

MECHANICAL SYMBOLS LIST

Table with columns for Equipment Symbol, Controls and Sensors, and Ductwork. Includes symbols for air devices, duct accessories, and various duct types.

MECHANICAL ABBREVIATIONS

Table listing mechanical abbreviations such as AFF (Above Finished Floor), AL (Acoustic Lining), BOD (Bottom of Duct), etc.

SUMMARY OF DESIGN CONDITIONS

- CLIMATE:
1. CLIMATE ZONE 1A.
2. COOLING OUTDOOR DESIGN TEMPERATURE (DB): 92.1° F (FLORIDA, 0.4% ASHRAE 2017 CLIMATE DATA).

MECHANICAL DRAWING LIST table with columns for drawing number and description (e.g., M001 MECHANICAL GENERAL NOTES, SYMBOLS LIST & ABBREVIATIONS).

FLORIDA ENERGY CONSERVATION CODE-2020 COMPLIANCE

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

FLORIDA BUILDING DEPARTMENT NOTES

- ALL WORK SHALL COMPLY WITH APPLICABLE SECTIONS OF FLORIDA BUILDING CODE; BASE CODE IBC 2020, AND ALL RULES AND REGULATIONS OF THE DEPARTMENT OF BUILDINGS TO DATE.
1. ALL HEATING AND COOLING LOADS CALCULATED PER ASHRAE/ACCA 183.

GENERAL NOTES

- 1. CONTRACTOR SHALL SURVEY THE AREA OF THIS WORK BEFORE SUBMITTING A BID AND SHALL BE RESPONSIBLE FOR NOTIFYING THE ARCHITECT OF ANY CONDITIONS WHICH WOULD PREVENT THE INSTALLATION OF THE WORK AS SHOWN ON DRAWINGS.
2. ALL APPLICABLE CODES, LAWS AND REGULATIONS GOVERNING OR RELATING TO ANY PORTION OF THIS WORK ARE HEREBY INCORPORATED INTO AND MADE A PART OF THESE SPECIFICATIONS...

- 10. PLAN INSTALLATION OF NEW WORK AND CONNECTIONS TO EXISTING WORK TO INSURE MINIMUM INTERFERENCE WITH REGULAR OPERATION OF EXISTING FACILITIES. ALL SYSTEM SHUTDOWNS AFFECTING OTHER AREAS SHALL BE COORDINATED WITH BUILDING OWNER.
11. SUPPORT ALL DUCTWORK AND PIPING FROM BUILDING STRUCTURE AND/OR FRAMING IN AN APPROVED MANNER.
12. 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.

SCOPE OF WORK

- SCOPE OF WORK
1. THE WORK UNDER CONTRACT INCLUDES ALL LABOR, MATERIALS AND APPLIANCES NECESSARY FOR THE FURNISHING, INSTALLING AND TESTING, COMPLETE AND READY FOR SAFE OPERATION OF THE SYSTEMS AS DESCRIBED IN THE SPECIFICATIONS, FLOOR PLAN(S) DESIGN, DETAIL DRAWINGS, NOTES, RFI'S, ETC. FOR THIS PROJECT.

- 2. THE CONTRACTOR SHALL GIVE NECESSARY NOTICE, FILE DRAWINGS AND SPECIFICATIONS WITH THE DEPARTMENT HAVING JURISDICTION, OBTAIN PERMITS OR LICENSES NECESSARY TO CARRY OUT THIS WORK AND PAY ALL FEES THEREFORE.
3. THE CONTRACTOR SHALL FURNISH A WRITTEN GUARANTEE TO REPLACE OR REPAIR PROMPTLY AND ASSUME RESPONSIBILITY FOR ALL EXPENSES INCURRED FOR ANY WORKMANSHIP AND EQUIPMENT IN WHICH DEFECTS DEVELOP WITHIN ONE YEAR FROM THE DATE OF FINAL CERTIFICATE FOR PAYMENT AND/OR FROM DATE OR ACTUAL USE OF EQUIPMENT OR OCCUPANCY OF SPACES, BY OWNER, INCLUDED UNDER THE VARIOUS PARTS OF THE WORK, WHICHEVER DATE IS EARLIER.

GENERAL HVAC NOTES

- GENERAL
1. PROVIDE ALL MATERIAL AND EQUIPMENT AND PERFORM ALL LABOR REQUIRED TO INSTALL COMPLETE AND OPERABLE MECHANICAL SYSTEMS AS INDICATED ON THE DRAWINGS, AS SPECIFIED AND AS REQUIRED BY CODE.
2. CONTRACT DOCUMENT DRAWINGS FOR MECHANICAL WORK (HVAC, PLUMBING, AND FIRE PROTECTION) ARE DIAGRAMMATIC AND ARE INTENDED TO CONVEY SCOPE AND GENERAL ARRANGEMENT ONLY.
3. THE LOCATIONS OF ALL ITEMS SHOWN ON THE DRAWINGS OR CALLED FOR IN THE SPECIFICATIONS THAT ARE NOT FIXED BY DIMENSIONS ARE APPROXIMATE ONLY. THE EXACT LOCATIONS MUST BE DETERMINED BY THE PROJECT SITE CONDITIONS AND SHALL HAVE THE APPROVAL OF THE ENGINEER BEFORE BEING INSTALLED. DO NOT SCALE DRAWINGS.

HVAC DUCTWORK - SHEET METAL

- 1. CERTAIN ITEMS SUCH AS RISES AND DROPS IN DUCTWORK ACCESS DOORS, VOLUME DAMPERS, AND CONFORM WITH REQUIREMENTS OF THE LATEST HANDBOOKS PUBLISHED BY ASHRAE.
2. CONTRACTOR TO CHECK AND CORRECT ANY AND ALL DEFICIENCIES IN EXISTING DUCTS. ALL NEW DUCTWORK WILL BE CONFORM WITH THE LATEST SMACNA STANDARDS AND CONFORM WITH REQUIREMENTS OF THE LATEST HANDBOOKS PUBLISHED BY ASHRAE.
3. PROVIDE VOLUME DAMPER AT EACH TAP TO MAIN DUCT AND WHERE NECESSARY TO PROPERLY BALANCE SYSTEM.

- GENERAL NOTES:**
- A. CONTRACTORS AND SUB-CONTRACTORS SHALL CAREFULLY REVIEW THE CONSTRUCTION DOCUMENTS. INFORMATION REGARDING THE COMPLETE WORK IS DISPERSED THROUGHOUT THE DOCUMENT SET AND CANNOT BE ACCURATELY DETERMINED WITHOUT REFERENCE TO THE COMPLETE DOCUMENT SET.
 - B. COORDINATE WITH THE WORK OF OTHER SECTIONS, EQUIPMENT FURNISHED BY OTHERS, REQUIREMENTS OF THE OWNER, AND WITH THE CONSTRAINTS OF THE EXISTING CONDITIONS OF THE PROJECT SITE. PROVIDE DUCT RISERS AND DROPS AS REQUIRED FOR FIELD INSTALLATION AND TRADE COORDINATION. NOTIFY ARCHITECT OF ANY DISCREPANCIES BEFORE STARTING WORK.
 - C. DRAWINGS FOR HVAC WORK ARE DIAGRAMMATIC, SHOWING THE GENERAL LOCATION, TYPE, LAYOUT, AND EQUIPMENT REQUIRED. THE DRAWINGS SHALL NOT BE SCALED FOR EXACT MEASUREMENT. REFER TO ARCHITECTURAL DRAWINGS FOR DIMENSIONS. REFER TO MANUFACTURER'S STANDARD INSTALLATION DRAWINGS FOR EQUIPMENT CONNECTIONS AND INSTALLATION REQUIREMENTS. PROVIDE DUCTWORK, CONNECTIONS, ACCESSORIES, OFFSETS, AND MATERIALS NECESSARY FOR A COMPLETE SYSTEM.
 - D. ALL WORK SHALL COMPLY WITH STATE AND LOCAL CODE REQUIREMENTS AS APPROVED AND AMENDED BY THE GOVERNING CITY. PURCHASE ALL PERMITS ASSOCIATED WITH THE WORK. OBTAIN ALL INSPECTIONS REQUIRED BY CODE.
 - E. SUPPORT NEW MECHANICAL SYSTEMS WITH SEISMIC RESTRAINTS IN ACCORDANCE WITH SEISMIC HAZARD LEVEL 'A' OF THE SEISMIC RESTRAINT MANUAL, AS PUBLISHED BY SMACNA, AND IN ACCORDANCE WITH THE FLORIDA BUILDING CODE, LATEST EDITION.
 - F. CONTRACTOR SHALL BALANCE EACH DEVICE WITH THE CFM SHOWN ON PLAN.
 - G. 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.
 - H. COORDINATE LOCATIONS AND SIZES OF ROOF OPENINGS WITH OWNER AND STRUCTURAL ENGINEERS.
 - I. EQUIPMENT SIZES, DIMENSIONS AND REQUIRED CONNECTIONS SHALL BE VERIFIED WITH THE ACTUAL EQUIPMENT SELECTED VENDOR DRAWINGS BEFORE FABRICATION OF DUCTWORK, PIPING ETC.
 - J. DUCT SIZES SHOWN ON PLANS ARE CLEAR INSIDE AIR STREAM DIMENSIONS.
 - K. CONTRACTOR SHALL COORDINATE ALL ELECTRICAL REQUIREMENTS FOR ALL HVAC BASED ON ACTUAL EQUIPMENT SELECTED PRIOR TO INSTALLATION.
 - L. CONTRACTOR SHALL COORDINATE EQUIPMENT WEIGHTS AND SUPPORTS BASED ON ACTUAL EQUIPMENT SELECTED.
 - M. COORDINATE WITH ALL TRADES FOR MATERIALS IN RATED AND PLENUM SPACES.
 - N. 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.
 - O. MOUNT DUCTWORK AS HIGH AS POSSIBLE.
 - P. TEST AND BALANCE AIR SYSTEMS. PROVIDE REPORT TO G.C AND OWNER.
 - Q. MECHANICAL CONTRACTOR TO COORDINATE INSTALLATION OF WATER HEATER EXHAUST FLUE WITH PLUMBING CONTRACTOR.
 - R. ALL EXPOSED ROUND DUCTWORK SHALL BE INTERNALLY LINED. ALL DUCTWORK DIMENSIONS ARE INSIDE CLEAR.
 - S. NEW DUCTWORK IN CONCEALED AREAS MAY BE RECTANGULAR WITH EQUIVALENT CROSS SECTIONAL FLOW AREA.

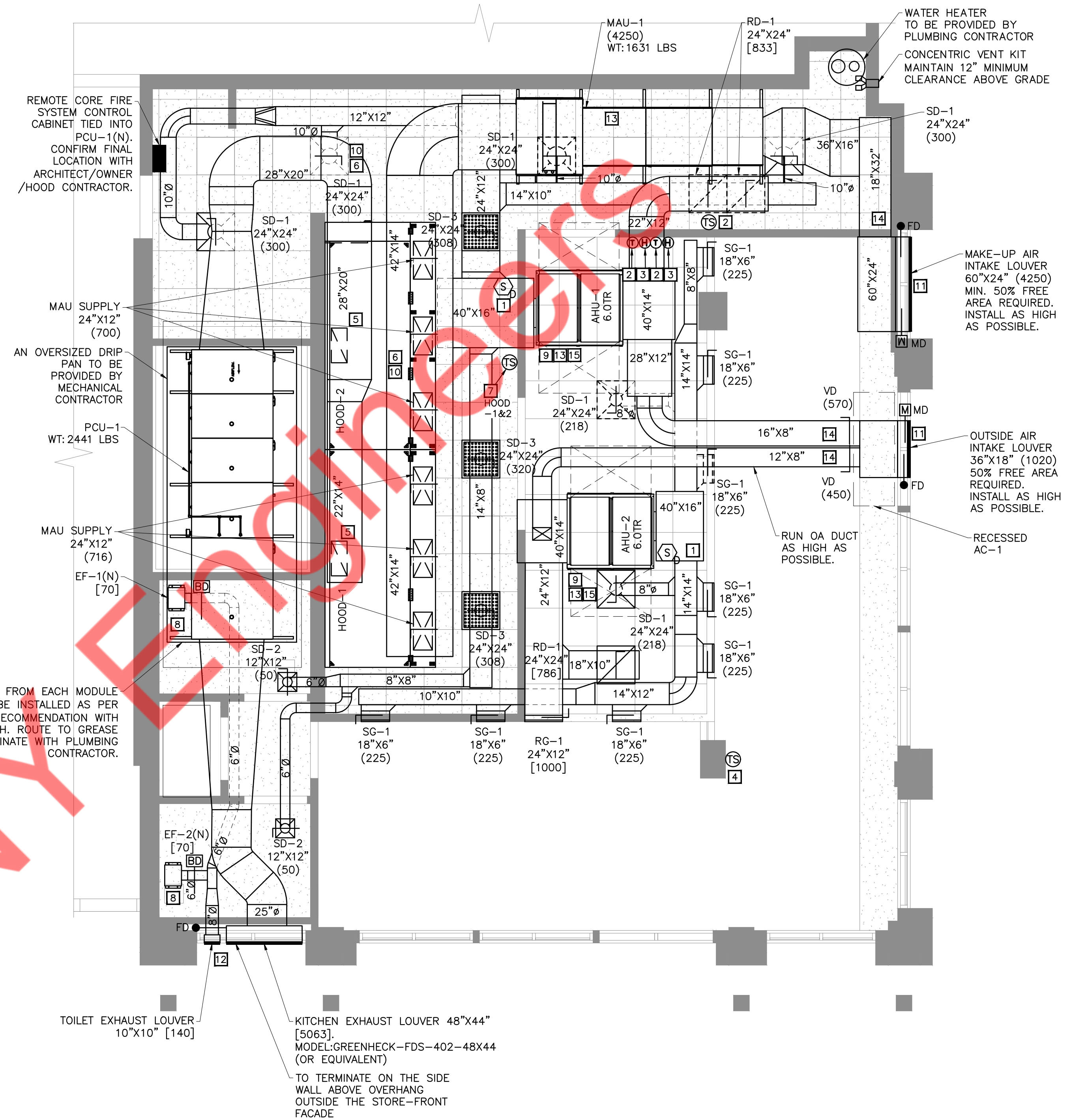
KITCHEN EXHAUST SYSTEM NOTES :

- PROVIDE CLEAN OUT AT ALL ELBOWS AND EVERY 15 FEET HORIZONTAL KITCHEN EXHAUST DUCT.
- COMMERCIAL KITCHEN GREASE DUCTS SHALL BE DESIGNED FOR THE TYPE OF COOKING APPLIANCE AND HOOD SERVED.
- 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.
- 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.
- 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.
- 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 SIDES. 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).
- PROVIDE SMOKE TEST TO PROOF TIGHTNESS OF THE GREASE DUCT.
- 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.
- PROVIDE A FUSIBLE LINK FIRE DAMPER OF THE SAME GAGE AS THE HOOD EXHAUST DUCT SHALL BE ADDED AT THE POINT OF CONNECTION OF THE BRANCH DUCT TO THE EXHAUST DUCT. THE FIRE DAMPER SHALL BE CLOSED AUTOMATICALLY UPON THE PENETRATION OF THE FIRE-EXTINGUISHING SYSTEM, AND THE BRANCH DUCT SHALL BE MADE IN EITHER THE TOP OR SIDES OF THE MAIN DUCT IN A MANNER TO PREVENT GREASE FROM FLOWING INTO THE BRANCH DUCT.
- 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.
- 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.
- A GREASE DUCT SERVING THE TYPE-1 HOOD THAT PENETRATED A CEILING, WALL OR FLOOR SHALL BE ENCLOSED FROM THE FIRE POINT OF PENETRATION TO THE OUTLET TERMINAL. DUCT ENCLOSURES SHALL HAVE A FIRE-RESISTANCE RATING NOT LESS THAN THAT OF THE FIRE-RESISTANCE RATED ASSEMBLY PENETRATED BUT NEED NOT EXCEED 2 HOURS.
- 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.
- CONTRACTOR TO FIELD VERIFY EXACT LOCATION OF THE DUCTWORK. MODIFY DUCTWORK AS PER SITE CONDITIONS IF REQUIRED.


MECHANICAL KEY NOTES

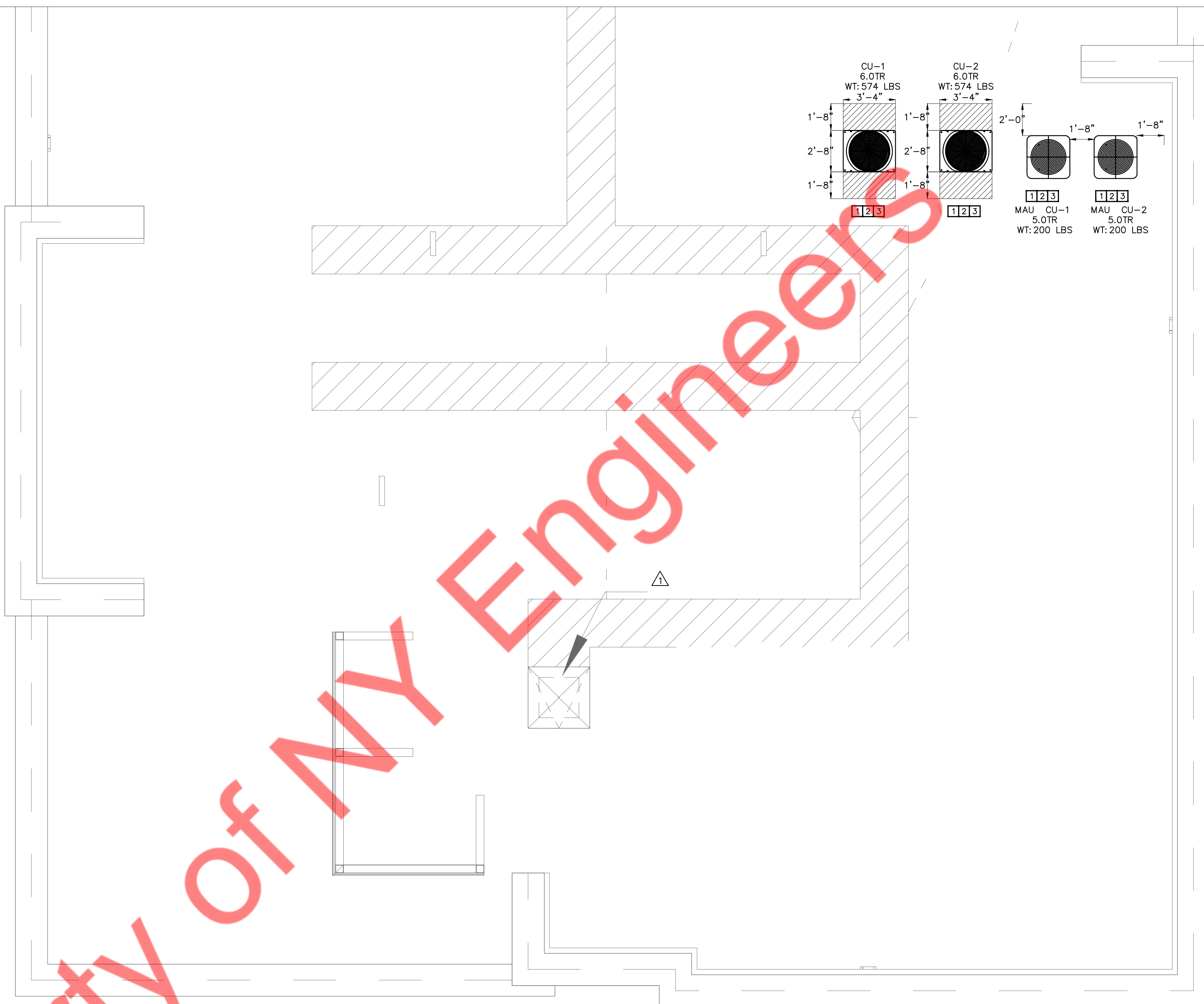
- 1 PROVIDE DUCT MOUNTED SMOKE DETECTOR. TIE IN AUDIO-VISUAL ANNUNCIATOR. UPON DETECTION OF SMOKE, AHU UNIT SHALL SHUT DOWN AND ACTIVATE ALARM. COORDINATE INSTALLATION LOCATION WITH ACCESS REQUIREMENTS.
- 2 PROVIDE 7-DAY PROGRAMMABLE T-STAT AND H-STAT WITH AUTO-CHANGEOVER AND AUTOMATIC START CAPABILITY. MOUNT THERMOSTAT 48" ABOVE FINISHED FLOOR. COORDINATE FINAL INSTALLATION LOCATION OF THERMOSTAT WITH OWNER'S REPRESENTATIVE.
- 3 PROVIDE MICROPROCESSOR REMOTE INTERFACE. MOUNT MICROPROCESSOR REMOTE INTERFACE 48" ABOVE FINISHED FLOOR. COORDINATE FINAL INSTALLATION LOCATION OF MICROPROCESSOR REMOTE INTERFACE WITH OWNER'S REPRESENTATIVE.
- 4 PROVIDE COMBINATION TEMPERATURE/HUMIDITY SENSOR. MOUNT SENSOR 48" ABOVE FINISHED FLOOR. HUMIDITY SENSOR SHALL OPERATE REFRIGERATION SYSTEM AND INITIATE HOT GAS REHEAT AS REQUIRED TO MAINTAIN SPACE HUMIDITY AT 55% RH.
- 5 INSTALL OWNER FURNISHED TYPE I GREASE EXHAUST HOOD. SUPPORT HOOD PER MANUFACTURER'S INSTALLATION INSTRUCTIONS. PROVIDE TRAPEZE HANGERS FOR ALL THREAD SUPPORT UNDER DUCTWORK AS REQUIRED. REFER TO HOOD DRAWING SET ON SHEET H100 TO H103 FOR HOOD SPECIFICATION AND ADDITIONAL INFORMATION.
- 6 INSTALL OWNER FURNISHED UL-2221 LISTED DOUBLE-WALL GREASE DUCT, EQUAL TO FRANKIE SYSTEMS MODEL FRDW-2R ROUND 20 GAUGE 430 STAINLESS INNER DUCT INSULATED WITH A 24 GAUGE 430 STAINLESS OUTER SHELL FROM HOOD COLLAR EXHAUST FAN ON ROOF. INSTALL EXHAUST DUCT PER MANUFACTURER'S INSTRUCTIONS. PROVIDE CLEANOUTS AT EVERY CHANGE OF DIRECTION IN THE DUCT AND/OR EVERY 10 FEET WITH MINIMUM OF 3 FEET OF CLEARANCE IN FRONT OF CLEAN-OUT.
- 7 INSTALL ROOM TEMPERATURE SENSOR FOR HOOD THERMOSTATIC CONTROL. SEE HOOD DRAWING SET ON H100 TO H103 FOR HOOD SPECIFICATIONS AND ADDITIONAL INFORMATION.
- 8 CEILING MOUNTED EXHAUST FAN. INTERCONNECT EXHAUST FAN WITH LIGHTS IN THIS ROOM. REFER TO ELECTRICAL LIGHTING PLAN. FAN SHALL BE SUSPENDED FROM STRUCTURE ABOVE. VERIFY EXACT LOCATION OF STRUCTURAL MEMBERS PRIOR TO INSTALLATION.
- 9 CONNECT CD FROM AC UNITS TO NEAREST PLUMBING DRAIN WITH AIR GAP FITTING. PROVIDE CONDENSATE DRAIN PUMP IF REQUIRED. PROVIDE SECONDARY DRAIN PAN WITH WATER LEAK BUG SENSOR TO SHUT DOWN THE UNIT IN CASE OF LEAKAGE.
- 10 PROVIDE HORIZONTAL SLOPE IN THE DIRECTION OF DISCHARGE OF NOT LESS TAN 1/8 UNIT VERTICAL IN 12 UNITS HORIZONTAL.
- 11 ALL FRESH AIR INTAKES SHALL BE LOCATED A MINIMUM OF 10' FROM ANY SANITARY VENT, EXHAUST FAN DISCHARGE AND FLUE OF OTHER GAS FIRED EQUIPMENT. WHEN NECESSARY, EXTEND VENT OR PROVIDE ADDITIONAL FRESH AIR INTAKE DUCTWORK AS DIRECTED BY THE ENGINEER.
- 12 PROVIDE EXHAUST LOUVER AS SHOWN.
- 13 ACOUSTICALLY LINE THE FIRST 10'-0" OF BOTH SUPPLY AND RETURN MAIN DUCTS.
- 14 ALL OUTSIDE AIR INTAKE DUCTS SHALL BE INSULATED WITH MIN. R-8 INSULATION.
- 15 AHU MUST SHUT DOWN WITH FIRE SUPPRESSION SYSTEM ACTIVATION.

GREASE DRAIN LINES FROM EACH MODULE IN PCU-1(N) SHALL BE INSTALLED AS PER MANUFACTURER'S RECOMMENDATION WITH THE REQUIRED PITCH. ROUTE TO GREASE INTERCEPTOR. COORDINATE WITH PLUMBING CONTRACTOR.

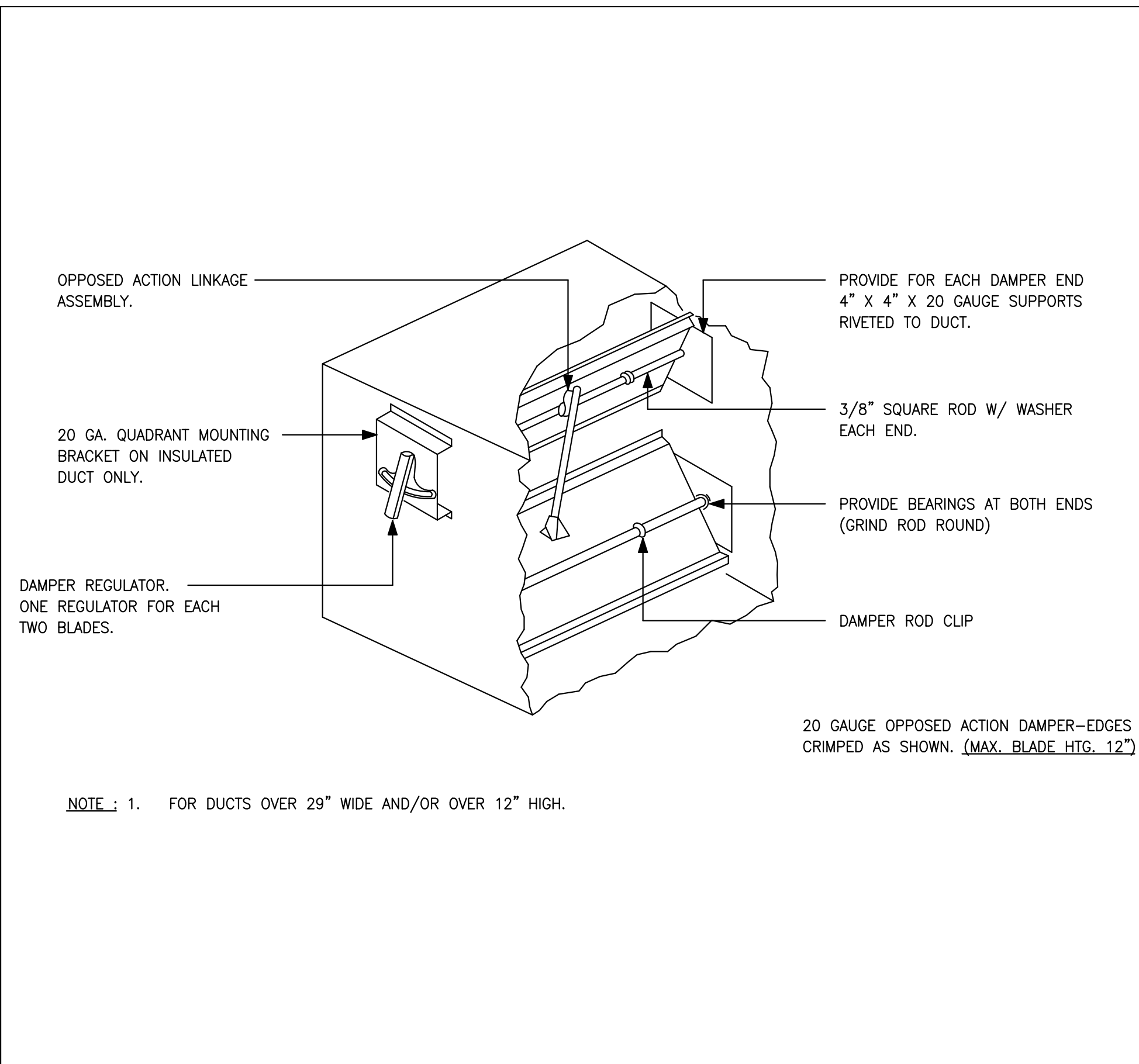


MECHANICAL PLAN KEY NOTES:

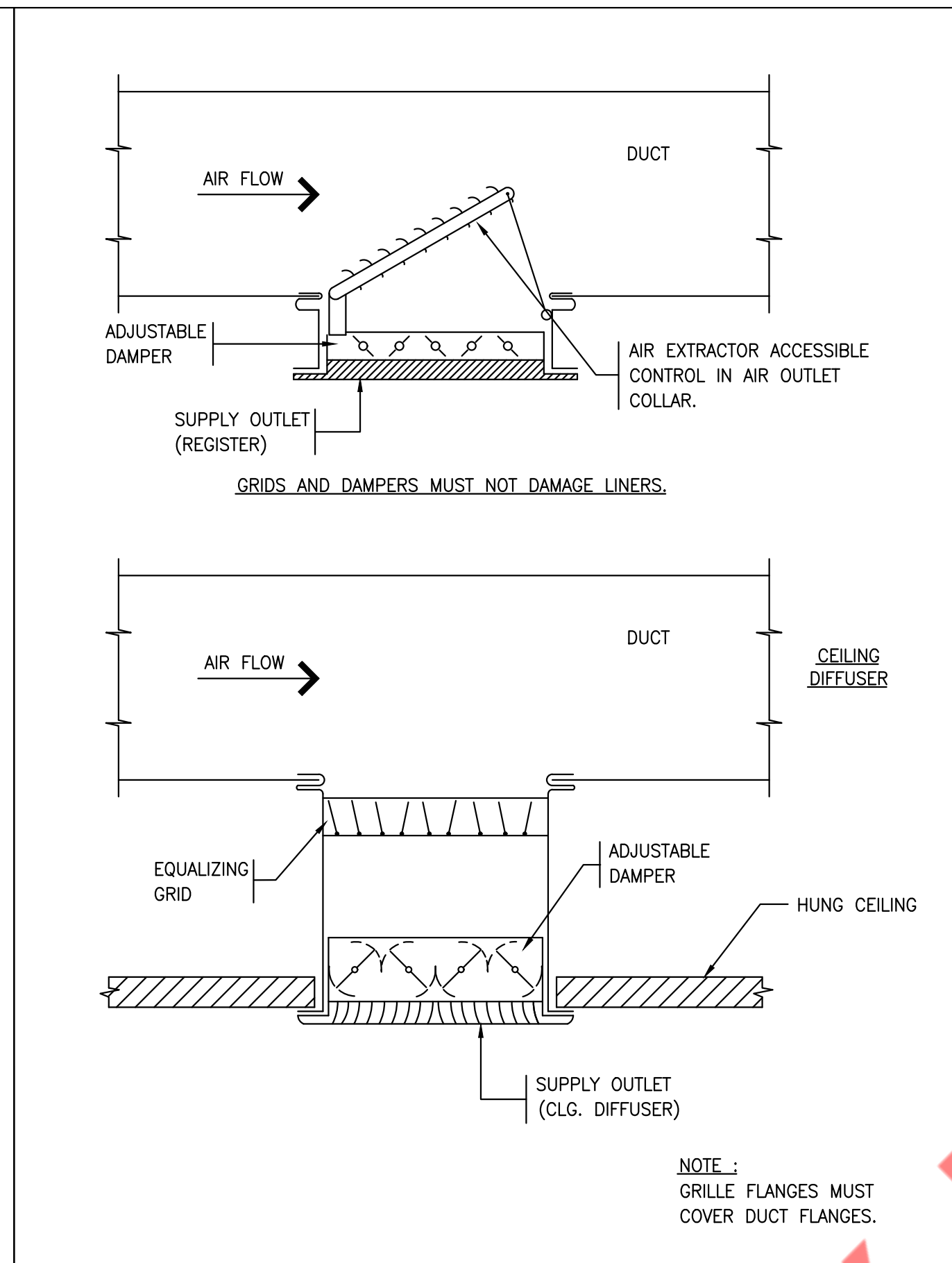
- 1 VERIFY FINAL LOCATION OF HVAC EQUIPMENT IN COORDINATION WITH ARCHITECT AND/OR OWNER AND EQUIPMENT PROVIDER.
- 2 CONDENSER ON CONCRETE PAD/STEEL DUNNAGE WITH VIBRATION ISOLATORS.
- 3 INSTALL NEW REFRIGERANT PIPING UP TO RESPECTIVE AHU & MAU. 



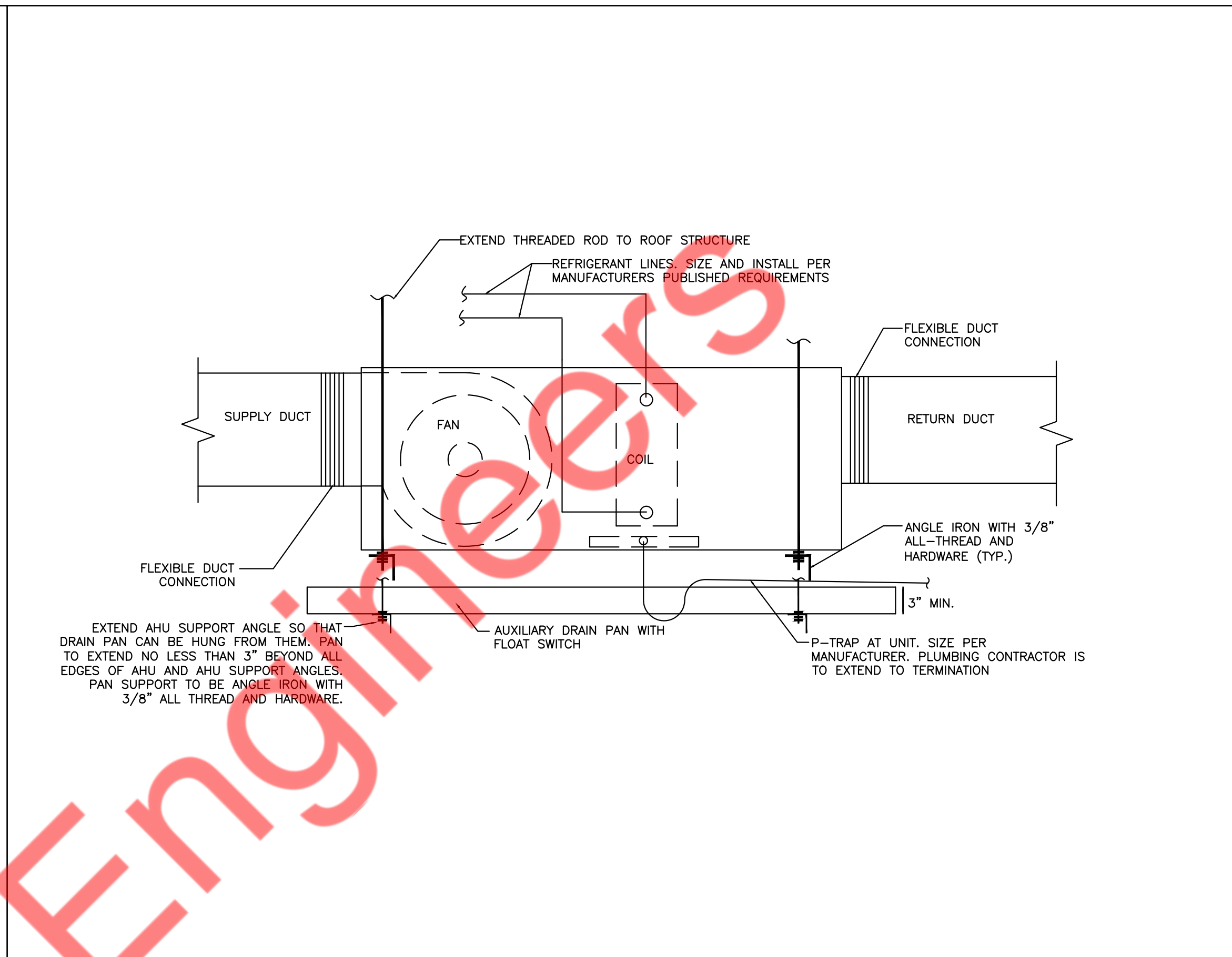
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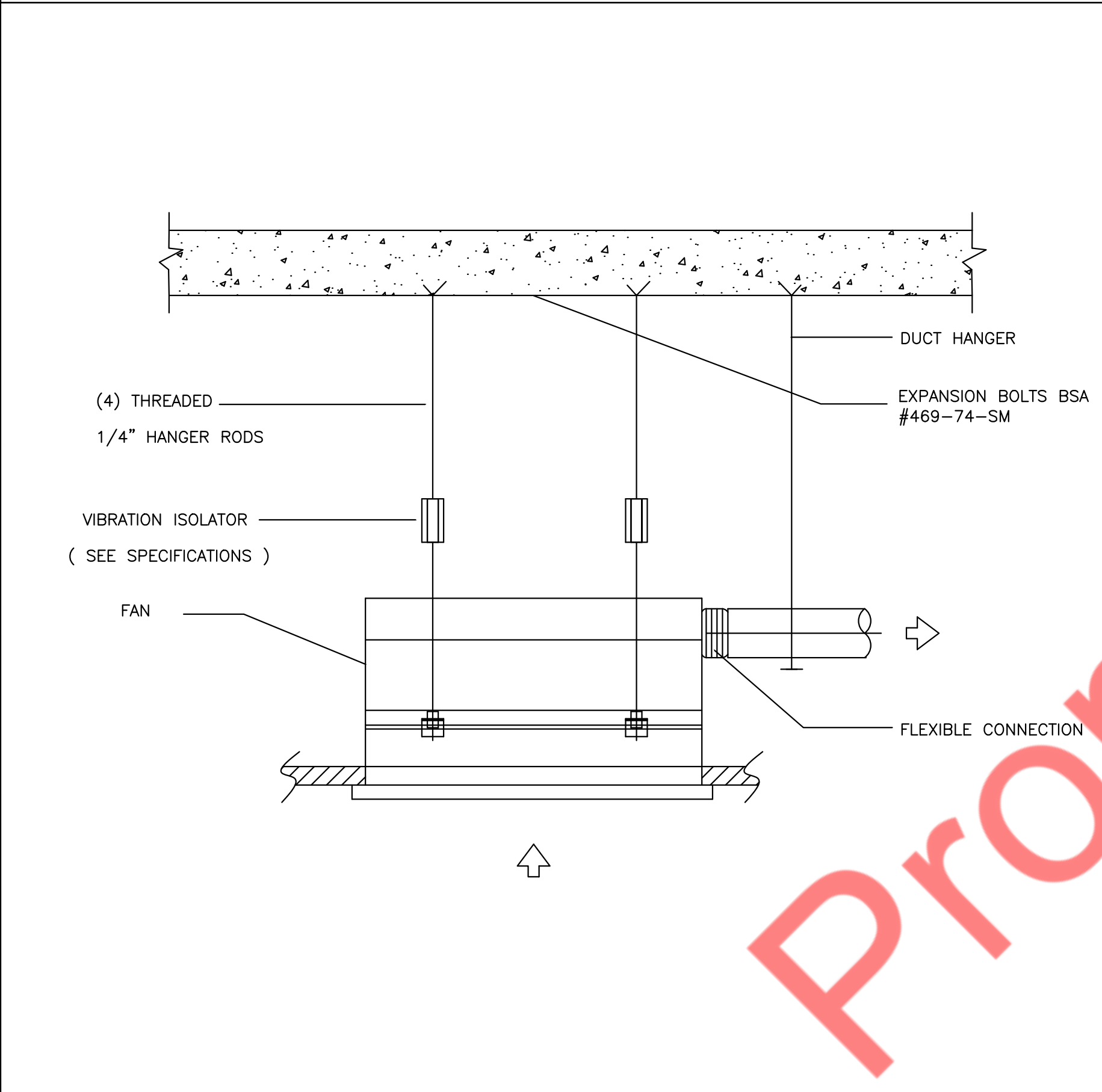
1 LOW PRESSURE BALANCING DAMPER
M500 N.T.S



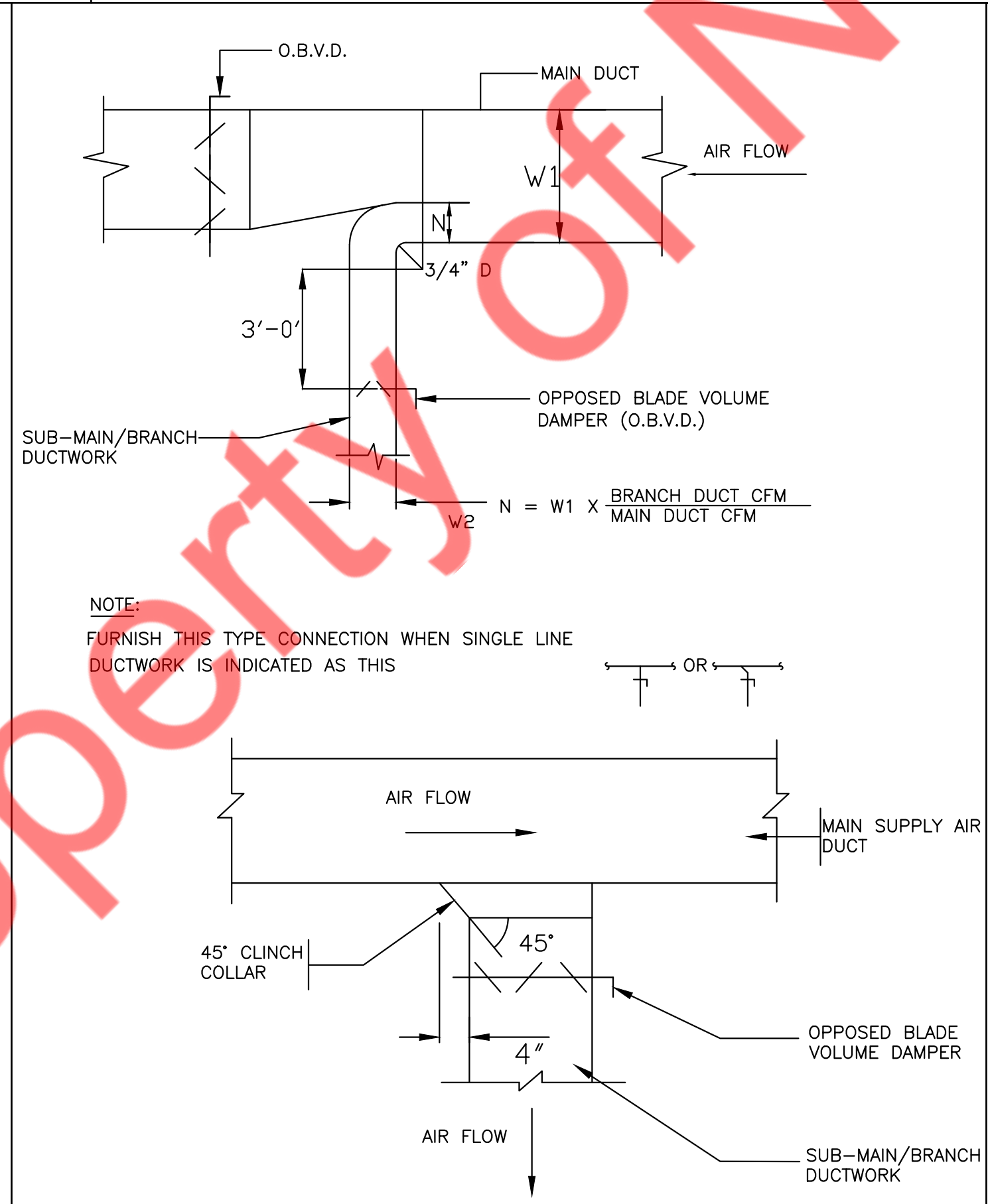
2 DIFFUSER AND REGISTER CONNECTIONS
M500 N.T.S



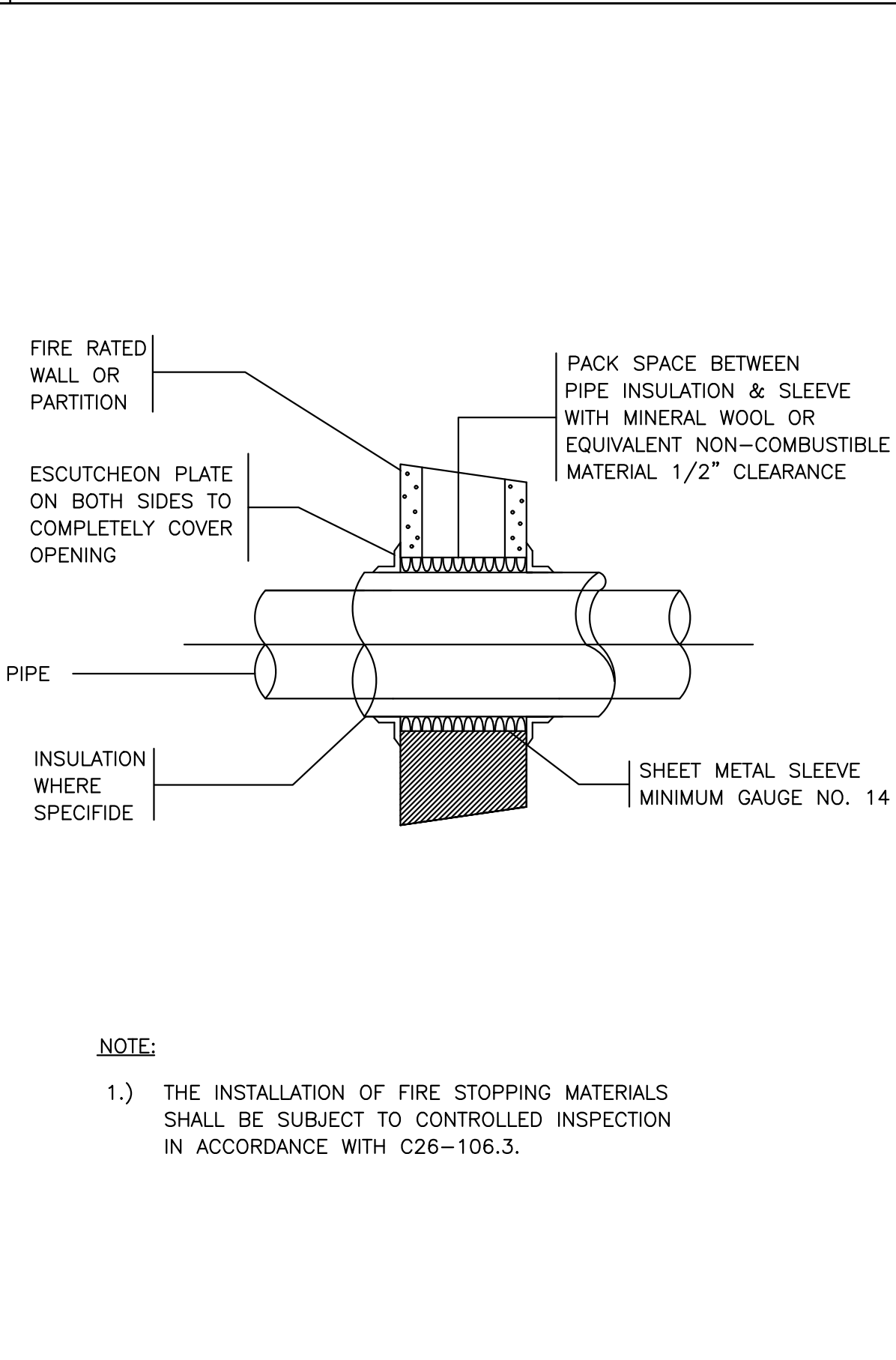
3 AIR HANDLER DETAILS
M500 N.T.S



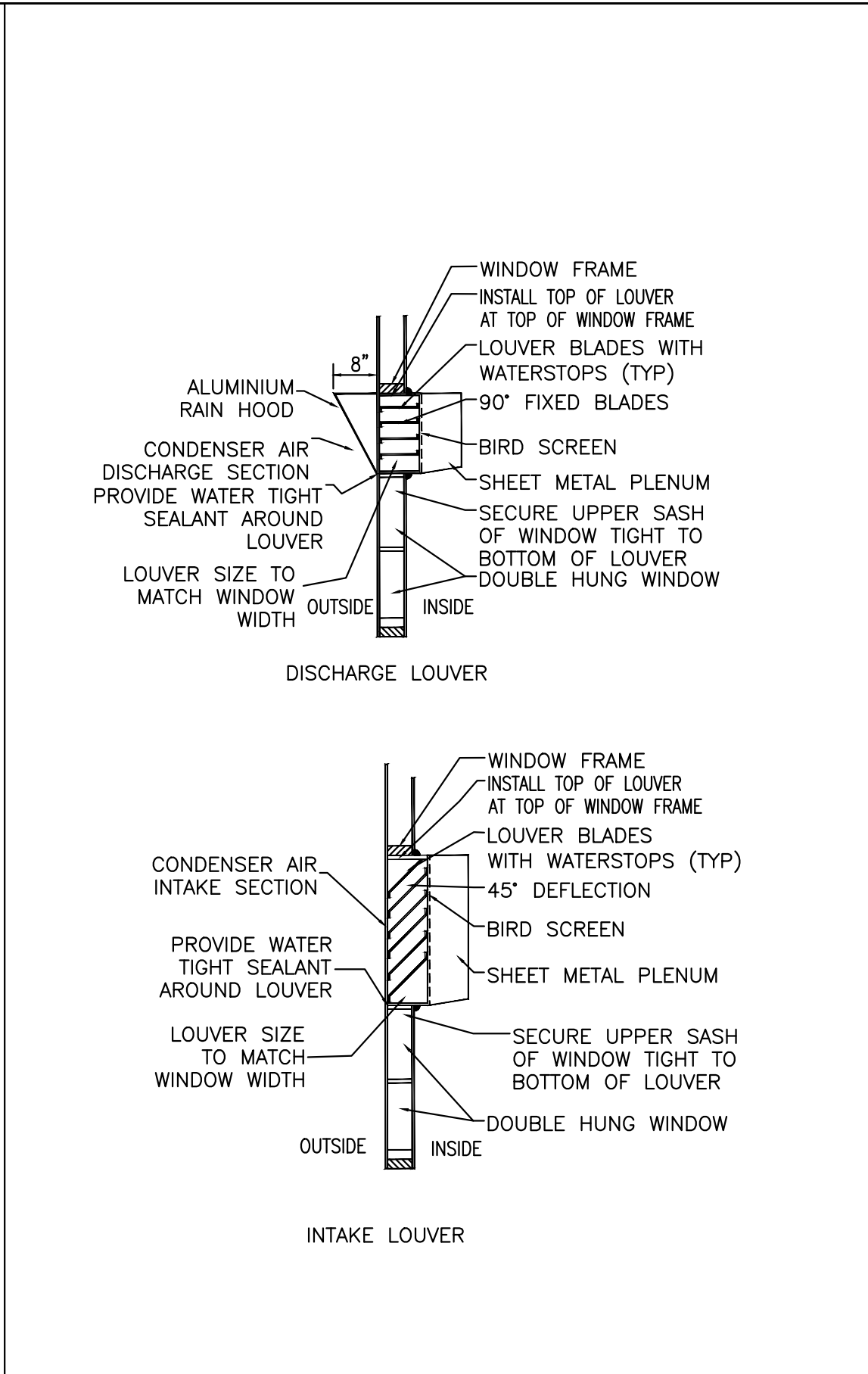
4 CEILING FAN HANGING SUPPORT DETAIL
M500 N.T.S



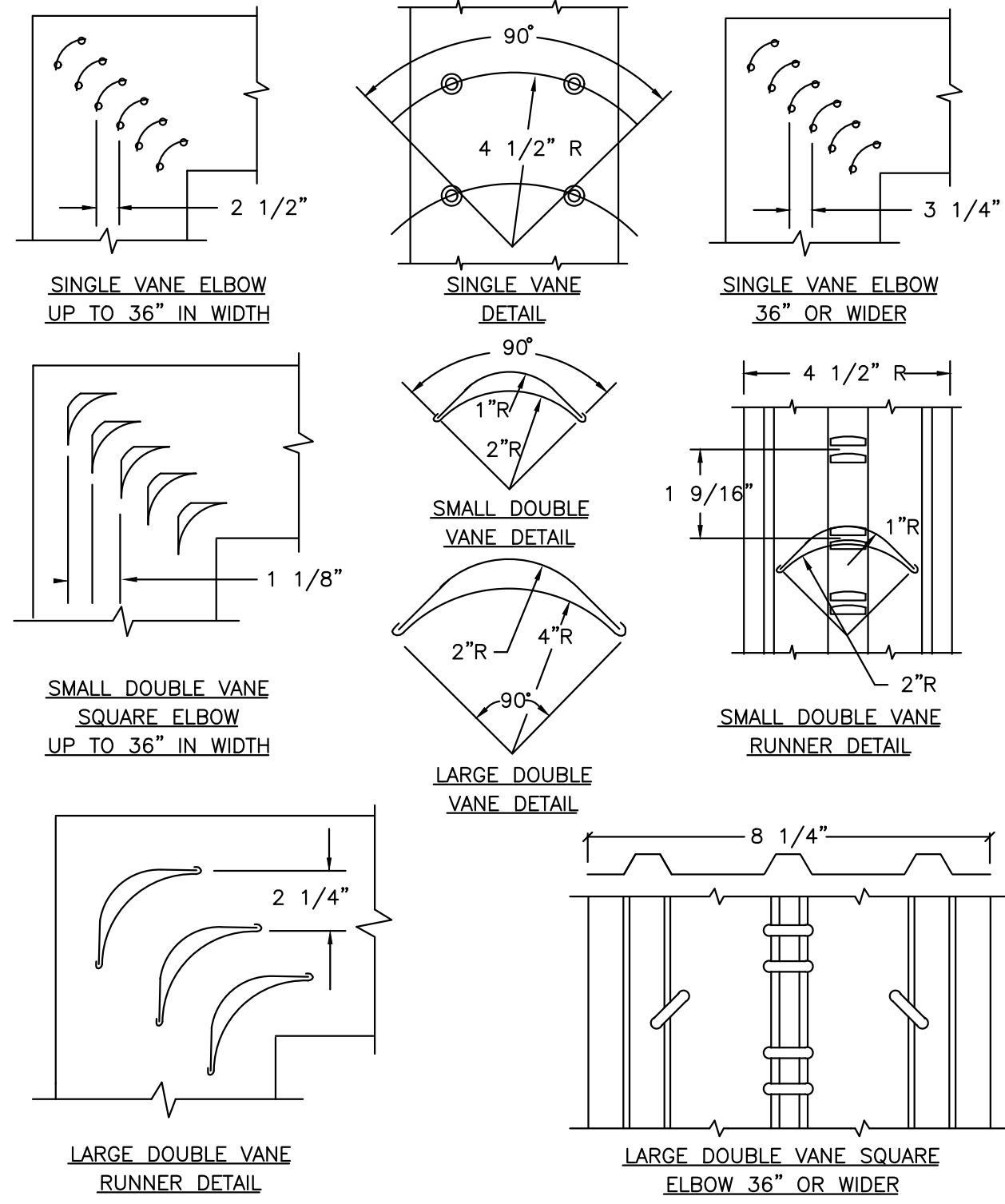
5 SUB-MAIN/BRANCH DUCT CONNECTION
M500 N.T.S



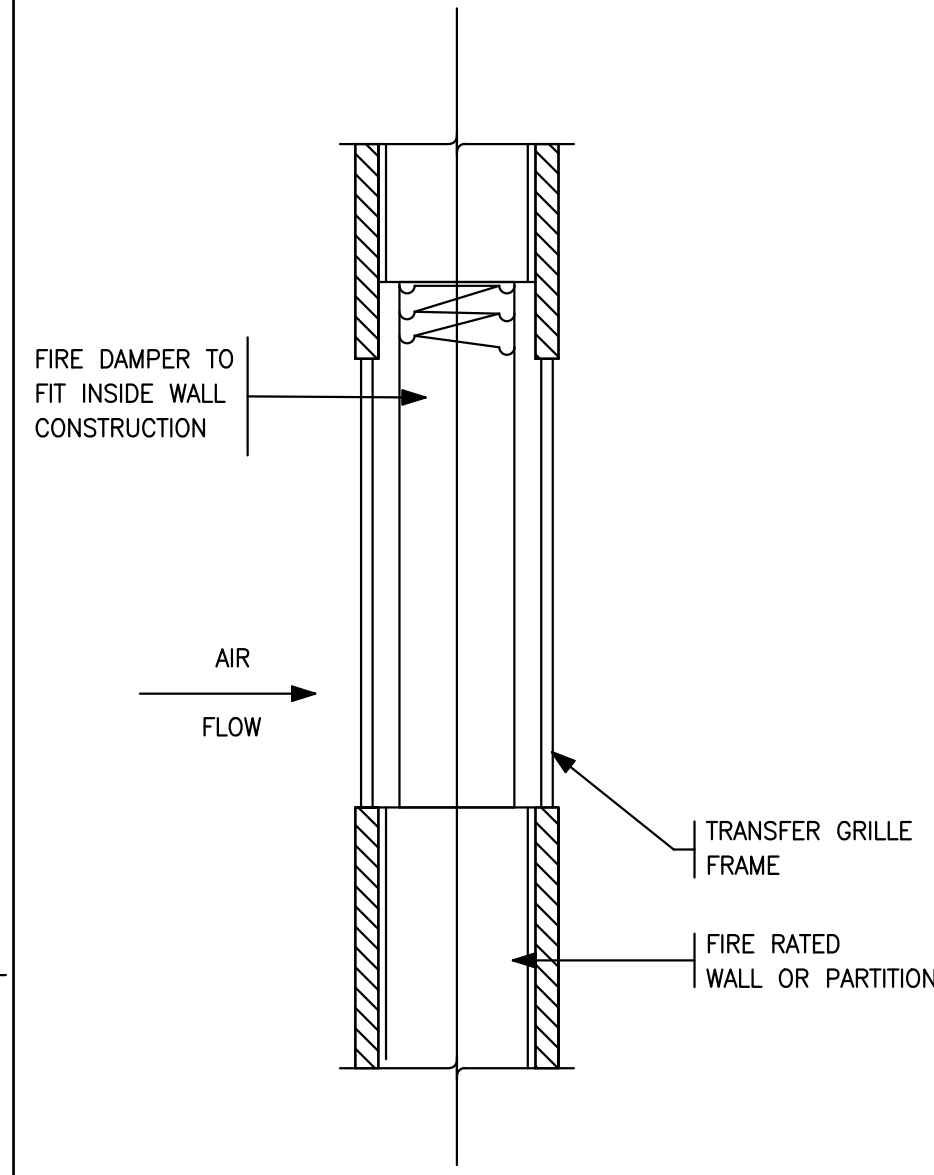
6 PIPE SLEEVE THRU RATED WALL
M500 N.T.S



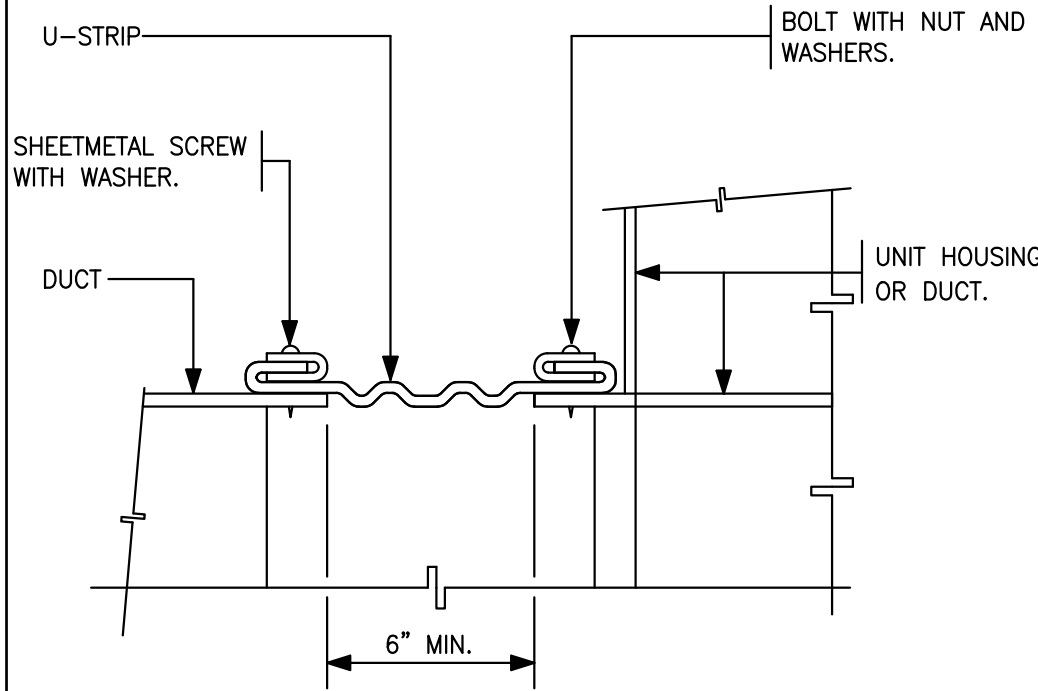
7 LOUVER DETAIL
M500 N.T.S



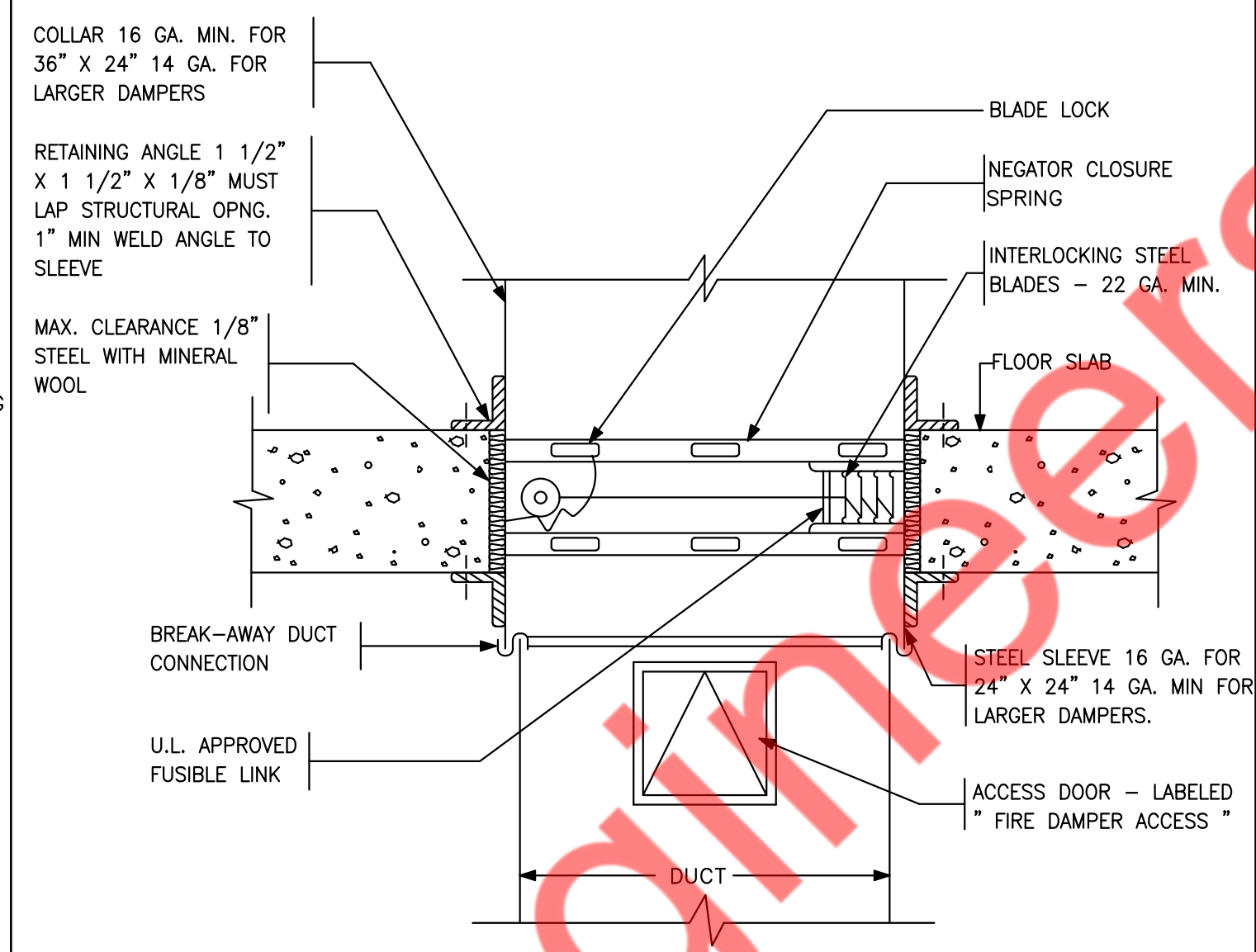
1 LOW VELOCITY DUCTWORK ELBOWS
M501 N.T.S



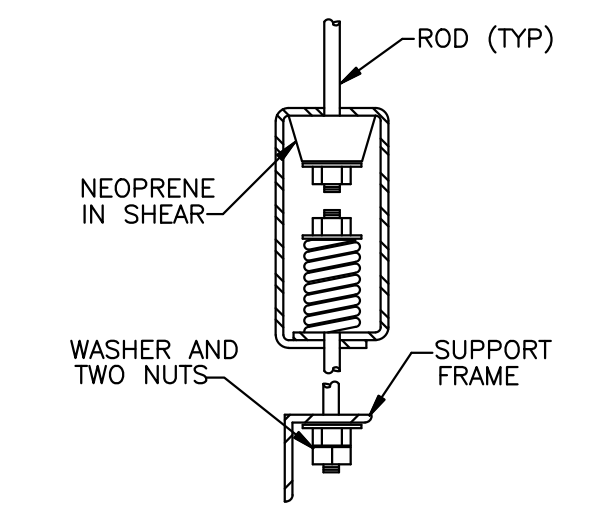
2 VERTICAL FIRE DAMPER
M501 N.T.S



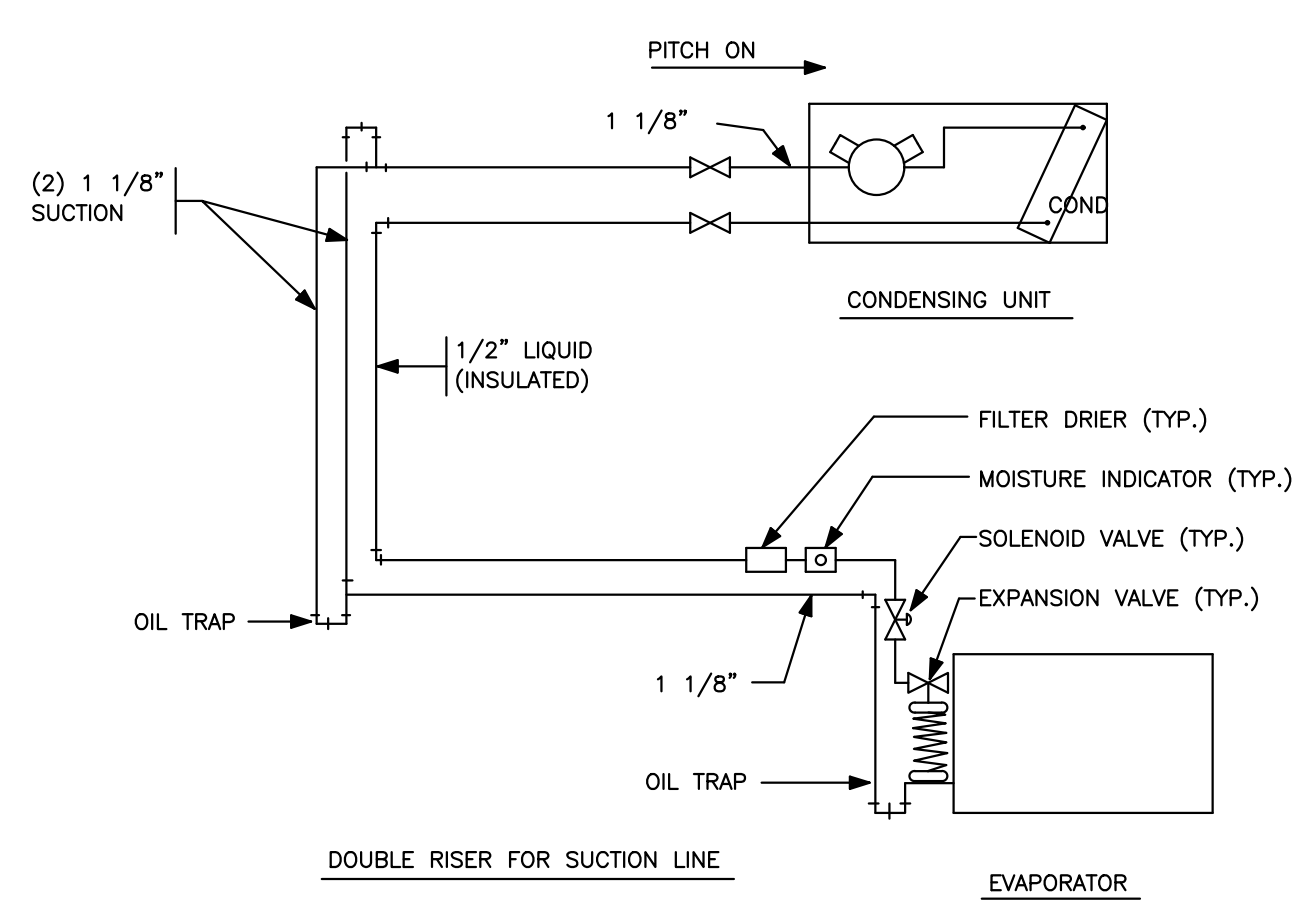
3 FLEXIBLE CONNECTION DETAIL
M501 N.T.S



4 HORIZONTAL FIRE DAMPER DETAIL
M501 N.T.S

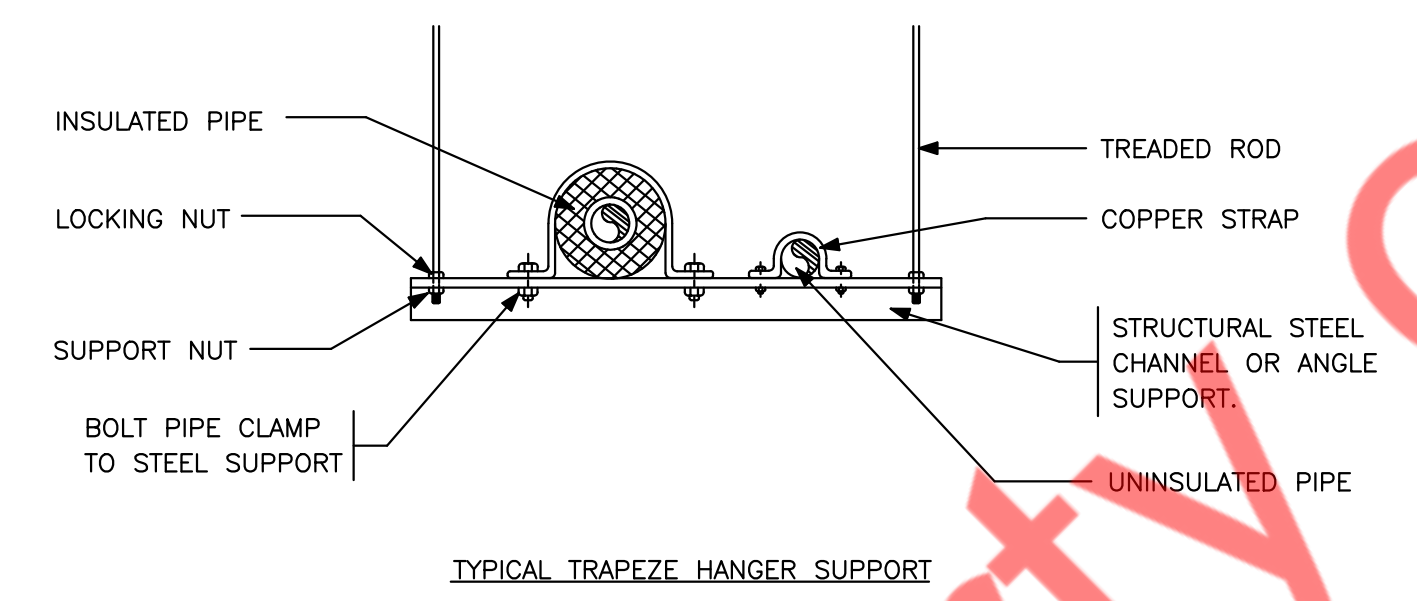


5 VIBRATION ISOLATOR
M501 N.T.S



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

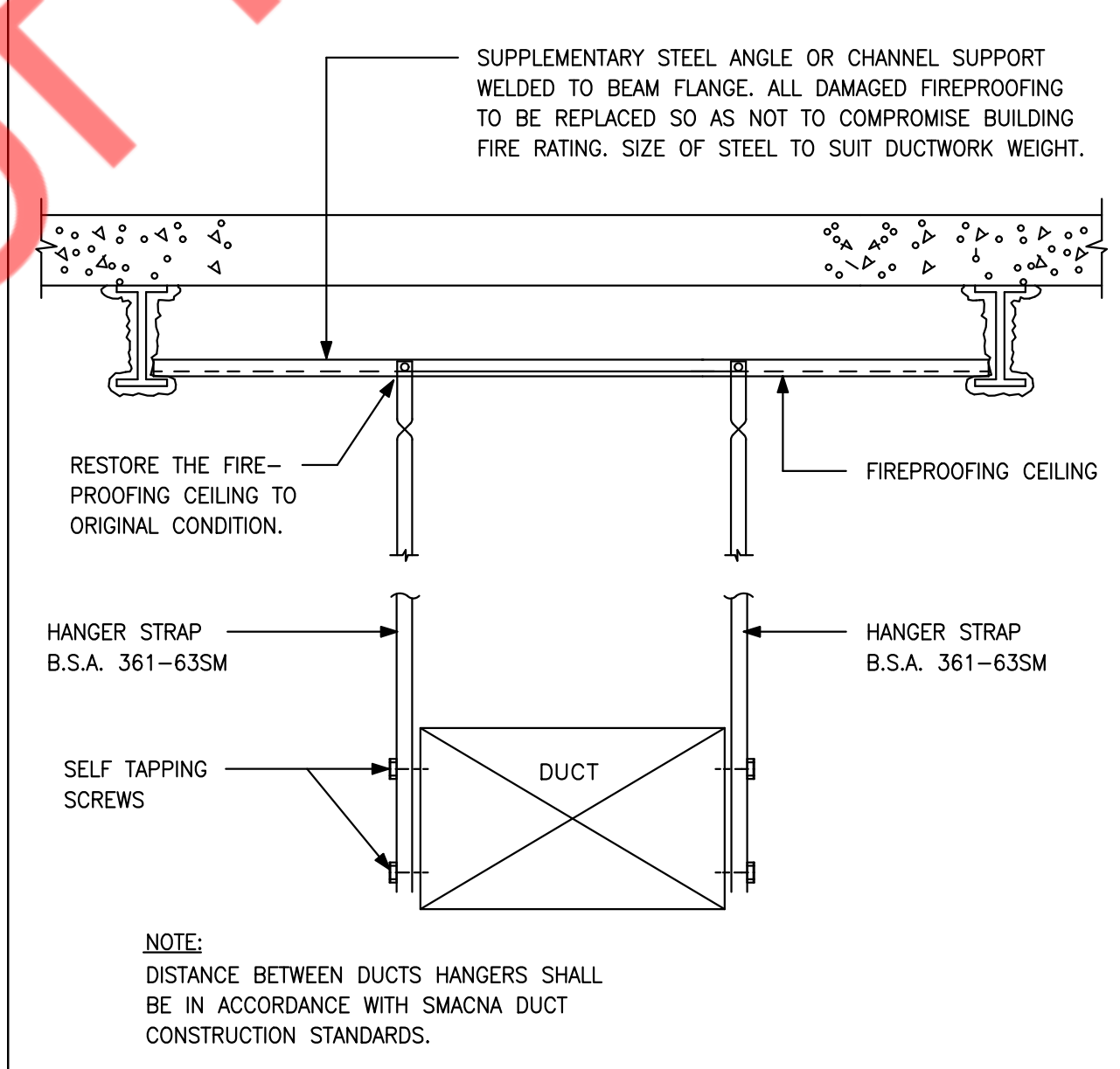
6 REFRIGERENT PIPING SCHEMATIC
M501 N.T.S



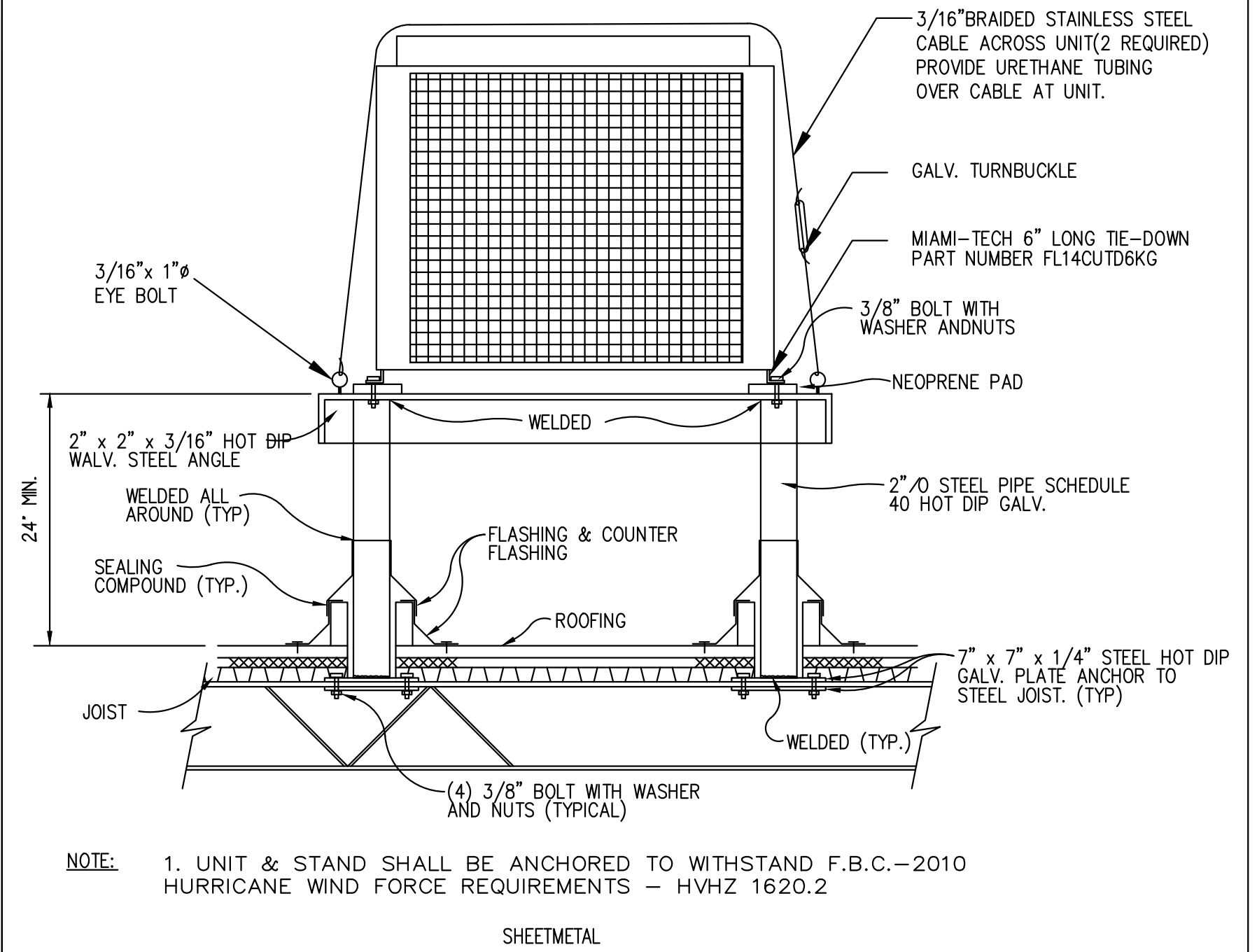
PIPE HANGER ROD AND SPACING SCHEDULE						
NOMINAL PIPE OR TUBE SIZE - INCHES	5/8	3/4	7/8	1	1 1/2	2 2 1/2
HANGER ROD SIZES INCHES	3/8	3/8	3/8	3/8	3/8	3/8
MAX. SPACING BETWEEN PIPE SUPPORTS - FEET	-	6	-	7	9	10
MAX. SPACING BETWEEN CU. TUBE SUPPORTS-FT.	6	6	6	6	8	9

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.

7 METHOD OF HANGING REFRIGERANT PIPING
M501 N.T.S



8 METHOD OF HANGING DUCTWORK
M501 N.T.S



NOTE: 1. UNIT & STAND SHALL BE ANCHORED TO WITHSTAND F.B.C.-2010 HURRICANE WIND FORCE REQUIREMENTS - HVHZ 1620.2

9 CONDENSING UNIT MOUNTING DETAIL
M501 N.T.S

AHU UNIT SCHEDULE																		
TAG	LOCATION	MANUFACTURER (AS STANDARD)	MODEL NO. (AS STANDARD)	TYPE	COOLING MBH	HEATING MBH	FAN DATA				ELECTRICAL DATA				DIMENSIONS W(N)X(H)X(D)(N)	OPERATING WEIGHT (LBS)	REMARKS	
							OA (CFM)	MIN (CFM)	MAX (CFM)	ESP (IN WG)	VOLT	PH	HZ	MCA (A)				MOCP (A)
AHU-1	SEE DWG.	TOSHIBA	MMD-AP0726HP-UL	HORIZONTAL DUCTED	72	81.0	570	1471	2236	1.0	208-230	1	60	5.7	15	55 X 18 X 35	218	PROVIDE DISCONNECT SWITCH,VIBRATION ISOLATION, REMOTE TEMP SENSOR, THERMOSTAT CONTROL, CONDENSATE PUMP, CONDENSATE OVERFLOW SENSOR
AHU-2							450											

- NOTES:
- SUPPLY AIR CFM BASED ON HIGH SPEED.
 - REFRIGERANT R410A SHALL BE PROVIDED.
 - PROVIDE MOUNTING BRACKETS AND ALL ASSOCIATED ACCESSORIES.
 - ALL REFRIGERANT PIPING TO BE SIZED PER MANUFACTURERS RECOMMENDATIONS.
 - PROVIDE MERV-13 FILTER ON ALL RETURNS TO UNIT.
 - INDOOR UNIT ACCESS PANEL FIELD-PROVIDED.
 - PROVIDE SECONDARY DRAIN PAN AND WATER LEAK SENSOR.
 - CONTRACTOR SHALL PROVIDE A LONG LINE SET FOR REFRIGERANT PIPING IN THE EVENT THAT TOTAL REFRIGERANT LENGTH EXCEEDS THE MANUFACTURER'S STANDARD RECOMMENDED LENGTH.

HEAT PUMP SCHEDULE																	
TAG	LOCATION(S) SERVED	MANUFACTURER	MODEL NO.	TYPE	DIMENSIONS (WXHXD) (IN)	MBH		ELECTRICAL DATA				EER	COP	PIPING DIA.		OPERATING WEIGHT (LBS)	REMARKS
						COOL	HEAT	VOLTS	PHASE	MCA	MOCP			LIQUID (IN)	GAS (IN)		
CU-1	SEE DWG.	TOSHIBA	MMY-MAPO726HT9P-UL	AIR COOLED	39X72X30	72.0	81.0	208-230	3	27 A	30A	13.7	3.88	1/2"	7/8"	574	PROVIDE DISCONNECT, ROOF EQUIPMENTS SUPPORTS, LOW AMBIENT COOLING KIT, LONG SET OF REFRIGERENT PIPING AS PER MANUFACTURER STANDARD.
CU-2																	

- NOTES:
- UNIT SHALL HAVE SEVEN YEAR EXTENDED WARRANTY FOR COMPRESSORS & FIVE YEARS FOR PARTS.
 - PROVIDE COMPRESSOR CYCLE PROTECTOR.
 - INSTALL CONDENSER ON STEEL DUNNAGE/CONCRETE PADS. PROVIDE NEW STEEL SUPPORT AS REQUIRED.
 - CONTRACTOR SHALL PROVIDE A LONG LINE SET FOR REFRIGERANT PIPING IN THE EVENT THAT TOTAL REFRIGERANT LENGTH EXCEED THE MANUFACTURER'S STANDARD RECOMMENDED LENGTH.

FAN SCHEDULE												
TAG	FAN UNIT MODEL#	SERVES	CFM	ESP (IN WG)	RPM	H.P	Ø	VOLT	FLA (A)	WEIGHT (LBS.)	SONES	REMARKS
EF-1	GREENHECK - SP-A390-VG	REST RM.	70	0.5	1174	0.04	1	208-230	0.9	24	3.5	PROVIDE DISCONNECT, HANGING BRACKETS, WALL VENT CAP
EF-2	GREENHECK - SP-A390-VG	REST RM.	70	0.5	1174	0.04	1	208-230	0.9	24	3.5	PROVIDE DISCONNECT, HANGING BRACKETS, WALL VENT CAP

- NOTES:
- ALL DIRECT DRIVE FANS SHALL BE FURNISHED WITH VARI-GREEN MOTOR CONTROL.
 - FAN SPEED SHALL BE EASILY FIELD ADJUSTABLE.
 - REFER TO DETAILS, FAN SHALL BE MOUNTED W/SUPPORT FRAMING BY OTHERS.
 - PROVIDE MOTOR STARTERS, DISCONNECTS WITH NEMA-3R (IF NOT FACTORY PROVIDED). ALL EQUIPMENT NORMAL POWER WIRING BY ELECTRICAL CONTRACTOR.
 - COORDINATE WITH ARCH./G.C. ACCESS DOORS FOR SERVICING ALL FANS WITHIN CEILINGS.
 - FANS SHALL BE UL-705 LISTED.

POLLUTION CONTROL UNIT SCHEDULE												
TAG	FAN UNIT MODEL#	SERVES	CFM	ESP (IN WG)	RPM	H.P	Ø	VOLT	FLA (A)	WEIGHT (LBS.)	SONES	REMARKS
PCU-1	CAPTIVE AIRE- KB20	HOODS	5063	2.0	1722	10.0	3	208-230	27	2441	35	RESTAURANT DUTY PROVIDE DISCONNECT, HINGE KIT.

MAKEUP AIR UNIT SCHEDULE																		
TAG	FAN UNIT MODEL#	TEMP. RISE	REQUIRED INPUT GAS PRESSURE	GAS TYPE	BLOWER	CFM	ESP (IN WG)	HEAT INPUT (MBH)	HEAT OUTPUT (MBH)	BURNER EFF.(%)	H.P	B.H.P	Ø	VOLT	MCA (A)	MOCP (A)	WEIGHT (LBS.)	SONES
MAU-1	A2-D.250-20D-MPU	24°F	7 IN. W.C. - 14 IN. W.C.	NATURAL	20MF-2-MOD	4250	0.5	118.4	108.9	92	5.0	2.78	3	208	18.2	30	1621	17.9

MAU CONDENSING UNIT														
TAG	LOCATION(S) SERVED	MODEL NO.	TEMPERATURE				COOLING			ELECTRICAL DATA				SEER
			ENT DB	ENT WB	LEAVE DB	LEAVE WB	TOTAL	SENSIBLE	LATENT	VOLTS	PHASE	MCA(A)	MOCP(A)	
MAU CU-1	SEE DWG.	A2-D.250-20D-MPU	91°F	78°F	76.8°F	70.9°F	120 MBH	63.9 MBH	56.1 MBH	208	3	17.4	30	14
MAU CU-2	SEE DWG.	A2-D.250-20D-MPU	91°F	78°F	76.8°F	70.9°F				208	3	17.4	30	14

REGISTER, GRILLE & DIFFUSER SCHEDULE									
TAG	SERVICE	CFM	NECK SIZE	FRAME TYPE	PATTERN	DAMPER	MATERIAL	FINISH	MANUFACTURER & MODEL No.
SD	SUPPLY	AS NOTED	AS NOTED	NOTE 1	AS SHOWN	YES	STEEL	PER ARCH.	PRICE SDG
SG	SUPPLY	AS NOTED	AS NOTED	NOTE 1,2	AS SHOWN	YES	STEEL	PER ARCH.	PRICE SDG
RG	RETURN	AS NOTED	AS NOTED	NOTE 1,2	AS SHOWN	YES	STEEL	PER ARCH.	PRICE RDG
RR	RETURN	AS NOTED	AS NOTED	NOTE 1, 2	FIXED	NO	STEEL	PER ARCH.	PRICE 80

NOTES:

- COORDINATE MOUNTING REQUIREMENTS WITH ARCHITECTURAL REFLECTED CEILING PLANS.
- PROVIDE FRAME SUITABLE FOR SURFACE MOUNTING, CEILING OR SIDEWALL.
- PROVIDE SQUARE TO ROUND TRANSITIONS WHERE NEEDED.

AIR CURTAIN SCHEDULE										
MARK	QTY	MANUFACTURER	MODEL	SIZE	CFM	NET WT.(LBS)	VELOCITY (FPM)	V/PH./HZ	AMPS	MCB(A)
AC-1	1	BERNER ARCH	ARD12-2072A	72(W)*26(D)X15(H)	3014	182	1722	208/1/60	8.6	15

NOTES:

- PROVIDE MANUFACTURER RECOMMENDED ACCESSORIES.
- COORDINATE WITH ELECTRICAL CONTRACTOR FOR POWER REQUIREMENT.

AIR BALANCE					
UNIT	SUPPLY AIR (CFM)	OUTSIDE AIR		RETURN AIR (CFM)	EXHUAST AIR (CFM)
		SUPPLY (CFM)	%OA		
AHU-1	2236	570	25%	1666	-
AHU-2	2236	450	20%	1786	-
EF-1	-	-	-	-	70
EF-2	-	-	-	-	70
MUA-1	4250	4250	-	-	-
PCU-1	-	-	-	-	5063
TOTAL	8722	5270	-	3452	5203
BUILDING PRESSURE:				67 CFM	POSITIVE

VENTILATION CALCULATIONS												
ROOM TAG	AREA (SQ.FT.)	OCCUPANCY AS PER 2020 FBC, MECH./100SQ.FT.	OCCUPANCY AS PER 2020 FBC, MECH.	OCCUPANCY AS PER ARCHITURAL LAYOUT	FINAL OCCUPANCY	MIN OUTSIDE AIR AS PER FBC 2020		REQUIRED OA (CFM)	PROVIDED OA (CFM)	EXHUAST CFM/SQ.FT./FIXTURE AS PER 2020 FBC, MECH.	TOTAL EXHUAST (CFM)	PROVIDED EXHUAST (CFM)
						CFM/PEOPLE	CFM/SQ.FT					
DINING	613	70	43	25	20	7.5	0.18	260	350	0	0	0
SERVICE	246	15	4	5	5	7.5	0.12	67	100	0	0	0
KITCHEN	596	20	12	6	6	7.5	0.12	117	570	0.7	0	555
OFFICE	6	5	1	1	1	0.5	0.06	1	0	0	0	0
TOILET	47	0	0	0	0	0	0	0	0	70 PER FIXTURE	70	70
TOILET	47	0	0	0	0	0	0	0	0	70 PER FIXTURE	70	70
JAN	12	0	0	0	0	0	0	0	0	70 PER FIXTURE	50	50
TOTAL	1567	-	-	-	32	-	-	445	1020	-	-	745

ELECTRICAL SYMBOLS LIST

GENERAL NOTES

Table with 2 columns: Symbol and Description. Includes Lighting Fixture and Outlet Box, Luminaire Type, Circuit Number, Switching, Emergency (EM) and Nightlight (NL) fixtures, and Ceiling/Wall Mounted Self Powered Exit Light Fixture.

Table with 2 columns: Symbol and Description. Includes Switches and Controls: 20A SPST Toggle Switch, 20A 3-Way Toggle Switch, and Ceiling Occupancy Sensor.

Table with 2 columns: Symbol and Description. Includes Wiring Systems: Power or Lighting Circuitry Homerun with Panelboard Designation, Conduit and Wire to Building Ground, and Underground/Existing/New status.

Table with 2 columns: Symbol and Description. Includes Electrical Drawing List: E001 (Electrical Symbols, Abbreviations and General Notes), E002 (Electrical Specifications Sheet 1 of 2), E003 (Electrical Specifications Sheet 2 of 2), E100 (Electrical Lighting Plan), E101 (Electrical Power Plan), E102 (Electrical Roof Plan), E200 (Electrical Details), E201 (Electrical Details), E300 (Electrical Riser Diagram), E301 (Electrical Panel Schedule).

Table with 2 columns: Symbol and Description. Includes Power and Telecommunication: Junction Box with Blank Cover Plate, Simplex Receptacle, Duplex GFI Receptacle, Duplex Convenience Receptacle, Special Receptacle, Data Outlet, Telephone Outlet, and 4 Port Data Outlet.

Table with 2 columns: Symbol and Description. Includes Motors and Controls: AC Indoor Unit Motor, AC Outdoor Unit Motor, Non Fused Disconnect Switch (30A/208V, 60A/208V, 100A/208V, 200A/208V), Fused Disconnect Switch, Duplex Pump, Electrical Heater, Thermal Overload Switch, and Manual Motor Switch.

Table with 2 columns: Symbol and Description. Includes Annotation: Keyed Note Reference, Mounting Height (+24"), and Detail Reference (Top/Bottom).

Table with 2 columns: Symbol and Description. Includes Power Distribution: Major Electrical Component or Device, Voltage and Amperage, and Distribution Panelboard (120/208V).

Table with 4 columns: Abbreviation, Full Name, Abbreviation, Full Name. Includes Amperes (A), Air Conditioning Unit (A/C, AC), Ampere Frame/Amp Fuse (AF), Above Finished Floor (AFF), Amp Switch (AS), Amps Interrupting Capacity (AIC), Amp Trip (AT), Automatic Transfer Switch (ATS), Automatic (AUTO), American Wire Gauge (AWG), Conduit (C), Circuit Breaker (C/B, CB), Circuit (CKT), Ceiling (CLG), Communication (COMM), Current Transformer (CT), Copper (CU), Diameter (DIA), Disconnect (DISC), Down (DN), Distribution Panel (DP), Drawing (DWG), Junction Box (JB), One Thousand Circular Mils (KCMIL), Kilovolt (KV), Kilovolt-Amperes (KVA), Kilowatts (KW), Lighting (LTG), Maximum (MAX), Motor Controller (MC), Main Circuit Breaker (MCB), Main Lugs Only (MLO), Mounted (MTD), Manual Transfer Switch (MTS), Neutral (N), Not in Contract (NIC), Not to Scale (NTS), Panel (PNL), Watt (W).

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

Property of [Redacted]

ELECTRICAL SPECIFICATIONS

1. GENERAL:
- A. THE "GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION," LATEST EDITION, AND THESE SPECIFICATIONS AS APPLICABLE ARE PART OF THIS CONTRACT.
- B. DRAWING ARE DIAGRAMMATIC AND INDICATE GENERAL ARRANGEMENT OF SYSTEMS AND WORK. CONDUIT ROUTING IS SHOWN DIAGRAMMATICALLY AND DOES NOT SHOW ALL OFFSETS, DROPS AND RISES OF RUNS. THE CONTRACTOR SHALL ALLOW IN HIS PRICE FOR ROUTING OF CONDUIT TO AVOID OBSTRUCTIONS. COORDINATION WITH EXISTING SERVICES, INCLUDING THOSE OF OTHER TRADES, IS REQUIRED, MAINTAIN HEADROOM AND SPACE CONDITIONS.
- C. BIDDERS, BEFORE SUBMITTING PROPOSALS, SHALL VISIT AND CAREFULLY EXAMINE THE AREA AFFECTED BY THIS WORK TO FAMILIARIZE THEMSELVES WITH THE EXISTING CONDITIONS AND THE DIFFICULTIES THAT WILL ATTEND THE EXECUTION OF THIS WORK. SUBMISSION OF A PROPOSAL WILL BE CONSTRUED AS EVIDENCE THAT SUCH AN EXAMINATION HAS BEEN MADE, AND LATER CLAIMS WILL NOT BE RECOGNIZED FOR EXTRA LABOR, EQUIPMENT, OR MATERIALS, REQUIRED BECAUSE OF DIFFICULTIES ENCOUNTERED WHICH COULD HAVE BEEN FORESEEN HAD SUCH AN EXAMINATION BEEN MADE.
- D. DISCONNECT, REMOVE AND/OR RELOCATE EXISTING MATERIAL, EQUIPMENT AND OTHER WORK AS NOTED OR REQUIRED FOR PROPER INSTALLATION OF NEW WORK.
- E. THE CONTRACTOR SHALL KEEP ALL EQUIPMENT AND MATERIALS, AND ALL PARTS OF THE BUILDING EXTERIOR SPACES AND ADJACENT STREETS, SIDEWALKS AND PAVEMENTS, FREE FROM MATERIAL AND DEBRIS RESULTING FROM THE EXECUTION OF THIS WORK. EXCESS MATERIALS WILL NOT BE PERMITTED TO ACCUMULATE EITHER ON THE INTERIOR OR THE EXTERIOR.
- F. SEAL OPENINGS THROUGH PARTITIONS, WALLS AND FLOORS WITH MINERAL WOOL OR OTHER NONCOMBUSTIBLE MATERIAL, UNLESS OTHERWISE NOTED.
- G. PROVIDE ALL NECESSARY FLASHING AND COUNTER FLASHING TO MAINTAIN THE WATERPROOFING INTEGRITY OF THE BUILDING AS REQUIRED BY THE INSTALLATION OR REMOVAL OF CONDUIT AND EQUIPMENT, PROVIDE EQUIPMENT CURBS AS REQUIRED.
- H. ALL EXISTING MATERIAL, EQUIPMENT AND CONSTRUCTION DEBRIS TO BE REMOVED UNDER THIS CONTRACT SHALL BECOME THE PROPERTY OF THE CONTRACTOR WITH THE EXCEPTION OF SPECIFIC EQUIPMENT 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.
- I. THE CONTRACTOR'S PROPOSAL FOR ALL WORK SHALL BE PREDICATED ON THE PERFORMANCE OF THE WORK DURING REGULAR WORKING HOURS. WHEN SO DIRECTED, HOWEVER, THE CONTRACTOR SHALL INSTALL WORK DURING OVERTIME HOURS AND THE ADDITIONAL COST TO BE CHARGED THEREFORE SHALL BE ONLY THE "PREMIUM" PORTION OF THE WAGES PAID.
- J. UNLESS OTHERWISE SPECIFICALLY NOTED OR SPECIFIED, INCLUDE ALL CUTTING AND PATCHING OF EXISTING FLOORS, WALLS, PARTITIONS AND OTHER MATERIALS IN THE EXISTING BUILDING. THE CONTRACTOR SHALL RESTORE THESE AREAS TO ORIGINAL CONDITION.
- K. ALL MATERIAL AND EQUIPMENT SHALL BE NEW UNLESS OTHERWISE NOTED AND SHALL BE IN ACCORDANCE WITH BUILDING STANDARDS.
- L. INSURANCE: PROVIDE IN ACCORDANCE WITH OWNER/BUILDING REQUIREMENTS AND SHALL INCLUDE A HOLD HARMLESS CLAUSE FOR OWNER AND ENGINEER.
- M. THE FINAL ACCEPTANCE SHALL BE MADE AFTER THE CONTRACTOR HAS ADJUSTED HIS EQUIPMENT, TESTED THE VARIOUS SYSTEMS, DEMONSTRATED THAT IT FULFILLS THE REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS AND HAS FURNISHED ALL THE REQUIRED CERTIFICATED OF INSPECTION AND APPROVAL.
2. GENERAL PROVISIONS FOR ELECTRICAL WORK:
- A. DEFINITIONS:
- 1) "PROVIDE": TO FURNISH, INSTALL AND CONNECT UP COMPLETE AND READY FOR SAFE AND REGULAR OPERATION THE PARTICULAR WORK REFERRED TO UNLESS SPECIFICALLY OTHERWISE NOTED.
- 2) "INSTALL": TO ERECT, MOUNT AND CONNECT COMPLETE WITH RELATED ACCESSORIES.
- 3) "FURNISH" OR "SUPPLY": TO PURCHASE, PROCURE, ACQUIRE, AND DELIVER COMPLETE WITH RELATED ACCESSORIES.
- 4) "WORK": LABOR, MATERIALS, EQUIPMENT, APPARATUS, CONTROLS, ACCESSORIES AND OTHER ITEMS REQUIRED FOR PROPER AND COMPLETE INSTALLATION.
- 5) "WIRING": RACEWAY, FITTINGS, WIRE, BOXES, AND RELATED ITEMS.
- 6) "CONCEALED": EMBEDDED IN MASONRY OR OTHER CONSTRUCTION, INSTALLED IN FURRED SPACES, WITHIN DOUBLE PARTITIONS OR HUNG CEILINGS, IN TRENCHES, IN CRAWL SPACES, OR IN ENCLOSURES.
- 7) "EXPOSED": NOT INSTALLED UNDERGROUND OR "CONCEALED" AS DEFINED ABOVE.
- 8) "SIMILAR" OR "EQUAL": EQUAL IN MATERIALS, WEIGHT, SIZE, DESIGN AND EFFICIENCY OF SPECIFIED PRODUCT.
- B. TEMPORARY LIGHT AND POWER: PROVIDE TEMPORARY LIGHT AND POWER SYSTEMS AT EARLIEST POSSIBLE DATE WITHIN THE CONSTRUCTION AREAS FOR THE REQUIREMENTS OF ALL TRADES AS HEREIN DESCRIBED. EXTEND SYSTEMS TO NEW CONSTRUCTION AS SOON AS PHYSICALLY POSSIBLE. MAINTAIN SYSTEM DURING WORKING OWNER. PROVIDE ALL REQUIRED MAINTENANCE, INCLUDING LAMPS AND SOCKETS.
- C. QUALITY ASSURANCE
- 1) QUALITY OF MATERIALS: ALL EQUIPMENT SHALL BE NEW SPECIFICATION GRADE, FREE FROM DEFECTS AND LISTED BY APPROVED TESTING AGENCY AND BEARING THEIR LABEL MATERIALS AND EQUIPMENT OF SIMILAR APPLICATION SHALL BE OF SAME MANUFACTURER, EXCEPT AS NOTED.
- 2) GUARANTEE: ALL MATERIALS AND WORKMANSHIP SHALL BE GUARANTEED AS DEFINED IN PARAGRAPH 2.C.
- 3) CURRENT CHARACTERISTICS:
- a. SERVICE: 120/208 VOLT, 3 PHASE, 4 WIRE, 60 HERTZ WITH GROUNDED NEUTRAL.
- b. DISTRIBUTION: 120/208 VOLT, 3 PHASE, 4 WIRE, 60 HERTZ WITH GROUNDED NEUTRAL.
- 4) HEIGHTS OF OUTLETS:
- a. FROM FINISHED FLOOR TO CENTERLINE OF OUTLETS FOR:
- RECEPTACLES AND TELEPHONES: 1 FT-6 IN.
 - WALL SWITCHES: 4 FT-0 IN.
 - WALL FIXTURES: 7 FT-0 IN.
 - MOTOR CONTROLLERS: 5 FT-0 IN.
 - CLOCKS: 7 FT 6 IN
- b. EXCEPTIONS: AT JUNCTION OF DIFFERENT WALL FINISH MATERIALS, ON MOLDING OR BREAK IN WALL SURFACE, IN VIOLATION OF CODE, OR AS NOTED OR DIRECTED.
- D. PRODUCT DELIVERY, STORAGE AND HANDLING
- 1) MOVING OF EQUIPMENT: WHERE NECESSARY, SHIP IN CARTED SECTIONS OF SIZE TO PERMIT PASSING THROUGH AVAILABLE SPACES.
- 2) ACCESSIBILITY: FOR OPERATION, MAINTENANCE AND REPAIR, MINOR DEVIATIONS SHALL BE PERMITTED, CHANGES OF MAGNITUDE OR INVOLVING EXTRA COST ARE NOT PERMISSIBLE WITHOUT REVIEW. GROUP CONCEALED ELECTRICAL EQUIPMENT REQUIRING ACCESS WITH EQUIPMENT FREELY ACCESSIBLE THROUGH ACCESS DOORS.
- E. MATERIALS
- 1) NAMEPLATES: PROVIDE BLACK LAMICOID SHEET WITH 3/4 IN. WHITE LETTERING, FASTENED WITH EPOXY CEMENT FOR EACH DISCONNECT SWITCH, CIRCUIT BREAKER, PANEL, CABINET, TRANSFORMER, ENCLOSURE, MOTOR CONTROLLER AND THE LIKE. NAMEPLATES SHALL DESCRIBE THE NAME AND NUMBER OF EACH COMPONENT.
- 2) CABLE TAGS: TAG EACH CONDUCTOR PASSING THROUGH SPLICE OR PULLBOX WITH A WHITE LINEN TAG, INDICATING POINT OF ORIGIN AND TERMINATION OF THE CIRCUIT.
- 3) INSERTS AND SUPPORTS:
- a. INSERTS: STEEL, SLOTTED TYPE, FACTORY PAINTED.
- SINGLE ROD: SIMILAR TO GRINNELL FIG. 281.
 - MULTI-ROD: SIMILAR TO FEE AND MASON SERIES 9000 WITH END CAPS AND CLOSURE STRIPS.
 - CLIP FORM NAILS FLUSH WITH INSERTS.
 - MAXIMUM LOADING 75 PERCENT OF RATING.
- b. SUPPORTS FROM BUILDING CONSTRUCTION: INSERTS, BEAM CLAMPS, STEEL FISHPLATES (IN CONCRETE FILL ONLY), CANTILEVER BRACKETS OR OTHER MEANS. SUBMIT FOR REVIEW.
- c. GROUPED LINES AND SERVICES: TRAPEZE HANGERS OF BOLTED ANGLES OR CHANNELS.
- d. WHERE BUILDING CONSTRUCTION IS INADEQUATE: PROVIDE ADDITIONAL FRAMING. SUBMIT FOR REVIEW.
- F. PAINT SHALL BE THE BEST GRADE FOR ITS PURPOSE. DELIVER IN ORIGINAL SEALED CONTAINERS AND APPLY IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. COLORS SHALL BE AS SELECTED BY ARCHITECT OR ENGINEER. UTILIZE GALVANIZED IRON PRIMER ON PANEL AND PULL BOXES, AFTER FABRICATION. UTILIZE HOT DIPPED GALVANIZED OR DIPPED IN ZINC BASED PRIMER FOR: OUTLET BOXES, JUNCTION BOXES, CONDUIT HANGERS, RODS, INSERTS AND SUPPORTS. ZINC BASED PRIMER WITH FINISH TO MATCH SURROUNDINGS SHALL BE USED FOR MAPPED SURFACES OF STEEL EQUIPMENT AND RACEWAYS. A FIELD-APPLIED ZINC BASED PRIME COAT SHALL BE UTILIZED FOR STEEL OR IRONWORK.
- G. BRUSH AND CLEAN WORK PRIOR TO CONCEALING, PAINTING AND ACCEPTANCE. PAINTED EXPOSED WORK SOILED OR DAMAGED; CLEAN AND REPAIR TO MATCH ADJOINING WORK BEFORE FINAL ACCEPTANCE. REMOVE DEBRIS FROM INSIDE AND OUTSIDE OF MATERIAL AND EQUIPMENT.
- H. FINAL LOCATIONS AND MOUNTING ORIENTATIONS OF ALL SWITCHES, RECEPTACLES AND LIGHT FIXTURES SHALL BE VERIFIED WITH ARCHITECT.
- I. ALL ACCESS DOOR LOCATIONS SHALL BE REVIEWED BY ARCHITECT PRIOR TO INSTALLATION.
3. SCOPE OF WORK:
- A. SCOPE OF WORK SHALL CONSIST OF PROVIDING LABOR, MATERIALS, EQUIPMENT, SERVICES AND FEES NECESSARY FOR COMPLETE AND SAFE INSTALLATION IN CONFORMING WITH NATIONAL AND LOCAL CODES AND AUTHORITIES HAVING JURISDICTION, AS INDICATED ON DRAWINGS AND HEREIN SPECIFIED.
- B. ALL DRAWINGS, PLANS, DETAILS, SPECIFICATIONS AND SPECIFICATION ADDENDA ARE MADE PART OF THIS CONTRACT AND SHALL APPLY TO ALL WORK UNDER THE CONTRACT UNLESS OTHERWISE AMENDED, MODIFIED, SUPPLIED OR SPECIFIED HEREIN.
- C. THE CONTRACTOR SHALL FURNISH A WRITTEN GUARANTEE TO REPLACE OR REPAIR PROMPTLY AND ASSUME RESPONSIBILITY FOR ALL EXPENSES INCURRED FOR ANY WORKMANSHIP AND EQUIPMENT IN WHICH DEFECTS DEVELOP WITHIN ONE YEAR FROM THE DATE OF FINAL CERTIFICATE FOR PAYMENT AND/OR FROM DATE OF ACTUAL USE OF EQUIPMENT OR OCCUPANCY OF SPACES BY OWNER INCLUDED UNDER THE VARIOUS PARTS OF THE WORK, WHICHEVER DATE IS EARLIER. THIS WORK SHALL BE DONE AS DIRECTED BY THE OWNER. THIS GUARANTEE SHALL ALSO PROVIDED THAT WHERE DEFECTS OCCUR, THE CONTRACTOR WILL ASSUME RESPONSIBILITY OF OTHER TRADES AFFECTED BY DEFECTS, REPAIRS OR REPLACEMENTS IN EQUIPMENT SUPPLIED BY THE CONTRACTOR
- D. THE CONTRACTOR SHALL GIVE NECESSARY NOTICE, FILE DRAWINGS AND SPECIFICATIONS WITH ALL DEPARTMENTS HAVING JURISDICTION, WORK AND PAY ALL FEES THEREFORE. THE CONTRACTOR SHALL ARRANGE FOR INSPECTION AND TESTS OF ANY OR ALL PARTS OF THE WORK IF SO REQUIRED BY AUTHORITIES AND PAY ALL CHARGES FOR SAME. THE CONTRACTOR SHALL PAY ALL COSTS FOR, AND FURNISH TO THE OWNER BEFORE FINAL BILLING, ALL CERTIFICATES NECESSARY AS EVIDENCE THAT THE WORK INSTALLED CONFORMS WITH ALL REGULATIONS WHERE THEY APPLY TO THIS WORK.
- E. CONTRACTOR SHALL PERFORM ALL CONTROLLED INSPECTIONS IN ACCORDANCE WITH THE ILLINOIS BUILDING CODE. SECURE ALL REQUIRED PERMITS AND APPROVALS AND TRANSMIT SAME TO OWNER. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL FEES.
- F. AREAS WITH NO ELECTRICAL WORK SHALL REMAIN AS IS. CONTRACTOR SHALL MAINTAIN CONTINUITY OF ALL ELECTRICAL SYSTEMS TO ALL AREAS NOT COVERED BY THIS RENOVATION AND SHALL PROVIDE 48 HOUR NOTICE TO LANDLORD OF ANY PLANNED POWER INTERRUPTIONS OR SIGNAL SYSTEM OUTAGES.
4. SHOP DRAWINGS
- A. PRIOR TO THE INSTALLATION OF ANY WORK AND PROCUREMENT OF EQUIPMENT, CONTRACTOR SHALL PROVIDE COMPLETE SETS OF COORDINATED SHOP DRAWINGS OF ALL NEW AND EXISTING EQUIPMENT, INDICATING CAPACITY, DIMENSIONS AND SEQUENCE OF OPERATION FOR WRITTEN APPROVAL BY THE ARCHITECT AND ENGINEER.
- B. INDICATE ON EACH SHOP DRAWINGS SUBMITTED:
- 1) PROJECT NAME AND LOCATION
- 2) NAME OF ARCHITECT AND ENGINEER
- 3) ITEM IDENTIFICATION
- 4) APPROVAL STAMP OF PRIME CONTRACTOR
- C. SUBMISSIONS:
- 1) SUBMISSIONS 11 IN. X 17 IN. OR SMALLER: IF THE SUBMISSION IS A CATALOG CUT, THEN THE CONTRACTOR SHALL SUBMIT ONE ORIGINAL AND TWO COPIES. OTHERWISE, HE SHALL SUBMIT THREE COPIES. THE ARCHITECT WILL FORWARD THE ORIGINAL AND ONE COPY (TWO COPIES WHEN NO ORIGINAL IS RECEIVED) TO THE ENGINEER. ALL CATALOG CUTS SHALL BE COMPLETE.
- 2) SUBMISSIONS LARGER THAN 11 IN. X 17 IN.: SUBMIT TWO PRINTS AND ONE PAPER SEPIA TO THE ARCHITECT. THE ARCHITECT WILL FORWARD ONE PRINT AND THE PAPER SEPIA TO THE ENGINEER.
- D. SUBMIT SHOP DRAWINGS FOR THE FOLLOWING:
- 1) SAFETY/DISCONNECT SWITCHES
- 2) FUSES
- 3) CIRCUIT BREAKERS
- 4) PANELBOARDS/LOADCENTER (INCLUDING DIMENSIONS, SCHEDULES, AND CATALOG CUTS).
- 5) RACEWAYS
- 6) WIRE AND CABLE
- 7) WALL SWITCHES
- 8) INSERTION RECEPTACLES
- 9) MOMENTARY CONTACT SWITCHES
- 10) TIME SWITCHES
- 11) LIGHTING FIXTURES.
- E. ASSIST AND PROVIDE ALL NECESSARY INFORMATION, DIAGRAMS, SKETCHES, ETC. TO THE HVAC CONTRACTOR, FOR THE PREPARATION OF COORDINATED SHOP DRAWINGS INDICATING ROUTING OF FEEDERS, CONTROL CONDUITS, RECESSED FIXTURES AND ADJACENT NEARBY PIPING AND DUCTWORK WHERE APPLICABLE, CERTIFIED BY ALL TRADES THAT COORDINATION HAS BEEN ESTABLISHED. SUBMIT FOUR(4) BOOKBOUND OPERATING AND SERVICE MANUALS WHICH SHALL INCLUDE COPIES OF ALL SHOP DRAWING, PROVIDE SHOP DRAWINGS FOR PANELS, FIXTURES, WIRING DEVICES, CONDUIT, CABLE, DISCONNECT SWITCH, RELAYS, CONTRACTORS, AND OTHER SYSTEMS AS DIRECTED BY THE ENGINEER.
5. AS-BUILT DRAWINGS AND EQUIPMENT OPERATIONAL INSTRUCTIONS
- A. UPON COMPLETION AND ACCEPTANCE OF WORK, CONTRACTOR SHALL FURNISH WRITTEN INSTRUCTIONS AND EQUIPMENT MANUALS AND DEMONSTRATE TO THE OWNER THE PROPER OPERATION AND MAINTENANCE OF ALL EQUIPMENT AND APPARATUS FURNISHED UNDER THIS CONTRACT.
- B. THESE INSTRUCTIONS SHALL BE TYPED ON 8-1/2 IN. X 11 IN. PAPER AND BOUND IN THREE RING BINDERS WITH CLEAR ACETATE COVERS. CONTRACTOR SHALL GIVE THREE COPIES OF THE INSTRUCTIONS TO THE OWNER AND ONE COPY TO THE ENGINEER.
- C. THE INSTRUCTION BOOKLET SHALL BEAR THE NAME, ADDRESS AND TELEPHONE NUMBER OF THE PROJECT, ARCHITECT AND ENGINEER.
- D. REPRODUCIBLE "AS-BUILT" DRAWINGS SHALL BE PROVIDED INDICATING THE AS INSTALLED CONDITIONS OF THE WORK. "AS-BUILT" DRAWINGS SHALL BE PROVIDED TO THE ARCHITECT AFTER COMPLETION OF THE INSTALLATION.
6. LOW-VOLTAGE DISTRIBUTION EQUIPMENT:
- A. PROVIDE COMPLETE EQUIPMENT INCLUDING: SWITCHES, FUSES, CIRCUIT BREAKERS, PANELS AND TRANSFORMERS.
- B. ALL EQUIPMENT SHALL CONFORM TO NEMA, ANSI AND IEEE STANDARDS.
- C. DISCONNECT SWITCHES SHALL BE FUSED OR NONFUSED AS NOTED. VOLTAGE SHALL BE AS REQUIRED. SWITCHES SHALL BE HEAVY DUTY, EXCEPT AS NOTED, AND HORSEPOWER RATED FOR MOTOR LOADS. TOGGLE TYPE SWITCHES SHALL BE NONFUSED, LOAD BREAK, HAVING MAXIMUM RATINGS OF 20 AMP AT 600 VOLTS AND 30 AMP AT 240 VOLTS. TWO-POLE SWITCHES SHALL BE SIMILAR TO HART AND HEGEMAN NO. 6808F. THREE-POLE SWITCHES SHALL BE SIMILAR TO HART AND HEGEMAN NO. 7810F. KNIFE-BLADE TYPE SWITCHES SHALL BE LOAD BREAK, QUICK-MAKE-QUICK-BREAK, UL CLASS R UP TO 600 AMP, MAXIMUM RATING EXCEPT AS NOTED SHALL BE 800 AMP. ARC QUENCHERS SHALL BE PROVIDED. SWITCHES SHALL BE SIMILAR TO GENERAL ELECTRIC OMR, ALL SWITCH ENCLOSURES SHALL BE DEAD FRONT, NEMA TYPE 1, EXCEPT AS NOTED.
7. FUSES:
- A. CIRCUITS 0 TO 600 AMPERES SHALL BE PROTECTED BY FUSES SIMILAR TO CURRENT LIMITING BUSSMAN LOW-PEAK DUAL-ELEMENT TIME-DELAY LPN-RK (AMP)SP (250V) /LPS-RK (AMP)SP (600V) OR LPJ (AMP)SP (600V) (UL CLASS RK1 OR CLASS J), AND BE LISTED BY UL WITH AN INTERRUPTING RATING OF 300,000 AMPERES RMS SYMMETRICAL.
- B. MOTOR CIRCUITS - ALL INDIVIDUAL MOTOR CIRCUITS WITH FULL LOAD AMPERE RATINGS (FLA) OF 480 AMPERES OR LESS SHALL BE PROTECTED BY FUSES SIMILAR TO CURRENT LIMITING BUSSMAN LOW-PEAK DUAL-ELEMENT TIME-DELAY LPN-RK (AMP)SP (250V) /LPS-RK (AMP)SP (600V) OR LPJ (AMP)SP (600V) (UL CLASS RK1 OR CLASS J), AND BE LISTED BY UL WITH AN INTERRUPTING RATING OF 300,000 AMPERES RMS SYMMETRICAL.
- 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) 120/208 VOLTS, 225-AMP FRAME: 22,000 AMPS MINIMUM
8. DISTRIBUTION PANELBOARDS, SWITCH AND FUSE:
- H. THREE PHASE, 3 OR 4 WIRE WITH COPPER BUS BARS. ALL THROUGH BUS SHALL BE INSULATED.
- I. NEMA CLASS 1 CONSTRUCTION TO ACCOMMODATE FUSIBLE, INDIVIDUALLY ENCLOSED SWITCHES, FRONT REMOVABLE, SWITCH AND DOOR INTERLOCKS. COVERS TO BE PAD-LOCKABLE.
- J. PANELBOARD SHALL BE CONSTRUCTED OF CODE-GAUGE STEEL GRAY FINISH OVER RUST INHIBITOR, FOR SURFACE MOUNTING. BOX AND PANEL FRAME SHALL BE FLANGED AND REINFORCED FOR RIGID SUPPORT OF INTERIOR AND ACCURATE ALIGNMENT OF INTERIOR WITH FRONT. TRIMS TO BE FASTENED TO BACK BOX WITH SCREWS.
- K. ALL BRANCH SWITCHES SHALL HAVE INDIVIDUAL ENGRAVED LAMICOID NAMEPLATES (BLACK WITH WHITE CORE).
- L. DISTRIBUTION PANELBOARD CONSTRUCTION MINIMUM SHORT CIRCUIT RATING 25,000 AMPERES, REMS SYMMETRICAL FOR ALL 120/208V APPLICATIONS. APPLICATIONS.
- M. DISCONNECTS
- 1) DISCONNECT SWITCHES SHALL CONFORM TO NEMA AND UL STANDARDS, AND SHALL BE HORSEPOWER RATED.
- 2) SWITCHING MECHANISM SHALL BE QUICK-MAKE, QUICK-BREAK, SINGLE THROW WITH EXTERNAL OPERATING HANDLE. MECHANICALLY INTERLOCKED WITH ENCLOSURE COVER TO PROVIDE ACCESS TO INTERIOR WHEN DISCONNECT IS IN OFF POSITION ONLY. PROVIDE MEANS TO LOCK OPERATING HANDLE IN THE OPEN AND CLOSED POSITION. DESIGNATE ON THE ENCLOSURE THE OPEN AND CLOSED POSITION OF THE OPERATING HANDLE.
- 3) SWITCHES SHALL BE OF THE DOUBLE STATIONARY CONTACT TYPE.
- 4) SWITCHES SHALL BE EQUIPPED WITH REJECTION TYPE FUSE HOLDERS, FUSIBLE AS SHOWN ON THE DRAWINGS; PROVIDE COMPLETE WITH FUSES AS SCHEDULED.
- G. INSTALLATION
- 1) DISTRIBUTION PANELBOARD SHALL BE MOUNTED TO STRUCTURAL STEEL CHANNEL (KINDORF) WHICH SHALL BE BOLTED TO THE WALL USING EXPANSION ANCHORS FOR LARGE PANELS.
- H. IDENTIFICATION
- 1) PROVIDE NAMEPLATE AT EACH SWITCH IDENTIFYING THE LOAD SERVED.
- 2) NAMEPLATES SHALL BE MOUNTED ON THE FRONT COVER SECURED WITH SELF-TAPPING SCREWS OR NUTS AND BOLTS. NAMEPLATES SHALL BE LAMINATED PHENOLIC, BLACK WITH A MINIMUM OF 1/4" HIGH WHITE LETTERING.
- I. DISTRIBUTION AND SUB-DISTRIBUTION PANELBOARDS SHALL BE A MINIMUM OF 30" WIDE AND 10" DEEP.
- J. POWER PANELBOARDS SHALL BE SIMILAR TO GENERAL ELECTRIC TYPE "OMR", AS MANUFACTURED BY ATLAS SWITCH COMPANY, ELECTRIC SWITCHBOARD COMPANY OR APPROVED EQUAL.
- K. PANELBOARD SHALL HAVE MAIN CIRCUIT BREAKER OR MAIN LUGS AS INDICATED ON THE DRAWINGS. QUANTITY, POLES AND TRIP RATINGS OF BRANCH CIRCUIT BREAKERS TO BE AS INDICATED ON DRAWINGS.
- L. PANELBOARD SHALL HAVE ENGRAVED WHITE CORE, BLACK LAMICOID NAMEPLATE SCREWED ONTO PANE TRIM WITH DESIGNATION LISTED (PANELBOARD NAME, VOLTAGE, RATING OR MAINS IN AMPS).
- B. MATERIALS
- 1) RACEWAYS:
- a. RIGID STEEL CONDUIT: FULL-WEIGHT PIPE, GALVANIZED, THREADED.
- b. ELECTROMETALLIC TUBING (EMT): THIN WALL PIPE, GALVANIZED, THREADLESS.
- c. FLEXIBLE STEEL CONDUIT: CONTINUOUS SINGLE STRIP, GALVANIZED.
- d. WIREWAYS: WIRE SHALL BE AS NOTED, MINIMUM NO. 16 GAUGE STEEL WITH GROUND CONTINUITY. FINISH SHALL BE BAKED ENAMEL. COVERS SHALL BE SCREW-ON.
- e. SURFACE METAL RACEWAY: SIZE AS NOTED. BASE 0.04 IN., COVER 0.25 IN. 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.

ELECTRICAL SPECIFICATIONS (CONT.)

3) BOXES:

- a. OUTLET BOXES: EXCEPT AS OTHERWISE REQUIRED BY CONSTRUCTION, DEVICES OR WIRING, BOXES SHALL BE STAMPED STEEL, 4 IN. SQUARE OR OCTAGON FOR FIXTURES. BOXES ABOVE CEILING SHALL BE 1-1/2 IN. DEEP. BOXES IN CEILING OR SLAB SHALL BE 3 IN. DEEP. BOXES IN WALL FOR FIXTURES SHALL BE 2-3/4 IN. DEEP. BOXES IN WALL FOR RECEPTACLES AND SWITCHES SHALL BE 1-1/2 IN. DEEP. FURNISH WITH RAISED COVERS AND FIXTURE STUDS WHERE REQUIRED. WITHOUT FIXTURE OR DEVICE: FURNISH BLANK COVER. OFFSET BACK-TO-BACK OUTLETS WITH MINIMUM 6 IN. SEPARATION.
- b. JUNCTION AND PULL BOXES: GALVANIZED SHEET STEEL WITH SCREW-ON COVERS, EXCEPT AS NOTED. FURNISH WITH INSULATED SUPPORTS FOR CABLES. LOCATIONS SHALL BE AS NOTED OR REQUIRED AND ACCESSIBLE. PROVIDE BARRIERS IN NEW AND RENOVATED BOXES BETWEEN 120/208 VOLT AND 265/460 VOLT WIRING AND BETWEEN EMERGENCY AND NORMAL WIRING. FLOOR BOXES SHALL BE SUITABLE FOR CONDUIT AND DEVICES NOTED. RAISED OUTLETS SHALL BE HUBBELL #B2414 SERIES WITH ABOVE FLOOR FITTING. TELEPHONE, BUSHED HOLE. POWER: DUPLEX RECEPTACLE OR OTHER AS NOTED. INCREASE SIZE TO SUIT AS NECESSARY. FLUSH OUTLETS SHALL BE HUBBELL #B2414 SERIES WITH FLUSH FLOOR FITTING FOR TELEPHONE AND FLUSH DUAL FLAP COVER WITH DUPLEX RECEPTACLE FOR POWER AS NOTED. INCREASE SIZE TO SUIT AS NECESSARY.

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

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

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

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

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

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

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

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

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

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

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

d. PROVIDE CABLE SUPPORTS IN ACCORDANCE WITH NATIONAL ELECTRIC CODE 2017 ARTICLE 300.19. CABLE SUPPORTS SHALL UTILIZE A ONE-PIECE PLUG WITH POZI-GRIP WEDGING PLUG AS MANUFACTURED BY OZ-GEDNEY. TYPE SF SHALL BE USED FOR ARMORED CABLE.

INSTALL CABLE SUPPORTS AT THE TOP OF A VERTICAL RISE AND PROVIDE INTERMEDIATE ADDITIONAL SUPPORTS AS REQUIRED TO LIMIT SUPPORTED CONDUCTOR LENGTHS TO NOT GREATER THAN THOSE SPECIFIED IN TABLE 300.19(A).

- A. ERECT WALL AND SWITCH OUTLETS IN ADVANCE OF FURRING AND FIREPROOFING. OUTLET BOXES SHALL BE SET SQUARE AND TRUE WITH BUILDING FINISH. SECURE TO BUILDING STRUCTURE BY ADJUSTABLE STRAP IRON OR GROUT IN WITH MASONRY. VERIFY OUTLET LOCATIONS IN FINISHED SPACES WITH ARCHITECTURAL DRAWINGS OF INTERIOR DETAILS AND FINISHES. PROVIDE BARRIERS BETWEEN SWITCHES CONNECTED TO DIFFERENT PHASES FOR VOLTAGES EXCEEDING 150 VOLTS TO GROUND.
- D. PANEL, JUNCTION AND PULL BOXES SHALL BE LOCATED CLEAR OF OTHER TRADES. CONCEAL JUNCTION AND PULL BOXES IN FINISHED SPACES. WHERE NECESSARY, REROUTE RACEWAYS OR MAKE OTHER ARRANGEMENTS FOR CONCEALMENT. BOXES SHALL BE ACCESSIBLE. SUPPORT BOXES FROM BUILDING STRUCTURE, INDEPENDENT OF CONDUIT. PROVIDE FLOOR-TO-CEILING CHANNELS FOR MOUNTING ON DRYWALL AND LIGHTWEIGHT CONSTRUCTION. OUTLET BOXES FOR FIXTURES RECESSED IN HUNG CEILINGS SHALL BE ACCESSIBLE THROUGH OPENING CREATED BY REMOVAL OF FIXTURE. SECURE TO BLACK IRON SUPPORT. MOTOR TERMINAL BOXES: COORDINATE WITH MOTOR BRANCH CIRCUIT CONDUIT AND WIRING; ADD BOX VOLUME WHERE REQUIRED.
- E. FIRE SEALANTS: PROVIDE FOR RACEWAYS AND WIRE PASSING THROUGH FLOOR SLOTS, SLEEVES OR OPENINGS IN FIRE-PARTITIONS ROOMS.
- F. PERFORM CONTINUITY TESTS OF RESISTANCE OF FEEDER CONDUITS FROM SERVICE TO POINT OF FINAL DISTRIBUTION USING 1 CONDUCTOR RETURN. MAXIMUM RESISTANCE SHALL BE 25 OHMS.

9. WIRE AND CABLE:

- A. PROVIDE WIRE AND CABLE COMPLETE WITH ACCESSORIES. SIZE REFERENCE SHALL BE AWG EXCEPT AS NOTED.
- B. CONDUCTORS SHALL BE COPPER, ASTM STANDARD SOLID (NO. 10 AND SMALLER) OR STRANDED (NO. 8 AND LARGER). GENERAL USE CABLING SHALL BE NO. 12 MINIMUM. AT 120 VOLTS AND OVER 100 FT CIRCUIT LENGTH PROVIDE NO. 10 MINIMUM. AT 265 VOLTS AND OVER 200 FT CIRCUIT LENGTH PROVIDE NO. 10 MINIMUM.
- C. CONTROL AND ALARM CABLING, EXCEPT AS NOTED, SHALL BE NO. 14 MINIMUM. AT 120 VOLTS AND OVER 200 FT CIRCUIT LENGTH PROVIDE NO. 12 MINIMUM. OTHER VOLTAGES AND PHASES: ADJUST CABLE SIZING AS REQUIRED TO MAINTAIN VOLTAGE DROP. INCREASE RACEWAY SIZES FOR LARGER WIRE AS REQUIRED.
- D. INSULATION SHALL BE RUBBER AND THERMOPLASTIC MEETING ASTM AND IPCA STANDARDS. TYPE THW OR THWN SHALL BE UTILIZED FOR FEEDERS AND BRANCH CIRCUITS EXCEPT AS NOTED. TYPE SFF-2 SHALL BE UTILIZED FOR BRANCH CIRCUITS LOCATED IN WIRING CHANNELS OF CONTINUOUS FLUORESCENT FIXTURES AND IN AMBIENT TEMPERATURES OVER 90 DEG C. FOR UNGROUNDED ISOLATED BRANCH CIRCUITS PROVIDE CROSS-LINKED POLYETHYLENE INSULATION (TYPE XHHW).
- E. COLOR CODING SHALL BE AS FOLLOWS:

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

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

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

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

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

I. NOT MORE THAN 3 LIGHTING OR CONVENIENCE OUTLET CIRCUITS SHALL BE INSTALLED IN ONE CONDUIT UNLESS OTHERWISE INDICATED. PULL NON-THERMOPLASTIC WIRES AT TEMPERATURES LOWER THAN 32 DEG F. PROVIDE SEPARATE RACEWAYS FOR CONDUCTORS OF 120/208 AND 265/460 VOLT SYSTEMS, EXCEPT 460 VOLT MOTOR BRANCH CIRCUIT WIRING AND RELATED 120 VOLT CONTROL WIRING. THERMOPLASTIC WIRES SHALL NOT BE INSTALLED IN COMPUTER AREA RAISED FLOORS.

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

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

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

11. WIRING DEVICES:

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

- B. LOCAL WALL SWITCHES SHALL BE ROCKER TYPE, QUIET OPERATING, RATED 20 AMP, 120/208 VOLT, AC. SIMILAR TO LEVITON DECORA SERIES A5621 (SINGLE POLE), A5623 (3-WAY) AND A5624 (4-WAY).
- C. STRAIGHT BLADE RECEPTACLES SHALL BE COMMERCIAL SPECIFICATION GRADE DUPLEX CONCEPTS 125 VOLTS, 2 POLE, 3 WIRE, U GROUND SLOT, DECORA SERIES BY LEVITON. GROUNDED, EXCEPT AS NOTED.

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

- E. DEVICE PLATES: SEE ARCHITECT FOR TYPE. FOR RECEPTACLES WITH OTHER THAN 120 VOLT, INSCRIBED VOLTAGE AVAILABLE.
- F. COLORS: COORDINATE COLORS WITH ARCHITECT.
- G. MOUNTING ORIENTATION OF RECEPTACLES (HORIZONTAL OR VERTICAL): COORDINATE WITH ARCHITECT.

12. LIGHTING FIXTURES:

- A. FIXTURES TO BE AS SPECIFIED BY ARCHITECT AND SHALL BE COMPLETELY FACTORY ASSEMBLED, WIRED AND EQUIPPED WITH ALL NECESSARY SOCKETS, BALLASTS, SUPPORTING HARDWARE AND ACCESSORIES. REFER TO DRAWINGS FOR INDIVIDUAL FIXTURE DESCRIPTIONS.
- B. FIXTURE CATALOG NUMBERS USED TO ILLUSTRATE EQUIPMENT TYPE DO NOT NECESSARILY DENOTE REQUIRED MOUNTING EQUIPMENT OR ACCESSORIES. PROVIDE ACCESSORIES TO SUIT.
- C. BALLAST: CLASS P, HIGH POWER FACTOR, LOWEST AVAILABLE, NEMA RATED NOISE LEVEL, ETI AND CBM APPROVED. ENERGY SAVING TYPE. TRIGGER START FOR 24-INCH LAMPS AND RAPID START FOR 48-INCH. TWO LAMP BALLASTS; NO THREE LAMP BALLASTS. BALLASTS SHALL BE ADVANCE MAGNETEK, UNIVERSAL OR EQUAL.
- D. LED DRIVERS SHALL BE ELECTRONIC TYPE, LABELED AS COMPLIANT WITH RADIO FREQUENCY INTERFERENCE (RFI) REQUIREMENTS OF FCC TITLE 47, PART 15 AND COMPLIANT WITH NEMA SSJ-1 "ELECTRONIC DRIVERS FOR LED DEVICES, ARRAYS OR SYSTEMS". LED DRIVERS SHALL HAVE A SOUND RATING OF "A", HAVE A MINIMUM EFFICIENCY OF 85% AND BE RATED FOR A THD OF LESS THAN 20% AT ALL INPUT VOLTAGES.
- E. DIMMABLE LED DRIVERS SHALL BE CAPABLE OF DIMMING WITHOUT LED STROBING OR FLICKER ACROSS THEIR FULL DIMMING RANGE. PROVIDE TYPE OF LED DRIVER AS PER LIGHTING FIXTURE SCHEDULE. DIMMABLE LED DRIVERS SHALL BE 0-10V WHERE NOT INDICATED.
- F. CONTINUOUS ROW, TWO LAMP STRIP FIXTURES SHALL BE STAGGERED TYPE.
- G. FLUORESCENT LIGHTING FIXTURES, INCLUDING GENERAL CONSTRUCTION, LAMPS AND BALLASTS SHALL CONFORM TO THE ENERGY EFFICIENCY REQUIREMENTS OF CONSOLIDATED EDISON CO. AND QUALITY FOR A UTILITY REBATE TO OWNER UNDER CON EDISON'S ENLIGHTENED ENERGY LIGHTING REBATE PROGRAM. CONTRACTOR SHALL COORDINATE REBATE PROGRAM WITH CON EDISON AND ARRANGE FOR CON EDISON TO PERFORM A SURVEY TO INVENTORY ALL EXISTING FIXTURES PRIOR TO DEMOLITION.
- H. EXIT SIGNS SHALL BE PRECISION DIE-CAST ALUMINUM HOUSING WITH LASER-FORMED ACRYLIC LEGEND. EXIT SIGNS SHALL COMPLY WITH UL 924 AND BE MEA APPROVED, AC POWERED WITH PREMIUM LONG-LIFE NICKEL CADMIUM BATTERY WITH STANDARD UL LISTED 3-HOUR RUN TIME. PROVIDE WITH INTEGRAL AUTOMATIC CHARGER IN A SELF-CONTAINED POWER PACK. LED INDICATOR WITH PUSH TO TEST SWITCH.

13. TELEPHONE CONDUIT SYSTEM:

- A. PROVIDE COMPLETE SYSTEM OF: RACEWAYS AND ACCESSORIES, OUTLET BOXES, SLEEVES AND FISHWIRES.
- B. EQUIPMENT SHALL CONFORM TO REQUIREMENTS OF TELEPHONE COMPANY.
- C. OUTLETS SHALL BE:
- 1) WALL: 4 IN. SQUARE WITH BUSHED COVER PLATE.
- D. PROVIDE FISHWIRES, IN RACEWAYS OVER 10 FT LONG.
- E. CONDUIT SHALL BE 3/4 IN. MINIMUM. FURNISH EMPTY CONDUIT FROM OUTLET BOX TO BUSHED END THRU WALL 6" BELOW THE PLASTER CEILING.
- F. FACE RACEWAYS IN ROOMS SHALL HUBBELL HBL500, HBL750 OR HBL2000 SERIES OR AS ACCEPTABLE.

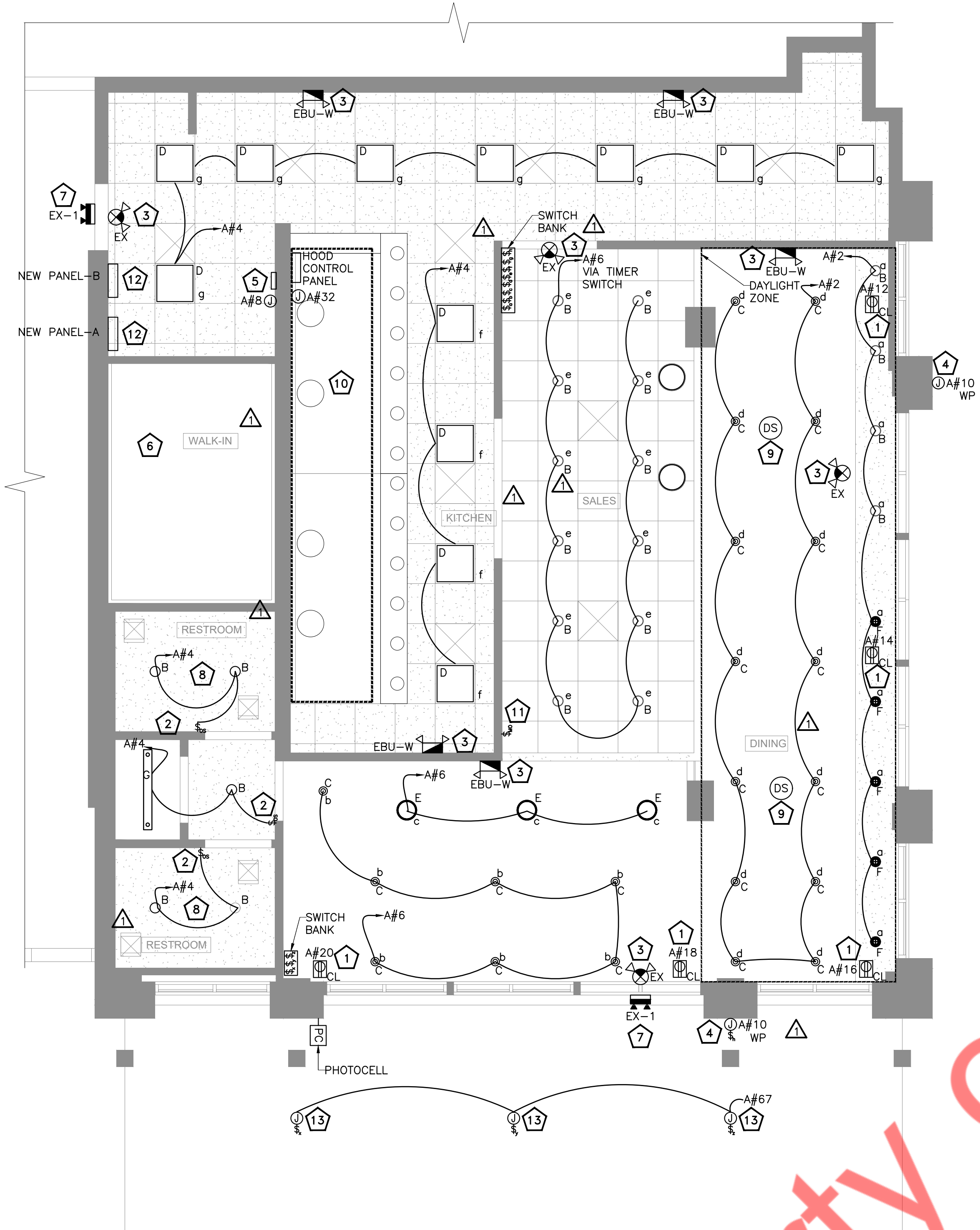
14. GROUNDING AND BONDING:

- A. PROVIDE GROUNDING SYSTEM IN ACCORDANCE WITH (2017) NATIONAL ELECTRICAL CODE), AND THESE SPECIFICATIONS. THE WIRING SYSTEM SHALL BE INSTALLED AS REQUIRED TO PROVIDE A CONTINUOUSLY GROUNDED SYSTEM. WHERE FLEXIBLE CONDUIT IS USED FOR PART OF A CONDUIT RUN, EXCEPT LIGHTING BRANCH CIRCUITS, AN INSULATED GROUNDING CONDUCTOR SHALL BE PROVIDED IN THE CONDUIT AND CONNECTED TO GROUNDING BUSHINGS AT EACH END OF THE RUN.
- B. USE EXOTHERMIC WELDING PROCESS FOR INACCESSIBLE CONNECTIONS.
- C. EXTEND EXISTING SYSTEM GROUND TO INCLUDE ALL THE ELECTRICAL EQUIPMENT IN THE SCOPE OF WORK.
- D. WHERE FLEXIBLE METALLIC CONDUIT IS USED AN INTERNAL BONDING CONDUCTOR SHALL BE INSTALLED.
- E. IN ADDITION, FURNISH A SEPARATE INSULATED GREEN EQUIPMENT GROUND CONDUCTOR WHERE INDICATED ON DRAWINGS AND FOR THE FOLLOWING BRANCH CIRCUITS:
- 1) CIRCUITS SERVING ANY WALL BOX DIMMER.
- 2) CIRCUITS SERVING ANY ISOLATED GROUND RECEPTACLES.

TERMINATE GROUND DIRECTLY AT AN EQUIPMENT GROUNDING CONDUCTOR TERMINAL OF THE SOURCE AT THE SOURCE, OR AS OTHER WISE NOTED ON DRAWINGS.

3) CIRCUITS SERVING ANY DUPLEX OR SIMPLEX COMPUTER RECEPTACLES

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



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

LIGHTING PLAN GENERAL NOTES: #

- A. CONTRACTOR IS ADVISED THAT ADJUSTMENTS TO EMERGENCY AND EXIT LIGHT FIXTURE LOCATIONS/QUANTITIES MAY BE REQUIRED BY AHJ UPON FINAL INSPECTION.
- B. ALL NIGHT LIGHT, EMERGENCY AND EXIT LIGHT FIXTURES SHALL BE CONNECTED AHEAD OF SWITCHED LIGHTING CIRCUIT.
- C. ELECTRICAL CEILING FIXTURES IN SUSPENDED CEILING SHALL BE INSTALLED IN COMPLIANCE WITH THE ASTM C636 2.7.1, 2.7.2, 2.7.3.
 - (1) 2.7.1 MOUNT FIXTURES INSTALLED IN ACOUSTICAL TILE OR LAY-IN PANEL CEILINGS IN A MANNER THAT WILL NOT COMPROMISE CEILING PERFORMANCE.
 - (2) 2.7.2 FIXTURES SHALL NOT BE SUPPORTED FROM MAIN RUNNERS OR CROSS RUNNERS IF THE WEIGHT OF THE FIXTURE CAUSES THE TOTAL DEAD LOAD TO EXCEED THE DEFLECTION CAPABILITY OF THE CEILING SUSPENSION SYSTEM. IN SUCH CASES, THE FIXTURE LOAD SHALL BE SUPPORTED BY SUPPLEMENTAL HANGERS WITHIN 6 IN. [150 MM] OF EACH CORNER, OR THE FIXTURE SHALL BE SEPARATELY SUPPORTED.
 - (3) 2.7.3 FIXTURES SHALL NOT BE INSTALLED SO THAT MAIN RUNNERS OR CROSS RUNNERS WILL BE ECCENTRICALLY LOADED EXCEPT WHERE PROVISION IS INHERENT IN THE SYSTEM (OR IS SEPARATELY PROVIDED FOR) TO PREVENT UNDESIRABLE SECTION ROTATION OR DISPLACEMENT, OR BOTH. IN ANY CASE, RUNNERS SUPPORTING CEILING FIXTURES SHALL NOT ROTATE MORE THAN 2° AFTER THE FIXTURE LOADS ARE IMPOSED.
 - (4) 2.7.4 WHERE FIXTURE INSTALLATION WOULD PRODUCE ROTATION OF RUNNERS IN EXCESS OF 2°, INSTALL FIXTURES WITH THE USE OF SUITABLE ACCESSORY DEVICES. THESE DEVICES SHALL SUPPORT THE FIXTURE IN SUCH A MANNER THAT MAIN RUNNERS AND CROSS RUNNERS WILL BE LOADED SYMMETRICALLY RATHER THAN ECCENTRICALLY.

LIGHT FIXTURE SCHEDULE					
MARK	SYMBOL	TYPE	MANUFACTURER	MODEL #	DESCRIPTION
A		LED CYLINDRICAL WALLWASH	LITHONIA LIGHTING	LDN4CYL-35-10-LW4-BR-LSS-120-GZ1-PM - DBL	4" CYLINDRICAL PENDANT WIDE OPTICS. COLOR / TRIM: BLACK
B		LED DOWNLIGHT	LITHONIA LIGHTING	LDN4-35-20-L04-WR-BR-LSS-120	4" ROUND BEVELED TRIM. COLOR / TRIM: MATCH CEILING
C		LED CYLINDER PENDANT	LITHONIA LIGHTING	LDN4CYL-35-10-L04-BR-LSS-120-GZ1-PM - DBL	4" CYLINDRICAL PENDANT WIDE OPTICS. COLOR / TRIM: BLACK
D		LED 2X4 LENSED TROFFER	LITHONIA LIGHTING	EPANL	24" X 24" FLAT PANEL GRID MOUNTED 400 LM, 80 CRI, 3500K. COLOR / TRIM: WHITE
E		LED DECORATIVE PENDANT	ANP LIGHTING	MCM12-M010LDDW35K-CRACK'D	12" DECORATIVE ARCHITECTURAL. WHITE EXTERIOR, YELLOW INTERIOR (AS PER CATALOG # DESIGNATION SPEC)
F		LED PENDANT	ANP LIGHTING	GUP110-M012LD-D-N-30K-BLC-YR-50	DECORATIVE ARCHITECTURAL. NAVY FINISH (AS PER CATALOG # DESIGNATION SPEC)
G		LED LINEAR	LITHONIA LIGHTING	MNSL L24 2LL MVOLT 40K 30CRI M6	CONTRACTOR SELECT 2' LED LINEAR FIXTURE
EX		LED	LED EMERGENCY EGRESS EXIT SIGN FIXTURE WITH 3.6V NICKEL-CADMIUM BACKUP BATTERY, WHITE FINISH, RED LETTERS, REMOTE CAPABILITIES, AND (2) HEADS.		
EX-1		LED	LED EXTERIOR EMERGENCY FIXTURE		
EBU-W		LED	2-HEAD EMERGENCY BATTERY PACK (WHITE) (LITHONIA LIGHTING ELM6L)		

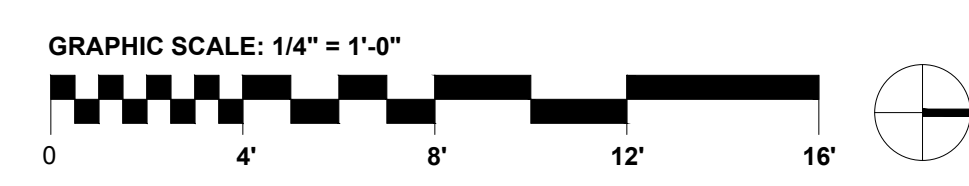
GENERAL NOTES:

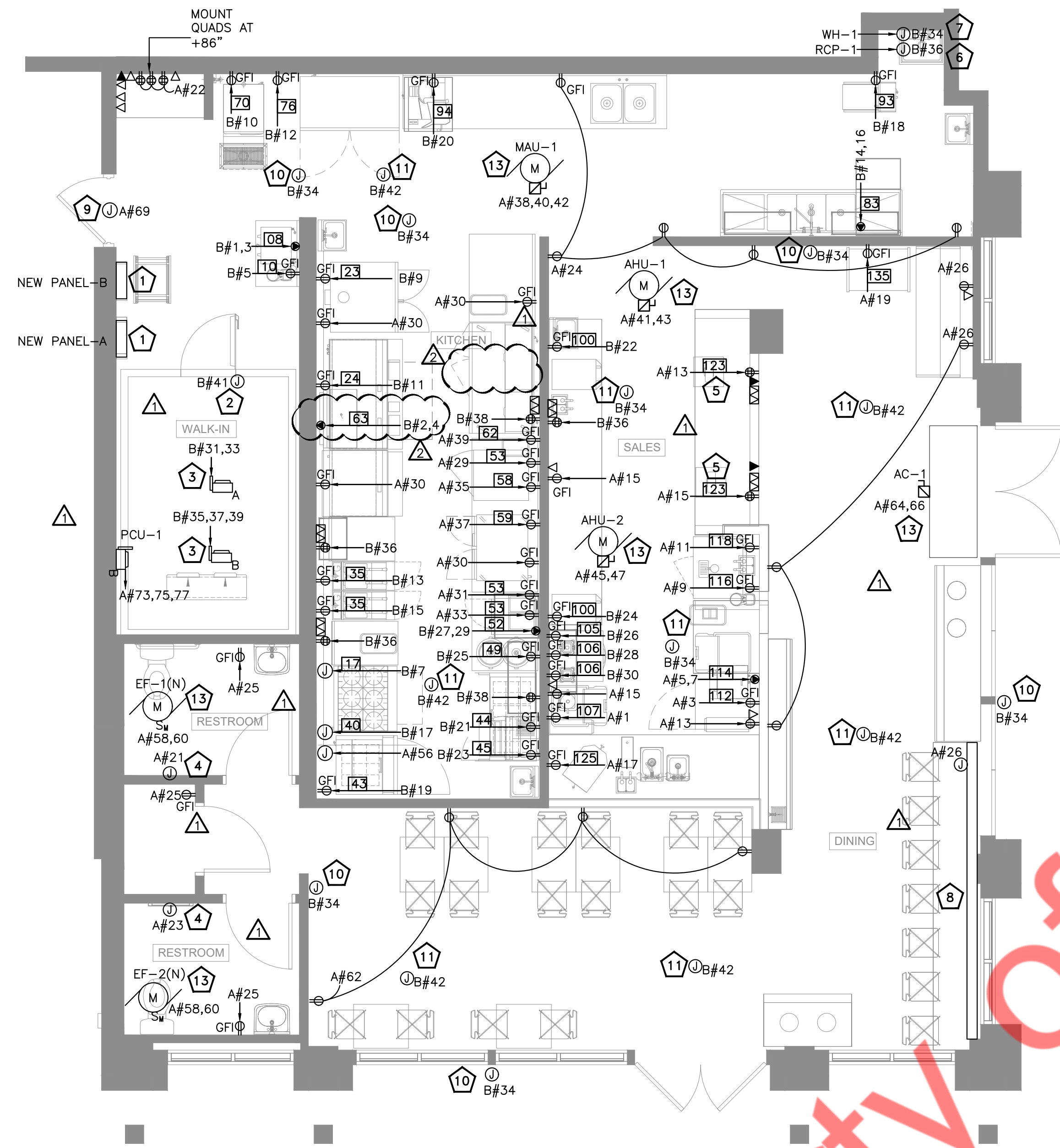
- A. VERIFY ALL LUMINAIRE COLORS, TRIMS, LENGTHS, ETC. WITH THE ARCHITECT PRIOR TO PLACING FINAL PURCHASE ORDERS. SUBMISSION OF SHOP DRAWINGS WILL BE INTERPRETED AS HAVING BEEN COORDINATED WITH THE ARCHITECTURAL DRAWINGS.
- B. PROVIDE ALL LENGTHS, FEEDS, ACCESSORIES, CONNECTORS, WIRING, POWER SUPPLIES, DRIVERS ETC. FOR A COMPLETE INSTALLATION. THE E.C. SHALL VERIFY THE COMPLETE BILL OF MATERIAL WITH MANUFACTURER'S REPRESENTATIVE AND ENSURE ALL EQUIPMENT ARE INCLUDED IN BID PRICE. COORDINATE INSTALLATION WITH ARCHITECTURAL DETAILS.
- C. VERIFY FINAL LUMINAIRE LOCATIONS WITH OTHER CEILING MOUNTED EQUIPMENTS SUCH AS DIFFUSER WITH ARCHITECTURAL REFLECTED CEILING PLANS.
- D. VERIFY EXACT MOUNTING HEIGHT AND LOCATIONS OF ALL WALL MOUNTED LUMINAIRE WITH ARCHITECTURAL PLANS AND ELEVATIONS PRIOR TO ROUGH-IN.
- E. ANY PROPOSED ALTERNATE LUMINAIRES SHALL BE APPROVED BY THE ARCHITECT PRIOR TO FINAL BID PRICING.
- F. SHOULD THE CONTRACTOR PROPOSE TO FURNISH MATERIALS, EQUIPMENT AND DEVICES OTHER THAN THOSE SPECIFIED AND LISTED, THE CONTRACTOR SHALL SUBMIT A WRITTEN REQUEST FOR SUBSTITUTIONS, TO THE ENGINEERS AT LEAST TEN (10) BUSINESS DAYS PRIOR TO BID OPENING. THE REQUEST SHALL BE AN ALTERNATE TO THE ORIGINAL BID AND SHALL INCLUDE A COMPLETE SPECIFICATIONS CUTSHEET SUBMITTAL AS OUTLINED IN THE SPECIFICATIONS, COMPLETE WITH DESCRIPTIVE (MANUFACTURER, BRAND NAME, CATALOG NUMBER, ETC.) AND TECHNICAL DATA FOR ALL ITEMS. INDICATE ANY ADDITIONS OR DEDUCTIONS TO THE CONTRACT PRICE WITH THE SUBSTITUTION SUBMITTAL AND ON THE BID FORM.

LIGHTING PLAN KEYED WORK NOTES: #

- 1. CEILING MOUNTED RECEPTACLES FOR SHOW WINDOW. E.C. TO INSTALL RECEPTACLE WITHIN 18" OF THE TOP OF SHOW WINDOW PER NEC REQUIREMENTS.
- 2. WALL MOUNTED OCCUPANCY SENSOR. SET OFF TIME TO 15 MINUTES FOR RESTROOM, SET DIP SWITCH TO AUTOMATIC ON.
- 3. CONNECT ALL EMERGENCY EGRESS AND NIGHT 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.
- 4. JUNCTION BOX WITH TOGGLE DISCONNECT PER NEC FOR CONNECTION TO BUILDING MOUNTED SIGNAGE. VERIFY EXACT LOCATION AND CONNECT TO SIGN PER MANUFACTURER'S INSTRUCTION. ROUTE CIRCUIT TO PANEL AS INDICATED VIA EXTERIOR LIGHTING/SIGNAGE CONTROLLER.
- 5. COORDINATE EXACT LOCATION OF LIGHTING CONTROL PANEL WITH ARCHITECT.
- 6. 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.
- 7. WEATHERPROOF EMERGENCY LIGHT FIXTURE. E.C. SHALL COORDINATE WITH ARCHITECT FOR FINAL FINISH & LOCATION. CONNECT ALL FIXTURES TO NEAREST LIGHTING CIRCUIT AHEAD OF SWITCHING FOR CONTINUOUS OPERATION.
- 8. EXHAUST FANS SHALL BE CIRCUITED AND CONTROLLED ALONG WITH THE LIGHT FIXTURES IN THE SAME ROOM.
- 9. LIGHTING IN DAYLIGHT ZONE SHALL BE CONTROLLED THROUGH DAYLIGHT SENSOR.
- 10. ALL THE LIGHT FIXTURES LOCATED BELOW HOOD SHALL BE WIRED VIA KITCHEN HOOD CONTROL PANEL. CO-ORDINATE WITH KITCHEN HOOD MANUFACTURER FOR DETAILS.
- 11. MANUAL OVER-RIDE SWITCH, E.C. SHALL CO-ORDINATE WITH ARCHITECT/OWNER FOR EXACT LOCATION OF MANUAL OVER-RIDE SWITCH.
- 12. NEW PANELS "A" AND "B" FOR SPACE. E.C. SHALL CO-ORDINATE WITH ARCHITECT/OWNER FOR EXACT LOCATION OF PANELS. REFER RISER AND PANEL SCHEDULE FOR MORE DETAIL.
- 13. PROVIDE JUNCTION BOX FOR FUTURE EXTERIOR CEILING FANS ON THE UNDERSIDE OF METAL CANOPY STRUCTURE.

LIGHTING RELAY ZONE SCHEDULE		
ZONE	SWITCH	CIRCUIT
1	a	A#2
2	b	A#6
3	c	A#6
4	d	A#2
5	e	A#6
6	f	A#4
7	g	A#4
8	h	A#10
9	-	-
10	-	-
11	-	-
12	-	-
13	-	-
14	-	-
15	-	-
16	-	-





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

ELECTRICAL POWER PLAN GENERAL NOTES:

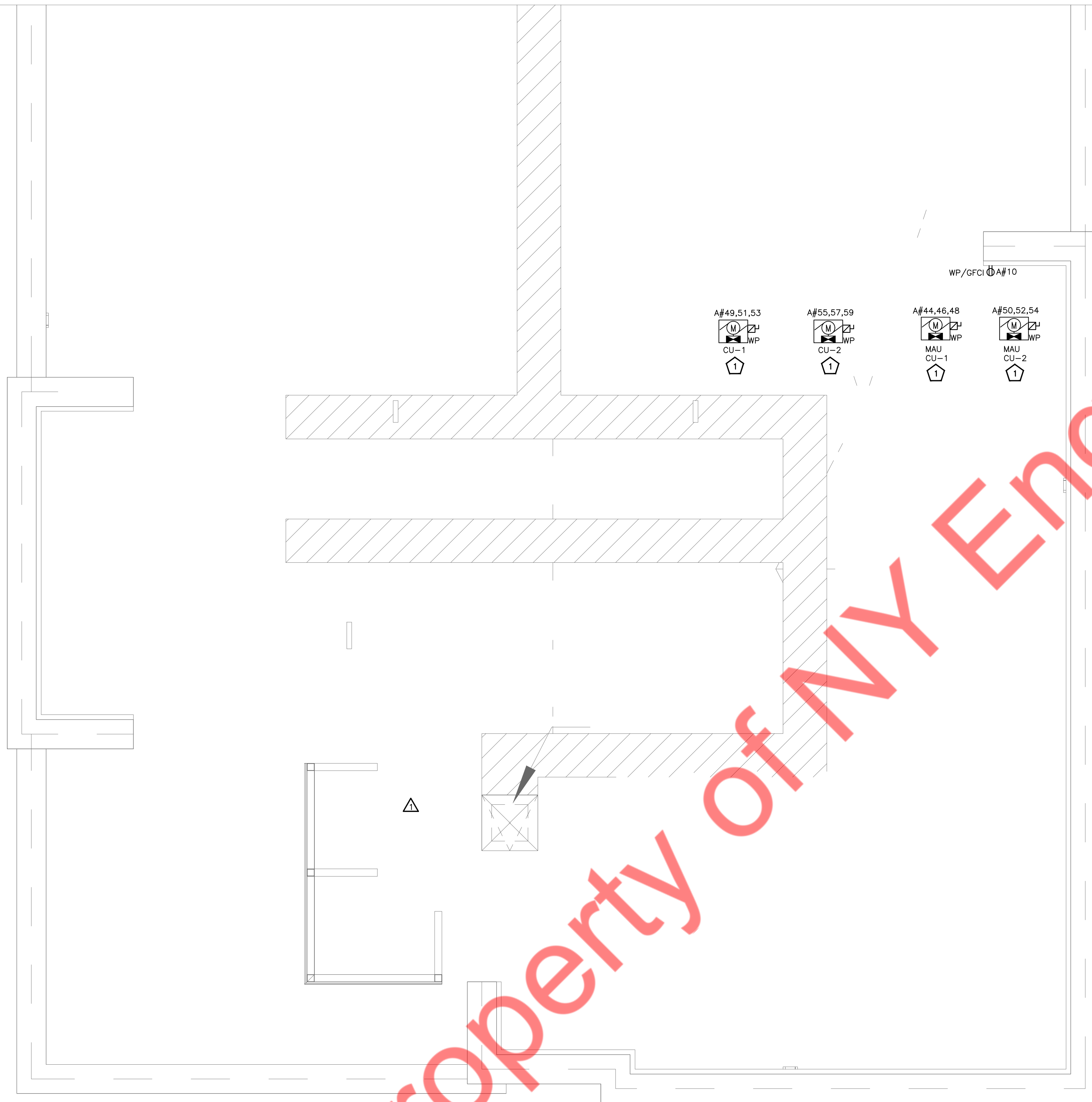
- A. E.C. SHALL COORDINATE LOCATIONS AND HEIGHT OF ALL OUTLETS WITH ARCHITECT/OWNER PRIOR TO ROUGH-IN.
- B. ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR SUPPLYING / INSTALLING ALL ELECTRICAL COMPONENTS NECESSARY TO PROVIDE POWER TO EQUIPMENT. ELECTRICAL CONTRACTOR SHALL ALSO COMPLETE ALL INTERNAL WIRING AND FINAL CONNECTIONS TO EQUIPMENT PER MANUFACTURERS SPECIFICATIONS, INCLUDING BUT NOT LIMITED TO:
 - C. -PROVIDING CAPS AND CORDS TO APPLICABLE EQUIPMENT
 - D. -STAINLESS STEEL COVER PLATES WHERE REQUIRED
 - E. - MAIN BREAKER PANELS, CONTROL PANELS, DISCONNECT SWITCHES, STARTERS, ETC.
- F. REFER TO ARCHITECTURAL PLANS AND / OR CONSTRUCTION DOCUMENTS FOR ANY ADDITIONAL ELECTRICAL CONNECTIONS OR OUTLETS REQUIRED TO MEET LOCAL CODES.
- G. ALL SINGLE PHASE RECEPTACLES 150 VOLTS TO GROUND OR LESS, 50 AMPS OR LESS, AND ALL THREE PHASE RECEPTACLES 150 VOLTS TO GROUND OR LESS, 100 AMPS OR LESS IN COMMERCIAL KITCHENS AND FOOD PREP AREAS MUST BE GFCI PROTECTED. ALL GFCI RESETS MUST BE READILY ACCESSIBLE PER NEC 210.8B
- H. THE HOOD SUPPRESSION SYSTEM SHALL SHUTDOWN ALL FUEL AND POWER FOR EQUIPMENT LOCATED UNDER THE HOOD UPON INITIATION IN ACCORDANCE WITH FLORIDA FIRE PREVENTION CODE FFPC 1-50.4.6 AND FFPC 50.4.8.1.
- I. ALL ELECTRICAL EQUIPMENT SHALL BE LABELLED TO INDICATE POTENTIAL ELECTRIC ARC FLASH HAZARDS PER NEC 110.16.

ELECTRICAL POWER PLAN KEYED WORK NOTES:

1. E.C. SHALL CO-ORDINATE WITH ARCHITECT/OWNER FOR EXACT LOCATION OF PANELS.
2. JUNCTION BOX FOR WALK-IN MISCELLANEOUS LOAD, E.C. SHALL COORDINATE WITH MANUFACTURER FOR EXACT POWER REQUIREMENTS.
3. E.C. TO CO-ORDINATE WITH WALKIN BOX MANUFACTURER FOR EXACT POWER REQUIREMENTS. PROVIDE NECESSARY ELECTRICAL CONNECTIONS AS PER MANUFACTURER REQUIREMENTS. CO-ORDINATE EXACT LOCATION OF WALKIN BOX CONDENSER AND EVAPORATOR PRIOR TO ROUGH-IN.
4. PROVIDE LOCKOUTS AT DISTRIBUTION PANEL FOR RESTROOM HAND DRYERS PER NEC 422.33
5. COORDINATE MOUNTING AND EXACT LOCATION OF DEVICES IN P.O.S. CABINERY WITH G.C. EACH P.O.S. STATION SHALL BE (1) QUAD RECEPTACLE, (1) QUAD DATA OUTLETS, AND (1) VOICE OUTLET. COORDINATE EXACT REQUIREMENTS WITH FRANCHISEE/ARCHITECT.
6. ELECTRICAL POWER PROVISION FOR HOT WATER RECIRCULATION PUMP (HWCP). E.C. SHALL COORDINATE WITH THE MANUFACTURER FOR THE EXACT POWER REQUIREMENT AND THE ARCHITECT FOR THE EXACT LOCATION BEFORE ROUGH-IN.
7. ELECTRICAL POWER PROVISION FOR WATER HEATER (WH). E.C. SHALL COORDINATE WITH THE MANUFACTURER FOR THE EXACT POWER REQUIREMENT AND THE ARCHITECT FOR THE EXACT LOCATION BEFORE ROUGH-IN.
8. MULTIOUTLET USB CHARGING SYSTEM (PLUGMOLD). COORDINATE WITH MANUFACTURER FOR ELECTRICAL REQUIREMENTS.
9. PROVIDE JUNCTION BOX AND ELECTRICAL SUPPLY FOR FAIL SAFE DOOR . COORDINATE WITH MANUFACTURER FOR EXACT POWER REQUIREMENT AND ELECTRICAL CONNECTION OF DOOR.
10. PROVIDE JUNCTION BOX FOR SECURITY CAMERAS. COORDINATE EXACT POWER REQUIREMENT AND LOCATION WITH LV VENDOR.
11. PROVIDE JUNCTION BOX OR CEILING OUTLET AS REQUIRED FOR SPEAKERS. COORDINATE POWER REQUIREMENT AND EXACT LOCATION WITH MANUFACTURER. TERMINATE SPEAKER WIRES AT OFFICE AUDIO BOX.
12. MOUNT DUPLEX AND DATA OUTLET ABOVE CEILING FOR FUTURE OLO SCREEN. COORDINATE EXACT LOCATION IN FIELD.
13. E.C. SHALL COORDINATE WITH MECHANICAL CONTRACTOR FOR EXACT LOCATION AND POWER REQUIREMENTS OF NEW MECHANICAL EQUIPMENTS. PROVIDE BREAKERS AND BRANCH CIRCUITS AS REQUIRED.

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

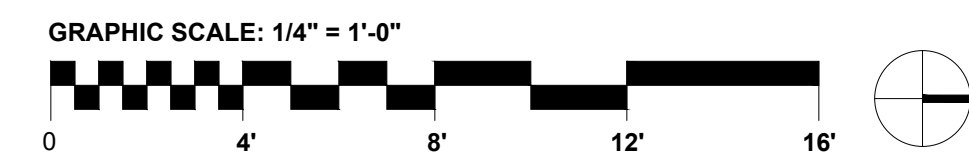


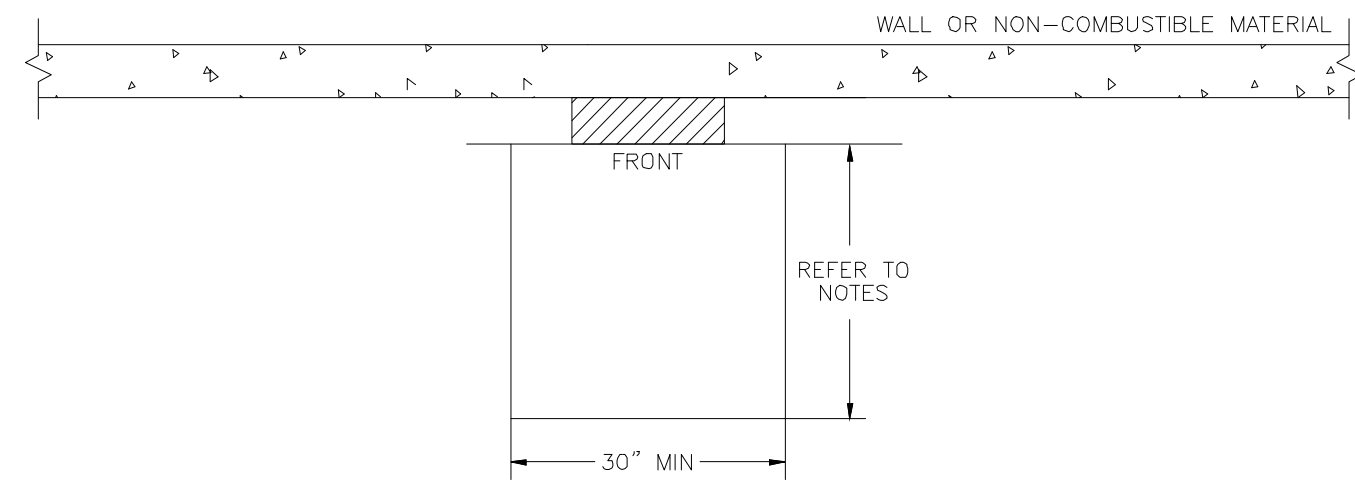


ROOF POWER PLAN KEYED NOTES: #

1. E.C. SHALL COORDINATE WITH MECHANICAL CONTRACTOR FOR EXACT LOCATION AND POWER REQUIREMENTS OF NEW MECHANICAL EQUIPMENTS. PROVIDE BREAKERS AND BRANCH CIRCUITS AS REQUIRED.

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

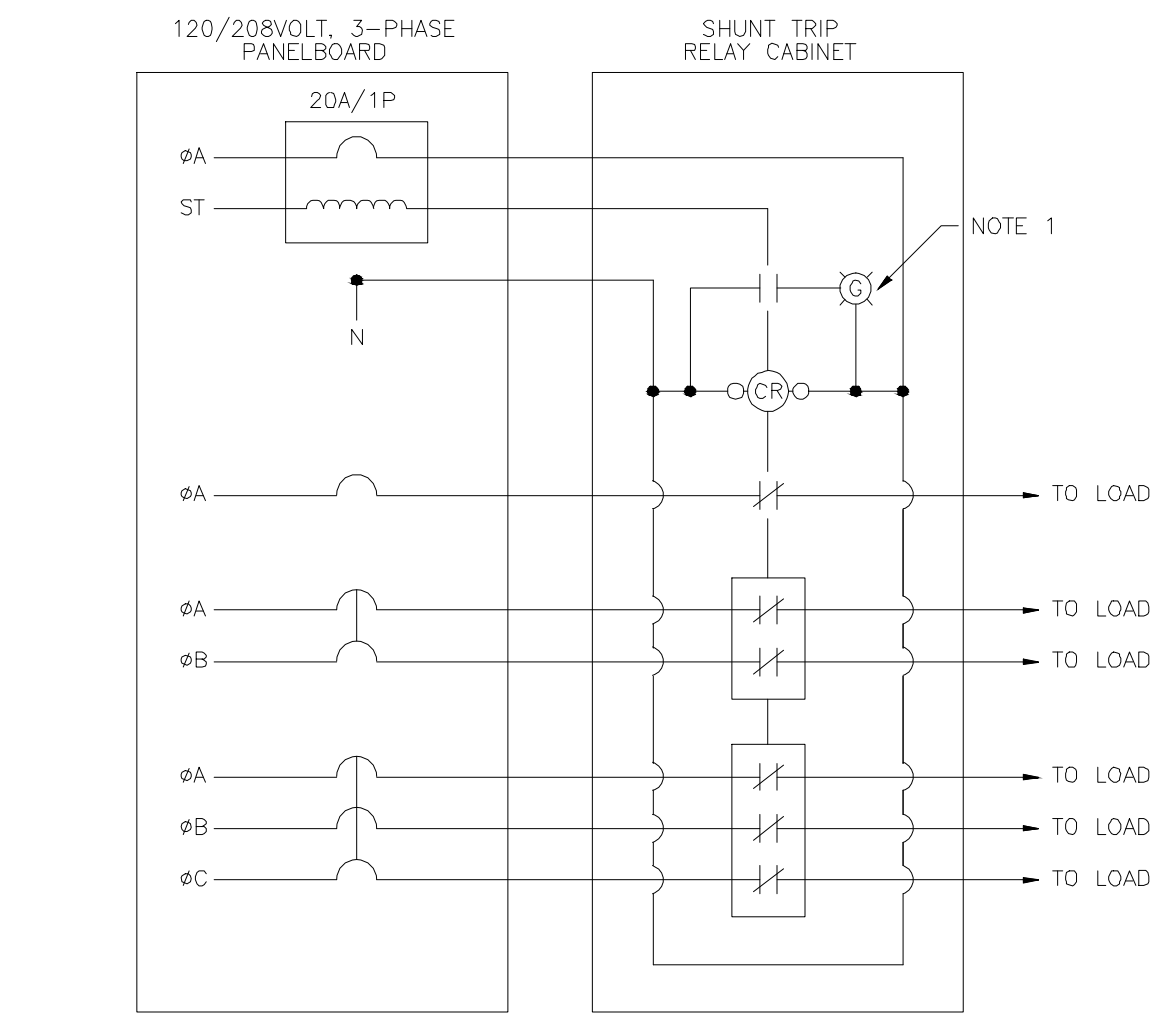




RECESSED MOUNTED PANELS

- MINIMUM WORKING CLEARANCE (IN THE DIRECTION OF ACCESS TO LIVE PARTS) AS REQUIRED BY NEC 110-16(a), CONDITION 2
 - 3' FOR 0-150 VOLT TO GROUND ELECTRIC EQUIPMENT
 - 3-1/2' FOR 150-600 VOLT TO GROUND ELECTRIC EQUIPMENT
 THE MINIMUM HEADROOM OF WORKING SPACE SHALL BE 6-1/2'
- PANELS INCLUDE POWER PANELS, CONTACTORS, CONTROL CABINETS, DISCONNECT SWITCHES, CONTROL CABINETS, DISCONNECT SWITCHES, MOTOR STARTERS, TIME CLOCK AND SIMILAR ELECTRIC EQUIPMENT

1 CLEARANCE FOR ELECTRIC EQUIPMENT DETAIL
E200 N.T.S



- NOTES:
1. GREEN PILOT LIGHT.
 2. NEMA 3A ENCLOSURE MOUNTED ADJACENT TO KITCHEN PANEL.

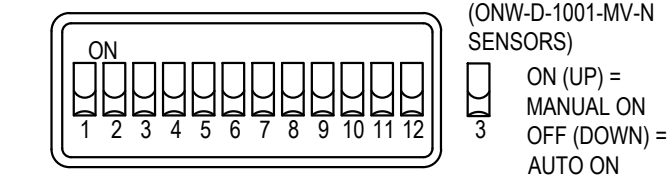
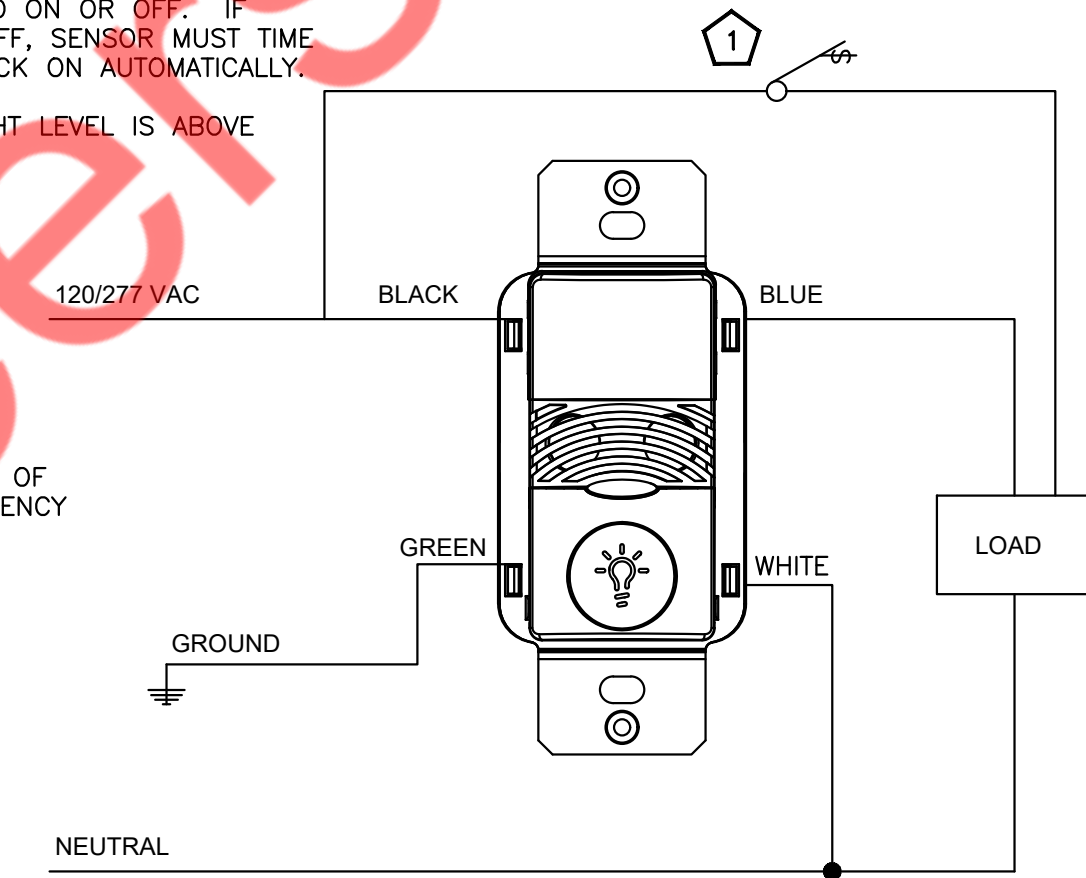
2 SHUT TRIP RELAY CABINET WIRING DETAIL
E200 N.T.S

- 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.

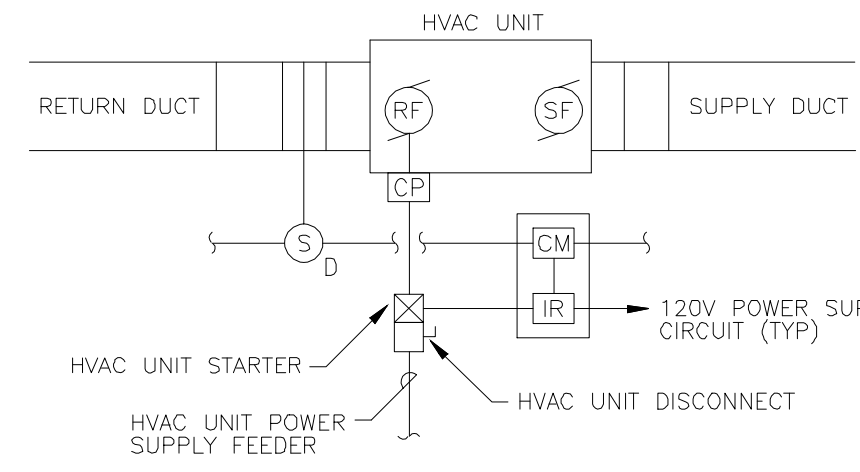
SENSOR TYPES INCLUDE:
ONW-D-1001-MV-N

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



3 WIRING DIAGRAM-LINE VOLTAGE WALL SWITCH SENSOR(NEUTRAL CONNECTION) OCCUPANCY/VACANCY-SINGLE LEVEL
E200 N.T.S

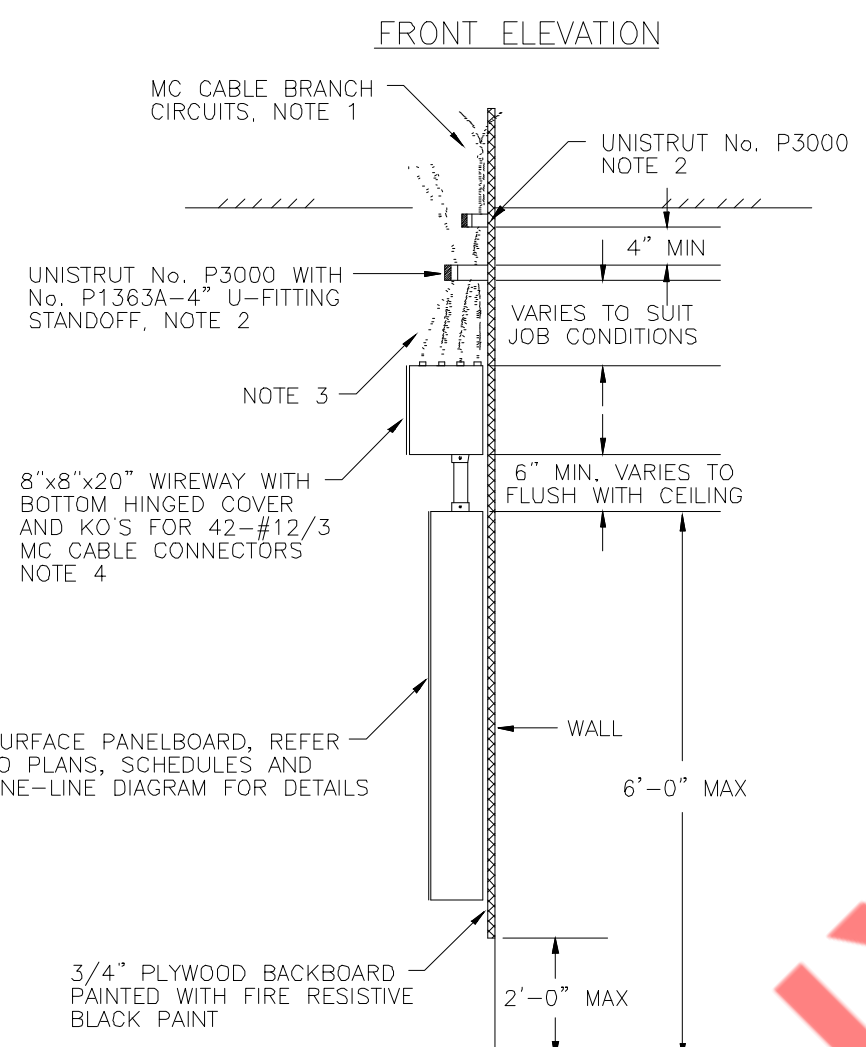
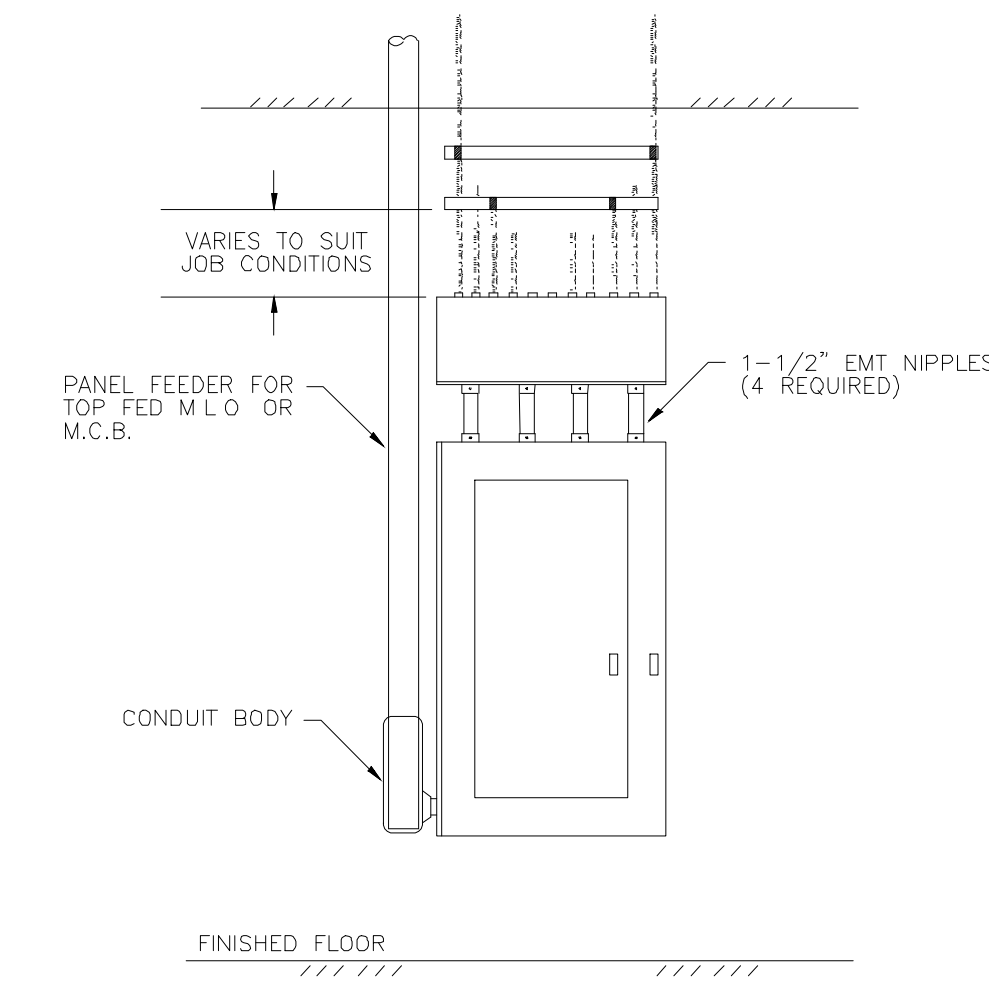
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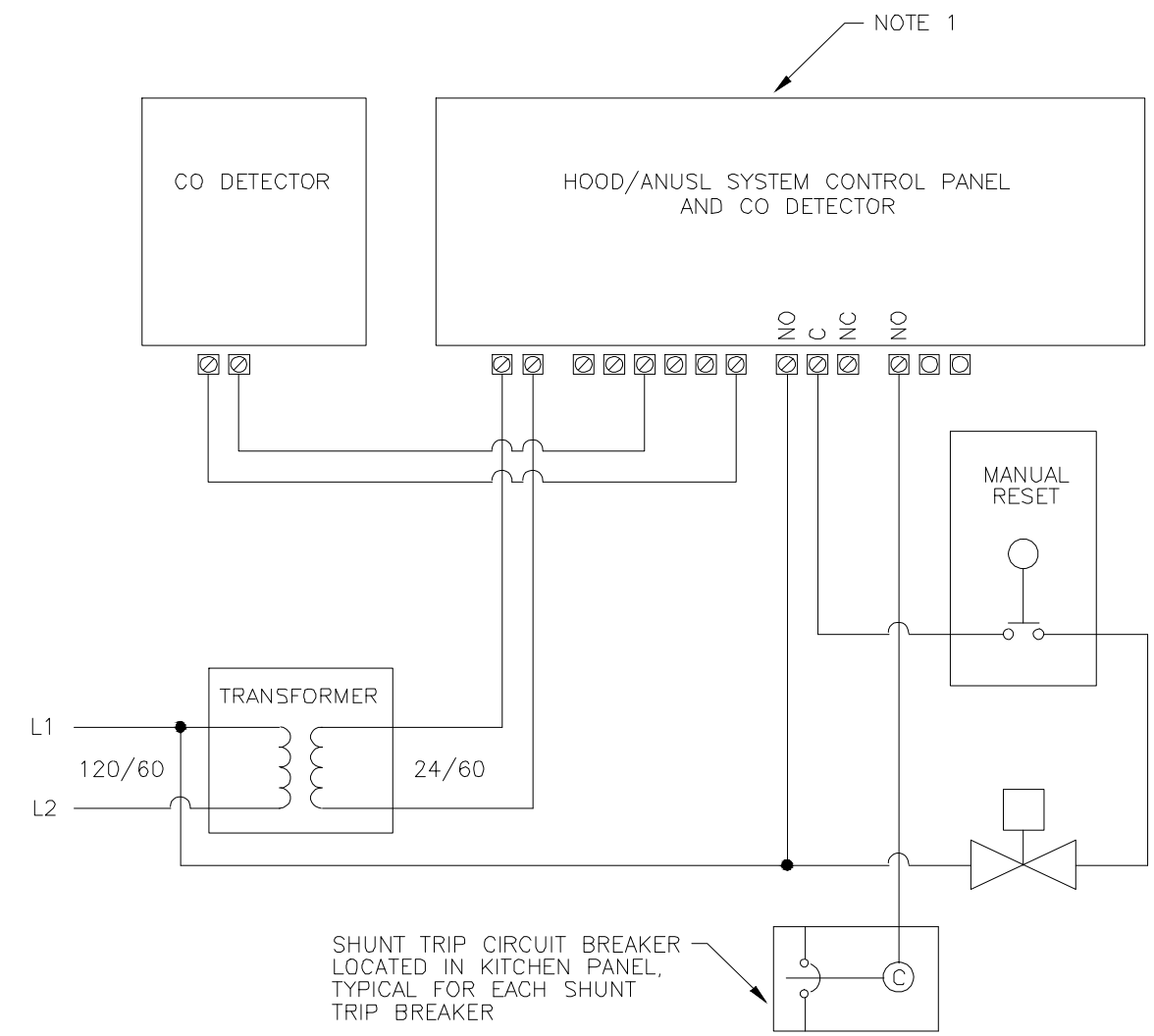
- REFER TO MECHANICAL DRAWINGS FOR EXACT LOCATION OF ALL HVAC UNITS AND DUCTWORK. DUCT TYPE SMOKE DETECTORS SHALL BE LOCATED AS IN ACCORDANCE WITH NFPA 72 AND COORDINATED WITH MECHANICAL CONTRACTOR.
- TO AUXILIARY CONTACTS IN RESPECTIVE AIR-HANDLING UNIT STARTER FOR UNIT SHUTDOWN ON ALARM. DUCT SMOKE DETECTOR SHALL BE PROVIDED AND WIRED BY ELECTRICAL CONTRACTOR. INSTALLED BY MECHANICAL CONTRACTOR. DUCT SMOKE DETECTORS SHALL BE INSTALLED AS IN ACCORDANCE WITH INTERNATIONAL MECHANICAL CODE.
 - SMOKE DETECTORS SHALL BE INSTALLED IN RETURN AIR SYSTEMS WITH A DESIGN CAPACITY GREATER THAN 2,000 CFM, IN THE RETURN AIR DUCT OR PLENUM UPSTREAM OF ANY FILTERS, EXHAUST AIR CONNECTIONS, OUTDOOR AIR CONNECTIONS, OR DECONTAMINATION EQUIPMENT AND APPLIANCES.
 - SMOKE DETECTORS SHALL BE INSTALLED IN THE SUPPLY AIR SYSTEM FOR ALL MAKE-UP AIR UNITS WITH A DESIGN CAPACITY GREATER THAN 2,000 CFM.

1 TYPICAL DUCT SMOKE DETECTOR MOUNTING DETAIL E201 N.T.S



NOTES:

- SUPPORT ALL CABLE RUNS FROM BUILDING STRUCTURE TO HIGH ABOVE CEILING. DO NOT ALLOW CABLES TO LAY-ON HUNG CEILINGS AT ANY POINT IN RUN.
- PROVIDE UNISTRUT No. M5026 OR No. M5028 CABLE/CONDUIT CLAMPS FOR EACH BRANCH CIRCUIT. INSTALL ALL INSIDE CABLE RUNS ON INSIDE STRUT AND INSIDE WIREWAY KO'S BEFORE INSTALLING ANY RUNS ON OUTSIDE STRUT. SUPPLY AND INSTALL ONE SPARE CLAMP FOR EACH SPARE OR SPACE IN PANELBOARD.
- INSTALL MARKER TAPE INDICATING CIRCUIT NUMBERS FOR EACH CABLE RUN.
- CUT BACK CABLE ARMOR JACKET SUFFICIENT TO RUN CONDUCTORS THRU WIREWAY AND NIPPLES TO EACH CIRCUIT BREAKER. WITHOUT SPLICES.
- CONDUCTORS RUN IN PANELBOARDS, NIPPLES AND WIREWAY SHALL BE GROUPED WITH 3 PHASES AND NEUTRALS IN EACH BUNDLED CONDITION TO AVOID INDUCTIVE HEATING IN METALLIC ENCLOSURES.

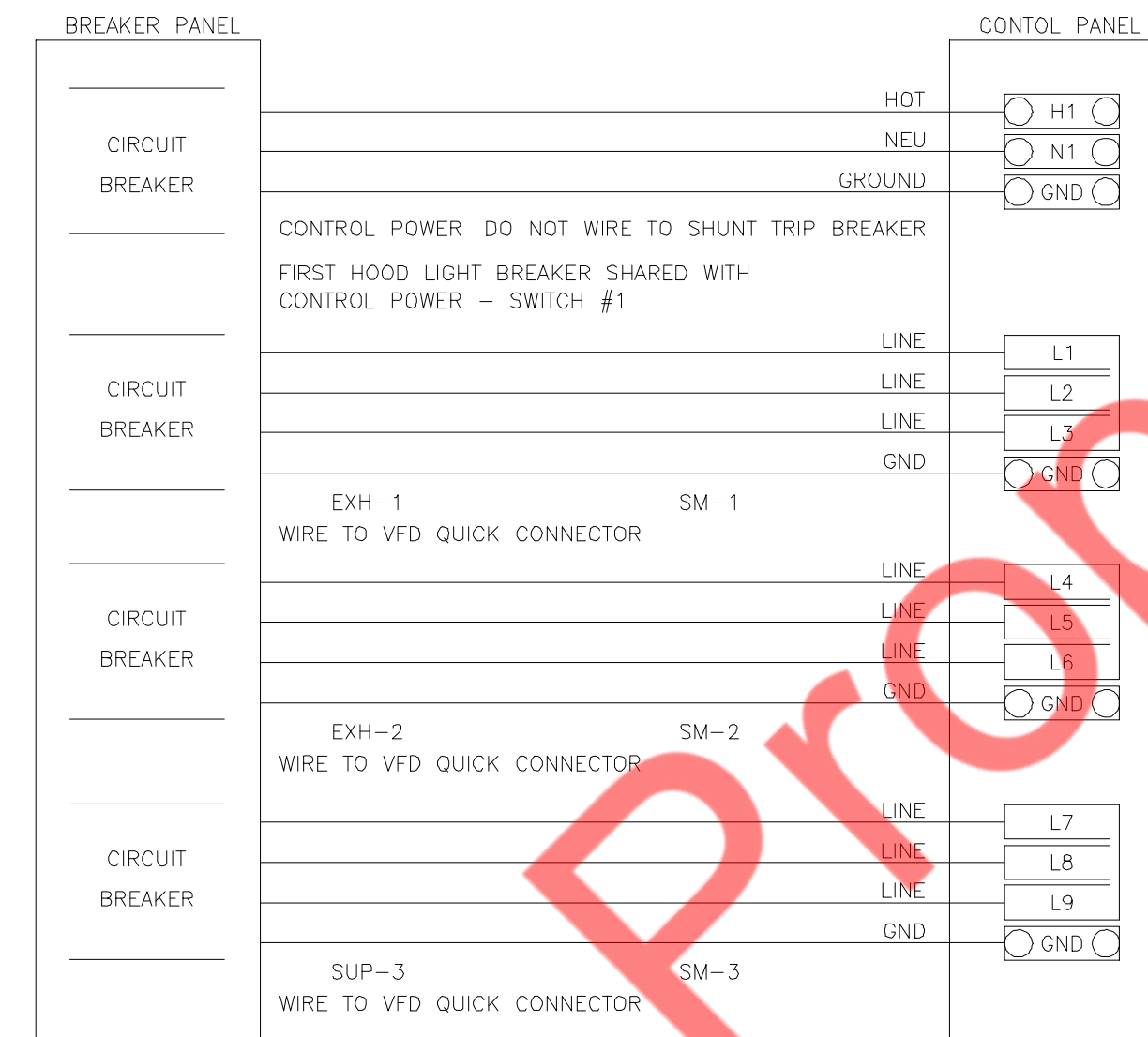


NOTES:

- RELAY SWITCHES WHEN UNIT IS POWERED. RELAY RETURNS TO DE-ENERGIZED ON POWER LOSS, SENSOR ALARM/FAILURE, OR CIRCUIT FAILURE.

2 KITCHEN HOOD CONTROL CO/DETECTOR WIRING DETAIL E201 N.T.S

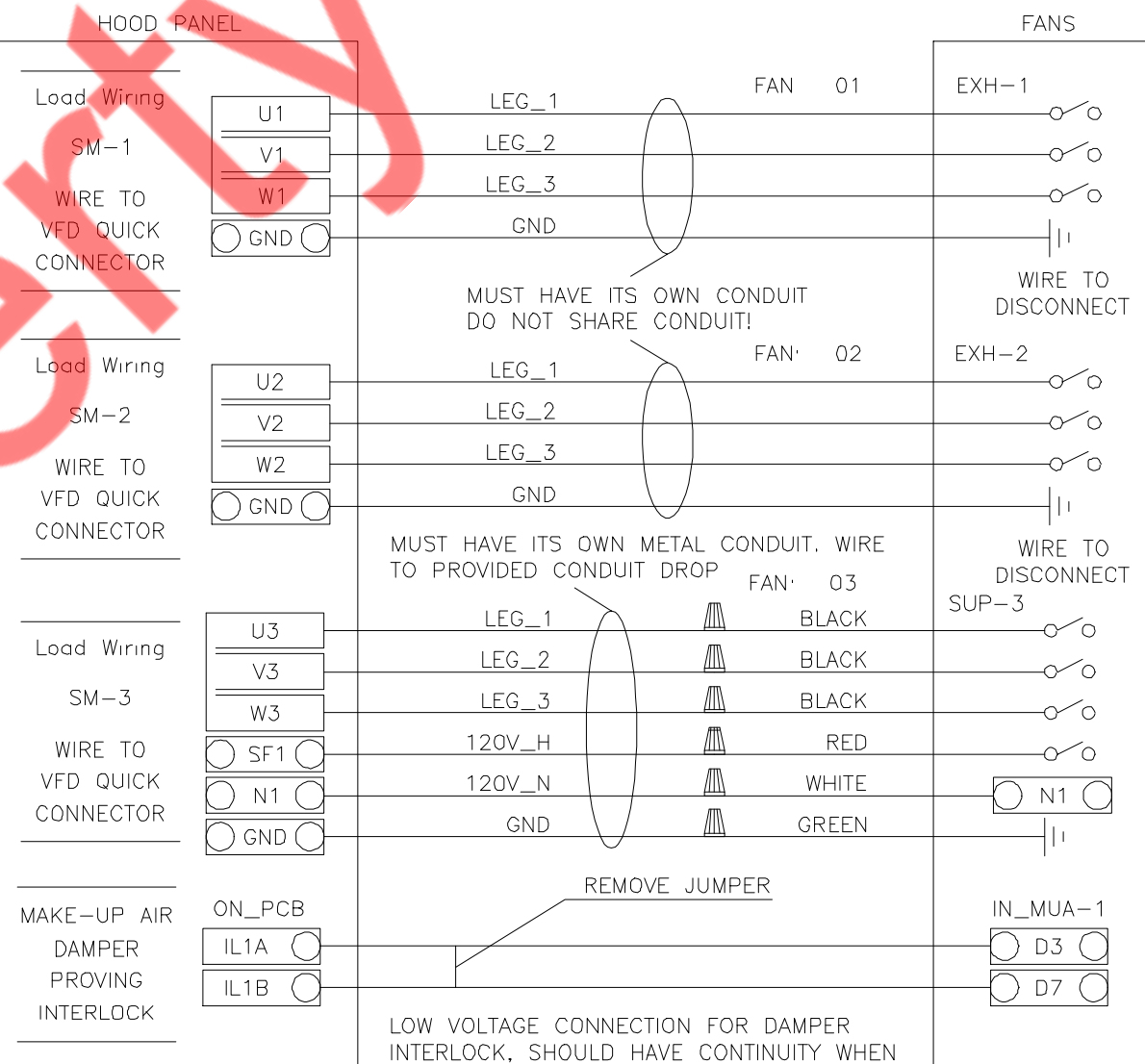
3 TYPICAL PANEL BOARD BRANCH CIRCUIT WIRING DETAIL E201 N.T.S



NOTES:

- ELECTRICAL CONTRACTOR SHALL COORDINATE ALL WIRING REQUIREMENTS WITH CAPTIVE AIRE PRIOR TO CONSTRUCTION.

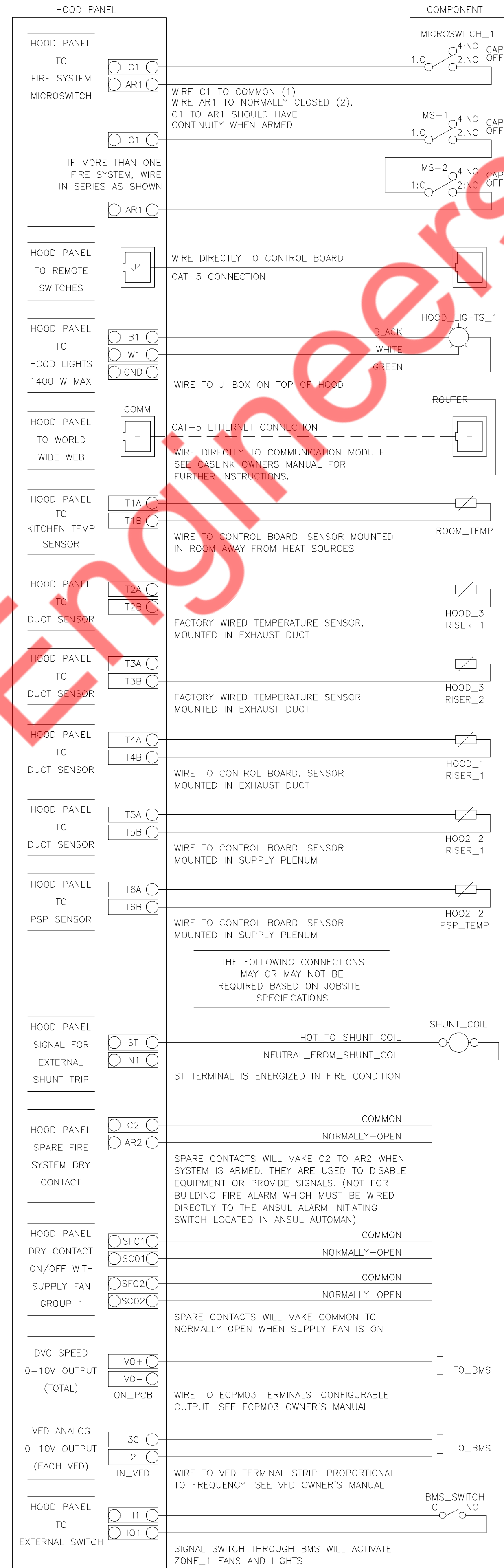
4 PANEL BOARD TO HOOD CONTROL WIRING DETAIL E201 N.T.S



NOTES:

- ELECTRICAL CONTRACTOR SHALL COORDINATE ALL WIRING REQUIREMENTS WITH CAPTIVE AIRE PRIOR TO CONSTRUCTION.

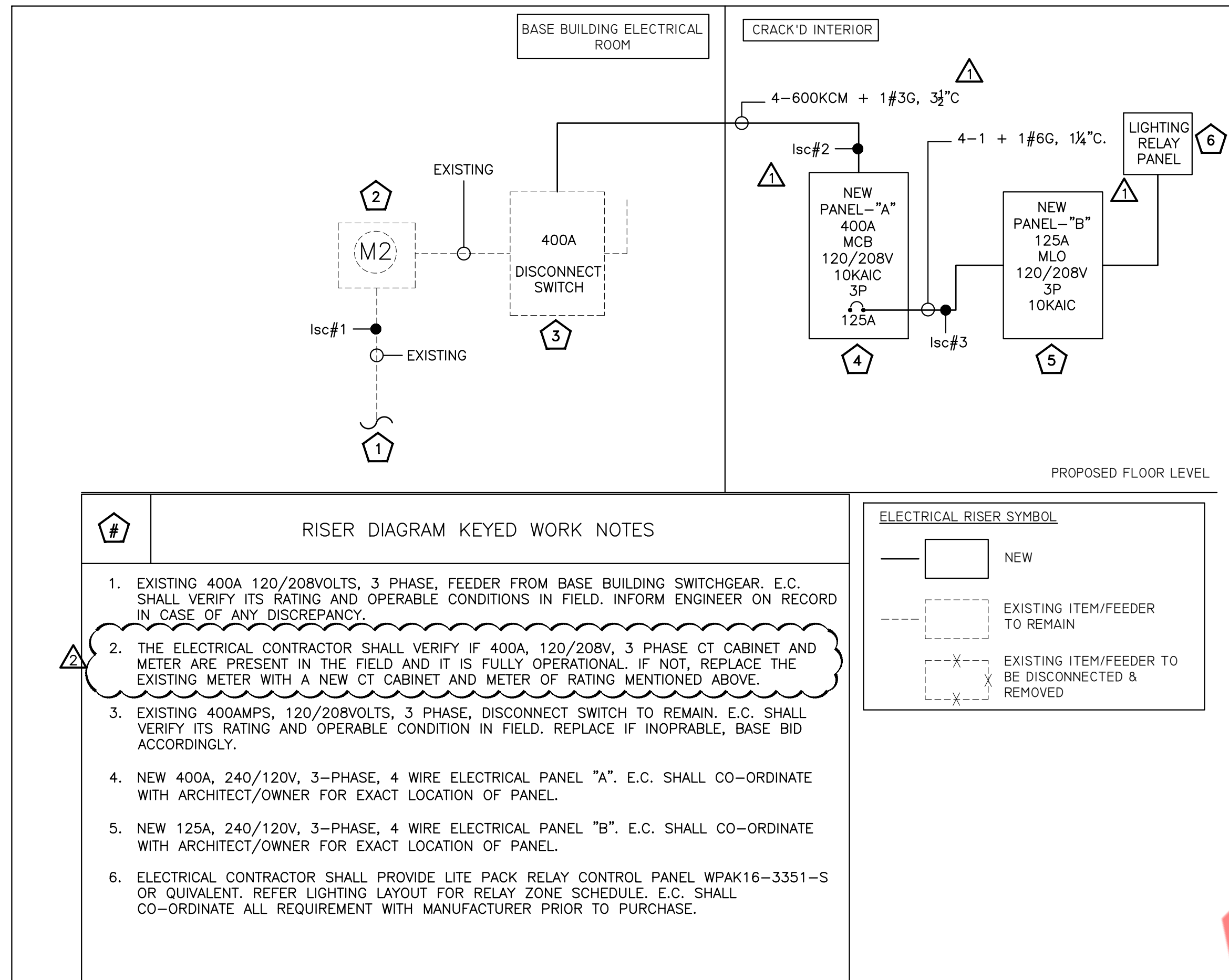
5 HOOD CONTROL TO FANS WIRING DETAIL E201 N.T.S



NOTES:

- ELECTRICAL CONTRACTOR SHALL COORDINATE ALL WIRING REQUIREMENTS WITH CAPTIVE AIRE PRIOR TO CONSTRUCTION.

6 HOOD CONTROL PANEL TO ACCESSORY ITEMS WIRING DETAIL E201 N.T.S



RISER DIAGRAM GENERAL NOTES:

- ELECTRICAL CONTRACTOR TO COORDINATE FAULT CURRENT (Isc) RATING WITH UTILITY COMPANY AND AHJ PRIOR TO BID.
- E.C. TO VERIFY EXACT POWER DISTRIBUTION IN FIELD. INFORM ENGINEER ON RECORD FOR ANY DISCREPANCY.
- E.C. TO VERIFY AND OPERABLE CONDITIONS OF ALL EXISTING PANELS, FEEDER DISCONNECT, SWITCH ETC. IN FIELD. REPLACE IF FOUND IN OPERABLE. BASE BID ACCORDINGLY.
- E.C. SHALL VERIFY AVAILABLE FAULT CURRENT AT THE SERVICE EQUIPMENT. SERVICE EQUIPMENT MUST BE FIELD MARKED WITH AVAILABLE FAULT CURRENT PER NEC 110.24, 110.9 AND 110.10.

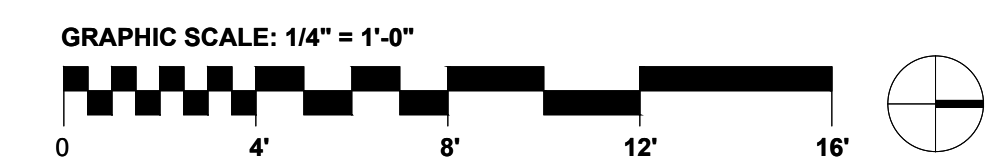
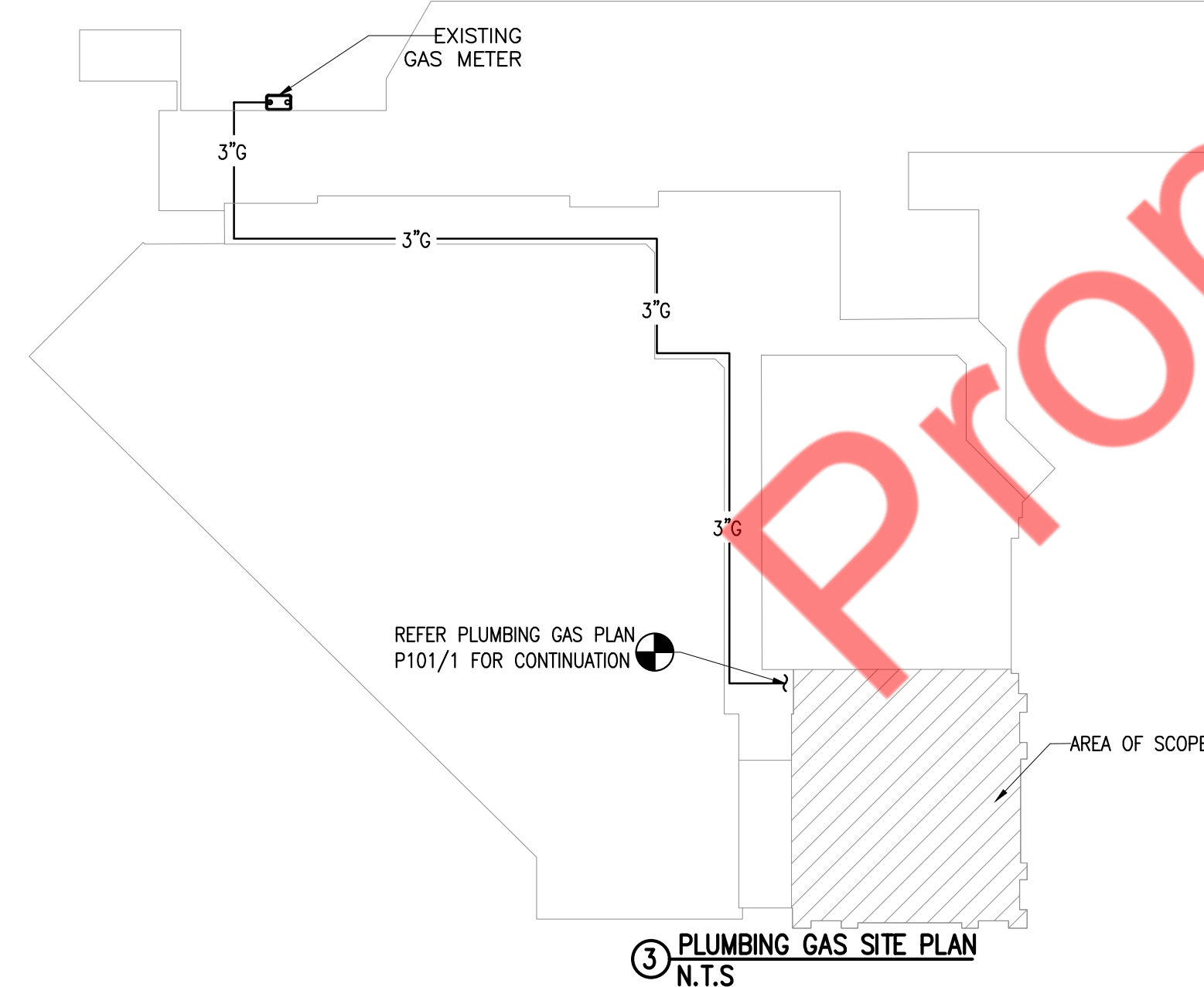
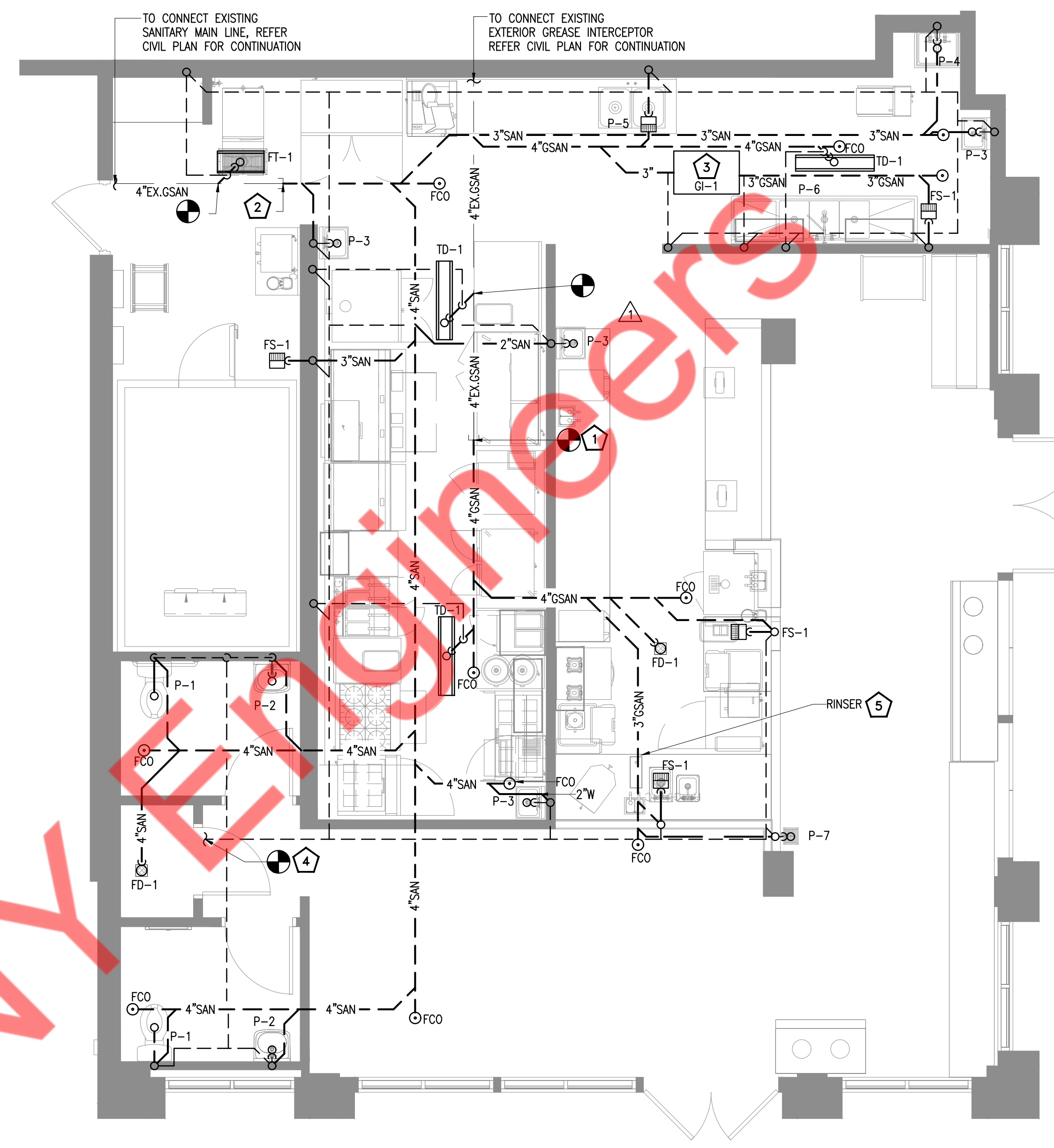
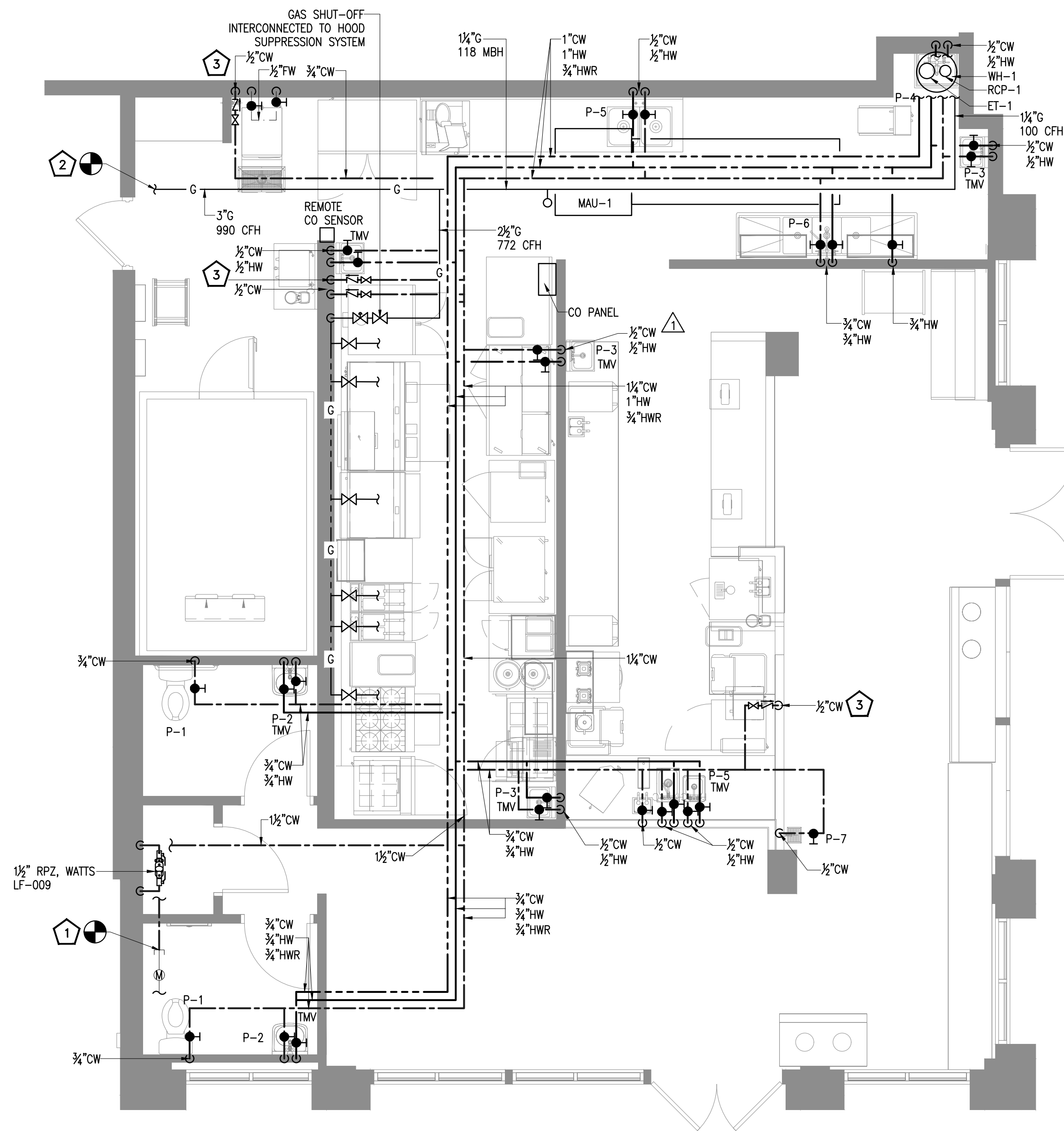
FAULT CURRENT CALCULATIONS

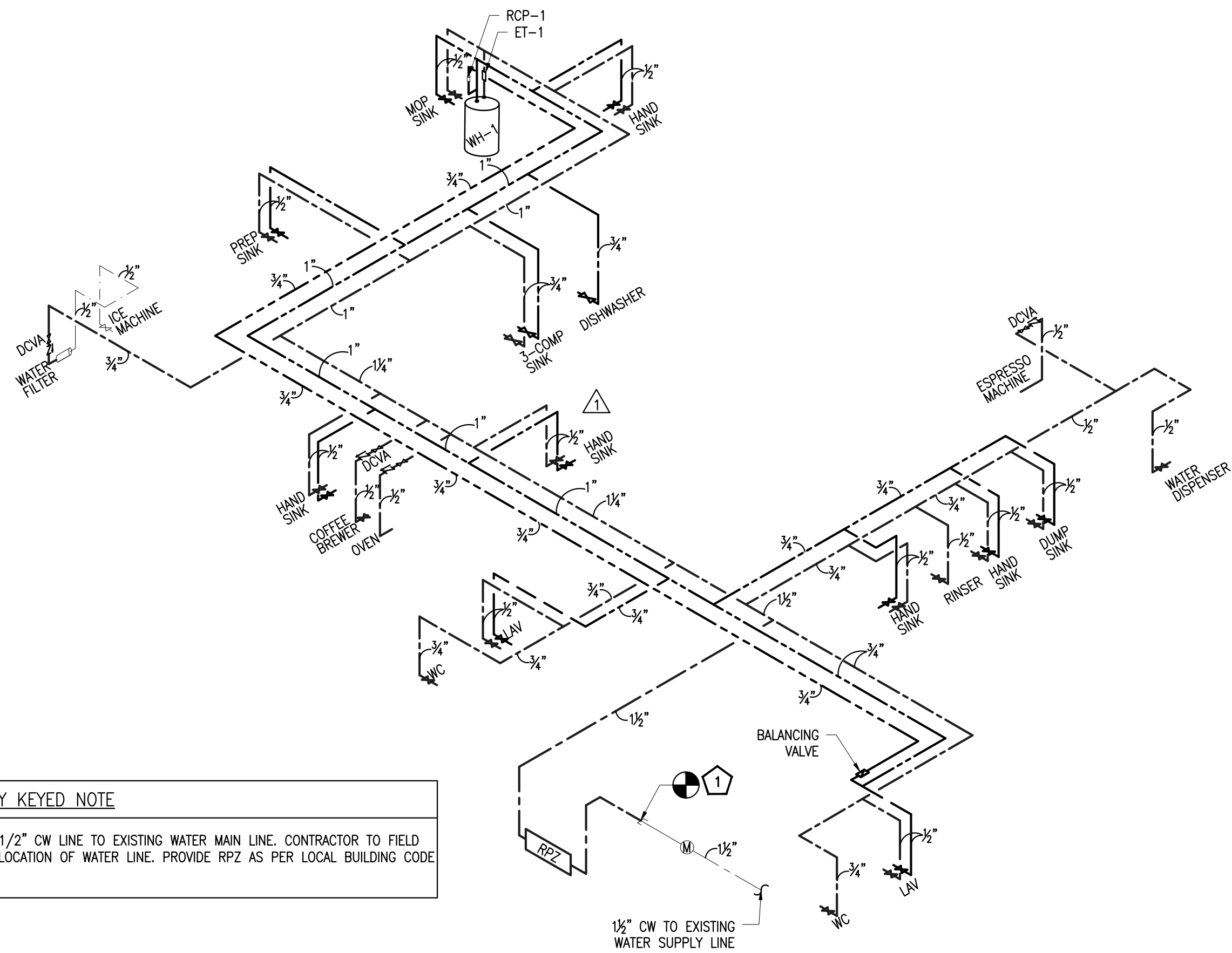
AVAILABLE FAULT CURRENT AT METER LOCATION (Isc1)
 Isc1: 16,175 AMPS

FAULT CURRENT AT PANEL A (Isc2)
 LENGTH: 150 FT
 CONDUCTOR SIZE: 600 KCM
 QTY: 1
 TYPE: THREE SINGLE CONDUCTORS
 CONDUIT: STEEL
 WIRE: CU, 600V
FAULT CURRENT Isc2: 9,500 AMPS

FAULT CURRENT AT PANEL B (Isc3)
 LENGTH: 5 FT
 CONDUCTOR SIZE: 1m-00
 QTY: 1
 TYPE: THREE SINGLE CONDUCTORS
 CONDUIT: STEEL
 WIRE: CU, 600V
FAULT CURRENT Isc3: 9,493 AMPS

Property of ANY Engineers

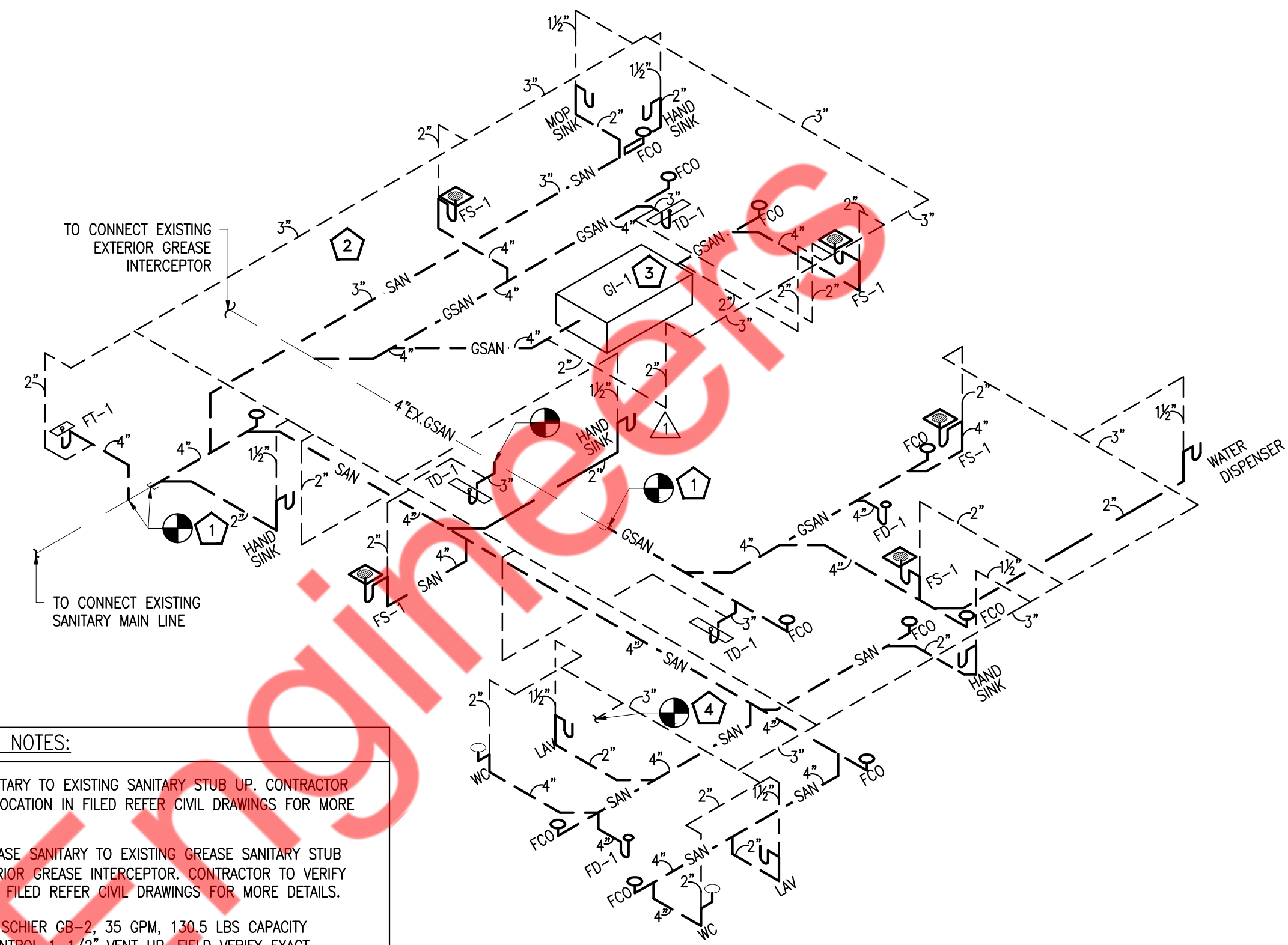




WATER SUPPLY KEYED NOTE

1 CONNECT NEW 1-1/2" CW LINE TO EXISTING WATER MAIN LINE. CONTRACTOR TO FIELD VERIFY SIZE AND LOCATION OF WATER LINE. PROVIDE RPZ AS PER LOCAL BUILDING CODE IF NOT PROVIDED.

1 PLUMBING WATER SUPPLY RISER
SCALE: N.T.S.



PLUMBING KEYED NOTES:

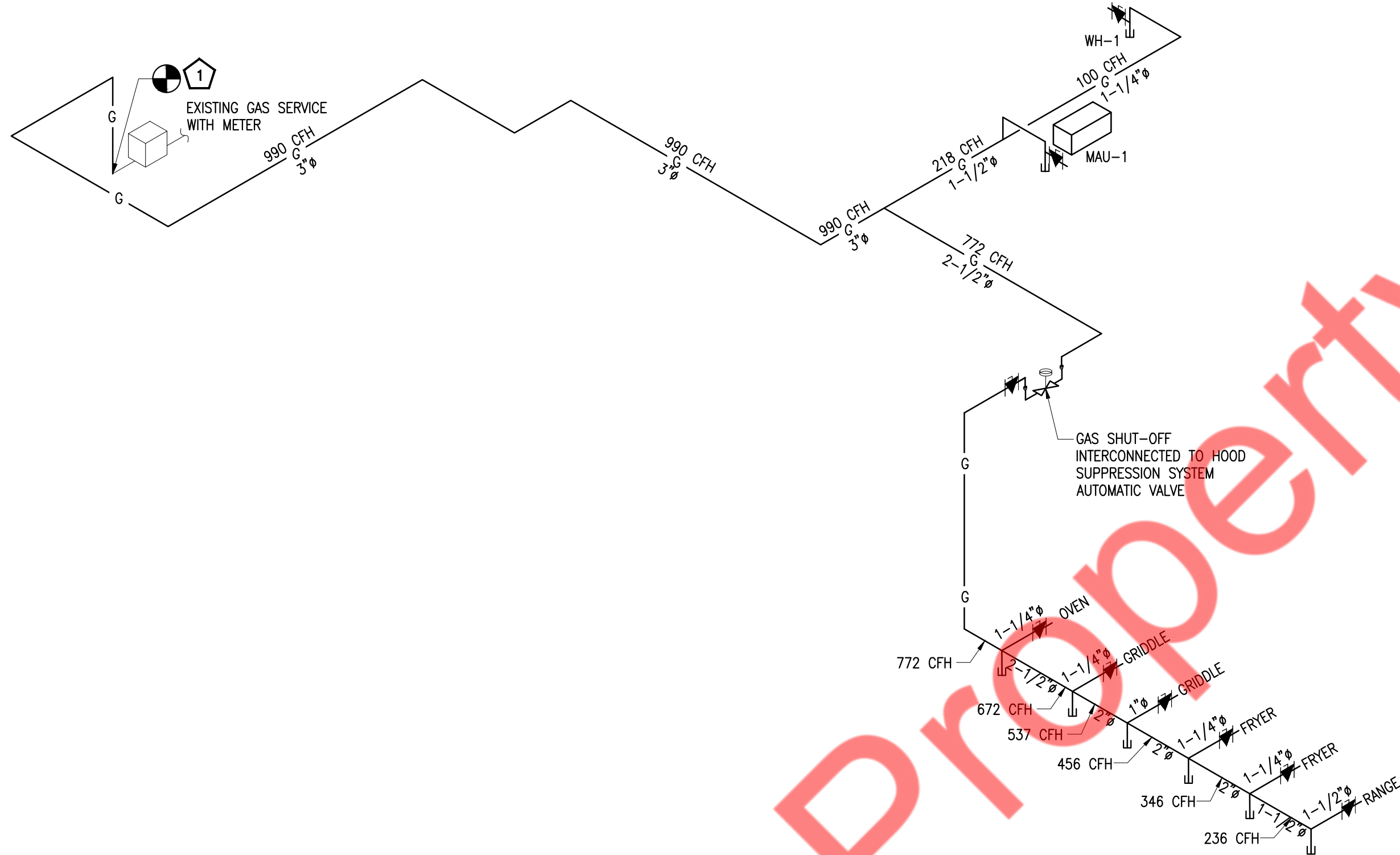
1 CONNECT NEW 4" SANITARY TO EXISTING SANITARY STUB UP. CONTRACTOR TO VERIFY SIZE AND LOCATION IN FILED REFER CIVIL DRAWINGS FOR MORE DETAILS.

2 CONNECT NEW 4" GREASE SANITARY TO EXISTING GREASE SANITARY STUB UP TO CONNECT EXTERIOR GREASE INTERCEPTOR. CONTRACTOR TO VERIFY SIZE AND LOCATION IN FILED REFER CIVIL DRAWINGS FOR MORE DETAILS.

3 GREASE INTERCEPTOR, SCHIER GB-2, 35 GPM, 130.5 LBS CAPACITY 4" INLET W/ FLOW CONTROL 1-1/2" VENT UP. FIELD VERIFY EXACT PLACEMENT OF GREASE TRAP AND COORDINATE WITH FOOD SERVICE EQUIPMENT PLANS TO AVOID LEG CONFLICTS.

4 CONNECT NEW 3" VENT PIPE TO EXISTING VENT. CONTRACTOR TO FIELD VERIFY SIZE, ROUTING ON SITE.

2 PLUMBING SANITARY RISER
SCALE: N.T.S.



GAS SCHEDULE

ITEM NO.	DESCRIPTION	QTY.	LOAD
23	CONVECTION OVEN	1	100
25	GRIDDLE	1	135
30	GRIDDLE	1	81
35	FRYER	2	220
40	RANGE	1	236
	MAU	1	118
	WH-1	1	100
TOTAL			990

GAS KEYED NOTE

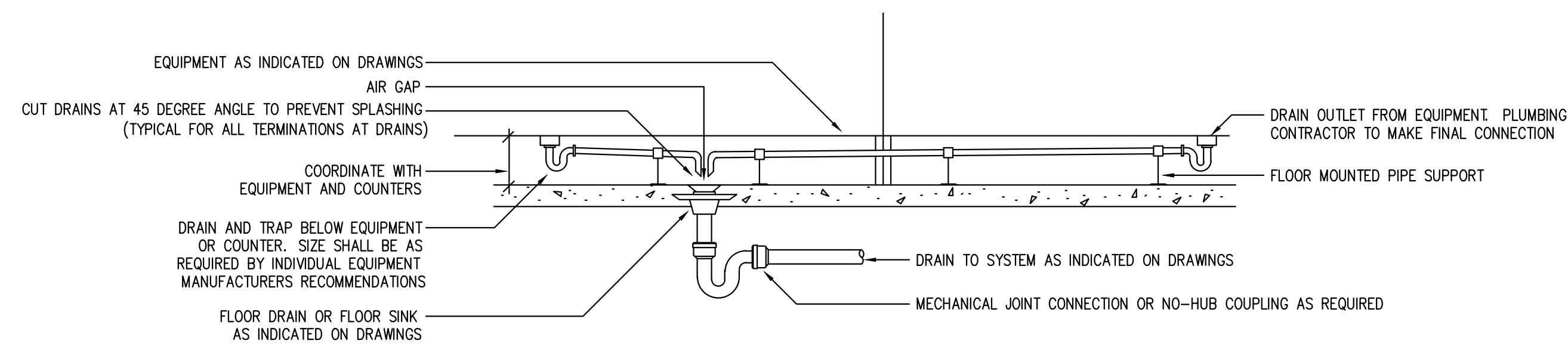
1 CONNECT NEW 3" GAS PIPING TO EXISTING GAS METER. CONTRACTOR TO FIELD VERIFY SIZE, PRESSURE, CAPACITY AND LOCATION IN FIELD WITH UTILITY COMPANY. UPGRADE GAS METER IF REQUIRED.

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

- NOTES:**
1. GAS PIPING TO BE SCHEDULE 40 STEEL PIPE W/125 CAST IRON SCREWED FITTINGS
 2. GAS SYSTEM TO BE INSTALLED BY QUALIFIED LICENSED CONTRACTOR.
 3. VERIFY ALL EQUIPMENT BTU'S PRIOR TO INSTALLATION. ADJUST PIPE SIZE ACCORDING TO 2020-FLORIDA FUEL GAS CODE, TABLE 402.4(2)
 4. ALL GAS LINES SHALL BE MARKED AT 5 FOOT INTERVALS, FROM BEGINNING TO TERMINATION
 5. MASTER SHUT-OFF VALVE SHALL BE NO HIGHER THAN 6' FROM FLOOR AND IN AREA THAT PROVIDES AN UNOBSTRUCTED 3 FEET ACCESS IN FRONT

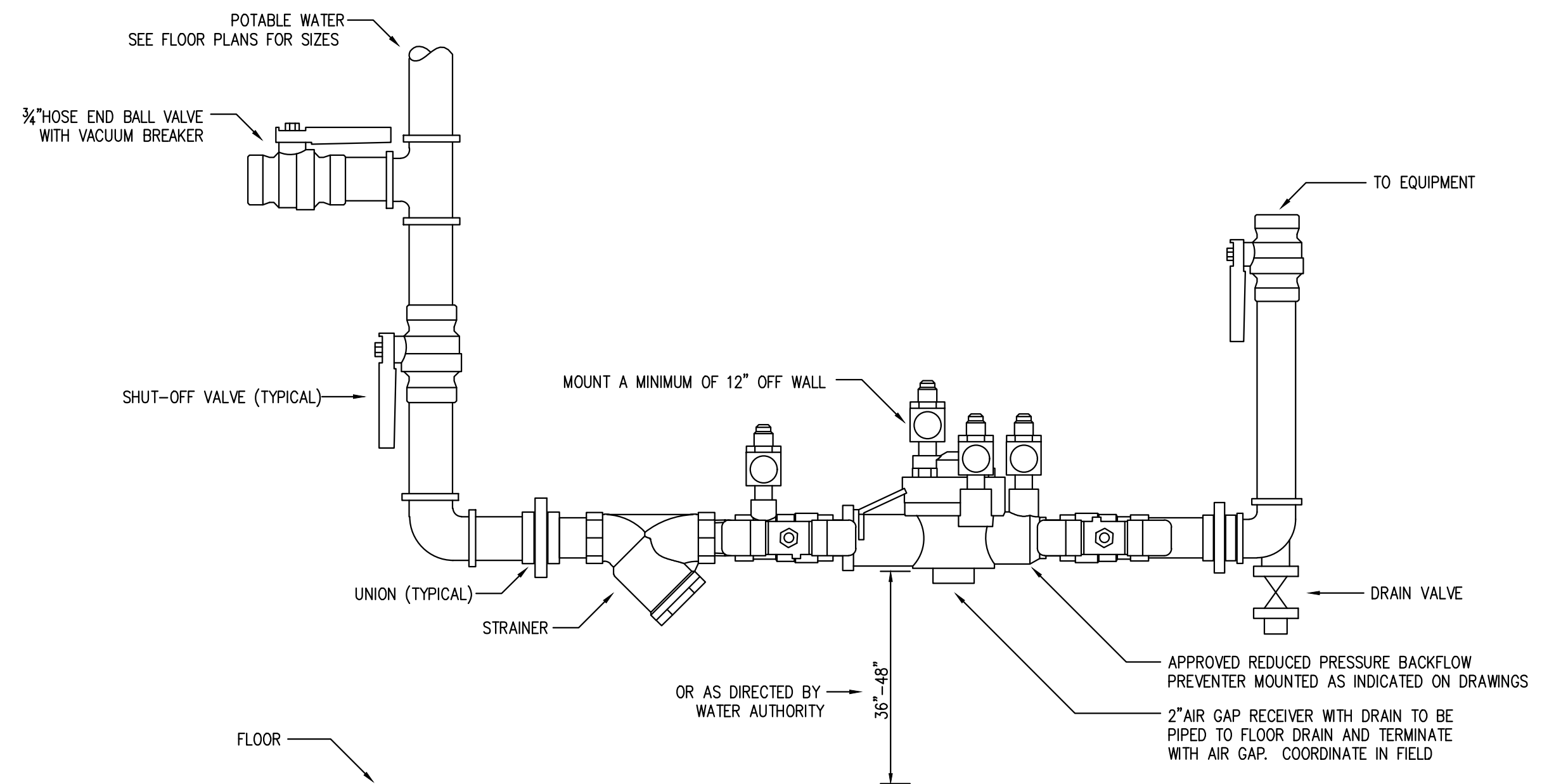
GAS PIPE SIZING PER
 TABLE 402.4(2) 2020 FLORIDA FUEL GAS CODE
 EQUIVALENT LENGTH OF PIPE = 350 FEET

3 PLUMBING GAS RISER
SCALE: N.T.S.



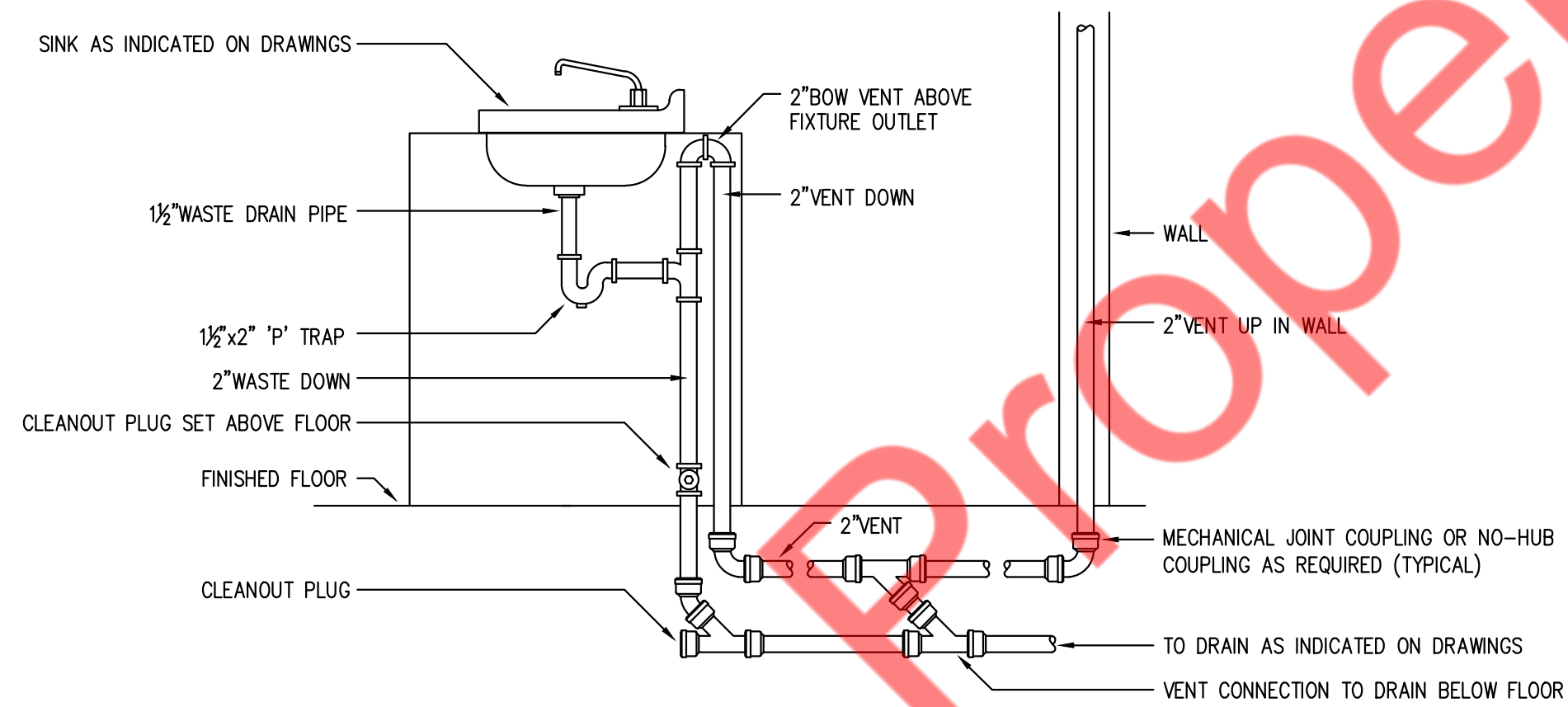
NOTES:
 1. EQUIPMENT DRAIN OUTLETS SHOWN ARE FOR GENERAL INFORMATION ONLY. CONTRACTOR SHALL COORDINATE WITH ALL EQUIPMENT DRAIN REQUIREMENTS AND PROVIDE PIPING AS NECESSARY.

6 INDIRECT WASTES FROM KITCHEN EQUIPMENT
 NOT TO SCALE

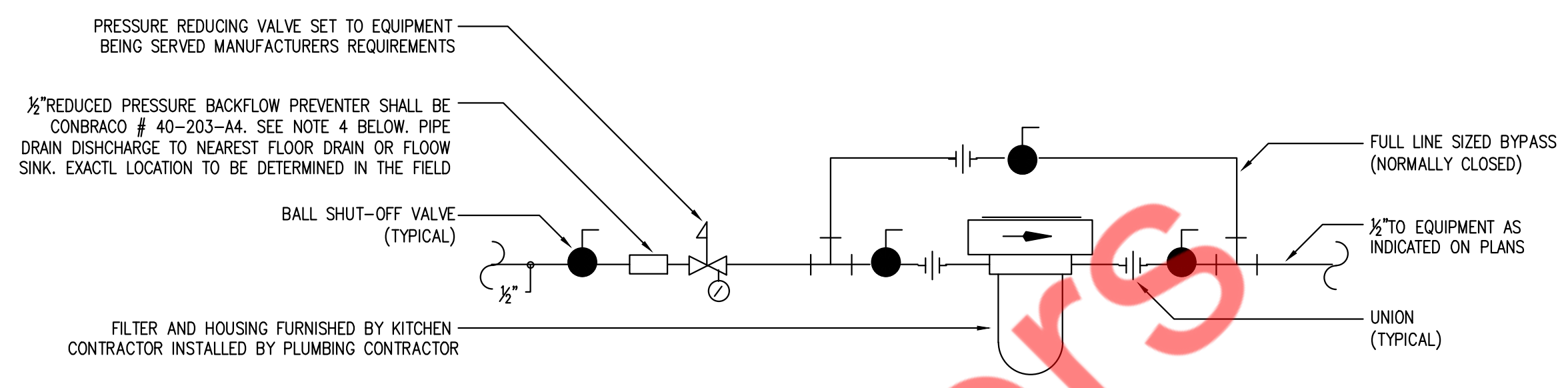


NOTES:
 1. AIR GAP AS NECESSARY FOR BACKFLOW PREVENTER TYPE
 2. IF EQUIPMENT IS SUPPLIED/PROVIDED WITH INTEGRAL BACKFLOW PREVENTION FROM THE MANUFACTURER, THE INSTALLATION REQUIREMENT OF AN EXTERNAL BACKFLOW DEVICE MUST BE REVIEWED WITH THE WATER AUTHORITY

5 BACKFLOW PREVENTION DEVICE INSTALLATION
 NOT TO SCALE

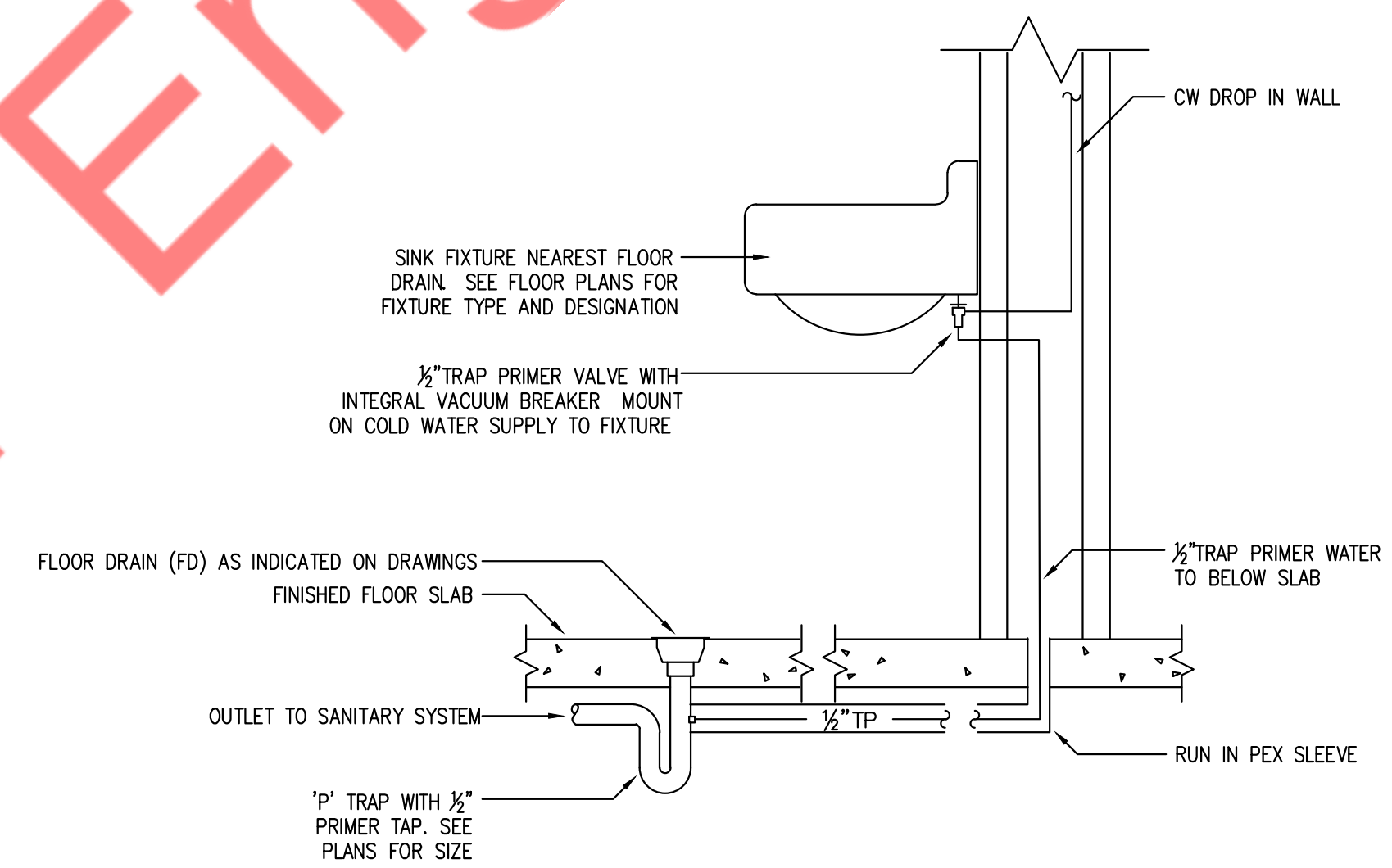


4 ISLAND SINK VENT (BOW VENT) DETAIL
 NOT TO SCALE

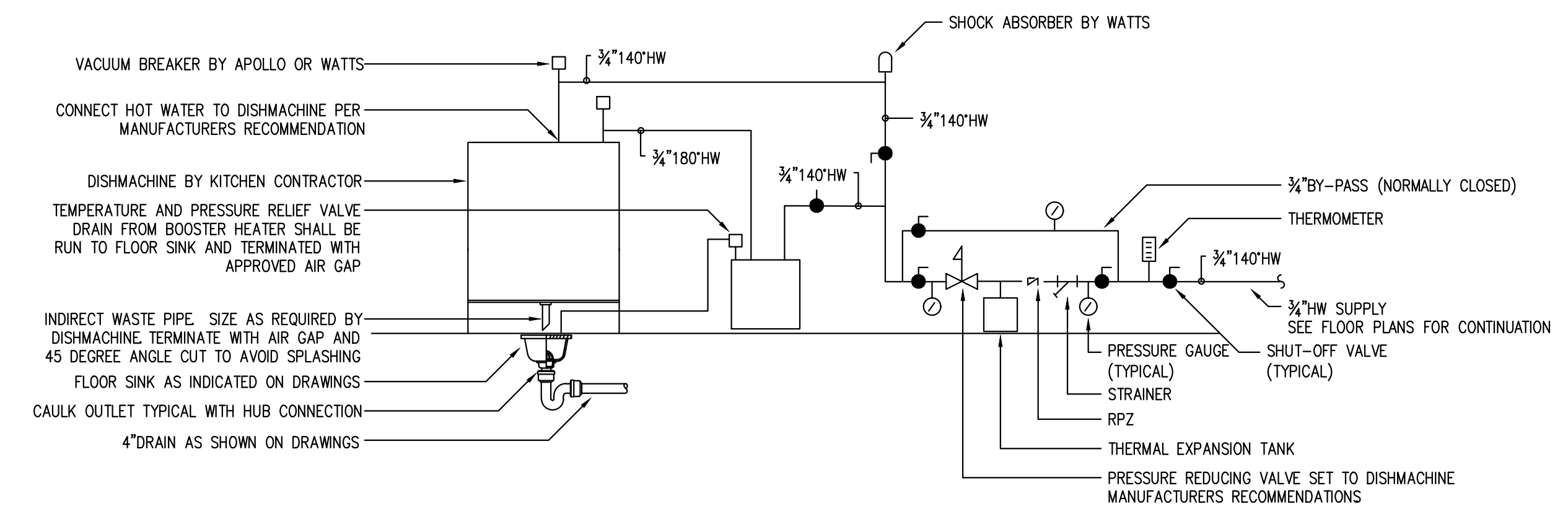


NOTES:
 1. PRESSURE REDUCING VALVE SHALL BE CONBRACO # 1/2" 36C-U2S-LP-GC.
 2. ENTIRE INSTALLATION SHOWN SHALL BE MOUNTED EXPOSED ON WALL AND READILY ACCESSIBLE.
 3. THE PLUMBING CONTRACTOR SHALL COORDINATE WITH THE EQUIPMENT MANUFACTURER THAT FILTER IS SERVING TO ENSURE THAT THERE WILL BE SUFFICIENT FLOW AND PRESSURE.
 4. THE BACKFLOW PREVENTER AT THE SODA DISPENSER SHALL BE CONBRACO SERIES 4C-100 CARBONATED BEVERAGE BACKFLOW PREVENTER

3 TYPICAL WATER FILTER DETAIL
 NOT TO SCALE



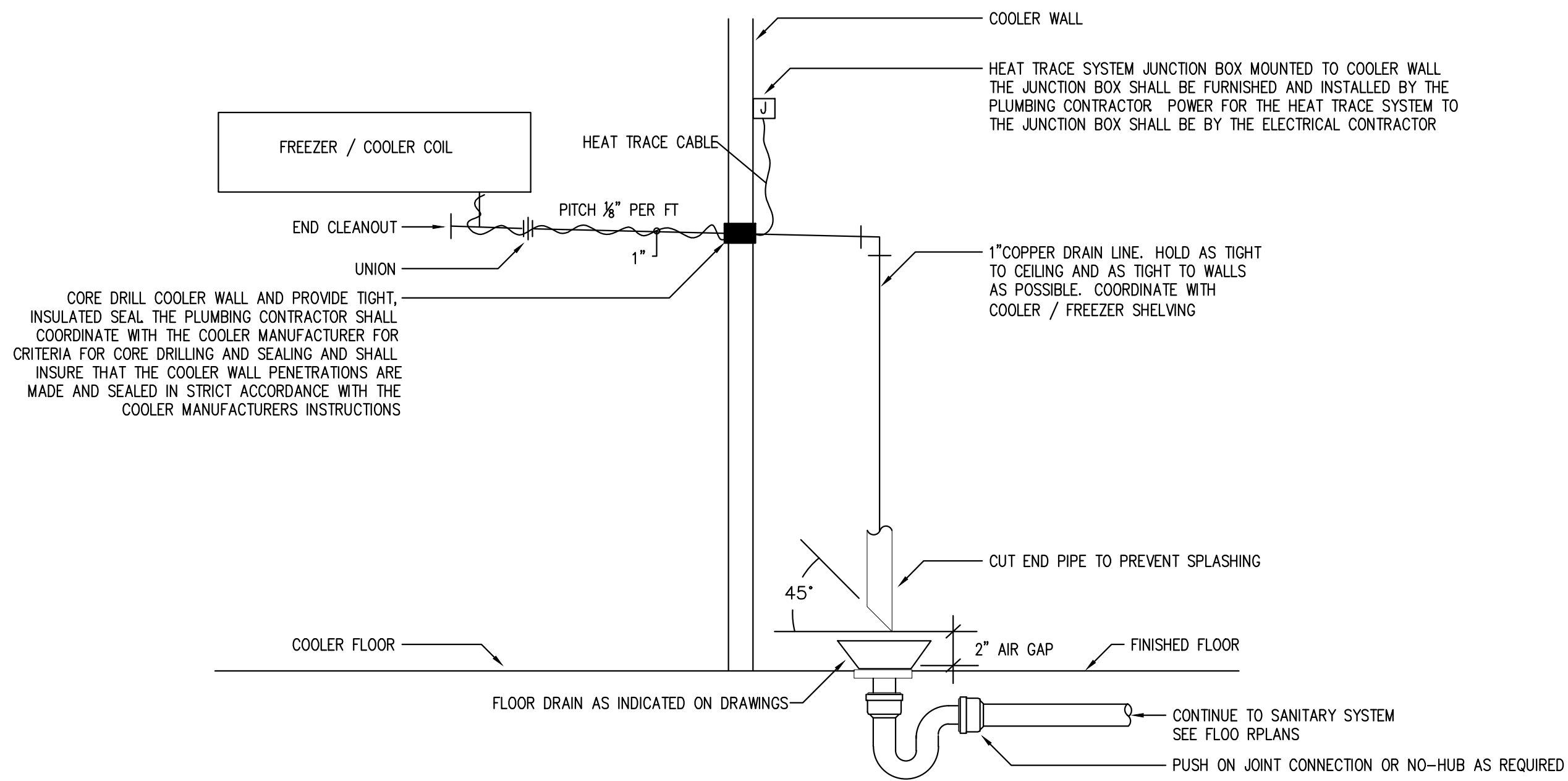
2 TRAP PRIMER AT FLOOR DRAIN
 NOT TO SCALE



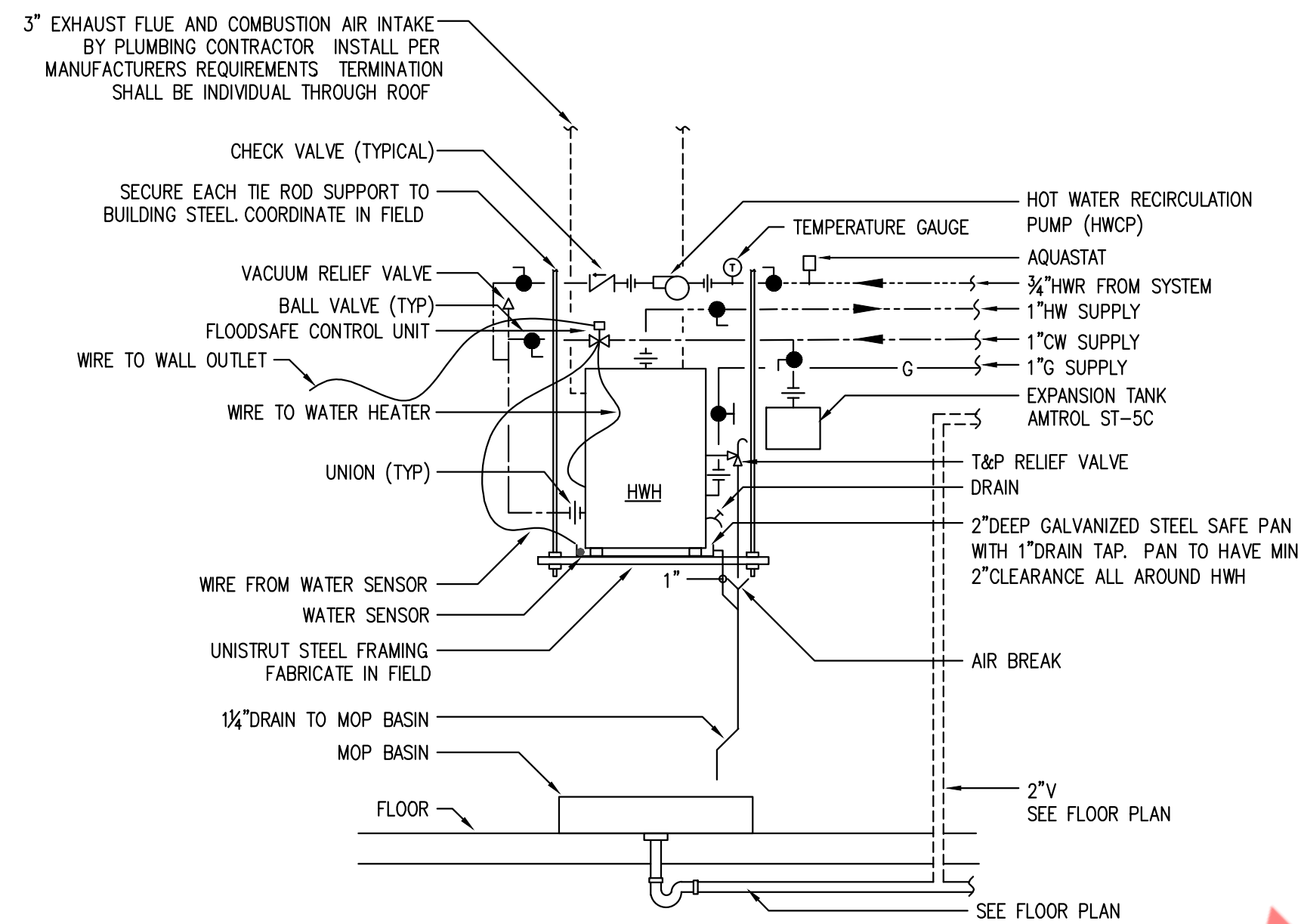
NOTES:
 1. CONTRACTOR SHALL COORDINATE WITH DISHMACHINE MANUFACTURERS RECOMMENDATIONS FOR ALL PIPING AND VALVE INSTALLATION REQUIREMENTS
 2. PRESSURE REDUCING VALVE SHALL BE 1" WILKINS 500YSBR
 3. PIPING AND VALVES ASSOCIATED WITH THE HOT WATER BOOSTER MAY BE OMITTED IF A HOT WATER BOOSTER IS NOT USED. PLUMBING CONTRACTOR SHALL COORDINATE WITH THE KITCHEN CONTRACTOR FOR THE REQUIREMENT OF THE HOT WATER BOOSTER

1 DISHMACHINE PIPING SCHEMATIC
 NOT TO SCALE

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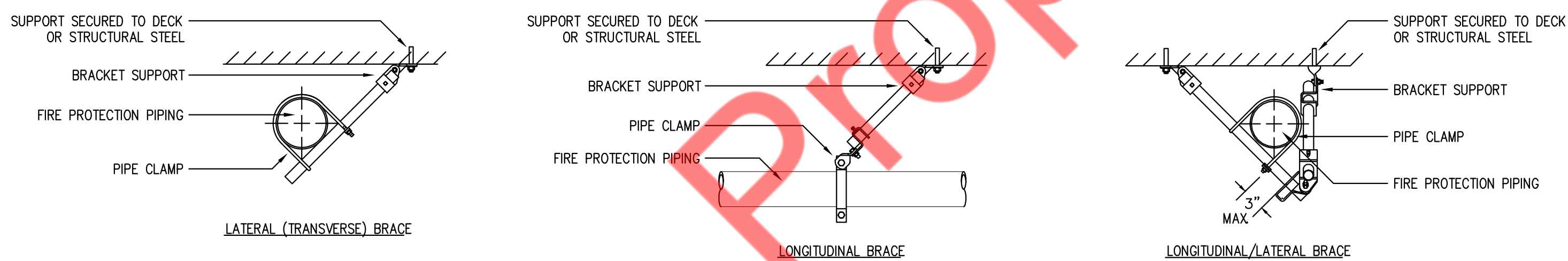


7 FREEZER / COOLER CONDENSATE DRAIN DETAIL
NOT TO SCALE



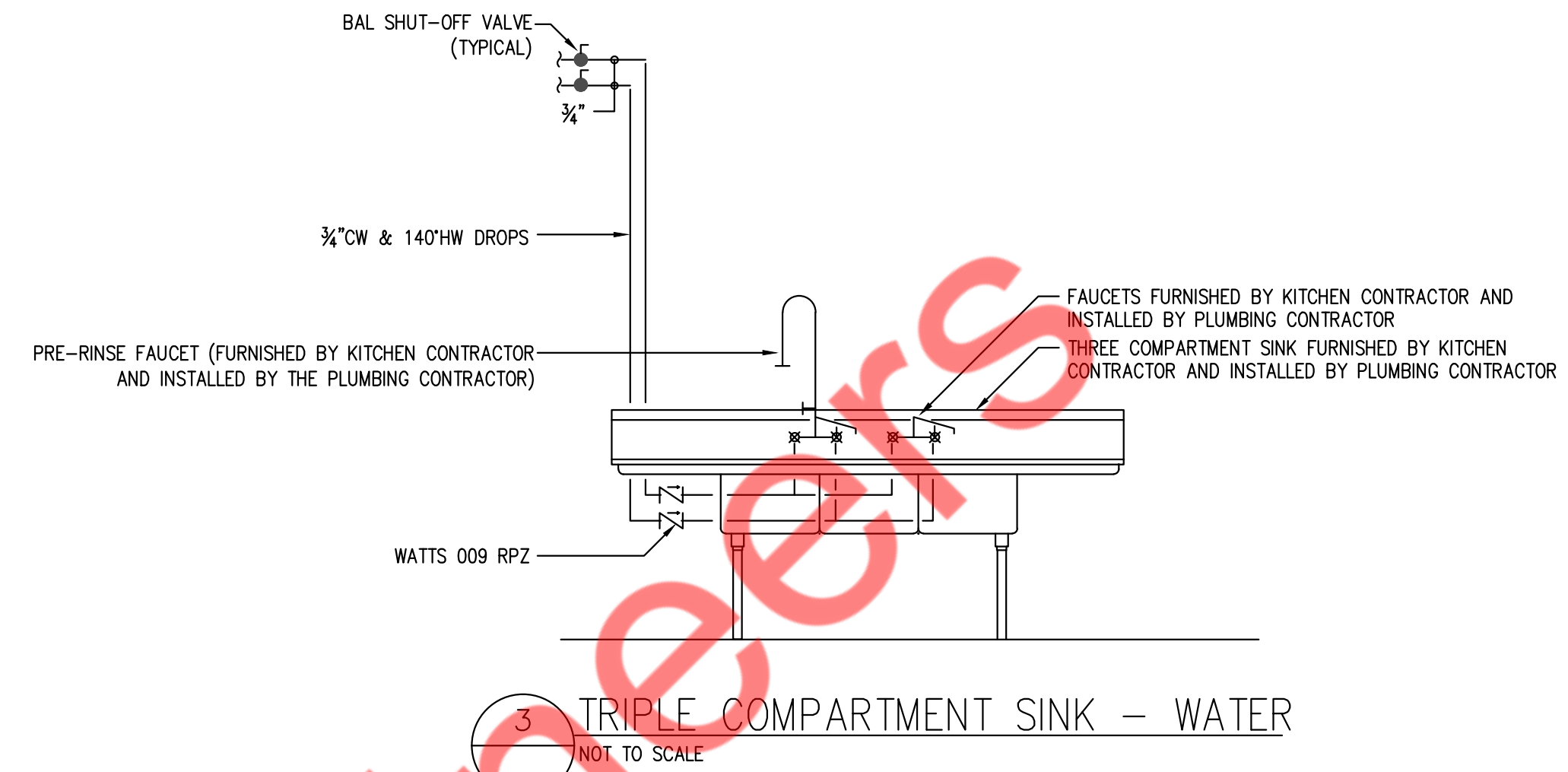
- NOTES:
1. WATER HEATER SHALL BE INSTALLED ON WALL, IN MOP SINK CLOSET COORDINATE WITH GENERAL CONTRACTOR TO PROVIDE SUPPORT STRUCTURE AS REQUIRED
 2. PROVIDE 3/4\" CDX PLYWOOD UNDERNEATH SAFE WASTE PAN.
 3. COORDINATE WATER DETECTION SYSTEM WITH ELECTRICAL CONTRACTOR

5 SUSPENDED GAS FIRED WATER HEATER DETAIL
NOT TO SCALE

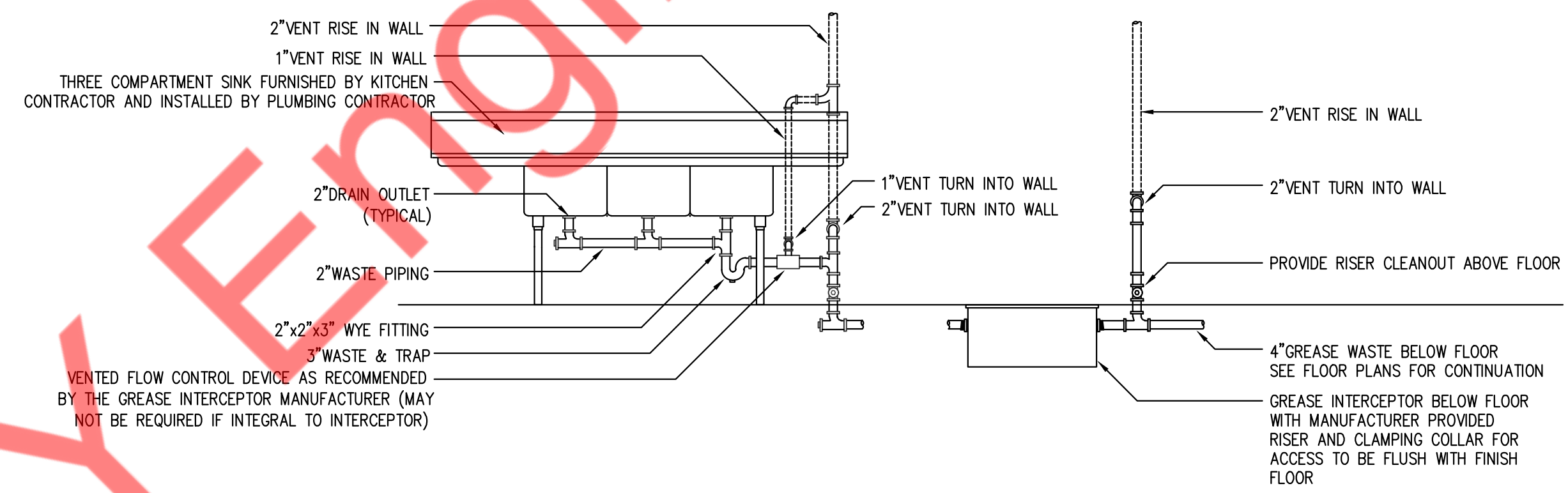


- NOTES:
1. ALL APPLICABLE PIPING SYSTEMS SHALL BE SEISMICALLY BRACED AND INSTALLED PER APPLICABLE SECTIONS OF THE STATE BUILDING CODE, LATEST ACCEPTED EDITION
 2. SEISMIC BRACING SHALL BE BY TOLCO

4 TYPICAL SEISMIC BRACING DETAIL
NOT TO SCALE

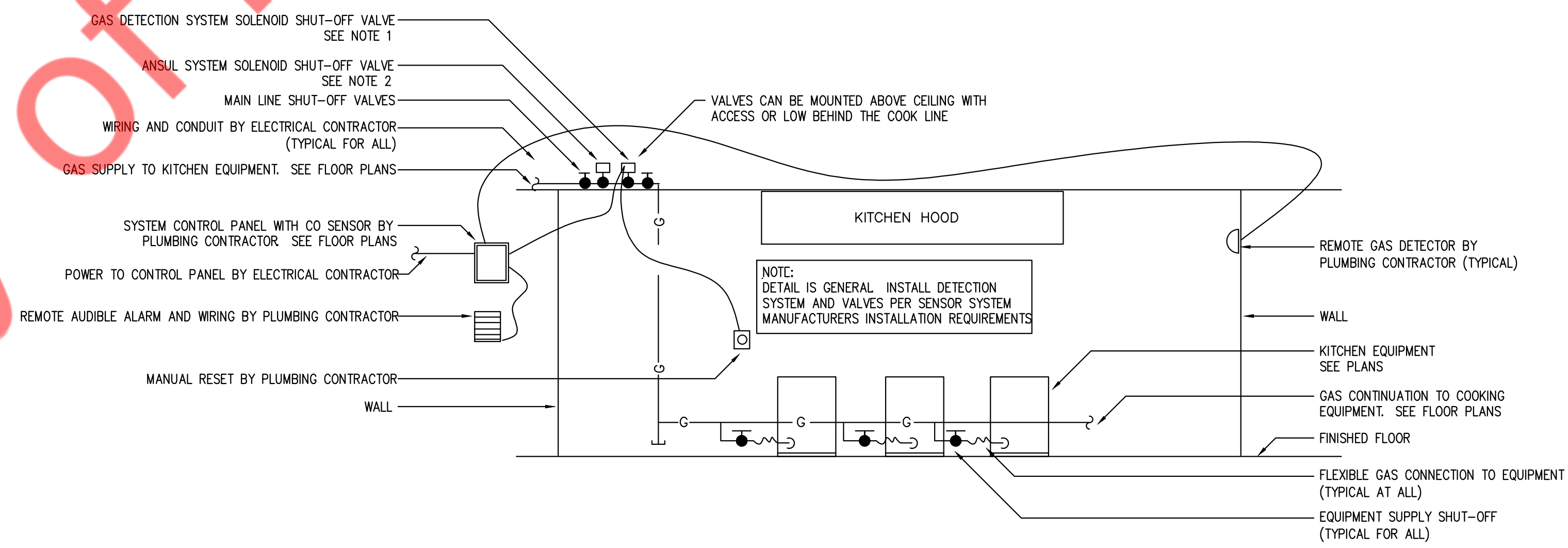


3 TRIPLE COMPARTMENT SINK - WATER
NOT TO SCALE



NOTE:
TRIPLE POT SINK BAYS & INTERCEPTOR SHALL BE LABELED WITH PROPER SIGNAGE PER GOVERNING CODE

2 TRIPLE COMPARTMENT POT SINK
NOT TO SCALE



- NOTES:
1. PROVIDE 120V SOLENOID SHUT OFF VALVE FOR MAIN GAS SUPPLY. THIS VALVE SHALL BE IN THE NORMALLY OPENED POSITION AND SHALL BE WIRED TO THE CO DETECTOR(S). ACTIVATION OF THE DETECTOR(S) WILL CLOSE THE SOLENOID VALVE. THE PLUMBING CONTRACTOR SHALL PROVIDE THE VALVE. POWER AND ALL WIRING FOR THE VALVE SHALL BE BY THE ELECTRICAL CONTRACTOR. THE PLUMBING CONTRACTOR SHALL COORDINATE WITH ELECTRICAL CONTRACTOR FOR CONTROLS AND CONNECTION REQUIREMENTS. THE VALVE SHALL BE MANUAL RESET TYPE.
 2. PROVIDE 120V SOLENOID SHUT OFF VALVE FOR MAIN GAS SUPPLY. THIS VALVE SHALL BE IN THE NORMALLY OPENED POSITION AND SHALL BE WIRED TO THE KITCHEN EXHAUST HOOD FIRE SUPPRESSION CONTROL SYSTEM. IN THE EVENT OF A FIRE UNDER THE EXHAUST HOOD THE EXHAUST HOOD FIRE SUPPRESSION CONTROL PANEL SHALL CLOSE THE SOLENOID VALVE. THE PLUMBING CONTRACTOR SHALL PROVIDE THE VALVE. POWER AND ALL WIRING FOR THE VALVE SHALL BE BY THE ELECTRICAL CONTRACTOR. THE PLUMBING CONTRACTOR SHALL COORDINATE WITH THE ELECTRICAL CONTRACTOR FOR CONTROLS AND CONNECTION REQUIREMENTS. THE VALVE SHALL BE MANUAL RESET TYPE.
 3. THE DETECTOR SYSTEM INCLUDING ALL DETECTION DEVICES, ALARM DEVICES, CONTROL PANEL, MANUAL RESET DEVICE AND SOLENOID VALVES SHALL COME AS A PACKAGE AND SHALL BE FURNISHED AND INSTALLED BY THE PLUMBING CONTRACTOR. ALL INTERCONNECTING WIRING AND CONDUIT SHALL BE FURNISHED AND INSTALLED BY THE ELECTRICAL CONTRACTOR.

1 KITCHEN EQUIPMENT GAS PIPING DETAIL
NOT TO SCALE

PLUMBING FIXTURE SCHEDULE							
FIXTURE	QTY.	EQUIPMENT CATEGORY	DIRECT DRAIN SIZE(IN)	INDIRECT DRAIN SIZE(IN)	VENT	CW	HW
P-1	2	WATER CLOSET	4"		2"	3/4"	-
P-2	2	LAVATORY	2"		1-1/2"	1/2"	1/2"
P-3	4	HAND SINK	2"		1-1/2"	1/2"	1/2"
P-4	1	MOP SINK	2"		1-1/2"	1/2"	1/2"
P-5	1	PREP SINK		2"	1-1/2"	1/2"	1/2"
P-6	1	3 COMPARTMENT SINK		2"	2"	3/4"	3/4"
P-7	1	WATER DISPENSER	2"		1-1/2"	1/2"	-
	2	FLOOR DRAIN	4"		2"	-	-
	4	FLOOR SINK	4"		2"	-	-
	3	TRENCH DRAIN	4"		2"	-	-
	1	FLOOR TROUGH	4"		2"	-	-

NOTE: ALL FIXTURE MAY BE SUBSTITUTED WITH APPROVED EQUAL. CONTACT OWNER FOR APPROVAL.

EXTERIOR GREASE INTERCEPTOR CALCULATION - BUILDING-TI-M2-600,M2-700 & M2-900

PER FLORIDA PLUMBING CODE SECTION 1003.3.4,IN ACCORDANCE WITH ASME 112.14.3 APPENDIX A,SIZING METHOD UTILIZING MAXIMUM PIPE FLOW.		
PIPE SIZE(INCHES)	MINIMUM SLOPE PER FBC	MAX GPM
4"	1/8" PER FT	100

BUILDING-TI-M2-600,M2-700 & M2-900		
TOTAL SEATS	MEALS PER SEAT	TOTAL MEALS PER DAY
259	X 4	= 1036

PUMP-OUT FREQUENCY PRODUCTION VALUES BY MEAL TYPE					
LOW GREASE PRODUCTION SANDWICH SHOP,CONVENIENCE STORE,FRESH BAR,SUSHI BAR,DELICATESSEN,SNACK BAR,FROZEN YOGURT,HOTEL BREAKFAST BAR,RESIDENTIAL.		MEDIUM GREASE PRODUCTION COFFEE HOUSE,PIZZA,GROCERY STORE(NO FRYER),ICE CREAM PARLOR,CAFETERIA(NO FOOD PREP),JAPANESE,FAST FOOD,DRIVE-IN,GREEK,INDIAN,LOW GREASE OUTPUT FSE(W/FRYER)		HIGH GREASE PRODUCTION CAFETERIA,FAMILY RESTAURANT,ITALIAN,STREAK HOUSE,BAKERY/DONUT SHOP,CHINESE,BUFFET,MEXICAN,SEAFOOD,FRIED CHICKEN,GROCERY STORE(W/FRYER),BARBECUE	
(A) NO FLATWARE: 0.005 LBS/MEAL	(B) WITH FLATWARE: 0.0065 LBS/MEAL	(C) NO FLATWARE: 0.025 LBS/MEAL	(D) WITH FLATWARE: 0.0325 LBS/MEAL	(E) NO FLATWARE: 0.035 LBS/MEAL	(F) WITH FLATWARE: 0.0455 LBS/MEAL

CUSTOMER PER DAY	GREASE PRODUCTION PER DAY	POF IN DAYS	GREASE CAPACITY NEEDED IN LBS		
1036	X 0.0455	X 90	=	4242	
	MODEL	QUANTITY	GPM	GREASE CAP. IN LBS.	
	GB-1000	1	100	6,547	

USE SCHIER GREASE INTERCEPTORS ASME A112.14.3 TO MEET THE GREASE CAPACITY CALCULATED ABOVE.

EXTERIOR GREASE INTERCEPTOR CALCULATION - BUILDING-TI-M2-600
PROPOSED CRACK'D PLATATION SPACE.

PER FLORIDA PLUMBING CODE SECTION 1003.3.4,IN ACCORDANCE WITH ASME 112.14.3 APPENDIX A,SIZING METHOD UTILIZING MAXIMUM PIPE FLOW.		
PIPE SIZE(INCHES)	MINIMUM SLOPE PER FBC	MAX GPM
4"	1/8" PER FT	100

BUILDING-TI-M2-600		
TOTAL SEATS	MEALS PER SEAT	TOTAL MEALS PER DAY
23	X 4	= 92

PUMP-OUT FREQUENCY PRODUCTION VALUES BY MEAL TYPE					
LOW GREASE PRODUCTION SANDWICH SHOP,CONVENIENCE STORE,FRESH BAR,SUSHI BAR,DELICATESSEN,SNACK BAR,FROZEN YOGURT,HOTEL BREAKFAST BAR,RESIDENTIAL.		MEDIUM GREASE PRODUCTION COFFEE HOUSE,PIZZA,GROCERY STORE(NO FRYER),ICE CREAM PARLOR,CAFETERIA(NO FOOD PREP),JAPANESE,FAST FOOD,DRIVE-IN,GREEK,INDIAN,LOW GREASE OUTPUT FSE(W/FRYER)		HIGH GREASE PRODUCTION CAFETERIA,FAMILY RESTAURANT,ITALIAN,STREAK HOUSE,BAKERY/DONUT SHOP,CHINESE,BUFFET,MEXICAN,SEAFOOD,FRIED CHICKEN,GROCERY STORE(W/FRYER),BARBECUE	
(A) NO FLATWARE: 0.005 LBS/MEAL	(B) WITH FLATWARE: 0.0065 LBS/MEAL	(C) NO FLATWARE: 0.025 LBS/MEAL	(D) WITH FLATWARE: 0.0325 LBS/MEAL	(E) NO FLATWARE: 0.035 LBS/MEAL	(F) WITH FLATWARE: 0.0455 LBS/MEAL

CUSTOMER PER DAY	GREASE PRODUCTION PER DAY	POF IN DAYS	GREASE CAPACITY NEEDED IN LBS		
92	X 0.0455	X 90	=	337	
	MODEL	QUANTITY	GPM	GREASE CAP. IN LBS.	
	GB-1000	1	100	6,547	

USE SCHIER GREASE INTERCEPTORS ASME A112.14.3 TO MEET THE GREASE CAPACITY CALCULATED ABOVE.

THERMOSTATIC MIXING VALVE SCHEDULE					
TAG	LOCATION	MANUFACTURER	MODEL	MIN OUTLET FLOW (GPM)	COMMENTS
TMV	HANDWASH SINKS	SYMONS MAXLINE	7-210	0.5	SET TO 110° AT ALL SINKS FOR HANDWASHING

TRAP PRIMER SCHEDULE				
TAG	DESIGNATION	MANUFACTURER	MODEL	COMMENTS
TP-1	UNDER SINK TRAP PRIMER	PRECISION PLUMBING PRODUCTS	PRO1-ULP500	MOUNT ON COLD WATER SUPPLY TO LAVATORY
TP-2	MECHANICAL TRAP PRIMER	PRECISION PLUMBING PRODUCTS	PRO1-500	PROVIDE DISTRIBUTION UNIT AS NECESSARY
TP-3	MECHANICAL TRAP PRIMER	PRECISION PLUMBING PRODUCTS	P2-500	-

NOTES:
1. ALL FLOOR DRAINS TO BE EQUIPPED WITH TRAP PRIMER UNLESS RECEIVING CONTINUOUS OR SEMI-CONTINUOUS FLOW FROM AN INDIRECT WASTE FIXTURE. NOT ALL TRAP PRIMERS ARE SHOWN ON DRAWINGS.

DRAINAGE SCHEDULE					
TAG	DESIGNATION	MANUFACTURER	MODEL	OUTLET	COMMENTS
FD-1	FLOOR DRAIN	WADE	1100	4"	CAST IRON BODY WITH FLASHING COLLAR, SEEPAGE HOLES, FULL GRATE, DEEP SEAL TRAP & TRAP PRIMER CONNECTION
FD-2	FLOOR DRAIN	WADE	1100	4"	CAST IRON BODY WITH FLASHING COLLAR, SEEPAGE HOLES, FULL GRATE, DEEP SEAL TRAP & TRAP PRIMER CONNECTION, WITH FUNNEL
FS-1	FLOOR SINK	WADE	9110	4"	8" SQUARE, CAST IRON BODY WITH FLASHING COLLAR, SEEPAGE HOLES, 1/2 GRATE & ACID RESISTANT BODY
TD-1	TRENCH DRAIN	WADE	2950	4"	6" WIDE MODULAR TRENCH DRAIN,PAINTED CAST IRON TRENCH DRAIN WITH DUCTILE IRON LOOSE SET SLOTTED GRATING, ANCHOR FLANGE AND BOTTOM OUTLET
FT-1	FLOOR TROUGH	JOHN BOOS	FTSG 1224X	4"	ACCOMMODATES A 4" O.D DIAMETER DRAIN PIPE 3.25" LONG 5 DEGREE BREAKS IN BOTTOM FOR POSITIVE DRAINAGE TOWARDS DRAIN

NOTES:
1. PLUMBING CONTRACTOR TO SHALL COORDINATE ALL FLASHING REQUIREMENTS WITH THE GENERAL CONTRACTOR PRIOR TO PURCHASE OF ALL DRAINAGE

GREASE INTERCEPTOR SCHEDULE						
TAG	SERVICE / LOCATION	MANUFACTURER	MODEL	FLOW RATE (GPM)	INLET/OUTLET	COMMENTS
GI-1	3BAY / KITCHEN	SCHIER	GB-2	35	3"/3"	COVER SHALL BE FLUSH WITH FINISH FLOOR. COORDINATE FINAL LOCATION & ELEVATIONS IN FIELD. PROVIDE FIELD OUT RISER FOR FLUSH WITH FINISH FLOOR ACCESS INSTALLATION

NOTES:
1. GREASE INTERCEPTOR TO BE COORDINATED & CONFIRMED TO FIT AT LOCATION SHOWN & MAKE ALL REQUIRED CONNECTIONS PRIOR TO PURCHASE. COORDINATE WITH GENERAL CONTRACTOR

HOT WATER CIRCULATION PUMP SCHEDULE											
TAG	LOCATION	MANUFACTURER	MODEL	TYPE	FLOW (GPM)	HEAD (FT)	ELECTRICAL				COMMENTS
							VOLT	HP	PHASE	hZ	
RCP-1	CENTRAL DISTRIBUTION	GRUNDFOS	MAGNA	IN-LINE	2	5	115	0.5	1	60	DOMESTIC WATER RECIRCULATING WITH IMMERSION AQUASTAT

GAS DETECTION SYSTEM SCHEDULE												
TAG	LOCATION	MANUFACTURER	MODEL	GAS TYPE	# OF SENSOR CARTRIDGES	ALARM LEVELS			ELECTRICAL			COMMENTS
						A	B	C	VOLT	PHASE	hZ	
COOK LINE	KITCHEN	HONEYWELL	E3POINT	CO	2	25 PPM	200 PPM	225 PPM	120	1	60	EQUIPMENT SHALL INCLUDE: (1)E3SA BASE UNIT (1)E3SCO PLUG-IN CO CARTRIDGE (PLUG IN TO BASE UNIT) (1)E3SRMCO (REMOTE CO SENSOR) (1)ASCO 8044 GAS VALVE

STORAGE HOT WATER HEATER SCHEDULE											
TAG	LOCATION	MANUFACTURER	MODEL	TYPE	LOAD (CFH)	STORAGE (GAL)	RECOVERY (GPH @ 100° RISE)	ELECTRICAL			COMMENTS
								VOLT	PHASE	hZ	
WH-1	RESTAURANT SERVICE	HTP	CROSSOVER RGH-100F	GAS	100	20	125	120	1	60	1 REQUIRED, FIELD SET TO 140° OUTPUT,VACCUUM, PRESSURE & TEMPERATURE RELIEF. PROVIDE CONDENSATE NEUTRALIZATION KIT

NOTES:
1. WATER SHALL BE PRODUCED AT 140°
2. PROVIDE STARTUP BY FACTORY CERTIFIED TECHNICIAN AND STANDARD MANUFACTURERS WARRANTY
3. WATER HEATER SHALL COME COMPLETE WITH TEMPERATURE AND PRESSURE RELIEF VALVE AND TANK DRAIN VALVE
4. PROVIDE VACUUM BREAKER RELIEF VALVE(S) AS REQUIRED BY THE STATE PLUMBING CODE. INSTALL IN MULTIPLES IS REQUIRED
5. ALL DOMESTIC WATER HEATING COMPONENTS SHALL COME ASME APPROVED