











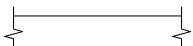

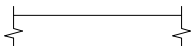






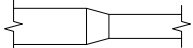



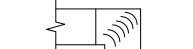
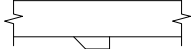
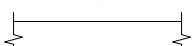



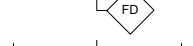



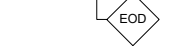







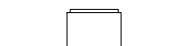




MECHANICAL SYMBOLS AND ABBREVIATIONS

GRILLES/DIFFUSERS & DAMPER:			
	SUPPLY DIFFUSER		PUSH BUTTON
	SIDEWALL MOUNTED SUPPLY REGISTER		THERMOSTAT
	RETURN GRILLE		TEMPERATURE SENSOR
	EXHAUST GRILLE		HUMIDISTAT
	VOLUME CONTROL DAMPER		PRESSURE SENSOR
	BACK DRAFT DAMPER		SMOKE DETECTOR
DUCT SYMBOLS:		GENERAL REFERENCES/NOTATIONS:	
	NEW SHEET METAL DUCTWORK		CONNECT TO EXISTING
	EXISTING DUCT/PIPE TO BE REMOVED		NOTE DESIGNATION
	EXISTING DUCT/PIPE TO REMAIN		REVISION DESIGNATION
	SUPPLY OR OUTSIDE AIR DUCT	MARK	MECHANICAL EQUIPMENT DESIGNATION
	RETURN AIR DUCT	CFM	DIFFUSER DESIGNATION AND CFM
	EXHAUST AIR DUCT	ABBREVIATIONS:	
	DUCTWORK TRANSITION	AD	ACCESS DOOR
	SUPPLY DUCT ELBOW UP OR DOWN	AFF	ABOVE FINISHED FLOOR
	RETURN DUCT ELBOW UP OR DOWN	AHU	AIR HANDLING UNIT
	EXHAUST DUCT ELBOW UP OR DOWN	AHJ	AUTHORITY HAVING JURISDICTION
	DUCT ELBOW WITH FIXED TURNING VANES	BOD	BOTTOM OF DUCT
	DUCT BRANCH TAKE-OFF	BHP	BRAKE HORSEPOWER
	ROUND SPIN-IN TAKEOFF	BTH	BRITISH THERMAL UNIT
	MANUAL DAMPER	CFM	CUBIC FEET PER MINUTE
	FLEXIBLE DUCT CONNECTION	DB	DRY BULB
	FIRE DAMPER	EC	ELECTRICAL CONTRACTOR
	SMOKE DAMPER	EA	EXHAUST AIR
	COMBINATION FIRE/SMOKE DAMPER	EAT	ENTERING AIR TEMPERATURE
	ELECTRIC OPERATED DAMPER	ESP	EXTERNAL STATIC PRESSURE
	BACKDRAFT DAMPER	ETR	EXISTING TO REMAIN
	VOLUME DAMPER	EWT	ENTERING WATER TEMPERATURE
	FLEXIBLE DUCTWORK	FPD	FIRE PROTECTION CONTRACTOR
EQUIPMENT:		FOB	FLAT ON BOTTOM
	ROOF MOUNTED EXHAUST FAN	FOT	FLAT ON TOP
	CEILING MOUNTED EXHAUST FAN	GPM	GALLONS PER MINUTE
	IN-LINE CABINET FAN	GC	GENERAL CONTRACTOR
	FAN TERMINAL UNIT	HP	HEAT PUMP
	VAV TERMINAL UNIT	HZ	FREQUENCY
	AIR HANDLING UNIT	LAZ	LEAVING AIR TEMPERATURE
	ROOFTOP UNIT	LWT	LEAVING WATER TEMPERATURE
	UNIT HEATER	MA	MIXED AIR
	ELECTRIC DUCT HEATER IN DUCT	MC	MECHANICAL CONTRACTOR
SYMBOLS LEGEND NOTES:		NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
1. REFER TO SPECIFICATIONS AND PLAN NOTES FOR DETAILED DESCRIPTION OF ALL DEVICES SHOWN IN THIS LEGEND, PROVIDED BY CONTRACTOR.		NC	NOISE CRITERIA
		OA	OUTSIDE AIR
		PC	PLUMBING CONTRACTOR
		POD	PNEUMATIC OPERATED DAMPER
		PD	PRESSURE DROP
		PSI	POUNDS PER SQUARE INCH
		RA	RETURN AIR
		RLF	RELIEF AIR
		RTU	ROOFTOP UNIT
		SA	SUPPLY AIR
		TSP	TOTAL STATIC PRESSURE
		TYP	TYPICAL
		UNO	UNLESS NOTED OTHERWISE
		WC	WATER COLUMN
		WB	WET BULB
		C.U	CONDENSING UNIT
		E.F	EXHAUST FAN
		MUA	MAKE UP AIR UNIT

MECHANICAL GENERAL NOTES

1	CONTRACTORS AND SUB-CONTRACTORS SHALL CAREFULLY REVIEW CONSTRUCTION DOCUMENTS. INFORMATION REGARDING COMPLETE WORK IS DISPERSED THROUGHOUT DOCUMENT SET AND CANNOT BE ACCURATELY DETERMINED WITHOUT REFERENCE TO COMPLETE DOCUMENT SET.
2	COORDINATE WITH WORK OF OTHER SECTIONS. EQUIPMENT FURNISHED BY OTHERS. REQUIREMENTS OF OWNER, AND WITH CONSTRAINTS OF EXISTING CONDITIONS OF PROJECT SITE. COORDINATE THE INSTALLATION OF MECHANICAL EQUIPMENT, DUCTWORK, ETC. TO FIT WITHIN THE SPACE ALLOWED BY ARCHITECTURAL AND STRUCTURAL CONDITIONS. CUTTING OR OTHERWISE ALTERING STRUCTURAL MEMBERS SHALL NOT BE PERMITTED WITHOUT WRITTEN PERMISSION FROM THE STRUCTURAL ENGINEER OF RECORD AND COORDINATION WITH THE GENERAL CONTRACTOR. PROVIDE DUCT AND PIPE RISES AND DROPS AS REQUIRED FOR FIELD INSTALLATION AND TRADE COORDINATION. COORDINATE ELECTRICAL CHARACTERISTICS AND REQUIREMENTS OF ALL MECHANICAL EQUIPMENT WITH ELECTRICAL DRAWINGS PRIOR TO ORDERING EQUIPMENT OR SUBMITTING SHOP DRAWINGS. FURNISH EQUIPMENT WIRED FOR VOLTAGES SHOWN THEREIN. CONTRACTOR SHALL BEAR ALL COST(S) ASSOCIATED WITH FAILURE TO COORDINATE ELECTRICAL CHARACTERISTICS. NOTIFY ARCHITECT OF ANY DISCREPANCIES BEFORE STARTING WORK.
3	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 MANUFACTURERS' STANDARD INSTALLATION DRAWINGS FOR EQUIPMENT CONNECTIONS AND INSTALLATION REQUIREMENTS. PROVIDE DUCTWORK, CONNECTIONS, ACCESSORIES, OFFSETS, AND MATERIALS NECESSARY FOR A COMPLETE SYSTEM. GENERALLY DUCTWORK SHALL BE KEPT AS HIGH AS POSSIBLE.
4	WORK SHALL COMPLY WITH STATE AND LOCAL CODE REQUIREMENTS AS APPROVED AND AMENDED BY GOVERNING CITY. PURCHASE PERMITS ASSOCIATED WITH WORK. OBTAIN INSPECTIONS REQUIRED BY CODE.
5	INSTALL EQUIPMENT PER MANUFACTURER'S INSTRUCTIONS AND MAINTAIN MANUFACTURER'S RECOMMENDED CLEARANCE.
6	PROVIDE ACCESS PANELS IN CEILINGS AND WALLS TO ALLOW ACCESS TO VALVES, TRAPS, DAMPERS, CLEANOUTS, CONTROLS, ETC. MINIMUM ACCESS SIZE - 12"x12", UNLESS LIMITED BY PHYSICAL CONSTRAINTS.
7	CONTRACT LANDLORD APPROVED ROOFING CONTRACTOR TO FLASH AND SEAL RELATED ROOF PENETRATIONS TO MAINTAIN ROOFING WARRANTY.
8	INSTALL EXHAUST FAN A MINIMUM OF 10 FT FROM INTAKE AIR OPENINGS.
9	COORDINATE LOCATIONS OF GRILLES, REGISTERS AND DIFFUSERS WITH ARCHITECTURAL REFLECTED CEILING PLAN. LOCATIONS SHOWN ARE APPROXIMATE, ADJUST LOCATIONS IN THE FIELD AS REQUIRED BY CONSTRUCTION CONSTRAINTS.
10	ELECTRICAL CONTRACTOR SHALL FURNISH, ROUTE, AND INSTALL CONTROL WIRING FOR MECHANICAL SYSTEMS. MECHANICAL CONTRACTOR SHALL PROVIDE CONTROLS AND CONTROL WIRING TERMINATIONS FOR MECHANICAL SYSTEMS.

MECHANICAL SPECIFICATIONS

PROVIDE EQUIPMENT INDICATED ON DRAWINGS, AND AS REQUIRED FOR COMPLETE FUNCTIONING SYSTEM.

DEFINITIONS:
FURNISH MEANS TO SUPPLY AND DELIVER TO PROJECT SITE, READY FOR INSTALLATION. INSTALL MEANS PLACE IN POSITION AND MAKE CONNECTIONS FOR SERVICE OR MEANS FURNISH AND INSTALL, COMPLETE AND READY FOR INTENDED USE.

WARRANTY: PROVIDE LABOR AND MATERIALS TO REPAIR OR REPLACE DEFECTIVE PARTS AND MATERIALS REQUIRED FOR ONE YEAR AFTER OWNER ACCEPTANCE OF COMPLETED PROJECT. REFRIGERATION COMPRESSORS SHALL HAVE A FIVE YEAR (PARTS ONLY) WARRANTY. NATURAL GAS HEAT EXCHANGERS SHALL HAVE A TEN YEAR (PARTS ONLY) WARRANTY. PROVIDE SEPARATE LINE ITEM DEDUCT AMOUNT ON PROPOSAL FORM TO DELETE WARRANTY SERVICE, AT OWNER'S OPTION.

COORDINATION: COORDINATE WORK OF OTHER TRADES, EQUIPMENT FURNISHED BY OTHERS, REQUIREMENTS OF OWNER, AND WITH CONSTRAINTS OF EXISTING CONDITIONS OF PROJECT SITE.

DUCT DIMENSIONS: UNLESS OTHERWISE NOTED, DUCT DIMENSIONS ON DRAWINGS ARE INSIDE CLEAR DIMENSIONS.

SHEETMETAL DUCTWORK: PROVIDE SHEETMETAL DUCTWORK FABRICATED AND INSTALLED IN ACCORDANCE WITH ASHRAE AND SMACNA STANDARDS. FOR 1" W.G. PRESSURE CLASS, SEAL CLASS "A". SHEETMETAL SHALL BE GALVANIZED SHEET STEEL OF LOCK FORMING QUALITY, WITH G90 ZINC COATING. SHEET STEEL SHALL COMPLY WITH ASTM A653 STANDARD SPECIFICATION FOR STEEL SHEETMETAL, ZINC COATED (GALVANIZED) OR ZINC-IRON ALLOY-COATED (GALVANNEAL) BY HOT DIP PROCESS, AND A924 STANDARD SPECIFICATION FOR GENERAL REQUIREMENTS FOR SHEET, METALLIC-COATED BY HOT DIP PROCESS. ALL ANGLE IRON USED FOR SUPPORT SHALL BE GALVANIZED. CONNECTIONS TO WALLS, OR FLOOR SHALL BE AIR TIGHT WITH ANGLE IRON AND CAULKING. SEAL ALL DUCT SEAMS, TRANSVERSERS AND LONGITUDINAL, AIR TIGHT. PROVIDE TURNING VANES AT ALL 90° ELBOWS.

REFRIGERANT PIPING: TYPE ACR HARD DRAWN COPPER TUBING MEETING REQUIREMENTS OF ASTM B280, WITH WROUGHT COPPER FITTINGS MEETING REQUIREMENTS OF ANSI B16.22, WITH BRAZED JOINTS MEETING REQUIREMENTS OF AWS A 5.8, USING BAG-1 (SILVER) FILLER MATERIAL IN LINE PIPING WITH THICK ARMAFLEX TYPE AP PAINT INSULATION LOCATED OUTDOORS WITH ARMAFLEX WB FINISH.

ROUND SHEETMETAL DUCT: PROVIDE SPIRAL SEAM (ALL SIZES) OR SNAP LOCK (DUCT SIZES UP TO 10") GALVANIZED STEEL COMPLYING WITH SMACNA STANDARDS. SPIRAL SEAM DUCTWORK SHALL HAVE SMACNA SEAM TYPE RL-1.

FLEXIBLE DUCT: PROVIDE FACTORY ASSEMBLED CLASS 1 AIR DUCT (UL 181) WITH 1" THICK 1 PCF FIBERGLASS INSULATION AND REINFORCED OUTER PROTECTIVE COVER/VAPOR BARRIER. FLEXIBLE DUCT SHALL MEET NFPA 90A WITH FLAME SPREAD UNDER 25, SMOKE DEVELOPED UNDER 50, AND SHALL BE RATED FOR MINIMUM 2" W.G. PRESSURE AND 0°F TO 250°F TEMPERATURE. PROVIDE SCREW-OPERATED METAL ADJUSTABLE CLAMPING DEVICES. USE TWIST-LOCK TAP COLLARS AT CONNECTIONS INTO SHEETMETAL DUCTWORK. MAXIMUM EXTENDED LENGTH OF FLEXIBLE DUCT SHALL NOT EXCEED 6 FEET.

DUCT SEALANT: PROVIDE WATER BASED SYNTHETIC LATEX EMULSION PERMANENTLY FLEXIBLE HIGH VELOCITY DUCT SEALANT, DUCTMAST INDUSTRIES, INC. PRO SEAL OR EQUAL. SEALANT SHALL BE LOW VOC LEED COMPLIANT CAPABLE OF 15 " W.G., NFPA 90A AND 90B APPROVED, UL 181B-M LISTED AND UL 723 CLASSIFIED. INSTALL PER MANUFACTURER'S INSTRUCTIONS. SEALANT SHALL BE APPROVED FOR PLENUM INSTALLATIONS AND MEET FLAME SPREAD AND SMOKE DEVELOPED RATINGS FOR PLENUM APPLICATIONS.

DUCT INSULATION (ALL ROUND SUPPLY DUCT AND ROUND RETURN DUCT ABOVE CEILING AND ALL MAKEUP AIR DUCTWORK): PROVIDE MINIMUM 1-1/2" MINIMUM 1-1/2" TYPE FIBERGLASS INSULATION COMPLYING WITH ASTM C-563, TYPE II, WITH FACTORY APPLIED KRAFT BONDED TO ALUMINUM FOIL, REINFORCED WITH FIBERGLASS VAPOR BARRIER/JACKET. JACKET SHALL CONFORM TO ASTM C-1136, TYPE II.

DUCT LINER (ALL RECTANGULAR SUPPLY AND RETURN DUCT EXCLUDING MAKEUP AIR DUCTWORK): PROVIDE MINIMUM 1" THICK, 2 PCF DENSITY, LONG TEXTILE FIBER TYPE DUCT LINER, WITH COATING ON AIR STREAM SIDE CONFORMING TO NFPA 90A. DUCT LINER SHALL BE SECURED TO DUCT WITH ADHESIVE AND MECHANICAL FASTENERS. ADHESIVE SHALL BE LEED COMPLIANT LOW VOC AS RECOMMENDED BY DUCT LINER MANUFACTURER, AND SHALL COMPLY WITH ASTM C-916. DUCT LINER FASTENERS SHALL COMPLY WITH SMACNA "HVAC DUCT CONSTRUCTION" LATEST EDITION. THERMAL CONDUCTIVITY SHALL BE EQUAL TO OR LESS THAN 0.24 AT 75°F.

ROUND VOLUME DAMPERS: PROVIDE MINIMUM 20 GAUGE GALVANIZED STEEL FRAME AND BLADES, MINIMUM 3/8" SQUARE STEEL AXLE.

MOLDED SYNTHETIC BEARINGS, WITH LOCKING POSITION REGULATOR. REGULATOR SHALL BE POSITIONED WITH SHEETMETAL BRACKET BEYOND DUCT COVERING. WHERE POSITIONING REGULATOR IS NOT ACCESSIBLE, PROVIDE COUPLING AND EXTENSION ROD WITH REGULATOR FOR CEILING OR WALL INSTALLATION.

RECTANGULAR VOLUME DAMPERS: PROVIDE MINIMUM 16 GAUGE GALVANIZED STEEL CHANNEL FRAME, 16 GAUGE GALVANIZED STEEL BLADES, MINIMUM 1/2" HEXAGONAL AXLE, MOLDED SYNTHETIC BEARINGS, WITH 3/8" SQUARE PLATED STEEL CONTROL SHAFT. LINKAGES SHALL BE CONCEALED IN FRAME. OPERATING SHAFT SHALL EXTEND BEYOND FRAME AND DUCT TO LOCKING ADJUSTMENT WITH ADJUSTABLE LEVER. MAXIMUM BLADE WIDTH SHALL NOT EXCEED 6".

DUCT TURNING VANES: PROVIDE FABRICATED TURNING VANES AND VANE RUNNERS CONSTRUCTED IN ACCORDANCE WITH SMACNA "HVAC DUCT CONSTRUCTION STANDARDS" PROVIDE TURNING VANES CONSTRUCTED OF CURVED BLADES, SUPPORTED WITH BARS PERPENDICULAR TO BLADES, AND SET INTO SIDE STRIPS SUITABLE FOR MOUNTING IN DUCTWORK. FOLLOW SMACNA GUIDELINES FOR SPACING SUPPORT, AND CONSTRUCTION. ALL BLADES SHALL BE DOUBLE THICKNESS AIRFOIL TYPE.

FLEXIBLE DUCT CONNECTORS: PROVIDE UL LABELED 30 OUNCE NEOPRENE COATED FIBERGLASS FABRIC DUCT CONNECTORS AT DUCT CONNECTIONS TO ALL VIBRATING EQUIPMENT.

DUCT ACCESS DOORS: PROVIDE HINGED ACCESS DOORS IN DUCTWORK WHERE REQUIRED FOR ACCESS TO EQUIPMENT. PROVIDE INSULATED ACCESS DOORS FOR INSULATED DUCTWORK. CONSTRUCT OF SAME OR THICKER GAUGE SHEETMETAL AS DUCT IN WHICH IT IS INSTALLED. PROVIDE FLUSH FRAMES FOR UNINSULATED DUCTS, AND EXTENDED FRAMES FOR EXTERNALLY INSULATED DUCTS. PROVIDE CONTINUOUS HINGE ON ONE SIDE, WITH ONE HANDLE-TYPE LATCH FOR ACCESS DOORS 12" HIGH AND SMALLER, AND TWO HANDLE-TYPE LATCHES FOR LARGER ACCESS DOORS.

GREASE EXHAUST DUCTWORK: PROVIDE FACTORY BUILT DOUBLE-WALL GREASE EXHAUST DUCT FOR USE WITH TYPE I HOODS AS MANUFACTURED BY CAPTIVEAIRE OR APPROVED EQUAL. DUCT SHALL BE ETL LISTED TO UL-1978 AND UL-2221 CONDITION B, FOR MAXIMUM 1" CLEARANCE TO COMBUSTIBLES AND ZERO CLEARANCE TO NON-COMBUSTIBLES. ALL ELBOWS IN GREASE EXHAUST DUCTWORK SHALL BE RADIUS ELBOWS. NO SQUARE ELBOWS ARE ALLOWED.

MECHANICAL EQUIPMENT IDENTIFICATION: PROVIDE ENGRAVED PLASTIC LAMINATE LABEL FOR EACH MAJOR ITEM OF MECHANICAL EQUIPMENT. & EACH OPERATIONAL DEVICE. LETTERS SHALL BE MINIMUM OF 1/2" HIGH. PROVIDE SIGNS TO INFORM OPERATOR OF OPERATIONAL REQUIREMENTS, TO INDICATE SAFETY AND EMERGENCY PRECAUTIONS, AND TO WARN OF HAZARDS AND IMPROPER OPERATION.

TESTING AND BALANCING: TEST AND ADJUST MECHANICAL SYSTEMS AND EQUIPMENT TO ASSURE PROPER BALANCE AND OPERATION. PERFORM TESTS IN ACCORDANCE WITH NEBB OR AABC, AND ASHRAE STANDARDS. TEST AND BALANCE REPORT SHALL INCLUDE OUTDOOR AIR TEMPERATURE AT TIME OF TESTING, ENTERING AIR TEMPERATURE AND LEAVING AIR TEMPERATURE AT THE COIL(S), AIR TEMPERATURE AND AIR FLOW AT EACH SUPPLY AIR DIFFUSER AND RETURN AIR GRILLE, AND SPACE TEMPERATURE FOR EACH SYSTEM. ELIMINATE OBJECTIONABLE NOISE AND VIBRATION, AND ASSURE PROPER FUNCTION OF CONTROLS. BALANCING CONTRACTOR SHALL BE AN INDEPENDENT CERTIFIED TEST AND BALANCE CONTRACTOR, WITH NEBB OR AABC CERTIFICATION. SUBMIT COMPLETED AND CERTIFIED TEST AND BALANCE REPORT TO OWNER'S REPRESENTATIVE. BALANCE SYSTEMS TO WITHIN 5% OF AIR FLOWS INDICATED ON DRAWINGS, AND RESOLVE DISCREPANCIES TO HVAC INSTALLER FOR CORRECTION. MARK FINAL BALANCE POSITIONS ON DAMPERS WITH PERMANENT MARKER.

OPERATIONS AND MAINTENANCE MANUALS (O&M): AT COMPLETION OF PROJECT PROVIDE MINIMUM OF TWO O&M MANUALS IN THREE RING BINDERS TO OWNER. MANUALS SHALL HAVE TABS LABELED WITH ALL SECTIONS SEPARATED WITH CLEAR INDEX AT FRONT. PROVIDE WARRANTY LETTER AT FRONT OF MANUAL STATING DATES OF WARRANTY (START DATE AND END DATE) AND CONTACTS WITH PHONE NUMBERS FOR WARRANTY WORK. PROVIDE NARRATIVE OF HOW EACH SYSTEM IS INTENDED TO OPERATE INCLUDING RECOMMENDED SETPOINTS. MANUALS SHALL INCLUDE SUBMITTALS OF ALL EQUIPMENT, SIZE AND OPTIONS SELECTED. PROVIDE ALL BALANCING REPORTS. PROVIDE MANUFACTURER LITERATURE FOR OPERATIONS AND MAINTENANCE FOR ALL EQUIPMENT ON PROJECT. ALL PERIODIC AND ROUTINE MAINTENANCE SHALL BE CLEARLY IDENTIFIED. PROVIDE CONTROLS SECTION LISTING SYSTEM OPERATING AND CONTROL INSTRUCTIONS, MAINTENANCE, CALIBRATION, WIRING DIAGRAMS SCHEMATICS AND CONTROL SEQUENCE DESCRIPTIONS.

THERMOSTATIC CONTROLS:

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

C403.4.1 THERMOSTATIC CONTROLS
THE SUPPLY OF HEATING AND COOLING ENERGY TO EACH ZONE SHALL BE CONTROLLED BY INDIVIDUAL THERMOSTATIC CONTROLS CAPABLE OF RESPONDING TO TEMPERATURE WITHIN THE ZONE. WHERE HUMIDIFICATION OR DEHUMIDIFICATION OR BOTH IS PROVIDED, AT LEAST ONE HUMIDITY CONTROL DEVICE SHALL BE PROVIDED FOR EACH HUMIDITY CONTROL SYSTEM.

C403.4.1.2 DEADBAND
WHERE USED TO CONTROL BOTH HEATING AND COOLING, ZONE THERMOSTATIC CONTROLS SHALL BE CAPABLE OF PROVIDING A TEMPERATURE RANGE OR DEADBAND OF AT LEAST 5°F (2.8°C) WITHIN WHICH THE SUPPLY OF HEATING AND COOLING ENERGY TO THE ZONE IS CAPABLE OF BEING SHUT OFF OR REDUCED TO A MINIMUM.

C403.4.1.3 SET POINT OVERLAP RESTRICTION
WHERE A ZONE HAS A SEPARATE HEATING AND A SEPARATE COOLING THERMOSTATIC CONTROL LOCATED WITHIN THE ZONE, A LIMIT SWITCH, MECHANICAL STOP OR DIRECT DIGITAL CONTROL SYSTEM WITH SOFTWARE PROGRAMMING SHALL BE PROVIDED WITH THE CAPABILITY TO PREVENT THE HEATING SET POINT FROM EXCEEDING THE COOLING SET POINT AND TO MAINTAIN A DEADBAND IN ACCORDANCE WITH SECTION C403.4.1.2.

C403.4.2 OFF-HOUR CONTROLS
EACH ZONE SHALL BE PROVIDED WITH THERMOSTATIC SETBACK CONTROLS THAT ARE CONTROLLED BY EITHER AN AUTOMATIC TIME CLOCK OR PROGRAMMABLE CONTROL SYSTEM.

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

C403.4.2.2 AUTOMATIC SETBACK AND SHUTDOWN CAPABILITIES
AUTOMATIC TIME CLOCK OR PROGRAMMABLE CONTROLS SHALL BE CAPABLE OF STARTING AND STOPPING THE SYSTEM FOR SEVEN DIFFERENT DAILY SCHEDULES PER WEEK AND RETAINING THEIR PROGRAMMING AND TIME SETTING DURING A LOSS OF POWER FOR AT LEAST 10 HOURS. ADDITIONALLY, THE CONTROLS SHALL HAVE A MANUAL OVERRIDE THAT ALLOWS TEMPORARY OPERATION OF THE SYSTEM FOR UP TO 2 HOURS; A MANUALLY OPERATED TIMER CAPABLE OF BEING ADJUSTED TO OPERATE THE SYSTEM FOR UP TO 2 HOURS; OR AN OCCUPANCY SENSOR.

C403.4.2.3 AUTOMATIC AND OPTIMUM START CAPABILITIES
AUTOMATIC START CONTROLS SHALL BE PROVIDED FOR EACH HVAC SYSTEM. THE CONTROLS SHALL BE CONFIGURED TO AUTOMATICALLY ADJUST THE DAILY START TIME OF THE HVAC SYSTEM IN ORDER TO BRING EACH SPACE TO THE DESIRED OCCUPIED TEMPERATURE IMMEDIATELY PRIOR TO SCHEDULED OCCUPANCY. INDIVIDUAL HEATING AND COOLING SYSTEMS WITH SETBACK CONTROLS AND DIRECT DIGITAL CONTROL SHALL HAVE OPTIMUM START CONTROLS. THE CONTROL ALGORITHM SHALL, AS A MINIMUM, BE A FUNCTION OF THE DIFFERENCE BETWEEN SPACE TEMPERATURE AND OCCUPIED SET POINT, THE OUTDOOR TEMPERATURE, AND THE AMOUNT OF TIME PRIOR TO SCHEDULED OCCUPANCY. MASS RADIANT FLOOR SLAB SYSTEMS SHALL INCORPORATE FLOOR TEMPERATURE INTO THE OPTIMUM START ALGORITHM.

VIRGINIA BUILDING DEPARTMENT NOTES

ALL WORK SHALL COMPLY WITH APPLICABLE SECTIONS OF VIRGINIA BUILDING CODE 2018 AND ALL AMENDMENTS AND RULES AND REGULATIONS OF THE DEPARTMENT OF BUILDINGS TO DATE.

1. THE CONTRACTOR SHALL ENGAGE THE SERVICES OF A PROFESSIONAL ENGINEER TO PROVIDE THE REQUIRED SPECIAL INSPECTIONS AND TESTS.

2. TESTS WILL BE CONDUCTED UNDER DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, ARCHITECT OR OTHER PERSON HAVING NOT LESS THAN FIVE (5) YEARS EXPERIENCE SUPERVISING THE INSTALLATION OF SUCH MECHANICAL SYSTEMS AND CONDUCTING SUCH TESTS WILL FILE DOCUMENTATION AND REPORTS OF TESTS THAT THE SYSTEM COMPLIES WITH THE CONSTRUCTION DOCUMENTS AND APPLICABLE LAWS.

3. THE LICENSED PROFESSIONAL ENGINEER, ARCHITECT OR OTHER PERSON HAVING NOT LESS THAN FIVE (5) YEARS EXPERIENCE SUPERVISING THE INSTALLATION OF SUCH MECHANICAL SYSTEMS AND CONDUCTING SUCH TESTS WILL FILE DOCUMENTATION AND REPORTS OF TESTS THAT THE SYSTEM COMPLIES WITH THE CONSTRUCTION DOCUMENTS AND APPLICABLE LAWS.

4. TESTS OF MECHANICAL SYSTEMS SHALL BE PERFORMED IN ACCORDANCE WITH SECTION MC 107 AND THE FOLLOWING SECTIONS OF THE 2018 VIRGINIA MECHANICAL CODE:
A. REFRIGERATION SYSTEMS - VMC 1108

5. THE FOLLOWING WORK ITEMS, COMPONENTS, MATERIALS, CAPACITIES, ETC. SHALL COMPLY WITH THE REFERENCED CODE OR STANDARD:
A. STANDARDS OF HEATING - 2018 VMC 309
B. GAS FIRED EQUIPMENT - FUEL GAS CODE

6. MINIMUM TEMPERATURE TO BE MAINTAINED IN OCCUPIED SPACES DURING HEATING SEASON: 68 DEG. FAHRENHEIT.

7. VENTILATION FOR ALL AREA SHALL COMPLY WITH 2018- VMC 401.

8. A STATEMENT SHALL BE FILED BY THE OWNER OR TENANT IN POSSESSION THAT THE VENTILATION SYSTEM WILL BE KEPT IN CONTINUOUS OPERATION AT ALL TIMES DURING THE NORMAL OCCUPANCY OF THE STRUCTURE AS REQUIRED BY 2018 VMC 403.3

9. REFER TO ARCHITECTURAL DRAWINGS FOR REQUIRED FIRE-RATED WALL AND SMOKE WALL CONSTRUCTION AND LOCATION.

10. THESE PLANS ARE APPROVED ONLY FOR THE WORK INDICATED ON THE APPLICATION SPECIFICATION SHEET. ALL OTHER MATTERS SHOWN ARE NOT TO BE RELIED UPON OR TO BE CONSIDERED AS EITHER BEING APPROVED OR IN ACCORDANCE WITH APPLICABLE CODES.

11. A WRITTEN REPORT DESCRIBING THE ACTIVITIES AND MEASUREMENTS COMPLETED IN ACCORDANCE WITH SECTION 2018-IECC, C408.2.1.

12. ALL HEATING AND COOLING LOADS CALCULATED PER ASHRAE/ACCA 183.

13. SMOKE DETECTOR SHALL MEET UL268A.

14. INDOOR DUCT AND PLENUM INSULATION SCHEDULE; (SECTION 230713)
A. CONCEALED, RECTANGULAR, ROUND AND FLAT-OVAL, SUPPLY-RETURN, OUTDOOR-AND EXHAUST-AIR DUCT AND AIR PLENUM INSULATION:
B. FLEXIBLE ELASTOMERIC, MINERAL-FIBER BLANKET, MINERAL-FIBER BOARD OR POLYOLEFIN WITH MINIMUM INSTALLED THERMAL RESISTANCE AS FOLLOWS:
UNCONDITIONED SPACES WITHIN BUILDING: R-6
WITHIN BUILDING ENVELOPE ASSEMBLY: R-8
OUTSIDE OF BUILDING: R-8

EXISTING ROOFTOP UNIT SCHEDULE - GAS HEAT																							
MARK	MANUFACTURER	MODEL	FAN				COOLING				HEATING				ELECTRICAL				APPROXIMATE WEIGHT(LBS)	SUPPLIED BY	INSTALLED BY	NOTES	
			SUPPLY AIR FLOW (CFM)	OUTSIDE AIR FLOW (CFM)	EXTERNAL STATIC (IN. W.G.)	MOTOR BHP	AMBIENT OAT °F	ENTERING AIR TEMPERATURE °F	TONS	TOTAL CAPACITY (BTU/HR)	EFFICIENCY EER/IEER	FUEL TYPE	INPUT CAPACITY (BTU/HR)	OUTPUT CAPACITY (BTU/HR)	EFFICIENCY	VOLTAGE	PHASE	MCA (A)					MOCP (A)
RTU-1(E)	CARRIER	48FCEN14K3M5-6FOAO	5000	250	0.75	4.64	95	80 / 67	12.5	147.5	10.2/15	NATURAL GAS	224	181	80%	208	3	68	80	1289	LL	LL	1-7
NOTES: 1. S.A.E. : SAME AS EXISTING. 2. RTU TO BE PROVIDED AND INSTALLED BY LANDLORD. 3. CONTRACTOR TO FIELD VERIFY EXACT LOCATION AND CONFIGURATION OF RTU ON SITE. 4. IF REQUIRED, PROVIDE NEW THERMOSTAT AND TEMPERATURE SENSOR COMPATIBLE WITH EXISTING RTU. CO-ORDINATE FINAL LOCATION OF T-SENSOR WITH ARCHITECT/OWNER. 5. CONTRACTOR TO BALANCE OUTSIDE AIR & RETURN AIR DAMPERS ON RTU TO MATCH VALUES MENTIONED IN THE TABLE ABOVE.																							

MAKEUP AIR UNIT SCHEDULE																										
MARK	MANUFACTURER	MODEL	FAN		COOLING					HEATING				ELECTRICAL								SUPPLIED BY	INSTALLED BY	APPROXIMATE WEIGHT	NOTES	
			AIR FLOW (CFM)	EXTERNAL STATIC (IN. W.G.)	MOTOR HP	AMBIENT OAT °F	TONS	TOTAL CAPACITY (BTU/HR)	SENSIBLE CAPACITY (BTU/HR)	EFFICIENCY (SEER)	FUEL TYPE	INPUT CAPACITY (BTU/HR)	OUTPUT CAPACITY (BTU/HR)	BURNER EFFICIENCY	CONDENSER		FAN		MCA (A)	MOCP (A)						
														VOLTAGE	PHASE	MCA (A)	MOCP (A)	VOLTAGE	PHASE	MCA (A)	MOCP (A)					
MUA-1(N)	CAPTIVEAIRE	A1-D-250-15D-MPU	1,350	0.5	1	90.0	3	29,600	19,800	15.0	NATURAL GAS	119,988	110,389	92%	208/230	1	18.1	30	115	1	16.6	25	O	GC	1350	1-7
NOTES: 1. PROVIDE WITH MOTORIZED DAMPER. 2. PROVIDE WITH WEATHER HOOD AND BIRDScreen. 3. PROVIDE WITH DOWNFLOW DISCHARGE. 4. PROVIDE WITH MANUFACTURER FABRICATED 20" HIGH ROOF CURB 5. PROVIDE WITH 3 TON SINGLE CIRCUIT CONDENSING UNIT. CONDENSING UNIT SHALL HAVE SEPARATE POWER CONNECTION AT 208V-1PH, 18.1 MCA, AND MOCP OF 30. 6. PROVIDE WITH COOLING INTERLOCK RELAY FOR MUA-1(N) AND RTU-1(E). 7. REFER TO CAPTIVEAIRE DRAWINGS FOR ADDITIONAL INFORMATION.																										

EXHAUST FAN SCHEDULE																		
MARK	MANUFACTURER	MODEL	TYPE	AREA SERVED	FAN					ELECTRICAL				APPROXIMATE WEIGHT (LBS)	SUPPLIED BY	INSTALLED BY	ACCESSORIES	NOTES
					EXHAUST AIRFLOW (CFM)	EXTERNAL STATIC (IN. W.G.)	DRIVE TYPE	MOTOR WATTS	MOTOR HP	VOLTAGE	PHASE	MCA (A)	MOCP (A)					
EF-1(N)	CAPTIVEAIRE	DU85HFA	UPBLAST	H-1	1,500	1.0	DIRECT	-	0.75	115	1	8.9 (FLA)	-	135	O	GC	RC, FSC, GDC, WP	1.2
EF-2(N)	COOK	GC-148	CEILING	RESTROOM	70	0.8	DIRECT	45	-	120	1	1.0	15	20	GC	GC	BD, DP, FSC, VI	3.4
ACCESSORIES: BD-BACKDRAFT DAMPER, DP-DISCONNECT PLUG, GDC- GREASE DRAIN CUPRC-FACTORY FURNISHED 18" ROOF CURB, FSC-FACTORY MOUNTED AND WIRED VARIABLE SPEED CONTROL, VI-VIBRATION ISOLATION, WP-NEMA 3R DISCONNECT SWITCH.																		
NOTES: 1. FAN SHALL BE CONTROLLED BY HOOD CONTROLS. INTERLOCK RTU-1(E) TO OPERATE IN OCCUPIED MODE WHILE KITCHEN EXHAUST FAN IS ENERGIZED. 2. REFER TO CAPTIVEAIRE DRAWINGS FOR ADDITIONAL INFORMATION. 3. INTERLOCK FAN OPERATION WITH RTU-1(E). 4. ACCEPTED ALTERNATE MANUFACTURER'S SHALL BE CARNES, GREENHECK, AND PENN.																		

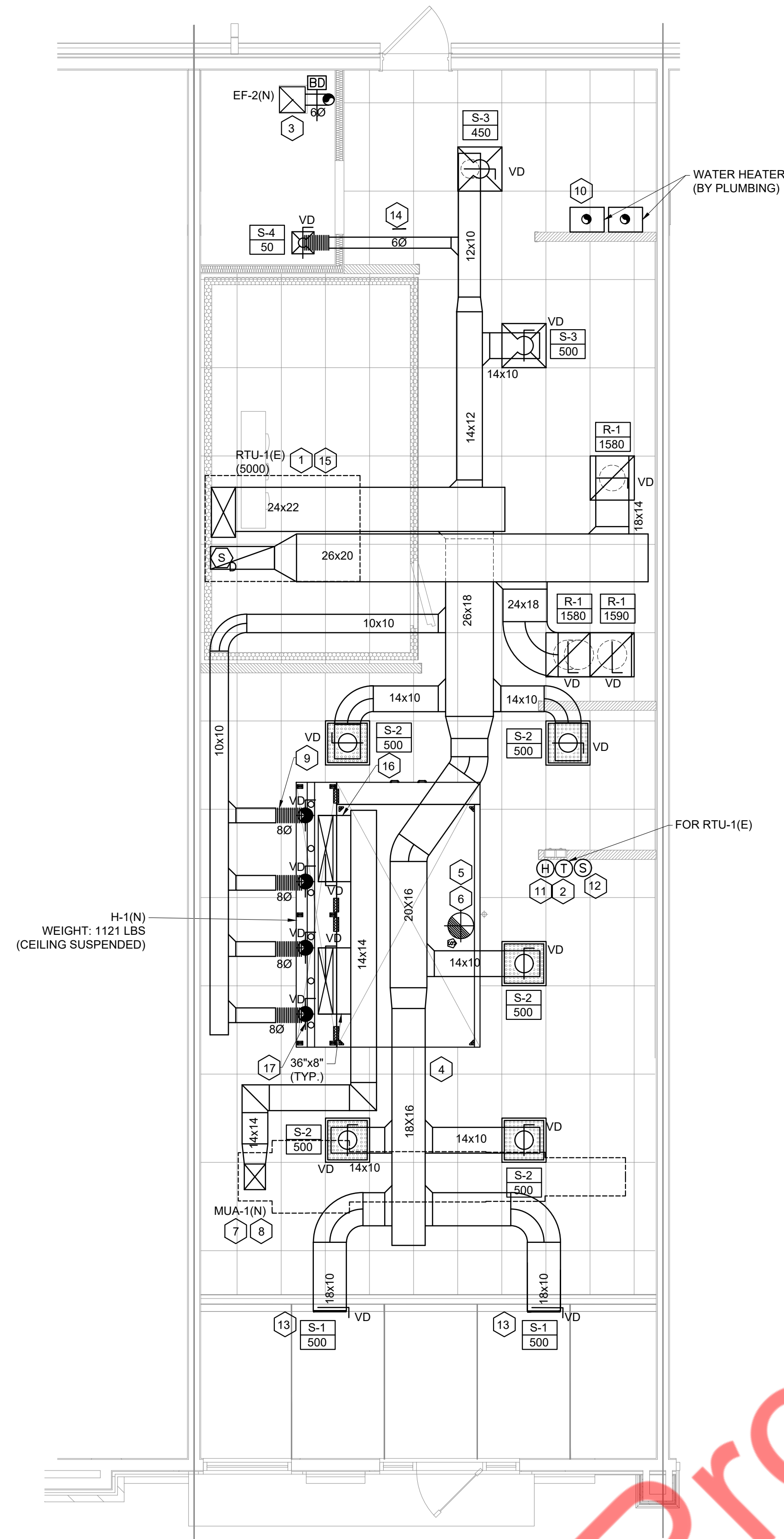
GRILLE, REGISTER, AND DIFFUSER SCHEDULE													
MARK	MANUFACTURER	MODEL	TYPE	NECK SIZE	FACE SIZE	FRAME TYPE	MATERIAL	FINISH	NOISE CRITERIA	ACCESSORIES	SUPPLIED BY	INSTALLED BY	QUANTITY
R-1	HAVACO	HT-2X2-ERTN	EGGCRATE GRILLE	16"Ø	24"X24"	LAY-IN	ABS POLYMER	STANDARD WHITE	<30	-	GC	GC	3
S-1	HEART & COOLEY	SVH	REGISTER	18"X10"	20"X12"	SURFACE	ALUMINUM	STANDARD WHITE	<30	OBD	GC	GC	2
S-2	HAVACO	HT-2X2-SPL	PERFORATED DIFFUSER	12"Ø	24"X24"	LAY-IN	ABS POLYMER	STANDARD WHITE	<30	OBD	GC	GC	5
S-3	HAVACO	HT-2X2-SPL	SQUARE CONE DIFFUSER	12"Ø	24"X24"	LAY-IN	ABS POLYMER	STANDARD WHITE	<30	OBD	GC	GC	2
S-4	HAVACO	HT-2X2-SPL	SQUARE CONE DIFFUSER	6"Ø	12"X12"	SURFACE	ABS POLYMER	STANDARD WHITE	<30	OBD, SMF	MC	MC	1
ACCESSORIES: OBD-OPPOSED BLADE DAMPER SMF-SURFACE MOUNT FRAME													

WALK-IN COOLER CONDENSING UNIT SCHEDULE										
MARK	MANUFACTURER	MODEL	COMPRESSOR HP	VOLTAGE	PHASE	MCA (A)	MOCP (A)	SUPPLIED BY	INSTALLED BY	APPROXIMATE WEIGHT (LBS)
CU-1	KOLPAK	AM36-145-1EC-PR-4	1.5	208	1	13.6	20	KEC	GC	165
SHOWN FOR REFERENCE ONLY. REFER TO KITCHEN EQUIPMENT SCHEDULE AND MANUFACTURER'S DRAWINGS FOR EXACT REQUIREMENTS.										

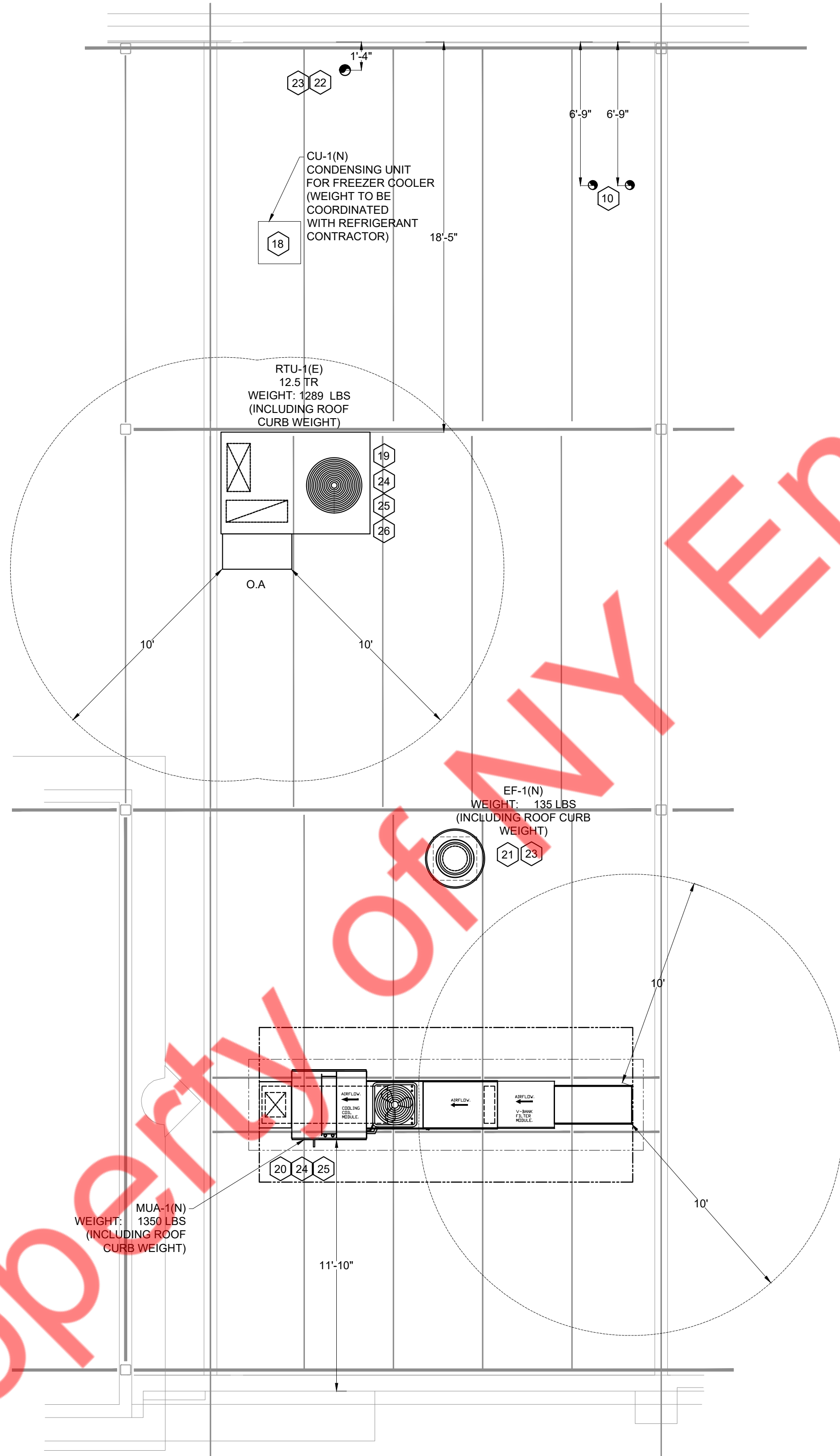
HOOD SCHEDULE													
MARK	MANUFACTURER	MODEL	TYPE	HOOD LENGTH	HOOD WIDTH	EXHAUST AIR FLOW (CFM)	SUPPLY AIR FLOW (CFM)	MAKEUP AIR FLOW (CFM)	EXHAUST EXTERNAL STATIC (IN. W.G.)	SUPPLY AIR PER RISER (CFM)	MAKEUP AIR PER RISER (CFM)	SUPPLIED BY	INSTALLED BY
H-1	CAPTIVEAIRE	7824ND-2WI-PQ-ACPSP-F	ISLAND	11'-0"	6'-6"	1500	500	1350	0.578	125	675	O	GC
REFER TO CAPTIVEAIRE HOOD DRAWINGS FOR EXACT REQUIREMENTS AND ACCESSORIES.													

BUILDING AIR BALANCE SCHEDULE:				
MARK	SUPPLY AIR (CFM)	OUTSIDE AIR (CFM)	RETURN AIR (CFM)	EXHAUST AIR (CFM)
RTU -1(E)	5000	250	5.0	4750
EF-2(N)	-	-	-	70
MUA-1(N)	1350	1350	-	-
EF-1(N)	-	-	-	1500
TOTAL	6350	1600	4750	1570
RESULTING BUILDING PRESSURIZATION		30 CFM	POSITIVE	
NOTES: 1. CONTRACTOR TO ADJUST MOTORISED DAMPER ON FRESH AIR TAP TO PROVIDE OUTSIDE AIR AS MENTIONED IN ABOVE TABLE				

VENTILATION CALCULATION AS PER INTERNATIONAL MECHANICAL CODE 2018									
VENTILATION CALCULATION FOR RTU-1 (E) & MAU-1(N)									
ROOM NAME	AREA (SQ.FT.)	AREA OUTDOOR AIR RATE	PEOPLE OUTDOOR AIR RATE	OCCUPANCY AS PER CODE	OCCUPANCY	REQUIRED OA (CFM)	PROVIDED OA (CFM)	EXHAUST AIRFLOW RATE (CFM/SQ.FT OR CFM/FIXT.)	TOTAL CALCULATED EXHAUST (CFM)
ORDERING AND WAITING	135	0.06	7.5	50	2	25	1600	-	-
WARE WASHING	300	0.12	7.5	20	3	59		0.7	405
KITCHEN	534	0.12	7.5	20	5	102		0.7	440
RESTROOM	54	-	-	-	-	-		-	70
TOTAL					10	185			985



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



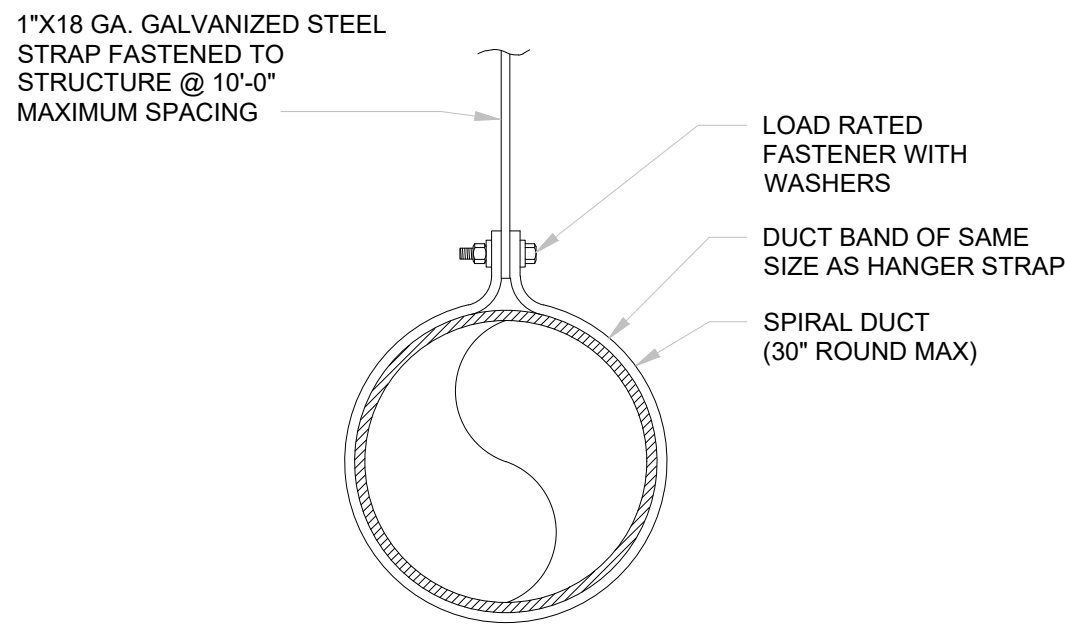
2 MECHANICAL ROOF PLAN
1/4" = 1'-0"

MECHANICAL KEY NOTES

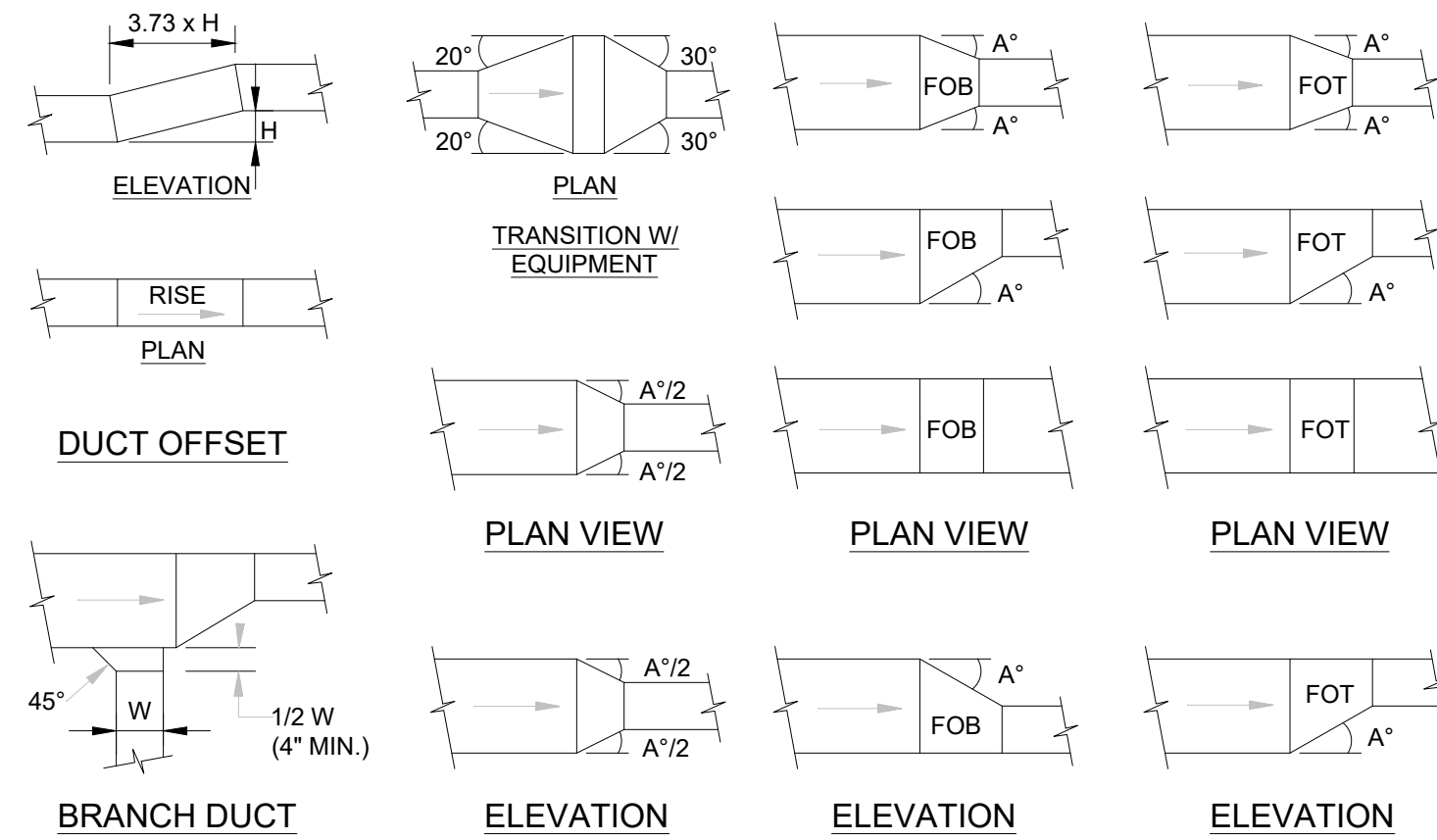
- EXTEND FULL SIZE SUPPLY & RETURN DUCTWORK FROM ROOFTOP UNITS TO SPACE. EXTEND AS SHOWN. TRANSITION DUCT AS NECESSARY TO MAKE CONNECTION. ACOUSTICALLY LINE THE FIRST 10'-0" OF BOTH SUPPLY AND RETURN MAIN DUCTS.
- FURNISH, INSTALL & WIRE HONEYWELL T7350 7-DAY PROGRAMMABLE THERMOSTAT WITH AUTO-CHANGEOVER AND AUTOMATIC START CAPABILITY. MOUNT 46" ABOVE FINISHED FLOOR. SETBACK SHALL BE SET TO 55°F HEATING AND 72°F COOLING. PROVIDE WITH 2 HOUR OCCUPANT OVERRIDE AND 10-HOUR BACKUP. COORDINATE EXACT LOCATION WITH ARCHITECT AND OWNER PRIOR TO ROUGH-IN.
- CEILING MOUNTED EXHAUST FAN. TRANSITION FROM FAN DISCHARGE TO DUCT SIZE SHOWN AND ROUTE 6"Ø EXHAUST DUCT UP THROUGH ROOF WITH TALL CONE FLASHING, WEATHER SKIRT, AND VENT CAP. MAINTAIN A MINIMUM OF 10'-0" FROM ALL OUTSIDE AIR INTAKES.
- INSTALL TYPE I GREASE EXHAUST HOOD. SUPPORT HOOD PER MANUFACTURER'S INSTALLATION INSTRUCTIONS. FURNISH AND INSTALL TRAPEZE HANGERS FOR ALL THREAD SUPPORT UNDER DUCTWORK AS REQUIRED. TRANSITION FROM HOOD CONNECTIONS TO WELDED KITCHEN EXHAUST DUCT SIZES SHOWN. REFER TO HOOD SCHEDULE AND DRAWINGS FOR HOOD SPECIFICATIONS AND FOR BALANCE OF MAKE-UP AND SUPPLY AIR TO HOOD.
- GREASE DUCT TO BE PROVIDED WITH KITCHEN EQUIPMENT AND INSTALLED BY MECHANICAL CONTRACTOR. INSTALL PER MANUFACTURER'S INSTRUCTIONS. INSTALL OWNER FURNISHED UL-2221 LISTED DOUBLE WALL GREASE DUCT EQUAL TO CAPTIVEAIRE SYSTEMS MODEL DW-2R ROUND 20 GAUGE 430 STAINLESS STEEL INNER DUCT INSULATED WITH A 24 GAUGE OUTER SHELL FROM HOOD COLLAR TO EXHAUST FAN ON ROOF. INSTALL EXHAUST DUCT PER MANUFACTURER'S INSTRUCTIONS. PROVIDE CLEANOUTS AT EVERY CHANGE OF DIRECTION IN THE DUCT AND EVERY 10 FEET WITH MINIMUM OF 3 FEET OF CLEARANCE IN FRONT OF CLEAN-OUT. COORDINATE EXACT DUCT LENGTHS REQUIRED BASED ON FIELD CONDITIONS WITH MANUFACTURER.
- 14"Ø GREASE EXHAUST DUCT FROM HOOD UP THRU ROOF TO EF-1(N), PROVIDE FIRE WRAP ON DUCT RATED FOR 0" CLEARANCE TO COMBUSTIBLES.
- EXTEND MAKE-UP AIR DUCT FROM HOOD COLLAR UP TO MOUNTED MAKE-UP AIR UNIT ON ROOF MUA-1(N).
- MAKEUP DUCT UP THRU ROOF TO MUA-1(N).
- CONNECT 8"Ø SUPPLY AIR DUCT TO HOOD 125 CFM EACH.
- PROVIDE AND INSTALL 3"Ø/5"Ø CONCENTRIC VENT KIT FOR WATER HEATER INTAKE & EXHAUST VENT PIPE UP THROUGH ROOF. INSTALL PER MANUFACTURER'S INSTRUCTIONS.
- HUMIDITY SENSOR TO BE SET WITH HONEYWELL T7350 THERMOSTAT. HUMIDITY SENSOR SHALL CONTROL REFRIGERATION SYSTEM AND INITIATE HOT GAS REHEAT AS REQUIRED TO MAINTAIN SPACE HUMIDITY AT 55% RH.
- PROVIDE AND INSTALL EMERGENCY MANUAL SHUTDOWN PUSH BUTTON FOR HOOD. PUSH BUTTON SHALL BE IN THE PATH OF EGRESS, A MINIMUM OF 10' AWAY FROM THE HOOD AND A MAXIMUM OF 20'.
- SET REAR VANES FOR HORIZONTAL THROW AND FRONT VANES FOR SPLIT 45° THROW.
- UNDERCUT DOOR 1/2" FOR TRANSFER AIR.
- FURNISH AND INSTALL SHOE TAP AT PLENUM CONNECTION.
- FURNISH AND INSTALL MANUAL VOLUME DAMPER IN EACH MAKE-UP AIR DUCT CONNECTED TO MAKE-UP AIR PLENUM. REFER TO HOOD SCHEDULE FOR REQUIRED AIRFLOW AT EACH CONNECTION.
- FURNISH AND INSTALL MANUAL VOLUME DAMPER IN EACH SUPPLY AIR DUCT CONNECTED TO HOOD SUPPLY AIR PLENUM. REFER TO HOOD SCHEDULE FOR REQUIRED AIRFLOW AT EACH CONNECTION.
- INSTALL REMOTE CONDENSING UNIT FOR FOOD SERVICE EQUIPMENT. FURNISH AND INSTALL ROOF MOUNTED EQUIPMENT RAILS, REFRIGERANT LINE SET, THERMOSTATIC EXPANSION VALVE, SOLENOID VALVE, TEMPERATURE CONTROL, SIGHT GLASS, FILTER DRIER, PRESSURE CONTROL, CRANKCASE HEATER, LOW AMBIENT CONTROLS AND WEATHERPROOF HOUSING. TRAP AND SLOPE REFRIGERANT LINES PER MANUFACTURER'S RECOMMENDATIONS. FURNISH AND INSTALL REQUIRED ROOF PENETRATIONS FOR REFRIGERANT PIPING. SEAL PIPING PENETRATIONS THROUGH WALK-IN ROOF.
- ROOFTOP UNIT AND CURB BY LANDLORD. COORDINATE UNIT WITH STRUCTURAL ENGINEER. SHIM UNIT AND CURB LEVEL FOR PROPER CONDENSATE DRAINAGE. FURNISH AND INSTALL FLEXIBLE CONNECTORS ON SUPPLY AND RETURN AIR DUCT CONNECTIONS. TRANSITION TO DUCT SIZES SHOWN ON MECHANICAL FLOOR PLAN. SET OUTSIDE AIR AS INDICATED ON ROOFTOP UNIT SCHEDULES. MECHANICAL CONTRACTOR SHALL SCRIBE INTO UNIT POSITION OF OUTSIDE AIR DAMPER AND LABEL OUTSIDE AIR VOLUME AND PERCENT OF OUTSIDE AIR. PROVIDE ROOF CURB ADAPTER AS REQUIRED.
- MAKE-UP AIR UNIT AND CURB ARE OWNER PROVIDED. COORDINATE UNIT WITH STRUCTURE, LANDLORD, AND EXISTING CONDITIONS. SHIM UNIT AND CURB LEVEL FOR PROPER OPERATION. ADJUST DUCTWORK ROUTING ACCORDINGLY. FURNISH AND INSTALL FLEXIBLE CONNECTION ON THE SUPPLY DUCT CONNECTION TRANSITION TO DUCT SIZE INDICATED. FIELD VERIFY EXISTING CONDITIONS PRIOR TO BID.
- ROOF MOUNTED GREASE EXHAUST FAN AND FAN CURB ARE OWNER PROVIDED. COORDINATE INSTALLATION OF FAN WITH LANDLORD AND EXISTING CONDITIONS TO ENSURE THAT FAN IS NOT INSTALLED WITHIN 10 FEET OF ANY OUTSIDE AIR INTAKE.
- Ø6" EXHAUST DUCT UP THROUGH ROOF WITH WITH GOOSE NECK, BIRD SCREEN, ROOF JACK, STORM COLLAR, AND ALL-WEATHER CAP. MAINTAIN A MINIMUM OF 10'-0" FROM ALL OUTSIDE AIR INTAKES AND TERMINATE 36" ABOVE ROOF.
- CONTRACTOR TO FIELD VERIFY THAT THE LOCATION OF ANY INTAKE SOURCE FROM ADJACENT TENANTS SHOULD BE AT LEAST 10' AWAY FROM THE EF-1(N) AND OTHER EXHAUST DUCT TERMINATING ON ROOF.
- CONTRACTOR TO FIELD VERIFY THAT THE LOCATION OF ANY EXHAUST SOURCE FROM ADJACENT TENANTS SHOULD BE AT LEAST 10' AWAY FROM THE RTU-1(E) & MUA-1(N).
- CONDENSATE DRAIN FROM RTU AND MAU SHALL BE CONVEYED TO AN APPROVED PLACE OF DISPOSAL. SUCH PIPING SHALL MAINTAIN A MINIMUM HORIZONTAL SLOPE IN THE DIRECTION OF DISCHARGE OF NOT LESS THAN THE 1/8TH UNIT VERTICAL IN 12 UNITS HORIZONTAL (1% SLOPE). CONDENSATE SHALL NOT DISCHARGE INTO A STREET, ALLEY OR OTHER AREAS SO AS TO CAUSE A NUISANCE.
- RTU TO BE SUPPLIED AND INSTALLED BY LANDLORD.

MECHANICAL REMODEL NOTES

DRAWINGS ARE BASED ON BEST AVAILABLE INFORMATION AT TIME OF DESIGN AND MAY NOT REFLECT AS-BUILT CONDITIONS. FIELD VERIFY MECHANICAL INSTALLATIONS INDICATED ON THIS SHEET PRIOR TO BID AND DEMOLITION.

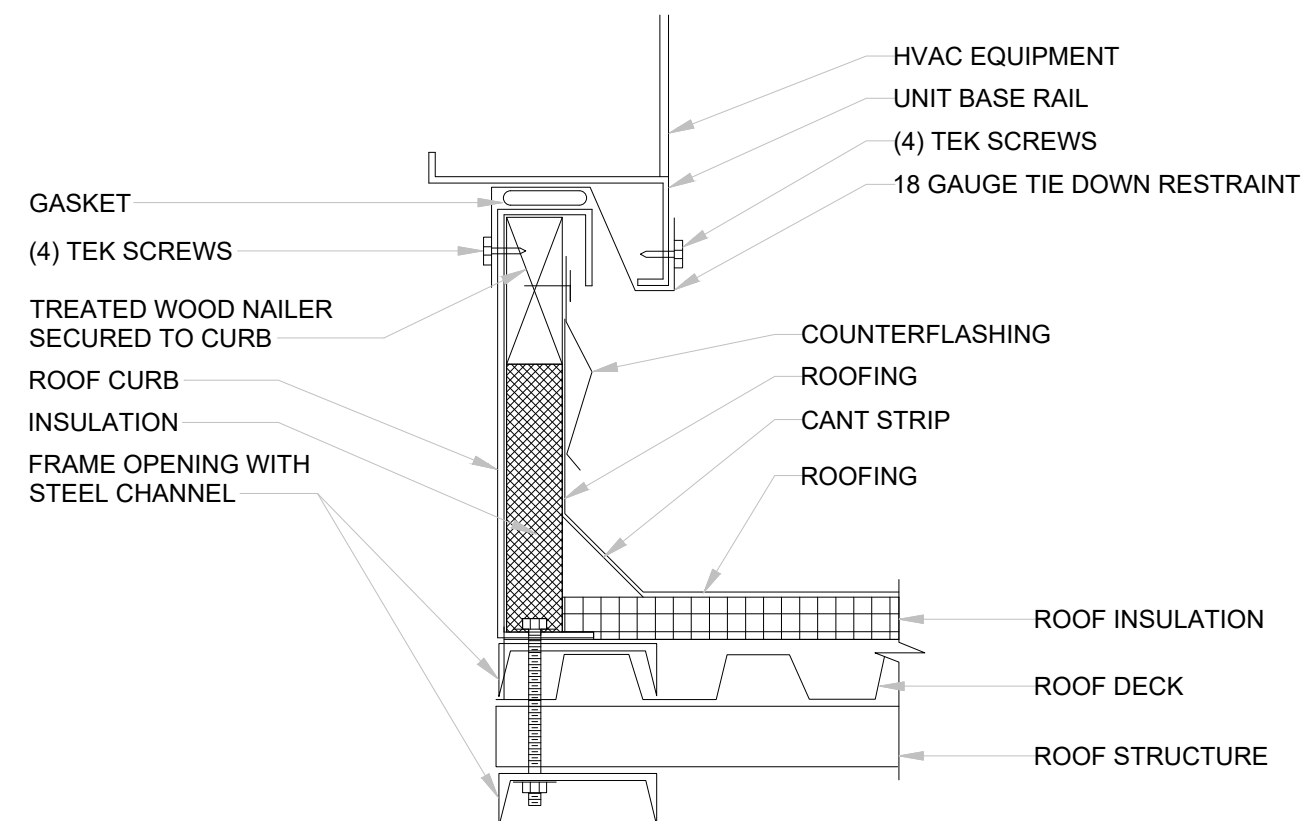


6 SPIRAL DUCT INSTALLATION DETAIL
M3-1 NOT TO SCALE

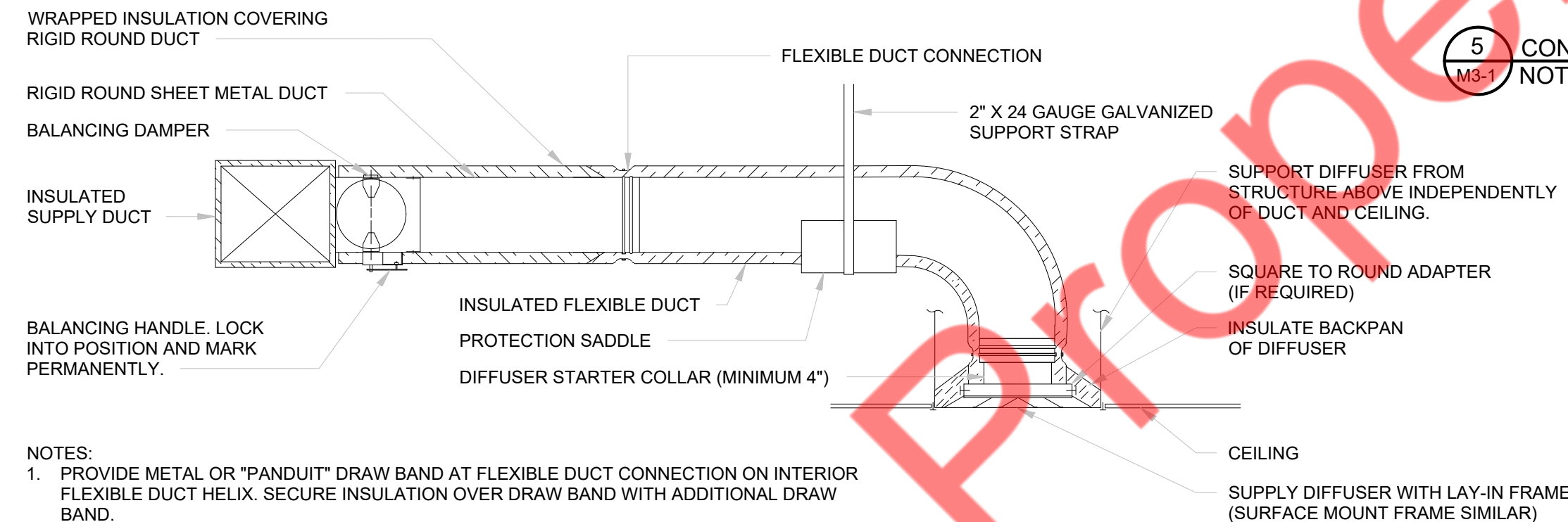


NOTES: 1) ANGLE A = 30° WHEN AIR FLOWS IN DIRECTION OF ARROW (SUPPLY AIR).
2) ANGLE A = 20° WHEN AIR FLOWS IN OPPOSITE DIRECTION OF ARROW (RETURN OR EXHAUST).

7 LOW VELOCITY DUCT FITTINGS DETAIL
M3-1 NOT TO SCALE

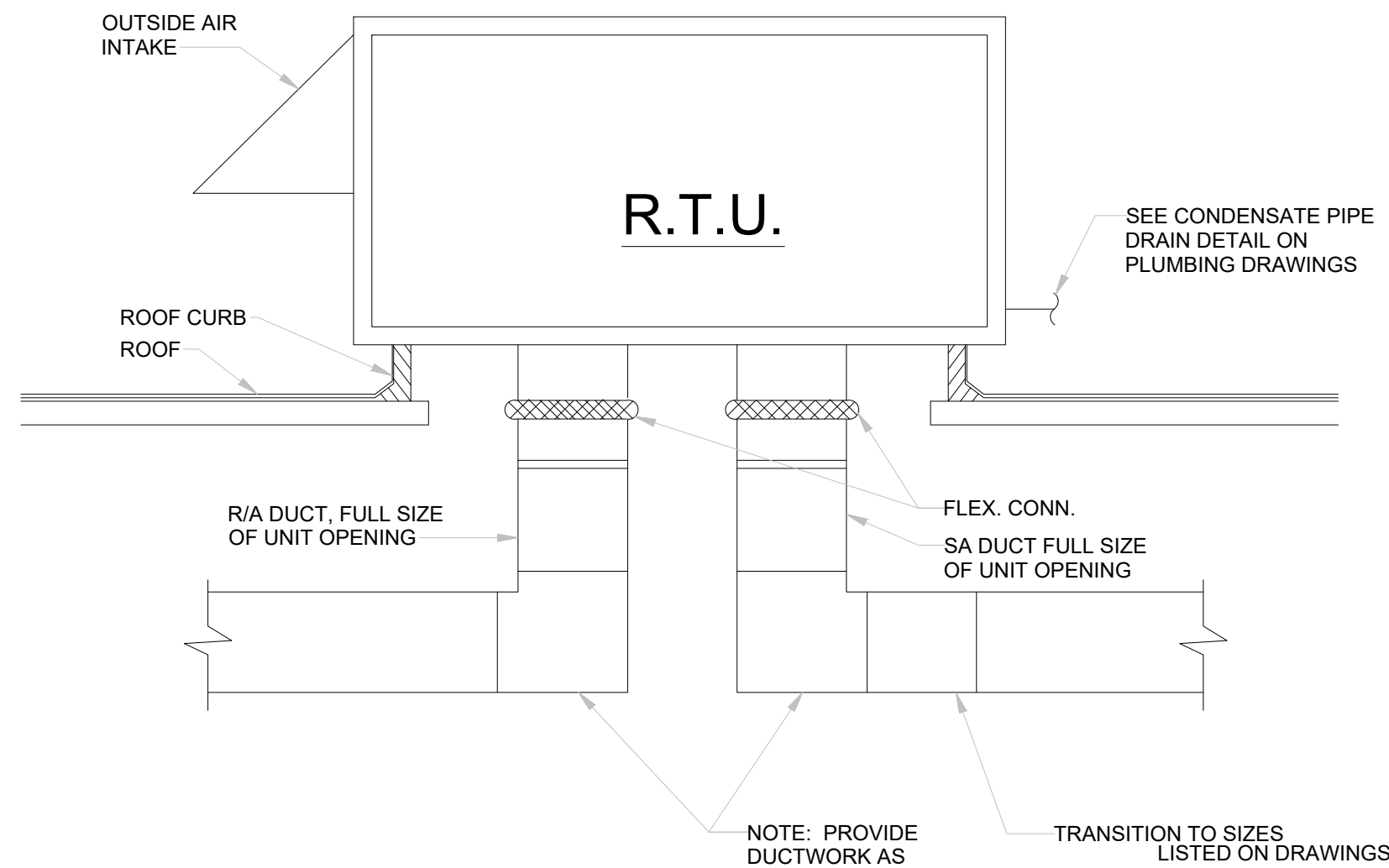


8 ROOFTOP UNIT CURB DETAIL
M3-1 NOT TO SCALE

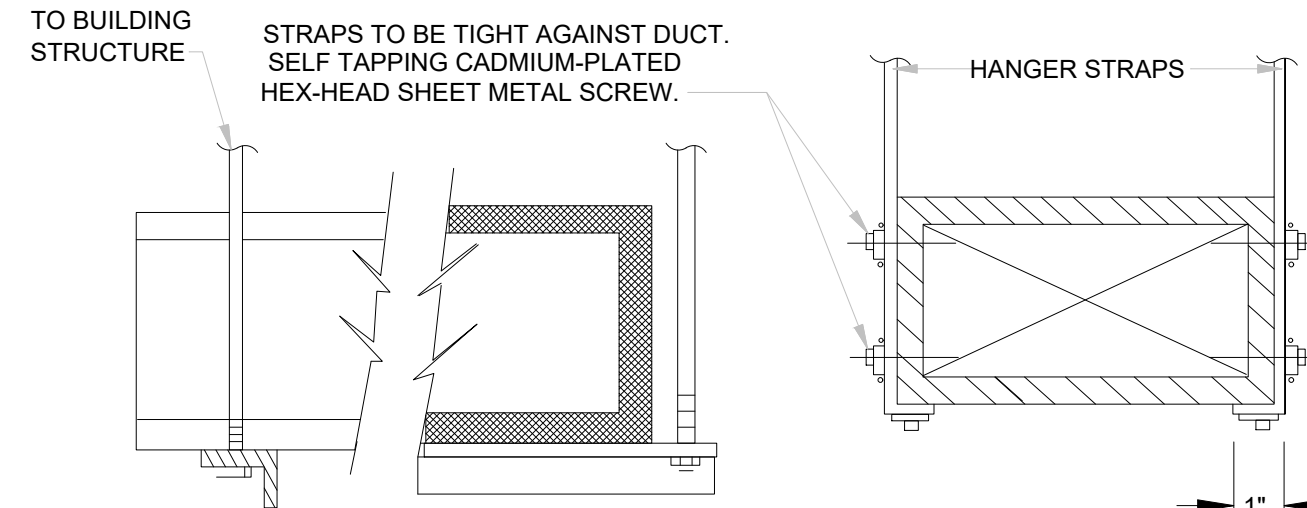


NOTES:
1. PROVIDE METAL OR "PANDUIT" DRAW BAND AT FLEXIBLE DUCT CONNECTION ON INTERIOR FLEXIBLE DUCT HELIX. SECURE INSULATION OVER DRAW BAND WITH ADDITIONAL DRAW BAND.
2. PROVIDE BEADING ON ROUND METAL DUCT 12" OR LARGER IN DIAMETER.
3. PROVIDE MINIMUM 4" COLLARS FOR ATTACHMENT OF FLEXIBLE DUCT TO ROUND DUCT, DAMPERS, AND DIFFUSERS.
4. BAND RIGID ROUND DUCT INSULATION TO DUCT AND PROVIDE TAPE FOR INSULATION OVERLAP.

9 DIFFUSER CONNECTION DETAIL - FLEX DUCT
M3-1 NOT TO SCALE

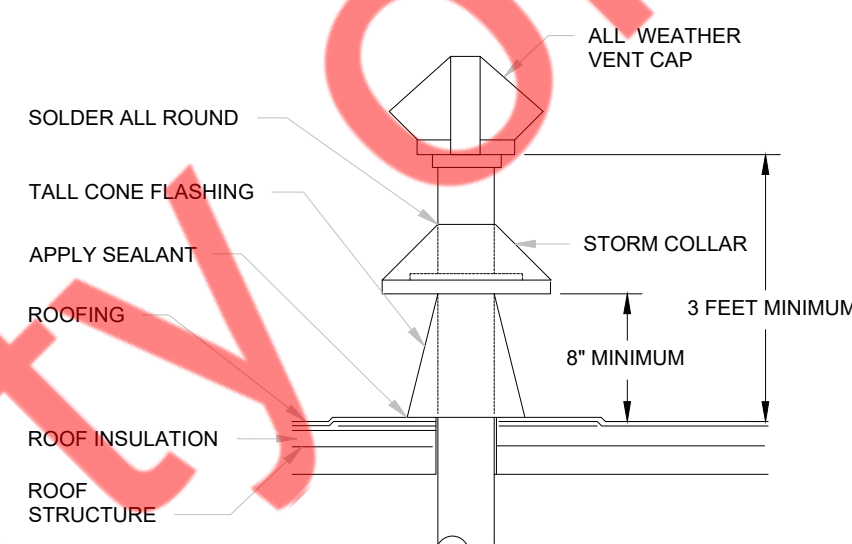


3 ROOF TOP UNIT DETAIL - DUCTED
M3-1 NOT TO SCALE

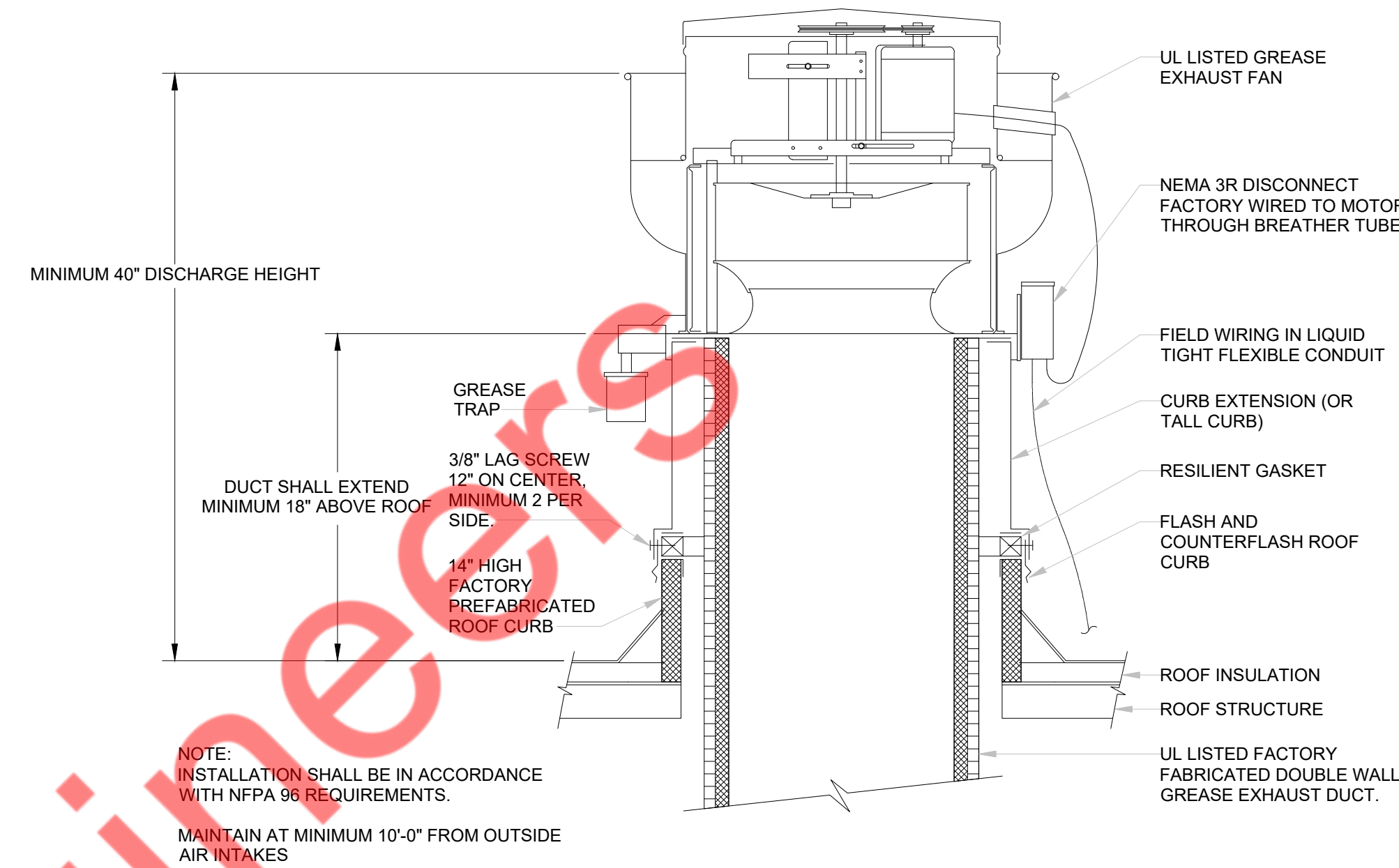


HANGER SIZES FOR RECTANGULAR DUCTS			
MAXIMUM DUCT WIDTH	HANGER	SUPPORT ANGLE HORIZONTAL	MAXIMUM HANGER SPACING
30"	1" x 18" GAUGE STRAP	NONE REQUIRED	10'-0"
36"	1/4" ROUND ROD	1-1/2" X 1-1/2" X 1/8"	8'-0"
48"	1/4" ROUND ROD	2" X 2" X 1/8"	8'-0"
60"	5/16" ROUND ROD	2" X 2" X 1/8"	8'-0"
84"	3/8" ROUND ROD	2" X 2" X 1/8"	8'-0"

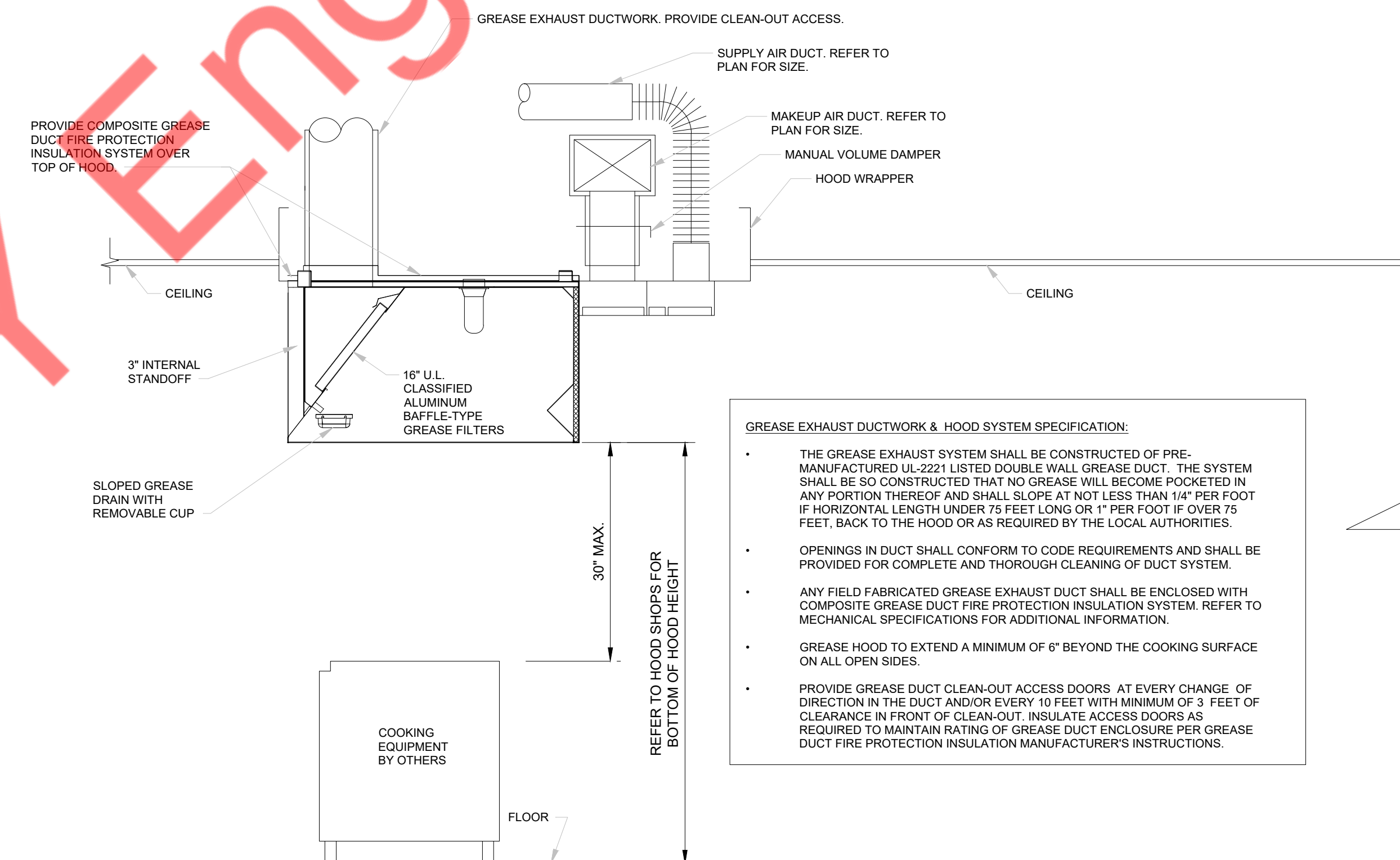
4 DUCT HANGER SIZING FOR RECTANGULAR
M3-1 NOT TO SCALE



5 CONCENTRIC DUCT THROUGH ROOF DETAILS
M3-1 NOT TO SCALE



1 ROOF MOUNTED GREASE EXHAUST FAN DETAIL
M3-1 NOT TO SCALE



GREASE EXHAUST DUCTWORK & HOOD SYSTEM SPECIFICATION:

- THE GREASE EXHAUST SYSTEM SHALL BE CONSTRUCTED OF PRE-MANUFACTURED UL-221 LISTED DOUBLE WALL GREASE DUCT. THE SYSTEM SHALL BE SO CONSTRUCTED THAT NO GREASE WILL BECOME POKETED IN ANY PORTION THEREOF AND SHALL SLOPE AT NOT LESS THAN 1/4" PER FOOT IF HORIZONTAL LENGTH UNDER 75 FEET LONG OR 1" PER FOOT IF OVER 75 FEET, BACK TO THE HOOD OR AS REQUIRED BY THE LOCAL AUTHORITIES.
- OPENINGS IN DUCT SHALL CONFORM TO CODE REQUIREMENTS AND SHALL BE PROVIDED FOR COMPLETE AND THOROUGH CLEANING OF DUCT SYSTEM.
- ANY FIELD FABRICATED GREASE EXHAUST DUCT SHALL BE ENCLOSED WITH COMPOSITE GREASE DUCT FIRE PROTECTION INSULATION SYSTEM. REFER TO MECHANICAL SPECIFICATIONS FOR ADDITIONAL INFORMATION.
- GREASE HOOD TO EXTEND A MINIMUM OF 6" BEYOND THE COOKING SURFACE ON ALL OPEN SIDES.
- PROVIDE GREASE DUCT CLEAN-OUT ACCESS DOORS 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. INSULATE ACCESS DOORS AS REQUIRED TO MAINTAIN RATING OF GREASE DUCT ENCLOSURE PER GREASE DUCT FIRE PROTECTION INSULATION MANUFACTURER'S INSTRUCTIONS.

NOTES:

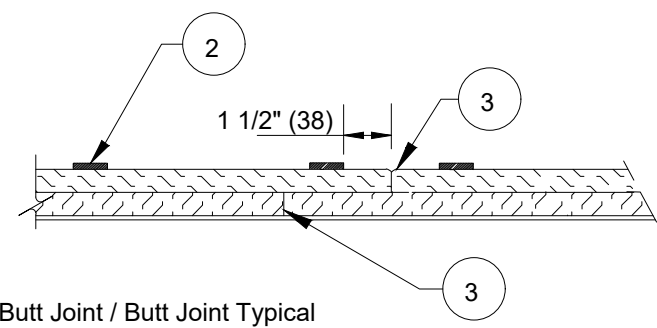
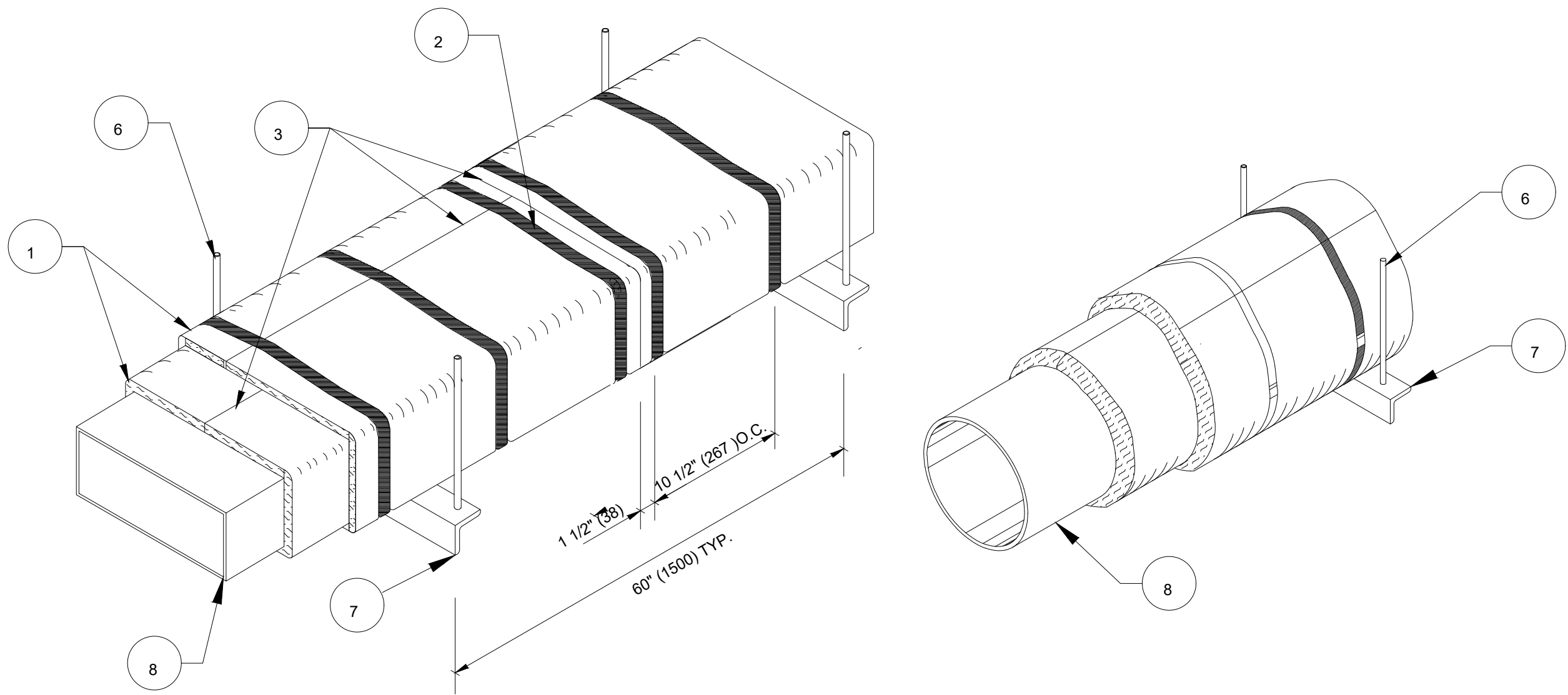
- PROVIDE UL LISTED TYPE 1 EXHAUST HOOD.
- THE GREASE HOOD SHALL MEET THE REQUIREMENTS OF THE MECHANICAL CODE, NSF, AND NFPA FOR A TYPE 1 HOOD.
- FIRE DEPARTMENT APPROVAL SHALL BE REQUIRED ON FIRE PROTECTION SYSTEM FOR GREASE HOODS AND DUCTS AS REQUIRED BY THE MECHANICAL CODE AND AS REQUIRED BY THE FIRE CODE.
- PROVIDE FIRE SUPPRESSION SYSTEM AS REQUIRED BY NFPA 17A.
- PERFORM SMOKE TEST ON GREASE EXHAUST DUCTWORK AFTER DUCTWORK INSTALLATION IS COMPLETE BUT PRIOR TO DUCTWORK CONCEALMENT PER REQUIREMENTS OF LOCAL CODE AUTHORITIES.
- HOODS, GREASE REMOVAL DEVICES, EXHAUST FANS, AND EXHAUST DUCT SHALL HAVE A CLEARANCE OF AT LEAST 18" FROM COMBUSTIBLE MATERIALS, 3" FROM LIMITED COMBUSTIBLE MATERIALS, AND 0" FROM NONCOMBUSTIBLE MATERIALS.

2 KITCHEN HOOD SCHEMATIC
M3-1 NOT TO SCALE

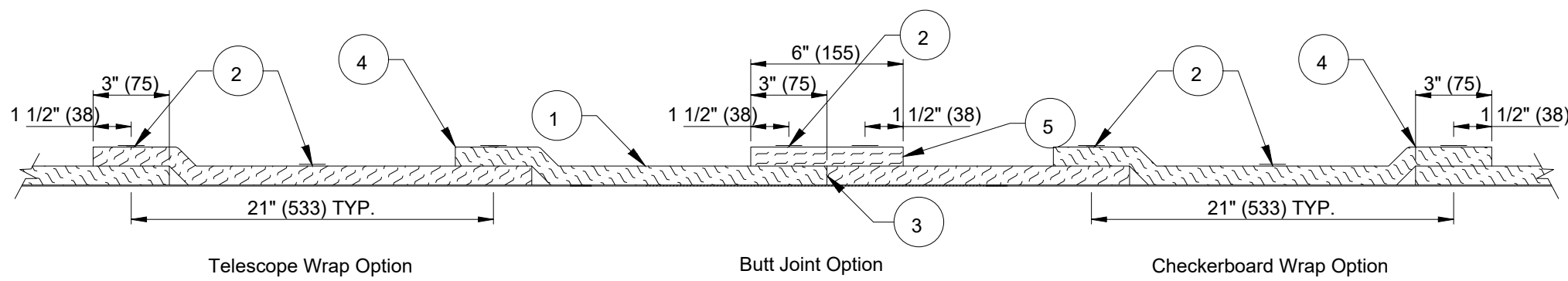


Grease and HVAC Duct Enclosure System

1 or 2 Hour Shaft Alternative / Zero Clearance to Combustibles



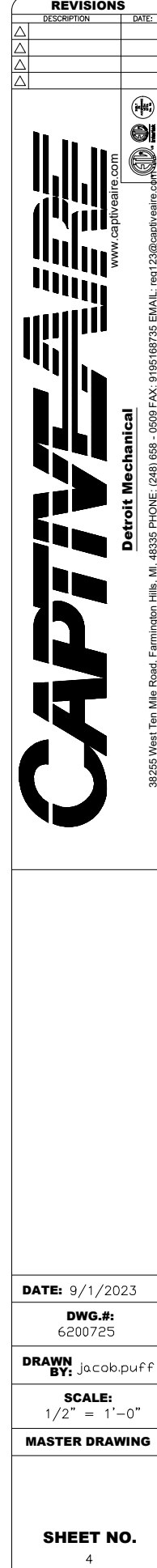
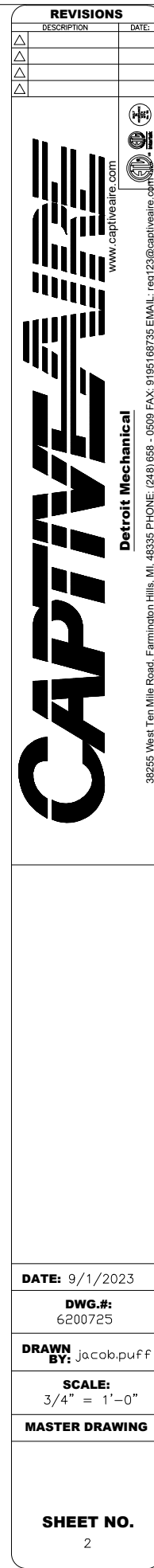
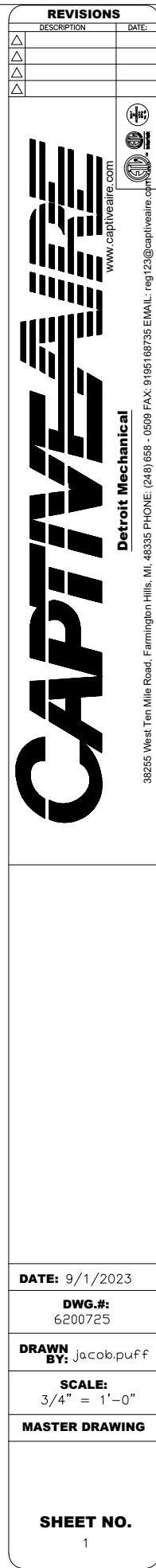
TWO LAYER INSTALLATION (Grease Duct per ASTM E2336)

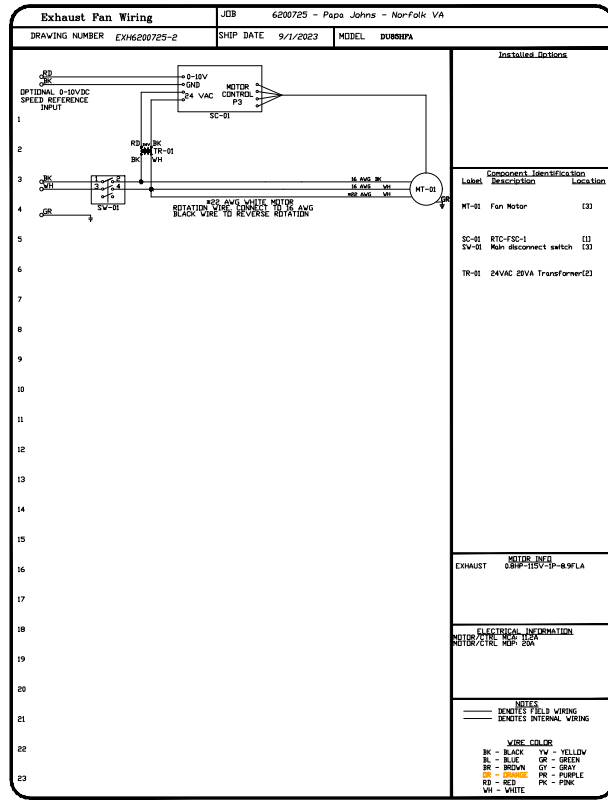


SINGLE LAYER INSTALLATION OPTIONS (HVAC Duct or Grease Duct per UL1978)

LEGEND	
1	Two Layers of XL Insulation for ASTM E2336 Grease Duct Enclosures One Layer of XL Insulation for Air Ventilation Duct Enclosures and UL1978 Zero Clearance
2	Steel banding minimum 1/2" (13) wide by 0.015" (0.4) thick
3	Tight butt joints (ULC Grease Duct requires 3" (75) overlap)
4	Min. 3" (75) overlap on perimeter and between adjacent blankets
5	Optional 6" XL collar
6	Hangers - size dependent weight of assembly (see datasheet Section G)
7	Trapeze Supports - size dependent on weight of assembly (see datasheet Section G)
8	Steel Rectangular or Round Duct (size, gage and construction dependent per Listed Design)

1 GREASE DUCT
M3-2 NOT TO SCALE

[illegible]



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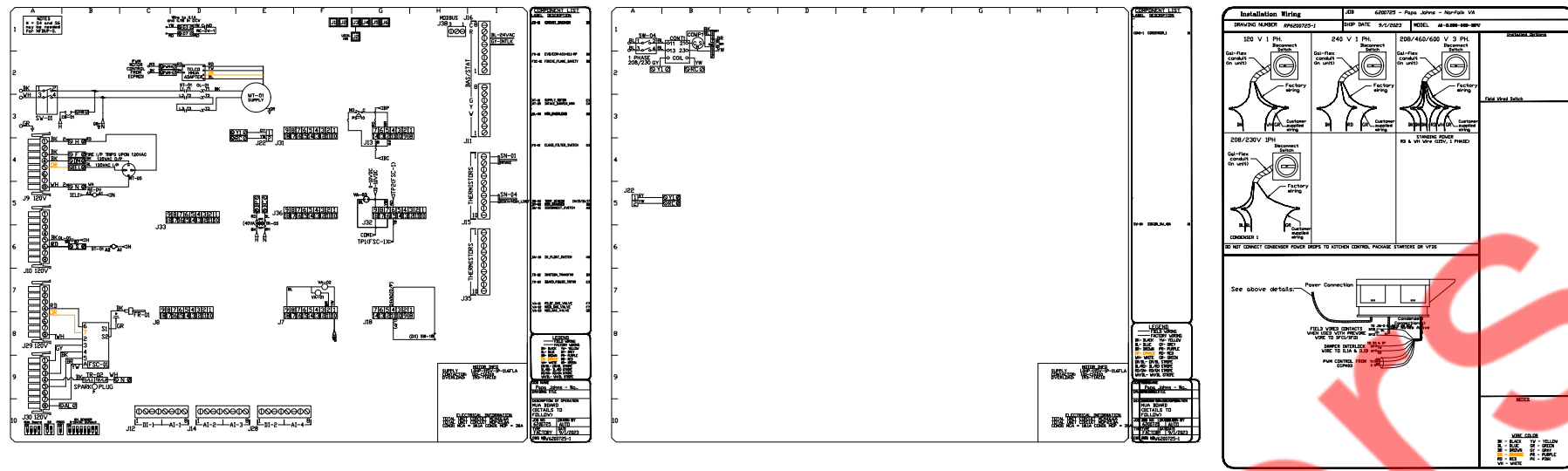
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Detroit Mechanical

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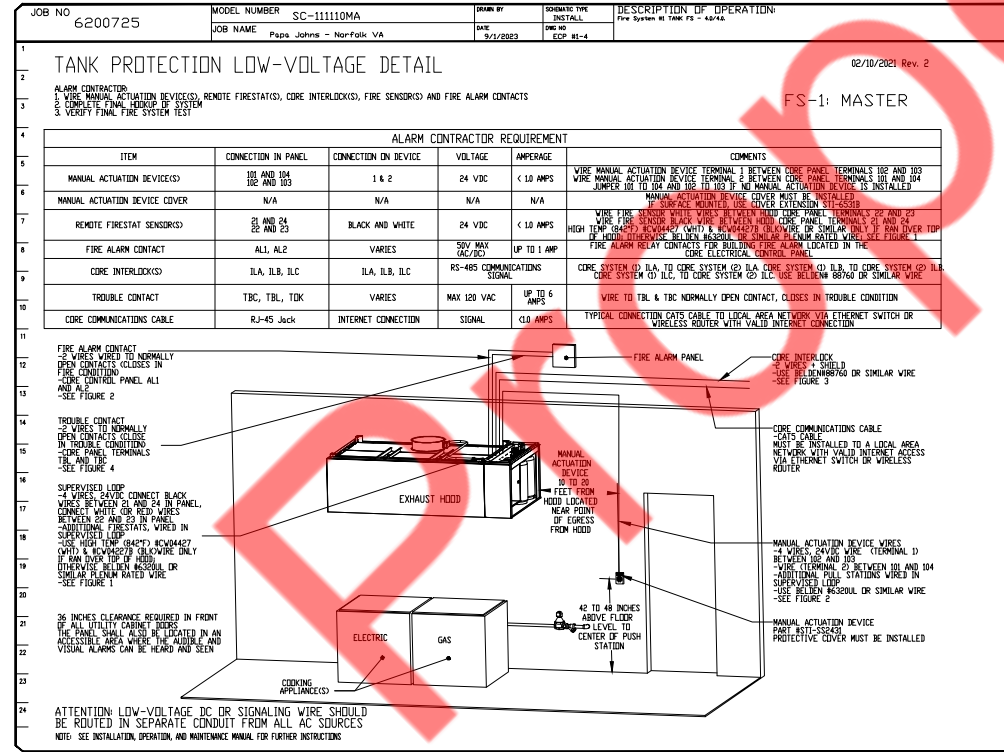
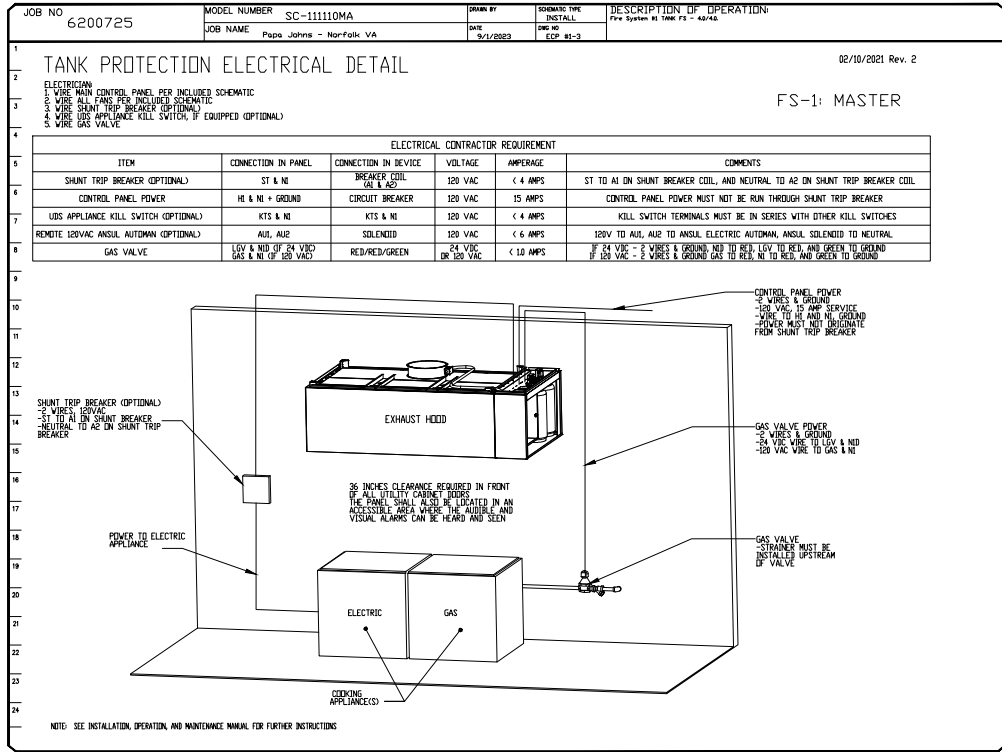
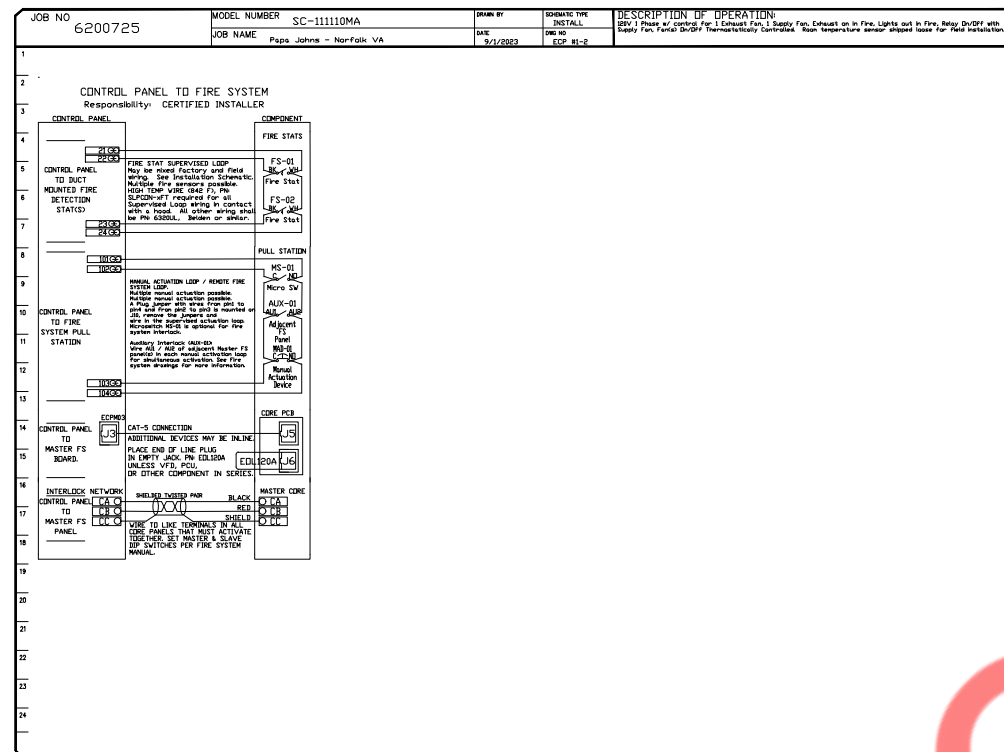
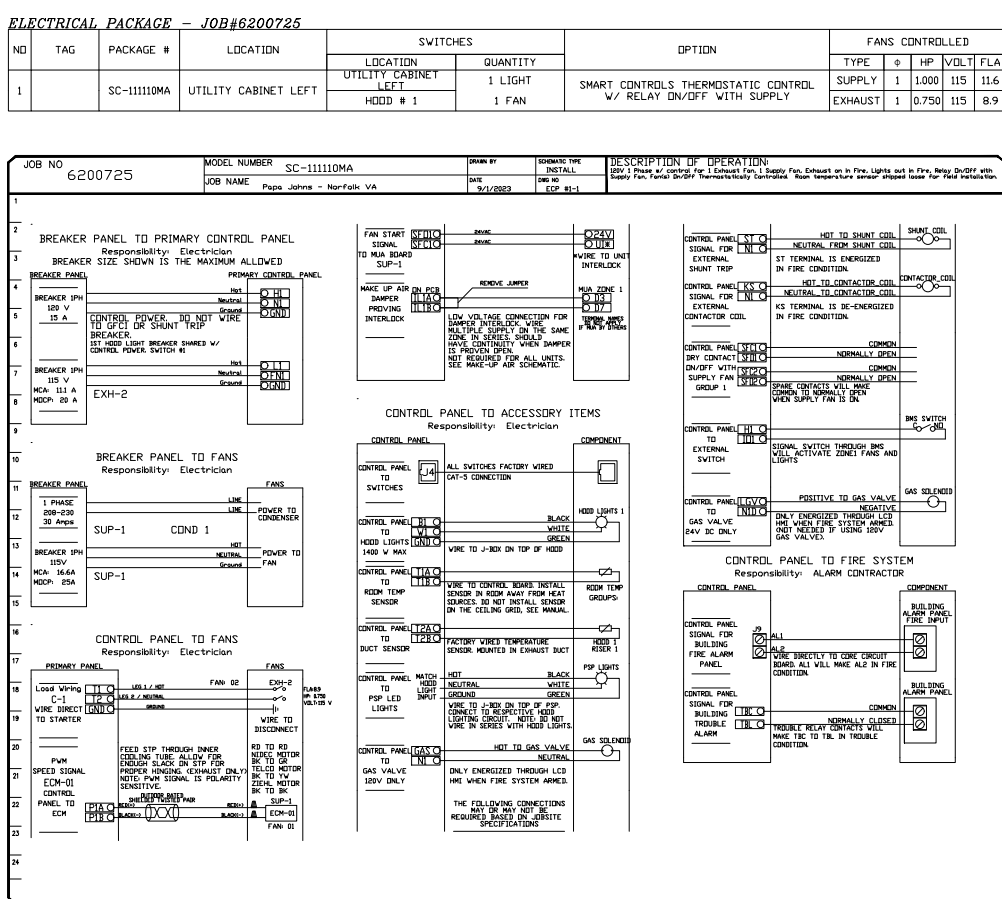
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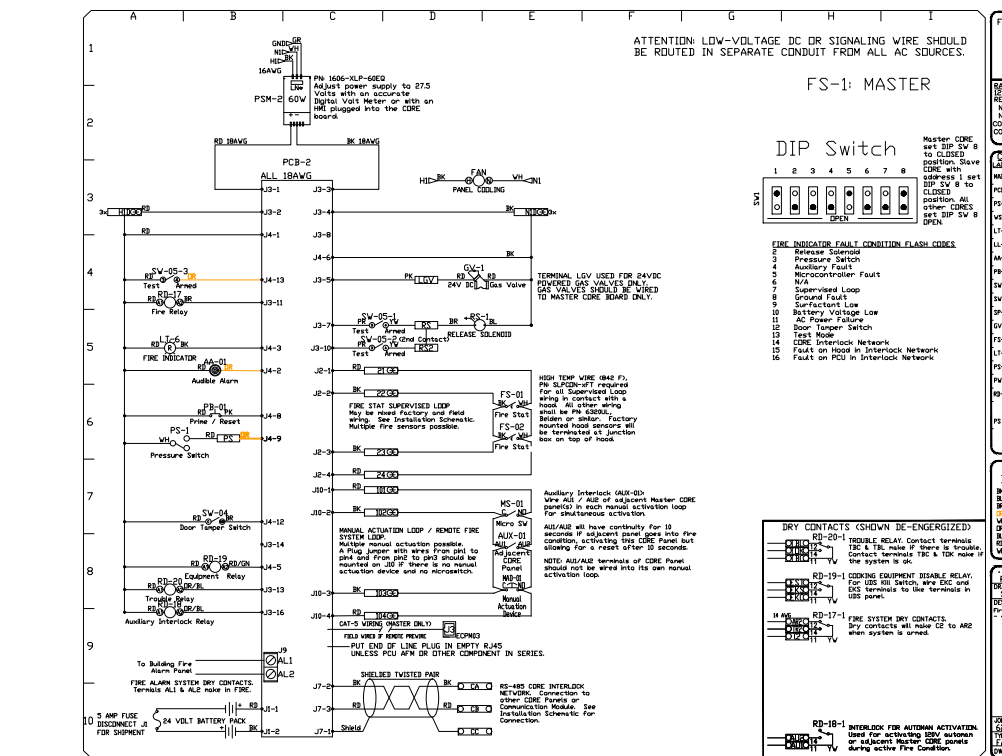
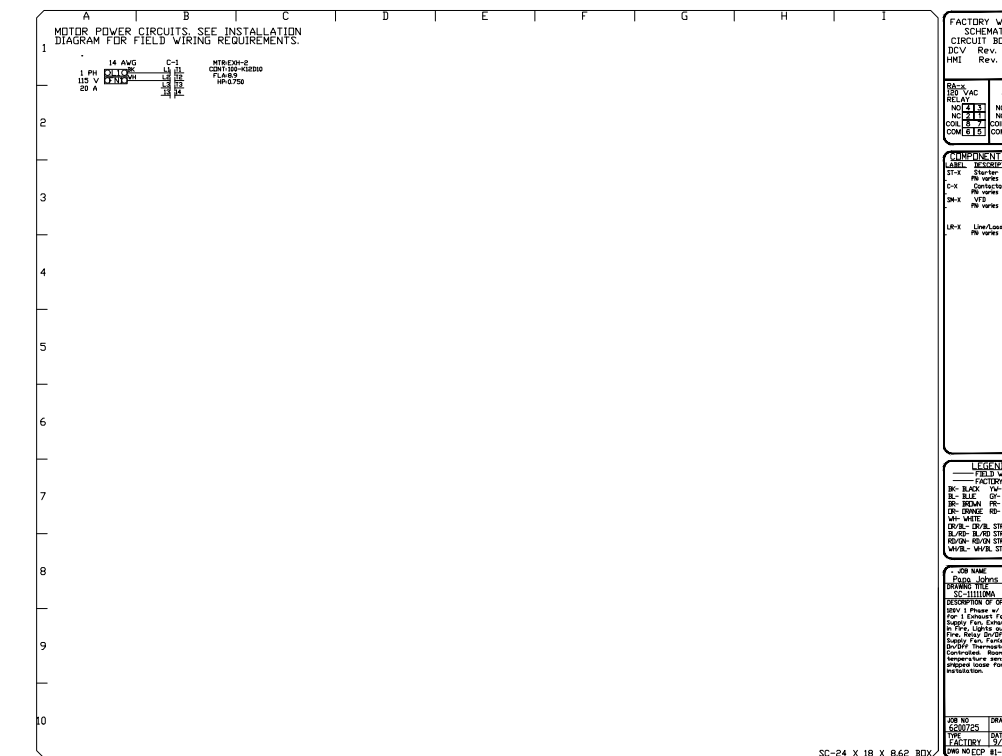
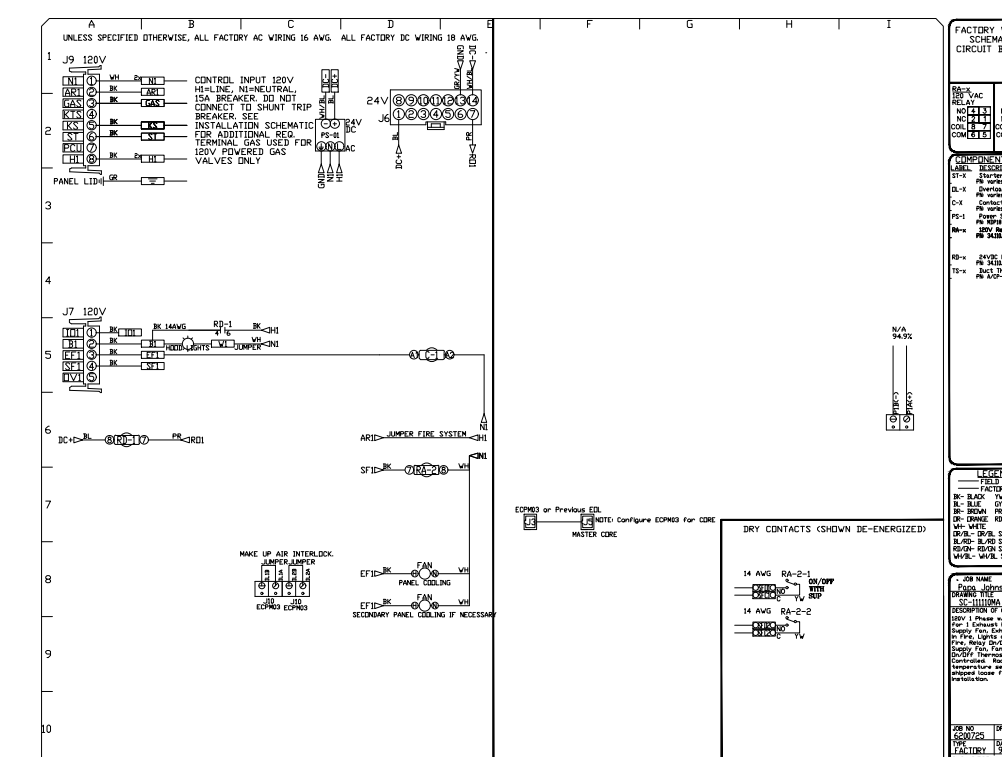
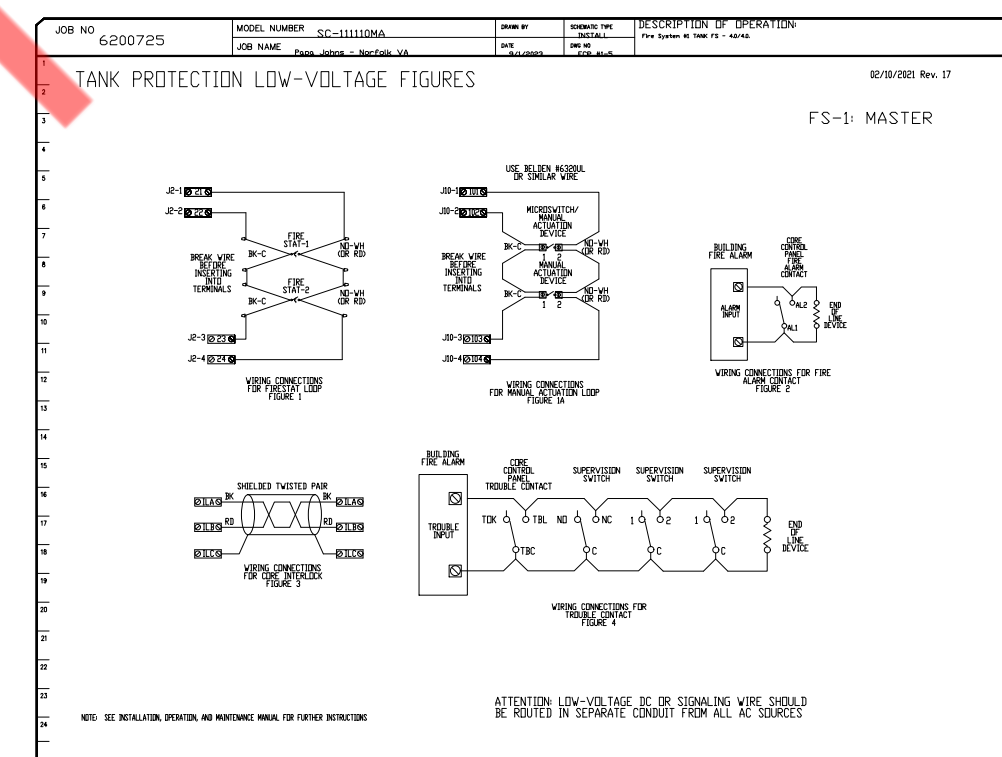
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DUCTWORK #1 PARTS - J08#6200725												
TAG	PART #	QTY	SPN	ZONE/COVEREDBY	SP	WEIGHT	VELOCITY	QTY	DESCRIPTION			
P1	DW414LT	1500				-0.033	15.46	4403.16	1 SINGLE WALL DUCT 14" DIAMETER, 10' LONG, FLANGE AT BOTH ENDS, STAINLESS STEEL.			
P2	DW414RST	1500				-0.033	17.22	4403.16	1 SINGLE WALL DUCT #5 BEGEEE ELBOW, 14" DUCT, ASSEMBLY.			
P3	DW414LT	1500				-0.033	8.82	4403.16	1 SINGLE WALL DUCT 14" DIAMETER, 10' LONG, FLANGE AT BOTH ENDS, STAINLESS STEEL.			
P4	DW414RST	1500				-0.033	8.82	4403.16	1 DUCT SUPPORT BRACKET KIT, 14" DUCT, USED FOR HANGING DUCT 10 GA STEEL, CLEAR ZINC COATING, 2 RINGS, 4 BRACKETS, 6 HARDWARE BAG 2.			
P5	DW414RST	1500				-0.033	17.22	4403.16	1 SINGLE WALL DUCT #5 BEGEEE ELBOW, 14" DUCT, ASSEMBLY.			
P6	ASSEMBLY V/P/R	1500				-0.033	15.95	4403.16	1 SINGLE WALL DUCT TEE, 14" DUCT, ASSEMBLY.			
P7	ASSEMBLY V/P/R	1500				-0.033	17.22	4403.16	1 DUCT ACCESS DOOR WITH HANDLE & GREASE DAM, FOR 14" DUCT USE 10' BOD. STAINLESS STEEL.			
P8	DW414LT	1500				-0.033	15.46	4403.16	1 SINGLE WALL DUCT 14" DIAMETER, 10' LONG, FLANGE AT BOTH ENDS, STAINLESS STEEL.			
P9	DW414LT	1500				-0.033	17.22	4403.16	1 SINGLE WALL DUCT 14" DIAMETER, 10' LONG, FLANGE AT BOTH ENDS, STAINLESS STEEL.			
P10	ASSEMBLY V/P/R	1500				-0.033	17.56	4403.16	1 SINGLE WALL DUCT ADJUSTABLE, 14" DIAMETER, 10' LONG, FLANGE AT ONE END WITH A 14" ADJUSTABLE COLLAR, STAINLESS STEEL.			
P11	DW414RST	1500				-0.033	17.56	4403.16	1 DUCT VERTICAL SUPPORT KIT, 14" DUCT, 10' CLEARANCE TO COMBUSTIBLES, PARTS ARE ZINC COATED, HARDWARE KIT #3 USED ON DUCTWORK & TRANSITION.			
P12	ASSEMBLY V/P/R	1500				-0.033	17.56	4403.16	1 DUCT TO CURB TRANSITION, 10' CURB TO 14" DUCT, 16 GA ALUMINIZED, USED ON BRUIS, BUTS & 90.			
P13	SYSTEM AT P12	1500				-0.033	0.00	4403.16				
P14	SH-2000PLUS	1500				-0.033	0.00	4403.16	3 DUCT - 3M FIRE BARRIER 2000 PLUS SILICONE - USED AS SEALANT TO SEAL DUCT JOINTS.			
P15	755682000	1500				-0.033	0.00	4403.16	1 DUCT - BUT INSULATION FOR 10'00 CLEARANCE TO COMBUSTIBLES - 300' X 24" X 1-1/2" ROLL, UNIFRAK FIVEWRAP ELITE LS.			
P16	BRANDIES	1500				-0.033	0.00	4403.16	2 DUCT - FIRE BARRIER WRAP STAINLESS STEEL BANDING, 3" WIDTH - 100' FT PER ROLL.			
P17	DW414LT	1500				-0.033	17.56	4403.16	3 DUCT - V-P CLAMP WITH NEW DESIGN 14 GA BRACKETS, 14" DUCT, ASSEMBLY.			
P18	SEAL-50-50	1500				-0.033	0.00	4403.16	2 DUCT - FIRE BARRIER WRAP STAINLESS STEEL BANDING SEAL, 3" WIDTH, QUANTITY 10' 50.			
P19	TAPEALUM	1500				-0.033	0.00	4403.16	2 DUCT - FIRE BARRIER WRAP ALUMINUM FUEL TAPE - 3" X 100' ROLL.			
P20	TOTAL WEIGHT	1500				-0.033	115.58	4403.16				

- SINGLE WALL FACILITY BUILD DUCTWORK
- ALL DUCTWORK IS REQUIRED TO BE INSTALLED WITH THE MAXIMUM SUPPORT SPACING LISTED BELOW.
 - FOR A COMPLETE LIST OF APPROVED SUPPORT METHODS, SEE THE INSTALLATION AND OPERATION MANUAL.
 - DUCTWORK SHALL SLOPE NOT LESS THAN 1/16" PER LINEAR FOOT TOWARDS THE HOOD OR AN APPROVED GREASE COLLECTION RESERVOIR.
 - WHERE HORIZONTAL DUCTS EXCEED 75 FEET IN LENGTH, THE SLOPE SHALL NOT BE LESS THAN 3/16" PER LINEAR FOOT.

DUCT DIAMETER	HORIZONTAL SUPPORT (FT)	VERTICAL WALL SUPPORT (FT)	VERTICAL CURB SUPPORT (FT)
5"	10'	10'	24'
6"	10'	10'	24'
7"	10'	10'	24'
8"	10'	10'	24'
10"	10'	10'	24'
12"	10'	10'	24'
14"	10'	10'	24'
16"	10'	10'	24'
18"	10'	10'	24'
20"	10'	10'	24'
22"	10'	10'	24'
24"	10'	10'	24'
26"	10'	10'	24'
28"	10'	10'	24'
30"	10'	10'	24'
32"	10'	10'	24'
34"	10'	10'	24'
36"	10'	10'	24'

DO NOT LEAK TEST USING SMOKE BOMBS CONTAINING CHLORINES/CHLORIDES. CONSULT WITH CAPTIVEAIRE FOR PROPER LEAK TESTING METHODS.

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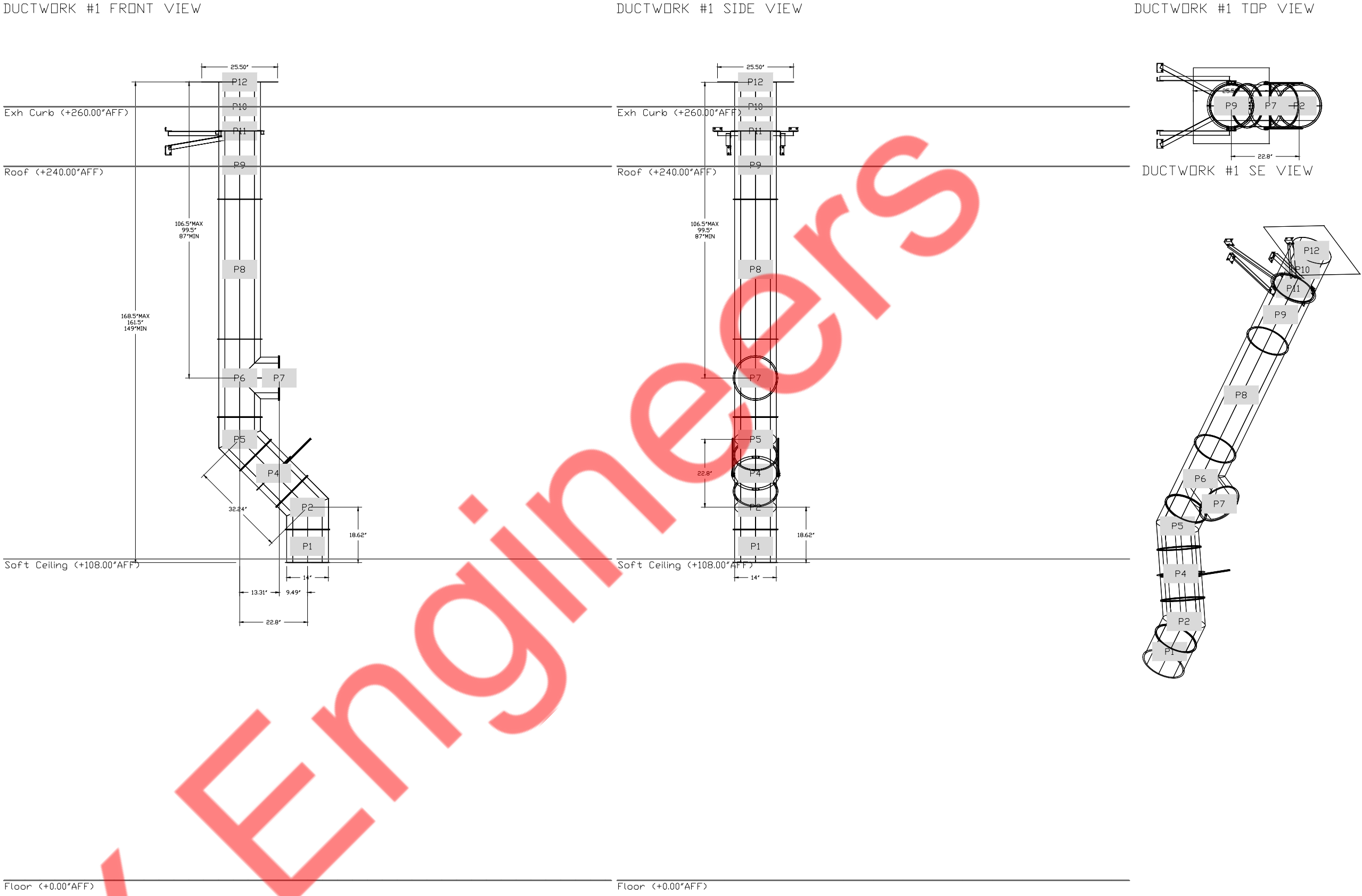
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ELECTRICAL SYMBOLS LEGEND

	HOME RUN TO PANEL. CIRCUIT NUMBERS, PHASE, NEUTRAL, AND GROUND CONDUCTORS INDICATED ALONG WITH ISOLATED GROUND CONDUCTOR IF APPLICABLE.
	PARTIAL CIRCUIT.
	CONDUIT INSTALLED CONCEALED ABOVE CEILING OR IN WALL.
	CONDUIT INSTALLED CONCEALED BELOW FLOOR SLAB OR UNDERGROUND.
	GROUND CONNECTION.
	SINGLE POLE SWITCH, +3'-10" OR AS NOTED.
	THREE-WAY SWITCH, +3'-10" OR AS NOTED.
	WALL MOUNTED OCCUPANCY SENSOR, +3'-10" OR AS NOTED.
	CEILING MOUNTED OCCUPANCY SENSOR.
	SIMPLEX RECEPTACLE, +18" OR AS NOTED.
	DUPLEX RECEPTACLE, +18" OR AS NOTED.
	QUADAPLEX RECEPTACLE +18" OR AS NOTED.
	RECEPTACLE INSTALLED HORIZONTALLY, BOTTOM AT +6" ABOVE COUNTER TOP.
	DUPLEX RECEPTACLE INSTALLED FLUSH IN CEILING.
	TWIST LOCK RECEPTACLE INSTALLED FLUSH IN CEILING.
	RECEPTACLE LETTER DESIGNATION DEFINITION: G GROUND FAULT INTERRUPTING DEVICE IG ISOLATED GROUND USB DEVICE WITH USB PORT WP WEATHERPROOF GROUND FAULT INTRUPTING DEVICE CR CORD REEL TR TAMPER RESISTANT
	SPECIAL RECEPTACLE, NEMA STYLE AS NOTED, +18" OR AS NOTED.
	JUNCTION BOX.
	4x4 JUNCTION BOX, UNLESS OTHERWISE NOTED.
	DISCONNECT SWITCH, TOP AT +6'-0" OR AS NOTED.
	DISCONNECT SWITCH PROVIDED WITH EQUIPMENT.
	EXTERIOR PHOTOCCELL, INSTALLED ON ROOF FACING NORTH.
	CONTROL OR POWER RELAY, INSTALLED AS NOTED.
	PUSHBUTTON, TOP AT +4'-6" OR AS NOTED.
	PANIC BUTTON, TOP AT +3'-6" OR AS NOTED.
	DOOR BELL CHIME, +8'-0" OR AS NOTED.
	CONTROL TRANSFORMER, INSTALLED AS NOTED.
	THERMOSTAT, TEMPERATURE SENSOR, CARBON MONOXIDE, CARBON DIOXIDE SENSOR AND HUMIDISTAT, +3'-10" OR AS NOTED. REFER TO MECHANICAL DRAWINGS FOR MORE INFORMATION.
	ELECTRICALLY OPERATED DAMPER
	120 VOLT DUCT TYPE SMOKE DETECTOR
	SECURITY SYSTEM CONTROL PANEL, TOP AT 6'-0".
	KEYPAD, +46" OR AS NOTED.
	SECURITY CAMERA, PENDANT MOUNTED
	WALL MOUNTED SECURITY CAMERA
	SECURITY KEYPAD
	DOOR CONTACTS.
	POWER COMPANY METER, TOP AT +6'-10" AFG OR AS NOTED.
	TRANSFORMER, FLOOR MOUNTED OR SUSPENDED FROM STRUCTURE AS NOTED.
	BRANCH CIRCUIT PANELBOARD, TOP AT +6'-0" OR AS NOTED.
	DISTRIBUTION PANEL, TOP AT +6'-0" OR AS NOTED.
	PLYWOOD PHONEBOARD, INSTALLED AS NOTED.
	CAT6 OUTLET, +18" UNLESS NOTED OTHERWISE WITH 1" CONDUIT TO ABOVE CEILING. NO # = 1 PORT, # = NUMBER OF PORTS
	DATA OUTLET, +18" UNLESS NOTED OTHERWISE WITH 1" CONDUIT TO ABOVE CEILING. C = COAX, H= HDMI, V = VGA
	CEILING MOUNTED DATA OUTLET
	AREA TYPE PHOTOELECTRIC SMOKE DETECTOR, CEILING MOUNTED, OR AS NOTED.

GENERAL REFERENCES/NOTATIONS

AC	MOUNT DEVICE +6" ABOVE TOP OF COUNTER TO BOTTOM OF DEVICE.
+48"	MOUNTING HEIGHT ABOVE FINISHED FLOOR TO CENTERLINE OF DEVICE.
03/E5	DETAIL OR SECTION REFERENCE.
???	FOODSERVICE EQUIPMENT DESIGNATION.
#	REVISION DESIGNATION.
TYPE ?	EQUIPMENT DESIGNATION.

ABBREVIATIONS

AFF/AFG	ABOVE FINISHED FLOOR/GRADE.	NEC	NATIONAL ELECTRICAL CODE.
AHJ	AUTHORITY HAVING JURISDICTION.	NFPA	NATIONAL FIRE PROTECTION ASSOCIATION.
BAS	BUILDING AUTOMATION SYSTEM.	NL	NIGHT LIGHT.
DNR	DEPARTMENT OF NATURAL RESOURCES.	NF	NON-FUSED.
EC	ELECTRICAL CONTRACTOR.	PA	PUBLIC ADDRESS.
EM	EMERGENCY.	PC	PLUMBING CONTRACTOR.
ETR	EXISTING TO REMAIN.	SPD	SURGE PROTECTION DEVICE.
FA	FIRE ALARM.	TYP	TYPICAL.
FPC	FIRE PROTECTION CONTRACTOR.	UL	UNDERWRITERS LABORATORIES.
FSEC	FOOD SERVICE EQUIPMENT CONTRACTOR.	UNO	UNLESS NOTED OTHERWISE.
GC	GENERAL CONTRACTOR.	UPS	UNINTERRUPTIBLE POWER SUPPLY.
MC	MECHANICAL CONTRACTOR.	WP	WEATHERPROOF.

SYMBOLS LEGEND NOTES

- REFER TO LIGHT FIXTURE SCHEDULE FOR SPECIFICATION AND INFORMATION ON ALL LUMINARIES.
- REFER TO SPECIFICATIONS AND PLAN NOTES FOR DETAILED DESCRIPTION OF ALL DEVICES SHOWN IN THIS SCHEDULE, PROVIDED BY CONTRACTOR.
- MOUNTING HEIGHTS INDICATED ARE MEASURED FROM FINISHED FLOOR TO THE CENTERLINE OF THE DEVICE UNLESS NOTED OTHERWISE.

ELECTRICAL SPECIFICATIONS

LIGHTING FIXTURES
A. PROVIDE LIGHTING FIXTURES, OF SIZES, TYPES AND RATINGS INDICATED-COMPLETE WITH ALL COMPONENTS AND ACCESSORIES. SHIP FIXTURES FACTORY ASSEMBLED, WITH THOSE COMPONENTS REQUIRED FOR A COMPLETE INSTALLATION. DESIGN FIXTURES WITH CONCEALED HINGES AND CATCHES, WITH METAL PARTS GROUNDED AS COMMON UNIT, AND SO CONSTRUCTED AS TO DAMPEN DRIVER GENERATED NOISE.
B. ALL LIGHTING SHALL BE U.L LISTED.
C. INSTALL INTERIOR LIGHTING FIXTURES AT LOCATIONS AS INDICATED, IN ACCORDANCE WITH FIXTURE MANUFACTURER'S WRITTEN INSTRUCTIONS, APPLICABLE REQUIREMENTS OF NEC, NECA'S "STANDARD OF INSTALLATION", NEMA STANDARDS, AND WITH RECOGNIZED INDUSTRY PRACTICES TO ENSURE THAT LIGHTING FIXTURES FULFILL REQUIREMENTS.
D. FASTEN LIGHTING FIXTURES SECURELY TO STRUCTURAL SUPPORTS, AND ENSURE THAT FIXTURES ARE PLUMB AND LEVEL.
E. LIGHT FIXTURES INSTALLED IN LAY-IN CEILINGS SHALL BE SUPPORTED BY ADDITIONAL WIRE SUPPORT AT TWO CORNERS. ATTACHED TO CEILING GRID, AND ANCHORED TO STRUCTURAL MEMBER. THIS ADDITIONAL WIRE SUPPORT SHALL BE THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR AND IS NOT CONSIDERED PART OF GENERAL GRID LAYOUT.
F. PROVIDE EQUIPMENT GROUNDING CONNECTIONS FOR INTERIOR LIGHTING FIXTURES AS INDICATED. TIGHTEN CONNECTION TO COMPLY WITH TIGHTENING TORQUES SPECIFIED IN UL STD 486A TO ASSURE PERMANENT AND EFFECTIVE GROUNDS.
FIRE RATED WALL PENETRATIONS
A. PROVIDE U.L. LISTED FIRESTOP SYSTEM SEALANTS AROUND ALL CONDUITS PASSING THROUGH ALL RATED WALLS OR FLOORS IN ACCORDANCE WITH THE U.L. FIRE RESISTANCE DIRECTORY.
B. THE SELECTED SYSTEM MUST BEAR AN APPROVED U.L. PENETRATION SYSTEM NUMBER AND BE INSTALLED IN ACCORDANCE WITH THE SELECTED SYSTEM TAKING INTO ACCOUNT THE CONSTRUCTION AND THE RATING OF THE RATED ASSEMBLY BEING PENETRATED AND THE TYPE OF PENETRATION BEING MADE.
C. THE ELECTRICAL CONTRACTOR SHALL REVIEW ARCHITECTURAL DRAWINGS TO CONFIRM NUMBER AND EXTENT OF ALL FIRE RATED PARTITIONS IN THE FACILITY.
D. APPROVED PRODUCTS: 1. HILTI CS240 2. TERMO CO FRESHIELD 3. 3M CP-25
RACEWAY SYSTEMS
A. THE ELECTRICAL CONTRACTOR SHALL REVIEW ARCHITECTURAL DRAWINGS TO CONFIRM NUMBER AND EXTENT OF ALL FIRE RATED PARTITIONS IN THE FACILITY.
B. CONDUIT SHALL BE SUPPORTED AT INTERVALS PER NEC REQUIREMENTS AND SHALL BE SECURELY FASTENED TO BUILDING WITH AN APPROVED FASTENING SYSTEM.
C. MINIMUM CONDUIT SIZE IS 1/2". MINIMUM CONDUIT SIZE FOR HOMERUNS IS 3/4". MINIMUM CONDUIT SIZE FOR UNDERGROUND IS 1".
D. MC CABLE MAY BE USED IN CONCEALED LOCATIONS ABOVE CEILINGS OR IN WALLS WHERE ALLOWED BY LOCAL CODES. MC CABLE SHALL NOT BE USED TO ENTER PANEL BOARDS.
WIRING, WIRING DEVICES, PLATES AND GROUNDING
A. ALL WIRING SHALL CONSIST OF COPPER CONDUCTORS WITH THERMOPLASTIC INSULATION RATED FOR SIX HUNDRED (600) VOLTS. ALL WIRING INSULATION SHALL BE HEAT AND MOISTURE RESISTANT TYPES THW, THWN, OR THHN FOR INTERNAL AND DRIVE LOCATIONS.
B. MINIMUM CONDUCTOR SIZE SHALL BE NO. 12 AWG FOR ALL POWER CIRCUITS (I.E. RECEPTACLES, LIGHTING, EQUIPMENT POWER, ETC.). NUMBER 14 AWG SHALL BE MINIMUM SIZE PERMITTED FOR EQUIPMENT CONTROL CIRCUIT WIRING.
C. ALL SPLICES AND CONNECTIONS SHALL BE MADE IN OUTLET BOXES, JUNCTION BOXES OR EQUIPMENT WHERE ACCESSIBLE.
D. CONDUCTORS SHALL BE PULLED WITHOUT THE USE OF OIL OR GREASE. WIRE PULLING LUBRICANTS WHICH ARE APPROVED FOR USE WITH CONDUCTOR INSULATION MAY BE USED. CARE SHALL BE TAKEN IN PULLING WIRE TO ASSURE THAT MAXIMUM ALLOWABLE PULLING TENSION OF WIRE IS NOT EXCEEDED. WIRING WITH DAMAGED CONDUCTORS OR INSULATION WILL NOT BE ACCEPTED.
E. ALL PLUG-IN DEVICES TO BE GROUNDED TYPE.
F. INSTALL INSULATED GREEN GROUNDING CONDUCTOR (NO.12 AWG MINIMUM) IN ALL RACEWAYS.
G. WIRING DEVICES SHALL BE INDUSTRIAL GRADE. FINISH SHALL BE PER ARCHITECT.
H. PLATES SHALL BE PROVIDED FOR ALL WIRING DEVICES, DATA OUTLETS, JUNCTION BOXES, ETC.
I. PLATES FOR FLUSH MOUNTED DEVICES SHALL BE STAINLESS STEEL. PLATES FOR SURFACE MOUNTED BOXES SHALL BE GALVANIZED STEEL. PLATE COLOR SHALL BE WHITE WHEN MOUNTED IN CEILING.

GENERAL ELECTRICAL NOTES

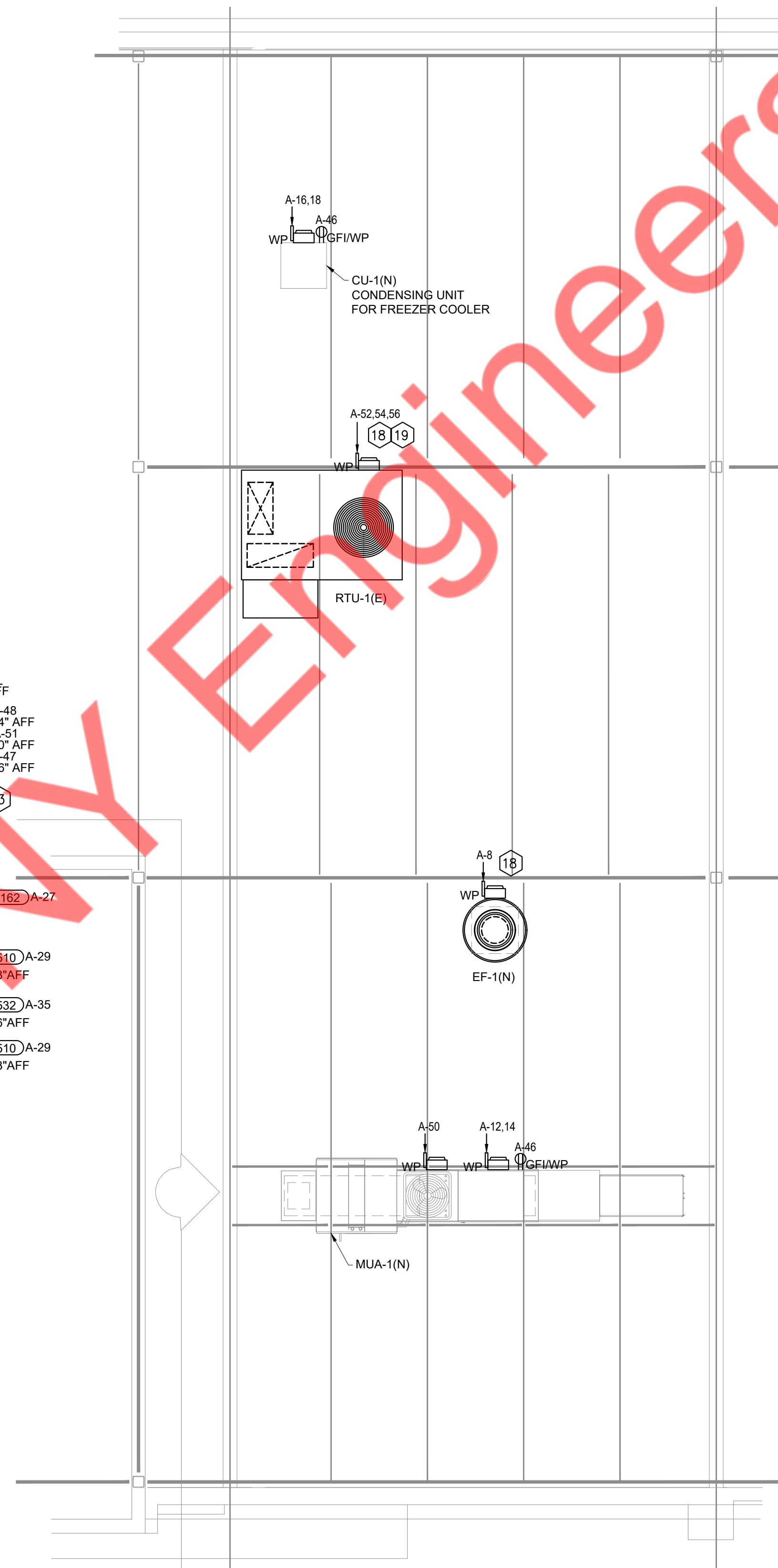
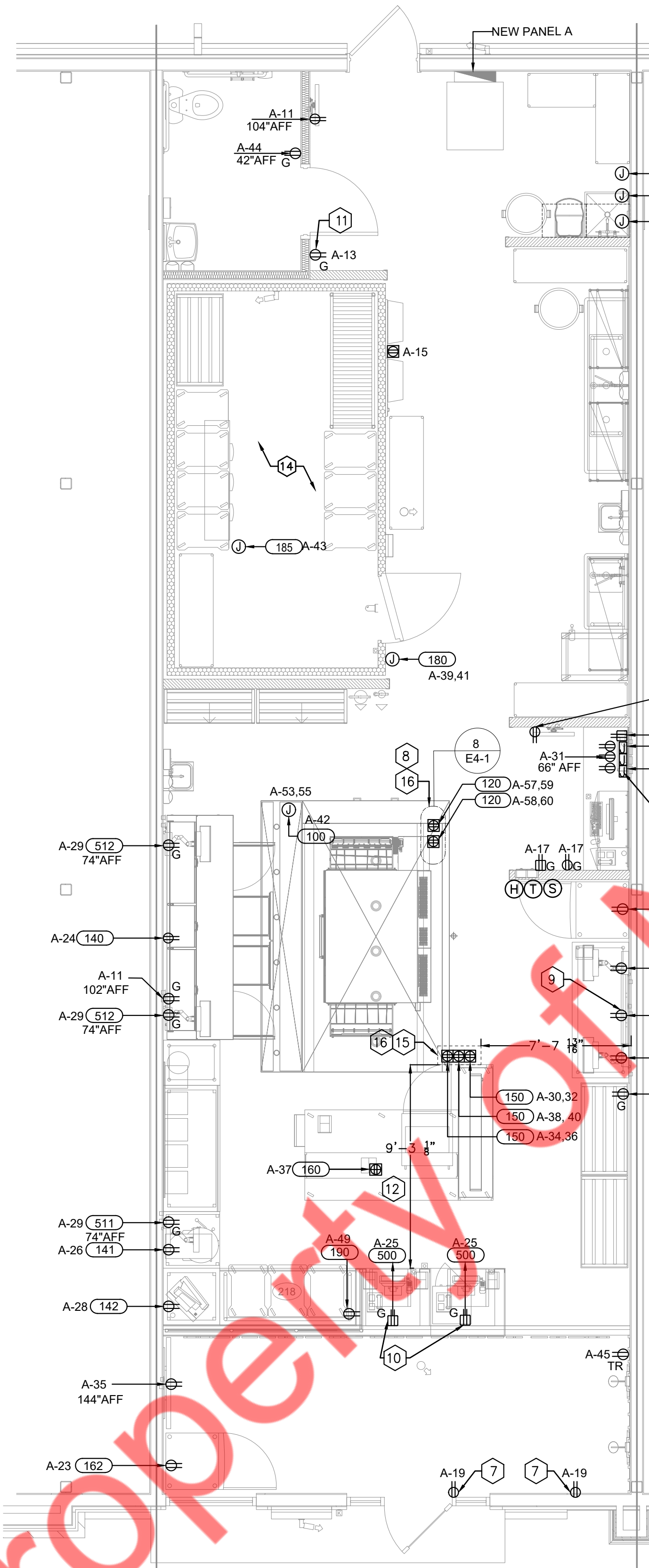
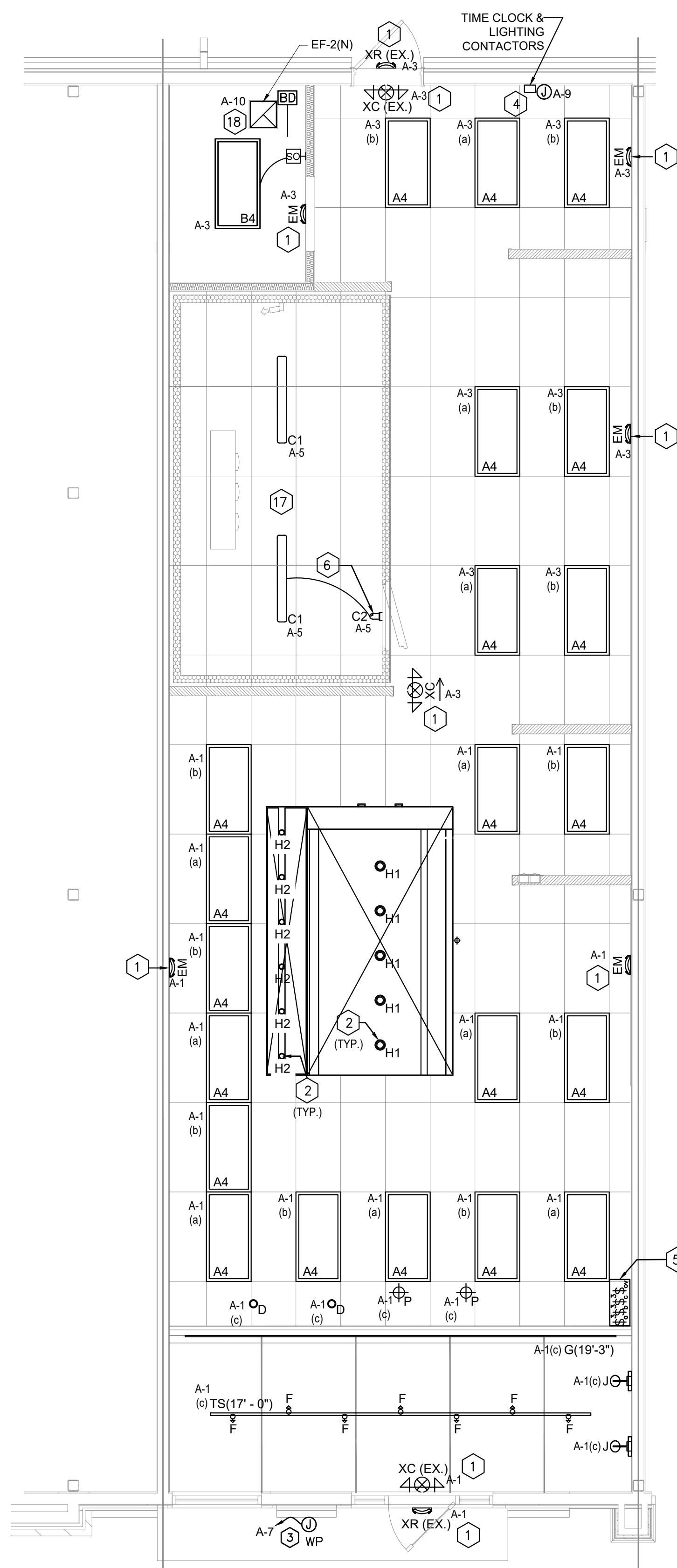
1. INCLUDE ALLOWANCE FOR UNFORSEEN CONDITIONS THAT MAY AFFECT THE SCOPE OF WORK. MINOR DEVIATIONS REQUIRED FOR ACCOMPLISHING THE INTENT OF THIS DESIGN ARE TO BE INCLUDED IN THIS ALLOWANCE.
2. COORDINATE WORK ABOVE THE CEILING WITH OTHER TRADES TO PROVIDE THE GREATEST POSSIBLE CLEARANCE. CONDUIT RUNS SHALL BE RUN THROUGH TRUSSES WHERE POSSIBLE. ANY RELOCATING OR REROUTING OF EQUIPMENT, PIPES, CONDUITS, DUCTS OR MATERIAL RESULTING FROM A LACK OF COORDINATION BETWEEN CONTRACTORS WILL BE AT THE CONTRACTOR'S EXPENSE.
3. VERIFY PLACEMENT OF ALL DEVICES SHOWN ON CONSTRUCTION DOCUMENT PRIOR TO FINAL PLACEMENT.
4. PROVIDE ALL REQUIRED DISCONNECT SWITCHES AND MOTOR STARTERS TO ALL EQUIPMENT.
5. ELECTRICAL DESIGN IS BASED ON THE INSTALLATION OF 75°C CONDUCTORS CONNECTED TO TERMINAL LUGS AND EQUIPMENT U.L. LISTED FOR A MINIMUM 75°C CONDUCTORS TERMINATED. ON EQUIPMENT WITH A LOWER RATING 60°C OR NO RATING SHOWN, CONDUCTOR SIZE SHALL BE INCREASED TO CONFORM TO ADOPTED ELECTRICAL CODE AND UL/CUL NO. 489 REQUIREMENTS.
6. CONTROL VOLTAGE WIRING SHALL BE PLENUM RATED OR INSTALL IN CONDUIT.
7. DATA WIRING SHALL BE ROUTED IN 3/4" CONDUIT BACK TO DEMARC AREA FROM DEVICE LOCATION.
8. CONDUIT SHALL BE SUPPORTED AT INTERVALS PER NEC REQUIREMENTS AND SHALL BE SECURELY FASTENED TO BUILDING WITH AN APPROVED FASTENING SYSTEM.
9. ALL BRANCH CIRCUIT WIRING SHALL BE ELECTRICAL METALLIC TUBING (EMT), MINIMUM 3/4" OR AS NOTED. USE COMPRESSION TYPE FITTINGS ON ALL EMT. SET SCREW OR CRIMP FITTINGS ARE NOT ALLOWED.
10. BRANCH CIRCUITS SHOWN WITH TWO GROUNDING CONDUCTORS SHALL HAVE ONE EQUIPMENT GROUND CONDUCTOR (GREEN) AND ONE ISOLATED GROUND CONDUCTOR (GREEN W/ YELLOW STRIP) INSTALLED IN RACEWAY.
11. CONDUCTORS SHALL BE A MINIMUM OF #12 THHN/THWN COPPER UNLESS NOTED OTHERWISE ON PLANS OR IN SPECIFICATIONS. BRANCH CIRCUITS SHALL BE PROVIDED WITH (2) #12 CONDUCTORS AND (1) #12 EQUIPMENT GROUND CONDUCTOR UNLESS NOTED OTHERWISE.
12. THERMOSTATS, TEMPERATURE SENSORS, CARBON DIOXIDE SENSORS AND HUMIDISTATS: UNLESS NOTED OTHERWISE, PROVIDE WALL BOX AT +3'-10" AFF WITH 3/4" CONDUIT STUBBED OUT TO ABOVE ACCESSIBLE CEILING WITH NYLON BUSHINGS AND PULLSTRINGS.
13. ALL EMPTY CONDUIT SHALL BE PROVIDE WITH A PULL STRING.
14. ALL RACEWAYS SHALL CONTAIN A GROUNDING ELECTRODE OR CONDUCTOR SIZED PER THE ADOPTED ELECTRICAL CODE.
15. SWITCHBOARDS, PANELBOARDS, DISCONNECT SWITCHES, TRANSFORMERS AND CONTACTORS SHALL BE "LISTED" AND "IDENTIFIED" AS RATED FOR A MINIMUM OF 75°C CONDUCTOR TERMINATION.
16. PROVIDE FLEXIBLE CONNECTIONS ONLY FOR FINAL CONNECTION TO EQUIPMENT (6'-0" MAXIMUM LENGTH). PROVIDE LIQUID TIGHT FLEXIBLE CONNECTION (6'-0" MAXIMUM LENGTH) AT EXTERIOR LOCATIONS AND WHERE EXPOSURE TO MOISTURE IS POSSIBLE.
17. ALL PANELBOARDS, SWITCHBOARDS AND LINE VOLTAGE CONTROL EQUIPMENT SHALL BE FIELD MARKED TO WARN QUALIFIED PERSONS OF POTENTIAL ELECTRIC ARC FLASH HAZARDS. MARKING SHALL BE LOCATED SO AS TO BE CLEARLY VISIBLE TO QUALIFIED PERSONS BEFORE EXAMINATION, ADJUSTING, SERVICING OR MAINTENANCE OF EQUIPMENT. MARKING SHALL BE SELF ADHESIVE, COMMERCIAL LABEL CONFORMING TO ADOPTED CODES.
18. LIGHT SWITCHES, CONVENIENCE ELECTRICAL OUTLETS, THERMOSTATS AND OTHER ENVIRONMENTAL CONTROLS SHALL BE LOCATED NO HIGHER THAN 48" AND NO LOWER THAN 15" ABOVE THE FLOOR. IF THE REACH IS OVER AN OBSTRUCTION BETWEEN 20" AND 25" IN DEPTH, THE MAXIMUM HEIGHT IS TO BE REDUCED TO 44" FOR FORWARD APPROACH OR 46" FOR SIDE APPROACH. PROVIDED THE OBSTRUCTION IS NO MORE THAN 24" IN DEPTH. OBSTRUCTIONS SHALL NOT EXTEND MORE THAN 25" FROM THE WALL BENEATH A CONTROL.
19. PROVIDE AS-BUILTS DRAWING AT JOB COMPELTION TO OWNER.
20. ALL WORK SHALL BE INSTALLED PER ALL GOVERING CODES.
21. PROVIDE STARTERS FOR ROOF MOUNTED EXHAUST FAN (EF), SUPPLY FANS (MUA) AND START-STOP SWITCH. BOTH MAU AND EF SHALL RUN AND STOP TOGETHER AND SHALL BE CONTROLLED FROM THE SAME SWITCH.
22. ALL JUNCTION BOXES INSTALLED ABOVE OR DIRECTLY BELOW SUSPENDED CEILING SHALL BE SUPPORTED IN ACCORDANCE WITH NEC.
23. PORCELAIN WIRE NUTS SHALL BE USED WITH THE HEAT LAMP. THE USE OF PLASTIC WIRE NUTS WILL VOID THE MANUFACTURER'S WARRANTY. CONTRACTOR SHALL USE 90°C WIRE FOR CONNECTION TO HEAT STRIP UNITS PER MANUFACTURER'S RECOMMENDATION.
24. MC CABLE MAY BE USED IN CONCEALED LOCATIONS ABOVE CEILINGS OR IN WALLS WHERE ALLOWED BY LOCAL CODES. MC CABLE SHALL NOT BE USED TO ENTER PANEL BAORDS.
TERMS: SHALL - ACTION THAT IS REQUIRED WITHOUT OPTION OR QUALIFICATION. FURNISH - CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING. INSTALL - CONTRACTOR SHALL BE RESPONSIBLE FOR LABOR AND CONSTRUCTION EQUIPMENT NECESSARY TO SET IN PLACE, CONNECT, CALIBRATE AND/OR TEST EQUIPMENT FURNISHED BY CONTRACTOR. PROVIDE - CONTRACTOR SHALL FURNISH AND INSTALL.

LIGHTING GENERAL NOTES

1. CONNECT EXIT SIGNS, EMERGENCY TO AN UNSWITCHED LIGHTING CIRCUIT, NOT CONTROLLED BY ANY OCCUPANCY SENSORS, SWITCHES OR CONTACTORS.
2. REFER TO "TYPICAL RECESSED FIXTURE INSTALLATION DETAIL," FOR INFORMATION ON SUPPORT OF ALL RECESSED LIGHT FIXTURES.
3. REFER TO ARCHITECTURAL REFLECTED CEILING PLAN AND DETAILS FOR THE LOCATION OF ALL LIGHTING FIXTURES AND ALL OTHER EQUIPMENT INSTALLED IN THE CEILING SYSTEM. VERIFY MOUNTING HEIGHTS AND FINISHES WITH ARCHITECT PRIOR TO ROUGH IN.
4. REFER TO THE POWER PLANS FOR LOCATIONS OF ELECTRICAL EQUIPMENT.

POWER GENERAL NOTES

1. VERIFY EXACT LOCATION IF HVAC AND PLUMBING EQUIPMENT CONDUIT STUB-UPS AND POWER CONNECTION PRIOR TO ROUGH-IN.
2. VERIFY EXACT LOCATION, MOUNTING HEIGHTS AND CONDUIT ROUTING FOR ALL THERMOSTATS, TEMPERATURE SENSORS, HUMIDSTATS AND CO2 SENSOR PRIOR TO ROUGH-IN
3. REFER TO MECHANICAL AND PLUMBING DRAWINGS FRO ADDITIONAL ELECTRICAL REQUIREMENTS. COORDINATE PROVISIONS FOR ALL CONTROLS CONDUIT AND WIRING AS REQUIRED FOR INTERLOCKING OF FANS, MOTORS, ETC. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
4. MOUNT DEVICES INSTALLED ON EQUIPMENT ON A NON-REMOVEABLE PANEL. COORDINATE LOCATION PRIOR TO COMMENCING ROUGH-IN WORK.



PLAN NOTES

1. VERIFY WITH OWNER EXACT LOCATION AND MOUNTING HEIGHT OF EMERGENCY EGRESS LIGHTING ABOVE DOOR AND PLATE GLASS.
2. ALL LIGHTING UNDER HOOD IS INTEGRAL TO HOOD.
3. JUNCTION BOX WITH TOGGLE DISCONNECT SWITCH FOR CONNECTION TO SIGN. FIELD VERIFY EXACT MOUNTING LOCATION AND CONNECTION REQUIREMENTS PRIOR TO ROUGH-IN.
4. LOCATION OF TIME CLOCK AND LIGHTING CONTACTOR. REFER TO CONTROL DIAGRAM ON DETAIL SHEET.
5. SWITCH BANK FOR CONTROL OF INTERIOR LIGHT FIXTURES. ELECTRICAL CONTRACTOR SHALL COORDINATE LOCATION WITH OWNER PRIOR TO ROUGH-IN.
6. COOLER LIGHTING CONTROL PROVIDE WITH COOLER. INSTALLED PER MANUFACTURER'S INSTRUCTION.
7. DUPLEX RECEPTACLE INSTALLED 6" ABOVE WINDOW. COORDINATE EXACT LOCATION WITH OWNER PRIOR TO ROUGH IN.
8. DROP CORDS TO PIZZA OVEN RECEPTACLE. CONNECTED TO JUNCTION BOX AT CEILING. DO NOT ROUTE THROUGH SUSPENDED CEILING TILE. ADD DROP CORDS FOR THIRD OVEN IF NECESSARY. ELECTRICAL CONTRACTOR SHALL INSTALL JUNCTION BOX BELOW SUSPENDED CEILING AND MAKE HARD WIRE CONNECTION TO TYPE SO CORD DROP TO PIZZA OVEN RECEPTACLE. PROVIDE STRAIN RELIEF FOR CONNECTION AT JUNCTION BOX. FIELD VERIFY EXACT MOUNTING LOCATION AND CONNECTION REQUIREMENTS PRIOR TO ROUGH-IN.
9. MOUNT RECEPTACLE TO THE SIDE OF THE MONITOR WHERE IT IS NOT IN VIEW OF CUSTOMER. REFER TO ARCHITECTS DRAWINGS HEIGHT.
10. MOUNT RECEPTACLE UNDER COUNTER TOP. PROVIDE (2) POWER CIRCUIT TO EACH QUAD. REFER TO ORDER STATION ELEVATION.
11. INSTALL DUPLEX RECEPTACLE 6" BELOW LAY-IN CEILING AND 15' RADIUS MINIMUM FROM GAS-FIRED OVEN FOR CONNECTION TO CARBON MONOXIDE DETECTOR. GENERAL CONTRACTOR SHALL PROVIDE DETECTOR.
12. ONE (1) TWIST-LOCK OUTLET IN CEILING WITH TWIST-LOCK STRAIN-RELIEF DROP CORD TERMINATING 12" BELOW CUT-TABLE. ELECTRICAL CONTRACTOR SHALL INSTALL JUNCTION BOX UNDER CUT-TABLE AND NEXT TO REFRIGERATION UNIT. FIELD VERIFY EXACT MOUNTING LOCATION AND CONNECTION REQUIREMENTS PRIOR TO ROUGH-IN.
13. TELECOM SYSTEM FURNISHED BY TELECOM CONTRACTOR. MOUNT AT DESIGNATED DEMARC AREA.
14. ALL CONDUITS PENETRATING COOLER WALLS SHALL BE PROVIDED WITH CONDUIT SEALS.
15. INSTALL JUNCTION BOX BELOW SUSPENDED CEILING AND MAKE HARD WIRE CONNECTION TO TYPE SO CORD DROP TO HEAT LAMP RECEPTACLE. PROVIDE STRAIN RELIEF FOR CONNECTION AT JUNCTION BOX. FIELD VERIFY EXACT MOUNTING LOCATION AND CONNECTION REQUIREMENTS PRIOR TO ROUGH-IN.
16. PORCELAIN WIRE NUTS SHALL BE USED WITH THE HEAT LAMP UNITS. THE USE OF PLASTIC WIRE NUTS WILL VOID THE MANUFACTURERS' WARRANTY. CONTRACTOR SHALL USE 90°C WIRE FOR CONNECTION TO HEAT LAMP UNITS PER MANUFACTURER'S RECOMMENDATION.
17. E.C. SHALL COORDINATE WITH THE WALK-IN COOLER MANUFACTURER TO DETERMINE IF THE LIGHTING CAN BE CONNECTED TO THE BATTERY BACK UP (MINIMUM 90 MINUTES). IF NOT, PROVIDE EMERGENCY LIGHTING INSIDE THE WALK-IN COOLER
18. E.C TO COORDINATE WITH MECHANICAL DRAWINGS FOR EXACT LOCATION AND POWER REQUIREMENT. PROVIDE ACCORDINGLY.
19. E.C. SHALL COORDINATE WITH THE LANDLORD/OWNER IF THEY WANT TO FEED RTU FROM THE LANDLORD PANEL (H) THAN ELSE PROPER CONNECTION FROM THE LANDLORD PANEL (H) ELSE REROUTE THE WIRING AND CONNECT TO THE INDICATED CIRCUIT.

GENERAL NOTES

- ALL RECEPTACLES LOCATED IN KITCHEN AREA SHALL BE GROUND-FAULT CIRCUIT INTERRUPTER PROTECTION AS REQUIRED BY NEC 210.8(8)
- MAKE ALL REQUIRED ELECTRICAL CONNECTIONS FOR WALK-IN COOLER LIGHTING, WALK-IN COOLER REFRIGERATION UNIT AND CUT TABLE HEAT LAMP UNITS.
- REFER TO SHEET E3-1 FOR EQUIPMENT FEEDER SCHEDULE.
- IF CASE OF TWO TO SIX DISCONNECT SWITCHES IF PERMITTED BY NEC 230.71, THEY SHALL BE GROUPED PER NEC 230.72. EACH DISCONNECT SHALL BE MARKED TO INDICATE THE LOAD SERVED.
- ALL EXIT AND EMERGENCY LIGHTS SHALL BE AHEAD SWITCHING AND SHALL BE ENERGIZED ALL THE TIME.

ALL RECEPTACLES LOCATED IN KITCHEN AREA SHALL BE GROUND-FAULT CIRCUIT INTERRUPTER PROTECTION AS REQUIRED BY NEC 210.8(8)

MAKE ALL REQUIRED ELECTRICAL CONNECTIONS FOR WALK-IN COOLER LIGHTING, WALK-IN COOLER REFRIGERATION UNIT AND CUT TABLE HEAT LAMP UNITS.

REFER TO SHEET E3-1 FOR EQUIPMENT FEEDER SCHEDULE

DATA SCHEDULE							
Data ID Tag	Equipment	Description	Connection Type	Requirement	Mounting Height	Supplied By	Installed By
D1	FRONT COUNTER POS SYSTEM #1	SINGLE GANG BOX, FACEPLATE W/ KEYSTONE JACKS, 1" CONDUIT FROM BOX STUBED ABOVE CEILING	CAT6 - 3 PORT	WIRE SUPPLIED AND INSTALLED BY GC, ROUTE TO PUNCHDOWN BLOCK AT IT RACK AND LEAVE LOOSE	1' - 6"	GC	GC
D2	FRONT COUNTER POS SYSTEM #2	SINGLE GANG BOX, FACEPLATE W/ KEYSTONE JACKS, 1" CONDUIT FROM BOX STUBED ABOVE CEILING	CAT6 - 3 PORT	WIRE SUPPLIED AND INSTALLED BY GC, ROUTE TO PUNCHDOWN BLOCK AT IT RACK AND LEAVE LOOSE	2' - 0"	GC	GC
D3	FUTURE FRONT COUNTER POS SYSTEM #3	SINGLE GANG BOX, FACEPLATE W/ KEYSTONE JACKS, 1" CONDUIT FROM BOX STUBED ABOVE CEILING	CAT6 - 2 PORT	WIRE SUPPLIED AND INSTALLED BY GC, ROUTE TO PUNCHDOWN BLOCK AT IT RACK AND LEAVE LOOSE	2' - 0"	GC	GC
D4	NA						
D5	MIRROR MAKE LINE	SINGLE GANG BOX, FACEPLATE W/ KEYSTONE JACK, 1" CONDUIT FROM BOX STUBED ABOVE CEILING	CAT6 - 1 PORT	WIRE SUPPLIED AND INSTALLED BY GC, ROUTE TO PUNCHDOWN BLOCK AT IT RACK AND LEAVE LOOSE	6' - 5"	GC	GC
D5A	MIRROR MAKE LINE	SINGLE GANG BOX, NO FACEPLATE (WIRE CONNECTS DIRECTLY TO EQUIPMENT), 1" CONDUIT FROM BOX STUBED ABOVE CEILING	VGA	WIRE SUPPLIED AND INSTALLED BY OWNER	6' - 5"	GC	GC
D6	MAKE LINE SECURITY MONITOR	SINGLE GANG BOX, FACEPLATE W/ HDMI JACK, 1" CONDUIT FROM BOX STUBED ABOVE CEILING	HDMI	WIRE SUPPLIED AND INSTALLED BY GC, ROUTE TO MATCHING HDMI JACK AT IT RACK	8' - 9"	GC	GC
D7	MAKE LINE	SINGLE GANG BOX, FACEPLATE W/ KEYSTONE JACK, 1" CONDUIT FROM BOX STUBED ABOVE CEILING	CAT6 - 1 PORT	WIRE SUPPLIED AND INSTALLED BY GC, ROUTE TO PUNCHDOWN BLOCK AT IT RACK AND LEAVE LOOSE	6' - 5"	GC	GC
D7A	MAKE LINE	SINGLE GANG BOX, NO FACEPLATE (WIRE CONNECTS DIRECTLY TO EQUIPMENT), 1" CONDUIT FROM BOX STUBED ABOVE CEILING	VGA	WIRE SUPPLIED AND INSTALLED BY OWNER	6' - 5"	GC	GC
D8	MAKE LINE	SINGLE GANG BOX, FACEPLATE W/ KEYSTONE JACK, 1" CONDUIT FROM BOX STUBED ABOVE CEILING	CAT6 - 1 PORT	WIRE SUPPLIED AND INSTALLED BY GC, ROUTE TO PUNCHDOWN BLOCK AT IT RACK AND LEAVE LOOSE	6' - 5"	GC	GC
D8A	MAKE LINE	SINGLE GANG BOX, NO FACEPLATE (WIRE CONNECTS DIRECTLY TO EQUIPMENT), 1" CONDUIT FROM BOX STUBED ABOVE CEILING	VGA	WIRE SUPPLIED AND INSTALLED BY OWNER	6' - 5"	GC	GC
D9	DRIVER'S STATION	SINGLE GANG BOX, FACEPLATE W/ KEYSTONE JACKS, 1" CONDUIT FROM BOX STUBED ABOVE CEILING	CAT6 - 2 PORT	WIRE SUPPLIED AND INSTALLED BY GC, ROUTE TO PUNCHDOWN BLOCK AT IT RACK AND LEAVE LOOSE	5' - 3"	GC	GC
D10	DRIVER'S STATION SECURITY MONITOR	SINGLE GANG BOX, FACEPLATE W/ KEYSTONE JACK, 1" CONDUIT FROM BOX STUBED ABOVE CEILING	CAT6 - 1 PORT	WIRE SUPPLIED AND INSTALLED BY GC, ROUTE TO PUNCHDOWN BLOCK AT IT RACK AND LEAVE LOOSE	6' - 4"	GC	GC
D11	DRIVER'S STATION	SINGLE GANG BOX, FACEPLATE W/ KEYSTONE JACKS, 1" CONDUIT FROM BOX STUBED ABOVE CEILING	CAT6 - 2 PORT	WIRE SUPPLIED AND INSTALLED BY GC, ROUTE TO PUNCHDOWN BLOCK AT IT RACK AND LEAVE LOOSE	5' - 3"	GC	GC
D12	MANAGER'S DESK	SINGLE GANG BOX, FACEPLATE W/ KEYSTONE JACKS, 1" CONDUIT FROM BOX STUBED ABOVE CEILING	CAT6 - 3 PORT	WIRE SUPPLIED AND INSTALLED BY GC, ROUTE TO PUNCHDOWN BLOCK AT IT RACK AND LEAVE LOOSE	1' - 6"	GC	GC
D13	DEMARC AREA	SINGLE GANG BOX, FACEPLATE W/ HDMI JACK, 1" CONDUIT FROM BOX STUBED ABOVE CEILING	HDMI	WIRE SUPPLIED AND INSTALLED BY GC, ROUTE TO MATCHING HDMI JACK AT IT RACK	7' - 0"	GC	GC
D14	REAR SECURITY MONITOR	SINGLE GANG BOX, FACEPLATE W/ COAX JACK, 1" CONDUIT FROM BOX STUBED ABOVE CEILING	COAX SIAMESE CABLE (BELDEN 639948 OR EQUAL)	WIRE SUPPLIED AND INSTALLED BY GC, ROUTE TO SECURITY PANEL AT IT RACK AND LEAVE LOOSE	8' - 8"	GC	GC
D15	DEMARC AREA	SINGLE GANG BOX, FACEPLATE W/ HDMI JACK, 1" CONDUIT FROM BOX STUBED ABOVE CEILING	HDMI	WIRE SUPPLIED AND INSTALLED BY GC, ROUTE TO MATCHING HDMI JACK AT IT RACK	7' - 0"	GC	GC
D16	REAR SECURITY MONITOR	SINGLE GANG BOX, FACEPLATE W/ COAX JACK, 1" CONDUIT FROM BOX STUBED ABOVE CEILING	COAX SIAMESE CABLE (BELDEN 639948 OR EQUAL)	WIRE SUPPLIED AND INSTALLED BY GC, ROUTE TO SECURITY PANEL AT IT RACK AND LEAVE LOOSE	8' - 8"	GC	GC
D17	LOBBY MONITOR	SINGLE GANG BOX, FACEPLATE W/ KEYSTONE JACK, 1" CONDUIT FROM BOX STUBED ABOVE CEILING	CAT6 - 1 PORT	WIRE SUPPLIED AND INSTALLED BY GC, ROUTE TO PUNCHDOWN BLOCK AT IT RACK AND LEAVE LOOSE	7' - 4"	GC	GC
D17A	LOBBY MONITOR	SINGLE GANG BOX, FACEPLATE W/ HDMI JACK, 1" CONDUIT FROM BOX STUBED ABOVE CEILING	HDMI	WIRE SUPPLIED AND INSTALLED BY GC, ROUTE TO MATCHING HDMI JACK AT IT RACK	7' - 4"	GC	GC
PB24	GC TO PULL WIRES AND LEAVE LOOSE, FINAL CONNECTIONS BY OWNER	LEVITON, 69586-U24, 24 PORT CAT6 PATCH PANEL, MOUNTED WITH ALLEN AT55HM-1 HINGED WALL MOUNT BRACKET (19.2"x1.75"x6"D)		PUNCHDOWN BLOCK - 24		GC	GC
D18	FRONT COUNTER POS SYSTEM #2	SINGLE GANG BOX, FACEPLATE W/ KEYSTONE JACKS, 1" CONDUIT FROM BOX STUBED ABOVE CEILING	CAT6 - 3 PORT	WIRE SUPPLIED AND INSTALLED BY GC, ROUTE TO PUNCHDOWN BLOCK AT IT RACK AND LEAVE LOOSE	2' - 0"	GC	GC

SECURITY DEVICE SCHEDULE								
SECURITY ID TAG	QTY	EQUIPMENT	REQUIREMENT	MANUFACTURER	MODEL	DESCRIPTION	SUPPLIE D BY	INSTALLED BY
BA1	1	BURGLAR ALARM PANEL	WIRES BY OWNER	TBD	TBD	BURGLAR ALARM PANEL, HOLD TIGHT TO CEILING	O	O
EN1	1	ENCODER	WIRES BY OWNER	HANWHA TECHWIN	SPE-1620	ENCODER, 15"Wx18"Hx2"D, VERTICAL MOUNTED ON JUNIPER 1URACK-119	GC	GC
SB1	4	PANIC BUTTON	WIRELESS UNDERCOUNTER BUTTON, BATTERY POWERED	TBD	TBD		O	GC
SB3	1	DOOR OPENER BUTTON - WALL MOUNTED	MOUNTED TO FACE OF KNEE WALL @ 36" A.F.F.	TBD	TBD	WALL MOUNTED BUTTON	O	GC
SC1	1	CAMERA, 360°, CEILING MOUNTED	CEILING MOUNTED. ROUTE COAX CABLE TO CONTROL PANEL AT DEMAC AREA.	HANWHA TECHWIN	HCF-8010V	WISENET HD+, ANALOG HD FISHEYE CAMERA, 5MP, 4.72"D X 2.50"H	VENDER	VENDER
SC2	3	CAMERA, DIRECTIONAL, CEILING MOUNTED	CEILING MOUNTED. ROUTE COAX CABLE TO CONTROL PANEL AT DEMAC AREA.	HANWHA TECHWIN	HCD-7010RA	WISENET HD+, ANALOG IR DOME CAMERA, 4MP, 4.33"D X 3.39"H	VENDER	VENDER
SC3	1	CAMERA, DIRECTIONAL, PENDANT MOUNT	PROVIDED W/ PENDANT MOUNT KIT, SEE ELEVATIONS FOR MOUNTING HEIGHT	HANWHA TECHWIN	HCD-7010RA	WISENET HD+, ANALOG IR DOME CAMERA, 4MP, 4.33"D X 3.39"H	VENDER	VENDER
SC4	3	CAMERA, DIRECTIONAL, WALL MOUNTED	WALL MOUNTED. ROUTE COAX CABLE TO REAR SECURITY MONITOR	HANWHA TECHWIN	HCO-7010RA	WISENET HD+, ANALOG IR BULLET CAMERA, 4MP, 7.5.2"D X 9.69"H	VENDER	VENDER
SK1	1	INTERIOR KEYPAD	Wall Mounted @ 42" a.f.f. Route Cable back to Burglar Control Panel	TBD	TBD	SECURITY KEYPAD	O	GC
SK2	2	EXTERIOR KEYPAD	Wall Mounted @ 42" a.f.f. Route Cable back to Burglar Control Panel	TBD	TBD	SECURITY KEYPAD	O	GC
SM1	1	MONITOR - REAR DOOR	WALL MOUNTED, SEE ELEVATIONS AND NOTES FOR HEIGHT	WBOX	0E-24LED2	24" MONITOR, W/ PEERLESS QP-ST630P TILT MOUNT	O	GC
SM2	1	MONITOR - MAKELINE	WALL MOUNTED, SEE ELEVATIONS AND NOTES FOR HEIGHT	TBD	TBD	32" MONITOR, W/ PEERLESS QP-ST630P TILT MOUNT	O	GC

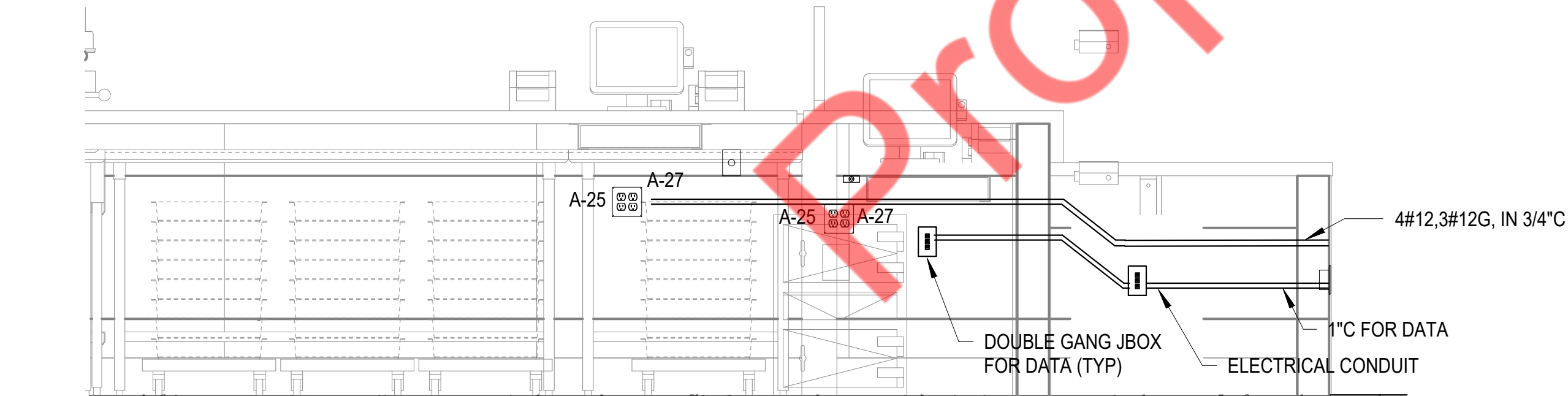
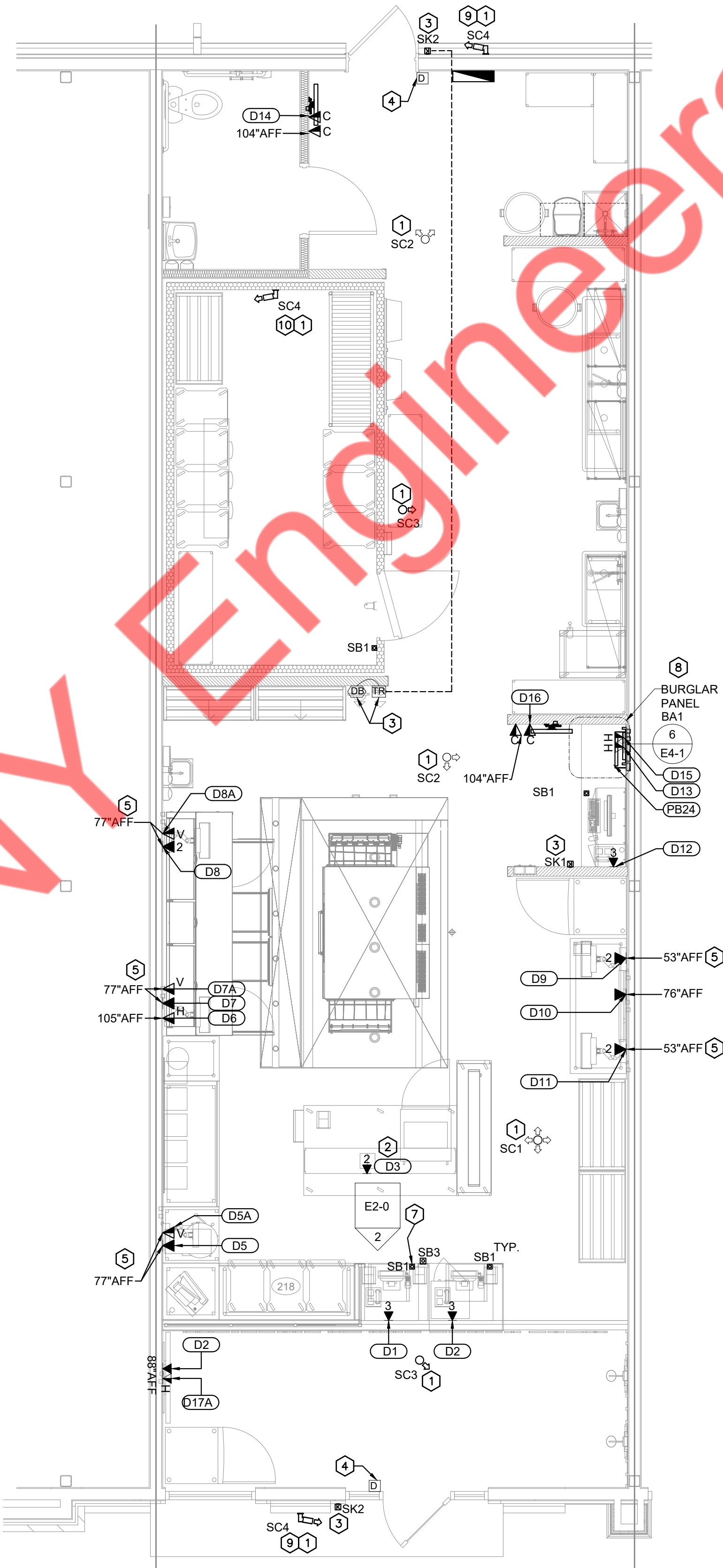
LOW VOLTAGE GENERAL NOTES

- DATA LINES SHOULD BE CATEGORY 6 AND RUN THROUGH THE WALLS AND CEILING FROM THE OFFICE AREA WHERE COMPUTER EQUIPMENT WILL BE CONNECTED. IN THE OFFICE AREA, ALL DATA LINES SHOULD BE TERMINATED TO A PUNCH-DOWN BLOCK (12 OR 24 PORT). THE OTHER END OF THE DATA LINES SHOULD BE PUNCHED DOWN TO EITHER WALL PLATES OR SURFACE MOUNT JACKS.
- ALL OF THE DATA LINES WILL BE TESTED. EACH PIECE OF EQUIPMENT IN FRONT OF STORE SHALL HAVE A DATA LINE. THIS INCLUDES ALL TERMINAL AND PRINTERS.
- WALL JACKS SHALL BE LABELED BY CONTRACTOR TO IDENTIFY THE PORT ON THE PUNCH-DOWN PANEL IN THE OFFICE.
- CAT6 DATA LINES FROM WALL JACK TO PUNCH-DOWN PANEL IN OFFICE SHALL BE PUNCH-DOWN TO THE STANDARD B CONFIGURATIONS, GIVING THEM A STRAIGHT THROUGH-CONNECTION.
- EACH DEVICE CONNECTED TO THE OFFICE COMPUTER BY MEANS OF A "HOME RUN" OF CAT6 CABLE, DATA CABLE.
- DEVICES ARE POLARITY SENSITIVE.
- WIRES MUST BE NUMBERED AND PUNCHED DOWN AND CHECK FOR CONTINUITY ON ALL 8 CONDUCTORS. DISCONTINUOUS RUNS MUST BE REPAIRED OR REPLACED. SPLICED RUNS ARE NOT ACCEPTABLE.
- LOW VOLTAGE CONTRACTOR SHALL SUPPLY CAT6 CABLE (8 CONDUCTOR), PUNCH DOWN BLOCK (12 OR 24 PORT), AND ALL MODULAR JACKS. MANUFACTURER PART (SEE BELOW) GRAYBAR 502-989-2971.
- LOW VOLTAGE CONTRACTOR TO PROVIDE CAT6 CONTINUOUSLY TO EACH DEVICE LOCATION, AS WELL AS ENDING THE CABLE WITH THE BLOCK (OFFICE) AND JACK (OUT FRONT) - TYPE 'B' CONFIGURATIONS.
- DATA CABLE "HOME RUN" ARE CONTAINED WITHIN WALL. SHALL EXIT WALL THROUGH JUNCTION BOX AT APPROXIMATELY THE SAME HEIGHT AS THE 110V DEDICATED LINE OUTLET, BUT WITHIN ONE FOOT HORIZONTALLY OF THAT OUTLET.
- MAKE TABLE PRODUCTION MONITOR SHALL BE MOUNTED AT 76" AFF OF WALL MOUNTED BRACKET. SEE DETAIL SHEET.
- CALL THE STORE SYSTEMS HELP LINE WITH ANY QUESTIONS: 1-800-755-1907
- INSTALL PLYWOOD BACKING BEHIND MONITOR SHELF.
- PLAN IS SHOWN FOR INFORMATION ONLY. COORDINATE WITH OWNER AND SECURITY VENDOR FOR EXACT REQUIREMENTS.

PLAN NOTES

- PROVIDE COAX CABLE TO ALL SECURITY CAMERA FROM CONTROL PANEL LOCATION. FOR ALL EXTERIOR SECURITY CAMERA RUN COAX CABLE BACK TO REAR MONITOR.
- DATA OUTLET SHALL BE MOUNTED FLUSH IN CEILING FOR STRIP PRINTER INSTALLED ON CENTER ISLAND STYLE CUT TABLE.
- PUSH BUTTON AND DOORBELL SYSTEM. COORDINATE ALL REQUIREMENT WITH MANUFACTURER'S INSTALLATION.
- PROVIDE J-BOX AND CONDUIT FOR ELECTRIC STRIKE. COORDINATE WITH DOOR INSTALLER.
- PROVIDE 1-1/2" CONDUIT INSIDE WALL BEHIND THESE (2) DATA OUTLETS. STUB OUT CONDUIT ADJACENT TO OUTLETS.
- PROVIDE 12" X 12" RECESSED JUNCTION WITH (2) 2" CONDUITS STUBBED OUT TO ABOVE CEILING FOR SECURITY CABLING.
- COORDINATE EXACT LOCATION WITH OWNER.
- STUB OUT 3" CONDUIT FROM CONTROL PANEL ABOVE CEILING.
- SECURITY CONTRACTOR TO MAKE EXTERIOR PENetration TO ENSURE PROPER PLACEMENT. PROVIDE CONDUIT AND WATERPROOF PENetration TO REACH PLENUM SPACE. EC SHALL PULL CABLE TO NEAREST PENetration LOCATION WITH 5 FEET SERVICE LOOP.
- PROVIDE CONDUIT AND PENetration TO WALK-IN WALL OR CEILING AND EXTEND INTO PLENUM SPACE. CONDUIT SHALL BE PLUGGED TO PREVENT CONDENSATION FROM ENTERING J-BOX THAT CAMERA CONNECTIONS WILL BE SPLICED IN

MANUFACTURER SUPPLY NUMBERS:
BLOCK 12-PORT, CAT6 - 69586-U89
BLOCK 24-PORT, CAT6 - 69586-U24
MOUNTING BRACKET - AT55HM-1
MODULAR JACKS, CAT6 - 61110-RL5 (THE "L" DENOTES THE COLOR, THIS HAPPENS TO BE BLUE)
SURFACE MOUNT BOX (BISCUIT) - AT33S-15
MOUNTING JACKS, CAT6 - ATT8EZ-XX (XX-COLOR) - THESE ARE THE JACKS THAT WOULD FIT INTO THE SURFACE MOUNT BOXES
SURFACE MOUNT BOX (REQUIRES A FACEPLATE) - AT30M-XX (XX-COLOR)
FACEPLATE - AT30-1-XX (XX-COLOR)
CAT6 CABLE, NON-PLENUM - 6NP4P24BL-X-BER-POV-NS (X-CARTON TYPE, P-PULL BOX, R-REEL)



2 TYPICAL ELEVATION AT ORDER STATION
E2-0 NOT TO SCALE

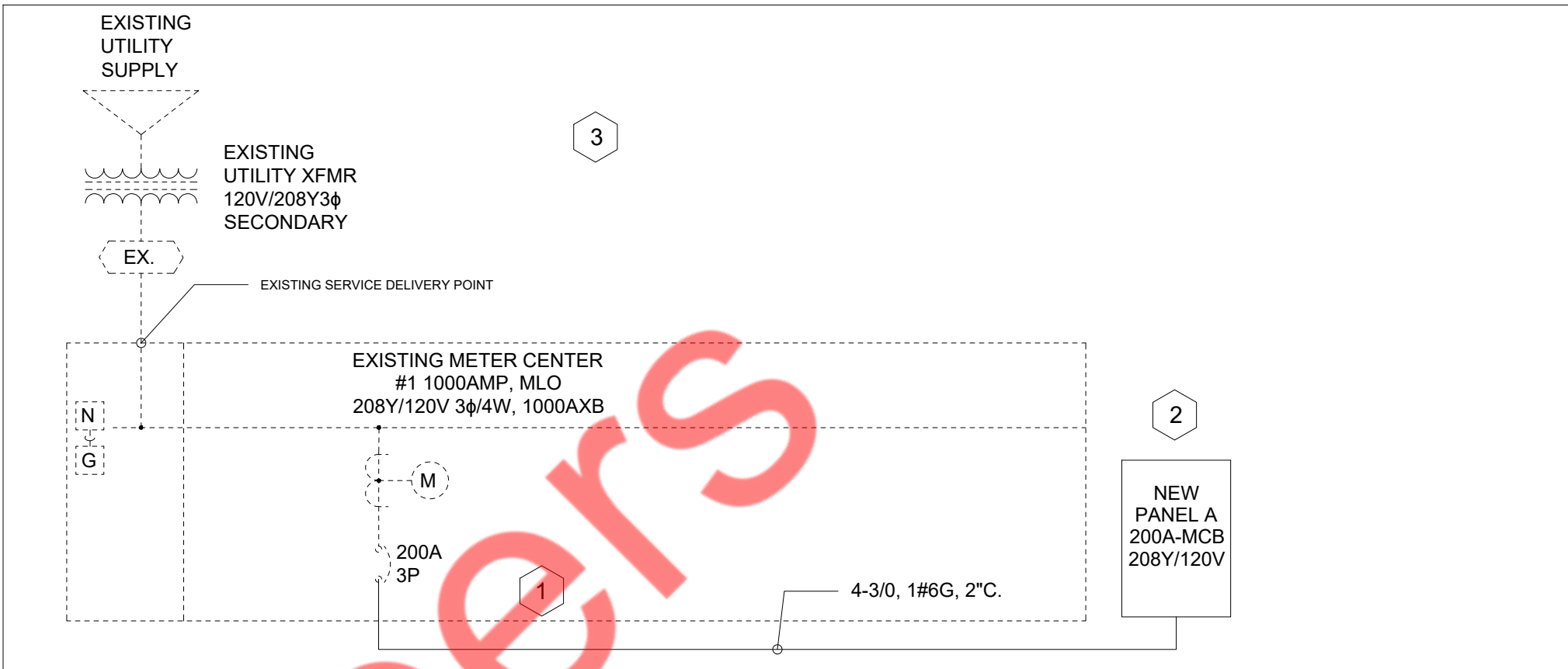
1 LOW VOLTAGE PLAN
E2-0 1/4" = 1'-0"

LIGHTING FIXTURE SCHEDULE										
TAG	QTY	REMARKS	MANUFACTURER	CATALOG NUMBER	DESCRIPTION	LAMPS	WATTAGE	VOLTAGE	SUPPLIED BY	INSTALLED BY
A4	22	Flat Panel 2x4	EnvisionLED	LED-BPL-2X4-3M50-TRI	Flat Panel LED, ACT ceiling recessed, Dimmable	Integral LED, 4000K, 82 CRI, 95° Beam Angle	38 W	120 V	EC	EC
B4	1	Flat Panel 2x4	EnvisionLED	LED-BPL-2X4-3M50-TRI / LED-PNL-2X4-SM	Flat Panel LED, Surface mounted w/ 2x4 mount frame, Dimmable	Integral LED, 4000K, 82 CRI, 95° Beam Angle	38 W	120 V	EC	EC
C1	2	Cooler Lights	Kason	1810JUV	4" Enclosed Gasketed Linear LED, 46 15/32"Lx4 59/64"Wx2 9/16"H, White painted steel, polycarbonate lens	Integral LED, 4550 Lumen, 4000K	40 W	120 V	O	GC
C2	1	Cooler Light Door	Kason	1803LED	Cooler Door light w/ bulb, globe, and nightlight	LED, 1100 Lumen, 4000K, 85 CRI, E26 Base	4 W	120 V	O	GC
D	2	4IN LED Downlight	Liteline	SLMB4-12W-CCT-WH / P-4020 / P-NCMK-1	Recessed Downlight	Integral LED, set to 4000K, 1000LM	5 W	120 V	EC	EC
EM	4	Emergency Lighting	Best	LED-R-1	2 Head, aimable, white housing, Nicad battery backup, 9.82"x4.68"x3.10"	(2) LP220L, 200 Lumen, 2.4W, linear pattern	2 W	120 V	EC	EC
G	1	Linear LED	GM Lighting	KM-(LENGTH)-40K-HO-HF-FC-SA-B-F-WH, Power Supply: PSV-96-24-U2ND-D	Kendo M LED Strip, aluminum channel w/ half frosted lens, back feed, 0.69"W x 0.49"H, Length as indicated, Non Dimming	295 lm/ft LED, 4000K, 90+ CRI, integral	16 W	120 V	O	EC
F	7	Track Head	Juno	R605L-40K-80CRI-PDIM-WFL-WH	Trac-Lites LED Cylinder, phase dimable, 2 1/2"dia 6 5/8"H, wide flood, white finish	935 lumens LED, 35° optic, 80 CRI, 4000K, Integral	120 V	6 W	TBD	EC
H1	5	Hood Lights	Captive Aire	L55	L55 Series E26 Canopy light fixture, high temp assembly, clear thermal and shock resistant globe, Provided w/ hood	LED	4 W	120 V	O	GC
H2	6	Hood Lights	Captive Aire	Captive Aire	LED puck light mounted to air plenum, Provided w/ hood	LED	4 W	120 V	O	GC
J	2	Wall Sconce	Hi-Lite Mfg. Co	H-18106-91/M-13-BM-1-91	Decorative sconce, black finish, mounted to custom millwork pizza peel fixture.	Satco S8593; LED, 400 Lumen, 4000K, 90+ CRI, A19 Shape, E26 Base	100 W	120 V	O	EC
P	2	Pendant	Hi-Lite Mfg. Co	Globe Pendant - Bronze w/black canopy & drop	Suspended decorative pendant	LED	10 W	120 V	O	EC
TS	1	Track	Contech	LT-8-B	8ft Track, Black	NA	0 W	120 V	EC	EC
WP	EX.	Building Lighting	EnvisionLED	LED-WPS-60W-50K-BZ-PC	Wall pack, wet location listed, photo cell, dark bronze housing and polycarbonate cover, 16 1/8"x15 1/2"x7 3/4"	Integral LED, 5000K, 5174 Lumens	48 W	120 V	EC	EC
XC	3	Exit Sign / Emergency Lighting	Best	LEDCXTEU2GWRC	LED Exit EM Combo - Remote Capable- White with green letters	LED	4 W	120 V	EC	EC
XR	2	Emergency Lighting Exterior	Best	RHLED2-WP-MV-B	Wet Rated LED Remote Heads	LED	3 W	120 V	EC	EC

GENERAL PANEL SCHEDULE NOTES

A. PROVIDE LISTED HANDLE TIES FOR ALL BREAKERS SERVING MULTIWIRE BRANCH CIRCUITS, I.E. SEPERATE BRANCH CIRCUITS THAT SHARE THE NEUTRAL CONDUCTOR IN ACCORDANCE WITH NEC 210.4

PANEL: A		NEW				LOCATION: FIRST FLOOR				NEMA ENCLOSURE		TYPE 1				
SYSTEM		208/120V-3P				BUS: 225 A				CABINET MOUNTING		SURFACE				
MCB		200 A				MAINS: NA				FED FROM		200A DISCONNECT				
NOTE: L: LIGHTING, R: RECEPTACLE, H: HVAC, M: MOTOR, E: EQUIPMENTS, O: OTHER																
CKT NO.	BKR SIZE/POLE	LOAD DESCRIPTION	LOAD TYPE	LOAD (KVA)	NOTE	PER PHASE (KVA)			NOTE	LOAD (KVA)	LOAD TYPE	LOAD DESCRIPTION	BKR SIZE/POLE	CKT NO.		
						A	B	C								
1	20A/1P	FOH LIGHTING	L	0.80	C2	1.00				0.20	O	WH-1	20A/1P	2		
3	20A/1P	BOH LIGHTING	L	0.80	C2		0.90		C2	0.10	M	RCP-1	20A/1P	4		
5	20A/1P	WALK-IN COOLER LIGHTS	L	0.10				0.10				SPARE	20A/1P	6		
7	20A/1P	EXTERIOR SIGNAGE	L	1.20	C1	1.40				0.20	M	EF-1(N)	20A/1P	8		
9	20A/1P	TIME CLOCK	L	0.20			0.40			0.20	M	EF-2(N)	20A/1P	10		
11	20A/1P	SECURITY MONITOR	R	0.72	LO			1.97		1.25	E	MUA-1(N)	30A/2P	12		
13	20A/1P	CARBON MONOXIDE DETECTOR	R	0.18	LO	1.43				1.25	E			14		
15	20A/1P	CAR TOPPER	R	0.18			1.64			1.46	H			16		
17	20A/1P	MANAGERS DESK	R	0.36				1.82		1.46	H	WALK-IN-CU-1	20A/2P	18		
19	20A/1P	RCPT-WINDOW	R	1.20	C1	1.20						SPARE	20A/1P	20		
21	20A/1P	FUTURE SINGLE DOOR COOLER	R	0.80	C1		0.80					SPARE	20A/1P	22		
23	20A/1P	162-REFRIGERATED MERC.	E	0.70	G			1.55		0.85	E	140-PIZZA PREP. TABLE	20A/1P	24		
25	20A/1P	500/501/502-FRONT POS/PRINTER	R	1.00	G	1.60			G	0.60	E	141-PIZZA DOUGH SPINNER	20A/1P	26		
27	20A/1P	162-REFRIGERATED MERC.	E	0.70	G			1.30		0.60	E	142-DOUGH SHEETER	20A/1P	28		
29	20A/1P	510/511/512-POS EQUIPMENT	R	1.00	G			1.81	G, LF	0.81	E	150-60" HEAT LAMP	20A/2P	30		
31	20A/1P	511/512-POS EQUIPMENT	R	1.00	G	1.81				0.81	E			32		
33	20A/1P	520/525-POS-PC-TELEPHONE	R	0.72	G		1.53		G, LF	0.81	E	150-60" HEAT LAMP	20A/2P	34		
35	20A/1P	532-DIGITAL DISPLAY 49" CCTV/SECURITY	R	0.50				1.31		0.81	E			36		
37	20A/1P	160-U/C REFRIGERATOR	E	1.05	G	1.86			G, LF	0.81	E	150-60" HEAT LAMP	20A/2P	38		
39	20A/2P	180-COOLER CONDENSING UNIT	H	1.41				2.22		0.81	E			40		
41			H	1.41				1.89		0.81	L	100- HOOD CTRLS/LTG	20A/1P	42		
43	20A/1P	185-WALK-IN EAVAPORATOR	E	0.28	G	1.68			G	1.40	R	GENERAL / RESTROOM RCPT	20A/1P	44		
45	20A/1P	RCPT-CONVENIENCE	R	1.40	G			1.94		0.54	R	HVAC EQUIP. SERVICE RCPT	20A/1P	46		
47	20A/1P	IT RACK RECEPTACLES	R	0.36	G			0.54	G, LF	0.18	R	RCPT - DEMARC	20A/1P	48		
49	20A/1P	190-HEATED CABINET	E	0.25	G	1.75				1.50	H	MAU-1	25A/1P	50		
51	20A/1P	RCPT - OFFICE TELEPHONE	R	0.18	G		8.18		G, LF	8.00	H			52		
53	20A/2P	100 - HOOD	E	0.57				8.57		8.00	H	RTU-1 (E)	80/3P	54		
55			E	0.57	G		8.57			G, LF	8.00	H			56	
57	20A/2P	120 - PIZZA OVEN	E	1.56			3.12		G, LF	1.56	E			58		
59			E	1.56				3.12			1.56	E	120 - PIZZA OVEN	20A/2P	60	
TOTAL CONNECTED LOAD (KVA)						22.29	22.02	22.68								
LOAD CLASSIFICATION			CONNECTED LOAD (KVA)			MAND FACT			MAND LOAD (KVA)			PANEL TOTAL LOAD				
TOTAL LIGHTING			L	3.58	125%	4.48										
TOTAL RECEPTACLE			R	11.72	100%	11.72	TOTAL CONNECTED LOAD								66.99	KVA
TOTAL HVAC			H	31.25	100%	31.25	TOTAL DEMAND LOAD								60.98	KVA
TOTAL MOTOR			M	0.50	100%	0.50	TOTAL CONNECTED CURRENT								161.34	AMP
TOTAL KITCHEN/EQUIPMENTS			E	19.74	65%	12.83	TOTAL DEMAND CURRENT								146.86	AMP
TOTAL OTHER			O	0.20	100%	0.20										
PANEL SCHEDULE NOTES																
C#	ROUTE THRU CONTACTOR INDICATED. REFER TO LIGHTING CONTROL DIAGRAM.															
G	GROUND FAULT INTERRUPTING BREAKER															
LF	PROVIDE PAD LOCK ATTACHMENT FOR MAINTENANCE LOCK OUT FOR CIRCUIT BREAKER.															
LO	PROVIDE LOCK ON DEVICE FOR CIRCUIT BREAKER.															
SUB	SUB-FEED CIRCUIT BREAKER.															
HC	ROUTE CIRCUIT BREAKER HOMERUN VIA HOOD CONTACTOR.															



1 RISER DIAGRAM

1 RISER DIAGRAM KEYED NOTES:

- PER SHELL, SET EXISTING 200A, 208/120V, 3PH, ELECTRICAL METER, BREAKER AND SERVICE FEEDER FROM EXISTING METER CENTER. E.C. TO COORDINATE WITH OWNER/LANDLORD FOR MORE INFORMATION.
- NEW ELECTRICAL PANEL FOR PROJECT SPACE. E.C. TO COORDINATE WITH OWNER/ARCHITECT FOR EXACT LOCATION.
- E.C. TO VERIFY OPERABLE CONDITIONS, RATINGS AND EXACT LOCATIONS OF THE EXISTING ITEMS IN THE RISER. REPLACE IF FOUND INOPERABLE. VERIFY SCOPE OF WORK WITH OWNER/LANDLORD. BASE BID ACCORDINGLY.

GENERAL PANEL NOTES

- AIC RATING FOR PANEL AND ALL BRANCH CIRCUIT BREAKERS: CONTRACTOR SHALL OBTAIN THE AVAILABLE FAULT CURRENT AT THE SERVICE POINT FROM THE LOCAL UTILITY. UPGRADE THE AIC RATING OF THE PANEL AS NECESSARY.
- ELECTRICAL SERVICE AND SYSTEM DETAILED IS DESIGNED BASED ON 120/208 VOLT THREE PHASE SERVICE. ELECTRICAL CONTRACTOR TO VERIFY AVAILABLE SERVICE PRIOT TO START OF CONSTRUCTION. COORDINATE ANY REQUIRED CHANGES WITH OWNER.
- BALANCE PANELS WITHIN 10% PHASE TO PHASE.
- EXISTING LOCATION OF ALL INCOMING SERVICES TO BE VERIFIED IN FIELD AND TO NOTIFY ARCHITECT OF ANY CONFLICTS PRIOR TO START OF CONSTRUCTION.
- E.C TO FIELD VERIFY EXACT POWER DISTRIBUTION. VERIFY SCOPE OF WORK WITH OWNER/LANDLORD. PRIOR TO BID.

PANEL NOTES:

- | | | | |
|----|--|-----|---|
| E | - EXISTING CIRCUIT TO REMAIN | LO | - PROVIDE LOCK-ON DEVICE FOR CIRCUIT BREAKER |
| N | - NEW BREAKER INSTALLED IN EXISTING PANEL | SUB | - SUB-FEED CIRCUIT BREAKER |
| R | - REUSE EXISTING BREAKER IN EXISTING PANEL WITH NEW LOAD | HC | - ROUTE CIRCUIT HOMERUN VIA HOOD CONTACTOR |
| C# | - ROUTE CIRCUIT HOMERUN VIA LIGHTING CONTACTOR INDICATED | LF | - PROVIDE PAD-LOCK ATTACHMENT FOR MAINTENANCE LOCK-OUT OF CIRCUIT BREAKER |
| | | G | - GFI CIRCUIT BREAKER |

KITCHEN EQUIPMENT POWER SCHEDULE

- REMARK:-
- PROVIDE SO CORD DROP WITH STRAIN RELIEF. REFER TO ELECTRICAL POWER PLAN.
 - FURNISHED WITH CONTROL BOX. CONNECT ALL COMPONENTS.
 - PROVIDE WP DISCONNECT SWITCH. VERIFY RATING WITH ACTUAL EQUIPMENT.

TAG	EQUIPMENT DESCRIPTION	VOLT	PHASE	LOAD (VA)	WIRE - CONDUIT SIZE	CONNECTION	PANEL	CIRCUIT NO.	REMARK
100	HOOD	208	1	624	(2)#12 & (1)#12G, IN 3/4\"C	JUNCTION BOX	A	53,55	-
120	PIZZA OVEN	208	1	3120	(2)#12 & (1)#12G, IN 3/4\"C	NEMA L6-20	A	57,59	1
120	PIZZA OVEN	208	1	3120	(2)#12 & (1)#12G, IN 3/4\"C	NEMA L6-20	A	58,60	1
140	PIZZA PREP TABLE	120	1	852	(2)#12 & (1)#12G, IN 3/4\"C	NEMA 5-20	A	24	-
141	PIZZA DOUGH SPINNER	120	1	600	(2)#12 & (1)#12G, IN 3/4\"C	NEMA 5-20	A	26	-
142	PIZZA DOUGH SHEETER	120	1	600	(2)#12 & (1)#12G, IN 3/4\"C	NEMA 5-20	A	28	-
150	HEAT LAMP - 60"	208	1	1610	(2)#12 & (1)#12G, IN 3/4\"C	JUNCTION BOX	A	30,32	1,2
150	HEAT LAMP - 60"	208	1	1610	(2)#12 & (1)#12G, IN 3/4\"C	JUNCTION BOX	A	34,36	1,2
150	HEAT LAMP - 60"	208	1	1610	(2)#12 & (1)#12G, IN 3/4\"C	JUNCTION BOX	A	38,40	1,2
162	REFRIGERATED MECHANDISER	120	1	360	(2)#12 & (1)#12G, IN 3/4\"C	NEMA 5-20	A	27	1
180	WALK-IN COOLER	208	1	2828	(2)#12 & (1)#12G, IN 3/4\"C	JUNCTION BOX	A	39,41	-
185	WALK-IN COOLER EVAPORATOR COIL	120	1	288	(2)#12 & (1)#12G, IN 3/4\"C	JUNCTION BOX	A	43	-
190	HEATED CABINET	120	1	1600	(2)#12 & (1)#12G, IN 3/4\"C	NEMA 5-20	A	49	-
500	POS TERMINAL	120	1	360	(2)#12 & (1)#12G, IN 3/4\"C	NEMA 5-20	A	25	-
500	POS TERMINAL	120	1	360	(2)#12 & (1)#12G, IN 3/4\"C	NEMA 5-20	A	25	-
500	POS TERMINAL	120	1	360	(2)#12 & (1)#12G, IN 3/4\"C	NEMA 5-20	A	25	-
510	POS TERMINAL	120	1	360	(2)#12 & (1)#12G, IN 3/4\"C	NEMA 5-20	A	29	-
510	POS TERMINAL	120	1	360	(2)#12 & (1)#12G, IN 3/4\"C	NEMA 5-20	A	29	-
511	POS PRINTER	120	1	180	(2)#12 & (1)#12G, IN 3/4\"C	NEMA 5-20	A	31	-
512	POS PRINTER	120	1	180	(2)#12 & (1)#12G, IN 3/4\"C	NEMA 5-20	A	31	-
512	POS PRINTER	120	1	180	(2)#12 & (1)#12G, IN 3/4\"C	NEMA 5-20	A	31	-
532	DRIVOCITY MONITOR	120	1	360	(2)#12 & (1)#12G, IN 3/4\"C	NEMA 5-20	A	35	-
NOTE: -									
CONTACTOR TO COORDINATE WITH MANUFACTURER FOR EXACT POWER REQUIREMENTS OF THE EQUIPMENT AND PROVIDE ACCORDINGLY.									

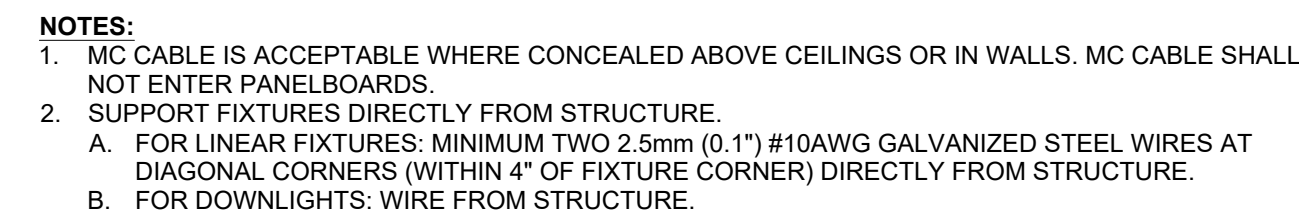
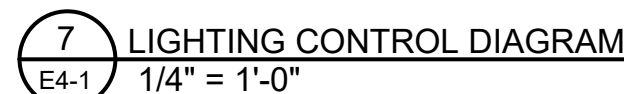
MECHANICAL EQUIPMENT SCHEDULE

- REMARK:-
- ADJACENT TO WH-1. DO NOT INSTALL BELOW WH-1.
 - FAN SHALL BE POWERED AND CONTROLLED WITH LIGHTS.
 - SEE HOOD DETAILS.

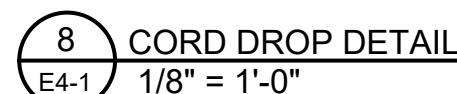
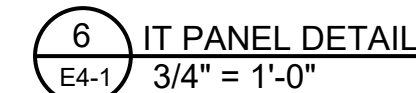
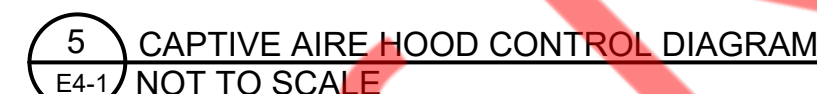
TAG	VOLTAGE	PHASE	LOAD			CONDUCTOR & CONDUIT	DISCONNECT	CIRCUIT		REMARK
			KW	HP	FLA			PANEL	NO.	
RTU-1 (E)	208	3	8	-	-	3#4, 1#8G, IN 1" C	INTERGRAL	A	52,54,56	-
MUA-1 (N)	120	1	1.5	-	-	2#10, 1#10G, IN 3/4" C	INTERGRAL	A	50	-
MUA-1 (N)	208	1	2	-	-	2#10, 1#10G, IN 3/4" C	INTERGRAL	A	12,14	-
EF-1 (N)	120	1	0.2	-	-	2#12, 1#12G, IN 3/4" C	INTERGRAL	A	8	3
EF-2 (N)	120	1	0.2	-	-	2#12, 1#12G, IN 3/4" C	INTERGRAL	A	10	2
CU-1	208	1	1.5	-	-	2#12, 1#12G, IN 3/4" C	INTERGRAL	A	16,18	-
WH-1	120	1	0.2	-	-	2#12, 1#12G, IN 3/4" C	HARDWIRE	A	2	-
RCP-1	120	1	0.1	-	-	2#12, 1#12G, IN 3/4" C	HARDWIRE	A	4	1

1. ALL GROUNDING SHALL BE INSTALLED IN ACCORDANCE WITH ARTICLE 250 OF THE NATIONAL ELECTRICAL CODE.

- MAIN SERVICE GROUNDING WITHIN PANEL OR DISCONNECT



2 TYPICAL RECESSED FIXTURE INSTALLATION DETAIL
E4-1 NOT TO SCALE



PLUMBING FIXTURE SCHEDULE												
ID	QTY	DESCRIPTION	MANUFACTURER	MODEL NO.	CONNECTION SIZES				DESCRIPTION	TRIM AND REMARKS	SUPPLIED BY	INSTALLED BY
					CW	HW	WASTE	VENT				
FD-1	2	FLOOR DRAIN, 3"84" PIPE	ZURN	Z415N-3NL			3",4"	1 1/2"	BODY ASSEMBLY WITH TYPE N STRAINER, DURA-COATED CAST IRON WITH BOTTOM OUTLET	PROVIDE WITH PROVENT SYSTEMS TRAP GUARD OR APPROVED EQUIVALENT	PC	PC
FFCO	6	FLOOR CLEANOUT	ZURN	Z1400-B					DURA-COATED CAST IRON BODY WITH BOTTOM OUTLET, PRE-PACKAGED SHIMS FOR TILT CORRECTION, AND "TYPE B" LIGHT DUTY COVER.	REFER TO PLANS FOR OUTLET SIZE.	PC	PC
FS-1	2	FLOOR SINK, 3" PIPE	PROFLO	PF42857, PF42895			3"	1 1/2"	PVC, 12"x12"x5 3/4"DEEP, WITH 9"x9" HALF GRATE		PC	PC
GT-1	1	GREASE INTERCEPTOR	SCHIER	GB-250			4"	2"	100 GPM, 1048 LBS. LIQUID CAPACITY, 1895 LBS GREASE CAPACITY	VENTED, NOT REQUIRE FLOW CONTROL DEVICE	PC	PC
HS-1	2	HAND SINK	UNIVERSAL STAINLESS BY SPG	UNSEHS-1RL	1/2"	1/2"	2"	1 1/2"	7" BACKSPLASH AND WALL BRACKETS, RIGHT AND LEFT SPLASH GUARDS, 12"x10"x6" BASIN, SS FINISH	T&S B-1115 FAUCET W/ 059X-A22 6" SWING NOZZLE W/ 2.2 GPM AERATOR, SPLASH MOUNTED	KEC	PC
KS-1	1	SINK, 3 COMPARTMENT	JOHN BOOS	3B184-2D18	1/2"	1/2"	0"	0"	93.25"x23.5"x44"H, 18"x18"x14"DEEP BASINS, (2) 18"L DRAINBOARDS, 10"x2" BACKSPLASH, 2" INDIRECT DRAIN	T&S BRASS B-0133-ADF12-B PRE-RINSE FAUCET, 8" CENTERS, 12" SWING NOZZLE, 1.07 GPM JETSPRAY VALVE, POLISHED CHROME	KEC	PC
KS-2	1	SINK, 1 COMP, LEFT DRAINBOARD	JOHN BOOS	1B184-1D18L	1/2"	1/2"	0"	0"	1 COMPARTMENT SINK, 40"Wx23.5"Dx44"H, 18"x18"x14"D BASIN, 18"L LEFT DRAINBOARD, 10"BACKSPLASH, 1 SET FAUCET HOLES 8" CENTERS, 18/300 STAINLESS STEEL, 2" INDIRECT DRAIN	T&S BRASS B-0133-ADF12-B PRE-RINSE FAUCET, 8" CENTERS, 12" SWING NOZZLE, 1.07 GPM JETSPRAY VALVE, POLISHED CHROME	KEC	PC
LAV-1	1	LAVATORY - WALL HUNG	AMERICAN STANDARD	0355.912.020	1/2"	1/2"	2"	1 1/2"	LUCERNE, ADA COMPLIANT, FAUCET HOLES 4" CENTERS, VITREOUS CHINA WHITE	FAUCET: AMERICAN STANDARD 7385.004.002, RELIANT SINGLE CONTROL, 4" CENTERSET, INDEXED METAL LEVER HANDLE, 1.2GPM, LESS DRAIN AND POP-UP	PC	PC
MS-1	1	MOP SINK	STERN WILLIAMS MTB	MTB-2424	1/2"	1/2"	3"	1 1/2"	PORTLAND CEMENT BASIN, PEARL GREY AND WHITE FINISH, 24"x24"x10", W/ SS DOMED STRAINER	(1) FAUCET T&S B-0660-BSTR, 8" CENTERS WALL MOUNT W/ BRACE, ROUGH CHROME FINISH, PLAIN END OUTLET, PROVIDE A-20 ALUMINUM BUMPER GUARDS AT EXPOSED EDGES	PC	PC
MV-1	3	MIXING VALVE	SYMMONS	7-225-CK	1/2"	1/2"			1/2" INLETS AND OUTLET, THERMOSTATIC CONTROLLER WITH INTEGRAL CHECKS, ALL BRASS BODY WITH STAINLESS STEEL STRAINER, VANDAL-RESISTANT TEMPERATURE ADJUSTMENT HANDLE.	SET TO 105°F. MOUNT IN ACCESSIBLE LOCATION.	PC	PC
WC-1	1	WATER CLOSET - FLOOR MOUNTED	ZURN	Z5555-K	3/4"		4"	2"	TWO PIECE, ADA COMPLIANT 16 23/32" RIM, ELONGATED BOWEL, 1.28 GPF, SIPHON JET FLUSH, 12" STANDARD ROUGH-IN	CHURCH 9500CT-000 ELONGATED OPEN FRONT SEAT	PC	PC
RPZ	1	REDUCED PRESSURE ZONE ASSEMBLY(BFP) (PROVIDE IF NEW SERVICE PROPOSED	WATTS	LF009	1"				LEAD FREE CAST COPPER SILICON ALLOY BODY, QT WITH AIR GAP AND ELBOW	-	PC	PC
HD-1	1	HUB DRAIN, 3" PIPE	ZURN	Z415E-3NL	3"				BODY ASSEMBLY WITH TYPE E STRAINER AND FUNNEL, DURA COATED CAST IRON WITH BOTTOM OUTLET	PROVIDE WITH PROVENT SYSTEMS TRAP GUARD OR APPROVED EQUIVALENT	PC	PC

WATER HEATER SCHEDULE												
ID	DESCRIPTION	QUANTITY	MANUFACTURER	MODEL NO.	VOLT	PH	HEATING CAPACITY	FLOW RATE	DESCRIPTION	TRIM AND REMARKS	SUPPLIED BY	INSTALLED BY
WH-1	WATER HEATER	2	NAVLEN	NPE-240S	120 V	1	199900 Btu/h	4.4 GPM @90°F	CONDENSING TANKLESS GAS WATER HEATER, 17 5/16"WX31"HX13 19/32"D, CLEARANCES: 3" SIDES, 9" TOP, 12" BOTTOM	4.4GAL EXPANSION TANK AMTROL ST-12 OR EQUAL, GXXX001325 CONDENSATE NEUTRALIZER TANK, COMMON VENT KIT, PRESSURE RELIEF SAFETY VALVE	PC	PC
NOTES: WATER HEATER SIZED FOR 4.4 GPM @ 90°F RISE. APPROVED ALTERNATE: RINNAI CU199IN												

PUMP SCHEDULE									
ID	DESCRIPTION	MANUFACTURER	MODEL NO.	VOLT	PH	TRIM AND REMARKS		SUPPLIED BY	INSTALLED BY
RP-1	RECIRCULATION PUMP	GRUNDFOS	ALPHA2	120 V	1	2 GPM @ 3.0 FT. HD. INSTALL NEAR WATER HEATER PER MANUFACTURER'S RECOMMENDATIONS. PROVIDE AQUASTAT WITH TIMER KIT		PC	PC

GREASE INTERCEPTORS SIZING									
FIXTURE	QUANTITY	DIMENSIONS			VOLUME		PERCENTAGE USAGE(%)	ACTUAL USAGE (GALLONS)	FLOW RATE(GPM)
		LENGTH(IN)	WIDTH(IN)	DEPTH(IN)	CUBIC INCHES	GALLONS			1 MIN.
3 COMP SINK - KS-1	1	18	18	14	13608	58.9	0.75	44.18	44.18
1 COMP SINK - KS-2	1	18	18	14	4536	19.6	0.75	14.7	14.7
MOP SINK - MS-1	1	24	24	10	5760	24.9	0.75	18.67	18.67
HAND SINK - HS-1	2	12	10	6	1440	6.23	0.75	4.67	4.67
FLOOR DRAIN-FD-1	1	-	-	-	-	-	-	-	1.0
TOTAL:								83.22	
PROPOSED GREASE INTERCEPTOR, SCHIER GB-250									

GREASE INTERCEPTOR SCHEDULE					
ITEM	SERVICE	LOCATION	FLOW CAPACITY (GPM)	GREASE CAPACITY (LBS)	MANUFACTURER AND MODEL
GREASE INTERCEPTOR GI-1	KITCHEN WASTE	UNDERGROUND	100	1895	SCHIER GB-250
NOTE- CONTRACTOR TO PROVIDE ALL REQUIRED ACCESSORIES FOR SATISFACTORY WORKING OF GREASE INTERCEPTOR AS PER SITE CONDITIONS.					

PLUMBING LEGEND	
SYMBOL	DESCRIPTION
	SANITARY SEWER (UNDERFLOOR)
	EXISTING SANITARY SEWER (UNDERFLOOR)
	VENT PIPING
	COLD WATER
	HOT WATER
	RECIRCULATING HOT WATER
	EXISTING COLD WATER
	CONDENSATE DRAIN
	CHECK VALVE
	BALANCING VALVE
	FLOOR DRAIN
	PIPE UP OR DOWN
	PIPE UP
	UNION
	ISOLATION VALVE
	CAP ON END OF PIPE
	CLEANOUT
	REDUCED PRESSURE BACKFLOW PREVENTER
	POINT OFF CONNECTION
	NEW GAS PIPING
	GAS SHUT OFF VALVE
	GAS PRESSURE REGULATOR VALVE

PLUMBING ABBREVIATIONS	
ABBREVIATIONS	DESCRIPTION
CW	COLD WATER
HW	HOT WATER
HW R	HOT WATER RETURN
SAN	SANITARY
V	VENT
AFF/AFG	ABOVE FINISHED FLOOR/GRADE
AHJ	AUTHORITY HAVING JURISDICTION
BFP	BACKFLOW PREVENTER
CO	CLEANOUT
ETR	EXISTING TO REMAIN
FFCO/FGCO	FLUSH FLOOR/GRADE CLEANOUT
EX.FFCO/FGCO	EXISTING FLUSH FLOOR/GRADE CLEANOUT
GC	GENERAL CONTRACTOR
IW	INDIRECT WASTE
PC	PLUMBING CONTRACTOR
TYP	TYPICAL
VTR	VENT THRU ROOF
WCO	WALL CLEANOUT
WH-1	WATER HEATER
ET-1	EXPANSION TANK
RP-1	HOT WATER CIRCULATION PUMP
FD	FLOOR DRAIN
HD	HUB DRAIN
FS	FLOOR SINK

PLUMBING NOTES AND SPECIFICATIONS	
WASTE AND VENT PIPING	PLUMBING GENERAL NOTES
<p>A. PROVIDE SCHEDULE 40 POLYVINYL CHLORIDE PIPE FOR ALL SOIL, WASTE AND VENT PIPING WHERE PERMITTED BY LOCAL CODES. WHERE PVC PIPING IS NOT PERMITTED BY LOCAL CODES, USE STANDARD WEIGHT CAST IRON PIPING. ALL PIPING ABOVE GRADE MAY HAVE HUBLESS FITTINGS. PLASTIC PIPING SHALL NOT BE USED IN RETURN AIR PLENUM. COORDINATE THIS REQUIREMENT WITH H.V.A.C. CONTRACTOR PRIOR TO INSTALLATION.</p> <p>B. FIELD VERIFY INVERT ELEVATIONS OF ALL NEW AND EXISTING SANITARY SEWERS PRIOR TO ROUGH-IN.</p> <p>C. ELEVATION OF FLOOR DRAINS SHALL BE HELD 1/2" BELOW FINISH FLOOR TILE.</p> <p>D. CLEANOUTS SHALL BE INSTALLED FLUSH WITH FINISHED GRADE/FINISHED FLOORS.</p> <p>E. PLUMBING VENTS SHALL BE MINIMUM 10'-0" FROM OUTSIDE AIR INTAKES, WHERE STATE OR LOCAL CODES REQUIRE MORE SEPARATION. PROVIDE OFFSET TO MEET THE MORE STRINGENT REQUIREMENTS. COORDINATE LOCATION WITH H.V.A.C. CONTRACTOR.</p> <p>F. CONDENSATE DRAIN PIPING SHALL BE TYPE L HARD DRAWN COPPER, ASTM B-88, WITH TYPE DWV FITTINGS, ASME B16.23, OR SCHEDULE 40 PVC, ASTM D1785, WITH TYPE DWV FITTINGS, ASTM D2471. COPPER DRAIN PIPE AND FITTINGS SHALL BE JOINED USING 95-5 SILVER SOLDER, AND PVC PIPE AND FITTINGS SHALL BE JOINED USING SOLVENT CEMENT. PROVIDE TRAP WITH CLEANOUT AND UNIONS. SLOPE CONDENSATE DRAIN LINES MINIMUM OF 1/8" PER FOOT AWAY FROM MECHANICAL EQUIPMENT.</p> <p>G. SOIL, WASTE AND VENT PIPING SHALL BE SERVICE WEIGHT CAST IRON OR SCHEDULE 40 PVC DWV PLASTIC PIPE WHERE ALLOWED BY LOCAL AUTHORITY HAVING JURISDICTION FOR THIS INSTALLATION. PROVIDE 3M FIRE BARRIER CAULK CP-25 CAULKING, OR U.L. APPROVED EQUAL, AT PENETRATIONS OF FIRE RATED ASSEMBLIES.</p> <p>H. SOIL, WASTE AND VENT PIPING SHALL BE UNIFORMLY GRADED AND SHALL HAVE A SLOPE OF NOT LESS THAN 1/4" PER FOOT FOR PIPING 3" IN DIAMETER AND SMALLER AND 1/8" PER FOOT FOR PIPE LARGER THAN 3" IN DIA.</p>	<p>1. REFER TO PLUMBING SPECIFICATION ELSEWHERE IN DRAWINGS FOR FURTHER INFORMATION AND REQUIREMENTS FOR PLUMBING CONTRACTOR.</p> <p>2. SUSPEND ALL HORIZONTAL SERVICE PIPING SHOWN ON THIS PROJECT SUCH AS, BUT NOT LIMITED TO WATER, SANITARY WASTE/VENT, STORM WATER, GAS, ETCETERA FROM UNDERSIDE OF ROOF AND/OR FLOOR STRUCTURE, UNLESS OTHERWISE NOTED OR INDICATED. HOLD SUCH PIPING HIGH AS POSSIBLE. EXTEND PIPING DOWN IN WALLS, PARTITIONS, CHASES, ETCETERA TO SERVE FIXTURES AND EQUIPMENT AS SHOWN ON PLANS.</p> <p>3. 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.</p> <p>4. 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 PIPE RISES, DROPS, AND OFFSETS, AS REQUIRED FOR FIELD INSTALLATION AND TRADE COORDINATION. NOTIFY ARCHITECT OF ANY DISCREPANCIES BEFORE STARTING WORK.</p> <p>5. DRAWINGS FOR PLUMBING 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 PIPING, CONNECTIONS, FITTINGS, VALVES, OFFSETS, ETCETERA AND ALL MATERIALS NECESSARY FOR A COMPLETE SYSTEM. SUBMIT SHOP DRAWINGS PER THE SPECIFICATIONS.</p> <p>6. ALL WORK SHALL COMPLY WITH STATE AND LOCAL CODE REQUIREMENTS AS APPROVED AND AMENDED BY THE GOVERNING CITY. INCLUDING APPLICABLE SECTIONS OF ANY INTERIM AMENDMENTS AT THE TIME OF THE PROPOSAL. PURCHASE ALL PERMITS ASSOCIATED WITH THE WORK. OBTAIN ALL INSPECTIONS REQUIRED BY CODE.</p> <p>7. PROVIDE BACKFLOW PREVENTION DEVICES, (BPD) IN WATER LINES FEEDING PLUMBING FIXTURES AND/OR EQUIPMENT, AS SHOWN ON PLANS AND ELSEWHERE AS REQUIRED BY LOCAL AUTHORITIES. USE DEVICES OF APPROVED TYPE AND MANUFACTURER (ATMOSPHERIC VACUUM, PRESSURE VACUUM, DOUBLE CHECK, AND REDUCED PRESSURE).</p> <p>8. VERIFY SERVICE CONNECTION POINTS, SIZES, ELEVATIONS, AND METERING LOCATIONS FOR PROJECT WITH LOCAL UTILITIES COMPANY'S AND/OR CIVIL ENGINEER. SERVICES TO INCLUDE BUT NOT LIMITED TO DOMESTIC WATER, FIRE, SANITARY SEWER, STORM SEWER, GAS, ETCETERA.</p> <p>9. WATER HAMMER ARRESTER SHALL BE INSTALLED THROUGHOUT PLUMBING WATER SYSTEMS AS REQUIRED PER DETAIL.</p> <p>10. ALL PLUMBING LINES NEED TO BE JET SPRAYED, CLEANED AND CHLORINATED. GREASE TRAPS NEED TO BE PUMPED AND CLEANED. GC TO PROVIDE PROOF OF COMPLIANCE.</p>
<p>DOMESTIC WATER PIPING</p> <p>A. INTERIOR DOMESTIC WATER: CROSS-LINKED POLYETHYLENE (PEX) PLASTIC TUBING: PEX-A GRADE, ASTM F-876; ASTM F-877 (100 PSI AT 180°F). BRASS, COPPER OR ENGINEERED PLASTIC (EP) FITTINGS, ASTM F-1960. PIPING, FITTINGS AND JOINTS TO COMPLY WITH NSF 61-C, NSF 61 AND NSF 372. COLD EXPANSION FITTING WITH PEX REINFORCING RINGS, ASTM F-1960 OR COLD EXPANSION FITTING WITH METAL COMPRESSION SLEEVE, ASTM 2080.</p> <p>B. EXTERIOR DOMESTIC WATER: TYPE "K" SOFT DRAWN COPPER WITH FLARE FITTINGS ONLY.</p> <p>C. PROVIDE 1" THICK FIBERGLASS PIPE INSULATION WITH SERVICE JACKET ON ALL DOMESTIC WATER PIPING. DOMESTIC COLD WATER PIPE INSULATION SHALL HAVE A CONTINUOUS VAPOR BARRIER.</p> <p>D. DOMESTIC WATER PIPING SHALL BE DISINFECTED PRIOR TO USE BY BUILDING OCCUPANTS. DISINFECT PER REQUIREMENTS OF LOCAL HEALTH DEPT., STATE AND LOCAL PLUMBING CODE.</p> <p>E. PLUMBING HOSE BIBBS OR VALVES WITH THREADED CONNECTIONS SHALL BE PROVIDED WITH VACUUM BREAKERS AND APPROVED MEANS OF BACKFLOW PREVENTION AS REQUIRED BY STATE AND LOCAL CODES.</p> <p>F. PROVIDE SHUT-OFF VALVES ON ALL COLD WATER AND STOP COCKS IN HOT AND COLD WATER PIPING TO ALL PLUMBING FIXTURES.</p> <p>G. PROVIDE DIELECTRIC UNIONS AT ALL PIPING CONNECTIONS WHERE DISSIMILAR METAL PIPING IS JOINED.</p> <p>H. VALVES SERVING DOMESTIC WATER SYSTEMS SHALL BE BALL VALVES OR APPROVED EQUAL. ALL VALVES SHALL BE LOCATED SO AS TO BE ACCESSIBLE BY MAINTENANCE PERSONNEL.</p> <p>I. WATER PIPING SHOWN ROUTED IN EXTERIOR WALLS SHALL BE LOCATED INSIDE THE BUILDING INSULATION AND FINISHED WALL TO PREVENT FREEZE DAMAGE.</p>	<p>NATURAL GAS PIPING</p> <p>A. COORDINATE INSTALLATION OF GAS METER WITH LOCAL GAS COMPANY REQUIREMENTS PRIOR TO INSTALLATION.</p> <p>B. GAS PIPING SHALL BE STANDARD WEIGHT SCHEDULE 40 BLACK STEEL PIPE. PIPE SHALL BE THREADED OR WELDED AS DIRECTED BY LOCAL GAS COMPANY AND STATE AND LOCAL PLUMBING CODES.</p> <p>C. PROVIDE GAS PIPING COMPLETE WITH ALL REQUIRED FITTINGS, STRAPS, HANGERS, SUPPORTS, ETC. OBTAIN ALL REQUIRED INSPECTIONS AND APPROVALS. GAS PIPING SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST EDITION OF NFPA 54 AND ANY APPLICABLE STATE AND LOCAL CODES OR REGULATIONS.</p> <p>D. GAS PIPING ROUTED ON ROOF SHALL BE SUPPORTED BY ROOF PIPE SUPPORT 10'-0" O.C.</p> <p>F. PAINT GAS PIPING EXPOSED TO WEATHER WITH (2) COATS OF "RUSTOLEUM" OR EQUAL PAINT. COLOR TO BE SELECTED BY OWNER OR GENERAL CONTRACTOR AND PER REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION.</p> <p>G. MAKE FINAL CONNECTIONS TO GAS FIRED EQUIPMENT. PROVIDE GAS SHUT-OFF VALVE AND 6" DIRT LEG AT EACH CONNECTION. INSTALL AND CONNECT FLEXIBLE GAS PIPING PROVIDED WITH GAS FIRED OVEN EQUIPMENT AND MAKE FINAL CONNECTIONS TO OVEN.</p> <p>H. PAINT GAS PIPING EXPOSED IN STORE BELOW CEILING SILVER.</p>

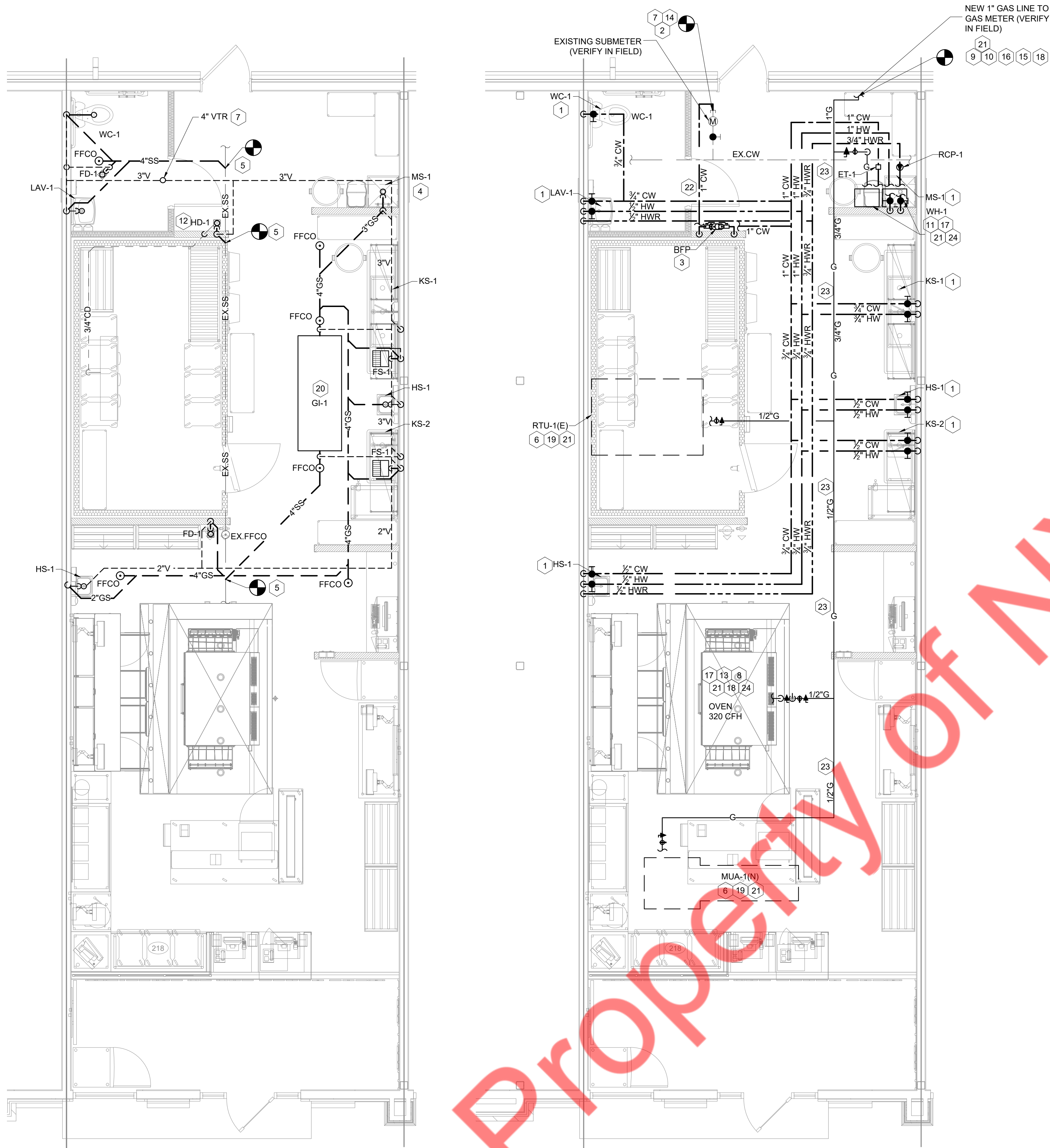
ENERGY CONSERVATION NOTES:

1. ALL DOMESTIC WATER PIPING ABOVE GRADE SHALL BE INSULATED WITH FIRE-RETARDANT, FACTORY-APPLIED JACKET. PROVIDE COLD WATER PIPING WITH FACTORY-APPLIED VAPOR BARRIER. INSULATION REQUIREMENT SHOULD COMPLY WITH INTERNATIONAL ENERGY CONSERVATION CODE 2018 SECTION C-404.4 & TABLE C403.11.3 REFER BELOW TABLE.
- | MINIMUM PIPE INSULATION THICKNESS | | | | | | |
|--|------------------------------------|-----------------------------|------------------------------------|-----------|-----------|-----------|
| FLUID OPERATING TEMPERATURE RANGE AND USAGE (°F) | INSULATION CONDUCTIVITY | | NOMINAL PIPE OR TUBE SIZE (INCHES) | | | |
| | CONDUCTIVITY BTU·IN./ (H. FT² ·°F) | MEAN RATING TEMPERATURE, °F | <1 | 1 to < 1½ | 1½ to < 4 | 4 to >= 8 |
| 105-140 | 0.21-0.28 | 100 | 1.0 | 1.0 | 1.5 | 1.5 |
| 40-60 | 0.21-0.27 | 75 | 0.5 | 0.5 | 1.0 | 1.0 |
2. AS PER INTERNATIONAL ENERGY CONSERVATION CODE 2018 C404.6.3 THE CONTROLS ON PUMPS THAT CIRCULATE WATER BETWEEN A WATER HEATER AND A HEATED-WATER STORAGE TANK SHALL LIMIT OPERATION OF THE PUMP FROM HEATING CYCLE STARTUP TO NOT GREATER THAN 5 MINUTES AFTER THE END OF THE CYCLE.
3. AS PER INTERNATIONAL ENERGY CONSERVATION CODE 2018 C404.6.1 HEATED-WATER CIRCULATION SYSTEMS SHALL BE PROVIDED WITH A CIRCULATION PUMP. THE SYSTEM RETURN PIPE SHALL BE A DEDICATED RETURN PIPE OR A COLD WATER SUPPLY PIPE. CONTROLS FOR CIRCULATING HOT WATER SYSTEM PUMPS SHALL START THE PUMP BASED ON THE IDENTIFICATION OF A DEMAND FOR HOT WATER WITHIN THE OCCUPANCY. THE CONTROLS SHALL AUTOMATICALLY TURN OFF THE PUMP WHEN THE WATER IN THE CIRCULATION LOOP IS AT THE DESIRED TEMPERATURE AND WHEN THERE IS NO DEMAND FOR HOT WATER.

ENERGY CONSERVATION NOTES:

4. WATER DISTRIBUTION SYSTEM AS PER INTERNATIONAL ENERGY CONSERVATION CODE 2018 C404.7, HAVING ONE OR MORE RECIRCULATION PUMPS THAT PUMP WATER FROM A HEATED-WATER SUPPLY PIPE BACK TO THE HEATED-WATER SOURCE THROUGH A COLD-WATER SUPPLY PIPE SHALL BE A DEMAND RECIRCULATION WATER SYSTEM. PUMPS SHALL HAVE CONTROLS THAT COMPLY WITH BOTH OF THE FOLLOWING:
- a. THE CONTROL SHALL START THE PUMP UPON RECEIVING A SIGNAL FROM THE ACTION OF A USER OF A FIXTURE OR APPLIANCE, SENSING THE PRESENCE OF A USER OF A FIXTURE OR SENSING THE FLOW OF HOT OR TEMPERED WATER TO A FIXTURE FITTING OR APPLIANCE.
- b. THE CONTROL SHALL LIMIT THE TEMPERATURE OF THE WATER ENTERING THE COLD-WATER PIPING TO 104°F (40°C).
5. HW SYSTEM PIPING IS DESIGNED AS PER MAXIMUM ALLOWED PIPE LENGTH METHOD AS PER IECC 2018 C404.5.1. THE HW PIPE LENGTH FROM THE NEAREST SOURCE OF HEATED WATER TO THE TERMINATION OF THE FIXTURE SUPPLY PIPE SHALL BE AS PER FOLLOWING TABLE.

NOMINAL PIPE SIZE (INCHES)	MAXIMUM PIPING LENGTH (FEET)	
	PUBLIC LAV	OTHER FIXTURES
½"	2'	43'
¾"	0.5'	21'
1"	0.5'	13'
1½"	0.5'	8'
1½"	0.5'	6'



GENERAL NOTES:

1. HVAC UNITS BY MECHANICAL CONTRACTOR, FINAL GAS CONNECTION BY PLUMBING CONTRACTOR.
2. REFER TO RISER DIAGRAMS FOR WATER AND WASTE PIPE SIZES.
3. PROVIDE BRANCH PRV IF PRESSURE EXCEEDS 80 PSI.
4. PROVIDE ACCESS PANELS FOR WATER HAMMER ARRESTOR, CLEANOUT & SHUT-OFF VALVES AS REQUIRED.
5. CONTRACTOR TO COORDINATE WITH WATER HEATER MANUFACTURERS FOR INSTALLATION REQUIREMENTS
6. REFERENCE RISER DIAGRAMS FOR WATER AND WASTE PIPE SIZES.

PLUMBING KEY NOTES:

1. EXTEND CW, HW LINES DOWN IN WALL TO FIXTURES AND CONNECT. REFERENCE DOMESTIC WATER RISER DIAGRAM FOR ADDITIONAL INFORMATION
2. EXTEND 1\"/>

GAS DEMAND LOAD CALCULATIONS				
MARK	FIXTURE/EQUIPMENT	QUANTITY	UNIT DEMAND BTUH	TOTAL DEMAND BTUH
WH-1	WATER HEATER	2	199,000	398,000
RTU-1(E)	ROOFTOP UNIT	1	224,000	224,000
MUA-1(N)	MAKEUP AIR UNIT	1	120,000	120,000
OVEN	PIZZA OVEN	2	160,000	320,000
TOTAL			1062,000	1062

1\"/>

GAS LOAD BASED ON 2018 INTERNATIONAL FUEL GAS CODE, SECTION 402 (IFGS) PIPE SIZING, 402.2 MAXIMUM GAS DEMAND, TABLE 402.4(5) SCHEDULE 40 METALLIC PIPE.

INLET PRESSURE - 2.0PSI
PRESSURE DROP - 1.0PSI
LONGEST LENGTH-APPROX. 110'

LOW PRESSURE SYSTEM (FOR WATER HEATER AND OVEN)

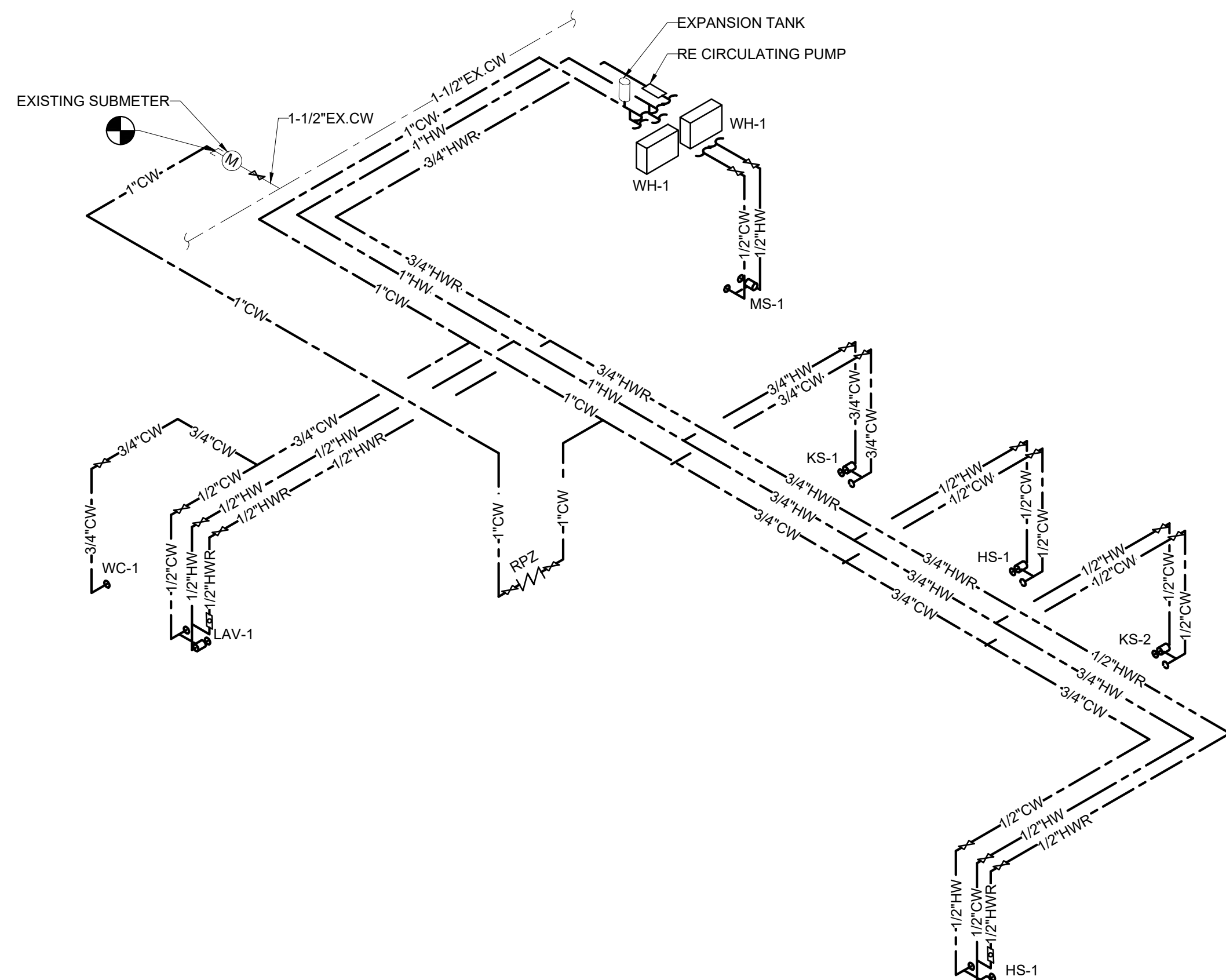
INLET PRESSURE < 2.0PSI
PRESSURE DROP- 0.5 IN W.C
LONGEST LENGTH-APPROX. 20'

GAS PRESSURE CONSIDERED AT METER MINIMUM OF 12\"/>

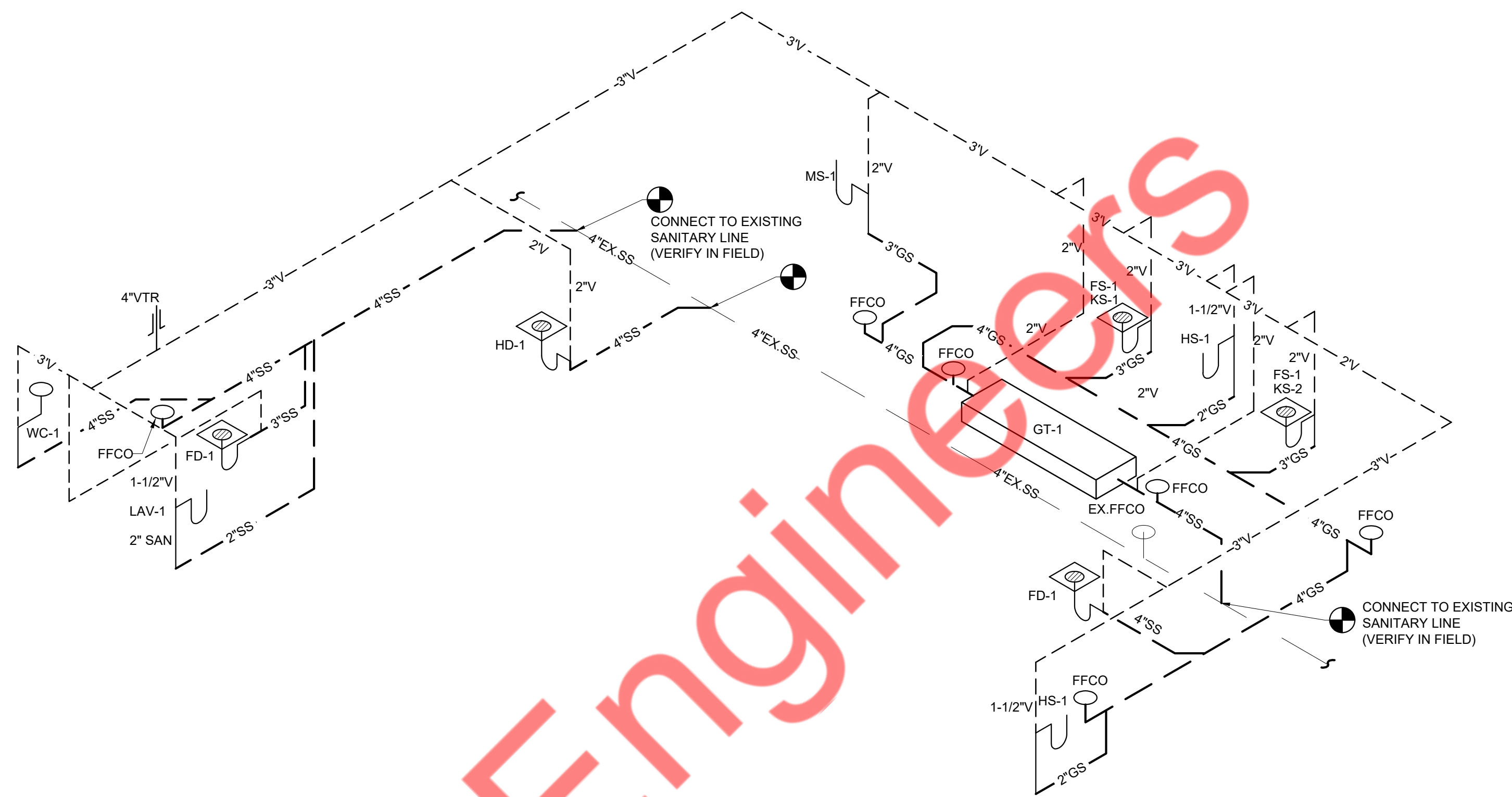
SIZE	GAS LOAD(CFH)
1/2"	462
3/4"	934
1"	1710
1-1/4"	3510
1-1/2"	5260

WATER FIXTURE LOAD CALCULATIONS					
MARK	FIXTURE/EQUIPMENT	QUANTITY	WATER		TOTAL F.U. PER FIXTURE
			CW F.U. PER FIXTURE	HW F.U. PER FIXTURE	
WC-1	WATER CLOSET	1	5.0	-	5.0
LAV-1	LAVATORY	1	1.5	1.5	2.0
MS-1	MOP SINK	1	2.25	2.25	3.0
KS-1	3 COMP. SINK	1	3.0	3.0	4.0
KS-2	1 COMP. SINK	1	3.0	3.0	4.0
HS-1	HAND SINK	2	0.5	0.5	0.7
TOTAL					19.4
MAXIMUM WATER DEMAND AT 19.4F.U. = 19.6 GPM = 1\"/>					
FIXTURE UNITS BASED ON 2018 INTERNATIONAL PLUMBING CODE TABLE E 103.3(3) FLUSH TANK					

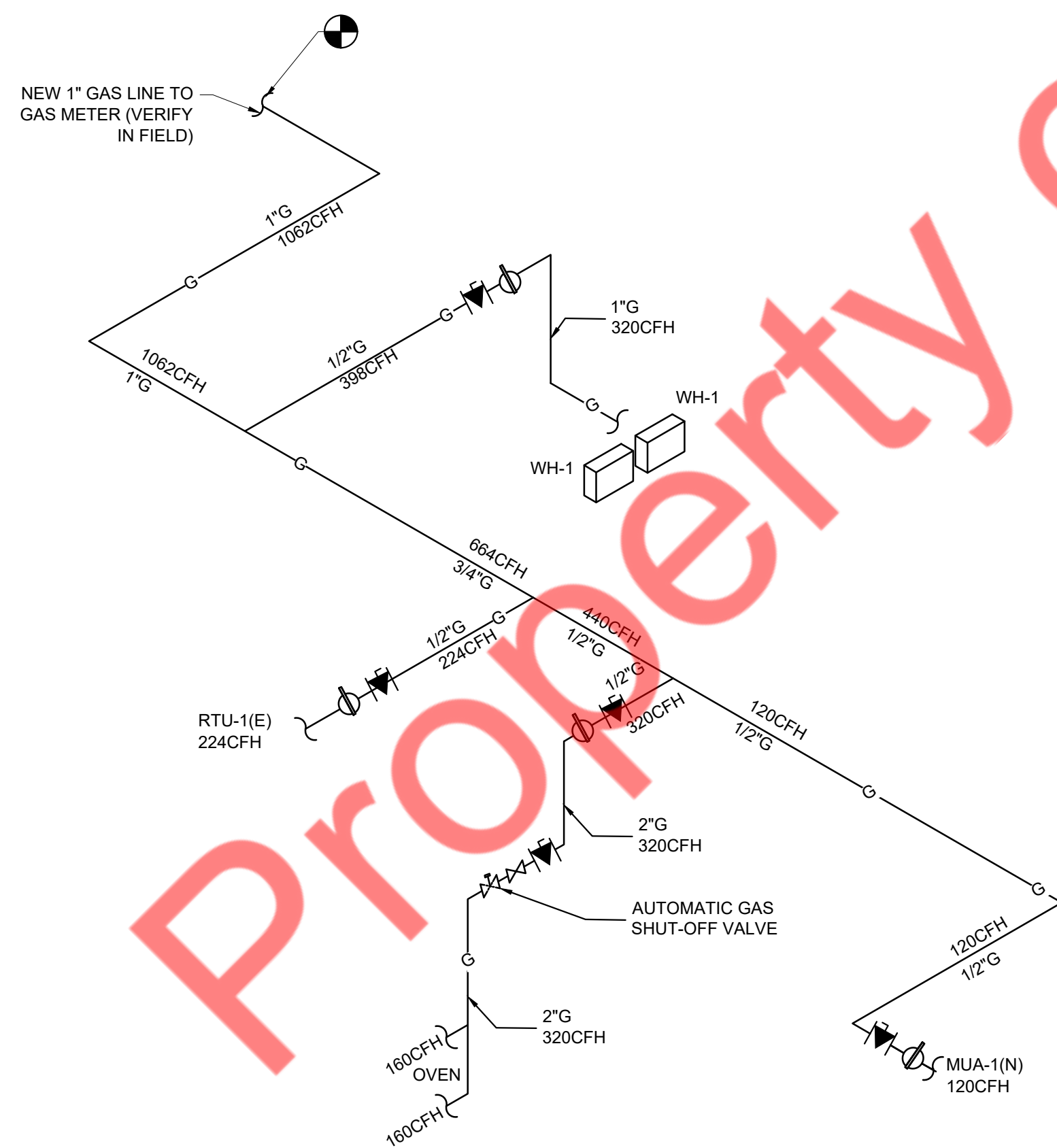
SANITARY SEWER FIXTURE LOAD CALCULATION				
MARK	FIXTURE/EQUIPMENT	QUANTITY	WASTE	
			WASTE F.U. PER FIXTURE	TOTAL F.U. PER FIXTURE
WC-1	WATER CLOSET	1	4.0	4.0
LAV-1	LAVATORY	1	1.0	1.0
FD-1	FLOOR DRAIN	2	5.0	10.0
MS-1	MOP SINK	1	5.0	5.0
3\"/>	FLOOR SINK	2	5.0	10.0
KS-1	3 - COMPARTMENT SINK	1	IW TO FS-1	-
KS-2	1 - COMPARTMENT SINK	1	IW TO FS-1	-
HS-1	HAND SINK	2	1.0	2.0
4\"/>	HUB DRAIN	1	6.0	6.0
TOTALS				38.0
MAXIMUM WASTE DEMAND AT 38.0 F.U. = 4\"/>				
FIXTURE UNITS BASED ON 2018 INTERNATIONAL PLUMBING CODE				



1 DOMESTIC WATER RISER DIAGRAM
P3-1 NOT TO SCALE



2 SANITARY WASTE AND VENT RISER DIAGRAM
P3-1 NOT TO SCALE

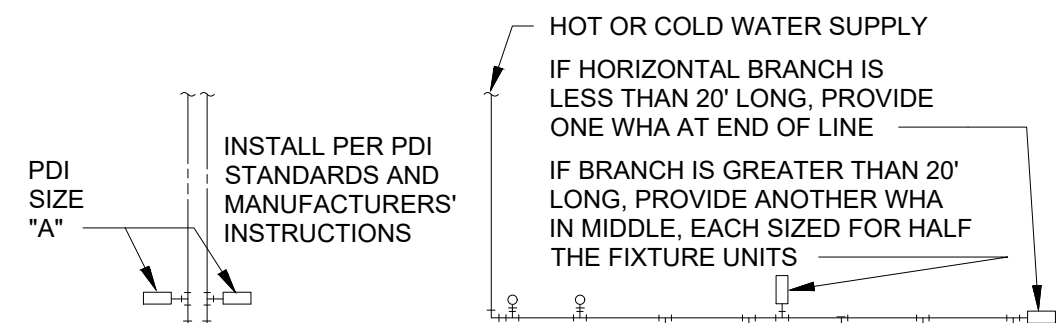


3 NATURAL GAS RISER DIAGRAM
P3-1 NOT TO SCALE

GAS DEMAND LOAD CALCULATIONS					
MARK	FIXTURE/EQUIPMENT	QUANTITY	UNIT DEMAND BTUH	TOTAL DEMAND BTUH	TOTAL CFH
WH-1	WATER HEATER	2	199,000	398,000	398
RTU-1(E)	ROOFTOP UNIT	1	224,000	224,000	224
MUA-1(N)	MAKEUP AIR UNIT	1	120,000	120,000	120
OVEN	PIZZA OVEN	2	160,000	320,000	320
TOTAL				1062,000	1062
1"GAS LINE REQUIRED BASED ON 110'-0" TOTAL LENGTH OF PIPE AT 2 PSI					
GAS LOAD BASED ON 2018 INTERNATIONAL FUEL GAS CODE, SECTION 402 (IFGS) PIPE SIZING, 402.2 MAXIMUM GAS DEMAND, TABLE 402.4(5), TABLE 402.4(2) SCHEDULE 40 METALLIC PIPE.					
INLET PRESSURE - 2.0PSI PRESSURE DROP - 1.0PSI LONGEST LENGTH-APPROX. 110'					
LOW PRESSURE SYSTEM (FOR WATER HEATER AND OVEN) INLET PRESSURE < 2.0PSI PRESSURE DROP- 0.5 IN W.C LONGEST LENGTH-APPROX. 20'					
GAS PRESSURE CONSIDERED AT METER MINIMUM OF 12" W.C. CONTRACTOR SHALL VERIFY ACTUAL GAS PRESSURE AND LOSEST LENGTH OF RUN FROM METER TO FARTHEST APPLIANCE PRIOR TO INSTALLATION AND NOTIFY ENGINEER IF CONDITIONS DIFFER FROM THOSE SHOWN ON THE PLAN.					

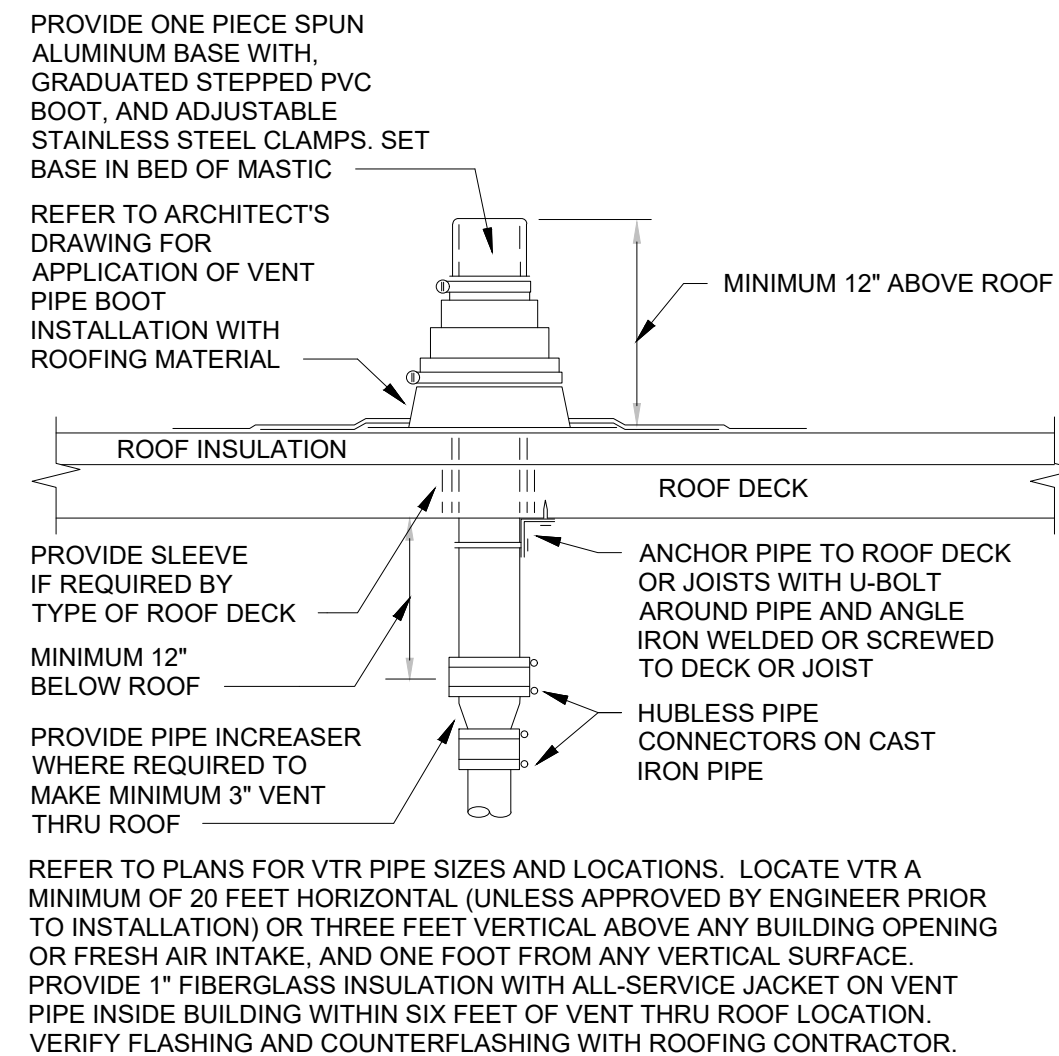
SIZE	GAS LOAD(CFH)
1/2"	462
3/4"	934
1"	1710
1-1/4"	3510
1-1/2"	5260

- NOTES:
1. GAS PIPING TO BE SCHEDULE 40 STEEL PIPE W/125 CAST IRON SCREWD FITTINGS
 2. GAS SYSTEM TO BE INSTALLED BY QUALIFIED LICENSED CONTRACTOR.
 3. VERIFY ALL EQUIPMENT BTU'S PRIOR TO INSTALLATION. ADJUST PIPE SIZE ACCORDING 2018 INTERNATIONAL FUEL GAS CODE TABLE 402.4(5)
 4. CONTRACTOR TO FIELD VERIFY FINAL TOTAL EQUIVALENT LENGTH AND SIZE.
 5. CONTRACTOR TO FIELD VERIFY EXACT LOCATION OF NEW GAS METER LOCATION, PRESSURE AND CAPACITY.

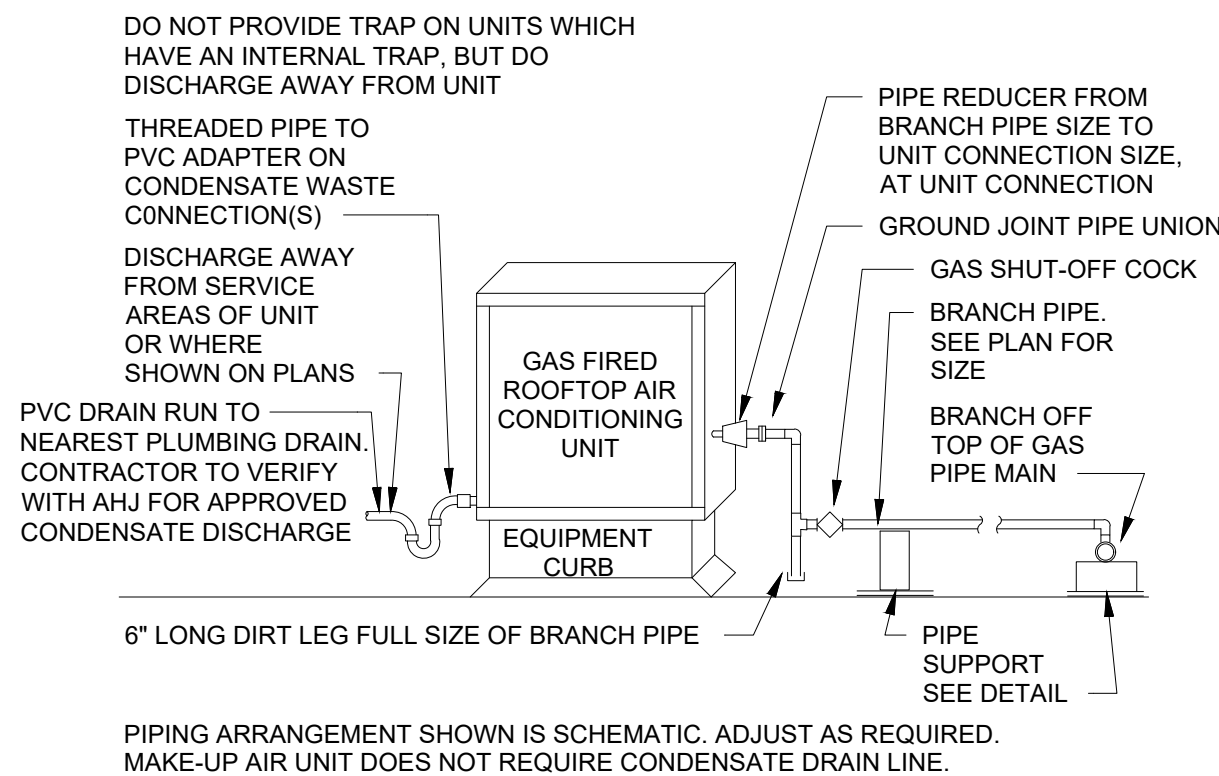
		
HOT OR COLD WATER SUPPLY IF HORIZONTAL BRANCH IS LESS THAN 20' LONG, PROVIDE ONE WHA AT END OF LINE IF BRANCH IS GREATER THAN 20' LONG, PROVIDE ANOTHER WHA IN MIDDLE, EACH SIZED FOR HALF THE FIXTURE UNITS		
INSTALL PER PDI STANDARDS AND MANUFACTURERS' INSTRUCTIONS		
SINGLE FIXTURE		
PDI SIZE	PIPE SIZE	FIXTURE UNIT LOAD
A	1/2"	1-11
B	3/4"	12-32
C	1"	33-60
D	1-1/4"	61-113
E	1-1/2"	114-154
F	2"	155-330
MULTIPLE FIXTURES		
FIXTURE UNIT TABULATION		
FIXTURE	COLD	HOT
VALVE WATER CLOSET	5	--
URINAL	5	--
COUNTER SINK	1.5	1.5
LAVATORY	1.5	1.5
MOP BASIN	2.25	2.25
WATER COOLER	25	--

PROVIDE WATER HAMMER ARRESTERS BY SIOUX CHIEF, PRECISION PLUMBING PRODUCTS, WATTS OR APPROVED EQUAL WITH PISTON AND O-RING CONSTRUCTION, HAVING PDI #WH-201, ASSE #1010 AND ANSI #A112.26.1M CERTIFICATION. INSTALL IN HORIZONTAL OR VERTICAL POSITION, BUT NEVER UPSIDE DOWN. INSTALL INLINE WITH WATER FLOW DIRECTION IF POSSIBLE. SIZE UNITS PER TABLES ABOVE.

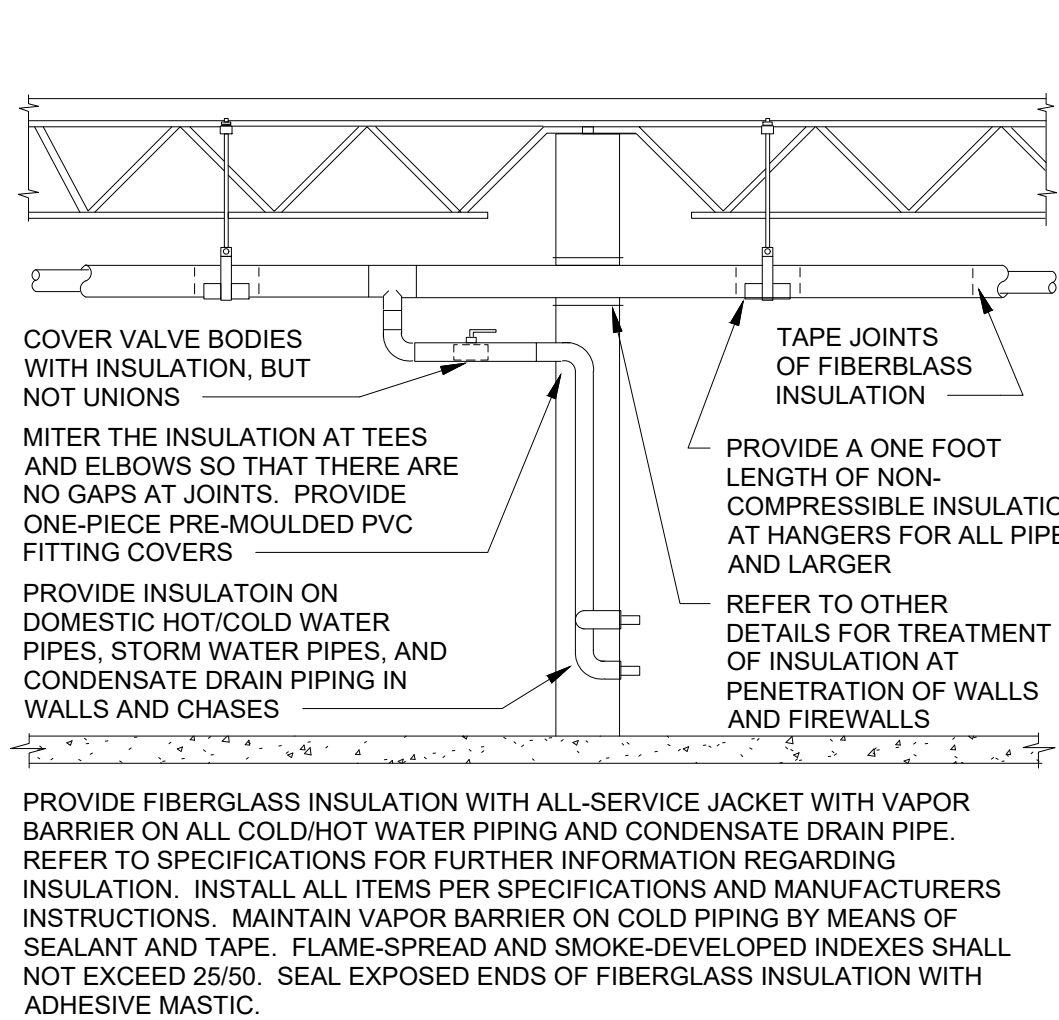
1 WATER HAMMER ARRESTORS NOT TO SCALE



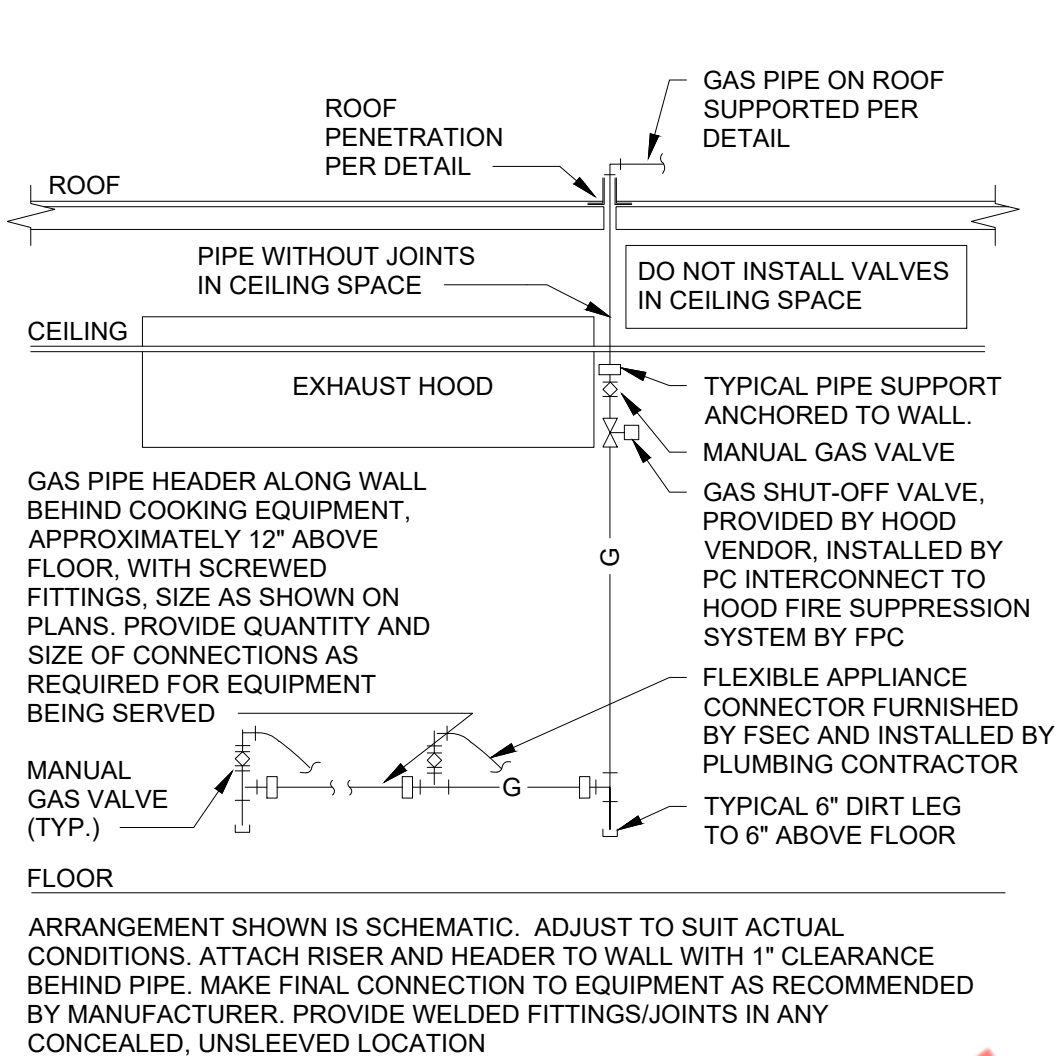
5 VENT THROUGH ROOF (VTR) NOT TO SCALE



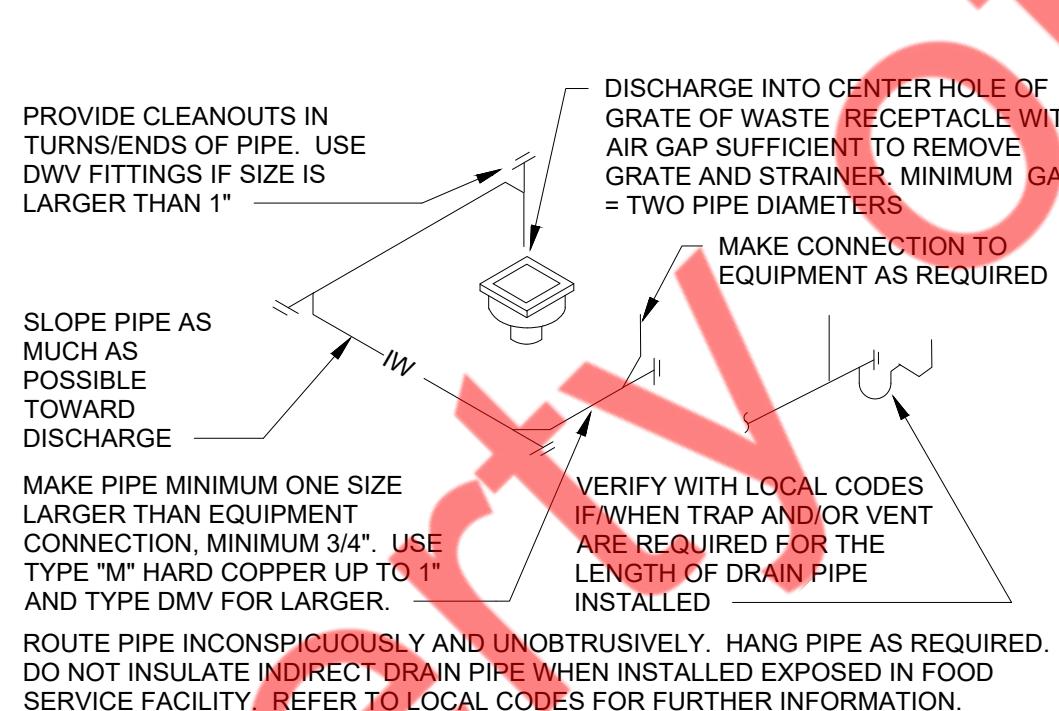
9 ROOFTOP UNIT CONNECTIONS NOT TO SCALE



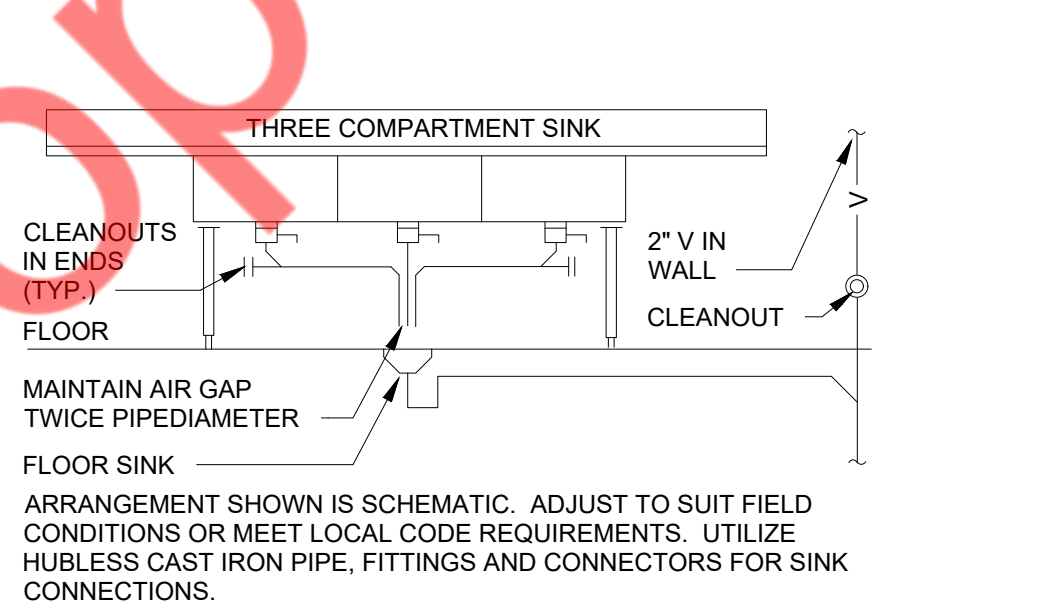
2 PIPE INSULATION DETAIL NOT TO SCALE



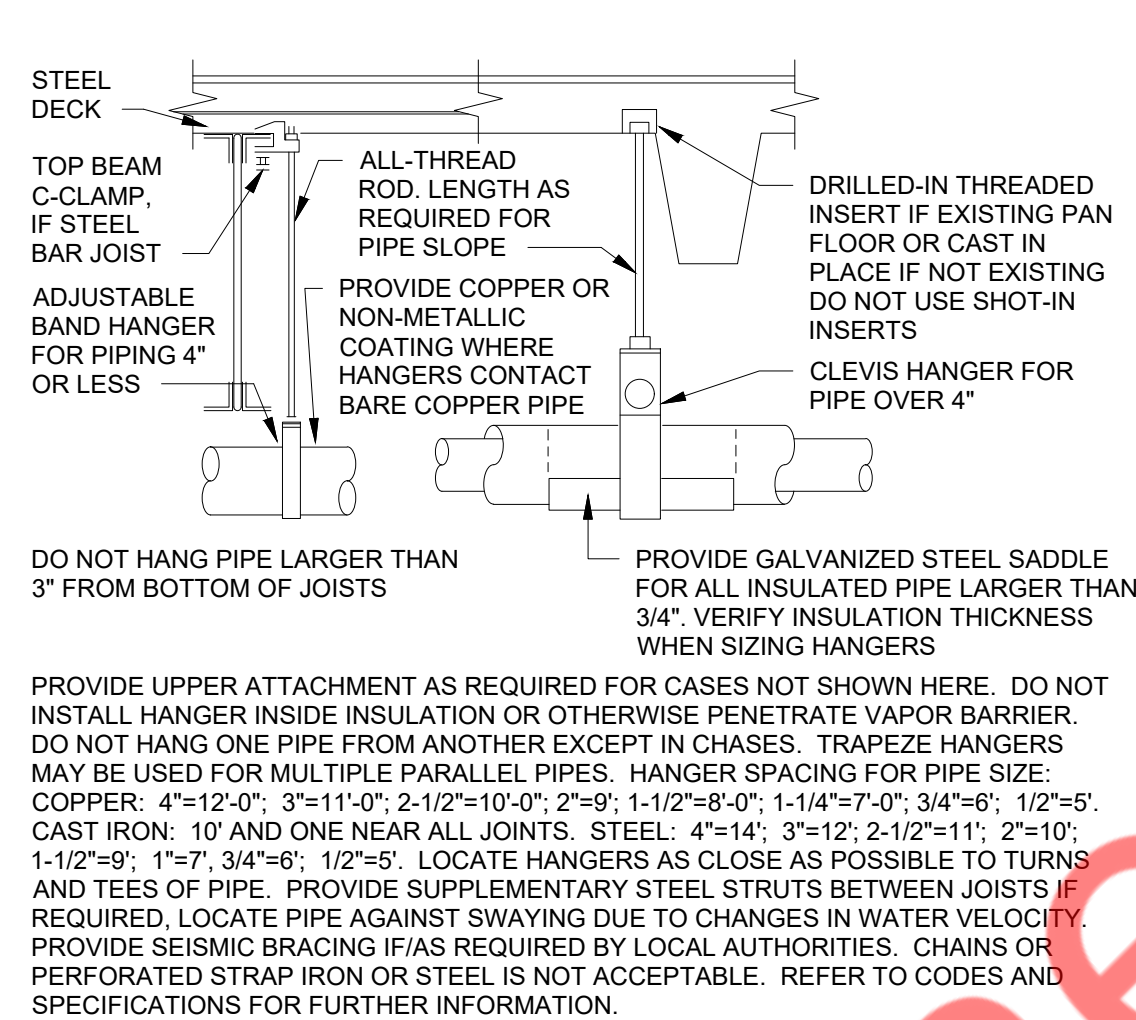
6 COOKING APPLIANCE GAS PIPE NOT TO SCALE



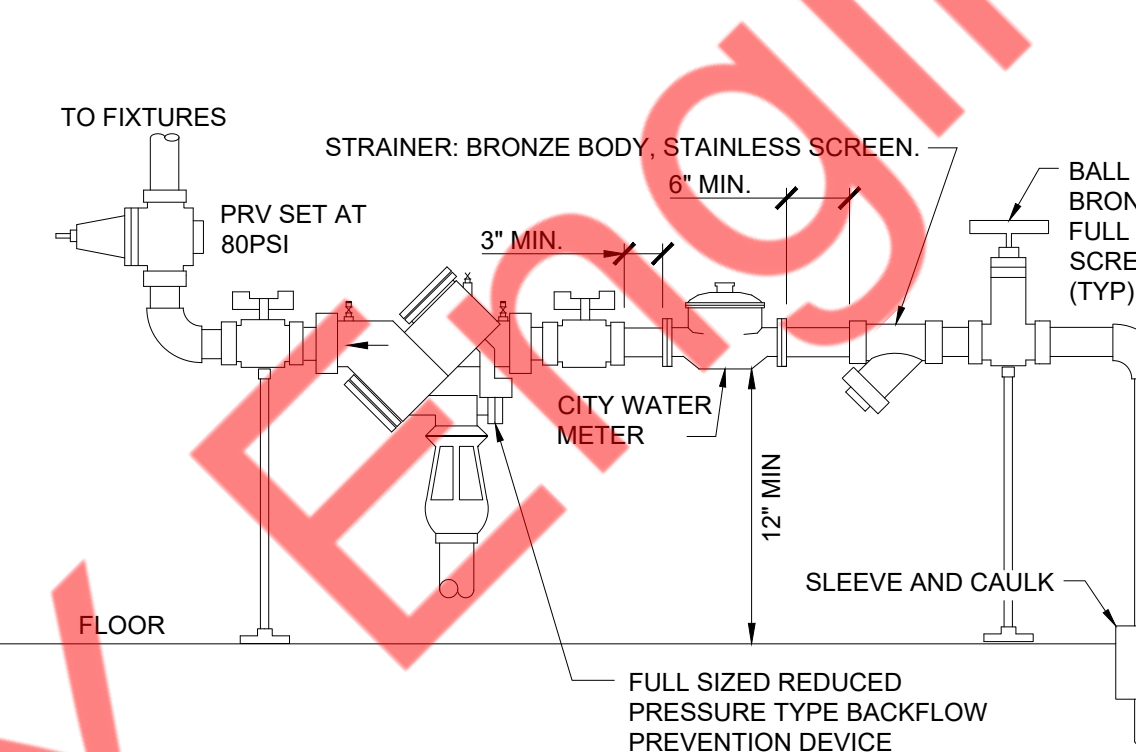
10 INDIRECT DRAIN NOT TO SCALE



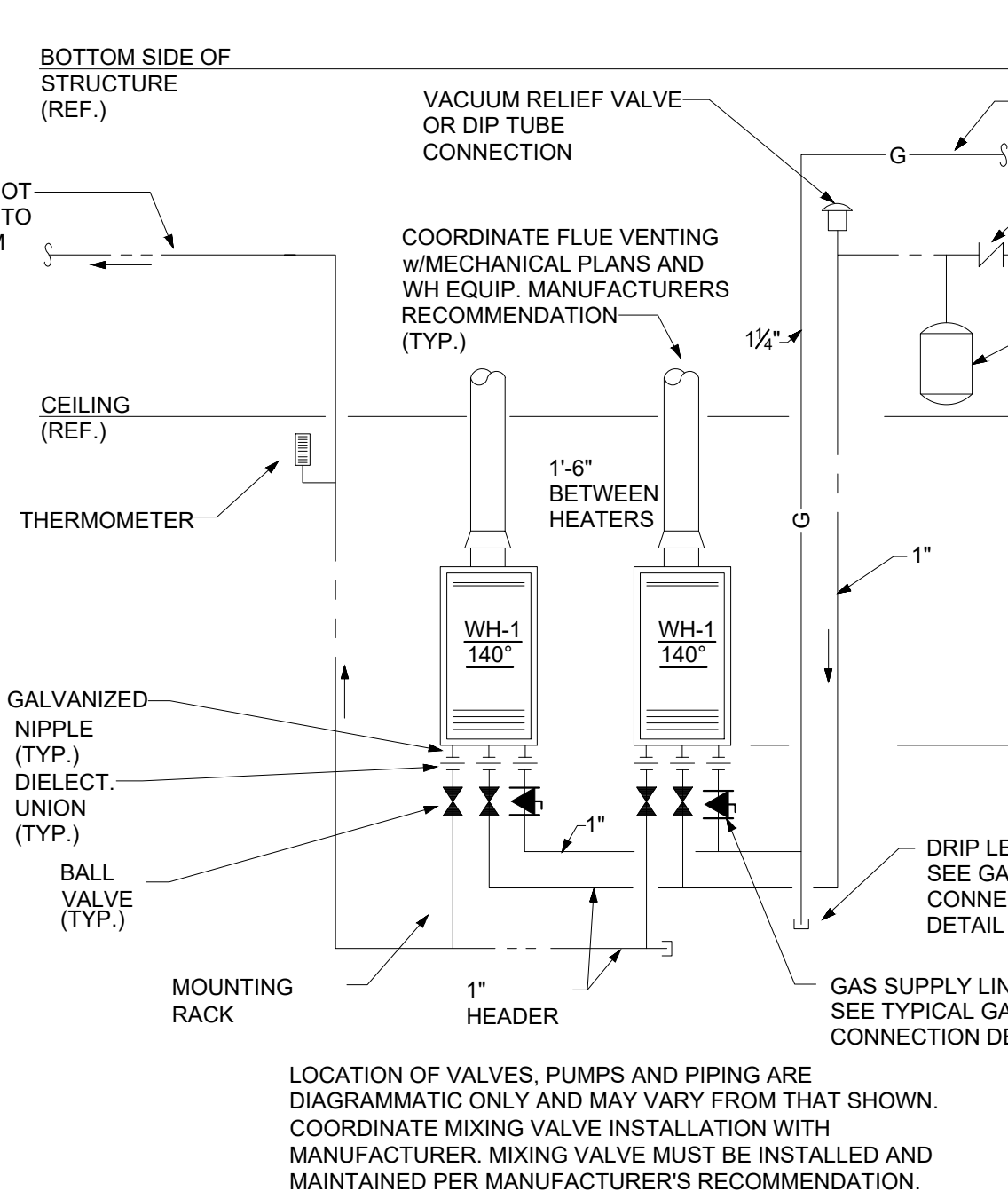
11 UTILITY SINK NOT TO SCALE



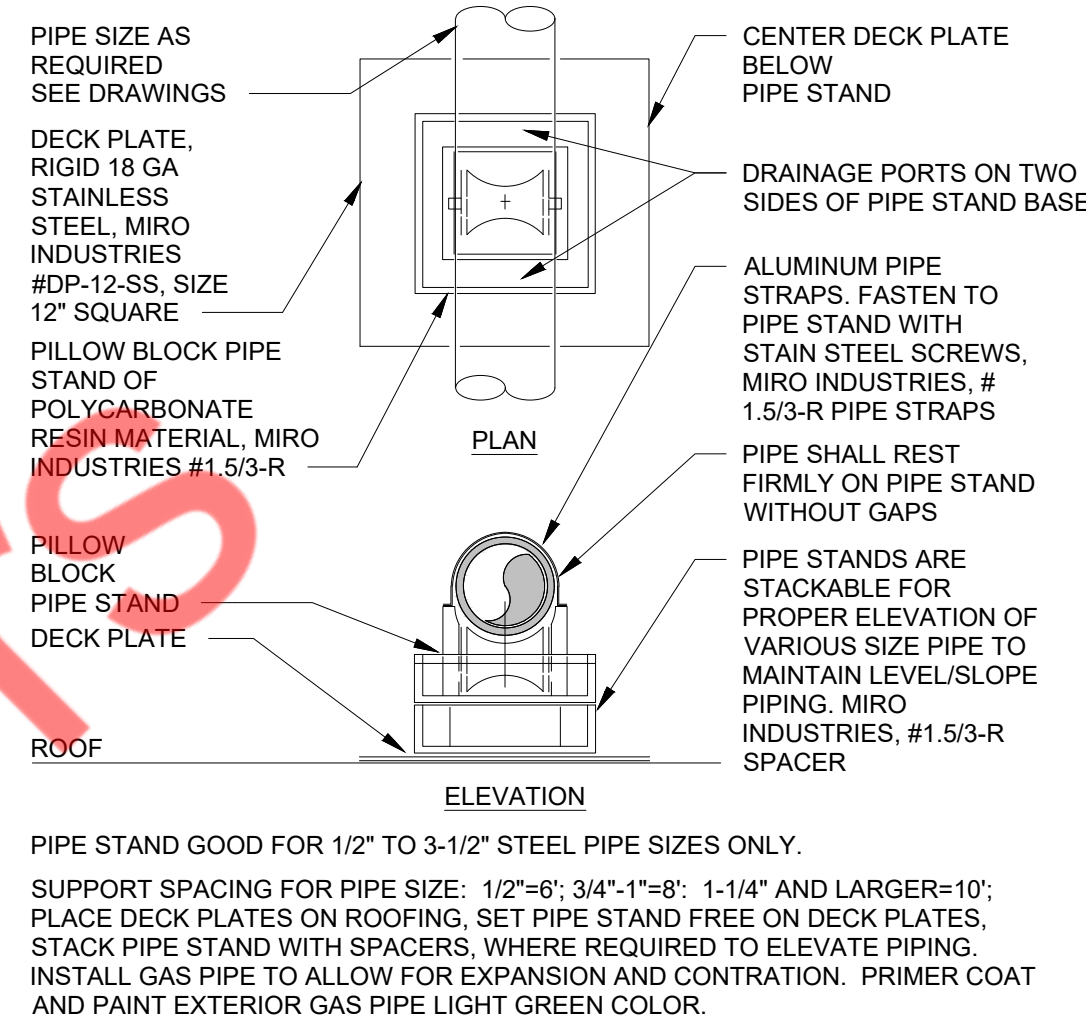
3 PIPE HANGERS NOT TO SCALE



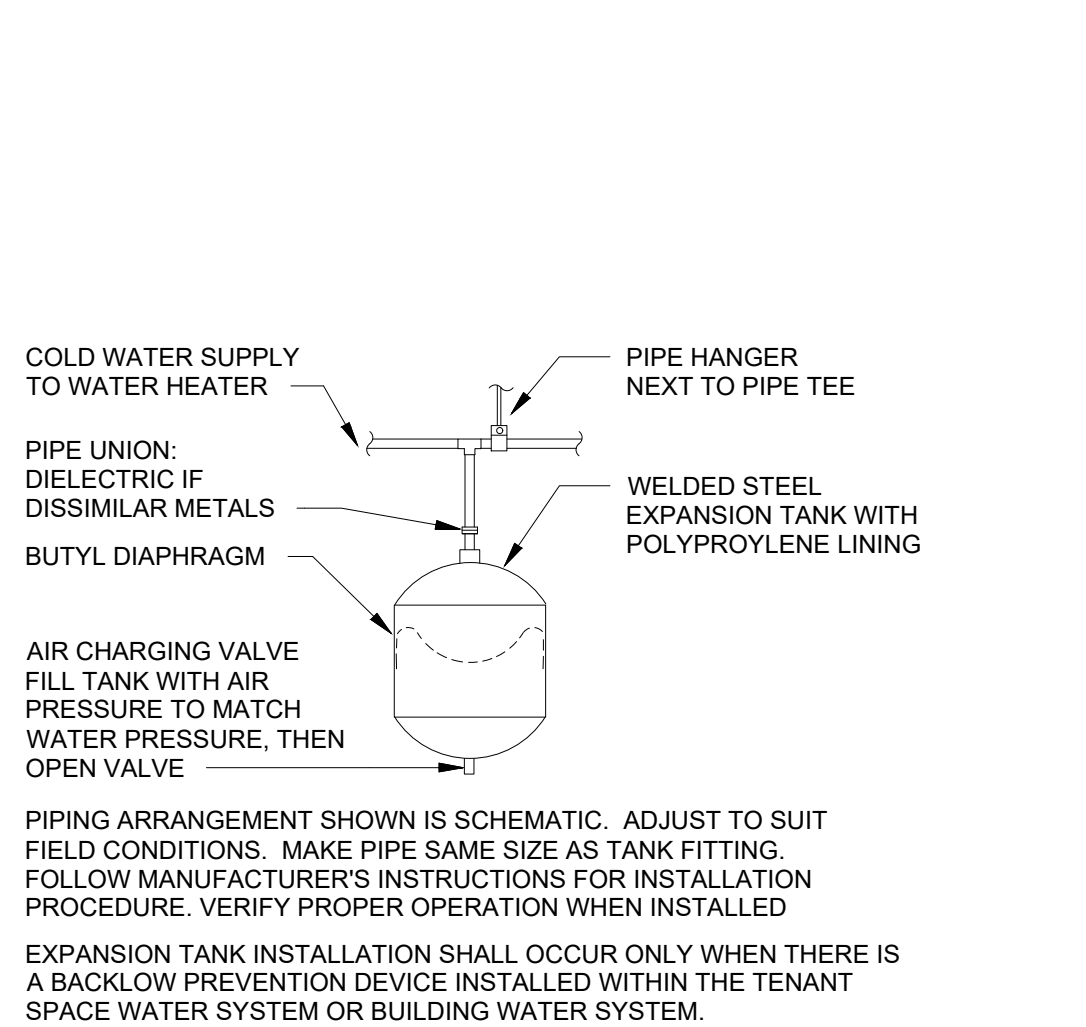
7 DOMESTIC WATER SERVICE ENTRY NOT TO SCALE



12 TANKLESS GAS WATER HEATER NOT TO SCALE



4 ROOF BLOCKING PIPE SUPPORT NOT TO SCALE



8 EXPANSION TANK NOT TO SCALE