

# MECHANICAL SYMBOLS LIST

EQUIPMENT SYMBOL	CONTROLS AND SENSORS	MECHANICAL ABBREVIATIONS	
AC-1 (TXF-1)		AFF	ABOVE FINISHED FLOOR
		AHU	AIR HANDLER UNIT
		AL	ACOUSTIC LINING
		GD	GRAVITY DAMPER
		BOB	BOTTOM OF BEAM
<b>AIR DEVICES</b>		BOD	BOTTOM OF DUCT
		BOE	BOTTOM OF EQUIPMENT
		BOH	BOTTOM OF HOOD
		CDS	CEILING DIFFUSER SUPPLY
		CDR	CEILING DIFFUSER RETURN
		CFM	CUBIC FEET OF AIR PER MINUTE
		C.O.	CLEAN OUT
<b>DUCT ACCESSORIES</b>	<b>DUCTWORK</b>	COP	COEFFICIENT OF PERFORMANCE
		CP	CONDENSATE PUMP
		CR	CONDENSATE RETURN PIPING
		CD	CONDENSATE DRAIN PIPE
		DN	DOWN
		EER	ENERGY EFFICIENCY RATIO
		EG	EXHAUST GRILLE
		EN	ENERGY ANALYSIS
<b>HVAC PIPING</b>	<b>PIPE FITTINGS AND EQUIPMENT</b>	ET	EXPANSION TANK
		FTR	FIN TUBE RADIATOR
		FC	FLEXIBLE CONNECTION
		FD/AD	FIRE DAMPER W/ACCESS DOOR
		FD	FIRE DAMPER W/FUSIBLE LINK
		FSD	FIRE SMOKE DAMPER
		GV	GAS VENT
		GX	GENERAL EXHAUST RISER
		GXF	GENERAL EXHAUST FAN
		HS	HYDRO SEPARATOR
		HSPF	HEATING SEASONAL PERFORMANCE FACTOR
		KX	KITCHEN EXHAUST RISER
		KXF	KITCHEN EXHAUST FAN
		LDS	LINEAR DIFFUSER SUPPLY
		LDR	LINEAR DIFFUSER RETURN
		MAU	MAKE UP AIR UNIT
		MAF	MAKE UP AIR FAN

**ENERGY CONSERVATION CODE OF NEW YORK STATE COMPLIANCE**

TO THE BEST OF MY PROFESSIONAL KNOWLEDGE AND JUDGEMENT, THESE PLANS AND SPECIFICATION ARE IN COMPLIANCE WITH THE ASHRAE 90.1-2016

MECHANICAL DRAWING LIST	
M-0.1	MECHANICAL SYMBOLS, ABBREVIATIONS, NOTES AND SPECIFICATIONS (1 OF 4)
M-0.2	MECHANICAL SPECIFICATION (2 OF 4)
M-0.3	MECHANICAL SPECIFICATIONS (3 OF 4)
M-0.4	MECHANICAL SPECIFICATION (4 OF 4)
M-1.0	MECHANICAL FIRST FLOOR PLAN
M-1.1	MECHANICAL ROOF PLAN
M-5.1	MECHANICAL DETAILS SHEET (1 OF 9)
M-5.2	MECHANICAL DETAILS SHEET (2 OF 9)
M-5.3	MECHANICAL DETAILS SHEET (3 OF 9)
M-5.4	MECHANICAL DETAILS SHEET (4 OF 9)
M-5.5	MECHANICAL DETAILS SHEET (5 OF 9)
M-5.6	MECHANICAL DETAILS SHEET (6 OF 9)
M-5.7	MECHANICAL DETAILS SHEET (7 OF 9)
M-5.8	MECHANICAL DETAILS SHEET (8 OF 9)
M-5.9	MECHANICAL DETAILS SHEET (9 OF 9)
M-6.1	MECHANICAL SCHEDULES

## NYS BUILDING DEPARTMENT NOTES

ALL WORK SHALL COMPLY WITH APPLICABLE SECTIONS OF THE 2020 INTERNATIONAL BUILDING CODE (AS ADOPTED BY NEW YORK STATE) EFFECTIVE OCTOBER, 2020 AND ALL AMENDMENTS AND RULES AND REGULATIONS OF THE DEPARTMENT OF BUILDINGS TO DATE.

- THE CONTRACTOR SHALL ENGAGE THE SERVICES OF A PROFESSIONAL ENGINEER TO PROVIDE THE REQUIRED SPECIAL INSPECTIONS AND TESTS.
- TESTS WILL BE CONDUCTED UNDER DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, ARCHITECT OR OTHER PERSON HAVING NOT LESS THAN FIVE (5) YEARS EXPERIENCE SUPERVISING THE INSTALLATION OF SUCH MECHANICAL SYSTEMS. THE TESTS WILL SHOW COMPLIANCE WITH 2020 BUILDING CODE REQUIREMENTS AS OUTLINED IN SECTION [IBC 1704].
- THE LICENSED PROFESSIONAL ENGINEER, ARCHITECT OR OTHER PERSON HAVING NOT LESS THAN FIVE (5) YEARS EXPERIENCE SUPERVISING THE INSTALLATION OF SUCH MECHANICAL SYSTEMS AND CONDUCTING SUCH TESTS WILL FILE DOCUMENTATION AND REPORTS OF TESTS THAT THE SYSTEM COMPLIES WITH THE CONSTRUCTION DOCUMENTS AND APPLICABLE LAWS.
- SPECIAL INSPECTIONS:**  
THE FOLLOWING SYSTEMS SHALL BE INSPECTED IN ACCORDANCE WITH THE SECTION CITED FROM THE 2020 NYS BUILDING CODE.
  - FIRE RESISTANT PENETRATIONS AND JOINTS- IBC 1705.17
  - DUCT CONSTRUCTION AND INSTALLATION- IMC 603
  - AIR INTAKES, EXHAUSTS AND RELIEFS - IMC 401.5
  - AIR FILTERS - IMC 605
- MINIMUM TEMPERATURE TO BE MAINTAINED IN OCCUPIED SPACES DURING HEATING SEASON: 68 DEG. FAHRENHEIT.
- VENTILATION FOR ALL AREA SHALL COMPLY WITH IMC 401.
- A STATEMENT SHALL BE FILED BY THE OWNER OR TENANT IN POSSESSION THAT THE VENTILATION SYSTEM WILL BE KEPT IN CONTINUOUS OPERATION AT ALL TIMES DURING THE NORMAL OCCUPANCY OF THE STRUCTURE AS REQUIRED BY IMC 403.3.
- REFER TO ARCHITECTURAL DRAWINGS FOR REQUIRED FIRE-RATED WALL AND SMOKE WALL CONSTRUCTION AND LOCATION.
- THESE PLANS ARE APPROVED ONLY FOR THE WORK INDICATED ON THE APPLICATION SPECIFICATION SHEET. ALL OTHER MATTERS SHOWN ARE NOT TO BE RELIED UPON OR TO BE CONSIDERED AS EITHER BEING APPROVED OR IN ACCORDANCE WITH APPLICABLE CODES.
- SMOKE DETECTOR SHALL MEET UL268A
- ALL HEATING AND COOLING LOADS CALCULATED PER ASHRAE/ACCA 183.
- HVAC SYSTEM SHALL BE BALANCED IN ACCORDANCE WITH ASHRAE 111, "TESTING, ADJUSTING, AND BALANCING OF BUILDING HVAC SYSTEM" OR OTHER ACCEPTED ENGINEERING STANDARDS AS APPROVED BY THE DEPARTMENT. AIR FLOW RATES SHALL BE MEASURED AND ADJUSTED TO DELIVER FINAL FLOW RATES WITHIN THE TOLERANCES PROVIDED IN THE PRODUCT SPECIFICATIONS. TEST AND BALANCE ACTIVITIES SHALL INCLUDE AIR SYSTEM.
- ALL LOW PRESSURE DUCTS OPERATING AT STATIC PRESSURE 2 INCH OF WATER GAUGE OR LESS SHALL BE PROPERLY SEALED AS PER REQUIREMENT AND APPROVED METHODS.
- OPERATING AND MAINTENANCE MANUAL SHALL BE PROVIDED BY MECHANICAL CONTRACTOR AND SPECIFIED IN CONSTRUCTION DOCUMENTS.
- MECHANICAL SYSTEMS SHALL BE COMMISSIONED PER ASHRAE 90.1 (2016) AND A PRELIMINARY COMMISSIONING REPORT CERTIFIED BY THE DESIGNER OF RECORD SHALL BE PROVIDED TO THE OWNER AND AHI.

## SCOPE OF WORK

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

## GENERAL NOTES

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





HUMIDIFIERS, ETC.

K. ALL DUCT DIMENSIONS INDICATED ON PLANS ARE INSIDE CLEAR DIMENSIONS.

L. AUTOMATIC DAMPERS: COMPLETE WITH LINKAGE AND ELECTRIC OPERATOR. OPPOSED BLADE DAMPER OR GALVANIZED STEEL MIN. 4 IN., MAX. 8 IN. WIDE WITH COMPRESSIBLE EDGE SEALS TO PREVENT LEAKAGE. FACTORY-ASSEMBLE STEEL LINKAGE AND SHAFT WITH NYLON OR OIL-IMPREGNATED BRONZE BEARINGS. MOTOR WITH SUFFICIENT POWER TO LIMIT LEAKAGE TO 10 CFM PER SQ. FT. LINKAGE TO WITHSTAND LOAD EQUAL TO TWICE MAXIMUM OPERATING FORCE WITHOUT DEFLECTION. DAMPER MOUNTED IN WELDED STEEL CHANNEL FRAME.

M. WIRE MESH SCREEN (WMS): NO. 16 USSS, 3/4 SQUARE MESH, 1 IN. WIDE GALVANIZED STEEL ENCLOSING FRAME. FLANGED DUCT OPENING TO RECEIVE FRAME.

N. COMBINATION FIRE AND SMOKE DAMPERS: UL LISTED, GALVANIZED STEEL CONSTRUCTION MULTI-BLADED TYPE. BLADES SHALL BE AIRFOIL SHAPED, DOUBLE SKIN, SINGLE PIECE CONSTRUCTION, EQUIPPED WITH FUSIBLE LINK CONFORMING TO NFPA STANDARD 90A, 92A & 92B, AND COMPLY WITH LATEST STANDARD UL555 AND UL555S WITH LEAKAGE CLASS 1 SMOKE DAMPERS, BLADE SEALS. SIMILAR TO RUSKIN MODEL FSD 60, NYC BSA LISTING# 176-82-SM. ACTUATOR SHALL BE ELECTRICALLY POWERED, 120 V/1 PH, AND MOUNTED IN THE FACTORY AT THE TIME OF FABRICATION.

## 2. AIR OUTLETS

### A. GENERAL:

1) MARGIN TYPES, COLORS, FINISH AND METHODS OF ATTACHMENT FOR ALL DIFFUSERS, GRILLES AND REGISTERS SHALL BE COORDINATED WITH ARCHITECTURAL CEILING AND WALL DETAILS AND SPECIFICATIONS.

2) FRAME TYPE SUITABLE FOR MOUNTING IN CEILING OR WALL CONSTRUCTION AS INDICATED ON ARCHITECTURAL PLANS.

3) EXACT LOCATION OF ALL AIR OUTLETS AS PER ARCHITECTURAL PLANS.

4) SUITABLE FOR OPERATION AT 20% EXCESS AND 20% LESS THAN NOTED CAPACITY FOR CONSTANT VOLUME SYSTEMS AND AT 20% EXCESS AND 60% LESS THAN NOTED CAPACITY FOR VARIABLE VOLUME SYSTEMS. MANUFACTURER RESPONSIBLE FOR EXAMINING APPLICATION OF EACH OUTLET AND GUARANTEE THAT EACH WILL PROVIDE REQUIRED NC LEVELS AND COMFORT SPACE CONDITIONS WITHOUT DRAFTS THROUGHOUT OPERATING RANGE.

5) ALL REGISTERS AND DIFFUSERS SHALL BE PROVIDED WITH OPPOSED BLADE VOLUME DAMPERS. DAMPER OPERATING LEVERS SHALL BE ACCESSIBLE AT THE FACE OF AIR OUTLETS.

A. LINEAR DIFFUSERS: EXTRUDED ALUMINUM CONSTRUCTION, NATURAL ANODIZED FINISH, REMOVABLE CORE, AIR DEFLECTION VANE AND CABLE DAMPER IN EACH BRANCH TAP WITH 3 FT CABLE TO DIFFUSER FACE. PROVIDE CABLE DAMPER SIMILAR TO ANEMOSTAT MODEL OBASL.

B. SQUARE DIFFUSERS: DIFFUSERS SHALL BE STEEL CONSTRUCTION PAINTED WHITE SIMILAR TO ANEMOSTAT.

### C. REGISTERS AND GRILLES:

1) RETURN AND EXHAUST REGISTERS: STEEL CONSTRUCTION WITH VOLUME DAMPER.

2) SUPPLY REGISTERS: ALUMINUM CONSTRUCTION ADJUSTABLE DOUBLE DEFLECTION ALUMINUM AIRFOIL LOUVERS WITH VOLUME DAMPER. PROVIDE AIR EQUALIZING DEFLECTOR WHERE REGISTER COLLAR DUCT IS LESS THAN 2 FT LONG.

3) TRANSFER GRILLES: STEEL CONSTRUCTION WITHOUT VOLUME DAMPER.

## 3. NOISE CONTROL

A. ALL ROOM NC LEVELS SHALL BE 35 OR LESS.

B. PROVIDE SOUND LINING FOR THE FOLLOWING DUCTWORK:

1) ALL DUCTWORK WITHIN MECHANICAL ROOMS AND NOT LESS THAN 20 FT ON EACH SIDE OF ALL FANS AND AC UNITS

2) AIR TRANSFER DUCTS

3) DOWNSTREAM OF ALL VARIABLE AIR VOLUME AND CONSTANT VOLUME BOXES FOR A MINIMUM OF 15 FT.

4) ALL MIXED AIR PLENUMS, EXCEPT WHERE MOISTURE CARRYOVER FROM OUTDOOR AIR LOUVER WILL OCCUR.

5) FULL EXTENT OF SUPPLY DUCTS SERVING CONFERENCE ROOMS.

6) ALL EXPOSED INTERIOR SUPPLY DUCTWORK.

7) ALSO WHERE NOTED ON A DRAWING.

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

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

## 4. TESTING AND BALANCING

A. AIR BALANCING SHALL BE ACCOMPLISHED BY ADJUSTMENT OF FANS AND BRANCH DAMPERS FOR MAJOR ADJUSTMENTS. ADJUSTMENT OF TERMINAL DAMPERS AND DEVICES SHALL BE FOR TRIM OR MINOR ADJUSTMENT ONLY. THIS SHALL BE DONE TO PERMIT THE LEAST NOISE GENERATION IN THE TERMINAL AREAS AND UTILIZE MINIMUM FAN ENERGY

B. WATER BALANCING SHALL BE ACCOMPLISHED BY ADJUSTMENT OF BALANCING VALVES AT PUMPS FOR PROPER FLOW. ADJUST FLOW THROUGH BOILERS, CHILLERS, HEAT EXCHANGERS AND COILS AS REQUIRED.

C. UPON COMPLETION OF THE INSTALLATION, THE CONTRACTOR SHALL REBALANCE ANY EXISTING PORTIONS OF AIR DISTRIBUTION SYSTEM AND WATER DISTRIBUTION SYSTEM AFFECTED BY THE RENOVATION AND ALSO BALANCE ALL NEW WORK.

D. THE CONTRACTOR SHALL PROVIDE ALL LABOR, PRESSURE GAUGES, FLOW METERS, SHEAVES, AND BELTS REQUIRED TO BALANCE SYSTEMS

E. BALANCING REPORT SHALL BE PROVIDED ON AABC-TYPE FORMS.

F. FANS, AIR HANDLING UNITS, PUMPS, AND COILS SHALL BE BALANCED TO WITHIN +5% OF THEIR DESIGN CAPACITIES. ALL OTHER AIR AND WATER QUANTITIES SHALL BE BALANCED TO WITHIN +10% OF THE DESIGN QUANTITIES.

G. BALANCING AND TESTING SHALL BE PERFORMED AND SUPERVISED BY ONE OF THE FOLLOWING INDEPENDENT FIRMS SPECIALIZING IN TESTING AND BALANCING

1) INDEPENDENT TESTING AND BALANCING, INC.

2) AIR CONDITIONING TEST AND BALANCING CORP

3) CFM TESTING AND BALANCING CO

H. THE PERFORMANCE AND CAPACITY OF ALL SYSTEMS AND EQUIPMENT TO BE DEMONSTRATED BY THE CONTRACTOR

I. AFTER OCCUPANCY OF THE SPACE, AND APPROVAL OF THE BALANCE REPORTS, THE AIR BALANCE COMPANY SHALL RETURN TO PROVIDE COMFORT BALANCE SERVICES. THE AIR BALANCE COMPANY SHALL ADJUST VOLUME DAMPERS AND VAV TERMINAL UNITS MAXIMUM AND MINIMUM SETTINGS IN RESPONSE TO THE OCCUPANTS REQUIREMENTS. ALLOW ONE HALF DAY MINIMUM PER FLOOR AND UP TO THREE DAYS ON SITE FOR COMFORT BALANCE SERVICES

### 1.5 KITCHEN EXHAUST DUCTWORK

A. ALL HORIZONTAL AND VERTICAL KITCHEN EXHAUST DUCTWORK SHALL BE CONSTRUCTED OF 16 GAUGE MINIMUM BLACK IRON OR PREFABRICATED DOUBLE WALL GREASE DUCTWORK APPROVED FOR KITCHEN EXHAUST APPLICATION WITH ETL LISTED TO UL 197B AND UL 2221 SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER INSTALLATION INSTRUCTIONS AND LOCAL CODES. ALL SEAMS AND JOINTS SHALL HAVE A LIQUID TIGHT CONTINUOUS EXTERNAL WELD AS PER NFPA 96 FOR BLACK IRON DUCTWORK. THE EXTERIOR OF ALL KITCHEN RANGE BLACK IRON EXHAUST DUCTS SHALL HAVE 1-1/2" X 1-1/2" X 1/8" WELDED ANGLES, PUNCHED FOR SECURING BLOCK INSULATION. WHERE KITCHEN RANGE BLACK IRON EXHAUST DUCT RISERS PASS VERTICALLY THROUGH FLOORS OF THE BUILDING, PROVIDE ANGLE CLIPS WELDED TO THE DUCT OF REQUIRED SIZES TO SUPPORT THE WEIGHT OF THE RISER SECTIONS ON THE BUILDING'S STRUCTURE AT EACH OF THE FLOOR LEVELS. PROVIDE AND INSTALL ALL SUPPLEMENTARY STRUCTURAL STEEL IN SHAFTS TO PROPERLY SUPPORT EXHAUST DUCTWORK FROM BUILDING CONSTRUCTION. PROVIDE MINIMUM 12"x12" ACCESS DOORS ON SIDE OF HORIZONTAL DUCT AT 12' SPACING. ACCESS DOORS SHALL BE SIMILAR TO DESCRIPTION IN "ACCESS DOORS IN SHEET METAL WORK" EXCEPT THAT DOOR GAUGE SHALL BE THE SAME AS DUCT GAUGE. ALL HORIZONTAL DUCTS SHALL BE PITCHED BACK TO HOODS 1/4" PER FOOT OF MAXIMUM PITCH ATTAINABLE. THIS TRADE SHALL DRILL OR CUT ALL REQUIRED OPENINGS AS REQUIRED BY THE DUCT EXTINGUISHING SYSTEM AND AS COORDINATED WITH THE TRADE SUPPLYING THE EXTINGUISHING SPRAY HEADS. MAINTAIN 1" CLEARANCE BETWEEN SHEET METAL DUCT AND ANY SURFACE SUCH AS SLAB, BEAM OR SHAFT ENCLOSURE.

B. ALL HORIZONTAL AND VERTICAL KITCHEN RANGE BLACK IRON EXHAUST DUCTWORK GAUGES SHALL BE AS FOLLOWS:

SIZE	GAUGE OF BLACK IRON
LESS THAN 155 SQ. IN.	16
155-200 SQ. IN.	14
ABOVE 201 SQ. IN.	12

C. ALL EXHAUST DUCTWORK FROM DISHWASHERS, POT SINKS, OVENS, OR OTHER KITCHEN APPARATUS EMITTING HEAT OR VAPOR (OTHER THAN RANGE HOOD EXHAUST) SHALL BE CONSTRUCTED OF ALUMINUM WITH WELDED JOINTS (USING SMACNA STANDARDS) AND MADE WATERTIGHT. THIS INCLUDES ALL DUCTWORK FROM THE EQUIPMENT TO THE EXHAUST FAN AND FROM THE EXHAUST FAN TO THE DISCHARGE AIR LOUVER. THE DUCTS SHALL PITCH BACK TO THE DISHWASHER FROM THE VERTICAL RISER OR WHERE THE RUN OF DUCT IS TOO LONG SHALL CHANGE PITCH TO DRAIN TO THE BOTTOM OF THE RISER. WHERE DUCTS LEAVE SHAFT TO ENTER THE EXHAUST FAN THEY SHALL ALSO BE PITCHED TO A LOW POINT AWAY FROM THE RISER. WELD 1/4" DRAINS AT ALL LOW POINTS AND RUN TO THE NEAREST DRAIN. THIS TRADE SHALL BE HELD RESPONSIBLE TO PROVIDE A WATERTIGHT AND DRAINED SYSTEM REGARDLESS OF THE QUANTITY OF STEAM OR WATER VAPOR LEAVING THE EQUIPMENT.

END OF SECTION 233113

**GENERAL NOTES**

**KITCHEN EXHAUST SYSTEM NOTES:**

- A. PROVIDE CLEAN OUT AT ALL ELBOWS AND BOTTOM OF RISER AND EVERY 15 FEET HORIZONTAL KITCHEN EXHAUST DUCT.
- B. CLEANOUT OPENINGS SHALL BE PROVIDED AT EVERY CHANGE IN DIRECTION AND WITHIN 3 FEET OF THE EXHAUST FAN.
- C. 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 NON-COMBUSTIBLE AND LIQUID TIGHT AND SHALL NOT HAVE FASTENERS THAT PENETRATED THE DUCT.
- D. 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.
- E. COMMERCIAL KITCHEN GREASE DUCTS SHALL BE DESIGNED FOR THE TYPE OF COOKING APPLIANCE AND HOOD SERVED.
- F. 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.
- G. 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.
- H. 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 JOINT 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.
- I. PRIOR TO THE USE OR CONCEALMENT OF ANY PORTION OF A GREASE DUCT SYSTEM, A LEAKAGE TEST SHALL BE PERFORMED. DUCT SHALL BE CONSIDERED TO BE CONCEALED WHERE INSTALLED IN SHAFTS OR COVERED BY COATINGS OR WRAPS THAT PREVENT THE DUCTWORK FROM VISUALLY INSPECTED ON ALL SIDE. THE DUCT INSTALLER SHALL BE RESPONSIBLE FOR PROVIDING THE NECESSARY EQUIPMENT AND PERFORMING THE GREASE DUCT LEAKAGE TEST. THE DUCT LEAKAGE TEST SHALL BE PERFORMED FOR ALL THE DUCT SYSTEMS, INCLUDING THE DUCT-TO-DUCT CONNECTION. THE DUCTWORK SHALL BE PERMITTED TO BE TESTED IN SECTIONS, PROVIDED THAT EVERY JOINT IS TESTED (IF TEST IS FAILED, CONTRACTOR TO PROVIDE NEW KITCHEN EXHAUST DUCT).
- J. PROVIDE SMOKE TEST TO PROOF TIGHTNESS OF THE GREASE DUCT.
- K. GREASE DUCT BRACING AND SUPPORTS SHALL BE OF NON-COMBUSTIBLE MATERIAL SECURELY ATTACHED TO THE STRUCTURE AND DESIGNED TO CARRY GRAVITY AND SEISMIC LOADS WITHIN THE STREET LIMITATIONS OF THE NEW YORK CITY BUILDING CODE. BOLTS, SCREWS, RIVETS AND OTHER MECHANICAL FASTENERS SHALL NOT PENETRATE DUCT WALLS.
- L. A RESIDUE TRAP SHALL BE PROVIDED AT THE BASE OF EACH VERTICAL RISER WITH PROVISION FOR CLEANOUT IN ACCORDANCE WITH NFPA 96.
- M. 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 NOT EXCEED 2 HOURS.
- N. KITCHEN EXHAUST OUTLETS SHALL BE LOCATED NOT LESS THAN 10 FEET HORIZONTALLY FROM PARTS OF THE SAME OR CONTIGUOUS BUILDINGS, ADJACENT BUILDINGS AND ADJACENT PROPERTY LINE. THIS EXHAUST OUTLETS SHALL BE LOCATED NOT LESS THAN 10 FEET HORIZONTALLY FROM AND NOT LESS THAN 3 FEET ABOVE AIR INTAKE OPENINGS INTO ANY BUILDING.
- O. PROVIDE TYPE-1 EXHAUST DUCT FOR HOOD-1&2 EXHAUST, IN COMPLIANCE WITH NYC MC 2014.
- P. PROVIDE UL LISTED 2 LAYERS OF 1.5" THICK FIRE WARP, TESTED IN ACCORDANCE WITH ASTM E2336 FOR TYPE-I EXHAUST DUCTS. FIRE WRAP TO PROVIDE 1 OR 2-HR ENCLOSURE. THROUGH PENETRATION FIRE STOP SYSTEMS ARE TO BE TESTED IN ACCORDANCE WITH ASTM E 814 (UL1479). FOIL COVERING TO BE PROVIDED ABOVE INSULATION.

**MECHANICAL GENERAL NOTES:**

- A. CONTRACTOR SHALL BALANCE EACH DEVICE WITH THE CFM SHOWN ON PLAN.
- B. NEW DUCTWORK SHOWN ON PLAN ARE SCHEMATIC ONLY. CONTRACTOR SHALL COORDINATE WITH OTHER TRADES FOR PIPING AND DUCTWORK ROUTING, OFFSET AND RUN PIPING, DUCTWORK INSIDE THE STRUCTURE IF REQUIRED. PROVIDE ANY EXTRA PIPING, DUCTWORK, FITTINGS, INSULATIONS AND OTHER ACCESSORIES IN ORDER TO COMPLETE THE INSTALLATION.
- C. COORDINATE LOCATIONS AND SIZES OF EXISTING ROOF OPENINGS WITH OWNER AND STRUCTURAL ENGINEER.
- 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. COORDINATE WITH ALL TRADES FOR MATERIALS IN RATED AND PLENUM SPACES.
- I. ALL SOURCE OF MECHANICAL INTAKE SHALL MAINTAIN 10 LINEAR FEET SEPARATION BETWEEN ANY SOURCE OF EXHAUST. CONTRACTOR IS RESPONSIBLE TO ADJUST DUCT LENGTH AS NEEDED.
- J. MOUNT DUCTWORK AS HIGH AS POSSIBLE.
- K. TEST AND BALANCE AIR SYSTEMS. PROVIDE REPORT TO G.C AND OWNER.
- L. PROVIDE 1.5" ACOUSTICAL LINING UP TO 20' OF DUCT RUN FROM AC UNITS IN SUPPLY AND RETURN DUCTS. PROVIDE 1.5" THERMAL INSULATION AFTER 20' OF DUCT RUN FROM AC UNITS. R-8(2" THICK) INSULATION TO BE PROVIDED TO DA DUCT.
- M. GREASE DUCT SYSTEM SHALL SLOPE NOT LESS THAN ONE-FOURTH UNIT VERTICAL IN 12 UNITS HORIZONTAL (2-PERCENT SLOPE) TOWARDS THE HOOD OR GREASE RESERVOIR. PROVIDE GREASE RESERVOIR IN DUCTS, WHERE HORIZONTAL DUCT RUN EXCEED 75 FEET. COORDINATE WITH ARCHITECT FOR GREASE RESERVOIR LOCATION AND ACCESS.
- N. RESIDUE TRAP TO BE PROVIDED AT THE BASE OF EACH VERTICAL RISER OF GREASE EXHAUST DUCT FOR CLEANOUT, IN ACCORDANCE WITH NFPA 96.

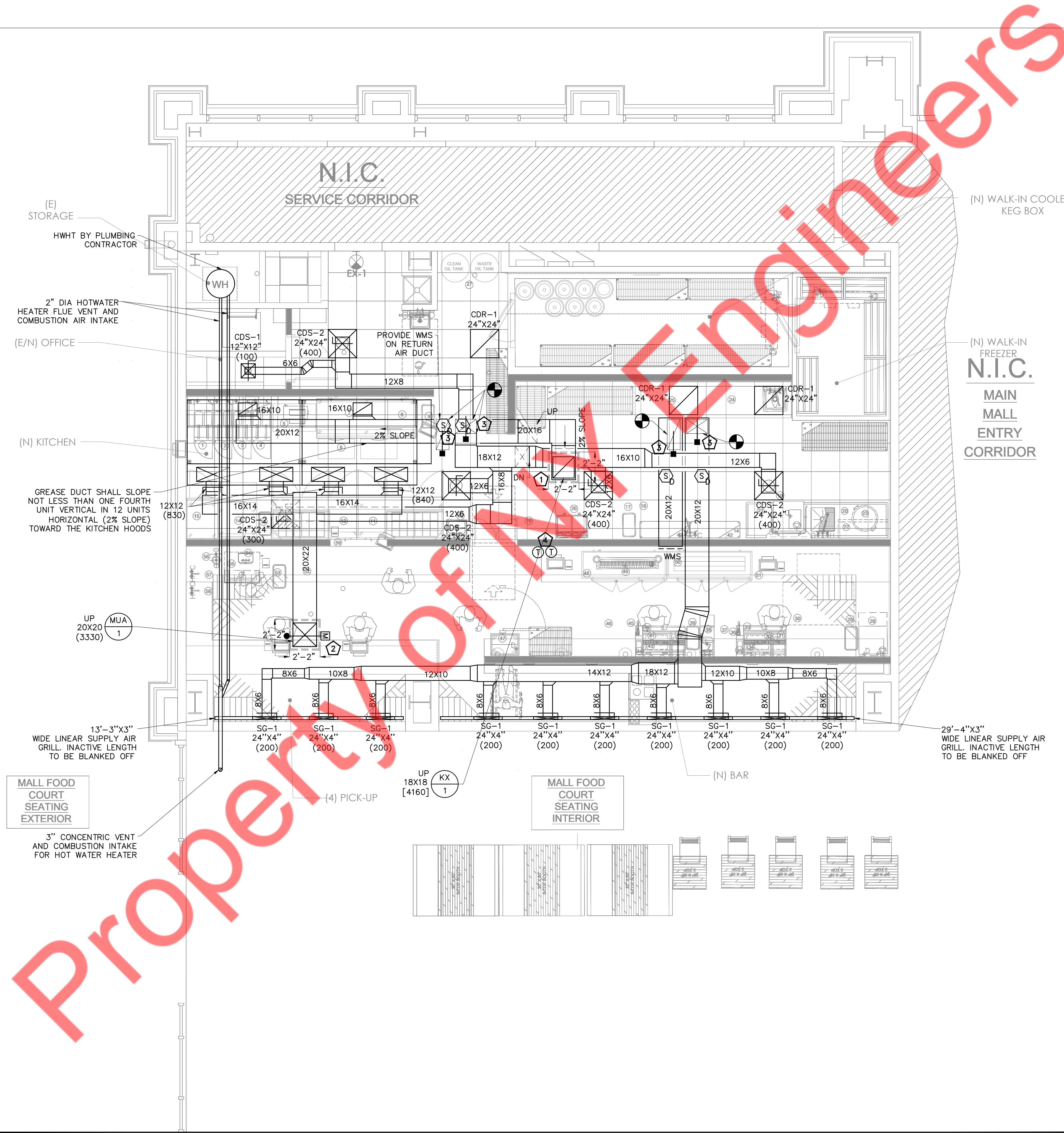
**LANDLORD GENERAL NOTES:**

- A. CONTRACTOR TO COORDINATE ALL TENANT WORK OUTSIDE OF DEMISED SPACE WALL WITH BASE BUILDING MANAGEMENT AND ADJACENT TENANTS, BEFORE INSTALLATION OF ANY HVAC WORKS.
- B. CONTRACTOR TO COORDINATE WITH BASE BUILDING MANAGEMENT AND SHALL MAINTAIN SAFE CONDITIONS AT ALL REQUIRED EGRESS ACCESS IN EXISTING TO REMAIN EGRESS CORRIDORS AND STAIRS.
- C. CONTRACTOR TO COORDINATE ALL ACCESS INCLUDING KITCHEN EXHAUST CLEAN-OUTS AND PROVIDE MEANS OF OPERATION/ MAINTENANCE. REPAIR ALL EXISTING CONSTRUCTION, WHICH GETS DAMAGED DURING INSTALLATION.
- D. CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIR OF ALL EXISTING SPRAY FIREPROOFING DAMAGED AS A RESULT OF CONNECTION ANY/ALL MEP SUPPORTS TO EXISTING DECK AND STRUCTURE (ABOVE).
- E. NO EQUIPMENT, DUCTS, PIPES OR CONTROLLER SHALL BE INSTALLED ON THE 2HRS RATED DEMISING WALL (SHARED WITH ADJACENT TENANTS)

**KEY NOTES**

**KEY NOTES:**

- 1. PROVIDE GREASE TRAP AT BOTTOM OF GREASE EXHAUST DUCT RISER. CONTRACTOR TO COORDINATE WITH ARCHITECT TO PROVIDE ACCESS FOR GREASE TRAP AT BOTTOM OF KITCHEN EXHAUST DUCT RISER.
- 2. INTERLOCK MOTORIZED DAMPER WITH MAU OPERATION..
- 3. CONTRACTOR TO VERIFY THE CONDITION OF EXISTING FIRE SMOKE DAMPER. IN CASE NO EXISTING DAMPER OR EXISTING IS NOT IN OPERATING CONDITION/DAMAGED, CONTRACTOR TO PROVIDE NEW FIRE SMOKE DAMPERS.
- 4. CONTRACTOR TO VERIFY THE CONDITION OF EXISTING THERMOSTATS FOR EXISTING RTU. IN CASE NO EXISTING THERMOSTAT OR EXISTING IS NOT IN OPERATING CONDITION/DAMAGED, CONTRACTOR TO PROVIDE NEW THERMOSTATS AND WIRE TO EACH RTU.



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

**GENERAL NOTES**

**KITCHEN EXHAUST SYSTEM NOTES:**

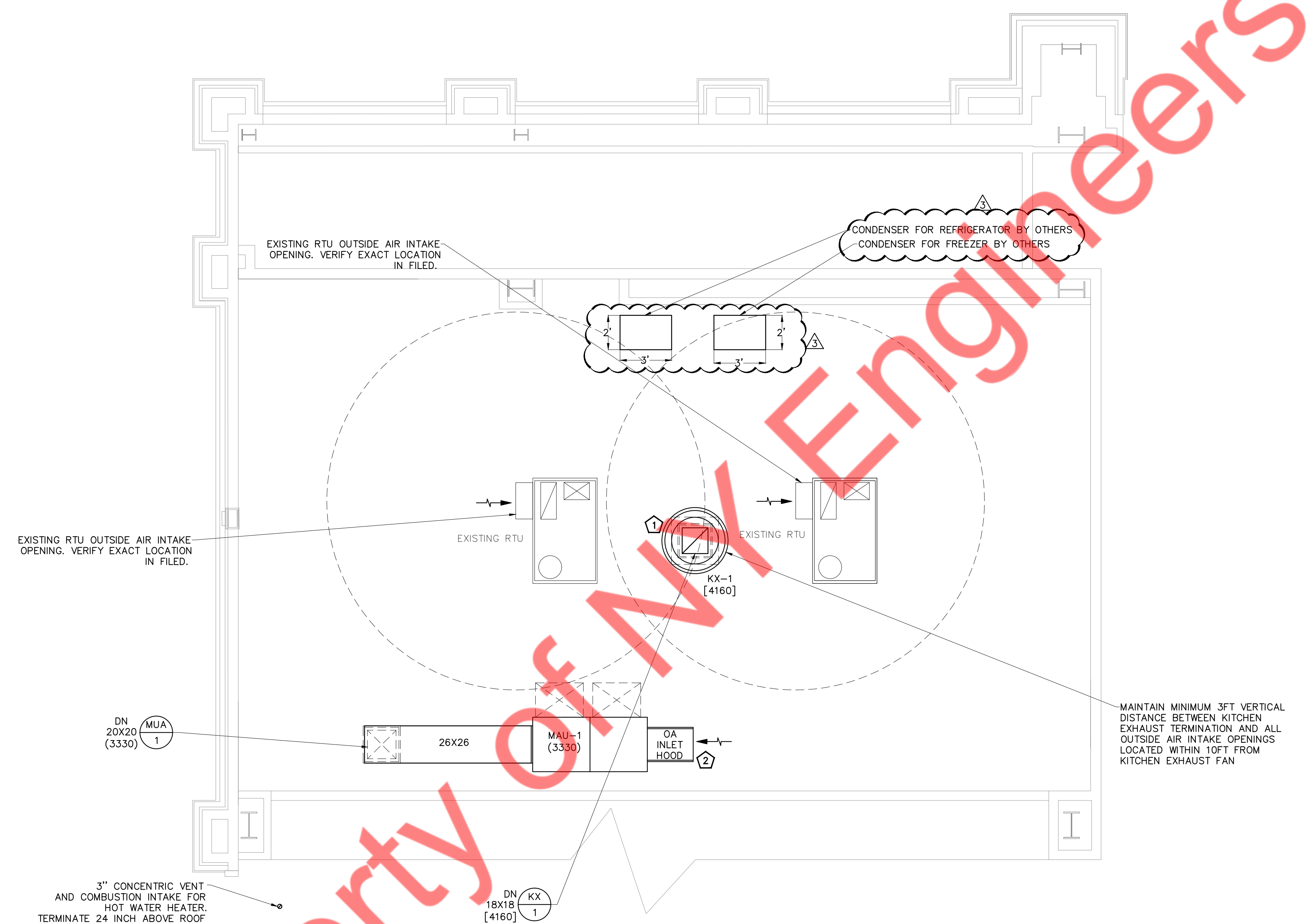
- A. PROVIDE CLEAN OUT AT ALL ELBOWS AND BOTTOM OF RISER AND EVERY 15 FEET HORIZONTAL KITCHEN EXHAUST DUCT.
- B. CLEANOUT OPENINGS SHALL BE PROVIDED AT EVERY CHANGE IN DIRECTION AND WITHIN 3 FEET OF THE EXHAUST FAN.
- C. CLEANOUT OPENINGS SHALL BE EQUIPPED WITH TIGHT-FITTING DOORS CONSTRUCTED OF STEEL 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 NON-COMBUSTIBLE AND LIQUID TIGHT AND SHALL NOT HAVE FASTENERS THAT PENETRATED THE DUCT.
- D. 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.
- E. COMMERCIAL KITCHEN GREASE DUCTS SHALL BE DESIGNED FOR THE TYPE OF COOKING APPLIANCE AND HOOD SERVED.
- F. 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.
- G. 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.
- H. 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.
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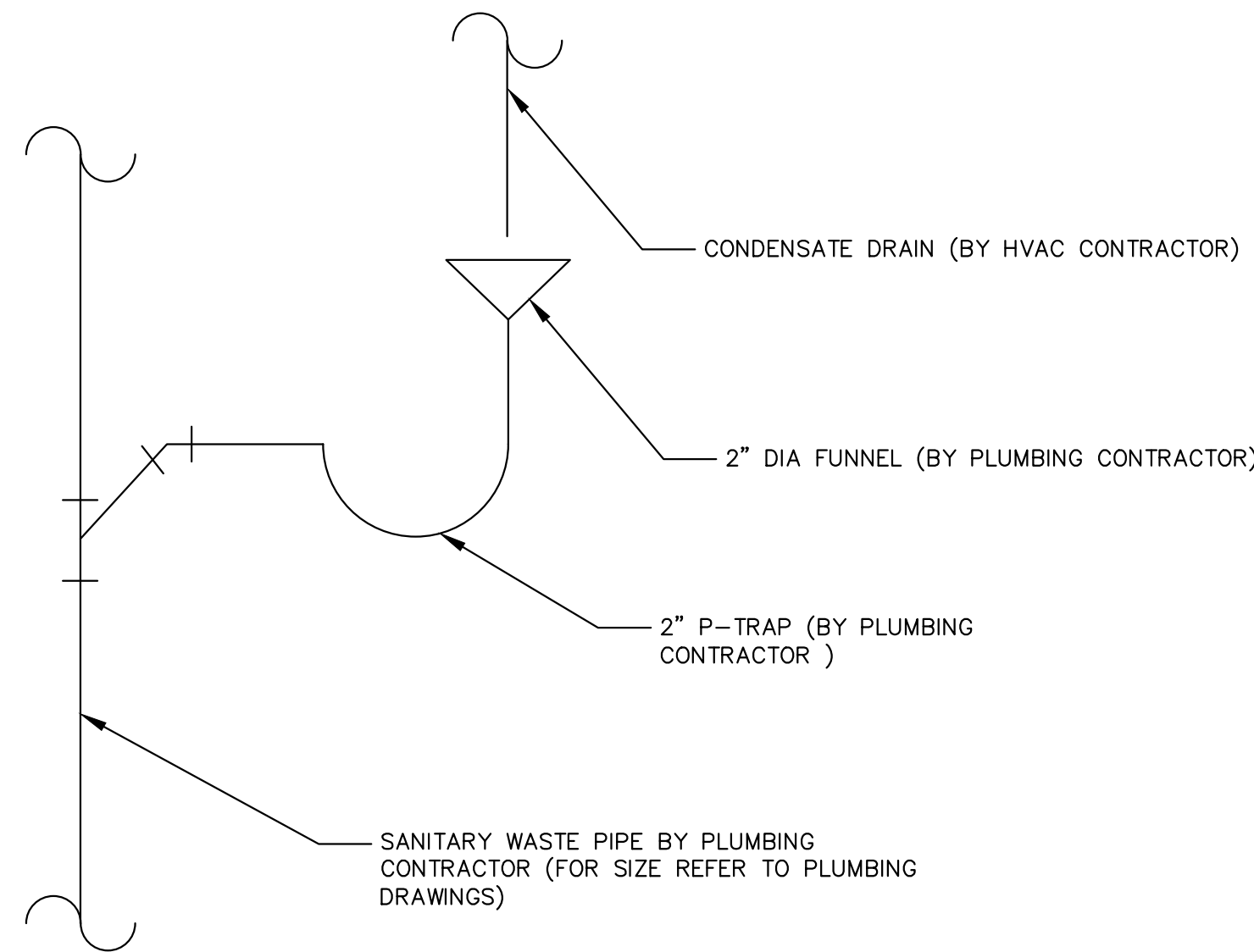
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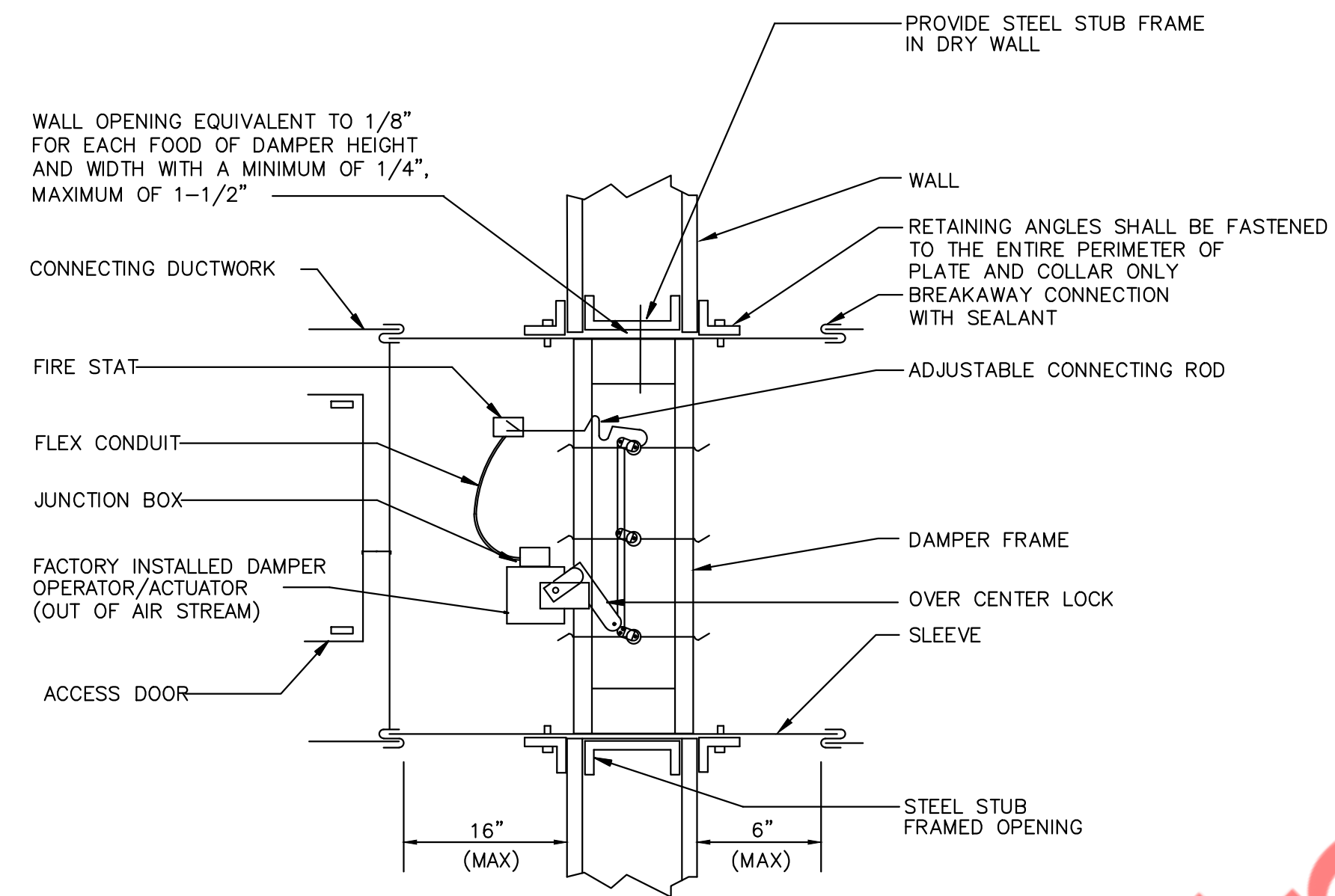
**KEY NOTES**

**KEY NOTES:**

- 1 PROVIDE 24" ROOF CURB AND (2) 24" WIND BAND EXTENSION. KITCHEN EXHAUST TERMINATION SHALL BE 102" ABOVE ROOF LEVEL. MAINTAIN 3FT VERTICAL DISTANCE SEPARATION BETWEEN KITCHEN EXHAUST TERMINATION AND ALL OUTSIDE AIR INTAKE OPENINGS AND MAINTAIN 10FT DISTANCE FROM PARAPET WALL.
- 2 OUTSIDE AIR INTAKE SHALL BE 10 FEET FROM LOT LINE, 10 FEET FROM ANY EXHAUST AND 10 FEET FROM THE ADJACENT TENANT EXHAUST.



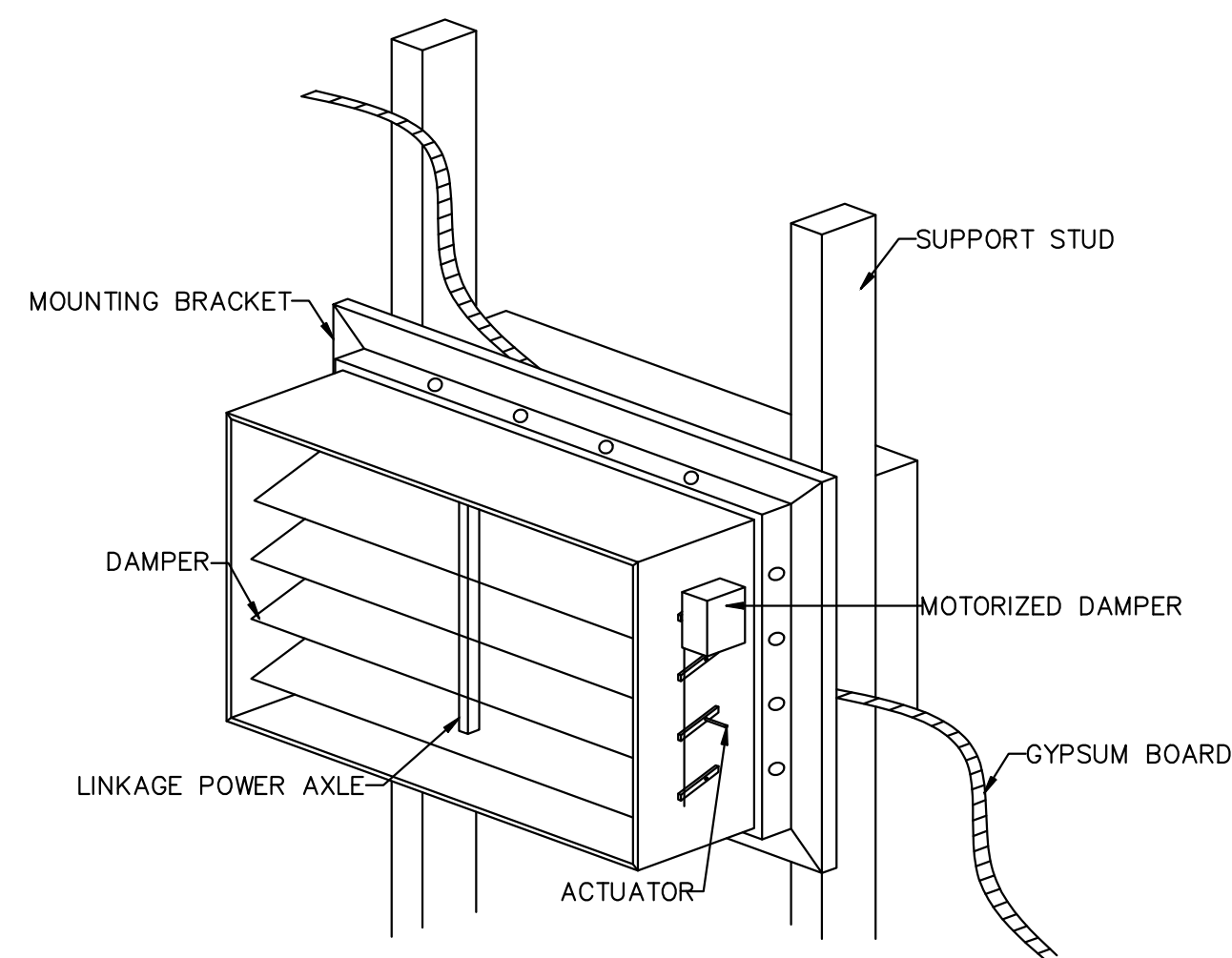
1 FUNNEL DRAIN INSTALLATION DETAIL  
M5.1 N.T.S



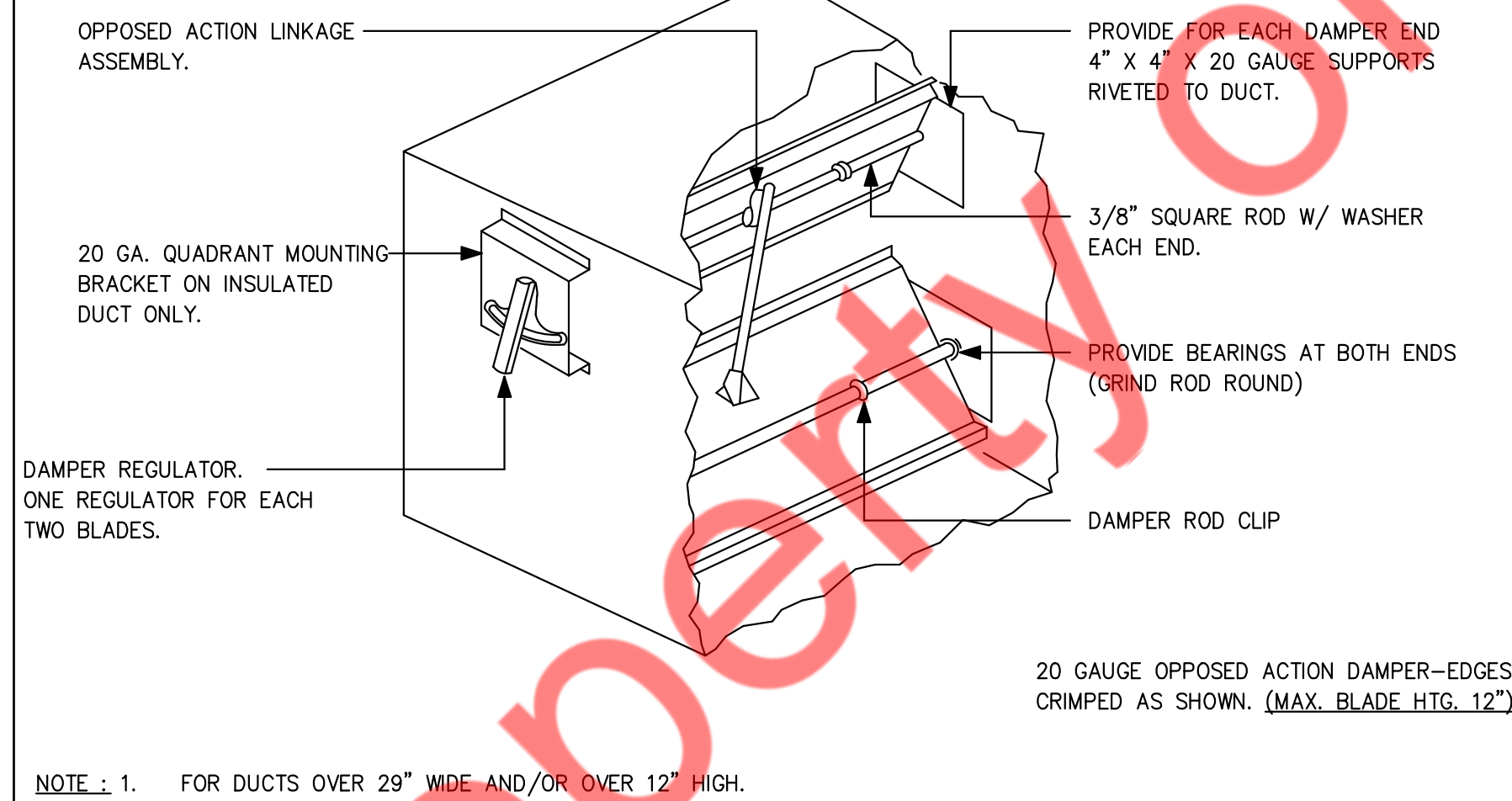
2 FIRE/SMOKE DAMPER DETAIL  
M5.1 N.T.S

**FIRE & SMOKE DAMPER NOTES:**

- A. FIRE/SMOKE DAMPER SLEEVE SHALL BE 16 GAUGE FOR DAMPERS WITH DIMENSIONS NOT EXCEEDING 24 IN. IN HEIGHT OR 36 IN. IN WIDTH, AND 14 GAUGE FOR LARGER SIZES. SLEEVE THICKNESS MUST NOT BE LESS THAN THE GAUGE OF THE CONNECTING DUCT. FIRE/SMOKE DAMPER SLEEVES THROUGH HOLLOW FIRE-RATED CONSTRUCTION BE MADE OF AT LEAST 14 GAUGE SHEET METAL.
- B. DUCT TO DAMPER SLEEVE CONNECTIONS SHALL BE BREAKAWAY STYLE. RECTANGULAR DUCTS MUST USE ONE OR MORE OF THE FOLLOWING CONNECTIONS: "S" SLIP, OR OTHER SLIP TYPE, MODIFIED DUCTMATE TYPES (PLASTIC CLEATS, NO CORNER BOLTS), OR MODIFIED PROPRIETARY TDC BY LOCKFORMER, OR TDF BY EAGLE FLANGE SYSTEM (NO CORNER BOLTS). ROUND AND OVAL DUCTS MUST USE A 4 IN. WIDE DRAWBAND CONNECTION. ALL THE CONNECTIONS SHALL BE LISTED IN UL555 AND DEPICTED IN THE SMACNA FIRE, SMOKE AND RADIATION DAMPER INSTALLATION GUIDE.
- C. DAMPER SLEEVES SHALL NOT EXTEND MORE THAN 6 IN. BEYOND THE FIRE WALL OR PARTITION UNLESS DAMPER IS EQUIPPED WITH AN ACTUATOR AND/OR FACTORY INSTALLED ACCESS DOOR. SLEEVE MAY EXTEND UP TO 16 IN. BEYOND THE FIRE WALL OR PARTITION ON SIDES EQUIPPED WITH ACTUATOR AND/OR FACTORY INSTALLED ACCESS DOOR.
- D. MOUNTING ANGLES SHALL BE A MINIMUM OF 1-1/2" X 1-1/2" X 14 GAUGE AND FASTENED TO SLEEVE WITH NO. 10 SHEET METAL SCREWS, 1/4" BOLTS AND NUTS, 1/2" LONG WELDS, OR 3/16" STEEL POP RIVETS. SECURE SLEEVES BY PERIMETER ANGLES ON FOUR SIDES OF THE SLEEVE ON BOTH SIDES OF OPENING.
- E. THE CONTRACTOR SHALL SEAL ALL JOINTS OF THE SLEEVE WITH SEALANT TO MEET UL555S REQUIREMENTS. THE JOINT BETWEEN TAPS AND DUCTS SHALL BE MADE AIRTIGHT AND SECURED BY U.S. NO. 10 SHEET METAL SCREWS (ONE PER SIDE OF RECTANGULAR DUCT, OR THREE PER ROUND DUCT), SEALED WITH SEALANT AND THEN TAPED. FIRE RATED SEALANT SHALL BE DOW CORNING SILICONE #999, #732 RTV, GE RTV SILICONE RUBBER, OR APPROVED EQUAL.
- F. PROVIDE ACCESS DOORS ON EITHER SIDE OF THE SLEEVE TO PERMIT INSPECTING, TESTING AND RESETTING THE DAMPERS.
- G. PRESSURE DROP ACROSS DAMPER SHALL NOT EXCEED 0.1" ESP.

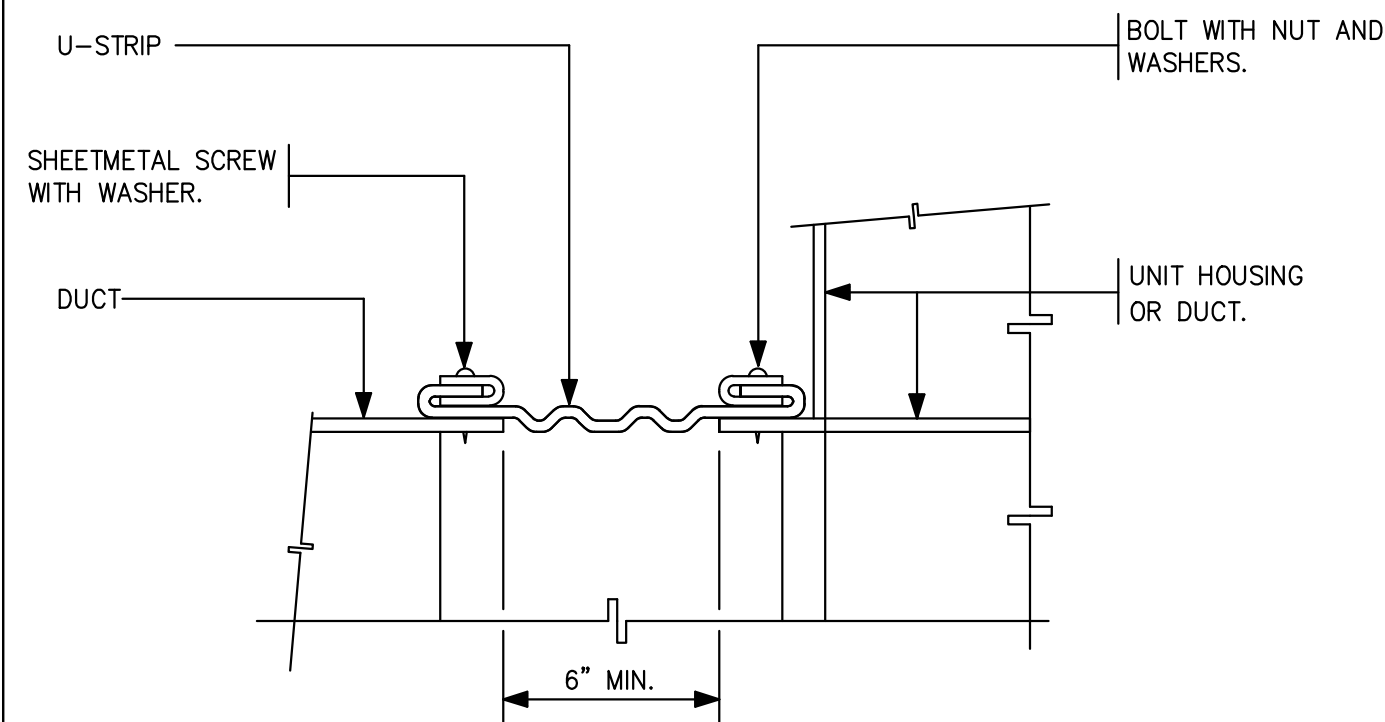


3 MOTORIZED DAMPER DETAIL  
M5.1 N.T.S

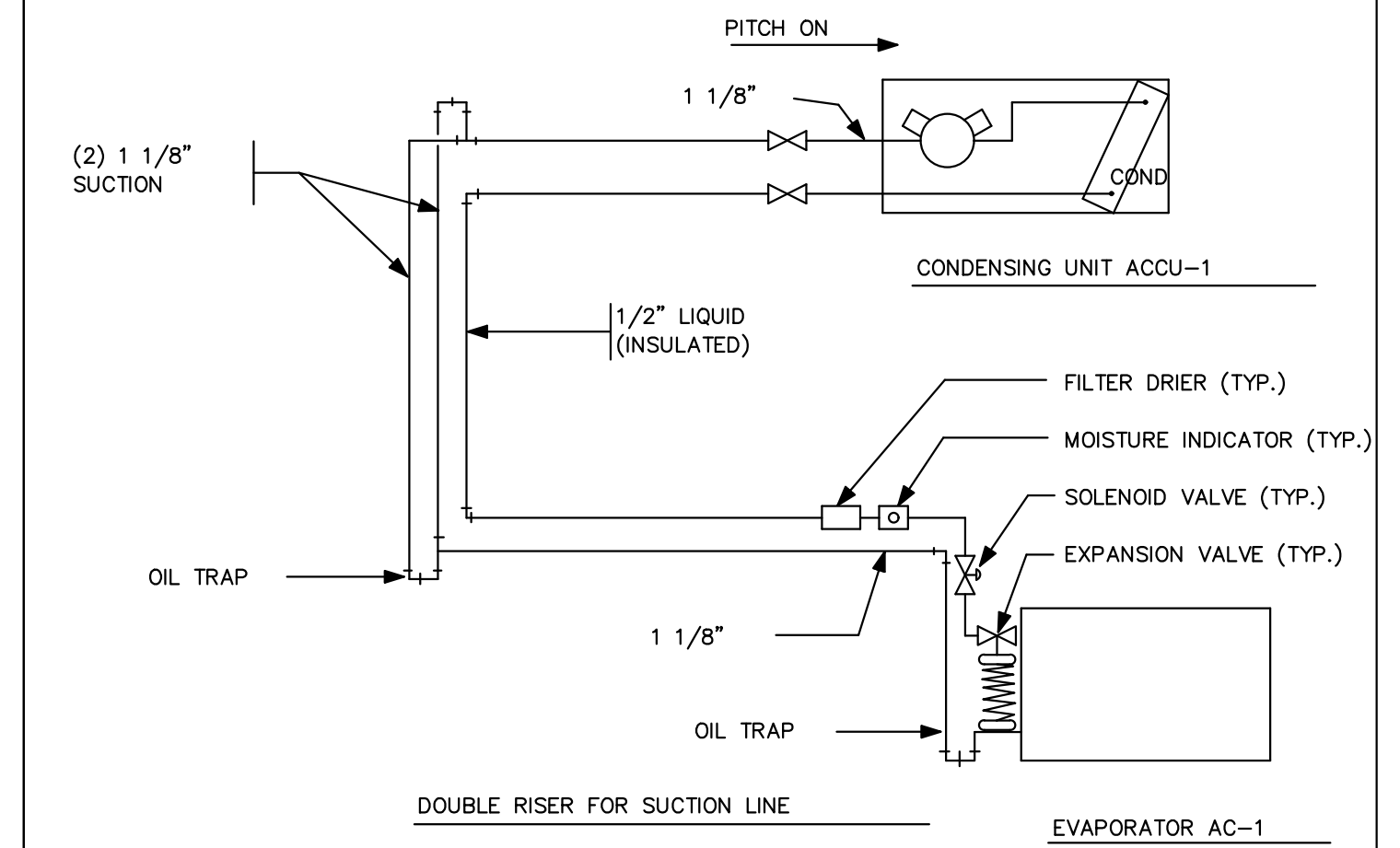


NOTE: 1. FOR DUCTS OVER 29" WIDE AND/OR OVER 12" HIGH.

4 LOW PRESSURE BALANCING DAMPER  
M5.1 N.T.S

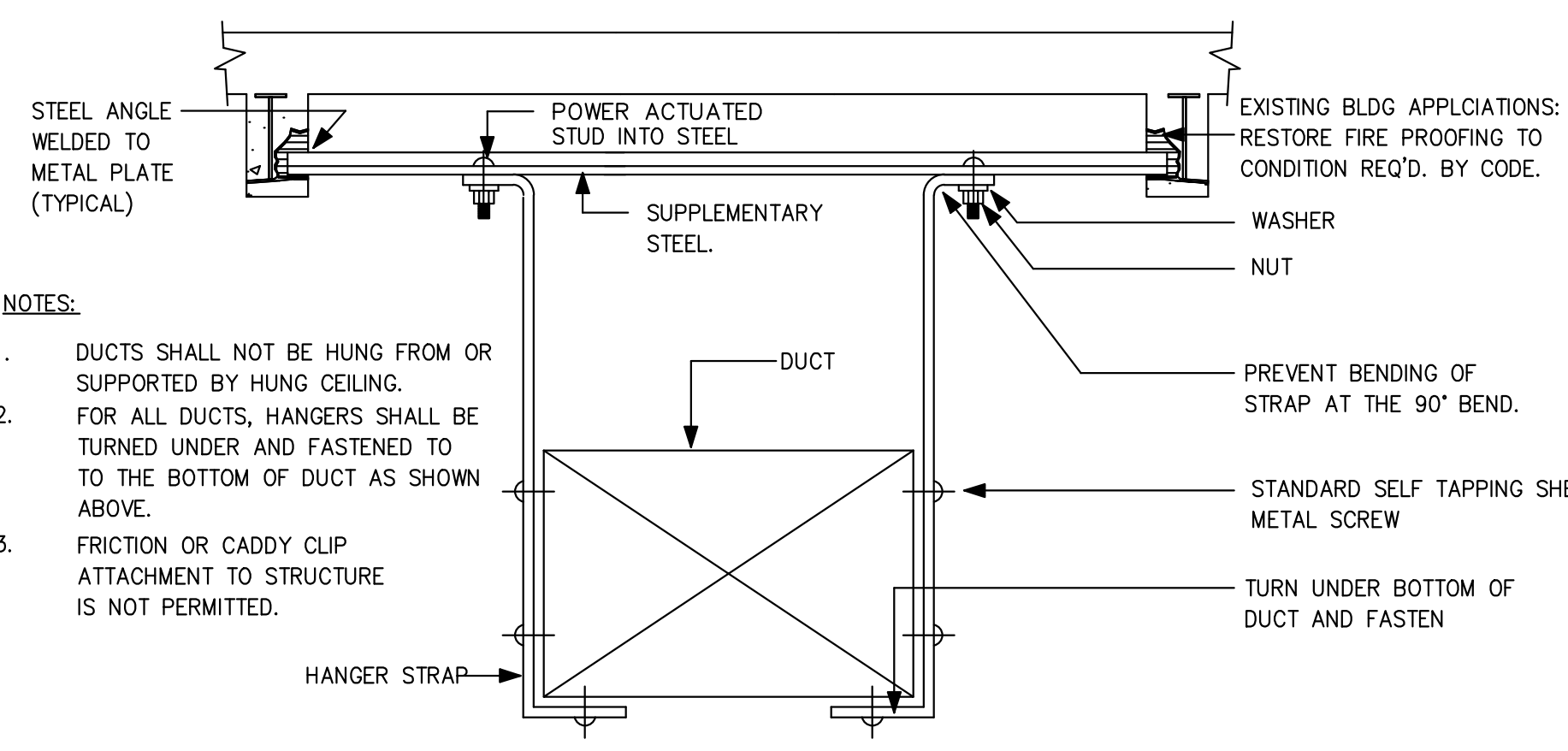


5 FLEXIBLE CONNECTION (DUCT-EQUIPMENT)  
M5.1 N.T.S



NOTE: THE HORIZONTAL DIMENSION OF OIL TRAPS TO BE AS SHORT AS POSSIBLE.

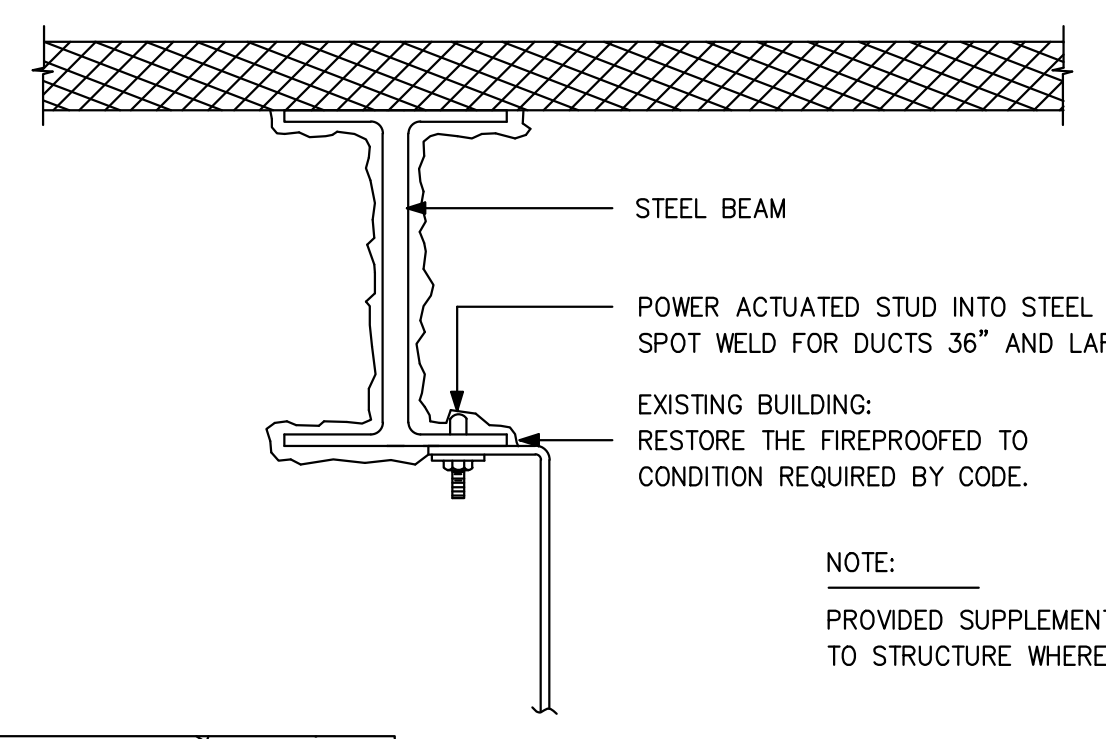
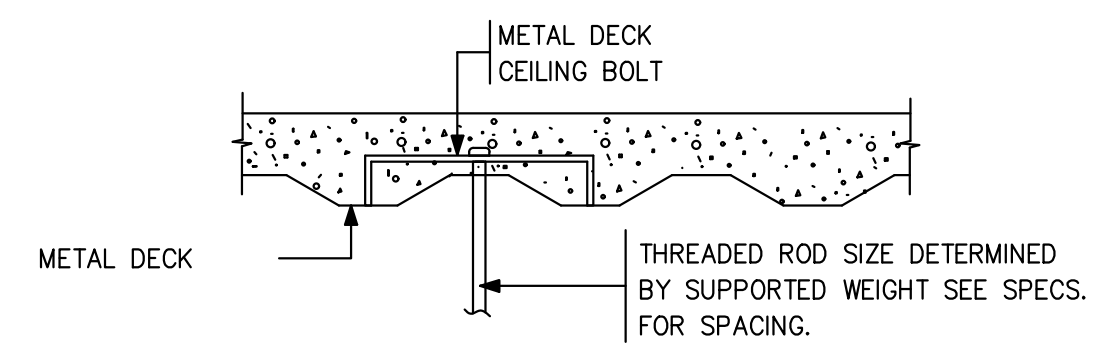
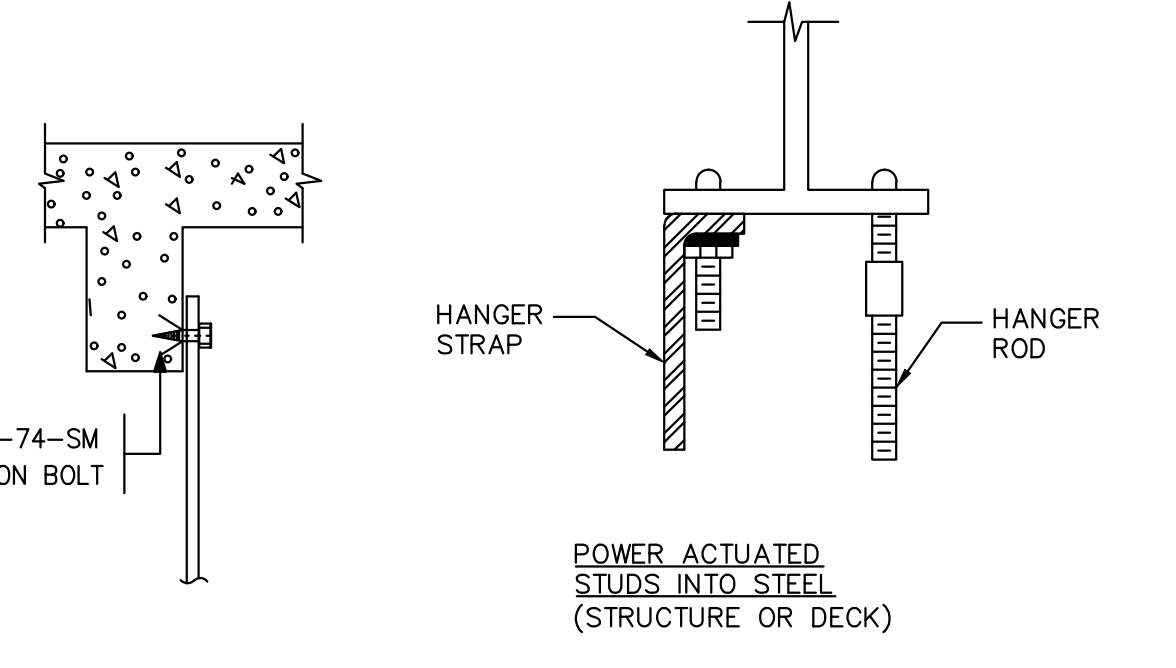
6 REFRIGERANT PIPING SCHEMATIC  
M5.1 N.T.S



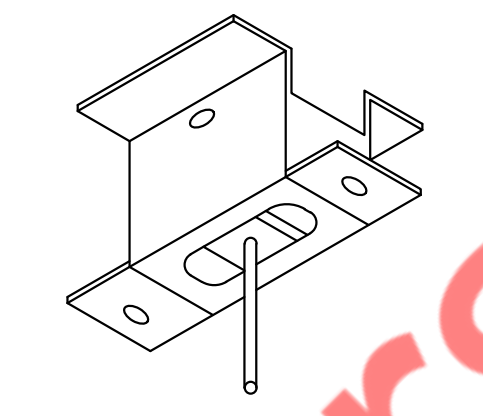
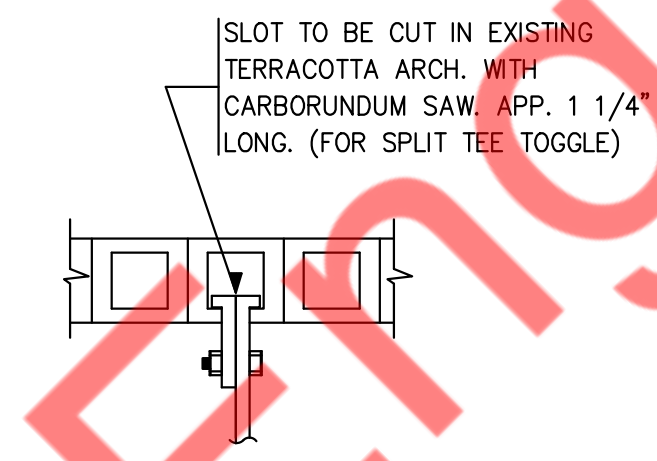
- NOTES:
1. DUCTS SHALL NOT BE HUNG FROM OR SUPPORTED BY HUNG CEILING.
  2. FOR ALL DUCTS, HANGERS SHALL BE TURNED UNDER AND FASTENED TO TO THE BOTTOM OF DUCT AS SHOWN ABOVE.
  3. FRICTION OR CADDY CLIP ATTACHMENT TO STRUCTURE IS NOT PERMITTED.

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

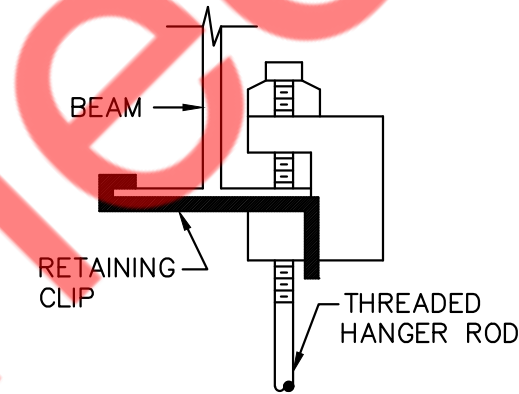
B.S.A. # 469-74-SM  
EXPANSION BOLT



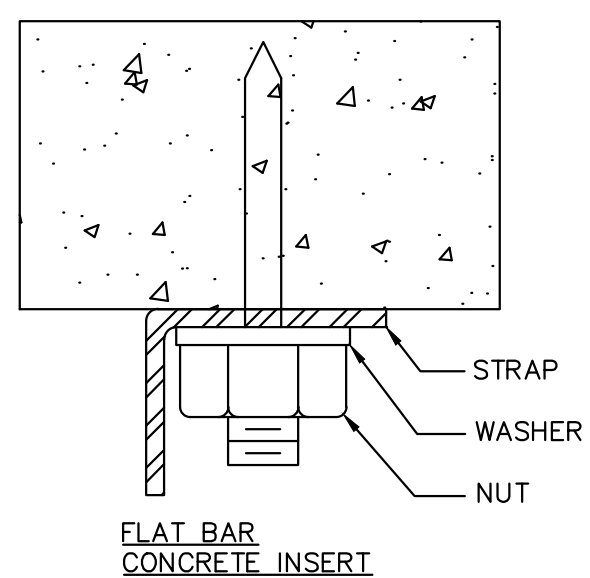
NOTE:  
PROVIDED SUPPLEMENTARY ATTACHMENT TO STRUCTURE WHERE REQUIRED.



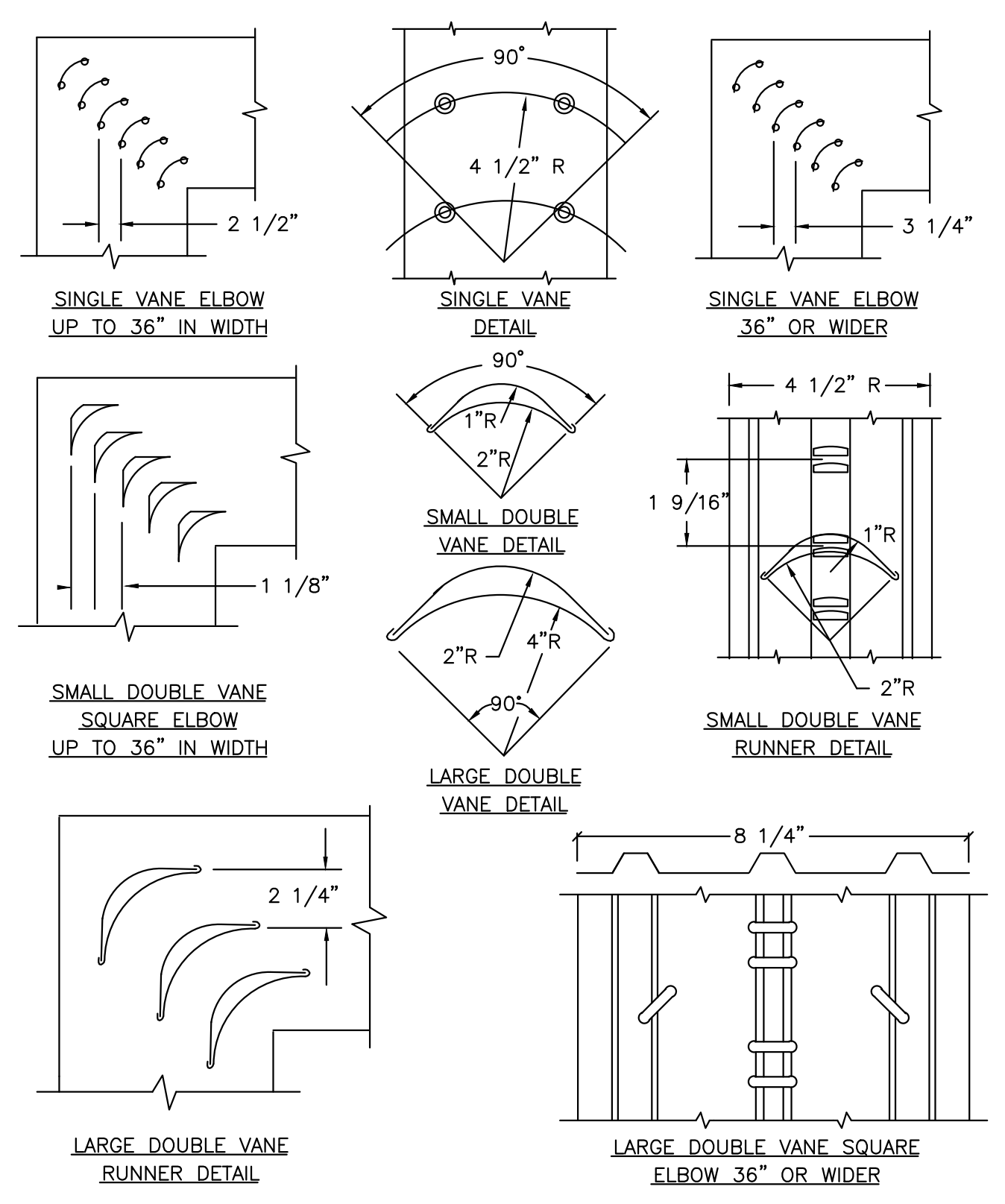
MANUFACTURED CONCRETE INSERT



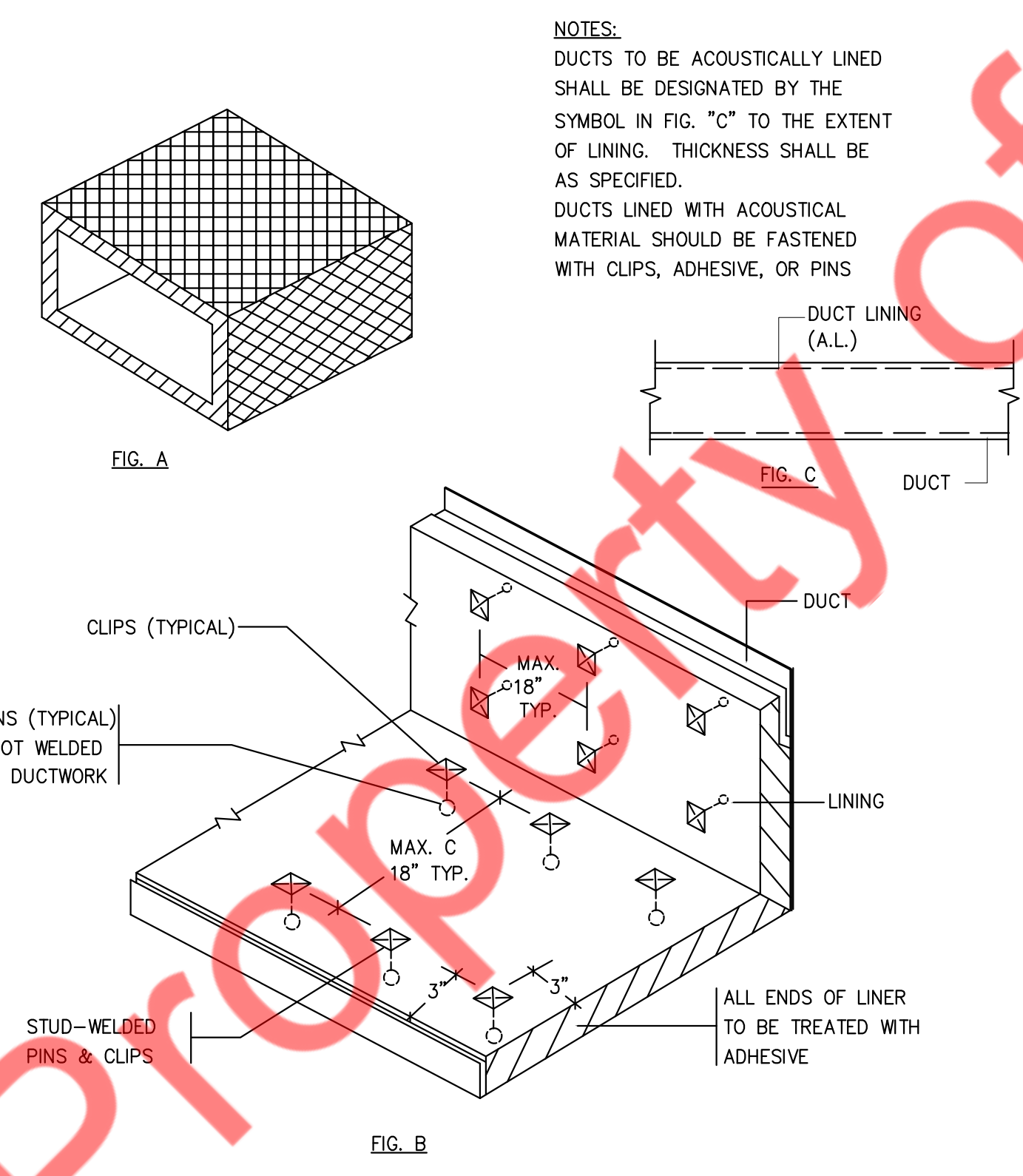
"C" CLAMP W/LOCK NUT



1 DUCT HANGING DETAILS  
M5.2 N.T.S



2 LOW VELOCITY DUCTWORK ELBOWS  
M5.2 N.T.S



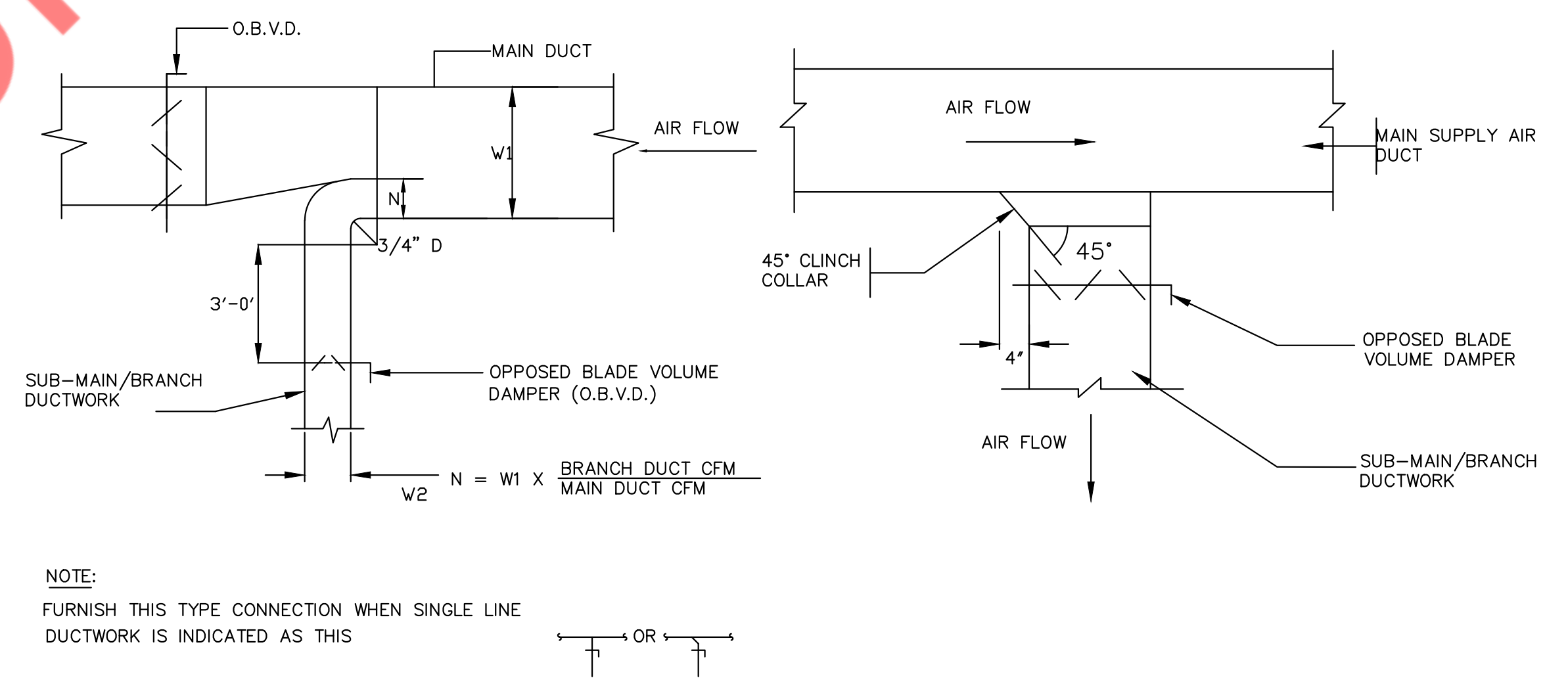
NOTES:  
DUCTS TO BE ACOUSTICALLY LINED SHALL BE DESIGNATED BY THE SYMBOL IN FIG. "C" TO THE EXTENT OF LINING. THICKNESS SHALL BE AS SPECIFIED.  
DUCTS LINED WITH ACOUSTICAL MATERIAL SHOULD BE FASTENED WITH CLIPS, ADHESIVE, OR PINS

FIG. A

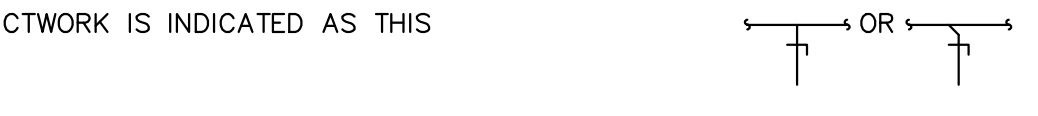
FIG. C

FIG. B

3 ACOUSTICAL TREATMENT DUCT LINING  
M5.2 N.T.S

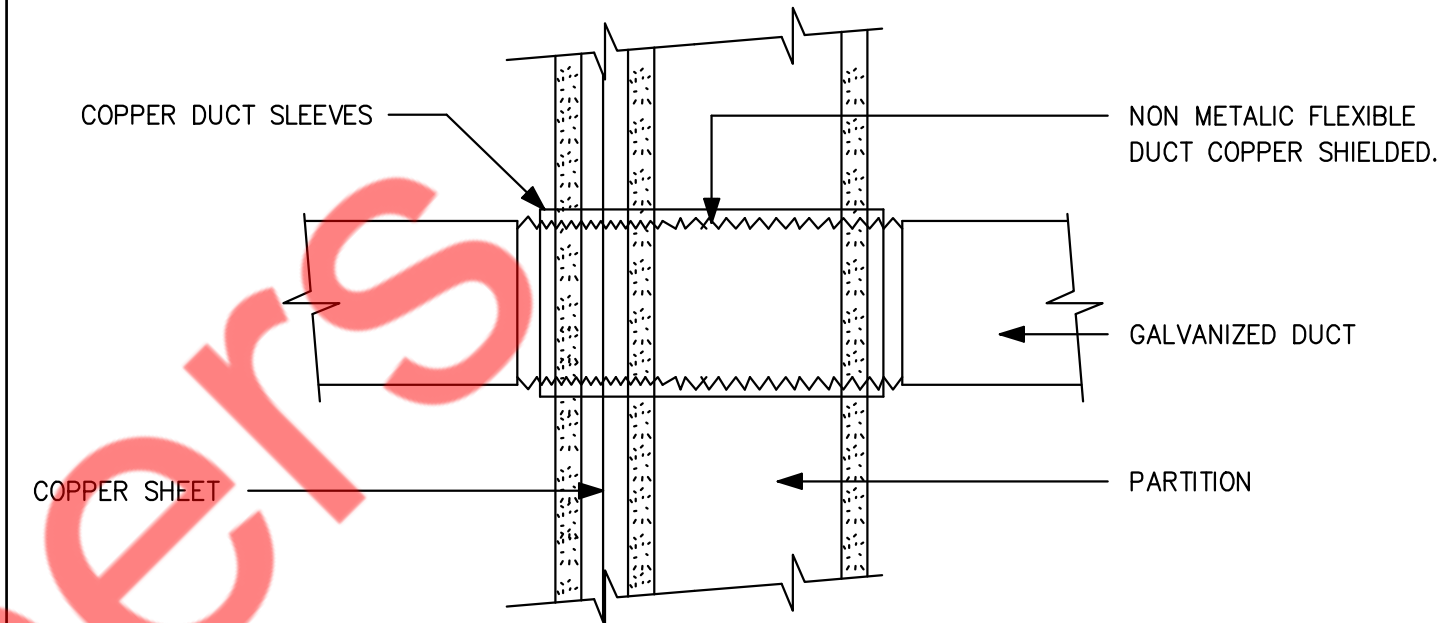
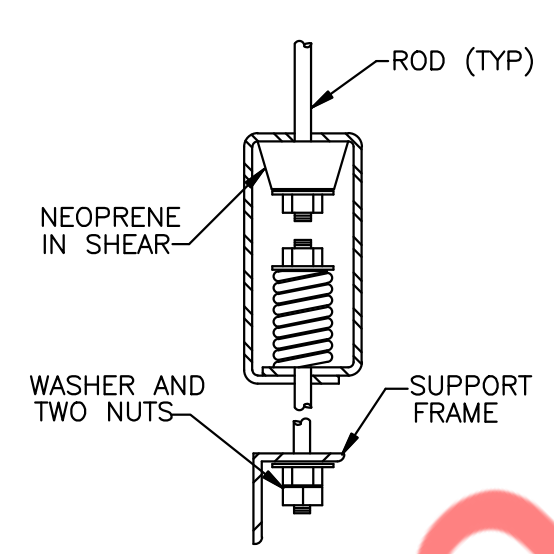
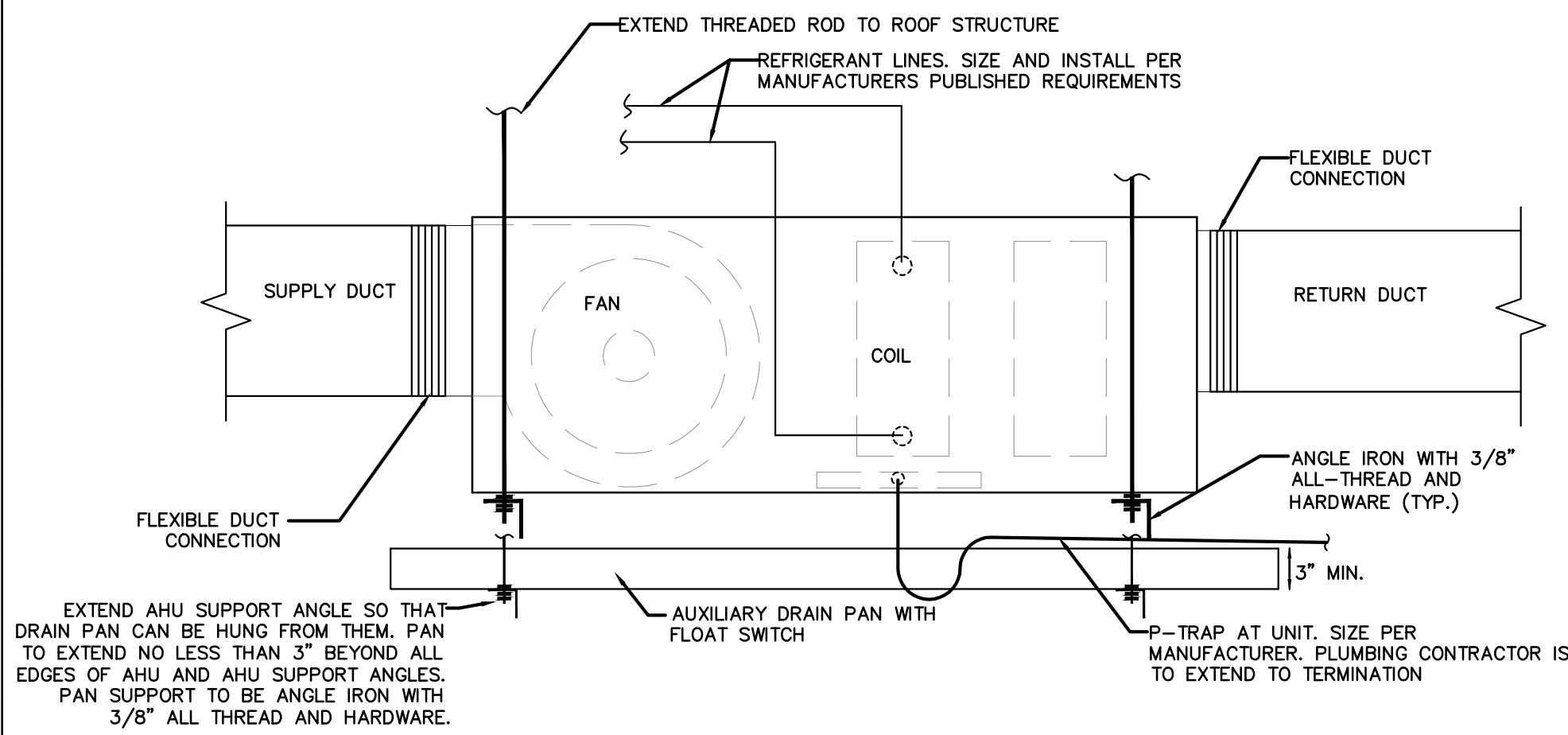
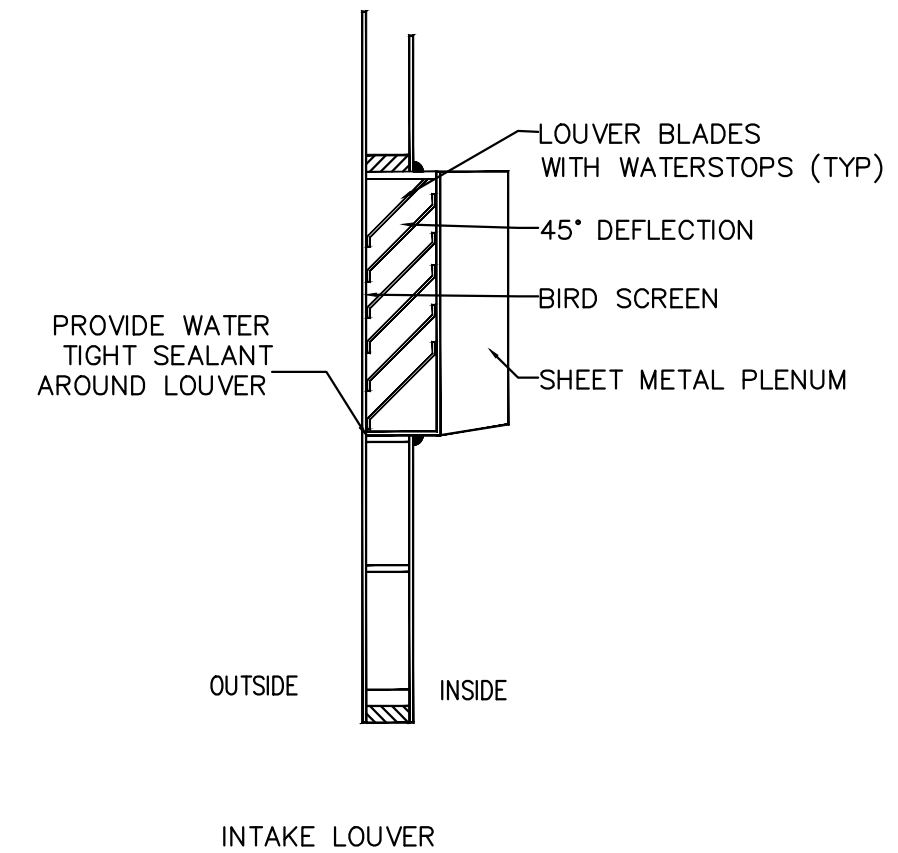
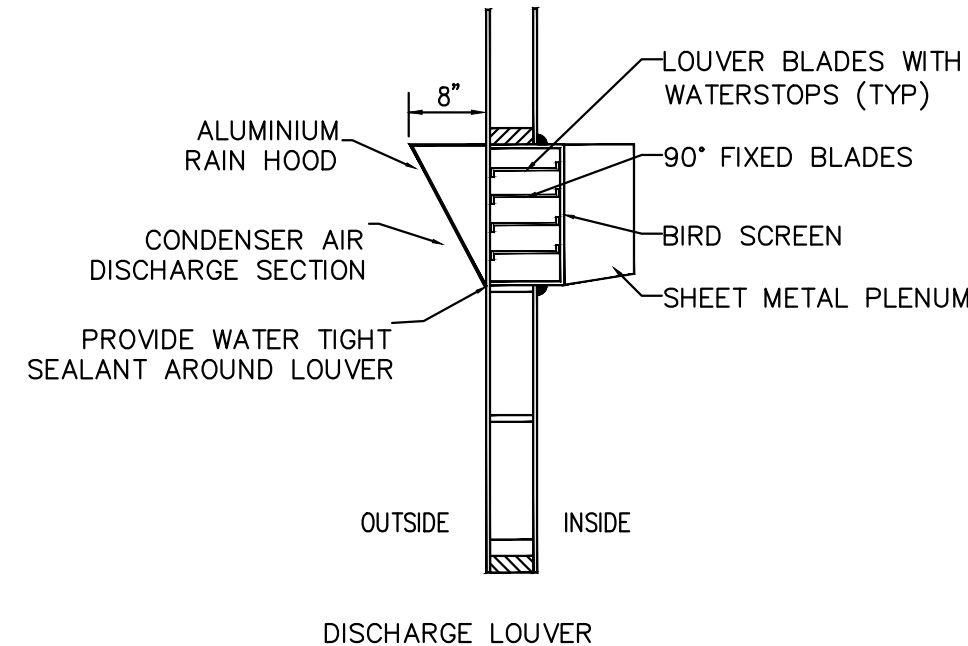


NOTE:  
FURNISH THIS TYPE CONNECTION WHEN SINGLE LINE DUCTWORK IS INDICATED AS THIS



4 SUPPLY AIR DUCTWORK SUB-MAIN/BRANCH DUCT CONNECTION  
M5.2 N.T.S





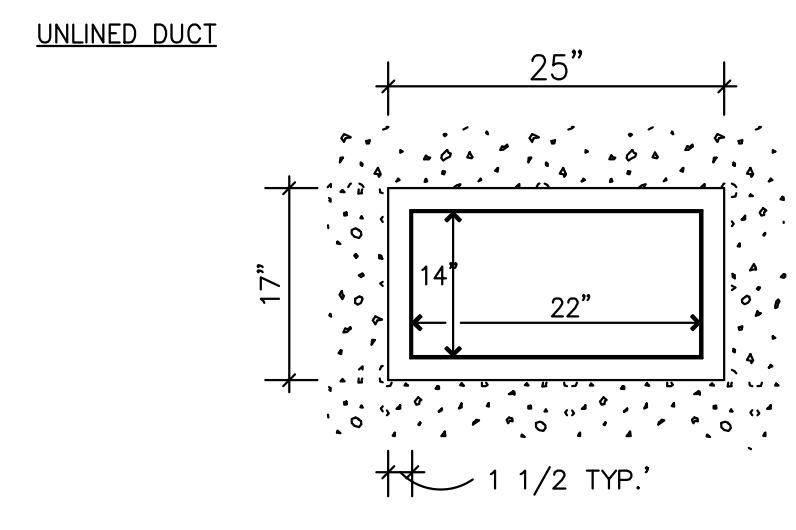
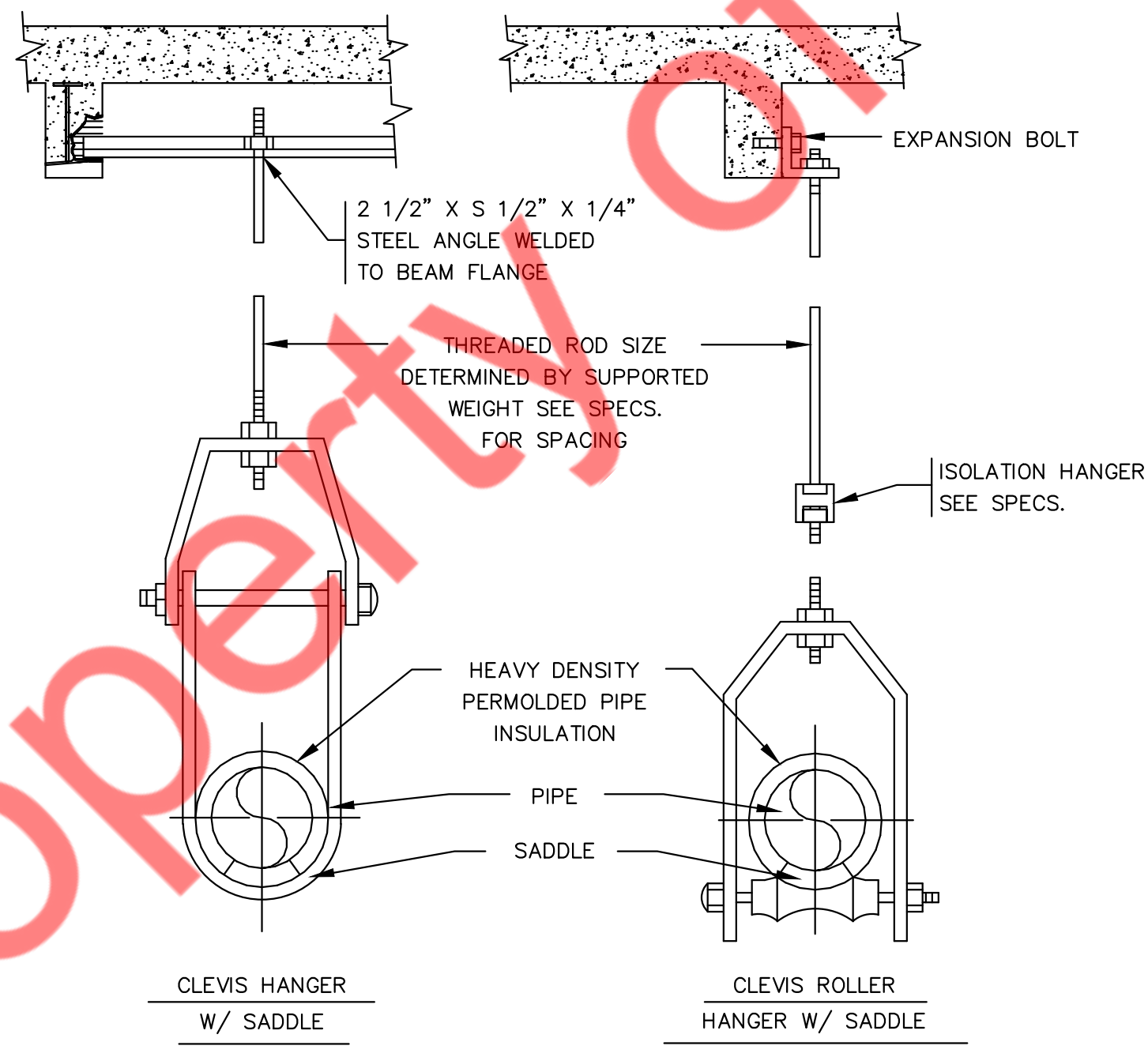
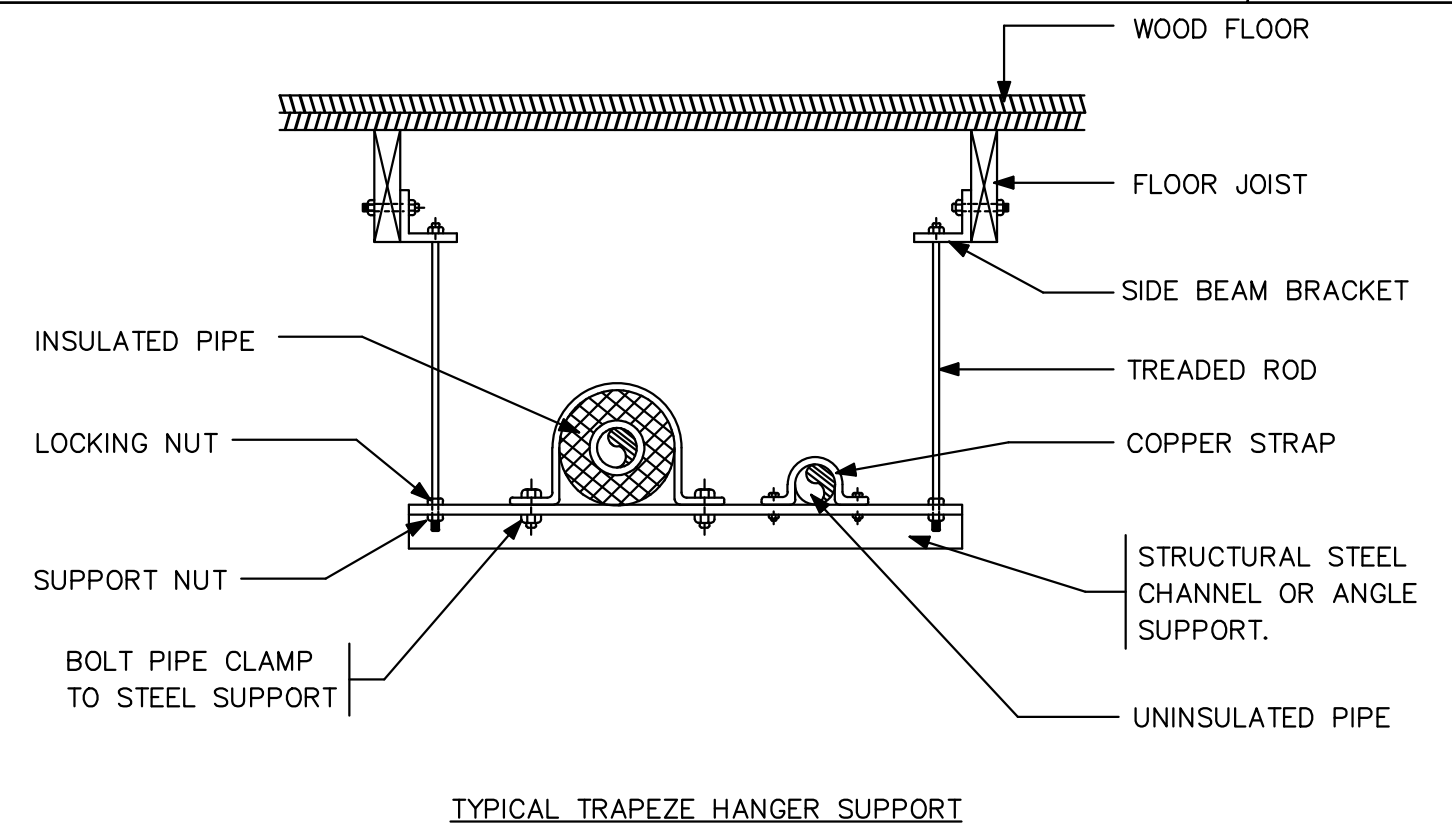
NOTES - 1. FOR WALL STRUCTURE - SEE ARCH. DWG.S.  
 2. COPPER DUCT SLEEVE AND COPPER SHIELDED PARTITION SHALL BE SOLIDLY CONNECTED EACH OTHER.

1 LOUVER DETAIL  
M5.3 N.T.S

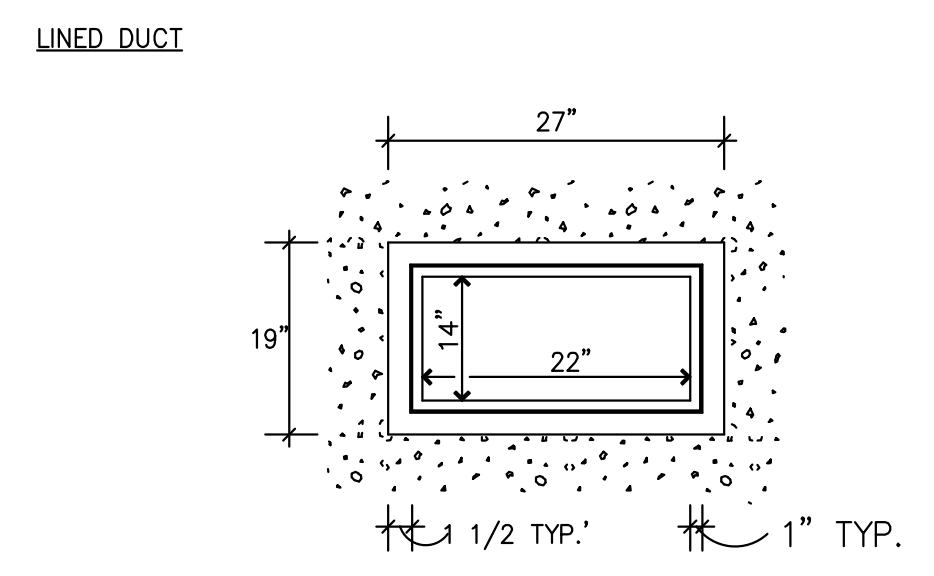
2 AIR HANDELLER DETAIL  
M5.3 N.T.S

3 VIBRATION ISOLATOR DETAIL  
M5.3 N.T.S

4 WALL PENETRATION DETAIL  
M5.3 N.T.S



\* SLAB OPENING = DUCT DIMENSION + 3"  
 \* IF SPACE IS LIMITED, CAN BE DUCT DIMENSION + 1"  
 IF INSULATION IS NOT REQUIRED (CHECK WITH ENGINEER)



\* SLAB OPENING = FREE AIRFLOW DIMENSION + 5"  
 \* IF SPACE IS LIMITED, CAN BE FREE AIRFLOW DIMENSION + 3"

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

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

5 METHOD OF HANGING REFRIGERANT PIPING  
M5.3 N.T.S

6 PIPE HANGING DETAIL  
M5.3 N.T.S

7 DUCT SIZE/SLAB OPENING CONVENTION  
M5.3 N.T.S

FOR QUESTIONS, CALL THE  
 Delaware / South NJ Mechanical  
 REGION 19  
 PHONE: (609) 654-8368  
 EMAIL: reg19@econair.com

PATENT NUMBERS  
 AC-PSP (UNITED STATES) - US PATENT 7963830 B2.  
 AC-PSP WALL (CANADA) - CA PATENT 2820509.  
 AC-PSP ISLAND (CANADA) - CA PATENT 2520330.

**HOOD INFORMATION - JOB#5656470**

HOOD NO	TAG	MODEL	MANUFACTURER	LENGTH	MAX COOKING TEMP	TYPE	APPLIANCE DUTY	DESIGN CFM/FT	TOTAL EXH CFM	EXHAUST PLENUM RISER(S)				TOTAL SUPPLY CFM	HOOD CONSTRUCTION	HOOD CONFIG				
										WIDTH	LENG	HEIGHT	DIA			CFM	VEL	SP	END TO END	ROW
1		5424 EX-2-PSP-F	ECON-AIR	8' 0"	600 DEG	I	HEAVY	260	2080	10'	16'	4'		2080	1872	-0.890'	1665	430 SS WHERE EXPOSED	LEFT	ALONE
2		5424 EX-2-PSP-F	ECON-AIR	8' 1"	600 DEG	I	HEAVY	257	2080	10'	16'	4'		2080	1872	-0.890'	1665	430 SS WHERE EXPOSED	RIGHT	ALONE

**HOOD INFORMATION**

HOOD NO	TAG	FILTER(S)				LIGHT(S)			UTILITY CABINET(S)				FIRE SYSTEM PIPING	HOOD HANGING WEIGHT			
		TYPE	QTY	HEIGHT	LENGTH	EFFICIENCY @ 7 MICRONS	QTY	TYPE	WIRE GUARD	LOCATION	SIZE	FIRE SYSTEM TYPE			SIZE	ELECTRICAL MODEL #	SWITCHES QUANTITY
1		CAPTRATE SDLO FILTER	5	20"	16"	85% SEE FILTER SPEC	3	L55 SERIES E26	NO						YES	461 LBS	
2		CAPTRATE SDLO FILTER	6	20"	16"	85% SEE FILTER SPEC	3	L55 SERIES E26	NO	RIGHT	12"x54"x24"	ANSUL R-102	3.0/3.0	DCV-1111	1 LIGHT 1 FAN	YES	703 LBS

**HOOD OPTIONS**

HOOD NO	TAG	OPTION
1		LEFT END STANDOFF (FINISHED) 1" WIDE 54" LONG INSULATED. WRAPPER CHANNEL - FRONT, LEFT. INSULATION FOR BACK OF HOOD. SENSOR-CV. LEFT WALL AS END PANEL.
2		WRAPPER CHANNEL - FRONT, RIGHT. INSULATION FOR BACK OF HOOD. SENSOR-CV. RIGHT WIDE VERTICAL END PANEL 42" TOP WIDTH, 36" BOTTOM WIDTH, 80" HIGH INSULATED 430 SS.

**PERFORATED SUPPLY PLENUM(S)**

HOOD NO	TAG	POS	LENGTH	WIDTH	HEIGHT	TYPE	RISER(S)			
							WIDTH	LENG	DIA	CFM
1		Front	97'	18"	6"	MUA	12"	28"	832	0.256'
2		Front	109'	18"	6"	MUA	12"	28"	832	0.222'

**FIRE SYSTEM INFORMATION - JOB#5656470**

FIRE SYSTEM NO	TAG	TYPE	SIZE	MAX FLOW POINTS	INSTALLATION	
					SYSTEM	LOCATION ON HOOD
1		ANSUL R102	3.0/3.0	22	FIRE CABINET RIGHT	RIGHT, HOOD 2

**GAS VALVE(S)**

FIRE SYSTEM NO	TAG	TYPE	SIZE	SUPPLIED BY
1		MECHANICAL	TBD	ECON-AIR

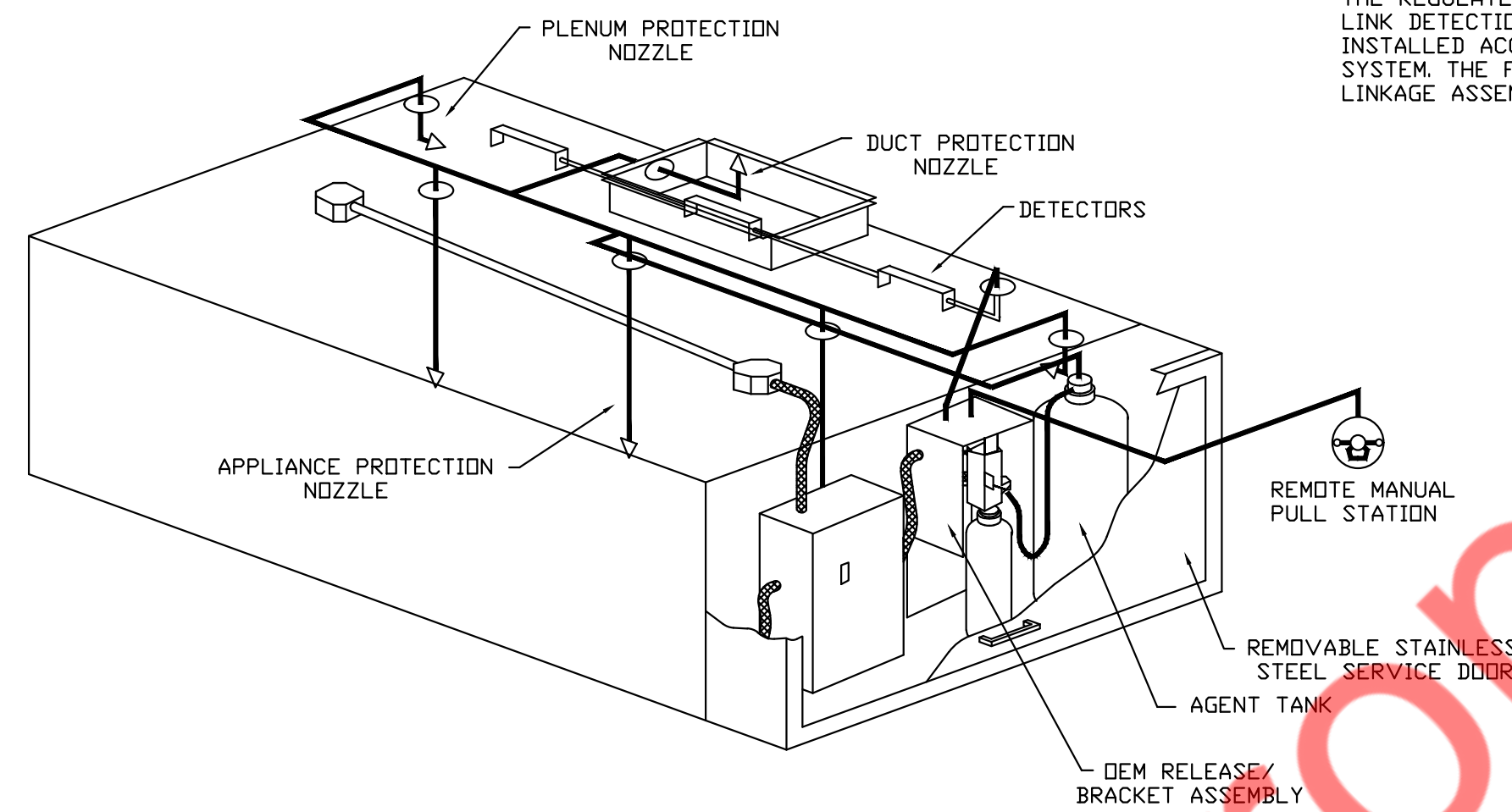
**SPECIFICATIONS**

THE RESTAURANT FIRE SUPPRESSION SYSTEM SHALL BE THE PRE-ENGINEERED TYPE WITH A FIXED NOZZLE AGENT DISTRIBUTION NETWORK. IT SHALL BE LISTED WITH UNDERWRITERS LABORATORIES, INC. (UL)

THE SYSTEM SHALL BE CAPABLE OF AUTOMATIC DETECTION AND ACTUATION WITH LOCAL OR REMOTE MANUAL ACTUATION. ACCESSORIES SHALL BE AVAILABLE FOR MECHANICAL OR ELECTRICAL GAS LINE SHUT-OFF APPLICATIONS.

THE EXTINGUISHING AGENT SHALL BE A POTASSIUM CARBONATE, POTASSIUM ACETATE-BASED FORMULATION DESIGNED FOR FLAME KNOCKDOWN AND SECUREMENT OF GREASE RELATED FIRES. IT SHALL BE AVAILABLE IN PLASTIC CONTAINERS WITH INSTRUCTIONS FOR LIQUID AGENT HANDLING AND USAGE.

THE REGULATED RELEASE MECHANISM SHALL BE COMPATIBLE WITH A FUSIBLE LINK DETECTION SYSTEM. THE FUSIBLE LINK SHALL BE SELECTED AND INSTALLED ACCORDING TO THE OPERATING TEMPERATURE IN THE VENTILATING SYSTEM. THE FUSIBLE LINK SHALL BE SUPPORTED BY A DETECTOR BRACKET/LINKAGE ASSEMBLY.



TYPICAL ANSUL R-102 SYSTEM LAYOUT

**SPECIFICATION: CAPTRATE® GREASE-STOP® SOLID FILTER**

THE CAPTRATE GREASE-STOP SOLID FILTER IS A SINGLE-STAGE FILTER FEATURING A UNIQUE S-Baffle DESIGN IN CONJUNCTION WITH A SLOTTED REAR Baffle DESIGN, TO DELIVER EXCEPTIONAL FILTRATION EFFICIENCY.

FILTER IS STAINLESS STEEL CONSTRUCTION, AND SIZED TO FIT INTO STANDARD 2-INCH DEEP HOOD CHANNEL(S).

UNITS SHALL INCLUDE STAINLESS STEEL HANDLES AND A FASTENING DEVICE TO SECURE THE TWO COMPONENTS WHEN ASSEMBLED.

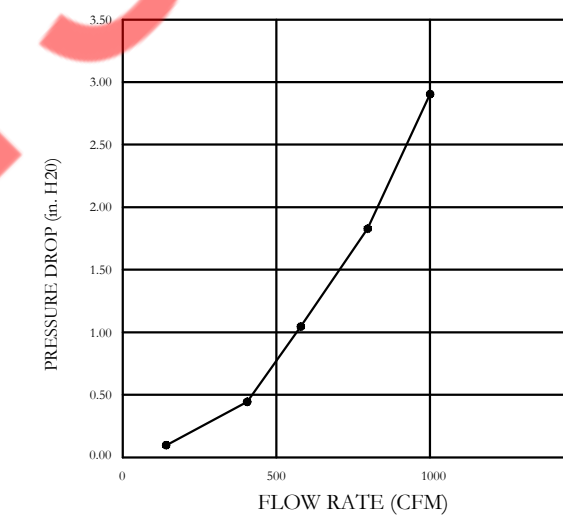
GREASE EXTRACTION EFFICIENCY PERFORMANCE SHALL REMOVE AT LEAST 75% OF GREASE PARTICLES FIVE MICRONS IN SIZE, AND 95% GREASE PARTICLES SEVEN MICRONS IN SIZE AND LARGER, WITH A CORRESPONDING PRESSURE DROP NOT TO EXCEED 1.0 INCHES OF WATER GAUGE.

THE CAPTRATE GREASE-STOP SOLID WAS TESTED TO ASTM STANDARD ASTM F2519-05. MANUFACTURER APPROVED FOR USE IN SOLID FUEL APPLICATIONS AS A SPARK ARRESTER.

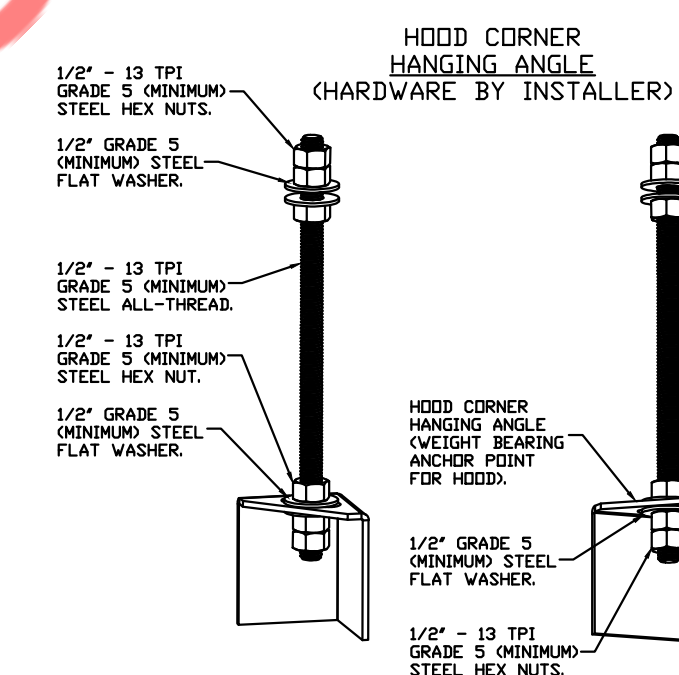
EFFICIENCY VS. PARTICLE DIAMETER



PRESSURE DROP VS. FLOW RATE

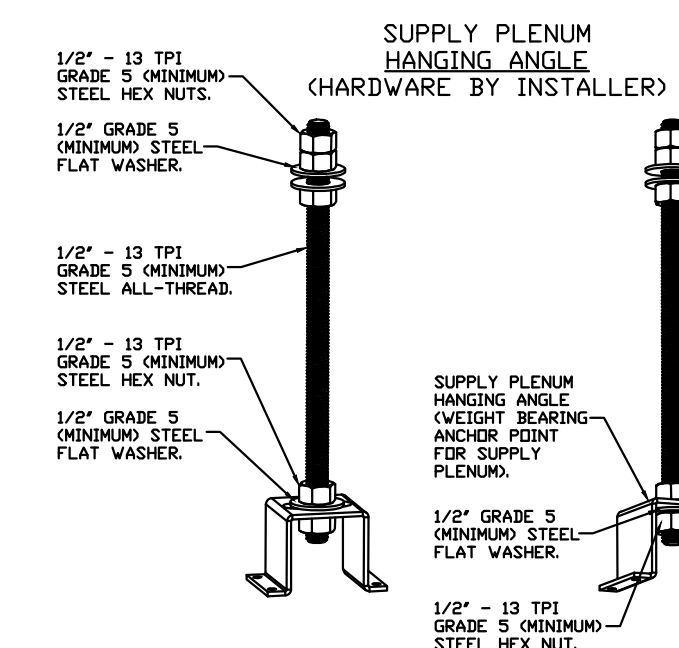


CAPTRATE FILTERS ARE BUILT IN COMPLIANCE WITH:  
 NFPA #96.  
 NSF STANDARD #2.  
 UL STANDARD #046.  
 INT. MACH. CODE (IMC).  
 UL C-5649.



**ASSEMBLY INSTRUCTIONS**

HANGING ANGLE MUST BE SUPPORTED WITH 1/2" - 13 TPI GRADE 5 (MINIMUM) ALL-THREAD, SANDWICH HANGING ANGLES AND CEILING ANCHOR POINTS WITH 1/2" GRADE 5 (MINIMUM) STEEL FLAT WASHERS AND 1/2" - 13 TPI GRADE 5 (MINIMUM) HEX NUTS AS SHOWN. MUST USE DOUBLED HEX NUT CONFIGURATION BENEATH HOOD HANGING ANGLES AND ABOVE CEILING ANCHORS. MAINTAIN 1/4" OF EXPOSED THREADS BENEATH BOTTOM HEX NUT. TORQUE ALL HEX NUTS TO 57 FT-LBS.



**ASSEMBLY INSTRUCTIONS**

HANGING ANGLE MUST BE SUPPORTED WITH 1/2" - 13 TPI GRADE 5 (MINIMUM) ALL-THREAD, SANDWICH HANGING ANGLES AND CEILING ANCHOR POINTS WITH 1/2" GRADE 5 (MINIMUM) STEEL FLAT WASHERS AND 1/2" - 13 TPI GRADE 5 (MINIMUM) HEX NUTS AS SHOWN. MUST USE DOUBLED HEX NUT CONFIGURATION ABOVE CEILING ANCHORS. SINGLE HEX NUT BENEATH HANGING ANGLE IS ACCEPTABLE FOR PSP HANGING ANGLES. MAINTAIN 1/4" OF EXPOSED THREADS BENEATH BOTTOM HEX NUT. TORQUE ALL HEX NUTS TO 57 FT-LBS.

**REVISIONS**

DESCRIPTION	DATE

**econ·air**  
 Delaware / South NJ Mechanical  
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 560 Stokes Road, Unit 13A6, Medford, NJ 08055 PHONE: (609) 654-8368 FAX: (609) 747-5604 EMAIL: reg19@econair.com

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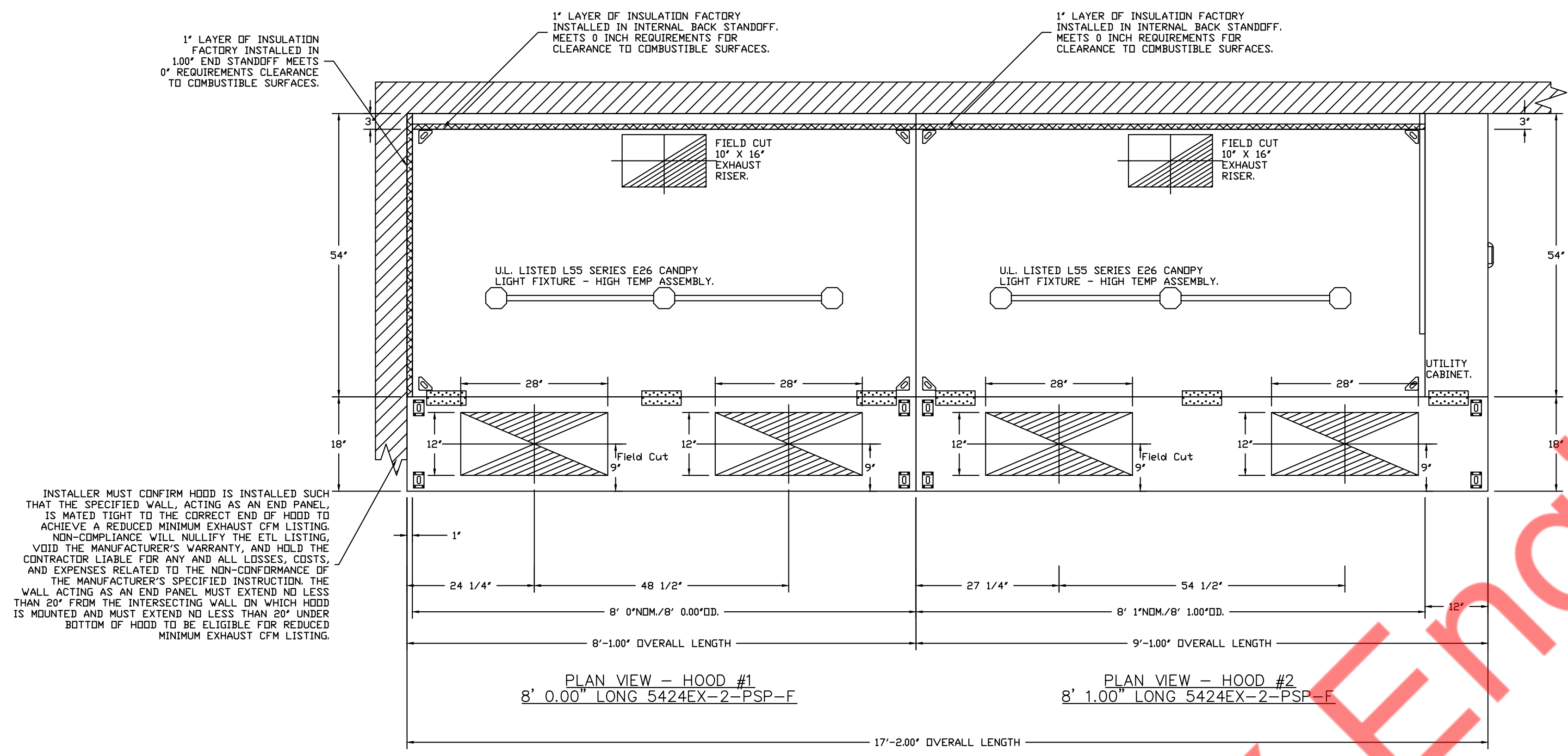
DWG.#: 5656470

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

MASTER DRAWING

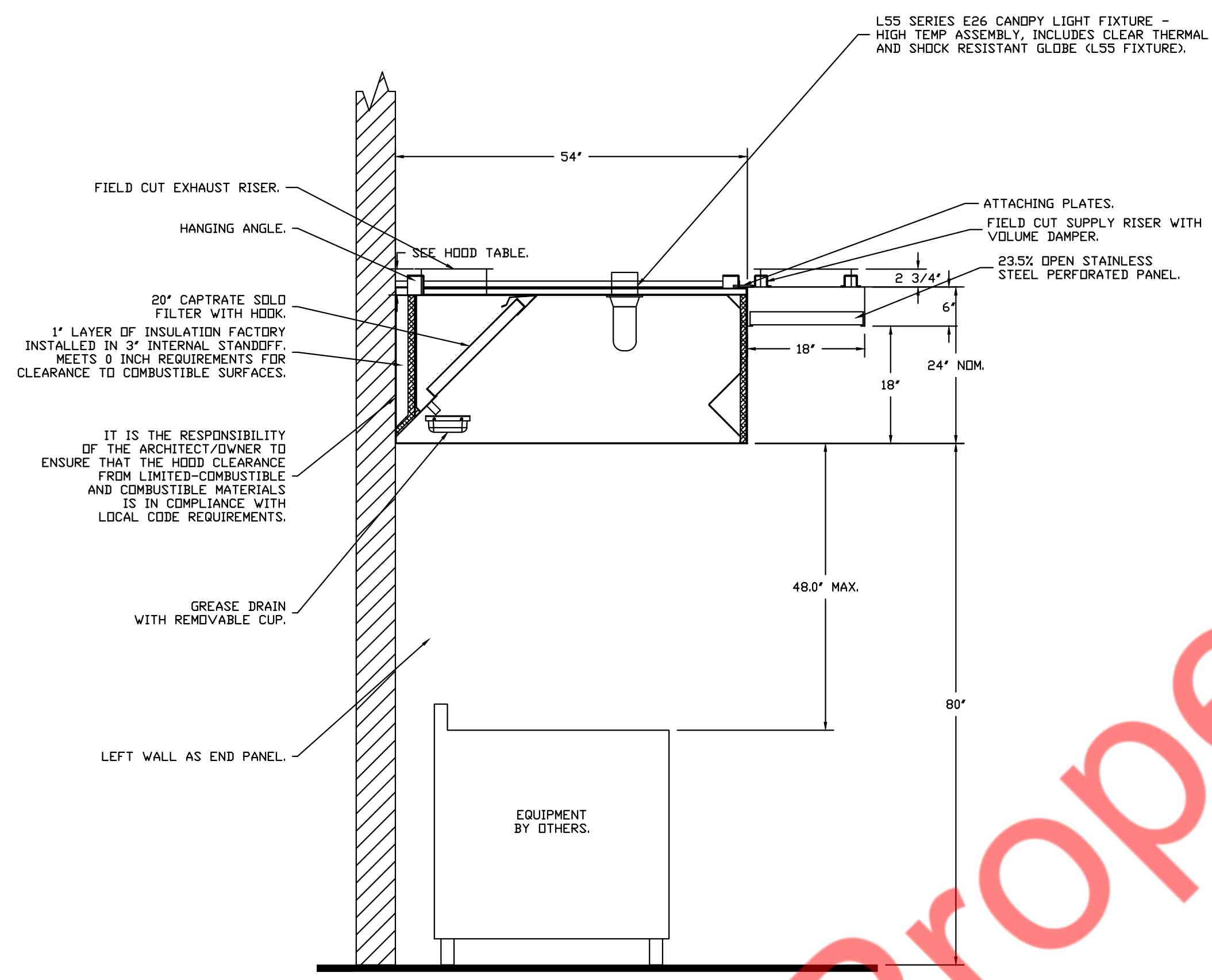
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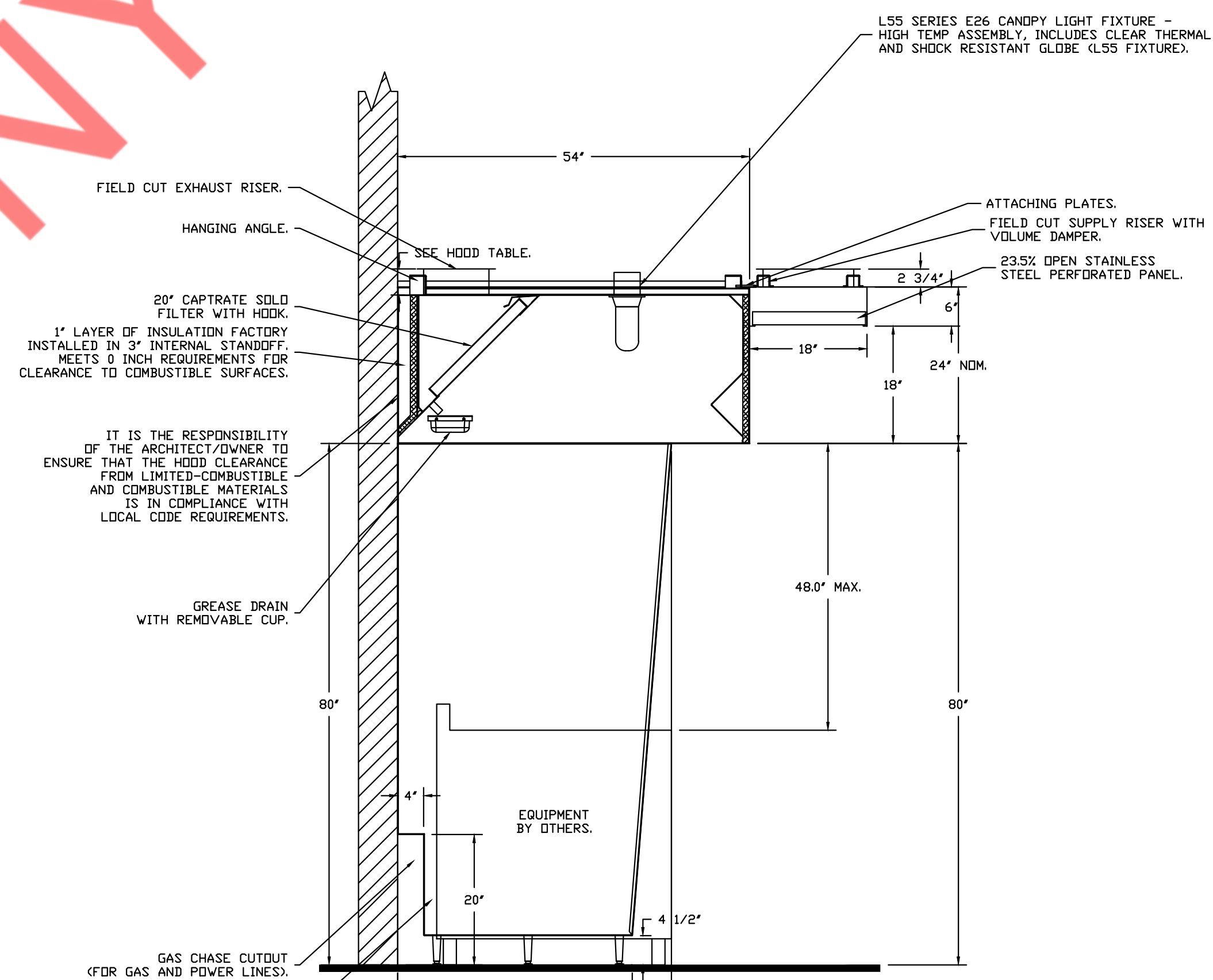
INSTALLER MUST CONFIRM HOOD IS INSTALLED SUCH THAT THE SPECIFIED WALL, ACTING AS AN END PANEL, IS MATED TIGHT TO THE CORRECT END OF HOOD TO ACHIEVE A REDUCED MINIMUM EXHAUST CFM LISTING. NON-COMPLIANCE WILL NULLIFY THE ETL LISTING, VOID THE MANUFACTURER'S WARRANTY, AND HOLD THE CONTRACTOR LIABLE FOR ANY AND ALL LOSSES, COSTS, AND EXPENSES RELATED TO THE NON-COMFORMANCE OF THE MANUFACTURER'S SPECIFIED INSTRUCTION. THE WALL ACTING AS AN END PANEL MUST EXTEND NO LESS THAN 20\"/>

PLAN VIEW - HOOD #1  
8' 0.00\"/>

PLAN VIEW - HOOD #2  
8' 1.00\"/>



SECTION VIEW - MODEL 5424EX-2-PSP-F  
HOOD - #1



SECTION VIEW - MODEL 5424EX-2-PSP-F  
HOOD - #2

REVISIONS	
DESCRIPTION	DATE



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 MASTER DRAWING  
 SHEET NO. 2

**EXHAUST FAN INFORMATION - JOB#5656470**

FAN UNIT NO	TAG	QTY	FAN UNIT MODEL #	MANUFACTURER	CFM	ESP	RPM	MOTOR ENCL	HP	BHP	PHASE	VOLT	FLA	DISCHARGE VELOCITY	WEIGHT (LBS)	SDNES
1		1	EADU240H	ECDN-AIR	4160	2,000	1000	DDP,PREMIUM	5,000	2,8100	3	208	15.8	945 FPM	345	20.3

**MUA FAN INFORMATION - JOB#5656470**

FAN UNIT NO	TAG	QTY	FAN UNIT MODEL #	BLOWER	HOUSING	MIN CFM	DESIGN CFM	ESP	RPM	MOTOR ENCL	HP	BHP	PHASE	VOLT	FLA	MCA	MDCP	WEIGHT (LBS)	SDNES
2		1	EA2-D.250-20D	20MF-2-MOD	A2-D.250	2000	3330	0.500	1338	DDP,PREMIUM	3,000	1,3810	3	208	9.5	11.9A	20A	645	11.5

**GAS FIRED MAKE-UP AIR UNIT(S)**

FAN UNIT NO	TAG	INPUT BTUs	OUTPUT BTUs	TEMP RISE	REQUIRED INPUT GAS PRESSURE	GAS TYPE	BURNER EFFICIENCY(%)
2		212680	195666	55°F	7 IN. W.C. - 14 IN. W.C.	NATURAL	92

**FAN OPTIONS**

FAN UNIT NO	TAG	QTY	DESCRIPTION
1		1	GREASE BOX
		1	HINGE KIT (HD)- SHIPS LOOSE FOR CURB SUPPLIED BY OTHERS
2		2	24" TALL STRAIGHT WIND BAND EXTENSION 24 (SHIPS LOOSE)
		1	2 YEAR PARTS WARRANTY
		1	INLET PRESSURE GAUGE, 0-35"
		1	MANIFOLD PRESSURE GAUGE, -5 TO 15" WC
		1	LOW FIRE START
		1	MOTORIZED BACKDRAFT DAMPER FOR A2-D HOUSING - MEETS AMCA CLASS 1A RATING
		1	OPPOSITE SIDE HEATER CONTROLS
		1	SEPARATE 120V WIRING PACKAGE (REQUIRED AND USED ONLY FOR DCV OR PREWIRE WITH VFD) - THREE PHASE ONLY
		1	SIZE 2 DIRECT FIRED HEATER LOW CFM PROFILE PACKAGE - USED ON HEATERS UNDER 2500 CFM
		1	2 YEAR PARTS WARRANTY

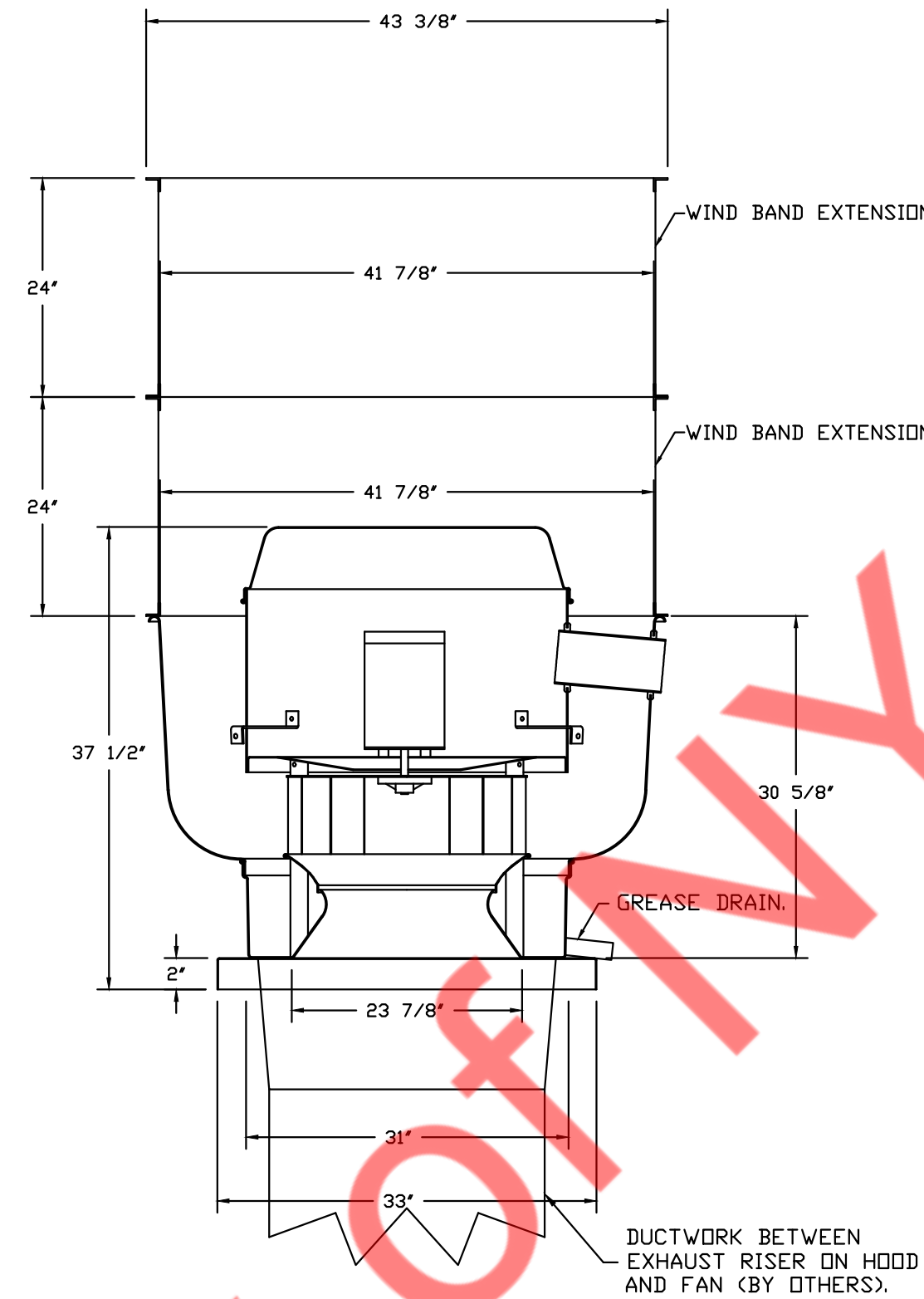
**FAN ACCESSORIES**

FAN UNIT NO	TAG	EXHAUST				SUPPLY		
		GREASE CUP	GRAVITY DAMPER	WALL MOUNT	SIDE DISCHARGE	GRAVITY DAMPER	MOTORIZED DAMPER	WALL MOUNT
1		YES						
2					YES		YES	

**CURB ASSEMBLIES**

NO	DN FAN	WEIGHT	ITEM	SIZE
1	# 1	43 LBS	CURB	31.500"W X 31.500"L X 24.000"H ALONG LENGTH, RIGHT VENTED.
2	# 2	80 LBS	CURB	31.000"W X 79.000"L X 20.000"H ALONG WIDTH, RIGHT INSULATED.

FAN #1 EADU240H - EXHAUST FAN



**FEATURES:**

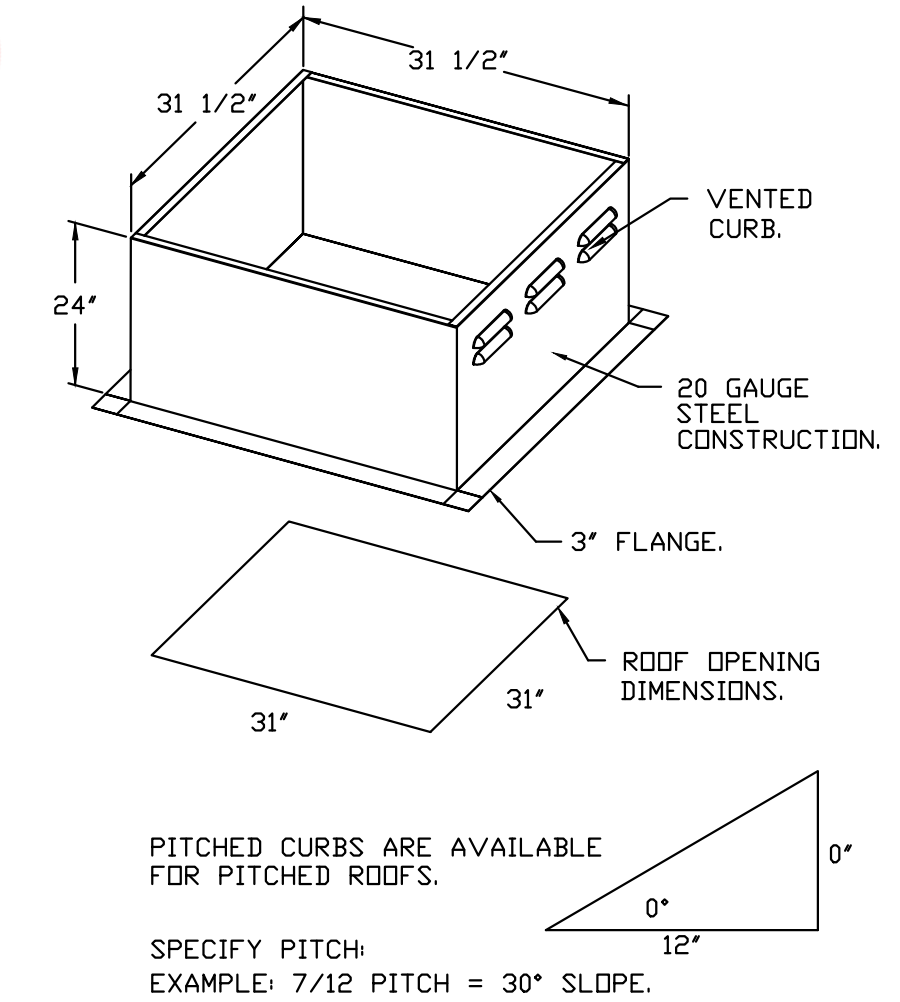
- DIRECT DRIVE CONSTRUCTION (NO BELTS/PULLEYS).
- ROOF MOUNTED FANS.
- RESTAURANT MODEL.
- UL705 AND UL762 AND ULC-S645
- VARIABLE SPEED CONTROL.
- INTERNAL WIRING.
- THERMAL OVERLOAD PROTECTION (SINGLE PHASE).
- HIGH HEAT OPERATION 300°F (149°C).
- GREASE CLASSIFICATION TESTING.
- NEMA 3R SAFETY DISCONNECT SWITCH.

**NORMAL TEMPERATURE TEST**  
EXHAUST FAN MUST OPERATE CONTINUOUSLY WHILE EXHAUSTING AIR AT 300°F (149°C) UNTIL ALL FAN PARTS HAVE REACHED THERMAL EQUILIBRIUM, AND WITHOUT ANY DETERIORATING EFFECTS TO THE FAN WHICH WOULD CAUSE UNSAFE OPERATION.

**ABNORMAL FLARE-UP TEST**  
EXHAUST FAN MUST OPERATE CONTINUOUSLY WHILE EXHAUSTING BURNING GREASE VAPORS AT 600°F (316°C) FOR A PERIOD OF 15 MINUTES WITHOUT THE FAN BECOMING DAMAGED TO ANY EXTENT THAT COULD CAUSE AN UNSAFE CONDITION.

**OPTIONS**

- GREASE BOX.
- HINGE KIT (HD)- SHIPS LOOSE FOR CURB SUPPLIED BY OTHERS.
- 24" TALL STRAIGHT WIND BAND EXTENSION 24 (SHIPS LOOSE).
- 2 YEAR PARTS WARRANTY.



\*\* CURB BY OTHERS - SHOWN FOR REFERENCE ONLY \*\*

REVISIONS	
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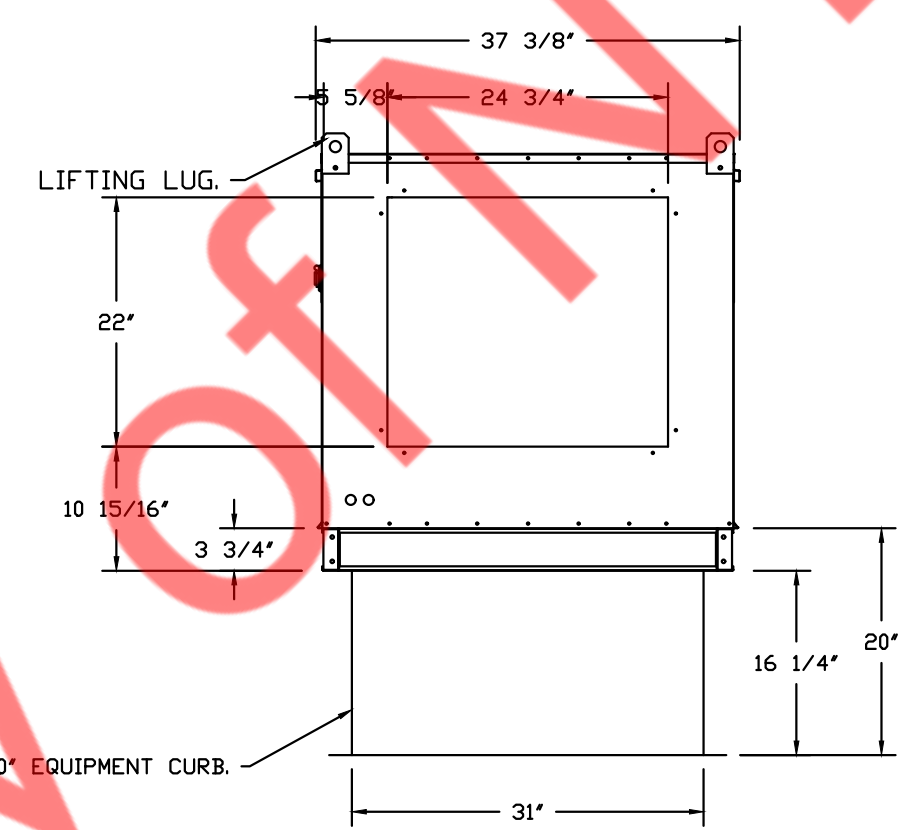
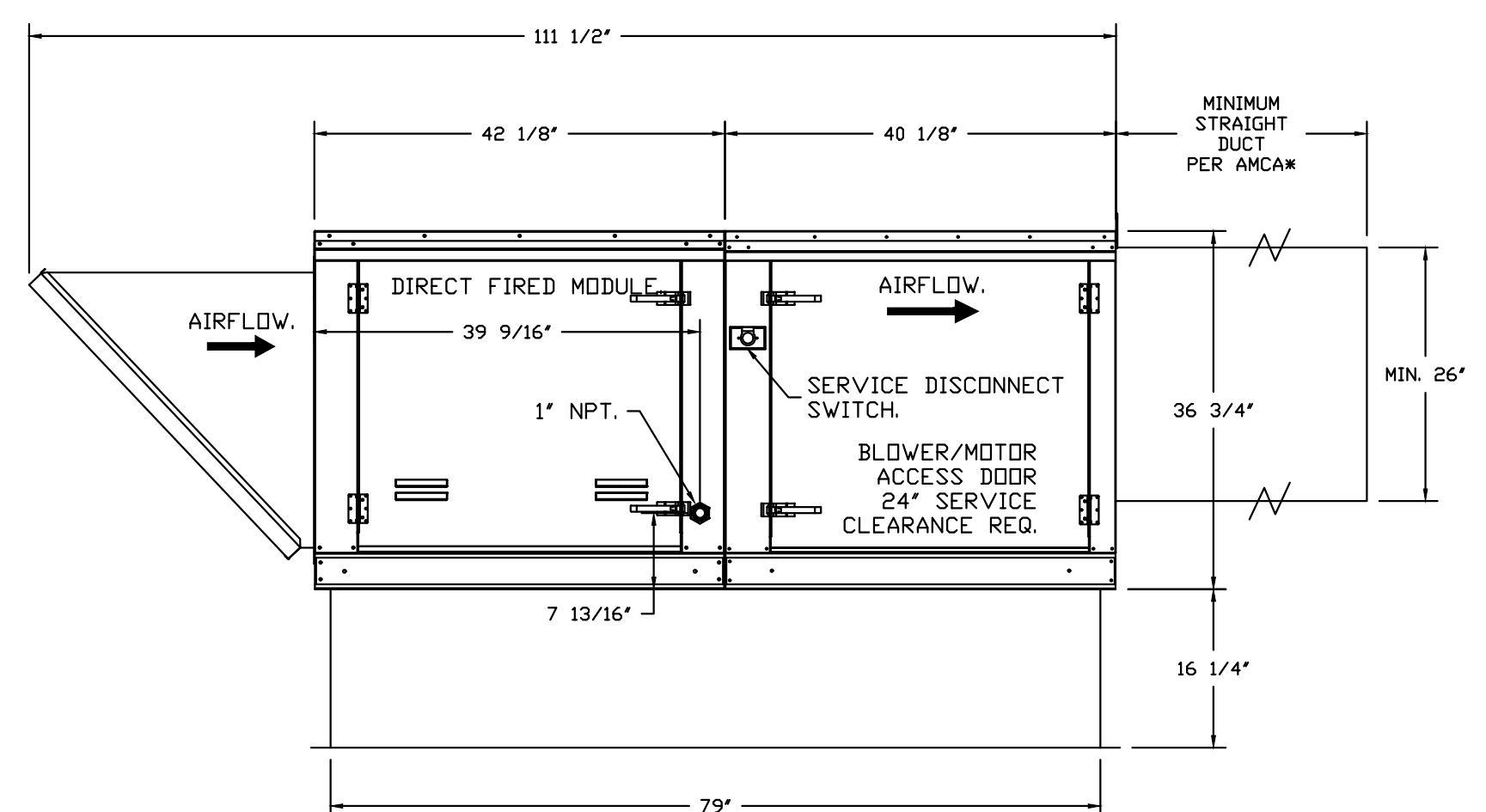
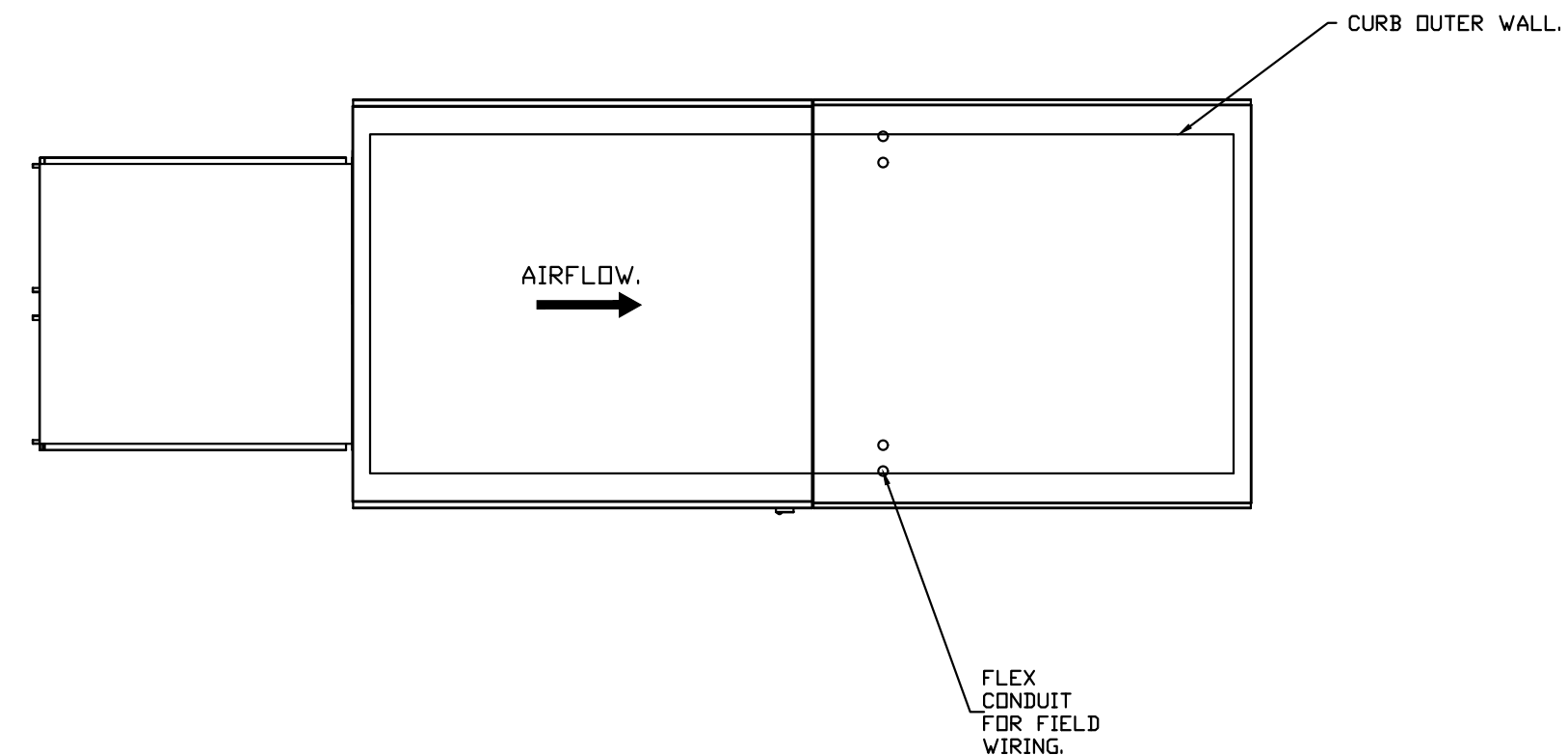
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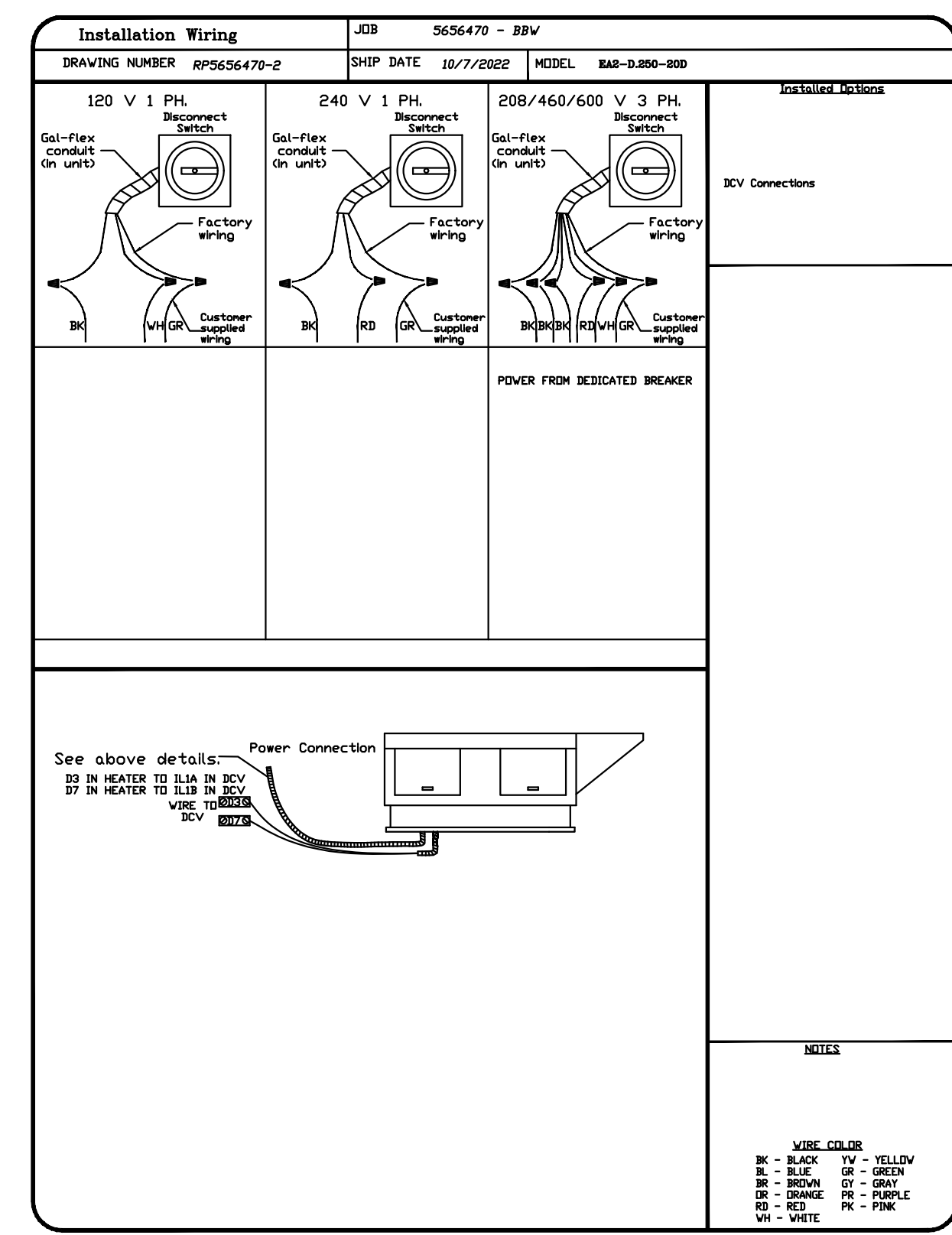
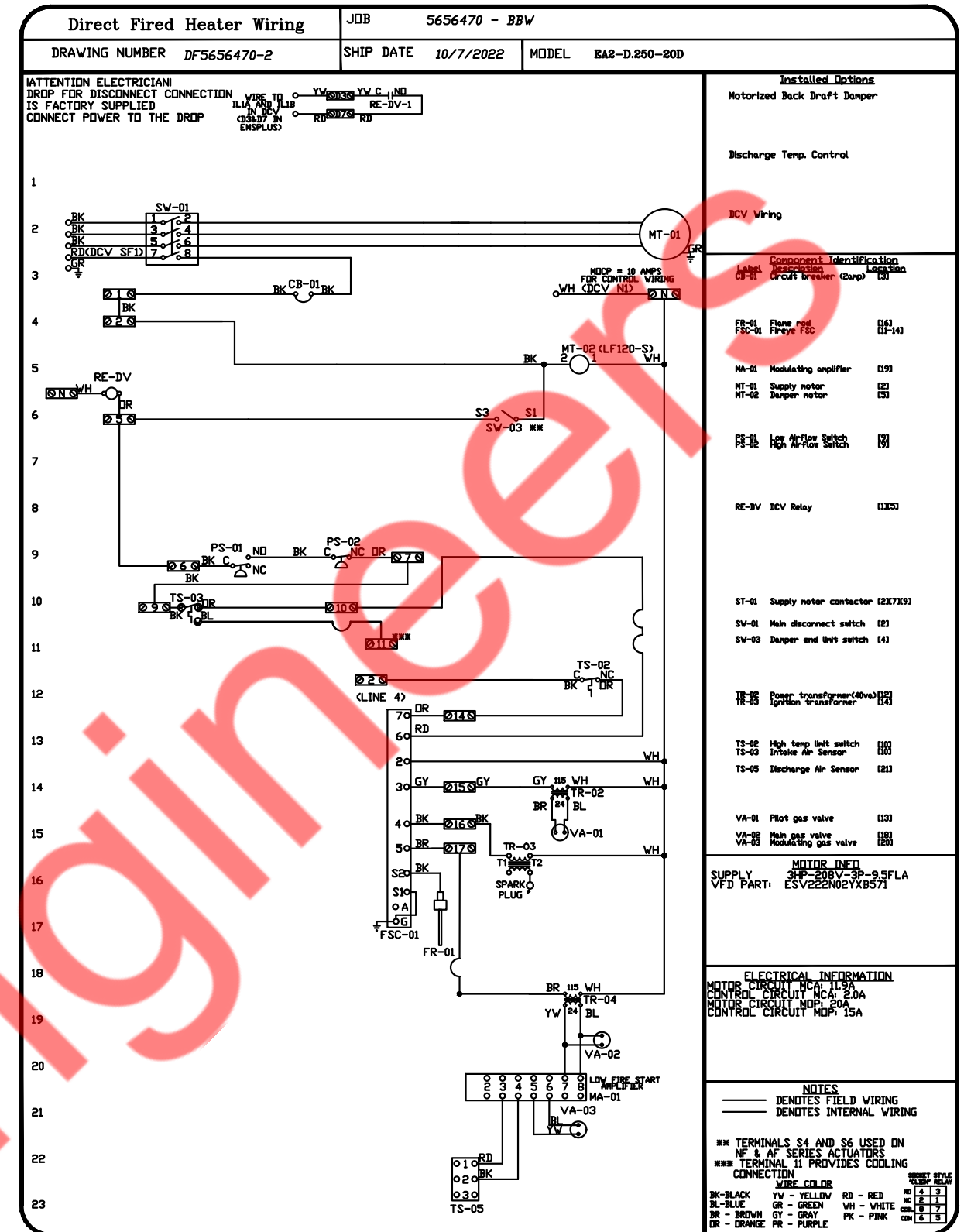
- FAN #EAS-D-250-20D - HEATER
- DIRECT GAS FIRED HEATED MAKE UP AIR UNIT WITH 20" MIXED FLOW DIRECT DRIVE FAN.
  - INTAKE HOOD WITH EZ FILTERS-LOW CFM.
  - SIDE DISCHARGE - AIR FLOW LEFT -> RIGHT.
  - GAS PRESSURE GAUGE, 0-25" 2.5" DIAMETER, 1/4" THREAD SIZE.
  - GAS PRESSURE GAUGE, -5 TO +15 INCHES WC, 2.5" DIAMETER, 1/4" THREAD SIZE.
  - LOW FIRE START, ALLOWS THE BURNER CIRCUIT TO ENERGIZE WHEN THE MODULATION CONTROL IS IN A LOW FIRE POSITION.
  - 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, LF1205 ACTUATOR INCLUDED.
  - MOUNT MOTOR AND CONTROLS ON OPPOSITE SIDE OF HEATER.
  - SEPARATE 120VAC WIRING PACKAGE FOR MAKE-UP AIR UNITS.
  - OPTION MUST BE SELECTED WHEN MOUNTING VFD IN PREVIEW PANEL OR WITH DCV PACKAGE. PROVIDES SEPARATE 120VAC INPUT TO SUPPLY FAN. THIS 120V SIGNAL MUST BE RUN BY ELECTRICIAN FROM DCV TO MAIN SWITCH.
  - PROFILE PLATE CONFIGURATION FOR SIZE 2 DIRECT FIRED UNIT FOR LOW CFM APPLICATIONS.
  - HINGED DOUBLE WALL INSULATED DOOR ASSEMBLY (BURNER/BLOWER SECTION).
  - 2 YEAR PARTS WARRANTY.

NOTE: SUPPLY DUCT MUST BE INSTALLED TO MEET SMACNA STANDARDS. A MINIMUM STRAIGHT DUCT LENGTH MUST BE MAINTAINED DOWNSTREAM OF UNIT DISCHARGE AS OUTLINED IN AMCA PUBLICATION 201. WHEN USING RECTANGULAR DUCTWORK, ELBOWS MUST BE RADIUS THROAT, RADIUS BACK WITH TURNING VANES. FLEXIBLE DUCTWORK AND SQUARE THROAT/SQUARE BACK ELBOWS SHOULD NOT BE USED. ANY TRANSITION AND/OR TURNS IN THE DUCTWORK WILL CAUSE SYSTEM EFFECT. SYSTEM EFFECT WILL DRASTICALLY INCREASE STATIC PRESSURE AND REDUCE AIRFLOW. DO NOT RELY ON UNIT TO SUPPORT DUCT IN ANY WAY. FAILURE TO PROPERLY SIZE DUCTWORK MAY CAUSE SYSTEM EFFECTS AND REDUCE PERFORMANCE OF THE EQUIPMENT. SUGGESTED STRAIGHT DUCT SIZE IS 26" x 26".

SUPPLY SIDE HEATER INFORMATION  
 WINTER TEMPERATURE = 20°F. TEMP. RISE = 55°F.  
 BTUs CALCULATED OFF ACTUAL AIR DENSITY.  
 OUTPUT BTUs AT ALTITUDE OF 0.0 FT. = 195666.  
 INPUT BTUs AT ALTITUDE OF 0.0 FT. = 212681.



\*\* CURB BY OTHERS - SHOWN FOR REFERENCE ONLY \*\*



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DESCRIPTION	DATE

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 Delaware / South NJ Mechanical  
 560 Stokes Road, Unit 13A6, Medford, NJ 08055 PHONE: (609) 654-8888 FAX: (609) 747-5604 EMAIL: reg.19@econair.com

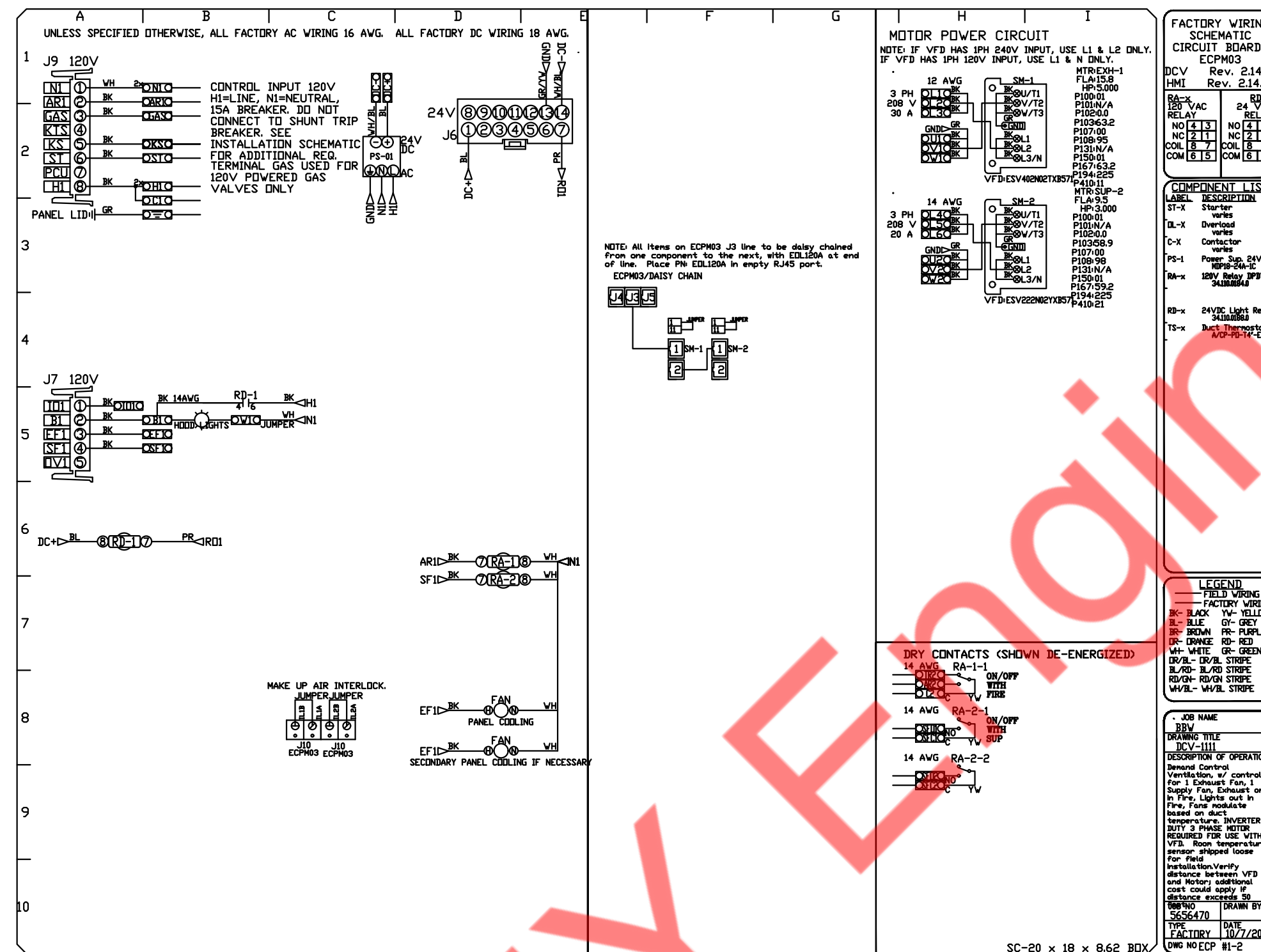
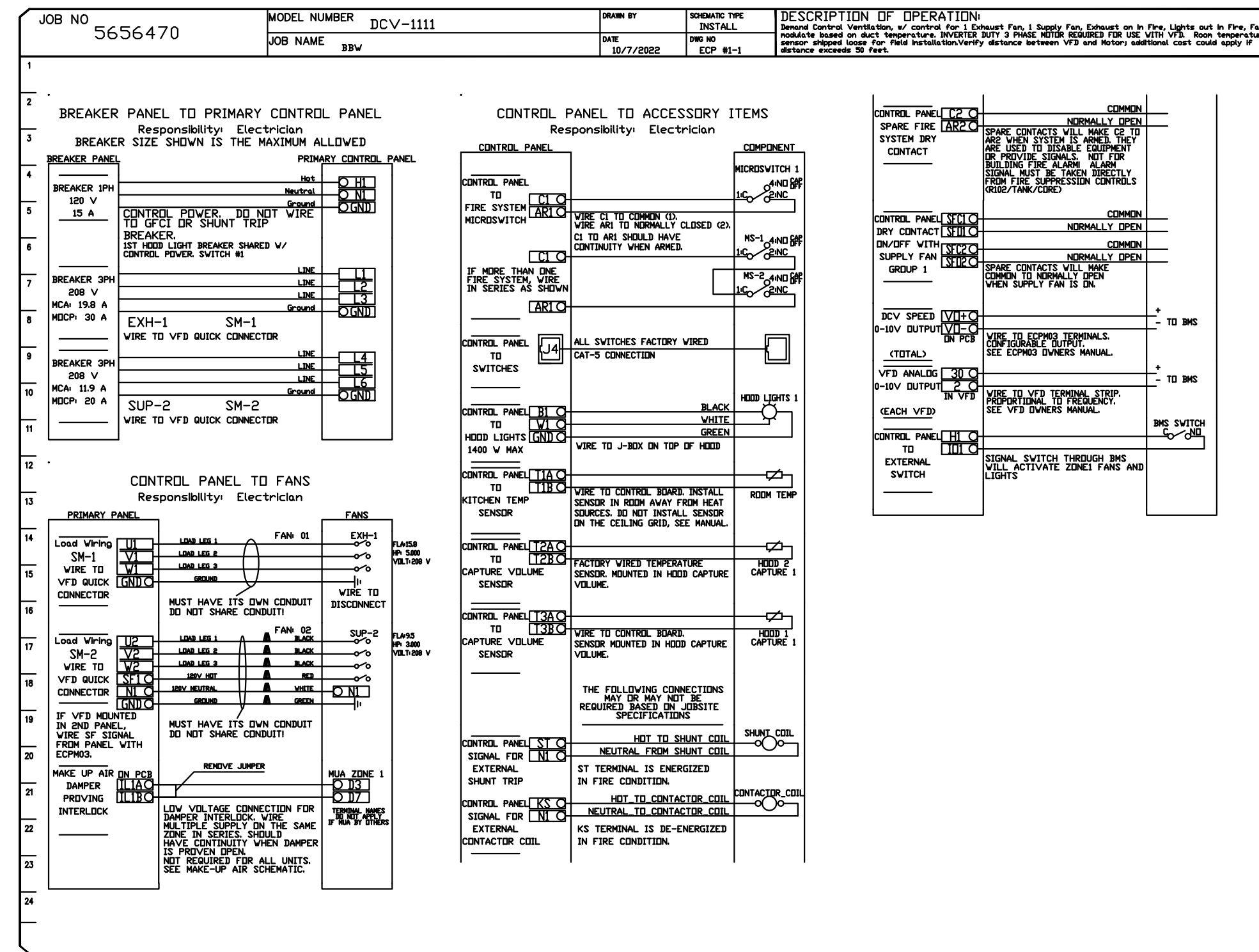
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 DRAWN BY: JRE  
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 MASTER DRAWING

SHEET NO. 4

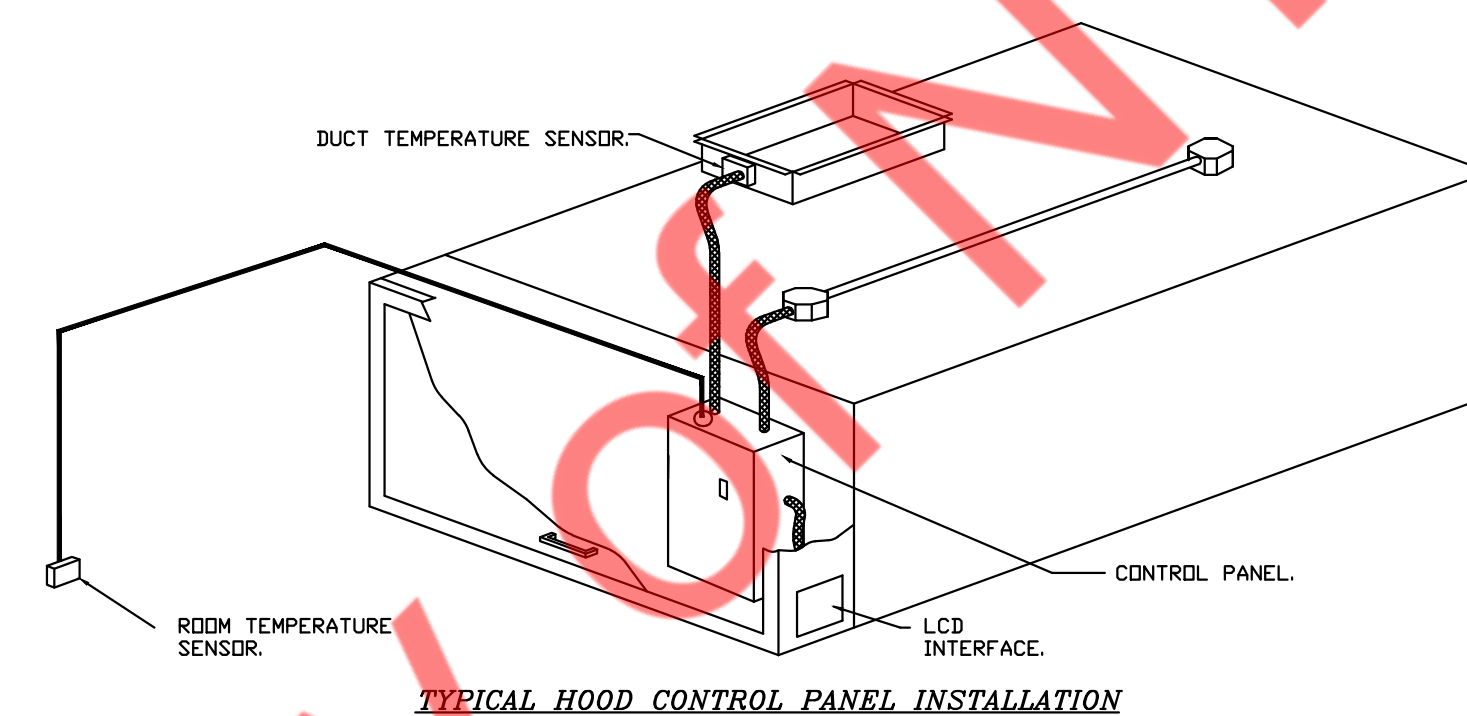
**ELECTRICAL PACKAGE - JOB#5656470**

NO	TAG	PACKAGE #	LOCATION	SWITCHES		OPTION	FANS CONTROLLED				
				LOCATION	QUANTITY		TYPE	HP	VOLTS	FLA	
1		DCV-1111	UTILITY CABINET RIGHT	04 - UTILITY CABINET RIGHT HOOD # 2	1 LIGHT 1 FAN	SMART CONTROLS DCV	EXHAUST	3	5,000	208	15.8
							SUPPLY	3	3,000	208	9.5



**DEMAND CONTROL VENTILATION HOOD CONTROL PANEL SPECIFICATIONS:**

- CONTROLS SHALL BE LISTED BY ETL (UL 508A) AND SHALL COMPLY WITH DEMAND VENTILATION SYSTEM TURNDOWN REQUIREMENTS OUTLINED IN IECC 403.2.8 (2015).
- THE CONTROL ENCLOSURE SHALL BE NEMA 1 RATED AND LISTED FOR INSTALLATION INSIDE OF THE EXHAUST HOOD UTILITY CABINET. THE CONTROL ENCLOSURE MAY BE CONSTRUCTED OF STAINLESS STEEL OR PAINTED STEEL.
- TEMPERATURE PROBE(S) LOCATED IN THE EXHAUST DUCT RISER(S) SHALL BE CONSTRUCTED OF STAINLESS STEEL.
- A DIGITAL CONTROLLER SHALL BE PROVIDED TO ACTIVATE THE HOOD EXHAUST FANS DYNAMICALLY BASED ON A FIXED DIFFERENTIAL BETWEEN THE AMBIENT AND DUCT TEMPERATURES. THIS FUNCTION SHALL MEET THE REQUIREMENTS OF IMC 507.1.1.
- A DIGITAL CONTROLLER SHALL PROVIDE ADJUSTABLE HYSTERESIS SETTINGS TO PREVENT CYCLING OF THE FANS AFTER THE COOKING APPLIANCES HAVE BEEN TURNED OFF AND/OR THE HEAT IN THE EXHAUST SYSTEM IS REDUCED.
- A DIGITAL CONTROLLER SHALL PROVIDE AN ADJUSTABLE MINIMUM FAN RUN-TIME SETTING TO PREVENT FAN CYCLING.
- VARIABLE FREQUENCY DRIVES (VFDs) SHALL BE PROVIDED FOR FANS AS REQUIRED. THE DIGITAL CONTROLLER SHALL MODULATE THE VFDs BETWEEN A MINIMUM SETPOINT AND A MAXIMUM SETPOINT ON DEMAND. THE DUCT TEMPERATURE SENSOR INPUT(S) TO THE DIGITAL CONTROLLER SHALL BE USED TO CALCULATE THE SPEED REFERENCE SIGNAL.
- THE VFD SPEED RANGE OF OPERATION SHALL BE FROM 0% TO 100% FOR THE SYSTEM, WITH THE ACTUAL MINIMUM SPEED SET AS REQUIRED TO MEET MINIMUM VENTILATION REQUIREMENTS.
- AN INTERNAL ALGORITHM TO THE DIGITAL CONTROLLER SHALL MODULATE SUPPLY FAN VFD SPEED PROPORTIONAL TO ALL EXHAUST FANS THAT ARE LOCATED IN THE SAME FAN GROUP AS THE SUPPLY FAN.
- THE SYSTEM SHALL OPERATE IN PREP MODE DURING LIGHT COOKING LOAD OR COOL DOWN MODE WHEN SUFFICIENT HEAT REMAINS UNDERNEATH THE HOOD SYSTEM AFTER COOKING OPERATIONS HAVE COMPLETED. OPERATION DURING EITHER OF THESE PERIODS WILL DISABLE THE SUPPLY FANS AND PROVIDE AN EXHAUST FAN SPEED THAT IS EQUAL TO THE MINIMUM VENTILATION REQUIREMENT.
- A DIGITAL CONTROLLER SHALL DISABLE THE SUPPLY FAN(S), ACTIVATE THE EXHAUST FAN(S), ACTIVATE THE APPLIANCE SHUNT TRIP, AND DISABLE AN ELECTRIC GAS VALVE AUTOMATICALLY WHEN FIRE CONDITION IS DETECTED ON A COVERED HOOD.
- A DIGITAL CONTROLLER SHALL ALLOW FOR EXTERNAL BMS FAN CONTROL VIA DRY CONTACT (EXTERNAL CONTROL SHALL NOT OVERRIDE FAN OPERATION LOGIC AS REQUIRED BY CODE).
- AN LCD INTERFACE SHALL BE PROVIDED WITH THE FOLLOWING FEATURES:
  - A. ON/OFF PUSH BUTTON FAN & LIGHT SWITCH ACTIVATION.
  - B. INTEGRATED GAS VALVE RESET FOR ELECTRONIC GAS VALVES (NO RESET RELAY REQUIRED).
  - C. VFD FAULT DISPLAY WITH AUDIBLE & VISUAL ALARM NOTIFICATION.
  - D. DUCT TEMPERATURE SENSOR FAILURE DETECTION WITH AUDIBLE & VISUAL ALARM NOTIFICATION.
  - E. MIS-WIRED DUCT TEMPERATURE SENSOR DETECTION WITH AUDIBLE & VISUAL ALARM NOTIFICATION.
  - F. A SINGLE LOW VOLTAGE CAT-5 RJ45 WIRING CONNECTION.
  - G. AN ENERGY SAVINGS INDICATOR THAT UTILIZES MEASURED KWH FROM THE VFDs.



- SEQUENCE OF OPERATIONS:**  
THE HOOD CONTROL PANEL IS CAPABLE OF OPERATING IN ONE OR MORE OF THE FOLLOWING STATES AT ANY GIVEN TIME:
- **AUTOMATIC:** THE SYSTEM OPERATES BASED ON THE DIFFERENTIAL BETWEEN ROOM TEMPERATURE AND THE TEMPERATURE AT THE HOOD CAVITY OR EXHAUST DUCT COLLAR. FANS ACTIVATE AT A CONFIGURABLE TEMPERATURE DIFFERENTIAL THRESHOLD. DEPENDING ON THE JOB CONFIGURATION EACH FAN ZONE CAN BE CONFIGURED AS STATIC OR DYNAMIC. THESE TERMS REFER TO WHETHER A VARIABLE MOTOR (SUCH AS EC MOTORS OR VFD DRIVEN MOTORS) MODULATE WITH TEMPERATURE. IF THE PANEL IS EQUIPPED WITH VARIABLE SPEED FANS AND THE ZONE IS DEFINED AS 'DYNAMIC', THESE WILL MODULATE WITHIN A USER-DEFINED RANGE BASED ON THE TEMPERATURE DIFFERENTIAL. PANELS EQUIPPED WITH VARIABLE SPEED FANS AND A FAN ZONE DEFINED AS 'STATIC', FANS WILL RUN AT A SET SPEED CALCULATED FOR THE DRIVE. DEMAND CONTROL VENTILATION SYSTEMS ARE CAPABLE OF MODULATING EXHAUST AND MAKE UP AIR FAN SPEEDS PER THE REQUIREMENTS OUTLINED IN IECC 403.2.8.
  - **MANUAL:** THE SYSTEM OPERATES BASED ON HUMAN INPUT FROM AN HMI.
  - **SCHEDULE:** A WEEKLY SCHEDULE CAN BE SET TO RUN FANS FOR A SPECIFIED PERIOD THROUGHOUT THE DAY. THERE ARE THREE OCCUPIED TIMES PER DAY TO ALLOW FOR THE USER TO SET UP A TIME THAT IS SUITABLE TO THEIR NEEDS. ANY TIME THAT IS WITHIN THE DEFINED OCCUPIED TIME, THE SYSTEM WILL RUN AT MODULATION MODE AND FOLLOW THE FAN PROCEDURE ALGORITHM BASED ON TEMPERATURE DURING THIS TIME. DURING UNOCCUPIED TIME, THE SYSTEM WILL HAVE AN EXTRA OFFSET TO PREVENT UNINTENDED ACTIVATION OF THE SYSTEM DURING A TIME WHERE THE SYSTEM IS NOT BEING OCCUPIED.
  - **OTHER:** THE SYSTEM OPERATES BASED ON THE INPUT FROM AN EXTERNAL SOURCE (DDC, BMS OR HARD-WIRED INTERLOCK).
  - **FIRE:** UPON ACTIVATION OF THE HOOD FIRE SUPPRESSION SYSTEM, THE EXHAUST FAN WILL COME ON OR CONTINUE TO RUN, THE HOOD MAKEUP AIR WILL SHUTDOWN, AND A SIGNAL WILL BE SENT FOR ACTIVATING THE SHUNT TRIP BREAKER PROVIDED BY THE ELECTRICIAN. FUEL GAS WILL SHUT OFF VIA A MECHANICAL/ELECTRICAL GAS VALVE ACTUATED BY THE HOOD FIRE SUPPRESSION SYSTEM.

REVISIONS	
DESCRIPTION	DATE

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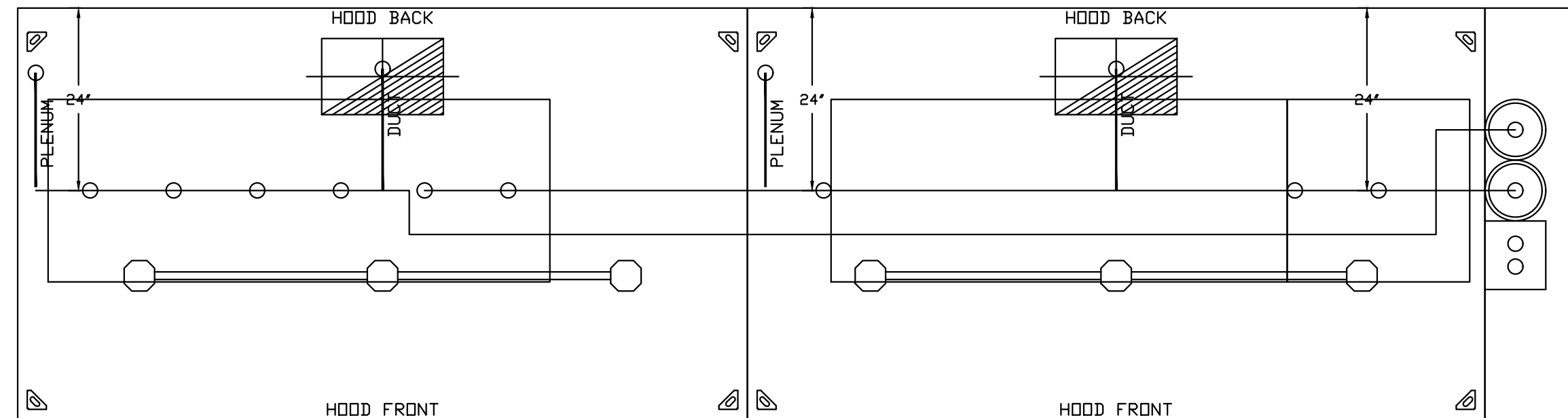
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BBW

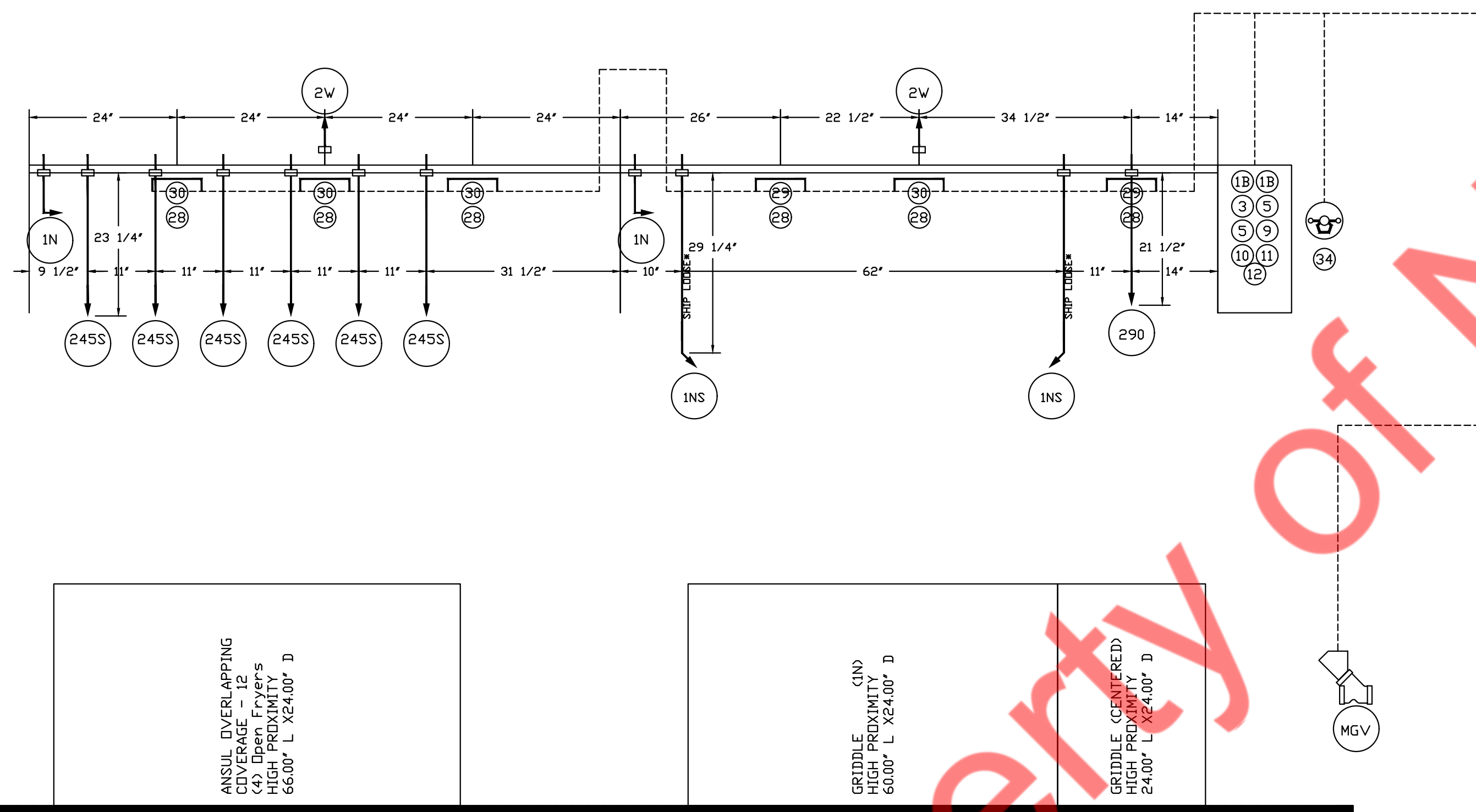
DATE: 10/10/2022  
DWG.#: 5656470  
DRAWN BY: JRE  
SCALE: 3/4" = 1'-0"  
MASTER DRAWING

SHEET NO.  
5



HOOD # 1 JOB # 5656470 FS # 1  
MODEL: ND-2-PSP-F SIZE: 54"x24" LENGTH: 8' 0"

HOOD # 2 JOB # 5656470 FS # 1  
MODEL: ND-2-PSP-F SIZE: 54"x24" LENGTH: 8' 1"



ANSUL OVERLAPPING  
COVERING  
COOKING  
FRYERS  
HIGH PROXIMITY  
66.00" L X 24.00" D

GRIDDLE (END)  
HIGH PROXIMITY  
60.00" L X 24.00" D

GRIDDLE (CENTERED)  
HIGH PROXIMITY  
24.00" L X 24.00" D

**NOTES**

- FIELD PIPE DROPS AS SHOWN
- SLEEVING, ELBOWS, TEES, AND NOZZLES SUPPLIED BY CAS.
- FIELD INSTALLED DROP: FACTORY WILL PROVIDE QTY 1 60IN LONG PIECE OF CHROME PLATED PIPING SHIPPED LOOSE TO BE FIELD-INSTALLED.
- SHIP LOOSE DROP: FACTORY WILL PROVIDE THE EXACT CHROME PIPE LENGTH NEEDED SHIPPED LOOSE TO BE FIELD-INSTALLED.
- RELOCATE NOZZLES IF FLOW PATTERN IS BLOCKED BY SHELVING, SALAMANDERS, ETC.
- MAXIMUM 9 ELBOWS IN SUPPLY LINE.
- MINIMUM 72 INCHES OF AGENT LINE FROM TANK TO FIRST NOZZLE COVERING A RANGE, FRYER, OR WOK TO REFLECT GENERAL PIPING REQUIREMENTS.
- IF APPLICABLE, PRE-PIPED CHARBROILER DROPS ARE SHIPPED LOOSE.
- FACTORY PIPING EXTENDS A MAXIMUM OF 6' ABOVE THE TOP OF THE HOOD.

- APPLIANCE DIMENSIONS LISTED REPRESENT THE COOKING SURFACE SIZE, NOT THE OVERALL APPLIANCE SIZE.
- THIS FIRE SYSTEM COMPLIES WITH U.L. 300 REQUIREMENTS.

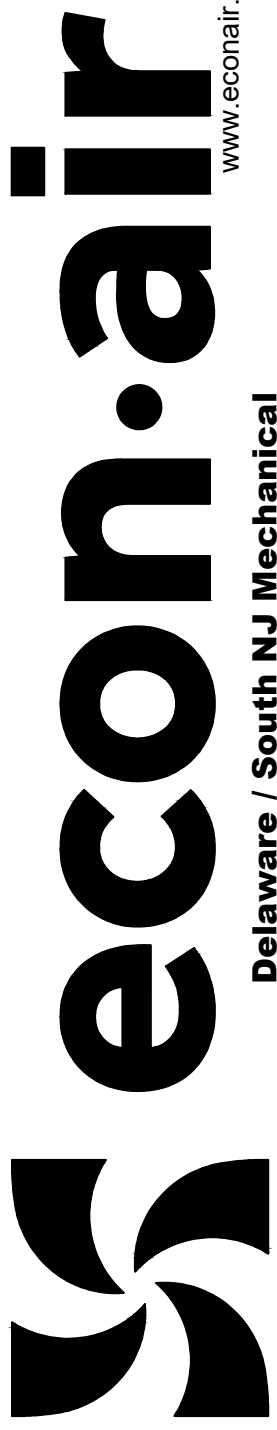
JOB #: 5656470  
JOB NAME: BBW

SYSTEM SIZE: ANSUL-3.0/3.0 TOTAL FP REQUIRED: 22.  
HOOD # 1 8' 0.00' LONG X 54' WIDE X 24' HIGH.  
RISER # 1 SIZE: 10' X 16'.  
HOOD # 1 METAL BLOW-OFF CAPS INCLUDED.  
HOOD # 2 8' 1.00' LONG X 54' WIDE X 24' HIGH.  
RISER # 1 SIZE: 10' X 16'.  
HOOD # 2 METAL BLOW-OFF CAPS INCLUDED.

**LEGEND - FIRE CABINET ANSUL SYSTEM**

- 1A 1.5 GALLON TANK.
- 1B 3 GALLON TANK.
- 2 DEM AUTOMAN RELEASE.
- 3 DEM REGULATED RELEASE.
- 4 DEM REGULATED ACTUATOR.
- 5 ANSULEX LIQUID AGENT (3 GAL.).
- 6 ANSULEX LIQUID AGENT (1.5 GAL.).
- 7 CARTRIDGE (101-20).
- 8 CARTRIDGE (101-10).
- 9 CARTRIDGE (101-30).
- 9A CARTRIDGE (LT-A-101-30).
- 9B DOUBLE TANK CARTRIDGE.
- 10 TEST LINK.
- 11 DOUBLE MICROSWITCH.
- 12 HOSE ASSEMBLY.
- 1100 DUCT NOZZLE (430913).
- 2W DUCT NOZZLE (419337).
- 1W NOZZLE ASSEMBLY (419336).
- 1F NOZZLE ASSEMBLY (419333).
- 1N NOZZLE ASSEMBLY (419335).
- 1/2N NOZZLE ASSEMBLY (419334).
- 3N NOZZLE ASSEMBLY (419338).
- 245 NOZZLE ASSEMBLY (419340).
- 230 NOZZLE ASSEMBLY (419339).
- 2120 NOZZLE ASSEMBLY (419343).
- 290 NOZZLE ASSEMBLY (419342).
- 260 NOZZLE ASSEMBLY (419341).
- 28 DETECTOR BRACKET.
- 29 LOW TEMP FUSIBLE LINK.
- 30 HIGH TEMP FUSIBLE LINK.
- MGV MECHANICAL GAS VALVE.
- EGV ELECTRICAL GAS VALVE.
- 34 REMDTE MANUAL PULL STATION.
- S SWIVEL ADAPTOR.

REVISIONS	
DESCRIPTION	DATE

  
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BBW

DATE: 10/10/2022

DWG.#: 5656470

DRAWN BY: JRE

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

MASTER DRAWING

SHEET NO. 6

GRILLE SCHEDULES								
UNIT TAG	QTY.	MANUFACTURER	USE	NECK SIZE (IN)	SIZE (IN)	CFM	MODEL	NOISE CRITERIA (DB)
SG	2	TITUS	SUPPLY	-	REFER PLAN	2000	CT-481	28
CDS-1	1	TITUS	SUPPLY	5	12X12	100	OMNI-AA	18
CDS-2	5	TITUS	SUPPLY	10	24X24	300-400	OMNI-AA	25
CDR-1	3	TITUS	RETURN	15	24X24	-	OMNI-AA	-

NOTES

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.

FANS SCHEDULE											
MARK	QTY	MODEL	CFM	ESP (IN W.G)	ELEC (V/Hz/Ph.)	MOTOR SIZE (hp)	FLA (A)	FAN SPEED (RPM)	SONE	WEIGHT (LBS)	MAKE
KX-1	1	EADU240H	4160	2	208/60/3	5	15.8	1000	20.3	345	ECON-AIR

NOTES:

1) PROVIDE 24 INCH ROOF CURB, HINGE KIT AND (2) 24 INCH TALL WIND BAND EXTENSION.

2) THE MOTOR AND DRIVES WILL SHIP LOOSE TO BE INSTALLED ON SITE BY THE INSTALLING CONTRACTOR TO AVOID FRIGHT DAMAGE.

3) PROVIDE GREASE BOX.

4) PROVIDE 2 YEAR PARTS WARRANTY.

HOOD SCHEDULE											
UNIT ID	MANUFACTURER	MODEL	LENGTH	COOKING MAX TEMPERATURE	APPLIANCE DUTY	FILTER TYPE	DESIGN CFM/FT	EXHAUST CFM	SUPPLY CFM	HOOD CONSTRUCTION	WEIGHT (LBS)
LEFT HOOD	ECON-AIR	5424 EX-2-PSP-F	8'-0"	600	HEAVY	CAPTRATE SOLO FILTER	260	2080	1665	430 SS	461
RIGHT HOOD	ECON-AIR	5424 EX-2-PSP-F	8'-1"	600	HEAVY	CAPTRATE SOLO FILTER	257	2080	1665	431 SS	703

NOTES:-

1) CONTRACTOR TO FIELD VERIFY WORKING CONDITION AND EXACT LOCATION.

KITCHEN MAKE UP AIR UNIT SCHEDULE																
TAG	SERVICE	FLOW RATE CFM	EXTERNAL SP IN W.G.	SPEED RPM	GAS HEATING CAPACITY				ELECTRIC DATA					WEIGHT (LBS)	BASIS OF DESIGN	
					GAS TYPE	INPUT BTUH	OUTPUT BTUH	REQUIRED INPUT GAS PRESSURE (MIN - MAX)	EFFICIENCY	V/PH/HZ	FLA	MCA (A)	MOCOP (A)		MANUFACTURER	MODEL
MAU-1	HOOD	3330	0.5	1338	NATURAL	213	196	7 IN WC - 14 IN WC	92%	208/3/60	9.5	11.9	20	645	ECON-AIR	EA2-D.250-20D

NOTES:

1) PROVIDE ALL NECESSARY ACCESSORIES AS PER MANUFACTURER'S RECOMMENDATIONS.

2) CONTRACTOR TO FIELD VERIFY WORKING CONDITION AND EXACT LOCATION.

Property of NY Engineers



## ELECTRICAL SYMBOLS LIST

## GENERAL NOTES

LIGHTING	
	LIGHTING FIXTURE AND OUTLET BOX. HALF SHADED FIXTURE OR "EM" INDICATES FIXTURES WITH INTEGRAL BATTERY PACK FOR EMERGENCY SERVICE, U.O.N.
	LUMINAIRE TYPE : INDICATE BY LIPPERCASE LETTER SEE LIGHTING EXTURE SCHEDULE.
	CIRCUIT NUMBER : INDICATED BY NUMBER
	SWITCHING INDICATED BY LOWER CASE LETTERS.
	EM DENOTES LUMINAIRE ON EMERGENCY CIRCUIT.
	CEILING/WALL MOUNTED SELF POWERED EXIT LIGHT FIXTURE WITH DIRECTIONAL ARROWS AS INDICATED. SHADED AREA DENOTES FACE(S). ISOLITE ELITE SERIES LED EXIT SIGN

SWITCHES AND CONTROLS	
	20A SPST TOGGLE SWITCH U.O.N. "a" DENOTES LIGHTING FIXTURE/SWITCHED RECEPTACLE CONTROLLED.
	WALL OCCUPANCY SENSOR, NUMBER INDICATES TYPE.
	ASCO CONTACTOR C-25 TORK TIMER T-25 STACKED.
	WALL MOUNTED SPRING WOUND TIME SWITCH TORK

ELECTRICAL DRAWING LIST	
E0.1	ELECTRICAL SYMBOL LIST, ABBREVIATIONS, GENERAL NOTES, LIGHTING FIXTURE SCHEDULE AND CONTROLS
E0.2	ELECTRICAL SPECIFICATIONS SHEET 1 OF 2
E0.3	ELECTRICAL SPECIFICATIONS SHEET 2 OF 2
E1.0	ELECTRICAL LIGHTING PLAN
E2.0	ELECTRICAL POWER PLAN
E2.1	ELECTRICAL POWER ROOF PLAN
E3.0	ELECTRICAL DETAILS
E4.0	ELECTRICAL RISER DIAGRAM AND PANEL SCHEDULES

POWER AND TELECOMMUNICATION	
	JUNCTION BOX WITH BLANK COVER PLATE, CEILING MOUNTED..
	DUPLEX CONVENIENCE RECEPTACLE, +12" AFF OR AS NOTED.
	DOUBLE DUPLEX RECEPTACLE - 20A-1P, 125V, NEMA 5-20R.
	OUTLET (JUNCTION BOX) 4" SQUARE BOX MINIMUM.
	DATA OUTLET - (1) PORT UNO, +18" AFF, UNO TEL / DATA OUTLET TO BE RUN (2) COMPOSITE CABLES FROM EACH OUTLET TO NID BOX
	JUNCTION BOX WITH BLANK COVER PLATE, CEILING MOUNTED..

MOTORS AND CONTROLS	
	MOTOR AS NOTED WITH CONTROLLER
	MUA UNIT MOTOR AS NOTED WITH CONTROLLER AND DISCONNECT SWITCH WITH WEATHER PROOF.
	NON FUSED DISCONNECT SWTCH AMPERAGE, AND NUMBER OF POLES AS NOTED.
	30A/240V NON FUSED DISCONNECT SWITCH
	60A/240V NON FUSED DISCONNECT SWITCH
	100A/240V NON FUSED DISCONNECT SWITCH
	MANUAL MOTOR SWITCH

ANNOTATION	
	+24" INDICATES MOUNTING HEIGHT, CENTER LINE TO FINISHED FLOOR.
	KEYED NOTE REFERENCE
	DETAIL REFERENCE: DETAIL NUMBER INDICATED ON TOP; DRAWING NUMBER INDICATED ON BOTTOM
POWER DISTRIBUTION	
	POWER PANELBOARD - 208V/120V

ELECTRICAL ABBREVIATIONS			
A	AMPERES	EA	EACH
A/C, AC	AIR CONDITIONING UNIT	EM	EMERGENCY
AF	AMPERE FRAME/AMP FUSE	EMT	ELECTRICAL METALLIC TUBING
AFF	ABOVE FINISHED FLOOR	EQUIP	EQUIPMENT
AS	AMP SWITCH	ER	EXISTING TO BE RELOCATED
AIC	AMPS INTERRUPTING CAPACITY	FA	FIRE ALARM
AT	AMP TRIP	E	EXISTING
AUTO	AUTOMATIC	FL	FLOOR
AWG	AMERICAN WIRE GAUGE	G	GROUND
C	CONDUIT	GFI	GROUND FAULT INTERRUPTER
C/B,CB	CIRCUIT BREAKER	GP	GENERAL PURPOSE
CKT	CIRCUIT	HP	HORSEPOWER
CLG	CEILING	HWH	HOW WATER HEATER
COMM	COMMUNICATION	HZ	HERTZ
CT	CURRENT TRANSFORMER	IC	INTERRUPTING CAPACITY
CU	COPPER	PP	POWER PANEL
DIA	DIAMETER	PWR	POWER
DISC	DISCONNECT	R	REMOVE
DN	DOWN	RE	RELOCATED EXISTING
DWG	DRAWING	REC	RECEPTACLE
JB	JUNCTION BOX	RGS	RIGID GALVANIZED STEEL
KCMIL	ONE THOUSAND CIRCULAR MILS	RR	REMOVE & RELOCATE
KV	KILOVOLT	SECT	SECTION
KVA	KILOVOLT-AMPERES	SPDT	SINGLE POLE DOUBLE THROW
KW	KILOWATTS	SPST	SINGLE POLE SINGLE THROW
LTC	LIGHTING	SPEC	SPECIFICATION
MAX	MAXIMUM	SW	SWITCH
MCB	MAIN CIRCUIT BREAKER	SYM	SYMMETRICAL
MLO	MAIN LUGS ONLY	SYS	SYSTEMS
MTD	MOUNTED	TELE	TELEPHONE
N	NEUTRAL	TEMP	TEMPERATURE
NIC	NOT IN CONTRACT	TXF	TOILET EXHAUST FAN
NTS	NOT TO SCALE	TYP	TYPICAL
PNL	PANEL	UON	UNLESS OTHERWISE NOTED
W	WATT	V	VOLT/VOLTAGE
WP	WEATHER PROOF	VA	VOLT AMPERE
ø	PHASE	CL	CURRENT LIMITER

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

### LIGHT FIXTURE SCHEDULE:

LIGHT FIXTURE TAG	DESCRIPTION	WATTAGE	QUANTITY
A1	2 x 2 TROFFER LIGHT FIXTURE	30	19
A2	4" RECESSED LIGHT FIXTURE	10	2
A3	PENDANT LIGHT	20	23
A5	LED SPOT LIGHT	10	30
A10	PENDENT LIGHT	10	6
EX-1	EMERGENCY EGRESS EXIT SIGN	5	1
EM	EMERGENCY LIGHTING	5	6

### GENERAL NOTES:

- COORDINATE FINAL FIXTURE MAKE AND MODEL WITH ARCHITECT.

### LIGHTING CONTROLS NOTES:

- AUTOMATIC LIGHTING CONTROLS: OCCUPANCY SENSOR SHALL BE CAPABLE OF TURNING OFF LIGHTS WITHIN 20 MINUTES OF ALL OCCUPANT LEAVING THE SPACE.
- ALL ILLUMINATED EXIT SIGN TO HAVE A MAX WATTAGE OF 5 PER SIDE.

### LIGHTING CONTROLS:

AREA	CONTROLS
BAR, PICKUP AREA AND KITCHEN AREA	1. TIME-CLOCK WITH MANUAL OVERRIDE SWITCH. EMERGENCY LIGHT FIXTURES TO REMAIN ENERGIZED AT EMERGENCY CONDITION. 2. LOCAL MULTI-LEVEL SWITCHES FOR MANUAL ON/OFF OF LIGHT FIXTURES.
OFFICE	WALL MOUNTED OCCUPANCY SENSOR FOR MANUAL/AUTOMATIC ON/OFF OF LIGHT FIXTURE.
ENTRANCE	MANUAL SWITCH ON/OFF FOR LIGHT FIXTURE.

# 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. INSTALL WORK SO AS TO BE READILY ACCESSIBLE FOR OPERATION, MAINTENANCE AND REPAIR, MINOR DEVIATIONS FROM DRAWING MAY BE MADE TO ACCOMPLISH THIS, BUT CHANGES WHICH INVOLVE EXTRA COST SHALL NOT BE MADE WITHOUT APPROVAL.
- E. REMOVAL AND RELOCATION OF CERTAIN EXISTING WORK MAY BE NECESSARY FOR THE PERFORMANCE OF THE GENERAL WORK. ALL EXISTING CONDITIONS CANNOT BE COMPLETELY DETAILED ON THE DRAWINGS. THE CONTRACTOR SHALL SURVEY THE SITE AND INCLUDE ALL CHANGES AND CHARGES IN MAKING UP THE WORK PROPOSAL.
- F. CONNECTIONS TO EXISTING WORK: INSTALL NEW WORK AND CONNECT TO EXISTING WORK WITH MINIMUM INTERFERENCE TO EXISTING FACILITIES. TEMPORARY SHUTDOWNS OF EXISTING SERVICES SHALL BE PERFORMED AT NO ADDITIONAL CHARGES. AT TIMES NOT TO INTERFERE WITH NORMAL OPERATION OF EXISTING FACILITIES AND ONLY WITH WRITTEN CONSENT OF OWNER, ALARM AND EMERGENCY SYSTEMS SHALL NOT BE INTERRUPTED. MAINTAIN CONTINUOUS OPERATION OF EXISTING FACILITIES AS REQUIRED WITH NECESSARY TEMPORARY CONNECTIONS BETWEEN NEW AND EXISTING WORK. CONNECT NEW WORK TO EXISTING WORK IN NEAT AND ACCEPTABLE MANNER. RESTORE EXISTING DISTURBED WORK TO ORIGINAL CONDITION, INCLUDING MAINTENANCE OF WIRING CONTINUITY AS REQUIRED.
- G. DISCONNECT, REMOVE AND/OR RELOCATE EXISTING MATERIAL, EQUIPMENT AND OTHER WORK AS NOTED OR REQUIRED FOR PROPER INSTALLATION OF NEW WORK.
- H. THE CONTRACTOR SHALL KEEP ALL EQUIPMENT AND MATERIALS, AND ALL PARTS OF THE BUILDING EXTERIOR SPACES AND ADJACENT STREETS, SIDEWALKS AND PAVEMENTS, FREE FROM MATERIAL AND DEBRIS RESULTING FROM THE EXECUTION OF THIS WORK. EXCESS MATERIALS WILL NOT BE PERMITTED TO ACCUMULATE EITHER ON THE INTERIOR OR THE EXTERIOR.
- I. SEAL OPENINGS THROUGH PARTITIONS, WALLS AND FLOORS WITH MINERAL WOOL OR OTHER NONCOMBUSTIBLE MATERIAL, UNLESS OTHERWISE NOTED.
- J. PROVIDE ALL NECESSARY FLASHING AND COUNTER FLASHING TO MAINTAIN THE WATERPROOFING INTEGRITY OF THE BUILDING AS REQUIRED BY THE INSTALLATION OR REMOVAL OF CONDUIT AND EQUIPMENT, PROVIDE EQUIPMENT CURBS AS REQUIRED.
- K. ALL EXISTING MATERIAL, EQUIPMENT AND CONSTRUCTION DEBRIS TO BE REMOVED UNDER THIS CONTRACT SHALL BECOME THE PROPERTY OF THE CONTRACTOR WITH THE EXCEPTION OF SPECIFIC EQUIPMENT AND APPARATUS REQUESTED BY THE BUILDING REPRESENTATIVE, ARCHITECT OR AS NOTED TO BE RELOCATED ON THE DRAWINGS. REMOVED EQUIPMENT SHALL BE PROPERLY DISPOSED OF BY THIS CONTRACTOR.
- L. THE CONTRACTOR'S PROPOSAL FOR ALL WORK SHALL BE PREDICATED ON THE PERFORMANCE OF THE WORK DURING REGULAR WORKING HOURS. WHEN SO DIRECTED, HOWEVER, THE CONTRACTOR SHALL INSTALL WORK DURING OVERTIME HOURS AND THE ADDITIONAL COST TO BE CHARGED THEREFORE SHALL BE ONLY THE "PREMIUM" PORTION OF THE WAGES PAID.
- M. UNLESS OTHERWISE SPECIFICALLY NOTED OR SPECIFIED, INCLUDE ALL CUTTING AND PATCHING OF EXISTING FLOORS, WALLS, PARTITIONS AND OTHER MATERIALS IN THE EXISTING BUILDING. THE CONTRACTOR SHALL RESTORE THESE AREAS TO ORIGINAL CONDITION.
- N. ALL MATERIAL AND EQUIPMENT SHALL BE NEW UNLESS OTHERWISE NOTED AND SHALL BE IN ACCORDANCE WITH BUILDING STANDARDS.
- O. INSURANCE: PROVIDE IN ACCORDANCE WITH OWNER/BUILDING REQUIREMENTS AND SHALL INCLUDE A HOLD HARMLESS CLAUSE FOR OWNER AND ENGINEER.
- P. THE FINAL ACCEPTANCE SHALL BE MADE AFTER THE CONTRACTOR HAS ADJUSTED HIS EQUIPMENT, TESTED THE VARIOUS SYSTEMS, DEMONSTRATED THAT IT FULFILLS THE REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS AND HAS FURNISHED ALL THE REQUIRED CERTIFICATED OF INSPECTION AND APPROVAL.

## 2. GENERAL PROVISIONS FOR ELECTRICAL WORK:

- A. DEFINITIONS:
  - 1) "PROVIDE": TO FURNISH, INSTALL AND CONNECT UP COMPLETE AND READY FOR SAFE AND REGULAR OPERATION THE PARTICULAR WORK REFERRED TO UNLESS SPECIFICALLY OTHERWISE NOTED.
  - 2) "INSTALL": TO ERECT, MOUNT AND CONNECT COMPLETE WITH RELATED ACCESSORIES.
  - 3) "FURNISH" OR "SUPPLY": TO PURCHASE, PROCURE, ACQUIRE, AND DELIVER COMPLETE WITH RELATED ACCESSORIES.
  - 4) "WORK": LABOR, MATERIALS, EQUIPMENT, APPARATUS, CONTROLS, ACCESSORIES AND OTHER ITEMS REQUIRED FOR PROPER AND COMPLETE INSTALLATION.
  - 5) "WIRING": RACEWAY, FITTINGS, WIRE, BOXES, AND RELATED ITEMS.
  - 6) "CONCEALED": EMBEDDED IN MASONRY OR OTHER CONSTRUCTION, INSTALLED IN FURRED SPACES, WITHIN DOUBLE PARTITIONS OR HUNG CEILINGS, IN TRENCHES, IN CRAWL SPACES, OR IN ENCLOSURES.
  - 7) "EXPOSED": NOT INSTALLED UNDERGROUND OR "CONCEALED" AS DEFINED ABOVE.
  - 8) "SIMILAR" OR "EQUAL": EQUAL IN MATERIALS, WEIGHT, SIZE, DESIGN AND EFFICIENCY OF SPECIFIED PRODUCT.
- B. TEMPORARY LIGHT AND POWER: PROVIDE TEMPORARY LIGHT AND POWER SYSTEMS AT EARLIEST POSSIBLE DATE WITHIN THE CONSTRUCTION AREAS FOR THE REQUIREMENTS OF ALL TRADES AS HEREIN DESCRIBED. EXTEND SYSTEMS TO NEW CONSTRUCTION AS SOON AS PHYSICALLY POSSIBLE. MAINTAIN SYSTEM DURING WORKING OWNER. PROVIDE ALL REQUIRED MAINTENANCE, INCLUDING LAMPS AND SOCKETS.
- C. QUALITY ASSURANCE
  - 1) QUALITY OF MATERIALS: ALL EQUIPMENT SHALL BE NEW SPECIFICATION GRADE, FREE FROM DEFECTS AND LISTED BY APPROVED TESTING AGENCY AND BEARING THEIR LABEL MATERIALS AND EQUIPMENT OF SIMILAR APPLICATION SHALL BE OF SAME MANUFACTURER, EXCEPT AS NOTED.
  - 2) GUARANTEE: ALL MATERIALS AND WORKMANSHIP SHALL BE GUARANTEED AS DEFINED IN PARAGRAPH 2.C.
  - 3) CURRENT CHARACTERISTICS:
    - a. DISTRIBUTION: 120/208 VOLT, 3 PHASE, 4 WIRE, 60 HERTZ WITH GROUNDED NEUTRAL.
  - 4) HEIGHTS OF OUTLETS:
    - a. FROM FINISHED FLOOR TO CENTERLINE OF OUTLETS FOR:
      - RECEPTACLES AND TELEPHONES: (AS PER CODE & ARCHITECTURAL DRAWING).
      - 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 MARRER SURFACES OF STEEL EQUIPMENT AND RACEWAYS. A FIELD-APPLIED ZINC BASED PRIME COAT SHALL BE UTILIZED FOR STEEL OR IRONWORK.

## 3. SCOPE OF WORK:

- A. SCOPE OF WORK SHALL CONSIST OF PROVIDING LABOR, MATERIALS, EQUIPMENT, SERVICES AND FEES NECESSARY FOR COMPLETE AND SAFE INSTALLATION IN CONFORMING WITH THE NATIONAL ELECTRICAL CODE (NEC) AND ALL OTHER APPLICABLE INDUSTRY, NATIONAL AND LOCAL CODES AND AUTHORITIES HAVING JURISDICTION, AS INDICATED ON DRAWINGS AND HEREIN SPECIFIED.
- B. ALL DRAWINGS, PLANS, DETAILS, SPECIFICATIONS AND SPECIFICATION ADDENDA ARE MADE PART OF THIS CONTRACT AND SHALL APPLY TO ALL WORK UNDER THE CONTRACT UNLESS OTHERWISE AMENDED, MODIFIED, SUPPLIED OR SPECIFIED HEREIN.
- C. THE CONTRACTOR SHALL FURNISH A WRITTEN GUARANTEE TO REPLACE OR REPAIR PROMPTLY AND ASSUME RESPONSIBILITY FOR ALL EXPENSES INCURRED FOR ANY WORKMANSHIP AND EQUIPMENT

IN WHICH DEFECTS DEVELOP WITHIN ONE YEAR FROM THE DATE OF FINAL CERTIFICATE FOR PAYMENT AND/OR FROM DATE 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 STATE 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. CERTIFY 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.

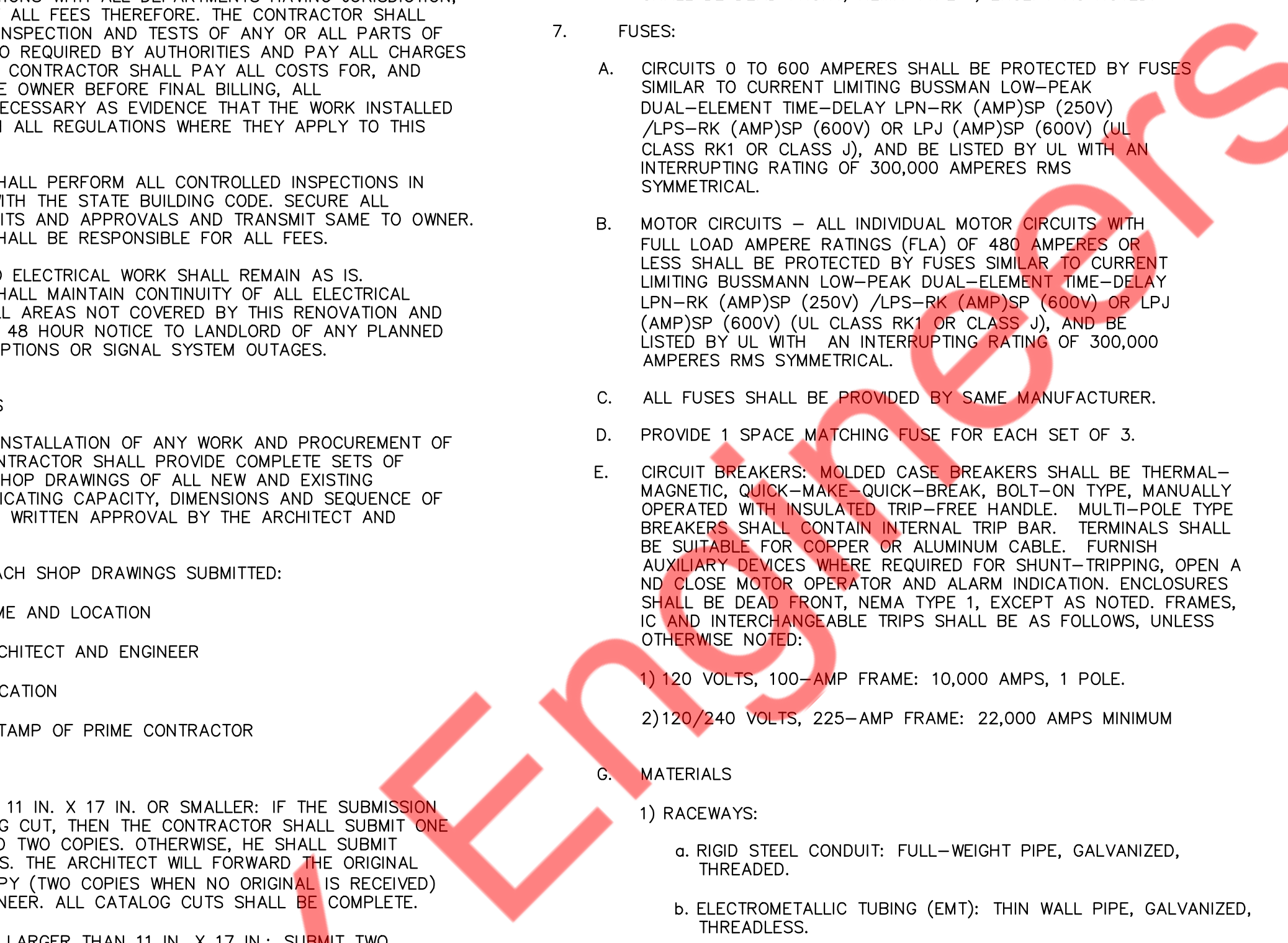
## 7. FUSES:

- A. CIRCUITS 0 TO 600 AMPERES SHALL BE PROTECTED BY FUSES SIMILAR TO CURRENT LIMITING BUSSMANN LOW-PEAK DUAL-ELEMENT TIME-DELAY LPN-RK (AMP)SP (250V) /LPS-RK (AMP)SP (600V) OR 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

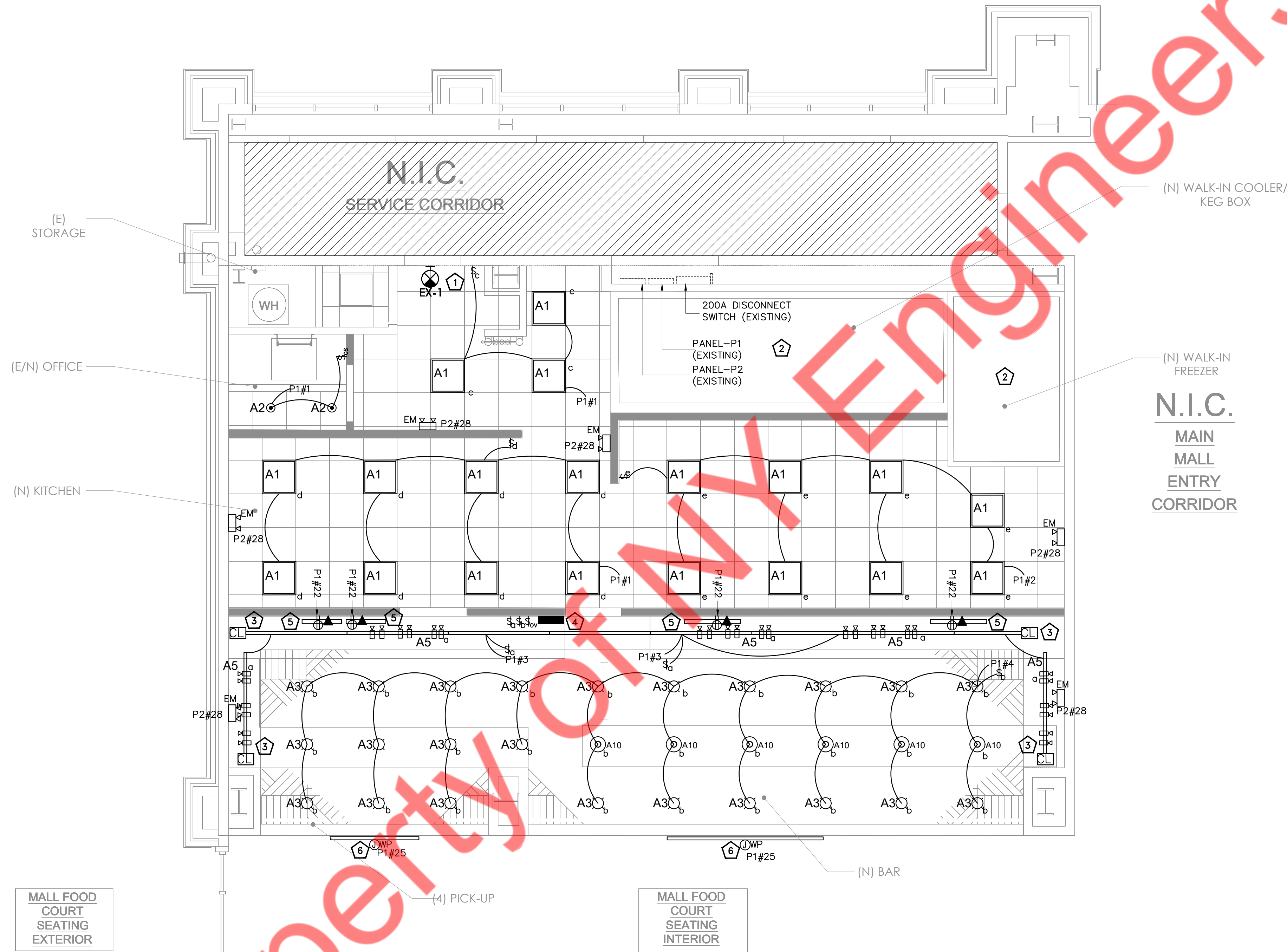
## G. MATERIALS

- 1) RACEWAYS:
  - a. RIGID STEEL CONDUIT: FULL-WEIGHT PIPE, GALVANIZED, THREADED.
  - b. ELECTROMETALLIC TUBING (EMT): THIN WALL PIPE, GALVANIZED, THREADED.
  - 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 0.02 IN. MATERIAL SHALL BE STEEL. FINISH SHALL BE BAKED ENAMEL. COVERS SHALL BE SCREW-ON.
- 2) FITTINGS AND ACCESSORIES:
  - a. RIGID STEEL: NONSPLIT, THREADED, STEEL OR MALLEABLE IRON. ZINC DIE CAST NOT PERMITTED.
  - b. ELECTROMETALLIC TUBING: COMPRESSION TYPE. GALVANIZED RIGID STEEL ELBOWS, 2 IN. OR LARGER.
  - c. FLEXIBLE METALLIC CONDUIT: ANGLE WEDGE TYPE WITH INSULATED THROAT.
  - d. BUSHINGS: METALLIC INSULATED TYPE.

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. 7810F. KNIFE-BLADE TYPE SWITCHES SHALL BE LOAD BREAK, QUICK-MAKE-QUICK-BREAK, UL CLASS R UP TO 600 AMP. MAXIMUM RATING EXCEPT AS NOTED SHALL BE 800 AMP. ARC QUENCHERS SHALL BE PROVIDED. SWITCHES SHALL BE SIMILAR TO GENERAL ELECTRIC QMR. ALL SWITCH ENCLOSURES SHALL BE DEAD FRONT, NEMA TYPE 1, EXCEPT AS NOTED.







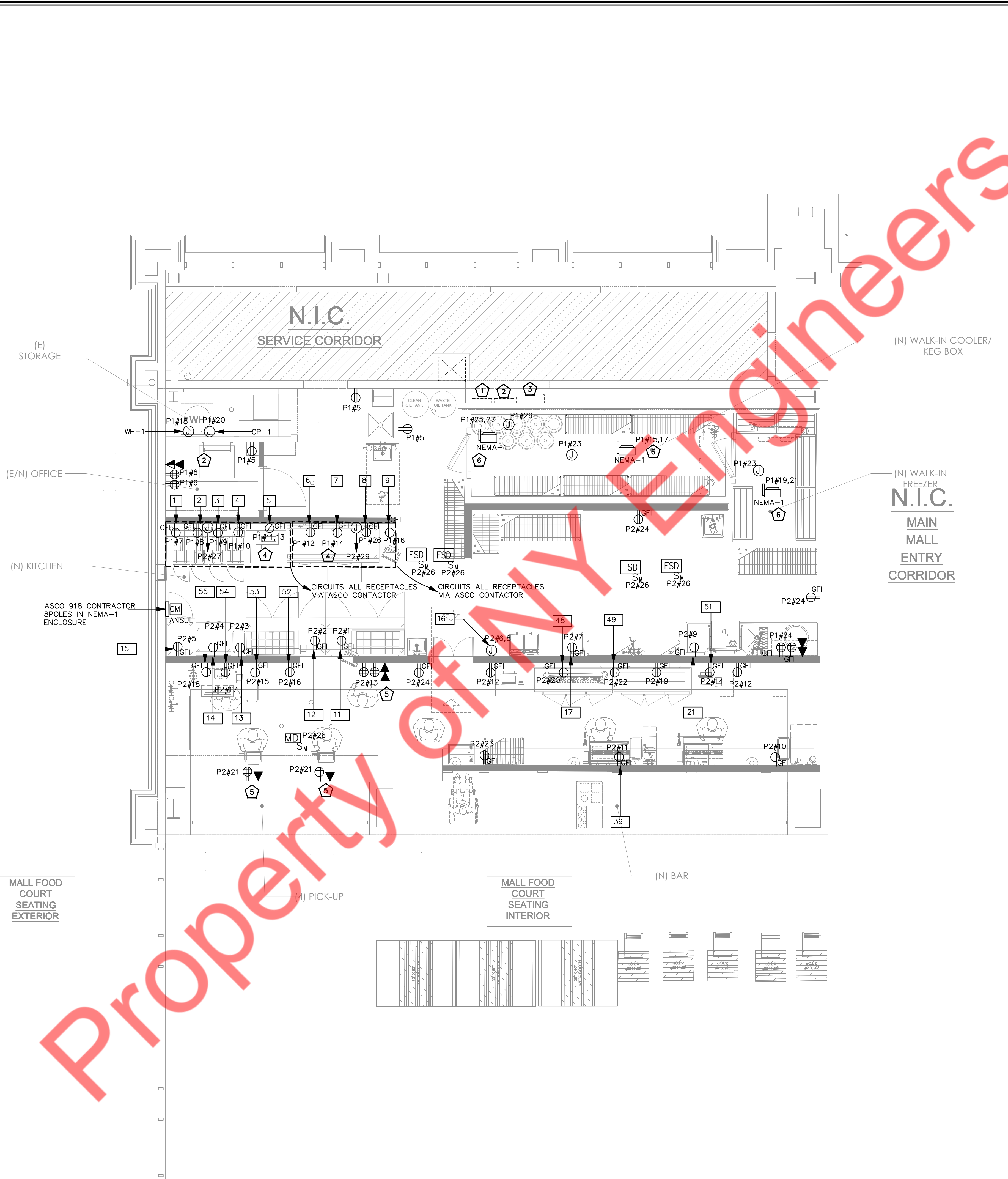
**KEYED WORK NOTES**

- 1 CONNECT ALL EXIT SIGN LIGHTING FIXTURES TO NEAREST LIGHTING BRANCH CIRCUIT AHEAD OF ALL SWITCHING AND CONTROLS PER STATE AND LOCAL CODES. EXIT SIGNS SHALL NOT EXCEED 5 WATTS PER FACE.
- 2 ALL COOLER FREEZER LIGHTING FIXTURES AND RELATED LOCAL CONTROLS SHALL BE PROVIDED BY EQUIPMENT SUPPLIER. E.C. SHALL MAKE ALL FINAL CONNECTION TO FIXTURES AS REQUIRED TO ENSURE A COMPLETE OPERATION. CONNECT FIXTURES TO NEAREST 120V LIGHTING CIRCUIT.
- 3 120 WATTS CURRENT LIMITER.
- 4 TIMECLOCK AND OVERRIDE SWITCH. ELECTRICAL CONTRACTOR TO VERIFY EXACT LOCATION WITH ARCHITECT/OWNER.
- 5 KITCHEN DISPLAY SYSTEM. ELECTRICAL CONTRACTOR VERIFY REQUIREMENTS AND COORDINATE INSTALLATION WITH OWNER.
- 6 JUNCTION BOX FOR EXTERIOR ILLUMINATED SIGNAGE WITH TIME CLOCK CONTROL. ELECTRICAL CONTRACTOR TO COORDINATE EXACT LOCATION WITH OWNER.

**GENERAL NOTE**

- 1. E.C. SHALL COORDINATE WITH ARCHITECT/OWNER FOR FINAL FIXTURE SELECTION AND THE CONTROL STRATEGY.
- 2. REFER TO SHEET E-0.1 FOR LEGENDS, ABBREVIATIONS, LIGHT FIXTURE SCHEDULE AND NOTES.
- 3. E.C. SHALL VERIFY THAT ALL THE MATERIAL/SUPPLIES, WIRING AND PRODUCTS SHALL MEET THE FIRE SUB CODES REQUIREMENTS AND NATIONAL ELECTRIC CODE REQUIREMENTS.

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**KEYED WORK NOTES**

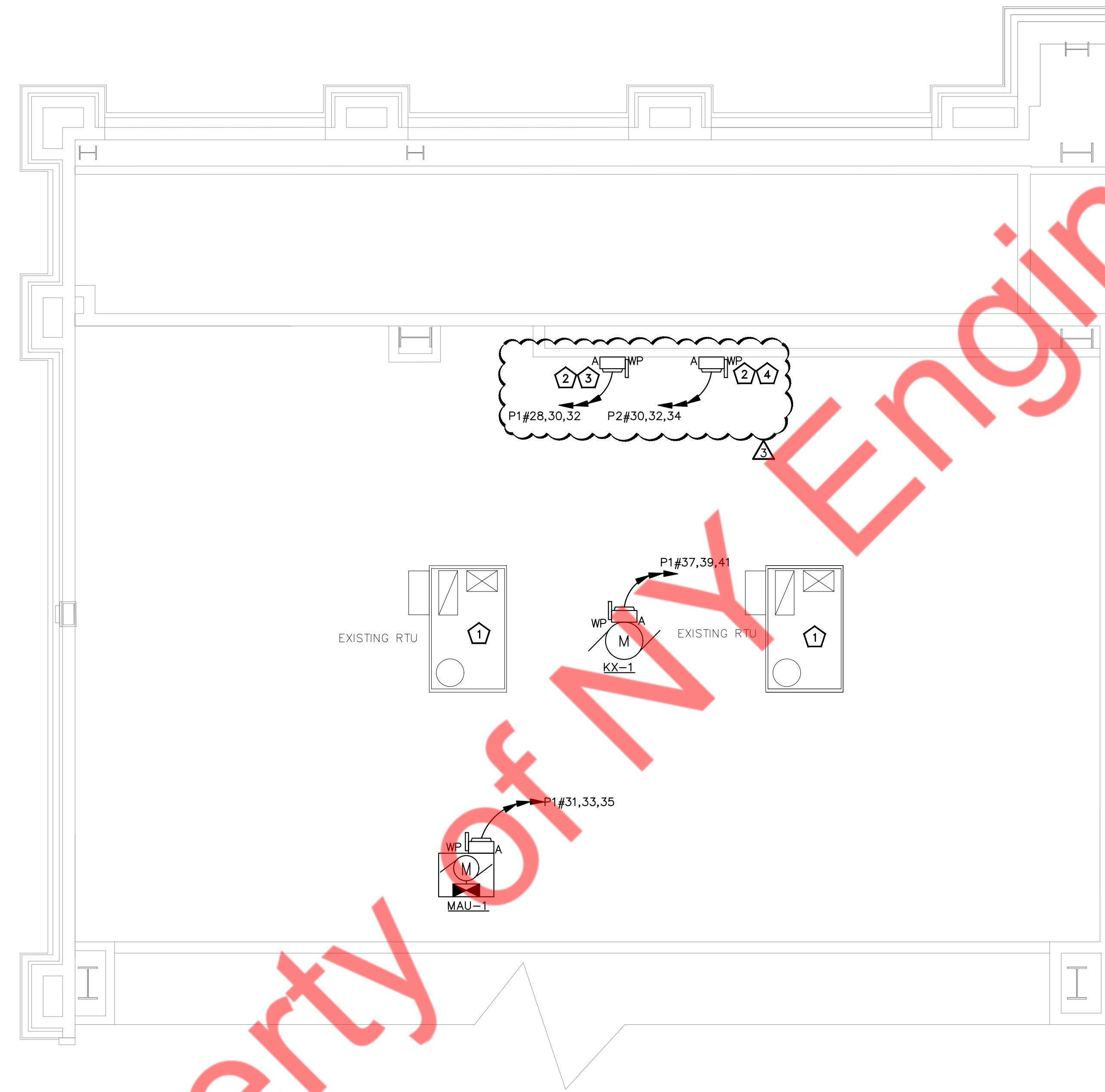
- 1 ELECTRICAL CONTRACTOR SHALL VERIFY ELECTRICAL RATING, LOCATION AND OPERABLE CONDITION OF EXISTING ASSUMPTION STEP DOWN 150KVA TRANSFORMER PROVIDE FOR PANEL P1 FROM MAIN DISCONNECT SWITCH- REFER THE ELECTRICAL RISER DIAGRAM. E.C SHALL INFORM TO ENGINEER/OWNER FOR ANY DISCREPANCY BEFORE COMMENCING ANY WORK.
- 2 ELECTRICAL CONTRACTOR SHALL VERIFY ELECTRICAL RATING, LOCATION AND THE OPERABLE CONDITION OF EXISTING PANEL "P1" & "P2" IN FIELD. E.C. SHALL INFORM TO ENGINEER/OWNER FOR ANY DISCREPANCY BEFORE COMMENCING ANY WORK.
- 3 ELECTRICAL CONTRACTOR SHALL VERIFY ELECTRICAL RATING, LOCATION AND THE OPERABLE CONDITION OF EXISTING DISCONNECT SWITCH IN FIELD. E.C. SHALL INFORM TO ENGINEER/OWNER FOR ANY DISCREPANCY BEFORE COMMENCING ANY WORK.
- 4 ALL THE LIGHT FIXTURES LOCATED BELOW HOOD SHALL BE WIRED VIA KITCHEN HOOD CONTROL PANEL. COORDINATE WITH KITCHEN HOOD MANUFACTURER FOR DETAILS.
- 5 POWER AND DATA FOR EACH MONITOR. ELECTRICAL CONTRACTOR TO VERIFY REQUIREMENT WITH OWNER/MANUFACTURER.
- 6 PROVIDE A 30A-2P UNFUSED DISCONNECT SWITCH MOUNTED ON/AT UNIT AS REQUIRED. COORDINATE FINAL LOCATION IN FIELD. WIRING SHALL BE 2#10,1#10(G), 3/4". TO THE 30A-2P CIRCUIT BREAKER INDICATED ON DRAWING.

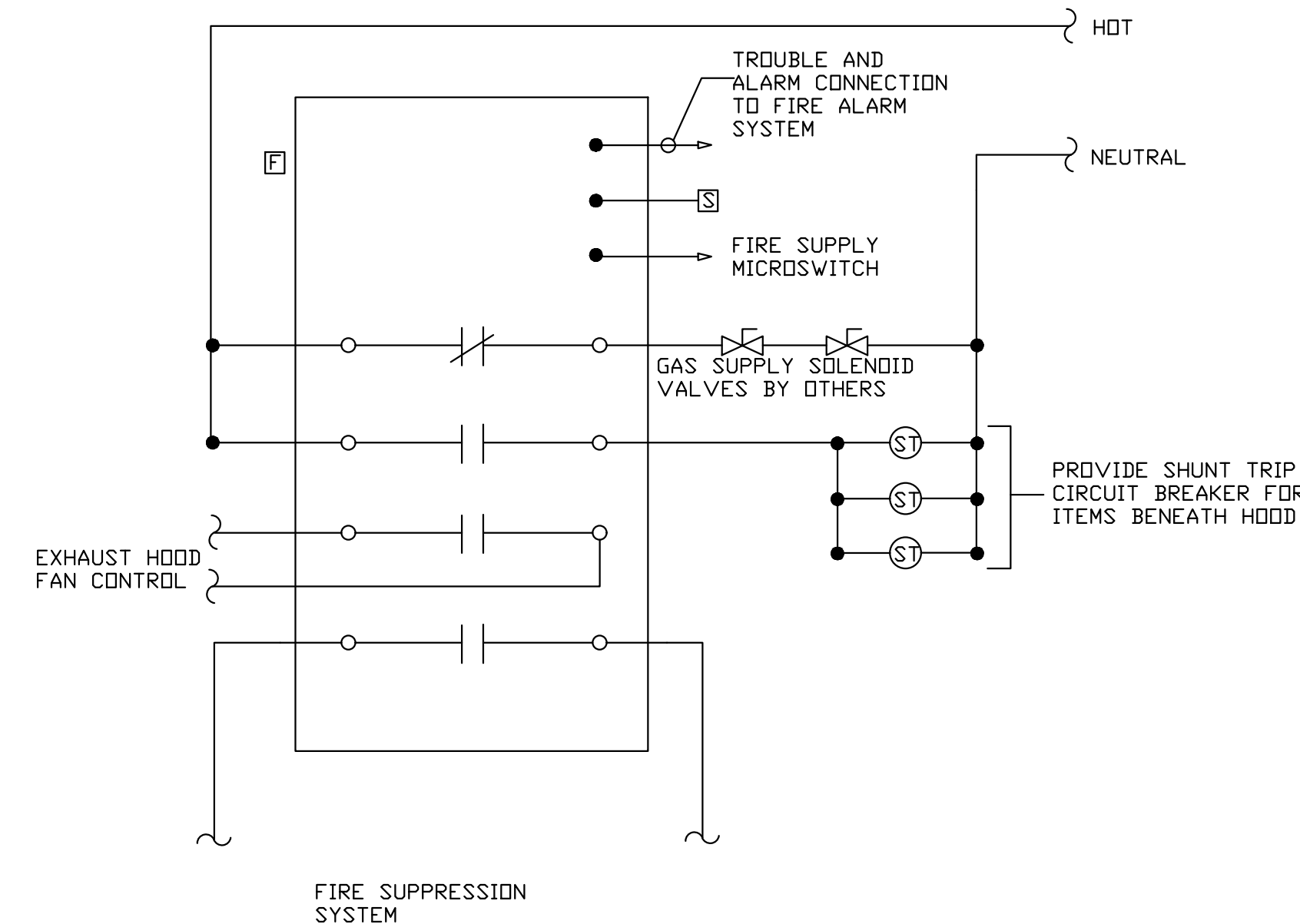
**GENERAL NOTES**

1. EXACT LOCATION OF MECHANICAL, PLUMBING, KITCHEN, FURNITURE SYSTEMS, OWNER FURNISHED EQUIPMENT ETC. THAT REQUIRE ELECTRICAL CONNECTIONS ARE SHOWN ON THE MECHANICAL, PLUMBING, AND/OR ARCHITECTURAL DRAWINGS. COORDINATE EXACT LOCATIONS WITH RESPECTIVE CONTRACTORS AND/OR VENDORS PRIOR TO ANY ROUGH-INS.
2. REVIEW AND COORDINATE WITH ALL TRADES CONTRACT DOCUMENTS TO DETERMINE SPECIFIC MOUNTING LOCATIONS FOR EQUIPMENT WITH ELECTRICAL CONNECTIONS. COORDINATE EXACT MOUNTING LOCATIONS WITH THE SPECIFIC TRADE AND ARCHITECT.
3. MINIMUM CONDUCTOR SIZE FOR 120V BRANCH CIRCUITS SHALL BE 12-AWG. FOR 120V BRANCH CIRCUITS WITH HOMERUN OVER 100 LINEAR FEET, A MINIMUM WIRE SIZE OF 10-AWG SHALL BE PROVIDED FROM FIRST JUNCTION/OUTLET BOX TO BRANCH CIRCUIT PANELBOARD. FOR 120V BRANCH CIRCUITS WITH HOMERUN OVER 150 LINEAR FEET, A MINIMUM OF 8-AWG SHALL BE PROVIDED FROM FIRST JUNCTION/OUTLET BOX TO BRANCH CIRCUIT PANELBOARD.
4. ALL WIRINGS SHALL BE IDENTIFIED BY PANELBOARD AND CIRCUIT NUMBERS IN ALL CABINETS, JUNCTION BOXES, WIRING TROUGH, ENCLOSURES, SPLICE OR TERMINATION POINTS, ETC.
5. A NEW TYPED PANELBOARD DIRECTORY CARD SHALL BE PROVIDED FOR ALL PANELS INSTALLED OR MODIFIED UNDER THIS CONTRACT. NEW DIRECTORY CARDS SHALL BE LOCATED ON THE INSIDE DOOR OF ASSOCIATED PANELS.
6. ALL RECEPTACLES IN THE KITCHEN/FOOD PREPARATION AREA SHALL BE OF GFCI TYPE.
7. ELECTRICAL CONTRACTOR SHALL VERIFY THAT WHEREVER CIRCUIT CONDUCTORS ARE SPLICED IN A BOX, ANY/ALL EQUIPMENT GROUNDING CONDUCTORS ASSOCIATED WITH THESE CIRCUITS MUST BE BONDED ("PIGTAILED") TO THE BOX.
8. ELECTRICAL CONTRACTOR SHALL VERIFY THAT ALL THE MATERIAL/SUPPLIES, WIRING AND PRODUCTS SHALL MEET THE FIRE SUBCODES REQUIREMENTS AND NATIONAL ELECTRIC CODE REQUIREMENTS.
9. REFER ARCHITECTURAL SHEET#A4.0 FOR KITCHEN EQUIPMENT SCHEDULE. NOTIFY ENGINEER IF ANY DISCREPANCY BETWEEN MANUFACTURER CUT SHEET AND ENGINEER'S PANEL SCHEDULE BEFORE BID.

KEYED WORK NOTES

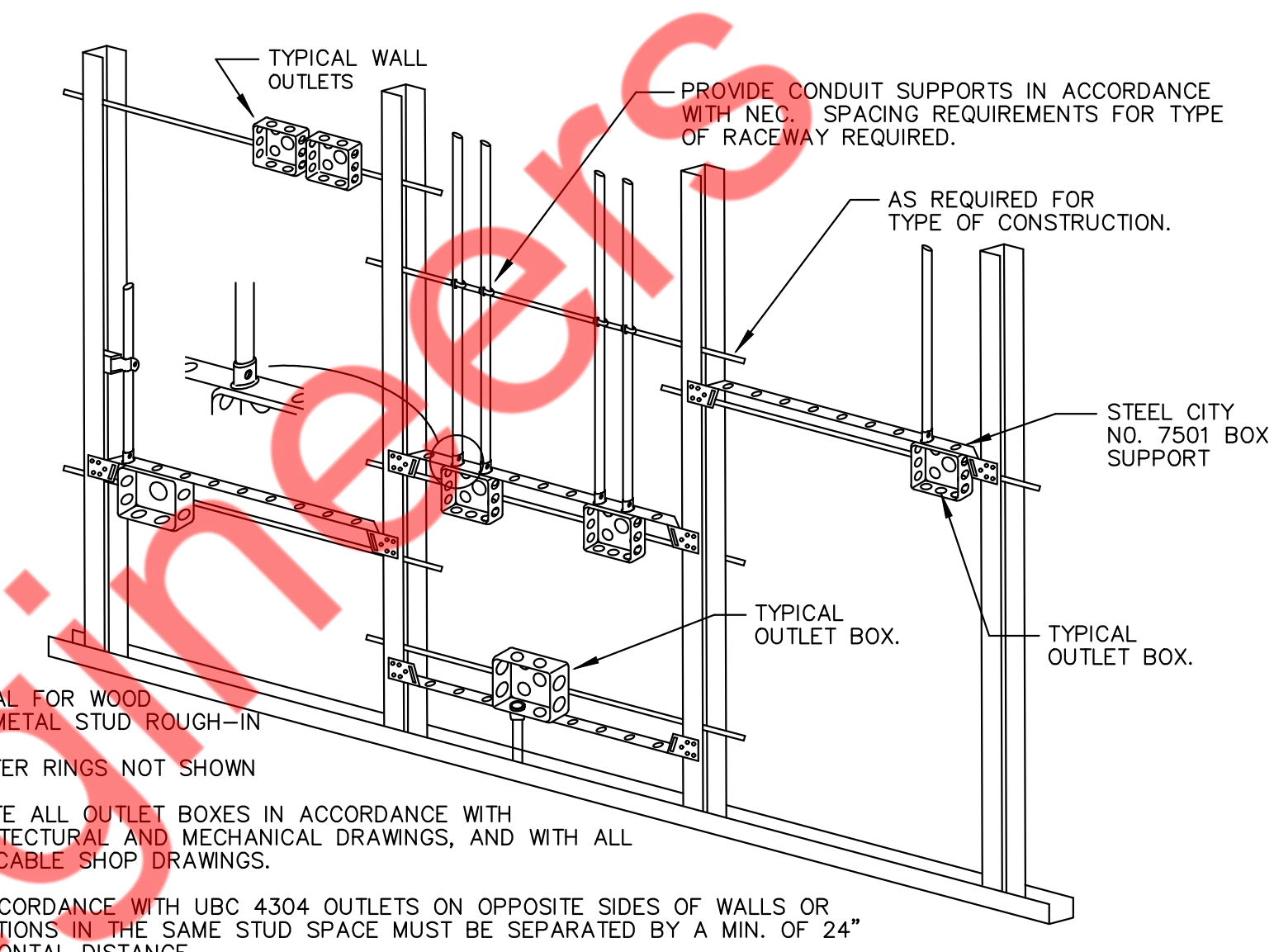
- 1 EXISTING RTU'S ARE FED FROM ANOTHER EXISTING PANEL AND G.C SHALL COMMUNICATE WITH ARCHITECT & NOTIFY ENGINEER FOR ANY DISCREPANCY.
- 2 E.C. TO COORDINATE WITH WALK-IN REFRIGERATOR/FREEZER MANUFACTURER FOR EXACT LOCATION OF ELECTRICAL CONNECTION AND POWER SUPPLY REQUIREMENT IN FIELD.
- 3 20A/3P CIRCUIT FOR WALK-IN REFRIGERATOR CONDENSER. E.C SHALL COORDINATE EXACT LOCATION AND ELECTRICAL REQUIREMENT WITH EQUIPMENT MANUFACTURER/SUPPLIER IN FIELD.
- 4 20A/3P CIRCUIT FOR WALK-IN FREEZER CONDENSER. E.C SHALL COORDINATE EXACT LOCATION AND ELECTRICAL REQUIREMENT WITH EQUIPMENT MANUFACTURER/SUPPLIER IN FIELD.





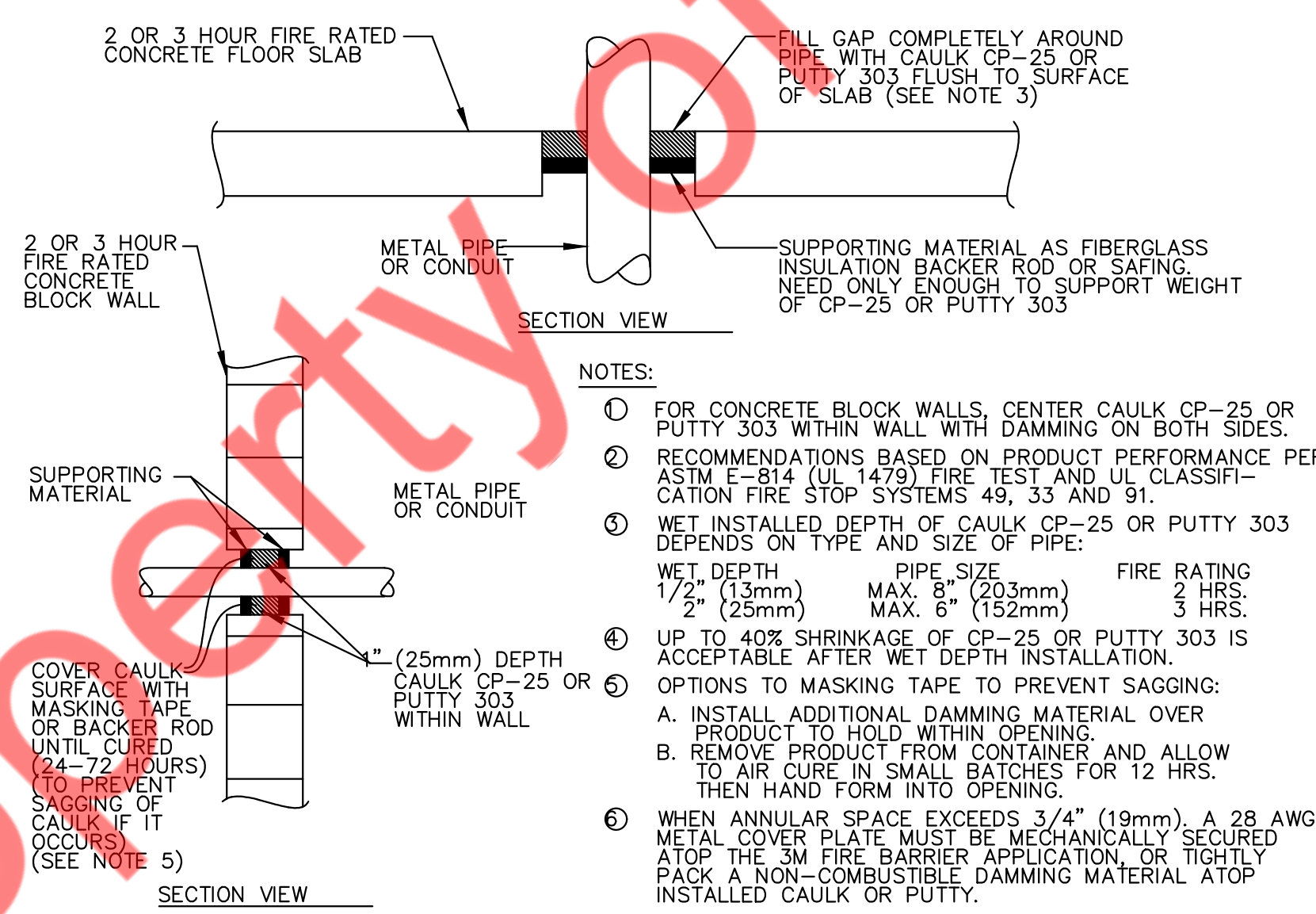
- NOTES:
1. REFER TO FOOD SERVICE DRAWINGS FOR ADDITION CONTROL PANEL REQUIREMENT BY ELECTRICAL CONTRACTOR.
  2. WHEN HOOD EXHAUST IS ACTIVATED, THE HOOD EXHAUST FAN SHALL RUN.

4 KITCHEN HOOD SHUT-OFF WIRING DIAGRAM  
E-3.0 N.T.S



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

2 DETAIL TYPICAL ROUGH-IN REQUIREMENTS  
E-3.0 N.T.S

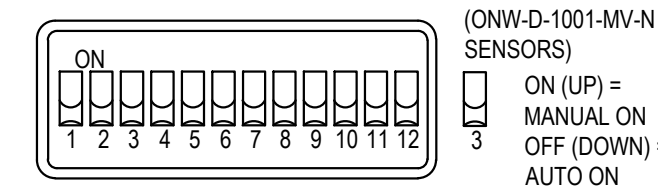
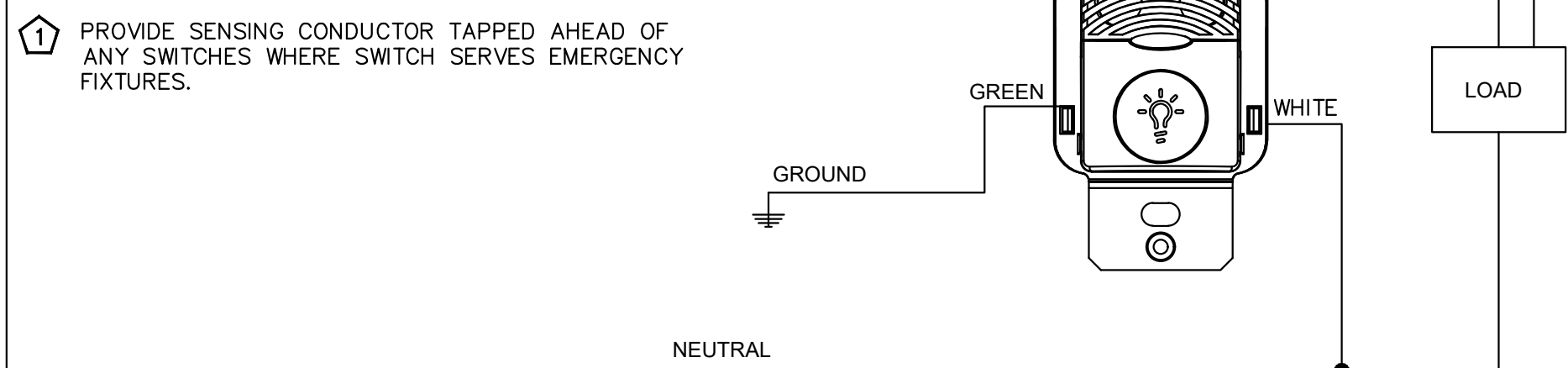


- NOTES:
1. FOR CONCRETE BLOCK WALLS, CENTER CAULK CP-25 OR PUTTY 303 WITHIN WALL WITH DAMMING ON BOTH SIDES.
  2. RECOMMENDATIONS BASED ON PRODUCT PERFORMANCE PER ASTM E-814 (UL 1479) FIRE TEST AND UL CLASSIFICATION FIRE STOP SYSTEMS 49, 33 AND 91.
  3. WET INSTALLED DEPTH OF CAULK CP-25 OR PUTTY 303 DEPENDS ON TYPE AND SIZE OF PIPE:
- | WET DEPTH     | PIPE SIZE       | FIRE RATING |
|---------------|-----------------|-------------|
| 1 1/2" (38mm) | MAX. 8" (203mm) | 2 HRS.      |
| 2" (51mm)     | MAX. 6" (152mm) | 3 HRS.      |
4. UP TO 40% SHRINKAGE OF CP-25 OR PUTTY 303 IS ACCEPTABLE AFTER WET DEPTH INSTALLATION.
  5. OPTIONS TO MASKING TAPE TO PREVENT SAGGING:
    - A. INSTALL ADDITIONAL DAMMING MATERIAL OVER PRODUCT TO HOLD WITHIN OPENING.
    - B. REMOVE PRODUCT FROM CONTAINER AND ALLOW TO AIR CURE IN SMALL BATCHES FOR 12 HRS. THEN HAND FORM INTO OPENING.
  6. WHEN ANNULAR SPACE EXCEEDS 3/4" (19mm), A 28 AWG METAL COVER PLATE MUST BE MECHANICALLY SECURED ATOP THE 3M FIRE BARRIER APPLICATION, OR TIGHTLY PACK A NON-COMBUSTIBLE DAMMING MATERIAL ATOP INSTALLED CAULK OR PUTTY.

3 FIRE STOP DETAIL  
E-3.0 N.T.S

- MANUAL MODE OPERATION:
1. PUSHBUTTON PRESS IS REQUIRED TO TURN LOAD ON.
  2. LOAD TURNS OFF WHEN SENSOR TIMES OUT OR BY PRESSING PUSH BUTTON.
  3. IF DAYLIGHT SENSOR IS ENABLED AND LIGHT LEVEL IS ABOVE SETPOINT, LOAD WILL NOT TURN ON.
- AUTOMATIC MODE OPERATION:
1. WHEN SENSOR ACTIVATES LOAD TURNS ON.
  2. PUSHBUTTON CAN BE USED TO TURN LOAD ON OR OFF. IF PUSHBUTTON IS USED TO TURN LOAD OFF, SENSOR MUST TIME OUT FIRST, BEFORE LOAD CAN TURN BACK ON AUTOMATICALLY.
  3. IF DAYLIGHT SENSOR IS ENABLED AND LIGHT LEVEL IS ABOVE SETPOINT, LOAD WILL NOT TURN ON.

SENSOR TYPES INCLUDE:  
ONW-D-1001-MV-N



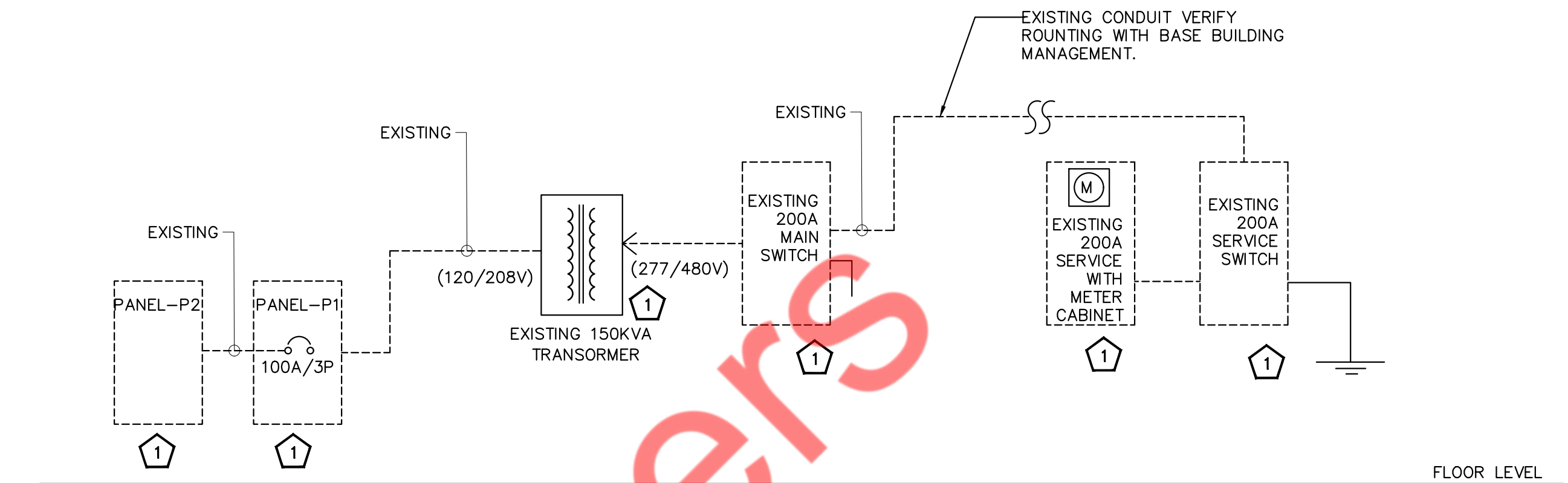
- (ONW-D-1001-MV-N SENSORS)
- ON (UP) =
  - MANUAL ON
  - OFF (DOWN) =
  - AUTO ON

1 CONNECTION OCCUPANCY/VACANCY-SINGLE LEVEL WIRING DIAGRAM-LINE VOLTAGE WALL SWITCH SENSOR(NEUTRAL)  
E-3.0 N.T.S

PANELBOARD

PANEL: P1(EX)		MOUNTING: SURFACE												
208Y/120	VOLTS,	3	PHASE,	4	WIRE									
MAIN CB		400A	MLO:	NA	BUS:	400A	INTERRUPTING RATING			EXISTING				
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	L	0.88	2#12, #12G, 3/4"C	1.75			2#12, #12G, 3/4"C	0.87	L	LIGHTING	20	2
3	20	LIGHTING	L	0.75	2#12, #12G, 3/4"C		1.63		2#12, #12G, 3/4"C	0.88	L	LIGHTING	20	4
5	20	FOH RECEPTACLE	R	0.54	2#12, #12G, 3/4"C			1.26	2#12, #12G, 3/4"C	0.72	R	QUAD RECEPTACLE	20	6
7	20	FRYER (#1)	E	0.92	2#12, #12G, 3/4"C	1.84			2#12, #12G, 3/4"C	0.92	E	FRYER(#2)	20	8
9	20	FRYER (#3)	E	0.92	2#12, #12G, 3/4"C		1.84		2#12, #12G, 3/4"C	0.92	E	FRYER(#4)	20	10
11	20/2P	TOASTER(#5)	E	1.60	2#12, #12G, 3/4"C			2.08	2#12, #12G, 3/4"C	0.48	E	CHEF BASE(#6)	20	12
13			E	1.60	2#12, #12G, 3/4"C	2.70			2#12, #12G, 3/4"C	1.10	E	GRIDDLE(#7)	20	14
15	30/2P	WALK-IN FREEZER	E	2.49	2#10, #12G, 3/4"C		3.03		2#12, #12G, 3/4"C	0.54	R	TRASH RECEPTACLE(#9)	20	16
17			E	2.49				2.99	2#12, #12G, 3/4"C	0.50	H	HWHT	20	18
19	30/2P	WALK-IN REFRIGERATOR	E	2.49	2#10, #12G, 3/4"C	2.99			2#12, #12G, 3/4"C	0.50	M	RCP	20	20
21			E	2.49			3.21		2#12, #12G, 3/4"C	0.72	R	RECEPTACLE	20	22
23	20	WALK-IN MISCELLANEOUS	E	0.50	2#12, #12G, 3/4"C			1.22	2#12, #12G, 3/4"C	0.72	R	QUAD RECEPTACLE	20	24
25	30/2P	KEG COOLER	E	2.49	2#10, #12G, 3/4"C	2.93			2#12, #12G, 3/4"C	0.44	E	GRIDDLE(#8)	20	26
27			E	2.49			4.29		2#12, #12G, 3/4"C	1.80	O	WALK-IN REFRIGERATOR (CONDENSER)	20/3P	28
29	20	WALK-IN MISCELLANEOUS	E	0.50	2#12, #12G, 3/4"C			2.30	3-12 + 1#12G, 3/4"C	1.80	O	WALK-IN REFRIGERATOR (CONDENSER)	20/3P	30
31			M	1.14		2.94				1.80	O		32	32
33	20/3P	MAU-1	M	1.14	3#12, #12G, 3/4"C		1.14					SPARE	20	34
35			M	1.14			1.14					SPARE	20	36
37			M	1.89		6.85				4.96	O		38	38
39	20/3P	KX-1	M	1.89	3#12, #12G, 3/4"C		6.49		EXISTING	4.60	O	PANEL-P2	100/3P	40
41			M	1.89			8.73			6.84	O		42	42
TOTAL CONNECTED LOAD (KVA)						22.00	21.63	19.72						
LOAD CLASSIFICATION			CONNECTED LOAD (KVA)			DEMAND FACTOR			DEMAND LOAD (KVA)			PANEL TOTAL LOAD		
TOTAL LIGHTING			L	3.38	100%	3.38								
TOTAL RECEPTACLE			R	3.24	100%	3.24			TOTAL CONNECTED LOAD			63.35	KVA	
TOTAL HVAC			H	0.50	100%	0.50			TOTAL DEMAND LOAD			54.66	KVA	
TOTAL MOTOR			M	9.59	100%	9.59			TOTAL CONNECTED CURRENT			176.05	AMP	
TOTAL KITCHEN/EQUIPMENTS			E	24.84	65%	16.15			TOTAL DEMAND CURRENT			151.89	AMP	
TOTAL OTHER/MISCELLANEOUS			O	21.80	100%	21.80			SYSTEM VOLTAGE			120/208 Wye		

PANEL: P2(EX)		MOUNTING: SURFACE												
208Y/120	VOLTS,	3	PHASE,	4	WIRE									
MAIN CB		MLO:	100A	BUS:	125A	INTERRUPTING RATING			EXISTING	FROM PANEL-P1				
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	FRIDGE(#11)	E	0.70	2#12, #12G, 3/4"C	1.40			2#12, #12G, 3/4"C	0.70	E	FRIDGE(#12)	20	2
3	20	TRASH RECEPTACLE(#13)	R	0.54	2#12, #12G, 3/4"C		0.82		2#12, #12G, 3/4"C	0.28	E	FRIDGE(#14)	20	4
5	20	FREEZER(#15)	E	0.31	2#12, #12G, 3/4"C			0.96	2#12, #12G, 3/4"C	0.65	E	ICE MAKER(#16)	20/2P	6
7	20	TRASH RECEPTACLE(#13)	R	0.54	2#12, #12G, 3/4"C	1.19			2#12, #12G, 3/4"C	0.65	E	BACK BAR REFRIGERATOR(#51)	20	8
9	20	CLEAN DISTABLE RECEPTACLE	R	0.54	2#12, #12G, 3/4"C		1.08		2#12, #12G, 3/4"C	0.54	R	TRASH RECEPTACLE(#29)	20	10
11	20	TRASH RECEPTACLE(#39)	R	0.54	2#12, #12G, 3/4"C			1.08	2#12, #12G, 3/4"C	0.54	R	GFI RECEPTACLE	20	12
13	20	QUAD RECEPTACLE	R	0.72	2#12, #12G, 3/4"C	0.96			2#12, #12G, 3/4"C	0.24	E	BACK BAR REFRIGERATOR(#51)	20	14
15	20	TRASH RECEPTACLE(#53)	R	0.54	2#12, #12G, 3/4"C		0.78		2#12, #12G, 3/4"C	0.24	E	BACK BAR REFRIGERATOR(#52)	20	16
17	20	DRINK MIXER(#54)	E	1.80	2#12, #12G, 3/4"C			3.60	2#12, #12G, 3/4"C	1.80	E	ICE CREAM FREEZER(#55)	20	18
19	20	LIQUOR DISPLAY(#50)	R	0.57	2#12, #12G, 3/4"C	0.81			2#12, #12G, 3/4"C	0.24	E	BACK BAR REFRIGERATOR(#48)	20	20
21	20	QUAD RECEPTACLE	R	0.72	2#12, #12G, 3/4"C		1.12		2#12, #12G, 3/4"C	0.40	E	BEER TOWER(#49)	20	22
23	20	GFI RECEPTACLE	R	0.36	2#12, #12G, 3/4"C			0.90	2#12, #12G, 3/4"C	0.54	R	GFI RECEPTACLE	20	24
25	20	EXTERIOR SIGNAGE	L	0.30	2#12, #12G, 3/4"C	0.60			2#12, #12G, 3/4"C	0.30	M	MOTORIZED & SMOKE DAMPER	20	26
27	20	HOOD LIGHTING	L	0.30	2#12, #12G, 3/4"C		0.80		2#12, #12G, 3/4"C	0.50	L	FL LIGHT	20	28
29	20	HOOD LIGHTING	L	0.30	2#12, #12G, 3/4"C			2.10	2#12, #12G, 3/4"C	1.80	O	WALK-IN FREEZER (CONDENSER)	20/3P	30
31	20	SPARE				1.80			3-12 + 1#12G, 3/4"C	1.80	O		32	32
33	20	SPARE					1.80			1.80	O		34	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)						6.76	6.40	8.64						
LOAD CLASSIFICATION			CONNECTED LOAD (KVA)			DEMAND FACTOR			DEMAND LOAD (KVA)			PANEL TOTAL LOAD		
TOTAL LIGHTING			L	1.40	125%	1.75								
TOTAL RECEPTACLE			R	6.69	100%	6.69			TOTAL CONNECTED LOAD			21.79	KVA	
TOTAL HVAC			H	0.00	100%	0.00			TOTAL DEMAND LOAD			19.34	KVA	
TOTAL MOTOR			M	0.30	100%	0.30			TOTAL CONNECTED CURRENT			60.55	AMP	
TOTAL KITCHEN/EQUIPMENTS			E	8.00	65%	5.20			TOTAL DEMAND CURRENT			53.75	AMP	
TOTAL OTHER/MISCELLANEOUS			O	5.40	100%	5.40			SYSTEM VOLTAGE			120/208 Wye		



- ELECTRICAL GENERAL NOTES:**
1. ELECTRICAL CONTRACTOR TO COORDINATE FAULT CURRENT (Isc) RATING WITH UTILITY COMPANY AND AHEAD PRIOR TO COMMENCING ANY WORK
- ELECTRICAL RISER KEYED WORK NOTES:**
1. E.C. SHALL VERIFY ELECTRICAL RATING, LOCATION AND THE OPERABLE CONDITION OF EXISTING EQUIPMENT IN FIELD. E.C. SHALL INFORM TO ENGINEER/OWNER FOR ANY DISCREPANCY BEFORE COMMENCING ANY WORK.
- RISER NOTES:**
1. ALL SHUTDOWN AND TIES ARE TO BE COORDINATE WITH BUILDING MANagements.
  2. ELECTRICAL CONTRACTOR TO FIELD VERIFY EXACT LOCATION OF THE EXISTING ELECTRICAL EQUIPMENT.
  3. CONTRACTOR TO FIELD VERIFY EXISTING TELECOM CONDUIT RISER AND RUN CONDUIT UP TO TELE/DATA POINT. BASE BID ACCORDINGLY.
  4. DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL ARRANGEMENT OF SYSTEMS AND WORK. ALL CONDUIT ROUTING, OFFSETS, DROPS, AND RISES OF RUNS ARE NOT SHOWN ON THE PLANS AND ARE SHOWN DIAGRAMMATICALLY IN THE RISERS. THE CONTRACTOR SHALL ACCOUNT FOR THE PRICE FOR ROUTING OF CONDUIT TO AVOID OBSTRUCTION. COORDINATION WITH EXISTING SERVICES, INCLUDING THOSE OF OTHER TRADES, IS REQUIRED BY THE CONTRACTOR. MAINTAIN HEADROOM AND SPACE CONDITIONS.
  5. ALL BRANCH CIRCUITS HOMERUNS ASSIGN INDICATED ON THIS PLAN SHALL BE CIRCUITED TO THE RESPECTIVE PANEL, CIRCUIT NUMBER INDICATED, U.O.N.
  6. ELECTRICAL CONTRACTOR TO FIELD VERIFY AND TEST EXISTING EQUIPMENT FOR CONTINUED USE.
- GENERAL NOTES:**
1. REFER TO SHEET A4.0 ON ARCHITECTURAL DRAWING FOR KITCHEN EQUIPMENT SCHEDULE. NOTIFY ENGINEER IF ANY DISCREPANCY BETWEEN MANUFACTURER CUTSHEET AND ENGINEER'S PANEL SCHEDULE BEFORE BID.



**PLUMBING SYMBOLS LIST**

Table with 2 columns: Symbol and Description. Symbols include lines for sanitary, gas, vent, cold water, filtered water, hot water, and hot water return piping. Symbols also include P-trap, pipe up, pipe drop, plugged outlet/cleanout, shut-off valve, solenoid valve, gas shut-off valve, balancing valve, points of disconnection and connection, and backflow preventor.

**PLUMBING ABBREVIATIONS**

Table with 2 columns: Abbreviation and Full Name. Abbreviations include CDDP (CLEAN OUT DECK PLATE), CW (COLD WATER), FCW (FILTERED COLD WATER), HW (HOT WATER), HWR (HOT WATER RETURN), SAN (SANITARY), V (VENT), W (WASTE), G (GAS), MS (MOP SINK), TYP. (TYPICAL), DN (DOWN), EXIST. (EXISTING), AFF (ABOVE FINISH FLOOR), FD (FLOOR DRAIN), HWHT (HOT WATER HEATER), and FS (FLOOR SINK).

**BUILDING DEPARTMENT PLUMBING NOTES:**

- 1. ALL PLUMBING SYSTEMS (SANITARY, WASTE, VENT & WATER DISTRIBUTION SYSTEMS) AND ASSOCIATED EQUIPMENT SHALL BE INSTALLED, OPERATED AND MAINTAINED IN ACCORDANCE WITH THE REQUIREMENTS OF NEW YORK STATE ENERGY CONSERVATION CODE 2020 (NYSECC 2020), INTERNATIONAL PLUMBING CODE 2018 (IPC 2018).
- 2. INSTALLATION OF UNDERGROUND SANITARY DRAINAGE AND VENT PIPING SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION IPC 2018 SECTION 702.2
- 3. PROTECTION OF PIPING AND PLUMBING SYSTEM COMPONENTS AS PER SECTION IPC 2018 SECTION 305.
- 4. RODENT PROOFING AS PER IPC 2018 SECTION 304.
- 5. MATERIALS USED IN PLUMBING SYSTEMS SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF IPC 2018 SECTION 303, 605, 702, 902, 1102.
- 6. EQUIPMENT CONNECTIONS AND JOINING OF PIPING SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF CHAPTERS 4, 5, 6, 7 AND 9.
- 7. TRAPS FOR FIXTURES SHALL BE PROVIDED AS PER IPC 2018 SECTION 1002, AND CLEAN-OUTS SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF IPC 2018 SECTION 708
- 8. DRAINAGE PIPE CLEANOUTS AS PER IPC 2018 SECTION 708.
- 9. VERTICAL AND HORIZONTAL PIPING SHALL BE SUPPORTED IN ACCORDANCE WITH THE REQUIREMENTS OF IPC 2018 SECTION 308
- 10. WATER SUPPLY SYSTEMS SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE REQUIREMENTS OF IPC 2018 CHAPTER 6 SECTION PC 601, 602, 603, 604, 606, 607, 608, 610.
- 11. THE SANITARY DRAINAGE SYSTEM SHALL BE SIZED AND INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF IPC 2018 CHAPTER 7 SECTIONS 701 THROUGH PC 712.
- 12. VENT PIPING FOR THE SANITARY DRAINAGE SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF IPC 2018 CHAPTER 9.
- 13. INSPECTION AND TESTING OF PLUMBING SYSTEMS SHALL BE IN ACCORDANCE WITH IPC 2018 SECTION 312.
- 14. GAS PIPING INSTALLATION SHALL IN IN ACCORDANCE WITH 2020 FGCNYS CHAPTER 4.
- 15. PIPING FROM MULTIPLE GAS METER INSTALLATION SHALL BE MARKED WITH AN APPROVED LABEL AS PER SECTION 401.7 OF 2020 FGCNYS.
- 16. ALL BACKFLOW PREVENTER DEVICES SHALL BE ACCEPTANCE TESTED BY A NYS DEPARTMENT OF HEALTH APPROVED TESTING AGENT, THE RESULTS RECORDED ON THE DOH FORM SIGNED BY THE TESTING AGENT AND DESIGN ENGINEER.
- 17. MECHANICAL SYSTEMS SHALL BE COMMISSIONED PER 2020 IECC C408.2.4 & C408.2.4.2 AND A PRELIMINARY COMMISSIONING REPORT CERTIFIED BY THE DESIGNER OF RECORD SHALL BE PROVIDED TO THE OWNER AND AHI.

**PLUMBING SPECIFICATIONS:**

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

**PLUMBING DRAWING LIST**

- P0.1 PLUMBING SYMBOLS, ABBREVIATIONS, NOTES, DRAWING LIST AND SPECIFICATIONS (1 OF 2)
- P0.2 PLUMBING SPECIFICATIONS (2 OF 2)
- P1.0 PLUMBING SANITARY PLAN
  - P1.1 PLUMBING WATER PLAN
  - P1.2 PLUMBING ROOF PLAN
- P2.0 PLUMBING DETAILS
- P3.0 PLUMBING SCHEDULES
  - P3.1 PLUMBING RISER DIAGRAMS

1.02 SUBMITTALS

- A. SUBMITTAL REQUIREMENTS SHALL BE COORDINATED WITH THE ARCHITECT AND AUTHORITIES HAVING JURISDICTION. UNLESS OTHERWISE DIRECTED, CONTRACTOR SHALL PROVIDE SUBMITTALS AS LISTED BELOW.
  - 1. PIPE AND FITTINGS
  - 2. VALVES
  - 3. HANGERS AND SUPPORTS
  - 4. PLUMBING PIPING LAYOUT
  - 5. TESTS
  - 6. PLUMBING FIXTURES
  - 7. WATER HEATERS & ACCESSORIES
  - 8. FLOOR DRAINS
  - 9. MIXING VALVES
  - 10. BACKFLOW PREVENTER
  - 11. ALL SCHEDULED PLUMBING EQUIPMENT
- B. SUBMITTALS FROM SUPPLIERS OR MANUFACTURERS WHICH DO NOT BEAR THE STAMP OF THE SUBMITTING CONTRACTOR INDICATING THAT THE CONTRACTOR HAS REVIEWED THE SUBMITTAL FOR CONFORMANCE WITH THE PROJECT REQUIREMENTS WILL BE RETURNED REJECTED.
- C. THE ENGINEER'S REVIEW OF SUBMITTALS IS A COURTESY WHICH DOES NOT RELIEVE THE CONTRACTOR FROM CONFORMING WITH THE CONSTRUCTION DOCUMENTS, REGARDLESS OF THE ACTION INDICATED BY THE SHOP DRAWINGS STAMP.
- D. REVIEW OF SHOP DRAWINGS BY THE ENGINEER SHALL BE LIMITED TO THE INITIAL REVIEW, AND 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, SERVING REQUIREMENTS, INSPECTION DATA, REPLACEMENT PART NUMBERS AND AVAILABILITY AND CONTACT INFORMATION FOR SERVICE/SUPPLY COMPANY.
- G. FOR ALL BELOW GRADE PIPING WHERE ACTUAL INSTALLATION DEVIATES FROM CONSTRUCTION DRAWINGS, THE CONTRACTOR SHALL PROVIDE AS-BUILT DRAWINGS INDICATING BELOW GRADE PIPE LOCATIONS DIMENSIONED TO NEAREST COLUMN LINES.
- H. RECORD AS-BUILT DRAWINGS SHALL BE SUPPLIED TO THE OWNER/TENANT AFTER COMPLETION OF THE WORK SHOWING ANY ALTERATIONS, ADDITIONS AND/OR DELETIONS TO THE SYSTEM(S) INSTALLED.

1.03 SUBSTITUTIONS

- A. ALL EQUIPMENT SHALL BE PRODUCTS OF THE SPECIFIED MANUFACTURER OR MANUFACTURERS. ALL BIDS SHALL BE BASED ON THE SPECIFIED MANUFACTURER OR MANUFACTURER'S EQUIPMENT. FOR SUBSTITUTIONS OF OTHER MANUFACTURER'S EQUIPMENT TO BE CONSIDERED, THE SUBSTITUTION MUST BE INDICATED PRIOR TO BIDDING WITH THE REASON FOR THE PROPOSED SUBSTITUTION IDENTIFIED, AND THE PROPOSED CREDIT TO THE OWNER INDICATED. THE ENGINEER SHALL DETERMINE THE ACCEPTABILITY OF ANY PROPOSED SUBSTITUTIONS.
- B. THE CONTRACTOR ASSUMES ALL RESPONSIBILITY FOR COORDINATING THE WORK OF OTHER TRADES WHICH MAY BE AFFECTED BY SUBSTITUTIONS, INCLUDING ALL RELATED COSTS.

1.04 DEFINITIONS

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

1.05 DRAWINGS

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

1.06 PRODUCTS

- A. SANITARY, VENT & STORM PIPING:
  - 1. ABOVE GRADE PIPING SHALL BE HUBLESS CAST IRON PIPE WITH STAINLESS STEEL COUPLINGS AND ELASTOMERIC GASKETS WITH A MINIMUM 4 BANDS PER COUPLING.
  - 2. BELOW GRADE PIPING SHALL BE CAST-IRON PIPE WHICH COMPLIES WITH ASTM A 74; ASTM A 888; CISPI 301
  - 3. SLOPE OF DRAINAGE SYSTEM SHALL BE 1/8" PER FOOT OF RUN FOR PIPE OVER 3" (I.D.) AND 1/4" PER FOOT OF RUN FOR PIPE 3" AND SMALLER (I.D.). FOR PIPE SIZE GREATER THAN 8" (I.D.), SLOPE SHOULD BE 1/16". REFER TO FLOOR PLANS FOR SLOPE CHANGES, IF REQUIRED. VENT PIPING SHALL BE PITCHED TO DRAIN.

- 4. PVC OR OTHER COMBUSTIBLE PLASTIC PIPING SHALL NOT BE USED.
- 5. ALL CAST IRON SOIL PIPE AND FITTINGS SHALL BE MARKED WITH THE COLLECTIVE TRADEMARK OF THE CAST IRON SOIL PIPE INSTITUTE (CISPI) AND BE LISTED BY NSF INTERNATIONAL
- B. DOMESTIC WATER PIPING:
  - 1. ABOVE GRADE WATER PIPING SHALL BE TYPE "L" HARD-DRAWN AND COMPLY WITH ASTM F2855
  - 2. ALL PIPE FITTINGS AND JOINTS SHOULD BE PROVIDED AS COMPATIBLE FOR PIPE MATERIALS AND SHOULD FULFILL REQUIREMENTS OF NYS PLUMBING CODE 2020.
  - 4. PER IPC 2018 SECTION 605.4, HOT WATER DISTRIBUTION PIPE & TUBING SHALL HAVE PRESSURE RATING NOT LESS THAN 100PSI AT 180°F
  - 3. THE ENTIRE DOMESTIC WATER DISTRIBUTION SYSTEM SHALL BE INSULATED INCLUDING ALL VALVES, FITTINGS, ETC.
  - 4. COMPLY WITH NSF 61 FOR MATERIALS FOR WATER-SERVICE PIPING AND SPECIALTIES FOR DOMESTIC WATER.
  - 5. ALL DOMESTIC WATER PIPING ABOVE GRADE SHALL BE INSULATED WITH FIRE-RETARDANT, FACTORY-APPLIED JACKET. PROVIDE COLD WATER PIPING WITH FACTORY-APPLIED VAPOR BARRIER. INSULATION REQUIREMENT SHOULD COMPLY WITH NYS ENERGY CONSERVATION CODE 2020 (NYS EEC 2020) AS ADOPTED WITH AMENDMENTS IN INTERNATIONAL ENERGY CONSERVATION CODE 2018 SECTION C403.11.3 REFER BELOW TABLE.

MINIMUM PIPE INSULATION THICKNESS

FLUID OPERATING TEMPERATURE RANGE AND USAGE (°F)	INSULATION CONDUCTIVITY (BTU IN./ (H FF-°F))	MEAN RATING TEMPERATURE, °F	NOMINAL PIPE OR TUBE SIZE (INCHES)			
			< 1 1/2	1 1/2 to 4	4 to 8	> 8
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

- 6. WATER DISTRIBUTION SYSTEM AS PER NYS ENERGY CONSERVATION CODE 2020 C404.7. A WATER DISTRIBUTION SYSTEM HAVING ONE OR MORE RECIRCULATION PUMPS THAT PUMP WATER FROM A HEATED-WATER SUPPLY PIPE BACK TO THE HEATED-WATER SOURCE THROUGH A COLD-WATER SUPPLY PIPE SHALL BE A DEMAND RECIRCULATION WATER SYSTEM. PUMPS SHALL HAVE CONTROLS THAT COMPLY WITH BOTH OF THE FOLLOWING:
  - a. THE CONTROL SHALL START THE PUMP UPON RECEIVING A SIGNAL FROM THE ACTION OF A USER OF A FIXTURE OR APPLIANCE, SENSING THE PRESENCE OF A USER OF A FIXTURE OR SENSING THE FLOW OF HOT OR TEMPERED WATER TO A FIXTURE FITTING OR APPLIANCE.
  - b. THE CONTROL SHALL LIMIT THE TEMPERATURE OF THE WATER ENTERING THE COLD-WATER PIPING TO 104°F (40°C).
- 9. AS PER NYS ENERGY CONSERVATION CODE 2020 C404.6.1 HEATED-WATER CIRCULATION SYSTEMS SHALL BE PROVIDED WITH A CIRCULATION PUMP. THE SYSTEM RETURN PIPE SHALL BE A DEDICATED RETURN PIPE OR A COLD WATER SUPPLY PIPE. CONTROLS FOR CIRCULATING HOT WATER SYSTEM PUMPS SHALL START THE PUMP BASED ON THE IDENTIFICATION OF A DEMAND FOR HOT WATER WITHIN THE OCCUPANCY. THE CONTROLS SHALL AUTOMATICALLY TURN OFF THE PUMP WHEN THE WATER IN THE CIRCULATION LOOP IS AT THE DESIRED TEMPERATURE AND WHEN THERE IS NO DEMAND FOR HOT WATER.
- 10. ALL DOMESTIC WATER PIPING ABOVE GRADE SHALL BE INSULATED WITH FIRE-RETARDANT, FACTORY-APPLIED JACKET. PROVIDE COLD WATER PIPING WITH FACTORY-APPLIED VAPOR BARRIER. INSULATION REQUIREMENT SHOULD COMPLY WITH ASHRAE 90.1 2016 TABLE 6.8.3-1 & TABLE 6.8.3-2. REFER BELOW TABLE.

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

- 11. AS PER ASHRAE 90.1 2016 SECTION 7.4.4.1. TEMPERATURE CONTROLS SHALL BE PROVIDED THAT ALLOW FOR STORAGE TEMPERATURE ADJUSTMENT FROM 120°F OR LOWER TO A MAXIMUM TEMPERATURE COMPATIBLE WITH THE INTENDED USE.
- 12. SEAL ALL JOINTS BETWEEN SEGMENTS OF INSULATION.
- 13. AS PER NYSECC 2020 C404.3 STORAGE TANK TYPE WATER HEATERS AND HOT WATER STORAGE TANKS THAT HAVE VERTICAL WATER PIPES CONNECTING TO THE INLET AND OUTLET OF THE TANK SHALL BE PROVIDED WITH INTEGRAL HEAT TRAPS AT THOSE INLETS AND OUTLETS OR SHALL HAVE PIPE CONFIGURED HEAT TRAPS IN THE PIPING CONNECTED TO THOSE INLETS AND OUTLETS.
- 14. AS PER ASHRAE 90.1 2016 SECTION 7.4.4.4. WHEN USED TO MAINTAIN STORAGE TANK WATER TEMPERATURE, RECIRCULATING PUMPS SHALL BE EQUIPPED WITH CONTROLS LIMITING OPERATION TO A PERIOD FROM THE START OF THE HEATING CYCLE TO A MAXIMUM OF FIVE MINUTES AFTER THE END OF THE HEATING CYCLE.
- 15. AS PER ASHRAE 90.1 2016 SECTION 7.4.4.2. SYSTEMS DESIGNED TO MAINTAIN USAGE TEMPERATURES IN HOT-WATER PIPES, SUCH AS RECIRCULATING HOT-WATER SYSTEMS OR HEAT TRACE, SHALL BE EQUIPPED WITH AUTOMATIC TIME SWITCHES OR OTHER CONTROLS THAT CAN BE SET TO SWITCH OFF THE USAGE TEMPERATURE MAINTENANCE SYSTEM DURING EXTENDED PERIODS WHEN HOT WATER IS NOT REQUIRED.
- 16. PROVIDE SHIELDS BETWEEN HANGERS AND INSULATION.
- 17. AS PER ASHRAE 90.1 2016 SECTION 7.4.4.3 OUTLET TEMPERATURE CONTROLLING MEANS SHALL BE PROVIDED TO LIMIT THE MAXIMUM TEMP. OF WATER DELIVERED FROM LAVATORY FAUCETS IN PUBLIC FACILITY RESTROOMS TO 110° F.

C. MIXING VALVES

13. MASTER WATER MIXING VALVES SHALL BE OF THE THERMOSTATIC TYPE WITH LIQUID-FILLED THERMAL MOTOR. THEY SHALL HAVE BRONZE BODY CONSTRUCTION WITH REPLACEABLE CORROSION-RESISTANT COMPONENTS.
14. VALVE CONSTRUCTION SHALL EMPLOY A SLIDING PISTON CONTROL MECHANISM. SLIDING PISTON AND LINER SHALL BE OF STAINLESS STEEL MATERIAL. VALVES SHALL COME EQUIPPED WITH UNION END STOP AND CHECK INLETS WITH REMOVABLE STAINLESS STEEL STRAINERS.
15. VALVES SHALL PROVIDE PROTECTION AGAINST HOT OR COLD SUPPLY LINE FAILURE AND THERMOSTAT FAILURE.

D. VALVES:

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

E. SLEEVES AND ESCUTCHEONS:

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

F. 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 & CLEANOUT PLUG
    - THREADED PIPE FITTING OR CAST IRON FERRULE WITH GAS TIGHT CLEANOUT PLUG
    - PLUG SHOULD BE CAST BRASS OR BRONZE, WITH THREADED END, AND RAISED OR COUNTERSUNK HEAD.
    - LUBRICATE THREADS OF CLEANOUT PLUG WITH ANTI-SEIZE LUBRICANT BEFORE FINAL INSTALLATION.
  - b. 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.
  - c. CLEANOUT DECK PLATE
    - IT SHOULD BE STANDARD DUTY FLOOR CLEANOUT FITTING WITH COATED CAST IRON BODY; ROUND, POLISHED NICKEL BRONZE SCORiated TOP SECURED TO CLEANOUT PLUG WITH STAINLESS STEEL VANDAL RESISTANT FASTENER, THREADED HEIGHT ADJUSTMENT, CAST IRON HEAD, GAS TIGHT CLEANOUT PLUG, AND CONNECTION TO MATCH PIPING OPTION SELECTED.
3. INDIRECT WASTE FUNNEL
  - a. IT SHOULD BE COMBINATION OF FUNNEL DRAIN AND P TRAP WITH POLISHED CHROME PLATED CAST BRASS CONSTRUCTION WITH 4" TOP DIA., 4" DEEP WITH THREADED OUTLET.
- G. 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.
- H. 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.
- I. IN ALL AREAS WITH FINISHED SURFACES, SYSTEM PIPING AND COMPONENTS SHALL BE CONCEALED ABOVE OR WITHIN FINISHED SURFACES.
- J. INSTALL VALVES WITH STEMS UPRIGHT OR HORIZONTAL. REMOVE PROTECTIVE COATINGS PRIOR TO INSTALLATION.
- K. REDUCTIONS IN PIPE SIZES SHALL BE MADE WITH ONE-PIECE REDUCING FITTINGS. BUSHINGS ARE NOT ACCEPTABLE. USE FLANGED FITTINGS AT THE BASE OF RISERS.
- L. VENT PENETRATIONS THROUGH THE ROOF SHALL BE FLASHED.
- M. IF WATER PRESSURE EXCEEDS 80 PSI, A WATER PRESSURE REDUCING VALVE SHALL BE INSTALLED IN WATER PIPING AT CONNECTION TO MAIN.
- N. PROVIDE DIELECTRIC FITTINGS BETWEEN DISSIMILAR METALS.

O. PROVIDE ACCESS PANELS AT TOP AND LOWER FLOORS FOR SNAKING SANITARY RISERS.

P. PIPE BACKFLOW PREVENTER DRAINS TO FLOOR DRAIN OR OTHER APPROVED INDIRECT WASTE SOURCE OR AS PER LOCAL LAWS.

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

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

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

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

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

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

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

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

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

Z. 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.

2. INSTALLATION

2.01 GENERAL

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

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

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

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

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

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

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

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

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

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

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

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

M. ALL PENETRATION FOR FIRE RATED PARTITIONS/ASSEMBLIES (FLOOR/CEILING) TO BE PROVIDED WITH UL LISTED/APPROVED FIRE STOPPING MATERIAL.

2.02 INSULATION:

COVER ALL COLD WATER, HOT WATER AND HOT WATER RECIRCULATION PIPE WITH 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 MANUFACTURER'S RECOMMENDATIONS. ALL PIPE INSULATION SHALL COMPLY WITH 2020 NYS ENERGY CONSERVATION CODE.

2.03 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 GRADENT SLOPE PIPING AND ARRANGE SYSTEMS TO DRAIN. IN DOMESTIC WATER SYSTEMS, PROVIDE DRAIN VALVES AT MAIN SHUT-OFF VALVES AND ALL LOW POINTS IN PIPING.

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

3. TESTING

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

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

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

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

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

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

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

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

J. ALL EQUIPMENT WILL BE FACTORY TESTED.

K. 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.

L. 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 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.

GAS FIRED HOT WATER HEATER HWHT-1 SEQUENCE OF OPERATION

THE FOLLOWING IS A BRIEF EXPLANATION OF THE SEQUENCE FOR THIS MODE OF OPERATION. FOR A DETAILED EXPLANATION OF CONTROLLER SET-UP PLEASE REFER TO THE OPERATION MANUAL PROVIDED WITH EACH HEATER.

1. POWER AT EACH WATER HEATER IS ON AND THEY HAVE BEEN INSTALLED AND CONFIGURED FOR A MULTIPLE WATER HEATER APPLICATION PER THE INSTALLATION AND OPERATION INSTRUCTIONS.
2. DOMESTIC HOT WATER, (DHW) DEMAND IS DETECTED BY THE MASTER CONTROLLER (FIELD SELECTABLE BUT ONLY ONE HEATER IN THE SERIES CAN BE SET AS MASTER) VIA A STORAGE TANK MOUNTED TEMPERATURE INSTRUMENT.
3. THE MASTER CONTROLLER SELECTS THE HEATER TO RUN BASED ON PRE-PROGRAMMED AND FIELD SELECTABLE PARAMETERS SUCH AS RUN TIME, LAST RUN ETC. WHEN DHW DEMAND IS DETECTED THE HOT WATER HEATER CONTROL SYSTEM SHALL:
  - a. START THE CIRCULATOR PUMP FOR THE SELECTED HEATER. FLOW THROUGH THE WATER HEATER SHALL BE CONFIRMED VIA FLOW SWITCH.
  - b. A WATER HEATER SYSTEM SAFE START CHECK SHALL BE PERFORMED AND THE BLOWER FAN STARTED.
  - c. THE WATER HEATER SHALL PERFORM A PRE-PURGE SEQUENCE.
  - d. THE IGNITION AND GAS VALVE ARE COMMANDED ON AND A SEQUENCED COMBUSTION SHALL BEGIN.
  - e. CONTROLLERS SHALL PROVIDE VERIFICATION OF FLAME (THE CONTROL SYSTEM HAS A BUILT IN IGNITION RETRY, ALLOWING THE SYSTEM TO TRY THREE TIMES BEFORE LOCKING OUT.)
  - f. ONCE SYSTEM IS IN RUN (A SLOW START CAN BE PRESENT PRIOR TO RUN DEPENDING ON THE SETTINGS FOR THE DHW LOW START ENABLE PARAMETER), THE FIRING RATE WILL MODULATE BASED ON HEAT LOAD REQUIREMENT.
4. THE CONTROL SYSTEM SHALL MONITOR FOR CONTINUED DHW REQUEST, AND IF ADDITIONAL HEATERS ARE REQUIRED ON LINE. IF THE NEED EXISTS, AN ADDITIONAL WATER HEATER IS BROUGHT ON PER STEP 3 ABOVE, REPEATING THE PROCESS UNTIL THE CURRENT HEAT LOAD REQUIREMENTS ARE MET. (CONTROLLERS CAN BE CONFIGURED SUCH THAT AN INTER-STAGE DELAY OF CASCADED WATER HEATERS CAN BE SET TO A MINIMUM OF 5 SECONDS.)
5. IF THE DHW LOAD CAN BE SATISFIED WITH FEWER THAN THE NUMBER OF HEATERS ONLINE THEN ONE HEATER WILL BE CYCLED OFF PER STEP 7 BELOW UNTIL REQUIRED DHW DEMAND REQUIREMENTS ARE SATISFIED.
6. IF THE DHW DEMAND FROM THE STORAGE TANK TEMPERATURE IS SATISFIED, THEN ALL WATER HEATERS SHALL CYCLE OFF PER STEP 7.
7. UPON THE COMPLETION OF AN INDIVIDUAL WATER HEATERS REQUEST FOR HEAT:
  - a. THE BURNER IS SWITCHED OFF.
  - b. THE BLOWER REMAINS ON UNTIL COMPLETING A POST PURGE SEQUENCE.
  - c. ANY NEW HEAT REQUEST FOR THE INDIVIDUAL WATER HEATER IS BLOCKED FOR THE TIME SET BY THE ANTI-SHORT CYCLE TIME.
  - d. THE CIRCULATOR REMAINS ON DURING THE PUMP OVERRUN TIME.
  - e. AT THE END OF THE PUMP OVERRUN TIME THE PUMP IS SWITCHED OFF.

**GENERAL NOTES**

1. CONTRACTOR SHALL LEAVE NO DEAD ENDS TO CONCEALED, EXPOSED, OR UNDERGROUND PIPING WHEN REMOVING SANITARY PIPING.
2. THE COMPLETE SYSTEM AND THE WORK SHALL BE SO INSTALLED AS TO GIVE PROPER AND CONTINUOUS SERVICE TO BUILDING TENANTS UNDER ALL CONDITIONS. IF INTERRUPTION OF SERVICES TO OTHER TENANTS IS NECESSARY, IT SHALL BE THOROUGHLY COORDINATED WITH BUILDING STAFF AND TENANTS.
3. LOCATION OF EXISTING PLUMBING RISERS ARE ESTIMATED LOCATIONS. CONTRACTOR SHALL VERIFY IN FIELD CONDITIONS AND DETERMINE THE EXACT LOCATION OF RISERS.
4. COORDINATE ALL SERVICE SHUTDOWNS WITH THE LANDLORD, BUILDING STAFF, AND ALL OTHER TENANTS AFFECTED BY IT.
5. PROVIDE CUTTING, CORE DRILLING IN WALLS FOR ALL PIPE PENETRATIONS, CONNECTION, AND ALL ASSOCIATED WORK. PROVIDE PATCHING, RESTORATION, AND FINISHING WORK TO MATCH EXISTING CONDITIONS IN ALL ASPECTS.

NOTE:  
EXISTING STORM WATER SYSTEM TO REMAIN & PROTECTED DURING CONSTRUCTION

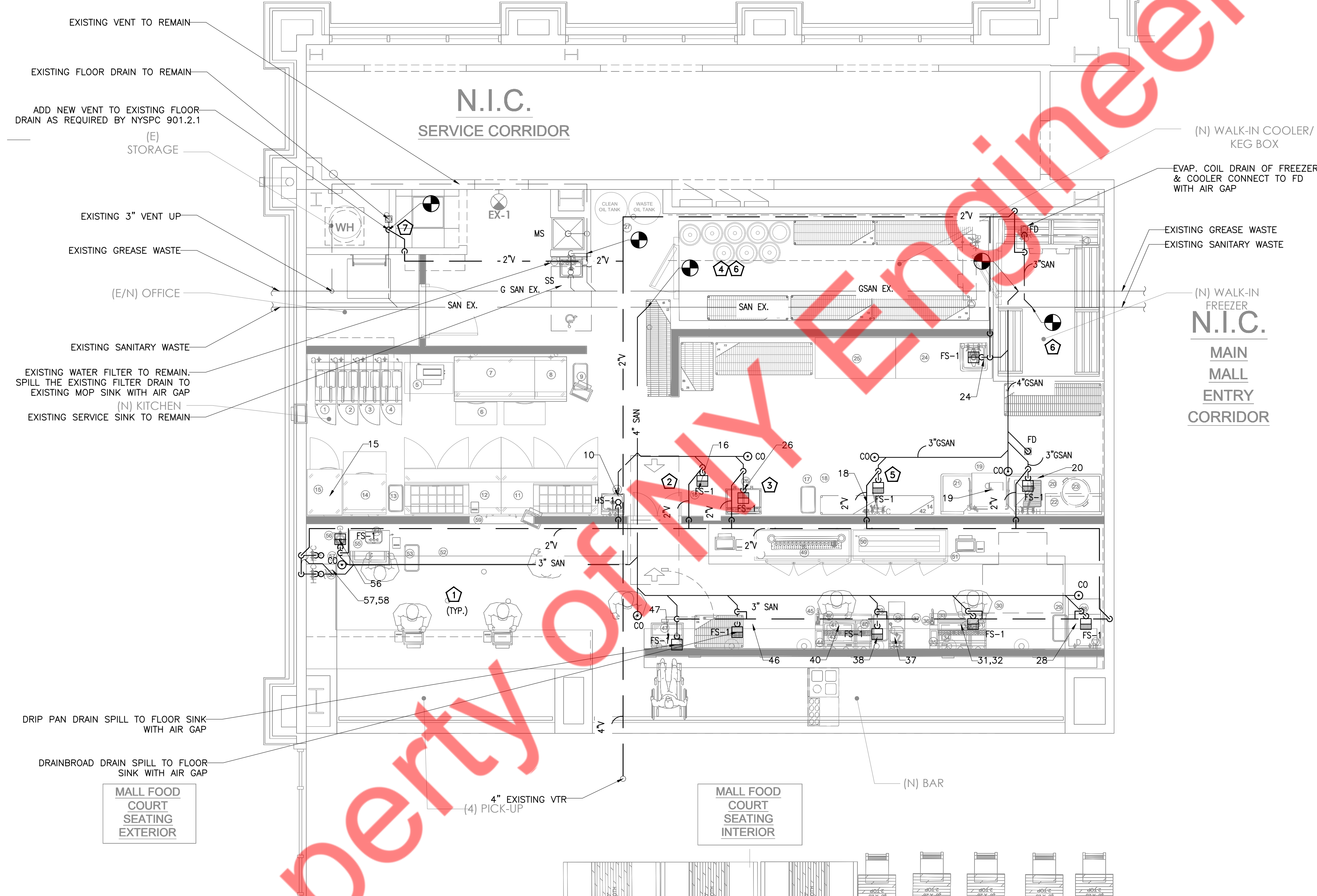
**KEY NOTES**

1. COORDINATE WITH EXACT LOCATION OF ALL PLUMBING FIXTURES AND KITCHEN EQUIPMENTS WITH ARCHITECTURAL AND FOOD SERVICE DRAWINGS. REFER TO PLUMBING AND KITCHEN EQUIPMENT SCHEDULE FOR PIPE SIZES AND ADDITIONAL INFORMATION.
2. PROVIDE DRAIN LINE FROM ICE MACHINE TO FUNNEL DRAIN ABOVE GRADE PER MANUFACTURER'S INSTRUCTIONS. PROVIDE PROPER AIR GAP AT DISCHARGE TO FUNNEL DRAIN.
3. PROVIDE 6" SCHEDULE 40 PVC CONDUIT SODA LINE SLEEVE IN CEILING FROM BAG-IN-BOX RACK TO SODA SYSTEM TO TERMINATE AT BAR. COORDINATE EXACT LOCATION AND CONDUIT RUN WITH BEVERAGE VENDOR.
4. PROVIDE 8" SCHEDULE 40 PVC CONDUIT BEER LINE SLEEVE IN CEILING FROM KEG COOLER TO TERMINATE AT BAR. COORDINATE EXACT LOCATION AND CONDUIT RUN WITH BEVERAGE VENDOR. CONDUIT SHALL BE INSTALLED BELOW PROPOSED SANITARY LINE.
5. PROVIDE DRAIN LINE FROM KITCHEN FIXTURES TO FUNNEL DRAIN ABOVE GRADE. PROVIDE PROPER AIR GAP AT DISCHARGE TO FUNNEL DRAIN.
6. PROVIDE 1" CONDENSATE DRAIN LINE FROM WALK-IN COOLERS AND FREEZE EVAPORATORS COIL TO THE NOTED F.S.. SLOPE DRAIN LINE MINIMUM OF 1" PER FOOT. DISCHARGE DRAIN WITH AND P-TRAP THROUGH AN AIR GAP.
7. PROVIDE 1" CONDENSATE DRAIN LINE FROM WALK-IN COOLERS AND FREEZE EVAPORATORS COIL TO THE NOTED F.S.. SLOPE DRAIN LINE MINIMUM OF 1" PER FOOT. DISCHARGE DRAIN WITH AND P-TRAP THROUGH AN AIR GAP.

**LEGEND**

**KITCHEN EQUIPMENT**

ITEM NO.	QTY	EQUIPMENT CATEGORY
1,2,3,4	4	FRYER
7	1	GRIDDLE
8	1	GRIDDLE
10	1	HAND SINK
16	1	ICE MAKER
18	1	3 COMPARTMENT SINK
19	1	WAREWASHER
20	1	SOILED DISHTABLE
24	1	WORK TABLE WITH SINK
26	1	BAG-IN-BOX SODA RACK
28	1	UNDERCOUNTER WAREWASHER
31,32	2	ICE CHEST
37	1	MIXOLOGY SINK
38	1	HAND SINK
46	1	DRAINBOARD
47	1	DRIP PAN
55	1	ICE CREAM FREEZER
56	1	DIPPERWELL ASSEMBLY
57	1	DUMP SINK IN S/S BACK BAR COUNTER
58	1	DROP IN HAND SINK
MS	1	MOP SINK
FS-1	13	FLOOR SINK
FD	1	FLOOR DRAIN
SS	1	SERVICE SINK



**GENERAL NOTES**

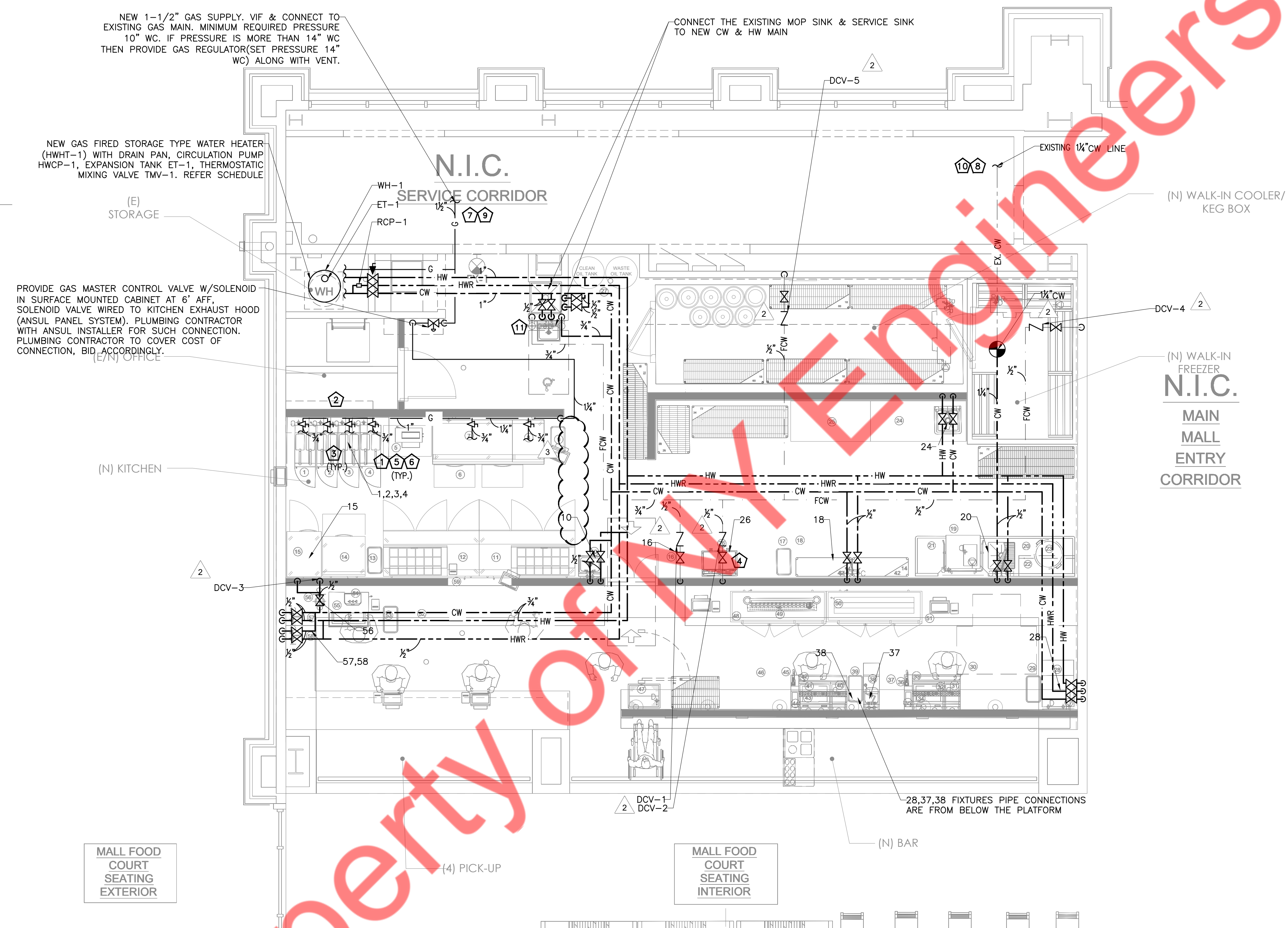
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2. THE COMPLETE SYSTEM AND THE WORK SHALL BE SO INSTALLED AS TO GIVE PROPER AND CONTINUOUS SERVICE TO BUILDING TENANTS UNDER ALL CONDITIONS. IF INTERRUPTION OF SERVICES TO OTHER TENANTS IS NECESSARY, IT SHALL BE THOROUGHLY COORDINATED WITH BUILDING STAFF AND TENANTS.
3. LOCATION OF EXISTING PLUMBING RISERS ARE ESTIMATED LOCATIONS. CONTRACTOR SHALL VERIFY IN FIELD CONDITIONS AND DETERMINE THE EXACT LOCATION OF RISERS.
4. COORDINATE ALL SERVICE SHUTDOWNS WITH THE LANDLORD, BUILDING STAFF, AND ALL OTHER TENANTS AFFECTED BY IT.
5. PROVIDE CUTTING, CORE DRILLING IN WALLS FOR ALL PIPE PENETRATIONS, CONNECTION, AND ALL ASSOCIATED WORK. PROVIDE PATCHING, RESTORATION, AND FINISHING WORK TO MATCH EXISTING CONDITIONS IN ALL ASPECTS.

2

**BACKFLOW PREVENTOR SCHEDULE**

LOCATION	TAG	MODEL	ASSE
ICE MAKER	DCV-1	WATTS SERIES 7	1024
BAG-IN-BOX SODA RACK	DCV-2	WATTS SD - 3	1022
DIPPERWELL ASSEMBLY	DCV-3	WATTS SERIES 7	1024
WALK IN FREEZER	DCV-4	WATTS LF288A	1001
WALK IN COOLER	DCV-5	WATTS LF288A	1001

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



**KEY NOTES**

- KEY NOTES:
1. COORDINATE WITH EXACT LOCATION OF ALL PLUMBING FIXTURES AND KITCHEN EQUIPMENTS WITH ARCHITECTURAL AND FOOD SERVICE DRAWINGS. REFER TO PLUMBING AND KITCHEN EQUIPMENT SCHEDULE FOR PIPE SIZES AND ADDITIONAL INFORMATION.
  2. PROVIDE SOLENOID GAS SHUT OFF VALVE WITH MANUAL RESET 6" BELOW THE CEILING AS PER DETAIL ON DRAWING P-1 FOR KITCHEN EQUIPMENTS EMERGENCY GAS SHUT-OFF. GAS SAFETY SHUT-OFF VALVE SHALL BE INTERLOCKED WITH HOOD FIRE SUPPRESSION SYSTEM.
  3. PROVIDE GAS CONNECTION TO KITCHEN EQUIPMENTS AT NOTED HEIGHT AND SIZE AS PER FOOD SERVICE EQUIPMENT SCHEDULE. REFER TO DETAIL ON P-1 FOR GAS PIPE CONNECTION.
  4. PROVIDE WATTS 98D DUAL CHECK VALVE ON FILTER LINE TO ICE MACHINE AND CARBONATOR.
  5. PROVIDE TRAP SEAL AS PER DETAIL ON DRAWING P-1. PROVIDE 1/2" PIPE FOR EACH FLOOR DRAIN, FUNNEL FLOOR DRAIN AND FLOOR SINK.
  6. PROVIDE SHUT OFF VALVE AT ALL PLUMBING AND KITCHEN EQUIPMENTS ON CW, HW AND GAS LINE.
  7. CONNECT NEW 1-1/2" GAS LINE TO EXISTING GAS METER. CONTRACTOR TO FIELD VERIFY SIZE AND LOCATION.
  8. CONNECT NEW 1-1/2" COLD WATER LINE TO EXISTING 1-1/2" DOMESTIC SERVICE LINE. CONTRACTOR TO FIELD VERIFY SIZE AND LOCATION. CONTRACTOR TO VERIFY EXISTING WATER METER & BACKFLOW PREVENTER IN FIELD.
  9. CONTRACTOR TO FIELD VERIFY EXISTING AVAILABLE GAS PRESSURE AND MAKE SURE TO PROVIDE ADEQUATE INLET PRESSURE REQUIRED FOR GAS FIRED WATER HEATER, KITCHEN EQUIPMENTS AND MAU-1.
  10. CONTRACTOR TO TAP EXISTING WATER CONNECTION STUBS PROVIDED FOR TENANT BY THE BASE BUILDING.
  11. CONTRACTOR TO FIELD VERIFY EXISTING SECONDARY RPZ FOR FILTER. IF RPZ NOT PROVIDED, THEN PROVIDE NEW SECONDARY RPZ TO WATER FILTER.

**LEGEND**

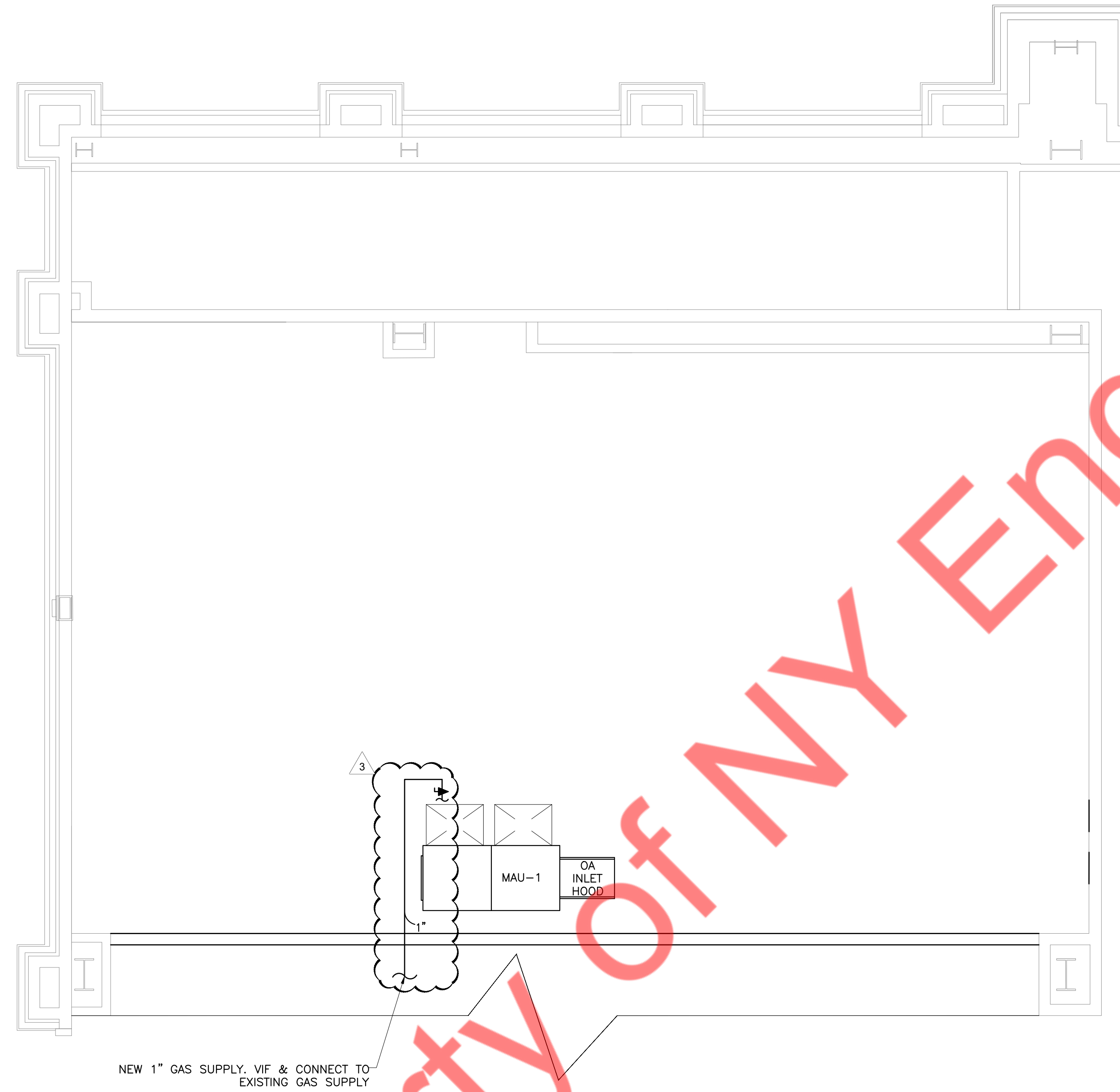
**KITCHEN EQUIPMENT**

ITEM NO.	QTY	EQUIPMENT CATEGORY
1,2,3,4	4	FRYER
7	1	GRIDDLE
8	1	GRIDDLE
10	1	HAND SINK
16	1	ICE MAKER
18	1	3 COMPARTMENT SINK
19	1	WAREWASHER
20	1	SOILED DISHTABLE
24	1	WORK TABLE WITH SINK
26	1	BAG-IN-BOX SODA RACK
28	1	UNDERCOUNTER WAREWASHER
31,32	2	ICE CHEST
37	1	MIXOLOGY SINK
38	1	HAND SINK
46	1	DRAINBOARD
47	1	DRIP PAN
55	1	ICE CREAM FREEZER
56	1	DIPPERWELL ASSEMBLY
57	1	DUMP SINK IN S/S BACK BAR COUNTER
58	1	DROP IN HAND SINK
MS	1	MOP SINK
FS-1	13	FLOOR SINK
FD	1	FLOOR DRAIN
SS	1	SERVICE SINK

GENERAL NOTES

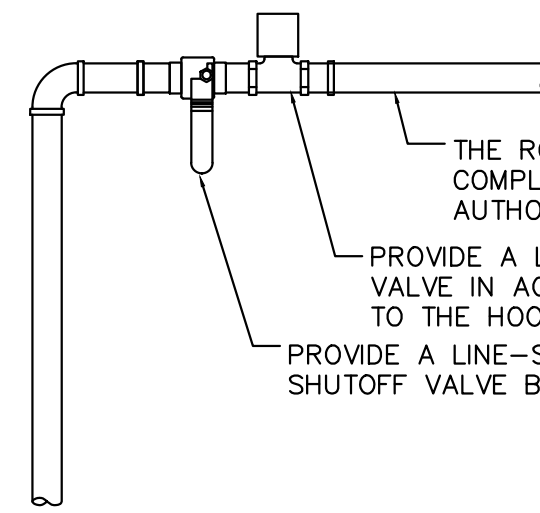
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NOTE:  
EXISTING STORM WATER SYSTEM TO REMAIN & PROTECTED DURING CONSTRUCTION



KEY NOTES

LEGEND

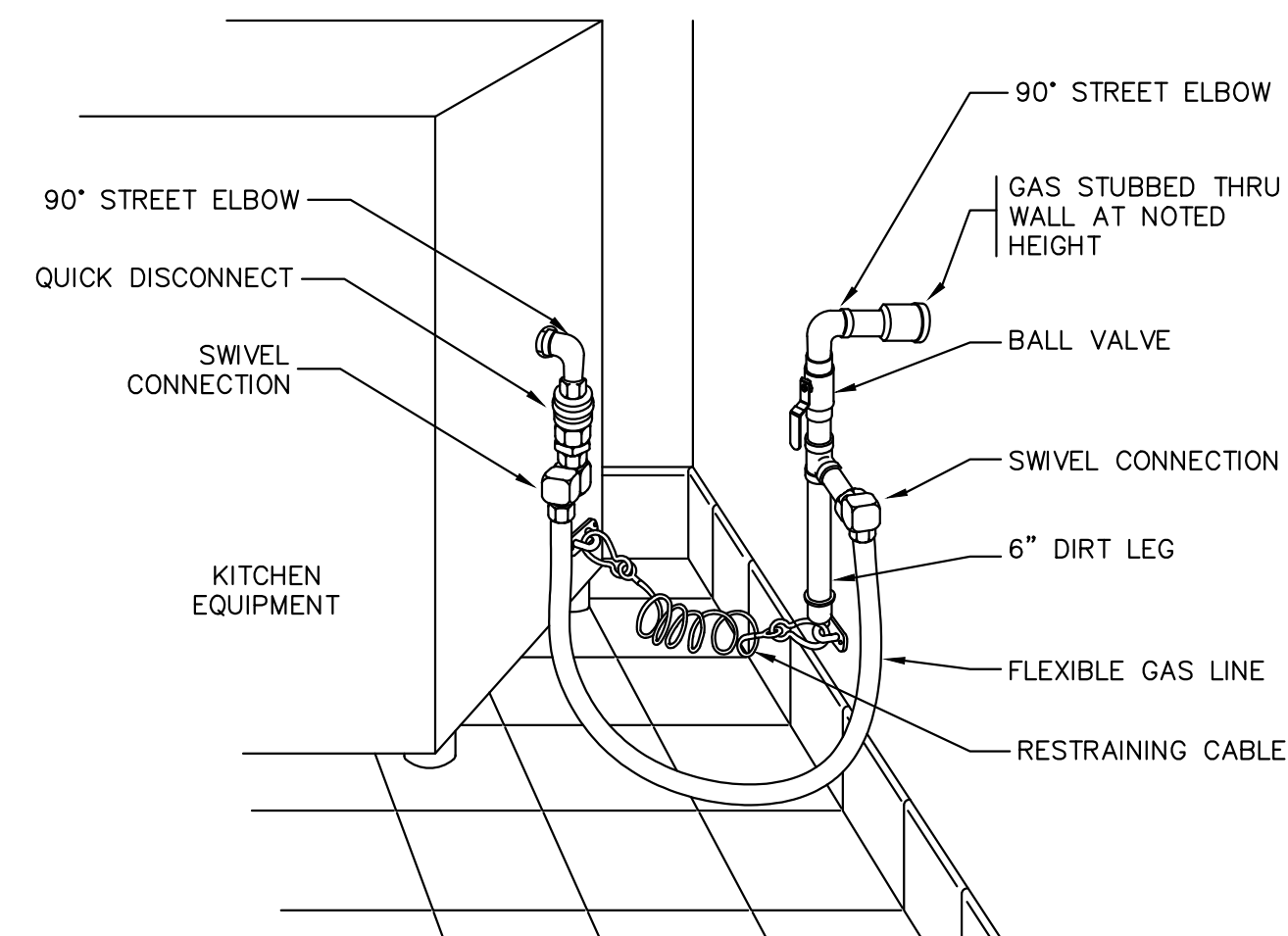


THE ROUTING OF THE GAS PIPE MUST COMPLY WITH LOCAL CODES AND AUTHORITIES HAVING JURISDICTION  
 PROVIDE A LINE-SIZE SOLENOID-OPERATED GAS VALVE IN ACCESSIBLE LOCATION. INTERCONNECT TO THE HOOD FIRE SUPPRESSION SYSTEM.  
 PROVIDE A LINE-SIZE MANUAL GAS SHUTOFF VALVE BELOW THE CEILING

**SEQUENCE OF OPERATIONS:**

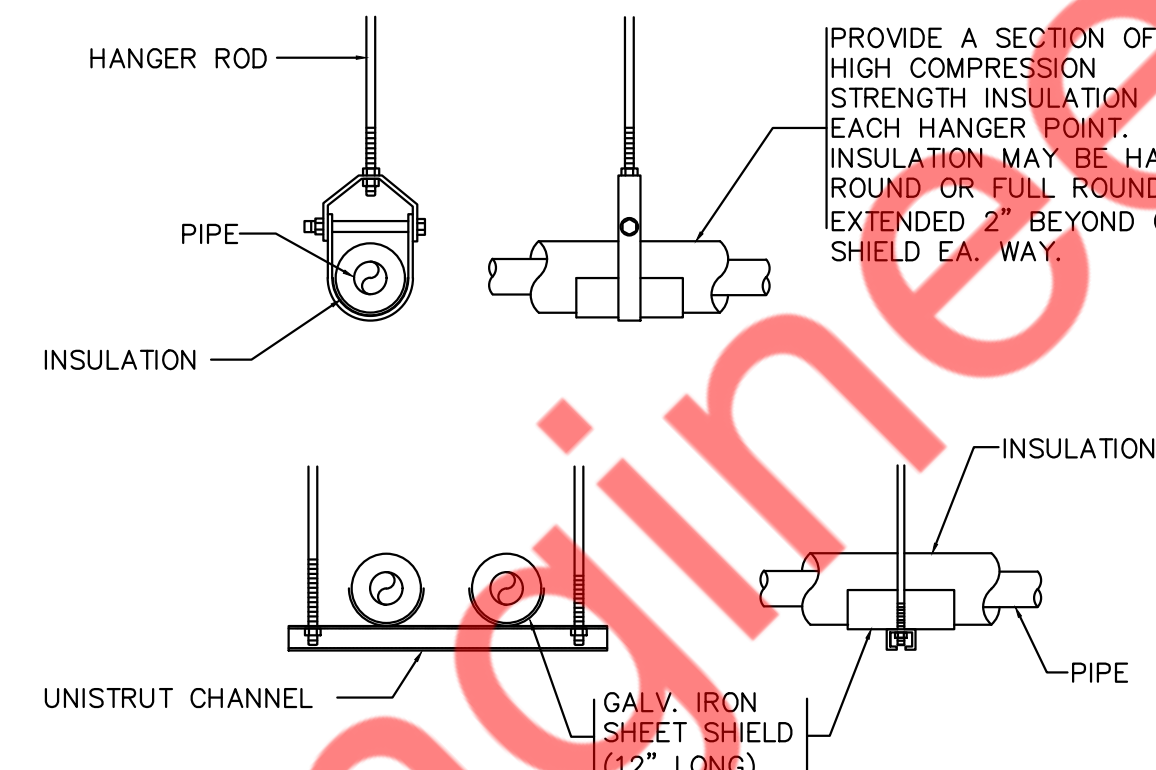
- NORMAL MODE:**
- WHEN HOOD FAN IS ENERGIZED SOLENOID VALVE IS TO OPEN.
  - ON A LOSS OF POWER OR IF THE FAN IS DE-ENERGIZED THE VALVE IS TO CLOSE.
- EMERGENCY MODE:**
- UPON ACTUATION OF THE FIRE SUPPRESSION SYSTEM OR A SIGNAL FROM THE FIRE ALARM, THE SOLENOID VALVE IS TO CLOSE

**1** TYPICAL KITCHEN GAS SHUT-OFF DETAIL  
 P2.0 N.T.S



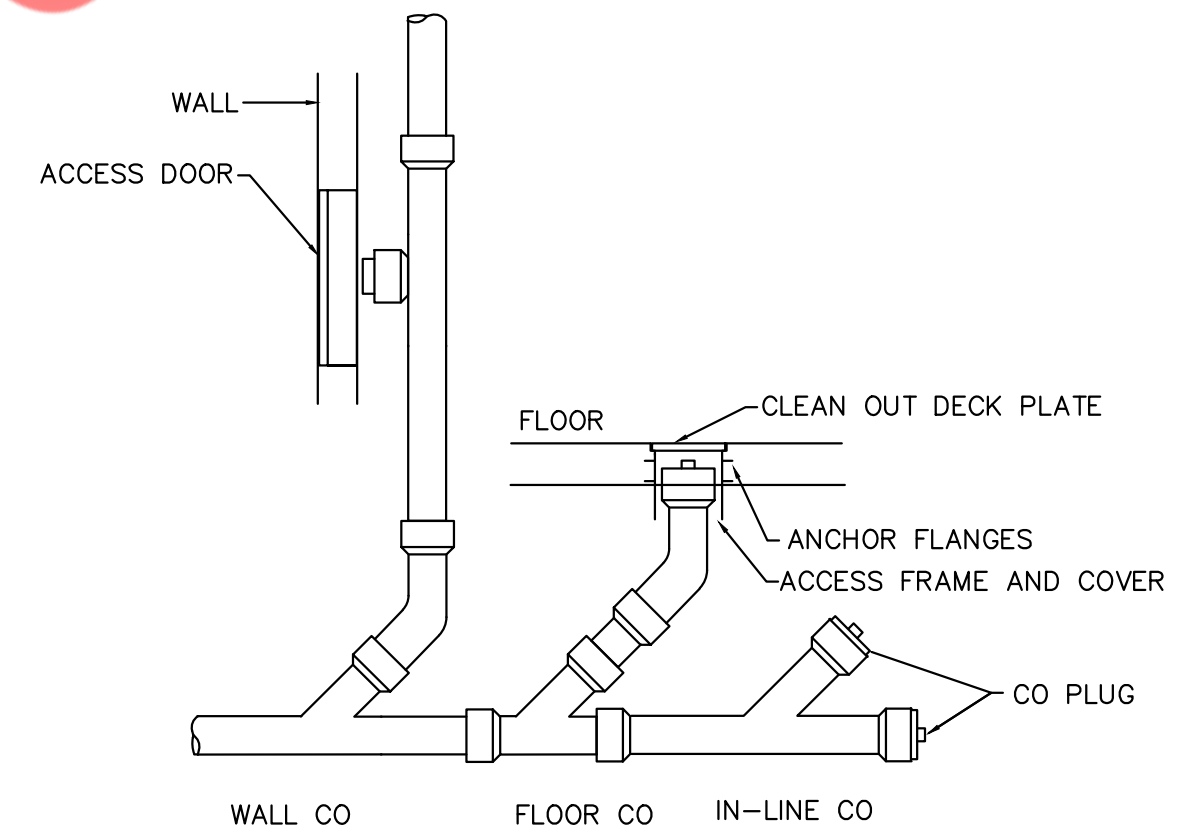
ARRANGEMENT SHOWN IS SCHEMATIC. ADJUST TO SUIT ACTUAL CONDITIONS. MAKE FINAL CONNECTION TO EQUIPMENT AS RECOMMENDED BY MANUFACTURER. PROVIDE WELDED FITTINGS/JOINTS IN ANY CONCEALED, UNSLEEVED LOCATION.

**2** TYPICAL KITCHEN GAS CONNECTION DETAIL  
 P2.0 N.T.S

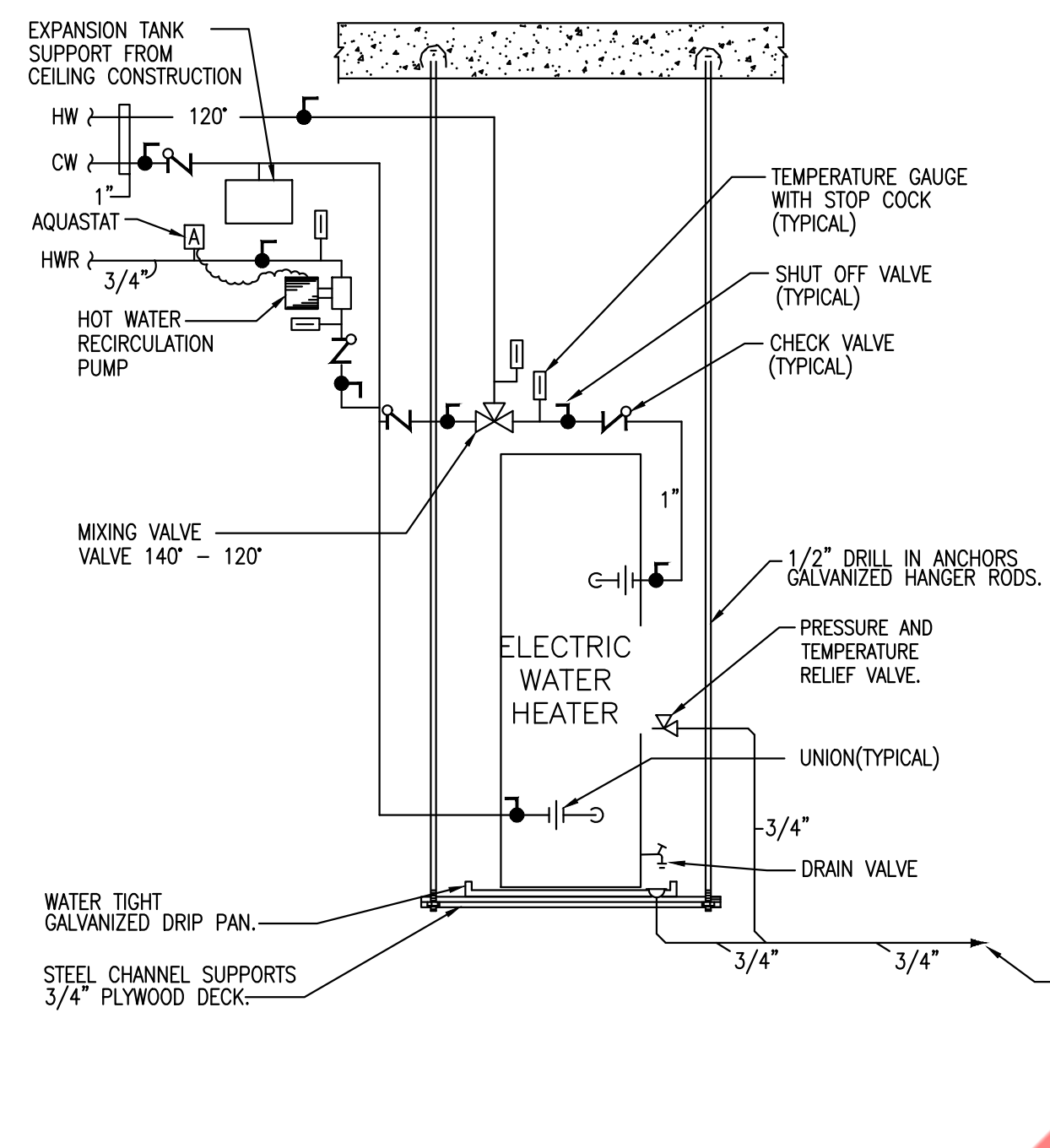


PROVIDE A SECTION OF HIGH COMPRESSION STRENGTH INSULATION AT EACH HANGER POINT. INSULATION MAY BE HALF ROUND OR FULL ROUND & EXTENDED 2" BEYOND GALV. SHIELD EA. WAY.

**3** TYPICAL PIPE HANGER DETAIL  
 P2.0 N.T.S

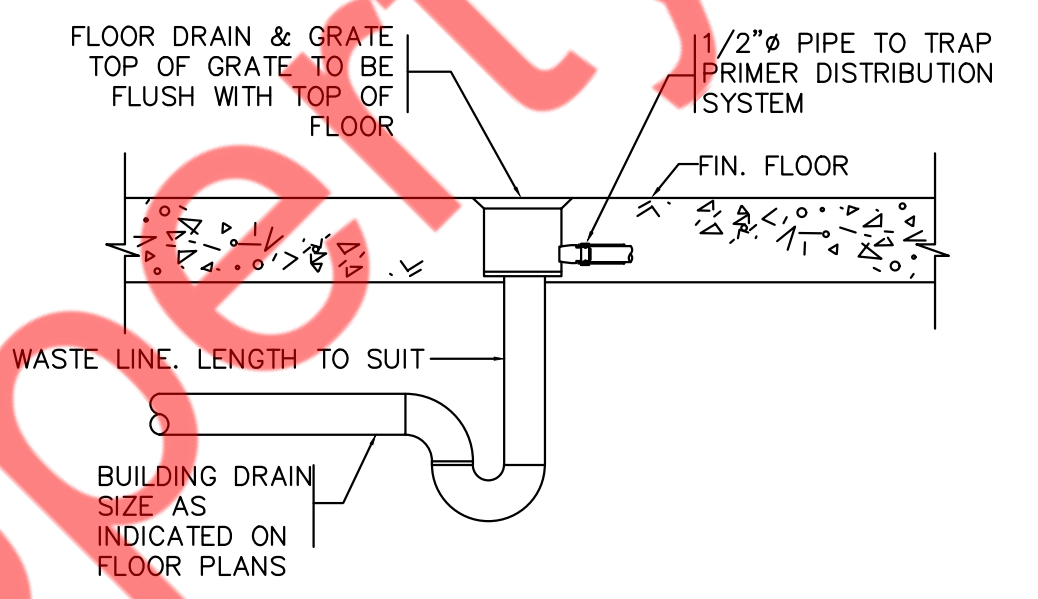


**4** TYPICAL CLEAN OUT INSTALLATION  
 P2.0 N.T.S

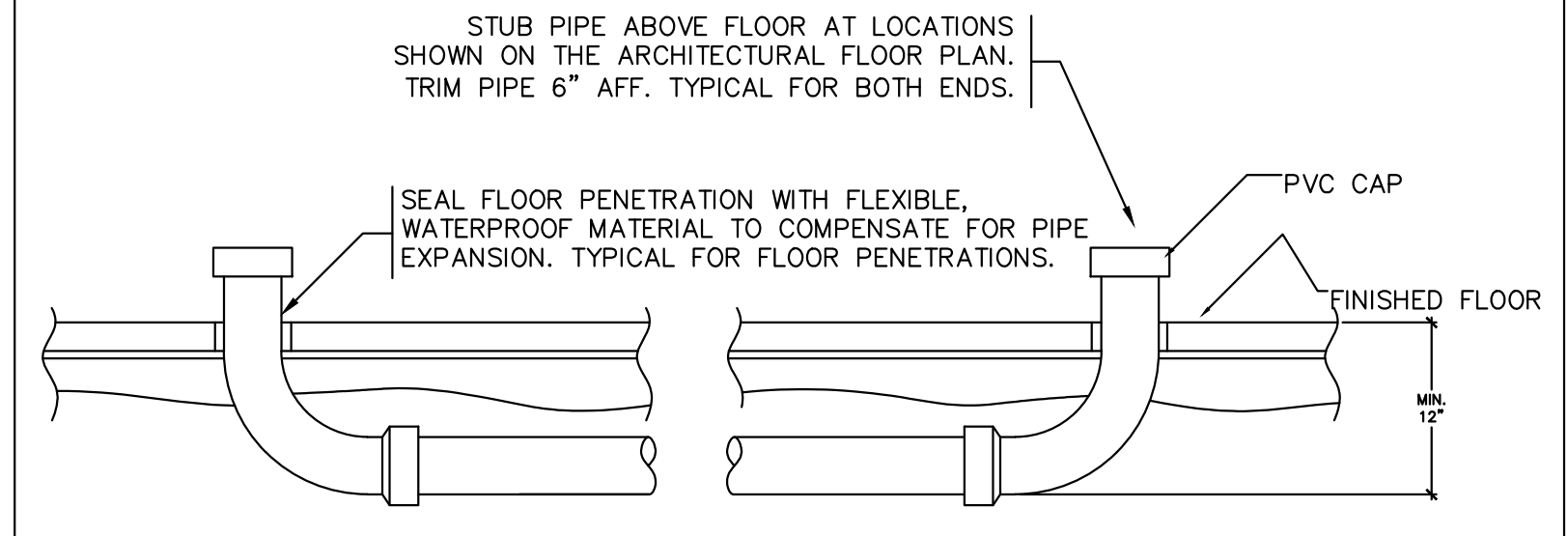


SPILL INTO NEAREST WASHER/DRYER FUNNEL, FLOOR DRAIN OR SINK TRAP WITH AIR GAP FITTING

**5** GAS FIRED HOT WATER HEATER (CEILING MOUNTED) DETAIL  
 P2.0 N.T.S

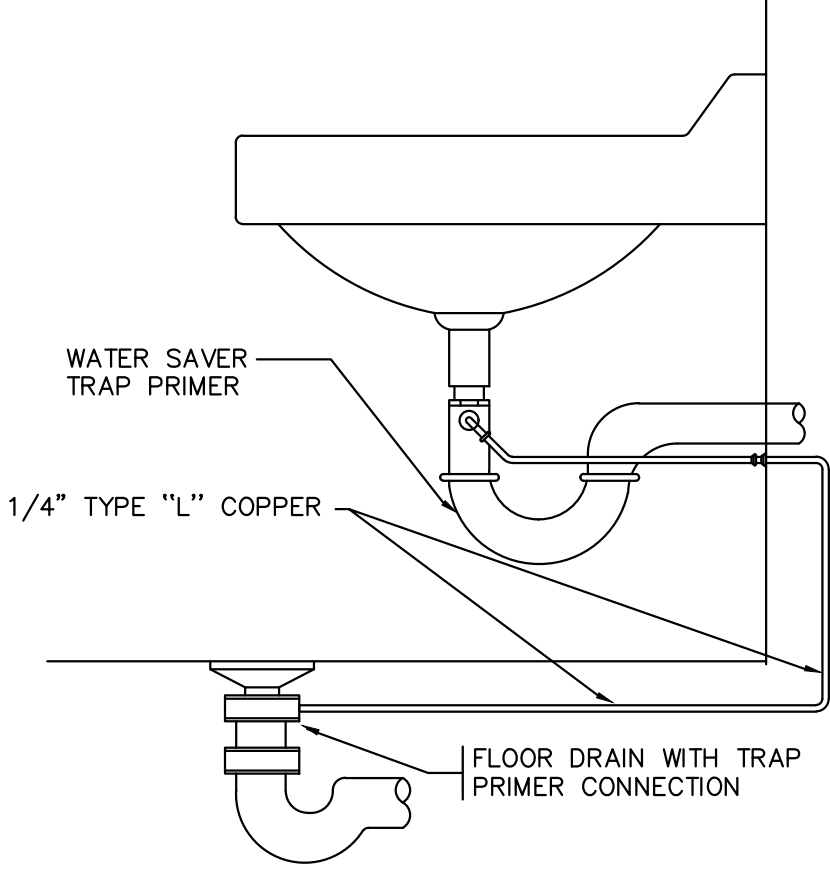


**6** TYPICAL FLOOR DRAIN DETAIL  
 P2.0 N.T.S



PROVIDE SCHEDULE 40 PVC CONDUIT AND FITTINGS WITH SOLVENT-WELDED JOINTS. USE MINIMUM QUANTITY OF FITTINGS. PROVIDE LONG SWEEP ELBOWS AT BOTH ENDS, WITH MINIMUM 16 INCH RADIUS. AVOID ELBOWS IN HORIZONTAL RUN. SEAL ENDS OF CONDUIT WITH FOAM AFTER LINES IS INSTALLED IN CONDUIT. INSTALL PVC CAP WITH HOLE FOR SODA AND BEER LINES ON EACH END OF THE CONDUIT. SEAL HOLE IN PVC CAP AROUND BUNDLE.

**7** TYPICAL SODA/BEER CONDUIT DETAIL  
 P2.0 N.T.S



**8** TYPICAL TRAP SEAL PRIMER  
 P2.0 N.T.S

KITCHEN EQUIPMENT SCHEDULE

ITEM NO.	QTY	EQUIPMENT CATEGORY	COLD WATER SIZE (IN)	COLD WATER A/F (IN)	HOT WATER SIZE (IN)	HOT WATER GPH (IN)	HOT WATER A/F (IN)	DIRECT DRAIN (IN)	INDIRECT DRAIN SIZE (IN)	GAS SIZE (IN)	MBTUH	GAS A/F (IN)	PLUMBING REMARKS
1,2,3,4	4	FRYER	-	-	-	-	-	-	-	0.75	100	32	6" W.C. NG; FLEXIBLE QUICK-DISCONNECT GAS CONNECTORS
7	1	GRIDDLE	-	-	-	-	-	-	-	0.75	150	32	10" W.C. NG; FLEXIBLE QUICK-DISCONNECT GAS CONNECTORS
8	1	GRIDDLE	-	-	-	-	-	-	-	0.75	60	32	4" W.C. NG; FLEXIBLE QUICK-DISCONNECT GAS CONNECTORS
10	1	HAND SINK	0.5	18	0.5	-	18	1.5	-	-	-	-	-
16	1	ICE MAKER	0.375	60	-	-	-	-	-	-	6	-	INTERCONNECT CW, W/ WATER FILTER, IW TO FS
18	1	3 COMPARTMENT SINK	0.5	18	0.5	-	18	1.5	-	-	-	-	IW TO FS
19	1	WAREWASHER	0.5	6	-	-	-	-	1	-	-	-	IW TO FS
20	1	SOILED DISHTABLE	0.5	18	0.5	-	18	1.5	-	-	-	-	T&S B-0133-ADF08-B PRE RINSE FAUCET, IW TO FS
24	1	WORK TABLE WITH SINK	0.5	18	0.5	-	18	1.5	-	-	-	-	IW TO FS
26	1	BAG-IN-BOX SODA RACK	0.5	72	-	-	-	-	-	-	-	-	IW TO FS
28	1	UNDERCOUNTER WAREWASHER	-	-	0.5	-	-	-	1.5	-	-	-	IW TO FS
31,32	2	ICE CHEST	-	-	-	-	-	-	0.5	-	-	-	IW TO FS
37	1	MIXOLOGY SINK	0.5	8	0.5	-	8	1.5	-	-	-	-	IW TO FS
38	1	HAND SINK	0.5	18	0.5	-	18	1.5	-	-	-	-	-
46	1	DRAINBOARD	-	-	-	-	-	1	-	-	-	-	IW TO FS
47	1	DRIP PAN	-	-	-	-	-	0.5	-	-	-	-	IW TO FS
55	1	ICE CREAM FREEZER	-	-	-	-	-	0.5	-	-	-	-	IW TO FS
56	1	DIPPERWELL ASEMBLY	-	-	0.375	-	24	0.75	-	-	-	-	IW TO FS
57	1	DUMP SINK IN S/S BACK BAR COUNTER	0.5	18	0.5	-	18	1.5	-	-	-	-	-
58	1	DROP IN HAND SINK	0.5	18	0.5	-	18	1.5	-	-	-	-	-
MS	1	MOP SINK	0.5	8	0.5	-	8	1.5	-	-	-	-	-
FS-1	13	FLOOR SINK	-	-	-	-	-	3	-	-	-	-	-
FD	1	FLOOR DRAIN	-	-	-	-	-	2	-	-	-	-	-
SS	1	SERVICE SINK	0.5	18	0.5	-	18	1.5	-	-	-	-	-

HOT WATER HEATER WITH STORAGE

TAG No.	QUANTITY	LOCATION	GAS INPUT (BTU/Hr INPUT)	EFFICIENCY	STOR. CAP (GAL)	RECOVERY CAP. (GPH) @100' RISE	TYPE	MANUFACTURER & MODEL NO.	REMARKS
HWHT-1	1	BASEMENT	45,000	96%	50	45	DIRECT VENT GAS WATER HEATER	AO SMITH GPDT 50	-DIMENSIONS 29 7/8"D X 67 1/2"H -PROVIDE EXPANSION TANK (ET-1) AS PER SCHEDULE -CEILING MOUNTED HEATER

MASTER THERMOSTATIC MIXING VALVE

ITEM	QUANTITY	LOCATION	SERVICE	CAPACITY (GPM)	PRESSURE DROP (PSI)	MINIMUM FLOW (GPM)	MAKE	CW INLET	HIGH TEMP. INLET	LOW TEMP. OUTLET	REMARKS
TMV-1	1	REFER PLANS	HOT WATER	30	5	0.5	ACORN MV17-3	1"	1"(140°F)	1-1/4"(110°F)	-BRONZE BODY CONSTRUCTION AND LEAD FREE CONSTRUCTION -ASSE CERTIFIED

EXPANSION TANK SCHEDULE

ITEM	QUANTITY	LOCATION	SERVICE	GALLONS	MANUFACTURER & MODEL NO.	WEIGHT(LBS)	DIMENSION
EXPANSION TANK (ET-1)	1	REFER PLANS	HOT WATER	2	AMTROL ST-5	5	DIMENSIONS- 13"(H)x8"(DIA.)

RECIRCULATING PUMP SCHEDULE

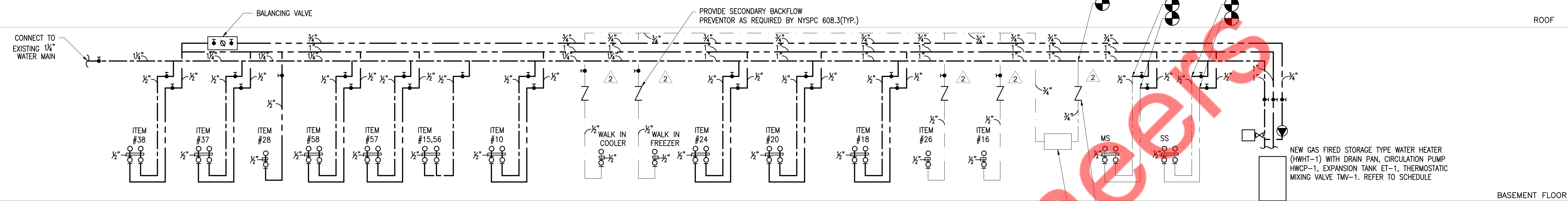
ITEM	QUANTITY	GPM	TOTAL HEAD (FT)	MOTOR HP	MANUFACTURER & MODEL NO.
RCP-1	1	2	7	0.025	B & G NBF 8S/LW

BACKFLOW PREVENTOR SCHEDULE

LOCATION	TAG	MODEL	ASSE
ICE MAKER	DCV-1	WATTS SERIES 7	1024
BAG-IN-BOX SODA RACK	DCV-2	WATTS SD - 3	1022
DIPPERWELL ASEMBLY	DCV-3	WATTS SERIES 7	1024
WALK IN FREEZER	DCV-4	WATTS LF288A	1001
WALK IN COOLER	DCV-5	WATTS LF288A	1001

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

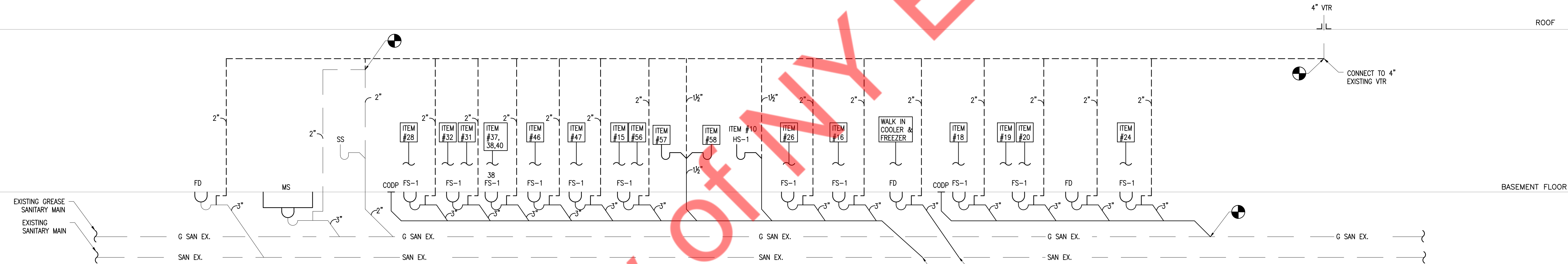
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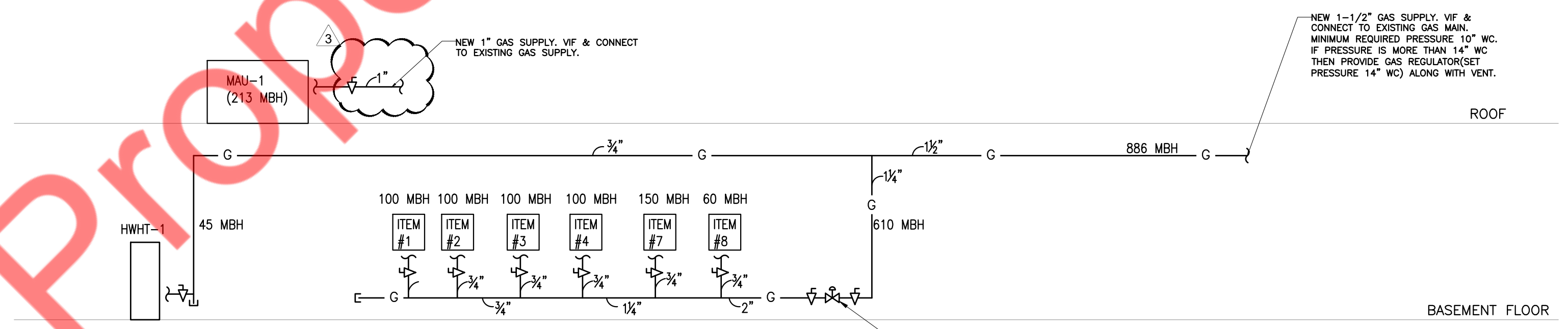
DOMESTIC WATER SUPPLY RISER DIAGRAM  
NOT TO SCALE

V.F. IF EXISTING FILTER IS PROTECTED WITH SECONDARY BACKFLOW PREVENTOR IF NOT, PROVIDE THE SECONDARY BACKFLOW PREVENTOR AS REQUIRED BY NYSPC 608.13

EXISTING WATER FILTER SYSTEM



SANITARY RISER DIAGRAM  
NOT TO SCALE



GAS RISER DIAGRAM  
NOT TO SCALE

PROVIDE GAS METER CONTROL VALVE W/SOLENOID IN SURFACE MOUNTED CABINET 6" AFF, SOLENOID VALVE WIRED TO KITCHEN EXHAUST HOOD (ANSUL PANEL SYSTEM). PLUMBING CONTRACTOR WITH ANSUL INSTALLER FOR SUCH CONNECTION. PLUMBING CONTRACTOR TO COVER COST OF CONNECTION, BID ACCORDINGLY.

KITCHEN EQUIPMENT		
ITEM NO.	QTY	EQUIPMENT CATEGORY
1,2,3,4	4	FRYER
7	1	GRIDDLE
8	1	GRIDDLE
10	1	HAND SINK
16	1	ICE MAKER
18	1	3 COMPARTMENT SINK
19	1	WAREWASHER
20	1	SOILED DISHTABLE
24	1	WORK TABLE WITH SINK
26	1	BAG-IN-BOX SODA RACK
28	1	UNDERCOUNTER WAREWASHER
31,32	2	ICE CHEST
37	1	MIXOLOGY SINK
38	1	HAND SINK
46	1	DRAINBOARD
47	1	DRIP PAN
55	1	ICE CREAM FREEZER
56	1	DIPPERWELL ASSEMBLY
57	1	DUMP SINK IN S/S BACK BAR COUNTER
58	1	DROP IN HAND SINK
MS	1	MOP SINK
FS-1	13	FLOOR SINK
FD	1	FLOOR DRAIN
SS	1	SERVICE SINK