ALL TEMPERATURE, 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.
12. WHERE BEAMS ARE INDICATED TO BE PENETRATED WITH DUCTWORK OR PIPING, COORDINATE DUCTWORK AND PIPING LAYOUT WITH BEAM OPENING SIZE AND OPENING LOCATIONS. COORDINATION SHALL BE DONE PRIOR TO THE FABRICATION OF DUCTWORK, CUTTING OF PIPING, OR FABRICATION OF BEAMS.
13. 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.
14. PROVIDE ACCESS PANELS FOR INSTALLATION IN WALLS AND CEILINGS, WHERE REQUIRED, TO SERVICE DAMPERS, VALVES, SMOKE DETECTORS, AND OTHER CONCEALED MECHANICAL EQUIPMENT. ACCESS PANELS SHALL BE TURNED OVER TO THE GENERAL CONTRACTOR FOR INSTALLATION. ACCESS PANELS SHALL HAVE THE EQUAL RATED CAPACITY (1HR, 2HR, ETC.) AS WALL.
15. MECHANICAL EQUIPMENT, DUCTWORK, AND PIPING SHALL NOT BE SUPPORTED FROM A METAL DECK.
16. ALL EQUIPMENT, PIPING, DUCTWORK, ETC., SHALL BE SUPPORTED AS DETAILED, SPECIFIED AND REQUIRED TO PROVIDE A VIBRATION-FREE INSTALLATION.
17. 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.
18. 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.
19. LOCATIONS AND SIZES OF ALL FLOOR, WALL, AND ROOF OPENINGS SHALL BE COORDINATED WITH ALL OTHER TRADES INVOLVED.
20. ALL OPENINGS IN FIRE WALLS DUE TO DUCTWORK, PIPING, CONDUIT, ETC., SHALL BE FIRE STOPPED WITH A PRODUCT SIMILAR TO 3M OR APPROVED EQUAL.
21. 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.
22. REFER TO TYPICAL DETAILS FOR DUCTWORK, PIPING, AND EQUIPMENT INSTALLATION.

SCOPE OF WORK

SCOPE OF WORK

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

THE CONTRACTOR IS TO VERIFY ALL DIMENSIONS.

THE ARCHITECT SHALL NOT BE RESPONSIBLE FOR ACTUAL CONDITIONS, CONSTRUCTION AND/OR USE THEREOF. THIS DRAWING IS TO CONVEY DESIGN INTENTIONS AND/OR CODE COMPLIANCE ONLY. USE OF THESE DRAWINGS IMPLIES AGREEMENT WITH THESE CONDITIONS.

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DATE: 08-20-2025

REVISIONS:

NO.	DATE	DESCRIPTION	BY

PROJECT NAME:

FIREHOUSE SUBS

SHEET TITLE:

MECHANICAL SYMBOL, ABBREVIATION & NOTES

PROJECT NUMBER: 25-053

DATE:

SHEET NO.

M-0.1

SHEET 1 OF 5

SPECIFICATIONS

SECTION 0001 - NOTICE TO BIDDERS

1.1 BIDDERS REPRESENTATIONS

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.

1.5 FIELD QUALITY CONTROL

A. INSPECTION OF INSTALLED FIRE-STOPPING: BY OWNER-ENGAGED AGENCY ACCORDING TO ASTM E 2174.

1.5 THROUGH-PENETRATION FIRESTOP SYSTEM SCHEDULE:

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

1.6 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 ANNULAR SPACE BETWEEN PIPING AND SLEEVE.

1. SEALING ELEMENTS: EPDM RUBBER OR NBR.
2. PRESSURE PLATES: CARBON STEEL, PLASTIC, STAINLESS STEEL.
3. CONNECTING BOLTS AND NUTS: CARBON STEEL WITH CORROSION-RESISTANT COATING, STAINLESS STEEL.

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

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

1.2 SLEEVE-SEAL FITTINGS

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

1.3 GROUT

A. NON-SHRINK, FACTORY PACKAGED.

1.4 SLEEVE AND SLEEVE-SEAL SCHEDULE

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

1. INTERIOR PARTITIONS:

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

b. PIPING NPS 6 (DN 150) AND LARGER: GALVANIZED-STEEL-SHEET SLEEVES.

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

1.2 SUBMITTALS

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

1.3 QUALITY ASSURANCE

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

1.4 COMPONENTS

A. METAL PIPE HANGERS AND SUPPORTS: CARBON OR STAINLESS STEEL

B. FIBERGLASS PIPE HANGERS: -CLEVIS, CENTURY COMPOSITES, COOPER B-LINE

D. METAL FRAMING SYSTEMS: MFMA MANUFACTURER

E. FIBERGLASS STRUT SYSTEMS: COOPER B-LINE

F. THERMAL-HANGER SHIELD INSERTS:

G. FASTENER SYSTEMS: POWDER-ACTUATED FASTENERS OR MECHANICAL-EXPANSION ANCHORS

H. PIPE STANDS: COMPACT, LOW TYPE, SINGLE PIPE, HIGH TYPE, SINGLE PIPE, HIGH TYPE, MULTIPLE PIPES, CURB-MOUNTED 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 SEISMIC USE GROUP OR BUILDING CATEGORY AS DEFINED IN THE IBC: I II III
a. COMPONENT IMPORTANCE FACTOR: 1.0
b. COMPONENT RESPONSE MODIFICATION FACTOR: 2.5
c. COMPONENT AMPLIFICATION FACTOR: 2.5.
3. DESIGN SPECTRAL RESPONSE ACCELERATION AT SHORT PERIODS (0.2 SECOND) 18%
4. DESIGN SPECTRAL RESPONSE ACCELERATION AT 1-SECOND PERIOD: 8%

1.2 COMPONENTS

A. VIBRATION ISOLATORS:

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

B. AIR-MOUNTING SYSTEMS:

1. AIR MOUNTS: FREESTANDING, SINGLE OR MULTIPLE, COMPRESSED-AIR BELLOWS.
2. RESTRAINED AIR MOUNTS: HOUSED COMPRESSED-AIR BELLOWS.

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

D. VIBRATION ISOLATION EQUIPMENT BASES:

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

1.3 FIELD QUALITY CONTROL

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

PART-2 PRODUCTS

1.4 VIBRATION ISOLATORS & SEISMIC-RESTRAINT DEVICES

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

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

1. ACE MOUNTINGS CO., INC.
2. AMBER/BOOTH COMPANY, INC.
3. CALIFORNIA DYNAMICS CORPORATION.
4. COOPER B-LINE, INC.; A DIVISION OF COOPER INDUSTRIES.
5. HILTI, INC.
6. ISOLATION TECHNOLOGY, INC.
7. KINETICS NOISE CONTROL.

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 PROCURE THE SERVICES OF A TESTING, ADJUSTING AND BALANCING (TAB) SPECIALIST WHO SPECIALIZES IN HEATING, VENTILATION AND AIR CONDITIONING SYSTEMS. THE TAB AGENT SHALL HAVE THE FOLLOWING QUALIFICATIONS: AABC, NEBB OR TABB CERTIFIED.

1.3 EXECUTION

A. THE TAB SPECIALIST SHALL PERFORM FLOW MEASUREMENTS OF ALL EXISTING AIR AND HYDRONIC SYSTEMS THAT ARE TO REMAIN OR TO BE INCORPORATED INTO NEW WORK PRIOR TO THE STARTING OF WORK IN THE PROJECT SCOPE. A REPORT OF THESE MEASUREMENTS, INDICATING ANY AND ALL DEFICIENCIES SHALL BE SUBMITTED FOR OWNER REVIEW.

B. THE TAB SPECIALIST SHALL PERFORM FLOW MEASUREMENTS OF ALL NEW AIR AND HYDRONIC SYSTEMS AS LISTED ABOVE IN THE PROJECT SCOPE. A REPORT OF THESE MEASUREMENTS, INDICATING ANY AND ALL DEFICIENCIES SHALL BE SUBMITTED FOR OWNER REVIEW.

C. THE REPORT SHALL INDICATE A SCHEMATIC DIAGRAM INDICATING LOCATIONS OF ALL EQUIPMENT TESTED AND MEASUREMENT LOCATIONS.

D. PRIOR TO FINAL INSPECTION OF THE WORK, THE TAB SPECIALIST SHALL BALANCE ALL SYSTEMS AS INDICATED ABOVE TO THE REQUIREMENTS OF THE DESIGN.

E. THE CONTRACTOR SHALL HAVE FURNISH AND INSTALL ALL ADDITIONAL BALANCING EQUIPMENT, PRESSURE TAPS, GAUGES AND OTHER EQUIPMENT AS REQUIRED FOR A PROPERLY BALANCED SYSTEM AT NO ADDITIONAL COST TO THE OWNER. SUCH ADDITIONAL EQUIPMENT SHALL ADHERE IN STRICT ACCORDANCE WITH THE RESPECTIVE EQUIPMENT MANUFACTURER'S RECOMMENDATIONS.

F. THE CONTRACTOR SHALL HAVE THE TESTING AND BALANCING SPECIALIST COORDINATE ALL WORK OF THIS S3ECTION WITH THE BUILDING MANAGER. BALANCING WORK SHALL NOT CONFLICT WITH OTHER WORK SO AS TO MAINTAIN COMPLETION WITHIN THE SPECIFIED TIME.

G. ALL INSTRUMENTS USED FOR TAB SHALL BE MAINTAINED IN GOOD WORKING CONDITION AND ACCURATELY CALIBRATED.

H. TOLERANCES: PLUS OR MINUS 5 PERCENT OF DESIGN VALUES.

I. INSPECTIONS: RANDOM CHECKS BY OWNER OR ARCHITECT TO VERIFY FINAL TESTING, ADJUSTING, AND BALANCING REPORT.

J. ADDITIONAL TESTS: RANDOM TESTS WITHIN 90 DAYS OF COMPLETING TAB TO VERIFY BALANCE CONDITIONS AND SEASONAL TESTS.

END OF SECTION 230593

SECTION 233713 - DIFFUSERS, REGISTERS, AND GRILLES

1.1 PRODUCTS

A. DIFFUSERS, REGISTERS AND GRILLES SHALL BE FURNISHED AND INSTALLED FOR CAPACITIES AND IN LOCATIONS INDICATED ON DRAWINGS. ALL REGISTERS AND DIFFUSERS SHALL BE PRIME COATED STEEL OR EXTRUDED ALUMINUM FINISHED UNLESS OTHERWISE NOTED IN BAKED WHITE ENAMEL.

B. MANUFACTURERS: TITUS

1. SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCT BY ONE OF THE FOLLOWING:

a. HART & COOLEY INC.

b. KRUEGER.

c. METALAIRE, INC.

d. RUSKIN

C. ALL DIFFUSERS SHALL HAVE CONTROLLING/EQUALIZING GRID AND OPPOSED BLADE DAMPER UNLESS OTHERWISE NOTED.

D. ALL DUCTED RETURN REGISTERS SHALL HAVE AN OPPOSED BLADE DAMPER UNLESS OTHERWISE NOTED.

END OF SECTION 233713

SECTION 233113 - METAL DUCTS

1.1 CONSTRUCTION

A. EACH DUCT SYSTEM SHALL BE CONSTRUCTED FOR THE SPECIFIC SMACNA DUCT PRESSURE CLASSIFICATIONS SHOWN ON THE CONTRACT DRAWINGS. WHERE NO PRESSURE CLASSES ARE SPECIFIED BY THE DESIGNER, THE SMACNA 1 INCH WG PRESSURE, SEAL CLASS "A".

B. ALL DUCTWORK SHALL BE CONSTRUCTED TO SMACNA 1" WG DESIGN AND NOT LESS THAN THE FOLLOWING STANDARDS:

1. CONSTRUCT SO THAT ALL INTERIOR SURFACES ARE SMOOTH. USE SLIP AND DRIVE OR FLANGED AND BOLTED CONSTRUCTION WHEN FABRICATING RECTANGULAR DUCTWORK. USE SPIRAL LOCK SEAM CONSTRUCTION WHEN FABRICATING ROUND SPIRAL DUCTWORK. SHEET METAL SCREWS MAY BE USED ON DUCT HANGERS, TRANSVERSE JOINTS AND OTHER SMACNA APPROVED LOCATIONS IF THE SCREW DOES NOT EXTEND MORE THAN 1/2 INCH INTO THE DUCT.
2. SHEET STEEL SHALL COMPLY WITH ASTMA653 STANDARD SPECIFICATION FOR STEEL SHEET METAL, ZINC COATED (GALVANIZED) OR ZINC IRON ALLOY-COATED (GALVANNEALED) BY HOT DIP PROCESS, AND A924 STANDARD SPECIFICATION FOR GENERAL REQUIREMENT FOR SHEET METALLIC-COATED BY HOT DIP PROCESS. ALL ANGLE IRON USED FOR SUPPORT SHALL BE GALVANIZED. CONNECTIONS TO WALLS OR FLOOR SHALL BE AIR TIGHT WITH ANGLE IRON AND CAULKING. SEAL ALL DUCT SEAMS, TRANSVERSE AND LONGITUDINAL, AIR TIGHT. PROVIDE TURNING VANES ALL 90° ELBOWS.
3. USE ELBOWS AND TEES WITH A CENTER LINE RADIUS TO WIDTH OR DIAMETER RATIO OF 1.5 WHEREVER SPACE PERMITS. WHEN A SHORTER RADIUS MUST BE USED DUE TO LIMITED SPACE, INSTALL SINGLE WALL SHEET METAL SPLITTER VANES IN ACCORDANCE WITH SMACNA PUBLICATIONS, TYPE RE 3. WHERE SPACE WILL NOT ALLOW AND THE C VALUE OF THE RADIUS ELBOW, AS GIVEN IN SMACNA PUBLICATIONS, EXCEEDS 0.31, USE RECTANGULAR ELBOWS WITH TURNING VANES AS SPECIFIED IN SECTION 23 33 00. SQUARE THROAT-RADIUS HEEL ELBOWS WILL NOT BE ACCEPTABLE. STRAIGHT TAPS OR BULLHEAD TEES ARE NOT ACCEPTABLE.
4. WHERE RECTANGULAR ELBOWS ARE USED, PROVIDE TURNING VANES IN ACCORDANCE WITH SECTION 23 33 00.
5. PROVIDE EXPANDED TAKE-OFFS OR 45 DEGREE ENTRY FITTINGS FOR BRANCH DUCT CONNECTIONS WITH BRANCH DUCTWORK AIRFLOW VELOCITIES GREATER THAN 700 FPM. SQUARE EDGE 90-DEGREE TAKE-OFF FITTINGS OR TRAIGHT TAPS WILL NOT BE ACCEPTED.
6. BUTTON PUNCH SNAP-LOCK CONSTRUCTION WILL NOT BE ACCEPTED ON ALUMINUM DUCTWORK.

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

SUPPORT SCHEDULE - DUCTWORK

USG	MAX SIDE INCHES	TRANSVERSE JOINT AND BRACING
22	UP TO 12	S SLIP, DRIVE, ONE INCH POCKET ON 8 FOOT
22	13 TO 24	1"X1"X1/8" ANGLES ON 4 FOOT CENTERS
20	25 TO 35	1"X1"X1/8" ANGLES ON 2 FOOT CENTERS

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

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

E. FLAT OVAL OR ROUND DUCTWORK MAY BE PROVIDED IN LIEU OF RECTANGULAR DUCTWORK WITH THE REINFORCEMENT FOR FLAT SIDES SAME AS SPECIFIED FOR THE RECTANGULAR DUCTWORK, AND AS PER SMACNA FLAT OVAL DUCT CONSTRUCTION STANDARDS

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

1.2 MATERIALS

A. SINGLE-WALL RECTANGULAR DUCTS AND FITTINGS.

B. SINGLE-WALL ROUND AND FLAT-OVAL DUCTS AND FITTINGS.

C. SHEET METAL MATERIALS:

1. GALVANIZED SHEET STEEL.
2. STAINLESS-STEEL SHEETS.
3. ALUMINUM SHEETS.
4. FACTORY-APPLIED ANTI-MICROBIAL COATING.

D. DUCT LINER:

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

E. SEALANT MATERIALS:

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

1.3 DUCT CLEANING

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

B. CLEAN THE FOLLOWING ITEMS:

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

1.4 DUCT SCHEDULE

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

1. MOIST ENVIRONMENT DUCT MATERIAL: ALUMINUM.

END OF SECTION 233113

SECTION 230713 - INSULATION

INSULATION - GENERAL REQUIREMENTS

A. ALL INSULATION MATERIALS, INCLUDING JACKETS, FACING, ADHESIVE, COATINGS, AND ACCESSORIES ARE TO BE FIRE HAZARD RATED AND LISTED BY UNDERWRITERS LABORATORIES, INC. USING STEINER TUNNEL TEST METHOD FOR FIRE HAZARD CLASSIFICATION OF BUILDING MATERIALS, STANDARD UL 723 (ASTM E-84), (ASA A2.5-1963). FLAMESPREAD: MAXIMUM 25. FUEL CONTRIBUTED AND SMOKE DEVELOPED: MAXIMUM 50. FLAMEPROOFING TREATMENTS SUBJECT TO DETERIORATION FROM MOISTURE OR HUMIDITY ARE NOT ACCEPTABLE.

B. DEFINITIONS:

1) EXPOSED: INDOOR DUCTS, PIPING OR EQUIPMENT LOCATED IN MECHANICAL EQUIPMENT ROOMS AND IN AREAS WHICH WILL BE VISIBLE WITHOUT REMOVING CEILINGS OR OPENING ACCESS PANELS.

2) CONCEALED: INDOOR DUCTS, PIPING OR EQUIPMENT WHICH IS NOT EXPOSED.

3) OUTDOOR: DUCTS, PIPING OR EQUIPMENT WHICH IS EXPOSED TO THE WEATHER.

DUCTWORK INSULATION

A. INSULATE ALL DUCTWORK IN ACCORDANCE WITH INSULATION SCHEDULE EXCEPT AS OTHERWISE NOTED.

INSULATION SCHEDULE - DUCTWORK

SERVICE	LOCATION	R-VALUE	TYPE	FINISH
SUPPLY/RETURN	CONCEALED	R-6	D-1	VAPORSEAL
SUPPLY/RETURN	EXPOSED	R-8	D-1	VAPORSEAL
INTAKE	ALL	R-8	D-1	VAPORSEAL
SUPPLY	EXTERIOR	R-8	D-1	VAPORSEAL

B. REINSULATE ALL DUCTWORK AND PIPING WHICH IS EXISTING TO REMAIN AND WAS DAMAGED DURING CONSTRUCTION OR SHOWN OR REQUIRED TO BE RELOCATED. INSULATE WITH SAME MATERIAL AND THICKNESS.

C. NON-INSULATED DUCTWORK:

1) WHERE SOUND LINING IS OF MINIMUM THICKNESS SPECIFIED FOR INSULATION.

2) AIR CONDITIONING RETURN AIR DUCTWORK EXPOSED IN AIR CONDITIONED SPACES AND INSTALLED IN HUNG CEILINGS WHERE SPACE IMMEDIATELY ABOVE AND BELOW ARE BOTH AIR CONDITIONED.MATERIAL:

D. MATERIAL:

1) TYPE D-1: MINIMUM 1-LB DENSITY FIBERGLASS BLANKET, MAXIMUM 0.28 K-FACTOR AT 75 ADEG F MEAN TEMPERATURE WITH FACTORY-APPLIED FOIL-SKRIM-KRAFT FACING SIMILAR TO MANVILLE MICROLITE.

2) TYPE D-2: 3 LB. FIBERGLASS BOARD. THE MAXIMUM K FACTOR SHALL BE 0.23 AT 75 DEG F MEAN TEMPERATURE WITH A MINIMUM DENSITY OF 3 LB. THE INSULATION SHALL BE PROVIDED WITH A FACTORY-APPLIED ALL PURPOSE OR ALL SERVICE FACING. THE INSULATION SHALL BE EQUAL TO MANVILLE TYPE 814 SPIN-GLAS AP.

3) TYPE D-3: MINIMUM 6 LB FIBERGLASS BOARD. MAXIMUM 0.22 K-FACTOR AT 75 DEG F MEAN TEMPERATURE WITH FACTORY APPLIED ALL PURPOSE OR ALL SERVICE FACING. SIMILAR TO MANVILLE 817 SPIN-GLAS AP

E. FINISH:

1) TYPE F-1: FITTING COVER, MOLDED WHITE PVC JACKET, UL CLASS 1, MAXIMUM PERMEANCE 0.05 SIMILAR TO MANVILLE ZESTRON.
2) TYPE F-2: WHITE VAPOR BARRIER COATING WITH 10X10 OR 20X20 MESH WHITE GLASS, POLYESTER OR NYLON CLOTH REINFORCING MEMBRANE, MINIMUM 31 MIL DRY FILM THICKNESS, SIMILAR TO FOSTER TITE-FIT, UL LABEL.
3) TYPE F-4: ALUMINUM JACKETING WITH MINIMUM 0.016 IN. WALL THICKNESS AND LONGITUDINAL JOINTS WITH LOCK SEAMS.
4) TYPE F-6: WHITE FINISHING AND INSULATING CEMENT APPLIED OVER HEXAGONAL WIRE MESH. CEMENT SIMILAR TO KEENE SUPERSLICK.

F. INSTALLATION:

a. FIBERGLASS BLANKET: 2 IN. LAP STRIPS AT ALL SEAMS. SECURE BOTTOM OF ALL DUCTS OVER 24 IN. WIDE WITH MIN 2 ROWS OF WELD PINS 12 IN. ON CENTER. SECURE ALL SEAMS WITH FOIL VAPOR BARRIER TAPE AND VAPORSEAL ADHESIVE.

b. FIBERGLASS BOARD: SEAL JOINTS AND BREAKS IN FACING WITH 3 IN. WIDE TAPE TO MATCH FACING AND ADHERE WITH VAPOR SEAL ADHESIVE. APPLY 5 IN. WIDE TAPE AT CORNERS, WELD PINS ON TOP, SIDES AND BOTTOM.

G. ACOUSTICAL TREATMENT

ACOUSTICALLY LINE THE FIRST 10'-0" OF BOTH SUPPLY AND RETURN MAIN DUCTS, LOW PRESSURE DUCTWORK SHALL BE LINED WITH 1.5" THICK R-6 AS MANUFACTURED BY DUCTMATE, 1-1/2 POUND MINIMUM DENSITY, NEOPRENE COATED, FLEXIBLE FIBERGLASS DUCT LINER. LINING SHALL COMPLY WITH NFPA 90A AND SHALL HAVE A FLAME SPREAD CLASSIFICATION OF NOT MORE THAN 25 AND A SMOKE DEVELOPED RATING NOT MORE THAN 50. DUCT SIZES WHERE LINING IS INDICATED ON PLANS ARE MINIMUM INSIDE CLEAR DIMENSIONS REQUIRED,

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DATE: 08-20-2025

REVISIONS:

NO.	DATE	DESCRIPTION	BY

PROJECT NAME: FIREHOUSE SUBS

SHEET TITLE: MECHANICAL SPECIFICATIONS

PROJECT NUMBER: 25-053

DATE:

SHEET NO. M-0.2

GENERAL NOTES:

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. EACH UNIT GENERATING CONDENSATE SHALL BE PROVIDED WITH A CONDENSATE DRAIN WITH EXTERNAL, 4" DEEP P-TRAP. EXTEND DRAIN TO A ROOF MOUNTED SPLASH PAD OR AN ACCEPTABLE LOCATION REQUIRED BY CODE.

G. DUCT SIZES SHOWN ON DRAWINGS ARE CLEAR INSIDE DIMENSION.

H. ALL DUCTWORK SHALL BE FABRICATED, INSTALLED, SEALED, AND INSULATED PER THE LATEST ISSUE OF SMACNA LOW-VELOCITY DUCT MANUAL.

I. FLEXIBLE AIR DUCTS, BOTH METALLIC AND NONMETALLIC, SHALL BE TESTED IN ACCORDANCE WITH UL 181. SUCH DUCTS SHALL BE LISTED AND LABELED AS CLASS 0 OR CLASS 1. FLEXIBLE AIR DUCTS SHALL NOT BE LIMITED IN LENGTH PER DROP OR PER LOCAL CODE.

J. THE CONTRACTOR SHALL COORDINATE DIFFUSER LOCATIONS ON SITE WITH THE MOST RECENT REFLECTED CEILING PLAN.

K. THE CONTRACTOR IS TO MAKE ALL LOW-VOLTAGE WIRING CONNECTIONS FOR ALL HVAC EQUIPMENT INCLUDING TEMPERATURE CONTROLS, ROOF TOP UNITS, SMOKE DETECTORS AND CONTRACTOR PANEL.

L. PROVIDE AND INSTALL SMOKE DUCT DETECTORS IN THE AIR CONDITIONING UNIT AS SHOWN ON PLAN. CONTRACTOR SHALL PROVIDE INTERCONNECTION AND WIRE TO THE FIRE ALARM CONTROL PANEL IF REQUIRED. DUCT DETECTORS SHALL HAVE REMOTE TEST STATIONS LOCATED IN THE OFFICE NEAR THE RESPECTIVE THERMOSTATS. VERIFY CODE REQUIREMENTS FOR DUCT DETECTORS IN BOTH THE SUPPLY AND RETURN AIR STREAMS.

M. 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.

N. 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.

O. 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 ±10% OF AMOUNTS INDICATED ON THE FLOOR PLAN AND SCHEDULES.

P. PROVIDE FIRE OR FIRE+SMOKE DAMPER WHEREVER DUCTS ARE CROSSING FIRE/SMOKE RATED WALLS/ BARRIERS. COORDINATE WITH ARCHITECTURAL DRAWING FOR FIRE RATING OF THE WALLS.

Q. PROVIDE VOLUME DAMPER IN ACCESSIBLE CEILING AND PROVIDE CORD OPERATED DAMPER IN INACCESSIBLE CEILING.

R. FLEXIBLE CONNECTION SHALL BE INSTALLED BETWEEN EQUIPMENT AND CONNECTING DUCTWORK.

S. GC TO HIRE A CERTIFIED TEST AND BALANCE FIRM TO CONDUCT TESTING AND BALANCING.

T. THE MECHANICAL CONTRACTOR SHALL CAREFULLY EXAMINE ALL DRAWING SPECIFICATIONS RELATING TO THE WORK TO BE CERTAIN THAT THE WORK UNDER THE CONTRACT CAN BE SATISFACTORILY CARRIED OUT AND PRIOR TO THE SUBMISSION OF HIS TENDER, REPORT AT ONCE TO THE CONSULTANT ANY DEFECT, DISCREPANCY, OMISSION OR INTERFERENCE AFFECTING THE WORK OF THE SECTION OR THE GUARANTEE OF SAME.

U. THE MECHANICAL CONTRACTOR SHALL GUARANTEE THE SATISFACTORY OPERATION OF ALL WORK AND APPARATUS INCLUDE AND INSTALLED UNDER THIS SECTION OF THE SPECIFICATION FOE A PERIOD OF 12 MONTHS AFTER THE FINAL ACCEPTANCE OF THE COMPLETE BUILDING.

V. ALL EXPOSED DUCTWORK SHALL BE MIN OF 26GA SPIRAL WOUND GALVANIZED DUCTWORK (PRIMED AND PAINTED). COORDINATE HEIGHT WITH ELECTRICAL CONTRACTOR.

W. ALL EXPOSED DUCT, AIR TERMINALS & DAMPER COLOR SHALL BE MATCHED SAME AS CEILING COLOR. KINDLY COORDINATE WITH ARCHITECT.

X. THE GC TO HIRE AND COORDINATE. ANY NECESSARY STRUCTURAL WORK (WHERE APPLICABLE) FOR ANY LOADS ADDED TO THE EXISTING ROOF STRUCTURE (I.E, NEW UNITS, EXHAUST FANS, COOLER COMPRESSORS, ETC.)

Y. STRUCTURAL ENGINEERS SHALL BE RESPONSIBLE FOR CREATION AND SUBMITTAL OF ANY ENGINEERED DOCUMENTS & SUBSEQUENT SUBMITTAL TO THE LOCAL JHA.

Z. COORDINATE LOCATIONS AND SIZES OF ROOF OPENINGS WITH OWNER AND LL ROOFING CONTRACTOR. PROVIDE NEW OPENING IF REQUIRED AND CLOSE USED OPENINGS.

AA. EQUIPMENT SIZES, DIMENSIONS AND REQUIRED CONNECTIONS SHALL BE VERIFIED WITH THE ACTUAL EQUIPMENT SELECTED VENDOR DRAWINGS AND SITE BEFORE FABRICATION OF DUCTWORK, PIPING ETC.

AB. CONTRACTOR SHALL COORDINATE ALL ELECTRICAL REQUIREMENTS FOR ALL HVAC BASED ON ACTUAL EQUIPMENT SELECTED PRIOR TO INSTALLATION.

AC. CONTRACTOR SHALL COORDINATE EQUIPMENT WEIGHTS AND SUPPORTS BASED ON ACTUAL EQUIPMENT SELECTED.

AD. COORDINATE ALL EQUIPMENT WITH STRUCTURAL DRAWING.

AE. MAINTAIN ALL CODE AND MANUFACTURERS RECOMMENDED CLEARANCE AROUND ALL ROOF EQUIPMENT.

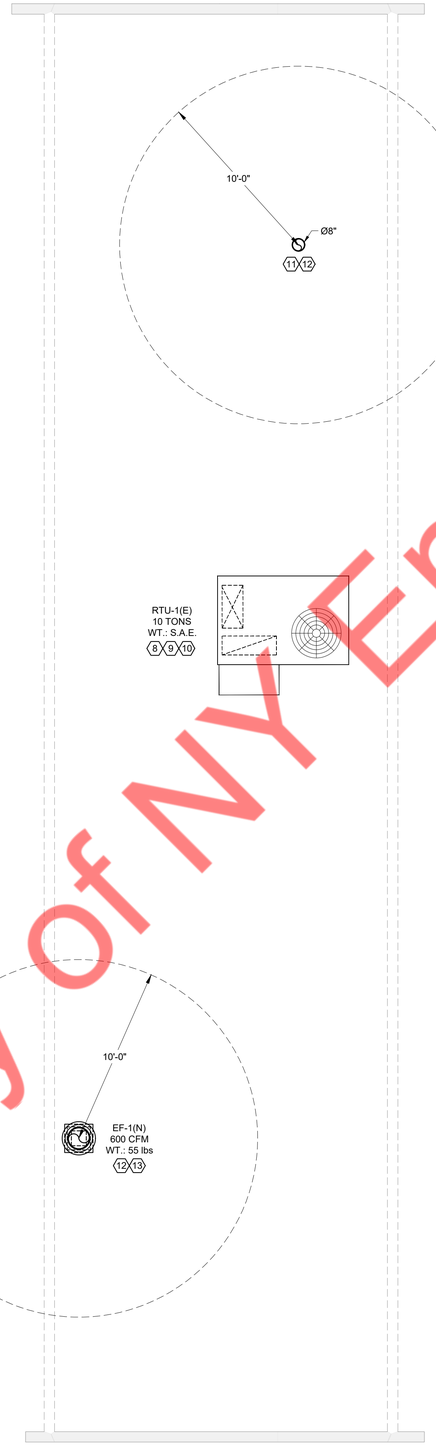
AF. ALL ROOF PENETRATION AND MEMBRANE ROOF REPAIRS ARE TO BE ACCOMPLISHED BY THE LANDLORD'S ROOFING CONTRACTOR FOR WARRANTY PURPOSES.

AG. ROOF REPAIR UNIT PRICES SHOULD BE SUBMITTED PRIOR TO COMMENCEMENT OF CONSTRUCTION.

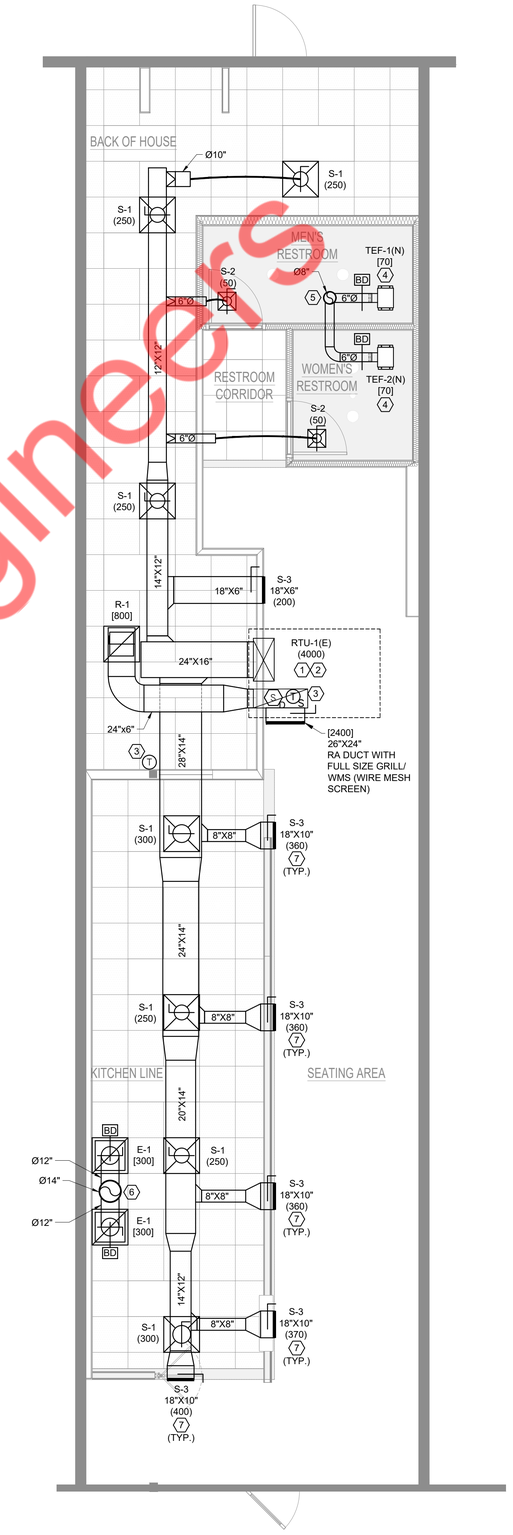
AH. CONTRACTOR TO COORDINATE WITH STRUCTURAL ENGINEER AND ADD BLOCKING TO ENSURE PROPER LOAD DISTRIBUTION ON EXISTING TRUSSES.

KEYED NOTES: ⟨#⟩

1. EXTEND FULL SIZE SUPPLY AND RETURN DUCTWORK FROM ROOFTOP UNIT TO SPACE, EXTEND AS SHOWN. CONTRACTOR TO FIELD VERIFY EXACT LOCATION AND SIZE. ACOUSTICALLY LINE THE FIRST 10'-0" OF BOTH SUPPLY AND RETURN MAIN DUCTS.
2. EXISTING SMOKE DETECTOR TO REMAIN AND REUSED. IF NOT FOUND OR NOT REUSABLE, PROVIDE SMOKE DETECTOR IN RETURN DUCT TO SHUT DOWN CORRESPONDING UNIT UNDER ALARM CONDITIONS. ALL WIRING SHALL BE IN CONDUIT PER NRC SMOKE DETECTOR SHALL BE SYSTEM SENSOR MODEL DH100ACDCLP.
3. RELOCATE THE EXISTING THERMOSTAT AND REMOTE TEMP SENSOR AT SHOWN LOCATION. IF NOT REUSABLE, PROVIDE NEW 7-DAY PROGRAMMABLE THERMOSTAT AND REMOTE TEMP SENSOR. MOUNT ON WALL AT 48" A.F.F. COORDINATE EXACT LOCATION WITH ARCHITECT AND OWNER PRIOR TO ROUGH-IN. PROVIDE LOCKABLE COVER.
4. CEILING MOUNTED EXHAUST FAN. FAN SHALL BE SUSPENDED FROM STRUCTURE ABOVE. VERIFY EXACT LOCATION OF STRUCTURAL MEMBERS PRIOR TO INSTALLATION.
5. Ø8" TOILET EXHAUST DUCT UP TO ROOF.
6. Ø14" STEAMER EXHAUST DUCT UP TO EF-1(N).
7. INSTALL GRILLE WITH 22" DEFLECTION.
8. EXISTING MECHANICAL ROOFTOP UNIT TO REMAIN ALONG WITH ALL ACCESSORIES. CLEAN AND REFURBISH TO LIKE NEW CONDITION. REPAIR/REPLACE ANY ACCESSORIES AS REQUIRED TO PROVIDE FULLY FUNCTIONING VERIFY PRIOR TO BID. 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.
9. CONDENSATE DRAIN TO BE REMAIN AS IT IS FOR EXISTING RTU. CONTRACTOR TO FLUSH THE EXISTING DRAIN. CONTRACTOR TO CLEAN/REPAIR/REPLACE DRAIN IF FOUND DAMAGED.
10. CONTRACTOR TO FIELD VERIFY EXACT LOCATION OF EXISTING RTU.
11. Ø8" EXHAUST AIR DUCT FROM SPACE BELOW . TERMINATE WITH GOOSENECK AND BIRD SCREEN.
12. CONTRACTOR TO ENSURE THAT EXHAUST OUTLETS SHALL MAINTAIN MINIMUM 10' HORIZONTALLY DISTANCE FROM OUTSIDE AIR INTAKE SOURCE ON ROOF.
13. Ø14" EXHAUST AIR DUCT FROM SPACE AND CONNECT EXHAUST DUCT TO EF-1(N).



2 MECHANICAL ROOF PLAN
1/4" = 1'-0"



1 MECHANICAL FLOOR PLAN
1/4" = 1'-0"

PLAN NORTH

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SHEET TITLE:

MECHANICAL
FLOOR & ROOF
PLAN

PROJECT NUMBER: 25-053

DATE:

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M-1.0

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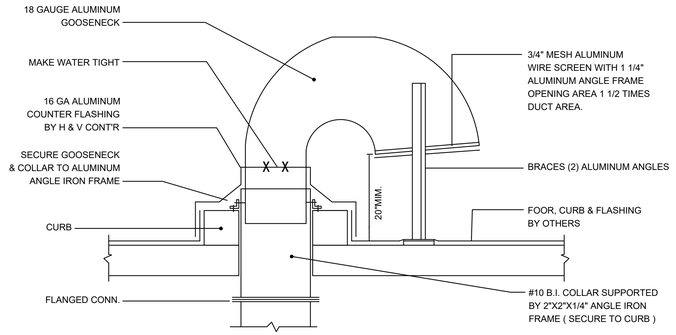
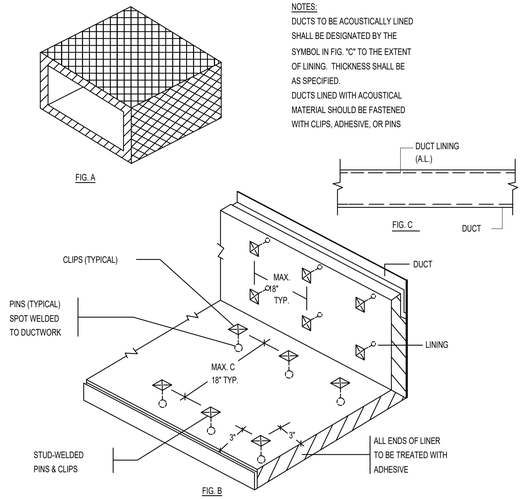


1 TYPICAL GOOSENECK DETAIL
SCALE: N.T.S.



2 ACOUSTIC LINING DETAIL
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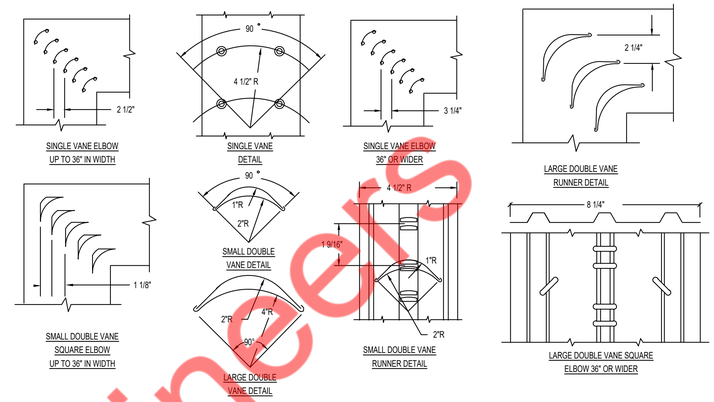
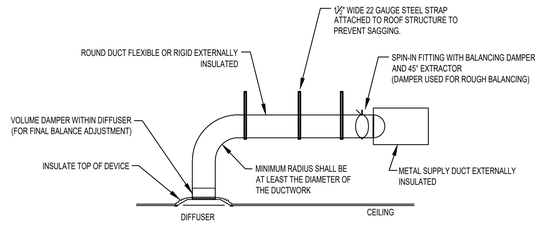
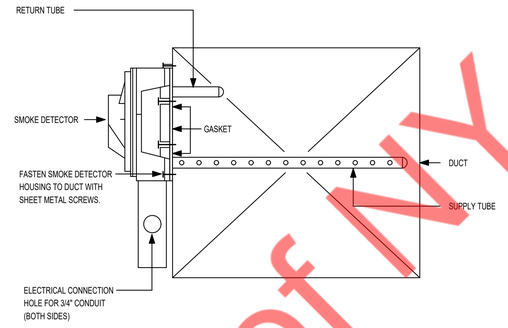


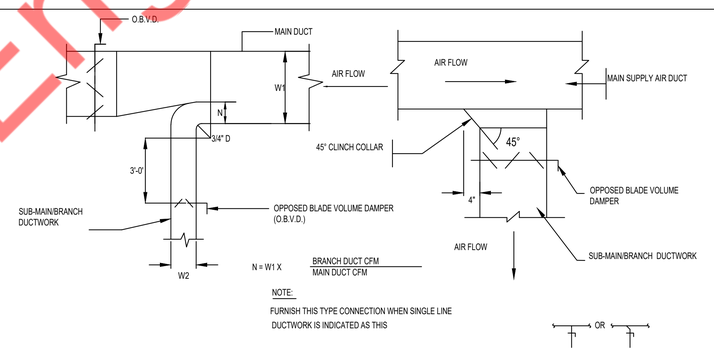
3 LOW VELOCITY DUCTWORK ELBOW
SCALE: N.T.S.



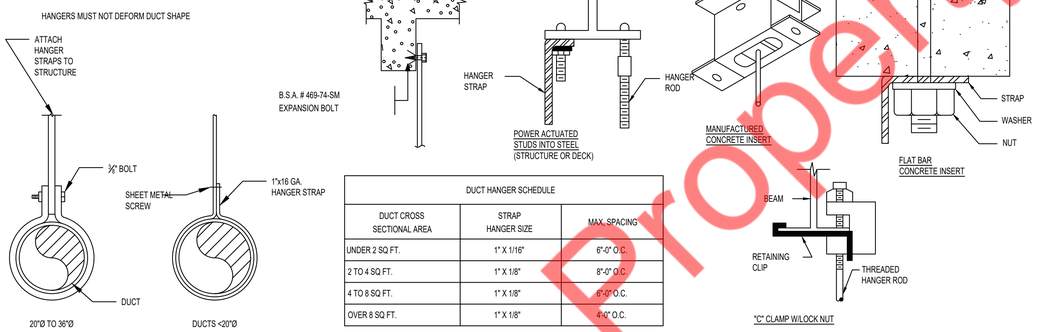
4 DIFFUSER CONNECTION DETAILS
SCALE: N.T.S.



5 SMOKE DETECTOR DETAIL
SCALE: N.T.S.

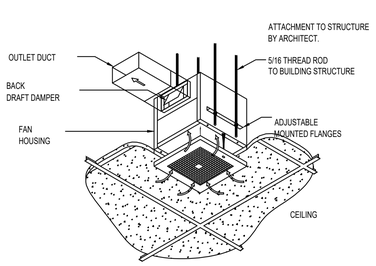


6 SUPPLY DUCT MAIN BRANCH TAP-OFF DETAILS
SCALE: N.T.S.

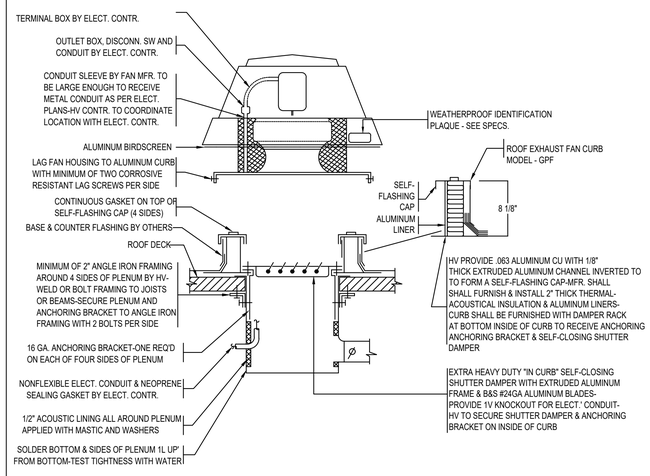


DUCT HANGER SCHEDULE		
DUCT CROSS SECTIONAL AREA	STRAP HANGER SIZE	MAX. SPACING
UNDER 2 SQ FT.	1" X 1/16"	6'-0" O.C.
2 TO 4 SQ FT.	1" X 1/8"	8'-0" O.C.
4 TO 8 SQ FT.	1" X 1/8"	6'-0" O.C.
OVER 8 SQ FT.	1" X 1/8"	4'-0" O.C.

7 TYPICAL DUCT HANGING DETAIL
SCALE: N.T.S.



8 CEILING MOUNTED FAN DETAIL
SCALE: N.T.S.



9 ROOF MOUNTED EXHAUST FAN DETAIL
SCALE: N.T.S.

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MECHANICAL DETAILS

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ROOF TOP UNIT SCHEDULE

UNIT ID	MANUFACTURER	EFFICIENCY	MODEL	AREA SERVED	NOMINAL TONS	SUPPLY FAN			HEATING CAPACITY (KW)	COOLING				ELECTRICAL				EER	IEER/SEER	OPERATING WEIGHT (LBS)
						TOTAL CFM	OUTSIDE AIR CFM	EXTERNAL STATIC PRESSURE (IN.W.G.)		TOTAL MBH	SENSIBLE MBH	AMBIENT DB (°F)	ENTERING DB / WB(°F)	VOLTS	PHASE	MCA(A)	MOCP(A)			
RTU-1(E)	ICP DAS (V.I.F.)	S.A.E.	RHV120H02A0AAA (V.I.F.)	SEE ON PLAN	10 (V.I.F.)	4000 (V.I.F.)	800	S.A.E.	S.A.E.	S.A.E.	S.A.E.	S.A.E.	S.A.E.	208	3	49 (V.I.F.)	60 (V.I.F.)	S.A.E.	S.A.E.	S.A.E.

NOTES / ACCESSORIES FOR EXISTING RTU :-

1. EXISTING RTUs 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 IF ALL RTUs ARE WORKING AT THEIR 100% RATED CAPACITY. INFORM TO DESIGN ENGINEER IF ANY DISCREPANCIES ARE FOUND IN PERFORMANCE PRIOR TO CONSTRUCTION.
4. CONTRACTOR TO FIELD VERIFY EXACT LOCATION AND CONFIGURATION OF UNIT ON SITE.
5. IF REQUIRED, PROVIDE NEW THERMOSTAT AND TEMPERATURE SENSOR COMPATIBLE WITH EXISTING RTU. CO-ORDINATE FINAL LOCATION OF T-SENSOR WITH ARCHITECT/OWNER.
6. CONTRACTOR TO BALANCE OUTSIDE AIR & RETURN AIR DAMPER ON EXISTING RTU TO MATCH VALUES MENTIONED IN ABOVE TABLES.
7. REPLACE FILTERS, IF REQUIRED.
8. CONTRACTOR SHALL VERIFY EXACT ELECTRICAL CONNECTIONS, WIRE SIZES, BREAKER, DISCONNECT ETC. PRIOR TO ORDERING AND BID.

FAN SCHEDULE

UNIT ID	MANUFACTURER	CFM	ESP(IN W.G.)	HP	VOLTS/PH/Hz	FLA(A)	MCA	MOCP	WEIGHT (LBS)	MODEL	NOTES
TEF-1(N)	GREENHECK	70	0.26	-	115/1/60	0.29	0.4	15	8	SP-LP0810W	1,2,3
TEF-2(N)	GREENHECK	70	0.26	-	115/1/60	0.29	0.4	15	8	SP-LP0810W	1,2,3
EF-1(N)	GREENHECK	600	0.75	1/4	115/1/60	3.8	4.8	15	54	G-098-VG	1,3,4,5,6

NOTES:

1. PROVIDE GRAVITY BACKDRAFT DAMPER
2. HANGING BRACKET WITH VIBRATION ISOLATOR.
3. INTERLOCK WITH RTU-1(E)
4. PROVIDE SOLID STATE VARIABLE SPEED SWITCH FOR EF-1(N)
5. PROVIDE ROOF CURB.
6. PROVIDE ON/OFF SWITCH FOR EF-1(N).

SCHEDULE OF GRILLES/DIFFUSER — MAKE: TITUS

TAG	TYPE	MODEL NO.	DIMENSION (IN)	MOUNTING	FRAME TYPE	MAX NC dBA
S-1	SUPPLY	OMNI	24X24	SAT / HARD CEILING	LAY IN	20
S-2	SUPPLY	OMNI	12X12	SAT / HARD CEILING	LAY IN	20
S-3	SUPPLY	300FL	SEE PLAN	DUCT/WALL MOUNTED	FLANGED	20
R-1	RETURN	50FF	24X24	SAT / HARD CEILING	LAY IN	20
E-1	EXHAUST	PAR-AA	24X24	SAT / HARD CEILING	LAY IN	25

NOTES FOR DIFFUSERS

1. ALL GRILLES : CONTRACTOR SHALL COORDINATE WITH LATEST ARCHITECTURAL REFLECTED CEILING PLANS TO ENSURE PROPER AIR DEVICE BORDER SELECTION.
2. COORDINATE COLOR/FINISH WITH ARCHITECT.

FOR ROUND NECK DIFFUSERS:

FOR ROUND DIFFUSER NECK SIZE	FOR SQUARE DIFFUSER NECK SIZE
6" DIA: 0-100 CFM	6"X6" : 0 - 115 CFM
8" DIA: 101-175 CFM	8"X8" : 116 - 220 CFM
10" DIA: 176-275 CFM	10"X10" : 221 - 350 CFM
12" DIA: 276-395 CFM	12"X12" : 351 - 520 CFM
14" DIA: 396-535 CFM	14"X14" : 521 - 730 CFM
15" DIA:536-750 CFM	16"X16" : 731 - 840 CFM
	18"X18" : 840 - 1035 CFM
	20"X20" : 1036 - 1285 CFM
	22"X22" : 1286 - 1570 CFM

AIR BALANCE

UNIT	AREA SERVED	SUPPLY AIR (CFM)	OUTSIDE AIR (CFM)	RETURN AIR (CFM)	EXHAUST AIR(CFM)
RTU-1(E)	SEE PLAN	4000	800	3200	0
TEF-1(N)	SEE PLAN	0	0	0	70
TEF-2(N)	SEE PLAN	0	0	0	70
EF-1(N)	SEE PLAN	0	0	0	600
TOTAL:		4000	800	3200	740
BUILDING PRESSURE:			**60**	**POSITIVE**	

NOTES:

1. CONTRACTOR TO ADJUST MOTORIZED DAMPER ON FRESH AIR TAP TO PROVIDE OUTSIDE AIR AS MENTIONED IN ABOVE TABLE.

VENTILATION CALCULATION

ROOM NAME	AREA (SQ.FT.)	NUMBER OF PEOPLE/1000sq.ft AS PER IMC 2018	NUMBER OF PEOPLE AS PER IMC 2018	NUMBER OF CHAIR	FINAL PEOPLE NO.	MIN OUTSIDE AIR AS PER IMC 2018		REQ. OA (CFM)	EFFECTIVENESS (CFM/0.8)	PROVIDED OA (CFM)	EXHAUST AIRFLOW RATE (CFM/SQ.FT)	TOTAL EXHAUST (CFM)	PROVIDED EXHAUST (CFM)
						CFM/PEOPLE	CFM/SQ.FT						
DINING AREA	535	70	38	32	38	7.5	0.18	382	478	800	0	0	0
KITCHEN LINE	320	20	7	0	7	7.5	0.12	91	114		0.7	224	600
BACK OF HOUSE	385	20	8	0	3	7.5	0.12	69	86		0	0	0
RESTROOM CORRIDOR	34	0	0	0	0	0	0.06	3	4		0	0	0
MEN RESTROOM	64	0	0	0	0	0	0	0	0		70	70	70
WOMEN RESTROOM	49	0	0	0	0	0	0	0	0		70	70	70
TOTAL	**1387**	-	**53**	**32**	**48**	-	**TOTAL**	**545**	**681**	**800**	**TOTAL**	-	**740**

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1	08-20-2025	PLAN REVIEW COMMENTS	NYE

PROJECT NAME:

FIREHOUSE SUBS

SHEET TITLE:

MECHANICAL SCHEDULE

PROJECT NUMBER: 25-053

DATE:

SHEET NO.

M-3.0

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PLUMBING SYMBOL LIST

SYMBOL	DESCRIPTION
— SAN —	SANITARY SEWER (ABOVE FLOOR)
— SAN —	SANITARY SEWER (UNDERGROUND)
— EX.SAN —	EXISTING SANITARY SEWER (UNDERGROUND)
— GW —	GREASE WASTE (UNDERGROUND)
— FW —	FILTER WATER PIPING
	VENT PIPING
	COLD WATER PIPING
	HOT WATER PIPING
	EXISTING COLD WATER PIPING
	EXISTING HOT WATER PIPING
	HOT WATER RETURN PIPING
	P-TRAP
	PIPE UP
	PIPE DROP
	FLOOR CLEANOUT
	PLUGGED OUTLET/CLEANOUT
	SHUT-OFF VALVE
	POINT OF CONNECTION
	ANGLE VALVE
	RECIRCULATION PUMP
	BALANCING VALVE

PLUMBING ABBREVATIONS

FCO	FLOOR 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
GW	GREASE WASTE
FW	FILTER WATER
WH	WATER HEATER
ET	EXPANSION TANK
RCP	RECIRCULATION PUMP
E	EXISTING
FS	FLOOR SINK
GI	GREASE INTERCEPTOR
WH	WATER HEATER
RPZ	REDUCED PRESSURE ZONE DEVICE
BFP	BACKFLOW PREVENTOR

PLUMBING DRAWING LIST

BUILDING DEPARTMENT PLUMBING NOTES

1. ALL PLUMBING SYSTEMS (SANITARY WASTE, VENT, WATER) AND ASSOCIATED EQUIPMENT SHALL BE INSTALLED, OPERATED AND MAINTAINED IN ACCORDANCE WITH THE REQUIREMENTS OF 2018 INTERNATIONAL PLUMBING CODE.
2. INSTALLATION OF UNDERGROUND PIPING SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF 2018 INTERNATIONAL PLUMBING CODE SECTION 704.
3. PROTECTION OF PIPING AND PLUMBING SYSTEM COMPONENTS AS PER 2018 INTERNATIONAL PLUMBING CODE SECTION 305.
4. TRENCHING, EXCAVATION AND BACKFILL AS PER 2018 INTERNATIONAL PLUMBING CODE SECTION 306.
5. RODENT PROOFING AS PER 2018 INTERNATIONAL PLUMBING CODE SECTION 304.
6. MATERIALS USED IN PLUMBING SYSTEMS SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF 2018 INTERNATIONAL PLUMBING CODE SECTION PC 303, 605, 702 AND 902.
7. TRAP PRIMERS FOR FLOOR DRAINS SHALL BE PROVIDED AS PER 2018 INTERNATIONAL PLUMBING CODE SECTION 1002 AND CLEAN OUTS SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENT OF SECTION 708.
8. VERTICAL AND HORIZONTAL PIPING SHALL BE SUPPORTED IN ACCORDANCE WITH THE REQUIREMENTS OF 2018 INTERNATIONAL PLUMBING CODE SECTION 308.
9. WATER SUPPLY SYSTEMS SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE REQUIREMENTS OF 2018 INTERNATIONAL PLUMBING CODE CHAPTER 6 SECTION 601-603, 604, 605, 606, 607, 608, 610.
10. THE SANITARY DRAINAGE SYSTEM SHALL BE SIZED AND INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF 2018 INTERNATIONAL PLUMBING CODE CHAPTER 7 SECTION 701, 704, 705, 706, 707, 708, 711.
11. VENT PIPING FOR THE SANITARY DRAINAGE SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF 2018 INTERNATIONAL PLUMBING CODE CHAPTER 9 SECTIONS 901-12 AND SECTION 917.
12. INSPECTION AND TESTING OF PLUMBING SYSTEMS SHALL BE IN ACCORDANCE WITH 2018 INTERNATIONAL PLUMBING CODE SECTION 312.
13. GREASE INTERCEPTOR SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION 19-49 AS PER CODE OF ORDIANCE, MUNICODE.

PLUMBING SPECIFICATIONS

1. BASIC PLUMBING REQUIREMENTS, MATERIALS AND METHODS

1.01 SCOPE

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

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

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

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

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

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

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

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

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

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

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

1.02 SUBMITTALS

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

1. PIPE AND FITTINGS
2. VALVES
3. HANGERS AND SUPPORTS
4. PLUMBING PIPING LAYOUT
5. TESTS
6. PLUMBING FIXTURES
7. WATER HEATERS & ACCESSORIES
8. MIXING VALVES
9. ALL SCHEDULED PLUMBING EQUIPMENT

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

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

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

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

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

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

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

1.03 SUBSTITUTIONS

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

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

1.05 DEFINITIONS

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

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

C. PROVIDE: TO FURNISH AND INSTALL.

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

1.06 DRAWINGS

A. THE DRAWINGS ARE DIAGRAMMATIC AND ARE INTENDED TO ILLUSTRATE THE GENERAL ARRANGEMENT AND ROUTING OF PIPING AND GENERAL LOCATIONS OF EQUIPMENT. PRECISE LOCATIONS OF EQUIPMENT, RISERS AND STACKS, AND ROUTING AND ELEVATION OF ALL PIPING SYSTEMS SHALL BE COORDINATED IN THE FIELD WITH THE ARCHITECT, ARCHITECTURAL DRAWINGS, THE WORK OF OTHER TRADES, EXISTING AND NEW BUILDING CONDITIONS AND/OR THE PREFERENCES OF THE OWNER/TENANT AS CONSTRUCTION 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. ABOVE GRADE AND UNDERGROUND PIPING SHALL BE POLYVINYL CHLORIDE(PVC) AS PER ASTM D2665, ASTM F891 AND CSA B181.2 STANDARDS ON TABLE P-702-1 AND P-702.2 RESPECTIVELY AS PER 2018 INTERNATIONAL PLUMBING CODE.
2. SLOPE OF DRAINAGE SYSTEM SHALL BE 1/8" PER FOOT OF RUN FOR PIPE OVER 3" (I.D.) AND 1/4" PER FOOT OF RUN FOR PIPE 3" AND SMALLER (I.D.). VENT PIPING SHALL BE PITCHED TO DRAIN.
3. PVC OR OTHER COMBUSTIBLE PLASTIC PIPING SHALL NOT BE INSTALLED IN CEILING PLENUM SPACES.

B. DOMESTIC WATER PIPING:

1. ABOVE GRADE WATER PIPING SHALL BE CROSS-LINKED POLYETHYLENE (PEX) PLASTIC TUBING AND COMPLY WITH ASTM F876, CSA B137.5 STANDARDS ON TABLE 605.3 AND 605.5 AS PER 2018 INTERNATIONAL PLUMBING CODE.
2. FITTINGS IN DOMESTIC WATER PIPING SHALL BE CROSS-LINKED POLYETHYLENE (PEX) PLASTIC TUBING AND COMPLY WITH ASTM 1061, ASTM F877, ASTM F1870, ASTM F1960, ASTM F2080, ASTM F2098, ASTM F2159, ASTM F2434, ASTM F2735, CSA B137.5 ON TABLE 605.5 AS 2018 INTERNATIONAL PLUMBING CODE.
3. JOINTS SHALL BE MADE WITH LEAD-FREE SOLDIER.
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 2018 INTERNATIONAL ENERGY CONSERVATION CODE SECTION C404.4 TABLE C403.2.10.

MINIMUM PIPE INSULATION THICKNESS							
FLUID OPERATING TEMPERATURE RANGE AND USAGE (°F)	INSULATION CONDUCTIVITY		NOMINAL PIPE OR TUBE SIZE (INCHES)				
	CONDUCTIVITY BTU· IN./(H· FT2· °F)	MEAN RATING TEMPERATURE, °F	<1	1 TO <1½	1½ TO <4	4 TO <8	≥8
141-200	0.25-0.29	125	1.5	1.5	2	2	2
105-140	0.21-0.28	100	1.0	1.0	1.5	1.5	1.5
40-60	0.21-0.27	75	0.5	0.5	1.0	1.0	1.0

7. WATER DISTRIBUTION SYSTEM AS PER 2018 INTERNATIONAL ENERGY CONSERVATION CODE C404.7, HEATED-WATER CIRCULATION SYSTEMS SHALL BE PROVIDED WITH A CIRCULATION PUMP. THE SYSTEM RETURN PIPE SHALL BE A DEDICATED RETURN PIPE OR A COLD WATER SUPPLY PIPE. GRAVITY AND THERMO-SYPHON CIRCULATION SYSTEMS SHALL BE PROHIBITED. CONTROLS FOR CIRCULATING HOT WATER SYSTEM PUMPS SHALL AUTOMATICALLY TURN OFF THE PUMP WHEN THE WATER IN THE CIRCULATION LOOP IS AT THE DESIRED TEMPERATURE AND WHEN THERE IS NOT A DEMAND FOR HOT WATER.
   A. THE CONTROL SHALL START THE PUMP UPON RECEIVING A SIGNAL FROM THE ACTION OF A USER OF A FIXTURE OR APPLIANCE, SENSING THE PRESENCE OF A USER OF A FIXTURE OR SENSING THE FLOW OF HOT OR TEMPERED WATER TO A FIXTURE FITTING OR APPLIANCE.
   B. THE CONTROL SHALL LIMIT THE TEMPERATURE OF THE WATER ENTERING THE COLD-WATER PIPING TO 104°F (40°C).
8. HW SYSTEM PIPING IS DESIGNED AS PER MAXIMUM ALLOWED PIPE LENGTH METHOD AS PER 2018 INTERNATIONAL ENERGY CONSERVATION CODE C404.5.1. THE HW PIPE LENGTH FROM THE NEAREST SOURCE OF HEATED WATER TO THE TERMINATION OF THE FIXTURE SUPPLY PIPE SHALL BE AS PER FOLLOWING TABLE C404.5.1.

NOMINAL PIPE SIZE (INCHES)	MIXIMUM PIPING LENGTH (FEET)	
	PUBLIC LAV	OTHER FIXTURES
½"	2'	43'
¾"	0.5'	21'
1"	0.5'	13'
1¼"	0.5'	8'
1½"	0.5'	6'
2" OR LARGER	0.5'	4'

C. HANGERS AND SUPPORTS:

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

D. VALVES:

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

E. INSTALL PIPING TO CONSERVE BUILDING SPACE. DO NOT INTERFERE WITH USE OF BUILDING SPACE AND THE WORK OF OTHER TRADES. ALL PIPING RUN IN CEILING SHALL BE INSTALLED TIGHT TO THE STRUCTURE ABOVE.

F. INSTALL PIPING TO ALLOW FOR EXPANSION AND CONTRACTION WITHOUT STRESSING PIPE, JOINTS OR CONNECTED EQUIPMENT. PROVIDE PIPE ANCHORS, GUIDES AND EXPANSION JOINTS OR LOOPS IN ALL HOT WATER AND HOT WATER CIRCULATING MAIN SUPPLY PIPING AND SEGMENTS OF SUCH PIPE THAT EXCEED 30'-0" IN LENGTH.

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

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

I. VENT PENETRATIONS THROUGH THE ROOF SHALL BE FLASHED.

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

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

L. PROVIDE ACCESS DOORS/PANELS FOR SERVICE AND ACCESS TO ALL VALVES AND OTHER SYSTEM COMPONENTS ENCLOSED IN WALLS AND CEILINGS. ACCESS DOORS SHALL BE FURNISHED BY THIS CONTRACTOR, INSTALLED BY THE GENERAL CONTRACTOR.

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

N. ANY PENETRATIONS THROUGH FIRE RATED PARTITIONS, FLOORS, OR CEILINGS SHALL BE STEEL SLEEVED AND SEALED WITH 3M BRAND UL RATED FIRE BARRIER CAULK OR APPROVED EQUAL.

O. 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.

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

Q. 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.

2. INSTALLATION

2.01 GENERAL

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

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

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

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

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

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

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

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

I. NO DOMESTIC WATER PIPING SHALL BE INSTALLED IN UNHEATED SPACES.

J. PRIOR TO DISCONNECTING AND CONNECTING NEW WORK TO EXISTING SYSTEMS, THE PLUMBING CONTRACTOR SHALL NOTIFY THE PROPERTY MANAGER AND OFFER A PROPOSED SCHEDULE OF WORK. ESB WILL AUTHORIZE CONNECTIONS AND COORDINATE NECESSARY SHUT DOWNS AND DRAIN DOWNS AS REQUIRED. SHUT DOWNS AND DRAIN DOWNS MAY BE PERFORMED BY THE PLUMBING CONTRACTOR ONLY AFTER RECEIVING ESB AUTHORIZATION, AND SHOULD BE PERFORMED UNDER SUPERVISION OF ESB PERSONNEL. THREE (3) DAYS ADVANCE NOTICE TO THE PROPERTY MANAGER IS REQUIRED.

K. THE PLUMBING CONTRACTOR IS ADVISED THAT DUE TO THE NATURE OF THE OPERATIONS AND TENANT REQUIREMENTS, CONNECTIONS TO EXISTING SYSTEMS MAY HAVE TO BE MADE AFTER REGULAR WORKING HOURS. THE PROPERTY MANAGER WILL ADVISE THE PLUMBING CONTRACTOR OF THE TIME CONSTRAINTS UPON RECEIPT AND APPROVAL OF THE PLUMBING CONTRACTOR'S REQUEST FOR SHUT DOWN AND CONNECTION TO EXISTING SYSTEMS.

L. WHEN CONNECTING TO EXISTING STACKS AND RISERS, PROVISION IS TO BE MADE FOR FUTURE CONNECTIONS BY PROVIDING CAPPED AND VALVED OUTLETS ON DOMESTIC WATER RISERS AND PLUGGED OUTLETS ON THE SANITARY AND VENT STACKS.

2.02 ABOVE GRADE

A. INSTALL PLUMBING PIPING IN ACCORDANCE WITH RECOGNIZED INDUSTRY PRACTICES TO ENSURE THAT PIPING COMPLIES WITH REQUIREMENTS AND SERVES INTENDED PURPOSES.

B. ROUTE PIPING IN AN ORDERLY MANNER, PLUMB AND PARALLEL TO BUILDING STRUCTURE. MAINTAIN GRADIENT. SLOPE PIPING AND ARRANGE SYSTEMS TO DRAIN. IN DOMESTIC WATER SYSTEMS, PROVIDE DRAIN VALVES AT MAIN SHUT-OFF VALVES AND ALL LOW POINTS IN PIPING.

C. USE EXISTING CONNECTIONS AT MAINS WHERE AVAILABLE FOR NEW BRANCH PIPING. LOCATE ALL RISERS AND PIPING BEFORE CONSTRUCTION COMMENCES AND TAKE CARE NOT TO DAMAGE SAME. ANY DAMAGE OCCURRING TO THE EXISTING PIPING WILL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.

3. TESTING

A. AT THE COMPLETION OF THE PLUMBING WORK, COMPLETELY TEST THE ENTIRE INSTALLATION OF ALL SYSTEMS FOR PROPER OPERATION AND COMPLIANCE WITH APPLICABLE CODES AND LOCAL REQUIREMENTS. CORRECT ALL DEFICIENCIES FOUND.

B. TESTING OF THE INSTALLED SYSTEMS SHALL BE MADE BY THE CONTRACTOR IN THE PRESENCE OF A REPRESENTATIVE OF THE OWNER.

C. THE CONTRACTOR SHALL NOT COVER UP OR PERMANENTLY CONCEAL PIPING, DEVICES OR ANY PORTION OF NEWLY CONSTRUCTED PLUMBING SYSTEM(S) UNTIL SUCH SYSTEM, OR PORTION OF THE SYSTEM, HAS BEEN TESTED IN THE PRESENCE OF A REPRESENTATIVE OF THE OWNER AND INSPECTED BY THE LOCAL INSPECTOR AND APPROVED IN WRITING, EXCEPT PIPING PASSING THROUGH FLOORS, WALLS, PARTITIONS, OR BEAMS, FOR DISTANCES EQUAL TO THE THICKNESS OF SUCH FLOOR, WALL, PARTITION OR BEAM.

D. THIS CONTRACTOR SHALL NOTIFY THE VARIOUS DEPARTMENTS, BUREAUS AND INDIVIDUALS AT LEAST TWO WEEKS IN ADVANCE OF THE TIME THAT THE TESTS ARE TO BE CONDUCTED.

E. ALL DEFECTIVE PARTS SHALL BE REPLACED OR CORRECTED BY THIS CONTRACTOR AND AN EXTRA TEST OR TESTS SHALL BE MADE UNTIL THE OPERATION IS SATISFACTORY. ALL ARRANGEMENTS AND EXPENSES NECESSARY TO CONDUCT ALL TESTS REQUIRED BY THESE SPECIFICATIONS AND THE VARIOUS AGENCIES HAVING JURISDICTION OVER THE WORK INSTALLED UNDER THIS CONTRACT SHALL BE MADE BY THIS CONTRACTOR. NO EXTRA COMPENSATION WILL BE ALLOWED FOR THESE TESTS, THE COST THEREOF BEING INCLUDED IN THE LUMP SUM BID FOR THIS CONTRACT.

F. WHERE ANY EVIDENCE OF STOPPAGE IS FOUND IN PIPING OR EQUIPMENT, THIS CONTRACTOR SHALL DISCONNECT, CLEAN, REPAIR AND RECONNECT ALL OBSTRUCTED PIPING OR EQUIPMENT AND SHALL ALSO PAY FOR ALL NECESSARY CUTTING AND REPAIRS TO ADJOINING WORK.

G. ALL PIPING AND EQUIPMENT SHALL BE THOROUGHLY CLEANED INSIDE AND OUT, OF DIRT, CUTTINGS, OILS AND OTHER FOREIGN SUBSTANCES AND SHALL BE LEFT CLEAN.

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

J. ALL EQUIPMENT WILL BE FACTORY TESTED.

I. CONTRACTOR SHALL IDENTIFY TO THE OWNER'S REPRESENTATIVE ANY LEAKS OR DAMAGE THAT OCCURS AS A RESULT OF SYSTEM TESTING. CONTRACTOR SHALL TAKE NECESSARY PRECAUTIONS TO LIMIT ANY POTENTIAL DAMAGE. CORRECTIVE ACTION REQUIRED AS A RESULT OF TESTING SHALL BE PERFORMED IMMEDIATELY AND AT THE CONTRACTOR'S EXPENSE.

K. REPORT IN WRITING TO AUTHORITIES HAVING JURISDICTION, THE ARCHITECT AND THE OWNER THE RESULTS OF ALL TESTING.

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

M. REFILL ENTIRE POTABLE HOT AND COLD WATER SUPPLY SYSTEM WITH CHLORINE SOLUTION (HTH OLIN CHEMICAL CORP.) AT A STRENGTH TO MEET STANDARDS OF THE DEPARTMENT OF HEALTH, AND FOR A PERIOD OF RETENTION AS STIPULATED.

N. THOROUGHLY FLUSH PIPING SYSTEM WITH FRESH WATER IMMEDIATELY PRIOR TO FINAL ACCEPTANCE.

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DATE: 08-20-2025

REVISIONS:

NO.	DATE	DESCRIPTION	BY

PROJECT NAME:

FIREHOUSE SUBS

SHEET TITLE:

PLUMBING NOTES, SYMBOLS, ABBREVATIONS, & SPECIFICATIONS

PROJECT NUMBER: 25-053

DATE:

SHEET NO.

P-0.1

4. WARRANTY

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

E. ELECTRIC WATER HEATER (WH-1)

1. TANKS SHALL 40 GALLON CAPACITY AND SHALL HAVE 150 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.

F. HOT WATER RE-CIRCULATING PUMP

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

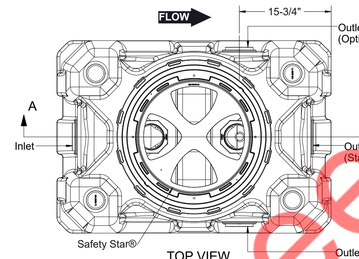
2. THE PUMP SHALL HAVE A GROUND AND POLISHED STEEL SHAFT WITH A HARDENED INTEGRAL THRUST COLLAR. THE SHAFT SHALL BE SUPPORTED BY TWO HORIZONTAL SLEEVE BEARINGS DESIGNED TO CIRCULATE OIL. THE PUMPS ARE TO BE EQUIPPED WITH A MECHANICAL SEAL WITH CARBON SEAL FACE ROTATING AGAINST CERAMIC SEAT. THE MOTOR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

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

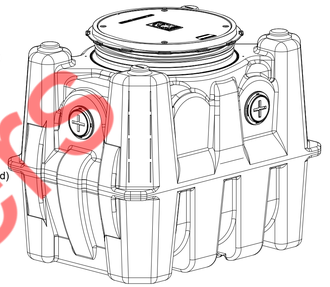
4. INSTALL IN-LINE CIRCULATING PUMPS BETWEEN PIPE FLANGES IN PIPING SYSTEMS. INSTALL OVERHEAD PIPE SUPPORTS, BOTH SIDES OF IN-LINE PUMPS, INSTALLED IN HORIZONTAL PIPING RUNS.

SPECIFICATIONS

Notes:
1. 4" FPT inlet/outlet with 4" plain end adapters, single inlet and triple outlet.
2. Unit weight - w/ composite cover: 135 lbs. (For wet weight add 1,043 lbs.)
3. Maximum operating temperature: 150° F continuous
4. Capacities - Liquid: 125 gal.
   Grease: 861 lbs. (118 gal.) @75 GPM
   Solids: 31 gal.
5. For gravity drainage applications only.
6. Do not use for pressure applications.
7. Cover placement allows full access to tank for proper maintenance.
8. Vent not required unless per local code.
9. Engineered inlet and outlet diffusers with inspection ports are removable to inspect / clean piping.
10. Integral air relief / Anti-siphon / Sampling access.
11. Adjustable cover adapter provides up to 4" of additional height.
12. Designed for below-grade, above-grade, indoor or outdoor installations.
13. Safety Star®, access restrictor built into cover adapter, prevents accidental entry to tank (450 lb rating).



TOP VIEW
(COVER REMOVED FOR CLARITY)


ISOMETRIC VIEW

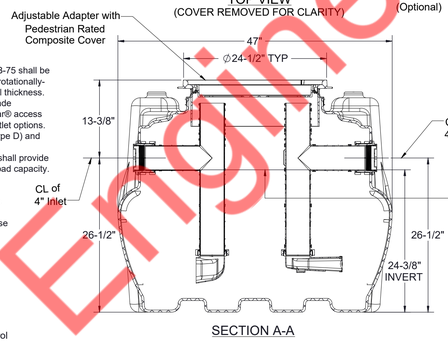
ENGINEER SPECIFICATION GUIDE

Schier Great Basin™ grease interceptor model # GB-75 shall be lifetime guaranteed and made in USA of seamless, rotationally-molded polyethylene with minimum 3/8" uniform wall thickness. Interceptor shall be furnished for above or below-grade installation with adjustable cover adapter, Safety Star® access restrictor built into each cover adapter, and three outlet options. Interceptor shall be certified to ASME A112.14.3 (Type D) and CSA B481.1. Interceptor flow rate shall be 75 GPM. Interceptor grease capacity shall be 861 lbs. Cover shall provide water/gas-tight seal and have minimum 2,000 lbs. load capacity.

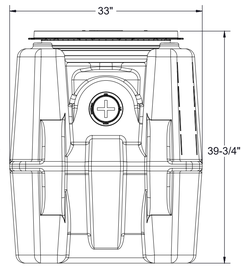
CERTIFIED PERFORMANCE

Great Basin™ hydromechanical grease interceptors are third party performance-tested and listed by IAPMO to ASME #A112.14.3 and CSA B481.1 grease interceptor standards and greatly exceed requirements for grease separation and storage. They are compliant to the Uniform Plumbing Code and the International Plumbing Code.

Type D certification does not require a flow control



SECTION A-A



END VIEW

SPECIFICATION SHEET

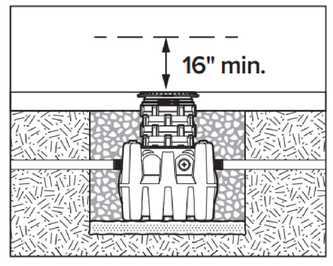
MODEL NUMBER:	PART NUMBER: 4045-001-02				
GB-75	DESCRIPTION: GB-75 GREASE INTERCEPTOR 75 GPM, 4" INLET/OUTLET, PEDESTRIAN RATED COMPOSITE COVER				
	DWG BY: C. BUSENITZ	DATE: 4/14/2022	REV: A	ECO: BB - 12/5/22	

6455 Woodland Dr
Shawnee, KS 66218
Tel: 913-951-3300
Fax: 913-951-3399
schierproducts.com

GREASE INTERCEPTOR DETAILS

AS PER CITY CODE SECTION 51.074, GREASE TRAPS MUST BE CLEANED WHEN THEY REACH 25% CAPACITY. (2)

Required clearance above covers:
Allow at least 16" of clearance above the interceptor for routine maintenance.



GREASE INTERCEPTOR BURIED INSTALLATION DETAILS

(1)

NY ENGINEERS
382 NE 191st Street Suite 49674
MIAMI, FL 33179
(786)-788-0295
ny-engineers.com

DATE: 08-20-2025

REVISIONS:

NO.	DATE	DESCRIPTION	BY
1	08-20-2025	PLAN REVIEW COMMENTS	NYE
2	09-25-2025	PLAN REVIEW COMMENTS	NYE

PROJECT NAME:

FIREHOUSE SUBS

SHEET TITLE:

PLUMBING SPECIFICATIONS & DETAIL

PROJECT NUMBER: 25-053

DATE:

SHEET NO.

P-0.2

SHEET 2 OF 7

GENERAL NOTES TO PLUMBERS:

A. PLUMBING CONTRACTORS TO OBTAIN ALL NECESSARY PERMITS AND INSTALLATION IS TO BE IN COMPLETE ACCORDANCE WITH ALL NATIONAL, STATE, AND LOCAL CODES.

B. PLUMBING CONTRACTORS SHALL FURNISH ALL LABOR AND MATERIALS TO MAKE ALL FINAL CONNECTIONS AND SHALL INCLUDE ALL ITEMS REQUIRED BY APPLICABLE LAW.

C. A CATALOG OF MANUFACTURERS EQUIPMENT SPECIFICATION SHEETS IS INCLUDED AS AN INTEGRAL PORTION OF THIS SUBMITTAL. WE SUGGEST THEREFORE THAT ALL TRADES REVIEW THE REQUIREMENTS AS INDICATED REGARDING EACH MANUFACTURER.

D. PLUMBING CONTRACTORS TO CROSS REFERENCE ROUGH-IN DRAWINGS, STAINLESS STEEL FABRICATION DRAWINGS, WALK-IN DRAWINGS, EXHAUST HOOD DRAWINGS, AND MILLWORK DETAIL DRAWINGS.

E. ALL VENT LOCATIONS AND RUNS TO BE LOCATED BY PLUMBER.

F. ALL FUNNEL FLOOR DRAINS, FLOOR SINKS, AND OR FLOOR DRAINS UTILIZED FOR THE DRAINAGE OF FOOD SERVICE EQUIPMENT SHALL BE SELF-PRIMING.

G. PLUMBING CONTRACTOR TO PROVIDE ALL INDIRECT DRAINS FROM EQUIPMENT TO FLOOR SINK DRAINS.

H. ALL PLUMBING TO BE INSTALLED AS TO PRECLUDE ANY POSSIBILITY OF BACK SIPHON.

I. ALL INDIRECT DRAINS ARE TO BE AIR-GAPPED 2" ABOVE FLOOR DRAINS (OR PER LOCAL CODE). ALL INDIRECT DRAIN LINES ARE TO BE COPPER LINES (OR PER LOCAL CODE). THE END OF THE LINES ARE TO BE CUT AT 45°.

J. PLUMBING CONTRACTOR TO PROVIDE REQUIRED PRESSURE REGULATING VALVES FOR HOT WATER LINES TO DISHWASHER RINSE CONNECTION AND ALL OTHER EQUIPMENT REQUIRING REGULATORS.

K. PLUMBER IS NOT RESPONSIBLE FOR SUPPLYING FAUCETS UNLESS NOTED OTHERWISE.

L. PLUMBER TO PROVIDE MIXING VALVE AT WATER HEATER SO THAT A MINIMUM OF 140° WATER IS DELIVERED TO BOOSTER HEATER.

M. CW/HW PIPING TO BE PROVIDED WITH INSULATION AS PER 2018 INTERNATIONAL ENERGY CONSERVATION CODE.

N. PROVIDE BRANCH PRV IF PRESSURE EXCEEDS 80 PSI.

O. PROVIDE ACCESS PANELS FOR WATER HAMMER ARRESTOR & SHUT-OFF VALVES AS REQUIRED.

P. REFER RISER DIAGRAMS FOR ALL PIPE SIZES.

Q. WATER HEATER DRAIN SPILLS TO THE MOP SINK. (1)

R. PROVIDE FULL OPEN VALVE AS PER THE REQUIREMENTS OF IPC SECTION 606.1.

WATER KEY NOTES: (#)

1. CONNECT NEW 1" CW PIPING TO THE EXISTING COLD WATER LINE IN SPACE WITH NEW WATER METER AND RPZ. CONTRACTOR TO FIELD VERIFY THE SIZE, ROUTING AND LOCATION OF EXISTING CW LINE.
2. PROVIDE A TEMERATURE MIXING VALVE FOR LAVATORY AND HAND SINK. SET TEMPERATURE TO A MAXIMUM OF 110°F.
3. PROVIDE BFP-1 CONFORMING TO ASSE 1022. BACK-FLOW PROTECTION TO BE INSTALLED FOR ICE MACHINES, BEVERAGE DISPENSERS & TEA BREWER.
4. CONTRACTOR TO MAKE SURE THAT THE SOFT WATER INLET PRESSURE FOR STEAMERS SHOULD BE AT MINIMUM 45 PSI & MAXIMUM 70 PSI.
5. NO TAP OFF TO BE TAKEN BEFORE RPZ.

PLUMBING FILTERED WATER NOTES: (#)

1	REFER TO STEAMER INSTALLATION DETAIL 2 ON P-1.0.
2	1/4" ID TUBING LINES TO CENTRAL KITCHEN STEAMERS.

PLUMBING SUPPLY SCHEDULE

#	DESCRIPTION	ROUGH-IN HEIGHT	SUPPLY COLD	SUPPLY HOT	GAS SIZE	GAS MBH	REMARKS
205	STEAMER WATER FILTRATION SYSTEM (VZN)	96"	1/2"				FEED FROM ICE MACHINE FILTER (#208)
206	ICE MACHINE WITH BIN	78"	1/2"				140° MIN. FOR H.W. CONNECTION
212D	3 COMP SINK-104"	12"	3/4"	3/4"			140° MIN. FOR H.W. CONNECTION
217	FREESTYLE SYRUP RACK & PUMP	84"	1/2"				SUPPLIED BY COKE VENDOR
219	MOP SINK	36"	3/4"	3/4"			140° MIN. FOR H.W. CONNECTION
220A	HOSE BIB	15"	1/2"				140° MIN. FOR H.W. CONNECTION
222	BOOSTER PUMP	60"	3/4"				
222A	ELECTRIC STORAGE WATER HEATER		1"				
236	HAND SINK	12"		1/2"			
243A	STEAMER	40"	1/2" FW				244 FILTERED WATER TO STEAMER. REFER TO PLUMBING FILTER WATER NOTE 1.
244	STEAMER WATER SOFTNER SYSTEM	40"	1/2" FW				VZN FILTERED WATER TO SOFTENER. REFER TO WATER SYSTEM FLOW DIAGRAM .
257A	FREE STYLE SODA MACHINE	84"	1/2" FW				
259	TEA BREWER	36"	1/2" FW				

(1)

WSFU CALCULATIONS

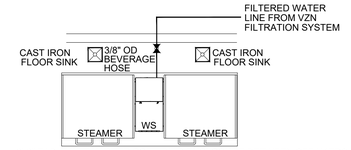
FIXTURE	QTY.	WSFU	TOTAL
WATER CLOSET (TANK)	2	5	10
LAVATORY	2	1	2
MOP BASIN	1	3	3
HAND SINK	2	1	2
3-COMP SINK	1	4	4
OTHERS*	8	0.25	2
* STEAMER, SODA MACHINE, TEA BREWER, ICE MAKER, ETC			
*WSFU VALUES GIVEN AS PER 2018 INTERNATIONAL PLUMBING CODE.	WSFU TOTAL		23

AS PER 2018 IPC TABLE E201.1, FOR 20.5 GPM, PIPE SIZE REQUIRED- 1 INCH, WATER METER SIZE-3/4" (2)

- VZN FILTERED WATER SUPPLY LINE TO THE WATER SOFTENER IS TO BE 3/8"OD MIN. 3FT. OF BEVERAGE HOSE TO THE SOFTENER. WATER TO THE VZN MUST BE AT LEAST 80 psig AND LESS THAN 100 psig. BOOSTER PUMP IS REQUIRED BY FIREHOUSE SUBS IN ORDER TO ACHIEVE THE 45 psig AFTER ANTUNES WATER SOFTENER TO EACH STEAMER.

- THE PREFERRED LAYOUT IS TWO (2) CAST IRON FLOOR SINKS BEHIND EACH STEAMER STACK. PROVIDE 10'-0" MIN. OF CAST IRON PIPING DOWNSTREAM OF THE LAST FIXTURE THAT CAN RECEIVE HIGH TEMP WASTE WATER FROM STEAMERS.

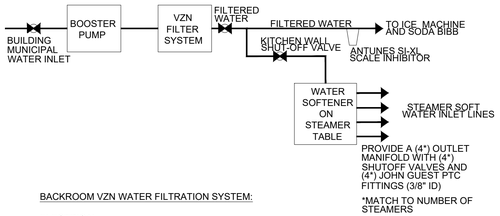
- CAST IRON FLOOR DRAINS TO BE LOCATED AS CLOSE AS POSSIBLE TO BACK WALL.



6'-0" TABLE WITH WATER SOFTENER ENCLOSURE BETWEEN STEAMERS

STEAMER SETUP WITH ANTUNES WATER SOFTENER

PLUMBING SCHEMATIC FOR STEAMER INSTALLATION



BACKROOM VZN WATER FILTRATION SYSTEM:

ELECTRICAL:
· (1) 120V 15A NEMA 5-15R GFCI DUPLEX OUTLET AT 84" (TYP.). FINAL OUTLET HEIGHT TO BE VERIFIED IN FIELD TO COORD. WITH FIELD CONDITIONS AND EQUIPMENT PLACEMENT.

PLUMBING:
· WATER TO THE VZN MUST BE AT LEAST 80 psig AND LESS THAN 100 psig. BOOSTER PUMP IS REQUIRED BY FIREHOUSE SUBS IN ORDER TO ACHIEVE THE 45 psig AFTER ANTUNES WATER SOFTENER TO EACH STEAMER.

· PLUMING IS REQUIRED FOR ONE TAP WATER AND ONE FILTERED WATER LINES. BOTH WATER LINES ARE TO HAVE SHUT OFF VALVES ON THE PIPE AT THE WALL:
1. SUPPLY LINE OF TAP WATER TO THE VZN
2. VZN FILTERED WATER OUTPUT LINE TO WATER SOFTENER.

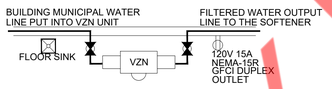
· A FLOOR SINK IS REQUIRED FOR THE BACKFLUSH.

VZN PLUMBING:

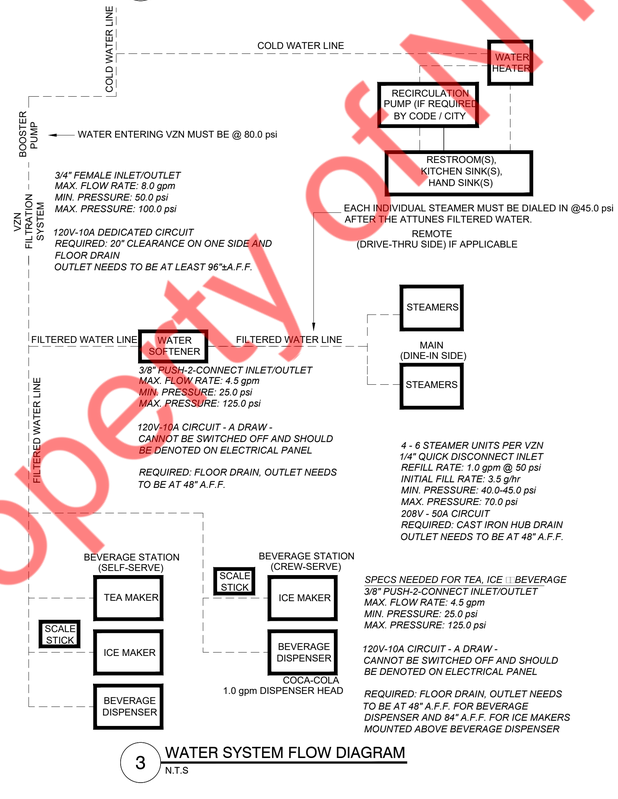
NOTE: THE SYSTEM MUST BE CONNECTED TO THE COLD WATER LINE. DO NOT CONNECT THE SYSTEM TO THE HOT WATER LINE.

VZN SYSTEM USES THE FOLLOWING CONNECTIONS:

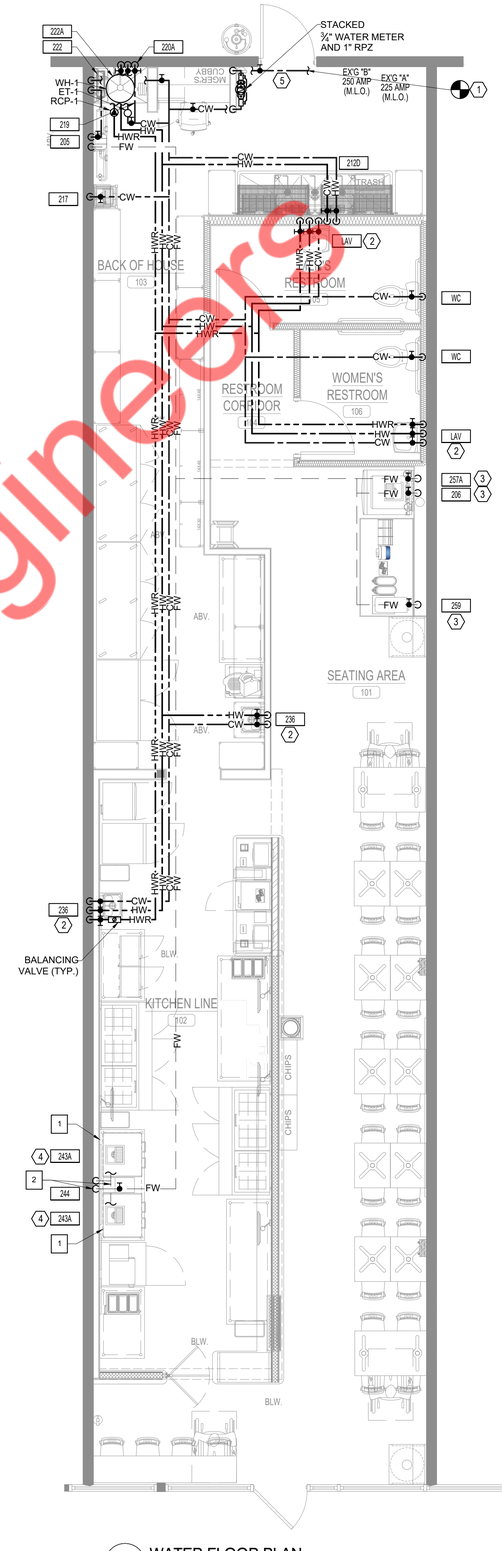
SYSTEM INLET	3/4" FNPT
SYSTEM OUTLET (PRODUCT WATER)	3/4" FNPT
DRAIN	3/4" FNPT
RINSE OUTLET	3/4" FNPT



2 STEAMER WATER LINE INSTALLATION DIAGRAM
N.T.S



3 WATER SYSTEM FLOW DIAGRAM
N.T.S



1 WATER FLOOR PLAN
1/4" = 1'-0"

PLAN NORTH

NY ENGINEERS
382 NE 191st Street Suite 49674
MIAMI, FL 33179
(786)-788-0295
ny-engineers.com

DATE: 08-20-2025

REVISIONS:

NO.	DATE	DESCRIPTION	BY
1	08-20-2025	PLAN REVIEW COMMENTS	NYE
2	09-25-2025	PLAN REVIEW COMMENTS	NYE

PROJECT NAME:

FIREHOUSE SUBS

SHEET TITLE:

PLUMBING WATER FLOOR PLAN AND DIAGRAMS

PROJECT NUMBER: 25-053

DATE:

SHEET NO.

P-1.0

SHEET 3 OF 7

GENERAL NOTES TO PLUMBER:

A. PLUMBING CONTRACTORS TO OBTAIN ALL NECESSARY PERMITS AND INSTALLATION IS TO BE IN COMPLETE ACCORDANCE WITH ALL NATIONAL, STATE, AND LOCAL CODES.

B. PLUMBING CONTRACTORS SHALL FURNISH ALL LABOR AND MATERIALS TO MAKE ALL FINAL CONNECTIONS AND SHALL INCLUDE ALL ITEMS REQUIRED BY APPLICABLE LAW.

C. A CATALOG OF MANUFACTURERS EQUIPMENT SPECIFICATION SHEETS IS INCLUDED AS AN INTEGRAL PORTION OF THIS SUBMITTAL. WE SUGGEST THEREFORE THAT ALL TRADES REVIEW THE REQUIREMENTS AS INDICATED REGARDING EACH MANUFACTURER.

D. PLUMBING CONTRACTORS TO CROSS REFERENCE ROUGH-IN DRAWINGS, STAINLESS STEEL FABRICATION DRAWINGS, WALK-IN DRAWINGS, EXHAUST HOOD DRAWINGS, AND MILLWORK DETAIL DRAWINGS.

E. ALL VENT LOCATIONS AND RUNS TO BE LOCATED BY PLUMBER.

F. ALL FUNNEL FLOOR DRAINS, FLOOR SINKS, AND OR FLOOR DRAINS UTILIZED FOR THE DRAINAGE OF FOOD SERVICE EQUIPMENT SHALL BE SELF-PRIMING.

G. PLUMBING CONTRACTOR TO PROVIDE ALL INDIRECT DRAINS FROM EQUIPMENT TO FLOOR SINK DRAINS.

H. ALL PLUMBING TO BE INSTALLED AS TO PRECLUDE ANY POSSIBILITY OF BACK SIPHON.

I. ALL INDIRECT DRAINS ARE TO BE AIR-GAPPED 2" ABOVE FLOOR DRAINS (OR PER LOCAL CODE). ALL INDIRECT DRAIN LINES ARE TO BE PVC LINES (OR PER LOCAL CODE). THE END OF THE LINES ARE TO BE CUT AT 45°.

J. PLUMBER IS NOT RESPONSIBLE FOR SUPPLYING FAUCETS UNLESS NOTED OTHERWISE.

K. PLUMBER TO PROVIDE MIXING VALVE AT WATER HEATER SO THAT A MINIMUM OF 140° WATER IS DELIVERED .

L. PLUMBING CONTRACTOR TO SUPPLY GREASE TRAP AS REQUIRED BY CODE.

M. CONTRACTOR TO FIELD VERIFY FEASIBILITY OF SLAB PENETRATION AS PER STRUCTURAL REQUIREMENT.

N. REFER RISER DIAGRAMS FOR ALL PIPE SIZES.

O. THE VENT SHALL RISE 6 INCHES VERTICALLY ABOVE THE FLOOD RIM LEVEL OF THE FIXTURE BEING VENTED BEFORE OFFSETTING HORIZONTALLY OR VERTICALLY DOWNWARD BEFORE CONNECTING TO THE OUTSIDE VENT TERMINAL.

SANITARY AND VENT KEY NOTES: (#)

1. EXTEND AND CONNECT NEW 4" SANITARY WASTE PIPING TO EXISTING SANITARY LINE IN SPACE. CONTRACTOR TO FIELD VERIFY EXACT SIZE, LOCATION, ROUTING AND INVERT OF EXISTING PIPE ON SITE.
2. ROUTE INDIRECT DRAIN FROM ICE MACHINE & SODA MACHINE TO FLOOR SINK WITH APPROVED AIR GAP.
3. ROUTE INDIRECT DRAIN FROM STEAMERS TO FLOOR SINK WITH APPROVED AIR GAP.
4. ROUTE INDIRECT CONDENSATE DRAIN FROM WATER HEATER TO MOP SINK WITH APPROVED AIR GAP.
5. ROUTE INDIRECT DRAIN FROM 3-COMPARTMENT SINK TO FLOOR SINK WITH APPROVED AIR GAP.
6. UNDERGROUND SANITARY PIPE SHALL BE NO HUB CAST IRON PIPE FOR THE FIRST 10 FEET FROM CONNECTION TO FLOOR SINK FS-1, OUTWARD.
7. ROUTE INDIRECT DRAIN FROM BAG IN BOX TO FLOOR SINK WITH APPROVED AIR GAP.
8. EXTEND AND CONNECT NEW 3" VENT TO EXISTING VENT PIPING IN SPACE. CONTRACTOR TO FIELD VERIFY EXACT LOCATION, ROUTING AND SIZE, UPGRADE IF REQUIRED.
9. ROUTE INDIRECT DRAIN FROM RPZ TO FLOOR DRAIN WITH APPROVED AIR GAP.
10. TRAP PRIMER (TP-1) TO BE INSTALLED AT FLOOR DRAINS.
11. INDOOR RECESSED GREASE INTERCEPTOR SCHIER GB-75 OR SIMILAR. CONTRACTOR TO INSTALL GI-1 AS PER MANUFACTURER'S INSTRUCTIONS AND LOCAL GUIDELINES. COORDINATE WITH LANDLORD FOR FINAL LOCATION.

GREASE INTERCEPTOR (GI-1) SIZING CALCULATIONS

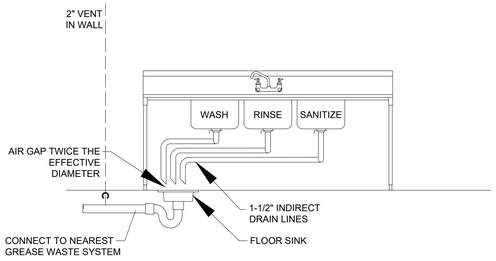
SR. NO.	FIXTURE	QUANTITY	DIMENSIONS (INCHES)			VOLUME		PERCENTAGE USAGE	ACTUAL USAGE	FLOW RATE (GPM)	
			LENGTH (L)	WIDTH (W)	DEPTH (D)	CUBIC INCHES	GALLONS			1 MINUTE	2 MINUTES
1	3 COMPARTMENT SINK	1	18	24	12	15,552	67.32	0.75	50.49	50.49	25.24
2	HAND SINK	2	10	14	5	1,400	6	0.75	4.5	4.5	2.27
3	MOP SINK	1	24	36	10	8,640	37.40	0.75	28.05	28.05	14.02
4	FLOOR SINK	4	--	--	--	--	10	--	10	10	5
5	FLOOR DRAIN	3	--	--	--	--	7.5	--	7.5	7.5	3.75
TOTAL										100.54	50.27
PROPOSED GREASE REMOVAL DEVICE										SCHIER GB-75	
GREASE REMOVAL DEVICE SIZED AS PER 2018 INTERNATIONAL PLUMBING CODE, SECTION 1003.3.5.											

PLUMBING WASTE LEGEND:

⊙	FLOOR CLEANOUT
▨	FLOOR DRAIN
	FLOOR SINK WITH HALF OPEN GRATE UNLESS NOTED OTHERWISE
	FIELD CONNECTIONS

PLUMBING WASTE SCHEDULE

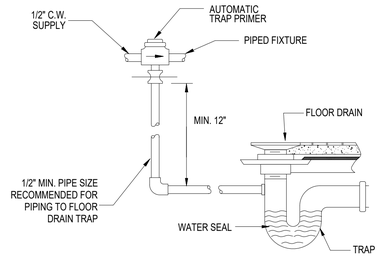
#	DESCRIPTION	WASTE DIRECT	WASTE INDIRECT	REMARKS
206	ICE MACHINE WITH BIN		1/2"	PLUMBER TO RUN TO F.S. W/ FLOOR SINK WITH ATTACHED FUNNEL
212D	3 COMP SINK		1-1/2"	PLUMBER TO MANIFOLD AND RUN TO F.S. W/ 1/2 OPEN GRATE
236	HAND SINK - WALL MOUNTED	1-1/2"		CONNECT @ 10" A.F.F.
257A	FREESTYLE SODA MACHINE		1/2"	PLUMBER TO RUN TO F.S. W/ 1/2 OPEN GRATE
FD	FLOOR DRAIN			
FS	FLOOR SINK			
FS-1	CAST IRON FLOOR SINK			WITH HALF OPEN GRATE



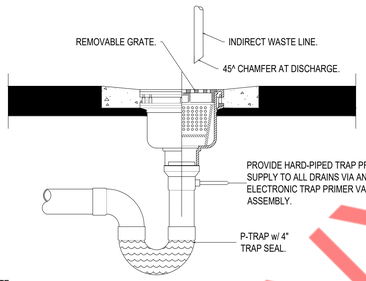
COMMENTS:

1. ARRANGEMENT SHOWN IS SCHEMATIC. ADJUST TO SUIT FIELD CONDITIONS OR MEET LOCAL CODE REQUIREMENTS.
2. COORDINATE INDIVIDUAL BAY DRAINAGE, AIR GAP & DRAIN FUNNEL WITH LOCAL CODE REQUIREMENTS.

2 3-COMPARTMENT DETAIL
N.T.S

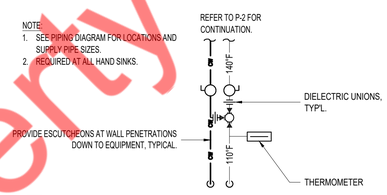


3 TRAP PRIMER DETAIL
N.T.S



NOTE:
1. INSULATION REQUIRED ONLY FOR INDIRECT WASTE LINES RECEIVING CONDENSATE FROM REFRIGERATION EQUIPMENT (A/C UNITS, EVAPORATORS, ICE-MAKER, ETC.) REFER TO PLANS AND COORDINATE FOR OTHER TRADES.
2. SPILL INDIRECT WASTE OVER OPENINGS IN DRAIN GRATES, WHERE SPECIFIED.

4 TYPICAL FLOOR SINK DETAIL
N.T.S

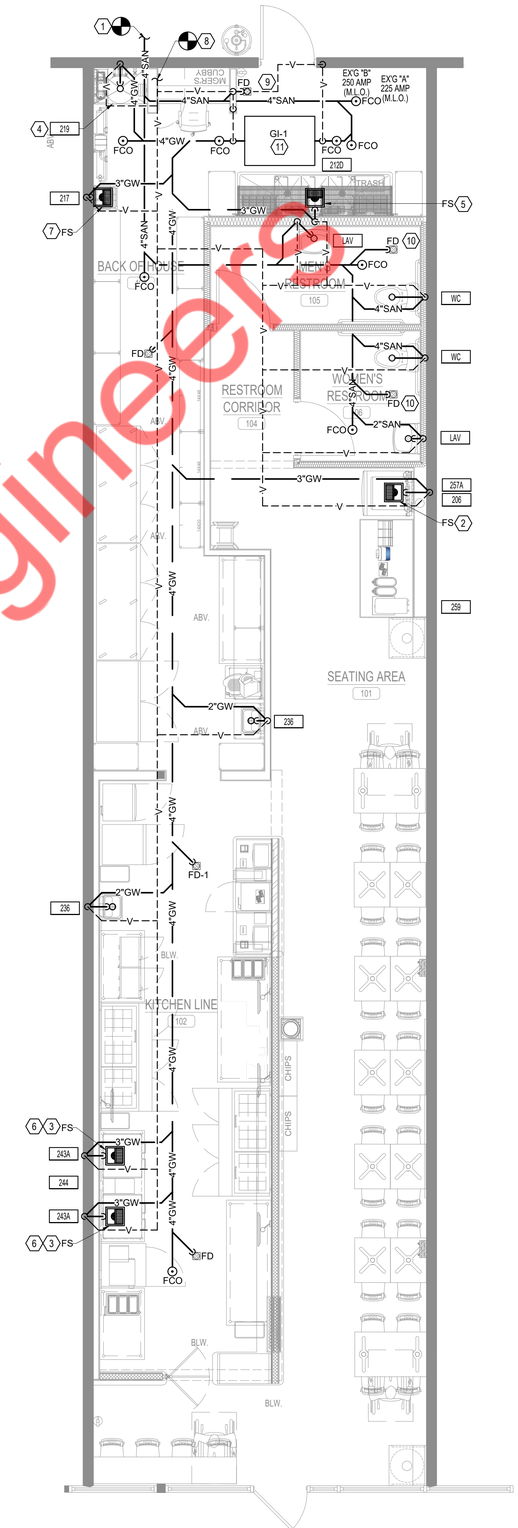


1 WATTS MODEL: #LFUSG-B FOR SINGLE SINK APPLICATIONS.

2 WATTS MODEL: #LFMMV FOR WALL HYDRANTS, 2, 3 OR 4 SINK APPLICATIONS.

SUPPLIED WITH REMOVABLE PISTON AND THERMAL MOTOR, SEPARATE CHECK STOPS, ROUGH BRONZE FINISH. INSTALL IN SUPPLY PIPING ABOVE CEILING. SET TEMPERATURE AT 110°F.

5 MIXING VALVE PIPING DETAIL
N.T.S



1 SANITARY FLOOR PLAN
1/4" = 1'-0"

PLAN NORTH

THE ARCHITECT SHALL NOT BE RESPONSIBLE FOR ACTUAL CONDITIONS, CONSTRUCTION AND/OR USE THEREOF. THIS DRAWING IS TO CONVEY DESIGN INTENTIONS AND/OR CODE COMPLIANCE ONLY. USE OF THESE DRAWINGS IMPLIES AGREEMENT WITH THESE CONDITIONS. **THE CONTRACTOR IS TO VERIFY ALL DIMENSIONS.**

NY ENGINEERS
382 NE 191st Street Suite 49674
MIAMI, FL 33179
(786)-788-0295
ny-engineers.com

DATE: 08-20-2025

REVISIONS:

NO.	DATE	DESCRIPTION	BY
1	08-20-2025	PLAN REVIEW COMMENTS	NYE

PROJECT NAME:

FIREHOUSE SUBS

SHEET TITLE:

PLUMBING SANITARY FLOOR PLAN AND DETAILS

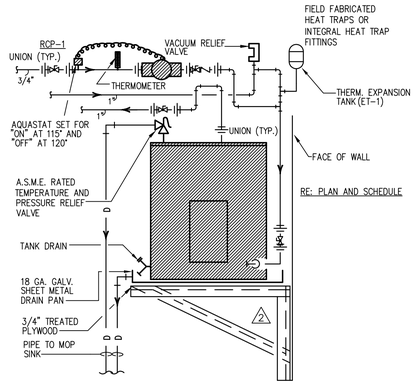
PROJECT NUMBER: 25-053

DATE:

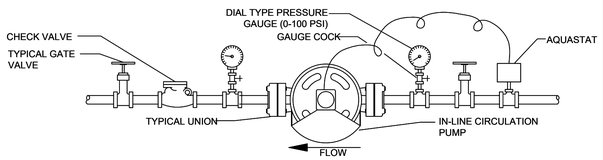
SHEET NO.

P-1.1

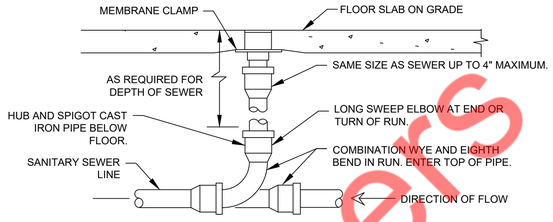
SHEET 4 OF 7



1 WATER HEATER DETAIL
SCALE: N.T.S.

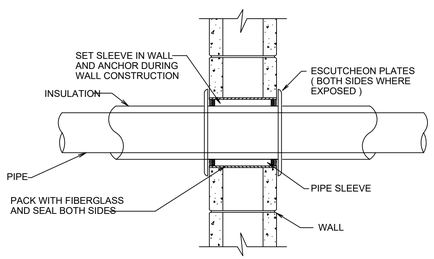


2 INLINE RETICULATING PUMP DETAIL
SCALE: N.T.S.

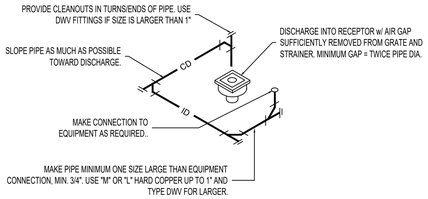


COMMENTS:
1. LOCATE AT BUILDING EXIT, AT ENDS OF RUNS, AT TURNS OF PIPE GREATER THAN 45 DEGREES, AT 50' INTERVALS ON STRAIGHT RUNS, AND/OR WHERE SHOWN ON PLANS. PROVIDE BACKFILL PER ARCHITECTURAL SPECIFICATIONS. LOCATE CLEANOUTS WHERE THERE IS 18" CLEAR AROUND. CONSULT LOCAL CODES FOR OTHER FCO REQUIREMENTS.
2. ROUND SECURED GASKETED NICKEL BRONZE ADJUSTABLE TOP WITH "CO" CAST IN COVER. PROVIDE CLEANOUT TOP WITH VARIATIONS SUITABLE FOR FLOOR COVERING (CARPET MARKER, RECESSED FOR TILE, SCORIATED FOR UNFINISHED FLOORS). PROVIDE GASKETED PLASTIC PLUG IN CAST IRON BODY. USE TEFLON JOINT COMPOUND ON PLUG THREADS. CLEAN THE TOP OF EXPOSED FCO AFTER INSTALLATION.

3 FLOOR CLEANOUT DETAIL
SCALE: N.T.S.

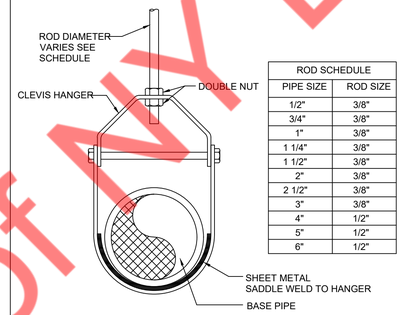


4 PIPE SLEEVE THRU WALL SECTION
SCALE: N.T.S.

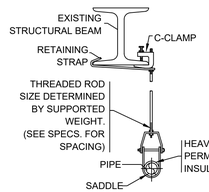


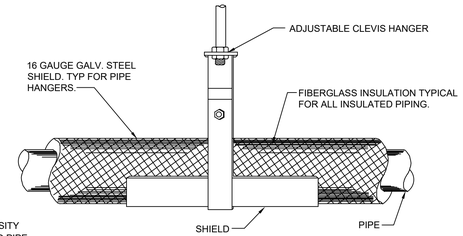
ROUTE PIPE INCONSPICUOUSLY AND UNOBTRUSIVELY. HANG PIPE AS REQUIRED. DO NOT INSULATE INDIRECT DRAIN PIPE WHEN INSTALLED EXPOSED IN FOOD SERVICE FACILITY. REFER TO LOCAL CODES FOR FURTHER INFORMATION.

5 INDIRECT WASTE DETAIL
SCALE: N.T.S.



ROD SCHEDULE	
PIPE SIZE	ROD SIZE
1/2"	3/8"
3/4"	3/8"
1"	3/8"
1 1/4"	3/8"
1 1/2"	3/8"
2"	3/8"
2 1/2"	3/8"
3"	3/8"
4"	1/2"
5"	1/2"
6"	1/2"

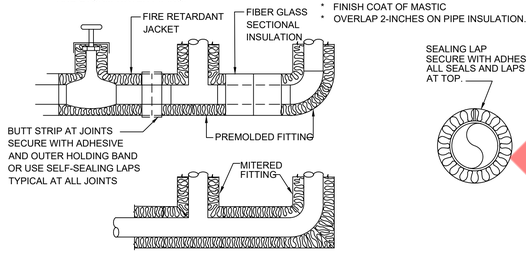




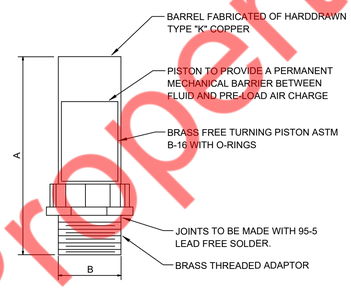
6 HANGER DETAIL
SCALE: N.T.S.

CONCEALED VALVES AND FITTINGS
* WRAP WITH 1-INCH THICK, 1-POUND DENSITY TO REQUIRED PIPE INSULATION THICKNESS
* SECURE WITH WIRE OR TAPE.
* VAPOR SEAL COLD WATER, CHILLED WATER AND STORM WATER PIPING.

CONCEALED VALVES AND FITTINGS
* PREMOLDED FIBER GLASS OR RADIAL MITERED PIPE INSULATION
* SKIM COAT OF INSULATION CEMENT
* COAT OF MASTIC
* WRAP WITH FIBER GLASS REINFORCING CLOTH.
* FINISH COAT OF MASTIC
* OVERLAP 2-INCHES ON PIPE INSULATION.



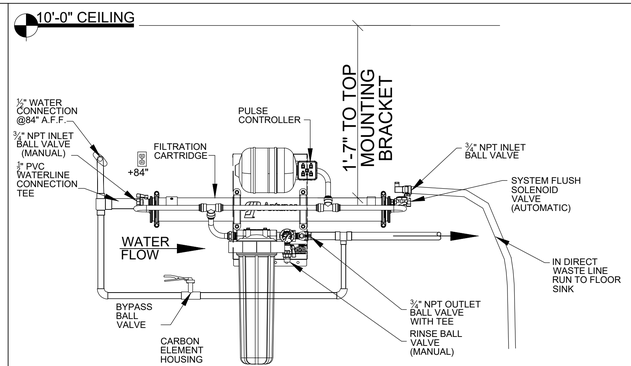
7 INSULATION FOR EXPOSED AND CONCEALED LOCATIONS
SCALE: N.T.S.



PIPE SIZE	P.D.I. SYMBOL	FIXTURE UNIT RATINGS	A SIZE	B SIZE
1/2"	A	1 - 11	5"	1/2"
3/4"	B	12 - 32	5"	3/4"
1"	C	33 - 60	7"	1"
1-1/4"	D	61 - 113	7"	1-1/4"
1-1/2"	E	114 - 154	9"	1-1/2"
2"	F	155 - 330	9"	2"

NOTE: LOCATE ONE FOR EACH BANK OF FLUSHOMETER
FIXTURES AT LAST FIXTURE PROVIDE A STAINLESS STEEL
ACCESS DOOR FOR EACH SUFFICIENT IN SIZE TO ALLOW
REPLACEMENT OF ARRESTOR AT A FUTURE DATE.

8 WATER HAMMER ARRESTOR DETAIL
SCALE: N.T.S.



NOTES:
1. THOROUGHLY READ ALL MANUFACTURERS INSTALLATION INSTRUCTIONS BEFORE STARTING INSTALLATION
2. BEFORE CONNECTING THE FITTING TO THE SYSTEM INLET, PLUMBING SYSTEM MUST BE FLUSHED FREE OF DEBRIS.
3. RUN TUBING DRAIN VALVE TO FLOOR SINK.
4. F&J REDUCERS TO FIT INLET AND OUTLET PIPE SIZES LISTED IN PLANS.
5. H-BALL BYPASS MUST BE INSTALLED FIELD SUPPORT INLET BALL VALVE AND OUTLET BALL VALVE.
6. 110" OF SPACE MUST BE ACCOMMODATED BETWEEN H-BALL BYPASS AND FLOOR.
7. H-BALL INLET AND OUTLET DISTANCE IS 36"

9 VZN FILTER DETAILS
SCALE: N.T.S.

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DATE: 08-20-2025

REVISIONS:

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2	09-25-2025	PLAN REVIEW COMMENTS	NYE

PROJECT NAME:

FIREHOUSE SUBS

SHEET TITLE:

PLUMBING DETAILS

PROJECT NUMBER: 25-053

DATE:

SHEET NO.

P-2.0

SHEET 5 OF 7

PLUMBING FIXTURE SCHEDULE

MARK	ITEM	HW	CW	FW	WASTE	DESCRIPTION
WC	WATER CLOSET	--	3/4"	--	4"	PROFLO TWO-PIECE ELONGATED TOILET, 1.1 GPF. BOWL PF1603PAWH, TANK PF1610PAWHA.
LAV	LAVATORY	1/2"	1/2"	--	2"	WALL HUNG PROFLO PF5514/PF5518. FAUCET : PROFLO PFWSC1347LCP.
FD	FLOOR DRAIN	--	--	--	LINE SIZE	ZURN #ZS-415 TYPE "S"
FS	FLOOR SINK	--	--	--	3"	ZURN #Z1750
FS-1	FLOOR SINK	--	--	--	3"	ZURN #Z1900, NO HUB CAST IRON PIPE FOR FIRST 10 FEET
TP-1	TRAP PRIMER	--	1/2"	--	--	PRIME PERFECT SERIES 695
FCO	CLEANOUT	--	--	--	LINE SIZE	JAY R. SMITH, 4020 SERIES W/ROUND, POLISHED BRONZE TOP.
205	WATER FILTRATION SYSTEM	--	3/4"	--	--	ANTUNES VZN-541HC
206	ICE MACHINE	--	--	1/2"	3/4"	HOSHIZAKI 440-KM520MAJ
212D	3-COMP SINK	3/4"	3/4"	--	3/4"	SKIBBEE SKIBSKISSC1T18241424RL
217	FREESTYLE SYRUP RACK & PUMP	--	1/2"	--	--	COCA-COLA 45897
219	MOP SINK	3/4"	3/4"	--	3"	MUSTEE 24"X36" BASIN OR EQUAL
220A	HOSE BIBB	--	3/4"	--	--	T&S BRASS B-0702
222	BOOSTER PUMP	--	3/4"	--	--	LITTLE GIANT 25LGIL1100N41
222A	WATER HEATER	1"	1"	--	--	AO SMITH DEN-40
236	HAND SINK	1/2"	1/2"	--	2"	SKIBBEE SKIHS17SS
243A	COUNTERTOP DRAWER STEAMER	--	--	1/2"	3/4"	ANTUNES IS-1000
244	WATER SOFTENER	--	--	1/2"	--	ANTUNES WSS-0618-ENC
257A	SODA MACHINE	--	--	1/2"	3/4"	COCA-COLA SELF SERVE 9100
259	TEA BREWER	--	--	1/2"	3/4"	BUNN 52000.0300

RECIRCULATION PUMP SCHEDULE

TAG	DESCRIPTION	TYPE	CAPACITY		ELECTRICAL DATA				SELECTION BASED ON		REMARKS/OPTIONS
			GPM	HEAD (ft.)	HP	V	PH	HZ	MANUFACTURER	MODEL NUMBER	
RCP-1	HOT WATER RECIRC. PUMP	IN-LINE	2.5	7	1/12	120	1	60	BELL & GOSSETT	PL-30-B	NOTE 1,2

OPTIONS (ALL RCP UNITS)
- AQUA-STAT & NIGHT TIMER
- FLANGED PUMP
- BALANCING VALVE & CHECK VALVE
- MAINTENANCE BALL VALVES ON BOTH SIDES OF PUMP

OPTIONS (ALL SUMP UNITS)
- 30"X30"X30" BASIN BY G.C.
- DISCHARGE CHECK VALVE
- DISCHARGE BALL VALVE
- ---

ADDITIONAL OPTIONS (UNITS AS NOTED)
A: OIL-MINDER ALARM/CONTROL SYSTEM

NOTES:
1. SET AQUA-STAT WITH SET POINT 10 DEGREES BELOW SYSTEM SUPPLY TEMP.
2. INSTALL RECIRCULATION PUMP PER MANUFACTURERS REQUIREMENTS.

EXPANSION TANK SCHEDULE

TAG	DESCRIPTION	VOLUME (GALLONS)	DIAMETER (INCHES)	HEIGHT (INCHES)	SELECTION BASED ON		REMARKS
					MANUFACTURER	MODEL NUMBER	
ET-1	BLADDER TYPE	2.0	8"	12 1/2"	AMTROL	ST-5C-DD	NOTE 1

NOTES:
1. INSTALL EXPANSION TANK ON IN-COMING COLD WATER PER MANUFACTURERS REQUIREMENTS.

THERMOSTATIC MIXING VALVE SCHEDULE

TAG	DESCRIPTION	MAXIMUM GPM	MINIMUM GPM	PRESSURE LOSS	SELECTION BASED ON		REMARKS/OPTIONS
					MANUFACTURER	MODEL NUMBER	
TMV	THERMOSTATIC MIXING VALVE	3.5	0.25	5	LEONARD	270-LF	NOTE 1, A

OPTIONS (ALL UNITS)
- LEAD FREE NSF APPROVED
- PROVIDE T'STAT ON TEMPERED LINE

ADDITIONAL OPTIONS (UNITS AS NOTED)
A: ASSE 1070 APPROVED, SET @110°F. 3/4" INLET/3/4" OUTLET, MOUNT BELOW FIXTURE.

NOTES:
1. INSTALL MIXING VALVE PER MANUFACTURERS REQUIREMENTS. PROVIDE ALL PIPING AND VALVES PER O&M MANUAL.

GREASE INTERCEPTOR SCHEDULE

TAG	DESCRIPTION	INLET/ OUTLET SIZE (INCHES)	FLOW RATE (GPM)	CAPACITY				SELECTION BASED ON		REMARKS/OPTIONS
				WATER (GAL)	GREASE (LBS)	SOLIDS (GAL)	OIL (GAL)	MANUFACTURER	MODEL NUMBER	
GI-1	GREASE INTERCEPTOR	4	75	125	861	31	--	SCHIER	GB-75	NOTE 1, B

OPTIONS (ALL UNITS)
- DISCHARGE BACKWATER VALVE IN SEPARATE VALVE BOX
- --

ADDITIONAL OPTIONS (UNITS AS NOTED)
A: NEMA 4X ALARM PANEL, SEE NOTE #2, SINGLE POINT ELECTRICAL CONNECTION
B: PROVIDE H-20 TRAFFIC RATED RELIEVING SLAB PER MANUFACTURERS REQUIREMENTS.
C: PROVIDE EXTERNAL, VENTED FLOW CONTROL @ SCHEDULED FLOW RATE.

NOTES:
1. INSTALL INTERCEPTOR PER MANUFACTURERS REQUIREMENTS. COORDINATE ALL CONNECTION POINTS IN THE FIELD.
2. PROVIDE AUDIBLE AND VISUAL ALARM SYSTEM THAT INDICATES HIGH WATER LEVEL (VISUAL ONLY) AND HIGH-HIGH WATER LEVEL (AUDIBLE AND VISUAL) OF WATER LEVEL IN BASIN. A SILENCE CONTROL SHALL BE PROVIDED FOR THE AUDIBLE ALARMS. LEVEL SENSOR(S) TO BE INTRINSICALLY SAFE. LEVEL SENSOR FLOATS TO BE MADE OF STAINLESS STEEL. POWER TO THE CONTROL PANEL IS TO BE [208] VOLT, [1] PHASE BY E.C. CONTROL/POWER WIRING FROM PANEL TO PUMP PROVIDED BY P.C. AND INSTALLED BY E.C.
3. PROVIDE FP24 RISER FOR INDOOR/OUTDOOR BURIED AND THROUGH FLOOR APPLICATION AS REQUIRED OR WHERE THE TOP OF THE INTERCEPTOR IS AT AN ELEVATION LOWER THAN GRADE.
4. PROVIDE P24-GI PLASTIC COVER AS PART OF THE FINAL INSTALLATION TO AID IN EASIER REMOVAL IN ABOVE-GRADE OR NON-TRAFFIC APPLICATION

BACKFLOW PREVENTOR SCHEDULE

LOCATION	TAG	MODEL	ASSE
MAIN WATER SUPPLY	RPZ	WATTS LF009M2-QT	1013
ICE MACHINE, BEVERAGE DISPENSER & TEA BREWER	BFP-1	WATTS SD-3	1022

NOTE:
VERIFY BACKFLOW VALVE REQUIREMENTS AND APPROVAL FOR ALL EQUIPMENT
WITH AUTHORITIES HAVING JURISDICTION PRIOR TO INSTALLATION.

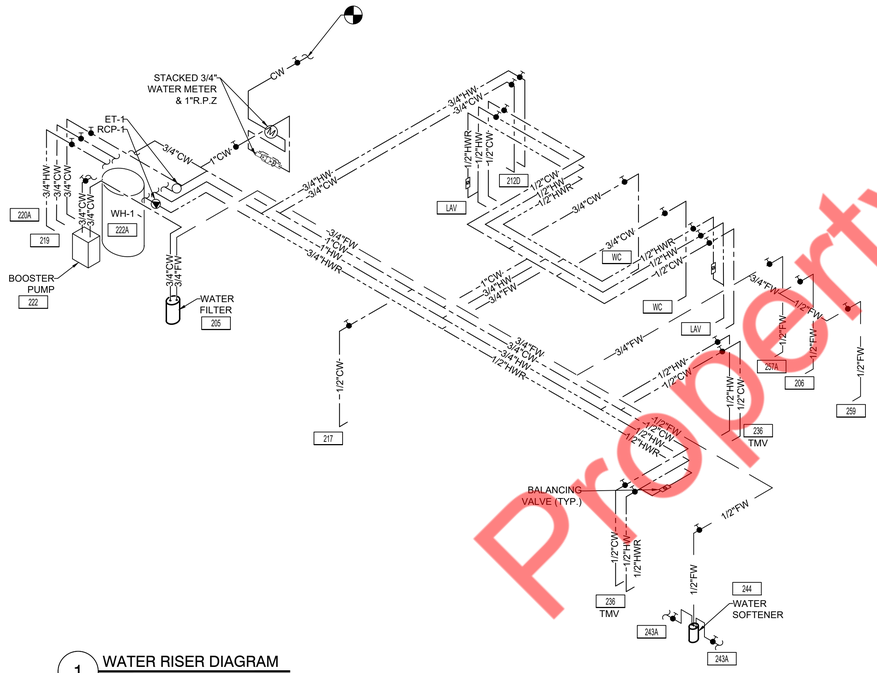
PLUMBING PIPE MATERIAL SCHEDULE

PIPING SYSTEM	ABBREVIATION	PIPING MATERIAL
SANITARY DRAINAGE & VENT (ABOVE GRADE)	SAN OR V	SCH.40 PVC*/ CAST IRON / COPPER
SANITARY DRAINAGE & VENT (BELOW GRADE)	SAN OR V	SCH.40 PVC*/ CAST IRON / COPPER
POTABLE WATER (ABOVE GRADE)	CW, HW OR HWR	TYPE L HARD-DRAWN COPPER PIPE AND FITTINGS (CPVC PIPING AND FITTINGS OR PEX PIPING AND FITTINGS ALLOWED IF AHJ AND LANDLORD PERMITS).
POTABLE WATER - 2" & SMALLER (BELOW GRADE)	CW, HW OR HWR	TYPE K SOFT ANNEALED COPPER

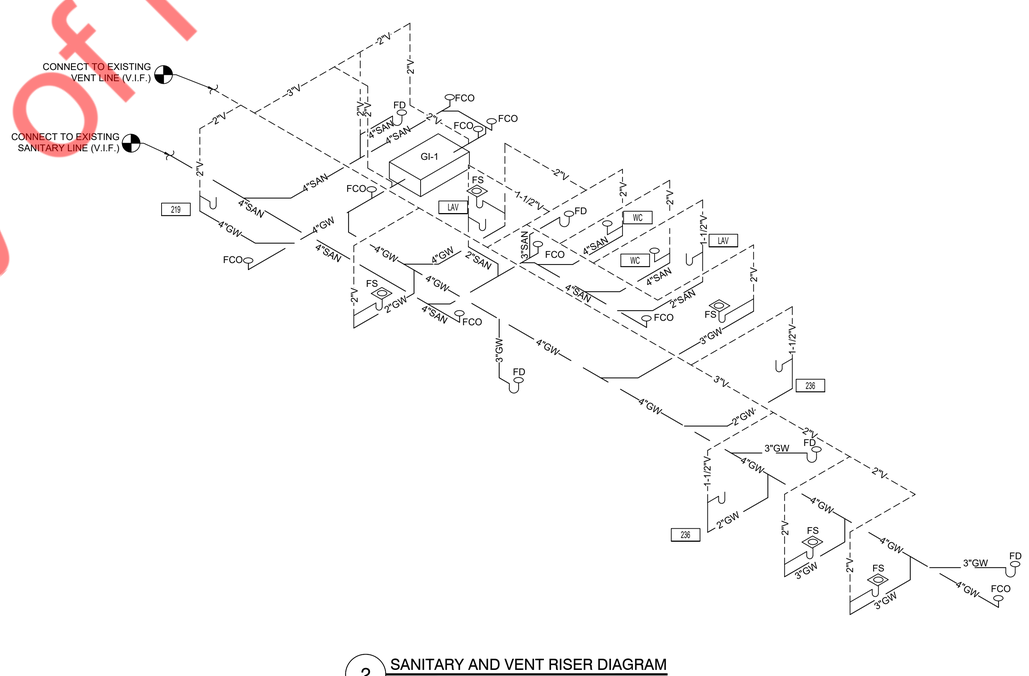
*ALL PLUMBING SYSTEMS (SANITARY, WASTE, VENT,GAS, WATER DISTRIBUTION PIPING SYSTEMS) AND ASSOCIATED EQUIPMENT SHALL BE INSTALLED, OPERATED AND MAINTAINED IN ACCORDANCE WITH THE REQUIREMENTS OF 2018 INTERNATIONAL PLUMBING CODE. PVC ONLY WHERE ALLOWABLE PER LOCAL AHJ. PVC SHALL NOT BE USED WHERE EXPOSED IN RETURN AIR PLENUM, OR WHERE WATER TEMPS EXCEED 140°F

ELECTRIC STORAGE WATER HEATER SCHEDULE

TAG No.	NO. OF ELEMENTS	STORAGE GALLONS	RECOVERY CAP. (GPM @ RISE)	ELECTRICAL				MANUFACTURER & MODEL NO.	REMARKS
				VOLTS	PHASE	HERTZ	INPUT KW		
WH-1	2	40	41 GPH @ 80°F	208	3	60	8	A.O. SMITH DEN-40	-DIMENSIONS 20.5"DX45.125"H -HEATERS SHALL HAVE 150PSI WORKING PRESSURE



1 WATER RISER DIAGRAM
N.T.S.



2 SANITARY AND VENT RISER DIAGRAM
N.T.S.

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PROJECT NAME:

FIREHOUSE SUBS

SHEET TITLE:

PLUMBING SCHEDULE AND RISER DIAGRAMS

PROJECT NUMBER: 25-053

DATE:

SHEET NO.

P-3.0

SHEET 6 OF 7

COMcheck Software Version COMcheckWeb
Mechanical Compliance Certificate

Project Information

Energy Code: 2018 IECC
Project Title: FHS COOLIDGE
Location:
Climate Zone: 2b
Project Type: Alteration

Construction Site:

Owner/Agent:

Designer/Contractor:
MICHAEL TOBIAS
NY ENGINEERS
382 NE 191ST STREET SUITE 49674
MIAMI, Florida 33179

Mechanical Systems List

Quantity **System Type & Description**

1 WH-1:
Electric Storage Water Heater, Capacity: 40 gallons w/ Circulation Pump
No minimum efficiency requirement applies

Mechanical Compliance Statement

Compliance Statement: The proposed mechanical alteration project represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed mechanical systems have been designed to meet the 2018 IECC requirements in COM*check* Version COMcheckWeb and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

MICHAEL TOBIAS — Name - Title
Signature
07/31/25 — Date

COMcheck Software Version COMcheckWeb
Inspection Checklist

Energy Code: 2018 IECC

Requirements: 100.0% were addressed directly in the COM*check* software

Text in the "Comments/Assumptions" column is provided by the user in the COMcheck Requirements screen. For each requirement, the user certifies that a code requirement will be met and how that is documented, or that an exception is being claimed. Where compliance is itemized in a separate table, a reference to that table is provided.

Section # & Req.ID	Plan Review	Complies?	Comments/Assumptions
C103.2 [PR3][1]	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the service water heating systems and equipment and document where exceptions to the standard are claimed. Hot water system sized per manufacturer's sizing guide.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.

Additional Comments/Assumptions:

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

Section # & Req.ID	Plumbing Rough-In Inspection	Complies?	Comments/Assumptions
C404.5, C404.5.1, C404.5.2 [PL6][3]	Heated water supply piping conforms to pipe length and volume requirements. Refer to section details.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C404.6.1, C404.6.2 [PL3][1]	Automatic time switches installed to automatically switch off the recirculating hot-water system or heat trace.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C404.6.3 [PL7][3]	Pumps that circulate water between a heater and storage tank have controls that limit operation from startup to <= 5 minutes after end of heating cycle.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C404.7 [PL8][3]	Demand recirculation water systems have controls that start the pump upon receiving a signal from the action of a user of a fixture or appliance and limits the temperature of the water entering the cold-water piping to 104°F.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.

Additional Comments/Assumptions:

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

Section # & Req.ID	Mechanical Rough-In Inspection	Complies?	Comments/Assumptions
C402.2.6 [ME41][3]	Thermally ineffective panel surfaces of sensible heating panels have insulation >= R-3.5.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C403.7.2 [ME115][3]	Enclosed parking garage ventilation has automatic contaminant detection and capacity to stage or modulate fans to 50% or less of design capacity.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C403.7.5 [ME116][3]	Kitchen exhaust systems comply with replacement air and conditioned supply air limitations, and satisfy hood rating requirements and maximum exhaust rate criteria.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C403.4.1.4 [ME63][2]	Heating for vestibules and air curtains with integral heating include automatic controls that shut off the heating system when outdoor air temperatures > 45F. Vestibule heating and cooling systems controlled by a thermostat in the vestibule with heating setpoint <= 60F and cooling setpoint >= 80F.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C408.2.2.1 [ME53][3]	Air outlets and zone terminal devices have means for air balancing.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C403.5, C403.5.1, C403.5.2 [ME123][3]	Refrigerated display cases, walk-in coolers or walk-in freezers served by remote compressors and remote condensers not located in a condensing unit, have fan-powered condensers that comply with Sections C403.5.1 and refrigeration compressor systems that comply with C403.5.2..	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.

Additional Comments/Assumptions:

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

Section # & Req.ID	Rough-In Electrical Inspection	Complies?	Comments/Assumptions
C405.6 [EL26][2]	Low-voltage dry-type distribution electric transformers meet the minimum efficiency requirements of Table C405.6.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C405.7 [EL27][2]	Electric motors meet the minimum efficiency requirements of Tables C405.7(1) through C405.7(4). Efficiency verified through certification under an approved certification program or the equipment efficiency ratings shall be provided by motor manufacturer (where certification programs do not exist).	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C405.8.2, C405.8.2.1 [EL28][2]	Escalators and moving walks comply with ASME A17.1/CSA B44 and have automatic controls configured to reduce speed to the minimum permitted speed in accordance with ASME A17.1/CSA B44 or applicable local code when not conveying passengers.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C405.9 [EL29][2]	Total voltage drop across the combination of feeders and branch circuits <= 5%.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.

Additional Comments/Assumptions:

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

Section # & Req.ID	Final Inspection	Complies?	Comments/Assumptions
C404.3 [FI11][3]	Heat traps installed on supply and discharge piping of non-circulating systems.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C404.4 [FI25][2]	All piping insulated in accordance with section details and Table C403.11.3.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C404.6.1 [FI12][3]	Controls are installed that limit the operation of a recirculation pump installed to maintain temperature of a storage tank. System return pipe is a dedicated return pipe or a cold water supply pipe.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C408.1.1 [FI57][1]	Building operations and maintenance documents will be provided to the owner. Documents will cover manufacturers' information, specifications, programming procedures and means of illustrating to owner how building, equipment and systems are intended to be installed, maintained, and operated.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.

Additional Comments/Assumptions:

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

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DATE: 08–20–2025

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PROJECT NAME:

FIREHOUSE SUBS

SHEET TITLE:

COMCHECK

PROJECT NUMBER: 25–053

DATE:

SHEET NO.

P-4.0

SHEET 7 OF 7

SWITCHES AND CONTROLS

S_a	20A SPST SWITCH U.O.N. "a" DENOTES SWITCH'S TAG
S^D_a	DIMMER SWITCH U.O.N. "a" DENOTES SWITCH'S TAG
S^3_a	THREE WAY SWITCH
S_{OS}	WALL OCCUPANCY SENSOR SWITCH
S^D_a	DIMMER SWITCH
S_{OV}	OVERRIDE SWITCH
(S)D	DUCT SMOKE DETECTOR
TC	TIME CLOCK

WIRING SYSTEMS

----------	EXISTING
————	NEW

ANNOTATION

+24"	INDICATES MOUNTING HEIGHT CENTER LINE TO FINISHED FLOOR.
#	KEYED NOTE REFERENCE
1 / E-1.0	DETAIL REFERENCE: DETAIL NUMBER INDICATED ON TOP; DRAWING NUMBER INDICATED ON BOTTOM

POWER DISTRIBUTION

■	DISTRIBUTION PANELBOARD, SURFACE OR FLUSH MOUNTED.

ELECTRICAL DRAWING LIST

POWER AND TELECOMMUNICATION

J	JUNCTION BOX, MOUNTING AS NEEDED.
	DUPLEX RECEPTACLE, +18" AFF OR AS NOTED.
	SPECIAL RECEPTACLE
	QUAD RECEPTACLE
GFI	GFI DUPLEX RECEPTACLE, +18" AFF OR AS NOTED.
	DATA OUTLET

MOTORS AND CONTROLS

M	MOTOR AS NOTED WITH LIQUID TIGHT FLEXIBLE CONNECTION WITH JUNCTION BOX AND MOTOR SWITCH.
A	30A NON FUSED DISCONNECT SWITCH, POLES AS NOTED.
B	60A NON FUSED DISCONNECT SWITCH, POLES AS NOTED.
C	100A NON FUSED DISCONNECT SWITCH, POLES AS NOTED.
D	200A NON FUSED DISCONNECT SWITCH, POLES AS NOTED.
$_M$	MANUAL MOTOR SWITCH

ELECTRICAL ABBREVIATIONS

A	AMPERES	EA	EACH
A/C, AC	AIR CONDITIONING UNIT	EC	EMPTY CONDUIT/ ELECTRICAL CONTRACTOR
AF	AMPERE FRAME/AMP FUSE	EF	EXHAUST FAN
AFF	ABOVE FINISHED FLOOR	EM	EMERGENCY
AS	AMP SWITCH	EMT	ELECTRICAL METALLIC TUBING
AIC	AMPS INTERRUPTING CAPACITY	EQUIP	EQUIPMENT
AUTO	AUTOMATIC	ER	EXISTING TO BE RELOCATED
AWG	AMERICAN WIRE GAUGE	ETR	EXISTING TO REMAIN
C	CONDUIT	EWF	ELECTRIFIED WORKSTATION FURNITURE
C/B,CB	CIRCUIT BREAKER	EWH	ELECTRIC WATER HEATER
CKT	CIRCUIT	FA	FIRE ALARM
CLG	CEILING	FBO	FURNISHED BY OTHERS, INSTALLED & WIRED BY EC
COMM	COMMUNICATION	FDR	FEEDER
CT	CURRENT TRANSFORMER	FIBO	FURNISHED & INSTALLED BY OTHERS, WIRED BY EC
CU	COPPER	FIXT	FIXTURE
°C	DEGREE CELSIUS	FL	FLOOR
°F	DEGREE FAHRENHEIT	FLUOR	FLUORESCENT
DIA	DIAMETER	G	GROUND
DISC	DISCONNECT	GFI	GROUND FAULT INTERRUPTER
DN	DOWN	GP	GENERAL PURPOSE
DWG	DRAWING	HC	HUNG CEILING
JB	JUNCTION BOX	HP	HORSEPOWER
KCMIL	ONE THOUSAND CIRCULAR MILS	HWH	HOW WATER HEATER
KV	KILOVOLT	HZ	HERTZ
KVA	KILOVOLT-AMPERES	IC	INTERRUPTING CAPACITY
KW	KILOWATTS	PP	POWER PANEL
LP	LIGHTING PANEL	PVC	POLYVINYL CHLORIDE
LTG	LIGHTING	PWR	POWER
MAX	MAXIMUM	R	REMOVE
MC	MOTOR CONTROLLER	RE	RELOCATED EXISTING
MCB	MAIN CIRCUIT BREAKER	REC	RECEPTACLE
MER	MECHANICAL EQUIPMENT ROOM	RR	REMOVE & RELOCATE
MIN	MINIMUM	SECT	SECTION
MLO	MAIN LUGS ONLY	SPDT	SINGLE POLE DOUBLE THROW
MTD	MOUNTED	SPST	SINGLE POLE SINGLE THROW
N	NEUTRAL	SPEC	SPECIFICATION
NE	NEW DEVICE TO REPLACE EXISTING	SW	SWITCH
NIC	NOT IN CONTRACT	SWBD	SWITCHBOARD
NL	NIGHT LIGHT	SYM	SYMMETRICAL
NTS	NOT TO SCALE	SYS	SYSTEMS
OC	ON CENTER	TELE	TELEPHONE
P	POLES	TEMP	TEMPERATURE
PB	PULLBOX	TXF	TOILET EXHAUST FAN
PC	PERSONAL COMPUTER	TYP	TYPICAL
Ø	PHASE	UON	UNLESS OTHERWISE NOTED
PNL	PANEL	V	VOLT/VOLTAGE
W	WATT	VA	VOLT AMPERE
W	WIRE	VFD	VARIABLE FREQUENCY DRIVE
WH	WALL HEATER	WP	WEATHER PROOF
E	EXISTING	XFMR	TRANSFORMER
TC	TIME CLOCK	IG	ISOLATED GROUND
PC	PHOTOCELL	TR	TAMPER RESISTANCE

GENERAL NOTES

(APPLY TO ALL "E" DRAWINGS)

1. ALL WORK SHALL BE PERFORMED IN STRICT ACCORDANCE WITH THE CURRENT VERSION OF 2017 NATIONAL ELECTRICAL CODE, LOCAL JURISDICTION REQUIREMENTS, AND ALL GOVERNING LOCAL CODES, LAWS, AND REGULATIONS.
2. CONTRACTOR SHALL VISIT THE SITE AND BECOME FAMILIAR WITH ALL EXISTING CONDITIONS THAT MAY AFFECT THE WORK. NO ADDITIONAL COMPENSATION WILL BE CONSIDERED FOR FAILURE TO DO SO.
3. CONTRACTOR SHALL OBTAIN AND PAY FOR ALL PERMITS, TEST REPORTS, AND CERTIFICATIONS FOR TEMPORARY AND FINAL CERTIFICATE OF OCCUPANCY.
4. FIRE STOP ALL PENETRATIONS OF FIRE RATED CONSTRUCTION IN A CODE APPROVED MANNER IN ORDER TO MAINTAIN FIRE RATING. ALL PENETRATIONS SHALL BE SLEEVED AND SEALED WATERTIGHT.
5. SECURE ALL SUPPORTS TO BUILDING STRUCTURE UTILIZING TOGGLE BOLTS (HOLLOW MASONRY), EXPANSION SHIELDS OR INSERTS (CONCRETE AND BRICK), MACHINE SCREWS (METAL), BEAM CLAMPS (FRAMEWORK), WOOD SCREWS (WOOD) OR PAN THRU STRAPS (METAL DECK). NAILS, RAWL PLUGS AND WOOD PLUGS ARE NOT PERMITTED. WHERE REQUIRED BY STRUCTURE, PROVIDE THRU BOLTS AND FISH PLATES. SUPPORT HORIZONTAL RUNS OF METALLIC RACEWAYS NOT MORE THAN 10 FT APART. SUPPORT RACEWAY RISERS AT EACH FLOOR LEVEL. RUN EXPOSED RACEWAYS PARALLEL WITH OR AT RIGHT ANGLES TO WALLS.
6. LEAVE WIRES WITH SUFFICIENT SLACK TO PERMIT MAKING FINAL CONNECTIONS. RACEWAYS OVER 10 FT LONG IN WHICH WIRING IS NOT INSTALLED: FURNISH FISH WIRE.
7. VERIFY LOCATIONS OF OUTLETS AND SWITCHES IN FINISHED ROOMS WITH ARCHITECTURAL DRAWINGS OF INTERIOR DETAILS AND FINISH. IN CENTERING OUTLETS AND LOCATING BOXES AND OUTLETS, ALLOW FOR OVERHEAD PIPES, DUCTS AND MECHANICAL EQUIPMENT, EQUIPMENT, VARIATIONS IN FIREPROOFING AND PLASTERING, WINDOW AND DOOR TRIM, PANELING, HUNG CEILINGS AND THE LIKE. CORRECT ANY INACCURACY RESULTING FROM FAILURE TO DO SO WITHOUT EXPENSE TO OWNER.
8. CONTRACTOR SHALL PROVIDE A WARRANTY ON ALL MATERIALS, EQUIPMENT, AND WORKMANSHIP FOR A PERIOD OF ONE YEAR FROM THE DATE OF FINAL ACCEPTANCE.
9. ALL UNUSED MATERIALS AND DEBRIS SHALL BE LEGALLY REMOVED AND DISPOSED OF AWAY FROM THE PREMISES ON A DAILY BASIS.
10. CONTRACTOR SHALL PATCH, PAINT, AND RESTORE EXISTING SURFACES DAMAGED DURING THE COURSE OF THIS CONSTRUCTION TO PRE-EXISTING CONDITIONS OR BETTER.
11. MINIMUM SIZE OF CONDUIT SHALL BE ¾", AND TYPE SHALL BE ELECTRICAL METALLIC TUBING (EMT), UNLESS OTHERWISE NOTED. PROVIDE NYLON DRAG LINE AND CONDUIT CAP FOR ALL EMPTY CONDUITS.
12. CONNECT CONDUIT TO MOTOR CONDUIT TERMINAL BOXES WITH FLEXIBLE CONDUIT (MINIMUM 18 IN. LENGTH AND 50% SLACK). DO NOT TERMINATE IN OR FASTEN RACEWAYS TO MOTOR FOUNDATION.
13. PULL AND JUNCTION BOXES WHERE INDICATED ON THE DRAWINGS, SHALL BE CONSIDERED SHOWN AT THEIR APPROXIMATE LOCATION. THE CONTRACTOR SHALL LOCATE THEM AS FIELD CONDITIONS DICTATE. ADDITIONAL PULL AND JUNCTION BOXES NOT SHOWN ON DRAWINGS SHALL BE PROVDED WHERE REQUIRED BY APPLICABLE CODE PROVISIONS OR WHERE CALLED FOR BY FIELD CONDITIONS. PULL AND JUNCTION BOXES SHALL BE SURFACE TYPE IN UNFINISHED AREAS AND INSTALLED CANCEALED IN FINISHED AREAS, AND ALL COVERS TO PULL & JUNCTION BOXES SHALL BE READILY ACCESSIBLE.
14. SUPPORT PANEL, JUNCTION AND PULLBOXES INDEPENDENTLY TO BUILDING STRUCTURE WITH NO WEIGHT BEARING ON RACEWAYS.
15. FOR EXACT LOCATION AND MOUNTING HEIGHT OF LIGHTING FIXTURES AND SWITCH/RECEPTACLE OUTLETS, REFER TO ARCHITECTURAL REFLECTED CEILING AND POWER PLANS.
16. ALL ELECTRICAL ACCESSORIES AND EQUIPMENT INSTALLED OUTSIDE OR EXPOSED TO WEATHER SHALL HAVE NEMA 3R ENCLOSURES AND SHALL BE TIGHTLY GASKETED FOR A COMPLETE RAINTIGHT INSTALLATION. ALL BUILDING EXTERIOR MOUNTED RECEPTACLES SHALL BE GFCI RATED AND MOUNTED IN WEATHERPROOF ENCLOSURE.
17. ALL ACCESS PANEL LOCATIONS SHALL BE REVIEWED BY ARCHITECT PRIOR TO INSTALLATION.
18. ELECTRICAL CONTRACTOR SHALL COORDINATE THE LOCATION AND INSTALLATION OF NEW WORK WITH THE GENERAL CONTRACTOR AND OTHER ASSOCIATED TRADES IN A TIMELY MANNER. THE CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFYING ALL DIMENSIONS AND CONDITIONS PRIOR TO CONSTRUCTION. REFER TO ALL GENERAL, MECHANICAL, AND ELECTRICAL, DRAWINGS AND SPECIFICATIONS FOR THIS PROJECT.
19. ALL CONDUITS AND EQUIPMENT TO BE CONCEALED IN FINISHED SPACES UNLESS OTHERWISE NOTED. CONDUITS SHALL BE ENCASED IN THE CONCRETE FLOOR SLAB.
20. ALL EQUIPMENT AND MATERIALS INSTALLED IN PLENUM CEILINGS SHALL BE APPROVED FOR THAT APPLICATION.
21. OUTLET BOXES AND JUNCTION BOXES ON OPPOSITE SIDES OF FIRE-RATED WALLS SHALL BE SEPARATED BY A HORIZONTAL DISTANCE OF NOT LESS THAN 24 INCHES, UNLESS FIRE-RATED BOXES OR PUTTY PADS ARE UTILIZED.
22. COORDINATE ALL FLOOR PENETRATIONS WITH THE STRUCTURAL AND ARCHITECTURAL DRAWINGS. CONFIRM PENETRATION LOCATIONS WITH THE ENGINEER AND OWNER BEFORE INSTALLATION.
23. COORDINATE THE MOUNTING HEIGHT AND LOCATION OF RACEWAYS, COMMUNICATIONS OUTLETS, AND RECEPTACLES WITH THE ARCHITECTURAL CASEWORK DRAWINGS AND DETAILS. COORDINATE LOCATIONS OF LIGHT FIXTURES, SWITCHES, AND RELATED DEVICES WITH THE ARCHITECTURAL DRAWINGS AND DETAILS.
24. REFER TO ARCHITECTURAL PLANS FOR FINAL LOACTIONS OF ALL LUMINARIES AND SWITCHES, AND FOR ALL FINISHED CEILING HEIGHTS.
25. REFER TO ARCHITECTURAL PLANS FOR FINAL LOCATIONS OF ALL ELECTRICAL DEVICES, AND FOR FINAL CEILING AND WALL HEIGHTS AND LAYOUTS.
26. LIGHTING FIXTURES PROVIDED WITH EMERGENCY BATTERY PACKS AND INDICATED WITH SWITCH CONTROL SHALL BE WIRED WITH BATTERY CHARGING/SENSING CIRCUIT WIRED AHEAD OF SWITCH CONTROL.
27. NUMBER(S) SHOWN AT RECEPTACLES, JUNCTION BOXES AND EQUIPMENT INDICATES CIRCUIT NUMBERS IN PANELBOARD. PROVIDE WIRE AND CONDUIT TO INTERCONNECT EQUIPMENT AND DEVICES WITH SAME CIRCUIT NUMBERS AND RUN TO PANELBOARD.

DATE: 08-20-2025

REVISIONS:

NO.	DATE	DESCRIPTION	BY
1	08-20-2025	PLAN REVIEW COMMENTS	NYE

PROJECT NAME:

FIREHOUSE SUBS

SHEET TITLE:

ELECTRICAL SYMBOL LIST, ABBREVIATIONS AND GENERAL NOTES

PROJECT NUMBER: 25-053

DATE:

SHEET NO.

E-0.1

SHEET 1 OF 10

ELECTRICAL SPECIFICATION

1. GENERAL:

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

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

C. 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.

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

E. 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 UP THE WORK PROPOSAL.

F. 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 ONLY WITH WRITTEN CONSENT OF OWNER. ALARM AND EMERGENCY SYSTEMS SHALL NOT BE INTERRUPTED. 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.

G. DISCONNECT, REMOVE AND/OR RELOCATE EXISTING MATERIAL, EQUIPMENT AND OTHER WORK AS NOTED OR REQUIRED FOR PROPER INSTALLATION OF NEW WORK.

H. 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.

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

J. 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.

K. 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 ND APPARATUS REQUESTED BY THE BUILDING REPRESENTATIVE, ARCHITECT OR AS NOTED TO BE RELOCATED ON THE DRAWINGS. REMOVED EQUIPMENT SHALL BE PROPERLY DISPOSED OF BY THIS CONTRACTOR.

L. 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.

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

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

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

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

2. 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 OWNER. PROVIDE ALL REQUIRED MAINTENANCE, INCLUDING LAMPS AND SOCKETS.

C. QUALITY ASSURANCE

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

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

3) CURRENT CHARACTERISTICS:

a. DISTRIBUTION: 120/208 VOLT, 3 PHASE, 4 WIRE, 60 HERTZ WITH GROUNDED NEUTRAL.

4) HEIGHTS OF OUTLETS:

a. FROM FINISHED FLOOR TO CENTERLINE OF OUTLETS FOR:

- RECEPTACLES AND TELEPHONES: 1 FT-6 IN.
- WALL SWITCHES: 4 FT-0 IN.
- WALL FIXTURES: 7 FT-0 IN.
- MOTOR CONTROLLERS: 5 FT-0 IN.
- CLOCKS: 7 FT 6 IN

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

D. PRODUCT DELIVERY, STORAGE AND HANDLING

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

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

E. MATERIALS

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

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

3) INSERTS AND SUPPORTS:

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

- SINGLE ROD: SIMILAR TO GRINNELL FIG. 281.
- MULTI-ROD: SIMILAR TO FEE AND MASON SERIES 9000 WITH END CAPS AND CLOSURE STRIPS.
- CLIP FORM NAILS FLUSH WITH INSERTS.
- MAXIMUM LOADING 75 PERCENT OF RATING.

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

c. GROUPED LINES AND SERVICES: TRAPEZE HANGERS OF BOLTED ANGLES OR CHANNELS.

d. WHERE BUILDING CONSTRUCTION IS INADEQUATE: PROVIDE ADDITIONAL FRAMING. SUBMIT FOR REVIEW.

F. PAINT SHALL BE THE BEST GRADE FOR ITS PURPOSE. DELIVER INORIGINAL SEALED CONTAINERS AND APPLY IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. COLORS SHALL BE AS SELECTED BY ARCHITECT OR ENGINEER. UTILIZE GALVANIZED IRON PRIMER ON PANEL AND PULL BOXES, AFTER FABRICATION. UTILIZE HOT DIPPED GALVANIZED OR DIPPED IN ZINC BASED PRIMER FOR: OUTLET BOXES, JUNCTION BOXES, CONDUIT HANGERS, RODS, INSERTS AND SUPPORTS. ZINC BASED PRIMER WITH FINISH TO MATCH BRUSH AND CLEAN WORK PRIOR TO CONCEALING, PAINTING, AND ACCEPTANCE. 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.

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

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

3. SCOPE OF WORK:

A. SCOPE OF WORK SHALL CONSIST OF PROVIDING LABOR, MATERIALS, EQUIPMENT, SERVICES AND FEES NECESSARY FOR COMPLETE AND SAFE INSTALLATION IN CONFORMING WITH THE NATIONAL ELECTRICAL CODE 2017 WITH LOCAL ADOPTIONS, AND ALL OTHER APPLICABLE INDUSTRY, NATIONAL AND LOCAL CODES AND AUTHORITIES HAVING JURISDICTION, AS INDICATED ON DRAWINGS AND HEREIN SPECIFIED.

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

C. THE CONTRACTOR SHALL FURNISH A WRITTEN GUARANTEE TO REPLACE OR REPAIR PROMPTLY AND ASSUME RESPONSIBILITY FOR ALL EXPENSES INCURRED FOR ANY WORKMANSHIP AND EQUIPMENT IN WHICH DEFECTS DEVELOP WITHIN ONE YEAR FROM THE DATE OF FINAL CERTIFICATE FOR PAYMENT AND/OR FROM DATE OR ACTUAL USE OF EQUIPMENT OR OCCUPANCY OF SPACES BY OWNER INCLUDED UNDER THE VARIOUS PARTS OF THE WORK, WHICHEVER, DATE IS EARLIER, THIS WORK SHALL BE DONE AS DIRECTED BY THE OWNER. THIS GUARANTEE SHALL ALSO PROVIDED THAT WHERE DEFECTS OCCUR, THE CONTRACTOR WILL ASSUME RESPONSIBILITY OF OTHER TRADES AFFECTED BY DEFECTS, REPAIRS OR REPLACEMENTS IN EQUIPMENT SUPPLIED BY THE CONTRACTOR.

D. THE CONTRACTOR SHALL GIVE NECESSARY NOTICE, FILE DRAWINGS AND SPECIFICATIONS WITH ALL DEPARTMENTS HAVING JURISDICTION, WORK AND PAY ALL FEES THEREFORE. THE CONTRACTOR SHALL ARRANGE FOR INSPECTION AND TESTS OF ANY OR ALL PARTS OF THE WORK IF SO REQUIRED BY AUTHORITIES AND PAY ALL CHARGES FOR SAME. THE CONTRACTOR SHALL PAY ALL COSTS FOR, AND FURNISH TO THE OWNER BEFORE FINAL BILLING, ALL CERTIFICATES NECESSARY AS EVIDENCE THAT THE WORK INSTALLED CONFORMS WITH ALL REGULATIONS WHERE THEY APPLY TO THIS WORK.

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

F. 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 (TWO COPIES WHEN NO ORIGINAL IS RECEIVED) TO THE ENGINEER. ALL CATALOG CUTS SHALL BE COMPLETE.

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

D. SUBMIT SHOP DRAWINGS FOR THE FOLLOWING:

1) SAFETY/DISCONNECT SWITCHES

2) FUSES

3) CIRCUIT BREAKERS

4) PANELBOARDS/LOADCENTER (INCLUDING DIMENSIONS, SCHEDULES, AND CATALOG CUTS).

5) RACEWAYS

6) WIRE AND CABLE

7) WALL SWITCHES

8) INSERTION RECEPTACLES

9) MOMENTARY CONTACT SWITCHES

10) TIME SWITCHES

11) LIGHTING FIXTURES

12) TRANSFORMER.

E. ASSIST AND PROVIDE ALL NECESSARY INFORMATION, DIAGRAMS, SKETCHES, ETC. TO THE HVAC CONTRACTOR, FOR THE PREPARATION OF COORDINATED SHOP DRAWINGS INDICATING ROUTING OF FEEDERS, CONTROL CONDUITS, RECESSED FIXTURES AND ADJACENT NEARBY PIPING AND DUCTWORK WHERE APPLICABLE. CERTIFIED BY ALL TRADES THAT COORDINATION HAS BEEN ESTABLISHED. SUBMIT FOUR(4) BOOKBOUND OPERATING AND SERVICE MANUALS WHICH SHALL INCLUDE COPIES OF ALL SHOP DRAWING. PROVIDE SHOP DRAWINGS FOR PANELS, FIXTURES, WIRING DEVICES, CONDUIT, CABLE, DISCONNECT SWITCH, RELAYS, CONTRACTORS, AND OTHER SYSTEMS AS DIRECTED BY THE ENGINEER.

5. AS-BUILT DRAWINGS AND EQUIPMENT OPERATIONAL INSTRUCTIONS

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

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

C. THE INSTRUCTION BOOKLET SHALL BEAR THE NAME, ADDRESS AND TELEPHONE NUMBER OF THE PROJECT, ARCHITECT AND ENGINEER.

D. REPRODUCIBLE "AS-BUILT" DRAWINGS SHALL BE PROVIDED INDICATING THE AS INSTALLED CONDITIONS OF THE WORK. "AS-BUILT" DRAWINGS SHALL BE PROVIDED TO THE ARCHITECT AFTER COMPLETION OF THE INSTALLATION.

6. LOW-VOLTAGE DISTRIBUTION EQUIPMENT:

A. PROVIDE COMPLETE EQUIPMENT INCLUDING: SWITCHES, FUSES, CIRCUIT BREAKERS, PANELS AND TRANSFORMERS.

B. ALL EQUIPMENT SHALL CONFORM TO NEMA, ANSI AND IEEE STANDARDS.

C. DISCONNECT SWITCHES SHALL BE FUSED OR NONFUSED AS NOTED. VOLTAGE SHALL BE AS REQUIRED. SWITCHES SHALL BE HEAVY DUTY, EXCEPT AS NOTED, AND HORSEPOWER RATED FOR MOTOR LOADS. TOGGLE TYPE SWITCHES SHALL BE NONFUSED, LOAD BREAK, HAVING MAXIMUM RATINGS OF 20 AMP AT 600 VOLTS AND 30 AMP AT 240 VOLTS. TWO-POLE SWITCHES SHALL BE SIMILAR TO HART AND HEGEMAN NO. 6808F. THREE-POLE SWITCHES SHALL BE SIMILAR TO HART AND HEGEMAN NO. 7810F. KNIFE-BLADE TYPE SWITCHES SHALL BE LOAD BREAK, QUICK-MAKE- QUICK-BREAK, UL CLASS R UP TO 600 AMP. MAXIMUM RATING EXCEPT AS NOTED SHALL BE 800 AMP. ARC QUENCHERS SHALL BE PROVIDED. SWITCHES SHALL BE SIMILAR TO GENERAL ELECTRIC QMR. ALL SWITCH ENCLOSURES SHALL BE DEAD FRONT, NEMA TYPE 1, EXCEPT AS NOTED.

7. FUSES:

A. CIRCUITS 0 TO 600 AMPERES SHALL BE PROTECTED BY FUSES SIMILAR TO CURRENT LIMITING BUSSMAN LOW-PEAK DUAL-ELEMENT TIME-DELAY LPN-RK (AMP)SP (250V) /LPS-RK (AMP)SP (600V) OR LPJ (AMP)SP (600V) (UL CLASS RK1 OR CLASS J), AND BE LISTED BY UL WITH AN INTERRUPTING RATING OF 300,000 AMPERES RMS SYMMETRICAL.

B. MOTOR CIRCUITS - ALL INDIVIDUAL MOTOR CIRCUITS WITH FULLLOAD AMPERE RATINGS (FLA) OF 480 AMPERES OR LESS SHALL BE PROTECTED BY FUSES SIMILAR TO CURRENT LIMITING BUSSMANN LOW-PEAK DUAL-ELEMENT TIME-DELAY LPN-RK (AMP)SP (250V) /LPS-RK (AMP)SP (600V) OR LPJ (AMP) SP (600V) (UL CLASS RK1 OR CLASS J), AND BE LISTED BY UL WITH AN INTERRUPTING RATING OF 300,000 AMPERES RMS SYMMETRICAL.

C. ALL FUSES SHALL BE PROVIDED BY SAME MANUFACTURER.

D. PROVIDE 1 SPACE MATCHING FUSE FOR EACH SET OF 3.

E. CIRCUIT BREAKERS: MOLDED CASE BREAKERS SHALL BE THERMAL-MAGNETIC, QUICK-MAKE-QUICK-BREAK, BOLT-ON TYPE, MANUALLY OPERATED WITH INSULATED TRIP-FREE HANDLE. MULTI-POLE TYPE BREAKERS SHALL CONTAIN INTERNAL TRIP BAR. TERMINALS SHALL BE SUITABLE FOR COPPER OR ALUMINUM CABLE. FURNISH AUXILIARY DEVICES WHERE REQUIRED FOR SHUNT-TRIPPING, OPEN AND CLOSE MOTOR OPERATOR AND ALARM INDICATION. ENCLOSURES SHALL BE DEAD FRONT, NEMA TYPE 1, EXCEPT AS NOTED. FRAMES, IC AND INTERCHANGEABLE TRIPS SHALL BE AS FOLLOWS, UNLESS OTHERWISE NOTED:

1) 120 VOLTS, 100-AMP FRAME: 10,000 AMPS, 1 POLE.

2) 120/240 VOLTS, 225-AMP FRAME: 22,000 AMPS MINIMUM.

8. DISTRIBUTION PANELBOARDS, CIRCUIT BREAKER TYPE:

A. THREE PHASE, 4 OR 5 WIRE, COPPER BUS BARS, WITH 2, 3, OR 4 WIRE BRANCHES, AS NOTED. CAPACITY OF PANEL AND CIRCUITS, AS NOTED BELOW. PANELBOARD TO HAVE GROUND BUS SAME SIZE AS PHASE BUSES.

B. CABINETS: CODE GAUGE GALVANIZED SHEET STEEL PRIMED AND PAINTED WITH TRIM AND DOOR TYPE AS NOTED, LAP AND RIVET CORNERS OR FORM AS APPROVED.

C. TRIM: ONE PIECE FULL FINISH PRIMED AND PAINTED SHEET STEEL. TRIM SHALL BE MOUNTED WITH A CONTINUOUS PIANO HINGE CONFIGURED IN SUCH A MANNER THAT IT SHALL BE POSSIBLE TO GAIN FULL ACCESS TO CIRCUIT BREAKERS AND WIRING GUTTERS WITHOUT REMOVING THE TRIM. PROVIDE A MULTI-PIN CYLINDER LOCK (YALE, CORBIN OR EQUAL) TO LATCH THE TRIM. KEYS SHALL BE MILLED.

D. HARDWARE: MULTI-PIN, CYLINDER LOCKS WITH MILLED KEYS. ALL PANELS SHALL BE KEYED ALIKE. DOOR OVER 48″ HIGH SHALL BE EQUIPPED WITH A CHROME PLATED VAULT HANDLE, BUILT-IN LOCK AND 3-POINT CATCH FASTENING DOOR AT TOP, BOTTOM AND CENTER.

E. HINGES: CONCEALED, CONTINUOUS PIANO HINGE AS DESCRIBED ABOVE.

F. DIRECTORY HOLDER: MEAL FRAME WITH NONBREAKABLE TRANSPARENT COVER AND DIRECTORY CARD. ENTRIES TO BE TYPEWRITTEN BY ELECTRICAL CONTRACTOR. PROVIDE AN ENGRAVED LAMINATED NAMEPLATE ADJACENT TO EACH BRANCH BREAKER. MOUNT WITH SELF TAPPING MACHINE SCREWS.

G. FURNISH MULTI-CABLE LUGS WHERE REQUIRED. DOUBLE LUGGING NOT PERMITTED. SECURE LUGS TO BUS BY STUD BOLTS.

H. PANELBOARD CONSTRUCTION FOR BOLTED TYPE BREAKERS. MINIMUM SHORT CIRCUIT RATING 25,000 AMPERES, RMS SYMMETRICAL FOR ALL 120/208V APPLICATIONS. INDIVIDUAL CIRCUIT BREAKERS SHALL HAVE MINIMUM 100A FRAME, TRIPS SIZED AS SHOW ON THE PLANS.

I. MINIMUM GUTTER SPACES: PANELS WITH 225 AMPERE MAINS, 5-¾″ MINIMUM, 400 AMPERES AND OVER, MINIMUM GUTTERS 8″. FOR PANELS WITH THROUGH FEEDERS, INCREASE GUTTER WIDTH BY 2″ MINIMUM AND PROVIDE A SHEET STEEL BARRIER BETWEEN THE PANEL GUTTER AND THE THROUGH FEEDER PORTION OF THE BACK BOX. BRANCH CIRCUIT BREAKERS SHALL BE MECHANICALLY INTERLOCKED WHEN SHOWN ON DRAWINGS.

J. DISTRIBUTION AND SUB-DISTRIBUTION PANELBOARDS SHALL BE A MINIMUM OF 30" WIDE AND 10" DEEP.

K. PANELBOARD SHALL HAVE MAIN CIRCUIT BREAKER OR MAIN LUGS AS INDICATED ON THE DRAWINGS. QUANTITY, POLES AND TRIP RATINGS OF BRANCH CIRCUIT BREAKERS TO BE AS INDICATED ON DRAWINGS.

L. PANELBOARD SHALL HAVE ENGRAVED WHITE CORE, BLACK LAMACOID NAMEPLATE SCREWED ONTO PANE TRIM WITH DESIGNATION LISTED (PANELBOARD NAME, VOLTAGE, RATING OR MAINS IN AMPS).

9. DISTRIBUTION PANELBOARDS, SWITCH AND FUSE:

A. THREE PHASE, 3 OR 4 WIRE WITH COPPER BUS BARS. ALL THROUGH BUS SHALL BE INSULATED.

B. NEMA CLASS 1 CONSTRUCTION TO ACCOMMODATE FUSIBLE, INDIVIDUALLY ENCLOSED SWITCHES, FRONT REMOVABLE, SWITCH AND DOOR INTERLOCKS. COVERS TO BE PAD-LOCKABLE.

C. PANELBOARD SHALL BE CONSTRUCTED OF CODE-GAUGE STEEL, GRAY FINISH OVER RUST INHIBITOR, FOR SURFACE MOUNTING. BOX AND PANEL FRAME SHALL BE FLANGED AND REINFORCED FOR RIGID SUPPORT OF INTERIOR AND ACCURATE ALIGNMENT OF INTERIOR WITH FRONT. TRIMS TO BE FASTENED TO BACK BOX WITH SCREWS.

D. ALL BRANCH SWITCHES SHALL HAVE INDIVIDUAL ENGRAVED LAMICOID NAMEPLATES (BLACK WITH WHITE CORE).

E. DISTRIBUTION PANELBOARD CONSTRUCTION MINIMUM SHORT CIRCUIT RATING 25,000 AMPERES, REMS SYMMETRICAL FOR ALL 120/208V APPLICATIONS. APPLICATIONS.

F. DISCONNECTS

1) DISCONNECT SWITCHES SHALL CONFORM TO NEMA AND UL STANDARDS, AND SHALL BE HORSEPOWER RATED.

2) SWITCHING MECHANISM SHALL BE QUICK-MAKE, QUICK-BREAK, SINGLE THROW WITH EXTERNAL OPERATING HANDLE MECHANICALLY INTERLOCKED WITH ENCLOSURE COVER TO PROVIDE ACCESS TO INTERIOR WHEN DISCONNECT IS IN OFF POSITION ONLY. PROVIDE MEANS TO LOCK OPERATING HANDLE IN THE OPEN AND CLOSED POSITION. DESIGNATE ON THE ENCLOSURE THE OPEN AND CLOSED POSITION OF THE OPERATING HANDLE.

3) SWITCHES SHALL BE OF THE DOUBLE STATIONARY CONTACT TYPE.

4) SWITCHES SHALL BE EQUIPPED WITH REJECTION TYPE FUSE HOLDERS, FUSIBLE AS SHOWN ON THE DRAWINGS; PROVIDE COMPLETE WITH FUSES AS SCHEDULED.

DATE: 08-20-2025

REVISIONS:

NO.	DATE	DESCRIPTION	BY

PROJECT NAME:

FIREHOUSE SUBS

SHEET TITLE:

ELECTRICAL SPECIFICATIONS (1 OF 2)

PROJECT NUMBER: 25-053

DATE:

SHEET NO.

E-0.2

SHEET 2 OF 10

ELECTRICAL SPECIFICATION (CONT.)

D. INSTALLATION

1) DISTRIBUTION PANELBOARD SHALL BE MOUNTED TO STRUCTURAL STEEL CHANNEL (KINDORF) WHICH SHALL BE BOLTED TO THE WALL USING EXPANSION ANCHORS FOR LARGE PANELS.

H. IDENTIFICATION

1) PROVIDE NAMEPLATE AT EACH SWITCH IDENTIFYING THE LOAD SERVED.

2) NAMEPLATES SHALL BE MOUNTED ON THE FRONT COVER SECURED WITH SELF-TAPPING SCREWS OR NUTS AND BOLTS. NAMEPLATES SHALL BE LAMINATED PHENOLIC, BLACK WITH A MINIMUM OF ¼" HIGH WHITE LETTERING.

I. DISTRIBUTION AND SUB-DISTRIBUTION PANELBOARDS SHALL BE A MINIMUM OF 30" WIDE AND 10" DEEP.

J. POWER PANELBOARDS SHALL BE SIMILAR TO GENERAL ELECTRIC TYPE "OMR", AS MANUFACTURED BY ATLAS SWITCH COMPANY, ELECTRIC SWITCHBOARD COMPANY OR APPROVED EQUAL.

K. PANELBOARD SHALL HAVE MAIN CIRCUIT BREAKER OR MAIN LUGS AS INDICATED ON THE DRAWINGS. QUANTITY, POLES AND TRIP RATINGS OF BRANCH CIRCUIT BREAKERS TO BE AS INDICATED ON DRAWINGS.

L. PANELBOARD SHALL HAVE ENGRAVED WHITE CORE, BLACK LAMACOID NAMEPLATE SCREWED ONTO PANE TRIM WITH DESIGNATION LISTED (PANELBOARD NAME, VOLTAGE, RATING OR MAINS IN AMPS).

M. MATERIALS

1) RACEWAYS:

a. RIGID STEEL CONDUIT: FULL-WEIGHT PIPE, GALVANIZED, THREADED.

b. ELECTROMETALLIC TUBING (EMT): THIN WALL PIPE, GALVANIZED, THREADLESS.

c. FLEXIBLE STEEL CONDUIT: CONTINUOUS SINGLE STRIP, GALVANIZED.

d. WIREWAYS: WIRE SHALL BE AS NOTED, MINIMUM NO. 16 GAUGE STEEL WITH GROUND CONTINUITY. FINISH SHALL BE BAKED ENAMEL. COVERS SHALL BE SCREW-ON.

e. SURFACE METAL RACEWAY: SIZE AS NOTED. BASE 0.04 IN., COVER 0.25 IN. MATERIAL SHALL BE STEEL. FINISH SHALL BE BAKED ENAMEL. COVERS SHALL BE SCREW-ON.

2) FITTINGS AND ACCESSORIES:

a. RIGID STEEL: NONSPLIT, THREADED, STEEL OR MALLEABLE IRON. ZINC DIE CAST NOT PERMITTED.

b. ELECTROMETALLIC TUBING: COMPRESSION TYPE. GALVANIZED RIGID STEEL ELBOWS, 2 IN. OR LARGER.

c. FLEXIBLE METALLIC CONDUIT: ANGLE WEDGE TYPE WITH INSULATED THROAT.

d. BUSHINGS: METALLIC INSULATED TYPE.

3) BOXES:

a. OUTLET BOXES: EXCEPT AS OTHERWISE REQUIRED BY CONSTRUCTION, DEVICES OR WIRING, BOXES SHALL BE STAMPED STEEL, 4 IN. SQUARE OR OCTAGON FOR FIXTURES. BOXES ABOVE CEILING SHALL BE 1-1/2 IN. DEEP. BOXES IN CEILING OR SLAB SHALL BE 3 IN. DEEP. BOXES IN WALL FOR FIXTURES SHALL BE 2-3/4 IN. DEEP. BOXES IN WALL FOR RECEPTACLES AND SWITCHES SHALL BE 1-1/2 IN. DEEP. FURNISH WITH RAISED COVERS AND FIXTURE STUDS WHERE REQUIRED. WITHOUT FIXTURE OR DEVICE: FURNISH BLANK COVER. OFFSET BACK-TO-BACK OUTLETS WITH MINIMUM 6 IN. SEPARATION.

b. JUNCTION AND PULL BOXES: GALVANIZED SHEET STEEL WITH SCREW-ON COVERS, EXCEPT AS NOTED. FURNISH WITH INSULATED SUPPORTS FOR CABLES. LOCATIONS SHALL BE AS NOTED OR REQUIRED AND ACCESSIBLE. PROVIDE BARRIERS IN NEW AND RENOVATED BOXES BETWEEN 120/208 VOLT AND 265/460 VOLT WIRING AND BETWEEN EMERGENCY AND NORMAL WIRING. FLOOR BOXES SHALL BE SUITABLE FOR CONDUIT AND DEVICES NOTED. RAISED OUTLETS SHALL BE HUBBELL #B2414 SERIES WITH ABOVE FLOOR FITTING. TELEPHONE: BUSHED HOLE. POWER: DUPLEX RECEPTACLE OR OTHER AS NOTED. INCREASE SIZE TO SUIT AS NECESSARY. FLUSH OUTLETS SHALL BE HUBBELL #B2414 SERIES WITH FLUSH FLOOR FITTING FOR TELEPHONE AND FLUSH DUAL FLAP COVER WITH DUPLEX RECEPTACLE FOR POWER AS NOTED. INCREASE SIZE TO SUIT AS NECESSARY.

N. PROVIDE RACEWAYS ONLY AS HEREIN SPECIFIED, EXCEPT AS NOTED. RACEWAYS SHALL BE RUN CONCEALED, EXCEPT AS NOTED.

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

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

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

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

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

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

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

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

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

O. PROVIDE CABLE SUPPORTS IN ACCORDANCE WITH NATIONAL ELECTRIC CODE ARTICLE 300.19. CABLE SUPPORTS SHALL UTILIZE A ONE-PIECE PLUG WITH POZI-GRIP WEDGING PLUG AS 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).

P. ERECT WALL AND SWITCH OUTLETS IN ADVANCE OF FURRING AND FIREPROOFING. OUTLET BOXES SHALL BE SET SQUARE AND TRUE WITH BUILDING FINISH. SECURE TO BUILDING STRUCTURE BY ADJUSTABLE STRAP IRON OR GROUT IN WITH MASONRY. VERIFY OUTLET LOCATIONS IN FINISHED SPACES WITH ARCHITECTURAL DRAWINGS OF INTERIOR DETAILS AND FINISHES. PROVIDE BARRIER BETWEEN SWITCHES CONNECTED TO DIFFERENT PHASES FOR VOLTAGES EXCEEDING 150 VOLTS TO GROUND.

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

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

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

10. WIRE AND CABLE:

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

B. CONDUCTORS SHALL BE COPPER, ASTM STANDARD SOLID (NO. 10 AND SMALLER) OR STRANDED (NO. 8 AND LARGER). GENERAL USE CABLING SHALL BE NO. 12 MINIMUM. AT 120 VOLTS AND OVER 100 FT CIRCUIT LENGTH PROVIDE NO. 10 MINIMUM. AT 265 VOLTS AND OVER 200 FT CIRCUIT LENGTH PROVIDE NO. 10 MINIMUM.

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

D. INSULATION SHALL BE RUBBER AND THERMOPLASTIC MEETING ASTM AND IPCEA STANDARDS. TYPE THW OR THWN SHALL BE UTILIZED FOR FEEDERS AND BRANCH CIRCUITS EXCEPT AS NOTED. TYPE SEF-2 SHALL BE UTILIZED FOR BRANCH CIRCUITS LOCATED IN WIRING CHANNELS OF CONTINUOUS FLUORESCENT FIXTURES AND IN AMBIENT TEMPERATURES OVER 90 DEG C.FOR UNGROUNDED ISOLATED BRANCH CIRCUITS PROVIDE CROSS-LINKED POLYETHYLENE INSULATION (TYPE XHHW).

E. ARMORED CABLE (BX) SHALL BE UTILIZED FOR BRANCH CIRCUITS IN DRY HOLLOW LOCATIONS, HUNG CEILINGS, AND BLOCK WALLS. WHEN USED IN LIEU OF WIRING IN CONDUIT, STATE IN PROPOSAL THAT PRICE IS BASED UPON THE USE OF HOSPITAL GRADE BX.

F. COLOR CODING SHALL BE AS FOLLOWS:

120/208 VOLT SYSTEM:	277/480 VOLT SYSTEM:
BLACK FOR A PHASE	BROWN FOR A PHASE
RED FOR B PHASE	ORANGE FOR C PHASE
BLUE FOR C PHASE	YELLOW FOR C PHASE

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

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

H. TERMINATIONS, SPLICES AND TAPS UNDER 600 VOLTS: COPPER CONDUCTORS NO. 10 AND SMALLER SHALL UTILIZE COMPRESSION-TYPE OF TWIST-ON SPRING-LOADED CONNECTORS AND CLEAR NYLON-INSULATED COVERING. COPPER CONDUCTORS NO. 8 AND LARGER SHALL UTILIZE MECHANICAL BOLTED PRESSURE OR HYDRAULIC COMPRESSION TYPE USING MANUFACTURER'S RECOMMENDED TOOLING. CABLE LUGS AND CONNECTORS SHALL UTILIZE COMPRESSION TYPE OF SAME METAL AS CONDUCTOR. PROVIDE TO MATCH CABLE, WITH MARKING INDICATING SIZE AND TYPE. COPPER LUG CONNECTIONS TO BUS BARS: USE ANTISEIZE COMPOUND ON TANG.

I. NOT MORE THAN 3 LIGHTING OR CONVENIENCE OUTLET CIRCUITS SHALL BE INSTALLED IN ONE CONDUIT UNLESS OTHERWISE INDICATED. PULL NO THERMOPLASTIC WIRES AT TEMPERATURES LOWER THAN 32 DEG F. PROVIDE SEPARATE RACEWAYS FOR CONDUCTORS OF 120/208 AND 265/460 VOLT SYSTEMS, EXCEPT 460 VOLT MOTOR BRANCH CIRCUIT WIRING AND RELATED 120 VOLT CONTROL WIRING. THERMOPLASTIC WIRES SHALL NOT BE INSTALLED IN COMPUTER AREA RAISED FLOORS.

J. LEAVE WIRES WITH SUFFICIENT SLACK TO PERMIT MAKING FINAL CONNECTIONS.

K. PERFORM CONTINUITY AND INSULATION TESTS. MEGGER TEST 100 PERCENT OF FEEDERS, 10 PERCENT OF BRANCH CIRCUITS AND ALL MOTOR BRANCH CIRCUITS OVER 25 HP.

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

11. WIRING DEVICES:

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

B. LOCAL WALL SWITCHES SHALL BE ROCKER TYPE, QUIET OPERATING, RATED 20 AMP, 120/277 VOLT, AC. SIMILAR TO LEVITON DECORA SERIES A5621 (SINGLE POLE), A5623 (3-WAY) AND A5624 (4-WAY).

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

1) SINGLE GANG, RECESSED, DUPLEX RECEPTACLE: TAMPER RESISTANT, 2-POLE, 3-WIRE GROUNDING, 15A, 125V, NEMA 5-20R; LEVITON 689 SERIES (COLOR AS SPECIFIED BY ARCHITECT).

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

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

E. COLORS: COORDINATE COLORS WITH ARCHITECT.

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

12. LIGHTING FIXTURES:

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

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

C. BALLAST: CLASS P, HIGH POWER FACTOR, LOWEST AVAILABLE NEMA RATED NOISE LEVEL, ET1 AND CBM APPROVED. ENERGY SAVING TYPE. TRIGGER START FOR 24-INCH LAMPS AND RAPID START FOR 48-INCH. TWO LAMP BALLASTS, NO THREE LAMP BALLASTS. BALLASTS SHALL BE ADVANCE MAGNETEK, UNIVERSAL OR EQUAL.

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

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

F. CONTINUOUS ROW, TWO LAMP STRIP FIXTURES SHALL BE STAGGERED TYPE.

G. EXIT SIGNS SHALL BE PRECISION DIE-CAST ALUMINUM HOUSING WITH LASER-FORMED ACRYLIC LEGEND. EXIT SIGNS SHALL COMPLY WITH UL 924 AND BE MEA APPROVED AC POWERED WITH PREMIUM LONG-LIFE NICKEL CADMIUM BATTERY WITH STANDARD UL LISTED 3-HOUR RUN TIME. PROVIDE WITH INTEGRAL AUTOMATIC CHARGER IN A SELF CONTAINED POWER PACK. LED INDICATOR WITH PUSH TO TEST SWITCH.

13. TELEPHONE CONDUIT SYSTEM:

A. PROVIDE COMPLETE SYSTEM OF: RACEWAYS AND ACCESSORIES, OUTLET BOXES, SLEEVES AND FISHWIRES.

B. EQUIPMENT SHALL CONFORM TO REQUIREMENTS OF TELEPHONE COMPANY.

C. OUTLETS SHALL BE:

1) WALL: 4 IN. SQUARE WITH BUSHED COVER PLATE.

D. PROVIDE FISHWIRES, IN RACEWAYS OVER 10 FT LONG.

E. CONDUIT SHALL BE 3/4 IN. MINIMUM. FURNISH EMPTY CONDUIT FROM OUTLET BOX TO BUSHED END THRU WALL 6" BELOW THE PLASTER CEILING.

F. FACE RACEWAYS IN ROOMS SHALL HUBBELL HBL500, HBL750 OR HBL2000 SERIES OR AS ACCEPTABLE.

14. PANELBOARDS:

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

B. CIRCUIT BREAKERS SHALL BE OF THE BOLT-ON THERMAL MAGNETIC MOLDED CASE TYPE, AND SHALL HAVE THE TRIP RATINGS AND NUMBER OF POLES SHOWN IN SCHEDULES ON THE CONTRACT DRAWINGS. FOR BLANK (SPACE) COMPARTMENTS, PROVIDE FULL RATED BUS. MINIMUM GUTTER SPACES SHALL BE 5-3/4". SIDES, TOP AND BOTTOM, INCREASE FOR THROUGH FEEDERS. PROVIDE 25% COPPER GROUND BUS AND 100% COPPER NEUTRAL BUS AND INCREASE NEUTRAL BUS INDICATED.

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

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. LOCKS MUST BE COMPATIBLE WITH BUILDING STANDARD KEY SYSTEM AND WHEN NONE EXISTS, THEY SHALL BE SIMILAR TO A YALE NO. 911 KEY.

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

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 R.M.S. SYMMETRICAL FOR 208Y/120 VOLT SYSTEM AND 14,000 AMPERES R.M.S. 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.

15. INTERCOM CONDUIT SYSTEM:

A. PROVIDE COMPLETE SYSTEM OF: RACEWAYS AND ACCESSORIES, OUTLET BOXES, SLEEVES AND FISHWIRES.

B. EQUIPMENT SHALL CONFORM TO REQUIREMENTS OF INTERCOM MANUFACTURER.

C. OUTLETS SHALL BE: 1) WALL : 4 IN. SQUARE WITH SINGLE GANG COVER PLATE.

D. PROVIDE FISH WIRES, IN RACEWAYS OVER 10 FT LONG.

E. CONDUIT SHALL BE 3/4 IN. MINIMUM. FURNISH EMPTY CONDUIT FROM EACH APARTMENT TO MAIN INTERCOM CONTROLLER AT ENTRANCE.

DATE: 08-20-2025

REVISIONS:

NO.	DATE	DESCRIPTION	BY

PROJECT NAME:

FIREHOUSE SUBS

SHEET TITLE:

ELECTRICAL SPECIFICATIONS (2 OF 2)

PROJECT NUMBER: 25-053

DATE:

SHEET NO.

E-0.3

SHEET 3 OF 10

LIGHT FIXTURE SCHEDULE

TYPE	SYMBOL	DESCRIPTION	MANU.	REFERENCE CATALOG #	LAMP	VOLTS
B1		PENDANT LIGHT FIXTURE	OLDDE BRICK LIGHTING	PC-WARMER-10	(1) 100 W	120
C1		TRACK LIGHT	JUNO (TRACK LIGHT)/ SATCO (BULB)	TRAC LITE SECTION R-4FT-BL , TRAC LITE SECTION R-6FT-BL, TRAC LITE SECTION R-8FT-BL , TRAC LITE STEP CYLINDER R512B-BL , BULB - SATCO S29433, END FEED - RCLF11BL, TRACK CIRCUIT BREAKER - TCL2BL	(1) 12.5watt EACH HEAD	120
D-1		6" DOWNLIGHT	LITHONIA LIGHTING	LDN6-35/15-L06-AR-LSS-MVOLT DRIVER-GZ10	(1) 20.5watt LED	120
LT-1		2'x4' LED CEILING LIGHT FIXTURE	LITHONIA LIGHTING	CPX2X4AL08SWW7M2	(1) 35.55 W LED	120-277
LT-1 (NL)		2'x4' LED CEILING LIGHT FIXTURE (NIGHT LIGHT)	LITHONIA LIGHTING	CPX2X4AL08SWW7M2 ACCESSORIES: ILBLP CP10 HE SD A - LED EMERGENCY DRIVER DGA24 DRYWALL GRID ADAPTER - 2X4 TROFFER	(1) 35.55 W LED	120-277
X-3		LED COMBINATION EXIT/LIGHT	PROGRESS LIGHTING	PECUE-UR-30-RC	(1) 3.56 W LED	120-277
X-4		OUTDOOR LED REMOTE EMERGENCY LIGHT	PROGRESS LIGHTING	SINGLE: PERHC-SB-OD-30 DOUBLE: PERHC-DB-OD-30	(1) 2.00 W LED	120-277
X-5		LED EMERGENCY LIGHT	PROGRESS LIGHTING	PE2EU-30	(1) 0.56 W LED	120-277

NOTES:

1. COORDINATE LIGHT FIXTURE LOCATION AND MOUNTING w/ OTHER EQUIPMENT AND ARCHITECTURAL ELEVATIONS.
2. INSTALL ALL WALL AND SURFACE MOUNTED EXIT SIGN FIXTURES AT THE LOCATION INDICATED AND PROVIDE FACES AND ARROWS AS INDICATED. VERIFY EXACT LOCATION OF ALL EQUIPMENT PER ARCHITECTURAL DRAWINGS.
3. J-BOXES SHALL BE PROVIDED FOR ALL EXIT FIXTURES UNLESS FIXTURES ARE APPROVED FOR THROUGH WIRING. EXTERIOR RECEPTACLES SHALL BE W.P. TYPE.
4. SUPPORT LAY-IN TYPE LIGHT FIXTURES INDEPENDENT OF GRID.
5. ELECTRICAL CONTRACTOR SHALL PROVIDE ALL LAMPS, ACCESSORIES & MOUNTING HARDWARE REQUIREMENTS.
6. CONTRACTOR SHALL VERIFY EXACT FIXTURE LOCATIONS w/ ARCHITECTURAL REFLECTED CEILING PLAN.
7. CONTRACTOR SHALL VERIFY CEILING TYPES AND PROVIDE TRIM & ACCESSORY REQUIREMENTS.
8. PROVIDE LIGHT FIXTURE BY MANUFACTURER SPECIFIED OR APPROVED EQUAL.

GENERAL NOTES:

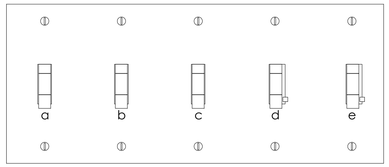
1. BATTERY PACKS FOR ALL EXIT, NIGHT LIGHT AND EMERGENCY LIGHT FIXTURES SHALL BE CAPABLE OF PROVIDING EMERGENCY POWER TO THE FIXTURES FOR A MINIMUM OF 90 MINUTES OR AS APPROVED BY LOCAL AHJ.
2. NOT USED.
3. FIXTURE MODEL NUMBER MAY NOT REFLECT ALL MOUNTING HARDWARE. ELECTRICAL CONTRACTOR SHALL PROVIDE ALL NECESSARY MOUNTING EQUIPMENT, LENSES, STEMS, SAFETY CHAINS, END PLATES, AND ALL OTHER HARDWARE NECESSARY FOR A COMPLETE FIXTURE INSTALLATION. SEE MOUNTING DETAILS WHEN APPLICABLE.
4. LINE VOLTAGE DRIVERS MAY BE SUBSTITUTED FOR "UNIVERSAL" OR "MULTI-VOLTAGE" DRIVERS.
5. ALL FIXTURES SHALL BE UL OR ETL LISTED.
6. ALL FIXTURES IN DIRECT CONTACT WITH INSULATION SHALL BE IC RATED OR INSULATION SHALL BE KEPT A MINIMUM OF 3" FROM ALL SIDES OF FIXTURES.
7. ALL SURFACE CONDUIT, BOXES, COVERS TO BE PAINTED TO MATCH COLOURS IN OPEN CEILING AREA REFER TO ARCHITECTURE..
8. ADJUST FOCUS OF ALL TRACK AND RECESSED DIRECTIONAL LIGHTING TO FULLY ILLUMINATE ALL ARTWORK, MENU BOARDS, AND MERCHANDISE BAYS.
9. ALL RECEPTACLES AND SWITCHES SHALL BE INSTALLED IN ACCORDANCE WITH THE FOLLOWING SCHEDULE:
   - 9.1. FOYER, SEATING, HALL: BLACK OUTLET, BLACK SWITCH & BLACK COVER PLATE.
   - 9.2. MECH. ROOM, OFFICE, RESTROOMS, & BELOW CASH REGISTER: WHITE OUTLET, WHITE SWITCH & WHITE COVER PLATE
   - 9.3. PREP & STAGING: WHITE OUTLET, WHITE SWITCH & STAINLESS COVER PLATE.

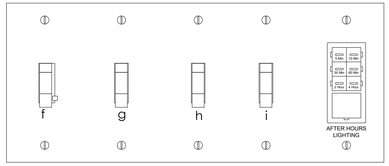
LIGHTING PLAN GENERAL NOTES:

1. COORDINATE EXACT LIGHTING FIXTURE LOCATIONS w/ MECHANICAL EQUIPMENT AND DUCT WORK PRIOR TO ROUGH-IN.
2. ALL RECESSED FIXTURES SHALL BE PROVIDED w/ ALL REQUIRED STRUCTURAL SUPPORTS AS REQUIRED BY CURRENTLY ACCEPTED EDITION OF ALL APPLICABLE NATIONAL, STATE, AND CITY CODES, ORDINANCES, AND AMENDMENTS.
3. ALL DIMMING BRANCH CIRCUITS SHALL BE PROVIDED w/ A DEDICATED NEUTRAL CONDUCTOR FOR EACH ZONE/CHANNEL.
4. REFER TO ARCHITECTURAL REFLECTED CEILING PLANS FOR EXIT SIGN CHEVRONS AND NUMBER OF FACES PER EXIT SIGN. ANY DISCREPANCIES BETWEEN EXIT SIGNS SHOWN ON THE ELECTRICAL AND ARCHITECTURAL PLANS SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT PRIOR TO ORDERING EXIT SIGNS.
5. CONTRACTOR TO PROVIDE ALL NECESSARY TRAVELER CONDUCTORS FOR ALL 3 AND 4 WAY SWITCHING APPLICATIONS.
6. G.C. SHALL VERIFY CEILING FIRE RATING WITH ARCHITECT, AND BOX OR TENT ALL RECESSED LIGHT FIXTURES, IF REQUIRED, TO MAINTAIN CEILING FIRE RATING.
7. EMERGENCY LIGHTING SHALL BE INSTALLED SO THAT THE FAILURE OF ANY INDIVIDUAL LIGHTING ELEMENT, SUCH AS THE BURNING OUT OF A LIGHT BULB, CAN NOT LEAVE IN DARKNESS ANY SPACE THAT REQUIRES EMERGENCY ILLUMINATION. THIS NOTES HOLDS TRUE FOR ALL EMERGENCY AND EXIT LIGHTING DEVICES.
8. CONTRACTOR IS ADVISED THAT ADJUSTMENTS TO EMERGENCY, NIGHT LIGHT AND EXIT LIGHT FIXTURE LOCATIONS/QUANTITIES MAY BE REQUIRED BY AHJ UPON FINAL INSPECTION.
9. ALL EXTERIOR LIGHTS/ SIGNS SHALL BE CONTROLLED VIA PHOTOCELL/TIME-CLOCK. E.C. SHALL PROVIDE ALL THE LIGHTING CONTROL COMPLYING WITH ENERGY CONSERVATION CODE 2018 AND LOCAL REQUIREMENTS.
10. REFER TO DWG. E-0.1 FOR ELECTRICAL GENERAL NOTES, SYMBOL LIST, ABBREVIATIONS AND E-0.2 AND E-0.3 FOR ADDITIONAL SPECIFICATIONS.
11. FINAL CONDUIT/CABLE ROUTING SHALL BE DETERMINED IN-FIELD, AND PRIOR TO THE COMMENCEMENT OF WORK, COORDINATED WITH OTHER TRADE CONTRACTORS AND THE TENANT.
12. 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.
13. ALL SWITCHES LOCATION AND MOUNTING DETAILS SHALL BE COORDINATED WITH ARCHITECT/OWNER IN THE FIELD.

LIGHTING PLAN KEYED NOTES: (#)

1. WIRE ALL EMERGENCY, NIGHT LIGHT AND EXIT LIGHT TO THE NEAREST CIRCUIT AHEAD OF ALL CONTROLS & SWITCHING FOR CONTINUOUS OPERATION.
2. ASTRONOMICAL TIME CLOCK, TORK "DZS400BP" 4-CHANNEL OR EQUAL. E.C. SHALL VERIFY EXACT MAKE/MODEL OF TIME-CLOCK AND LIGHTING CONTACTOR WITH ARCHITECT/OWNER IN FIELD. E.C. SHALL ALSO PROCURE ALL THE NECESSARY FOR PROPER FUNCTIONALITY OF TIME CLOCK WITH LIGHTING.
3. E.C. TO COORDINATE EXACT LOCATION, QUANTITIES & MAKE/MODEL OF MANUAL & DIMMER SWITCHES WITH ARCHITECT/OWNER IN COORDINATION WITH DEVICE MANUFACTURER IN FIELD. BASE BID ACCORDINGLY. SWITCHES QUANTITIES SHALL MATCH WITH THE SWITCHES INDICATED WITH THE LIGHT FIXTURES ON THE PLAN.
4. E.C. TO INSTALL SHOW WINDOW RECEPTACLES AS PER NEC 210.62. COORDINATE EXACT LOCATION OF OUTLET IN FIELD WITH ARCHITECT/OWNER BEFORE COMMENCEMENT OF ANY WORK.
5. WALL MOUNTED DUAL-TECHNOLOGY OCCUPANCY SENSOR ACUITY: #WSX PDT 2P FAN WH. E.C. TO COORDINATE EXACT MAKE/MODEL OF WALL MOUNTED OCCUPANCY SENSOR WITH ARCHITECT/OWNER IN COORDINATION WITH EQUIPMENT MANUFACTURER IN FIELD. BASE BID ACCORDINGLY.
6. MANUAL OVERRIDE SWITCH (TORK R5M4HW OR EQUAL). FINAL LOCATION AND MAKE/MODEL SHALL BE COORDINATED WITH OWNER BEFORE COMMENCEMENT OF WORK. BASE BID ACCORDINGLY.
7. PROVIDE JUNCTION BOX WITH LOCAL TOGGLE SWITCH DISCONNECT LOCATED ABOVE ACCESSIBLE CEILING AND ASSOCIATED 120V, 1Ø, 20 AMP CIRCUIT(S) FOR SIGNAGE. FIELD VERIFY EXACT ROUGH-IN LOCATION. CIRCUIT THRU TIME CLOCK CONTROLLED RELAY FOR AUTOMATIC ON/OFF CONTROL OF LIGHTING.
8. LIGHTING NEAR ELECTRICAL PANELS SHALL NOT BE CONTROLLED BY ANY AUTOMATIC MEANS AND SHALL BE COMPILED AS PER NEC 110.26(D).
9. PHOTOCELL TO CONTROL EXTERIOR SIGNAGE & SHOW WINDOW RECEPTACLE. E.C. SHALL COORDINATE EXACT MAKE/MODEL OF PHOTOCELL WITH ARCHITECT/OWNER IN FIELD. BASE BID ACCORDINGLY.
10. CURRENT LIMITER SERVING TRACK CIRCUIT SHALL BE SIZED FOR AMPERAGE SHOWN AS COMPATIBLE WITH VENDOR'S TRACK RAIL AND FIXTURES.



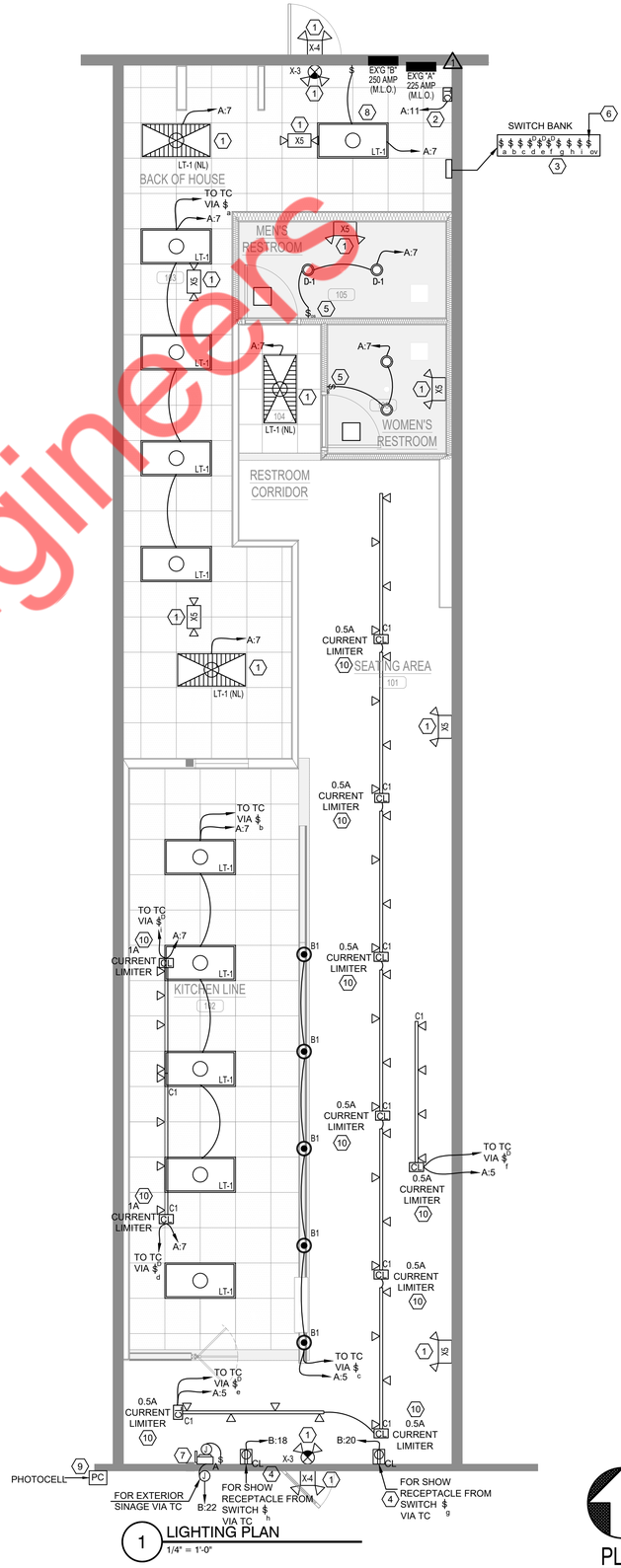


INDICATES PANEL NAME — B:a — INDIACATES CIRCUIT NO.

SWITCH DESIGNATION	TYPE	SIZE
'a' = BACK OF HOUSE	SINGLE POLE, TOGGLE SWITCH	20A
'b' = KITCHEN LINE AREA	SINGLE POLE, TOGGLE SWITCH	20A
'c' = PENDANT LIGHTING	SINGLE POLE, TOGGLE SWITCH	20A
'd' = KITCHEN AREA TRACK LIGHT	SINGLE POLE, TOGGLE DIMMER	20A
'e' = MAIN SEATING AREA	SINGLE POLE, TOGGLE DIMMER	20A
'f' = MAIN SEATING AREA	SINGLE POLE, TOGGLE DIMMER	20A
'g' = FRONT SHOW RECEPTACLE	SINGLE POLE, TOGGLE SWITCH	20A
'h' = FRONT SHOW RECEPTACLE	SINGLE POLE, TOGGLE SWITCH	20A
'i' = MENUBOARD	SINGLE POLE, TOGGLE DIMMER	20A

NOTE:
1. MAXIMUM SWITCH HEIGHT TO BE 48" PER ADAAG GUIDELINES.
2. COORDINATE EXACT LOCATION WITH TENANT PRIOR TO INSTALLATION.

2 SWITCH BANK DETAILS
NTS



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

PLAN NORTH

DATE: 08-20-2025

REVISIONS:

NO.	DATE	DESCRIPTION	BY
1	08-20-2025	PLAN REVIEW COMMENTS	NYE

PROJECT NAME:

FIREHOUSE SUBS

SHEET TITLE:

LIGHTING PLAN

PROJECT NUMBER: 25-053

DATE:

SHEET NO.

E-1.0

SHEET 4 OF 10

POWER PLAN GENERAL NOTES:

A. NOT USED.

B. NOT USED.

C. REFER TO DWG. E-0.1 FOR ELECTRICAL GENERAL NOTES, SYMBOL LIST, ABBREVIATIONS AND E-0.2 AND E-0.3 FOR ADDITIONAL SPECIFICATIONS.

D. FINAL CONDUIT/CABLE ROUTING SHALL BE DETERMINED IN-FIELD, AND PRIOR TO THE COMMENCEMENT OF WORK, COORDINATED WITH OTHER TRADE CONTRACTORS AND THE TENANT.

E. NOT USED.

F. ALL WIRING TO BE #12AWG WITH #12AWG GND IN 3/4" CONDUIT UNLESS OTHERWISE NOTED OR REQUIRED.

G. ALL 125-VOLT THROUGH 250-VOLT RECEPTALCES SUPPLIED BY SINGLE-PHASE BRANCH CIRCUITS RATED 150 VOLTS OR LESS TO GROUND, 50 AMPERES OR LESS, AND ALL RECEPTACLES SUPPLIED BY THREE-PHASE BRANCH CIRCUITS RATED 150 VOLTS OR LESS TO GROUND, 100 AMPERES OR LESS LOCATED IN KITCHEN, DRIVE-THRU, AND FOOD PREP AREAS SHALL BE GFCI PROTECTION PER NEC 210.8B.

H. NOT USED.

I. DETAIL REFERENCES ON PLANS ARE TO AID THE CONTRACTOR IN IDENTIFYING THE APPLICABLE DETAIL. NOT ALL DETAILS, OR INSTANCES OF DETAILS, ARE REFERENCES ON PLANS. CONTRACTOR IS RESPONSIBLE TO REVIEW AND COMPLY WITH ALL APPLICABLE DETAILS WHETHER OR NOT REFERENCED ON PLANS.

J. OUTLETS ON OPPOSITE SIDE OF WALL SHALL HAVE A MINIMUM OF 24 INCHES OF HORIZONTAL SEPARATION.

K. THE MAXIMUM ALLOWABLE AREA OF PENETRATIONS IN THE OCCUPANCY SEPARATION IS 100 SQUARE INCHES IN 100 SQUARE FEET OF WALL PER SECTION 711.3.2 OF THE INTERNATIONAL BUILDING CODE.

ELECTRICAL / DATA NOTES:

P.O.S. STATION:
- CONTRACTOR TO PROVIDE (1) DEDICATED, ISOLATED GROUND RECEPTACLE (ORANGE) FOR EACH P.O.S. STATION.
- CONTRACTOR TO PROVIDE (1) J-BOX AT EACH P.O.S. STATION w/ (3) TERMINATED CAT-5 CABLES IN EACH (1-POS, 1-VERIFONE, 1-EXTRA)
- CONTRACTOR TO PROVED (1) J-BOX IN P.O.S. CABINET w/ (1) CAT-5 CABLE, TERMINATED FOR VOICE.
- CONTRACTOR TO PROVIDE (1) DUPLEX RECEPT. IN P.O.S. CABINET FOR PHONE BASE, ETC.

LINE PRINTER:
- CONTRACTOR TO PROVIDE (1) DEDICATED, ISOLATED GROUND RECEPT. AND (1) J-BOX w/ ONE TERMINATED CAT-5 CABLE AT LINE PRINTER.

BUMP SECTION:
- CONTRACTOR TO PROVIDE (1) DEDICATED, ISOLATED GROUND RECEPT. AND (1) J-BOX w/ (1) TERMINATED CAT-5 CABLE AT END OF LINE FOR BUMP SCREEN.

MANAGER'S DESK:
- CONTRACTOR TO PROVIDE (3) QUAD RECEPTACLES MANAGER'S DESK (TWO ABOVE DESK, ONE BELOW DESK) AND (1) DUPLEX DEDICATED, ISOLATED GROUND RECEPTACLE (ABOVE TOP SHELF).
- CONTRACTOR TO PROVIDE AN 18-PORT MODULAR PATCH PANEL, ABOVE TOP SHELF AT MANAGER'S DESK.
- CONTRACTOR IS RESPONSIBLE FOR PULLING CAT-5 CABLE AND TERMINATING WALL JACKS.

POWER PLAN KEYED NOTES: (#)

1. ALL RECEPTACLES IN THIS AREA SHALL BE TAMPER RESISTANCE AS PER NEC 406.12. BOTH THE COVER AND OUTLETS IN SEATING AREA SHALL BE BLACK.
2. E.C. SHALL COORDINATE EXACT LOCATION (@44" A. F .F). POWER AND ELECTRICAL OUTLET/DISCONNECT REQUIREMENT FOR KITCHEN EQUIPMENT WITH KITCHEN EQUIPMENT MANUFACTURER IN COORDINATION WITH ARCHITECT/OWNER IN THE FIELD PRIOR TO ROUGH-IN. MAKE POWER PROVISION ACCORDINGLY. BASE BID ACCORDINGLY.
3. ELECTRICAL POWER PROVISION FOR MECHANICAL/PLUMBING EQUIPMENT. E.C. SHALL COORDINATE EXACT POWER AND ELECTRICAL OUTLET/DISCONNECT REQUIREMENT FOR MECHANICAL/PLUMBING EQUIPMENT WITH EQUIPMENT MANUFACTURER IN COORDINATION WITH ARCHITECT/OWNER IN THE FIELD PRIOR TO ROUGH-IN. BASE BID ACCORDINGLY.
4. E.C SHALL FIELD VERIFY THAT THE PANELS ARE UNOBSTRUCTED AND THE AREA WHERE THE PANELS ARE PLACED SHALL NOT BE USED AS A STORAGE SPACE AND WORKING SPACE FOR ELECTRICAL PANEL SHALL BE AS PER NEC SECTION 110.26(A).
5. ELECTRICIAN TO PROVIDE ONE DEDICATED, ISOLATED GROUND RECEPTACLE (ORANGE) FOR EACH POS STATION. ELECTRICIAN TO PROVIDE ONE J- BOX AT EACH POS STATION, WITH THREE TERMINATED CAT-6 CABLES IN EACH (1-POS,1-VERIFONE, 1-EXTRA). ELECTRICIAN TO PROVIDE ONE J-BOX IN POS CABINET WITH ONE CAT-6 CABLE, TERMI9NATED FOR VOICE, ELECTRICIAN TO PROVIDE ONE DUPLEX RECEPTACLE IN EACH POS CABINET FOR PHONE BASE, ETC.
6. DENOTES JUNCTION BOX MOUNTED @60" A.F.F. FOR AMBIANCE MUSIC VOLUME CONTROL. ROUTE (1) ¾" C WITH PULL STRING ABOVE CEILING. COORDINATE EXACT LOCATION WITH OWNER PRIOR TO INSTALLING.
7. ELECTRICIAN SHALL INSTALL ALL DATA CONNECTIONS IN 1 1/2" CONDUIT WITH PULL STRING FOR NCR TO INSTALL ALL KVS AND POS DATA WIRING AS PER THEIR CONTRACT. LOW VOLTAGE CABLING AND TERMINATIONS SHALL BE INCLUDED IN THIS BID FOR A COMPLETE POS SYSTEM INSTALLATION.
8. E.C. SHALL COORDINATE EXACT LOCATION/MOUNTING DETAILS OF ELECTRICAL/DATA OUTLET FOR MENUBOARD IN FIELD WITH ARCHITECT/OWNER. BASE BID ACCORDINGLY.
9. TOILET EXHAUST FAN TEF-1(N) AND TEF-2(N) INTERLOCKED TO RTU-1(E). PROVIDE RELAY AS REQUIRED. INSTALL PER MANUFACTURER'S REQUIREMENTS. REFER TO MECHANICAL PLANS FOR LOCATION.

KITCHEN EQUIPMENT SCHEDULE

#	EQUIPMENT DESCRIPTION	ROUGH-IN HEIGHT	VOLTS	PH	MCA	NEMA
100	CONVENIENCE OUTLET	18"	120V	1	1.5	5-15P
200	MANAGER'S OFFICE	34"	120V	1	3.0	5-15P
200A	MANAGER'S OFFICE	48"	120V	1	3.0	5-15P
200B	MANAGER'S OFFICE	109"	120V	1	1.5	5-15P
200C	MANAGER'S OFFICE	109"	120V	1	1.5	5-15P
200D	MANAGER'S OFFICE	109"	120V	1	3.0	5-15P
201	PHONE BOARD CONNECTIONS	114"	--	--	--	--
205	WATER FILTARATION SYSTEM	72"	120V	1	0.08	5-15P
206	ICE MACHINE	65"	115V	1	10.6	--
208	ICE MACHINE FILTER	65"	120V	1	20	--
210	SEMI-AUTOMATIC SLICER	24"	120V	1	3.5	5-15P
217	FREESTYLE SYRUP RACK & PUMP	72"	120V	1	20	--
222	BOOSTER PUMP	72"	230V	1	3.9	--
222A	WATER HEATER	FV	208V	3	22.20	DISC.
237A	REFRIGERATOR, SINGLE DOOR	24"	115V	1	2.2	5-15P
237C	REFRIGERATOR, TRIPLE DOOR	24"	115V	1	6.9	5-15P
238	BOTTELES TO GO COOLER	24"	115V	1	4.1	5-15P
243A	COUNTERTOP DRAWER STEAMER	44"	208V	1	41	6-50P
244	WATER SOFTNER SYSTEM	84"	120V	1	5.0	5-15R
-	-	-	-	-	-	-
246	MICROWAVE	24"	120V	1	15	5-15P
247D	72" REFRIGERATOR, PREP TABLE	24"	115V	1	7.2	5-15P
248B	FREEZER, DOUBLE DOOR	24"	115V	1	9.6	5-15P
249A	FREEZER WORK TOP 27"	24"	115V	1	2.3	5-15P
250A	COUNTERTOP WARMER	30"	120V	1	10	5-15P
253A	POS TERMINAL WITH CASH DRAWER	18"	120V	1	0.33	5-15P
253E	KVS W RADIAL ARM	-	120V	1	0.33	5-15P
255B	COUNTERTOP CONVEYOR TOASTER	38"	208V	1	28	6-50P
256	COUTERTOP VENTLESS FRYER	40"	208V	3	22	6-50P
256	COUTERTOP VENTLESS FRYER	40"	120V	1	16	5-15P
257A	FREE STYLE SODA MACHINE	24"	115V	1	20	5-15P
259	TEA BREWER	38"	120V	1	14	5-15P

NOTE:

1. NOT USED.
2. THE HEIGHT AND EXACT LOCATION OF ROUGH-INS SHALL BE COORDINATED IN THE FIELD WITH KITCHEN EQUIPMENT MANUFACTURER AND ARCHITECT.

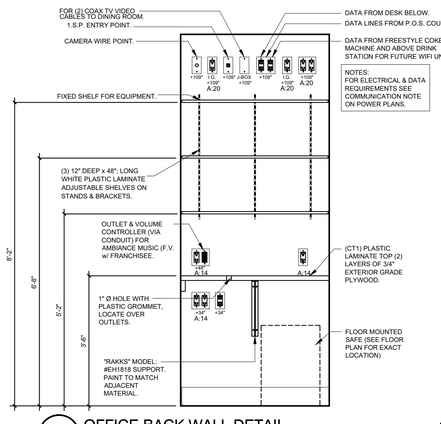
GENERAL NOTES FOR ELECTRICIAN - NCR:

A. NO VISIBLE CABLES WILL BE SEEN FROM THE CUSTOMER AREAS.

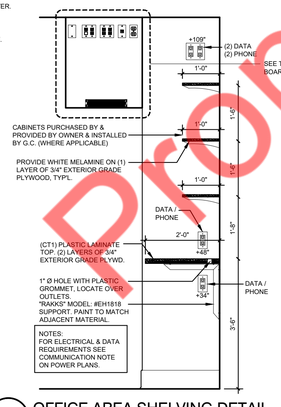
B. ALL CABLING NEEDS TO BE SLEEVED IN A BLACK SLEEVE OR CHASE.

C. NO CABLES ARE TO BE ZIP TIED, GLUES, TAPPED, OR TACKY SURFACE AREA FOR FINAL INSTALL, ALL CABLES ARE TO BE SLEEVED OR IN A CHASE.

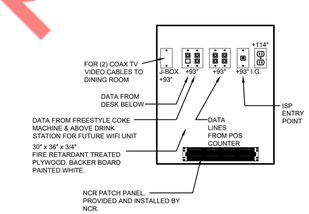
D. LABEL ALL CABLES AND TERMINATE AS NEEDED, PER FIREHOUSE SUBS STANDARDS.



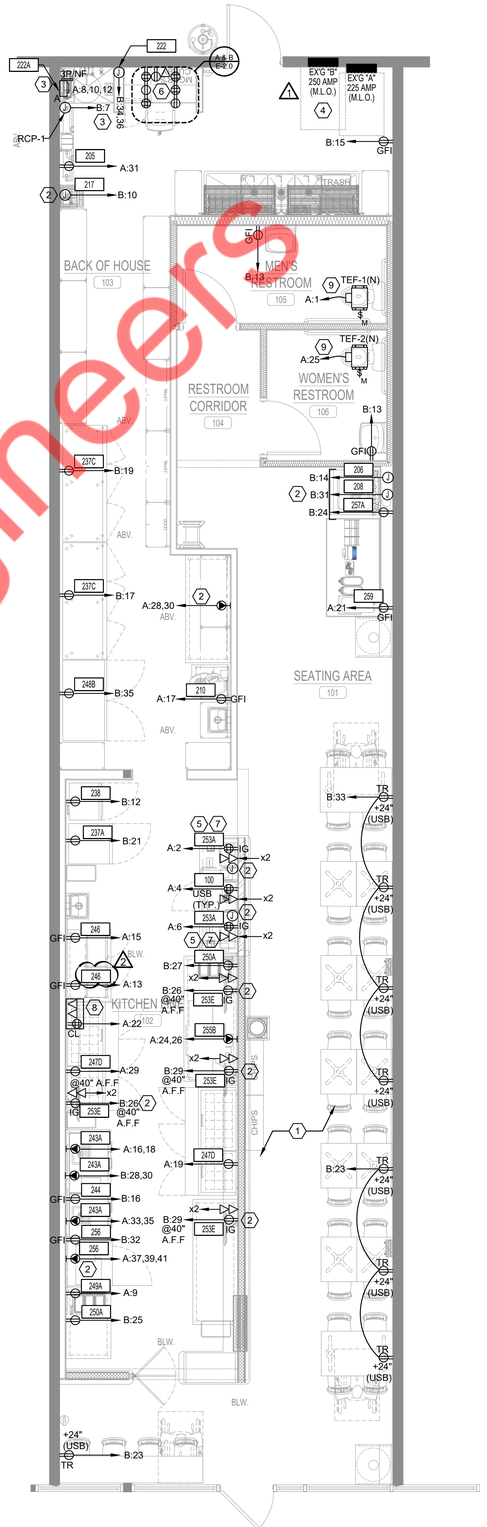
A OFFICE BACK WALL DETAIL
N.T.S.



B OFFICE AREA SHELVING DETAIL
N.T.S.



C PHONE BOARD
N.T.S.



1 POWER FLOOR PLAN
1/4" = 1'-0"

PLAN NORTH

DATE: 08-20-2025

REVISIONS:

NO.	DATE	DESCRIPTION	BY
1	08-20-2025	PLAN REVIEW COMMENTS	NYE
2	09-25-2025	PLAN REVIEW COMMENTS	NYE

PROJECT NAME:

FIREHOUSE SUBS

SHEET TITLE:

POWER FLOOR PLAN

PROJECT NUMBER: 25-053

DATE:

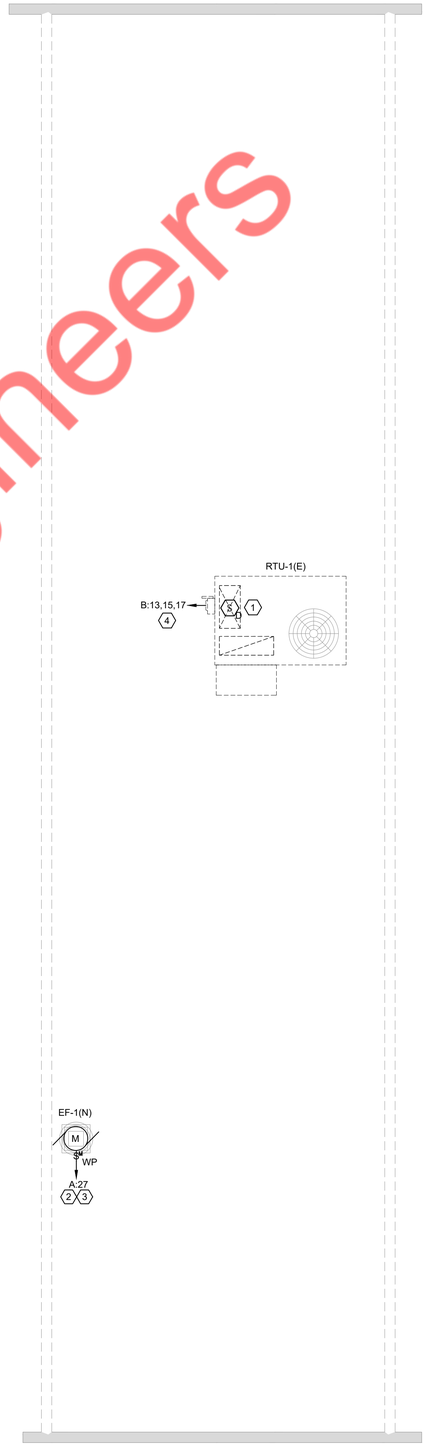
SHEET NO.

E-2.0

SHEET 5 OF 10

ROOF POWER PLAN KEYED NOTES: ⟨#⟩

1. DUCT-MOUNTED SMOKE DETECTOR PROVIDED BY ELECTRICAL CONTRACTOR (E.C.), INSTALLED BY MECHANICAL CONTRACTOR, WIRED BY E.C. TO SHUT UNIT DOWN UPON DETECTION OF SMOKE IN AIRSTREAM. FIELD COORDINATE ALL WORK INVOLVED FOR EXACT CONTROL OF THE SAME.
2. NEW EXHAUST FAN EF-1(N) TO BE INTERLOCKED WITH RTU-1(E). E.C. SHALL COORDINATE EXACT MAKE AND MODEL WITH MECHANICAL DRAWINGS AND SHALL COORDINATE EXACT LOCATION WITH MECHANICAL CONTRACTOR. BASE BID ACCORDINGLY.
3. EXHAUST FANS FURNISHED AND INSTALLED BY MECHANICAL CONTRACTOR. E.C. SHALL COORDINATE WITH MECHANICAL CONTRACTOR FOR SWITCHING & CONTROLS AND PROVIDE ALL NECESSARY WIRING AND ACCESSORIES REQUIRED. ⚠1
4. EXISTING CIRCUIT AND DISCONNECTING MEANS FOR EXISTING MECHANICAL EQUIPMENT SHALL REMAIN AS IT IS.



1 ROOF POWER PLAN
1/4" = 1'-0"

PLAN NORTH

DATE: 08-20-2025

REVISIONS:

NO.	DATE	DESCRIPTION	BY
⚠1	08-20-2025	PLAN REVIEW COMMENTS	NYE

PROJECT NAME:

FIREHOUSE SUBS

SHEET TITLE:

ROOF POWER PLAN

PROJECT NUMBER: 25-053

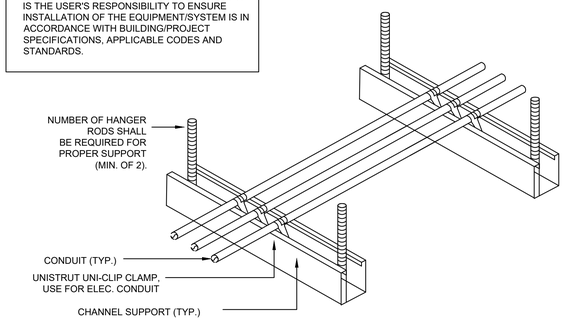
DATE:

SHEET NO.

E-2.1

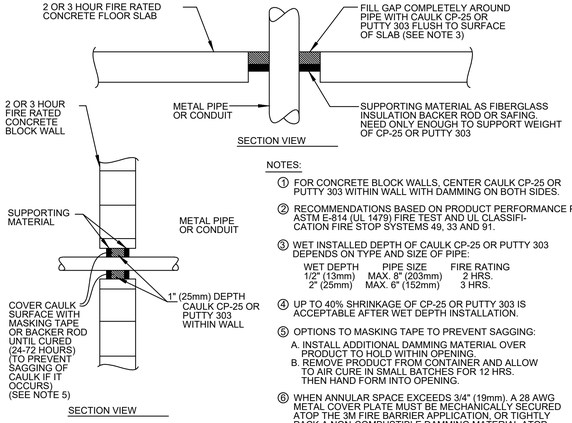
SHEET 6 OF 10

NOTE:
THIS INFORMATION MAY NOT CONTAIN ALL DETAILS REQUIRED FOR CONSTRUCTION. APPROPRIATE MODIFICATION MAY BE REQUIRED TO ENSURE SUITABILITY OF THESE DRAWINGS FOR THE SPECIFIC APPLICATION. IT IS THE USER'S RESPONSIBILITY TO ENSURE INSTALLATION OF THE EQUIPMENT/SYSTEM IS IN ACCORDANCE WITH BUILDING/PROJECT SPECIFICATIONS, APPLICABLE CODES AND STANDARDS.



NOTES:
1. ALL CONDUIT MAY BE COMBINED ON SAME SUPPORT CHANNEL WHERE PRACTICAL.
2. SUPPORT CHANNEL LENGTH SHALL NOT BE DETERMINED UNTIL ALL PIPING, CONDUIT, ETC. TO BE SUPPORTED IS COORDINATED.
3. SUPPORT CHANNEL SPACING SHALL BE NO MORE THAN 10'-0".
4. UNISTRUT AND CONDUIT INSTALLATION MAY BE REVERSED.

1 CONDUIT SUPPORT DETAIL
NTS



NOTES:
1. FOR CONCRETE BLOCK WALLS, CENTER CAULK CP-25 OR PUTTY 303 WITHIN WALL WITH DAMMING ON BOTH SIDES.
2. RECOMMENDATIONS BASED ON PRODUCT PERFORMANCE PER ASTM E-814 (UL 1479) FIRE TEST AND UL CLASSIFICATION FIRE STOP SYSTEMS 49, 33 AND 91.
3. WET INSTALLED DEPTH OF CAULK CP-25 OR PUTTY 303 DEPENDS ON TYPE AND SIZE OF PIPE:

WET DEPTH	PIPE SIZE	FIRE RATING
1/2" (13mm)	MAX. 8" (203mm)	2 HRS.
2" (25mm)	MAX. 6" (152mm)	3 HRS.

4. UP TO 40% SHRINKAGE OF CP-25 OR PUTTY 303 IS ACCEPTABLE AFTER WET DEPTH INSTALLATION.
5. OPTIONS TO MASKING TAPE TO PREVENT SAGGING:
   A. INSTALL ADDITIONAL DAMMING MATERIAL OVER PRODUCT TO HOLD WITHIN OPENING.
   B. REMOVE PRODUCT FROM CONTAINER AND ALLOW TO AIR CURE IN SMALL BATCHES FOR 12 HRS. THEN HAND FORM INTO OPENING.
6. WHEN ANNULAR SPACE EXCEEDS 3/4" (19mm). A 28 AWG METAL COVER PLATE MUST BE MECHANICALLY SECURED ATOP THE 3M FIRE BARRIER APPLICATION, OR TIGHTLY PACK A NON-COMBUSTIBLE DAMMING MATERIAL ATOP INSTALLED CAULK OR PUTTY.

2 FIRE STOP DETAIL
NTS

MANUAL MODE OPERATION:

1. PUSHBUTTON PRESS IS REQUIRED TO TURN LOAD ON.
2. LOAD TURNS OFF WHEN SENSOR TIMES OUT OR BY PRESSING PUSH BUTTON.
3. IF DAYLIGHT SENSOR IS ENABLED AND LIGHT LEVEL IS ABOVE SETPOINT, LOAD WILL NOT TURN ON.

AUTOMATIC MODE OPERATION:

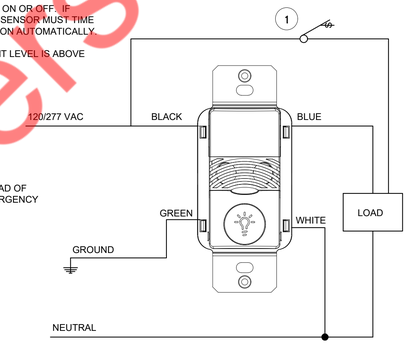
1. WHEN SENSOR ACTIVATES LOAD TURNS ON.
2. PUSHBUTTON CAN BE USED TO TURN LOAD ON OR OFF. IF PUSHBUTTON IS USED TO TURN LOAD OFF, SENSOR MUST TIME OUT FIRST, BEFORE LOAD CAN TURN BACK ON AUTOMATICALLY.
3. IF DAYLIGHT SENSOR IS ENABLED AND LIGHT LEVEL IS ABOVE SETPOINT, LOAD WILL NOT TURN ON.

SENSOR TYPES INCLUDE:

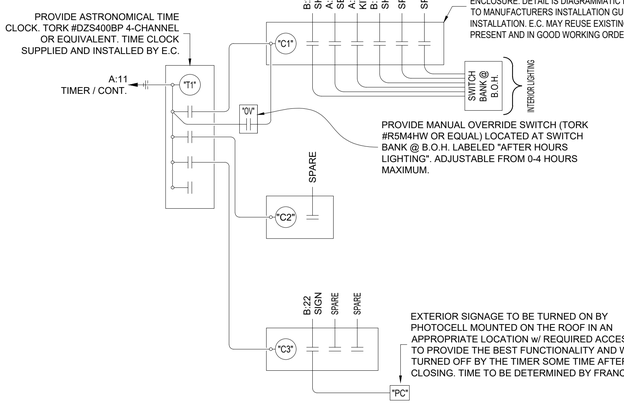
ACUITY : WSX PDT 2P FAN WH

(1) PROVIDE SENSING CONDUCTOR TAPPED AHEAD OF ANY SWITCHES WHERE SWITCH SERVES EMERGENCY FIXTURES.

ACUITY : WSX PDT 2P FAN WH
ON (UP) = MANUAL ON
OFF (DOWN) = AUTO ON



3 WALL SWITCH SENSOR
NTS



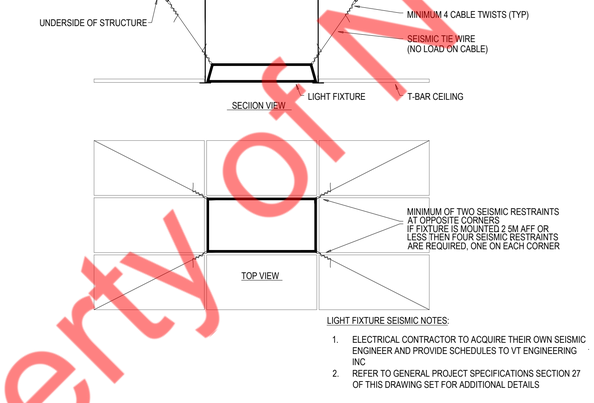
NOTE:
LIGHTING CONTACTOR(S) SHALL BE LOCATED IN FIELD ACCORDINGLY. COORDINATE EXACT LOCATION GC.

E.C. TO PROVIDE CONTACTOR(S) TO ACCOMMODATE THE NUMBER OF POLES REQUIRED. INSTALL IN A NEMA-1 ENCLOSURE. DETAIL IS DIAGRAMMATIC IN NATURE. REFER TO MANUFACTURERS INSTALLATION GUIDE FOR PROPER INSTALLATION. E.C. MAY REUSE EXISTING EQUIPMENT IF PRESENT AND IN GOOD WORKING ORDER.

PROVIDE MANUAL OVERRIDE SWITCH (TORK #R5M4HW OR EQUAL) LOCATED AT SWITCH BANK @ B.O.H. LABELED "AFTER HOURS LIGHTING". ADJUSTABLE FROM 0-4 HOURS MAXIMUM.

EXTERIOR SIGNAGE TO BE TURNED ON BY PHOTOCELL MOUNTED ON THE ROOF IN AN APPROPRIATE LOCATION w/ REQUIRED ACCESSORIES TO PROVIDE THE BEST FUNCTIONALITY AND WILL BE TURNED OFF BY THE TIMER SOME TIME AFTER CLOSING. TIME TO BE DETERMINED BY FRANCHISEE.

4 EXTERIOR AND INTERIOR LIGHTING CONTROL DETAIL
NTS



LIGHT FIXTURE SEISMIC NOTES:
1. ELECTRICAL CONTRACTOR TO ACQUIRE THEIR OWN SEISMIC ENGINEER AND PROVIDE SCHEDULES TO VT ENGINEERING INC
2. REFER TO GENERAL PROJECT SPECIFICATIONS SECTION 27 OF THIS DRAWING SET FOR ADDITIONAL DETAILS

5 TYPICAL TROFFER DETAILS
NTS

Electrical Requirements:
-four (4) 208 V 50 A 1 ph. NEMA 6-50R receptacles. Locate two behind each steamer stack. Arranged vertically @44" a.f.f.

-One: 120 V 5 amp New 5-15R GFCI duplex receptacle between to 50A receptacles.

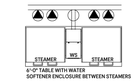


Figure 2: Steamer Set-up with Water Softener

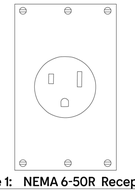


Figure 1: NEMA 6-50R Receptacle

Backroom VZN Water Filtration System:

-One: 120 V 5 amp New 5-15R duplex receptacle between @84" a.f.f.

6 STEAMER WATER LINE INSTALLATION DIAGRAM
NTS

DATE: 08-20-2025

REVISIONS:

NO.	DATE	DESCRIPTION	BY

PROJECT NAME:

FIREHOUSE SUBS

SHEET TITLE:

ELECTRICAL DETAILS

PROJECT NUMBER: 25-053

DATE:

SHEET NO.

E-3.0

SHEET 7 OF 10

PANEL: A (EXISTING) (1) | **S.S.C. RATING:** 10,000AIC (EXISTING) | **MOUNTING:** RECESSED

120/208 VOLTS, | **3** PHASE, | **4** WIRE | **LOCATION** BOH AREA

MAIN CB NA | **MLO:** 225A | **BUS:** 225A (EXISTING) | **FED FROM** EXISTING ELECTRICAL SERVICE

NOTE: L : LIGHTING, H : HVAC LOAD, M : MOTOR LOAD, R : RECEPTACLES, O : OTHER/MISC. (TYPICAL), * : GFI BREAKER.

CKT NO.	TRIP AMPS	DESCRIPTION OF LOAD	LOAD TYPE	LOAD (KVA)	MINIMUM BRANCH CIRCUIT	PER PHASE (KVA) A	B	C	MINIMUM BRANCH CIRCUIT	LOAD (KVA)	LOAD TYPE	DESCRIPTION OF LOAD	TRIP AMPS	CKT NO.
1	15	TEF-1(N)	M	0.05	2#12, #12G, 3/4"C	0.41			2#12, #12G, 3/4"C	0.36	R	253A_POS TERMINAL	20*	2
3	20	DUCT SMOKE DETECTOR (2)	O	0.10	2#12, #12G, 3/4"C		0.46		2#12, #12G, 3/4"C	0.36	R	100_POS COUNTER	20*	4
5	20	(2) LIGHTING & UNIT EQUIPMENTS- SEATING AREA	L	0.95	2#12, #12G, 3/4"C			1.31	2#12, #12G, 3/4"C	0.36	R	253A_POS TERMINAL	20*	6
7	20	LIGHTING & UNIT EQUIPMENTS - KITCHEN AREA & BOH AREA	L	0.63	2#12, #12G, 3/4"C	3.30			3#10, #10G, 3/4"C	2.67	O	WH-1	3P-30	8
9	20*	248A_FREEZER WORK TOP 48	E	1.73	2#12, #12G, 3/4"C		4.39			2.67	O			10
11	20	(2) TIME CLOCK	L	0.10	2#12, #12G, 3/4"C			2.77		2.67	O			12
13	20	246_MICROWAVE	E	1.80	2#12, #12G, 3/4"C	2.88			2#12, #12G, 3/4"C	1.08	R	OFFICE RECEPTACLE	20	14
15	20	246_MICROWAVE	E	1.80	2#12, #12G, 3/4"C		6.06		2#8, #10G, 3/4"C	4.26	E	243A_COUNTERTOP DRAWER STEAMER	2P-50*	16
17	20	210_SEMI-AUTOMATIC SLICER	E	0.42	2#12, #12G, 3/4"C			4.68		4.26	E			18
19	20*	247D_72" REFRIGIRETED PREP TABLE	E	0.83	2#12, #12G, 3/4"C	1.55			2#12, #12G, 3/4"C	0.72	R	OFFICE RECEPTACLE	20	20
21	20	259_TEA BREWER	E	1.68	2#12, #12G, 3/4"C		2.04		2#12, #12G, 3/4"C	0.36	R	MENU BOARD	20*	22
23	20	ROOF RECEPTACLE	R	0.54	2#12, #12G, 3/4"C			3.54	2#8, #10G, 3/4"C	3.00	E	255B_COUNTERTOP CONVEYOR TOASTER	2P-50*	24
25	15	TEF-2(N)	M	0.05	2#12, #12G, 3/4"C	3.05				3.00	E			26
27	15	EF-1(N)	M	0.55	2#12, #12G, 3/4"C		4.75		2#8, #10G, 3/4"C	4.20	E	RECEPTACLE FOR STEAMER MAINTENANCE	2P-50*	28
29	20*	247D_72" REFRIGIRETED PREP TABLE	E	0.83	2#12, #12G, 3/4"C			5.03		4.20	E			30
31	20*	205_WATER FILTARATION SYSTEM	E	0.01	2#12, #12G, 3/4"C	0.01						SPARE	20	32
33	2P-50*	243A_COUNTERTOP DRAWER STEAMER	E	4.26	2#8, #10G, 3/4"C		4.26					SPARE	20	34
35			E	4.26				4.26				SPARE	20	36
37	3P-50*	256_COUTERTOP VENTLESS FRYER	E	2.57	3#8, #10G, 3/4"C	2.57						SPARE	20	38
39			E	2.57			2.57					SPARE	20	40
41			E	2.57				2.57				SPARE	20	42
TOTAL CONNECTED LOAD (KVA)						**13.76**	**24.54**	**24.16**						

LOAD CLASSIFICATION		CONNECTED LOAD (KVA)	DEMAND FACTOR	DEMAND LOAD (KVA)	PANEL TOTAL LOAD		
TOTAL LIGHTING	L	1.68	125%	2.10			
TOTAL RECEPTACLE	R	3.78	100%	3.78	TOTAL CONNECTED LOAD	62.45	KVA
TOTAL HVAC	H	0.00	100%	0.00	TOTAL DEMAND LOAD	45.99	KVA
TOTAL MOTOR	M	0.64	100%	0.64	TOTAL CONNECTED CURRENT	173.56	AMP
TOTAL KITCHEN/EQUIPMENTS	E	48.25	65%	31.36	TOTAL DEMAND CURRENT	127.80	AMP
TOTAL OTHER/MISCILLANEOUS	O	8.10	100%	8.10	SYSTEM VOLTAGE	120/208 Wye	

PANEL: B (EXISTING) (1) | **S.S.C. RATING:** 10,000AIC (EXISTING) | **MOUNTING:** RECESSED

120/208 VOLTS, | **3** PHASE, | **4** WIRE | **LOCATION** BOH AREA

MAIN CB NA | **MLO:** 250A | **BUS:** 250A(EXISTING) | **FED FROM** PANEL-A (EXISTING)

NOTE: L : LIGHTING, H : HVAC LOAD, M : MOTOR LOAD, R : RECEPTACLES, O : OTHER/MISC. (TYPICAL), * :GFI BREAKER.

CKT NO.	TRIP AMPS	DESCRIPTION OF LOAD	LOAD TYPE	LOAD (KVA)	MINIMUM BRANCH CIRCUIT	PER PHASE (KVA) A	B	C	MINIMUM BRANCH CIRCUIT	LOAD (KVA)	LOAD TYPE	DESCRIPTION OF LOAD	TRIP AMPS	CKT NO.
1	20	REC.MAIN & MATH	R	0.36	2#12, #12G, 3/4"C	0.36						SPARE	20	2
3	20	SPARE					0.00					SPARE	20	4
5	20	SIGN	L	1.20	2#12, #12G, 3/4"C			1.20				SPARE	20	6
7	20	RCP-1	M	0.60	2#12, #12G, 3/4"C	0.60			2#12, #12G, 3/4"C	0.50	L	LIGHTING BUILDING & CANOPY	20	8
9	20	REC. T.M.B	R	0.54	2#12, #12G, 3/4"C		1.54		2#12, #12G, 3/4"C	1.00	E	217_FREESTYLE SYRUP RACK & PUMP	20	10
11	20	REC. MAIN	R	0.72	2#12, #12G, 3/4"C			1.12	2#12, #12G, 3/4"C	0.40	E	238_BOTTELES TO GO COOLER	20*	12
13	20	RESTROOM RECEPTACLE	R	0.36	2#12, #12G, 3/4"C	1.58			2#12, #12G, 3/4"C	1.22	E	206_ICE MACHINE	20*	14
15	20	KITCHEN & BOH CONVENIENCE RECEPTACLE	R	0.18	2#12, #12G, 3/4"C		0.78		2#12, #12G, 3/4"C	0.60	E	244_WATER SOFTNER SYSTEM	20	16
17	20*	237C_REFRIGERATOR,TRIPLE DOOR	E	0.79	2#12, #12G, 3/4"C			1.99	2#12, #12G, 3/4"C	1.20	L	SHOW WINDOW RECEPTACLE	20	18
19	20*	237C_REFRIGERATOR,TRIPLE DOOR	E	0.79	2#12, #12G, 3/4"C	1.99			2#12, #12G, 3/4"C	1.20	L	SHOW WINDOW RECEPTACLE	20	20
21	20*	237A_REFRIGERATOR, SINGLE DOOR	E	0.36	2#12, #12G, 3/4"C		1.56		2#12, #12G, 3/4"C	1.20	L	EXTERIOR SIGNAGE	20	22
23	20	CONVENIENCE RECEPTACLE - SEATING AREA	R	0.72	2#12, #12G, 3/4"C			2.56	2#12, #12G, 3/4"C	1.84	E	257A_FREE STYLE SODA MACHINE	20*	24
25	20*	250A_COUNTERTOP WARMER	E	1.20	2#12, #12G, 3/4"C	1.56			2#12, #12G, 3/4"C	0.36	R	253E_KVS W RADIAL ARM	20*	26
27	20*	250A_COUNTERTOP WARMER	E	1.20	2#12, #12G, 3/4"C		5.46		2#8, #10G, 3/4"C	4.26	E	243A_COUNTERTOP DRAWER STEAMER	2P-50*	28
29	20*	253E_KVS W RADIAL ARM	R	0.36	2#12, #12G, 3/4"C			4.62		4.26	E			30
31	20*	208_ICE MACHINE FILTER	E	1.00	2#12, #12G, 3/4"C	2.92			2#12, #12G, 3/4"C	1.92	E	256_COUTERTOP VENTLESS FRYER	20*	32
33	20	CONVENIENCE RECEPTACLE - SEATING AREA	R	0.72	2#12, #12G, 3/4"C		1.17		2#12, #12G, 3/4"C	0.45	M	222_BOOSTER PUMP	2P-20*	34
35	20*	248B_FREEZER DOUBLE DOOR	E	1.10	2#12, #12G, 3/4"C			1.55		0.45	M			36
37	3P-60	RTU-1(E)	H	5.88	3#6, #10G, 3/4"C	5.88						SPARE	20	38
39			H	5.88			5.88					SPARE	20	40
41			H	5.88				5.88				SPARE	20	42
TOTAL CONNECTED LOAD (KVA)						**14.89**	**16.40**	**18.93**						

LOAD CLASSIFICATION		CONNECTED LOAD (KVA)	DEMAND FACTOR	DEMAND LOAD (KVA)	PANEL TOTAL LOAD		
TOTAL LIGHTING	L	5.30	125%	6.63			
TOTAL RECEPTACLE	R	4.32	100%	4.32	TOTAL CONNECTED LOAD	50.22	KVA
TOTAL HVAC	H	17.65	100%	17.65	TOTAL DEMAND LOAD	43.86	KVA
TOTAL MOTOR	M	1.00	100%	1.00	TOTAL CONNECTED CURRENT	139.56	AMP
TOTAL KITCHEN/EQUIPMENTS	E	21.95	65%	14.27	TOTAL DEMAND CURRENT	121.89	AMP
TOTAL OTHER/MISCILLANEOUS	O	0.00	100%	0.00	SYSTEM VOLTAGE	120/208 Wye	

PANEL SCHEDULE KEYED NOTES: (#)

1. ALL THE BREAKERS IN THE PANELS ARE OF 10,000 AIC RATED.
2. E.C. SHALL CLEARLY INDICATE IN THE PANEL DIRECTORY THE CIRCUITS FEEDING TO THE UNIT EQUIPMENT.

NOTE:

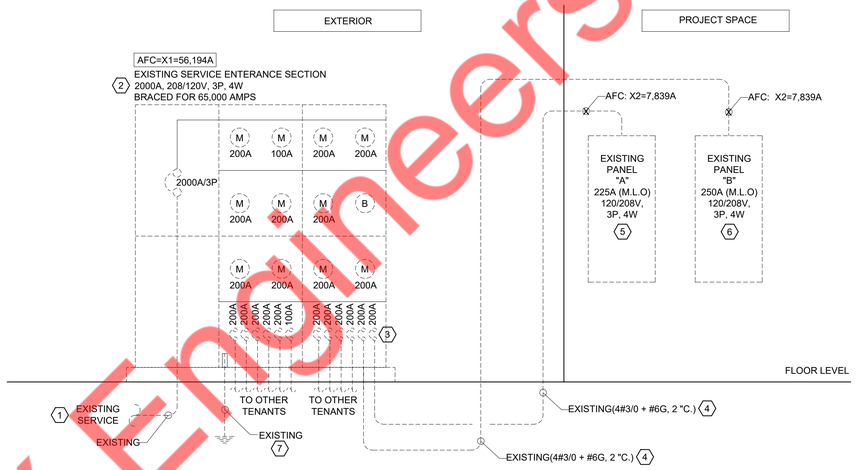
UNIT EQUIPMENT SERVES EMERGENCY LIGHTING.

OVERALL SERVICE LOAD CALCULATION AS PER NEC 220.87:

TENANTS SERVICE AMPERAGE	TENANTS MAXIMUM DEMAND AMPERAGE	
200A	145A	TOTAL OVERALL DEMAND AMPERAGE = 1,740A
200A	139A	
200A	163A	
200A	159A	
200A	170A	
200A	172A	
200A	115A	
200A	141A	
200A	162A	
200A	183A	
200A	127A	
100A	65A	

1 ELECTRICAL PANEL SCHEDULE
NTS

ELECTRICAL RISER SYMBOL
- NEW
- EXISTING ITEM/FEEDER TO REMAIN
- EXISTING ITEM/FEEDER TO BE DISCONNECTED & REMOVED



RISER DIAGRAM KEYED NOTES: (#)

1. EXISTING 2000A, 120/208V, 3-PHASE, 4-WIRE ELECTRICAL SERVICE FOR THE PROJECT SPACE SHALL REMAIN AS IS.
2. EXISTING 200A, 120/208V, 3-PHASE, 4-WIRE ELECTRICAL SERVICE ENTRANCE SECTION FOR THE OVERALL SPACE SHALL REMAIN AS IS.
3. EXISTING (2) 200A, 120/208V, 3-PHASE, 4-WIRE METER & DISCONNECT/BREAKER FOR THE PROJECT SPACE SPACE SHALL REMAIN AS IS.
4. EXISTING FEEDER FEEDING PROJECT SPACE PANEL SHALL REMAIN AS IS.
5. EXISTING 225A (M.L.O), 120/208V, 3-PHASE, 4-WIRE ELECTRICAL PANEL "A" FOR THE PROJECT SPACE SHALL REMAIN AS IS.
6. EXISTING 250A (M.L.O), 120/208V, 3-PHASE, 4-WIRE ELECTRICAL PANEL "B" FOR THE PROJECT SPACE.
7. EXISTING GROUNDING FOR THE PROJECT SPACE SHALL REMAIN AS IS.

2 ELECTRICAL RISER DIAGRAM
NTS

FAULT-CURRENT CALCULATION

EATON BUSSMANN SERIES — FC² available fault current calculator

Your System Details

Project Name: FIREHOUSE SUBS - COOLIDGE, AZ
System Type: Three-Phase
Creator Name:
Creator Email:
Creator Company/Organization:
Creator Title/Position:
Creation Date:

FAULT - X1
$I_{sym\ r.m.s.}$ 56,194 AMPS — AT EXISTING SES
Voltage (L-L) 208 V

CONDUCTOR RUN - C1
LENGTH 180 FT
SIZE 3/0
QTY (per phase) 1
TYPE Three-Conductor Cable
CONDUIT Steel
WIRE Cu, 600 V

CONDUCTOR

FAULT - X2
$I_{sym\ r.m.s.}$ 7,839 AMPS — AT PANEL A & B
Voltage (L-L) 208 V

Created Using Eaton's Bussmann Series - Available Fault Current Calculator 1.5 — Page 1

DATE: 08-20-2025

REVISIONS:

NO.	DATE	DESCRIPTION	BY
1	08-20-2025	PLAN REVIEW COMMENTS	NYE
2	09-25-2025	PLAN REVIEW COMMENTS	NYE

PROJECT NAME:

FIREHOUSE SUBS

SHEET TITLE:

ELECTRICAL PANEL SCHEDULE & RISER DIAGRAM

PROJECT NUMBER: 25-053

DATE:

SHEET NO.

E-4.0

SHEET 8 OF 10

COM*check* Software Version COMcheckWeb

Interior Lighting Compliance Certificate

Project Information

Energy Code: 2018 IECC
Project Title: FHS COOLIDGE
Project Type: Alteration

Construction Site: Owner/Agent: Designer/Contractor:

Allowed Interior Lighting Power

A Area Category	B Floor Area (ft2)	C Allowed Watts / ft2	D Allowed Watts
1-Retail	1840	1.06	1950
		Total Allowed Watts =	1950

Proposed Interior Lighting Power

A Fixture ID : Description / Lamp / Wattage Per Lamp / Ballast	B Lamps/ Fixture	C # of Fixture	D Fixture Watt.	E (C X D)
Retail (1840 sq.ft.)				
LED: LT-1: 2'x4' LED CEILING LIGHT FIXTURE: Other:	1	13	36	468
LED: D1: 6" DOWNLIGHT: Other:	1	4	20	80
LED: C1: TRACK LIGHT: Other:	1	10	60	600
LED: B1: PENDANT LIGHT FIXTURE: Other:	1	5	60	300
			Total Proposed Watts =	1448

Interior Lighting PASSES

Interior Lighting Compliance Statement

Compliance Statement: The proposed interior lighting alteration project represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed interior lighting systems have been designed to meet the 2018 IECC requirements in COM*check* Version COMcheckWeb and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

Name - Title | Signature | 07/31/25 Date

COM*check* Software Version COMcheckWeb

Inspection Checklist

Energy Code: 2018 IECC

Requirements: 100.0% were addressed directly in the COM*check* software

Text in the "Comments/Assumptions" column is provided by the user in the COMcheck Requirements screen. For each requirement, the user certifies that a code requirement will be met and how that is documented, or that an exception is being claimed. Where compliance is itemized in a separate table, a reference to that table is provided.

Section # & Req.ID	Plan Review	Complies?	Comments/Assumptions
C103.2 [PR4][1]	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the interior lighting and electrical systems and equipment and document where exceptions to the standard are claimed. Information provided should include interior lighting power calculations, wattage of bulbs and ballasts, transformers and control devices.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.

Additional Comments/Assumptions:

1 High Impact (Tier 1) | 2 Medium Impact (Tier 2) | 3 Low Impact (Tier 3)

Section # & Req.ID	Rough-In Electrical Inspection	Complies?	Comments/Assumptions
C405.2.2.2 [EL22][1]	Spaces required to have light-reduction controls have a manual control that allows the occupant to reduce the connected lighting load in a reasonably uniform illumination pattern >= 50 percent.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C405.2.1, C405.2.1.1 [EL18][1]	Occupancy sensors installed in classrooms/lecture/training rooms, conference/meeting/multipurpose rooms, copy/print rooms, lounges/breakrooms, enclosed offices, open plan office areas, restrooms, storage rooms, locker rooms, warehouse storage areas, and other spaces <= 300 sqft that are enclosed by floor-to-ceiling height partitions. Reference section language C405.2.1.2 for control function in warehouses and section C405.2.1.3 for open plan office spaces.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C405.2.1.2 [EL19][1]	Occupancy sensors control function in warehouses: In warehouses, the lighting in aisleways and open areas is controlled with occupant sensors that automatically reduce lighting power by 50% or more when the areas are unoccupied. The occupant sensors control lighting in each aisleway independently and do not control lighting beyond the aisleway being controlled by the sensor.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C405.2.1.3 [EL20][1]	Occupant sensor control function in open plan office areas: Occupant sensor controls in open office spaces >= 300 sq.ft. have controls 1) configured so that general lighting can be controlled separately in control zones with floor areas <= 600 sq.ft. within the space, 2) automatically turn off general lighting in all control zones within 20 minutes after all occupants have left the space, 3) are configured so that general lighting power in each control zone is reduced by >= 80% of the full zone general lighting power within 20 minutes of all occupants leaving that control zone, and 4) are configured such that any daylight responsive control will activate space general lighting or control zone general lighting only when occupancy for the same area is detected.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C405.2.2, C405.2.2.1, C405.2.2.2 [EL21][2]	Each area not served by occupancy sensors (per C405.2.1) have time-switch controls and functions detailed in sections C405.2.2.1 and C405.2.2.2.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable[3]	Requirement will be met.

1 High Impact (Tier 1) | 2 Medium Impact (Tier 2) | 3 Low Impact (Tier 3)

Section # & Req.ID	Rough-In Electrical Inspection	Complies?	Comments/Assumptions
C405.2.3, C405.2.3.1, C405.2.3.2 [EL23][2]	Daylight zones provided with individual controls that control the lights independent of general area lighting. See code section C405.2.3 Daylight-responsive controls for applicable spaces, C405.2.3.1 Daylight responsive control function and section C405.2.3.2 Sidelit zone.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C405.2.4 [EL26][1]	Separate lighting control devices for specific uses installed per approved lighting plans.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C405.2.4 [EL27][1]	Additional interior lighting power allowed for special functions per the approved lighting plans and is automatically controlled and separated from general lighting.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C405.3 [EL6][1]	Exit signs do not exceed 5 watts per face.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C405.6 [EL26][2]	Low-voltage dry-type distribution electric transformers meet the minimum efficiency requirements of Table C405.6.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C405.7 [EL27][2]	Electric motors meet the minimum efficiency requirements of Tables C405.7(1) through C405.7(4). Efficiency verified through certification under an approved certification program or the equipment efficiency ratings shall be provided by motor manufacturer (where certification programs do not exist).	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C405.8.2, C405.8.2.1 [EL28][2]	Escalators and moving walks comply with ASME A17.1/CSA B44 and have automatic controls configured to reduce speed to the minimum permitted speed in accordance with ASME A17.1/CSA B44 or applicable local code when not conveying passengers.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C405.9 [EL29][2]	Total voltage drop across the combination of feeders and branch circuits <= 5%.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.

Additional Comments/Assumptions:

1 High Impact (Tier 1) | 2 Medium Impact (Tier 2) | 3 Low Impact (Tier 3)

Section # & Req.ID	Final Inspection	Complies?	Comments/Assumptions
C303.3, C408.2.5.2 [FI17][3]	Furnished O&M instructions for systems and equipment to the building owner or designated representative.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C405.4.1 [FI18][1]	Interior installed lamp and fixture lighting power is consistent with what is shown on the approved lighting plans, demonstrating proposed watts are less than or equal to allowed watts.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	*See the Interior Lighting fixture schedule for values.*
C408.1.1 [FI57][1]	Building operations and maintenance documents will be provided to the owner. Documents will cover manufacturers' information, specifications, programming procedures and means of illustrating to owner how building, equipment and systems are intended to be installed, maintained, and operated.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C408.2.5.1 [FI16][3]	Furnished as-built drawings for electric power systems within 90 days of system acceptance.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C408.3 [FI33][3]	Lighting systems have been tested to ensure proper calibration, adjustment, programming, and operation.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.

Additional Comments/Assumptions:

1 High Impact (Tier 1) | 2 Medium Impact (Tier 2) | 3 Low Impact (Tier 3)

DATE: 08-20-2025

REVISIONS:

NO.	DATE	DESCRIPTION	BY

PROJECT NAME:

FIREHOUSE SUBS

SHEET TITLE:

ELECTRICAL COMCHECK

PROJECT NUMBER: 25-053

DATE:

SHEET NO.

E-5.0

SHEET 9 OF 10