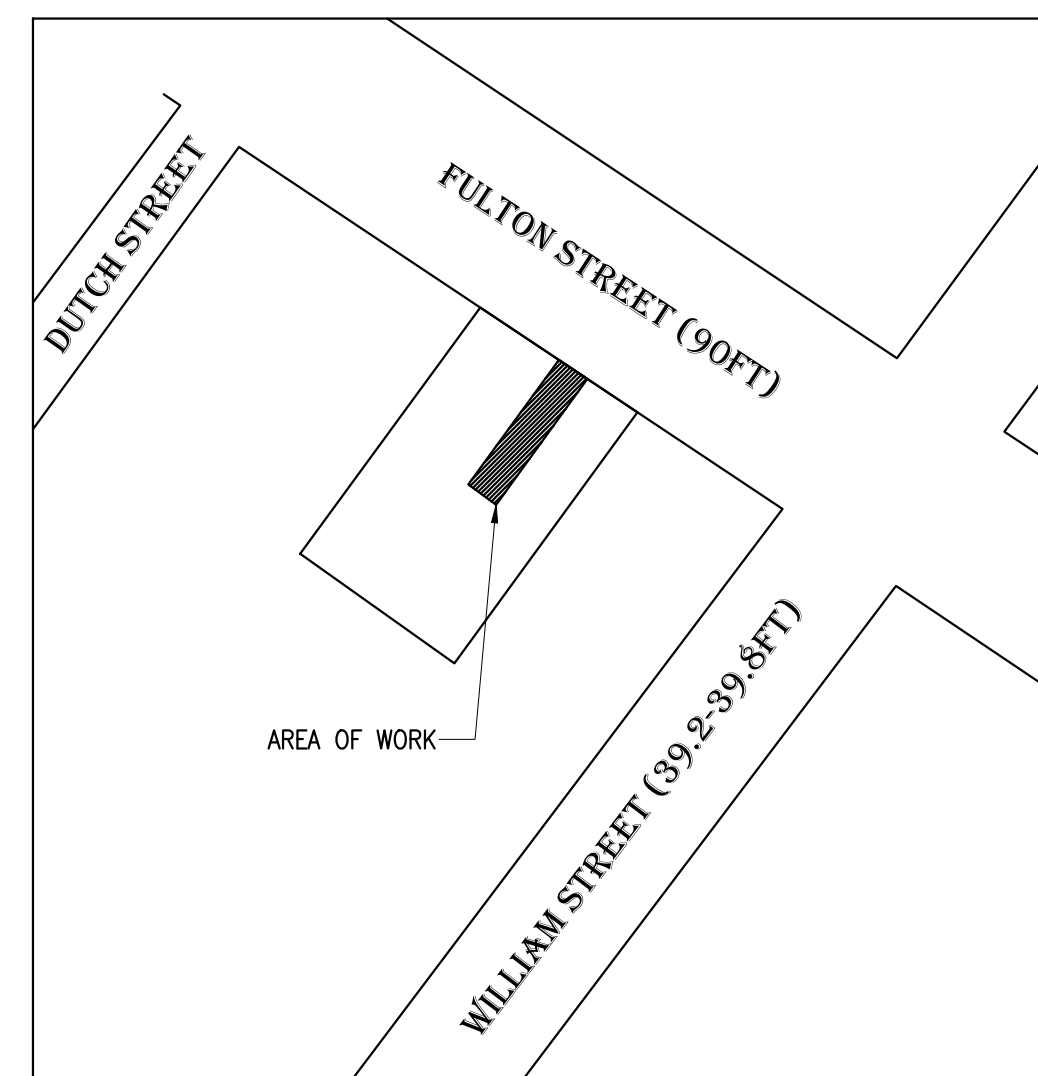


MECHANICAL SYMBOLS LIST	
	EQUIPMENT SYMBOL
AIR DEVICES	
	CEILING DIFFUSER SUPPLY
	CEILING DIFFUSER RETURN/EXHAUST
DUCT ACCESSORIES	
	VOLUME DAMPER W/ ACCESS DOOR
	BACKDRAFT DAMPER
	MOTORIZED DAMPER W/ ACCESS DOOR
	FIRE SMOKE DAMPER W/ ACCESS DOOR
CONTROLS AND SENSORS	
	THERMOSTAT
	TEMPERATURE SENSOR
DUCTWORK	
	RECTANGULAR DUCT (WIDTH X DEPTH)
	AIR DUCT W/ 1.5" ACOUSTICAL LINING
	FLEXIBLE CONNECTION
	ROUND DUCT (DIAMETER)
	ROUND DUCT CROSS SECTION
	POINT OF NEW CONNECTION
	SUPPLY AIR RECTANGULAR DUCT GOING UP/DOWN
	RETURN AIR RECTANGULAR DUCT GOING UP/DOWN

KEY PLAN:



PLOT PLAN
SCALE: N.T.S.

102 FULTON STREET, 10038
 BOROUGH : 1 (MANHATTAN)
 BLOCK : 78
 LOT : 7506
 ZONING DISTRICT : C6-4
 MAP : 12B
 BUILDING USE : MIXED RESIDENTIAL & COMMERCIAL BUILDING

MECHANICAL ABBREVIATIONS	
AC	AIR CONDITIONING UNIT
ACCU	AIR COOLED CONDENSING UNIT
ACH	AIR CURTAIN
AF	ABOVE FINISHED FLOOR
AL	ACOUSTIC LINING
BD	GRAVITY DAMPER
CD	CONDENSATE DRAIN
CDR	CEILING DIFFUSER RETURN
CDS	CEILING DIFFUSER SUPPLY
CFM	CUBIC FEET OF AIR PER MINUTE
CP	CONDENSATE PUMP
DN	DOWN
EER	ENERGY EFFICIENCY RATIO
EF	EXHAUST FAN
EN	ENERGY ANALYSIS
FC	FLEXIBLE CONNECTION
FD/AD	FIRE DAMPER W/ACCESS DOOR
FD	FIRE DAMPER W/FUSIBLE LINK
FSD	FIRE SMOKE DAMPER
HSPF	HEATING SEASONAL PERFORMANCE FACTOR
IEER	INTEGRATED ENERGY EFFICIENCY RATIO
MD	MOTORIZED DAMPER
OA	OUTSIDE AIR
OAF	OUTSIDE AIR FAN
RA	RETURN AIR
RAD	RETURN AIR DUCT
REF	REFRIGERANT PIPING
RG	RETURN GRILLE
SA	SUPPLY AIR
SAD	SUPPLY AIR DUCT
SEER	SEASONAL ENERGY EFFICIENCY RATIO
SG	SUPPLY GRILLE
VD	VOLUME CONTROL DAMPER

APPLICABLE CODES	
A.	2022 NYC BUILDING CODE.
B.	2022 NYC MECHANICAL CODE.
C.	2022 NYC PLUMBING CODE.
D.	2011 NATIONAL ELECTRICAL CODE. (NEC).
E.	2022 NYC FUEL GAS CODE.
F.	2020 NYC ENERGY CONSERVATION CODE.
G.	2022 NYC FIRE CODE.

ENERGY CONSERVATION CODE OF
NEW YORK CITY COMPLIANCE

TO THE BEST OF MY PROFESSIONAL KNOWLEDGE AND JUDGEMENT, THESE PLANS AND SPECIFICATION ARE IN COMPLIANCE WITH THE ENERGY CONSERVATION CODE OF NEW YORK CITY 2020.

NEW YORK CITY BUILDING DEPARTMENT NOTES

ALL WORK SHALL COMPLY WITH APPLICABLE SECTIONS OF THE CITY OF NEW YORK BUILDING CODE, EFFECTIVE NOVEMBER 7, 2022 AND ALL AMENDMENTS AND RULES AND REGULATIONS OF THE DEPARTMENT OF BUILDINGS TO DATE.

- THE CONTRACTOR SHALL ENGAGE THE SERVICES OF A PROFESSIONAL ENGINEER TO PROVIDE THE REQUIRED SPECIAL INSPECTIONS AND TESTS.
- TESTS WILL BE CONDUCTED UNDER DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, ARCHITECT OR OTHER PERSON HAVING NOT LESS THAN FIVE (5) YEARS EXPERIENCE SUPERVISING THE INSTALLATION OF SUCH MECHANICAL SYSTEMS. THE TESTS WILL SHOW COMPLIANCE WITH 2022 BUILDING CODE REQUIREMENTS AS OUTLINES IN SECTION [BC 1704].
- THE LICENSED PROFESSIONAL ENGINEER, ARCHITECT OR OTHER PERSON HAVING NOT LESS THAN FIVE (5) YEARS EXPERIENCE SUPERVISING THE INSTALLATION OF SUCH MECHANICAL SYSTEMS AND CONDUCTING SUCH TESTS WILL FILE DOCUMENTATION AND REPORTS OF TESTS THAT THE SYSTEM COMPLIES WITH THE CONSTRUCTION DOCUMENTS AND APPLICABLE LAWS.
- TESTS OF MECHANICAL SYSTEMS SHALL BE PERFORMED IN ACCORDANCE WITH SECTION MC 108.3 AND THE FOLLOWING SECTIONS OF THE 2022 NEW YORK CITY MECHANICAL CODE:
 - VENTILATION SYSTEM BALANCING MC 403.3.1.6
 - NYC NOISE CONTROL CODE: 24-227
 - REFRIGERATION SYSTEMS - MC 1108
- THE FOLLOWING WORK ITEMS, COMPONENTS, MATERIALS, CAPACITIES, ETC. SHALL COMPLY WITH THE REFERENCED CODE OR STANDARD:
 - STANDARDS OF HEATING - MC 309.1
 - NYC NOISE CONTROL CODE: 24-227
 - DUCT CONSTRUCTION AND INSTALLATION- MC 603
 - AIR INTAKES, EXHAUSTS AND RELIEFS - MC 401.5
 - AIR FILTERS - MC 605
 - SMOKE DETECTORS AND FIRE AND SMOKE DAMPERS - MC 606 & 607 RESPECTIVELY
- MINIMUM TEMPERATURE TO BE MAINTAINED IN OCCUPIED SPACES DURING HEATING SEASON: 68 DEG. FAHRENHEIT.
- VENTILATION FOR ALL AREA SHALL COMPLY WITH MC 401.
- A STATEMENT SHALL BE FILED BY THE OWNER OR TENANT IN POSSESSION THAT THE VENTILATION SYSTEM WILL BE KEPT IN CONTINUOUS OPERATION AT ALL TIMES DURING THE NORMAL OCCUPANCY OF THE STRUCTURE AS REQUIRED BY MC 403.3
- ALL FIRE DAMPERS SHALL BE ACCEPTED FOR USE BY THE NEW YORK CITY DEPARTMENT OF BUILDINGS. FIRE DAMPERS SHALL BE MANUFACTURED AND INSTALLED IN ACCORDANCE WITH UL 555, STANDARDS FOR FIRE DAMPERS AND CEILING DAMPERS.
- COMBINATION FIRE/SMOKE DAMPERS AND SMOKE DAMPERS SHALL BE ACCEPTED FOR USE BY NEW YORK CITY DEPARTMENT OF BUILDINGS AND SHALL BE MANUFACTURED AND INSTALLED IN ACCORDANCE WITH UL 555.
- SMOKE DETECTION SYSTEMS SHALL BE INSTALLED AND SEQUENCED TO FOLLOW CONTROLS OPERATIONS WITH THE REQUIREMENTS OF SECTION MC 606 TO CLOSE DAMPERS AND AUTOMATICALLY STOP THE FAN.
- THESE PLANS ARE APPROVED ONLY FOR THE WORK INDICATED ON THE APPLICATION SPECIFICATION SHEET. ALL OTHER MATTERS SHOWN ARE NOT TO BE RELIED UPON OR TO BE CONSIDERED AS EITHER BEING APPROVED OR IN ACCORDANCE WITH APPLICABLE CODES.
- SMOKE DETECTOR SHALL MEET UL268A.
- ALL HEATING AND COOLING LOADS CALCULATED PER ASHRAE/ACCA 183.
- CERTIFICATE OF COMPLIANCE SHALL BE OBTAINED FOR EQUIPMENT PER BC110.6.
- THESE PLANS ARE APPROVED ONLY FOR THE WORK INDICATED ON THE APPLICATION SPECIFICATION SHEET. ALL OTHER MATTERS SHOWN ARE NOT TO BE RELIED UPON OR TO BE CONSIDERED AS EITHER BEING APPROVED OR IN ACCORDANCE WITH APPLICABLE CODES.
- ALL WORK SHALL COMPLY WITH THE 2020 NYC ENERGY CONSERVATION CODE (NYCECC), EXCEPT WHERE EXPLICITLY STATED IN THE CODE, IT IS NOT RETROACTIVE IN EXISTING BUILDINGS. ADDITIONS TO EXISTING BUILDING MUST COMPLY WITH THE NYCECC WITH RESPECT TO NEW CONSTRUCTION. ALTERATIONS MUST COMPLY WITH THE ENERGY CODE WHERE ANY BUILDING SYSTEM OR SUBSYSTEM IS BEING EXCEPT WHERE EXCLUDED BY THE CODE.
- REFER TO ARCHITECTURAL DRAWINGS FOR REQUIRED FIRE-RATED WALL AND SMOKE WALL CONSTRUCTION AND LOCATION.
- AIR BALANCING REPORT SHALL BE PROVIDED IN ACCORDANCE WITH SECTION C408.2.2

SR. NO.	MECHANICAL DRAWING LIST	
1	M-001.00	MECHANICAL SYMBOL, DRAWING LIST, ABBREVIATION & NOTES
2	M-002.00	MECHANICAL SPECIFICATIONS (1 OF 2)
3	M-003.00	MECHANICAL SPECIFICATIONS (2 OF 2)
4	M-100.00	MECHANICAL FLOOR PLAN
5	M-500.00	MECHANICAL DETAILS (1 OF 3)
6	M-501.00	MECHANICAL DETAILS (2 OF 3)
7	M-502.00	MECHANICAL DETAILS (3 OF 3)
8	M-600.00	MECHANICAL SCHEDULE

TR1 SPECIAL INSPECTIONS			
YES	NO	INSPECTION LIST	NYC BC 2022
X	-	MECHANICAL SYSTEM	BC 1705.21
X	-	FIRE RESISTANCE PENETRATION AND JOINTS	BC 1705.17
X	-	POST INSTALLED ANCHORS	BC 1705.37

GENERAL NOTES

- CONTRACTOR SHALL SURVEY THE AREA OF THIS WORK BEFORE SUBMITTING A BID AND SHALL BE RESPONSIBLE FOR NOTIFYING THE ARCHITECT OF ANY CONDITIONS WHICH WOULD PREVENT THE INSTALLATION OF THE WORK AS SHOWN ON DRAWINGS.
- ALL APPLICABLE CODES, LAWS AND REGULATIONS GOVERNING OR RELATING TO ANY PORTION OF THIS WORK ARE HEREBY INCORPORATED INTO AND MADE A PART OF THESE SPECIFICATIONS, AND THEIR PROVISIONS SHALL BE CARRIED OUT BY THE CONTRACTOR WHO SHALL INFORM THE OWNER, PRIOR TO SUBMITTING A PROPOSAL, OF ANY WORK OR MATERIALS WHICH VIOLATE ANY OF THE ABOVE LAWS AND REGULATIONS. ANY WORK DONE BY THE CONTRACTOR CAUSING SUCH VIOLATION SHALL BE CORRECTED BY THE CONTRACTOR.
- BEFORE PROCEEDING WITH ANY WORK IN OCCUPIED OR USED AREAS, THE CONTRACTOR SHALL APPLY TO OWNER FOR PERMISSION TO ENTER SUCH AREAS. THE CONTRACTOR IS OBLIGED TO PERFORM HIS WORK ONLY AT THE TIMES DESIGNATED BY OWNER. THERE WILL BE NO ADDITIONAL COMPENSATION FOR THE WORK PERFORMED AFTER HOURS OR ON OFF-DAYS WITHOUT PRIOR WRITTEN APPROVAL.
- THE WORK IN THE BUILDING SHALL BE DONE WHEN AND AS DIRECTED, AND IN A MANNER SATISFACTORY TO THE OWNER. THE WORK SHALL BE PERFORMED SO AS TO CAUSE THE LEAST POSSIBLE INCONVENIENCE AND DISTURBANCE TO THE PRESENT OCCUPANTS.
- THE CONTRACTOR'S PROPOSAL FOR ALL WORK SHALL BE PREDICATED ON THE PERFORMANCE OF THE WORK DURING REGULAR WORKING HOURS, WHEN SO DIRECTED. HOWEVER, THE CONTRACTOR SHALL INSTALL WORK IN OVERTIME AND THE ADDITIONAL COST TO BE CHARGED THEREFORE SHALL BE ONLY THE "PREMIUM" PORTION OF THE WAGES PAID.
- CONTRACTOR SHALL ASCERTAIN THE APPROPRIATE METHOD FOR BRINGING THE UNITS INTO AND THROUGH THE BUILDING TO POSITION UNIT IN LOCATION SHOWN ON THE PLANS. WHERE NECESSARY, EQUIPMENT SHALL BE SHIPPED FROM MANUFACTURER IN SECTIONS OF SIZE SUITABLE FOR MOVING THROUGH RESTRICTIVE SPACES. COORDINATE WITH BUILDING OWNER APPROPRIATE TIMES OF DAY SUCH EQUIPMENT MAY BE MOVED THROUGH ALL AREAS.
- DUCTWORK AND PIPING IS SHOWN DIAGRAMMATICALLY AND DOES NOT SHOW OFFSETS, DROPS AND RISERS OF RUNS. THE CONTRACTOR SHALL MAKE ALLOWANCE IN PRICING FOR ROUTING OF DUCTWORK AND PIPING TO AVOID OBSTRUCTIONS. EXACT LOCATIONS ARE SUBJECT TO APPROVAL OF ARCHITECT. COORDINATION WITH THE OTHER TRADES IS REQUIRED.
- SUPPORT ALL DUCTWORK AND PIPING FROM BUILDING STRUCTURE AND/OR FRAMING IN AN APPROVED MANNER. WHERE OVERHEAD CONSTRUCTION DOES NOT PERMIT FASTENING OR SUPPORTS FOR EQUIPMENT, FURNISH ADDITIONAL FRAMING. INSERTS SHALL BE STEEL, SLOTTED TYPE AND FACTORY PAINTED. SINGLE ROD SHALL BE SIMILAR TO GRINNELL FIG. 281. MULTI-ROD SHALL BE SIMILAR TO FEE & MASON SERIES 9000 WITH END CAPS AND CLOSURE STRIPS. MAXIMUM CLEARANCE BETWEEN DUCTWORK CONTENTS AND COVERING SHALL NOT EXCEED 75% OF RATED INSERT CAPABILITY. WHEN SUPPORTING FROM BUILDING USE BEAM CLAMPS IN APPROVED MANNER.
- PROVIDE ALL NECESSARY FLASHING AND COUNTER FLASHING TO MAINTAIN THE WATERPROOFING INTEGRITY OF THIS BUILDING AS REQUIRED BY THE INSTALLATION OR REMOVAL OF PIPES, DUCTS, LOUVERS, CONDUIT, AND EQUIPMENT. PROVIDE EQUIPMENT CURBS AND DUNNAGE STEEL AS REQUIRED.
- SEAL OPENINGS AROUND DUCTS AND PIPING THROUGH PARTITIONS, WALLS AND FLOORS (NOT IN SHAFTS) WITH MINERAL WOOL OR OTHER NONCOMBUSTIBLE MATERIAL (FIBERGLASS INSULATION IS NOT ACCEPTABLE).
- WHERE PENETRATIONS THROUGH FIRE RATED WALLS ARE NOT FIRE PROOFED THIS CONTRACTOR SHALL BE RESPONSIBLE TO SEAL SAME TO MAINTAIN THE RATED INTEGRITY.
- INSTALL WORK SO AS TO BE READILY ACCESSIBLE FOR OPERATION, MAINTENANCE AND REPAIR. MINOR DEVIATIONS FROM DRAWINGS MAY BE MADE TO ACCOMPLISH THIS, BUT CHANGES WHICH INVOLVE EXTRA COST SHALL NOT BE MADE WITHOUT APPROVAL.
- ACCESS DOORS ARE REQUIRED FOR ALL BUILDING SERVICE VALVES THAT RUN THROUGH THE SPACE, AND ACCESS DOOR SHALL HAVE THE EQUAL RATED CAPACITY (1HR, 2HR, ETC.) AS WALL. COORDINATE ALL LOCATIONS OF ACCESS DOORS WITH THE ARCHITECT.
- REMOVABLE ACCESS TILE AND/OR ACCESS DOOR ARE REQUIRED IN HUNG CEILINGS, SHAFTS AND WALLS FOR ALL VOLUME AND FIRE DAMPERS, AUTOMATIC DAMPERS AND ALL OTHER MECHANICAL EQUIPMENT AND DEVICES. HVAC CONTRACTOR TO FURNISH ACCESS LOCATION REQUIREMENTS TO GENERAL CONTRACTOR. ACCESS TILE IDENTIFICATION: PROVIDE BUTTONS, TABS, AND MARKERS TO IDENTIFY LOCATION OF CONCEALED VALVES, DAMPERS AND EQUIPMENT.
- THE CONTRACTOR SHALL KEEP ALL EQUIPMENT AND MATERIALS, AND ALL PARTS OF THE BUILDING, EXTERIOR SPACES AND ADJACENT STREETS, SIDEWALKS AND PAVEMENTS, FREE FROM MATERIAL AND DEBRIS RESULTING FROM THE EXECUTION OF THIS WORK. EXCESS MATERIALS WILL NOT BE PERMITTED TO ACCUMULATE EITHER ON THE INTERIOR OR THE EXTERIOR.
- MATERIALS AND WORKMANSHIP, UNLESS OTHERWISE NOTED, SHALL BE IN ACCORDANCE WITH BUILDING STANDARDS.
- ALL EQUIPMENT SHALL BE PROVIDED WITH ONE YEAR WARRANTY PARTS AND LABOR AND FIVE YEARS ON COMPRESSORS. WARRANTY PERIOD BEGINS UPON PROJECT ACCEPTANCE
- ALL MATERIAL AND EQUIPMENT TO BE NEW UNLESS OTHERWISE NOTED AND SHALL BE IN ACCORDANCE WITH BUILDING STANDARDS.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR HIS WORK WITH ITS COMPLETION AND FINAL ACCEPTANCE AND SHALL REPLACE ANY OF THE SAME WHICH MAY BE DAMAGED, LOST, OR STOLEN WITHOUT ADDITIONAL COST TO THE OWNER.

GENERAL NOTES

- THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE FAILURE OF ANY DUCTWORK SYSTEM OR EQUIPMENT TO FUNCTION PROPERLY UPON COMPLETION OF HIS WORK UPON SAID SYSTEM OR EQUIPMENT.
- SUBMIT SHOP DRAWING OF ALL WORK WHICH MUST BE APPROVED BY THE ARCHITECT AND ENGINEER BEFORE WORK COMMENCES.
- INSURANCE: IN ACCORDANCE WITH BUILDING REQUIREMENTS THE CONTRACTOR SHALL INCLUDE A HOLD HARMLESS CLAUSE FOR OWNER AND ENGINEER.
- THE FINAL ACCEPTANCE WILL BE MADE AFTER THE CONTRACTOR HAS ADJUSTED HIS EQUIPMENT, BALANCED THE VARIOUS SYSTEMS, DEMONSTRATED THAT IT FULFILLS THE REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS AND HAS FURNISHED ALL THE REQUIRED CERTIFICATES OF INSPECTION AND APPROVAL.
- SPECIFICATIONS ARE OF SIMPLIFIED FORM AND INCLUDE INCOMPLETE SENTENCES. WORDS OR PHRASES SUCH AS "THE CONTRACTOR SHALL," "SHALL BE," "FURNISH," "PROVIDE," "A," "THE," AND "ALL" HAVE BEEN OMITTED FOR BREVITY.
- WHERE A CONFLICT EXISTS BETWEEN THE DRAWINGS, THE SPECIFICATIONS OR ANY OTHER CONSTRUCTION DOCUMENT, THE ONE WITH THE MOST STRINGENT REQUIREMENT(S) SHALL APPLY.
- THE CONTRACTOR SHALL COORDINATE WITH BUILDING ENGINEERING AND MANAGEMENT TEAM FOR ANY BUILDING UTILITY SHUTDOWN.
- THE CONTRACTOR SHALL FOLLOW WITH BUILDING RULES AND REGULATION.

DEFINITIONS:

- "PROVIDE": TO SUPPLY, INSTALL AND CONNECT UP COMPLETE AND READY FOR SAFE AND REGULAR OPERATION THE PARTICULAR WORK REFERRED TO UNLESS SPECIFICALLY OTHERWISE NOTED.
- "INSTALL": TO ERECT, MOUNT AND CONNECT COMPLETE WITH RELATED ACCESSORIES.
- "FURNISH" OR "SUPPLY": TO PURCHASE, PROCURE, ACQUIRE AND DELIVER COMPLETE WITH RELATED ACCESSORIES.

SCOPE OF WORK

SCOPE OF WORK

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

GENERAL NOTES

- PROVIDE ALL MATERIAL AND EQUIPMENT AND PERFORM ALL LABOR REQUIRED TO INSTALL COMPLETE AND OPERABLE MECHANICAL SYSTEMS AS INDICATED ON THE DRAWINGS, AS SPECIFIED AND AS REQUIRED BY CODE.
- CONTRACT DOCUMENT DRAWINGS FOR MECHANICAL WORK (HVAC, PLUMBING, AND FIRE PROTECTION) ARE DIAGRAMMATIC AND ARE INTENDED TO CONVEY SCOPE AND GENERAL ARRANGEMENT ONLY.
- THE LOCATIONS OF ALL ITEMS SHOWN ON THE DRAWINGS OR CALLED FOR IN THE SPECIFICATIONS THAT ARE NOT FIXED BY DIMENSIONS ARE APPROXIMATE ONLY. THE EXACT LOCATIONS NECESSARY TO SECURE THE BEST CONDITIONS AND RESULTS MUST BE DETERMINED BY THE PROJECT SITE CONDITIONS AND SHALL HAVE THE APPROVAL OF THE ENGINEER BEFORE BEING INSTALLED. DO NOT SCALE DRAWINGS.
- WHEN MECHANICAL WORK (HVAC, PLUMBING, SHEET METAL, FIRE PROTECTION, ETC.) IS SUBCONTRACTED, IT SHALL BE THE MECHANICAL CONTRACTOR'S RESPONSIBILITY TO COORDINATE SUBCONTRACTORS AND THE ASSOCIATED CONTRACTS. WHEN DISCREPANCIES ARISE PERTAINING TO WHICH CONTRACTOR PROVIDES A PARTICULAR ITEM OF THE MECHANICAL CONTRACT OR WHICH CONTRACTOR PROVIDES FINAL CONNECTIONS FOR A PARTICULAR ITEM OF THE MECHANICAL CONTRACT, IT SHALL BE BROUGHT TO THE ATTENTION OF THE MECHANICAL CONTRACTOR, WHOSE DECISION SHALL BE FINAL.
- COORDINATE CONSTRUCTION OF ALL MECHANICAL WORK WITH ARCHITECTURAL, STRUCTURAL, CIVIL, ELECTRICAL WORK, ETC., SHOWN ON OTHER CONTRACT DOCUMENT DRAWINGS.
- INSTALL ALL MECHANICAL EQUIPMENT AND APPURTENANCES IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS, CONTRACT DOCUMENTS, AND APPLICABLE CODES AND REGULATIONS.
- WHERE TWO OR MORE ITEMS OF THE SAME TYPE OF EQUIPMENT ARE REQUIRED, THE PRODUCT OF ONE MANUFACTURER SHALL BE USED.
- COORDINATE ALL EQUIPMENT CONNECTIONS WITH MANUFACTURERS' CERTIFIED DRAWINGS. COORDINATE AND PROVIDE ALL DUCT AND PIPING TRANSITIONS REQUIRED FOR FINAL EQUIPMENT CONNECTIONS TO FURNISHED EQUIPMENT. FIELD VERIFY AND COORDINATE ALL DUCT AND PIPING DIMENSIONS BEFORE FABRICATION.
- ALL CONTROL WIRE AND CONDUIT SHALL COMPLY WITH THE NATIONAL ELECTRIC CODE AND ELECTRICAL DIVISION OF THE SPECIFICATION.
- PROVIDE VIBRATION ISOLATION FOR ALL MECHANICAL EQUIPMENT TO PREVENT TRANSMISSION OF VIBRATION TO BUILDING STRUCTURE.
- PROVIDE VIBRATION ISOLATORS FOR ALL PIPING SUPPORTS CONNECTED TO, AND WITHIN 50 FT. OF, ISOLATED EQUIPMENT (EXCEPT AT BASE ELBOW SUPPORTS AND ANCHOR POINTS).
- LOCATE ALL TEMPERATURE, PRESSURE, AND FLOW MEASURING DEVICES IN ACCESSIBLE LOCATIONS WITH THE STRAIGHT SECTION OF PIPE OR DUCT UP- AND DOWNSTREAM AS RECOMMENDED BY THE MANUFACTURER FOR GOOD ACCURACY.
- WHERE BEAMS ARE INDICATED TO BE PENETRATED WITH DUCTWORK OR PIPING, COORDINATE DUCTWORK AND PIPING LAYOUT WITH BEAM OPENING SIZE AND OPENING LOCATIONS. COORDINATION SHALL BE DONE PRIOR TO THE FABRICATION OF DUCTWORK, CUTTING OF PIPING, OR FABRICATION OF BEAMS.
- ALL MISCELLANEOUS STEEL REQUIRED TO ENSURE PROPER INSTALLATION AND AS SHOWN IN THE DETAILS FOR PIPING, DUCTWORK, AND EQUIPMENT (UNLESS OTHERWISE NOTED) SHALL BE FURNISHED AND INSTALLED BY THE MECHANICAL CONTRACTOR.
- PROVIDE ACCESS PANELS FOR INSTALLATION IN WALLS AND CEILINGS, WHERE REQUIRED, TO SERVICE DAMPERS, VALVES, SMOKE DETECTORS, AND OTHER CONCEALED MECHANICAL EQUIPMENT. ACCESS PANELS SHALL BE TURNED OVER TO THE GENERAL CONTRACTOR FOR INSTALLATION. ACCESS PANELS SHALL HAVE THE EQUAL RATED CAPACITY (1HR, 2HR, ETC.) AS WALL.
- MECHANICAL EQUIPMENT, DUCTWORK, AND PIPING SHALL NOT BE SUPPORTED FROM A METAL DECK.
- ALL EQUIPMENT, PIPING, DUCTWORK, ETC., SHALL BE SUPPORTED AS DETAILED, SPECIFIED AND REQUIRED TO PROVIDE A VIBRATION-FREE INSTALLATION.
- ALL DUCTWORK, PIPING, AND EQUIPMENT SUPPORTED FROM STRUCTURAL STEEL SHALL BE COORDINATED WITH THE GENERAL CONTRACTOR. ALL ATTACHMENTS TO STEEL BAR JOISTS, TRUSSES, OR JOIST GIRDERS SHALL BE AT PANEL POINTS. PROVIDE BEAM CLAMPS MEETING MSS STANDARDS. WELDING TO STRUCTURAL MEMBERS SHALL NOT BE PERMITTED. THE USE OF C-CLAMPS SHALL NOT BE PERMITTED.
- ALL ROOF-MOUNTED EQUIPMENT CURBS/STEEL RAILS FOR EQUIPMENT PROVIDED BY THE MECHANICAL CONTRACTOR SHALL BE FURNISHED BY THE MECHANICAL CONTRACTOR AND INSTALLED BY THE GENERAL CONTRACTOR.
- LOCATIONS AND SIZES OF ALL FLOOR, WALL, AND ROOF OPENINGS SHALL BE COORDINATED WITH ALL OTHER TRADES INVOLVED.
- ALL OPENINGS IN FIRE WALLS DUE TO DUCTWORK, PIPING, CONDUIT, ETC., SHALL BE FIRE STOPPED WITH A PRODUCT SIMILAR TO 3M OR APPROVED EQUAL.
- ALL AIR CONDITIONING CONDENSATE DRAIN LINES FROM EACH AIR HANDLING UNIT SHALL BE PIPED FULL SIZE OF THE UNIT DRAIN OUTLET, WITH "P" TRAP, AND PIPED TO THE NEAREST DRAIN. SEE THE DETAILS SHOWN IN THE DRAWINGS OR THE CONTRACT SPECIFICATIONS FOR THE DEPTH OF THE AIR CONDITIONING CONDENSATE TRAP.
- REFER TO TYPICAL DETAILS FOR DUCTWORK, PIPING, AND EQUIPMENT INSTALLATION.

SPECIFICATIONS

SECTION 0001 - NOTICE TO BIDDERS

- BIDDERS REPRESENTATIONS
 - THE BIDDER BY MAKING A BID REPRESENTS THAT:
 - THE BIDDER HAS READ AND UNDERSTANDS THE BIDDING DOCUMENTS, TO THE EXTENT THAT SUCH DOCUMENTATION RELATES TO THE WORK FOR WHICH THE BID IS SUBMITTED, AND FOR OTHER PORTIONS OF THE PROJECT, IF ANY, BEING BID CONCURRENTLY OR PRESENTLY UNDER CONSTRUCTION.
 - THE BID IS MADE IN COMPLIANCE WITH THE BIDDING DOCUMENTS.
 - 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.
 - 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.
 - THE BID IS BASED UPON THE MATERIALS, EQUIPMENT AND SYSTEMS REQUIRED BY THE BIDDING DOCUMENTS WITHOUT EXCEPTION.
 - EXISTING CONDITIONS AND COORDINATION
 - THE BIDDER HAS VISITED THE SITE, BECOME FAMILIAR WITH LOCAL CONDITIONS UNDER WHICH THE WORK IS TO BE PERFORMED AND HAS CORRELATED THE BIDDER'S PERSONAL OBSERVATIONS WITH THE REQUIREMENTS OF THE PROPOSED BIDDING DOCUMENTS.
 - THE BIDDER SHALL PROPOSE COORDINATION OF WORK SUCH THAT CONFLICTS WITH OTHER TRADES AND SPACE ALLOCATIONS ARE AVOIDED.
- RESPONSIBILITIES
 - 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.
 - 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.
 - THE BIDDER UNDERSTANDS THAT ANY PROPOSED SHUT-DOWN OF EXISTING SYSTEMS DURING CONSTRUCTION SHALL BE PRE-ARRANGED WITH THE BUILDING MANAGER AND THAT SUCH SHUT-DOWNS ARE TO BE KEPT TO A MINIMUM.

END OF SECTION 0001

SECTION 0101 - QUALITY OF WORK

- WORKMANSHIP
 - ALL WORK SHALL BE FREE FROM DEFECTS IN MATERIALS AND WORKMANSHIP FOR A PERIOD OF ONE YEAR FROM DATE OF FINAL ACCEPTANCE.
 - 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.
 - UPON COMPLETION OF THE WORK THE CONTRACTOR SHALL REMOVE FROM THE SITE, ALL TOOLS, DEMOLISHED APPLIANCES AND ANY SURPLUS MATERIAL.
- CODE COMPLIANCE
 - ALL WORK SHALL MEET ALL STATE AND LOCAL CODES HAVING JURISDICTION.

END OF SECTION 0101

SECTION 0102 -REQUIRED DOCUMENTS

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

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

FOR THE FOLLOWING SYSTEMS:
METALLIC AND NON-METALLIC PIPES, CONDUIT, OR TUBING, ELECTRICAL CABLES, CABLE TRAYS WITH ELECTRIC CABLES, MISCELLANEOUS ELECTRICAL PENETRANTS, INSULATED PIPES, GROUPINGS OF PENETRANTS, USE ON OR MORE THE FOLLOWING MATERIALS:

- LATEX SEALANT
- SILICONE SEALANT
- INTUMESCENT PUTTY
- MORTAR
- SILICONE FOAM
- PILLOWS/BAGS
- INTUMESCENT WRAP STRIPS
- INTUMESCENT COMPOSITE SHEET

- MANUFACTURERS
 - HILTI CONSTRUCTION CHEMICAL, INC
 - TREMCO INC.
 - 3M FIRE PROTECTION PRODUCTS

END OF SECTION 078413

SECTION 230548 - VIBRATION CONTROLS FOR PIPING AND HVAC EQUIPMENT

- GENERAL
 - SEISMIC-RESTRAINT LOADING:
 - SITE CLASS AS DEFINED IN THE IBC: A, B
 - ASSIGNED SEISMIC USE GROUP OR BUILDING CATEGORY AS DEFINED IN THE IBC: I II III
 - COMPONENT IMPORTANCE FACTOR: 1.0
 - COMPONENT RESPONSE MODIFICATION FACTOR: 2.5
 - COMPONENT AMPLIFICATION FACTOR: 2.5.
 - DESIGN SPECTRAL RESPONSE ACCELERATION AT SHORT PERIODS (0.2 SECOND) 18%
 - DESIGN SPECTRAL RESPONSE ACCELERATION AT 1-SECOND PERIOD: 8%
- COMPONENTS
 - VIBRATION ISOLATORS:
 - ISOLATOR PADS: NEOPRENE, RUBBER, HERMETICALLY AND/OR SEALED COMPRESSED FIBERGLASS
 - MOUNTS: DOUBLE-DEFLECTION TYPE.
 - RESTRAINED MOUNTS: ALL DIRECTIONAL MOUNTINGS WITH SEISMIC RESTRAINT; CAST-DUCTILE-IRON HOUSING.
 - SPRING ISOLATORS: FREESTANDING, LATERALLY STABLE, OPEN-SPRING TYPE.
 - RESTRAINED SPRING ISOLATORS: FREESTANDING, STEEL, OPEN-SPRING TYPE WITH SEISMIC RESTRAINT.
 - HOUSED SPRING MOUNTS: DUCTILE-IRON OR STEEL HOUSING, WITH INTEGRAL, VERTICALLY ADJUSTABLE SEISMIC SNUBBERS.
 - ELASTOMERIC HANGERS: DOUBLE-DEFLECTION TYPE.
 - SPRING HANGERS: COMBINATION COIL-SPRING AND ELASTOMERIC-INSERT HANGERS WITH SPRING AND INSERT IN COMPRESSION.
 - SPRING HANGERS WITH VERTICAL-LIMIT STOP: COMBINATION COIL-SPRING AND ELASTOMERIC-INSERT HANGERS WITH SPRING AND INSERT IN COMPRESSION AND WITH VERTICAL-LIMIT STOP.
 - PIPE RISER RESILIENT SUPPORT: ALL-DIRECTIONAL, ACOUSTICAL PIPE ANCHOR.
 - RESILIENT PIPE GUIDES.
 - AIR-MOUNTING SYSTEMS:
 - AIR MOUNTS: FREESTANDING, SINGLE OR MULTIPLE, COMPRESSED-AIR BELLOWES.
 - RESTRAINED AIR MOUNTS: HOUSED COMPRESSED-AIR BELLOWES.
 - 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.

- VIBRATION ISOLATION EQUIPMENT BASES:
 - STEEL BASE: FACTORY-FABRICATED, WELDED, STRUCTURAL-STEEL BASES AND RAILS.
 - INERTIA BASE: FACTORY-FABRICATED, WELDED, STRUCTURAL-STEEL BASES AND RAILS READY FOR FIELD-APPLIED, CAST-IN-PLACE CONCRETE
- FIELD QUALITY CONTROL
 - TESTING: BY EITHER: OWNER-ENGAGED AGENCY, CONTRACTOR-ENGAGED AGENCY, OR CONTRACTOR.
- PART-2 PRODUCTS
 - VIBRATION ISOLATORS & SEISMIC-RESTRAINT DEVICES
 - 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:
 - ACE MOUNTINGS CO., INC.
 - AMBER/BOOTH COMPANY, INC.
 - CALIFORNIA DYNAMICS CORPORATION.
 - COOPER B-LINE, INC.; A DIVISION OF COOPER INDUSTRIES.
 - HILTI, INC.
 - ISOLATION TECHNOLOGY, INC.
 - KINETICS NOISE CONTROL.
 - LOOS & CO.; CABLEWARE DIVISION.
 - MASON INDUSTRIES.
 - TOLCO INCORPORATED; A BRAND OF NIBCO INC.
 - UNISTRUT; TYCO INTERNATIONAL, LTD.
 - VIBRATION ELIMINATOR CO., INC.
 - VIBRATION ISOLATION.
 - VIBRATION MOUNTINGS & CONTROLS, INC.

END OF SECTION 230548

SECTION 230593 - TESTING, ADJUSTING, AND BALANCING FOR HVAC

- SUMMARY
 - TESTING, ADJUSTING, AND BALANCING FOR THE FOLLOWING:
 - MOTORS.
 - CONDENSING UNITS.
 - AIR SYSTEM: CONSTANT VOLUME
 - QUALITY ASSURANCE
 - 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.
 - EXECUTION
 - 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.
 - 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.
 - THE REPORT SHALL INDICATE A SCHEMATIC DIAGRAM INDICATING LOCATIONS OF ALL EQUIPMENT TESTED AND MEASUREMENT LOCATIONS.
 - PRIOR TO FINAL INSPECTION OF THE WORK, THE TAB SPECIALIST SHALL BALANCE ALL SYSTEMS AS INDICATED ABOVE TO THE REQUIREMENTS OF THE DESIGN.
 - 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.
 - THE CONTRACTOR SHALL HAVE THE TESTING AND BALANCING SPECIALIST COORDINATE ALL WORK OF THIS SECTION WITH THE BUILDING MANAGER. BALANCING WORK SHALL NOT CONFLICT WITH OTHER WORK SO AS TO MAINTAIN COMPLETION WITHIN THE SPECIFIED TIME.
 - ALL INSTRUMENTS USED FOR TAB SHALL BE MAINTAINED IN GOOD WORKING CONDITION AND ACCURATELY CALIBRATED.
 - TOLERANCES: PLUS OR MINUS 5 PERCENT OF DESIGN VALUES.
 - INSPECTIONS: RANDOM CHECKS BY OWNER OR ARCHITECT TO VERIFY FINAL TESTING, ADJUSTING, AND BALANCING REPORT.
 - ADDITIONAL TESTS: RANDOM TESTS WITHIN 90 DAYS OF COMPLETING TAB TO VERIFY BALANCE CONDITIONS AND SEASONAL TESTS.

END OF SECTION 230593

SECTION 233113 - METAL DUCTS

- CONSTRUCTION
 - 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".
 - ALL DUCTWORK SHALL BE CONSTRUCTED TO SMACNA 1" WG DESIGN AND NOT LESS THAN THE FOLLOWING STANDARDS:
 - 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.
 - 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 CALULKING. SEAL ALL DUCT SEAMS, TRANSVERSE AND LONGITUDINAL, AIR TIGHT. PROVIDE TURNING VANES ALL 90° ELBOWS.
 - 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.
 - WHERE RECTANGULAR ELBOWS ARE USED, PROVIDE TURNING VANES IN ACCORDANCE WITH SECTION 23 33 00.
 - 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 TRIGHT TAPS WILL NOT BE ACCEPTED.
 - BUTTON PUNCH SNAP-LOCK CONSTRUCTION WILL NOT BE ACCEPTED ON ALUMINUM DUCTWORK.
 - 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

- PROVIDE TAPPING IN DUCTS FOR THERMOMETERS WHERE SPECIFIED. IN ADDITION, PROVIDE AN AIRTIGHT PLUGGED TAPPING LOCATED AS FOLLOWS:
 - UPSTREAM OF EACH REHEAT COIL AND VAV BOX.
 - DOWNSTREAM OF EACH REHEAT COIL AND VAV BOX.

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

- MATERIALS
 - SINGLE-WALL RECTANGULAR DUCTS AND FITTINGS.
 - SINGLE-WALL ROUND AND FLAT-OVAL DUCTS AND FITTINGS.
 - SHEET METAL MATERIALS:
 - GALVANIZED SHEET STEEL.
 - STAINLESS-STEEL SHEETS.
 - ALUMINUM SHEETS.
 - FACTORY-APPLIED ANTI-MICROBIAL COATING.
 - DUCT LINER:
 - FIBROUS GLASS, TYPE I, FLEXIBLE.
 - WITH ANTI-MICROBIAL EROSION-RESISTANT COATING.
 - FLEXIBLE ELASTOMERIC.
 - NATURAL FIBER.
 - SEALANT MATERIALS:
 - TWO-PART TAPE SEALING SYSTEM.
 - WATER-BASED JOINT AND SEAM SEALANT.
 - SOLVENT-BASED JOINT AND SEAM SEALANT.
 - FLANGED JOINT SEALANT.
 - FLANGE GASKETS.
 - ROUND DUCT JOINT O-RING SEALS.

- DUCT CLEANING
 - CLEAN EXISTING DUCT SYSTEM(S) BEFORE TESTING, ADJUSTING, AND BALANCING.
 - CLEAN THE FOLLOWING ITEMS:
 - AIR OUTLETS AND INLETS.
 - SUPPLY, RETURN, AND EXHAUST FANS.
 - AIR-HANDLING UNITS.
 - COILS AND RELATED COMPONENTS.
 - RETURN-AIR DUCTS, DAMPERS, ACTUATORS, AND TURNING VANES.
 - SUPPLY-AIR DUCTS, DAMPERS, ACTUATORS, AND TURNING VANES.
 - DEDICATED EXHAUST AND VENTILATION COMPONENTS AND MAKEUP AIR SYSTEMS.

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

END OF SECTION 233113

SPECIFICATIONS

SECTION 230713 – DUCT 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-SKIRM-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 SUPERSLUCK.

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

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

PIPING INSULATION

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

PIPING INSULATION SCHEDULE

SERVICE	SIZE	THICKNESS	MATERIAL FINISH
REFRIGERANT PIPING	1.5"	P-6	
CONDENSATE DRAIN	1.0"	P-6	

- B. PIPING, VALVES AND FITTINGS TO BE INSULATED: PROTECTIVE COVERINGS SHALL BE INSTALLED ON AREAS OF INSULATION THAT ARE EXPOSED TO WEATHER OR SUBJECT TO MECHANICAL DAMAGE. THE PROTECTIVE COVERING SHALL BE:

a. ARMA-CHEK SILVER® MULTI-LAYER LAMINATE OF ALUMINUM, COATED WITH A UV PROTECTIVE FILM AND BACKED WITH A FLEXIBLE PVC FILM. THE MATERIAL SHOULD BE ADHERED WITH ARMAFLEX 520 ADHESIVE OR EQUIVALENT, AND ALL JOINTS AND SEAMS SECURED WITH ARMA-CHEK SILVER TAPE. INSTALLATION SHALL BE IN ALL CASES TO THE MANUFACTURER'S RECOMMENDATIONS.

b. HIGH DENSITY RUBBER CLADDING OF THE "ARMA-CHEK R" TYPE BONDED USING AN APPROPRIATE FULL CONTACT ADHESIVE WITH A MINIMUM 50 MM OVERLAP AT ALL BUTT JOINTS AND LONGITUDINAL SEAMS. A WEATHER-PROOF MASTIC SEALANT SHALL BE APPLIED OVER ALL SEAMS AND JOINTS. ALL MATERIAL SHALL BE OVERLAPPED AND STAGGERED IN SUCH A WAY AS TO ENSURE A WATERSEAL IS ALWAYS PROVIDED. INSTALLATION SHALL BE IN ALL CASES TO THE MANUFACTURER'S RECOMMENDATIONS. ALL EXCESS ADHESIVE VISIBLE ON THE SURFACE OF THE COMPLETED ASSEMBLY SHALL BE REMOVED USING AN APPROPRIATE CLEANING MATERIAL.

c. METAL CLADDING, COMPRISED OF COATED SHEET METAL, WITH ALL EXTERNAL JOINTS AND FIXING MADE WEATHER-PROOF WITH SILICONE SEALANT.

C. MATERIAL:

- 1) TYPE P-1: MINIMUM 4 LB DENSITY MOLDED FIBERGLASS, MAXIMUM 0.24 K-FACTOR AT 75 DEG F MEAN TEMPERATURE WITH FACTORY-APPLIED FIRE-RETARDANT FOIL-SKIRM-KRAFT FACING. ALL SERVICE JACKET. SIMILAR TO OWENS-CORNING 650 ASJ.
- 2) TYPE P-3: MINIMUM 4 LB DENSITY MOLDED FIBERGLASS FITTING, MAXIMUM 0.23 K-FACTOR AT 75 DEG F MEAN TEMPERATURE SIMILAR TO EPOLUX HAMFAB MOLDED FITTINGS.
- 3) TYPE P-4: MINIMUM 1 LB DENSITY FIBERGLASS FITTING INSERTS, MAXIMUM 0.27 K-FACTOR AT 75 DEG F MEAN TEMPERATURE SIMILAR TO MANVILLE HI-LO TEMP INSULATION INSERTS.
- 4) TYPE P-6: MINIMUM 6 LB MOLDED FOAMED PLASTIC. MAXIMUM 0.27 K-FACTOR AT 75 DEG F MEAN TEMPERATURE. MAXIMUM 0.17 PERMEANCE. SIMILAR TO ARMSTRONG ARMAFLEX II.

D. 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 SUPERSLUCK.

END OF SECTION 230713

SECTION 233713 – DIFFUSERS, REGISTERS, AND GRILLES

1.1 PRODUCTS

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

B. MANUFACTURERS: TITUS

1. SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCT BY ONE OF THE FOLLOWING:
 - a. CARNES.
 - b. HART & COOLEY INC.
 - c. KRUEGER.
 - d. METALAIR, INC.
 - e. NAILOR INDUSTRIES INC.
 - f. RUSKIN

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

END OF SECTION 233713

SECTION 230517 – SLEEVES AND SLEEVE SEALS FOR HVAC PIPING

1.1 SLEEVE-SEAL SYSTEMS

- A. FIELD-ASSEMBLED, MODULAR SEALING-ELEMENT UNIT FOR FILLING ANNUAL SPACE BETWEEN PIPING AND SLEEVE.

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 230518 – ESCUTCHEONS FOR HVAC PIPING

PART 2 – PRODUCTS

2.1 ESCUTCHEONS

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

2.2 FLOOR PLATES

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

PART 3 – EXECUTION

3.1 INSTALLATION

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

1. ESCUTCHEONS FOR NEW PIPING:

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

3.2 FIELD QUALITY CONTROL

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

END OF SECTION 230518

NOISE CONTROL

- A. ALL ROOM NC LEVELS SHALL BE 35 OR LESS.
- B. PROVIDE SOUND LINING FOR THE FOLLOWING DUCTWORK:
 - 1) ALL DUCTWORK WITHIN NOT LESS THAN 20 FT ON EACH SIDE OF ALL FANS AND AC UNITS.
 - 2) AIR TRANSFER DUCTS.
 - 3) DOWNSTREAM OF ALL CONSTANT VOLUME BOXES FOR A MINIMUM OF 15 FT.
 - 4) ALL MIXED AIR PLENUMS.
 - 5) FULL EXTENT OF SUPPLY DUCTS SERVING CONFERENCE ROOMS.
 - 6) ALL EXPOSED INTERIOR SUPPLY DUCTWORK.
 - 7) ALSO WHERE NOTED ON A DRAWING.

- C. SOUND LINING IN DUCTWORK: FIBROUS GLASS, MINIMUM 3 LB DENSITY, 1 IN. THICKNESS, MAXIMUM 0.25 K FACTOR AT 75 DEG F MEAN TEMPERATURE WITH ACRYLIC COATED FINISH FACTORY APPLIED EDGE COATING AND STENCILED IN ACCORDANCE WITH NFPA 90. FLAMESPREAD SHALL BE A MAXIMUM OF 25. LINING SHALL NOT SUPPORT MICROBIAL GROWTH AND SHALL BE TESTED IN ACCORDANCE WITH ASTM C 1071 AND ASTM G21/G22. SIMILAR TO MANVILLE PERMACOTE LINA COUSTIC.

- D. ALL SOUND LINING, ADHESIVES, FACES AND ACCESSORIES TO BE APPLIED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS, EXCEPT AS OTHERWISE NOTED.

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 TYPE
- I. EQUIPMENT SUPPORTS.

END OF SECTION 230529

IRB ENERGY CODE PROGRESS INSPECTIONS (MECHANICAL)						
YES	NO	TAG	INSPECTION/TEST	FREQUENCY/MINIMUM	REFERENCE STANDARD (SEE ECC CHAPTER 6) OR OTHER CRITERIA	ECC OR OTHER CITATION
		11B	MECHANICAL AND SERVICE WATER HEATING INSPECTIONS			
			SHUTOFF DAMPERS: DAMPERS FOR STAIR AND ELEVATOR SHAFT VENTS AND OTHER OUTDOOR AIR INTAKES AND EXHAUST OPENINGS INTEGRAL TO THE BUILDING ENVELOPE MUST BE VISUALLY INSPECTED TO VERIFY THAT SUCH DAMPERS, EXCEPT WHERE PERMITTED TO BE GRAVITY DAMPERS, COMPLY WITH APPROVED CONSTRUCTION DRAWINGS. MANUFACTURER'S LITERATURE MUST BE REVIEWED TO VERIFY THAT THE PRODUCT HAS BEEN TESTED AND FOUND TO MEET THE STANDARD.	AS REQUIRED DURING INSTALLATION	APPROVED CONSTRUCTION DOCUMENTS, AMCA 5000	C403.5.5, C403.7.7; ASHRAE 90.1 – 6.4.3.4
X		11B2	HVAC-R EQUIPMENT: EQUIPMENT SIZING, EFFICIENCIES AND OTHER PERFORMANCE FACTORS OF ALL MAJOR EQUIPMENT UNITS, AS DETERMINED BY THE APPLICANT OF RECORD, AND NO LESS THAN 15% OF MINOR EQUIPMENT UNITS, SHALL BE VERIFIED BY VISUAL INSPECTION AND, WHERE NECESSARY, REVIEW OF MANUFACTURER'S DATA. POOL HEATERS AND COVERS SHALL BE VERIFIED BY VISUAL INSPECTION.	PRIOR TO FINAL PLUMBING AND CONSTRUCTION INSPECTION	APPROVED CONSTRUCTION DOCUMENTS	C403.1, C403.2, C403.3, C403.7.5, C404.9, C404.10, C406; ASHRAE 90.1 – 6.3, 6.4, 6.5, 6.7, 7.4, 7.5, 7.8, 10.1.6, APPENDIX I
X		11B3	HVAC-R SYSTEM CONTROLS: NO LESS THAN 20% OF EACH TYPE OF REQUIRED CONTROLS MUST BE VERIFIED BY VISUAL INSPECTION AND TESTED FOR FUNCTIONALITY AND PROPER OPERATION. SUCH CONTROLS MUST INCLUDE, BUT ARE NOT LIMITED TO: <ul style="list-style-type: none"> • THERMOSTATIC • OFF-HOUR • ZONES • VENTILATION SYSTEM AND FAN CONTROLS • ENERGY RECOVERY SYSTEMS • KITCHEN/LAB EXHAUST SYSTEMS • FAN SYSTEMS SERVING SINGLE AND MULTIPLE ZONES • OUTDOOR HEATING SYSTEMS • HOT GAS BYPASS LIMITATION • REFRIGERATION SYSTEMS 	AFTER INSTALLATION AND PRIOR TO FINAL ELECTRICAL AND CONSTRUCTION INSPECTION, EXCEPT THAT FOR CONTROLS WITH SEASONALLY DEPENDENT FUNCTIONALITY, SUCH TESTING MUST BE PERFORMED BEFORE SIGNOFF FOR ISSUANCE OF A FINAL CERTIFICATE OF OCCUPANCY	APPROVED CONSTRUCTION DOCUMENTS, INCLUDING CONTROL SYSTEM NARRATIVES; ASHRAE GUIDELINE 1-THE HVAC COMMISSIONING PROCESS WHERE APPLICABLE	C403.1, C404.4, C404.5, MC 603.9; ASHRAE 90.1 – 6.3, 6.4, 6.5, 6.6, 7.4, 7.5, APPENDIX I
X		11B4	HVAC-R DESIGN AND INSULATION: INSTALLED PIPING INSULATION MUST BE VISUALLY INSPECTED TO VERIFY PROPER INSULATION PLACEMENT AND VALUES. SERVICE HOT WATER DISTRIBUTION SYSTEMS MUST BE INSPECTED TO VERIFY THE SUPPLY OF HEATED WATER.	AFTER INSTALLATION AND PRIOR TO CLOSING SHAFTS, CEILINGS AND WALLS	APPROVED CONSTRUCTION DOCUMENTS, SMACNA DUCT CONSTRUCTION STANDARDS, METAL AND FLEXIBLE	C403.11, C404.4, C404.5, MC 603.9; ASHRAE 90.1 – 6.3, 6.4, 6.8.2, 6.8.3, 7.4.3
X		11B5	DUCT LEAKAGE TESTING, INSULATION AND DESIGN: FOR DUCT SYSTEMS DESIGNED TO OPERATE AT STATIC PRESSURES IN EXCESS OF 3 INCHES W.G. (747 PA), REPRESENTATIVE SECTIONS, AS DETERMINED BY THE PROGRESS INSPECTOR, TOTALING AT LEAST 25% OF THE DUCT AREA, MUST BE TESTED TO VERIFY THAT ACTUAL AIR LEAKAGE IS BELOW ALLOWABLE AMOUNTS. INSTALLED DUCT INSULATION MUST BE VISUALLY INSPECTED TO VERIFY PROPER INSULATION PLACEMENT AND VALUES. JOINTS, LONGITUDINAL AND TRANSVERSE SEAMS AND CONNECTIONS IN DUCTWORK MUST BE VISUALLY INSPECTED FOR PROPER SEALING.	AFTER INSTALLATION AND PRIOR TO CLOSING SHAFTS, CEILINGS AND WALLS	APPROVED CONSTRUCTION DOCUMENTS, SMACNA HVAC AIR DUCT LEAKAGE TEST MANUAL; SMACNA DUCT CONSTRUCTION STANDARDS, METAL AND FLEXIBLE	C403.11; ASHRAE 90.1 – 6.4.4.2
		11D	OTHER			
X		11D1	MAINTENANCE INFORMATION: MAINTENANCE MANUALS FOR MECHANICAL, SERVICE HOT WATER AND ELECTRICAL EQUIPMENT AND SYSTEMS REQUIRING PREVENTIVE MAINTENANCE MUST BE REVIEWED FOR APPLICABILITY TO INSTALLED EQUIPMENT AND SYSTEMS BEFORE SUCH MANUALS ARE PROVIDED TO THE OWNER. LABELS REQUIRED FOR SUCH EQUIPMENT OR SYSTEMS MUST BE INSPECTED FOR ACCURACY AND COMPLETENESS.	PRIOR TO SIGN-OFF OR ISSUANCE OF FINAL CERTIFICATE OF OCCUPANCY	APPROVED CONSTRUCTION DOCUMENTS, INCLUDING ELECTRICAL DRAWINGS WHERE APPLICABLE; ASHRAE GUIDELINE 4: PREPARATION OF OPERATING AND MAINTENANCE DOCUMENTATION FOR BUILDING SYSTEMS	C408.11, C408.2.5.2, C408.3.2; ASHRAE 90.1 – 4.2.2.3, 6.7.2.2, 6.7.2.3.5.2, 8.7.2, 9.4.3.2.2, 9.7.2.2

THERMOSTATIC CONTROLS

- C403.4 HEATING AND COOLING SYSTEM CONTROLS
EACH HEATING AND COOLING SYSTEM SHALL BE PROVIDED WITH THERMOSTATIC CONTROLS AS SPECIFIED IN SECTION C403.4.1, C403.4.1.2, C403.4.1.3 AND C403.4.2

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 AT LEAST 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 CAPABLE OF PROVIDING A TEMPERATURE RANGE OR DEADBAND OF AT LEAST 5°F (2.8°C) WITHIN WHICH THE SUPPLY OF HEATING AND COOLING ENERGY TO THE ZONE IS CAPABLE OF BEING SHUT OFF OR REDUCED TO A MINIMUM.

C403.4.1.3 SET POINT 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 PROVIDED WITH THE CAPABILITY TO PREVENT THE HEATING SET POINT FROM EXCEEDING THE COOLING SET POINT 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 CAPABILITIES

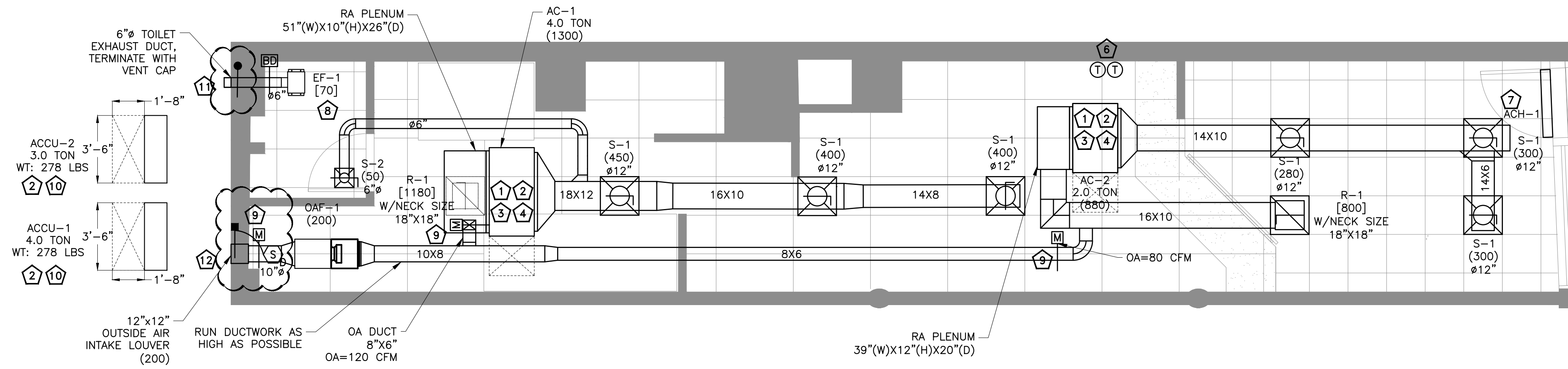
THERMOSTATIC SETBACK CONTROLS SHALL HAVE THE CAPABILITY TO SET BACK OR TEMPORARILY OPERATE THE SYSTEM TO MAINTAIN ZONE TEMPERATURES DOWN TO 55°F (13°C) OR UP TO 85°F (29°C).

C403.4.2.2 AUTOMATIC SETBACK AND SHUTDOWN CAPABILITIES

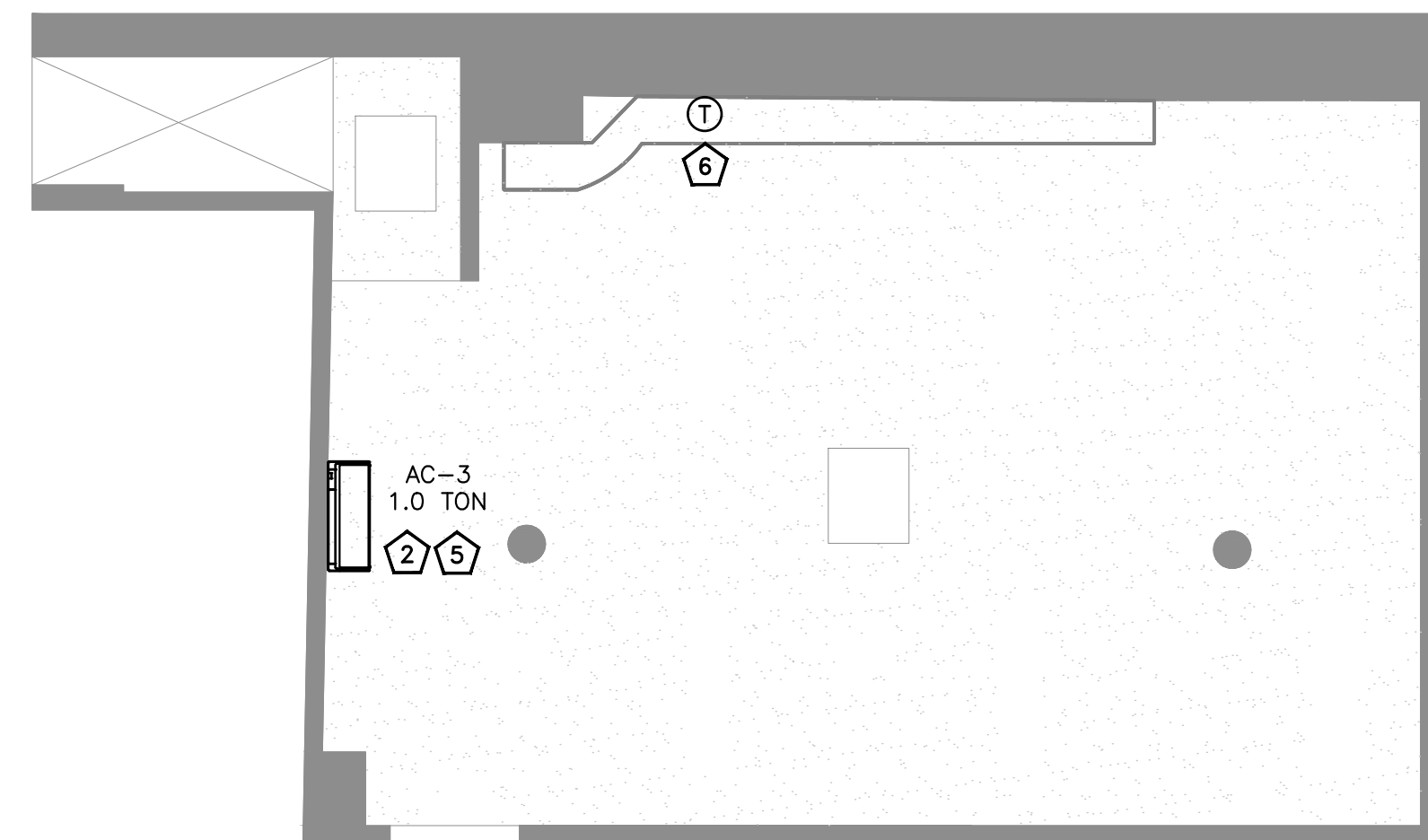
AUTOMATIC TIME CLOCK OR PROGRAMMABLE CONTROLS SHALL BE CAPABLE OF STARTING AND STOPPING THE SYSTEM FOR SEVEN DIFFERENT DAILY SCHEDULES PER WEEK AND RETAINING THEIR PROGRAMMING AND TIME SETTING DURING A LOSS OF POWER FOR AT LEAST 10 HOURS. ADDITIONALLY, THE CONTROLS SHALL HAVE A MANUAL OVERRIDE THAT ALLOWS TEMPORARY OPERATION OF THE SYSTEM FOR UP TO 2 HOURS; A MANUALLY OPERATED TIMER CAPABLE OF BEING ADJUSTED TO OPERATE THE SYSTEM FOR UP TO 2 HOURS; OR AN OCCUPANCY SENSOR.

C403.4.2.3 AUTOMATIC AND OPTIMUM START CAPABILITIES

AUTOMATIC START CONTROLS SHALL BE PROVIDED FOR EACH HVAC SYSTEM. THE CONTROLS SHALL BE CONFIGURED TO AUTOMATICALLY ADJUST THE DAILY START TIME OF THE HVAC SYSTEM IN ORDER TO BRING EACH SPACE TO THE DESIRED OCCUPIED TEMPERATURE IMMEDIATELY PRIOR TO SCHEDULED OCCUPANCY. INDIVIDUAL HEATING AND COOLING SYSTEMS WITH SETBACK CONTROLS AND DIRECT DIGITAL CONTROL SHALL HAVE OPTIMUM START CONTROLS. THE CONTROL ALGORITHM SHALL, AS A MINIMUM, BE A FUNCTION OF THE DIFFERENCE BETWEEN SPACE TEMPERATURE AND OCCUPIED SET POINT, THE OUTDOOR TEMPERATURE, AND THE AMOUNT OF TIME PRIOR TO SCHEDULED OCCUPANCY. MASS RADIANT FLOOR SLAB SYSTEMS SHALL INCORPORATE FLOOR TEMPERATURE INTO THE OPTIMUM START ALGORITHM.



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



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

MECHANICAL GENERAL NOTES

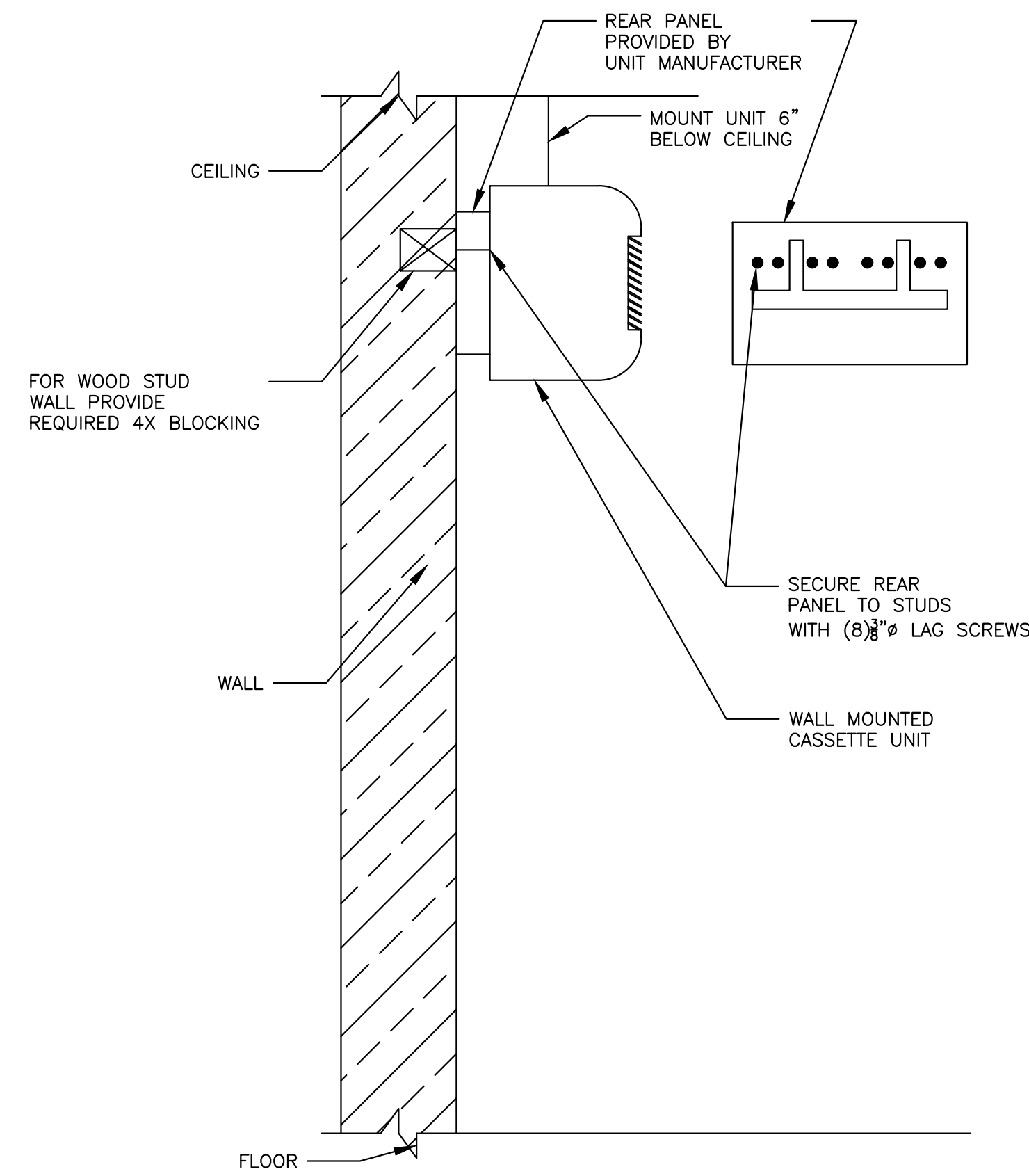
1. CONTRACTOR SHALL BALANCE EACH DEVICE WITH THE CFM SHOWN ON PLAN.
2. NEW DUCTWORK SHOWN ON PLAN ARE SCHEMATIC ONLY. CONTRACTOR SHALL COORDINATE WITH OTHER TRADES FOR PIPING AND DUCTWORK ROUTING. OFFSET AND RUN PIPING, DUCTWORK INSIDE THE STRUCTURE IF REQUIRED. PROVIDE ANY EXTRA PIPING, DUCTWORK, FITTINGS, INSULATIONS AND OTHER ACCESSORIES IN ORDER TO COMPLETE THE INSTALLATION.
3. EQUIPMENT SIZES, DIMENSIONS AND REQUIRED CONNECTIONS SHALL BE VERIFIED WITH THE ACTUAL EQUIPMENT SELECTED VENDOR DRAWINGS BEFORE FABRICATION OF DUCTWORK, PIPING ETC.
4. DUCT SIZES SHOWN ON PLANS ARE CLEAR INSIDE AIR STREAM DIMENSIONS.
5. EXTEND FULL SIZE SUPPLY & RETURN DUCTWORK TO SPACE. EXTEND AS SHOWN. ACOUSTICALLY LINE THE FIRST 10'-0" OF BOTH SUPPLY AND RETURN MAIN DUCTS.
6. CONTRACTOR SHALL COORDINATE ALL ELECTRICAL REQUIREMENTS FOR ALL HVAC BASED ON ACTUAL EQUIPMENT SELECTED PRIOR TO INSTALLATION.
7. CONTRACTOR SHALL COORDINATE EQUIPMENT WEIGHTS AND SUPPORTS BASED ON ACTUAL EQUIPMENT SELECTED.
8. MOUNT DUCTWORK AS HIGH AS POSSIBLE.
9. TEST AND BALANCE AIR SYSTEMS. PROVIDE REPORT TO G.C AND OWNER.
10. NEW DUCTWORK IN CONCEALED AREAS MAY BE RECTANGULAR WITH EQUIVALENT CROSS SECTIONAL FLOW AREA.
11. PROVIDE R-8 INSULATION FOR OAI DUCT AND R-6 INSULATION FOR SUPPLY AND RETURN DUCT.
12. PROVIDE FIRE OR FIRE+SMOKE DAMPER WHEREVER DUCTS ARE CROSSING FIRE/SMOKE RATED WALLS/BARRIERS. COORDINATE WITH ARCHITECTURAL DRAWINGS FOR FIRE RATINGS OF THE WALLS COORDINATE WITH ELECTRICAL ENGINEER FOR POWER REQUIREMENT FOR FSD.
13. PROVIDE CHORD OPERATED DAMPERS IN INACCESSIBLE CEILING.
14. OUTDOOR AIR INTAKE, EXHAUST OPENINGS SHALL BE PROVIDED WITH CLASS I MOTORIZED DAMPERS. THE DAMPERS SHALL HAVE AN AIR LEAKAGE RATE NOT GREATER THAN 4 CFM/FT2 OF DAMPER SURFACE AREA AT 1.0 INCH WATER GAUGE (249 PA) AND SHALL BE LABELED BY AN APPROVED AGENCY WHEN TESTED IN ACCORDANCE WITH AMCA 500D.
15. ALL EQUIPMENT SHALL MAINTAIN MINIMUM CLEARANCE FROM THE COMBUSTIBLE MATERIAL AS PER MANUFACTURE RECOMMENDATION.

KEY NOTES:-

1. CONNECT 1-1/4" CD FROM AC TO NEAREST PLUMBING DRAIN WITH AIR GAP FITTING. INSTALL CONDENSATE DRAIN WITH 1% TOWARD SINK. PROVIDE CONDENSATE PUMP AS/IF REQUIRED.
2. INSTALL REFRIGERANT PIPING BETWEEN INDOOR AND OUTDOOR UNIT AS PER MANUFACTURERS RECOMMENDATIONS. PROVIDE INSULATION TO REF PIPING AS PER ENERGY CONSERVATION CODE. COORDINATE WITH BASE BUILDING ENGINEER FOR PIPE ROUTING AND RISER LOCATION. NOTIFY THE ENGINEER OF ANY DISCREPANCY BEFORE COMMENCING BID.
3. PROVIDE AN AUXILIARY DRAIN PAN WITH WATER LEAKAGE SENSOR IN ORDER TO SHUT-OFF THE UNIT IN CASE OF WATER LEAKAGE. THE PAN SHALL HAVE A DEPTH OF NOT LESS THAN 1.5 INCHES, SHALL BE NOT LESS THAN 3 INCHES LARGER THAN THE UNIT, OR THE COIL DIMENSIONS IN WIDTH AND LENGTH AND SHALL BE CONSTRUCTED OF CORROSION-RESISTANT MATERIAL. METALLIC PANS SHALL HAVE A THICKNESS OF NOT LESS THAN 0.0236 INCH (NO. 24 GAGE) FOR GALVANIZED SHEET METAL PANS, 0.0179 INCH (NO. 26 GAGE) FOR STAINLESS STEEL PANS, OR 0.0320 INCH (NO. 20 GAGE) FOR ALUMINUM PANS. NON-METALLIC PANS SHALL HAVE A THICKNESS OF NOT LESS THAN 0.0625 INCH.
4. PROVIDE REMOTE TEMP SENSOR MOUNTED IN RETURN DUCT AND WIRE BACK TO T-STAT.
5. CONNECT 1" CD FROM AC TO NEAREST PLUMBING DRAIN WITH AIR GAP FITTING. INSTALL CONDENSATE DRAIN WITH 1% TOWARD SINK. PROVIDE CONDENSATE PUMP
6. LOCATE THERMOSTAT CONTROLS ON WALL AT 48" A.F.F. COORDINATE LOCATION WITH LIGHT SWITCHES AND OTHER WALL MOUNTED ACCESSORIES. RUN 24 VAC POWER AND SIGNAL CONDUCTORS IN TWO (2) SEPARATE TWO (2) CONDUCTOR CABLES, 18 AWG.
7. PROVIDE AIR CURTAIN IN LOCATION AS SHOWN ON PLAN.
8. PROVIDE A NEW CEILING MOUNTED TOILET EXHAUST FAN. INTERLOCK WITH AC-1. FAN SHALL BE SUSPENDED FROM STRUCTURE ABOVE. VERIFY EXACT LOCATION OF STRUCTURE MEMBER PRIOR TO INSTALLATION.
9. MD TO INTERLOCK WITH RESPECTIVE FAN/AC UNITS.
10. CONTRACTOR TO FIELD VERIFY AND INSTALL THE OUTDOOR UNIT AS PER SITE CONDITIONS. MAXIMUM REFRIGERANT PIPING LENGTH SHALL NOT EXCEED 492 FT. FROM INDOOR UNIT TO OUTDOOR UNIT. COORDINATE WITH ARCHITECT/OWNER FOR EXACT LOCATION.
11. RESTROOM EXHAUST SHALL BE TERMINATED 3 FEET AWAY FROM THE OPENING INTO THE BUILDING, 10 FEET FROM PROPERTY LINE, 10 FEET ABOVE GRADE. EXHAUST SOURCE ON WALL SHALL BE MAINTAIN 10 FEET HORIZONTAL DISTANCE OR 3 FEET VERTICAL DISTANCE FROM ANY MECHANICAL AIR INTAKE ON WALL.
12. OUTSIDE AIR SHALL BE TERMINATED 10 FEET FROM PROPERTY LINE. OUTSIDE AIR INTAKE ON WALL SHALL BE MAINTAIN 10 FEET HORIZONTAL DISTANCE OR 3 FEET VERTICAL DISTANCE FROM ANY EXHAUST SOURCE ON WALL.

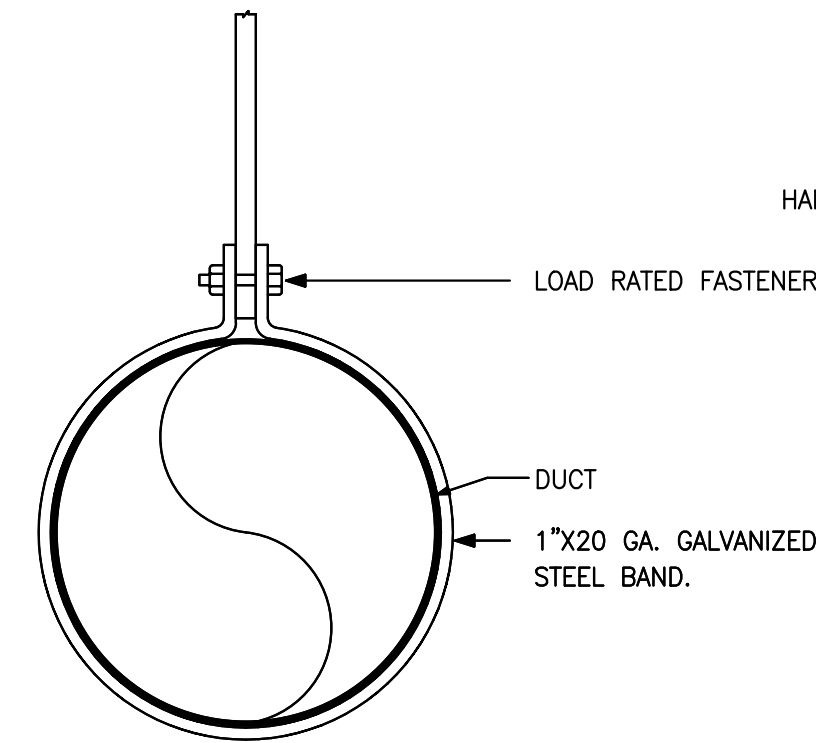
LL NOTES:-

ALL BUILDING SYSTEM SHUTDOWNS AND REQUIRED ACCESS TO AREAS OUTSIDE LEASED PREMISES TO SUPPORT TENANT WORK SHALL BE COORDINATED WITH BUILDING MANAGEMENT WITH PROPER NOTIFICATION AND METHODS OF PROCEDURES ISSUED TO THE BUILDING MANAGEMENT TEAM FOR REVIEW/APPROVAL PRIOR TO COMMENCING WORK.



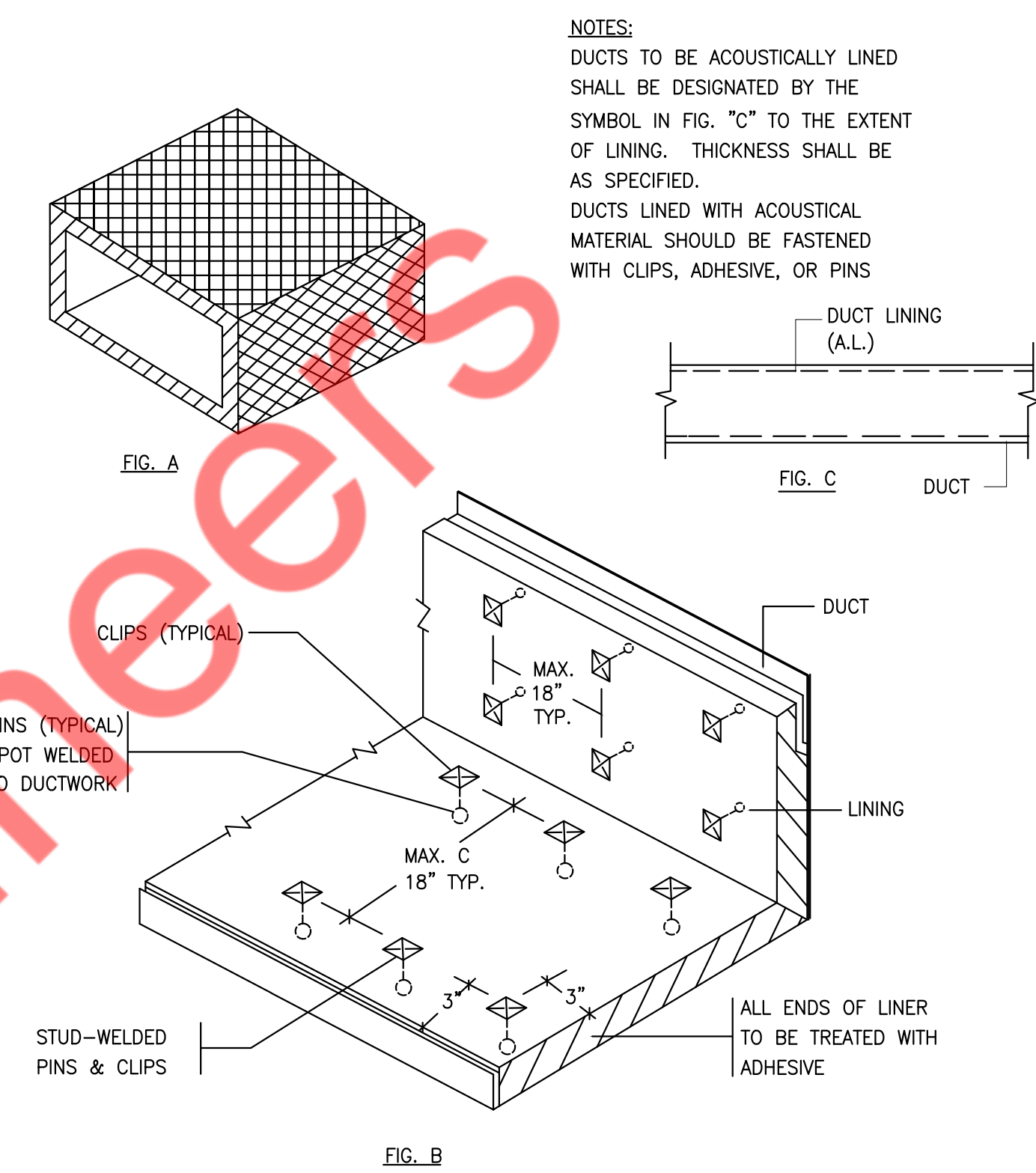
1 TYPICAL WALL MOUNTED UNIT DETAIL
M-500 N.T.S.

- NOTES:
1. DUCT CONSTRUCTION SHALL CONFORM TO LOW PRESSURE MATCHNA CONSTR. STD.
 2. DUCTS SHALL BE FABRICATED WITH LONGITUDINAL SEAMS.
 3. PROVIDE ONE PRIME-COAT PAINT FOR ROUND DUCTS INSTALLED IN EXPOSED AREAS.

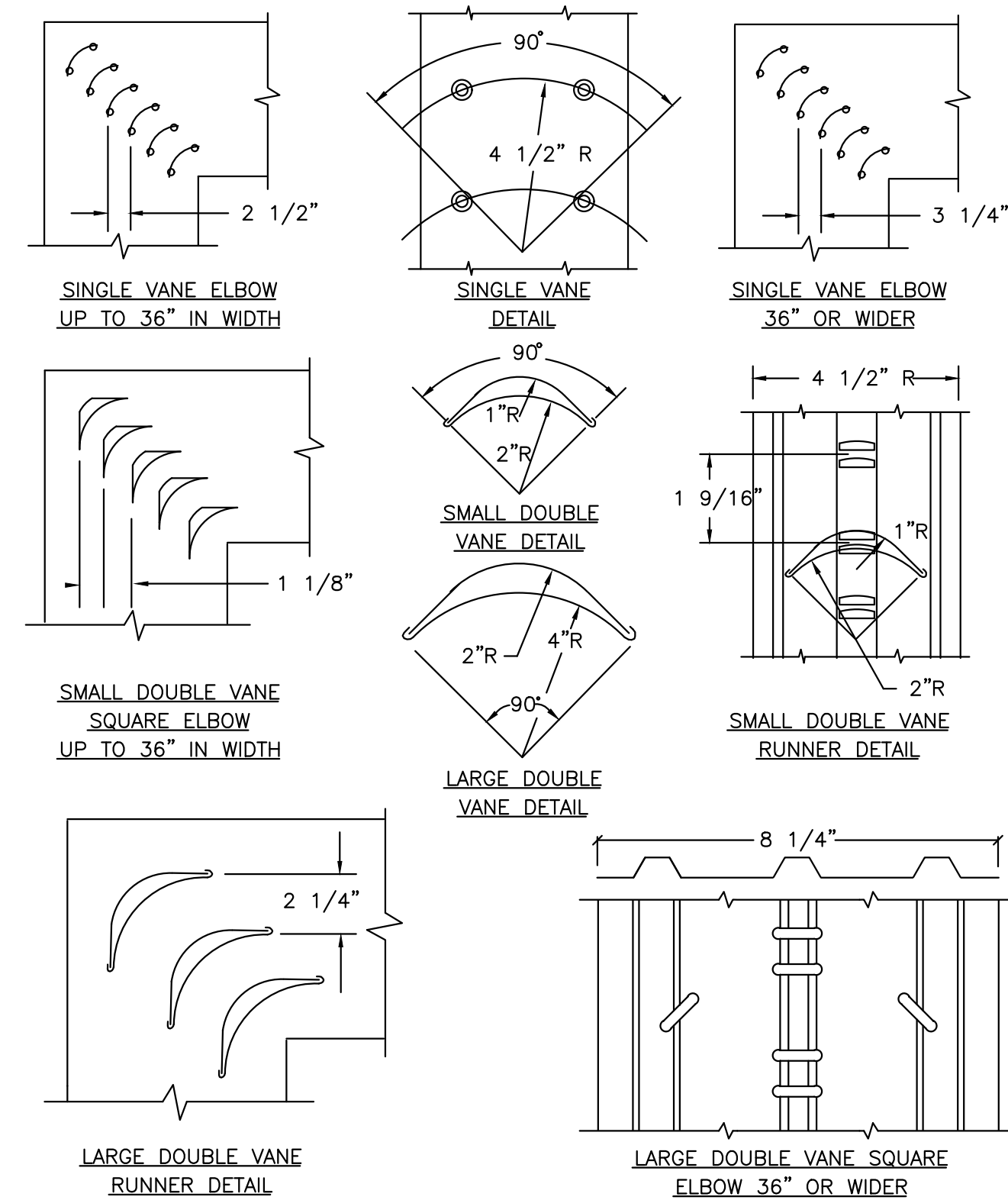


DUCT HANGER SCHEDULE		
DUCT CROSS SECTIONAL AREA	STRAP HANGER SIZE	MAX. SPACING
UNDER 2 SQ. FT.	1" X 1/16"	6'-0" O.C.
2 TO 4 SQ. FT.	1" X 1/8"	8'-0" O.C.
4 TO 8 SQ. FT.	1" X 1/8"	6'-0" O.C.
OVER 8 SQ. FT.	1" X 1/8"	4'-0" O.C.

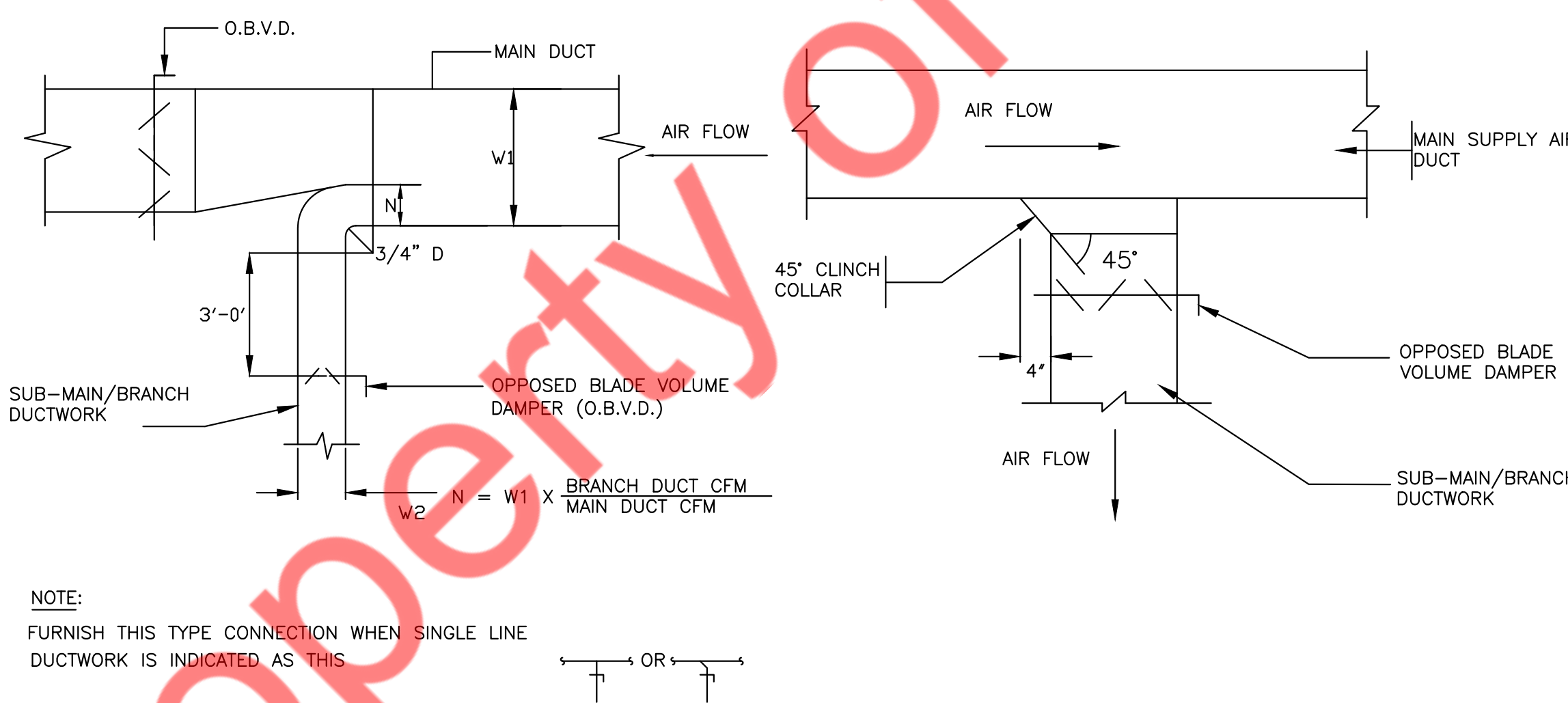
2 DUCTWORK HANGING DETAIL
M-500 N.T.S.



3 ACOUSTICAL TREATMENT DUCT LINING
M-500 N.T.S.

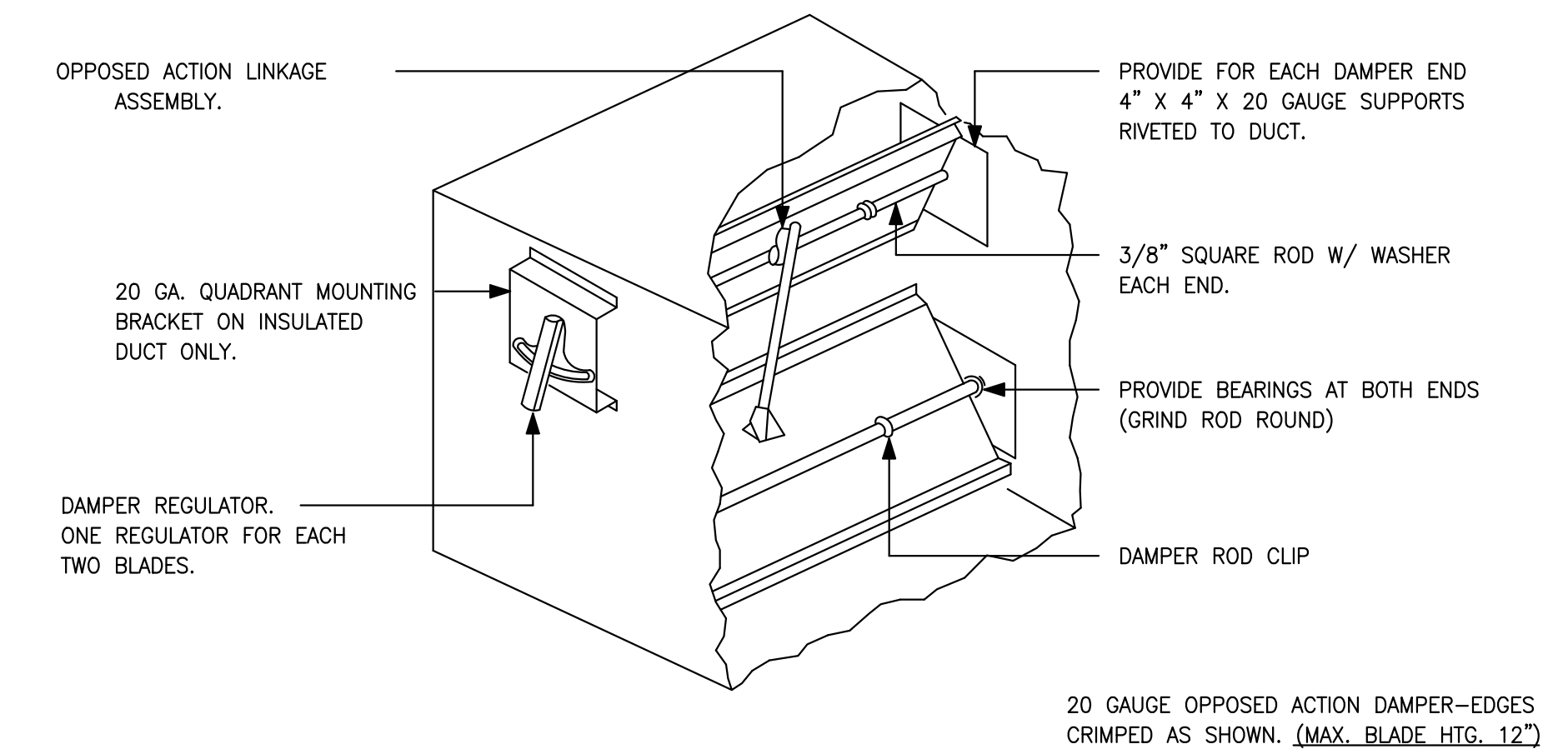


4 LOW VELOCITY DUCTWORK ELBOWS
M-500 N.T.S.



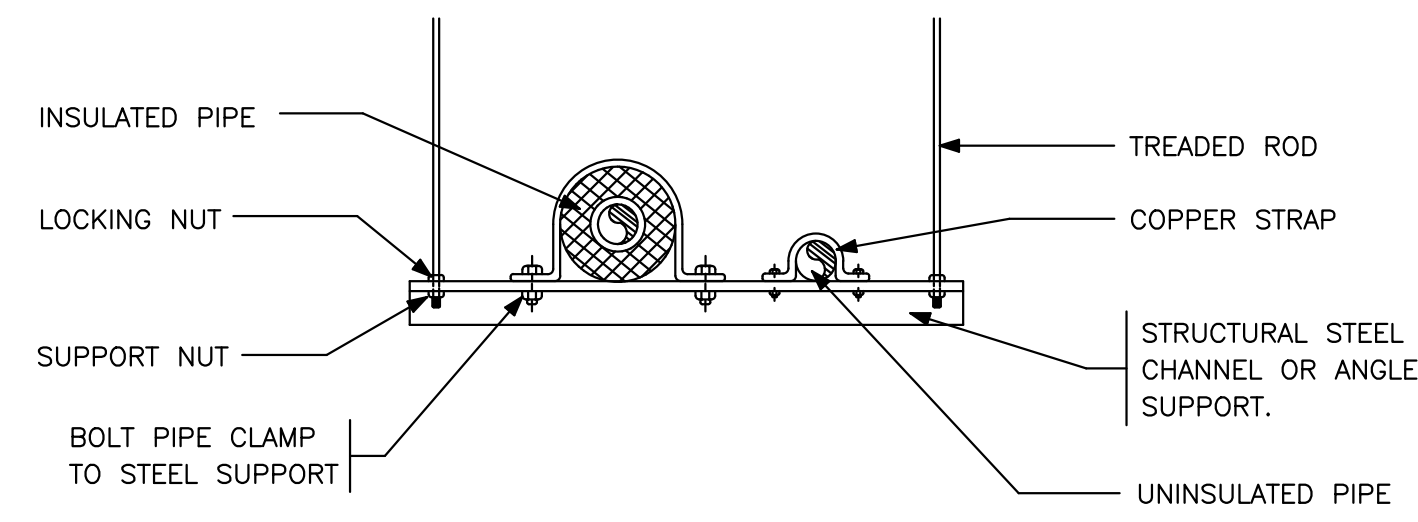
NOTE:
FURNISH THIS TYPE CONNECTION WHEN SINGLE LINE DUCTWORK IS INDICATED AS THIS

5 SUPPLY AIR DUCTWORK SUB-MAIN/BRANCH DUCT CONNECTION
M-500 N.T.S.



NOTE: 1. FOR DUCTS OVER 29\"/>

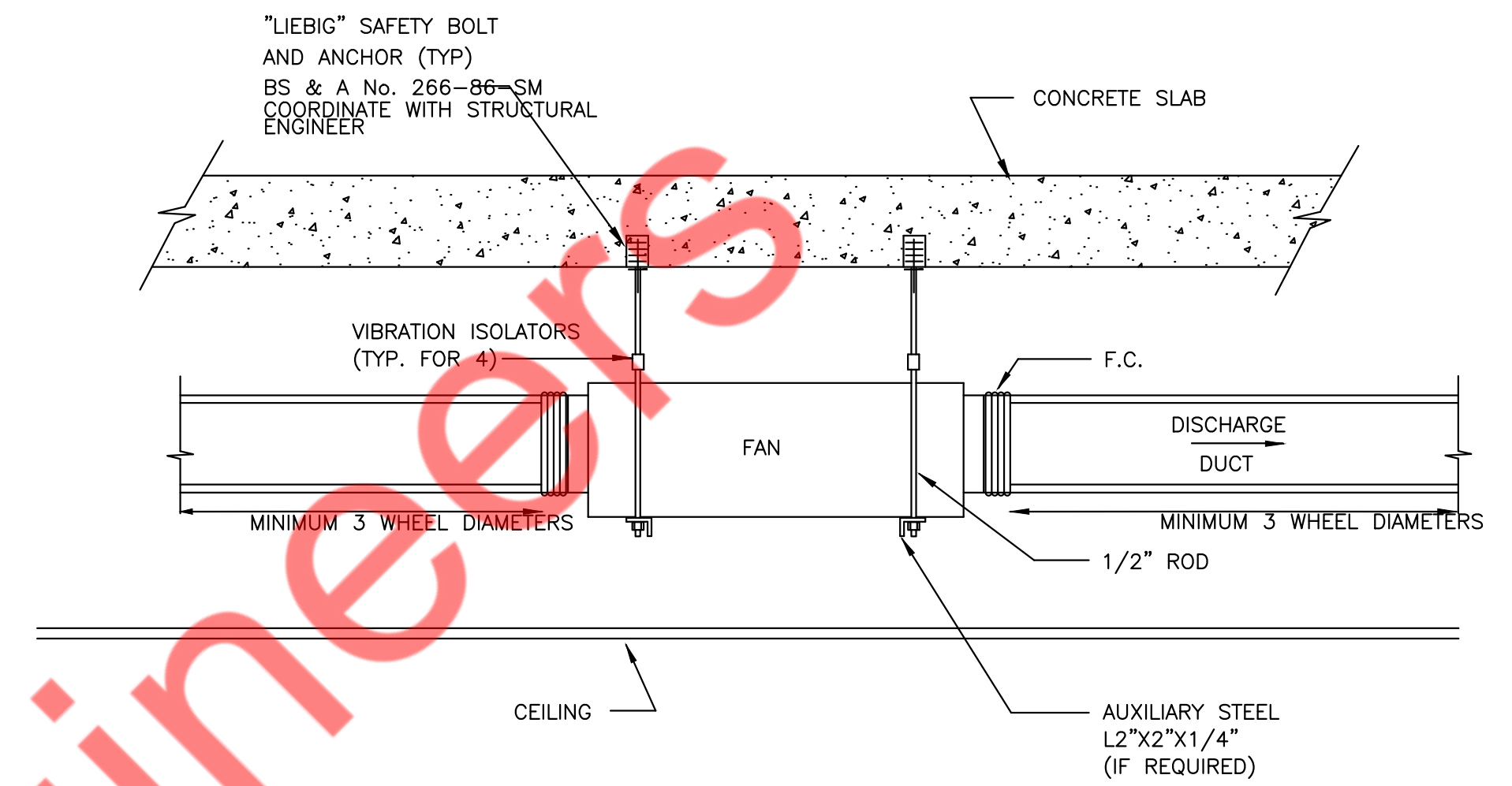
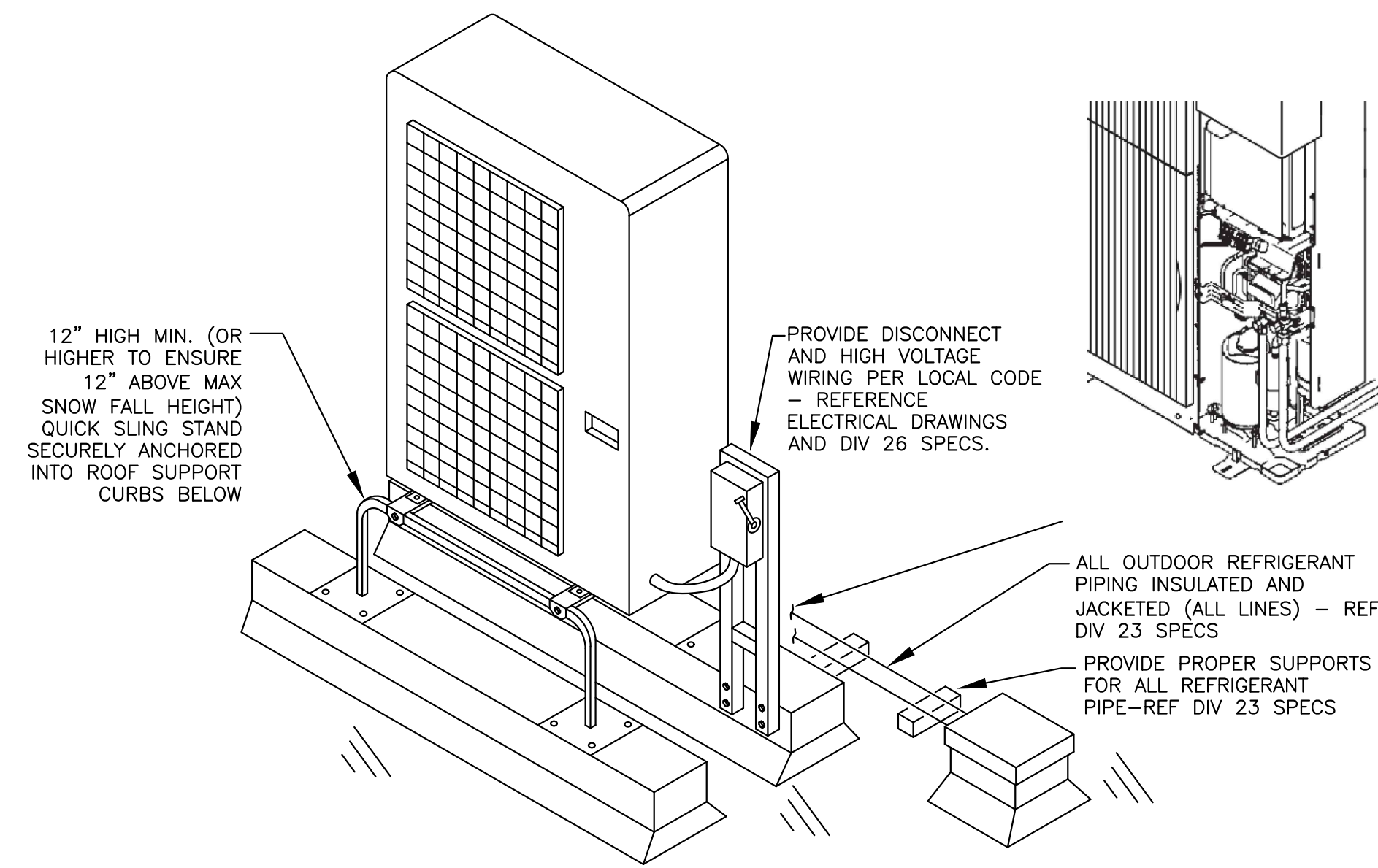
6 LOW PRESSURE BALANCING DAMPER
M-500 N.T.S.



TYPICAL TRAPEZE HANGER SUPPORT

PIPE HANGER ROD AND SPACING SCHEDULE							
NOMINAL PIPE OR TUBE SIZE - INCHES	5/8	3/4	7/8	1	1 1/2	2	2 1/2
HANGER ROD SIZES INCHES	3/8	3/8	3/8	3/8	3/8	3/8	3/8
MAX. SPACING BETWEEN PIPE SUPPORTS - FEET	-	6	-	7	9	10	11
MAX. SPACING BETWEEN CU. TUBE SUPPORTS-FT.	6	6	6	6	8	9	10

NOTES : TRAPEZE HANGER SPACING SHALL BE BASED ON SPACING OF SMALLEST PIPE ON TRAPEZE. TRAPEZE SHALL BE DESIGNED WITH A FACTOR OF SAFETY OF 5 FOR CENTER OF SPAN CONCENTRATED LOAD.

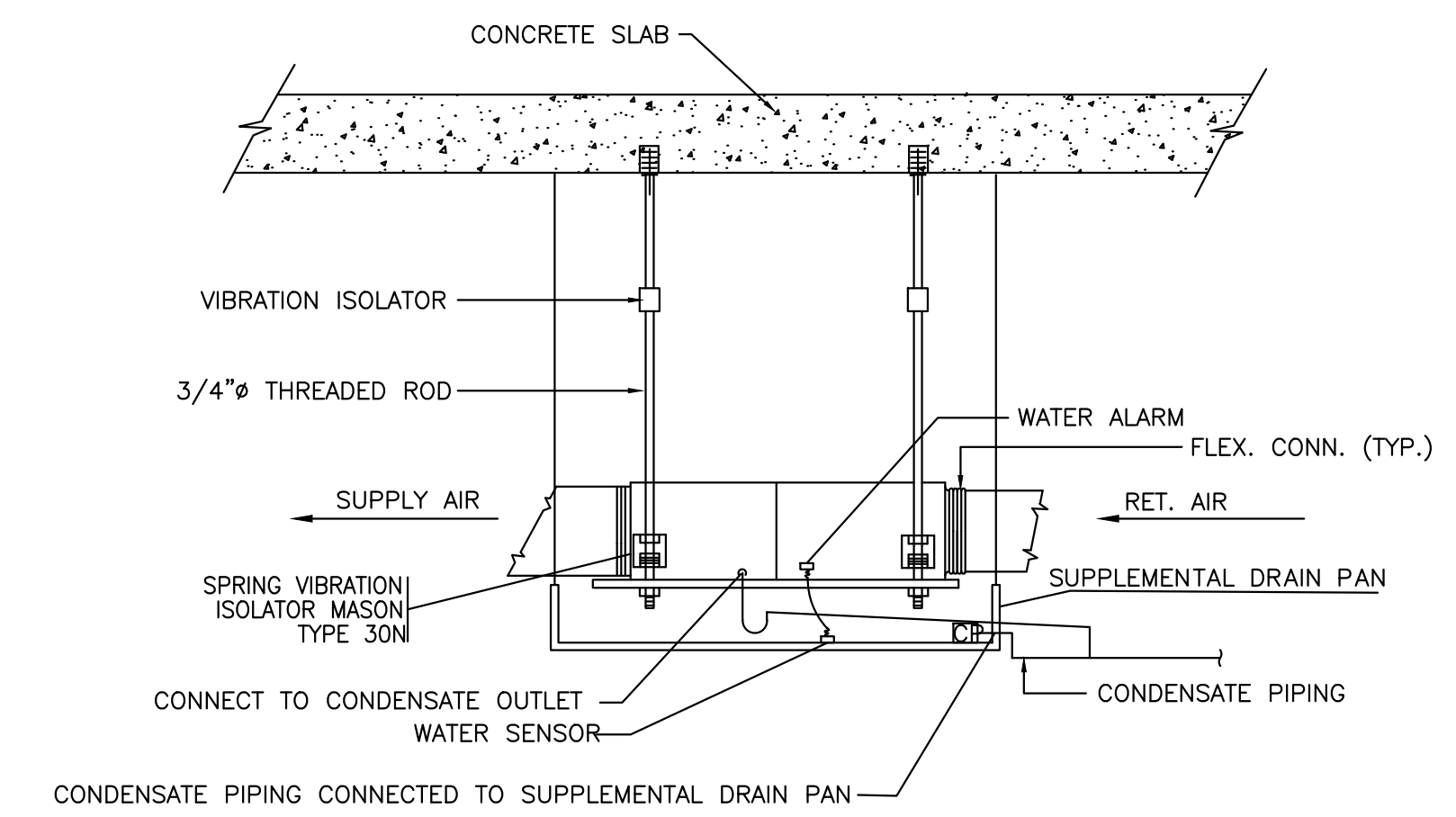
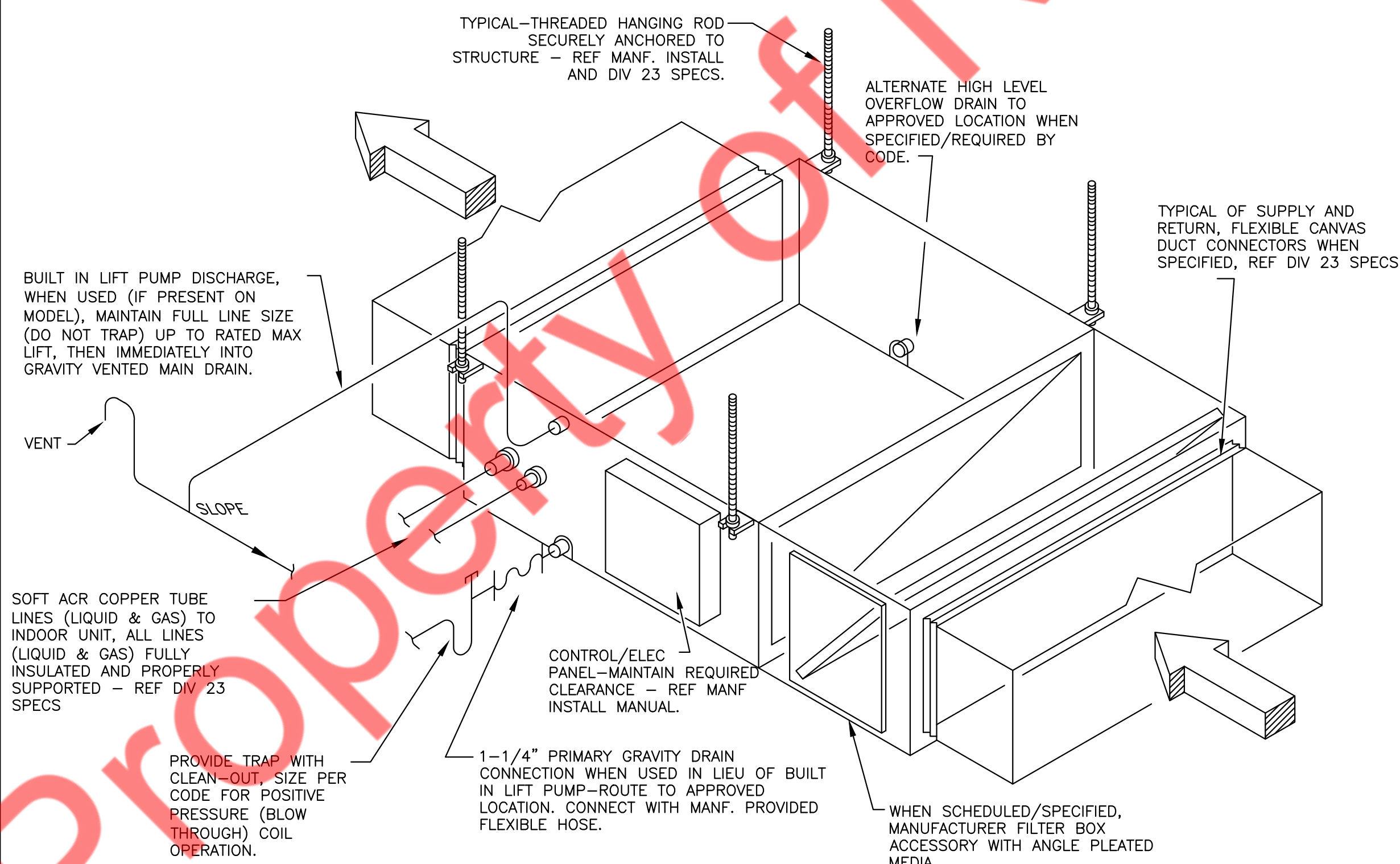
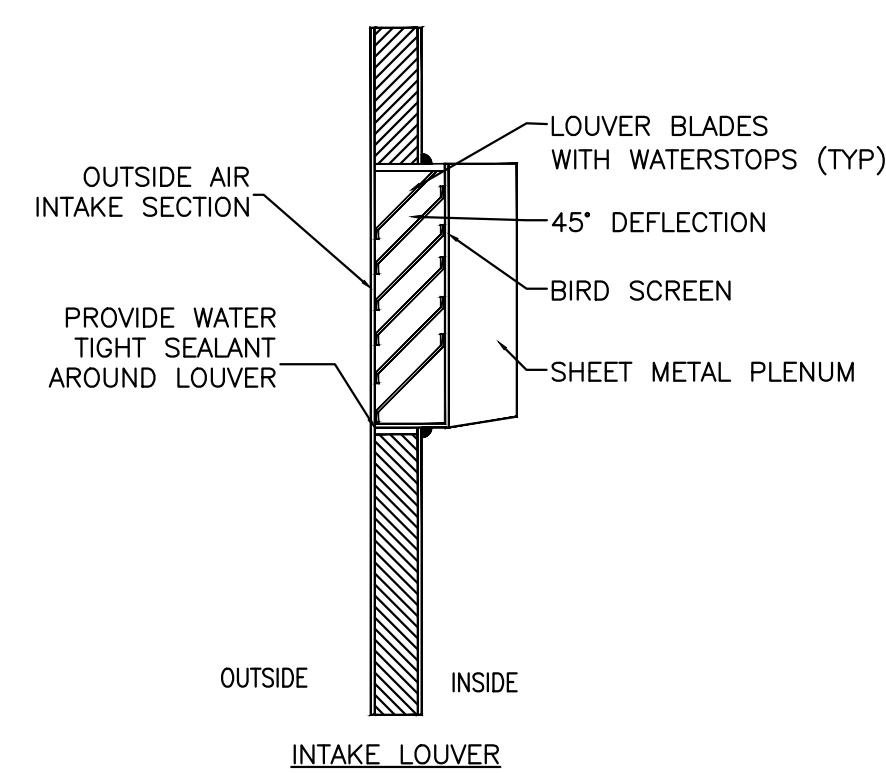
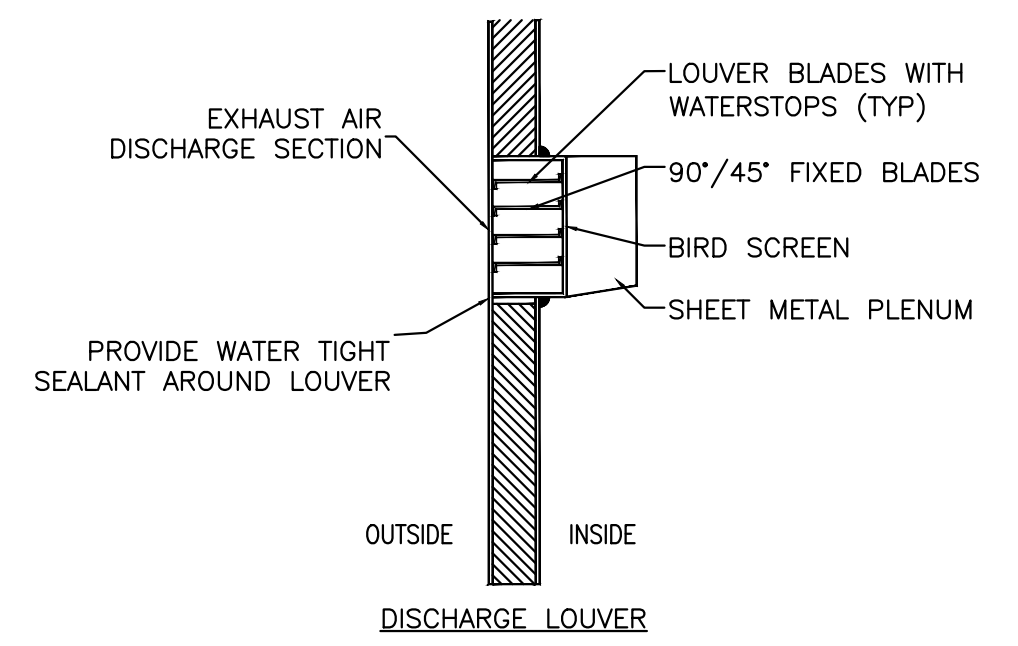


NOTE:
1. DUCT LENGTH TO BE MINIMUM THREE WHEEL DIAMETER ON DISCHARGE AND INLET.

1 METHOD OF HANGING REFRIGERANT PIPING
M-501 N.T.S

2 OUTDOOR UNIT INSTALLATION
M-501 N.T.S

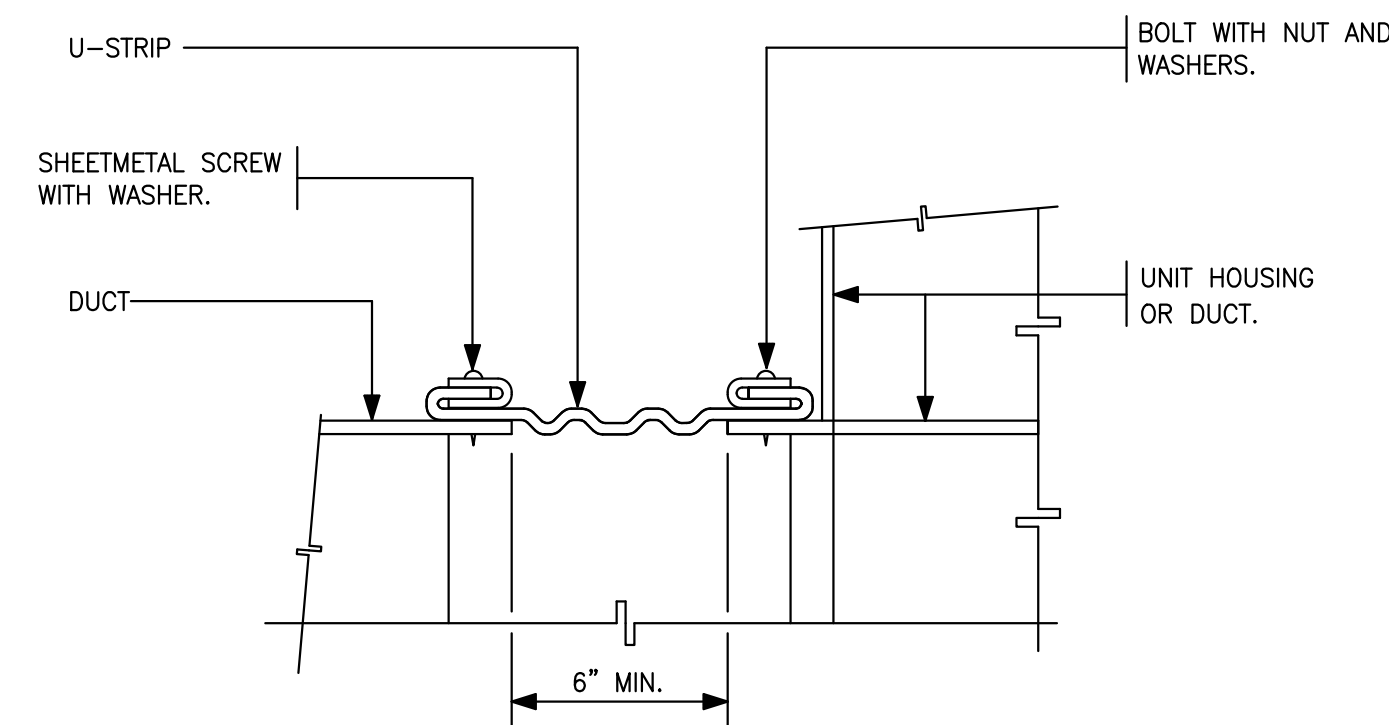
3 INLINE FAN DETAIL
M-501 N.T.S



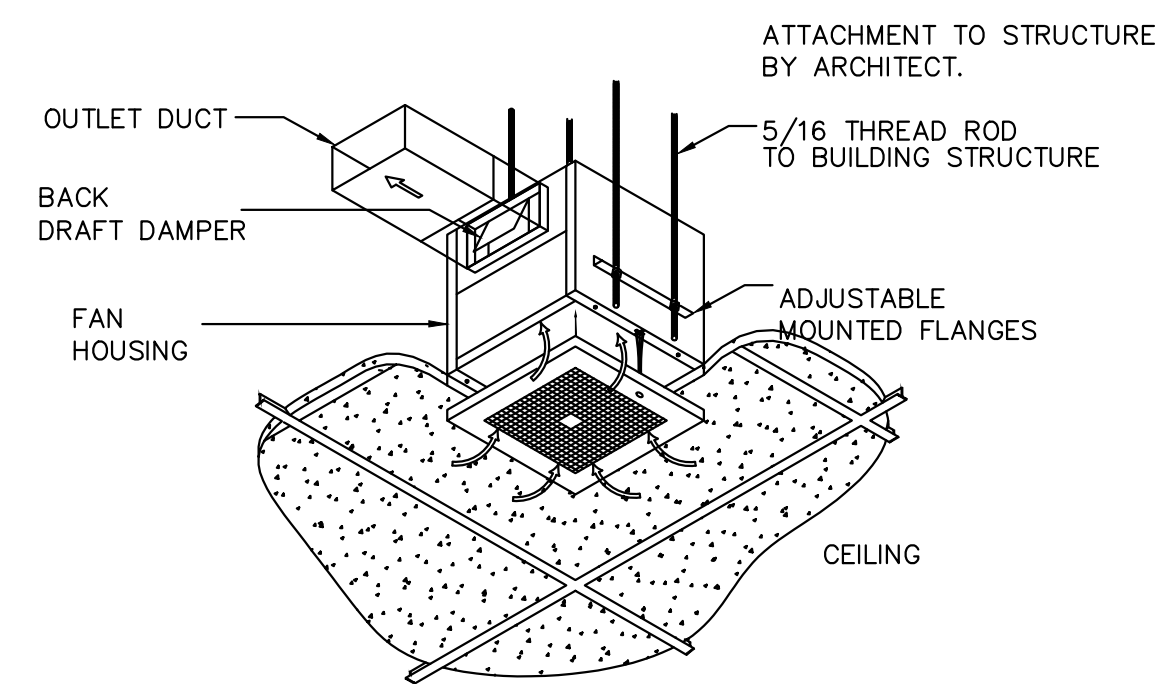
4 WALL LOUVER DETAIL
M-501 N.T.S

5 INDOOR UNIT INSTALLATION DETAIL
M-501 N.T.S

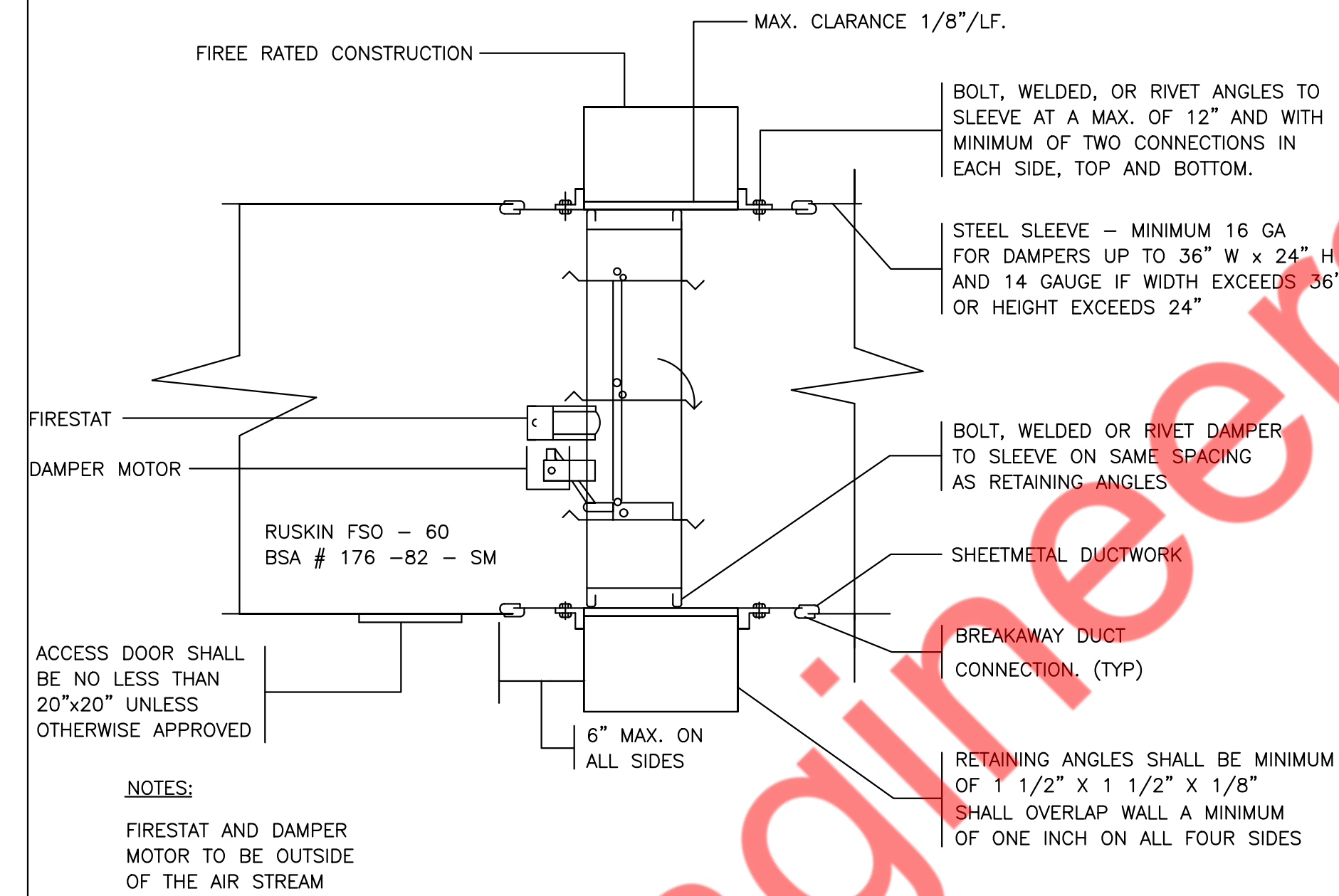
6 HVAC UNIT HANGING DETAIL
M-501 N.T.S



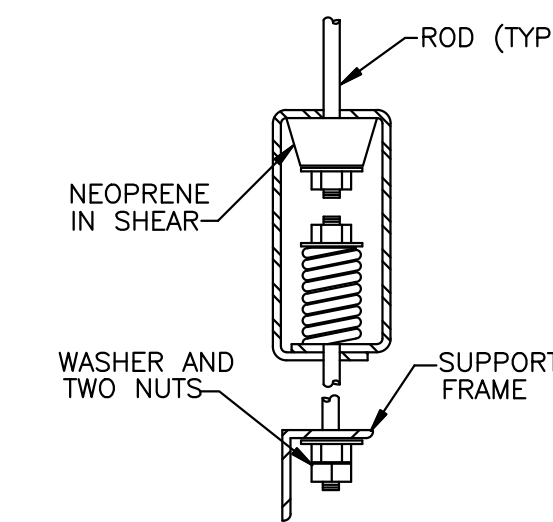
1 FLEXIBLE CONNECTION DETAIL
M-502 N.T.S



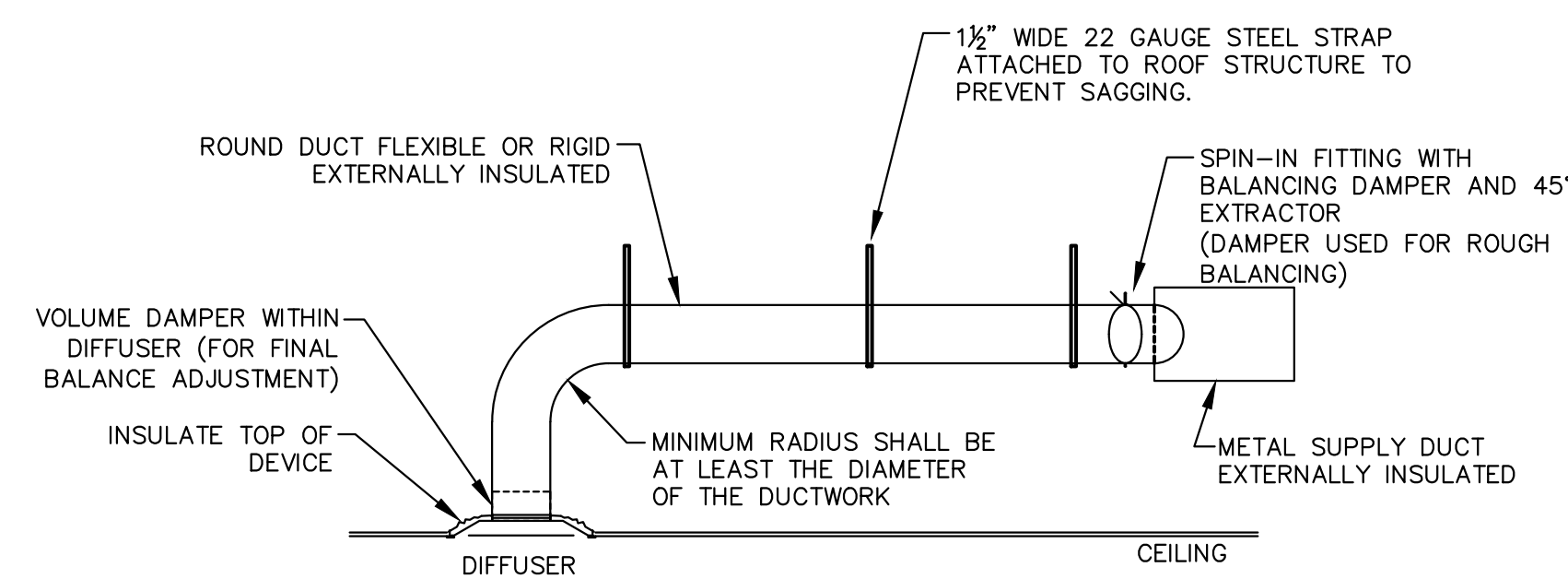
2 CEILING MOUNTED EXHAUST FAN
M-502 N.T.S



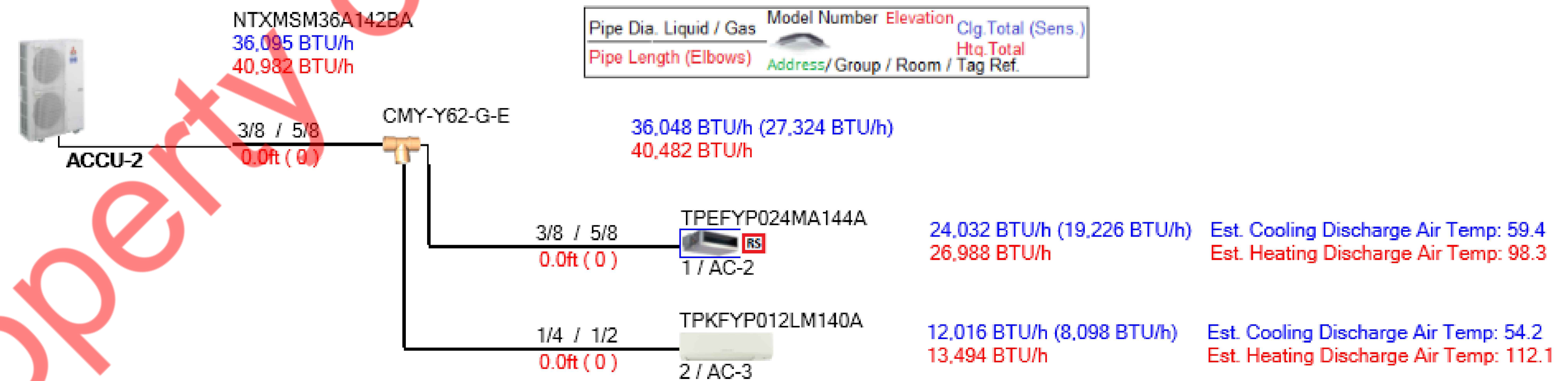
3 FIRE AND SMOKE DAMPER DETAIL
M-502 N.T.S



4 VIBRATION ISOLATOR DETAIL
M-500 N.T.S



5 DIFFUSER INSTALLATION DETAIL
M-502 N.T.S



6 ACCU-2 RISER DIAGRAM
M-502 N.T.S

VRF HEAT PUMP (INDOOR UNIT) SCHEDULE																	MAKE:- TRANE-MITSUBISHI (OR EQUIVALENT)			
UNIT TAG	LOCATION	AREA SERVED	TYPE	CAP. (TON)	COOLING MBH	HEATING MBH	TOTAL CFM	OUTDOOR CFM	MAX RATED ESP. (IN. WG)	MAX. SOUND PRESS.(DBA)	ELECTRICAL DATA			DIMENSIONS (HXWXD) (IN.)		PIPE SIZE (INCH)			WEIGHT (LBS.)	MODEL NO.
											PH/VOLT/HZ	MCA (A)	MOP (A)	UNIT	LIQ.	SUCTION	DRAIN (ID)			
AC-1	SEE ON PLAN	SEE PLAN	CEILING CONCEALED DUCTED	4	48	54	1300	120	0.6	44	1/208-230/60	4.38	15	10"X56"X29"	3/8"	5/8"	1-1/4"	86	TPEFY048MA144A (OR EQUIVALENT)	
AC-2	SEE ON PLAN	SEE PLAN	CEILING CONCEALED DUCTED	2	24	27	880	80	0.6	39	1/208-230/60	2.88	15	10"X44"X29"	3/8"	5/8"	1-1/4"	67	TPEFY024MA144A (OR EQUIVALENT)	
AC-3	SEE ON PLAN	SEE PLAN	WALL MOUNT	1	12	13.5	290	-	-	41	1/208-230/60	0.2	15	10"X31"X12"	1/4"	1/2"	5/8"	24.5	TPKFY012LM140A (OR EQUIVALENT)	

NOTES:-
1) SUPPLY AIR CFM BASED ON HIGH SPEED.
2) REFRIGERANT R410A SHALL BE PROVIDED.
3) PROVIDE MOUNTING BRACKETS AND ALL ASSOCIATED ACCESSORIES.
4) ALL REFRIGERANT PIPING TO BE SIZED PER MANUFACTURERS RECOMMENDATIONS.
5) CEILING MOUNTED UNIT TO BE PROVIDED WITH THE APPROPRIATE FBM FILTER BOXES.
6) INDOOR UNIT ACCESS PANEL FIELD-PROVIDED.
7) CONTRACTOR SHALL PROVIDE A LONG LINE SET FOR REFRIGERANT PIPING IN THE EVENT THAT TOTAL REFRIGERANT LENGTH EXCEEDS THE MANUFACTURER'S STANDARD RECOMMENDED LENGTH.
8) AC-1 & 2 UNITS TO INCLUDE SECONDARY DRAIN PANS AS WELL AS WATER BUG SENSORS TO SHUT DOWN THE CORRESPONDING EQUIPMENT AND NOTIFY IN EVENT OF A WATER LEAKAGE.
9) AC-1 & 2 UNITS TO BE INSTALLED WITH VIBRATION ISOLATION (RESILIENTLY SUPPORTED) TO MINIMIZE SOUND AND VIBRATION INTO THE SPACE.
10) PROVIDE CONDENSATE DRAIN PUMP FOR AC-3.

VRF HEAT PUMP (OUTDOOR UNIT) SCHEDULE																	MAKE:- TRANE-MITSUBISHI (OR EQUIVALENT)	
UNIT TAG	LOCATION	INDOOR UNIT SERVED	CAP.TR	COOLING MBH	HEATING MBH	UNIT DIMENSIONS IN.(HXWXD)	WEIGHT (LBS)	PIPING DIMENSION		ELECTRICAL				SOUND LEVEL (Dba)	MODEL NO.			
								LIQUID-HI PRESSURE (INCH)	GAS HIGH-PRESSURE (INCH)	(V/Hz/Ph)	MCA (A)	MOP (A)	EER			SEER	HSPF	REFRIGERANT
ACCU-1	SEE ON PLAN	AC-1	4	48	54	53"X42"X13"	278	3/8"	5/8"	208-230/60/1	36	40	13.1	23	12	R410	54	NTXMSH48A182BA (OR EQUIVALENT)
ACCU-2	SEE ON PLAN	AC-2 & AC-3	3	36	42	53"X42"X13"	278	3/8"	5/8"	208-230/60/1	36	40	15	23	12.5	R410	53	NTXMSH36A142BA (OR EQUIVALENT)

NOTES:-
1. UNIT SHALL HAVE TEN YEAR EXTENDED WARRANTY FOR COMPRESSORS/PARTS.
2. PROVIDE LOW AMBIENT CONTROL FOR CONDENSING UNIT OPERATION DOWN TO -4°F.
3. PROVIDE COMPRESSOR CYCLE PROTECTOR.
4. STEEL RAILS SUPPORT TO BE PROVIDED BY MECHANICAL CONTACTOR.
5. CONTRACTOR SHALL PROVIDE A LONG LINE SET FOR REFRIGERANT PIPING IN THE EVENT THAT TOTAL REFRIGERANT LENGTH EXCEED THE MANUFACTURER'S STANDARD RECOMMENDED LENGTH.

FAN SCHEDULE													
UNIT ID	MANUFACTURER	MODEL	CFM	TYPE	DRIVE	FAN RPM	E.S.P.			SERVICE	NOTES / ACCESSORIES	WEIGHT (LBS)	
							(IN. W.G.)	VOLTS	PHASE				FLA (A)
EF-1	GREENHECK	SP-A50-90-VG	70	CEILING	DIRECT	838	0.5	115	1	0.29	RESTROOM	1,2,3,4,5,6	12
OAF-1	GREENHECK	SQ-97-VG	200	INLINE	DIRECT	1850	0.8	115	1	6.6	SEE PLAN	1,2,3,4,7,8,9,10,11	85

NOTES / ACCESSORIES:
1. VARIABLE SPEED CONTROL
2. SPEED CONTROL SWITCH
3. AMCA SEAL & UL CERTIFIED
4. THERMAL OVERLOAD PROTECTION
5. GRAVITY BACKDRAFT DAMPER
6. INTERLOCK WITH AC-1.
7. INTERLOCK WITH AC UNITS.
8. MOTORISED DAMPER, FIRE AND SMOKE DAMPER
9. PROVIDE FACTORY-MOUNTED AND INSTALLED DISCONNECT SWITCH.
10. PROVIDE ALL NECESSARY ACCESSORIES AS PER MANUFACTURER'S RECOMMENDATIONS.
11. PROVIDE MERV-8 FILTER.

AIR TERMINAL DEVICES SCHEDULE						
TAG	APPLICATION	SIZE (IN.)	DESCRIPTION	BASIS OF DESIGN		NOTES
				MANUFACTURER	MODEL	
S-1	CEILING MOUNTED	24X24	SQUARE CONE SUPPLY AIR DIFFUSER	TITUS	TMS	1,2,3,4,5,6
S-2	CEILING MOUNTED	12X12	SQUARE CONE SUPPLY AIR DIFFUSER	TITUS	TMS	1,2,3,5,6
R-1	CEILING MOUNTED	24X24	RETURN AIR GRILLE	TITUS	50F	1,2,3,4,5,6

NOTES:-
1) ACCEPTABLE ALTERNATE MANUFACTURERS INCLUDE: PRICE, KRUEGER, AND METALAIR
2) DIFFUSER NECK SIZE TO MATCH BRANCH DUCT SIZE SHOWN ON PLANS.
3) MAXIMUM NOISE CRITERIA (NC) FOR ANY DEVICE SHALL BE NOT GREATER THAN NC30
4) CEILING MODULE SHALL BE 24X24 UNLESS OTHERWISE NOTED.
5) AIR PATTERN SHALL BE 4-WAY UNLESS SHOWN OTHERWISE ON DRAWINGS.
6) PROVIDE WITH IN BUILT OPPOSED BLADE DAMPER.

AIR CURTAIN SCHEDULE								
MANUFACTURER	UNIT ID	MODEL	LENGTH (IN.)	CFM	QUANTITY	ELECTRIC HEAT (KW)	V/PH/HZ	AMPS (A)
MARS	ACH-1	LPV242-1UD-OB	42	1050	1	-	115/1/60	2.4

NOTES / ACCESSORIES:
1. PROVIDE MANUFACTURER RECOMMENDED ACCESSORIES.
2. COORDINATE WITH ELECTRICAL CONTRACTOR FOR POWER REQUIREMENT.

VENTILATION CALCULATION												
ROOM NAME	AREA (SQ.FT.)	NUMBER OF PEOPLE/1000sq.ft AS PER NYCMC 2022	NUMBER OF PEOPLE AS PER NYCMC 2022	NUMBER OF CHAIR	FINAL PEOPLE NO.	MIN OUTSIDE AIR AS PER NYCMC 2022	REQ. OA (CFM)	Provided OA (CFM)	EXHAUST AIRFLOW RATE (CFM/SQ.FT OR /FIXT.)	TOTAL EXHAUST (CFM)	PROVIDED EXHAUST (CFM)	
PICK UP	60	15	1	4	4	7.5	37		0	0	0	
PREP	410	15	7	0	7	7.5	102	200	0	0	0	
RESTROOM	45	0	0	0	0	0	0		70	70	70	
TOTAL								139	200	-	-	70

AIR BALANCE					
UNIT	AREA SERVED	SUPPLY AIR (CFM)	OUTSIDE AIR (CFM)	RETURN AIR (CFM)	EXHAUST AIR(CFM)
AC-1	SEE PLAN	1300	120	1180	0
AC-2	SEE PLAN	880	80	800	0
EF-1	RESTROOM	0	0	0	70
TOTAL:		2180	200	1980	70
BUILDING PRESSURE:			130	POSITIVE	

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

RCL CALCULATION										
NOTES	OUTDOOR UNIT TAG	FLOOR	ROOM NAME	AREA (FT²)	HEIGHT (FT)	VOLUME (FT³)	ASHRAE 34 RCL (LB/1000 FT³)	RC (LB)	MAV (FT³)	REMARKS
RISER COMING FROM BACK OF STORE	ACCU-1 & ACCU-2	FIRST FLOOR	FIRST FLOOR	470	15	7050	26	66	2538.5	ACCEPTABLE

ELECTRICAL SYMBOLS LIST

SWITCHES AND CONTROLS

	20A SPST TOGGLE SWITCH U.O.N. "a" DENOTES LIGHTING FIXTURE CONTROLLED.
	20A 3-WAY TOGGLE SWITCH U.O.N. "a" DENOTES LIGHTING FIXTURE CONTROLLED
	20A 4-WAY TOGGLE SWITCH U.O.N. "a" DENOTES LIGHTING FIXTURE CONTROLLED
	WALL BOX DIMMER SWITCH, LUTHRON MAESTRO SERIES. "a" DENOTES LIGHTING FIXTURE CONTROLLED.
	OVERRIDE SWITCH
	WALL OCCUPANCY SENSOR, NUMBER INDICATES TYPE; SEE OCCUPANCY SENSOR SCHEDULE.
	ASCO CONTACTOR C-25 TORK TIMER T-25 STACKED.
	DOOR SWITCH
	PHOTOCELL IN NEMA 3R ENCLOSURE
	WALL MOUNTED PHOTOCELL MOUNTED IN NEMA 3R ENCLOSURE.
	CEILING OCCUPANCY SENSOR
	CEILING MOUNTED DAYLIGHT SENSOR.

WIRING SYSTEMS

	POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSIST OF 1#12 Ø, 1#12 N. & 1#12 G. IN 3/4"Ø, UNLESS OTHERWISE NOTED.
	POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSIST OF 2#12 Ø, 2#12 N. & 2#12 G. IN 3/4"Ø, UNLESS OTHERWISE NOTED.
	POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSIST OF 3#12 Ø, 3#12 N. & 3#12 G. IN 3/4"Ø, UNLESS OTHERWISE NOTED.
	CONDUIT TURNING UP, SEE FLOOR PLANS FOR CONDITIONS.
	CONDUIT TURNING DOWN, SEE FLOOR PLANS FOR CONDITION.
	CONDUIT AND WIRE TO BUILDING GROUND.
	UNDERGROUND
	EXISTING
	NEW
	CEILING MOUNTED SMOKE DETECTOR.
	COMBINATION OF SMOKE AND CO DETECTOR.

ELECTRICAL DRAWING LIST

E-001.00	ELECTRICAL SYMBOL LIST, ABBREVIATIONS & GENERAL NOTES
E-002.00	ELECTRICAL SPECIFICATIONS (1 OF 2)
E-003.00	ELECTRICAL SPECIFICATIONS (2 OF 2)
E-101.00	ELECTRICAL LIGHTING PLAN—FIRST FLOOR & CELLAR
E-201.00	ELECTRICAL POWER PLAN—FIRST FLOOR & CELLAR
E-301.00	ELECTRICAL PANEL SCHEDULES AND RISER DIAGRAM
E-401.00	ELECTRICAL COMMUNICATION—FIRST FLOOR & CELLAR
E-501.00	ELECTRICAL DETAILS

POWER AND TELECOMMUNICATION

	JUNCTION BOX WITH BLANK COVER PLATE, FLUSH IN FLOOR.
	JUNCTION BOX WITH BLANK COVER PLATE, WALL MOUNTED, +18" AFF OR AS NOTED.
	JUNCTION BOX WITH BLANK COVER PLATE, CEILING MOUNTED..
	DUPLEX CONVENIENCE RECEPTACLE, +18" AFF OR AS NOTED.
	DUPLEX DEDICATED RECEPTACLE, +18" AFF OR AS NOTED.
	DUPLEX CONVENIENCE RECEPTACLE - 20A-1P, 125V, NEMA 5-20R MOUNTED FLUSH IN CEILING.
	DUPLEX RECEPTACLE WITH GFCI PROTECTION
	ELECTRICAL FLOOR BOX
	SPECIAL RECEPTACLE
	NETWORK INTERFACE DEVICE, NID IS "ONT" BOX WHICH INCLUDES BOTH "ONT" AND ITS SISTER BOX AS PER VERIZON STANDARDS.
	DOUBLE DUPLEX RECEPTACLE - 20A-1P, 125V, NEMA 5-20R.
	TELEPHONE/DATA OUTLET, 4" SQUARE OUTLET BOX WITH SINGLE GANG COLLAR AND BLANK PLATE. PROVIDE 3/4" E.C., U.O.N., UP TO HUNG CEILING AND TERMINATE WITH 90° ELBOW, BUSHING AND DRAG WIRE.
	DATA OUTLET - (1) PORT UNO, +18" AFF, UNO TEL / DATA OUTLET TO BE PROVIDED WITH 1" CONDUIT U.O.N. TO H.C. AND TERMINATED WITH 90 DEGREE ELBOW AND BUSHING. TEL / DATA OUTLET PLATE SHALL BE PROVIDED WITH 1 1/4" DIAMETER GROMMETTED OPENING.
	SIMPLEX RECEPTACLE

MOTORS AND CONTROLS

	AC INDOOR UNIT MOTOR AS NOTED WITH LIQUID TIGHT FLEXIBLE CONNECTION WITH JUNCTION BOX AND MOTOR SWITCH.
	AC OUTDOOR UNIT MOTOR AS NOTED WITH CONTROLLER AND DISCONNECT SWITCH WITH WEATHER PROOF.
	NON FUSED DISCONNECT SWITCH AMPERAGE, AND NUMBER OF POLES AS NOTED.
	40A NON FUSED DISCONNECT SWITCH
	50A NON FUSED DISCONNECT SWITCH
	100A NON FUSED DISCONNECT SWITCH
	200A NON FUSED DISCONNECT SWITCH
	COMBINATION MAGNETIC STARTER AND DISCONNECT SWITCH, FURNISHED BY HVAC/CONTRACTOR, INSTALLED AND WIRED BY ELECTRICAL CONTRACTOR.
	FUSED DISCONNECT SWITCH AND FUSE AMPERAGE AS INDICATED. TOP NUMBER DENOTES SWITCH SIZE AND BOTTOM NUMBER DENOTES FUSE.
	COMBINATION SOLID-STATE MOTOR STARTER.
	MOTORIZED DAMPER
	FIRE SMOKE DAMPER
	DUPLEX PUMP. NUMBER INDICATES HP RATING OF PUMP.
	THERMAL OVERLOAD SWITCH AT MOTOR. PROVIDE THERMAL ELEMENTS AS PER MOTOR RATING.
	MANUAL MOTOR SWITCH
	ELECTRICAL HEATER, NUMBER DENOTES HEATER RATING

ANNOTATION

	INDICATES MOUNTING HEIGHT, CENTER LINE TO FINISHED FLOOR.
	KEYED NOTE REFERENCE
	DETAIL REFERENCE: DETAIL NUMBER INDICATED ON TOP; DRAWING NUMBER INDICATED ON BOTTOM

POWER DISTRIBUTION

	MAJOR ELECTRICAL COMPONENT OR DEVICE. VOLTAGE AND AMPERAGE AS NOTED.
	BRANCH PANELBOARD, 208Y/120V—SURFACE OR FLUSH MOUNTED
	DISTRIBUTION PANELBOARD, 208Y/120V—SURFACE OR FLUSH MOUNTED.

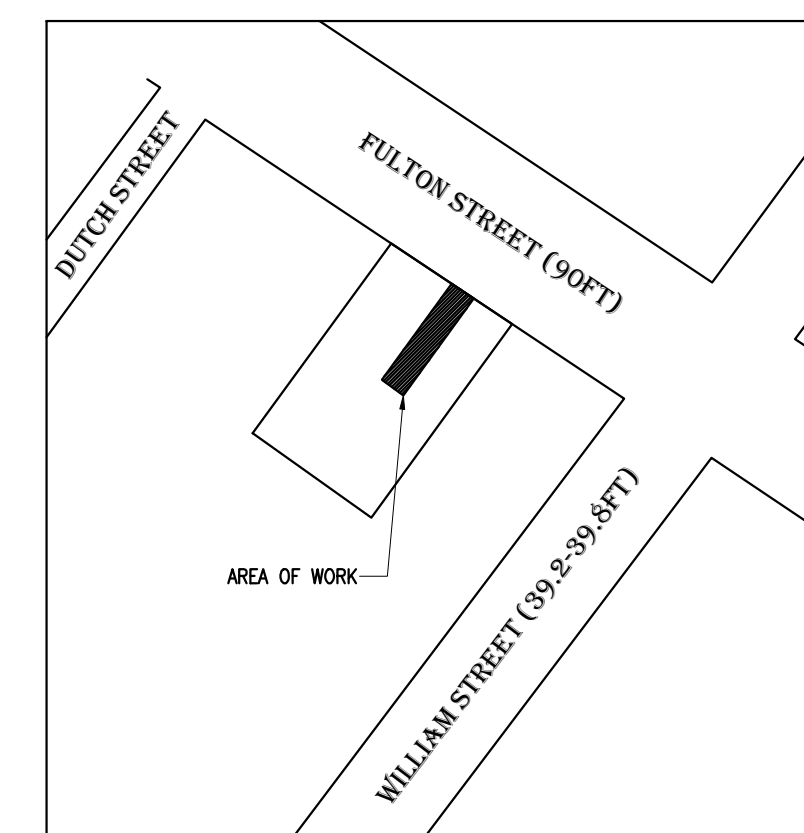
ELECTRICAL ABBREVIATIONS

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
AT	AMP TRIP	ER	EXISTING TO BE RELOCATED
ATS	AUTOMATIC TRANSFER SWITCH	ETR	EXISTING TO REMAIN
AUTO	AUTOMATIC	EFW	ELECTRIFIED WORKSTATION FURNITURE
AWG	AMERICAN WIRE GAUGE	EWH	ELECTRIC WATER HEATER
C	CONDUIT	FA	FIRE ALARM
C/B,CB	CIRCUIT BREAKER	FBO	FURNISHED BY OTHERS, INSTALLED & WIRED BY EC
CKT	CIRCUIT	FDR	FEEDER
CLG	CEILING	FIBO	FURNISHED & INSTALLED BY OTHERS, WIRED BY EC
COMM	COMMUNICATION	FIXT	FIXTURE
CT	CURRENT TRANSFORMER	FL	FLOOR
CU	COPPER	FLUOR	FLUORESCENT
°C	DEGREE CELSIUS	G	GROUND
°F	DEGREE FAHRENHEIT	GFI	GROUND FAULT INTERRUPTER
DIA	DIAMETER	GP	GENERAL PURPOSE
DISC	DISCONNECT	HC	HUNG CEILING
DN	DOWN	HP	HORSEPOWER
DP	DISTRIBUTION PANEL	HWH	HOW WATER HEATER
DWH	DOMESTIC WATER HEATER	HZ	HERTZ
DWG	DRAWING	IC	INTERRUPTING CAPACITY
JB	JUNCTION BOX	PP	POWER PANEL
KCMIL	ONE THOUSAND CIRCULAR MILS	PVC	POLYVINYL CHLORIDE
KV	KILOVOLT	PWR	POWER
KVA	KILOVOLT-AMPERES	R	REMOVE
KW	KILOWATTS	RE	RELOCATED EXISTING
LP	LIGHTING PANEL	REC	RECEPTACLE
LTG	LIGHTING	RGS	RIGID GALVANIZED STEEL
MAX	MAXIMUM	RR	REMOVE & RELOCATE
MC	MOTOR CONTROLLER	SECT	SECTION
MCB	MAIN CIRCUIT BREAKER	SPDT	SINGLE POLE DOUBLE THROW
MER	MECHANICAL EQUIPMENT ROOM	SPST	SINGLE POLE SINGLE THROW
MIN	MINIMUM	SPEC	SPECIFICATION
MLO	MAIN LUGS ONLY	SW	SWITCH
MTD	MOUNTED	SWBD	SWITCHBOARD
MTS	MANUAL TRANSFER SWITCH	SYM	SYMMETRICAL
N	NEUTRAL	SYS	SYSTEMS
NE	NEW DEVICE TO REPLACE EXISTING	TELE	TELEPHONE
NIC	NOT IN CONTRACT	TEMP	TEMPERATURE
NL	NIGHT LIGHT	TXF	TOILET EXHAUST FAN
NTS	NOT TO SCALE	TYP	TYPICAL
OC	ON CENTER	UON	UNLESS OTHERWISE NOTED
P	POLES	V	VOLT/VOLTAGE
PB	PULLBOX	VA	VOLT AMPERE
PC	PERSONAL COMPUTER	VAV	VARIABLE AIR VOLUME
∅	PHASE	VFD	VARIABLE FREQUENCY DRIVE
PNL	PANEL	VP	VAPORPROOF
W	WATT	WP	WEATHER PROOF
W	WIRE	XFMR	TRANSFORMER
WH	WALL HEATER	ZRT	ZONE REGISTER TERMINALS
E	EXISTING	IG	ISOLATED GROUND

GENERAL NOTES (APPLY TO ALL "E" DRAWINGS)

- ALL WORK SHALL BE PERFORMED IN STRICT ACCORDANCE WITH THE CURRENT VERSION OF THE NATIONAL ELECTRIC CODE(NEC), WITH NYC AMENDMENTS, LOCAL JURISDICTION REQUIREMENTS, AND ALL GOVERNING LOCAL CODES, LAWS, AND REGULATIONS.
- 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.
- CONTRACTOR SHALL OBTAIN AND PAY FOR ALL PERMITS, TEST REPORTS, AND CERTIFICATIONS FOR TEMPORARY AND FINAL CERTIFICATE OF OCCUPANCY.
- 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.
- 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.
- LEAVE WIRES WITH SUFFICIENT SLACK TO PERMIT MAKING FINAL CONNECTIONS. RACEWAYS OVER 10 FT LONG IN WHICH WIRING IS NOT INSTALLED: FURNISH FISH WIRE.
- 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.
- CONTRACTOR SHALL PROVIDE A WARRANTY ON ALL MATERIALS, EQUIPMENT, AND WORKMANSHIP FOR A PERIOD OF ONE YEAR FROM THE DATE OF FINAL ACCEPTANCE.
- ALL UNUSED MATERIALS AND DEBRIS SHALL BE LEGALLY REMOVED AND DISPOSED OF AWAY FROM THE PREMISES ON A DAILY BASIS.
- CONTRACTOR SHALL PATCH, PAINT, AND RESTORE EXISTING SURFACES DAMAGED DURING THE COURSE OF THIS CONSTRUCTION TO PRE-EXISTING CONDITIONS OR BETTER.
- MINIMUM SIZE OF CONDUIT SHALL BE 3/4", AND TYPE SHALL BE ELECTRICAL METALLIC TUBING (EMT), UNLESS OTHERWISE NOTED. PROVIDE NYLON DRAG LINE AND CONDUIT CAP FOR ALL EMPTY CONDUITS.
- 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.
- PULL AND JUNCTION BOXES WHERE INDICATED ON THE DRAWINGS, SHALL BE CONSIDERED SHOWN AT THEIR APPROXIMATE LOCATION. THE CONTRACTOR SHALL LOCATE THEM AS FIELD CONDITIONS DICTATE. ADDITIONAL PULL AND JUNCTION BOXES NOT SHOWN ON DRAWINGS SHALL BE PROVIDED WHERE REQUIRED BY APPLICABLE CODE PROVISIONS OR WHERE CALLED FOR BY FIELD CONDITIONS. PULL AND JUNCTION BOXES SHALL BE SURFACE TYPE IN UNFINISHED AREAS AND INSTALLED CONCEALED IN FINISHED AREAS, AND ALL COVERS TO PULL & JUNCTION BOXES SHALL BE READILY ACCESSIBLE.
- SUPPORT PANEL, JUNCTION AND PULLBOXES INDEPENDENTLY TO BUILDING STRUCTURE WITH NO WEIGHT BEARING ON RACEWAYS.
- FOR EXACT LOCATION AND MOUNTING HEIGHT OF LIGHTING FIXTURES AND SWITCH/RECEPTACLE OUTLETS, REFER TO ARCHITECTURAL REFLECTED CEILING AND POWER PLANS.
- 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.
- ALL ACCESS PANEL LOCATIONS SHALL BE REVIEWED BY ARCHITECT PRIOR TO INSTALLATION.
- 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.
- ALL CONDUITS AND EQUIPMENT TO BE CONCEALED IN FINISHED SPACES UNLESS OTHERWISE NOTED. CONDUITS SHALL BE ENCASED IN THE CONCRETE FLOOR SLAB.
- ALL EQUIPMENT AND MATERIALS INSTALLED IN PLENUM CEILINGS SHALL BE APPROVED FOR THAT APPLICATION.
- 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.
- COORDINATE ALL FLOOR PENETRATIONS WITH THE STRUCTURAL AND ARCHITECTURAL DRAWINGS. CONFIRM PENETRATION LOCATIONS WITH THE ENGINEER AND OWNER BEFORE INSTALLATION.
- 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.
- REFER TO ARCHITECTURAL PLANS FOR FINAL LOACTIONS OF ALL LUMINARIES AND SWITCHES, AND FOR ALL FINISHED CEILING HEIGHTS.
- REFER TO ARCHITECTURAL PLANS FOR FINAL LOCATIONS OF ALL ELECTRICAL DEVICES, AND FOR FINAL CEILING AND WALL HEIGHTS AND LAYOUTS.
- 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.
- 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.

KEY PLAN:



PLOT PLAN SCALE: N.T.S.

102 FULTON STREET, 10038
 BOROUGH : 1 (MANHATTAN)
 BLOCK : 78
 LOT : 7506
 ZONING DISTRICT : C6-4
 MAP : 12B
 BUILDING USE : MIXED RESIDENTIAL & COMMERCIAL BUILDING

APPLICABLE CODES

- 2022 NYC BUILDING CODE.
- 2022 NYC MECHANICAL CODE.
- 2022 NYC PLUMBING CODE.
- 2011 NYC ELECTRICAL CODE. (NEC).
- 2022 NYC FUEL GAS CODE.
- 2020 NYC ENERGY CONSERVATION CODE
- 2016 NFPA 13.

PROJECT COORDINATION NOTES

- BIDDERS ARE TO VISIT THE SITE AND FAMILIARIZE THEMSELVES WITH EXISTING CONDITIONS AND SATISFY THEMSELVES AS TO THE NATURE AND SCOPE OF WORK. THE SUBMISSION OF A BID WILL BE EVIDENCE THAT SUCH AN EXAMINATION HAS BEEN MADE. LATER CLAIMS FOR LABOR, EQUIPMENT OR MATERIALS REQUIRED, OR FOR DIFFICULTIES ENCOUNTERED WHICH COULD HAVE BEEN FORESEEN HAD AN EXAMINATION BEEN MADE, WILL NOT BE ALLOWED.
- COORDINATE WITH OTHER TRADES FOR ITEMS IN THEIR SCOPE OF WORK WHICH WOULD REQUIRE ELECTRICAL WORK (DISCONNECTION/RECONNECTION, ETC.) AND ARE NOT INDICATED ON THE ELECTRICAL PLANS.

ENERGY CONSERVATION CODE OF NEW YORK CITY COMPLIANCE

TO THE BEST OF MY PROFESSIONAL KNOWLEDGE AND JUDGEMENT, THESE PLANS AND SPECIFICATION ARE IN COMPLIANCE WITH THE ENERGY CONSERVATION CODE OF NEW YORK CITY 2020

SYSTEMS COMMISSIONING PURSUANT TO SECTION C408.3 NYC ECC 2020

SYSTEMS REQUIRING COMMISSIONING

- OCCUPANT SENSOR CONTROLS.
- TIMER SWITCH CONTROLS.

ELECTRICAL SPECIFICATIONS (CONT.)

3. BOXES:

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.

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.

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

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

RIGID STEEL CONDUIT SHALL BE PERMITTED FOR FEEDERS AND BRANCH CIRCUITS. PAINT MALE THREADS OF FIELD-THREADED CONDUIT WITH GRAPHITE-BASE PIPE COMPOUND AND BUTT CONDUIT ENDS. TOUCH UP MARRED SURFACES AND FIELD-CUT THREADS, CRC-COLD GALVANIZED. EMT SHALL BE 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. OVIDE 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).PR

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 BARRIERS 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 SPACES. WHERE NECESSARY, REROUTE RACEWAYS OR MAKE OTHER ARRANGEMENTS FOR CONCEALMENT. BOXES SHALL BE ACCESSIBLE. SUPPORT BOXES FROM BUILDING STRUCTURE, INDEPENDENT OF CONDUIT. PROVIDE FLOOR-TO-CEILING CHANNELS FOR MOUNTING ON DRYWALL AND LIGHTWEIGHT CONSTRUCTION. OUTLET BOXES FOR FIXTURES RECESSED IN HUNG CEILINGS SHALL BE ACCESSIBLE THROUGH OPENING CREATED BY REMOVAL OF FIXTURE. SECURE TO BLOCK WITH 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.

9. WIRE AND CABLE:

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

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

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

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

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

F. COLOR CODING SHALL BE AS FOLLOWS:

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

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

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

G. PROVIDE FLAMEPROOF LINEN OR FIBER TAGS IN ACCESSIBLE LOCATIONS. FOR FEEDERS INDICATE FEEDER NUMBER, SIZE, PHASE AND POINTS OF ORIGIN AND TERMINATIONS. FOR CONTROL AND ALARM WIRING INDICATE TYPE (CONTROL OR ALARM), SIZE OF WIRE, AND POINTS OF ORIGIN AND TERMINATIONS.

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

10. 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 SPLIT, 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.

11. LIGHTING FIXTURES:

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

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

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

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

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

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

G. 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.

12. 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.

13. GROUNDING AND BONDING:

A. PROVIDE GROUNDING SYSTEM IN ACCORDANCE WITH (NATIONAL ELECTRICAL CODE), AND THESE SPECIFICATIONS. THE WIRING SYSTEM SHALL BE INSTALLED AS REQUIRED TO PROVIDE A CONTINUOUSLY GROUNDED SYSTEM. WHERE FLEXIBLE CONDUIT IS USED FOR PART OF A CONDUIT RUN, EXCEPT LIGHTING BRANCH CIRCUITS, AN INSULATED GROUNDING CONDUCTOR SHALL BE PROVIDED IN THE CONDUIT AND CONNECTED TO GROUNDING BUSHINGS AT EACH END OF THE RUN.

B. USE EXOTHERMIC WELDING PROCESS FOR INACCESSIBLE CONNECTIONS.

C. EXTEND EXISTING SYSTEM GROUND TO INCLUDE ALL THE ELECTRICAL EQUIPMENT IN THE SCOPE OF WORK.

D. WHERE FLEXIBLE METALLIC CONDUIT IS USED AN INTERNAL BONDING CONDUCTOR SHALL BE INSTALLED.

E. IN ADDITION, FURNISH A SEPARATE INSULATED GREEN EQUIPMENT GROUND CONDUCTOR WHERE INDICATED ON DRAWINGS AND FOR THE FOLLOWING BRANCH CIRCUITS:

1) CIRCUITS SERVING ANY WALL BOX DIMMER.

2) CIRCUITS SERVING ANY ISOLATED GROUND RECEPTACLES. TERMINATE GROUND DIRECTLY AT AN EQUIPMENT GROUNDING CONDUCTOR TERMINAL OF THE SOURCE, OR AS OTHER WISE NOTED ON DRAWINGS.

3) CIRCUITS SERVING ANY DUPLEX OR SIMPLEX COMPUTER RECEPTACLES

4) ANY CIRCUIT SERVED VIA AN ISOLATION TRANSFORMER OR COMPUTER POWER DISTRIBUTION UNIT.

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. SMOKE ALARMS

A. PROVIDE SOLID STATE, PHOTOELECTRIC TYPE, HARD-WIRED SMOKE ALARM WITH 9V BATTERY BACKUP AND INTEGRAL TEMPORAL PATTERN EVACUATION HORN. EDWARDS 517 SERIES OR APPROVED EQUAL.

B. THREE POSITION TEST FEATURE THAT SIMULATES ACTUAL SMOKE CONDITIONS. SHALL CONTAIN MAINTENANCE INDICATOR.

C. PROVIDE WITH INTEGRAL 135 DEGREE F ISOLATED HEAT DETECTION OR INTEGRAL RELAY RATED 0.6A AT 125V AC., AS INDICATED ON THE PLANS AND DRAWINGS.

D. DEVICE SHALL BE RATED TO OPERATE AT A RANGE OF 40' TO 100'.

E. UL LISTED TO UL217 AND APPROVED.

16. INTERCOM CONDUIT SYSTEM:

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

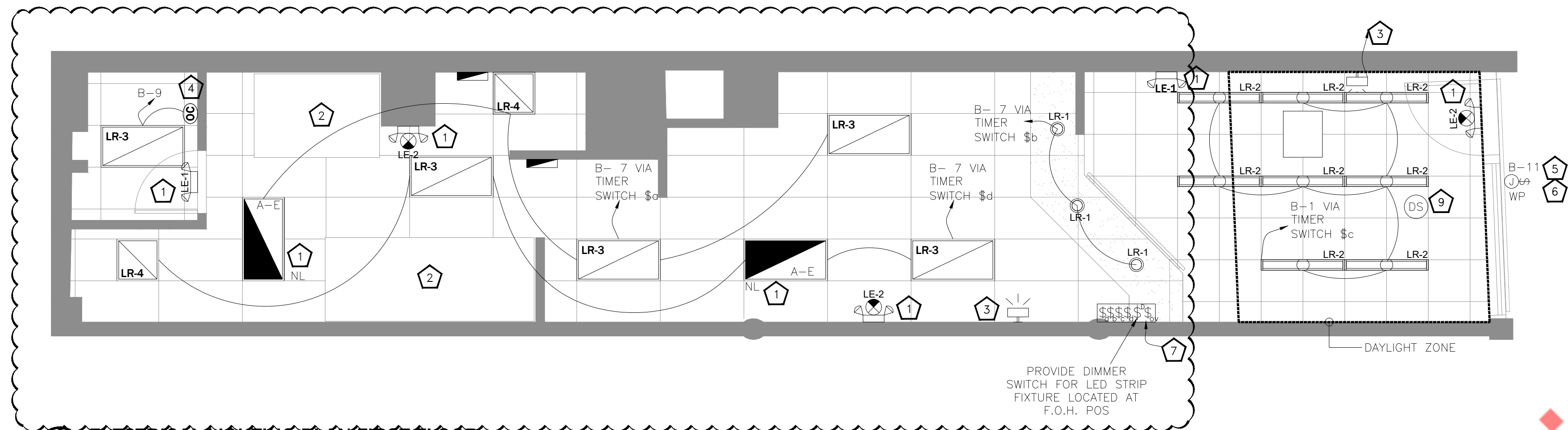
B. EQUIPMENT SHALL CONFORM TO REQUIREMENTS OF INTERCOM MANUFACTURER.

C. OUTLETS SHALL BE:

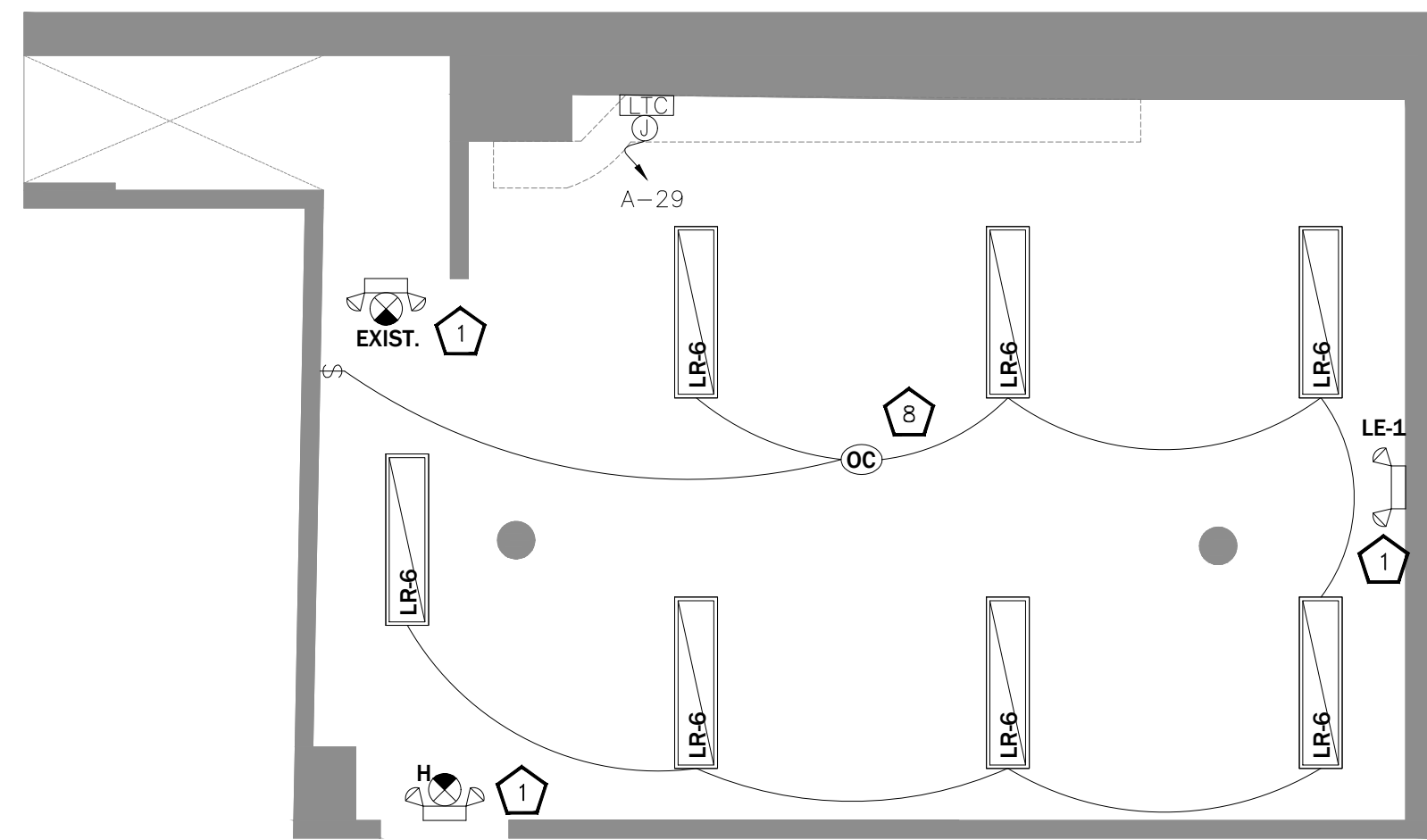
1) WALL: 4 IN. SQUARE WITH SINGLE GANG COVER PLATE.

D. PROVIDE FISHWIRES, 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.



1 ELECTRICAL LIGHTING PLAN-FIRST FLOOR
1/4"=1'-0"



2 ELECTRICAL LIGHTING PLAN-CELLAR
1/4"=1'-0"

LIGHTING PLAN GENERAL NOTES:

1. LIGHTING CONTROLS: ALL NEW LIGHTING TO BE CONNECTED TO EXISTING AUTOMATIC LIGHTING CONTROL SYSTEM. IF EXISTING SYSTEM DOES NOT COMPLY WITH LATEST IECC 2020 CONTROLS REQUIREMENTS, PROVIDE UPDATED/UPGRADED SYSTEM AS REQUIRED.
2. LIGHTING SHALL BE CIRCUITED EXACTLY AS SHOWN ON PLANS.
3. SEE ARCHITECTURAL REFLECTED CEILING PLAN FOR EXACT LOCATION AND QUANTITY OF LIGHTING FIXTURES.
4. EMERGENCY AND EXIT LIGHTS SHALL BE INSTALLED AND CIRCUITED PER THE LATEST NATIONAL ELECTRICAL CODE AND ALL LOCAL CODES. ALL EMERGENCY AND EXIT FIXTURES SHALL BE DUAL VOLTAGE (120/277 VOLT INPUT) WITH 90 MINUTE BATTERY BACKUP.
5. ELECTRICAL SUB-CONTRACTOR IS RESPONSIBLE FOR ALL REFLECTED CEILING PLAN NOTES ON ARCHITECTURAL DRAWINGS.
6. ALL FLUORESCENT LIGHTING SHALL BE PROVIDED WITH INTEGRAL DISCONNECTING MEANS PER NEC.
7. REFER TO ARCHITECTURAL ELEVATIONS FOR MOUNTING OF EXTERIOR LIGHTS.
8. "NL" DESIGNATES NIGHT LIGHT-24/7 OPERATION ON SWITCH- RATED BREAKER.
9. THE DIRECTION OF THE BUILDING OFFICIAL/QUANTITY, LOCATION AND TYPE OF EXIT/EGRESS LIGHTS REQUIRED SHALL TAKE PRECEDENCE OVER WHAT IS SHOWN IN THIS DOCUMENT SET.
10. PROVIDE CURRENT LIMITERS (IN-LINE) FOR TRACK LIGHTING AS NEEDED WHERE REQUIRED BY INSPECTOR TO ACHIEVE ENERGY CODE COMPLIANCE.
11. PROVIDE ALL TEMPORARY LIGHTING DURING DEMOLITION AND CONSTRUCTION PHASE.
12. ALL FIXTURES FINISHES AND OPTIONS MUST BE APPROVED BY OWNER OR ARCHITECT.
13. ADDITIONAL LIGHT SWITCHES MAY BE INSTALLED IF APPROVED BY OWNER OR ARCHITECT.
14. ALL LIGHTING EXPOSED TO PLENUM IS PLENUM RATED.
15. CONTRACTOR TO COORDINATE ALL LIGHTING/DIMMING CONTROLS AND LIGHTING SPECIFICATIONS WITH CONTROL VENDOR PRIOR TO ORDERING TO ENSURE CORRECT COMPONENTS ARE PROVIDED FOR DIMMING AND CONTROL COMPATIBILITY
16. ALL LIGHTING SHALL BE 120V.
17. EC SHALL COMPLY WITH 2020 NYC ENERGY CONSERVATION CODE.
18. LIGHTING REDUCTION CONTROLS SHALL COMPLY WITH 2020 NYC ENERGY CONSERVATION CODE SECTION C405.2.2.2.

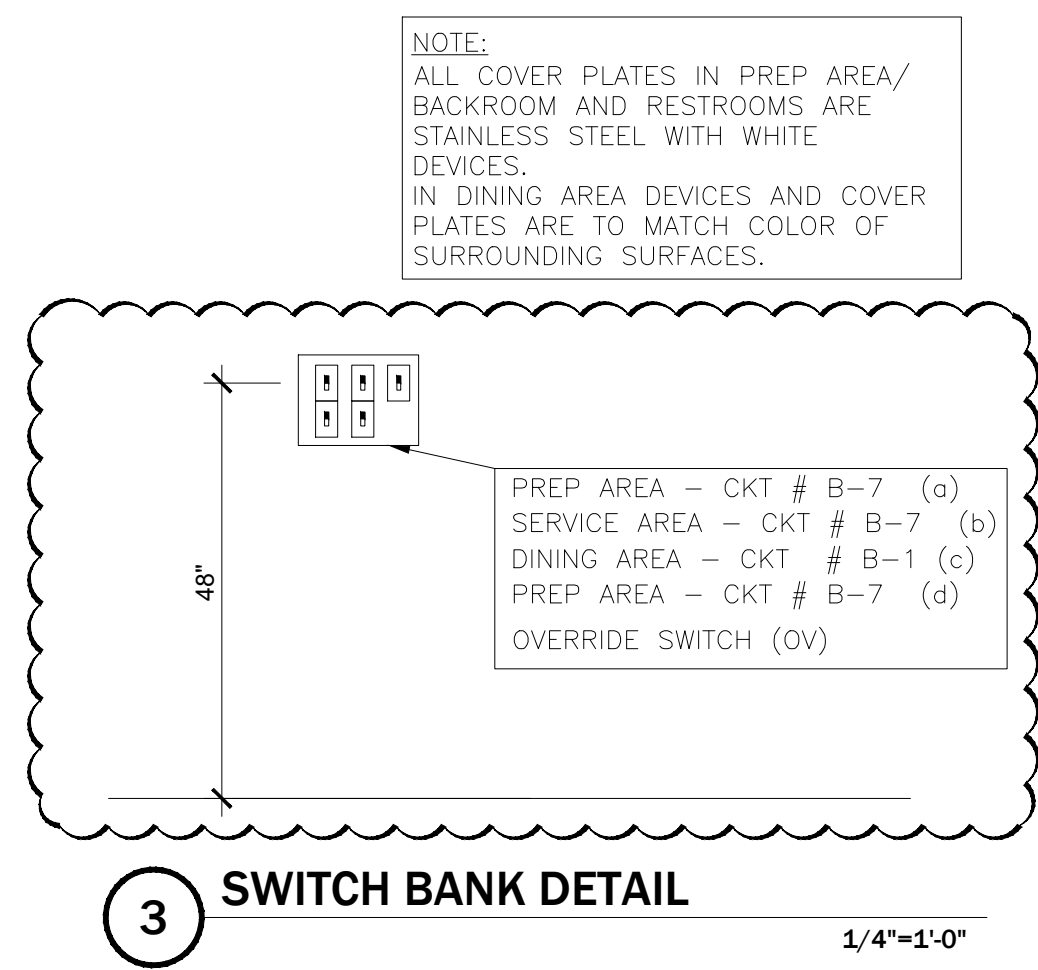
CONTRACTOR SHALL EXTEND DUAL CIRCUITS AT ALL EXIT AND EGRESS LIGHTING TO BASE BUILDING LIFE/FIRE SAFETY GENERATOR (PER N.Y. CITY HIGH RISE REQ.)

ELECTRICAL NOTE:
ELECTRICAL CONTRACTOR TO COORDINATE ALL CONDUIT LOCATIONS WITH THE COMMUNICATIONS/DATA SUB-CONTRACTOR.

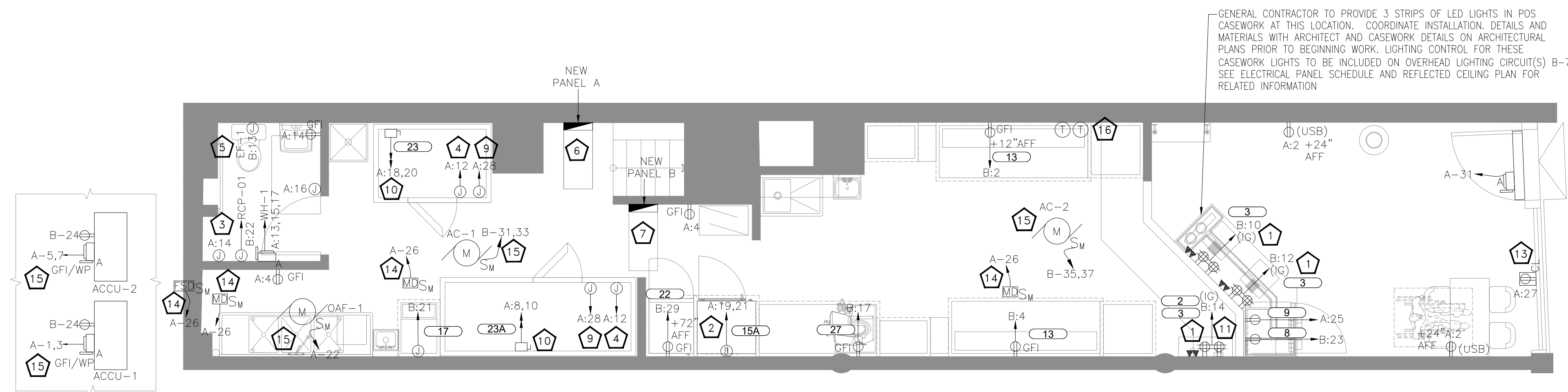
E.C. TO FIELD VERIFY BUILDING ELECTRICAL SERVICE (VOLTS, PHASE, AMPS) PRIOR TO BID. IF THERE IS ANY DISCREPANCIES BETWEEN THE CONTRACT DOCUMENTS AND FIELD CONDITIONS, E.C. IS TO NOTIFY FRANCHISEE, ARCHITECT AND ENGINEER IMMEDIATELY.

- # LIGHTING PLAN KEYED NOTES:**
1. ALL NIGHT LAMP, EMERGENCY AND EXIT FIXTURES SHALL BE CONNECTED TO NEAREST LIGHTING CIRCUIT AHEAD OF ANY SWITCHING. PROVIDE ADDITIONAL FIXTURES AS NEEDED TO MEET THE CODE REQUIREMENTS PER LOCAL AFD.
 2. LIGHT FIXTURES FURNISHED BY WALK-IN BOX VENDOR. ELECTRICAL CONTRACTOR TO INSTALL AND CONNECT FIXTURES.
 3. TERMINATE SPEAKER WIRE AT VOLUME CONTROLS. COORDINATE WITH ARCHITECT/OWNER FOR LOCATING THE VOLUME CONTROLS. VERIFY LOCATION AND QUANTITY OF SPEAKERS WITH ARCHITECT/OWNER.
 4. WALL MOUNTED OCCUPANCY SENSOR EQUAL TO WATTSTOPPER WS-250. SET OFF TIME TO 20 MINUTES FOR RESTROOM AND OFFICE. SET DIP SWITCH TO AUTOMATIC ON.
 5. VERIFY THE EXACT LOCATIONS OF SIGNS BOXES BEFORE INSTALLATION OF JUNCTION BOXES. E.C. SHALL VERIFY EXACT SIGN(S) WIRING REQUIREMENTS WITH THE SIGN SUPPLIER PRIOR TO SUBMITTING A BID FOR THE ELECTRICAL.
 6. ELECTRICAL CONTRACTOR SHALL PROVIDE JUNCTION BOX WITH TOGGLE DISCONNECTION AS PER NEC FOR CONNECTION TO THE EXTERIOR BUILDING SIGNAGE. THE SIGNS SHOULD BE SUPPLIED WITH WHIPS FOR FINAL CONNECTION TO THIS JUNCTION BOX. E.C. TO COORDINATE WITH THE SIGN VENDOR ON THE QUANTITY AND LOCATION OF THE REQUIRED JUNCTION BOXES. THE CONTRACTOR SHALL PROPERLY SIZE THE JUNCTION BOX BASED ON THE QUANTITY OF CONNECTIONS REQUIRED. VERIFY LOCATION WITH ARCHITECTURAL DRAWINGS AND SIGN VENDOR PRIOR TO INSTALLING. ALL SIGNS SHALL BE CONTROLLED VIA TIME CLOCK.
 7. 2HR. MAX. OVERRIDE SWITCH.
 8. PROVIDE LOW VOLTAGE OCCUPANCY SENSOR EQUAL TO WATTSTOPPER DT-305. PROVIDE WATTSTOPPER BZ POWER PACK(S) AS REQUIRED. INTERCONNECT OCCUPANCY SENSORS SO THAT ANY SENSOR WILL TRIGGER ALL LIGHTS. SET OFF TIME FOR 20 MINUTES.
 9. DAY LIGHT SENSOR LIGHTING IN THIS AREA SHALL BE CONTROLLED VIA DAY LIGHT SENSOR. PROVIDE DAYLIGHT RESPONSIVE CONTROLS IN ACCORDANCE WITH 2020 NYC ENERGY CONSERVATION CODE SECTION C405.2.3.

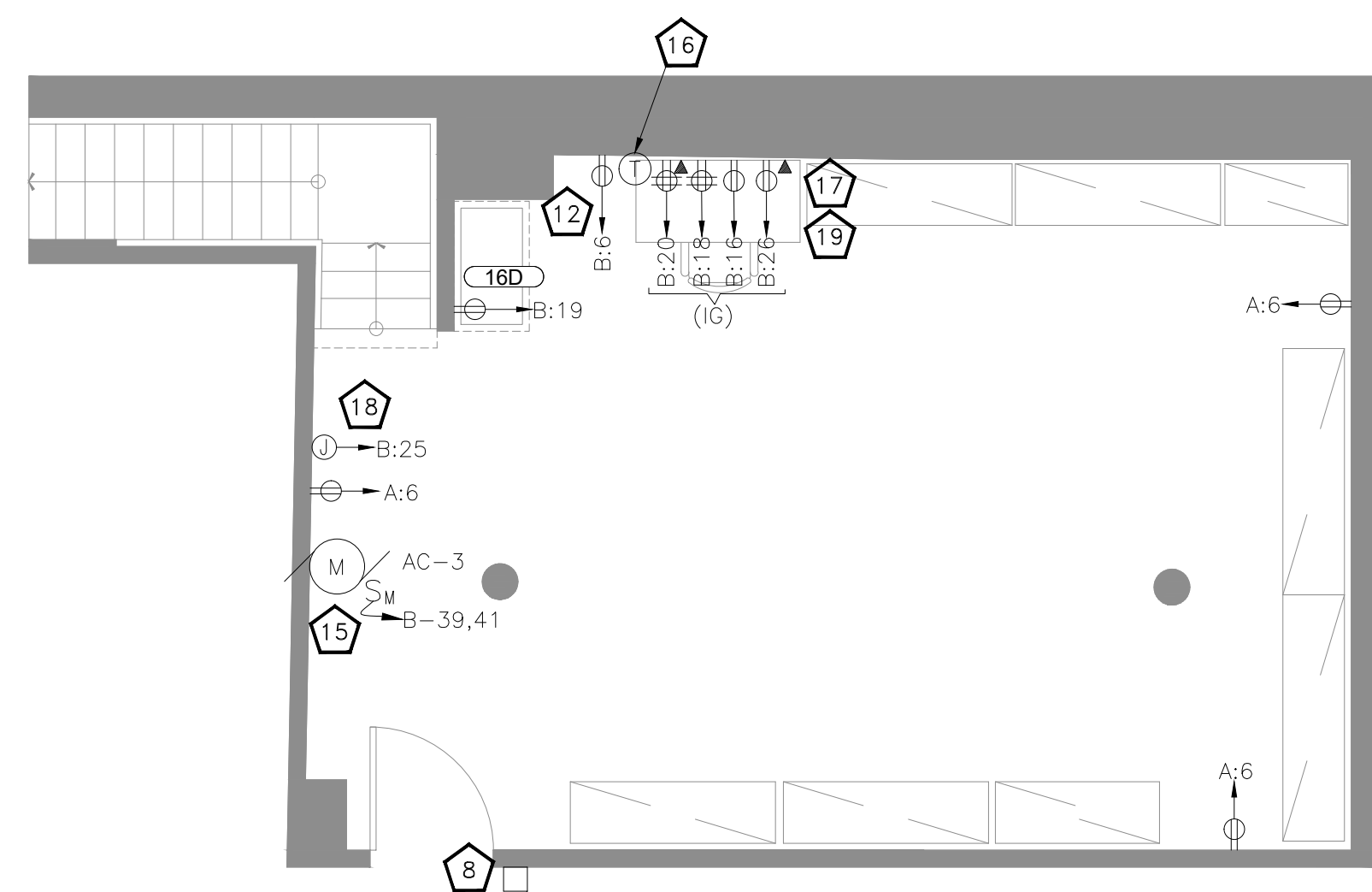
LIGHTING FIXTURE SCHEDULE						
CATEGORY	DESCRIPTION	MANUFACTURER	MODEL	FURNISHED BY	INSTALLED BY	REMARKS
LE-1	EMERGENCY LIGHT	LIGHTOLIER, INC	VU6	VENDOR	GC	UPDATED FROM SPEC BOOK RECEIVED FROM OnSite LIGHTING ON 7-11-2022
LE-2	COMBO EXIT LIGHT AND SIGN	LIGHTOLIER, INC	VCRWLRC	VENDOR	GC	UPDATED FROM SPEC BOOK RECEIVED FROM OnSite LIGHTING ON 7-11-2022
LE-4	EMERGENCY LIGHT - OUTDOOR	LIGHTOLIER, INC	STGGWG	VENDOR	GC	UPDATED FROM SPEC BOOK RECEIVED FROM OnSite LIGHTING ON 7-11-2022
LR-1	6" RECESSED CAN LIGHT	SATCO	S9540	VENDOR	GC	UPDATED FROM SPEC BOOK RECEIVED FROM OnSite LIGHTING ON 7-11-2022
LR-2	6"X48" LINEAR LED	SATCO	NUVO 62-1257	VENDOR	GC	UPDATED FROM SPEC BOOK RECEIVED FROM OnSite LIGHTING ON 7-11-2022
LR-3	2X4 FLAT PANEL	SATCO	NUVO 65-572	VENDOR	GC	UPDATED FROM SPEC BOOK RECEIVED FROM OnSite LIGHTING ON 7-11-2022
LR-4	2X2 FLAT PANEL	SATCO	NUVO 65-321	VENDOR	GC	UPDATED FROM SPEC BOOK RECEIVED FROM OnSite LIGHTING ON 7-11-2022
LR-5	5" OUTDOOR RECESSED CAN LIGHT	LIGHTOLIER, INC	L5R	VENDOR	GC	UPDATED FROM SPEC BOOK RECEIVED FROM OnSite LIGHTING ON 7-11-2022
LR-6	1X4 FLAT PANEL	SATCO	NUVO 65-573	VENDOR	GC	
LT-1	ULTRABRIGHT ACCENT SERIES LED STRIP	FLEXFIRELEDS	UB-AT1-30K97C-24 V-32FT	VENDOR	GC	UPDATED FROM SPEC BOOK RECEIVED FROM OnSite LIGHTING ON 7-11-2022
LW-1	WALL SCONCE - OUTDOOR	SATCO	NUVO 62-1144R1	VENDOR	GC	UPDATED FROM SPEC BOOK RECEIVED FROM OnSite LIGHTING ON 7-11-2022
LTC	LIGHTING TIME CLOCK	INTERMATIC	T101	-	GC	365 DAYS PROGRAMMABLE



3 SWITCH BANK DETAIL
1/4"=1'-0"



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



2 ELECTRICAL POWER PLAN-CELLAR
1/4"=1'-0"

TAG	DESCRIPTION	VOLTAGE PHASE	LOAD(FLA)	TYPE OF CONNECTION	MOUNTING HEIGHT	REMARKS
2	AVAYA 2554 FEATURE PHONE					
3	P.O.S. SYSTEM	120V/1Ø	4.1A	DUPLEX I.G. RECEPTACLE	IN CASEWORK	LOCATE IN CASEWORK
7	WATER HEATER	208V/3Ø	37.5	50A/3P DISCONNECT	VERIFY	SEE PLUMBING DRAWINGS FOR CONTACT INFO TO PURCHASE
8	ICE/DRINK DISPENSER	120V/1Ø	4A	DUPLEX RECEPTACLE	VERIFY	120V-CORD AND PLUG (C&P)-(INSTALL OUTLET ON WALL NEAR MACHINE. COKE TO PROVIDE STAND.
9	IDW WATER COOLER	120V/1Ø	1.5A	GFCI RECEPTACLE	IN CASEWORK	LOCATE IN CASEWORK
13	REFRIGERATED PREP TABLE (2)	120V/1Ø	13.29A	DUPLEX RECEPTACLE	12" A.F.F.	PROVIDE GFCI BREAKER
15A	OVEN/PROOFER	208V/1Ø	29A	60A/2P DISCONNECT	18" AFF	PROVIDE GFCI BREAKER AND LOCK-OFF DEVICE. IF DISCONNECT IS REQUIRED, CONTACT JJ CONSTRUCTION FOR INSTALLATION INSTRUCTIONS.
16D	CARBONATOR	120V/1Ø	3A	DUPLEX RECEPTACLE	VERIFY	CENTERED ABOVE BAG N BOX
17	ICE MAKER (AIR COOLED)	120V/1Ø	13.7A	JUNCTION BOX	72" A.F.F.	PROVIDE GFCI BREAKER
22	REFRIGERATOR	115V/1Ø	5A	GFCI RECEPTACLE	18" AFF	
23	WALK-IN FREEZER WW ELECTRIC DOOR	208V/1Ø	21.5A	60A/2P DISCONNECT	VERIFY	PROVIDE GFCI BREAKER
23A	WALK-IN COOLER W/ ELECTRIC DOOR	208V/1Ø	9.3A	30A/2P DISCONNECT	VERIFY	PROVIDE GFCI BREAKER
27	ELECTRIC SLICER	120V/1Ø	2.0A	GFCI RECEPTACLE	44" A.F.F.	

KEYED NOTES :

- POWER AND DATA FOR POS. COORDINATE ALL REQUIREMENTS WITH POS VENDOR PRIOR TO ROUGH-IN. REFER TO DETAIL SHEET E401.
- WHEN A LOCK-OFF DEVICE FOR OVEN CIRCUIT BREAKER IN PANEL IS SUFFICIENT, STUB POWER FROM WALL @ 18" AFF IN SEAL TIGHT ELECTRICAL WHIP CONNECTED TO OVEN. IF LOCK-OFF DEVICE IS NOT SUFFICIENT, INSTALL DISCONNECT BOX IN ACCESSIBLE LOCATION THAT DOES NOT INTERFERE WITH OTHER EQUIPMENT.
- PROVIDE JUNCTION BOXES AT RESTROOM, SINKS AND OPTIONAL URINAL IF ALTERNATE "HANDS FREE" RESTROOM FIXTURES ARE BEING PROVIDED.
- J-BOX FOR WALK-IN FREEZER/COOLER HEATER. E.C SHALL COORDINATE EXACT LOCATION AND ELECTRICAL REQUIREMENT WITH EQUIPMENT IN SITE.
- EF-1 SHALL BE INTERLOCKED WITH AC-1. E.C. TO REFER MECHANICAL DRAWING FOR MORE DETAILS.
- ELECTRICAL PANEL "A" FOR THE SPACE, REFER TO SHEET E-301 ELECTRICAL RISER DIAGRAM AND PANEL SCHEDULES. E.C. TO VERIFY EXACT RATING, BREAKERS AND SIZE OF THE PANELS IN THE FIELD.
- ELECTRICAL PANEL "B" FOR THE SPACE, REFER TO SHEET E-301 ELECTRICAL RISER DIAGRAM AND PANEL SCHEDULES. E.C. TO VERIFY EXACT RATING, BREAKERS AND SIZE OF THE PANELS IN THE FIELD.
- PROVIDE NSI PART #76080PS, OR EQUAL FLUSH INDUSTRIAL WEATHERPROOF PUSH-BUTTON FOR DOOR BELL AT 42". SEE KEY NOTE 16.
- FOR PANIC BUTTONS IN COOLERS, CONDUIT SHALL BE RAN INSIDE COOLER WALL TO JUNCTION BOX FOR PANIC ALARM FIRE ALARM CONTRACTOR SHALL PROVIDE THE PANIC ALARM AND THE WIRING TO THE ALARM.
- COOLER/FREEZER EVAPORATOR FED FROM ABOVE. COORDINATE CONNECTION TO LIGHT AND DOOR HEATER AND ALL OTHER REQUIREMENTS WITH SUPPLIER PRIOR TO ROUGH-IN.
- PROVIDE ONE (1) 3/4" CONDUIT STUBBED UP INTO ACCESSIBLE CEILING. VERIFY LOCATION IN FIELD FOR ALL VOICE AND DATA LOCATIONS. SEE ELECTRICAL/DATA PHONE BANK DETAIL ON SHEET E-401 ELECTRICAL COMMUNICATION/DATA PLAN.
- DUPLEX OUTLET TO BE INSTALLED AT 12" A.F.F. FOR CO2 SENSOR POWER. ALL WIRES FROM THE SENSOR TO THE ALARM (INSTALLED TIGHT TO THE BOTTOM OF THE CEILING ABOVE) ARE TO BE RECESSED IN THE WALL.
- E.C. TO INSTALL SHOW WINDOW RECEPTACLES AS PER NEC 210.62.
- JUNCTION BOX FOR MOTORIZED /FIRE SMOKE DAMPER. E.C. TO FIELD VERIFY EXACT LOCATION OF MOTORIZED/FIRE SMOKE DAMPER WITH MECHANICAL CONTRACTOR PRIOR TO ROUGH-IN.
- ELECTRICAL CONTRACTOR TO COORDINATE WITH MECHANICAL CONTRACTOR FOR EXACT LOCATION AND POWER REQUIREMENT OF ALL MECHANICAL UNITS IN FIELD. PROVIDE CIRCUIT AND CONTROLS AS REQUIRED.
- E.C SHALL PROVIDE BACK BOX AND CONDUIT PULL STRING FOR MECHANICAL UNIT. CONFIRM FINAL LOCATION WITH MECHANICAL DRAWING PRIOR ROUGH-IN.
- DATA RACK. COORDINATE REQUIREMENTS WITH A/V VENDOR AND ARCH. ELEVATION.
- JUNCTION BOX ABOVE CEILING FOR DOOR BELL TRANSFORMER, TRANSFORMER TO BE EDWARDS #592. PROVIDED WITH EDWARDS #55-4G5 DOOR BELL. MAKE ALL CONNECTIONS AS REQUIRED.
- TELEPHONE CABINET W/ 3/4" PLYWOOD MOUNTING BOARD, HOFFMAN #ACT36246F OR EQUAL. MOUNT TOP ABOVE CEILING. PROVIDE 60A GROUND BAR W/ 1#6 GND IN 1/2" EMT TO SERVICE GROUND. PROVIDE ONE QUAD ISOLATED GROUND RECEPTACLE W/ 120V SOURCE FROM PANEL A. PROVIDE 2" PVC CONDUIT ABOVE CEILING FOR USE BY TELEPHONE COMPANY. CONFIRM & COORDINATE REQUIREMENTS.

GENERAL NOTES :

- COORDINATE EXACT LOCATION OF HVAC EQUIPMENTS WITH MECHANICAL CONTRACTOR.
- ELECTRICAL CONTRACTOR SHALL COORDINATE DISCONNECT AND FUSE REQUIREMENT FOR MECHANICAL UNIT WITH MECHANICAL CONTRACTOR AND EQUIPMENT MANUFACTURER PRIOR TO ROUGH-IN AND PROVIDE AS REQUIRED. COORDINATE LOCATION OF DISCONNECT WITH MANUFACTURER AND MECHANICAL CONTRACTOR PRIOR TO ROUGH-IN. LOCATE AS REQUIRED TO MAINTAIN NEC CLEARANCES.
- ALL 120V, 15A AND 20A RECEPTACLES IN KITCHEN AREA SHALL BE "GFCI" IN ACCORDANCE WITH NEC ARTICLE 210.8(B). PROVIDE GFI RATED BREAKER AT PANEL FOR KITCHEN EQUIPMENT.
- THE CONTRACTOR IS RESPONSIBLE FOR REVIEWING THE LATEST KITCHEN PLANS AND EQUIPMENT CUTS SHEETS FOR PROPER EQUIPMENT LOCATIONS AND CONNECTION REQUIREMENTS PRIOR TO STARTING WORK.

POWER DEVICE LEGEND:

- DUPLEX RECEPTACLE, 20A, 120V
- QUAD RECEPTACLE, 20A, 120V
- SPECIAL RECEPTACLE, VOLTAGE AND AMPERAGE BASED ON CONNECTED CIRCUIT
- JUNCTION BOX
- DISCONNECT SWITCH - FUSED OR UNFUSED
- MOTORISED SWITCH

COORDINATE WITH ARCHITECT/OWNER TO CONFIRM COLOR OF RECEPTACLES PRIOR TO ORDERING.

ELECTRICAL NOTE:

ELECTRICAL CONTRACTOR TO COORDINATE ALL CONDUIT LOCATIONS WITH THE COMMUNICATIONS/DATA SUB-CONTRACTOR.

E.C TO FIELD VERIFY BUILDING ELECTRICAL SERVICE (VOLTS,PHASE,AMPS) PRIOR TO BID. IF THERE IS ANY DISCREPANCIES BETWEEN THE CONTRACT DOCUMENTS AND FIELD CONDITIONS, E.C. IS TO NOTIFY FRANCHISEE, ARCHITECT AND ENGINEER IMMEDIATELY.

OVEN DISCONNECT:

ELECTRICIAN TO CONFIRM LOCK OFF DEVICE AT PANEL IS SUFFICIENT. IF DISCONNECT IS REQUIRED CONTACT JJ CONSTRUCTION FOR INSTALL INSTRUCTIONS.

NOTE:

CONTRACTOR TO CONFIRM TYPE OF WALK-IN COMPRESSOR CONFIGURATION WITH EQUIPMENT SUPPLIER AND FRANCHISEE. OPTIONS ARE REMOTE AND DIRECTED MOUNTED.

MECHANICAL EQUIPMENT POWER SCHEDULE NOTES :

- ELECTRICAL CONTRACTOR SHALL REFER TO ALL MECHANICAL, PLUMBING AND ARCHITECTURAL DRAWINGS FOR EXACT LOCATIONS AND CHARACTERISTICS OF ALL EQUIPMENT LISTED BELOW. ANY MODIFICATION AND/OR ADDITIONAL WORK NECESSARY SHALL BE INCLUDED IN THE BASE BID.
- ELECTRICAL CONTRACTOR SHALL CHECK THE ROTATION OF ALL THREE PHASE MOTORS AND CORRECT THE ROTATION IF REVERSED.
- ALL TEMPERATURE CONTROL AND INTERLOCK WIRING SHALL BE BY HVAC CONTRACTOR UNLESS NOTED OTHERWISE.
- ELECTRICAL CONTRACTOR SHALL SUBMIT EIGHT (8) SETS OF CATALOG CUTS FOR ALL SCHEDULED EQUIPMENT FURNISHED BY THIS CONTRACTOR FOR ARCHITECT/ENGINEER REVIEW.
- ELECTRICAL CONTRACTOR SHALL COORDINATE THE ROUTING OF POWER WIRING TO ROOF-MOUNTED EQUIPMENT WITH MECHANICAL PIPE CURB ASSEMBLY. NO SEPARATE ROOF PENETRATIONS WILL BE PERMITTED.
- ELECTRICAL CONTRACTOR SHALL FURNISH AND WIRE DUCT SMOKE DETECTORS IN THE RETURN AIR PLENUM AND A FAN SHUT DOWN RELAY FOR ALL AIR SUPPLY UNITS. DETECTORS TO BE INSTALLED BY MECH. CONTR.
- ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL A WEATHER PROOF, GROUND FAULT INTERRUPTER TYPE RECEPTACLE. AT AN ACCESSIBLE LOCATION FOR SERVICING ON ROOFTOP HEATING AND AIR CONDITIONING EQUIPMENT. THIS RECEPTACLE SHALL BE LOCATED WITHIN 25 FEET AND AT THE SAME LEVEL OF THIS EQUIPMENT.

MECHANICAL EQUIPMENT POWER SCHEDULE

TAG	DESCRIPTION	VOLTAGE/PHASE	KW/HP/FLA	REMARKS
AC-1	AC INDOOR UNIT	115/1 Ø	4.38 MCA	REF. MECHANICAL SHEETS
AC-2	AC INDOOR UNIT	115/1 Ø	4.38 MCA	REF. MECHANICAL SHEETS
AC-3	AC INDOOR UNIT	115/1 Ø	4.38 MCA	REF. MECHANICAL SHEETS
WH-1	WATER HEATER	208/3 Ø	37.7A	REF. PLUMBING SHEETS
ACCU-1	AC OUTDOOR UNIT	208/1 Ø	36 MCA	REF. MECHANICAL SHEETS
ACCU-2	AC OUTDOOR UNIT	208/1 Ø	36 MCA	REF. MECHANICAL SHEETS
EF-1	RESTROOM FAN	115/1 Ø	0.29 FLA	REF. MECHANICAL SHEETS
OEF-1	OUTSIDE AIR FAN	115/1 Ø	6.6 FLA	REF. MECHANICAL SHEETS
ACH-1	AIR CURTAIN	115/1 Ø	2.4 FLA	REF. MECHANICAL SHEETS

PANEL: A (NEW)												MOUNTING: SURFACE		
208Y/120 VOLTS, 3 PHASE, 4 WIRE												PANEL LOCATION: BOH		
MAIN CB: 200A MLO: BUS: 200A MIN, FED FROM: EX. DISC. SWITCH														
NOTE:														
CKT NO.	TRIP AMPS	DESCRIPTION OF LOAD	LOAD TYPE	LOAD (KVA)	MINIMUM BRANCH CIRCUIT	PER PHASE (KVA)			MINIMUM BRANCH CIRCUIT	LOAD (KVA)	LOAD TYPE	DESCRIPTION OF LOAD	TRIP AMPS	CKT NO.
						A	B	C						
1	2P-40	ACCU-01	H	3.74	2#8, #10G, 3/4"	4.28			2#12, #12G, 3/4"	0.54	R	GENERAL RECEPTACLE-DINING AREA	20	2
3			H	3.74			4.10		2#12, #12G, 3/4"	0.36	R	GENERAL RECEPTACLE-KITCHEN AREA	20	4
5	2P-40	ACCU-02	H	3.74	2#8, #10G, 3/4"			4.28	2#12, #12G, 3/4"	0.54	R	GENERAL RECEPTACLE-STORAGE AREA	20	6
7			H	3.74		4.71			2#10, #10G, 3/4"	0.97	H	WALK-IN COOLER CONDENSER	2P-30	8
9	20	TELEPHONE CABINET	R	0.36	2#12, #12G, 3/4"		1.33		2#12, #12G, 3/4"	0.36	H	WALK-IN COOLER / FREEZER HEATER	20	10
11	20	SPARE					0.36		2#12, #12G, 3/4"	0.36	R	RESTROOM RECEPTACLE	20	12
13			O	4.50		4.86			2#12, #12G, 3/4"	0.36	R	RESTROOM RECEPTACLE	20	14
15	3P-50	7_WATER HEATER	O	4.50	3#8, #10G, 3/4"		5.50		2#12, #12G, 3/4"	1.00	O	RESTROOM HAND DRYER	20	16
17			O	4.50				6.74	2#6, #10G, 3/4"	2.24	H	WALK-IN FREEZER CONDENSER	2P-60	18
19			O	4.50		5.25			2#12, #12G, 3/4"	2.24	H	WALK-IN FREEZER CONDENSER	20	20
21	2P-60	15A_FOR OVEN PROOFER	E	3.02	3#6, #10G, 3/4"		3.78		2#12, #12G, 3/4"	0.76	H	OAF-1	20	22
23	20	SPARE						0.00				SPARE	20	24
25	20	9_IDW WATER COOLER	E	0.90	2#12, #12G, 3/4"	1.40			2#12, #12G, 3/4"	0.50	M	MD/FSD/FD	20	26
27	20	SHOW WINDOW RECEPTACLE	L	0.50	2#12, #12G, 3/4"		0.50					SPARE	20	28
29	20	TIME CLOCK/CONTACTOR PANEL	O	0.50	2#12, #12G, 3/4"			0.50				SPARE	20	30
31	20	ACH-1	H	0.28	2#12, #12G, 3/4"	0.28						SPARE	20	32
33	20	SPARE					0.00					SPARE	20	34
35	20	SPARE						0.00				SPACE	20	36
37			O	4.63		4.63						SPACE	20	38
39	3P-100	PANEL B	O	4.63	4#3, #8G, 1 1/4"		4.63					SPACE	20	40
41			O	4.63			4.63					SPACE	20	42
TOTAL CONNECTED LOAD (KVA)						25.41	19.83	16.51						

PANEL: B (NEW)												MOUNTING: SURFACE		
208Y/120 VOLTS, 3 PHASE, 4 WIRE												PANEL LOCATION: BOH		
MAIN CB: NA MLO: 125A BUS: 125A MIN, FED FROM: PANEL-A														
NOTE:														
CKT NO.	TRIP AMPS	DESCRIPTION OF LOAD	LOAD TYPE	LOAD (KVA)	MINIMUM BRANCH CIRCUIT	PER PHASE (KVA)			MINIMUM BRANCH CIRCUIT	LOAD (KVA)	LOAD TYPE	DESCRIPTION OF LOAD	TRIP AMPS	CKT NO.
						A	B	C						
1	20	LIGHTING DINING	L	0.11	2#12, #12G, 3/4"	1.64			2#12, #12G, 3/4"	1.53	E	13_REFRI. PREP TABLE	20	2
3	20	SPARE					1.53		2#12, #12G, 3/4"	1.53	E	13_REFRI. PREP TABLE	20	4
5	20	CELLAR LIGHTS	L	0.18	2#12, #12G, 3/4"			0.36	2#12, #12G, 3/4"	0.18	R	CO2 SENSOR ALARM	20	6
7	20	LIGHTING PREP & SERVICE AREA	L	0.44	2#12, #12G, 3/4"	0.44						SPARE	20	8
9	20	LIGHTING RESTROOM	L	0.10	2#12, #12G, 3/4"		0.82		2#12, #12G, 3/4"	0.72	R	POS RECEPTACLE	20	10
11	20	EXTERNAL SIGNAGE	L	1.50	2#12, #12G, 3/4"			2.22	2#12, #12G, 3/4"	0.72	R	POS RECEPTACLE	20	12
13	20	EF-1	M	0.03	2#12, #12G, 3/4"	0.75			2#12, #12G, 3/4"	0.72	R	POS RECEPTACLE	20	14
15	20	SPARE					0.36		2#12, #12G, 3/4"	0.36	R	DATA RACK	20	16
17	20	27_1/2 HP ELECTRIC SLICER	E	0.24	2#12, #12G, 3/4"			0.96	2#12, #12G, 3/4"	0.72	R	MANAGERS OFFICE	20	18
19	20	16D CARBONATOR	E	0.18	2#12, #12G, 3/4"	0.90			2#12, #12G, 3/4"	0.72	R	MANAGERS COMPUTER	20	20
21	20	17_JCE MAKER	E	1.58	2#12, #12G, 3/4"		1.68		2#12, #12G, 3/4"	0.10	M	RCP-01	20	22
23	20	8_FREESTANDING ICE UNIT	E	0.48	2#12, #12G, 3/4"			0.84	2#12, #12G, 3/4"	0.36	R	EXTERIOR RECEPTACLE	20	24
25	20	DOORBELL	R	0.20	2#12, #12G, 3/4"	0.70			2#12, #12G, 3/4"	0.50	R	FAX MACHINE PRINTER	20	26
27	20	SPARE					0.10		2#12, #12G, 3/4"	0.10	R	PANIC BUTTON	20	28
29	20	22_REACH IN 1 DOOR REFRIGERATOR	E	0.60	2#12, #12G, 3/4"			0.60				SPARE	20	30
31			H	0.46	2#12, #12G, 3/4"	0.46						SPARE	20	32
33	2P-15	AC-1	H	0.46	2#12, #12G, 3/4"		0.46					SPARE	20	34
35			H	0.30	2#12, #12G, 3/4"			0.30				SPARE	20	36
37	2P-15	AC-2	H	0.30	2#12, #12G, 3/4"	0.30						SPACE		38
39			H	0.02	2#12, #12G, 3/4"		0.02					SPACE		40
41	2P-15	AC-3	H	0.02	2#12, #12G, 3/4"			0.02				SPACE		42
TOTAL CONNECTED LOAD (KVA)						5.19	4.96	5.30						

PANEL BOARD SCHEDULE GENERAL NOTES

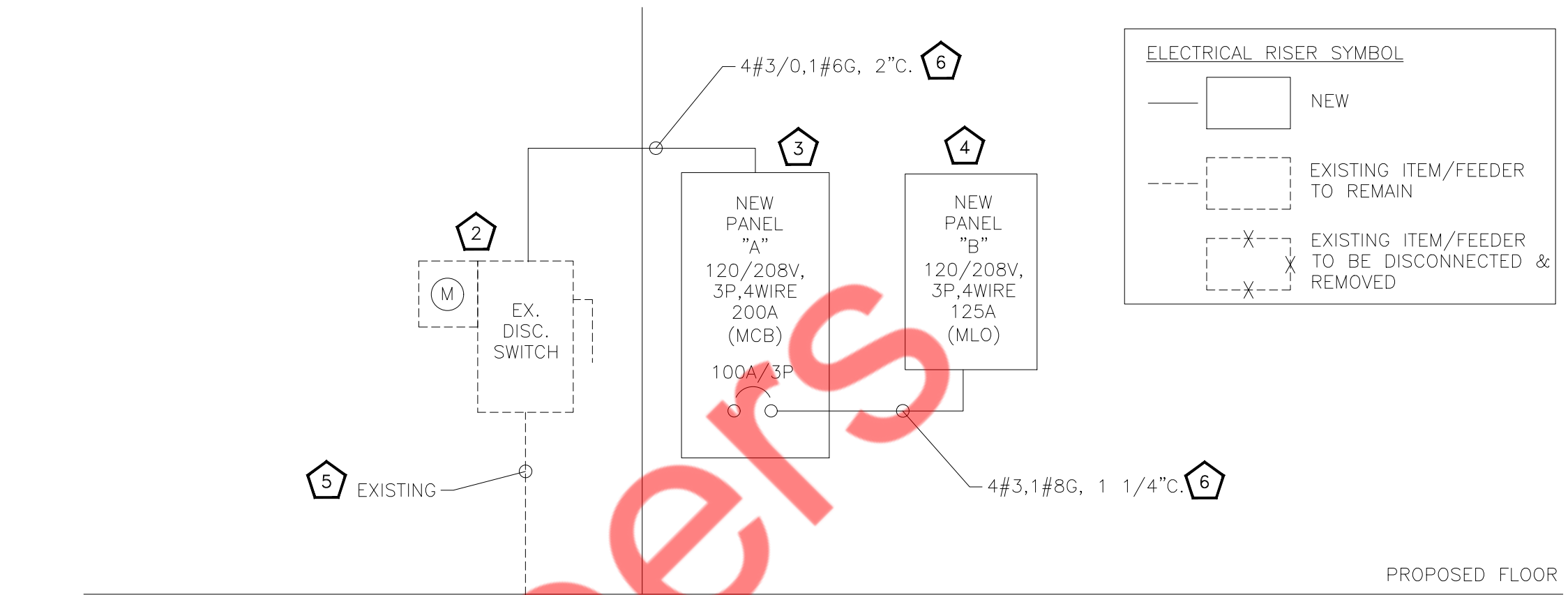
- ALL CIRCUITING SHOWN IS FOR REFERENCE PURPOSE ONLY. E.C. SHALL VERIFY THE ELECTRICAL REQUIREMENT FOR CIRCUITING IN FIELD AS PER THE FINAL ELECTRICAL LOAD AND INFORM ENGINEER FOR ANY DISCREPANCIES.
- E.C. TO VERIFY THE BREAKER AND CABLE SIZE FOR ALL THE EQUIPMENTS WITH EQUIPMENT SUPPLIER/MANUFACTURER AND ACCORDINGLY UPDATE THE BREAKER/CABLES IF REQUIRED IN FIELD AS PER FINAL EQUIPMENT SELECTION. BASE BID ACCORDINGLY.

ELECTRICAL PANEL SCHEDULE ABBREVIATIONS

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

01 ELECTRICAL PANEL SCHEDULES

NTS



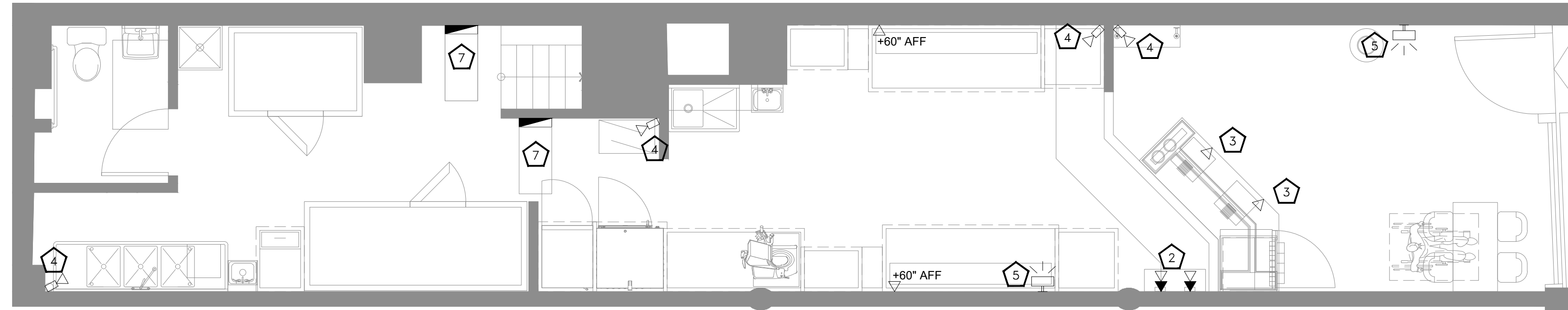
- RISER DIAGRAM KEYED WORK NOTES**
- EXISTING 200A, 120/208V, 3-PHASE, 4-WIRE ELECTRICAL SERVICE FROM THE UTILITY SHALL REMAIN. E.C. SHALL VERIFY AND COORDINATE EXACT RATING AND LOCATION WITH UTILITY COMPANY/OWNER IN FIELD. INFORM ENGINEER FOR ANY DISCREPANCY FOUND. BASE BID ACCORDINGLY.
 - EXISTING 200A, 120/208V, 3-PHASE, 4-WIRE DISCONNECT SWITCH AND ELECTRICAL METER SHALL REMAIN. E.C. SHALL VERIFY EXACT RATING AND LOCATION IN FIELD. INFORM ENGINEER FOR ANY DISCREPANCY FOUND. BASE BID ACCORDINGLY.
 - NEW 200A, 120/208V, 3-PHASE, 4-WIRE ELECTRICAL PANEL "A" FOR THE PROJECT SPACE. E.C. TO COORDINATE WITH ARCHITECT/ OWNER FOR EXACT LOCATION OF NEW ELECTRICAL PANEL "A" IN FIELD.
 - NEW 125A, 120/208V, 3-PHASE, 4-WIRE ELECTRICAL PANEL "B" FOR THE PROJECT SPACE. E.C. TO COORDINATE WITH ARCHITECT/ OWNER FOR EXACT LOCATION OF NEW ELECTRICAL PANEL "B" IN FIELD.
 - EXISTING ELECTRICAL FEEDER SHALL REMAIN. E.C. SHALL VERIFY THE RATING, CONDUIT SIZE AND OPERABLE CONDITION OF EXISTING ELECTRICAL FEEDER IN FIELD. REPLACE IF FOUND INOPERABLE. BASE BID ACCORDINGLY.
 - E.C. TO FIELD VERIFY THE EXACT LENGTH OF THE CABLE AND CHECK THE VOLTAGE DROP IS UNDER LIMIT PER NEC BEFORE INSTALLATION.

- RISER DIAGRAM GENERAL NOTES**
- RISER DIAGRAM IS FOR REFERENCE PURPOSES ONLY. E.C. SHALL VERIFY EXACT POWER DISTRIBUTION IN FIELD AND INFORM ENGINEER ON RECORD FOR ANY DISCREPANCY.
 - E.C. SHALL VERIFY INCOMING SERVICE AMPERAGE, WIRE SIZING AND DISTRIBUTION IN FILED COORDINATION WITH OWNER/ARCHITECT.
 - ELECTRICAL CONTRACTOR TO COORDINATE FAULT CURRENT (Isc) RATING WITH UTILITY COMPANY AND AHJ PRIOR TO COMMENCING ANY WORK.

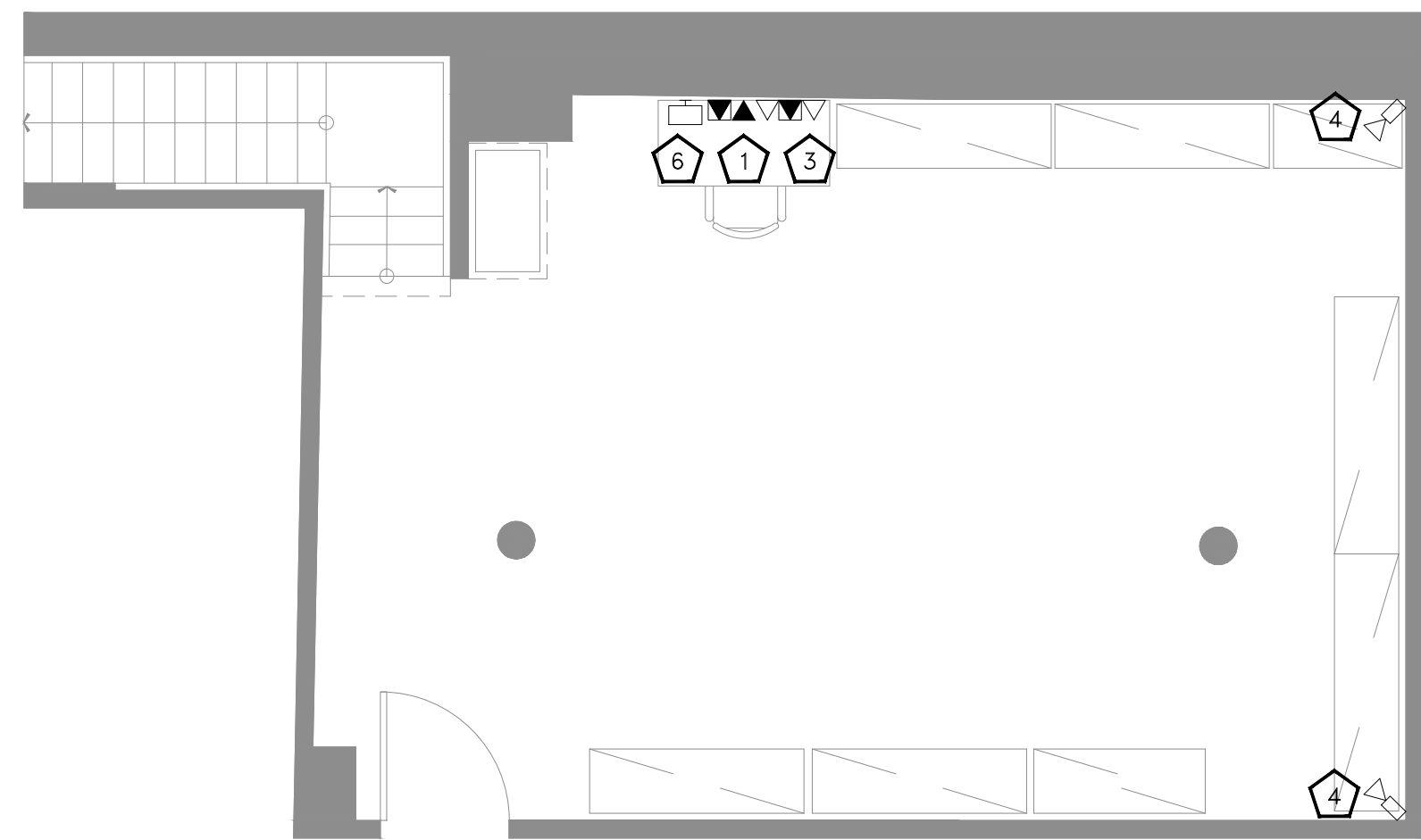
02 ELECTRICAL RISER DIAGRAM

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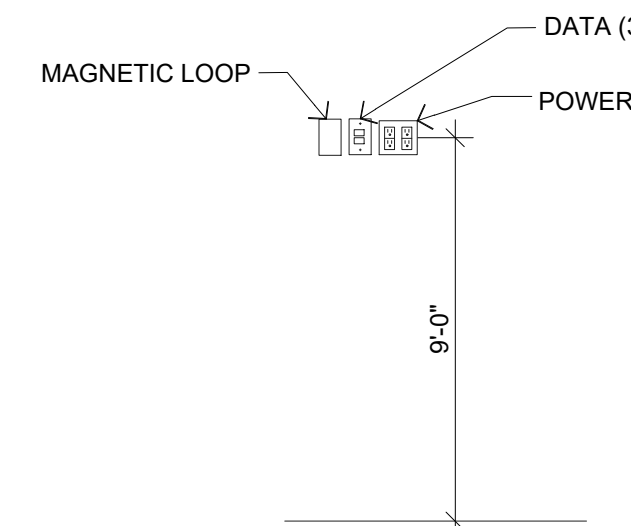
- ELECTRICAL WIRING METHOD**
- ALL CONDUIT SHALL BE RUN CONCEALED IN SO FAR AS IS PRACTICABLE. CONDUITS SHALL BE EXPOSED ONLY WHERE SO INDICATED ON THE DRAWINGS OR IN UNFINISHED AREAS SUCH AS ELECTRICAL AND BOILER ROOMS.
 - MINIMUM CONDUIT SIZE SHALL BE 3/4" UNLESS NOTED OTHERWISE ON THE PLANS.
 - RIGID METAL CONDUIT: HOT DIPPED GALVANIZED, MILD STEEL PIPE, ZINC COATED THREADS WITH AN OUTER COATING OF ZINC BICHROMATE, AS MANUFACTURED BY TRIANGLE, REPUBLIC, WHEATLAND OR EQUAL.
 - INTERMEDIATE METAL CONDUIT (IMC): HOT DIPPED GALVANIZED, MILD STEEL PIPE, ZINC COATED THREADS WITH AN OUTER COATING OF ZINC BICHROMATE AS MANUFACTURED BY TRIANGLE, REPUBLIC, WHEATLAND OR EQUAL.
 - FLEXIBLE METAL CONDUIT: GALVANIZED OR ZINC METALIZED STEEL, SINGLE STRIP INTERLOCKED CONSTRUCTION AS MANUFACTURED BY TRIANGLE, ANACONDA, AMERICAN FLEXIBLE CONDUIT, ELECTRIC-FLEX, OR EQUAL.
 - ELECTRIC METALLIC TUBING (EMT): HOT DIPPED GALVANIZED, MILD STEEL TUBE, ZINC COATED, AS MANUFACTURED BY TRIANGLE, REPUBLIC, WHEATLAND OR EQUAL.
 - RIGID NONMETALLIC CONDUIT: SCHEDULE 40 PVC AS MANUFACTURED BY CARLON OR EQUAL.
 - METAL CLAD CABLE: TYPE MC, COPPER CONDUCTOR, 600 VOLT THERMOPLASTIC INSULATION, 90 DEG. C, INTERLOCKED STEEL TAPE ARMOR.
 - ARMORED CABLE: TYPE AC, COPPER CONDUCTOR, 600 VOLT THERMOPLASTIC INSULATION, 90 DEG. C.
 - ANY EXPOSED RACEWAY SHALL BE RUN TRUE, PLUMB AND PARALLEL OR PERPENDICULAR TO BUILDING LINES.
 - ALL CONDUCTORS SHALL BE COPPER.
 - RACEWAYS SHALL BE SEALED WHERE ENTERING PULL BOXES OR STRUCTURES.
 - SINGLE CONDUCTOR CABLES SHALL BE USED FOR FEEDERS AND BRANCH CIRCUIT WIRING (EXCEPT WHERE AC AND MC CABLE IS USED). MINIMUM SIZE WIRE SHALL BE #12 AWG UNLESS OTHERWISE INDICATED AND SHALL BE SIZED TO CONFORM TO NORMAL NEC VOLTAGE DROPS. WIRE SIZES #10 AWG AND SMALLER SHALL BE SOLID, #8 AWG AND LARGER SHALL BE STRANDED.
 - FEEDERS AND ALL WIRING IN MOIST OR WET LOCATIONS UNDERGROUND OR UNDER THE SLAB SHALL BE 600 VOLT CODE TYPE THHN-THWN. BRANCH CIRCUIT WIRING IN DRY LOCATIONS, ABOVE GRADE, IN THE INTERIOR OF THE BUILDING SHALL BE 600 VOLT CODE TYPE THHN-THWN OR XHHW.
 - WIRING TO RECESSED FIXTURE AND WITHIN FIXTURE RACEWAYS SHALL BE TYPE THHN, #12 AWG MINIMUM.
 - EQUIPMENT GROUND: GREEN CONDUCTOR SHALL BE USED.



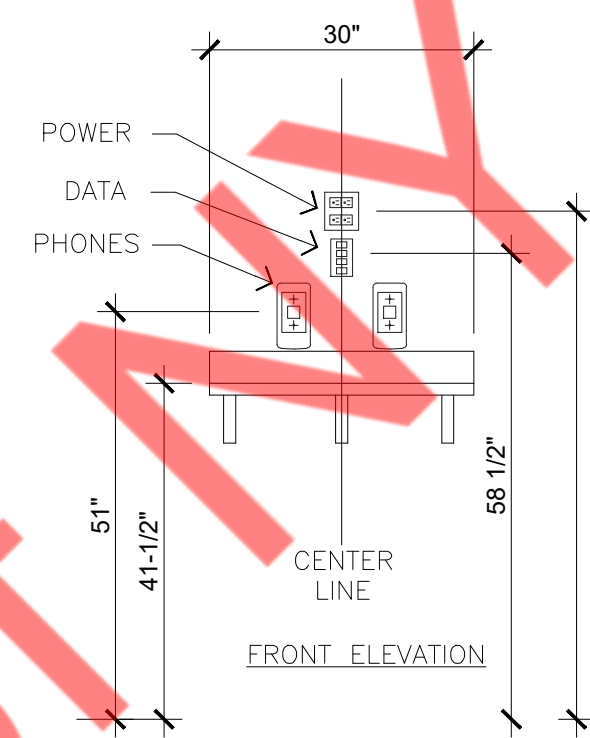
1 ELECTRICAL COMMUNICATION/DATA PLAN-FIRST FLOOR
1/4"=1'-0"



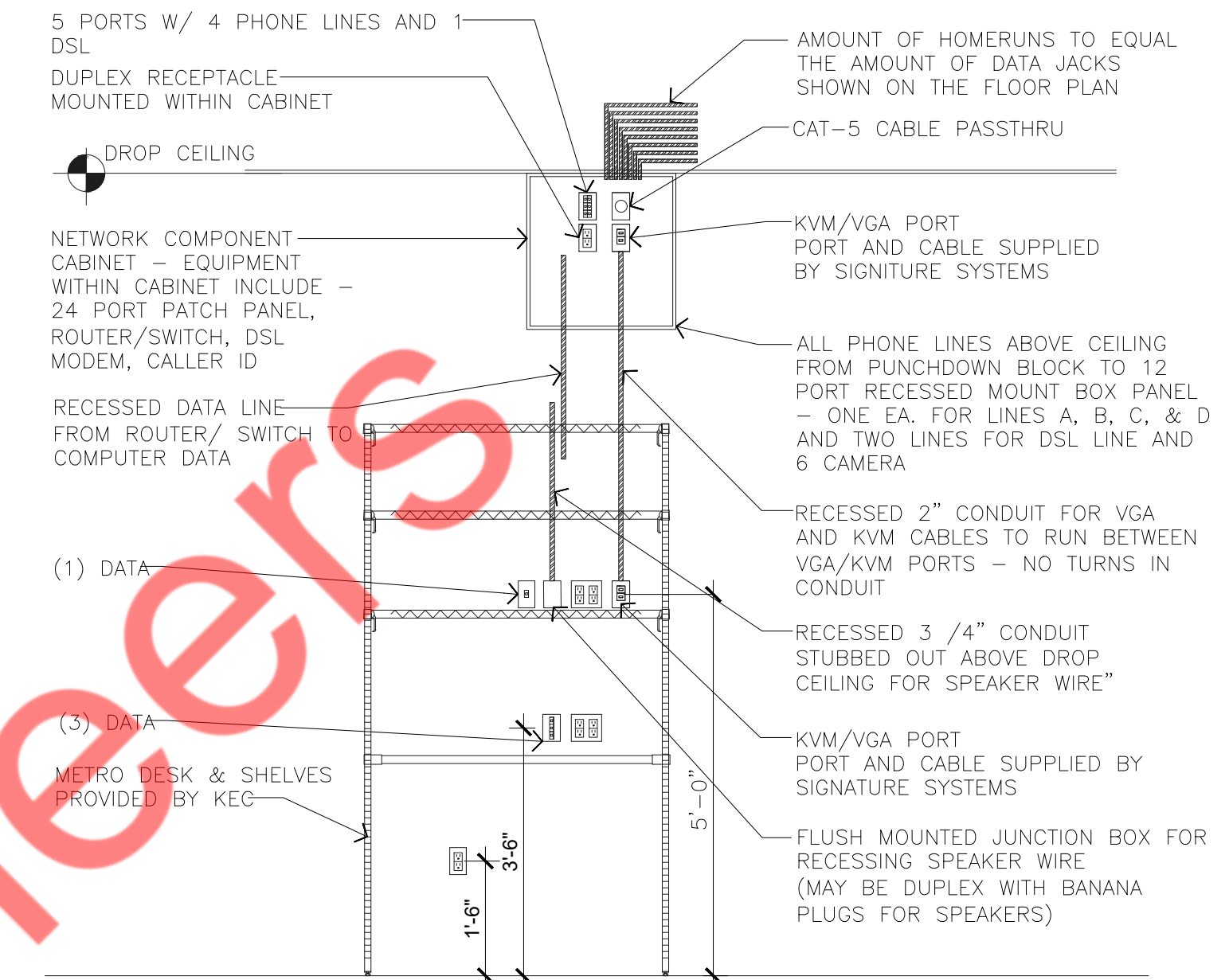
2 ELECTRICAL COMMUNICATION/DATA PLAN-CELLAR
1/4"=1'-0"



3 COMMUNICATIONS PANEL
1/4"=1'-0"



4 PHONE BANK
1/4"=1'-0"



5 NETWORK CABINET
1/4"=1'-0"

GENERAL NOTES :

1. RUN WIRING TO P.O.S. AND PREPARATION TABLES THRU WIRING CHASE PROVIDED IN THE CABINETS. CONCEAL CONDUIT RISER TO CEILING BEHIND WALL. ARRANGE CONDUIT SO DATA WIRING CAN BE HOME RUNS TO THE PATCH PANEL WITHIN THE NETWORK CABINET ABOVE THE DESK.
2. SEE ELECTRICAL/DATA PHONE BANK DETAIL ON SHEET COM1 FOR INSTALLATION OF PHONE/DATA EQUIPMENT.
3. PROVIDE (2) PULL STRINGS IN EACH EMPTY CONDUIT FOR DATA/PHONE LINES.
4. ALL PHONE CAT-5e HOME RUN TO PUNCHDOWN BLOCK.
5. ALL DATA CABLES TO TERMINATE ON RJ45 CATEGORY 5e JACKS AND WIRE TO EIA/TIA 568-B.1 STANDARDS.
6. ALL DATA CABLES TO HOMERUN AND TERMINATE ON 24 PORT RACKMOUNT PATCH PANEL TO BE MOUNTED IN THE NETWORK CABINET.
7. ALL CABLES TO BE CONTINUITY TESTED FOR POLARITY AND CORRECT PIN CONFIGURATION AND MACHINE LABELED.
8. ALL NETWORK CABLING IN THE STORE MUST BE CATEGORY 5e CERTIFIED. YOU MUST OBTAIN A CERTIFICATION REPORT FROM YOUR COMMUNICATIONS/LOW VOLTAGE SUBCONTRACTOR.
9. STEREO SYSTEM WIRING - SEE NETWORK CABINET DETAIL FOR JUNCTION BOX LOCATION AND RECESSED CONDUIT INSTRUCTIONS FOR STEREO SPEAKER WIRE.
10. REFER TO JJ'S BLOCKING CHECKLIST IN BUILD-OUT MANUAL FOR ADDITIONAL MEASUREMENTS AND DETAILS.

DATA LEGEND :

- DATA OUTLET (X) = AMT. OF DATA JACKS (JACK = ORANGE)
- 1 PHONE JACK (JACK = BLACK)
- KVM/VGA PORT - 1 VGA JACK AND 1 KVM JACK
- (1) DATA JACK (CAT-5 LINE) AT PRE-WIRE SECURITY CAMERA LOCATIONS.
- SPEAKER
- RECEIVER & VOLUME CONTROL

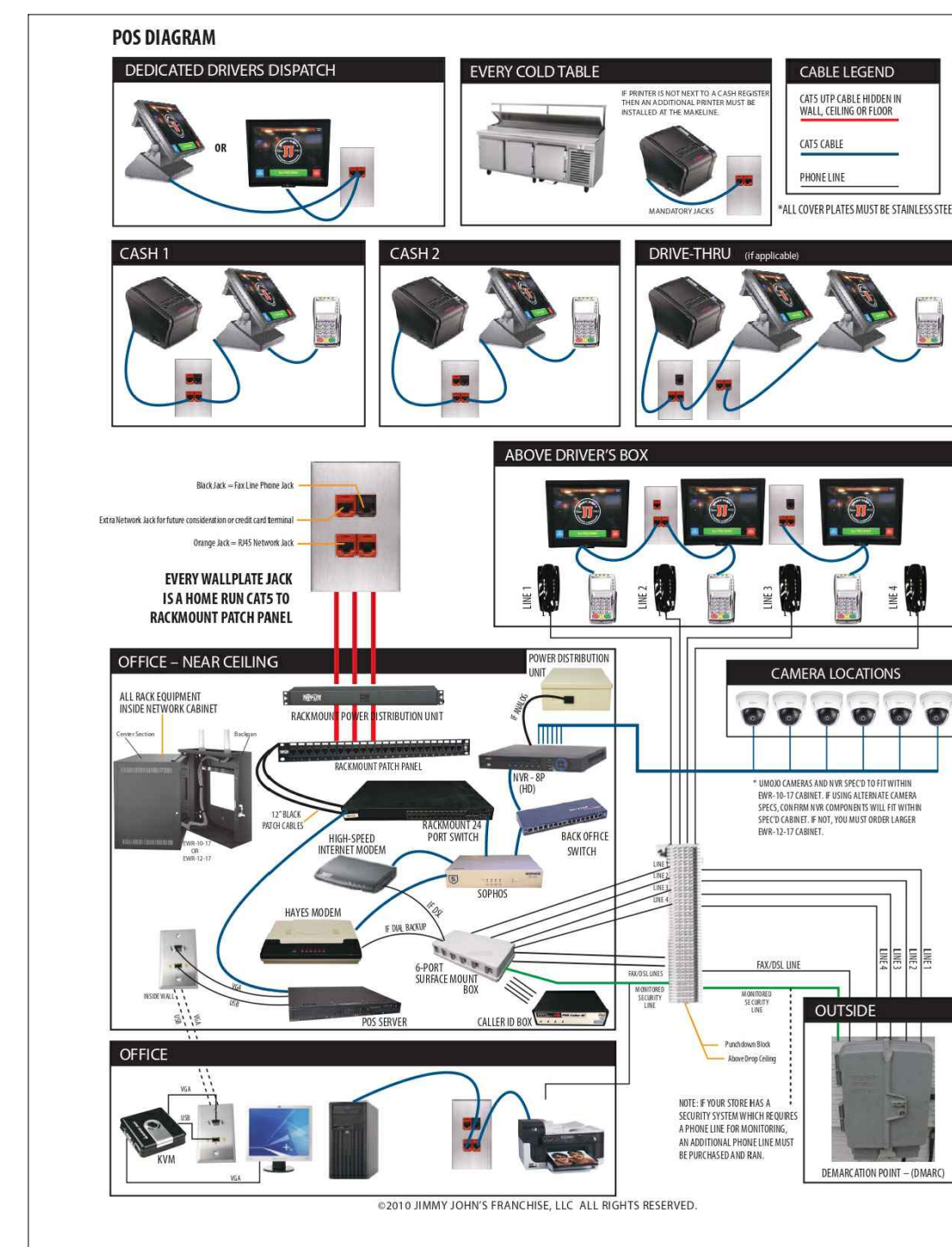
GENERAL NOTE:
PHONE COMPANY TO PROVIDE 4 PHONE LINES ON ROLLOVER SERVICE AND ONE (1) DSL LINE.

ALL CABLING AND TERMINATION TO BE COMPLETED BY COMMUNICATIONS/DATA SUB-CONTRACTOR.

COMMUNICATIONS/DATA SUB-CONTRACTOR TO COORDINATE LOCATION AND SIZE OF NECESSARY CONDUITS FOR CABLING WITH ELECTRICAL CONTRACTOR.

KEYED NOTES :

1. MOUNT THE NETWORK ELECTRONIC COMPONENT CABINET TIGHT TO CEILING ABOVE SHELVES IN THE BACK PREP AREA. SEE NETWORK CABINET DETAIL AND GENERAL NOTES ON THIS SHEET FOR INFORMATION ON CABLING AND COMPONENTS WITHIN CABINET. SEE COMPONENT BOX EQUIPMENT LIST ON COM-1 SHEET.
2. PROVIDE ONE (1) 3/4" CONDUITS STUBBED UP INTO ACCESSIBLE CEILING. VERIFY LOCATION IN FIELD FOR ALL VOICE AND DATA LOCATIONS. SEE ELECTRICAL/DATA PHONE BANK DETAIL ON SHEET E-301.
3. PROVIDE (2) PULL STRINGS IN EACH EMPTY CONDUIT FOR DATA/PHONE LINES..
4. MUST PRE-WIRE OR INSTALL AT MINIMUM (6) CAMERA LOCATIONS. CAMERAS IN PREP AREA NOT ON A WALL OR UNDERSIDE OF SOFFIT ARE TO BE SURFACE MOUNTED ON DROP CEILING, CAMERAS THAT ARE ON SOFFIT TO BE INSTALLED ON THE UNDERSIDE OF SOFFIT. IN DINING AREA CAMERAS TO BE INSTALLED ON WALLS AT +10'-0" A.F.F. PROVIDE (1) DATA JACK (CAT-5) AT EACH PRE-WIRE LOCATION.
5. RECOMMENDED SPEAKER LOCATION. MUST BE INSTALLED AT +10'-0" A.F.F. SEE SHEET E-401 FOR REQUIRED SPEC.
6. REQUIRED RECEIVER & VOLUME CONTROL LOCATION AT MANGER'S DESK. SEE SHEET E-401 FOR REQUIRED SPEC.
7. SURFACE MOUNTED ELECTRICAL PANEL. E.C. TO COORDINATED WITH ARCHITECT PRIOR TO BID.



COMPONENT BOX REQUIRED EQUIPMENT:

COMPLETE COMPONENT BOX PROVIDED BY SIGNATURE SYSTEMS:

NETWORK CABINET : MIDDLE ATLANTIC EWR-12-17

REQUIRED EQUIPMENT WITHIN THE COMPONENT CABINET:

- PATCH PANEL - PANDUIT CFAPPB1 (QTY 1)
- POWER DISTRIBUTION UNIT - MIDDLE ATLANTIC PD-915RV-R13 (QTY 1)
- 24 PORT NETWORK SWITCH - DELL POWER CONNECT 3524 (QTY 1)
- ROUTER WITH DIAL BACKUP - NETOPIA 4686XL WITH DIAL-UP (QTY 1)
- RACK SHELF - MIDDLE ATLANTIC UTR1 (QTY 2)
- CABLE STRAPS - MIDDLE ATLANTIC TW12 (QTY 1)
- PATCH CABLES - 1" PATCH CABLES (QTY 10 **)
- RACK SCREWS - 10/32 RACK SCREWS (QTY 1 BOX)
- VGA & KVM WALL PLATE (QTY 2)
- VGA DUAL PANEL-MOUNT F/F CABLE (QTY 1)
- KVM 2.0 DUAL PANEL-MOUNT CABLE (QTY 1)
- KVM 2.0 A MALE TO A MALE CABLE (QTY 1)
- SVGA VIDEO MINI-COAX DH15MM (QTY 1)

* CALLER ID BOX IS ONLY REQUIRED FOR STORES THAT ARE INSTALLING POS - PROVIDED BY SIGNATURE SYSTEMS.

** QTY IS NUMBER OF NETWORK RUNS PLUS 2 EXTRA

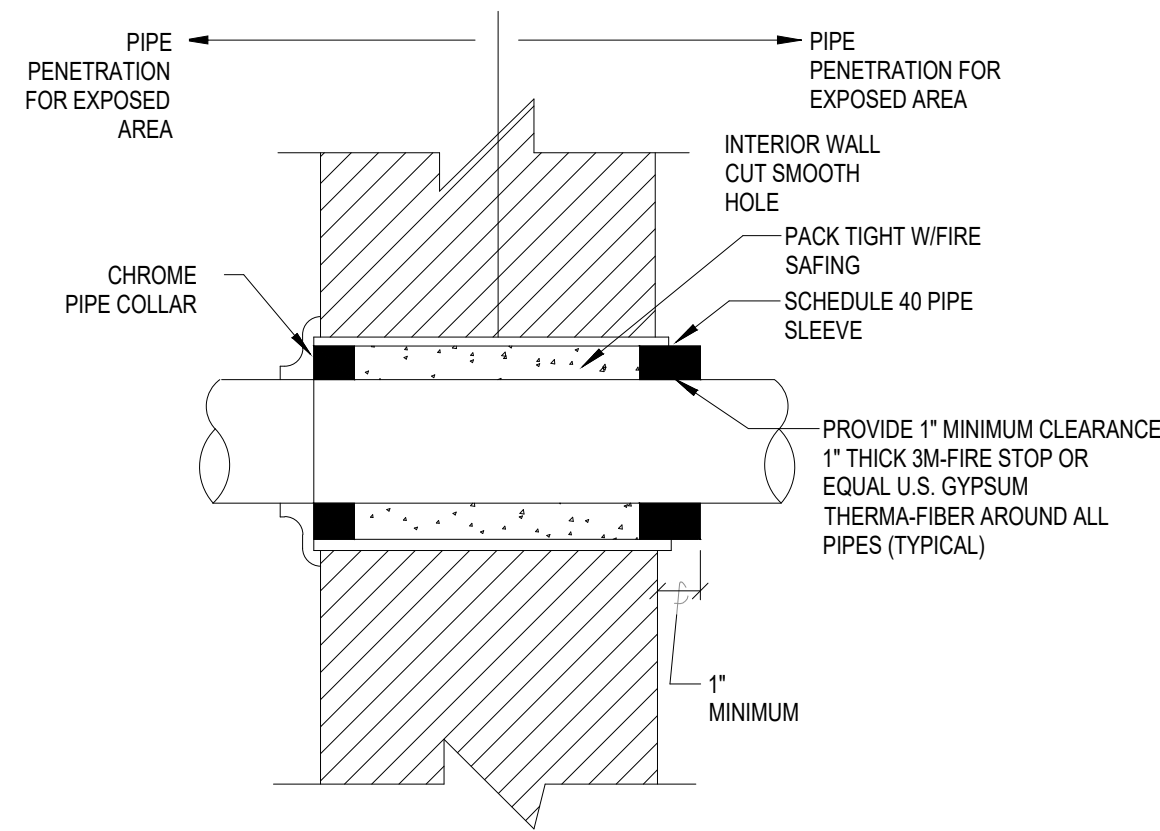
SPEAKER / RECEIVER / VOLUME CONTROL:
(RECOMMENDED & MINIMUM SPECIFICATIONS)

- SPEAKERS: DEFINITIVE AW6500 BK (1" TWEETER, 6 1/2" MID/WOOFER MINIMUM)
- RECEIVER: YAMAHA RS700 (100W PER CHANNEL MINIMUM)
- VOLUME CONTROL : NILES SSV-4 (OPTIONAL, BUT RECOMMENDED)

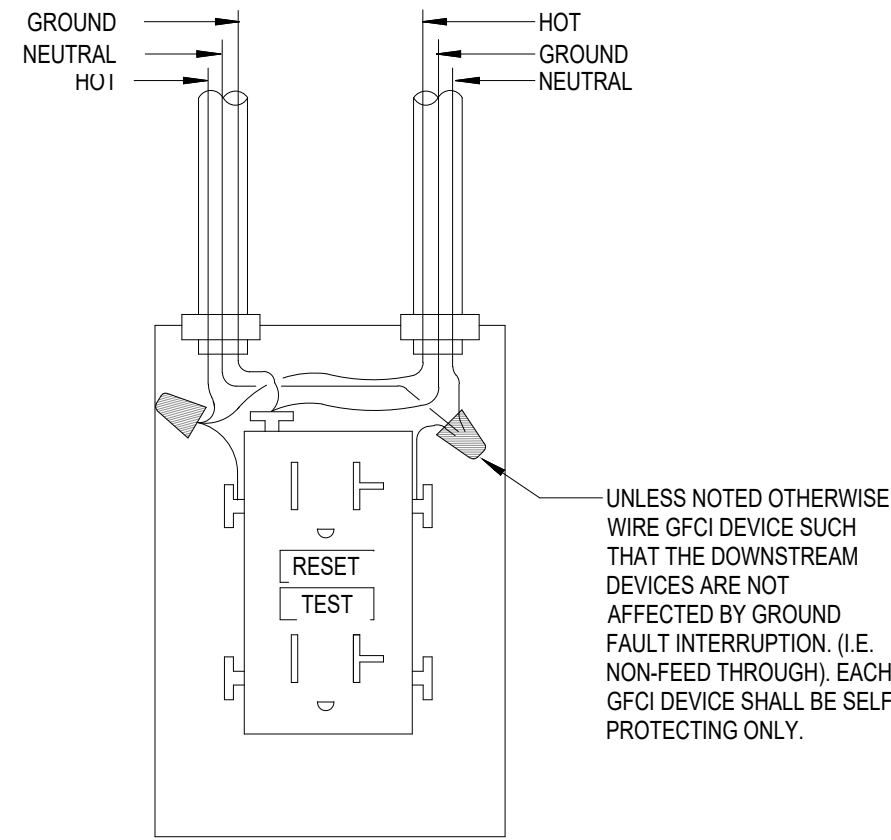
* FLUSH MOUNTED SPEAKER INSTALLATION (OPTIONAL): SPEAKER MUST BE PAINTED TO MATCH SURROUNDING FINISH

POS VENDOR CONTACT:

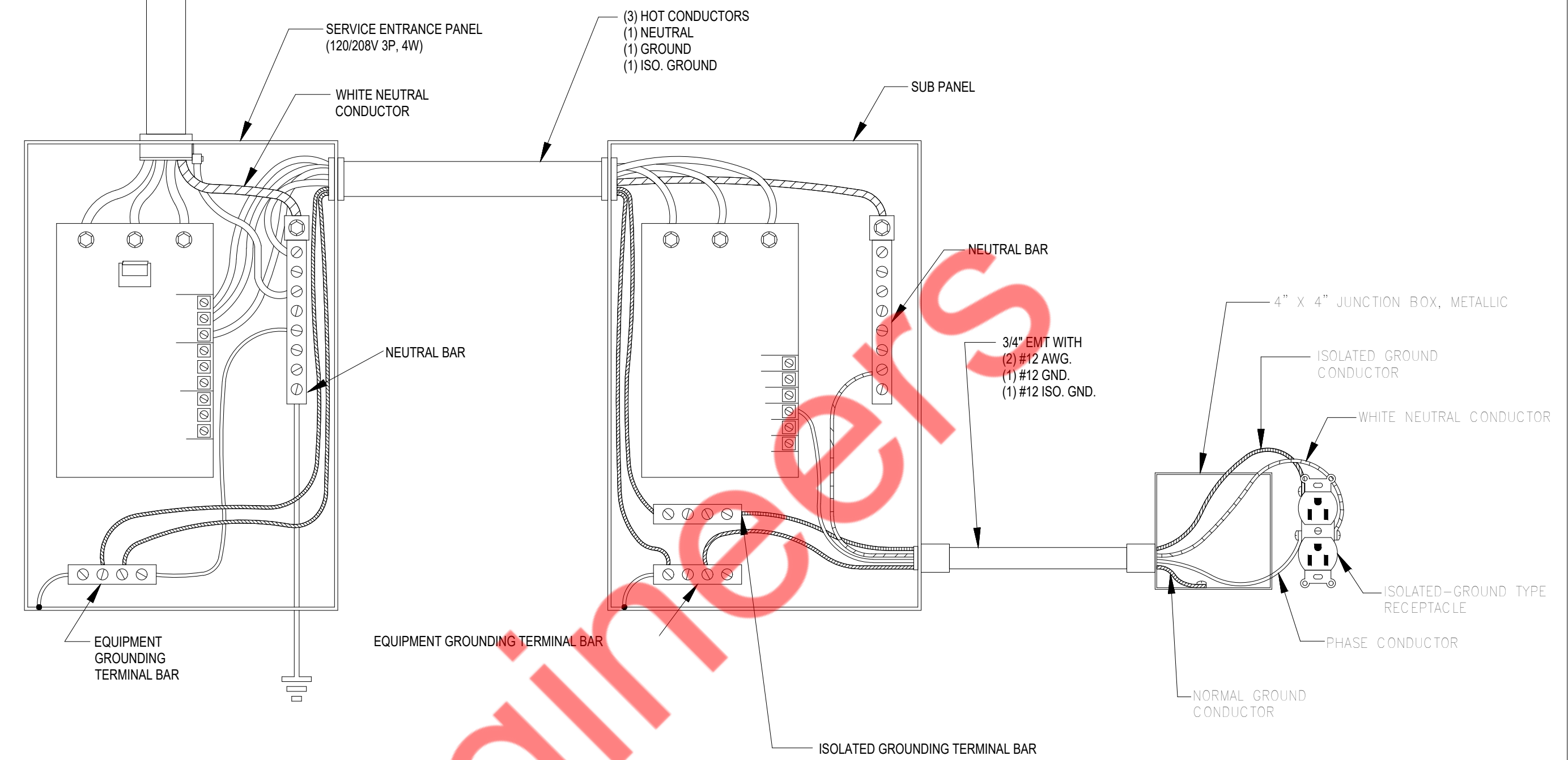
SIGNATURE SYSTEMS, INC
11 PENNS TRAIL
NEWTOWN, PA 18940
SALES: (877) 968-6430 OR sales@pdapos.com
FAX: (215) 968-6431
DEDICATED JJ TECH SUPPORT: (877) 844-5313



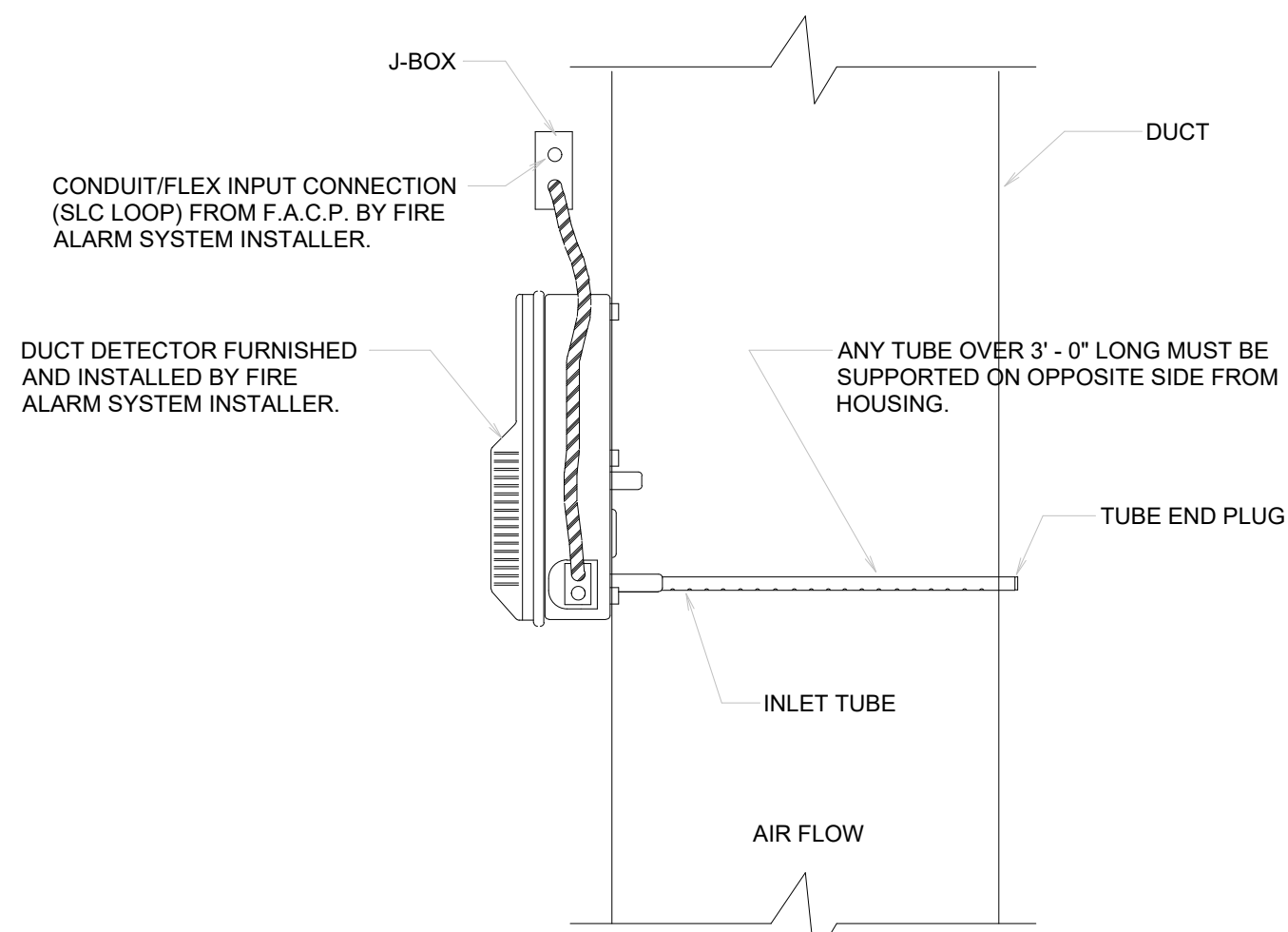
3 FIRE PENETRATION DETAIL
1/4" = 1'-0"



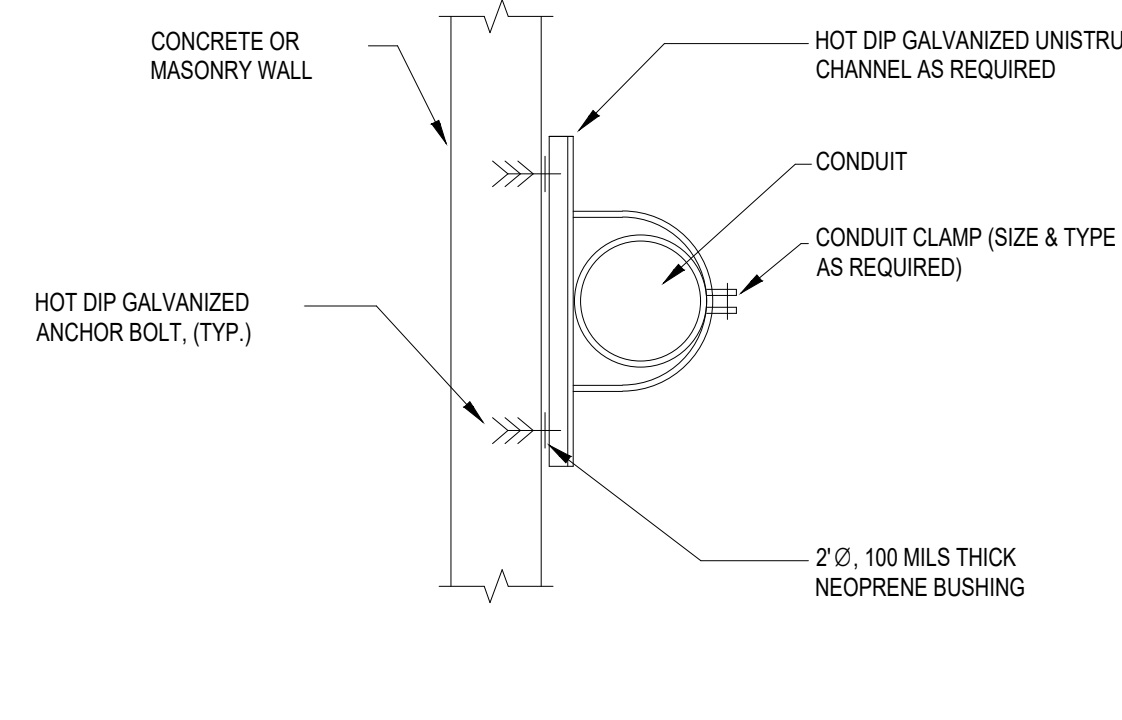
4 GFI RECEPTACLE DETAIL
1/4" = 1'-0"



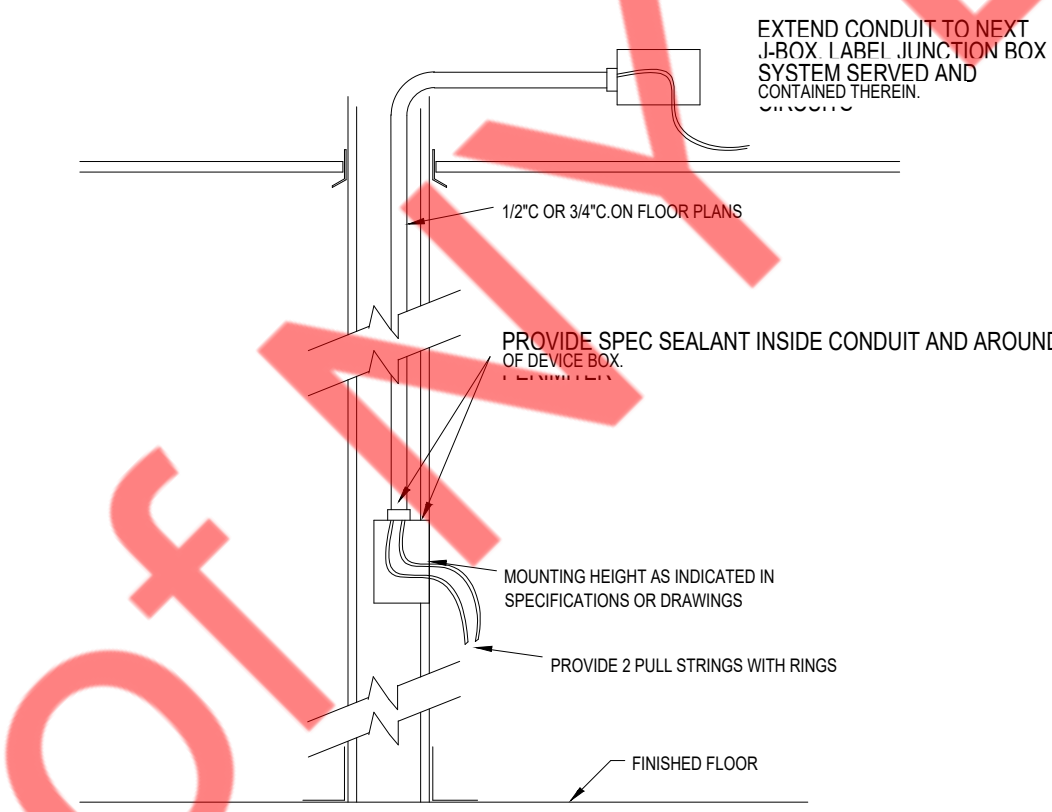
9 ISOLATED GROUNDING DETAIL
1/4" = 1'-0"



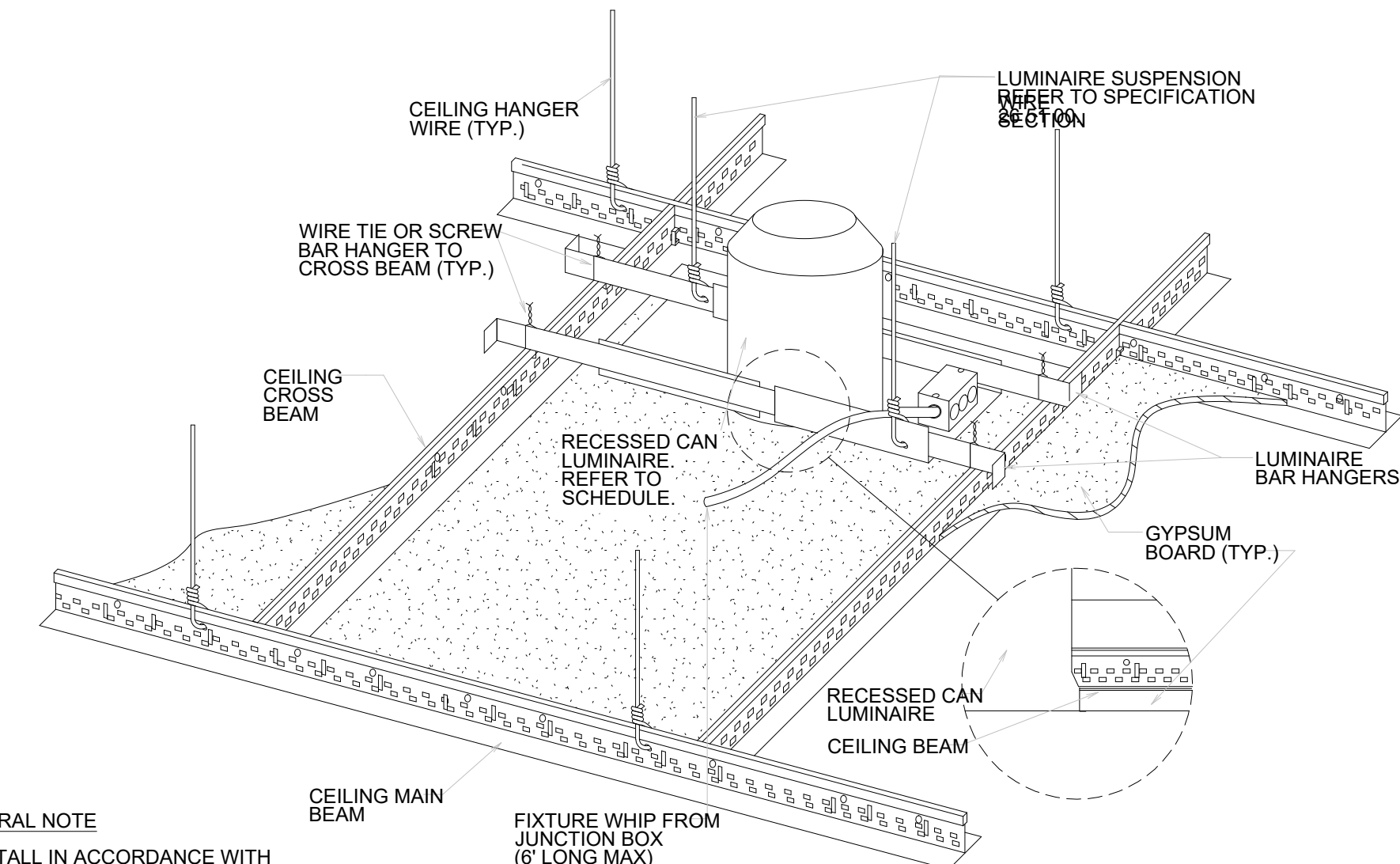
10 DUCT DETECTOR MOUNTING DETAIL
3" = 1'-0"



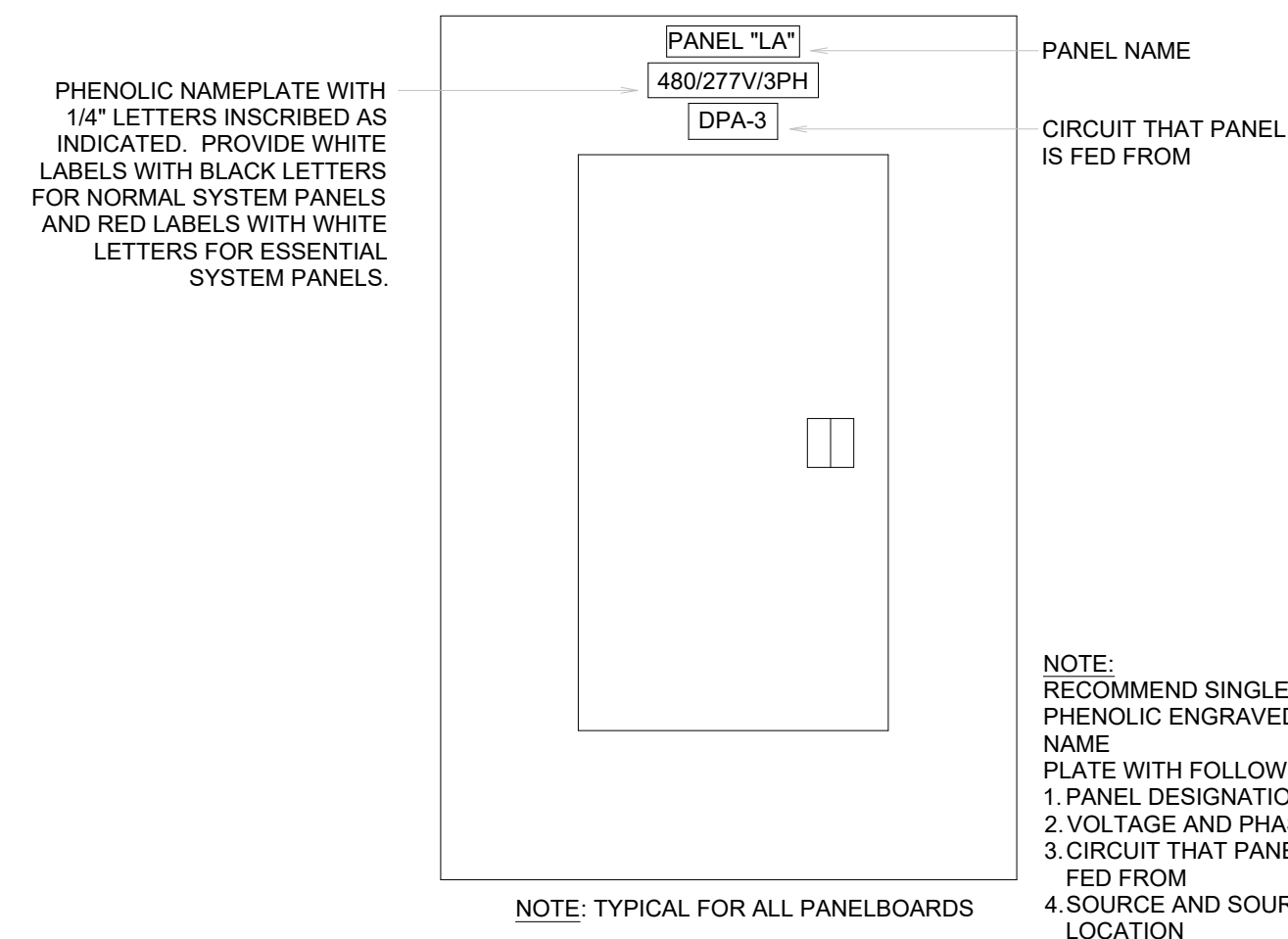
2 CONDUIT SUPPORT DETAIL
1/4" = 1'-0"



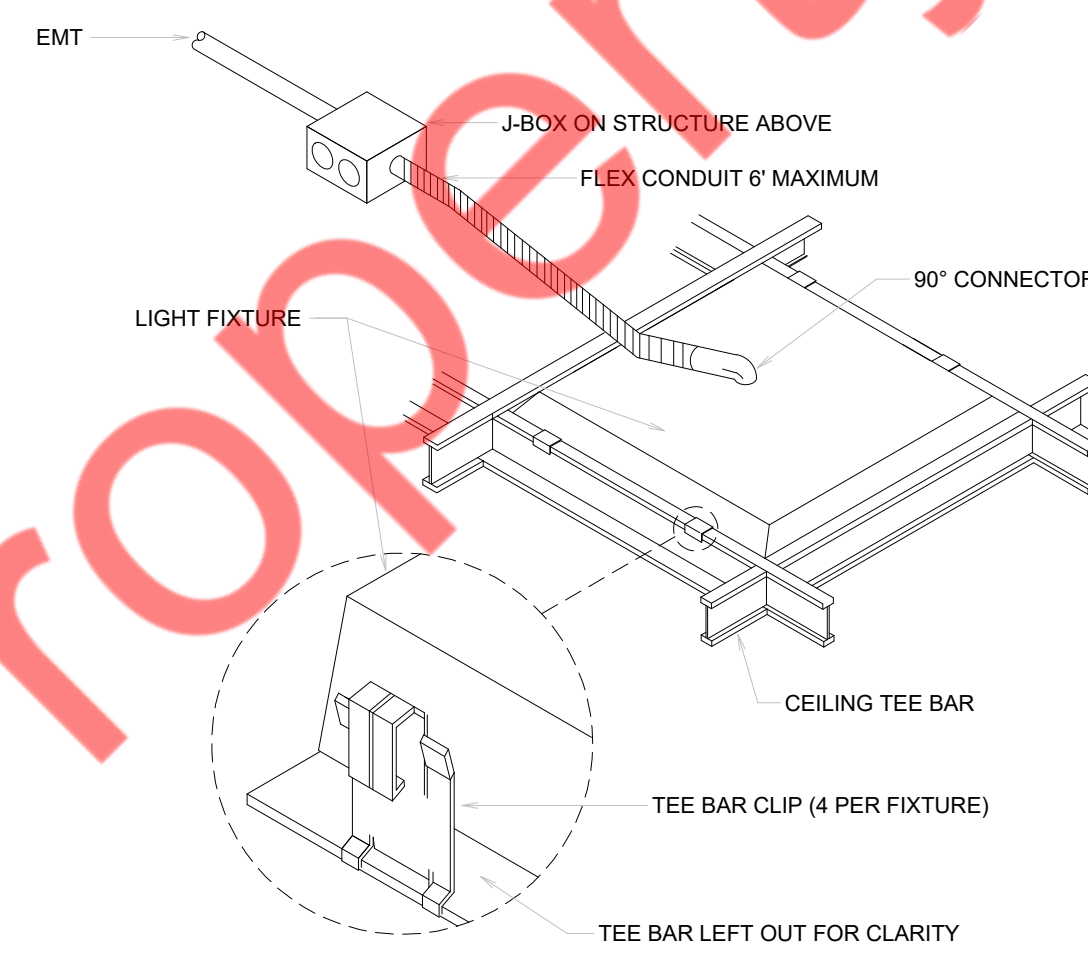
1 BACK BOX AND CONDUIT STUB-UP DETAIL
1/4" = 1'-0"



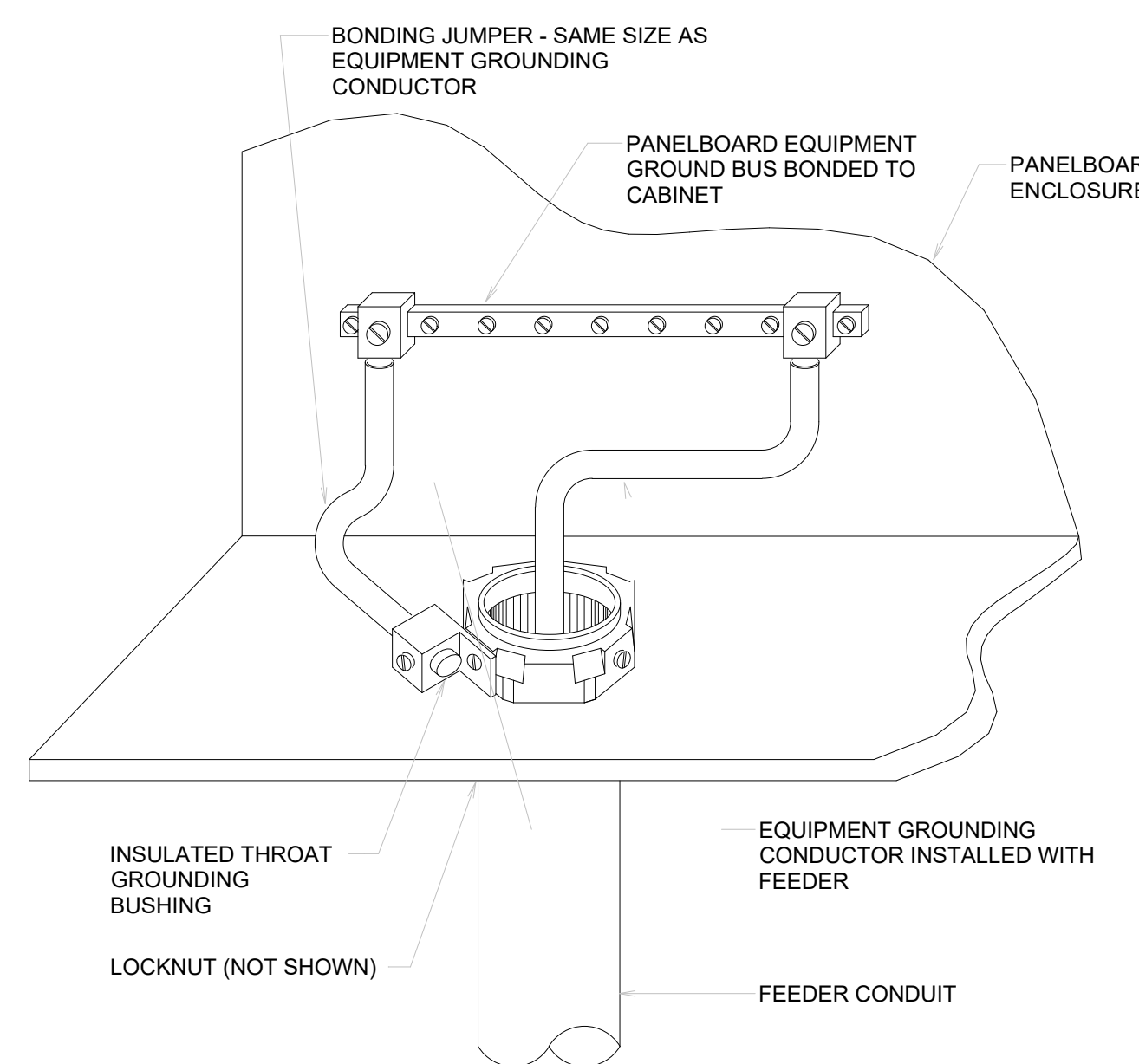
8 WIRING DIAGRAM TEMPLATE
12" = 1'-0"



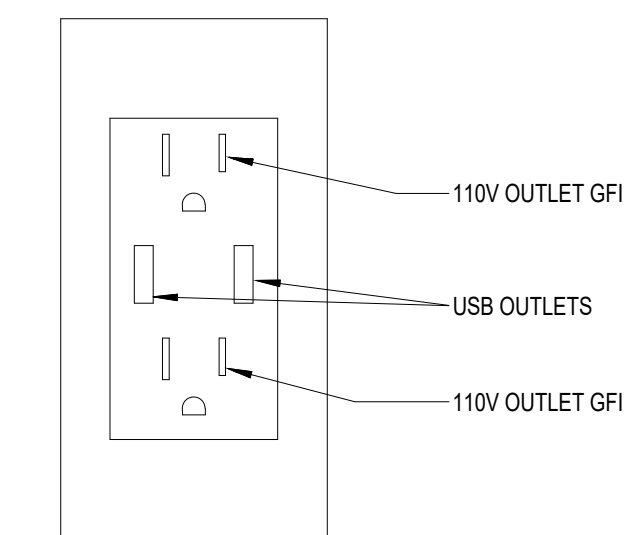
6 PANELBOARD IDENTIFICATION DETAIL
12" = 1'-0"



5 LAY-IN FIXTURE DETAIL
12" = 1'-0"



7 PANELBOARD BONDING DETAIL
12" = 1'-0"



11 USB/OUTLET COMBO
1/4" = 1'-0"

GENERAL NOTE
1. INSTALL IN ACCORDANCE WITH MANUFACTURER'S MOUNTING INSTRUCTIONS AND USING RECOMMENDED MOUNTING HARDWARE.

Property of MVE Engineers

PLUMBING SYMBOLS LIST

- DOMESTIC COLD WATER PIPING
- EXISTING COLD WATER PIPING
- FILTER WATER PIPING
- HOT WATER PIPING
- HOT WATER RETURN PIPING
- SAN SANITARY PIPING
- -SAN--- UNGD. SANITARY PIPING
- VENT PIPING
- P-TRAP
- PIPE UP
- PIPE DROP
- |--- PLUGGED OUTLET/CLEANOUT
- FLOOR CLEANOUT
- ⊙ POINT OF NEW CONNECTION
- ⊙ BALANCING VALVE
- ⊙ ISOLATION VALVE
- ⊙ BACK FLOW PREVENTER
- ⊙ THERMOSTATIC MIXING VALVE
- ⊙ FLOOR SINK
- ⊙ FLOOR DRAIN

PLUMBING ABBREVIATIONS

- | | |
|--------|---------------------|
| CO | CLEANOUT |
| CW | COLD WATER |
| HW | HOT WATER |
| HWR | HOT WATER RETURN |
| FW | FILTERED WATER |
| SAN | SANITARY |
| V | VENT |
| W | WASTE |
| LAV | LAVATORY |
| WC | WATER CLOSET |
| TYP. | TYPICAL |
| DN | DOWN |
| EXIST. | EXISTING |
| FD | FLOOR DRAIN |
| BFP | BACK FLOW PREVENTER |
| GC | GENERAL CONTRACTOR |
| VIF | VERIFY IN FIELD |
| FFD | FUNNEL FLOOR DRAIN |

PLUMBING DRAWING LIST

- P-001.00 PLUMBING NOTES AND SPECIFICATIONS
- P-002.00 PLUMBING SPECIFICATIONS
- P-101.00 PLUMBING WATER PLAN
- P-102.00 PLUMBING SANITARY PLAN
- P-501.00 PLUMBING DETAILS
- P-601.00 PLUMBING RISERS AND SCHEDULES

APPLICABLE CODES

- a. 2022 NYC BUILDING CODE
- b. 2022 NYC MECHANICAL CODE
- c. 2022 NYC PLUMBING CODE
- d. 2011 NYC ELECTRICAL CODE (NEC)
- e. 2022 NYC FUEL GAS CODE
- f. 2020 NYC ENERGY CONSERVATION CODE

SPECIAL INSPECTION PLUMBING NOTE

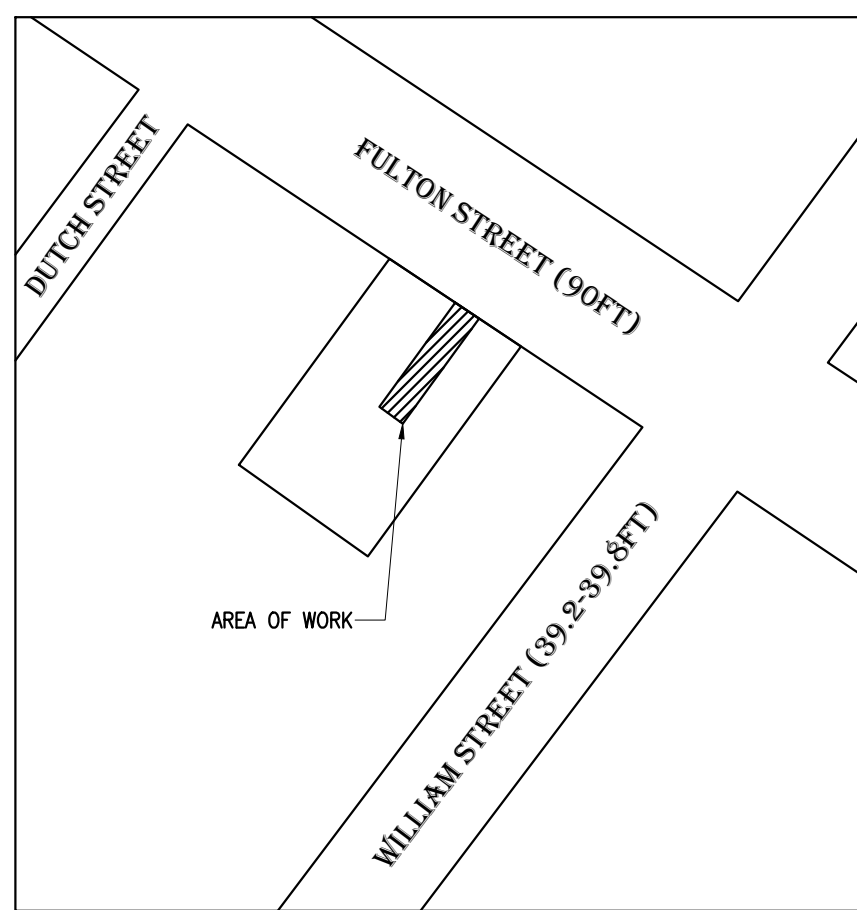
1. FIRE RESISTANT PENETRATION & JOINTS IN ACCORDANCE WITH NY CITY BUILDING CODE BC-1705.17
2. FINAL INSPECTION IN ACCORDANCE WITH NY CITY BUILDING CODE BC 110.5 DIRECTIVE FROM 14 OF 1975, AND 1 RCNY § 101-10
3. POST INSTALLATION ANCHOR INSPECTION TO BE DONE IN ACCORDANCE WITH NY CITY BUILDING CODE BC-1705.37

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 2022 NYC PLUMBING CODE & 2020 NYC ENERGY CONSERVATION CODE.
2. INSTALLATION OF UNDERGROUND PIPING SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF 2022 NYC SECTION PC 704.
3. PROTECTION OF PIPING AND PLUMBING SYSTEM COMPONENTS AS PER 2022 NYC PC SECTION 305.
4. TRENCHING, EXCAVATION AND BACKFILL AS PER 2022 NYC PC SECTION 306.
5. RODENT PROOFING AS PER 2022 NYC PC 304.
6. MATERIALS USED IN PLUMBING SYSTEMS SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF 2022 NYC PC SECTION PC 303, PC 605, PC 702, PC 902, PC 1102.
7. EQUIPMENT CONNECTIONS AND JOINING OF PIPING SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF 2022 NYC CHAPTERS 4, 5, 6, 7 AND 9.
8. DEEP SEAL TRAPS FOR FLOOR DRAINS SHALL BE PROVIDED AS PER 2022 NYC PC 1002, AND CLEAN-OUTS SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION PC 708.
9. DRAINAGE PIPE CLEANOUTS AS PER 2022 NYC PC 708.
10. VERTICAL AND HORIZONTAL PIPING SHALL BE SUPPORTED IN ACCORDANCE WITH THE REQUIREMENTS OF 2022 NYC PC SECTION 308
11. WATER SUPPLY SYSTEMS SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE REQUIREMENTS OF 2022 NYC PC CHAPTER 6 SECTION 601-603, 604, 606, 607, 608, 610.
12. THE SANITARY DRAINAGE SYSTEM SHALL BE SIZED AND INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF 2022 NYC PC CHAPTER 7 SECTION 701, 704, 705, 706, 707, 708, 711.
13. VENT PIPING FOR THE SANITARY DRAINAGE SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF 2022 NYC PC CHAPTER 9 SECTIONS 901 THROUGH SECTION 912 THROUGH SECTION 917.
14. INSPECTION AND TESTING OF PLUMBING SYSTEMS SHALL BE IN ACCORDANCE WITH 2022 NYC PC SECTION 108.
15. GREASE INTERCEPTORS SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION 2022 NYC PC 1003.

ENERGY CONSERVATION CODE OF NEW YORK CITY COMPLIANCE
 TO THE BEST OF MY PROFESSIONAL KNOWLEDGE AND JUDGEMENT, THESE PLANS AND SPECIFICATION ARE IN COMPLIANCE WITH THE ENERGY CONSERVATION CODE OF NEW YORK CITY 2020

KEY PLAN:



102 FULTON STREET, NEW YORK, NY, 10038
 BOROUGH : 1 (MANHATTAN)
 BLOCK : 78
 LOT : 7506
 ZONING DISTRICT : C6-4
 MAP : 12B
 BUILDING USE : MIXED RESIDENTIAL & COMMERCIAL BUILDING

PLOT PLAN N.T.S.

PLUMBING SPECIFICATIONS

1. BASIC PLUMBING REQUIREMENTS, MATERIALS AND METHODS

- 1.01 SCOPE
 - A. PROVIDE ALL MATERIAL, TOOLS, SUPERVISION AND LABOR INCLUDING ALL MISCELLANEOUS AND INCIDENTAL ITEMS REQUIRED FOR COMPLETE AND OPERABLE PLUMBING INSTALLATIONS AS SHOWN OR DESCRIBED ON THE DRAWINGS AND IN THESE SPECIFICATIONS.
 - B. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL NEW CONDITIONS AND MATERIALS WITHIN THE CONSTRUCTION AREA. ANY DAMAGE CAUSED BY THE CONTRACTOR SHALL BE REPAIRED TO THE OWNER'S SATISFACTION.
 - C. OBTAIN ALL PERMITS, PAY ALL PERMIT FEES AND SCHEDULE ALL REQUIRED INSPECTIONS. COPIES OF ALL PERMITS AND INSPECTION CERTIFICATES SHALL BE FORWARDED TO THE OWNER FOR RECORD.
 - D. THE GENERAL CONDITIONS OF THE CONTRACT AND ALL DIVISION 1 REQUIREMENTS APPLY TO THE WORK OF THIS SECTION.
 - E. THE CONTRACTOR SHALL VISIT THE SITE PRIOR TO SUBMITTING BID TO DETERMINE CONDITIONS AND THE EXTENT OF THE WORK. BY COMMENCING WORK, THE CONTRACTOR ACKNOWLEDGES HIS CONFIRMATION OF ALL CONDITIONS AS ACCEPTABLE WITH REFERENCE TO HIS CONTRACT, SCOPE OF WORK AND BID PRICE SUCH THAT NO ADDITIONAL COMPENSATION SHALL BE FORTHCOMING FOR UNFORESEEN EXISTING CONDITIONS.
 - F. IN ALL AREAS SUBJECT TO FREEZING CONDITIONS, THE CONTRACTOR SHALL PROVIDE FREEZE PROTECTION FOR ALL DOMESTIC WATER PIPING INSTALLED UNDER HIS CONTRACT.
 - G. ALL ELECTRICAL REQUIREMENTS SHALL BE COORDINATED WITH THE CONTRACTOR FOR ELECTRICAL WORK. THIS CONTRACTOR IS RESPONSIBLE FOR ALL LOW VOLTAGE WIRING FOR EQUIPMENT INSTALLED UNDER HIS CONTRACT. THE CONTRACTOR FOR ELECTRICAL WORK IS RESPONSIBLE FOR LINE VOLTAGE POWER WIRING ONLY.
 - H. COLOR AND FINISH SELECTIONS FOR ALL MATERIALS, INCLUDING PAINTING OF PIPING, SHALL BE AS DIRECTED AND/OR APPROVED BY THE ARCHITECT.
 - I. MINOR DETAILS NOT SHOWN OR SPECIFIED, BUT NECESSARY FOR THE PROPER AND ACCEPTABLE CONSTRUCTION, INSTALLATION OR OPERATION OF ANY PART OF THE WORK AS DETERMINED BY THE ENGINEER SHALL BE INCLUDED AS IF SPECIFIED OR INDICATED ON THE DRAWINGS.
 - J. THIS CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING ALL REQUIREMENTS FOR THE INSTALLATION, CONNECTION, EXTENSION OR MODIFICATION TO ALL UTILITY SERVICES WITH RESPECTIVE PROVIDERS INCLUDING PAYMENT OF ALL ASSOCIATED FEES.
 - K. THE CONTRACTOR IS RESPONSIBLE FOR ALL PAINTING ASSOCIATED WITH CUTTING AND PATCHING. ALL PAINTING IN AREAS WITH COMPLETE FINISH RENOVATIONS SHALL BE PROVIDED BY THE GENERAL CONTRACTOR.
- 1.02 SUBMITTALS
 - A. SUBMITTAL REQUIREMENTS SHALL BE COORDINATED WITH THE ARCHITECT AND AUTHORITIES HAVING JURISDICTION. UNLESS OTHERWISE DIRECTED, CONTRACTOR SHALL PROVIDE SUBMITTALS AS LISTED BELOW.
 1. PIPE AND FITTINGS
 2. VALVES
 3. HANGERS AND SUPPORTS
 4. PLUMBING PIPING LAYOUT
 5. TESTS
 6. PLUMBING FIXTURES
 7. WATER HEATERS & ACCESSORIES
 8. FLOOR DRAINS
 9. MIXING VALVES
 10. 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.

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

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

- C. PROVIDE: TO FURNISH AND INSTALL.
- D. PLUMBING CONTRACTOR, THE CONTRACTOR, THIS CONTRACTOR: THE CONTRACTOR FOR PLUMBING WORK WHICH IS SPECIFIED HEREIN AND SHOWN ON THESE DRAWINGS.
- E. REFER TO THE NATIONAL STANDARD PLUMBING CODE FOR ADDITIONAL DEFINITIONS.

1.05 DRAWINGS

- A. THE DRAWINGS ARE DIAGRAMMATIC AND ARE INTENDED TO ILLUSTRATE THE GENERAL ARRANGEMENT AND ROUTING OF PIPING AND GENERAL LOCATIONS OF EQUIPMENT. PRECISE LOCATIONS OF EQUIPMENT, RISERS AND STACKS, AND ROUTING AND ELEVATION OF ALL PIPING SYSTEMS SHALL BE COORDINATED IN THE FIELD WITH THE ARCHITECT, ARCHITECTURAL DRAWINGS, THE WORK OF OTHER TRADES, EXISTING AND NEW BUILDING CONDITIONS AND/OR THE PREFERENCES OF THE OWNER/TENANT AS CONSTRUCTION PROCEEDS. ALL PIPING SHALL BE INSTALLED CONCEALED IN FINISHED SPACES, UNLESS NOTED OTHERWISE.
- B. PROVIDE ALL NECESSARY INCIDENTAL MATERIALS AND ACCESSORIES REQUIRED TO MAKE THE WORK COMPLETE IN ALL RESPECTS, EVEN IF NOT PARTICULARLY SHOWN OR SPECIFIED.
- C. REFER TO PLUMBING EQUIPMENT/FIXTURE SCHEDULE ON THE DRAWINGS FOR ALL FIXTURE AND EQUIPMENT SPECIFICATIONS.
- D. REFER TO FIXTURE CONNECTION SIZE SCHEDULE FOR ALL FIXTURE ROUGHING SIZE REQUIREMENTS.
- E. VERIFY ALL INDICATED CONDITIONS BEFORE STARTING WORK AND REPORT ANY DISCREPANCIES. THE DRAWINGS REFLECT CONDITIONS WHICH CAN BE REASONABLY INTERPRETED FROM THE EXISTING VISIBLE CONDITIONS OR FROM DRAWINGS AND INFORMATION FURNISHED BY THE OWNER.
- F. LOCATE ALL FIXTURES AND EQUIPMENT AS PER THE FINAL ARCHITECTURAL DRAWINGS.

1.06 PRODUCTS

- A. SANITARY AND VENT PIPING:
 1. ABOVE GRADE PIPING SHALL BE HUBLESS CAST IRON PIPE WITH STAINLESS STEEL COUPLINGS AND ELASTOMERIC GASKETS WITH A MINIMUM NO. OF BALLS PER COUPLING AS PER CISPI 310-12.
 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 2-1/2" AND SMALLER (I.D.). VENT PIPING SHALL BE PITCHED TO DRAIN.
 3. ALL CAST IRON SOIL PIPE AND FITTINGS SHALL BE MARKED WITH THE COLLECTIVE TRADEMARK OF THE CAST IRON SOIL PIPE INSTITUTE (CISPI) AND BE LISTED BY NSF INTERNATIONAL.

B. DOMESTIC WATER PIPING:

1. ABOVE GRADE WATER PIPING SHALL BE TYPE 'L' HARD-DRAWN COPPER TUBE.
2. FITTINGS IN DOMESTIC WATER PIPING SHALL BE WROUGHT COPPER OR CAST BRASS.
3. JOINTS SHALL BE MADE WITH LEAD-FREE SOLDER.
4. THE ENTIRE DOMESTIC WATER DISTRIBUTION SYSTEM SHALL BE INSULATED INCLUDING ALL VALVES, FITTINGS, ETC.
5. COMPLY WITH NSF 61 FOR MATERIALS FOR WATER-SERVICE PIPING AND SPECIALTIES FOR DOMESTIC WATER.
6. ALL DOMESTIC WATER PIPING ABOVE GRADE SHALL BE FIRE-RETARDANT, FACTORY-APPLIED JACKET. PROVIDE COLD WATER PIPING WITH FACTORY-APPLIED VAPOR BARRIER. INSULATION REQUIREMENT SHOULD COMPLY SECTION C404.4 REFER WITH NYC ENERGY CONSERVATION CODE 2020 BELOW TABLE C403.11.3

FLUID OPERATING TEMPERATURE RANGE AND USAGE (°F)	MINIMUM PIPE INSULATION THICKNESS		NOMINAL PIPE OR TUBE SIZE (INCHES)			
	INSULATION CONDUCTIVITY (BTU-IN./ (H-FT²·F)	MEAN RATING TEMPERATURE, °F	<1	1 to 1 1/2	1 1/2 to 4	4 to ≥8
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. HEATED WATER SUPPLY PIPING SHALL BE IN ACCORDANCE WITH NYC ENERGY CONSERVATION CODE 2020 SECTION C404.5.1 OR C404.5.2. THE FLOW RATE THROUGH 1/4-INCH PIPING SHALL BE NOT GREATER THAN 0.5 GPM. THE FLOW RATE THROUGH 5/16-INCH PIPING SHALL BE NOT GREATER THAN 1 GPM. THE FLOW RATE THROUGH 3/8-INCH PIPING SHALL BE NOT GREATER THAN 1.5 GPM. HW SYSTEM PIPING IS DESIGNED AS PER MAXIMUM ALLOWED PIPE LENGTH METHOD AS PER NYC ECC 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.

NOMINAL PIPE SIZE (INCHES)	MIXIMUM PIPING LENGTH (FEET)	
	PUBLIC LAV	OTHER FIXTURES
3/8"	3'	50'
1/2"	2'	43'
3/4"	0.5'	21'
1"	0.5'	13'
1 1/2"	0.5'	8'
1 1/2"	0.5'	6'
2" OR LARGER	0.5'	4'

8. SEAL ALL JOINTS BETWEEN SEGMENTS OF INSULATION.
9. PROVIDE SHIELDS BETWEEN HANGERS AND INSULATION.
10. AS PER NYC ENERGY CONSERVATION CODE 2020 C404.6.1 HEATED-WATER CIRCULATION SYSTEMS SHALL BE PROVIDED WITH A CIRCULATION PUMP. THE SYSTEM RETURN PIPE SHALL BE A DEDICATED RETURN PIPE OR A COLD WATER SUPPLY PIPE. CONTROLS FOR CIRCULATING HOT WATER SYSTEM PUMPS SHALL START THE PUMP BASED ON THE IDENTIFICATION OF A DEMAND FOR HOT WATER WITHIN THE OCCUPANCY. THE CONTROLS SHALL AUTOMATICALLY TURN OFF THE PUMP WHEN THE WATER IN THE CIRCULATION LOOP IS AT THE DESIRED TEMPERATURE AND WHEN THERE IS NO DEMAND FOR HOT WATER.

11. WATER DISTRIBUTION SYSTEM AS PER NYC ENERGY CONSERVATION CODE 2020 C404.7, HAVING ONE OR MORE RECIRCULATION PUMPS THAT PUMP WATER FROM A HEATED-WATER SUPPLY PIPE BACK TO THE HEATED-WATER SOURCE THROUGH A COLD-WATER SUPPLY PIPE SHALL BE A DEMAND RECIRCULATION WATER SYSTEM. PUMPS SHALL HAVE CONTROLS THAT COMPLY WITH BOTH OF THE FOLLOWING:

- a. THE CONTROL SHALL START THE PUMP UPON RECEIVING A SIGNAL FROM THE ACTION OF A USER OF A FIXTURE OR APPLIANCE, SENSING THE PRESENCE OF A USER OF A FIXTURE OR SENSING THE FLOW OF HOT OR TEMPERED 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).

C. PRESS JOINERY SYSTEM:

- a. FITTINGS 1/2" - 4":
 1. WHERE APPROVED BY THE LOCAL JURISDICTION, THE NIBCO PRESS SYSTEM MAY BE USED AT THE CONTRACTOR'S OPTION FOR THE FOLLOWING BUILDING SERVICES PIPING -20°F TO +250°F UP TO 200 PSI:
 - HOT AND COLD DOMESTIC WATER; FITTINGS AND VALVES SHALL BE NSF-61 APPROVED.
 - POTABLE WATER; FITTINGS AND VALVES SHALL BE NSF-61 APPROVED.
 - HOT WATER HEATING SERVICE

- ALL LEAD FREE WROUGHT COPPER PRESS FITTINGS SHALL BE MADE FROM COMMERCIALLY PURE COPPER MILL PRODUCTS PER ASTM B 75 ALLOY C12200. THESE FITTINGS SHALL BE THIRD-PARTY CERTIFIED TO NSF/ANSI 61 ANNEX C AND COMPLY WITH NEW YORK CITY HEALTH AND SAFETY CODE, NYC FC 2022 AND VERMONT ACT 193. NIBCO LEAD FREE CAST DEZINCIFICATION-RESISTANT (DZR) FITTINGS SHALL BE MADE FROM A HIGH QUALITY LEAD FREE PERFORMANCE BRONZE ALLOY PER ASTM B 584 ALLOY C87850. THE PRESS FITTINGS CONNECTIONS SHALL BE COMPATIBLE WITH SEAMLESS K, L OR M COPPER TUBE MADE TO ASTM B 88. FITTINGS SHALL HAVE A MAXIMUM NON-SHOCK WORKING PRESSURE OF 200 PSI BETWEEN THE TEMPERATURES OF -20°F AND +250°F. ELASTOMERIC SEALS WITH LEAK DETECTION DESIGN SHALL BE MADE OF EPDM MATERIAL. AND THE FITTINGS SHALL BE MANUFACTURED WITH AN INBOARD BEAD DESIGN. NIBCO PRESS FITTINGS MEET ALL PERFORMANCE REQUIREMENTS OF ASME B16.22 AND B16.18ALL FITTINGS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION INSTRUCTIONS AND ACCORDING TO LOCAL PLUMBING AND MECHANICAL CODES. THE PRESS-TO-CONNECT JOINT SHALL BE MADE WITH PRESSING TOOLS AND JAW SETS RECOMMENDED AND AUTHORIZED BY NIBCO. ALL FITTINGS, VALVES AND TOOLS SHALL BE PROVIDED BY SAME MANUFACTURER; NIBCO.
 - b. VALVES 2" AND SMALLER: BALL VALVES: (ON/OFF, ISOLATION OR THROTTLING)
 1. BALL VALVES (STAINLESS STEEL BALL AND STEM) WITH MALE OR FEMALE PRESS-TO-CONNECT ENDS SHALL BE RATED AT 200 PSI CWP TO +250°F MAXIMUM. NIBCO LEAD FREE VALVES SHALL BE MANUFACTURED IN ACCORDANCE WITH MSS SP-110 AND CONSTRUCTED OF DEZINCIFICATION-RESISTANT (DZR) BRONZE BODIES AND END PIECES AND SHALL BE MADE FROM A HIGH QUALITY LEAD FREE PERFORMANCE BRONZE ALLOY PER ASTM B 584 ALLOY C87850. NO BRASS CONTAINING MORE THAN 15% ZINC SHALL BE APPROVED. VALVE SHALL HAVE REINFORCED TEFLON SEATS, BLOW-OUT PROOF STEM, SOLID STAINLESS STEEL BALL AND STEM. NO HOLLOW CHROME PLATED BALLS ACCEPTED. ALL VALVES SHALL BE FULL PORT. ALL ELASTOMERIC SEALS SHALL HAVE LEAK DETECTION DESIGN.
 - WHERE PIPING IS TO BE INSULATED, BALL VALVES SHALL BE EQUIPPED WITH 2" EXTENDED HANDLES OF NON-THERMAL CONDUCTIVE MATERIAL. HANDLE TO HAVE EXTENDED SLEEVE INCORPORATING AN INSULATION PLUG TO PROVIDE A VAPOR BARRIER AND ALLOW VALVE OPERATION WITHOUT DISTURBING THE INSULATION, AND A MEMORY STOP, WHICH CAN BE SET AFTER INSTALLATION.
 - ACCEPTABLE VALVES: (NSF-61, NON-INSULATED LINES): NIBCO PC585-66-LF, -HC, -LL.
 - ACCEPTABLE VALVES: (NSF-61, INSULATED LINES): NIBCO PC585-66-LF-NS, -HC, -LL

- c. CHECK VALVES: (BACKFLOW PREVENTION)
 1. VALVES WITH PRESS-TO-CONNECT ENDS SHALL BE RATED TO 200 PSI CWP AT +250°F MAXIMUM. NIBCO LEAD FREE VALVES SHALL BE MANUFACTURED IN ACCORDANCE WITH MSS SP-80 AND CONSTRUCTED OF DEZINCIFICATION-RESISTANT (DZR) BRONZE BODY & CAP SHALL BE MADE FROM A HIGH QUALITY LEAD FREE PERFORMANCE BRONZE ALLOY PER ASTM B 584 ALLOY C87850. DISC SHALL BE THE TEFLON. ALL ELASTOMERIC SEALS SHALL HAVE LEAK DETECTION DESIGN.
 - ACCEPTABLE CHECK VALVES: NIBCO PS413-Y-LF: Y PATTERN, SWING TYPE CHECK VALVE; NIBCO PS480-Y-LF : IN-LINE SPRING LOADED SILENT CHECK VALVE

- d. BUTTERFLY VALVES 2-1/2" - 4", (ON/OFF, ISOLATION OR THROTTLING)
 1. BUTTERFLY VALVES WITH FEMALE LEAD FREE PRESS-TO-CONNECT ENDS SHALL BE RATED AT 200 PSI CWP TO +250°F MAXIMUM. VALVES SHALL BE MANUFACTURED IN ACCORDANCE WITH MSS SP-67 AND CONSTRUCTED OF A DUCTILE-IRON BODY. FOR BUBBLE-TIGHT SHUTOFF, EXTENDED-NECK FOR INSULATION, DISC AND LINING SUITABLE FOR POTABLE WATER, VALVES SHALL BE SUITABLE FOR BI-DIRECTIONAL DEAD END SERVICE AT FULL RATED PRESSURE. ONE-PIECE TYPE 416 STAINLESS-STEEL STEM, COPPER BUSHING, FASTENERS AND PINS SHALL NOT BE USED TO ATTACH STEM TO DISC. NO PINS OR FASTENERS IN WATERWAY. ALUMINUM-BRONZE DISC, AND MOLDED-IN EPDM SEAT (LINER). ALL ELASTOMERIC SEALS SHALL HAVE LEAK DETECTION DESIGN.
 - ACCEPTABLE VALVES: NIBCO PFD2000 SERIES (NSF-61)
 - GD4765N-LF (NSF-61)

- d. BUTTERFLY VALVES 2-1/2" - 4", (ON/OFF, ISOLATION OR THROTTLING)
 1. VALVE BODY SHALL BE MADE OF CAST BRASS. THE INTERNAL COMPONENTS SHALL BE MADE OF BRASS OR STAINLESS STEEL.
 2. TYPES A, C & D VALVES: VALVE SHUTS OFF IN FULL COLD POSITION AND MUST PASS THROUGH COLD RANGE BEFORE DELIVERING WARM, AND/OR HOT WATER. TEMPERATURE LIMIT SET AT 105°F MAXIMUM DELIVERY TEMPERATURE. IF ONE SUPPLY SHOULD FAIL, THE OTHER WILL AUTOMATICALLY AND INSTANTLY SHUT DOWN. DELIVERY CAPACITY IS 5GPM @ 45 PSIG DIFFERENTIAL.
 3. TYPES OF VALVES: TYPE A- THERMOSTATICALLY OPERATED BY MEANS OF BI-METALLIC STRIP, OR EXPANSION BELLOWS; TYPE B- SINGLE HANDLE MECHANICAL MIXER, OR INDIVIDUAL HOT AND COLD CONTROL VALVES; TYPE C- PRESSURE BALANCING SHOWER VALVE/PISTON OPERATED MIXING VALVE; TYPE D- BALANCED PRESSURE OPERATION, WITH INTEGRAL DIAL THERMOMETER INDICATING DELIVERED WATER TEMPERATURE.

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.

E. HANGERS AND SUPPORTS:

- 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.
- SECTIONS OF INDIVIDUAL PIPE RUNS SHALL BE SUPPORTED BY CLEVIS HANGERS.
- ALL EQUIPMENT SHALL BE PROVIDED WITH APPROVED SUPPORTS.
- PROVIDE SEISMIC RESTRAINTS IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE AND LOCAL CODES AND STANDARDS AND THE REQUIREMENTS OF AUTHORITIES HAVING JURISDICTION.
- SUPPORTS SHALL BE PROVIDED IN STRICT ACCORDANCE WITH THE RECOMMENDATIONS OF THE PIPING MANUFACTURER.

F. VALVES:

- 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.
- ALL FIXTURES WITH THE EXCEPTION OF FLUSHMETER-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.
- ALL PLUMBING FIXTURES AND EQUIPMENT TO HAVE SHUT-OFF VALVES ON SUPPLY LINES.
- ALL BRANCH LINES TO HAVE SHUT-OFF VALVES.
- ALL VALVES SHALL BE ACCESSIBLE. PROVIDE ACCESS DOORS WHERE REQUIRED FOR VALVE ACCESS.
- PROVIDE GLOBE VALVES FOR THROTTLING/BALANCING OF THE HOT WATER CIRCULATING SYSTEM.

G. ELECTRIC WATER HEATER(WH-1)

- TANKS SHALL 50 GALLON CAPACITY AND SHALL HAVE 150 PSI WORKING PRESSURE AND BE EQUIPPED WITH EXTRUDED HIGH DENSITY ANODE.
- 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.
- ELECTRIC HEATING ELEMENTS SHALL BE MEDIUM WATT DENSITY WITH ZINC PLATED COPPER SHEATH.
- 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 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.

H. HOT WATER RE-CIRCULATING PUMP

- IN-LINE PUMP: SINGLE STAGE VOLUTE TYPE PUMP SHALL BE MADE OF CAST IRON OR FORGED LEAD-FREE BRONZE IMPELLER.
- 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 SEAL. THE MOTOR SHALL BE NON-OVERLOADING AT ANY POINT ON PUMP CURVE.
- 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.
- 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.

- I. 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.

- J. 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.

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

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

M. VENT PENETRATIONS THROUGH THE ROOF SHALL BE FLASHED.

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

O. PROVIDE DIELECTRIC FITTINGS BETWEEN DISSIMILAR METALS.

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

- Q. 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.

- R. ALL FIXTURES REQUIRING VACUUM BREAKERS SHALL BE EQUIPPED WITH INTEGRAL VACUUM BREAKERS.

- S. 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.

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

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

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

2. INSTALLATION

2.01 GENERAL

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

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

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

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

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

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

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

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

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

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

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

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

2.02 ABOVE GRADE

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

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

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

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

- THE SYSTEM SHALL BE TESTED AND PROVED TIGHT UNDER A WATER PRESSURE OF 50 PSI (344KPA) ABOVE ITS NORMAL WORKING PRESSURE BUT NOT LESS THAN 150 PSI.
- THIS PRESSURE SHALL BE HELD FOR NOT LESS THAN 15 MINUTES.
- TESTS SHALL BE WITNESSED BY THE BUILDING ENGINEER.
- 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.

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.

TENANT PROTECTION PLAN NOTES:

28-120.1 TENANT PROTECTION PLAN 2022. A TENANT PROTECTION PLAN SHALL BE PREPARED AND SUBMITTED FOR THE ALTERATION, CONSTRUCTION, OR PARTIAL DEMOLITION OF BUILDINGS IN WHICH ANY DWELLING UNIT WILL BE OCCUPIED DURING CONSTRUCTION, INCLUDING NEWLY CONSTRUCTED BUILDINGS THAT ARE PARTIALLY OCCUPIED WHERE WORK IS ONGOING. THE TENANT PROTECTION PLAN SHALL BE PREPARED BY A REGISTERED DESIGN PROFESSIONAL AND FILED WITH THE DEPARTMENT. THE REGISTERED DESIGN PROFESSIONAL PREPARING THE TENANT PROTECTION PLAN SHALL BE RETAINED BY THE GENERAL CONTRACTOR PERFORMING THE ALTERATION, CONSTRUCTION, OR PARTIAL DEMOLITION WORK. NO PERMIT SHALL BE ISSUED FOR WORK THAT REQUIRES A TENANT PROTECTION PLAN UNLESS SUCH PLAN IS APPROVED BY THE DEPARTMENT. SUCH PLAN SHALL CONTAIN A STATEMENT SIGNED BY THE OWNER AND SIGNED BY THE APPLICANT AFFIRMING THAT THE BUILDING CONTAINS DWELLING UNITS THAT WILL BE OCCUPIED DURING CONSTRUCTION AND SHALL IDENTIFY IN SUFFICIENT DETAIL THE SPECIFIC UNITS THAT ARE OR MAY BE OCCUPIED DURING CONSTRUCTION, THE MEANS AND METHODS TO BE EMPLOYED TO SAFEGUARD THE SAFETY AND HEALTH OF THE OCCUPANTS THROUGHOUT THE CONSTRUCTION, INCLUDING, WHERE APPLICABLE, DETAILS SUCH AS TEMPORARY FIRE-RESISTANT PARTITIONS, OPENING PROTECTIVES, OR DUST CONTAINMENT PROCEDURES. SUCH MEANS AND METHODS SHALL BE DESCRIBED WITH PARTICULARITY AND IN NO CASE SHALL TERMS SUCH AS "CODE COMPLIANT," "APPROVED," "LEGAL," "PROTECTED IN ACCORDANCE WITH LAW" OR SIMILAR TERMS BE USED AS SUBSTITUTE FOR SUCH DESCRIPTION. THE TENANT PROTECTION PLAN MUST BE SITE SPECIFIC. THE ELEMENTS OF THE TENANT PROTECTION PLAN MAY VARY DEPENDING ON THE NATURE AND SCOPE OF THE WORK BUT AT A MINIMUM, MUST COMPLY WITH ALL APPLICABLE LAWS AND REGULATIONS, INCLUDING THE NEW YORK CITY CONSTRUCTION CODES, THE NEW YORK CITY HOUSING MAINTENANCE CODE, THE NEW YORK CITY NOISE CONTROL CODE AND THE NEW YORK CITY HEALTH CODE, AND SHALL MAKE DETAILED AND SPECIFIC PROVISIONS FOR:

- EGRESS
 - AT ALL TIMES IN THE COURSE OF CONSTRUCTION PROVISION SHALL BE MADE FOR ADEQUATE EGRESS AS REQUIRED BY THIS CODE AND THE TENANT PROTECTION PLAN SHALL IDENTIFY THE EGRESS THAT WILL BE PROVIDED. REQUIRED EGRESS SHALL NOT BE OBSTRUCTED AT ANY TIME EXCEPT WHERE APPROVED BY THE COMMISSIONER.
 - FIRE SAFETY
 - ALL NECESSARY LAWS AND CONTROLS, INCLUDING THOSE WITH RESPECT TO OCCUPIED DWELLINGS, AS WELL AS ADDITIONAL SAFETY MEASURES NECESSITATED BY THE CONSTRUCTION SHALL BE STRICTLY OBSERVED.
 - HEALTH REQUIREMENTS
 - SPECIFICATION OF MEANS AND METHODS TO BE USED FOR CONTROL OF DUST, DISPOSAL OF CONSTRUCTION DEBRIS, PEST CONTROL AND MAINTENANCE OF SANITARY FACILITIES SHALL BE INCLUDED.
 - THERE SHALL BE INCLUDED A STATEMENT OF COMPLIANCE WITH APPLICABLE PROVISIONS OF LAW RELATING TO LEAD AND ASBESTOS, AND SUCH STATEMENT SHALL DESCRIBE WITH PARTICULARITY WHAT MEANS AND METHODS ARE BEING UNDERTAKEN TO MEET SUCH COMPLIANCE.
 - COMPLIANCE WITH HOUSING STANDARDS. THE REQUIREMENTS OF THE NEW YORK CITY HOUSING MAINTENANCE CODE, AND, WHERE APPLICABLE, THE NEW YORK STATE MULTIPLE DWELLING LAW SHALL BE STRICTLY OBSERVED.
 - STRUCTURAL SAFETY. NO STRUCTURAL WORK SHALL BE DONE THAT MAY ENDANGER THE OCCUPANTS.
 - NOISE RESTRICTIONS. SPECIFICATION OF MEANS AND METHODS TO BE USED FOR THE LIMITATION OF NOISE TO ACCEPTABLE LEVELS IN ACCORDANCE WITH THE NEW YORK CITY NOISE CONTROL CODE SHALL BE INCLUDED. WHERE HOURS OF THE DAY OR THE DAYS OF THE WEEK IN WHICH CONSTRUCTION WORK MAY BE UNDERTAKEN ARE LIMITED PURSUANT TO THE NEW YORK CITY NOISE CONTROL CODE, SUCH LIMITATIONS SHALL BE STATED.
 - MAINTAINING ESSENTIAL SERVICES. WHERE HEAT, HOT WATER, COLD WATER, GAS, ELECTRICITY, OR OTHER UTILITY SERVICES ARE PROVIDED IN SUCH BUILDING OR IN ANY DWELLING UNIT LOCATED THEREIN, THE TENANT PROTECTION PLAN SHALL SPECIFY THE MEANS AND METHODS TO BE USED FOR MAINTAINING SUCH SERVICES DURING SUCH WORK IN ACCORDANCE WITH THE REQUIREMENTS OF THE NEW YORK CITY HOUSING MAINTENANCE CODE. IF A DISRUPTION OF ANY SUCH SERVICE IS ANTICIPATED DURING THE WORK, THEN SUCH PLAN SHALL SPECIFY THE ANTICIPATED DURATION OF SUCH DISRUPTION AND THE MEANS AND METHODS TO BE EMPLOYED TO MINIMIZE SUCH DISRUPTION, INCLUDING THE PROVISION OF SUFFICIENT ALTERNATIVES FOR SUCH SERVICE DURING SUCH DISRUPTION. NOTIFICATION OF THE DISRUPTION MUST BE GIVEN TO ALL AFFECTED OCCUPANTS OF OCCUPIED DWELLING UNITS.

EXCEPTION: IN THE FOLLOWING INSTANCES, THE TENANT PROTECTION PLAN MAY BE PREPARED AND FILED BY THE REGISTERED DESIGN PROFESSIONAL OF RECORD FOR THE ALTERATION, CONSTRUCTION, OR PARTIAL DEMOLITION WORK AS PART OF THE UNDERLYING APPLICATION:

- WORK IN OCCUPIED ONE-AND TWO-FAMILY HOMES.
- WORK LIMITED TO THE INTERIOR OF A SINGLE DWELLING UNIT OF AN OCCUPIED MULTIPLE DWELLING WITH NO DISRUPTION TO THE ESSENTIAL SERVICES OF OTHER UNITS, WHERE SUCH DWELLING IS OWNER-OCCUPIED. FOR A DWELLING UNIT WITHIN A PROPERTY THAT IS OWNED BY A CONDOMINIUM OR HELD BY A SHAREHOLDER OF A COOPERATIVE CORPORATION UNDER PROPRIETARY LEASE, THE UNIT MUST BE OCCUPIED BY THE OWNERS OF RECORD FOR SUCH UNIT.

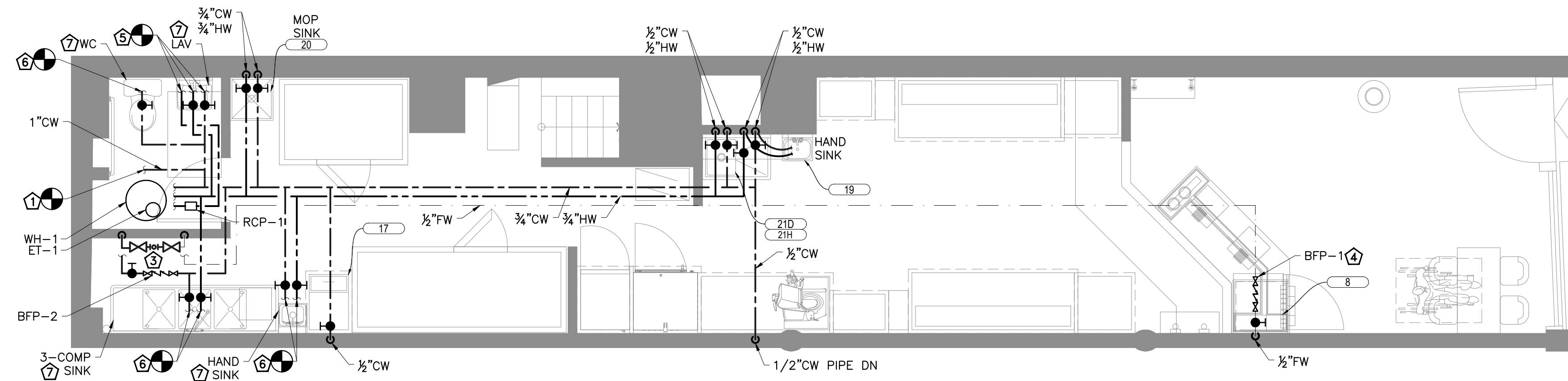
- § 28-120.1.1 PUBLIC AVAILABILITY OF TENANT PROTECTION PLAN. UPON ISSUANCE OF A PERMIT FOR WORK CONTAINING A TENANT PROTECTION PLAN, THE DEPARTMENT SHALL MAKE THE TENANT PROTECTION PLAN PUBLICLY AVAILABLE ON ITS WEBSITE.

- § 28-120.1.2 PROVISION OF COPY OF TENANT PROTECTION PLAN TO OCCUPANTS UPON REQUEST. THE OWNER OF A BUILDING UNDERGOING WORK FOR WHICH A TENANT PROTECTION PLAN IS REQUIRED BY SECTION 28-120.1 SHALL, UPON REQUEST FROM AN OCCUPANT OF A DWELLING UNIT WITHIN SUCH BUILDING, PROVIDE SUCH OCCUPANT WITH A PAPER COPY OF THE TENANT PROTECTION PLAN APPROVED BY THE DEPARTMENT.

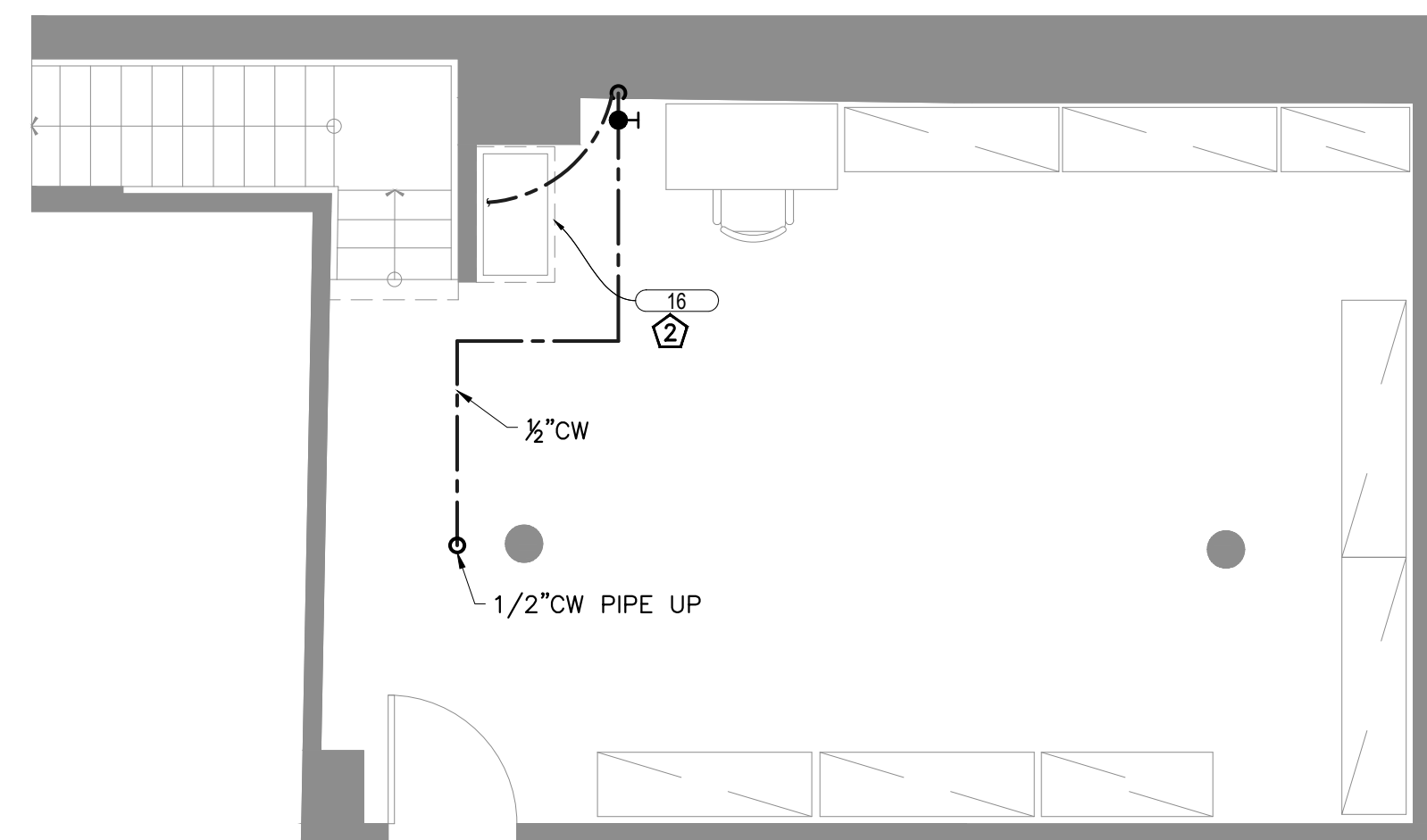
- § 28-120.1.2 PROVISION OF COPY OF TENANT PROTECTION PLAN TO OCCUPANTS UPON REQUEST. THE OWNER OF A BUILDING UNDERGOING WORK FOR WHICH A TENANT PROTECTION PLAN IS REQUIRED BY SECTION 28-120.1 SHALL, UPON REQUEST FROM AN OCCUPANT OF A DWELLING UNIT WITHIN SUCH BUILDING, PROVIDE SUCH OCCUPANT WITH A PAPER COPY OF THE TENANT PROTECTION PLAN APPROVED BY THE DEPARTMENT.

- § 28-120.1.3 NOTICE TO OCCUPANTS. UPON ISSUANCE OF A PERMIT FOR WORK CONTAINING A TENANT PROTECTION PLAN, THE OWNER SHALL (i) DISTRIBUTE A NOTICE REGARDING SUCH PLAN TO EACH OCCUPIED DWELLING UNIT AND (ii) POST A NOTICE REGARDING SUCH PLAN IN A CONSPICUOUS MANNER IN THE BUILDING LOBBY, AS WELL AS ON EACH FLOOR WITHIN TEN FEET OF THE ELEVATOR OR IN A BUILDING WHERE THERE IS NO ELEVATOR, WITHIN TEN FEET OF OR IN THE MAIN STAIRWELL ON SUCH FLOOR. THE NOTICE SHALL BE IN A FORM CREATED OR APPROVED BY THE DEPARTMENT AND SHALL INCLUDE:

- A STATEMENT THAT OCCUPANTS OF THE BUILDING MAY OBTAIN A PAPER COPY OF SUCH PLAN FROM THE OWNER AND MAY ACCESS SUCH PLAN ON THE DEPARTMENT WEBSITE;
- THE NAME AND CONTACT INFORMATION FOR THE SITE SAFETY MANAGER, SITE SAFETY COORDINATOR OR SUPERINTENDENT OF CONSTRUCTION REQUIRED BY SECTION 3301.3 OF THE NEW YORK CITY BUILDING CODE, AS APPLICABLE, OR, IF THERE IS NO SITE SAFETY MANAGER, SITE SAFETY COORDINATOR OR SUPERINTENDENT OF CONSTRUCTION, THE NAME AND CONTACT INFORMATION OF THE OWNER OF THE BUILDING OR SUCH OWNER'S DESIGNEE; AND
- STATEMENT THAT OCCUPANTS OF THE BUILDING MAY CALL 311 TO MAKE COMPLAINTS ABOUT THE WORK.



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



2 PLUMBING WATER PLAN - CELLAR
1/4"=1'-0"

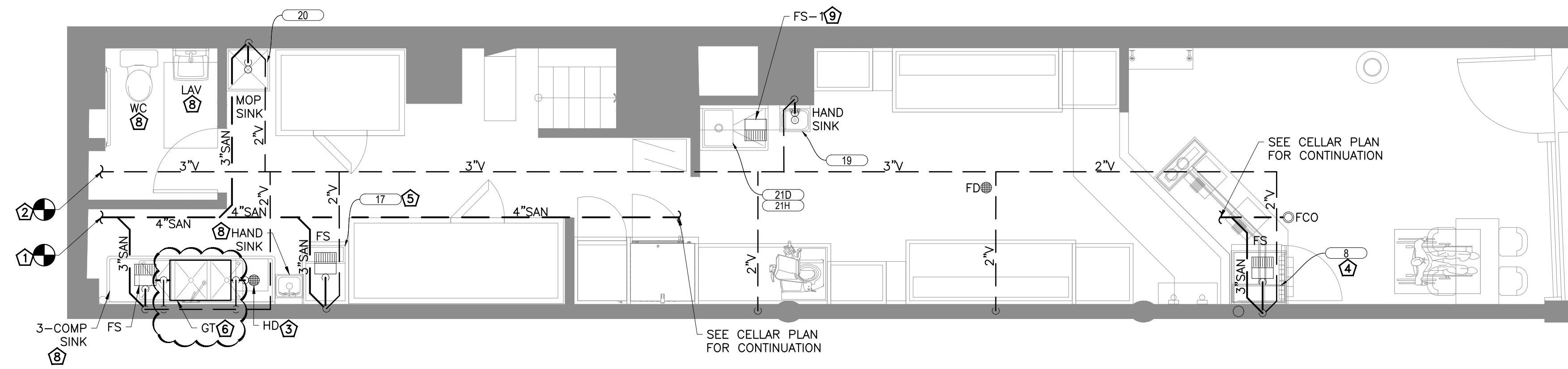
GENERAL NOTES

1. ALL FLOOR SINKS, FLOOR DRAINS, FLOOR CLEANOUTS, AND GREASE TRAP SHALL BE INSTALLED SO THAT TOPS ARE FLUSH WITH FINISH FLOOR.
2. CONTRACTOR TO COORDINATE / VERIFY EXACT LOCATIONS FOR ALL FLOOR FIXTURES PRIOR TO SAW-CUTTING.
3. COORDINATE WATER LINES WITH ELECTRICAL CONTRACTOR PIPING SHALL NOT BE ROUTED OVER ELECTRICAL PANEL OR EQUIPMENT.
4. ALL BACKFLOW PREVENTERS SHOULD BE INSTALLED ABOVE THE KITCHEN OR RESTROOM DROP CEILING. IF BFP CANNOT BE INSTALLED ABOVE CEILING, IT MUST BE INSTALLED ABOVE THE MOP SINK, UNDER THE WATER HEATER PLATFORM. BFP SHOULD NOT INTERFERE IN ANY WAY WITH THE OPERATION OF THE KITCHEN. IF AN EXISTING BACKFLOW PREVENTER IS IN A LOCATION OTHER THAN WHAT IS SHOWN ON THESE DRAWINGS, CONTACT THE JIMMY JOHN'S CONSTRUCTION DEPARTMENT IMMEDIATELY FOR DIRECTION ON HOW TO PROCEED.
5. ALL PLUMBING LINES MUST BE RECESSED WITHIN WALL CAVITIES, UNLESS SPECIFICALLY NOTED OTHERWISE IN THE BLUEPRINTS. NO WATER LINES MAY RUN ALONG WALL. ALL EXISTING MUST BE MOVED 12" OFF OF WALL. IF CANNOT BE MOVED, LINE MUST BE FRAMED AROUND AND FINISHED PER WALL STYLE. ANY APPROVED EXPOSED DRAIN LINES MUST BE COPPER.
8. IF A FLOW CONTROL DEVICE IS REQUIRED AT GREASE TRAP, IT MUST BE INSTALLED UNDERGROUND WITH AN 8" SQUARE SHAPED CLEANOUT COVER OVER TOP SET FLUSH WITH THE FINISHED FLOOR.
9. CONTRACTORS TO INSTALL ALL AND ANY PIPING AND OR COMPONENTS AS TIGHT TO UNDERSIDE OF STRUCTURE AS POSSIBLE.
10. ALL SLAB PENETRATIONS OVER 5" WILL REQUIRE STRUCTURAL ENGINEER'S APPROVAL.

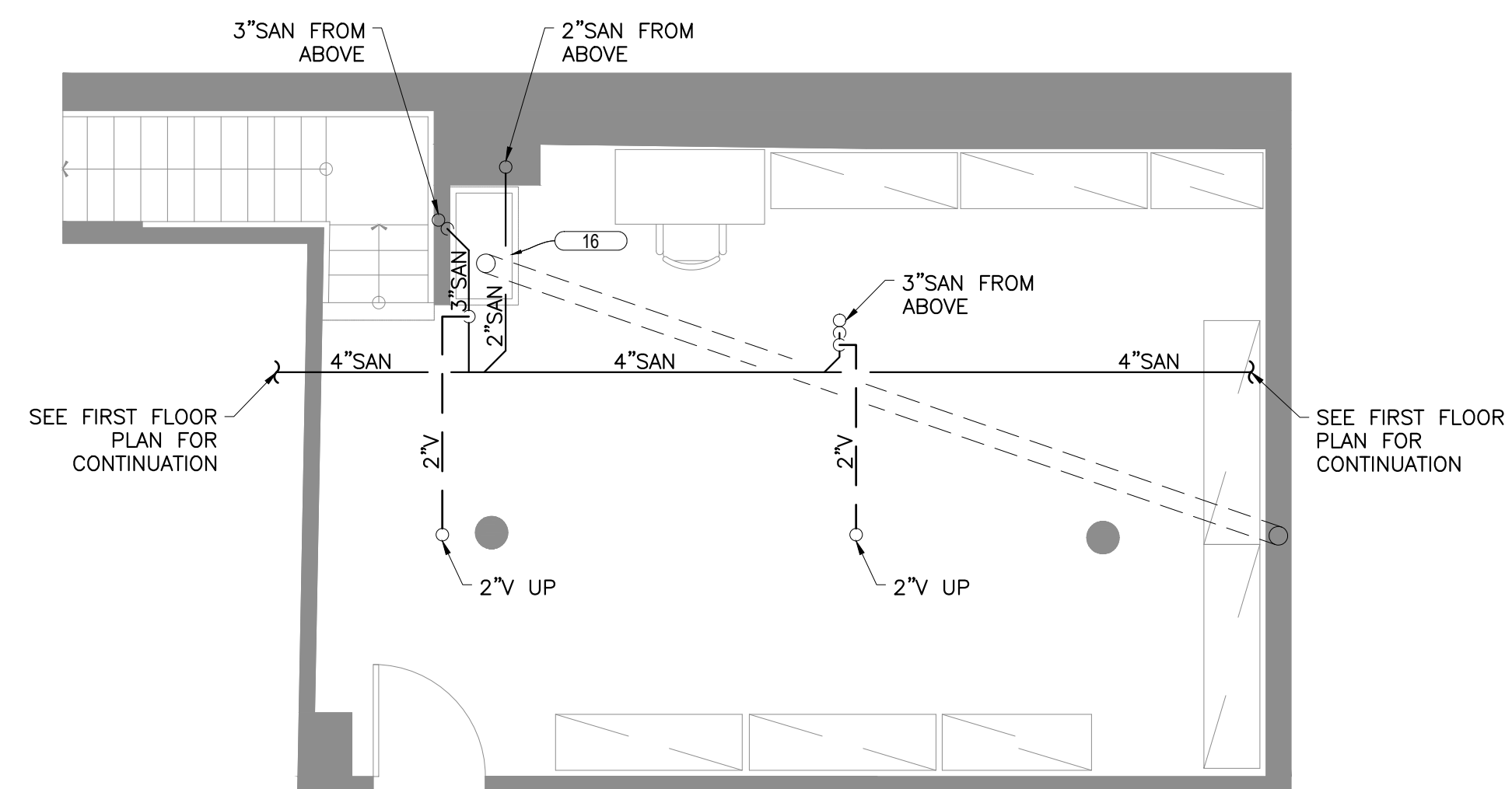
PLUMBING KEYNOTES

1. CONNECT NEW 1" WATER TO EXISTING CW LINE WITH EXISTING BACKFLOW PREVENTER AND WATER SUB-METER IN THE CELLAR. CONTRACTOR TO FIELD VERIFY THE EXACT LOCATION, SIZE AND PRESSURE OF EXISTING CW LINE.
2. PROVIDE 1/2" CW LINE WITH SHUT OFF VALVE AT 81" A.F.F. THRU WALL TO BE CARBONATOR (MOUNTED ABOVE BAG-N-BOX). CONNECTIONS TO CARBONATOR TO BE PROVIDED BY BEVERAGE COMPANY.
3. WATER FILTER TO BE MOUNTED ON WALL. PROVIDE SHUT OFF VALVE AT EACH SIDE OF FILTER. RECESS ALL SUPPLY LINES. REFER TO DETAIL SHEET FOR MORE INFORMATION.
4. COCA-COLA TO PROVIDE 3/8" SHUTOFF TEE ON NON-CARBONATED WATER LINE WITHIN SODA CABINET.
5. CONNECT NEW 1/2" CW/HW/HWR PIPING TO THE EXISTING CW/HW/HWR PIPING IN THE CEILING. CONTRACTOR TO FIELD VERIFY THE CONDITION OF EXISTING PIPING AND REPLACE/UPGRADE IF REQUIRED.
6. CONNECT NEW 1/2" CW PIPING TO THE EXISTING CW PIPING IN THE CEILING. CONTRACTOR TO FIELD VERIFY THE CONDITION OF EXISTING PIPING AND REPLACE/UPGRADE IF REQUIRED.
7. EXISTING PLUMBING FIXTURES TO BE REPLACED IN KIND WITH NEW FIXTURE. RECONNECT THE EXISTING CW/HW/HWR PIPING TO NEW PIPING. CONTRACTOR TO FIELD VERIFY THE CONDITION OF EXISTING PIPING AND UPGRADE IF REQUIRED.

Property of NY Enginee



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



2 PLUMBING SANITARY PLAN - CELLAR
1/4"=1'-0"

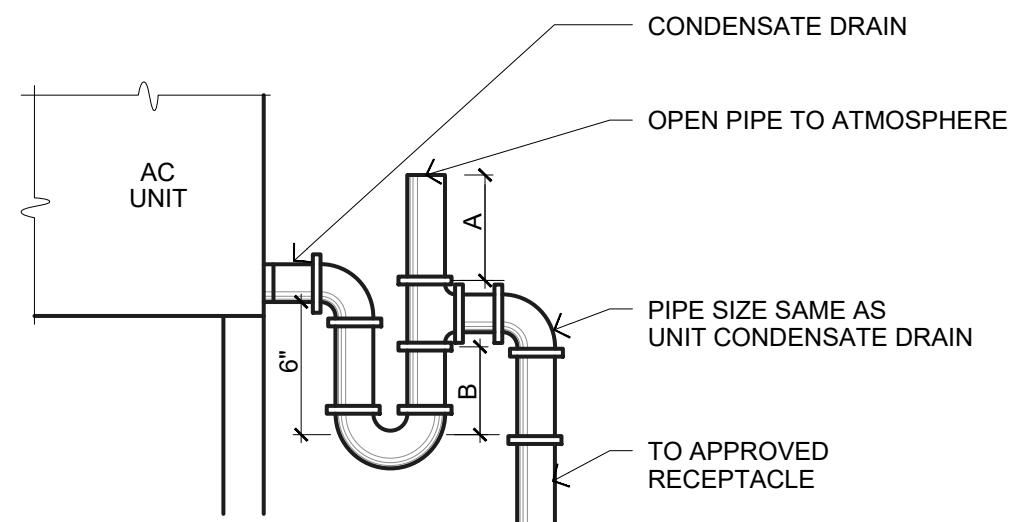
GENERAL NOTES

1. ALL FLOOR SINKS, FLOOR DRAINS, FLOOR CLEANOUTS, AND GREASE TRAP SHALL BE INSTALLED SO THAT TOPS ARE FLUSH WITH FINISH FLOOR.
2. CONTRACTOR TO COORDINATE / VERIFY EXACT LOCATIONS FOR ALL FLOOR FIXTURES PRIOR TO SAW-CUTTING.
3. COORDINATE WATER LINES WITH ELECTRICAL CONTRACTOR PIPING SHALL NOT BE ROUTED OVER ELECTRICAL PANEL OR EQUIPMENT.
4. WALL HUNG TOILETS (IF USED) REQUIRE A MIN. OF A 1 1/2" MAIN WATER SERVICE.
5. GC TO CONFIRM FLOOR DRAIN AND STAINLESS STEEL CHASE INSIDE SODA CABINET ARE UNDER COKE MACHINE.
6. IF A FLOW CONTROL DEVICE IS REQUIRED AT GREASE TRAP, IT MUST BE INSTALLED UNDERGROUND WITH AN 8" SQUARE SHAPED CLEANOUT COVER OVER TOP SET FLUSH WITH THE FINISHED FLOOR.
7. CONTRACTORS TO INSTALL ALL AND ANY PIPING AND OR COMPONENTS AS TIGHT TO UNDERSIDE OF STRUCTURE AS POSSIBLE.
8. ALL SLAB PENETRATIONS OVER 5" WILL REQUIRE STRUCTURAL ENGINEER'S APPROVAL.
9. FLOOR DRAINS AND FLOOR SINKS SHALL BE PROVIDED WITH FLASHING COLLAR TO RECEIVE WATERPROOFING SYSTEM.

PLUMBING KEYNOTES

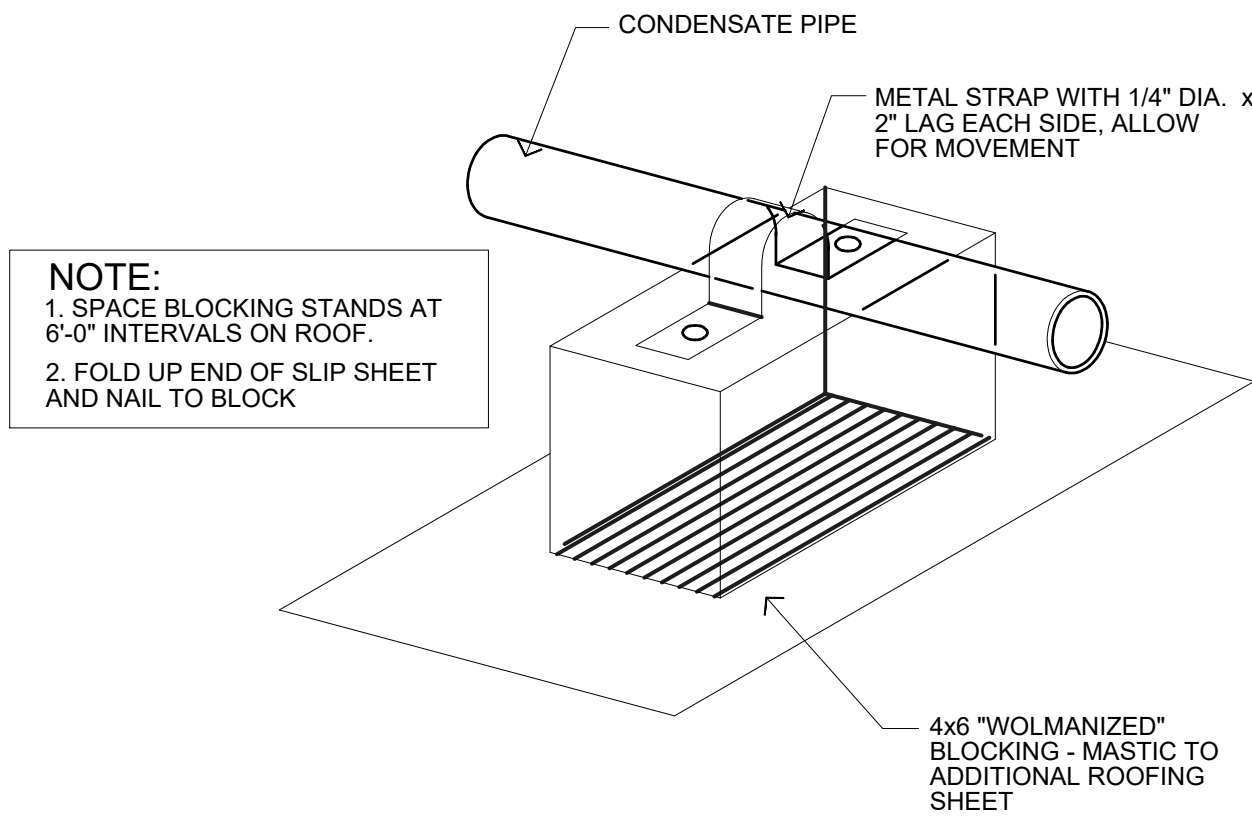
- ① CONTRACTOR TO ROUTE NEW 4" SANITARY AND CONNECT TO EXISTING SANITARY PIPING IN SPACE. CONTRACTOR TO FIELD VERIFY EXACT TIE-IN LOCATION, SIZE, SLOPE, AND INVERT PRIOR TO COMMENCING WORK.
- ② NEW 3" VENT PIPE CONNECT TO EXISTING VENT PIPE. CONTRACTOR TO FIELD VERIFY EXACT SIZE AND LOCATION.
- ③ ROUTE INDIRECT WASTE FROM 3 COMPARTMENT SINK TO HUB DRAIN WITH APPROVED AIR GAP..
- ④ PROVIDE 2" INDIRECT WASTE FROM BEVERAGE UNIT TO FLOOR SINK WITH APPROVED AIR GAP.
- ⑤ PROVIDE 2" INDIRECT WASTE FROM ICE MAKER TO FLOOR SINK WITH APPROVED AIR GAP.
- ⑥ PROVIDE GREASE TRAP AS SHOWN ON PLAN. SCHEDULE FOR DETAILS. CONTRACTOR TO INSTALL AS PER MANUFACTURER INSTRUCTIONS.
- ⑦ CONTRACTOR TO PROVIDE AND ROUTE NEW 6" STAINLESS STEEL PIPE THROUGH SLAB FOR SODA DISPENSER LINES FROM BAG-N-BOX. VERIFY EXACT ROUTING IN FIELD FOR SODA LINES TO DESIGNATION LOCATION WITH SODA CABINET AND BAG-N-BOX. COORDINATE ROUTING WITH SODA VENDOR AND BELOW SLAB PIPING. REFER TO DETAIL SHEET FOR MORE INFORMATION.
- ⑧ EXISTING PLUMBING FIXTURES TO BE REPLACED IN KIND WITH NEW. RECONNECT THE EXISTING SANITARY AND VENT PIPING TO NEW PIPING. CONTRACTOR TO FIELD VERIFY THE CONDITION OF EXISTING PIPING AND UPGRADE IF REQUIRED.
- ⑨ PROVIDE 2" INDIRECT WASTE FROM PREP SINK TO FLOOR SINK WITH APPROVED AIR GAP.

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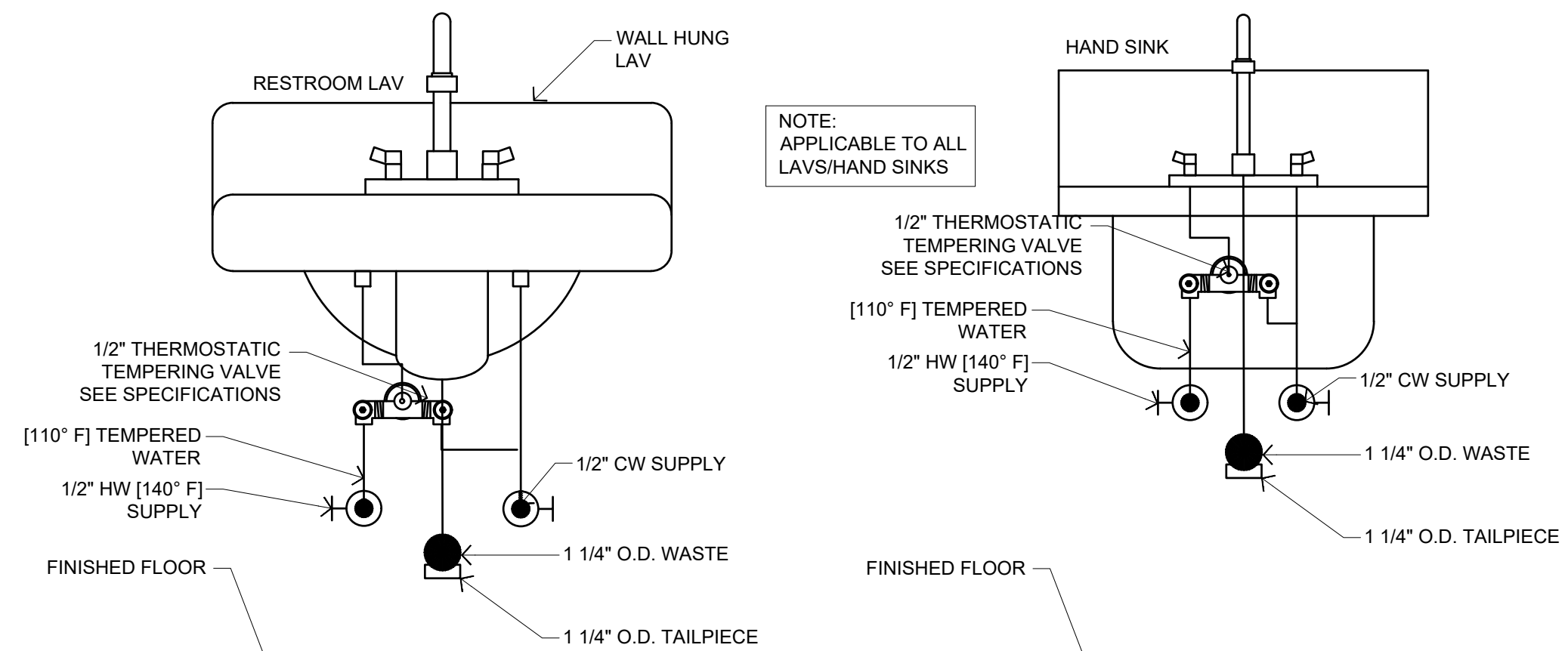
A. STATIC PRESSURE IN PAN (INCHES)
 B. 0.5 X STATIC PRESSURE IN PAN (INCHES).
 NOTE: ALL PIPES FULL SIZE OF UNIT OUTLET

1A TYPICAL VENT CONDENSATE PIPING
 N.T.S.



NOTE:
 1. SPACE BLOCKING STANDS AT 6'-0" INTERVALS ON ROOF.
 2. FOLD UP END OF SLIP SHEET AND NAIL TO BLOCK.

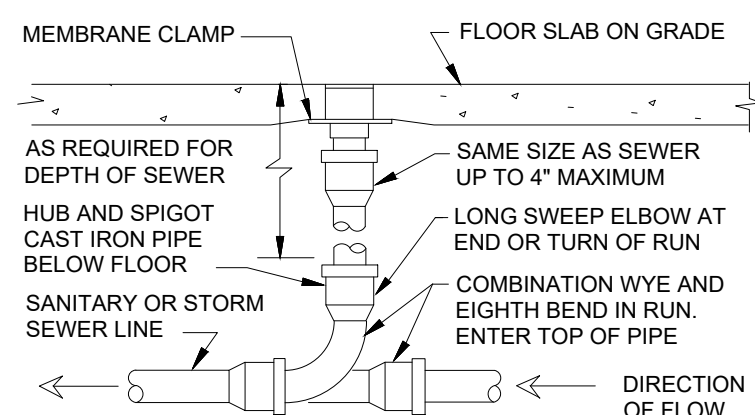
1B CONDENSATE SUPPORT SIMILAR
 N.T.S.



NOTE: WATER SUPPLY AND DRAINPIES UNDER LAVATORIES AND SINKS SHALL BE INSULATED OR OTHER WISE CONFIGURED TO PROTECT AGAINST CONTACT.

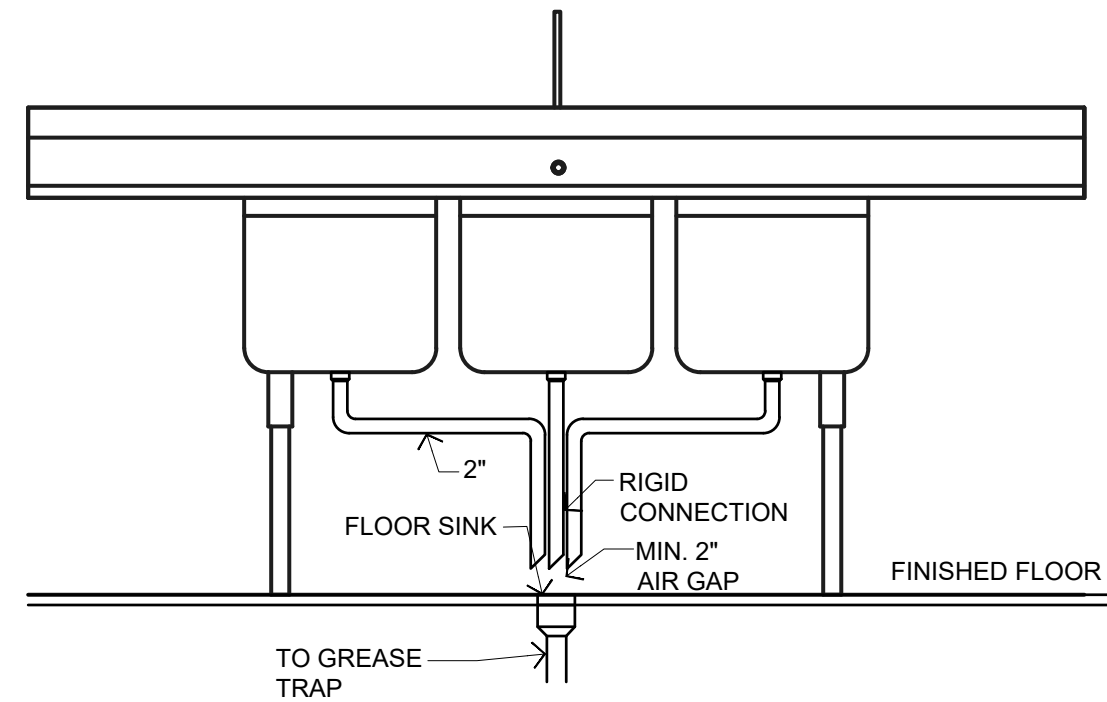
1C LOCAL MIXING VALVE DETAIL
 N.T.S.

PROVIDE ROUND SECURED NICKEL BRONZE ADJUSTABLE TOP WITH "CO" CAST IN COVER. PROVIDE CLEANOUT TOP WITH VARIATIONS SUITABLE FOR FLOOR COVERING (CARPET MARKER, RECESSED FOR TILE, SCORED FOR UNFINISHED FLOORS). PROVIDE BRONZE PLUG IN CAST IRON BODY.

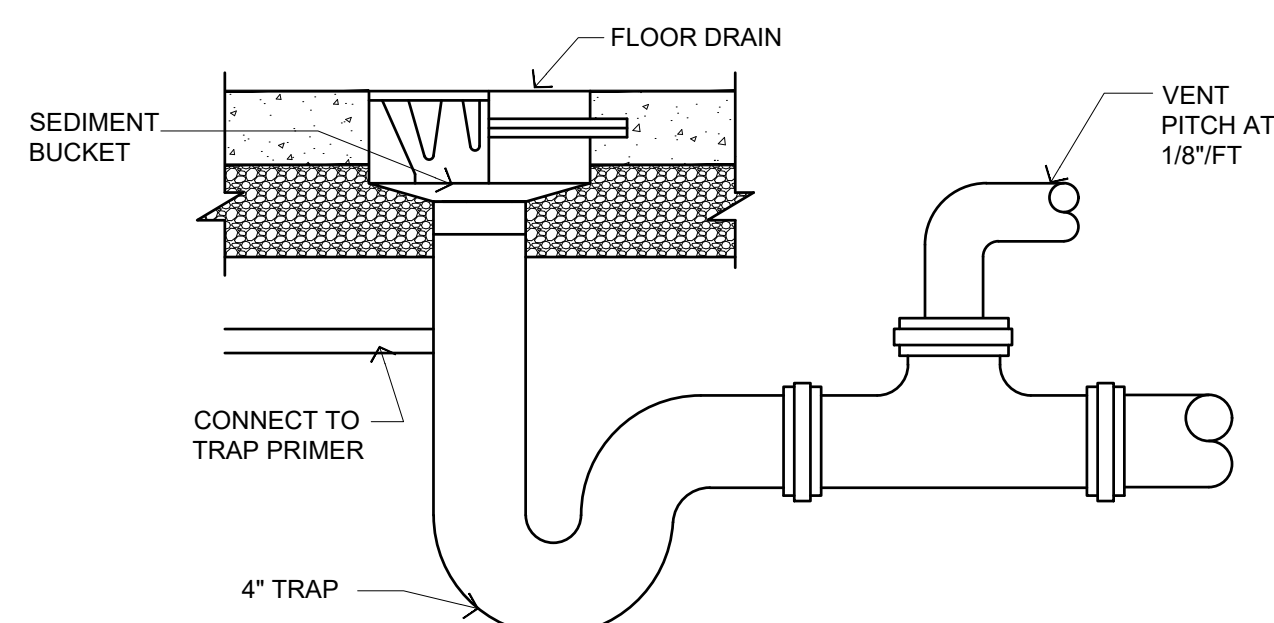


LOCATE AT BUILDING EXIT, AT ENDS OF RUNS, AT TURNS OF PIPE GREATER THAN 45 DEGREES, AT 50' INTERVALS ON STRAIGHT RUNS, AND WHERE SHOWN ON PLANS. PROVIDE BACKFILL PER ARCHITECTURAL SPECIFICATIONS. LOCATE CLEANOUTS WHERE THERE IS 18" CLEAR AROUND. CONSULT LOCAL CODES FOR OTHER FCO REQUIREMENTS.

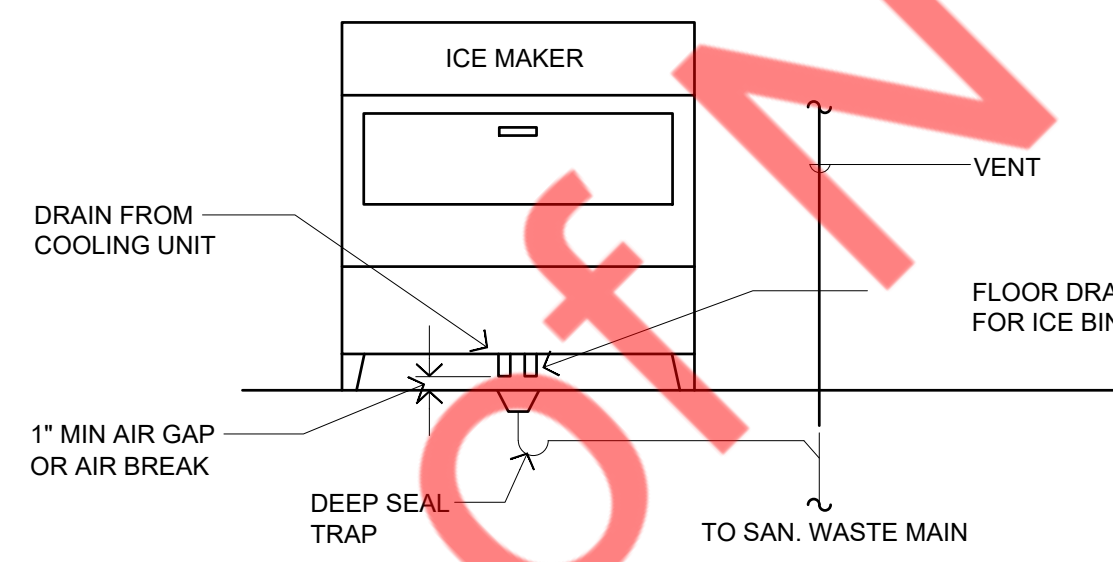
1D FLOOR CLEANOUT DETAIL
 N.T.S.



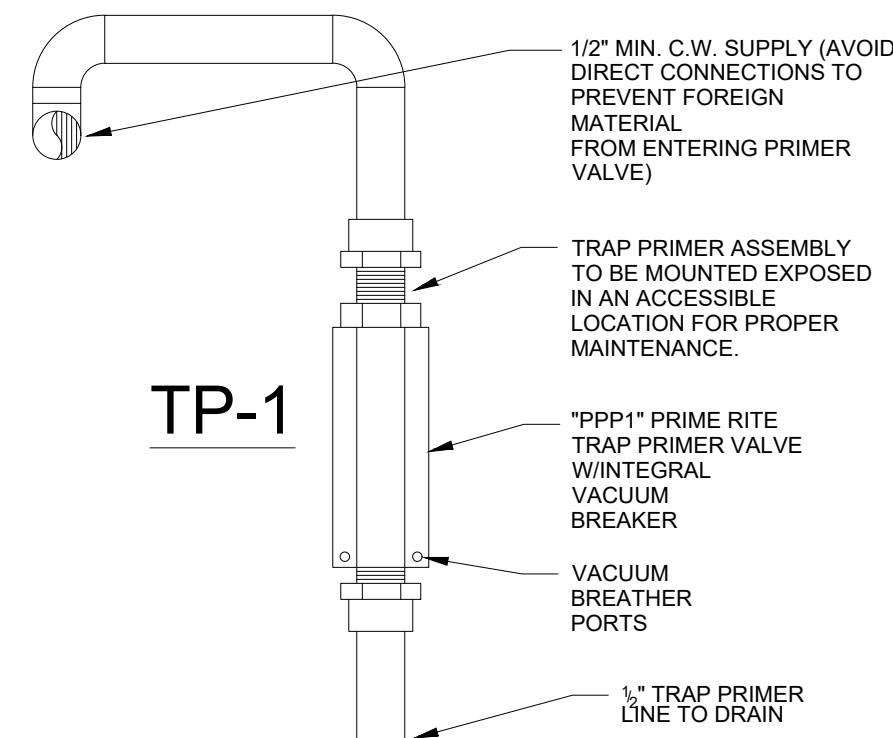
2A COMPARTMENT SINK DETAIL
 N.T.S.



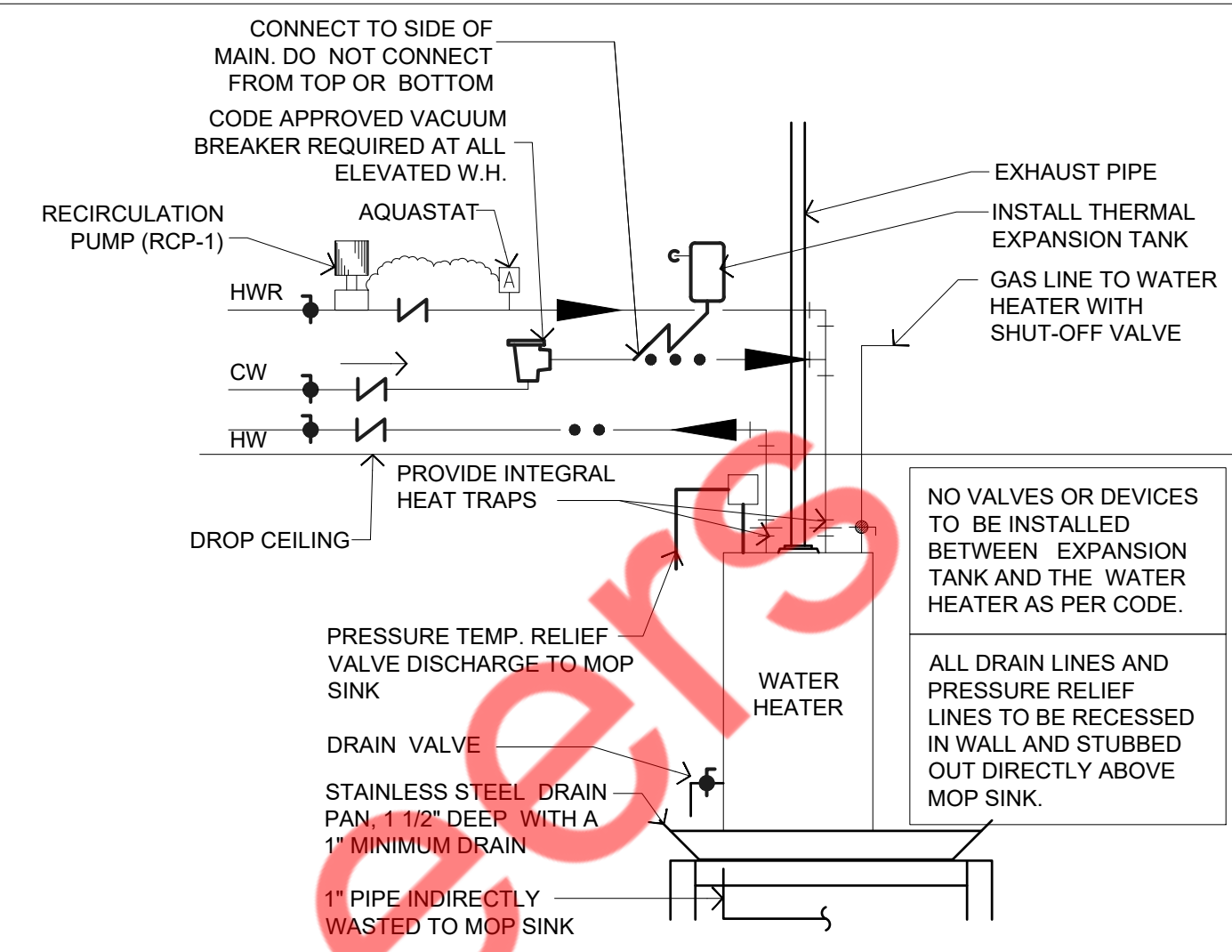
2B FLOOR DRAIN DETAIL
 N.T.S.



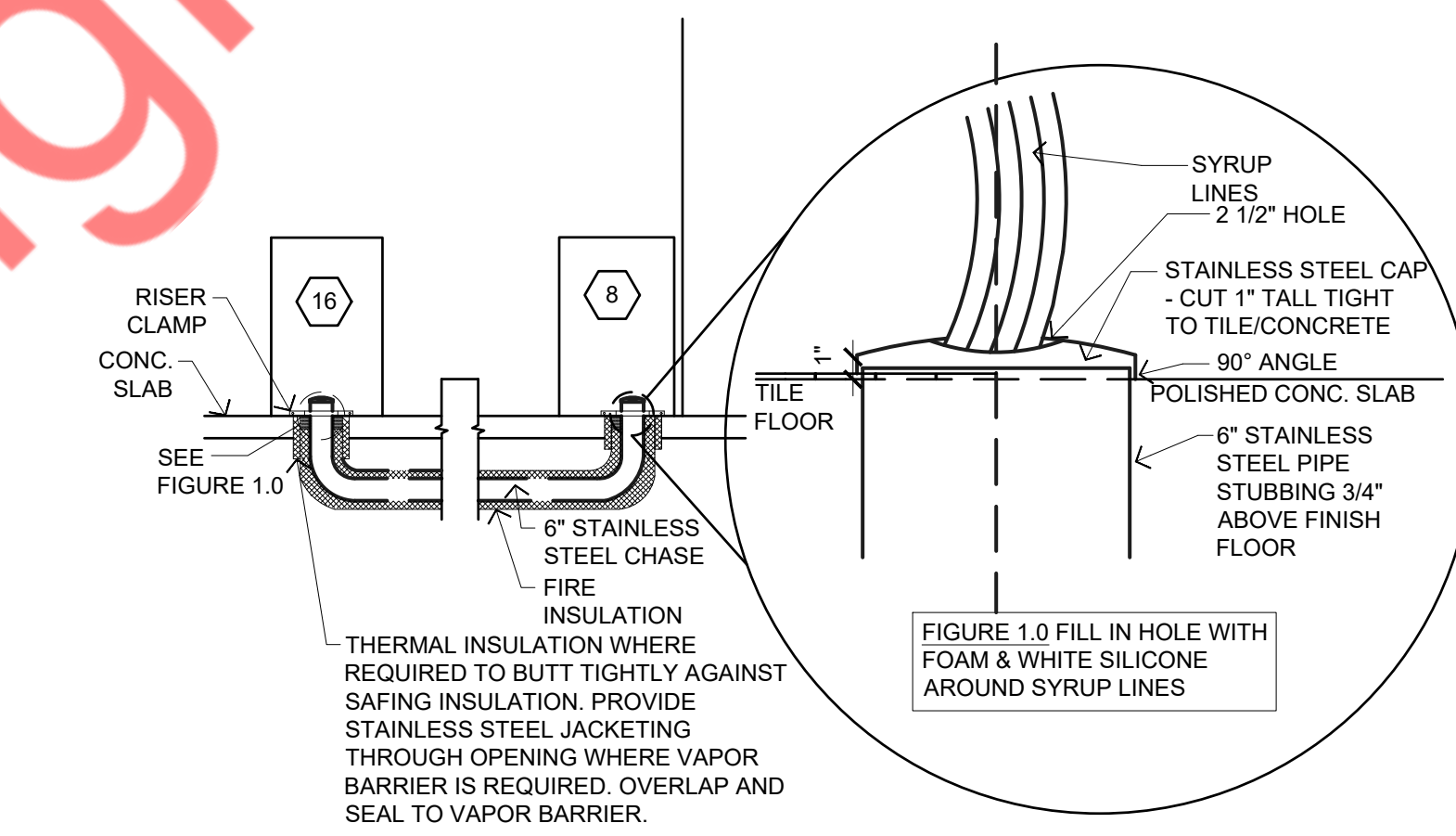
2C ICE MAKER DRAINAGE PIPING DETAIL
 N.T.S.



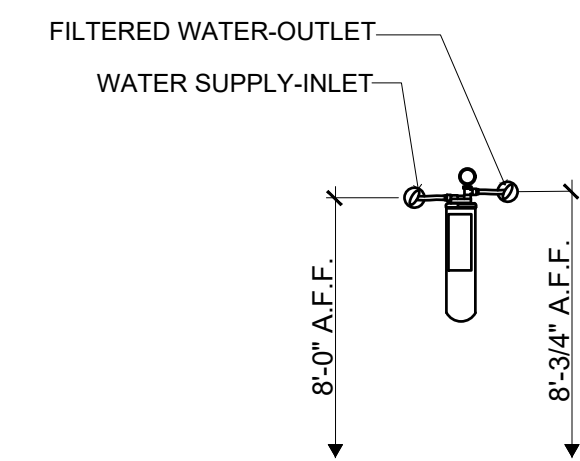
2D TRAP PRIMER DETAIL
 N.T.S.



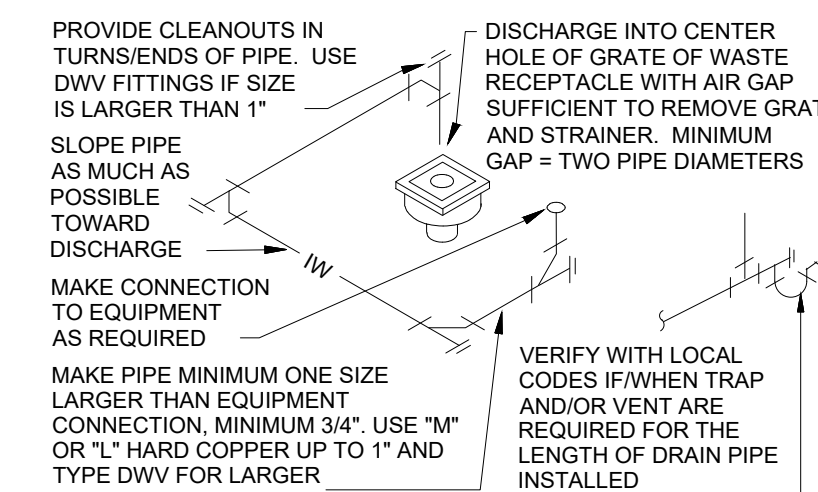
3A WATER HEATER DETAIL
 N.T.S.



3B SODA CHOSE TERMINATION DETAIL
 N.T.S.



3C WATER FILTER DETAIL
 N.T.S.



3D INDIRECT DRAIN DETAIL
 N.T.S.

ZURN Z1170 GREASE INTERCEPTOR SPECIFICATION SHEET TAG

Dimensional Data (inches and mm) are Subject to Manufacturing Tolerances and Change Without Notice

Size	Inlet/Outlet Size*	Capacity		Approx. Wt. Lbs. (kg)	Dimensions in Inches							
		Water Gal. (L)	Grease Lbs. (kg)		C	D/E	F	G				
100	2-1/2"	4(15)	3(1)	8(4)	4(21)	1(25)	7	4(18)	20	3(8)	18	7(28)
200	3"	12(45)	9(4)	2(24)	11	4(28)	9	1(26)	21	3(45)	17	7(28)
300	3-1/2"	19(70)	13(5)	3(12)	16	4(38)	11	3(42)	25	4(18)	22	8(32)
400	4"	26(97)	18(7)	4(15)	21	4(42)	13	3(48)	27	4(18)	24	9(36)
500	4-1/2"	34(126)	24(9)	5(18)	26	4(48)	15	3(54)	30	4(24)	26	10(40)
600	5"	42(153)	29(11)	6(21)	31	4(54)	17	3(60)	32	4(30)	28	11(44)
700	5-1/2"	50(182)	34(12)	7(25)	36	4(60)	19	3(66)	34	4(36)	30	12(48)
800	6"	58(210)	40(15)	8(28)	41	4(66)	21	3(72)	36	4(42)	32	13(52)

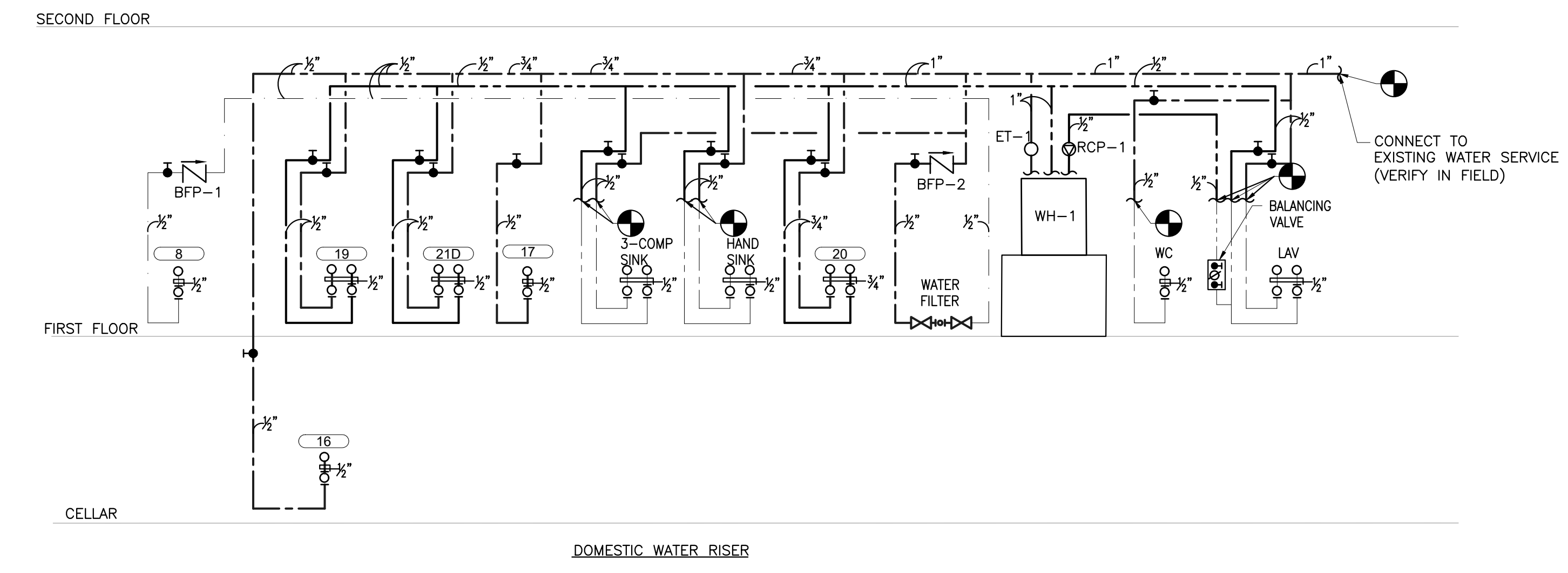
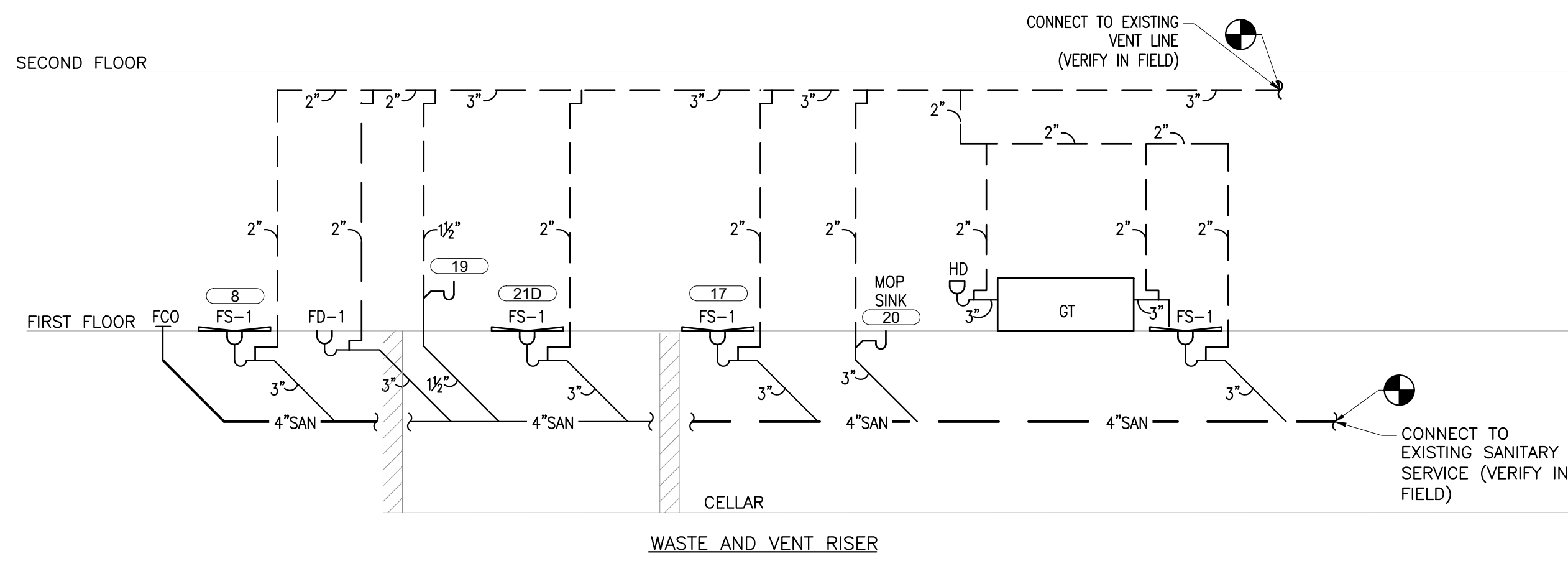
INLET G = WIDTH OF BODY OUTLET

OPERATING SPECIFICATION: ZURN Z1170 Acid Resistant Coated Interior and exterior fabricated steel grease interceptor. PFC rated at GPM and Lbs. grease capacity, with internal air relief system, bronze cleanout plug, removable pressure equalizing air/lifting and baffles, fixed bottom outlet baffle, and rubber double wall trap seal. Casted non-skid secured cover complies with codes for down assembly with 2 1/2" flow control fitting. Regularly furnished with a high inlet and outlet connection. Note: Location of outlet from bottom of interceptor cannot be changed.

PREFIXES:
 -Z Acid Resistant Coated Fabricated Steel*
 -E5M Type 304 Fabricated Stainless Steel

SUFFIXES:
 -A Aluminum Cover
 -D Dual High/Low Level
 -H Acid Resistant Coated Interior and exterior fabricated steel extension section. (Specify "C" Dim. required for recessed installation.)
 -HD Heavy Duty Cover rated at 10,000 lbs. maximum safe live load. A 3 [76] minimum extension height is required when Heavy Duty Cover is specified.
 -K Anchor Flange 1 3/4 [44] down from top and 2 [51] wide. A 3 [76] minimum extension height is required when anchor flange is specified.
 -KCA Anchor Flange 1 3/4 [44] down from top and 2 [51] wide with clamp collar. A 3 [76] minimum extension height is required when anchor flange is specified.
 -L Angle type (21103-L) flow control device with plunger.
 -R Acid resistant coated interior and exterior fabricated steel necessary receiver for recessed installation is equipped with adjustable support brackets and gasketed non-skid cover with covered recessed lift handle.
 -RE Acid resistant coated interior and exterior fabricated steel necessary receiver enclosed type for recessed installation. Furnished with adjustable support brackets and gasketed non-skid cover with covered recessed lift handle.
 -T Cover recessed for Interceptor. A 3 [76] minimum extension height is required. (Specify recess depth - 1/8 [3], 3/4 [19], or 1 1/4 [32].)

2E GREASE TRAP DETAIL
 N.T.S.



PLUMBING FIXTURE SCHEDULE

NOTE: THERE WILL BE ABSOLUTELY NO SUBSTITUTIONS ALLOWED FOR ANY PLUMBING PRODUCTS AS SPECIFIED. THIS INCLUDES ALL ZURN PRODUCTS.

MARK	ITEM	MANUFACTURER - MODEL NO	CONNECTIONS				TEMP	REMARKS
			CW	HW	SAN	VENT		
16	BAG-N-BOX	BIB FLEX	1/2"	-	-	-	-	
17	ICE-MAKER	HOSHIZAKI - F-1002MWJ-C	1/2"	-	-	-	-	AIR COOLED ICE MAKER. PROVIDE W/ HOSHIZAKI B-300PF BIN.
19	HAND SINK FAUCET	UNIVERSAL STAINLESS - EHS-1 UNIVERSAL STAINLESS - CHF-04	-	-	1-1/2"	1-1/2"	110'	SEE NOTE 2 FOR THERMOSTATIC MIXING VALVES REQUIREMENTS. GOOSENECK FAUCET.
20	MOP BASIN FAUCET	ZURN - Z1996-24 ZURN - Z1996-SF	-	-	3"	2"	140'	WALL-MOUNT WITH 1/2" IPS FLANGED FEMALE INLET, VACUUM BREAKER SPOUT, PAIL HOOK, 3/4" HOSE THREAD, LEVER HANDLES AND ROUGH CHROME FINISH. PROVIDE HOSE BIB VACUUM BREAKER FOR SPRAYER. FAUCET MUST BE INSTALLED AT 3'-0" AFF AND CENTERED ON MOP SINK.
FCO	FLOOR CLEANOUT ROUND	ZURN-Z1400 OR SIMILAR	-	-	-	-	-	DURA COATED CAST IRON BODY, TOP TO BE INSTALLED FLUSH WITH FINISHED FLOOR. FIELD VERIFY CORRECT CONNECTION (3" OR 4") AND ORDER APPROPRIATE MODEL.
FD	FLOOR DRAIN ROUND	ZURN-Z415N OR SIMILAR	-	-	3"	2"	-	FLOOR DRAIN IS TO BE FLUSH WITH FINISH FLOOR. COLLAR TO BE USED AS A FLASHING.
FS	FLOOR SINK	ZURN-Z1900 OR SIMILAR	-	-	3"	2"	-	12"x12" FLOOR SINK DEEP CAST IRON BODY, 3" OUTLET, LIGHT DUTY GRATE WITH 1/2" SLOTTED OPENING, INTERIOR BOTTOM DOME STRAINER. - TOP OF FLOOR SINK IS TO BE ABOVE FINISH FLOOR.
GT	GREASE TRAP	ZURN Z1170-700 OR SIMILAR	-	-	3"	2"	-	35 G.P.M. FLOW RATE, 70 LBS CAPACITY, ACID RESISTANT COATED INTERIOR AND EXTERIOR FABRICATED STEEL GREASE INTERCEPTOR, WITH INTERNAL AIR RELIEF BY-PASS, BRONZE CLEANOUT PLUG.
LAV	HANDICAP WALL HUNG LAVATORY	ZURN - Z5354 OR EQUAL	1/2"	1/2"	E	E	110'	FURNISH W/ZURN Z812B1 FAUCET WITH VANDAL RESISTANT AERATOR AND GRID DRAIN. PROVIDE TRU-BRO LAV GUARD. SEE NOTE 2 FOR THERMOSTATIC MIXING VALVES REQUIREMENTS.
WC	HANDICAP FLOOR MOUNT WATER CLOSET	ZURN - Z5560	1/2"	-	E	E	-	FURNISH WITH ZURN OPEN FRONT SEAT Z5955SS STOP VALVE. 1/2" WATER LINE AT 12" A.F.F.
TP	TRAP PRIMER	PPP - P1-500 W/ADAPTER OR EQUAL	1/2"	-	-	-	-	INTEGRAL BFP AND VACUUM BREAKER MOUNT ABOVE CEILING
WCO	WALL CLEANOUT	SIoux CHIEF - 8706/ 870-B/ 874-4C	-	-	-	-	-	SMOOTH, STAINLESS STEEL ACCESS COVER

- NOTES**
- ALL PLUMBING FIXTURES TO BE FULLY ACCESSIBLE TO INDIVIDUALS WITH DISABILITIES ACT OF 1990. FIXTURES AND THEIR INSTALLATION SHALL ALSO COMPLY WITH AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI) PUBLICATION A117.1 - PROVIDING ACCESSIBILITY AND USABILITY FOR PHYSICALLY HANDICAPPED PEOPLE AND/OR GOVERNING CODES. - ALL PLUMBING FIXTURES EQUIPMENT, TRIM, & FITTINGS SHALL COMPLY WITH CITY REQUIREMENTS, AND FEDERAL REGULATIONS AND CODES, INCLUDING, BUT NOT LIMITED TO, WATER AND ENERGY CONSERVATION CODES. THE SCHEDULED AND/OR SPECIFIED PLUMBING FIXTURES AND EQUIPMENT REPRESENT THE MINIMUM CRITERIA AND SHALL BE THE BASIS FOR THE CONTRACTOR'S BASE BID. IF THE SCHEDULED OR SPECIFIED FIXTURES OR EQUIPMENT DO NOT COMPLY WITH GOVERNING CODES OR REGULATIONS IN ALL RESPECTS, THE CONTRACTOR SHALL PROVIDE AN ALTERNATE BID FOR COMPLYING FIXTURES, EQUIPMENT, TRIM, OR FITTINGS. THE ABSENCE OF AN ALTERNATE BID SHALL BE CONSTRUED TO MEAN THAT THE CONTRACTOR'S BID INCLUDES ALL COSTS NECESSARY TO MEET ALL REGULATIONS & CODES.
 - PROVIDE THERMOSTATIC MIXING VALVE AT ALL LAVATORIES AND HAND SINKS. PROVIDE ZURN TMV-1, 1 TO 15 GPM, NOT TO EXCEED 3 PSI, W/ UNION STOP CHECK INLETS, AND REMOVABLE STAINLESS STEEL STRAINERS, DIAL THERMOMETER AND DISCHARGE VALVE. SUPPLIES 110°F.
 - ALL ROOF PENETRATIONS SHALL BE APPROVED BY LANDLORD AND DONE IN ACCORDANCE WITH ROOF MANUFACTURERS RECOMMENDATIONS SO AS NOT TO VOID THE WARRANTY.
 - REFER TO JJ'S BLOCKING CHECKLIST IN BUILD-OUT MANUAL FOR ADDITIONAL MEASUREMENTS AND DETAILS

ELECTRIC WATER HEATER SCHEDULE

MARK	MANUFACTURER AND MODEL NO.	RECOVERY G.P.H.	TEMP. RISE F	NO. OF ELEMENTS F	INPUT RATING			TANK DIA.	TANK HEIGHT	REMARKS
					V/PH	KWATT	AMPS			
WH-1	AO SMITH DRE-52	62 GPH	90	2	208/3PH	13.5	-	21.7"	55.7"	-PROVIDE EXPANSION TANK(ET-1)-AMTROL-5 OR EQUIVALENT. -PROVIDE CIRCULATION PUMP(RCP-1)-UP 15-18BUC5 OR EQUIVALENT -PROVIDE DRIP PAN AND ALL ACCESSORIES REQUIRED FOR SATISFACTORILY WORKING.

RECIRCULATING PUMP SCHEDULE

MARK	SERVICE	GPM	TOTAL HEAD FT.	MOTOR HP	MANUFACTURER & REMARKS
RCP-1	HW RECIRCULATION	2	10	0.115	GRUNDFOS UP 15-18 BUC5 W/AQUASTAT + TIMER

GREASE INTERCEPTOR CALCULATIONS PER DEP TITLE 15 RCNY 19-11 (GI-1)

TABLE 1

3 COMPARTMENT UTILITY SINK
DESCRIPTION: #3-COMP. SINK

SIZE PER COMP. = 18"L x 22"W x 14"H = 5,544 CU.IN.
SIZE PER SINK = 5,544 CU.IN. x 3 = 16,632 CU.IN.

TOTAL VOLUME FOR #1 SINK:
16,632 X 1 = 16,632 CU.IN.

TOTAL VOLUME = 16,632 CU.IN.
TOTAL FLOW = 35 GPM
TOTAL (LB) = 70 LBS

PROPOSED GREASE INTERCEPTOR: ENDURA 35