

MECHANICAL SYMBOLS LIST	
	EQUIPMENT SYMBOL
	RISER 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

MECHANICAL ABBREVIATIONS	
AF	ABOVE FINISHED FLOOR
AL	ACOUSTIC LINING
BD	BACKDRAFT DAMPER
CFM	CUBIC FEET OF AIR PER MINUTE
CD	CONDENSATE DRAIN PIPE
DN	DOWN
EER	ENERGY EFFICIENCY RATIO
FC	FLEXIBLE CONNECTION
FD/AD	FIRE DAMPER W/ACCESS DOOR
FD	FIRE DAMPER W/FUSIBLE LINK
IEER	INTEGRATED ENERGY EFFICIENCY RATIO
SEER	SEASONAL ENERGY EFFICIENCY RATIO
EF	EXHAUST FAN
VD	VOLUME DAMPER
CDS	CEILING DIFFUSER SUPPLY
CDR	CEILING DIFFUSER RETURN
BOD	BOTTOM OF DUCT
CDE	CEILING DIFFUSER EXHAUST
EX	EXHAUST AIR
ACCU	AIR COOLED CONDENSING COIL UNIT
AC	AIR CONDITIONING UNIT
KEF	KITCHEN EXHAUST FAN
SA	SUPPLY AIR
RA	RETURN AIR
MUA	MAKE UP AIR UNIT

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.

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 2022 NYCMC 108.3 AND THE FOLLOWING SECTIONS OF THE 2022 NEW YORK CITY MECHANICAL CODE:
 - VENTILATION SYSTEM BALANCING 2022 NYCMC 403.3.1.6
 - NYC NOISE CONTROL CODE: 24-227
 - REFRIGERATION SYSTEMS - 2022 NYCMC 1108
 - THE FOLLOWING WORK ITEMS, COMPONENTS, MATERIALS, CAPACITIES, ETC. SHALL COMPLY WITH THE REFERENCED CODE OR STANDARD:
 - STANDARDS OF HEATING - 2022 NYCMC 309.1
 - NYC NOISE CONTROL CODE: 24-227
 - DUCT CONSTRUCTION AND INSTALLATION- 2022 NYCMC 603
 - AIR INTAKES, EXHAUSTS AND RELIEFS - 2022 NYCMC 401.5
 - AIR FILTERS - 2022 NYCMC 605
 - SMOKE DETECTORS AND FIRE AND SMOKE DAMPERS - 2022 NYCMC 606 & 607 RESPECTIVELY
 - GREASE DUCT TEST- 2022 NYCMC 506.3.2.5
 - MINIMUM TEMPERATURE TO BE MAINTAINED IN OCCUPIED SPACES DURING HEATING SEASON: 68 DEG. FAHRENHEIT.
 - VENTILATION FOR ALL AREA SHALL COMPLY WITH 2022 NYCMC 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 2022 NYCMC 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 555S.
 - 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 2022 NYCBC 110.6.
 - 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 INEXISTING 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 2020 NYCECC C408.2.2

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 INSTANTLY DO EXCESSIVE AND THE ADDITIONAL COST TO BE CHARGED THEREFOR SHALL BE ONLY THE "PREMIUM" PORTION OF THE WAGES PAID.
- CONTRACTOR SHALL ASCERTAIN THE APPROPRIATE METHOD FOR BRINGING THE UNITS INTO AND THROUGH THE BUILDING TO POSITION UNIT IN LOCATION SHOWN ON THE PLANS. WHERE NECESSARY, EQUIPMENT SHALL BE SHIPPED FROM MANUFACTURER IN SECTIONS OF SIZE SUITABLE FOR MOVING THROUGH RESTRICTIVE SPACES. COORDINATE WITH BUILDING OWNER APPROPRIATE TIMES OF DAY SUCH EQUIPMENT MAY BE MOVED THROUGH ALL AREAS.
- DUCTWORK AND PIPING IS SHOWN DIAGRAMMATICALLY AND DOES NOT SHOW ALL OBSTRUCTIONS, RISERS OF RISERS. THE CONTRACTOR SHALL MAKE ALLOWANCE IN PRICING FOR ROUTING OF DUCTWORK AND PIPING TO AVOID OBSTRUCTIONS. EXACT LOCATIONS ARE SUBJECT TO APPROVAL OF ARCHITECT. COORDINATION WITH THE OTHER TRADES IS REQUIRED.
- SUPPORT ALL DUCTWORK AND PIPING FROM BUILDING STRUCTURE AND/OR FRAMING IN AN APPROVED MANNER. WHERE OVERHEAD CONSTRUCTION DOES NOT PERMIT FASTENING OR SUPPORTS FOR EQUIPMENT, FURNISH ADDITIONAL FRAMING. INSERTS SHALL BE STEEL, SLOTTED TYPE AND FACTORY PAINTED. SINGLE ROD SHALL BE SIMILAR TO GRINNELL FIG. 281. MULTI-ROD SHALL BE SIMILAR TO FEE & MASON SERIES 9000 WITH END CAPS AND CLOSURE STRIPS. MAXIMUM LOADING INCLUDING PIPES, DUCTWORK, CONTENTS AND COVERING SHALL NOT EXCEED 75% OF RATED INSERT CAPABILITY. WHEN SUPPORTING FROM BUILDING USE BEAM CLAMPS IN APPROVED MANNER.
- PROVIDE ALL NECESSARY FLASHING AND COUNTER FLASHING TO MAINTAIN THE WATERPROOFING INTEGRITY OF THIS BUILDING AS REQUIRED BY THE INSTALLATION OR REMOVAL OF PIPES, DUCTS, LOUVERS, CONDUIT, AND EQUIPMENT. PROVIDE EQUIPMENT CURBS AND DUNNAGE STEEL AS REQUIRED.
- SEAL OPENINGS AROUND DUCTS AND PIPING THROUGH PARTITIONS, WALLS AND FLOORS (NOT IN SHAFTS) WITH MINERAL WOOL OR OTHER NONCOMBUSTIBLE MATERIAL (FIBERGLASS INSULATION IS NOT ACCEPTABLE).
- WHERE PENETRATIONS THROUGH FIRE RATED WALLS ARE NOT FIRE PROOFED THIS CONTRACTOR SHALL BE RESPONSIBLE TO SEAL SAME TO MAINTAIN THE RATED INTEGRITY.
- INSTALL WORK SO AS TO BE READILY ACCESSIBLE FOR OPERATION, MAINTENANCE AND REPAIR. MINOR DEVIATIONS FROM DRAWINGS MAY BE MADE TO ACCOMPLISH THIS, BUT CHANGES WHICH INVOLVE EXTRA COST SHALL NOT BE MADE WITHOUT APPROVAL.
- ACCESS DOORS ARE REQUIRED FOR ALL BUILDING SERVICE VALVES THAT RUN THROUGH THE SPACE, AND ACCESS DOOR SHALL HAVE THE EQUAL RATED CAPACITY (1HR, 2HR, ETC.) AS WALL. COORDINATE ALL LOCATIONS OF ACCESS DOORS WITH THE ARCHITECT.
- REMOVABLE ACCESS TILE AND/OR ACCESS DOOR ARE REQUIRED IN HUNG CEILINGS, SHAFTS AND WALLS FOR ALL VOLUME AND FIRE DAMPERS, AUTOMATIC DAMPERS AND ALL OTHER MECHANICAL EQUIPMENT AND DEVICES. HVAC CONTRACTOR TO FURNISH ACCESS LOCATION REQUIREMENTS TO GENERAL CONTRACTOR. ACCESS TILE IDENTIFICATION: PROVIDE BUTTONS, TABS, AND MARKERS TO IDENTIFY LOCATION OF CONCEALED VALVES, DAMPERS AND EQUIPMENT.
- THE CONTRACTOR SHALL KEEP ALL EQUIPMENT AND MATERIALS, AND ALL PARTS OF THE BUILDING, EXTERIOR SPACES AND ADJACENT STREETS, SIDEWALKS AND PAVEMENTS, FREE FROM MATERIAL AND DEBRIS RESULTING FROM THE EXECUTION OF THIS WORK. EXCESS MATERIALS WILL NOT BE PERMITTED TO ACCUMULATE EITHER ON THE INTERIOR OR THE EXTERIOR.
- MATERIALS AND WORKMANSHIP, UNLESS OTHERWISE NOTED, SHALL BE IN ACCORDANCE WITH BUILDING STANDARDS.
- ALL EQUIPMENT SHALL BE PROVIDED WITH ONE YEAR WARRANTY PARTS AND LABOR AND FIVE YEARS ON COMPRESSORS. WARRANTY PERIOD BEGINS UPON PROJECT ACCEPTANCE
- ALL MATERIAL AND EQUIPMENT TO BE NEW UNLESS OTHERWISE NOTED AND SHALL BE IN ACCORDANCE WITH BUILDING STANDARDS.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR HIS WORK WITH ITS COMPLETION AND FINAL ACCEPTANCE AND SHALL REPLACE ANY OF THE SAME WHICH MAY BE DAMAGED, LOST, OR STOLEN WITHOUT ADDITIONAL COST TO THE OWNER.

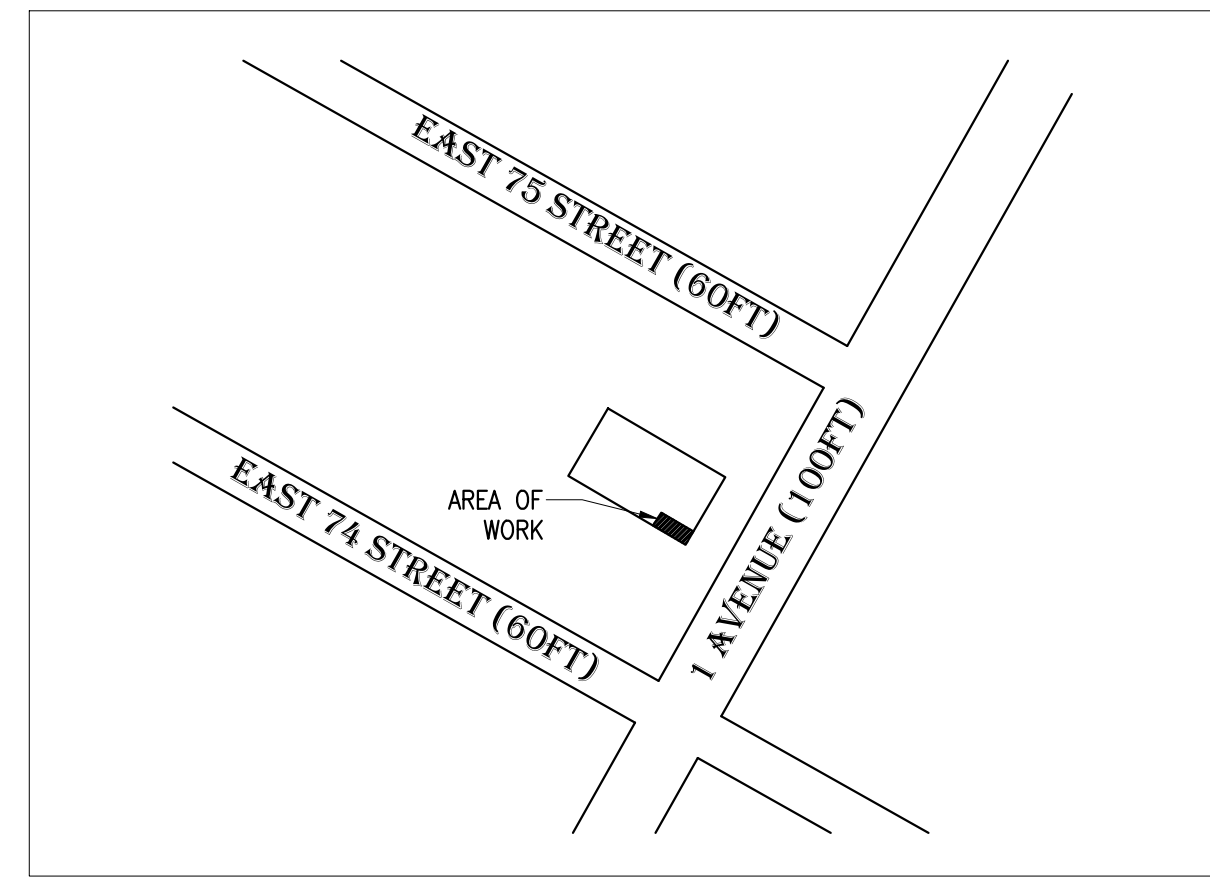
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE FAILURE OF ANY DUCTWORK SYSTEM OR EQUIPMENT TO FUNCTION PROPERLY UPON COMPLETION OF HIS WORK UPON SAID SYSTEM OR EQUIPMENT.
- SUBMIT SHOP DRAWING OF ALL WORK WHICH MUST BE APPROVED BY THE ARCHITECT AND ENGINEER BEFORE WORK COMMENCES.
- INSURANCE: IN ACCORDANCE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

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

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 THEREFOR. THE CONTRACTOR SHALL ARRANGE FOR INSPECTION AND TESTS OF ANY OR ALL PARTS OF THE WORK IF SO REQUIRED BY AUTHORITIES AND PAY ALL CHARGES FOR SAME. THE CONTRACTOR SHALL PAY ALL COSTS FOR, AND FURNISH TO THE OWNER BEFORE FINAL BILLING, ALL CERTIFICATES NECESSARY AS EVIDENCE THAT THE WORK INSTALLED CONFORMS WITH ALL REGULATIONS WHERE THEY APPLY TO THIS WORK.
 - 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.

KEY PLAN:



PLOT PLAN
SCALE: N.T.S.

1435 1ST AVENUE, MANHATTAN NY 10021
 BLOCK : 1449
 LOT : 26
 ZONING DISTRICT : C1-9
 MAP : 9A
 BUILDING USE : MIXED RESIDENTIAL & COMMERCIAL BUILDING

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.

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, CELLAR & PARTIAL ROOF PLANS
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-503.00	MECHANICAL REFRIGERANT RISER DIAGRAM
9	M-600.00	MECHANICAL SCHEDULES
10	M-700.00	HOOD DETAILS (1 OF 3)
11	M-701.00	HOOD DETAILS (2 OF 3)
12	M-702.00	HOOD DETAILS (3 OF 3)

TR1 SPECIAL INSPECTIONS			
YES	NO	INSPECTION	NYC BC 2022
X		MECHANICAL SYSTEMS	BC 1705.21
X		FIRE RESISTANT PENETRATION AND JOINTS	BC 1705.17
X		POST INSTALLED ANCHORS	BC 1704.32

TR8 PROGRESS INSPECTIONS			
YES	NO	INSPECTION LIST	TABLE REFERENCE 13RCNY §5000-01(H) (1) AND (2)
X		VENTILATION AND AIR DISTRIBUTION SYSTEM	(IB2)
X		HVAC-R AND SERVICES WATER HEATING EQUIPMENTS	(IB3), (IB3)
X		HVAC-R AND SERVICES WATER HEATING SYSTEM CONTROL	(IB4), (IB4)
X		MAINTENANCE INFORMATION	(ID1), (ID1)

SPECIFICATIONS

SECTION 0001 - NOTICE TO BIDDERS

- 1.1 BIDDERS REPRESENTATIONS
A. THE BIDDER BY MAKING A BID REPRESENTS THAT:
THE BIDDER HAS READ AND UNDERSTANDS THE BIDDING DOCUMENTS...
B. THE BID IS MADE IN COMPLIANCE WITH THE BIDDING DOCUMENTS.
C. THE SPECIFICATIONS AND DRAWINGS ARE INTENDED TO SERVE JOINTLY AS A BASIS FOR THE BIDDER TO SUBMIT A CONTRACT PRICE...
D. SHOULD CONFLICTS OR DISCREPANCIES OCCUR WITHIN THE BIDDING DOCUMENTS...
E. THE BID IS BASED UPON THE MATERIALS, EQUIPMENT AND SYSTEMS REQUIRED BY THE BIDDING DOCUMENTS WITHOUT EXCEPTION.
1.2 EXISTING CONDITIONS AND COORDINATION
A. THE BIDDER HAS VISITED THE SITE, BECOME FAMILIAR WITH LOCAL CONDITIONS...
B. THE BIDDER SHALL PROPOSE COORDINATION OF WORK SUCH THAT CONFLICTS WITH OTHER TRADES AND SPACE ALLOCATIONS ARE AVOIDED.
1.3 RESPONSIBILITIES
A. THE BIDDER UNDERSTANDS THAT ANY CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR THE TIMELY COMPLETION AND ACCEPTANCE OF THEIR WORK...
B. THE BIDDER UNDERSTANDS THAT ANY PROPOSED WORK IN OCCUPIED TENANT SPACES SHALL BE PERFORMED DURING TIMES OF NON-TENANT OCCUPANCY...
C. THE BIDDER UNDERSTANDS THAT ANY PROPOSED SHUT-DOWN OF EXISTING SYSTEMS DURING CONSTRUCTION SHALL BE PRE-ARRANGED WITH THE BUILDING MANAGER...
END OF SECTION 0001

SECTION 0101 - QUALITY OF WORK

- 1.1 WORKMANSHIP
A. ALL WORK SHALL BE FREE FROM DEFECTS IN MATERIALS AND WORKMANSHIP FOR A PERIOD OF ONE YEAR FROM DATE OF FINAL ACCEPTANCE.
B. ALL DEFECTS WHICH DEVELOP OR ARE DISCOVERED WITHIN THIS PERIOD SHALL BE REPAIRED BY THE CONTRACTOR TO THE SATISFACTION OF THE ARCHITECT OR BUILDING MANAGER AT NO ADDITIONAL COST TO THE OWNER.
C. UPON COMPLETION OF THE WORK THE CONTRACTOR SHALL REMOVE FROM THE SITE, ALL TOOLS, DEMOLISHED APPLIANCES AND ANY SURPLUS MATERIAL.
1.2 CODE COMPLIANCE
A. ALL WORK SHALL MEET ALL STATE AND LOCAL CODES HAVING JURISDICTION.
END OF SECTION 0101

SECTION 0102 -REQUIRED DOCUMENTS

- 1.1 SHOP DRAWINGS
A. A SET OF PRINTS FOR ANY MECHANICAL WORK INCLUDING BUT NOT LIMITED TO, DUCTWORK AND PIPING LAYOUT SHALL BE SUBMITTED FOR APPROVAL TO THE ENGINEER PRIOR TO CONSTRUCTION OR PURCHASE OF MATERIALS.
1.2 SUBMITTALS
A. EQUIPMENT SUBMITTALS OF ALL PROPOSED MECHANICAL AND ANCILLARY EQUIPMENT INCLUDING ALL ACCESSORIES SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW. ALL PERTINENT MODELS, SIZES, ACCESSORIES AND CHOICES SHALL BE CLEARLY CHECKED, PRINTED OR OTHERWISE INDICATED ON THE SUBMITTALS.
1.3 RECORD DRAWINGS
A. UPON COMPLETION OF THE WORK, A RECORD DRAWING SHALL BE SUBMITTED TO THE OWNER DEPICTING ALL SUBSEQUENT CHANGES, ADDITIONS AND OR CORRECTIONS TO THE CONTRACT DRAWINGS AND OR CONTRACT SCOPE MADE DURING CONSTRUCTION. THIS DRAWING SHALL REPRESENT A COMPLETE RECORD OF THE WORK INSTALLED.
1.4 EQUIPMENT OPERATING INSTRUCTIONS
A. ON COMPLETION AND ACCEPTANCE OF WORK, THIS CONTRACTOR SHALL FURNISH WRITTEN INSTRUCTIONS, EQUIPMENT MANUALS AND DEMONSTRATE TO THE OWNER THE PROPER OPERATION AND MAINTENANCE OF ALL EQUIPMENT AND APPARATUS FURNISHED UNDER THIS CONTRACT.
B. THESE INSTRUCTIONS SHALL BE TYPED ON 8-1/2 IN. X 11 IN. PAPER AND BOUND IN THREE-RING BINDERS WITH CLEAR ACETATE COVERS. THE CONTRACTOR SHALL GIVE THREE COPIES OF THE INSTRUCTIONS TO THE OWNER AND ONE ELECTRONIC COPY TO THE ENGINEER.
C. THE INSTRUCTION BOOKLET SHALL BE ORGANIZED IN SECTIONS, WITH ONE SECTION PER SYSTEM. THE COVER OF THE INSTRUCTION BOOKLET SHALL BEAR THE NAME, ADDRESS AND PHONE NUMBER OF THE PROJECT, ARCHITECT, ENGINEER, MECHANICAL CONTRACTOR AND SUBCONTRACTORS.
END OF SECTION 0102

SECTION 078413-PENETRATION FIRE-STOPPING

- 1.1 QUALITY ASSURANCE
A. INSTALLER QUALIFICATIONS: AN FM GLOBAL-APPROVED FIRE-STOP CONTRACTOR OR A UL-QUALIFIED FIRE-STOP CONTRACTOR.
B. FIRE-TEST-RESPONSE CHARACTERISTICS: UL, INTERTEK ETL SEMKO OR FM GLOBAL
1.2 PENETRATION FIRESTOPPING
A. PENETRATIONS IN FIRE-RESISTANCE-RATED WALLS: F-RATINGS PER ASTM E 814 OR UL 1479.
B. PENETRATIONS IN HORIZONTAL ASSEMBLIES: F- AND T-RATINGS PER ASTM E 814 OR UL 1479.
C. PENETRATIONS IN SMOKE BARRIERS: L-RATINGS PER UL 1479.
D. W-RATINGS: PER UL 1479.
1.3 INSTALLATION
A. IDENTIFICATION: PREPRINTED METAL OR PLASTIC LABELS.
1.4 FIELD QUALITY CONTROL
A. INSPECTION OF INSTALLED FIRE-STOPPING: BY OWNER-ENGAGED AGENCY ACCORDING TO ASTM E 2174.
1.5 THROUGH-PENETRATION FIRESTOP SYSTEM SCHEDULE
WHERE UL-CLASSIFIED SYSTEMS ARE INDICATED, THEY REFER TO SYSTEM NUMBERS IN UL'S "FIRE RESISTANCE DIRECTORY" UNDER PRODUCT CATEGORY XHEZ.
FOR THE FOLLOWING SYSTEMS:
METALLIC AND NON-METALLIC PIPES, CONDUIT, OR TUBING, ELECTRICAL CABLES, CABLE TRAYS WITH ELECTRIC CABLES, MISCELLANEOUS ELECTRICAL PENETRANTS, INSULATED PIPES, GROUPINGS OF PENETRANTS, USE ON OR MORE THE FOLLOWING MATERIALS:
a. LATEX SEALANT
b. SILICONE SEALANT
c. INTUMESCENT PUTTY
d. MORTAR
h. SILICONE FOAM
i. PILLIOWS/BAGS
j. INTUMESCENT WRAP STRIPS
k. INTUMESCENT COMPOSITE SHEET
1.6 MANUFACTURERS
1. HILTI CONSTRUCTION CHEMICAL, INC
2. TREMCO INC.
3. 3M FIRE PROTECTION PRODUCTS
END OF SECTION 078413

SECTION 230548 - VIBRATION CONTROLS FOR HVAC EQUIPMENT

- PART 1 - GENERAL
1.1 PERFORMANCE REQUIREMENTS
A. SEISMIC-RESTRAINT LOADING:
1. SITE CLASS AS DEFINED IN THE IBC: A, B
2. ASSIGNED SEISMIC USE GROUP OR BUILDING CATEGORY AS DEFINED IN THE IBC: I II III
a. COMPONENT IMPORTANCE FACTOR: 1.0
b. COMPONENT RESPONSE MODIFICATION FACTOR: 2.5
c. COMPONENT AMPLIFICATION FACTOR: 2.5.
3. DESIGN SPECTRAL RESPONSE ACCELERATION AT SHORT PERIODS (0.2 SECOND) 18%
4. DESIGN SPECTRAL RESPONSE ACCELERATION AT 1-SECOND PERIOD: 8%
1.2 COMPONENTS
A. VIBRATION ISOLATORS:
1. ISOLATOR PADS: NEOPRENE, RUBBER, HERMETICALLY AND/OR SEALED COMPRESSED FIBERGLASS
2. MOUNTS: DOUBLE-DEFLECTION TYPE.
3. RESTRAINED MOUNTS: ALL DIRECTIONAL MOUNTINGS WITH SEISMIC RESTRAINT; CAST-DUCTILE-IRON HOUSING.
4. SPRING ISOLATORS: FREESTANDING, LATERALLY STABLE, OPEN-SPRING TYPE.
5. RESTRAINED SPRING ISOLATORS: FREESTANDING, STEEL, OPEN-SPRING TYPE WITH SEISMIC RESTRAINT.
6. HOUSED SPRING MOUNTS: DUCTILE-IRON OR STEEL HOUSING, WITH INTEGRAL, VERTICALLY ADJUSTABLE SEISMIC SNUBBERS.
7. ELASTOMERIC HANGERS: DOUBLE-DEFLECTION TYPE.
8. SPRING HANGERS: COMBINATION COIL-SPRING AND ELASTOMERIC-INSERT HANGERS WITH SPRING AND INSERT IN COMPRESSION.
9. SPRING HANGERS WITH VERTICAL-LIMIT STOP: COMBINATION COIL-SPRING AND ELASTOMERIC-INSERT HANGERS WITH SPRING AND INSERT IN COMPRESSION AND WITH VERTICAL-LIMIT STOP.
10. PIPE RISER RESILIENT SUPPORT: ALL-DIRECTIONAL, ACOUSTICAL PIPE ANCHOR.
11. RESILIENT PIPE GUIDES.
B. AIR-MOUNTING SYSTEMS:
1. AIR MOUNTS: FREESTANDING, SINGLE OR MULTIPLE, COMPRESSED-AIR BELLOWES.
2. RESTRAINED AIR MOUNTS: HOUSED COMPRESSED-AIR BELLOWES.
C. RESTRAINED VIBRATION ISOLATION ROOF-CURB RAILS: FACTORY-ASSEMBLED, FULLY ENCLOSED, INSULATED, AIR- AND WATERTIGHT CURB RAIL; WITH SPRING ISOLATORS MOUNTED ON ELASTOMERIC ISOLATION PADS, AND SNUBBER BUSHINGS.
D. VIBRATION ISOLATION EQUIPMENT BASES:
1. STEEL BASE: FACTORY-FABRICATED, WELDED, STRUCTURAL-STEEL BASES AND RAILS.
2. INERTIA BASE: FACTORY-FABRICATED, WELDED, STRUCTURAL-STEEL BASES AND RAILS READY FOR FIELD-APPLIED, CAST-IN-PLACE CONCRETE
1.3 FIELD QUALITY CONTROL
A. TESTING: BY EITHER: OWNER-ENGAGED AGENCY, CONTRACTOR-ENGAGED AGENCY, OR CONTRACTOR.
PART-2 PRODUCTS
1.4 VIBRATION ISOLATORS & SEISMIC-RESTRAINT DEVICES
A. AVAILABLE MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, MANUFACTURERS OFFERING PRODUCTS THAT MAY BE INCORPORATED INTO THE WORK INCLUDE, BUT ARE NOT LIMITED TO, THE FOLLOWING:
B. MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY ONE OF THE FOLLOWING:
SECTION 230593 - TESTING, ADJUSTING, AND BALANCING FOR HVAC
1.1 SUMMARY
A. TESTING, ADJUSTING, AND BALANCING FOR THE FOLLOWING:
1. MOTORS.
2. CONDENSING UNITS.
3. AIR SYSTEM: CONSTANT VOLUME
1.2 QUALITY ASSURANCE
A. THE CONTRACTOR SHALL PROCURE THE SERVICES OF A TESTING, ADJUSTING AND BALANCING (TAB) SPECIALIST WHO SPECIALIZES IN HEATING, VENTILATION AND AIR CONDITIONING SYSTEMS. THE TAB AGENT SHALL HAVE THE FOLLOWING QUALIFICATIONS: AABC, NEBB OR TABB CERTIFIED.

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- 1. ACE MOUNTINGS CO., INC.
2. AMBER/BOOTH COMPANY, INC.
3. CALIFORNIA DYNAMICS CORPORATION.
4. COOPER B-LINE, INC.; A DIVISION OF COOPER INDUSTRIES.
5. HILTI, INC.
6. ISOLATION TECHNOLOGY, INC.
7. KINETICS NOISE CONTROL.
8. LOOS & CO.; CABLEWARE DIVISION.
9. MASON INDUSTRIES.
10. TOLCO INCORPORATED; A BRAND OF NIBCO INC.
11. UNISTRUT; TYCO INTERNATIONAL, LTD.
12. VIBRATION ELIMINATOR CO., INC.
13. VIBRATION ISOLATION.
14. VIBRATION MOUNTINGS & CONTROLS, INC.

END OF SECTION 230548

1.3 EXECUTION

- A. THE TAB SPECIALIST SHALL PERFORM FLOW MEASUREMENTS OF ALL EXISTING AIR AND HYDRONIC SYSTEMS THAT ARE TO REMAIN OR TO BE INCORPORATED INTO NEW WORK PRIOR TO THE STARTING OF WORK IN THE PROJECT SCOPE. A REPORT OF THESE MEASUREMENTS, INDICATING ANY AND ALL DEFICIENCIES SHALL BE SUBMITTED FOR OWNER REVIEW.
B. THE TAB SPECIALIST SHALL PERFORM FLOW MEASUREMENTS OF ALL NEW AIR AND HYDRONIC SYSTEMS AS LISTED ABOVE IN THE PROJECT SCOPE. A REPORT OF THESE MEASUREMENTS, INDICATING ANY AND ALL DEFICIENCIES SHALL BE SUBMITTED FOR OWNER REVIEW.
C. THE REPORT SHALL INDICATE A SCHEMATIC DIAGRAM INDICATING LOCATIONS OF ALL EQUIPMENT TESTED AND MEASUREMENT LOCATIONS.
D. PRIOR TO FINAL INSPECTION OF THE WORK, THE TAB SPECIALIST SHALL BALANCE ALL SYSTEMS AS INDICATED ABOVE TO THE REQUIREMENTS OF THE DESIGN.
E. THE CONTRACTOR SHALL HAVE FURNISH AND INSTALL ALL ADDITIONAL BALANCING EQUIPMENT, PRESSURE TAPS, GAUGES AND OTHER EQUIPMENT AS REQUIRED FOR A PROPERLY BALANCED SYSTEM AT NO ADDITIONAL COST TO THE OWNER. SUCH ADDITIONAL EQUIPMENT SHALL ADHERE IN STRICT ACCORDANCE WITH THE RESPECTIVE EQUIPMENT MANUFACTURER'S RECOMMENDATIONS.
F. THE CONTRACTOR SHALL HAVE THE TESTING AND BALANCING SPECIALIST COORDINATE ALL WORK OF THIS SECTION WITH THE BUILDING MANAGER. BALANCING WORK SHALL NOT CONFLICT WITH OTHER WORK SO AS TO MAINTAIN COMPLETION WITHIN THE SPECIFIED TIME.
G. ALL INSTRUMENTS USED FOR TAB SHALL BE MAINTAINED IN GOOD WORKING CONDITION AND ACCURATELY CALIBRATED.
H. TOLERANCES: PLUS OR MINUS 5 PERCENT OF DESIGN VALUES.
I. INSPECTIONS: RANDOM CHECKS BY OWNER OR ARCHITECT TO VERIFY FINAL TESTING, ADJUSTING, AND BALANCING REPORT.
J. ADDITIONAL TESTS: RANDOM TESTS WITHIN 90 DAYS OF COMPLETING TAB TO VERIFY BALANCE CONDITIONS AND SEASONAL TESTS.
END OF SECTION 230593
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.

VIBRATION ISOLATION

- A. GENERAL:
1) PROVIDE ISOLATION FOR EQUIPMENT, PIPING AND DUCTWORK.
2) INSTALL IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
3) PROVIDE LEVELING DEVICES AND APPROVED RESILIENT RESTRAINING DEVICES AS REQUIRED TO LIMIT EQUIPMENT AND PIPING MOTION IN EXCESS OF 1/4".
4) ACCEPTABLE MANUFACTURERS:
a. MASON INDUSTRIES, INC.
b. VIBRATION ELIMINATOR CO.
c. KORFUND DYNAMICS CORP.

- B. CEILING-HUNG FANS AND EQUIPMENT:
1) PROVIDE SPRING HANGER ROD ISOLATORS. STEEL COMPRESSION SPRING AND NEOPRENE SOUND PAD WITHIN A STEEL RETAINER BOX. SIMILAR TO MASON TYPE PCHS.
2) 1 IN. MINIMUM STATIC DEFLECTION. 1/2 IN. MINIMUM RESERVE DEFLECTION. FACTORY-PRELOADED TO 75% OF RATED LOAD.
3) PROVIDE SUPPLEMENTAL STEEL AS REQUIRED WHERE EQUIPMENT OR STRUCTURE CANNOT SUPPORT POINT LOADS.

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.

EXCEPTIONS:
1. THERMOSTATS REQUIRING MANUAL CHANGEOVER BETWEEN HEATING AND COOLING MODES.
2. OCCUPANCIES OR APPLICATIONS REQUIRING PRECISION IN INDOOR TEMPERATURE CONTROL AS APPROVED BY THE CODE OFFICIAL.

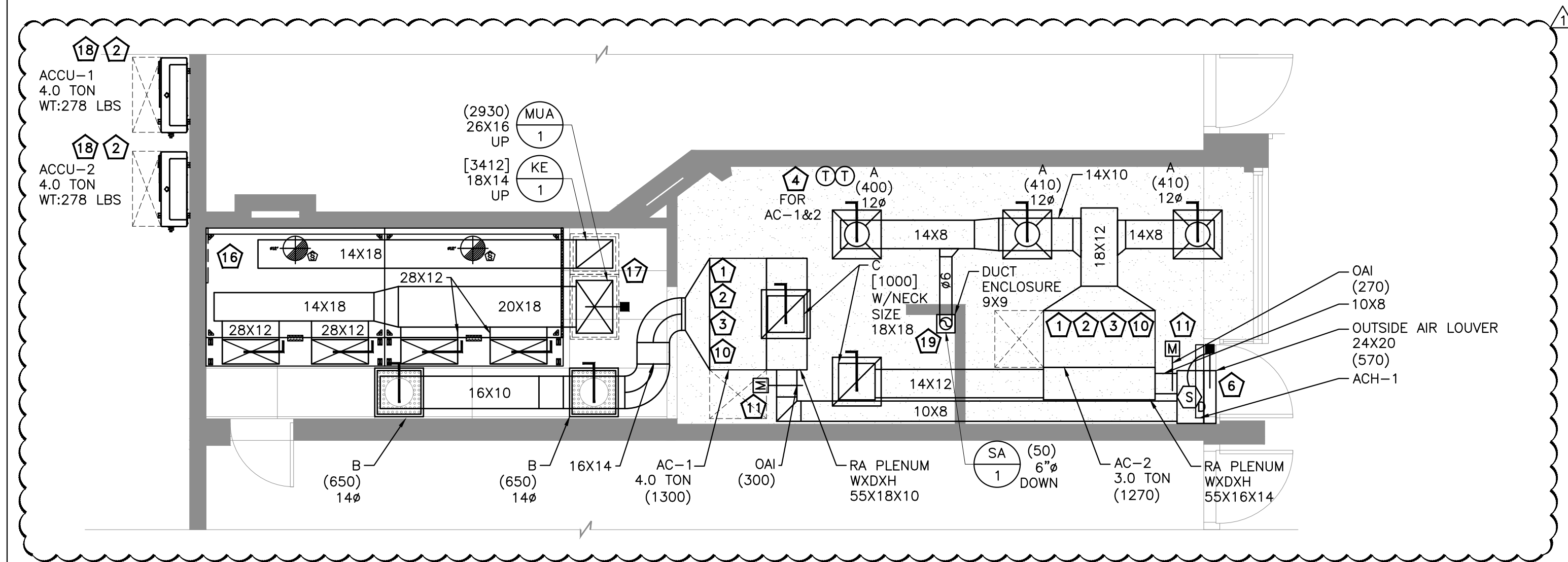
C403.4.1.3 SET POINT OVERLAP RESTRICTION
WHERE A ZONE HAS A SEPARATE HEATING AND A SEPARATE COOLING THERMOSTATIC CONTROL LOCATED WITHIN THE ZONE, A LIMIT SWITCH, MECHANICAL STOP OR DIRECT DIGITAL CONTROL SYSTEM WITH SOFTWARE PROGRAMMING SHALL BE PROVIDED WITH THE CAPABILITY TO PREVENT THE HEATING SET 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.
EXCEPTIONS:
1. ZONES THAT WILL BE OPERATED CONTINUOUSLY.
2. ZONES WITH A FULL HVAC LOAD DEMAND NOT EXCEEDING 6,800 BTU/H (2 KW) AND HAVING A READILY ACCESSIBLE MANUAL SHUTOFF SWITCH.

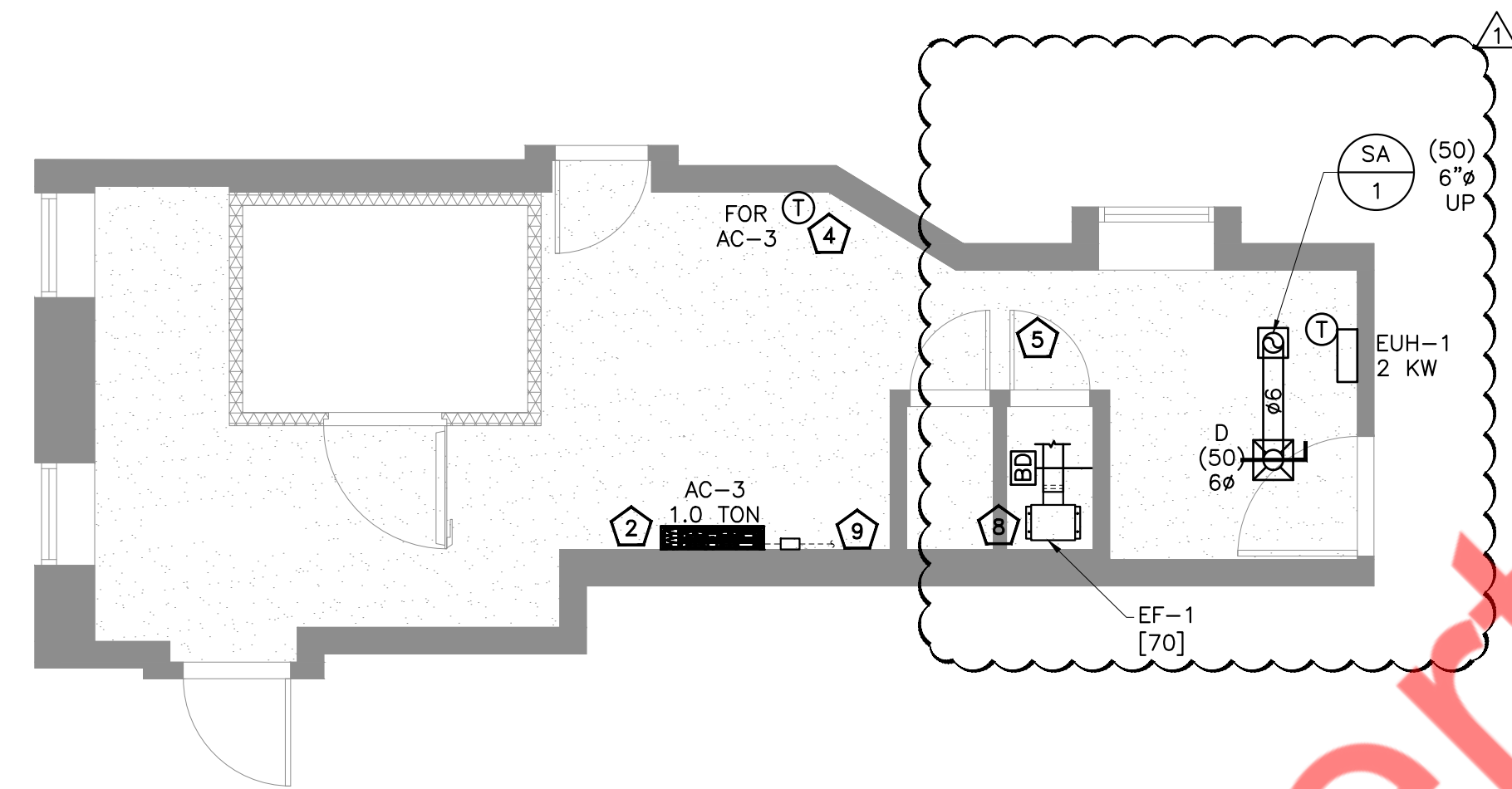
C403.4.2.1 THERMOSTATIC SETBACK CAPABILITIES
THERMOSTATIC SETBACK CONTROLS SHALL HAVE THE CAPABILITY TO SET BACK OR TEMPORARILY OPERATE THE SYSTEM TO MAINTAIN ZONE TEMPERATURES DOWN TO 55°F (13°C) OR UP TO 85°F (29°C).

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.

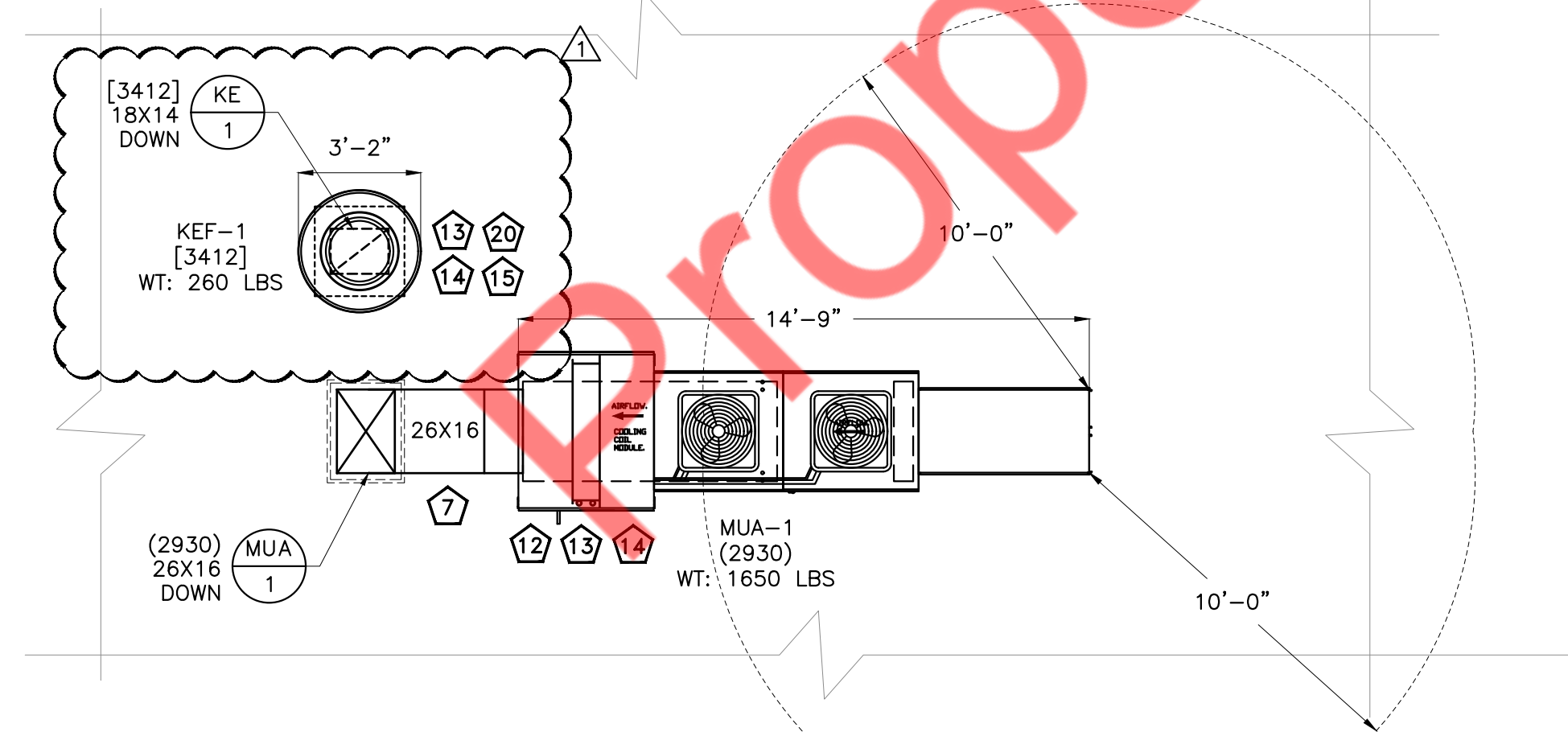
C403.4.2.3 AUTOMATIC AND OPTIMUM START CAPABILITIES
AUTOMATIC START CONTROLS SHALL BE PROVIDED FOR EACH HVAC SYSTEM. THE CONTROLS SHALL BE CONFIGURED TO AUTOMATICALLY ADJUST THE DAILY START TIME OF THE HVAC SYSTEM IN ORDER TO BRING EACH SPACE TO THE DESIRED OCCUPIED TEMPERATURE IMMEDIATELY PRIOR TO SCHEDULED 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"



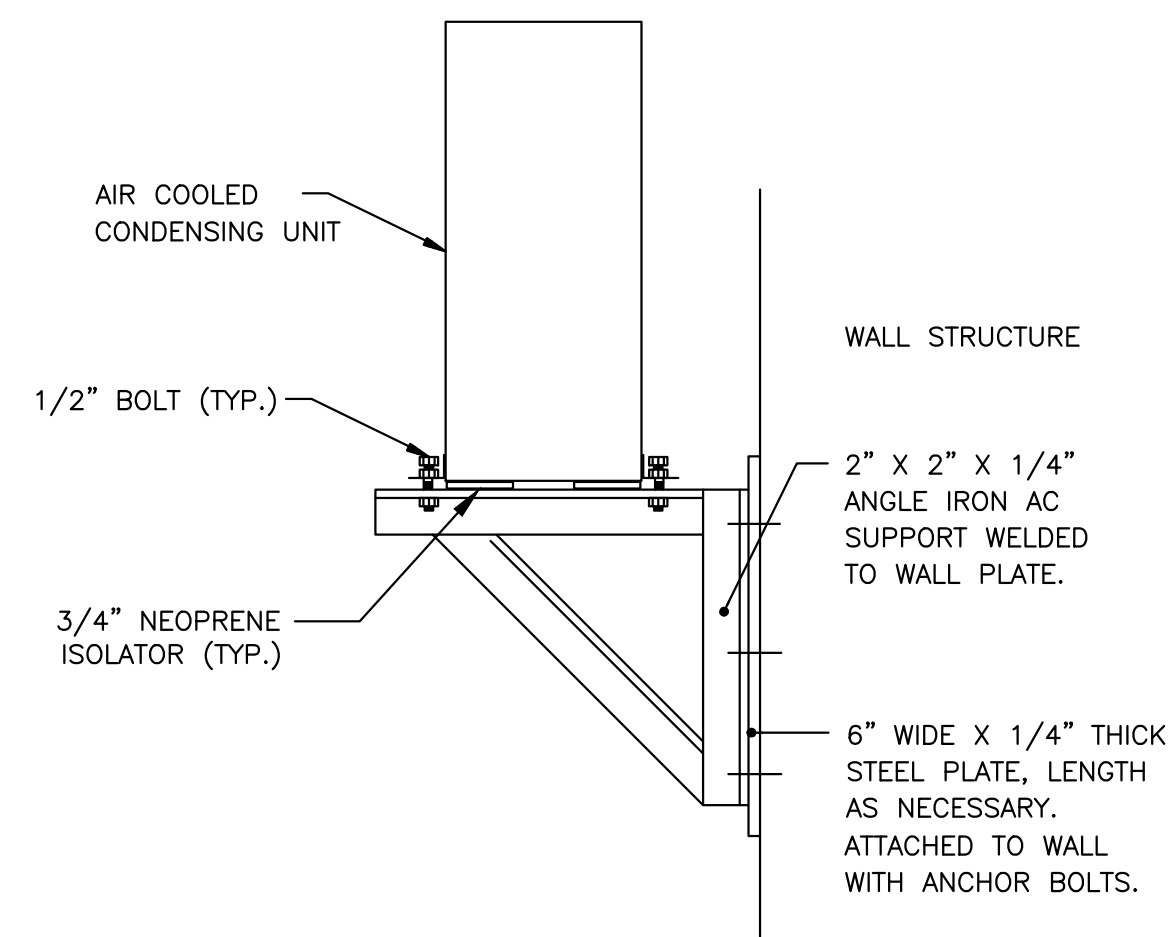
3 PARTIAL MECHANICAL ROOF PLAN
1/4"=1'-0"

MECHANICAL GENERAL NOTES

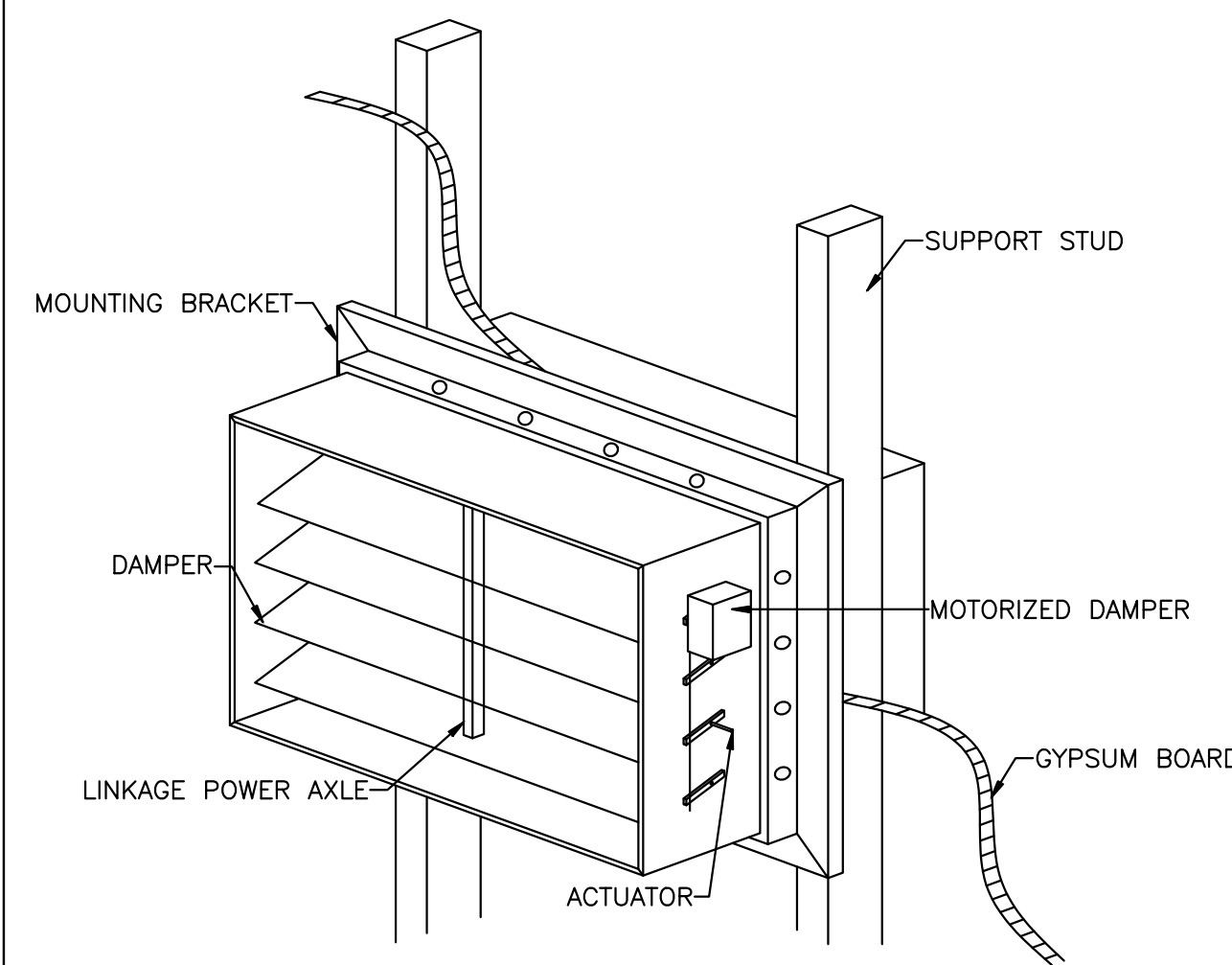
1. CONTRACTOR SHALL BALANCE EACH DEVICE WITH THE CFM SHOWN ON PLAN.
2. NEW DUCTWORK SHOWN ON PLAN ARE SCHEMATIC ONLY. CONTRACTOR SHALL COORDINATE WITH OTHER TRADES FOR PIPING AND DUCTWORK ROUTING, OFFSET AND RUN PIPING, DUCTWORK INSIDE THE STRUCTURE IF REQUIRED. PROVIDE ANY EXTRA PIPING, DUCTWORK, FITTINGS,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

KEY NOTES:-

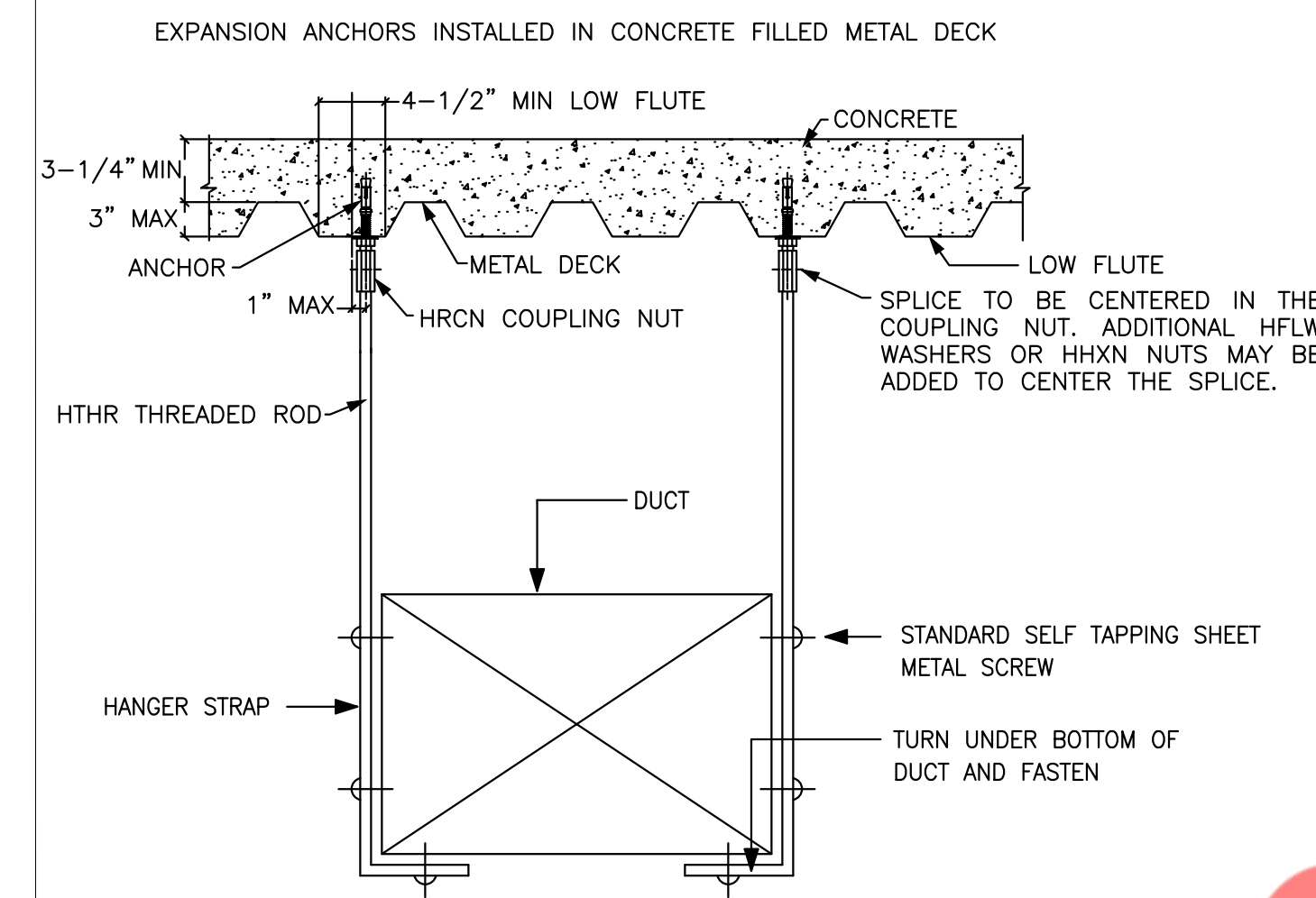
1. CONNECT 1-1/4" CD FROM AC TO NEAREST PLUMBING DRAIN WITH AIR GAP FITTING. INSTALL CONDENSATE DRAIN WITH 1% TOWARD SINK. PROVIDE CONDENSATE PUMP AS/IF REQUIRED.
2. INSTALL REFRIGERANT PIPING BETWEEN INDOOR AND OUTDOOR UNIT AS PER MANUFACTURERS RECOMMENDATIONS. PROVIDE INSULATION TO REF PIPING AS PER 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. 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.
5. UNDERCUT RESTROOM DOORS MINIMUM 3/4" FOR MAKE-UP AIR.
6. PROVIDE AIR CURTAIN IN LOCATION AS SHOWN ON PLAN.
7. PROVIDE WEATHER PROOF COATING FOR ALL ALL EXTERIOR PIPING INSULATION AND DUCTING
8. PROVIDE A NEW CEILING MOUNTED TOILET EXHAUST FAN. PROVIDE WALL MOUNTED SWITCH OR INTERLOCK WITH LIGHT. CONFIRM WITH OWNER/ARCHITECT. CONNECT TO NEAREST NETWORK.
9. CONNECT 5/8" CD FROM AC TO NEAREST PLUMBING DRAIN WITH AIR GAP FITTING. INSTALL CONDENSATE DRAIN WITH 1% TOWARD SINK. PROVIDE CONDENSATE PUMP AS/IF REQUIRED.
10. PROVIDE REMOTE TEMP SENSOR MOUNTED IN RETURN DUCT AND WIRE BACK TO T-STAT.
11. MD TO INTERLOCK WITH RESPECTIVE AC UNITS.
12. PROVIDE STRUCTURAL SUPPORT AS REQUIRED. COORDINATE WITH STRUCTURAL ENGINEER.
13. MAINTAIN 10 FEET DISTANCE BETWEEN OUTSIDE AIR INTAKE AND EXHAUST ON THE ROOF.
14. CONTRACTOR TO FIELD VERIFY LOCATION OF EQUIPMENT ON ROOF. COORDINATE WITH ARCHITECT/OWNER FOR FINAL LOCATION OF EQUIPMENT. NOTIFY TO ENGINEER IF ANY DISCREPANCY FOUND BEFORE COMMENCING OF BID.
15. THE KITCHEN EXHAUST DUCT TERMINATION ABOVE THE ROOF SHALL HAVE DISCHARGE OPENING LOCATED NOT LESS THAN 40 INCHES. THE DISCHARGE FLOW SHALL BE DIRECTED AWAY FROM THE STRUCTURE OF THE ROOF.
16. INSTALL TYPE-1 GREASE EXHAUST HOOD. SUPPORT HOOD PER MANUFACTURER'S INSTALLATION INSTRUCTIONS. PROVIDE TRAPEZE HANGERS FOR ALL THREAD SUPPORT UNDER DUCTWORK AS REQUIRED. TRANSITION FROM HOOD CONNECTION TO WELDED KITCHEN EXHAUST DUCT SIZES SHOWN.
17. CONTRACTOR TO FIELD VERIFY THE DUCT ROUTING OF RISER FOR MUA AND KEF DUCT. COORDINATE WITH ARCHITECT/OWNER FOR FINAL LOCATION.
18. CONTRACTOR TO FIELD VERIFY AND INSTALL THE OUTDOOR UNIT AS PER SITE CONDITIONS. MAXIMUM REFRIGERANT PIPING LENGTH SHALL NOT EXCEED 900 FT. FROM INDOOR UNIT TO OUTDOOR UNIT. COORDINATE WITH ARCHITECT/OWNER FOR EXACT LOCATION.
19. PROVIDE SOFFIT/ENCLOSURE AROUND OUTSIDE AIR DUCT GOING TO CELLAR.
20. 18"x14" EXHAUST AIR DUCT DOWN AND TRANSITION TO FIELD CUT EXHAUST CONNECTION AT HOOD.



1 OUTDOOR UNIT INSTALLATION DETAILS
M-500 N.T.S

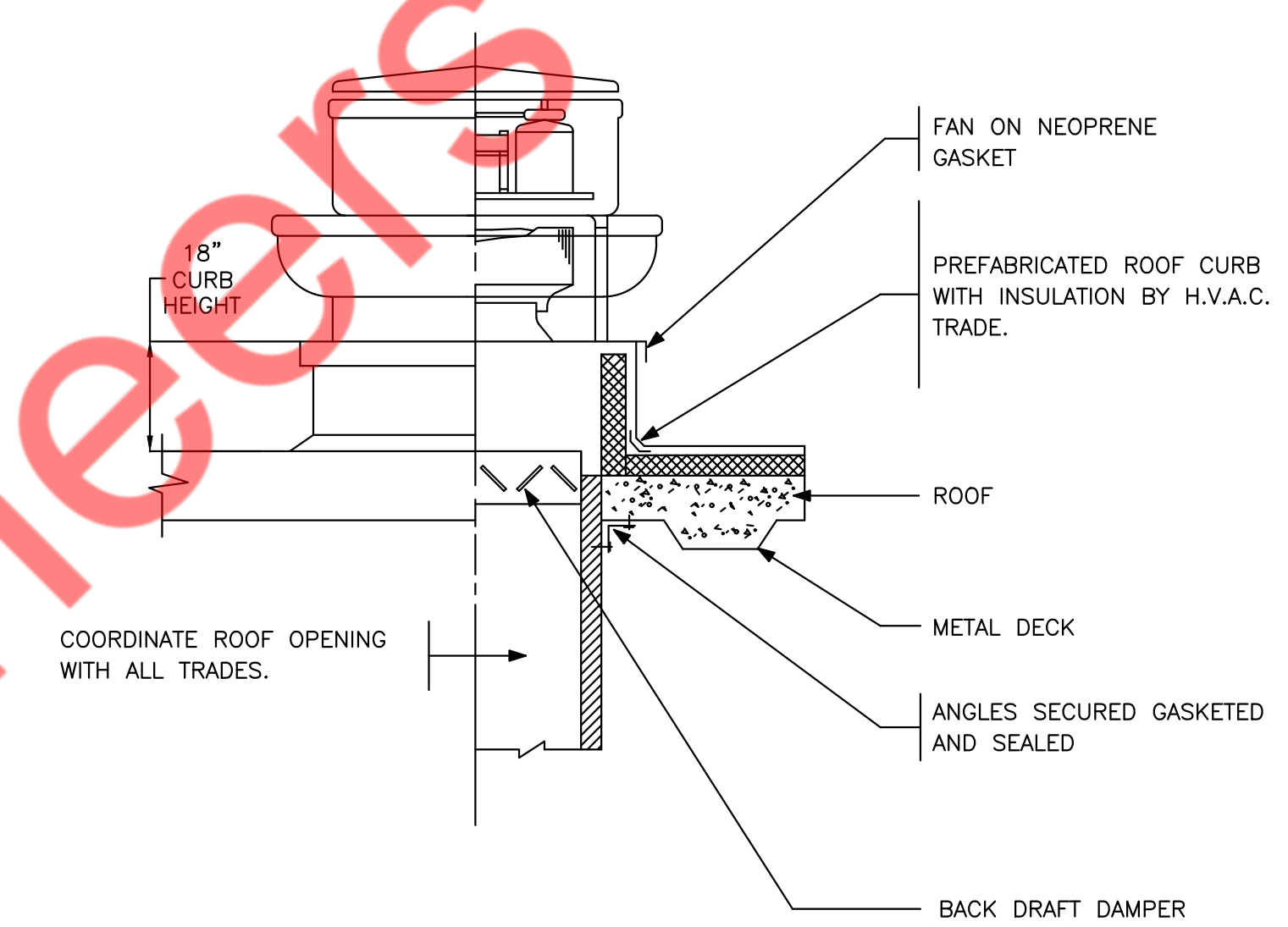


2 METHOD OF HANGING DUCTWORK
M-500 N.T.S

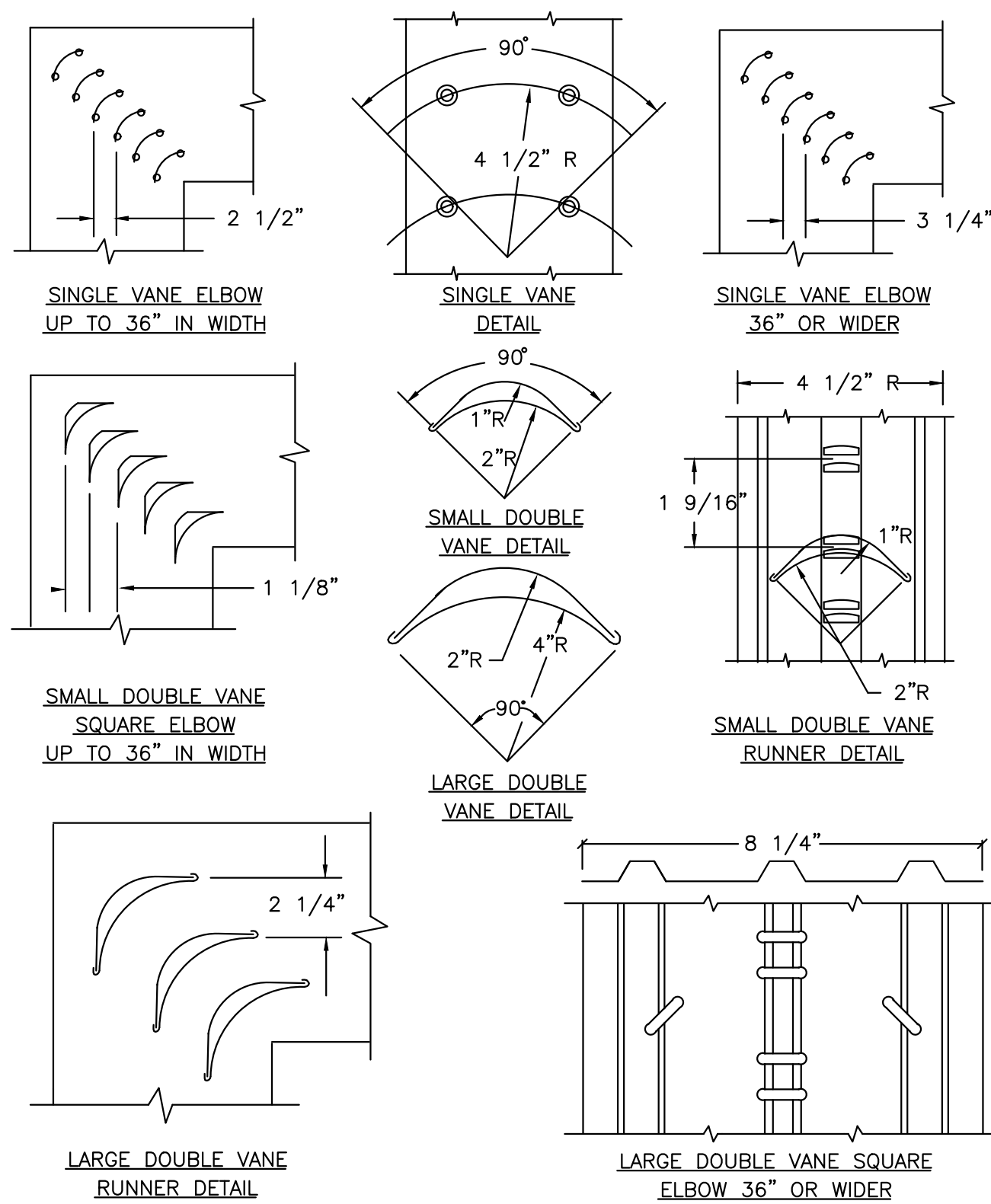


DUCT CROSS SECTIONAL AREA	STRAP HANGER SIZE	MAX. SPACING
UNDER 2 SQ FT.	1" X 1/16"	6'-0" O.C.
2 TO 4 SQ FT.	1" X 1/8"	8'-0" O.C.
4 TO 8 SQ FT.	1" X 1/8"	6'-0" O.C.
OVER 8 SQ FT.	1" X 1/8"	4'-0" O.C.

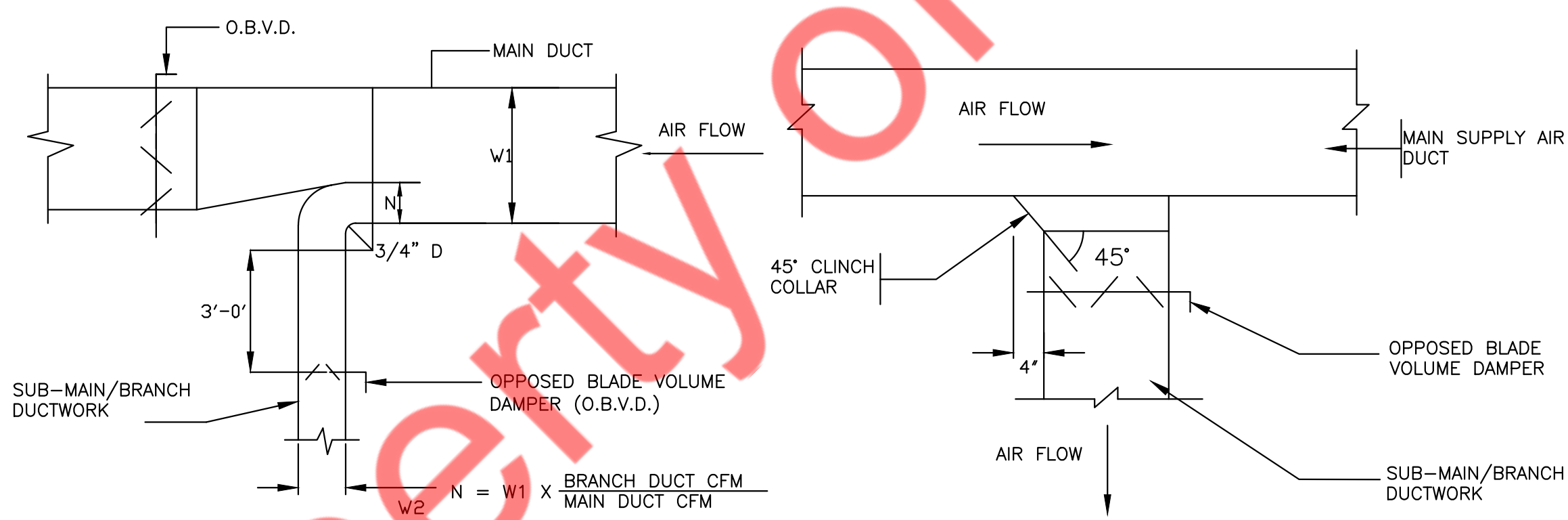
3 METHOD OF HANGING DUCTWORK
M-500 N.T.S



4 UP BLAST EXHAUST FAN DETAIL
M-500 N.T.S

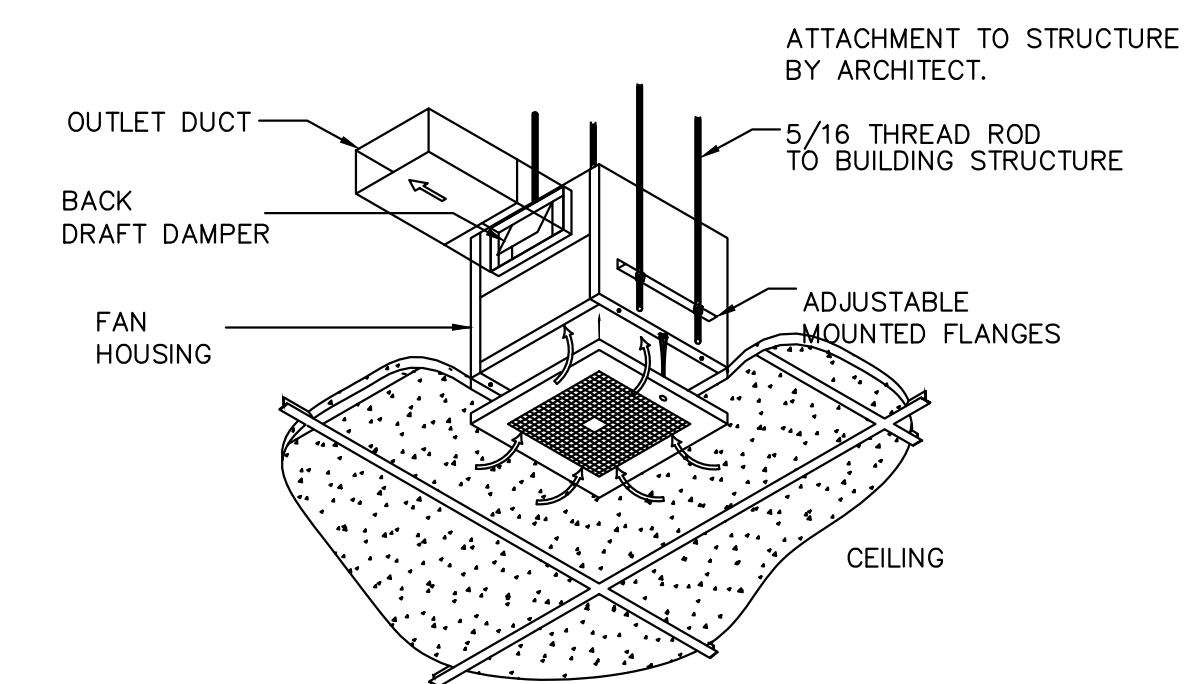


5 LOW VELOCITY DUCTWORK ELBOWS
M-500 N.T.S

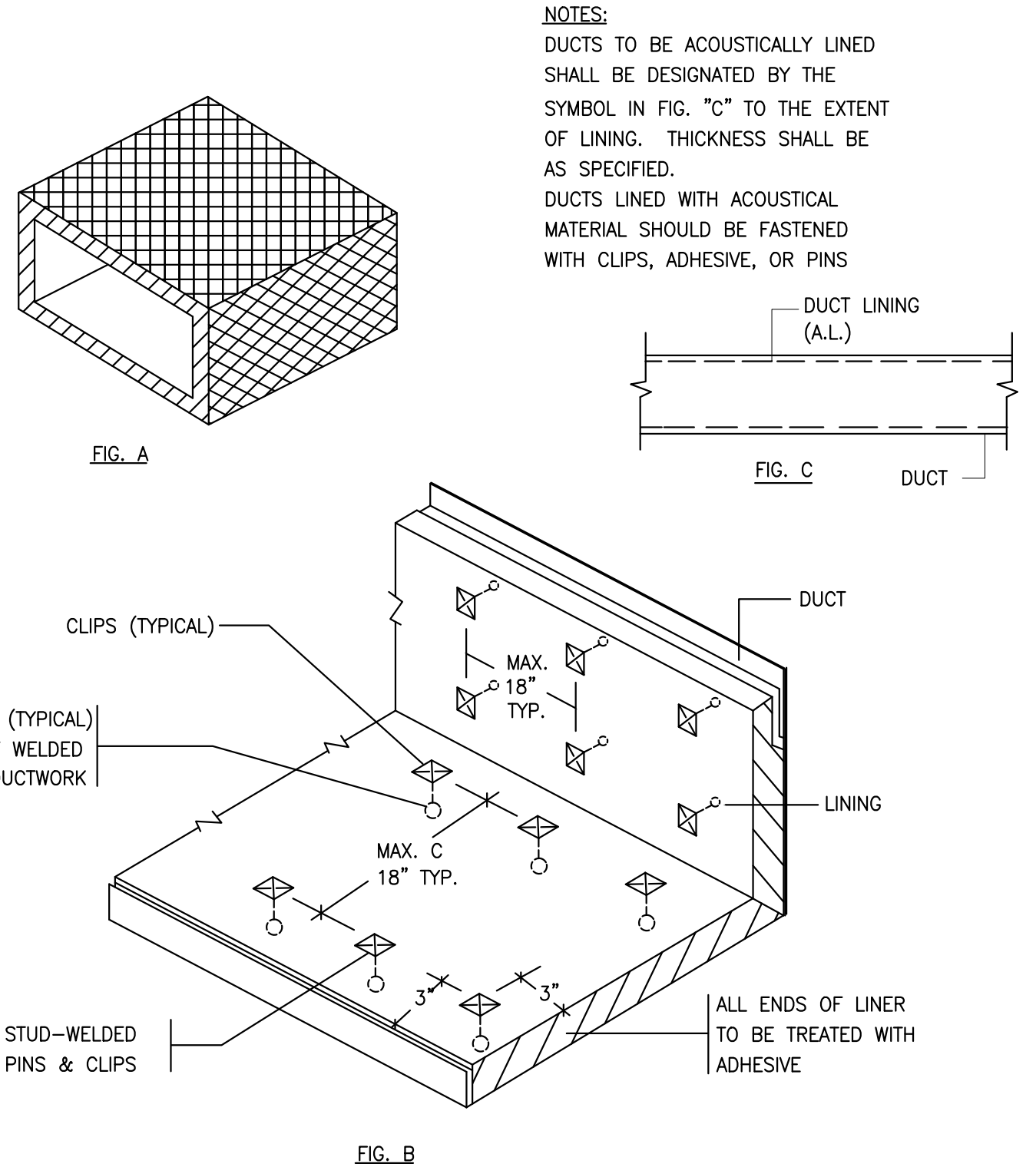


NOTE:
FURNISH THIS TYPE CONNECTION WHEN SINGLE LINE DUCTWORK IS INDICATED AS THIS

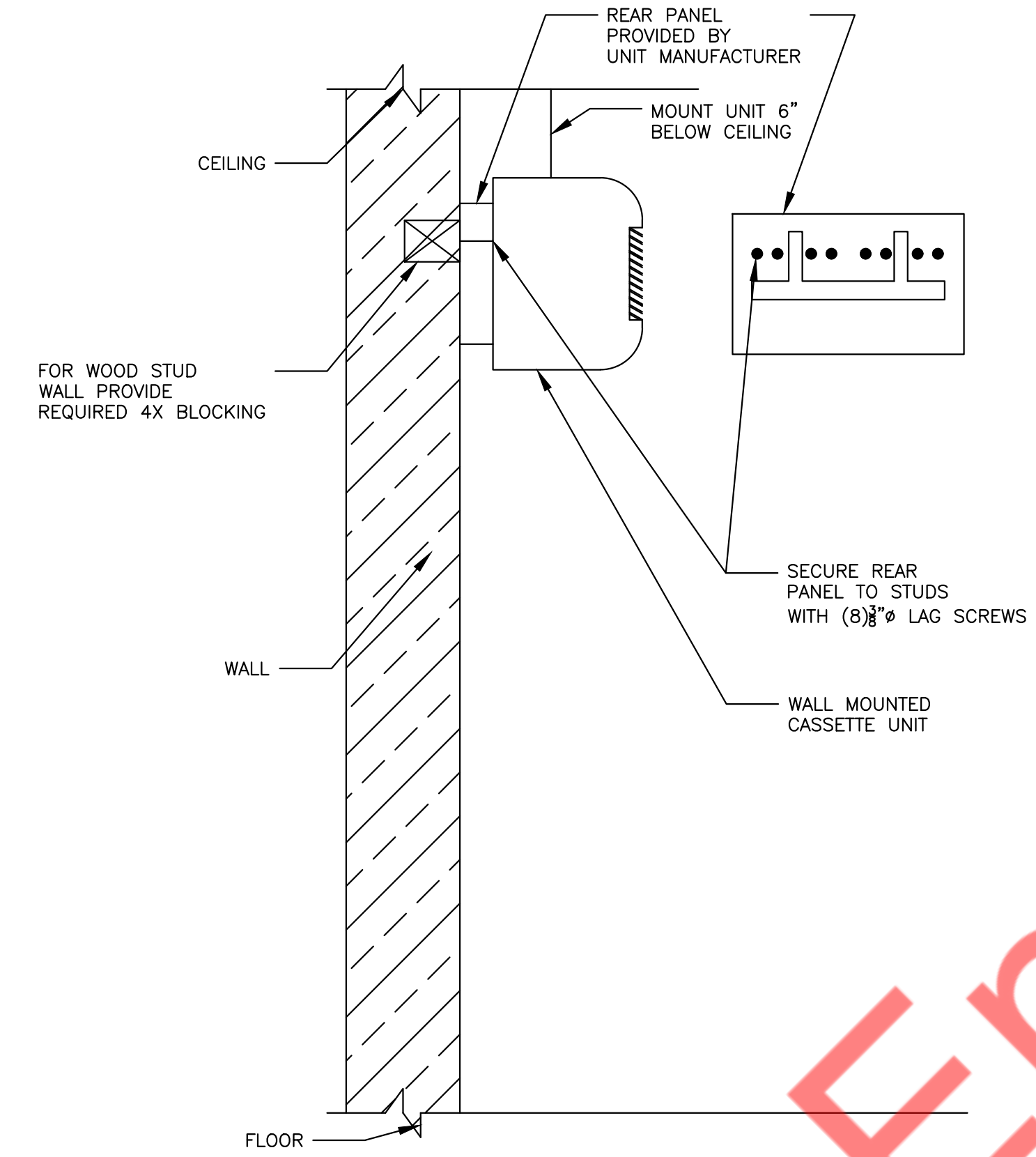
6 SUPPLY AIR DUCTWORK SUB-MAIN/BRANCH DUCT CONNECTION
M-500 N.T.S



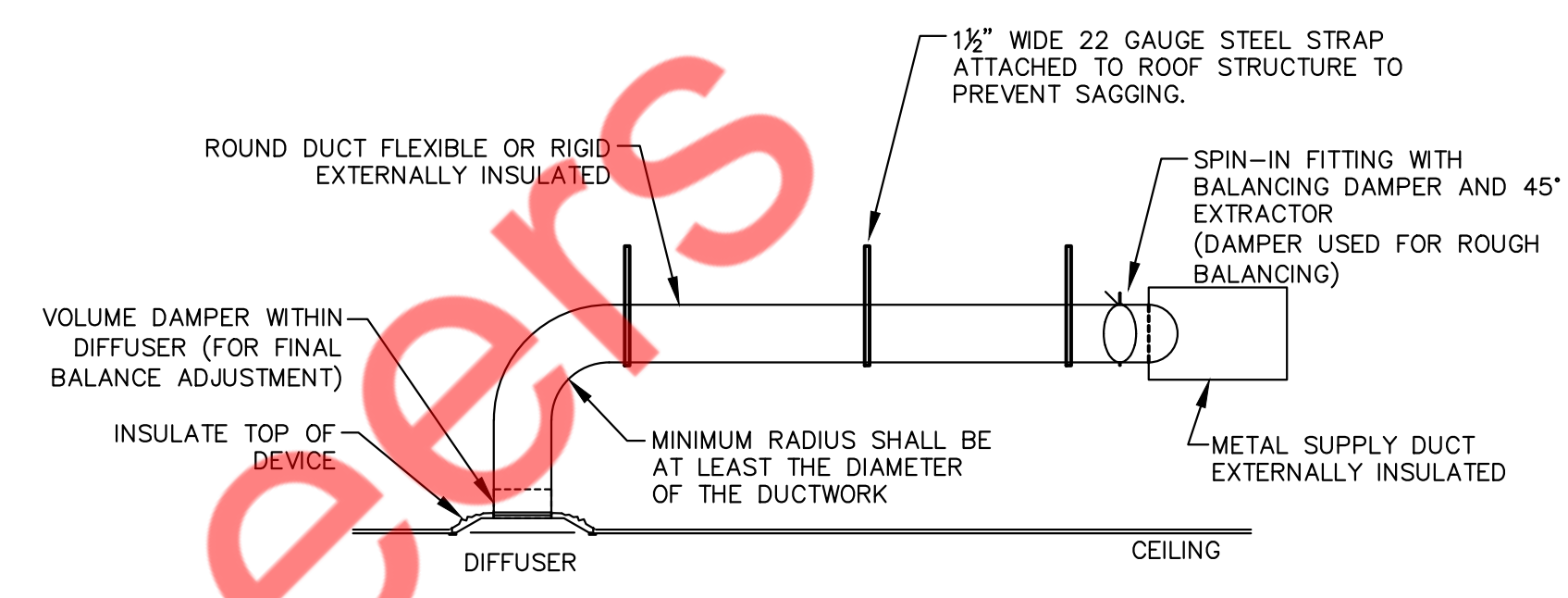
7 CEILING EXHAUST FAN DETAIL
M-500 N.T.S



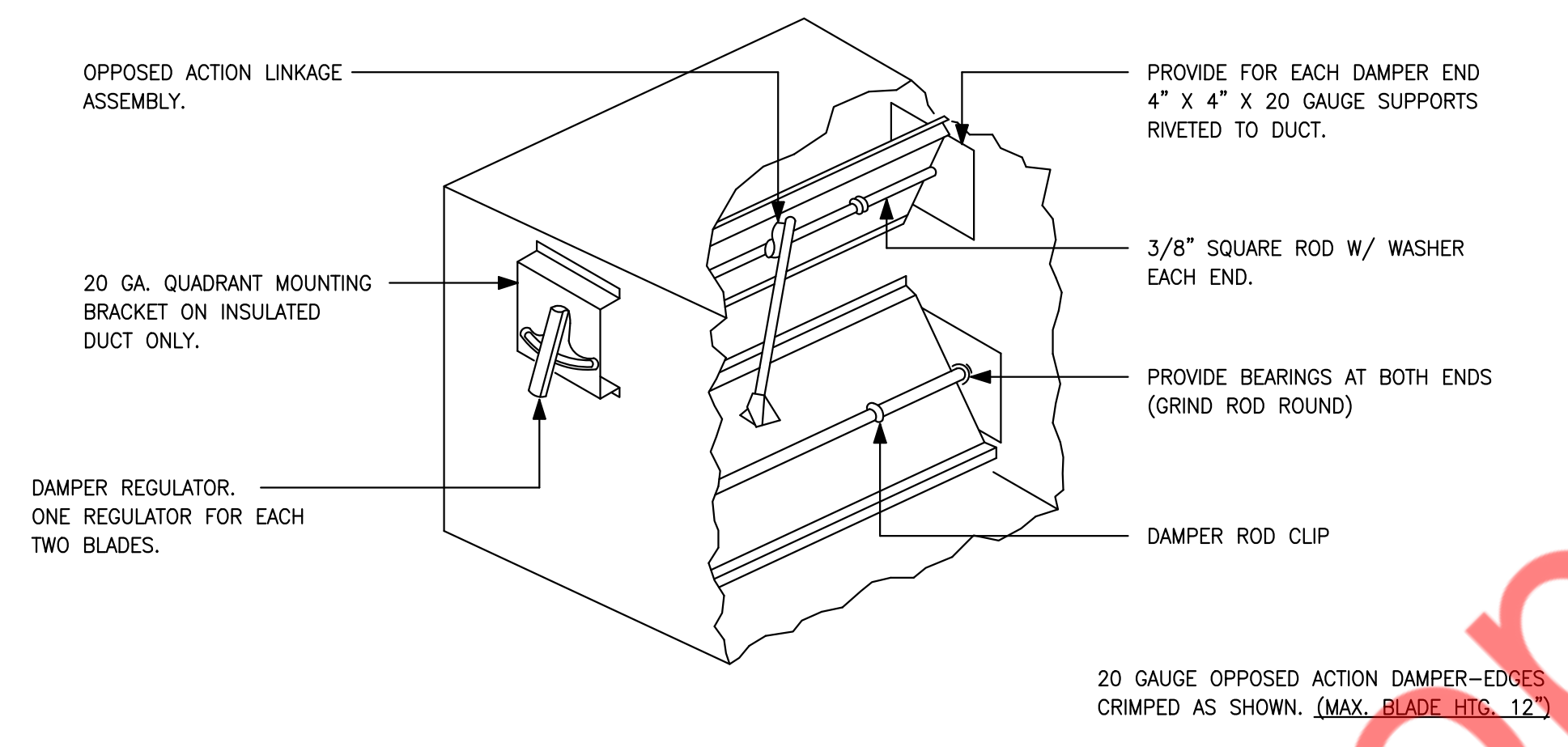
1 ACOUSTICAL TREATMENT DUCT LINING
 M-501 N.T.S



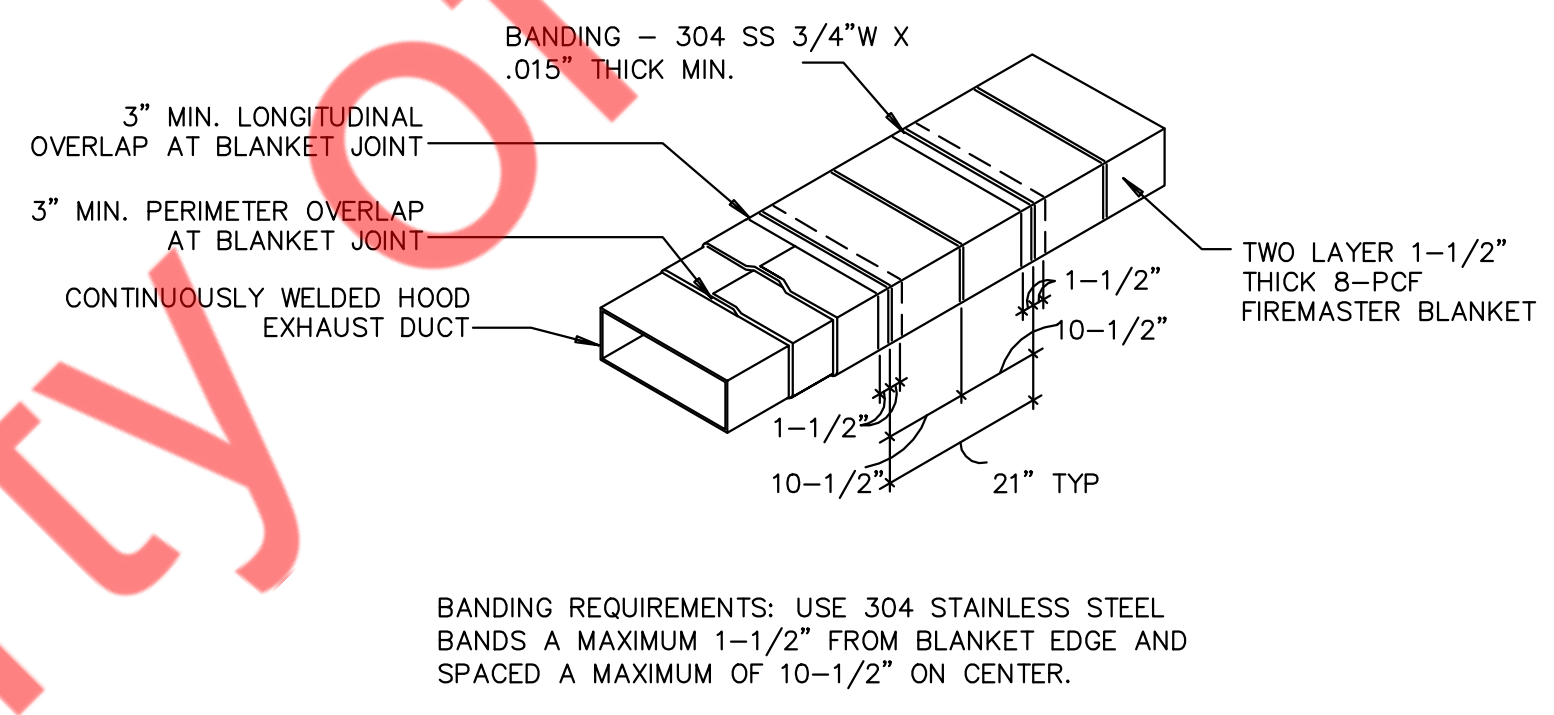
2 WALL MOUNTED UNIT DETAIL
 M-501 N.T.S



3 CEILING DIFFUSER DETAILS
 M-501 N.T.S

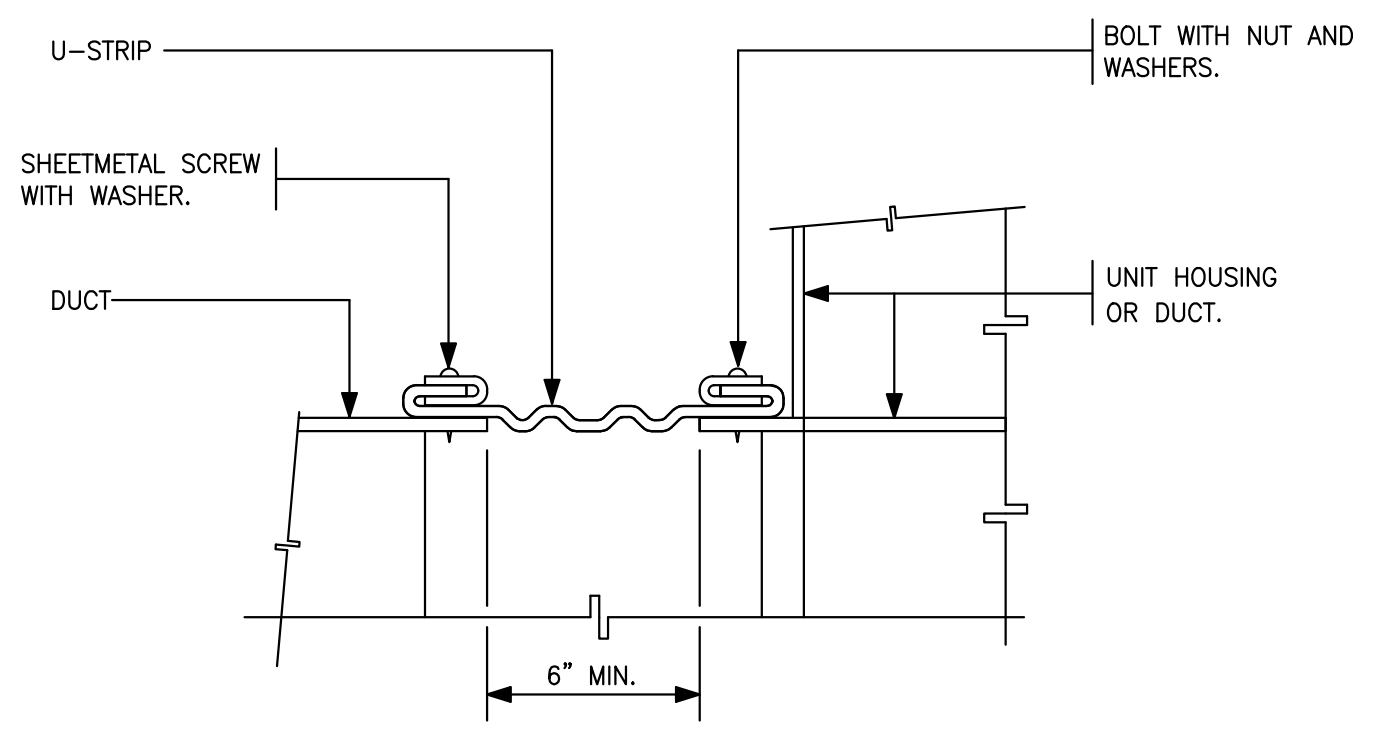


4 LOW PRESSURE BALANCING DAMPER
 M-501 N.T.S

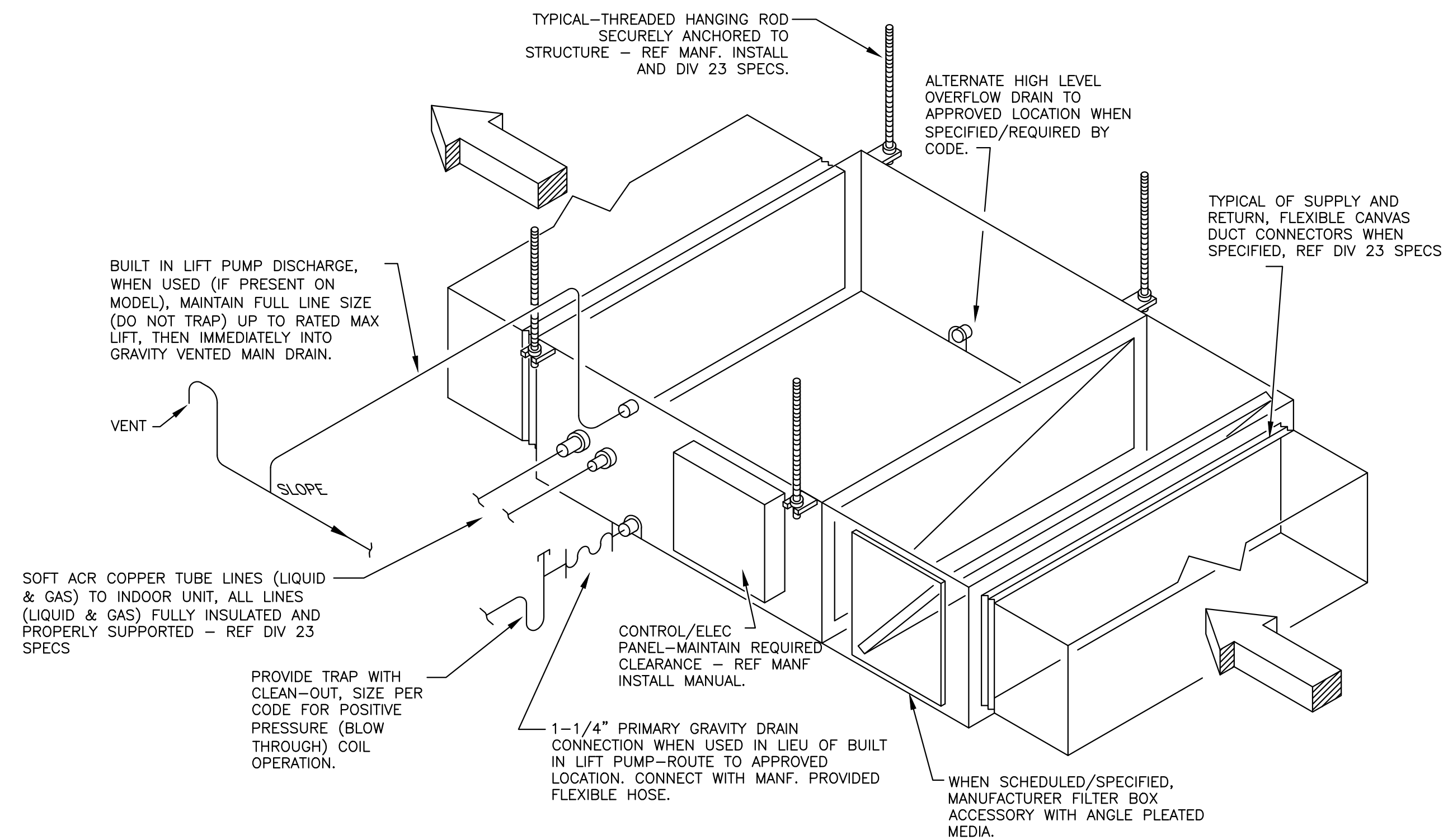


NOTES:
 1. WRAP GREASE DUCT CONTINUOUS AS SHOWN FROM CONNECTION AT FAN THROUGH CURB AND EXTEND 18" MIN. BELOW ROOF DECK.
 2. FOR HORIZONTAL RUNS OF EXHAUST DUCTS PROVIDE TYPICAL TRAPEZE SUPPORT SYSTEM WITH 1/2" HANGER RODS A MAXIMUM OF 6" FROM INSULATION EDGE. TRAPEZE SUPPORTS SHALL BE SPACED A MAXIMUM OF 60" ON CENTER FROM CENTERLINE OF VERTICAL EXHAUST DUCT.
 3. SLOPE HORIZONTAL EXHAUST DUCT RUNS A MINIMUM OF 1/4" PER FOOT (2% SLOPE) TOWARDS EXHAUST HOOD.
 4. PROVIDE INSULATED ACCESS DOOR OR PANEL NEAR MID POINT OF EXHAUST DUCT RUN FOR CLEANING AND INSPECTION OF DUCT. PROVIDE AN APPROVED SIGN ON ACCESS DOOR OR PANEL WHICH READS "ACCESS PANEL DO NOT OBSTRUCT."

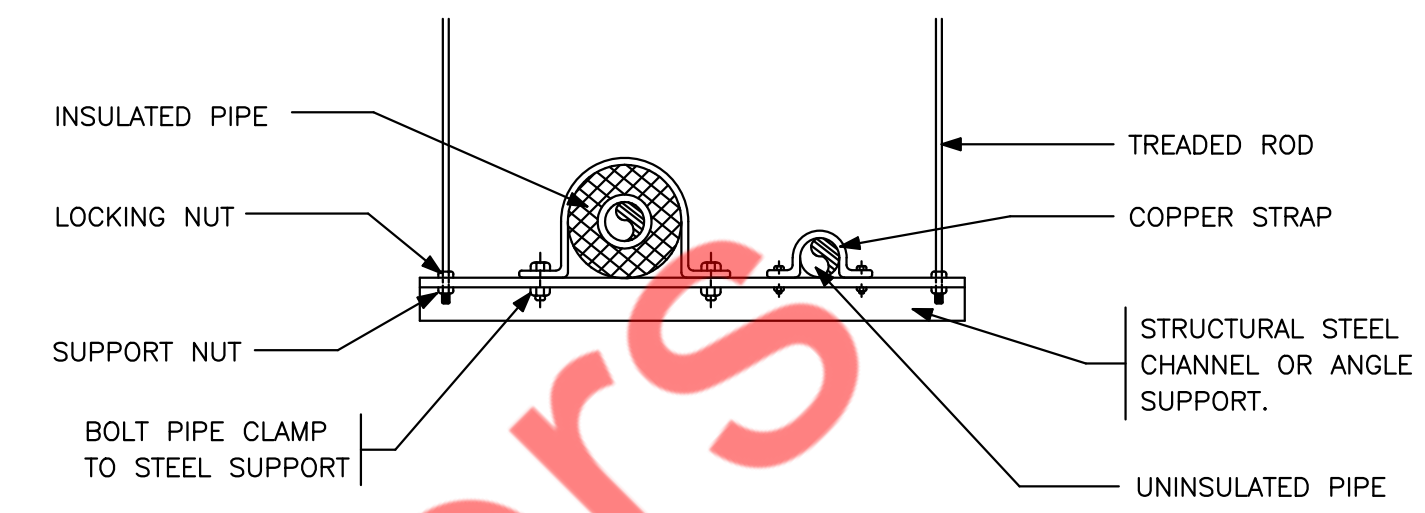
5 KITCHEN EXHAUST DUCT DETAILS
 M-501 N.T.S



6 FLEXIBLE CONNECTION (DUCT-EQUIPMENT)
 M-501 N.T.S



1 TRANE-MITSUBISHI VRF DUCTED INDOOR UNIT DETAIL
M-502 N.T.S

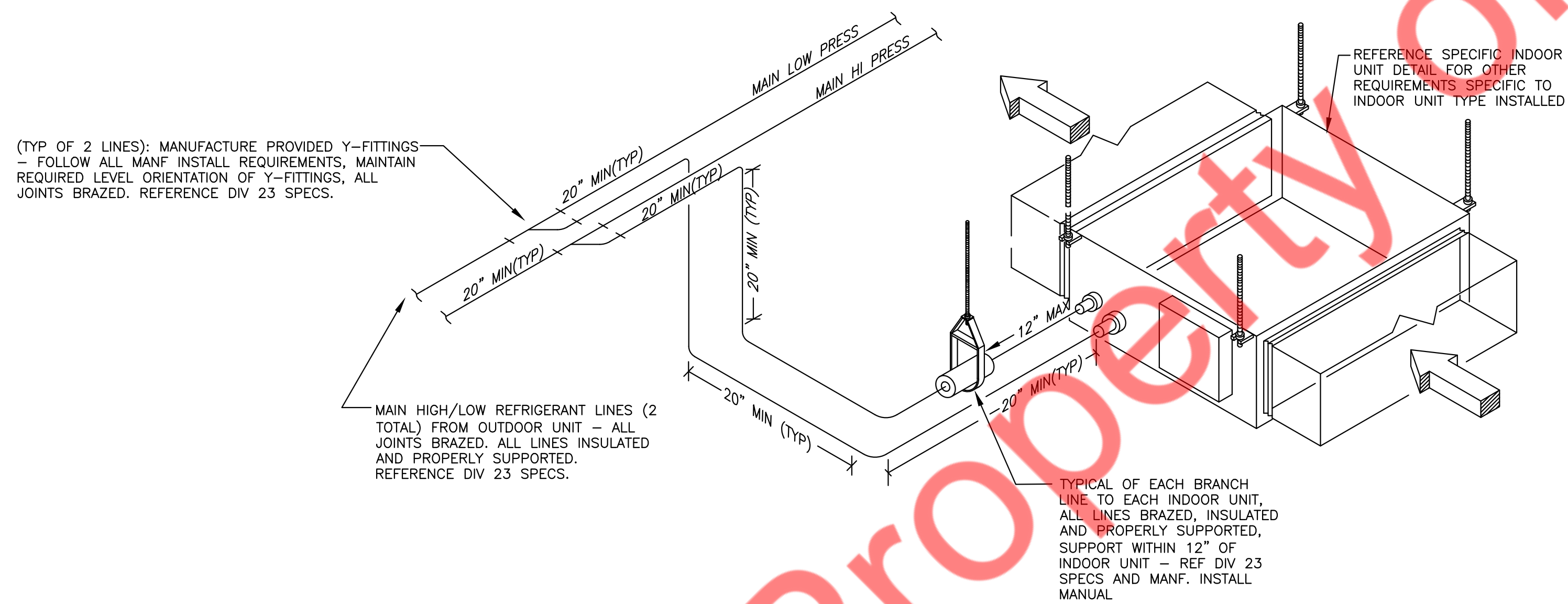


TYPICAL TRAPEZE HANGER SUPPORT

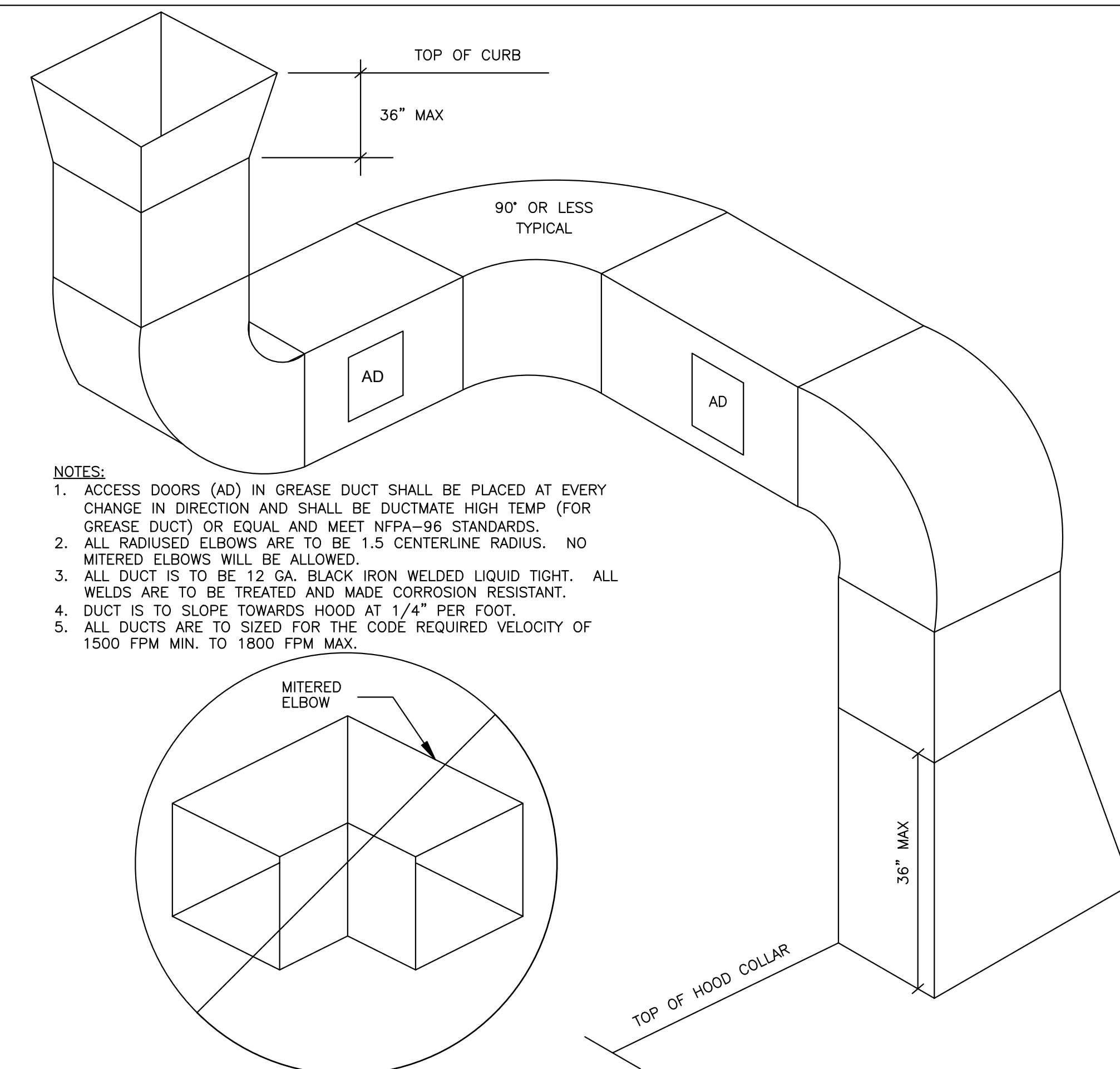
PIPE HANGER ROD AND SPACING SCHEDULE							
NOMINAL PIPE OR TUBE SIZE - INCHES	5/8	3/4	7/8	1	1 1/2	2	2 1/2
HANGER ROD SIZES INCHES	3/8	3/8	3/8	3/8	3/8	3/8	3/8
MAX. SPACING BETWEEN PIPE SUPPORTS - FEET	-	6	-	7	9	10	11
MAX. SPACING BETWEEN CU. TUBE SUPPORTS-FT.	6	6	6	6	8	9	10

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.

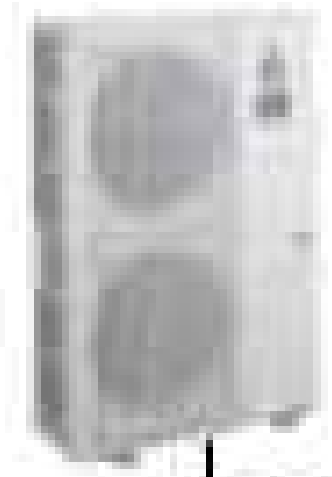
3 METHOD OF HANGING REFRIGERANT PIPING
M-502 N.T.S



2 HEAT PUMP INDOOR BRANCH CONNECTION DETAIL
M-502 N.T.S



4 TYPICAL GREASE DUCT DETAIL
M-502 N.T.S



NTXMSH48A182AA
46,722 BTU/h
52,897 BTU/h

Pipe Dia. Liquid / Gas	Model Number	Elevation	Clg Total (Sens.)
Pipe Length (Elbows)	Address/Group / Room / Tag Ref.	Htg Total	

ACCU-1

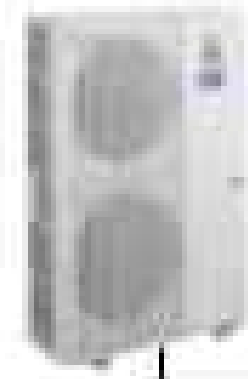
3/8 / 5/8
0.0ft (0)

TPEFYP048MA144A
 RS
1 / AC-1

46,722 BTU/h (33,055 BTU/h)
52,897 BTU/h

Est. Cooling Discharge Air Temp: 56.1
Est. Heating Discharge Air Temp: 107.5

1 ACCU-1 REFRIGERANT RISER DIAGRAM
M-503 / n.t.s



NTXMSH48A182AA
46,722 BTU/h
52,897 BTU/h

Pipe Dia. Liquid / Gas	Model Number	Elevation	Clg Total (Sens.)
Pipe Length (Elbows)	Address/Group / Room / Tag Ref.	Htg Total	

ACCU-2

3/8 / 5/8
0.0ft (0)

CMY-Y62-G-E

46,722 BTU/h (35,974 BTU/h)
52,897 BTU/h

3/8 / 5/8
0.0ft (0)

TPEFYP036MA144A
 RS
2 / AC-2

35,041 BTU/h (28,018 BTU/h)
39,549 BTU/h

Est. Cooling Discharge Air Temp: 59.2
Est. Heating Discharge Air Temp: 98.8

1/4 / 1/2
0.0ft (0)

TPKFYP012LM140A

3 / AC-3

11,680 BTU/h (7,956 BTU/h)
13,348 BTU/h

Est. Cooling Discharge Air Temp: 54.7
Est. Heating Discharge Air Temp: 111.7

2 ACCU-2 REFRIGERANT RISER DIAGRAM
M-503 / 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		DIMENSI ONS (HXWXD) (IN.)	PIPE SIZE (INCH)	WEIGHT (LBS.)	MODEL NO.			
AC-1	SEE ON PLAN	SEE PLAN	CEILING CONCEALED DUCTED	4	48	54	1300	300	0.6	44	1/208-230/60	4.38	15	10X56X29	3/8"	5/8"	1-1/4"	86	TPEFY048MA144A
AC-2	SEE ON PLAN	SEE PLAN	CEILING CONCEALED DUCTED	3	36	42	1270	270	0.6	43	1/208-230/60	4.25	15	10X56X29	3/8"	5/8"	1-1/4"	84	TPEFY036MA144A
AC-3	CELLAR	SEE PLAN	WALL MOUNTED UNIT	1	12	13.5	-	-	-	41	1/208-230/60	0.2	15	12X36X10	1/4"	1/2"	5/8"	24.5	TPKFP012LM140A

NOTES FOR INDOOR UNITS:
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 FOR AC-1 & AC-2.
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 & AC-2 TO BE INCLUDED SECONDARY DRAIN PANS AS WELL AS WATER BUG SENSORS TO SHUT DOWN THE CORRESPONDING EQUIPMENT AND NOTIFY IN EVENT OF A WATER LEAKAGE.
9) ALL AC TO BE INSTALLED WITH VIBRATION ISOLATION (RESILIENTLY SUPPORTED) TO MINIMIZE SOUND AND VIBRATION INTO THE SPACE.

SCHEDULE OF GRILLES/DIFFUSER					MAKE: TITUS	
TAG	TYPE	CFM RANGE	DIMENSION(N) (IN)	MODEL NO.	MAX NC	DBA
A	SUPPLY	400-500	24X24	TMS	25	
B	SUPPLY(PERFORATED)	600-700	24X24	PAS	25	
C	RETURN	830-1230	24X24	50 FL	25	
D	SUPPLY	0-100	12X12	TMS	25	

NOTES FOR DIFFUSERS:
1. ALL GRILLES : CONTRACTOR SHALL COORDINATE WITH LATEST ARCHITECTURAL REFLECTED CEILING PLANS PLANS TO ENSURE PROPER AIR DEVICE BORDER SELECTION.
2. COORDINATE COLOR/FINISH WITH ARCHITECT.
FOR ROUND NECK DIFFUSERS:
6"-100 CFM
8"-101-225 CFM
10"-226-400 CFM
12"-401-600 CFM
14"-601-900 CFM
16"-901-1200 CFM

VRF HEAT PUMP (OUTDOOR UNIT) SCHEDULE														MAKE:- TRANE-MITSUBISHI (OR EQUIVALENT)					
UNIT TAG	LOCATION	INDOOR UNIT SERVED	CAP.TR	COOLING MBH	HEATING MBH	COMPRESSOR TYPE	UNIT DIMENSIONS IN. (HXWXD)	WEIGHT (LBS)	PIPING DIMENSION		ELECTRICAL		REFRIGERANT	EER	SEER	HSPF	SOUND LEVEL (Dba)	MODEL NO.	
ACCU-1	SEE ON PLAN	AC-1	4	48	54	INVERTER SCROLL HERMATIC	52"X42"X14"	278	3/8"	5/8"	208/60/1	36	40	R410	11.3	16.5	11	54	NTXMSH48A182AA
ACCU-2	SEE ON PLAN	AC-2, AC-3	4	48	54	INVERTER SCROLL HERMATIC	52"X42"X14"	278	3/8"	5/8"	208/60/1	36	40	R410	11.3	16.5	11	54	NTXMSH48A182AA

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. PROVIDE SIDE WALL BRACKET/SUPPORTS AND VIBRATION ISOLATORS FOR CONDENSER MOUNTING.
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.

AIR BALANCE					
UNIT	AREA SERVED	SUPPLY AIR (CFM)	OUTSIDE AIR (CFM)	RETURN AIR (CFM)	EXHAUST AIR (CFM)
AC-1	SEE PLAN	1300	300	1000	0
AC-2	SEE PLAN	1270	270	1000	0
MUA-1	SEE PLAN	2930	2930	0	0
KEF-1	SEE PLAN	0	0	0	3412
EF-1	SEE PLAN	0	0	0	70
TOTAL:		5500	3500	2000	3482

BUILDING PRESSURE: 18 POSITIVE
NOTES:
1. CONTRACTOR TO ADJUST MOTORIZED DAMPER ON FRESH AIR TAP TO PROVIDE OUTSIDE AIR AS MENTIONED IN ABOVE TABLE.

MAKE UP AIR UNIT SCHEDULE																				
UNIT ID	SERVICE	CFM	ESP(IN W.G.)	COOLING DATA		HEATING DATA		ELECTRICAL DATA						THERMAL EFF. (%)	WEIGHT (LBS)	MANUFACTURER	MODEL			
				TOTAL COOLING MBH	SENSIBLE COOLING MBH	INPUT MBH	OUTPUT MBH	HP	VOLTS/PH	FAN SECTION		CONDENSER SECTION						SEER		
MUA-1	CAPTIVEAIRE	2930	1	2.5	62.2	47.3	197.05	181.29	2.00	208/3	10.4	15	11.2	20	14	14	92%	1630	CAPTIVEAIRE	A2-D.250-20D-MPU

REMARK:
1. REFER TO HOOD DETAILS, FROM M-700.00 TO M-703.00
2. ALL EQUIPMENT NORMAL POWER WIRING BY ELECTRICAL CONTRACTOR. COORDINATE POWER REQUIREMENTS.

EXHAUST FAN SCHEDULE										
UNIT ID	MANUFACTURER	CFM	ESP(IN W.G.)	RPM	HP	VOLTS/PH	FLA(A)	WEIGHT (LBS)	MODEL	NOTES
KEF-1	CAPTIVEAIRE	3412	2	1313	5.00	208/3	15	260	DU200HFA	1
EF-1	GREENHECK	70	0.1	836	-	115/1	0.29	12	SP-A50-90-VG	2

REMARK:
1. REFER TO HOOD DETAILS, FROM M-700.00 TO M-703.00
2. PROVIDE GRAVITY BACKDRAFT DAMPER

ELECTRIC UNIT HEATERS SCHEDULE										
UNIT TAG	SERVING	TYPE	KW	BTU/HR	ELECTRIC DATA (V/PH/HZ)	AMPS (A)	QTY (NOS)	DIMENSIONS (WXHXD)	MODEL NO.	MAKE
EUH-1	SEE PLAN	WALL MOUNTED	2	6826	208/1/60	9.6	1	10-6/8"X12-1/8"X4"	CWH1208DSF	QMARK

NOTES FOR HEATER:
1) PROVIDE DISCONNECTION SWITCH.
2) "HEATER ON" PILOT LIGHT.
3) THREE-POSITION SELECTOR SWITCH (HEATER-STANDBY-FAN)
4) BUILT-IN THERMOSTAT 40F TO 85 F RANGE.
5) ALL UNIT HEATERS SHALL BE INSTALLED IN ACCORDANCE WITH THE LISTING AND MANUFACTURER'S INSTALLATION INSTRUCTIONS.

AIR CURTAIN SCHEDULE							
MANUFACTURER	UNIT ID	MODEL	LENGTH (IN.)	CFM	QUANTITY	V/PH/HZ	AMPS (A)
MARS	ACH-1	LPV236-1UD-08	36	900	1	208-230/1/60	1.2

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	NUMBER OF PEOPLE AS PER NYCMC 2022	NUMBER OF CHAIR	FINAL FLOOR NO.	CFM/PEOPLE	MIN OUTSIDE AIR AS PER NYCMC 2022	REQ. OA (CFM)	Provided OA (CFM)	EXHAUST AIR FLOW RATE (CFM)	TOTAL EXHAUST (CFM)	PROVIDED EXHAUST (CFM)
SALES AREA	245	15	4	0	15	7.5	0.12	142	0	0	0	0
KITCHEN	145	0	0	0	2	0	0	0	3500	0.7	101.5	3412
STORAGE	225	0	0	0	0	0	0.12	27	0	0	0	0
TOILET	18	0	0	0	0	0	0	0	0	0	0	70
TOTAL								169	3500	0	101.5	3482

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 SIDE WALL	ACCU-1 & ACCU-2	FIRST FLOOR	KITCHEN + SALES AREA	390	11.5	4485	26	78	3000.0	ACCEPTABLE
CONNECTED TO AC-1	ACCU-1	FIRST FLOOR	KITCHEN + SALES AREA	390	11.5	4485	26	39	1500.0	ACCEPTABLE
CONNECTED TO AC-2	ACCU-2	FIRST FLOOR	KITCHEN + SALES AREA	390	11.5	4485	26	39	1500.0	ACCEPTABLE
CONNECTED TO AC-3	ACCU-2	CELLAR	STORAGE	225	7	1575	26	39	1500.0	ACCEPTABLE

FOR QUESTIONS CALL THE
 MODEL #207
 40-100-103-104
 40-100-103-104
 40-100-103-104

HOOD INFORMATION - JGB812787

NO.	TAG	TYPE	MANUFACTURER	LENGTH	WIDTH	HEIGHT	DEPTH	WEIGHT	FINISH	NOTES
1	HOOD	HOOD	UL-2021	48"	30"	18"	18"	150 LB	SS	SEE SPECIFICATIONS
2	HOOD	HOOD	UL-2021	48"	30"	18"	18"	150 LB	SS	SEE SPECIFICATIONS

HOOD INFORMATION

NO.	TAG	TYPE	MANUFACTURER	LENGTH	WIDTH	HEIGHT	DEPTH	WEIGHT	FINISH	NOTES
1	HOOD	HOOD	UL-2021	48"	30"	18"	18"	150 LB	SS	SEE SPECIFICATIONS
2	HOOD	HOOD	UL-2021	48"	30"	18"	18"	150 LB	SS	SEE SPECIFICATIONS

PERFORATED SUPPLY PLUNGES

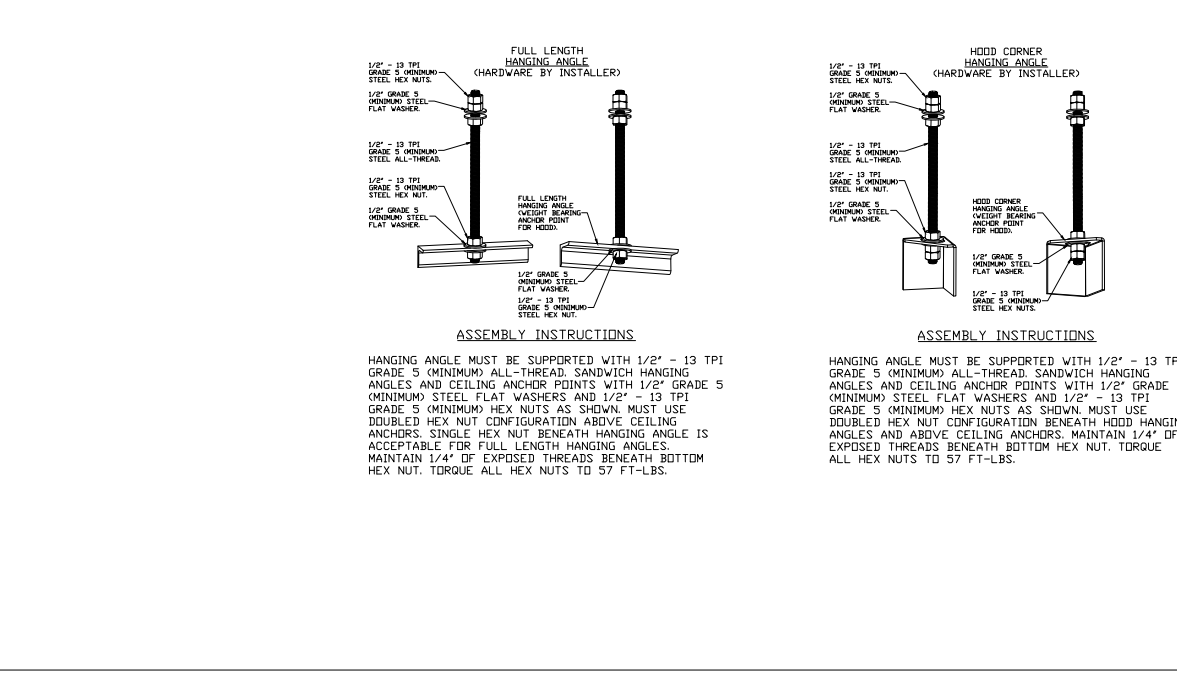
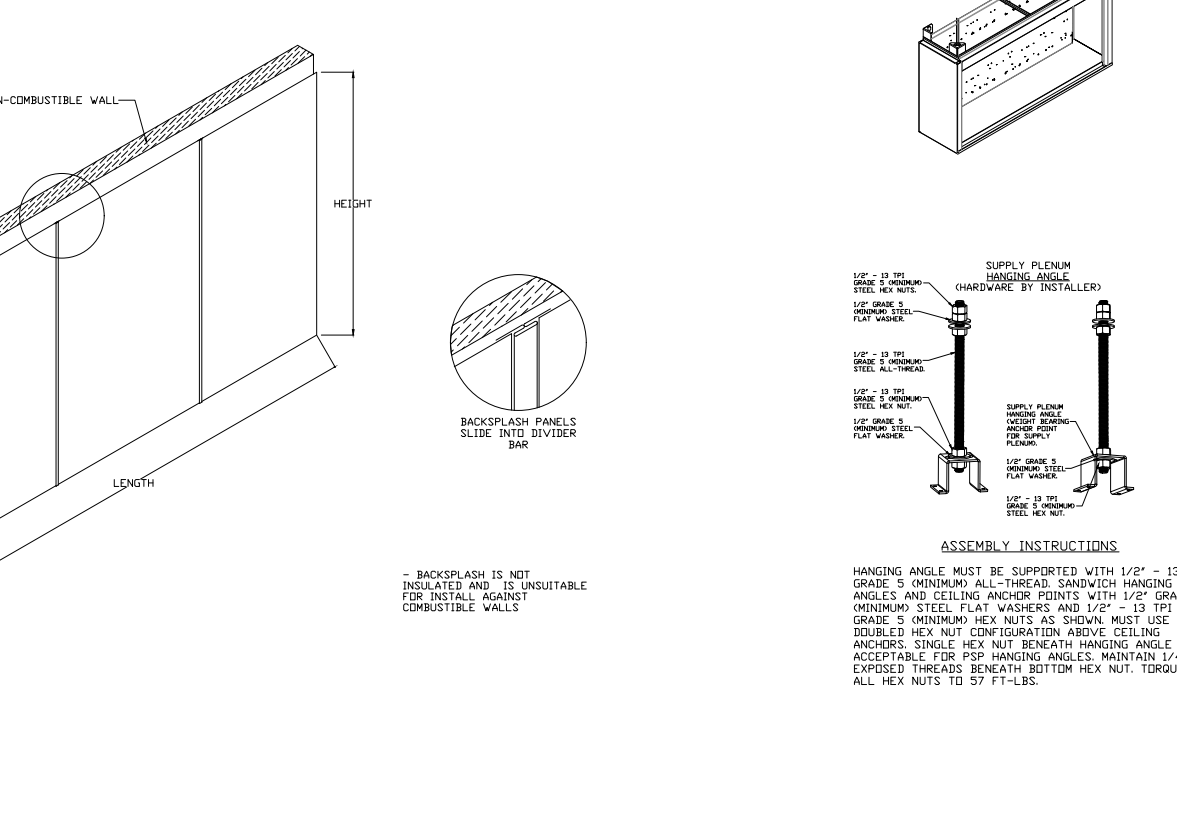
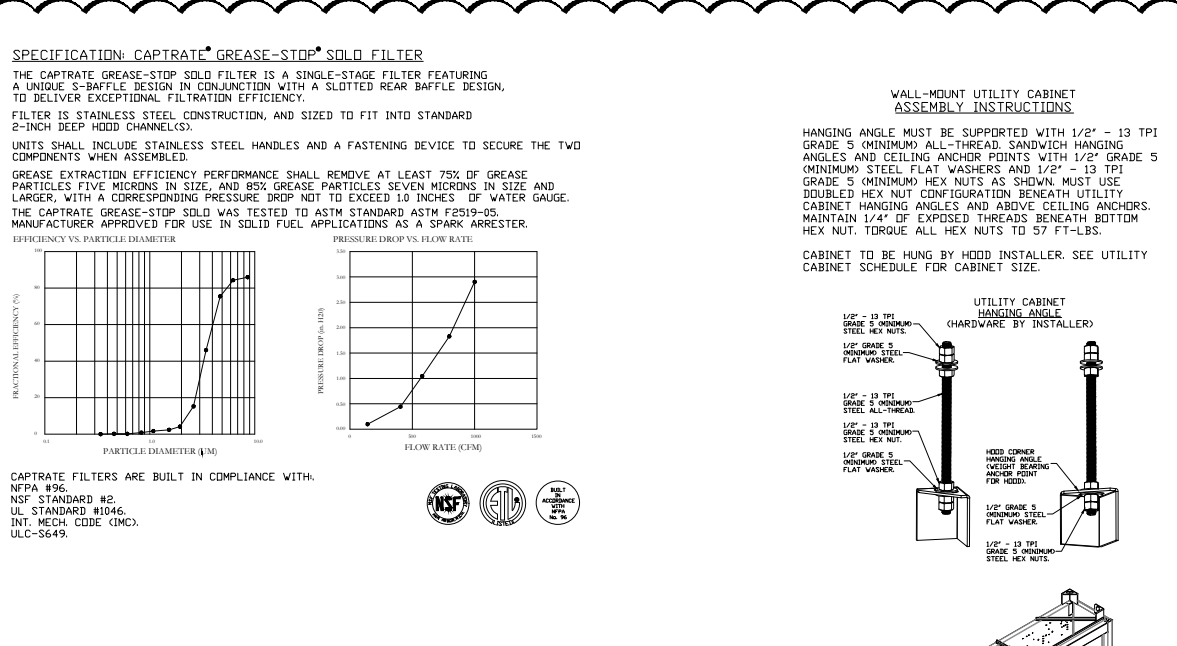
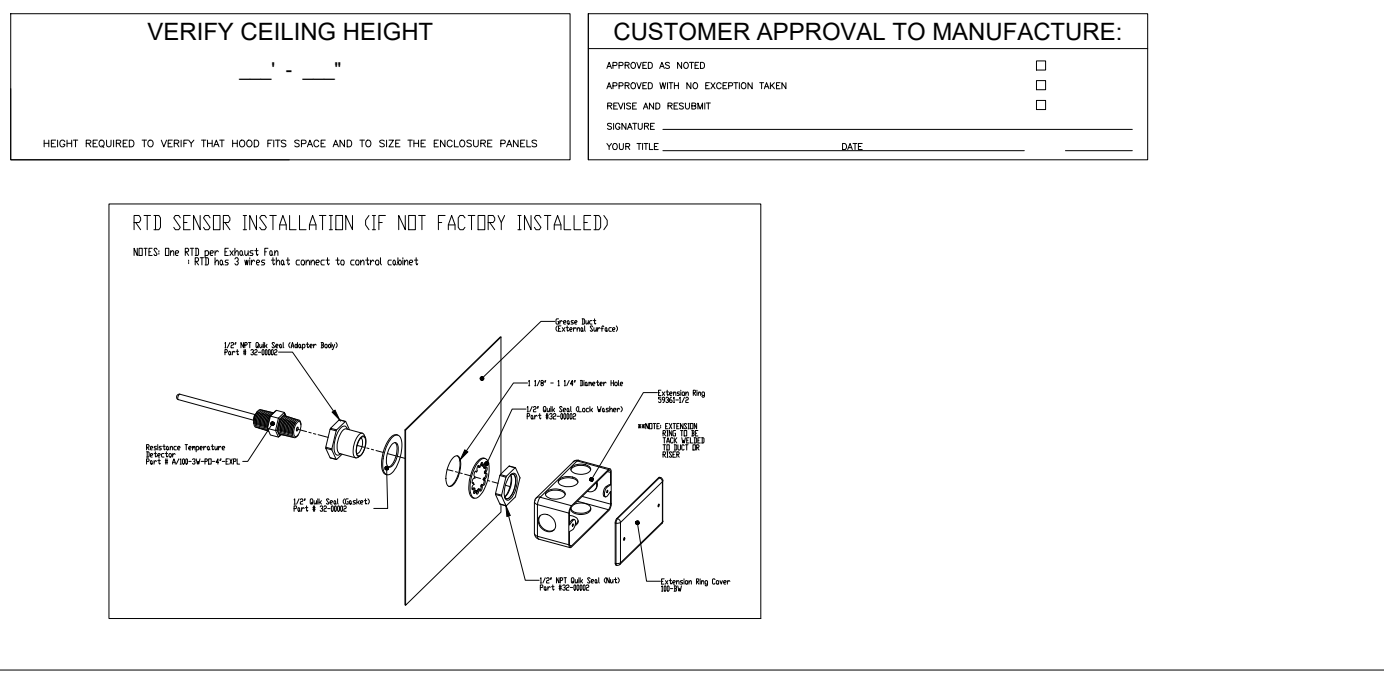
NO.	TAG	TYPE	MANUFACTURER	LENGTH	WIDTH	HEIGHT	DEPTH	WEIGHT	FINISH	NOTES
1	HOOD	HOOD	UL-2021	48"	30"	18"	18"	150 LB	SS	SEE SPECIFICATIONS
2	HOOD	HOOD	UL-2021	48"	30"	18"	18"	150 LB	SS	SEE SPECIFICATIONS

GREASE DUCT & CHIMNEY SPECIFICATIONS
 PROVIDE GREASE DUCT EQUAL TO CAPTIVEAIRE SYSTEMS MODEL "DW"
 ROUND 20 GAUGE 430 STAINLESS STEEL DUCTWORK. MODEL "DW"
 IS LISTED TO UL-1978 AND IS INSTALLED USING "V" CLAMP LOCKING
 CONNECTIONS SEALED WITH 3M FIRE BARRIER 2000 PLUS. MODEL "DM"
 DOES NOT REQUIRE WELDING PROVIDING IT HAS BEEN INSTALLED PER
 THE MANUFACTURER'S INSTALLATION GUIDE.
 PROVIDE RAISED ACCESS DOORS AT EVERY CHANGE IN DIRECTION AND EVERY 12' ON CENTER.
 PER MANUFACTURER'S LISTING MODEL "DW" HORIZONTAL RUNS LESS THAN 75 FT. CAN BE
 SLOPED 1/16" PER 12". HORIZONTAL RUNS MORE THAN 75 FT. CAN BE SLOPED 3/16" PER 12".
 DUCT SHOULD BE SLOPED AS MUCH AS POSSIBLE TO REDUCE THE CHANCE OF GREASE
 ACCUMULATION IN HORIZONTAL RUNS.
 IF THE DUCT OR CHIMNEY IS WITHIN 18 INCHES OF COMBUSTIBLE MATERIAL, PROVIDE
 UL-2021 OR UL-103 HT LISTED DOUBLE WALL GREASE DUCT OR DOUBLE WALL CHIMNEY
 EQUAL TO CAPTIVEAIRE SYSTEMS MODEL "DM" OR 2" TYPE HT, OR 3" OR 3 1/2" ROUND 20 GAUGE
 430 STAINLESS INNER DUCT INSULATED WITH A 24 GAUGE 430 STAINLESS OUTER SHELL.

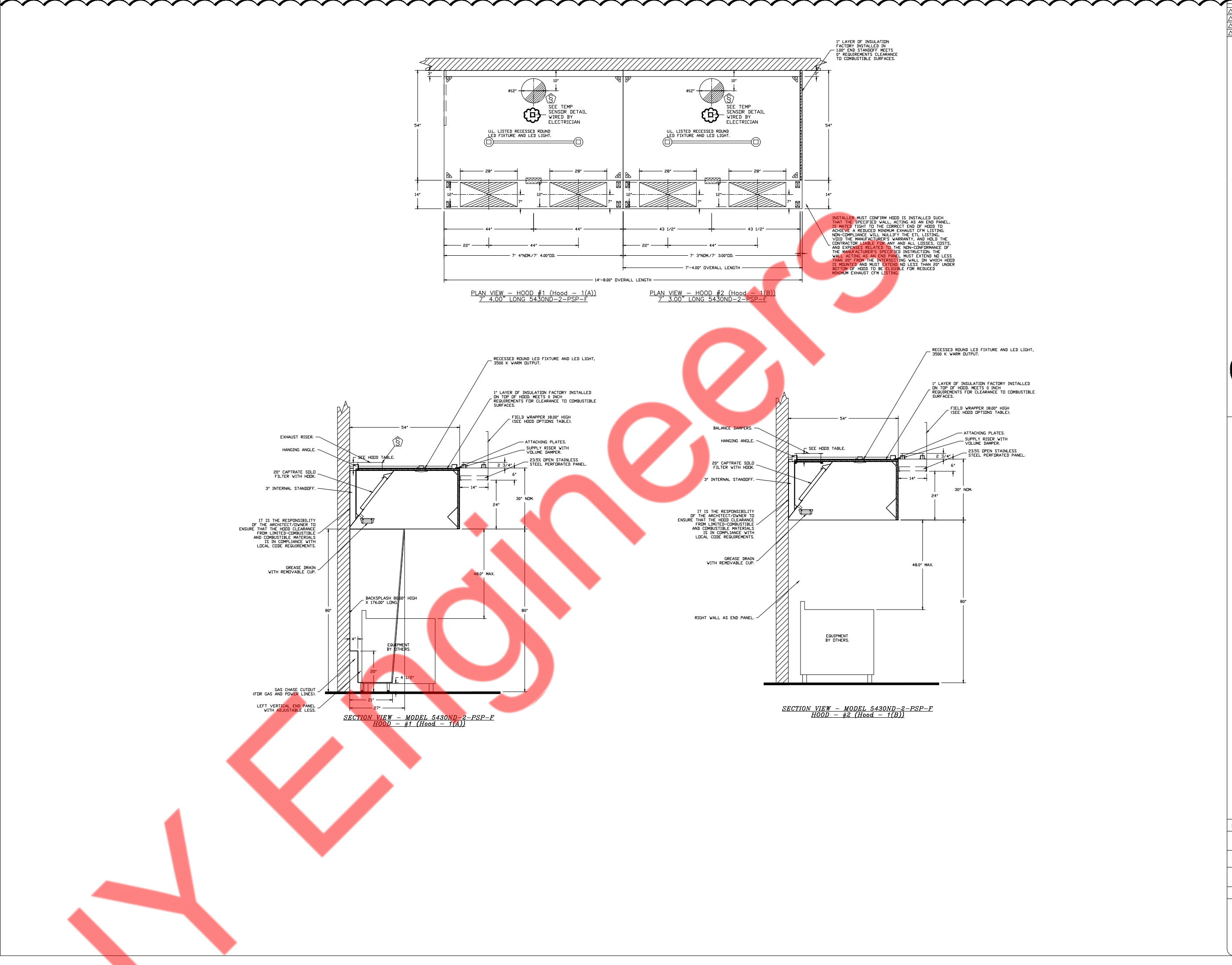
VERIFY CEILING HEIGHT
 _____"
 _____"
 _____"

CUSTOMER APPROVAL TO MANUFACTURE:

APPROVED BY OWNER: _____
 APPROVED BY ARCHITECT: _____
 APPROVED BY CONTRACTOR: _____
 DATE: _____

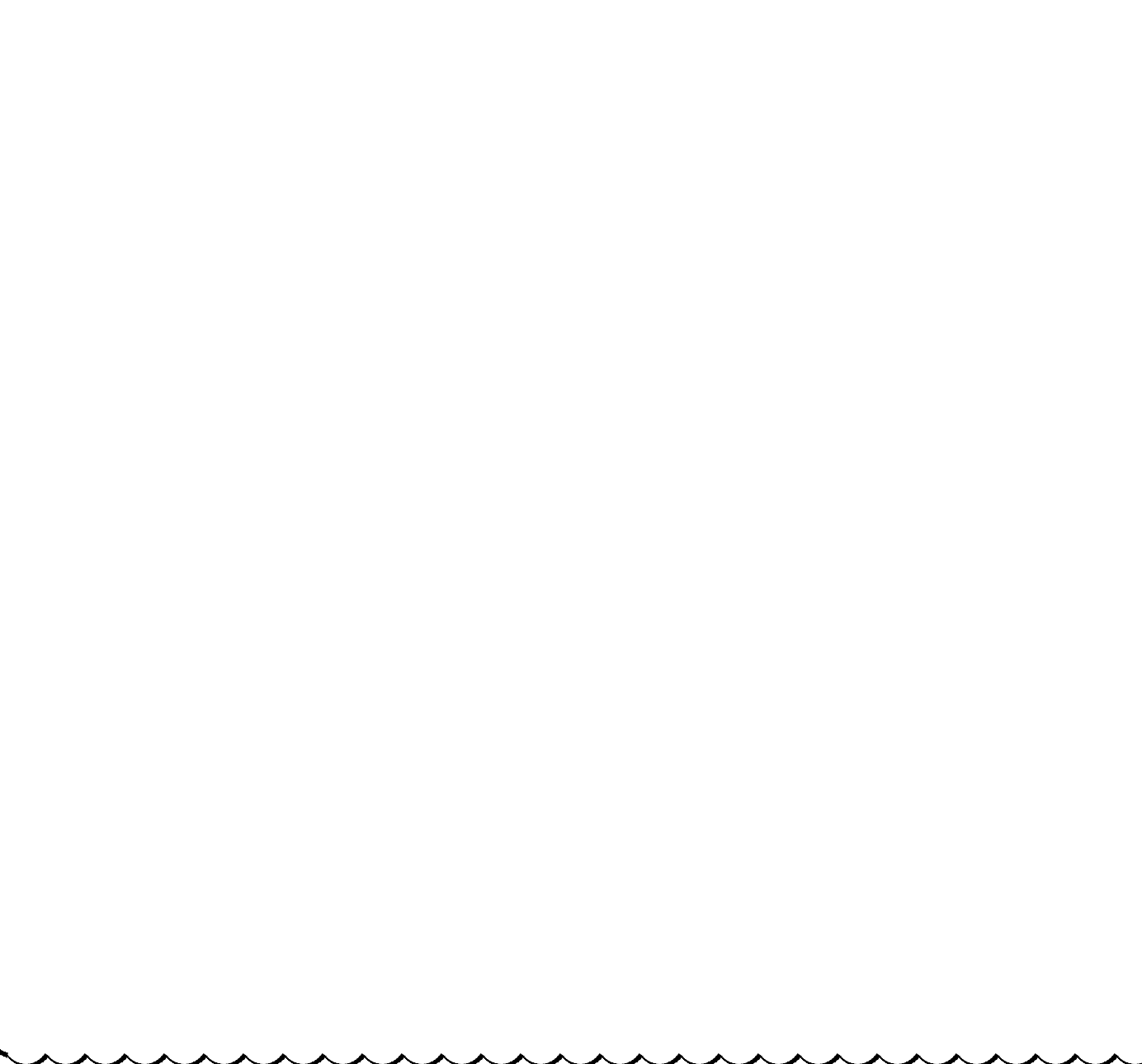


CAPTIVEAIRE
 Empenada Mono - 1435 1st Ave
 1435 1st Avenue,
 New York, NY, 10021
 DATE: 11/20/2023
 DWG #: 037787
 DRAWN BY: _____
 SCALE: 3/4" = 1'-0"
 MASTER DRAWING
 SHEET NO. _____



FIRE SYSTEM INFORMATION - JGB812787

NO.	TAG	TYPE	MANUFACTURER	LENGTH	WIDTH	HEIGHT	DEPTH	WEIGHT	FINISH	NOTES
1	HOOD	HOOD	UL-2021	48"	30"	18"	18"	150 LB	SS	SEE SPECIFICATIONS
2	HOOD	HOOD	UL-2021	48"	30"	18"	18"	150 LB	SS	SEE SPECIFICATIONS

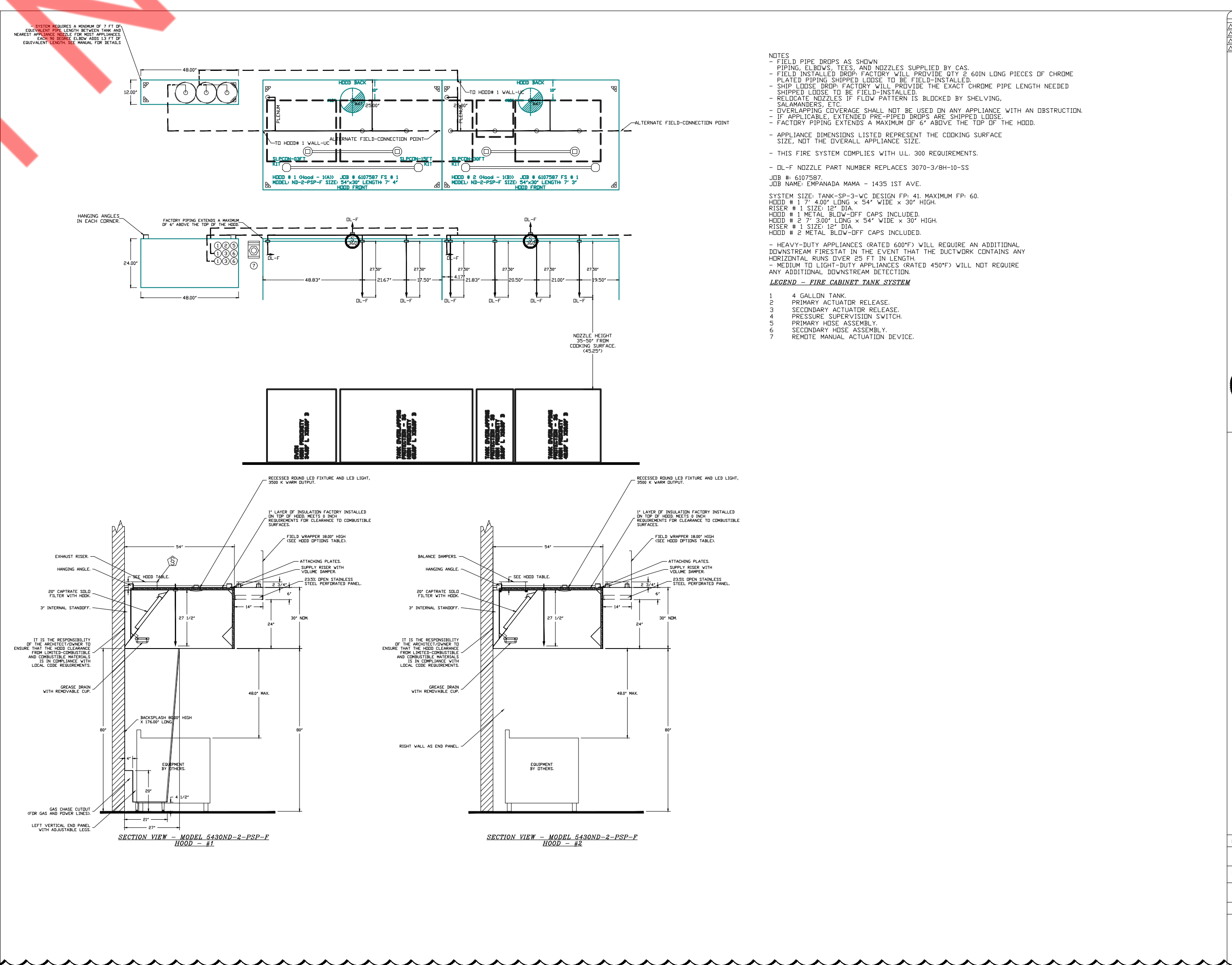


GAS VALVES AND STRAINERS

NO.	TAG	TYPE	MANUFACTURER	LENGTH	WIDTH	HEIGHT	DEPTH	WEIGHT	FINISH	NOTES
1	HOOD	HOOD	UL-2021	48"	30"	18"	18"	150 LB	SS	SEE SPECIFICATIONS
2	HOOD	HOOD	UL-2021	48"	30"	18"	18"	150 LB	SS	SEE SPECIFICATIONS



CAPTIVEAIRE
 Empenada Mono - 1435 1st Ave
 1435 1st Avenue,
 New York, NY, 10021
 DATE: 11/20/2023
 DWG #: 037787
 DRAWN BY: _____
 SCALE: 3/4" = 1'-0"
 MASTER DRAWING
 SHEET NO. _____



CAPTIVEAIRE
 Empenada Mono - 1435 1st Ave
 1435 1st Avenue,
 New York, NY, 10021
 DATE: 11/20/2023
 DWG #: 037787
 DRAWN BY: _____
 SCALE: 3/4" = 1'-0"
 MASTER DRAWING
 SHEET NO. _____

CAPTIVEAIRE
 Empenada Mono - 1435 1st Ave
 1435 1st Avenue,
 New York, NY, 10021
 DATE: 11/20/2023
 DWG #: 037787
 DRAWN BY: _____
 SCALE: 3/4" = 1'-0"
 MASTER DRAWING
 SHEET NO. _____

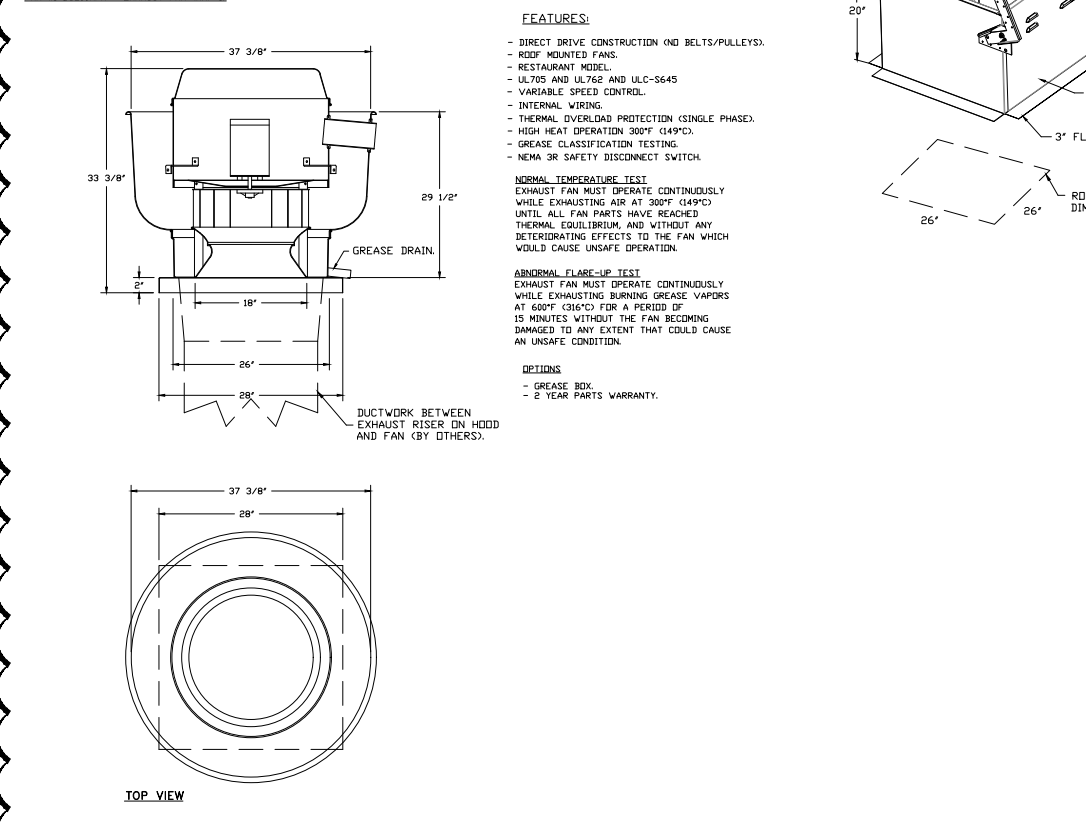
PRODUCT DATA INFORMATION - 2024/02/27														
UNIT	TAG	QTY	FAN UNIT MODEL #	MANUFACTURER	CFM	ESP	HP	WHP	PHASE	VOLT	FLA	SECURITY	WEIGHT	QTY
1	KXP-1	1	40-300-000-MV	CAPTIVEAIRE	3000	2.0	0.25	0.25	1	208	15.0	15.0	15.0	15.0

PRODUCT DATA INFORMATION - 2024/02/27														
UNIT	TAG	QTY	FAN UNIT MODEL #	MANUFACTURER	CFM	ESP	HP	WHP	PHASE	VOLT	FLA	SECURITY	WEIGHT	QTY
1	KXP-1	1	40-300-000-MV	CAPTIVEAIRE	3000	2.0	0.25	0.25	1	208	15.0	15.0	15.0	15.0

PRODUCT DATA INFORMATION - 2024/02/27														
UNIT	TAG	QTY	FAN UNIT MODEL #	MANUFACTURER	CFM	ESP	HP	WHP	PHASE	VOLT	FLA	SECURITY	WEIGHT	QTY
1	KXP-1	1	40-300-000-MV	CAPTIVEAIRE	3000	2.0	0.25	0.25	1	208	15.0	15.0	15.0	15.0

PRODUCT DATA INFORMATION - 2024/02/27														
UNIT	TAG	QTY	FAN UNIT MODEL #	MANUFACTURER	CFM	ESP	HP	WHP	PHASE	VOLT	FLA	SECURITY	WEIGHT	QTY
1	KXP-1	1	40-300-000-MV	CAPTIVEAIRE	3000	2.0	0.25	0.25	1	208	15.0	15.0	15.0	15.0

PRODUCT DATA INFORMATION - 2024/02/27														
UNIT	TAG	QTY	FAN UNIT MODEL #	MANUFACTURER	CFM	ESP	HP	WHP	PHASE	VOLT	FLA	SECURITY	WEIGHT	QTY
1	KXP-1	1	40-300-000-MV	CAPTIVEAIRE	3000	2.0	0.25	0.25	1	208	15.0	15.0	15.0	15.0



TOP VIEW

GREASE DUCT & CHIMNEY SPECIFICATIONS:
 PROVIDE GREASE DUCT EQUAL TO CAPTIVEAIRE SYSTEMS MODEL "DW"
 ROUND 20 GAUGE 430 STAINLESS STEEL DUCT (MFR: MODEL "DW"
 IS LISTED TO UL-1978 AND IS INSTALLED USING "V" CLAMP LOCKING
 CONNECTIONS SEALED WITH 3M FIRE BARRIER 2000 PLUS. MODEL "DW"
 DOES NOT REQUIRE WELDING PROVIDING IT HAS BEEN INSTALLED PER
 THE MANUFACTURER'S INSTALLATION GUIDE.
 PROVIDE RATED ACCESS DOORS AT EVERY CHANGE IN DIRECTION AND EVERY 12' ON CENTER.
 PER MANUFACTURER'S LISTING MODEL "DW" HORIZONTAL RUNS LESS THAN 75 FT. CAN BE
 SLOPED 1/16" PER 12". HORIZONTAL RUNS MORE THAN 75 FT. CAN BE SLOPED 3/16" PER 12".
 DUCT SHOULD BE SLOPED AS MUCH AS POSSIBLE TO REDUCE THE CHANCE OF GREASE
 ACCUMULATION IN HORIZONTAL RUNS.
 IF THE DUCT OR CHIMNEY IS WITHIN 18 INCHES OF COMBUSTIBLE MATERIAL, PROVIDE
 UL-2221 OR UL-103 HI LISTED DOUBLE WALL GREASE DUCT OR DOUBLE WALL CHIMNEY
 EQUAL TO CAPTIVEAIRE SYSTEMS MODEL "DW- 2R, 2R TYPE HT, 3R, OR 32" ROUND 20 GAUGE
 430 STAINLESS INNER DUCT INSULATED WITH A 24 GAUGE 430 STAINLESS OUTER SHELL.

CUSTOMER APPROVAL TO MANUFACTURE:

APPROVED AS NOTED:

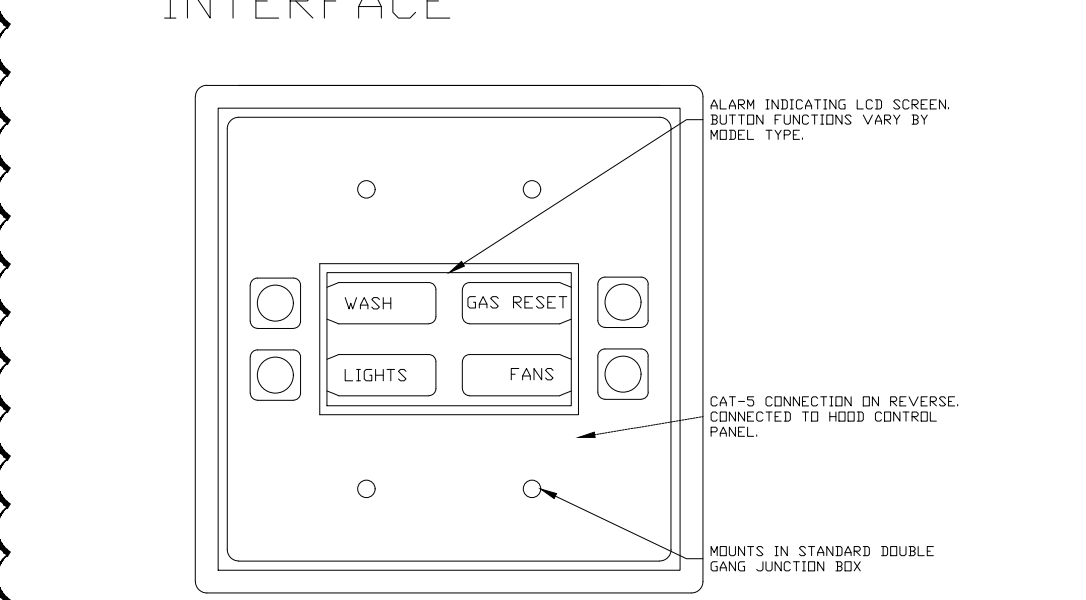
APPROVED WITH NO EXCEPTIONS THERE:

REVISIONS:

DATE: _____



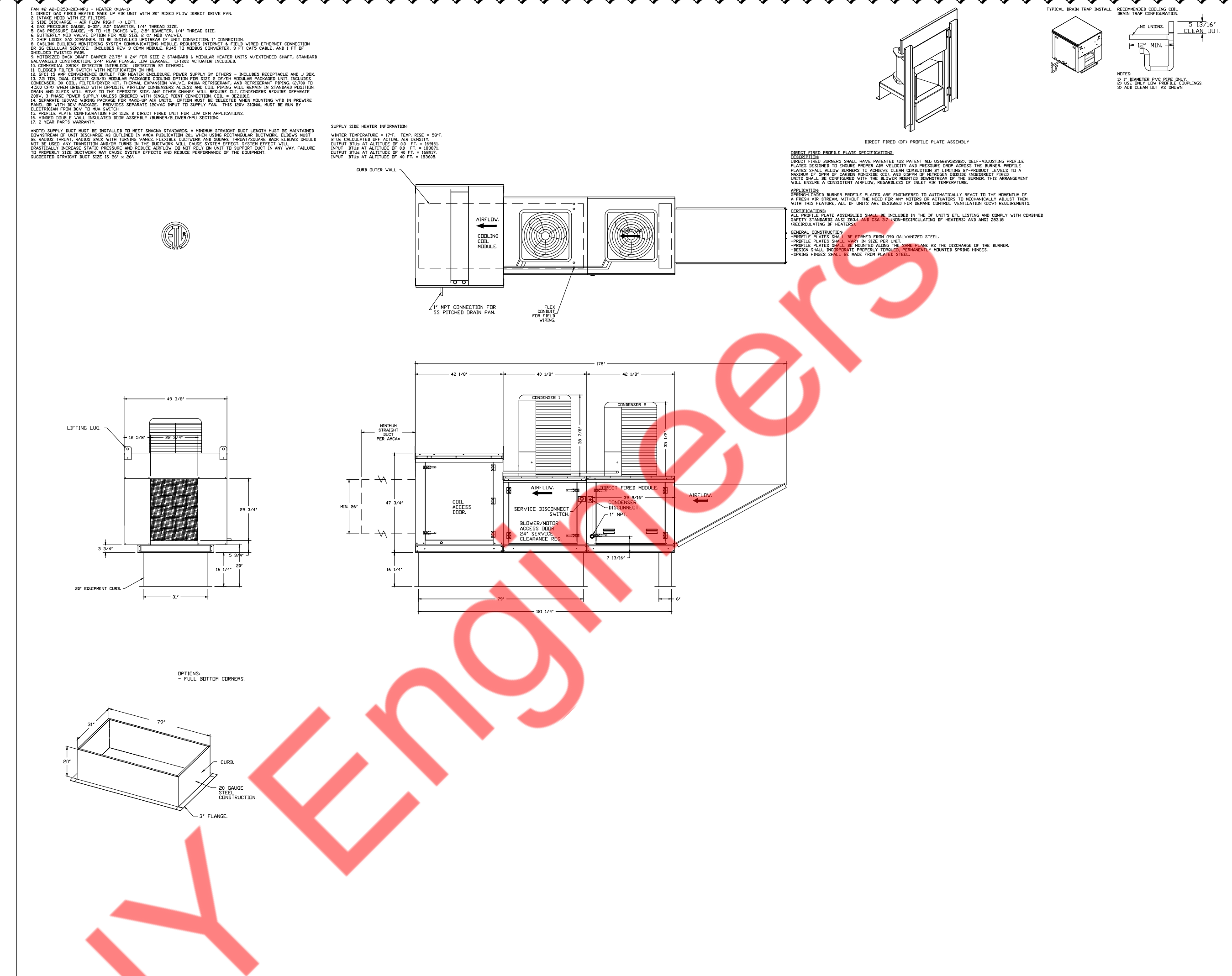
NOTE: UL 785 INSTALL.



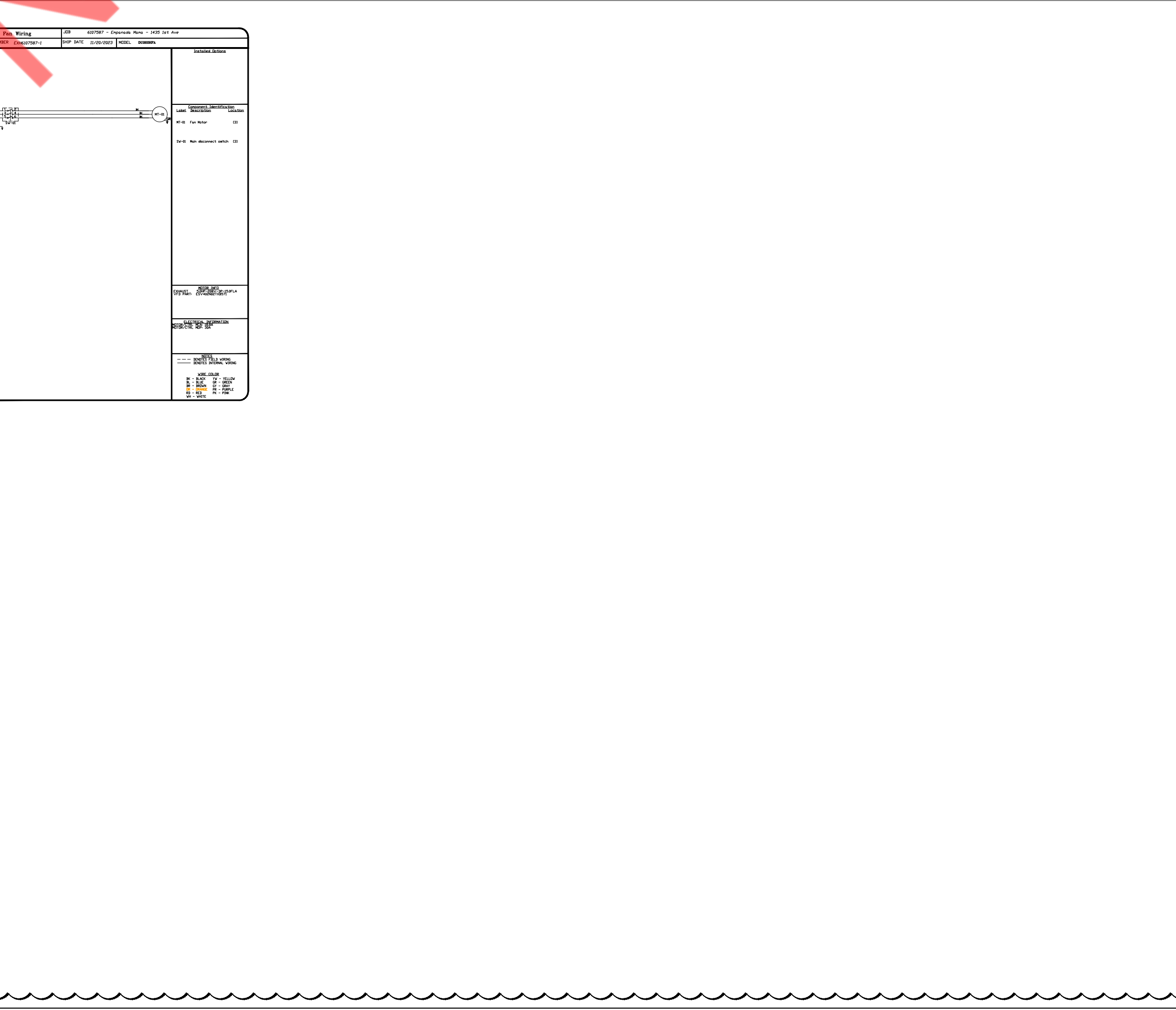
*****ATTENTION ELECTRICIAN*****
 LOAD SIDE WIRING FOR EACH FAN MUST BE RUN
 IN SEPARATE CONDUIT FROM EMS SYSTEM TO EACH
 FAN ON ROOF.

PRODUCT DATA INFORMATION - 2024/02/27														
UNIT	TAG	QTY	FAN UNIT MODEL #	MANUFACTURER	CFM	ESP	HP	WHP	PHASE	VOLT	FLA	SECURITY	WEIGHT	QTY
1	KXP-1	1	40-300-000-MV	CAPTIVEAIRE	3000	2.0	0.25	0.25	1	208	15.0	15.0	15.0	15.0

CAPTIVEAIRE
 Empavaada Mono - 1435 1st Ave
 1435 1st Avenue,
 New York, NY, 10021
 DATE: 11/20/2023
 DWG #: 037787
 DRAWN BY:
 SCALE: 3/4" = 1'-0"
 MASTER DRAWING
 SHEET NO. 5

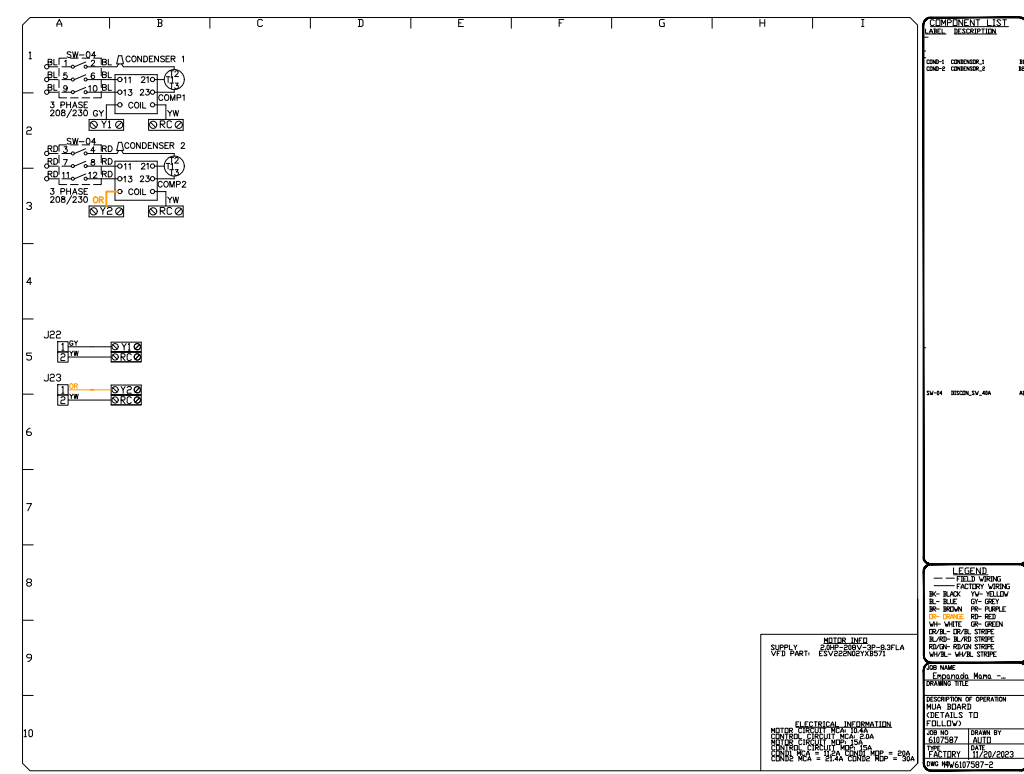
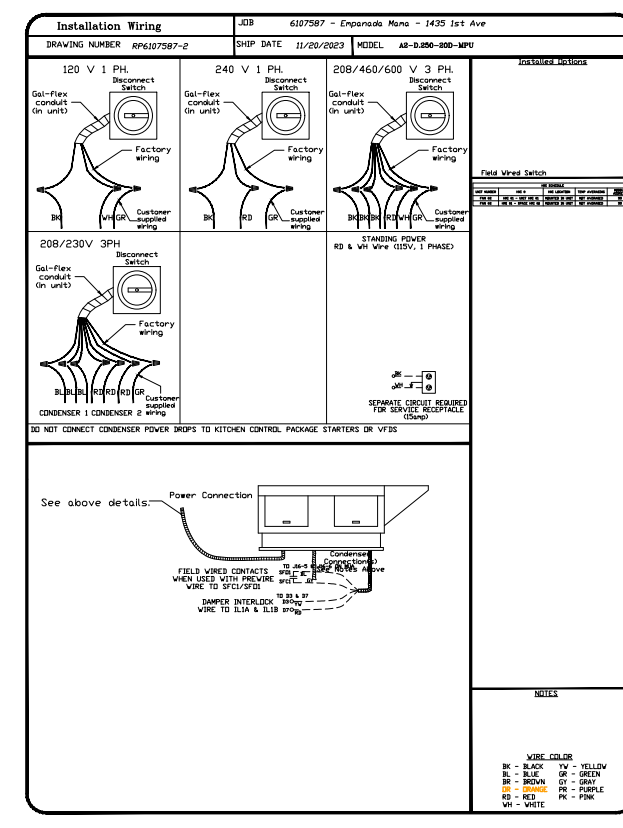
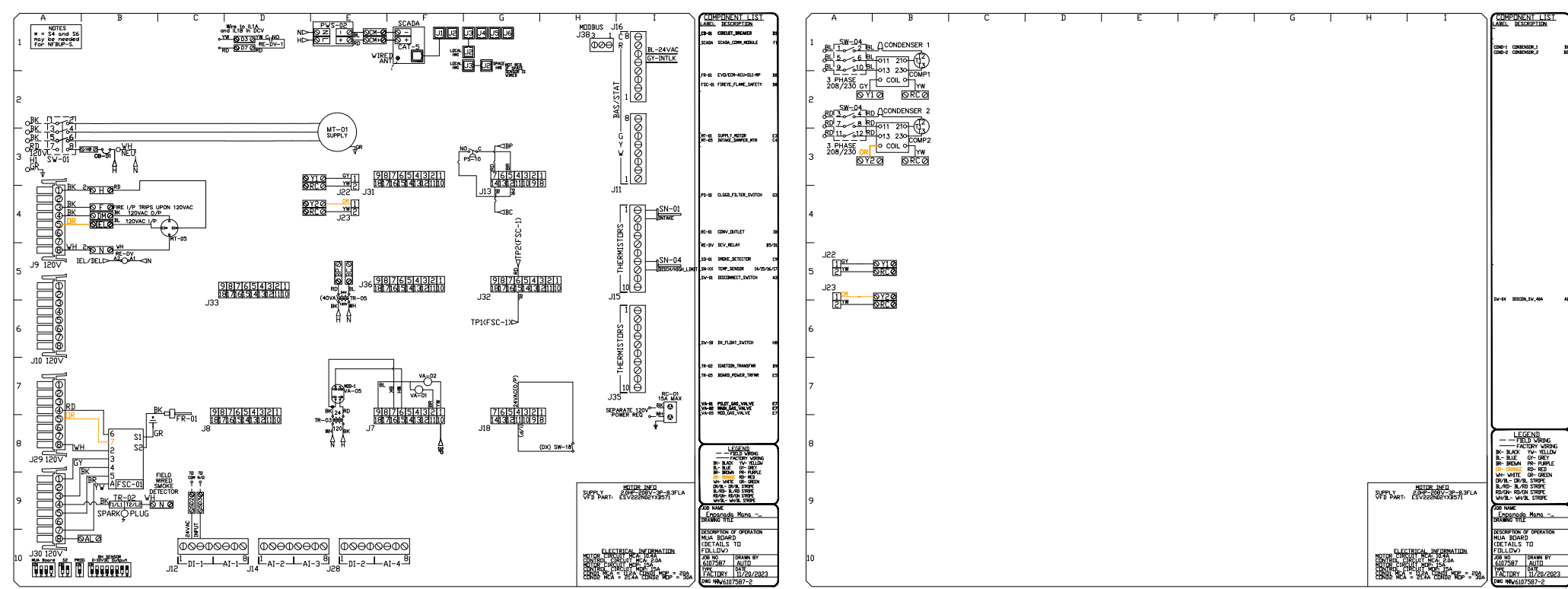


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 1435 1st Avenue,
 New York, NY, 10021
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 DWG #: 037787
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 SCALE: 3/4" = 1'-0"
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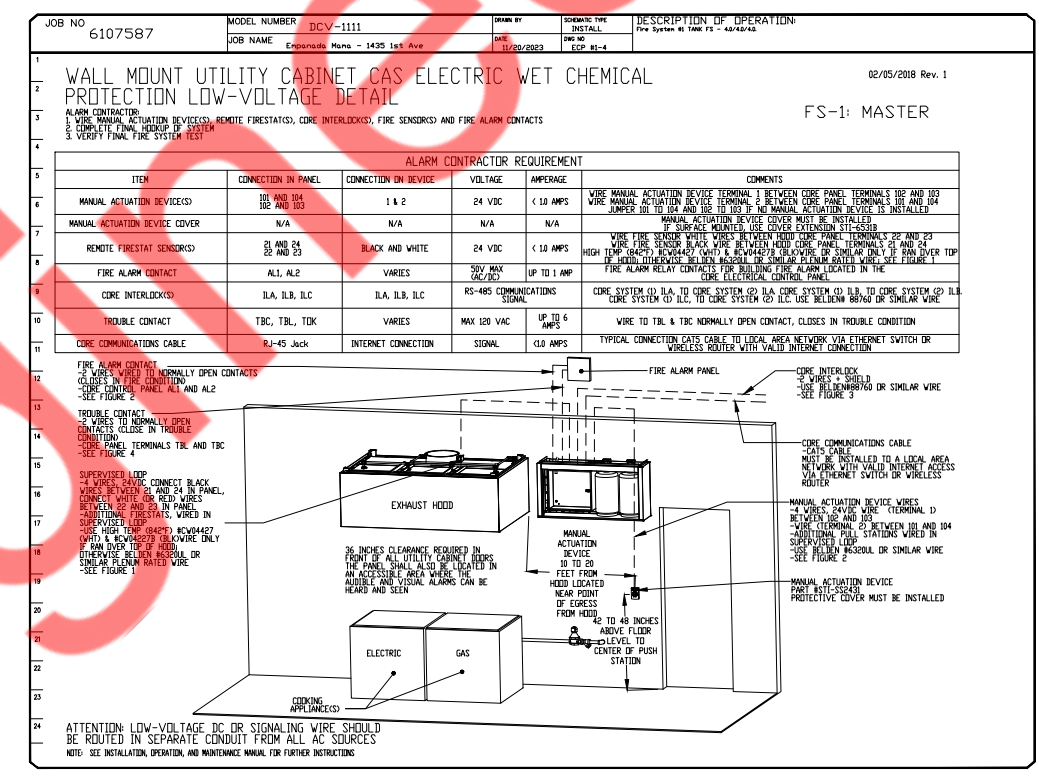
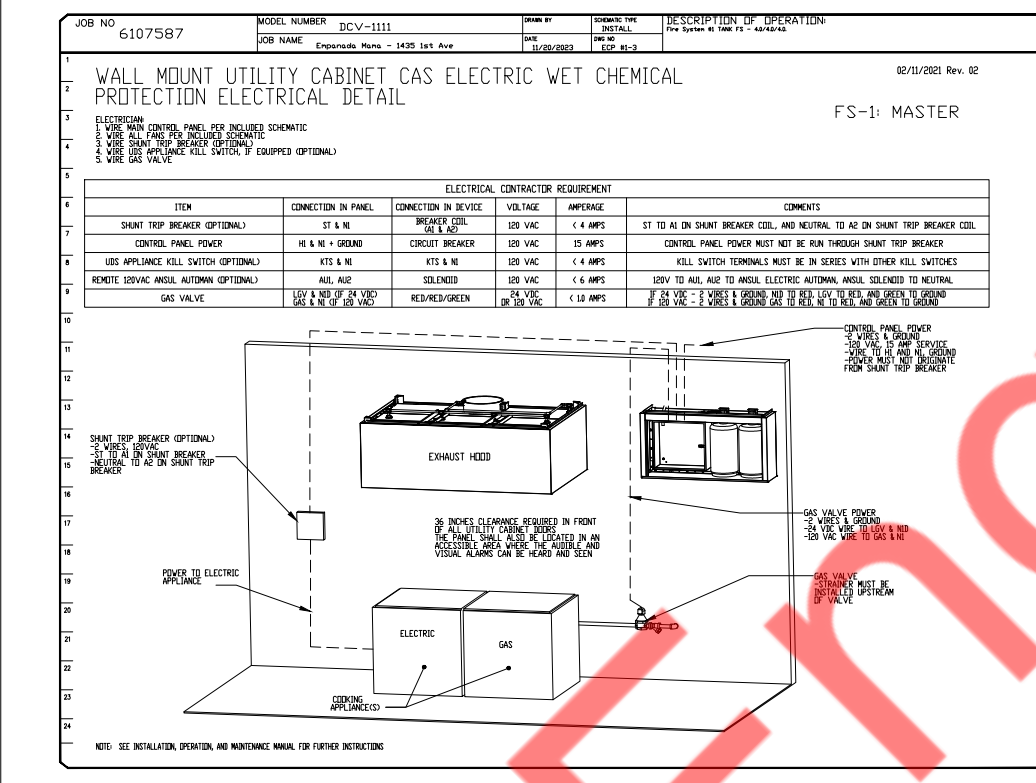
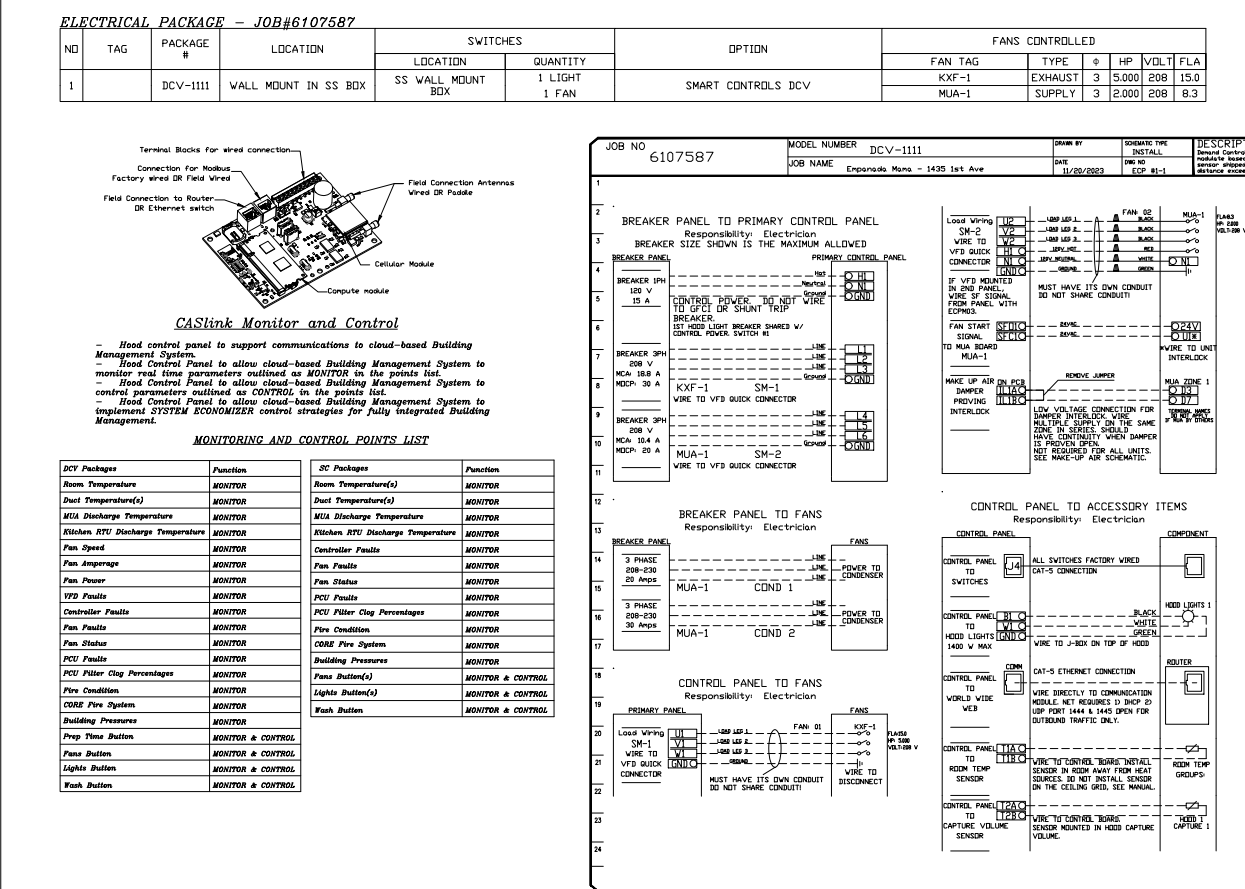
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 1435 1st Avenue,
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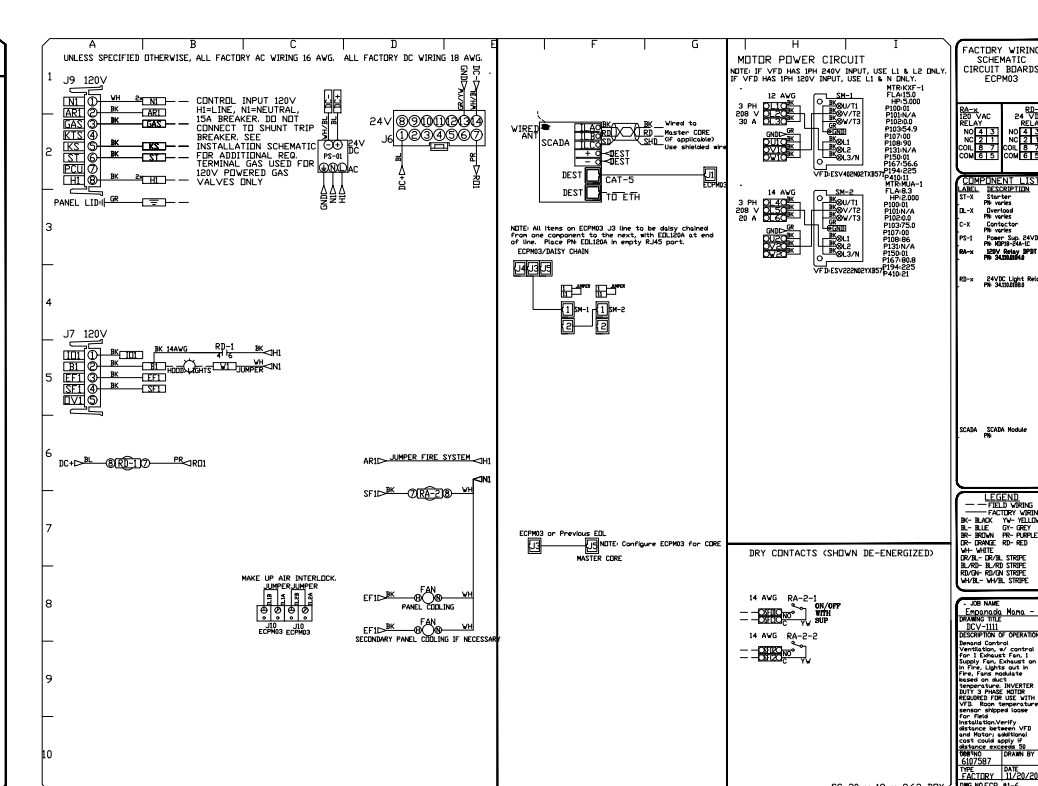
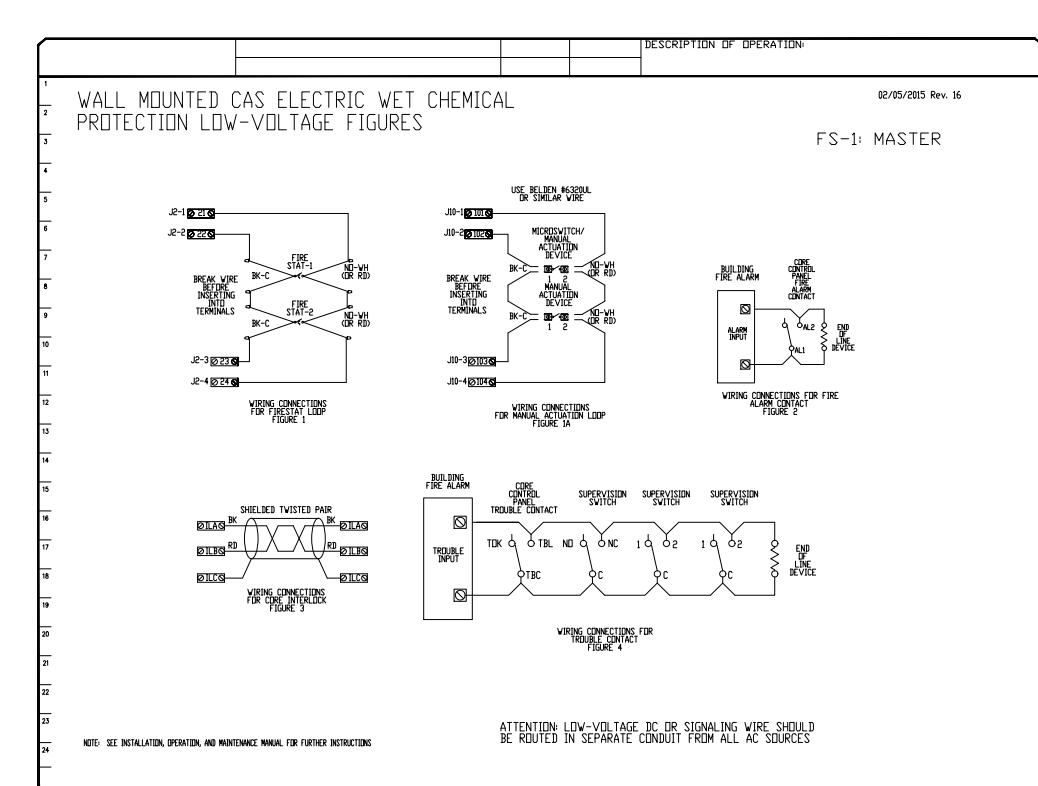
CAPTIVE WIRE
ELECTRICAL CONTRACTORS

Empire State Plaza - 1435 1st Ave
1435 1st Avenue,
New York, NY, 10021
DATE: 11/20/2023
DWG. NO.: 607587
DRAWN BY:
SCALE: 3/4" = 1'-0"
MASTER DRAWING
SHEET NO. 9



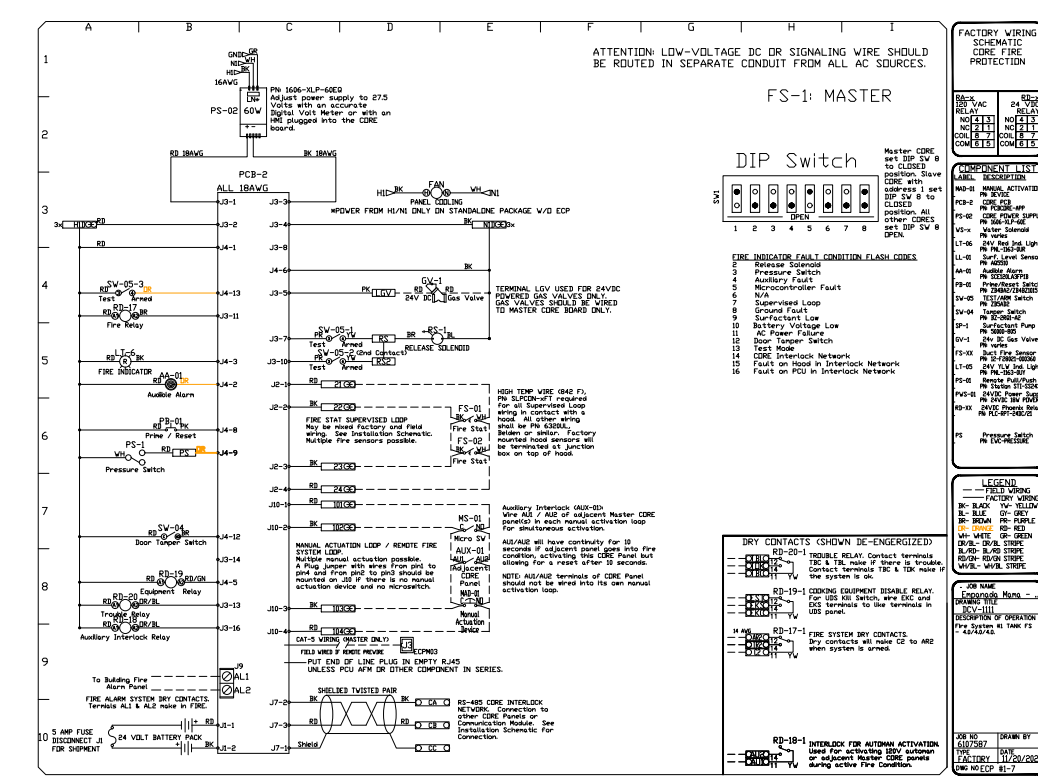
CAPTIVE WIRE
ELECTRICAL CONTRACTORS

Empire State Plaza - 1435 1st Ave
1435 1st Avenue,
New York, NY, 10021
DATE: 11/20/2023
DWG. NO.: 607587
DRAWN BY:
SCALE: 3/4" = 1'-0"
MASTER DRAWING
SHEET NO. 10

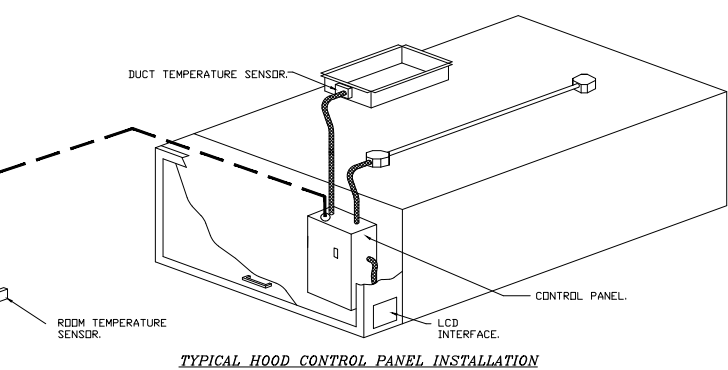


CAPTIVE WIRE
ELECTRICAL CONTRACTORS

Empire State Plaza - 1435 1st Ave
1435 1st Avenue,
New York, NY, 10021
DATE: 11/20/2023
DWG. NO.: 607587
DRAWN BY:
SCALE: 3/4" = 1'-0"
MASTER DRAWING
SHEET NO. 11



DEMAND CONTROL VENTILATION HOOD CONTROL PANEL SPECIFICATIONS
CONTRACTOR SHALL BE LISTED BY IETL UL 508AH AND SHALL COMPLY WITH DEMAND VENTILATION SYSTEM REQUIREMENTS OUTLINED IN IECX 400.3 (2023).
- THE CONTROL ENCLOSURE SHALL BE NEMA 1 RATED AND LISTED FOR INSTALLATION INSIDE OF THE EXHAUST HOOD UTILITY CABINET. THE CONTROL ENCLOSURE MAY BE CONSTRUCTED OF STAINLESS STEEL OR PAINTED STEEL.
- TEMPERATURE PROBES LOCATED IN THE EXHAUST DUCT RISERS SHALL BE CONSTRUCTED OF STAINLESS STEEL.
- A DIGITAL CONTROLLER SHALL BE PROVIDED TO ACTIVATE THE HOOD EXHAUST FANS DYNAMICALLY BASED ON A FIXED DIFFERENTIAL BETWEEN THE AMBIENT AND DUCT TEMPERATURE SENSORS. THIS FUNCTION SHALL MEET THE REQUIREMENTS OF IECX 400.3.1.
- A DIGITAL CONTROLLER SHALL PROVIDE ADJUSTABLE HYSTERESIS SETTINGS TO PREVENT CYCLING OF THE FANS AFTER THE COOKING APPLIANCE HAS BEEN TURNED OFF AND/OR THE HEAT IN THE EXHAUST SYSTEM IS REDUCED.
- A DIGITAL CONTROLLER SHALL PROVIDE AN ADJUSTABLE MINIMUM FAN RUN-TIME SETTINGS TO PREVENT FAN CYCLING.
- VARIABLE FREQUENCY DRIVES (VFDs) SHALL BE PROVIDED FOR FANS AS REQUIRED. THE DIGITAL CONTROLLER SHALL MODULATE THE VFDs BETWEEN A MINIMUM SETPOINT AND A MAXIMUM SETPOINT ON DEMAND. THE DUCT TEMPERATURE SENSOR SUPPLIED TO THE DIGITAL CONTROLLER SHALL BE USED TO CALCULATE THE SPEED REFERENCE SIGNAL.
- THE VFD SPEED RANGE OF OPERATION SHALL BE FROM 60 TO 100% FOR THE SYSTEM WITH THE ACTUAL MINIMUM SPEED SET AS REQUIRED TO MEET MINIMUM VENTILATION REQUIREMENTS.
- AN INTERNAL ALGORITHM TO THE DIGITAL CONTROLLER SHALL MODULATE SUPPLY FAN VFD SPEED PROPORTIONAL TO ALL EXHAUST FANS THAT ARE LOCATED IN THE SAME FAN GROUP AND THE SUPPLY FAN SHALL OPERATE IN PROP OR DYNAMIC MODE. THESE THREE SETPOINTS SHALL BE VARIABLE WITHIN A USER-DEFINED RANGE BASED ON THE TEMPERATURE DIFFERENTIAL. PANELS EQUIPPED WITH VARIABLE SPEED FANS AND A FAN ZONE SETPOINT AS DYNAMIC. THESE VFDs SHALL BE CALCULATED FOR THE DRIVE. DEMAND CONTROL VENTILATION SYSTEMS ARE CAPABLE OF MODULATING EXHAUST AND MAKE UP AIR FAN SPEEDS FOR THE REQUIREMENTS OUTLINED IN IECX 400.3 (2023).
- A DIGITAL CONTROLLER SHALL ISOLATE THE SUPPLY FAN(S). ACTIVATE THE EXHAUST FAN(S). ACTIVATE THE APPLIANCE SHUNT TRIP AND DISABLE AN ELECTRIC GAS VALVE AUTOMATICALLY WHEN FIRE CONDITION IS DETECTED BY A COVERED HOOD.
- A DIGITAL CONTROLLER SHALL ALLOW FOR EXTERNAL BMS FAN CONTROL VIA DRY CONTACT (EXTERNAL CONTROL SHALL NOT OVERRIDE FAN OPERATION LOGIC AS REQUIRED BY CODE).
- AN LED INTERFACE SHALL BE PROVIDED WITH THE FOLLOWING FEATURES:
A. DUALY PUSH BUTTON FAN & LIGHT SWITCH ACTIVATION.
B. INTEGRATED GAS VALVE RESET FOR ELECTRONIC GAS VALVES AND RESET RELAY REQUIRED.
C. VFD FAULT DISPLAY WITH AUDIBLE & VISUAL ALARM NOTIFICATION.
D. DUCT TEMPERATURE SENSOR FAILURE DETECTION WITH AUDIBLE & VISUAL ALARM NOTIFICATION.
E. WET-WIRES DUCT TEMPERATURE SENSOR DETECTION WITH AUDIBLE & VISUAL ALARM NOTIFICATION.
F. A SINGLE LOW VOLTAGE GATS+ FAN WIRING CONNECTION.
G. AN ENERGY SAVINGS INDICATOR THAT UTILIZES MEASURED KWH FROM THE VFDs.



SYSTEM DESIGN VERIFICATION (SDV)
IF ORDERED, GAS SERVICE WILL PERFORM A SYSTEM DESIGN VERIFICATION (SDV) ONCE ALL EQUIPMENT HAS HAD A COMPLETE START UP PER THE OPERATION AND INSTALLATION MANUAL. TYPICALLY, THE SDV WILL BE PERFORMED AFTER ALL INSPECTIONS ARE COMPLETE. ANY FIELD RELATED DISCREPANCIES THAT ARE DISCOVERED DURING THE SDV WILL BE BROUGHT TO THE ATTENTION OF THE GENERAL CONTRACTOR AND CORRESPONDING TRADES ON SITE. THESE ISSUES WILL BE DOCUMENTED AND FORWARDED TO THE APPROPRIATE SALES OFFICE. IF GAS SERVICE HAS TO RESOLVE A DISCREPANCY THAT IS A FIELD ISSUE, THE GENERAL CONTRACTOR WILL BE NOTIFIED AND BILLED FOR THE WORK. SHOULD A RETURN TRIP BE REQUIRED DUE TO ANY FIELD RELATED DISCREPANCY THAT CANNOT BE RESOLVED DURING THE SDV, THERE WILL BE ADDITIONAL TRIP CHARGES.
DURING THE SDV, GAS SERVICE WILL ADDRESS ANY DISCREPANCY THAT IS THE FAULT OF THE MANUFACTURER. SHOULD A RETURN TRIP BE REQUIRED, THE GENERAL CONTRACTOR AND APPROPRIATE SALES OFFICE WILL BE NOTIFIED. THERE WILL BE NO ADDITIONAL CHARGES FOR MANUFACTURER DISCREPANCIES.

CAPTIVE WIRE
ELECTRICAL CONTRACTORS

Empire State Plaza - 1435 1st Ave
1435 1st Avenue,
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DATE: 11/20/2023
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DRAWN BY:
SCALE: 3/4" = 1'-0"
MASTER DRAWING
SHEET NO. 12

ELECTRICAL SYMBOLS LIST

GENERAL NOTES (APPLY TO ALL "E" DRAWINGS)

SWITCHES AND CONTROLS	
\$0	20A SPST TOGGLE SWITCH U.O.N. "o" DENOTES LIGHTING FIXTURE CONTROLLED.
\$2	20A 3-WAY TOGGLE SWITCH U.O.N. "o" DENOTES LIGHTING FIXTURE CONTROLLED
\$3	20A 4-WAY TOGGLE SWITCH U.O.N. "o" DENOTES LIGHTING FIXTURE CONTROLLED
\$0	WALL BOX DIMMER SWITCH, LUTHRON MAESTRO SERIES. "o" DENOTES LIGHTING FIXTURE CONTROLLED.
\$OV	OVERRIDE SWITCH
OS	WALL OCCUPANCY SENSOR, NUMBER INDICATES TYPE; SEE OCCUPANCY SENSOR SCHEDULE.
ASCO	ASCO CONTACTOR C-25 TORK TIMER T-25 STACKED.
D	DOOR SWITCH
PC	PHOTOCELL IN NEMA 3R ENCLOSURE
PC	WALL MOUNTED PHOTOCELL MOUNTED IN NEMA 3R ENCLOSURE.
OS _A	CEILING OCCUPANCY SENSOR
DS	CEILING MOUNTED DAYLIGHT SENSOR.

POWER AND TELECOMMUNICATION	
J	JUNCTION BOX WITH BLANK COVER PLATE, FLUSH IN FLOOR.
J	JUNCTION BOX WITH BLANK COVER PLATE, WALL MOUNTED, +18" AFF OR AS NOTED.
J	JUNCTION BOX WITH BLANK COVER PLATE, CEILING MOUNTED..
Φ	DUPLEX CONVENIENCE RECEPTACLE, +18" AFF OR AS NOTED.
Φ	DUPLEX DEDICATED RECEPTACLE, +18" AFF OR AS NOTED.
CL	DUPLEX CONVENIENCE RECEPTACLE - 20A-1P, 125V, NEMA 5-20R MOUNTED FLUSH IN CEILING.
GFI	DUPLEX RECEPTACLE WITH GFCI PROTECTION
⊙	ELECTRICAL FLOOR BOX
⚡	SPECIAL RECEPTACLE
INTD	NETWORK INTERFACE DEVICE. NID IS 'ONT' BOX WHICH INCLUDES BOTH 'ONT' AND ITS SISTER BOX AS PER VERIZON STANDARDS.
Φ	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 GROMMETED OPENING.
Φ	SIMPLEX RECEPTACLE

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	EPH	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

- 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 GANCELED IN FINISHED AREAS, AND ALL COVERS TO PULL & JUNCTION BOXES SHALL BE READILY ACCESSIBLE.
- SUPPORT PANEL, JUNCTION AND PULL-BOXES 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 RAINIGHT 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 LOCATIONS 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.

WIRING SYSTEMS	
UP-3	POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSISTS OF 1#12 G., 1#12 N. & 1#12 G. IN 3/4"C, UNLESS OTHERWISE NOTED.
UP-3 5	POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSISTS OF 2#12 G., 2#12 N. & 2#12 G. IN 3/4"C, UNLESS OTHERWISE NOTED.
UP-3 5 7	POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSISTS OF 3#12 G., 3#12 N. & 3#12 G. IN 3/4"C, 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.

MOTORS AND CONTROLS	
⚡	AC INDOOR UNIT MOTOR AS NOTED WITH LIQUID TIGHT FLEXIBLE CONNECTION WITH JUNCTION BOX AND MOTOR SWITCH.
⚡/MWP	AC OUTDOOR UNIT MOTOR AS NOTED WITH CONTROLLER AND DISCONNECT SWITCH WITH WEATHER PROOF.
NF	NON FUSED DISCONNECT SWITCH AMPERAGE, AND NUMBER OF POLES AS NOTED.
N _A	20A NON FUSED DISCONNECT SWITCH
N _B	50A NON FUSED DISCONNECT SWITCH
N _C	100A NON FUSED DISCONNECT SWITCH
N _D	200A NON FUSED DISCONNECT SWITCH
⚡/M	COMBINATION MAGNETIC STARTER AND DISCONNECT SWITCH, FURNISHED BY HVAC/CONTRACTOR, INSTALLED AND WIRED BY ELECTRICAL CONTRACTOR.
⚡/400/350	FUSED DISCONNECT SWITCH AND FUSE AMPERAGE AS INDICATED. TOP NUMBER DENOTS SWITCH SIZE AND BOTTOM NUMBER DENOTES FUSE.
⚡/M	COMBINATION SOLID-STATE MOTOR STARTER.
M	MOTORIZED DAMPER
FSM	FIRE SMOKE DAMPER
⚡/M/M	DUPLEX PUMP. NUMBER INDICATES HP RATING OF PUMP.
S _r	THERMAL OVERLOAD SWITCH AT MOTOR. PROVIDE THERMAL ELEMENTS AS PER MOTOR RATING.
S _m	MANUAL MOTOR SWITCH
1.5 kW	ELECTRICAL HEATER, NUMBER DENOTES HEATER RATING

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
E-201.00	ELECTRICAL POWER PLAN
E-301.00	ELECTRICAL DETAILS
E-401.00	ELECTRICAL PANEL SCHEDULES AND RISER DIAGRAM

- | PROJECT COORDINATION NOTES | |
|----------------------------|--|
| 1. | 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. |
| 2. | 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. |

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
g.	2016 NFPA 13.

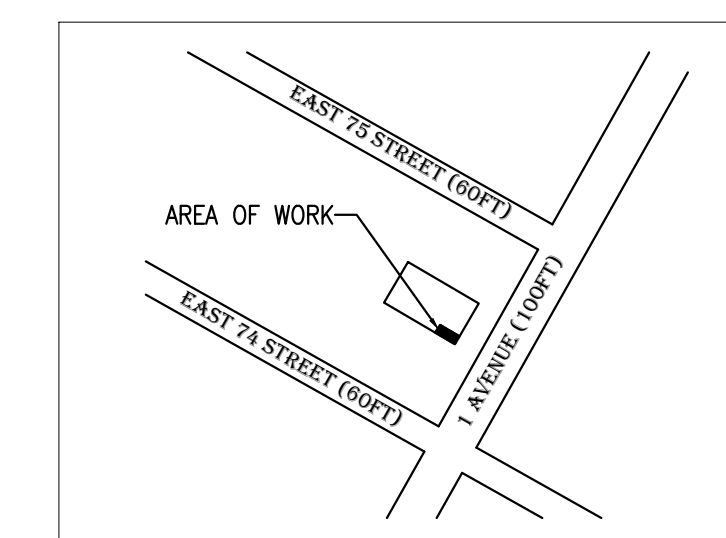
ANNOTATION	
+24"	INDICATES MOUNTING HEIGHT, CENTER LINE TO FINISHED FLOOR.
⚡	KEYED NOTE REFERENCE
1/E/207	DETAIL REFERENCE: DETAIL NUMBER INDICATED ON TOP; DRAWING NUMBER INDICATED ON BOTTOM

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.

SYSTEMS COMMISSIONING PURSUANT TO SECTION C408.3 NYC ECC 2020	
SYSTEMS REQUIRING COMMISSIONING	
1-	OCCUPANT SENSOR CONTROLS.
2-	TIMER SWITCH CONTROLS.

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:



PLOT PLAN
SCALE: N.T.S.

1435 1ST AVENUE, MANHATTAN NY 10021	
BLOCK	: 1449
LOT	: 26
ZONING DISTRICT	: C1-9
MAP	: 9A
BUILDING USE	: MIXED RESIDENTIAL & COMMERCIAL
BUILDING	

ELECTRICAL SPECIFICATIONS

1. GENERAL:

- A. THE "GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION," AIA DOCUMENT, LATEST EDITION, AND THESE SPECIFICATIONS AS APPLICABLE ARE PART OF THIS CONTRACT.
- B. DRAWING ARE DIAGRAMMATIC AND INDICATE GENERAL ARRANGEMENT OF SYSTEMS AND WORK. CONDUIT ROUTING IS SHOWN DIAGRAMMATICALLY AND DOES NOT SHOW ALL OFFSETS, DROPS AND RISES OF RUNS. THE CONTRACTOR SHALL ALLOW IN HIS PRICE FOR ROUTING OF CONDUIT TO AVOID OBSTRUCTIONS, COORDINATION WITH EXISTING SERVICES, INCLUDING THOSE OF OTHER TRADES, IS REQUIRED, MAINTAIN HEADROOM AND SPACE CONDITIONS.
- C. BIDDERS, BEFORE SUBMITTING PROPOSALS, SHALL VISIT AND CAREFULLY EXAMINE THE AREA AFFECTED BY THIS WORK TO FAMILIARIZE THEMSELVES WITH THE EXISTING CONDITIONS AND THE DIFFICULTIES THAT WILL ATTEND THE EXECUTION OF THIS WORK. SUBMISSION OF A PROPOSAL WILL BE CONSTRUED AS EVIDENCE THAT SUCH AN EXAMINATION HAS BEEN MADE, AND LATER CLAIMS WILL NOT BE RECOGNIZED FOR EXTRA LABOR, EQUIPMENT, OR MATERIALS, REQUIRED BECAUSE OF DIFFICULTIES ENCOUNTERED WHICH COULD HAVE BEEN FORESEEN HAD SUCH AN EXAMINATION BEEN MADE.
- D. INSTALL WORK SO AS TO BE READILY ACCESSIBLE FOR OPERATION, MAINTENANCE AND REPAIR. MINOR DEVIATIONS FROM DRAWING MAY BE MADE TO ACCOMPLISH THIS, BUT CHANGES WHICH INVOLVE EXTRA COST SHALL NOT BE MADE WITHOUT APPROVAL.
- E. REMOVAL AND RELOCATION OF CERTAIN EXISTING WORK MAY BE NECESSARY FOR THE PERFORMANCE OF THE GENERAL WORK. ALL EXISTING CONDITIONS CANNOT BE COMPLETELY DETAILED ON THE DRAWINGS. THE CONTRACTOR SHALL SURVEY THE SITE AND INCLUDE ALL CHANGES AND CHARGES IN MAKING UP THE WORK PROPOSAL.
- F. CONNECTIONS TO EXISTING WORK: INSTALL NEW WORK AND CONNECT TO EXISTING WORK WITH MINIMUM INTERFERENCE TO EXISTING FACILITIES. TEMPORARY SHUTDOWNS OF EXISTING SERVICES SHALL BE PERFORMED AT NO ADDITIONAL CHARGES, AT TIMES NOT TO INTERFERE WITH NORMAL OPERATION OF EXISTING FACILITIES AND ONLY WITH WRITTEN CONSENT OF OWNER, ALARM AND EMERGENCY SYSTEMS SHALL NOT BE INTERRUPTED. MAINTAIN CONTINUOUS OPERATION OF EXISTING FACILITIES AS REQUIRED WITH NECESSARY TEMPORARY CONNECTIONS BETWEEN NEW AND EXISTING WORK. CONNECT NEW WORK TO EXISTING WORK IN NEAT AND ACCEPTABLE MANNER. RESTORE EXISTING DISTURBED WORK TO ORIGINAL CONDITION, INCLUDING MAINTENANCE OF WIRING CONTINUITY AS REQUIRED.
- G. DISCONNECT, REMOVE AND/OR RELOCATE EXISTING MATERIAL, EQUIPMENT AND OTHER WORK AS NOTED OR REQUIRED FOR PROPER INSTALLATION OF NEW WORK.
- H. THE CONTRACTOR SHALL KEEP ALL EQUIPMENT AND MATERIALS, AND ALL PARTS OF THE BUILDING EXTERIOR SPACES AND ADJACENT STREETS, SIDEWALKS AND PAVEMENTS, FREE FROM MATERIAL AND DEBRIS RESULTING FROM THE EXECUTION OF THIS WORK. EXCESS MATERIALS WILL NOT BE PERMITTED TO ACCUMULATE EITHER ON THE INTERIOR OR THE EXTERIOR.
- I. SEAL OPENINGS THROUGH PARTITIONS, WALLS AND FLOORS WITH MINERAL WOOL OR OTHER NONCOMBUSTIBLE MATERIAL, UNLESS OTHERWISE NOTED.
- J. PROVIDE ALL NECESSARY FLASHING AND COUNTER FLASHING TO MAINTAIN THE WATERPROOFING INTEGRITY OF THE BUILDING AS REQUIRED BY THE INSTALLATION OR REQUIRED WITH NECESSARY EQUIPMENT, PROVIDE EQUIPMENT CURBS AS REQUIRED.
- K. ALL EXISTING MATERIAL, EQUIPMENT AND CONSTRUCTION DEBRIS TO BE REMOVED UNDER THIS CONTRACT SHALL BECOME THE PROPERTY OF THE CONTRACTOR WITH THE EXCEPTION OF SPECIFIC EQUIPMENT AND APPARATUS REQUESTED BY THE BUILDING REPRESENTATIVE, ARCHITECT OR AS NOTED TO BE RELOCATED ON THE DRAWINGS. REMOVED EQUIPMENT SHALL BE PROPERLY DISPOSED OF BY THIS CONTRACTOR.
- L. THE CONTRACTOR'S PROPOSAL FOR ALL WORK SHALL BE PREDICATED ON THE PERFORMANCE OF THE WORK DURING REGULAR WORKING HOURS. WHEN SO DIRECTED, HOWEVER, THE CONTRACTOR SHALL INSTALL WORK DURING OVERTIME HOURS AND THE ADDITIONAL COST TO BE CHARGED THEREFORE SHALL BE ONLY THE "PREMIUM" PORTION OF THE WAGES PAID.
- M. UNLESS OTHERWISE SPECIFICALLY NOTED OR SPECIFIED, INCLUDE ALL CUTTING AND PATCHING OF EXISTING FLOORS, WALLS, PARTITIONS AND OTHER MATERIALS IN THE EXISTING BUILDING. THE CONTRACTOR SHALL RESTORE THESE AREAS TO ORIGINAL CONDITION.
- N. ALL MATERIAL AND EQUIPMENT SHALL BE NEW UNLESS OTHERWISE NOTED AND SHALL BE IN ACCORDANCE WITH BUILDING STANDARDS.
- O. INSURANCE: PROVIDE IN ACCORDANCE WITH OWNER/BUILDING REQUIREMENTS AND SHALL INCLUDE A HOLD HARMLESS CLAUSE FOR OWNER AND ENGINEER.
- P. THE FINAL ACCEPTANCE SHALL BE MADE AFTER THE CONTRACTOR HAS ADJUSTED HIS EQUIPMENT, TESTED THE VARIOUS SYSTEMS, DEMONSTRATED THAT IT FULFILLS THE REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS AND HAS FURNISHED ALL THE REQUIRED CERTIFICATED OF INSPECTION AND APPROVAL.

2. GENERAL PROVISIONS FOR ELECTRICAL WORK:

A. DEFINITIONS:

- 1) "PROVIDE": TO FURNISH, INSTALL AND CONNECT UP COMPLETE AND READY FOR SAFE AND REGULAR OPERATION THE PARTICULAR WORK REFERRED TO UNLESS SPECIFICALLY OTHERWISE NOTED.
- 2) "INSTALL": TO ERECT, MOUNT AND CONNECT COMPLETE WITH RELATED ACCESSORIES.
- 3) "FURNISH" OR "SUPPLY": TO PURCHASE, PROCURE, ACQUIRE, AND DELIVER COMPLETE WITH RELATED ACCESSORIES.
- 4) "WORK": LABOR, MATERIALS, EQUIPMENT, APPARATUS, CONTROLS, ACCESSORIES AND OTHER ITEMS REQUIRED FOR PROPER AND COMPLETE INSTALLATION.
- 5) "WIRING": RACEWAY, FITTINGS, WIRE, BOXES, AND RELATED ITEMS.
- 6) "CONCEALED": EMBEDDED IN MASONRY OR OTHER CONSTRUCTION, INSTALLED IN FURRED SPACES, WITHIN DOUBLE PARTITIONS OR HUNG CEILING, IN TRENCHES, IN CRAWL SPACES, OR IN ENCLOSURES.
- 7) "EXPOSED": NOT INSTALLED UNDERGROUND OR "CONCEALED" AS DEFINED ABOVE.
- 8) "SIMILAR" OR "EQUAL": EQUAL IN MATERIALS, WEIGHT, SIZE, DESIGN AND EFFICIENCY OF SPECIFIED PRODUCT.
- B. TEMPORARY LIGHT AND POWER: PROVIDE TEMPORARY LIGHT AND POWER SYSTEMS AT EARLIEST POSSIBLE DATE WITHIN THE CONSTRUCTION AREAS FOR THE REQUIREMENTS OF ALL TRADES AS HEREBY DESCRIBED. EXTEND SYSTEMS TO NEW CONSTRUCTION AS SOON AS PHYSICALLY POSSIBLE. MAINTAIN SYSTEM DURING WORKING OWNER. PROVIDE ALL REQUIRED MAINTENANCE, INCLUDING LAMPS AND SOCKETS.
- C. QUALITY ASSURANCE

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

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

3) CURRENT CHARACTERISTICS:

- a. SERVICE: 120/208 VOLT, 3 PHASE, 4 WIRE, 60 HERTZ WITH GROUNDING NEUTRAL.
- b. DISTRIBUTION: 120/208 VOLT, 3 PHASE, 4 WIRE, 60 HERTZ WITH GROUNDING NEUTRAL.

4) HEIGHTS OF OUTLETS:

- a. FROM FINISHED FLOOR TO CENTERLINE OF OUTLETS FOR:
- RECEPTACLES AND TELEPHONES: 1 FT-6 IN.
 - WALL SWITCHES: 4 FT-0 IN.
 - WALL FIXTURES: 7 FT-0 IN.
 - MOTOR CONTROLLERS: 5 FT-0 IN.
 - CLOCKS: 7 FT 6 IN

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

D. PRODUCT DELIVERY, STORAGE AND HANDLING

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

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

E. MATERIALS

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

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

3) INSERTS AND SUPPORTS:

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

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

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

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

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

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

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

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

3. SCOPE OF WORK:

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

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

- C. THE CONTRACTOR SHALL FURNISH A WRITTEN GUARANTEE TO REPLACE OR REPAIR PROMPTLY AND ASSUME RESPONSIBILITY FOR ALL EXPENSES INCURRED FOR ANY WORKMANSHIP AND EQUIPMENT IN WHICH DEFECTS DEVELOP WITHIN ONE YEAR FROM THE DATE OF FINAL CERTIFICATE FOR PAYMENT AND/OR FROM DATE 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 PROVIDED THAT WHERE DEFECTS OCCUR, THE CONTRACTOR WILL ASSUME RESPONSIBILITY OF OTHER TRADES AFFECTED BY DEFECTS, REPAIRS OR REPLACEMENTS IN EQUIPMENT SUPPLIED BY THE CONTRACTOR.

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

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

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

4. SHOP DRAWINGS

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

- B. INDICATE ON EACH SHOP DRAWINGS SUBMITTED:

- 1) PROJECT NAME AND LOCATION
2) NAME OF ARCHITECT AND ENGINEER
3) ITEM IDENTIFICATION
4) APPROVAL STAMP OF PRIME CONTRACTOR

C. SUBMISSIONS:

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

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

D. SUBMIT SHOP DRAWINGS FOR THE FOLLOWING:

- 1) SAFETY/DISCONNECT SWITCHES
2) FUSES
3) CIRCUIT BREAKERS
4) PANELBOARDS/LOADCENTER (INCLUDING DIMENSIONS, SCHEDULES, AND CATALOG CUTS).
5) RACEWAYS
6) WIRE AND CABLE
7) WALL SWITCHES
8) INSERTION RECEPTACLES
9) MOMENTARY CONTACT SWITCHES
10) TIME SWITCHES
11) LIGHTING FIXTURES.

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

5. AS-BUILT DRAWINGS AND EQUIPMENT OPERATIONAL INSTRUCTIONS

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

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

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

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

6. LOW-VOLTAGE DISTRIBUTION EQUIPMENT:

- A. PROVIDE COMPLETE EQUIPMENT INCLUDING: SWITCHES, FUSES, CIRCUIT BREAKERS, PANELS AND TRANSFORMERS.
B. ALL EQUIPMENT SHALL CONFORM TO NEMA, ANSI AND IEEE STANDARDS.

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

7. FUSES:

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

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

- C. ALL FUSES SHALL BE PROVIDED BY SAME MANUFACTURER.

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

- E. CIRCUIT BREAKERS: MOLDED CASE BREAKERS SHALL BE THERMAL-MAGNETIC, QUICK-MAKE-QUICK-BREAK, BOLT-ON TYPE MANUALLY OPERATED WITH INSULATED TRIP-FREE HANDLE. MULTI-POLE TYPE BREAKERS SHALL CONTAIN INTERNAL TRIP BAR. TERMINALS SHALL BE SUITABLE FOR COPPER OR ALUMINUM CABLE. FURNISH AUXILIARY DEVICES WHERE REQUIRED FOR SHUNT-TRIPPING, OPEN A NO CLOSE MOTOR OPERATOR AND ALARM INDICATION. ENCLOSURES SHALL BE DEAD FRONT, NEMA TYPE 1, EXCEPT AS NOTED. FRAMES, IC AND INTERCHANGEABLE TRIPS SHALL BE AS FOLLOWS, UNLESS OTHERWISE NOTED:

- 1) 120 VOLTS, 100-AMP FRAME: 10,000 AMPS, 1 POLE.
2) 120/208 VOLTS, 225-AMP FRAME: 22,000 AMPS MINIMUM

8. DISTRIBUTION PANELBOARDS, CIRCUIT BREAKER TYPE:

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

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

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

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

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

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

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

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

- I. MINIMUM GUTTER SPACES: PANELS WITH 225 AMPERE MAINS, 5-3/4" MINIMUM GUTTER SPACES AND OVER, MINIMUM GUTTERS 8". FOR PANELS WITH THROUGH FEEDERS, INCREASE GUTTER WIDTH BY 2" MINIMUM AND PROVIDE A SHEET STEEL BARRIER BETWEEN THE PANEL GUTTER AND THE THROUGH FEEDER PORTION OF THE BACK BOX. BRANCH CIRCUIT TRIMS SHALL BE MECHANICALLY INTERLOCKED WHEN SHOWN ON DRAWINGS.

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

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

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

8. DISTRIBUTION PANELBOARDS, SWITCH AND FUSE:

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

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

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

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

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

F. DISCONNECTS

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

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

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

G. INSTALLATION

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

H. IDENTIFICATION

- 1) PROVIDE NAMEPLATE AT EACH SWITCH IDENTIFYING THE LOAD SERVED.
- 2) NAMEPLATES SHALL BE MOUNTED ON THE FRONT COVER SECURED WITH SELF-TAPPING SCREWS OR NUTS AND BOLTS. NAMEPLATES SHALL BE LAMINATED PHENOLIC, BLACK WITH A MINIMUM OF 3/4" HIGH WHITE LETTERING.

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

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

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

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

B. MATERIALS

1) RACEWAYS:

- a. RIGID STEEL CONDUIT: FULL-WEIGHT PIPE, GALVANIZED, THREADED.
- b. ELECTROMETALLIC TUBING (EMT): THIN WALL PIPE, GALVANIZED, THREADESS.
- c. FLEXIBLE STEEL CONDUIT: CONTINUOUS SINGLE STRIP, GALVANIZED.
- d. WIREWAYS: WIRE SHALL BE AS NOTED, MINIMUM NO. 16 GAUGE STEEL WITH GROUND CONTINUITY. FINISH SHALL BE BAKED ENAMEL. COVERS SHALL BE SCREW-ON.

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

2) FITTINGS AND ACCESSORIES:

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

ELECTRICAL SPECIFICATIONS (CONT.)

3) BOXES:

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

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

c. 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 FISHPATES.

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.

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

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

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

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

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

9. WIRE AND CABLE:

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

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

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

d. INSULATION SHALL BE RUBBER AND THERMOPLASTIC MEETING ASTM AND IJCEA 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 FLOUORESCENT FIXTURES AND IN AMBIENT TEMPERATURES OVER 90 DEG C. FOR UNGROUNDED ISOLATED BRANCH CIRCUITS PROVIDE CROSS-LINKED POLYETHYLENE INSULATION (TYPE XHWH).

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

f. COLOR CODING SHALL BE AS FOLLOWS:

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

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

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

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

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

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

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

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

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

11. WIRING DEVICES:

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

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

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

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

ARCHITECT).
2) USE CHARGER/ DUPLEX TAMPER-RESISTANT RECEPTACLE: TAMPER RESISTANT.

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

e. COLORS: COORDINATE COLORS WITH ARCHITECT.

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

12. LIGHTING FIXTURES:

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

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

c. BALLAST: CLASS P, HIGH POWER FACTOR, LOWEST AVAILABLE NEMA RATED NOISE LEVEL, E11 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.

13. TELEPHONE CONDUIT SYSTEM:

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

b. EQUIPMENT SHALL CONFORM TO REQUIREMENTS OF TELEPHONE COMPANY.

c. OUTLETS SHALL BE:

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

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

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

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

14. 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 AT 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.

15. PANELBOARDS:

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

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

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

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.

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.

16. LOADCENTERS

a. LOAD CENTERS SHALL COMPLY WITH UL67 AND MEET FEDERAL SPECIFICATION W-P-115c.

b. CIRCUIT BREAKERS SHALL BE OF THE PLUG-IN, 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. TANDEM OR DUPLEX TYPE CIRCUIT BREAKERS SHALL NOT BE PERMITTED. ONLY ONE WIRE SHALL BE INSTALLED UNDER EACH CIRCUIT BREAKER LUG. TIE-BARS SHALL NOT BE USED TO CREATE MULTI-POLE CIRCUITS.

c. 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.

d. ENCLOSURES MANUFACTURED IN CODE GAUGE AND SIZE BOXES FOR FLUSH MOUNTING AS INDICATED ON PLANS COMPLETE WITH TRIM, DOORS AND LOCKS. ALL LOCKS SHALL BE KEYED ALIKE. 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. ALL LOAD CENTERS SHALL BE 14 1/2" WIDE AND 3 1/2" DEEP.

e. 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.

f. 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 22,000/10,000 AMPERES R.M.S. SYMMETRICAL SERIES RATING FOR 208Y/120 VOLT. SERIES RATED LOAD CENTERS SHALL BE USED TO ACHIEVE REQUIRED SHORT CIRCUIT RATINGS.

17. INTERCOM CONDUIT SYSTEM:

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

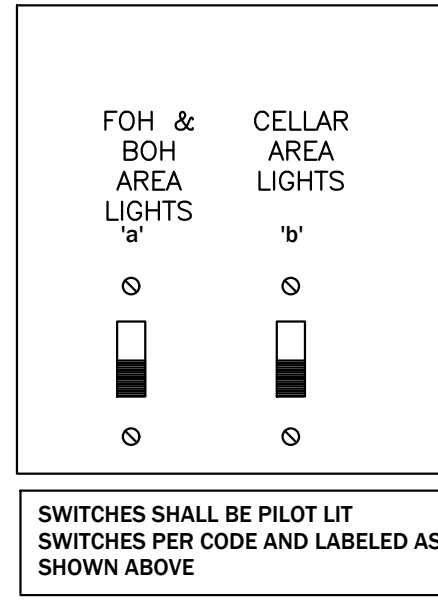
b. EQUIPMENT SHALL CONFORM TO REQUIREMENTS OF INTERCOM MANUFACTURER.

c. OUTLETS SHALL BE:

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

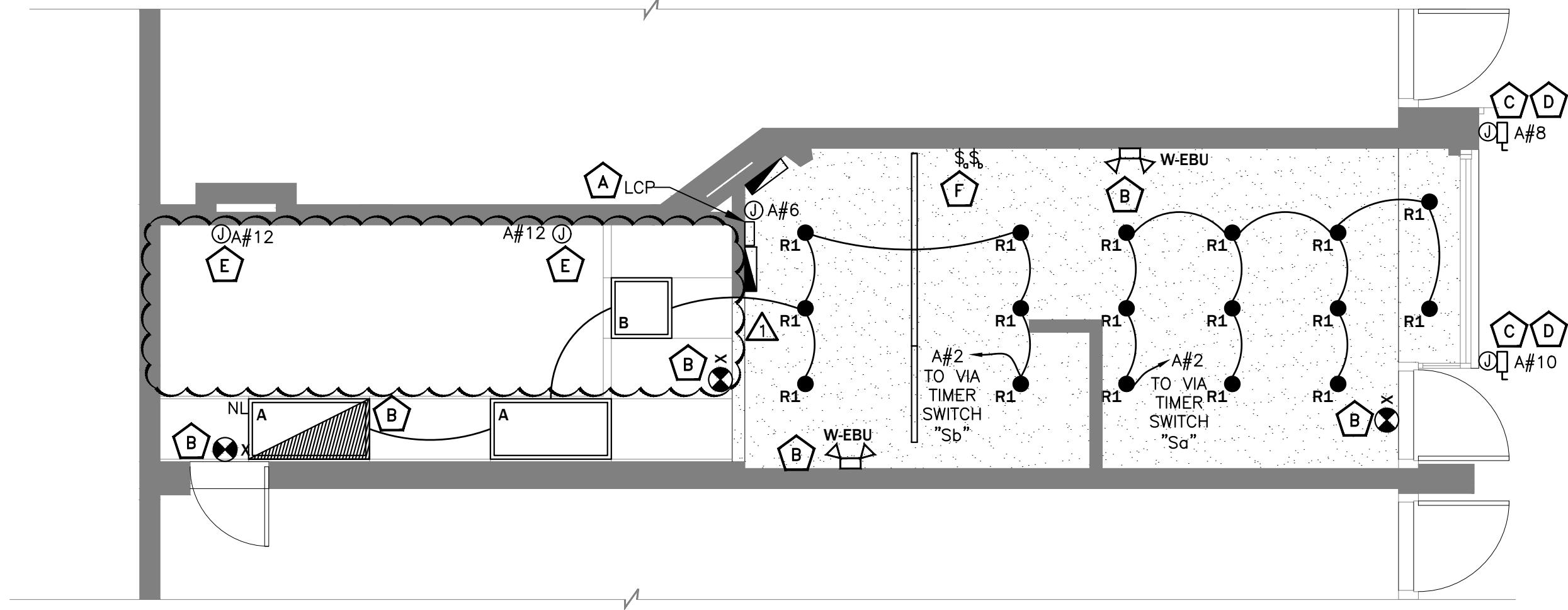
d. PROVIDE FISHWIRES, IN RACEWAYS OVER 10 FT LONG.

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



3 SWITCH BANK DETAILS
NTS

- ELECTRICAL LIGHTING PLAN KEYED WORK NOTES:**
- A E.C. SHALL COORDINATE EXACT LOCATION OF THE LIGHTING CONTROL PANEL "LCP" WITH ARCHITECT/OWNER.
 - B CONNECT ALL EMERGENCY EGRESS AND NIGHT LIGHTING FIXTURES TO THE NEAREST LIGHTING BRANCH CIRCUIT AHEAD OF ALL SWITCHING AND CONTROLS PER STATE AND LOCAL CODES.
 - C VERIFY THE EXACT LOCATIONS OF SIGNS, AND FASCIA 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.
 - D PROVIDE A 30AMP DISCONNECT SWITCH WITH LOCK-OFF CAPABILITY FOR STOREFRONT SIGN. VERIFY EXACT LOCATION AND ELECTRICAL REQUIREMENTS CONNECTION TO STOREFRONT SIGN. VERIFY EXACT LOCATION OF POWER FEED AND PUNCH-THRU WITH SIGNAGE CONTRACTOR TO ENSURE NO EXCESSIVE CONDUIT IS RUN NEITHER INSIDE NOT OUTSIDE. TIE CIRCUIT INTO LIGHTING CONTROL SYSTEM FOR CONTROLS.
 - E JUNCTION BOX ON HOOD FOR RE-WIRED HOOD LIGHTS.
 - F LOCATION OF LIGHTING SWITCH BANK. REFER TO SWITCH BANK DETAILS ON SHEET E-101.00 FOR ADDITIONAL INFORMATION.
 - G LIGHTING BY W.I.B MANUFACTURER. E.C. TO PROVIDE RACEWAYS, WIRING AND LAMPS FOR ALL LIGHT FIXTURES FURNISHED WITH THE FREEZER/COOLER STORAGE UNIT. COORDINATE THE INSTALLATION OF SWITCHES AND PLATES WITH THE EQUIPMENT SUPPLIER.
 - H CEILING MOUNTED OCCUPANCY SENSOR. EC TO COORDINATE FINAL LOCATION IN THE FIELD.
 - I WALL MOUNTED OCCUPANCY SENSOR EQUAL TO WATTSTOPPER WS-250. SET OFF TIME TO 15 MINUTES FOR EXISTING RESTROOM AND EXISTING OFFICE. SET DIP SWITCH TO AUTOMATIC ON.

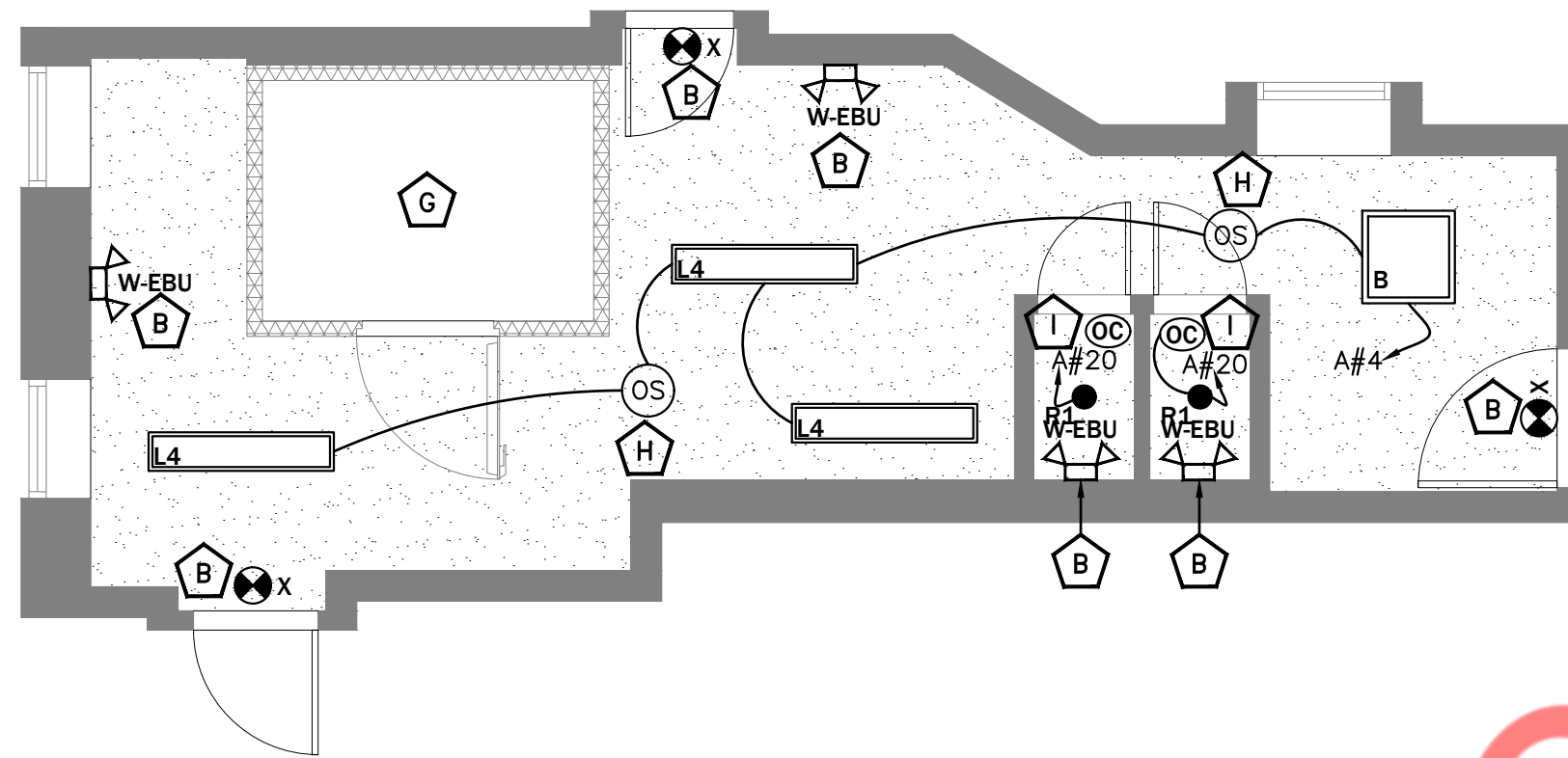


1 LIGHTING PLAN - FIRST FLOOR
1/4"=1'-0"

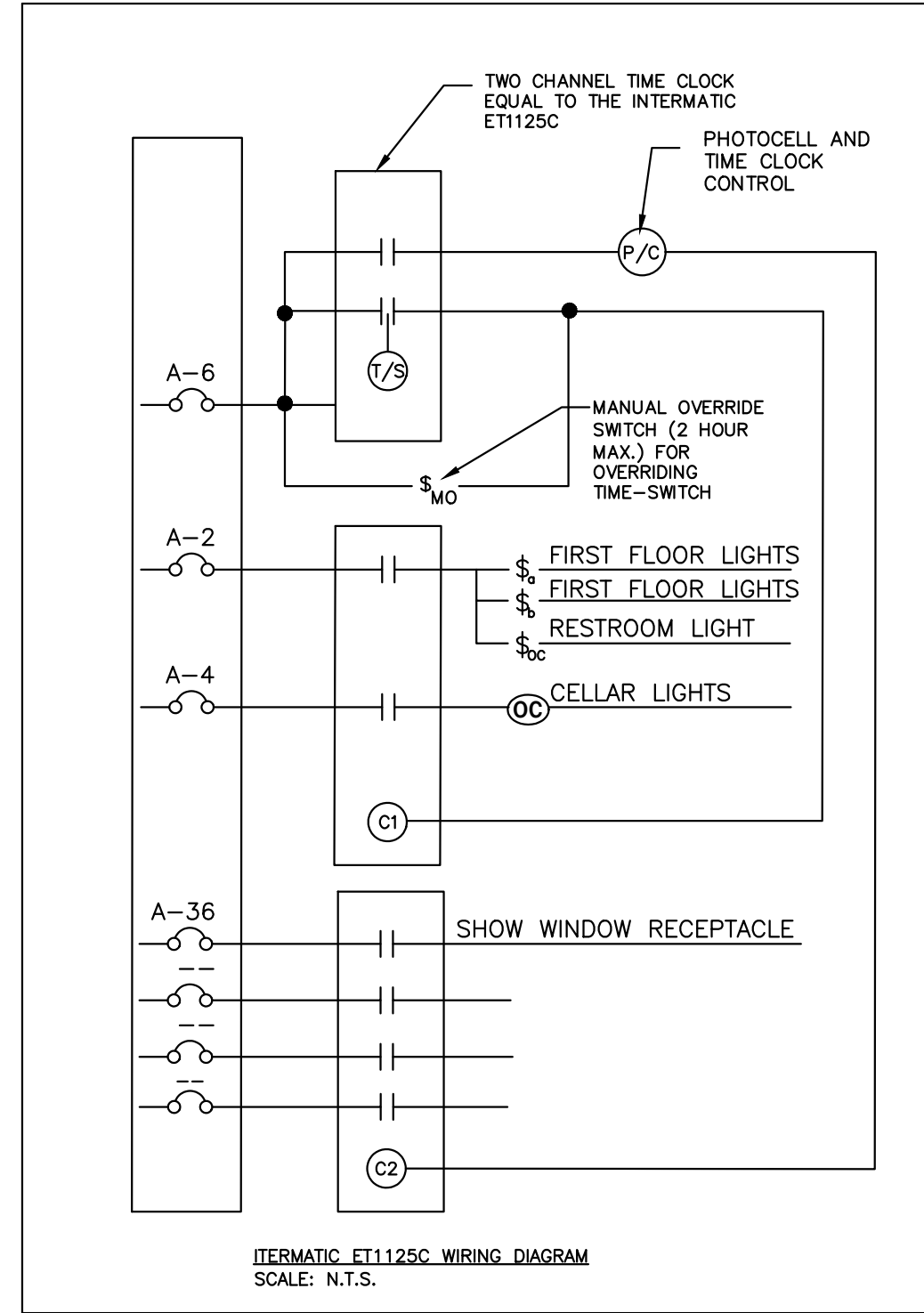
LIGHT FIXTURE SCHEDULE

QTY.	CODE	DESCRIPTION	MANUFACTURER	FIXTURE MODEL NO.	NOTES
2	A	2X4 LED LAY-IN	LITHONIA	EPANL 22-34L-40K	
2	B	2X4 LED LAY-IN	LITHONIA	EPANL 24-40L-40K	G.C TO USE SURFACE MOUNT KITS IN CELLAR
17	R1	SURFACE MOUNTED CYLINDER LIGHTING	ALCON	11235-DIR-S-L10-B60	
4	L4	CURVED BASKET LED WRAPAROUND	LITHONIA	LBL4LP840	
2	W-EBU	EMERGENCY LED	EXITRONIX	QMS	
3	X	EXIT LED LIGHT	EXITRONIX	VLED-U-WH-EL90-R	

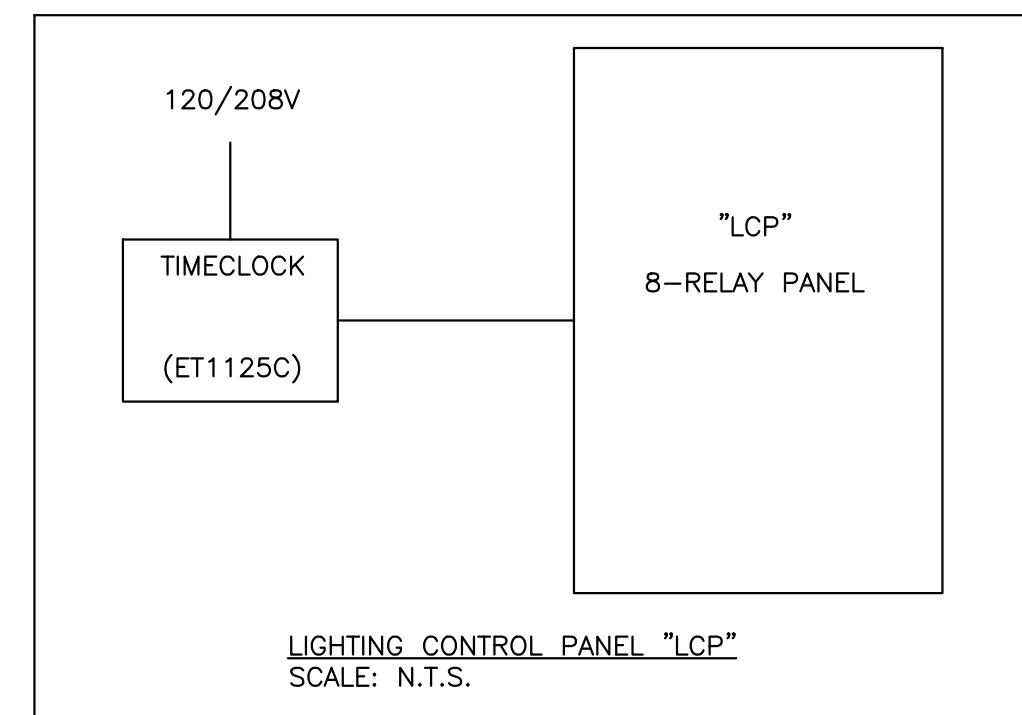
- NOTES:
- REFER TO REFLECTED CEILING PLAN IN ARCHITECTURAL DRAWINGS FOR MORE INFORMATION ON COLORS AND TRIMS REQUIRED.
 - E.C. SHALL RECEIVE APPROVAL FROM ARCHITECT/ OWNER FOR LIGHTING FIXTURE SELECTIONS BEFORE PURCHASE AND INSTALLATION.



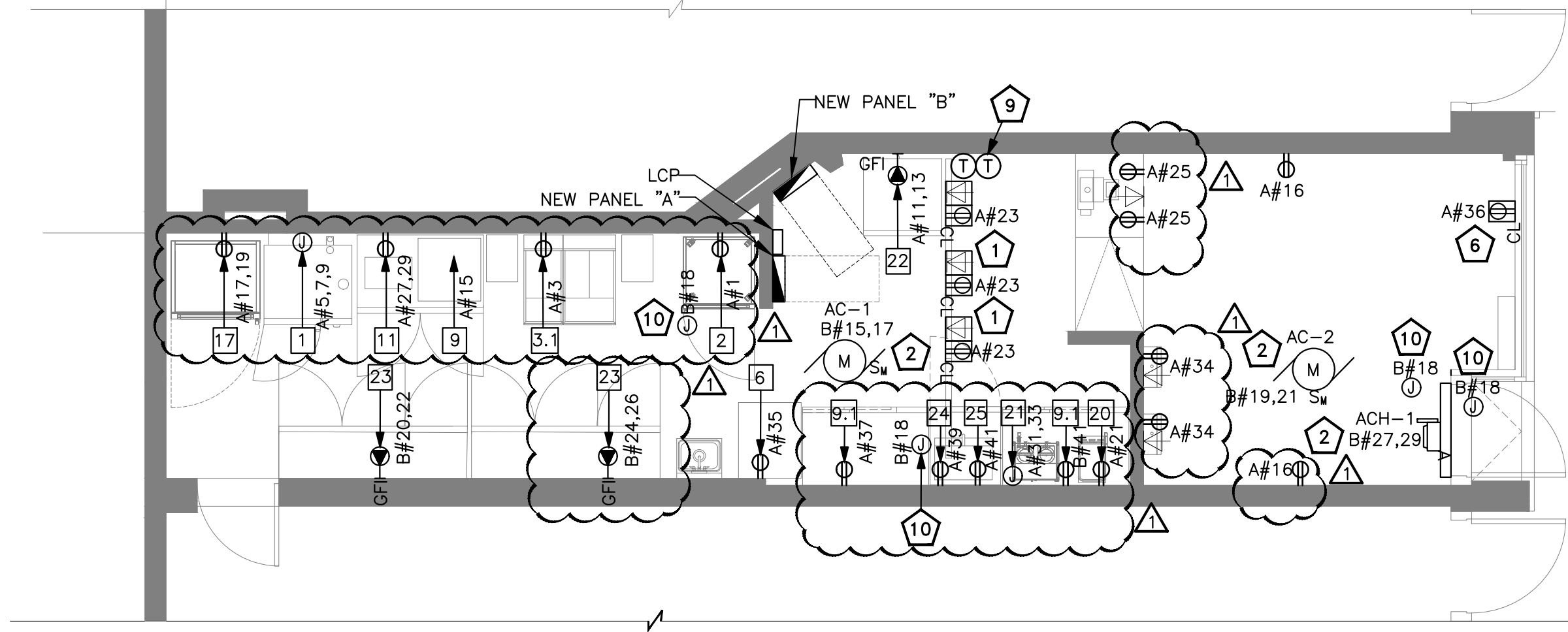
2 LIGHTING PLAN - CELLAR
1/4"=1'-0"



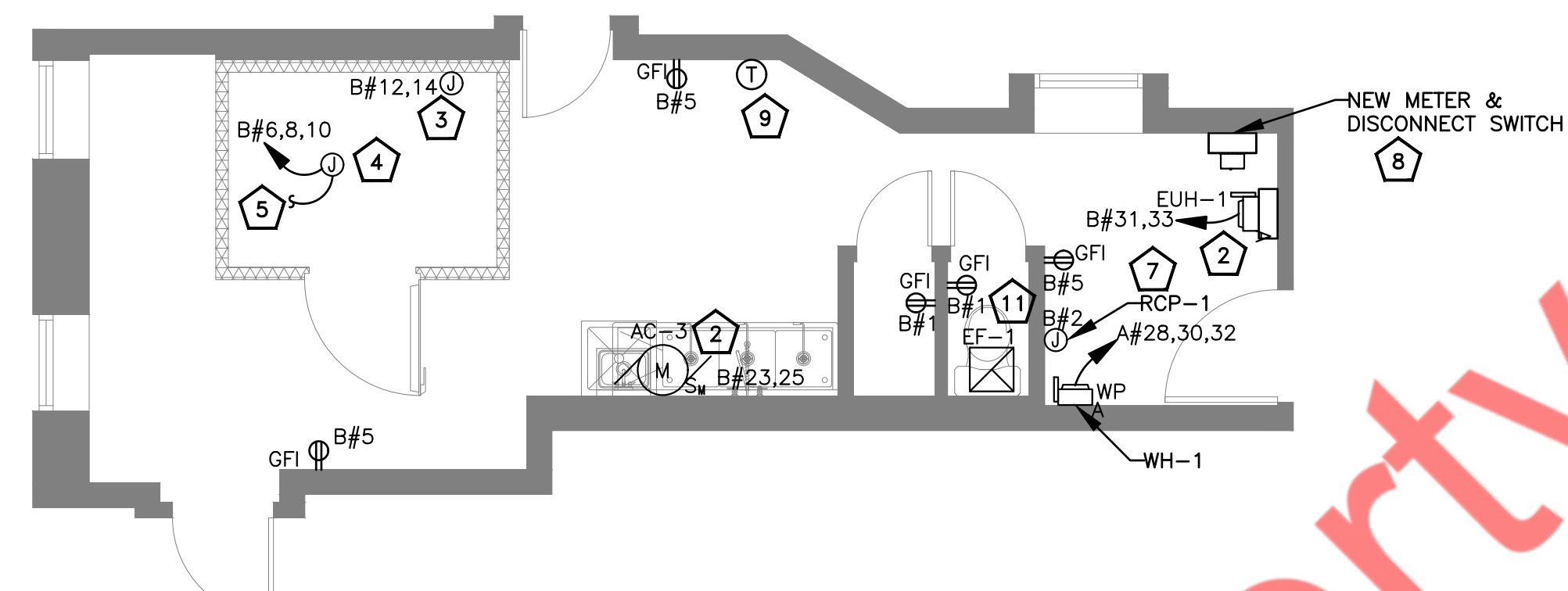
- ITERMATIC ET1125C 24-HOUR ELECTRONIC TIME SWITCH:**
- A. ITERMATIC TIMER BOX SHALL BE LOCATED AS CLOSE TO PANELBOARD AS PRACTICAL. PROVIDE WIRING FROM LOW VOLTAGE SWITCH TO RELAY CABINET REQUIRED FOR EACH RELAY AS REQUIRED.
 - B. PROGRAM LIGHTING SCHEDULE AND HOURS OF OPERATION WITH OWNER.
 - C. PROVIDE LOW VOLTAGE OVERRIDE SWITCH AS INDICATED ON DRAWINGS ITERMATIC ET1125C SERIES. LOW-VOLTAGE OVERRIDE SWITCH CONTROLS SHALL INITIATE AN OVERRIDE OF A MAXIMUM TIME OF NO MORE THAN TWO (2) HOURS.
 - D. PROVIDE TWO (2) HOUR TRAINING ON PROGRAMMING OF SYSTEM & SYSTEM OPERATION.



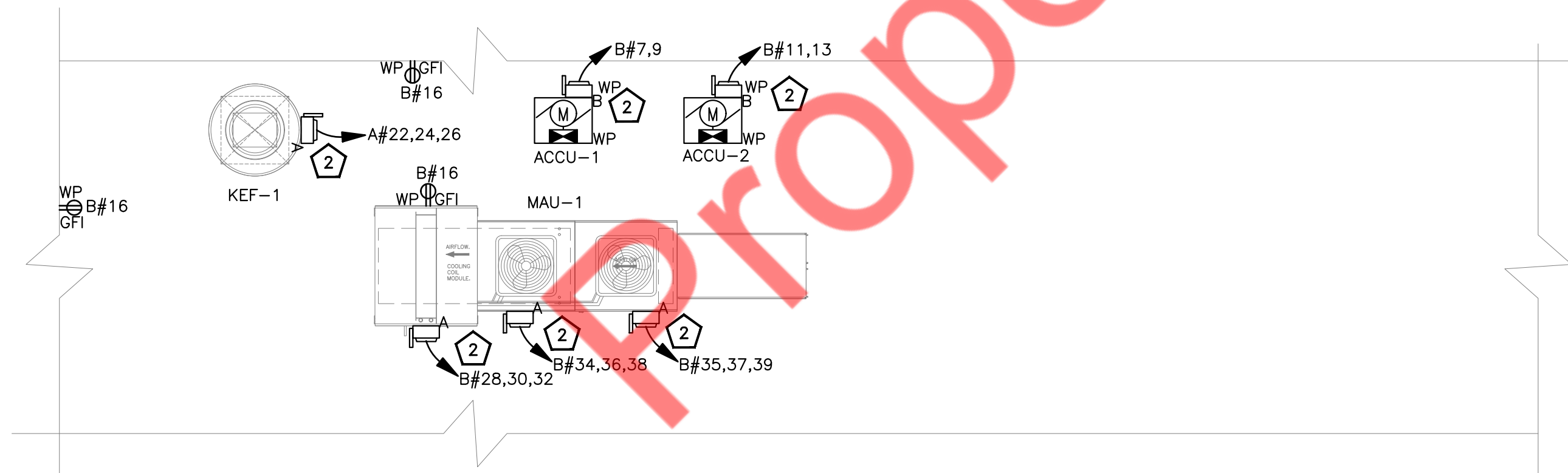
ITERMATIC ET1125C 24-HOUR ELECTRONIC TIME SWITCH:



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



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



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

- ELECTRICAL POWER PLAN GENERAL NOTES:**
- A. VERIFY MOUNTING HEIGHTS OF ALL RECEPTACLES WITH EQUIPMENT SUPPLIED PRIOR TO INSTALLATION.
 - B. E.C. TO PROVIDE CORD & PLUG CONNECTIONS FOR EQUIPMENT AS REQUIRED.
 - C. ALL 120V, 20A OUTLETS IN THE FOOD PREP AREA SHALL BE GROUND FAULT INTERRUPT TYPE.
 - D. ALL CIRCUITS FOR P.O.S. (POINT OF SALE) EQUIPMENT SHALL BE CONNECTED TO THE SAME PHASE OF POWER IN THE PANEL. ALL BRANCH CIRCUIT BREAKERS SUPPLYING P.O.S. EQUIPMENT SHALL HAVE LOCKING HANDLES DEVICES.
 - E. EACH RECEPTACLE TYPE (LOCKING OR STRAIGHT BLADE) SHALL MATCH THAT OF THE EQUIPMENT FURNISHED.

- ELECTRICAL POWER PLAN KEYED WORK NOTES:**
- 1 REFER TO EQUIPMENT SPECIFICATIONS FOR DATA AND POWER REQUIREMENTS AND LOCATIONS FOR ALL MENU BOARDS AND SIGNS.
 - 2 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.
 - 3 E.C. TO FIELD VERIFY LOCATION OF EVAPORATOR UNIT AND PROVIDE POWER CONNECTION WITH NECESSARY ELECTRICAL FIXTURES/ DISCONNECTS AS PER MANUFACTURER REQUIREMENTS.
 - 4 ELECTRICAL CONTRACTOR TO COORDINATE EXACT POWER REQUIREMENT WITH WALK IN BOX MANUFACTURER AND MAKE POWER PROVISION ACCORDINGLY.
 - 5 E.C. TO FIELD VERIFY LOCATION OF CONDENSING UNIT AND PROVIDE POWER CONNECTION WITH NECESSARY ELECTRICAL FIXTURES/ DISCONNECTS AS PER MANUFACTURER REQUIREMENTS.
 - 6 PROVIDE DUPLEX RECEPTACLE FOR SHOW WINDOW LIGHTING ABOVE STORE FRONT WINDOW WITHIN 18" OF TOP OF THE STORE FRONT WINDOW. RECEPTACLES SHALL BE CONTROLLED THROUGH LIGHTING CONTRACTOR PANEL "LCP". ELECTRICAL LOAD IS CALCULATED AS PER NEC 220.43.
 - 7 JUNCTION BOX FOR RCP. E.C. TO FIELD COORDINATE EXACT LOCATION WITH PLUMBING CONTRACTOR.
 - 8 PROPOSED LOCATION OF 200A, 208Y/120V, 3-PHASE, 4-WIRE ELECTRICAL METER AND DISCONNECT SWITCH. E.C. SHALL COORDINATE WITH LANDLORD/UTILITY COMPANY FOR EXACT LOCATION OF ELECTRICAL METER AND DISCONNECT SWITCH IN FIELD.
 - 9 E.C. SHALL PROVIDE BACK BOX AND CONDUIT PULL STRING FOR MECHANICAL UNIT. CONFIRM FINAL LOCATION WITH MECHANICAL DRAWING PRIOR TO ROUGH-IN.
 - 10 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.
 - 11 THE EXHAUST FAN IN THE ROOM SHALL BE INTERLOCKED WITH RESTROOM LIGHT. E.C TO COORDINATE WITH MECHANICAL DRAWINGS AND PROVIDE NECESSARY WIRING AND CONTROL AS REQUIRED.

KITCHEN EQUIPMENT SCHEDULE:

ITEM NO.	DESCRIPTION	VOLTAGE	PHASE	AMPS	KW	CONN. TYPE	NEMA
1	OVEN-STEAMER, COMBINATION, ELECTRIC	208	3	30.8	11.10	DIRECT	
2	REFRIGERATOR REACH IN GLASS DOOR	115	1	5.5	0.63	CORD & PLUG	5-15P
3.1	FRYER	120	1	0.6	0.07	CORD & PLUG	5-15P
6	PASS THRU MOBILE HEATED CABINET	120	1	15	1.80	CORD & PLUG	5-20P
9	REFRIGERATOR UNDERCOUNTER	115	1	2.2	0.25	CORD & PLUG	5-15P
9.1	BACK BAR REFRIGERATOR	115	A	2.5	0.29	CORD & PLUG	5-15P
11	MICROWAVE	208	1	15.5	3.22	CORD & PLUG	6-20P
17	REACH IN BLAST CHILLER	208	1	6.6	1.37	CORD & PLUG	6-15P
20	DISPENSER, BEVERAGE/CHOCOLATE	115	1	10	1.15	CORD & PLUG	5-15P
21	COFFEE MAKER	208	1	17	3.54	DIRECT	
22	VERTICAL OPEN AIR COOLER	208	1	6.8	1.41	CORD & PLUG	6-20P
23	REACH-IN REFRIGERATOR	208	1	14	2.91	CORD & PLUG	L14-20P
24	UNDERCOUNTER 27" FREEZER	115	1	2	0.23	CORD & PLUG	5-15P
25	ESPRESSO MACHINE	115	1	13	1.50	CORD & PLUG	5-15P

- KITCHEN EQUIPMENT SCHEDULE GENERAL NOTES:**
- E.C. TO VERIFY EXACT VOLTAGE, NO OF WIRES, BREAKER AND POWER CONNECTION REQUIREMENT OF THE EQUIPMENT WITH EQUIPMENT MANUFACTURER. ANY DISCREPANCIES SHALL BE COMMUNICATED WITH ENGINEER ON RECORD PRIOR TO BIDDING/ROUGH-IN.

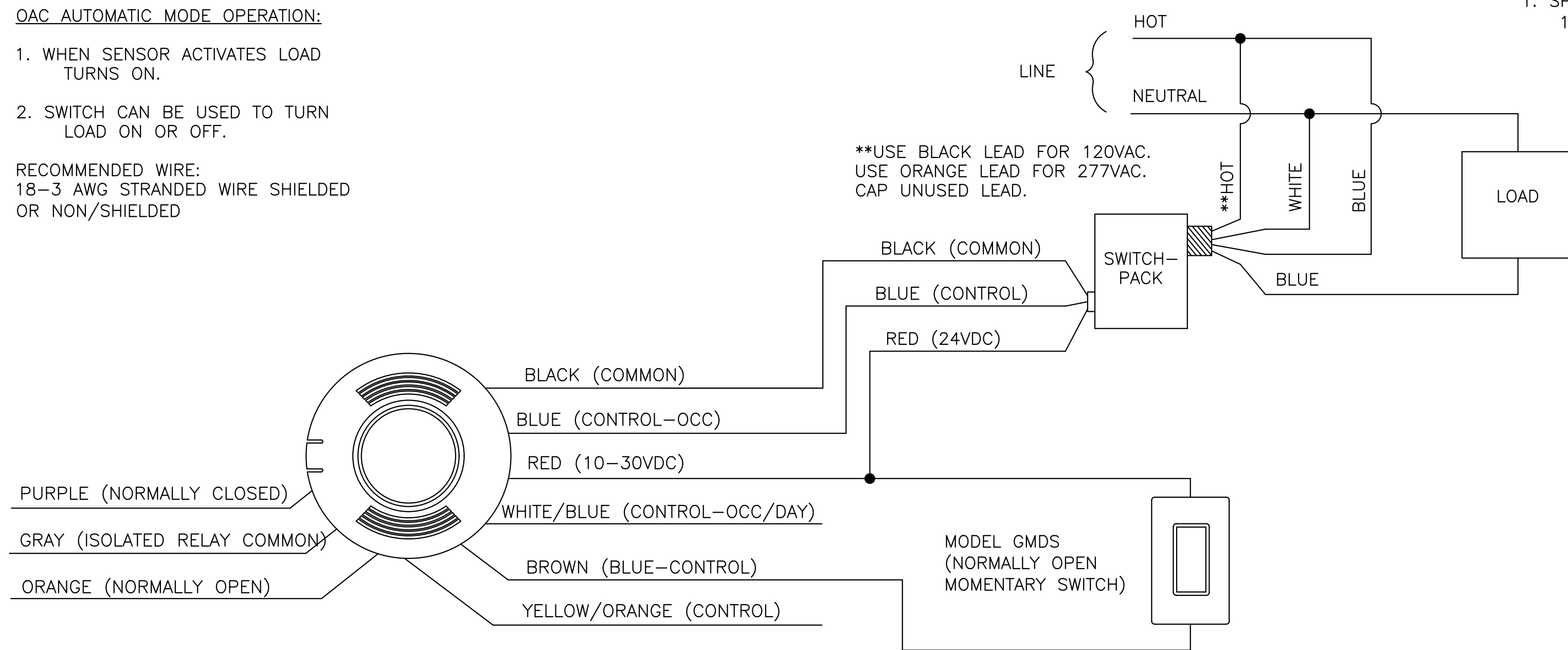
OAC AND VAC MANUAL MODE OPERATION:

1. SWITCHES ARE REQUIRED TO TURN LOAD ON.
2. LOAD TURNS OFF WHEN SENSOR TIMES OUT OR WITH SWITCH.

OAC AUTOMATIC MODE OPERATION:

1. WHEN SENSOR ACTIVATES LOAD TURNS ON.
2. SWITCH CAN BE USED TO TURN LOAD ON OR OFF.

RECOMMENDED WIRE:
18-3 AWG STRANDED WIRE SHIELDED OR NON/SHIELDED



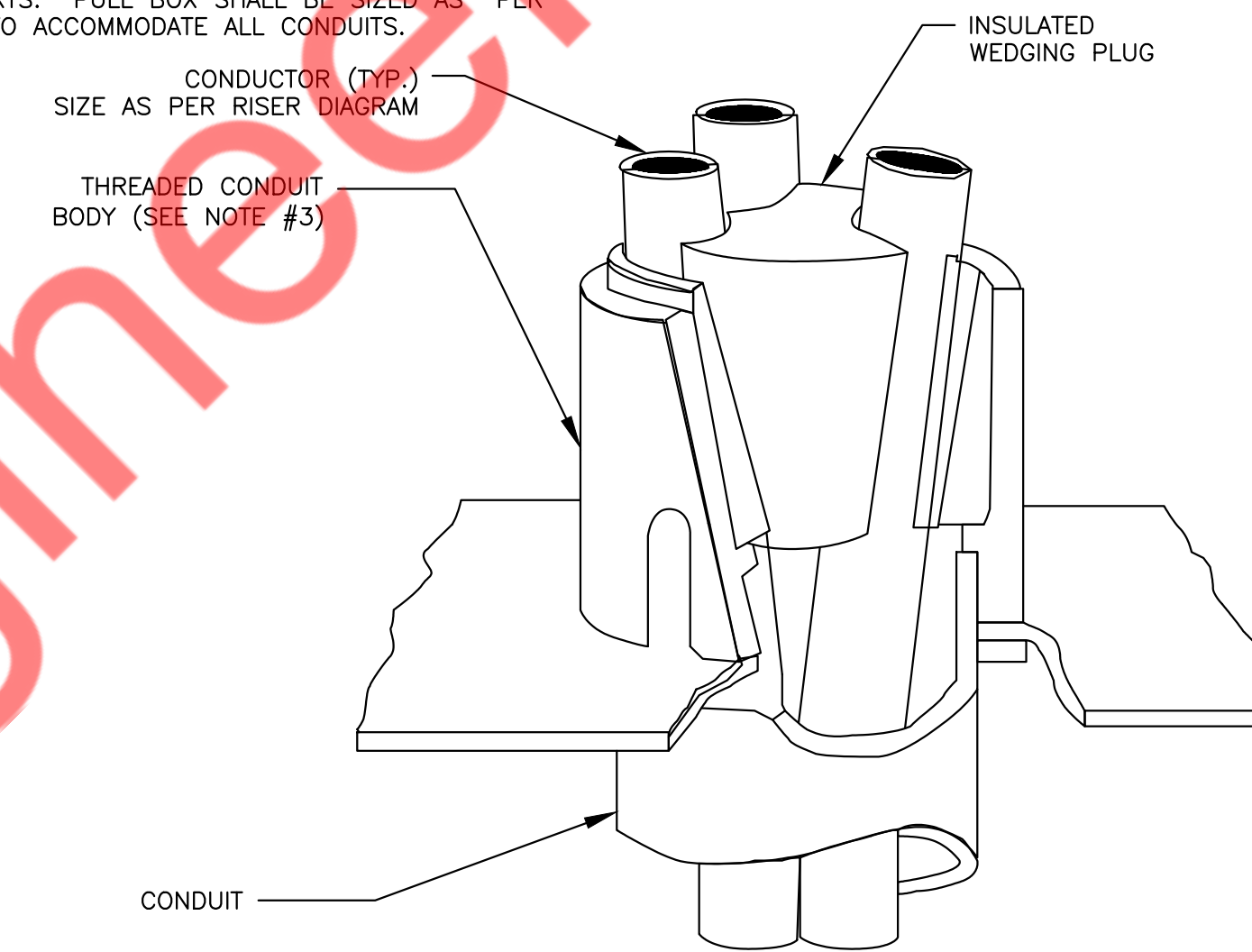
NOTES

1. SP20-RD4 SWITCHPACK SHOWN. 120/277VAC 20AMP RATING.

**USE BLACK LEAD FOR 120VAC. USE ORANGE LEAD FOR 277VAC. CAP UNUSED LEAD.

NOTES:

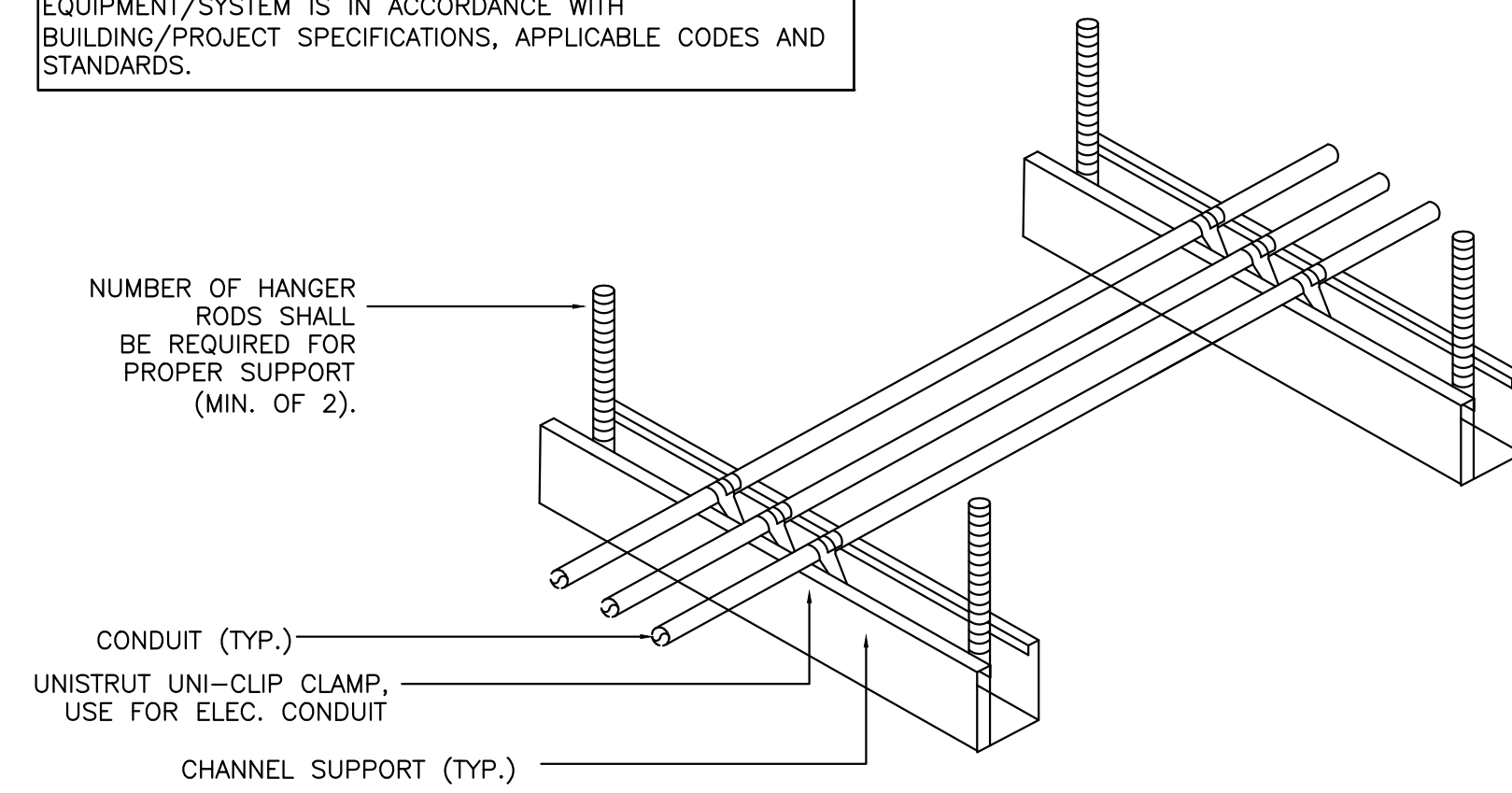
1. ALL CONDUCTORS IN VERTICAL RACEWAYS SHALL BE SUPPORTED IN ACCORDANCE WITH ARTICLE 300.19 OF NEC. CABLE SUPPORTS SHALL BE LOCATED AT THE INTERVALS REQUIRED BY THE NEC.
2. CABLE SUPPORT SYSTEM SHALL BE AS MANUFACTURED BY O-Z GEDNEY WITH pOZI-GRIP "S-STYLE" WEDGING PLUG OR APPROVED EQUAL.
3. FOR THREADLESS CONDUIT (RIGID, IMC OR EMT), ATTACH CONDUIT BODY TO MALE THREADS OF A SET SCREW OR COMPRESSION CONNECT, AS PERMITTED BY SPECIFICATIONS.
4. PROVIDE PULL BOX AT EACH LOCATION OF CABLE SUPPORTS. PULL BOX SHALL BE SIZED AS PER CODE TO ACCOMMODATE ALL CONDUITS.



3 OCCUPANCY - AUTO ON/OFF. WIRING DIAGRAM - LOW VOLTAGE CEILING SENSOR
E-301.00 N.T.S

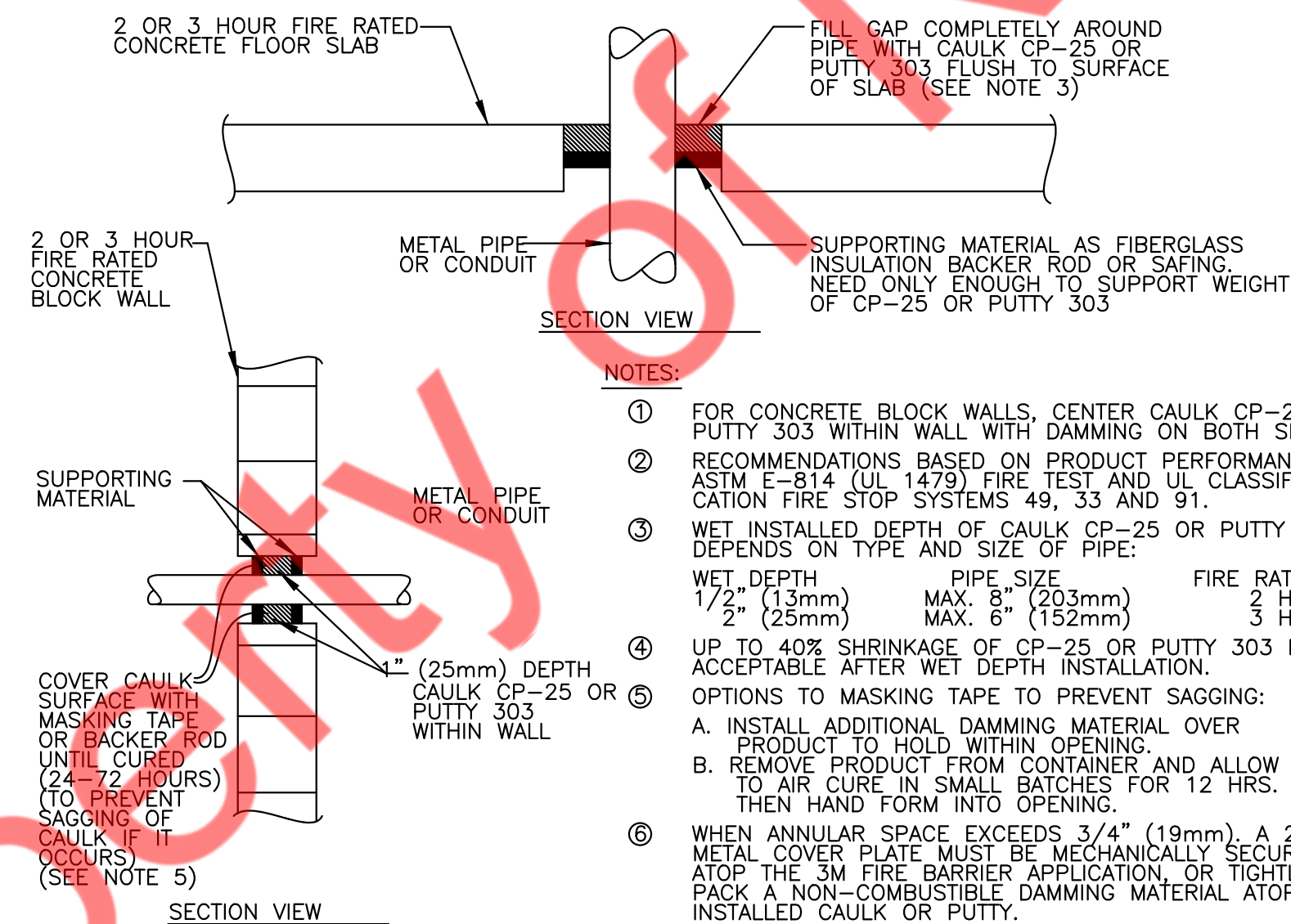
2 VERTICAL CABLE SUPPORT DETAIL
E-301.00 N.T.S

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



NOTES:

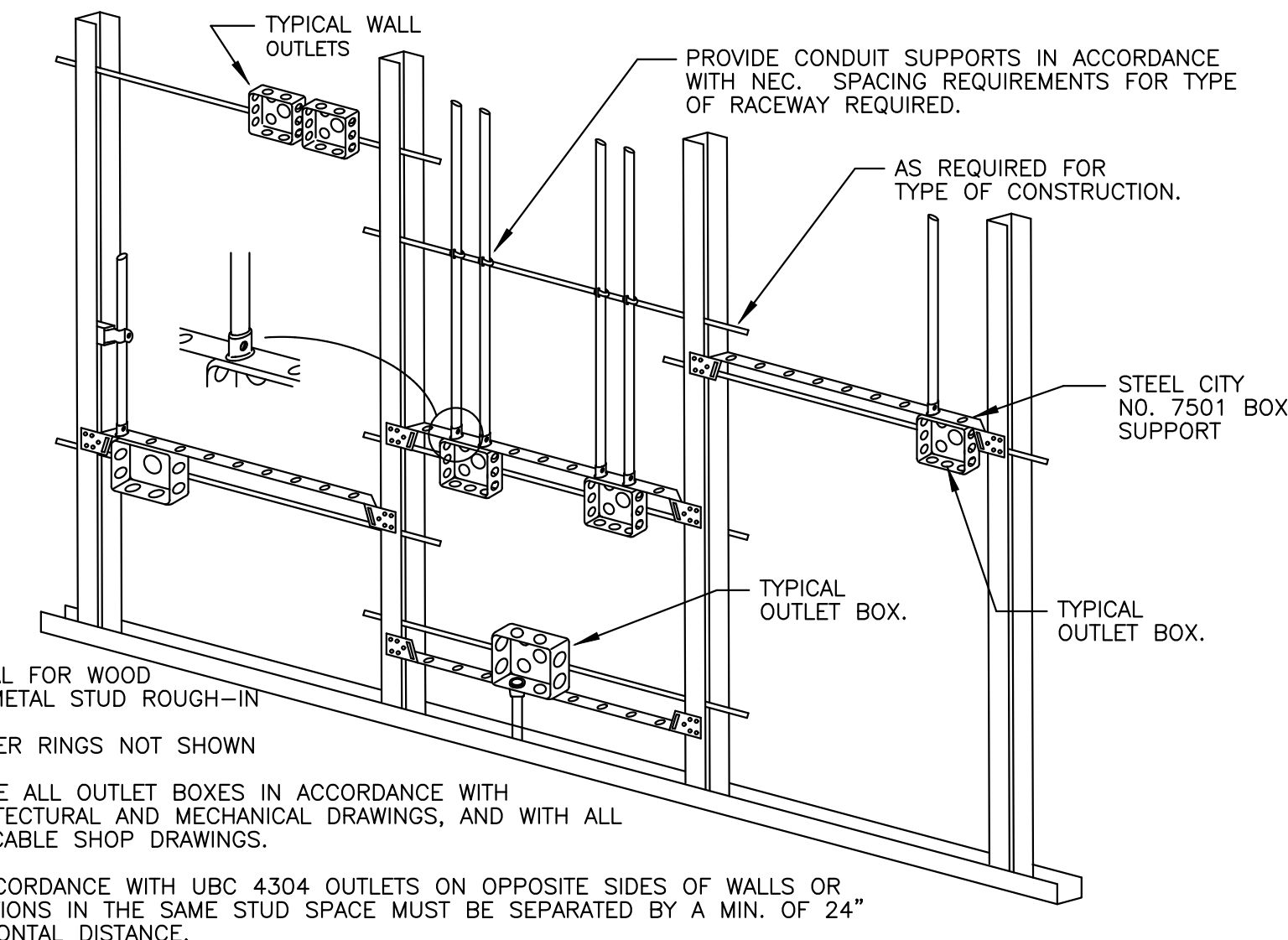
1. ALL CONDUIT MAY BE COMBINED ON SAME SUPPORT CHANNEL WHERE PRACTICAL.
2. SUPPORT CHANNEL LENGTH SHALL NOT BE DETERMINED UNTIL ALL PIPING, CONDUIT, ETC. TO BE SUPPORTED IS COORDINATED.
3. SUPPORT CHANNEL SPACING SHALL BE NO MORE THAN 10'-0".
4. UNISTRUT AND CONDUIT INSTALLATION MAY BE REVERSED.



NOTES:

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

WET DEPTH	PIPE SIZE	FIRE RATING
1/2" (13mm)	MAX. 8" (203mm)	2 HRS.
2" (25mm)	MAX. 6" (152mm)	3 HRS.
4. UP TO 40% SHRINKAGE OF CP-25 OR PUTTY 303 IS ACCEPTABLE AFTER WET DEPTH INSTALLATION.
5. OPTIONS TO MASKING TAPE TO PREVENT SAGGING:
 A. INSTALL ADDITIONAL DAMMING MATERIAL OVER PRODUCT TO HOLD WITHIN OPENING.
 B. REMOVE PRODUCT FROM CONTAINER AND ALLOW TO AIR CURE IN SMALL BATCHES FOR 12 HRS. THEN HAND FORM INTO OPENING.
6. WHEN ANNULAR SPACE EXCEEDS 3/4" (19mm), A 28 AWG METAL COVER PLATE MUST BE MECHANICALLY SECURED ATOP THE 3M FIRE BARRIER APPLICATION, OR TIGHTLY PACK A NON-COMBUSTIBLE DAMMING MATERIAL ATOP INSTALLED CAULK OR PUTTY.



NOTES:

1. TYPICAL FOR WOOD AND METAL STUD ROUGH-IN
2. PLASTER RINGS NOT SHOWN
3. LOCATE ALL OUTLET BOXES IN ACCORDANCE WITH ARCHITECTURAL AND MECHANICAL DRAWINGS, AND WITH ALL APPLICABLE SHOP DRAWINGS.
4. IN ACCORDANCE WITH UBC 4304 OUTLETS ON OPPOSITE SIDES OF WALLS OR PARTITIONS IN THE SAME STUD SPACE MUST BE SEPARATED BY A MIN. OF 24" HORIZONTAL DISTANCE.

4 CONDUIT SUPPORT DETAIL
E-301.00 N.T.S

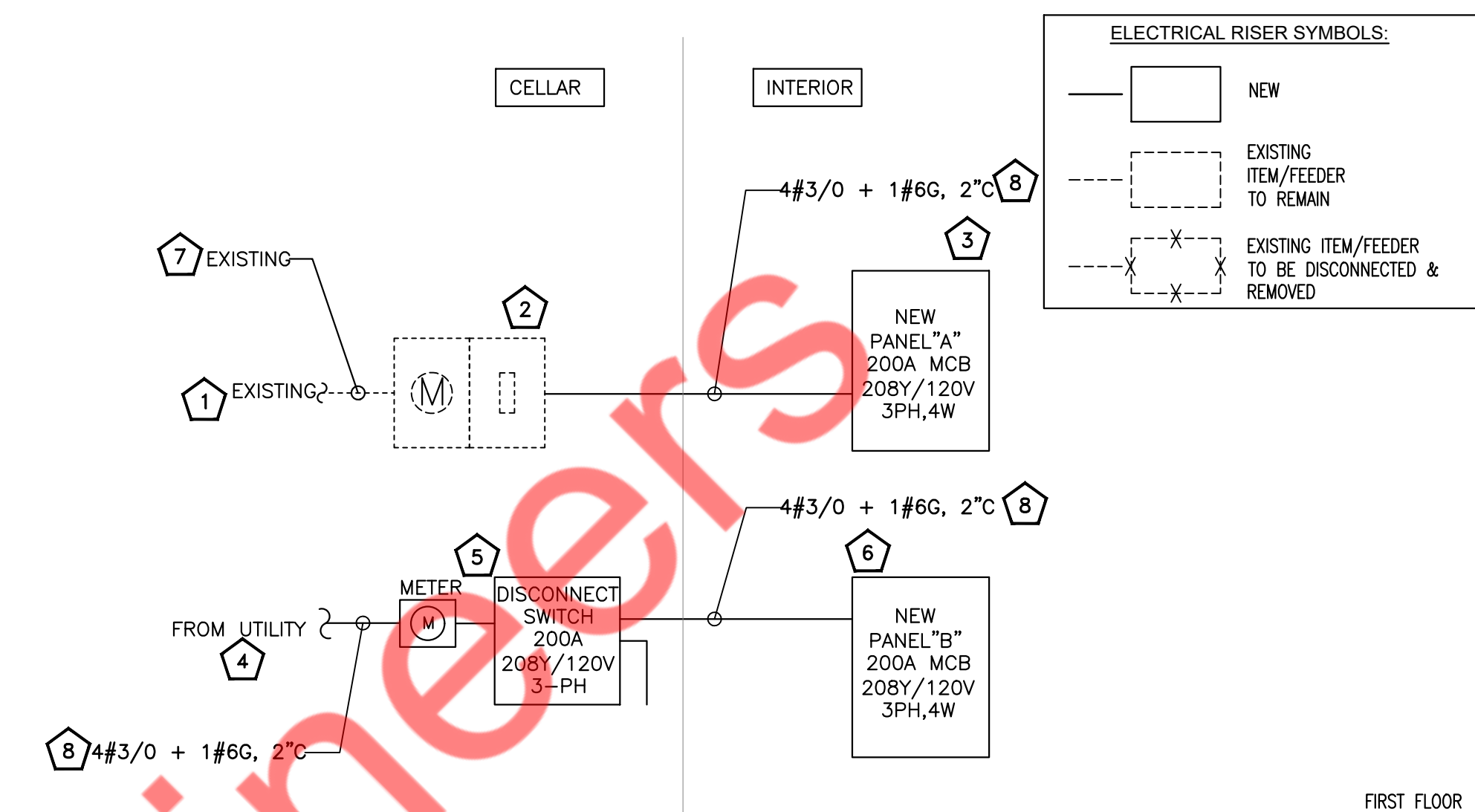
5 FIRE STOP DETAIL
E-301.00 N.T.S

1 DETAIL TYPICAL ROUGH-IN REQUIREMENTS
E-301.00 N.T.S

PANEL: A (NEW)												MOUNTING: SURFACE	
208Y/120 VOLTS, 3 PHASE, 4 WIRE												PANEL LOCATION: SERVICE AREA	
MAIN CB: 200A MLO: BUS: 200A MIN,												FED FROM: EXISTING DISCONNECT SWITCH	
NOTE:													
CKT NO.	TRIP AMPS	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	2_REFRIGERATOR REACH IN GLASS DOOR	E 0.63	2#12, #12G, 3/4"	0.93			2#12, #12G, 3/4"	0.30	L	LIGHTING- KITCHEN, DINNING	20	2
3	20	3.1_FRYER	E 0.10	2#12, #12G, 3/4"		0.30		2#12, #12G, 3/4"	0.20	L	LIGHTING-CELLAR	20	4
5			E 4.20					2#12, #12G, 3/4"	1.00	L	LCP	20	6
7	3P-40	1_OVENSTEAMER	E 4.20	3#8, #10G, 3/4"	5.20		5.20	2#12, #12G, 3/4"	1.00	L	STOREFRONT SIGN	20	8
9			E 4.20			5.20		2#12, #12G, 3/4"	1.00	L	STOREFRONT SIGN	20	10
11	2P-20	22_VERTICAL OPEN AIR COOLER	E 0.71	2#12, #12G, 3/4"			1.11	2#12, #12G, 3/4"	0.40	L	JB FOR HOOD LIGHTING	20	12
13			E 0.71		1.43			2#12, #12G, 3/4"	0.72	R	KITCHEN RECEPTACLES	20	14
15	20	9_REFRIGERATOR UNDECOUNTER	E 0.95	2#12, #12G, 3/4"		1.31		2#12, #12G, 3/4"	0.36	R	DINNING AREA RECEPTACLES	20	16
17			E 1.56				1.56	2#12, #12G, 3/4"		E	SHUNT TRIP	20	18
19	2P-20	17_CHILLER BLAST	E 1.56	2#12, #12G, 3/4"	1.62			2#12, #12G, 3/4"	0.06	M	RESTROOM LIGHT & EF-1	20	20
21	20	20_DISPENSER, BEVERAGE/CHOCOLATE	E 1.15	2#12, #12G, 3/4"		2.95			1.80	M		22	
23	20	23_MENU BOARD RECEPTACLE	R 0.54	2#12, #12G, 3/4"			2.34	3#12, #12G, 3/4"	1.80	M	KEF-1	3P-20	24
25	20	25_POS	R 0.54	2#12, #12G, 3/4"	2.34				1.80	M		26	
27			E 1.87			4.54			2.67	H		28	
29	2P-20	11_MICROWAVE	E 1.87	2#12, #12G, 3/4"			4.54	3#8, #10G, 3/4"	2.67	H	WH-1	3P-40	30
31			E 1.77		4.44				2.67	H		32	
33	2P-30	21_COFFEE MAKER	E 1.77	2#10, #10G, 3/4"		2.13		2#12, #12G, 3/4"	0.36	R	KIOSK RECEPTACLES	20	34
35	20	6_PASS THRU MOBILE HEATED CABINET	E 1.80	2#12, #12G, 3/4"			2.80	2#12, #12G, 3/4"	1.00	R	SHOW WINDOW RECEPTACLES	20	36
37	20	9.1_UNDERCOUNTER REFRIGERATOR	E 0.29	2#12, #12G, 3/4"	0.47			2#12, #12G, 3/4"	0.18	O	KITCHEN HOOD PANEL	20	38
39	20	24_UNDERCOUNTER 27" FREEZER	E 0.23	2#12, #12G, 3/4"		0.23					SPARE	20	40
41	20	25_ESPRESSO MACHINE	E 1.50	2#12, #12G, 3/4"			1.50				SPARE	20	42
TOTAL CONNECTED LOAD (KVA)					16.42	16.66	19.04						

PANEL: B (NEW)												MOUNTING: SURFACE	
208Y/120 VOLTS, 3 PHASE, 4 WIRE												PANEL LOCATION: SERVICE AREA	
MAIN CB: 200A MLO: NA BUS: 200A MIN,												FED FROM: NEW 200A DISCONNECT	
NOTE:													
CKT NO.	TRIP AMPS	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	RESTROOM RECEPTACLE	R 0.36	2#12, #12G, 3/4"	0.56			2#12, #12G, 3/4"	0.20	M	RCP-1	20	2
3	20	SPARE				0.00					SPARE	20	4
5	20	CONVENIENCE RECEPTACLE CELLAR	R 0.54	2#12, #12G, 3/4"			2.14		1.60	H		6	
7			H 4.32		5.92			3#10, #10G, 3/4"	1.60	H	WALK IN COOLER CONDENSOR	3P-30	8
9	2P-40	ACCU-1	H 4.32	2#8, #10G, 3/4"		5.92			1.60	H		10	
11			H 4.32				4.72	2#12, #12G, 3/4"	0.40	H	WALK IN COOLER EVAPORATOR	2P-20	12
13	2P-40	ACCU-2	H 4.32	2#8, #10G, 3/4"	4.72		4.72	2#12, #12G, 3/4"	0.40	H		14	
15			H 0.53			1.25		2#12, #12G, 3/4"	0.72	R	ROOF RECEPTACLE	20	16
17	2P-15	AC-1	H 0.53	2#12, #12G, 3/4"			1.03	2#12, #12G, 3/4"	0.50	M	MOTORIZED & FIRE SMOKE DAMPER	20	18
19			H 0.53		1.98			3#12, #12G, 3/4"	1.46	E	23_REACH-IN REFRIGERATOR	2P-20	20
21	2P-15	AC-2	H 0.53	2#12, #12G, 3/4"		1.98			1.46	E		22	
23			H 0.03				1.48	3#12, #12G, 3/4"	1.46	E	23_REACH-IN REFRIGERATOR	2P-20	24
25	2P-15	AC-3	H 0.03	2#12, #12G, 3/4"	1.48				1.46	E		26	
27			H 0.14			1.39		3#12, #12G, 3/4"	1.25	H		28	
29	2P-15	ACH-1	H 0.14	2#12, #12G, 3/4"			1.39	3#12, #12G, 3/4"	1.25	H	MUA-1 (FAN SECTION)	3P-15	30
31			H 1.15		2.40				1.25	H		32	
33	2P-20	EUH-1	H 1.15	2#12, #12G, 3/4"		3.72			2.57	H		34	
35			H 1.34				3.91	3#10, #10G, 3/4"	2.57	H	MUA-1 (CONDENSOR)	3P-30	36
37	3P-20	MUA-1 (CONDENSOR)	H 1.34	3#12, #12G, 3/4"	3.91				2.57	H		38	
39			H 1.34			1.34					SPARE	20	40
41	20	9.1_UNDERCOUNTER REFRIGERATOR	E 0.29	2#12, #12G, 3/4"			0.29				SPARE	20	42
TOTAL CONNECTED LOAD (KVA)					20.97	15.60	14.95						

1 ELECTRICAL PANEL SCHEDULE
N.T.S.



- ELECTRICAL RISER KEYED WORK NOTES:**
- EXISTING 200A, 208Y/120V, 3-PHASE, 4-WIRE ELECTRICAL SERVICE SHALL REMAIN. E.C. SHALL COORDINATE WITH THE BASE BUILDING/ LAND LORD/ OWNER FOR EXACT POWER DISTRIBUTION. REPORT TO ENGINEER ON RECORD FOR ANY DISCREPANCIES.
 - EXISTING 200A, 208Y/120V, 3-PHASE, 4-WIRE ELECTRICAL METER & DISCONNECT SWITCH TO REMAIN. E.C. SHALL COORDINATE WITH BASE BUILDING/LANDLORD/OWNER FOR LOCATION. E.C. TO VERIFY OPERABLE CONDITION OF EXISTING ELECTRICAL METER & DISCONNECT IN FIELD AND PROVIDE NEW IF FOUND INOPERABLE. BASE BID ACCORDINGLY.
 - NEW 200A(MCB), 208Y/120V, 3PH, 4W, ELECTRICAL PANEL"A". E.C. SHALL CO-ORDINATE WITH ARCHITECT/OWNER FOR EXACT LOCATION OF PANEL.
 - NEW 200A, 208Y/120V, 3PH, 4W FEEDER FROM UTILITY COMPANY. E.C TO COORDINATE WITH OWNER/UTILITY COMPANY FOR MORE DETAILS. BASE BID ACCORDINGLY.
 - NEW 200A, 208Y/120V, 3PH, 4W ELECTRICAL METER AND DISCONNECT FOR THE SPACE. E.C TO COORDINATE EXACT LOCATION WITH OWNER/UTILITY COMPANY IN FIELD. BASE BID ACCORDINGLY.
 - NEW 200A(MCB), 208Y/120V, 3PH, 4W, ELECTRICAL PANEL"B". E.C. SHALL CO-ORDINATE WITH ARCHITECT/OWNER FOR EXACT LOCATION OF PANEL.
 - 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.

- NOTE:**
- E.C. SHALL VERIFY INCOMING SERVICE AMPERAGE, WIRE SIZING AND DISTRIBUTION.
 - ELECTRICAL CONTRACTOR TO COORDINATE FAULT CURRENT (Isc) RATING WITH UTILITY COMPANY AND AHJ PRIOR TO COMMENCING ANY WORK.
 - PROVIDE SEPARATE GROUND CONDUCTOR IN ALL CONDUITS.
 - ALL EQUIPMENT MOUNTED UNDER THE EXHAUST HOOD SHALL BE CIRCUITED USING SHUNT-TRIP BREAKERS TIED TO THE FIRE SUPPRESSION SYSTEM. UPON ACTIVATION OF THE FIRE SUPPRESSION SYSTEM, THE EQUIPMENT UNDER THE HOOD SHALL BE DEACTIVATED UNLESS OPTIONAL NCA PANEL IS PROVIDED.
 - PROVIDE HACR TYPE CIRCUIT BREAKERS FOR MECHANICAL ROOFTOP UNITS AND FOR THE WALK-IN COOLER COMPRESSOR AND WALK-IN FREEZER COMPRESSOR.
 - P.O.S. SYSTEM, COMPUTER, PRINTERS, MONITORS, CREDIT CARDS AND MODEM TO BE ON ISOLATED GROUND.

2 ELECTRICAL RISER DIAGRAM
N.T.S.

PLUMBING LEGENDS

- DOMESTIC COLD WATER PIPING
- DOMESTIC HOT WATER PIPING
- HOT WATER RETURN
- VENT PIPING
- WASTE (SANITARY SEWER)
- SAN UNDERGROUND WASTE (SANITARY SEWER)
- INDIRECT WASTE
- GSAN GREASE WASTE
- GSAN UNDERGROUND GREASE WASTE
- G GAS PIPING
- ▲ GAS SHUT-OFF VALVE
- ⊗ GAS SOLENOID VALVE
- ISOLATION VALVE
- ⊘ BALANCING VALVE
- ⊎ CHECK VALVE
- || UNION
- PIPE UP
- ⊝ PIPE DOWN
- ⊘ FLOOR DRAIN
- ⊘ HUB DRAIN
- ⊘ FLOOR SINK
- ⊘ FLOOR CLEAN OUT
- ⊙ POINT OF CONNECTION

PLUMBING LEGENDS

- P-1 FIXTURE DESIGNATION
- AFB ABOVE FINISHED FLOOR
- PC PLUMBING SUB-CONTRACTOR
- GC GENERAL CONTRACTOR
- MC MECHANICAL SUB-CONTRACTOR
- EC ELECTRICAL SUB-CONTRACTOR
- FCO FLOOR CLEAN OUT
- WCO WALL CLEAN OUT
- GCO GRADE CLEAN OUT
- WHD WALL HYDRANT
- FD FLOOR DRAIN
- FS FLOOR SINK
- HD HUB DRAIN
- CW COLD WATER
- HW HOT WATER
- TW TEMPERED WATER
- FW FILTERED WATER
- AAV AIR ADMITTANCE VALVE (STUDDOR VENT)
- CODP CLEAN OUT DECK PLATE

PLUMBING DRAWING LIST

- P-001.00 PLUMBING NOTES AND SPECIFICATIONS (1 OF 2)
- P-002.00 PLUMBING NOTES AND SPECIFICATIONS (2 OF 2)
- P-101.00 PLUMBING SANITARY AND VENT PLAN
- P-102.00 PLUMBING WATER AND GAS PLAN
- P-501.00 PLUMBING DETAILS
- P-601.00 PLUMBING SCHEDULES
- P-602.00 PLUMBING RISER DIAGRAMS

APPLICABLE CODES

- a. 2022 NYC BUILDING CODE.
- b. 2022 NYC MECHANICAL CODE.
- c. 2022 NYC PLUMBING CODE.
- d. 2020 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.
3. POST INSTALLATION ANCHOR INSPECTION TO BE DONE IN ACCORDANCE WITH NY CITY BUILDING CODE BC-1705.37.

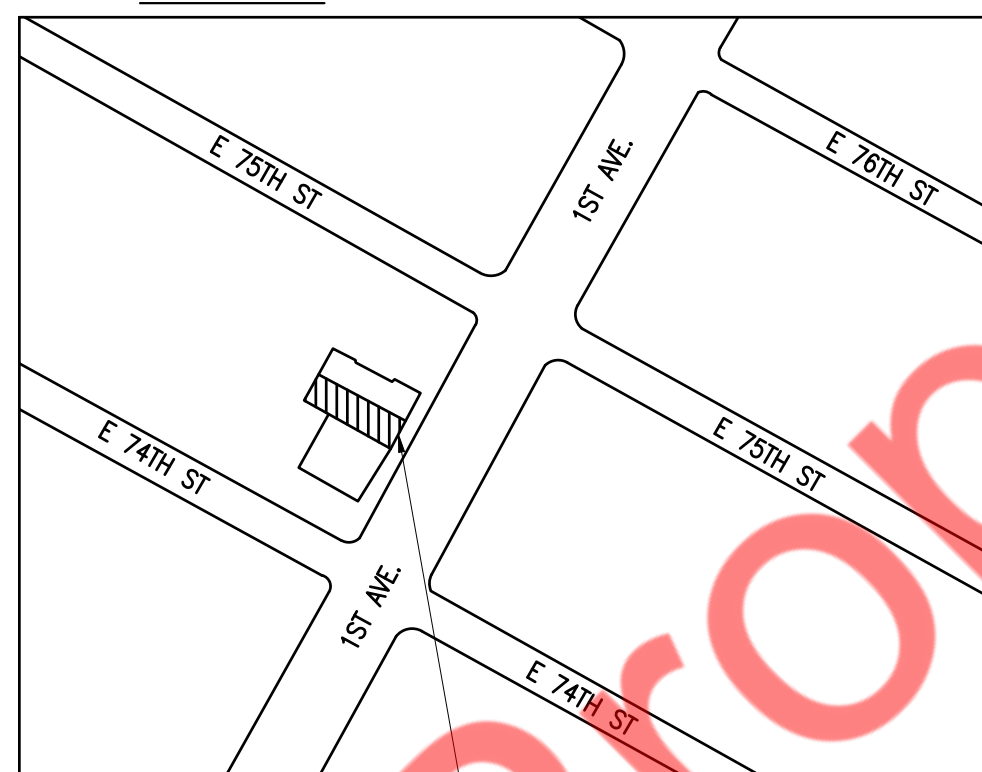
BUILDING DEPARTMENT PLUMBING NOTES

1. ALL PLUMBING SYSTEMS (SANITARY, WASTE, VENT, GAS, WATER, STORM) AND ASSOCIATED EQUIPMENT SHALL BE INSTALLED, OPERATED AND MAINTAINED IN ACCORDANCE WITH THE REQUIREMENTS OF 2022 THE NEW YORK CITY PLUMBING CODE (NYPC) & NYC FUEL GAS CODE 2022.
2. INSTALLATION OF UNDERGROUND PIPING SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION NYPC 702.2.
3. PROTECTION OF PIPING AND PLUMBING SYSTEM COMPONENTS AS PER SECTION NYPC 305.
4. TRENCHING, EXCAVATION AND BACKFILL AS PER SECTION NYPC 306.
5. RODENT PROOFING AS PER NYPC 304.
6. MATERIALS USED IN PLUMBING SYSTEMS SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION NYPC 303, NYPC 605, NYPC 702, NYPC 902, NYPC 1102.
7. EQUIPMENT CONNECTIONS AND JOINING OF PIPING SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF CHAPTERS 4, 5, 6, 7 AND 9.
8. DEEP SEAL TRAPS FOR FLOOR DRAINS SHALL BE PROVIDED AS PER NYPC 1002, AND CLEAN-OUTS SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION NYPC 708.
9. BUILDING HOUSE TRAPS SHALL BE PROVIDED AS PER SECTION NYPC 1002.
10. DRAINAGE PIPE CLEANOUTS AS PER SECTION NYPC 708.
11. VERTICAL AND HORIZONTAL PIPING SHALL BE SUPPORTED IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION NYPC 308.
12. WATER SUPPLY SYSTEMS SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE REQUIREMENTS OF CHAPTER 6 SECTION NYPC 601-603, 604, 606, 607, 608, 610.
13. THE SANITARY DRAINAGE SYSTEM SHALL BE SIZED AND INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF CHAPTER 7 SECTION NYPC 701, 704, 705, 706, 707, 708, 711.
14. VENT PIPING FOR THE SANITARY DRAINAGE SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF CHAPTER 9 SECTIONS NYPC 901 THROUGH NYPC 912 THROUGH NYPC 917.
15. GAS METER LOCATION SHALL BE IN ACCORDANCE OF FUEL GAS CODE APPENDIX E.
16. GAS PIPING INSTALLATION SHALL BE IN ACCORDANCE WITH NYC FUEL GAS CODE CHAPTER 4.
17. INSPECTION AND TESTING OF PLUMBING AND GAS PIPING SYSTEMS SHALL BE IN ACCORDANCE WITH SECTION NYC NYPC 108, 312.
18. ALL WORK SHALL COMPLY WITH THE 2020 NYC ENERGY CONSERVATION CODE (NYECC). EXCEPT WHERE EXPLICITLY STATED IN THE CODE, IT IS NOT RETROACTIVE IN EXISTING BUILDINGS. ADDITIONS TO EXISTING BUILDING MUST COMPLY WITH THE NYECC.
19. GREASE INTERCEPTOR SHALL BE IN ACCORDANCE WITH NYPC 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:



1435 1ST AVENUE, NEW YORK, NY 10021
 BOROUGH : 1 (MANHATTAN)
 BLOCK : 1449
 LOT : 26
 ZONING DISTRICT : C1-9
 MAP : 9A
 BUILDING USE : MIXED RESIDENTIAL & COMMERCIAL BUILDINGS

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. BACKFLOW PREVENTER
 11. 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, 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 BANDS 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 3" AND SMALLER (I.D.). VENT PIPING SHALL BE PITCHED TO DRAIN.
 3. ALL CAST IRON SOIL PIPE AND FITTINGS SHALL BE MARKED WITH THE COLLECTIVE TRADEMARK OF THE CAST IRON SOIL PIPE INSTITUTE (CISPI) AND BE LISTED BY NSF INTERNATIONAL.
- B. DOMESTIC WATER PIPING:
 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 WITH SECTION C404.4 REFER TO NYC ENERGY CONSERVATION CODE 2020 BELOW TABLE C403.11.3.

MINIMUM PIPE INSULATION THICKNESS						
FLUID OPERATING TEMPERATURE RANGE AND USAGE (°F)	INSULATION CONDUCTIVITY		NOMINAL PIPE OR TUBE SIZE (INCHES)			
	CONDUCTIVITY BTU IN./(H·FT ² ·°F)	MEAN RATING TEMPERATURE, °F	<1	1 1/2 to <2	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. THE FLOW RATE THROUGH 1/2-INCH PIPING SHALL BE NOT GREATER THAN 2.0 GPM. THE FLOW RATE THROUGH 3/4-INCH PIPING SHALL BE NOT GREATER THAN 2.5 GPM. THE FLOW RATE THROUGH 1-INCH PIPING SHALL BE NOT GREATER THAN 3.0 GPM. THE FLOW RATE THROUGH 1 1/4-INCH PIPING SHALL BE NOT GREATER THAN 3.5 GPM. THE FLOW RATE THROUGH 1 1/2-INCH PIPING SHALL BE NOT GREATER THAN 4.0 GPM. THE FLOW RATE THROUGH 2-INCH PIPING SHALL BE NOT GREATER THAN 4.5 GPM. THE FLOW RATE THROUGH 2 1/2-INCH PIPING SHALL BE NOT GREATER THAN 5.0 GPM. THE FLOW RATE THROUGH 3-INCH PIPING SHALL BE NOT GREATER THAN 5.5 GPM. THE FLOW RATE THROUGH 3 1/2-INCH PIPING SHALL BE NOT GREATER THAN 6.0 GPM. THE FLOW RATE THROUGH 4-INCH PIPING SHALL BE NOT GREATER THAN 6.5 GPM. THE FLOW RATE THROUGH 4 1/2-INCH PIPING SHALL BE NOT GREATER THAN 7.0 GPM. THE FLOW RATE THROUGH 5-INCH PIPING SHALL BE NOT GREATER THAN 7.5 GPM. THE FLOW RATE THROUGH 5 1/2-INCH PIPING SHALL BE NOT GREATER THAN 8.0 GPM. THE FLOW RATE THROUGH 6-INCH PIPING SHALL BE NOT GREATER THAN 8.5 GPM. THE FLOW RATE THROUGH 6 1/2-INCH PIPING SHALL BE NOT GREATER THAN 9.0 GPM. THE FLOW RATE THROUGH 7-INCH PIPING SHALL BE NOT GREATER THAN 9.5 GPM. THE FLOW RATE THROUGH 7 1/2-INCH PIPING SHALL BE NOT GREATER THAN 10.0 GPM. THE FLOW RATE THROUGH 8-INCH PIPING SHALL BE NOT GREATER THAN 10.5 GPM. THE FLOW RATE THROUGH 8 1/2-INCH PIPING SHALL BE NOT GREATER THAN 11.0 GPM. THE FLOW RATE THROUGH 9-INCH PIPING SHALL BE NOT GREATER THAN 11.5 GPM. THE FLOW RATE THROUGH 9 1/2-INCH PIPING SHALL BE NOT GREATER THAN 12.0 GPM. THE FLOW RATE THROUGH 10-INCH PIPING SHALL BE NOT GREATER THAN 12.5 GPM. THE FLOW RATE THROUGH 10 1/2-INCH PIPING SHALL BE NOT GREATER THAN 13.0 GPM. THE FLOW RATE THROUGH 11-INCH PIPING SHALL BE NOT GREATER THAN 13.5 GPM. THE FLOW RATE THROUGH 11 1/2-INCH PIPING SHALL BE NOT GREATER THAN 14.0 GPM. THE FLOW RATE THROUGH 12-INCH PIPING SHALL BE NOT GREATER THAN 14.5 GPM. THE FLOW RATE THROUGH 12 1/2-INCH PIPING SHALL BE NOT GREATER THAN 15.0 GPM. THE FLOW RATE THROUGH 13-INCH PIPING SHALL BE NOT GREATER THAN 15.5 GPM. THE FLOW RATE THROUGH 13 1/2-INCH PIPING SHALL BE NOT GREATER THAN 16.0 GPM. THE FLOW RATE THROUGH 14-INCH PIPING SHALL BE NOT GREATER THAN 16.5 GPM. THE FLOW RATE THROUGH 14 1/2-INCH PIPING SHALL BE NOT GREATER THAN 17.0 GPM. THE FLOW RATE THROUGH 15-INCH PIPING SHALL BE NOT GREATER THAN 17.5 GPM. THE FLOW RATE THROUGH 15 1/2-INCH PIPING SHALL BE NOT GREATER THAN 18.0 GPM. THE FLOW RATE THROUGH 16-INCH PIPING SHALL BE NOT GREATER THAN 18.5 GPM. THE FLOW RATE THROUGH 16 1/2-INCH PIPING SHALL BE NOT GREATER THAN 19.0 GPM. THE FLOW RATE THROUGH 17-INCH PIPING SHALL BE NOT GREATER THAN 19.5 GPM. THE FLOW RATE THROUGH 17 1/2-INCH PIPING SHALL BE NOT GREATER THAN 20.0 GPM. THE FLOW RATE THROUGH 18-INCH PIPING SHALL BE NOT GREATER THAN 20.5 GPM. THE FLOW RATE THROUGH 18 1/2-INCH PIPING SHALL BE NOT GREATER THAN 21.0 GPM. THE FLOW RATE THROUGH 19-INCH PIPING SHALL BE NOT GREATER THAN 21.5 GPM. THE FLOW RATE THROUGH 19 1/2-INCH PIPING SHALL BE NOT GREATER THAN 22.0 GPM. THE FLOW RATE THROUGH 20-INCH PIPING SHALL BE NOT GREATER THAN 22.5 GPM. THE FLOW RATE THROUGH 20 1/2-INCH PIPING SHALL BE NOT GREATER THAN 23.0 GPM. THE FLOW RATE THROUGH 21-INCH PIPING SHALL BE NOT GREATER THAN 23.5 GPM. THE FLOW RATE THROUGH 21 1/2-INCH PIPING SHALL BE NOT GREATER THAN 24.0 GPM. THE FLOW RATE THROUGH 22-INCH PIPING SHALL BE NOT GREATER THAN 24.5 GPM. THE FLOW RATE THROUGH 22 1/2-INCH PIPING SHALL BE NOT GREATER THAN 25.0 GPM. THE FLOW RATE THROUGH 23-INCH PIPING SHALL BE NOT GREATER THAN 25.5 GPM. THE FLOW RATE THROUGH 23 1/2-INCH PIPING SHALL BE NOT GREATER THAN 26.0 GPM. THE FLOW RATE THROUGH 24-INCH PIPING SHALL BE NOT GREATER THAN 26.5 GPM. THE FLOW RATE THROUGH 24 1/2-INCH PIPING SHALL BE NOT GREATER THAN 27.0 GPM. THE FLOW RATE THROUGH 25-INCH PIPING SHALL BE NOT GREATER THAN 27.5 GPM. THE FLOW RATE THROUGH 25 1/2-INCH PIPING SHALL BE NOT GREATER THAN 28.0 GPM. THE FLOW RATE THROUGH 26-INCH PIPING SHALL BE NOT GREATER THAN 28.5 GPM. THE FLOW RATE THROUGH 26 1/2-INCH PIPING SHALL BE NOT GREATER THAN 29.0 GPM. THE FLOW RATE THROUGH 27-INCH PIPING SHALL BE NOT GREATER THAN 29.5 GPM. THE FLOW RATE THROUGH 27 1/2-INCH PIPING SHALL BE NOT GREATER THAN 30.0 GPM. THE FLOW RATE THROUGH 28-INCH PIPING SHALL BE NOT GREATER THAN 30.5 GPM. THE FLOW RATE THROUGH 28 1/2-INCH PIPING SHALL BE NOT GREATER THAN 31.0 GPM. THE FLOW RATE THROUGH 29-INCH PIPING SHALL BE NOT GREATER THAN 31.5 GPM. THE FLOW RATE THROUGH 29 1/2-INCH PIPING SHALL BE NOT GREATER THAN 32.0 GPM. THE FLOW RATE THROUGH 30-INCH PIPING SHALL BE NOT GREATER THAN 32.5 GPM. THE FLOW RATE THROUGH 30 1/2-INCH PIPING SHALL BE NOT GREATER THAN 33.0 GPM. THE FLOW RATE THROUGH 31-INCH PIPING SHALL BE NOT GREATER THAN 33.5 GPM. THE FLOW RATE THROUGH 31 1/2-INCH PIPING SHALL BE NOT GREATER THAN 34.0 GPM. THE FLOW RATE THROUGH 32-INCH PIPING SHALL BE NOT GREATER THAN 34.5 GPM. THE FLOW RATE THROUGH 32 1/2-INCH PIPING SHALL BE NOT GREATER THAN 35.0 GPM. THE FLOW RATE THROUGH 33-INCH PIPING SHALL BE NOT GREATER THAN 35.5 GPM. THE FLOW RATE THROUGH 33 1/2-INCH PIPING SHALL BE NOT GREATER THAN 36.0 GPM. THE FLOW RATE THROUGH 34-INCH PIPING SHALL BE NOT GREATER THAN 36.5 GPM. THE FLOW RATE THROUGH 34 1/2-INCH PIPING SHALL BE NOT GREATER THAN 37.0 GPM. THE FLOW RATE THROUGH 35-INCH PIPING SHALL BE NOT GREATER THAN 37.5 GPM. THE FLOW RATE THROUGH 35 1/2-INCH PIPING SHALL BE NOT GREATER THAN 38.0 GPM. THE FLOW RATE THROUGH 36-INCH PIPING SHALL BE NOT GREATER THAN 38.5 GPM. THE FLOW RATE THROUGH 36 1/2-INCH PIPING SHALL BE NOT GREATER THAN 39.0 GPM. THE FLOW RATE THROUGH 37-INCH PIPING SHALL BE NOT GREATER THAN 39.5 GPM. THE FLOW RATE THROUGH 37 1/2-INCH PIPING SHALL BE NOT GREATER THAN 40.0 GPM. THE FLOW RATE THROUGH 38-INCH PIPING SHALL BE NOT GREATER THAN 40.5 GPM. THE FLOW RATE THROUGH 38 1/2-INCH PIPING SHALL BE NOT GREATER THAN 41.0 GPM. THE FLOW RATE THROUGH 39-INCH PIPING SHALL BE NOT GREATER THAN 41.5 GPM. THE FLOW RATE THROUGH 39 1/2-INCH PIPING SHALL BE NOT GREATER THAN 42.0 GPM. THE FLOW RATE THROUGH 40-INCH PIPING SHALL BE NOT GREATER THAN 42.5 GPM. THE FLOW RATE THROUGH 40 1/2-INCH PIPING SHALL BE NOT GREATER THAN 43.0 GPM. THE FLOW RATE THROUGH 41-INCH PIPING SHALL BE NOT GREATER THAN 43.5 GPM. THE FLOW RATE THROUGH 41 1/2-INCH PIPING SHALL BE NOT GREATER THAN 44.0 GPM. THE FLOW RATE THROUGH 42-INCH PIPING SHALL BE NOT GREATER THAN 44.5 GPM. THE FLOW RATE THROUGH 42 1/2-INCH PIPING SHALL BE NOT GREATER THAN 45.0 GPM. THE FLOW RATE THROUGH 43-INCH PIPING SHALL BE NOT GREATER THAN 45.5 GPM. THE FLOW RATE THROUGH 43 1/2-INCH PIPING SHALL BE NOT GREATER THAN 46.0 GPM. THE FLOW RATE THROUGH 44-INCH PIPING SHALL BE NOT GREATER THAN 46.5 GPM. THE FLOW RATE THROUGH 44 1/2-INCH PIPING SHALL BE NOT GREATER THAN 47.0 GPM. THE FLOW RATE THROUGH 45-INCH PIPING SHALL BE NOT GREATER THAN 47.5 GPM. THE FLOW RATE THROUGH 45 1/2-INCH PIPING SHALL BE NOT GREATER THAN 48.0 GPM. THE FLOW RATE THROUGH 46-INCH PIPING SHALL BE NOT GREATER THAN 48.5 GPM. THE FLOW RATE THROUGH 46 1/2-INCH PIPING SHALL BE NOT GREATER THAN 49.0 GPM. THE FLOW RATE THROUGH 47-INCH PIPING SHALL BE NOT GREATER THAN 49.5 GPM. THE FLOW RATE THROUGH 47 1/2-INCH PIPING SHALL BE NOT GREATER THAN 50.0 GPM. THE FLOW RATE THROUGH 48-INCH PIPING SHALL BE NOT GREATER THAN 50.5 GPM. THE FLOW RATE THROUGH 48 1/2-INCH PIPING SHALL BE NOT GREATER THAN 51.0 GPM. THE FLOW RATE THROUGH 49-INCH PIPING SHALL BE NOT GREATER THAN 51.5 GPM. THE FLOW RATE THROUGH 49 1/2-INCH PIPING SHALL BE NOT GREATER THAN 52.0 GPM. THE FLOW RATE THROUGH 50-INCH PIPING SHALL BE NOT GREATER THAN 52.5 GPM. THE FLOW RATE THROUGH 50 1/2-INCH PIPING SHALL BE NOT GREATER THAN 53.0 GPM. THE FLOW RATE THROUGH 51-INCH PIPING SHALL BE NOT GREATER THAN 53.5 GPM. THE FLOW RATE THROUGH 51 1/2-INCH PIPING SHALL BE NOT GREATER THAN 54.0 GPM. THE FLOW RATE THROUGH 52-INCH PIPING SHALL BE NOT GREATER THAN 54.5 GPM. THE FLOW RATE THROUGH 52 1/2-INCH PIPING SHALL BE NOT GREATER THAN 55.0 GPM. THE FLOW RATE THROUGH 53-INCH PIPING SHALL BE NOT GREATER THAN 55.5 GPM. THE FLOW RATE THROUGH 53 1/2-INCH PIPING SHALL BE NOT GREATER THAN 56.0 GPM. THE FLOW RATE THROUGH 54-INCH PIPING SHALL BE NOT GREATER THAN 56.5 GPM. THE FLOW RATE THROUGH 54 1/2-INCH PIPING SHALL BE NOT GREATER THAN 57.0 GPM. THE FLOW RATE THROUGH 55-INCH PIPING SHALL BE NOT GREATER THAN 57.5 GPM. THE FLOW RATE THROUGH 55 1/2-INCH PIPING SHALL BE NOT GREATER THAN 58.0 GPM. THE FLOW RATE THROUGH 56-INCH PIPING SHALL BE NOT GREATER THAN 58.5 GPM. THE FLOW RATE THROUGH 56 1/2-INCH PIPING SHALL BE NOT GREATER THAN 59.0 GPM. THE FLOW RATE THROUGH 57-INCH PIPING SHALL BE NOT GREATER THAN 59.5 GPM. THE FLOW RATE THROUGH 57 1/2-INCH PIPING SHALL BE NOT GREATER THAN 60.0 GPM. THE FLOW RATE THROUGH 58-INCH PIPING SHALL BE NOT GREATER THAN 60.5 GPM. THE FLOW RATE THROUGH 58 1/2-INCH PIPING SHALL BE NOT GREATER THAN 61.0 GPM. THE FLOW RATE THROUGH 59-INCH PIPING SHALL BE NOT GREATER THAN 61.5 GPM. THE FLOW RATE THROUGH 59 1/2-INCH PIPING SHALL BE NOT GREATER THAN 62.0 GPM. THE FLOW RATE THROUGH 60-INCH PIPING SHALL BE NOT GREATER THAN 62.5 GPM. THE FLOW RATE THROUGH 60 1/2-INCH PIPING SHALL BE NOT GREATER THAN 63.0 GPM. THE FLOW RATE THROUGH 61-INCH PIPING SHALL BE NOT GREATER THAN 63.5 GPM. THE FLOW RATE THROUGH 61 1/2-INCH PIPING SHALL BE NOT GREATER THAN 64.0 GPM. THE FLOW RATE THROUGH 62-INCH PIPING SHALL BE NOT GREATER THAN 64.5 GPM. THE FLOW RATE THROUGH 62 1/2-INCH PIPING SHALL BE NOT GREATER THAN 65.0 GPM. THE FLOW RATE THROUGH 63-INCH PIPING SHALL BE NOT GREATER THAN 65.5 GPM. THE FLOW RATE THROUGH 63 1/2-INCH PIPING SHALL BE NOT GREATER THAN 66.0 GPM. THE FLOW RATE THROUGH 64-INCH PIPING SHALL BE NOT GREATER THAN 66.5 GPM. THE FLOW RATE THROUGH 64 1/2-INCH PIPING SHALL BE NOT GREATER THAN 67.0 GPM. THE FLOW RATE THROUGH 65-INCH PIPING SHALL BE NOT GREATER THAN 67.5 GPM. THE FLOW RATE THROUGH 65 1/2-INCH PIPING SHALL BE NOT GREATER THAN 68.0 GPM. THE FLOW RATE THROUGH 66-INCH PIPING SHALL BE NOT GREATER THAN 68.5 GPM. THE FLOW RATE THROUGH 66 1/2-INCH PIPING SHALL BE NOT GREATER THAN 69.0 GPM. THE FLOW RATE THROUGH 67-INCH PIPING SHALL BE NOT GREATER THAN 69.5 GPM. THE FLOW RATE THROUGH 67 1/2-INCH PIPING SHALL BE NOT GREATER THAN 70.0 GPM. THE FLOW RATE THROUGH 68-INCH PIPING SHALL BE NOT GREATER THAN 70.5 GPM. THE FLOW RATE THROUGH 68 1/2-INCH PIPING SHALL BE NOT GREATER THAN 71.0 GPM. THE FLOW RATE THROUGH 69-INCH PIPING SHALL BE NOT GREATER THAN 71.5 GPM. THE FLOW RATE THROUGH 69 1/2-INCH PIPING SHALL BE NOT GREATER THAN 72.0 GPM. THE FLOW RATE THROUGH 70-INCH PIPING SHALL BE NOT GREATER THAN 72.5 GPM. THE FLOW RATE THROUGH 70 1/2-INCH PIPING SHALL BE NOT GREATER THAN 73.0 GPM. THE FLOW RATE THROUGH 71-INCH PIPING SHALL BE NOT GREATER THAN 73.5 GPM. THE FLOW RATE THROUGH 71 1/2-INCH PIPING SHALL BE NOT GREATER THAN 74.0 GPM. THE FLOW RATE THROUGH 72-INCH PIPING SHALL BE NOT GREATER THAN 74.5 GPM. THE FLOW RATE THROUGH 72 1/2-INCH PIPING SHALL BE NOT GREATER THAN 75.0 GPM. THE FLOW RATE THROUGH 73-INCH PIPING SHALL BE NOT GREATER THAN 75.5 GPM. THE FLOW RATE THROUGH 73 1/2-INCH PIPING SHALL BE NOT GREATER THAN 76.0 GPM. THE FLOW RATE THROUGH 74-INCH PIPING SHALL BE NOT GREATER THAN 76.5 GPM. THE FLOW RATE THROUGH 74 1/2-INCH PIPING SHALL BE NOT GREATER THAN 77.0 GPM. THE FLOW RATE THROUGH 75-INCH PIPING SHALL BE NOT GREATER THAN 77.5 GPM. THE FLOW RATE THROUGH 75 1/2-INCH PIPING SHALL BE NOT GREATER THAN 78.0 GPM. THE FLOW RATE THROUGH 76-INCH PIPING SHALL BE NOT GREATER THAN 78.5 GPM. THE FLOW RATE THROUGH 76 1/2-INCH PIPING SHALL BE NOT GREATER THAN 79.0 GPM. THE FLOW RATE THROUGH 77-INCH PIPING SHALL BE NOT GREATER THAN 79.5 GPM. THE FLOW RATE THROUGH 77 1/2-INCH PIPING SHALL BE NOT GREATER THAN 80.0 GPM. THE FLOW RATE THROUGH 78-INCH PIPING SHALL BE NOT GREATER THAN 80.5 GPM. THE FLOW RATE THROUGH 78 1/2-INCH PIPING SHALL BE NOT GREATER THAN 81.0 GPM. THE FLOW RATE THROUGH 79-INCH PIPING SHALL BE NOT GREATER THAN 81.5 GPM. THE FLOW RATE THROUGH 79 1/2-INCH PIPING SHALL BE NOT GREATER THAN 82.0 GPM. THE FLOW RATE THROUGH 80-INCH PIPING SHALL BE NOT GREATER THAN 82.5 GPM. THE FLOW RATE THROUGH 80 1/2-INCH PIPING SHALL BE NOT GREATER THAN 83.0 GPM. THE FLOW RATE THROUGH 81-INCH PIPING SHALL BE NOT GREATER THAN 83.5 GPM. THE FLOW RATE THROUGH 81 1/2-INCH PIPING SHALL BE NOT GREATER THAN 84.0 GPM. THE FLOW RATE THROUGH 82-INCH PIPING SHALL BE NOT GREATER THAN 84.5 GPM. THE FLOW RATE THROUGH 82 1/2-INCH PIPING SHALL BE NOT GREATER THAN 85.0 GPM. THE FLOW RATE THROUGH 83-INCH PIPING SHALL BE NOT GREATER THAN 85.5 GPM. THE FLOW RATE THROUGH 83 1/2-INCH PIPING SHALL BE NOT GREATER THAN 86.0 GPM. THE FLOW RATE THROUGH 84-INCH PIPING SHALL BE NOT GREATER THAN 86.5 GPM. THE FLOW RATE THROUGH 84 1/2-INCH PIPING SHALL BE NOT GREATER THAN 87.0 GPM. THE FLOW RATE THROUGH 85-INCH PIPING SHALL BE NOT GREATER THAN 87.5 GPM. THE FLOW RATE THROUGH 85 1/2-INCH PIPING SHALL BE NOT GREATER THAN 88.0 GPM. THE FLOW RATE THROUGH 86-INCH PIPING SHALL BE NOT GREATER THAN 88.5 GPM. THE FLOW RATE THROUGH 86 1/2-INCH PIPING SHALL BE NOT GREATER THAN 89.0 GPM. THE FLOW RATE THROUGH 87-INCH PIPING SHALL BE NOT GREATER THAN 89.5 GPM. THE FLOW RATE THROUGH 87 1/2-INCH PIPING SHALL BE NOT GREATER THAN 90.0 GPM. THE FLOW RATE THROUGH 88-INCH PIPING SHALL BE NOT GREATER THAN 90.5 GPM. THE FLOW RATE THROUGH 88 1/2-INCH PIPING SHALL BE NOT GREATER THAN 91.0 GPM. THE FLOW RATE THROUGH 89-INCH PIPING SHALL BE NOT GREATER THAN 91.5 GPM. THE FLOW RATE THROUGH 89 1/2-INCH PIPING SHALL BE NOT GREATER THAN 92.0 GPM. THE FLOW RATE THROUGH 90-INCH PIPING SHALL BE NOT GREATER THAN 92.5 GPM. THE FLOW RATE THROUGH 90 1/2-INCH PIPING SHALL BE NOT GREATER THAN 93.0 GPM. THE FLOW RATE THROUGH 91-INCH PIPING SHALL BE NOT GREATER THAN 93.5 GPM. THE FLOW RATE THROUGH 91 1/2-INCH PIPING SHALL BE NOT GREATER THAN 94.0 GPM. THE FLOW RATE THROUGH 92-INCH PIPING SHALL BE NOT GREATER THAN 94.5 GPM. THE FLOW RATE THROUGH 92 1/2-INCH PIPING SHALL BE NOT GREATER THAN 95.0 GPM. THE FLOW RATE THROUGH 93-INCH PIPING SHALL BE NOT GREATER THAN 95.5 GPM. THE FLOW RATE THROUGH 93 1/2-INCH PIPING SHALL BE NOT GREATER THAN 96.0 GPM. THE FLOW RATE THROUGH 94-INCH PIPING SHALL BE NOT GREATER THAN 96.5 GPM. THE FLOW RATE THROUGH 94 1/2-INCH PIPING SHALL BE NOT GREATER THAN 97.0 GPM. THE FLOW RATE THROUGH 95-INCH PIPING SHALL BE NOT GREATER THAN 97.5 GPM. THE FLOW RATE THROUGH 95 1/2-INCH PIPING SHALL BE NOT GREATER THAN 98.0 GPM. THE FLOW RATE THROUGH 96-INCH PIPING SHALL BE NOT GREATER THAN 98.5 GPM. THE FLOW RATE THROUGH 96 1/2-INCH PIPING SHALL BE NOT GREATER THAN 99.0 GPM. THE FLOW RATE THROUGH 97-INCH PIPING SHALL BE NOT GREATER THAN 99.5 GPM. THE FLOW RATE THROUGH 97 1/2-INCH PIPING SHALL BE NOT GREATER THAN 100.0 GPM. THE FLOW RATE THROUGH 98-INCH PIPING SHALL BE NOT GREATER THAN 100.5 GPM. THE FLOW RATE THROUGH 98 1/2-INCH PIPING SHALL BE NOT GREATER THAN 101.0 GPM. THE FLOW RATE THROUGH 99-INCH PIPING SHALL BE NOT GREATER THAN 101.5 GPM. THE FLOW RATE THROUGH 99 1/2-INCH PIPING SHALL BE NOT GREATER THAN 102.0 GPM. THE FLOW RATE THROUGH 100-INCH PIPING SHALL BE NOT GREATER THAN 102.5 GPM. THE FLOW RATE THROUGH 100 1/2-INCH PIPING SHALL BE NOT GREATER THAN 103.0 GPM. THE FLOW RATE THROUGH 101-INCH PIPING SHALL BE NOT GREATER THAN 103.5 GPM. THE FLOW RATE THROUGH 101 1/2-INCH PIPING SHALL BE NOT GREATER THAN 104.0 GPM. THE FLOW RATE THROUGH 102-INCH PIPING SHALL BE NOT GREATER THAN 104.5 GPM. THE

- E. MIXING VALVES
- VALVE BODY SHALL BE MADE OF CAST BRASS. THE INTERNAL COMPONENTS SHALL BE MADE OF BRASS OR STAINLESS STEEL.
 - 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.
 - 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.
 - 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. GAS PIPING:
- GAS PIPING SHALL BE SIZED IN ACCORDANCE WITH PIPE SIZING TABLES OR SIZING EQUATIONS IN ACCORDANCE WITH SECTION 402.4.
 - INDIVIDUAL OUTLETS TO GAS RANGES SHALL NOT BE LESS THAN ¾ INCHES NPS.
 - METALLIC PIPE SHALL COMPLY WITH SECTIONS NYC FGC 2022 SECTION 403.4.1 THROUGH 403.4.4.
 - PIPING SYSTEM INSTALLATION SHALL COMPLY WITH REQUIREMENTS OF NYC FUEL GAS CODE 2022 SECTION 404.
 - AS PER NYC FUEL GAS CODE 2022 SECTION 404.4; UNDERGROUND PIPING, WHERE INSTALLED BELOW GRADE THROUGH THE OUTER FOUNDATION OR BASEMENT WALL OF A BUILDING, SHALL BE ENCASED IN A PROTECTIVE PIPE SLEEVE. THE ANNUAL SPACE BETWEEN THE GAS PIPING AND THE SLEEVE SHALL BE SEALED.
 - PIPING INSTALLED UNDERGROUND BENEATH BUILDINGS IS PROHIBITED EXCEPT WHERE THE PIPING IS ENCASED IN A CONDUIT OF WROUGHT IRON OR STEEL PIPE DESIGNED TO WITHSTAND THE SUPERIMPOSED LOADS. THE CONDUIT SHALL BE PROTECTED FROM CORROSION IN ACCORDANCE WITH SECTION 404.9 AND SHALL BE INSTALLED IN ACCORDANCE WITH SECTION 404.12.1 OR 404.12.2 OF NYC FUEL GAS CODE 2022.
 - AS PER NYC FUEL GAS CODE 2022 SECTION 404.4; UNDERGROUND PIPING SYSTEMS SHALL BE INSTALLED A MINIMUM DEPTH OF 24 INCHES BELOW GRADE.
 - THE GAS PIPING IS ENCASED IN A CONDUIT OF WROUGHT IRON OR STEEL PIPE TO WITH STAND THE SUPERIMPOSED LOADS.
 - SHUTOFF VALVES SHALL BE LOCATED IN PLACES SO AS TO PROVIDE ACCESS FOR OPERATION AND SHALL BE INSTALLED SO AS TO BE PROTECTED FROM DAMAGE.
 - PROVIDE ADEQUATE SUPPORT FOR ALL PIPING.
 - GAS PIPING SHALL BE BLACK STEEL SCHEDULE 40 THREADED PIPE CONFORMING TO ANSI B36-20.
 - FITTINGS SHALL BE MALLEABLE IRON.
 - VALVES SHALL BE NORDSTROM IRON PLUG VALVES FIG. 142.
 - PIPING UNDERGROUND BENEATH BUILDING SHALL COMPLY WITH NYC FUEL GAS CODE SECTION 404.12.
- F. 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.
 - UNLESS OTHERWISE INDICATED OR REQUIRED BY AUTHORITIES HAVING JURISDICTION, THE FOLLOWING SHALL BE PROVIDED WITH SEISMIC RESTRAINTS AS REQUIRED BY THE BOCA NATIONAL BUILDING CODE, SECTION 1610.6.4: ALL EQUIPMENT AND MACHINERY, ALL NEW PIPING 2-1/2" AND LARGER (1-1/4" AND LARGER INBOLTER/MECHANICAL ROOMS) WITH HANGERS GREATER THAN 12" IN LENGTH FROM THE TOP OF PIPE TO THE STRUCTURE.
 - SUPPORTS SHALL BE PROVIDED IN STRICT ACCORDANCE WITH THE RECOMMENDATIONS OF THE PIPING MANUFACTURER.
- G. 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 O FLOUSHOMETER-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.

- H. 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.
- I. 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.
- J. IN ALL AREAS WITH FINISHED SURFACES, SYSTEM PIPING AND COMPONENTS SHALL BE CONCEALED ABOVE OR WITHIN FINISHED SURFACES.
- K. REDUCTIONS IN PIPE SIZES SHALL BE MADE WITH ONE-PIECE REDUCING FITTINGS. BUSHINGS ARE NOT ACCEPTABLE. USE FLANGED FITTINGS AT THE BASE OF RISERS.
- L. VENT PENETRATIONS THROUGH THE ROOF SHALL BE FLASHED.
- M. IF WATER PRESSURE EXCEEDS 80 PSI, A WATER PRESSURE REDUCING VALVE SHALL BE INSTALLED IN WATER PIPING AT CONNECTION TO MAIN.
- N. PROVIDE DIELECTRIC FITTINGS BETWEEN DISSIMILAR METALS.
- O. PIPE BACKFLOW PREVENTER DRAINS TO FLOOR DRAIN OR OTHER APPROVED INDIRECT WASTE SOURCE.
- P. 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.
- Q. ALL FIXTURES REQUIRING VACUUM BREAKERS SHALL BE EQUIPPED WITH INTEGRAL VACUUM BREAKERS.
- R. 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.
- S. 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.
- T. AT ALL INDIRECT WASTE DRAINS, MAINTAIN AIR GAP AS REQUIRED BY CODE.
- U. 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.
- J. 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 SEAT. 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.
- 2.01 GENERAL
- T. ALL WORK WHICH REQUIRES DISRUPTION OF THE ROOFING SHALL BE DONE BY A CONTRACTOR CERTIFIED BY THE ROOFING MANUFACTURER AS REQUIRED TO MAINTAIN ANY EXISTING ROOF WARRANTIES.
- U. EXTERIOR INSTALLATIONS TO BE WEATHER PROOF IN ALL RESPECTS.
- V. EXTERIOR MATERIALS AND EQUIPMENT SHALL BE PAINTED TO PREVENT CORROSION, COLOR PER ARCHITECT.
- W. COORDINATE THE PLUMBING WORK WITH ALL OTHER AFFECTED WORK AND THE CONSTRUCTION SCHEDULE.
- X. REAM PIPE AND TUBE ENDS. REMOVE BURRS. BEVEL PLAN AND FERROUS END PIPE.
- Y. REMOVE SCALE AND FOREIGN MATERIAL FROM INSIDE AND OUTSIDE, BEFORE ASSEMBLY.
- Z. PREPARE PIPING CONNECTIONS TO EQUIPMENT WITH FLANGES AND UNIONS.
- AA. COORDINATION WITH THE WORK OF OTHER TRADES IS REQUIRED. PROVIDE OFFSETS IN PIPING SYSTEMS OR MINOR DEVIATIONS TO THE INDICATED PIPE ROUTING IN ORDER TO COORDINATE THE PLUMBING WORK WITH THE WORK OF ALL OTHER TRADES AND THE GENERAL BUILDING CONDITIONS.
- AB. NO DOMESTIC WATER PIPING SHALL BE INSTALLED IN UNHEATED SPACES.
- AC. PRIOR TO DISCONNECTING AND CONNECTING NEW WORK TO EXISTING SYSTEMS, THE PLUMBING CONTRACTOR SHALL NOTIFY THE PROPERTY MANAGER AND OFFER A PROPOSED SCHEDULE OF WORK. ESB WILL AUTHORIZE CONNECTIONS AND COORDINATE NECESSARY SHUT DOWNS AND DRAIN DOWNS AS REQUIRED. SHUT DOWNS AND DRAIN DOWNS MAY BE PERFORMED BY THE PLUMBING CONTRACTOR ONLY AFTER RECEIVING ESB AUTHORIZATION, AND SHOULD BE PERFORMED UNDER SUPERVISION OF ESB PERSONNEL. THREE (3) DAYS ADVANCE NOTICE TO THE PROPERTY MANAGER IS REQUIRED.
- AD. THE PLUMBING CONTRACTOR IS ADVISED THAT DUE TO THE NATURE OF THE OPERATIONS AND TENANT REQUIREMENTS, CONNECTIONS TO EXISTING SYSTEMS MAY HAVE TO BE MADE AFTER REGULAR WORKING HOURS. THE PROPERTY MANAGER WILL ADVISE THE PLUMBING CONTRACTOR OF THE TIME CONSTRAINTS UPON RECEIPT AND APPROVAL OF THE PLUMBING CONTRACTOR'S REQUEST FOR SHUT DOWN AND CONNECTION TO EXISTING SYSTEMS.

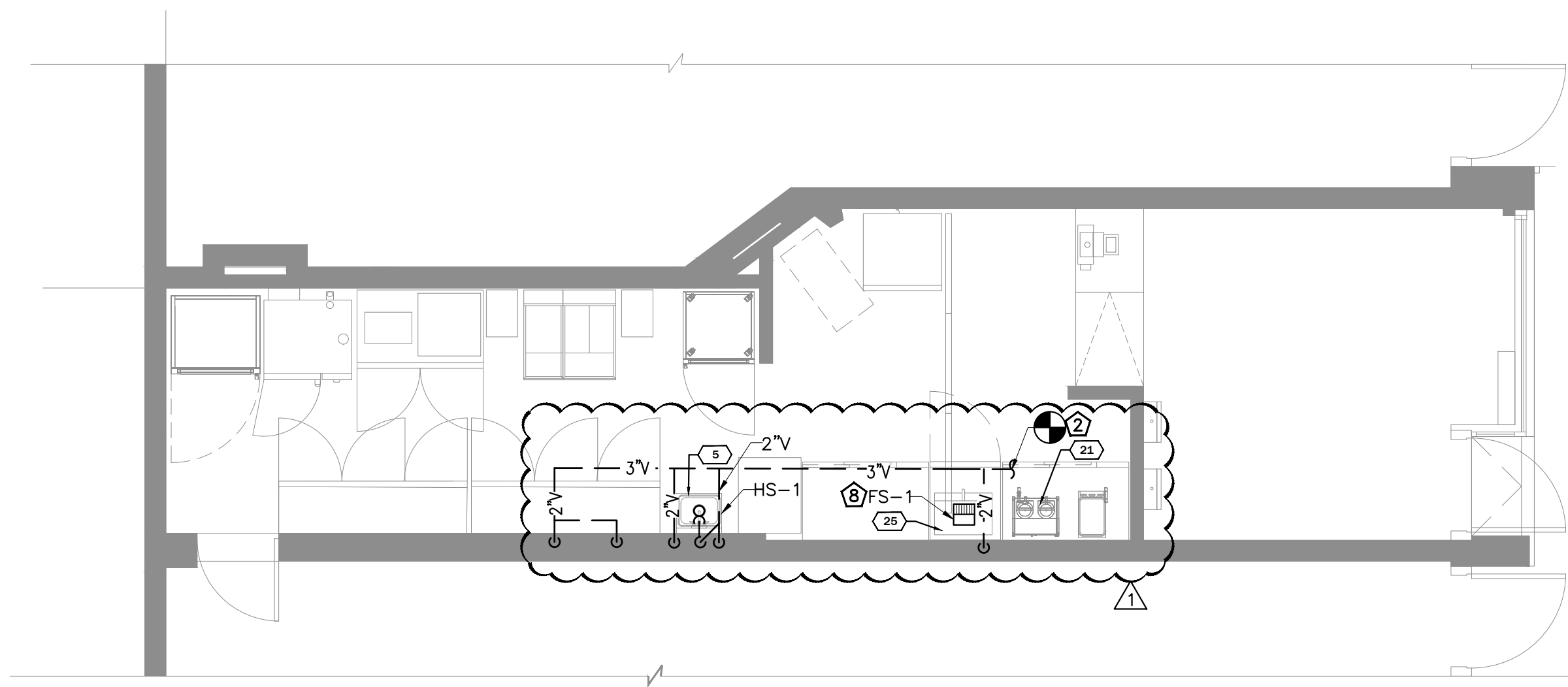
- AE. WHEN CONNECTING TO EXISTING STACKS AND RISERS, PROVISION IS TO BE MADE FOR FUTURE CONNECTIONS BY PROVIDING CAPPED AND VALVED OUTLETS ON DOMESTIC WATER RISERS AND PLUGGED OUTLETS ON THE SANITARY AND VENT STACKS.
3. GREASE INTERCEPTOR/TRAP
- IT SHOULD BE OF CAST IRON OR STEEL CONSTRUCTION WITH THREADED INLET AND OUTLET CONNECTIONS, REMOVABLE Baffles OR SCREENS, BOLTED AND GASKETED COVER WITH RECESSED LIFT RINGS OR GRIP HOLES.
 - IT SHOULD HAVE FACTORY ENAMEL COATED INSIDE AND OUTSIDE FINISH
 - IT SHOULD HAVE NON-SKID COVER TOP SURFACE (ONLY APPLICABLE TO GREASE TRAPS RECESSED IN THE FLOOR)
 - PROVIDE BUILT-IN FLOW CONTROL OR ADJUSTABLE FLOW CONTROL FITTING FOR INSTALLATION IN SYSTEM PIPING.
 - SET FLOW CONTROL AS RECOMMENDED BY THE MANUFACTURER'S INSTRUCTIONS.
 - ALL PREFABRICATED GREASE INTERCEPTORS SHALL BE APPROVED BY THE NEW YORK CITY BOARD OF STANDARDS & APPEALS PRIOR TO JULY 10, 1991, APPROVED BY THE NEW YORK CITY DEPARTMENT OF BUILDINGS MATERIALS AND EQUIPMENT ACCEPTANCE DIVISION PRIOR TO JULY 1, 2008, OR SHALL CONFORM TO PDI G101, ASME A112.14.3 OR ASME A112.14.4 AND SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
 - THE TEMPERATURE OF WATER ENTERING A GREASE INTERCEPTOR SHALL NOT EXCEED 180°F
 - ALL GREASE INTERCEPTORS MUST BE READILY ACCESSIBLE FOR INSPECTION BY DULY AUTHORIZED EMPLOYEES OF THE DEPARTMENT.
- 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 GRADE. 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 OLIU CHEMICAL OWNER-OCCUPIED, FOR A DWELLING UNIT WITHIN A PROPERTY THAT IS OWNED BY 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 ACCEPTANCE. 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.

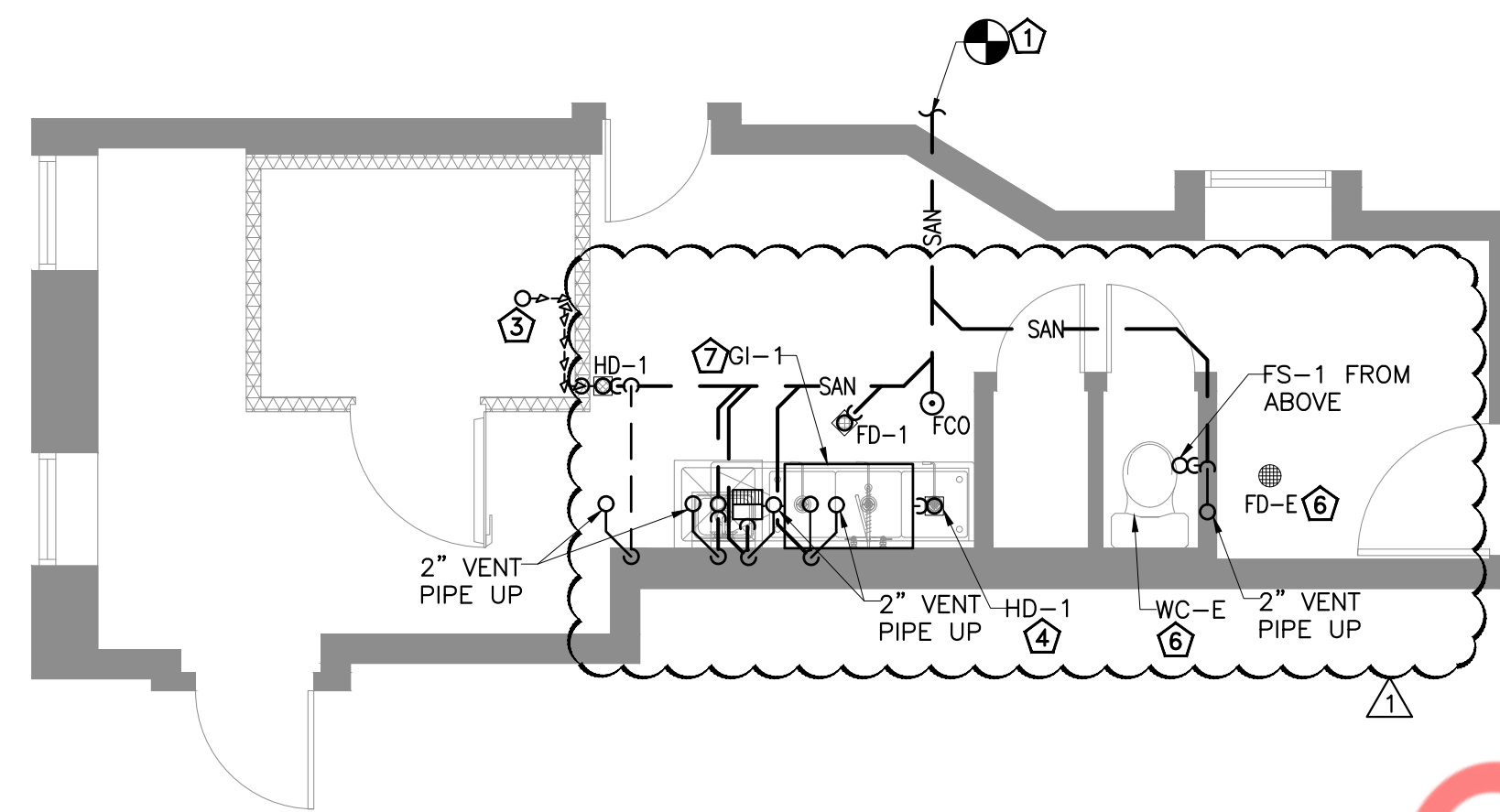
§ TENANT PROTECTION PLAN NOTES:

- 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 OF BUILDINGS. THE REGISTERED 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-RATED ASSEMBLIES, 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
 - FIRE SAFETY.
 - HEALTH REQUIREMENTS.
 - COMPLIANCE WITH HOUSING STANDARDS.
 - STRUCTURAL SAFETY.
 - NOISE RESTRICTIONS.
 - MAINTAINING ESSENTIAL SERVICES.
- 3.1.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.
4. 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.
5. STRUCTURAL SAFETY. NO STRUCTURAL WORK SHALL BE DONE THAT MAY ENDANGER THE OCCUPANTS.
6. 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.
7. 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 A 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 SANITARY & VENT PLAN - FIRST FLOOR
1/4"=1'-0"



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

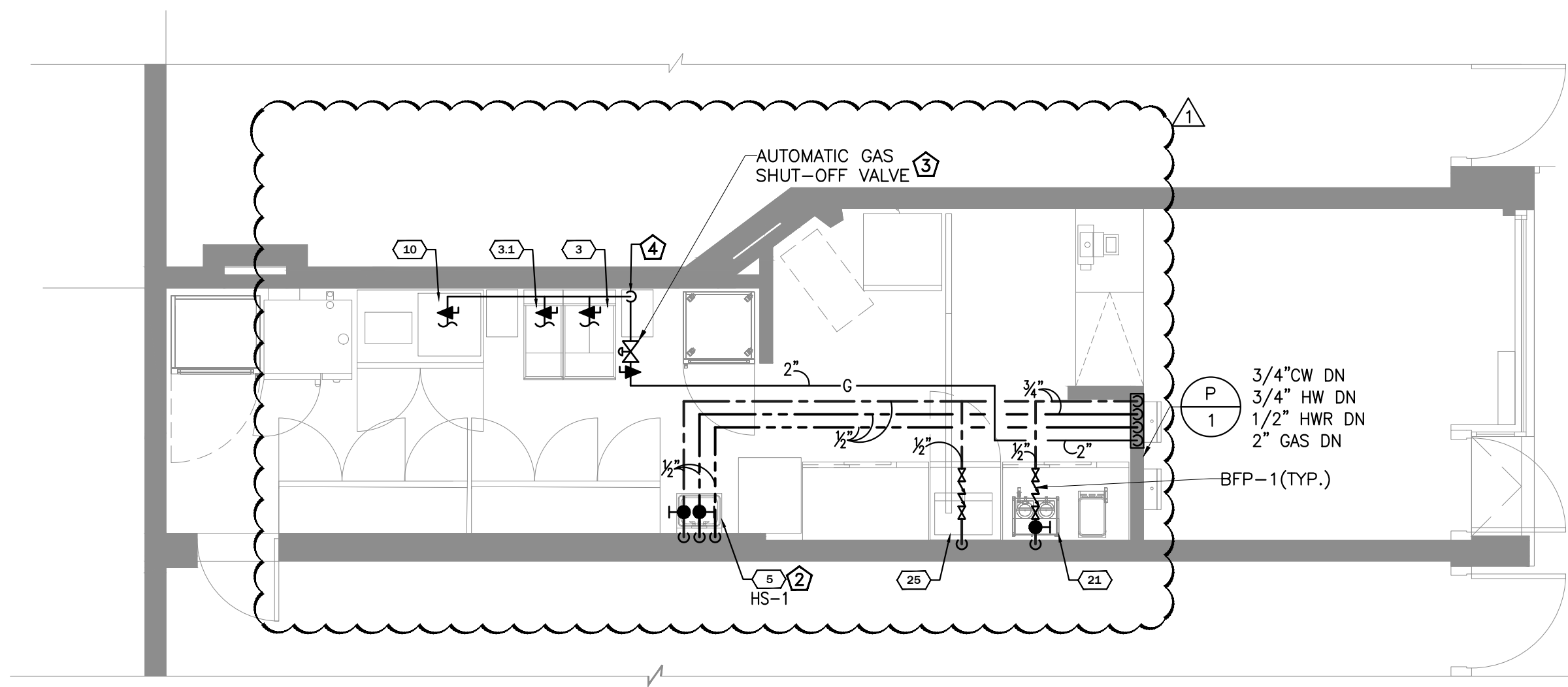
PLUMBING KEYNOTES

- 1 CONNECT NEW 4" SANITARY WASTE LINE TO EXISTING SANITARY LINE. CONTRACTOR TO VERIFY IN FIELD EXACT SIZE, INVERT AND LOCATION OF EXISTING SANITARY LINE.
- 2 EXTEND AND CONNECT NEW 3" VENT LINE TO EXISTING VENT LINE IN SPACE.
- 3 3/4" CONDENSATE PIPING BRACED TO WALK-IN WALLS. SPILL W/INDIRECT CONNECTION INTO HUB DRAIN.
- 4 PROVIDE 2" INDIRECT WASTE FROM 3 COMP SINK TO HUB DRAIN WITH APPROVED AIR GAP.
- 5 PROVIDE 2" INDIRECT WASTE FROM OVEN TO FLOOR SINK.
- 6 EXISTING PLUMBING FIXTURE WITH PLUMBING CONNECTIONS AND ASSOCIATED ACCESSORIES TO REMAIN. CONTRACTOR TO FIELD VERIFY CONDITION OF EXISTING PIPING AND REPLACE IF REQUIRED.
- 7 PROVIDE AND INSTALL SCHIER GB-2 GREASE TRAP FOR INDOOR INSTALLATION. FLOW RATE = 35 GPM. INSTALL GREASE TRAP PER MANUFACTURER'S RECOMMENDATION. CONTRACTOR TO FIELD VERIFY EXACT LOCATION PRIOR TO BID.
- 8 PROVIDE 1-1/4" INDIRECT WASTE FROM ESPRESSO MACHINE TO FLOOR SINK WITH APPROVED AIR GAP.

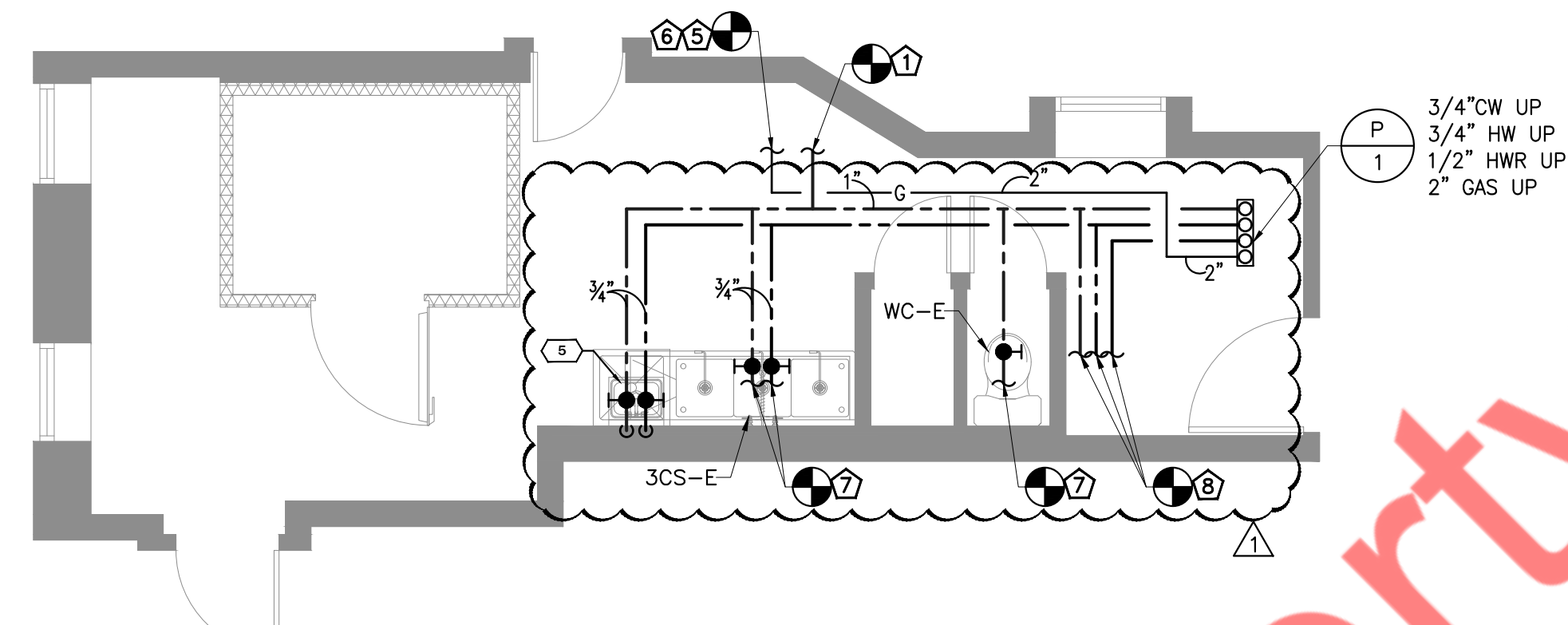
GENERAL NOTES

1. CONTRACTOR TO FIELD VERIFY FEASIBILITY OF SLAB PENETRATION AS PER STRUCTURAL REQUIREMENT.
2. VENTING ABOVE RIM HEIGHT, 6" MINIMUM.
3. THE LOCATION OF THE GREASE TRAP AS SHOWN IS FOR COORDINATION PURPOSE ONLY. THE CONTRACTOR SHALL FIELD VERIFY ALL SITE CONDITIONS DURING THE BIDDING PHASE OF THIS PROJECT AND ASSIGN ALL APPLICABLE COST. WHEN NOT INDICATED, VERIFY WITH LOCALITY IF ADDITIONAL SAMPLING PORT OR SAMPLE TEE IS REQUIRED.
4. PROVIDE ACCESS PANELS FOR ALL CLEANOUTS AS REQUIRED.
5. REFER RISER DIAGRAM FOR ALL PIPE SIZES.

Property of M.Y. Engineers



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



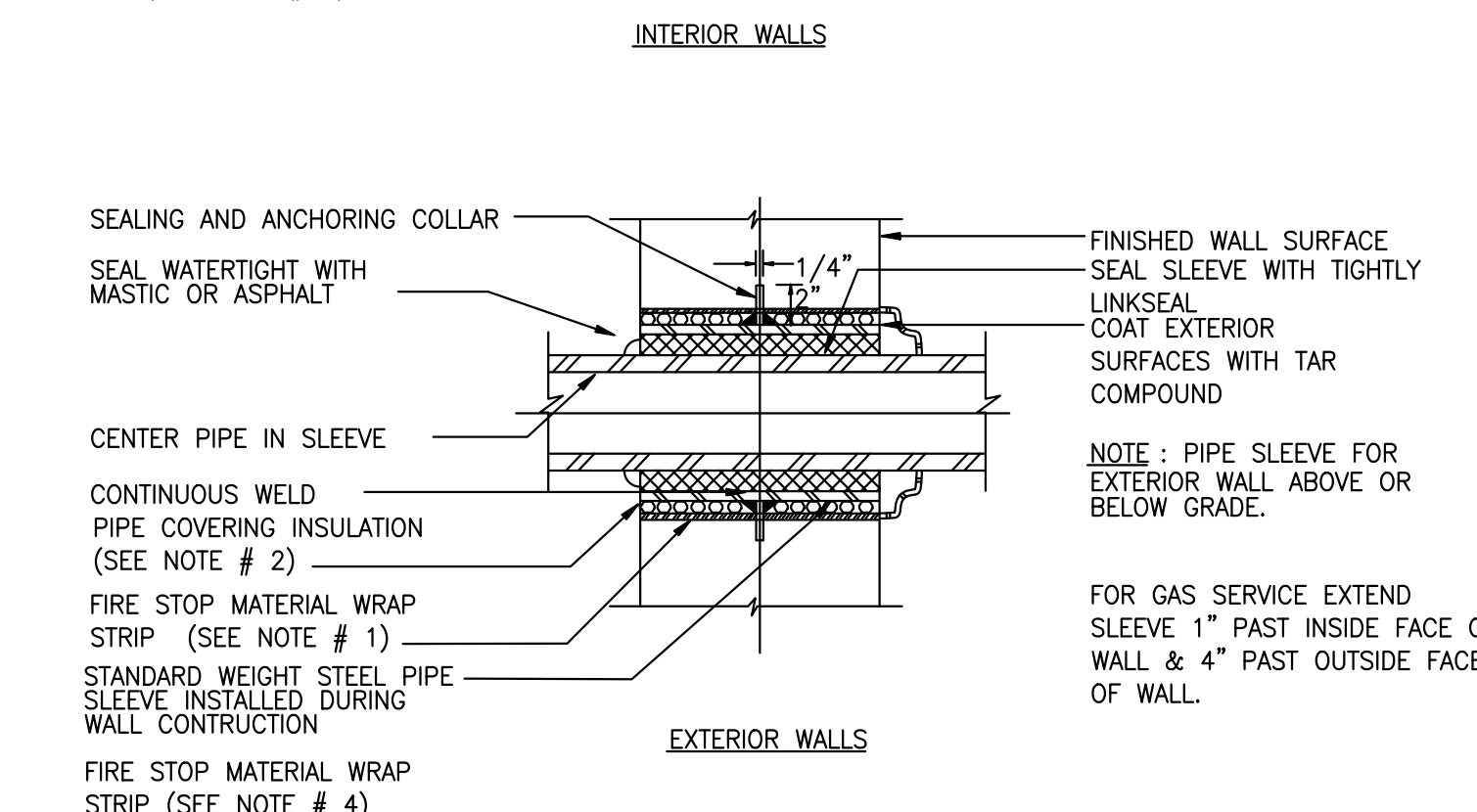
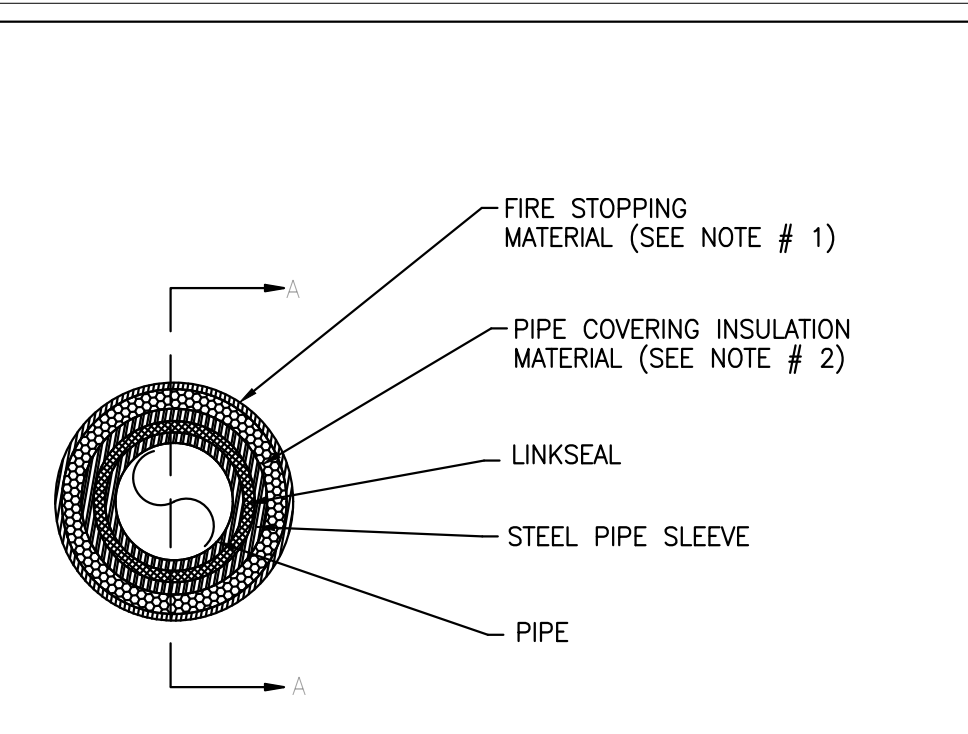
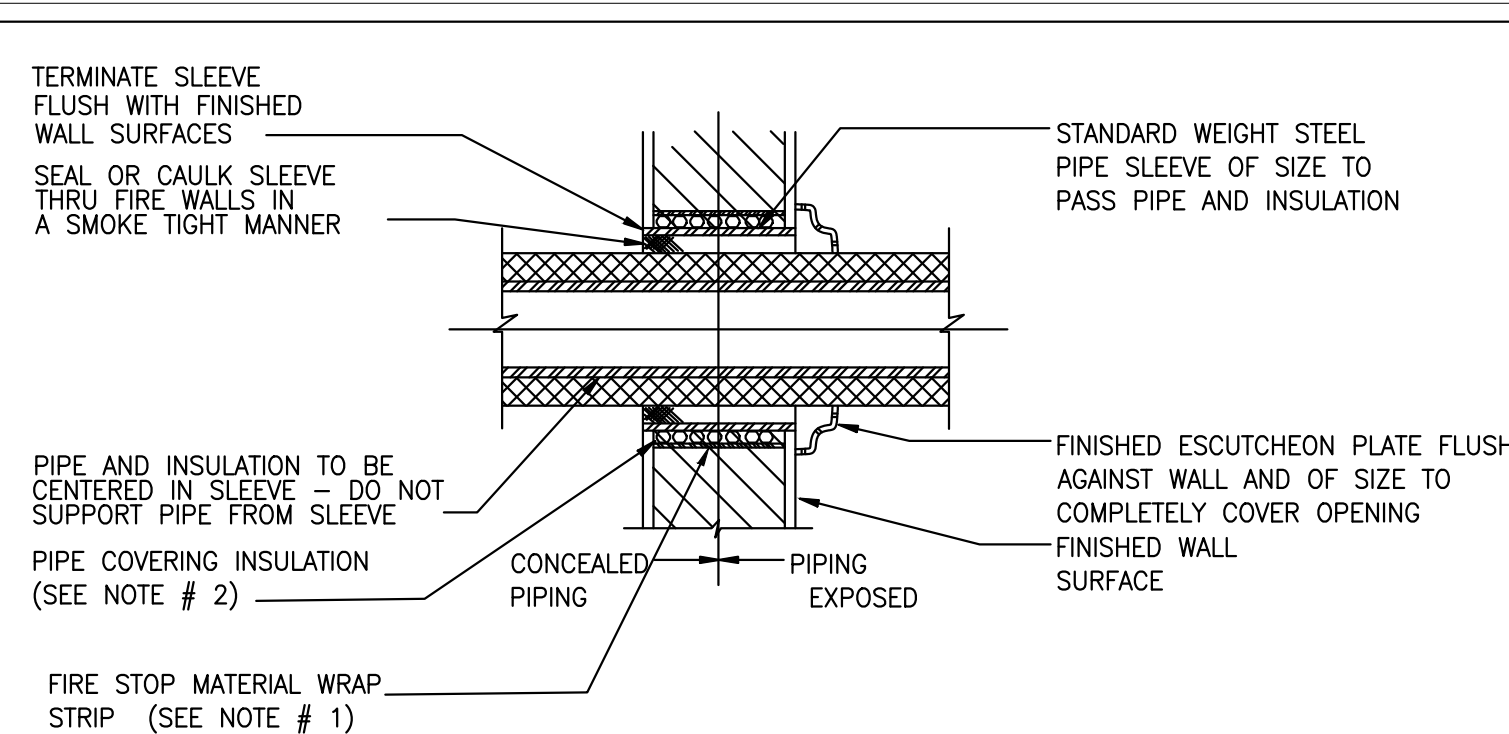
2 PLUMBING WATER & GAS PLAN - CELLAR
1/4"=1'-0"

PLUMBING KEYNOTES

- 1. CONNECT NEW 1" DOMESTIC WATER LINE TO EXISTING 1" WATER SERVICE WITH EXISTING WATER METER & BACKFLOW PREVENTER. CONTRACTOR TO FIELD VERIFY EXACT SIZE, LOCATION AND CONDITION OF EXISTING WATER METER, BFP & WATER LINE. UPGRADE/REPLACE IF REQUIRE.
- 2. PROVIDE TEMPERATURE MIXING VALVE, SET AT 110°F, ON HAND SINK.
- 3. EMERGENCY GAS SHUT-OFF VALVE LOCATED BELOW CEILING.
- 4. 2" GAS DOWN, EXPOSED ON WALL. EXTEND UNDER EQUIPMENT TO FINAL CONNECTIONS. PROVIDE PLUG VALVE, REDUCER AND AGA RATED FLEX SUPPLY AT CONNECTION.
- 5. CONNECT NEW 2" GAS LINE TO EXISTING GAS METER. CONTRACTOR TO MAKE SURE THAT EXISTING GAS METER CAPACITY IS EQUAL TO OR GREATER THAN 245 ORH. IF NOT, REPLACE EXISTING GAS METER WITH NEW METER. COORDINATE AVAILABLE GAS SERVICE WITH GAS UTILITY COMPANY.
- 6. CONTRACTOR TO FIELD VERIFY EXISTING AVAILABLE PRESSURE AND MAKE SURE TO PROVIDE ADEQUATE INLET PRESSURE REQUIRED FOR GAS FRYERS. PROVIDE GAS BOOSTER PUMP IF INLET PRESSURE IS LESS THAN 7" W.C. BASE BID ACCORDINGLY. REFER TO GAS LOAD SUMMARY AND GAS RISER DIAGRAM - SHEET P-602.00
- 7. EXTEND AND CONNECT NEW 3/4" CW/HW PIPING TO EXISTING PIPING IN CEILING. CONTRACTOR TO FIELD VERIFY THE ROUTING OF EXISTING CW/HW PIPING.
- 8. EXTEND AND CONNECT NEW CW/HW/HWR LINE TO EXISTING WATER HEATER. CONTRACTOR TO FIELD VERIFY THE LOCATION, CAPACITY AND CONDITION OF EXISTING WATER HEATER AND UPGRADE IF REQUIRED. ALSO VERIFY THE CONDITION OF ASSOCIATED ACCESSORIES AND UPGRADE IF REQUIRED.

GENERAL NOTES

- 1. CW/HW PIPING TO BE PROVIDED WITH INSULATION AS PER NYC ECC 2020 REFER SHEET P-001.00.
- 2. CONTRACTOR TO FIELD VERIFY FEASIBILITY OF SLAB PENETRATION AS PER STRUCTURAL REQUIREMENTS.
- 3. PROVIDE ACCESS PANEL FOR WATER HAMMER ARRESTOR & SHUT OFF VALVES AS REQUIRED.
- 4. FOR HAND SINK PROVIDE HOT WATER AT 110°F.
- 5. PROVIDE ACCESS PANEL FOR CLEANOUTS AND ALL CONCEALED EQUIPMENTS THAT REQUIRE MAINTENANCE ACCESS. CONTRACTOR TO COORDINATE WITH ARCHITECT FOR LOCATION.
- 6. PROVIDE TRAP PRIMERS FOR ALL FLOOR DRAINS INSTALLED IN CEILING OR PROVIDE ACCESS WALL PANEL.
- 7. PROVIDE PRESSURE REGULATING VALVE IF THE PRESSURE EXCEEDS 85 PSI.
- 8. REFER RISER DIAGRAM FOR ALL PIPE SIZES.

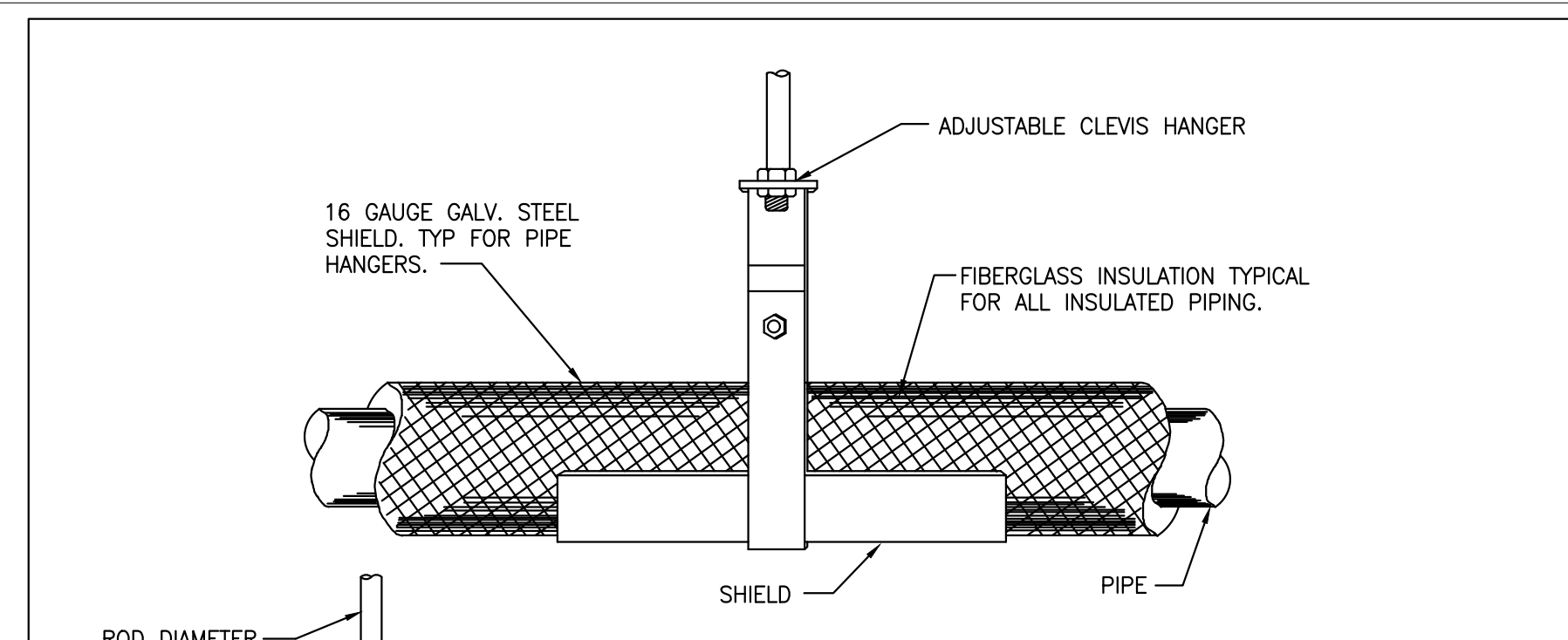


PIPE SLEEVE THRU WALL SECTION

NOTES:

- FIRESTOP MATERIAL WRAP STRIP SHALL BE 1/4" THICK INTUMESCENT ELASTOMERIC MATERIAL FACED ON ONE SIDE WITH ALUMINUM FOIL SUPPLIED IN 2 IN. WIDE STRIPS AND WRAP AROUND THE PIPE AS PER UL MATERIAL LISTED 3M COMPANY FS-195+ OR FILL CAVITY WITH CAULK OR SEALANT MIN. 1/4" DIA. CONTINUOUS BEAD APPLIED TO THE WRAP STRIP/WALL INTERFACE AND TO THE EXPOSED OF THE WRAP STRIP LAYER APPROX. 3/4" FROM WALL SURFACE. AS PER UL LISTED 3M COMPANY CP25WB+, IC 15WB+, FIRE DAM 150+CAULK.
- PIPE COVERING INSULATION SHALL BE 2" THICK HOLLOW CYLINDRICAL HEAVY DENSITY GLASS FIBER UNITS JACKETED ON THE OUTSIDE WITH AN ALL SERVICE JACKETED. AS PER UL CLASSIFICATION AND MARKING WITH A FLAME SPREAD INDEX OF 25 OR LESS AND A SMOKE DEVELOPED INDEX OF 50 OR LESS MAY BE USED.

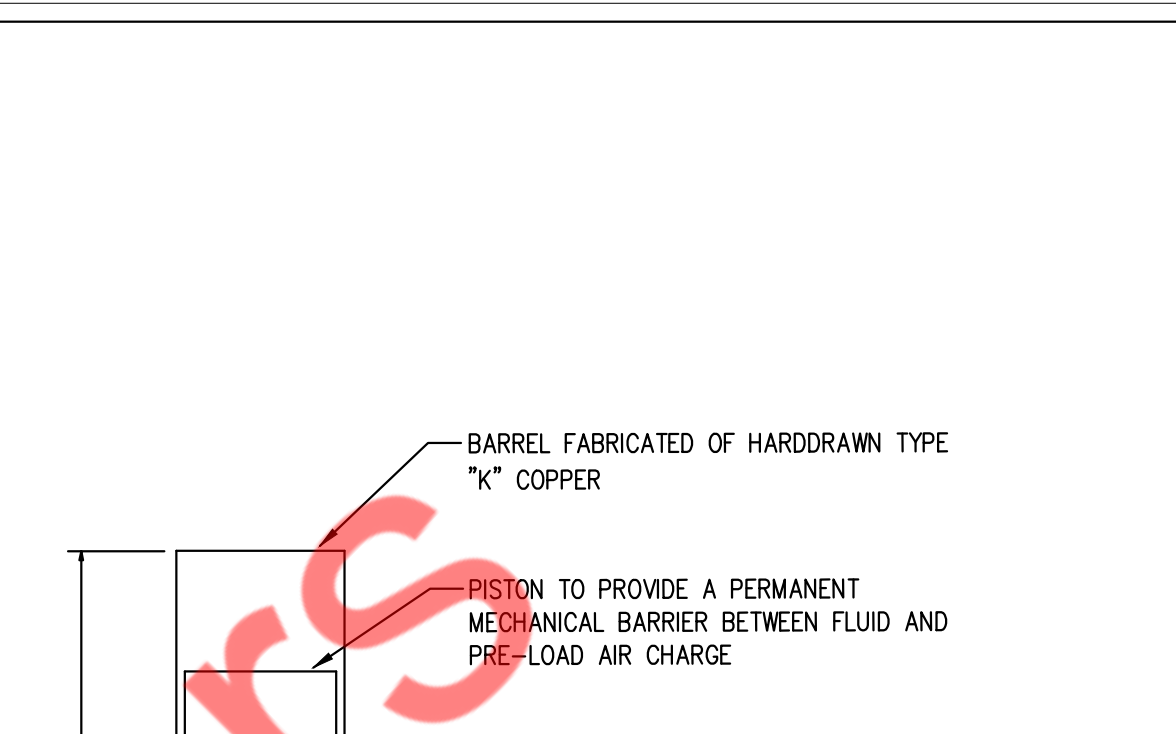
1 PIPE SLEEVE THRU WALL SECTION
P-501.00 N.T.S



ROD SCHEDULE

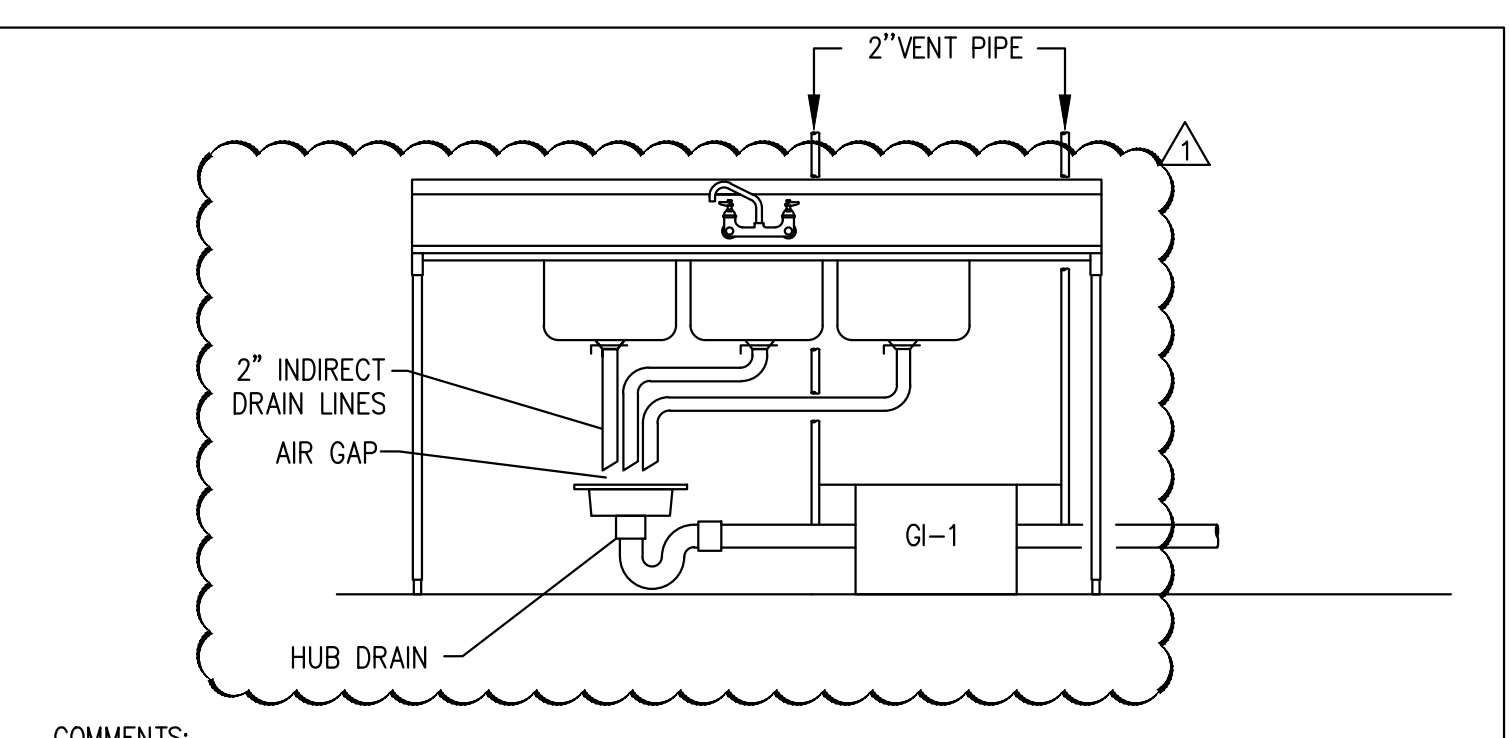
PIPE SIZE	ROD SIZE
1/2"	3/8"
3/4"	3/8"
1"	3/8"
1 1/4"	3/8"
1 1/2"	3/8"
2"	3/8"
2 1/2"	3/8"
3"	3/8"
4"	1/2"
5"	1/2"
6"	1/2"

2 HANGER DETAIL
P-501.00 N.T.S



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

3 WATER HAMMER ARRESTOR DETAILS
P-501.00 N.T.S

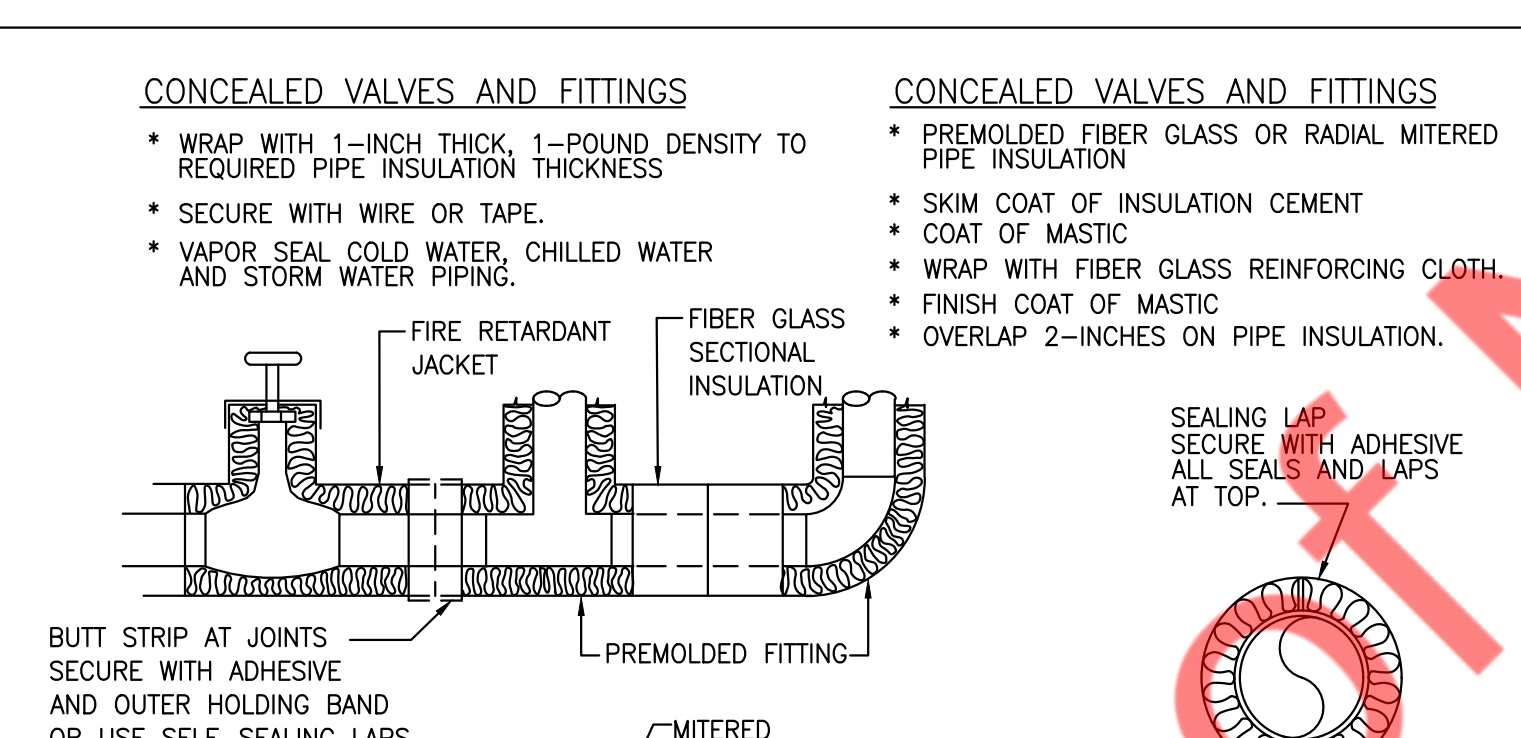


3 COMPARTMENT SINK DETAILS

COMMENTS:

- CONNECT GREASE SANITARY LINE TO GREASE TRAP LOCATED IN CELLAR. VERIFY IN FIELD EXACT LOCATION.
- ARRANGEMENT SHOWN IS SCHEMATIC. ADJUST TO SUIT FIELD CONDITIONS OR MEET LOCAL CODE REQUIREMENTS. HUBLESS CAST IRON PIPE, FITTINGS AND CONNECTORS ALL AROUND SINK AND TRAP. CONNECT GREASE TRAP FROM CENTER COMPARTMENT.
- COORDINATE INDIVIDUAL BAY DRAINAGE, AIR GAP, & DRAIN FUNNEL WITH LOCAL CODE REQUIREMENTS.

4 3 COMPARTMENT SINK DETAILS
P-501.00 N.T.S



INSULATION OF PIPING, VALVES AND FITTINGS FOR EXPOSED AND CONCEALED LOCATIONS

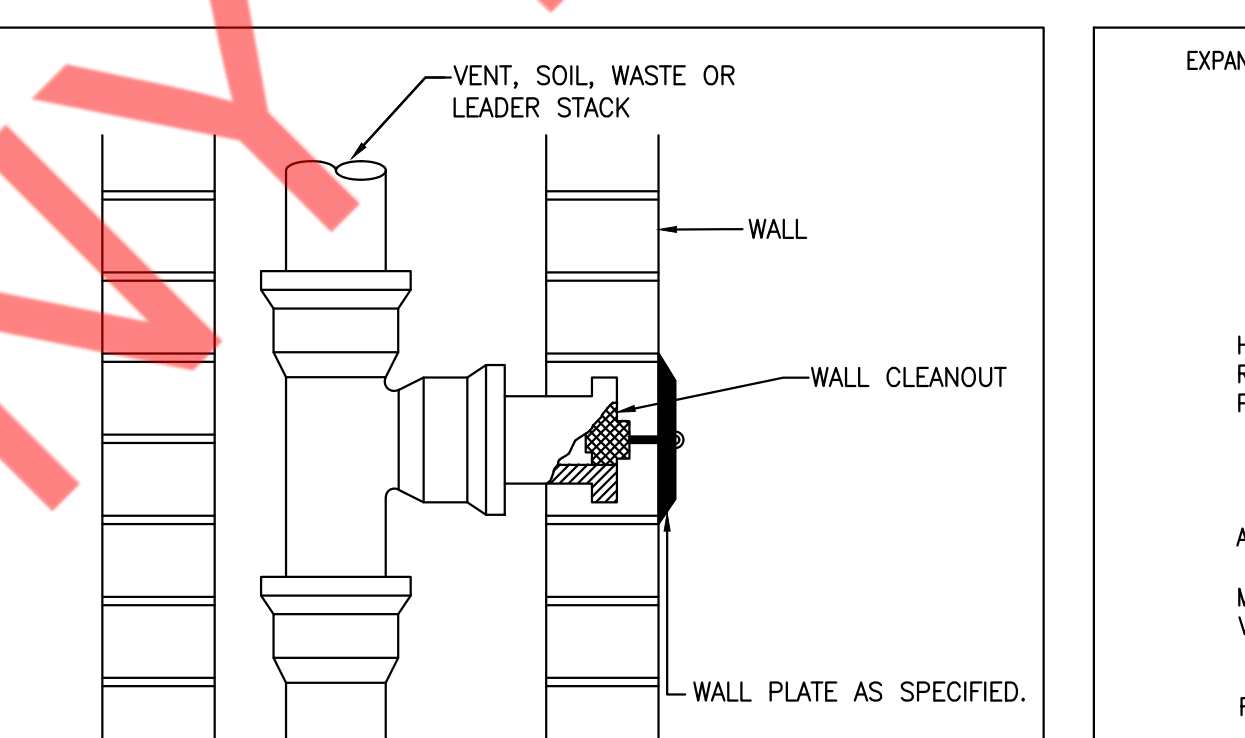
CONCEALED VALVES AND FITTINGS

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

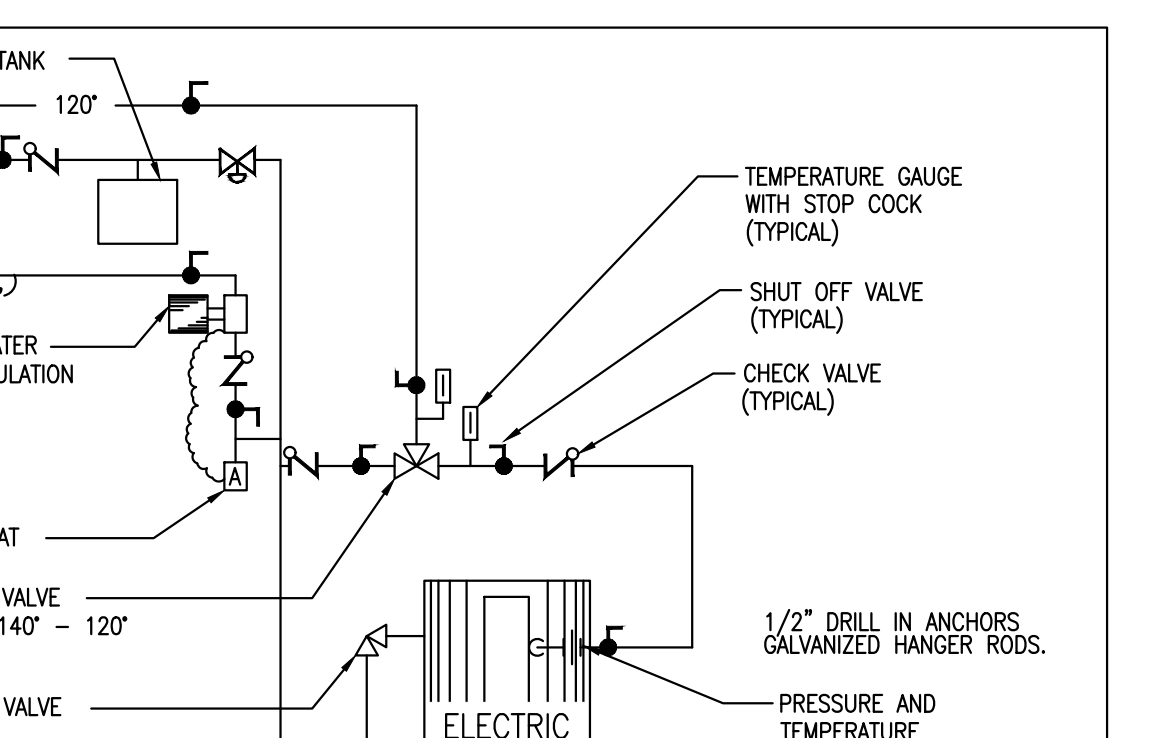
CONCEALED VALVES AND FITTINGS

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

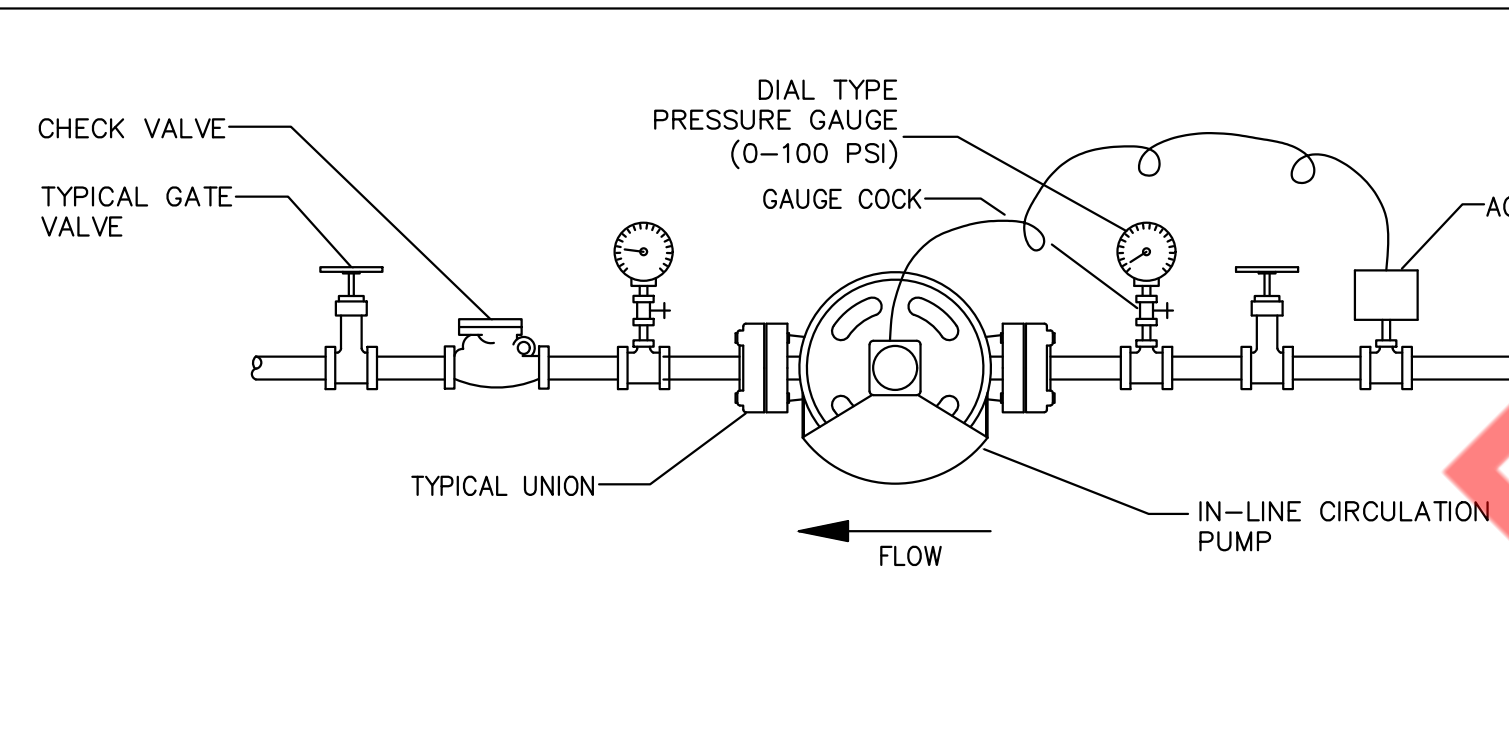
5 INSULATION OF PIPING, VALVES AND FITTINGS FOR EXPOSED AND CONCEALED LOCATIONS
P-501.00 N.T.S



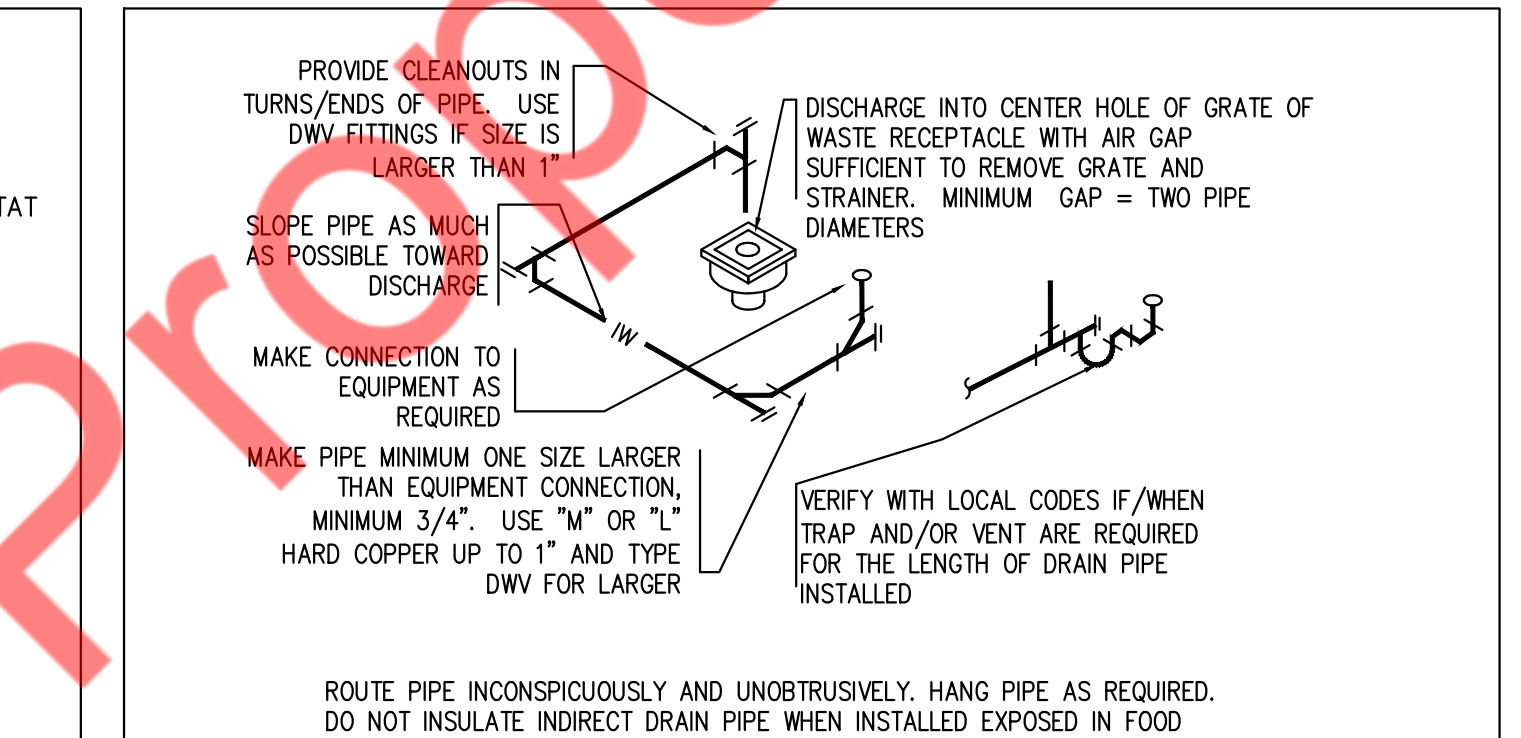
6 WALL CLEANOUT DETAILS
P-501.00 N.T.S



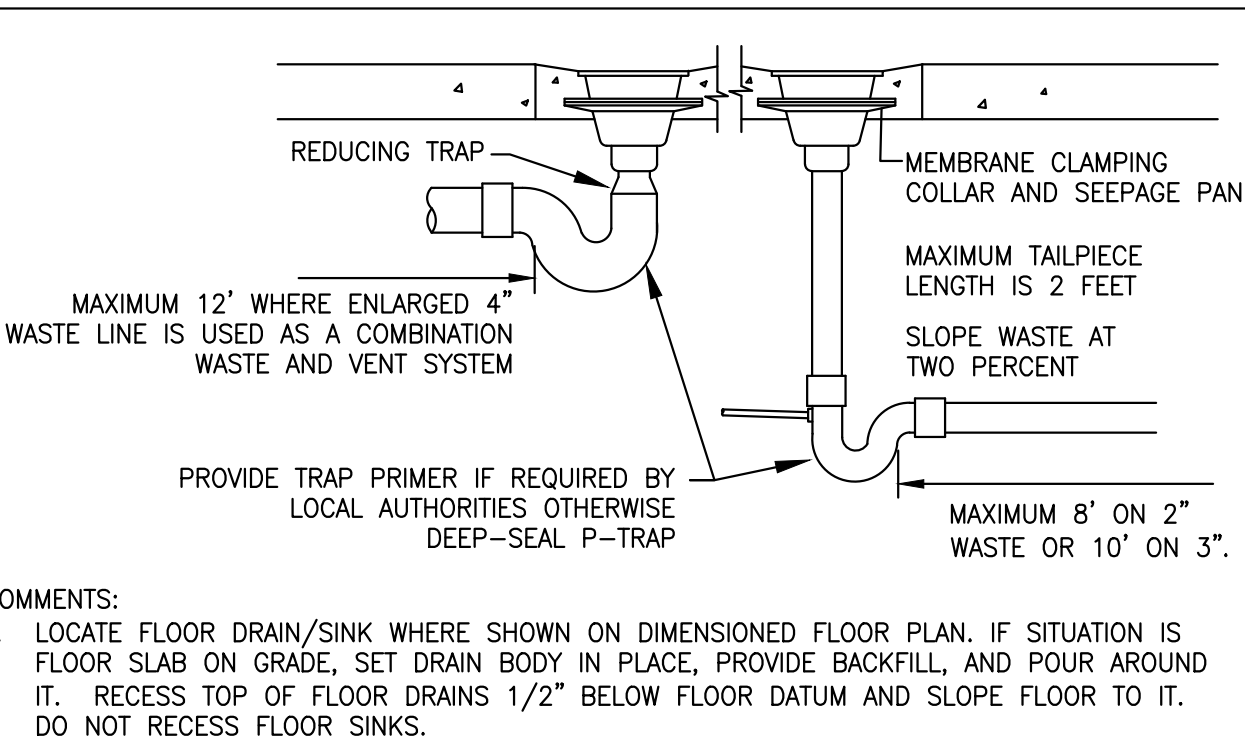
7 HOT WATER HEATER INSTALLATION DETAIL
P-501.00 N.T.S



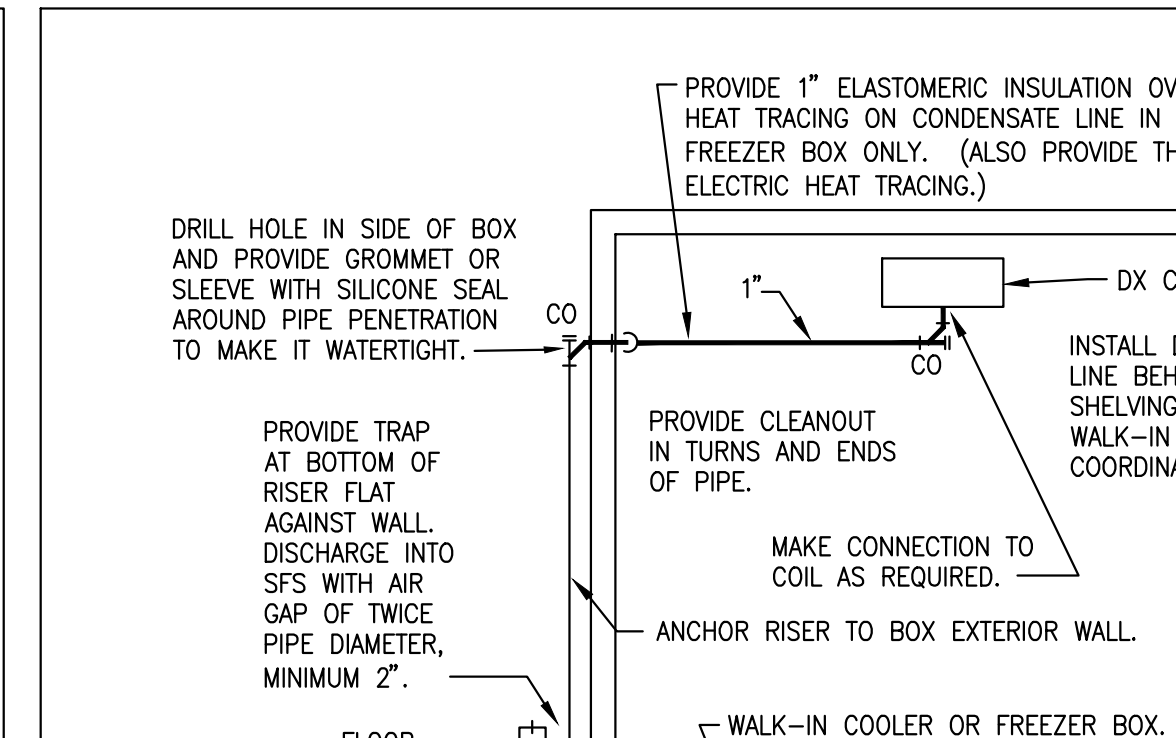
8 INLINE RECIRCULATING PUMP DETAIL
P-501.00 N.T.S



9 INDIRECT WASTE DETAILS
P-501.00 N.T.S



10 FLOOR SINK AND FLOOR DRAIN DETAILS
P-501.00 N.T.S



11 WALK IN BOX CONDENSATE DRAIN DETAILS
P-501.00 N.T.S

PLUMBING FIXTURE SCHEDULE									
TAG	LEGEND	PLUMBING FIXTURE	CONNECTION SIZE - INCHES						REMARKS
			TRAP	SOIL/WASTE	VENT	COLD WATER	HOT WATER	THERMOSTATIC MIXING VALVE	
--	3CS	3-COMPARTMENT SINK	2"	2"	2"	E	E	PROVIDE	I.W. FROM 3CS SPILLS INTO FLOOR SINK
1	--	OVEN	--	--	--	--	--	--	--
5	HS-1	HAND SINK	2"	1/2"	1/2"	1/2"	1/2"	PROVIDE	P-TRAP
--	MS-1	MOP SINK	3"	3"	2"	3/4"	3/4"	PROVIDE	P-TRAP
--	FS-1	FLOOR SINK	3"	3"	2"	--	--	--	P-TRAP
--	FD-1	FLOOR DRAIN	3"	3"	2"	--	--	--	P-TRAP
--	HD-1	HUB DRAIN	3"	3"	--	--	--	--	P-TRAP
21	--	COFFEE MAKER	--	--	--	1/2"	--	--	--
25	--	ESPRESSO MACHINE	--	1/4"	--	1/2"	--	--	I.W. FROM ESPRESSO MACHINE SPILLS INTO FLOOR SINK, SECONDARY BFP

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

GREASE INTERCEPTOR SCHEDULE				
ITEM	FLOW RATE (GPM)	GREASE CAPACITY (LBS)	MAKE	REMARKS
GI-1	25	64.9	SCHIER GB-1	DIMENSIONS- 12"(H)x27"(L)x23"(B) WEIGHT- 39 LBS

THERMOSTATIC MIXING VALVE										
TAG No.	LOCATION	SERVING	SERVICE	PIPE SIZE (INCHES)	CAPACITY RANGE (GPM)		TEMP. RANGE (°F)		MANUFACTURER & MODEL NO.	REMARKS
					MIN.	MAX.	MIN.	MAX.		
MX-1	ALL UNITS	ALL UNITS	HOT WATER	1/2	0.1	45	100	160	ACORN MODEL MV17-1	-BRASS BODY -ASSE 1017 LISTED -CSA APPROVED

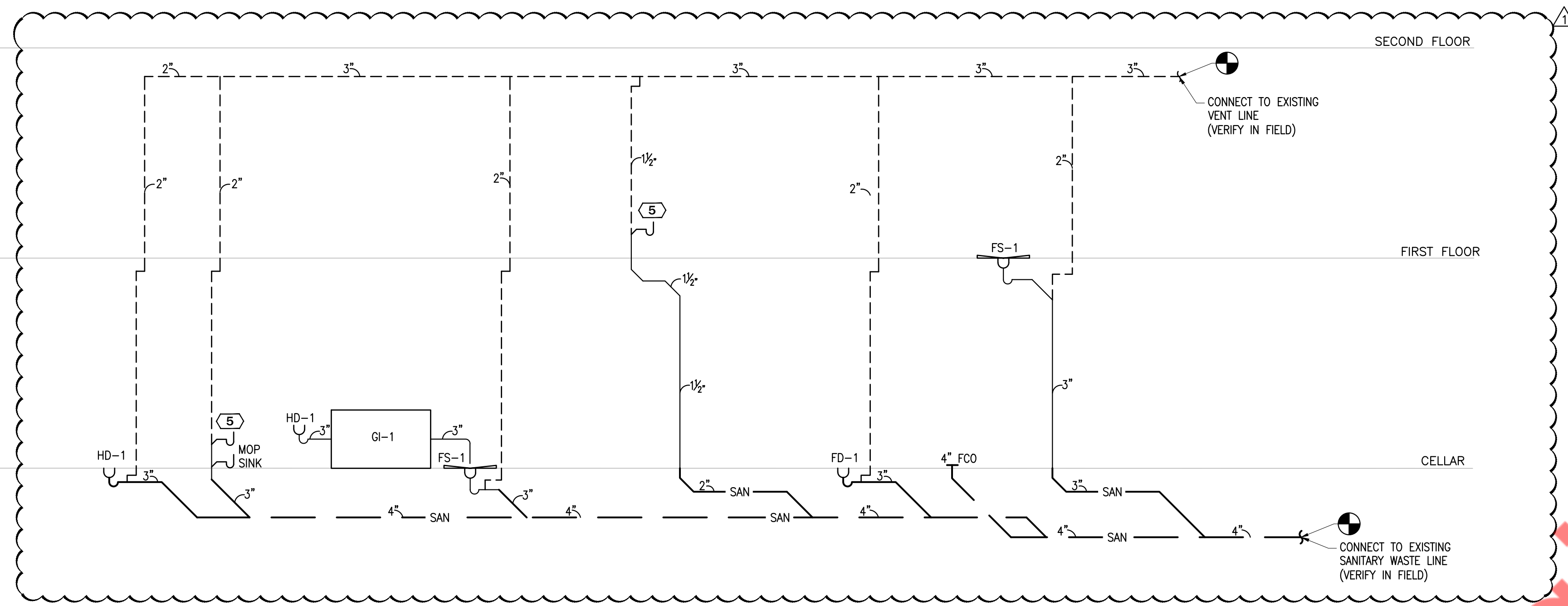
NYC GREASE INTERCEPTOR SIZING GUIDELINES (GI-1)							
TABLE 1							
FIXTURE	LENGTH	WIDTH	DEPTH	CU IN - EA BASIN	BASIN QTY	CU IN - EA FIXTURE	FIXTURE QTY
3-COMP SINK	18	18	14	45.36	3	13608	1
				TABLE 1 MINIMUM REQUIRED LBS.		50	
				TABLE 1 TOTAL REQUIRED GPM		25	
				TOTAL REQUIRED LBS.		50	
				TOTAL REQUIRED GPM		25	
				UNIT RECOMMENDED:		GB-2	
				FLOW RATE		35 GPM	
				GREASE CAPACITY		130 LBS	

HOT WATER HEATER											
TAG No.	NO. OF ELEMENTS	FIXTURES SERVING	STORAGE GALLONS	RECOVERY CAP. (GPM @ RISE)	TYPE	ELECTRICAL				MANUFACTURER & MODEL NO.	REMARKS
						VOLTS	PHASE	HERTZ	INPUT KW		
WH-1	2	HAND SINK, EX. 3-COMPARTMENT SINK, LAV-E	40	36 GPH @ 90°F	ELECTRIC WATER HEATER (SIMULTANEOUS OPERATION)	208	3	60	8	AO SMITH DEL 40	-DIMENSIONS 23"DIA X 32"H -HEATERS SHALL HAVE 150PSI WORKING PRESSURE.

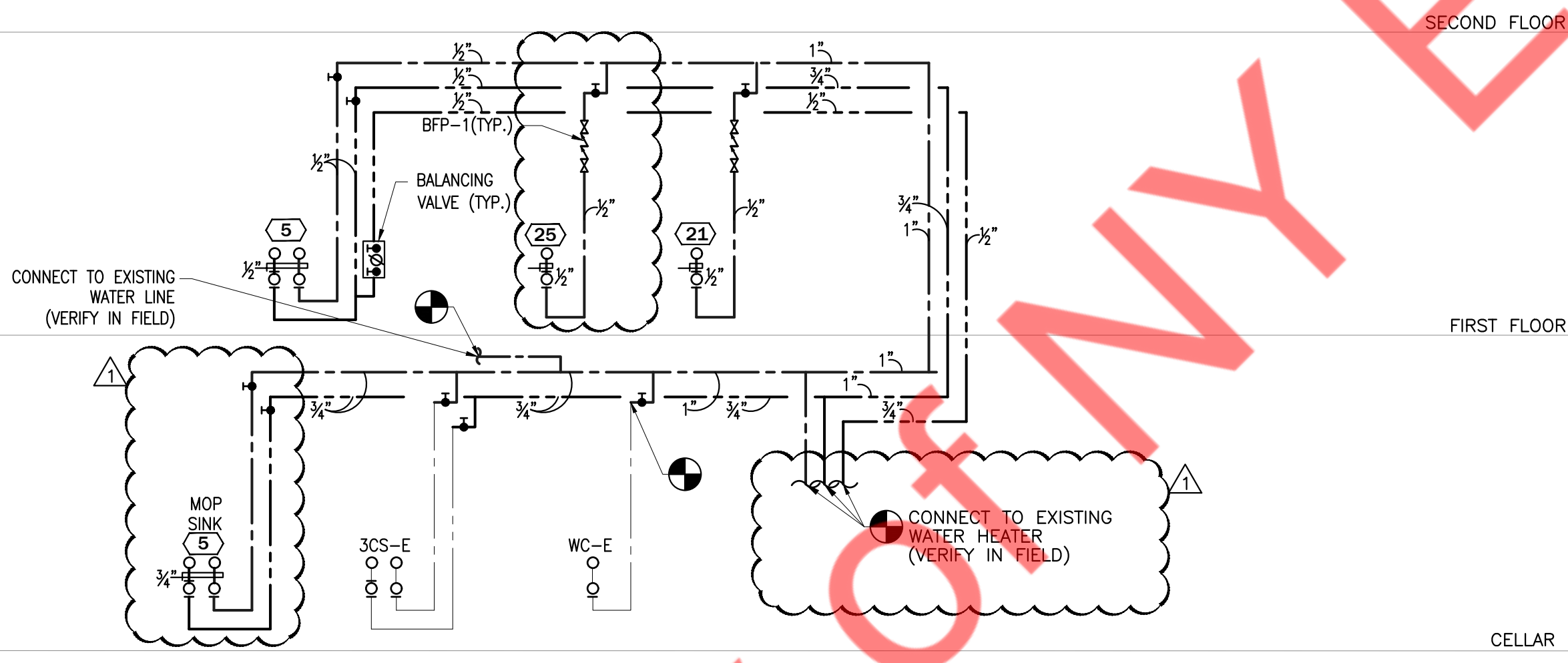
RECIRCULATION PUMP SCHEDULE					
MARK	SERVICE	GPM	TOTAL HEAD FT.	MOTOR HP	MANUFACTURER & REMARKS
RCP-1	HW RECIRCULATION	2	10	0.115	GRUNDFOS UPS 15-18 BUCS W/AQUASTAT + TIMER

EXPANSION TANK SCHEDULE				
ITEM	SERVICE	GALLONS	MAKE	REMARKS
EXPANSION TANK (ET-1)	HOT WATER	2	AMTROL ST-5	DIMENSIONS- 15"(H)x9"(DIA.) SHIPPING WEIGHT- 7 LBS

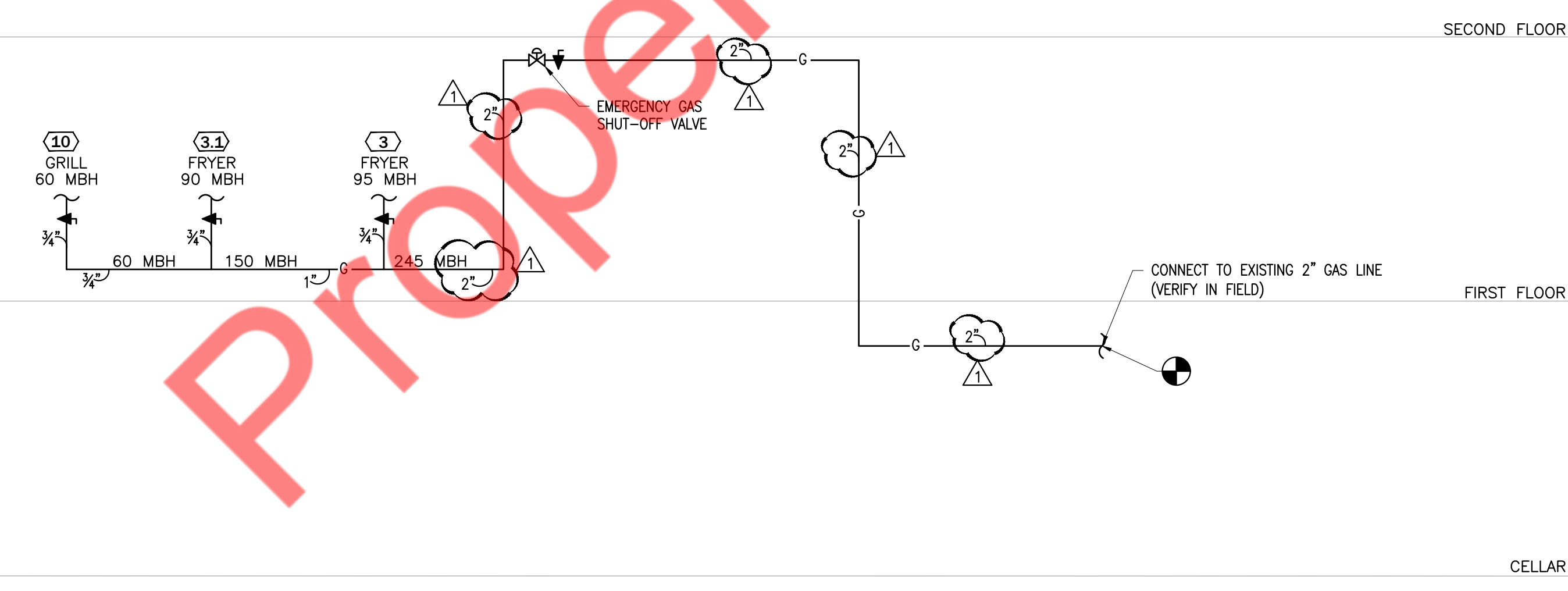
Property of NY Engineers



1 PLUMBING SANITARY RISER DIAGRAM
N.T.S.



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



3 PLUMBING GAS RISER DIAGRAM
N.T.S.

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

NOTES:
 1. GAS PIPING TO BE SCHEDULE 40 STEEL PIPE W/125 CAST IRON SCREWD FITTINGS
 2. GAS SYSTEM TO BE INSTALLED BY QUALIFIED LICENSED CONTRACTOR.
 3. VERIFY ALL EQUIPMENT BTUS'S PRIOR TO INSTALLATION. ADJUST PIPE SIZE ACCORDING NYC FUEL GAS CODE 2022, TABLE 402.4(2).

GAS LOAD SUMMARY	
EQUIPMENT	MBH LOAD
FRYER	95
FRYER	90
GRILL	60
TOTAL LOAD	245

GAS PIPE SIZING PER TABLE 402.4(2) NYC FUEL GAS CODE 2022
 GAS INLET PRESSURE- LESS THAN 2 PSI.
 PRESSURE DROP- 0.5" WC
 SPECIFIC GRAVITY- 0.60
 EQUIVALENT LENGTH OF PIPE = 100 FT