

HVAC LEGEND			
SD-1 TYPE 300 CFM	DIFFUSER DESIGNATION	Ⓢ	DUCT SMOKE DETECTOR
☑	EXHAUST FAN	Ⓣ	PROGRAMMABLE THERMOSTAT
☒	S.A. DIFFUSER	RTU	ROOF TOP UNIT
■	PERFORATED S.A. DIFFUSER	RG	R.A. GRILLE
☒	R.A. DIFFUSER	(N)	NEW
—	MANUAL DAMPER	GD	GRAVITY DAMPER
OA/SA/RA	OUTSIDE/SUPPLY/ RETURN AIR	EF	EXHAUST FAN
Ⓣ	REMOTE TEMPERATURE SENSOR		

MECHANICAL DRAWING LIST	
M-1	MECHANICAL SCHEDULES, NOTES, AND LEGENDS
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**NOTE TO CONTRACTOR**

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

**FREERPORT, IL BUILDING DEPARTMENT NOTES**

- ALL WORK SHALL COMPLY WITH APPLICABLE SECTIONS OF FREERPORT BUILDING CODE AND ALL AMENDMENTS AND RULES AND REGULATIONS OF THE DEPARTMENT OF BUILDINGS TO DATE.
- THE CONTRACTOR SHALL ENGAGE THE SERVICES OF A PROFESSIONAL ENGINEER TO PROVIDE THE REQUIRED SPECIAL INSPECTIONS AND TESTS.
  - TESTS WILL BE CONDUCTED UNDER DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, ARCHITECT OR OTHER PERSON HAVING NOT LESS THAN FIVE (5) YEARS EXPERIENCE SUPERVISING THE INSTALLATION OF SUCH MECHANICAL SYSTEMS.
  - THE LICENSED PROFESSIONAL ENGINEER, ARCHITECT OR OTHER PERSON HAVING NOT LESS THAN FIVE (5) YEARS EXPERIENCE SUPERVISING THE INSTALLATION OF SUCH MECHANICAL SYSTEMS AND CONDUCTING SUCH TESTS WILL FILE DOCUMENTATION AND REPORTS OF TESTS THAT THE SYSTEM COMPLIES WITH THE CONSTRUCTION DOCUMENTS AND APPLICABLE LAWS.
  - TESTS OF MECHANICAL SYSTEMS SHALL BE PERFORMED IN ACCORDANCE WITH THE FOLLOWING SECTIONS OF THE 2012 INTERNATIONAL MECHANICAL CODE:  
VENTILATION SYSTEM BALANCING IMC 403.3
  - THE FOLLOWING WORK ITEMS, COMPONENTS, MATERIALS, CAPACITIES, ETC. SHALL COMPLY WITH THE REFERENCED CODE OR STANDARD:  
SPACE HEATING SYSTEM - 2012 INTERNATIONAL MC 309.1  
DUCT CONSTRUCTION AND INSTALLATION- 2012 INTERNATIONAL MC 603  
SMOKE CONTROL SYSTEM - 2012 INTERNATIONAL MC 513
  - 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 2012 INTERNATIONAL MC 403.3.
  - FIRE DAMPERS AND CEILING DAMPERS LOCATED WITHIN THE AIR DISTRIBUTION AND SMOKE CONTROL SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION 2012 INTERNATIONAL MC 607.
  - REFER TO ARCHITECTURAL DRAWINGS FOR REQUIRED FIRE-RATED WALL AND SMOKE WALL CONSTRUCTION AND LOCATION.
  - THESE PLANS ARE APPROVED ONLY FOR THE WORK INDICATED ON THE APPLICATION SPECIFICATION SHEET. ALL OTHER MATTERS SHOWN ARE NOT TO BE RELIED UPON OR TO BE CONSIDERED AS EITHER BEING APPROVED OR IN ACCORDANCE WITH APPLICABLE CODES.
  - ALL HEATING AND COOLING LOADS CALCULATED PER ASHRAE/ACCA 183.
  - MINIMUM TEMPERATURE TO BE MAINTAINED IN OCCUPIED SPACES DURING HEATING SEASON: 68 DEG. FAHRENHEIT.
  - A WRITTEN REPORT DESCRIBING THE ACTIVITIES AND MEASUREMENTS COMPLETED IN ACCORDANCE WITH IECC 2018

**ENERGY CONSERVATION CODE OF FREERPORT, IL COMPLIANCE**

TO THE BEST OF MY PROFESSIONAL KNOWLEDGE AND JUDGEMENT, THESE PLANS AND SPECIFICATION ARE IN COMPLIANCE WITH THE 2018 ENERGY CONSERVATION CODE.

NEW GAS-FIRED MAKE-UP AIR UNIT																			
TAG	SERVES	CFM	E.S.P.	COOLING					HEATING					ELECTRICAL			MANUFACTURER/ MODEL #	REMARKS	
				TOTAL MBH	SENS. MBH	EER/ IER	ENT DB/WB	LAT DB/WB	INPUT MBH	OUTPUT MBH	% EFF.	EAT DB/WB	LAT DB/WB	V/Ø/HZ	MCA	MOCP			WEIGHT (LBS)
MAU-1(N)	SEE PLAN	1300	0.75	76.0	44.9	12.2/17.9	90.0/75.0	56.2/55.8	150.0	120.0	80	0.0/0.0	85.3/52.2	208/3/60	33.0	50.0	1099	AAON RN-Q07-8-0-GA02-3K9 (OR EQUIVALENT)	1 TO 16

FAN SCHEDULE														
No.	UNIT TAG	MANUFACTURER	MODEL	SERVICE	MOUNTING LOCATION	CFM	ESP (IN)	DRIVE (BELT/DIRECT)	MIN. HP	FAN RPM	ELEC. V/PH	ELEC. FLA	INTERLOCKED WITH	NOTES
1	EF-1(N)	HOODMART	20D	KITCHEN EXHAUST	ROOF	1200	0.625	DIRECT	1/4	1680	115/1	2.6	HOOD CONTROL	1 TO 4, 6
2	EF-2(N)	GREENHECK	CFA-D90-CA	TOILET EXHAUST	CEILING	70	0.13	DIRECT	0.043	641	115/1	0.13	LIGHT SWITCH	4 TO 6

HOOD									
UNIT ID	MANUFACTURER	LENGTH (INCH)	MODEL	SERVICE	EXHAUST			CONSTRUCTION	UL LISTING
					AIR (CFM)	COLLAR (INCH)	S.P (INCH)		
HOOD-1(N)	HOODMART	72	CONC	FRYER & FLAT TOP GRILL	1200	10X10	0.5	STAINLESS STEEL	710

GRILLE, REGISTER AND DIFFUSER SCHEDULE													
No.	TAG	MANUFACTURER	MODEL	CFM RANGE	SIZE (IN)		MOUNTING			MATERIAL		FINISH	BORDER STYLE
					MOD.	NECK	SIDE-WALL	CEILING	DUCT	STEEL	ALUM.		
1	SD-1	TITUS	PAS	420-650	24X24	16"Ø						"C"	"B"

- NOTES :-
- SYMBOL KEY- FIRST LETTER: S-SUPPLY R-RETURN E-EXHAUST SECOND LETTER: D-DIFFUSER R-REGISTER G-GRILLE
  - CATALOGUE NUMBERS REFER TO TITUS AIR DEVICES. SEE PLANS FOR DUCT NECK SIZES.
  - DAMPERS SHALL BE OPERABLE FROM FACE "A" YOUNG'S REGULATOR WITH REMOTE SWITCH "C" BUTTERFLY (BD5)
  - FINISH "C" BAKED WHITE ENAMELED FINISH STANDARD.
  - BORDER STYLE "A" SURFACE MOUNTED "B" LAY-IN MOUNTING "C" LAY-IN PLASTER FRAME

AIR BALANCING						
UNIT TAG	AREA SERVED	SUPPLY AIR (CFM)	OUTSIDE AIR (CFM)	RETURN AIR (CFM)	EXHAUST AIR (CFM)	BALANCE
MAU-1(N)	SEE PLAN	1300	1300	-	-	+1300
EF-1(N)	KITCHEN	-	-	-	1200	-1200
EF-2(N)	TOILET	-	-	-	70	-70
TOTAL:		1300	1300	-	1270	+30
BUILDING PRESSURE:			POSITIVE			

NOTE: CONTRACTOR TO REBALANCE OUTSIDE AIR & RETURN AIR DAMPERS ON RTU TO MATCH VALUES MENTIONED IN ABOVE TABLE.

VRF HEAT PUMP (INDOOR UNIT) SCHEDULE														MAKE:- LG (OR EQUIVALENT)			
UNIT TAG	LOCATION	AREA SERVED	TYPE	CAP. (TON)	COOLING MBH	HEATING MBH	TOTAL CFM	MAX. SOUND PRESS.(DBA)	ELECTRICAL DATA		DIMENSIONS (HXWXD) (IN.)		PIPE SIZE (INCH)			WEIGHT (LBS.)	MODEL NO.
									PH/VOLT/HZ	RATED AMPS	UNIT	LIQ.	SUCTION	DRAIN (ID)			
AC-1(N)	SEE PLAN	SEE PLAN	CEILING SUSPENDED	1.5	19.1	21.5	477	36	1/208-230/60	0.97	10X39X28	1/4"	1/2"	5/8"	64	ARNU183V1A4 (OR EQUIVALENT)	
AC-2(N)	SEE PLAN	SEE PLAN	CEILING SUSPENDED	1.5	19.1	21.5	477	36	1/208-230/60	0.97	10X39X28	1/4"	1/2"	5/8"	64	ARNU183V1A4 (OR EQUIVALENT)	

VRF HEAT PUMP (OUTDOOR UNIT) SCHEDULE														MAKE:- LG (OR EQUIVALENT)						
UNIT TAG	LOCATION	INDOOR UNIT SERVED	CAP.TR	COOLING MBH	HEATING MBH	COMPRESSOR TYPE	UNIT DIMENSIONS IN.(HXWXD)	WEIGHT (LBS)	PIPING DIMENSION		ELECTRICAL			REFRIGERANT	EER2	SEER2	HSPF2	SOUND LEVEL (DBa)	MODEL NO.	MAKE
									LIQUID-HI PRESSURE (INCH)	GAS HIGH-PRESSURE (INCH)	(V/Hz/Ph)	MCA (A)	MOP (A)							
ACCU-1(N)	ROOF	AC-1(N) & AC-2(N)	3	38	43	INVERTER	54"X38"X13"	207	3/8"	5/8"	208-230/60/1	25	40	R410	14.0	20.1	10.6	50	ARUN038GS4 (OR EQUIVALENT)	LG

MINIMUM EXHAUST RATE						
UNIT TAG	AREA PURPOSE	GROSS FLOOR AREA (SQ.FT.)	EXHAUST CFM PER FIXTURE	EXHAUST CFM PER SQFT	TOTAL EXHAUST REQUIRED	ACTUAL EXHAUST AIR PROVIDED
EF-1(N)	KITCHEN	590	-	0.7	413	1200
EF-2(N)	TOILET	50	70	-	70	70
EXHAUST AIRFLOW						1270

NOTE: EXHAUST REQUIREMENTS PER IMC 2012 TABLE 403.3

VENTILATION CALCULATIONS												
ROOM NAME	AREA	HEIGHT	NUMBER OF PEOPLE/1000sq.ft AS PER 2012 IMC	NUMBER OF PEOPLE 2012 IMC	FINAL PEOPLE NO.	CFM AS PER 2012 IMC		CALCULATED VENT CFM	PROVIDED. OAI	TOILET EXHAUST CFM	KITHEN EXHAUST CFM	REMARK
						CFM/PERSON	CFM/SQ.FT					
KITCHEN	590	9	0	0	4	0	0	0	1300	-	1200	2012 IMC KITCHEN
TOILET	50	9	0	0	0	0	0	0	0	70	-	2012 IMC TOILET
TOTAL									1300			

AIR CURTAIN SCHEDULE							
UNIT ID	MANUFACTURER	LENGTH (INCH)	MODEL	CFM	QUANTITY	V/PH/HZ	AMPS
ACH-1(N)	MARS	42	LPV242-1UA-08	1050	1	115/1/60	2.4
ACH-2,3,4(N)	MARS	48	LPV242-1UA-08	1200	3	115/1/60	2.4

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

## GENERAL HVAC NOTES

- HVAC CONTRACTOR TO PROVIDE 1 YR PART AND LABOR WARRANTY ON ALL WORK, PROVIDE 5 YEARS COMPRESSOR WARRANTY AND 10 YEAR HEAT EXCHANGER WARRANTY ON ALL HVAC EQUIPMENT.
- HVAC CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION OF ALL TRADES, LANDLORD REQUIREMENTS, CEILING HEIGHTS AND EXISTING STRUCTURAL CONDITIONS PRIOR TO FABRICATION OF ANY DUCTWORK OR ORDERING OF ANY EQUIPMENT.
- ALL WORK SHALL BE IN STRICT ACCORDANCE WITH ALL FEDERAL, STATE AND LOCAL CODES AND ORDINANCES.
- FURNISH ALL LABOR, MATERIALS, TOOLS, INCIDENTALS AND DETAILS NECESSARY TO PROVIDE A COMPLETE HEATING, VENTILATING, AIR CONDITIONING SYSTEM. INCLUDE ANY LABOR AND MATERIAL NOT SPECIFICALLY MENTIONED, BUT NECESSARY TO PROVIDE A COMPLETE AND OPERATING SYSTEM. ALL WORK SHALL BE INSTALLED IN A PROFESSIONAL MANNER AND SHALL MEET ALL THE REQUIREMENTS OF THE STATE BUILDING CODE, CITY BUILDING CODE, SAFETY AND HEALTH CODES, NFPA CODES AND ALL OTHER APPLICABLE CODES AND REQUIREMENTS. ALL COSTS FOR SAID REQUIREMENTS SHALL BE INCLUDED IN THIS CONTRACTORS BID PRICE.
- HVAC CONTRACTOR SHALL SECURE AND PAY FOR ALL REQUIRED PERMITS AND INSPECTIONS AND PERFORM ALL TESTS CALLED FOR OR REQUIRED AS A PART OF HIS WORK. FURNISHED APPROVED CERTIFICATE OF FINAL INSPECTION, AND TURN OVER TO OWNER AT COMPLETION OF PROJECT.
- HVAC PLANS ARE DIAGRAMMATIC, NOT SHOWING EVERY ITEM IN EXACT LOCATION OR DETAIL. MEASUREMENTS AND LOCATIONS MUST BE FIELD VERIFIED AND COORDINATED WITH ARCHITECTURAL, HVAC, FIRE PROTECTION, STRUCTURAL, ELECTRICAL AND OTHER BUILDING DRAWINGS.
- HVAC CONTRACTOR TO PROVIDE TENANT WITH AS-BUILT DRAWINGS, ALL EQUIPMENT SHOP DRAWINGS, INFORMATION ON THERMOSTATS, CONTROL WIRING DIAGRAMS AND OTHER PERTINENT INFORMATION AT COMPLETION OF PROJECT.
- PROVIDE AN INDEPENDENT ABC OR NEBB CERTIFIED AIR BALANCE ON ALL HVAC EQUIPMENT FOR MINIMUM AND ECONOMIZER OA OPERATION, HOOD SYSTEM AND FANS.
- NEW DUCTS USED TO CONVEY THE CONDITIONED AIR SUPPLY AND VENTILATION AIR ARE TO BE MADE OF CONTINUOUS SHEET METAL. PROVIDE SPIRAL DUCT IN OPEN CEILING AREAS.
- DUCT LININGS (THERMAL AND ACOUSTICAL), VIBRATION ISOLATION CONNECTORS, FLEXIBLE DUCT CONNECTORS, AND DUCT TYPE TO BE APPROVED BY LOCAL CODE.
- ALL RETURN AIR, AND SUPPLY AIR DUCTWORK SHALL BE LINED WITH 1/2" THICK ACOUSTICAL LINER U.N.O. DUCT DIMENSIONS SHOWN ARE INSIDE NET DIMENSIONS, ADD TO SHEET METAL SIZE FOR INSULATION. IN GENERAL, INSTALL DUCTWORK TIGHT TO UNDERSIDE OF STRUCTURE UNLESS OTHERWISE NOTED OR REQUIRED BY FIELD CONDITIONS. COORDINATE EXACT MOUNTING HEIGHT IN FIELD WITH GENERAL CONTRACTOR. ALL OUTSIDE AIR DUCTS SHALL BE EXTERNALLY INSULATED WITH 1-1/2" THICK, 1.5 LBS. DENSITY FOIL FACED FIBERGLASS INSULATION. SPIRAL ROUND DUCTWORK IN CONDITIONED SPACE DOES NOT REQUIRE INSULATION UNLESS OTHERWISE NOTED.
- ALL DUCTWORK SHALL BE SHEET METAL FABRICATED IN ACCORDANCE WITH ASHRAE GUIDELINES AND SMACNA MANUAL LATEST EDITIONS.
- ALL BRANCH TAKE-OFFS SHALL BE PROVIDED WITH MANUAL BALANCING DAMPERS.
- 1" INSULATED FLEXIBLE DUCTS SHALL BE MAXIMUM 10'-0" LONG AND SHALL MEET INSTALLATION AND MATERIAL REQUIREMENTS OF LOCAL CODES. INSULATED DUCT TO BE 1" THICK 1-1/2 LBS DENSITY W/FOIL FACE.
- THE HVAC CONTRACTOR SHALL FURNISH AND INSTALL A COMPLETE TEMPERATURE CONTROL SYSTEM TO INCLUDE SEVEN DAY PROGRAMMABLE THERMOSTAT COMPATIBLE WITH UNIT.
- ALL TEMPERATURE CONTROLS, FIRE ALARM COMPONENTS, EQUIPMENT NAMEPLATES, LABELS, OR COLOR CODED COMPONENTS SHALL BE MASKED DURING PAINTING TO PREVENT DAMAGE FROM OVER-SPRAY OR OBSCURING INFORMATION.
- ALL LOW VOLTAGE WIRING AND CONDUIT REQUIRED FOR HVAC EQUIPMENT SHALL BE FURNISHED AND INSTALLED BY LANDLORD'S HVAC CONTRACTOR. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING WITH ELECTRICAL CONTRACTOR ALL WIRING AND CONDUIT REQUIRED FOR EQUIPMENT OPERATION AND CONTROL.
- PROVIDE OPERATIONAL MANUALS, INSTRUCT OWNER ON EQUIPMENT USE, AND TEST ALL UNITS AND CONTROLS FOR PROPER SEQUENCING.
- IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE THAT THE HVAC EQUIPMENT COMPONENTS ARE INSTALLED AT LOCATIONS AND ELEVATIONS WHICH MAKE THEM READILY ACCESSIBLE FOR ROUTINE MAINTENANCE WITHOUT REQUIRING ANY EXTRAORDINARY MEASURES.
- ALL ROOF WORK TO BE PERFORMED BY APPROVED ROOFING CONTRACTOR @ HVAC CONTRACTOR'S EXPENSE. SEAL ALL ROOF PENETRATIONS WEATHERTIGHT.
- MAINTAIN 10' MINIMUM SEPARATION BETWEEN ALL OA OPENINGS AND EXHAUST OR VENT OPENINGS.
- ALL TYPE 1 HOOD EXHAUST DUCTWORK TO BE 16 GA WELDED BLACK IRON. PROVIDE 3M FIRE MASTER DUCT WRAP TO FORM ZERO INCH TO COMBUSTIBLE, 1 HR ASSEMBLY OVER DUCT WHERE ADEQUATE CLEARANCE TO COMBUSTIBLES CANNOT BE OBTAINED.
- CONTRACTOR SHALL COORDINATE WITH SPECIFICATIONS AND PROVIDE ACOUSTIC INSULATION OF THE FIRST 10'-0" OF SUPPLY & RETURN DUCTWORK (OR AS DESIGNATED BY CODE) USE MINIMUM R-6 FIBERGLASS ACOUSTIC DUCT LINER, AND ALL EXPOSED, RAW LINER EDGES SHALL BE CAPPED WITH SHEET METAL NOSING.
- ALL INTERIOR EXPOSED DUCTWORK SHALL BE INTERNALLY INSULATED WITH MINIMUM R-6 INSULATION TO PREVENT CONDENSATION.

## MECHANICAL SYSTEM SPECIFICATIONS

THE FOLLOWING OUTLINE SPECIFICATIONS ARE MEANT FOR REFERENCE ONLY AND HAVE BEEN PROVIDED TO ESTABLISH RECOMMENDED MINIMUM QUALITY LEVEL FOR SERVICES AND EQUIPMENT TO BE USED FOR THE CONSTRUCTION OF BEEF-A-ROO.

THE USE OF BRAND NAMES, CATALOGUE NUMBERS OR NAMES OF MANUFACTURERS IS SOLELY FOR THE PURPOSE OF ESTABLISHING THE TYPE AND QUALITY THAT WILL BE ACCEPTABLE. UNLESS SPECIFICALLY PROHIBITED IN THE SPECIFICATIONS, SUBSTITUTIONS WILL BE PERMITTED AFTER SUBMITTAL TO AND WRITTEN APPROVAL BY BEEF-A-ROO.

IT IS RECOMMENDED THAT THE CONTRACTOR ACQUIRE THE DESIGN AND EQUIPMENT BROCHURES FROM BEEF-A-ROO EQUIPMENT AND SUPPLY FOR REFERENCE WITH THESE DOCUMENTS.

### MECHANICAL GENERAL REQUIREMENTS:

- ALL WORK SHALL CONFIRM TO APPLICABLE CODES.

### COMMON WORK RESULTS FOR HVAC:

- V-BELT FAN DRIVES: MULTIPLE V-BELT STYLE WITH ADJUSTABLE PITCH DRIVER SHEAVES UP TO 2 INCHES OF TOTAL STATIC PRESSURE AND FIXED PITCH DRIVER SHEAVES AT OR ABOVE 2 INCHES OF TOTAL STATIC PRESSURE AND UP. SHEAVES SHALL HAVE SPLIT, TAPER STYLE BUSHINGS. SELECT DRIVES FOR A 150 PERCENT SERVICE FACTOR AND THAT PROVIDE FOR ADJUSTMENT OF BOTH BELT TENSION AND ALIGNMENT. PROVIDE FOR ADJUSTMENT OF FAN SPEED FOR EACH AIR HANDLING SYSTEM DURING AIR QUANTITY BALANCING OPERATIONS. FURNISH EXTRA SET OF SHEAVES AS RECOMMENDED BY THE BALANCING AGENCY.

### MOTORS:

- MOTORS SHALL BE PREMIUM EFFICIENCY TYPE.
- MOTORS SMALLER THAN 1/2 HP SHALL BE 115 VOLTS, SINGLE PHASE, UNLESS OTHERWISE NOTED ON DRAWINGS.
- MOTORS 1/2 HP AND LARGER SHALL BE 208 VOLTS, 3 PHASE, UNLESS OTHERWISE NOTED ON DRAWINGS.
- FOR ELECTRICAL EQUIPMENT FURNISHED BY ELECTRICAL TRADES REFER TO DIVISION 16.

### HANGERS AND SUPPORTS:

- HANGERS AND SUPPORTS SHALL BE MSS SP-58, TYPES 1 THROUGH 58, CONSTRUCTED OF FACTORY-FABRICATED COMPONENTS. INSULATED PIPING IN CONTACT WITH HANGERS SHALL HAVE THERMAL-HANGER SHIELD INSERTS.

### MECHANICAL VIBRATION CONTROLS:

- ALL ROTATING MECHANICAL EQUIPMENT WILL BE MOUNTED ON OR HUNG ON VIBRATION ISOLATORS TO PREVENT THE TRANSMISSION OF VIBRATION AND MECHANICALLY TRANSMITTED SOUND TO THE BUILDING STRUCTURE.
- ROOF MOUNTED AND INDOOR AIR HANDLING UNIT FANS WILL HAVE INTERNAL FRAME MOUNTED VIBRATION ISOLATORS. ADDITIONALLY, ROOF MOUNTED AIR HANDLING UNITS WILL HAVE A CONTINUOUS NEOPRENE ISOLATOR PAD BETWEEN THE ROOF CURB AND THE UNIT.

### MECHANICAL INSULATION:

- PIPING, DUCT SYSTEMS AND EQUIPMENT SHALL BE INSULATED TO CONSERVE ENERGY, AVOID CONDENSATION AND/OR TO PROVIDE PERSONNEL PROTECTION WHEN REQUIRED. A CONTINUOUS VAPOR BARRIER JACKET SHALL BE PROVIDED WHEN CONDENSATION IS POSSIBLE. INSULATION THICKNESS AND R-VALUE SHALL COMPLY WITH ASHRAE 90.1.
- INSULATION SHALL BE SEGMENTED FOR REMOVAL WITHOUT DAMAGE TO ADJACENT INSULATION IN ORDER TO PROVIDE FOR NORMAL MAINTENANCE AND INSPECTION ACTIVITIES.
- INSULATION SHALL BE PROVIDED FOR THE FOLLOWING SERVICES:
  - DOMESTIC COLD WATER
  - DOMESTIC HOT WATER
  - DOMESTIC HOT WATER RETURN
  - ROOF DRAIN PANS AND HORIZONTAL RAIN CONDUCTORS
  - COLD CONDENSATE DRAINS
  - SUPPLY AIR
  - RELIEF/EXHAUST AIR, FROM DAMPER TO OUTSIDE OPENING
- INSULATION MATERIALS SHALL MEET APPLICABLE REQUIREMENTS OF NFPA 90A.
- DUCT INSULATION IN SHAFTS AND ABOVE CEILINGS SHALL BE 1-1/2" 3/4# DENSITY BLANKET TYPE FIBERGLASS WITH VAPOR BARRIER JACKET.
- OUTDOOR DUCTWORK SHALL BE INSULATED WITH MINIMUM R-12 RIGID BOARD INSULATION WITH ALUMINUM JACKET.
- INDOOR PIPE INSULATION SHALL BE PRE-SIZED RIGID FIBERGLASS WITH PVC FITTING COVERS.
- INSULATION SHALL NOT BE APPLIED UNTIL AFTER PIPE, DUCT AND EQUIPMENT HAS BEEN FINAL TESTED, INSPECTED AND APPROVED.
- INDOOR DUCT AND PLENUM INSULATION SCHEDULE:
  - CONCEALED, RECTANGULAR, ROUND AND FLAT-OVAL, SUPPLY-RETURN, OUTDOOR-AND EXHAUST-AIR DUCT AND AIR PLENUM INSULATION: 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-12
OUTSIDE OF BUILDING:	R-12

### UNITARY ROOFTOP AIR CONDITIONERS:

- UNITARY ROOFTOP AIR CONDITIONERS 1-1/2 TO 20 TONS:

- DESCRIPTION: FACTORY ASSEMBLED AND TESTED; DESIGNED FOR EXTERIOR INSTALLATION, CONSISTING OF COMPRESSOR, CONDENSER COIL, DIRECT EXPANSION COOLING OIL, GAS FIRED HEATING SECTION, SUPPLY-AIR FAN, CONDENSER COIL FAN, REFRIGERATION CONTROLS, FILTERS, DAMPERS, AND TEMPERATURE CONTROLS OR INTERFACE SPECIFIED FOR UNIT CONTROLS.
- CASING GALVANIZED-STEEL SINGLE-WALL CONSTRUCTION WITH ENAMEL PAINT FINISH, HINGED SUPPLY-AIR FAN; FORWARD CURVED, CENTRIFUGAL BELT DRIVEN WITH ADJUSTABLE MOTOR SHEAVES, GREASE-LUBRICATED BALL BEARINGS, AND MOTOR.

- SUPPLY-AIR FAN: FORWARD CURVED, CENTRIFUGAL BELT DRIVEN WITH ADJUSTABLE MOTOR SHEAVES, GREASE-LUBRICATED BALL BEARINGS, AND MOTOR.
- CONDENSER COIL FAN: PROPELLER TYPE, DIRECTLY DRIVEN BY PERMANENTLY LUBRICATED MOTOR.
- DIRECT EXPANSION COOLING COILS: ALUMINUM-PLATE FIN AND SEAMLESS COPPER TUBE IN STEEL CASING WITH EQUALIZING-TYPE VERTICAL DISTRIBUTOR.
- COMPRESSOR(S): NUMBER AS SCHEDULED. HERMETIC RECIPROCATING OR SCROLL COMPRESSORS WITH INTEGRAL VIBRATION ISOLATORS, INTERNAL OVERCURRENT AND OVERTEMPERATURE PROTECTION, INTERNAL PRESSURE RELIEF, AND CRANKCASE HEATER(S).
- REFRIGERATION SYSTEM:
  - COMPRESSOR(S).
  - CONDENSER COIL AND FAN.
  - DIRECT EXPANSION COOLING COIL AND SUPPLY-AIR FAN.
  - EXPANSION VALVES WITH REPLACEABLE THERMOSTATIC ELEMENTS.
  - CHECK VALVES.
  - REFRIGERANT DRYERS.
  - HIGH-PRESSURE SWITCHES.
  - LOW-PRESSURE SWITCHES.
  - THERMOSTATS FOR COIL FREEZE-UP PROTECTION DURING LOW AMBIENT TEMPERATURE OPERATION OR LOSS OF AIR.
  - LOW AMBIENT SWITCH.
  - BRASS SERVICE VALVES INSTALLED IN DISCHARGE AND LIQUID LINE.
  - REFRIGERANT CHARGE-R410A.
  - COMPRESSOR LOAD OVERLOAD PROTECTION/MANUAL RESET.
  - ANTI-RECYCLING TIMING DEVICE PREVENTS COMPRESSOR RESTART FOR FIVE MINUTES AFTER SHUTDOWN.
  - OIL-PRESSURE SWITCH: DESIGNATED TO SHUT DOWN COMPRESSORS ON LOW OIL PRESSURE.

- FILTERS: 2-INCH THICK, FIBERGLASS, PLEATED, THROWAWAY FILTERS IN FILTER RACK.
- HEAT EXCHANGER: ALUMINUM-STEEL OR STAINLESS-STEEL CONSTRUCTION FOR NATURAL-GAS-FIRED BURNER WITH FOLLOWING CONTROLS:
  - REDUNDANT DUAL GAS VALVE WITH MANUAL SHUTOFF.
  - DIRECT-SPARK PILOT IGNITION.
  - ELECTRONIC FLAME SENSOR.
  - INDUCED-DRAFT BLOWER.
  - FLAME ROLLOUT SWITCH.
- OUTSIDE-AIR DAMPER: LINKED DAMPER BLADES WITH FULLY MODULATING, SPRING-RETURN DAMPER MOTOR AND HOOD.
- ECONOMIZER: RETURN- AND OUTSIDE-AIR DAMPERS WITH NEOPRENE SEALS, BIRD SCREEN, AND HOOD.

- DAMPER MOTOR: FULLY MODULATING SPRING RETURN WITH ADJUSTABLE MINIMUM POSITION.
- CONTROL: ELECTRONIC-CONTROL SYSTEM USES RETURN-AIR AND OUTSIDE-AIR TEMPERATURE TO ADJUST MIXING DAMPERS.
- RELIEF DAMPER: GRAVITY ACTUATED WITH BIRD SCREEN AND HOOD.

- POWER CONNECTION: PROVIDE FOR SINGLE CONNECTION OF POWER TO UNIT WITH UNIT-MOUNTED AND WIRED DISCONNECT SWITCH ACCESSIBLE FROM OUTSIDE UNIT AND CONTROL-CIRCUIT TRANSFORMER WITH BUILT-IN CIRCUIT BREAKER.
- UNIT CONTROLS: SOLID-STATE CONTROL BOARD AND COMPONENTS CONTAIN AT LEAST THE FOLLOWING FEATURES:
  - SUPPLY-AIR FAN CONTROL RELAY.
  - DEFAULT CONTROL TO ENSURE PROPER OPERATION AFTER POWER INTERRUPTION.
  - FIELD-ADJUSTABLE CONTROL PARAMETERS.
  - ECONOMIZER CONTROL.
  - ELECTRIC HEAT STAGING.
  - GAS VALVE DELAY BETWEEN FIRST- AND SECOND STAGE FIRING.
  - NIGHT SETBACK MODE (OUTSIDE AIR DAMPER LOCKOUT).
  - LOW REFRIGERANT PRESSURE CONTROL.
  - CONTROL INTERFACE FOR FIELD MOUNTED THERMOSTAT.

- THERMOSTAT: WALL-MOUNTED, PROGRAMMABLE, ELECTRONIC; WITH HEATING SETBACK AND COOLING SETUP WITH SEVEN-DAY PROGRAMMING; AND THE FOLLOWING:
  - TOUCH SENSITIVE KEYPAD.
  - DEG F SPACE TEMPERATURE READOUT.
  - LED INDICATORS.
  - HOURLY/DAILY PROGRAMMING.
  - MANUAL OVERRIDE CAPABILITY.
  - TIME AND OPERATIONAL MODE READOUT.
  - STATUS INDICATOR.
  - BATTERY BACKUP.
  - SUBBASE WITH MANUAL SYSTEM SWITCH (ON-HEAT-AUTO-COOL) AND FAN SWITCH (AUTO-ON).
  - DIRTY-FILTER INDICATION.

- ACCESSORIES:
  - COLD-WEATHER KIT: ELECTRIC HEATER MAINTAINS TEMPERATURE IN GAS BURNER COMPARTMENT.
  - SERVICE OUTLETS: 115-V, GROUND-FAULT, CIRCUIT-INTERRUPTER TYPE, FACTORY WIRED SUCH THAT OUTLET REMAINS ENERGIZED EVEN IF THE UNIT MAIN DISCONNECT IS OPEN.
  - DIRTY-FILTER SWITCH.
  - HAIL GUARDS OF STEEL, PAINTED TO MATCH CASING.
  - VERTICAL VENT EXTENSION.

- ROOF CURB: STEEL WITH CORROSION-PROTECTION COATING, GASKETING, AND FACTORY-INSTALLED WOOD NAILER; COMPLYING WITH NRCA STANDARDS. TOP OF CURB SHALL BE LEVEL AND HEIGHT SHALL BE AS SCHEDULED.

### PIPING INSULATION

- INSULATE ALL PIPING IN ACCORDANCE WITH INSULATION SCHEDULE EXCEPT AS OTHERWISE NOTED.

SERVICE	INSULATION SCHEDULE - PIPING	
	SIZE	THICKNESS MATERIAL FINISH
CONDENSER DRAIN PIPING	1.0"	P-6

- MATERIAL:
- TYPE P-1: MINIMUM 4 LB DENSITY MOLDED FIBERGLASS, MAXIMUM 0.24 K-FACTOR AT 75 DEG F MEAN TEMPERATURE WITH FACTORY-APPLIED FIRE-RETARDANT FOIL-SKRIM-KRAFT FACING. ALL SERVICE JACKET. SIMILAR TO OWENS-CORNING 650 ASJ.
  - TYPE P-3: MINIMUM 4 LB DENSITY MOLDED FIBERGLASS FITTING, MAXIMUM 0.23 K-FACTOR AT 75 DEG F MEAN TEMPERATURE SIMILAR TO EPOLOX HAMFAB MOLDED FITTINGS.
  - TYPE P-4: MINIMUM 1 LB DENSITY FIBERGLASS FITTING INSERTS, MAXIMUM 0.27 K-FACTOR AT 75 DEG F MEAN TEMPERATURE SIMILAR TO MANVILLE HI-LO TEMP INSULATION INSERTS.
  - TYPE P-6: MINIMUM 6 LB MOLDED FOAMED PLASTIC, MAXIMUM 0.27 K-FACTOR AT 75 DEG F MEAN TEMPERATURE. MAXIMUM 0.17 PERMEANCE. SIMILAR TO ARMSTRONG ARMAFLEX II.

### METAL DUCTS:

- DUCTWORK SHALL CONFORM TO SMACNA HVAC DUCT CONSTRUCTION STANDARDS, METAL AND FLEXIBLE.
- DUCTWORK SHALL BE SEALED AS SPECIFIED BELOW. THE SEAL CLASSES CORRESPOND TO THE SEAL CLASSES SPECIFIED IN TABLE 11.2 OF SMACNA HVAC DUCT CONSTRUCTION STANDARDS, METAL AND FLEXIBLE.
- ALL SUPPLY AIR, RETURN AIR, AND GENERAL EXHAUST AIR DUCTWORK (UNLESS OTHERWISE INDICATED) SHALL BE SINGLE WALL GALVANIZED SHEET METAL DUCT OF THE APPROPRIATE PRESSURE CLASSIFICATION AND SEALED IN ACCORDANCE WITH SEAL CLASS B REQUIREMENTS DEPENDING ON THE OPERATING PRESSURE INDICATED.
- CARBON-STEEL SHEETS: KITCHEN HOOD EXHAUST DUCTWORK SHALL BE WELDED BLACK STEEL CONSTRUCTED OF ASTM A 368/A 368M, COLD-ROLLED SHEETS, COMMERCIAL QUALITY, WITH OILED, MATTE FINISH FOR EXPOSED DUCTS.

### DUCT ACCESSORIES:

- INSULATED FLEXIBLE DUCTS SHALL BE WRAPPED WITH FLEXIBLE GLASS FIBER INSULATION, ENCLOSED BY A FIRE RETARDANT POLYETHYLENE VAPOR BARRIER JACKET, MAXIMUM 0.23 K VALUE AT 75 DEG F. FLEXIBLE DUCT SHALL BE INTERLOCKING SPIRAL OF GALVANIZED STEEL OR ALUMINUM CONSTRUCTION OR FABRIC SUPPORTED BY HELICALLY WOUND SPRING STEEL WIRE OR FLAT STEEL BANDS; RATED TO 6 INCHES WG POSITIVE AND 4 INCHES WG NEGATIVE FOR LOW AND MEDIUM PRESSURE DUCTS. FLEXIBLE DUCTS SHALL HAVE HIGH SOUND ATTENUATION PROPERTIES.

### POWER VENTILATORS:

- CEILING-MOUNTING VENTILATORS (TOILET ROOM EXHAUST FAN)

- DESCRIPTION: CENTRIFUGAL FANS DESIGNED FOR INSTALLING IN CEILING OR WALL OR FOR CONCEALED IN-LINE APPLICATIONS.
- HOUSING: STEEL, LINED WITH ACOUSTICAL INSULATION.
- FAN WHEEL: CENTRIFUGAL WHEELS DIRECTLY MOUNTED ON MOTOR SHAFT, FAN SHROUDS, MOTOR, AND FAN WHEEL SHALL BE REMOVABLE FOR SERVICE.
- GRILLE: PLASTIC, LOUVERED GRILLE WITH FLANGE ON INTAKE AND THUMBSCREW ATTACHMENT TO FAN HOUSING.
- ELECTRICAL REQUIREMENTS: JUNCTION BOX FOR ELECTRICAL CONNECTION ON HOUSING AND RECEPTACLE FOR MOTOR PLUG-IN.

- ACCESSORIES:
  - VARIABLE-SPEED CONTROLLER: SOLID-STATE CONTROL TO REDUCE SPEED FROM 100 TO LESS THAN 50 PERCENT.
  - MANUAL STARTER SWITCH: SINGLE-POLE ROCKER SWITCH ASSEMBLY WITH COVER AND PILOT LIGHT.
  - TIME-DELAY SWITCH: ASSEMBLY WITH SINGLE-POLE ROCKER SWITCH, TIMER, AND COVER PLATE.
  - FILTER: WASHABLE ALUMINUM TO FIT BETWEEN FAN AND GRILLE.
  - ISOLATION: RUBBER-IN-SHEAR VIBRATION ISOLATORS.
  - MANUFACTURER'S STANDARD ROOF JACK OR WALL CAP, AND TRANSITION FITTINGS.
- KITCHEN HOOD EXHAUST FANS

- DESCRIPTION: UL 762 LABELED BELT-DRIVEN CENTRIFUGAL FANS CONSISTING OF HOUSING, WHEEL, FAN SHAFT, BEARINGS, MOTOR AND DISCONNECT SWITCH, DRIVE ASSEMBLY, HEAT BAFFLE, CURB BASE, AND ACCESSORIES.

- HOUSING: SPUN-ALUMINUM CONSTRUCTION WITH SQUARE, ONE-PIECE, ALUMINUM BASE WITH VENTURI INLET CONE PROVIDE SPUN-ALUMINUM DISCHARGE BAFFLE TO DIRECT DISCHARGE AIR UPWARD, WITH RAIN AND SNOW DRAINS, GREASE COLLECTOR, AND DRAIN CONNECTION.

- HINGED SUBBASE: VENTILATED, GALVANIZED-STEEL HINGED ARRANGEMENT PERMITTING SERVICE AND MAINTENANCE.

- FAN WHEELS: ALUMINUM HUB AND WHEEL WITH BACKWARD-INCLINED BLADES.

- BELT-DRIVEN DRIVE ASSEMBLY: RESILIENTLY MOUNTED TO HOUSING, WITH THE FOLLOWING FEATURES:

- FAN SHAFT: TURNED, GROUND, AND POLISHED STEEL; KEYED TO WHEEL HUB.
- SHAFT BEARINGS: PERMANENTLY LUBRICATED, PERMANENTLY SEALED, SELF-ALIGNING BALL BEARINGS.
- SHEAVES: CAST-IRON, ADJUSTABLE-PITCH MOTOR SHEAVE.
- FAN AND MOTOR ISOLATED FROM EXHAUST AIRSTREAM.
- REFER TO DIVISION 15 SECTION "COMMON WORK RESULTS FOR HVAC" FOR ADDITIONAL REQUIREMENTS.

### ACCESSORIES:

- DISCONNECT SWITCH: NON-FUSIBLE TYPE, WITH THERMAL-OVERLOAD PROTECTION MOUNTED INSIDE FAN HOUSING, FACTORY WIRED THROUGH AN INTERNAL ALUMINUM CONDUIT.
- BIRD SCREENS: REMOVABLE, 1/2-INCH MESH, ALUMINUM OR BRASS WIRE.
- MOTORIZED DAMPERS: PARALLEL-BLADE DAMPERS MOUNTED IN CURB BASE WITH ELECTRIC ACTUATOR; WIRED TO CLOSE WHEN FAN STOPS.
- PROVIDE PREFABRICATED ROOF CURBS FOR EACH FAN.

### ROOF CURB

- CONSTRUCTION: GALVANIZED STEEL; MITERED AND WELDED CORNERS; 1-1/2-INCH THICK, RIGID, FIBERGLASS INSULATION ADHERED TO INSIDE WALLS; AND 1-1/2-INCH CHEMICALLY TREATED WOOD NAILER. SIZE AS REQUIRED TO SUIT ROOF OPENING AND FAN BASE.
  - CONFIGURATION: SELF-FLASHING WITHOUT A CANT STRIP, WITH MOUNTING FLANGE, AND SUITABLE FOR FLAT ROOFS WITH TAPERED INSULATION.
  - HEIGHT: CURB SHALL EXTEND A MINIMUM 12 INCHES ABOVE TOP SURFACE OF ROOF INSULATION.

- CONSTRUCTION: GALVANIZED STEEL; MITERED AND WELDED CORNERS; 1-1/2-INCH THICK, RIGID, FIBERGLASS INSULATION ADHERED TO INSIDE WALLS; AND 1-1/2-INCH CHEMICALLY TREATED WOOD NAILER. SIZE AS REQUIRED TO SUIT ROOF OPENING AND FAN BASE.

- CONFIGURATION: BUILT-IN RAISED CANT WITH STEP DIMENSION MATCHING INSULATION THICKNESS, WITH MOUNTING FLANGE, AND SUITABLE FOR SLOPED ROOFS WITH UNIFORM INSULATION THICKNESS.
- HEIGHT: CURB SHALL EXTEND A MINIMUM 12 INCHES ABOVE TOP SURFACE OF ROOF INSULATION.

### COMMERCIAL KITCHEN HOODS

#### A. HOOD MATERIALS:

- STAINLESS-STEEL SHEET, ASTM A 666, TYPE 304.
- MINIMUM THICKNESS: 0.03 INCH.
- GENERAL COMPLY WITH SSINAS' FINISHES FOR STAINLESS STEEL" FOR RECOMMENDATIONS FOR APPLYING AND DESIGNATING FINISHES.
- EXPOSED SURFACES: ASTM A 480/A 480M, NO. 4 FINISH (BRIGHT, DIRECTIONAL POLISH).
- WHEN POLISHING IS COMPLETED, PASSIVATE AND RINSE SURFACES. REMOVE EMBEDDED FOREIGN MATTER AND LEAVE SURFACES CHEMICALLY CLEAN.

- GASKETS: NSF CERTIFIED FOR END-USE APPLICATION INDICATED; OF RESILIENT RUBBER, NEOPRENE, OR PVC THAT IS NONTOXIC, STABLE, ODORLESS, NONABSORBENT, AND UNAFFECTED BY EXPOSURE TO FOODS AND CLEANING COMPOUNDS, AND PASSES TESTING ACCORDING TO UL 710.

#### B. HOOD FABRICATION, GENERAL:

- WELDING: USE WELDING ROD OF SAME COMPOSITION AS METAL BEING WELDED. USE METHODS THAT MINIMIZE DISTORTION AND DEVELOP STRENGTH AND CORROSION RESISTANCE OF BASE METAL. MAKE DUCTILE WELDS FREE OF MECHANICAL IMPERFECTIONS SUCH AS GAS HOLES, PITS, OR CRACKS.
- FOR METAL BUTT JOINTS, COMPLY WITH SMACNA'S "KITCHEN EQUIPMENT FABRICATION GUIDELINES."
- IN FOOD ZONES, AS DEFINED IN NSF, FABRICATE SURFACES FREE FROM EXPOSED FASTENERS.
- TYPE I EXHAUST HOOD FABRICATION:

- WELD ALL JOINTS EXPOSED TO GREASE WITH CONTINUOUS WELDS AND MAKE GREASE REMOVAL DEVICES AND MAKEUP AIR DIFFUSERS EASILY ACCESSIBLE FOR CLEANING.
- EXHAUST-DUCT COLLARS: MINIMUM 0.0625-INCH THICK STAINLESS STEEL AT LEAST 3 INCHES LONG, CONTINUOUSLY WELDED TO TOP OF HOOD AND AT CORNERS.

- GREASE REMOVAL DEVICES: REMOVABLE, FILTER/BAFFLE GREASE FILTERS.

- WET-CHEMICAL FIRE-SUPPRESSION SYSTEM: PRE-ENGINEERED DISTRIBUTION PIPING DESIGNED FOR AUTOMATIC DETECTION AND RELEASE OR MANUAL RELEASE OF FIRE-SUPPRESSION AGENT BY HOOD OPERATOR. FIRE-SUPPRESSION SYSTEM SHALL BE LISTED AND LABELED BY A TESTING AGENCY ACCEPTABLE TO AUTHORITIES HAVING JURISDICTION.

#### DIFFUSERS, REGISTERS, AND GRILLES:

- AIR DIFFUSION DEVICES SHALL BE CHOSEN IN TERMS OF SPECIFIC AIR DISTRIBUTION REQUIREMENTS, SPACING, AND SOUND CHARACTERISTICS. PROVIDE ADC CERTIFIED MANUFACTURER'S STANDARD DEVICES.

#### TESTING, ADJUSTING AND BALANCING:

- OPERATIONAL TESTING, ADJUSTING AND BALANCING OF HYDRONIC AND AIR HANDLING SYSTEMS, AND DUCT LEAKAGE TESTING, SHALL BE DONE IN ACCORDANCE WITH NEBB OR AAEC STANDARDS AND SHALL BE PERFORMED BY AN INDEPENDENT NEBB OR AAEC CERTIFIED TAB CONTRACTOR.

#### THERMOSTATIC CONTROLS:

##### A. GENERAL:

- SUPPLY OF HEATING AND COOLING ENERGY TO EACH ZONE SHALL BE CONTROLLED BY INDIVIDUAL THERMOSTATIC CONTROLS CAPABLE OF RESPONDING TO TEMPERATURE WITHIN THE ZONE. WHERE HUMIDIFICATION OR DEHUMIDIFICATION OR BOTH IS PROVIDED, NOT FEWER THAN ONE HUMIDITY CONTROL DEVICE SHALL BE PROVIDED FOR EACH HUMIDITY CONTROL SYSTEM.
- EXCEPTION:
  - THE PERIMETER SYSTEM INCLUDES NOT FEWER THAN ONE THERMOSTATIC CONTROL ZONE FOR EACH BUILDING EXPOSURE HAVING EXTERIOR WALLS FACED ONLY ONE ORIENTATION (WITHIN ± 45 DEGREES) (0.8 RAD) FOR MORE THAN 50 CONTIGUOUS FEET (15 240 MM).
  - THE PERIMETER SYSTEM HEATING AND COOLING SUPPLY IS CONTROLLED BY THERMOSTATS LOCATED WITHIN THE ZONES SERVED BY THE SYSTEM.

##### B. DEAD BAND:

- WHERE USED TO CONTROL BOTH HEATING AND COOLING, ZONE THERMOSTATIC CONTROLS SHALL BE CONFIGURED TO PROVIDE A TEMPERATURE RANGE OR DEAD BAND OF NOT LESS THAN 5°F (2.8°C) WITHIN WHICH THE SUPPLY OF HEATING AND COOLING ENERGY TO THE ZONE IS SHUT OFF OR REDUCED TO A MINIMUM.
- EXCEPTIONS:
  - THERMOSTATS REQUIRING MANUAL CHANGEOVER BETWEEN HEATING AND COOLING MODES.
  - OCCUPANCIES OR APPLICATIONS REQUIRING PRECISION IN INDOOR TEMPERATURE CONTROL AS APPROVED BY THE CODE OFFICIAL.

##### C. THERMOSTATIC SETBACK:

- THERMOSTATIC SETBACK CONTROLS SHALL BE CONFIGURED TO SET BACK OR TEMPORARILY OPERATE THE SYSTEM TO MAINTAIN ZONE TEMPERATURES DOWN TO 55°F (13°C) OR UP TO 85°F (29°C).
- AUTOMATIC SETBACK AND SHUTDOWN:
  - AUTOMATIC TIME CLOCK OR PROGRAMMABLE CONTROLS SHALL BE CAPABLE OF STARTING AND STOPPING THE SYSTEM FOR SEVEN DIFFERENT DAILY SCHEDULES PER WEEK AND RETAINING THEIR PROGRAMMING AND TIME SETTING DURING A LOSS OF POWER FOR NOT FEWER THAN 10 HOURS. ADDITIONALLY, THE CONTROLS SHALL HAVE A MANUAL OVERRIDE THAT ALLOWS TEMPORARY OPERATION OF THE SYSTEM FOR UP TO 2 HOURS; A MANUALLY OPERATED TIMER CONFIGURED TO OPERATE THE SYSTEM FOR UP TO 2 HOURS; OR AN OCCUPANCY SENSOR.

##### E. SETPOINT OVERLAP RESTRICTION:

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

##### F. HEAT PUMP SUPPLEMENTARY HEAT:

- HEAT PUMPS HAVING SUPPLEMENTARY ELECTRIC RESISTANCE HEAT SHALL HAVE CONTROLS THAT, EXCEPT DURING DEFROST, PREVENT SUPPLEMENTARY HEAT OPERATION WHERE THE HEAT PUMP CAN PROVIDE THE HEATING LOAD.

##### G. AUTOMATIC START:

- 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.

SHEET NO.

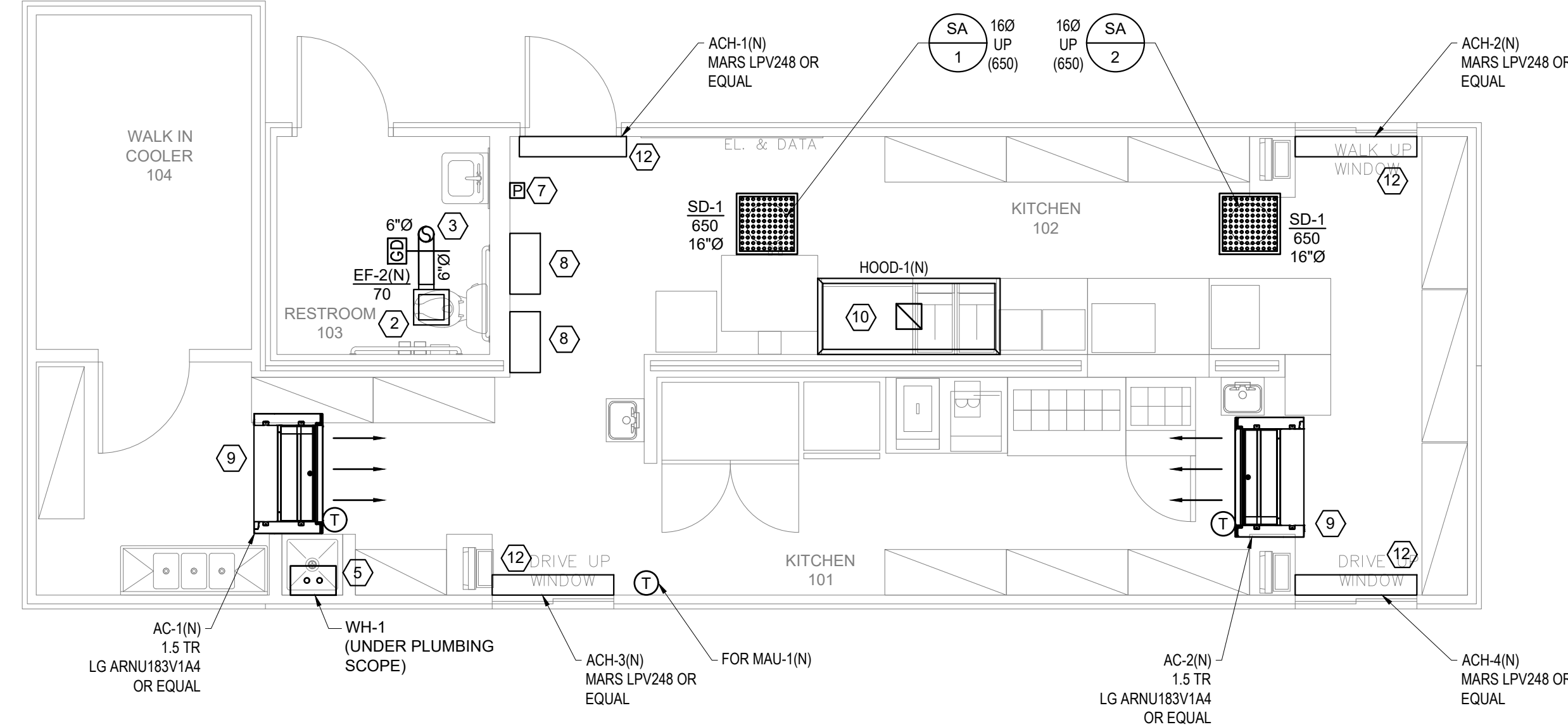
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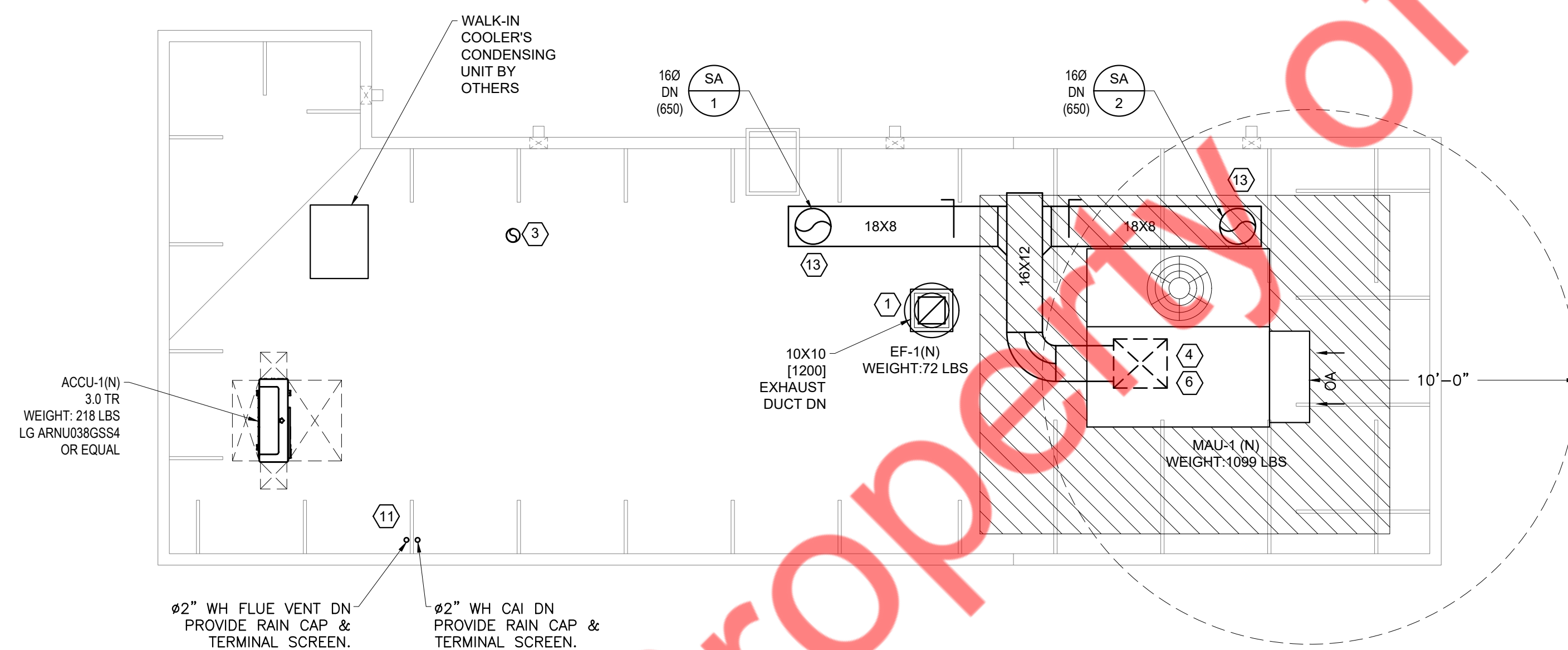
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07.20.23  
12.15.23

SEAL:

NY ENGINEERS



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



**02 MECHANICAL ROOF PLAN**  
SCALE: 1/4"=1'-0"

KEY NOTES

NO.	ITEM DESCRIPTION	NO.	ITEM DESCRIPTION
1	EF-1(N) ROOF MOUNTED EXHAUST FAN & CURB FURNISHED BY HOOD SUPPLIER AND INSTALLED BY HVAC CONTRACTOR. HVAC CONTRACTOR TO PROVIDE 16 GA WELDED BLACK IRON DUCT (10x10) FROM HOOD, UP THROUGH ROOF TO EXHAUST FAN. FLASH & SEAL WATER TIGHT. PROVIDE 3M, FIRE MASTER DUCT WRAP TO FORM 0" CLEARANCE TO COMBUSTIBLE, 1HR RATED ENCLOSURE. SEE HOOD DRAWINGS FOR ADDITIONAL REQUIREMENTS. ON SHEET M-6. EF-1(N) SHALL BE UL 762 LABELED UPBLAST TYPE GREASE, BELT-DRIVEN CENTRIFUGAL EXHAUST FAN CONSISTING OF HOUSING, WHEEL, FAN SHAFT, BEARINGS, MOTOR AND DISCONNECT SWITCH, DRIVE ASSEMBLY, HEAT BAFFLE, CURB BASE, AND ACCESSORIES. EXHAUST TO BE TERMINATE AT 40" ABOVE THE ROOF.	6	INSTALL CONDENSATE DRAIN FROM MAU-1(N). MINIMUM DRAIN SIZE TO BE 3/4". CONDENSATE DRAIN TO BE TRAPPED WITH A TRAP DEPTH OF 1.5 X UNITS TOTAL STATIC PRESSURE (MINIMUM 5" DEEP). DRAINS SHALL BE EXTENDED TO A SPLASH BLOCK ON ROOF. PIPING SHALL BE UV RESISTANT PVC. PVC JOINTS SHALL BE CHEMICALLY WELDED
2	EF-2(N) PROVIDE GREENHECK#SP-B110 CEILING MOUNTED EXHAUST FAN W/BACKDRAFT DAMPER, 75CFM @ 0.5" SP, 120V, 80 WATTS. EXTEND 6"Ø DUCT FROM UNIT UP THROUGH ROOF.	7	PULL STATION FURNISHED AND INSTALLED BY HOOD FIRE SUPPRESSION CONTRACTOR MOUNTED @ 48" AFF. PROVIDE FINAL CABLING AND CONNECTION TO HOOD FIRE SUPPRESSION CABINET AND MECHANICAL GAS VALVE.
3	EXTEND 6"Ø DUCT UP THROUGH ROOF AND TERMINATE AS PER MANUFACTURER RECOMMENDATION. FLASH AND SEAL WATER TIGHT. TERMINATE TOILET EXHAUST DUCT 3' AWAY FROM PROPERTY LINE, 10' FROM A FORCED AIR INLET, AND 3' FROM OPENINGS INTO THE BUILDING. DUCT TO BE TERMINATED WITH MUSHROOM CAP AIR RELIEF VENT WITH INSECT SCREEN.	8	HOOD CONTROL PANEL AND FIRE SUPPRESSION SYSTEM FURNISHED BY HOOD SUPPLIER AND INSTALLED ON WALL BY HVAC CONTRACTOR. SEE ELECTRICAL PLAN FOR WIRING. HOOD FIRE SUPPRESSION SYSTEM FURNISHED AND INSTALLED BY LICENSED FIRE SUPPRESSION CONTRACTOR. F.S. CONTRACTOR TO SUBMIT PLAN AND OBTAIN APPROVAL UNDER SEPARATE PERMIT APPLICATION PRIOR TO COMMENCEMENT OF WORK
4	MAU-1(N) AAON RN-007-8-0-GA02-3K8, GAS FIRED MAKE-UP AIR UNIT INSTALLED ON ROOF. 1300 CFM @ 208-230V, 3 Ø, 120 MBH GAS HEAT. CONTRACTOR SHALL PROVIDE STEEL ANGLES TO SUPPORT UNIT PROPERLY. PROVIDE MAU WITH 3 SETS OF FILTERS. CHANGE FILTER AFTER FINAL STORE CLEANING AND AGAIN PRIOR TO AIR BALANCE. PROVIDE TRAP CONDENSATE TO SPLASH BLOCK ON ROOF.	9	1" CD CONNECT TO NEAREST LAVATORY WASTE OR DRAIN POINT W/AIR GAP FITTING. COORDINATE W/PLUMBING DRAWINGS.
5	2" CPVC VENT AND CAI GOING UP TO THE ROOF. TERMINATE FLUE VENT AND CAI WITH MANUFACTURER APPROVED TERMINATION KIT AND AS PER MANUFACTURER INSTRUCTIONS.	10	KITCHEN EXHAUST HOOD, EXHAUST FAN AND ALL RELATED ACCESSORIES SHALL BE PROVIDED BY KITCHEN EQUIPMENT VENDOR/SUPPLIER AND SHALL BE INSTALLED BY MECHANICAL CONTRACTOR AS PER MANUFACTURER'S RECOMMENDATION.
		11	WATER HEATER VENT TO TERMINATE 3 FEET ABOVE ANY HIGHEST CONSTRUCTION ON ROOF LEVEL WITHIN 10 FEET AND 4 FEET AWAY FROM THE LOT LINE. USE SCHEDULE 40 CPVC PIPES FOR COMBUSTION AIR INTAKE (CAI) AND FLUE VENT. INSTALLATION SHALL BE AS PER MANUFACTURER STANDARD.
		12	COORDINATE REQUIREMENT & FINAL LOCATION OF AIR CURTAINS WITH OWNER/ARCHITECT. COORDINATE WITH ELECTRICAL CONTRACTOR FOR POWER SUPPLY.
		13	PROVIDE ROOF OPENING OF 22Ø FOR MAKE-UP AIR DUCTWORK. CONTRACTOR TO COORDINATE WITH ARCHITECT/STRUCTURAL ENGINEER PRIOR TO BID.

GENERAL NOTES

NO.	ITEM DESCRIPTION	NO.	ITEM DESCRIPTION
1	CONTRACTOR SHALL BALANCE EACH AIR DIFFUSER WITH THE CFM SHOWN ON PLANS.	8	AVOID FREE DUST MOVEMENT AND DIRT MIGRATING TO OCCUPIED AREAS OF THE BUILDING. BLANK OFF ANY RETURN AIR GRILLES/ DUCTS IN THE WORK AREA. PROVIDE TEMPORARY EXHAUST FANS, DUCTED DIRECTLY TO OUTDOORS, TO MAINTAIN NEGATIVE PRESSURE WITHIN THE WORK AREA.
2	DUCTWORK SHOWN ON PLAN ARE SCHEMATIC ONLY. CONTRACTOR SHALL COORDINATE WITH OTHER TRADES FOR DUCTWORK ROUTING. OFFSET AND RUN DUCTWORK INSIDE THE STRUCTURE IF REQUIRED. PROVIDE ANY EXTRA DUCTWORK, FITTINGS, INSULATIONS AND OTHER ACCESSORIES IN ORDER TO COMPLETE THE INSTALLATION.	9	KEEP ALL ADJOINING AREAS ADJACENT TO THE WORK AREAS CLEAN AND FREE OF DEBRIS.
3	COORDINATE LOCATIONS AND SIZES OF ROOF OPENINGS WITH OWNER AND STRUCTURAL ENGINEERS.	10	TEST AND BALANCE AIR SYSTEMS. PROVIDE REPORT TO GENERAL CONTRACTOR AND OWNER.
4	EQUIPMENT SIZES, DIMENSIONS AND REQUIRED CONNECTIONS SHALL BE VERIFIED WITH THE ACTUAL EQUIPMENT SELECTED VENDOR DRAWINGS BEFORE FABRICATION OF DUCTWORK, PIPING ETC.	11	OUTSIDE AIR INTAKES SHALL BE LOCATED A MINIMUM 10 FEET FROM ANY SANITARY VENT AND EXHAUST FAN DISCHARGE. WHEN NECESSARY, EXTEND VENT OR PROVIDE ADDITIONAL FRESH AIR INTAKE DUCTWORK AS DIRECTED BY THE ENGINEER.
5	DUCT SIZES SHOWN ON PLANS ARE CLEAR INSIDE AIR STREAM DIMENSIONS.	12	PROVIDE WEATHER PROOF COATING FOR ALL OUTDOOR DUCTWORK. FOLLOW THE 'R' VALUES AS PER SPECIFICATIONS.
6	PROVIDE FIRE OR FIRE+SMOKE DAMPER WHEREVER DUCTS ARE CROSSING FIRE/SMOKE RATED WALLS/BARRIERS IN ACCORDANCE WITH THE LOCAL CODE. COORDINATE WITH ARCHITECTURAL DRAWINGS FOR FIRE RATINGS OF THE WALL/SLAB.	13	CONTRACTOR TO PROVIDE REFRIGERANT PIPING FROM VRF INDOOR TO OUTDOOR UNIT ALONG WITH SUPPORTS, REFNET JOINTS AND ALL ASSOCIATED ACCESSORIES AS REQUIRED. CONFIRM REFRIGERANT PIPE SIZING WITH MANUFACTURER AND COORDINATE THE ROUTE ON FIELD PRIOR TO BID.
7	CONTRACTOR TO ENSURE THE CLEARANCES OF EQUIPMENTS KEPT ON ROOF, PROVIDE A SUITABLE ARRANGEMENTS ON ROOF FOR SERVICE & MAINTENANCE.		

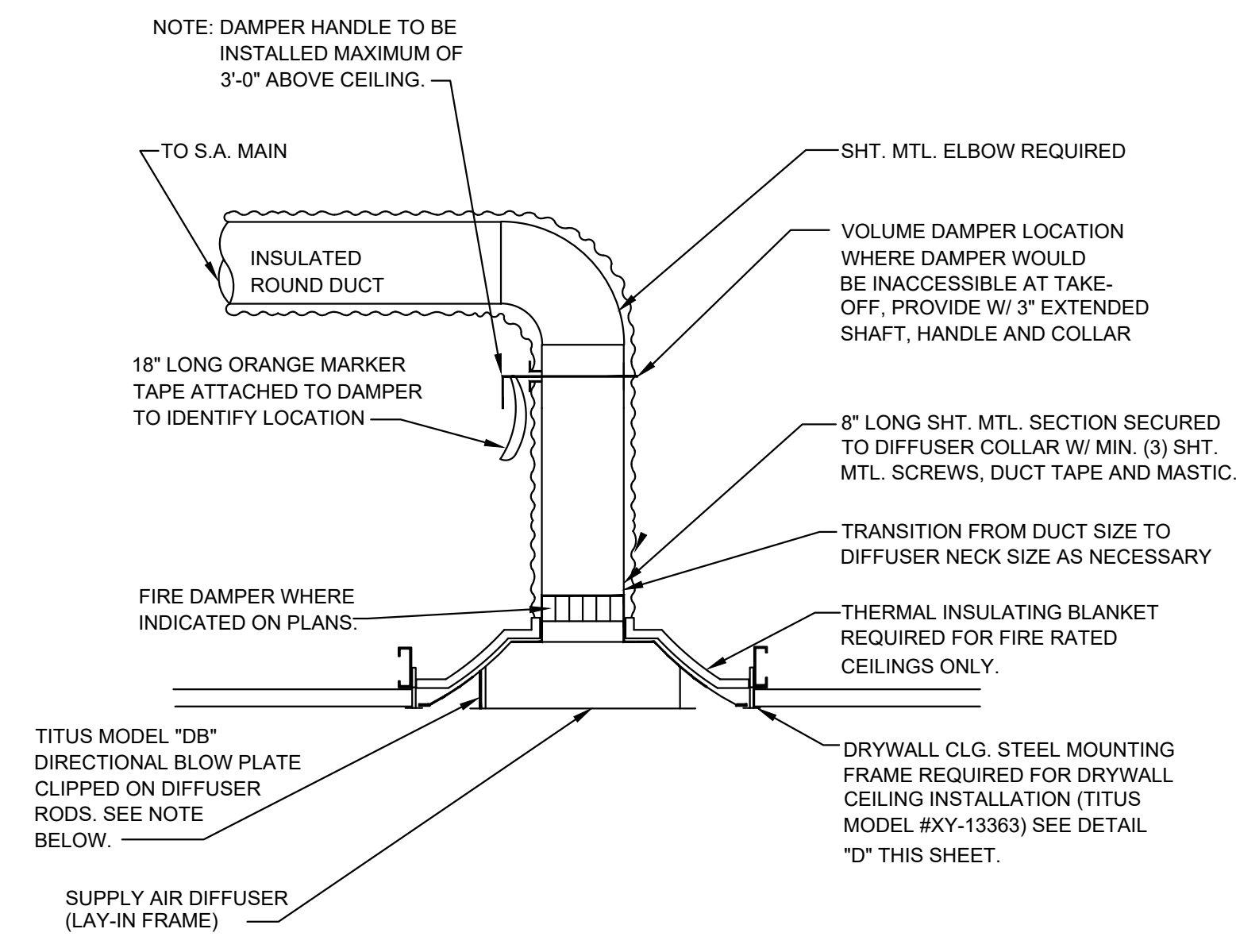
KITCHEN EXHAUST SYSTEM NOTES

- COMMERCIAL KITCHEN GREASE DUCTS SHALL BE DESIGNED FOR THE TYPE OF COOKING APPLIANCE AND HOOD SERVED.
- JOINTS, SEAMS AND PENETRATIONS OF GREASE DUCTS SHALL BE MADE WITH A CONTINUOUS LIQUID TIGHT WELD OR BRAZE MADE IN THE EXTERNAL SURFACE IF THE DUCT SYSTEMS.
- DUCT TO EXHAUST FAN CONNECTIONS SHALL BE FLANGED, GASKETED AND BOLTED TO THE INLET OF THE FAN. APPROVED FLEXIBLE CONNECTIONS MAY BE PROVIDED.
- A VIBRATION ISOLATION CONNECTOR FOR CONNECTING A DUCT TO A FAN SHALL CONSIST OF NON-COMBUSTIBLE PACKING IN A METAL SLEEVE JOINT OF APPROVED DESIGN OR SHALL BE A COATED-FABRIC FLEXIBLE DUCT CONNECTOR LISTED AND LABELED FOR THE APPLICATION. VIBRATION ISOLATION CONNECTORS SHALL BE INSTALLED ONLY AT THE CONNECTION OF A DUCT TO A FAN INLET OR OUTLET.
- PRIOR TO THE USE OR CONCEALMENT OF ANY PORTION OF A GREASE DUCT SYSTEM, A LEAKAGE TEST SHALL BE PERFORMED. DUCT SHALL BE CONSIDERED TO BE CONCEALED WHERE INSTALLED IN SHAFTS OR COVERED BY COATINGS OR WRAPS THAT PREVENT THE DUCTWORK FROM VISUALLY INSPECTED ON ALL SIDE. THE DUCT INSTALLER SHALL BE RESPONSIBLE FOR PROVIDING THE NECESSARY EQUIPMENT AND PERFORMING THE GREASE DUCT LEAKAGE TEST. THE DUCT LEAKAGE TEST SHALL BE PERFORMED FOR ALL THE DUCT SYSTEMS, INCLUDING THE DUCT-TO-DUCT CONNECTION. THE DUCTWORK SHALL BE PERMITTED TO BE TESTED IN SECTIONS, PROVIDED THAT EVERY JOINT IS TESTED (IF TEST IS FAILED, CONTRACTOR TO PROVIDE NEW KITCHEN EXHAUST DUCT).
- PROVIDE SMOKE TEST TO PROOF TIGHTNESS OF THE GREASE DUCT.
- GREASE DUCT BRACING AND SUPPORTS SHALL BE OF NON-COMBUSTIBLE MATERIAL SECURELY ATTACHED TO THE STRUCTURE AND DESIGNED TO CARRY GRAVITY AND SEISMIC LOADS WITHIN THE LIMITATIONS OF THE FREPORT ADOPTED BUILDING CODE. BOLTS, SCREWS, RIVETS AND OTHER MECHANICAL FASTENERS SHALL NOT PENETRATE DUCT WALLS.
- PROVIDE A FUSIBLE LINK FIRE DAMPER OF THE SAME GAGE AS THE HOOD EXHAUST DUCT SHALL BE ADDED AT THE POINT OF CONNECTION OF THE BRANCH DUCT TO THE EXHAUST DUCT. THE FIRE DAMPER SHALL BE CLOSED AUTOMATICALLY UPON THE PENETRATION OF THE FIRE-EXTINGUISHING SYSTEM, AND THE BRANCH DUCT SHALL BE MADE IN EITHER THE TOP OR SIDES OF THE MAIN DUCT IN A MANNER TO PREVENT GREASE FROM FLOWING INTO THE BRANCH DUCT.
- A RESIDUE TRAP SHALL BE PROVIDED AT THE BASE OF EACH VERTICAL RISER WITH PROVISION FOR CLEANOUT IN ACCORDANCE WITH NFPA 96.
- CLEANOUT OPENINGS SHALL BE EQUIPPED WITH TIGHT-FITTING DOORS CONSTRUCTED OF STEEL HAVING A THICKNESS NOT LESS THAN THAT REQUIRED FOR THE DUCT. DOORS SHALL BE EQUIPPED WITH A SUBSTANTIAL METHOD OF LATCHING SUFFICIENT TO HOLD THE DOOR TIGHTLY CLOSED. DOOR ASSEMBLIES SHALL HAVE A GASKET OR SEALANT THAT IS NON-COMBUSTIBLE AND LIQUID TIGHT AND SHALL NOT HAVE FASTENERS THAT PENETRATED THE DUCT.
- A GREASE DUCT SERVING THE TYPE-1 HOOD THAT PENETRATED A CEILING, WALL OR FLOOR SHALL BE ENCLOSED FROM THE FIRE POINT OF PENETRATION TO THE OUTLET TERMINAL. DUCT ENCLOSURES SHALL HAVE A FIRE-RESISTANCE RATING NOT LESS THAN THAT OF THE FIRE-RESISTANCE RATED ASSEMBLY PENETRATED BUT NEED NOT EXCEED 2 HOURS.
- KITCHEN-EXHAUST OUTLETS SHALL BE LOCATED NOT LESS THAN 10 FEET HORIZONTALLY FROM PARTS OF THE SAME OR CONTIGUOUS BUILDINGS, ADJACENT BUILDINGS AND ADJACENT PROPERTY LINE. THIS EXHAUST OUTLETS SHALL BE LOCATED NOT LESS THAN 10 FEET HORIZONTALLY FROM AND NOT LESS THAN 3 FEET ABOVE AIR INTAKE OPENINGS INTO ANY BUILDING AND 40 INCH ABOVE THE ROOF.
- PROVIDE TYPE-I EXHAUST DUCT FOR HOOD-1 EXHAUST. IN COMPLIANCE WITH IMC 2012.
- PROVIDE UL LISTED 2 LAYERS OF 1.5" THICK FIRE WRAP. TESTED IN ACCORDANCE WITH ASTM E2336 FOR TYPE-I EXHAUST DUCTS. FIRE WRAP TO PROVIDE 1 OR 2-HR ENCLOSURE. THROUGH PENETRATION FIRE STOP SYSTEMS ARE TO BE TESTED IN ACCORDANCE WITH ASTM E 814 (UL1479). FOIL COVERING TO BE PROVIDED ABOVE INSULATION.

REVIEW SET	
PERMIT SET	
DATE:	07.20.23
	12.15.23

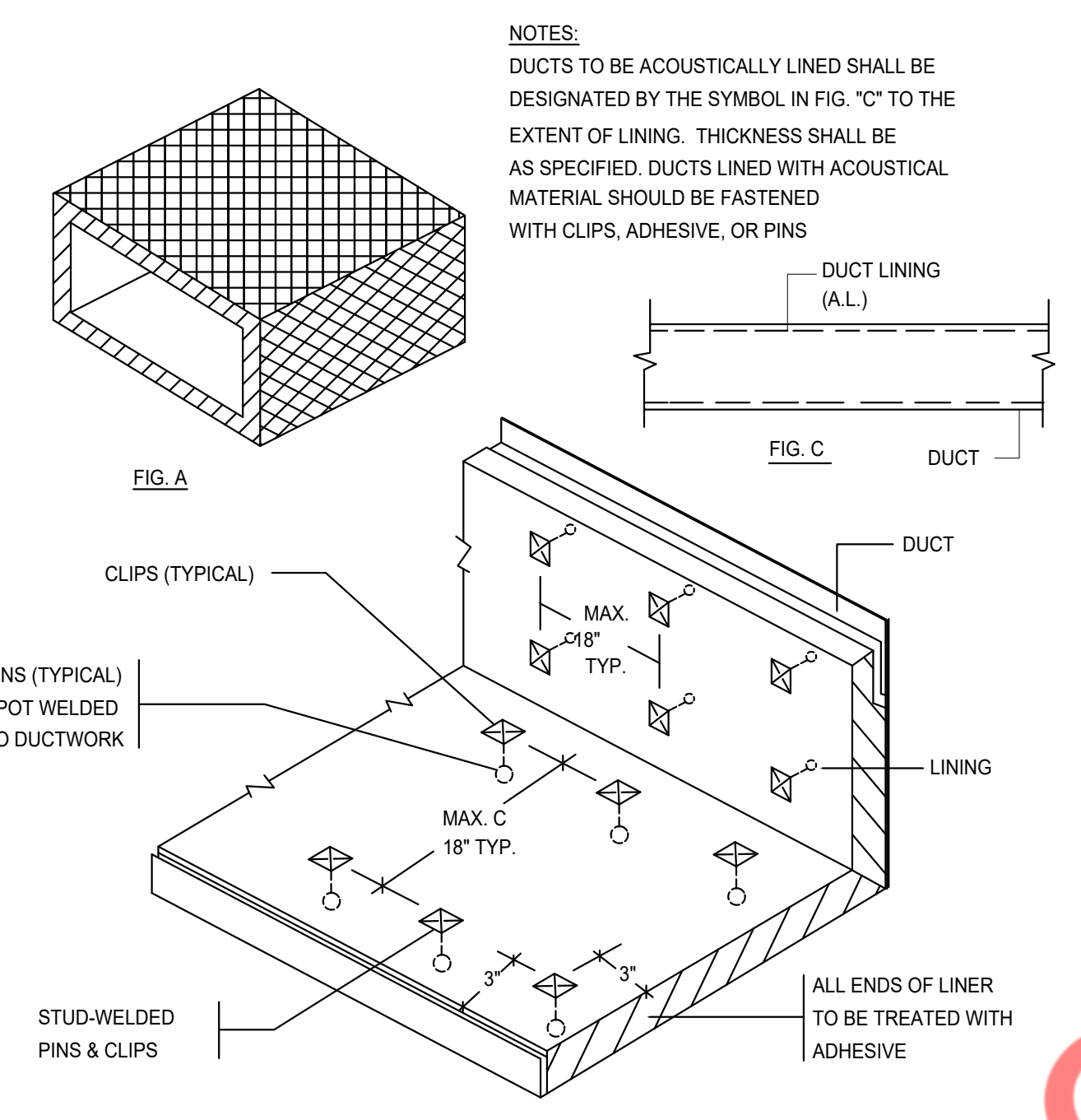
SEAL:

NY ENGINEERS



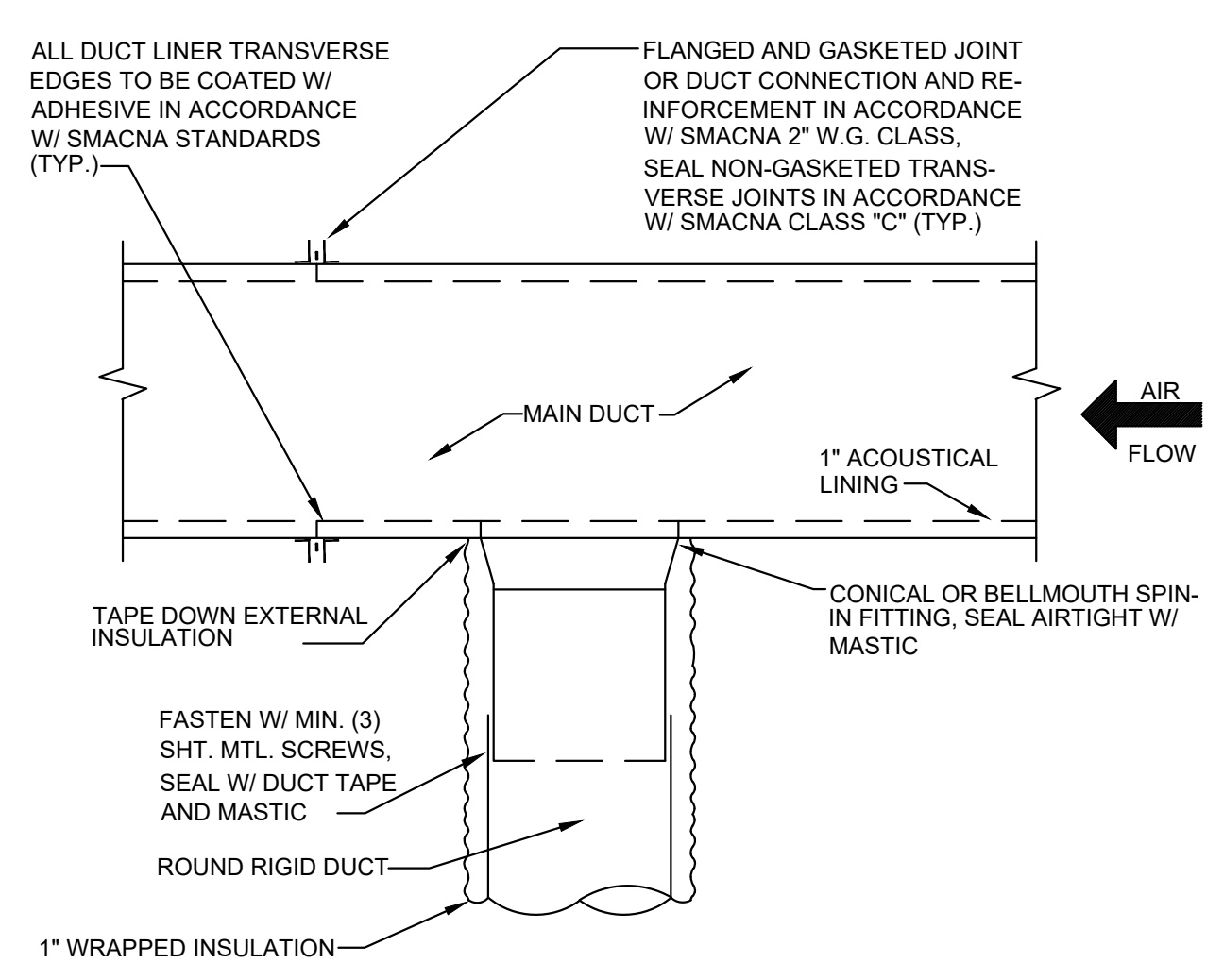
**A** 24" x 24" DIFFUSER MOUNTING DETAIL  
N.T.S.

NOTE: ALL DIFFUSERS ARE 4-WAY BLOW UNLESS NOTED OTHERWISE. PROVIDE OPTIONAL DIRECTIONAL BLOW, TITUS MODEL "DB" TO CONVERT DIFFUSER FROM STANDARD 4-WAY TO 1-WAY.

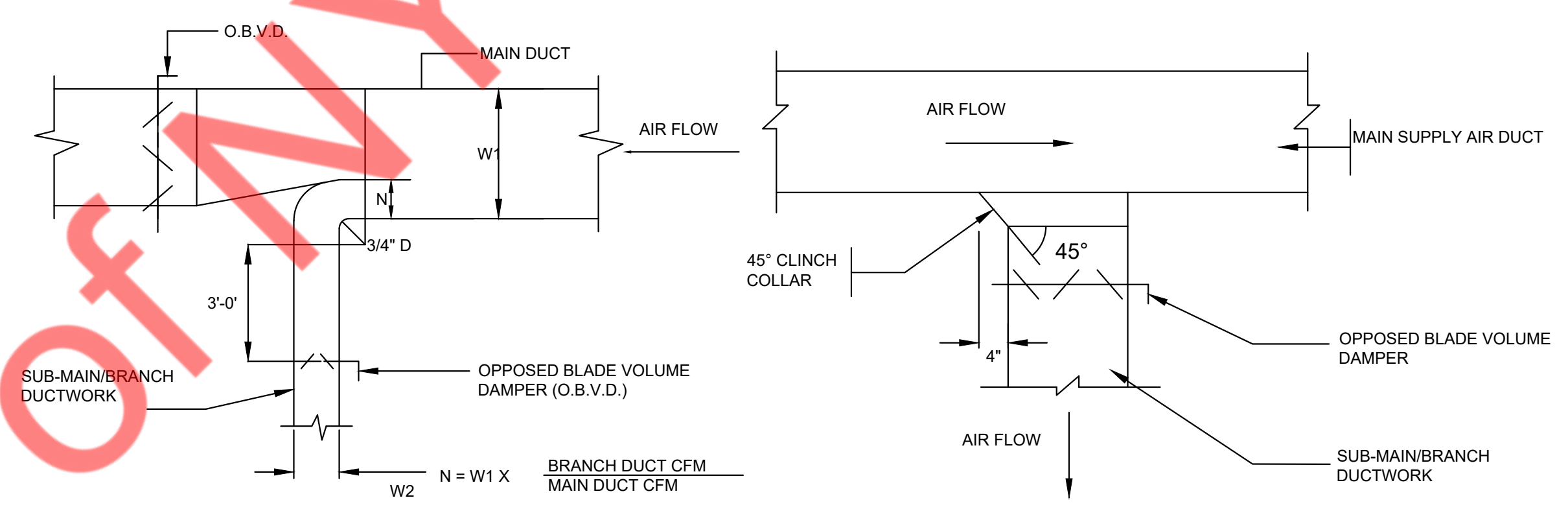


**B** DIFFUSER MOUNTING DETAIL  
N.T.S.

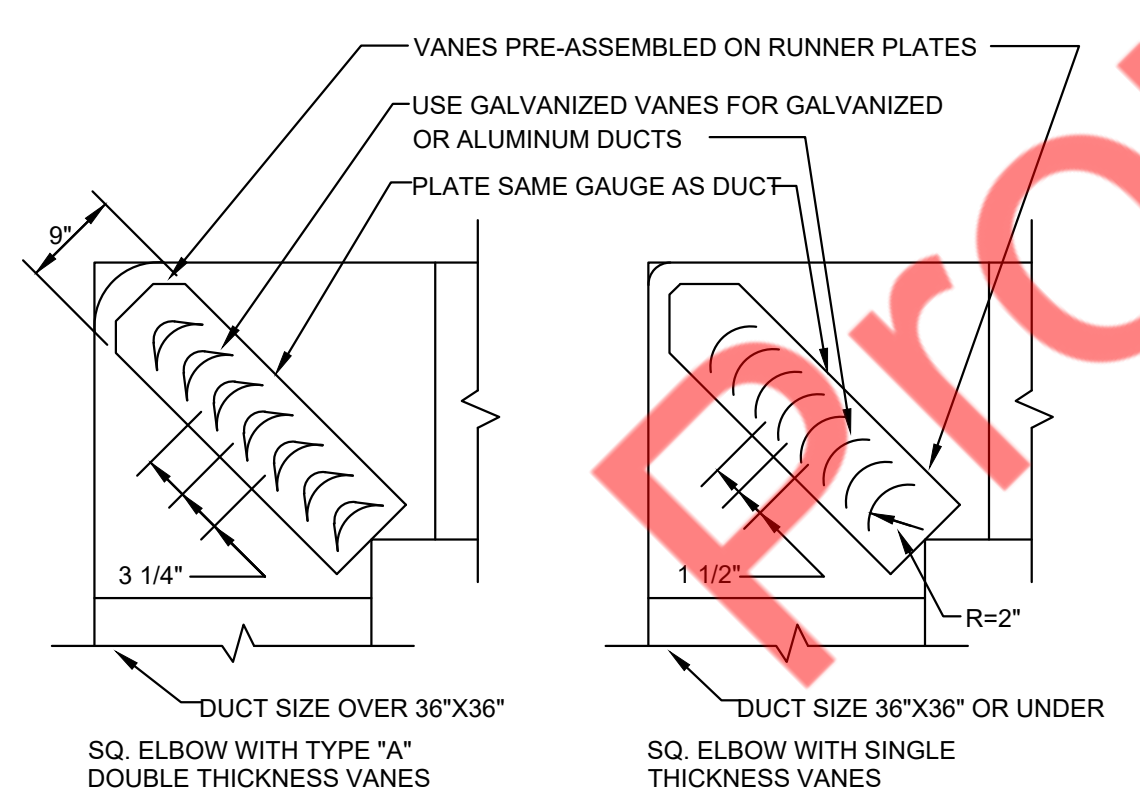
**C** CEILING EXHAUST FAN DETAIL  
N.T.S.



**D** TYPICAL ROUND DUCT TAKE-OFF DETAIL  
N.T.S.

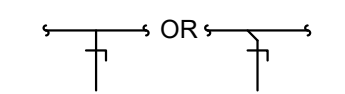


**E** SUPPLY AIR DUCTWORK SUB-MAIN/BRANCH DUCT CONNECTION  
N.T.S.



**F** TURNING VANE DETAIL  
N.T.S.

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

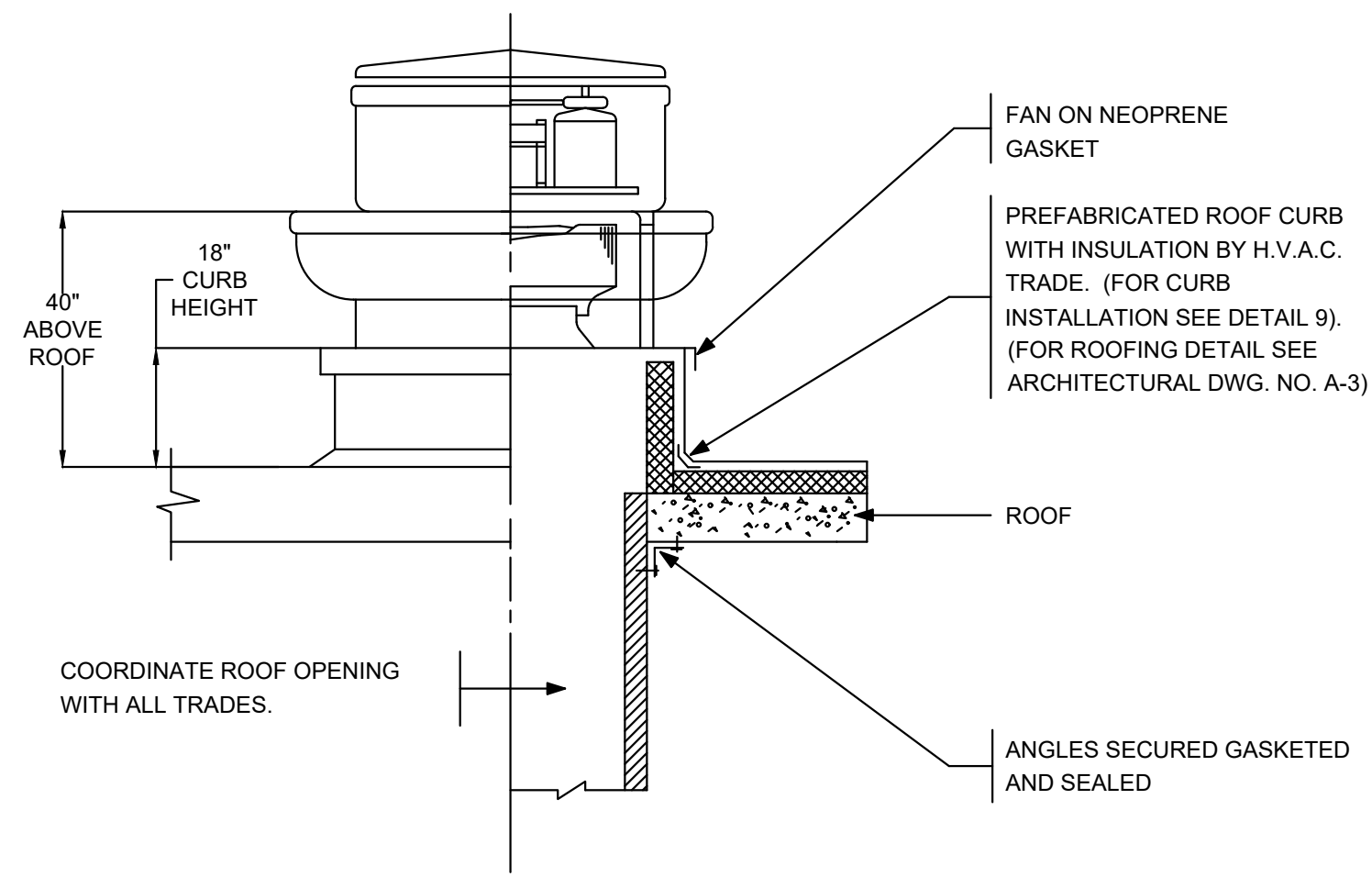


NOTES:  
DUCTS TO BE ACOUSTICALLY LINED SHALL BE DESIGNATED BY THE SYMBOL IN FIG. "C" TO THE EXTENT OF LINING. THICKNESS SHALL BE AS SPECIFIED. DUCTS LINED WITH ACOUSTICAL MATERIAL SHOULD BE FASTENED WITH CLIPS, ADHESIVE, OR PINS

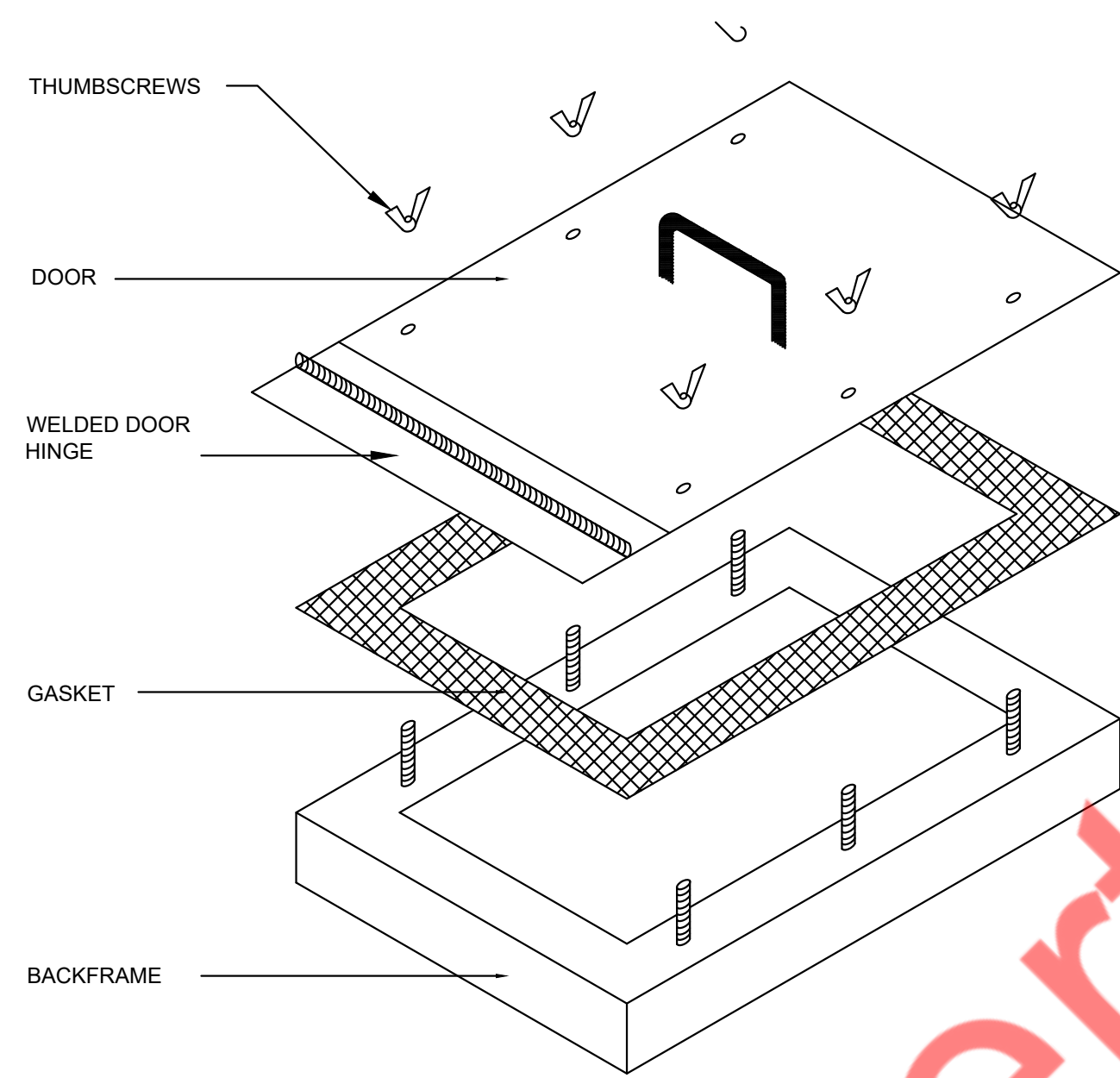
FIG. A

FIG. C

FIG. B

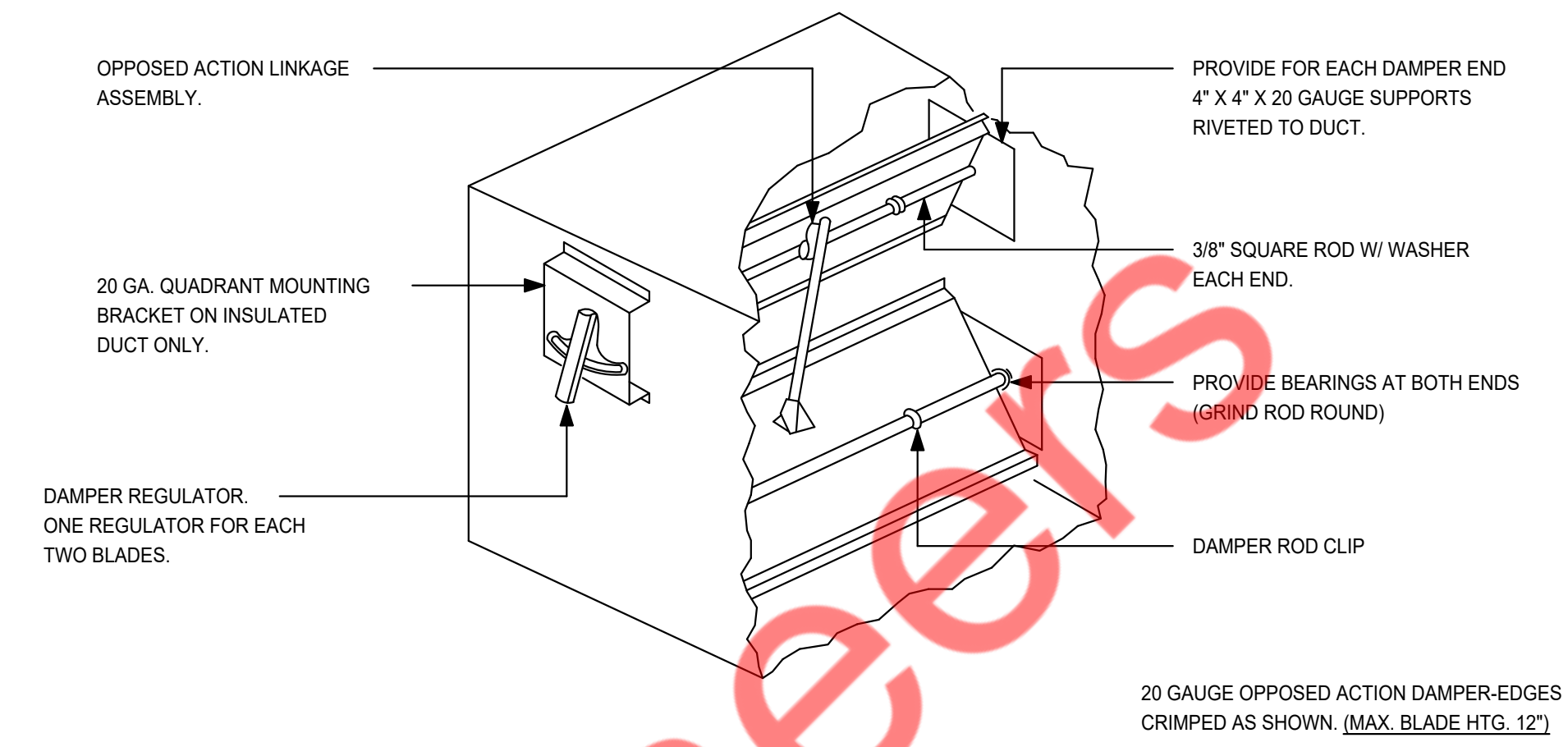


**G** ROOF EXHAUST FAN DETAIL  
N.T.S.



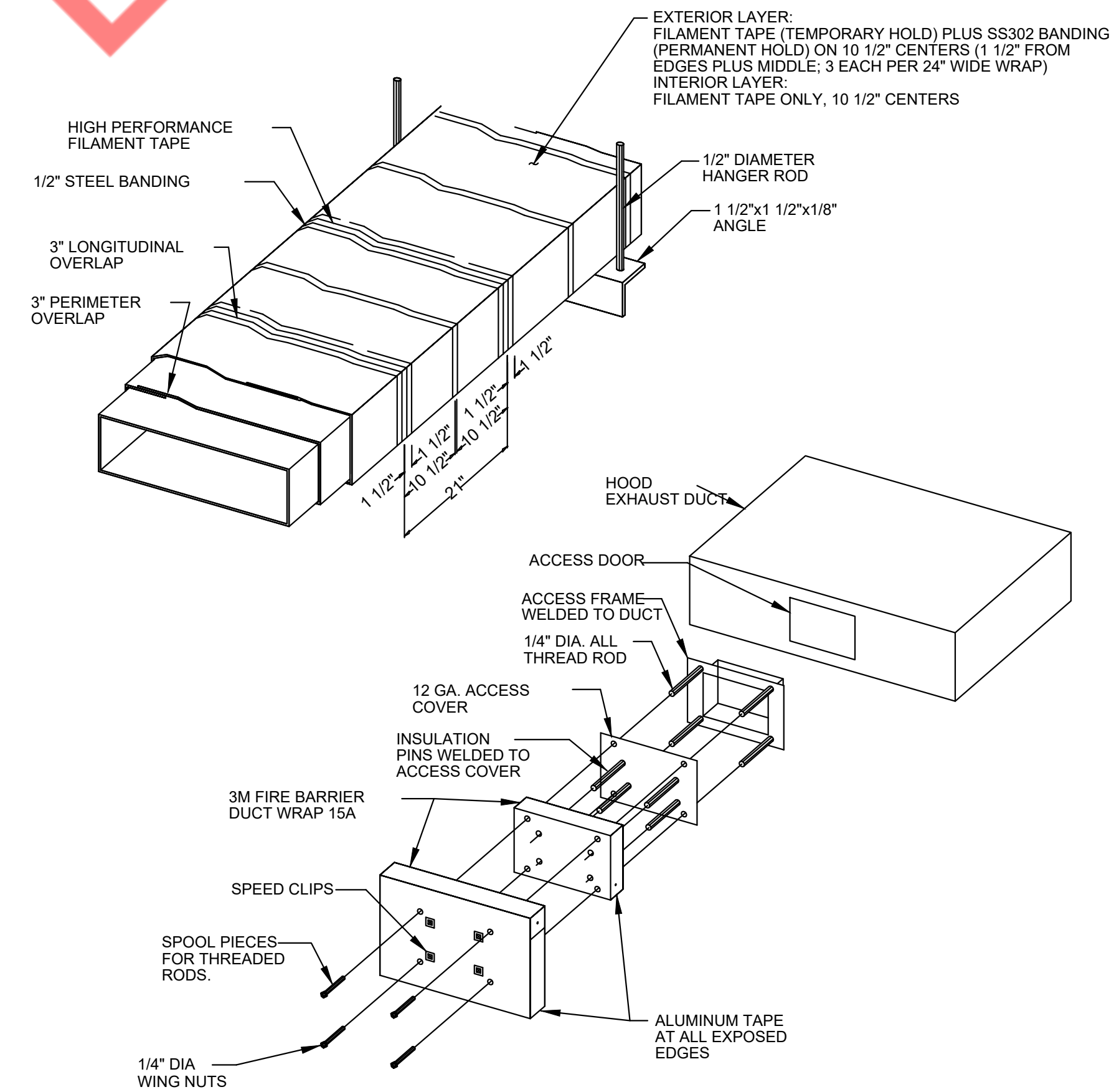
- NOTES:
1. ACCESS DOOR IS TO BE DUCTMATE ULTIMATE DOOR II OR EQUAL.
  2. ACCESS DOOR IS TO BE U.L. LISTED # 65X3.
  3. ACCESS DOOR IS TO MEET OR EXCEED THE REQUIREMENTS OF NFPA 96, 2008 EDITION.
- AT ALL LOCATIONS REQUIRED BY LOCAL CODE.

**I** GREASE DUCT ACCESS DOOR DETAILS  
N.T.S.



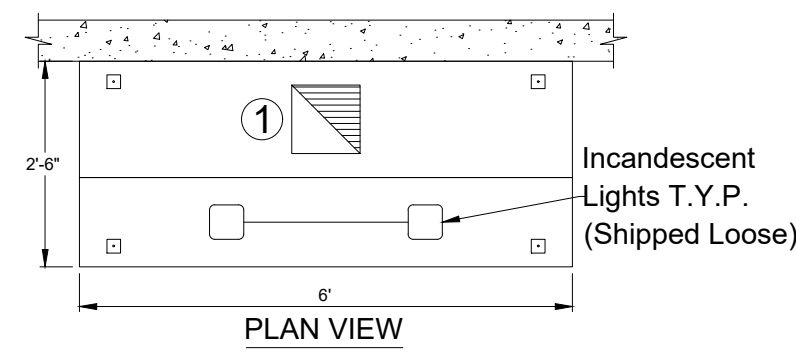
NOTE: 1. FOR DUCTS OVER 29" WIDE AND/OR OVER 12" HIGH.

**H** LOW PRESSURE BALANCING DAMPER  
N.T.S.



**J** GREASE DUCT WRAP DETAILS  
N.T.S.

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ELYRIA, OHIO 44035 FAX: 440-365-2100 TOLL FREE FAX: 800-716-1214SALES@HOODMART.COM

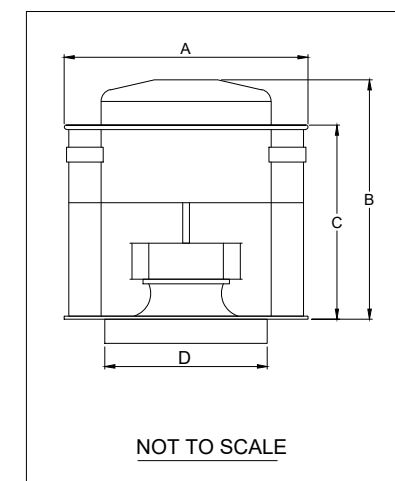


HOOD NO.	MODEL	LENGTH	MAX. COOKING TEMP.	① EXHAUST PLENUM				② SUPPLY PLENUM				HOOD CONSTRUCTION			
				TOTAL EXH. CFM	WIDTH	LENGTH	QTY.	RISER(S) CFM	S.P.	TOTAL SUP. CFM	WIDTH		LENGTH	QTY.	RISER(S) CFM
1	CONC.	72" NOM 72" OD	700 Deg.	1200	10"	10"	1	1200	0.5"	-	-	-	-	-	STAINLESS STEEL

DUCT OPENING ARE RECOMMENDED SIZES  
OPENINGS TO BE PUT IN FIELD



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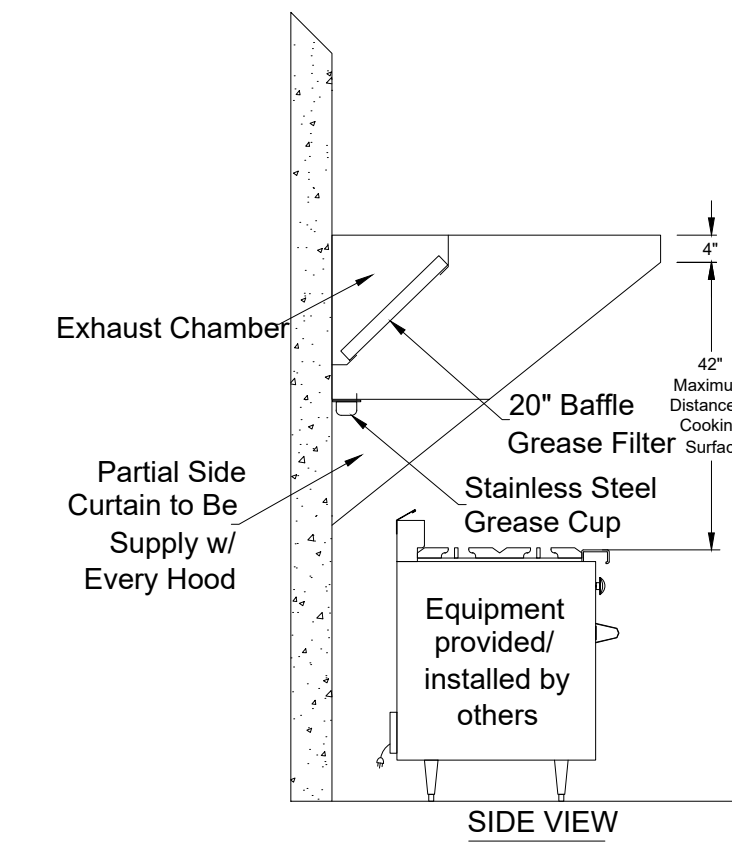


FAN MODEL	A	B	C	D	WT. LBS.
20D	28"	19 1/4"	16 1/2"	19" SQ.	72 LBS.

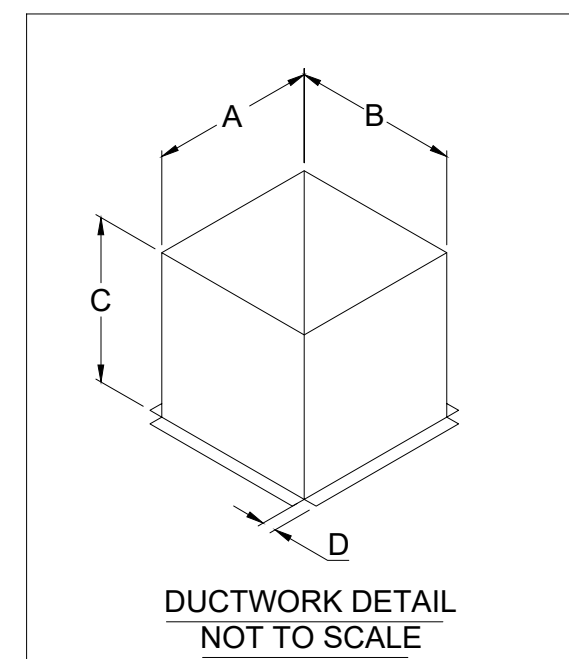
FAN UNIT NO.	FAN UNIT MODEL#	① EXHAUST FAN								
		MODEL	TAG	CFM	S.P.	RPM	H.P.	Ø	VOLTS	FLA.
1	20D EF-1	20D	EF-1	1200	0.625"	1680	1/4	1	115	2.6



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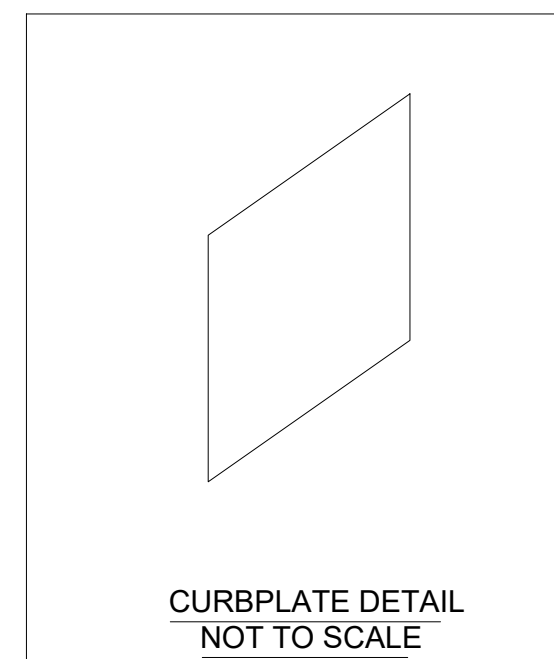
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DUCTWORK				
A	B	C	D	QTY
10"	10"	12"	1"	1



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CURBPLATE		
WIDTH	LENG.	QTY.
18"	18"	1



NOTE:  
COORDINATE WITH HOOD SUPPLIER FOR HOOD CONTROL PANEL AND FIRE SUPPRESSION SYSTEM. HOOD FIRE SUPPRESSION SYSTEM FURNISHED AND INSTALLED BY LICENSED FIRE SUPPRESSION CONTRACTOR. F.S. CONTRACTOR TO SUBMIT PLAN AND OBTAIN APPROVAL UNDER SEPARATE PERMIT APPLICATION PRIOR TO COMMENCEMENT OF WORK.

ELECTRICAL DRAWING LIST	
E-1	ELECTRICAL ABBREVIATIONS & SPECIFICATIONS (1 OF 2)
E-2	ELECTRICAL SPECIFICATIONS SHEET (2 OF 2)
E-3	ELECTRICAL POWER FLOOR & ROOF PLAN
E-4	ELECTRICAL LIGHTING FLOOR PLAN
E-5	ELECTRICAL DETAILS (1 OF 2)
E-6	ELECTRICAL DETAILS (2 OF 2)
E-7	ELECTRICAL RISER DIAGRAM & PANEL SCHEDULE

ABBREVIATIONS			
A	AMPERES	HZ	HERTZ
A/C, AC	AIR CONDITIONING UNIT	IC	INTERRUPTING CAPACITY
TR	TAMPER RESISTANCE	PP	POWER PANEL
AFF	ABOVE FINISHED FLOOR	PVC	POLYVINYL CHLORIDE
AS	AMP SWITCH	R	REMOVE
AIC	AMPS INTERRUPTING CAPACITY	REC	RECEPTACLE
AWG	AMERICAN WIRE GAUGE	RGS	RIGID GALVANIZED STEEL
C	CONDUIT	SECT	SECTION
C/B, CB	CIRCUIT BREAKER	SW	SWITCH
CKT	CIRCUIT	P	POLES
CLG	CEILING	TYP	TYPICAL
CU	COPPER	U.O.N.	UNLESS OTHERWISE NOTED
°C	DEGREE CELSIUS	V	VOLT/VOLTAGE
°F	DEGREE FAHRENHEIT	VA	VOLT AMPERE
DIA	DIAMETER	WP	WEATHER PROOF
DN	DOWN	E	EXISTING
DP	DISTRIBUTION PANEL	N.I.C.	NOT IN CONTRACT
DWG	DRAWING	DR	DUPLEX RECEPTACLE
J.B.	JUNCTION BOX	SR	SINGLE RECEPTACLE
KCMIL	ONE THOUSAND CIRCULAR MILS	QR	QUAD RECEPTACLE
KV	KILOVOLT	SW	SWITCH
KVA	KILOVOLT-AMPERES	DS	DISCONNECT SWITCH
KW	KILOWATTS	DC	DROP CORD
LTG	LIGHTING	EC	HARDWIRED ELECTRICAL CONNECTION
MAX	MAXIMUM	TO	TELEPHONE OUTLET
MCB	MAIN CIRCUIT BREAKER	DO	DATA OUTLET, CAT5E
MIN	MINIMUM	EV	EQUIPMENT VENDOR
MLO	MAIN LUGS ONLY	GC	GENERAL CONTRACTOR
MTD	MOUNTED	CC	CONTRACTORS CHOICE
N	NEUTRAL	OC	OWNERS CHOICE
NTS	NOT TO SCALE	LJ	LOCAL JURISDICTION
EA	EACH	SC	SIGN COMPANY
EC	EMPTY CONDUIT/ ELECTRICAL CONTRACTOR	VLL	VERIFY WITH LANDLORD
EM	EMERGENCY	PB	PAR BRINK
EMT	ELECTRICAL METALLIC TUBING	UMI	ULTERIOR MOTIVES INTERNATIONAL
FL	FLOOR	HL	HERMITAGE LIGHTING
G	GROUND	MMM	MUZAK (MOOD MEDIA)
GFI	GROUND FAULT INTERRUPTER	UC	UTILITY COMPANY
HP	HORSEPOWER	FIN. CON.	FINAL CONNECTIONS

## ELECTRICAL SYSTEM SPECIFICATIONS OUTLINE:

THE FOLLOWING OUTLINE SPECIFICATIONS ARE MEANT FOR REFERENCE ONLY AND HAVE BEEN PROVIDED TO ESTABLISH RECOMMENDED MINIMUM QUALITY LEVEL FOR SERVICES AND EQUIPMENT TO BE USED FOR THE CONSTRUCTION OF BEEF A ROO STORE.  
THE USE OF BRAND NAMES, CATALOGUE NUMBERS OR NAMES OF MANUFACTURERS IS SOLELY FOR THE PURPOSE OF ESTABLISHING THE TYPE AND QUALITY THAT WILL BE ACCEPTABLE UNLESS SPECIFICALLY PROHIBITED IN THE SPECIFICATIONS. SUBSTITUTIONS WILL BE PERMITTED AFTER SUBMITTAL TO AND WRITTEN APPROVAL BY BEEF A ROO.  
IT IS RECOMMENDED THAT THE CONTRACTOR ACQUIRE THE DESIGN AND EQUIPMENT BROCHURES FROM BEEF A ROO EQUIPMENT AND SUPPLY FOR REFERENCE WITH THESE DOCUMENTS ELECTRICAL GENERAL REQUIREMENTS

- SCOPE OF WORK: ALL MATERIAL SHALL BE NEW UNLESS OTHERWISE INDICATED FURNISH ALL LABOR, EQUIPMENT, TECHNICAL SUPERVISION, AND INCIDENTAL SERVICES REQUIRED TO COMPLETE, TEST AND LEAVE READY FOR OPERATION THE ELECTRICAL SYSTEMS AS SPECIFIED AND AS INDICATED ON DRAWING.
- ORDINANCES AND CODES: PERFORM ALL WORK IN ACCORDANCE WITH APPLICABLE FEDERAL, STATE AND LOCAL ORDINANCES AND REGULATIONS, THE RULES AND REGULATIONS OF NFPA, NECA, AND UL, UNLESS OTHERWISE INDICATED.
- UNLESS OTHERWISE INDICATED, ALL REQUIRED PERMITS, LICENSES, INSPECTIONS, APPROVALS AND FEES FOR ELECTRICAL WORK SHALL BE SECURED AND PAID FOR BY THE CONTRACTOR. WORK SHALL CONFORM TO ALL APPLICABLE CODES, RULES AND REGULATIONS.
- THE DRAWINGS SHOW THE LOCATION AND GENERAL ARRANGEMENT OF EQUIPMENT, ELECTRICAL SYSTEMS AND RELATED ITEMS THEY SHALL BE FOLLOWED AS CLOSELY AS ELEMENTS OF THE CONSTRUCTION WILL PERMIT.
- EXAMINE THE DRAWINGS OF OTHER TRADES AND VERIFY THE CONDITIONS GOVERNING THE WORK ON THE JOB SITE ARRANGE WORK ACCORDINGLY, PROVIDING SUCH FITTINGS, CONDUIT, JUNCTION BOXES AND ACCESSORIES AS MAY BE REQUIRED TO MEET SUCH CONDITIONS.
- COORDINATE ARRANGEMENT MOUNTING AND SUPPORT OF ELECTRICAL EQUIPMENT WITH OTHER TRADES.
- VISIT THE SITE, EXAMINE AND VERIFY THE CONDITIONS UNDER WHICH THE WORK MUST BE CONDUCTED BEFORE SUBMITTING PROPOSAL. THE SUBMITTING OF A PROPOSAL IMPLIES THAT THE CONTRACTOR HAS VISITED THE SITE AND UNDERSTANDS THE CONDITIONS UNDER WHICH THE WORK MUST BE CONDUCTED. NO ADDITIONAL CHARGES WILL BE ALLOWED BECAUSE OF FAILURE TO MAKE THIS EXAMINATION OR TO INCLUDE ALL MATERIALS AND LABOR TO COMPLETE THE WORK.
- BIDS SHALL BE BASED UPON MANUFACTURED EQUIPMENT SPECIFIED. VOLUNTARY ALTERNATES MAY BE SUBMITTED FOR CONSIDERATION, WITH LISTED ADDITION OR DEDUCTION TO THE BID.
- SUBMIT FOR APPROVAL SHOP DRAWINGS FOR ALL ELECTRICAL SYSTEMS OR EQUIPMENT BUT NOT LIMITED TO THE ITEMS LISTED BELOW.
  - PANELBOARDS
  - DISCONNECT SWITCHES
  - WIRING DEVICES
  - LIGHTING FIXTURES
  - LIGHTING CONTROL SYSTEMS AND DEVICES (IF REQUIRED)
  - FIRE ALARM SYSTEM (IF REQUIRED)
- PROVIDE COMPLETE OPERATION AND MAINTENANCE INSTRUCTIONAL MANUALS COVERING ALL ELECTRICAL EQUIPMENT HEREIN SPECIFIED TOGETHER WITH PARTS LISTS.
- WARRANTY: CONTRACTOR SHALL WARRANTY THAT THE ELECTRICAL INSTALLATION IS FREE FROM DEFECTS AND AGREES TO REPLACE OR REPAIR, TO THE OWNER'S SATISFACTION, ANY PART OF THIS ELECTRICAL INSTALLATION WHICH BECOMES DEFECTIVE WITHIN A PERIOD OF ONE YEAR FROM THE DATE OF SUBSTANTIAL COMPLETION FOLLOWING FINAL ACCEPTANCE, PROVIDED THAT SUCH FAILURE IS DUE TO DEFECTS IN THE EQUIPMENT, MATERIAL, WORKMANSHIP OR FAILURE TO FOLLOW THE CONTRACT DOCUMENTS.
- CONTRACTOR SHALL BE RESPONSIBLE FOR ANY TEMPORARY SERVICES INCLUDING EQUIPMENT AND INSTALLATION REQUIRED TO MAINTAIN OPERATION AS A RESULT OF ANY EQUIPMENT FAILURE OR DEFECT DURING WARRANTY PERIOD
- FILE WITH THE OWNER ANY AND ALL WARRANTIES FROM THE EQUIPMENT MANUFACTURERS INCLUDING THE OPERATING CONDITIONS AND PERFORMANCE CAPACITIES THEY ARE BASED ON.
- CONSULT WITH THE OWNER'S REPRESENTATIVE AS TO THE METHODS OF CARRYING ON THE WORK SO AS NOT TO INTERFERE WITH THE OWNER'S OPERATION ANY MORE THAN ABSOLUTELY NECESSARY. ACCORDINGLY, ALL SERVICE LINES SHALL BE KEPT IN OPERATION AS LONG AS POSSIBLE AND THE SERVICES SHALL ONLY BE INTERRUPTED AT SUCH TIME AS WILL BE DESIGNATED BY THE OWNER'S REPRESENTATIVE.
- ALL CUTTING, PATCHING AND REPAIR WORK SHALL BE PERFORMED BY THE CONTRACTOR THROUGH APPROVED QUALIFIED SUBCONTRACTORS. CONTRACTOR SHALL INCLUDE FULL COST OF SAME IN BID.
- PROVIDE ALL EXCAVATION, TRENCHING, TUNNELING, DEWATERING AND BACKFILLING REQUIRED FOR THE ELECTRICAL WORK. COORDINATE THE WORK WITH OTHER EXCAVATING AND BACKFILLING IN THE SAME AREA.
- INSPECT THE INSTALLATION OF ALL EQUIPMENT PER THE MANUFACTURER'S RECOMMENDATION AND APPLICABLE CODES.
- PROVIDE UL APPROVED FIRE-STOPPING SYSTEM FOR ALL PENETRATIONS PASSING THROUGH FIRE RATED ASSEMBLIES.
- COMPLY WITH NECA 1.
- PROVIDE AND INSTALL ARC-FLASH HAZARD LABELS ON EACH ELECTRICAL EQUIPMENT AND ENCLOSURES DEFINED BY NFPA 70E LABELS SHALL COMPLY WITH THE REQUIREMENTS OF NFPA 70E AND CONTAIN AS A MINIMUM:
  - VOLTAGE (PHASE-PHASE)
  - FLASH PROTECTION BOUNDARY (INCHES)
  - INCIDENT ENERGY LEVEL AT THE WORKING DISTANCE (CA/CM2)
  - PERSONNEL PROTECTIVE EQUIPMENT (PPE) CLASS AND DESCRIPTION
  - RESTRICTED APPROACH BOUNDARY (INCHES)
  - LIMITED SHOCK APPROACH BOUNDARY (INCHES)
  - PROHIBITED SHOCK APPROACH BOUNDARY (INCHES)

### GROUND AND BONDING

- EQUIPMENT GROUNDING: COMPLY WITH NFPA 70, ARTICLE 250, FOR TYPES, SIZES, AND QUANTITIES OF EQUIPMENT GROUNDING CONDUCTORS, UNLESS SPECIFIC TYPES, LARGER SIZES, OR MORE CONDUCTORS THAN REQUIRED

BY NFPA 70 ARE INDICATED.

- PROVIDE EQUIPMENT GROUNDING CONDUCTORS IN EACH RACEWAY.

### CONDUCTORS AND CABLE

- CONDUCTOR MATERIAL: COPPER COMPLYING WITH NEMA WC 70; SOLID CONDUCTOR FOR NO 10 AWG AND SMALLER, STRANDED FOR NO 8 AWG AND LARGER.
- CONDUCTOR INSULATION TYPES: TYPE THHN-THWN, SO COMPLYING WITH NEMA WC 70.
- CONDUCTOR AND INSULATION APPLICATIONS:
  - FEEDERS: TYPE THHN-THWN, SINGLE CONDUCTORS IN RACEWAY, OR TYPE MC CABLE IF PERMITTED BY LOCAL AHJ.
  - BRANCH CIRCUITS, INCLUDING IN CRAWLSPACES: TYPE THHN-THWN, SINGLE CONDUCTORS IN RACEWAY, OR TYPE MC CABLE IF PERMITTED BY LOCAL AHJ.
  - CORD DROPS AND PORTABLE APPLIANCE CONNECTIONS: TYPE SO, HARD SERVICE CORD.
  - CLASS I CONTROL CIRCUITS: TYPE THHN-THWN IN RACEWAY.
  - FIRE ALARM CIRCUITS (IF APPLICABLE): TYPE THHN-THWN IN RACEWAY
  - CLASS II CONTROL CIRCUITS: CABLE

- CONCEAL CABLES IN FINISHED WALLS, CEILINGS, AND FLOORS, UNLESS OTHERWISE INDICATED.
- USE CONDUCTOR NOT SMALLER THAN 12 AWG FOR POWER AND LIGHTING CIRCUITS, UNLESS INDICATED OTHERWISE, ALL CIRCUITS SHALL BE #12, #12G, AND ¾" C.
- USE CONDUCTOR NOT SMALLER THAN 14 AWG FOR CONTROL CIRCUITS, PROVIDED BY ELECTRICAL CONTRACTOR.
- SUPPORT COMMUNICATION CABLES ABOVE ACCESSIBLE CEILING, USING SPRING METAL CLIPS OR PLASTIC CABLE TIES TO SUPPORT CABLES FROM STRUCTURE. DO NOT REST CABLE ON CEILING PANELS.

### RACEWAY AND BOXES

- RACEWAY APPLICATIONS:
  - OUTDOORS ABOVE GRADE AND WET LOCATIONS: RIGID STEEL OR IMC.
  - OUTDOORS, BELOW GRADE: SCHEDULE 40 PVC WITH RIGID STEEL SWEEPS.
  - INDOORS, NOT EXPOSED TO PHYSICAL DAMAGE: EMT OR TYPE MC CABLE IF PERMITTED BY LOCAL AHJ.
  - INDOORS, EXPOSED TO PHYSICAL DAMAGE (EXPOSED, BELOW 10'): RIGID STEEL OR IMC.
  - CONNECTIONS TO MOTORS AND TRANSFORMERS: LIQUID TIGHT FLEXIBLE METAL CONDUIT (LFMC)
- MINIMUM RACEWAY SIZE: ¾-INCH TRADE SIZE.
- INSTALL CONDUIT IN ACCORDANCE WITH NECA "NATIONAL ELECTRICAL INSTALLATION STANDARDS".

### WIRING DEVICES

- STRAIGHT-BLADE-TYPE RECEPTACLES: COMPLY WITH NEMA WD 1, NEMA WD 6, DSCC W-C-596G, AND UL 498 CONFIGURATION 5-20R DUPLEX RECEPTACLE. HUBBELL HBL 5352 OR EQUAL BY PASS & SEYMOUR AND LEVITON.
- GFCI RECEPTACLES: STRAIGHT BLADE, FEED-THROUGH TYPE, GENERAL DUTY GRADE, WITH INTEGRAL NEMA WD 6, CONFIGURATION 5-20R DUPLEX RECEPTACLE: COMPLYING WITH UL 498 AND UL 943 DESIGN UNITS FOR INSTALLATION IN A 2- ¾-INCH- (70-MM) DEEP OUTLET BOX WITHOUT AN ADAPTER HUBBELL GF5352 OR EQUAL BY PASS & SEYMOUR OR LEVITON.
- CORD AND PLUG SETS: MATCH VOLTAGE AND CURRENT RATINGS AND NUMBER OF CONDUCTORS TO REQUIREMENTS OF EQUIPMENT BEING CONNECTED
  - CORD: RUBBER-INSULATED, STRANDED- COPPER CONDUCTORS, WITH TYPE SOW-A JACKET, WITH GREEN-INSULATED GROUNDING CONDUCTOR AND EQUIPMENT-RATING AMPACITY PLUS A MINIMUM OF 30 PERCENT.
  - PLUG: NYLON BODY AND INTEGRAL CABLE-CLAMPING JAWS MATCH CORD AND RECEPTACLE TYPE FOR CONNECTION.
- WALL SWITCHES: SINGLE AND DOUBLE-POLE SWITCHES: COMPLY WITH DSCC W-C-896F AND UL 20 HUBBELL WIRING DEVICE, KELLEMS 1220 SERIES OR EQUAL BY PASS & SEYMOUR OR LEVITON.
- WALL PLATES: PROVIDE STAINLESS STEEL WALL PLATES IN FINISHED AREAS.
- WIRING DEVICE COLOR AS SELECTED BY ARCHITECT UNLESS OTHERWISE INDICATED OR REQUIRED BY NFPA 70.
- CONNECT WIRING DEVICE GROUNDING TERMINAL TO OUTLET BOX WITH BONDING JUMPER. USE OF QUICK GROUND STRAP OR SCREW IS NOT ACCEPTABLE.
- ROOF MOUNTED SERVICE RECEPTACLES: PROVIDE A GFCI RECEPTACLE WITHIN 25' OF EACH MECHANICAL EQUIPMENT UNIT FOR SERVICING. PROVIDE RED DOT OR EQUAL WEATHERPROOF WHILE IN USE RECEPTACLE COVER. ALL ROOF PENETRATIONS SHALL BE BY A LICENSED ROOFING CONTRACTOR.
- COORDINATE NEMA CONFIGURATION OF ALL ELECTRICAL CONNECTIONS FOR OWNER SUPPLIED EQUIPMENT WITH FINAL EQUIPMENT CUT SHEETS PRIOR TO INSTALLATION

### LIGHTING CONTROL DEVICES (IF APPLICABLE)

- DIGITAL TIME SWITCHES: ELECTRONIC, SOLID-STATE PROGRAMMABLE UNITS WITH ALPHANUMERIC DISPLAY COMPLYING WITH UL 917, NEMA TYPE 1- GENERAL PURPOSE STEEL ENCLOSURE WITH CORROSION-RESISTANT PRIMER AND BAKED ENAMEL FINISH IN MANUFACTURER'S STANDARD COLOR TORK OR EQUAL.
- OUTDOOR PHOTOELECTRIC CONTROL: SOLID STATE, WITH DRY CONTACTS RATED, TO OPERATE CONNECTED LOAD, RELAY, CONTACTOR COILS, OR MICROPROCESSOR INPUT, AND COMPLYING WITH UL 773A.
- OCCUPANCY SENSOR:
  - WALL SWITCH PASSIVE INFRARED OCCUPANCY SENSOR: WATTSTOPPER WS-200 OR EQUAL.
  - DUAL LEVEL SWITCHING PASSIVE INFRARED OCCUPANCY SENSOR: WATTSTOPPER WA-300 OR EQUAL.
  - 360° CEILING MOUNTED DUAL TECHNOLOGY OCCUPANCY SENSOR: WATTSTOPPER DT-300 OR EQUAL.

4. 110° WALL MOUNTED DUAL TECHNOLOGY OCCUPANCY SENSOR: WATTSTOPPER DT-200 OR EQUAL.

5. 360° CEILING MOUNTED ULTRASONIC OCCUPANCY SENSORS: WATTSTOPPER "W" SERIES OR EQUAL.  
6. 360° CEILING MOUNTED PASSIVE INFRARED OCCUPANCY SENSOR WATTSTOPPER CI-200 OR EQUAL.

7. OUTDOOR SENSORS (PIR): WATT STOPPER EW SERIES OR EQUAL.

- PROVIDE POWER SUPPLIES AND CONTROL MODULES AS REQUIRED FOR OCCUPANCY SENSOR OPERATION. PROVIDE ONE SET OF AUXILIARY CONTACT FOR TEMPERATURE CONTROLS.
- LIGHTING CONTACTORS: ELECTRICALLY-OPERATED MECHANICALLY- HELD CONTACTOR PER NEMA ICS2, WITH SIZE AND NUMBER OF POLES INDICATED. SQUARE D CO. OR EQUAL.
- INSTALL LIGHTING CONTROL DEVICES AS INDICATED ON PLAN. INSTALL AT ACCESSIBLE LOCATIONS. MOUNT PHOTOCELL ON ROOF OR PARAPET TO ½" GRS CONDUIT, SUPPORTED TO BUILDING STRUCTURE BELOW. COORDINATE ROOF PENETRATION WITH ROOFING CONTRACTOR.
- OCCUPANCY SENSOR ADJUSTMENTS: WHEN REQUESTED WITHIN 12 MONTHS OF DATE OF SUBSTANTIAL COMPLETION, PROVIDE ON-SITE ASSISTANCE IN ADJUSTING SENSORS TO SUIT ACTUAL OCCUPIED CONDITIONS. PROVIDE UP TO TWO VISITS TO SITE OUTSIDE NORMAL OCCUPANCY HOURS FOR THIS PURPOSE.

### ENCLOSED SWITCHES AND CIRCUIT BREAKERS

- FUSIBLE AND NON-FUSIBLE SWITCHES: NEMA KS 1, QUICK MAKE, QUICK-BREAK LOAD INTERRUPTER ENCLOSED KNIFE SWITCH TYPE HD, WITH CLIPS OR BOLT PADS TO ACCOMMODATE SPECIFIED FUSES (IF REQUIRED), EXTERNALLY OPERABLE LOCKABLE HANDLE WITH CAPABILITY TO ACCEPT TWO PADLOCKS, AND INTERLOCKED WITH COVER IN CLOSED POSITION SQUARE D OR EQUAL.
- TOGGLE DISCONNECT SWITCH: HEAVY DUTY, 30A, 600 VOLT, DOUBLE OR THREE POLE AS REQUIRED, SINGLE THROW, MOTOR RATED SWITCH WITHOUT OVERLOAD PROTECTION. PROVIDE NEMA 1 ENCLOSURE AND PADLOCK ATTACHMENT.
- MOLDED-CASE CIRCUIT BREAKER: NEMA AB 1, WITH INTERRUPTING CAPACITY TO MEET AVAILABLE FAULT CURRENTS. THERMAL-MAGNETIC CIRCUIT BREAKER WITH INVERSE TIME-CURRENT ELEMENT FOR LOW-LEVEL OVERLOADS AND INSTANTANEOUS MAGNETIC TRIP ELEMENT FOR SHORT CIRCUITS. ADJUSTABLE MAGNETIC TRIP SETTING FOR CIRCUIT BREAKER FRAME SIZES 250 A AND LARGER.
- MOLDED-CASE SWITCHES: MOLDED-CASE CIRCUIT BREAKER WITH FIXED, HIGH-SET INSTANTANEOUS TRIP ONLY, AND SHORT-CIRCUIT WITHSTAND RATING EQUAL TO EQUIVALENT BREAKER FRAME SIZE INTERRUPTING RATING.
- COMPLY WITH APPLICABLE PORTIONS OF NECA 1, NEMA PB 1.1, AND NEMA PB 2.1 FOR INSTALLATION OF ENCLOSED SWITCHES AND CIRCUIT BREAKERS.
- SET FIELD-ADJUSTABLE SWITCHES AND CIRCUIT-BREAKER TRIP AND TIME DELAY SETTINGS.
- LABEL EACH DISCONNECT WITH ENGRAVED METAL OR LAMINATED-PLASTIC NAMEPLATE MOUNTED WITH CORROSION-RESISTANT SCREWS. INDICATE SOURCE AND LOAD SERVED.

### ENCLOSED CONTROLLERS

- MANUAL CONTROLLER: NEMA ICS 2, GENERAL PURPOSE, CLASS A, WITH "QUICK-MAKE, QUICK-BREAK" TOGGLE OR PUSHBUTTON ACTION, MARKED TO SHOW WHETHER UNIT IS "OFF," "ON," OR "TRIPPED," AND OVERLOAD RELAY.
- MAGNETIC CONTROLLER: NEMA ICS 2, CLASS A, FULL VOLTAGE, NONREVERSING, ACROSS THE LINE, UNLESS OTHERWISE INDICATED.
  - CONTROL CIRCUIT: 120 V; OBTAINED FROM INTEGRAL CONTROL POWER TRANSFORMER WITH SUFFICIENT CAPACITY TO OPERATE CONNECTED PILOT, INDICATING AND CONTROL DEVICES, PLUS 100 PERCENT SPARE CAPACITY.
  - OVERLOAD RELAY: AMBIENT-COMPENSATED TYPE WITH INVERSE-TIME-CURRENT CHARACTERISTIC AND NEMA ICS 2, CLASS 20 TRIPPING CHARACTERISTIC. PROVIDE WITH HEATERS OR SENSORS IN EACH PHASE MATCHED TO NAMEPLATE FULL-LOAD CURRENT OF SPECIFIC MOTOR TO WHICH THEY CONNECT AND WITH APPROPRIATE ADJUSTMENT FOR DUTY CYCLE.
- COMBINATION MAGNETIC CONTROLLER: FACTORY-ASSEMBLED COMBINATION CONTROLLER AND DISCONNECT SWITCH.
  - FUSIBLE DISCONNECTING MEANS: NEMA KS 1, HEAVY-DUTY, FUSIBLE SWITCH WITH REJECTION-TYPE FUSE CLIPS RATED FOR FUSES. SELECT AND SIZE FUSES TO PROVIDE TYPE 2 PROTECTION ACCORDING TO IEC 947-4-1, AS CERTIFIED BY AN NRTL.
- ENCLOSURES: FLUSH- OR SURFACE-MOUNTING CABINETS AS INDICATED NEMA 250, TYPE 1, UNLESS OTHERWISE INDICATED TO COMPLY WITH ENVIRONMENTAL CONDITIONS AT INSTALLED LOCATION.

- ACCESSORIES:
  - DEVICES SHALL BE FACTORY INSTALLED IN CONTROLLER ENCLOSURE, UNLESS OTHERWISE INDICATED.
  - PUSH-BUTTON STATIONS, PILOT LIGHTS: NEMA ICS 2, HEAVY-DUTY TYPE.
  - INDICATING LIGHTS: RUN (RED), OFF OR READY (GREEN).
  - AUXILIARY CONTACTS: PROVIDE TWO NORMALLY OPEN (N.O.) AND TWO NORMALLY CLOSED (N.C.) CONTACTS.
  - SELECTOR SWITCH: NEMA ISC 2, MOUNTED IN FRONT COVER TO READ "HAND/OFF/AUTO," PROVIDE AUXILIARY CONTACT FOR AUTO POSITION MONITORING.
  - CONTROL RELAYS: AUXILIARY AND ADJUSTABLE TIME-DELAY RELAYS.

- SELECT HORSEPOWER RATING OF CONTROLLERS TO SUIT MOTOR CONTROLLED
- FOR CONTROL EQUIPMENT AT WALLS, BOLT UNITS TO WALL OR MOUNT ON LIGHTWEIGHT STRUCTURAL-STEEL CHANNELS BOLTED TO WALL. FOR CONTROLLERS NOT AT WALLS, PROVIDE FREESTANDING RACKS.
- INSTALL FREESTANDING EQUIPMENT ON CONCRETE BASES.
- ENCLOSED CONTROLLER FUSES: INSTALL FUSES IN EACH FUSIBLE SWITCH.
- SELECT AND INSTALL HEATER ELEMENTS IN MOTOR STARTERS TO MATCH INSTALLED MOTOR CHARACTERISTICS.
- IDENTIFY ENCLOSED CONTROLLER, COMPONENTS, WITH ENGRAVED METAL OR LAMINATED- PLASTIC NAMEPLATE IDENTIFY SOURCE AND LOAD SERVED.
- SET FIELD-ADJUSTABLE SWITCHES AND CIRCUIT-BREAKER TRIP RANGES

SHEET NO.

E-1  
OF 7 SHEETS

REVIEW SET  
PERMIT SET

DATE:

07.20.23  
12.15.23

SEAL:

NY ENGINEERS

PANELBOARD

A. COORDINATE LAYOUT AND INSTALLATION OF PANEL BOARDS AND COMPONENTS WITH OTHER CONSTRUCTION THAT PENETRATES WALLS OR IS SUPPORTED BY THEM, INCLUDING ELECTRICAL AND OTHER TYPES OF EQUIPMENT, RACEWAYS, PIPING, AND ENCUMBRANCES TO WORKSPACE CLEARANCE REQUIREMENTS.

B. COMPLIANCE WITH REQUIREMENTS PROVIDE PRODUCTS BY SQUARE D OR EQUAL.

C. ENCLOSURES: MOUNTING AS NOTED ON PANEL SCHEDULES NEMA PB 1, RATED FOR ENVIRONMENTAL CONDITIONS AT INSTALLED LOCATION.

1. INDOOR DRY LOCATIONS; NEMA 250, TYPE 1.

2. CABINET FRONT: FLUSH OR SURFACE CABINET AS NOTED ON THE DRAWINGS, WITH FRONT WITH CONCEALED TRIM CLAMPS, DEAD FRONT COVER, HINGED DOOR, AND FLUSH LOCK ALL KEYPED ALIKE.

3. DIRECTORY CARD: WITH TRANSPARENT PROTECTIVE COVER, MOUNTED IN METAL FRAME, INSIDE PANELBOARD DOOR.

D. PHASE AND GROUND BUSES SHALL BE HARD-DRAWN COPPER, 98 PERCENT CONDUCTIVITY.

E. SERVICE EQUIPMENT LABEL: UL LABELED FOR USE AS SERVICE EQUIPMENT FOR PANELBOARDS WITH MAIN SERVICE DISCONNECT SWITCHES.

F. SHORT-CIRCUIT RATINGS: FULLY RATED TO INTERRUPT SYMMETRICAL SHORT-CIRCUIT CURRENT AVAILABLE AT TERMINALS.

G. MOLDED-CASE CIRCUIT BREAKERS: UL 489, WITH INTERRUPTING CAPACITY TO MEET AVAILABLE FAULT CURRENTS

1. THERMAL-MAGNETIC CIRCUIT BREAKERS: INVERSE TIME-CURRENT ELEMENT FOR LOW-LEVEL OVERLOADS, AND INSTANTANEOUS MAGNETIC TRIP ELEMENT FOR SHORT CIRCUITS. ADJUSTABLE MAGNETIC TRIP SETTING FOR CIRCUIT-BREAKER FRAME SIZES 250A AND LARGER WITH RESTRICTED ACCESS COVER.

H. MOLDED-CASE CIRCUIT-BREAKER FEATURES AND ACCESSORIES:

1. LUGS: MECHANICAL STYLE, SUITABLE FOR NUMBER, SIZE, TRIP RATINGS, AND CONDUCTOR MATERIALS.

2. APPLICATION LISTING: APPROPRIATE FOR APPLICATION; TYPE SWD FOR SWITCHING FLUORESCENT LIGHTING LOADS; TYPE HACR FOR HEATING, AIR-CONDITIONING, AND REFRIGERATING EQUIPMENT.

3. GROUND-FAULT PROTECTION: INTEGRALLY MOUNTED RELAY AND TRIP UNIT WITH ADJUSTABLE PICKUP AND TIME-DELAY SETTINGS, PUSH-TO-TEST FEATURE, AND GROUND-FAULT INDICATOR.

4. SHUNT TRIP: 120-V TRIP COIL ENERGIZED FROM SEPARATE CIRCUIT, SET TO TRIP AT 75 PERCENT OF RATED VOLTAGE.

5. DO NOT USE TANDEM CIRCUIT BREAKERS.

I. INSTALL PANELBOARDS AND ACCESSORIES ACCORDING TO NEMA PB 1.1.

J. MOUNT TOP OF TRIM 74 INCHES (1880 MM) ABOVE FINISHED FLOOR, UNLESS OTHERWISE INDICATED.

K. CREATE A DIRECTORY TO INDICATE INSTALLED CIRCUIT LOADS AFTER BALANCING PANELBOARD LOADS OR CREATED BY RETROFITTING. OBTAIN APPROVAL BEFORE INSTALLING. USE A COMPUTER OR TYPEWRITER TO CREATE DIRECTORY; HANDWRITTEN DIRECTORIES ARE NOT ACCEPTABLE. COORDINATE FINAL DIRECTORY ROOM NAMES AND NUMBERS WITH (OWNER) (FACILITY ENGINEER).

L. ON COMPLETION OF INSTALLATION, INSPECT INTERIOR AND EXTERIOR OF PANELBOARDS. REMOVE PAINT SPLATTERS AND OTHER SPOTS VACUUM DIRT AND DEBRIS; DO NOT USE COMPRESSED AIR TO ASSIST IN CLEANING REPAIR EXPOSED SURFACES TO MATCH ORIGINAL FINISH.

M. IF REQUIRED BY LOCAL CODES OR LOCAL AHJ, ANY EQUIPMENT UNDER THE PIZZA OVEN HOOD SHALL BE CIRCUITED TO A SHUNT TRIP BREAKER CONTROLLED BY THE ANSEL SYSTEM.

FUSES

A. OBTAIN FUSES FROM A SINGLE MANUFACTURER.

B. COMPLY WITH:

1. NEMA FU 1 – LOW VOLTAGE CARTRIDGE FUSES

2. NFPA 70 – NATIONAL ELECTRICAL CODE.

3. UL 198C – HIGH-INTERRUPTING-CAPACITY FUSES, CURRENT-LIMITING TYPES

4. UL 198E – CLASS R FUSES.

5. UL 512 – FUSEHOLDERS

C. COORDINATE FUSE RATINGS WITH UTILIZATION EQUIPMENT NAMEPLATE LIMITATIONS OF MAXIMUM FUSE SIZE.

D. SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY COOPER BUSSMAN, INC OR EQUAL.

E. CARTRIDGE FUSES: NEMA FU 1, NONRENEWABLE CARTRIDGE FUSE; CLASS AND CURRENT RATING INDICATED; VOLTAGE RATING CONSISTENT WITH CIRCUIT VOLTAGE.

1. SERVICE ENTRANCE: CLASS L, TIME DELAY

2. FEEDERS: CLASS RK5 TIME DELAY

3. MOTOR BRANCH CIRCUITS: CLASS RK1, TIME DELAY

4. OTHER BRANCH CIRCUITS: CLASS RK1, TIME DELAY

F. EXAMINE UTILIZATION EQUIPMENT NAMEPLATES AND INSTALLATION INSTRUCTIONS INSTALL FUSES OF SIZES AND WITH CHARACTERISTICS APPROPRIATE FOR EACH PIECE OF EQUIPMENT.

G. INSTALL LABELS INDICATING FUSE REPLACEMENT INFORMATION ON INSIDE DOOR OF EACH FUSED SWITCH.

LIGHTING

A. PROVIDE LIGHTING FIXTURES AS INDICATED IN THE SCHEDULES.

B. INSTALL BALLASTS, AND SPECIFIED ACCESSORIES AT FACTORY. INSTALL LAMPS ON PROJECT SITE AFTER FIXTURE INSTALLATION.

C. PROVIDE PROGRAM RAPID START ELECTRONIC BALLASTS FOR LINEAR LAMPS: COMPLY WITH NEMA C82.11; SOUND RATING A OR BETTER; TOTAL HARMONIC DISTORTION RATING OF LESS THAN 20%; OPERATING FREQUENCY: 25 KHZ OR HIGHER, AND OPERATE WITHOUT VISIBLE FLICKER; LAMP CURRENT CREST FACTOR LESS THAN 1.7; POWER FACTOR SHALL BE 90% MINIMUM; BALLAST FACTOR SHALL BE .875 TO 1.00.

D. EXIT SIGNS: COMPLY WITH UL 924; FOR SIGN COLORS AND LETTERING SIZE, COMPLY WITH AUTHORITIES HAVING JURISDICTION.

1. PROVIDE EXIT SIGNS WITH LIGHT-EMITTING DIODES, 70,000 HOURS MINIMUM OF RATED LAMP LIFE.

2. SELF-POWERED EXIT SIGNS (BATTERY TYPE): INTEGRAL AUTOMATIC CHARGER IN A SELF-CONTAINED POWER PACK.

3. BATTERY: SEALED, MAINTENANCE-FREE, NICKEL-CADMIUM TYPE WITH SPECIAL WARRANTY.

4. CHARGER: FULLY AUTOMATIC, SOLID-STATE TYPE WITH SEALED TRANSFER RELAY.

5. OPERATION: RELAY AUTOMATICALLY ENERGIZES LAMP FROM BATTERY WHEN CIRCUIT VOLTAGE DROPS TO 80 PERCENT OF NOMINAL VOLTAGE OR BELOW WHEN NORMAL VOLTAGE IS RESTORED, RELAY DISCONNECTS LAMPS FROM BATTERY, AND BATTERY IS AUTOMATICALLY RECHARGED AND FLOATED ON CHARGER.

E. EMERGENCY LIGHTING UNITS: SELF-CONTAINED UNITS COMPLYING WITH UL 924.

1. BATTERY: SEALED, MAINTENANCE-FREE, LEAD-ACID TYPE WITH MINIMUM 10-YEAR NOMINAL LIFE AND SPECIAL WARRANTY.

2. CHARGER: FULLY AUTOMATIC, SOLID-STATE TYPE WITH SEALED TRANSFER RELAY.

3. OPERATION: RELAY AUTOMATICALLY TURNS LAMP ON WHEN POWER SUPPLY CIRCUIT VOLTAGE DROPS TO 80 PERCENT OF NOMINAL VOLTAGE OR BELOW LAMP AUTOMATICALLY DISCONNECTS FROM BATTERY WHEN VOLTAGE APPROACHES DEEP-DISCHARGE LEVEL, WHEN NORMAL VOLTAGE IS RESTORED, RELAY DISCONNECTS LAMPS FROM BATTERY, AND BATTERY IS AUTOMATICALLY RECHARGED AND FLOATED ON CHARGER.

4. INTEGRAL TIME-DELAY RELAY: HOLDS UNIT ON FOR FIXED INTERVAL WHEN POWER IS RESTORED AFTER AN OUTAGE; TIME DELAY PERMITS HIGH-INTENSITY-DISCHARGE LAMPS TO RE-STRIKE AND DEVELOP ADEQUATE OUTPUT.

F. FLUORESCENT EMERGENCY LIGHTING FIXTURES: SELF-CONTAINED, MODULAR, BATTERY-INVERTER UNIT FACTORY MOUNTED WITHIN FIXTURE BODY. COMPLY WITH UL 924.

1. TEST SWITCH AND LIGHT-EMITTING-DIODE INDICATOR LIGHT: VISIBLE AND ACCESSIBLE WITHOUT OPENING FIXTURE OR ENTERING CEILING SPACE. INSTALL REMOTE TEST SWITCH AND PLATE IN ADJACENT CEILING TILE.

2. BATTERY: SEALED, MAINTENANCE-FREE, NICKEL-CADMIUM TYPE WITH MINIMUM SEVEN-YEAR NOMINAL LIFE.

3. CHARGER: FULLY AUTOMATIC, SOLID-STATE, CONSTANT-CURRENT TYPE.

4. UNIVERSAL TRANSFORMER TO OPERATE AT 120 VOLT OR 277 VOLT.

G. FLUORESCENT LAMPS: COMPLY WITH FEDERAL TOXIC CHARACTERISTIC LEACHING PROCEDURE TEST, AND YIELD LESS THAN 0.2 MG OF MERCURY PER LITER, WHEN TESTED ACCORDING TO NEMA LL 1. PROVIDE FLUORESCENT LAMPS BY OSRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC TYPE AND COLOR TEMPERATURE AS SCHEDULED.

H. FIXTURES: SET LEVEL, PLUMB, AND SQUARE WITH CEILINGS AND WALLS. INSTALL LAMPS IN EACH FIXTURE.

I. SUPPORT LUMINAIRES INDEPENDENT OF CEILING FRAMING SUPPORT RECESSED GRID LUMINAIRES FROM TWO OPPOSITE CORNERS DIRECTLY TO STRUCTURE WIRE OR ROD SHALL HAVE BREAKING STRENGTH OF THE WEIGHT OF FIXTURE AT A SAFETY FACTOR OF 3.

J. INSTALL RECESSED LUMINAIRES TO PERMIT REMOVAL FROM BELOW.

K. INSTALL RECESSED LUMINAIRES USING ACCESSORIES AND FIRESTOPPING MATERIALS TO MEET REGULATORY REQUIREMENTS FOR FIRE RATING.

L. INSTALL SURFACE MOUNTED LUMINAIRES AND EXIT SIGNS PLUMB AND ADJUST TO ALIGN WITH BUILDING LINES AND WITH EACH OTHER. SECURE TO PROHIBIT MOVEMENT.

M. TIGHTEN ELECTRICAL CONNECTORS AND TERMINALS ACCORDING TO MANUFACTURER'S PUBLISHED TORQUE TIGHTENING VALUES. IF MANUFACTURER'S TORQUE VALUES ARE NOT INDICATED, USE THOSE SPECIFIED IN UL 486A AND UL 486B.

N. MAKE WIRING CONNECTIONS TO BRANCH CIRCUIT USING BUILDING WIRE WITH INSULATION SUITABLE FOR TEMPERATURE CONDITIONS WITHIN LUMINAIRE.

O. BOND PRODUCTS AND METAL ACCESSORIES TO BRANCH CIRCUIT EQUIPMENT GROUNDING CONDUCTOR.

P. CONNECT LUMINAIRES TO BRANCH CIRCUIT OUTLET BOXES PROVIDED UNDER SECTION 16130 USING 1/2" FLEXIBLE CONDUIT.

Q. CLEAN ELECTRICAL PARTS TO REMOVE CONDUCTIVE AND DELETERIOUS MATERIALS.

R. REMOVE DIRT AND DEBRIS FROM ENCLOSURES AND LENSES.

S. CLEAN PHOTOMETRIC CONTROL SURFACES AS RECOMMENDED BY MANUFACTURER.

T. CLEAN FINISHES AND TOUCH UP DAMAGE.

FIRE ALARM

(SINGLE STATION DUCT DETECTORS ARE REQUIRED ON MECHANICAL UNITS OVER 2000CFM FIRE ALARM SYSTEMS ARE TO BE INSTALLED ONLY IF REQUIRED BY LANDLORD INSURANCE CARRIER, OR LOCAL AHJ)

A. PERFORMANCE REQUIREMENTS

1. COMPLY WITH NFPA 72.

2. DEVICE LOCATIONS AND RATINGS INDICATED ON DRAWINGS ARE MINIMUM REQUIREMENTS, ESTABLISHED FOR GENERAL SCOPE AND COORDINATION PURPOSES IN ADDITION TO DEVICES SHOWN ON DRAWINGS, PROVIDE ADDITIONAL AND SUPPLEMENTAL DEVICES AS REQUIRED TO MEET THE REQUIREMENTS OF THE AUTHORITIES HAVING JURISDICTION (AHJ) AND ALL APPLICABLE CODES.

3. FIRE ALARM SYSTEM VENDOR SHALL PROVIDE SOUND PRESSURE LEVEL CALCULATIONS DEMONSTRATING COMPLIANCE WITH NFPA 72 AND ESTABLISH QUANTITIES AND TAP SETTINGS OF AUDIBLE DEVICES.

4. A COMPLETE FUNCTIONAL SYSTEM MEETING THE REQUIREMENTS OF THIS SPECIFICATION, APPLICABLE CODES AND AHJ REQUIREMENTS SHALL BE PROVIDED.

5. NO ADDITIONAL CHARGE FOR FIRE ALARM DEVICES WILL BE ALLOWED UNLESS SPACE DEFINITION, USE OR CONSTRUCTION IS SUBSTANTIALLY REVISED.

6. SYSTEM FUNCTIONAL PERFORMANCE SHALL BE AS INDICATED ON THE FIRE ALARM MATRIX ON THE DRAWINGS.

B. SUBMIT FIRE ALARM DRAWINGS AND DOCUMENTATION TO THE AUTHORITIES HAVING JURISDICTION AND THE ARCHITECT/ENGINEER.

C. INSTALLER QUALIFICATIONS: PERSONNEL CERTIFIED BY NICET AS FIRE ALARM LEVEL II.

D. INTERRUPTION OF EXISTING FIRE ALARM SERVICE: DO NOT INTERRUPT FIRE ALARM SERVICE TO FACILITIES OCCUPIED BY OWNER OR OTHERS UNLESS PERMITTED UNDER THE FOLLOWING CONDITIONS AND THEN ONLY AFTER ARRANGING TO PROVIDE TEMPORARY GUARD SERVICE ACCORDING TO REQUIREMENTS INDICATED BY ARCHITECT, OWNER OR CONSTRUCTION MANAGER. NO FEWER THAN SEVEN DAYS IN ADVANCE OF PROPOSED INTERRUPTION OF FIRE ALARM SERVICE. DO NOT PROCEED WITH INTERRUPTION OF FIRE ALARM SERVICE WITHOUT OWNER'S WRITTEN PERMISSION.

E. EXISTING FIRE ALARM EQUIPMENT: MAINTAIN FULLY OPERATIONAL UNTIL NEW EQUIPMENT HAS BEEN TESTED AND ACCEPTED AS NEW EQUIPMENT IS INSTALLED. LABEL IT "NOT IN SERVICE" UNTIL IT IS ACCEPTED. REMOVE LABELS FROM NEW EQUIPMENT WHEN PUT INTO SERVICE AND LABEL EXISTING FIRE ALARM EQUIPMENT "NOT IN SERVICE" UNTIL REMOVED FROM THE BUILDING.

F. FIRE ALARM SYSTEM AND COMPONENTS SHALL OPERATE AS AN EXTENSION OF AN EXISTING SYSTEM ALL NEW DEVICES SHALL BE SUITABLE AND LISTED WITH EXISTING FIRE ALARM CONTROL PANEL.

G. MANUAL FIRE ALARM BOXES: UL 38 LISTED; FINISHED IN RED WITH MOLDED, RAISED-LETTER OPERATING INSTRUCTIONS IN CONTRASTING COLOR STATION SHALL SHOW VISIBLE INDICATION OF OPERATION MOUNTED ON RECESSED OUTLET BOX; IF INDICATED AS SURFACE MOUNTED, PROVIDE MANUFACTURER'S SURFACE BACK BOX.

1. DOUBLE-ACTION MECHANISM REQUIRING TWO ACTIONS TO INITIATE AN ALARM, PULL-LEVER TYPE WITH INTEGRAL ADDRESSABLE MODULE, ARRANGED TO COMMUNICATE MANUAL-STATION STATUS (NORMAL, ALARM, OR TROUBLE) TO THE FACP.

2. STATION RESET: KEY- OR WRENCH-OPERATED SWITCH.

H. SYSTEM SMOKE DETECTORS: PHOTOELECTRIC, UL 268 LISTED, OPERATING AT 24-V DC, NOMINAL WITH INTEGRAL ADDRESSABLE MODULE; ARRANGED TO COMMUNICATE DETECTOR STATUS (NORMAL, ALARM, OR TROUBLE) TO THE FACP.

I. DUCT SMOKE DETECTORS: PHOTOELECTRIC TYPE; UL 268A LISTED, OPERATING AT 24-V DC, NOMINAL; INTEGRAL ADDRESSABLE MODULE; ARRANGED TO COMMUNICATE DETECTOR STATUS (NORMAL, ALARM, OR TROUBLE) TO THE FACP. PLUG-IN ARRANGEMENT: DETECTOR AND ASSOCIATED ELECTRONIC COMPONENTS SHALL BE MOUNTED IN A PLUG-IN MODULE THAT CONNECTS TO A FIXED BASE. THE FIXED BASE SHALL BE DESIGNED FOR MOUNTING DIRECTLY TO THE AIR DUCT. PROVIDE TERMINALS IN THE FIXED BASE FOR CONNECTION TO BUILDING WIRING.

1. SELF-RESTORING: DETECTORS SHALL NOT REQUIRE RESETTING OR READJUSTMENT AFTER ACTUATION TO RESTORE THEM TO NORMAL OPERATION.

2. EACH SENSOR SHALL HAVE MULTIPLE LEVELS OF DETECTION SENSITIVITY.

3. SAMPLING TUBES: DESIGN AND DIMENSIONS AS RECOMMENDED BY MANUFACTURER FOR THE SPECIFIC DUCT SIZE, AIR VELOCITY, AND INSTALLATION CONDITIONS WHERE APPLIED.

4. RELAY FAN SHUTDOWN: PROVIDE TWO (2) SETS OF CONTACTS RATED TO INTERRUPT FAN MOTOR-CONTROL CIRCUIT.

J. SINGLE-STATION SMOKE DETECTORS:

1. UL 217 LISTED, SUITABLE FOR NFPA 101, SECTION 9.6.2.9 OCCUPANCIES, OPERATING AT 120-V AC.

2. AUXILIARY RELAYS: ONE FORM C RATED AT 0.5 A.

3. AUDIBLE NOTIFICATION APPLIANCE: PIEZOELECTRIC SOUNDER RATED AT 90 dBA AT 10 FEET (3 M) ACCORDING TO UL 464.

4. VISIBLE NOTIFICATION APPLIANCE: 177 CANDELA STROBE.

5. TEST SWITCH: PUSH-TO-TEST, SIMULATES SMOKE AT RATED OBSCURATION.

6. TANDEM CONNECTION: ALLOW TANDEM CONNECTION OF NUMBER OF INDICATED DETECTORS; ALARM ON ONE DETECTOR SHALL ACTUATE NOTIFICATION ON ALL CONNECTED DETECTORS.

7. PLUG-IN ARRANGEMENT: DETECTOR AND ASSOCIATED ELECTRONIC COMPONENTS SHALL BE MOUNTED IN A PLUG-IN MODULE THAT CONNECT TO A FIXED BASE. PROVIDE TERMINALS IN THE FIXED BASE FOR CONNECTION TO BUILDING WIRING.

8. SELF-RESTORING: DETECTORS SHALL NOT REQUIRE RESETTING OR READJUSTMENT AFTER ACTUATION TO RESTORE THEM TO NORMAL OPERATION.

9. INTEGRAL VISUAL-INDICATING LIGHT: LED TYPE INDICATING DETECTOR HAS OPERATED AND POWER-ON STATUS.

K. SINGLE-STATION DUCT DETECTORS:

1. UL 268A LISTED, OPERATING AT 120-V AC.

2. SENSOR: LED OR INFRARED LIGHT SOURCE WITH MATCHING SILICON-CELL RECEIVER

a. DETECTOR SENSITIVITY: BETWEEN 2.5 AND 3.5 PERCENT/FOOT (0.008 AND 0.011 PERCENT/MM), SMOKE OBSCURATION WHEN TESTED ACCORDING TO UL 268A.

3. PLUG-IN ARRANGEMENT: DETECTOR AND ASSOCIATED ELECTRONIC COMPONENTS SHALL BE MOUNTED IN A PLUG-IN MODULE THAT CONNECTS TO A FIXED BASE. THE FIXED BASE SHALL BE DESIGNED FOR MOUNTING DIRECTLY TO THE AIR DUCT. PROVIDE TERMINALS IN THE FIXED BASE FOR CONNECTION TO BUILDING WIRING.

a. WEATHERPROOF DUCT HOUSING ENCLOSURE: UL LISTED FOR USE WITH THE SUPPLIED DETECTOR THE ENCLOSURE SHALL COMPLY WITH NEMA 250 REQUIREMENTS FOR TYPE 4X.

4. SELF-RESTORING: DETECTORS SHALL NOT REQUIRE RESETTING OR READJUSTMENT AFTER ACTUATION TO RESTORE THEM TO NORMAL OPERATION.

5. INTEGRAL VISUAL-INDICATING LIGHT: LED TYPE INDICATING DETECTOR HAS OPERATED AND POWER-ON STATUS PROVIDE REMOTE STATUS AND ALARM INDICATOR AND TEST STATION WHERE INDICATED AND/OR REQUIRED

6. SAMPLING TUBES: DESIGN AND DIMENSIONS AS RECOMMENDED BY MANUFACTURER FOR THE SPECIFIC DUCT SIZE, AIR VELOCITY, AND INSTALLATION CONDITIONS WHERE APPLIED.

7. RELAY FAN SHUTDOWN: PROVIDE TWO (2) SETS OF CONTACTS RATED TO INTERRUPT FAN MOTOR-CONTROL CIRCUIT.

L. HEAT DETECTORS: UL 521 LISTED FIXED-TEMPERATURE TYPE; ACTUATED BY TEMPERATURE THAT EXCEEDS A FIXED TEMPERATURE OF 190 DEG F (88 DEG C).

M. EQUIPPED FOR MOUNTING AS INDICATED AND WITH SCREW TERMINALS FOR SYSTEM CONNECTIONS.

1. COMBINATION DEVICES: FACTORY-INTEGRATED AUDIBLE AND VISIBLE DEVICES IN A SINGLE-MOUNTING ASSEMBLY.

a. BELLS: ELECTRIC-VIBRATING, 24-V DC, UNDER-DOME TYPE; WITH PROVISION FOR HOUSING THE OPERATING MECHANISM BEHIND THE BELL. BELLS SHALL PRODUCE A SOUND-PRESSURE LEVEL OF 94 DBA,

MEASURED 10 FEET (3 M) FROM THE BELL 10-INCH (254-MM) SIZE, UNLESS OTHERWISE INDICATED BELLS ARE WEATHERPROOF WHERE INDICATED.

2. CHIMES, LOW-LEVEL OUTPUT: VIBRATING TYPE, 75-DBA MINIMUM RATED OUTPUT.

3. CHIMES, HIGH-LEVEL OUTPUT: VIBRATING TYPE, 81-DBA MINIMUM RATED OUTPUT.

4. HORNS: ELECTRIC-VIBRATING-POLARIZED TYPE, 24-V DC, WITH PROVISION FOR HOUSING THE OPERATING MECHANISM BEHIND A GRILLE HORNS SHALL PRODUCE A SOUND-PRESSURE LEVEL OF 90 DBA, MEASURED 10 FEET (3 M) FROM THE HORN.

5. VISIBLE ALARM DEVICES: XENON STROBE LIGHTS LISTED UNDER UL 1971, WITH CLEAR OR NOMINAL WHITE POLYCARBONATE LENS MOUNTED ON AN ALUMINUM FACEPLATE. THE WORD "FIRE" IS ENGRAVED IN MINIMUM 1-INCH-(25-MM)-HIGH LETTERS ON THE LENS.

a. RATED LIGHT OUTPUT: 15, 30, 60, 75, 110, 135, 185 CANDELA AS REQUIRED TO MEET NFPA 72 REQUIREMENTS

b. STROBE LEADS: FACTORY CONNECTED TO SCREW TERMINALS

6. VOICE/TONE SPEAKERS:

a. UL 1480 LISTED

b. HIGH-RANGE UNITS: RATED 2 TO 15 W

c. LOW-RANGE UNITS: RATED 1 TO 2 W

d. MOUNTING: FLUSH, SEMI RECESSED, OR SURFACE MOUNTED; BIDIRECTIONAL AS INDICATED.

e. MATCHING TRANSFORMERS: TAP RANGE MATCHED TO THE ACOUSTICAL ENVIRONMENT OF THE SPEAKER LOCATION.

N. MAGNETIC DOOR HOLDERS: UNITS ARE EQUIPPED FOR WALL OR FLOOR MOUNTING AS INDICATED AND ARE COMPLETE WITH MATCHING DOOR PLATE

1. ELECTROMAGNET: REQUIRES NO MORE THAN 3 W TO DEVELOP 25-LBF (111-N) HOLDING FORCE.

2. WALL-MOUNTED UNITS: FLUSH MOUNTED, UNLESS OTHERWISE INDICATED

3. RATING: 24-V AC OR DC OR 120V AC AS REQUIRED.

4. MATERIAL AND FINISH: MATCH DOOR HARDWARE.

O. ADDRESSABLE INTERFACE DEVICE: MICROELECTRONIC MONITOR MODULE LISTED FOR USE IN PROVIDING A SYSTEM ADDRESS FOR LISTED ALARM-INITIATING DEVICES FOR WIRED APPLICATIONS WITH NORMALLY OPEN CONTACTS.

P. ADDRESSABLE CONTROL MODULE: PROVIDE FOR INTEGRATION OF AUXILIARY CONTROL FUNCTIONS INTO THE ANALOG SIGNALING CIRCUIT INTELLIGENT ANALOG SIGNALING CIRCUIT CONTROL WITH COMMUNICATION INTERACTION WITH THE ANALOG SIGNALING CIRCUIT HAVING THE CAPABILITY OF INITIATING A CONTROL FUNCTION TO AN AUXILIARY DEVICE BASED ON A SPECIFIED EVENT AND NO/NC CONTACT PAIRS RATED AT 2AMPS 120 VAC OR 24 VDC.

Q. DIGITAL ALARM COMMUNICATOR TRANSMITTER: LISTED AND LABELED ACCORDING TO UL 632.

1. FUNCTIONAL PERFORMANCE: UNIT RECEIVES AN ALARM, SUPERVISORY, OR TROUBLE SIGNAL FROM THE FACP, AND AUTOMATICALLY CAPTURES ONE OR TWO TELEPHONE LINES AND DIALS A PRESET NUMBER FOR A REMOTE CENTRAL STATION WHEN CONTACT IS MADE WITH THE CENTRAL STATION(S). THE SIGNAL IS TRANSMITTED THE UNIT SUPERVISES UP TO TWO TELEPHONE LINES WHERE SUPERVISING 2 LINES, IF SERVICE ON EITHER LINE IS INTERRUPTED FOR LONGER THAN 45 SECONDS, THE UNIT INITIATES A LOCAL TROUBLE SIGNAL AND TRANSMITS A SIGNAL INDICATING LOSS OF TELEPHONE LINE TO THE REMOTE ALARM RECEIVING STATION OVER THE REMAINING LINE WHEN TELEPHONE SERVICE IS RESTORED, UNIT AUTOMATICALLY REPORTS THAT EVENT TO THE CENTRAL STATION IF SERVICE IS LOST ON BOTH TELEPHONE LINES. THE LOCAL TROUBLE SIGNAL IS INITIATED.

2. SECONDARY POWER: INTEGRAL RECHARGEABLE BATTERY AND AUTOMATIC CHARGER BATTERY CAPACITY IS ADEQUATE TO COMPLY WITH NFPA 72 REQUIREMENTS.

3. SELF-TEST: CONDUCTED AUTOMATICALLY EVERY 24 HOURS WITH REPORT TRANSMITTED TO CENTRAL STATION.

R. WIRE AND CABLE: WIRE AND CABLE FOR FIRE ALARM SYSTEMS SHALL BE UL LISTED AND LABELED AS COMPLYING WITH NFPA 70, ARTICLE 760.

1. SIGNALING LINE CIRCUITS: TWISTED, SHIELDED PAIR, SIZE AS RECOMMENDED BY SYSTEM MANUFACTURER.

2. NON-POWER-LIMITED CIRCUITS: SOLID-COPPER CONDUCTORS WITH 600-V RATED, 75 DEG C, COLOR-CODED INSULATION LOW-VOLTAGE CIRCUITS: NO 16 AWG, MINIMUM LINE-VOLTAGE CIRCUITS: NO 12 AWG, MINIMUM.

S. CONNECTING TO EXISTING EQUIPMENT: VERIFY THAT EXISTING FIRE ALARM SYSTEM IS OPERATIONAL BEFORE MAKING CHANGES OR CONNECTIONS.

T. DUCT SMOKE DETECTORS: COMPLY WITH NFPA 72 AND NFPA 90A. INSTALL SAMPLING TUBES SO THEY EXTEND THE FULL WIDTH OF THE DUCT.

U. SINGLE-STATION SMOKE DETECTORS: WHERE MORE THAN ONE SMOKE ALARM IS INSTALLED WITHIN A DWELLING OR SUITE, THEY SHALL BE CONNECTED SO THAT THE OPERATION OF ANY SMOKE ALARM CAUSES THE ALARM IN ALL SMOKE ALARMS TO SOUND.

V. AUDIBLE ALARM-INDICATING DEVICES: INSTALL NOT LESS THAN 6 INCHES (150 MM) BELOW THE CEILING INSTALL BELLS AND HORNS ON FLUSH-MOUNTED BACK BOXES WITH THE DEVICE-OPERATING MECHANISM CONCEALED BEHIND A GRILLE.

W. VISIBLE ALARM-INDICATING DEVICES: INSTALL AT 96" AFF OR 6 INCHES (150MM) BELOW THE CEILING, WHICHEVER IS LESS.

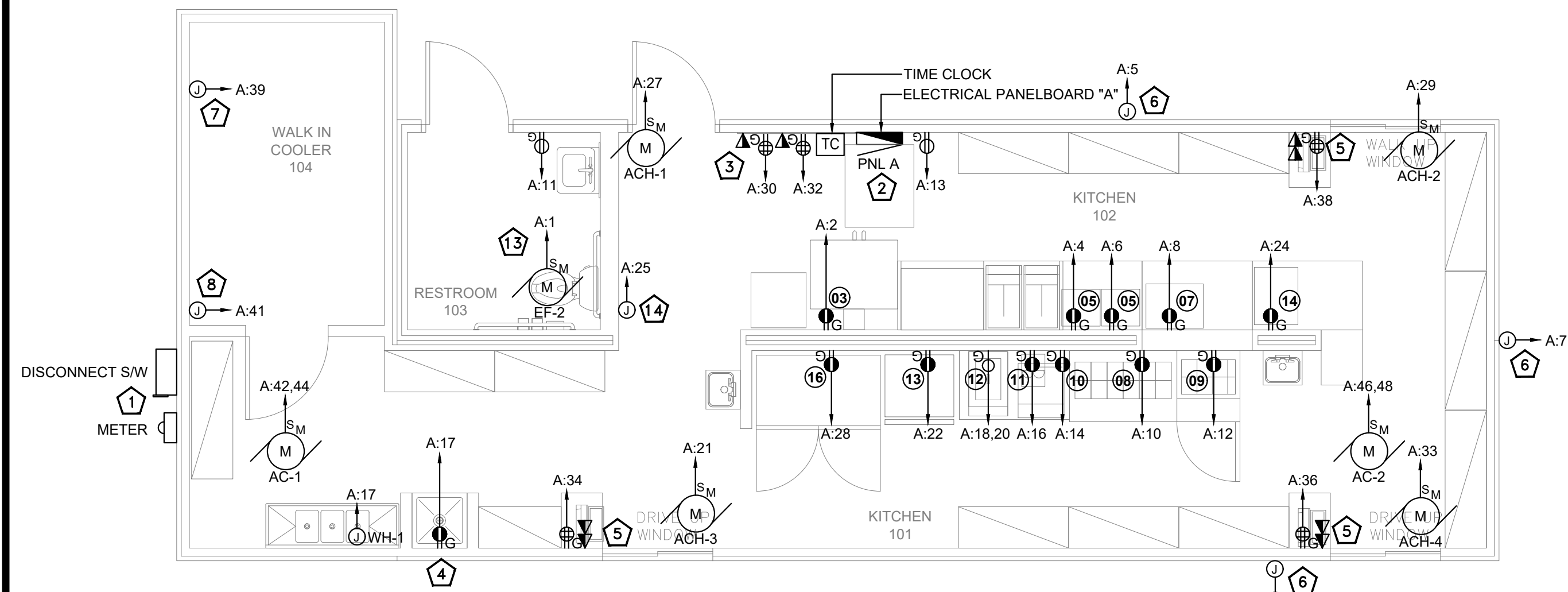
X. DEVICE LOCATION-INDICATING LIGHTS: LOCATE IN PUBLIC SPACE NEAR THE DEVICE THEY MONITOR.

Y. INSTALL WIRING ACCORDING TO NECA 1 AND TIA/EIA 568-A.

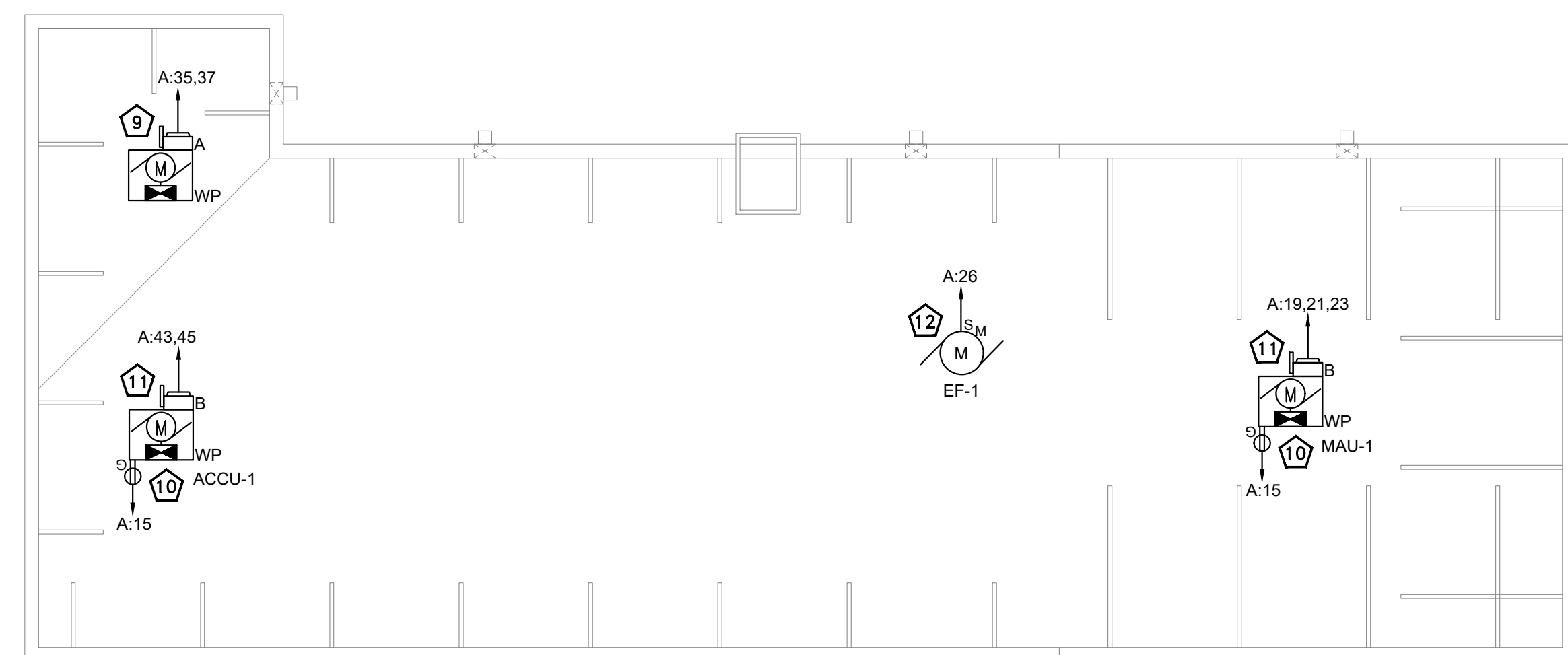
Z. FIRE ALARM CIRCUITS AND EQUIPMENT CONTROL WIRING ASSOCIATED WITH THE FIRE ALARM SYSTEM SHALL BE INSTALLED IN A DEDICATED RACEWAY SYSTEM IN AREAS OF EXPOSED CONSTRUCTION PLENUM RATED CABLE IS ALLOWED ABOVE CONCEALED, ACCESSIBLE CEILINGS.

AA. ENGAGE A FACTORY-AUTHORIZED SERVICE REPRESENTATIVE TO INSPECT TEST, AND ADJUST FIELD-ASSEMBLED COMPONENTS AND EQUIPMENT INSTALLATION, INCLUDING CONNECTIONS, AND TO ASSIST IN FIELD TESTING. REPORT RESULTS IN WRITING.

AB. TEST AND INSPECTION RECORDS: PREPARE ACCORDING TO NFPA 72, INCLUDING DEMONSTRATION OF SEQUENCES OPERATION BY USING THE MATRIX-STYLE FORM IN APPENDIX A IN NFPA.



**01 ELECTRICAL POWER FLOOR PLAN**  
SCALE: 1/4"=1'-0"



**02 ELECTRICAL POWER ROOF PLAN**  
SCALE: 1/4"=1'-0"

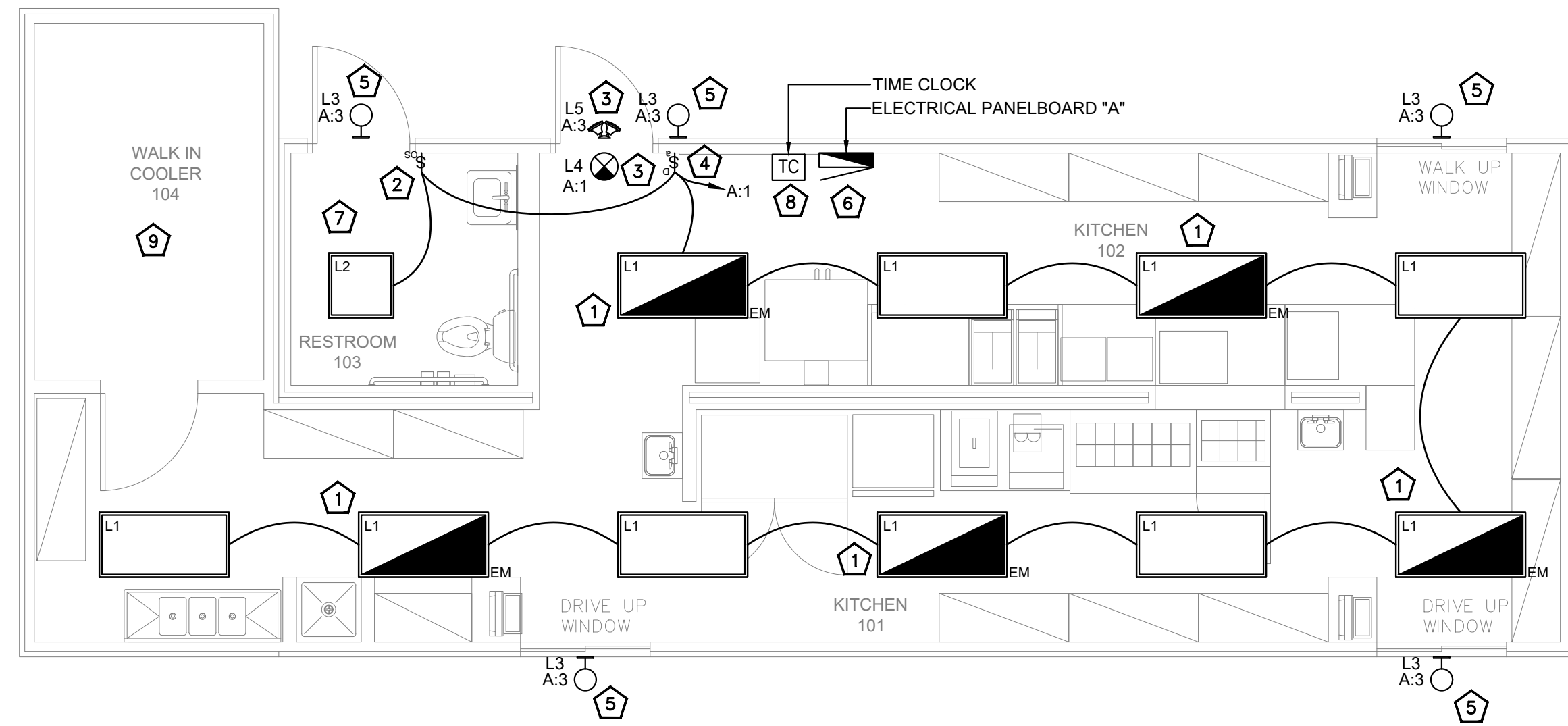
ID	QTY	ITEM	VOLT	PHASE	CONNECTION TYPE
03	1	DOUBLE DECK CONVECTION OVEN	120	1	NEMA 5-20R
05	2	STEAMER	120	1	NEMA 5-20R
07	1	BUN TOASTER	120	1	NEMA 5-20R
08	1	REFRIGERATED PREP TABLE	120	1	NEMA 5-20R
09	1	SALAD PREP TABLE	120	1	NEMA 5-20R
10	1	ICE MAKER	120	1	NEMA 5-20R
11	1	SHAKE MIXER	120	1	NEMA 5-20R
12	1	SHAKE MACHINE	208	1	NEMA 6-20R
13	1	REACH-IN TOP FREEZER REF.	120	1	NEMA 5-20R
14	1	MEAT SLICER	120	1	NEMA 5-20R
15	1	REACH-IN COOLER	120	1	NEMA 5-20R
16	1	REACH-IN FREEZER	120	1	NEMA 5-20R

ELECTRICAL LEGEND	
	DUPL120V-20A DUPLEX CONVENIENCE RECEPTACLE, STRAIGHT BLADE MOUNTED AT 18" A.F.F UNLESS OTHERWISE NOTED.
	120V-20A DUPLEX GFI CONVENIENCE RECEPTACLE, STRAIGHT BLADE MOUNTED AT 18" A.F.F UNLESS OTHERWISE NOTED.
	120V-20A DUPLEX DEDICATED RECEPTACLE, STRAIGHT BLADE MOUNTED AT 18" A.F.F UNLESS OTHERWISE NOTED.
	120V-20A DUPLEX GFI DEDICATED RECEPTACLE, STRAIGHT BLADE MOUNTED AT 18" A.F.F UNLESS OTHERWISE NOTED.
	120V-20A QUADPLEX CONVENIENCE RECEPTACLE, STRAIGHT BLADE MOUNTED AT 18" A.F.F UNLESS OTHERWISE NOTED.
	120V-20A QUADPLEX GFI CONVENIENCE RECEPTACLE, STRAIGHT BLADE MOUNTED AT 18" A.F.F UNLESS OTHERWISE NOTED.
	SIMPLEX GFI SPECIAL PURPOSE RECEPTACLE MOUNTED AT 18" A.F.F UNLESS OTHERWISE NOTED.
	JUNCTION BOX CONNECTION FOR EQUIPMENT. E.C. SHALL CONFIRM EXACT CONNECTION REQUIREMENTS AND MOUNTING HEIGHT.
	NON FUSED DISCONNECT SWITCH. LETTER DENOTES THE SIZE OF THE DISCONNECT AS FOLLOWS: A - 30A B - 60A C - 100A
	TEL/DATA COMBINATION OUTLET MOUNTED AT 18" A.F.F. UNLESS OTHERWISE NOTED. PROVIDE 3/4" CONDUIT AND/OR PULL STRING TO ACCESSIBLE CEILING OR AREA AS REQUIRED.
	SWITCH
	ELECTRICAL PANELBOARD. SEE RISER DIAGRAM FOR DETAILS
	WALK-IN/AC OUTDOOR UNIT
	KITCHEN EXHAUST FAN
	MOTOR RATED SWITCH

ELECTRICAL GENERAL NOTES	
1	ALL ELECTRICAL ROUGH-INS AND CONNECTIONS SHOWN ON THESE PLANS ARE FOR FOOD SERVICE FIXTURES AND EQUIPMENT PROVIDED BY THE EQUIPMENT VENDOR OR BY OUTSIDE PARTIES LISTED AS 'VENDOR' OR 'BY OTHERS'. ALL INFORMATION PROVIDED ON THESE PLANS ARE TO BE VERIFIED BY THE ELECTRICAL CONTRACTOR THRU THE SPECIFICATIONS MANUAL PROVIDED BY THE EQUIPMENT VENDOR OR BY CONSULTING THE APPROPRIATE OUTSIDE PARTIES.
2	ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR SUPPLYING / INSTALLING ALL ELECTRICAL COMPONENTS NECESSARY TO PROVIDE POWER TO EQUIPMENT. ELECTRICAL CONTRACTOR SHALL ALSO COMPLETE ALL INTERNAL WIRING AND FINAL CONNECTIONS TO EQUIPMENT PER MANUFACTURERS SPECIFICATIONS, INCLUDING BUT NOT LIMITED TO: - PROVIDING CAPS AND CORDS TO APPLICABLE EQUIPMENT - STAINLESS STEEL COVER PLATES WHERE REQUIRED - MAIN BREAKER PANELS, CONTROL PANELS, DISCONNECT SWITCHES, STARTERS, ETC.
3	ALL ELECTRICAL CONDUIT IS TO BE RUN WITHIN WALL CAVITY AND BOXES AND RECEPTACLES ARE TO BE MOUNTED FLUSH WITH THE WALL SURFACE. SURFACE MOUNTED ELECTRICAL WORK IS NOT TO BE USED UNLESS OTHERWISE SPECIFIED.
4	ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR ENSURING PROPER WORKING CONDITION AND MEETING CURRENT LOCAL CODE REQUIREMENTS FOR ANY 'ALL EQUIPMENT LISTED ON THESE PLANS AS 'EXISTING''
5	ALL ELECTRICAL WORK IS TO BE PERFORMED IN FULL ACCORDANCE WITH ALL LOCAL AND FEDERAL CODES AND REQUIREMENTS.
6	ALL DIMENSIONS ARE TAKEN FROM FINISHED FLOORS AND FINISHED WALLS OR AS NOTED ON PLAN AND ARE TO CENTERLINE OF ROUGH-INS.
7	REFER TO ARCHITECTURAL PLANS AND / OR CONSTRUCTION DOCUMENTS FOR ANY ADDITIONAL ELECTRICAL CONNECTIONS OR OUTLETS REQUIRED TO MEET LOCAL CODES.
8	ELECTRICAL CONTRACTOR TO MAKE SINGLE POINT HARNESS CONNECTION FROM CONDENSING UNIT TO EVAPORATOR AS WELL AS CONNECTING EVAP. PAN
9	G.C. TO CONNECT PRECHARGED REFRIGERATION LINES FROM CONDENSING UNIT TO EVAPORATOR.
10	RECOMMEND CONDENSING UNIT TO BE KEPT AT TEMPERATURE OF 90 DEGREES OR LESS.

KITCHEN GENERAL NOTES	
1	ALL SINGLE-PHASE RECEPTACLE RATED 150 VOLTS OR LESS TO GROUND, 50 AMPERES OR LESS, AND THREE-PHASE RECEPTACLE RATED 150 VOLTS OR LESS TO GROUND, 100 AMPERES OR LESS, INSTALLED IN THE LOCATIONS SPECIFIED IN 210.8(B) SHALL HAVE GFCI PROTECTION. PROVIDE GFCI BREAKER FOR THE BRANCH CIRCUIT WHERE THE ABOVE MENTIONED RECEPTACLES ARE INSTALLED NOT IN A READILY ACCESSIBLE LOCATION.

POWER PLAN KEY NOTES	
NO	ITEM DESCRIPTION
1	NEW 200A 208/120V, 3-PHASE, 4-WIRE ELECTRICAL METER AND SERVICE DISCONNECT FOR THE SPACE. E.C. TO COORDINATE WITH ELECTRICAL UTILITY FOR EXACT LOCATION AND INSTALLATION REQUIREMENTS PRIOR TO ROUGH-IN.
2	NEW 200A 208/120V, 3-PHASE, 4-WIRE, 42 POLE, MLO ELECTRICAL PANELBOARD FOR THE SPACE. E.C. TO COORDINATE WITH ARCHITECT/OOWNER FOR EXACT LOCATION PRIOR TO ROUGH-IN. ALL CLEARANCE REQUIREMENT PER NEC 110.26 SHALL BE MET.
3	DEDICATED QUAD RECEPTACLE FOR DATA/TELEPHONE EQUIPMENT, E.C TO COORDINATE EXACT ELECTRICAL REQUIREMENTS WITH DATA/TELEPHONE EQUIPMENT SUPPLIER PRIOR TO ROUGH-IN.
4	RECEPTACLE FOR IGNITION OF GAS WATER HEATER. E.C TO COORDINATE EXACT LOCATION, MOUNTING HEIGHT, AND ELECTRICAL REQUIREMENTS WITH PLUMBING PRIOR TO ROUGH-IN.
5	QUAD RECEPTACLE AND DATA OUTLETS FOR POS AT DRIVE THRU SALES AREA. E.C TO COORDINATE EXACT REQUIREMENTS WITH POS INSTALLER PRIOR TO ROUGH-IN.
6	JUNCTION BOX WITH TOGGLE DISCONNECT PER NEC FOR CONNECTION TO BUILDING MOUNTED SIGNAGE. VERIFY LOCATION AND CONNECT TO SIGN PER MANUFACTURE'S/SIGN VENDOR'S INSTRUCTION. ROUTE CIRCUIT TO PANEL VIA EXTERIOR MOUNTED PHOTOCELL/TIME CLOCK
7	JUNCTION BOX FOR WALK-IN COOLER EVAPORATOR. E.C TO COORDINATE EXACT CONNECTION AND MOUNTING REQUIREMENTS WITH WALK-IN COOLER INSTALLER PRIOR TO ROUGH-IN.
8	JUNCTION BOX FOR WALK-IN COOLER INTERIOR LIGHTING. E.C TO COORDINATE EXACT CONNECTION AND MOUNTING REQUIREMENTS WITH WALK-IN COOLER INSTALLER PRIOR TO ROUGH-IN.
9	CONNECTION FOR WALK-IN COOLER CONDENSER MOUNTED ON ROOF. E.C TO COORDINATE EXACT CONNECTION REQUIREMENTS AND LOCATION WITH WALK-IN COOLER INSTALLER PRIOR TO ROUGH-IN.
10	WEATHER PROOF GFI RECEPTACLE WITHIN 25FT OF EACH HVAC EQUIPMENT AS PER NEC 210.63.
11	DISCONNECT FOR HVAC UNIT. E.C. TO COORDINATE THE EXACT LOCATION AND ELECTRICAL REQUIREMENTS WITH MECHANICAL CONTRACTOR. PROVIDE THE ELECTRICAL CONNECTION AS PER FINAL MECHANICAL EQUIPMENTS REQUIREMENTS IN FIELD.
12	CONNECTION FOR KITCHEN EXHAUST FAN. E.C. SHALL COORDINATE WITH MECHANICAL CONTRACTOR FOR EXACT LOCATION, SWITCHING & CONTROLS AND PROVIDE ALL NECESSARY WIRING REQUIRED IN FIELD.
13	EXHAUST FAN FURNISHED AND INSTALLED BY MECHANICAL CONTRACTOR. EXHAUST FAN EF-3 SHALL BE POWERED AND CONTROLLED ALONG WITH RESTROOM LIGHT FIXTURE. E.C. SHALL COORDINATE EXACT LOCATION WITH MECHANICAL CONTRACTOR IN FIELD.
14	JUNCTION BOX FOR KITCHEN HOOD CONTROLLER. COORDINATE EXACT LOCATION AND ELECTRICAL REQUIREMENTS WITH KITCHEN HOOD EQUIPMENT VENDOR PRIOR TO ROUGH-IN.



**01** ELECTRICAL LIGHTING FLOOR PLAN  
SCALE: 1/4"=1'-0"

**ELECTRICAL GENERAL NOTES**

NO	ITEM DESCRIPTION
1	ALL WORK SHALL BE IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE AND ALL APPLICABLE FEDERAL, STATE AND LOCAL CODES AND LANDLORD'S DESIGN CRITERIA.
2	WIRE SIZE SHALL BE #12 THHN/THWN UNLESS OTHERWISE NOTED ON PLANS. ALL CONDUCTORS #6 AND LARGER SHALL BE THHN/THWN.
3	ALL CONDUCTORS SHALL BE COPPER.
4	ALL CONDUCTORS SHALL BE RUN IN CONDUIT (EMT OR RIGID) OR MC CABLE IN BOTH EXPOSED AND CONCEALED AREAS. FLEXIBLE CONDUIT WAY ONLY BE USED FOR FINAL CONNECTIONS FROM OUTLET BOXES TO LIGHT FIXTURES, MOTORS, APPLIANCES, ETC., MAX. LENGTH 6'-0"
5	ALL MATERIALS SHALL BE U.L. APPROVED.
6	ALL BRANCH CIRCUITS SHALL BE PROPERLY PHASE BALANCED.
7	ALL NON-POWER RELATED WIRING IN CEILING AIR CONDITIONING PLENUM RUNNING WITHOUT CONDUIT SHALL BE TEFLON COATED CLASSIFIED FIBER USE IN PLENUMS.
8	SEE ARCHITECTURAL DRAWINGS OR INFORMATION CONCERNING EXISTING CONDITIONS AND NEW WORK.
9	ALL WIRING DEVICES SHALL BE 20A RATED, COMMERCIAL GRADE TYPE. DEVICE COLORS AND PLATE COLORS TO BE DETERMINED BY ARCHITECT PRIOR TO PURCHASE AND INSTALLATION.
10	ALL CONDUITS, CABINETS, PANELS AND OTHER EXPOSED NON-CURRENT CARRYING METAL PARTS OF ELECTRICAL EQUIPMENT SHALL BE GROUNDED IN ACCORDANCE WITH N.E.C. 250 AND ALL APPLICABLE FEDERAL, STATE AND LOCAL CODES.
11	ALL LUMINARIES SHALL BE PROPERLY SUPPORTED IN ACCORDANCE WITH THE CEILING SYSTEM MANUFACTURER RECOMMENDATIONS AND LOCAL CODE REQUIREMENTS.
12	THIS DRAWING IS A GUIDE FOR THE INSTALLATION OF ELECTRICAL SERVICE. THE ELECTRICAL CONTRACTOR IS RESPONSIBLE TO PROVIDE A FUNCTIONING SYSTEM.
13	ALL CABLES SHALL BE RUN WITHOUT SPLICES EXCEPT WHERE OTHERWISE INDICATED.
14	ALL PULL AND JUNCTION BOXES SHALL BE ACCESSIBLE AT ALL TIMES.
15	EXACT POINT METHOD OF CONNECTION SHALL BE DETERMINED IN FIELD.
16	ALL WORK SHALL BE DONE IN A NEAT AND WORKMANLIKE MANNER.
17	ALL RACEWAY ROUTED, INSULATED CONDUCTORS SYSTEM SHALL BE COLOR CODED AS FOLLOWS:
	120/208V SYSTEM
	PHASE "A" BLACK
	PHASE "B" RED
	PHASE "C" BLUE
	NEUTRAL WHITE

**KEY NOTES**

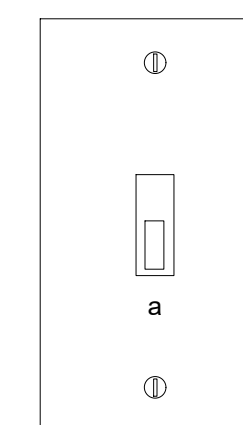
NO	ITEM DESCRIPTION
1	2X4 FIXTURE WITH BATTERY BACKUP OPTION FOR EMERGENCY EGRESS ILLUMINATION. FIXTURE SHALL ILLUMINATE IN 100% BRIGHTNESS USING BATTERY AT EMERGENCY SITUATION AHEAD OF ANY SWITCHING.
2	WALL MOUNTED OCCUPANCY SENSOR. SET OFF TIME TO 15 MINUTES FOR RESTROOM. SET DIP SWITCH TO AUTOMATIC ON.
3	WIRE ALL EMERGENCY EXIT SIGNS TO NEAREST LIGHTING CIRCUIT AHEAD OF ALL CONTROL & SWITCHING FOR CONTINUOUS OPERATIONS.
4	MANUAL TOGGLE SWITCH WITH DIMMER FOR CONTROL LIGHTING FIXTURES WITHIN THE KITCHEN AREA. E.C TO CONFIRM THE SWITCH LOCATION WITH ARCHITECT/OWNER PRIOR TO ROUGH-IN. WIRE VIA TIME CLOCK FOR AUTOMATIC SHUT OFF DURING NON WORKING HOURS.
5	EXTERIOR WALL SCONCE AT EXIT DOORS AND DRIVE UP WINDOWS. E.C COORDINATE EXACT LOCATION, QUANTITY, AND MOUNTING HEIGHT OF WALL SCONCE PRIOR TO ROUGH-IN. WIRE VIA PHOTOCELL ON ROOF WITH TIME CLOCK OVERRIDE FOR AUTOMATIC SHUT OFF DURING DAY TIME AND NON WORKING HOURS.
6	LIGHTING NEAR ELECTRICAL PANELS SHALL NOT BE CONTROLLED BY ANY AUTOMATIC MEANS AND SHALL BE COMPLIED AS PER NEC 110.26(D)
7	E.C. SHALL TIE EXHAUST FAN TO SWITCH CONTROLLING LIGHTING IN ROOM
8	COORDINATE EXACT LOCATION OF TIME CLOCK WITH ARCHITECT/OWNER
9	LIGHTING AND CONTROLLERS WITHIN THE WALK-IN COOLER SHALL BE PROVIDED BY WALK-IN COOLER SUPPLIER. E.C. TO PROVIDE REQUIRED ELECTRICAL CONNECTIONS FOR WALK-IN COOLER LIGHTING.

**LIGHT FIXTURE SCHEDULE**

TYPE	SYMBOL	LIGHT FIXTURE DISCRPTION	WATTAGE
L1		2X4 LED FIXTURE. FIXTURE SHOWN WITH "EM" SHALL HAVE BATTERY BACKUP OPTION FOR EMERGENCY EGRESS ILLUMINATION.	40W
L2		2X2 LED FIXTURE.	30W
L3		EXTERIOR WALL SCONCE	20W
L4		LED EXIT SIGN	3W
L5		EXTERIOR REMOTE HEAD	3W

- LIGHTING FIXTURE SCHEDULE NOTES:  
 1. ALL LIGHT FIXTURE SHOULD BE LED TYPE.  
 2. LIGHTING FIXTURE CONTROLLED BY DIMMER SWITCH SHALL BE CAPABLE OF DIMMING.

SWITCH DESIGNATION	TYPE	SIZE	
SWITCH "a"	MANUAL TOGGLE SWITCH	20A	\$ <sub>OS</sub>
SENSOR	WALL MOUNTED SENSOR		\$ <sub>OS</sub>



**GENERAL NOTE**

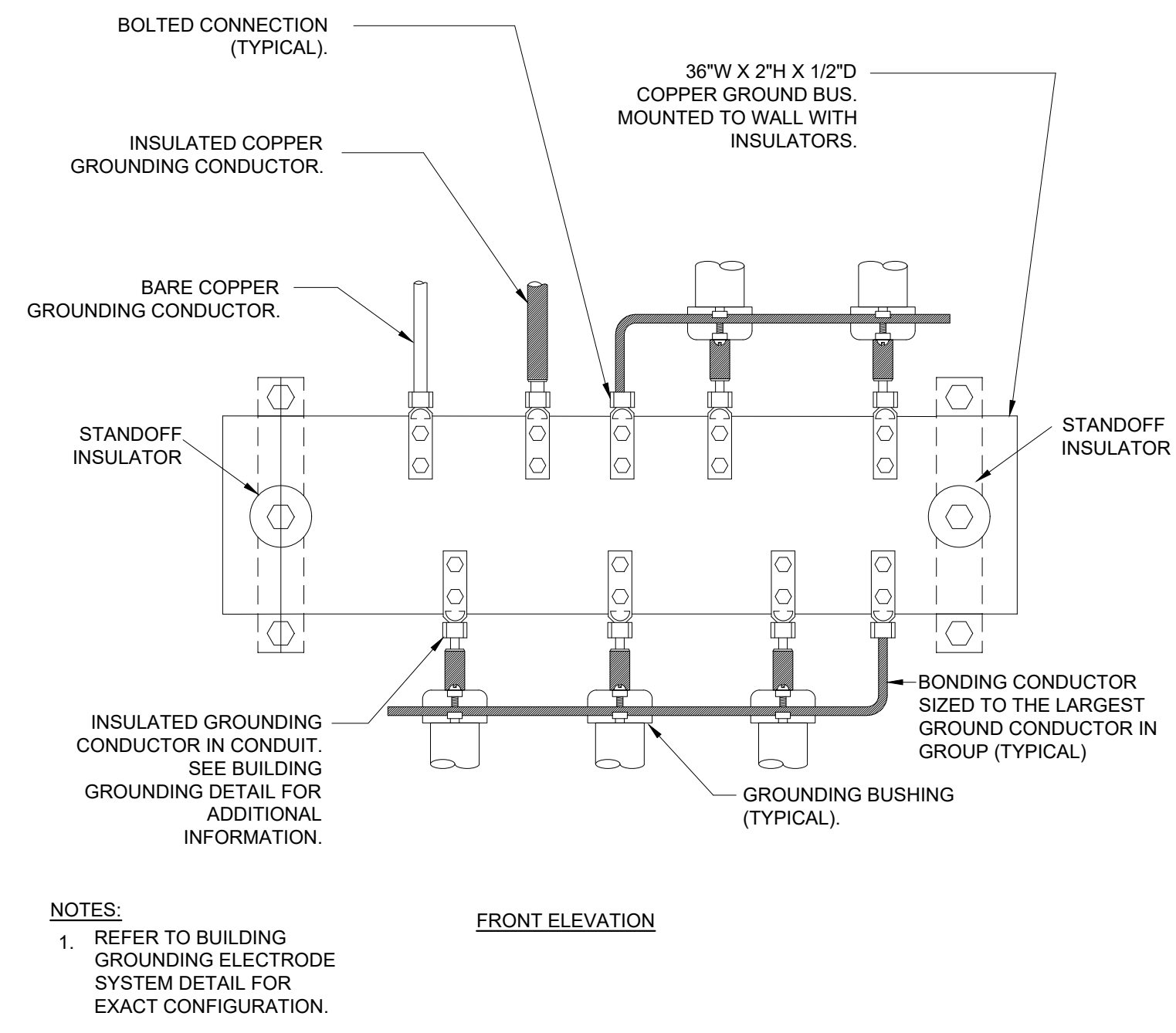
MAXIMUM SWITCH HEIGHT TO BE 48" PER ADAAG GUIDELINES.  
 COORDINATE EXACT LOCATION WITH TENANT PRIOR TO INSTALLATION.

**02** SWITCH BANK DETAILS  
N.T.S

DATE:	REVIEW SET	PERMIT SET
07.20.23		
12.15.23		

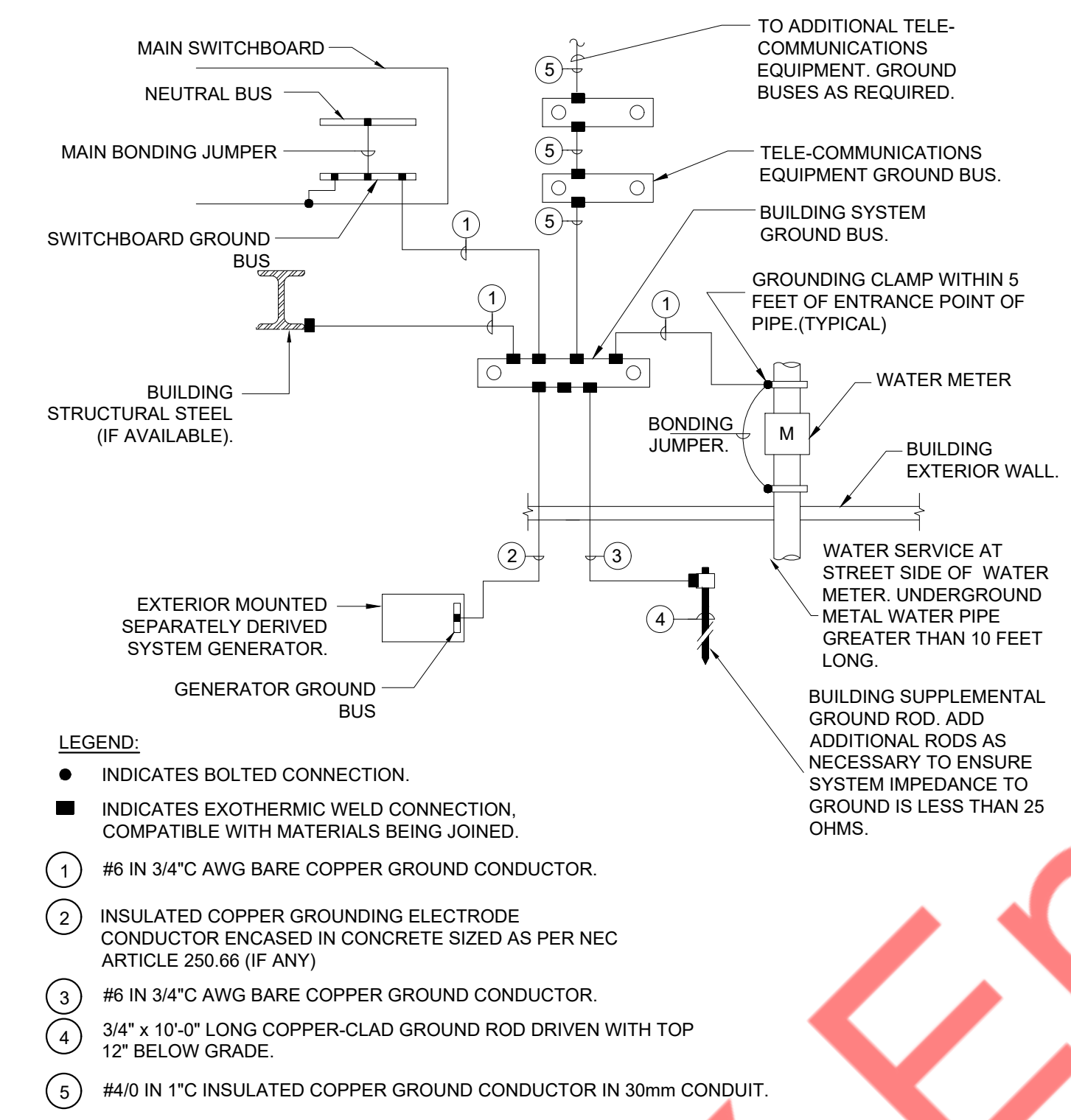
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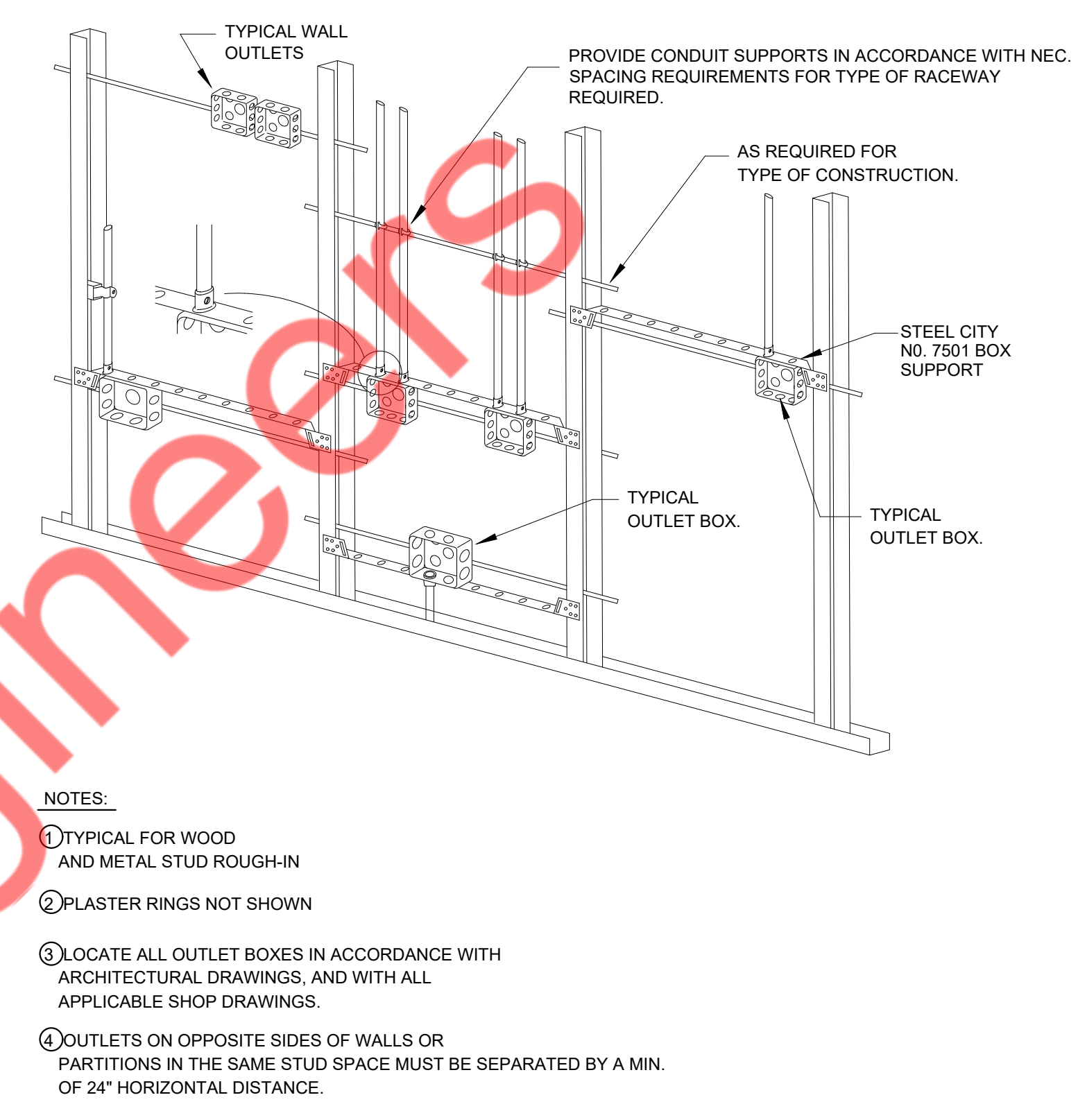
NOTES:  
1. REFER TO BUILDING GROUNDING ELECTRODE SYSTEM DETAIL FOR EXACT CONFIGURATION.

1 BUILDING ELECTRICAL SYSTEMS GROUND BUS  
E-5 N.T.S



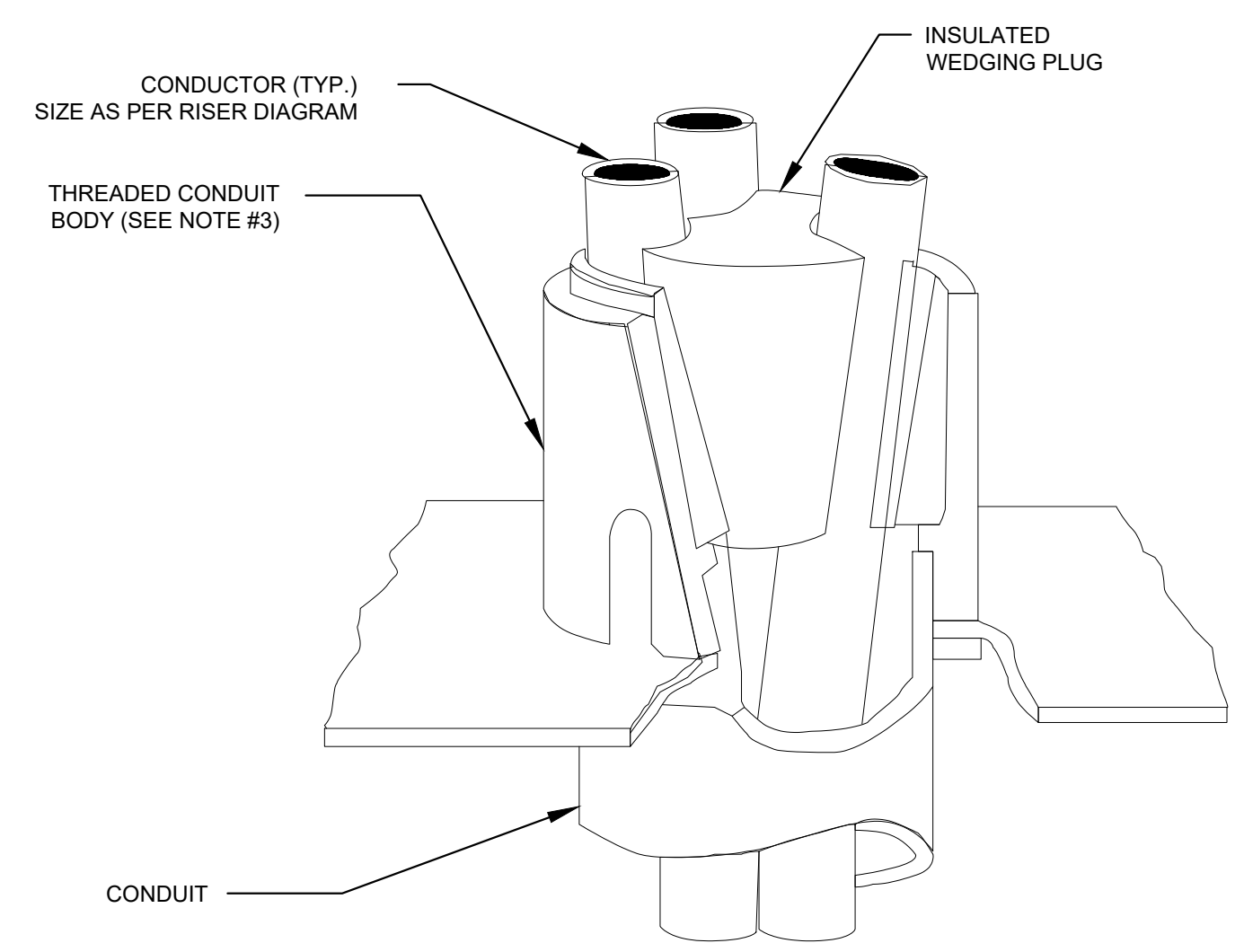
LEGEND:  
● INDICATES BOLTED CONNECTION.  
■ INDICATES EXOTHERMIC WELD CONNECTION, COMPATIBLE WITH MATERIALS BEING JOINED.  
① #6 IN 3/4\"/>

2 BUILDING GROUNDING ELECTRODE SYSTEM  
E-5 N.T.S



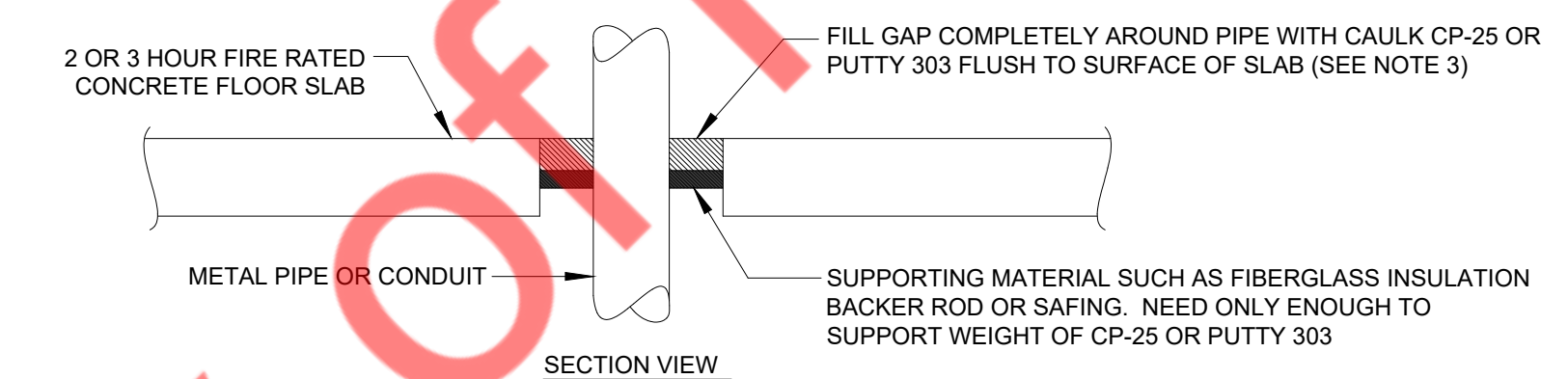
NOTES:  
① TYPICAL FOR WOOD AND METAL STUD ROUGH-IN  
② PLASTER RINGS NOT SHOWN  
③ LOCATE ALL OUTLET BOXES IN ACCORDANCE WITH ARCHITECTURAL DRAWINGS, AND WITH ALL APPLICABLE SHOP DRAWINGS.  
④ OUTLETS ON OPPOSITE SIDES OF WALLS OR PARTITIONS IN THE SAME STUD SPACE MUST BE SEPARATED BY A MIN. OF 24\"/>

3 TYPICAL ROUGH-IN REQUIREMENTS  
E-5 N.T.S



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

4 TYPICAL ROUGH-IN REQUIREMENTS  
E-5 N.T.S

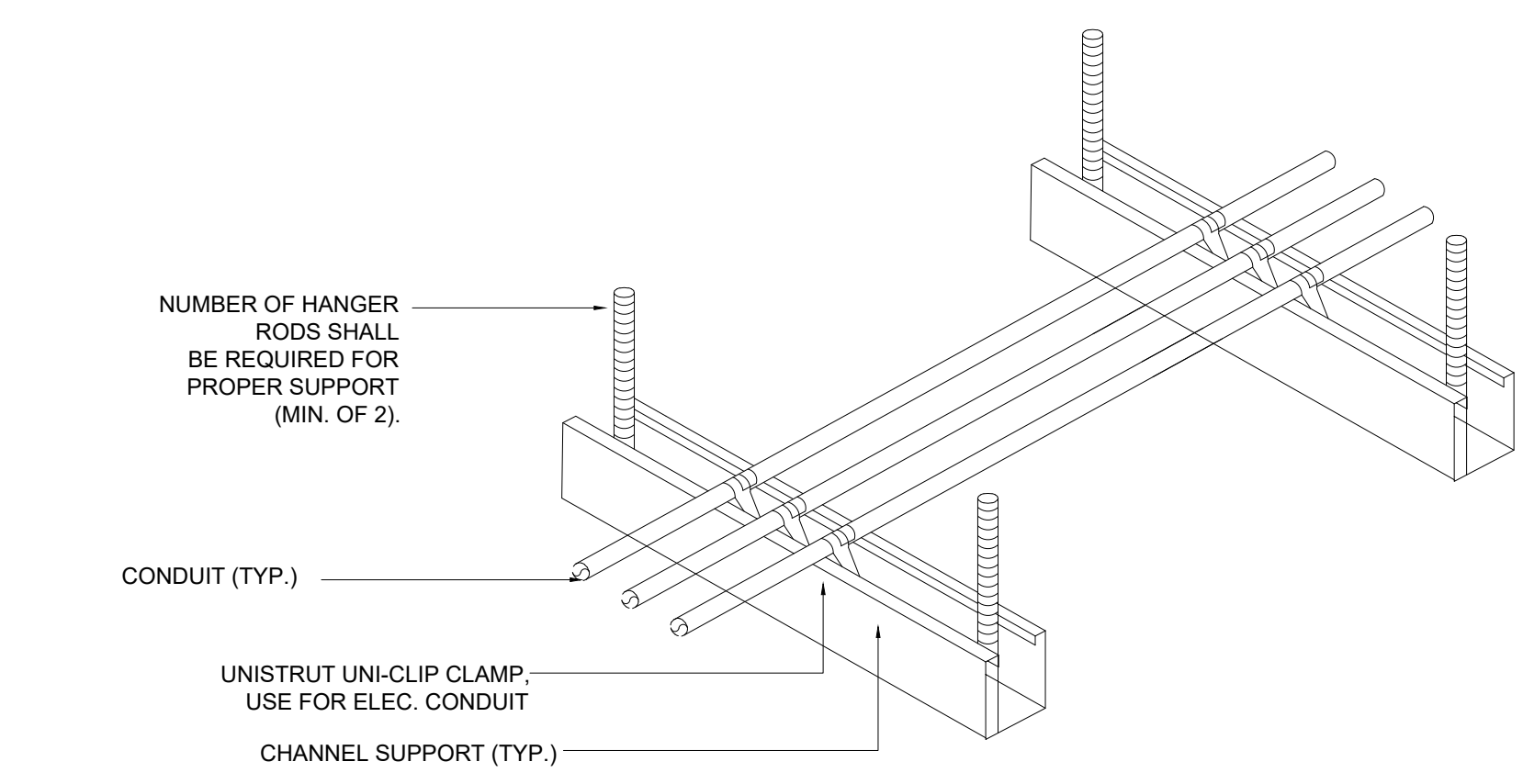


NOTES:  
1. FOR CONCRETE BLOCK WALLS, CENTER CAULK CP-25 OR PUTTY 303 WITHIN WALL WITH DAMMING ON BOTH SIDES.  
2. RECOMMENDATIONS BASED ON PRODUCT PERFORMANCE PER ASTM E-814 (UL 1479) FIRE TEST AND UL CLASSIFICATION FIRE STOP SYSTEMS 49, 33 AND 91.  
3. UP TO 40% SHRINKAGE OF CP-25 OR PUTTY 303 IS ACCEPTABLE AFTER WET DEPTH INSTALLATION.  
4. WHEN ANNULAR SPACE EXCEEDS 3/4\"/>

WET DEPTH	PIPE SIZE	FIRE RATING
1/2\"/>		

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

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



NOTES:  
1. ALL CONDUIT MAY BE COMBINED ON SAME SUPPORT CHANNEL WHERE PRACTICAL.  
2. SUPPORT CHANNEL LENGTH SHALL NOT BE DETERMINED UNTIL ALL PIPING, CONDUIT, ETC. TO BE SUPPORTED IS COORDINATED.  
3. SUPPORT CHANNEL SPACING SHALL BE NO MORE THAN 10'-0\"/>

6 CONDUIT SUPPORT DETAIL  
E-5 N.T.S

**MANUAL MODE OPERATION:**

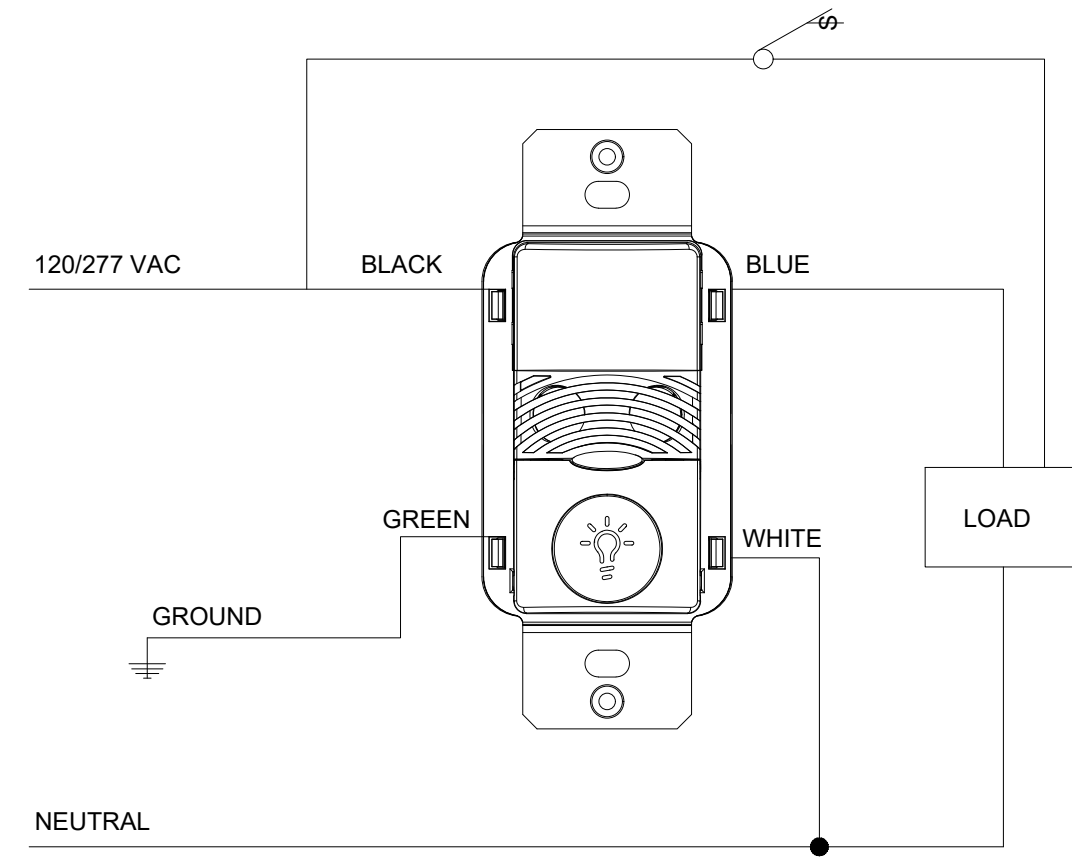
1. PUSHBUTTON PRESS IS REQUIRED TO TURN LOAD ON.
2. LOAD TURNS OFF WHEN SENSOR TIMES OUT OR BY PRESSING PUSH BUTTON.
3. IF DAYLIGHT SENSOR IS ENABLED AND LIGHT LEVEL IS ABOVE SET POINT, LOAD WILL NOT TURN ON.

**AUTOMATIC MODE OPERATION:**

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

**SENSOR TYPES INCLUDE:**

ONW-D-1001-MV-N



1 WIRING DIAGRAM-LOW VOLTAGE WALL SWITCH SENSOR  
E-6 (NEUTRAL CONNECTION) OCCUPANCY/VACANCY- SINGLE LEVEL  
N.T.S

DATE:	REVIEW SET	PERMIT SET
07.20.23		
12.15.23		

SEAL:

Property of NY Engineers

### ELECTRICAL PANEL SCHEDULE

PANELBOARD		A		VOLTAGE		120 / 208 V		PHASE		3		WIRE		4		
MLO		MLO		MLO		MLO		BUS RATING		225		AIC RATING		FIELD VERIFY		
NEMA TYPE ENCLOSURE		1		MOUNTING		SURFACE		OPTIONS		NOTE		NEW PANEL				
CKT. NO.	EQT. TAG	CKT. TAG	DESCRIPTION	POLE	WIRE SIZE	BKR. SIZE	TOTAL WATTS	PHASE	TOTAL WATTS	BKR. SIZE	WIRE SIZE	POLE	DESCRIPTION	CKT. TAG	EQT. TAG	CKT. NO.
1			LIGHTING/TOILET EX. FAN	1	12	20	600	A	708	20	12	1	DOUBLE DECK OVEN	GFCI		2
3			LIGHTING	1	12	20	600	B	1,800	20	12	1	STEAMER			4
5			STORE FRONT SIGN	1	12	20	1,200	C	1,800	20	12	1	STEAMER			6
7			STORE FRONT SIGN	1	12	20	1,200	A	1,600	20	12	1	BUN TOASTER			8
9			STORE FRONT SIGN	1	12	20	1,200	B	936	20	12	1	REFRIGERATED PREP TABLE	GFCI		10
11			RESTROOM RECEPT	1	12	20	180	C	1,176	20	12	1	SALAD PREP TABLE	GFCI		12
13			GENERAL RECEPT	1	12	20	180	A	852	20	12	1	ICE MAKER			14
15			WP/GFI ROOF RECEPTACLE	1	12	20	1,200	B	800	20	12	1	SHAKE MIXER			16
17			GAS WATER HEATER	1	12	20	180	C	1,250				SHAKE MACHINE			18
19							4,000	A	1,250	20	12	2				20
21			MAU-1	3	6	50	4,000	B	360	20	12	1	REACH-IN REF/FREEZER	GFCI		22
23							4,000	C	630	20	12	1	MEAT SLICER			24
25			KITCHEN HOOD CONTROLLER	1	12	20	500	A	300	20	12	1	EF-1			26
27			ACH-1	1	12	20	300	B	1,332	20	12	1	REACH-IN FREEZER	GFCI		28
29			ACH-2	1	12	20	300	C	360	20	12	1	IT QUAD RECEPT			30
31			ACH-3	1	12	20	300	A	360	20	12	1	IT QUAD RECEPT			32
33			ACH-4	1	12	20	300	B	360	20	12	1	POS QUAD RECEPT			34
35							2,500	C	360	20	12	1	POS QUAD RECEPT			36
37			WALK-IN CONDENSER	2	10	30	2,500	A	360	20	12	1	POS QUAD RECEPT			38
39		LO	WALK-IN EVAPORATOR	1	12	20	1,000	B	360	20	12	1	POS QUAD RECEPT			40
41			WALK-IN LIGHTS	1	12	20	300	C	150							42
43							2,900	A	150	20	12	2	AC-1			44
45			ACCU-1	2	8	40	2,900	B	150							46
47			SPARE	1				C	150	20	12	2	AC-2			48
49			SPARE	1				A		20			SPARE			50
51			SPARE	1				B		20			SPARE			52
53			SPARE	1				C		20			SPARE			54

ALL PHASES TO BE BALANCED TO WITHIN 7%  
 A= 17,760 WATTS  
 B= 17,598 WATTS  
 C= 14,536 WATTS

(E) EXISTING TO REMAIN  
 (N) NEW CIRCUIT  
 GFCI GROUND FAULT CURRENT INTERRUPTER  
 IG CIRCUITS WITH ISOLATED GROUND  
 TC CIRCUITS ON TIMECLOCK  
 EMS ROUTING TO THE EMS PANEL  
 LO CIRCUITS WITH HANDLE LOCK-OFF DEVICE  
 a,b,c SWITCHES CONTROLLING LIGHTS

TOTAL CONNECTED LOAD	49,394	WATTS	137	AMPS
TOTAL DEMAND LOAD	43,496	WATTS	121	AMPS

### ELECTRICAL LOAD SUMMARY

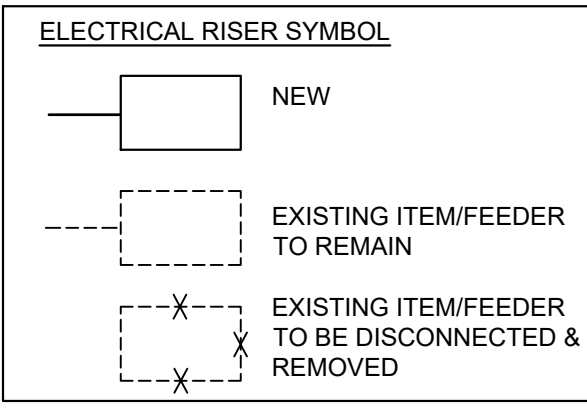
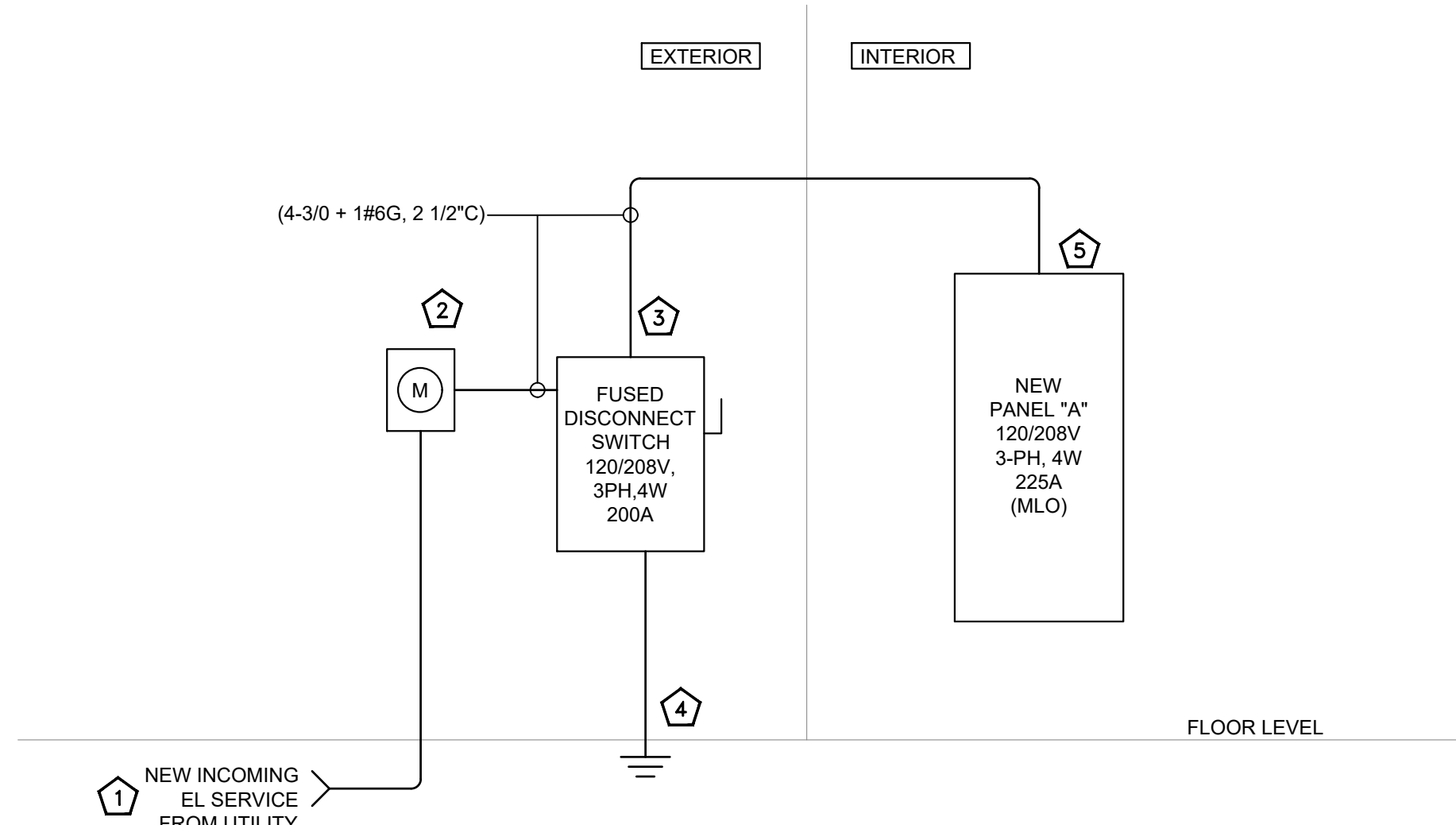
DESCRIPTION	NEC CONNECTED kW	VOLT	PHASE	NEC DEMAND FACTOR	NEC DEMAND kW
LIGHTING- 120V	1.5	120	1	1.25	1.9
RECEPTACLES	3.7	120	1	>10kW=10+(0.5*(kW-10))	3.7
STOREFRONT SIGN	3.6	120	1	1.25	4.5
AC INDOOR UNIT (VRF)	0.6	208	1	1.00	0.6
AIR CURTAIN-1	1.2	120	1	1.00	1.2
ACCU	5.8	208	1	1.00	5.8
KITCHEN EQUIPMENT	20.5	208	1	0.65	13.3
ROOFTOP UNITS	12.0	208	3	1.00	12.0
HOT WATER HEATER	0.2	120	1	1.00	0.2
KITCHEN EF	0.3	120	1	1.00	0.3
<b>TOTALS</b>	<b>49.4</b>				<b>43.5</b>

NOTES:  
 \* USE GREATER VALUE OF THE TWO CATEGORIES.  
 \*\* 125% OF THE LARGEST MOTOR OR COMPRESSOR IN SYSTEM APPLIED ONLY ON ONE UNIT.  
 \*\*\* N.E.C. ARTICLE 220-12 REQUIREMENT (200 VA PER FOOT OF SHOW WINDOW)  
 MINUS ACTUAL SHOW WINDOW LIGHTING KVA.

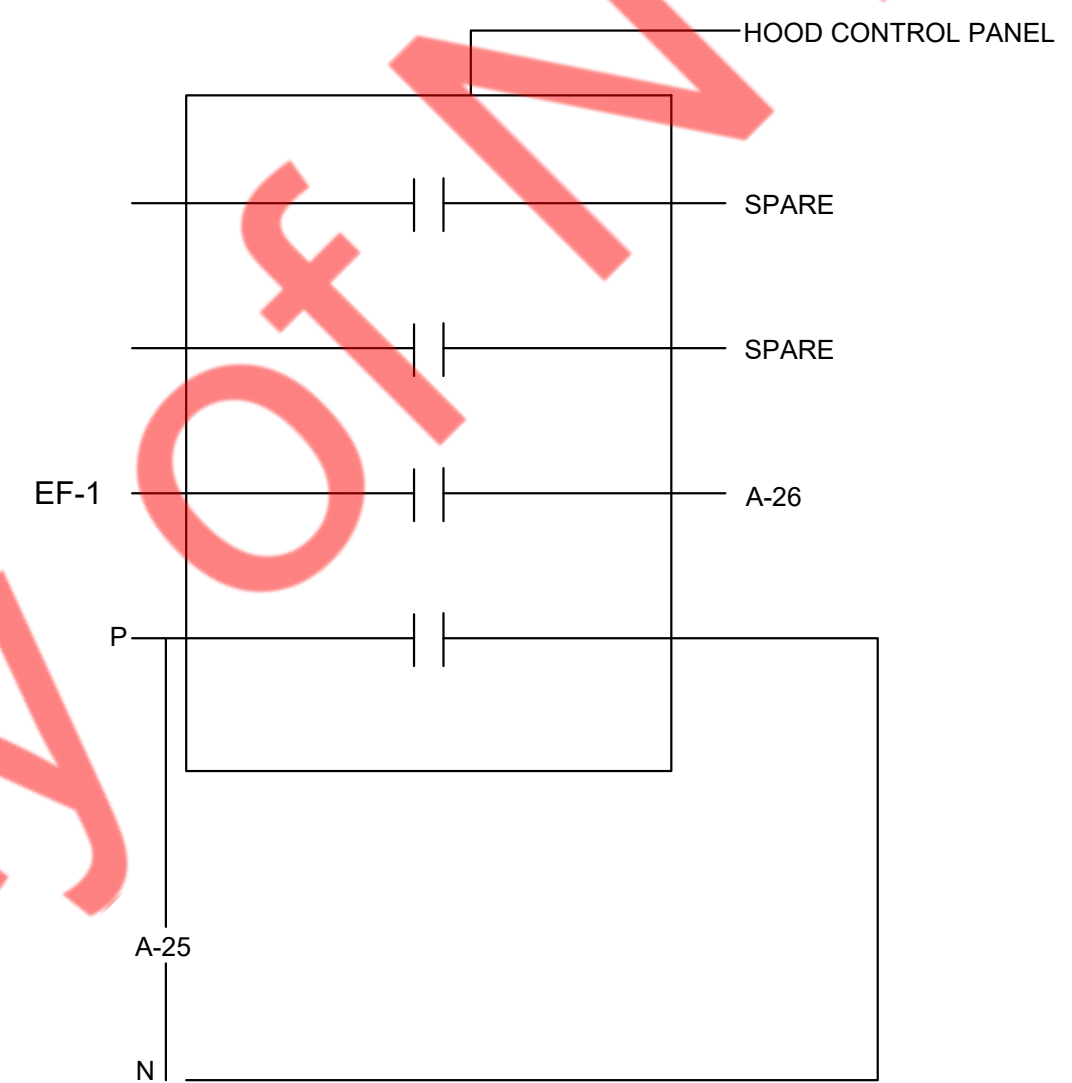
N.E.C. DEMAND KVA x 1,000 = 43,496  
 SYSTEM VOLTAGE x 1.732 = 120.7 AMPS USE 200AMP SERVICE.

ELECTRICAL PANELBOARD SCHEDULE AND LOAD SUMMARY

SCALE	1
SCALE	2
N.T.S.	



ALL CONDUCTORS SHOWN TO BE TYPE COPPER THHN FOR ABOVE GROUND INSTALLATIONS AND COPPER TYPE THWN FOR OUTDOOR OR UNDER GROUND INSTALLATION.



NOTE: COORDINATE EXACT HOOD CONTROLLER FUNCTION AND REQUIREMENTS WITH KITCHEN HOOD EQUIPMENT VENDOR PRIOR TO ROUGH-IN.

PANEL SCHEDULE GENERAL NOTES:

- ALL CIRCUITING SHOWN IS FOR REFERENCE PURPOSES ONLY. E.C. SHALL VERIFY EXACT BREAKER, CABLE, ELECTRICAL LOAD, AND CONDUIT REQUIREMENTS/SIZES/RATINGS WITH EQUIPMENT/APPLIANCES/MECHANICAL EQUIPMENT SUPPLIER/MANUFACTURER IN COORDINATION WITH ARCHITECT/OWNER IN THE FIELD. E.C. SHALL PROVIDE THE CIRCUIT BREAKER, CABLE, AND ALL REQUIRED ACCESSORIES/DEVICES TO RUN ALL THE STORE EQUIPMENT/APPLIANCES/DEVICES IN THE FIELD. BASE BID ACCORDINGLY.
- REFER TO THE ARCHITECTURE DRAWINGS FOR THE KITCHEN EQUIPMENT SCHEDULE. INFORM THE ENGINEER FOR ANY DISCREPANCIES. BASE BID ACCORDINGLY.
- ELECTRICAL CONTRACTOR TO VERIFY THE EXACT PANEL SIZES AND INCOMING FEEDER SIZE IN THE FIELD
- ALL SINGLE-PHASE RECEPTACLES RATED 50 AMPERES OR LESS, AND THREE-PHASE RECEPTACLES RATED 100 AMPERES OR LESS, INSTALLED IN KITCHEN AREA SHALL HAVE GFCI PROTECTION ACCORDING TO NEC 210.8(B). PROVIDE GFI BREAKERS IN PANELS FOR KITCHEN EQUIPMENT.
- THE RECEPTACLES MARKED AS "G" ON THE FLOOR PLAN INDICATE THAT THE RECEPTACLE SHALL BE GFI PROTECTED. E.C. SHALL PROVIDE GFI BREAKER FOR THE BRANCH CIRCUIT WHERE THE RECEPTACLES ARE NOT READILY ACCESSIBLE OR RATED MORE THAN 20AMP.
- E.C. SHALL VERIFY THE BREAKER AND CABLE RATING WITH THE EQUIPMENT SUPPLIER/OWNER AND ACCORDINGLY UPDATE THE BREAKER RATING AND CABLE SIZE IN THE FIELD.

SCALE	3
N.T.S.	

RISER DIAGRAM GENERAL NOTES:

- ALL CONDITIONS TO BE FIELD VERIFIED BEFORE SUBMITTING BID.
- GENERAL CONTRACTOR TO MAINTAIN FIRE RATING OF PARTITION NEW ELECTRICAL EQUIPMENT IS BEING SECURED TO.
- ALL ELECTRICAL WORK BEING SHOWN IN SCHEMATIC TO BE BY TENANTS GENERAL CONTRACTORS ELECTRICAL SUBCONTRACTOR UNLESS OTHERWISE NOTED.
- THE ELECTRICAL CONTRACTOR'S SUB-CONTRACTOR IS RESPONSIBLE FOR CHECKING ALL VOLTAGES ON PLANS UPON FIRST VISIT TO THE SITE. THE INCOMING SERVICE SHOULD CORRESPOND TO THE SPECIFICATIONS FOR THE LIGHTING FIXTURES AND THE H.V.A.C. EQUIPMENT AND BE PROPERLY NOTED ON THE ELECTRICAL PANEL DIAGRAMS AND RISERS. ANY DISCREPANCIES SHOULD BE REPORTED TO THE ARCHITECT IMMEDIATELY.
- HVAC CIRCUIT BREAKERS SHALL BE "HACR" TYPE WHERE REQUIRED BY EQUIPMENT NAMEPLATE PER N.E.C.
- TENANTS ELECTRICAL CONTRACTOR SHALL FIELD VERIFY EXACT A.I.C. RATING OF LANDLORDS DISTRIBUTION EQUIPMENT, FURNISH AND INSTALL TENANTS SYSTEM TO MATCH.
- ELECTRICAL CONTRACTOR SHALL BALANCE ALL PANELS AND + ELECTRICAL EQUIPMENT TO 10% BETWEEN PHASES: A/B B/C, A/C REGARDLESS OF CIRCUITING INDICATED. PROVIDE BALANCE SHEET TO CONSTRUCTION MANAGER AT PUNCHLIST.
- PROPER CLEARANCE MUST BE MAINTAINED ABOUT ELECTRICAL EQUIPMENT PER N.E.C. FIELD VERIFY EXACT MOUNTING SPACE AVAILABLE IN ELECTRICAL ROOM/AREA PRIOR TO INSTALLATION OF ELECTRICAL EQUIPMENT.
- ELECTRICAL CONTRACTOR SHALL MAKE ALL FINAL ELECTRICAL CONNECTIONS FOR A COMPLETE ELECTRICAL DISTRIBUTION SYSTEM.
- ALL ELECTRICAL WORK SHALL BE INSTALLED SO AS TO BE READILY ACCESSIBLE FOR OPERATING, SERVICING, MAINTAINING & REPAIRING.
- MAKE ALL FINAL ELECTRICAL CONNECTIONS FOR A COMPLETE ELECTRICAL DISTRIBUTION SYSTEM. ALL CONNECTIONS/DISCONNECTIONS TO LANDLORDS/UTILITIES SERVICE EQUIPMENT SHALL BE AS DIRECTED BY LANDLORDS/UTILITIES SITE REPRESENTATIVE. TENANT GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TERMINATION/DETERMINATION EXPENSES.
- CONTRACTOR SHALL VERIFY INCOMING SERVICE AMPERAGE, WIRE SIZING AND DISTRIBUTION.
- CONTRACTOR SHALL COORDINATE WITH BASE BUILDING FOR THE EXACT LOCATION OF THE EXISTING SWITCH GEAR AND EXACT POWER DISTRIBUTION.
- CONTRACTOR SHALL VERIFY OPERABLE CONDITION INFIELD OF ALL EXISTING TO REMAIN ELECTRICAL DEVICES/EQUIPMENTS AND REPLACE WITH NEW IF FOUND INOPERABLE.

SCALE	4
N.T.S.	

RISER DIAGRAM KEYED NOTES

- NEW 200A, 120/208V, 3-PHASE, 4-WIRE ELECTRICAL INCOMING SERVICE TO THE LEASED SPACE FROM UTILITY. E.C. SHALL GET INFORMATION ABOUT THE NEW POWER DISTRIBUTION PRIOR TO COMMENCING ANY WORK AND INFORM ENGINEER ON RECORD FOR ANY DISCREPANCIES. BASE BID ACCORDINGLY.
- NEW 200A, 120/208V, 3-PHASE, 4-WIRE ELECTRICAL METER, THE SPACE. E.C. SHALL COORDINATE WITH OWNER/UTILITY FOR EXACT LOCATION IN FIELD.
- NEW 200A, 120/208V, 3Ø FUSED SERVICE DISCONNECT SWITCH FOR THE PROJECT SPACE. E.C. TO COORDINATE WITH OWNER/UTILITY FOR EXACT LOCATION IN FIELD.
- PROVIDE NEW GROUNDING FOR THE SERVICE. ALL GROUNDING TYPES AND CONDUCTOR SIZES SHALL BE ACCORDING TO NEC 250. SEE ELECTRICAL GROUNDING DETAILS ON ELECTRICAL DETAIL SHEET.
- NEW 225A, 120/208V, 3Ø ELECTRICAL PANEL "A" FOR THE PROJECT SPACE. E.C. TO COORDINATE WITH OWNER/ARCHITECT FOR EXACT LOCATION IN FIELD.

ELECTRICAL PARTIAL RISER DIAGRAM

SCALE	6
N.T.S.	

HOOD CONTROL PANEL DIAGRAM

SCALE	5
N.T.S.	

PLUMBING SYMBOLS LIST			
PLUMBING LEGENDS		PLUMBING ABBREVIATIONS	
--- SAN ---	SANITARY SEWER	CW	COLD WATER
--- G SAN ---	GREASE SANITARY SEWER	HW	HOT WATER
-----	VENT PIPING	HWR	HOT WATER RETURN
-----	COLD WATER	SAN	SANITARY
-----	HOT WATER	GSAN	GREASE SANITARY
-----	RECIRCULATING HOT WATER	V	VENT
-----	SECONDARY BFP	AFF/AFG	ABOVE FINISHED FLOOR/GRADE
-----	BALANCING VALVE	AHJ	AUTHORITY HAVING JURISDICTION
-----	PIPE UP OR DOWN	BFP	BACKFLOW PREVENTER
-----	PIPE UP	ETR	EXISTING TO REMAIN
-----	UNION	FCO	FLOOR CLEANOUT
-----	ISOLATION VALVE	GC	GENERAL CONTRACTOR
-----	CLEANOUT	IW	INDIRECT WASTE
-----	BACKFLOW PREVENTER	PC	PLUMBING CONTRACTOR
-----	POINT OFF CONNECTION	WCO	WALL CLEANOUT
-----	FLOOR SINK	WH-1	INSTANTANEOUS WATER HEATER
-----	HUB / FLOOR DRAIN	ET-1	EXPANSION TANK
-----	GAS SHUT-OFF VALVE	RCP-1	RE CIRCULATION PUMP
-----	GAS PIPING	FD	FLOOR DRAIN
-----	CONDENSATE DRAIN	HD	HUB DRAIN
-----	KEY NOTE TAG	FS	FLOOR SINK
-----	EQUIPMENT TAG	F	FRANCHISE
-----		EV	EQUIPMENT VENDOR
-----		CC	CONTRACTORS CHOICE
-----		OC	OWNERS CHOICE
-----		VLL	VERIFY WITH LANDLORD
-----		SPS	SEE PLUMBING SCHEDULE

PLUMBING DRAWING LIST	
P-1	PLUMBING SCHEDULES AND LEGENDS
P-2	PLUMBING NOTES AND SPECIFICATIONS
P-3	SANITARY , WATER AND GAS PLAN
P-4	SANITARY , WATER AND GAS RISER DIAGRAM
P-5	PLUMBING DETAILS - 1
P-6	PLUMBING DETAILS - 2

ENERGY CONSERVATION NOTES	
1.	AS PER 2018 INTERNATIONAL ENERGY CONSERVATION CODE (IECC 2018) SECTION C404.4, PIPING FROM A WATER HEATER TO THE TERMINATION OF HEATED WATER FIXTURE SUPPLY PIPE SHALL BE INSULATED IN ACCORDANCE WITH TABLE C403.11.3 OF MINIMUM PIPE INSULATION THICKNESS.
2.	HOT WATER SYSTEM PIPING IS DESIGNED AS PER MAXIMUM ALLOWED PIPE LENGTH METHOD AS PER 2018 INTERNATIONAL ENERGY CONSERVATION CODE, C404.5.1. THE HOT WATER VOLUME FROM THE NEAREST SOURCE OF HEATED WATER TO THE TERMINATION OF THE FIXTURE SUPPLY PIPE SHALL BE AS PER MAXIMUM PIPING LENGTH TABLE.
3.	AS PER 2018 INTERNATIONAL ENERGY CONSERVATION CODE, WATER HEATING EQUIPMENT AND HOT WATER STORAGE TANKS SHALL MEET THE REQUIREMENTS OF TABLE C404.2. THE EFFICIENCY SHALL BE VERIFIED THROUGH THE DATA FURNISHED BY THE MANUFACTURER.
4.	AS PER 2018 INTERNATIONAL ENERGY CONSERVATION CODE, C404.6.1, 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 NOT DEMAND FOR HOT WATER.
5.	AS PER 2018 INTERNATIONAL ENERGY CONSERVATION CODE, C404.7, THE CONTROLS SHALL LIMIT THE TEMPERATURE OF THE WATER ENTERING THE COLD-WATER PIPING TO NOT GREATER THAN 104°F (40°C).

EQUIPMENT SCHEDULE										
#	NO.	QTY	EQUIPMENT DESCRIPTION	WATER		WASTE			GAS MBH	REMARKS
				HOT	COLD	DIRECT	INDIRECT	VENT		
	17	2	HAND SINK	1/2"	1/2"	2"			1-1/2"	
	18	1	3-COMPARTMENT SINK	3/4"	3/4"	-	2"		1-1/2"	RUN INDIRECT WASTE TO FLOOR SINK
	-	2	INSTANTANEOUS WATER HEATER	3/4"	3/4"	-	3/4"			RUN T&P WASTE TO MOP SINK
	19	1	MOP SINK	1/2"	1/2"	3"		2"		
	10	1	ICE MAKER		1/2"		3/4"			
	WC	1	WATER CLOSET	-	3/4"	4"			2"	
	LAV	1	LAVATORY	1/2"	1/2"	2"			1-1/2"	
	22	1	GREASE INTERCEPTOR			4"			2"	SCHIER GB-50 RECESSED
	3	1	DOUBLE CONVECTION OVEN							108
	4	2	FRYER							#2X120
	6	1	FLAT TOP GRILL							90

PLUMBING FIXTURE SCHEDULE						
TAG	EQUIPMENT	DESCRIPTION/ ACCESSORIES	WATER PIPING	WASTE PIPING	MANUFACTURER/ MODEL	NOTES
WC	WATER CLOSET (ADA)	BEMIS ELONGATED TOILET SEAT MODEL #1500PRO	3/4" CW	4"	AS PER ARCHITECT	
LAV	ADA WALL HUNG LAVATORY	VITEROUS CHINA, W/ 4" CENTER W/ AM STD. FAUCET # 7385 004 PROVIDE WITH .5 GPM SPRAY	1/2" HW & CW	2"	AS PER ARCHITECT	
MS	MOP SINK	FLOOR MOUNTED STAINLESS STEEL UNIT WITH T&S BRASS B-0665-BSTR FAUCET ASSEMBLY	3/4" HW&CW	3"	ADVANCE TABCO - 9-OP-20	3
FD	FLOOR DRAIN	3" 4" DURA COATED CAST IRON BODY, ADJUSTABLE COLLAR WITH TYPE B , POLISHED NICKEL BRONZE STRAINER.	-	3", 4"	ZURN Z415 B	1,2
FS	FLOOR SINK	12X12 CAST IRON BODY A.R.E. WITH HALF GRATE 8X8 CAST IRON BODY A.R.E. WITH HALF GRATE	-	3"	ZURN Z1900	1
HD	HUB DRAIN	3" SS BODY, HUB DRAIN		3"	ZURN Z1870	
WCO	WALL CLEANOUT	PROVIDE PVC TYPE W/ 6" Ø SS COVER ON ALL EXPOSED WALLS. SIZE AS INDICATED ON PLAN/STACK	--		ZURN Z 1446	
FCO	FLOOR CLEANOUT	HEAVY DUTY ADJUSTABLE FLOOR CLEANOUT		4"	ZURN Z 1400	1
TP	TRAP PRIMER	1/2" CW, AUTOMATIC, MULTI-DROP TRAP PRIMER	1/2" CW	---	PRECISION PLUMBING PRODUCTS #DU-U-500	
WH-1	WATER HEATER	GAS FIRED (199 MBH INPUT) TANKLESS WATER HEATER.	3/4" HW & CW		NAVIENT NPE-240 A 3.9 GPM @ 100F	
GI	GREASE INTERCEPTOR	50 GPM FLOW RATE WITH 439.5 LBS GREASE CAPACITY. RECESSED GREASE INTERCEPTOR. PROVIDE WITH ANGLE FLOW CONTROL VALVE	-	4"	SCHIER GB-50	1

GENERAL NOTES	
1.	THE PLUMBING CONTRACTOR SHALL COORDINATE WITH GENERAL CONTRACTOR FOR ALL CONCRETE FLOOR CUTS. THE CUTTING & PATCHING OF THE FLOOR SLAB IS THE RESPONSIBILITY OF THE PLUMBING CONTRACTOR.
2.	THE PLUMBING CONTRACTOR SHALL FIELD VERIFY SANITARY LINE INVERT ELEVATIONS, LOCATIONS & SIZES, PRIOR TO INSTALLING ANY UNDERGROUND PIPING.
3.	THE PLUMBING CONTRACTOR SHALL USE PVC/CPVC PIPING FOR ALL SANITARY AND VENT PIPING, TO COMPLY WITH STATE AND LOCAL CODE.
4.	ALL DOMESTIC WATER PIPING MUST BE COPPER. INSULATE ALL WATER PIPING WITH A MINIMUM OF 1/2" FIBERGLASS WRAP INSULATION.
5.	PLUMBING CONTRACTOR SHALL FURNISH & INSTALL SHUT-OFF VALVES TO ALL FIXTURES NOT OTHERWISE EQUIPPED
6.	THE PLUMBING CONTRACTOR IS RESPONSIBLE TO PROVIDE ALL HANGERS, SUPPORTS & ACCESSORIES AS REQUIRED BY ALL CODES.
7.	ALL WORK SHALL BE PERFORMED IN A PROFESSIONAL MANNER & SHALL MEET OR EXCEED ALL CODES HAVING JURISDICTION.
8.	THE PLUMBING CONTRACTOR SHALL FURNISH & INSTALL SHOCK ABSORBERS ON ALL WATER PIPING AS REQUIRED.
9.	THE PLUMBING CONTRACTOR SHALL MAKE ALL FINAL CONNECTIONS TO FIXTURES & EQUIPMENT PROVIDED BY OTHERS. PLUMBING CONTRACTOR IS RESPONSIBLE FOR COORDINATION OF THESE ITEMS WITH THE VENDOR REPRESENTATIVE.
10.	THE PLUMBING CONTRACTOR IS RESPONSIBLE TO MAKE ALL FINAL WATER CONNECTIONS TO FIXTURES, SEE FIXTURE SCHEDULES.
11.	THE PLUMBING CONTRACTOR IS RESPONSIBLE TO PAY FOR & OBTAIN ALL REQUIRED PERMITS & SCHEDULE INSPECTIONS IN A TIMELY MANNER AS TO NOT DELAY PROJECT.
12.	THE PLUMBING CONTRACTOR MUST FURNISH AN AS-BUILT SET OF DRAWINGS SHOWING THE EXACT LOCATION/ELEVATION OF ALL UNDERGROUND PIPING TO THE OWNER, AT COMPLETION OF THE PROJECT.
13.	THE PLUMBING CONTRACTOR SHALL VERIFY ALL LOCATIONS & CONDITIONS IN THE FIELD PRIOR TO STARTING ANY WORK. ANY CONFLICTS FOUND SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT OR CONSTRUCTION MANAGER.
14.	ALL WATER & VENT PIPING SHOWN IS TO BE CONCEALED IN WALLS UNLESS NOTED OTHERWISE.

GREASE INTERCEPTOR SCHEDULE					
ITEM	SERVICE	LOCATION	FLOW CAPACITY	LIQ./GREASE CAPACITY	MANF. & MODEL
GT	KITCHEN WASTE	PREP AREA	50 GPM	65 GAL / 439.5 LBS	SCHIER GB-50

EXPANSION TANK SCHEDULE							
TAG	DESCRIPTION	VOLUME (GALLONS)	DIAMETER (INCHES)	HEIGHT (INCHES)	SELECTION BASED ON		REMARKS
					MANUFACTURER	MODEL NUMBER	
ET-1	BLADDER TYPE	2.0	8"	12 1/2"	AMTROL	ST-5	NOTE 1

NOTES:  
1. INSTALL EXPANSION TANK ON IN-COMING COLD WATER PER MANUFACTURERS REQUIREMENTS.

SHEET NO. **P-1** OF 6 SHEETS

DATE: 07.20.23  
REVIEW SET 12.15.23  
PERMIT SET

SEAL: \_\_\_\_\_

NY ENGINEERS

BUILDING DEPARTMENT PLUMBING NOTES

- 1. ALL PLUMBING SYSTEMS (SANITARY, WASTE, VENT, WATER, STORM) AND ASSOCIATED EQUIPMENT SHALL BE INSTALLED, OPERATED AND MAINTAINED IN ACCORDANCE WITH THE REQUIREMENTS OF CHAPTER 1, 890. 2014 ILLINOIS STATE PLUMBING CODE.
2. INSTALLATION OF UNDERGROUND PIPING SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF CHAPTER I, SUBPART J, 2014 ILLINOIS STATE PLUMBING CODE.
3. PROTECTION OF PIPING AND PLUMBING SYSTEM COMPONENTS SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION 890.1130, 2014 ILLINOIS STATE PLUMBING CODE.
4. MATERIALS USED IN PLUMBING SYSTEMS SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION 890.210, 2014 ILLINOIS STATE PLUMBING CODE.
5. EQUIPMENT CONNECTIONS AND JOINING OF PIPING SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF CHAPTER 1, SUBPART C OF 2014 ILLINOIS STATE PLUMBING CODE.
6. DEEP SEAL TRAPS FOR FLOOR DRAINS SHALL BE PROVIDED AS PER SECTION 890.730. OF 2014 ILLINOIS STATE PLUMBING CODE.
7. DRAINAGE PIPE CLEANOUTS AS PER SECTION 890.420. 2014 ILLINOIS PLUMBING CODE.
8. VERTICAL AND HORIZONTAL PIPING SHALL BE SUPPORTED IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION 890-920.930. 2014 ILLINOIS STATE PLUMBING CODE.
9. WATER SUPPLY SYSTEMS SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE REQUIREMENTS OF CHAPTER 1, SUBPART I OF 2014 ILLINOIS STATE PLUMBING CODE.
10. THE SANITARY DRAINAGE SYSTEM SHALL BE SIZED AND INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF CHAPTER 1, SUBPART J OF 2014 ILLINOIS STATE PLUMBING CODE.
11. VENT PIPING FOR THE SANITARY DRAINAGE SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF CHAPTER 1, SUBPART K OF 2014 ILLINOIS STATE PLUMBING CODE.
12. INSPECTION AND TESTING OF PLUMBING SYSTEMS SHALL BE IN ACCORDANCE WITH CHAPTER I SUBPART M OF 2014 ILLINOIS STATE PLUMBING CODE.
13. GAS PIPING INSTALLATION SHALL IN IN ACCORDANCE WITH 2012 INTERNATIONAL FUEL GAS CODE, CHAPTER 4.
1. BASIC PLUMBING REQUIREMENTS, MATERIALS AND METHODS
1.01 SCOPE
A. PROVIDE ALL MATERIAL, TOOLS, SUPERVISION AND LABOR INCLUDING ALL MISCELLANEOUS AND INCIDENTAL ITEMS REQUIRED FOR COMPLETE AND OPERABLE PLUMBING INSTALLATIONS AS SHOWN OR DESCRIBED ON THE DRAWINGS AND IN THESE SPECIFICATIONS.
B. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL NEW CONDITIONS AND MATERIALS WITHIN THE CONSTRUCTION AREA. ANY DAMAGE CAUSED BY THE CONTRACTOR SHALL BE REPAIRED TO THE OWNER'S SATISFACTION.
C. OBTAIN ALL PERMITS, PAY ALL PERMIT FEES AND SCHEDULE ALL REQUIRED INSPECTIONS. COPIES OF ALL PERMITS AND INSPECTION CERTIFICATES SHALL BE FORWARDED TO THE OWNER FOR RECORD.
D. THE GENERAL CONDITIONS OF THE CONTRACT AND ALL DIVISION 1 REQUIREMENTS APPLY TO THE WORK OF THIS SECTION.
E. THE CONTRACTOR SHALL VISIT THE SITE PRIOR TO SUBMITTING BID TO DETERMINE CONDITIONS AND THE EXTENT OF THE WORK. BY COMMENCING WORK, THE CONTRACTOR ACKNOWLEDGES HIS CONFIRMATION OF ALL CONDITIONS AS ACCEPTABLE WITH REFERENCE TO HIS CONTRACT. SCOPE OF WORK AND BID PRICE SUCH THAT NO ADDITIONAL COMPENSATION SHALL BE FORTHCOMING FOR UNFORESEEN EXISTING CONDITIONS.
F. IN ALL AREAS SUBJECT TO FREEZING CONDITIONS, THE CONTRACTOR SHALL PROVIDE FROST PROTECTION FOR ALL DOMESTIC WATER PIPING INSTALLED UNDER HIS CONTRACT.
G. ALL ELECTRICAL REQUIREMENTS SHALL BE COORDINATED WITH THE CONTRACTOR FOR ELECTRICAL WORK. THIS CONTRACTOR IS RESPONSIBLE FOR ALL LOW VOLTAGE WIRING FOR EQUIPMENT INSTALLED UNDER HIS CONTRACT. THE CONTRACTOR FOR ELECTRICAL WORK IS RESPONSIBLE FOR LINE VOLTAGE POWER WIRING ONLY.
H. COLOR AND FINISH SELECTIONS FOR ALL MATERIALS, INCLUDING PAINTING OF PIPING, SHALL BE AS DIRECTED AND/OR APPROVED BY THE ARCHITECT.
I. MINOR DETAILS NOT SHOWN OR SPECIFIED, BUT NECESSARY FOR THE PROPER AND ACCEPTABLE CONSTRUCTION, INSTALLATION OR OPERATION OF ANY PART OF THE WORK AS DETERMINED BY THE ENGINEER SHALL BE INCLUDED AS IF SPECIFIED OR INDICATED ON THE DRAWINGS.
J. THIS CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING ALL REQUIREMENTS FOR THE INSTALLATION, CONNECTION, EXTENSION OR MODIFICATION TO ALL UTILITY SERVICES WITH RESPECTIVE PROVIDERS INCLUDING PAYMENT OF ALL ASSOCIATED FEES.
K. THE CONTRACTOR IS RESPONSIBLE FOR ALL PAINTING ASSOCIATED WITH CUTTING AND PATCHING. ALL PAINTING IN AREAS WITH COMPLETE FINISH RENOVATIONS SHALL BE PROVIDED BY THE GENERAL CONTRACTOR.

1.02 SUBMITTALS

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

1.03 SUBSTITUTIONS

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

1.04 DEFINITIONS

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

1.05 DRAWINGS

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

1.06 PRODUCTS

- A. SANITARY AND VENT PIPING:
1. ABOVE GRADE PIPING SHALL BE HUBLESS CAST IRON PIPE WITH STAINLESS STEEL COUPLINGS AND ELASTOMERIC GASKETS WITH A MINIMUM NO. OF BANDS PER COUPLING AS PER CISPI 310-12.
2. SLOPE OF DRAINAGE SYSTEM SHALL BE 1/8" PER FOOT OF RUN FOR PIPE OVER 3" (I.D.) AND 1/4" PER FOOT OF RUN FOR PIPE 3" AND SMALLER (I.D.). VENT PIPING SHALL BE PITCHED TO DRAIN.
3. ALL CAST IRON SOIL PIPE AND FITTINGS SHALL BE MARKED WITH THE COLLECTIVE TRADEMARK OF THE CAST IRON SOIL PIPE INSTITUTE (CISPI) AND BE LISTED BY NSF INTERNATIONAL.

B. DOMESTIC WATER PIPING:

- 2. ABOVE GRADE WATER PIPING SHALL BE TYPE 'L' HARD-DRAWN COPPER TUBE.
3. FITTINGS IN DOMESTIC WATER PIPING SHALL BE WROUGHT COPPER OR CAST BRASS.
4. JOINTS SHALL BE MADE WITH LEAD-FREE SOLDER.
5. THE ENTIRE DOMESTIC WATER DISTRIBUTION SYSTEM SHALL BE INSULATED INCLUDING ALL VALVES, FITTINGS, ETC.
6. COMPLY WITH NSF 61 FOR MATERIALS FOR WATER-SERVICE PIPING AND SPECIALTIES FOR DOMESTIC WATER.

C. GAS PIPING:

- 1. GAS PIPING SHALL BE SIZED IN ACCORDANCE WITH PIPE SIZING TABLES OR SIZING EQUATIONS IN ACCORDANCE WITH IFGC 2012 SECTION 402.4.
2. METALLIC PIPE SHALL COMPLY IFGC 2012 WITH SECTIONS 403.4.1 THROUGH 403.4.4.
3. PIPING SYSTEM INSTALLATION SHALL COMPLY WITH REQUIREMENTS OF 2012 INTERNATIONAL FUEL GAS CODE, SECTION 404.
4. AS PER IFGC 2012 SECTION 404.6: UNDERGROUND PIPING, WHERE INSTALLED BELOW GRADE THROUGH THE OUTER FOUNDATION OR BASEMENT WALL OF A BUILDING, SHALL BE ENCASED IN A PROTECTIVE PIPE SLEEVE. THE ANNULAR SPACE BETWEEN THE GAS PIPING AND THE SLEEVE SHALL BE SEALED.
5. PIPING INSTALLED UNDERGROUND BENEATH BUILDINGS IS PROHIBITED EXCEPT WHERE THE PIPING IS ENCASED IN A CONDUIT OF WROUGHT IRON OR STEEL PIPE DESIGNED TO WITHSTAND THE SUPERIMPOSED LOADS. THE CONDUIT SHALL BE PROTECTED FROM CORROSION IN ACCORDANCE WITH SECTION 404.11 AND SHALL BE INSTALLED IN ACCORDANCE WITH SECTION 404.11.1 OR 404.11.2 OF 2012 INTERNATIONAL FUEL GAS CODE.
6. AS PER 2012 INTERNATIONAL FUEL GAS CODE SECTION 404.12: UNDERGROUND PIPING SYSTEMS SHALL BE INSTALLED A MINIMUM DEPTH OF 12 INCHES BELOW GRADE.
7. THE GAS PIPING IS ENCASED IN A CONDUIT OF WROUGHT IRON OR STEEL PIPE TO WITH STAND THE SUPERIMPOSED LOADS.
8. SHUTOFF VALVES SHALL BE LOCATED IN PLACES SO AS TO PROVIDE ACCESS FOR OPERATION AND SHALL BE INSTALLED SO AS TO BE PROTECTED FROM DAMAGE.

D. GAS FIRED WATER HEATER

- 1. DESCRIPTION: COMPLY WITH ANSI Z21 10 3/CSA 4 3, EXCEPT STORAGE IS NOT REQUIRED
2. A CONSTRUCTION: COPPER PIPING OR TUBING COMPLYING WITH NSF 61 BARRIER MATERIALS FOR POTABLE WATER, WITHOUT STORAGE CAPACITY
3. TAPPINGS: ASME B1 20 1 PIPE THREAD
4. PRESSURE RATING: 150 PSIG
5. HEAT EXCHANGER: COPPER TUBING
6. INSULATION: COMPLY WITH ASHRAE/IESNA 90.1 OR ASHRAE 90.2
7. BURNER: FOR USE WITH TANKLESS WATER HEATERS AND FOR NATURAL-GAS FUEL
8. AUTOMATIC IGNITION: MANUFACTURER'S PROPRIETARY SYSTEM FOR AUTOMATIC, GAS IGNITION
9. TEMPERATURE CONTROL: ADJUSTABLE THERMOSTAT
10. JACKET: METAL WITH ENAMELED FINISH OR PLASTIC
11. SUPPORT: BRACKET FOR WALL MOUNTING

ACCESSORIES:

- 1. GAS SHUTOFF VALVES: ANSI Z21.15/CSGA 9.1, MANUALLY OPERATED FURNISH FOR INSTALLATION IN PIPING
2. GAS PRESSURE REGULATORS: ANSI Z21.18, APPLIANCE TYPE INCLUDE PRESSURE RATING, CAPACITY, AND PRESSURE DIFFERENTIAL REQUIRED BETWEEN GAS SUPPLY AND WATER HEATER
3. COMBINATION TEMPERATURE AND PRESSURE RELIEF VALVES: INCLUDE RELIEVING CAPACITY AT LEAST AS GREAT AS HEAT INPUT, AND INCLUDE PRESSURE SETTING LESS THAN WATER HEATER WORKING-PRESSURE. RATING SELECT EACH RELIEF VALVE WITH SENSING ELEMENT THAT EXTENDS INTO STORAGE TANK
4. GAS WATER HEATERS: ANSI Z21.22/CSA 4.4
5. WATER HEATER MOUNTING BRACKETS: WATER HEATER MANUFACTURER'S FACTORY-FABRICATED STEEL BRACKET OR WALL MOUNTING AND CAPABLE OF SUPPORTING WATER HEATER AND WATER
6. PIPING-TYPE HEAT TRAPS: FIELD-FABRICATED PIPING ARRANGEMENT ACCORDING TO ASHRAE/IESNA 90.1 OR ASHRAE 90.2

E. MIXING VALVES

- 1. VALVE BODY SHALL BE MADE OF CAST BRASS. THE INTERNAL COMPONENTS SHALL BE MADE OF BRASS OR STAINLESS STEEL.
2. TYPES A, C & D VALVES: VALVE SHUTS OFF IN FULL COLD POSITION AND MUST PASS THROUGH COLD RANGE BEFORE DELIVERING WARM, AND/OR HOT WATER. TEMPERATURE LIMIT SET AT 105°F MAXIMUM DELIVERY TEMPERATURE. IF ONE SUPPLY SHOULD FAIL, THE OTHER WILL AUTOMATICALLY AND INSTANTLY SHUT DOWN. DELIVERY CAPACITY IS 0.55GPM @ 5 PSIG DIFFERENTIAL.
3. TYPES OF VALVES: TYPE A- THERMOSTATICALLY OPERATED BY MEANS OF BI-METALLIC STRIP, OR EXPANSION BELLOWS; TYPE B- SINGLE HANDLE MECHANICAL MIXER, OR INDIVIDUAL HOT AND COLD CONTROL VALVES; TYPE C- PRESSURE BALANCING SHOWER VALVE/PISTON OPERATED MIXING VALVE; TYPE D- BALANCED PRESSURE OPERATION, WITH INTEGRAL DIAL THERMOMETER INDICATING DELIVERED WATER TEMPERATURE.
4. EACH ELEMENT SHALL BE CONTROLLED BY AN INDIVIDUALLY MOUNTED THERMOSTAT AND HIGH TEMPERATURE CUT-OFF SWITCH. ALL INTERNAL CIRCUITS SHALL BE FUSED. THE OUTER JACKET SHALL BE OF BAKED ENAMEL FINISH AND SHALL BE PROVIDED WITH FULL SIZE CONTROL COMPARTMENT FOR PERFORMANCE OF SERVICE AND MAINTENANCE THROUGH HINGED FRONT PANEL AND SHALL ENCLOSE THE TANK WITH FOAM INSULATION. ELECTRICAL JUNCTION BOX WITH HEAVY DUTY TERMINAL BLOCK SHALL BE PROVIDED. THE DRAIN VALVE SHALL BE LOCATED IN THE FRONT FOR EASE OF SERVICING.

F. GREASE INTERCEPTOR.

- 1. IT SHOULD BE OF MOLDED POLYETHYLENE CONSTRUCTION WITH THREADED INLET AND OUTLET CONNECTIONS, REMOVABLE BAFFLES OR SCREENS, COVER WITH RECESSED FLIT RINGS OR GRIP HOLES.
2. IT SHOULD HAVE FACTORY ENAMEL COATED INSIDE AND OUTSIDE FINISH
3. IT SHOULD HAVE NON-SKID COVER TOP SURFACE (ONLY APPLICABLE TO GREASE TRAPS RECESSED IN THE FLOOR)
4. PROVIDE BUILT-IN FLOW CONTROL OR ADJUSTABLE FLOW CONTROL FITTING FOR INSTALLATION IN SYSTEM PIPING.
5. SET FLOW CONTROL AS RECOMMENDED BY THE MANUFACTURER'S INSTRUCTIONS.
6. ALL PREFABRICATED GREASE INTERCEPTORS SHALL BE APPROVED BY THE NEW YORK STATE STANDARDS APPROVED BY THE NEW YORK STATE DEPARTMENT OR SHALL CONFORM TO PDI G101, ASME A112.14.3 OR ASME A112.14.4 AND SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
7. GREASE INTERCEPTORS SHALL REMOVE AN AVERAGE OF 90 PERCENT OR MORE OF THE GREASE OR OTHER EXTRACTABLE MATTER IN THE WASTEWATER.
8. THE TEMPERATURE OF WATER ENTERING A GREASE INTERCEPTOR SHALL NOT EXCEED 180°F.
9. ALL GREASE INTERCEPTORS MUST BE READILY ACCESSIBLE FOR INSPECTION BY DULY AUTHORIZED EMPLOYEES OF THE DEPARTMENT.

G. HANGERS AND SUPPORTS:

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

H. VALVES:

- 1. PROVIDE GATE VALVES, BUTTERFLY OR BALL VALVES FOR SHUT-OFF DUTY ON MAIN AND BRANCH SUPPLY LINES. FOR ALL PIPE RUNS 2" AND SMALLER, PROVIDE BALL FOR ALL PIPE RUNS LARGER THAN 2" AND SMALLER THAN 4", PROVIDE GATE VALVES. PIPING 4" AND LARGER, PROVIDE BUTTERFLY VALVES FOR SHUT-OFF DUTY.
2. ALL FIXTURES WITH THE EXCEPTION O FLUSHOMETER-EQUIPPED WATER CLOSETS AND URINALS SHALL HAVE STOP VALVES TO CONTROL SUPPLY TO THE FIXTURE, WHERE SUPPLIES ARE EXPOSED PROVIDE CHROME-PLATED STOPS WITH CHROME-PLATED ESCUTCHEONS ON PIPING PENETRATIONS.
3. ALL PLUMBING FIXTURES AND EQUIPMENT TO HAVE SHUT-OFF VALVES ON SUPPLY LINES.
4. ALL BRANCH LINES TO HAVE SHUT-OFF VALVES.
5. ALL VALVES SHALL BE ACCESSIBLE. PROVIDE ACCESS DOORS WHERE REQUIRED FOR VALVE ACCESS.
6. PROVIDE GLOBE VALVES FOR THROTTLING/BALANCING OF THE HOT WATER CIRCULATING SYSTEM.
7. IN GENERAL, VALVES SIZED 2 INCHES AND SMALLER SHALL HAVE THREADED OR SOLDER END CONNECTIONS. VALVES SIZED 2-1/2 INCHES AND LARGER SHALL HAVE FLANGED END CONNECTIONS.
8. GATE AND GLOBE VALVES SHALL BE PRESSURE RATED AND OF TYPE THAT CAN BE PACKED UNDER PRESSURE WHETHER OPEN OR CLOSED
9. BALL VALVES SHALL BE BRONZE, FULL PORT TYPE WITH STAINLESS STEEL BALL, BLOW-OUT PROOF STEM, AND SOLDER OR THREADED END CONNECTIONS

I. SLEEVES AND ESCUTCHEONS:

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

J. DRAINAGE ACCESSORIES

- 1. GENERAL:
a. INSTALL THE WORK OF THIS SECTION IN ACCORDANCE WITH THE MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS, UNLESS OTHERWISE SPECIFIED.
b. SECURE EXTERNAL COMPONENTS IN PLACE WITH VANDAL RESISTANT FASTENERS OR DEVICES WHICH CANNOT BE REMOVED WITHOUT SPECIAL TOOLS.
2. DEVICES:
a. CLEANOUT & CLEANOUT PLUG
• THREADED PIPE FITTING OR CAST IRON FERRULE WITH GAS TIGHT CLEANOUT PLUG
• PLUG SHOULD BE CAST BRASS OR BRONZE, WITH THREADED END, AND RAISED OR COUNTERSUNK HEAD.
• LUBRICATE THREADS OF CLEANOUT PLUG WITH ANTI-SEIZE LUBRICANT BEFORE FINAL INSTALLATION.
b. CLEANOUT WALL PLATE
• IT SHOULD BE STANDARD DUTY FLOOR CLEANOUT FITTING WITH COATED CAST IRON BODY; ROUNDED, POLISHED NICKEL BRONZE SCORiated TOP SECURED TO CLEANOUT PLUG WITH STAINLESS STEEL VANDAL RESISTANT FASTENER; THREADED HEIGHT ADJUSTMENT, CAST IRON HEAD, GAS TIGHT CLEANOUT PLUG, AND CONNECTION TO MATCH PIPING OPTION SELECTED.

4. INDIRECT WASTE FUNNEL

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

M. INSTALL PIPING TO CONSERVE BUILDING SPACE. DO NOT INTERFERE WITH USE OF BUILDING SPACE AND THE WORK OF OTHER TRADES. ALL PIPING RUN IN CEILING SHALL BE INSTALLED TIGHT TO THE STRUCTURE ABOVE.

N. VERIFY EXACT LOCATIONS OF ALL EXISTING UTILITIES.

O. INSTALL PIPING TO ALLOW FOR EXPANSION AND CONTRACTION WITHOUT STRESSING PIPE, JOINTS OR CONNECTED EQUIPMENT. PROVIDE ANCHORS, GUIDES AND EXPANSION JOINTS OR LOOPS IN ALL HOT WATER AND HOT WATER CIRCULATING MAIN SUPPLY PIPING AND SEGMENTS OF SUCH PIPE THAT EXCEED 30'-0" IN LENGTH

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

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

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

S. VENT PENETRATIONS THROUGH THE ROOF SHALL BE FLASHED.

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

U. PROVIDE DIELECTRIC FITTINGS BETWEEN DISSIMILAR METALS.

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

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

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

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

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

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

AB. CONNECT GAS PIPING TO ALL GAS-FIRED EQUIPMENT WITH GAS COOK, DIRECT LEG AND NIPING.

AC. FOR ALL GAS-FIRED EQUIPMENT, VERIFY INPUT RATING AND PRESSURE REQUIREMENTS. PROVIDE GAS PRESSURE REGULATORS VENTED TO THE BUILDING EXTERIOR ON GAS SUPPLY TO ALL EQUIPMENT REQUIRING LOWER THAN LINE GAS PRESSURE.

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

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

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

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

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

2. INSTALLATION

2.01 GENERAL

- A. ALL WORK WHICH REQUIRES DISRUPTION OF THE ROOFING SHALL BE DONE BY A CONTRACTOR CERTIFIED BY THE ROOFING MANUFACTURER AS REQUIRED TO MAINTAIN ANY EXISTING ROOF WARRANTIES.
B. EXTERIOR INSTALLATIONS TO BE WEATHER PROOF IN ALL RESPECTS.
C. EXTERIOR MATERIALS AND EQUIPMENT SHALL BE PAINTED TO PREVENT CORROSION, COLOR PER ARCHITECT.
D. COORDINATE THE PLUMBING WORK WITH ALL OTHER AFFECTED WORK AND THE CONSTRUCTION SCHEDULE.
E. REAM PIPE AND TUBE ENDS. REMOVE BURRS. BEVEL PLAIN AND FERROUS END PIPE.
F. REMOVE SCALE AND FOREIGN MATERIAL, FROM INSIDE AND OUTSIDE, BEFORE ASSEMBLY.
G. PREPARE PIPING CONNECTIONS TO EQUIPMENT WITH FLANGES AND UNIONS.
H. COORDINATION WITH THE WORK OF OTHER TRADES IS REQUIRED. PROVIDE OFFSETS IN PIPING SYSTEMS OR MINOR DEVIATIONS TO THE INDICATED PIPE ROUTING IN ORDER TO COORDINATE THE PLUMBING WORK WITH THE WORK OF ALL OTHER TRADES AND THE GENERAL BUILDING CONDITIONS.
I. NO DOMESTIC WATER PIPING SHALL BE INSTALLED IN UNHEATED SPACES.
J. PRIOR TO DISCONNECTING AND CONNECTING NEW WORK TO EXISTING SYSTEMS, THE PLUMBING CONTRACTOR SHALL NOTIFY THE PROPERTY MANAGER AND OFFER A PROPOSED SCHEDULE OF WORK. ESB WILL AUTHORIZE CONNECTIONS AND COORDINATE NECESSARY SHUT DOWNS AND DRAIN DOWNS AS REQUIRED. SHUT DOWNS AND DRAIN DOWNS MAY BE PERFORMED BY THE PLUMBING CONTRACTOR ONLY AFTER RECEIVING ESB AUTHORIZATION, AND SHOULD BE PERFORMED UNDER SUPERVISION OF ESB PERSONNEL. THREE (3) DAYS ADVANCE NOTICE TO THE PROPERTY MANAGER IS REQUIRED.

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

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

2.02 ABOVE GRADE

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

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

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

2.03 INSULATION

COVER ALL HOT WATER AND HOT WATER RE-CIRCULATION PIPE WITH 1" THICK FOR PIPE SIZE UP TO 1/2" AND 1/2" THICK FOR PIPE SIZE 1/2" AND GREATER WITH MANVILLE MICRO-LOK AP-T PLUS FIBERGLASS INSULATION. COVER ALL COLD WATER PIPE WITH 3/8" THICK FOR PIPE SIZE UP TO 1/2" AND 1" THICK FOR PIPE SIZE 1/2" AND GREATER WITH 1" MANVILLE MICRO-LOK AP-T PLUS FIBERGLASS INSULATION. FITTINGS AND VALVES SHALL BE INSULATED WITH MANVILLE ZESTON 2000 PVC INSULATED FITTING COVERS. INSTALL ALL INSULATION AS PER MANUFACTURER'S RECOMMENDATIONS. ALL INSULATION MATERIAL SHALL COMPLY WITH THE CITY BUILDING CODE REQUIREMENT OF A FLAME SPREAD RATING NOT TO EXCEED 25 AND A SMOKE DEVELOPED RATING NOT TO EXCEED 50. ALL PIPE INSULATION SHALL COMPLY WITH ASHRAE 90.1 2007 ENERGY CONSERVATION CODE.

3. TESTING

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

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

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

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

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

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

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

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

I. ALL EQUIPMENT WILL BE FACTORY TESTED.

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

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

L. TESTING REQUIREMENTS

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

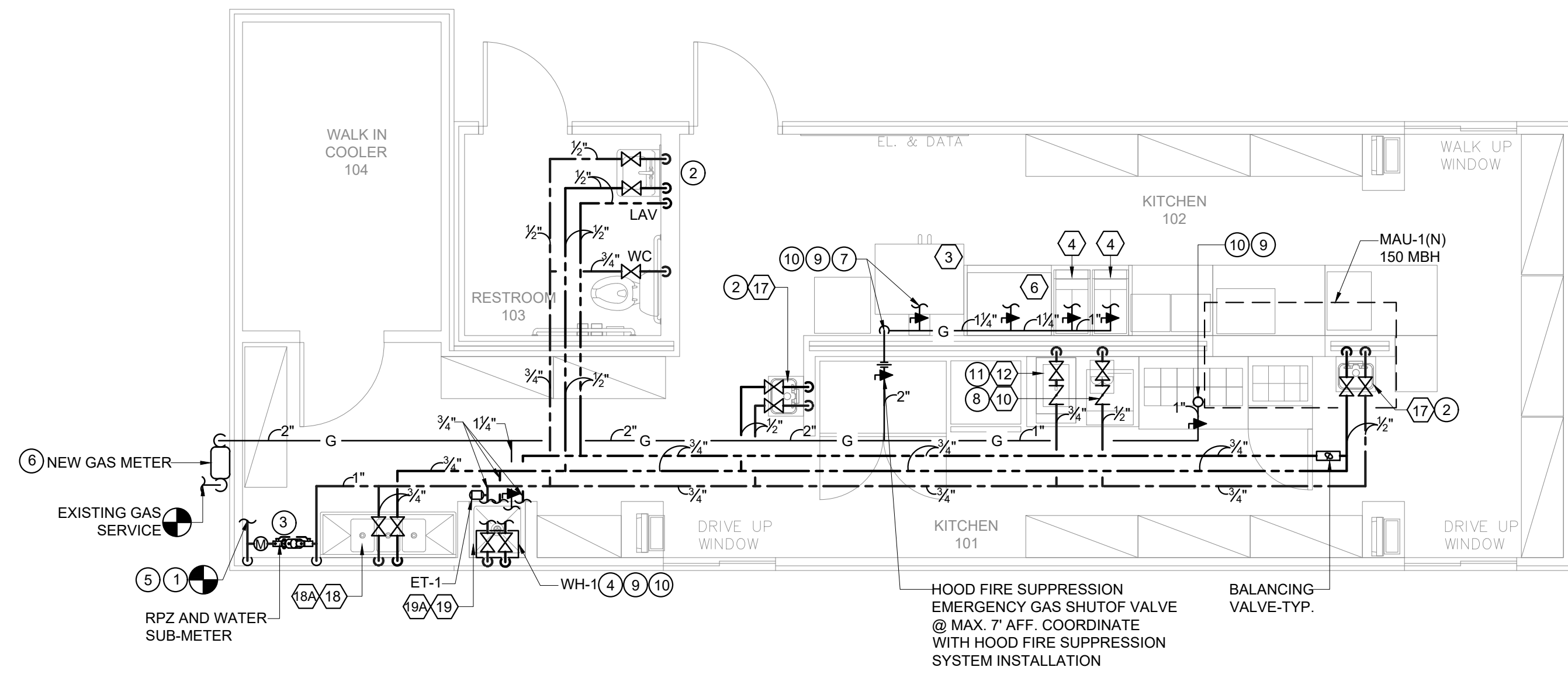
M. REFILL ENTIRE POTABLE HOT AND COLD WATER SUPPLY SYSTEM WITH CHLORINE SOLUTION (HTH OLIN CHEMICAL CORP.) AT A STRENGTH TO MEET STANDARDS OF THE DEPARTMENT OF HEALTH, AND FOR A PERIOD OF RETENTION AS STIPULATED.

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

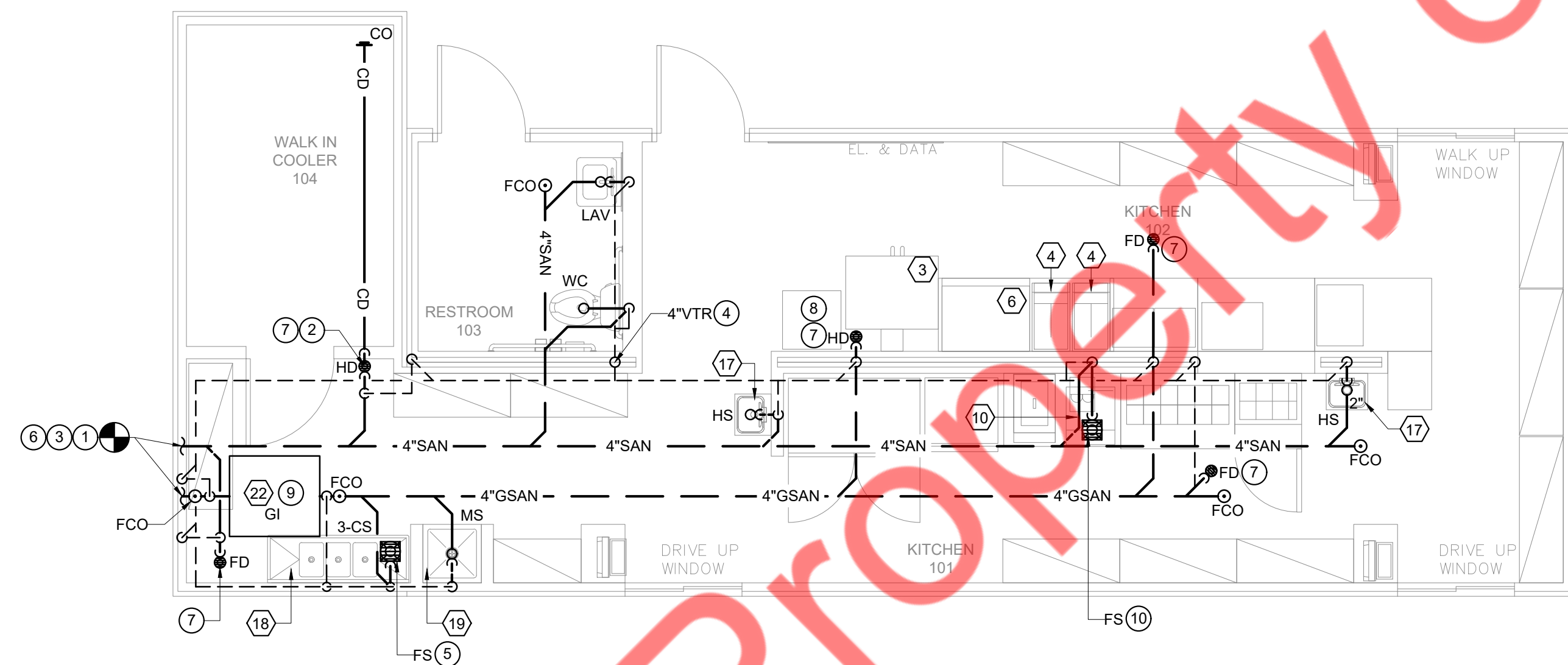
4. WARRANTY

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

SHEET NO. P-2 OF 6 SHEETS
DATE: 07.20.23 12.15.23
REVIEW SET PERMIT SET
SEAL:
NY ENGINEERS



**01 WATER SUPPLY & GAS PLAN**  
SCALE: 1/4"=1'-0"



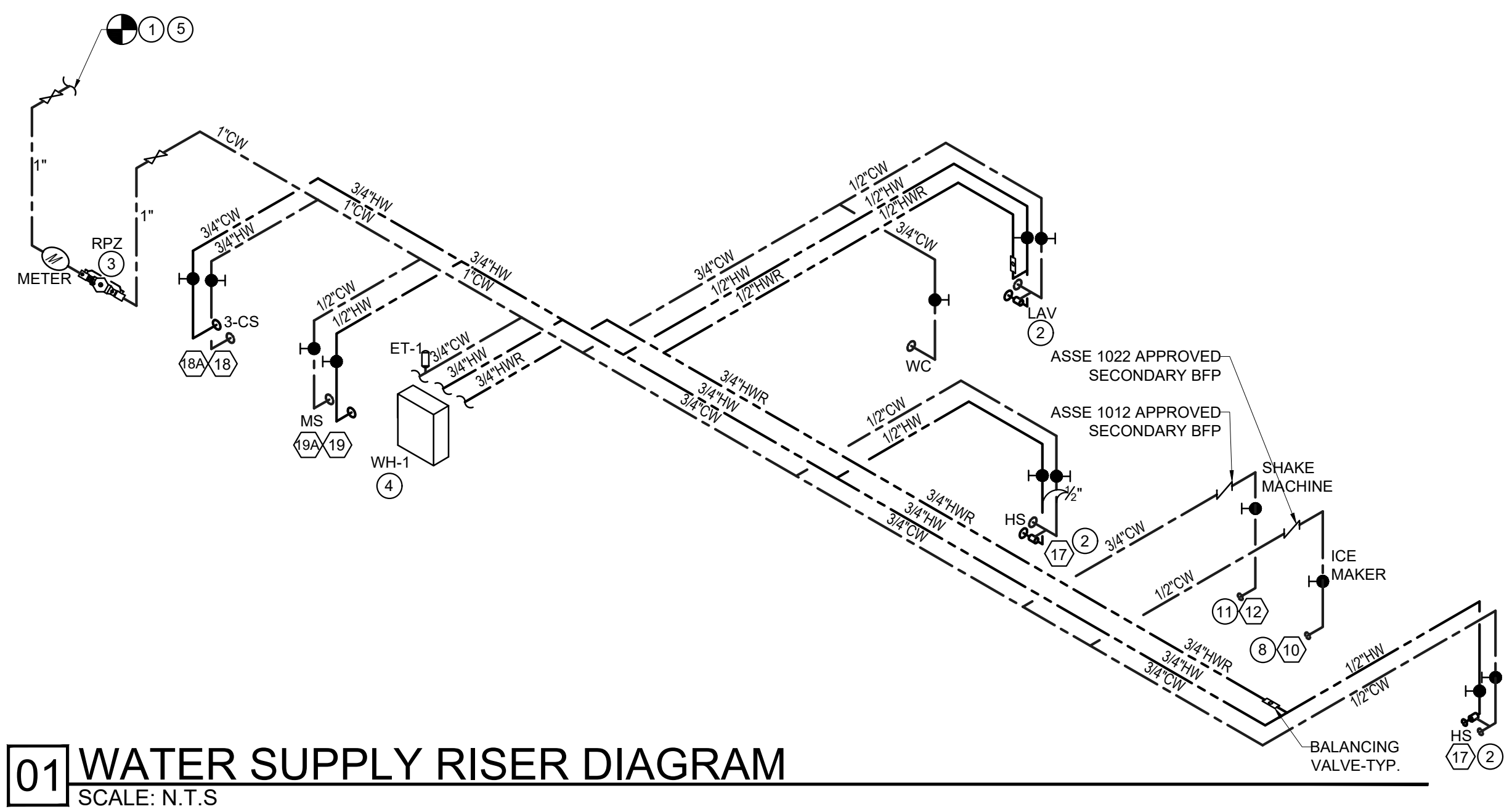
**02 SANITARY AND VENT PLAN**  
SCALE: 1/4"=1'-0"

# WATER & GAS KEY NOTES			
NO.	ITEM DESCRIPTION	NO.	ITEM DESCRIPTION
1		6	
2	CONTRACTOR SHALL PROVIDE AND INSTALL MIXING VALVE EQUAL TO WATTS MODEL # USG-B ASSE 1070 APPROVED. MOUNT BELOW LAVATORY/HAND SINK AND SET OUTPUT TEMPERATURE TO 105 DEGREES F. REFER TO DETAIL #3 THIS ON SHEET P-6 FOR INSTALLATION.	7	2" GAS LINE DOWN. PROVIDE (2) 3/4" QUICK DISCONNECTS FOR GAS CONNECTION FOR CONVEYOR OVENS.
3		8	PROVIDE ASSE-1022 APPROVED 1/2" BFP BY WATTS MODEL SD-3 OR EQUIVALENT FOR ICE MAKER. CONTRACTOR TO FIELD VERIFY AND INSTALL BFP AT AN ACCESSIBLE LOCATION.
4	T&P RELIEF VALVE AND DRAIN LINE. EXTEND DRAIN LINE TO MOP SINK AND SPILL. DRAIN LINE TO BE A MIN OF 2" ABOVE FLOOD RIM LEVEL OF MOP SINK.	9	CONTRACTOR SHALL PROVIDE NEW DIRT LEG, SHUT-OFF PLUG COCK, AND UNION. VERIFY EXACT SIZE, LOCATION, AND DISTANCE IN FIELD PRIOR TO BID. ALSO PROVIDE SHUT-OFF VALVE AN ACCESSIBLE LOCATION
5	REFER RISER DIAGRAMS FOR WATER PIPE SIZES.	10	CONTRACTOR TO FIELD VERIFY EXISTING AVAILABLE GAS PRESSURE AND MAKE SURE TO PROVIDE ADEQUATE INLET PRESSURE REQUIRED FOR MECHANICAL, KITCHEN EQUIPMENTS AND WATER HEATER. PROVIDE PRESSURE REGULATOR IF REQUIRED.
		11	PROVIDE ASSE-1012 APPROVED 3/4" BFP BY WATTS MODEL 9D OR EQUIVALENT FOR SHAKE MACHINE. CONTRACTOR TO FIELD VERIFY AND INSTALL BFP AT AN ACCESSIBLE LOCATION.

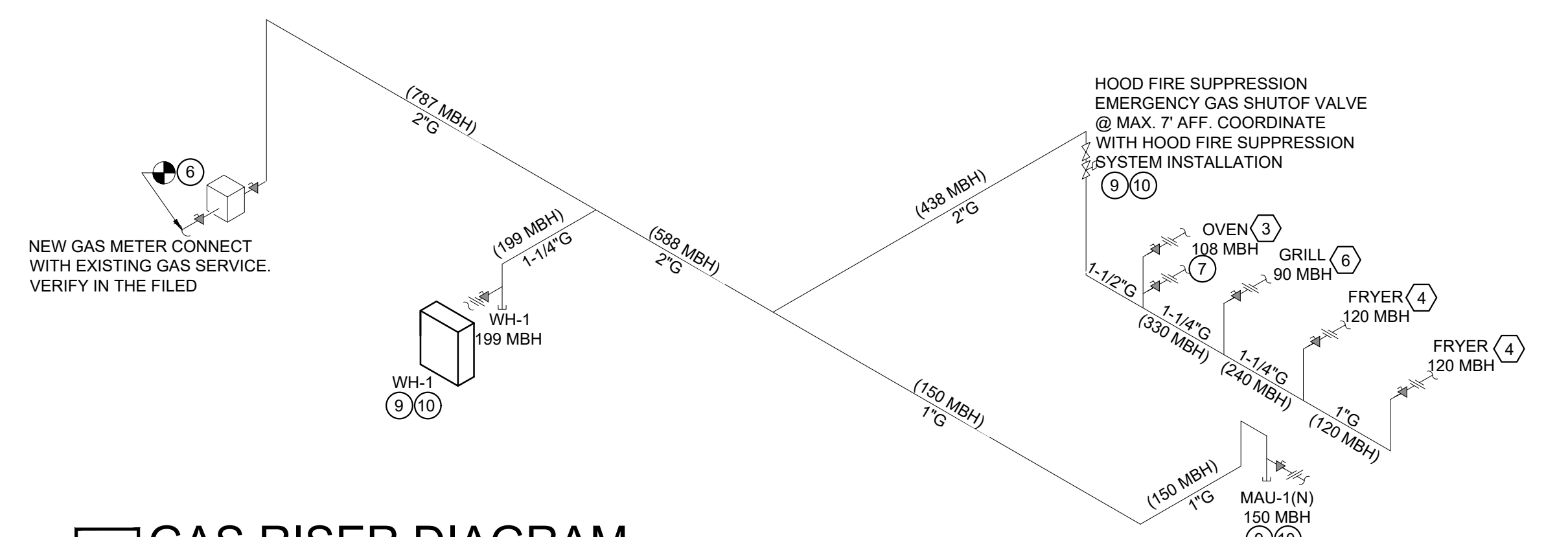
# GAS GENERAL NOTES	
1.	CONTRACTOR SHALL VERIFY EXACT DEVELOPED DISTANCE FROM NEW GAS METER TO FARTHEST GAS LINE POINT. ADJUST GAS SIZES ACCORDINGLY.
2.	CONTRACTOR TO FIELD VERIFY EXISTING AVAILABLE GAS PRESSURE AND MAKE SURE TO PROVIDE ADEQUATE INLET PRESSURE REQUIRED FOR MECHANICAL EQUIPMENTS.
3.	PROVIDE SHUT-OFF VALVE AND PRESSURE REGULATOR AN ACCESSIBLE LOCATION.
4.	CONTRACTOR SHALL VERIFY ACTUAL GAS PRESSURE AND LONGEST LENGTH OF RUN FROM METER TO FARTHEST APPLIANCE PRIOR TO INSTALLATION AND NOTIFY ENGINEER IF CONDITIONS DIFFER FROM THOSE SHOWN ON THE PLAN.
5.	CONTRACTOR TO VERIFY SIZE OF CONNECTIONS WITH EQUIPMENT CUT SHEETS.
6.	GAS PIPING SHALL BE BLACK STEEL OR AS PERMITTED BY CODE.
7.	GAS PIPING CONNECTIONS SHALL BE THREADED UNLESS OTHERWISE REQUIRED BY CODE.
8.	ALL GAS BURNING EQUIPMENT SHALL BE INSTALLED PER NFPA #58, NFPA #54 (L.P.G.) OR NFPA #96 (COMMERCIAL COOKING EQUIPMENT).
9.	LOCATIONS OF VALVES AND PIPING ARE DIAGRAMMATIC ONLY AND MAY VARY PER UNIT SUPPLIED. INSTALL PER MANUFACTURER'S RECOMMENDATIONS. CONTRACTOR SHALL USE DIELECTRIC UNIONS FOR ALL PIPE CONNECTIONS BETWEEN DISSIMILAR METALS. CONTRACTOR SHALL VERIFY EXACT GAS DELIVERY PRESSURE AT THE CUSTOMER SIDE OF METER PRIOR TO BID.
10.	CONTRACTOR SHALL APPLY FOR GAS SERVICE AND COORDINATE GAS SERVICE IN A TIMELY MANNER. IF PRESSURE IS HIGHER THAN THE GAS PRESSURE USED TO SIZE THE GAS PIPING, CONTRACTOR SHALL PROVIDE A PRESSURE REGULATOR, IF LOWER, CONTACT THE PROFESSIONAL OF RECORD IMMEDIATELY FOR DIRECTION. IF THE PROFESSIONAL OF RECORD IS NOT CONTACTED, IT IS ASSUMED GAS PRESSURE IS VERIFIED AND ADEQUATE FOR THE SYSTEM DESIGNED ON THE DRAWINGS.

# SANITARY & VENT KEY NOTES			
NO.	ITEM DESCRIPTION	NO.	ITEM DESCRIPTION
1	EXTEND AND CONNECT NEW 4" SANITARY PIPING TO EXISTING SANITARY LINE. CONTRACTOR SHALL VERIFY SIZE, INVERT AND ACTUAL LOCATION.	6	REFER RISER DIAGRAMS FOR DRAINAGE AND VENT PIPE SIZES.
2	3/4" PVC CONDENSATE DRAIN TO BE HELD TIGHT TO INSIDE COOLER WALL. TO SLOPE AT A 1/4" PER FOOT, TO DROP INSIDE COOLER AND EXIT COOLER AT 12" A.F.F. TO HUB DRAIN PROVIDE WITH 2" AIR GAP	7	PROVIDE TRAP PRIMER RECESSED IN WALL WITH ACCESS PANEL. ROUTE 1/2" CW TO FLOOR / HUB DRAIN PER MANUFACTURER SPECIFICATIONS
3	PLUMBING CONTRACTOR TO VERIFY INVERT PRIOR TO STARTING ANY WORK. CONTRACTOR MAINTAIN SLOPE FOR SANITARY AND GREASE WASTE AS PER LOCAL / PLUMBING CODE.	8	ROUTE INDIRECT DRAIN FROM OVEN HOOD TO NEAREST DRAIN. WITH AN APPROVED AIR GAP. CONTRACTOR TO FILED VERIFY DRAIN LOCATION AND ROUTING.
4	EXTEND AND CONNECT NEW 3" VENT PIPING TO NEW 4" VTR. CONTRACTOR SHALL VERIFY SIZE, ROUTING, LOCATION. CONTRACTOR SHOULD MAINTAIN 10FT DISTANCE FROM MECHANICAL FRESH AIR EQUIPMENTS AS PER CODES	9	PROVIDE SCHIER GB-50 RECESSED GREASE INTERCEPTOR. CONTRACTOR TO FILED VERIFY LOCATION, ROUTING AND INSTALLATION AS PER LOCAL CODES.
5	ROUTE INDIRECT WASTE FROM 3 COMP SINK TO FLOOR SINK WITH APPROVED CONNECTIONS AND AIR GAP AS PER LOCAL CODE.	10	ROUTE INDIRECT WASTE FROM ICE MAKER TO FLOOR SINK WITH APPROVED AIR GAP.

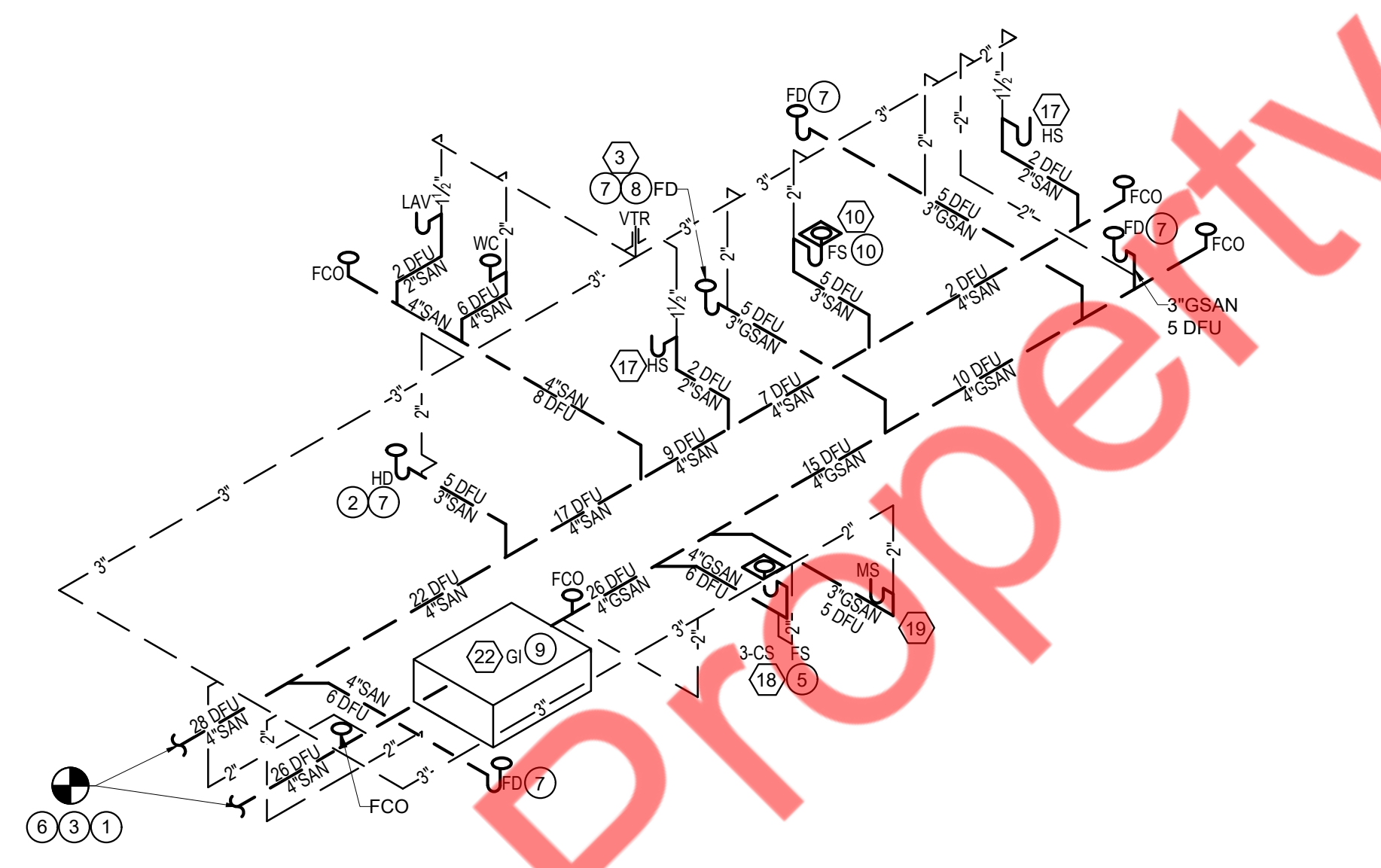
# GENERAL NOTES	
1.	ALL WORK SHALL COMPLY WITH ALL LOCAL AND STATE CODES AND AUTHORITIES HAVING JURISDICTION.
2.	THE CONTRACTOR SHALL COORDINATE HIS WORK WITH OTHER CONTRACTORS AND TRADES.
3.	THESE DRAWINGS, AS PREPARED, ARE DIAGRAMMATIC BUT SHALL BE FOLLOWED AS CLOSELY AS CONSTRUCTION OF THE PROJECT AND THE WORK OF THE TRADES WILL PERMIT. EQUIPMENT LOCATIONS INDICATED ARE APPROXIMATE. COORDINATE EXACT LOCATIONS AND REQUIRED CLEARANCES WITH EQUIPMENT SUPPLIER AND ALL TRADES PRIOR TO INSTALLATION
4.	ALL WORK SHALL BE SUBJECT TO THE ACCEPTANCE AND APPROVAL OF THE ARCHITECT AND OWNER. THE ARCHITECT SHALL BE NOTIFIED OF ANY AND ALL DISCREPANCIES BETWEEN FIELD CONDITIONS AND THE CONTRACT DOCUMENTS BEFORE PROCEEDING WITH THAT PORTION OF THE WORK. FAILURE OF PROPER NOTIFICATION DOES NOT RELIEVE THE CONTRACTOR. THE CONTRACTOR SHALL CORRECT ANY AND ALL WORK ARISING FROM SUCH FAILURE TO COORDINATE DISCREPANCIES TO THE SATISFACTION OF THE ARCHITECT WITHOUT ADDITIONAL COST TO THE OWNER.
5.	ALL PIPING TO BE CONCEALED IN HUNG CEILINGS, CHASES AND FURRED SPACES.
6.	REFER TO EQUIPMENT SCHEDULE AND EQUIPMENT SPECIFICATIONS FOR EXACT LOCATIONS OF PLUMBING CONNECTIONS.
7.	THE CONTRACTOR SHALL VERIFY DEPTH, SIZE, LOCATION OF ALL EXISTING UTILITIES IN FIELD PRIOR TO STARTING WORK.
8.	THE CONTRACTOR SHALL PROVIDE AND INSTALL ALL PIPE HANGERS, AND SUPPORTS IN ACCORDANCE WITH THE LOCAL APPLICABLE CODES.
9.	THE CONTRACTOR TO PROVIDE TRAP PRIMERS, DEEP SEAL TRAP OR TRAP SEAL ON ALL FLOOR DRAINS AS PER APPLICABLE CODE.
10.	ALL PENETRATIONS REQUIRED FOR PLUMBING EQUIPMENT AND PIPING THROUGH ANY WALL SHALL BE PROPERLY SEALED OFF TO MAINTAIN THE INTEGRITY OF THE STRUCTURE.



**01 WATER SUPPLY RISER DIAGRAM**  
SCALE: N.T.S



**02 GAS RISER DIAGRAM**  
SCALE: N.T.S



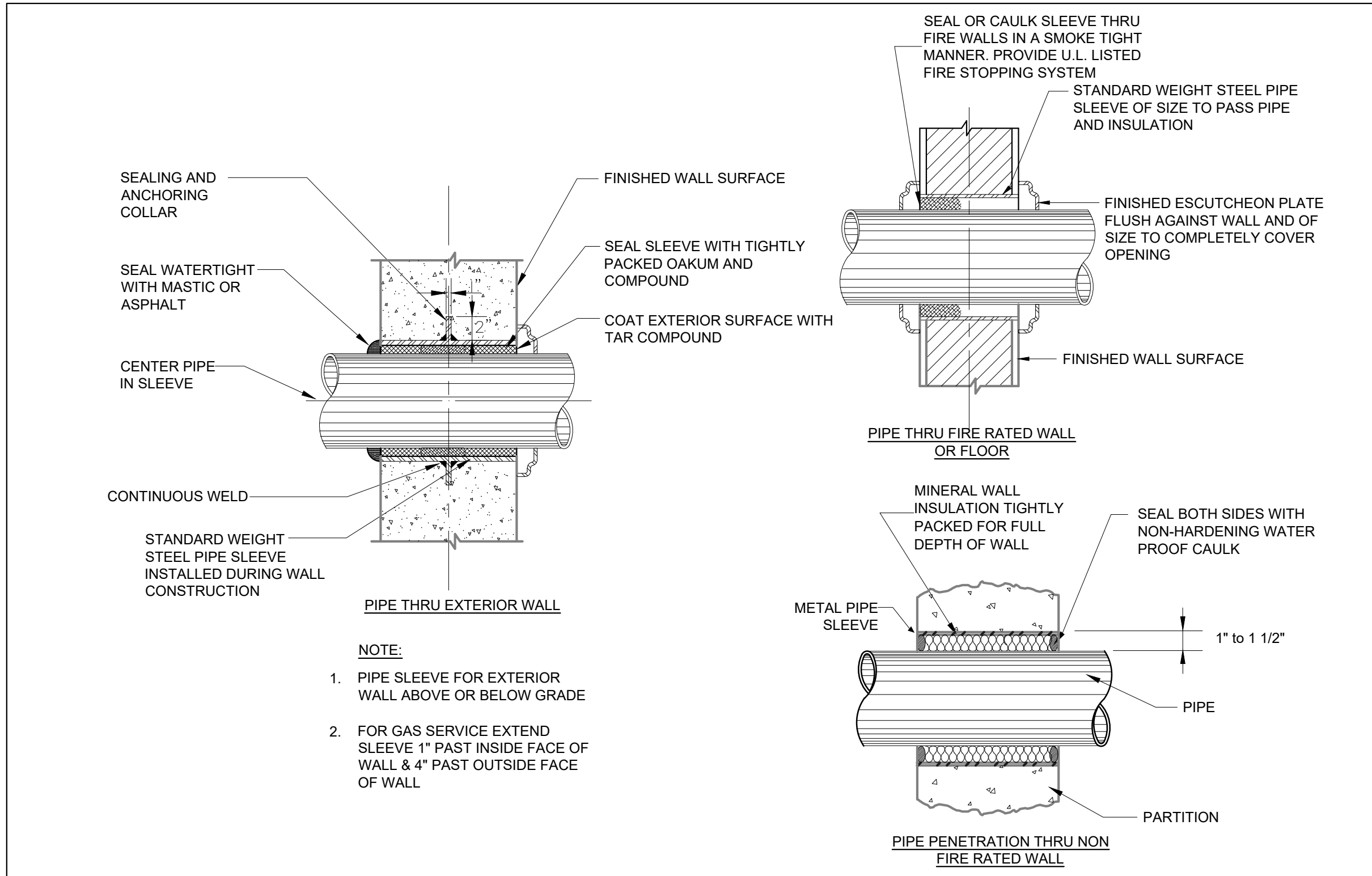
**03 SANITARY AND VENT RISER DIAGRAM**  
SCALE: N.T.S

WATER & GAS KEY NOTES			
NO.	ITEM DESCRIPTION	NO.	ITEM DESCRIPTION
1	EXTEND AND CONNECT NEW 1" CW PIPING TO EXISTING CW LINE IN THE SPACE. CONTRACTOR SHALL VERIFY EXACT LOCATION AND SIZE. UPGRADE THE EXISTING WATER SERVICE LINE IF NOT SUFFICIENT.	6	NEW GAS LINE TO BE ROUTED FROM NEW GAS METER PROVIDED BY LANDLORD FOR BEEF A ROO SPACE. ROUTE 2" GAS LINE UP ALONG BUILDING. ROUTE GAS LINE TO WATER HEATER, KITCHEN EQUIPMENTS AND MAU. CONTRACTOR TO VERIFY EXISTING GAS SERVICE PRESSURE AND PROVIDE ADEQUATE PRESSURE FOR THE SPACE.
2	CONTRACTOR SHALL PROVIDE AND INSTALL MIXING VALVE EQUAL TO WATTS MODEL # USG-B ASSE 1070 APPROVED. MOUNT BELOW LAVATORY/HAND SINK AND SET OUTPUT TEMPERATURE TO 105 DEGREES F. REFER TO DETAIL "43" THIS ON SHEET P-6 FOR INSTALLATION.	7	2" GAS LINE DOWN. PROVIDE (2) 3/4" QUICK DISCONNECTS FOR GAS CONNECTION FOR CONVEYOR OVEN'S.
3	PROVIDE NEW MAIN COLD WATER METER, SHUT-OFF VALVE AND BACKFLOW PREVENTER IN ACCESSIBLE LOCATION.	8	PROVIDE ASSE-1022 APPROVED 1/2" BFP BY WATTS MODEL SD-3 OR EQUIVALENT FOR ICE MAKER. CONTRACTOR TO FIELD VERIFY AND INSTALL BFP AT AN ACCESSIBLE LOCATION.
4	T&P RELIEF VALVE AND DRAIN LINE. EXTEND DRAIN LINE TO MOP SINK AND SPILL. DRAIN LINE TO BE A MIN OF 2" ABOVE FLOOD RIM LEVEL OF MOP SINK.	9	CONTRACTOR SHALL PROVIDE NEW DIRT LEG, SHUT-OFF PLUG COCK, AND UNION. VERIFY EXACT SIZE, LOCATION, AND DISTANCE IN FIELD PRIOR TO BID. ALSO PROVIDE SHUT-OFF VALVE AN ACCESSIBLE LOCATION.
5	REFER RISER DIAGRAMS FOR WATER PIPE SIZES.	10	CONTRACTOR TO FIELD VERIFY EXISTING AVAILABLE GAS PRESSURE AND MAKE SURE TO PROVIDE ADEQUATE INLET PRESSURE REQUIRED FOR MECHANICAL, KITCHEN EQUIPMENTS AND WATER HEATER. PROVIDE PRESSURE REGULATOR IF REQUIRED.
		11	PROVIDE ASSE-1012 APPROVED 3/4" BFP BY WATTS MODEL 9D OR EQUIVALENT FOR SHAKE MACHINE. CONTRACTOR TO FIELD VERIFY AND INSTALL BFP AT AN ACCESSIBLE LOCATION.

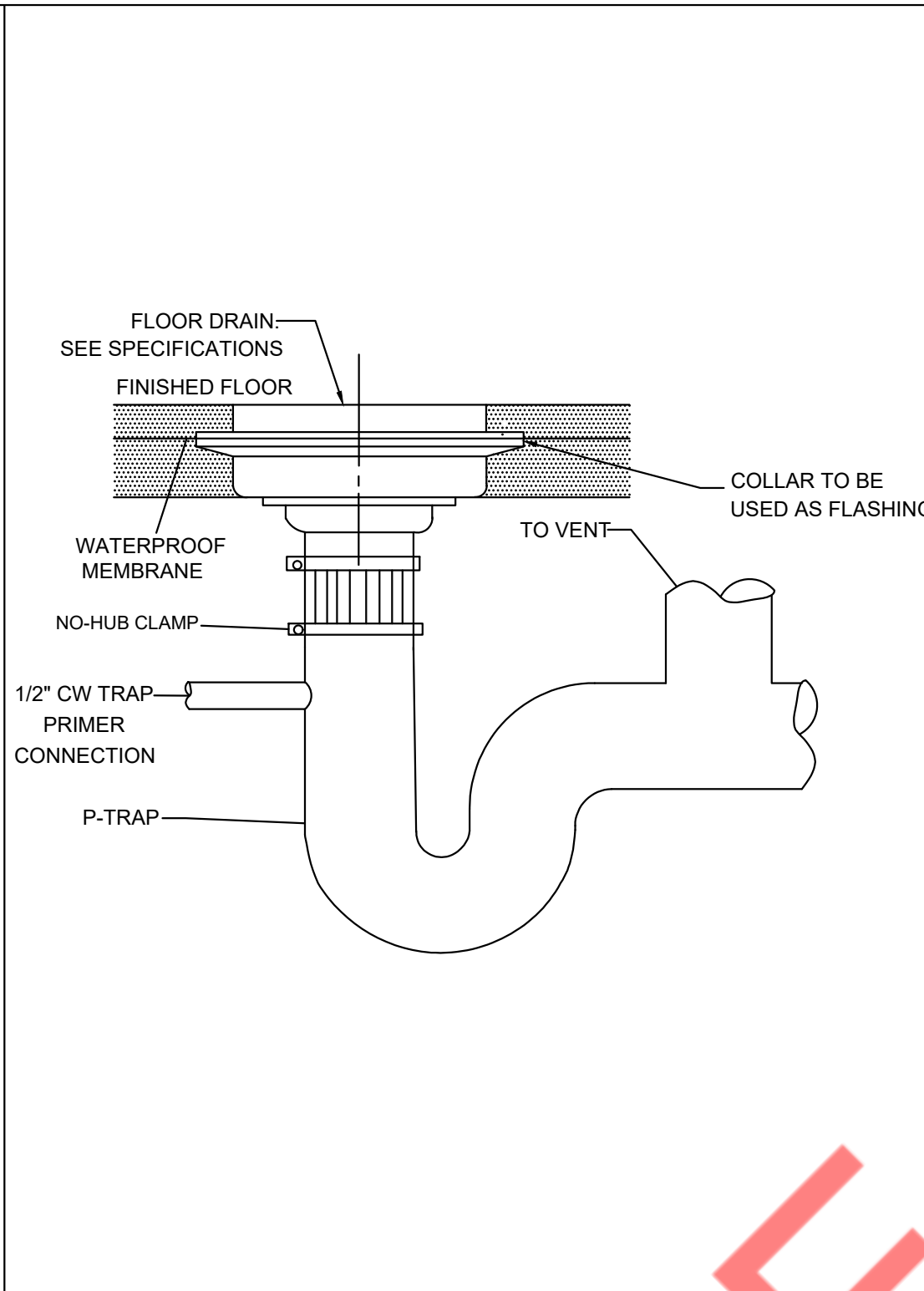
GAS EQUIPMENT SCHEDULE						
ITEM NO	QTY	DESCRIPTION	MANUFACTURER	MODEL	BTU/HR.	BTU/HR.
WH-1	1	TANKLESS WATER HEATER	NORITZ	NPE-240 A	199,000	199,000
3	1	DOUBLE CONVECTION OVEN	MAIN STREET EQ	3270-H	108,000	108,000
4	2	FRYER	PATRIOT	PT-F4-NG	120,000	240,000
6	1	FLAT TOP GRILL	CPG	GM-CPG-36-NL	90,000	90,000
MAU-1(N)	1	MAKEUP AIR UNIT	-	-	150,000	150,000
					787,000	787,000
TOTAL LOAD					787,000	787,000

NAT. GAS DESIGN  
 NEW GAS PIPING - LOW PRESSURE SYSTEM  
 INLET PRESSURE < 2.0PSI  
 PRESSURE DROP- 0.5 IN W.C  
 LONGEST LENGTH- APPROX. 100'  
 GAS PIPE SIZING PER TABLE 402.4(2),  
 INTERNATIONAL FUEL GAS CODE, 2012.

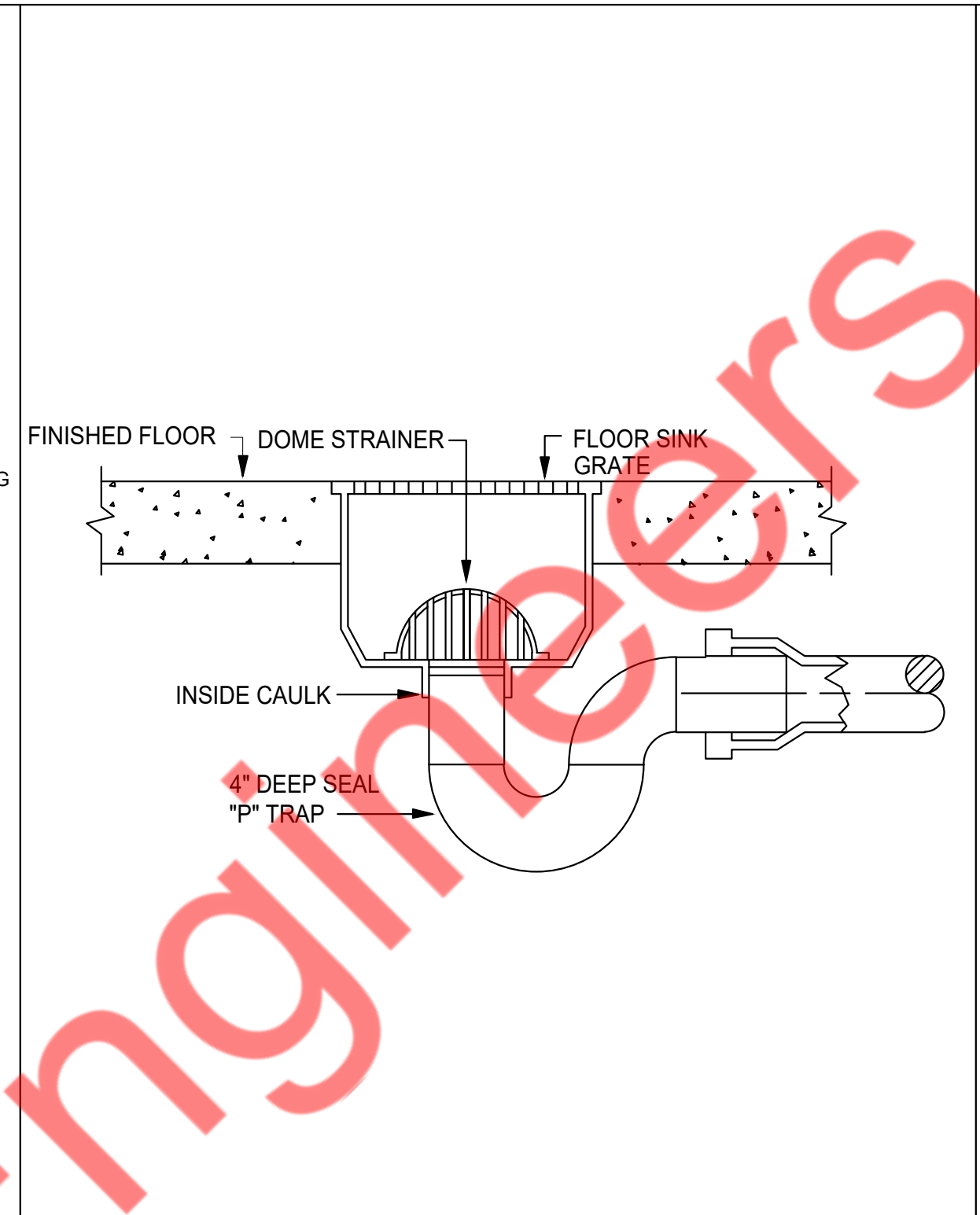
SANITARY & VENT KEY NOTES			
NO.	ITEM DESCRIPTION	NO.	ITEM DESCRIPTION
1	EXTEND AND CONNECT NEW 4" SANITARY PIPING TO EXISTING SANITARY LINE. CONTRACTOR SHALL VERIFY SIZE, INVERT AND ACTUAL LOCATION.	6	REFER RISER DIAGRAMS FOR DRAINAGE AND VENT PIPE SIZES.
2	3/4" PVC CONDENSATE DRAIN TO BE HELD TIGHT TO INSIDE COOLER WALL, TO SLOPE AT A 1/4" PER FOOT, TO DROP INSIDE COOLER AND EXIT COOLER AT 12" A.F.F. TO HUB DRAIN PROVIDE WITH 2" AIR GAP	7	PROVIDE TRAP PRIMER RECESSED IN WALL WITH ACCESS PANEL. ROUTE 1/2" CW TO FLOOR / HUB DRAIN PER MANUFACTURER SPECIFICATIONS
3	PLUMBING CONTRACTOR TO VERIFY INVERT PRIOR TO STARTING ANY WORK. CONTRACTOR MAINTAIN SLOPE FOR SANITARY AND GREASE WASTE AS PER LOCAL / PLUMBING CODE.	8	ROUTE INDIRECT DRAIN FROM OVEN HOOD TO NEAREST DRAIN. WITH AN APPROVED AIR GAP. CONTRACTOR TO FILED VERIFY DRAIN LOCATION AND ROUTING.
4	EXTEND AND CONNECT NEW 3" VENT PIPING TO NEW 4" VTR. CONTRACTOR SHALL VERIFY SIZE, ROUTING, LOCATION. CONTRACTOR SHOULD MAINTAIN 10FT DISTANCE FROM MECHANICAL FRESH AIR EQUIPMENTS AS PER CODES	9	PROVIDE SCHIER GB-50 RECESSED GREASE INTERCEPTOR. CONTRACTOR TO FILED VERIFY LOCATION, ROUTING AND INSTALLATION AS PER LOCAL CODES.
5	ROUTE INDIRECT WASTE FROM 3 COMP SINK TO FLOOR SINK WITH APPROVED CONNECTIONS AND AIR GAP AS PER LOCAL CODE.	10	ROUTE INDIRECT WASTE FROM ICE MAKER TO FLOOR SINK WITH APPROVED AIR GAP.



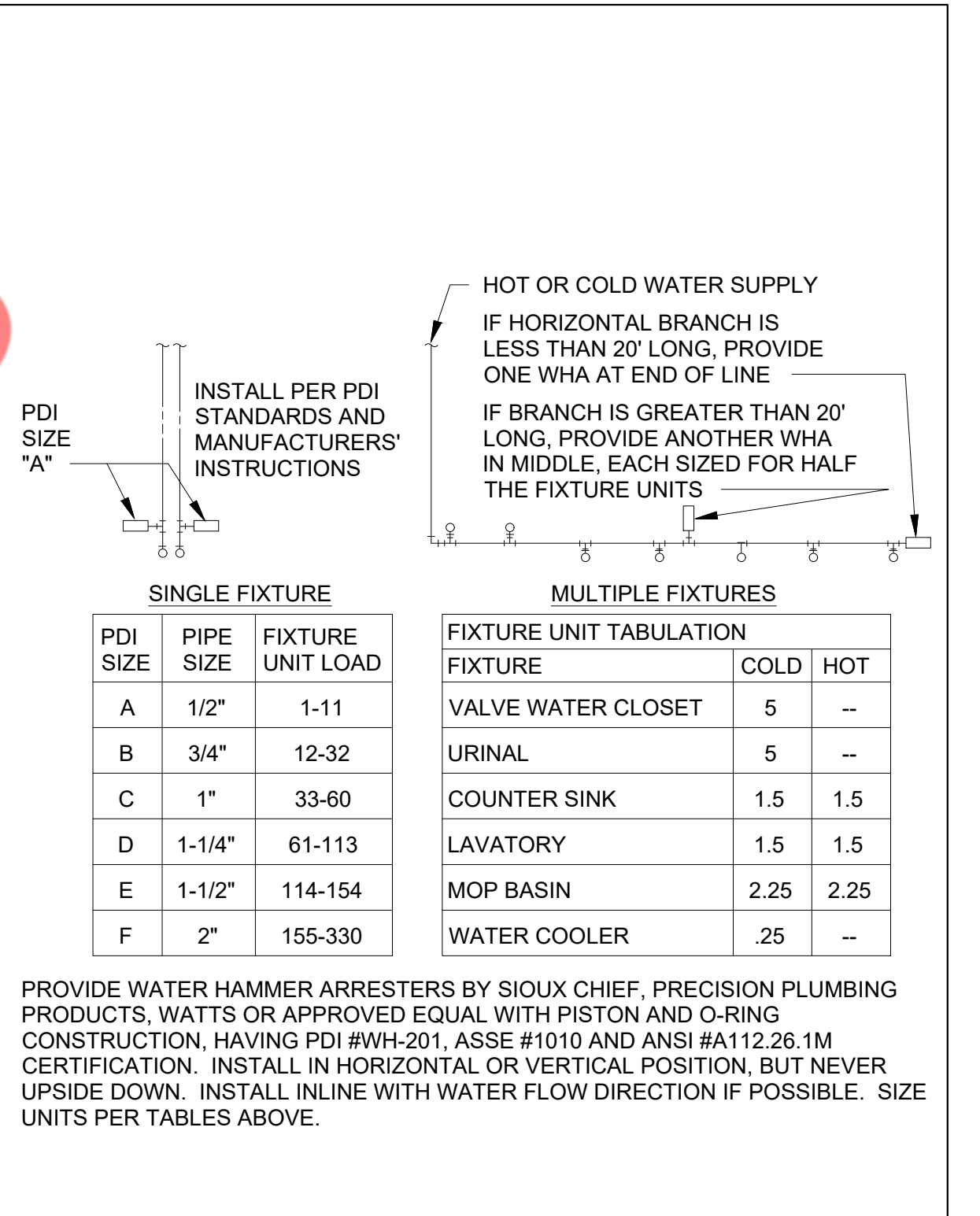
1 PIPE SLEEVE THRU WALL SECTION  
P-5 N.T.S



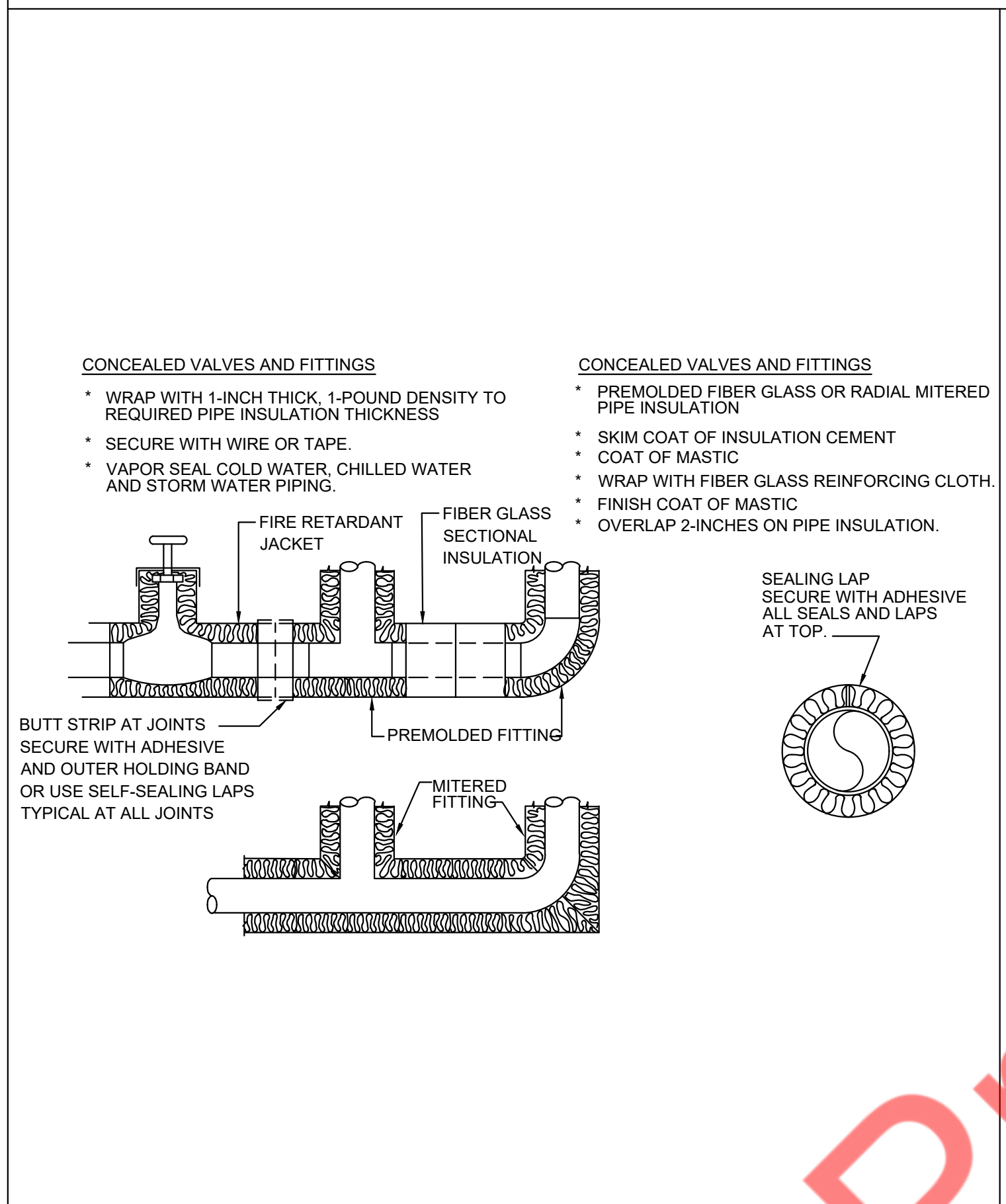
2 FLOOR DRAIN DETAIL  
P-5 N.T.S



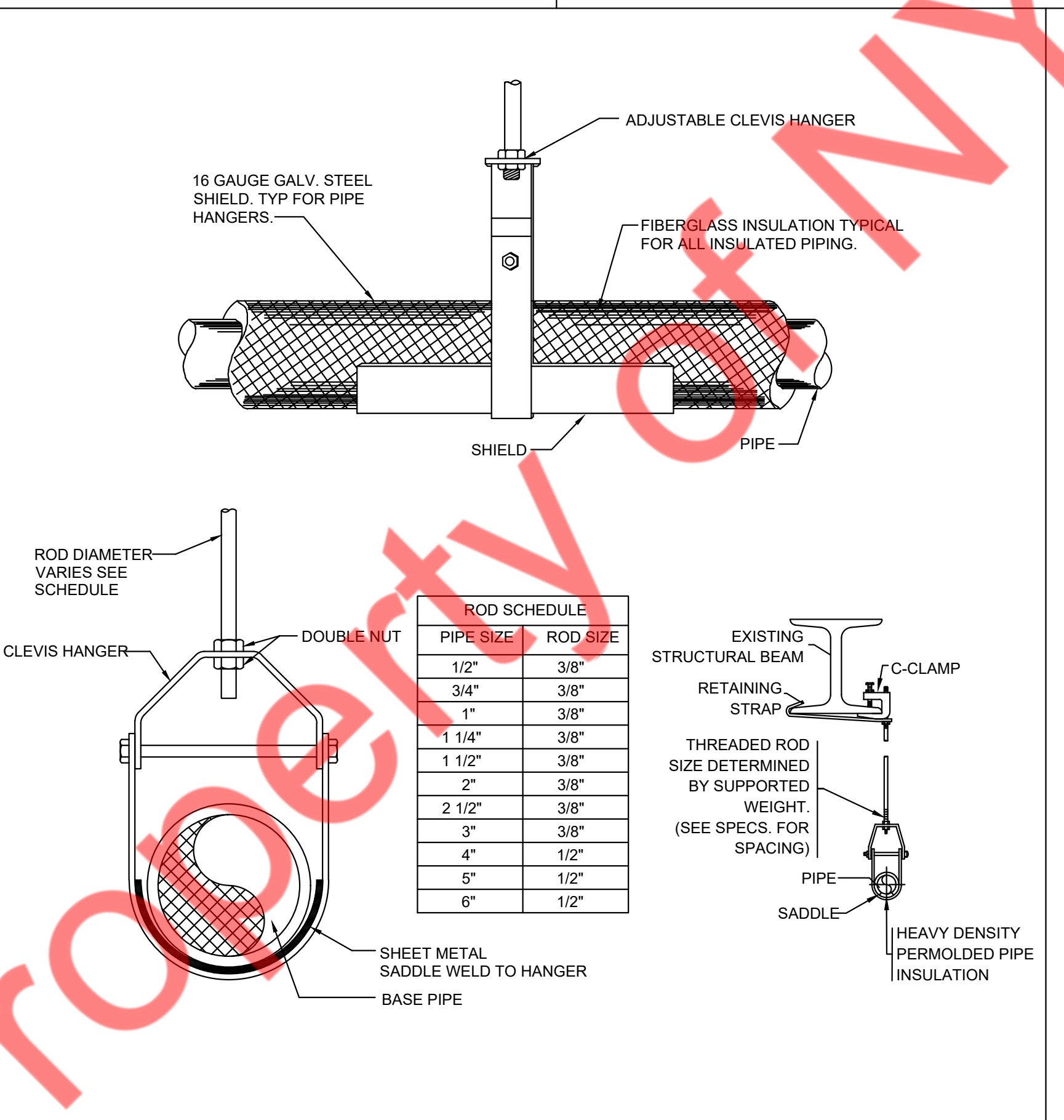
3 FLOOR SINK DETAIL  
P-5 N.T.S



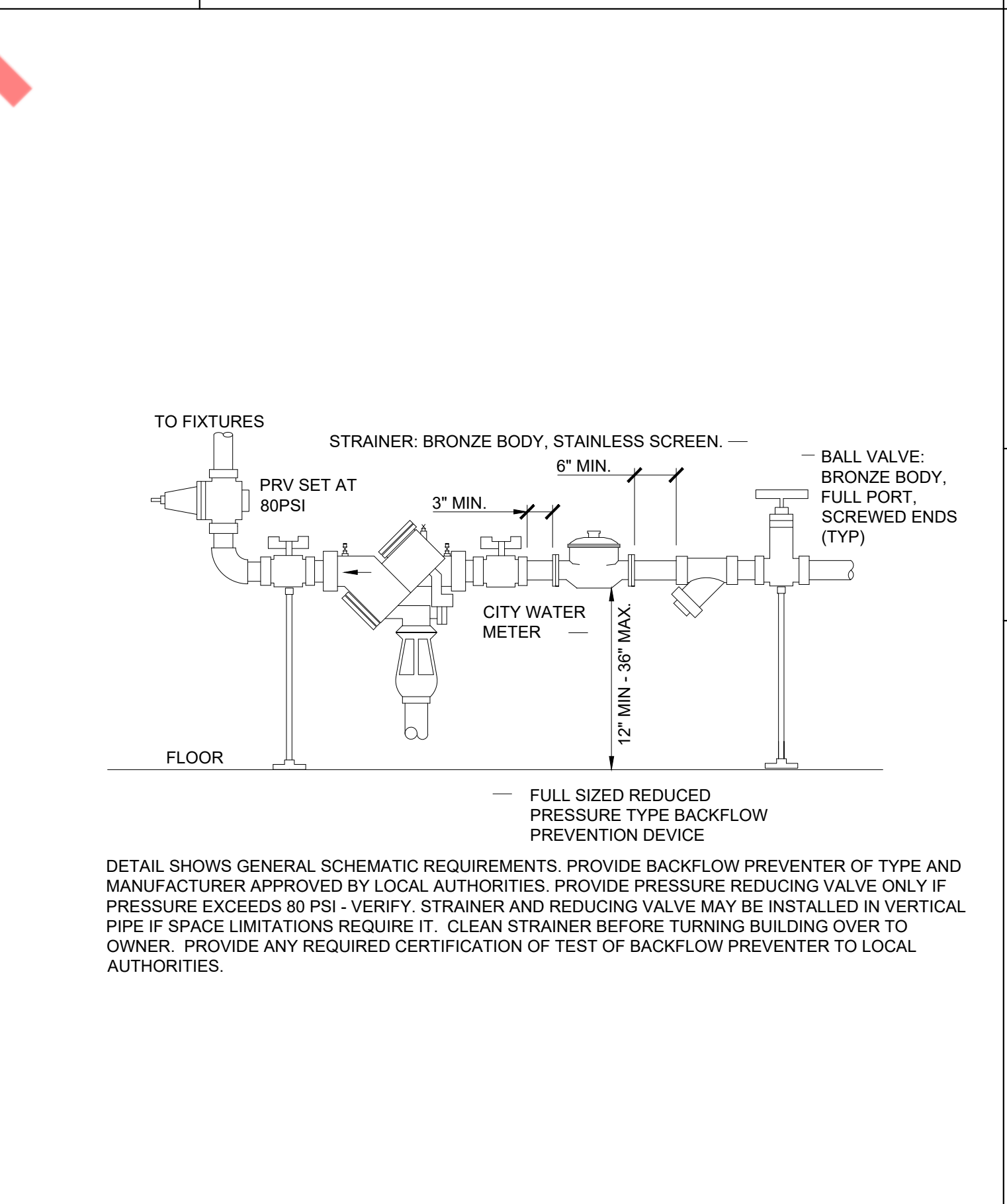
4 WATER HAMMER ARRESTOR  
P-5 N.T.S



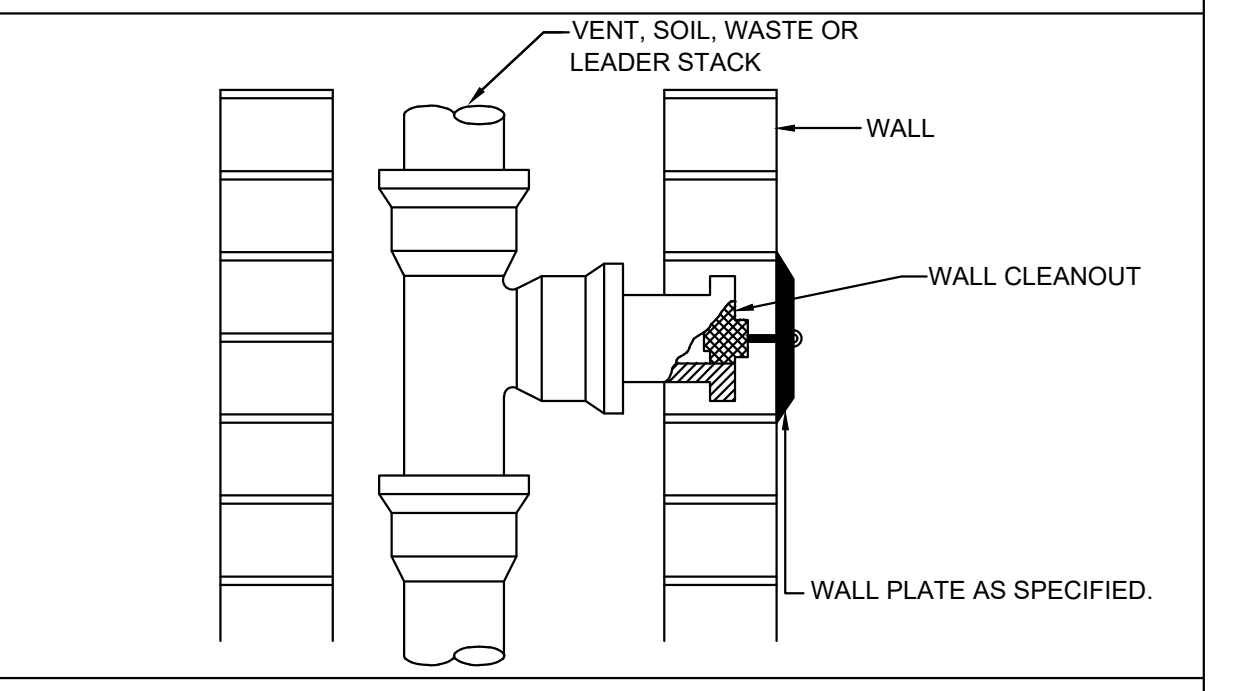
5 PIPE INSULATION DETAIL  
P-5 N.T.S



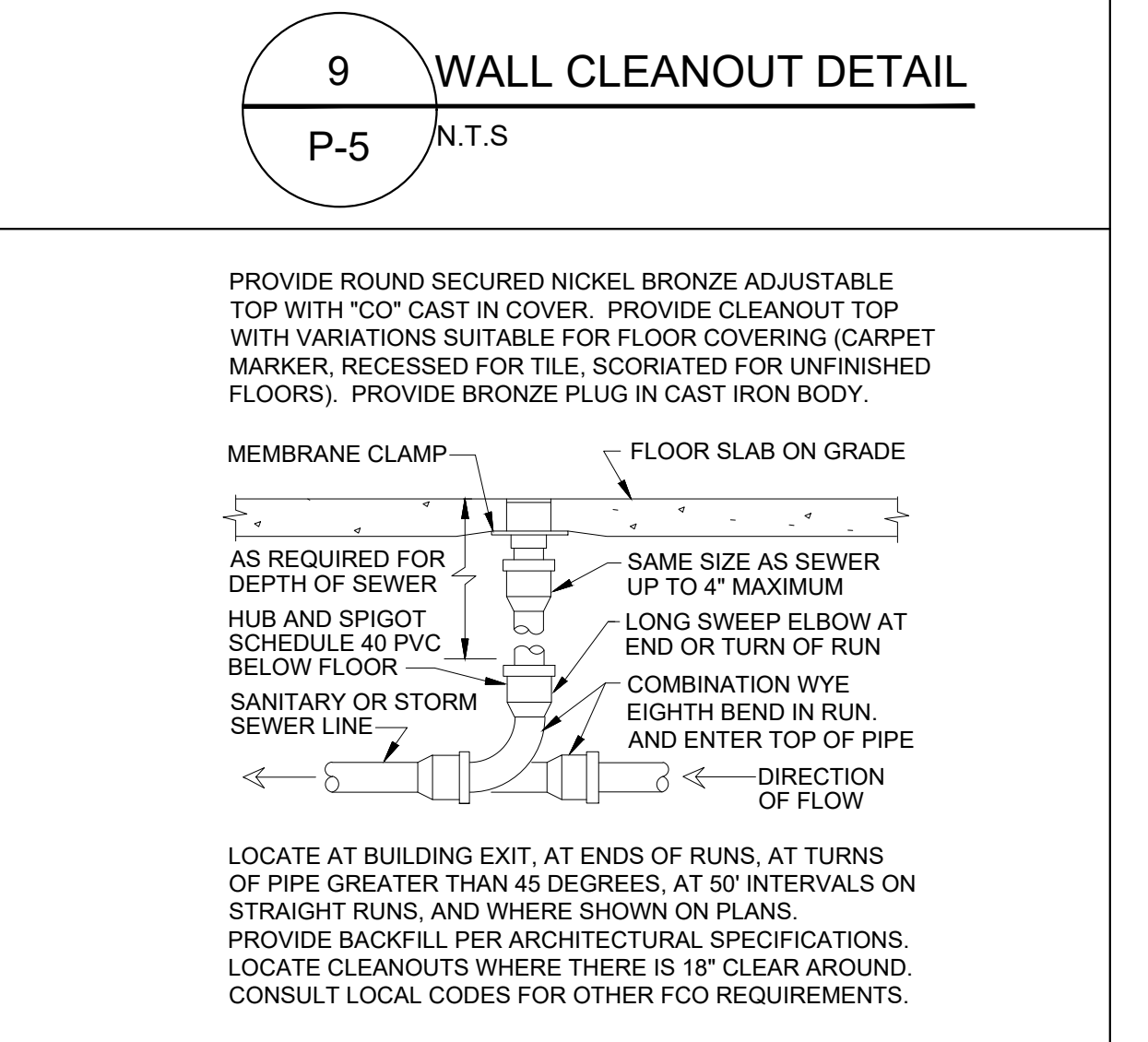
6 HANGER DETAIL  
P-5 N.T.S



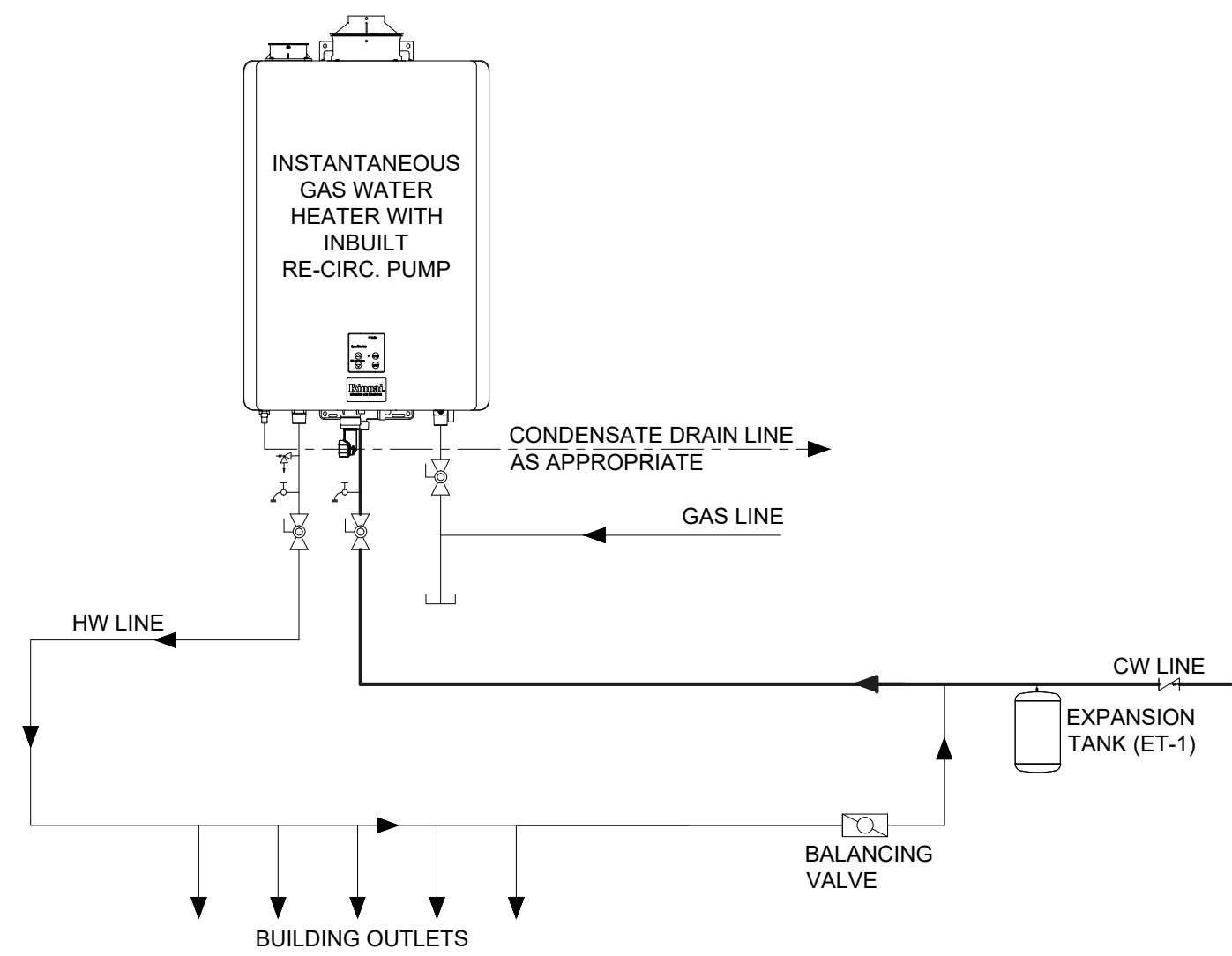
7 WATER SERVICE ENTRY DETAIL  
P-5 N.T.S



9 WALL CLEANOUT DETAIL  
P-5 N.T.S

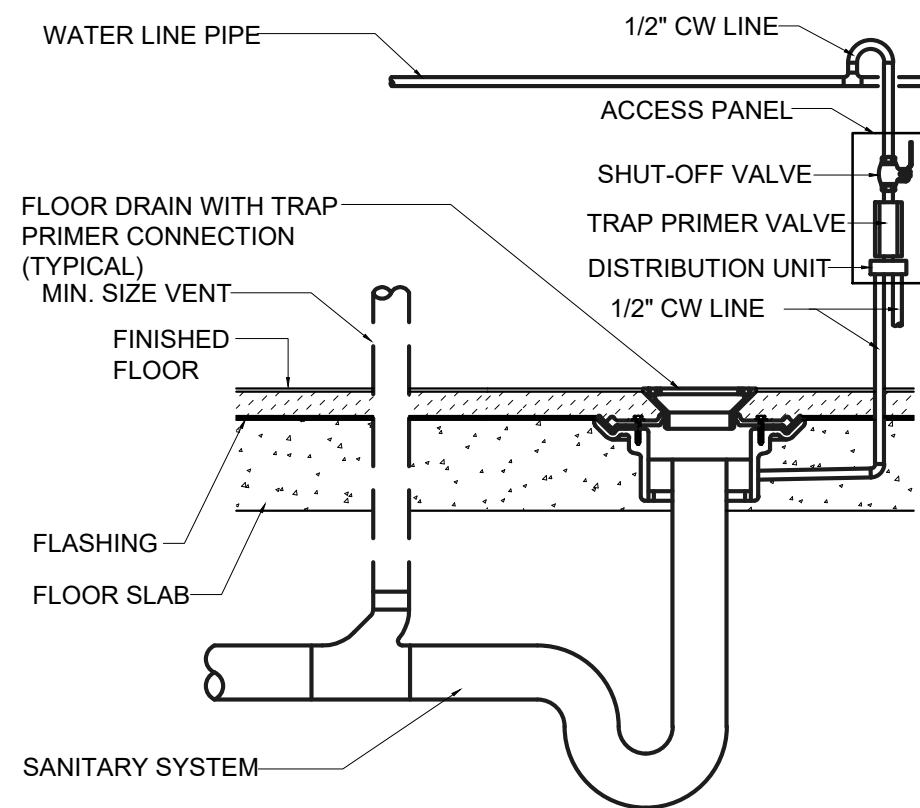


8 FLOOR CLEANOUT DETAIL  
P-5 N.T.S

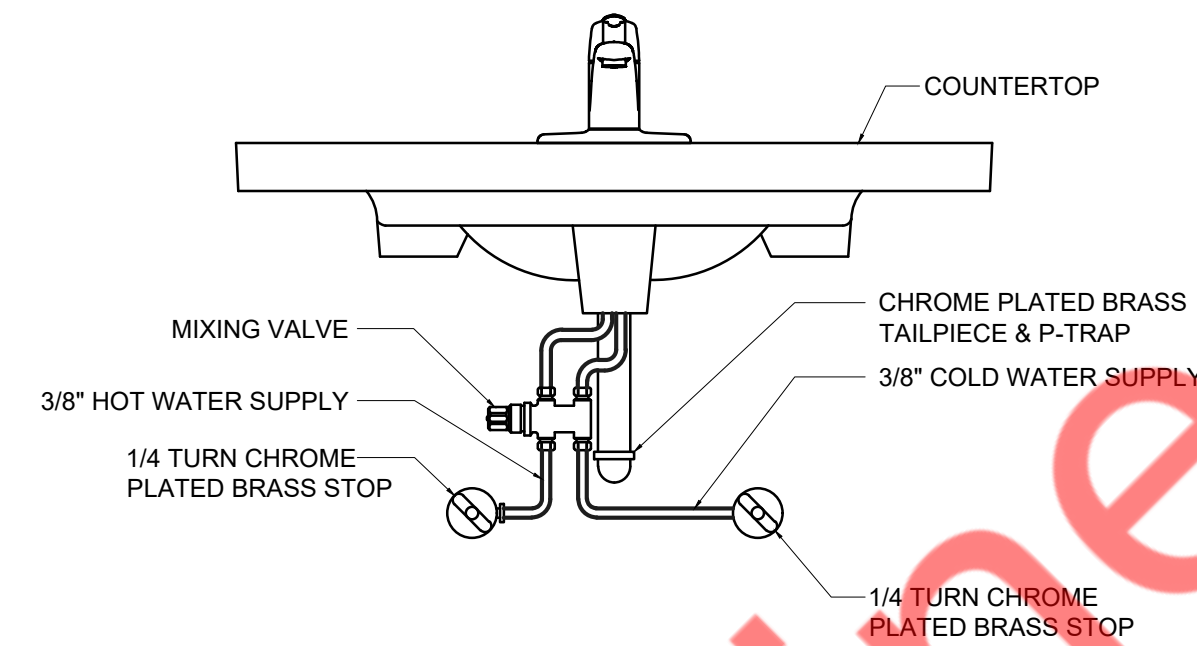


REFER TO SPECIFICATION AND PLUMBING FIXTURE SCHEDULE. PIPING ARRANGEMENT SHOWN IS SCHEMATIC. ADJUST TO SUITE FIELD CONDITIONS. REFER TO FLOOR PLAN FOR PIPE SIZES.

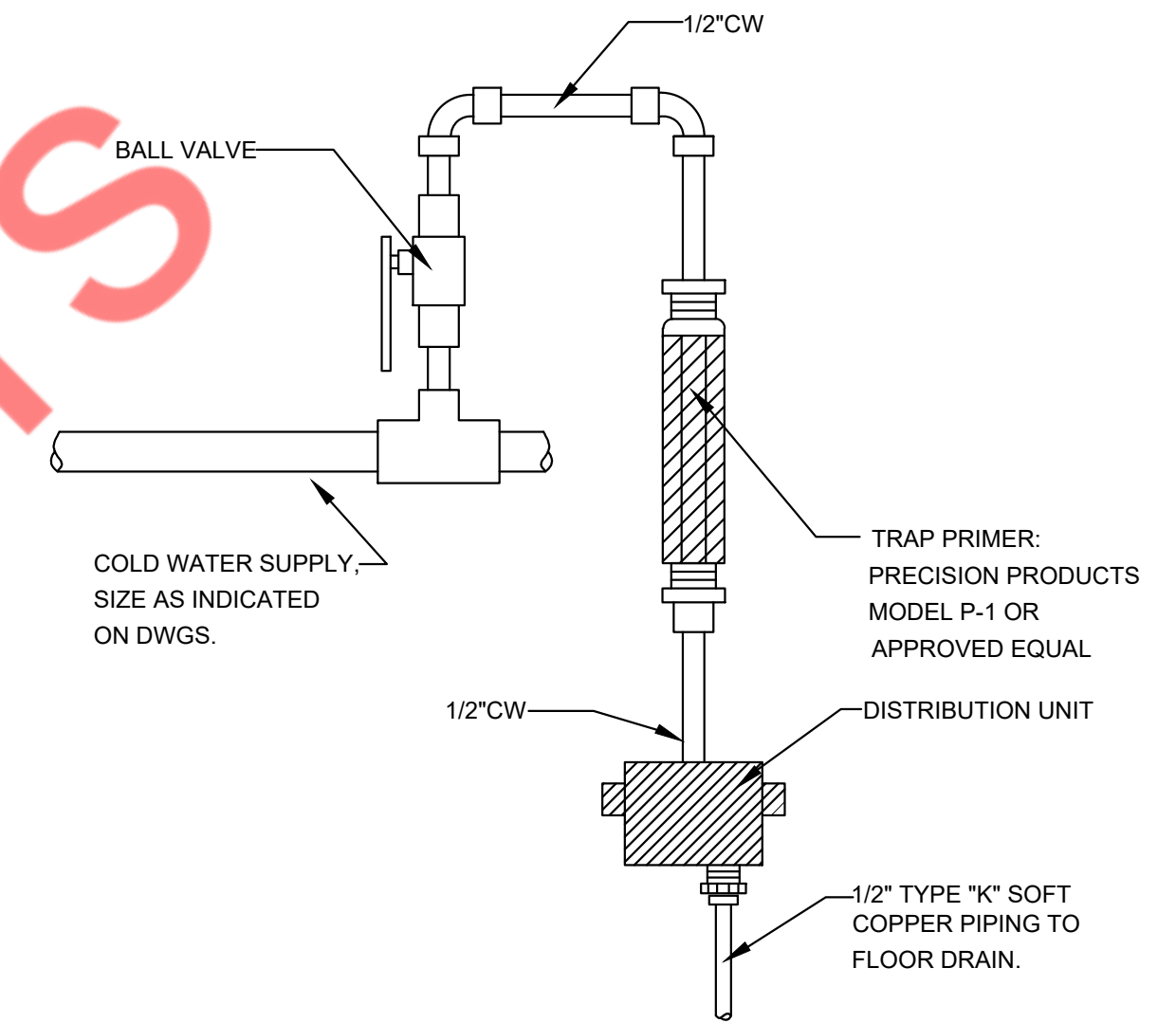
1 INSTANTANEOUS GAS WATER HEATER  
P-6 N.T.S



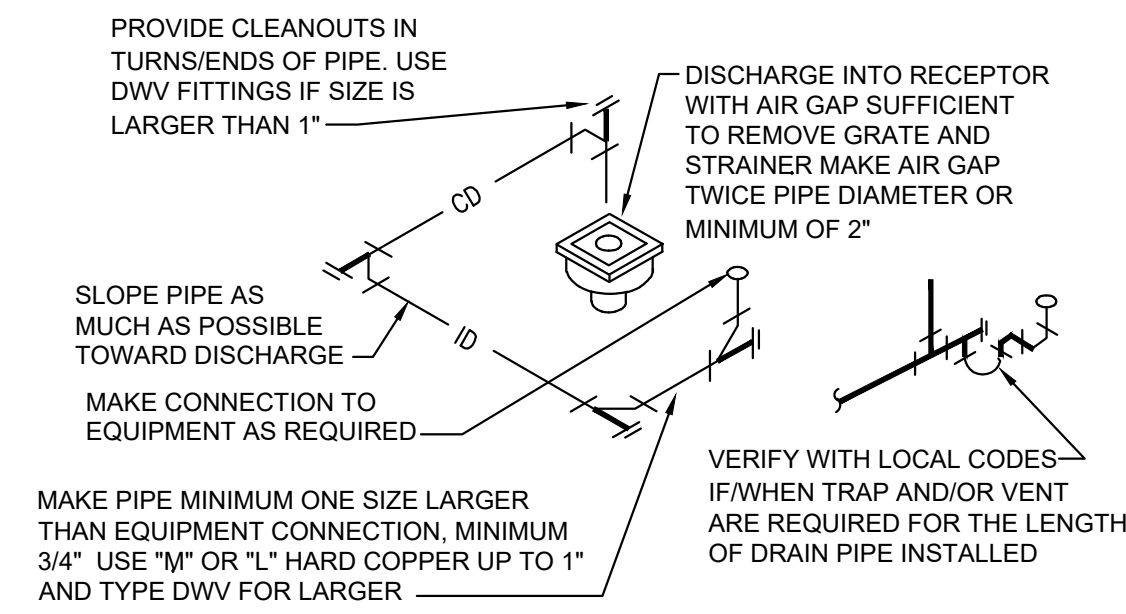
2 FLOOR DRAIN DETAILS  
P-6 N.T.S



3 MIXING VALVE DETAILS  
P-6 N.T.S

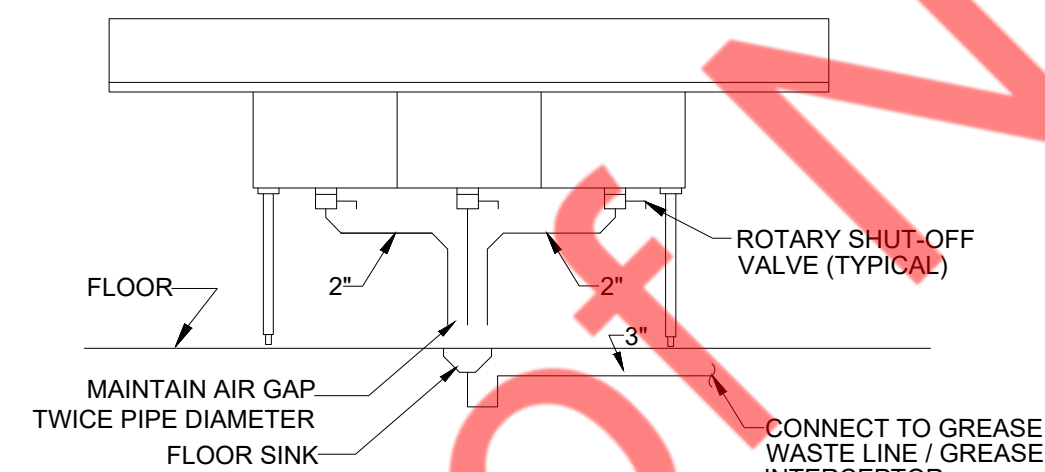


4 TRAP PRIMER DETAILS  
P-6 N.T.S



ROUTE PIPE INCONSPICUOUSLY AND UNOBTUSIVELY. SECURED BY MEANS OF CLAMPS OR BRACKETS TO THEIR OWN EQUIPMENT UNITS AND ROUTED TO THEIR SPECIFIC FLOOR SINKS THERE SHALL NOT BE ANY LOOSE OR DANGLING WASTE LINES. NOR WASTE LINES LYING ON THE FLOOR. DO NOT INSULATE INDIRECT DRAIN PIPE WHEN INSTALLED EXPOSED IN FOOD SERVICE FACILITY. REFER TO LOCAL CODES FOR FURTHER INFORMATION.

4 INDIRECT DRAIN DETAILS  
P-6 N.T.S



ROUTE GREASE DRAIN LINE TO WALL. ROUTE VENT UP, AND SANITARY DOWN AS SHOWN ON PLANS. ARRANGEMENT SHOWN IS SCHEMATIC. ADJUST TO SUIT FIELD CONDITIONS OR MEET LOCAL CODE REQUIREMENTS. DWV COPPER PIPE, FITTINGS AND CONNECTORS ALL AROUND SINK.

5 3-COMPARTMENT SINK DETAILS  
P-6 N.T.S