

ALL DATES SPECIFIED IN DD-MON-RR FORMAT

DRAWING MANIFEST
PACKET NO: BM-00188
GEN SUBJ MATL: 196116
JEA-GEC FUEL OIL STORAGE TANKS
DIST PURPOSE: BID
PROCESS DATE: 07-AUG-17

CLIENT REF:
B&V FILE NO: 196116.05

CLIENT DISTRIBUTION	HARDCOPY FS	HS	ELEC- TRONIC	OTHER
ATTN:JAMILA AKRAYI NO ADDRESS STORED	0	0	1	

B&V DWG NO	REV/ REV DATE	B&V DRAWING TITLE
196116-CAAA-E0001	01 07-AUG-17	FUEL OIL SUPPLY & STORAGE ELECTRICAL LEGEND AND GENERAL NOTES
196116-CAAA-E0002	01 07-AUG-17	FUEL OIL SUPPLY & STORAGE ELECTRICAL DETAILS
196116-CFOA-E3001	01 07-AUG-17	FUEL OIL TANKS ELECTRICAL SITE PLAN
196116-CFOA-K2001	00 07-AUG-17	INSTRUMENT LOOP DIAGRAM FUEL OIL SYSTEM
196116-CFOA-M6001	01 07-AUG-17	FUEL OIL SUPPLY & STORAGE PIPING PLAN
196116-CFOA-M6002	01 07-AUG-17	FUEL OIL SUPPLY & STORAGE PIPING PLAN
196116-CFOA-M6003	01 07-AUG-17	FUEL OIL SUPPLY & STORAGE PIPING SECTIONS AND DETAILS
196116-CFPU-E1601	00 07-AUG-17	FIRE PUMP BUILDING PANELBOARD SCHEDULE
196116-CFPU-E1602	00 07-AUG-17	FIRE PUMP BUILDING PANELBOARD SCHEDULE
196116-CFPU-K2001	00 07-AUG-17	INSTRUMENT LOOP DIAGRAM PLANT FIRE PROTECTION SYSTEM
196116-CUUU-G0000	01 07-AUG-17	FUEL OIL & DEMIN WATER SUPPLY AND STORAG COVER SHEET

ALL DATES SPECIFIED IN DD-MON-RR FORMAT

B&V DWG NO	REV/ REV DATE	B&V DRAWING TITLE
196116-CWSH-E3010	01 07-AUG-17	DEMINERALIZED WATER TANK ELECTRICAL SITE PLAN
196116-CWSH-K2001	00 07-AUG-17	INSTRUMENT LOOP DIAGRAM DEMINERALIZED WATER TANK
196116-CWSH-M6010	01 07-AUG-17	DEMINERALIZED WATER SUPPLY & STORAGE PIPING PLAN
196116-CWSH-M6011	01 07-AUG-17	DEMINERALIZED WATER SUPPLY & STORAGE PIPING SECTIONS AND DETAILS

END OF LISTING

01100 - General Requirements and Scope of Work

01100.1 Overall Project Description

Greenland Energy Center (GEC) is located in southeast Jacksonville at 6850 Energy Center Drive, Jacksonville, FL 32256 in Duval County. The power plant consists of two nominal 175 MW General Electric (GE) model PG7241 FA (DLN) combustion turbine generators (CTG), designated Units 1 and 2, installed in simple-cycle configuration and currently in Commercial Operation. The site was cleared and developed, including the storm water detention ponds, for ultimate site build out (including future Units 3, 4, 5, 6, and 7).

01100.2 Contractor's Scope of Work

The scope of work specified herein includes improvements to existing fuel oil and NOx injection water systems at JEA's Greenland Energy Center. All work to furnish and erect equipment specified herein shall be provided by the Contractor. The scope of work includes but is not limited to the following.

- Earthwork including clearing and grubbing of the limits of construction.
- Earthen berm spill containment structure, including:
 - Earthen Embankment (fill material available from onsite spoil pile)
 - 60 mil conductive HDPE liner system
 - Drain sumps
 - Drain lines to existing oil/water separator
 - Through berm pipe penetrations
- Tank foundations including
 - Radial grooves for visual leak detection
 - Embedded tank anchor bolts (if required)
 - Tank drain sumps
- Other concrete bases as shown on the Drawings
- Demolition of the existing 20,000 gallon Fuel Oil Storage Tank. The existing fuel in the tank will be removed by JEA. However, for bidding purposes, assume the tank and piping will contain less than 1000 gallons which will need to be removed by the Contractor. The Contractor shall demolish the external piping and provide blind flanges for all piping connections as indicated on the drawings. The foundation will remain in place. Existing instrumentation cables shall be reused and extended to new fuel oil storage tanks via contractor provided new termination boxes. Existing cables no longer being used or from demolished equipment such as the fuel oil surge tank control valve shall be made safe by determinating on both ends and marking as spare.
- Instrumentation, including:
 - Guided Wave radar fuel oil tank level transmitters,
 - Demineralized water tank static pressure level transmitter
 - ~~Fuel oil tanks mechanical local level indicators~~
- Lightning protection and tank grounding tied into the existing ground grid.
- Tank lighting
- Above grade/below grade piping and valves as to modify the existing fuel oil system including fill piping, return piping, suction piping, and fire water supply piping.
- Pipe supports including concrete sleepers
- Fire detection and suppression equipment including:
 - Control panel,
 - Tank heat detection equipment
 - Manually actuated low expansion foam fire suppression equipment including foam house, foam chamber assemblies, handline hose reel stations, piping, valves, and instrumentation
 - Fire safe, fusible link, automatic shut-off valve assemblies installed on all tank piping connections located beneath the tank overflow connection.

General Drawings		
Drawing No.	Title	Revision
CUUU-G0000	Fuel Oil & Demineralized Water Supply And Storage – Cover Sheet	01
Civil & Structural Drawings		
Drawing No.	Title	Revision
CSTF-S3000	Grading & Drainage Drawing – Key Plan Layout	0
CSTF-S3030	Fuel Oil Containment – Grading and Drainage Plan	0
CSTF-S3040	Fuel Oil Containment – Geomembrane Liner Plan	
CSTF-S3720	Fuel Oil Containment – Sections and Details	0
CUUU-S5500	Fuel Oil & Demineralized Water Storage Foundation	0
CFOA-S5501	Fuel Oil Storage Tank – Foundation Plan, Sections and Details	0
CFOA-S5502	Demineralized Water Storage Tank – Foundation Plan, Sections and Details	0
CFOA-S5503	Fuel Oil Containment Foundations – Piping Sleepers	0
CFOA-S5504	Fuel Oil Containment Foundations– Miscellaneous	0
CFOA-S6001	Fuel Oil Containment Steel– Miscellaneous	0
Mechanical Drawings		
Drawing No.	Title	Revision
CFPA-M2361	Piping & Instrument Diagram – Fuel Oil Fire Protection	0
CFOA-M2401	Piping & Instrument Diagram – Fuel Oil Supply And Storage	0
CWWC-M2643	Piping & Instrument Diagram – Fuel Oil Containment Area Drain	0
CWSH-M2668	Piping & Instrument Diagram – Demin Water NOx Injection Supply And Storage	0
CFOA-M6000	Fuel Oil & Demineralized Water Supply And Storage – Piping Key Plan, Tie Points And General Notes	0
CFOA-M6001	Fuel Oil Supply & Storage – Piping Plan	01
CFOA-M6002	Fuel Oil Supply and Storage – Piping Plan	10
CFOA-M6003	Fuel Oil Supply & Storage – Piping Sections And Details	10
CWSH-M6010	Demineralized Water Supply & Storage – Piping Plan	10
CWSH-M6011	Demineralized Water Supply & Storage – Piping Sections And Details	0
Controls & Electrical Drawings		
Drawing No.	Title	Revision
CAAA-E0001	Fuel Oil Supply & Storage – Electrical Legend And General Notes	10

Controls & Electrical Drawings		
Drawing No.	Title	Revision
CAAA-E0002	Fuel Oil Supply & Storage – Electrical Details	10
CFOA-E3001	Fuel Oil Tanks – Electrical Site Plan	10
CWSH-E3010	Demineralized Water Tank – Electrical Site Plan	10
<u>CFPU-E1601</u>	<u>Fire Pump Building – Panelboard Schedule</u>	<u>0</u>
<u>CFPU-E1602</u>	<u>Fire Pump Building – Panelboard Schedule</u>	<u>0</u>
<u>CFOA-K2001</u>	<u>Instrument Loop Diagram – Fuel Oil System</u>	<u>0</u>
<u>CFPU-K2001</u>	<u>Instrument Loop Diagram – Plant Fire Protection System</u>	<u>0</u>
<u>CWSH-K2001</u>	<u>Instrument Loop Diagram – Demineralized Water Tank</u>	<u>0</u>

The following listed documents are included in Appendix C and are reference documents to the Contract.

Black & Veatch Drawings		
Drawing No.	Title	Revision
160167-CGAU-G1000	Plot Plan Drawing	6
160167-CSTF-S3000	Grading and Drainage – Key Plan	8
160167-CSTF-S3001	Grading and Drainage – Plan – Area 1	6
160167-CSTF-S3002	Grading and Drainage – Plan – Area 2	5
160167-CSTF-S3004	Grading and Drainage – Plan – Area 4	8
160167-CSTF-S3005	Grading and Drainage – Plan – Area 5	6
160167-CSTU-S3300	Underground Utilities – Key Plan	8
160167-CSTU-S3309	Underground Utilities – Plan - Area 9	6
160167-CSTU-S3311	Underground Utilities – Plan – Area 11	6
196116-DM-0001	Fuel Oil Supply & Storage – 500,000 Gallon Fuel Oil Tank	0
196116-DM-0002	Demineralized Water Supply & Storage – 800,000 Gallon Demin Water Storage Tank	0

Zachry Electrical Drawings		
Drawing No.	Title	Revision
D013784-100E00001	Area Classification Plan	0
D013784-684E00002	Grounding Plant Area Grounding View Plan	3
D013784-684E00003	Grounding Zone 1 Layout	1
D013784-684E00005	Grounding Zone 3 Layout	1
D013784-684E00009	Grounding Zone 7 Layout	1

differential gauges, rotary type indicator full scale pointer travel shall be a minimum of 270 degrees. Indicator dial size shall be at least 4-1/2 inches. Accuracy of pressure indicators shall be ± 0.5 percent of full scale range. Accuracy of temperature indicators shall be ± 0.1 percent of full scale range.

Differential pressure indicator full scale pointer travel shall be at least 80 degrees. Indicator dial size shall be at least 4 inches. Accuracy shall be 2 to 4 percent of full scale range.

K100.2.1 Level Indicators

Tank level indicators shall be mechanical float and cable type, with cable tension~~ed~~ automatically maintained by the local indicator. The cable and float shall enter the tank through the top and the local indicator shall be installed at a location providing convenient access to an operator standing at ground level.

K100.2.2 Not Used

K100.3 Not Used

K100.4 Not Used

K100.5 Not Used

K100.6 Level Transmitters

Level transmitters on the fuel oil storage tanks shall be guided wave radar and the transmitter on the demineralized water storage tank shall be static pressure type. Transmitters shall be as specified in the Instrument List and on the electrical drawings.~~Level transmitters shall be as specified in the Instrument List and on the electrical drawings.~~

Q003 Quality System Requirements

(Source: 21Jan10 - Revised by Project: 02Jun11)

This Supplemental Specification establishes the quality management system requirements for suppliers of equipment and commodities.

Q003.1 Quality System

It is the Contractor's responsibility to define and implement a detailed and documented quality management system which ensures that all equipment and commodities supplied are in conformance with required drawings and/or specifications. The Contractor shall meet all the guidelines (requirements) set forth in this document. The quality management system shall be capable of providing assurance that design, purchasing, materials, manufacturing, examination and testing of equipment, shipping, storage, and related services comply with the Contract requirements.

The Contractor's quality management system shall include, at a minimum, procedures and/or methods that ensure the following processes are controlled:

Design documents, drawings, specifications, procedures, inspection and test status and procurement documents are current, accurate, and controlled.

Materials, equipment, and services conform to the requirements of the Contract.

Receipt inspection, in-process inspection, examination, testing, checkouts, and final acceptance testing are conducted.

17300 - Instrumentation

17300.1 General

Instruments shall be furnished in accordance with the requirements of the applicable sub-section and as specified herein. All instruments and ancillary devices supplied under this specification shall meet the hazardous area classification identified on the attached datasheets.

Instrument List

Instrument ID	Instrument Name	Manufacturer
CFOA-LI001	Fuel Oil Storage Tank 1 Level Indicator	Varec
CFOA-LI002	Fuel Oil Storage Tank 2 Level Indicator	Varec
CFOA-LT001	Fuel Oil Storage Tank 1 Level Transmitter	Magnetrol
CFOA-LT002	Fuel Oil Storage Tnak -Tank 2 Level Transmitter	Magnetrol
CWSH-LT001	Demineralized Water Storage Tank 1 Level Transmitter	Rosemount

See drawing CFOA-E3001 and CWSH-E3010 for instrument model numbers.

17300.2 Materials

Materials received at the site having damaged or defective surfaces or surface coatings shall be repaired at the manufacturer's expense.

17300.3 Coatings

All metallic surfaces subject to corrosion, excluding stainless steel, shall be furnished with the manufacturer's standard paint or plating applied in the shop. Ferrous surfaces that should not be painted and are subject to corrosion should be coated with a rust-preventive compound. Surfaces that will be inaccessible after assembly shall be protected for the life of the equipment. Exposed surfaces shall be finished smooth, thoroughly cleaned, and filled as necessary to provide a smooth, uniform base for painting. The surfaces shall be cleaned and prepared in the shop. The Owner will approve rust-preventive compounds.

17300.4 Lubricants

An anti-seize compound or a spray lubricant shall be applied to all enclosure threads to prevent thread galling.

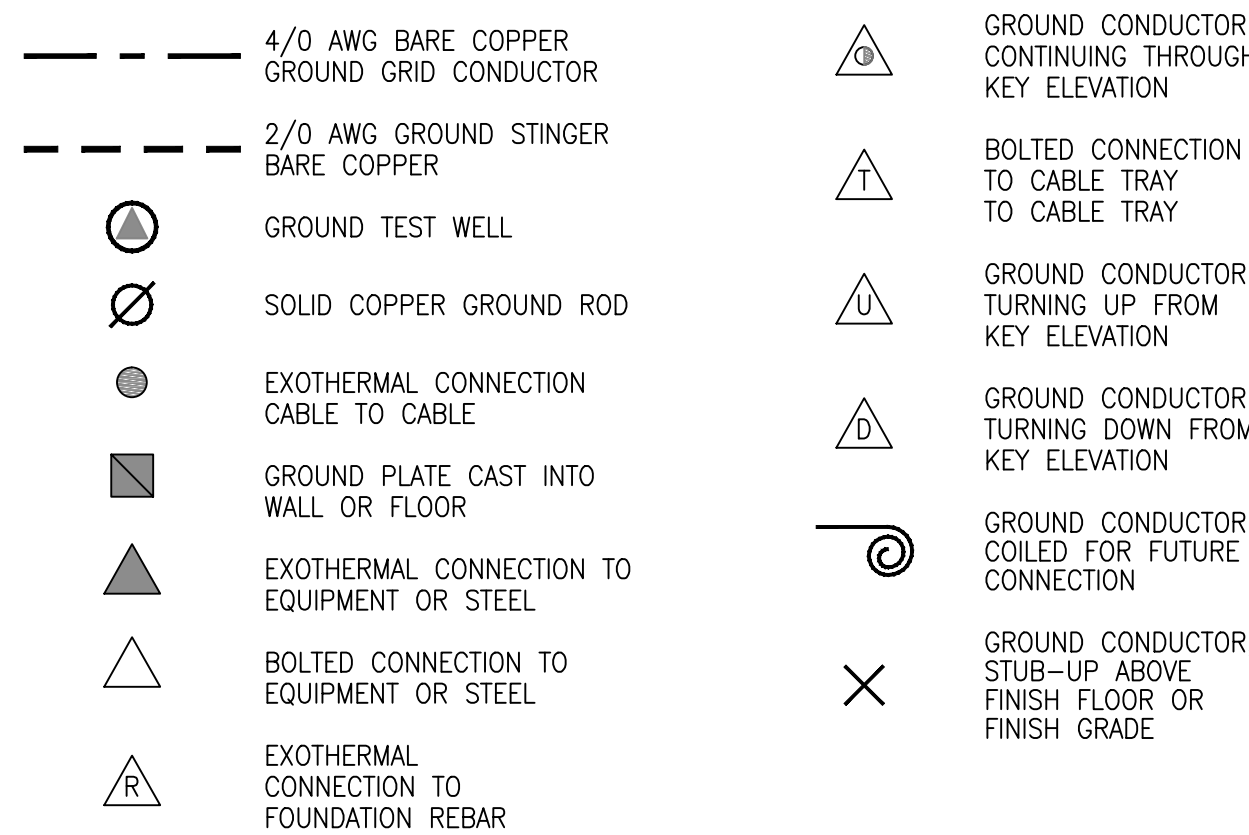
17300.5 Shipping and Storage Protection

Instruments that are flanged or are to be mounted between flanges shall be furnished with wooden flange face protectors. Instruments that have process, instrument air, or electrical connections shall be furnished with plugs or caps to protect instrument internals and threads. If more than one electrical connection is provided, a permanent electrical connection plug shall be furnished for each spare connection. Each instrument shipment weighing more than 200 pounds (91 kg) shall be packed in a weatherproof wooden crate for protection.

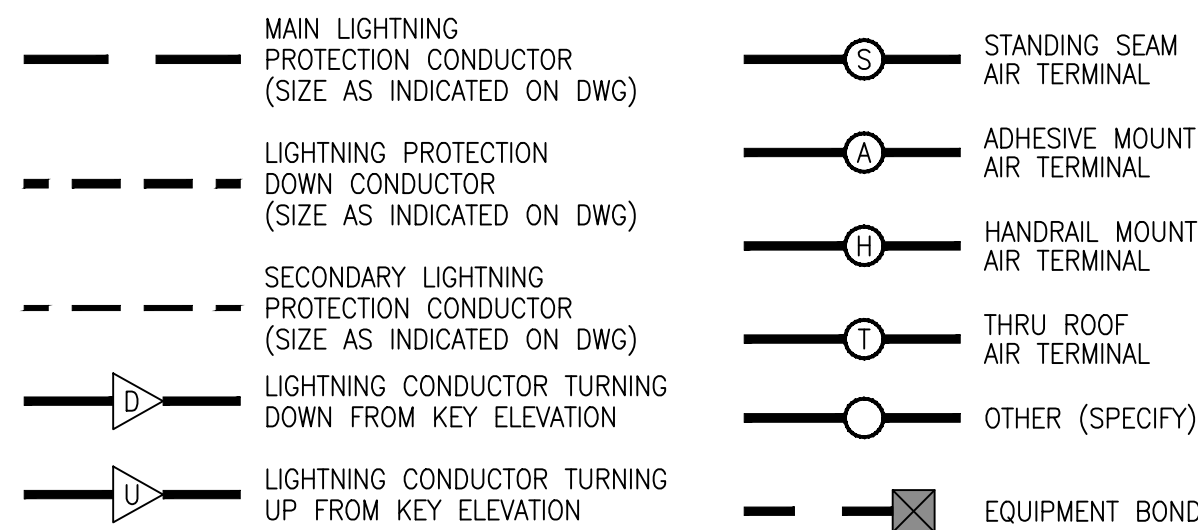
GROUNDING & BONDING

GROUNDING SYMBOLS ARE USED TO SHOW GROUNDING INVOLVED IN THE KEY ELEVATION. THE KEY ELEVATION INCLUDES, THE SPACE BETWEEN THE BOTTOM OF THE STRUCTURAL FLOOR OR THE SLAB BELOW AND THE BOTTOM OF THE STRUCTURAL FLOOR, SLAB OR ROOF ABOVE THE KEY ELEVATION. THE KEY ELEVATION ALSO INCLUDES THE EARTH BELOW THE BASEMENT, GROUND FLOOR SLAB OR FINISHED GRADE AS NEEDED.

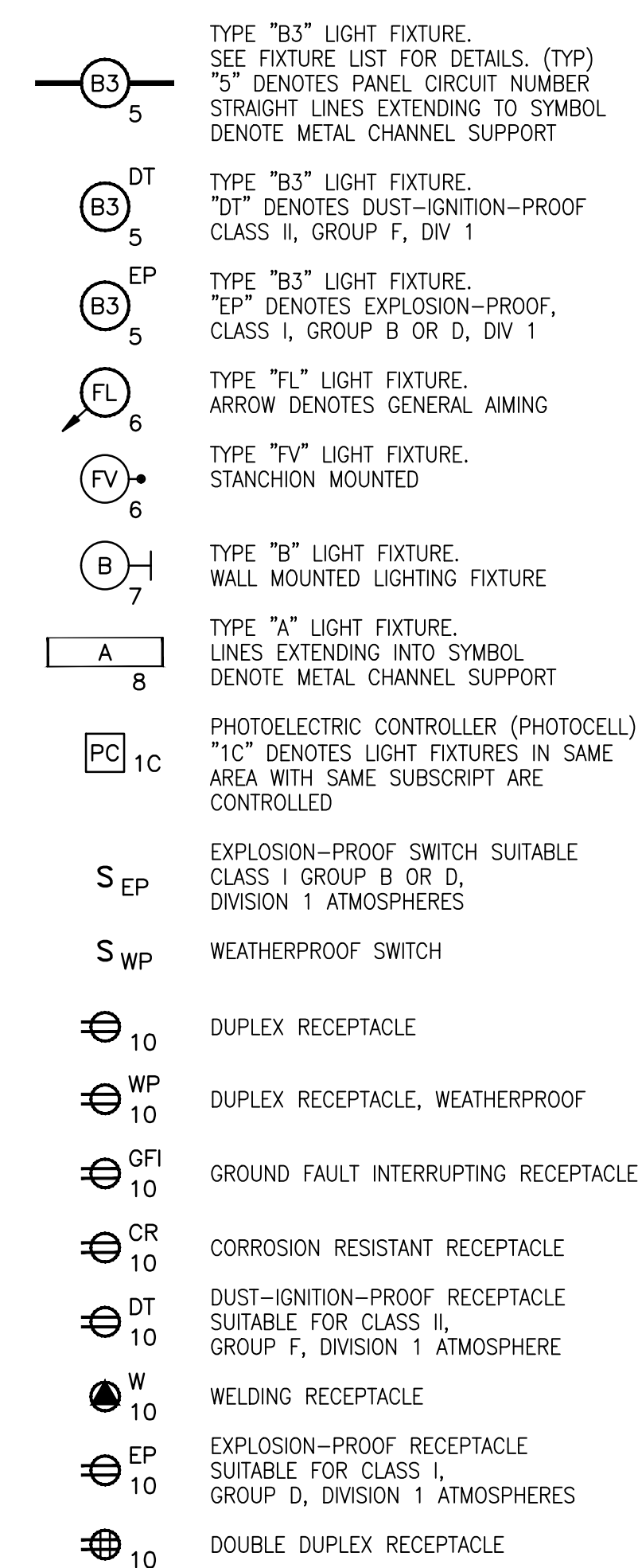
VERIFY MATERIALS, INSTALLATION AND WORKMANSHIP REQUIREMENTS WITH SPECIFICATIONS.



LIGHTNING PROTECTION



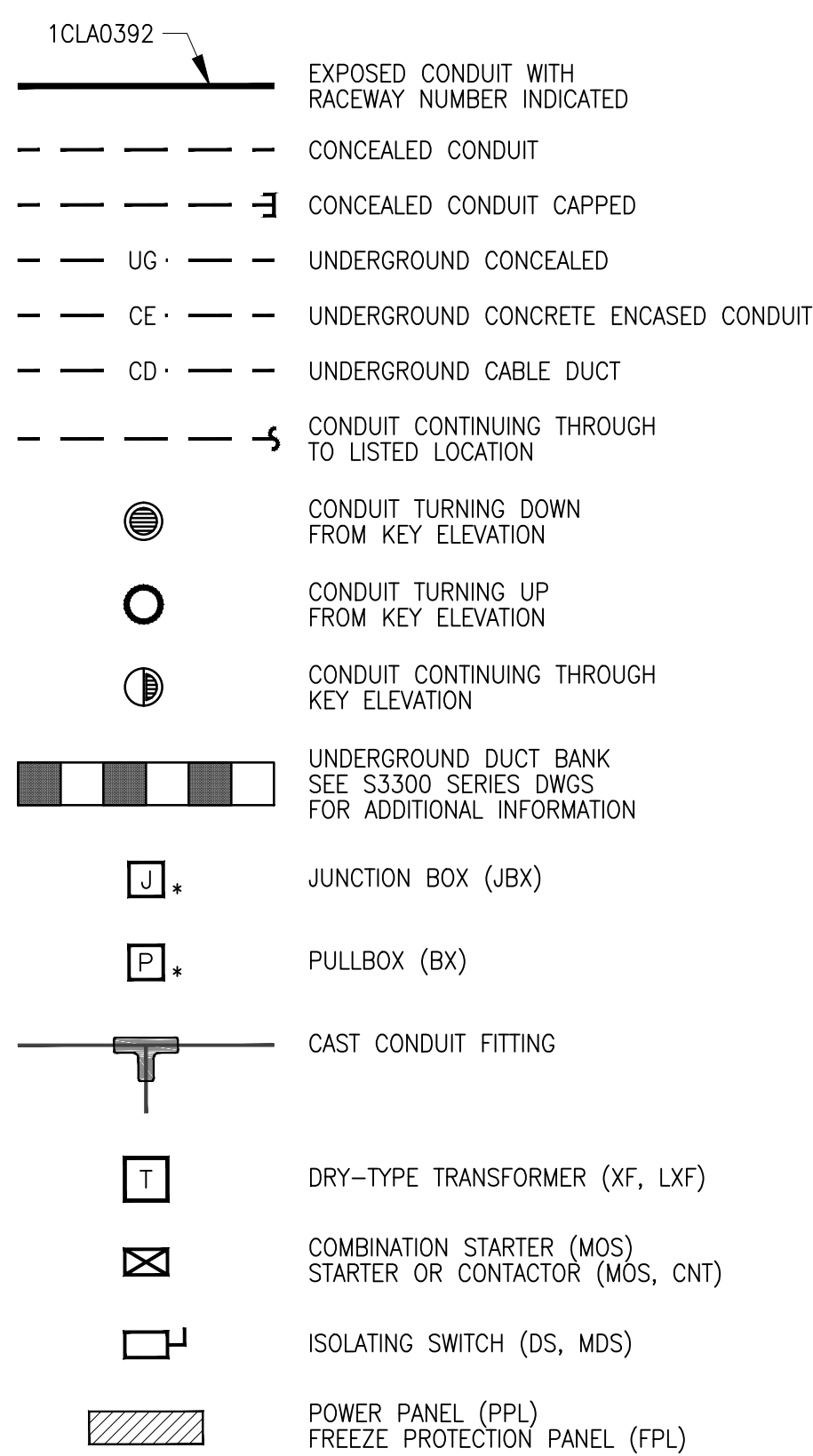
LIGHTING AND COMMUNICATION



RACEWAY - COMPOSITE

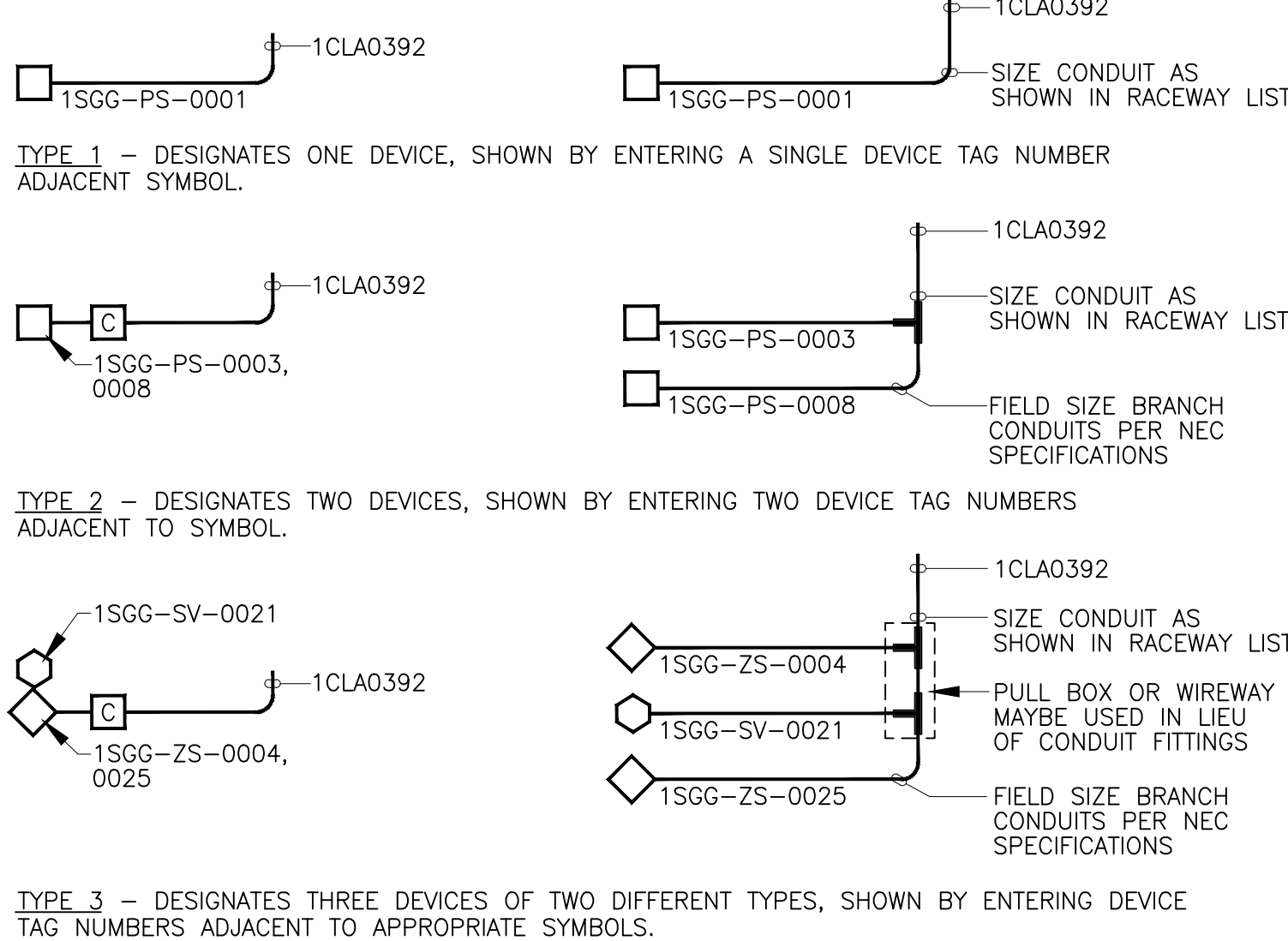
LETTERS WITHIN PARENTHESIS () INDICATE COMPONENT FUNCTION CODE

* IDENTIFICATION NUMBER SHOWN ON PLANS CORRESPONDS TO PROJECT ACCESSORY
EQUIPMENT OR MAJOR EQUIPMENT LIST



DEVICE & CONDUIT DESCRIPTION

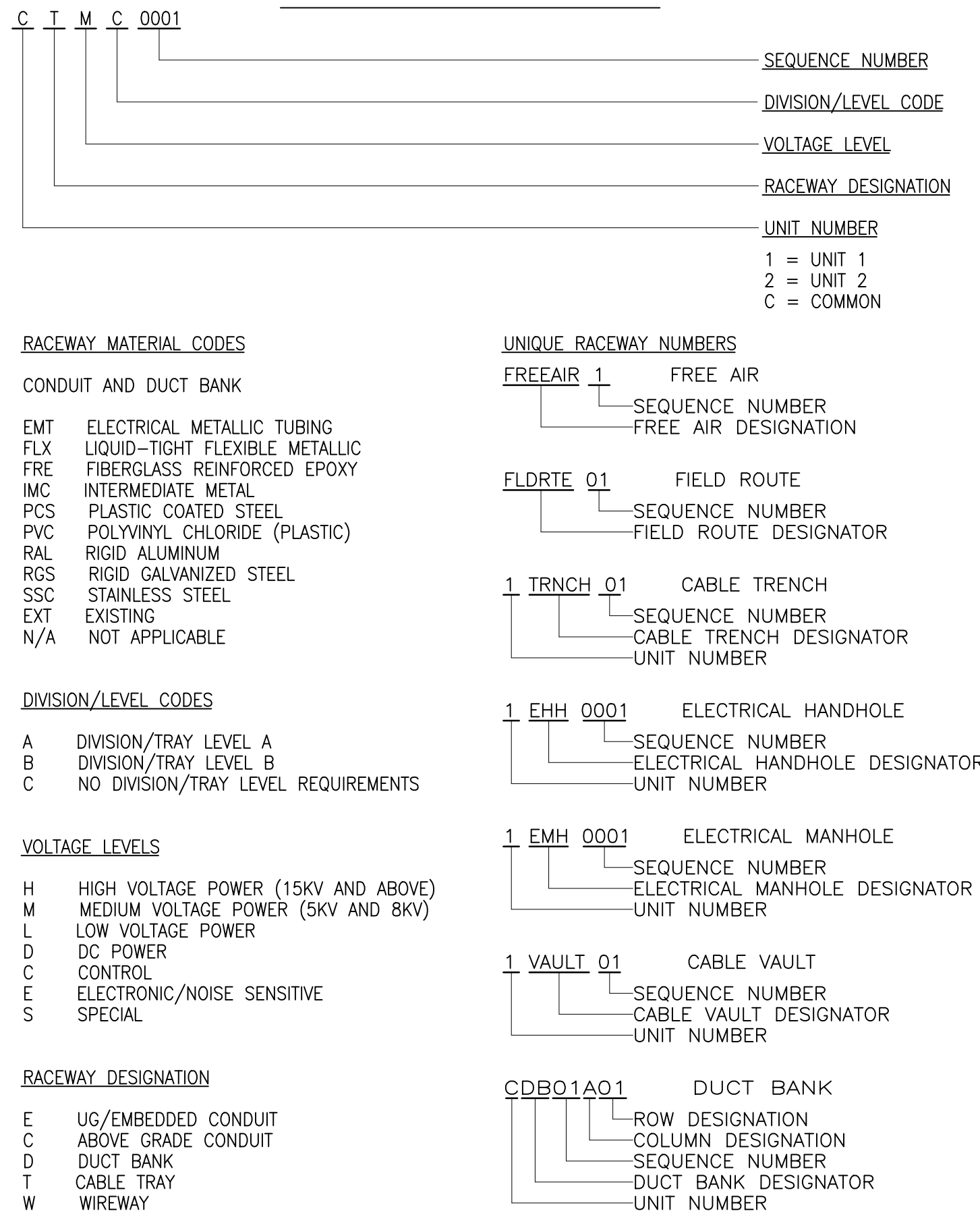
ACCESSORY EQUIPMENT DEVICES GROUPED IN A SMALL AREA MAY BE SHOWN ON THE PLANS WITH SYMBOLS AS ILLUSTRATED IN THE LEFT HAND COLUMN BELOW. CONDUIT AND ASSOCIATED WIRING INSTALLATION SHALL BE INSTALLED AS SHOWN IN THE RIGHT HAND COLUMN BELOW.



CIRCUIT NUMBER FORMAT



RACEWAY LIST DESCRIPTION



CIRCUIT LIST

FROM EQUIP./DESC./DEVICE/	TO EQUIP./DESC./DEVICE/	CABLE DATA	ROUTING
		DATA	
1APC - SUS-11 480V WIR TRMT SUS 11 SCT 2A	1APC - MCC-111 WIR TRMT MCC 111 SCT 3	6 1 500 C1	1TL00024, 1TLC0001, 1TLC0017, 1TLC0018, 1TLC0004, 1TLC0008
"FROM" INDICATES THE EQUIPMENT OR DEVICE AT WHICH THE SUBJECT CIRCUIT ORIGINATES	"TO" INDICATES THE EQUIPMENT OR DEVICE AT WHICH THE SUBJECT CIRCUIT TERMINATES		"ROUTING" INDICATES TRACWAYS IN WHICH THE CIRCUIT IS TO BE ROUTED. RACEWAY NUMBERS ARE IN THE ORDER OF ROUTING STARTING AT THE "FROM" EQUIPMENT. ROUTING DOES NOT NECESSARILY SPECIFY THE DIRECTION TO BE USED FOR CABLE PULLING
			PRIMARY - SECONDARY CABLE PRIMARY & SECONDARY CABLES WILL BE USED TO ALLOW FOR A SINGLE CIRCUIT TO CONSIST OF TWO DIFFERENT SIZES AND TYPES OF CABLE AS FOLLOWS
			CABLE TYPE REFER TO E-CBLSPE (CABLE SPECIFICATION)
			SIZE SIZE OF INDIVIDUAL CONDUCTORS. NUMBER INDICATED IS AWG, KCMIL OR sq mm
			CONDUCTOR INDICATES THE NUMBER OF CONDUCTORS IN AN OVERALL CABLE ASSEMBLY
			NUMBER INDICATES THE NUMBER OF OVERALL CABLE ASSEMBLIES TO BE INSTALLED

1. ELECTRICAL DRAWINGS ARE GENERALLY DIAGRAMMATIC TO ILLUSTRATE GENERALIZED SCOPE AND ROUTING. THE INSTALLATION REQUIRES BOXES, STRAPS, SUPPORTS AND OTHER ESSENTIAL COMPONENTS THAT ARE NOT NECESSARILY SHOWN, BUT ARE IMPLIED AND REQUIRED.
2. WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE CURRENT APPLICABLE CODES, STANDARDS AND BEST PRACTICES.
3. BACKGROUND DRAWINGS MAY NOT REFLECT EXISTING FIELD CONDITIONS SUFFICIENTLY TO AVOID REMOVAL AND/OR INSTALLATION CONFLICTS. CONTRACTOR SHALL FIELD VERIFY CONDITIONS FOR EACH SPACE, BEFORE PROCEEDING WITH ANY WORK.
4. THE ELECTRICAL CONTRACTOR SHALL COORDINATE WORK WITH OTHER DISCIPLINES, UTILITIES, EQUIPMENT PROVIDED BY OTHERS. PROJECT RELATED CONFLICTS AND CLARIFICATIONS SHALL BE RESOLVED BY THE ENGINEER.
5. THE ELECTRICAL CONTRACTOR SHALL MAINTAIN AN ACCURATE UP-TO-DATE PLAN SET ON SITE WHICH SHALL BE USED FOR "CONSTRUCTION RECORD" MARKUPS. THE ON-SITE PLAN SET WILL INCLUDE PLAN REVISION APPROVAL DOCUMENTATION.
6. ELECTRICAL MATERIALS, DEVICES AND EQUIPMENT SHALL BE PURCHASED, FABRICATED AND/OR INSTALLED COMPLETE AND IN READINESS FOR PROPER OPERATION IN FULL CONFORMITY WITH THE INTENT OF THE DESIGN, SPECIFICATIONS, DRAWINGS AND IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. CONTRACTOR SHALL SUBMIT A LIST OF ALL EQUIPMENT, MATERIALS, SIMILAR MATERIALS OR DEVICES SHALL BE FROM THE SAME MANUFACTURER.

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SECTION

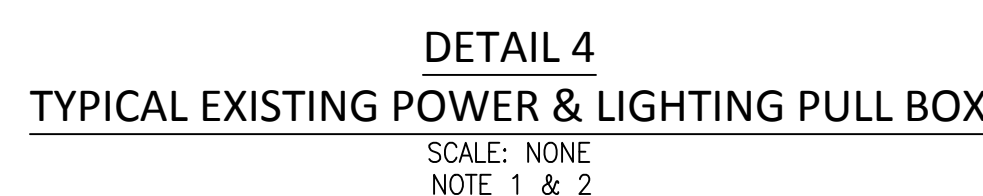
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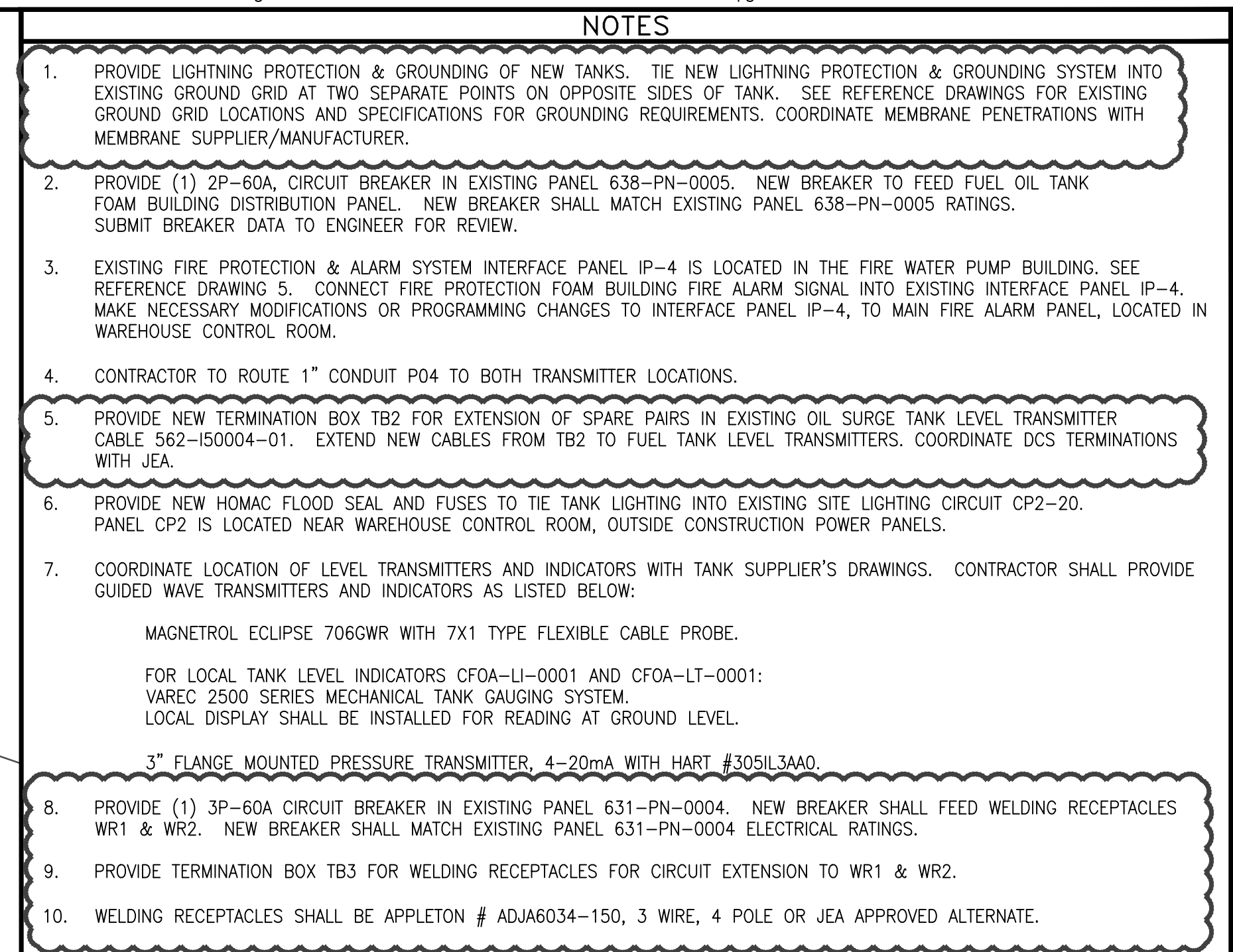


	JEA
	GREENLAND ENERGY CE
	FUEL OIL SUPPLY & STOR
	ELECTRICAL DETAIL

FIXTURE LIST				
SYMBOL	FIXTURE DESCRIPTION / PART NUMBER	INPUT WATTS	TOTAL LUMENS	MTG EL
B1	LED AREA LIGHT CROUSE-HINDS # PWSL-W-P-R3-UNV34 MOUNTED PER DETAIL 5 OR 6	43	5335	AS INDICATED BY DETAIL

MATERIAL LIST (REFERENCE ONLY)			
ITEM	MANUFACTURER/SUPPLIER	DESCRIPTION	PART NUMBER
5	BUSSMAN	STREET LIGHT CONNECTION (FUSE)	JEAN STORES ITEM # FUSING 046
10	HOMAC	FLOOD SEAL MECHANICAL CONNECTOR	JEAN STORES ITEM # SHC 4/0-3 - SHC 4/0-5 AS REQUIRED
13	ASSOCIATED PLASTICS, INC.	POWER PULL BOX - POLYMER WITH POLYMER CONCRETE LID & RING FMS LOCATOR IN LID	JEAN STORES ITEM # BOX5001 13"x24"x18" DEEP HEB -W/R-RLG-A
15	BUSSMAN	HEB SERIES 600V FUSE HOLDER	

[illegible]



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sheet of	JEA GREENLAND ENERGY CENTER		PROJECT NUMBER: 196116-CFOA-E3001	DRAWING NUMBER:	REV 1
	FUEL OIL TANKS ELECTRICAL SITE PLAN		CODE:	REFERENCE DWG NUMBER:	
			AREA:		

BAU57645 ACAD 1=1 02/09/16 15:07:51

18.2s (LMS Tech) 17" x 22"

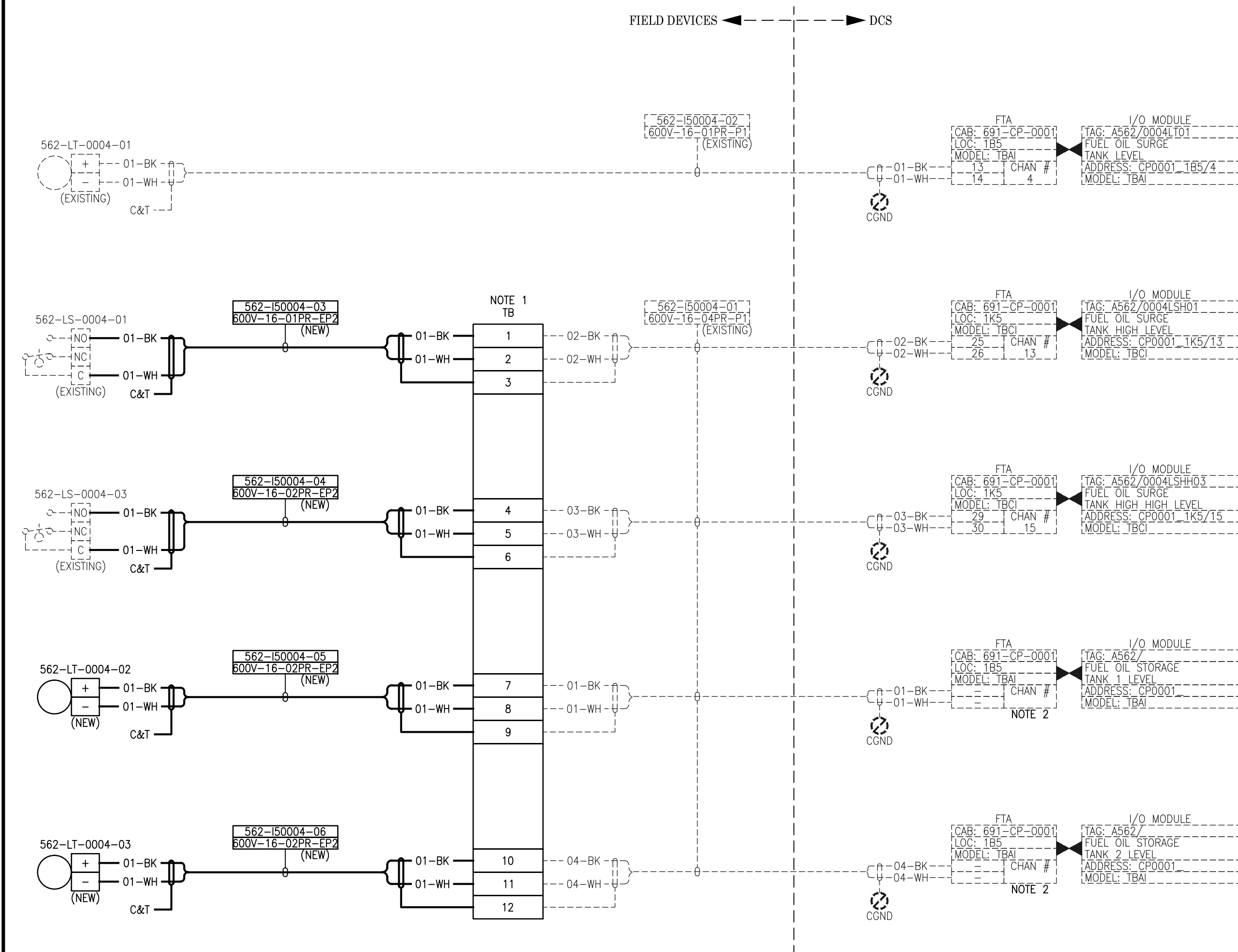
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NOTES:

- CONTRACTOR TO INSTALL NEW JUNCTION BOX WITH TERMINAL BLOCK AT THE 2" CONDUITS WHICH EMERGE FROM THE FLOOR OF THE FUEL OIL SURGE TANK CONTAINMENT. LOCATE JUNCTION BOX ABOVE THE TOP OF THE CONTAINMENT WALL ELEVATION. PULL BACK EXISTING CABLE 562-IS004-01 FROM THE FUEL OIL SURGE TANK LEVEL SWITCHES AND ROUTE IT INTO THE NEW JUNCTION BOX FOR TERMINATION, AS SHOWN. IT MAY BE NECESSARY TO ALSO PULL BACK THE 2-PAIR AND 1-PAIR CABLES WHICH SHARE THE CONDUIT WITH THE 4-PAIR CABLE. THESE CABLES GO TO THE SURGE TANK LEVEL CONTROL VALVE AND SURGE TANK LEVEL TRANSMITTER. RE-INSTALL AND TERMINATE THESE TO "AS-FOUND" CONDITION. INSTALL NEW CABLES FROM JUNCTION BOX TO FIELD DEVICES AS SHOWN. UTILIZE EXISTING CONDUIT FOR EXISTING DEVICES.
 - DCS TERMINATION LOCATIONS TO BE ASSIGNED BY JEA AT TIME OF CONSTRUCTION.
- C & T = CUT OFF SHIELD DRAIN WIRE AND INSULATE WITH TAPE.

PROJECT 196116 DOCUMENT CONTROL NOTES:

- EXISTING BACKGROUND INFORMATION DISPLAYED ON THIS DRAWING ORIGINATED FROM ZACHRY DRAWING B013784-562C50004, REVISION 1.
- THE ORIGINAL DRAWING AND SUBSEQUENT REVISIONS WITH APPROVAL NAMES, INITIALS P.E. SEAL, IF APPLICABLE, ARE MAINTAINED IN THE FILES OF JEA.
- ATTACHED REFERENCE FILE: NONE

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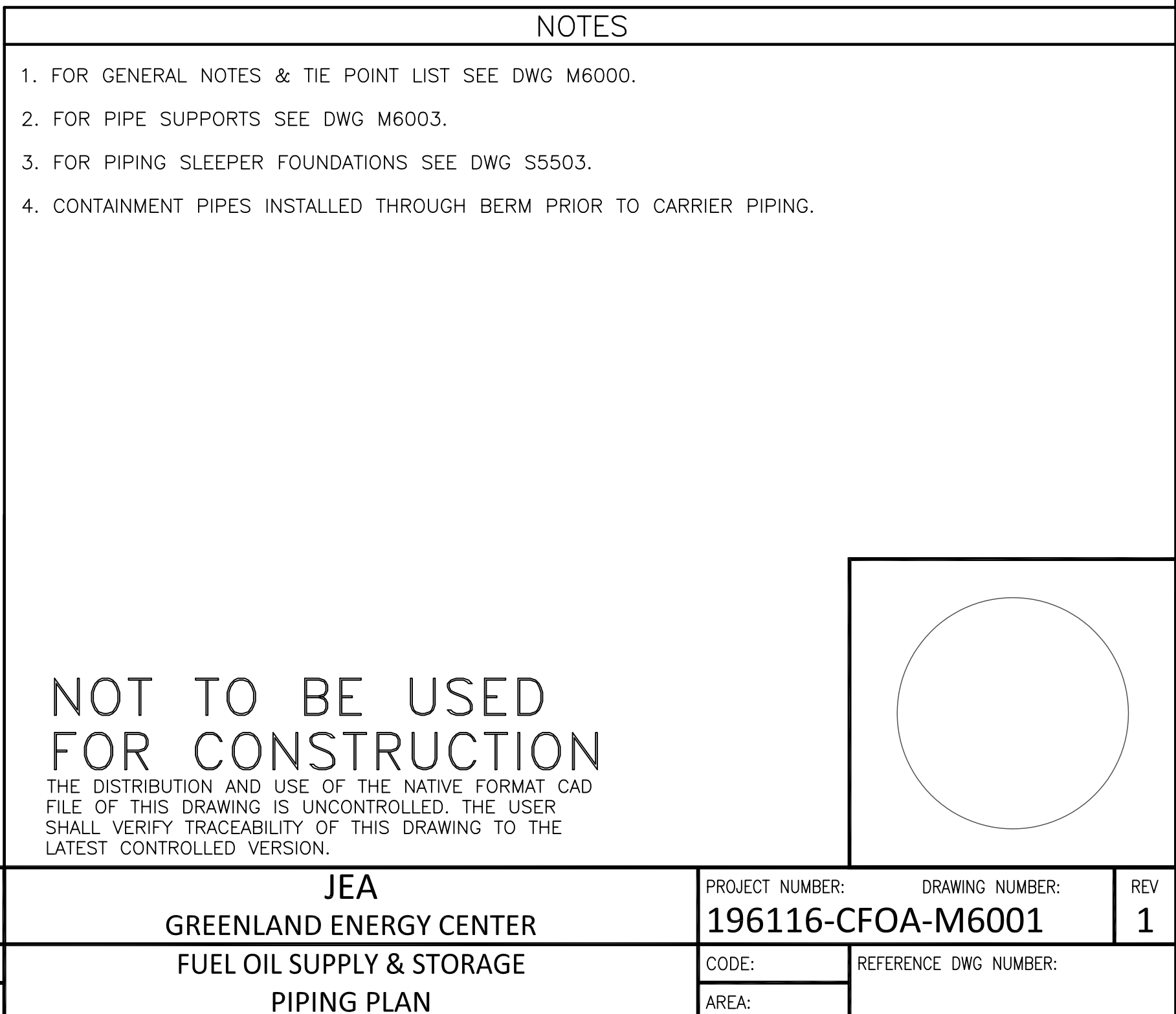
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NO	DATE	REVISIONS AND RECORD OF ISSUE	DRN	DES	CHK	PDE	APP		

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	BLACK & VEATCH	12740 Gran Bay Parkway West Suite 2140 Jacksonville, Florida 32258 CERTIFICATE OF AUTHORIZATION NO. 8132
ENGINEER: JWL	DRAWN: JKB	
CHECKED:	DATE:	

JEA
GREENLAND ENERGY CENTER
INSTRUMENT LOOP DIAGRAM
FUEL OIL SYSTEM

PROJECT NUMBER: 196116-CFOA-K2001	DRAWING NUMBER: 0	REV
CODE:	REFERENCE DWG NUMBER:	
AREA:		



1 2 3 4 5 6 7 8 9 10

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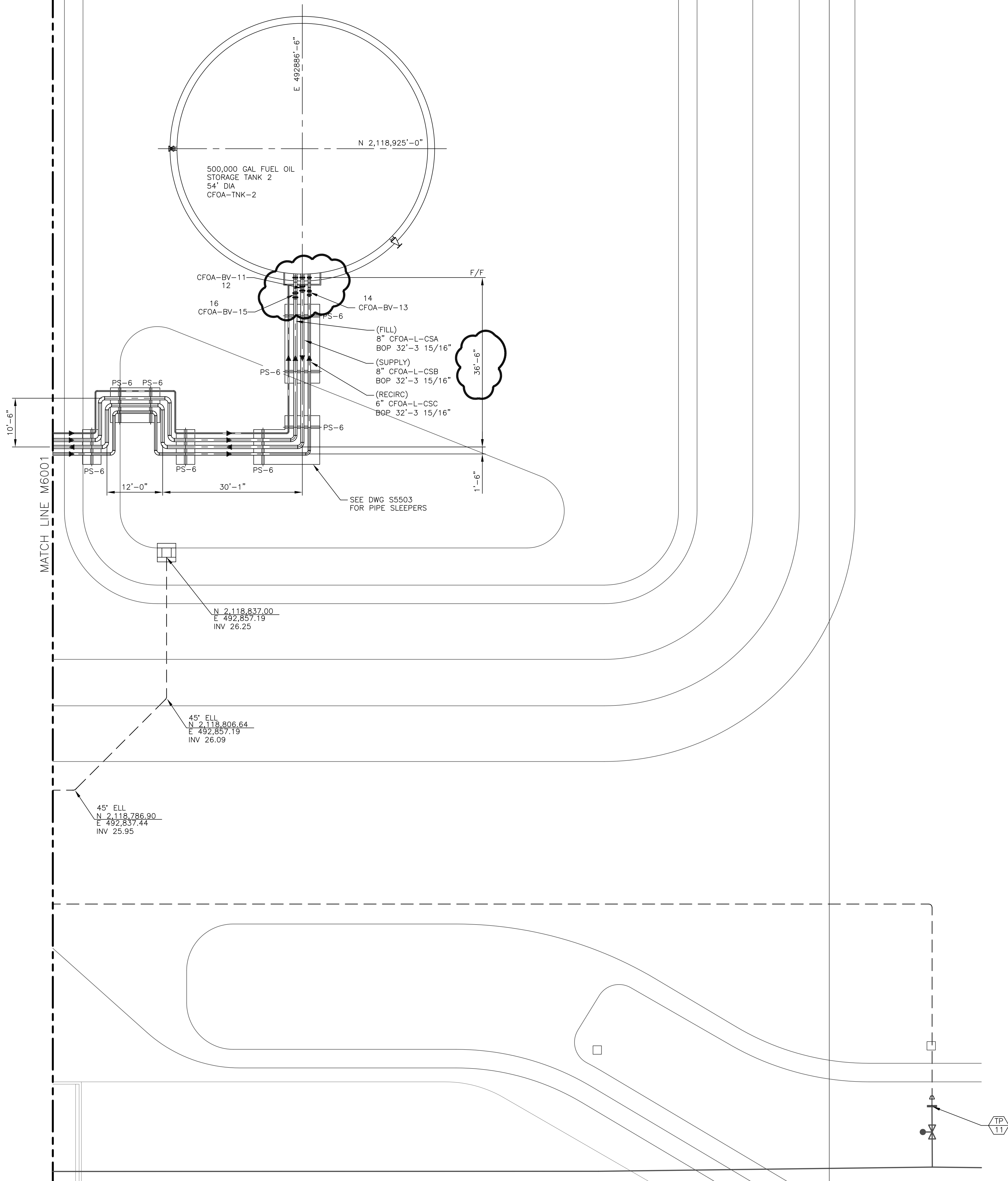
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JOH57765 ACAD 18.2s (LMS Tech) 07/25/17 15:13:35 34" x 44"



GENERAL NOTES

1. FOR GENERAL NOTES & TIE POINT LIST SEE DWG M6000.
2. FOR PIPE SUPPORTS SEE DWG M6003.
3. FOR PIPING SLEEPER FOUNDATIONS SEE DWG. S5503.

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JEA
GREENLAND ENERGY CENTER
FUEL OIL SUPPLY & STORAGE
PIPING PLAN

PROJECT NUMBER:
196116-CFOA-M6002

DRAWING NUMBER:
1

REV

CODE:

AREA:

REFERENCE DWG NUMBER:

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BLACK & VEATCH
12740 Glen Bay Parkway West
Suite 2140
Jacksonville, Florida 32258
PROFESSIONAL ENGINEER
STATE OF FLORIDA
No. 8132

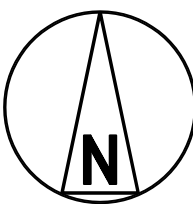
ENGINEER: MBB

DRAWN: SAJ

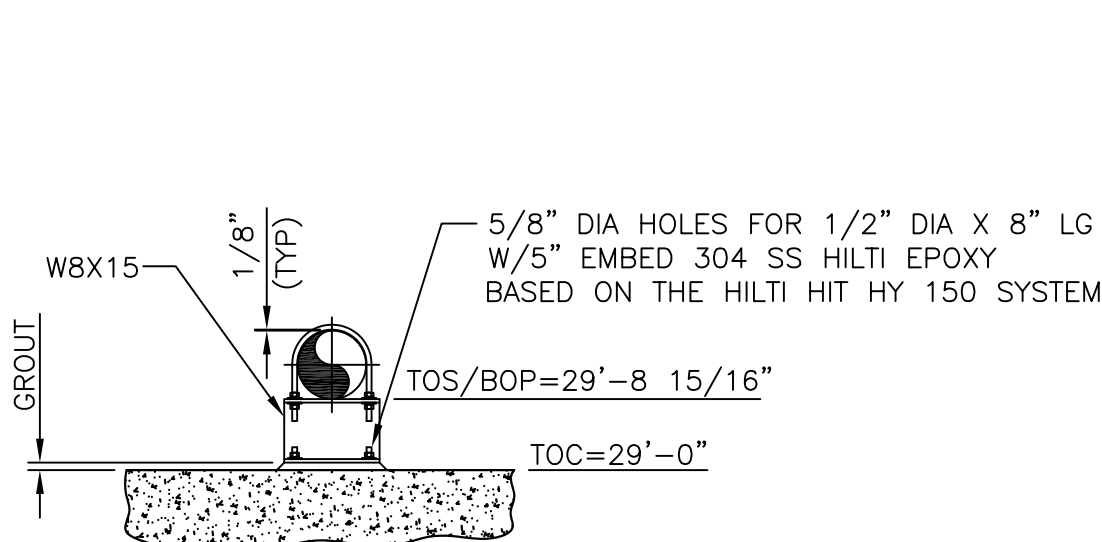
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DATE:

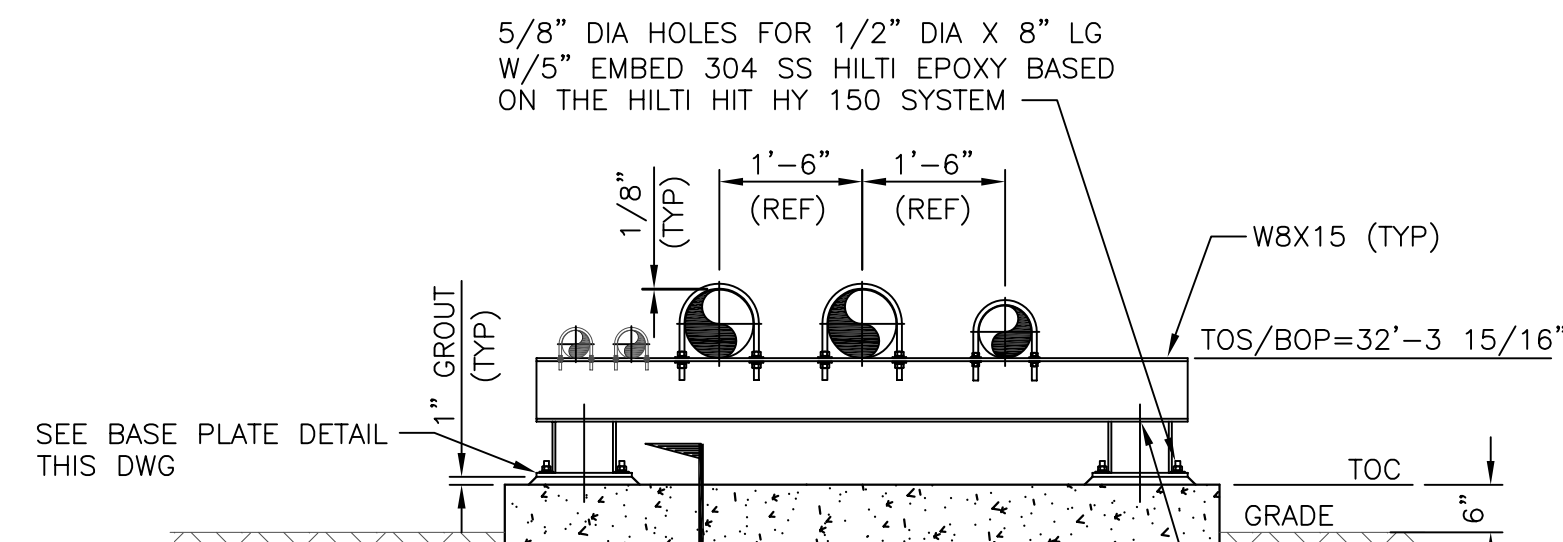
NO	DATE	REVISIONS AND RECORD OF ISSUE	DRN	DES	CHK	PDE	APP
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0	26/JUL/2017	ISSUED FOR BIDS	SAJ	SAJ	MBB	EEB	



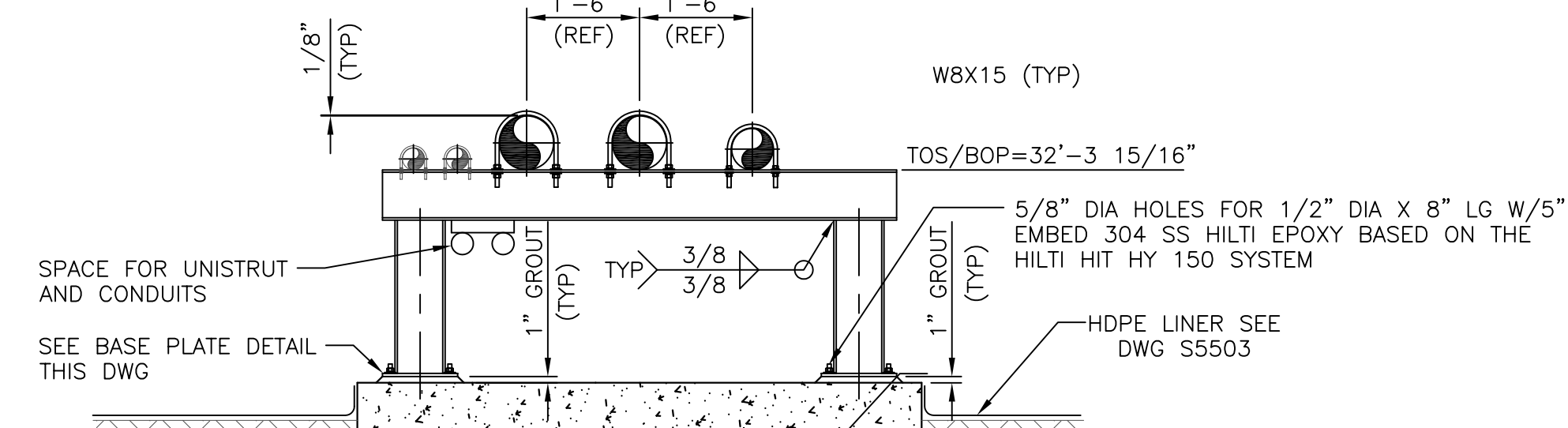
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PS-1
DWG M6001
SCALE: 1/2"=1'
(1) REQD

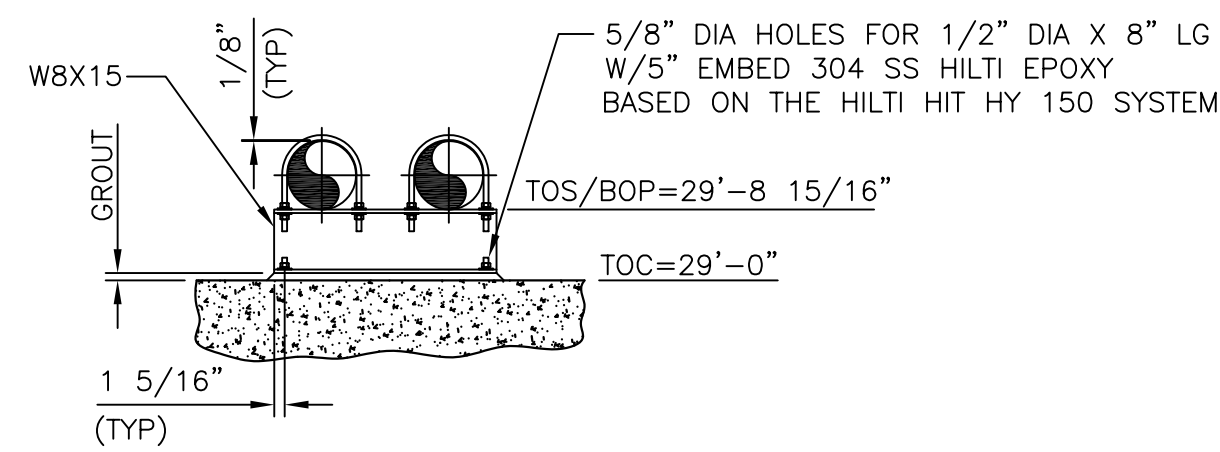


PS-4
DWG M6001
SCALE: 1/2"=1'
(1) REQD

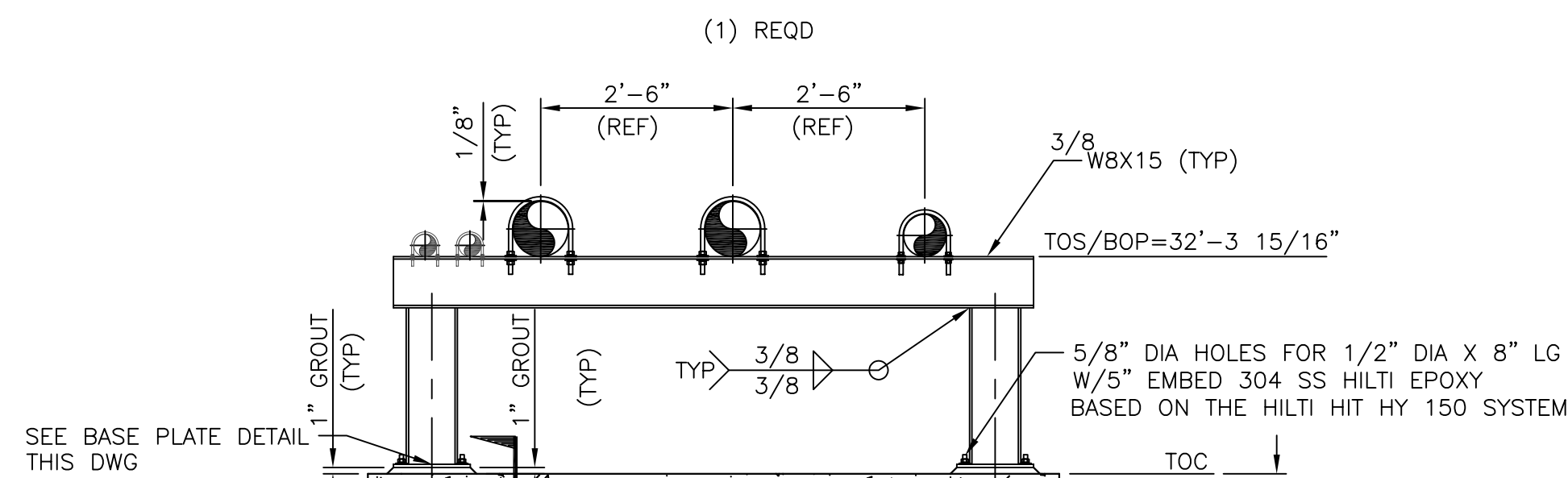


PS-6
DWG M6001
SCALE: 1/2"=1'
(16) REQD

B

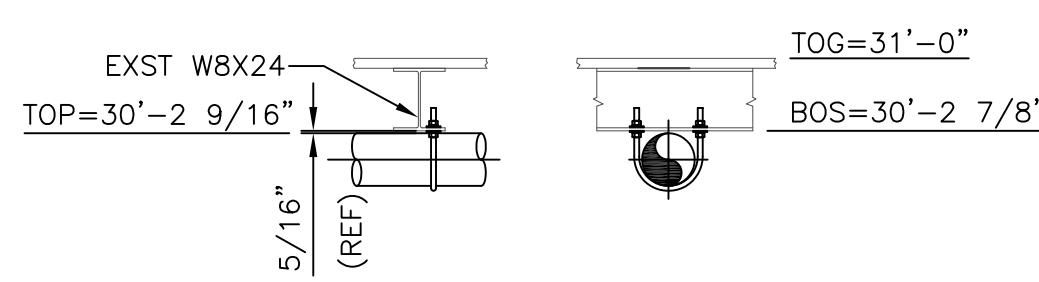


PS-2
DWG M6001
SCALE: 1/2"=1'
(2) REQD



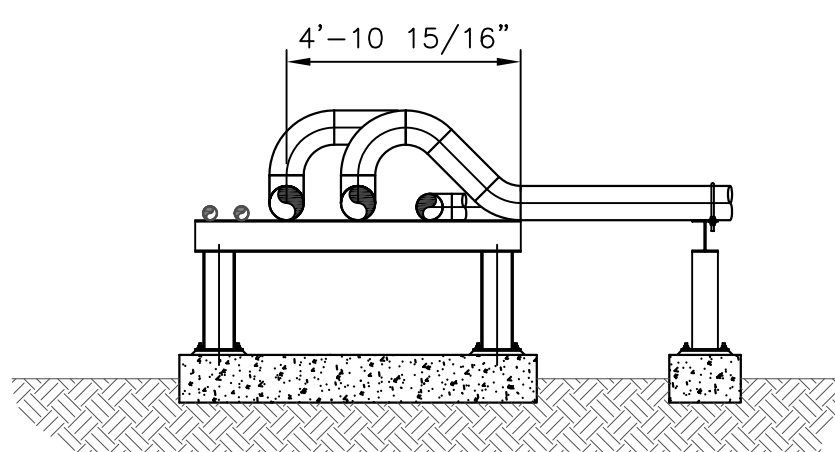
PS-5
DWG M6001
SCALE: 1/2"=1'
(2) REQD

C



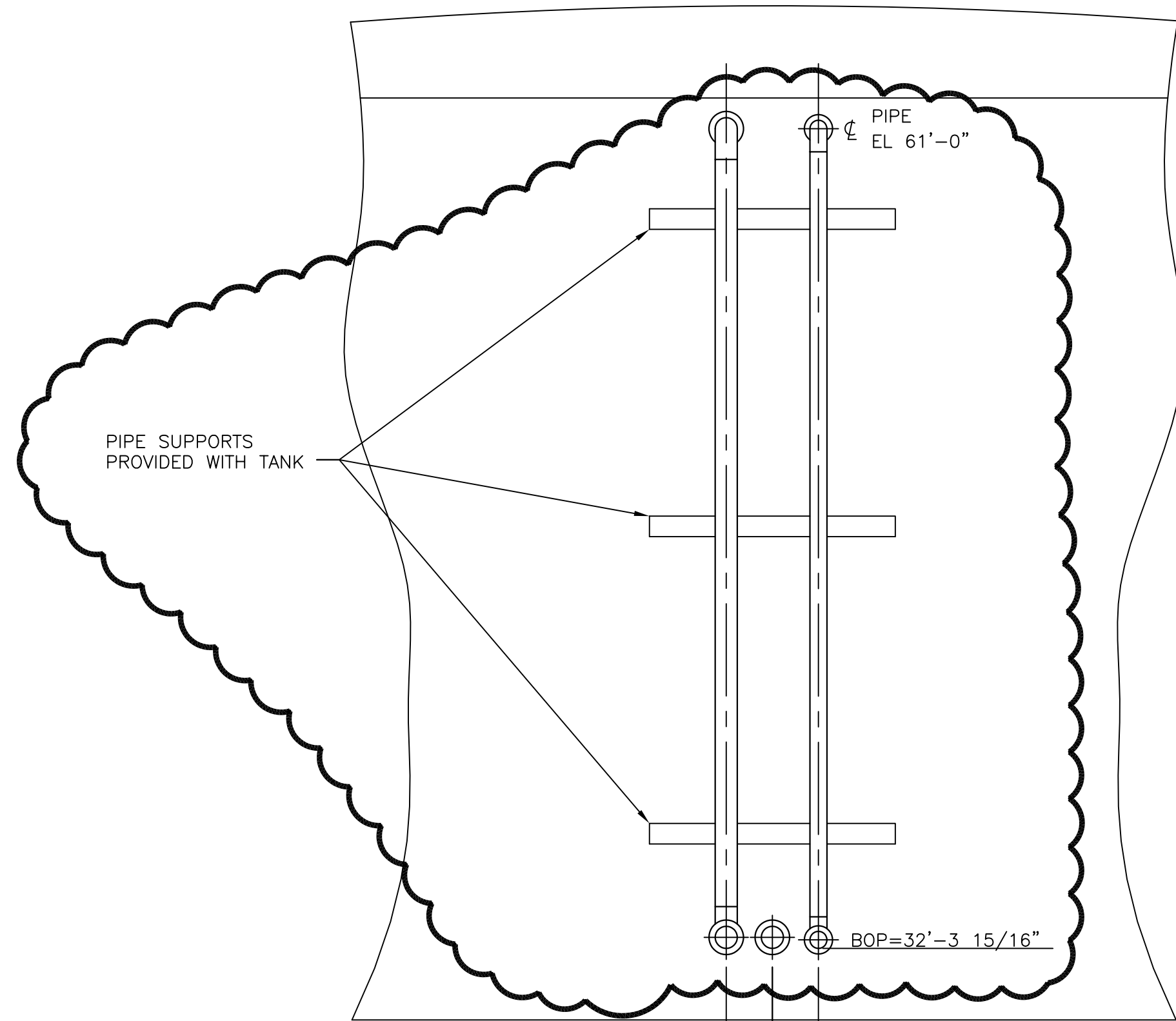
PS-3
DWG M6001
SCALE: 1/2"=1'
(3) REQD

D



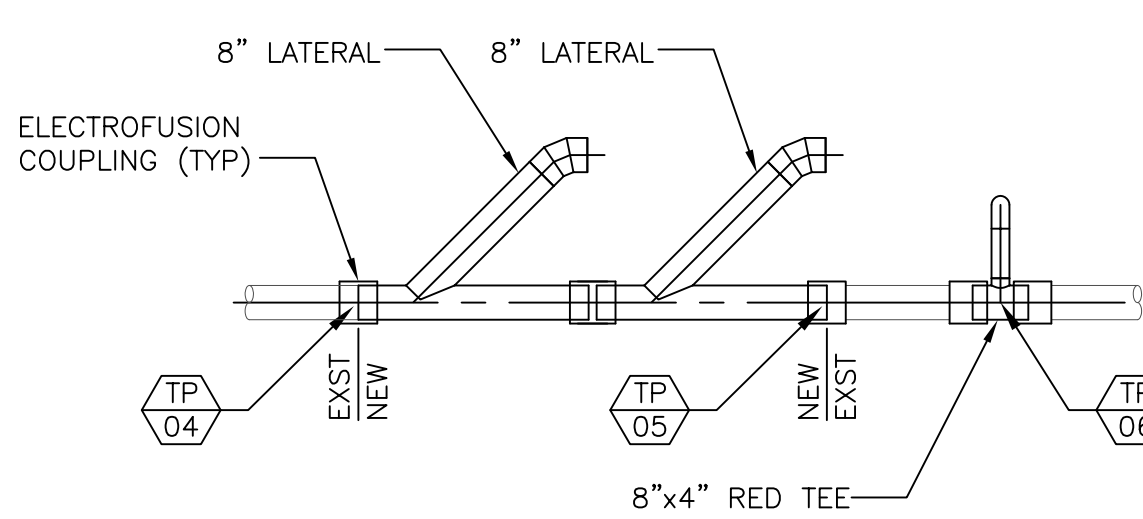
SECTION 1
DWG M6001
SCALE: 1/4"=1'

E

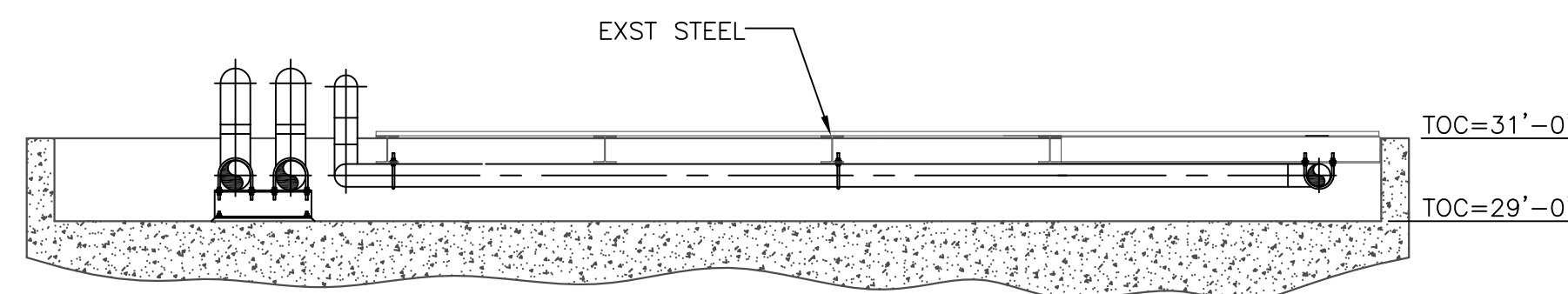


SECTION 2
DWG M6001, M6002
SCALE: 1/4"=1'

F



SECTION 3
DWG M6000
SCALE: 1/4"=1'



SECTION 4
DWG M6001
SCALE: 1/4"=1'

G

GENERAL NOTES

1. FOR GENERAL NOTES & TIE POINT LIST SEE DWG M6000.

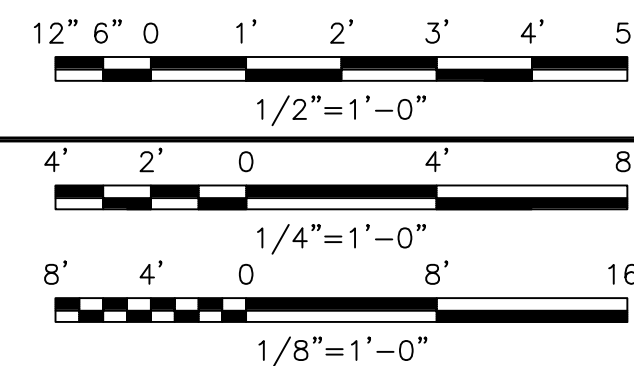
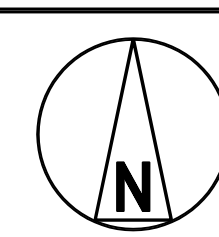
NOT TO BE USED
FOR CONSTRUCTION

THE DISTRIBUTION AND USE OF THE NATIVE FORMAT CAD FILE OF THIS DRAWING IS UNCONTROLLED. THE USER SHALL VERIFY TRACEABILITY OF THIS DRAWING TO THE LATEST CONTROLLED VERSION.

JEA
GREENLAND ENERGY CENTER
FUEL OIL SUPPLY & STORAGE
PIPING SECTIONS AND DETAILS

PROJECT NUMBER: 196116-CFOA-M6003
DRAWING NUMBER: 1
CODE: AREA: REFERENCE DWG NUMBER:

NO	DATE	REVISIONS AND RECORD OF ISSUE	DRN	DES	CHK	PDE	APP
1	07/AUG/2017	ADDENDUM 1	SAJ	SAJ	MBB	EEB	
0	26/JUL/2017	ISSUED FOR BIDS	SAJ	SAJ	MBB	EEB	



PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

BLACK & VEATCH	12740 Glen Roy Parkway West Suite 2140 Omaha, Nebraska 68128
ENGINEER: MBB	DRAWN: SAJ
CHECKED:	DATE:

NOTES:

1. PROVIDE (1) 2P-60A, CIRCUIT BREAKER IN EXISTING PANEL 638-PN-0005. NEW BREAKER TO FEED FUEL OIL TANK FOAM BUILDING DISTRIBUTION PANEL. NEW BREAKER SHALL MATCH EXISTING PANEL 638-PN-0005 RATINGS. SUBMIT BREAKER DATA TO ENGINEER FOR REVIEW.

PROJECT 196116 DOCUMANT CONTROL NOTES:

- A. EXISTING BACKGROUND INFORMATION DISPLAYED ON THIS DRAWING ORIGINATED FROM ZACHRY DRAWING D013784-572E60001, REVISION 1.
- B. THE ORIGINAL DRAWING AND SUBSEQUENT REVISIONS WITH APPROVAL NAMES, INITIALS P.E. SEAL, IF APPLICABLE, ARE MAINTAINED IN THE FILES OF JEA.
- C. ATTACHED REFERENCE FILE: NONE

125A MAIN CIRCUIT BREAKER
120/208V, 3 ϕ , 4W, 30P
10KA INTERRUPTING RATING
(4) 4/0 + #2GND 2 1/2C

PANELBOARD SCHEDULE

EXISTING PANEL: 638-PN-0005

SUPPLIED FROM: 638-XF-0005
TOTAL LINE AMPS: AØ : 23.1
BØ : 24.4.
CØ : 24.6

WIRE SIZE/CONDUIT	LOAD DESCRIPTION	CONNECTED LOAD			BKR. AMPS	CIR. NO.		CIR. NO.	BKR. AMPS	CONNECTED LOAD			LOAD DESCRIPTION	WIRE SIZE/CONDUIT
		A-PH	B-PH	C-PH						A-PH	B-PH	C-PH		
1#12,1#12 NEUT., 1#12 GND, 3/4" C	LIGHTS	7			20	1		2	20	6			NORTH SIDE RECEPTACLES	1#12,1#12 NEUT., 1#12 GND, 3/4" C
1#12,1#12 NEUT., 1#12 GND, 3/4" C	EXTERIOR LIGHTS		10.7		20	3		4	20		6		SOUTH SIDE RECEPTACLES	1#12,1#12 NEUT., 1#12 GND, 3/4" C
1#12,1#12 NEUT., 1#12 GND, 3/4" C	EMERGENCY LIGHTS & EXIT			0.2	20	5		6	20			6	OUTSIDE RECEPTACLES	1#12,1#12 NEUT., 1#12 GND, 3/4" C
1#12,1#12 NEUT., 1#12 GND, 3/4" C	572-CP-0016 - ELEC. CONTROLLER	1			20	7		8	20	1			572-CP-0017- JOCKEY CNTL / HEATER	1#12,1#12 NEUT., 1#12 GND, 3/4" C
	SPARE		0.0		20	9		10	20		0.0		SPARE	1#12,1#12 NEUT., 1#12 GND, 3/4" C
1#12,1#12 NEUT., 1#12 GND, 3/4" C	572-FN-0001			4.4	20	11		12	20			13	FIRE PUMP JACKET WATER HEATER	1#12,1#12 NEUT., 1#12 GND, 3/4" C
1#12,1#12 NEUT., 1#12 GND, 3/4" C	572-FN-0002	4.4			20	13		14	60	3.7			FUEL STOR TANKS FOAM FIRE HOUSE POWER PANEL	2 #4, #4 NEUTM #6 GND, 2" C
1#12,1#12 NEUT., 1#12 GND, 3/4" C	572-CP-0015 - HEATER		4		20	15		16	60		3.7			
1#12,1#12 NEUT., 1#12 GND, 3/4" C	572-CP-0015 - DIESEL CONTRL			1	20	17		18				0.0	SPACE	
	SPACE	0.0				19		20		0.0			SPACE	
	SPACE		0.0			21		22			0.0		SPACE	
	SPACE			0.0		23		24				0.0	SPACE	
	SPACE	0.0				25		26		0.0			SPACE	
	SPACE		0.0			27		28			0.0		SPACE	
	SPACE			0.0		29		30				0.0	SPACE	
	ODD POLE AMP TOTALS	12.4	14.7	5.6						10.7	9.7	19.0	EVEN POLE AMP TOTALS	

CIRCUIT: C50002-02
NOTE 1

* CIRCUIT WIRING TO FIRE PUMP CONTROLLERS & WATER JACKET HEATERS BY OTHERS

18.2s (LMS Tech)
17" x 22"

BAU57645 ACAD
1=1
02/09/16 15:07:51

NOT TO BE USED
FOR CONSTRUCTION

THE DISTRIBUTION AND USE OF THE NATIVE FORMAT CAD
FILE OF THIS DRAWING IS UNCONTROLLED. THE USER
SHALL VERIFY TRACEABILITY OF THIS DRAWING TO THE
LATEST CONTROLLED VERSION.

[illegible]

NOTES:

1. PROVIDE (1) 3P-60A, CIRCUIT BREAKER IN EXISTING PANEL 631-PN-0004. NEW BREAKER TO FEED FUEL OIL TANK WELDING OUTLETS. NEW BREAKER SHALL MATCH EXISTING PANEL 631-PN-00045 RATINGS. SUBMIT BREAKER DATA TO ENGINEER FOR REVIEW.

PROJECT 196116 DOCUMANT CONTROL NOTES:

- A. EXISTING BACKGROUND INFORMATION DISPLAYED ON THIS DRAWING ORIGINATED FROM ZACHRY DRAWING D013784-572E60001, REVISION 1.
- B. THE ORIGINAL DRAWING AND SUBSEQUENT REVISIONS WITH APPROVAL NAMES, INITIALS P.E. SEAL, IF APPLICABLE, ARE MAINTAINED IN THE FILES OF JEA.
- C. ATTACHED REFERENCE FILE: NONE

225A MAIN CIRCUIT BREAKER
480V, 3 ϕ , 3W, 30P
50KA INTERRUPTING RATING
(4) 4/0 + #2GND 2 1/2C

PANELBOARD SCHEDULE
EXISTING PANEL: 631-PN-0004

TOTAL LINE AMPS: AØ : 59.6
 BØ : 59.6
 CØ : 59.6

LOAD DESCRIPTION	CONNECTED LOAD			BKR. AMPS	CIR. NO.		CIR. NO.	BKR. AMPS	CONNECTED LOAD			LOAD DESCRIPTION
	A-PH	B-PH	C-PH						A-PH	B-PH	C-PH	
572-UH-0001	5.8			20	1		2	20	5.8			572-UH-0002
		5.8		20	3		4	20		5.8		
			5.8	20	5		6	20			5.8	
SPARE	0.0			20	7		8	50	36			638-XF-0005
		0.0		20	9		10	50		36		
			0.0	20	11		12	50			36	
WELDING OUTLET WR1 & WR2	12.0			60	13		14	20	0.0			SPARE
		12.0		60	15		16	20		0.0		
			12.0	60	17		18	20			0.0	
SPACE	0.0				19		20		0.0			SPACE
SPACE		0.0			21		22			0.0		SPACE
SPACE			0.0		23		24				0.0	SPACE
SPACE	0.0				25		26		0.0			SPACE
		0.0			27		28			0.0		SPACE
SPACE			0.0		29		30				0.0	SPACE
ODD POLE AMP TOTALS	17.8	17.8	17.8						41.8	41.8	41.8	EVEN POLE AMP TOTALS

631-PN-0004-13,15,17

18.2s (LMS Tech)
17" x 22"

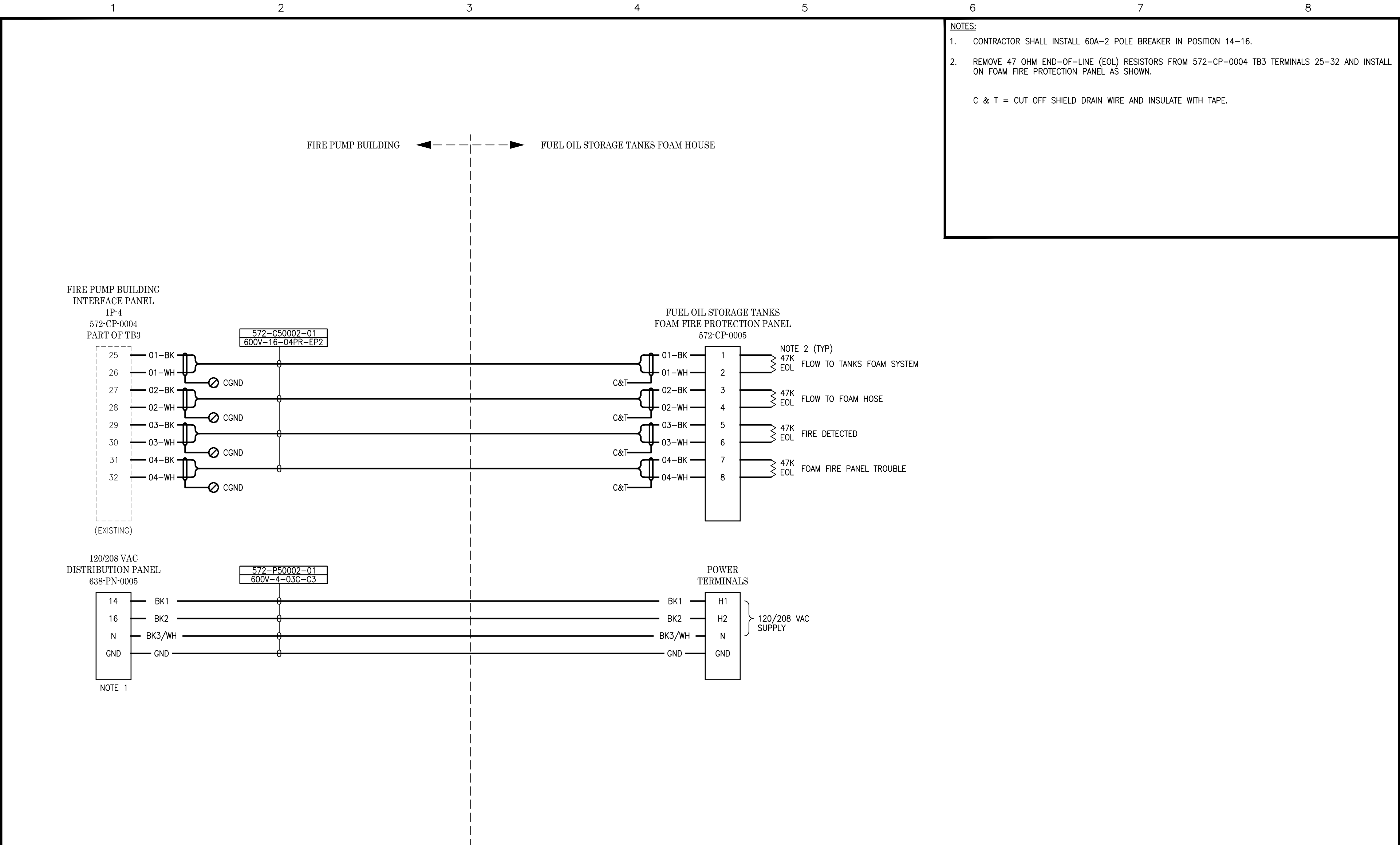
BAU57645 ACAD
1=1
02/09/16 15:07:51

NOT TO BE USED
FOR CONSTRUCTION

THE DISTRIBUTION AND USE OF THE NATIVE FORMAT CAD
FILE OF THIS DRAWING IS UNCONTROLLED. THE USER
SHALL VERIFY TRACEABILITY OF THIS DRAWING TO THE
LATEST CONTROLLED VERSION.

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BAU57645 ACAD 1=1 02/09/16 15:07:51 18.2s (LMS Tech) 17" x 22"

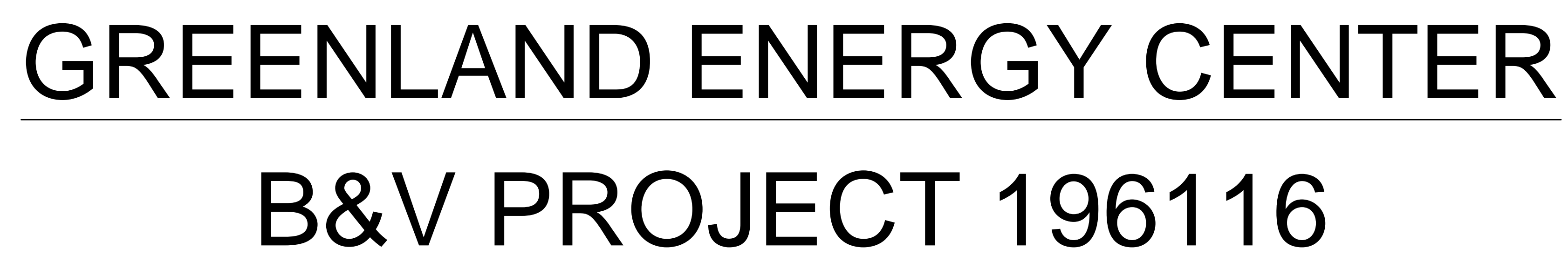


- NOTES:**
- CONTRACTOR SHALL INSTALL 60A-2 POLE BREAKER IN POSITION 14-16.
 - REMOVE 47 OHM END-OF-LINE (EOL) RESISTORS FROM 572-CP-0004 TB3 TERMINALS 25-32 AND INSTALL ON FOAM FIRE PROTECTION PANEL AS SHOWN.
- C & T = CUT OFF SHIELD DRAIN WIRE AND INSULATE WITH TAPE.

**NOT TO BE USED
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FUEL OIL & DEMINERALIZED WATER SUPPLY AND STORAGE

PROJECT DRAWING LIST

GENERAL DRAWINGS

196116-CUUU-G0000 - FUEL OIL & DEMINERALIZED WATER SUPPLY & STORAGE - COVER SHEET

CIVIL DRAWINGS

196116-CSTF-S3000	- GRADING & DRAINAGE DRAWING-KEY PLAN LAYOUT
196116-CSTF-S3030	- FUEL OIL CONTAINMENT-GRADING AND DRAINAGE PLAN
196116-CSTF-S3040	- FUEL OIL CONTAINMENT-GEOMEMBRANE LINER PLAN
196116-CSTF-S3720	- FUEL OIL CONTAINMENT -SECTIONS AND DETAILS
196116-CUUU-S5500	- FUEL OIL & DEMINERALIZED WATER STORAGE FOUNDATION
196116-CFOA-S5501	- FUEL OIL STORAGE TANK-FOUNDATION PLAN, SECTIONS AND DETAILS
196116-CWSH-S5502	- DEMINERALIZED WATER STORAGE TANK-FOUNDATION PLAN, SECTIONS AND DETAILS
196116-CFOA-S5503	- FUEL OIL CONTAINMENT FOUNDATIONS-PIPING SLEEPERS
196116-CFOA-S5504	- FUEL OIL CONTAINMENT FOUNDATIONS-MISCELLANEOUS
196116-CFOA-S6001	- FUEL OIL CONTAINMENT STEEL-MISCELLANEOUS

MECHANICAL DRAWINGS

196116-CFPA-M2361 - PIPING & INSTRUMENT DIAGRAM-FUEL OIL FIRE PROTECTION
196116-CFOA-M2401 - PIPING & INSTRUMENT DIAGRAM-FUEL OIL SUPPLY AND STORAGE
196116-CWWW-M2643 - PIPING & INSTRUMENT DIAGRAM-FUEL OIL CONTAINMENT AREA DRAIN
196116-CWSH-M2668 - PIPING & INSTRUMENT DIAGRAM-DEMIN WATER NOx INJECT SUPPLY AND STORAGE
196116-CFOA-M6000 - FUEL OIL & DEMERALIZED WATER STORAGE -PIPING KEY PLAN, TIE POINTS AND GENERAL NOTES
196116-CFOA-M6001 - FUEL OIL SUPPLY & STORAGE-PIPING PLAN
196116-CFOA-M6002 - FUEL OIL SUPPLY & STORAGE-PIPING PLAN
196116-CFOA-M6003 - FUEL OIL SUPPLY & STORAGE-PIPING SECTIONS AND DETAILS
196116-CWSH-M6010 - DEMINERALIZED WATER SUPPLY & STORAGE-PIPING PLAN
196116-CWSH-M6011 - DEMINERALIZED WATER SUPPLY & STORAGE-PIPING SECTIONS AND DETAILS

ELECTRICAL DRAWINGS

196116-CAAA-E0001 - FUEL OIL SUPPLY & STORAGE - ELECTRICAL LEGEND AND GENERAL NOTES
196116-CAAA-E0002 - FUEL OIL SUPPLY & STORAGE - ELECTRICAL DETAILS
196116-CFOA-E3001 - FUEL OIL TANKS - ELECTRICAL SITE PLAN
196116-CFOA-E3010 - DEMINERALIZED WATER TANK - ELECTRICAL SITE PLAN
196116-CFPU-E1601 - FIRE PUMP BUILDING - PANELBOARD SCHEDULE
196116-CFPU-E1602 - FIRE PUMP BUILDING - PANELBOARD SCHEDULE

CONTROL DRAWINGS

196116-CFOA-K2001 - INSTRUMENT LOOP DIAGRAM - FUEL OIL SYSTEM
196116-CFPU-K2001 - INSTRUMENT LOOP DIAGRAM - PLANT FIRE PROTECTION SYSTEM
196116-CWSH-K2001 - INSTRUMENT LOOP DIAGRAM - DEMINERALIZED WATER TANK

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[illegible]

BAU57645 ACAD 1=1 18.2s (LMS Tech)
08/07/17 15:34:14 34⁰ x 44⁰ Q

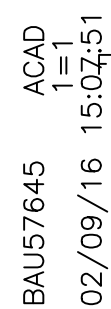
1. CONTRACTOR TO INSTALL TERMINAL BLOCK IN EXISTING PULLBOX AT DEMIN WATER SUPPLY PUMPS SKID. PULL BACK EXISTING CABLE 513-150001-01 FROM TANK LEVEL SWITCHES INTO PULLBOX AND TERMINATE ON NEW TB. INSTALL THREE NEW CABLES FROM TB TO FIELD DEVICES USING EXISTING CONDUIT FOR EXISTING DEVICES, AS SHOWN.
2. DCS TERMINATION LOCATIONS TO BE ASSIGNED BY JEA AT TIME OF CONSTRUCTION.
3. CORRECTED TAG ID FOR EXISTING CABLE.

C & T = CUT OFF SHIELD DRAIN WIRE AND INSULATE WITH TAPE.

A. EXISTING BACKGROUND INFORMATION DISPLAYED ON THIS DRAWING ORIGINATED FROM ZACHRY DRAWING B013784-513C50001, REVISION 0.

B. THE ORIGINAL DRAWING AND SUBSEQUENT REVISIONS WITH APPROVAL NAMES, INITIALS P.E. SEAL, IF APPLICABLE, ARE MAINTAINED IN THE FILES OF JEA.

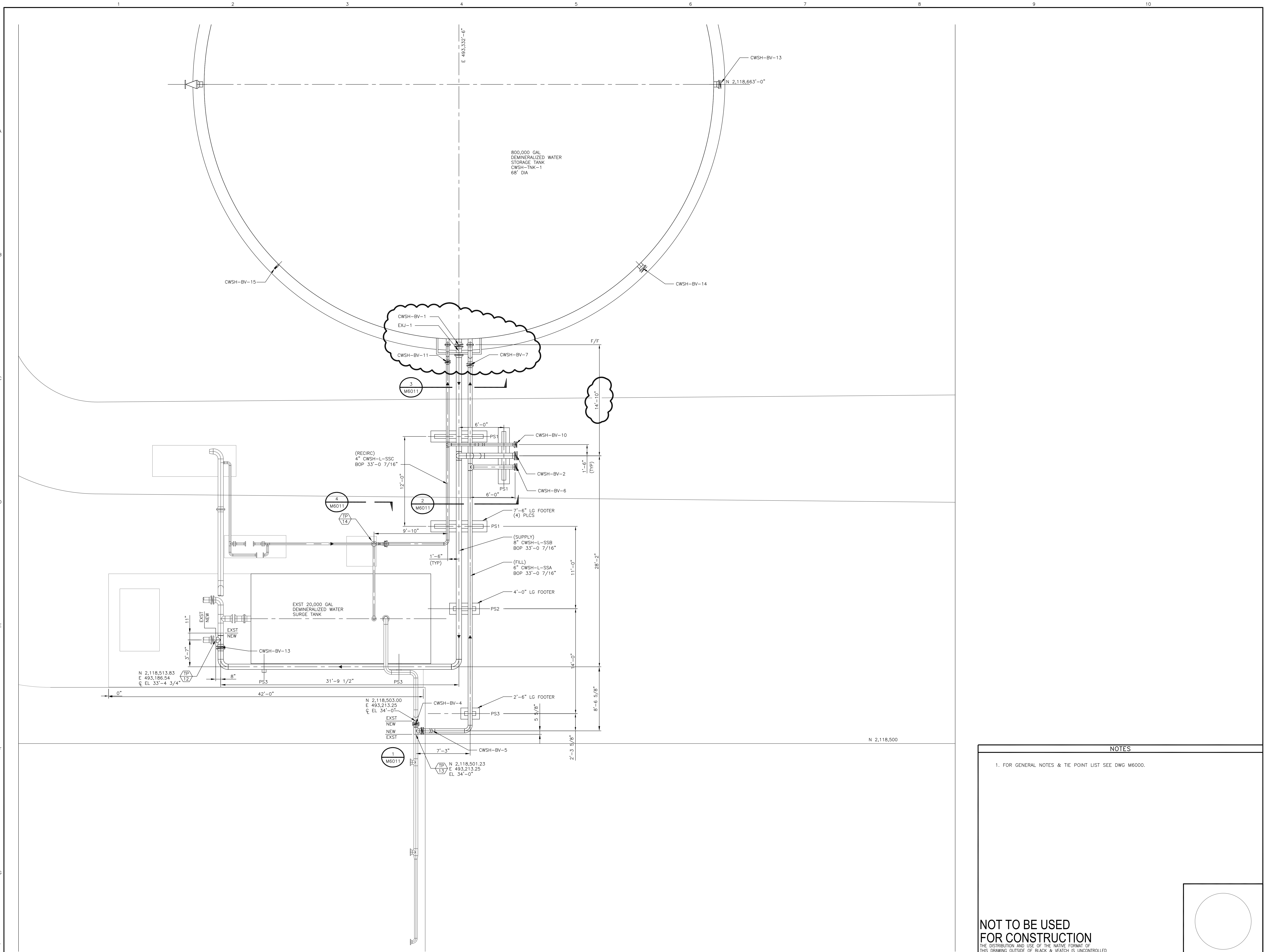
C. ATTACHED REFERENCE FILE: NONE



THE DISTRIBUTION AND USE OF THE NATIVE FORMAT CAD
FILE OF THIS DRAWING IS UNCONTROLLED. THE USER
SHALL VERIFY TRACEABILITY OF THIS DRAWING TO THE
LATEST CONTROLLED VERSION.

[illegible]

JOH57765 ACAD 18.26 (LMS Tech)
07/26/17 15:31:28 1/4"=1'-0"



NOTES

1. FOR GENERAL NOTES & TIE POINT LIST SEE DWG M6000.

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FOR CONSTRUCTION

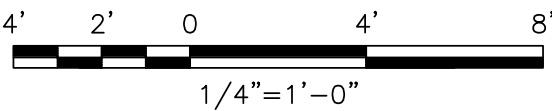
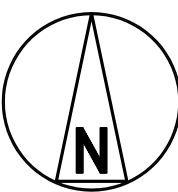
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BLACK & VEATCH	
ENGINEER: MBB	DRAWN: SAJ
CHECKED:	DATE:

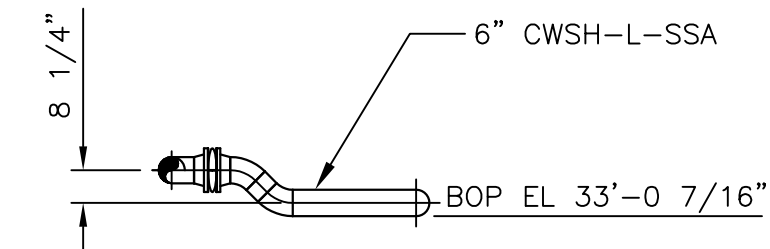
JEA GREENLAND ENERGY CENTER	
DEMINERALIZED WATER SUPPLY & STORAGE PIPING PLAN	

PROJECT NUMBER: 196116-CWSH-M6010	DRAWING NUMBER: 1
CODE:	REFERENCE DWG NUMBER:
AREA:	

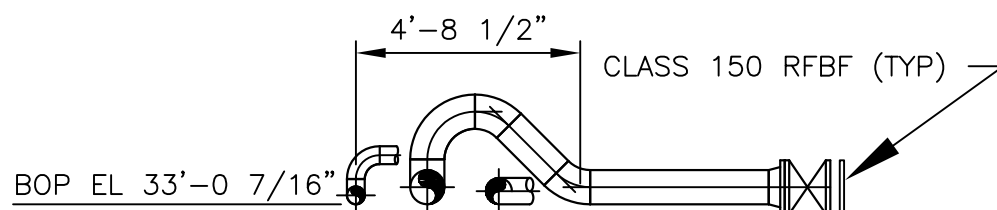
NO	DATE	REVISIONS AND RECORD OF ISSUE	DRN	DES	CHK	PDE	APP
1	07/AUG/2017	ADDENDUM 1					
0	26/JUL/2017	ISSUED FOR BIDS					



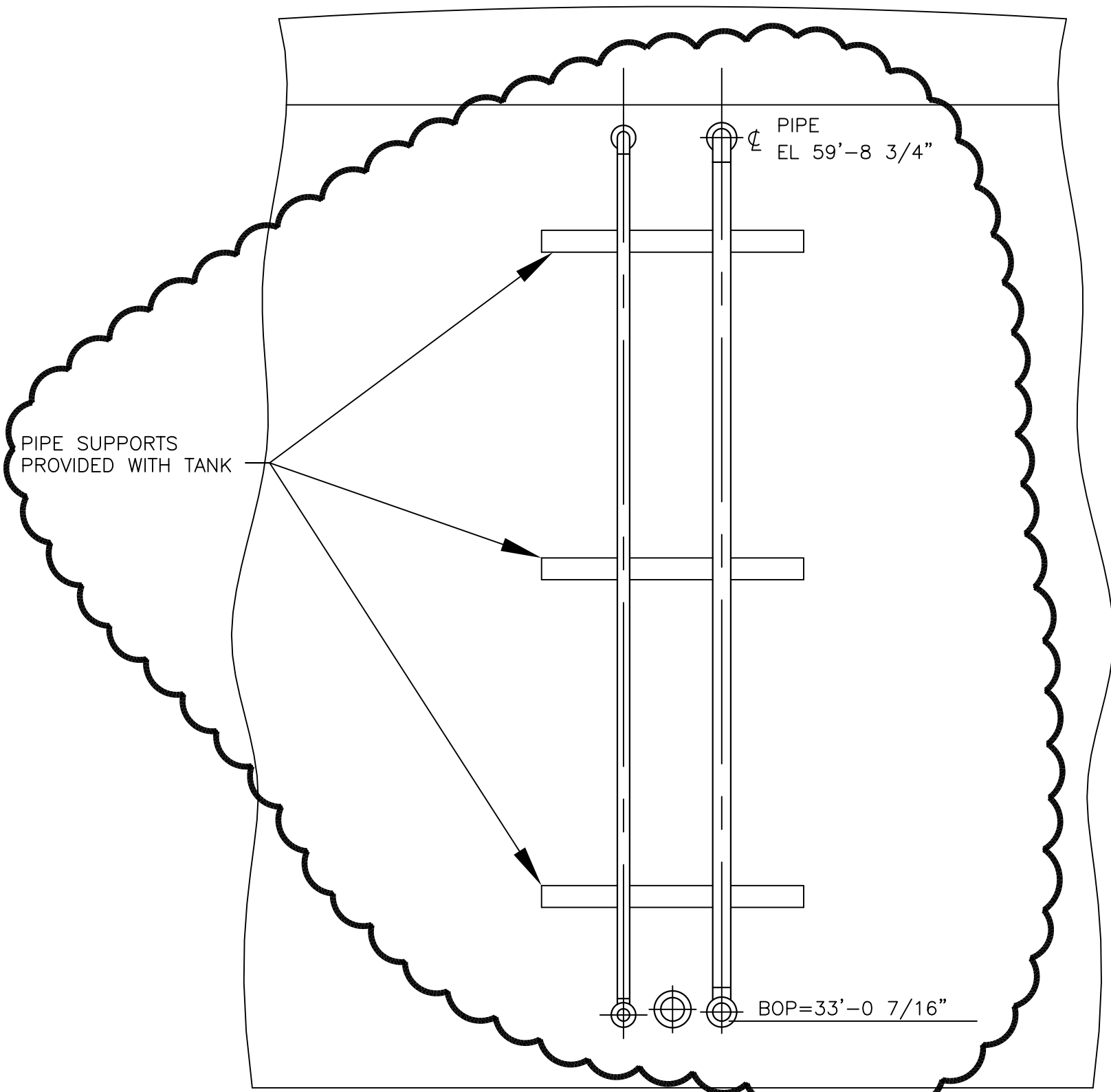
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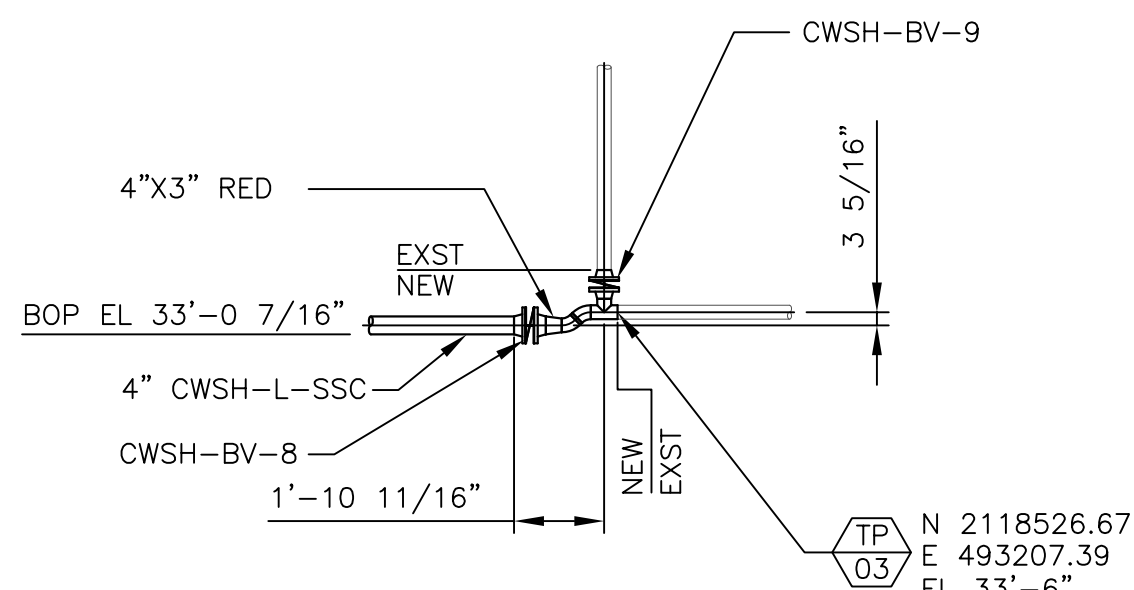
ELEVATION LOOKING NORTH
SECTION 1
DWG M6010



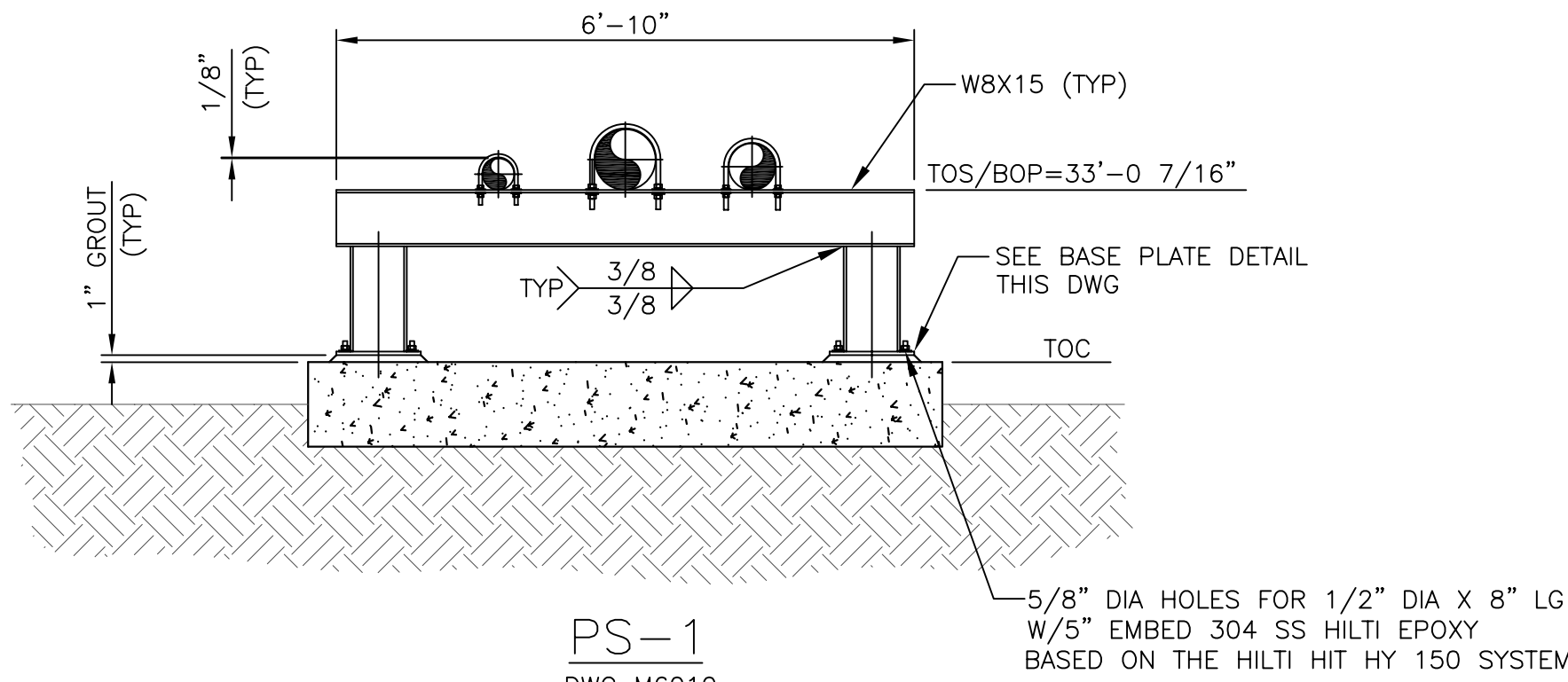
ELEVATION LOOKING NORTH
SECTION 2
DWG M6010



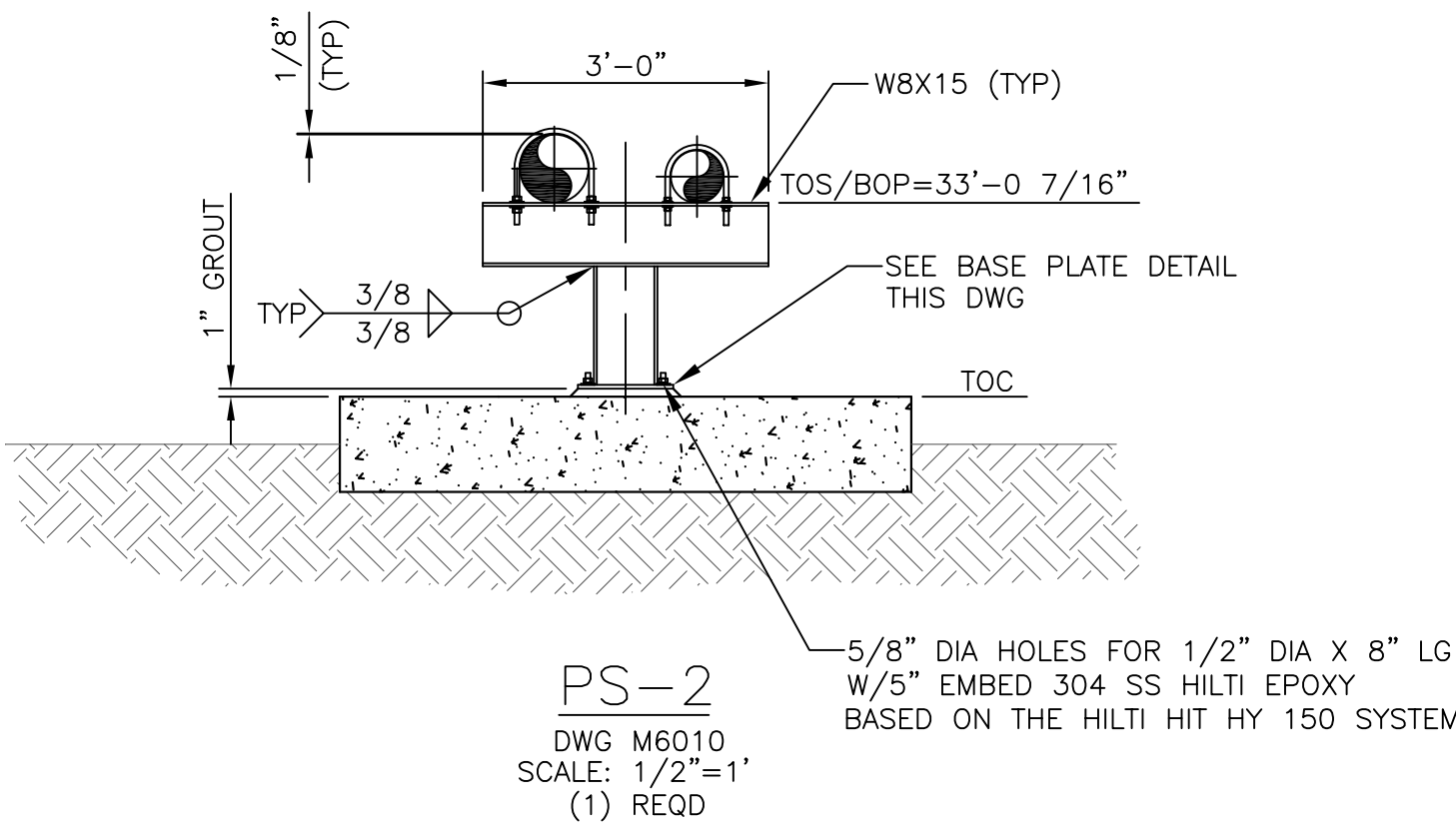
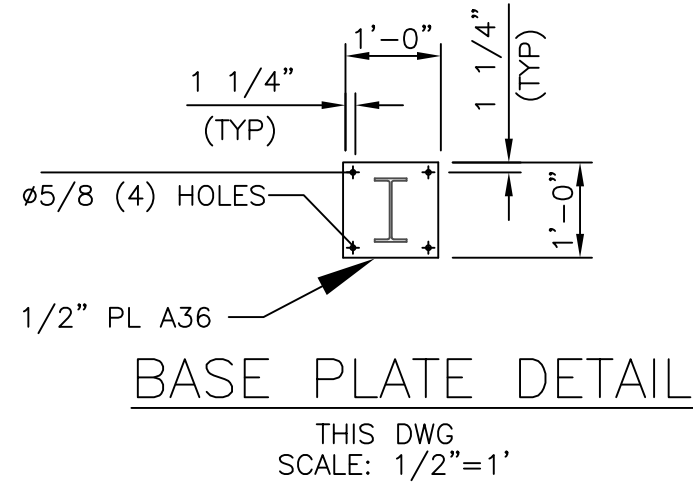
ELEVATION LOOKING NORTH
SECTION 3
DWG M6010



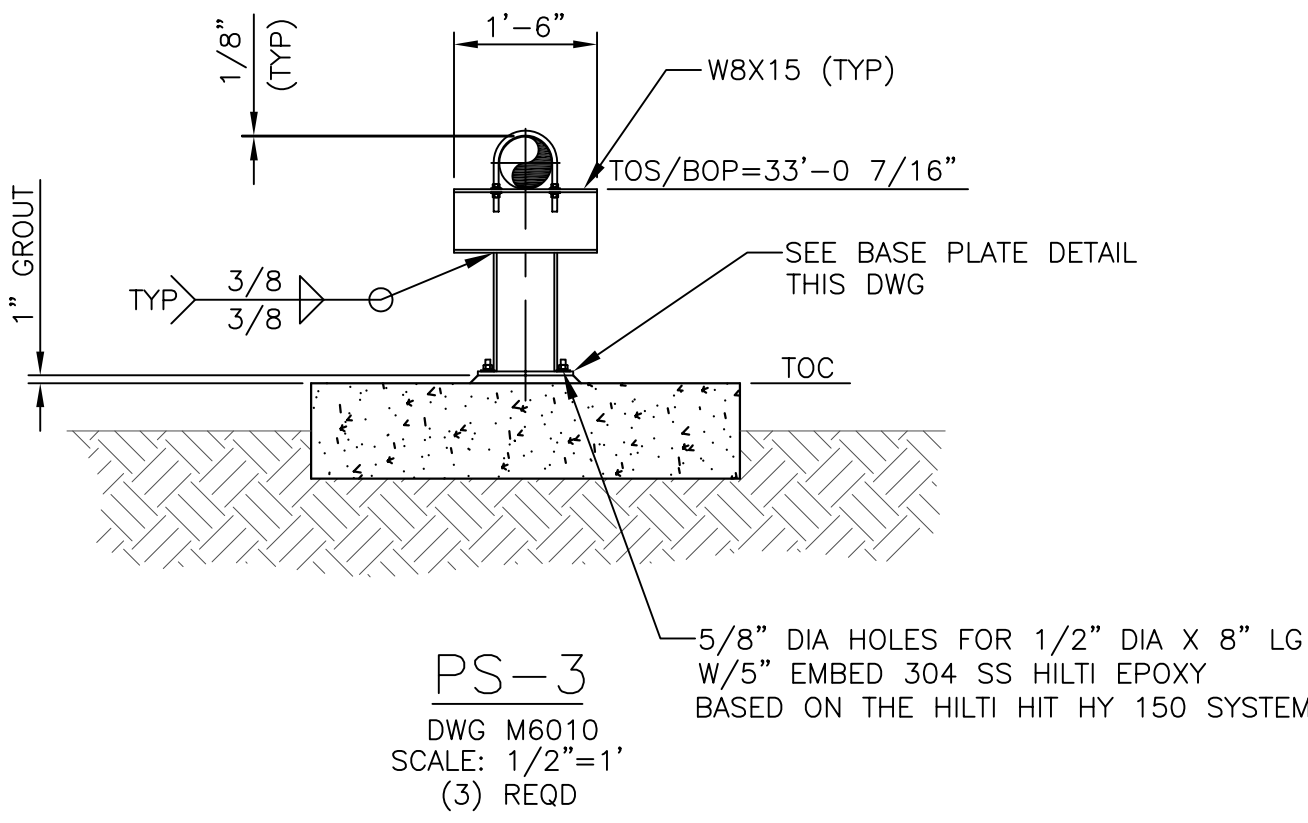
ELEVATION LOOKING SOUTH
SECTION 4
DWG M6010



PS-1
DWG M6010
SCALE: 1/2"=1'
(4) REQD



PS-2
DWG M6010
SCALE: 1/2"=1'
(1) REQD



PS-3
DWG M6010
SCALE: 1/2"=1'
(3) REQD

NOTES

1. FOR GENERAL NOTES & TIE POINT LIST SEE DWG M6000

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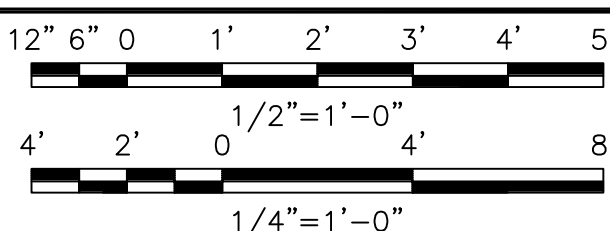
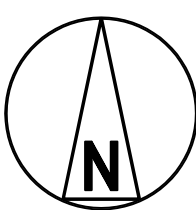
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JEA
GREENLAND ENERGY CENTER
DEMINERALIZED WATER SUPPLY & STORAGE
PIPING SECTIONS AND DETAILS

PROJECT NUMBER:
196116-CWSH-M6011
DRAWING NUMBER:
1
REV

BLACK & VEATCH
12740 Glen Bay Parkway West
Suite 2140
Jacksonville, Florida 32258
PHONE: 904.332.8122
FAX: 904.332.8122
ENGINEER: MBB
DRAWN: SAJ
CHECKED: DATE:

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NO	DATE	REVISIONS AND RECORD OF ISSUE	DRN	DES	CHK	PDE	APP
1	07/AUG/2017	ADDENDUM 1	SAJ	SAJ	MBB	EEB	
0	26/JUL/2017	ISSUED FOR BIDS	SAJ	SAJ	MBB	EEB	