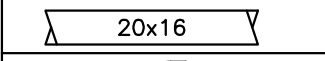
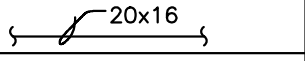
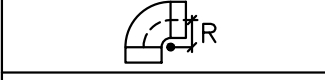
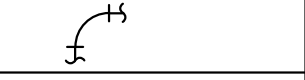
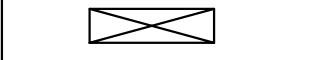
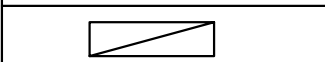
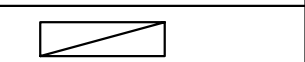
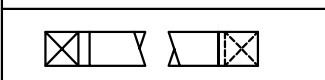
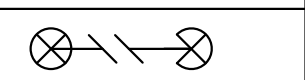
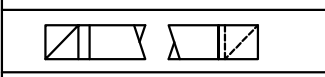
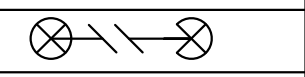
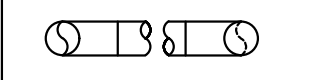
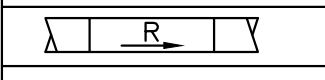
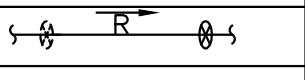
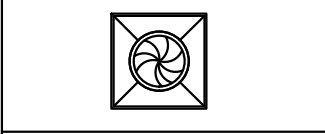
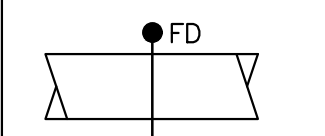
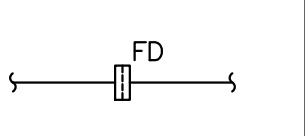
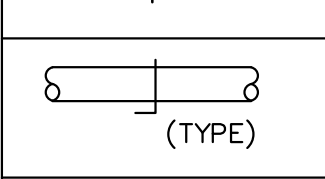
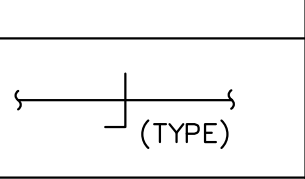
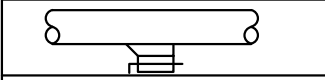
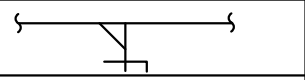
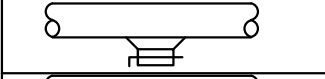
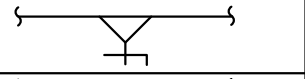
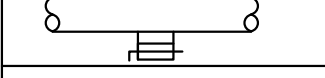
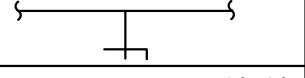
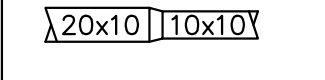
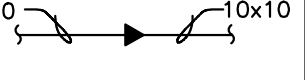
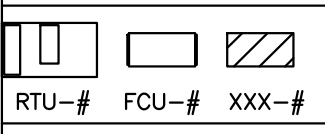
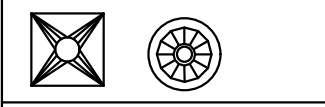
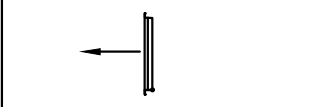
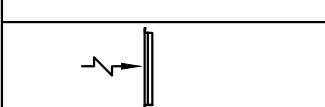


DUCT SYMBOLS		
DOUBLE LINE SYMBOL	DESCRIPTION	SINGLE LINE SYMBOL
	DUCT-- FIRST NUMBER IS VISIBLE DIMENSION.	
	RADIUS ELBOW W/VANE(S) (1.5=R/D STANDARD)	
	DUCT SECTION, POSITIVE PRESSURE	
	DUCT SECTION, NEGATIVE PRESSURE	
	DUCT & AIRFLOW UP(LEFT) POSITIVE PRESSURE DUCT & AIRFLOW DN(RIGHT) POSITIVE PRESSURE	
	DUCT & AIRFLOW UP(LEFT) NEGATIVE PRESSURE DUCT & AIRFLOW DN(RIGHT) NEGATIVE PRESSURE	
	DUCT & AIRFLOW UP(LEFT) NEG./POS. PRESSURE DUCT & AIRFLOW DN(RIGHT) NEG./POS. PRESSURE	
	CHANGE OF ELEVATION=RISE (R), DROP (D)	
	CEILING EXHAUST FAN WITH LIGHT	
	FD-- FIRE DAMPER	
	MANUAL VOLUME DAMPER--SPECIFIC TYPE, NO LABEL--BUTTERFLY, OBD--OPPOSED BLADED DAMPER, PBD--PARALLEL BLADE DAMPER	
	BRANCH TAP--W/45 DEG. ENTRY	
	BRANCH TAP--CONICAL SPIN-IN	
	BRANCH TAP--STRAIGHT SPIN-IN	
	TRANSITION	
	HVAC -- EQUIP AS NOTED RTU--# FCU--# XXX--#	
	AIR DEVICE, SUPPLY-- CEILING CLEAR	
	AIR DEVICE TAG SPIN-IN DIMENSION AIRFLOW (CFM)	
	AIR DEVICE, SUPPLY-- SIDEWALL	
	AIR DEVICE, RETURN/EXHAUST-- SIDEWALL	

MECHANICAL DRAWING LIST	
M1	MECHANICAL SYMBOLS & NOTES
M2	MECHANICAL SPECIFICATION (1 OF 2)
M3	MECHANICAL SPECIFICATION (2 OF 2)
M4	MECHANICAL FLOOR PLAN
M5	MECHANICAL ROOF PLAN
M6	MECHANICAL DETAILS (1 OF 3)
M7	MECHANICAL DETAILS (2 OF 3)
M8	MECHANICAL DETAILS (3 OF 3)
M9	MECHANICAL SCHEDULES
M10	HOOD DETAILS (1 OF 4)
M11	HOOD DETAILS (2 OF 4)
M12	HOOD DETAILS (3 OF 4)
M13	HOOD DETAILS (4 OF 4)
M14	ENERGY ANALYSIS (SHEET 1 OF 2)
M15	ENERGY ANALYSIS (SHEET 2 OF 2)

CODE COMPLIANCE	
ALL WORK AND MATERIAL SHALL BE PERFORMED AND INSTALLED IN COMPLIANCE WITH THE FOLLOWING CODES AS ADOPTED AND AMENDED BY THE INSPECTING AUTHORITY. NOTHING IN THESE DRAWINGS IS TO BE CONSTRUCTED TO PERMIT WORK NOT CONFORMING TO THESE CODES OR OTHERS APPLICABLE TO THESE PROJECT:	
A.	2021 VIRGINIA BUILDING CODE.
B.	2021 VIRGINIA PLUMBING CODE.
C.	2021 VIRGINIA MECHANICAL CODE.
D.	2021 VIRGINIA ENERGY CONSERVATION CODE.
E.	2021 VIRGINIA FUEL GAS CODE.
F.	NATIONAL ELECTRICAL CODE--2020.

MECHANICAL ABBREVIATIONS	
BD	BACKDRAFT DAMPER
CFM	CUBIC FEET PER MINUTE
CD	CONDENSATE DRAIN
DN	DOWN
EER	ENERGY EFFICIENCY RATIO
IEER	INTEGRATED ENERGY EFFICIENCY RATIO
SEER	SEASONAL ENERGY EFFICIENCY RATIO
AFUE	ANNUALIZED FUEL UTILIZATION EFFICIENCY
ISMRE	INTEGRATED SEASONAL MOISTURE REMOVAL EFFICIENCY
FC	FLEXIBLE CONNECTION
VD	VOLUME DAMPER
EF	EXHAUST FAN
KEF	KITCHEN EXHAUST FAN
MD	MOTORIZED DAMPER
MAU	MAKEUP AIR UNIT
FD	FIRE DAMPER
RTU	ROOF TOP UNIT
KSF	KITCHEN SUPPLY FAN
CDR	CEILING DIFFUSER RETURN
CDS	CEILING DIFFUSER SUPPLY
SAG	SUPPLY AIR GRILLE
EAG	EXHAUST AIR GRILLE
KH	KITCHEN HOOD

VIRGINIA BEACH, VA BUILDING DEPT. NOTES	
ALL WORK SHALL COMPLY WITH APPLICABLE SECTIONS OF THE VIRGINIA BUILDING CODE 2021, AND ALL AMENDMENTS AND RULES AND REGULATIONS OF THE DEPARTMENT OF BUILDINGS TO DATE.	
1.	ALL HEATING AND COOLING LOADS CALCULATED PER ASHRAE/ACCA 183.
2.	VENTILATION FOR ALL AREA SHALL COMPLY WITH VIRGINIA MECHANICAL CODE 2021 CHAPTER 4.
3.	TESTS OF MECHANICAL SYSTEMS SHALL BE PERFORMED IN ACCORDANCE WITH THE FOLLOWING SECTIONS OF THE VIRGINIA MECHANICAL CODE 2021: A. VENTILATION SYSTEM BALANCING VMC 2021 -- 403.1
4.	THE FOLLOWING WORK ITEMS, COMPONENTS, MATERIALS, CAPACITIES, ETC. SHALL COMPLY WITH THE REFERENCED CODE OR STANDARD: A. STANDARDS OF HEATING --VMC 2021 -- 309.1 B. MANUAL AND AUTOMATIC FIRE AND SMOKE CONTROLS FOR AIR DISTRIBUTION SYSTEMS -- VMC 2021 --606 C. DUCT CONSTRUCTION AND INSTALLATION-- VMC 2021 -- 603 D. AIR INTAKES, EXHAUSTS AND RELIEF -- VMC 2021 -- 401.5 E. AIR FILTERS -- VMC 2021 -- 605 F. GAS FIRED EQUIPMENT -- VFGC 2021
5.	MINIMUM TEMPERATURE TO BE MAINTAINED IN OCCUPIED SPACES DURING HEATING SEASON: 68 DEG. FAHRENHEIT.
6.	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 VMC 2021 -- 403.3
7.	REFER TO ARCHITECTURAL DRAWINGS FOR REQUIRED FIRE--RATED WALL AND SMOKE WALL CONSTRUCTION AND LOCATION.
8.	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.
9.	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.
10.	VENTILATION SYSTEMS SHALL BE BALANCED TO MAINTAIN THE MINIMUM VENTILATION AIRFLOW RATE AS SHOWN IN VENTILATION REQUIREMENT TABLE. THIS SYSTEM SHALL BE BALANCED BY APPROVED METHOD. CONTRACTOR TO SUBMIT THE AIR BALANCE REPORT TO INSPECTOR OF RESPECTIVE BUILDING DEPARTMENT PRIOR TO FINAL INSPECTION.
11.	SMOKE DETECTOR SHALL MEET UL268A.
12.	SMOKE DETECTION SYSTEMS SHALL BE INSTALLED AND SEQUENCED TO FOLLOW CONTROLS OPERATIONS WITH THE REQUIREMENTS OF SECTION VMC 2021 -- 606 TO CLOSE DAMPERS AND AUTOMATICALLY STOP THE FAN.

SCOPE OF WORK	
1.	TO REUSE FIVE EXISTING 4.0 TON GAS HEAT ROOF TOP UNIT AND PROVIDE TWO NEW 5.0 TON GAS HEAT ROOF TOP UNIT AND PROVIDE ALL THE NEW DUCTWORK AND NECESSARY ACCESSORIES FOR THE COMPLETE HVAC SYSTEM.
2.	PROVIDE ONE NEW KITCHEN HOOD (KH), ONE NEW KITCHEN EXHAUST FAN (KEF) AND ONE NEW MAKE UP AIR UNIT (KSF) FOR THE KITCHEN AREA AS SHOWN ON THE PLANS.
3.	PROVIDE ONE NEW EXHAUST FAN FOR THE RESTROOM AREA.
4.	COORDINATE WITH THE GC FOR ANY ADDITIONAL REFRIGERATION WORK AND WITH PLUMBING CONTRACTOR FOR CONDENSATE LINES FOR MECHANICAL EQUIPMENT AND WITH ELECTRICAL CONTRACTOR FOR ALL THE POWER AND WIRING REQUIREMENTS.
3.	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.
4.	THE CONTRACTOR SHALL GIVE NECESSARY NOTICE, FILE DRAWINGS AND SPECIFICATIONS WITH THE DEPARTMENT HAVING JURISDICTION, OBTAIN PERMITS OR LICENSES NECESSARY TO CARRY OUT THIS WORK AND PAY ALL FEES THEREFORE. THE CONTRACTOR SHALL ARRANGE FOR INSPECTION AND TESTS OF ANY OR ALL PARTS OF THE WORK IF SO REQUIRED BY AUTHORITIES AND PAY ALL CHARGES FOR SAME. THE CONTRACTOR SHALL PAY ALL COSTS FOR, AND FURNISH TO THE OWNER BEFORE FINAL BILLING, ALL CERTIFICATES NECESSARY AS EVIDENCE THAT THE WORK INSTALLED CONFORMS WITH ALL REGULATIONS WHERE THEY APPLY TO THIS WORK.
5.	THE CONTRACTOR SHALL FURNISH A WRITTEN GUARANTEE TO REPLACE OR REPAIR PROMPTLY AND ASSUME RESPONSIBILITY FOR ALL EXPENSES INCURRED FOR ANY WORKMANSHIP AND EQUIPMENT IN WHICH DEFECTS DEVELOP WITHIN ONE YEAR FROM THE DATE OF FINAL CERTIFICATE FOR PAYMENT AND/OR FROM DATE OF ACTUAL USE OF EQUIPMENT OR OCCUPANCY OF SPACES, BY OWNER, INCLUDED UNDER THE VARIOUS PARTS OF THE WORK, WHICHEVER DATE IS EARLIER. THIS WORK SHALL BE DONE AS DIRECTED BY THE OWNER. THIS GUARANTEE SHALL ALSO PROVIDE THAT WHERE DEFECTS OCCUR, THE CONTRACTOR WILL ASSUME RESPONSIBILITY FOR ALL EXPENSES INCURRED IN REPAIRING AND REPLACING WORK OF OTHER TRADES AFFECTED BY DEFECTS, REPAIRS OR REPLACEMENTS IN EQUIPMENT SUPPLIED BY THE CONTRACTOR.

GENERAL NOTES	
1.	CONTRACTOR SHALL SURVEY THE AREA OF THIS WORK BEFORE SUBMITTING A BID AND SHALL BE RESPONSIBLE FOR NOTIFYING THE ARCHITECT OF ANY CONDITIONS WHICH WOULD PREVENT THE INSTALLATION OF THE WORK AS SHOWN ON DRAWINGS.
2.	ALL APPLICABLE CODES, LAWS AND REGULATIONS GOVERNING OR RELATING TO ANY PORTION OF THIS WORK ARE HEREBY INCORPORATED INTO AND MADE A PART OF THESE SPECIFICATIONS, AND THEIR PROVISIONS SHALL BE CARRIED OUT BY THE CONTRACTOR WHO SHALL INFORM THE OWNER, PRIOR TO SUBMITTING A PROPOSAL, OF ANY WORK OR MATERIALS WHICH VIOLATE ANY OF THE ABOVE LAWS AND REGULATIONS. ANY WORK DONE BY THE CONTRACTOR CAUSING SUCH VIOLATION SHALL BE CORRECTED BY THE CONTRACTOR.
3.	BEFORE PROCEEDING WITH ANY WORK IN OCCUPIED OR USED AREAS, THE CONTRACTOR SHALL APPLY TO OWNER FOR PERMISSION TO ENTER SUCH AREAS. THE CONTRACTOR IS OBLIGED TO PERFORM HIS WORK ONLY AT THE TIMES DESIGNATED BY OWNER. THERE WILL BE NO ADDITIONAL COMPENSATION FOR THE WORK PERFORMED AFTER HOURS OR ON OFF-DAYS WITHOUT PRIOR WRITTEN APPROVAL.
4.	THE WORK IN THE BUILDING SHALL BE DONE WHEN AND AS DIRECTED, AND IN A MANNER SATISFACTORY TO THE OWNER. THE WORK SHALL BE PERFORMED SO AS TO CAUSE THE LEAST POSSIBLE INCONVENIENCE AND DISTURBANCE TO THE PRESENT OCCUPANTS.
5.	THE CONTRACTOR'S PROPOSAL FOR ALL WORK SHALL BE PREDICATED ON THE PERFORMANCE OF THE WORK DURING REGULAR WORKING HOURS. WHEN SO DIRECTED, HOWEVER, THE CONTRACTOR SHALL INSTALL WORK IN OVERTIME AND THE ADDITIONAL COST TO BE CHARGED THEREFORE SHALL BE ONLY THE "PREMIUM" PORTION OF THE WAGES PAID.
6.	CONTRACTOR SHALL ASCERTAIN THE APPROPRIATE METHOD FOR BRINGING THE UNITS INTO AND THROUGH THE BUILDING TO POSITION UNIT IN LOCATION SHOWN ON THE PLANS. WHERE NECESSARY, EQUIPMENT SHALL BE SHIPPED FROM MANUFACTURER IN SECTIONS OF SIZE SUITABLE FOR MOVING THROUGH RESTRICTIVE SPACES. COORDINATE WITH BUILDING OWNER APPROPRIATE TIMES OF DAY SUCH EQUIPMENT MAY BE MOVED THROUGH ALL AREAS.
7.	DUCTWORK AND PIPING IS SHOWN DIAGRAMMATICALLY AND DOES NOT SHOW ALL OFFSETS, DROPS AND RISES OF RUNS. THE CONTRACTOR SHALL MAKE ALLOWANCE IN BRINGING FOR ROUTING OF DUCTWORK AND PIPING TO AVOID OBSTRUCTIONS. EXACT LOCATIONS ARE SUBJECT TO APPROVAL OF ARCHITECT. COORDINATION WITH THE EXISTING SERVICES, INCLUDING THOSE OF OTHER TRADES IS REQUIRED.
8.	SUPPORT ALL DUCTWORK AND PIPING FROM BUILDING STRUCTURE AND/OR FRAMING IN AN APPROVED MANNER. WHERE OVERHEAD CONSTRUCTION DOES NOT PERMIT FASTENING OR SUPPORTS FOR EQUIPMENT, FURNISH ADDITIONAL FRAMING. INSERTS SHALL BE STEEL, SLOTTED TYPE AND FACTORY PAINTED. SINGLE ROD SHALL BE SIMILAR TO GRINNELL FIG. 281. MULTI-ROD SHALL BE SIMILAR TO FEE & MASON SERIES 9000 WITH END CAPS AND CLOSURE STRIPS-- MAXIMUM LOADING INCLUDING PIPES, DUCTWORK CONTENTS AND COVERING SHALL NOT EXCEED 75% OF RATED INSERT CAPABILITY. WHEN SUPPORTING FROM BUILDING USE BEAM CLAMPS IN APPROVED MANNER.
9.	PROVIDE ALL NECESSARY FLASHING AND COUNTER FLASHING TO MAINTAIN THE WATERPROOFING INTEGRITY OF THIS BUILDING AS REQUIRED BY THE INSTALLATION OR REMOVAL OF PIPES, DUCTS, LOUVERS, CONDUIT, AND EQUIPMENT. PROVIDE EQUIPMENT CURBS AND DUNNAGE STEEL AS REQUIRED.

10.	SEAL OPENINGS AROUND DUCTS AND PIPING THROUGH PARTITIONS, WALLS AND FLOORS (NOT IN SHAFTS) WITH MINERAL WOOL OR OTHER NONCOMBUSTIBLE MATERIAL (FIBERGLASS INSULATION IS NOT ACCEPTABLE).
11.	WHERE PENETRATIONS THROUGH FIRE RATED WALLS ARE NOT FIRE PROOFED THIS CONTRACTOR SHALL BE RESPONSIBLE TO SEAL SAME TO MAINTAIN THE RATED INTEGRITY.
12.	INSTALL WORK SO AS TO BE READILY ACCESSIBLE FOR OPERATION, MAINTENANCE AND REPAIR. MINOR DEVIATIONS FROM DRAWINGS MAY BE MADE TO ACCOMPLISH THIS, BUT CHANGES WHICH INVOLVE EXTRA COST SHALL NOT BE MADE WITHOUT APPROVAL.
13.	ACCESS DOORS ARE REQUIRED FOR ALL BUILDING SERVICE VALVES THAT RUN THROUGH THE SPACE, AND ACCESS DOOR SHALL HAVE THE EQUAL RATED CAPACITY (1HR, 2HR, ETC.) AS WALL. COORDINATE ALL LOCATIONS OF ACCESS DOORS WITH THE ARCHITECT.
14.	REMOVABLE ACCESS TILE AND/OR ACCESS DOOR ARE REQUIRED IN HUNG CEILINGS, SHAFTS AND WALLS FOR ALL VOLUME AND FIRE DAMPERS, AUTOMATIC DAMPERS AND ALL OTHER MECHANICAL EQUIPMENT AND DEVICES. HVAC CONTRACTOR TO FURNISH ACCESS LOCATION REQUIREMENTS TO GENERAL CONTRACTOR. ACCESS TILE IDENTIFICATION: PROVIDE BUTTONS, TABS, AND MARKERS TO IDENTIFY LOCATION OF CONCEALED VALVES, DAMPERS AND EQUIPMENT.
15.	THE CONTRACTOR SHALL KEEP ALL EQUIPMENT AND MATERIALS, AND ALL PARTS OF THE BUILDING, EXTERIOR SPACES AND ADJACENT STREETS, SIDEWALKS AND PAVEMENTS, FREE FROM MATERIAL AND DEBRIS RESULTING FROM THE EXECUTION OF THIS WORK. EXCESS MATERIALS WILL NOT BE PERMITTED TO ACCUMULATE EITHER ON THE INTERIOR OR THE EXTERIOR.
16.	UNLESS OTHERWISE SPECIFICALLY SPECIFIED, INCLUDE ALL CUTTING AND PATCHING OF EXISTING FLOORS, WALLS, PARTITIONS AND OTHER MATERIALS IN THE EXISTING BUILDING. THE CONTRACTOR SHALL RESTORE THESE AREAS TO ORIGINAL CONDITION.
17.	MATERIALS AND WORKMANSHIP, UNLESS OTHERWISE NOTED, SHALL BE IN ACCORDANCE WITH BUILDING STANDARDS.
18.	ALL EQUIPMENT SHALL BE PROVIDED WITH ONE YEAR WARRANTY PARTS AND LABOR AND FIVE YEARS ON COMPRESSORS. WARRANTY PERIOD BEGINS UPON PROJECT ACCEPTANCE
19.	ALL MATERIAL AND EQUIPMENT TO BE NEW UNLESS OTHERWISE NOTED AND SHALL BE IN ACCORDANCE WITH BUILDING STANDARDS.
20.	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.
21.	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.
22.	SUBMIT SHOP DRAWING OF ALL WORK WHICH MUST BE APPROVED BY THE ARCHITECT AND ENGINEER BEFORE WORK COMMENCES.
23.	ALL MATERIAL AND EQUIPMENT TO BE NEW UNLESS OTHERWISE NOTED AND SHALL BE IN ACCORDANCE WITH BUILDING STANDARDS.
24.	INSURANCE: IN ACCORDANCE WITH BUILDING REQUIREMENTS THE CONTRACTOR SHALL INCLUDE A HOLD HARMLESS CLAUSE FOR OWNER AND ENGINEER.
25.	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.
26.	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.
27.	WHERE A CONFLICT EXISTS BETWEEN THE DRAWINGS, THE SPECIFICATIONS OR ANY OTHER CONSTRUCTION DOCUMENT, THE ONE WITH THE MOST STRINGENT REQUIREMENT(S) SHALL APPLY.

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

GENERAL HVAC NOTES	
1.	PROVIDE ALL MATERIAL AND EQUIPMENT AND PERFORM ALL LABOR REQUIRED TO INSTALL COMPLETE AND OPERABLE MECHANICAL SYSTEMS AS INDICATED ON THE DRAWINGS, AS SPECIFIED AND AS REQUIRED BY CODE.
2.	CONTRACT DOCUMENT DRAWINGS FOR MECHANICAL WORK (HVAC, PLUMBING, AND FIRE PROTECTION) ARE DIAGRAMMATIC AND ARE INTENDED TO CONVEY SCOPE AND GENERAL ARRANGEMENT ONLY.
3.	THE LOCATIONS OF ALL ITEMS SHOWN ON THE DRAWINGS OR CALLED FOR IN THE SPECIFICATIONS THAT ARE NOT FIXED BY DIMENSIONS ARE APPROXIMATE ONLY. THE EXACT LOCATIONS NECESSARY TO SECURE THE BEST CONDITIONS AND RESULTS MUST BE DETERMINED BY THE PROJECT SITE CONDITIONS AND SHALL HAVE THE APPROVAL OF THE ENGINEER BEFORE BEING INSTALLED. DO NOT SCALE DRAWINGS.
4.	WHEN MECHANICAL WORK (HVAC, PLUMBING, SHEET METAL, FIRE PROTECTION, ETC.) IS SUBCONTRACTED, IT SHALL BE THE MECHANICAL CONTRACTOR'S RESPONSIBILITY TO COORDINATE SUBCONTRACTORS AND THE ASSOCIATED CONTRACTS. WHEN DISCREPANCIES ARISE PERTAINING TO WHICH CONTRACTOR PROVIDES A PARTICULAR ITEM OF THE MECHANICAL CONTRACT OR WHICH CONTRACTOR PROVIDES FINAL CONNECTIONS FOR A PARTICULAR ITEM OF THE MECHANICAL CONTRACT, IT SHALL BE BROUGHT TO THE ATTENTION OF THE MECHANICAL CONTRACTOR, WHOSE DECISION SHALL BE FINAL.
5.	COORDINATE CONSTRUCTION OF ALL MECHANICAL WORK WITH ARCHITECTURAL, STRUCTURAL, CIVIL, ELECTRICAL WORK, ETC., SHOWN ON OTHER CONTRACT DOCUMENT DRAWINGS.
6.	INSTALL ALL MECHANICAL EQUIPMENT AND APPURTENANCES IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS, CONTRACT DOCUMENTS, AND APPLICABLE CODES AND REGULATIONS.
7.	WHERE TWO OR MORE ITEMS OF THE SAME TYPE OF EQUIPMENT ARE REQUIRED, THE PRODUCT OF ONE MANUFACTURER SHALL BE USED.
8.	COORDINATE ALL EQUIPMENT CONNECTIONS WITH MANUFACTURERS' CERTIFIED DRAWINGS. COORDINATE AND PROVIDE ALL DUCT AND PIPING TRANSITIONS REQUIRED FOR FINAL EQUIPMENT CONNECTIONS TO FURNISHED EQUIPMENT. FIELD VERIFY AND COORDINATE ALL DUCT AND PIPING DIMENSIONS BEFORE FABRICATION.
9.	ALL CONTROL WIRE AND CONDUIT SHALL COMPLY WITH THE NATIONAL ELECTRIC CODE AND ELECTRICAL DIVISION OF THE SPECIFICATION.
10.	PROVIDE VIBRATION ISOLATION FOR ALL MECHANICAL EQUIPMENT TO PREVENT TRANSMISSION OF VIBRATION TO BUILDING STRUCTURE.
11.	PROVIDE VIBRATION ISOLATORS FOR ALL PIPING SUPPORTS CONNECTED TO, AND WITHIN 50 FT. OF, ISOLATED EQUIPMENT (EXCEPT AT BASE ELBOW SUPPORTS AND ANCHOR POINTS) THROUGHOUT MECHANICAL EQUIPMENT ROOMS. DO THE SAME FOR SUPPORTS OF STEAM MAINS WITHIN 50 FT. OF BOILER OR PRESSURE--REDUCING VALVES.
12.	LOCATE ALL TEMPERATURE, PRESSURE, AND FLOW MEASURING DEVICES IN ACCESSIBLE LOCATIONS WITH THE STRAIGHT SECTION OF PIPE OR DUCT UP-- AND DOWNSTREAM AS RECOMMENDED BY THE MANUFACTURER FOR GOOD ACCURACY.

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13. WHERE BEAMS ARE INDICATED TO BE PENETRATED WITH DUCTWORK OR PIPING, COORDINATE DUCTWORK AND PIPING LAYOUT WITH BEAM OPENING SIZE AND OPENING LOCATIONS. COORDINATION SHALL BE DONE PRIOR TO THE FABRICATION OF DUCTWORK, CUTTING OF PIPING, OR FABRICATION OF BEAMS.
14. ALL MISCELLANEOUS STEEL REQUIRED TO ENSURE PROPER INSTALLATION AND AS SHOWN IN THE DETAILS FOR PIPING, DUCTWORK, AND EQUIPMENT (UNLESS OTHERWISE NOTED) SHALL BE FURNISHED AND INSTALLED BY THE MECHANICAL CONTRACTOR.
15. PROVIDE ACCESS PANELS FOR INSTALLATION IN WALLS AND CEILINGS, WHERE REQUIRED, TO SERVICE DAMPERS, VALVES, SMOKE DETECTORS, AND OTHER CONCEALED MECHANICAL EQUIPMENT. ACCESS PANELS SHALL BE TURNED OVER TO THE GENERAL CONTRACTOR FOR INSTALLATION. ACCESS PANELS SHALL HAVE THE EQUAL RATED CAPACITY (1HR, 2HR, ETC.) AS WALL.
16. MECHANICAL EQUIPMENT, DUCTWORK, AND PIPING SHALL NOT BE SUPPORTED FROM A METAL DECK.
17. ALL EQUIPMENT, PIPING, DUCTWORK, ETC., SHALL BE SUPPORTED AS DETAILED, SPECIFIED AND REQUIRED TO PROVIDE A VIBRATION-FREE INSTALLATION.
18. ALL DUCTWORK, PIPING, AND EQUIPMENT SUPPORTED FROM STRUCTURAL STEEL SHALL BE COORDINATED WITH THE GENERAL CONTRACTOR. ALL ATTACHMENTS TO STEEL BAR JOISTS, TRUSSES, OR JOIST GIRDERS SHALL BE AT PANEL POINTS. PROVIDE BEAM CLAMPS MEETING MSS STANDARDS. WELDING TO STRUCTURAL MEMBERS SHALL NOT BE PERMITTED. THE USE OF C-CLAMPS SHALL NOT BE PERMITTED.
19. LOCATIONS AND SIZES OF ALL FLOOR, WALL, AND ROOF OPENINGS SHALL BE COORDINATED WITH ALL OTHER TRADES INVOLVED.
20. ALL OPENINGS IN FIRE WALLS DUE TO DUCTWORK, PIPING, CONDUIT, ETC., SHALL BE FIRE STOPPED WITH A PRODUCT SIMILAR TO 3M OR APPROVED EQUAL.
21. ALL AIR CONDITIONING CONDENSATE DRAIN LINES FROM EACH AIR HANDLING UNIT AND ROOFTOP UNIT SHALL BE PIPED FULL SIZE OF THE UNIT DRAIN OUTLET, WITH "P" TRAP, AND PIPED TO THE NEAREST DRAIN. SEE THE DETAILS SHOWN IN THE DRAWINGS OR THE CONTRACT SPECIFICATIONS FOR THE DEPTH OF THE AIR CONDITIONING CONDENSATE TRAP.
22. REFER TO TYPICAL DETAILS FOR DUCTWORK, PIPING, AND EQUIPMENT INSTALLATION.
23. REINFORCEMENT, DETAILING, AND PLACEMENT OF CONCRETE SHALL CONFORM TO ASTM 315 AND ACI 318. CONCRETE SHALL CONFORM TO ASTM C94. CONCRETE WORK SHALL CONFORM TO ACI 318 PART ENTITLED "CONSTRUCTION REQUIREMENTS".COMPRESSIVE STRENGTH IN 28 DAYS SHALL BE 3,000 PSI. TOTAL AIR CONTENT OR EXTERIOR CONCRETE SHALL BE BETWEEN 5 AND 7 PERCENT BY VOLUME. SLUMP SHALL BE BETWEEN 3 AND 4 IN. CONCRETE SHALL BE CURED FOR 7 DAY AFTER PLACEMENT.
24. CONCRETE HOUSEKEEPING PADS TO SUIT MECHANICAL EQUIPMENT SHALL BE SIZED AND LOCATED BY THE MECHANICAL CONTRACTOR. MINIMUM CONCRETE PAD THICKNESS SHALL BE 6 IN. PAD SHALL EXTEND BEYOND THE EQUIPMENT A MINIMUM OF 6 IN. ON EACH SIDE. CONCRETE HOUSEKEEPING PADS SHALL BE PROVIDED BY THE GENERAL CONTRACTOR. IT SHALL BE THE RESPONSIBILITY OF THE MECHANICAL CONTRACTOR TO COORDINATE THE SIZE AND LOCATION OF CONCRETE HOUSEKEEPING PADS WITH THE GENERAL CONTRACTOR.
25. ALL TESTS SHALL BE COMPLETED BEFORE ANY MECHANICAL EQUIPMENT OR PIPING INSULATION IS APPLIED.
26. TESTING, ADJUSTING, AND BALANCING AGENCY SHALL BE A MEMBER OF THE ASSOCIATED AIR BALANCE COUNCIL (AABC) OR THE NATIONAL ENVIRONMENTAL BALANCING BUREAU (NEBB). TESTING, ADJUSTING, AND BALANCING SHALL BE PERFORMED IN ACCORDANCE WITH THE AABC STANDARDS.

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, TO THE EXTENT THAT SUCH DOCUMENTATION RELATES TO THE WORK FOR WHICH THE BID IS SUBMITTED, AND FOR OTHER PORTIONS OF THE PROJECT, IF ANY, BEING BID CONCURRENTLY OR PRESENTLY UNDER CONSTRUCTION.
- 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 FOR THE MATERIAL AND LABOR.
- D. SHOULD CONFLICTS OR DISCREPANCIES OCCUR WITHIN THE BIDDING DOCUMENTS, THE ITEM OR ITEMS IN DISPUTE THAT REPRESENT THE GREATER COST SHALL PREVAIL IN THE FINAL BID.
- 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 UNDER WHICH THE WORK IS TO BE PERFORMED AND HAS CORRELATED THE BIDDER'S PERSONAL OBSERVATIONS WITH THE REQUIREMENTS OF THE PROPOSED BIDDING DOCUMENTS.
- B. THE BIDDER SHALL PROPOSE COORDINATION OF WORK SUCH THAT CONFLICTS WITH OTHER TRADES AND SPACE ALLOCATIONS ARE AVOIDED.
- 1.3 RESPONSIBILITIES
- A. THE BIDDER UNDERSTANDS THAT ANY CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR THE TIMELY COMPLETION AND ACCEPTANCE OF THEIR WORK AND THAT ANY ITEMS DAMAGED, LOST OR STOLEN DURING TIME OF CONSTRUCTION SHALL BE REPAIRED OR REPLACED WITHOUT ANY ADDITIONAL COST TO THE OWNER.
- B. THE BIDDER UNDERSTANDS THAT ANY PROPOSED WORK IN OCCUPIED TENANT SPACES SHALL BE PERFORMED DURING TIMES OF NON-TENANT OCCUPANCY OR AS SCHEDULED OR DIRECTED BY THE BUILDING MANAGER.
- C. THE BIDDER UNDERSTANDS THAT ANY PROPOSED SHUT-DOWN OF EXISTING SYSTEMS DURING CONSTRUCTION SHALL BE PRE-ARRANGED WITH THE BUILDING MANAGER AND THAT SUCH SHUT-DOWNS ARE TO BE KEPT TO A MINIMUM.

END OF SECTION 0001

SECTION 0101 – QUALITY OF WORK

- 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. PILLOWS/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 230529 – HANGERS AND SUPPORTS FOR HVAC PIPING AND EQUIPMENT

- 1.1 PERFORMANCE REQUIREMENTS
- A. DELEGATED DESIGN: DESIGN TRAPEZE PIPE HANGERS AND EQUIPMENT SUPPORTS, INCLUDING COMPREHENSIVE ENGINEERING ANALYSIS BY A QUALIFIED PROFESSIONAL ENGINEER, USING PERFORMANCE REQUIREMENTS AND DESIGN CRITERIA INDICATED.
- B. STRUCTURAL PERFORMANCE: HANGERS AND SUPPORTS FOR HVAC PIPING AND EQUIPMENT SHALL WITHSTAND THE EFFECTS OF GRAVITY LOADS AND STRESSES WITHIN LIMITS AND UNDER CONDITIONS INDICATED ACCORDING TO ASCE/SEI 7.
1. DESIGN SUPPORTS FOR MULTIPLE PIPES CAPABLE OF SUPPORTING COMBINED WEIGHT OF SUPPORTED SYSTEMS, SYSTEM CONTENTS, AND TEST WATER.
2. DESIGN EQUIPMENT SUPPORTS CAPABLE OF SUPPORTING COMBINED OPERATING WEIGHT OF SUPPORTED EQUIPMENT AND CONNECTED SYSTEMS AND COMPONENTS.

- 1.2 SUBMITTALS
- A. SHOP DRAWINGS: SIGNED AND SEALED BY A PROFESSIONAL ENGINEER

- 1.3 QUALITY ASSURANCE
- A. AWS D1.1/D1.1M, "STRUCTURAL WELDING CODE – STEEL."

- 1.4 COMPONENTS
- A. METAL PIPE HANGERS AND SUPPORTS: CARBON OR STAINLESS STEEL
- B. TRAPEZE PIPE HANGERS: CARBON OR STAINLESS STEEL
- C. FIBERGLASS PIPE HANGERS: –CLEVIS, CENTURY COMPOSITES, COOPER B–LINE
- D. METAL FRAMING SYSTEMS: MFMA MANUFACTURER
- E. FIBERGLASS STRUT SYSTEMS: COOPER B–LINE
- F. THERMAL–HANGER SHIELD INSERTS:
- G. FASTENER SYSTEMS: POWDER–ACTUATED FASTENERS OR MECHANICAL–EXPANSION ANCHORS
- H. PIPE STANDS: COMPACT, LOW TYPE, SINGLE PIPE, HIGH TYPE, SINGLE PIPE, HIGH TYPE, MULTIPLE PIPES, CURB–MOUNTED TYPE
- I. EQUIPMENT SUPPORTS.

END OF SECTION 230529

SECTION 230548 – VIBRATION CONTROLS FOR HVAC 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:
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

SECTION 230593 – TESTING, ADJUSTING, AND BALANCING FOR HVAC

- 1.1 SUMMARY
- A. TESTING, ADJUSTING, AND BALANCING FOR THE FOLLOWING:
1. AIR SYSTEMS: CONSTANT–VOLUME.
- 1.2 QUALITY ASSURANCE
- A. THE CONTRACTOR SHALL PROCURE THE SERVICES OF A TESTING, ADJUSTING AND BALANCING (TAB) SPECIALIST WHO SPECIALIZES IN HEATING, VENTILATION AND AIR CONDITIONING SYSTEMS. THE TAB AGENT SHALL HAVE THE FOLLOWING QUALIFICATIONS: AABC, NEBB OR TABB CERTIFIED.
- 1.3 EXECUTION
- A. THE TAB SPECIALIST SHALL PERFORM FLOW MEASUREMENTS OF ALL EXISTING AIR AND HYDRONIC SYSTEMS THAT ARE TO REMAIN OR TO BE INCORPORATED INTO NEW WORK PRIOR TO THE STARTING OF WORK IN THE PROJECT SCOPE. A REPORT OF THESE MEASUREMENTS, INDICATING ANY AND ALL DEFICIENCIES SHALL BE SUBMITTED FOR OWNER REVIEW.
- B. THE TAB SPECIALIST SHALL PERFORM FLOW MEASUREMENTS OF ALL NEW AIR AND HYDRONIC SYSTEMS AS LISTED ABOVE IN THE PROJECT SCOPE. A REPORT OF THESE MEASUREMENTS, INDICATING ANY AND ALL DEFICIENCIES SHALL BE SUBMITTED FOR OWNER REVIEW.
- C. THE REPORT SHALL INDICATE A SCHEMATIC DIAGRAM INDICATING LOCATIONS OF ALL EQUIPMENT TESTED AND MEASUREMENT LOCATIONS.

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- D. PRIOR TO FINAL INSPECTION OF THE WORK, THE TAB SPECIALIST SHALL BALANCE ALL SYSTEMS AS INDICATED ABOVE TO THE REQUIREMENTS OF THE DESIGN.
- E. THE CONTRACTOR SHALL HAVE FURNISH AND INSTALL ALL ADDITIONAL BALANCING EQUIPMENT, PRESSURE TAPS, GAUGES AND OTHER EQUIPMENT AS REQUIRED FOR A PROPERLY BALANCED SYSTEM AT NO ADDITIONAL COST TO THE OWNER. SUCH ADDITIONAL EQUIPMENT SHALL ADHERE IN STRICT ACCORDANCE WITH THE RESPECTIVE EQUIPMENT MANUFACTURER'S RECOMMENDATIONS.
- F. THE CONTRACTOR SHALL HAVE THE TESTING AND BALANCING SPECIALIST COORDINATE ALL WORK OF THIS S3ECTION WITH THE BUILDING MANAGER. BALANCING WORK SHALL NOT CONFLICT WITH OTHER WORK SO AS TO MAINTAIN COMPLETION WITHIN THE SPECIFIED TIME.
- G. ALL INSTRUMENTS USED FOR TAB SHALL BE MAINTAINED IN GOOD WORKING CONDITION AND ACCURATELY CALIBRATED.
- H. TOLERANCES: PLUS OR MINUS 5 PERCENT OF DESIGN VALUES.
- I. INSPECTIONS: RANDOM CHECKS BY OWNER OR ARCHITECT TO VERIFY FINAL TESTING, ADJUSTING, AND BALANCING REPORT.
- J. ADDITIONAL TESTS: RANDOM TESTS WITHIN 90 DAYS OF COMPLETING TAB TO VERIFY BALANCE CONDITIONS AND SEASONAL TESTS.
- END OF SECTION 230593

SECTION 230713 – DUCT INSULATION

- 1.1 QUALITY ASSURANCE
- SURFACE–BURNING CHARACTERISTICS: ALL INSULATION SHALL HAVE COMPOSITE (INSULATION JACKET OR FACING AND ADHESIVE USED TO ADHERE THE FACING OR JACKET TO THE INSULATION) A FLAME–SPREAD INDEX OF 25, AND SMOKE–DEVELOPED INDEX OF 50 FOR INSULATION INSTALLED INDOOR, 75, AND SMOKE–DEVELOPED INDEX OF 150 FOR INSULATION INSTALLED OUTDOORS; ACCORDING TO ASTM E 84.
- 1.2 FIELD QUALITY CONTROL
- A. FIELD INSPECTIONS: BY OWNER–ENGAGED AGENCY.
- 1.3 INDOOR DUCT AND PLENUM INSULATION SCHEDULE;
- A. CONCEALED, RECTANGULAR, ROUND AND FLAT–OVAL, SUPPLY–RETURN, OUTDOOR–AND EXHAUST–AIR DUCT AND AIR PLENUM INSULATION:
- B. FLEXIBLE ELASTOMERIC, MINERAL–FIBER BLANKET, MINERAL–FIBER BOARD OR POLYOLEFIN WITH MINIMUM INSTALLED THERMAL RESISTANCE AS FOLLOWS:
- UNCONDITIONED SPACES WITHIN BUILDING: R–6
- WITHIN BUILDING ENVELOPE ASSEMBLY: R–8
- OUTSIDE OF BUILDING: R–8
- 1.4 ITEMS NOT INSULATED:
1. FIBROUS–GLASS DUCTS.
2. METAL DUCTS WITH DUCT LINER OR SUFFICIENT THICKNESS TO COMPLY WITH ENERGY CODE AND ASHRAE/IESNA 90.1.
3. FACTORY–INSULATED FLEXIBLE DUCTS.
4. FACTORY–INSULATED PLENUMS AND CASINGS.
5. FLEXIBLE CONNECTORS.
6. VIBRATION–CONTROL DEVICES.
7. FACTORY–INSULATED ACCESS PANELS AND DOORS.
8. DUCTS THAT HAVE INTERNAL ACOUSTICAL LINING.
- 1.5 PRODUCTS
- A. THE FOLLOWING INSULATION MANUFACTURERS WILL BE ACCEPTABLE:
1. JOHNS–MANVILLE
2. OWENS–CORNING
- 1.6 ACOUSTICAL TREATMENT
1. WHERE SHOWN ON THE DRAWINGS, LOW PRESSURE DUCTWORK SHALL BE LINED WITH 1.5" THICK R–6 AS MANUFACTURED BY DUCTMATE, 1–1/2 POUND MINIMUM DENSITY, NEOPRENE COATED, FLEXIBLE FIBERGLASS DUCT LINER, LINING SHALL COMPLY WITH NFPA 90A AND SHALL HAVE A FLAME SPREAD CLASSIFICATION OF NOT MORE THAN 25 AND A SMOKE DEVELOPED RATING NOT MORE THAN 50. DUCT SIZES WHERE LINING IS INDICATED ON PLANS ARE MINIMUM INSIDE CLEAR DIMENSIONS REQUIRED,
- END OF SECTION 230713

SECTION 233113 – METAL DUCTS

- 1.1 CONSTRUCTION
- A. EACH DUCT SYSTEM SHALL BE CONSTRUCTED FOR THE SPECIFIC SMACNA DUCT PRESSURE CLASSIFICATIONS SHOWN ON THE CONTRACT DRAWINGS. WHERE NO PRESSURE CLASSES ARE SPECIFIED BY THE DESIGNER, THE SMACNA 1 INCH WG PRESSURE, SEAL CLASS "A".
- B. ALL DUCTWORK SHALL BE CONSTRUCTED TO SMACNA 1" WG DESIGN AND NOT LESS THAN THE FOLLOWING STANDARDS:
1. CONSTRUCT SO THAT ALL INTERIOR SURFACES ARE SMOOTH. USE SLIP AND DRIVE OR FLANGED AND BOLTED CONSTRUCTION WHEN FABRICATING RECTANGULAR DUCTWORK. USE SPIRAL LOCK SEAM CONSTRUCTION WHEN FABRICATING ROUND SPIRAL DUCTWORK. SHEET METAL SCREWS MAY BE USED ON DUCT HANGERS, TRANSVERSE JOINTS AND OTHER SMACNA APPROVED LOCATIONS IF THE SCREW DOES NOT EXTEND MORE THAN 1/2 INCH INTO THE DUCT.
2. SHEET STEEL SHALL COMPLY WITH ASTM A653 STANDARD SPECIFICATION FOR STEEL SHEET METAL, ZINC COATED (GALVANIZED) OR ZINC IRON ALLOY–COATED (GALVANNEALED) BY HOT DIP PROCESS, AND A924 STANDARD SPECIFICATION FOR GENERAL REQUIREMENT FOR SHEET METALLIC–COATED BY HOT DIP PROCESS. ALL ANGLE IRON USED FOR SUPPORT SHALL BE GALVANIZED. CONNECTIONS TO WALLS OR FLOOR SHALL BE AIR TIGHT WITH ANGLE IRON AND CAULKING. SEAL ALL DUCT SEAMS, TRANSVERSE AND LONGITUDINAL, AIR TIGHT. PROVIDE TURNING VANES ALL 90° ELBOWS.
3. LONGITUDINAL SEAMS FOR RECTANGULAR DUCTWORK SHALL BE PITTSBURGH LOCK SEAMS WITH SEALING COMPOUND, EQUAL TO BENJAMIN FOSTER NO. 30–03 INSERTED INTO SEAM. ALL SEAMS SHALL BE BRUSHED WITH NO. 30–02 AND COVERED WITH APPROVED SEALING TAPE.
4. RECTANGULAR DUCTWORK 18 GAUGE AND HEAVIER, FILLER RODS SHALL BE IN ACCORDANCE WITH SPECIFICATIONS FOR IRON AND STEEL GAS WELDING RODS, ASTM 215; AWG A5.2.
- C. WHERE LATEST EDITION OF SMACNA DOES NOT CLEARLY STATE GAUGES AND/OR STIFFENERS TO BE USED OR, WHERE SMACNA STANDARDS REQUIRE INTERPRETATION, THE FOLLOWING MINIMUM METAL GAUGES AND BRACING SHALL BE USED:
- | USG | MAX. SIDE INCHES | TRANSVERSE JOINTS AND | BRACING |
|-----|------------------|------------------------------|-------------------------------|
| 22 | UP TO 12 | S SLIP, DRIVE SLIP, ONE INCH | POCKET LOCK ON 8 FOOT CENTERS |
| 22 | 13 TO 24 | 1"x1"x1/8" ANGLES ON 4 | FOOT CENTERS |
| 20 | 25 TO 35 | 1"x1"x1/8" ANGLES ON 2 | FOOT CENTERS |

- D. PROVIDE TAPPING IN DUCTS FOR THERMOMETERS WHERE SPECIFIED. IN ADDITION, PROVIDE AN AIRTIGHT PLUGGED TAPPING LOCATED AS FOLLOWS:
1. UPSTREAM OF EACH REHEAT COIL AND VAV BOX.
2. DOWNSTREAM OF EACH REHEAT COIL AND VAV BOX.
- E. FLAT OVAL OR ROUND DUCTWORK MAY BE PROVIDED IN LIEU RECTANGULAR DUCTWORK WITH THE REINFORCEMENT FOR FLAT SIDES SAME AS SPECIFIED FOR THE RECTANGULAR DUCTWORK, AND AS PER SMACNA FLAT OVAL DUCT CONSTRUCTION STANDARDS SHOWN IN FIG. 3–6 AND AS SHOWN IN FIG. 3–1 AND 3–2 FOR ROUND DUCTWORK.
- F. ALL DUCTWORK SHALL BE SEALED TO CLASS "A" AND LEAK TESTED TO MEAT SMACNA CLASS 6 FOR RECTANGULAR AND CLASS 3 FOR ROUND DUCTS.
- 1.2 MATERIALS
- A. SINGLE–WALL RECTANGULAR DUCTS AND FITTINGS.
- B. DOUBLE–WALL RECTANGULAR DUCTS AND FITTINGS.
1. FIBROUS–GLASS OR FLEXIBLE ELASTOMERIC DUCT LINER FOR INTERSTITIAL INSULATION.
2. PERFORATED INNER DUCT.
- C. SINGLE–WALL ROUND AND FLAT–OVAL DUCTS AND FITTINGS.
- D. DOUBLE–WALL ROUND AND FLAT–OVAL DUCTS AND FITTINGS.
1. FIBROUS–GLASS OR FLEXIBLE ELASTOMERIC DUCT LINER FOR INTERSTITIAL INSULATION.
2. PERFORATED INNER DUCT.
- E. SHEET METAL MATERIALS:
1. GALVANIZED SHEET STEEL.
2. PVC–COATED, GALVANIZED SHEET STEEL.
3. CARBON–STEEL SHEETS.
4. STAINLESS–STEEL SHEETS.
5. ALUMINUM SHEETS.
6. FACTORY–APPLIED ANTI–MICROBIAL COATING.
- F. DUCT LINER:
1. FIBROUS GLASS, TYPE I, FLEXIBLE.
- a. WITH ANTI–MICROBIAL EROSION–RESISTANT COATING.
2. FLEXIBLE ELASTOMERIC.
3. NATURAL FIBER.
- G. SEALANT MATERIALS:
1. TWO–PART TAPE SEALING SYSTEM.
2. WATER–BASED JOINT AND SEAM SEALANT.
3. SOLVENT–BASED JOINT AND SEAM SEALANT.
4. FLANGED JOINT SEALANT.
5. FLANGE GASKETS.
6. ROUND DUCT JOINT O–RING SEALS.
- 1.3 SEISMIC–RESTRAINT DEVICES
- A. CHANNEL SUPPORT SYSTEM.
- B. STAINLESS–STEEL RESTRAINT CABLES.
- C. HANGER ROD STIFFENER: STEEL TUBE OR STEEL SLOTTED–SUPPORT–SYSTEM SLEEVE WITH INTERNALLY BOLTED CONNECTIONS OR REINFORCING STEEL ANGLE CLAMPED TO HANGER ROD.
- 1.4 DUCT CLEANING
- A. CLEAN EXISTING DUCT SYSTEM(S) BEFORE TESTING, ADJUSTING, AND BALANCING.
- B. CLEAN THE FOLLOWING ITEMS:
1. AIR OUTLETS AND INLETS.
2. SUPPLY, RETURN, AND EXHAUST FANS.
3. AIR–HANDLING UNITS.
4. COILS AND RELATED COMPONENTS.
5. RETURN–AIR DUCTS, DAMPERS, ACTUATORS, AND TURNING VANES.
6. SUPPLY–AIR DUCTS, DAMPERS, ACTUATORS, AND TURNING VANES.
- 1.5 DUCT SCHEDULE
- A. ALL DUCTS SHALL BE GALVANIZED STEEL EXCEPT AS FOLLOWS:
1. MOIST ENVIRONMENT DUCT MATERIAL: ALUMINUM.
- END OF SECTION 233113

GREASE DUCT SPECIFICATIONS

1. PROVIDE CLEAN OUT AT ALL ELBOWS AND BOTTOM OF RISER AND EVERY 20 FEET HORIZONTAL KITCHEN EXHAUST DUCT.
2. COMMERCIAL KITCHEN GREASE DUCTS SHALL BE DESIGNED FOR THE TYPE OF COOKING APPLIANCE AND HOOD SERVED. GREASE DUCTS SERVING A TYPE I HOOD SHALL BE CONSTRUCTED OF STEEL NOT LESS THAN 0.055 INCH (1.4 MM) (NO. 16 GAUGE) IN THICKNESS OR STAINLESS STEEL NOT LESS THAN 0.044 INCH (1.1 MM) (NO. 18 GAUGE) IN THICKNESS.
3. 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.
4. DUCT TO EXHAUST FAN CONNECTIONS SHALL BE FLANGED, GASKETED AND BOLTED TO THE INLET AND OUTLET OF THE FAN FOR INLINE FANS. APPROVED FLEXIBLE CONNECTIONS MAY BE PROVIDED.
5. 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.
6. PROVIDE SMOKE TEST TO PROOF TIGHTNESS OF THE GREASE DUCT.
7. 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 CHICAGO BUILDING CODE. BOLTS, SCREWS, RIVETS AND OTHER MECHANICAL FASTENERS SHALL NOT PENETRATE DUCT WALLS.
8. A RESIDUE TRAP SHALL BE PROVIDED AT THE BASE OF EACH VERTICAL RISER WITH PROVISION FOR CLEANOUT IN ACCORDANCE WITH NFPA 96.
9. CLEANOUT OPENINGS SHALL BE PROVIDED AT EVERY CHANGE IN DIRECTION, WITHIN 3 FEET OF THE EXHAUST FAN.
10. CLEANOUT OPENINGS SHALL BE EQUIPPED WITH TIGHT–FITTING DOORS CONSTRUCTED OF STEEL HAVING A THICKNESS NOT LESS THAN THAT REQUIRED FOR THE DUCT. DOORS SHALL BE EQUIPPED WITH A SUBSTANTIAL METHOD OF LATCHING, SUFFICIENT TO HOLD THE DOOR TIGHTLY CLOSED. DOOR ASSEMBLIES SHALL HAVE A GASKET OR SEALANT THAT IS NONCOMBUSTIBLE AND LIQUID TIGHT AND SHALL NOT HAVE FASTENERS THAT PENETRATED THE DUCT
11. A GREASE DUCT SERVING THE TYPE–1 HOOD THAT PENETRATED A CEILING, WALL OR FLOOR SHALL BE ENCLOSED FROM THE FIRE POINT OF PENETRATION TO THE OUTLET TERMINAL. DUCT ENCLOSURES SHALL HAVE A FIRE–RESISTANCE RATING NOT LESS THAN THAT OF THE FIRE–RESISTANCE RATED ASSEMBLY PENETRATED BUT NEED NOT EXCEED 2 HOURS.

THERMOSTATIC CONTROL NOTES

C403.4.1 THERMOSTATIC CONTROLS

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

EXCEPTION: INDEPENDENT PERIMETER SYSTEMS THAT ARE DESIGNED TO OFFSET ONLY BUILDING ENVELOPE HEAT LOSSES, GAINS OR BOTH SERVING ONE OR MORE PERIMETER ZONES ALSO SERVED BY AN INTERIOR SYSTEM PROVIDED THAT BOTH OF THE FOLLOWING CONDITIONS ARE MET:

1. THE PERIMETER SYSTEM INCLUDES NOT FEWER THAN ONE THERMOSTATIC CONTROL ZONE FOR EACH BUILDING EXPOSURE HAVING EXTERIOR WALLS FACING ONLY ONE ORIENTATION (WITHIN ±45 DEGREES) (0.8 RAD) FOR MORE THAN 50 CONTIGUOUS FEET (15 240 MM).
2. THE PERIMETER SYSTEM HEATING AND COOLING SUPPLY IS CONTROLLED BY THERMOSTATS LOCATED WITHIN THE ZONES SERVED BY THE SYSTEM.

C403.4.1.2 DEADBAND

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

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 SETPOINT OVERLAP RESTRICTION

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

C403.4.2 OFF–HOUR CONTROLS

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

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 MANUAL SHUTOFF SWITCH LOCATED WITH READY ACCESS.

C403.4.2.1 THERMOSTATIC SETBACK

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

C403.4.2.2 AUTOMATIC SETBACK AND SHUTDOWN

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

C403.4.2.3 AUTOMATIC START AND STOP

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

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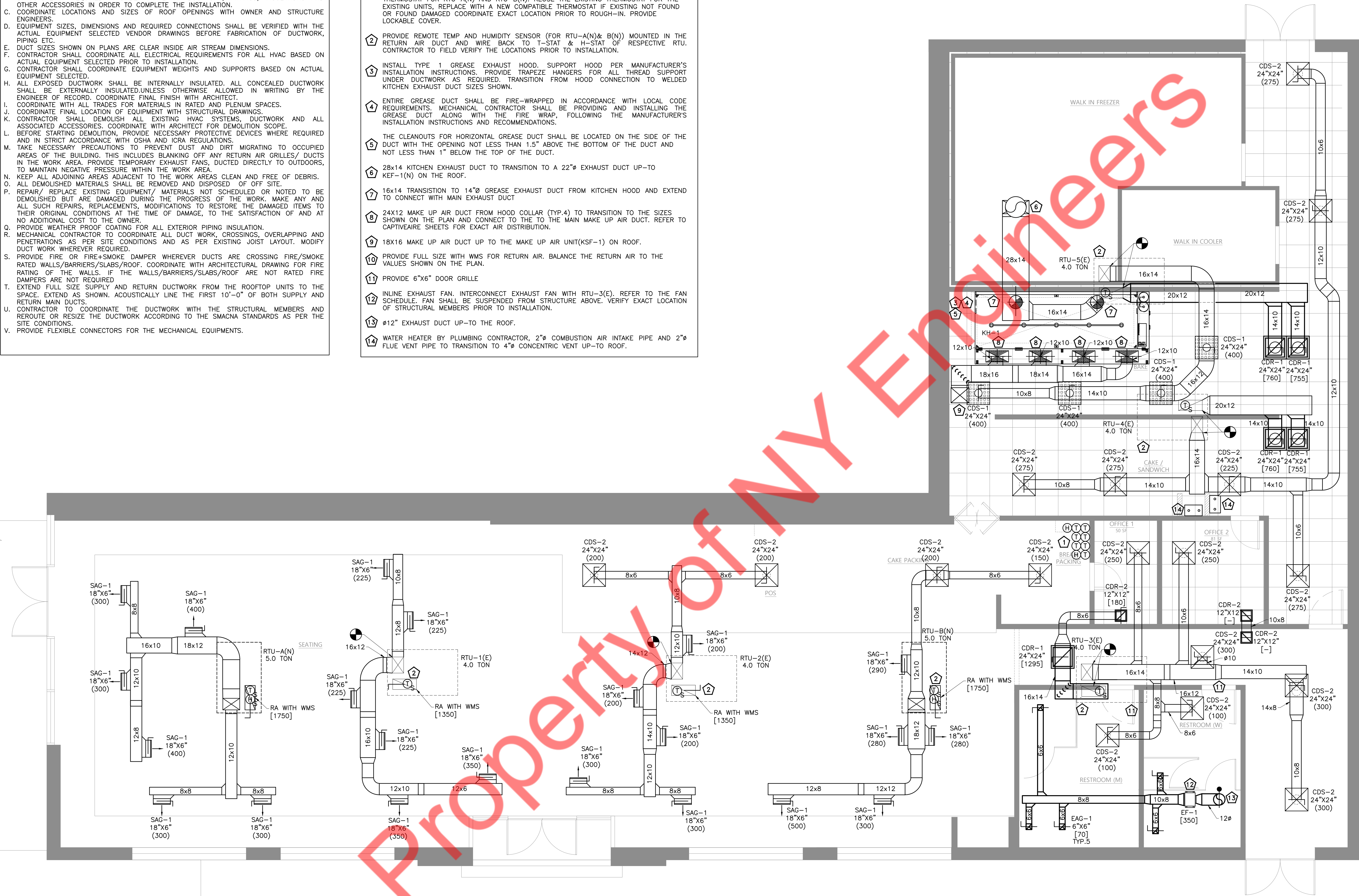
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MECHANICAL FLOOR PLAN GENERAL NOTES

- A. CONTRACTOR SHALL BALANCE EACH AIR DIFFUSER WITH THE CFM SHOWN PLAN.
- B. DUCTWORK SHOWN ON PLAN ARE SCHEMATIC ONLY. CONTRACTOR SHALL COORDINATE WITH OTHER TRADES FOR DUCTWORK ROUTING, OFFSET AND RUN PIPING, DUCTWORK INSIDE THE STRUCTURE IF REQUIRED. PROVIDE ANY EXTRA DUCTWORK, FITTINGS, INSULATIONS AND OTHER ACCESSORIES IN ORDER TO COMPLETE THE INSTALLATION.
- C. COORDINATE LOCATIONS AND SIZES OF ROOF OPENINGS WITH OWNER AND STRUCTURE ENGINEERS.
- D. EQUIPMENT SIZES, DIMENSIONS AND REQUIRED CONNECTIONS SHALL BE VERIFIED WITH THE ACTUAL EQUIPMENT SELECTED VENDOR DRAWINGS BEFORE FABRICATION OF DUCTWORK, PIPING ETC.
- E. DUCT SIZES SHOWN ON PLANS ARE CLEAR INSIDE AIR STREAM DIMENSIONS.
- F. CONTRACTOR SHALL COORDINATE ALL ELECTRICAL REQUIREMENTS FOR ALL HVAC BASED ON ACTUAL EQUIPMENT SELECTED PRIOR TO INSTALLATION.
- G. CONTRACTOR SHALL COORDINATE EQUIPMENT WEIGHTS AND SUPPORTS BASED ON ACTUAL EQUIPMENT SELECTED.
- H. ALL EXPOSED DUCTWORK SHALL BE INTERNALLY INSULATED. ALL CONCEALED DUCTWORK SHALL BE EXTERNALLY INSULATED, UNLESS OTHERWISE ALLOWED IN WRITING BY THE ENGINEER OF RECORD. COORDINATE FINAL FINISH WITH ARCHITECT.
- I. COORDINATE WITH ALL TRADES FOR MATERIALS IN RATED AND PLENUM SPACES.
- J. COORDINATE FINAL LOCATION OF EQUIPMENT WITH STRUCTURAL DRAWINGS.
- K. CONTRACTOR SHALL DEMOLISH ALL EXISTING HVAC SYSTEMS, DUCTWORK AND ALL ASSOCIATED ACCESSORIES. COORDINATE WITH ARCHITECT FOR DEMOLITION SCOPE.
- L. BEFORE STARTING DEMOLITION, PROVIDE NECESSARY PROTECTIVE DEVICES WHERE REQUIRED AND IN STRICT ACCORDANCE WITH OSHA AND ICRA REGULATIONS.
- M. TAKE NECESSARY PRECAUTIONS TO PREVENT DUST AND DIRT MIGRATING TO OCCUPIED AREAS OF THE BUILDING. THIS INCLUDES BLANKING OFF ANY RETURN AIR GRILLES/ DUCTS IN THE WORK AREA. PROVIDE TEMPORARY EXHAUST FANS, DUCTED DIRECTLY TO OUTDOORS, TO MAINTAIN NEGATIVE PRESSURE WITHIN THE WORK AREA.
- N. KEEP ALL ADJOINING AREAS ADJACENT TO THE WORK AREAS CLEAN AND FREE OF DEBRIS.
- O. ALL DEMOLISHED MATERIALS SHALL BE REMOVED AND DISPOSED OF OFF SITE.
- P. REPAIR/ REPLACE EXISTING EQUIPMENT/ MATERIALS NOT SCHEDULED OR NOTED TO BE DEMOLISHED BUT ARE DAMAGED DURING THE PROGRESS OF THE WORK. MAKE ANY AND ALL SUCH REPAIRS, REPLACEMENTS, MODIFICATIONS TO RESTORE THE DAMAGED ITEMS TO THEIR ORIGINAL CONDITIONS AT THE TIME OF DAMAGE, TO THE SATISFACTION OF AND AT NO ADDITIONAL COST TO THE OWNER.
- Q. PROVIDE WEATHER PROOF COATING FOR ALL EXTERIOR PIPING INSULATION.
- R. MECHANICAL CONTRACTOR TO COORDINATE ALL DUCT WORK, CROSSINGS, OVERLAPPING AND PENETRATIONS AS PER SITE CONDITIONS AND AS PER EXISTING JOIST LAYOUT. MODIFY DUCT WORK WHEREVER REQUIRED.
- S. PROVIDE FIRE OR FIRE+SMOKE DAMPER WHEREVER DUCTS ARE CROSSING FIRE/SMOKE RATED WALLS/BARRIERS/SLABS/ROOF. COORDINATE WITH ARCHITECTURAL DRAWING FOR FIRE RATING OF THE WALLS. IF THE WALLS/BARRIERS/SLABS/ROOF ARE NOT RATED FIRE DAMPERS ARE NOT REQUIRED.
- T. EXTEND FULL SIZE SUPPLY AND RETURN DUCTWORK FROM THE ROOFTOP UNITS TO THE SPACE. EXTEND AS SHOWN. ACOUSTICALLY LINE THE FIRST 10'-0" OF BOTH SUPPLY AND RETURN MAIN DUCTS.
- U. CONTRACTOR TO COORDINATE THE DUCTWORK WITH THE STRUCTURAL MEMBERS AND REROUTE OR RESIZE THE DUCTWORK ACCORDING TO THE SMACNA STANDARDS AS PER THE SITE CONDITIONS.
- V. PROVIDE FLEXIBLE CONNECTORS FOR THE MECHANICAL EQUIPMENTS.

FLOOR PLAN KEYNOTES

1. LOCATION OF DIGITAL THERMOSTAT CONTROL FOR RTU-1(E), 2(E), 3(E), 4(E), 5(E), A(N) AND B(N) & HUMIDISTAT FOR NEW RTUs. INSTALL AND WIRE NEW 7-DAY PROGRAMMABLE THERMOSTAT FOR RTU-A(N) AND RTU-B(N). REUSE THE EXISTING THERMOSTAT FOR THE EXISTING UNITS, REPLACE WITH A NEW COMPATIBLE THERMOSTAT IF EXISTING NOT FOUND OR FOUND DAMAGED COORDINATE EXACT LOCATION PRIOR TO ROUGH-IN. PROVIDE LOCKABLE COVER.
2. PROVIDE REMOTE TEMP AND HUMIDITY SENSOR (FOR RTU-A(N)& B(N)) MOUNTED IN THE RETURN AIR DUCT AND WIRE BACK TO T-STAT & H-STAT OF RESPECTIVE RTU. CONTRACTOR TO FIELD VERIFY THE LOCATIONS PRIOR TO INSTALLATION.
3. 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.
4. ENTIRE GREASE DUCT SHALL BE FIRE-WRAPPED IN ACCORDANCE WITH LOCAL CODE REQUIREMENTS. MECHANICAL CONTRACTOR SHALL BE PROVIDING AND INSTALLING THE GREASE DUCT ALONG WITH THE FIRE WRAP, FOLLOWING THE MANUFACTURER'S INSTALLATION INSTRUCTIONS AND RECOMMENDATIONS.
5. 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.
6. 28x14 KITCHEN EXHAUST DUCT TO TRANSITION TO A 22"Ø EXHAUST DUCT UP-TO KEF-1(N) ON THE ROOF.
7. 16x14 TRANSITION TO 14"Ø GREASE EXHAUST DUCT FROM KITCHEN HOOD AND EXTEND TO CONNECT WITH MAIN EXHAUST DUCT
8. 24X12 MAKE UP AIR DUCT FROM HOOD COLLAR (TYP.4) TO TRANSITION TO THE SIZES SHOWN ON THE PLAN AND CONNECT TO THE TO THE MAIN MAKE UP AIR DUCT. REFER TO CAPTIVEAIRE SHEETS FOR EXACT AIR DISTRIBUTION.
9. 18X16 MAKE UP AIR DUCT UP TO THE MAKE UP AIR UNIT(KSF-1) ON ROOF.
10. PROVIDE FULL SIZE WITH WMS FOR RETURN AIR. BALANCE THE RETURN AIR TO THE VALUES SHOWN ON THE PLAN.
11. PROVIDE 6"x6" DOOR GRILLE
12. INLINE EXHAUST FAN, INTERCONNECT EXHAUST FAN WITH RTU-3(E). REFER TO THE FAN SCHEDULE. FAN SHALL BE SUSPENDED FROM STRUCTURE ABOVE. VERIFY EXACT LOCATION OF STRUCTURAL MEMBERS PRIOR TO INSTALLATION.
13. Ø12" EXHAUST DUCT UP-TO THE ROOF.
14. WATER HEATER BY PLUMBING CONTRACTOR, 2"Ø COMBUSTION AIR INTAKE PIPE AND 2"Ø FLUE VENT PIPE TO TRANSITION TO 4"Ø CONCENTRIC VENT UP-TO ROOF.



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FLOOR PLAN

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MECHANICAL FLOOR PLAN

SCALE
1/4" = 1'-0"

1

A. COORDINATE LOCATIONS AND SIZES OF ROOF OPENINGS WITH OWNER AND STRUCTURE ENGINEERS.

B. EQUIPMENT SIZES, DIMENSIONS AND REQUIRED CONNECTIONS SHALL BE VERIFIED WITH THE SUPPLIER. EQUIPMENT SELECTED VENDOR DRAWINGS BEFORE FABRICATION OF DUCTWORK, PIPING AND ELECTRICAL.

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

D. CONTRACTOR SHALL COORDINATE EQUIPMENT WEIGHTS AND SUPPORTS BASED ON ACTUAL EQUIPMENT SELECTED PRIOR TO INSTALLATION.

E. KEEP ALL ADJOINING AREAS ADJACENT TO THE WORK AREAS CLEAN AND FREE OF DEBRIS.

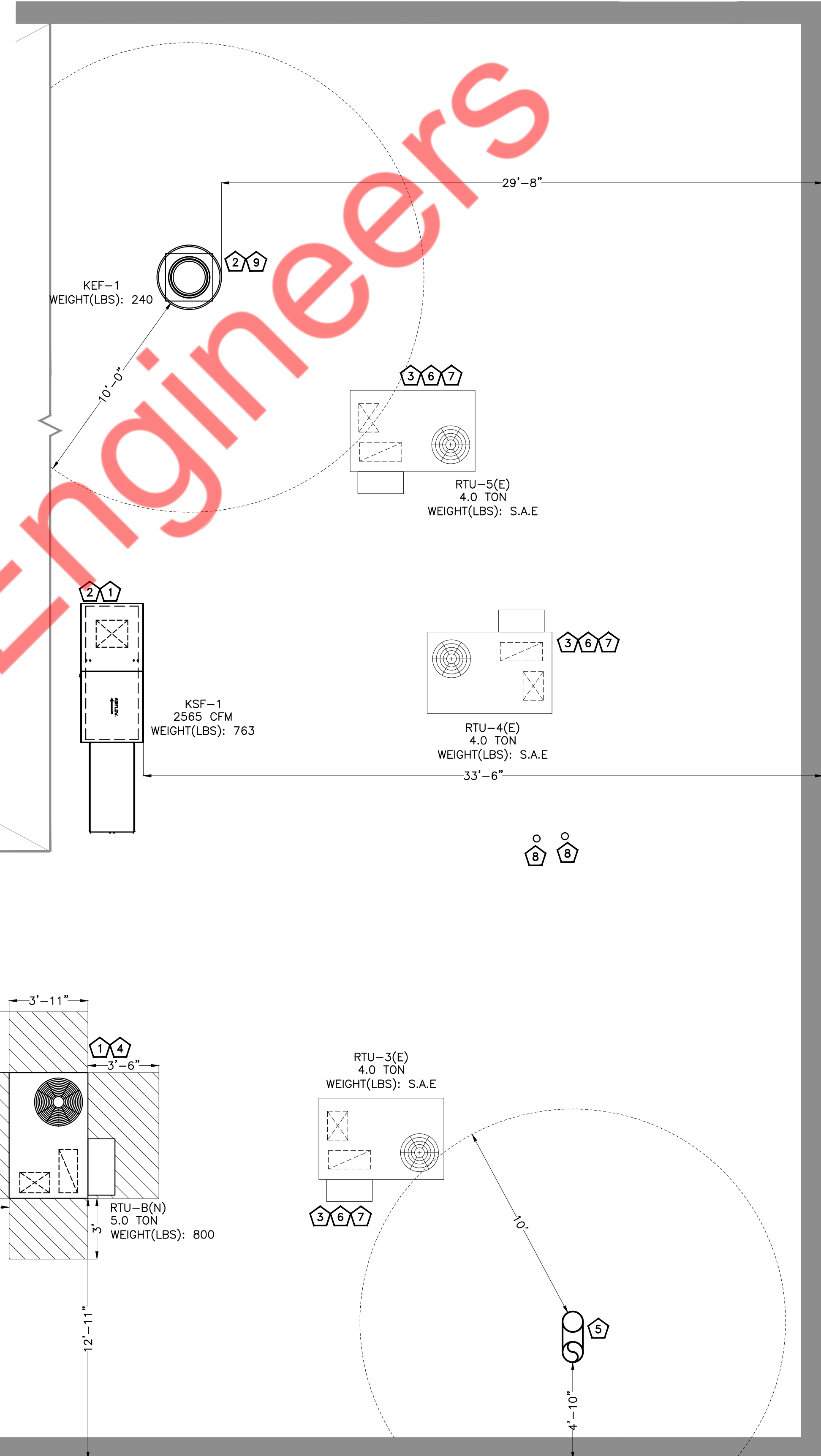
F. G.C. TO VERIFY THE CAPACITY AND CONDITION OF THE EXISTING HVAC UNIT BEFORE TO STARTING ANY NEW WORK.

G. CONTRACTOR SHALL COORDINATE WITH LANDLORD AND ROOFING CONTRACTOR FOR ANY ROOF PENETRATIONS, MODIFICATIONS AND REPAIRS.

H. ALL OUTSIDE AIR INTAKE ON THE ROOF SHALL BE MINIMUM 10 FEET AWAY FROM ANY EXHAUST SOURCE.

GUARDS SHALL BE PROVIDED WHERE VARIOUS COMPONENTS THAT REQUIRE SERVICE AND REPAIR ARE LOCATED WITHIN 10 FEET OF A ROOF EDGE OR OPEN SIDE OR OPEN SIDE OF A WALKING SURFACE AND SUCH EDGE OR OPEN SIDE IS LOCATED MORE THAN 30 INCHES ABOVE THE FLOOR, ROOF, OR GRADE BELOW. THE GUARD SHALL EXTEND NOT LESS THAN 30 INCHES BEYOND EACH END OF COMPONENTS THAT REQUIRE SERVICE. THE TOP OF THE GUARD SHALL BE LOCATED NOT LESS THAN 42 INCHES ABOVE THE FLOOR OR GRADE. GUARDS SHALL BE CONSTRUCTED TO BE CONSTRUCTION BASED SO AS TO PREVENT THE PASSAGE OF A 21-INCH-DIAMETER SPHERE AND SHALL COMPLY WITH THE LOADING REQUIREMENTS FOR GUARDS SPECIFIED IN THE INTERNATIONAL BUILDING CODE.

- 1 NEW ROOFTOP UNIT IS PROVIDED. PROVIDE FLEXIBLE CONNECTORS ON SUPPLY AND RETURN DUCT CONNECTIONS. SET OUTSIDE AIR AS INDICATED ON ROOFTOP UNIT SCHEDULES. MECHANICAL CONTRACTOR SHALL SCRIBE INTO UNIT POSITION OF OUTSIDE AIR DAMPER AND LABEL OUTSIDE AIR VOLUME AND PERCENT OF OUTSIDE AIR. TRANSITION AND CONNECT SUPPLY AND RETURN DUCTWORK FROM BELOW. PROVIDE FLEXIBLE CONNECTORS. COORDINATE ROUTING THROUGH STRUCTURAL TRUSSES AND OFFSET AS REQUIRED.
- 2 COORDINATE/SUBMIT FINAL LOAD OF MECHANICAL UNITS, SUPPORT DETAILS WITH STRUCTURAL DRAWINGS. TAKE STRUCTURAL ENGINEER'S APPROVAL PRIOR TO CONSTRUCTION.
- 3 EXISTING ROOF TOP UNITS TO REMAIN AND TO BE REUSED. CONTRACTOR TO FIELD VERIFY EXACT LOCATION. SET OUTSIDE AIR AS INDICATED ON ROOFTOP UNIT SCHEDULES. MECHANICAL CONTRACTOR SHALL SCRIBE INTO UNIT POSITION OF OUTSIDE AIR DAMPER AND LABEL OUTSIDE AIR VOLUME AND PERCENT OF OUTSIDE AIR. TRANSITION AND CONNECT SUPPLY AND RETURN DUCTWORK FROM BELOW.
- 4 CONTRACTOR TO RUN THE 1" CONDENSATE DRAIN AT A SLOPE OF 1/8" PER LINEAR FOOT AND TERMINATE THE CONDENSATE DRAIN LINE INTO THE BUILDING'S EXISTING STORM DRAINAGE SYSTEM OR OTHER APPROVED PLACE OF DISPOSAL. THE CONDENSATE DRAIN SHALL BE MADE OF PVC/CPVC OR ANY OTHER APPROVED MATERIAL AS PER THE LOCAL CODE
- 5 12" EXHAUST DUCT TO BE TERMINATED WITH GOOSENECK, WEATHER SKIRT, AND BIRD SCREEN. MAINTAIN A MINIMUM OF 10'-0" FROM ALL OUTSIDE AIR INTAKES.
- 6 CONDENSATE DRAIN LINES FROM THE EXISTING RTUs TO REMAIN AS IT IS. IF THE PIPING IS DAMAGED OR BLOCKED REPAIR OR REPLACE AS/IF DAMAGED. USE PVC/CPVC OR ANY OTHER CODE APPROVED MATERIAL.
- 7 CONTRACTOR TO VERIFY IN FIELD THE CAPACITIES OF THE EXISTING RTU SERVING THE SPACE IS AS PER THE SCHEDULE. IF NOT REPORT BACK TO ENGINEER PRIOR STARTING THE CONSTRUCTION.
- 8 4"Ø CONCENTRIC VENT KIT FROM WATER HEATER BELOW, TERMINATE AS PER MANUFACTURER'S RECOMMENDATIONS.
- 9 CONTRACTOR TO PROVIDE ALL THE NECESSARY ACCESSORIES AND INSTALL THE EXHAUST FAN AS PER MANUFACTURER'S RECOMMENDATION.



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MECHANICAL ROOF PLAN

SCALE
1/4" = 1'-0"

1

M5

ROOF TOP UNIT SCHEDULE																		
UNIT ID	MANUFACTURER	MODEL	NOMINAL TONS	SUPPLY FAN DATA			GAS HEAT		COOLING DATA		ELECTRICAL DATA				SEER2	THERMAL EFFICIENCY (%)	OPERATING WEIGHT (LBS)	REMARKS
				TOTAL CFM	OUTSIDE AIR CFM	ESP (IN. W.G.)	INPUT MBH	OUTPUT MBH	TOTAL MBH	SENSIBLE MBH	VOLTS	PHASE/HZ	MCA(A)	MOC(P(A)				
RTU-1(E) TO 2(E)	DAIKIN (V.I.F)	DCG0480903 (V.I.F)	4.0	1600	250	S.A.E	92 (V.I.F)	74 (V.I.F)	45.5 (V.I.F)	35.5 (V.I.F)	208/230 (V.I.F)	3/60 (V.I.F)	21 (V.I.F)	30 (V.I.F)	S.A.E	S.A.E	S.A.E	EXISTING
RTU-3(E)	DAIKIN (V.I.F)	DCG0480903 (V.I.F)	4.0	1600	125	S.A.E	92 (V.I.F)	74 (V.I.F)	45.5 (V.I.F)	35.5 (V.I.F)	208/230 (V.I.F)	3/60 (V.I.F)	21 (V.I.F)	30 (V.I.F)	S.A.E	S.A.E	S.A.E	EXISTING
RTU-4(E) TO 5(E)	DAIKIN (V.I.F)	DCG0480903 (V.I.F)	4.0	1600	85	S.A.E	92 (V.I.F)	74 (V.I.F)	45.5 (V.I.F)	35.5 (V.I.F)	208/230 (V.I.F)	3/60 (V.I.F)	21 (V.I.F)	30 (V.I.F)	S.A.E	S.A.E	S.A.E	EXISTING
RTU-A(N)	CARRIER (OR EQUIVALENT)	48FEDB06*2*5 (OR EQUIVALENT)	5.0	2000	250	1.0	67.0	54.0	62.0	46.2	208/230	3/60	31	45	13.4	81	800	NEW
RTU-B(N)	CARRIER (OR EQUIVALENT)	48FEDB06*2*5 (OR EQUIVALENT)	5.0	2000	250	1.0	67.0	54.0	62.0	46.2	208/230	3/60	31	45	13.4	81	800	NEW
NOTES & INCLUDED SYSTEM OPTIONS FOR NEW RTU:																		
1. PROVIDE UNIT WITH DRY BULB ECONOMIZER WITH BAROMETRIC RELIEF AND FDD.																		
2. PROVIDE 2" MERV-8 FILTERS.																		
3. PROVIDE HINGED PANELS FOR FILTER ACCESS, FAN MOTOR ACCESS,COMPRESSOR ACCESS AND CONTROL COMPARTMENT ACCESS.																		
4. CONTRACTOR TO PROVIDE 7-DAY PROGRAMMABLE THERMOSTAT (WI-FI ENABLED) WITH ALL THE CONTROL WIRING FOR RTU.																		
5. PROVIDE HAIL GUARD.																		
6. PROVIDE FUSED DISCONNECT SWITCH AND ALL POWER WIRING CONNECTIONS.																		
7. PROVIDE WITH TUBE & FIN COIL SYSTEM.																		
8. PROVIDE WITH DRAIN PAN OVERFLOW SWITCH AND CONDENSATE PIPING																		
9. PROVIDE WITH STANDARD CAP AND PHASE MONITOR SYSTEM.																		
10.UNIT TO BE PROVIDED WITH OA MOTORIZED DAMPER..																		
11.PROVIDE MEDIUM STATIC DRIVE.																		
12.PROVIDE A NEW 14" HIGH CURB AS PER SITE REQUIREMENTS.																		
13. PROVIDE WITH HOT GAS REHEAT/ HUMIDIMIZER.																		
14. PROVIDE WITH GFCI FLD WIRED.																		
NOTES FOR EXISTING RTU:-																		
1. EXISTING RTUS TO REMAIN AND TO BE REUSED WITH ALL ACCESSORIES. REPLACE FILTERS IF REQUIRED.																		
2. S.A.E : SAME AS EXISTING. VIF : VERIFY IN FIELD.																		
3. CONTRACTOR TO FIELD VERIFY EXACT LOCATION AND CONFIGUARTION OF UNITS ON SITE.																		
4. IF REQUIRED, PROVIDE NEW THERMOSTAT & TEMPERATURE SENSOR COMPATIBLE WITH THE EXISTING RTU.																		
5. CONTRACTOR TO BALANCE OUTSIDE AIR & RETURN AIR DAMPER ON RTUS TO MATCH VALUES MENTIONED IN ABOVE TABLE.																		
6. CONTRACTOR TO VERIFY IN FIELD THE CONDITIONS OF THE EXISTING RTU SERVING THE SPACE. IF REQUIRED REFURBISH THE UNITS TO OPERATE PROPERLY.																		
7. CONTRACTOR TO FIELD VERIFY THE CORRECTLY IDENTIFY THE LABEL OF THE EXISTING UNITS SERVING THE SPACE AND PROVIDE THE REQUIRED ELECTRICAL REQUIREMENT.																		

FAN SCHEDULE											
UNIT ID	MANUFACTURER	CFM	ESP(IN W.G.)	RPM	HP	BHP	VOLTS/PH	FLA(A)	WEIGHT (LBS)	MODEL	NOTES
KEF-1	ECON-AIR	3205	1.30	1290	2.0	1.54	208/3	8.3	240	EADU180H	1,2,3,5
EF-1	GREENHECK	350	0.5	1070	-	-	115/1	1.42	30	CSP-A390	1,2,3,4,6
NOTES: 1) PROVIDE THERMAL OVERLOAD PROTECTION, BACKDRAFT DAMPER, AMCA SEAL & UL CERTIFIED. 2) PROVIDE FACTORY MOUNTED DISCONNECT SWITCH. 3) PROVIDE ALL NECESSARY ACCESSORIES AS PER MANUFACTURER'S RECOMMENDATIONS. 4) INTERLOCK WITH RTU-3(E). 5) INTERLOCK WITH KSF-1. 6) PROVIDE MULTI SPEED CONTROLLER.											

HOOD SCHEDULE											
UNIT ID	MANUFACTURER	LENGTH (FT. INCH.)	TYPE	MODEL	SERVICE	COOKING LOAD /DUTY RATING	EXHAUST AIR (CFM)	CONSTRUCTION	MAX COOKING TEMP	WEIGHT (LBS)	
KH-1	ECONAIRE	14'-3"	I	6024-EX-2-PSP-F	KITCHEN	HEAVY	3205	430 SS WHERE EXPOSED	600 DEG	1152	
NOTES: 1. REFER TO CAPTIVEAIRE DRAWINGS FOR SPECIFICATIONS AND MORE DETAILS. SCHEDULES SHOWN FOR REFERENCE ONLY.											

MAKEUP AIR UNIT SCHEDULE																		
TAG	UNIT	MANUFACTURER	STATUS	MODEL	AREA SERVED	HP	BHP	SUPPLY FAN		HEATING CAPACITY			ELECTRICAL					OPERATING WEIGHT (LBS.)
								SUPPLY CFM	ESP (IN. OF W.G.)	TOTAL IN	TOTAL OUT	BURNER EFF	VOLTS	PHASE	MCA (A)	MOC(P (A)	FLA	
										MBH	MBH	%						
KSF-1	GAS HEAT	ECONAIRE	NEW	EA2-D.250-20D	SEE PLAN	1.5	0.965	2565	0.75	148.8	136.9	92	208	3	8.3	15	6.6	763
NOTES: 1. DIRECT GAS FIRED HEATED MAKE UP AIR UNIT WITH 20" MIXED FLOW DIRECT DRIVE FAN. 2. INTAKE HOOD WITH EZ FILTERS. 3. DOWN DISCHARGE - AIR FLOW RIGHT -> LEFT. 4. DOWN DISCHARGE CONSTRUCTION FOR SIZE 2 DIRECT DRIVE AHUS. 5. GAS PRESSURE GAUGE, 0-35", 2.5" DIAMETER, 1/4" THREAD SIZE. 6. GAS PRESSURE GAUGE, -5 TO +15 INCHES WC, 2.5" DIAMETER, 1/4" THREAD SIZE. 7. BUTTERFLY MOD VALVE OPTION FOR MOD SIZE 2 (1" MOD VALVE). 8. MOTORIZED BACK DRAFT DAMPER 22.75" X 24" FOR SIZE 2 STANDARD & MODULAR HEATER UNITS W/EXTENDED SHAFT, STANDARD GALVANIZED CONSTRUCTION, 3/4" REAR FLANGE, LOW LEAKAGE, LF120S ACTUATOR INCLUDED. 9. MIAMI DADE IMPACT AND WIND LOAD CERTIFICATION +30 / -130 PSF - MIAMI DADE COUNTY PRODUCT CONTROL APPROVED. FLORIDA BUILDING CODE APPROVAL. ROOF MOUNT EXHAUST CURBS UP TO 20" HIGH MUST BE 18 GAUGE ALUMINIZED. 10. SEPARATE 120VAC WIRING PACKAGE FOR MAKE-UP AIR UNITS. OPTION MUST BE SELECTED WHEN MOUNTING VFD IN PREWIRE PANEL OR WITH DCV PACKAGE. PROVIDES SEPARATE 120VAC INPUT TO SUPPLY FAN. THIS 120V SIGNAL MUST BE RUN BY ELECTRICIAN FROM DCV TO MUA SWITCH. 11. HINGED DOUBLE WALL INSULATED DOOR ASSEMBLY (BURNER/BLOWER SECTION). 12. EXTERIOR GAS CONNECTION PROVIDED BY FACTORY WITH QUICK SEAL AND ANTI-ROTATION BRACKET.																		

AIR BALANCE					
UNIT	AREA SERVED	SUPPLY AIR (CFM)	OUTSIDE AIR (CFM)	RETURN AIR (CFM)	EXHAUST AIR(CFM)
RTU-1(E)	SEE PLAN	1600	250	1350	0
RTU-2(E)	SEE PLAN	1600	250	1350	0
RTU-3(E)	SEE PLAN	1600	125	1475	0
RTU-4(E)	SEE PLAN	1600	85	1515	0
RTU-5(E)	SEE PLAN	1600	85	1515	0
RTU-A(N)	SEE PLAN	2000	250	1750	0
RTU-B(N)	SEE PLAN	2000	250	1750	0
KSF-1	SEE PLAN	2565	2565	0	0
KEF-1	SEE PLAN	0	0	0	3205
EF-1	SEE PLAN	0	0	0	350
TOTAL		14565	3860	10705	3555
BUILDING PRESSURE:		305		POSITIVE	
NOTES:					
1. CONTRACTOR TO ADJUST MOTORIZED DAMPER ON FRESH AIR TAP TO PROVIDE OUTSIDE AIR AS MENTIONED IN ABOVE TABLE.					

VENTILATION CALCULATION											
ROOM TAG	AREA	OCCUPANCY/10 00SQ.FT. AS PER VMC 2021	OCCUPANY AS PER CODE	FINAL OCCUPANCY	CFM/SQ.FT	CFM/PERSON	CALCULATED OA CFM	PROVIDED OA CFM	EXHAUST CFM/SQ.FT./F IXTURE	EXHAUST CFM	PROVIDED EXHAUST CFM
SEATING AREA	2033	70	143	80	0.18	7.5	966	1295	0	0	0
CAKE + BREAD PACKING	375	15	6	5	0.12	7.5	83		0	0	0
OFFICE 1	50	5	1	1	0.06	5	8		0	0	0
WOMEN RR	117	0	0	0	0	0	0		70	140	140
MEN RR	145	0	0	0	0	0	0		0	210	210
HALLWAY	270	0	0	0	0.06	0	17		0	0	0
KITCHEN	925	20	19	6	0.12	7.5	156		0.7	648	3205
OFFICE 2	80	5	1	1	0.06	5	10		0	0	0
TOTAL	3995		170	93			1240	1295			3555

SCHEDULE OF GRILLES/DIFFUSER				MAKE: TITUS	
TAG	TYPE	CFM RANGE	DIMENSION(IN)	MODEL NO.	ACCESSORIES
CDS-1	SUPPLY (PERFORATED)	0-500	24X24	PAS	VOLUME DAMPER
CDS-2	SUPPLY	0-650	24X24	TMS	VOLUME DAMPER
CDR-1	RETURN	750-1500	24X24	35ORL	VOLUME DAMPER
CDR-2	RETURN	0-750	12X12	35ORL	VOLUME DAMPER
SAG-1	SUPPLY	0-650	AS SHOWN	300 FL	VOLUME DAMPER
RAG-1	RETURN	750-1500	AS SHOWN	56 FL	VOLUME DAMPER
EAG-1	EXHAUST	0-200	6X6	56 FL	VOLUME DAMPER
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.					
3. MAX NC LEVEL 30 OR LESS.					
NECK SIZES FOR ROUND DIFFUSERS:					
6"-100 CFM					
8"-101-200 CFM					
10"-201-400 CFM					
12"-401-700 CFM					
14"-701-1000 CFM					
16"-1001-1400 CFM					

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REVISIONS :

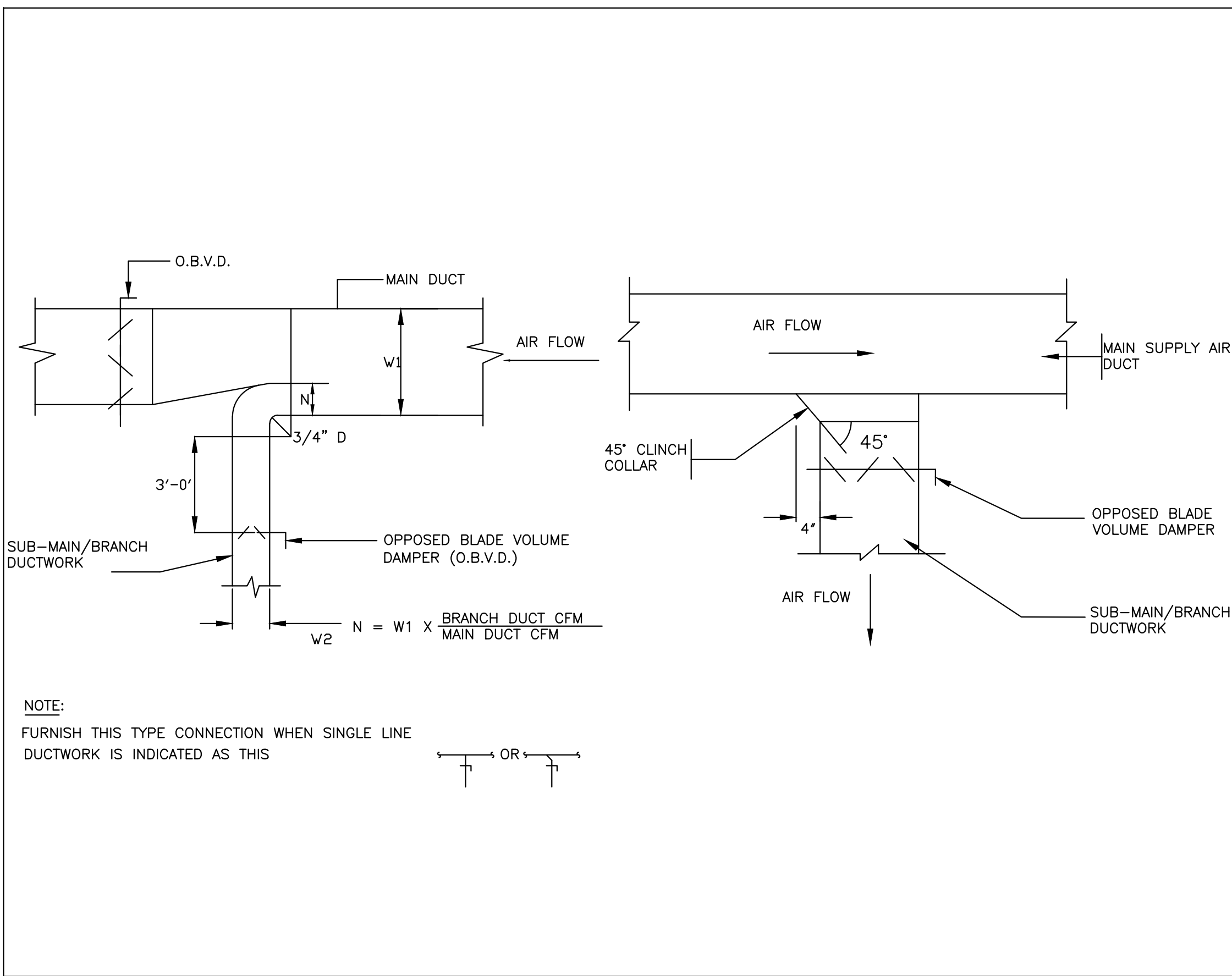
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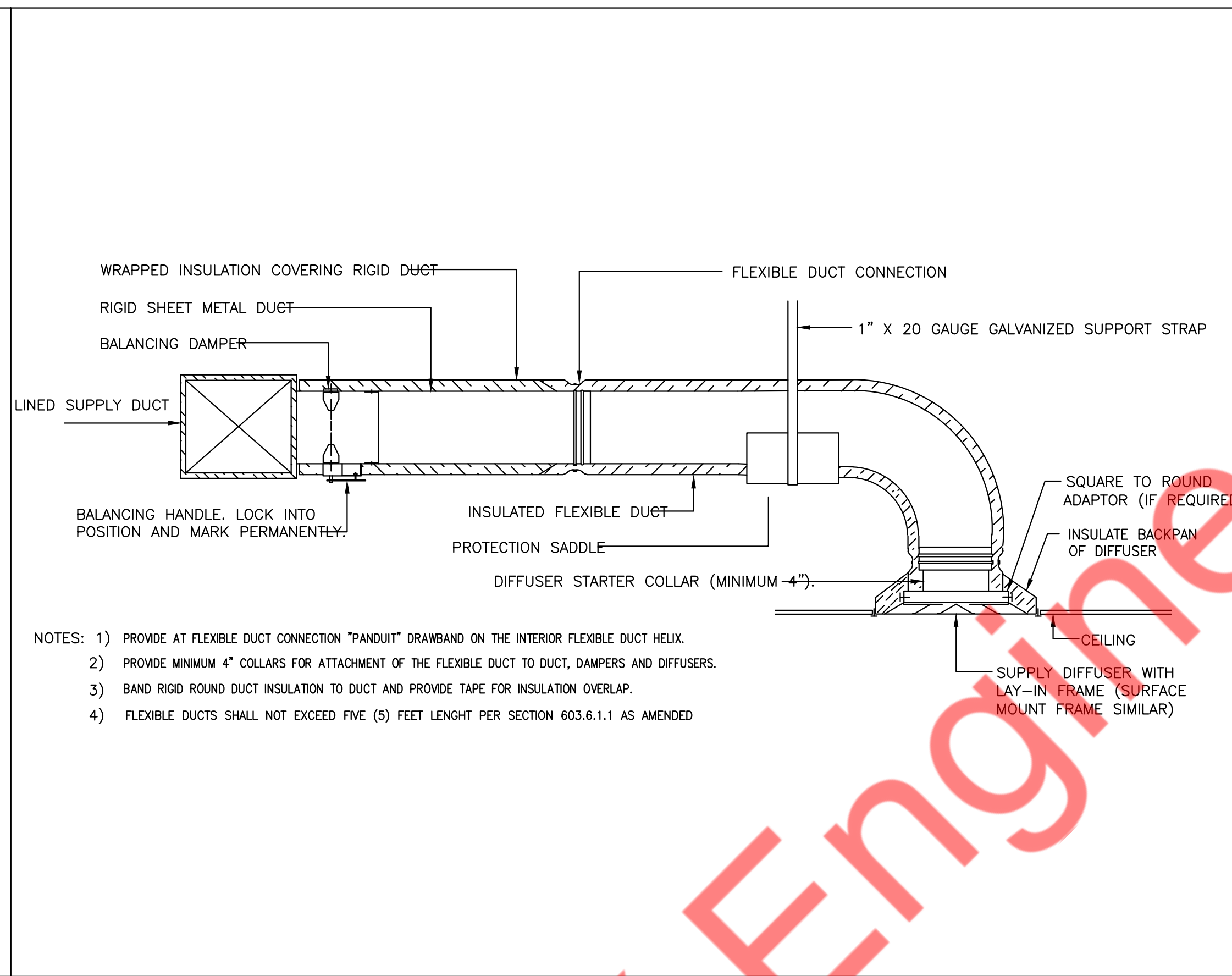
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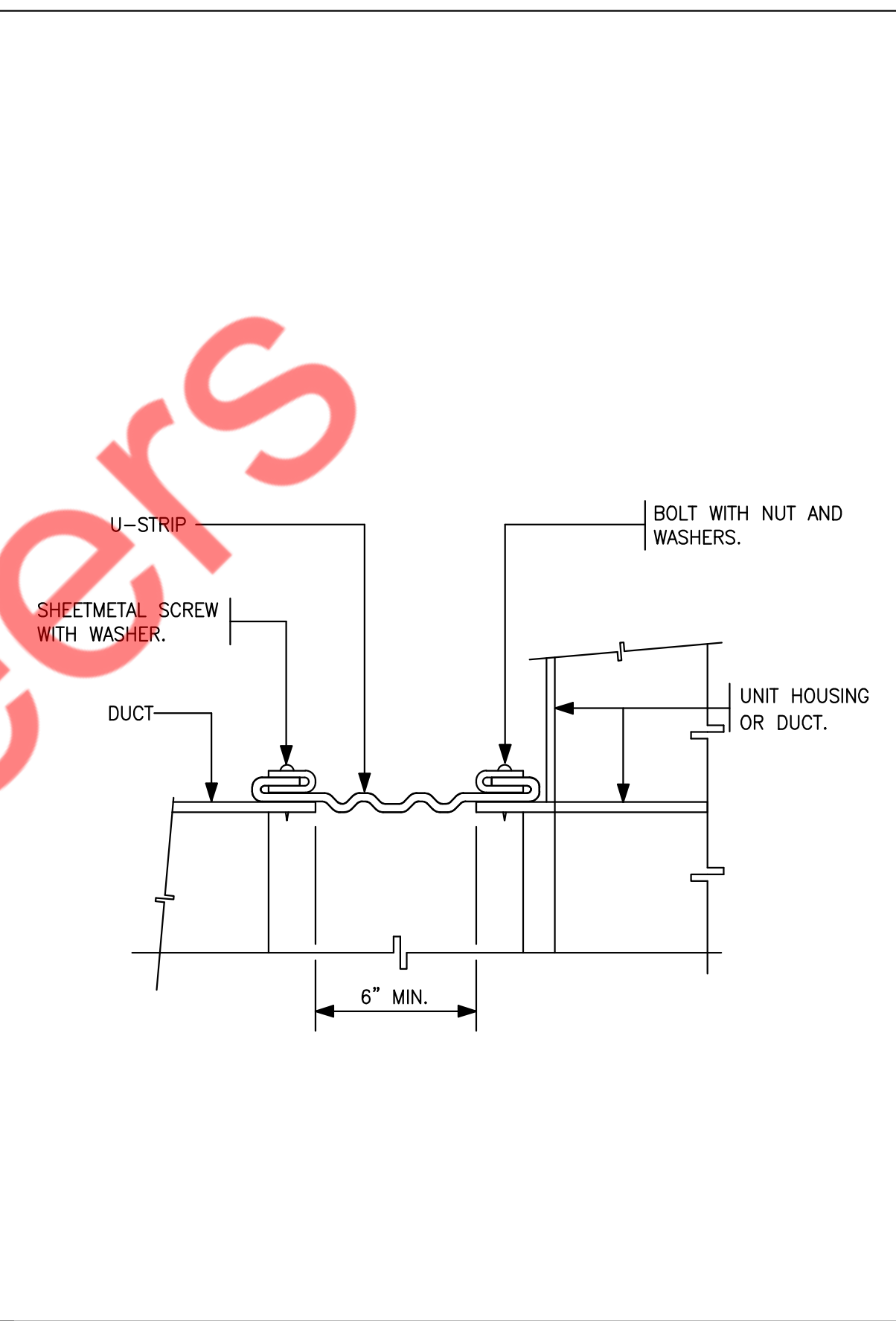
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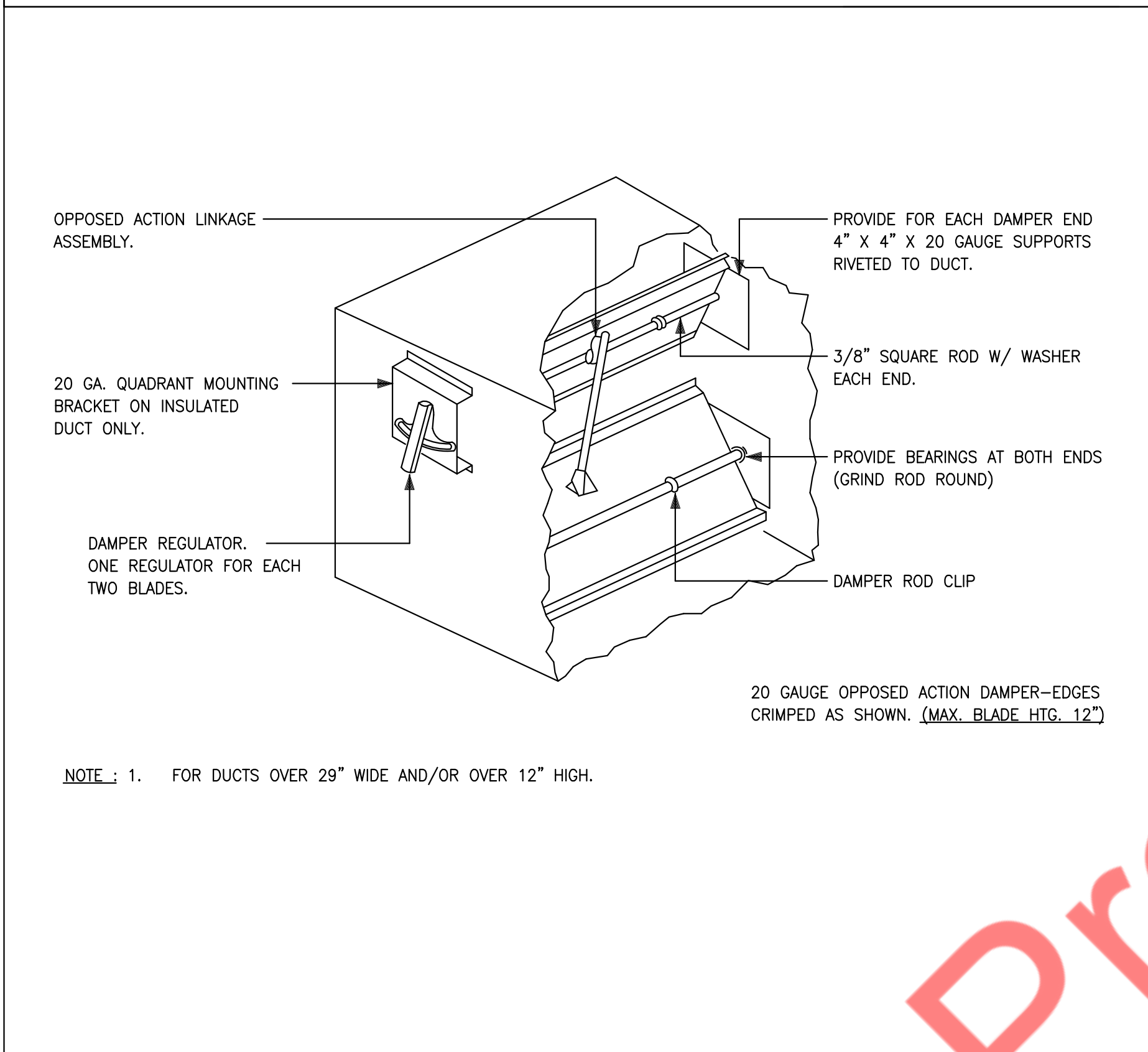
1 SUPPLY AIR DUCTWORK SUB-MAIN/BRANCH DUCT CONNECTION
M6 N.T.S



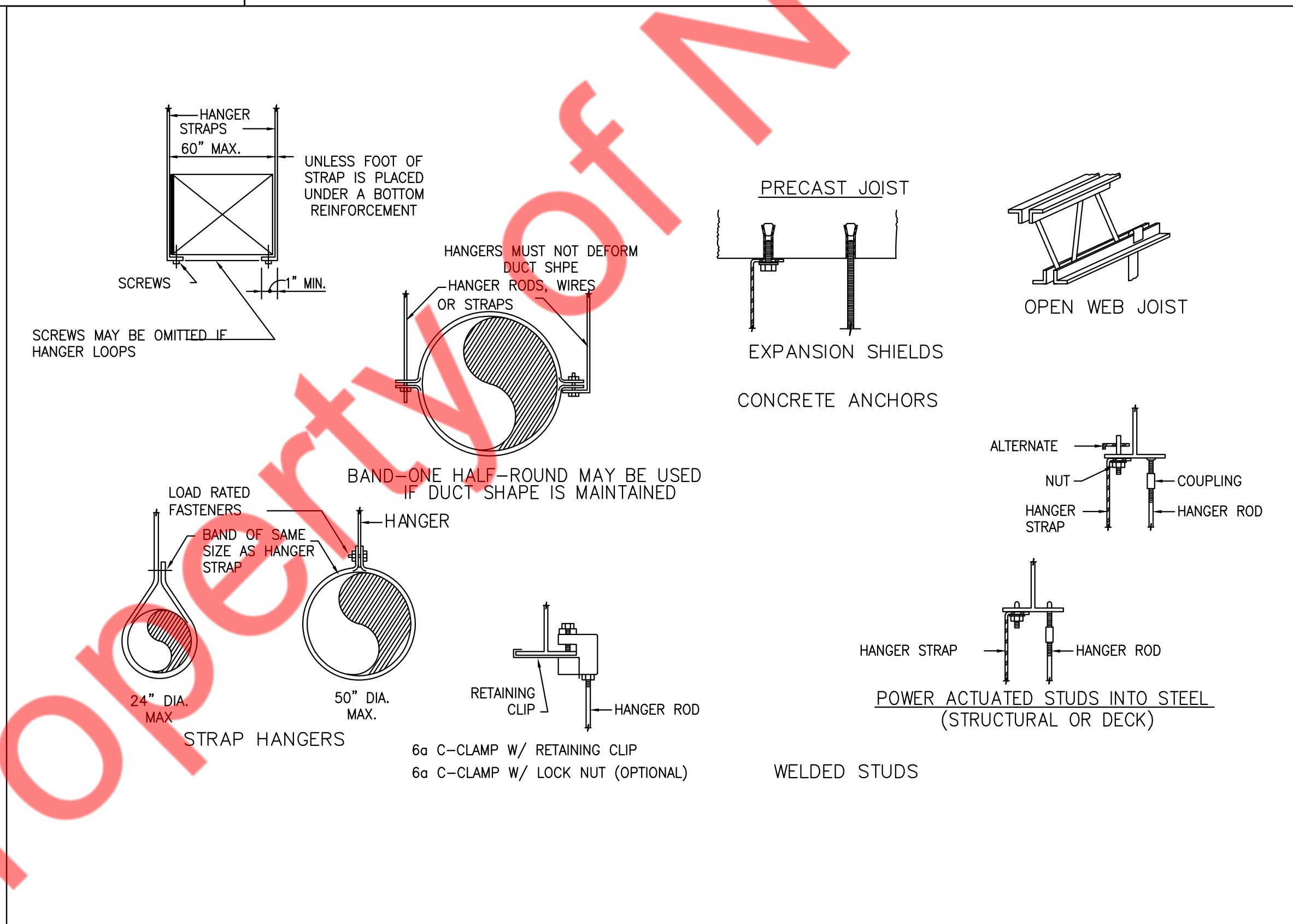
2 DIFFUSER CONNECTION DETAIL-FLEX DUCT & DUCT MOUNTED DIFFUSER DETAIL
M6 N.T.S



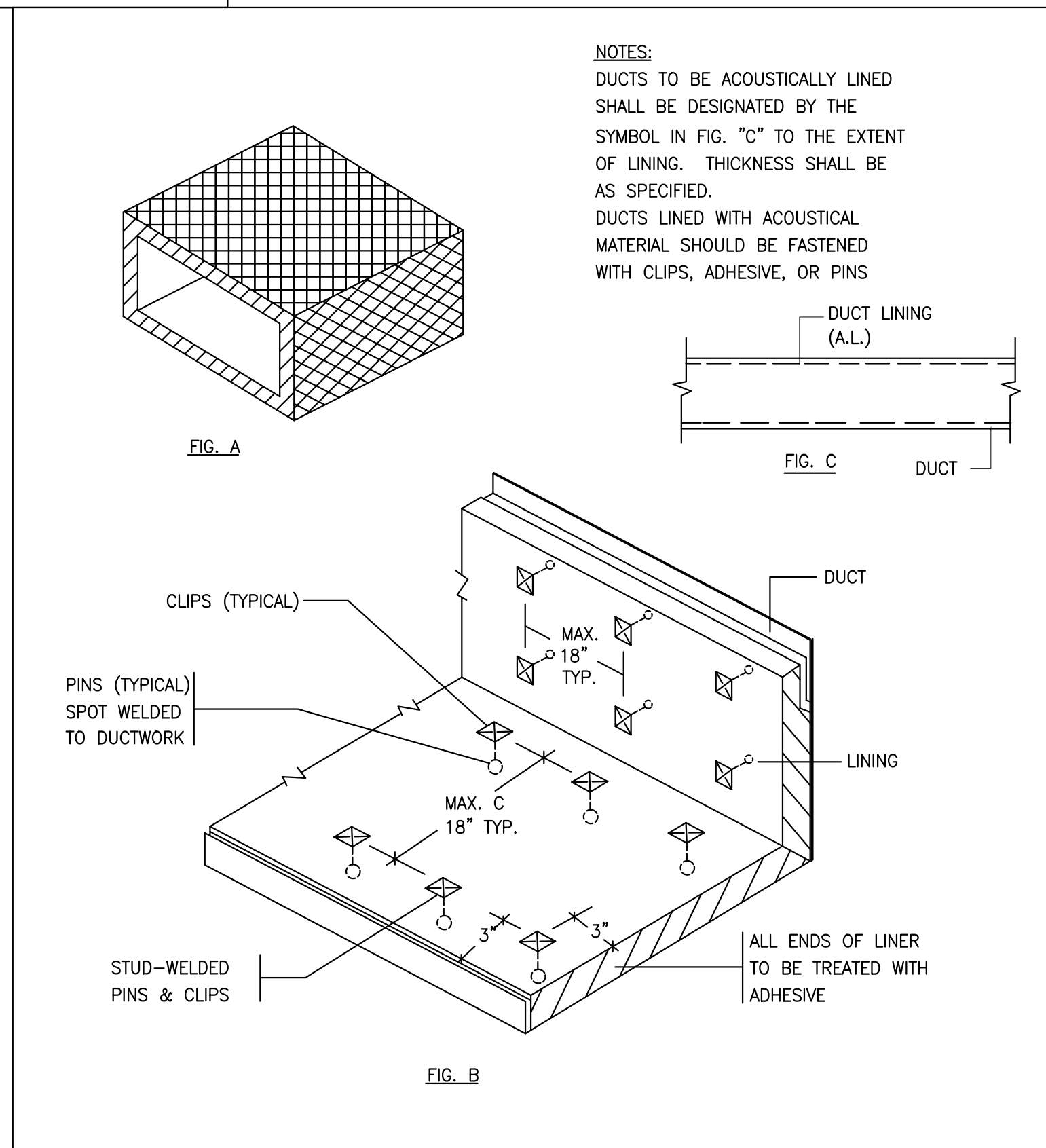
3 FLEXIBLE CONNECTION (DUCT-EQUIPMENT)
M6 N.T.S



4 LOW PRESSURE BALANCING DAMPER
M6 N.T.S



5 UPPER & LOWER ATTACHMENTS & DEVICES
M6 N.T.S



6 ACOUSTICAL TREATMENT DUCT LINING
M6 N.T.S

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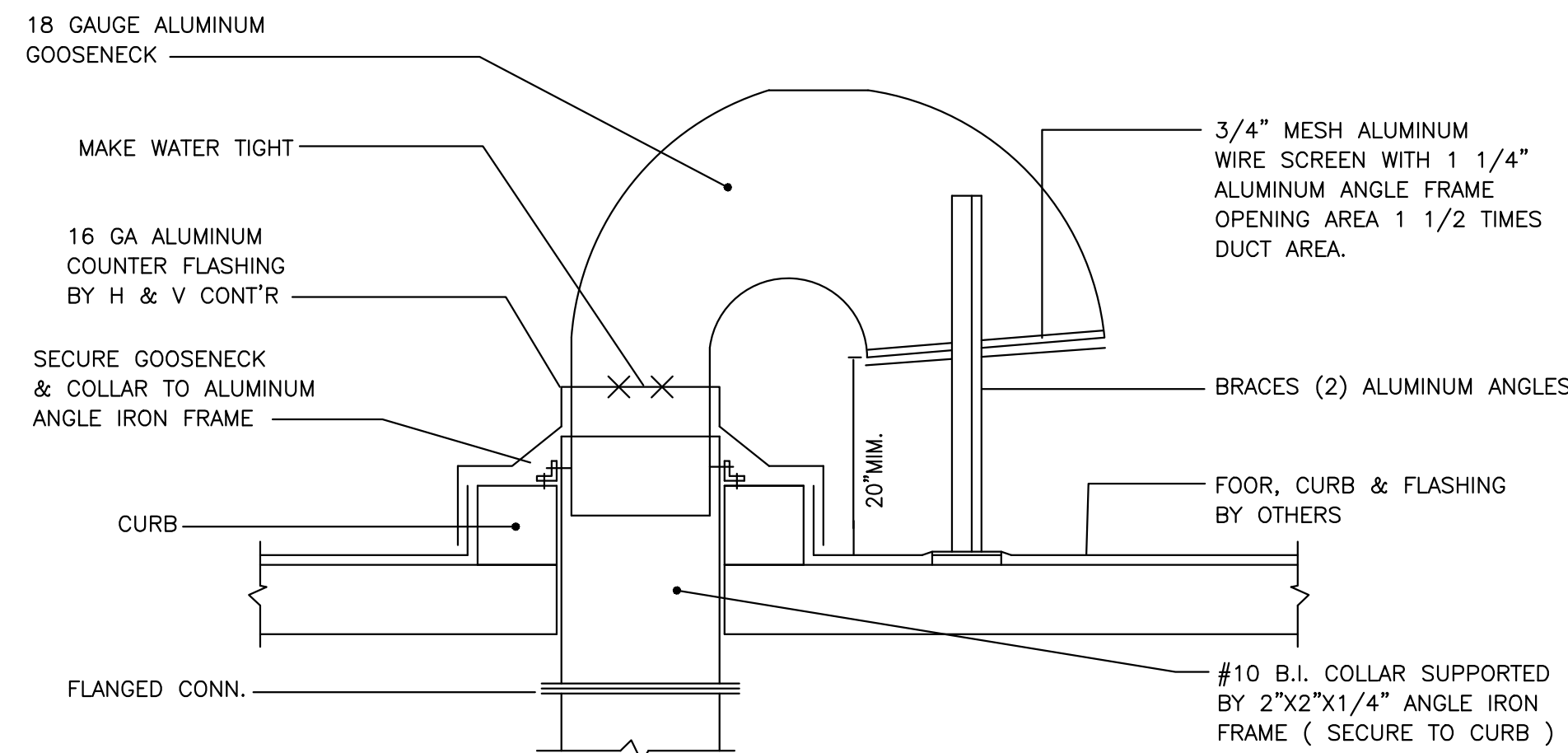
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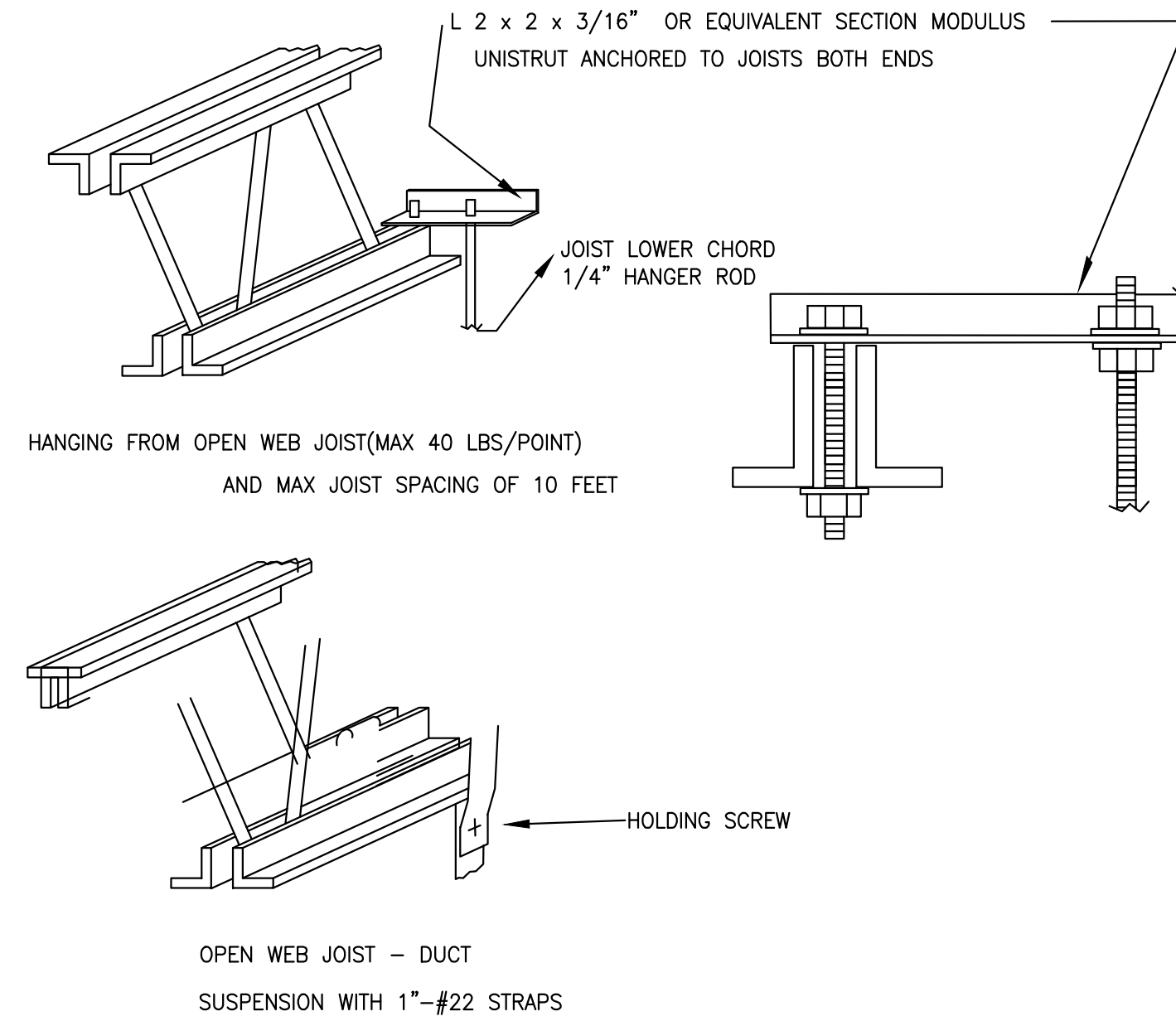
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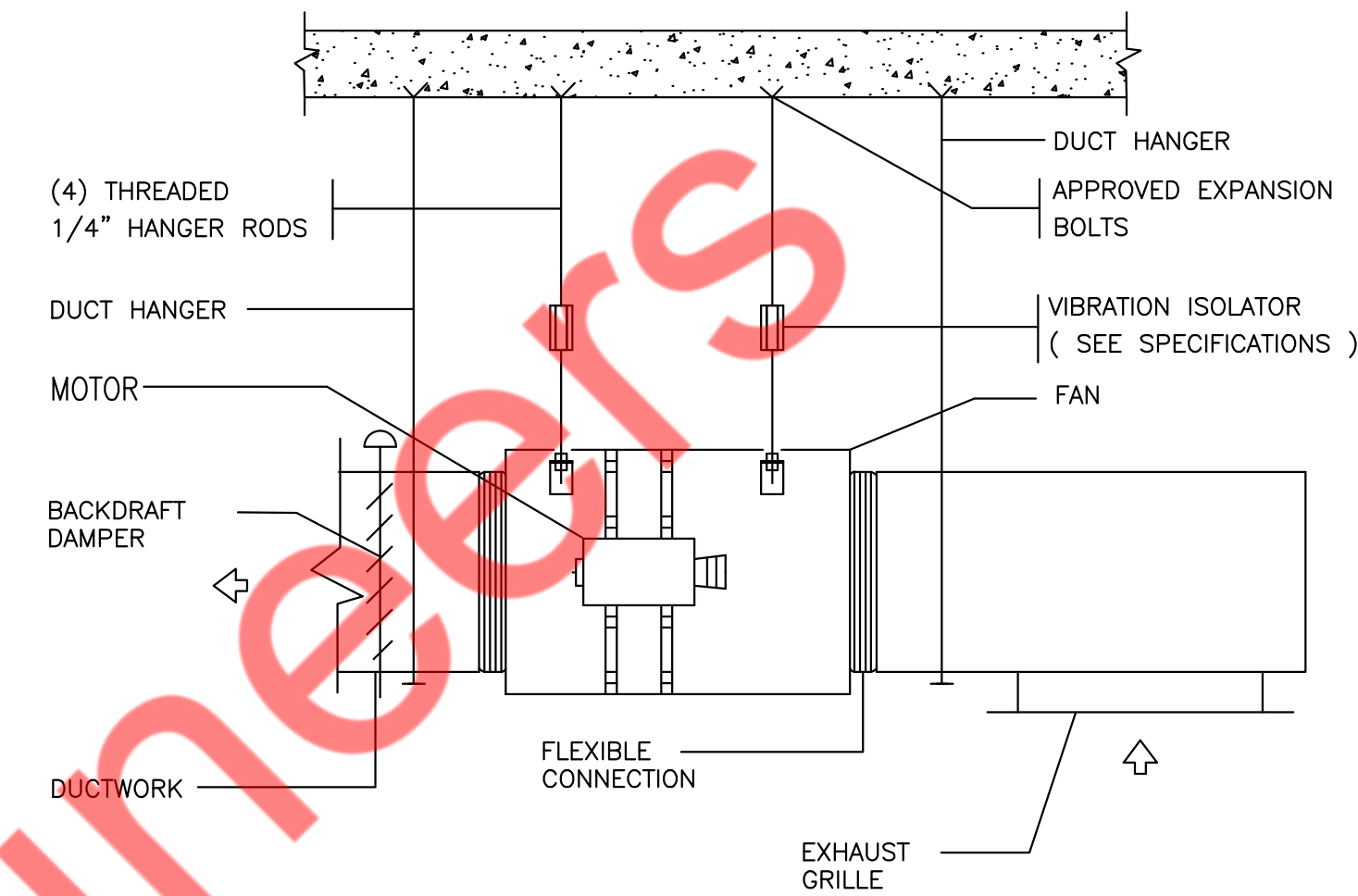
1
M7
N.T.S

TYPICAL DETAIL OF ROOF GOOSENECK



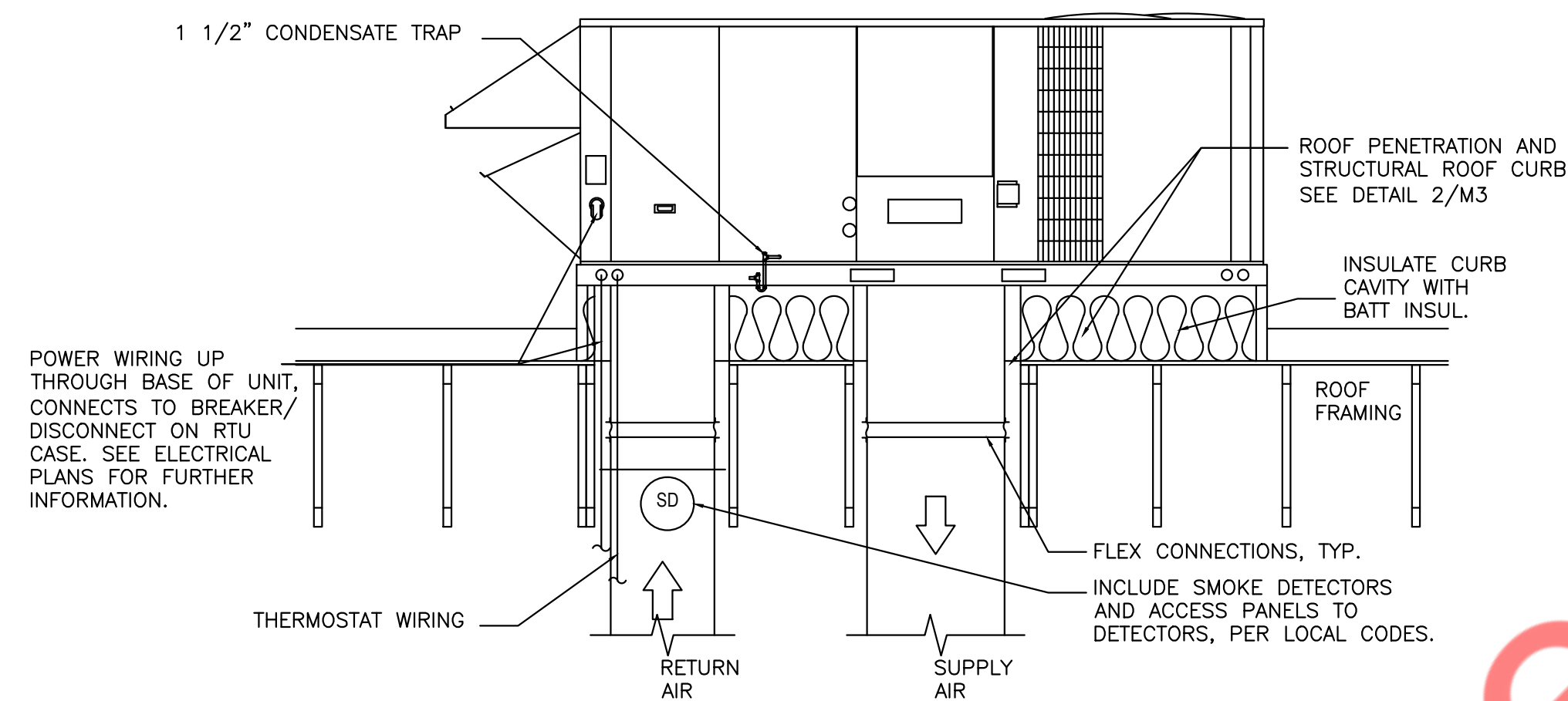
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M7
N.T.S

DUCT MOUNTING DETAIL



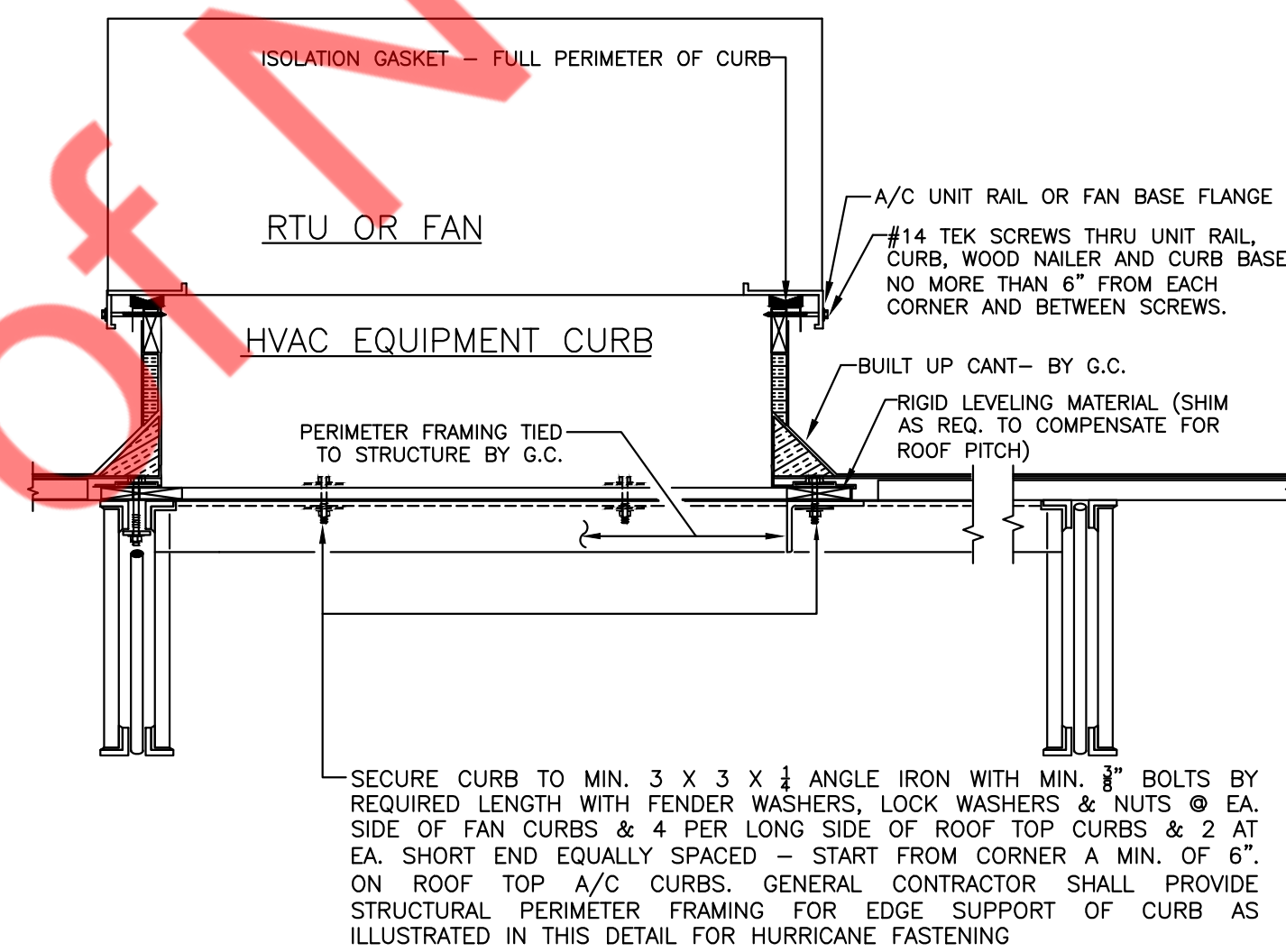
3
M7
N.T.S

INLINE FAN DETAIL



4
M7
N.T.S

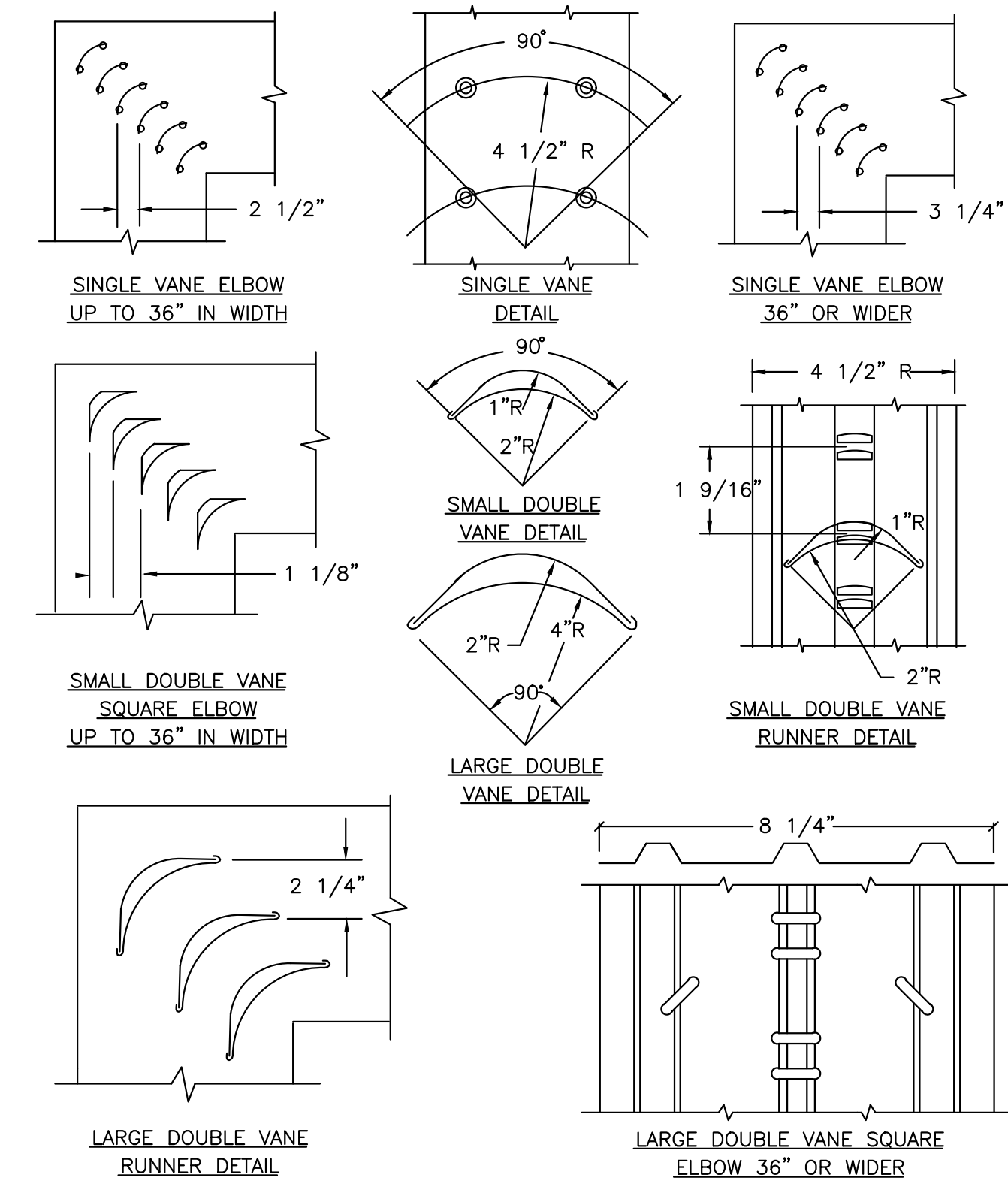
TYPICAL ROOF TOP UNIT DETAILS



VERIFY ON SITE WITH GENERAL CONTRACTOR

5
M7
N.T.S

ROOF TOP UNIT INSTALLATION



6
M7
N.T.S

LOW VELOCITY DUCTWORK ELBOWS

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MECHANICAL
DETAILS (2 OF 3)

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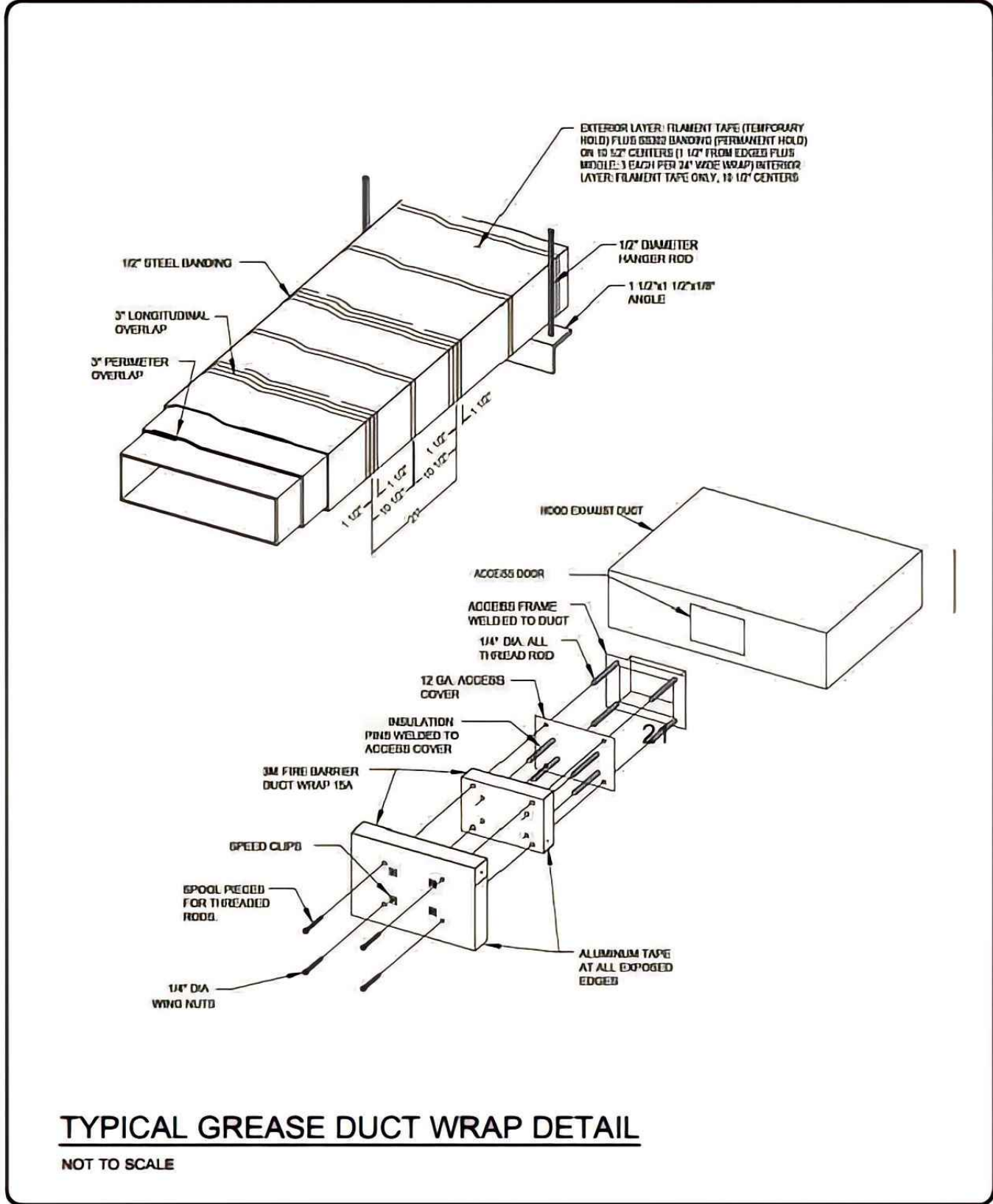
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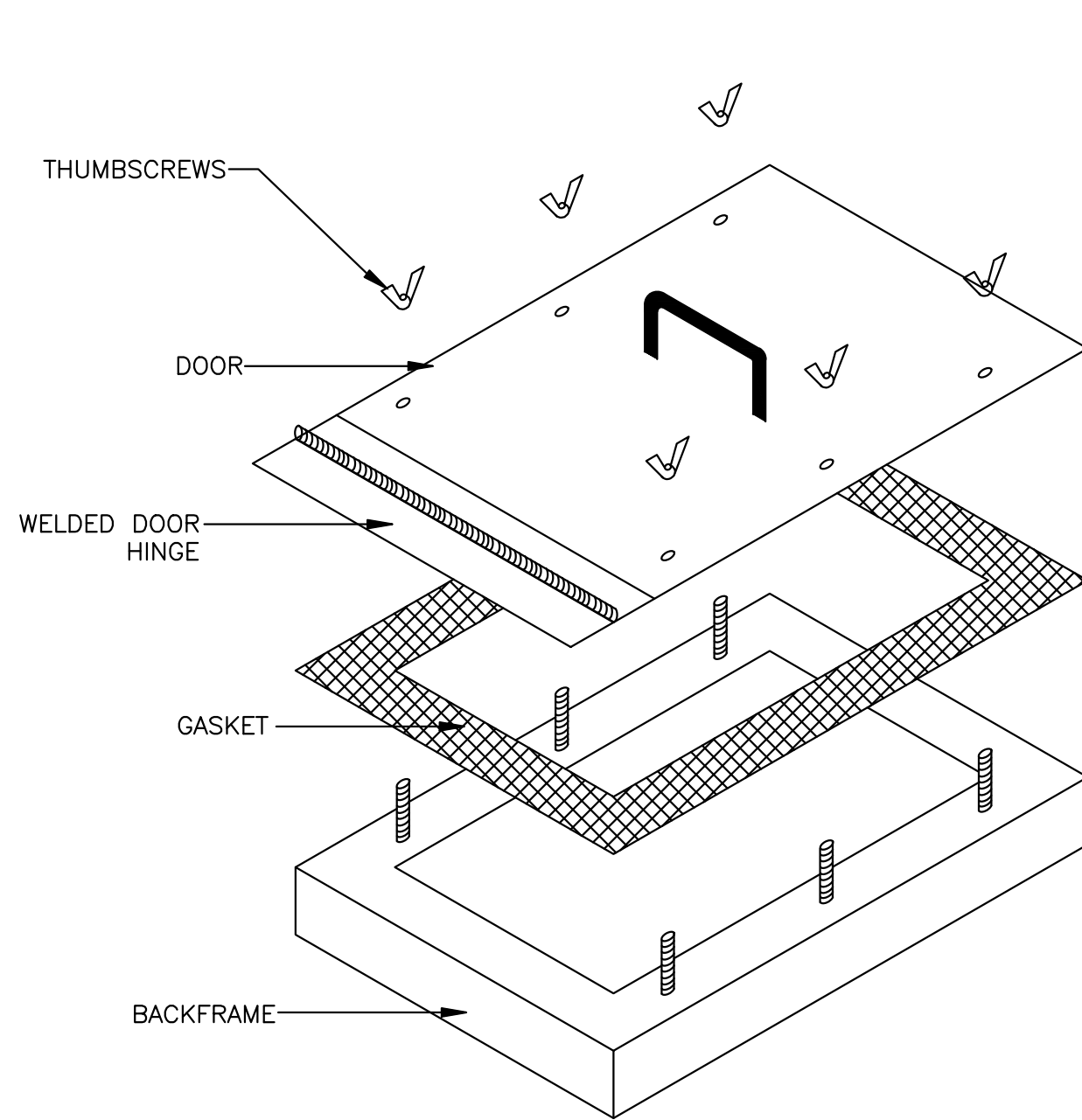
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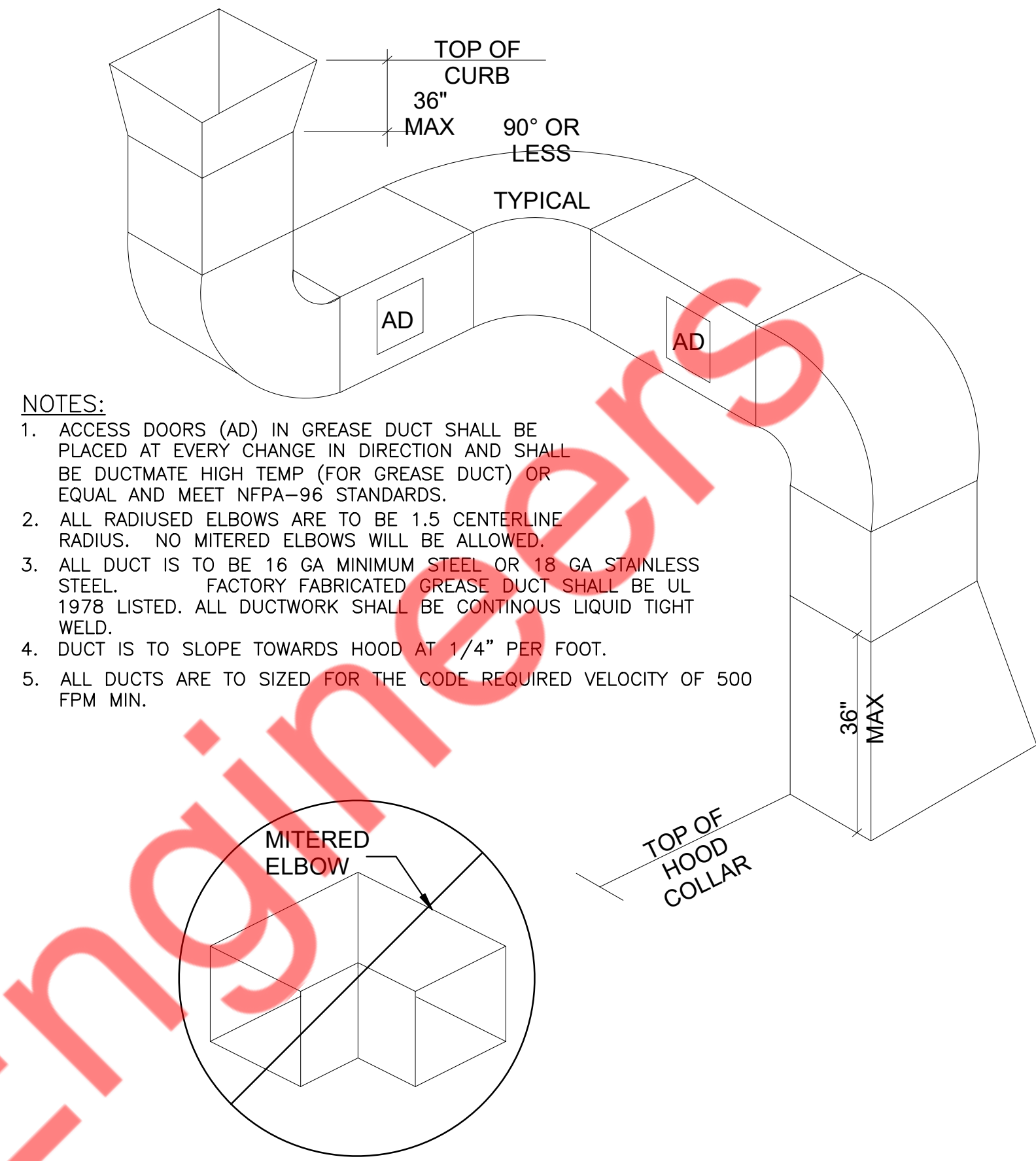


1 TYPICAL GREASE DUCT WRAP DETAIL
M8 N.T.S



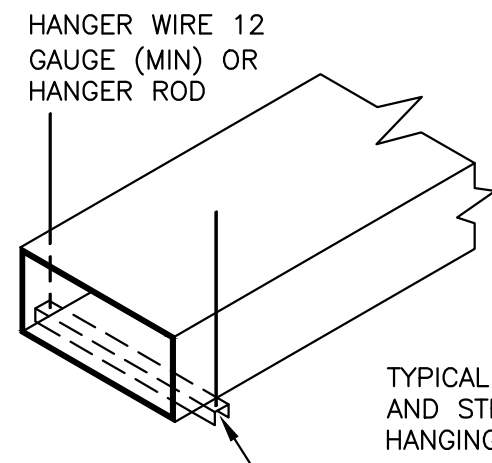
NOTES:
ACCESS DOOR IS TO BE DUCTMATE ULTIMATE DOOR II OR EQUAL.
ACCESS DOOR IS TO BE U.L. LISTED # 65X3.
ACCESS DOOR IS TO MEET OR EXCEED THE REQUIREMENTS OF NFPA 96, 2008 EDITION AT ALL LOCATIONS REQUIRED BY LOCAL CODE.

2 TYPICAL GREASE DUCT ACCESS DOOR DETAIL
M8 N.T.S

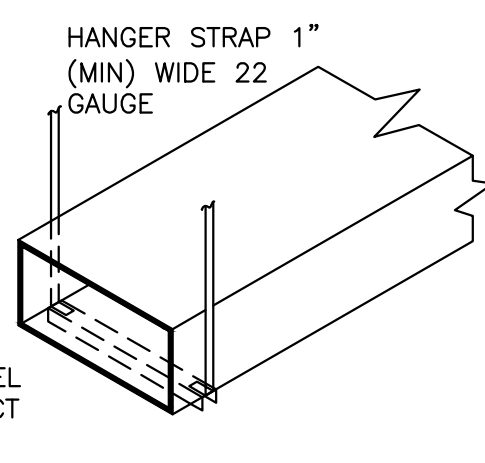


3 TYPICAL GREASE DUCT DETAIL
M8 N.T.S

CHANNEL SELECTION		
DUCT WIDTH MIN.	CHANNEL GAUGE MIN.	CHANNEL PROFILE
LESS THAN 18"	22	3" X 2"
LESS THAN 30"	18	3" X 2"



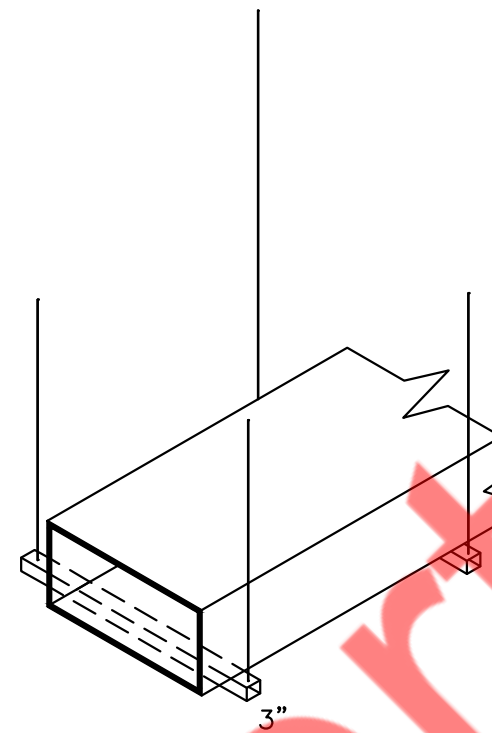
TYPICAL CHANNEL AND STRAP DUCT HANGING DETAIL



TYPICAL CHANNEL AND STRAP DUCT HANGING DETAIL

CLOSURE:
-PRESSURE SENSITIVE ALUMINUM FOIL TAPES LSITED UNDER UL 181A, PART I (P)
- HEAT ACTIVATED ALUMINUM FOIL/SCRIM TAPES LISTED UNDER UL 181A, PART II (H)
- MASTIC AND GLASS FABRIC TAPE CLOSURE SYSTEMS LISTED UNDER UL 181A, PART III (M)

DUCT SIZE, IN.	MAXIMUM HANGER SPACING
① WIDTH 48" OR GREATER	4'-0"
② LESS THEN 48"W X 12"H	6'-0"
③ WIDTH BETWEEN 24" & 48" & HEIGHT OVER 24"	6'-0"
④ WIDTH BETWEEN 24" & 48" & HEIGHT BETWEEN 12" & 24"	8'-0"
⑤ WIDTH LESS THAN 24" & HEIGHT GREATER THAN 12"	8'-0"
DUCT REINFORCING PER SMACNA REQUIRED	



HANGER SPACING AND EXTENSION
3" WIDE CHANNELS

4 DUCT SUPPORTS
M8 N.T.S

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(3 OF 3)

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[illegible]

BACKPLATE

NON-CORROSION WALL

14' GWT

12' GWT

BACKPLATE PANEL SIZE 12' GWT

BACKPLATE PANEL SIZE 12' GWT

NON-CORROSION WALL

DATE: 3/24/2023 BY: J. L. K. SCALE: 3/4" = 1'-0" MASTER DRAWING		Tous Les Jours - Virginia Beach, VA 550 First Colonial Road, Virginia Beach, VA, 23451	REVISIONS DATE BY DESCRIPTION
SHEET NO.		econ·air Business Products Office	2

[illegible][illegible]

NO.	DATE	DESCRIPTION
1	8/25/2025	HD COMMENTS

Tous Les Jours - Virginia Beach, VA
550 First Colonial Road,
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www.econ-air.com

Manufactured Plastic Duct

DATE: 7/24/2025

DWG#:
152136

REVISION: **REV: 1**

1/4" = 1'-0"

MASTER DRAWING

REVISIONS

NO.	DESCRIPTION	DATE
1	ISSUED FOR CONSTRUCTION	7/24/2025

SHEET NO.

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Manufactured Plastic Duct

DATE: 7/24/2025

DWG#:
152136

REVISION: **REV: 1**

1/4" = 1'-0"

MASTER DRAWING

REVISIONS

NO.	DESCRIPTION	DATE
1	ISSUED FOR CONSTRUCTION	7/24/2025

SHEET NO.

[illegible]

REVISIONS	DATE	BY	DESCRIPTION
A	12/24/2025	JL	Initial Design
B			
C			
D			
E			
F			
G			
H			
I			
J			

TOULON LES JOURS

550 First Colonial Road,
Virginia Beach, VA 23451

DATE: 12/24/2025

DRAWN BY: J. Lee

SCALE: 3/4" = 1'-0"

MATERIAL DRAWING

TOULON LES JOURS – Virginia Beach, VA

550 First Colonial Road,
Virginia Beach, VA 23451

SHEET NO. 00

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NO.	DATE	DESCRIPTION
1	8/25/2025	HD COMMENTS

DRAWING TITLE :
HOOD DETAILS
(2 OF 4)

DATE : 7.28.2025

DRAWN BY : NYE

CHECKED BY : NYE

DRAWING NUMBER

M11

Exhaust Fan Wiring

Installation Wiring

REVISIONS

NO.	DATE	DESCRIPTION
1	7/24/2025	Initial Design

Tous Les Jours - Virginia Beach, VA
550 First Colonial Road,
Virginia Beach, VA, 23451

DATE: 7/24/2025
DRAWN: J. Lee
SCALE: 3/4" = 1'-0"
MASTER DRAWING
SHEET NO. 1

TANK PROTECTION LOW-VOLTAGE FIGURES

FS-I MASTER

REVISIONS

NO.	DATE	DESCRIPTION
1	7/24/2025	Initial Design

Tous Les Jours - Virginia Beach, VA
550 First Colonial Road,
Virginia Beach, VA, 23451

DATE: 7/24/2025
DRAWN: J. Lee
SCALE: 3/4" = 1'-0"
MASTER DRAWING
SHEET NO. 2

ELECTRICAL PACKAGE - JORDANVILLE

FS-I MASTER

REVISIONS

NO.	DATE	DESCRIPTION
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550 First Colonial Road,
Virginia Beach, VA, 23451

DATE: 7/24/2025
DRAWN: J. Lee
SCALE: 3/4" = 1'-0"
MASTER DRAWING
SHEET NO. 3

TANK PROTECTION LOW-VOLTAGE FIGURES

FS-I MASTER

REVISIONS

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Tous Les Jours - Virginia Beach, VA
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DATE: 7/24/2025
DRAWN: J. Lee
SCALE: 3/4" = 1'-0"
MASTER DRAWING
SHEET NO. 4

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1	8/25/2025	HD COMMENTS

DRAWING TITLE :
HOOD DETAILS
(3 OF 4)

DATE :
7.28.2025

DRAWN BY :
NYE

CHECKED BY :
NYE

DRAWING NUMBER

M12

SYSTEM DESIGN VERIFICATION (SDV):

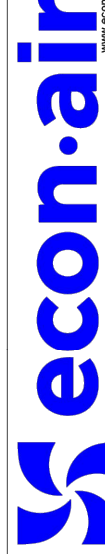
IF ORDERED, CAS SERVICE WILL PERFORM A SYSTEM DESIGN VERIFICATION (SDV) ONCE ALL EQUIPMENT HAS BEEN A COMPLETE START-UP PER THE OPERATOR AND INSTALLATION MANUAL. TYPICALLY, THE SDV WILL BE PERFORMED AFTER ALL INSPECTIONS ARE COMPLETE.

ANY FIELD RELATED DISCREPANCIES THAT ARE DISCOVERED DURING THE SDV WILL BE BROUGHT TO THE ATTENTION OF THE GENERAL CONTRACTOR AND CORRESPONDING TRAKS ON SITE. THESE ISSUES WILL BE DOCUMENTED AND FORWARDED TO THE APPROPRIATE SALES OFFICE. IF CAS 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, CAS 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.

REVISIONS

NO.	DATE	DESCRIPTION
1	8/25/2025	HD COMMENTS



5500 Orange Ave., Ste. 100, Tampa, FL 33634
PH: 813.242.1000 FAX: 813.242.1001
www.econ-air.com

Tous Les Jours - Virginia Beach, VA
550 First Colonial Road,
Virginia Beach, VA 22451

DATE: 7/24/2025

DWG. NO.: 7-25-08

DRAWN BY: J. Lee

SCALE: 3/4" = 1'-0"

MASTER DRAWING

SHEET NO.

1

NY ENGINEERS

NEARBY ENGINEERS

382 NE 191ST STREET SUITE 49674,
MIAMI, FL 33179
PH-914.257.3455
WWW.NY-ENGINEERS.COM

REVISIONS :

NO.	DATE	DESCRIPTION
1	8/25/2025	HD COMMENTS

DRAWING TITLE :
HOOD DETAILS
(4 OF 4)

DATE :
7.28.2025

DRAWN BY :
NYE

CHECKED BY :
NYE

DRAWING NUMBER
M13



COMcheck Software Version COMcheckWeb
Mechanical Compliance Certificate

Project Information

Energy Code: 2021 IECC
Project Title: TOUS LES JOURS
Location: Virginia Beach, Virginia
Climate Zone: 3a
Project Type: Alteration

Construction Site: 550 FIRST COLONIAL RD
VIRGINIA BEACH, Virginia 23451
Owner/Agent:
Designer/Contractor: MICHAEL TOBIAS
NY ENGINEERS
382 NE 191ST STREET SUITE 49674
MIAMI, Florida 33179

Mechanical Systems List

QuantitySystem Type & Description

- 2 RTU-A(N) & RTU-B(N) (Single Zone):
Heating: 1 each - Central Furnace, Gas, Capacity = 67 kBtu/h
Proposed Efficiency = 81.00% Et, Required Efficiency: 80.00 % Et or 80% AFUE
Cooling: 1 each - Single Package DX Unit, Capacity = 62 kBtu/h, Air-Cooled Condenser, Air Economizer
Proposed Efficiency = 13.40 SEER2, Required Efficiency = 13.40 SEER2
Proposed Part Load Efficiency = 0.00 , Required Part Load Efficiency = 0.00
- 2 WH-1:
Gas Instantaneous Water Heater, Capacity: 0 gallons, Input Rating: 199 kBtu/h w/ Circulation Pump
No minimum efficiency requirement applies

Mechanical Compliance Statement

Compliance Statement: The proposed mechanical alteration project represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed mechanical systems have been designed to meet the 2021 IECC requirements in COMcheck Version COMcheckWeb and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

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



Project Title: TOUS LES JOURS Report date: 07/25/25
Page 1 of 9



COMcheck Software Version COMcheckWeb
Inspection Checklist

Energy Code: 2021 IECC

Requirements: 100.0% were addressed directly in the COMcheck software

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

Section # & Req.ID	Plan Review	Complies?	Comments/Assumptions
C103.2 [PR2] ¹	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the mechanical and service water heating systems and document where exceptions to the standard are claimed. Load calculations per acceptable engineering standards and handbooks. Hot water system sized per manufacturer's sizing guide.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.

Additional Comments/Assumptions:

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

Project Title: TOUS LES JOURS Report date: 07/25/25
Page 2 of 9

Section # & Req.ID	Plumbing Rough-In Inspection	Complies?	Comments/Assumptions
C404.5, C404.5.1, C404.5.2 [PL6] ³	Heated water supply piping conforms to pipe length and volume requirements. Refer to section details.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
C404.6.1, C404.6.2 [PL3] ¹	Automatic time switches installed to automatically switch off the recirculating hot-water system or heat trace.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
C404.6.3 [PL7] ¹	Pumps that circulate water between a heater and storage tank have controls that limit operation from startup to <= 5 minutes after end of heating cycle.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Exception: Requirement does not apply.
C404.6.1, C404.6.1.1 [PL8] ³	Demand recirculation water systems have controls that start the pump upon receiving a signal from the action of a user of a fixture or appliance and limits the temperature of the water entering the cold-water piping to 104°F.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.

Additional Comments/Assumptions:

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

Project Title: TOUS LES JOURS Report date: 07/25/25
Page 3 of 9

Section # & Req.ID	Mechanical Rough-In Inspection	Complies?	Comments/Assumptions
C402.2.6 [ME41] ³	Thermally ineffective panel surfaces of sensible heating panels have insulation >= R-3.5.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Exception: Requirement does not apply.
C403.8.1 [ME65] ³	HVAC fan systems at design conditions do not exceed allowable fan system motor nameplate hp or fan system bhp.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met. <i>See the Mechanical Systems list for values.</i>
C403.8.3 [ME117] ³	Fans have a fan energy index (FEI) >= 1.00. Variable volume fans will have an FEI >= 0.95.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Exception: Fans integral to equipment listed under Section C403.3.2.
C403.9 [ME144] ²	Large diameter fans where installed shall be tested and labeled in accordance with AMCA 230.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
C403.13.1 [ME71] ²	Systems that heat outside the building envelope are radiant heat systems controlled by an occupancy sensing device or timer switch.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Exception: Requirement does not apply.
C403.3 [ME55] ²	HVAC equipment efficiency verified.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	<i>See the Mechanical Systems list for values.</i>
C403.5.5 [ME113] ²	Fault detection and diagnostics installed with air-cooled unitary DX units or VRF units having economizers.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
C403.2.2 [ME59] ³	Natural or mechanical ventilation is provided in accordance with International Mechanical Code Chapter 4. Mechanical ventilation has capability to reduce outdoor air supply to minimum per IMC Chapter 4.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
C403.7.1 [ME59] ¹	Demand control ventilation provided for spaces >500 ft2 and >15 people/1000 ft2 occupant density and served by systems with air side economizer, auto modulating outside air damper control, or design airflow >3,000 cfm.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Exception: Requirement does not apply.
C403.7.2 [ME115] ³	Enclosed parking garage ventilation has automatic contaminant detection and capacity to stage or modulate fans to 50% or less of design capacity.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Exception: Requirement does not apply.
C403.7.6 [ME141] ³	HVAC systems serving guestrooms in Group R-1 buildings with > 50 guestrooms: Each guestroom is provided with controls that automatically manage temperature setpoint and ventilation (see sections C403.7.6.1 and C403.7.6.2).	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Exception: Requirement does not apply.
C403.7.4 [ME57] ¹	Exhaust air energy recovery on systems meeting Table C403.7.4(1) and C403.7.4(2).	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Exception: Requirement does not apply.

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

Project Title: TOUS LES JOURS Report date: 07/25/25
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Section # & Req.ID	Mechanical Rough-In Inspection	Complies?	Comments/Assumptions
C403.7.5 [ME116] ³	Kitchen exhaust systems comply with replacement air and conditioned supply air limitations, and satisfy hood rating requirements and maximum exhaust rate criteria.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Exception: Requirement does not apply.
C403.12.1, C403.12.2 [ME60] ³	HVAC ducts and plenums insulated in accordance with C403.11.1 and constructed in accordance with C403.11.2, verification may need to occur during Foundation Inspection.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
C403.5, C403.5.1, C403.5.2 [ME62] ¹	Air economizers provided where required, meet the requirements for design capacity, control signal, ventilation controls, high-limit shut-off, integrated economizer control, and provide a means to relieve excess outside air during operation.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
C403.5.2 [ME16] ²	Economizer operation will not increase heating energy use during normal operation.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
C403.5.3, 3 [ME124] ¹	Air economizers automatically reduce outdoor air intake to the design minimum and outdoor air quantity when outdoor air intake will not reduce cooling energy usage. See Table C403.5.3.3 for applicable device types and climate zones.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
C403.5.3, 4 [ME125] ¹	System capable of relieving excess outdoor air during air economizer operation to prevent over pressurizing the building. The relief air outlet located to avoid recirculation into the building.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
C403.5.3, 5 [ME126] ¹	Return exhaust/relief and outdoor air dampers used in economizers have motorized dampers that automatically shut when not in use and meet maximum leakage rates. Reference section C403.7.7 for details.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
C403.4.1, 4 [ME63] ³	Heating for vestibules and air curtains with integral heating include automatic controls that shut off the heating system when outdoor air temperatures > 45°F. Vestibule heating and cooling systems controlled by a thermostat in the vestibule with heating setpoint <= 60°F and cooling setpoint >= 80°F.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Exception: Requirement does not apply.
C403.3.3 [ME35] ¹	Hot gas bypass limited to: <=240 kBtu/h - 50% >240 kBtu/h - 25%	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
C408.2.2, 1 [ME53] ³	Air outlets and zone terminal devices have means for air balancing.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.

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

Project Title: TOUS LES JOURS Report date: 07/25/25
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Section # & Req.ID	Mechanical Rough-In Inspection	Complies?	Comments/Assumptions
C403.11.3, C403.11.3.1, C403.11.3.2 [ME123] ³	Refrigerated display cases, walk-in coolers or walk-in freezers served by remote compressors and remote condensers not located in a condensing unit, have fan-powered condensers that comply with Sections C403.11.3.1 and refrigeration compressor systems that comply with C403.11.3.2.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Exception: Requirement does not apply.

Additional Comments/Assumptions:

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

Project Title: TOUS LES JOURS Report date: 07/25/25
Page 6 of 9

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REVISIONS :

NO.	DATE	DESCRIPTION
1	8/25/2025	HD COMMENTS

DRAWING TITLE :

ENERGY ANALYSIS
(SHEET 1 OF 2)

DATE :

7.28.2025

DRAWN BY :

NYE

CHECKED BY :

NYE

DRAWING NUMBER

M14

Section # & Req.ID	Rough-In Electrical Inspection	Complies?	Comments/Assumptions
C405.7 [EL26] ²	Low-voltage dry-type distribution electric transformers meet the minimum efficiency requirements of Table C405.6.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Exception: Requirement does not apply.
C405.8 [EL27] ²	Electric motors meet the minimum efficiency requirements of Tables C405.7(1) through C405.7(4). Efficiency verified through certification under an approved certification program or the equipment efficiency ratings shall be provided by motor manufacturer (where certification programs do not exist).	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
C405.9.1, C405.9.2 [EL28] ²	Escalators and moving walks comply with ASME A17.1/CSA B44 and have automatic controls configured to reduce speed to the minimum permitted speed in accordance with ASME A17.1/CSA B44 or applicable local code when not conveying passengers.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Exception: Requirement does not apply.
C405.10 [EL29] ²	Total voltage drop across the combination of feeders and branch circuits <= 5%.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
C405.1.1 [EL30] ²	At least 90% of dwelling unit permanently installed lighting shall have lamp efficacy >= 65 lm/W or luminaires with efficacy >= 45 lm/W or comply with C405.2.4 or C405.3.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Exception: Requirement does not apply.
C405.11, C405.11.1 [EL31] ²	50% of 15/20 amp receptacles installed in enclosed offices, conference rooms, copy rooms, break rooms, classrooms and workstations and > 25% of branch circuit feeders for modular furniture will have automatic receptacle control in accordance with C405.11.1.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
Additional Comments/Assumptions:			
1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3) Project Title: TOUS LES JOURSReport date: 07/25/25Page 7 of 9			

Section # & Req.ID	Final Inspection	Complies?	Comments/Assumptions
C303.3, C408.2.5, 3 [FI8] ³	Furnished O&M manuals for HVAC systems within 90 days of system acceptance.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
C403.1.1 [FI50] ³	HVAC systems and equipment design loads calculated in accordance with ANSI/ASHRAE/ACCA Standard 183 or by an approved equivalent computational procedure.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
C403.3.1 [FI27] ³	HVAC systems and equipment capacity does not exceed calculated loads.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
C403.4.1 [FI47] ³	Heating and cooling to each zone is controlled by a thermostat control. Minimum one humidity control device per installed humidification/dehumidification system.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
C403.4.1, 2 [FI38] ³	Thermostatic controls have a 5 °F deadband.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
C403.4.1, 3 [FI20] ³	Temperature controls have setpoint overlap restrictions.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
C403.4.2 [FI39] ³	Each zone equipped with setback controls using automatic time clock or programmable control system.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
C403.4.2, 1, C403.4.2, 2 [FI40] ³	Automatic Controls: Setback to 55°F (heat) and 85°F (cool); 7-day clock; 2-hour occupant override, 10-hour backup	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
C404.3 [FI11] ³	Heat traps installed on supply and discharge piping of non-circulating systems.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Exception: Requirement does not apply.
C404.4 [FI25] ²	All piping insulated in accordance with section details and Table C403.12.3.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
C404.6.1 [FI12] ³	Controls are installed that limit the operation of a recirculation pump installed to maintain temperature of a storage tank. System return pipe is a dedicated return pipe or a cold water supply pipe.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3) Project Title: TOUS LES JOURSReport date: 07/25/25Page 8 of 9			

Section # & Req.ID	Final Inspection	Complies?	Comments/Assumptions
C408.1.1 [FI57] ³	Building operations and maintenance documents will be provided to the owner. Documents will cover manufacturers' information, specifications, programming procedures and means of illustrating to owner how building, equipment and systems are intended to be installed, maintained, and operated.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
C408.2.1 [FI28] ³	Commissioning plan developed by registered design professional or approved agency.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
C408.2.3, 1 [FI31] ³	HVAC equipment, systems and system-to-system relationships have been tested to ensure proper operation.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
C408.2.3, 2 [FI10] ³	HVAC and service water heating control systems have been tested to ensure proper operation, calibration and adjustment of controls.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
C408.2.3, 3 [FI32] ³	Economizers have been tested to ensure proper operation.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
C408.2.4 [FI29] ³	Preliminary commissioning report completed and certified by registered design professional or approved agency.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
C408.2.5 [FI17] ³	Furnished HVAC as-built drawings submitted within 90 days of system acceptance.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
C408.2.5, 1 [FI43] ³	An air and/or hydronic system balancing report is provided for HVAC systems.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
C408.2.5, 2 [FI30] ³	Final commissioning report due to building owner within 90 days of receipt of certificate of occupancy.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
Additional Comments/Assumptions:			
1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3) Project Title: TOUS LES JOURSReport date: 07/25/25Page 9 of 9			

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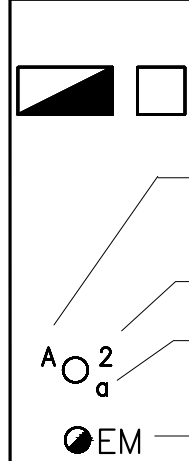
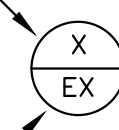
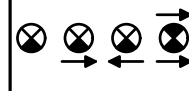
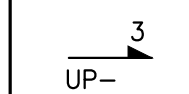
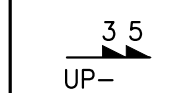
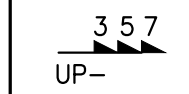
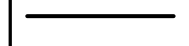
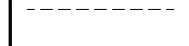
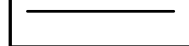
DRAWING TITLE :
ENERGY ANALYSIS
(SHEET 2 OF 2)

DATE :
7.28.2025

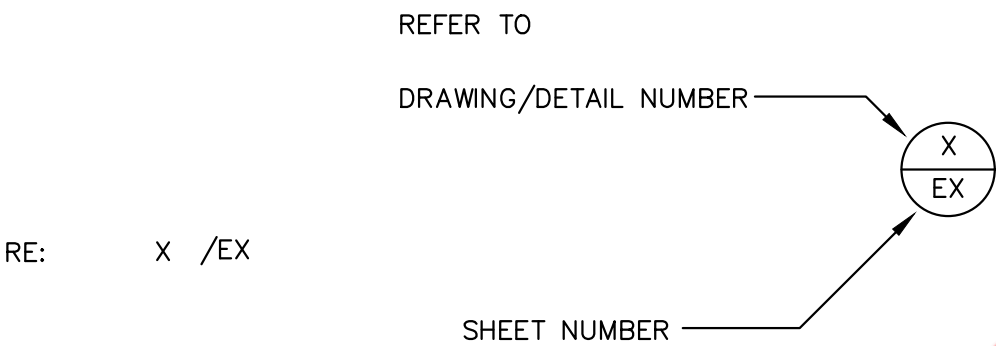
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NYE

CHECKED BY :
NYE

DRAWING NUMBER
M15

ELECTRICAL SYMBOLS LIST									
LIGHTING			POWER AND TELECOMMUNICATION					ABBREVIATIONS	
	LIGHTING FIXTURE AND OUTLET BOX. HALF SHADED FIXTURE OR "EM" INDICATES FIXTURES WITH INTEGRAL BATTERY PACK FOR EMERGENCY SERVICE, U.O.N.		MOTORS AND CONTROLS			DRAWING/DETAIL REFERENCE KEY REFER TO DRAWING/DETAIL NUMBER →  RE: X /EX SHEET NUMBER → GENERAL NOTES A. NOT ALL SYMBOLS SHOWN ON THIS SYMBOL LIST ARE USED IN THE CONTRACT DOCUMENTS.			
	LUMINAIRE TYPE : INDICATED BY UPPERCASE LETTER SEE LIGHTING FIXTURE SCHEDULE.			NON FUSED DISCONNECT SWITCH AMPERAGE, AND NUMBER OF POLES AS NOTED.					
	CIRCUIT NUMBER : INDICATED BY NUMBER			30A/240V NON FUSED DISCONNECT SWITCH					
	SWITCHING INDICATED BY LOWER CASE LETTERS.			60A/240V NON FUSED DISCONNECT SWITCH					
	DENOTES LUMINAIRE ON EMERGENCY CIRCUIT.			100A/240V NON FUSED DISCONNECT SWITCH					
	CEILING/WALL MOUNTED SELF POWERED EXIT LIGHT FIXTURE WITH DIRECTIONAL ARROWS AS INDICATED. SHADED AREA DENOTES FACE(S). ISOLITE ELITE SERIES LED EXIT SIGN		RECEPTACLES AND OUTLETS						
				DUPLEX CONVENIENCE RECEPTACLE					
WIRING SYSTEMS									
	POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSISTS OF 1#12 Ø, 1#12 N. & 1#12 G. IN 3/4"C, UNLESS OTHERWISE NOTED.								
	POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSISTS OF 2#12 Ø, 1#12 N. & 1#12 G. IN 3/4"C, UNLESS OTHERWISE NOTED.		 						
	POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSISTS OF 3#12 Ø, 1#12 N. & 1#12 G. IN 3/4"C, UNLESS OTHERWISE NOTED.		 						
	UNDERGROUND								
	EXISTING								
	NEW								
ELECTRICAL DRAWING LIST									
E1	ELECTRICAL SYMBOLS & ABBREVIATIONS					POWER DISTRIBUTION			
E2	ELECTRICAL SPECIFICATIONS-1								
E3	ELECTRICAL SPECIFICATIONS-2					COMMUNICATIONS			
E4	ELECTRICAL LIGHTING PLAN-1								
E5	ELECTRICAL LIGHTING PLAN-2					TELEPHONE/DATA OUTLET, ELECTRICAL CONTRACTOR TO PROVIDE MUD RING AND PULL STRING TO ABOVECEILING			
E6	ELECTRICAL POWER PLAN								
E7	ELECTRICAL ROOF POWER PLAN					DATA OUTLET, ELECTRICAL CONTRACTOR TO PROVIDE MUD RING AND PULL STRING TO ABOVECEILING			
E8	ELECTRICAL DETAILS-1								
E9	ELECTRICAL DETAILS-2					CEILING MOUNTED DATA OUTLET			
E10	ELECTRICAL RISER DIAGRAM & PANEL SCHEDULE								
E11	ENERGY ANALYSIS-1								
E12	ENERGY ANALYSIS-2		Property of NY Engineers						
CODE COMPLIANCE									
ALL WORK AND MATERIAL SHALL BE PERFORMED AND INSTALLED IN COMPLIANCE WITH THE FOLLOWING CODES AS ADOPTED AND AMENDED BY THE INSPECTING AUTHORITY. NOTHING IN THESE DRAWINGS IS TO BE CONSTRUCTED TO PERMIT WORK NOT CONFORMING TO THESE CODES OR OTHERS APPLICABLE TO THESE PROJECT:									
A. 2021 VIRGINIA BUILDING CODE.									
B. 2021 VIRGINIA PLUMBING CODE.									
C. 2021 VIRGINIA MECHANICAL CODE.									
D. 2021 VIRGINIA ENERGY CONSERVATION CODE.									
E. 2021 VIRGINIA FUEL GAS CODE.									
F. NATIONAL ELECTRICAL CODE-2020.									

DRAWING/DETAIL REFERENCE KEY



GENERAL NOTES

A. NOT ALL SYMBOLS SHOWN ON THIS SYMBOL LIST ARE USED IN THE CONTRACT DOCUMENTS.

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E1

ELECTRICAL SPECIFICATIONS

1. GENERAL:

A. THE "GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION," AIA DOCUMENT A201, 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. DISCONNECT, REMOVE AND/OR RELOCATE EXISTING MATERIAL, EQUIPMENT AND OTHER WORK AS NOTED OR REQUIRED FOR PROPER INSTALLATION OF NEW WORK.

E. 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.

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

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

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

I. 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.

J. 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.

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

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

M. 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 CEILINGS, IN TRENCHES, IN CRAWL SPACES, OR IN ENCLOSURES.

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

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

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

C. QUALITY ASSURANCE

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

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

3) CURRENT CHARACTERISTICS:

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

b. DISTRIBUTION: 120/208 VOLT, 3 PHASE, 4 WIRE, 60 HERTZ WITH GROUNDED NEUTRAL.
- 4) HEIGHTS OF OUTLETS:

a. FROM FINISHED FLOOR TO CENTERLINE OF OUTLETS FOR:

– RECEPTACLES AND TELEPHONES: 1 FT–6 IN.

– WALL SWITCHES: 4 FT–0 IN.

– WALL FIXTURES: 7 FT–0 IN.

– MOTOR CONTROLLERS: 5 FT–0 IN.

– CLOCKS: 7 FT 6 IN

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

D. PRODUCT DELIVERY, STORAGE AND HANDLING

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

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

E. MATERIALS

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

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

3) INSERTS AND SUPPORTS:

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

– SINGLE ROD: SIMILAR TO GRINNELL FIG. 281.

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

– CLIP FORM NAILS FLUSH WITH INSERTS.

– MAXIMUM LOADING 75 PERCENT OF RATING.

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

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

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

F. PAINT SHALL BE THE BEST GRADE FOR ITS PURPOSE. DELIVER 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 NATIONAL AND LOCAL CODES AND AUTHORITIES HAVING JURISDICTION, AS INDICATED ON DRAWINGS AND HEREIN SPECIFIED.

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

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

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

E. CONTRACTOR SHALL PERFORM ALL CONTROLLED INSPECTIONS IN ACCORDANCE WITH THE FLORIDA 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(4) BOOKBOUND OPERATING AND SERVICE MANUALS WHICH SHALL INCLUDE COPIES OF ALL SHOP DRAWING, PROVIDE SHOP DRAWINGS FOR PANELS, FIXTURES, WIRING DEVICES, CONDUIT, CABLE, DISCONNECT SWITCH, RELAYS, CONTRACTORS, AND OTHER SYSTEMS AS DIRECTED BY THE ENGINEER.

5. AS-BUILT DRAWINGS AND EQUIPMENT OPERATIONAL INSTRUCTIONS

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

B. THESE INSTRUCTIONS SHALL BE TYPED ON 8-1/2 IN. X 11 IN. PAPER 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 HEGEMAN NO. 6808F. THREE-POLE SWITCHES SHALL BE SIMILAR TO HART AND HEGEMAN NO. 7810F. KNIFE-BLADE TYPE SWITCHES SHALL BE LOAD BREAK, QUICK-MAKE- QUICK-BREAK, UL CLASS R UP TO 600 AMP. MAXIMUM RATING EXCEPT AS NOTED SHALL BE 800 AMP. ARC QUENCHERS SHALL BE PROVIDED. SWITCHES SHALL BE SIMILAR TO GENERAL ELECTRIC OMR. ALL SWITCH ENCLOSURES SHALL BE DEAD FRONT, NEMA TYPE 1, EXCEPT AS NOTED.

7. FUSES:

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

B. MOTOR CIRCUITS – ALL INDIVIDUAL MOTOR CIRCUITS WITH 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 LPJ (AMP)SP (600V) (UL CLASS RK1 OR CLASS J), AND BE LISTED BY UL WITH AN INTERRUPTING RATING OF 300,000 AMPERES RMS SYMMETRICAL.

C. ALL FUSES SHALL BE PROVIDED BY SAME MANUFACTURER.

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

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

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

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

8. DISTRIBUTION PANELBOARDS, SWITCH AND FUSE:

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

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

J. 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.

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

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

M. 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 ¼" HIGH WHITE LETTERING.

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

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

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

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

B. MATERIALS

1) RACEWAYS:

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

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

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

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

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

2) FITTINGS AND ACCESSORIES:

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

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

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

d. BUSHINGS: METALLIC INSULATED TYPE.

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REVISIONS :

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E2

ELECTRICAL SPECIFICATIONS–1

SCALE
N.T.S.

1

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.

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

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

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

EXPPOSED 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 MARKED 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 IPCA STANDARDS. TYPE THW OR THWN SHALL BE UTILIZED FOR FEEDERS AND BRANCH CIRCUITS EXCEPT AS NOTED. TYPE SFF-2 SHALL BE UTILIZED FOR BRANCH CIRCUITS LOCATED IN WIRING CHANNELS OF CONTINUOUS FLUORESCENT FIXTURES AND IN AMBIENT TEMPERATURES OVER 90 DEG C. FOR UNGROUNDED ISOLATED BRANCH CIRCUITS PROVIDE CROSS-LINKED POLYETHYLENE INSULATION (TYPE XHHW).
- E. USE NON-METALLIC (NM) (ROMEX) AND METAL-CLAD (MC) CABLES AS BRANCH CIRCUITS. THE INSTALLATION SHALL COMPLY WITH NEC CODES 334.10, 334.12, 320.10, AND 320.12.
- 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, 120/208 VOLT, AC, SIMILAR TO LEVITON DECORA SERIES A5621 (SINGLE POLE), A5623 (3-WAY) AND A5624 (4-WAY).
- C. STRAIGHT BLADE RECEPTACLES SHALL BE COMMERCIAL SPECIFICATION GRADE DUPLEX CONVENIENCE 125 VOLTS, 2 POLE, 3 WIRE, U GROUND SLOT, DECORA SERIES BY LEVITON. GROUNDED, EXCEPT AS NOTED.
- 1) SINGLE GANG, RECESSED, DUPLEX RECEPTACLE: TAMPER RESISTANT, 2-POLE, 3-WIRE GROUNDING, 15A, 125V, NEMA 5-20R; LEVITON 689 SERIES (COLOR AS SPECIFIED BY ARCHITECT).
- 2) USB CHARGER/ DUPLEX TAMPER-RESISTANT RECEPTACLE: TAMPER RESISTANT,
- E. DEVICE PLATES: SEE ARCHITECT FOR TYPE. FOR RECEPTACLES WITH OTHER THAN 120 VOLT, INSCRIBED VOLTAGE AVAILABLE.
- F. COLORS: COORDINATE COLORS WITH ARCHITECT.
- G. MOUNTING ORIENTATION OF RECEPTACLES (HORIZONTAL OR VERTICAL): COORDINATE WITH ARCHITECT.

12. LIGHTING FIXTURES:

- A. FIXTURES TO BE AS SPECIFIED BY ARCHITECT AND SHALL BE COMPLETELY FACTORY ASSEMBLED, WIRED AND EQUIPPED WITH ALL NECESSARY SOCKETS, BALLASTS, SUPPORTING HARDWARE AND ACCESSORIES. REFER TO DRAWINGS FOR INDIVIDUAL FIXTURE DESCRIPTIONS.
- B. FIXTURE CATALOG NUMBERS USED TO ILLUSTRATE EQUIPMENT TYPE DO NOT NECESSARILY DENOTE REQUIRED MOUNTING EQUIPMENT OR ACCESSORIES. PROVIDE ACCESSORIES TO SUIT.
- C. BALLAST: CLASS P, HIGH POWER FACTOR, LOWEST AVAILABLE NEMA RATED NOISE LEVEL, ET1 AND CBM APPROVED. ENERGY SAVING TYPE. TRIGGER START FOR 24-INCH LAMPS AND RAPID START FOR 48-INCH. TWO LAMP BALLASTS; NO THREE LAMP BALLASTS. BALLASTS SHALL BE ADVANCE MAGNETEK, UNIVERSAL OR EQUAL.
- D. LED DRIVERS SHALL BE ELECTRONIC TYPE, LABELED AS COMPLIANT WITH RADIO FREQUENCY INTERFERENCE (RFI) REQUIREMENTS OF FCC TITLE 47, PART 15 AND COMPLY WITH NEMA SSL 1 "ELECTRONIC DRIVERS FOR LED DEVICES, ARRAYS OR SYSTEMS". LED DRIVERS SHALL HAVE A SOUND RATING OF "A", HAVE A MINIMUM EFFICIENCY OF 85% AND BE RATED FOR A THD OF LESS THAN 20% AT ALL INPUT VOLTAGES.
- E. DIMMABLE LED DRIVERS SHALL BE CAPABLE OF DIMMING WITHOUT LED STROBING OR FLICKER ACROSS THEIR FULL DIMMING RANGE. PROVIDE TYPE OF LED DRIVER AS PER LIGHTING FIXTURE SCHEDULE. DIMMABLE LED DRIVERS SHALL BE 0-10V WHERE NOT INDICATED.
- F. CONTINUOUS ROW, TWO LAMP STRIP FIXTURES SHALL BE STAGGERED TYPE.
- G. EXIT SIGNS SHALL BE PRECISION DIE-CAST ALUMINUM HOUSING WITH LASER-FORMED ACRYLIC LEGEND. EXIT SIGNS SHALL COMPLY WITH UL 924 AND BE MEA APPROVED FOR USE. 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 (2020) 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. PANEL BOARDS:

- A. PANEL BOARDS 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 GROSS SECTIONAL AREAS LARGE ENOUGH TO LIMIT THE TEMPERATURE RISE, WHEN CARRYING FULL LOAD, TO 35 DEGREES C. ABOVE AN AMBIENT INSIDE THE ENCLOSURE OF 55 DEGREES C. AS DEFINED IN IEEE STANDARD RULES. MAIN BUS CAPACITY SHALL BE AS SHOWN ON THE CONTRACT DRAWINGS.
- E. ENCLOSURES SHALL BE SURFACE OR FLUSH AS INDICATED. TRIMS SHALL BE SECURED TO PANEL WITH MACHINE SCREWS. COVERS SHALL BE HINGED DOOR-IN-DOOR CONSTRUCTION WITH CYLINDER LOCKS AND CATCHES. LOCKS MUST BE COMPATIBLE WITH BUILDING STANDARD KEY SYSTEM AND WHEN NONE EXISTS, THEY SHALL BE SIMILAR TO A YALE NO. 911 KEY.
- F. DISTRIBUTION AND SUB-DISTRIBUTION PANELBOARD SHALL BE A MINIMUM OF 30" WIDE AND 10" DEEP.
- G. ALL STANDARD PANELBOARDS SHALL BE A MINIMUM OF 20" WIDE AND 5 3/4" DEEP.
- H. FURNISH ALL PANELBOARDS WITH FEED-THRU LUGS UNLESS OTHERWISE INDICATED ON THE DRAWINGS.
- I. ALL NEW PANELBOARDS SHALL BE PROVIDED WITH AN ENGRAVED WHITE CORE LAMACOID NAMEPLATE, WITH 3/4 IN. WHITE LETTERING ON A BLACK BACKGROUND, WITH DESIGNATION LISTED (PANELBOARD NAME), FASTENED WITH EPOXY CEMENT OR OVAL HEAD CHROME PLATED MACHINE SCREWS.
- J. THE CIRCUIT DIRECTORY SHALL BE TYPEWRITTEN AND PROVIDED INSIDE EACH PANEL DOOR TO INDICATE EQUIPMENT AND/OR AREA SERVED. DIRECTORY HOLDER SHALL BE METAL FRAME WITH CLEAR PLASTIC, TRANSPARENT COVER. THE TYPEWRITTEN LIST INDICATING CIRCUIT NUMBERS, OUTLETS SUPPLIED AND THEIR LOCATIONS SHALL BE PROVIDED.
- K. TIE-BARS SHALL NOT BE USED TO CREATE MULTI-POLE CIRCUITS. MAXIMUM 42 CIRCUITS ALLOWED.
- L. ONLY ONE WIRE SHALL BE INSTALLED UNDER EACH CIRCUIT BREAKER LUG.
- M. SHORT CIRCUIT RATING OF PANELBOARDS SHALL NOT BE LESS THAN AS INDICATED ON THE CONTRACT DRAWINGS OR SPECIFIED HEREIN. WHERE NOT INDICATED OR SPECIFIED THE MINIMUM SHORT CIRCUIT RATING SHALL BE EQUAL TO THE INTERRUPTING CAPACITY OF THE LOWEST RATED CIRCUIT BREAKER IN THE PANELBOARD, BUT IN NO CASE LESS THAN 10,000 AMPERES R.M.S. SYMMETRICAL FOR 208Y/120 VOLT SYSTEM. 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.

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REVISIONS :

NO.	DATE	DESCRIPTION
1	8/25/2025	HD COMMENTS

DRAWING TITLE :

ELECTRICAL
SPECIFICATIONS-2

DATE :

7.28.2025

DRAWN BY :

NYE

CHECKED BY :

NYE

DRAWING NUMBER

E3

ELECTRICAL SPECIFICATIONS-2

SCALE
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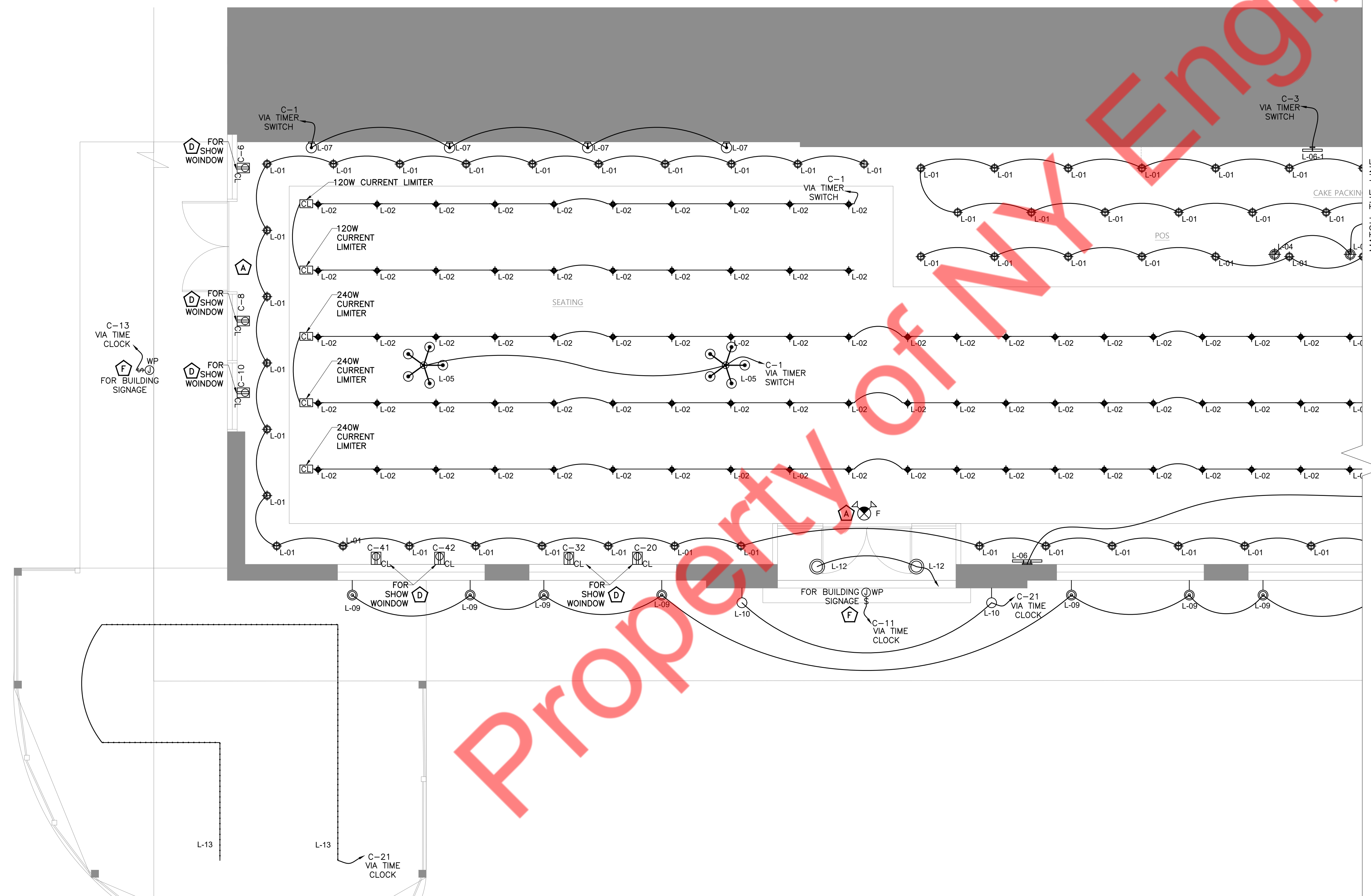
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1. SEE ARCHITECTURAL REFLECTED CEILING PLAN FOR EXACT FIXTURE LOCATIONS AND ORIENTATIONS.
2. REFER TO ARCHITECTURAL ELEVATIONS AND SECTIONS FOR ADDITIONAL LIGHTING FIXTURE MOUNTING DETAILS AND INFORMATION.
3. THIS LIGHTING PLAN IS FOR TENANT ONLY.
4. VERIFY ALL MOUNTING HEIGHTS AND LED LENGTHS WITH ARCHITECT AND ENGINEER PRIOR TO ORDERING FIXTURES.
5. E.C. SHALL COORDINATE WITH OWNER/ARCHITECT FOR EXACT CONTROLLING. INFORM ENGINEER ON RECORD IF DIFFERENT THAT WHAT IS SHOWN ON THE DRAWINGS TO CHECK THE COMPATIBILITY WITH 2021-ENERGY CONSERVATION CODE CODES.
6. PROVIDE EMERGENCY LIGHTS WITH BATTERY BACKUP. CONTRACTOR ARE ADVISED TO UPDATE THE EMERGENCY LIGHT FIXTURES LOCATIONS/QUANTITY PER SITE REQUIREMENT UP ON FINAL INSPECTION OR PER LOCAL A.H.J. REQUIREMENT.
7. LIGHTS SHALL BE SHIELDED, COATED, OR OTHERWISE SHATTER-RESISTANT IN AREAS WHERE THERE IS EXPOSED FOOD; CLEAN EQUIPMENT, UTENSILS, AND LINENS; OR UNWRAPPED SINGLE-SERVICE ARTICLES AS PER SECTION 2890.
8. A MINIMUM OF 50 FOOT CANDLES OF LIGHT ARE REQUIRED WHERE FOOD EMPLOYEES WORK WITH FOOD OR WORK WITH UTENSILS OR EQUIPMENT SUCH AS KNIVES, SLICERS, OR GRINDERS WHERE EMPLOYEE SAFETY IS A FACTOR. A MINIMUM OF 10 FOOT CANDLES OF LIGHT IS REQUIRED IN A FULLY LOADED WALK IN AS PER SECTION 3080.

a. COORDINATE FINAL FIXTURE MAKE AND MODEL WITH ARCHITECT/OWNER PRIOR TO PURCHASE.

A	CONNECT ALL EMERGENCY EGRESS FIXTURES TO THE NEAREST LIGHTING BRANCH CIRCUIT AHEAD OF ALL SWITCHING AND CONTROLS PER STATE AND LOCAL CODES.
B	E.C SHALL COORDINATE WITH OWNER/ ARCHITECT FOR EXACT LOCATION OF THE INTERMATIC ET90815CR OR EQUAL ELECTRONIC TIMER IN FIELD. BASE BID ACCORDINGLY.
C	E.C SHALL PROVIDE OVERRIDE SWITCH. COORDINATE EXACT LOCATION WITH ARCHITECT/ OWNER.
D	PROVIDE SHOW WINDOW RECEPTACLE AS PER NEC 210.62. VERIFY EXACT LOCATION WITH ARCHITECT/OWNER.
E	E.C SHALL COORDINATE WITH WALK-IN BOX COOLER/ FREEZER MANUFACTURER/ VENDOR FOR LIGHT FIXTURE CONNECTION AND CONTROLS. PROVIDE AS REQUIRED. BASE BID ACCORDINGLY.
F	PROVIDE A DISCONNECT SWITCH AT FEEDER OR BRANCH CIRCUIT ENTERS THE SIGN PER NEC,VERIFY MOUNTING HEIGHT FOR SIGNAGE POWER WITH ARCHITECTURAL ELEVATIONS, SIGN VENDOR, AND LANDLORD. ROUTE CIRCUIT TO PANEL VIA TIME CLOCK AS INDICATED ON PLAN.
G	PROVIDE 120V DEDICATED CIRCUIT FOR NEW HOOD LIGHTING & CONTROL PANEL. COORDINATE FOR LIGHTING CONNECTION & ALL OTHER REQUIREMENT WITH CAPTIVE AIRE HOOD DRAWINGS/MANUFACTURER IN FIELD.
H	LIGHTING NEAR ELECTRICAL PANELS SHALL NOT BE CONTROLLED BY ANY AUTOMATIC MEANS AND SHALL BE COMPLIED AS PER NEC 110.26(D).
I	INTERLOCK EF-1 WITH RTU-3(E). E.C SHALL COORDINATE WITH MECHANICAL DRAWING FOR EXACT LOCATION.
J	E.C SHALL COORDINATE EXACT LOCATION OF SWITCH BANK AND QUANTITY OF SWITCHES WITH ARCHITECT/OWNER. E.C. SHALL CONFIRM CLEAR SPACE FOR SWITCH, NO OBJECT INFRONT OF SWITCH LOCATION. E.C. SHALL COORDINATE WITH THE TIMER SWITCH MANUFACTURER FOR MAXIMUM LOAD PER SWITCH BEFORE COMMENCING ANY WORK. BASE BID ACCORDINGLY.

LIGHTING FIXTURE SCHEDULE							
TYPE	DESCRIPTION	MANUFACTURER	CATALOGUE#	MOUNTING	VOLTAGE	WATTAGE (W)	REMARK
L-01	6" RECESSED LIGHT	WAC LIGHTING	LOTOS R6ERDR	RECESSED	120	15W	
L-02	TRACK LIGHT	GREEN CREATIVE	TBD	SURFACE	120	10W	
L-03	2X4 TROFFER PANEL	WYZM	TBD	CEILING	120	50W	
L-03-1	2X2 TROFFER PANEL	WYZM	TBD	CEILING	120	45W	
L-04	CANDLE LIGHT	TECH LIGHTIMG	TEC883945	SUSPENDED	120	50W	
L-05	CHANDELIER	TBD	TBD	SUSPENDED	120	60W(MAX) /BULB	VERIFY WITH ARCHITECT
L-06	PICTURE LIGHT	HOLLY	HL263203-AGB	WALL MOUNT	120	25W	
L-06-1	PICTURE LIGHT	HOLLY	HL263202-AGB/WH	WALL MOUNT	120	25W	
L-07	WALL SCONE LIGHT	MITZI	TBD	WALL MOUNT	120	60W	
L-08	CASSIA WALL SCONE	ALORA LIGHTING	TBD	WALL MOUNT	120	80W	
L-09	GOOSENECK LIGHT	TBD	TBD	WALL MOUNT	120	36W	VERIFY WITH ARCHITECT
L-10	SCONE LIGHT	TBD	TBD	WALL MOUNT	120	40W	VERIFY WITH ARCHITECT
L-11	FLOOD LIGHT	TBD	TBD	WALL MOUNT	120	36W	VERIFY WITH ARCHITECT
L-12	EXTERIOR RECESSED CEILING LIGHT	TBD	TBD	CEILING	120	32W	VERIFY WITH ARCHITECT
L-13	EXTERIOR STRING LIGHT	TBD	TBD	SUSPENDED	120	5W / BULB	VERIFY WITH ARCHITECT
F	EMERGENCY EXIT LIGHT	TBD	TBD	WALL MOUNT	120	2	EMERGENCY FIXTURE



ELECTRICAL LIGHTING PLAN-1

SCALE
1/4" = 1'-0"



E4

NO.	DATE	DESCRIPTION
1	8/25/2025	HD COMMENTS

ELECTRICAL
LIGHTING PLAN-1

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ELECTRICAL LIGHTING PLAN GENERAL NOTES:

1. SEE ARCHITECTURAL REFLECTED CEILING PLAN FOR EXACT FIXTURE LOCATIONS AND ORIENTATIONS.
2. REFER TO ARCHITECTURAL ELEVATIONS AND SECTIONS FOR ADDITIONAL LIGHTING FIXTURE MOUNTING DETAILS AND INFORMATION.
3. THIS LIGHTING PLAN IS FOR TENANT ONLY.
4. VERIFY ALL MOUNTING HEIGHTS AND LED LENGTHS WITH ARCHITECT AND ENGINEER PRIOR TO ORDERING FIXTURES.
5. E.C. SHALL COORDINATE WITH OWNER/ARCHITECT FOR EXACT CONTROLLING. INFORM ENGINEER ON RECORD IF DIFFERENT THAT WHAT IS SHOWN ON THE DRAWINGS TO CHECK THE COMPATIBILITY WITH 2021-ENERGY CONSERVATION CODE CODES.
6. PROVIDE EMERGENCY LIGHTS WITH BATTERY BACKUP. CONTRACTOR ARE ADVISED TO UPDATE THE EMERGENCY LIGHT FIXTURES LOCATIONS/QUANTITY PER SITE REQUIREMENT UP ON FINAL INSPECTION OR PER LOCAL A.H.J REQUIREMENT.
7. LIGHTS SHALL BE SHIELDED, COATED, OR OTHERWISE SHATTER-RESISTANT IN AREAS WHERE THERE IS EXPOSED FOOD; CLEAN EQUIPMENT, UTENSILS, AND LINENS; OR UNWRAPPED SINGLE-SERVICE ARTICLES AS PER SECTION 2890.
8. A MINIMUM OF 50 FOOT CANDLES OF LIGHT ARE REQUIRED WHERE FOOD EMPLOYEES WORK WITH FOOD OR WORK WITH UTENSILS OR EQUIPMENT SUCH AS KNIVES, SLICERS, OR GRINDERS WHERE EMPLOYEE SAFETY IS A FACTOR. A MINIMUM OF 10 FOOT CANDLES OF LIGHT IS REQUIRED IN A FULLY LOADED WALK IN AS PER SECTION 3080.

LIGHTING FIXTURE SCHEDULE NOTES:

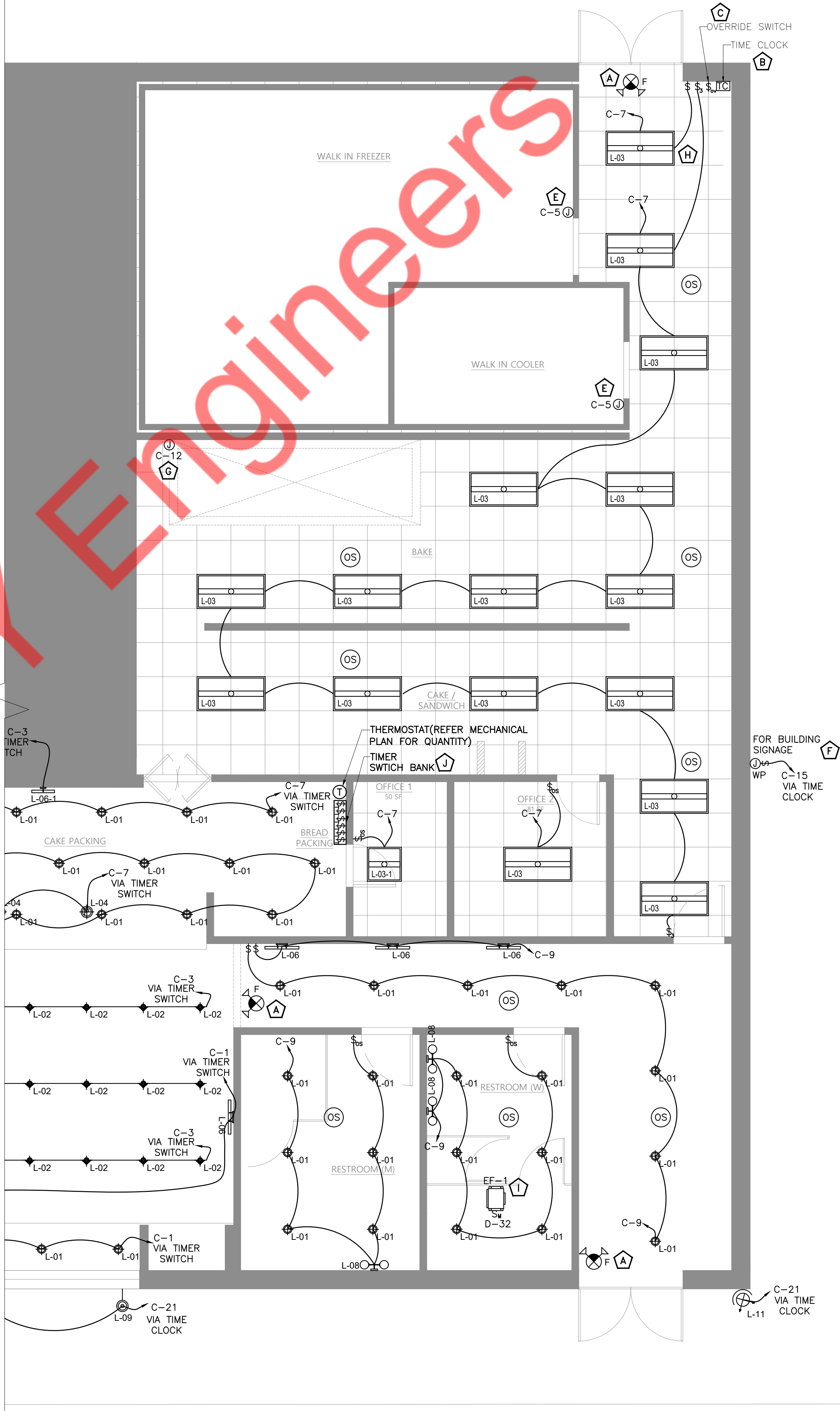
- a. COORDINATE FINAL FIXTURE MAKE AND MODEL WITH ARCHITECT/OWNER PRIOR TO PURCHASE.

ELECTRICAL LIGHTING PLAN KEYED WORK NOTES:

- A** CONNECT ALL EMERGENCY EGRESS FIXTURES TO THE NEAREST LIGHTING BRANCH CIRCUIT AHEAD OF ALL SWITCHING AND CONTROLS PER STATE AND LOCAL CODES.
- B** E.C SHALL COORDINATE WITH OWNER/ ARCHITECT FOR EXACT LOCATION OF THE INTERMATIC ET90815CR OR EQUAL ELECTRONIC TIMER IN FIELD. BASE BID ACCORDINGLY.
- C** E.C SHALL PROVIDE OVERRIDE SWITCH. COORDINATE EXACT LOCATION WITH ARCHITECT/ OWNER.
- D** PROVIDE SHOW WINDOW RECEPTACLE AS PER NEC 210.62. VERIFY EXACT LOCATION WITH ARCHITECT/OWNER.
- E** E.C SHALL COORDINATE WITH WALK-IN BOX COOLER/ FREEZER MANUFACTURER/ VENDOR FOR LIGHT FIXTURE CONNECTION AND CONTROLS. PROVIDE AS REQUIRED. BASE BID ACCORDINGLY.
- F** PROVIDE A DISCONNECT SWITCH AT FEEDER OR BRANCH CIRCUIT ENTERS THE SIGN PER NEC.VERIFY MOUNTING HEIGHT FOR SIGNAGE POWER WITH ARCHITECTURAL ELEVATIONS, SIGN VENDOR, AND LANDLORD. ROUTE CIRCUIT TO PANEL VIA TIME CLOCK AS INDICATED ON PLAN.
- G** PROVIDE 120V DEDICATED CIRCUIT FOR NEW HOOD LIGHTING & CONTROL PANEL. COORDINATE FOR LIGHTING CONNECTION & ALL OTHER REQUIREMENT WITH CAPTIVE AIRE HOOD DRAWINGS/MANUFACTURER IN FIELD.
- H** LIGHTING NEAR ELECTRICAL PANELS SHALL NOT BE CONTROLLED BY ANY AUTOMATIC MEANS AND SHALL BE COMPLIED AS PER NEC 110.26(D).
- I** INTERLOCK EF-1 WITH RTU-3(E). E.C SHALL COORDINATE WITH MECHANICAL DRAWING FOR EXACT LOCATION.
- J** E.C SHALL COORDINATE EXACT LOCATION OF SWITCH BANK AND QUANTITY OF SWITCHES WITH ARCHITECT/OWNER. E.C. SHALL CONFIRM CLEAR SPACE FOR SWITCH, NO OBJECT INFRONT OF SWITCH LOCATION. E.C. SHALL COORDINATE WITH THE TIMER SWITCH MANUFACTURER FOR MAXIMUM LOAD PER SWITCH BEFORE COMMENCING ANY WORK. BASE BID ACCORDINGLY.

LIGHTING SCHEDULE:

LIGHTING FIXTURE SCHEDULE							
TYPE	DESCRIPTION	MANUFACTURER	CATALOGUE#	MOUNTING	VOLTAGE	WATTAGE (W)	REMARK
L-01	6" RECESSED LIGHT	WAC LIGHTING	LOTOS R6ERDR	RECESSED	120	15W	
L-02	TRACK LIGHT	GREEN CREATIVE	TBD	SURFACE	120	10W	
L-03	2X4 TROFFER PANEL	WYZM	TBD	CEILING	120	50W	
L-03-1	2X2 TROFFER PANEL	WYZM	TBD	CEILING	120	45W	
L-04	CANDLE LIGHT	TECH LIGHTING	TEC883945	SUSPENDED	120	50W	
L-05	CHANDELIER	TBD	TBD	SUSPENDED	120	60W(MAX) /BULB	VERIFY WITH ARCHITECT
L-06	PICTURE LIGHT	HOLLY	HL263203-AGB	WALL MOUNT	120	25W	
L-06-1	PICTURE LIGHT	HOLLY	HL263202-AGB/WH	WALL MOUNT	120	25W	
L-07	WALL SCONCE LIGHT	MITZI	TBD	WALL MOUNT	120	60W	
L-08	CASSIA WALL SCONCE	ALORA LIGHTING	TBD	WALL MOUNT	120	80W	
L-09	GOOSENECK LIGHT	TBD	TBD	WALL MOUNT	120	36W	VERIFY WITH ARCHITECT
L-10	SCONE LIGHT	TBD	TBD	WALL MOUNT	120	40W	VERIFY WITH ARCHITECT
L-11	FLOOD LIGHT	TBD	TBD	WALL MOUNT	120	36W	VERIFY WITH ARCHITECT
L-12	EXTERIOR RECESSED CEILING LIGHT	TBD	TBD	CEILING	120	32W	VERIFY WITH ARCHITECT
L-13	EXTERIOR STRING LIGHT	TBD	TBD	SUSPENDED	120	5W / BULB	VERIFY WITH ARCHITECT
F	EMERGENCY EXIT LIGHT	TBD	TBD	WALL MOUNT	120	2	EMERGENCY FIXTURE



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DRAWING TITLE :

ELECTRICAL
LIGHTING PLAN-2

DATE :

7.28.2025

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E5

ELECTRICAL LIGHTING PLAN-2

SCALE
1/4" = 1'-0"

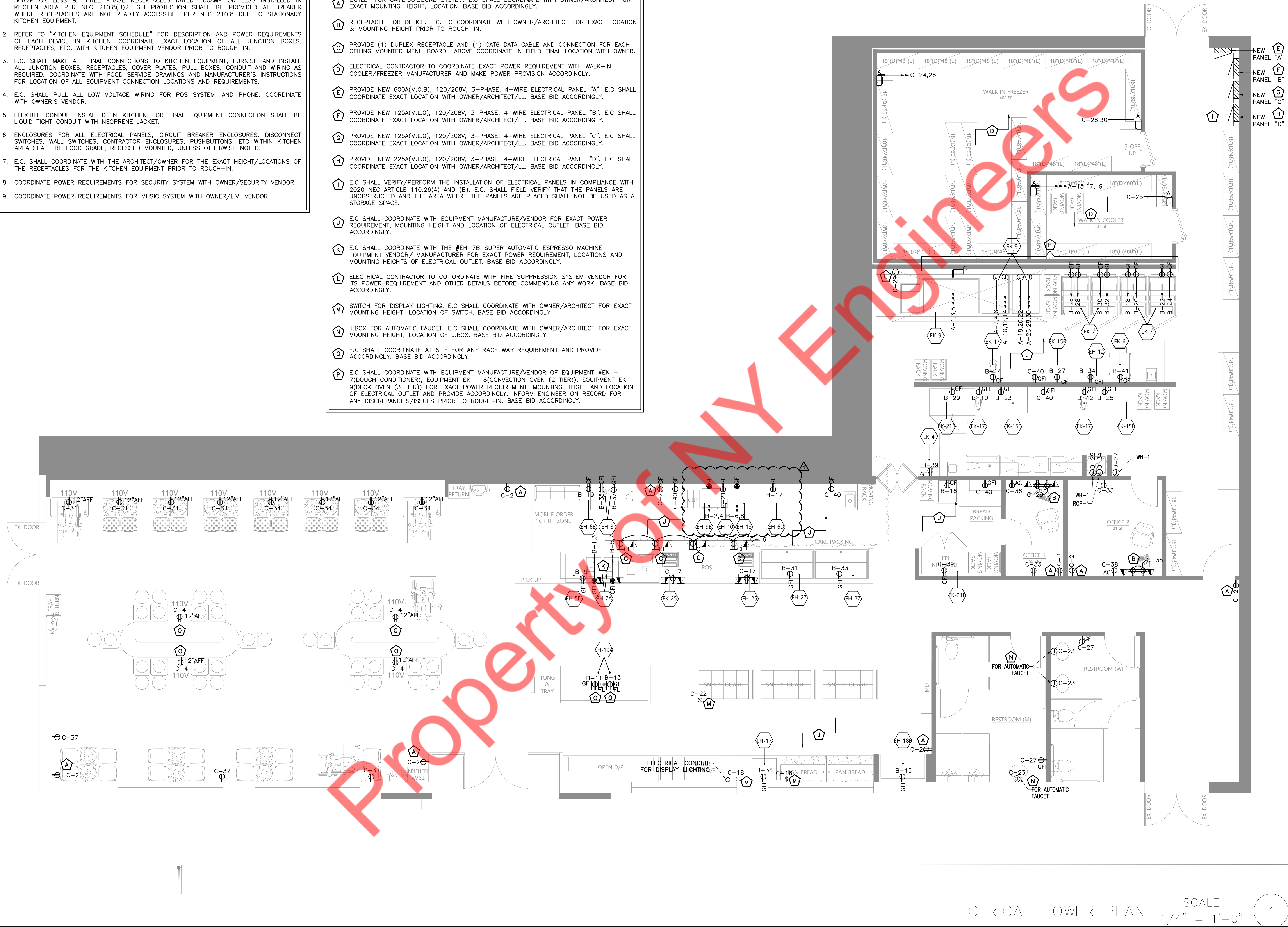
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ELECTRICAL POWER PLAN GENERAL NOTES:

1. PROVIDE GFCI PROTECTION FOR PERSONNEL FOR ALL SINGLE PHASE RECEPTACLES RATED 50AMP OR LESS & THREE PHASE RECEPTACLES RATED 100AMP OR LESS INSTALLED IN KITCHEN AREA PER NEC 210.8(B)2. GFI PROTECTION SHALL BE PROVIDED AT BREAKER WHERE RECEPTACLES ARE NOT READILY ACCESSIBLE PER NEC 210.8 DUE TO STATIONARY KITCHEN EQUIPMENT.
2. REFER TO "KITCHEN EQUIPMENT SCHEDULE" FOR DESCRIPTION AND POWER REQUIREMENTS OF EACH DEVICE IN KITCHEN. COORDINATE EXACT LOCATION OF ALL JUNCTION BOXES, RECEPTACLES, ETC. WITH KITCHEN EQUIPMENT VENDOR PRIOR TO ROUGH-IN.
3. E.C. SHALL MAKE ALL FINAL CONNECTIONS TO KITCHEN EQUIPMENT, FURNISH AND INSTALL ALL JUNCTION BOXES, RECEPTACLES, COVER PLATES, PULL BOXES, CONDUIT AND WIRING AS REQUIRED. COORDINATE WITH FOOD SERVICE DRAWINGS AND MANUFACTURER'S INSTRUCTIONS FOR LOCATION OF ALL EQUIPMENT CONNECTION LOCATIONS AND REQUIREMENTS.
4. E.C. SHALL PULL ALL LOW VOLTAGE WIRING FOR POS SYSTEM, AND PHONE. COORDINATE WITH OWNER'S VENDOR.
5. FLEXIBLE CONDUIT INSTALLED IN KITCHEN FOR FINAL EQUIPMENT CONNECTION SHALL BE LIQUID TIGHT CONDUIT WITH NEOPRENE JACKET.
6. ENCLOSURES FOR ALL ELECTRICAL PANELS, CIRCUIT BREAKER ENCLOSURES, DISCONNECT SWITCHES, WALL SWITCHES, CONTRACTOR ENCLOSURES, PUSHBUTTONS, ETC WITHIN KITCHEN AREA SHALL BE FOOD GRADE, RECESSED MOUNTED, UNLESS OTHERWISE NOTED.
7. E.C. SHALL COORDINATE WITH THE ARCHITECT/OWNER FOR THE EXACT HEIGHT/LOCATIONS OF THE RECEPTACLES FOR THE KITCHEN EQUIPMENT PRIOR TO ROUGH-IN.
8. COORDINATE POWER REQUIREMENTS FOR SECURITY SYSTEM WITH OWNER/SECURITY VENDOR.
9. COORDINATE POWER REQUIREMENTS FOR MUSIC SYSTEM WITH OWNER/L.V. VENDOR.

ELECTRICAL POWER PLAN KEYED WORK NOTES:

- A** OUTLET FOR CAMERA/SOUND SYSTEM. E.C SHALL COORDINATE WITH OWNER/ARCHITECT FOR EXACT MOUNTING HEIGHT, LOCATION. BASE BID ACCORDINGLY.
- B** RECEPTACLE FOR OFFICE. E.C. TO COORDINATE WITH OWNER/ARCHITECT FOR EXACT LOCATION & MOUNTING HEIGHT PRIOR TO ROUGH-IN.
- C** PROVIDE (1) DUPLEX RECEPTACLE AND (1) CAT6 DATA CABLE AND CONNECTION FOR EACH CEILING MOUNTED MENU BOARD ABOVE COORDINATE IN FIELD FINAL LOCATION WITH OWNER.
- D** ELECTRICAL CONTRACTOR TO COORDINATE EXACT POWER REQUIREMENT WITH WALK-IN COOLER/FREEZER MANUFACTURER AND MAKE POWER PROVISION ACCORDINGLY.
- E** PROVIDE NEW 600A(M.C.B), 120/208V, 3-PHASE, 4-WIRE ELECTRICAL PANEL "A". E.C SHALL COORDINATE EXACT LOCATION WITH OWNER/ARCHITECT/LL. BASE BID ACCORDINGLY.
- F** PROVIDE NEW 125A(M.L.O), 120/208V, 3-PHASE, 4-WIRE ELECTRICAL PANEL "B". E.C SHALL COORDINATE EXACT LOCATION WITH OWNER/ARCHITECT/LL. BASE BID ACCORDINGLY.
- G** PROVIDE NEW 125A(M.L.O), 120/208V, 3-PHASE, 4-WIRE ELECTRICAL PANEL "C". E.C SHALL COORDINATE EXACT LOCATION WITH OWNER/ARCHITECT/LL. BASE BID ACCORDINGLY.
- H** PROVIDE NEW 225A(M.L.O), 120/208V, 3-PHASE, 4-WIRE ELECTRICAL PANEL "D". E.C SHALL COORDINATE EXACT LOCATION WITH OWNER/ARCHITECT/LL. BASE BID ACCORDINGLY.
- I** E.C SHALL VERIFY/PERFORM THE INSTALLATION OF ELECTRICAL PANELS IN COMPLIANCE WITH 2020 NEC ARTICLE 110.26(A) AND (B). E.C. SHALL FIELD VERIFY THAT THE PANELS ARE UNOBSTRUCTED AND THE AREA WHERE THE PANELS ARE PLACED SHALL NOT BE USED AS A STORAGE SPACE.
- J** E.C SHALL COORDINATE WITH EQUIPMENT MANUFACTURE/VENDOR FOR EXACT POWER REQUIREMENT, MOUNTING HEIGHT AND LOCATION OF ELECTRICAL OUTLET. BASE BID ACCORDINGLY.
- K** E.C SHALL COORDINATE WITH THE #EH-7B SUPER AUTOMATIC ESPRESSO MACHINE EQUIPMENT VENDOR/ MANUFACTURER FOR EXACT POWER REQUIREMENT, LOCATIONS AND MOUNTING HEIGHTS OF ELECTRICAL OUTLET. BASE BID ACCORDINGLY.
- L** ELECTRICAL CONTRACTOR TO CO-ORDINATE WITH FIRE SUPPRESSION SYSTEM VENDOR FOR ITS POWER REQUIREMENT AND OTHER DETAILS BEFORE COMMENCING ANY WORK. BASE BID ACCORDINGLY.
- M** SWITCH FOR DISPLAY LIGHTING. E.C SHALL COORDINATE WITH OWNER/ARCHITECT FOR EXACT MOUNTING HEIGHT, LOCATION OF SWITCH. BASE BID ACCORDINGLY.
- N** J.BOX FOR AUTOMATIC FAUCET. E.C SHALL COORDINATE WITH OWNER/ARCHITECT FOR EXACT MOUNTING HEIGHT, LOCATION OF J.BOX. BASE BID ACCORDINGLY.
- O** E.C SHALL COORDINATE AT SITE FOR ANY RACE WAY REQUIREMENT AND PROVIDE ACCORDINGLY. BASE BID ACCORDINGLY.
- P** E.C SHALL COORDINATE WITH EQUIPMENT MANUFACTURE/VENDOR OF EQUIPMENT #EK - 7(DOUGH CONDITIONER), EQUIPMENT EK - 8(CONVECTION OVEN (2 TIER)), EQUIPMENT EK - 9(DECK OVEN (3 TIER)) FOR EXACT POWER REQUIREMENT, MOUNTING HEIGHT AND LOCATION OF ELECTRICAL OUTLET AND PROVIDE ACCORDINGLY. INFORM ENGINEER ON RECORD FOR ANY DISCREPANCIES/ISSUES PRIOR TO ROUGH-IN. BASE BID ACCORDINGLY.



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NO.	DATE	DESCRIPTION
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DRAWING TITLE :

ELECTRICAL
POWER PLAN

DATE :

7.28.2025

DRAWN BY :

NYE

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DRAWING NUMBER

E6

ELECTRICAL POWER PLAN

SCALE
1/4" = 1'-0"

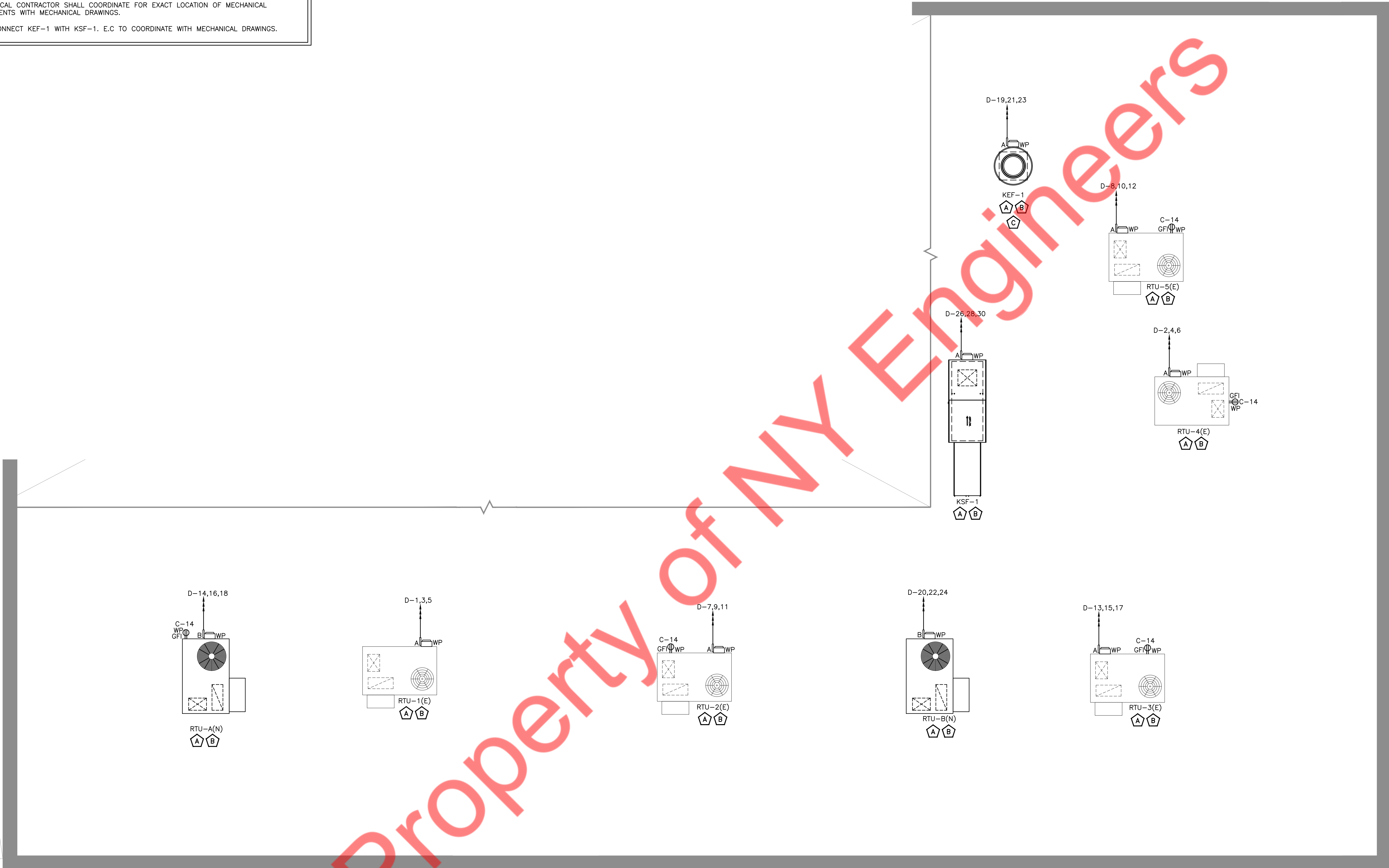
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- # ELECTRICAL POWER PLAN KEYED WORK NOTES:
- A

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

ELECTRICAL CONTRACTOR SHALL COORDINATE FOR EXACT LOCATION OF MECHANICAL EQUIPMENTS WITH MECHANICAL DRAWINGS.
- C

INTERCONNECT KEF-1 WITH KSF-1. E.C TO COORDINATE WITH MECHANICAL DRAWINGS.



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DRAWING TITLE :
ELECTRICAL ROOF
POWER PLAN

DATE :
7.28.2025

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E7

MANUAL MODE OPERATION:

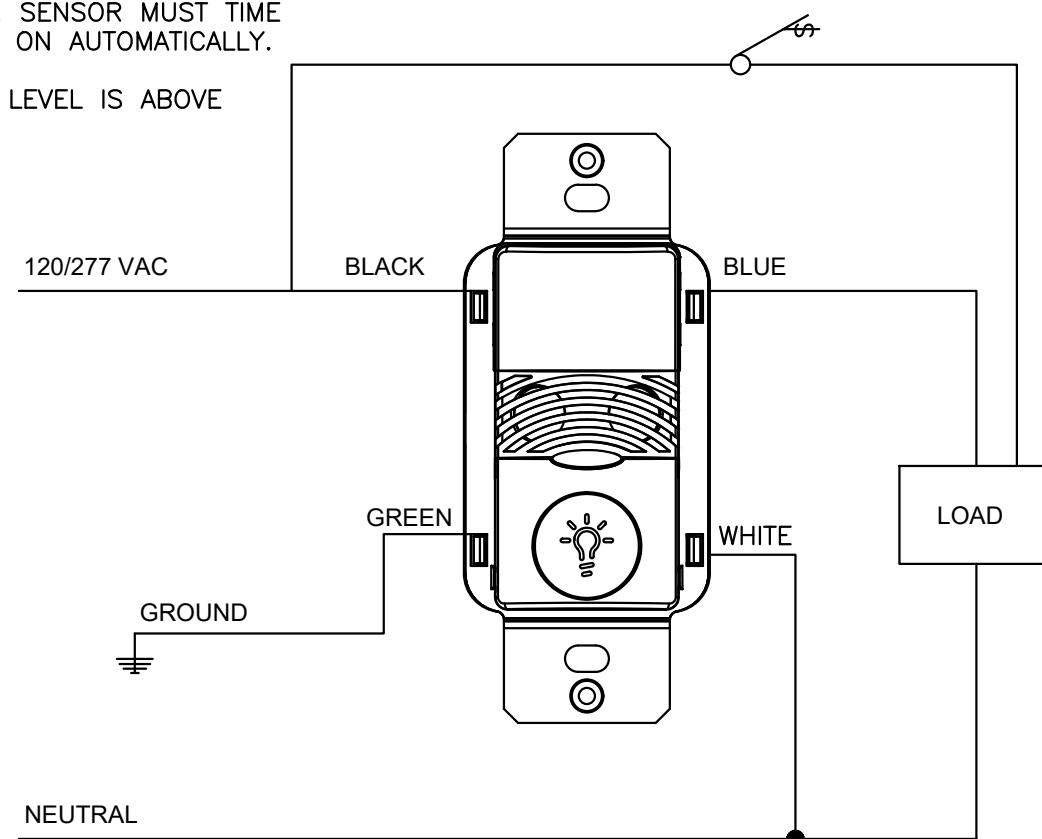
- PUSHBUTTON PRESS IS REQUIRED TO TURN LOAD ON.
- LOAD TURNS OFF WHEN SENSOR TIMES OUT OR BY PRESSING PUSH BUTTON.
- IF DAYLIGHT SENSOR IS ENABLED AND LIGHT LEVEL IS ABOVE SETPOINT, LOAD WILL NOT TURN ON.

AUTOMATIC MODE OPERATION:

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

SENSOR TYPES INCLUDE:

ONW-D-1001-MV-N



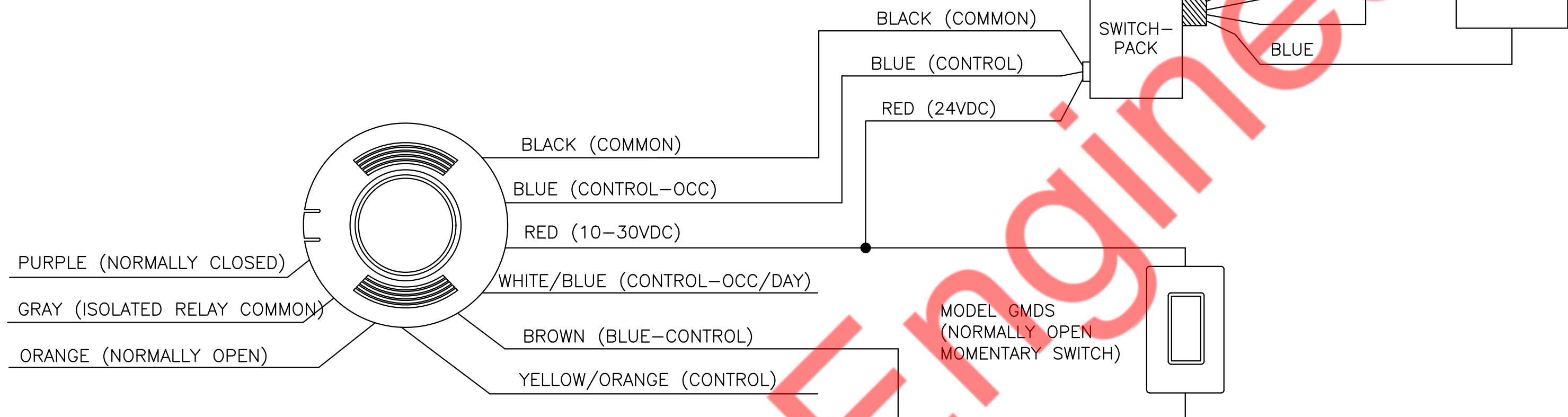
OAC AND VAC MANUAL MODE OPERATION:

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

OAC AUTOMATIC MODE OPERATION:

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

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



NOTES

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

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

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CONNECTION) OCCUPANCY/VACANCY-SINGLE LEVEL
WIRING DIAGRAM-LOW VOLTAGE WALL SWITCH SENSOR(NEUTRAL
N.T.S

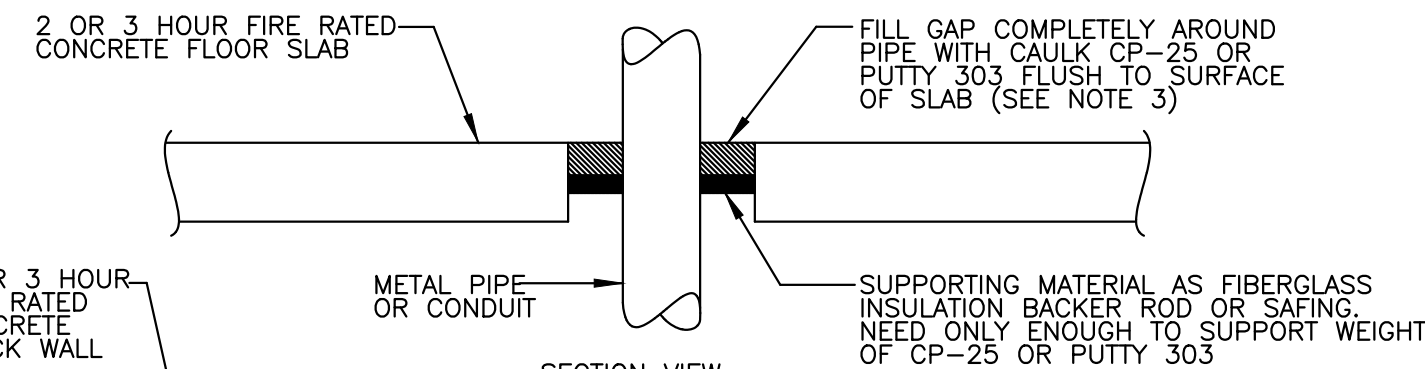
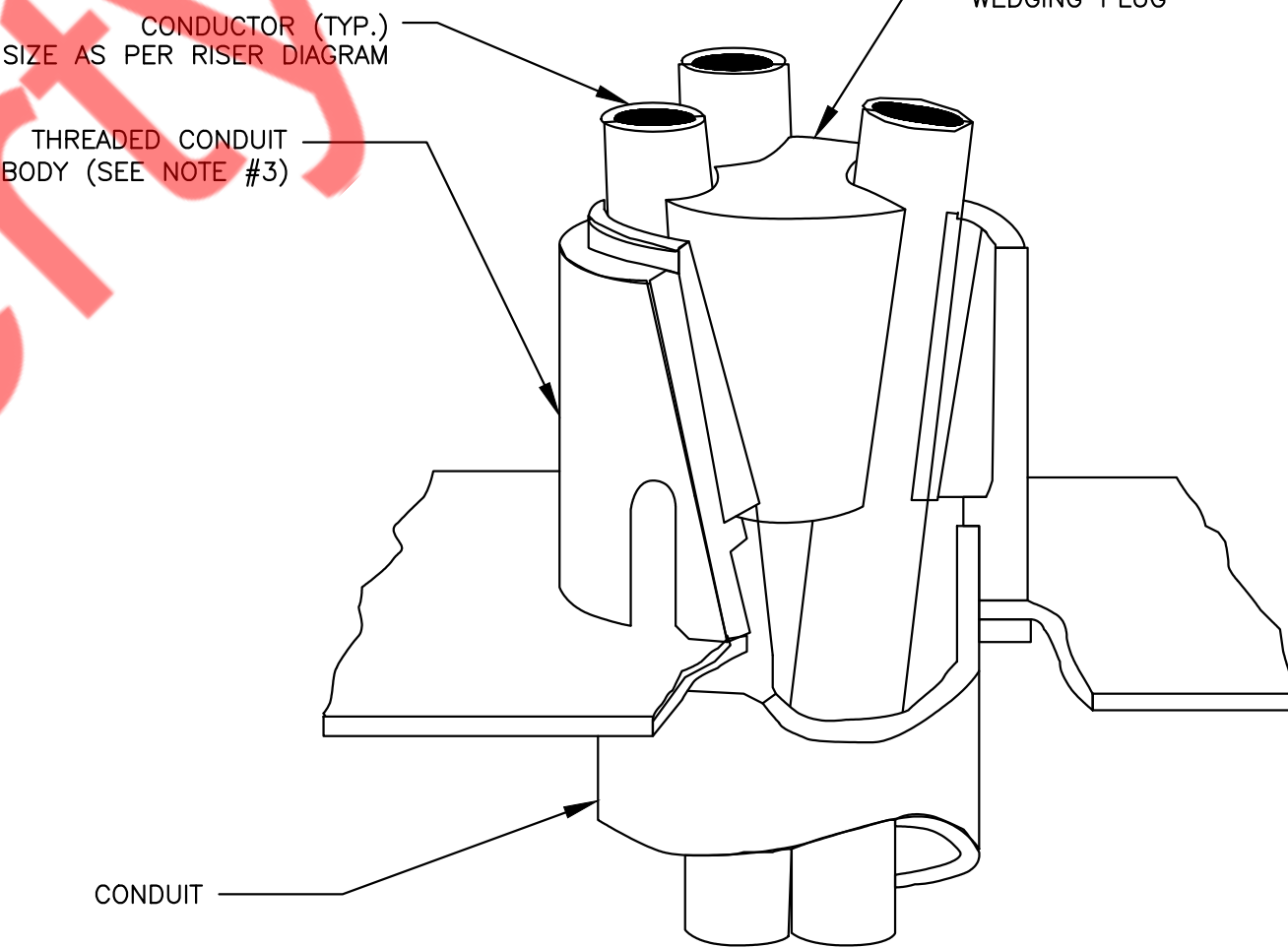
2

E7

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

NOTES:

- 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.
- CABLE SUPPORT SYSTEM SHALL BE AS MANUFACTURED BY O-Z GEDNEY WITH POZI-GRIP "S-STYLE" WEDGING PLUG OR APPROVED EQUAL.
- FOR THREADLESS CONDUIT (RIGID, IMC OR EMT), ATTACH CONDUIT BODY TO MALE THREADS OF A SET SCREW OR COMPRESSION CONNECT, AS PERMITTED BY SPECIFICATIONS.
- PROVIDE PULL BOX AT EACH LOCATION OF CABLE SUPPORTS. PULL BOX SHALL BE SIZED AS PER CODE TO ACCOMMODATE ALL CONDUITS.

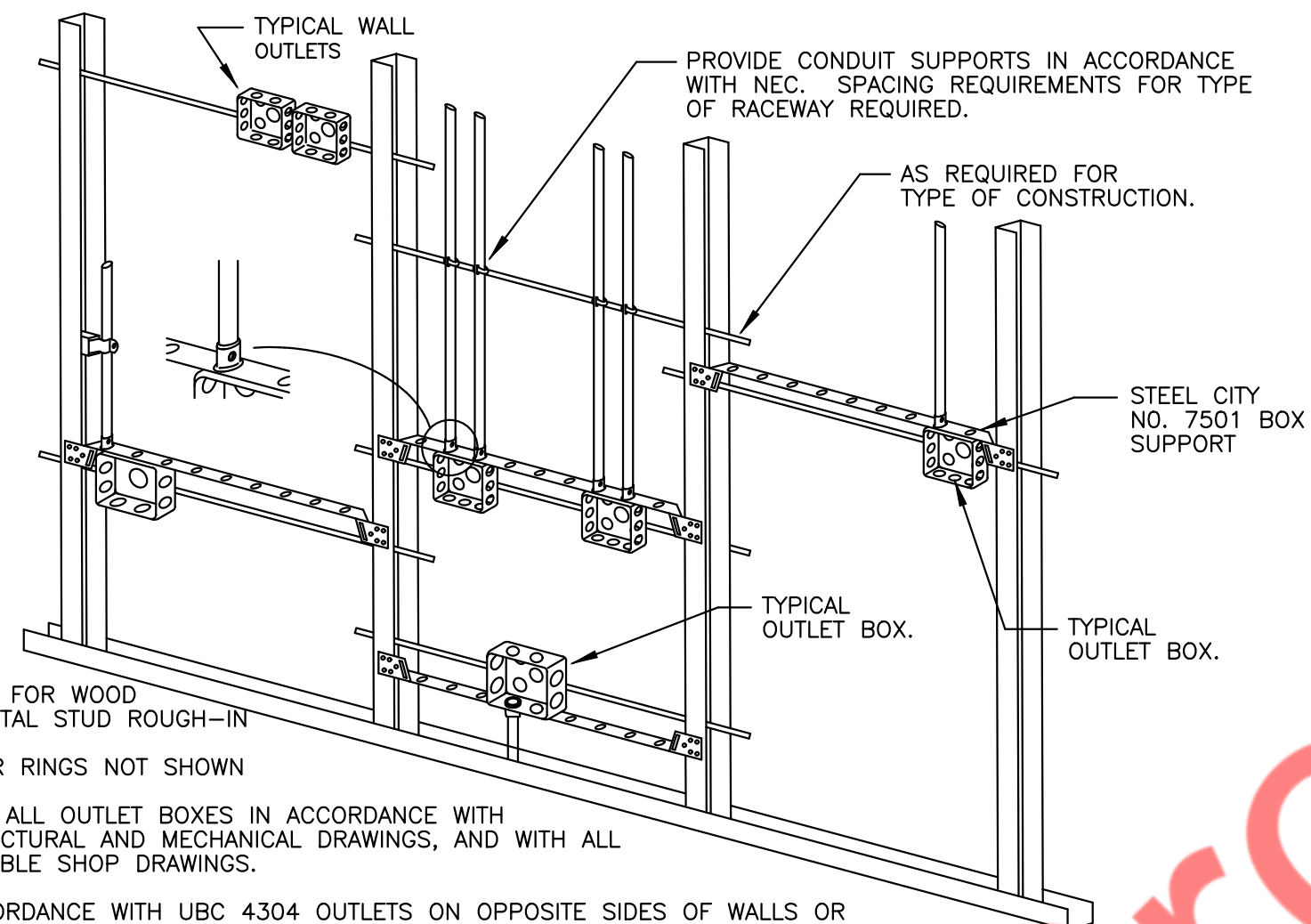


NOTES:

- FOR CONCRETE BLOCK WALLS, CENTER CAULK CP-25 OR PUTTY 303 WITHIN WALL WITH DAMMING ON BOTH SIDES.
- RECOMMENDATIONS BASED ON PRODUCT PERFORMANCE PER ASTM E-814 (UL 1479) FIRE TEST AND UL CLASSIFICATION FIRE STOP SYSTEMS 49, 33 AND 91.
- WET INSTALLED DEPTH OF CAULK CP-25 OR PUTTY 303 DEPENDS ON TYPE AND SIZE OF PIPE:
PIPE SIZE
WET DEPTH
1 1/2" (38mm) MAX. 8" (203mm)
2" (51mm) MAX. 8" (152mm)
FIRE RATING
2 HRS.
3 HRS.
- UP TO 40% SHRINKAGE OF CP-25 OR PUTTY 303 IS ACCEPTABLE AFTER WET DEPTH INSTALLATION.
- 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.
- 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:

- TYPICAL FOR WOOD AND METAL STUD ROUGH-IN
- PLASTER RINGS NOT SHOWN
- LOCATE ALL OUTLET BOXES IN ACCORDANCE WITH ARCHITECTURAL AND MECHANICAL DRAWINGS, AND WITH ALL APPLICABLE SHOP DRAWINGS.
- 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

E7

DETAIL TYPICAL ROUGH-IN REQUIREMENTS
N.T.S

3

E7

VERTICAL CABLE SUPPORT DETAIL
N.T.S

1

E7

FIRE STOP DETAILS
N.T.S

ELECTRICAL DETAIL SHEET-1

SCALE
N.T.S.

1

REVISIONS :

NO.	DATE	DESCRIPTION
1	8/25/2025	HD COMMENTS

DRAWING TITLE :

ELECTRICAL
DETAILS SHEET-1

DATE :

7.28.2025

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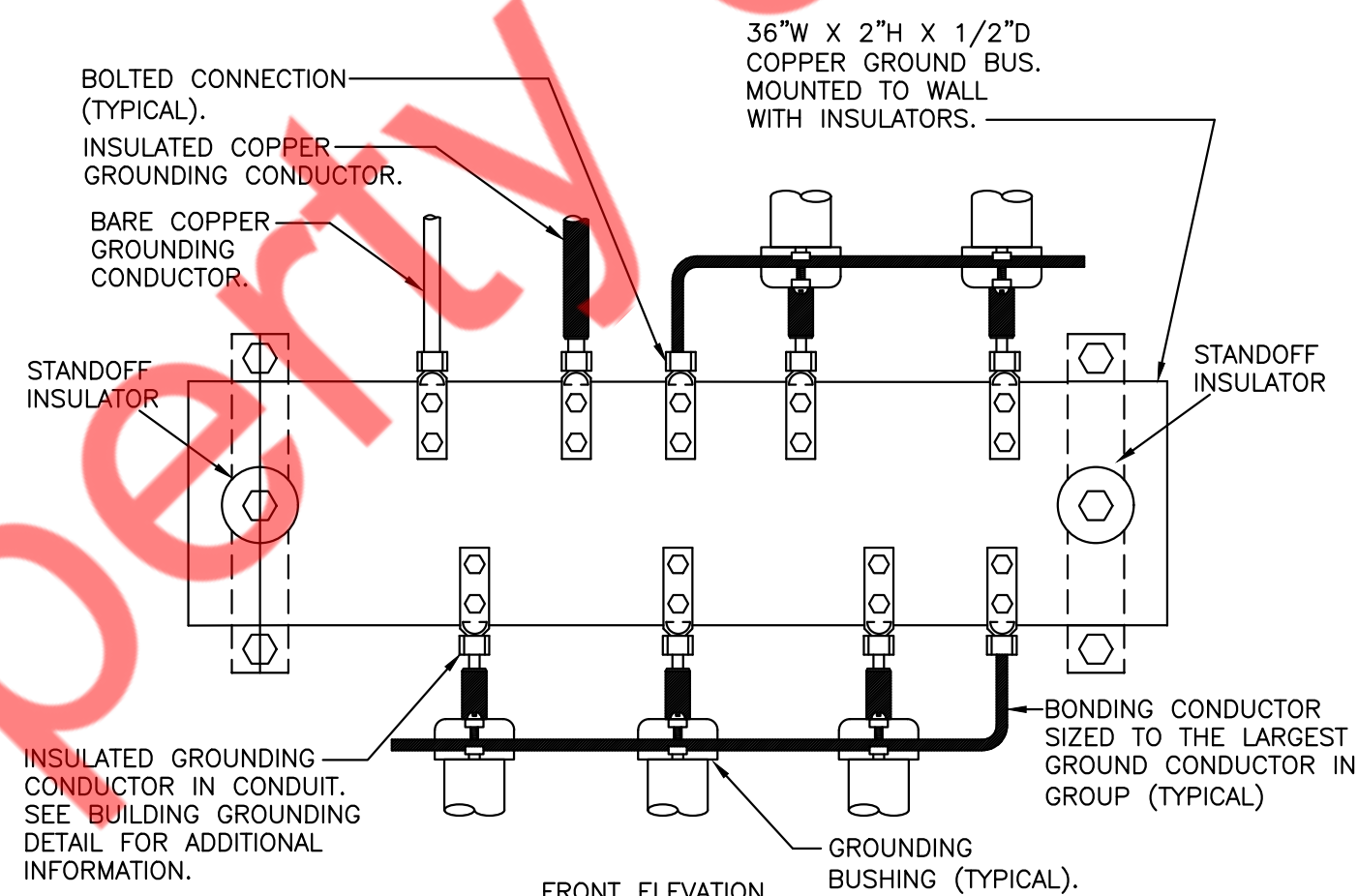
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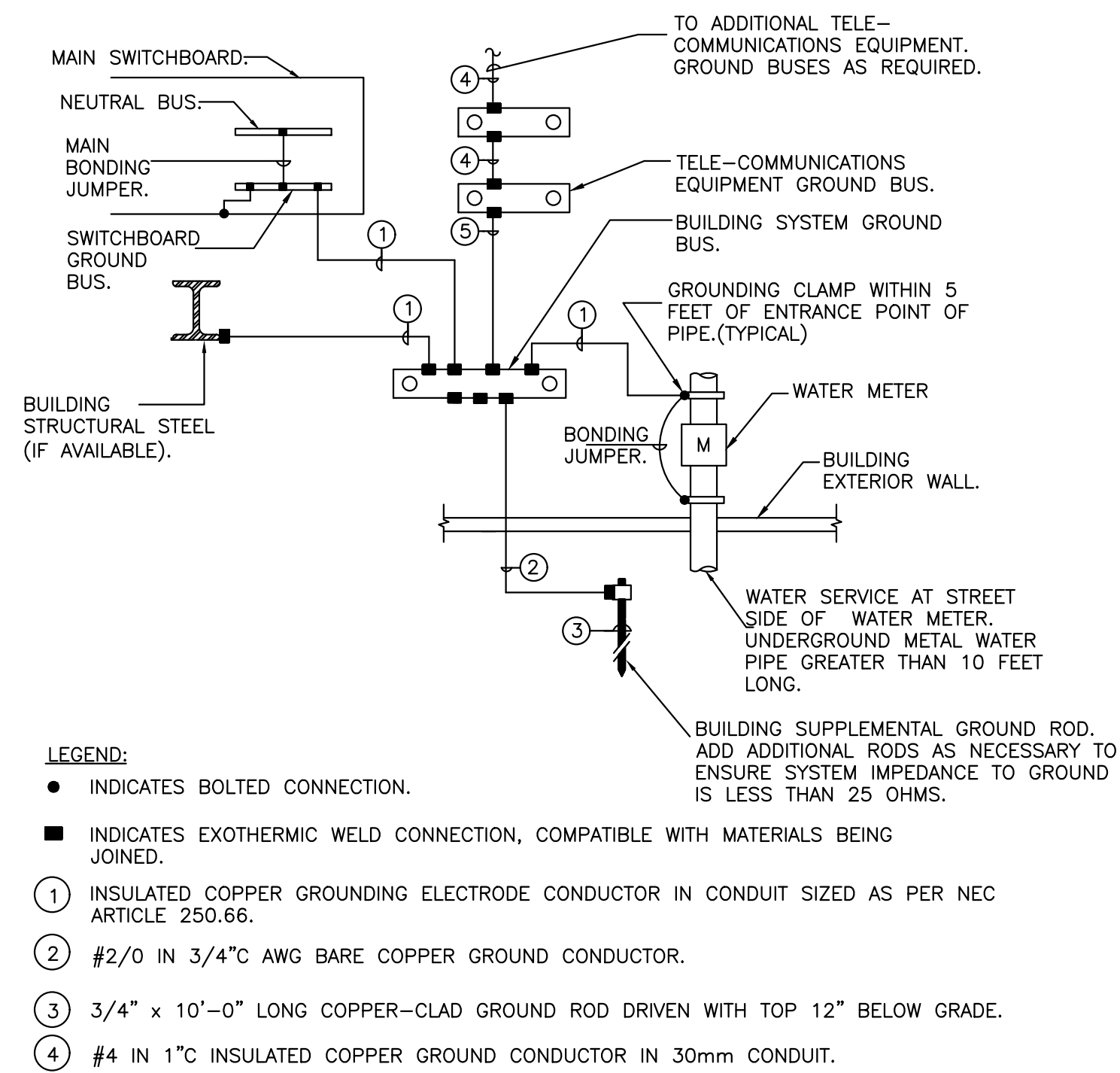
DRAWING NUMBER

E8



NOTES:
1. REFER TO BUILDING GROUNDING ELECTRODE SYSTEM DETAIL FOR EXACT CONFIGURATION.

2 BUILDING ELECTRICAL SYSTEMS GROUND BUS
E8 N.T.S.



1 BUILDING GROUNDING ELECTRODE SYSTEM
E8 N.T.S.

REVISIONS :

NO.	DATE	DESCRIPTION
1	8/25/2025	HD COMMENTS

DRAWING TITLE :

ELECTRICAL
DETAILS SHEET-2

DATE :

7.28.2025

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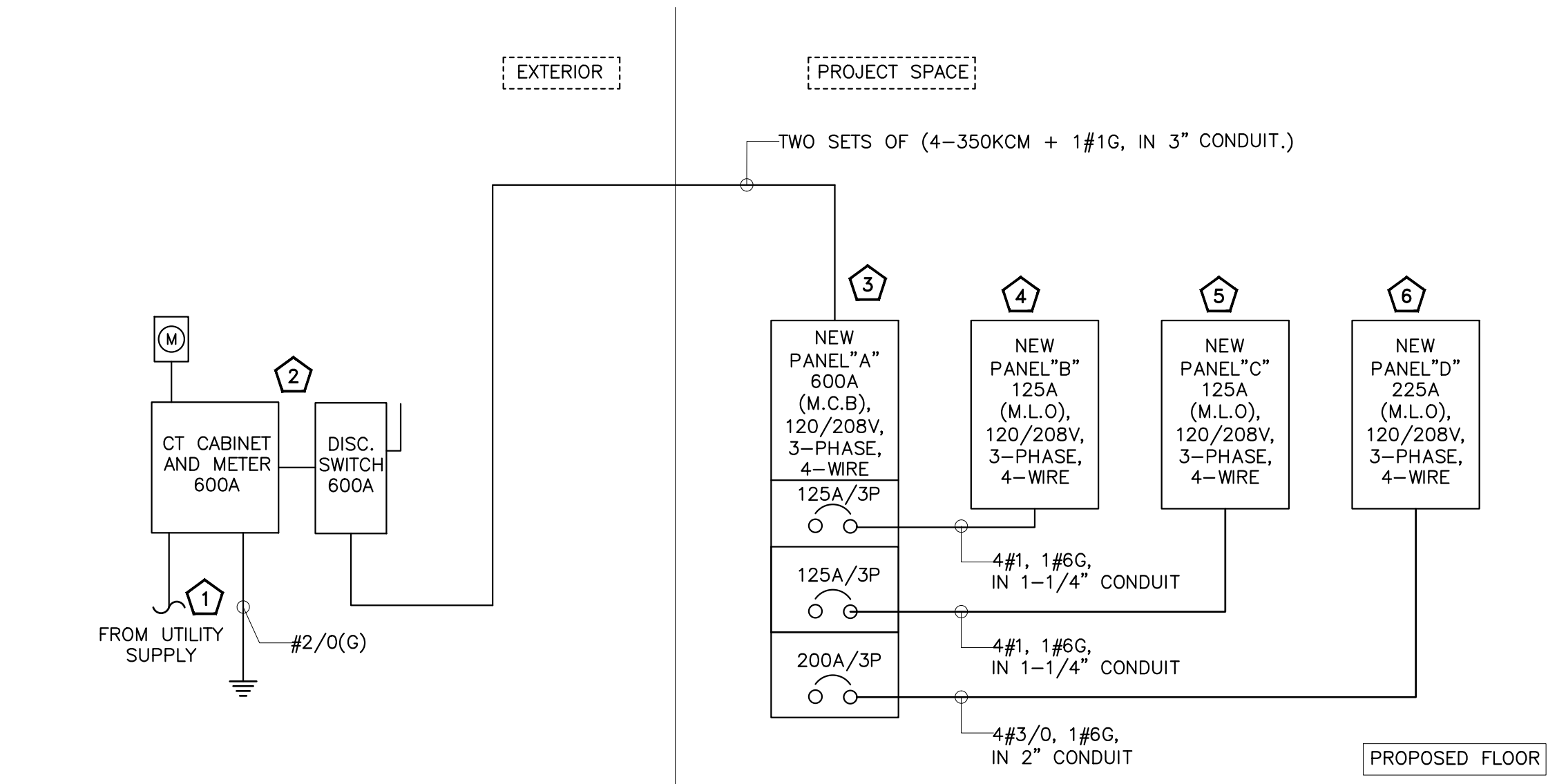
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DRAWING NUMBER

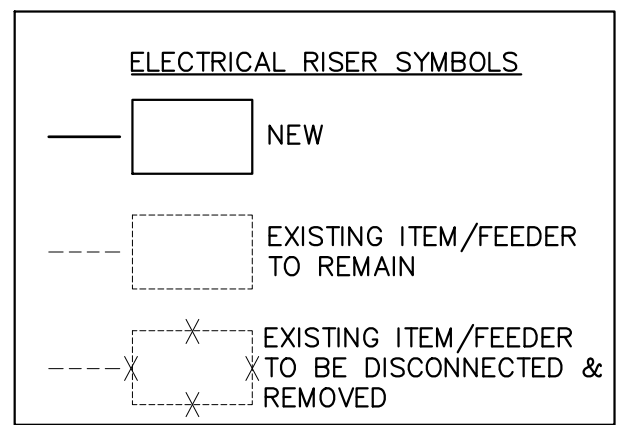
E9

PANEL SCHEDULE:



ELECTRICAL RISER KEYED NOTES:

- NEW ELECTRICAL SERVICE OF 600A, 120/208V, 3-PHASE, 4-WIRE FOR THE PROJECT SPACE. E.C. SHALL COORDINATE WITH OWNER/BASE BUILDING FOR EXACT POWER DISTRIBUTION.
- NEW 600A, 120/208V, 3-PHASE, 4-WIRE ELECTRICAL CT METER & DISCONNECT SWITCH FOR THE PROJECT SPACE. E.C. SHALL COORDINATE WITH OWNER/ BASE BUILDING FOR LOCATION.
- NEW 600A(M.C.B), 120/208V, 3-PHASE, 4-WIRE ELECTRICAL PANEL "A". E.C SHALL COORDINATE EXACT LOCATION WITH ARCHITECT/OWNER.
- NEW 125A(M.L.O), 120/208V, 3-PHASE, 4-WIRE ELECTRICAL PANEL "B". E.C SHALL COORDINATE EXACT LOCATION WITH ARCHITECT/OWNER.
- NEW 125A(M.L.O), 120/208V, 3-PHASE, 4-WIRE ELECTRICAL PANEL "C". E.C SHALL COORDINATE EXACT LOCATION WITH ARCHITECT/OWNER.
- NEW 225A(M.L.O), 120/208V, 3-PHASE, 4-WIRE ELECTRICAL PANEL "D". E.C SHALL COORDINATE EXACT LOCATION WITH ARCHITECT/OWNER.



ELECTRICAL GENERAL NOTE:

- ELECTRICAL CONTRACTOR TO COORDINATE FAULT CURRENT (Isc) RATING WITH UTILITY COMPANY AND AHJ PRIOR TO COMMENCING ANY WORK.
- RISER DIAGRAM SHOWN IS FOR REFERENCE PURPOSE ONLY. E.C. SHALL VERIFY EXACT POWER DISTRIBUTION IN FIELD.

PANEL SCHEDULE:

PANEL: A(N)										MOUNTING:		REFER TO EL. POWER PLAN (EL. SHEET E-5)		
208Y/120		VOLTS,	3	PHASE,	4	WIRE	PANEL LOCATION:		REFER TO EL. POWER PLAN (EL. SHEET E-5)					
MAIN CB		600A	MLO:	N/A	BUS:	600A	MIN:	FED FROM:		REFER TO EL. RISER DIS. (EL. SHEET E-5)				
NOTE: L : LIGHTING, R : RECEPTACLES, H : HVAC LOAD, M : MOTOR LOAD, E : EQUIPMENTS, O : OTHER/MISC. (TYPICAL)														
CKT NO.	TRIP AMPS	DESCRIPTION OF LOAD	LOAD TYPE	LOAD (KVA)	MINIMUM BRANCH CIRCUIT	PER PHASE (KVA)			MINIMUM BRANCH CIRCUIT	LOAD (KVA)	LOAD TYPE	DESCRIPTION OF LOAD	TRIP AMPS	CKT NO.
						A	B	C						
1			E	8.41		11.07				2.67	E			2
3	100/3P	EK-9_DECK OVEN	E	8.41	3#3, #6G, 1"		11.07		3#8, #10G, 3/4"	2.67	E	EK-8_CONNECTION OVEN	40/3P	4
5			E	8.41				11.07		2.67	E			6
7	20	SHUNT TRIP BREAKER				0.00				2.67	E	SHUNT TRIP BREAKER	20	8
9	20	SPARE					2.67			2.67	E			10
11	20	SPARE						2.67		2.67	E	EK-8_CONNECTION OVEN	40/3P	12
13	20	SPARE				2.67				2.67	E			14
15			E	1.80				1.80		2.67	E	SHUNT TRIP BREAKER	20	16
17	20/3P	WALK-IN COOLER CONDENSER	E	1.80	3#12, #12G, 3/4"			4.47		2.67	E	EK-8_CONNECTION OVEN	40/3P	18
19			E	1.80		4.47				2.67	E			20
21			O	22.82			25.49			2.67	E			22
23	200/3P	PANEL D	O	22.82	4#3/0, #6G, 2"			22.82		2.67	E	SHUNT TRIP BREAKER	20	24
25			O	22.82		25.49				2.67	E			26
27			O	10.66			13.32			2.67	E	EK-8_CONNECTION OVEN	40/3P	28
29	125/3P	PANEL B	O	10.66	4#1, #6G, 1-1/2"			13.32		2.67	E			30
31			O	10.66		10.66				2.67	E	SHUNT TRIP BREAKER	20	32
33			O	12.18			12.18			2.67	E			34
35	125/3P	PANEL C	O	12.18	4#1, #6G, 1-1/2"			12.18		2.67	E			36
37			O	12.18		12.18				2.67	E			38
39	20	SPARE	O	12.18			0.00			2.67	E			40
41	20	SPARE						0.00			E			42
TOTAL CONNECTED LOAD (KVA)						66.53	66.53	66.53						

PANEL: B(N)										MOUNTING:		REFER TO EL. POWER PLAN (EL. SHEET E-5)		
208Y/120		VOLTS,	3	PHASE,	4	WIRE	PANEL LOCATION:		REFER TO EL. POWER PLAN (EL. SHEET E-5)					
MAIN CB		NA	MLO:		125A	BUS:	125A		MIN,	FED FROM:		REFER TO EL. RISER DIG. (EL. SHEET E-9)		
NOTE: L : LIGHTING, R : RECEPTACLES, H : HVAC LOAD, M : MOTOR LOAD, E : EQUIPMENTS, O : OTHER/MISC. (TYPICAL)														
CKT NO.	TRIP AMPS	DESCRIPTION OF LOAD	LOAD TYPE	LOAD (KVA)	MINIMUM BRANCH CIRCUIT	PER PHASE (KVA)			MINIMUM BRANCH CIRCUIT	LOAD (KVA)	LOAD TYPE	DESCRIPTION OF LOAD	TRIP AMPS	CKT NO.
						A	B	C						
1	40/2P	EH-7A_SUPER AUTOMATIC ESPRESSO MACHINE	E	3.12	2#8, #10G, 3/4"	6.12			2#8, #10G, 3/4"	3.00	E	EH-9B_BREWER_ICB TWIN SST TALL	40/2P	2
3			E	3.12			6.12			3.00	E			4
5	40/2P	EH-7A_SUPER AUTOMATIC ESPRESSO MACHINE	E	3.12	2#8, #10G, 3/4"			5.20	2#10, #10G, 3/4"	2.08	E	EH-13_TURBO CHEF	30/2P	6
7			E	3.12		5.20				2.08	E			8
9	20	EH-5D_60" UNDERCOUNTER REFRIGERATOR	E	0.28	2#12, #12G, 3/4"			0.78	2#12, #12G, 3/4"	0.50	E	EK-17_8 QUART STAND MIXER	20	10
11	20	EH-19A_50" OPEN DISPLAY	E	0.92	2#12, #12G, 3/4"			1.42	2#12, #12G, 3/4"	0.50	E	EK-17_8 QUART STAND MIXER	20	12
13	20	EH-19A_50" OPEN DISPLAY	E	0.92	2#12, #12G, 3/4"	1.42			2#12, #12G, 3/4"	0.50	E	EK-17_8 QUART STAND MIXER	20	14
15	20	EH-18B_51" OPEN DISPLAY	E	1.78	2#12, #12G, 3/4"			2.66	2#12, #12G, 3/4"	0.88	E	EH-15_MULTI SLICER	20	16
17	20	EH-6D_60" UNDERCOUNTER FREEZER2-DOOR	E	0.64	2#12, #12G, 3/4"			1.39	2#12, #12G, 3/4"	0.75	E	EK-7 DOUGH CONDITIONER	20	18
19	20	EH-6B_36" UNDERCOUNTER FREEZER2-DOOR	E	0.35	2#12, #12G, 3/4"	1.09			2#12, #12G, 3/4"	0.75	E	EK-7 DOUGH CONDITIONER	20	20
21	20	EH-10_BREWED COFFEE GRINDER	E	1.04	2#12, #12G, 3/4"		1.78		2#12, #12G, 3/4"	0.75	E	EK-7 DOUGH CONDITIONER	20	22
23	20	EK-15B_60" UNDERCOUNTER REFRIGERATOR	E	0.28	2#12, #12G, 3/4"			1.02	2#12, #12G, 3/4"	0.75	E	EK-7 DOUGH CONDITIONER	20	24
25	20	EK-15B_60" UNDERCOUNTER REFRIGERATOR	E	0.28	2#12, #12G, 3/4"	1.02			2#12, #12G, 3/4"	0.75	E	EK-7 DOUGH CONDITIONER	20	26
27	20	EK-15B_60" UNDERCOUNTER REFRIGERATOR	E	0.28	2#12, #12G, 3/4"			1.02	2#12, #12G, 3/4"	0.75	E	EK-7 DOUGH CONDITIONER	20	28
29	20	EK-21B_REACH-IN REFRIGERATOR (REACH IN COOLER)	E	0.32	2#12, #12G, 3/4"			1.07	2#12, #12G, 3/4"	0.75	E	EK-7 DOUGH CONDITIONER	20	30
31	20	EH-27_CAKE SHOWCASE	E	0.99	2#12, #12G, 3/4"	1.74			2#12, #12G, 3/4"	0.75	E	EK-7 DOUGH CONDITIONER	20	32
33	20	EH-27_CAKE SHOWCASE	E	0.99	2#12, #12G, 3/4"		2.67		2#12, #12G, 3/4"	1.68	E	EH-12_MICROWAVE	20	34
35	20	EH-3_BLENDER	E	1.80	2#12, #12G, 3/4"			3.52	2#12, #12G, 3/4"	1.72	E	EH-17_WARMER	20	36
37	20	EH-3_BLENDER	E	1.80	2#12, #12G, 3/4"	1.80						SPARE	20	38
39	20	EK-4_ICE WAXER	E	1.22	2#12, #12G, 3/4"		1.22					SPARE	20	40
41	20	EK-6_MOULDER	E	0.92	2#12, #12G, 3/4"			0.92				SPARE	20	42
TOTAL CONNECTED LOAD (KVA)						18.39	16.25	14.54						

PANEL: D(N)										MOUNTING:		REFER TO EL. POWER PLAN (EL. SHEET E-5)		
208Y/120		VOLTS,	3	PHASE,	4	WIRE	PANEL LOCATION:		REFER TO EL. POWER PLAN (EL. SHEET E-5)					
MAIN CB		NA	MLO:	225A	BUS:	225A	MIN,	FED FROM:		REFER TO EL. RISER DIG. (EL. SHEET E-9)				
NOTE: L : LIGHTING, R : RECEPTACLES, H : HVAC LOAD, M : MOTOR LOAD, E : EQUIPMENTS, O : OTHER/MISC. (TYPICAL)														
CKT NO.	TRIP AMPS	DESCRIPTION OF LOAD	LOAD TYPE	LOAD (KVA)	MINIMUM BRANCH CIRCUIT	PER PHASE (KVA)			MINIMUM BRANCH CIRCUIT	LOAD (KVA)	LOAD TYPE	DESCRIPTION OF LOAD	TRIP AMPS	CKT NO.
						A	B	C						
1	30/3P	RTU-1(E)	H	2.52	3#10, #10G, 3/4"	5.04			3#10, #10G, 3/4"	2.52	H	RTU-4(E)	30/3P	2
3				5.04			2.52	H		4				
5						5.04		2.52		H	6			
7								2.52		H	8			
9	30/3P	RTU-2(E)	H	2.52	3#10, #10G, 3/4"		5.04		3#10, #10G, 3/4"	2.52	H	RTU-5(E)	30/3P	10
11						5.04		2.52		H	12			
13														14
15	30/3P	RTU-3(E)	H	2.52	3#10, #10G, 3/4"	6.24			3#8, #10G, 3/4"	3.72	H	RTU-A(N)	45/3P	16
17						6.24		3.72		H	18			
19														20
21	20/3P	KEF-1	M	1.00	3#12, #12G, 3/4"	4.72			3#8, #10G, 3/4"	3.72	H	RTU-B(N)	45/3P	22
23				M		1.00		4.72			3.72			H
25	20	WH-1	O	0.60	2#12, #12G, 3/4"	1.60			3#12, #12G, 3/4"	1.00	M	KSF-1	15/3P	26
27	20	WH-1	O	0.60	2#12, #12G, 3/4"		1.60			1.00	M			28
29	20	FIRE SUPPRESSION PANEL/SYSTEM	O	0.10	2#12, #12G, 3/4"			1.10		1.00	M			30
31	20	SPARE				0.16			2#12, #12G, 3/4"	0.16	M	EF-1(N)	20	32
33	20	SPARE					0.85		2#12, #12G, 3/4"	0.85	O	RCP-1	20	34
35	20	SPARE						0.00				SPARE	20	36
37	20	SPARE				0.00						SPARE	20	38
39	20	SPARE					0.00					SPARE	20	40
41	20	SPARE						0.00				SPARE	20	42
TOTAL CONNECTED LOAD (KVA)						22.81	23.50	22.15						

PANEL: C(N)										MOUNTING:		REFER TO EL. POWER PLAN (EL. SHEET E-5)		
208Y/120		VOLTS,	3	PHASE,	4	WIRE	PANEL LOCATION:		REFER TO EL. POWER PLAN (EL. SHEET E-5)					
MAIN CB		NA	MLO:	125A	BUS:	125A	MIN,	FED FROM:		REFER TO EL. RISER DIG. (EL. SHEET E-9)				
NOTE: L : LIGHTING, R : RECEPTACLES, H : HVAC LOAD, M : MOTOR LOAD, E : EQUIPMENTS, O : OTHER/MISC. (TYPICAL)														
CKT NO.	TRIP AMPS	DESCRIPTION OF LOAD	LOAD TYPE	LOAD (KVA)	MINIMUM BRANCH CIRCUIT	PER PHASE (KVA)			MINIMUM BRANCH CIRCUIT	LOAD (KVA)	LOAD TYPE	DESCRIPTION OF LOAD	TRIP AMPS	CKT NO.
						A	B	C						
1	20	LIGHTING-DINING, SEATING	L	1.54	2#12, #12G, 3/4"	2.98			2#12, #12G, 3/4"	1.44	R	RECEPTACLE CAMERA / SOUND SYSTEM	20	2
3	20	LIGHTING-DINING, SEATING	L	0.66	2#12, #12G, 3/4"		1.38		2#12, #12G, 3/4"	0.72	R	RECEPTACLE FLOOR	20	4
5	20	LIGHTING - WALK-IN COOLER, WALK-IN FREEZER	L	0.50	2#12, #12G, 3/4"			1.50	2#12, #12G, 3/4"	1.00	R	RECEPTACLE-SHOW WINDOW	20	6
7	20	LIGHTING-BREAD PACKING, OFFICE 1, OFFICE 2, CAFE/SANDOVICH	L	1.35	2#12, #12G, 3/4"	2.35			2#12, #12G, 3/4"	1.00	R	RECEPTACLE-SHOW WINDOW	20	8
9	20	LIGHTING- RESTROOM, HALLWAY	L	0.68	2#12, #12G, 3/4"		1.68		2#12, #12G, 3/4"	1.00	R	RECEPTACLE-SHOW WINDOW	20	10
11	20	BUILDING SIGNAGE	L	1.20	2#12, #12G, 3/4"			1.40	2#12, #12G, 3/4"	0.20	L	HOOD LIGHT	20	12
13	20	BUILDING SIGNAGE	L	1.20	2#12, #12G, 3/4"	2.10			2#12, #12G, 3/4"	0.90	R	RECEPTACLE - ROOF	20	14
15	20	BUILDING SIGNAGE	L	1.20	2#12, #12G, 3/4"		1.70		2#12, #12G, 3/4"	0.50	L	LIGHTING-DISPLAY LIGHTING	20	16
17	20	POS	R	0.72	2#12, #12G, 3/4"			1.22	2#12, #12G, 3/4"	0.50	L	LIGHTING-DISPLAY LIGHTING	20	18
19	20	EH-31_DIGITAL MENU BOARD	R	0.72	2#12, #12G, 3/4"	1.72			2#12, #12G, 3/4"	1.00	R	RECEPTACLE-SHOW WINDOW	20	20
21	20	LIGHT-EXTERIOR	L	0.53	2#12, #12G, 3/4"		1.03		2#12, #12G, 3/4"	0.50	L	LIGHTING-DISPLAY LIGHTING	20	22
23	20	AUTOMATIC FAUCET	O	0.50	2#12, #12G, 3/4"			2.58	2#10, #10G, 3/4"	2.08	E	WALK IN FREEZER CONDENSER	25/2P	24
25	20	WALK-IN COOLER EVAPORATOR	E	1.92	2#12, #12G, 3/4"	4.00				2.08	E			26
27	20	RECEPTACLE- RESTROOM	R	0.36	2#12, #12G, 3/4"		1.92			1.56	E	WALK IN FREEZER EVAPORATOR	20/2P	28
29	20	RECEPTACLE- OFFICE 1	R	0.72	2#12, #12G, 3/4"			2.28		1.56	E			30
31	20	RECEPTACLE-GENERAL SEATING AREA	R	0.72	2#12, #12G, 3/4"	1.72			2#12, #12G, 3/4"	1.00	R	RECEPTACLE-SHOW WINDOW	20	32
33	20	RECEPTACLE - OFFICE 1, OFFICE 2	R	0.36	2#12, #12G, 3/4"		1.08		2#12, #12G, 3/4"	0.72	R	RECEPTACLE- GENERAL SEATING AREA	20	34
35	20	RECEPTACLE- OFFICE 3	R	0.72	2#12, #12G, 3/4"			0.90	2#12, #12G, 3/4"	0.18	R	RECEPTACLE - OFFICE 1	20	36
37	20	RECEPTACLE- GENERAL SEATING AREA	R	0.54	2#12, #12G, 3/4"	0.72			2#12, #12G, 3/4"	0.18	R	RECEPTACLE - OFFICE 2	20	38
39	20	EK-21B_REACH-IN REFRIGERATOR (REACH IN COOLER)	E	0.32	2#12, #12G, 3/4"		1.22		2#12, #12G, 3/4"	0.90	R	RECEPTACLE - GENERAL USE	20	40
41	20	RECEPTACLE-SHOW WINDOW	R	1.00	2#12, #12G, 3/4"			2.00	2#12, #12G, 3/4"	1.00	R	RECEPTACLE-SHOW WINDOW	20	42
TOTAL CONNECTED LOAD (KVA)						15.59	10.01	11.88						



Interior Lighting Compliance Certificate

Project Information

Energy Code: 2021 IECC
Project Title: TOUS LES JOURS
Project Type: Alteration

Construction Site: 550 FIRST COLONIAL RD., VIRGINIA BEACH, Virginia 23451
Owner/Agent: Florida
Designer/Contractor: MICHAEL TOBIAS NY ENGINEERS 382 NE 191ST STREET SUITE 49674 MIAMI, Florida 33179

Allowed Interior Lighting Power

A Area Category	B Floor Area (ft2)	C Allowed Watts / ft2	D Allowed Watts
1-OFFICE1, OFFICE 2 (Common Space Types:Office - Enclosed)	155	0.74	115
2-HALLWAY (Common Space Types:Corridor/Transition <8 ft wide)	330	0.41	135
3-RESTROOM (Common Space Types:Restrooms)	310	0.63	195
4-CAKE PACKING, CAKE/SANDWICH, BAKE (Common Space Types:Food Preparation)	2250	1.09	2452
5-SEATING AREA (Common Space Types:Dining Area - Bar Lounge/Leisure)	2177	0.86	1872
Total Allowed Watts = 4770			

Proposed Interior Lighting Power

A Fixture ID : Description / Lamp / Wattage Per Lamp / Ballast	B Lamps/ Fixture	C # of Fixture	D Fixture Watt.	E (C X D)
OFFICE1, OFFICE 2 (Common Space Types: Office - Enclosed, 155 sq.ft.) LED: L-03: 2X4 TROFFER PANEL: Other:	1	1	50	50
LED: L-03-1: 2X2 TROFFER PANEL: Other:	1	1	45	45
HALLWAY (Common Space Types: Corridor/Transition <8 ft wide, 330 sq.ft.) LED: L-01: 6" RECESSED LIGHT: Other:	1	8	15	120
LED: L-06: PICTURE LIGHT: Other:	1	3	25	75
RESTROOM (Common Space Types: Restrooms, 310 sq.ft.) LED: L-01: 6" RECESSED LIGHT: Other:	1	12	15	180
LED: L-08: CASSIA WALL SCONCE: Other:	1	3	80	240
CAKE PACKING, CAKE/SANDWICH, BAKE (Common Space Types: Food Preparation, 2250 sq.ft.) LED: L-01: 6" RECESSED LIGHT: Other:	1	27	15	405
LED: L-03: 2X4 TROFFER PANEL: Other:	1	15	50	750
LED: L-04: CANDLE LIGHT: Other:	1	2	50	100
LED: L-06-1: PICTURE LIGHT: Other:	1	1	25	25
SEATING AREA (Common Space Types: Dining Area - Bar Lounge/Leisure, 2177 sq.ft.) LED: L-01: 6" RECESSED LIGHT: Other:	1	30	15	450
LED: L-02: TRACK LIGHT: Other:	1	86	10	860

MICHAEL TOBIAS
Project Title: TOUS LES JOURS
Report date: 08/18/25
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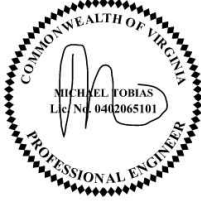
A Fixture ID : Description / Lamp / Wattage Per Lamp / Ballast	B Lamps/ Fixture	C # of Fixture	D Fixture Watt.	E (C X D)
LED: L-05: CHANDELIER: Other:	1	2	300	600
LED: L-06: PICTURE LIGHT: Other:	1	2	25	50
LED: L-07: WALL SCONCE LIGHT: Other:	1	4	60	240
Total Proposed Watts = 4190				

Interior Lighting PASSES

Interior Lighting Compliance Statement

Compliance Statement: The proposed interior lighting alteration project represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed interior lighting systems have been designed to meet the 2021 IECC requirements in COMcheck Version COMcheckWeb and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

MICHAEL TOBIAS
Name - Title
Signature
Date 08/18/25



Project Title: TOUS LES JOURS
Report date: 08/18/25
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Exterior Lighting Compliance Certificate

Project Information

Energy Code: 2021 IECC
Project Title: TOUS LES JOURS
Project Type: Alteration
Exterior Lighting Zone: 3 (Other (LZ3))

Construction Site: 550 FIRST COLONIAL RD., VIRGINIA BEACH, Virginia 23451
Owner/Agent: Florida
Designer/Contractor: MICHAEL TOBIAS NY ENGINEERS 382 NE 191ST STREET SUITE 49674 MIAMI, Florida 33179

Allowed Exterior Lighting Power

A Area/Surface Category	B Quantity	C Allowed Watts /	D Tradable Wattage	E Allowed Watts (B X C)
Dining area	600 ft2	0.75	Yes	450
Illuminated area of facade wall or surface	375 ft2	0.11	No	42
Entry canopy	55 ft2	0.4	Yes	22
Total Tradable Watts (a) =				472
Total Allowed Watts =				514
Total Allowed Supplemental Watts (b) =				500

(a) Wattage tradeoffs are only allowed between tradable areas/surfaces.
(b) A supplemental allowance equal to 500 watts may be applied toward compliance of both non-tradable and tradable areas/surfaces.

Proposed Exterior Lighting Power

A Fixture ID : Description / Lamp / Wattage Per Lamp / Ballast	B Lamps/ Fixture	C # of Fixture	D Fixture Watt.	E (C X D)
Dining area (600 ft2): Tradable Wattage LED: L-13: STRING LIGHT: Other:	1	8	30	240
Illuminated area of facade wall or surface (375 ft2): Non-tradable Wattage LED: L-09: GOOSEROCK LIGHT: Other:	1	8	36	288
LED: L-10: SCONCE LIGHT: Other:	1	2	40	80
LED: L-11: FLOOD LIGHT: Other:	1	1	36	36
Entry canopy (55 ft2): Tradable Wattage LED: L-12: EXTERIOR RECESSED CEILING LIGHT: Other:	1	2	32	64
Total Tradable Proposed Watts = 304				

Exterior Lighting PASSES

Exterior Lighting Compliance Statement

Compliance Statement: The proposed exterior lighting alteration project represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed exterior lighting systems have been designed to meet the 2021 IECC requirements in COMcheck Version COMcheckWeb and to comply with any

Project Title: TOUS LES JOURS
Report date: 08/18/25
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applicable mandatory requirements listed in the Inspection Checklist.

Name - Title
Signature
Date 08/18/25



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Inspection Checklist

Energy Code: 2021 IECC

Requirements: 90.0% were addressed directly in the COMcheck software
Text in the "Comments/Assumptions" column is provided by the user in the COMcheck Requirements screen. For each requirement, the user certifies that a code requirement will be met and how that is documented, or that an exception is being claimed. Where compliance is itemized in a separate table, a reference to that table is provided.

Section # & Req.ID	Plan Review	Complies?	Comments/Assumptions
C103.2 (PR4) ¹	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the interior lighting and electrical systems and equipment and document where exceptions to the standard are claimed. Information provided should include interior lighting power calculations, wattage of bulbs and ballasts, transformers and control devices.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
C103.2 (PR8) ¹	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the exterior lighting and electrical systems and equipment and document where exceptions to the standard are claimed. Information provided should include exterior lighting power calculations, wattage of bulbs and ballasts, transformers and control devices.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	

Additional Comments/Assumptions:

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

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Section # & Req.ID	Rough-In Electrical Inspection	Complies?	Comments/Assumptions
C405.2.3.1 (EL22) ¹	Spaces required to have light-reduction controls have a manual control that allows the occupant to reduce the connected lighting load in a reasonably uniform illumination pattern $\geq$ 50 percent.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
C405.2.1.1 (EL18) ¹	Occupancy sensors installed in classrooms/lecture/training rooms, conference/meeting/multipurpose rooms, copy/print rooms, lounges/breakrooms, enclosed offices, open plan office areas, restrooms, storage rooms, locker rooms, corridors, warehouse storage areas, and other spaces $\leq$ 300 sqft that are enclosed by floor-to-ceiling height partitions. Reference section language C405.2.1.2 for control function in warehouses and section C405.2.1.3 for open plan office spaces.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
C405.2.1.2 (EL19) ¹	Occupancy sensors control function in warehouses: In warehouses, the lighting in aiseways and open areas is controlled with occupant sensors that automatically reduce lighting power by 50% or more within 20 minutes of when the areas are unoccupied. The occupant sensors control lighting in each aisleyway independently and do not control lighting beyond the aisleyway being controlled by the sensor. Lights not turned off by occupant sensors is done so by time-switch.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Exception: Requirement does not apply.
C405.2.1.3 (EL20) ¹	Occupant sensor control function in open plan office areas: Occupant sensor controls in open office spaces $\geq$ 300 sq.ft. have controls 1) configured so that general lighting can be controlled separately in control zones with floor areas $\leq$ 600 sq.ft. within the space, 2) general lighting in each zone permitted to turn on upon occupancy in control zone, 3) automatically turn off general lighting in all control zones within 20 minutes after all occupants have left the space, 4) are configured so that general lighting power in each control zone is reduced by $\geq$ 80% of the full zone general lighting power within 20 minutes of all occupants leaving that control zone.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Exception: Requirement does not apply.
C405.2.2.1 (EL21) ¹	Each area not served by occupancy sensors (per C405.2.1.1) have time-switch controls and functions detailed in sections C405.2.2.1.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.

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

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NY ENGINEERS

NEARBY ENGINEERS
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REVISIONS :

NO.	DATE	DESCRIPTION
1	8/25/2025	HD COMMENTS

DRAWING TITLE :

ENERGY ANALYSIS—1

DATE : 7.28.2025

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Section # & Req.ID	Rough-In Electrical Inspection	Complies?	Comments/Assumptions
C405.2.4, C405.2.4.1, C405.2.4.2 [EL23] ²	Daylight zones provided with individual controls that control the lights independent of general area lighting. See code section C405.2.3 Daylight-responsive controls for applicable spaces; C405.2.3.1 Daylight responsive control function and section C405.2.3.2 Sidelit zone.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Exception: Requirement does not apply.
C405.2.5 [EL27] ¹	Additional interior lighting power allowed for special functions per the approved lighting plans and is automatically controlled and separated from general lighting.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
C405.2.7 [EL28] ¹	Automatic lighting controls for exterior lighting installed. Controls will be daylight controlled, set based on business operation time-of-day, or reduce connected lighting > 30%.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	
C405.7 [EL26] ²	Low voltage dry type distribution electric transformers meet the minimum efficiency requirements of Table C405.6.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Exception: Requirement does not apply.
C405.8 [EL27] ²	Electric motors meet the minimum efficiency requirements of Tables C405.7(1) through C405.7(4). Efficiency verified through certification under an approved certification program or the equipment efficiency ratings shall be provided by motor manufacturer (where certification programs do not exist).	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
C405.9.1, C405.9.2 [EL28] ²	Escalators and moving walks comply with ASME A17.1/CSA B44 and have automatic controls configured to reduce speed to the minimum permitted speed in accordance with ASME A17.1/CSA B44 or applicable local code when not conveying passengers.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Exception: Requirement does not apply.
C405.10 [EL29] ¹	Total voltage drop across the combination of feeders and branch circuits <= 5%.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
C405.1.1 [EL30] ²	At least 90% of dwelling unit permanently installed lighting shall have lamp efficacy >= 65 lm/W or luminaires with efficacy >= 45 lm/W or comply with C405.2.4 or C405.3.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Exception: Requirement does not apply.
C405.11, C405.11.1 [EL31] ²	50% of 15/20 amp receptacles installed in enclosed offices, conference rooms, copy rooms, break rooms, classrooms and workstations and > 25% of branch circuit feeders for modular furniture will have automatic receptacle control in accordance with C405.11.1.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.

Additional Comments/Assumptions:

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

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Section # & Req.ID	Final Inspection	Complies?	Comments/Assumptions
C303.3, C408.2.5.2 [F117] ³	Furnished O&M instructions for systems and equipment to the building owner or designated representative.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
C405.5.1 [F119] ¹	Exterior lighting power is consistent with what is shown on the approved lighting plans, demonstrating proposed watts are less than or equal to allowed watts.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	See the Exterior Lighting fixture schedule for values.
C408.1.1 [F157] ¹	Building operations and maintenance documents will be provided to the owner. Documents will cover manufacturers' information, specifications, programming procedures and means of illustrating to owner how building, equipment and systems are intended to be installed, maintained, and operated.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
C408.2.5 [F116] ³	Furnished as-built drawings for electric power systems within 90 days of system acceptance.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
C408.3 [F133] ¹	Lighting systems have been tested to ensure proper calibration, adjustment, programming, and operation.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.

Additional Comments/Assumptions:

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

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PLUMBING SYMBOLS LIST

— V —	VENT PIPING
— SAN —	SANITARY PIPING
— G SAN —	GREASE SANITARY PIPING
— — — — —	COLD WATER PIPING
— - - - -	HOT WATER PIPING
— - - - - FW — - - - -	HOT WATER RETURN PIPING
— - - - - FW — - - - -	FILTER WATER
— G —	GAS PIPING
— ∞ —	P–TRAP
— ○ —	PIPE UP
— ∩ —	PIPE DROP
— ✕ —	ISOLATION VALVE
— ↗ —	BACKFLOW PREVENTER
— ⚡ —	GAS VALVE
— □ —	FLOOR SINK
— ⊗ —	FLOOR DRAIN
— ⊙ —	POINT OF CONNECTION
— ⊕ —	CLEANOUT
— ⊠ —	BALANCING VALVE
— □ —	EXPANSION TANK
— ▲ —	RECIRCULATION PUMP
— ⚙ —	GAS PRESSURE REGULATOR

PLUMBING ABBREVIATIONS

CO–1	CLEANOUT
SAN	SANITARY
GSAN	GREASE SANITARY
V	VENT
W	WASTE
LAV–1	LAVATORY
WC–1	WATER CLOSET
UR–1	URINAL
FD–1	FLOOR DRAIN
CW	COLD WATER
HW	HOT WATER
HWR	HOT WATER RETURN
FW	FILTER WATER
TYP.	TYPICAL
AAV	AIR ADMITTANCE VALVE
BFP	BACK FLOW PREVENTER
WH–1	WATER HEATER
ET–1	EXPANSION TANK
RCP–1	RECIRCULATION PUMP
GI	GREASE INTERCEPTOR
I.D	INDIRECT DRAIN
V.I.F	VERIFY IN FIELD
AAV	AIR ADMITTANCE VALVE
FS–1	FLOOR SINK
GCO	GRADE CLEANOUT

BUILDING DEPARTMENT PLUMBING NOTES

- ALL PLUMBING SYSTEMS (SANITARY, WASTE, VENT, WATER) AND ASSOCIATED EQUIPMENT SHALL BE INSTALLED, OPERATED AND MAINTAINED IN ACCORDANCE WITH THE REQUIREMENTS OF 2021 VIRGINIA PLUMBING CODE.
- INSTALLATION OF UNDERGROUND PIPING SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF 2021 VIRGINIA PLUMBING CODE SECTION 702.2
- PROTECTION OF PIPING AND PLUMBING SYSTEM COMPONENTS AS PER 2021 VIRGINIA PLUMBING CODE SECTION 305.
- TRENCHING, EXCAVATION AND BACKFILL AS PER 2021 VIRGINIA PLUMBING CODE SECTION 306.
- RODENT PROOFING AS PER 2021 VIRGINIA PLUMBING CODE SECTION 304.
- MATERIALS USED IN PLUMBING SYSTEMS SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION 2021 VIRGINIA PLUMBING CODE 303, 605, 702, 902.
- EQUIPMENT CONNECTIONS AND JOINING OF PIPING SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF 2021 VIRGINIA PLUMBING CODE CHAPTERS 4, 5, 6, 7, 8, 9 AND 10.
- DEEP SEAL TRAPS FOR FLOOR DRAINS SHALL BE PROVIDED AS PER 2021 VIRGINIA PLUMBING CODE SECTION 1002, AND CLEAN-OUTS SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION 2021 VIRGINIA PLUMBING CODE SECTION 708.
- VERTICAL AND HORIZONTAL PIPING SHALL BE SUPPORTED IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION 2021 VIRGINIA PLUMBING CODE SCTION 308.
- WATER SUPPLY SYSTEMS SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE REQUIREMENTS OF 2021 VIRGINIA PLUMBING CODE CHAPTER 6 SECTION 601, 602, 603, 604, 605, 606, 610 AND 613.
- THE SANITARY DRAINAGE SYSTEM SHALL BE SIZED AND INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF 2021 VIRGINIA PLUMBING CODE CHAPTER 7 SECTION 701, 702, 703, 704, 705, 706, 707, 708, 709 AND 710.
- VENT PIPING FOR THE SANITARY DRAINAGE SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF 2021 VIRGINIA PLUMBING CODE CHAPTER 9 SECTIONS 901 THROUGH 2021 VIRGINIA PLUMBING CODE SECTION 919.
- INSPECTION AND TESTING OF PLUMBING PIPING SYSTEMS SHALL BE IN ACCORDANCE WITH SECTION 2021 VIRGINIA PLUMBING CODE SECTION 312.
- GREASE INTERCEPTORS SHALL BE IN ACCORDANCE WITH THE SECTION 2021 VIRGINIA PLUMBING CODE SECTION 1003.

PLUMBING DRAWING LIST	
P1	PLUMBING SYMBOLS, ABBREVIATIONS, NOTES & SPECIFICATIONS
P2	PLUMBING SPECIFICATIONS
P3	PLUMBING WASTE & VENT FLOOR PLAN
P4	PLUMBING DOMESTIC WATER & GAS FLOOR PLAN
P5	GAS ROOF PLAN
P6	PLUMBING DETAILS
P7	PLUMBING DETAILS
P8	PLUMBING SCHEDULES
P9	PLUMBING RISERS

CODE COMPLIANCE	
ALL WORK AND MATERIAL SHALL BE PERFORMED AND INSTALLED IN COMPLIANCE WITH THE FOLLOWING CODES AS ADOPTED AND AMENDED BY THE INSPECTING AUTHORITY. NOTHING IN THESE DRAWINGS IS TO BE CONSTRUCTED TO PERMIT WORK NOT CONFORMING TO THESE CODES OR OTHERS APPLICABLE TO THESE PROJECT:	
A.	2021 VIRGINIA BUILDING CODE.
B.	2021 VIRGINIA PLUMBING CODE.
C.	2021 VIRGINIA MECHANICAL CODE.
D.	2021 VIRGINIA ENERGY CONSERVATION CODE.
E.	2021 VIRGINIA FUEL GAS CODE.
F.	NATIONAL ELECTRICAL CODE–2020.

PLUMBING SPECIFICATIONS:

- BASIC PLUMBING REQUIREMENTS, MATERIALS AND METHODS

1.01 SCOPE

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

1.02 SUBMITTALS

- A. SUBMITTAL REQUIREMENTS SHALL BE COORDINATED WITH THE ARCHITECT AND AUTHORITIES HAVING JURISDICTION. UNLESS OTHERWISE DIRECTED, CONTRACTOR SHALL PROVIDE SUBMITTALS AS LISTED BELOW.
- PIPE AND FITTINGS
 - VALVES
 - HANGERS AND SUPPORTS
 - PLUMBING PIPING LAYOUT
 - TESTS
 - PLUMBING FIXTURES
 - WATER HEATERS & ACESORIES
 - FLOOR DRAINS
 - MIXING VALVES
 - GREASE INTERCEPTOR
 - BACKFLOW PREVENTER
 - ALL SCHEDULED PLUMBING EQUIPMENT
- B. SUBMITTALS FROM SUPPLIERS OR MANUFACTURERS WHICH DO NOT BEAR THE STAMP OF THE SUBMITTING CONTRACTOR INDICATING THAT THE CONTRACTOR HAS REVIEWED THE SUBMITTAL FOR CONFORMANCE WITH THE PROJECT REQUIREMENTS WILL BE RETURNED REJECTED.
- C. THE ENGINEER’S REVIEW OF SUBMITTALS IS A COURTESY WHICH DOES NOT RELIEVE THE CONTRACTOR FROM CONFORMING WITH THE CONSTRUCTION DOCUMENTS, REGARDLESS OF THE ACTION INDICATED BY THE SHOP DRAWINGS STAMP.
- D. REVIEW OF SHOP DRAWINGS BY THE ENGINEER SHALL BE LIMITED TO THE INITIAL REVIEW, AND A SECOND REVIEW OF ANY REQUIRED RESUBMITTED DATA. IF THE ENGINEER IS REQUIRED TO REVIEW SHOP DRAWINGS FOR A THIRD (OR MORE) SUBMISSION OF THE SAME ITEM, THE CONTRACTOR SHALL BE LIABLE FOR COMPENSATING THE ENGINEER FOR THESE SUBSEQUENT REVIEWS AS PER THE ENGINEER’S CURRENT HOURLY RATE SCHEDULE.
- E. SUBMIT PROOF OF APPROVAL AND/OR CONFIRMATION OF SATISFACTORY TEST RESULTS TO THE OWNER AND THE ARCHITECT.
- F. SUBMIT TO THE OWNER’S MAINTENANCE PERSONNEL OPERATION AND MAINTENANCE DATA FOR ALL SYSTEM COMPONENTS, SERVICING REQUIREMENTS, INSPECTION DATA, REPLACEMENT PART NUMBERS AND AVAILABILITY AND CONTACT INFORMATION FOR SERVICE/SUPPLY COMPANY.
- G. FOR ALL BELOW GRADE PIPING WHERE ACTUAL INSTALLATION DEVIATES FROM CONSTRUCTION DRAWINGS, THE CONTRACTOR SHALL PROVIDE AS–BUILT DRAWINGS INDICATING BELOW GRADE PIPE LOCATIONS DIMENSIONED TO NEAREST COLUMN LINES.
- H. RECORD AS–BUILT DRAWINGS SHALL BE SUPPLIED TO THE OWNER/TENANT AFTER COMPLETION OF THE WORK SHOWING ANY ALTERATIONS, ADDITIONS AND/OR DELETIONS TO THE SYSTEM(S) INSTALLED.

1.03 SUBSTITUTIONS

- A. ALL EQUIPMENT SHALL BE PRODUCTS OF THE SPECIFIED MANUFACTURER OR MANUFACTURERS. ALL BIDS SHALL BE BASED ON THE SPECIFIED MANUFACTURER OR MANUFACTURER’S EQUIPMENT. FOR SUBSTITUTIONS OF OTHER MANUFACTURER’S EQUIPMENT TO BE CONSIDERED, THE SUBSTITUTION MUST BE

- INDICATED PRIOR TO BIDDING WITH THE REASON FOR THE PROPOSED SUBSTITUTION IDENTIFIED, AND THE PROPOSED CREDIT TO THE OWNER INDICATED. THE ENGINEER SHALL DETERMINE THE ACCEPTABILITY OF ANY PROPOSED SUBSTITUTIONS.
- B. THE CONTRACTOR ASSUMES ALL RESPONSIBILITY FOR COORDINATING THE WORK OF OTHER TRADES WHICH MAY BE AFFECTED BY SUBSTITUTIONS, INCLUDING ALL RELATED COSTS.

1.04 DEFINITIONS

- A. FURNISH: TO PURCHASE, PROCURE, ACQUIRE AND DELIVER, COMPLETE WITH RELATED ACCESSORIES.
- B. INSTALL: TO ERECT, MOUNT AND CONNECT, COMPLETE WITH RELATED ACCESSORIES.
- C. PROVIDE: TO FURNISH AND INSTALL.
- D. PLUMBING CONTRACTOR, THE CONTRACTOR, THIS CONTRACTOR: THE CONTRACTOR FOR PLUMBING WORK WHICH IS SPECIFIED HEREIN AND SHOWN ON THESE DRAWINGS.
- E. REFER TO THE 2021 VIRGINIA PLUMBING CODE FOR ADDITIONAL DEFINITIONS.

1.05 DRAWINGS

- A. THE DRAWINGS ARE DIAGRAMMATIC AND ARE INTENDED TO ILLUSTRATE THE GENERAL ARRANGMENT 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:

- ABOVE / BELOW GRADE PIPING SHALL BE PVC (SCHEDULE 40) AS PER ASTM D2665, ASTM F 891, ASTM F1488, CSA B181.2 STANDARDS.
- SLOPE OF DRAINAGE SYSTEM SHALL BE 1/16” PER FOOT OF RUN FOR PIPE OVER 8” AND LARGER. 1/8” PER FOOT OF RUN FOR PIPE OVER 3” TO 6” AND 1/4” PER FOOT OF RUN FOR PIPE 2½” AND SMALLER. VENT PIPING SHALL BE PITCHED TO DRAIN. SLOPE FOR GREASE SANITARY PIPING SHALL BE MINIMUM 1/4” PER FOOT RUN.

- B. DOMESTIC WATER PIPING:

- ABOVE GRADE WATER SUPPLY PIPING SHALL BE CROSS–LINKED POLYETHYLENE (PEX) PLASTIC TUBING AND COMPLY WITH ASTM F876, AWWA C904 CSA B137.5.
- ABOVE GRADE FITTINGS IN DOMESTIC WATER PIPING SHALL BE CROSS–LINKED POLYETHYLENE (PEX) PLASTIC TUBING AND COMPLY WITH ASTM 1061, ASTM F887, ASTM F1807, ASTM F1960, ASTM F2080, ASTM F2098, ASTM F2159, ASTM 2434, ASTM F2735, CSA B137.5.
- THE ENTIRE DOMESTIC WATER DISTRIBUTION SYSTEM SHALL BE INSULATED INCLUDING ALL VALVES, FITTINGS, ETC.
- COMPLY WITH NSF 61 FOR MATERIALS FOR WATER–SERVICE PIPING AND SPECIALTIES FOR DOMESTIC WATER.
- ALL DOMESTIC WATER PIPING ABOVE GRADE SHALL BE FIRE–RETARDANT, FACTORY–APPLIED JACKET. PROVIDE COLD WATER PIPING WITH FACTORY–APPLIED VAPOR BARRIER.
- INSULATION REQUIREMENT SHOULD COMPLY SECTION C404.4 REFER WITH 2021 VIRGINIA ENERGY CONSERVATION CODE (2021 IECC) TABLE C403.12.3.

MINIMUM PIPE INSULATION THICKNESS						
FLUID OPERATING TEMPERATURE RANGE AND USAGE (°F)	INSULATION CONDUCTIVITY		NOMINAL PIPE OR TUBE SIZE (INCHES)			
	CONDUCTIVITY BTU·IN./ (H· FT2 ·°F)	MEAN RATING TEMPERATURE, °F	<1	1 to < 1½	1½ to < 4	4 to >8
141–200	0.25–0.29	125	1.5	1.5	2.0	2.0
105–140	0.21–0.28	100	1.0	1.0	1.5	1.5
40–60	0.21–0.27	75	0.5	0.5	1.0	1.0

- HW SYSTEM PIPING IS DESIGNED AS PER MAXIMUM ALLOWED PIPE LENGTH METHOD AS PER 2021 VIRGINIA ENERGY CONSERVATION CODE (2021 IECC) C404.5.1, THE HW PIPE LENGTH FROM THE NEAREST SOURCE OF HEATED WATER TO THE TERMINATION OF THE FIXTURE SUPPLY PIPE SHALL BE AS PER FOLLOWING TABLE.

NOMINAL PIPE SIZE (INCHES)	MIXIMUM PIPING LENGTH (FEET)	
	PUBLIC LAW	OTHER FIXTURES
¾”	3’	50’
½”	2’	43’
¾”	0.5’	21’
1”	0.5’	13’
1¼”	0.5’	8’
1½”	0.5’	6’
2” OR LARGER	0.5’	4’

- AS PER 2021 VIRGINIA ENERGY CONSERVATION CODE (2021 IECC) C404.5.1, AUTOMATIC CONTROLS SHALL BE INSTALLED THAT LIMITS THE OPERATION OF A RECIRCULATING PUMP AND THE SYSTEM RETURN PIPE SHALL BE A DEDICATED RETURN PIPE OR A COLD WATER SUPPLY PIPE. THE CONTROL SHALL LIMIT THE TEMPERATURE OF THE WATER ENTERING THE COLD WATER PIPING TO NOT GREATER THAN 104°F (40°C).
- SEAL ALL JOINTS BETWEEN SEGMENTS OF INSULATION.
- PROVIDE SHIELDS BETWEEN HANGERS AND INSULATION.

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D. GAS WATER HEATER

1. THE TANKLESS WATER HEATER SHALL BE UL LISTED FOR THE US AND NSF CERTIFIED.
2. UNIT SHALL BE PROTECTED BY A SHEET METAL HOUSING. HEAT EXCHANGER SHALL BE RATED FOR MAXIMUM WORKING PRESSURE NOT LESS THAN 2 PSI.
3. ALL ASPECTS OF INSTALLATION OF WATER HEATER PLANT SHALL BE IN STRICT ACCORDANCE WITH MANUFACTURER RECOMMENDATIONS. MATERIALS SHALL CONFORM TO ALL MANUFACTURER RECOMMENDATION INCLUDING GAS CONNECTION, ELECTRICAL CONNECTIONS AND WIRING.
4. WATER HEATER PIPING SHALL BE FIELD CONSTRUCTED OF MATERIALS AS SPECIFIED. WATER HEATER SHALL BE INSTALLED WITH INDIVIDUAL ISOLATING SHUTOFF VALVES FOR SERVICE AND MAINTENANCE.

E. GAS PIPING

1. ALL GAS PIPING WORK SHALL COMPLY WITH 2021 VIRGINIA FUEL GAS CODE, LOCAL UTILITY GAS REQUIREMENTS.
2. FURNISH AND INSTALL ALL NECESSARY GAS PIPING TO ALL EQUIPMENT REQUIRING GAS SUPPLY.
3. PROVIDE A LUBRICATED GAS VALVE AT ALL CONNECTIONS TO EQUIPMENT.
4. ALL GAS PIPING AND INSTALLATION SHALL BE IN ACCORDANCE WITH RULES AND REGULATIONS OF LOCAL UTILITY GAS COMPANY AND OTHER AUTHORITIES HAVING JURISDICTION.
5. PROVIDE ADEQUATE SUPPORT FOR ALL PIPING.
6. GAS PIPING SHALL BE BLACK STEEL SCHEDULE 40 THREADED PIPE CONFORMING TO ANSI B36-20.
7. FITTINGS SHALL BE MALLEABLE IRON.

F. HOT WATER RE-CIRCULATING PUMP

1. IN-LINE PUMP: SINGLE STAGE VOLUTE TYPE PUMP SHALL BE MADE OF CAST IRON OR FORGED LEAD-FREE BRONZE IMPELLER.
2. THE PUMP SHALL HAVE A GROUND AND POLISHED STEEL SHAFT WITH A HARDENED INTEGRAL THRUST COLLAR. THE SHAFT SHALL BE SUPPORTED BY TWO HORIZONTAL SLEEVE BEARINGS DESIGNED TO CIRCULATE OIL. THE PUMPS ARE TO BE EQUIPPED WITH A MECHANICAL SEAL WITH CARBON SEAL FACE ROTATING AGAINST CERAMIC SEAT. THE MOTOR SHALL BE NON-OVERLOADING AT ANY POINT ON PUMP CURVE.
3. DIRECT CONNECT PUMP TO ELECTRIC MOTOR WITH FLEXIBLE COUPLING. THE MOTOR SHALL BE OF THE DRIP-PROOF, SLEEVE-BEARING, QUIET OPERATING, RUBBER-MOUNTED CONSTRUCTION. EQUIPMENT MOTOR WITH BUILT-IN THERMAL OVERLOAD PROTECTION.
4. INSTALL IN-LINE CIRCULATING PUMPS BETWEEN PIPE FLANGES IN PIPING SYSTEMS. INSTALL OVERHEAD PIPE SUPPORTS, BOTH SIDES OF IN-LINE PUMPS, INSTALLED IN HORIZONTAL PIPING RUNS.

G. MIXING VALVES

1. VALVE BODY SHALL BE MADE OF CAST BRASS. THE INTERNAL COMPONENTS SHALL BE MADE OF BRASS OR STAINLESS STEEL.
2. TYPES A, C & D VALVES: VALVE SHUTS OFF IN FULL COLD POSITION AND MUST PASS THROUGH COLD RANGE BEFORE DELIVERING WARM, AND/OR HOT WATER. TEMPERATURE LIMIT SET AT 105°F MAXIMUM DELIVERY TEMPERATURE. IF ONE SUPPLY SHOULD FAIL, THE OTHER WILL AUTOMATICALLY AND INSTANTLY SHUT DOWN. DELIVERY CAPACITY IS 5GPM @ 45 PSIG DIFFERENTIAL.
3. TYPES OF VALVES: TYPE A- THERMOSTATICALLY OPERATED BY MEANS OF BI-METALLIC STRIP, OR EXPANSION BELLOWS; TYPE B- SINGLE HANDLE MECHANICAL MIXER, OR INDIVIDUAL HOT AND COLD CONTROL VALVES; TYPE C- PRESSURE BALANCING SHOWER VALVE/PISTON OPERATED MIXING VALVE; TYPE D- BALANCED PRESSURE OPERATION, WITH INTEGRAL DIAL THERMOMETER INDICATING DELIVERED WATER TEMPERATURE.
4. EACH ELEMENT SHALL BE CONTROLLED BY AN INDIVIDUALLY MOUNTED THERMOSTAT AND HIGH TEMPERATURE CUT-OFF SWITCH. ALL INTERNAL CIRCUITS SHALL BE FUSED. THE OUTER JACKET SHALL BE OF BAKED ENAMEL FINISH AND SHALL BE PROVIDED WITH FULL SIZE CONTROL COMPARTMENT FOR PERFORMANCE OF SERVICE AND MAINTENANCE THROUGH HINGED FRONT PANEL AND SHALL ENCLOSE THE TANK WITH FOAM INSULATION. ELECTRICAL JUNCTION BOX WITH HEAVY DUTY TERMINAL BLOCK SHALL BE PROVIDED. THE DRAIN VALVE SHALL BE LOCATED IN THE FRONT FOR EASE OF SERVICING.

H. HOT WATER RE-CIRCULATING PUMP

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

2. THE PUMP SHALL HAVE A GROUND AND POLISHED STEEL SHAFT WITH A HARDENED INTEGRAL THRUST COLLAR. THE SHAFT SHALL BE SUPPORTED BY TWO HORIZONTAL SLEEVE BEARINGS DESIGNED TO CIRCULATE OIL. THE PUMPS ARE TO BE EQUIPPED WITH A MECHANICAL SEAL WITH CARBON SEAL FACE ROTATING AGAINST CERAMIC SEAT. THE MOTOR SHALL BE NON-OVERLOADING AT ANY POINT ON PUMP CURVE.
3. DIRECT CONNECT PUMP TO ELECTRIC MOTOR WITH FLEXIBLE COUPLING. THE MOTOR SHALL BE OF THE DRIP-PROOF, SLEEVE-BEARING, QUIET OPERATING, RUBBER-MOUNTED CONSTRUCTION. EQUIPMENT MOTOR WITH BUILT-IN THERMAL OVERLOAD PROTECTION.
4. INSTALL IN-LINE CIRCULATING PUMPS BETWEEN PIPE FLANGES IN PIPING SYSTEMS. INSTALL OVERHEAD PIPE SUPPORTS, BOTH SIDES OF IN-LINE PUMPS, INSTALLED IN HORIZONTAL PIPING RUNS.

I. HANGERS AND SUPPORTS:

1. HANGERS SHALL BE STANDARD STEEL, MALLEABLE OR WROUGHT IRON, AS MANUFACTURED BY GRINNELL OR APPROVED EQUAL, SUITABLE FOR THE TYPE OF CONSTRUCTION. PIPING SHALL NOT BE HUNG FROM OTHER PIPE.
2. SECTIONS OF INDIVIDUAL PIPE RUNS SHALL BE SUPPORTED BY CLEVIS HANGERS.
3. ALL EQUIPMENT SHALL BE PROVIDED WITH APPROVED SUPPORTS.
4. PROVIDE SEISMIC RESTRAINTS IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE AND LOCAL CODES AND STANDARDS AND THE REQUIREMENTS OF AUTHORITIES HAVING JURISDICTION.
5. UNLESS OTHERWISE INDICATED OR REQUIRED BY AUTHORITIES HAVING JURISDICTION, THE FOLLOWING SHALL BE PROVIDED WITH SEISMIC RESTRAINTS AS REQUIRED BY THE BOCA NATIONAL BUILDING CODE, SECTION 1610.6.4: ALL EQUIPMENT AND MACHINERY, ALL NEW PIPING 2-1/2" AND LARGER (1-1/4" AND LARGER IN-BOILER/MECHANICAL ROOMS) WITH HANGERS GREATER THAN 12" IN LENGTH FROM THE TOP OF PIPE TO THE STRUCTURE.
6. SUPPORTS SHALL BE PROVIDED IN STRICT ACCORDANCE WITH THE RECOMMENDATIONS OF THE PIPING MANUFACTURER.

J. VALVES:

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

K. SLEEVES AND ESCUTCHEONS:

1. SLEEVES THROUGH STRUCTURAL CONCRETE MEMBERS AND SLEEVES FOR WALLS BELOW GRADE AND FLOORS ON GRADE SHALL BE STANDARD WEIGHT GALVANIZED SCHEDULE 40 STEEL PIPE. SLEEVES THROUGH OTHER THAN STRUCTURAL COMPONENTS OF THE BUILDING SHALL BE 20 GAGE GALVANIZED SHEET METAL WITH LOCK SEAM JOINTS. USE THERMAFIBER SAFING INSULATION SHALL BE INSTALLED BETWEEN PIPE AND SLEEVE.
2. PIPE ESCUTCHEON PLATES SHALL BE INSTALLED WHERE EXPOSED PIPING PASSES THROUGH WALLS, CEILINGS, AND FLOORS AND SHALL BE MINIMUM 20 GAGE STEEL. PROVIDE CHROME PLATED ESCUTCHEON PLATES IN FINISHED AREAS.

L. DRAINAGE ACCESSORIES

1. GENERAL:
 - a. INSTALL THE WORK OF THIS SECTION IN ACCORDANCE WITH THE MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS, UNLESS OTHERWISE SPECIFIED.
 - b. SECURE EXTERNAL COMPONENTS IN PLACE WITH VANDAL RESISTANT FASTENERS OR DEVICES WHICH CANNOT BE REMOVED WITHOUT SPECIAL TOOLS.
2. DEVICES:
 - a. CLEANOUT WALL PLATE
 - IT SHOULD BE ROUND, STAINLESS STEEL OR POLISHED CHROME PLATED BRONZE COVER PLATE WITH STAINLESS STEEL VANDAL RESISTANT FASTENER TO SECURE TO CLEANOUT PLUG.
 - b. CLEANOUT DECK PLATE
 - IT SHOULD BE STANDARD DUTY FLOOR CLEANOUT FITTING WITH COATED PVC BODY; ROUND, POLISHED NICKEL BRONZE SCORATED TOP SECURED TO CLEANOUT PLUG WITH STAINLESS STEEL VANDAL RESISTANT FASTENER; THREADED HEIGHT ADJUSTMENT, PVC HEAD, GAS TIGHT CLEANOUT PLUG, AND CONNECTION TO MATCH PIPING OPTION SELECTED.

3. GREASE INTERCEPTOR/TRAP

- a. IT SHOULD HAVE NON-SKID COVER TOP SURFACE (ONLY APPLICABLE TO GREASE TRAPS RECESSED IN THE FLOOR)
- b. PROVIDE BUILT-IN FLOW CONTROL OR ADJUSTABLE FLOW CONTROL FITTING FOR INSTALLATION IN SYSTEM PIPING.
- c. SET FLOW CONTROL AS RECOMMENDED BY THE MANUFACTURER'S INSTRUCTIONS.
- d. ALL PREFABRICATED GREASE INTERCEPTORS 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.
- e. GREASE INTERCEPTORS SHALL REMOVE AN AVERAGE OF 90 PERCENT OR MORE OF THE GREASE OR OTHER EXTRACTABLE MATTER IN THE WASTEWATER.
- f. THE TEMPERATURE OF WATER ENTERING A GREASE INTERCEPTOR SHALL NOT EXCEED 180°F.
- g. ALL GREASE INTERCEPTORS MUST BE READILY ACCESSIBLE FOR INSPECTION BY DULY AUTHORIZED EMPLOYEES OF THE DEPARTMENT.

4. INDIRECT WASTE FLOOR SINK

- a. IT SHOULD BE COMBINATION OF FUNNEL DRAIN AND P TRAP WITH POLISHED CHROME PLATED PVC CONSTRUCTION WITH 4" TOP DIA., 4" DEEP WITH THREADED OUTLET.

- M. 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.

N. VERIFY EXACT LOCATIONS OF ALL EXISTING UTILITIES.

- O. 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.

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

- Q. INSTALL VALVES WITH STEMS UPRIGHT OR HORIZONTAL. REMOVE PROTECTIVE COATINGS PRIOR TO INSTALLATION.

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

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

T. PROVIDE DIELECTRIC FITTINGS BETWEEN DISSIMILAR METALS.

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

- V. 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.

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

- X. 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.

- Y. 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.

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

- AA. ALL PIPING INSTALLED ON THE ROOF SHALL BE SUPPORTED BY "PILLOW BLOCK" PIPE STANDS AS MANUFACTURED BY MIRO INDUSTRIES, OR APPROVED EQUAL. WOOD PIPE SUPPORTS SHALL NOT BE ACCEPTABLE. PROVIDE TRAFFIC/WALK PADS BELOW ALL PIPE STANDS.

- AB. 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.

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

- AD. UNLESS OTHERWISE INDICATED, TRAPS SEALS AT ALL FLOOR DRAINS SHALL BE MAINTAINED BY AN APPROVED TRAP PRIMING DEVICE.

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

- AF. MAINTAIN MINIMUM 10'-0" CLEARANCE BETWEEN ALL PLUMBING V.T.R.S. AND ALL OUTDOOR AIR INTAKES. OFFSET VENT STACKS AND STACK VENTS IF AND AS REQUIRED BELOW ROOF TO MAINTAIN SUCH CLEARANCE WHETHER OR NOT SUCH OFFSET IS INDICATED ON THE DRAWINGS. PROVIDE ALL REQUIRED SEISMIC SUPPORTS.

5. INSTALLATION

2.01 GENERAL

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

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

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

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

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

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

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

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

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

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

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

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

2.02 ABOVE GRADE

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

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

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

2.03 INSULATION

COVER ALL HOT WATER AND HOT WATER RECIRCULATION PIPE WITH 1" THICK FOR PIPE SIZE UP TO 1½" AND 1½" THICK FOR PIPE SIZE 1½" AND GREATER WITH MANVILLE MICRO-LOK AP-T PLUS FIBERGLASS INSULATION. COVER ALL COLD WATER PIPE WITH ½" THICK FOR PIPE SIZE UP TO 1½" AND 1" THICK FOR PIPE SIZE 1½" AND GREATER WITH 1" MANVILLE MICRO-LOK AP-T PLUS FIBERGLASS INSULATION. FITTINGS AND VALVES SHALL BE INSULATED WITH MANVILLE ZESTON 2000 PVC INSULATED FITTING COVERS. INSTALL ALL INSULATION AS PER MANUFACTURERS RECOMMENDATIONS. ALL INSULATION MATERIAL SHALL COMPLY WITH THE VIRGINIA CITY BUILDING CODE REQUIREMENT FOR A FAME SPREAD RATING NOT TO EXCEED 5 AND A SMOKE DEVELOPED RATING NOT TO EXCEED 50. ALL PIPE INSULATION SHALL COMPLY WITH 2021 VIRGINIA ENERGY CONSERVATION CODE (2021 IECC).

3. TESTING

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

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

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

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

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

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

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

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

- J. ALL EQUIPMENT WILL BE FACTORY TESTED.

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

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

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

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

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

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

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PLUMBING SPECIFICATIONS

DATE :

7.28.2025

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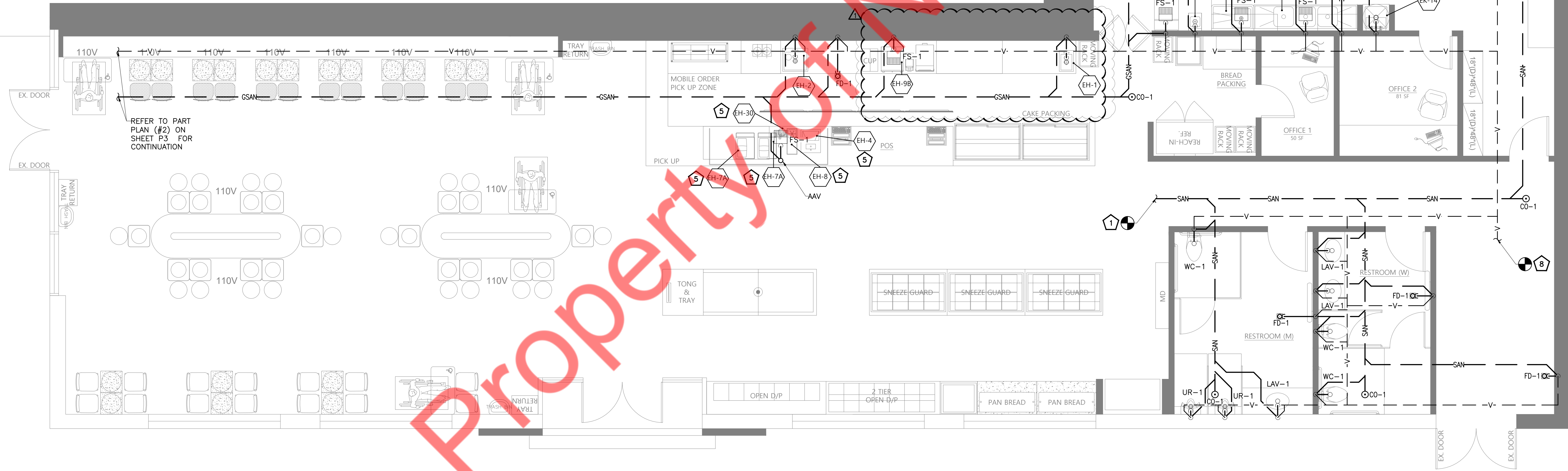
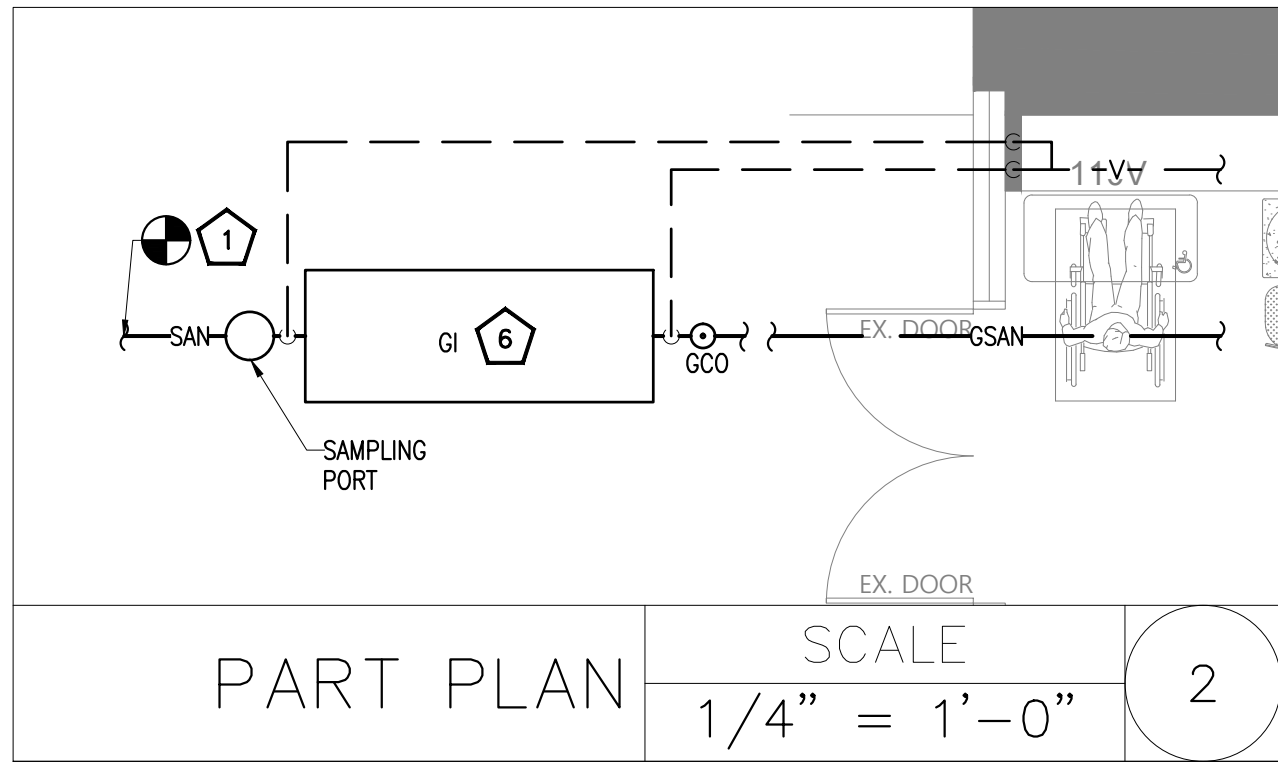
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- GENERAL NOTES**
1. PROVIDE TRAP PRIMER FOR ALL FLOOR DRAINS AS PER THE LOCAL JURISDICTION.
 2. CONTRACTOR TO FIELD VERIFY THE EXISTING SANITARY PIPING SIZE, LOCATION & INVERT ON SITE.
 3. CONTRACTOR TO COORDINATE WITH KITCHEN CONSULTANT/ARCHITECT FOR FINAL EQUIPMENT SELECTION.
 4. CONTRACTOR TO FIELD VERIFY FEASIBILITY OF SLAB PENETRATION AS PER STRUCTURAL REQUIREMENT.
 5. REFER SANITARY RISER DIAGRAM FOR PIPE SIZING

- WASTE AND VENT PLAN KEY NOTES**
1. CONNECT NEW 4" SANITARY PIPING TO EXISTING SANITARY PIPING IN/NEARBY SPACE OF ADEQUATE SIZE. CONTRACTOR TO FIELD VERIFY EXACT SIZE, LOCATION AND INVERT ON SITE & MAKE NECESSARY CHANGES IF REQUIRED.
 2. ROUTE INDIRECT WASTE FROM ICE MACHINE WITH ICE BIN TO FLOOR SINK WITH APPROVED AIR GAP.
 3. ROUTE INDIRECT WASTE FROM 3 COMPARTMENT SINK TO FLOOR SINK WITH APPROVED AIR GAP.
 4. ROUTE INDIRECT WASTE FROM PREP SINK TO FLOOR SINK WITH APPROVED AIR GAP.
 5. ROUTE INDIRECT WASTE FROM ALL COFFEE MACHINES, SPOON RINSER, SPRAY RINSER AND DROP-IN ICE BIN TO FLOOR SINK WITH APPROVED AIR GAP.
 6. INSTALL NEW EXTERIOR GREASE INTERCEPTOR (GI) (SCHIER GB-250). CONTRACTOR TO FIELD VERIFY THE FINAL LOCATION WITH THE OWNER/LANDLORD. INSTALLATION SHALL BE IN STRICT ACCORDANCE WITH CITY/COUNTY REGULATIONS..
 7. CONDENSATE DRAIN LINE FROM WALK-IN-FREEZER AND WALK-IN-REFRIGERATOR TO BE DISCHARGED TO THE NEAREST FLOOR SINK AS PER LOCAL BUILDING CODES.
 8. CONNECT NEW 3" VENT PIPING TO EXISTING VENT PIPING. CONTRACTOR TO FIELD VERIFY EXACT SIZE AND LOCATION OF EXISTING VENT LINE & UPGRADE IF REQUIRED.

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DRAWING TITLE :
**PLUMBING WASTE & VENT
FLOOR PLAN**

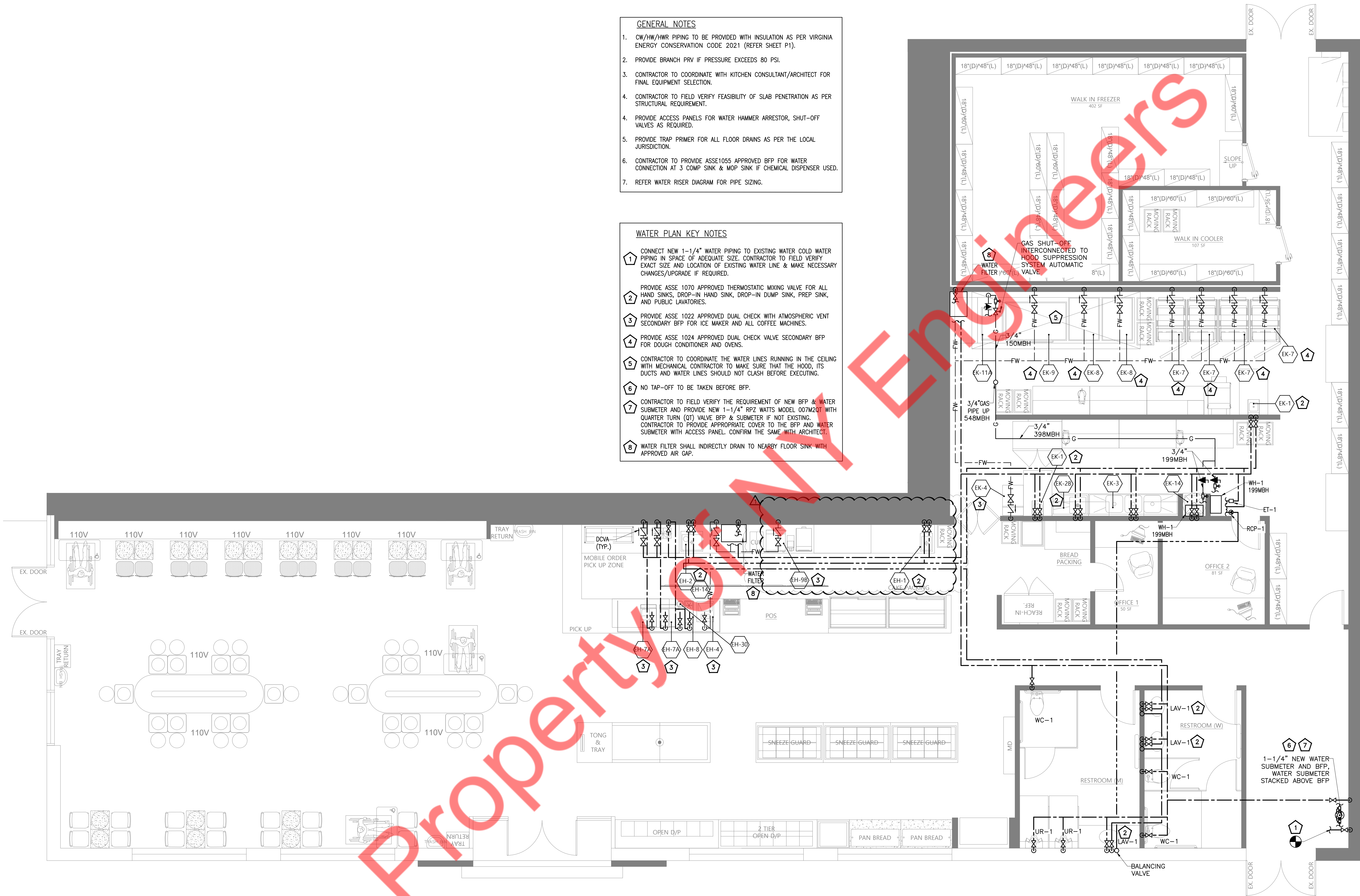
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GENERAL NOTES

1. CW/HW/HWR PIPING TO BE PROVIDED WITH INSULATION AS PER VIRGINIA ENERGY CONSERVATION CODE 2021 (REFER SHEET P1).
2. PROVIDE BRANCH PRV IF PRESSURE EXCEEDS 80 PSI.
3. CONTRACTOR TO COORDINATE WITH KITCHEN CONSULTANT/ARCHITECT FOR FINAL EQUIPMENT SELECTION.
4. CONTRACTOR TO FIELD VERIFY FEASIBILITY OF SLAB PENETRATION AS PER STRUCTURAL REQUIREMENT.
4. PROVIDE ACCESS PANELS FOR WATER HAMMER ARRESTOR, SHUT-OFF VALVES AS REQUIRED.
5. PROVIDE TRAP PRIMER FOR ALL FLOOR DRAINS AS PER THE LOCAL JURISDICTION.
6. CONTRACTOR TO PROVIDE ASSE1055 APPROVED BFP FOR WATER CONNECTION AT 3 COMP SINK & MOP SINK IF CHEMICAL DISPENSER USED.
7. REFER WATER RISER DIAGRAM FOR PIPE SIZING.

WATER PLAN KEY NOTES

1. CONNECT NEW 1-1/4" WATER PIPING TO EXISTING WATER COLD WATER PIPING IN SPACE OF ADEQUATE SIZE. CONTRACTOR TO FIELD VERIFY EXACT SIZE AND LOCATION OF EXISTING WATER LINE & MAKE NECESSARY CHANGES/UPGRADE IF REQUIRED.
2. PROVIDE ASSE 1070 APPROVED THERMOSTATIC MIXING VALVE FOR ALL HAND SINKS, DROP-IN HAND SINK, DROP-IN DUMP SINK, PREP SINK, AND PUBLIC LAVATORIES.
3. PROVIDE ASSE 1022 APPROVED DUAL CHECK WITH ATMOSPHERIC VENT SECONDARY BFP FOR ICE MAKER AND ALL COFFEE MACHINES.
4. PROVIDE ASSE 1024 APPROVED DUAL CHECK VALVE SECONDARY BFP FOR DOUGH CONDITIONER AND OVENS.
5. CONTRACTOR TO COORDINATE THE WATER LINES RUNNING IN THE CEILING WITH MECHANICAL CONTRACTOR TO MAKE SURE THAT THE HOOD, ITS DUCTS AND WATER LINES SHOULD NOT CLASH BEFORE EXECUTING.
6. NO TAP-OFF TO BE TAKEN BEFORE BFP.
7. CONTRACTOR TO FIELD VERIFY THE REQUIREMENT OF NEW BFP & WATER SUBMETER AND PROVIDE NEW 1-1/4" RPZ WATTS MODEL 007M20T WITH QUARTER TURN (QT) VALVE BFP & SUBMETER IF NOT EXISTING. CONTRACTOR TO PROVIDE APPROPRIATE COVER TO THE BFP AND WATER SUBMETER WITH ACCESS PANEL. CONFIRM THE SAME WITH ARCHITECT.
8. WATER FILTER SHALL INDIRECTLY DRAIN TO NEARBY FLOOR SINK WITH APPROVED AIR GAP.



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DRAWING TITLE :

PLUMBING DOMESTIC WATER
AND GAS FLOOR PLAN

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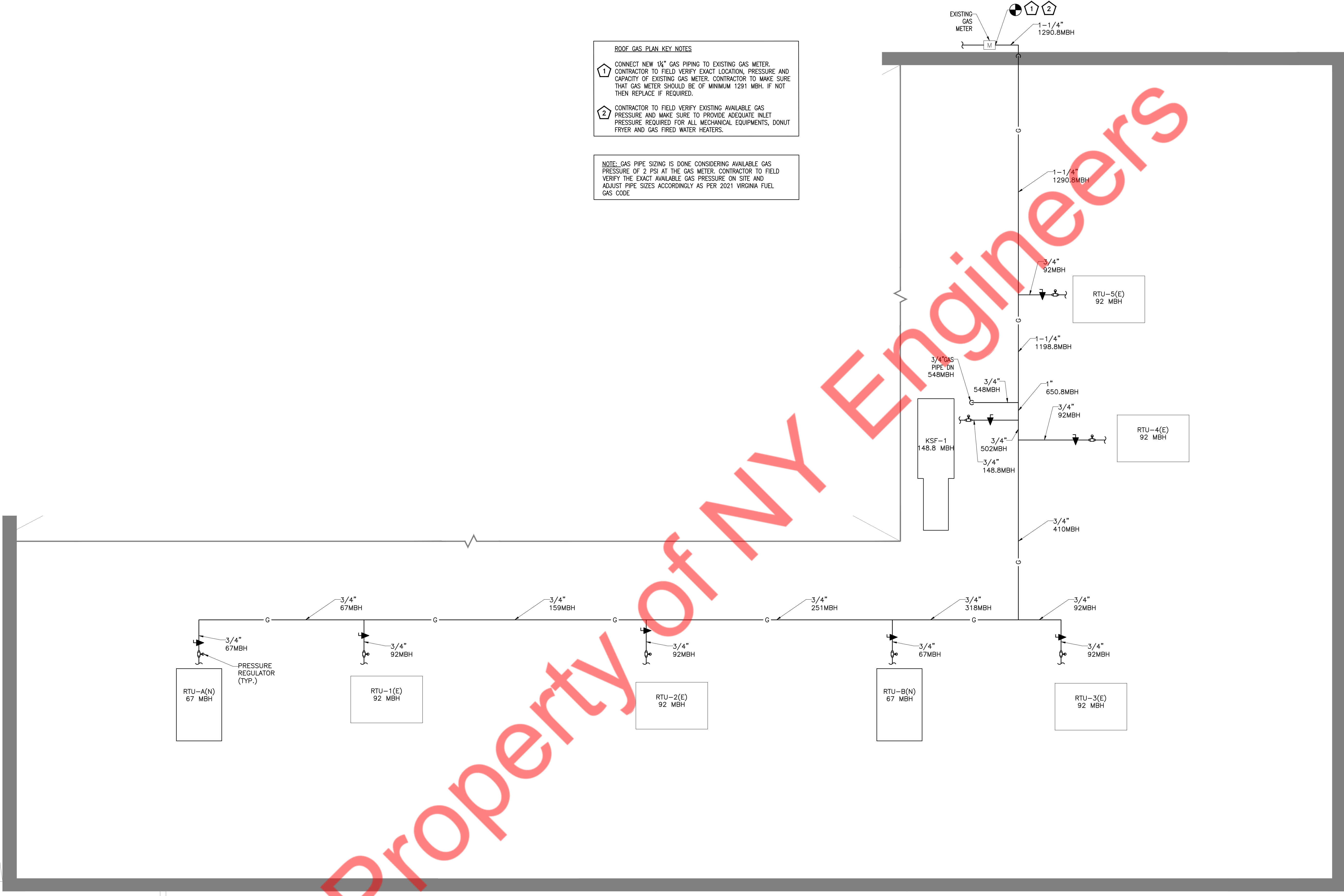
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ROOF GAS PLAN KEY NOTES

1. CONNECT NEW 1/2" GAS PIPING TO EXISTING GAS METER. CONTRACTOR TO FIELD VERIFY EXACT LOCATION, PRESSURE AND CAPACITY OF EXISTING GAS METER. CONTRACTOR TO MAKE SURE THAT GAS METER SHOULD BE OF MINIMUM 1291 MBH. IF NOT THEN REPLACE IF REQUIRED.

2. CONTRACTOR TO FIELD VERIFY EXISTING AVAILABLE GAS PRESSURE AND MAKE SURE TO PROVIDE ADEQUATE INLET PRESSURE REQUIRED FOR ALL MECHANICAL EQUIPMENTS, DONUT FRYER AND GAS FIRED WATER HEATERS.

NOTE: GAS PIPE SIZING IS DONE CONSIDERING AVAILABLE GAS PRESSURE OF 2 PSI AT THE GAS METER. CONTRACTOR TO FIELD VERIFY THE EXACT AVAILABLE GAS PRESSURE ON SITE AND ADJUST PIPE SIZES ACCORDINGLY AS PER 2021 VIRGINIA FUEL GAS CODE



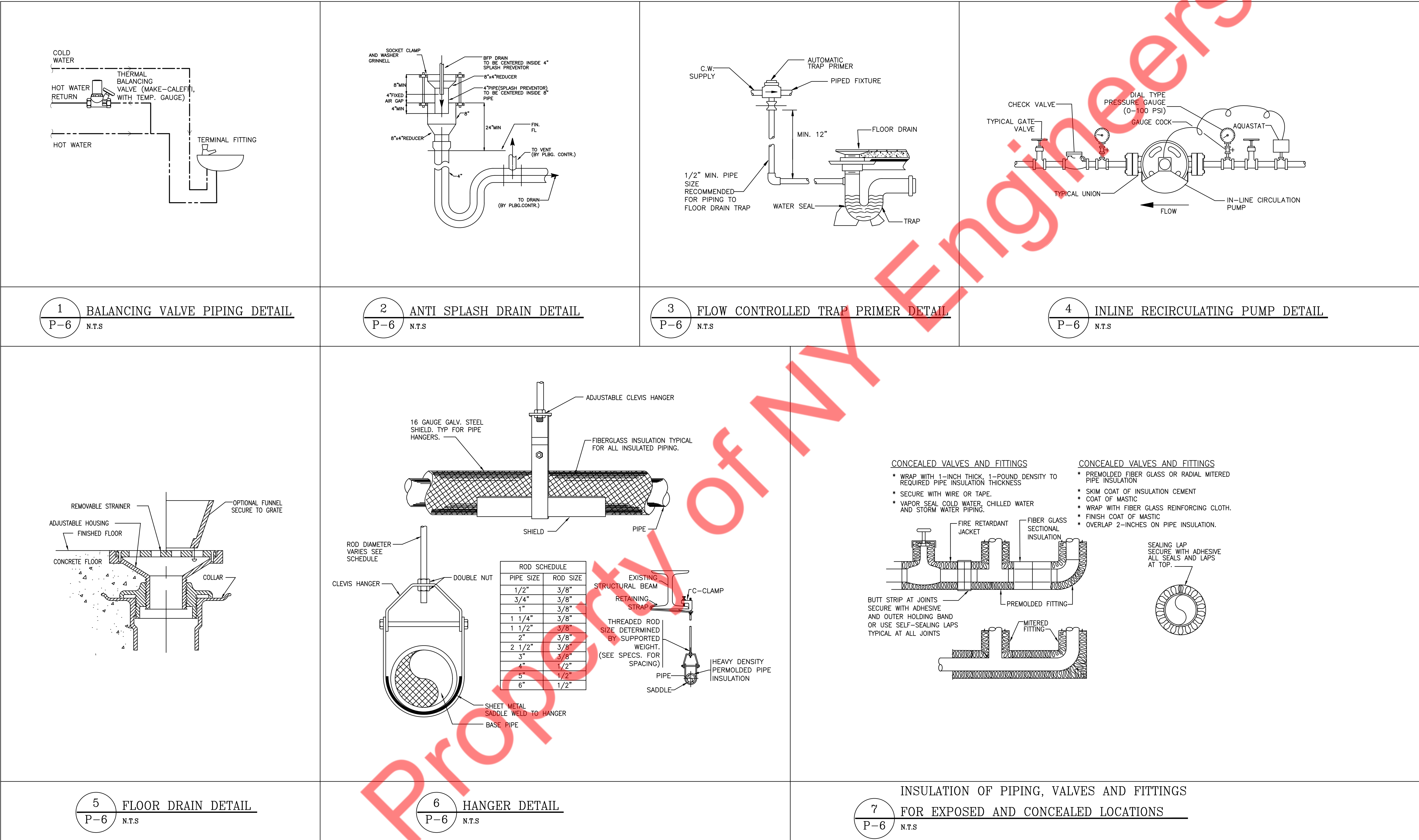
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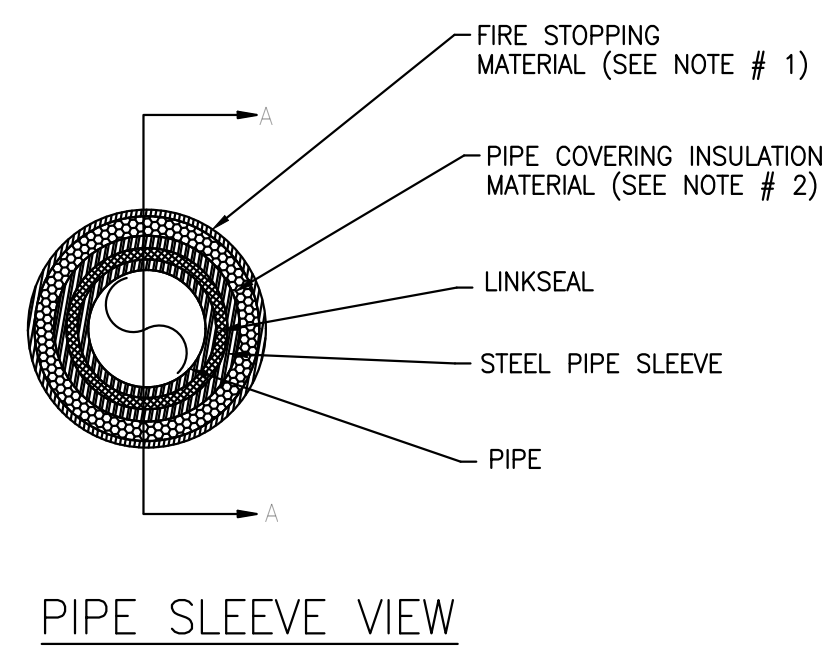
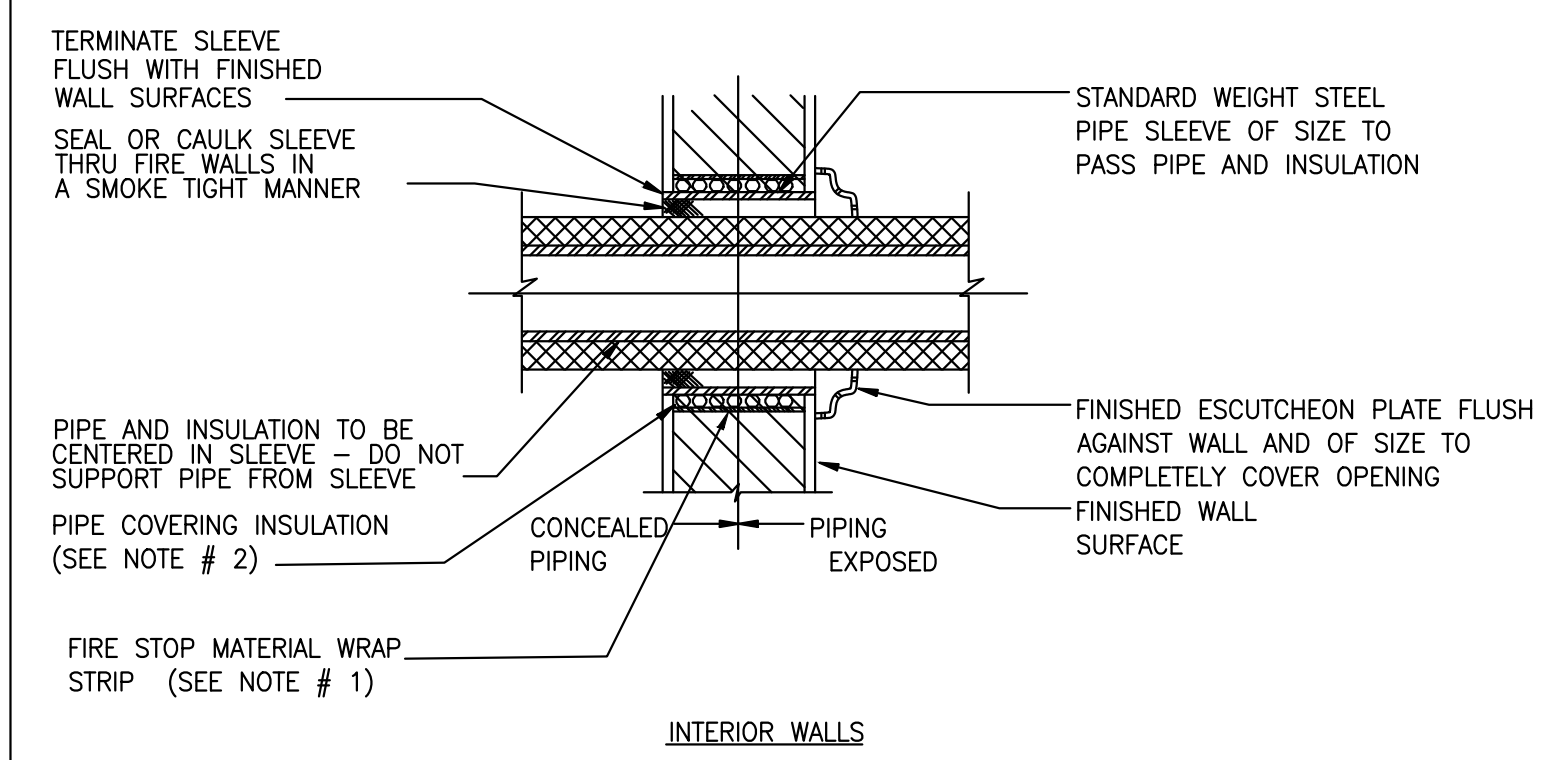
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GAS ROOF PLAN

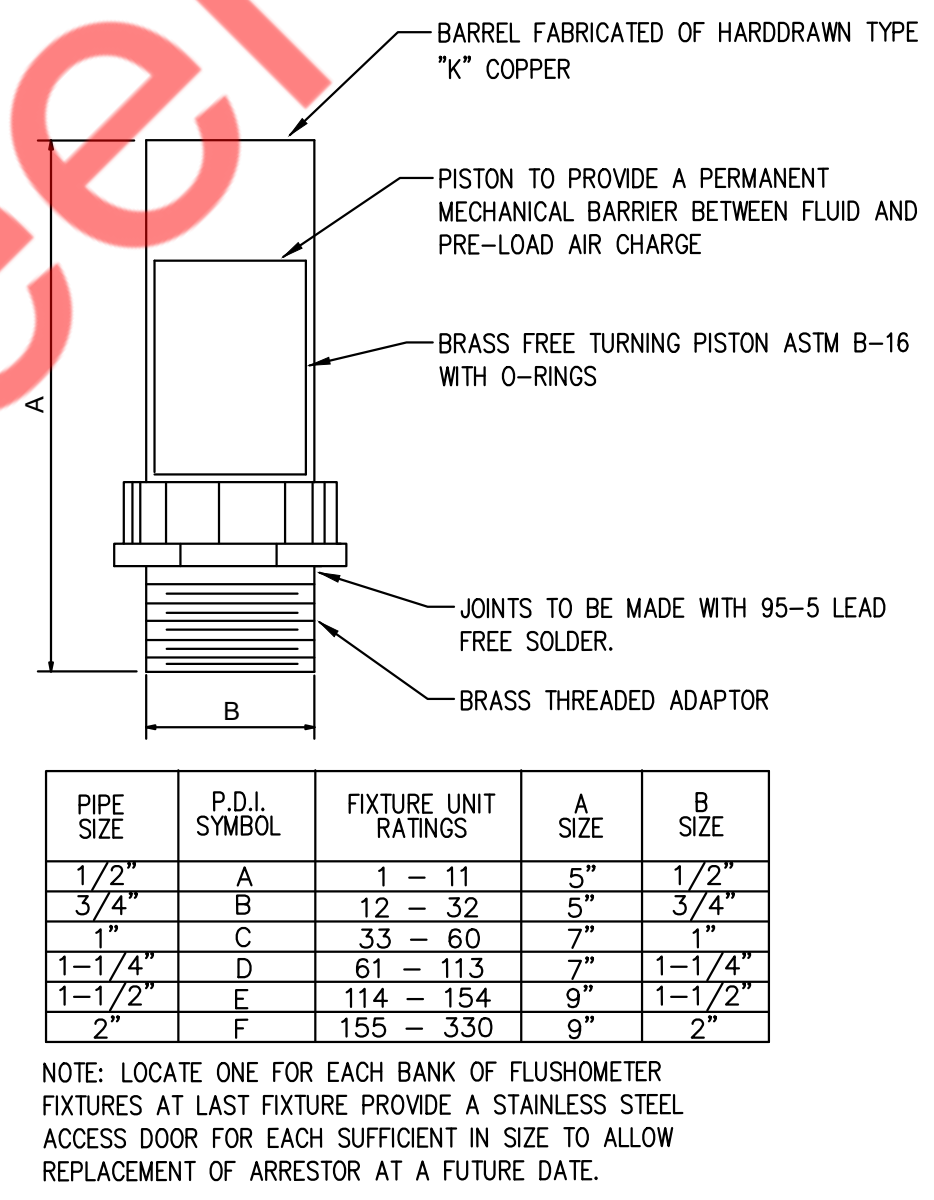
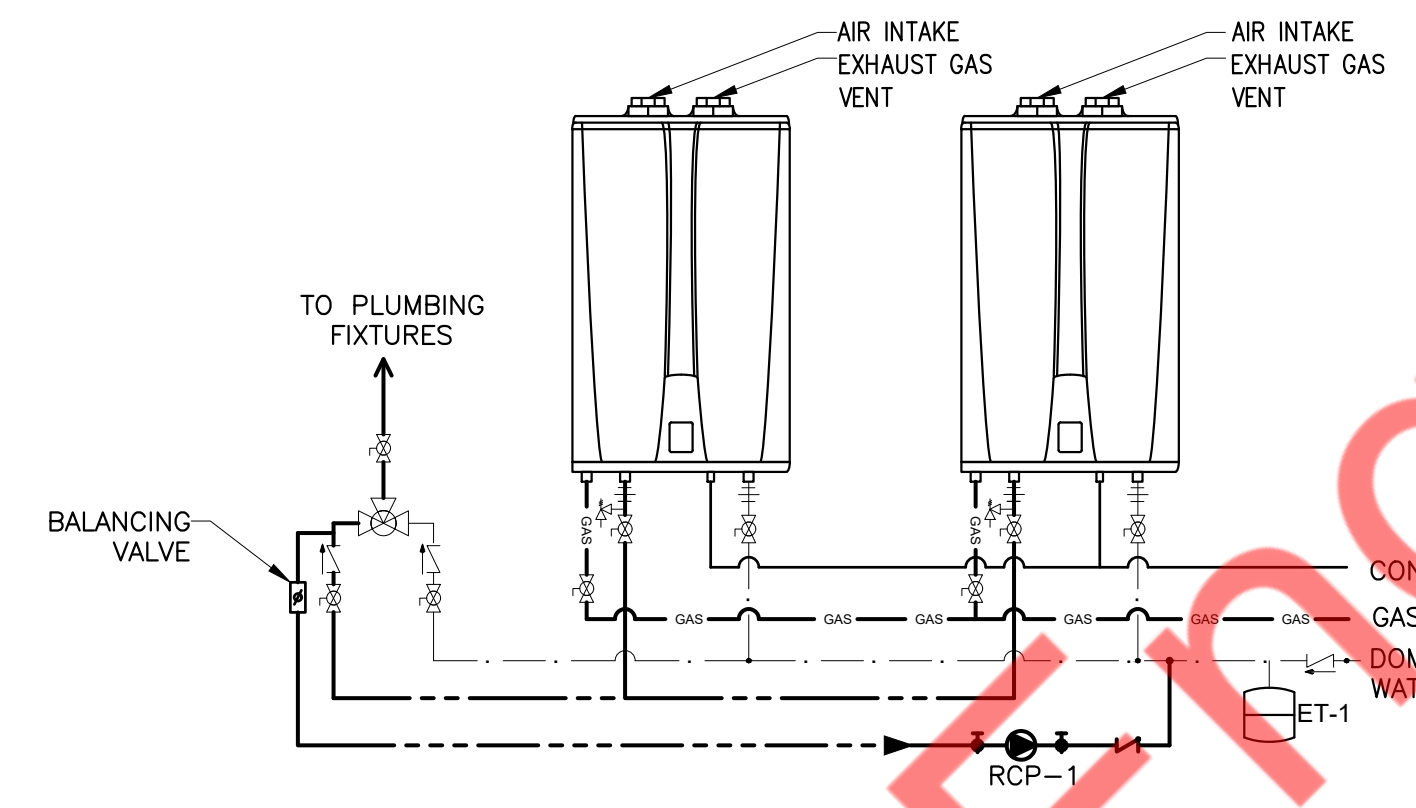
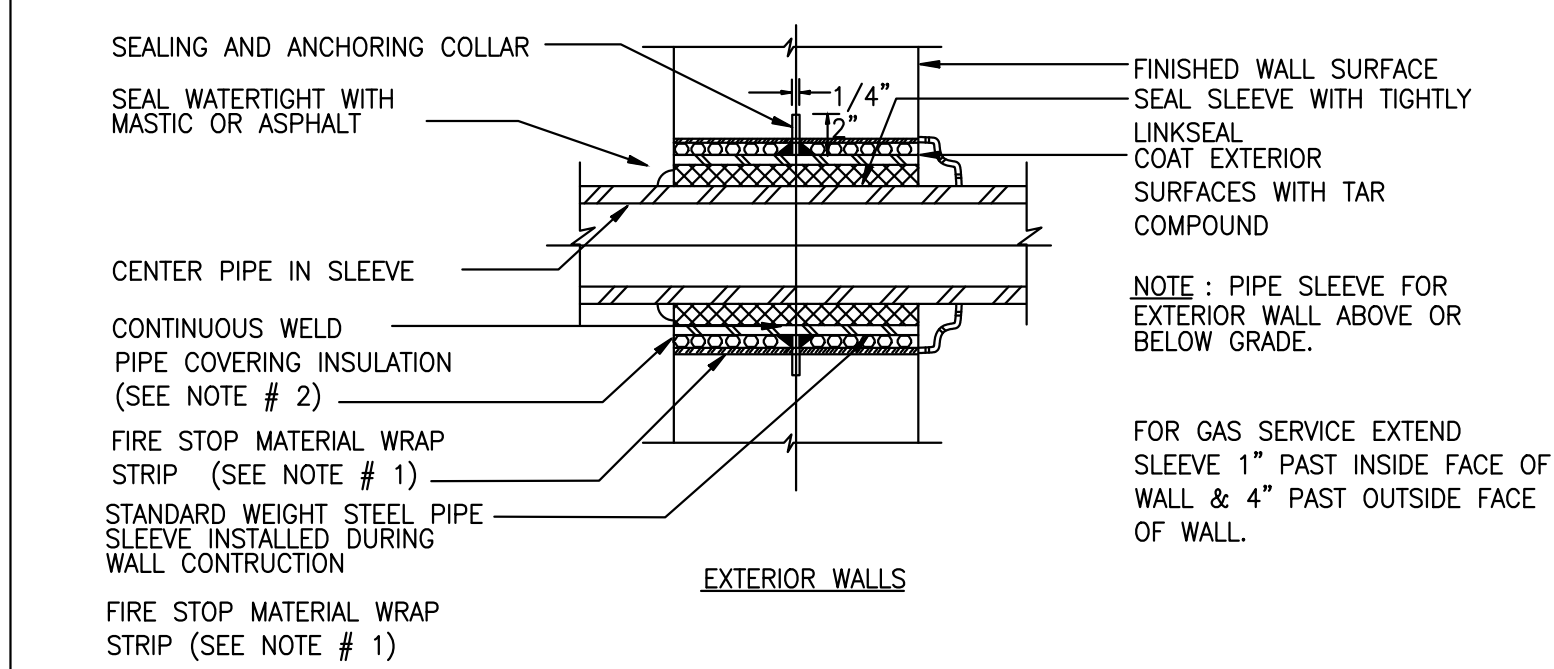
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- NOTES:
- FIRESTOP MATERIAL WRAP STRIP SHALL BE 1/2" THICK INTUMESCENT ELASTOMERIC MATERIAL FACED ON ONE SIDE WITH ALUMINUM FOIL SUPPLIED IN 2 IN. WIDE STRIPS AND WRAP AROUND THE PIPE AS PER UL MATERIAL LISTED 3M COMPANY FS-195+ OR FILL CAVITY WITH 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.



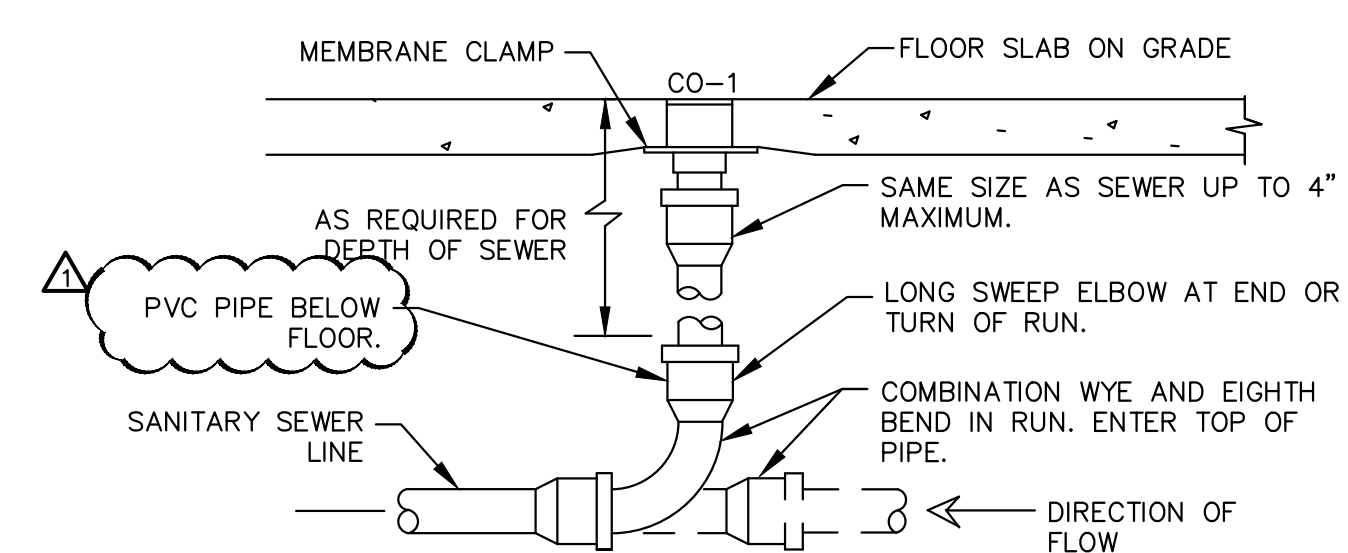
PIPE SIZE	P.D.I. SYMBOL	FIXTURE UNIT RATINGS	A SIZE	B SIZE
1/2"	A	1 - 11	5"	1/2"
3/4"	B	12 - 32	5"	3/4"
1"	C	33 - 60	7"	1"
1-1/4"	D	61 - 113	7"	1-1/4"
1-1/2"	E	114 - 154	9"	1-1/2"
2"	F	155 - 330	9"	2"

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

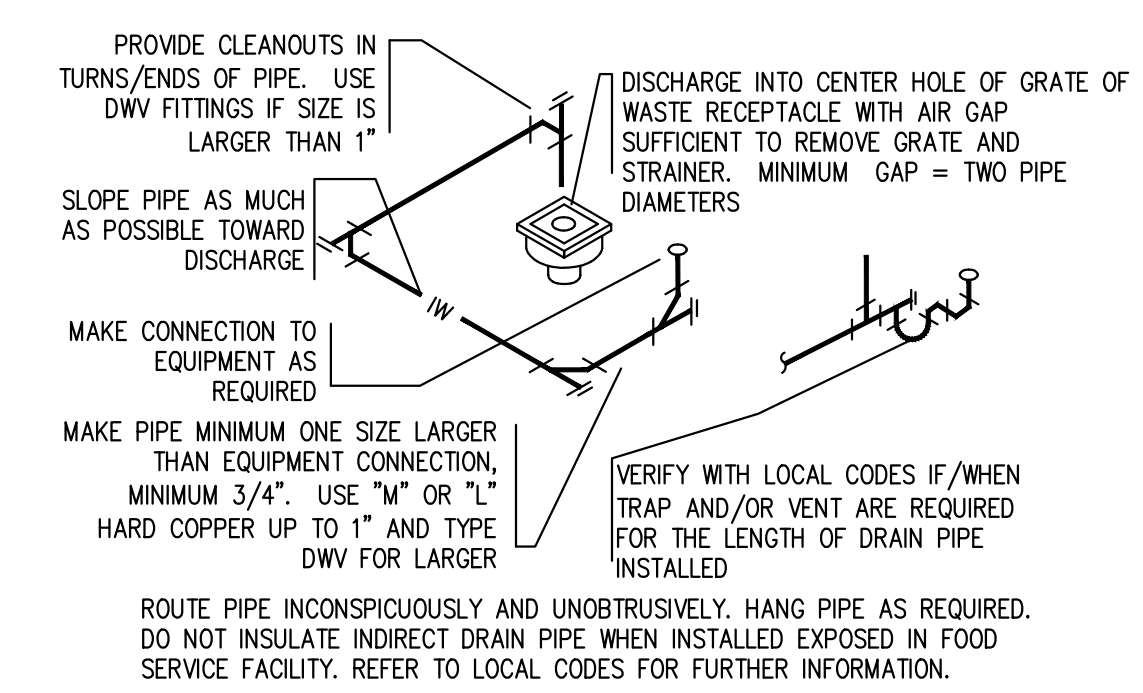
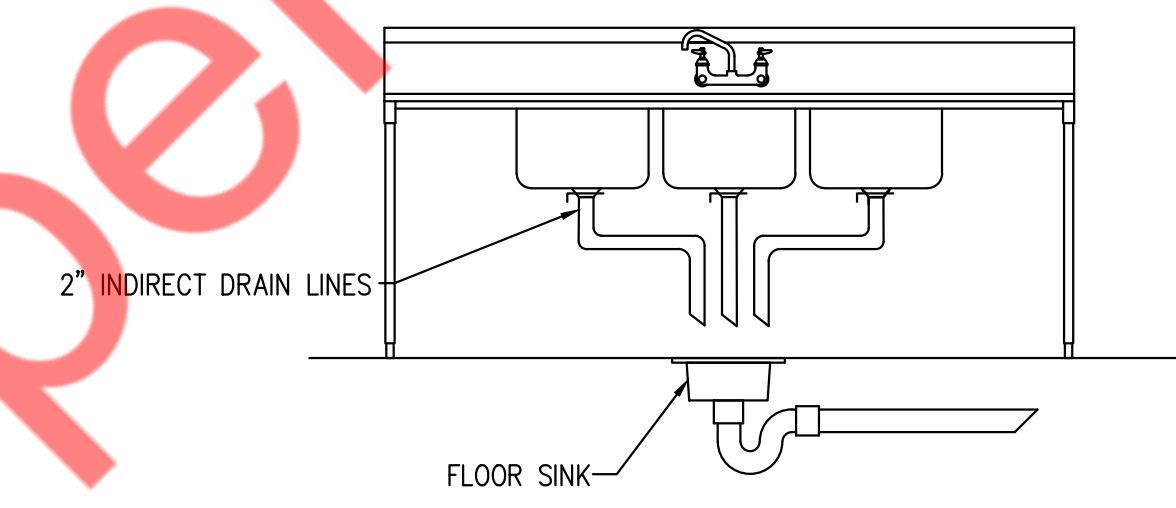
1 PIPE SLEEVE THRU WALL SECTION
P-7 N.T.S

2 GAS FIRED TANKLESS HOT WATER HEATER DETAILS (WH-1)
P-7 N.T.S

3 WATER HAMMER ARRESTER DETAIL
P-7 N.T.S



- COMMENTS:
- LOCATE AT BUILDING EXIT, AT ENDS OF RUNS, AT TURNS OF PIPE GREATER THAN 45 DEGREES, AT 50' INTERVALS ON STRAIGHT RUNS, AND/OR WHERE SHOWN ON PLANS. PROVIDE BACKFILL PER ARCHITECTURAL SPECIFICATIONS. LOCATE CLEANOUTS WHERE THERE IS 18" CLEAR AROUND. CONSULT LOCAL CODES FOR OTHER FCO REQUIREMENTS.
 - PROVIDE CLEANOUT TOP WITH VARIATIONS SUITABLE FOR FLOOR COVERING (CARPET MARKER, RECESSED FOR TILE, SCORiated FOR UNFINISHED FLOORS). CLEAN THE TOP OF EXPOSED FCO AFTER INSTALLATION.



4 FLOOR CLEANOUT DETAIL
P-7 N.T.S

5 3-COMPARTMENT SINK DETAILS
P-7 N.T.S

6 INDIRECT WASTE DETAILS
P-7 N.T.S

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PLUMBING FIXTURE & KITCHEN EQUIPMENT SCHEDULE									
LEGEND	PLUMBING FIXTURE	CONNECTION SIZE – INCHES							REMARKS
		TRAP	SOIL/WASTE	VENT	COLD WATER	HOT WATER	FILTER WATER	THERMOSTATIC MIXING VALVE	
WC–1	WATER CLOSET	–	4"	2"	¾"	–	–	–	FLUSH TANK
LAV–1	LAVATORY	1½"	2"	1½"	½"	½"	–	PROVIDE	P–TRAP PROVIDE SENSOR OPERATED FAUCET MAX. ①0.25 GALLON PER METERING CYCLE
UR–1	URINAL	2"	2"	2"	½"	–	–	–	P–TRAP
EH–1	DROP–IN HAND SINK	2"	2"	1½"	½"	½"	–	PROVIDE	P–TRAP
EH–2	DROP–IN DUMP SINK	2"	2"	1½"	½"	½"	–	PROVIDE	P–TRAP
EH–4	DROP–IN ICE BIN	–	1"	–	–	–	½"	–	I.W. FROM ICE BIN SPILLS INTO FLOOR SINK
EH–7A	ESPRESSO MACHINE	–	I.D	–	½"	–	–	–	I.W. FROM ESPRESSO MACHINE SPILLS INTO FLOOR SINK
EH–8	SPRAY RINSER	–	I.D	–	½"	–	–	–	I.W. FROM SPRAY RINSER SPILLS INTO FLOOR SINK
EH–9B	BREW COFFEE MACHINE	–	I.D	–	–	–	½"	–	I.W. FROM BREW COFFEE MACHINE SPILLS INTO FLOOR SINK
EH–14	BLENDER RINSER	–	–	–	½"	–	–	–	–
EH–30	SPOON RINSER	–	1½"	–	½"	–	–	–	I.W. FROM SPOON RINSER SPILLS INTO FLOOR SINK
EK–1	HAND SINK	2"	2"	1½"	½"	½"	–	PROVIDE	P–TRAP
EK–2B	PREP SINK	–	2"	–	½"	½"	–	PROVIDE	I.W. FROM PREP SINK SPILLS INTO FLOOR SINK
EK–3	3–COMPARTMENT SINK	–	2"	–	¾"	¾"	–	–	I.W. FROM 3CS SPILLS INTO FLOOR SINK
EK–4	ICE MACHINE	–	¾"	–	–	–	½"	–	I.W. FROM ICE MACHINE SPILLS INTO FLOOR SINK
EK–7	DOUGH CONDITIONER	–	½"	–	–	–	½"	–	I.W. FROM DOUGH CONDITIONER SPILLS INTO FLOOR SINK
EK–8	CONVECTION OVEN	–	–	–	–	–	½"	–	–
EK–9	DECK OVEN	–	–	–	–	–	½"	–	–
EK–14	MOP SINK	3"	3"	2"	¾"	¾"	–	–	P–TRAP
–	WATER FILTER	–	I.D	–	¾"	–	–	–	–
FS–1	FLOOR SINK	3"	3"	2"	–	–	–	–	P–TRAP
FD–1	FLOOR DRAIN	3"/4"	3"/4"	2"	–	–	–	–	P–TRAP

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

GREASE INTERCEPTOR SIZING CALCULATION										
ITEM NO.	FIXTURE	QUANTITY	DIMENSIONS			VOLUME		PERCENTAGE USAGE(%)	ACTUAL USAGE (GALLONS)	FLOW RATE(GPM)
			LENGTH(IN)	WIDTH(IN)	DEPTH(IN)	CUBIC INCHES	GALLONS			2 MIN.
EH-1	HAND SINK	1	14	10	5	700	3.03	0.75	2.27	1.14
EH-2	DUMP SINK	1	16	20	12	3,840	16.62	0.75	12.47	6.23
EK-1	HAND SINK	2	9	9	4	648	2.81	0.75	2.1	1.06
EK-14	MOP SINK	1	24	24	12	6,912	29.92	0.75	22.44	11.22
EK-2B	PREP SINK	1	18	18	14	4,536	19.64	0.75	14.73	7.36
EK-3	3 COMP SINK	1	18	18	14	13,608	58.91	0.75	44.18	22.09
FS-1	FLOOR SINK	6	—	—	—	—	3	—	18	9
FD-1	FLOOR DRAIN	3	—	—	—	—	3	—	9	4.5
TOTAL:										62.6
PROPOSED GREASE INTERCEPTOR										GB-250

EXTERIOR GREASE INTERCEPTOR SCHEDULE (GI)					
QTY	LOCATION	FLOW RATE (GPM)	GREASE CAPACITY (LBS)	MAKE	REMARKS
1	OUTSIDE	100	1895	SCHIER GB–250	DIMENSIONS–44"(H)X87"(L)X33"(W) SHIPPING WEIGHT– 376 LBS

THE CONTRACTOR SHALL PROVIDE ALL REQUIRED ACCESSORIES FOR SATISFACTORILY WORKING AS PER SITE CONDITIONS.

NEW GAS TANKLESS WATER HEATER								
TAG No.	MAX INPUT (MBH)	FLOW (GPM)	FIXTURES SERVING	QUANTITY	TYPE	EFFICIENCY U.E.F	MANUFACTURER & MODEL NO.	REMARKS
WH–1	199	4.8①80°F	3–COMPARTMENT SINK, PREP SINK, MOP SINK, HAND SINKS, LAVATORIES, DROP IN HAND SINK, DROP IN DUMP SINK	2	GAS TANKLESS TYPE WATER HEATER	0.98	RINNAI CX199I	–DIMENSIONS 18.5"LX25.8"HX11.4"W

RECIRCULATING PUMP SCHEDULE						
MARK	SERVICE	QTY	GPM	TOTAL HEAD FT.	MOTOR HP	MANUFACTURER & REMARKS
RCP–1	HW RECIRCULATION	1	2	10	0.115	GRUNDFOS UP 15–18 B5 W/AQUASTAT + TIMER

THERMOSTATIC MIXING VALVE								
ITEM	CAPACITY (GPM)	PRESSURE DROP (PSI)	MINIMUM FLOW (GPM)	MAKE	CW INLET	HIGH TEMP. INLET	LOW TEMP. OUTLET	REMARKS
TMV	15	5	2	ACORN MV17-2	3/4"	3/4" (140°F)	1" (120°F)	-BRONZE BODY AND LEAD FREE CONSTRUCTION -ASSE CERTIFIED

EXPANSION TANK SCHEDULE					
ITEM	SERVICE	QTY	GALLONS	MAKE	REMARKS
EXPANSION TANK (ET–1)	HOT WATER	1	2	AMTROL ST–SC–DD	DIMENSIONS– 13"(H)X8"(DIA.) SHIPPING WEIGHT– 5 LBS

NY ENGINEERS

NEARBY ENGINEERS
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MIAMI, FL 33179
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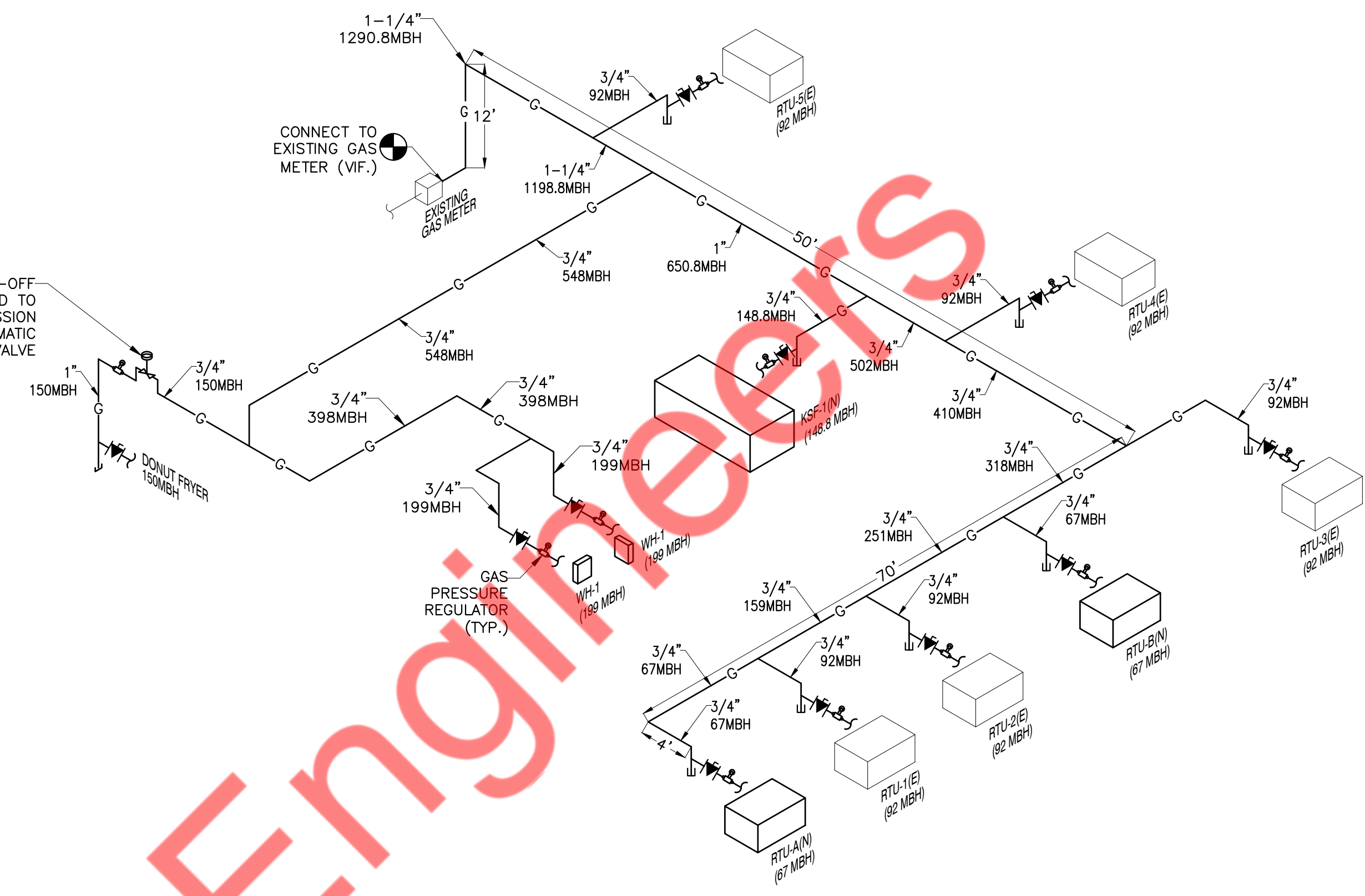
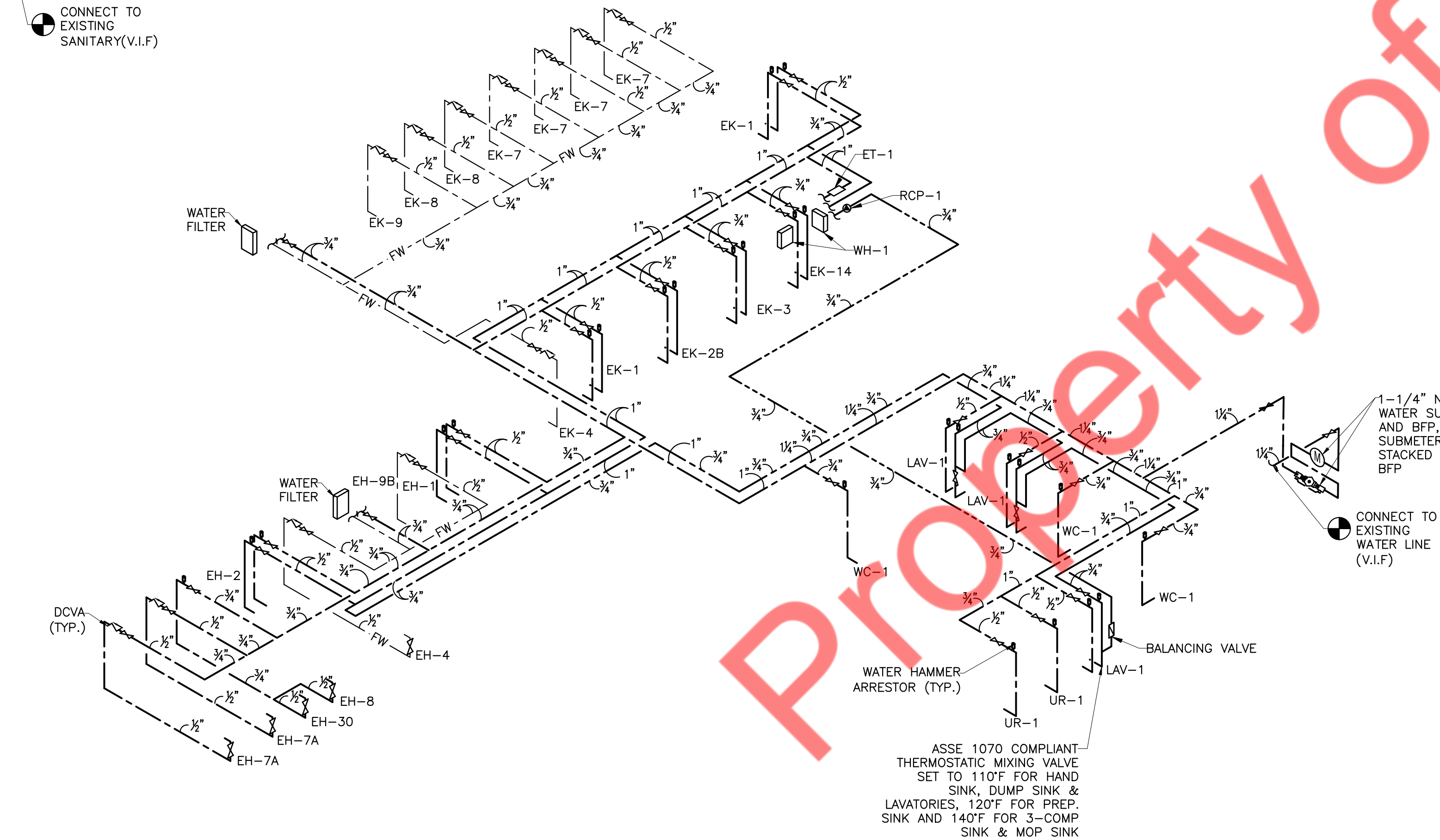
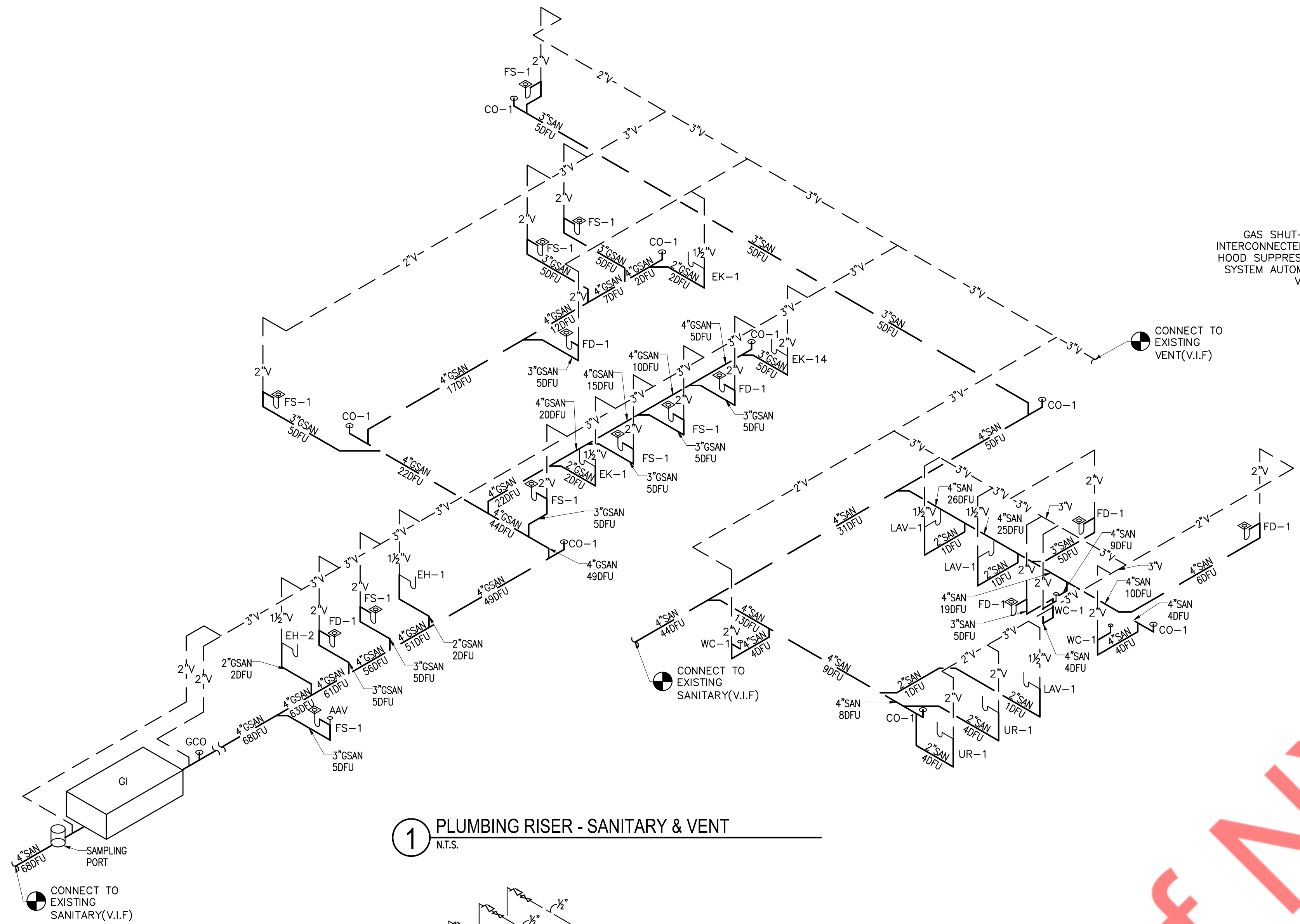
PLUMBING SCHEDULES

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7.28.2025

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GAS SCHEDULE						
TAG	QTY.	DESCRIPTION	MANUFACTURER	MODEL	SIZE	BTU/HR
RTU-1(E)	1	MECHANICAL UNIT	REFER MECHANICAL SHEETS	REFER MECHANICAL SHEETS	3/4"	92,000
RTU-2(E)	1	MECHANICAL UNIT	REFER MECHANICAL SHEETS	REFER MECHANICAL SHEETS	3/4"	92,000
RTU-3(E)	1	MECHANICAL UNIT	REFER MECHANICAL SHEETS	REFER MECHANICAL SHEETS	3/4"	92,000
RTU-4(E)	1	MECHANICAL UNIT	REFER MECHANICAL SHEETS	REFER MECHANICAL SHEETS	3/4"	92,000
RTU-5(E)	1	MECHANICAL UNIT	REFER MECHANICAL SHEETS	REFER MECHANICAL SHEETS	3/4"	92,000
RTU-A(N)	1	MECHANICAL UNIT	REFER MECHANICAL SHEETS	REFER MECHANICAL SHEETS	3/4"	67,000
RTU-B(N)	1	MECHANICAL UNIT	REFER MECHANICAL SHEETS	REFER MECHANICAL SHEETS	3/4"	67,000
KSF-1(N)	1	MECHANICAL UNIT	REFER MECHANICAL SHEETS	REFER MECHANICAL SHEETS	3/4"	148,800
WH-1	2	WATER HEATER	RINNAI	CX199i	3/4"	199,000
EK-11A	1	DONUT FRYER	CASTLE	GF85	3/4"	150,000
TOTAL LOAD						1,290,800

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 GAS 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 SCREWED FITTINGS
2. GAS SYSTEM TO BE INSTALLED BY QUALIFIED LICENSED CONTRACTOR.
3. VERIFY EQUIPMENT BTU PRIOR TO INSTALLATION, ADJUST PIPE SIZE ACCORDING TO 2021 VIRGINIA FUEL GAS CODE TABLE 402.4(5).
4. CONTRACTOR TO FIELD VERIFY THE LONGEST LENGTH AND GAS PRESSURE SHOULD MATCH WITH THE GAS PLAN AND RISER. IF NOT THEN NOTIFY TO THE ENGINEER BEFORE BASE BID/COMMENCING CONSTRUCTION.

GAS PIPE SIZING PER TABLE 402.4(5) 2021 VIRGINIA FUEL GAS CODE
INLET PRESSURE = 2.0PSI PRESSURE DROP = 1.0 PSI
EQUIVALENT LENGTH OF PIPE= 12'+50'+70'+4' = 136' + FITTINGS (+40%) = 191 FEET

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PLUMBING RISERS

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