05 - ELECTRICAL
INDEX OF DRAWINGS

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THE DESIGN APPEARS TO CONFORM TO APPLICABLE CRITERIA. APPROVAL IS NOT TO BE CONSTRUED TO MEAN THAT ALL ASPECTS OF THE DESIGN HAVE BEEN PERSONALLY CHECKED BY THE UNDERSIGNED.

Digitally signed by Adam Fox, P.E.
DN: E=adam.fox@ct.gov, CN="Adam Fox, P.E.", OU=Department of Transportation, OU=Transportation Principal Engineer, OU=Facilities Design, O=State of Connecticut, L=Newington, S=Connecticut, SERIALNUMBER=MAS202307138880408, C=US
Date: 2024.10.02 11:56:44-04'00'

TRANSPORTATION PRINCIPAL ENGINEER

REV.	DATE	REVISION DESCRIPTION

DESIGNER/DRAFTER: JC CHECKED BY: MPW

SIGNATURE/ BLOCK:

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

PROJECT NUMBER: 0173-0541
PROJECT DESCRIPTION: MAINTENANCE FACILITY TANK REPLACEMENT
TOWN(S): MILFORD
DRAWING TITLE: INDEX OF DRAWINGS

DRAWING NO. E-001
SHEET NO. 05.01

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PLOTTED DATE: 10/2/2024

POWER SYMBOLS

X00 AF / X00 AT	MOLDED CASE CIRCUIT BREAKER X00A FRAME RATING AS INDICATED ON PLANS/PANEL SCHEDULES X00A TRIP RATING AS INDICATED ON PLANS/PANEL SCHEDULES
	GROUND ROD
	120/240V POWER PANEL
A	DISCONNECT SWITCH, AMPERE RATING AS INDICATED
F A	FUSED DISCONNECT SWITCH, AMPERE RATING AS INDICATED NOTE: FUSING SHALL BE SIZED PER NEC
	UNDERGROUND CONDUIT
	INTERIOR CONDUIT

ABBREVIATIONS

A	AMPERE
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AIC	AMPS INTERRUPTING CAPACITY
AWG	AMERICAN WIRING GAUGE
AST	ABOVEGROUND STORAGE TANK
BLDG	BUILDING
CB	CIRCUIT BREAKER
C.	CONDUIT
CKT.	CIRCUIT
COMM.	COMMUNICATIONS
CU	COPPER
DISC.	DISCONNECT
DWG	DRAWING
ELEC.	ELECTRICAL
EUH	ELECTRICAL UNIT HEATER
EMT	ELECTRICAL METALLIC TUBING
FL	FLOOR
GEN	GENERATOR
GFI	GROUND-FAULT INTERRUPTER
G, GND.	GROUND
JB	JUNCTION BOX
MDP	MAIN DISTRIBUTION PANEL
PB	PUSH BUTTON
PVC	POLYVINYL CHLORIDE CONDUIT
PNL	PANEL
RM	ROOM
REC	RECEPTACLE
RGSC	RIGID GALVANIZED STEEL CONDUIT
SW	SWITCH
SWN	SWITCH NEUTRAL
TYP.	TYPICAL
UST	UNDERGROUND STORAGE TANK
V	VOLT
P	POLE
W	WATT
WP	WEATHERPROOF
TMS	TANK MONITORING SYSTEM
FMU	FUEL MANAGEMENT UNIT
OWS	OIL-WATER SEPARATOR

GENERAL ELECTRICAL NOTES:

1. THE CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL EXISTING UNDERGROUND UTILITIES. THE CONTRACTOR IS RESPONSIBLE FOR CONTACTING "CALL BEFORE YOU DIG" BEFORE ANY EXCAVATION WORK TAKES PLACE. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL NECESSARY EQUIPMENT AND MATERIAL NEEDED TO IDENTIFY UNDERGROUND UTILITIES THROUGH NON-DESTRUCTIVE METHODS.
2. ALL UNDERGROUND CONDUIT SHALL BE INSTALLED AWAY FROM OTHER UTILITIES. THE CONTRACTOR SHALL COORDINATE WITH ALL OTHER UTILITIES TO ESTABLISH CLEARANCE REQUIREMENTS.
3. THE CONTRACTOR SHALL COORDINATE ANY INTERRUPTIONS IN SERVICE WITH THE ENGINEER.
4. INSTALLER SHALL COORDINATE ALL WORK WITH OTHER DIVISION TRADES. LOCATE FIXTURES, DEVICES, ETC, IN ORDER TO AVOID INTERFERENCE.
5. ALL CONDUCTORS SHALL BE IN 3/4" CONDUIT MINIMUM UNLESS OTHERWISE NOTED. MINIMUM CONDUCTOR SIZE FOR ALL POWER CIRCUITS SHALL BE #12 AWG. BRANCH CIRCUITS EXCEEDING 150 FEET IN LENGTH SHALL BE #10 AWG MINIMUM TO REFLECT VOLTAGE DROP. WIRING SIZE SHALL BE ADJUSTED AS NECESSARY TO REFLECT AMPACITY DERATING DUE TO NUMBER OF LOADED CONDUCTORS SHARING A PARTICULAR RACEWAY.
6. INTERRUPTING CAPACITY OF ELECTRICAL EQUIPMENT SHALL BE EQUAL TO OR GREATER THAN THE AVAILABLE SHORT-CIRCUIT CURRENT AT ITS SUPPLY TERMINAL.
7. ALL FEEDER AND BRANCH CIRCUITS SHALL HAVE AN EQUIPMENT GROUND CONDUCTOR INCLUDED WITH PHASE WIRING.
8. ALL 120V CIRCUITS SHALL HAVE SEPARATE NEUTRAL CONDUCTOR FROM ELECTRICAL PANELS.
9. AN EXPLOSION PROOF FITTING IS REQUIRED AT EACH END OF ANY CONDUIT ENTERING OR LEAVING A CLASS I OR II ZONE. FITTINGS SHALL BE WITHIN 18" OF WIRING DEVICES AND BEFORE ENTERING THE BUILDING.
10. THE CONTRACTOR SHALL INSTALL FIRESTOP AROUND ALL ELECTRICAL CONDUIT PENETRATIONS THROUGH FIRE RATED WALLS.
11. THE CONTRACTOR SHALL RESTORE THE BUILDING WITH SUITABLE MATERIALS. COLOR OF REPAIR TO MATCH EXISTING BUILDING COLOR SCHEME. FIRE RATING OF WALLS SHALL BE MAINTAINED AFTER REPAIR.
12. THE CONTRACTOR SHALL REPAIR ANY DISTURBED CONCRETE AND PAVEMENT TO ORIGINAL CONDITIONS.
13. UNLESS OTHERWISE NOTED, ALL EXTERIOR CONDUIT SWEEPS/STUB-UPS PENETRATING ASPHALT OR CONCRETE SHALL BE PVC COATED RGSC. ALL OTHER EXTERIOR CONDUIT SWEEPS/STUB-UPS SHALL BE RGSC. UNLESS OTHERWISE NOTED, PVC COATED RGSC SHALL STUB UP 12 INCHES MINIMUM AFG BEFORE TRANSITIONING TO RGSC. IF 12 INCHES CANNOT BE ACHIEVED DUE TO SITE CONSTRAINTS, THE CONTRACTOR SHALL COORDINATE WITH THE ENGINEER.
14. ALL UNDERGROUND COMMUNICATIONS CONDUCTORS (EG. FIRE ALARM CABLE, CAT 6A, ETC) SHALL BE RATED FOR EXTERIOR UNDERGROUND USE.
15. ALL UNDERGROUND CONDUIT INSTALLED UNDER THE SLAB AND SURROUNDING AREAS SHALL BE INSTALLED 24" BELOW FINAL GRADE. UNDERGROUND CONDUIT WITH AT LEAST 24" OF COVER SHALL BE SCHEDULE 80 PVC AND SHALL TRANSITION TO RGSC 24" BEFORE THE POINT OF CONNECTION TO THE ABOVEGROUND RACEWAY.
16. INTRINSICALLY SAFE, COMMUNICATION, AND POWER CONDUCTORS SHALL NOT SHARE RACEWAYS. INTRINSICALLY SAFE RACEWAYS SHALL BE LABELED IN ACCORDANCE WITH NEC SECTION 504.80.
17. CONDUIT AND CIRCUIT ROUTING IS DIAGRAMMATIC. CONDUIT AND CIRCUITS MOUNTED ON EQUIPMENT SHALL BE ROUTED PER MANUFACTURERS SPECIFICATIONS AND RECOMMENDATIONS.
18. ALL CONNECTIONS BELOW GRADE SHALL BE EXOTHERMICALLY WELDED, UNLESS OTHERWISE NOTED.

SITE PLAN NOTES:

1. SPARE CONDUIT SHALL BE CAPPED WITH PULL STRING AND TERMINATE IN THE ROOMS INDICATED 18" AFF.
2. SIZE OF EQUIPMENT NOT TO SCALE. SIZES SHOWN FOR CLARITY (TYP.)
3. ALL EXTERIOR CONDUITS RUN SHOWN SHALL BE IN TRENCH PER CONDUIT TRENCH DETAIL, UNLESS OTHERWISE NOTED.

MOTOR FUEL ISLAND AND TANK GENERAL NOTES:

1. ALL CONDUITS SHALL BE PROVIDED WITH EXPLOSION PROOF FITTINGS AND SEALED AS REQUIRED IN ACCORDANCE WITH NFPA-70, STATE, AND LOCAL CODES. CONDUIT EXTENSIONS ABOVE GROUND WITHIN 20 FEET PROXIMITY OF FUELING SHALL HAVE E.Y. FITTINGS INSTALLED AT THE POINT OF EMERGENCE 12"-18" AFG. THIS INCLUDES CONDUITS THAT ENTER THE FUEL MASTER AND DISPENSERS.
2. CONDUIT AND CONDUCTORS MOUNTED ON TANK SHALL BE ROUTED TO ASSOCIATED DEVICES. PERFORM ALL FINAL CONNECTIONS PER MANUFACTURER'S SPECIFICATIONS.
3. BOND AND GROUND ALL METALLIC CONDUITS, METALLIC BODIES, ENCLOSURES, CABLES, FALL PROTECTION, PIPING VENTS, FILL PORTS, AND OTHER CONDUCTIVE INFRASTRUCTURE AS PER THE NEC AND NFPA 780.
4. GROUNDING RING FOR THE TANKS SHALL NOT CONFLICT WITH FOUNDATIONS FOR BOLLARDS AND LIGHT POLES.

REVISION DESCRIPTION | DATE | REV.

DESIGNER/DRAFTER: JC CHECKED BY: MPW

SIGNATURE/ BLOCK:

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

PROJECT NUMBER: 0173-0541
PROJECT DESCRIPTION: MAINTENANCE FACILITY TANK REPLACEMENT
TOWN(S): MILFORD
DRAWING TITLE: GENERAL NOTES & SYMBOLS

DRAWING NO. E-002
SHEET NO. 05.02

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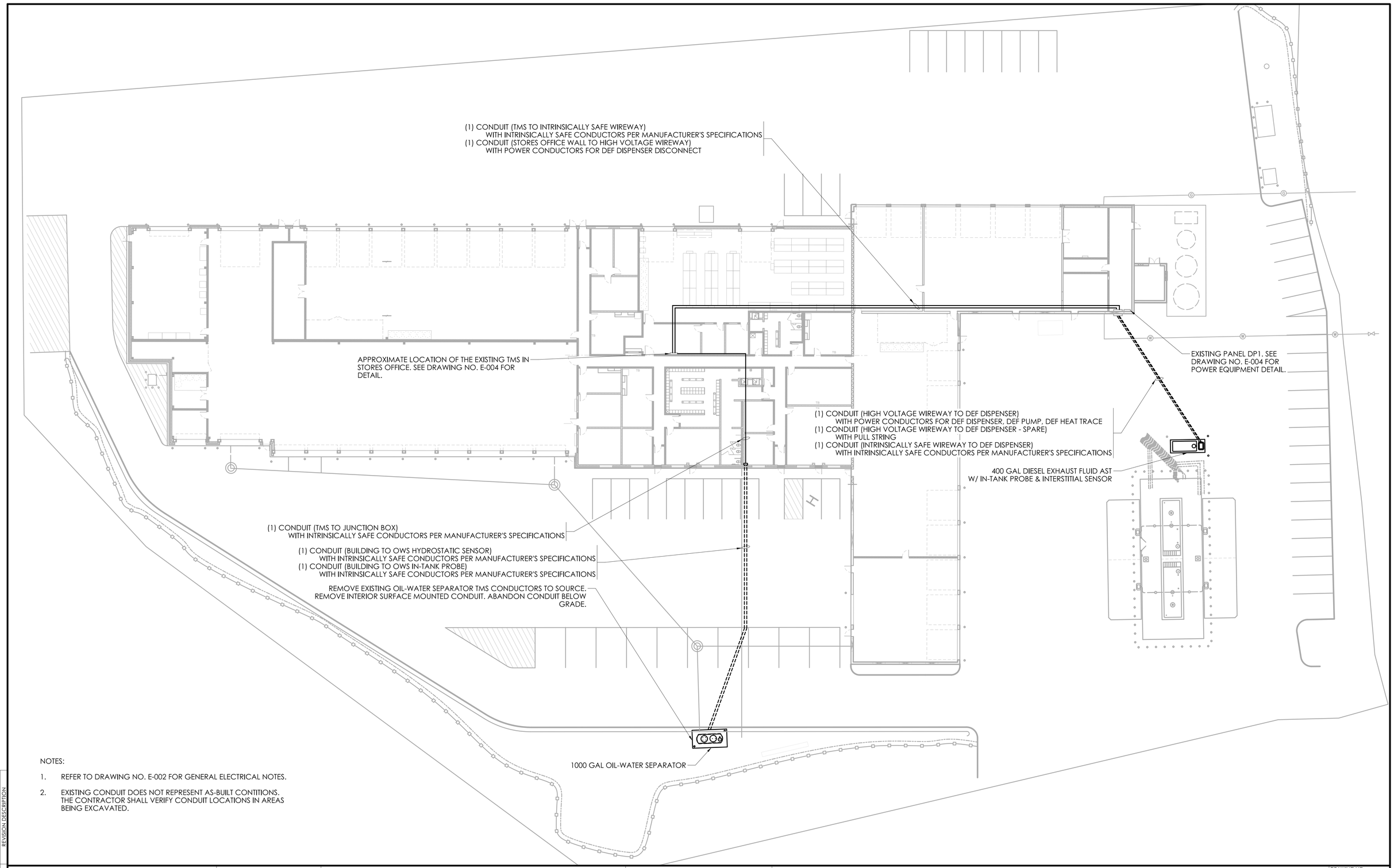


NOTES:

1. REFER TO DRAWING NO. E-002 FOR GENERAL ELECTRICAL NOTES.
2. EXISTING CONDUIT DOES NOT REPRESENT AS-BUILT CONTITIONS. THE CONTRACTOR SHALL VERIFY CONDUIT LOCATIONS IN AREAS BEING EXCAVATED.

REV.	DATE	REVISION DESCRIPTION

DESIGNER/DRAFTER: JC CHECKED BY: MPW

0 20' 40'
SCALE 1" = 20'

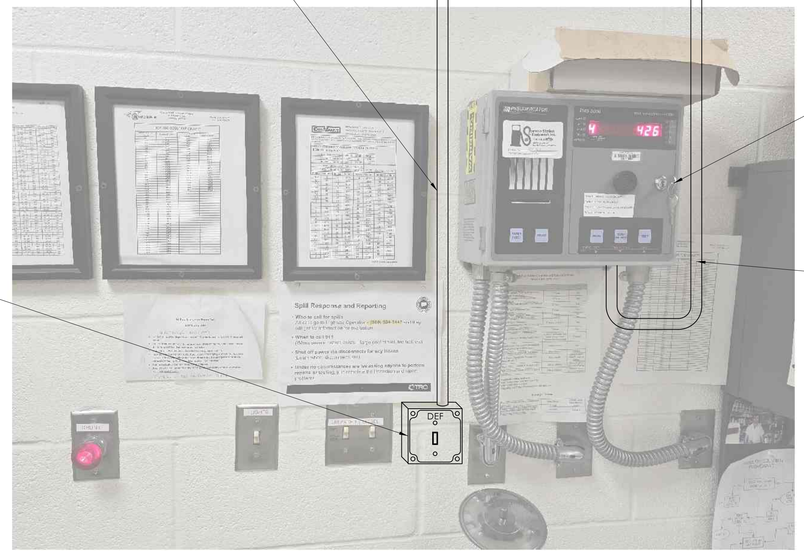
SIGNATURE/ BLOCK:

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

PROJECT NUMBER: 0173-0541
PROJECT DESCRIPTION: MAINTENANCE FACILITY TANK REPLACEMENT
TOWN(S): MILFORD
DRAWING TITLE: ELECTRICAL SITE PLAN

DRAWING NO. E-003
SHEET NO. 05.03

LASTED SAVED BY: ComeauJ **FILE NAME:** C:\Users\bensonja\State of Connecticut\0173-0541 - Design\F_Elect\Contract_Plans\FD_CP_ELE_0173_0541_E-003 (Electrical Site Plan).dgn
PLOTTED DATE: 10/2/2024



STORES OFFICE WALL - EXISTING AND PROPOSED EQUIPMENT

NOT TO SCALE

1 E-004

FUEL ISLAND POWER EQUIPMENT

NOT TO SCALE

2 E-004

NOTE: SAWCUT AND HAND DIG/TRENCH CAREFULLY TO AVOID EXISTING UNDERGROUND CONDUIT.

EXTERIOR WALL - PROPOSED WORK

NOT TO SCALE

3 E-004

REV.	DATE	REVISION DESCRIPTION

DESIGNER/DRAFTER: JC CHECKED BY: MPW

SIGNATURE/ BLOCK:

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

PROJECT NUMBER: 0173-0541
PROJECT DESCRIPTION: MAINTENANCE FACILITY TANK REPLACEMENT
TOWN(S): MILFORD
DRAWING TITLE: MOTOR FUEL ISLAND EXISTING AND PROPOSED EQUIPMENT

DRAWING NO. E-004
SHEET NO. 05.04

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PLOTTED DATE: 10/2/2024

PANEL: DP1
LOCATION: ELEC ROOM
SUPPLY FROM SHUNT TRIP
MOUNTING: SURFACE
ENCLOSURE: TYPE 1

VOLTS: 120/208
PHASES: 1
WIRES: 3

K.I.C. RATING: 22 KIC
MAIN BREAKER: LUGS ONLY
PANEL RATING: 50A

NOTES:
BRANCH CIRCUIT BREAKERS SHALL BE RATED 22 KAIC MINIMUM

CKT.	DIRECTORY	TRIP	POLES	Leg A (VA)		Leg B (VA)		POLES	TRIP	DIRECTORY	CKT.
1	SHUNT TRIP	20A	1	-	-			2	20A	DIESEL PUMP	2
3	TMS	20A	1			-	-				4
5	FUEL MASTER	20A	1	-	-			2	20A	UNLEADED PUMP	6
7	UNLEADED DISPENSER	20A	1			-	-				8
9	DIESEL DISPENSER	20A	1	-	-			1	20A	DEF PUMP	10
11	DEF DISPENSER	20A	1			-	-	1	20A	SPARE	12
13	FUEL ISLAND LIGHTS	20A	2	-	-			1	20A	SPARE	14
15						-	-	1	30A	SPARE	16
17	SPACE			-	-			1	20A	DEF HEAT TRACE	18 *

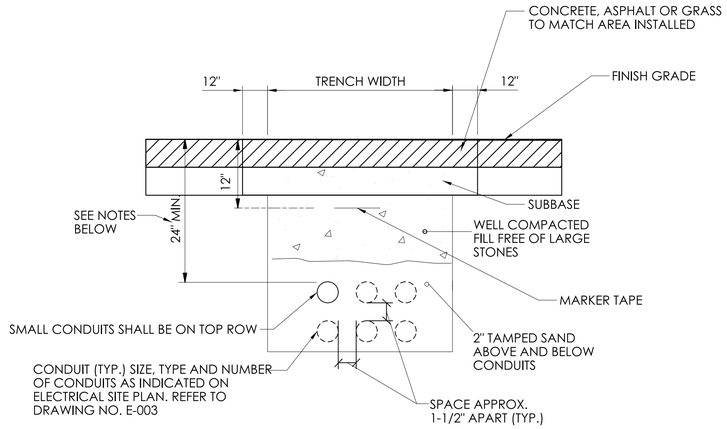
* GFI CIRCUIT BREAKER

* ← INSTALL MATCHING 20A GFCI CB INTO OPEN SPACE IN THE PANEL.

FUEL ISLAND PANEL SCHEDULE

NOT TO SCALE

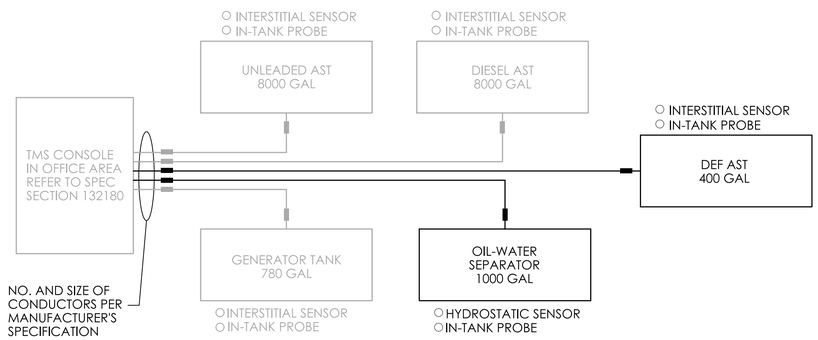
1 / E-005



CONDUIT TRENCH

NOT TO SCALE

3 / E-005



TANK MONITORING SYSTEM DIAGRAM

NOT TO SCALE

2 / E-005

NOTE: INSTALL SCHEDULE 40 STEEL PIPE OF LENGTH REQUIRED ON TOP OF TANK TO ACCOMODATE IN-TANK PROBE.

REV.	DATE	REVISION DESCRIPTION

DESIGNER/DRAFTER: JC CHECKED BY: MPW

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DEPARTMENT OF TRANSPORTATION

PROJECT NUMBER: 0173-0541
PROJECT DESCRIPTION: MAINTENANCE FACILITY TANK REPLACEMENT
TOWN(S): MILFORD
DRAWING TITLE: ELECTRICAL DETAILS 1

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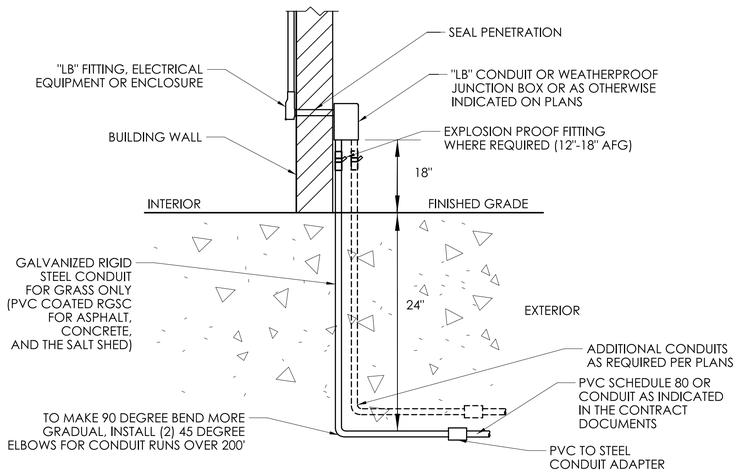
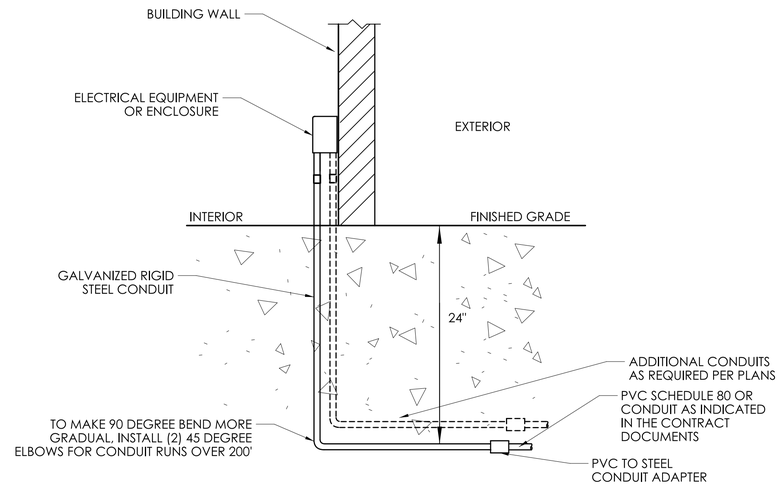
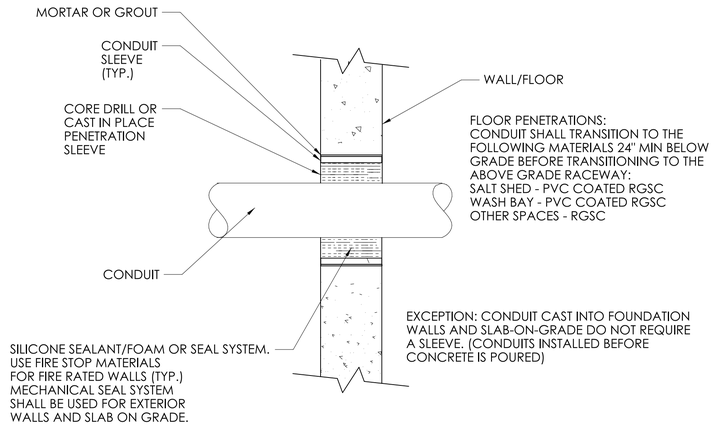


NOTE: THIS DETAIL ONLY APPLIES TO CONDUITS ROUTED TO EXISTING STRUCTURES AND CONDUITS REQUIRING EXPLOSION PROOF FITTINGS.

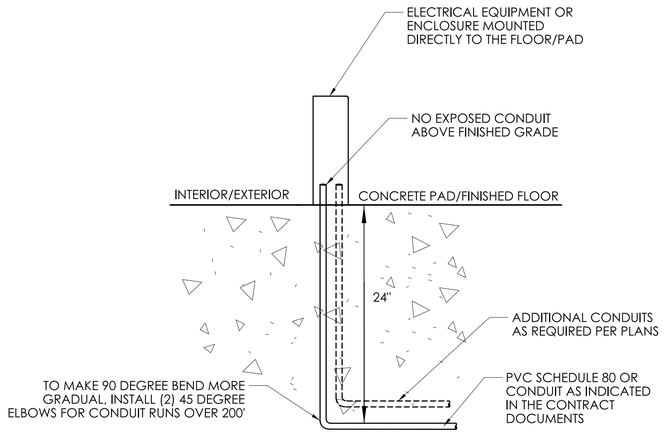
EXTERIOR CONDUIT SWEEP — 1 / E-006
NOT TO SCALE



INTERIOR CONDUIT SWEEP — 3 / E-006
NOT TO SCALE



CONDUIT PENETRATION DETAIL — 4 / E-006
NOT TO SCALE



CONDUIT SWEEP DIRECTLY INTO ELECTRICAL EQUIPMENT OR ENCLOSURE — 2 / E-006
NOT TO SCALE

CONDUIT CHART

		LOCATION									
		OFFICE CORE / MECH ROOM / ELEC ROOM / COMM ROOM	BAY AREAS / SHOPS / BAY STORAGE (OTHER THAN WASH BAYS)		WASH BAY		EXTERIOR SURFACE MOUNTED		SALT SHED		
		SURFACE MOUNTED / CONCEALED IN WALL / ABOVE DROP CEILING	SURFACE MOUNTED CONDUIT FROM FINISHED FLOOR UP TO 10 FT. HIGH	SURFACE MOUNTED CONDUIT ABOVE 10 FT.	SURFACE MOUNTED CONDUIT FROM FINISHED FLOOR UP TO 10 FT. HIGH	SURFACE MOUNTED CONDUIT ABOVE 10 FT.	CONDUIT BELOW 12 IN.	CONDUIT ABOVE 12 IN.	SURFACE MOUNTED CONDUIT FROM FINISHED FLOOR UP TO 10 FT. HIGH	SURFACE MOUNTED CONDUIT ABOVE 10 FT.	CONCEALED IN WALL
CONDUIT TYPE	EMT	✓*/**		✓*							
	RGSC		✓*					✓			
	PVC COATED RGSC				✓*		✓		✓		
	PVC SCHEDULE 40					✓*				✓	✓
	PVC SCHEDULE 80										

NOTES

* UNLESS OTHERWISE NOTED, EQUIPMENT AND WIRING DEVICES FOR NEW CONSTRUCTION SHALL BE RECESSED WITH CONDUIT CONCEALED IN THE WALL.
** RGSC SHALL BE USED IF BEING SWEPT FROM BELOW GRADE AND ENTERING SURFACE MOUNTED INTO ELECTRICAL EQUIPMENT. SEE DETAIL 3.

EXPOSED (SURFACE MOUNTED) CONDUIT SHALL BE LIMITED TO EQUIPMENT THAT CANNOT BE RECESSED MOUNTED AND/OR CONDUIT INSTALLED ON EXISTING "TO REMAIN" WALLS.
ALL WIRING ABOVE CEILING IN OFFICE CORE SHALL BE IN CONDUIT (NO EXPOSED WIRING ALLOWED); EXCEPT THE FOLLOWING SYSTEM: VOICE AND DATA, EXCLUDING FIRE ALARM SYSTEM.
NO CONDUIT ALLOWED IN FLOOR SLAB UNLESS OTHERWISE NOTED.
RGSC CAN BE USED IN LIEU OF EMT. FOR CONDUIT IN TRENCH SEE SITE PLAN.
PVC SHALL BE EQUIPPED WITH EXPANSION FITTINGS WHERE NECESSARY TO COMPENSATE FOR THERMAL EXPANSION AND CONTRACTION AS SPECIFIED IN THE NEC ARTICLE 300.7.

CONDUIT CHART — 5 / E-006
NOT TO SCALE

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DEPARTMENT OF TRANSPORTATION

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