

MECHANICAL SYMBOLS

HVAC EQUIPMENT & DUCTWORK

NOTE: ALL DUCT DIMENSIONS SHOWN ON DRAWINGS ARE INSIDE DIMENSIONS. SEE SECTION 15250 OF THE SPECIFICATION FOR DUCTWORK TO RECEIVE INSULATION OR LINER.

	EXISTING DUCTWORK OR EQUIPMENT TO REMAIN
	EXISTING DUCTWORK OR EQUIPMENT TO BE REMOVED
	LINEAR SLOT DIFFUSER
	INSULATED FLEXIBLE DUCT (MAX. 5'-0" LONG)
	BRANCH DUCT WITH 45° RECTANGLE-ROUND BRANCH FITTING AND MANUAL VOLUME DAMPER
	ELBOW WITH TURNING VANES
	BRANCH DUCT WITH BELL-MOUTH FITTING & MANUAL VOLUME CONTROL DAMPER
	RETURN, EXHAUST, OR OUTSIDE AIR DUCT UP
	RETURN, EXHAUST, OR OUTSIDE AIR DUCT DOWN
	SUPPLY AIR DUCT UP
	SUPPLY AIR DUCT DOWN
	EQUIPMENT WITH FLEXIBLE DUCT CONNECTION
	10" CS-D-1 300 CFM NECK SIZE, TYPE, CFM OF SUPPLY DIFFUSER OR REGISTER
	24x24 CEG-1 800 CFM SIZE, TYPE, CFM OF EXHAUST GRILLE
	MANUAL VOLUME DAMPER
	SQUARE TO ROUND TRANSITION
	DUCT MOUNTED SMOKE DETECTOR (SD-SUPPLY/RD-RETURN)
	Ⓡ RISER DESIGNATION
	Ⓣ FIRE DAMPER
	ⓉSD FIRE SMOKE DAMPER
	ⓉD SMOKE DAMPER
	ⓉD VOLUME DAMPER
	ⓉMD MOTORIZED DAMPER
	ⓉBD BACKDRAFT DAMPER
	ⓉH HUMIDISTAT
	ⓉT THERMOSTAT

STANDARD MOUNTING HEIGHTS

MECHANICAL	(AFF. AFG, UNLESS NOTED OTHERWISE)
THERMOSTATS (USER ADJUSTABLE)(TOP OF DEVICE)	48"
CONTROLS (TOP OF DEVICE)	48"
PLUMBING	REFER TO THE ARCHITECTURAL DRAWINGS FOR PLUMBING FIXTURE MOUNTING HEIGHTS. UNO, INSTALL PLUMBING FIXTURES WITH THE MOUNTING HEIGHTS AS LISTED BELOW WITH FINAL APPROVAL BY THE ARCHITECT.
LAVATORY OR SINK	
STANDARD HEIGHT	34" FLOOR TO RIM
ADA ACCESSIBLE	31" FLOOR TO RIM
CHILD HEIGHT	24" FLOOR TO RIM
URINAL	
STANDARD HEIGHT	24" FLOOR TO RIM
ADA ACCESSIBLE	17" FLOOR TO RIM
CHILD HEIGHT	14" FLOOR TO RIM
WATER CLOSET	
STANDARD HEIGHT	15" FLOOR TO RIM
ADA ACCESSIBLE	17" TO 19" FLOOR TO TOP OF SEAT
CHILD HEIGHT	24" FLOOR TO RIM
WATER COOLER OR DRINKING FOUNTAIN	
STANDARD HEIGHT	41" FLOOR TO SPOUT
ADA ACCESSIBLE	36" FLOOR TO SPOUT
CHILD HEIGHT	30" FLOOR TO SPOUT
SHOWER VALVES	
STANDARD HEIGHT	48" MEN & 42" WOMEN
ADA ACCESSIBLE	38" MINIMUM TO 48" MAXIMUM
FLOOR TO CENTERLINE	
SHOWER VALVES	
STANDARD HEIGHT	48" MEN & 42" WOMEN
FLOOR TO CENTERLINE	
SHOWER HEADS	
STANDARD HEIGHT	6'-6" MEN & 6'-0" WOMEN
FLOOR TO CENTERLINE	
TUB VALVES	
STANDARD HEIGHT	32" FLOOR TO CENTERLINE
ADA ACCESSIBLE	CENTER BETWEEN GRAB BAR AND TUB RIM
CLINIC SERVICE SINKS	
SURGEON'S SCRUB-UP SINKS	35" FLOOR TO FRONT RIM
ICE MAKER OUTLET BOXES	24" FLOOR TO CENTER OF BOX
WASHING MACHINE OUTLET BOXES	42" FLOOR TO RIM
JANITOR'S SINK FAUCET FITTINGS	42" FLOOR TO CENTERLINE
HOSE BIBBS	36" AFF TO CENTERLINE
NON FREEZE HYDRANT	18" AFG TO CENTERLINE

PIPING

—	DOMESTIC COLD WATER
—SCW	SOFTENED COLD WATER (SCW)
—	DOMESTIC HOT WATER
—	DOMESTIC HOT WATER RECIRC.
—140"	140" DOMESTIC HOT WATER (140")
T	TRAP PRIMER LINE (T)
S	SOIL PIPING - ABOVE FLOOR (S)
S	SOIL PIPING - BELOW FLOOR (S)
W	WASTE PIPING - ABOVE FLOOR (W)
W	WASTE PIPING - BELOW FLOOR (W)
GW	GREASE WASTE - ABOVE FLOOR (GW)
GW	GREASE WASTE - BELOW FLOOR (GW)
ST	STORM DRAIN - ABOVE FLOOR (ST)
ST	STORM DRAIN - BELOW FLOOR (ST)
OST	OVERFLOW STORM DRAIN - ABOVE FLOOR (OST)
AW	ACID WASTE - ABOVE FLOOR (AW)
AW	ACID WASTE - BELOW FLOOR (AW)
AV	ACID VENT (AV)
V	VENT PIPING (V)
VBG	VENT BELOW GRADE (VBG)
VBF	VENT BELOW FLOOR (VBF)
ID	INDIRECT DRAIN (ID)
CDH	CONDENSATE DRAIN - HIGH EFFICIENCY RTU (CDH)
CD	CONDENSATE DRAIN (CD)
ACD	AUXILIARY CONDENSATE DRAIN (ACD)
SPD	SUMP OR SEWAGE PUMP DISCHARGE (SPD)
CA	COMPRESSED AIR (CA)
G	NATURAL GAS (G)
G	NATURAL GAS ON ROOF (G)
MPG	MEDIUM PRESSURE NATURAL GAS (MPG)
MPG	MEDIUM PRESSURE NATURAL GAS ON ROOF (MPG)
FOS	FUEL OIL SUPPLY (FOS)
FOR	FUEL OIL RETURN (FOR)
FOV	FUEL OIL VENT (FOV)
AI	MEDICAL AIR INTAKE (AI)
MA	MEDICAL AIR (MA)
MV	MEDICAL VACUUM (MV)
VE	MEDICAL VACUUM EXHAUST (VE)
EV	EVAUATION (EV)
CO	CARBON DIOXIDE (CO)
N	NITROGEN (N)
O	OXYGEN (O)
NO	NITROUS OXIDE (NO)
NPW	NON POTABLE WATER (NPW)
LPG	LIQUIFIED PETROLEUM GAS (LPG)
WS	WATER SERVICE (WS)
FP	FIRE PROTECTION (FP)
HPS	HIGH PRESSURE STEAM SUPPLY (HPS)
HPC	HIGH PRESSURE STEAM CONDENSATE (HPC)
MPS	MEDIUM PRESSURE STEAM SUPPLY (MPS)
MPC	MEDIUM PRESSURE STEAM CONDENSATE (MPC)
LPS	LOW PRESSURE STEAM SUPPLY (LPS)
LPC	LOW PRESSURE STEAM CONDENSATE (LPC)
PD	CONDENSATE PUMP DISCHARGE (PD)
HWS	HEATING HOT WATER SUPPLY (HWS)
HWR	HEATING HOT WATER RETURN (HWR)
CWS	CHILLED WATER SUPPLY (CWS)
CWR	CHILLED WATER RETURN (CWR)
HCS	HOT/CHILLED WATER SUPPLY (HCS)
HCR	HOT/CHILLED WATER RETURN (HCR)
CS	DIRECTION OF FLOW
CS	CONDENSER WATER SUPPLY (CS)
CR	CONDENSER WATER RETURN (CR)
HS	HEAT PUMP SUPPLY (HS)
HR	HEAT PUMP RETURN (HR)
RL	REFRIGERANT LIQUID (RL)
RD	REFRIGERANT DISCHARGE (HOT GAS) (RD)
RS	REFRIGERANT SUCTION (RS)
RDB	REFRIGERANT DISCHARGE BYPASS (RDB)
RV	REFRIGERANT VENT (RV)
---	EXISTING PIPING TO BE REMOVED
---	EXISTING PIPING TO REMAIN

PLUMBING EQUIPMENT

	(WC-1) TANK TYPE WATER CLOSET & TYPE
	(WC-1) WALL MOUNTED FLUSH VALVE WATER CLOSET & TYPE
	(WC-1) FLOOR MOUNTED FLUSH VALVE WATER CLOSET & TYPE
	(UR-1) URINAL & TYPE
	(LAV-1) WALL MOUNTED LAVATORY & TYPE
	(LAV-1) COUNTER TOP LAVATORY & TYPE
	(S-1) SINK & TYPE
	(B-1) BATHTUB & TYPE
	(SH-1) SHOWER & TYPE
	(DF-1) DRINKING FOUNTAIN & TYPE
	(JS-1) JANITORS SINK & TYPE
	(SH-1) SHOWER HEADS & TYPE
	(SH-1) SHOWER ENCLOSURE & TYPE

ANNOTATION

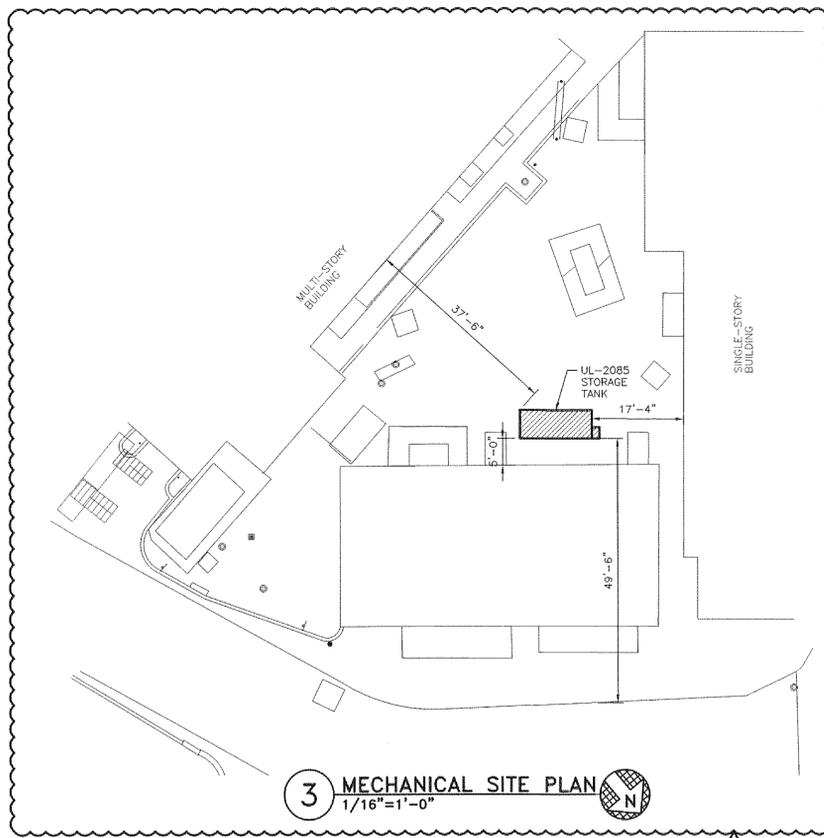
	MECHANICAL OR FIRE PROTECTION PLAN CALLOUT
	PLUMBING PLAN NOTE CALLOUT
	TECHNOLOGY PLAN CALLOUT
	PLUMBING EQUIPMENT DESIGNATION. (CONTRACTOR FURNISHED AND INSTALLED). REFER TO PLUMBING FIXTURE OR EQUIPMENT SCHEDULES
	EQUIPMENT DESIGNATION (OWNER FURNISHED, CONTRACTOR INSTALLED)
	MECHANICAL EQUIPMENT DESIGNATION (CONTRACTOR FURNISHED AND INSTALLED UNLESS NOTED OTHERWISE)
	CONNECTION POINT OF NEW WORK TO EXISTING
	DETAIL REFERENCE UPPER NUMBER INDICATES DETAIL NUMBER LOWER NUMBER INDICATES SHEET NUMBER
	SECTION CUT DESIGNATION

FIRE SPRINKLERS

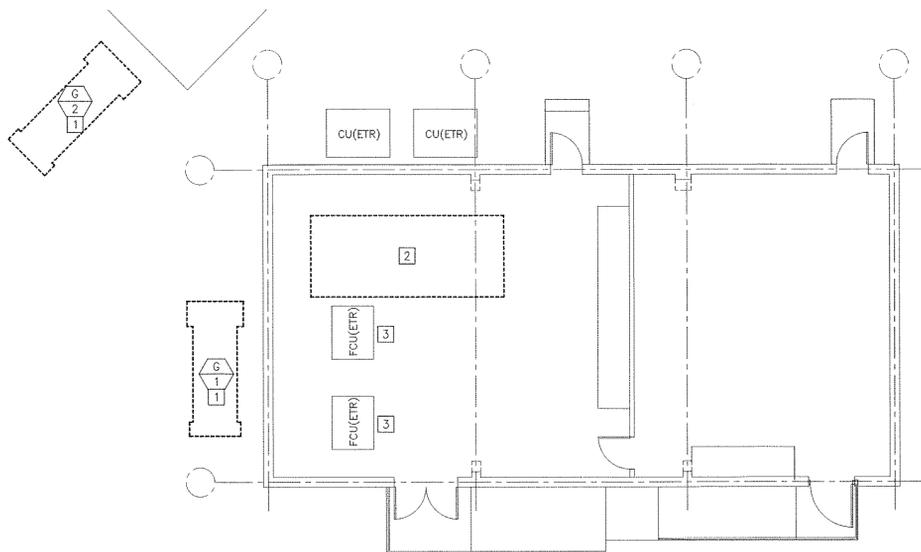
	UPRIGHT SPRINKLER
	PENDENT SPRINKLER
	CONCEALED SPRINKLER
	DRY PENDENT SPRINKLER
	DRY SIDEWALL SPRINKLER
	SIDEWALL SPRINKLER

ABBREVIATIONS

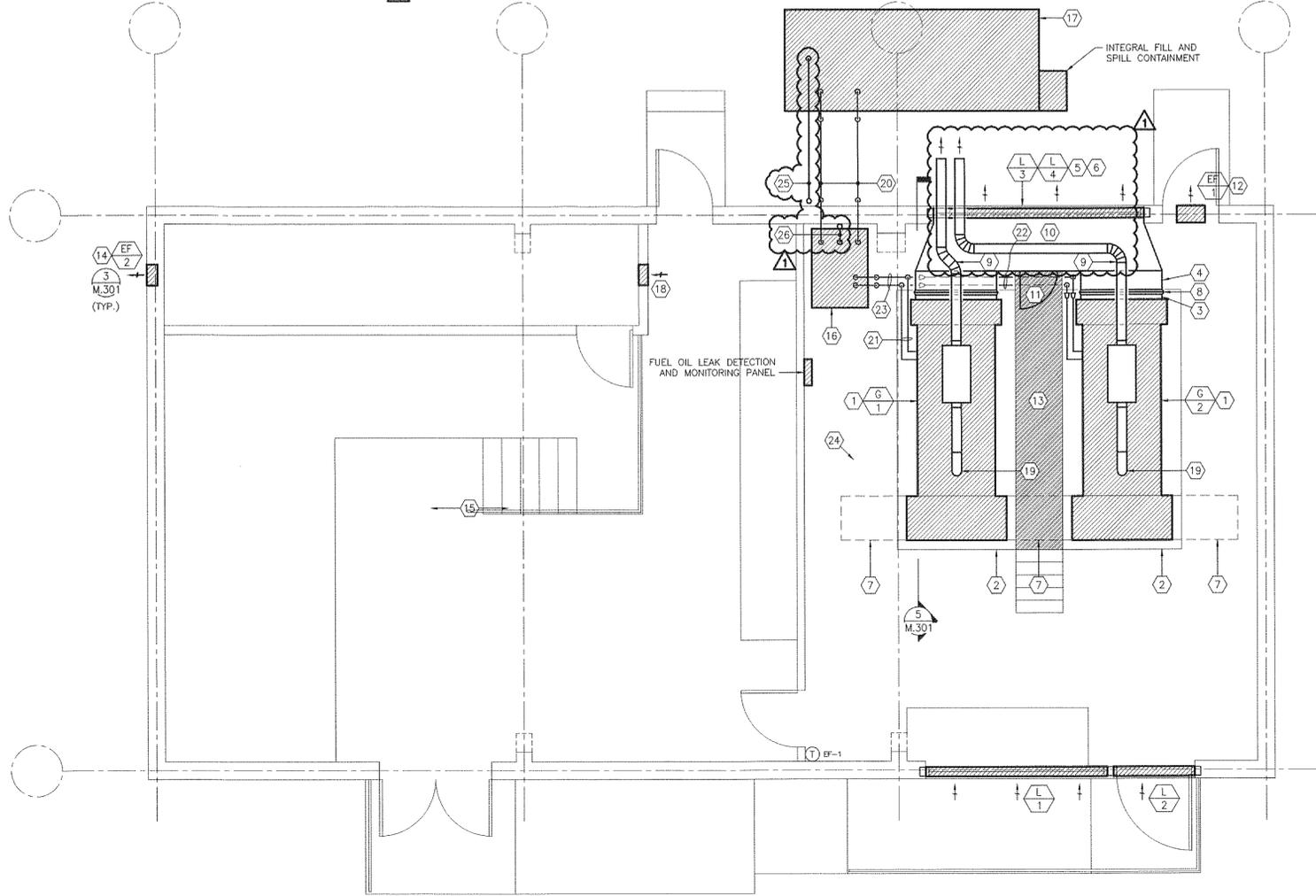
A	AMPERES
A/C	AIR (COMPRESSED)
A/C	AIR CONDITIONING
ACC	AIR COOLED CHILLER
ACCU	AIR COOLED CONDENSING UNIT
ADA	AMERICANS WITH DISABILITIES ACT
AF	AMPERE FUSE
AFD	ABOVE FINISHED CEILING
AFCI	ARC FAULT CIRCUIT INTERRUPTER
AFI	AREA FOR EVACUATION ASSISTANCE
AFI	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AHJ	AUTHORITY HAVING JURISDICTION
AHU	AIR HANDLING UNIT
AI	ANALOG INPUT
AIC	AMPERE INTERRUPTING CURRENT
AL	ALUMINUM
AO	ANALOG OUTPUT
AP	ACCESS PANEL
AP	ACCESS POINT
ATL	ACROSS-THE-LINE UNIT
ATS	AUTOMATIC TRANSFER SWITCH
AV	AUDIO VISUAL
AWG	AMERICAN WIRE GAUGE
B	BOILER
BAS	BUILDING AUTOMATION SYSTEM
BC	BACKBONE
BD	BACKDRAFT DAMPER
BD	BLOWDOWN
BD	BUILDING DISTRIBUTOR
BD	BUILDING DISTRIBUTION
BDF	BELOW FINISHED FLOOR
BFG	BELOW FINISHED GRADE
BFP	BOILER FEED PUMP
BI	BINARY INPUT
BKR	BREAKER
BO	BINARY OUTPUT
BOD	BOTTOM OF DUCT
BOP	BOTTOM OF PIPE
BOS	BOTTOM OF STRUCTURE
BTU	BRITISH THERMAL UNIT
BTU	1000 CIRCULAR MILS
KA	KIRK KEY
KV	KILOVOLT
KVA	KILOVOLT-AMPS
KVAR	KILOVOLT-AMPS REACTIVE
KW	KILOWATT
KWH	KILOWATT-HOUR
C	CONDUIT
CAT	CATEGORY
CAV	CABLE TELEVISION SYSTEM
CD	CARD/ELA
CD	CAMPUS DISTRIBUTOR
CT	CURRENT TRANSFORMER
CCTV	CLOSED CIRCUIT TELEVISION CHILLER
CFM	CUBIC FEET PER MINUTE
CKT	CIRCUIT
CMR	COMMUNICATIONS RISER
CABLE	COMMUNICATIONS RISER
CMR	COMMUNICATIONS RISER
CABLE	CONTROL POWER
CP	CONDENSATE PUMP
CPT	CONTROL POINT
TRANSFORMER	CPVC CHLORINATED POLYVINYL CHLORIDE
CRAC	COMPUTER ROOM AIR CONDITIONING UNIT
CRU	COMPUTER ROOM UNIT
CT	COOLING TOWER
CTP	COOLING TOWER PUMP
CU	COPPER
CU	CONDENSING UNIT
CVD	CUMULATIVE VOLTAGE DROP
CWP	CHILLED WATER PUMP
D	DECIBELS
DDC	DIRECT DIGITAL CONTROL
DFU	DRAINAGE FIXTURE UNIT
DI	DIGITAL INPUT
DI	DUCTILE IRON
DN	DOWN
DPDT	DOUBLE-POLE, DOUBLE-THROW
DPI	DIFFERENTIAL PRESSURE INDICATOR
DPST	DOUBLE-POLE, SINGLE-THROW
DS	DOWNSPOUT
DS	DIRECT SILENCER
DX	DUCT EXPANSION
E	EXISTING
EA	EXHAUST AIR
EAT	ENTERING AIR TEMPERATURE
EED	ENTERING DRY BULB TEMPERATURE
EER	ENERGY EFFICIENCY RATIO
EA	EXHAUST FAN
EI	ELECTRONIC INDUSTRIES ASSOCIATIONS
EL	ELECTRIFIED LOCK OR LATCH EMERGENCY
EM	ELECTROMAGNETIC INTERFERENCE
EMS	ENERGY MANAGEMENT SYSTEM
EMT	ELECTRICAL METALLIC TUBING
EPO	EMERGENCY POWER OFF EQUIPMENT ROOM
ESFR	EARLY SUPPRESSION FAST RESPONSE
ETR	EXISTING TO REMAIN
EWB	ENTERING WET BULB TEMPERATURE
EWC	ELECTRIC WATER COOLER
EWI	ENTERING WATER TEMPERATURE
F	FIRE ALARM CONTROL PANEL
FBO	FURNISHED BY OTHERS/OWNER
FCA	FAULT CURRENT AMPS
FD	FLOOR DRAIN
FFA	FROM FLOOR ABOVE
FFB	FROM FLOOR BELOW
FF	FINISHED FLOOR
FFC	FIRE HOSE CABINET
FL	FLOW LINE
FLA	FULL LOAD AMPS
FLR	FLOOR
FLR	FURNACE
FNRR	FULL-VOLTAGE, NON-REVERSING
G	GENERAL CONTRACTOR
GE	GROUNDING EQUALIZER
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GFR	GROUND FAULT RELAY
GR	GROUND
GND	GROUND
GPM	GALLONS PER MINUTE
GRS	GALVANIZED RIGID STEEL
GYP	GYPSON BOARD
H	HORIZONTAL
HC	CROSS-CONNECT
HD	HEAD
HD	HUB DRAIN
HOA	HAND-OFF-AUTOMATIC
HTG	HEATING
HTR	HEATER
HV	HEATING AND VENTILATING UNIT
HZ	HEATING WATER PUMP
HZ	HERTZ
I	INTERMEDIATE
IC	CROSS-CONNECT
IE	ISOLATED ELEVATION
IG	ISOLATED GROUND
IMC	INTERMEDIATE METAL CONDUIT
IN WC	INCHES OF WATER COLUMN
IP	INTERNET PROTOCOL
ISC	SHORT CIRCUIT CURRENT
ISDN	INTEGRATED SERVICES DIGITAL NETWORK
ISP	INTERNET SERVICE PROVIDER
ISP	INSIDE PLANT CABLE
J	JUNCTION
JB	JUNCTION BOX
J-BOX	JUNCTION BOX
K	1000 CIRCULAR MILS
KA	KIRK KEY
KV	KILOVOLT
KVA	KILOVOLT-AMPS
KVAR	KILOVOLT-AMPS REACTIVE
KW	KILOWATT
KWH	KILOWATT-HOUR
L	LOUVER
LAN	LOCAL AREA NETWORK
LAT	LEAVING AIR TEMPERATURE
LCC	LIMITED COMBUSTIBLE CABLE
LDB	LEAVING DRY BULB TEMPERATURE
LEC	LOCAL EXCHANGE CARRIER
LED	LIGHT-EMITTING DIODE
LF	LINEAR FEET
LP	LOW PRESSURE
LRA	LOCKED ROTOR AMPS
LWB	LEAVING WET BULB TEMPERATURE
LWT	LEAVING WATER TEMPERATURE
M	MULTIMODE
M-M	METROPOLITAN AREA NETWORK
MAV	MASTER ANTENNA TELEVISION SYSTEM
MAU	MAKE-UP AIR UNIT
MAX	MAXIMUM
MBH	1000 BTU PER HOUR
MC	MAIN CROSS-CONNECT
MCA	MINIMUM CIRCUIT AMPACITY
MCB	MAIN CIRCUIT BREAKER
MCC	MAIN CONTROL CENTER
MD	MOTORIZED DAMPER
MDP	MAIN DISTRIBUTION PANEL
MFR	MANUFACTURER
MG	MOTOR GENERATOR
MH	MAINTENANCE HOLE
MH	MANHOLE
MIN	MINIMUM
MLO	MAIN LUGS ONLY
MOCP	MAXIMUM OVERCURRENT PROTECTION
MPOE	MAIN POINT OF ENTRANCE
MPOP	MAIN POINT OF PRESENCE
MSB	MAIN SWITCHBOARD
MSWB	MAIN SWITCHBOARD
MS/TP	MASTER SLAVE/TOKEN PASSING - COMMUNICATION TRUNK
MTD	MOUNTED
MU	MAKE-UP
N	NOT APPLICABLE
N/A	NORMALLY CLOSED
N/C	NORMALLY OPEN
N/O	NORMALLY OPEN
NC	NOISE CRITERIA
NEC	NATIONAL ELECTRICAL CODE
NEF	NON-FUSED
NPPA	NATIONAL FIRE PROTECTION ASSOCIATION, INC.
NOT	NOT IN CONTRACT
NL	NIGHT LIGHT
NM	NANO METER
O	OUTSIDE AIR
OC	ON CENTER
ORB	OVERFLOW ROOF DRAIN OCCUPANCY SENSOR
OS	OCCUPANCY SAFETY AND HEALTH ADMINISTRATION
OSP	OUTSIDE PLANT
P	POLE
PBX	PRIVATE BRANCH EXCHANGE
POR	PUMPED CONDENSATE RETURN
P	PLUMBING DRAINAGE INSTITUTE
PDU	POWER DISTRIBUTION UNIT
PH	PHASE
PH	PHASE
PV	POST INDICATOR VALVE
PV	PANEL
PNLBD	PANELBOARD
POE	POWER OVER ETHERNET
POTS	STANDARD ANALOG TELEPHONE LINE
POTS	PLAIN OLD TELEPHONE SERVICE
PRV	PROVIDE FURNISH AND INSTALL
PRV	PRESSURE REDUCING VALVE
PSTN	PUBLIC SWITCHED TELEPHONE NETWORK
PT	POTENTIAL TRANSFORMER
PTP	POINT-TO-POINT
PVC	PAN, TLT, ZOOM
PVC	POLYVINYL CHLORIDE
QTY	QUANTITY
R	RETURN
RA	RETURN AIR
RC	REINFORCED CONCRETE PIPE
RCPT	RECEPTACLE
RD	ROOF DRAIN
RD	RETURN DUCT
REV	REVISION
RF	RETURN FAN
RH	RELATIVE HUMIDITY
RH	ROOF HOOD
RHG	REFRIGERANT HOT GAS
RLA	RUNNING LOAD AMPS
RMC	RIGID METAL CONDUIT
RP	REVOLUTIONS PER MINUTE
RTU	ROOFTOP UNIT
RU	RACK UNIT
S	SUPPLY
SA	SUPPLY AIR
SATV	SYNCHRONOUS OPTICAL NETWORK
SD	SMOKE DUCT DETECTOR
SD	SUPPLY DUCT
SEER	SEASONAL ENERGY EFFICIENCY RATIO
SF	SQUARE FEET
SF	SUPPLY FAN
SPDT	SINGLE-POLE, DOUBLE-THROW
SPST	SINGLE-POLE, SINGLE-THROW



3 MECHANICAL SITE PLAN
1/16"=1'-0"



1 MECHANICAL DEMOLITION PLAN
1/8"=1'-0"



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

MECHANICAL PLAN NOTES:

- 1 DISASSEMBLE WEATHER ENCLOSURE, DRAIN ALL FUEL FROM BLADDER TANK, AND BORE LARGE HOLES IN TANK TO PREVENT FUTURE STORAGE OF FUEL INSIDE BUILDING. RELOCATE GENERATOR TO LOCATION SHOWN IN 2/M.101.
- 2 REMOVE ABANDONED RTU AND PATCH ROOF. RE: ARCH.
- 3 EXISTING FCU TO REMAIN. RELOCATE AND EXTEND REFRIGERANT PIPING AS NECESSARY TO ACCOMMODATE NEW BATTERY ENCLOSURE.

CONTRACTOR TO COORDINATE SPECIFIC PHASING OF INSTALLATION TO PROVIDE AS LITTLE DOWNTIME AS POSSIBLE. PERFORM AS MUCH FRONT END INSTALLATION WORK AS POSSIBLE, THEN HAVE TEMPORARY GENERATOR PROVIDED BY GSD DELIVERED AND GET FULLY OPERATIONAL. DECOMMISSION FIRST GENERATOR AND RELOCATE PER PLANS. WITH TEMPORARY GENERATOR STILL IN OPERATION, DECOMMISSION SECOND GENERATOR AND RELOCATE. DISCONNECT AND RETURN TEMPORARY GENERATOR ONCE ALL FUNCTIONAL TESTING HAS BEEN PERFORMED ON PERMANENT INSTALLATION OF GENERATORS AND ALL APPURTENANCES.

MECHANICAL PLAN NOTES:

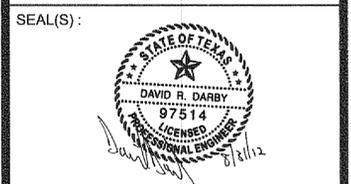
- 1 RELOCATE GENERATOR TO LOCATION SHOWN. BOTTOM OF GENERATOR TO BE 3'-6" AFF. RE: STRUCTURAL FOR SUPPORT AND ANCHORING DETAILS.
- 2 PROVIDE CONCRETE EQUIPMENT BASE 6" LARGER THAN GENERATOR FOOTPRINT. RE: STRUCTURAL FOR PAD DETAILS.
- 3 PROVIDE 3 INCH LONG DUCT TO MATCH HEAT EXCHANGER DISCHARGE DIMENSION (APPROXIMATELY 52x52). PROVIDE WITH FLANGE FOR CONNECTION TO HEAT EXCHANGER. TYPICAL FOR BOTH GENERATORS.
- 4 GALVANIZED DUCT TO DISCHARGE PLENUM. APPROXIMATE SIZE IS 52x46. TYPICAL FOR BOTH GENERATORS.
- 5 DISCHARGE LOUVER AND BIRD SCREEN. BOTTOM OF L-3 AT 3'-0" AFF. BOTTOM OF L-4 AT 9'-2" AFF.
- 6 MAINTAIN 25 FEET SEPARATION BETWEEN DISCHARGE AND NEAREST OUTSIDE AIR INTAKE. REPORT ANY DISCREPANCY TO ENGINEER.
- 7 MAINTAIN 42 INCHES CLEAR (PER NEC).
- 8 PROVIDE FLEXIBLE CONNECTION RATED FOR 250° F. TYPICAL FOR BOTH GENERATORS.
- 9 BLACK-IRON EXHAUST PIPE THROUGH WALL. PROVIDE INSULATION ON EXHAUST PIPE AND PROVIDE DRAIN AT LOW POINT. SUPPORTS FROM STRUCTURE ABOVE ROOF. DISCHARGE TO BE 10' MINIMUM ABOVE GRADE AND 10' MINIMUM FROM BUILDING OPENINGS.
- 10 PROVIDE HIGH TEMPERATURE GALVANIZED SHEET METAL PLENUM ENCOMPASSING BOTH DISCHARGE LOUVERS AND SEAL AIRTIGHT. SLOPE BOTTOM OF PLENUM DOWN TOWARDS BOTTOM OF LOWER LOUVER. PROVIDE SHEET METAL CAP FOR INTERMEDIATE SECTION OF WALL ON INTERIOR OF PLENUM.
- 11 PROVIDE 30" HINGED ACCESS DOOR IN PLENUM WITH DOUBLE LATCH CLOSURE ASSEMBLY.
- 12 MOUNT BOTTOM OF SIDEWALL PROPELLER FAN AT 13'-6" AFF. FAN TO BE ENERGIZED UPON SPACE TEMPERATURE REACHING 95 DEGREES. PROVIDE CONTROL RELAY TO DISABLE FAN UPON EITHER GENERATOR'S START SEQUENCE BEING ENABLED.
- 13 SUPPORT STEEL SERVICE PLATFORM FROM GENERATOR STRUCTURE. PROVIDE STAIRS AND HANDRAILS PER CODE. RE: STRUCTURAL AND ARCHITECTURAL PLANS FOR DETAILS.
- 14 MOUNT BOTTOM OF SIDEWALL PROPELLER FAN AT 14'-4" AFF. FAN TO RUN CONTINUOUSLY. PROVIDE AUDIBLE AND VISUAL ALARM UPON FAN FAILURE.
- 15 EXISTING HVAC UNITS TO REMAIN IN OPERATION IN UPS ROOM. ENSURE ALL UNITS ARE OPERATING CORRECTLY AND CLEAN OF ANY CONSTRUCTION DEBRIS.
- 16 PROVIDE 200 GALLON DAY TANK WITH DUPLEX PUMPS AND ASSOCIATED ACCESSORIES. TOTAL PUMPING CAPACITY REQUIRED IS 10 GPM AT FULL LOAD. PROVIDE A 7 GPM PRIMARY PUMP AND A 4 GPM SECONDARY PUMP, BOTH WITH HIGH LIFT GEAR AND 480/3 PHASE MOTOR. COORDINATE HP REQUIREMENTS WITH ELEC PRIOR TO INSTALLATION. BASIS OF DESIGN: E&CA MODEL DT200LD, OR EQUIVALENT MEETING ALL AHJ REQUIREMENTS. ANCHOR TO HOUSEKEEPING PAD WITH UPLIFT PROTECTION. RE: STRUCTURAL FOR PAD AND DETAILS. RE: 5/M.302 FOR ALL ACCESSORIES AND PIPING SCHEMATIC.
- 17 PROVIDE 2,000 GALLON UL-2085 RATED DIESEL STORAGE TANK WITH ALL ACCESSORIES SPECIFIED. BASIS OF DESIGN IS GENERAL INDUSTRIES, 2,000 GALLON THERMALLY INSULATED RECTANGULAR (FIREGUARD) STORAGE TANK. ANCHOR TO HOUSEKEEPING PAD WITH UPLIFT PROTECTION. RE: STRUCTURAL. MAINTAIN MINIMUM 25' SEPARATION FROM ADJACENT MULTI-STORY BUILDING AND 5' MINIMUM FROM SINGLE STORY STRUCTURES MADE OF NON-COMBUSTIBLE MATERIALS. RE: 1 & 2 M.302 FOR ALL ACCESSORIES AND PIPING SCHEMATIC.
- 18 PROVIDE 12x12 FIRE DAMPER 1'-0" AFF OF BATTERY ROOM. RE: 4/M.301.
- 19 RECONNECT EXHAUST MANIFOLD AND DUAL FLEXIBLE CONNECTOR TO GEN SET.
- 20 2" TRANSFER SUPPLY AND RETURN PIPE FROM STORAGE TANK TO DAY TANK. SLOPE PIPE DOWN TOWARDS STORAGE TANK. PROVIDE TRANSITIONS TO TANK CONNECTIONS AS REQUIRED. RE: SHEET M.302 FOR SCHEMATICS AND ACCESSORIES. RE: 3/M.302 FOR SUPPORT DETAIL.
- 21 ROUTE 3/4" FUEL OIL SUPPLY AND RETURN LINES ABOVE GENERATOR STRUCTURE. TYPICAL BOTH GENERATORS. RE: SHEET M.302 FOR SCHEMATICS AND ACCESSORIES.
- 22 ROUTE 1" FUEL OIL SUPPLY AND RETURN LINES BENEATH RADIATOR DISCHARGE PLENUMS.
- 23 1-1/4" FUEL OIL SUPPLY AND RETURN AIR LINES.
- 24 REMOVE FLOOR DRAIN BODY AND CAP PIPE WITH LIQUID TYPE CONSTRUCTION. PATCH SLAB TO LEAVE SMOOTH AND LEVEL SURFACE. TYPICAL ALL EXISTING FLOOR DRAINS IN GENERATOR ROOM.
- 25 ROUTE VENT OVER TO WALL AND UP TO MINIMUM OF 12' ABOVE GRADE.
- 26 ROUTE VENT UP THRU ROOF AND TERMINATE MINIMUM OF 12' ABOVE GRADE.

ISSUE LOG		
NO.	DATE	DESCRIPTION
1	04.13.2012	BID AND PERMIT
2	08.31.2012	CITY COM./BID ADD.

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PROJECT NAME:
City of Houston
Emergency Generator Relocation
62 Riesner
Houston, TX 77002



REVIEWED:

PROGRAM MANAGER _____ SPONSORING DEPARTMENT _____

PROJECT MANAGER _____

DATE: _____

G.F.S. No: _____

SCALE: NONE

DRAWN BY: RS

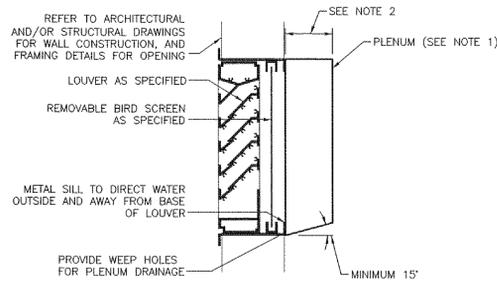
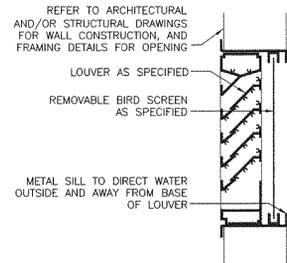
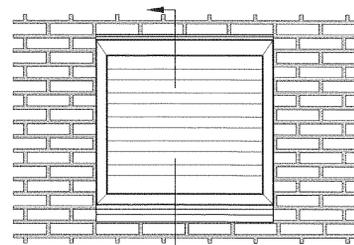
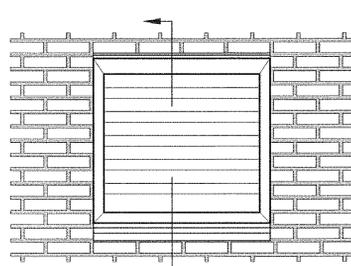
CHECKED BY: DD

SHEET TITLE:
MECHANICAL FLOOR PLANS

SHEET NO.:
M.101

CITY DWG. NO.:





NOTES:
 1. SEAL ALL JOINTS AND SEAMS OF PLENUM TO PROVIDE WATER TIGHT CONSTRUCTION.
 2. MINIMUM DEPTH OF PLENUM SHALL BE 30".

1 INTAKE LOUVER INSTALLATION DETAIL
NO SCALE

2 EXHAUST LOUVER INSTALLATION DETAIL
NO SCALE

FAN SCHEDULE

MARK	SERVICE (EA, RA, SA)	MANUFACTURER	MOUNTING	MODEL	CFM	ESP (IN)	DRIVE (BELT/DIRECT)	MIN. HP	FAN RPM	VFD (Y/N)	ELECTRICAL			NOTES
											V/PH	DISC. TYPE	STARTER TYPE	
EF-1	EA	GREENHECK	SIDEWALL	SE1-12-432-D	700	0.4	DIRECT	1/7	1,550	N	115/60	NF	ATL	A, B
EF-2	EA	GREENHECK	SIDEWALL	SE1-8-440-G	150	0.2	DIRECT	1/50	1,350	N	115/60	NF	ATL	A

MODEL NUMBERS SHALL NOT BE CONSIDERED COMPLETE AND MATERIAL SHALL NOT BE ORDERED BY MANUFACTURER AND MODEL NUMBERS ONLY. REVIEW THE COMPLETE DESCRIPTION, NOTES AND SPECIFICATIONS TO DETERMINE THE EXACT MATERIAL AND ACCESSORIES TO BE ORDERED. THE MANUFACTURERS LISTED ARE THE BASIS FOR THE DESIGN.

NOTES:
 A. DIVISION 16 CONTRACTOR TO FURNISH DISCONNECT SWITCH.
 B. PROVIDE MANUFACTURERS ROOM MOUNTED ADJUSTABLE DIAL THERMOSTAT.

EMERGENCY GENERATOR SCHEDULE (EXISTING TO BE RELOCATED)

MARK	MANUFACTURER	MODEL	FUEL SYSTEM				RADIATOR SYSTEM			COMBUSTION AIR (CFM)	NOTES		
			SUPPLY LINE (IN.)	RETURN LINE (IN.)	MAX. LIFT (FT.)	FUEL FLOW (GPH)	FUEL CONSUMPTION AT 100% LOAD (GPH)	FUEL TYPE	COOLING AIR (CFM)			TSP (IN. W.C.)	FAN (HP)
G-1	DETROIT DIESEL/MTU	600DS-4, 60 HZ	0.75	0.75	6.8	280	44.8	#2 DIESEL	28,200	0.5	42	2,140	A, B, C
G-2	DETROIT DIESEL/MTU	600DS-4, 60 HZ	0.75	0.75	6.8	280	44.8	#2 DIESEL	28,200	0.5	42	2,140	A, B, C

NOTES:
 A. GENERATOR IS EXISTING TO BE RELOCATED. OBTAIN O&M MANUAL FROM OWNER FOR MANUFACTURER'S RECOMMENDED INSTALLATION INSTRUCTIONS.
 B. GENERATOR IS UL 2200 LISTED, COMPLIES WITH ISO 8528-5, AND IS EPA CERTIFIED.
 C. EXISTING 13' (L) x 5' (W) x 4' (T) BELLY TANK TO BE DRILLED OUT PER PLAN NOTES SO THAT NO FUEL CAN BE STORED WITHIN THE BUILDING.

LOUVER SCHEDULE

MARK	SERVICE	MANUFACTURER	MODEL	SIZE (W" x H")	CFM	MIN. FREE AREA (SF)	MAX. VEL. (FPM)	MAX. P.D. (IN. W.C.)	NOTES
L-1	INTAKE	GREENHECK	EHH-601	116" x 154"	50,980	64.6	850	0.15	A - C
L-2	INTAKE	GREENHECK	EHH-601	52" x 66"	9,700	11.6	850	0.15	A - C
L-3	EXHAUST	GREENHECK	FSJ-602	134" x 52"	32,980	22.6	1,380	0.3	A - C
L-4	EXHAUST	GREENHECK	FSJ-602	134" x 46"	27,700	19.3	1,380	0.3	A - C

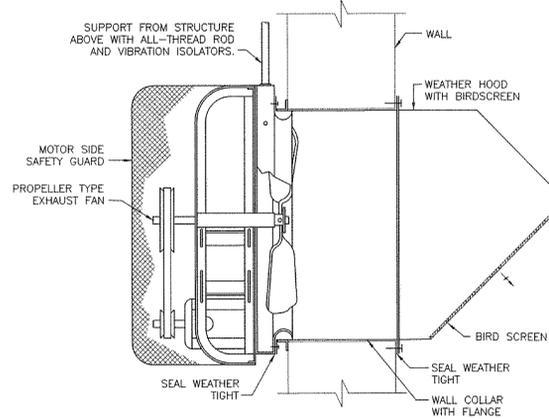
MODEL NUMBERS SHALL NOT BE CONSIDERED COMPLETE AND MATERIAL SHALL NOT BE ORDERED BY MANUFACTURER AND MODEL NUMBERS ONLY. REVIEW THE COMPLETE DESCRIPTION, NOTES AND SPECIFICATIONS TO DETERMINE THE EXACT MATERIAL AND ACCESSORIES TO BE ORDERED. THE MANUFACTURERS LISTED ARE THE BASIS FOR THE DESIGN.

NOTES:
 A. PROVIDE 1/2" ALUMINUM BIRD SCREEN.
 B. PROVIDE ANODIZED FINISH. COLOR AS SELECTED BY ARCHITECT.
 C. FRAME TYPE SHALL MATCH WALL CONSTRUCTION, COORDINATE WITH ARCHITECT.

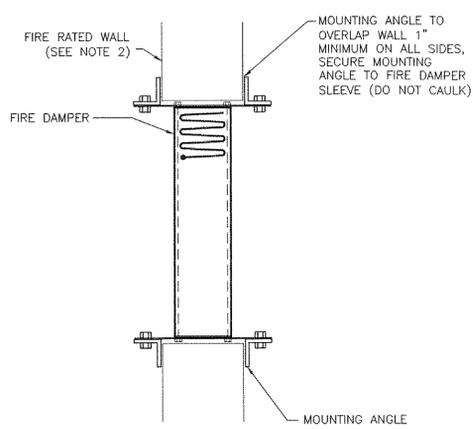
FUEL STORAGE ALLOWED

MATERIAL	CLASS	LIQUID GALLONS (ALLOWED)	APPLICABLE MULTIPLIERS	TOTAL GALLONS (ALLOWED)	LIQUID GALLONS (STORED)	H GROUP REQUIRED (Y/N)	NOTES
COMBUSTIBLE LIQUID	II	120	100%	240	200	N	A, B

A. VALUES TAKEN FROM TABLE 307.1(1) OF THE 2006 IBC.
 B. NOTE E OF TABLE DICTATES A MAXIMUM ALLOWABLE STORAGE QUANTITY SHALL BE INCREASED 100 PERCENT WHEN STORED IN APPROVED STORAGE CABINETS.

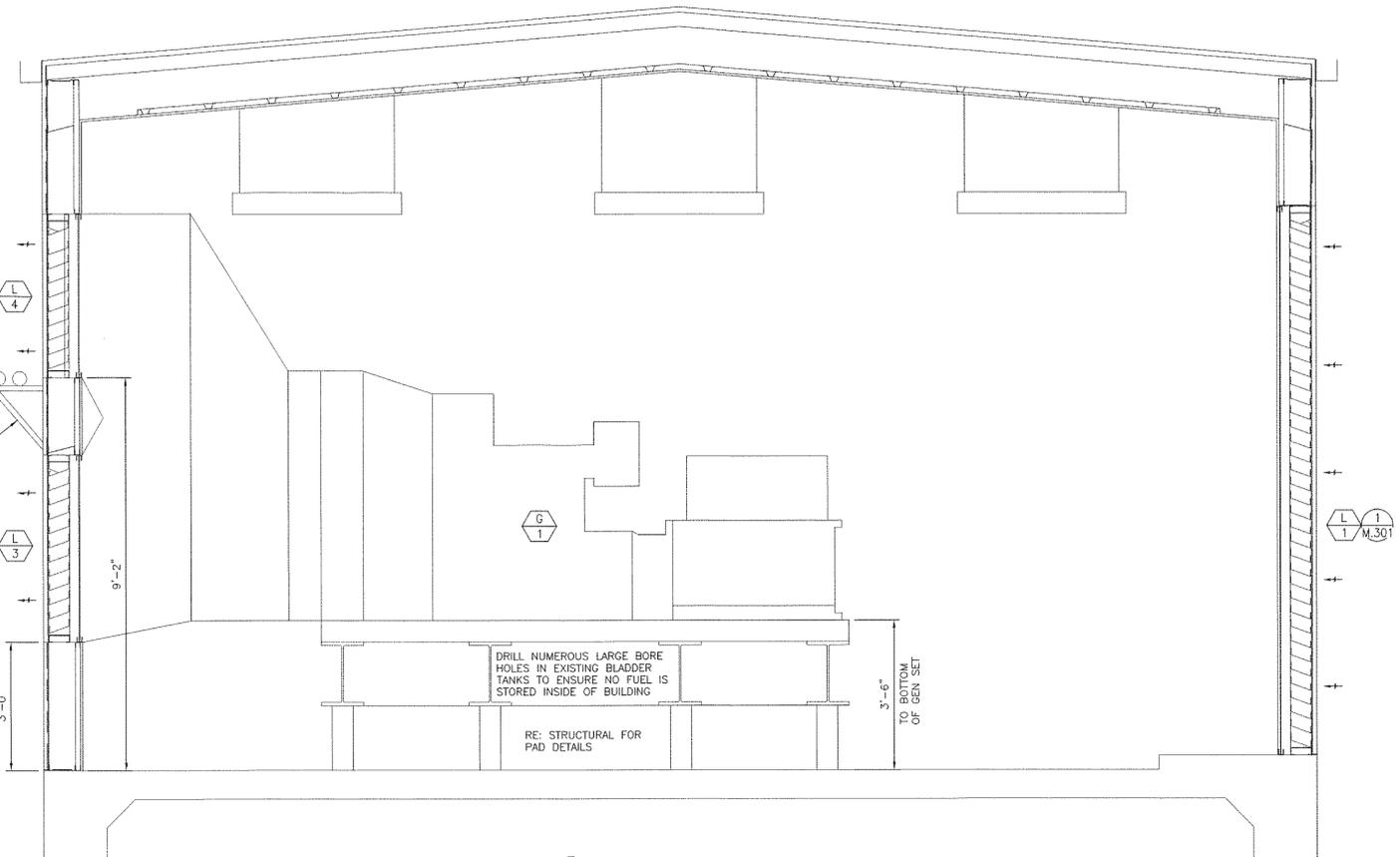


3 SIDE WALL PROPELLER EXHAUST FAN WITH WEATHER PROOF HOOD DETAIL
NO SCALE



NOTES:
 1. INSTALL FIRE DAMPER PER MANUFACTURER'S RECOMMENDATION AND NFPA STANDARDS.
 2. MAKE WALL OPENING 1/8" PER FOOT LARGER THAN DAMPER DIMENSIONS WITH 1/4" MINIMUM REQUIRED, MAXIMUM 1".

4 CURTAIN TYPE RECTANGULAR FIRE DAMPER DETAIL
NO SCALE



5 SECTION THRU GENERATOR ROOM
1/2"=1'-0"

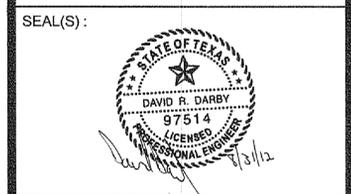
ISSUE LOG

NO.	DATE	DESCRIPTION
1	04.13.2012	BID AND PERMIT
2	08.31.2012	CITY COM./BID ADD.

CONSULTANT(S):
 MEP Henderson Engineers Inc.
 3535 Briarpark Dr, Suite 200
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 Contact: David Darby, PE

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 4617 Montrose Blvd, Suite C230
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 V: 713.524.5858
 F: 713.524.5868
 B/A Project #: 11172
 Contact: Greg Ryden, AIA

Structural CJG Engineers
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 V: 713.780.3345
 Contact: Hunter Kornegay, PE



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 Houston, TX 77002



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 SCALE: NONE
 DRAWN BY: RS
 CHECKED BY: DD

SHEET TITLE:
MECHANICAL SCHEDULES & DETAILS

SHEET NO.:
M.301

CITY DWG. NO.:

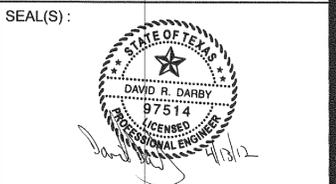


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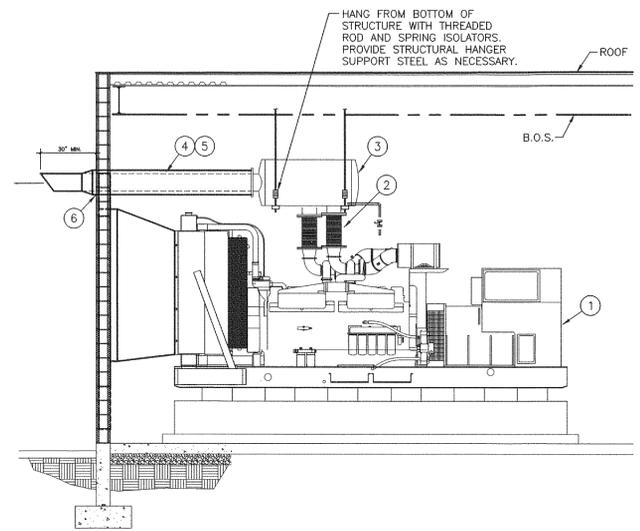
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 G.F.S. No: _____
 SCALE: NONE
 DRAWN BY: RS
 CHECKED BY: DD

SHEET TITLE:
MECHANICAL DETAILS

SHEET NO.:
M.302

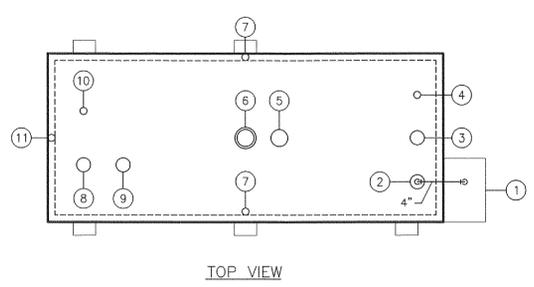
CITY DWG. NO.:

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 www.hei-eng.com
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 EXPIRES 09/30/12



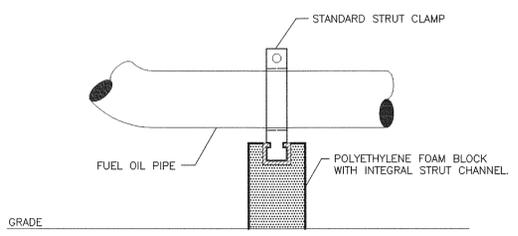
- KEY NOTES:**
- EXISTING GENERATOR SET AND SILENCERS TO BE RELOCATED. COORDINATE ADDITIONAL PIPING REQUIRED TO PIPE THRU WALL WITH EXISTING PIPE SIZE. COORDINATE INSTALLATION OF PIPING AND SILENCERS WITH OWNER, AND LOCAL CODES AND ORDINANCES.
 - EXISTING STAINLESS STEEL FLEXIBLE CONNECTION TO BE RELOCATED. FLEXIBLE CONNECTION IS FOR EXPANSION/COMPENSATION/VIBRATION ISOLATION AND SHALL NOT BE USED FOR PIPING MISALIGNMENT COMPENSATION. FLEXIBLE CONNECTION, MANIFOLDS, AND TURBOCHARGER HOUSINGS SHALL NOT BE INSULATED.
 - EXISTING EXHAUST SILENCER TO BE RELOCATED. SUSPEND SILENCER, SO THAT BOTTOM BOTTOM OF DISCHARGE PIPE IS AT 13'-10" ABOVE FINISHED FLOOR, WITH THREADED ROD AND SPRING ISOLATORS. INSULATE SILENCERS WITH CALCIUM SILICATE INSULATION AND ALUMINUM JACKET PER SPECIFICATION.
 - PROVIDE SCHEDULE 40 BLACK IRON PIPE, SIZE TO MATCH SILENCER CONNECTION, TO TERMINATION POINT. PROVIDE BIRD SCREEN AT OUTLET. INSULATE PIPING WITH CALCIUM SILICATE INSULATION PER SPECIFICATION.
 - SLOPE EXHAUST PIPING A MINIMUM OF 1/8" PER LINEAL FOOT WITH THE HIGH POINT AT EXTERIOR DISCHARGE BACK TOWARDS SILENCER AND CONDENSATE DRAIN CONNECTION.
 - EXTERIOR EXHAUST PIPING SHALL HAVE STAINLESS STEEL JACKETING AND FLASHING PER SPECIFICATIONS.

4 GENERATOR EXHAUST DETAIL
 SCALE: 1/8"=1'-0"

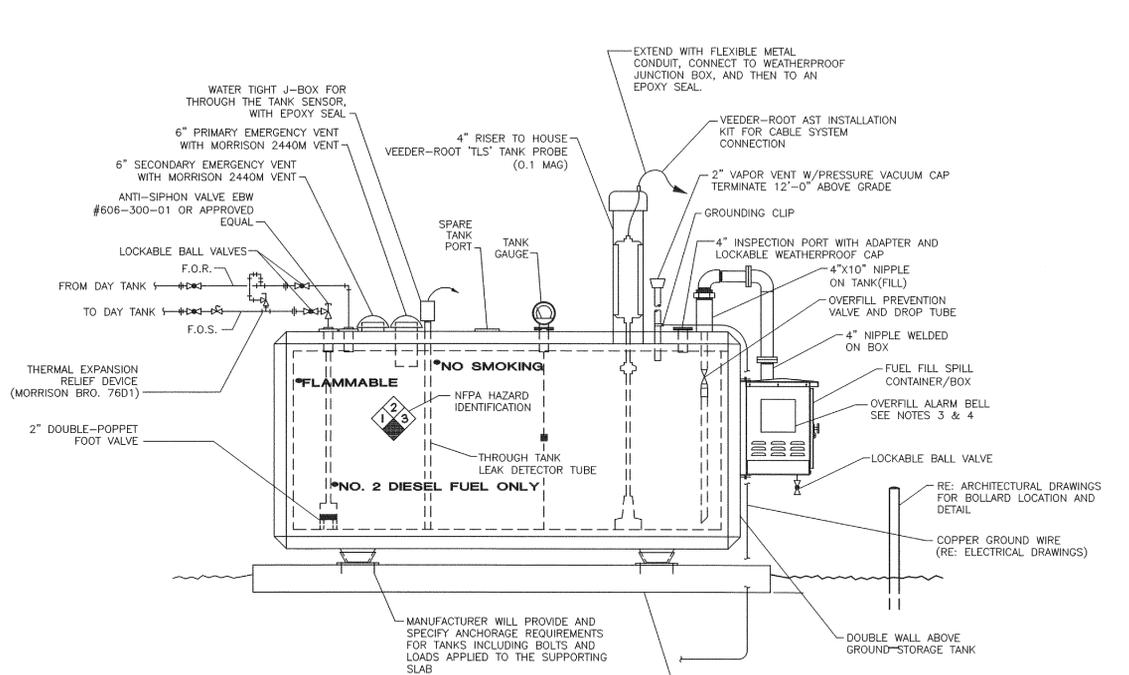


- KEY NOTES:**
- FILL SPILL CONTAINER/BOX
 - 4" FILL CONNECTION
 - 4" MECHANICAL GAUGE
 - 2" MANUAL GAUGE (STICK)
 - 6" PRIMARY EMERGENCY VENT WITH MORRISON 2440M VENT
 - 6" SECONDARY EMERGENCY VENT WITH MORRISON 2440M VENT
 - 2" LIGHT WEIGHT CONCRETE FILL PORT
 - 4" SUPPLY
 - 4" RETURN
 - 2" NORMAL VENT
 - 2" INTERSTITIAL MONITOR/LEAK DETECTOR TUBE

2 ABOVE GROUND STORAGE TANK PIPING CONNECTION DETAIL
 NOT TO SCALE



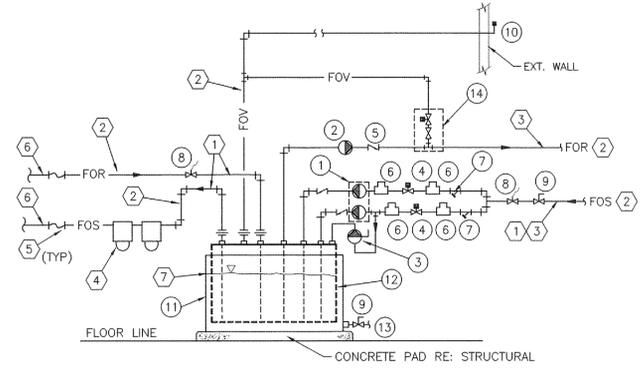
3 ERICO PIPE PIER SUPPORT SYSTEM
 NO SCALE



- NOTES:**
- PROVIDE SIGNAGE ON FUEL TANK INDICATING WARNINGS
 - CONTRACTOR SHALL COORDINATE EXACT NUMBER AND SIZE OF OPENINGS TO PROVIDE SPECIFIED CONNECTIONS AND SPARE OPENINGS.
 - OVERFILL ALARM BELL SHALL SOUND WHEN FUEL LEVEL REACHES 90%.
 - OVERFILL PREVENTION VALVE SHALL CLOSE AUTOMATICALLY WHEN FUEL LEVEL REACHES 95%.

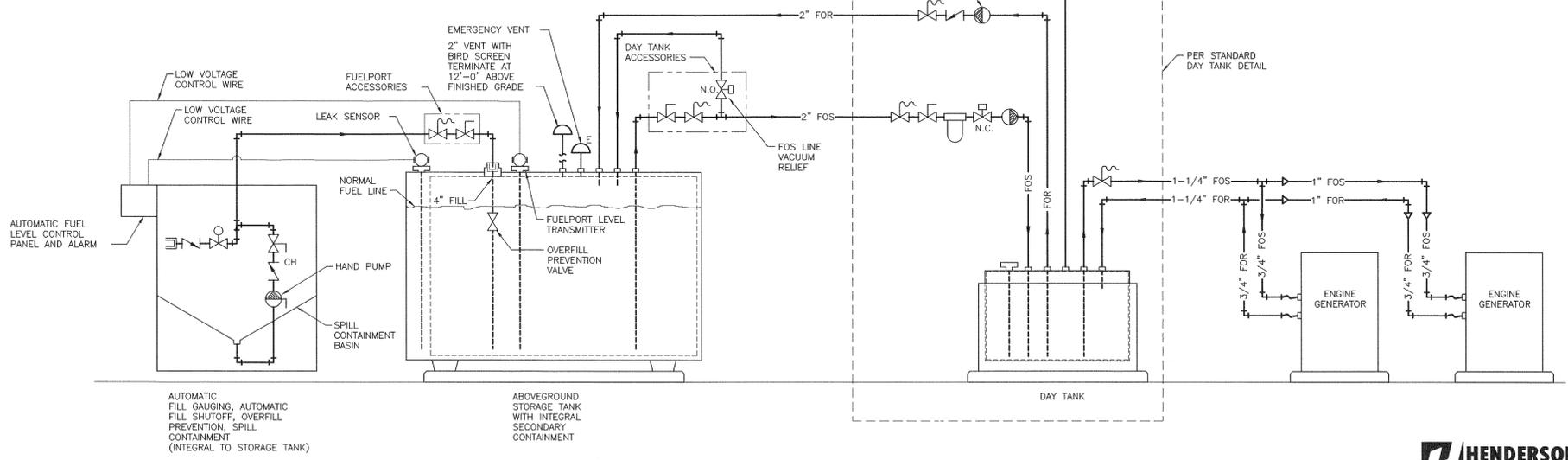
1 ABOVE GROUND FUEL OIL STORAGE TANK
 NO SCALE

SYMBOLS LEDGEND	
	HAND SHUT-OFF VALVE, BRONZE, 600 PSI
	HAND SHUT-OFF VALVE, CARBON STEEL, FIRE RATED
	ELECTRICALLY OPERATED SHUT-OFF VALVE
	SOLENOID VALVE (N.O. OR N.C.)
	AUTOMATIC CLOSURE, FUSIBLE LEAK, FIRE RATED VALVE
	CHECK VALVE
	QUICK DISCONNECT COUPLING
	PUMP, MOTOR DRIVEN
	PUMP, HAND OPERATED
	STRAINER
	EMERGENCY VENT
	VENT



- KEY NOTES:**
- SLOPE FILL, SUPPLY, AND RETURN PIPES BACK TOWARDS DAY TANK
 - PROVIDED AND INSTALLED BY MECHANICAL CONTRACTOR
 - FUEL LINE TO/FROM FUEL STORAGE TANK
 - FUEL FILTERS BY MECHANICAL CONTRACTOR
 - FLEXIBLE FUEL LINE CONNECTION AT GENERATOR BY MECHANICAL CONTRACTOR
 - FUEL LINES TO GENERATOR, SIZE PER MANUFACTURER RECOMMENDATIONS
 - NORMAL FUEL LEVEL SHALL BE BELOW FUEL INJECTOR PORTS
- COMPONENTS PROVIDED WITH DAY TANK:**
- DUPLEX FILL PUMP (AC)
 - OVERFLOW - RETURN PUMP (DC)
 - AUXILIARY HAND PUMP
 - NORMALLY CLOSED SOLENOID VALVE
 - CHECK VALVE
 - PRIMING TEE
 - FUEL STRAINER (100 MESH)
 - AUTOMATIC CLOSING FUSIBLE LINK 165' F FIRE RATED VALVE
 - BRONZE, MANUAL SHUT OFF VALVE
 - VENT CAP
 - DAY TANK
 - RUPTURE BASIN
 - RUPTURE BASIN DRAIN
 - SIPHON BREAK SOLENOID VALVE

5 DIESEL DAY TANK FUEL OIL PIPING
 NOT TO SCALE



6 TYPICAL ABOVE GROUND TANK DETAIL
 NO SCALE