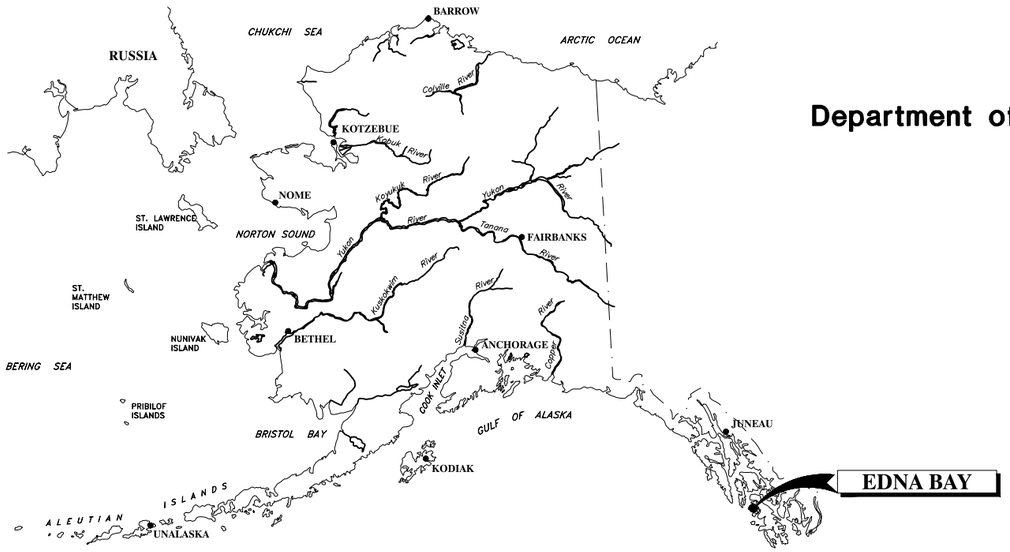


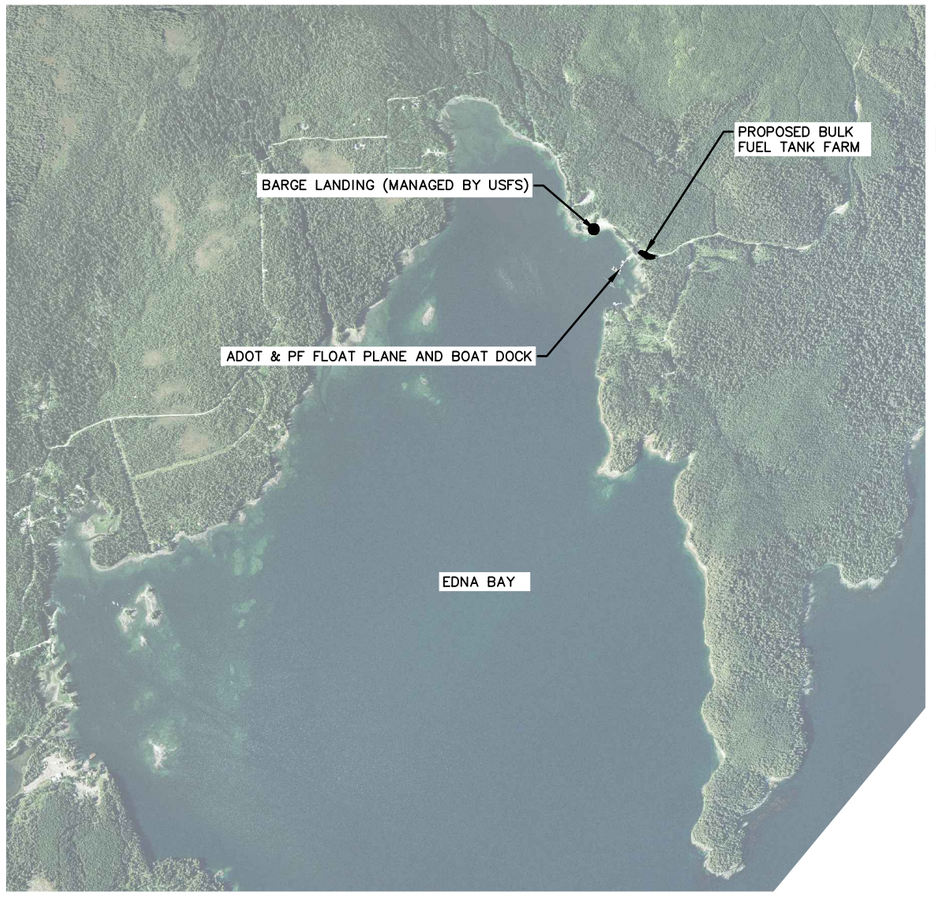
EDNA BAY, ALASKA

BULK FUEL UPGRADE PROJECT
ISSUED FOR CONSTRUCTION
APRIL, 2015

State of Alaska
Department of Community and Economic Development

ALASKA ENERGY AUTHORITY

813 West Northern Lights Blvd.
Anchorage, Alaska 99503



Project Number (Consultant) 30406.00 (AEA) ITB 15131

AEA Project Manager KARL REICHE, P.E.

Contractor —

Final Design (Date) —

Fire Marshal Approval (Date) —

Construction Period (From) _____ (To) _____

As-Builts (Date) _____

CRW ENGINEERING GROUP, LLC
3940 Arctic Blvd. Suite 300
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PHONE: (907) 562-3252
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STATE OF ALASKA — 49TH — Andy Horazdovsky — ANDY HORAZDOVSKY — CE-14054 — 04/07/2015 — REGISTERED PROFESSIONAL ENGINEER

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J:\Jobsdata\30406.00 Edna Bay Bulk Fuel Upgrades\00 CADD\01 Working Set\01 Civil\30406.00 C2 To C8, SITE PLAN, COVER.dwg

PROJECT SCOPE

THIS PROJECT PROVIDES FOR THE CONSTRUCTION OF NEW BULK FUEL STORAGE AND HANDLING FACILITIES IN EDNA BAY, ALASKA. SPECIFIC ACTIVITIES WILL INCLUDE THE CONSTRUCTION OF:

- A NEW BULK FUEL TANK FARM WITH THREE HORIZONTAL, SKID MOUNTED ABOVEGROUND STORAGE TANKS WITHIN A LINED CONCRETE WALL CONTAINMENT AREA.
- BULK TANKS INCLUDE:
  - (1) 20,000-GALLON GASOLINE STORAGE TANK
  - (1) 28,000-GALLON DUAL PRODUCT STORAGE TANK (8,000-GALLON DIESEL #1, 20,000-GALLON DIESEL #2)
  - (1) 5,000-GALLON DUAL PRODUCT, PROTECTED, DISPENSING TANK
- NEW THREE PRODUCT TRUCK FILL HEADER.
- NEW TRUCK FILL SECONDARY CONTAINMENT AREA. (ADDITIVE ALTERNATIVE #1)
- NEW DUAL PRODUCT RETAIL DISPENSER (GASOLINE AND DIESEL #2.)
- NEW HOSE REEL FLEET DISPENSER (DIESEL #1 AND DIESEL #2.)
- ONSITE POWER GENERATION, LIGHTING AND ELECTRICAL CONTROLS AS REQUIRED.
- REQUIRED SPILL CONTINGENCY EQUIPMENT AND REGULATORY PLANS.
- SPILL RESPONSE EQUIPMENT HOUSED WITHIN AN 8'x20' CONNEX
- RETAIL ATTENDANT KIOSK

GENERAL NOTES

1. SEE PROJECT TECHNICAL SPECIFICATIONS UNDER SEPARATE COVER.
2. ALL EXISTING UTILITIES MAY NOT BE SHOWN ON THESE PLANS. THE CONTRACTOR SHALL CONSULT WITH THE APPROPRIATE UTILITY ORGANIZATIONS TO VERIFY AND LOCATE UTILITIES PRIOR TO CONSTRUCTION. SEE UTILITY CONTACT INFORMATION ON THIS SHEET.
3. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO DETERMINE APPROPRIATE TEMPORARY CUT SLOPES AND SHORING FOR EXCAVATIONS AND TRENCHES FOR SITE SOILS, GROUNDWATER AND RUNOFF CONDITIONS AND SURFACE LOADING CONDITIONS. THE CONTRACTOR MUST COMPLY WITH APPLICABLE FEDERAL AND STATE OSHA REGULATIONS. THE CONTRACTOR SHALL MAINTAIN ALL SIGNS, BARRICADES, WARNING LIGHTS AND OTHER PROTECTIVE DEVICES NECESSARY FOR SAFETY AND TRAFFIC CONTROL.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING HIS WORK WITH EXISTING FACILITY OPERATORS, OTHER CONTRACTORS, SUBCONTRACTORS, THE CITY AND STATE AND FEDERAL AUTHORITIES.
5. THE DRAWINGS ARE DIAGRAMMATIC AND DO NOT NECESSARILY SHOW ALL FEATURES OF THE REQUIRED WORK. PROVIDE ALL LABOR, EQUIPMENT AND MATERIALS REQUIRED FOR A COMPLETE, AND CODE COMPLIANT SYSTEM. VERIFY EXISTING FIELD CONDITIONS PRIOR TO STARTING CONSTRUCTION. IMMEDIATELY CONTACT THE ENGINEER FOR CLARIFICATION OF QUESTIONABLE ITEMS OR APPARENT CONFLICTS.
5. THE CONTRACTOR SHALL PREPARE AND SUBMIT A SWPPP IF ONE IS REQUIRED.
6. CONTRACTOR SHALL PROCURE AND ATTACH TANK NUMBERING LABELS AS SHOWN ON G2.
7. ALL ITEMS TO BE INSTALLED ARE NEW UNLESS SPECIFICALLY INDICATED AS EXISTING. INSTALL ALL MATERIALS AND EQUIPMENT IAW MANUFACTURERS RECOMMENDATIONS, INSTRUCTIONS, AND INSTALLATION DRAWINGS, UNLESS OTHERWISE INDICATED ON THE DRAWINGS.
8. THE SPECIFICATION OF A NAME BRAND PRODUCT FOLLOWED BY THE "OR EQUAL" PHRASE IS DONE MERELY TO ESTABLISH THE MINIMUM LEVEL OF QUALITY OF MATERIALS AND EQUIPMENT REQUIRED AND IS NOT A PRODUCT ENDORSEMENT. SUBMIT ANY PROPOSED SUBSTITUTIONS FOR REVIEW AND APPROVAL, UNLESS "NO SUBSTITUTIONS" IS SPECIFIED.
9. FACILITY DESIGN IS IN ACCORDANCE WITH THE 2009 INTERNATIONAL FIRE CODE, STATE OF ALASKA FIRE AND SAFETY REGULATIONS ADMINISTRATIVE CODES 13 AAC 50, 13 AAC 55, AND THE MOST RECENT MEMORANDUM OF AGREEMENT BETWEEN THE AEA AND THE STATE OF ALASKA FIRE MARSHALL.
10. CONTRACTOR TO PROVIDE SIGNAGE IAW THE SIGN SCHEDULE, AND AS IDENTIFIED ELSEWHERE IN THE DRAWINGS.
11. PERFORM WORK WITH SKILLED CRAFTSMEN SPECIALIZED IN SAID WORK. INSTALL ALL MATERIALS IN A NEAT, ORDERLY, AND SECURE FASHION, AS REQUIRED BY THE DRAWINGS AND SPECIFICATIONS AND COMMONLY RECOGNIZED STANDARDS OF GOOD WORKMANSHIP.
12. PIPE SUPPORTS SHALL BE SPACED A MAXIMUM OF 10' ON CENTER IAW THE 2009 UPC.
13. CONTRACTOR SHALL MAINTAIN A "REDLINE" SET OF DRAWINGS TO REFLECT FIELD CHANGES THROUGHOUT CONSTRUCTION. RED LINE CONSTRUCTION DRAWINGS SHALL BE SUBMITTED TO ENGINEER AT COMPLETION OF THE PROJECT.
14. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH U.S. ENVIRONMENTAL PROTECTION AGENCY, ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION, AND STATE AND FEDERAL OCCUPATIONAL HEALTH AND SAFETY REGULATIONS.

CLASSIFIED FILL

MATERIALS FURNISHED BY THE CONTRACTOR FOR USE AS TYPE I, TYPE II, AND TYPE III FILL SHALL BE GRADED WITHIN THE LIMITATIONS DELINEATED BELOW:

TYPE I		TYPE II		TYPE III	
U.S. STD SIEVE	CUMULATIVE % PASSING BY WEIGHT	U.S. STD SIEVE	CUMULATIVE % PASSING BY WEIGHT	U.S. STD SIEVE	CUMULATIVE % PASSING BY WEIGHT
4"	100	1"	100	18"	100
3"	60–100	3/8"	60–100	12"	40–60
#4	10–20	#4	40–85	6"	10–20
#200	0–10	#200	0–6	1"	0

ABBREVIATIONS

ADD ALT	ADDITIVE ALTERNATIVE
ADEC	ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION
ADOT	ALASKA DEPARTMENT OF TRANSPORTATION
AEA	ALASKA ENERGY AUTHORITY
ALCAP	ALUMINUM SURVEY CAP
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
API	AMERICAN PETROLEUM INSTITUTE
APPROX	APPROXIMATE
ASTM	AMERICAN SOCIETY FOR TESTING OF MATERIALS
AST	ABOVEGROUND STORAGE TANK
ASV	ANTI-SIPHON VALVE
AWS	AMERICAN WELDING SOCIETY
AP&T	ALASKA POWER AND TELEPHONE
BLDG	BUILDING
BV	BALL VALVE
CMP	CORRUGATED METAL PIPE
CP	CONTROL PANEL
CV	CHECK VALVE
DEMO	DEMOLISH
DFT	DRY FILM THICKNESS
DIA	DIAMETER
DWG	DRAWING
E	EAST
EA	EACH
EL	ELEVATION
ELEC	ELECTRIC
EPA	U.S. ENVIRONMENTAL PROTECTION AGENCY
ENGINEER	CRW ENGINEERING GROUP, LLC
E-VENT	EMERGENCY VENT
°F	FAHRENHEIT
FC	FLEX CONNECT
FF	FINISH FLOOR ELEV.
FG	FINISH GRADE
FOR	FUEL OIL RETURN
FOS	FUEL OIL SUPPLY
FPT	FEMALE NATIONAL PIPE TAPERED THREAD
FT	FOOT OR FEET
GA	GAUGE
GAL	GALLON
GALV	GALVANIZED
GPM	GALLONS PER MINUTE
HDPE	HIGH DENSITY POLYETHYLENE
HP	HORSE POWER
HR	HOUR
HOA	HAND OFF & AUTOMATE
IAW	IN ACCORDANCE WITH
IBC	INTERNATIONAL BUILDING CODE
ID	INSIDE DIAMETER
IFC	INTERNATIONAL FIRE CODE
IPC	INTERNATIONAL PLUMBING CODE
LF	LINEAR FEET
LB	POUND
M	METERS
MAX	MAXIMUM
MIL	0.001 INCH
MIN	MINIMUM
MLLW	MEAN LOWER LOW WATER
MNPT	MALE NATIONAL PIPE THREAD
MV	MOTORIZED BALL VALVE
N	NORTH
NC	NORMALLY CLOSED
NFS	NON-FROST SUSCEPTIBLE SOIL
NO	NORMALLY OPEN
NPT	NATIONAL PIPE TAPERED THREAD
NTS	NOT TO SCALE
NWR	NATIONAL WILDLIFE REFUGE
OAE	OR APPROVED EQUAL
OD	OUTSIDE DIAMETER
OSHA	OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION
OZ	OUNCE
PCC	PORTLAND CEMENT CONCRETE
PL	PLATE
PT	PRESSURIZED TEST TAP
PRV	PRESSURE RELIEF VALVE
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
R	RADIUS
RF	RAISED FACE
S	SEWER
SCH	SCHEDULE
SHPO	STATE HISTORIC PRESERVATION OFFICE
SIM	SIMILAR
SPEC	SPECIFICATION
SQ	SQUARE
SS	STAINLESS STEEL
SSPC	STEEL STRUCTURES PAINTING COUNCIL
STA	STATION
SY	SQUARE YARD
TBM	TEMPORARY BENCH MARK
TS	TUBE STEEL
TYP	TYPICAL
UG	UNDERGROUND
UL	UNDERWRITERS LABORATORY
UPC	UNIFORM PLUMING CODE
UST	UNDERGROUND STORAGE TANK
ULSD	ULTRA LOW SULFUR DIESEL
w/	WITH
W	WATER

TESTING, STARTUP AND COMMISSIONING PROCEDURES

1. CONTRACTOR SHALL PERFORM SYSTEM TESTING, STARTUP AND COMMISSIONING IN ACCORDANCE WITH THE PROCEDURES LISTED HERE AND IN ACCORDANCE WITH MANUFACTURER INSTRUCTIONS. LEAVE ALL WORK SITES IN AN ORDERLY CONDITION CONSISTENT WITH THAT FOUND UPON ARRIVAL.
2. PRESSURE TEST ALL PIPING AND FILL OUT AEA-APPROVED PIPELINE PRESSURE TEST REPORTS, NOTIFY ENGINEER SEVEN DAYS PRIOR TO PLANNED PRESSURE TESTING. THE ENGINEER OR HIS APPROVED REPRESENTATIVE SHALL BE PRESENT DURING ALL PRESSURE TESTING UNLESS DIRECTED OTHERWISE IN WRITING. DELIVER ORIGINAL REPORTS TO AEA AND A COPY TO THE ENGINEER.
3. TEST ALL PRESSURE RELIEF AND ANTI-SIPHON VALVES FOR PROPER OPERATION AT SPECIFIED PRESSURE.
4. CONTRACTOR SHALL BE PRESENT DURING INITIAL FILLING OF TANKS. UPON FILLING OF TANKS VERIFY PRODUCT LEVEL WITH GAUGING STICK AND RECALIBRATE ALL TANK GAUGES. REMOVE AND CLEAN ALL STRAINERS AFTER INITIAL FILLING.
5. CHECK ALL PUMPS FOR PROPER ROTATION. PRIOR TO OPERATING CENTRIFUGAL PUMPS PRIME THE PUMP CAVITY WITH FUEL. DURING COLD WEATHER (BELOW 40 °F), PRIOR TO INITIAL START UP, WARM PUMP BODY IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATION.
6. CHECK ALL CONTROL AND ALARM FUNCTIONS. MANIPULATE TANK FLOAT SWITCHES TO SIMULATE LOW AND HIGH LEVEL CONDITIONS. SET TIMING RELAYS FOR 30 SECONDS AND VERIFY TIME-OUT FUNCTION. RE-SET TIMERS TO SPECIFIED VALUES AFTER TESTING. VERIFY LATCHING AND RESET FUNCTIONS, EMERGENCY STOP FUNCTION, AND OPERATION OF ALL SIGNAL LAMPS AND HORNS. OBSERVE OPERATION OF MOTOR ACTUATED VALVES. VERIFY THAT ONSITE POWER GENERATION SYSTEM & AREA LIGHTING FUNCTION PROPERLY.
7. TEST THE TRUCK TRANSFER HOSE REEL, RETAIL DISPENSER, AND ALL RELATED COMPONENTS.
8. VERIFY ALL SIGNS, PLACARDS, AND VALVE TAGS ARE PROPERLY LOCATED. VERIFY PROPER PRODUCT COLOR CODE AND LABELING FOR ALL TANKS AND PIPING.
9. INSTALL PADLOCKS ON ALL VALVES AND FENCE GATES. KEY ALL LOCKS ALIKE. PROVIDE (2) SPARE LOCKS AND KEYS.
10. INSTRUCT LOCAL OPERATORS IN THE OPERATION AND MAINTENANCE OF ALL SYSTEMS. PLACE SPARE PARTS, INCINERATOR, AND SPILL RESPONSE SUPPLIES IN DESIGNATED LOCATION.

CIVIL LEGEND (GENERAL)

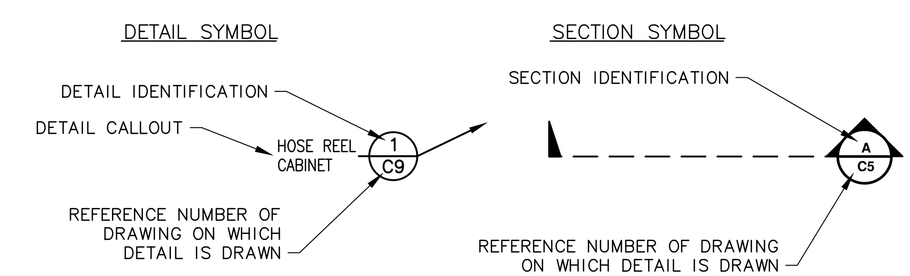
NOTE: SOME DETAILS UTILIZE SYMBOLS NOT IN THIS GENERAL LEGEND. WHERE THIS OCCURS, SYMBOLS ARE DEFINED ON THE SHEET IN WHICH THEY ARE USED.

- PROPERTY BOUNDARY
- CENTERLINE
- CULVERT
- EDGE OF WATER
- DITCH LINE/DRAINAGE SWALE
- 2% DRAINAGE DIRECTION & SLOPE
- TRAVELED WAY
- FILL SLOPE
- CUT SLOPE
- FENCE LINE
- FIRE EXTINGUISHER
- 20 GROUND ELEVATION CONTOURS
- BOLLARD
- PP POWER POLE
- 9 INFORMATION / WARNING SIGN
- 5 SHEET NOTE
- SURVEY MONUMENT
- TEST PIT
- XXX FINISH GRADE ELEVATION
- Ø DIAMETER
- ANTI-SIPHON VALVE
- BALL VALVE
- MOTOR ACTUATED BALL VALVE
- CHECK VALVE
- GATE VALVE
- PRESSURE RELIEF VALVE w/ FLOW DIRECTION
- P PRESSURE TEST TAP
- M METER
- F FILTER
- FLEXIBLE CONNECTOR
- (#10) WYE STRAINER (MESH SIZE)
- QUICK COUPLING
- SUBMERSIBLE PUMP
- VERTICAL PIPE TRANSITION
- REDUCER
- LEVEL FLOAT SWITCH
- HOSE REEL

PIPELINE DESIGNATIONS

DIESEL OR GASOLINE	——— XX ———	ABOVEGROUND PIPELINE: PROPOSED
DIESEL OR GASOLINE	— — — XX — —	UNDERGROUND PIPELINE: PROPOSED

DETAIL/SECTION REFERENCES



CALL BEFORE YOU DIG	
WATER/SEWER	CITY OF EDNA BAY 907-594-6301
ELECTRIC	

State of Alaska
Department of Community and Economic Development
AIDEA/AEA
Rural Energy Group
813 West Northern Lights Blvd.
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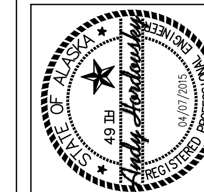

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FAX: (907) 561-2273

EDNA BAY, ALASKA
BULK FUEL UPGRADE
NOTES, LEGEND, & ABBREVIATIONS

NO.	REVISION	BY	DATE
0	ISSUED FOR CONSTRUCTION	AMH	04/2015

Plot Date 4/9/15
Designed AMH
Drawn AJG
Approved KRH

Sheet No. G1
SHEET G1 OF G5

File: J:\Jobsdata\30406.00 Edna Bay Bulk Fuel Upgrades\00 CADD\01 Working Set\01 Civil\30406.00 G1-G5, GENERAL SHEETS.dwg

NOTES:

1. INSTALL 7 PORTABLE FIRE EXTINGUISHERS, INCLUDING TWO IN THE CONCRETE WALL CONTAINMENT AREA, TWO AT THE HOSE REEL, ONE AT THE DISPENSER AND TWO SPARES TO BE STORED WITH SPILL RESPONSE EQUIPMENT. EXTINGUISHERS MOUNTED OUTSIDE SHALL BE WITHIN APPROVED WEATHER PROOF ENCLOSURE WITH HINGED DOORS. (TYP. 5)

2. SEE ELECTRICAL SHEETS FOR LOCATIONS OF EMERGENCY STOPS AND INSTALL SIGNS AT THOSE LOCATIONS.

SETBACK/SEPARATION REQUIREMENTS:

THE PROPOSED TANK FARM WILL PERFORM TWO FUNCTIONS – BULK STORAGE AND RETAIL/FLEET DISPENSING. ALL TANKS ARE INSTALLED ABOVE GROUND. TO COMPLY WITH THE REQUIREMENTS OF THE 2009 INTERNATIONAL FIRE CODE, EPA, THE 2013 ALASKA ENERGY AUTHORITY/DIVISION OF FIRE PREVENTION MEMORANDUM OF AGREEMENT, AND STATE OF ALASKA REGULATIONS THE FOLLOWING MINIMUM CLEARANCES ARE REQUIRED:

10' FROM THE DISPENSER TO ALL BUILDINGS AND PROPERTY LINES.
20' FROM THE DISPENSER TO FIXED SOURCES OF IGNITION.
50' FROM THE DISPENSER TO ALL UNPROTECTED TANKS. (INCLUDES STATIONARY TANK TRUCKS)
5' FROM PROTECTED DISPENSING TANKS (6000 GAL MAX) TO THE NEAREST IMPORTANT BUILDING OR NEAREST SIDE OF A PUBLIC WAY.
15' FROM PROTECTED DISPENSING TANKS (6000 GAL MAX) TO THE NEAREST PROPERTY LINE WHICH IS OR CAN BE BUILT UPON.
30' FROM 751–12,000 GAL BULK STORAGE TANKS TO THE NEAREST PROPERTY LINE WHICH IS OR CAN BE BUILT UPON.
40' FROM 12,001–30,000 GAL BULK STORAGE TANKS TO THE NEAREST PROPERTY LINE WHICH IS OR CAN BE BUILT UPON.
25' FROM THE BULK TRANSFER HOSE STAND TO THE NEAREST TANK, THE NEAREST IMPORTANT BUILDING, THE NEAREST PROPERTY LINE WHICH IS OR CAN BE BUILT UPON, COMBUSTIBLE MATERIALS, AND FIXED SOURCES OF IGNITION. DISTANCE MAY BE REDUCED TO 15' IF NOT USED FOR TRANSFER OF CLASS I LIQUIDS.
25' FROM FUEL TANKS AND PIPELINES TO RESIDENTIAL WATER WELLS
100' FROM FUEL TANKS AND PIPELINES TO PUBLIC WATER WELLS

WARNING SIGNS & INFORMATION PLACARD SCHEDULE:

PROVIDE ALL SIGNS INDICATED IN THE SCHEDULE BELOW, QUANTITY & LOCATION AS INDICATED ON THE DRAWINGS. ALL SIGNS SHALL BE CONSTRUCTED FROM 0.08" ALUMINUM PLATE, AND SIZED IAW 2009 IFC. SIGN LETTERING IS SHOWN BELOW IN QUOTATIONS. PROVIDE 3/16" HOLES IN ALL FOUR CORNERS. PROVIDE NON-REFLECTIVE VINYL BACKGROUND, 3M 3650-10, WITH 3M SERIES 225 HIGH PERFORMANCE VINYL LETTERS, ONE SIDE ONLY, COLOR AS INDICATED. ATTACH TO FENCING WITH GALVANIZED HOG RINGS OR STAINLESS STEEL CABLE TIES. SIGNAGE PLACED DIRECTLY ON TANKS SHALL CONSIST OF HIGH QUALITY ADHESIVE BACK DECALS OR PAINTED STENCILS.

WARNING SIGNS – RED LETTERING ON WHITE BACKGROUND (3" HIGH X 1/2" STROKE LETTERS)

(1) "DANGER FLAMMABLE LIQUIDS"

(2) "NO SMOKING NO OPEN FLAMES"

(3) "FLAMMABLE ____ GALLONS GASOLINE" OR "COMBUSTIBLE ____ GALLONS DIESEL", INSERT VOLUME IN GALLONS AS APPROPRIATE.

INFORMATIONAL PLACARDS – BLACK LETTERING ON WHITE BACKGROUND (2" HIGH 1/2" STROKE LETTERS)

(4) "IMPORTANT – PRIOR TO DISPENSING:
1. SHUT OFF MOTOR
2. DISCHARGE YOUR STATIC ELECTRICITY BEFORE FUELING BY TOUCHING A METAL SURFACE AWAY FROM THE NOZZLE
3. TO PREVENT STATIC CHARGE, DO NOT RE-ENTER YOUR VEHICLE WHILE FUEL IS PUMPING
4. IF A FIRE STARTS, DO NOT REMOVE NOZZLE – BACK AWAY IMMEDIATELY"

(5) "IT IS UNLAWFUL AND DANGEROUS TO DISPENSE FUEL INTO UNAPPROVED CONTAINERS"

(6) "ATTACH STATIC WIRE TO PORTABLE TANK PRIOR TO FILLING"

(7) "IN CASE OF FIRE SPILL OR RELEASE:"
1. USE EMERGENCY SHUTOFF
2. CONTACT THE COMMUNITY OF EDNA BAY (907)-594-6301
3. REPORT ACCIDENT TO ADEC (1-800-478-9300)

(8) "SPILL CONTINGENCY EQUIPMENT"

(9) "EMERGENCY SHUTOFF" – SEE ELECTRICAL FOR SIGN LOCATIONS

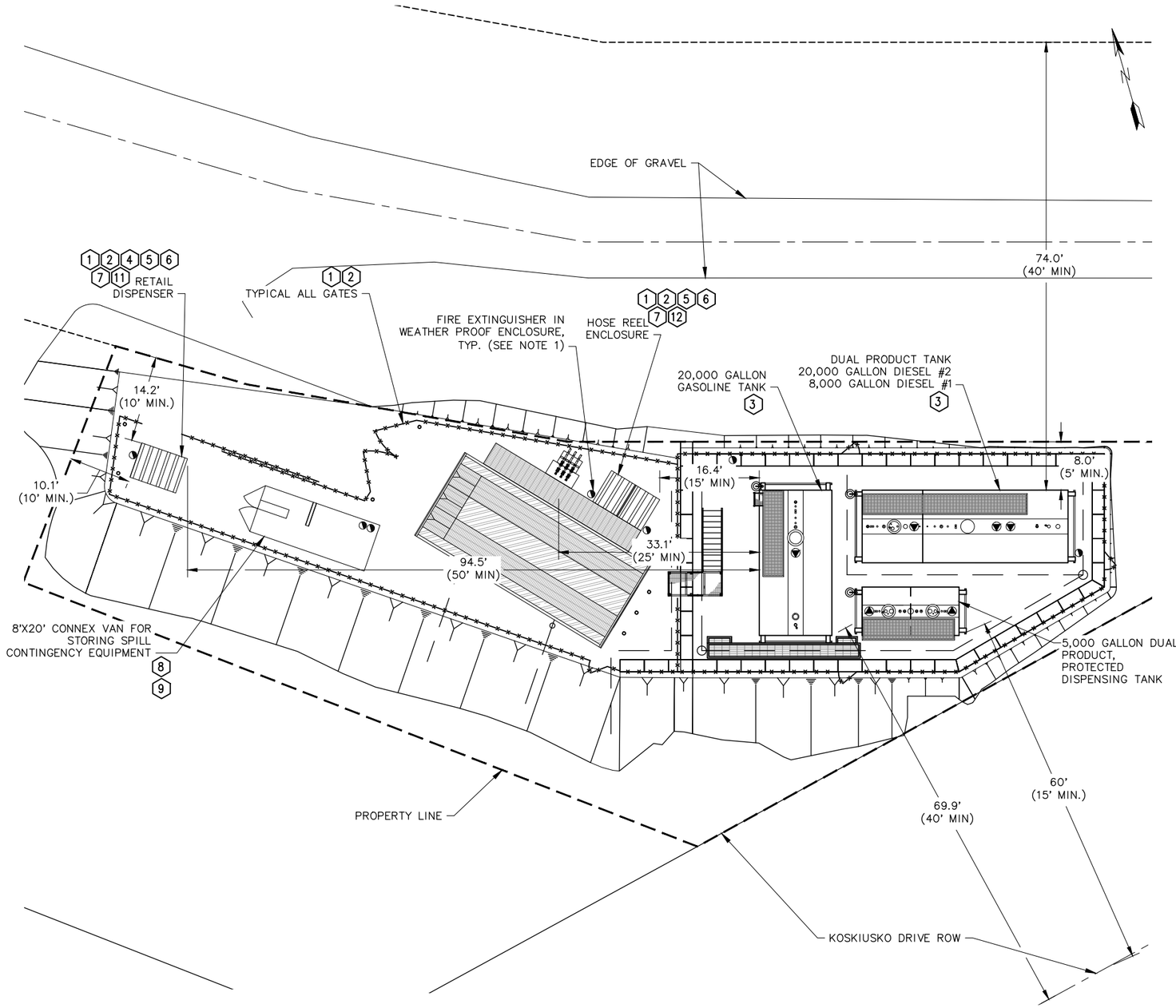
(10) "PRESSURE NOT TO EXCEED 70 PSI" (NOTE THIS SIGN IS WELDED TO THE TRUCK HEADER SUPPORT)

INSTRUCTION PLACARDS – BLUE LETTERING ON WHITE BACKGROUND (1/2" HIGH X 3/8" STROKE LETTERS)

(11) "RETAIL DISPENSING:
1. SEE ATTENDANT TO PRE-PAY FOR FUEL
2. REMOVE NOZZLE, LIFT LEVER AND BEGIN FUELING
3. REPLACE NOZZLE AFTER FUELING
4. SEE ATTENDANT FOR RECEIPT"

(12) "BULK TRANSFER/FLEET DISPENSING:
1. SHUT OFF VEHICLE AND CONNECT GROUNDING REEL.
2. RESET METER – SET TO DESIRED VOLUME
3. DEPRESS "PUMP ON" BUTTON LOCATED NEAR HOSE REEL.
4. PLACE NOZZLE IN FUEL RECEPTACLE
5. DEPRESS NOZZLE LEVER TO BEGIN FLOW
6. TO PREVENT STATIC CHARGE, DO NOT RE-ENTER YOUR VEHICLE WHILE FUEL IS PUMPING.
7. IF FIRE STARTS, DO NOT REMOVE NOZZLE – BACK AWAY IMMEDIATELY.
8. WHEN FUELING IS COMPLETE DEPRESS "PUMP OFF" BUTTON, REWIND HOSE AND HANG UP NOZZLE"

(13) PROVIDE PLACARDS INDICATING PRODUCT TYPE AT EACH HOSE REEL (TYP 2)



– / G2 TANK FARM SETBACK/SIGNAGE PLAN
SCALE: GRAPHIC

GRAPHIC SCALE
10 0 10 20
SCALE IN FEET

State of Alaska
Department of Commerce, Community and Economic Development
AIDEA/AEA
Rural Energy Group
813 West Northern Lights Blvd.
Anchorage, Alaska 99503

ALASKA ENERGY AUTHORITY

STATE OF ALASKA – 49TH – REGISTERED PROFESSIONAL ENGINEER – 04/07/2015

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EDNA BAY, ALASKA
BULK FUEL UPGRADE
SET BACK & SIGNAGE PLAN

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Plot Date 4/9/15
Designed AMH
Drawn AJG
Approved KRH

Sheet No. G2
SHEET G2 OF G5

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VALVE SCHEDULE

VALVE ID	SIZE	LOCATION	END CONNECTION	FUNCTION/COMMENT	TAG	TAG LABEL
GATE VALVES (GV)						
GV-1	3"	TRUCK HEADER	FLANGED	ISOLATE GASOLINE TRUCK HEADER	X	N.C. - OPEN FOR FUEL DELIVERY
GV-2	3"	TRUCK HEADER	FLANGED	ISOLATE DIESEL #1 TRUCK HEADER	X	N.C. - OPEN FOR FUEL DELIVERY
GV-3	3"	TRUCK HEADER	FLANGED	ISOLATE DIESEL #2 TRUCK HEADER	X	N.C. - OPEN FOR FUEL DELIVERY
BALL VALVES (BV)						
BV-1	3"	TANK 1	FLANGED	TANK 1 FILL	X	N.O. - CLOSE ONLY FOR SERVICE
BV-2	3"	TANK 2A	FLANGED	TANK 2A FILL	X	N.O. - CLOSE ONLY FOR SERVICE
BV-3	3"	TANK 2B	FLANGED	TANK 2B FILL	X	N.O. - CLOSE ONLY FOR SERVICE
BV-4	2"	TANK 1	FLANGED	TANK 1 ISOLATION	X	N.O. - CLOSE ONLY FOR SERVICE
BV-5	2"	TANK 2B	FLANGED	TANK 2B ISOLATION	X	N.O. - CLOSE ONLY FOR SERVICE
BV-6	2"	TANK 2A	FLANGED	TANK 2A ISOLATION	X	N.O. - CLOSE ONLY FOR SERVICE
BV-7	2"	TANK 2B	FLANGED	TANK 2B ISOLATION	X	N.O. - CLOSE ONLY FOR SERVICE
BV-8 & 9	2"	TANK 3	FLANGED	TANK 3 ISOLATION	X	N.O. - CLOSE ONLY FOR SERVICE
BV-10 & 11	1-1/2"	FLEET DISPENSER	FLANGED	FLEET DISPENSER ISOLATION	X	N.O. - CLOSE ONLY FOR SERVICE
BV-12 & 13	1-1/2"	RETAIL DISPENSER	FLANGED	RETAIL DISPENSER ISOLATION	X	N.O. - CLOSE ONLY FOR SERVICE
BV-14 & 15	2"	TRUCK CONTAINMENT	FLANGED	DRAIN TRUCK CONTAINMENT	X	N.O. - CLOSE WHEN TRANSFERING FUEL
CHECK VALVES (CV)						
CV-1 to 3	3"	TRUCK FILL HEADER	FLANGED	TRUCK FILL CONNECTION		
CV-4 to 6	3"	TANK 1 & 2 FILL	FLANGED	SIPHON PREVENTION		
CV-7 & 8	2"	TANK 3 FILL	FLANGED	SIPHON PREVENTION		
PRESSURE RELIEF VALVES (PRV)						
PRV-1 TO 3	1"	TANK 1 & 2 FILL	FLANGED	PRESSURE SETTING 50 PSI		
PRV-4 & 5	1"	TANK 2 DRAW	FLANGED	PRESSURE SETTING 50 PSI		
PRV-6 & 7	1"	TANK 3 DRAW	FLANGED	PRESSURE SETTING 50 PSI		
PRV-8	1"	FLEET DISPENSER DIESEL #1	FLANGED	PRESSURE SETTING 50 PSI		
PRV-9	1"	FLEET DISPENSER DIESEL #2	FLANGED	PRESSURE SETTING 50 PSI		
ANTI-SIPHON VALVES (ASV)						
ASV-1 to 3	2"	TANK 2, PUMPS 2A, 2BD, 2BH	THREADED	20 PSI OPEN, 25 PSI EXP RELIEF		
ASV-4	2"	TANK 1, PUMP 1	THREADED	20 PSI OPEN, 25 PSI EXP RELIEF		
ASV-5 & 6	2	TANK 3, PUMPS 3A, 3B	THREADED	20 PSI OPEN, 25 PSI EXP RELIEF		

NOTE

TAG LABELS TO INCLUDE VALVE I.D. NUMBER

PUMP SCHEDULE

PUMP NAMEPLATE ID	TYPE	PRODUCT	LOCATION	MOTOR (HP)	ELECTRICAL	REMARKS
P-1	SUBMERSIBLE	GASOLINE	TANK 1	3/4	208/230 VAC, 1-PH	T1-T3A TRANSFER
P-2A	SUBMERSIBLE	DIESEL #1	TANK 2A	3/4	208/230 VAC, 1-PH	T2A-HOSEREEL
P-2B T	SUBMERSIBLE	DIESEL #2	TANK 2B	3/4	208/230 VAC, 1-PH	T2B-T3B TRANSFER
P-2B H	SUBMERSIBLE	DIESEL #2	TANK 2B	3/4	208/230 VAC, 1-PH	T2B-HOSEREEL
P-3A	SUBMERSIBLE	GASOLINE	TANK 3A	3/4	208/230 VAC, 1-PH	T3A-GAS DISPENSER
P-3B	SUBMERSIBLE	DIESEL #2	TANK 3B	3/4	208/230 VAC, 1-PH	T3B-DIESEL DISPENSER

NOTES

1. USE VALVE & MISCELLANEOUS COMPONENT SCHEDULES IN CONJUNCTION WITH OP SCHEMATIC ON SHEET C1.
2. SEE ELECTRICAL SHEETS FOR TANK LEVEL SENSORS SCHEDULE AND FUNCTIONS

SPILL RESPONSE EQUIPMENT NOTES

1. ALL ABSORBENT MATERIAL SHALL REPEL WATER AND ABSORB HYDROCARBONS ONLY. MINIMUM HYDROCARBON ABSORPTION SHALL BE 0.23 GALLONS PER SQUARE FOOT.
2. PLACE ALL SPILL RESPONSE ITEMS IN OVERPACK DRUMS WITHIN THE SPILL RESPONSE CONNEX. IF ITEMS WILL NOT FIT WITHIN 3 OVERPACK DRUMS, THEN PROVIDE ADDITIONAL DRUM. PERMANENTLY LABEL ALL OVERPACK DRUMS "SPILL RESPONSE KIT" WITH MINIMUM 3" HIGH LETTERS.
3. CONTRACTOR TO PROVIDE SHELVES WITHIN THE CONNEX AS REQUIRED TO ADEQUATELY STORE AND ORGANIZE THE SPILL EQUIPMENT AND SPARE PARTS.

SPILL RESPONSE EQUIPMENT

QUANTITY	ITEM/DESCRIPTION
ABSORBENT MATERIAL AND CONTAINERS	
3 EA	OVERPACK DRUMS, 95 GALLON POLY
1 EA	OPEN-TOP DRUM, 55 GALLON, METAL
2 EA	ABSORBENT ROLL, MIN 30"x140', MIN ABSORB 50 GAL/BALE
2 EA	ABSORBENT PADS, MIN 16"x20", 100 PIECES EA, MIN ABSORB 24 GAL/BALE
13 EA	ABSORBENT BOOM, MIN 6"x40'
2 EA	ABSORBENT SWEEP, 19"x100', MIN ABSORB 25 GAL/BALE
PERSONAL PROTECTIVE EQUIPMENT	
4 PAIR	GLOVES, NITRILE AF18 CHEM-RESIST, PAIRS
4 EA	TYVEK SUITS, XL POLYETHYLENE COATED
4 EA	GOGGLES
4 EA	HARDHATS
RECOVERY EQUIPMENT	
1 EA	3500 GALLON FOLD-A-TANK
1 EA	2-INCH PORTABLE CENTRIFUGAL PUMP, GAS-POWERED GOULDS 2AM32-P RATED AT 140 GPM WITH 2" CAMLOCKS
	(PRE-APPROVED OPTION: HOMELITE #320 RATED AT 140 GPM WITH 2" CAMLOCKS)
1 EA	DISCHARGE HOSE WITH 2" CAMLOCKS, 100' TOTAL LENGTH
1 EA	SUCTION HOSE WITH 2" CAMLOCKS, 50' TOTAL LENGTH
2 EA	SHOVEL
2 EA	RAKE
2 ROLL	GARBAGE/DISPOSAL BAGS
MISCELLANEOUS	
1 EA	SMART ASH INCINERATOR
7 EA	FIRE EXTINGUISHERS, PORTABLE, TYPE 3A-40BC
1 EA	CONNEX, 20 FOOT, LOCKABLE
12 EA	PADLOCKS, KEYED-ALIKE

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EDNA BAY, ALASKA

BULK FUEL UPGRADE

COMPONENT SCHEDULES

NO.	REVISION	BY	DATE
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Sheet No. G3
SHEET G3 OF G5

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MISCELLANEOUS COMPONENT SCHEDULE

COMPONENT ID	SIZE	DESCRIPTION	LOCATION	TAG REQD	END CONNECTION	FUNCTION
STRAINERS (S)						
S-1	3"	STRAINER - 10 MESH	TRUCK HEADER		FLANGED	TRUCK CONNECTION GASOLINE
S-2	3"	STRAINER - 10 MESH	TRUCK HEADER		FLANGED	TRUCK CONNECTION DIESEL #1
S-3	3"	STRAINER - 10 MESH	TRUCK HEADER		FLANGED	TRUCK CONNECTION DIESEL #2
FLEX CONNECTS (FC)						
FC-1	3"	24" LENGTH	TANK 1 FILL		FLANGED X FLANGED	PIPE DEFLECTION AND FIT UP
FC-2	3"	24" LENGTH	TANK 2A FILL		FLANGED X FLANGED	PIPE DEFLECTION AND FIT UP
FC-3	3"	24" LENGTH	TANK 2B FILL		FLANGED X FLANGED	PIPE DEFLECTION AND FIT UP
FC-4	2"	12" LENGTH	TANK 1 DRAW		FLANGED X MPT	PUMP DISCHARGE
FC-5	2"	12" LENGTH	TANK 2A DRAW		FLANGED X MPT	PUMP DISCHARGE
FC-6 & FC-7	2"	12" LENGTH	TANK 2B DRAW		FLANGED X MPT	PUMP DISCHARGE
FC-8	2"	24" LENGTH	TANK 1 DRAW		FLANGED X FLANGED	PIPE DEFLECTION AND FIT UP
FC-9	2"	24" LENGTH	TANK 2A DRAW		FLANGED X FLANGED	PIPE DEFLECTION AND FIT UP
FC-10 & FC 11	2"	24" LENGTH	TANK 2B DRAW		FLANGED X FLANGED	PIPE DEFLECTION AND FIT UP
FC-12 & FC-13	2"	12" LENGTH	TANK 3 FILL		FLANGED X FLANGED	PIPE DEFLECTION AND FIT UP
FC-14 & FC-15	2"	12" LENGTH	TANK 3 DRAW		FLANGED X MPT	PUMP DISCHARGE
FC-16 & FC-17	2"	12" LENGTH	TANK 3 DRAW		FLANGED X FLANGED	PIPE DEFLECTION AND FIT UP
FC-18 & FC-19	1-1/2"	18" LENGTH	FLEET DISPENSER		MPT X FLANGED	PIPE DEFLECTION AND FIT UP
FC-20 & FC-21	1-1/2"	18" LENGTH	RETAIL DISPENSER		MPT X FLANGED	PIPE DEFLECTION AND FIT UP
PRESSURE TEST TAP (PT)						
PT -1	3/4"		TRUCK HEADER			PIPING PRESSURE TEST
PT -2	3/4"		TRUCK HEADER			PIPING PRESSURE TEST
PT -3	3/4"		TRUCK HEADER			PIPING PRESSURE TEST
PT -4	3/4"		FLEET DISPENSER			PIPING PRESSURE TEST
PT -5	3/4"		FLEET DISPENSER			PIPING PRESSURE TEST
PT -6	3/4"		RETAIL DISPENSER			PIPING PRESSURE TEST
PT -7	3/4"		RETAIL DISPENSER			PIPING PRESSURE TEST
METER (M)						
M-1	2"	DIESEL #1 METER	FLEET DISPENSER		COMPANION FLANGE	TOTALIZING, METERING, AUTO SHUT OFF
M-2	2"	DIESEL #2 METER	FLEET DISPENSER		COMPANION FLANGE	TOTALIZING, METERING, AUTO SHUT OFF
HOSE REEL (HR)						
HR-1	-	HOSE REEL	FLEET DISPENSER		THREADED	HIGH FLOW, AUTO REWIND, DIESEL #1
HR-2	-	HOSE REEL	FLEET DISPENSER		THREADED	HIGH FLOW, AUTO REWIND, DIESEL #2
FILTER (F)						
F-1	2"	DIESEL #1 FILTER	FLEET DISPENSER		COMPANION FLANGE	PARTICULATE & WATER REMOVAL
F-2	2"	DIESEL #2 FILTER	FLEET DISPENSER		COMPANION FLANGE	PARTICULATE & WATER REMOVAL
QUICK COUPLER (QC)						
QC-1	3"	COUPLER-FEMALE	TRUCK HEADER		FLANGED	TRUCK CONNECTION - GASOLINE
QC-2	3"	COUPLER-FEMALE	TRUCK HEADER		FLANGED	TRUCK CONNECTION - DIESEL #1
QC-3	3"	COUPLER-FEMALE	TRUCK HEADER		FLANGED	TRUCK CONNECTION - DIESEL #2
LEVEL SENSORS (SEE ELECTRICAL)						
LSHA-1	3"	LEVEL SENSOR HIGH ALARM	TANK 1		FLANGED	CRITICAL HIGH LEVEL ALARM (95%)
LSH-1		LEVEL SENSOR HIGH	TANK 1			HIGH LEVEL (90%)
LSL-1		LEVEL SENSOR LOW	TANK 1			LOW LEVEL/INDICATOR LIGHT/P-1 SHUT OFF (8" FROM BOTTOM)
LSHA-2A	3"	LEVEL SENSOR HIGH ALARM	TANK 2A		FLANGED	CRITICAL HIGH LEVEL ALARM (95%)
LSH-2A		LEVEL SENSOR HIGH	TANK 2A			HIGH LEVEL (90%)
LSL-2A		LEVEL SENSOR LOW	TANK 2A			LOW LEVEL/INDICATOR LIGHT/P-2A SHUT OFF (8" FROM BOTTOM)
LSHA-2B	3"	LEVEL SENSOR HIGH ALARM	TANK 2B		FLANGED	CRITICAL HIGH LEVEL ALARM (95%)
LSH-2B		LEVEL SENSOR HIGH	TANK 2B			HIGH LEVEL (90%)
LSL-2B		LEVEL SENSOR LOW	TANK 2B			LOW LEVEL/INDICATOR LIGHT/P-2BT & P-2BH SHUT OFF (8" FROM BOTTOM)
LSHA-3A	3"	LEVEL SENSOR HIGH ALARM	TANK 3A		FLANGED	CRITICAL HIGH LEVEL ALARM (95%)
LSH-3A		LEVEL SENSOR HIGH	TANK 3A			HIGH LEVEL (90%)
LSL-3A		LEVEL SENSOR LOW	TANK 3A			LOW LEVEL/INDICATOR LIGHT (50%)
LSLA-3A		LEVEL SENSOR LOW ALARM	TANK 3A			CRITICAL LOW LEVEL P-3A SHUT OFF (8" FROM BOTTOM)
LSHA-3B	3"	LEVEL SENSOR HIGH ALARM	TANK 3B		FLANGED	CRITICAL HIGH LEVEL ALARM (95%)
LSH-3B		LEVEL SENSOR HIGH	TANK 3B			HIGH LEVEL (90%)
LSL-3B		LEVEL SENSOR LOW	TANK 3B			LOW LEVEL/INDICATOR LIGHT (50%)
LSLA-3B		LEVEL SENSOR LOW ALARM	TANK 3B			CRITICAL LOW LEVEL P-3B SHUT OFF (8" FROM BOTTOM)

NOTES

1. USE VALVE & MISCELLANEOUS COMPONENT SCHEDULES IN CONJUNCTION WITH OP SCHEMATIC ON SHEET C1.
2. SEE ELECTRICAL SHEETS FOR TANK LEVEL SENSORS SCHEDULE AND FUNCTIONS

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EDNA BAY, ALASKA
BULK FUEL UPGRADE
COMPONENT SCHEDULES

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Sheet No. G4
SHEET G4 OF G5

G5 **VICINITY MAP**
SCALE: NTS

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EDNA BAY, ALASKA
BULK FUEL UPGRADE

AERIAL PHOTO OF SURROUNDING AREA

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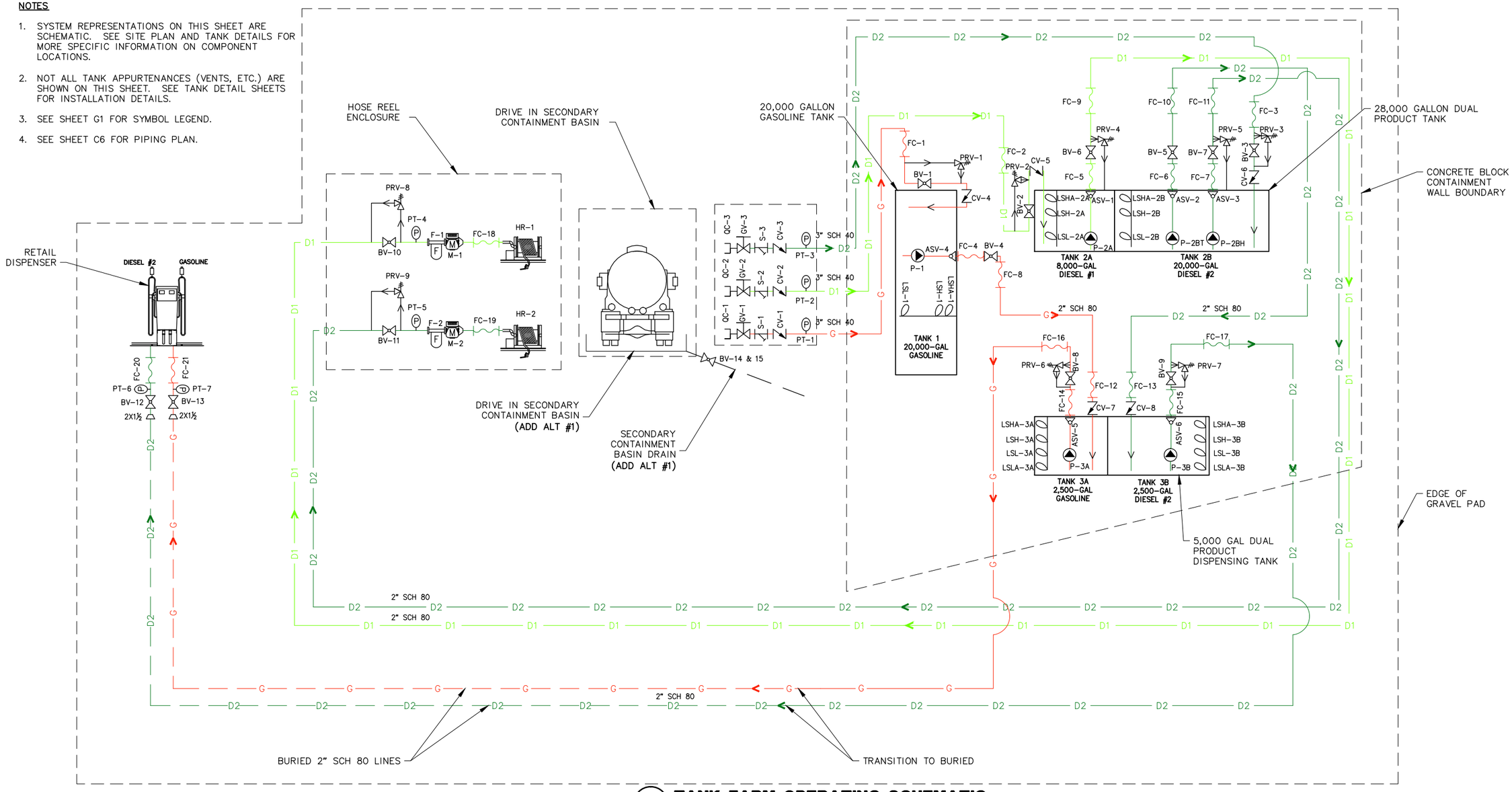
Sheet No. G5
SHEET G5 OF G5

NOTES

1. SYSTEM REPRESENTATIONS ON THIS SHEET ARE SCHEMATIC. SEE SITE PLAN AND TANK DETAILS FOR MORE SPECIFIC INFORMATION ON COMPONENT LOCATIONS.
2. NOT ALL TANK APPURTENANCES (VENTS, ETC.) ARE SHOWN ON THIS SHEET. SEE TANK DETAIL SHEETS FOR INSTALLATION DETAILS.
3. SEE SHEET G1 FOR SYMBOL LEGEND.
4. SEE SHEET C6 FOR PIPING PLAN.



TANK FARM OPERATING SCHEMATIC

C1 SCALE: NTS

TANK FARM OPERATIONAL NARRATIVE

FILLING TANK FARM FROM FUEL TRUCK

THE NEW TANK FARM WILL BE FILLED VIA A NEW, THREE PRODUCT TRUCK HEADER WITH THREE 3-INCH FILL LINES (DIESEL #1, #2, AND GASOLINE).

- BEFORE BEGINNING THE FILL PROCESS THE OPERATOR SHALL CONFIRM THAT ALL TANK ISOLATION VALVES IN THE TANK FARM ARE CLOSED.
- BULK TANKS SHOULD BE FILLED ONE AT A TIME BY SEQUENTIALLY OPENINGS AND CLOSING INDIVIDUAL TANK ISOLATION BALL VALVES.
- LINE PRESSURE WILL BE SUPPLIED BY THE FUEL TRUCK PUMPING SYSTEM.
- THE TANK FARM OPERATOR WILL MONITOR THE FILLING PROCESS VIA CLOCK GAUGES AND GAUGING ROD AT EACH TANK.
- AT THE CONCLUSION OF FILLING, CLOSE TRUCK HEADER ISOLATION VALVES AND DISCONNECT FILL HOSE.

FILLING THE DISPENSING TANK

THE DUAL PRODUCT DISPENSING TANK CONTAINS COMPARTMENTS T3A (GASOLINE) AND T3B (DIESEL #2), WHICH ARE FILLED FROM CORRESPONDING BULK TANKS T1 AND T2B.

- THE DISPENSING TANK FILL OPERATION IS STARTED MANUALLY FROM CP-1, LOCATED ON THE INTERIOR OF THE RETAIL SALES KIOSK.
- THE OPERATOR IS RESPONSIBLE FOR ENSURING THAT THE BULK TANK HAS SUFFICIENT FUEL FOR THE TRANSFER.
- THE FILLING PROCESS IS INITIATED WHEN THE OPERATOR PRESSES THE PUMP START BUTTON ON CP-1.
- HIGH LEVEL FLOAT SWITCHES WITHIN THE DISPENSING TANK AUTOMATICALLY DE-ENERGIZE THE TRANSFER PUMP WHEN THE FUEL LEVEL REACHES 90% FULL, STOPPING THE TRANSFER.
- A TIME-OUT FUNCTION WILL ALSO STOP TRANSFER. AFTER A TIME-OUT OCCURS, RESET SYSTEM BY TURNING PUMP HOA SWITCH TO OFF, THEN BACK TO AUTO.

FLEET DISPENSER/HOSE REEL OPERATION

THE HOSE REELS ARE INTENDED TO FACILITATE THE FILLING OF LOCAL FLEET VEHICLES/HEAVY EQUIPMENT AND BULK TRANSFER TO TANK TRUCKS.

- PRIOR TO FILLING, TURN OFF ENGINE, CHOCK WHEELS AND CONNECT STATIC GROUNDING CABLE.
- OPEN ISOLATION VALVE, INPUT DESIRED FUEL VOLUME INTO PRE-SET METER, SET SPRING LOADED MECHANICAL VALVE AND DEPRESS PUMP START BUTTON TO PRESSURIZE HOSE.
- UNWIND HOSE, PLACE NOZZLE IN APPROVED FUEL CONTAINER AND DEPRESS TRIGGER TO INITIATE FLOW.
- PROVIDE CONTINUOUS MONITORING DURING FUELING PROCESS. FLOW WILL AUTOMATICALLY STOP AT PRE-SET VOLUME, BUT PUMP WILL CONTINUE TO RUN.
- WHEN FUELING IS COMPLETE, DEPRESS PUMP STOP BUTTON, WIND HOSE ONTO REEL, HANG UP NOZZLE, AND NOTE VOLUME OF FUEL DISPENSED.

RETAIL SALES DISPENSER OPERATION

RETAIL DISPENSING WILL TAKE PLACE DURING SET ATTENDANT HOURS.

- ONCE CONTACTED AT THE SALES KIOSK, THE ATTENDANT WILL ACCOMPANY THE CONSUMER TO THE RETAIL DISPENSER AND DISPENSE THE DESIRED AMOUNT OF FUEL.
- UPON RETURNING TO THE KIOSK, THE CONSUMER WILL MAKE PAYMENT AND BE ISSUED A RECEIPT, AND THE ATTENDANT WILL LOG THE SALE.

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EDNA BAY, ALASKA
BULK FUEL UPGRADE
OPERATING SCHEMATIC

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Sheet No. C1
SHEET C1 OF C26

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EDNA BAY, ALASKA

BULK FUEL UPGRADE

VICINITY MAP

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Sheet No. C2
SHEET C2 OF C26

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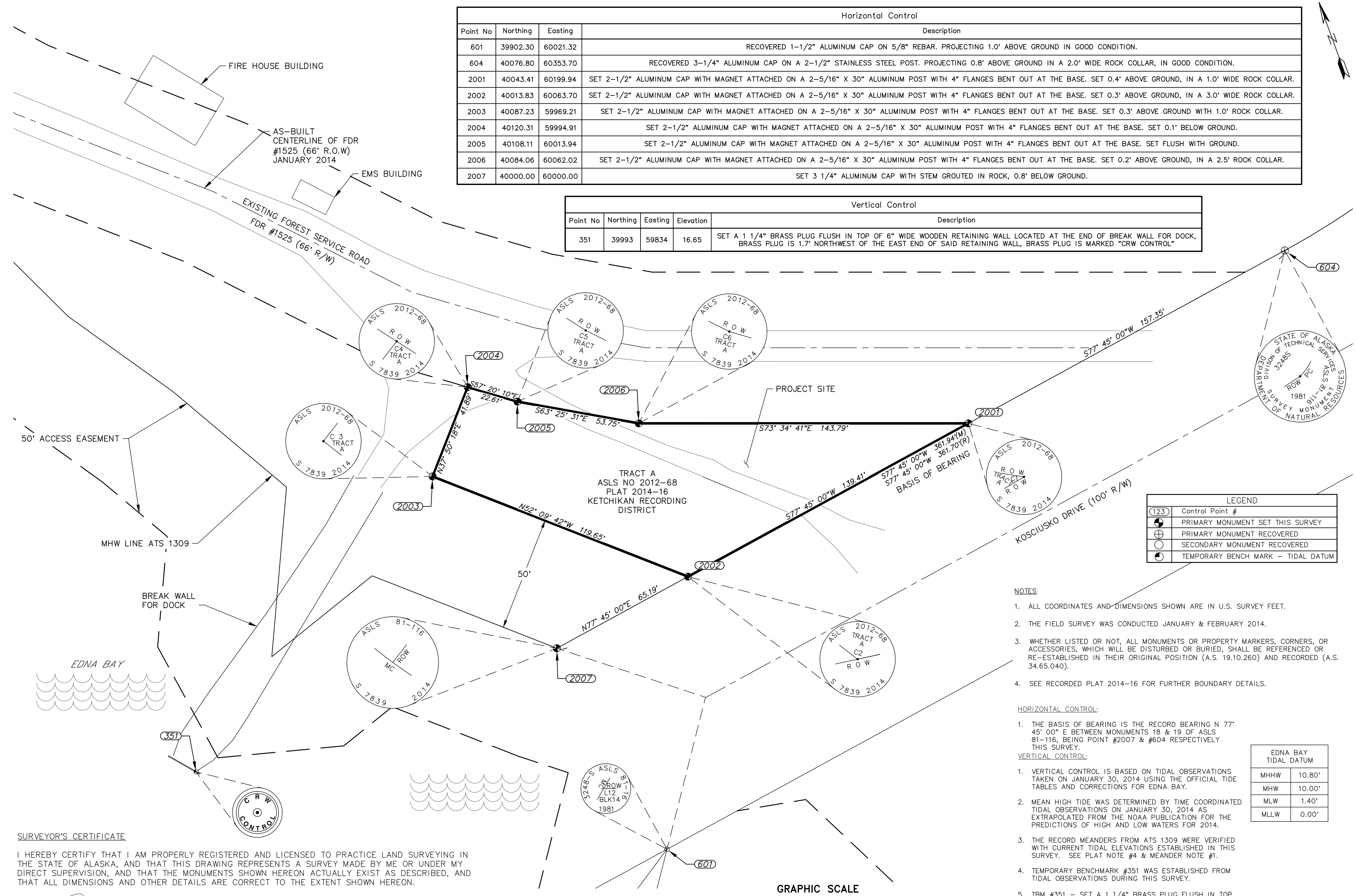
Horizontal Control			
Point No	Northing	Easting	Description
601	39902.30	60021.32	RECOVERED 1-1/2" ALUMINUM CAP ON 5/8" REBAR. PROJECTING 1.0' ABOVE GROUND IN GOOD CONDITION.
604	40076.80	60353.70	RECOVERED 3-1/4" ALUMINUM CAP ON A 2-1/2" STAINLESS STEEL POST. PROJECTING 0.8' ABOVE GROUND IN A 2.0' WIDE ROCK COLLAR, IN GOOD CONDITION.
2001	40043.41	60199.94	SET 2-1/2" ALUMINUM CAP WITH MAGNET ATTACHED ON A 2-5/16" X 30" ALUMINUM POST WITH 4" FLANGES BENT OUT AT THE BASE. SET 0.4' ABOVE GROUND, IN A 1.0' WIDE ROCK COLLAR.
2002	40013.83	60063.70	SET 2-1/2" ALUMINUM CAP WITH MAGNET ATTACHED ON A 2-5/16" X 30" ALUMINUM POST WITH 4" FLANGES BENT OUT AT THE BASE. SET 0.3' ABOVE GROUND, IN A 3.0' WIDE ROCK COLLAR.
2003	40087.23	59969.21	SET 2-1/2" ALUMINUM CAP WITH MAGNET ATTACHED ON A 2-5/16" X 30" ALUMINUM POST WITH 4" FLANGES BENT OUT AT THE BASE. SET 0.3' ABOVE GROUND WITH 1.0' ROCK COLLAR.
2004	40120.31	59994.91	SET 2-1/2" ALUMINUM CAP WITH MAGNET ATTACHED ON A 2-5/16" X 30" ALUMINUM POST WITH 4" FLANGES BENT OUT AT THE BASE. SET 0.1' BELOW GROUND.
2005	40108.11	60013.94	SET 2-1/2" ALUMINUM CAP WITH MAGNET ATTACHED ON A 2-5/16" X 30" ALUMINUM POST WITH 4" FLANGES BENT OUT AT THE BASE. SET FLUSH WITH GROUND.
2006	40084.06	60062.02	SET 2-1/2" ALUMINUM CAP WITH MAGNET ATTACHED ON A 2-5/16" X 30" ALUMINUM POST WITH 4" FLANGES BENT OUT AT THE BASE. SET 0.2' ABOVE GROUND, IN A 2.5' ROCK COLLAR.
2007	40000.00	60000.00	SET 3 1/4" ALUMINUM CAP WITH STEM GROUTED IN ROCK, 0.8' BELOW GROUND.

Vertical Control				
Point No	Northing	Easting	Elevation	Description
351	39993	59834	16.65	SET A 1 1/4" BRASS PLUG FLUSH IN TOP OF 6" WIDE WOODEN RETAINING WALL LOCATED AT THE END OF BREAK WALL FOR DOCK, BRASS PLUG IS 1.7' NORTHWEST OF THE EAST END OF SAID RETAINING WALL, BRASS PLUG IS MARKED "CRW CONTROL"



LEGEND	
(123)	Control Point #
◒	PRIMARY MONUMENT SET THIS SURVEY
⊕	PRIMARY MONUMENT RECOVERED
○	SECONDARY MONUMENT RECOVERED
◔	TEMPORARY BENCH MARK – TIDAL DATUM

NOTES

1. ALL COORDINATES AND DIMENSIONS SHOWN ARE IN U.S. SURVEY FEET.
2. THE FIELD SURVEY WAS CONDUCTED JANUARY & FEBRUARY 2014.
3. WHETHER LISTED OR NOT, ALL MONUMENTS OR PROPERTY MARKERS, CORNERS, OR ACCESSORIES, WHICH WILL BE DISTURBED OR BURIED, SHALL BE REFERENCED OR RE-ESTABLISHED IN THEIR ORIGINAL POSITION (A.S. 19.10.260) AND RECORDED (A.S. 34.65.040).
4. SEE RECORDED PLAT 2014-16 FOR FURTHER BOUNDARY DETAILS.

HORIZONTAL CONTROL:

1. THE BASIS OF BEARING IS THE RECORD BEARING N 77° 45' 00" E BETWEEN MONUMENTS 18 & 19 OF ASLS 81-116, BEING POINT #2007 & #604 RESPECTIVELY THIS SURVEY.

VERTICAL CONTROL:

1. VERTICAL CONTROL IS BASED ON TIDAL OBSERVATIONS TAKEN ON JANUARY 30, 2014 USING THE OFFICIAL TIDE TABLES AND CORRECTIONS FOR EDNA BAY.
2. MEAN HIGH TIDE WAS DETERMINED BY TIME COORDINATED TIDAL OBSERVATIONS ON JANUARY 30, 2014 AS EXTRAPOLATED FROM THE NOAA PUBLICATION FOR THE PREDICTIONS OF HIGH AND LOW WATERS FOR 2014.
3. THE RECORD MEANDERS FROM ATS 1309 WERE VERIFIED WITH CURRENT TIDAL ELEVATIONS ESTABLISHED IN THIS SURVEY. SEE PLAT NOTE #4 & MEANDER NOTE #1.
4. TEMPORARY BENCHMARK #351 WAS ESTABLISHED FROM TIDAL OBSERVATIONS DURING THIS SURVEY.
5. TBM #351 – SET A 1 1/4" BRASS PLUG FLUSH IN TOP OF 6" WIDE WOODEN RETAINING WALL LOCATED AT THE END OF BREAK WALL FOR DOCK, BRASS PLUG IS 1.7' NORTHWEST OF THE EAST END OF SAID RETAINING WALL, BRASS PLUG IS MARKED "CRW CONTROL"

EDNA BAY TIDAL DATUM	
MHHW	10.80'
MHW	10.00'
MLW	1.40'
MLLW	0.00'

SURVEYOR'S CERTIFICATE

I HEREBY CERTIFY THAT I AM PROPERLY REGISTERED AND LICENSED TO PRACTICE LAND SURVEYING IN THE STATE OF ALASKA, AND THAT THIS DRAWING REPRESENTS A SURVEY MADE BY ME OR UNDER MY DIRECT SUPERVISION, AND THAT THE MONUMENTS SHOWN HEREON ACTUALLY EXIST AS DESCRIBED, AND THAT ALL DIMENSIONS AND OTHER DETAILS ARE CORRECT TO THE EXTENT SHOWN HEREON.

MICHAEL L. JOKELA   LS-7839   4/07/2015 (DATE)

1 / C3 **SURVEY CONTROL**
SCALE: GRAPHIC

GRAPHIC SCALE
20 0 20 40
SCALE IN FEET

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Anchorage, Alaska 99503
ALASKA ENERGY AUTHORITY

STATE OF ALASKA 49th MICHAEL L. JOKELA LS - 7839 4/07/2015 REGISTERED PROFESSIONAL LAND SURVEYOR

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EDNA BAY, ALASKA
BULK FUEL UPGRADE
SURVEY CONTROL

NO.	REVISION	BY	DATE
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Drawn AJG
Approved KRH

Sheet No. C3
SHEET C3 OF C26

EXISTING DOCK PARKING AREA

3/C26 BOLLARD (TYP. 8)

—/C20 DRIVE IN CONTAINMENT (ADD ALT #1)

3/C20 GRIPSTRUT WALKWAY

—/C12 20,000 GALLON GASOLINE TANK

2/C24 MAN GATE (TYP. 4)

7/C26 TRUCK FILL HEADERS

—/C19 HOSE REEL ENCLOSURE

—/C9 LINED CONCRETE BLOCK SECONDARY CONTAINMENT

—/C13 DUAL PRODUCT TANK
- 20,000 GALLON DIESEL #2
- 8,000 GALLON DIESEL #1

CENTERLINE OF EXISTING FOREST SERVICE ROAD #1525

66' ROW

PROPERTY BOUNDARY

DRIVEWAY

CANTILEVER GATE —/C25

RETAIL DISPENSER ENCLOSURE —/C17

DOUBLE SWING GATE 3/C24

BOLLARD (TYP. 8) 3/C26

TO ADOT&PF DOCK

WEST PAD

EAST PAD

4.0'

5.0'

T1

T2A

T2B

4.0'

4.0'

T3A

T3B

11.0'

4.0'

A/C8

A/C7

2/C24 MAN GATE (TYP. 4)

3/C10 SUMP (TYP. 2)

4/C24 FENCE

—/C14 5,000 GALLON DUAL PRODUCT, PROTECTED DISPENSING TANK

8x20 CONNEX VAN (SPILL RESPONSE EQUIPMENT AND RETAIL SALES KIOSK) —/C23

VALVE BOX 2/C20

PROPERTY BOUNDARY

MAN GATE (TYP. 4) 2/C24

STAIRS 1/C22

2/C24 MAN GATE (TYP. OF 4)

ELEVATED WALKWAY OVER PIPING. CONTRACTOR TO PROVIDE SHOP DRAWINGS FOR ENGINEER APPROVAL.

HIGHEST EXPECTED TIDE (13.4 FT ABOVE MLLW)

EDNA BAY

GRAPHIC SCALE

10 0 10 20

SCALE IN FEET

—/C4 **TANK FARM SITE PLAN**

SCALE: GRAPHIC

TANK SCHEDULE

TANK NUMBER	CAPACITY (GALLONS)	TANK TYPE	PRODUCT
1	20,000	HORIZONTAL SINGLE WALL	GASOLINE
2A	8,000	HORIZONTAL, SINGLE WALL, DUAL PRODUCT	DIESEL #1
2B	20,000	HORIZONTAL, SINGLE WALL, DUAL PRODUCT	DIESEL #2
3A	2,500	HORIZONTAL, DUAL PRODUCT, PROTECTED DISPENSING	GASOLINE
3B	2,500	HORIZONTAL, DUAL PRODUCT, PROTECTED DISPENSING	DIESEL #2

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EDNA BAY, ALASKA

BULK FUEL UPGRADE

TANK FARM SITE PLAN

NO.	REVISION	BY	DATE
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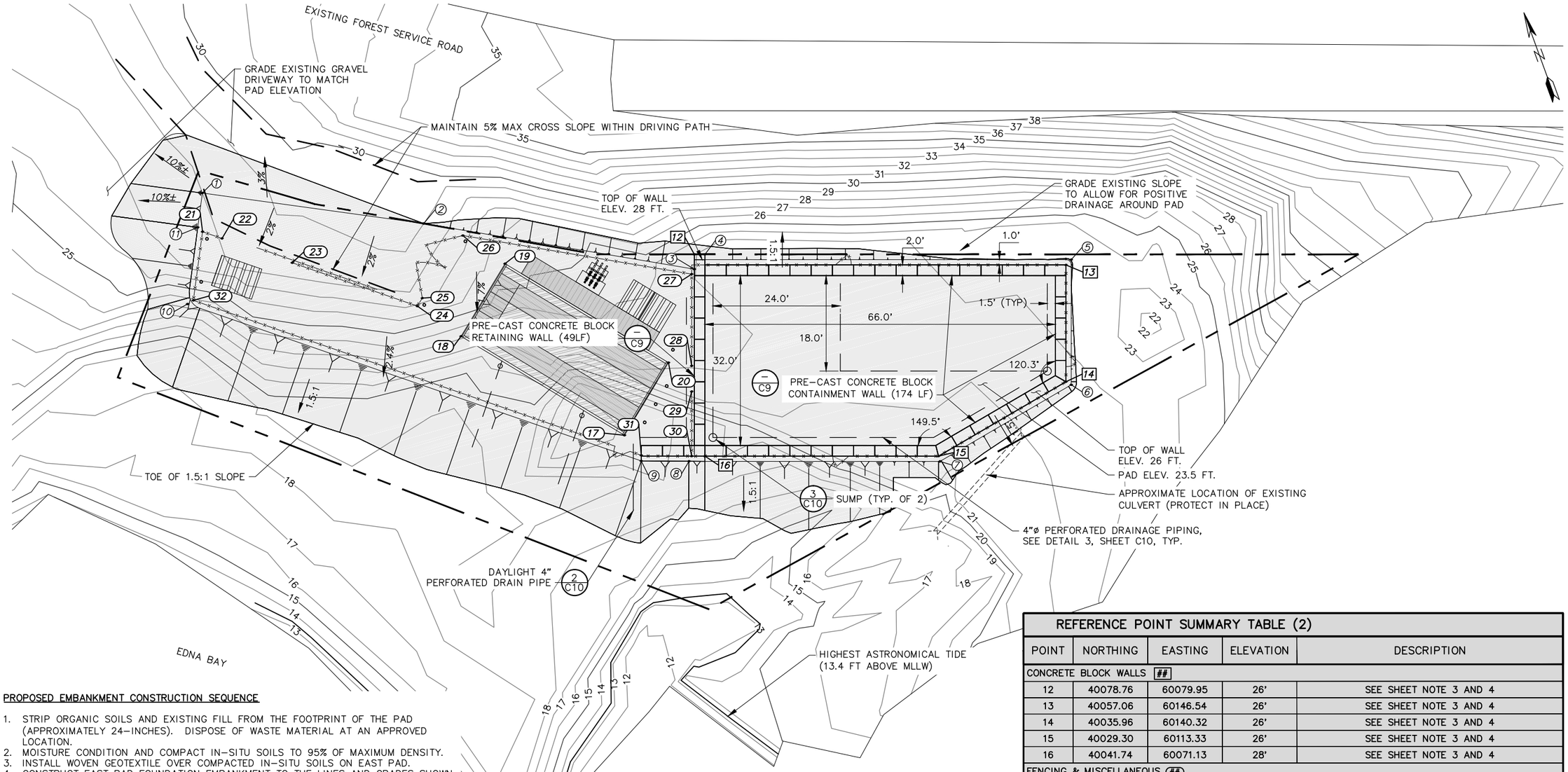
Plot Date 4/9/15 | Designed AMH | Drawn AJG | Approved KRH

Sheet No. C4

SHEET C4 OF C26

File: J:\Jobsdata\30406.00 Edna Bay Bulk Fuel Upgrades\00 CADD\01 Working Set\01 Civil\30406.00 C2 To C8, SITE PLAN, COVER.dwg



PROPOSED EMBANKMENT CONSTRUCTION SEQUENCE

1. STRIP ORGANIC SOILS AND EXISTING FILL FROM THE FOOTPRINT OF THE PAD (APPROXIMATELY 24-INCHES). DISPOSE OF WASTE MATERIAL AT AN APPROVED LOCATION.
2. MOISTURE CONDITION AND COMPACT IN-SITU SOILS TO 95% OF MAXIMUM DENSITY.
3. INSTALL WOVEN GEOTEXTILE OVER COMPACTED IN-SITU SOILS ON EAST PAD.
4. CONSTRUCT EAST PAD FOUNDATION EMBANKMENT TO THE LINES AND GRADES SHOWN ON THE DRAWINGS USING TYPE I FILL MATERIAL AS SPECIFIED. PLACE FILL IN MAXIMUM 8-INCH LIFTS AND COMPACT TO 95% OF MAXIMUM DENSITY.
5. INSTALL CONCRETE BLOCK CONTAINMENT WALLS AS SHOWN.
6. INSTALL SECONDARY CONTAINMENT MEMBRANE LINER.
7. INSTALL DRAINAGE PIPING.
8. INSTALL TYPE II FILL MATERIAL WITHIN CONTAINMENT AREA.
9. INSTALL REMAINDER OF CONCRETE BLOCK RETAINING WALL BETWEEN THE EAST AND WEST PADS.
10. INSTALL WOVEN GEOTEXTILE OVER COMPACTED IN-SITU SOILS ON WEST PAD.
11. CONSTRUCT THE WEST PAD FOUNDATION EMBANKMENT TO THE LINES AND GRADES SHOWN ON THE DRAWINGS, USING TYPE I FILL MATERIAL AS SPECIFIED. PLACE FILL IN MAXIMUM 8-INCH LIFTS AND COMPACT TO 95% OF MAXIMUM DENSITY.
12. INSTALL 1 FOOT OF TYPE II OVER BOTH PADS.
13. INSTALL ARMOR ROCK (TYPE III) ON SLOPES.

SHEET NOTES

1. SEE SPECIFICATIONS FOR DEFINITION OF CLASSIFIED FILL.
2. TANKS, FUEL PIPING AND RELATED COMPONENTS NOT SHOWN ON THIS SHEET. SEE SHEET C6 FOR PIPING LAYOUT.
3. TOP OF RETAINING WALL ELEVATION 28'. TOP OF CONTAINMENT WALL ELEVATION 26'.
4. SEE SHEET C9 FOR DETAILS ON CONCRETE BLOCK WALLS.
5. ALL DRAINAGE FEATURES SET AT 22.5' ELEVATION.
6. SEE SHEET C4 FOR PLACEMENT OF ABOVEGROUND STORAGE TANKS.

REFERENCE POINT SUMMARY TABLE (1)

POINT	NORTHING	EASTING	PAD ELEVATION	DESCRIPTION
PAD CORNERS (#)				
1	40116.04	59994.32	28.75'	WEST DRIVEWAY CORNER
2	40098.74	60032.69	29.00'	EAST DRIVEWAY CORNER
3	40076.09	60079.16	28.00'	END EAST PAD
4	40078.2	60081.87	23.50'	BEGIN WEST PAD
5	40057.74	60147.78	23.50'	POINT OF INTERSECTION FOR 1' RADIUS
6	40035.13	60141.11	23.50'	
7	40028.27	60113.31	23.50'	
8	40041.66	60067.97	23.50'	
9	40044.26	60059.36	28.00'	
10	40096.78	59985.72	28.54'	POINT OF INTERSECTION FOR 3' RADIUS
11	40110.07	59991.65	28.69'	BEGIN 10% GRADE ON SIDE SLOPE

REFERENCE POINT SUMMARY TABLE (2)

POINT	NORTHING	EASTING	ELEVATION	DESCRIPTION
CONCRETE BLOCK WALLS (##)				
12	40078.76	60079.95	26'	SEE SHEET NOTE 3 AND 4
13	40057.06	60146.54	26'	SEE SHEET NOTE 3 AND 4
14	40035.96	60140.32	26'	SEE SHEET NOTE 3 AND 4
15	40029.30	60113.33	26'	SEE SHEET NOTE 3 AND 4
16	40041.74	60071.13	28'	SEE SHEET NOTE 3 AND 4
FENCING & MISCELLANEOUS (##)				
17	40049.79	60057.70	28.30'	ELEVATION TOP OF CHANNEL
18	40076.38	60033.43	28.30'	ELEVATION TOP OF CHANNEL
19	40087.17	60045.25	28.50'	ELEVATION TOP OF CHANNEL
20	40060.58	60069.51	28.50'	ELEVATION TOP OF CHANNEL
21	40109.04	59992.29	28.68'	
22	40106.78	59995.44	28.68'	
23	40098.65	60006.84	28.69'	
24	40084.17	60027.13	28.59'	
25	40085.33	60028.46	28.62'	
26	40094.49	60039.11	28.83'	
27	40075.34	60078.42	28.00'	FENCE @ TOP OF RETAINING WALL
28	40058.77	60073.53	28.00'	FENCE @ TOP OF RETAINING WALL
29	40054.12	60072.16	28.00'	FENCE @ TOP OF RETAINING WALL
30	40042.45	60068.72	28.00'	FENCE @ TOP OF RETAINING WALL
31	40045.28	60059.65	28.00'	FENCE @ TOP OF RETAINING WALL
32	40097.12	59986.97	28.54'	

GRAPHIC SCALE
10 0 10 20
SCALE IN FEET

C5 TANK FARM GRADING PLAN
SCALE: GRAPHIC

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EDNA BAY, ALASKA
BULK FUEL UPGRADE
TANK FARM GRADING PLAN

NO.	REVISION	BY	DATE
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Drawn AJG
Approved KRH

Sheet No. C5
SHEET C5 OF C26

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RETAIL DISPENSER ENCLOSURE (C17)

PROPERTY LINE

DRIVE IN CONTAINMENT (ADD ALT #1) (C20)

TRUCK FILL HEADERS (7/C26)

HOSE REEL ENCLOSURE (C19)

3" ø TIMBER SUPPORTED PIPELINES (1/C26)

20,000 GALLON GASOLINE TANK

CONCRETE BLOCK SECONDARY CONTAINMENT WALL

DUAL PRODUCT TANK
- 20,000 GALLON DIESEL #2
- 8,000 GALLON DIESEL #1

INSTALL ANODES (8/C26)

TRANSITION TO ABOVEGROUND PIPELINES (5/C26)

2" ø BURIED PIPELINES

INSTALL ANODES (8/C26)

TRANSITION TO BURIED PIPELINES (5/C26)

PROPERTY BOUNDARY

ELEVATED WALKWAY OVER PIPING. CONTRACTOR TO PROVIDE SHOP DRAWINGS FOR ENGINEER APPROVAL.

T1

T2A

T2B

T3A

T3B

2" ø TIMBER SUPPORTED PIPELINES

2" ø PIPELINE UNDER WALKWAY

5,000 GALLON DUAL PRODUCT, PROTECTED DISPENSING TANK

NOTES

1. SYSTEM REPRESENTATIONS ON THIS SHEET ARE SCHEMATIC. SEE OPERATING SCHEMATIC (C1) AND TANK DETAILS (C12–C15) FOR MORE SPECIFIC INFORMATION ON COMPONENT LOCATIONS.
2. NOT ALL TANK APPURTENANCES (VENTS, ETC.) ARE SHOWN ON THIS SHEET. SEE TANK SHEETS (C12–C15) FOR INSTALLATION DETAILS.
3. SEE SHEET G1 FOR SYMBOL LEGEND.
4. SEE SPECIFICATIONS FOR PIPING AND FITTING MATERIAL REQUIREMENTS.

TANK FARM PIPING PLAN (C6)
SCALE: GRAPHIC

GRAPHIC SCALE
5 0 5 10
SCALE IN FEET

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EDNA BAY, ALASKA
BULK FUEL UPGRADE
TANK FARM PIPING PLAN

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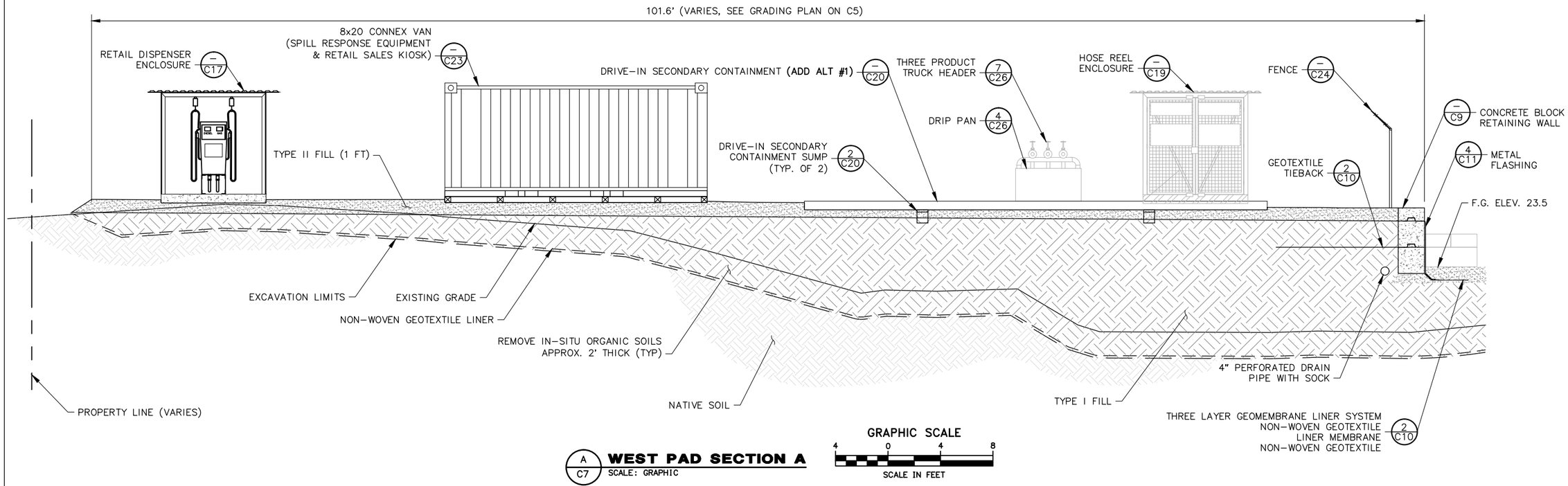
Sheet No. C6
SHEET C6 OF C26



A/C7 **WEST PAD SECTION A**
SCALE: GRAPHIC

GRAPHIC SCALE
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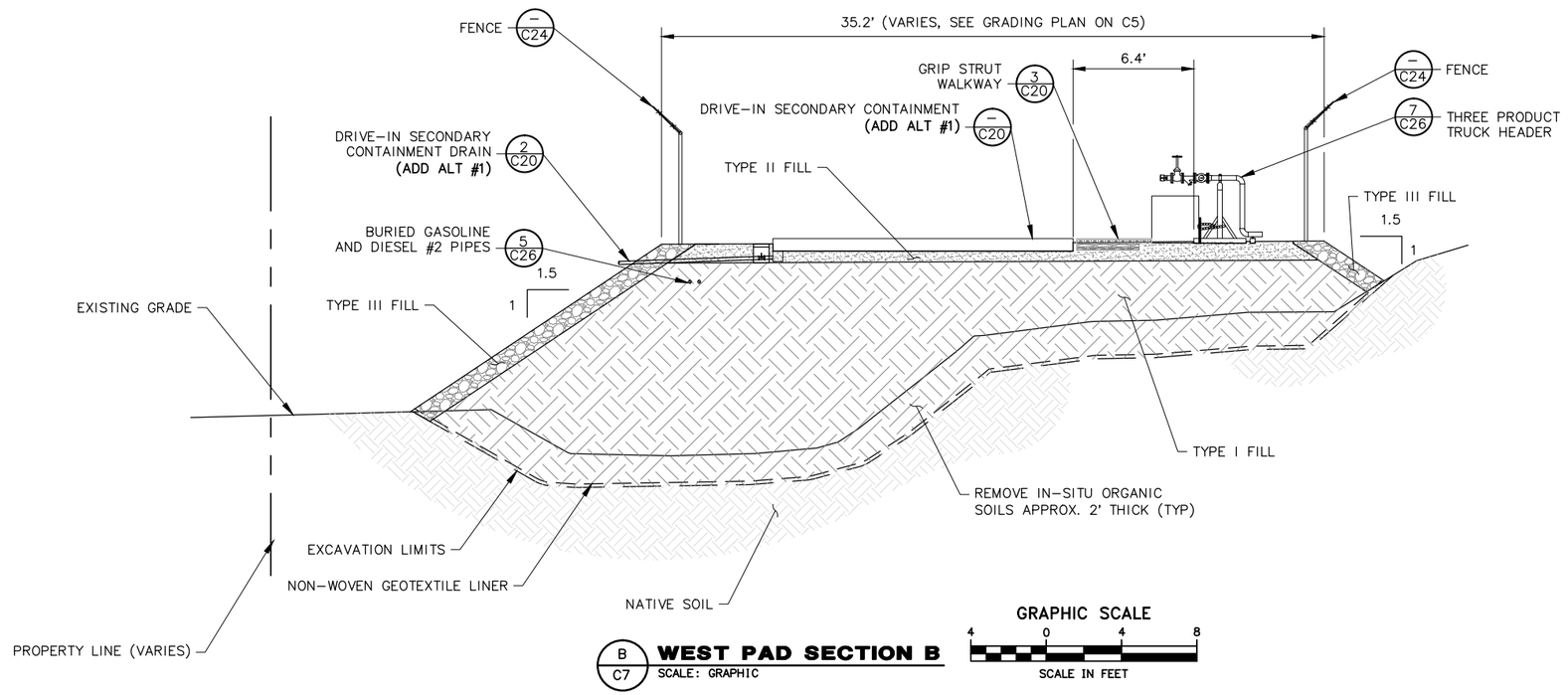
SCALE IN FEET



B/C7 **WEST PAD SECTION B**
SCALE: GRAPHIC

GRAPHIC SCALE
4 0 4 8
SCALE IN FEET

NOTES

1. STAIRS NOT SHOWN FOR CLARITY
2. SEE SHEET C5 FOR PAD CONSTRUCTION SEQUENCE.
3. SEE SPECIFICATIONS FOR DEFINITION OF CLASSIFIED FILL TYPES I, II, AND III.

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EDNA BAY, ALASKA
BULK FUEL UPGRADE
TANK FARM WEST PAD SECTIONS

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Sheet No. C7
SHEET C7 OF C26

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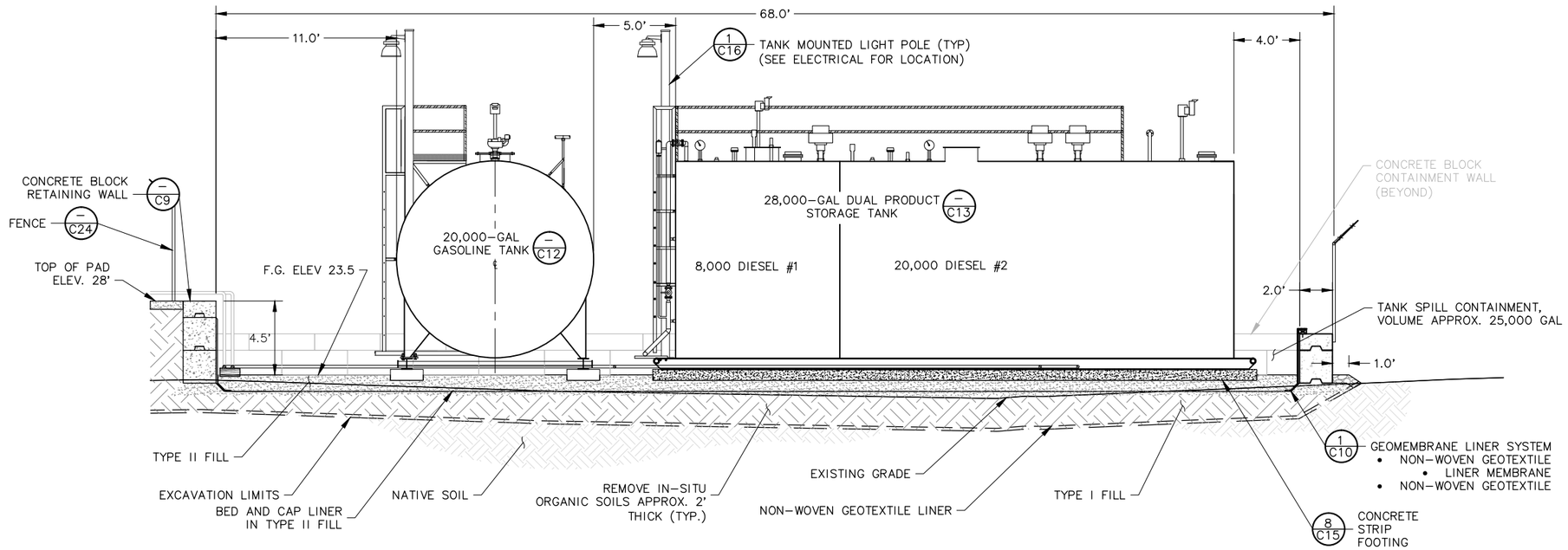

A C8 **EAST PAD SECTION 1**
SCALE: GRAPHIC

GRAPHIC SCALE
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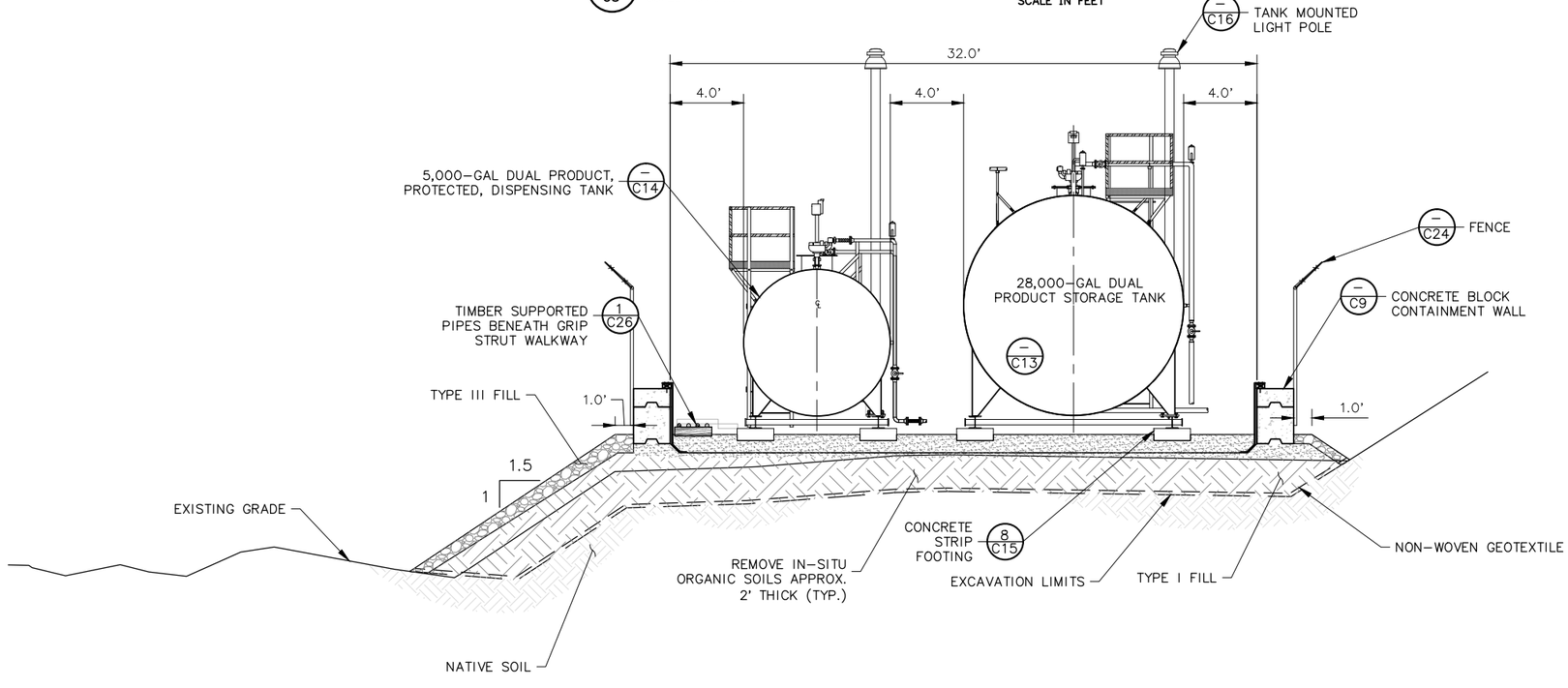
SCALE IN FEET



B C8 **EAST PAD SECTION 2**
SCALE: GRAPHIC

GRAPHIC SCALE
4 0 4 8
SCALE IN FEET

NOTES

1. STAIRS NOT SHOWN FOR CLARITY
2. SEE SHEET C5 FOR PAD CONSTRUCTION SEQUENCE.
3. SEE SPECIFICATIONS FOR DEFINITION OF CLASSIFIED FILL TYPES I, II, AND III.

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EDNA BAY, ALASKA
BULK FUEL UPGRADE
TANK FARM EAST PAD SECTIONS

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Sheet No. C8
SHEET C8 OF C26

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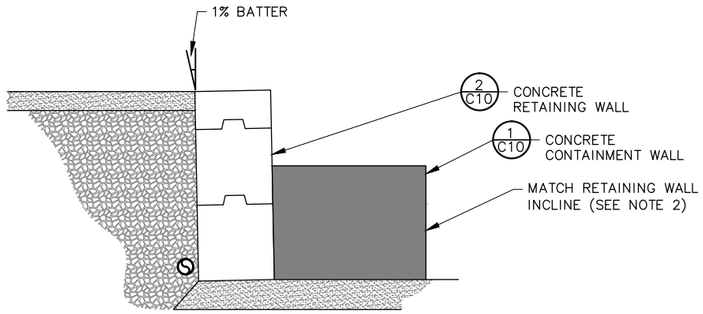
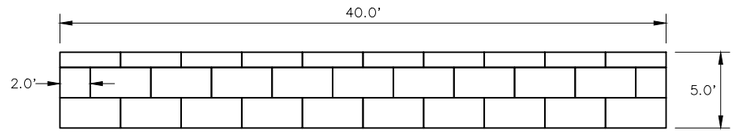


1 C9 INTERFACE OF CONTAINMENT & RETAINING WALLS WITH 1% BATTER

NTS



A C9 RETAINING WALL SECTION VIEW

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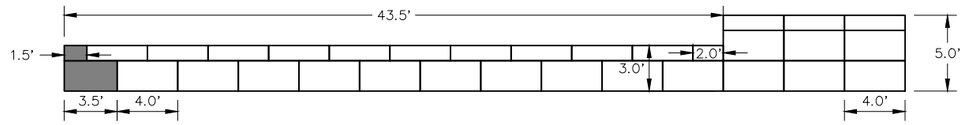

B C9 CONTAINMENT WALL SECTION VIEW

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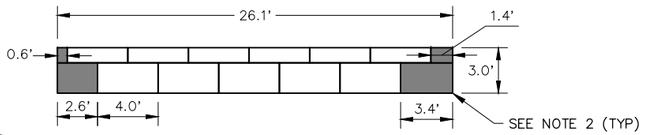

C C9 CONTAINMENT WALL SECTION VIEW

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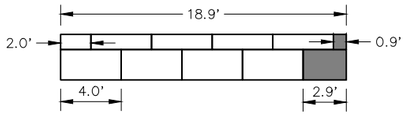
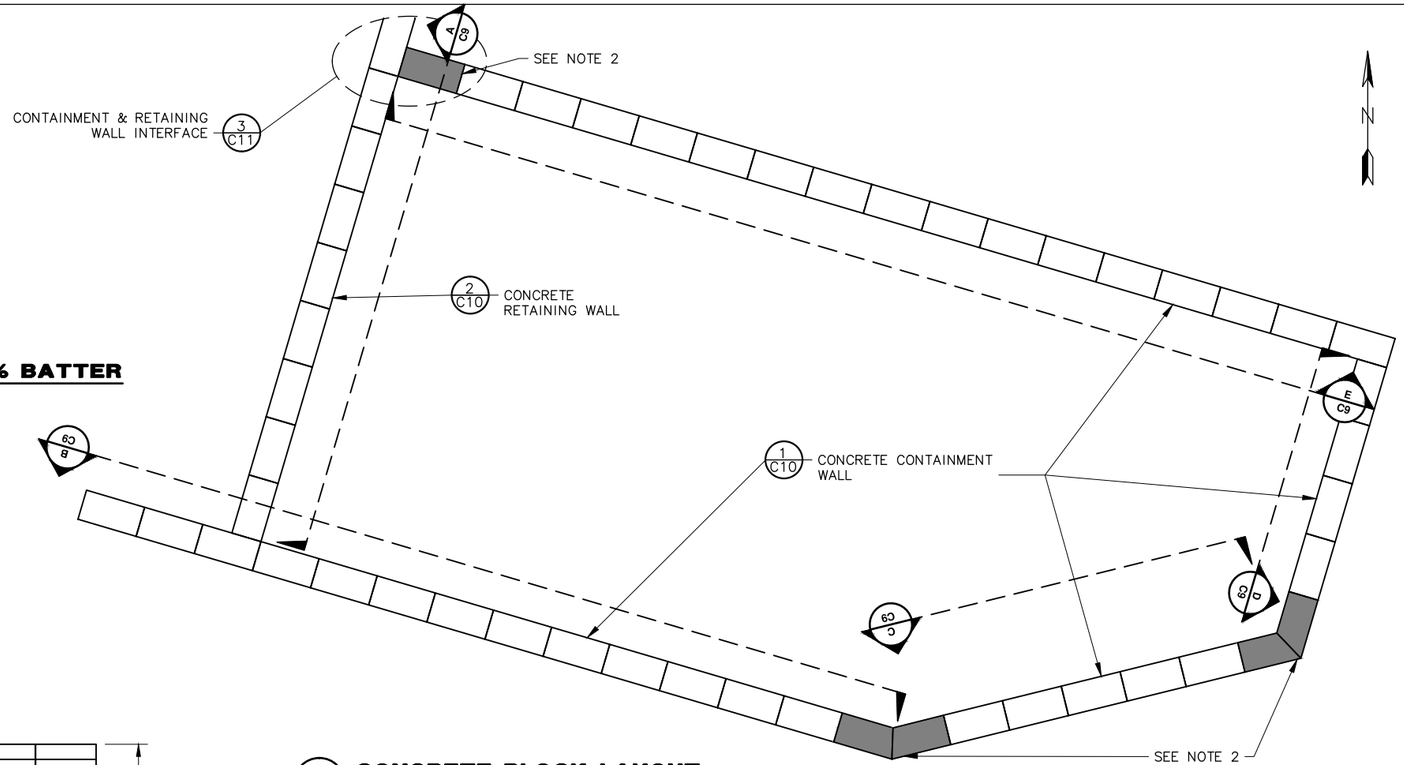


D C9 CONTAINMENT WALL SECTION VIEW

NTS

E C9 CONTAINMENT WALL SECTION VIEW

NTS



2 C9 CONCRETE BLOCK LAYOUT

NTS

NOTES

1. CONTRACTOR SHALL PROCURE BLOCKS THAT MATCH THE DIMENSIONS OF THE BLOCKS SHOWN ON THIS SHEET.
2. THESE BLOCKS SHALL BE CAST IN PLACE OR PRECAST TO FIT, TO MATCH FACES OF ADJACENT BLOCKS.
3. PROVIDE KNOB STYLE WORLD BLOCKS. AVAILABLE AT "EDDYSTONE ROCK AND READY MIX" (907-220-0890), KETCHIKAN, AK. (OR APPROVED EQUAL)

CONCRETE WALL BLOCK SCHEDULE

SECTION	INTERIOR BLOCK DIMENSIONS (FT)			QTY.	COMMENT
	HEIGHT	WIDTH	LENGTH		
A	2	2	4	19	
	2	2	2	2	
	1	2	4	10	TOP BLOCK
B	2	2	4	16	
	2	2	3.5	1	
	1	2	4	13	TOP BLOCK
	1	2	1.5	1	TOP BLOCK
	1	2	2	1	TOP BLOCK
C	2	2	4	5	
	2	2	2.6	1	
	2	2	3.4	1	
	1	2	4	5	TOP BLOCK
	1	2	0.6	1	TOP BLOCK
	1	2	1.4	1	TOP BLOCK
D	2	2	4	4	
	2	2	2.9	1	
	1	2	4	4	TOP BLOCK
	1	2	2	1	TOP BLOCK
	1	2	0.9	1	TOP BLOCK
E	2	2	4	17	
	1	2	4	16	TOP BLOCK
	1	2	2	2	TOP BLOCK

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EDNA BAY, ALASKA
BULK FUEL UPGRADE

CONCRETE BLOCK WALL LAYOUT DETAILS

NO.	REVISION	BY	DATE
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Plot Date 4/9/15
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Drawn AJG
Approved KRH

Sheet No. C9
SHEET C9 OF C26

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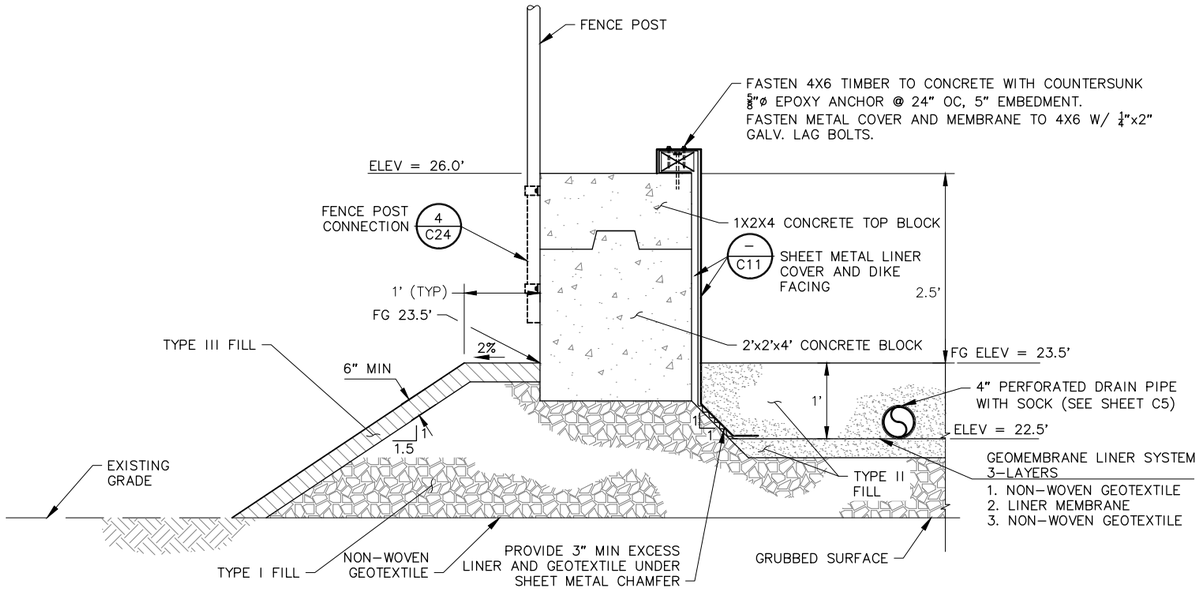
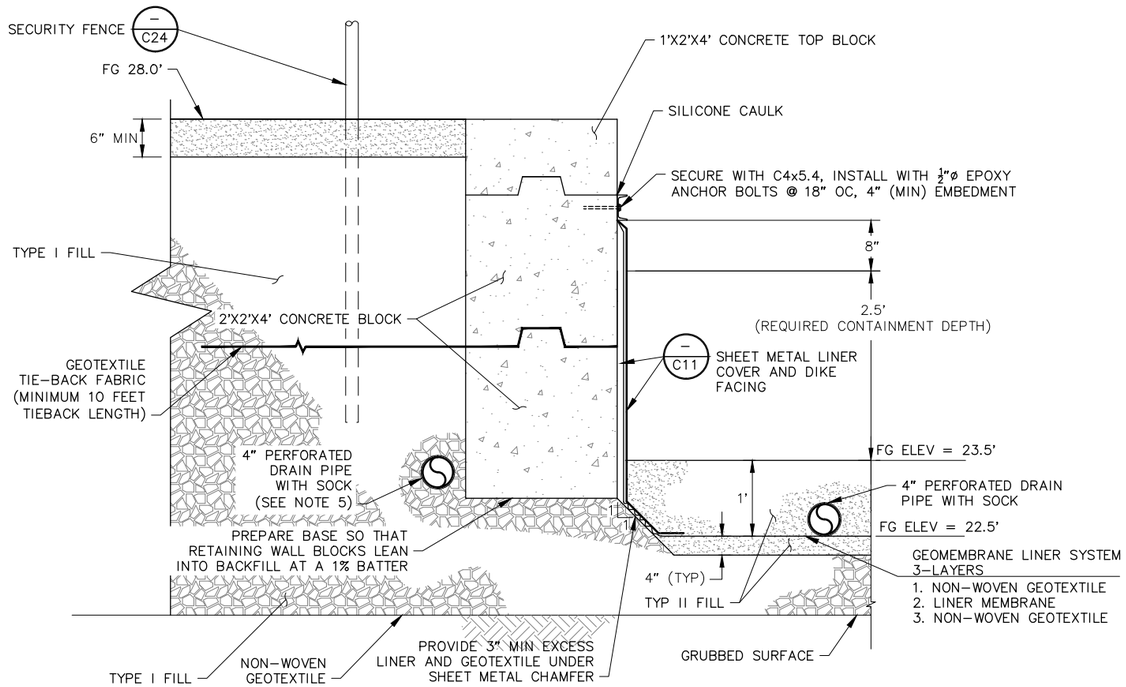


1/C10 CONCRETE CONTAINMENT WALL SECTION

SCALE: NTS

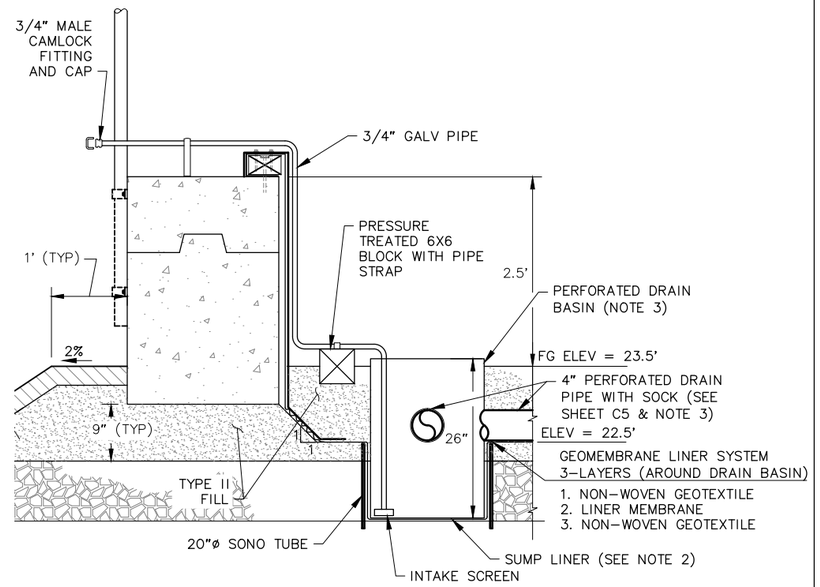


2/C10 CONCRETE RETAINING WALL SECTION

SCALE: NTS

SHEET NOTES

1. NO PENETRATIONS ALLOWED THROUGH MEMBRANE LINER.
2. OVERLAP SHEET METAL LINER COVER 2" (MIN) AND SEAL WITH FUEL RESISTANT CAULKING. (SEE SPECIFICATIONS)
3. ALLOW 3" MINIMUM OF EXCESS LINER AT BOTTOM OF CONCRETE BLOCKS FOR SETTLEMENT AND EXPANSION.
4. CONCRETE WALL DIMENSIONS SHOWN ON THIS SHEET ARE BASED ON CONCRETE BLOCK DIMENSIONS. FINISHED WALL HEIGHT SHALL BE AS SHOWN ON THE PLANS.
5. TRANSITION FROM PERFORATED DRAIN PIPE TO ABS PIPE BETWEEN PAD EDGE AND FILL SLOPE DAYLIGHT LIMIT. INSTALL VERTICAL CLEANOUTS AT PIPE ANGLE POINTS.



NOTES

1. INSTALL DRAINAGE PIPE DIRECTLY ON TOP OF GEOTEXTILE ABOVE LINER.
2. HEAT WELD 19"ø x 12" DEEP LINER SUMP TO LINER FOLLOWING MANUFACTURERS INSTRUCTIONS. SET WITHIN 20"ø SONO TUBE AS SHOWN.
3. DRAIN BASIN SHALL BE PERFORATED, 18"ø x 26" DEEP WITH TOP GRATE AND SOLID BOTTOM (ADS NYLOPLAST OAE)
4. DRAINAGE PIPING: PROVIDE 4"ø COILED SNAP FITTING, PERFORATED DRAINAGE PIPE WITH FILTER SOCK AND FITTINGS. ADS 4" PERFORATED WITH SOCK (HIGHWAY GRADE) OR APPROVED EQUAL.

3/C10 SUMP DETAIL

SCALE: NTS

State of Alaska
Department of Commerce, Community and Economic Development
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PHONE: (907) 562-3252
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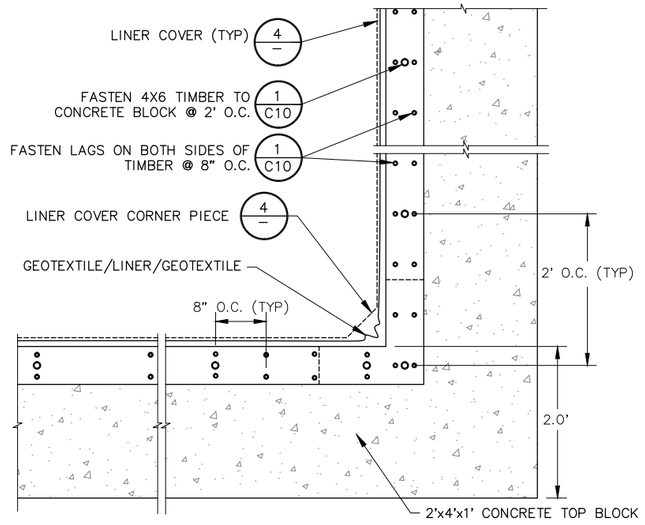
EDNA BAY, ALASKA
BULK FUEL UPGRADE
CONCRETE CONTAINMENT WALL AND SUMP

NO.	REVISION	BY	DATE
0	ISSUED FOR CONSTRUCTION	AMH	04/2015

Plot Date 4/9/15
Designed AMH
Drawn AJG
Approved KRH

Sheet No. C10
SHEET C10 OF C26

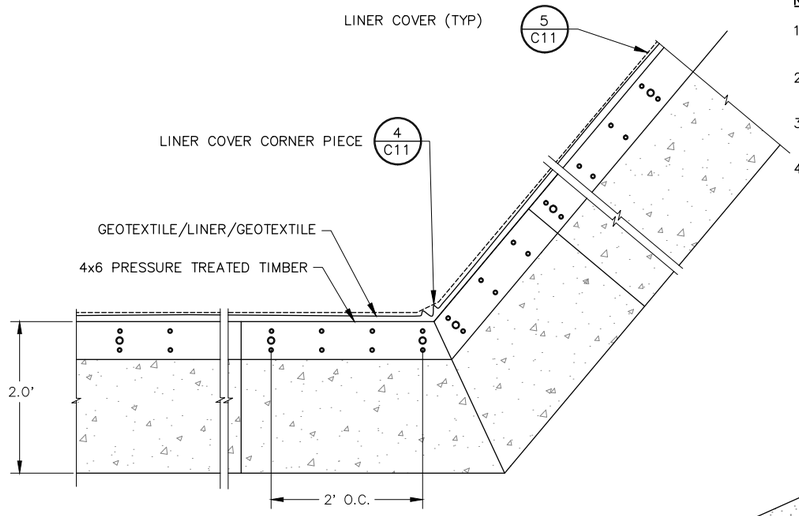
File: J:\Jobsdata\30406.00 Edna Bay Bulk Fuel Upgrades\00 CADD\01 Working Set\01 Civil\30406.00 C9-C11, CONCRETE CONTAINMENT WALL DETAILS.dwg



1/C11 RIGHT ANGLE CONTAINMENT WALL CORNER DETAIL

NTS

PLAN VIEW



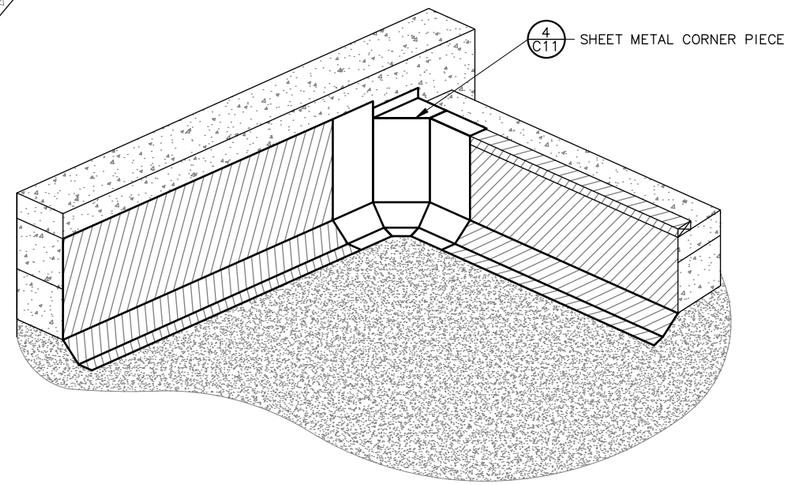
2/C11 OBTUSE ANGLE CORNER DETAIL

NTS

PLAN VIEW

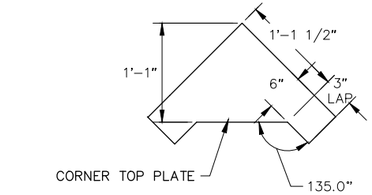
NOTES

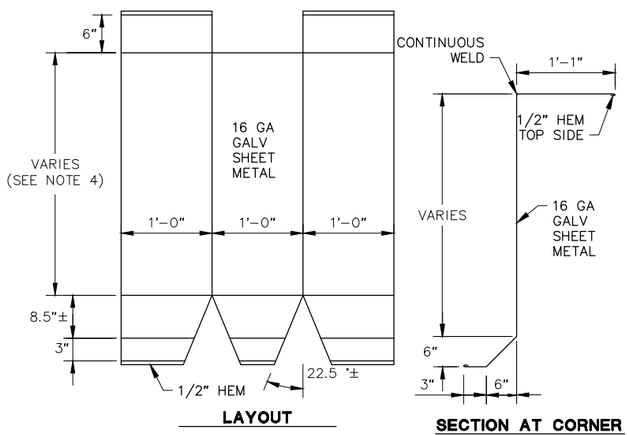
1. NO PENETRATIONS ALLOWED THROUGH LINER EXCEPT AT TOP SURFACE OF CONCRETE RETAINING WALL.
2. OVERLAP LINER COVER 2" (MIN) AND SEAL WITH FUEL RESISTANT CAULKING.
3. ALLOW 3" MINIMUM OF EXCESS LINER AT BOTTOM OF CONCRETE WALLS FOR SETTLEMENT AND EXPANSION.
4. DIMENSION OF VERTICAL PORTION OF FACING VARIES. CONCRETE CONTAINMENT WALLS 3'–4". CONCRETE RETAINING WALLS 4'.



3/C11 ISOMETRIC - CONCRETE RETAINING/CONTAINMENT WALL INTERFACE

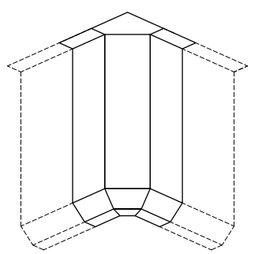
NTS





LAYOUT **SECTION AT CORNER**

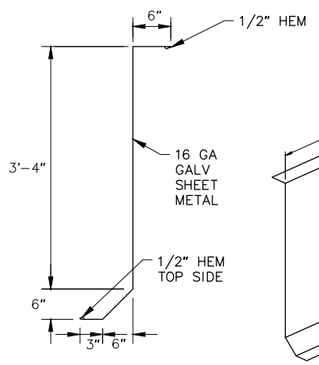
NOTE: SOME BENDS DIFFER AT RETAINING/CONTAINMENT WALL INTERFACE, SEE 3/C11



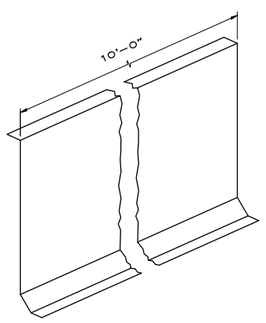
ISOMETRIC
NOT TO SCALE

4/C11 SHEET METAL LINER COVER CORNER DETAILS

NTS



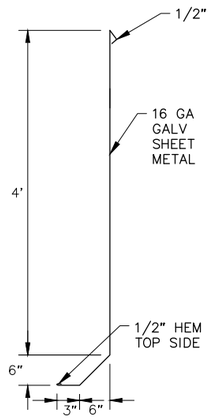
LINER COVER SECTION



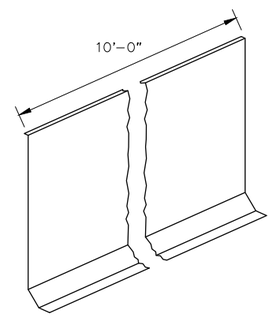
LINER COVER ISOMETRIC

5/C11 LINER COVER DETAILS FOR CONTAINMENT WALLS

NTS



LINER COVER SECTION



LINER COVER ISOMETRIC

6/C11 LINER COVER DETAILS FOR CONCRETE RETAINING WALL

NTS

State of Alaska
Department of Commerce, Community and Economic Development
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ALASKA ENERGY AUTHORITY

STATE OF ALASKA 49TH
ANDREW HORAZDOVSKY
CE-14054
04/07/2015
REGISTERED PROFESSIONAL ENGINEER

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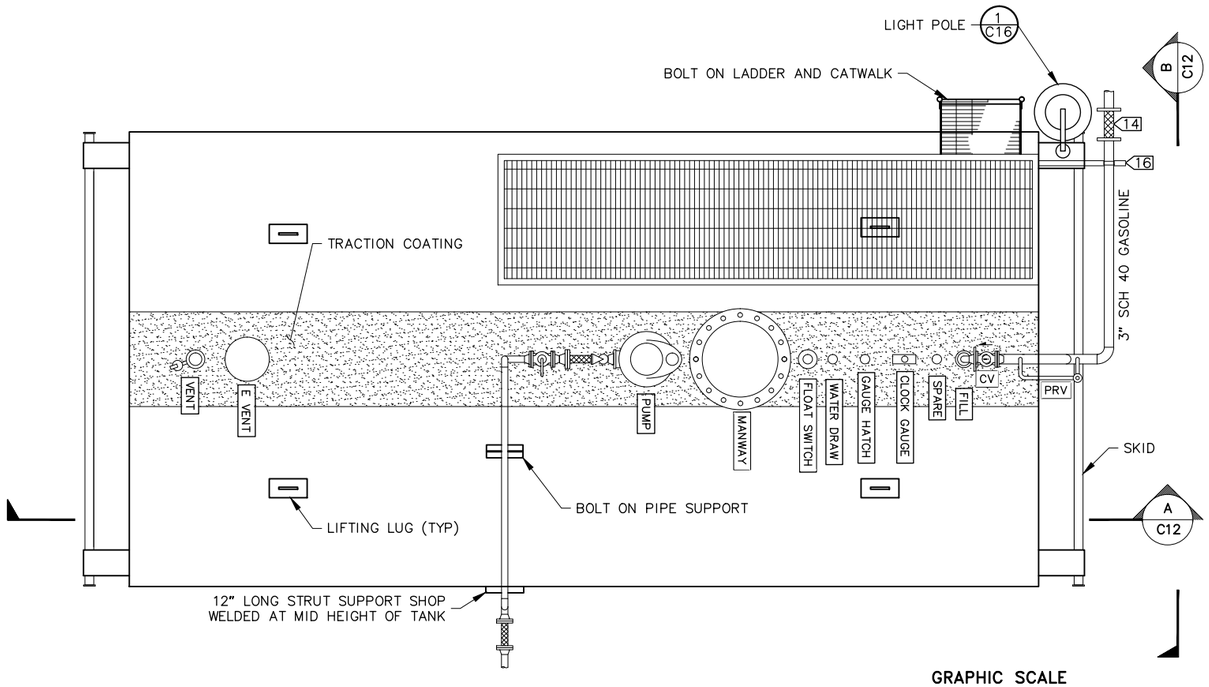
EDNA BAY, ALASKA
BULK FUEL UPGRADE
CONCRETE CONTAINMENT WALL DETAILS

NO.	REVISION	BY	DATE
0	ISSUED FOR CONSTRUCTION	AMH	04/2015

Plot Date 4/9/15
Designed AMH
Drawn AJG
Approved KRH

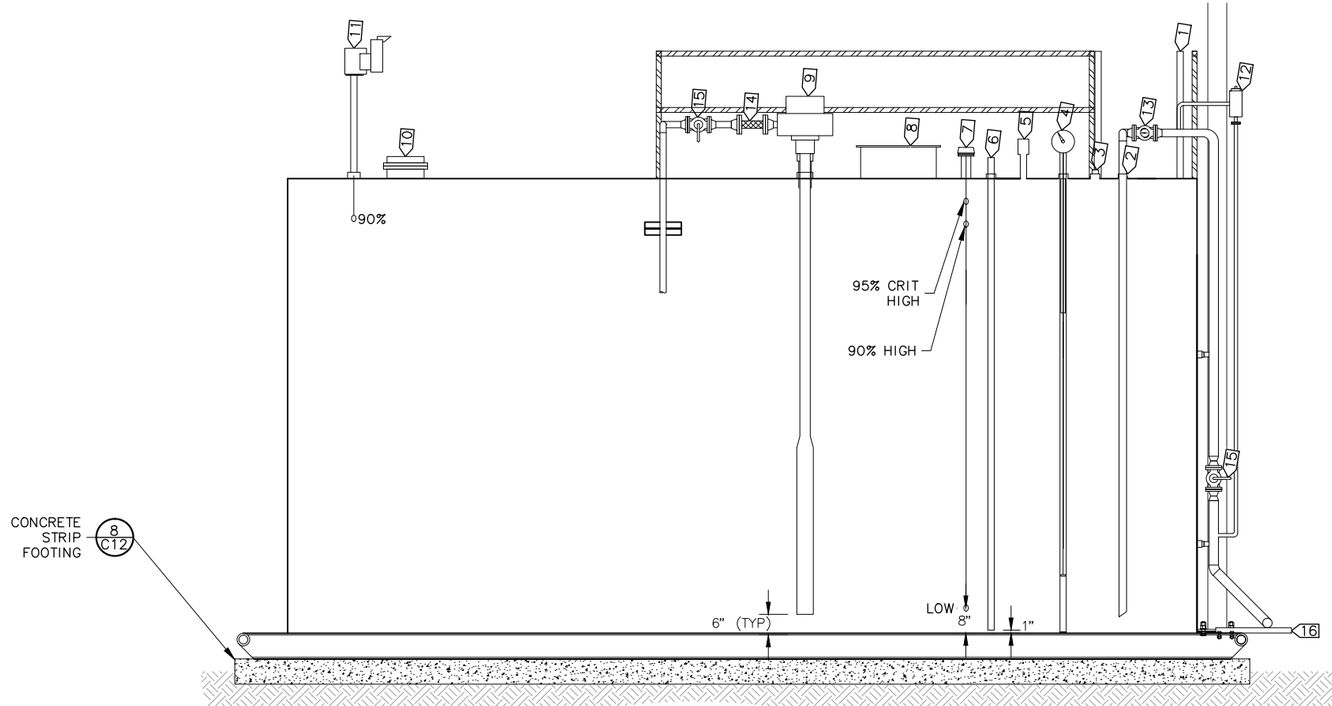
Sheet No. C11
SHEET C11 OF C26

File: J:\Jobsdata\30406.00 Edna Bay Bulk Fuel Upgrades\00 CADD\01 Working Set\01 Civil\30406.00 C9-C11, CONCRETE CONTAINMENT WALL DETAILS.dwg



1 C12 **20,000 GASOLINE TANK PLAN VIEW**
SCALE: GRAPHIC

GRAPHIC SCALE
2 0 2 4
SCALE IN FEET



A C12 **SECTION VIEW**
SCALE: GRAPHIC

GRAPHIC SCALE
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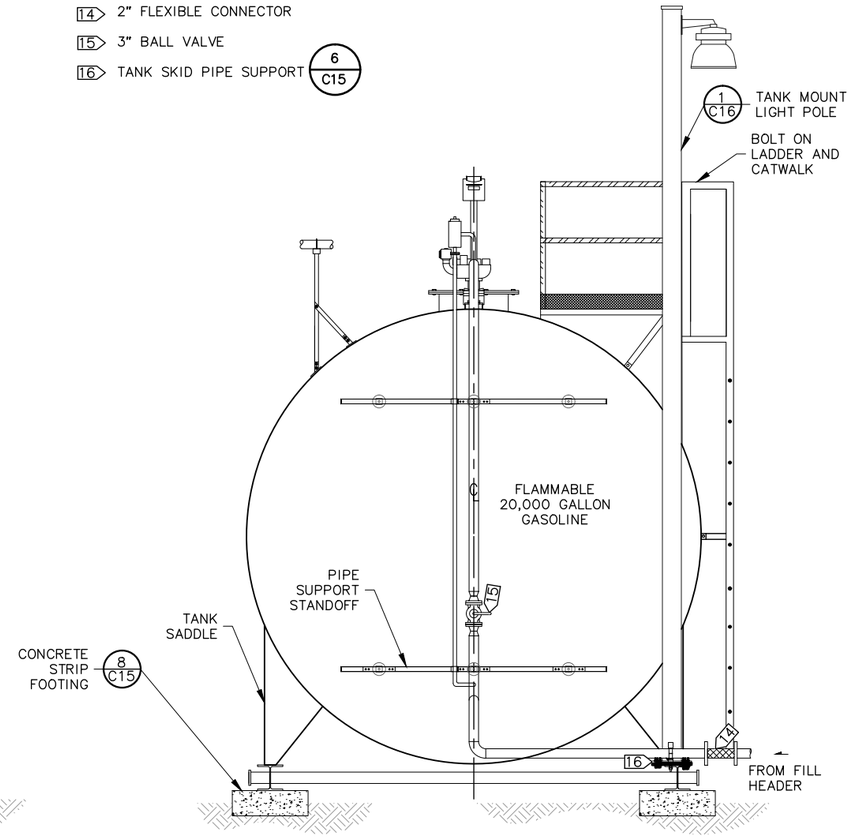
SCALE IN FEET



B C12 **END VIEW**
SCALE: GRAPHIC

GRAPHIC SCALE
2 0 2 4
SCALE IN FEET

SPECIFIC NOTES

1. SHOP FABRICATED BOLT ON LADDER AND PLATFORM
2. 4" FPT FILL w/ 4X3 DOUBLE TAP BUSHING & 3" DROP TUBE
3. 4" THREADED PENETRATION (SPARE W/ PLUG)
4. 2" THREADED PENETRATION (CLOCK GAUGE INSTALLED ON 2" X 18" NIPPLE) — 2 C15
5. 2" FPT (GAUGE HATCH INSTALLED ON 2"X4" NIPPLE)
6. 2" THREADED PENETRATION (WATER DRAW) — 3 C15
7. 3" FLANGED (LEVEL SWITCH)
8. 24" MANHOLE
9. 4" FPT (SUBMERSIBLE PUMP) — 1 C15
10. 10" FLANGED PENETRATION (E-VENT)
11. 3" THREADED PENETRATION (2" PRESSURE VACUUM VENT WITH WHISTLE ALARM.) INSTALL WITH 3"X2" REDUCING BUSHING & 2"X24" NIPPLE. SET WHISTLE ALARM TO 90% FULL.
12. 1" PRV SET @ PSIG
13. 3" CHECK VALVE
14. 2" FLEXIBLE CONNECTOR
15. 3" BALL VALVE
16. TANK SKID PIPE SUPPORT — 6 C15

GENERAL NOTES

1. TANK SHALL BE A NEW UL 142 LISTED AND LABELED 12.0'ø x 24.0" LONG, HORIZONTAL, SINGLE WALL AST AS DETAILED.
2. SEE SPECIFICATIONS FOR FURTHER COMPONENT REQUIREMENTS.
3. CONSULT SPECIFICATIONS FOR CLARIFICATION OF OWNER PROVIDED COMPONENTS.

State of Alaska
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ALASKA ENERGY AUTHORITY

STATE OF ALASKA — 49TH — REGISTERED PROFESSIONAL ENGINEER
ANDY HORAZDOVSKY
CE-14054
04/07/2015

CRW ENGINEERING GROUP LLC
3940 ARCTIC BLVD. SUITE 300
ANCHORAGE, ALASKA 99503
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FAX: (907) 561-2273

EDNA BAY, ALASKA
BULK FUEL UPGRADE
20,000 GALLON GASOLINE TANK

NO.	REVISION	BY	DATE
0	ISSUED FOR CONSTRUCTION	AMH	04/2015

Plot Date 4/9/15 | Designed AMH | Drawn AJG | Approved KRH

Sheet No. C12
SHEET C12 OF C26

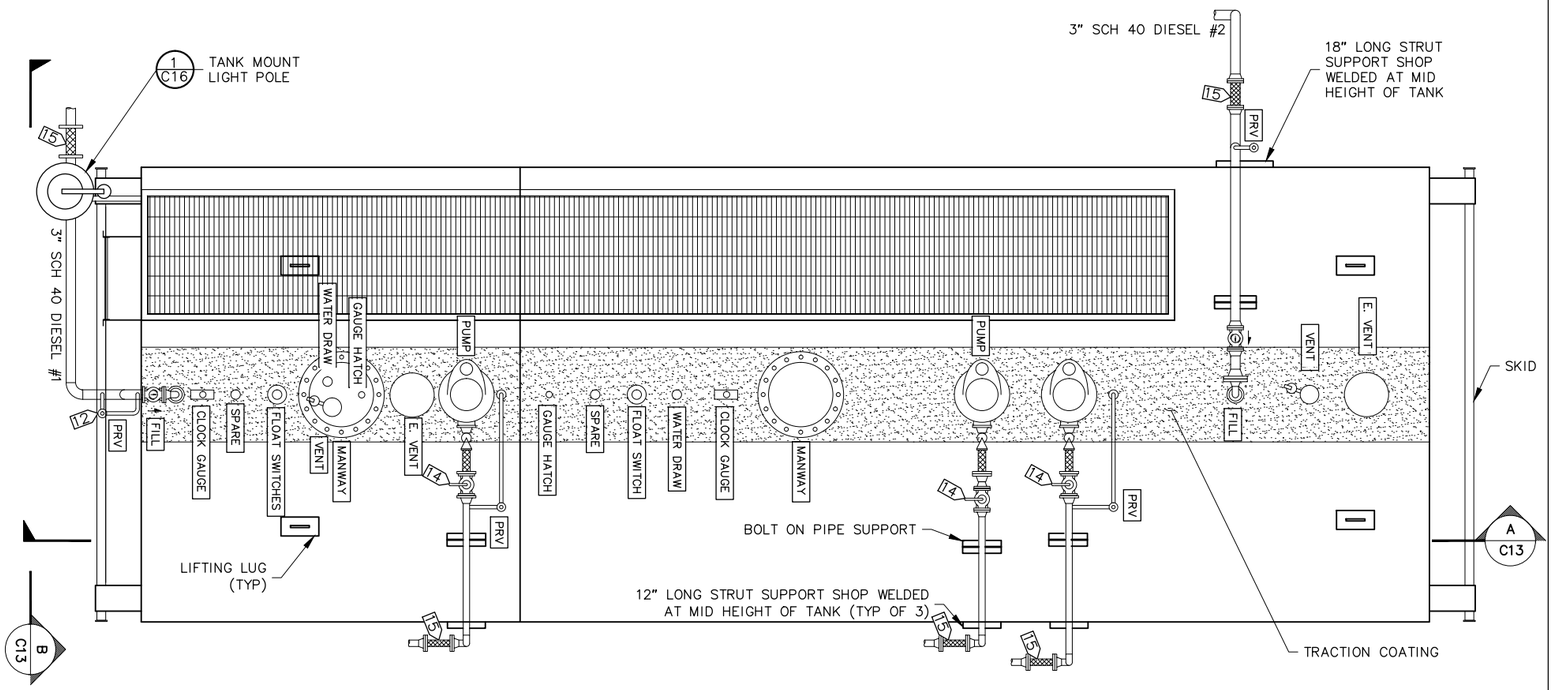
File: J:\Jobsdata\30406.00 Edna Bay Bulk Fuel Upgrades\00 CADD\01 Working Set\01 Civil\30406.00 C12-C15, TANK DETAILS.dwg

SPECIFIC NOTES

1. SHOP FABRICATED BOLT ON LADDER AND PLATFORM
2. 4" FPT FILL w/ 4X3 DOUBLE TAP BUSHING & 3" DROP TUBE
3. 4" THREADED PENETRATION (SPARE W/ PLUG)
4. 2" THREADED PENETRATION (CLOCK GAUGE INSTALLED ON 2" X 18" NIPPLE) (2/C15)
5. 2" FPT (GAUGE HATCH INSTALLED ON 2"X4" NIPPLE)
6. 2" THREADED PENETRATION (WATER DRAW) (3/C15)
7. 3" FLANGED (LEVEL SWITCH)
8. 24" MANHOLE
9. 4" FPT (SUBMERSIBLE PUMP) (1/C15)
10. 10" FLANGED PENETRATION (E-VENT)
11. 3" THREADED PENETRATION (2" PRESSURE VACUUM VENT WITH WHISTLE ALARM.) INSTALL WITH 3"X2" REDUCING BUSHING & 2"X24" NIPPLE. SET WHISTLE ALARM TO 90% FULL.
12. 1" PRV SET @ 50 PSIG
13. 3" CHECK VALVE
14. 3" BALL VALVE
15. 2" FLEXIBLE CONNECT
16. TANK SKID PIPE SUPPORT (6/C15)

GENERAL NOTES

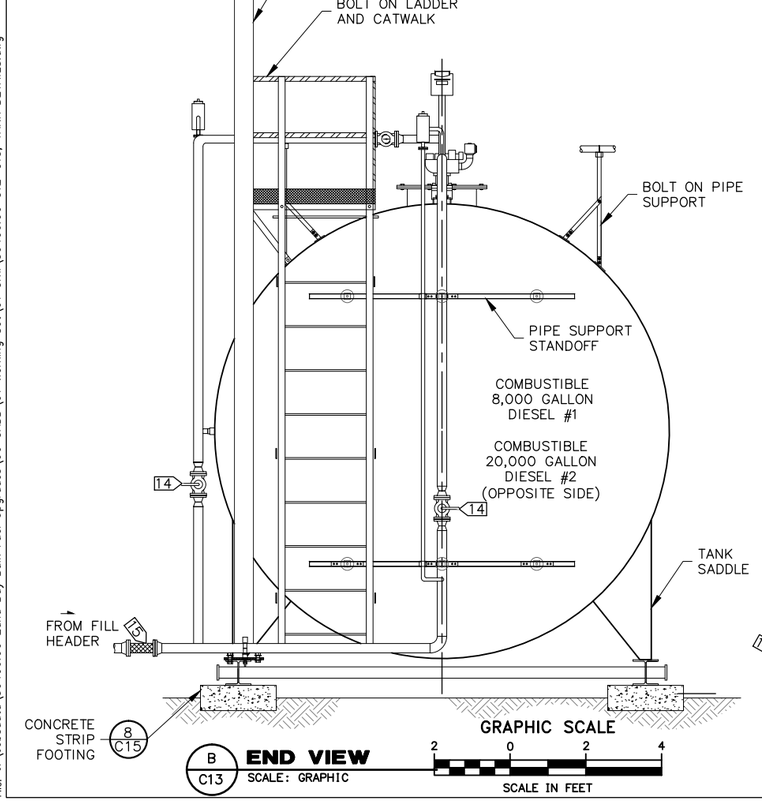
1. TANK SHALL BE A NEW UL 142 LISTED AND LABELED 12.0'ø x 34.0" LONG, HORIZONTAL, SINGLE WALL AST AS DETAILED.
2. SEE SPECIFICATIONS FOR FURTHER COMPONENT REQUIREMENTS.
3. CONSULT SPECIFICATIONS FOR CLARIFICATION OF OWNER PROVIDED COMPONENTS.



1/C13 28,000 GALLON DUAL PRODUCT STORAGE TANK - PLAN VIEW

SCALE: GRAPHIC

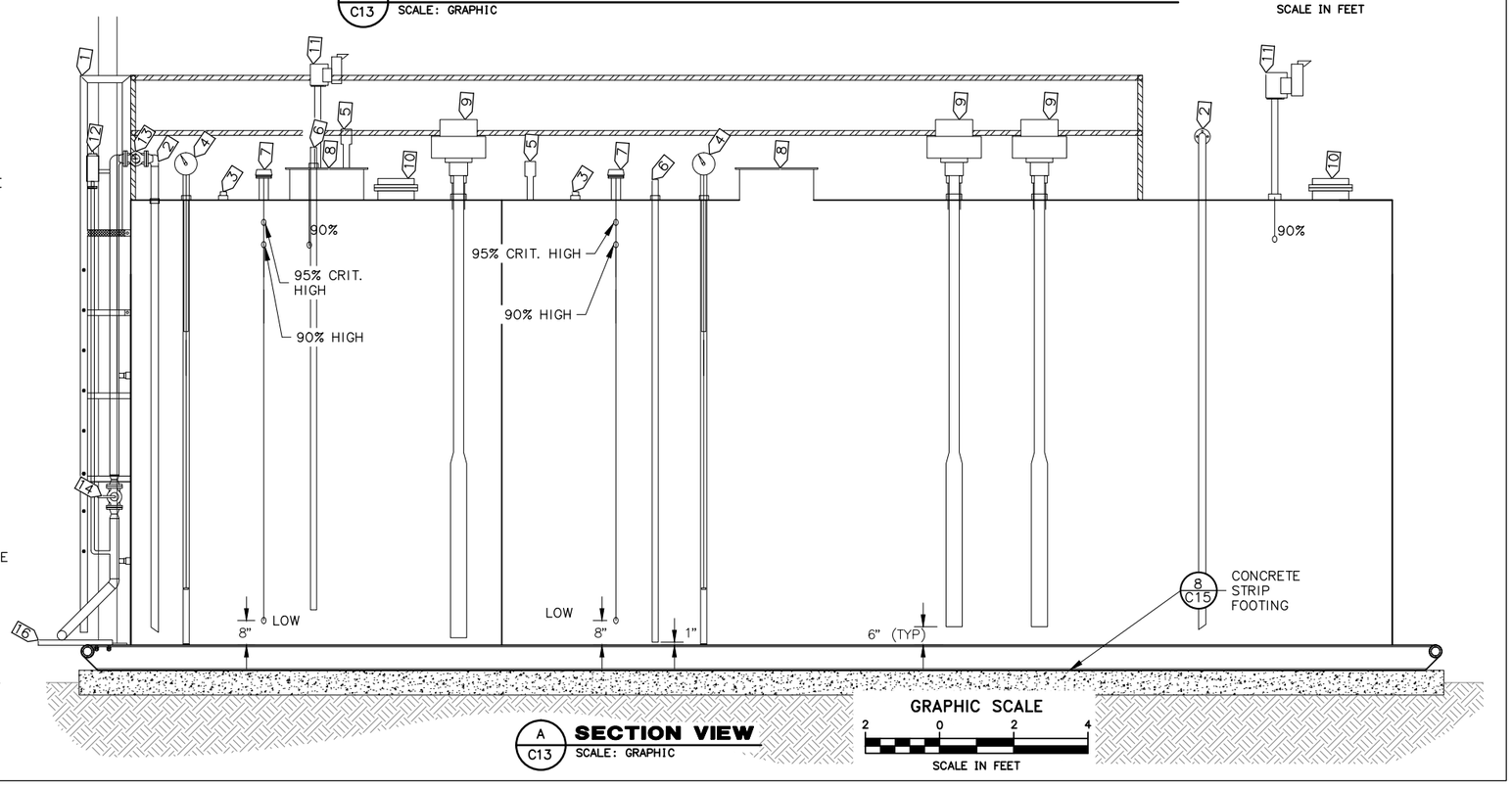
GRAPHIC SCALE 2 0 2 4 SCALE IN FEET



B/C13 END VIEW

SCALE: GRAPHIC

GRAPHIC SCALE 2 0 2 4 SCALE IN FEET



A/C13 SECTION VIEW

SCALE: GRAPHIC

GRAPHIC SCALE 2 0 2 4 SCALE IN FEET

State of Alaska
Department of Commerce, Community and Economic Development
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ALASKA ENERGY AUTHORITY

STATE OF ALASKA 49TH ANDY HORVATOVSKY CE-14054 04/07/2015 REGISTERED PROFESSIONAL ENGINEER

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EDNA BAY, ALASKA
BULK FUEL UPGRADE

28,000 GALLON DUAL PRODUCT TANK

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Sheet No. C13

SHEET C13 OF C26

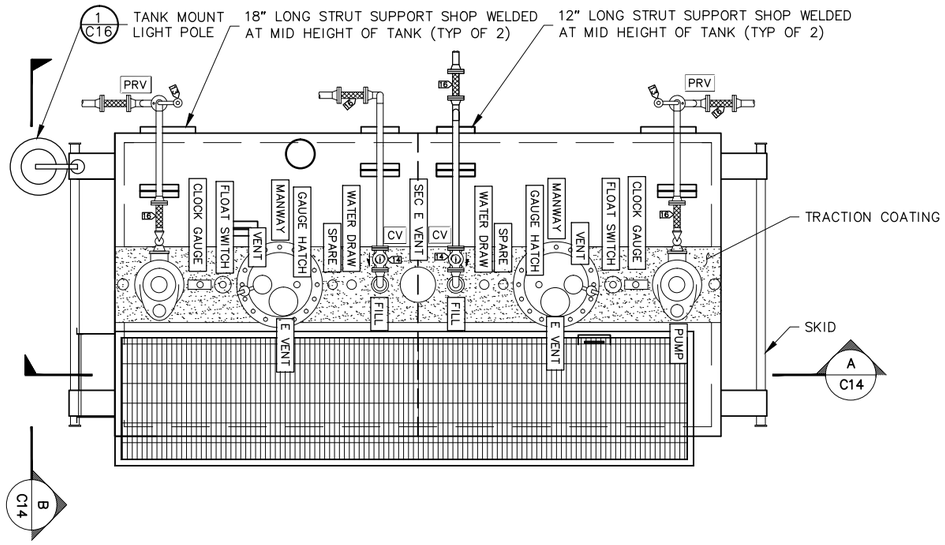
File: J:\Jobsdata\30406.00 Edna Bay Bulk Fuel Upgrades\00 CADD\01 Working Set\01 Civil\30406.00 C12-C15, TANK DETAILS.dwg

SPECIFIC NOTES

1. SHOP FABRICATED BOLT ON LADDER AND PLATFORM
2. 4" FPT FILL w/ 4X3 DOUBLE TAP BUSHING & 3" DROP TUBE
3. 4" THREADED PENETRATION (SPARE W/ PLUG)
4. 2" THREADED PENETRATION (CLOCK GAUGE INSTALLED ON 2" X 18" NIPPLE) (2 / C15)
5. 2" FPT (GAUGE HATCH INSTALLED ON 2"X4" NIPPLE)
6. 2" THREADED PENETRATION (WATER DRAW) (3 / C15)
7. 3" FLANGED FOUR POSITION LEVEL SWITCHES
8. 24" MANHOLE
9. 4" FPT (SUBMERSIBLE PUMP) (1 / C15)
10. 6" FLANGED PENETRATION (E-VENT)
11. 8" FLANGED PENETRATION (SECONDARY E-VENT)
12. 3" THREADED PENETRATION (2" PRESSURE VACUUM VENT WITH WHISTLE ALARM.) INSTALL WITH 3"X2" REDUCING BUSHING & 2"X24" NIPPLE. SET WHISTLE ALARM TO 90% FULL.
13. 1" PRV SET @ 50 PSIG
14. 2" CHECK VALVE
15. 2" BALL VALVE
16. 2" FLEXIBLE CONNECT

GENERAL NOTES

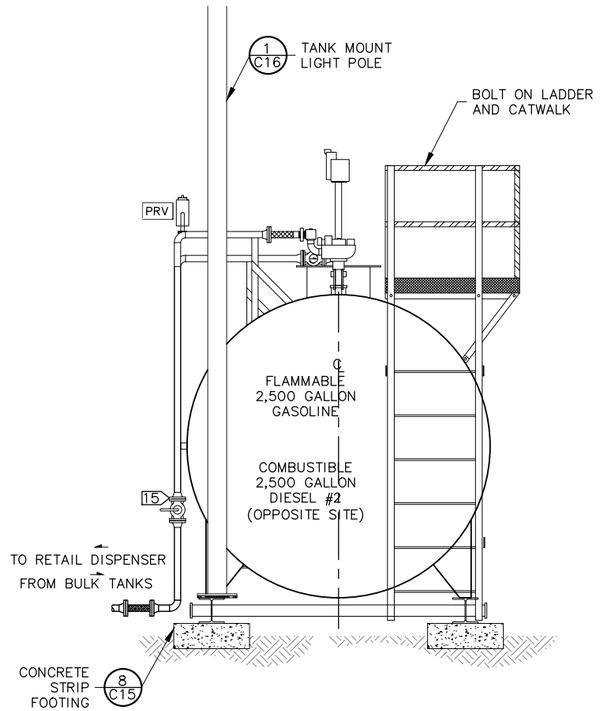
1. TANK SHALL BE A NEW AND UL 2085 LISTED AND LABELED, PRIMARY DIMENSION 8.0'ø x 16.0' LONG, HORIZONTAL, DOUBLE WALL, PROTECTED AST AS DETAILED.
2. SEE SPECIFICATIONS FOR FURTHER COMPONENT REQUIREMENTS.
3. CONSULT SPECIFICATIONS FOR CLARIFICATION OF OWNER PROVIDED COMPONENTS.



1 / C14 5,000 GALLON DUAL PRODUCT PROTECTED DISPENSING TANK - PLAN VIEW

SCALE: GRAPHIC

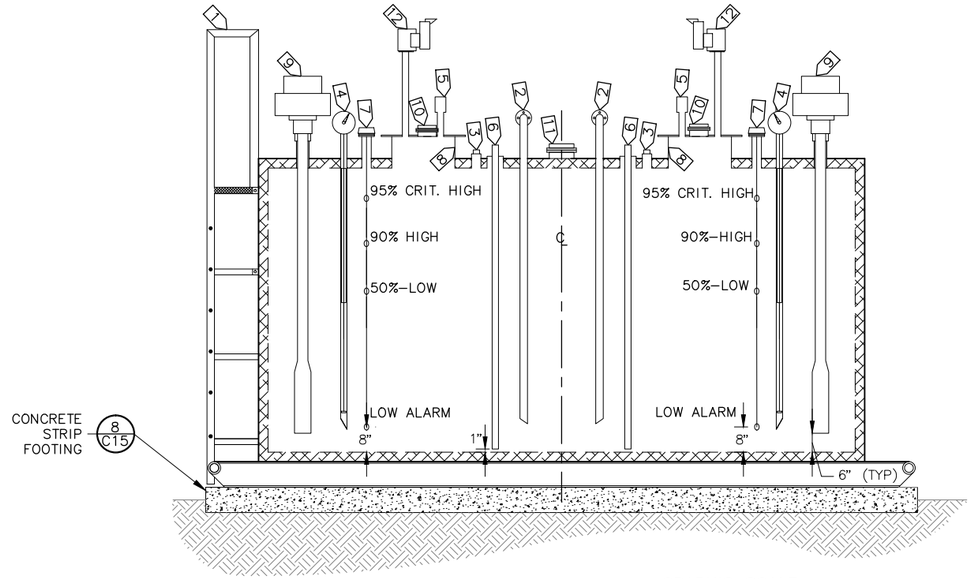
GRAPHIC SCALE
2 0 2 4
SCALE IN FEET



B / C14 END VIEW

SCALE: GRAPHIC

GRAPHIC SCALE
2 0 2 4
SCALE IN FEET



A / C14 SECTION VIEW

SCALE: GRAPHIC

GRAPHIC SCALE
2 0 2 4
SCALE IN FEET

State of Alaska
Department of Commerce, Community and Economic Development
AIDEA/AEA
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ALASKA ENERGY AUTHORITY

STATE OF ALASKA 49TH ANDY HORAZDOVSKY CE-14054 04/07/2015 REGISTERED PROFESSIONAL ENGINEER

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EDNA BAY, ALASKA

BULK FUEL UPGRADE

5,000 GALLON DUAL PRODUCT, PROTECTED, DISPENSING TANK

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Plot Date 4/9/15
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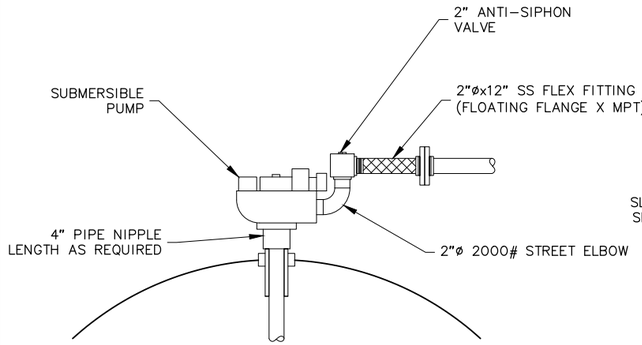
Approved KRH

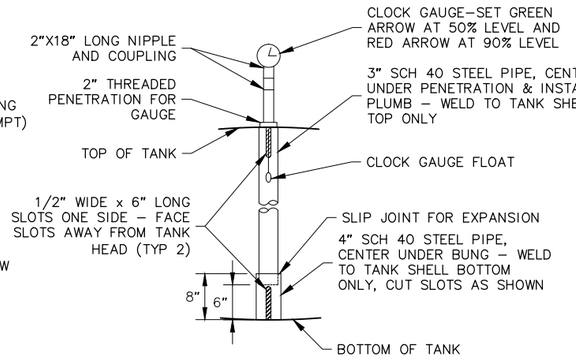
Sheet No. C14
SHEET C14 OF C26

File: L:\Jobsdata\30406.00 Edna Bay Bulk Fuel Upgrades\00 CADD\01 Working Set\01 Civil\30406.00 C12-C15, TANK DETAILS.dwg



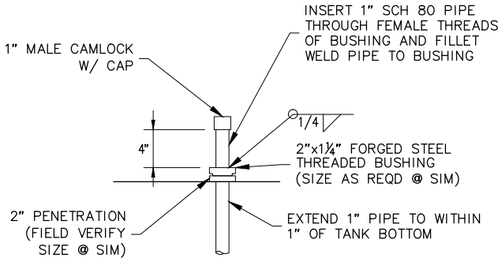
1 C15 **SUBMERSIBLE PUMP ASSEMBLY**

SCALE: NTS



2 C15 **GAUGE FLOAT STILLING WELL**

SCALE: NTS

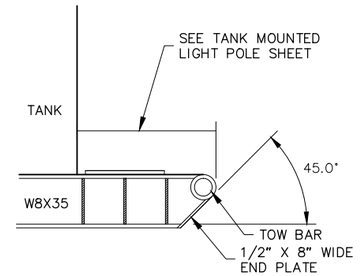


3 C15 **TYP WATER DRAW**

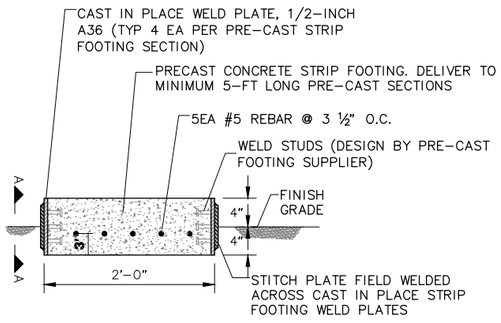
SCALE: NTS

GENERAL NOTES

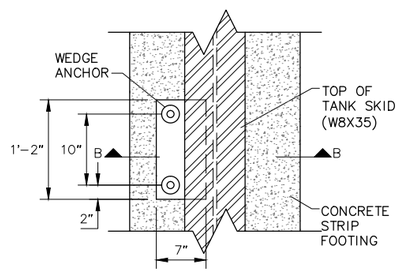
1. SEE SPECIFICATIONS FOR DETAILED COMPONENT DESIGNATIONS.
2. PROVIDE UL APPROVED GROUNDING LUG ON TANK SKIDS (TYP 2, ON OPPOSITE CORNERS)



ELEVATION A-A

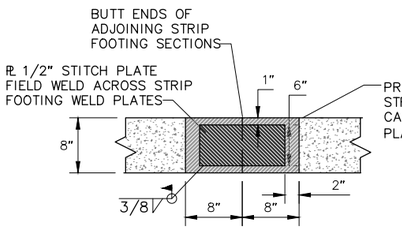


STRIP FOOTING END VIEW

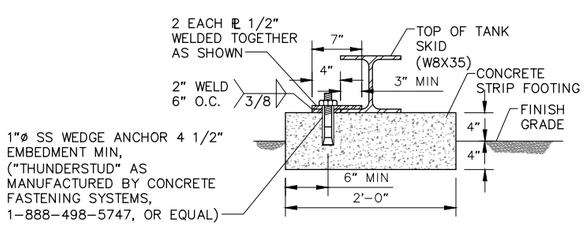


PLAN

NOTE
INSTALL THREE RESTRAINT ASSEMBLIES ON OUTSIDE FLANGE OF EACH TANK SKID. SPACE EVENLY ALONG SKID LENGTH.



SECTION A-A (SIDE VIEW AT SPLICE)



SECTION B-B

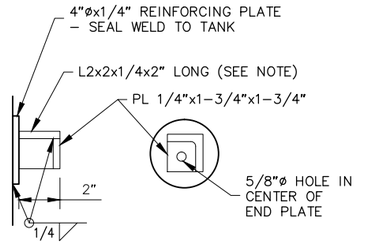
8 C15 **FIELD SPLICE FOR PRE-CAST STRIP FOOTINGS**

SCALE: NTS

9 C15 **TANK SKID RESTRAINT**

SCALE: NTS

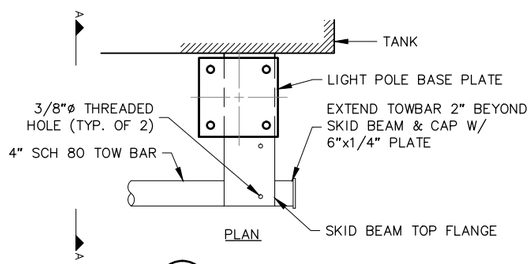
CONCRETE STRIP FOOTINGS CAN BE CAST IN PLACE FULL LENGTH WITHOUT STITCH PLATES.



NOTE TO TANK MANUFACTURER:
THE END PLATES OF STAND OFFS SHALL BE ON THE SAME VERTICAL PLANE. ANGLE LENGTHS MAY BE MODIFIED ±1 INCH TO ACCOUNT FOR CURVATURE OF THE TANK END.

4 C15 **STRUT STAND OFF**

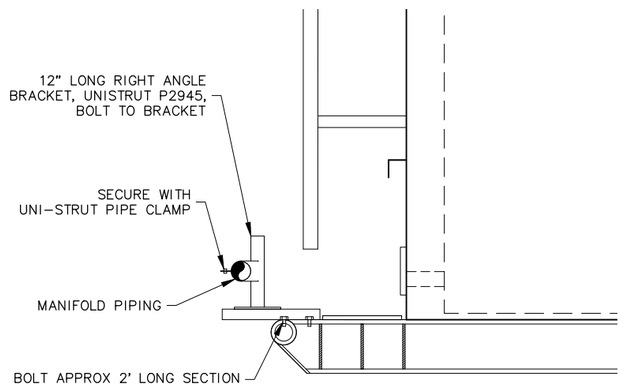
SCALE: NTS



PLAN

5 C15 **END OF SKID**

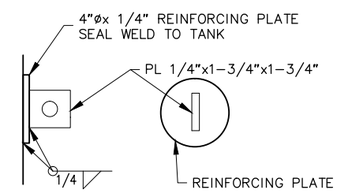
SCALE: NTS



NOTE
PIPE MAY BE SUPPORTED AS SHOWN HERE OR AS SHOWN ON TANK DRAWINGS AS APPROPRIATE.

6 C15 **PIPE SUPPORT FROM TANK SKID**

SCALE: NTS



NOTE TO TANK MANUFACTURER:
THE ENDS OF LADDER STAND OFFS SHALL BE ON THE SAME VERTICAL PLANE. PLATE LENGTHS MAY BE MODIFIED ±1 INCH TO ACCOUNT FOR CURVATURE OF THE TANK END.

7 C15 **LADDER STAND OFF**

SCALE: NTS

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ALASKA ENERGY AUTHORITY

STATE OF ALASKA — 49TH — REGISTERED PROFESSIONAL ENGINEER
ANDY HORAZDOVSKY
CE-14054
04/07/2015

CRW ENGINEERING GROUP LLC
3940 ARCTIC BLVD. SUITE 300
ANCHORAGE, ALASKA 99503
PHONE: (907) 562-3252
FAX: (907) 561-2273

EDNA BAY, ALASKA
BULK FUEL UPGRADE
MISCELLANEOUS TANK DETAILS

NO.	REVISION	BY	DATE
0	ISSUED FOR CONSTRUCTION	AMH	04/2015

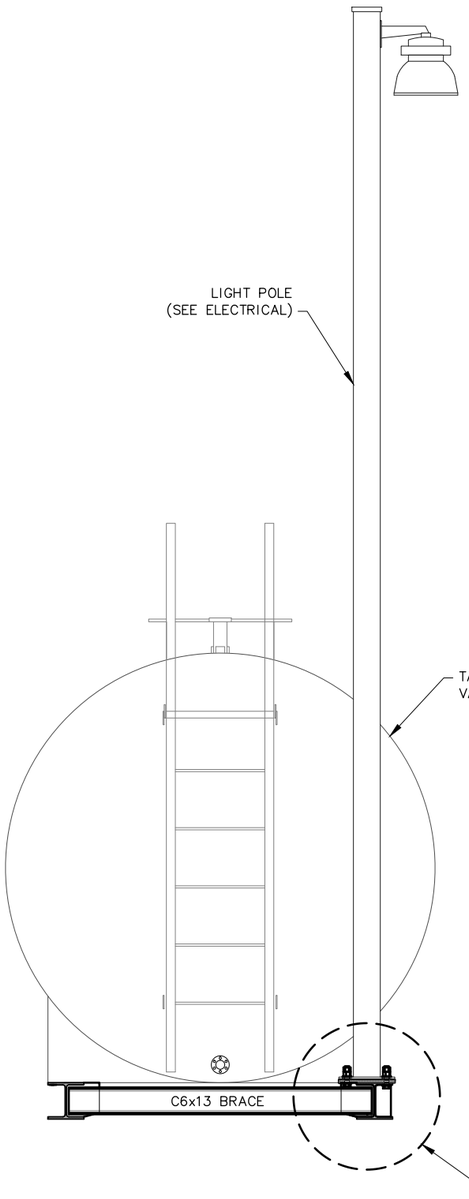
Plot Date 4/9/15 | Designed AMH | Drawn AJG | Approved KRH

Sheet No. C15
SHEET C15 OF C26

File: J:\Jobsdata\30406.00 Edna Bay Bulk Fuel Upgrades\00 CADD\01 Working Set\01 Civil\30406.00 C12-C15, TANK DETAILS.dwg

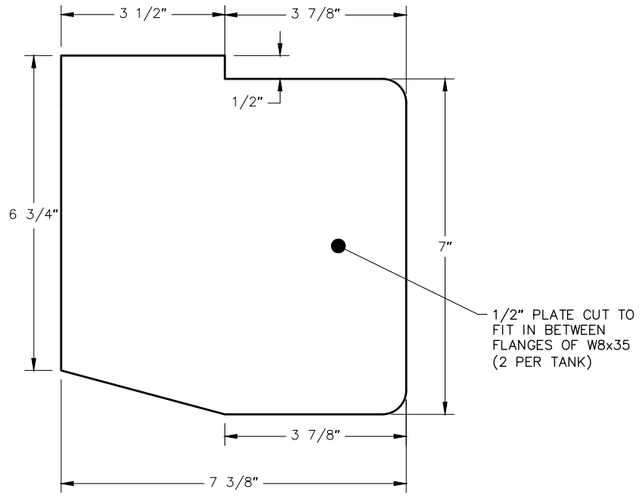
NOTES TO TANK MANUFACTURER

1. ALL WELDING TO TANK SKID SHALL BE PERFORMED BY TANK FABRICATOR. FIELD WELDING TO TANK OR TANK SKID IS PROHIBITED.
2. INSTALL WEB STIFFENERS BENEATH LIGHT POLE BASE PLATE AS SHOWN (SEE DETAIL 4 & 5). INSTALL GUSSET PLATE ON INSIDE OF BOTH SKIDS AND ATTACH CHANNEL BRACE AS SHOWN.
3. SEE ELECTRICAL FOR LIGHT POLE LOCATIONS.

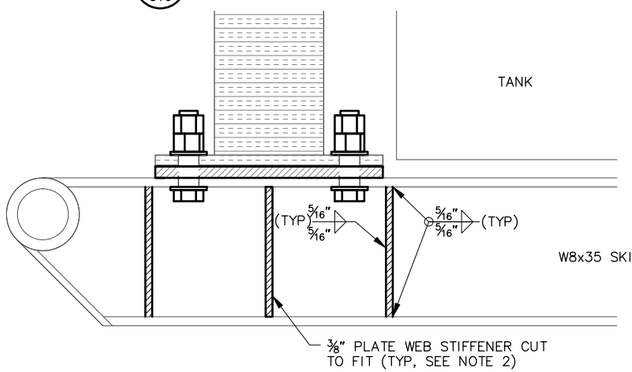


5/C16 LIGHT POLE CONNECTION w/ CHANNEL BRACE (OWNER PROVIDED)

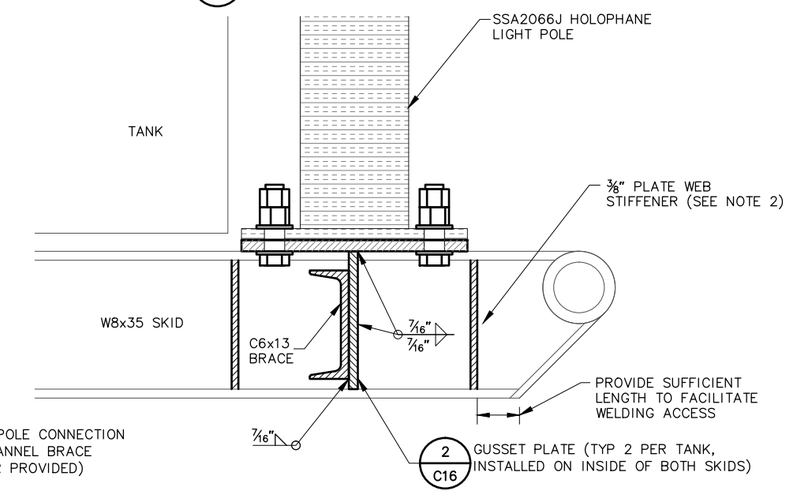
1/C16 TANK MOUNT LIGHT POLE



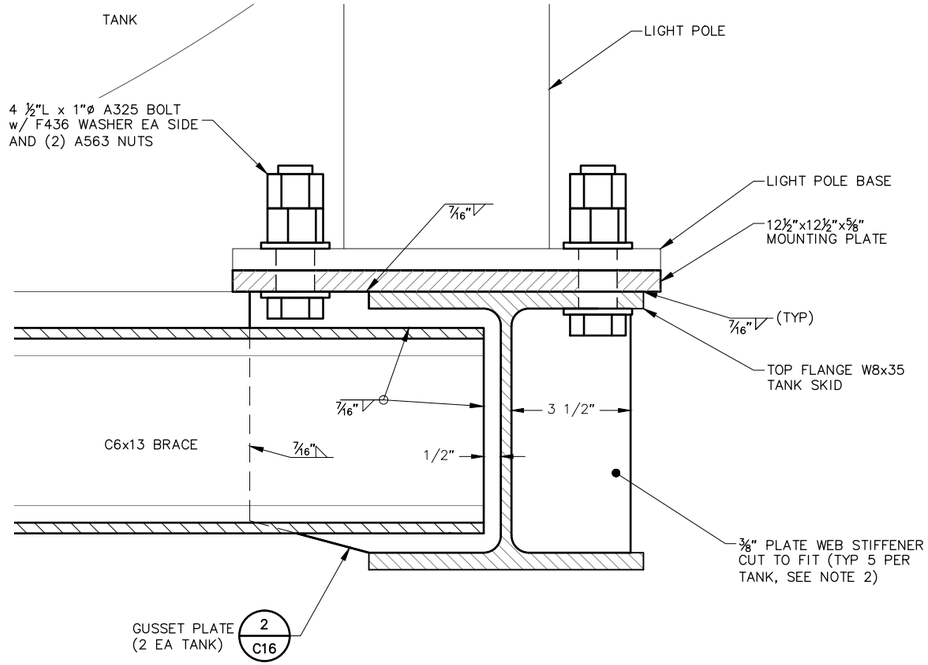
2/C16 GUSSET PLATE



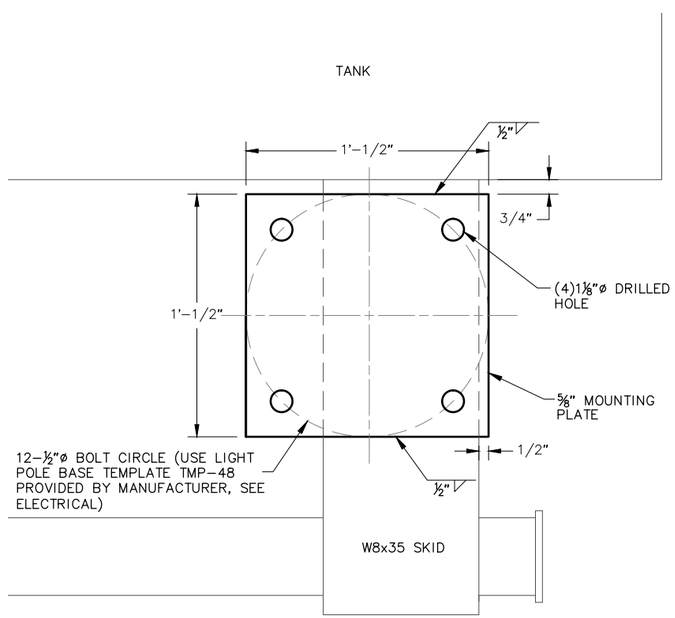
3/C16 OUTSIDE SKID VIEW



4/C16 INSIDE SKID VIEW



5/C16 CHANNEL BRACE CONNECTION



6/C16 BASE PLATE TOP VIEW

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Department of Commerce
and Economic Development
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ALASKA ENERGY AUTHORITY

STATE OF ALASKA 49TH REGISTERED ENGINEER ANDY HORAZDOVSKY CE-14054 04/07/2015 PROFESSIONAL ENGINEER

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EDNA BAY, ALASKA
BULK FUEL UPGRADE

TANK MOUNT LIGHT POLE DETAILS

NO.	REVISION	BY	DATE
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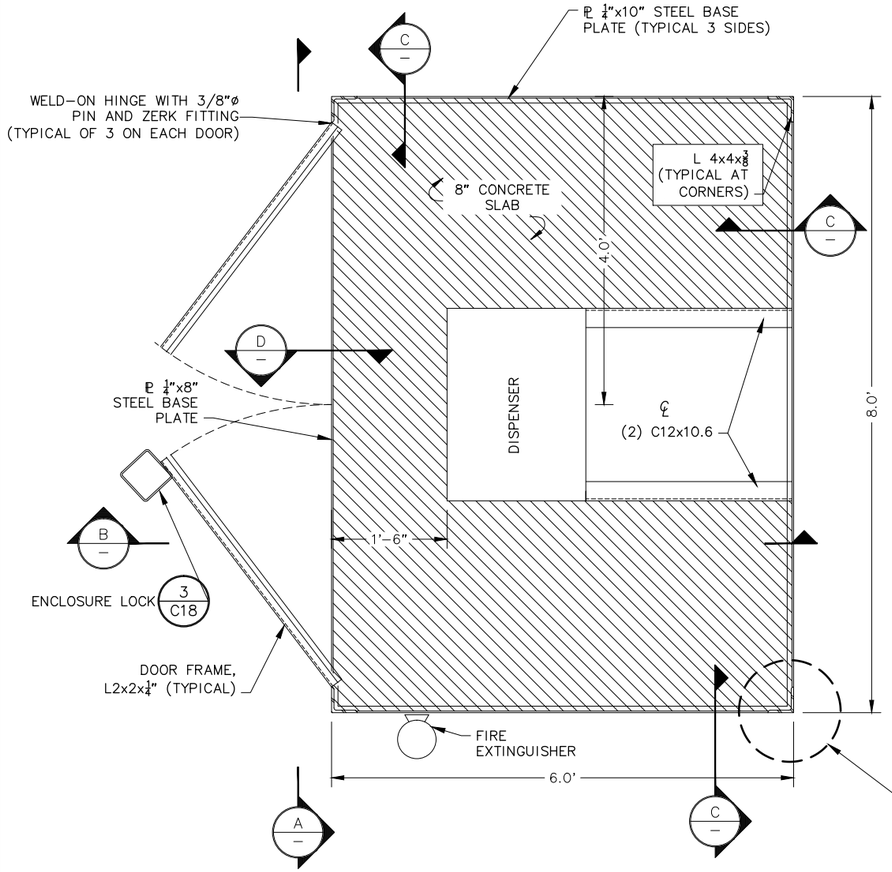
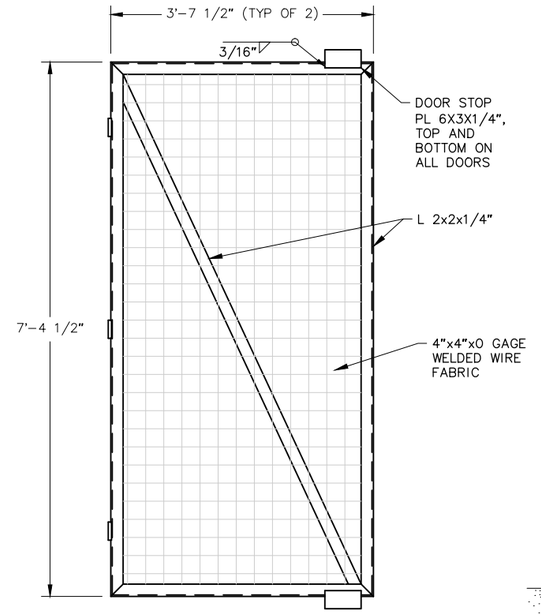
Plot Date 4/9/15
Designed AMH
Drawn AJG
Approved KRH

Sheet No. C16
SHEET C16 OF C26

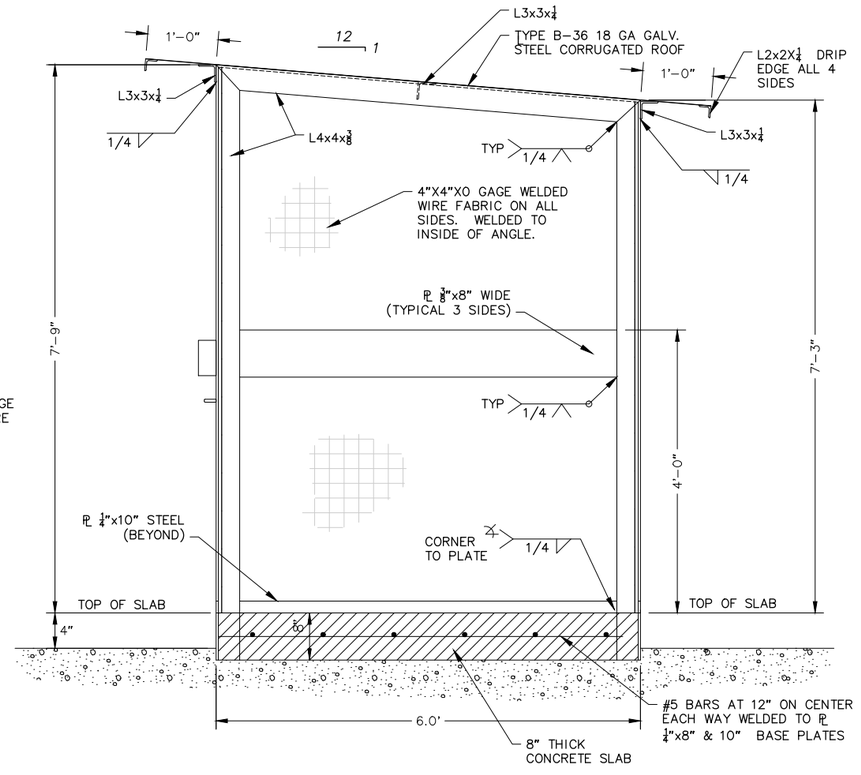
File: J:\Jobsdata\30406.00 Edna Bay Bulk Fuel Upgrades\00 CADD\01 Working Set\01 Civil\30406.00 C16-C19, LIGHT AND DISPENSER DETAILS.dwg



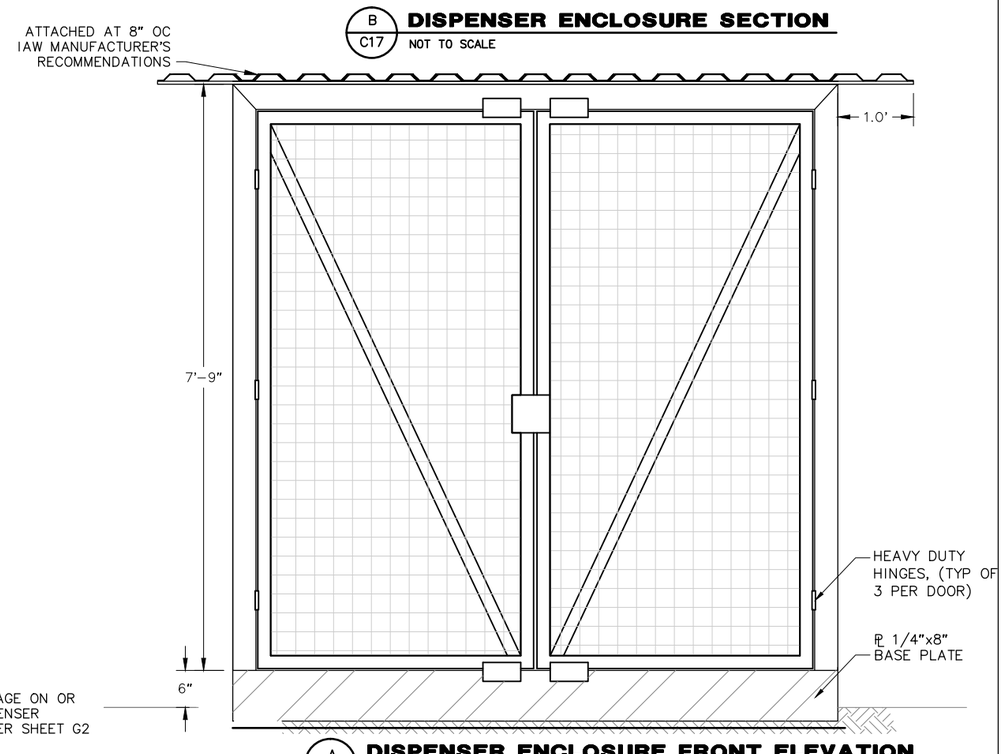
1 C17 **DISPENSER ENCLOSURE PLAN**
NOT TO SCALE



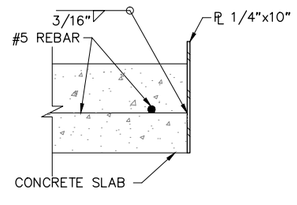
2 C17 **DOOR FRAME**
NOT TO SCALE



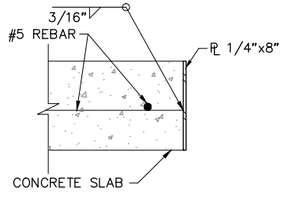
B C17 **DISPENSER ENCLOSURE SECTION**
NOT TO SCALE



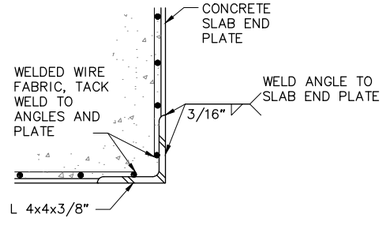
A C17 **DISPENSER ENCLOSURE FRONT ELEVATION**
NOT TO SCALE



C C17 **CONCRETE SLAB END**
NOT TO SCALE



D C17 **CONCRETE SLAB END**
NOT TO SCALE



E C17 **CORNER DETAIL SLAB**
NOT TO SCALE

NOTE

INSTALL SIGNAGE ON OR AROUND DISPENSER ENCLOSURE PER SHEET G2

State of Alaska
Department of Commerce, Community and Economic Development
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813 West Northern Lights Blvd.
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ALASKA ENERGY AUTHORITY

STATE OF ALASKA 49TH REGISTERED PROFESSIONAL ENGINEER
ANDY HORAZDOVSKY
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04/07/2015

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FAX: (907) 561-2273

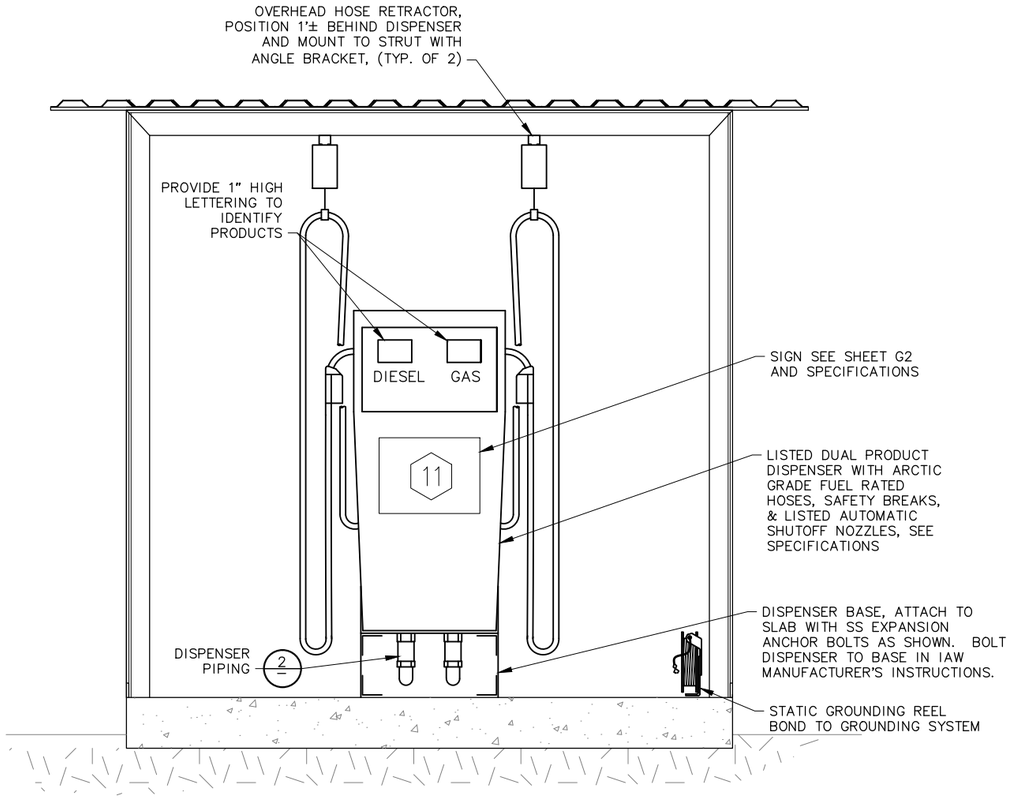
EDNA BAY, ALASKA
BULK FUEL UPGRADE
RETAIL DISPENSER CABINET

NO.	REVISION	BY	DATE
0	ISSUED FOR CONSTRUCTION	AMH	04/2015

Plot Date 4/9/15 | Designed AMH | Drawn AJG | Approved KRH

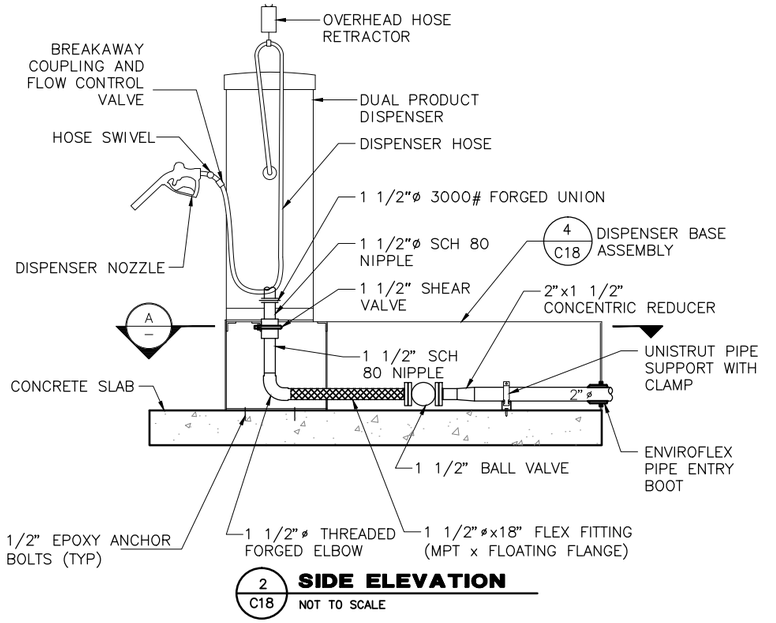
Sheet No. C17
SHEET C17 OF C26

File: J:\Jobsdata\30406.00 Edna Bay Bulk Fuel Upgrades\00 CADD\01 Working Set\01 Civil\30406.00 C16-C19, LIGHT AND DISPENSER DETAILS.dwg

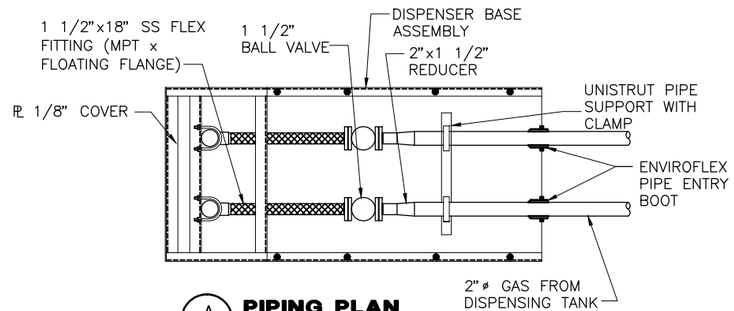


FRONT ELEVATION

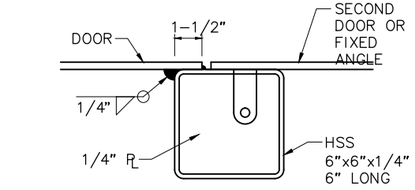
1 / C18 DUAL PRODUCT DISPENSER INSTALLATION DETAILS
NOT TO SCALE

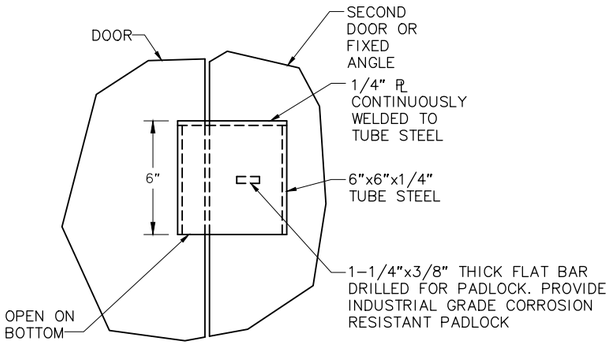


2 / C18 SIDE ELEVATION
NOT TO SCALE

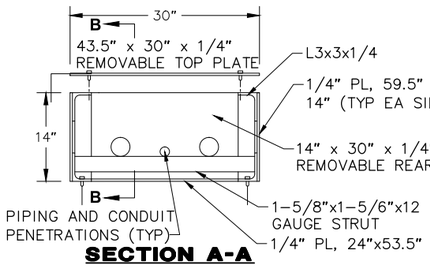


A / C18 PIPING PLAN
NOT TO SCALE

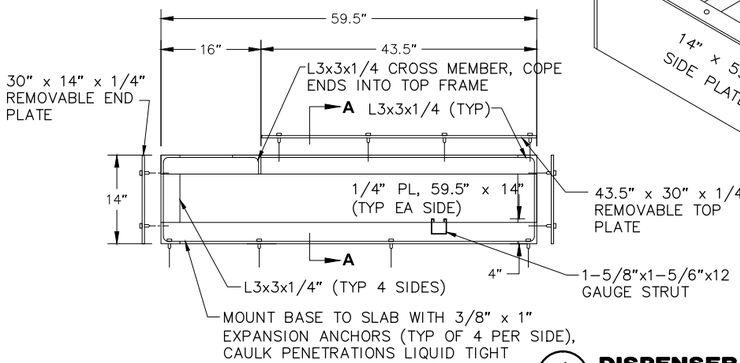




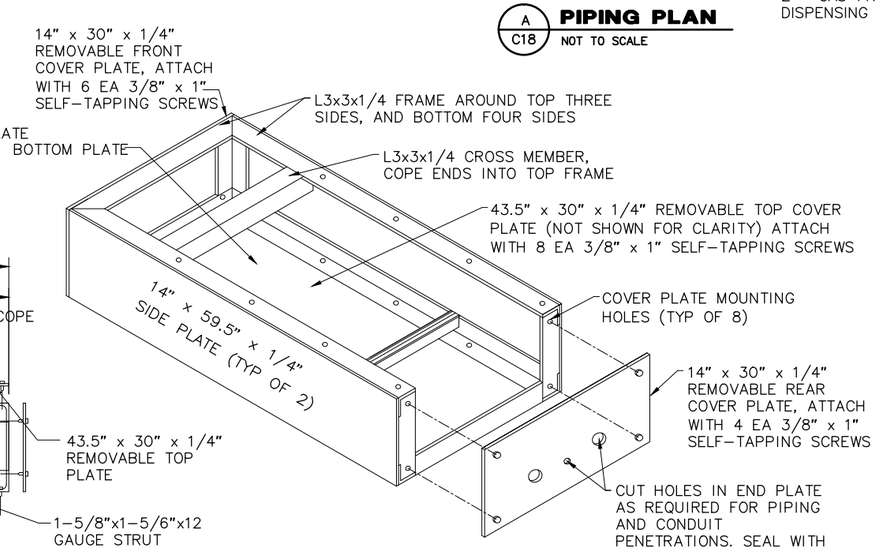
3 / C18 ENCLOSURE LOCK
NOT TO SCALE



SECTION A-A



SECTION B-B



ISOMETRIC VIEW

4 / C18 DISPENSER BASE FABRICATION
NOT TO SCALE

State of Alaska
Department of Commerce, Community and Economic Development
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Rural Energy Group
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Anchorage, Alaska 99503
ALASKA ENERGY AUTHORITY

STATE OF ALASKA 49TH REGISTERED ENGINEER ANDY HORAZDOVSKY CE-14054 04/07/2015 PROFESSIONAL ENGINEER

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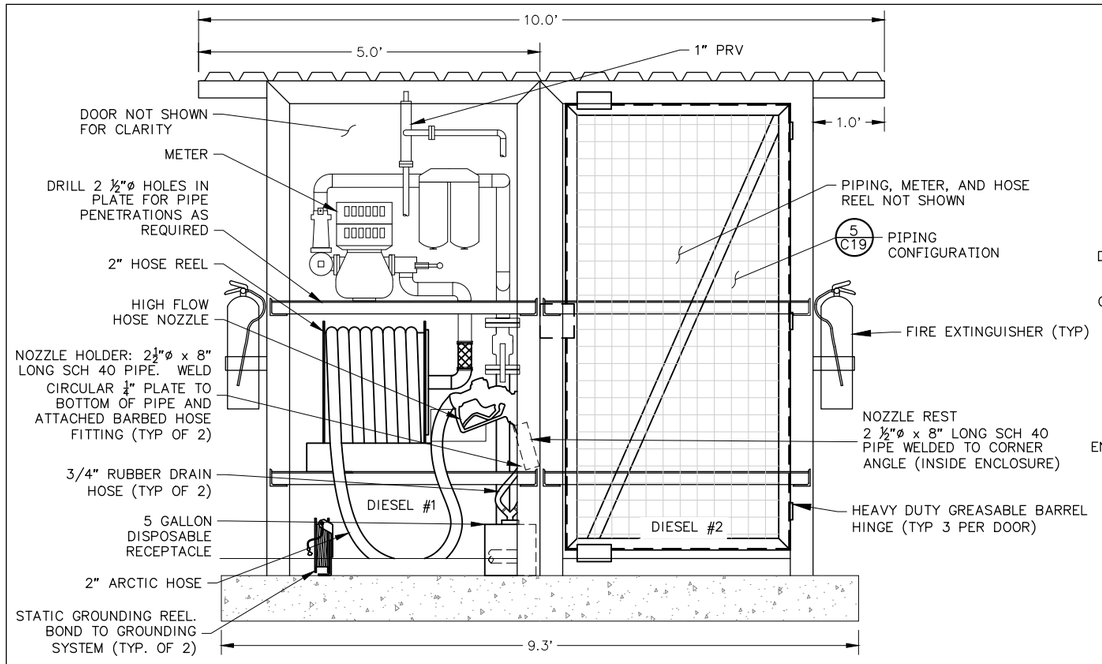
EDNA BAY, ALASKA
BULK FUEL UPGRADE
RETAIL DISPENSER DETAILS

NO.	REVISION	BY	DATE
0	ISSUED FOR CONSTRUCTION	AMH	04/2015

Plot Date 4/9/15 | Designed AMH | Drawn AJG | Approved KRH

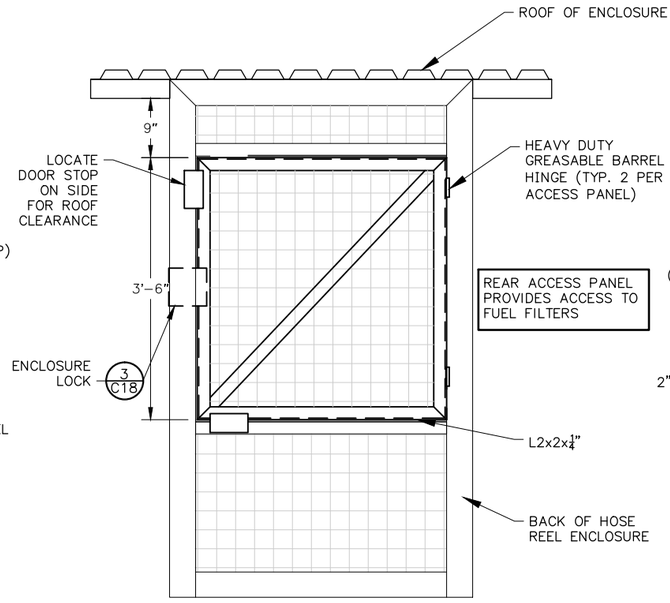
Sheet No. C18
SHEET C18 OF C26

File: J:\Jobsdata\30406.00 Edna Bay Bulk Fuel Upgrades\00 CADD\01 Working Set\01 Civil\30406.00 C16-C19, LIGHT AND DISPENSER DETAILS.dwg



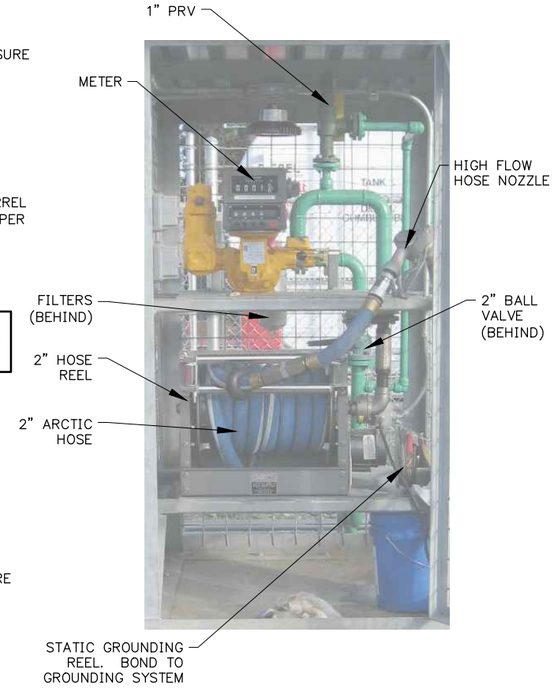
1 C19 TRUCK FILL HOSE REEL ELEVATION VIEW

SCALE: NTS



3 C19 REAR ACCESS PANEL (TYP. OF 2)

SCALE: NTS

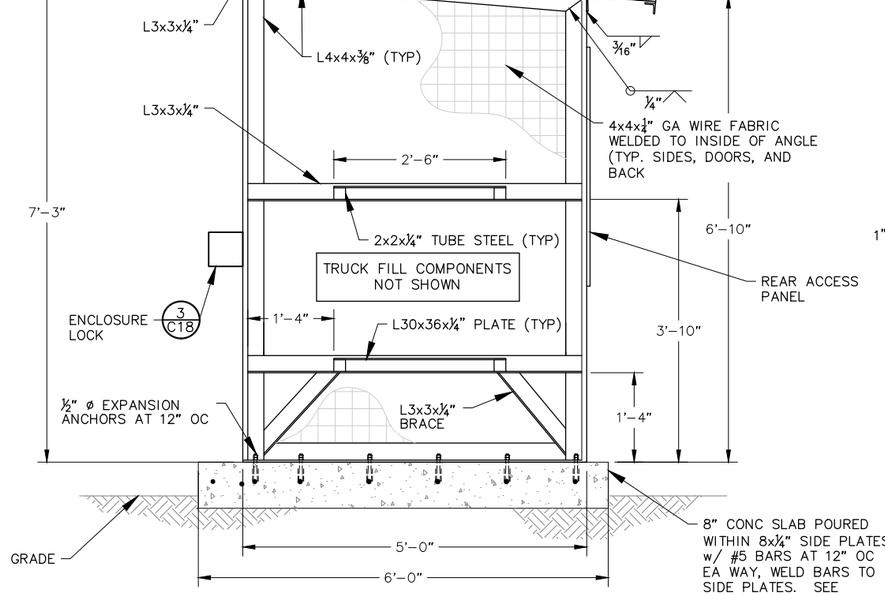


5 C19 HOSE REEL DISPENSER PIPING CONFIGURATION (FRONT)

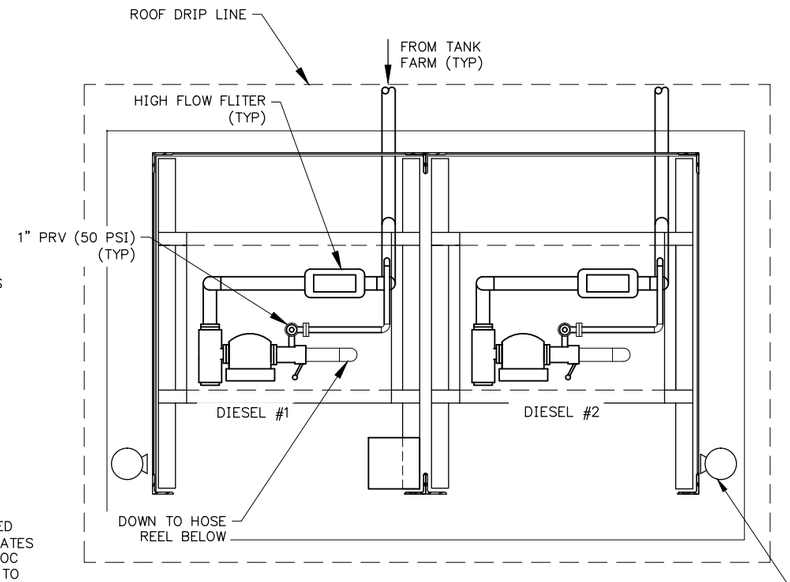
SCALE: NTS

NOTES

1. ALL STEEL TO BE COATED IN ACCORDANCE WITH THE SPECIFICATIONS.
2. HOSE REEL ENCLOSURE FABRICATION TO FOLLOW RETAIL DISPENSER. SEE SHEET C15 FOR ADDITIONAL DETAILS.

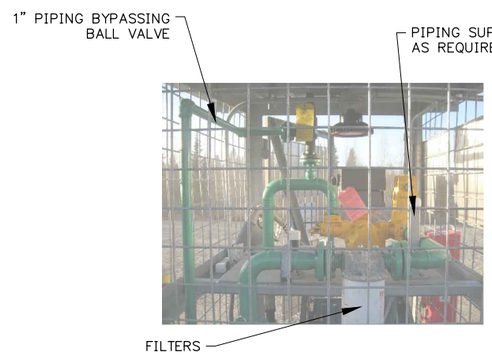


2 C19 TRUCK FILL HOSE REEL ENCLOSURE SECTION



4 C19 TRUCK TRANSFER HOSE REEL ENCLOSURE

SCALE: NTS



6 C19 HOSE REEL DISPENSER PIPING CONFIGURATION (REAR)

SCALE: NTS

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ALASKA ENERGY AUTHORITY

STATE OF ALASKA — REGISTERED PROFESSIONAL ENGINEER — ANDY HORAZDOVSKY — CE-14054 — 04/07/2015

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EDNA BAY, ALASKA
BULK FUEL UPGRADE

FLEET HOSE REEL DETAILS

NO.	REVISION	BY	DATE
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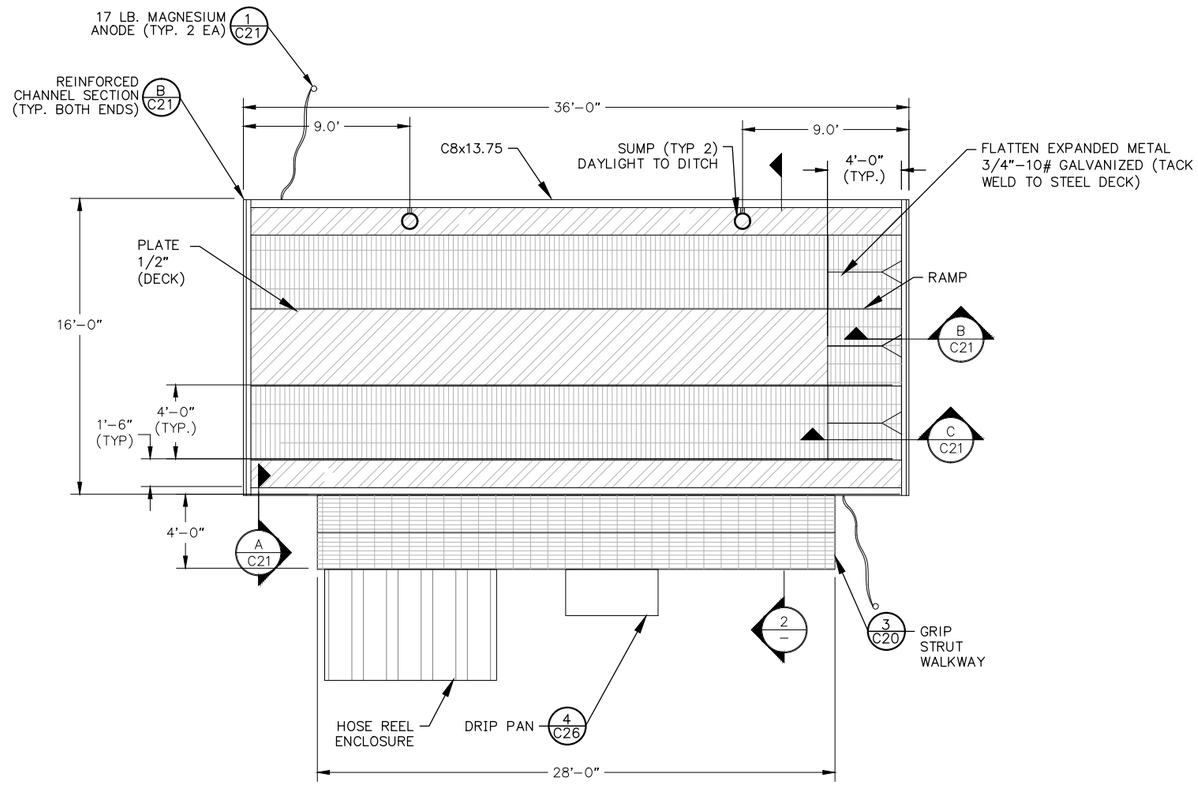
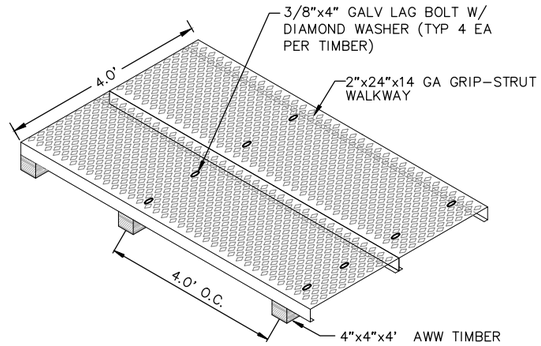
Sheet No. C19
SHEET C19 OF C26

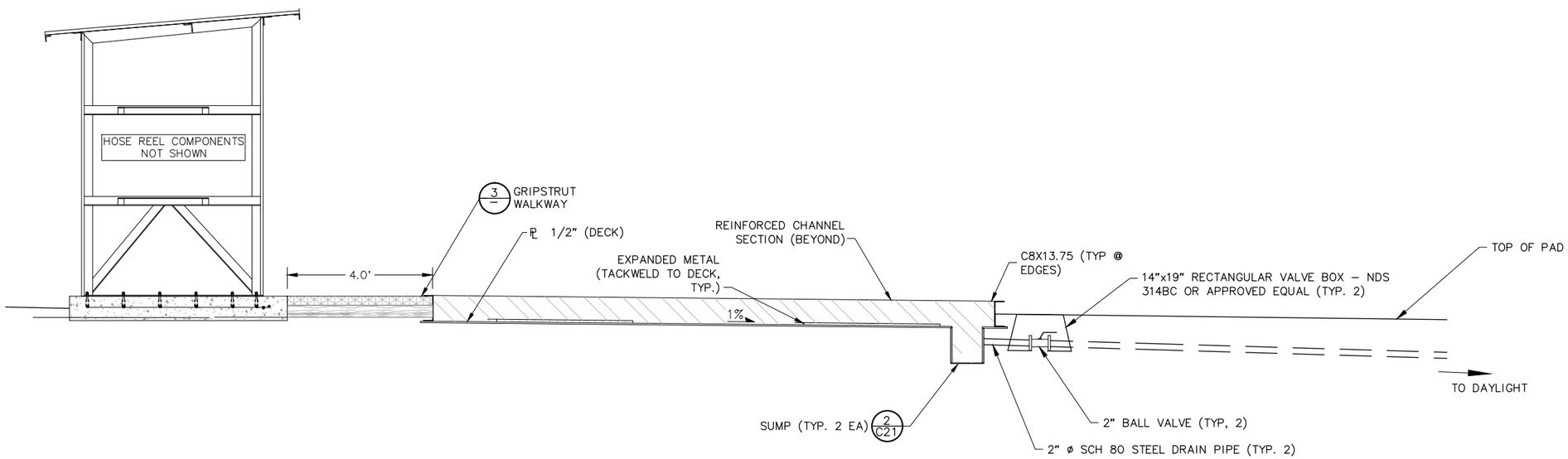
File: J:\jobsdata\30406.00 Edna Bay Bulk Fuel Upgrades\00 CADD\01 Working Set\01 Civil\30406.00 C16-C19, LIGHT AND DISPENSER DETAILS.dwg



1 C20 **SECONDARY CONTAINMENT PLAN**
SCALE: NTS



3 C20 **GRIP STRUT WALKWAY DETAIL**
SCALE: NTS



2 C20 **SECONDARY CONTAINMENT CROSS SECTION**
SCALE: NTS

File: J:\Jobsdata\30406.00 Edna Bay Bulk Fuel Upgrades\00 CADD\01 Working Set\01 Civil\30406.00 C20-C21, DRIVE IN CONTAINMENT DETAILS.dwg

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Anchorage, Alaska 99503

ALASKA ENERGY AUTHORITY

STATE OF ALASKA — 49TH — REGISTERED ENGINEER — PROFESSIONAL ENGINEER
CE-14054
24/07/2015
ANDY HORAZDOVSKY

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EDNA BAY, ALASKA
BULK FUEL UPGRADE
DRIVE IN CONTAINMENT
(ADDITIVE ALTERNATIVE #1)

NO.	REVISION	BY	DATE
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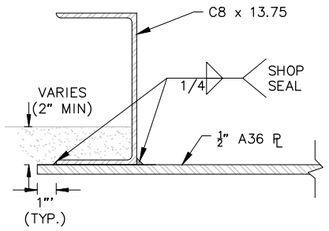
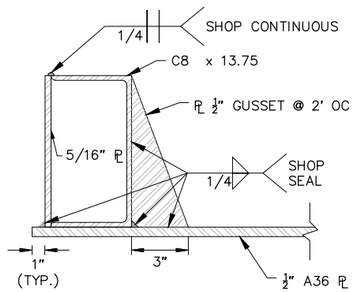
Plot Date 4/9/15
Designed AMH
Drawn AJG
Approved KRH

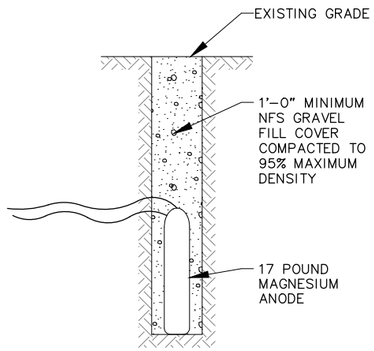
Sheet No. C20
SHEET C20 OF C26



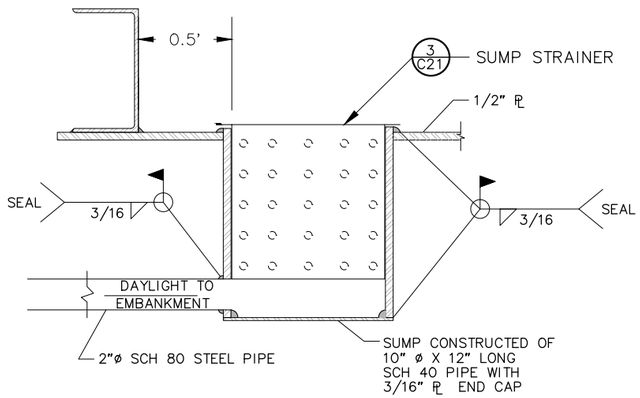
A C21 **CHANNEL CURB - CROSS SECTION**
SCALE: NTS



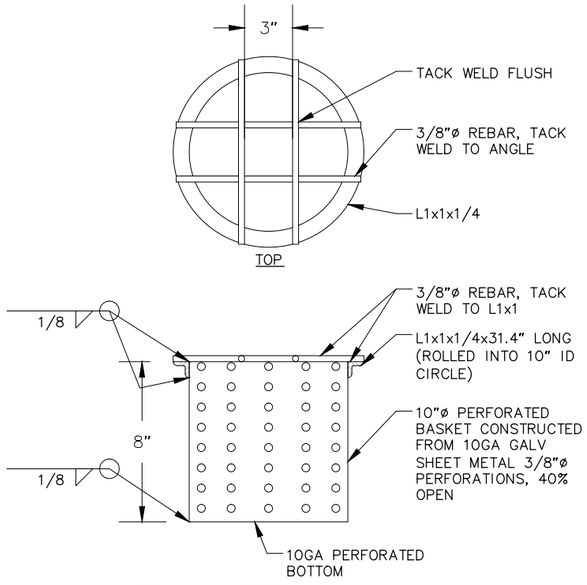
B C21 **REINFORCED CHANNEL CURB - CROSS SECTION**
SCALE: NTS



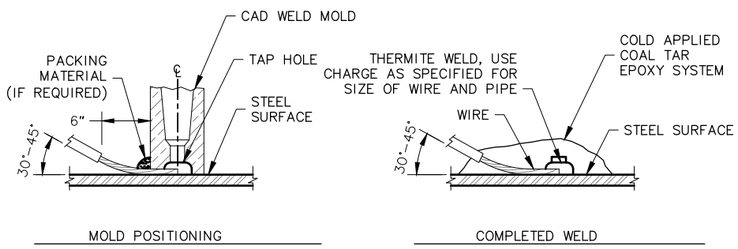
1 C21 **ANODE DETAIL**
SCALE: NTS



2 C21 **SUMP DETAIL**
SCALE: NTS



3 C21 **STRAINER DETAIL**
SCALE: NTS



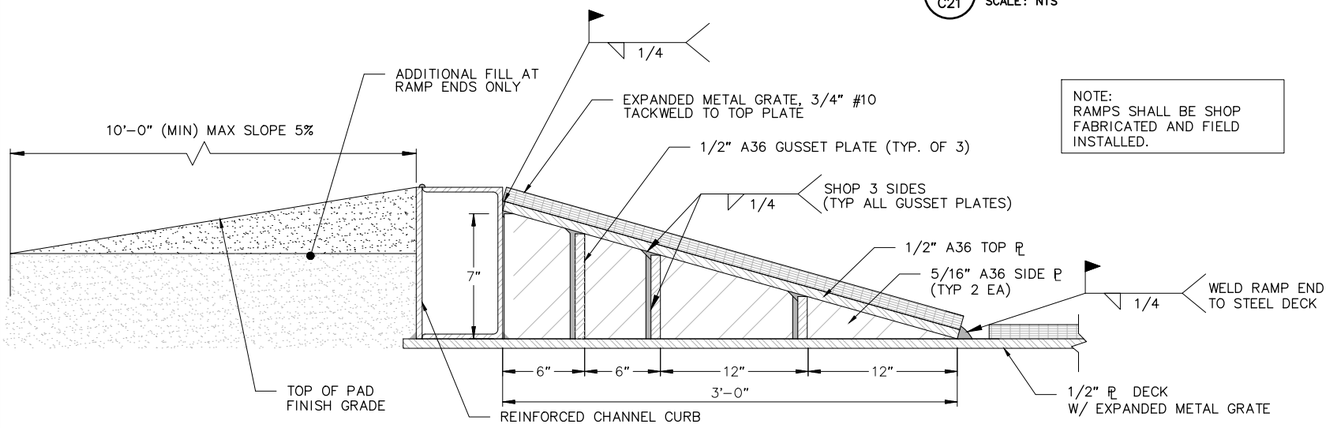
MOLD POSITIONING

COMPLETED WELD

NOTE

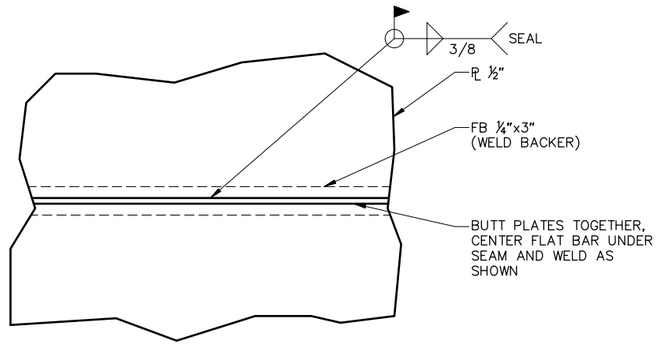
1. END OF CABLE SHOULD NOT PASS CENTER LINE OF MOLD.
2. REMOVE MINIMUM AMOUNT OF COATING REQUIRED FOR PLACEMENT OF CRUCIBLE ON SURFACE. COATING TO BE REMOVED BY USE OF TORCH AND KNIFE. AFTER THERMITE WELD HAS COOLED, REMOVE SLAG. COAT EXPOSED AREAS SUCH AS THE THERMITE WELD, STEEL SURFACE, AND COPPER CABLE WITH THE SPECIFIED COLD APPLIED COAL TAR EPOXY COATING SYSTEM.

4 C21 **ANODE WELD DETAIL**
SCALE: NTS



NOTE:
RAMPS SHALL BE SHOP FABRICATED AND FIELD INSTALLED.

C C21 **RAMP - CROSS SECTION**
SCALE: NTS



PLAN VIEW

5 C21 **FIELD PLATE SEAM WELD DETAIL**
SCALE: NTS

File: J:\Jobsdata\30406.00 Edna Bay Bulk Fuel Upgrades\00 CADD\01 Working Set\01 Civil\30406.00 C20-C21, DRIVE IN CONTAINMENT DETAILS.dwg

State of Alaska
Department of Commerce, Community and Economic Development
AIDEA/AEA
Rural Energy Group
813 West Northern Lights Blvd.
Anchorage, Alaska 99503

ALASKA ENERGY AUTHORITY

STATE OF ALASKA 49TH REGISTERED ENGINEER ANDY HORAZDOVSKY CE-14054 04/07/2015 REGISTERED PROFESSIONAL ENGINEER

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EDNA BAY, ALASKA
BULK FUEL UPGRADE

DRIVE IN CONTAINMENT DETAILS
(ADDITIVE ALTERNATIVE #1)

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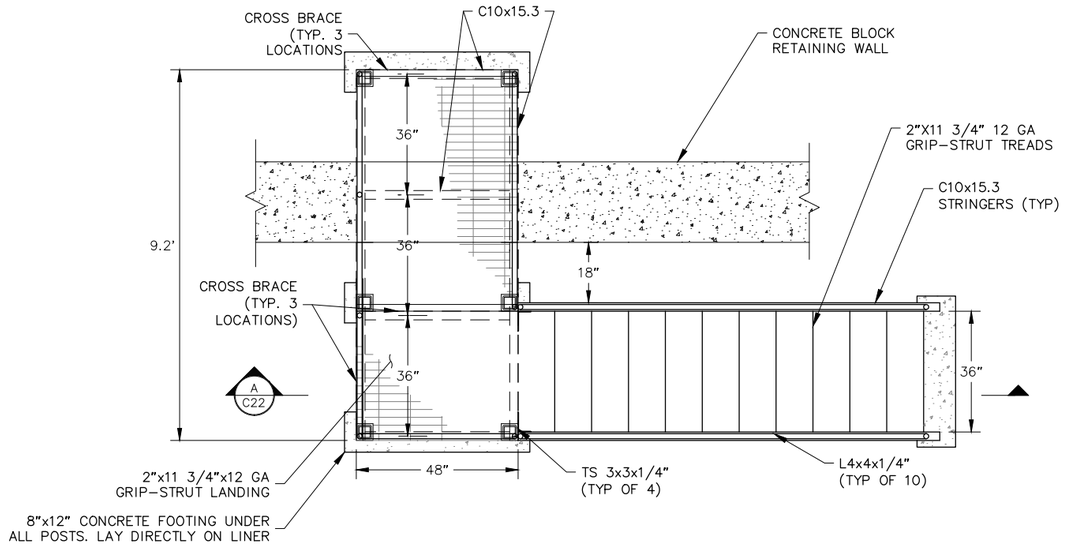
Drawn AJG
Approved KRH

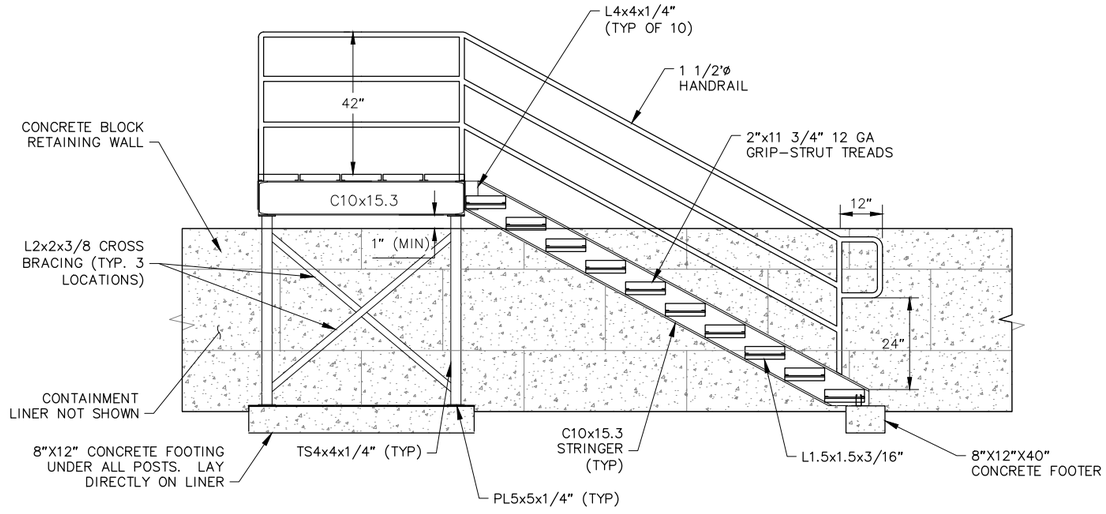
Sheet No. C21
SHEET C21 OF C26

ACCESS STAIR NOTES

1. ALL CONNECTIONS SHALL BE CONTINUOUSLY WELDED UNLESS SPECIFIED OTHERWISE ON DRAWINGS.
2. FABRICATE STAIR AND RAILING ASSEMBLIES FROM ASTM A-36 STEEL. ROUND ALL CORNERS AND SHARP EDGES AFTER FABRICATION.
3. PREP AND PAINT ALL NON-GALVANIZED STEEL SURFACES TO MATCH TANKS, SEE SPECIFICATIONS.
4. COMPLETED STAIR ASSEMBLIES SHALL CONFORM TO ALL IBC AND OSHA STANDARDS. SUBMIT SHOP DRAWINGS TO ENGINEER FOR REVIEW PRIOR TO BEGINNING FABRICATION.



1 / C22 **TRANSITION OVER RETAINING WALL STAIRS**
SCALE: NTS



A / C22 **INTERNAL RETAINING WALL STAIR - SECTION**
SCALE: NTS

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STAIR DETAILS

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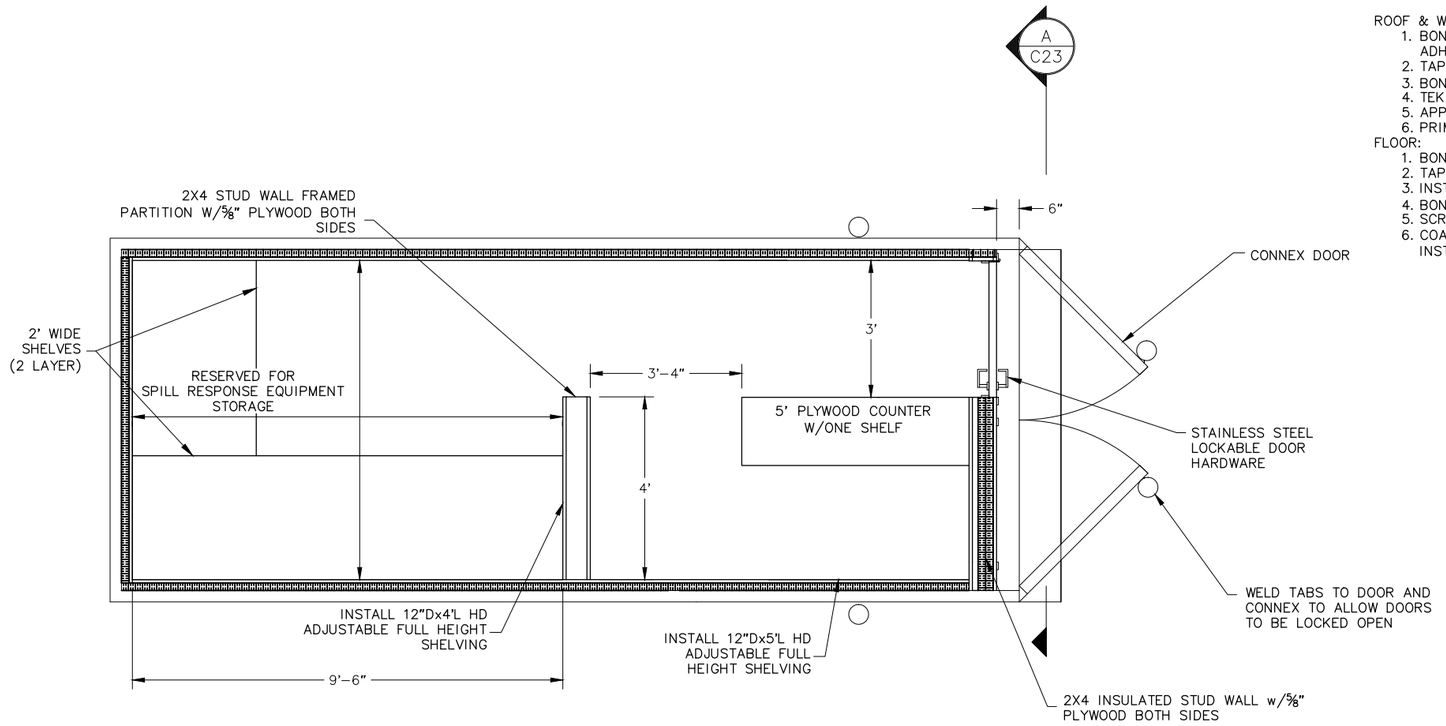
Sheet No. C22
SHEET C22 OF C26

File: J:\Jobsdata\30406.00 Edna Bay Bulk Fuel Upgrades\00 CADD\01 Working Set\01 Civil\30406.00 C22, STAIR DETAILS.dwg



INTERIOR SURFACE CONSTRUCTION SEQUENCE:

ROOF & WALLS:
1. BOND 2" DOW HI-40 RIGID INSULATION TO CONNEX ROOF AND WALLS WITH OSI QB-300 CONSTRUCTION ADHESIVE.
2. TAPE ALL INSULATION JOINTS WITH TYVEK TAPE.
3. BOND ⅝" T&G PLYWOOD TO INSULATION WITH OSI QB-300 CONSTRUCTION ADHESIVE.
4. TEK SCREW OR BOLT PLYWOOD & INSULATION TO CONNEX AT 24" OC EA WAY.
5. APPLY A FLEXIBLE ROOF SEALENT TO ALL ROOF AND WALL PENETRATIONS.
6. PRIME AND PAINT PLYWOOD WHITE.

FLOOR:
1. BOND 2" DOW HI-60 RIGID INSULATION TO CONNEX FLOOR WITH OSI QB-300 CONSTRUCTION ADHESIVE.
2. TAPE ALL INSULATION JOINTS WITH TYVEK TAPE.
3. INSTALL A WOOD SPACER BENEATH DOOR SILL TO COVER EXPOSED INSULATION.
4. BOND 1 ⅛" T&G PLYWOOD TO INSULATION WITH OSI QB-300 CONSTRUCTION ADHESIVE.
5. SCREW PLYWOOD & INSULATION TO CONNEX AT 24" OC EA WAY.
6. COAT PLYWOOD WITH VALSPAR PORCH & FLOOR ENAMEL (OR EQUAL) IN ACCORDANCE WITH MANUFACTURERS INSTRUCTIONS.

CONTRACTOR TO PROVIDE SHOP DRAWINGS OF SPILL RESPONSE CONNEX/RETAIL KIOSK FOR ENGINEER APPROVAL

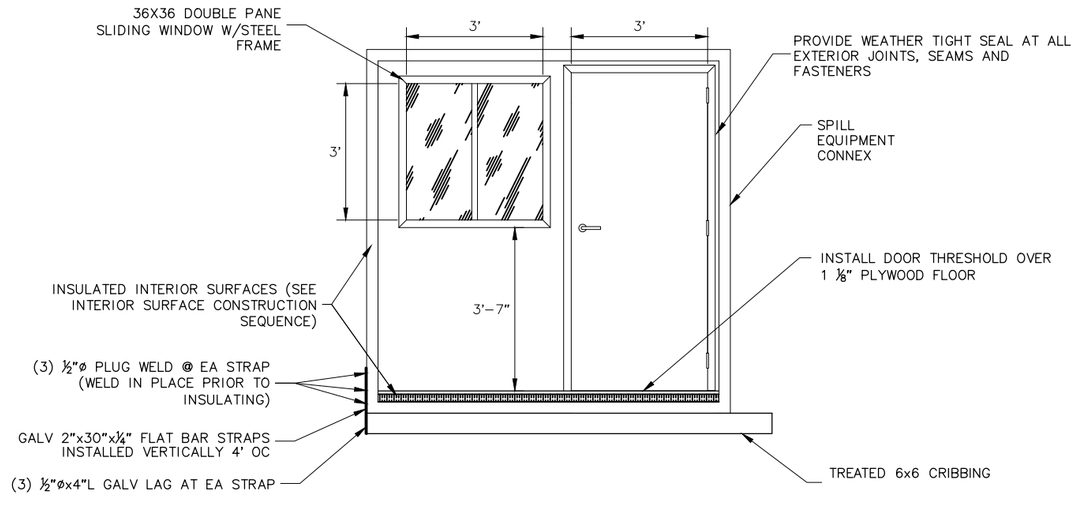
NOTES

1. CONNEX DOORS TO REMAIN LOCKED OPEN DURING BUILDING USE.
2. SEE ELECTRICAL FOR WIRING AND HEAT.

1 / C23 SPILL EQUIPMENT CONNEX UPGRADES
SCALE: NTS

THE MODIFIED CONNEX FALLS UNDER THE FOLLOWING CATEGORIES WITHIN THE 2009 IBC:

OCCUPANCY TYPE (MIXED):	MOTOR FUEL-DISPENSING FACILITY (M) / STORAGE (S-1)
CONSTRUCTION TYPE:	VB
ALLOWABLE AREA (M):	9,000 SF
MAXIMUM HEIGHT:	40 FT
EXITS REQUIRED:	1
PANIC HARDWARE:	NOT REQUIRED
EXIT SEPARATION:	GREATER THAN $^{27}/_{32}$ OF THE LONGEST DIAGONAL DISTANCE
EXIT TRAVEL DISTANCE:	200 FT MAXIMUM WITHOUT SPRINKLER SYSTEM
FIRE BLOCKING:	NOT REQUIRED
FIRE ALARM:	NOT REQUIRED
FIRE SUPPRESSION SYSTEM:	NOT REQUIRED
SMOKE ALARMS:	NOT REQUIRED



A / C23 PARTITION SECTION
SCALE: NTS

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EDNA BAY, ALASKA
BULK FUEL UPGRADE
SPILL RESPONSE CONNEX AND RETAIL KIOSK

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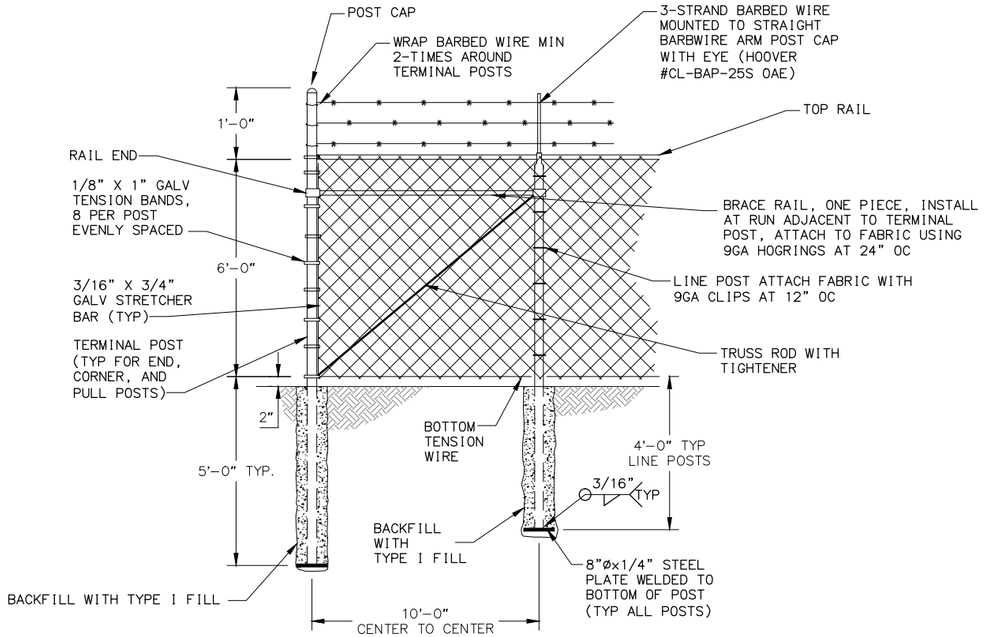
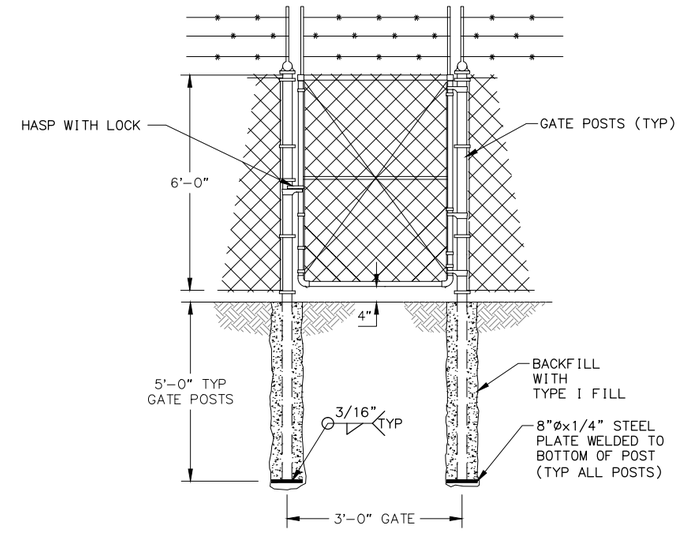
Sheet No. C23
SHEET C23 OF C26

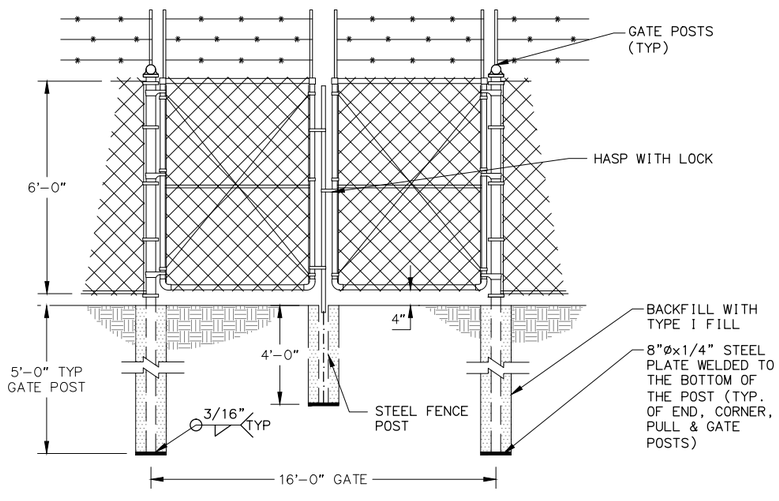
File: J:\Jobsdata\30406.00 Edna Bay Bulk Fuel Upgrades\00 CADD\01 Working Set\01 Civil\30406.00 C23-C26 CONNEX, FENCE AND MISCELLANEOUS DETAILS.dwg



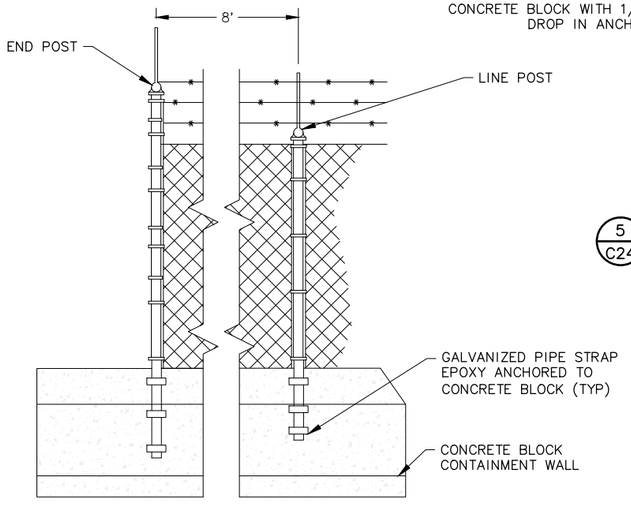
1 C24 **FENCE DETAIL**
NOT TO SCALE



2 C24 **MAN GATE DETAIL**
NOT TO SCALE



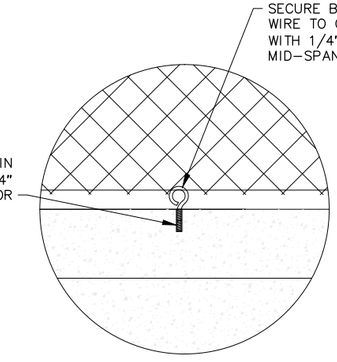
3 C24 **DOUBLE SWING GATE DETAIL**
NOT TO SCALE



4 C24 **CONCRETE BLOCK CONNECTION DETAIL**
NOT TO SCALE

GENERAL FENCE NOTES

1. MAXIMUM PULL POST SPACING 75 FEET. EACH PULL POST SHALL BE SUPPORTED WITH A DIAGONAL BRACE RAIL TO THE ADJACENT LINE POSTS.
2. BRACE RAILS AND TRESS RODS SHALL BE SECURELY FASTENED TO POSTS WITH BRACE BANDS AND THREADED TAKE-UP ADAPTED FOR TRUSS RODS.



5 C24 **FENCE FABRIC CONNECTION TO CONCRETE BLOCK DETAIL**
NOT TO SCALE

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EDNA BAY, ALASKA
BULK FUEL UPGRADE
FENCE DETAILS

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Approved: KRH

Sheet No. C24
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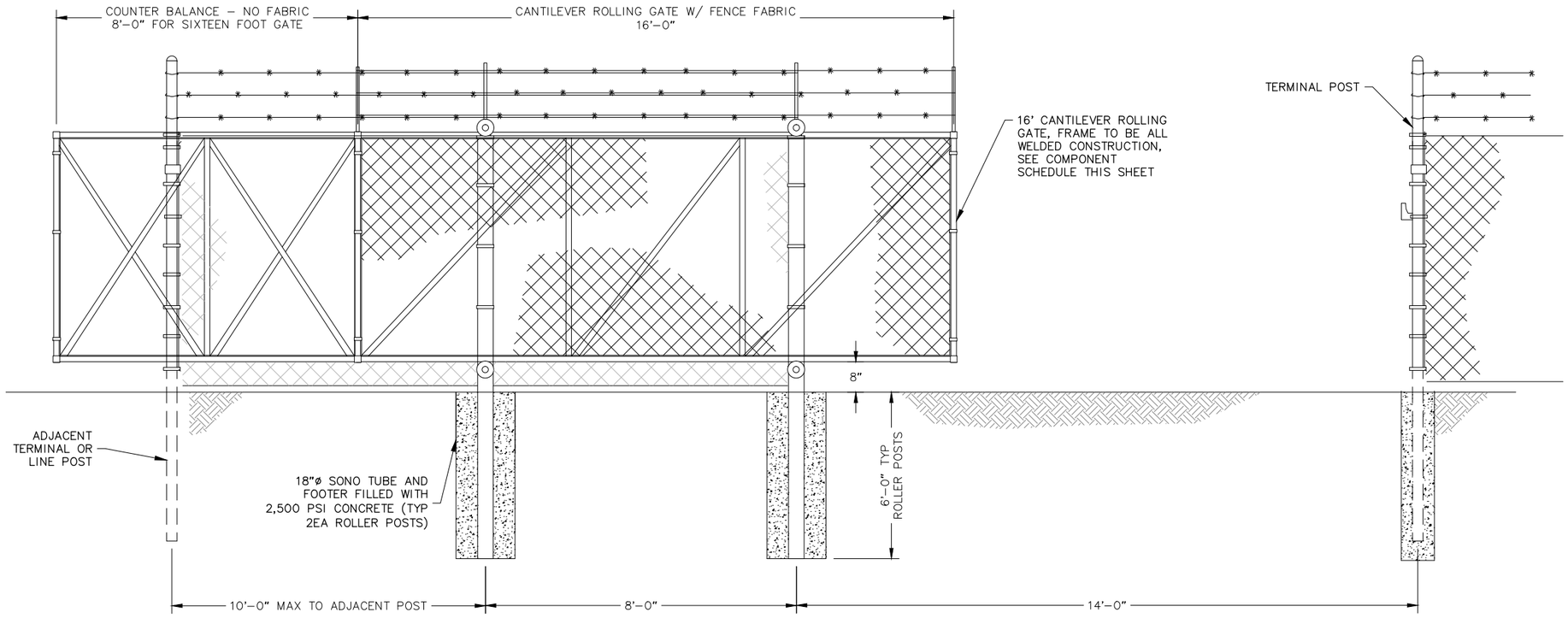
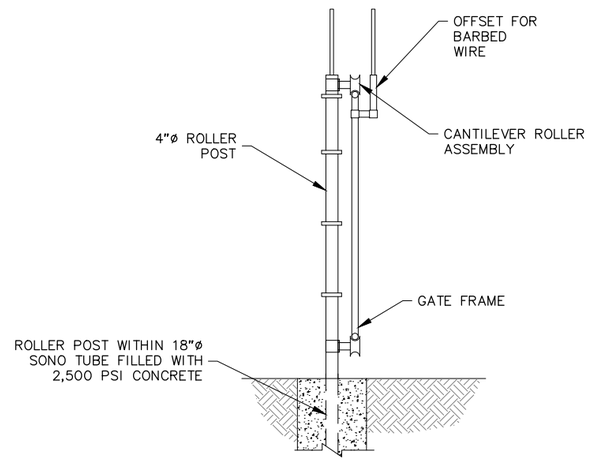


1 C25 **CANTILEVER GATE DETAIL**
NOT TO SCALE

NOTES

1. SEE GRADING PLAN ON SHEET C5 FOR LOCATION OF FENCE AND GATES.
2. SEE SPECIFICATIONS FOR DETAILED FENCE COMPONENT DETAILS.

WELDED CANTILEVER GATE COMPONENT SCHEDULE	
ITEM	DESCRIPTION
HORIZONTAL SUPPORTS	2–3/8" PIPE
VERTICAL SUPPORTS	2–3/8" PIPE
DIAGONAL SUPPORTS	1–5/8" PIPE
ROLLER POSTS	6–5/8" PIPE
ROLLER ASSEMBLY	HAMPDEN CR658 OAE



2 C25 **CANTILEVER GATE SECTION**
NOT TO SCALE

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EDNA BAY, ALASKA
BULK FUEL UPGRADE

CANTILEVER GATE DETAILS

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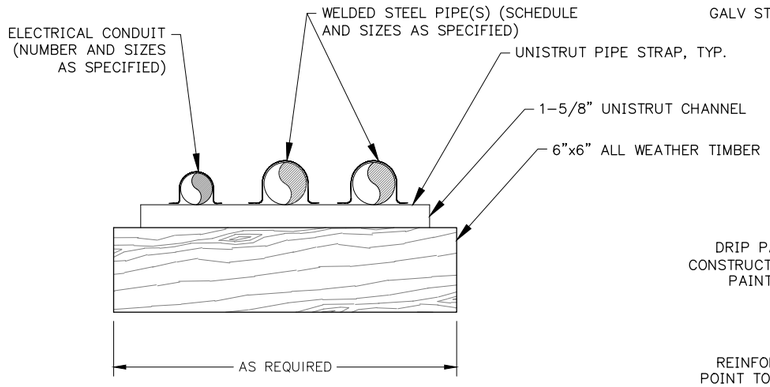
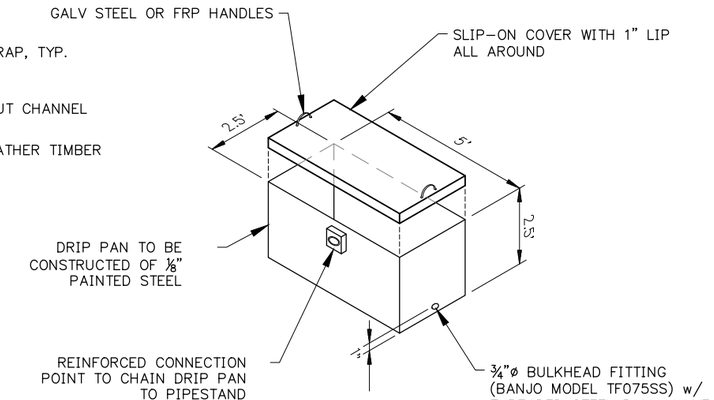


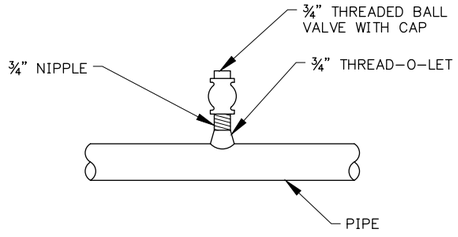
1 C26 TIMBER PIPE SUPPORT

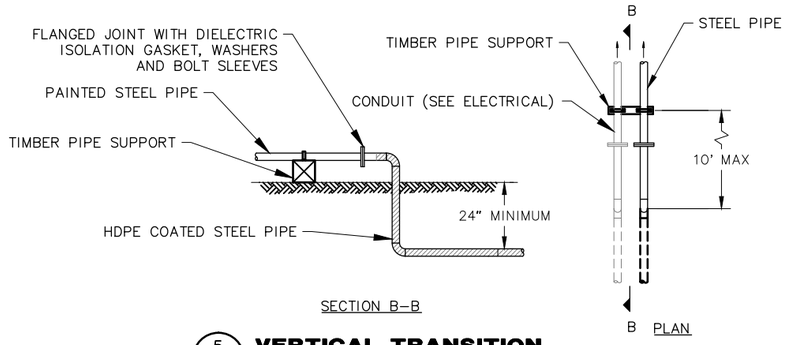
SCALE: NTS



4 C26 DRIP PAN

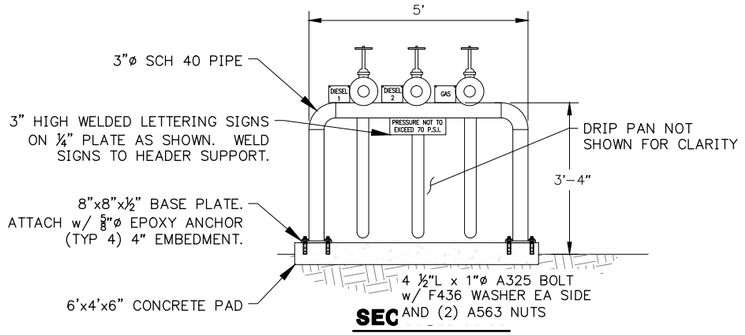
SCALE: NTS





5 C26 VERTICAL TRANSITION

SCALE: NTS



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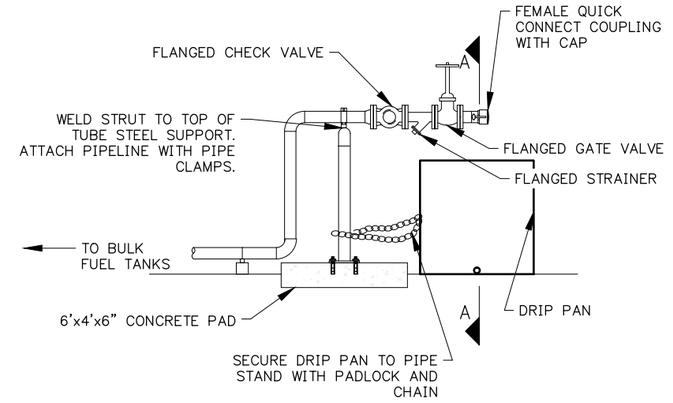
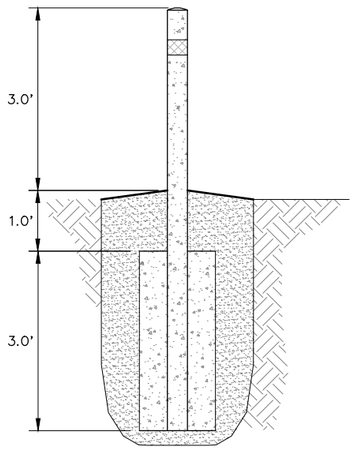


7 C26 TANK FARM TRUCK HEADER

SCALE: NTS

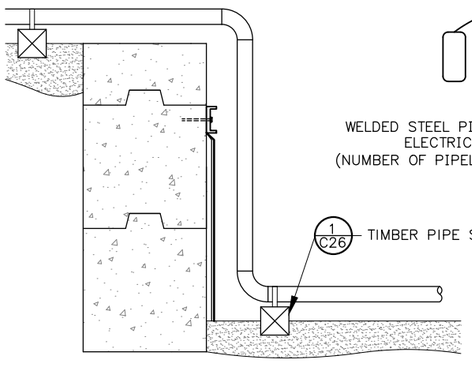
2 C26 PRESSURE TEST CONNECTION

SCALE: NTS



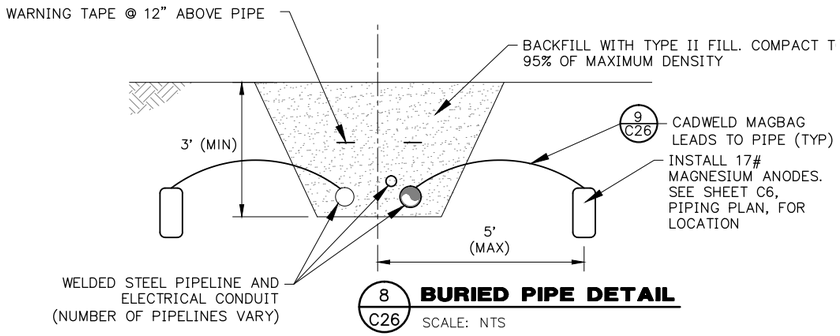
3 C26 DETAIL - BOLLARD

SCALE: NTS



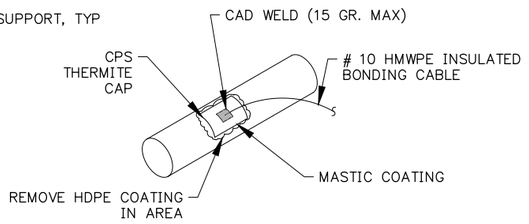
6 C26 PIPE TRANSITION OVER WALL

SCALE: NTS



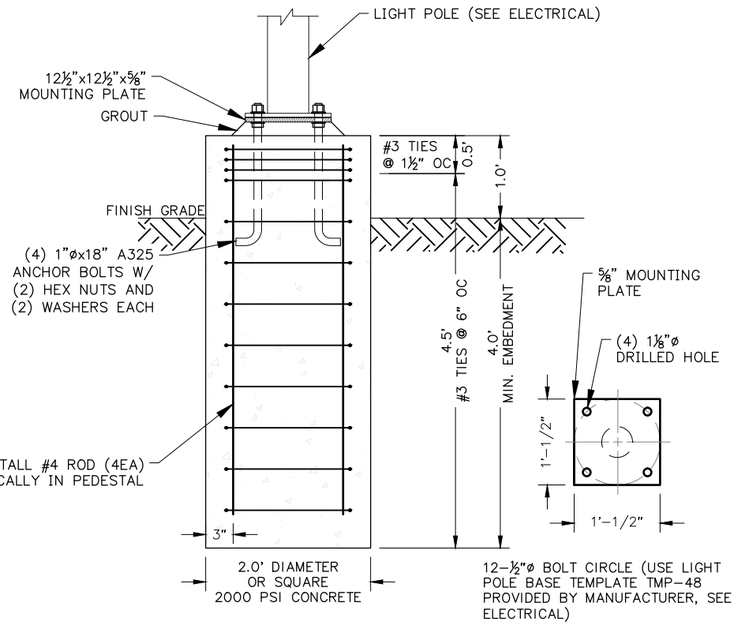
8 C26 BURIED PIPE DETAIL

SCALE: NTS



CADWELD LEAD TO PIPE

SCALE: NTS



10 C26 LIGHT POLE CONCRETE FOUNDATION

SCALE: NTS

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EDNA BAY, ALASKA
BULK FUEL UPGRADE
MISCELLANEOUS DETAILS

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Sheet No. C26
SHEET C26 OF C26

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LEGEND

- BUS
- EXPOSED CONDUIT
- CONDUIT/CABLE RUN UNDERGROUND OR IN CONCRETE
- X–Y,Z — HOMERUN TO PANEL "X", CIRCUITS NO. Y AND Z. CONDUIT RUNS NOT DEFINED ARE 1/2" C with 3#12.
- GROUND
- CONDUIT RUN – CHANGE IN ELEVATION
- GROUND ROD
- LIQUID–TIGHT FLEXIBLE CONDUIT
- HP — MOTOR, HP AS SHOWN, SINGLE PHASE, "F" = FRACTIONAL
- HP — MOTOR, HP AS SHOWN, THREE PHASE
- X — SHEET NOTE "X"
- X — ELECTRICAL EQUIPMENT TAG "X"
- PANELBOARD
- DISCONNECT SWITCH
- TRANSFORMER
- M — KILOWATT–HOUR METER
- GFI — 125V DUPLEX GROUND FAULT INTERRUPT WEATHER PROOF RECEPTACLE, NEMA CONFIGURATION 5 – 20R
- MOTOR INLET (REVERSE RECEPTACLE)
- TWO–WAY SPEAKER
- MOTOR OVERLOAD
- XX / YY — FIELD MOUNTED INSTRUMENT. XX = FUNCTION; YY = TAG NO.
- INSTRUMENT DEVICE LOCATION (SEE TAG)
- NORMALLY OPEN CONTACT
- NORMALLY CLOSED CONTACT
- R — PILOT LIGHT. R=RED, B=BLUE, A=AMBER, G=GREEN
- XX / XXXX — RELAY COIL
- XXX / YYY / (ZZZ) — TIME DELAY RELAY CONTACTS NORMALLY CLOSED TIMED OPEN. XXX= DESCRIPTION; YYY=RELATED COIL & CONTACT #; ZZZ=COIL RUNG
- XXX / YYY / (ZZZ) — TIME DELAY RELAY CONTACTS NORMALLY OPEN TIMED CLOSED. XXX= DESCRIPTION; YYY=RELATED COIL & CONTACT #; ZZZ=COIL RUNG
- XXX / YYY / (ZZZ) — TIME DELAY RELAY CONTACTS NORMALLY OPEN TIMED OPEN. XXX= DESCRIPTION; YYY=RELATED COIL & CONTACT #; ZZZ=COIL RUNG
- FLOAT OPERATED SWITCH, NORMALLY CLOSED
- FLOAT OPERATED SWITCH, NORMALLY OPEN
- PUSHBUTTON NORMALLY CLOSED, MOMENTARY CONTACT
- PUSHBUTTON NORMALLY OPEN, MOMENTARY CONTACT
- MV — MOTORIZED VALVE
- GROUND REEL
- 1 — FIELD CONTROL DEVICE
- 1 — CONTROL PANEL COMPONENT
- J — JUNCTION BOX OR FITTING
- CONDUIT TEE
- X — FUSE, X=SIZE IN AMPS
- MANUAL MOTOR STARTER (FVNR)
- COMBINATION MAGNETIC MOTOR STARTER (FVNR) WITH DISCONNECT
- X/Y — MOLDED CASE CIRCUIT BREAKER, X = AMPERE RATING, Y = NO. OF POLES THERMAL/MAGNETIC UON
- CONTROL PANEL
- $ — SINGLE POLE SWITCH 120/277V 20A
- SEAL–OFF FITTING
- PC — PHOTO ELECTRIC CONTROL
- INSTRUMENT DEVICE LOCATION (SEE TAG)
- MUSHROOOM HEAD, EMERGENCY SHUTDOWN PUSHBUTTON
- REMOTE OPERATOR FOR CONTROL PANEL
- X — PUSH TO TEST PILOT LIGHT. X= LENS TINT
- X — TERMINAL – X = CONTRACTOR DERIVED NUMBERING
- ST — STROBE ALARM
- O / H / A — HAND–OFF–AUTO SWITCH

FIXTURE SCHEDULE

SYMBOL	LAMP SIZE	MOUNTING	DESCRIPTION	MANUFACTURER
	118W LED	SQUARE STEEL POLE MOUNTED	120V, –40F RATED, CLASS 1, DIVISION 2 LED FIXTURE , 3/4" WALL MOUNT THRU FREED MOUNTING. ATTACH TO SKID MOUNTED 20' ALUMINUM 6" SQUARE POLE. PROVIDE BOLT PATTERN TO TANK SUPPLIER FOR FOUNDATION. SEE 1/C16.	COOPER CROUSE–HINDS (FIXTURE): VMV11L2TWDM1/UNV LITHONIA (POLE): SSA206JDM19XXDNA
A	118W LED	WALL MOUNT	120V, –40F RATED, CLASS 1, DIVISION 2 LED FIXTURE , 3/4" WALL MOUNT THRU FEED MOUNTING.	COOPER CROUSE–HINDS (FIXTURE): VMV11L2TWDM1/UNV
B	100W EQUIV. LED	WALL MOUNT	ENCLOSED AND GASKETED WALL MOUNT. PROVIDE ALUMINUM WIRE GUARD. PROVIDE A21 BASE LED LAMP.	APPLETON (FIXTURE): REA–10LB APPLETON (GUARD): VGU–1 PHILIPS (LAMP): 15A21/2700–WHT DIM 6/1
	22W LED	SURFACE MOUNT	VAPORTITE L.E.D AREA LIGHT WALL MOUNT	CROUSE HINDS: V2LCHBF2/UNV1
	32W LED	*SURFACE MOUNT*	*(2) T8 EQUIVALENT LED FIXTURE. 120V, 2'Wx4'L.*	*LITHONIA (FIXTURE): 2ALLS4 40L EZ1 LP84*

ABBREVIATIONS

A	AMPERE
AFF	ABOVE FINISH FLOOR
AIC	AMPERES INTERRUPTING CAPACITY
AVEC	ALASKA VILLAGE ELECTRIC COOPERATIVE
bCU	BARE COPPER
BKT	BRACKET
C	CONDUCTOR
C	CONDUIT
CCT	CORRELATED COLOR TEMPERATURE
C1D1	CLASS 1, DIVISION 1
C1D2	CLASS 1, DIVISION 2
CP	CONTROL PANEL
CT	CURRENT TRANSFORMER
DWG	DRAWING
EA	EACH
ENT	ELECTRICAL NON–METALLIC TUBING
EOL	END OF LINE RESISTOR
ESD	EMERGENCY SHUTDOWN
EXP	EXPLOSION PROOF
FVNR	FULL VOLTAGE NON–REVERSING, THERMAL MAGNETIC OCP
G	GROUND CONDUCTOR
GFI	GROUND FAULT INTERRUPTING
H	HOT CONDUCTOR
HOA	HAND OFF AUTO
HP	HORSEPOWER
HPS	HIGH PRESSURE SODIUM
KVA	KILO–VOLT–AMPERES
KW	KILOWATT
LTFC	LIQUID–TIGHT FLEXIBLE METAL CONDUIT
LTG	LIGHTING
MAX	MAXIMUM
MCM	THOUSAND CIRCULAR MILLS
MCP	MAGNETIC ONLY CIRCUIT PROTECTOR
MIN	MINIMUM
MV	MOTORIZED VALVE
N	NEUTRAL CONDUCTOR
NEMA	NATIONAL ELECTRICAL MANUFACTURES ASSOCIATION
NTS	NOT TO SCALE
OCP	OVERCURRENT PROTECTION
P	POLE
RCP	RECEPTACLE
RMC	RIGID METAL CONDUIT, GALVANIZED
SG	SPECIFIC GRAVITY
SIG	SIGNAL CONDUCTOR
SL	SWITCH LEG
SS	STAINLESS STEEL
TWSH	TWISTED/SHIELDED CONDUCTOR
TYP	TYPICAL
U/G	UNDERGROUND
UON	UNLESS OTHERWISE NOTED
V	VOLTS
VA	VOLT–AMPERES
VFD	VARIABLE FREQUENCY DRIVE
WP	WEATHER PROOF
XFMR	TRANSFORMER

ELECTRICAL EQUIPMENT SCHEDULE

ITEM NO.	DESCRIPTION	MANUFACTURER
1	EMERGENCY SHUTOFF SWITCH. NEMA 4 DIE–CAST ALUMINUM ENCLOSURE, 2–1/4" DIA. RED MUSHROOM HEAD MAINTAINED CONTACT PUSH BUTTON WITH 1 EA. NC CONTACT, 10A RATED.	ALLEN BRADLEY 800T–FX6D4 WITH 800T–1TZ ENCLOSURE & 800T–N247R HEAD
2	WEATHER PROOF RECEPTACLE. COMPLETE WITH 20A, 125V DUPLEX GFCI RECEPTACLE. INSTALL IN CAST SINGLE GANG FD BOX WITH WEATHERPROOF COVER.	P&S 2095TRWRI RED DOT CCGV COVER RED DOT IH32LM BOX
3	LIGHT SWITCH AND RECEPTACLE. COMPLETE WITH 20A, 125V DUPLEX GFCI RECEPTACLE, 20A SINGLE POLE SWITCH. INSTALL IN CAST MULTI–GANG FD BOX WITH WEATHERPROOF COVER.	P&S 2095TRWRI RECEPTACLE P&S PS20AC1–I SWITCH RED DOT 2CCTG COVER RED DOT 2IH4–2 BOX
4	LOCKABLE SWITCH. NEMA 4, 7, 9 EXPLOSION PROOF CONSTRUCTION WITH 3/4" FEED THRU HUB, 4PST, 250V, 20A.	KILLARK
5	MULTI–TONE ALARM WITH STROBE, 115V, NEMA 3R, WEATHER RESISTANT SURFACE MOUNT BELL BOX.	WHEELOCK MT4–115–WH–VNS
6	THREE POSITION FLOAT ACTIVATED LEVEL SWITCH, 316 SS STEM, 2" 316 SS FLOAT, 2" NPT BUSHING, 1/2" NPT CONDUIT ENTRY, EXPLOSION PROOF CONSTRUCTION, LISTED FOR CLASS 1, DIVISION 1, GROUP D, 120VAC, 100W MAX SWITCHING POWER. PROVIDE FLOAT ACTIVATED SWITCHES AT DIMENSIONS BASED ON APPROVED SHOP DRAWINGS. CONTRACTOR SHALL VERIFY ACTUAL TANK DIMENSIONS AND SUBMIT SWITCH DIMENSIONS TO CONSTRUCTION MANAGER FOR APPROVAL PRIOR TO ORDERING.	CUSTOM SWITCHES, INC. MODEL LS–1900 TYPE 7 OR APPROVED EQUAL. CONTRACTOR TO VERIFY CUSTOM PROBE LENGTHS PRIOR TO ORDERING. SEE DESCRIPTION.
7	FOUR POSITION FLOAT ACTIVATED LEVEL SWITCH, 316 SS STEM, 2" 316 SS FLOAT, 2" NPT BUSHING, 1/2" NPT CONDUIT ENTRY, EXPLOSION PROOF CONSTRUCTION, LISTED FOR CLASS 1, DIVISION 1, GROUP D, 120VAC, 100W MAX SWITCHING POWER. PROVIDE FLOAT ACTIVATED SWITCHES AT DIMENSIONS BASED ON APPROVED SHOP DRAWINGS. . CONTRACTOR SHALL VERIFY ACTUAL TANK DIMENSIONS AND SUBMIT SWITCH DIMENSIONS TO CONSTRUCTION MANAGER FOR APPROVAL PRIOR TO ORDERING.	CUSTOM SWITCHES, INC. MODEL LS–1900 TYPE 8 OR APPROVED EQUAL. CONTRACTOR TO VERIFY CUSTOM PROBE LENGTHS PRIOR TO ORDERING. SEE DESCRIPTION.

State of Alaska
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AIDEA/AEA
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813 West Northern Lights Blvd.
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ALASKA ENERGY AUTHORITY

STATE OF ALASKA — 49TH — REGISTERED PROFESSIONAL ENGINEER — William M. McDonald — EE 7879 — 04/07/15

CRW ENGINEERING GROUP LLC
3940 ARCTIC BLVD. SUITE 300
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EDNA BAY, ALASKA

BULK FUEL UPGRADE

ELECTRICAL LEGEND AND ABBREVIATIONS

NO.	REVISION	BY	DATE
0	ISSUED FOR CONSTRUCTION	JSJ	04/2015

Plot Date 4/9/15 — Designed WMM — Drawn JSJ — Approved

Sheet No. E1
SHEET E1 OF E9

File: J:\Jobsdata\30406.00 Edna Bay Bulk Fuel Upgrades\00 CADD\01 Working Set\03 Electrical\30406.00 – LEGEND.dwg

ELECTRICAL SPECIFICATION

SCOPE OF WORK: FURNISH AND INSTALL ALL MATERIAL AND EQUIPMENT AS REQUIRED FOR FINAL DESIGN, FABRICATION AND INSTALLATION OF THE FUEL SYSTEM CONTROLS AS INDICATED ON THE DRAWINGS AND IN THE SPECIFICATIONS ON ALL OF THE DRAWINGS.

STANDARDS, CODES AND REGULATIONS: CONTRACTOR SHALL COMPLY WITH THE LATEST ADOPTED EDITION OF THE NATIONAL ELECTRICAL CODE (NEC), INTERNATIONAL BUILDING CODE (IBC), AND INTERNATIONAL FIRE CODE (IFC) INCLUDING ALL STATE AND LOCAL AMENDMENTS TO THESE CODES.

DRAWINGS: THE DRAWINGS ARE DIAGRAMMATIC, NOT NECESSARILY SHOWING ALL OFFSETS OR EXACT LOCATIONS OF FIXTURES, EQUIPMENT, ETC., UNLESS SPECIFICALLY DIMENSIONED. REVIEW THE DRAWINGS AND SPECIFICATIONS FOR EQUIPMENT FURNISHED BY OTHER CRAFTS BUT INSTALLED IN ACCORDANCE WITH THIS SECTION. BRING QUESTIONABLE OR OBSCURE ITEMS, APPARENT CONFLICTS BETWEEN PLANS, SPECIFICATIONS, GOVERNING CODES AND/OR UTILITIES REGULATIONS TO THE ATTENTION OF THE ENGINEER. CODES, ORDINANCES, REGULATIONS, MANUFACTURER'S INSTRUCTIONS OR STANDARDS TAKE PRECEDENCE WHEN THEY ARE MORE STRINGENT OR CONFLICT WITH THE DRAWINGS AND SPECIFICATIONS.

RECORD DRAWINGS: MARK UP A CLEAN SET OF DRAWINGS AS THE WORK PROGRESSES TO SHOW THE DIMENSIONED LOCATION AND ROUTING OF ALL ELECTRICAL WORK THAT WILL BECOME PERMANENTLY CONCEALED. SHOW ROUTING OF WORK IN PERMANENTLY CONCEALED BLIND SPACES WITHIN BUILDINGS AND STRUCTURES. SHOW COMPLETE ROUTING AND SIZING OF ANY SIGNIFICANT REVISIONS TO THE SYSTEMS SHOWN. PROVIDE AS-BUILT SHOP DRAWINGS OF EACH OF THE FUEL SYSTEM CONTROL PANELS. PROVIDE FULL SIZE HARD COPY AND DRAWING FILES IN AUTOCAD V2000 ON CD.

WORKMANSHIP: INSTALLATION OF ALL WORK SHALL BE MADE SO THAT ITS SEVERAL COMPONENT PARTS SHALL FUNCTION AS A WORKABLE SYSTEM COMPLETE WITH ALL ACCESSORIES NECESSARY FOR ITS OPERATION. ALL MATERIAL AND EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS, INSTRUCTIONS AND/OR INSTALLATION DRAWINGS AND IN ACCORDANCE WITH NECA STANDARDS. MATERIALS AND EQUIPMENT SHALL BE NEW AND SHALL CONFORM TO APPLICABLE INDUSTRY STANDARDS, NEMA STANDARDS AND UNDERWRITERS LABORATORIES (U/L) STANDARDS.

SUBMITTALS: PROVIDE MATERIAL AND EQUIPMENT SUBMITTALS CONTAINING A COMPLETE LISTING OF MATERIAL AND EQUIPMENT SHOWN ON THE DRAWINGS. INCLUDE CATALOG NUMBERS, WIRING DIAGRAMS, ROUGH-IN DIMENSIONS AND PERFORMANCE DATA FOR ALL MATERIAL AND EQUIPMENT. SUBMITTALS SHALL BE BOUND IN HARD COVER, LOOSE-LEAF BINDERS SEPARATE FROM WORK FURNISHED UNDER OTHER DIVISIONS. INDEX AND CLEARLY IDENTIFY ALL MATERIAL AND EQUIPMENT BY ITEM, NAME OR DESIGNATION USED ON THE DRAWINGS.

SUBMITTAL REVIEW IS FOR GENERAL DESIGN AND ARRANGEMENT ONLY AND DOES NOT RELIEVE THE CONTRACTOR FROM ANY REQUIREMENTS OF THE CONTRACT DOCUMENTS. THE SUBMITTALS ARE NOT CHECKED FOR QUANTITY, DIMENSION, OR FOR PROPER OPERATION. WHERE ALLOWED, SUBSTITUTIONS WILL BE REVIEWED USING THE CRITERIA/MANUFACTURERS DATA OF THE SPECIFIED COMPONENT.

OPERATION AND MAINTENANCE MANUALS: PROVIDE OPERATION AND MAINTENANCE MANUALS FOR TRAINING OF THE OWNER'S PERSONNEL. DESCRIBE IN THE MANUALS THE PROCEDURES NECESSARY TO OPERATE THE SYSTEM INCLUDING START-UP, OPERATION, EMERGENCY OPERATION AND SHUTDOWN. PROVIDE INSTRUCTIONS AND A SCHEDULE OF PREVENTIVE MAINTENANCE IN TABULAR FORM FOR ALL ROUTINE CLEANING, INSPECTION AND LUBRICATION WITH RECOMMENDED LUBRICANTS. PROVIDE INSTRUCTIONS FOR MINOR REPAIR OR ADJUSTMENTS REQUIRED FOR PREVENTIVE MAINTENANCE ROUTINES. PROVIDE MANUFACTURER'S DESCRIPTIVE LITERATURE INCLUDING APPROVED SHOP DRAWINGS COVERING DEVICES USED IN ANY CONTRACTOR-PROVIDED EQUIPMENT OR SYSTEMS WITH ILLUSTRATION, EXPLODED VIEWS, ETC. PROVIDE A NON-PASSWORD PROTECTED PDF FILE OF EACH MANUAL IN ITS ENTIRETY ON A CD IN ADDITION TO THE REQUIRED HARD COPIES.

WARRANTY: THE CONTRACTOR SHALL GUARANTEE ALL WORK EXECUTED UNDER THIS CONTRACT TO BE FREE FROM DEFECTS IN MATERIALS AND WORKMANSHIP FOR A PERIOD OF ONE YEAR FROM BENEFICIAL OCCUPANCY. ANY FAULTY MATERIALS OR WORKMANSHIP SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR TO THE SATISFACTION OF THE OWNER AT NO ADDITIONAL COST DURING THE WARRANTY PERIOD.

PERMITS: SECURE AND PAY FOR ALL FEES, PERMITS, ETC. REQUIRED BY LOCAL AND STATE AGENCIES AND ALL LOCAL UTILITY COMPANIES.

REFERENCE SYMBOLS: THE ELECTRICAL "LEGEND" ON THE DRAWINGS IS A STANDARDIZED VERSION, AND ALL SYMBOLS SHOWN MAY NOT BE USED. USE THE "LEGEND" AS A REFERENCE FOR THE SYMBOLS USED ON THE DRAWINGS.

IDENTIFICATION: PROVIDE ENGRAVED THREE-LAYER LAMINATED PLASTIC NAMEPLATES WITH BLACK LETTERS ON A WHITE BACKGROUND TO IDENTIFY ALL ELECTRICAL DISTRIBUTION AND CONTROL EQUIPMENT, LOADS SERVED AND AS NOTED ON THE DRAWINGS. LETTER HEIGHTS SHALL BE 1/8 INCH FOR INDIVIDUAL SWITCHES, MOTOR STARTERS AND LOADS SERVED AND 1/4 INCH ON PANELBOARDS. SECURE NAMEPLATES TO EQUIPMENT FRONTS USING SCREWS, RIVETS OR ADHESIVES.

CONDUITS: MARK ALL CONDUITS ENTERING OR LEAVING PANELBOARDS/CONTROL PANELS WITH AN INDELIBLE BLACK MARKER WITH THE CIRCUIT NUMBERS OF THE CIRCUITS CONTAINED INSIDE.

JUNCTION BOXES: MARK ALL CIRCUIT NUMBERS OF WIRING ON ALL JUNCTION BOXES WITH SHEET STEEL COVERS. MARK WITH INDELIBLE BLACK MARKER. MARK ALL OTHER SPECIAL SYSTEM JUNCTION BOXES WITH SHEET STEEL COVERS.

CONDUIT: ALL WIRING SHALL BE INSTALLED IN GALVANIZED RIGID STEEL OR INTERMEDIATE METAL RACEWAY UNLESS OTHERWISE NOTED. ALL FITTINGS, CONNECTORS, BOXES, ETC., SHALL BE APPROVED FOR USE AS A GROUNDING MEANS. UTILIZE SHORT EXTENSIONS (36 INCHES MAXIMUM) OF FLEXIBLE LOW TEMPERATURE, LIQUIDTIGHT FLEXIBLE METALLIC CONDUIT FOR CONNECTION OF ALL MOTORS AND OTHER EQUIPMENT SUBJECT TO VIBRATION AND WHERE CONDUITS TRANSITION BETWEEN STRUCTURES OR ON RISERS FROM BELOW GRADE TO IN NON-HAZARDOUS AND CLASS I, DIVISION 2 AREAS. USE EXPLOSION-PROOF FLEXIBLE COUPLINGS FOR CONNECTIONS IN CLASS I, DIVISION 1 HAZARDOUS LOCATIONS. PAINT ALL EXPOSED RACEWAYS TO MATCH THE SURFACE TO WHICH IT IS ATTACHED OR CROSSES. OTHERWISE PAINT INDUSTRIAL GRAY. COMPLETELY AND THOROUGHLY SWAB RACEWAY SYSTEM BEFORE INSTALLING CONDUCTORS. ALL UNDERGROUND CONDUIT SHALL BE BURIED A MINIMUM OF 18" BELOW FINISHED GRADE.

CONDUCTORS: CONDUCTORS SHALL BE COPPER, SOLID OR STRANDED, WITH TYPE XHHW-2 INSULATION. MINIMUM BRANCH CIRCUIT CONDUCTOR SIZE SHALL BE #12 AWG. MINIMUM CONTROL CIRCUIT CONDUCTOR SIZE SHALL BE #14 AWG. PULL ALL CONDUCTORS INTO THE RACEWAY AT THE SAME TIME. USE UL LISTED WIRE-PULLING LUBRICANT FOR PULLING #4 AWG AND LARGER WIRES. COLOR CODE CONDUCTORS AS FOLLOWS: 480V SYSTEMS: BROWN (L1), YELLOW (L2), 120/240 VOLT SYSTEMS: BLACK (L1), RED (L2), WHITE (N) AND GREEN OR BARE (G). USE PROPERLY SIZED INSULATED SPRING WIRE CONNECTORS WITH PLASTIC CAPS FOR ALL CONDUCTORS #8 AWG AND SMALLER. TERMINATE #6 AWG AND LARGER CONDUCTORS WITH CRIMP OR COMPRESSION TYPE CONNECTORS INSTALLED WITH TOOL RECOMMENDED BY CONNECTION MANUFACTURER AND INSULATE WITH PROPERLY SIZED 600-VOLT RATED HEAT SHRINK TUBING.

CIRCUIT BREAKERS: MOLDED CASE CIRCUIT BREAKERS SHALL BE BOLT-ON THERMAL MAGNETIC TRIP TYPE WITH COMMON TRIP HANDLE FOR ALL POLES.

LIGHTING EQUIPMENT: PROVIDE ALL LIGHTING EQUIPMENT OR APPROVED EQUAL AS SHOWN ON THE DRAWINGS AND DESCRIBED IN THE "FIXTURE SCHEDULE". PROVIDE LIGHTING EQUIPMENT COMPLETE, WIRED, ASSEMBLED, WITH PROPER FLANGES, MOUNTING SUPPORTS, HARDWARE, ETC.

EQUIPMENT CONNECTIONS: PROVIDE WIRING AND CONNECTION TO EQUIPMENT REQUIRING ELECTRICAL POWER BUT SPECIFIED UNDER OTHER DIVISIONS OF THE SPECIFICATIONS. EQUIPMENT SHALL INCLUDE BUT IS NOT LIMITED TO MOTORS, PUMPS, DISPENSING EQUIPMENT, ETC. REVIEW EQUIPMENT SUBMITTAL FROM THE OTHER TRADES PRIOR TO INSTALLATION AND ELECTRICAL ROUGH-IN. VERIFY LOCATION, SIZE, TYPE OF CONNECTIONS, AND THAT EQUIPMENT IS READY FOR ELECTRICAL CONNECTION. MAKE WIRING CONNECTIONS IN CONTROL PANEL OR IN WIRING COMPARTMENT OF PRE-WIRED EQUIPMENT IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS. PROVIDE INTERCONNECTING WIRING AND DISCONNECTS WHERE REQUIRED.

DISCONNECT SWITCHES: PROVIDE 250V HEAVY DUTY NON-FUSIBLE QUICK-MAKE, QUICK BREAK, LOAD INTERRUPTER, ENCLOSED KNIFE SWITCHES WITH EXTERNALLY OPERABLE HANDLE INTERLOCKED TO PREVENT OPENING FRONT COVER WITH SWITCH IN ON POSITION, HANDLE LOCKABLE IN OFF POSITION.

PENETRATIONS OF HAZARDOUS LOCATIONS: ALL ELECTRICAL PENETRATIONS OF HAZARDOUS LOCATION BOUNDARIES SHALL BE PROVIDED WITH SEAL-OFF FITTINGS AS REQUIRED BY NEC ARTICLES 500 & 501.

MOTOR STARTERS: PROVIDE FULL VOLTAGE STARTING, NON-REVERSING, MAGNETIC TYPE MOTOR STARTERS, IEC RATED, AC GENERAL-PURPOSE, CLASS A, WITH MAGNETIC CONTROLLER FOR INDUCTION MOTORS RATED IN HORSEPOWER. OVERLOAD RELAY SHALL BE NON-AMBIENT SENSITIVE. PROVIDE TWO FIELD CONVERTIBLE CONTACTS IN ADDITION TO SEAL-IN CONTACT. INSTALL MOTOR CONTROL EQUIPMENT IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. SELECT AND INSTALL HEATER ELEMENTS OR SET ADJUSTABLE OVERLOADS IN MOTOR STARTERS TO MATCH INSTALLED MOTOR CHARACTERISTICS.

MOTOR DATA: PROVIDE NEATLY TYPED LABEL INSIDE EACH MOTOR STARTER OR CONTROL PANEL ENCLOSURE DOOR IDENTIFYING MOTOR(S) SERVED, NAMEPLATE HORSEPOWER, FULL LOAD AMPERES, CODE LETTER, SERVICE FACTOR, AND VOLTAGE/PHASE RATING.

EQUIPMENT MOUNTING: PROVIDE ALL BRACING AS REQUIRED TO SECURELY MOUNT ENCLOSURES, FIXTURES AND DEVICES. UNLESS OTHERWISE NOTED USE GALVANIZED HARDWARE AND GALVANIZED FORMED STEEL COMPONENTS SUCH AS UNISTRUT OR EQUAL. WHEN BOLTING TO STRUCTURE, VERIFY THAT THE ORIGINAL STRUCTURAL AND PERFORMANCE (I.E. WATER TIGHT) CHARACTERISTICS ARE MAINTAINED.

ENCLOSURE RATING: UNLESS NOTED OTHERWISE, ENCLOSURES, JUNCTION BOXES AND OTHER EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH THE FOLLOWING SCHEDULE -

EXTERIOR, NON HAZARDOUS - NEMA 4X NONMETALLIC
EXTERIOR, HAZARDOUS - NEMA 7 (CLASS 1, GROUP D) AND NEMA 4 OR 4X

SITE POWER GENERATOR: 20kW, SINGLE PHASE, 120/240V, 60Hz, DIESEL-FIRED, LIQUID COOLED WITH INTEGRAL RADIATOR AND FAN, WITH 80GAL. SUB-BASE TANK AND WEATHERPROOF SOUND ENCLOSURE. GENERATOR HOUSING TO INCLUDE ACCESS PANELS, COOLING LOUVERS, STARTER BATTERY, CHARGER, LINE CIRCUIT BREAKER CRITICAL SILENCER AND CONTROLLER. UL 2200 LISTING WITH ALL APPLICABLE MAINTENANCE AND OVERHAUL MANUALS.

SUBMITTAL WILL BE EVALUATED BASED ON THE KOHLER MODEL 20REOZK GENERATOR WITH MANUFACTURERS WEATHER HOUSING AND ACCESSORIES.

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Department of Commerce, Community and Economic Development
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STATE OF ALASKA
49TH
REGISTERED PROFESSIONAL ENGINEER
William M. McDowell
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04/07/15

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EDNA BAY, ALASKA

BULK FUEL UPGRADE

ELECTRICAL SPECIFICATIONS

NO.	REVISION	BY	DATE
0	ISSUED FOR CONSTRUCTION	JSJ	04/2015

Plot Date 4/9/15
Designed WMM
Drawn JSJ
Approved

Sheet No. E2
SHEET E2 OF E9

File: J:\Jobsdata\30406.00 Edna Bay Bulk Fuel Upgrades\00 CADD\01 Working Set\03 Electrical\30406.00 - LEGEND.dwg

CONTROL SPECIFICATION

CONTROLS
FURNISH AND INSTALL ALL MATERIAL AND EQUIPMENT AS REQUIRED FOR FINAL DESIGN, FABRICATION AND INSTALLATION OF THE TANK FARM CONTROLS AS INDICATED ON THE DRAWINGS AND IN THE SPECIFICATIONS ON ALL OF THE DRAWINGS.

STANDARDS, CODES AND REGULATIONS: CONTRACTOR SHALL COMPLY WITH THE LATEST ADOPTED EDITION OF THE NATIONAL ELECTRICAL CODE (NEC), AND NFPA 79 AND UL 508A.

SUBMITTALS
PRODUCT DATA: INCLUDE MANUFACTURER'S TECHNICAL LITERATURE FOR EACH CONTROL DEVICE. INDICATE DIMENSIONS, CAPACITIES, PERFORMANCE CHARACTERISTICS, ELECTRICAL CHARACTERISTICS, FINISHES FOR MATERIALS, AND INSTALLATION AND STARTUP INSTRUCTIONS FOR EACH TYPE OF PRODUCT INDICATED.
EACH CONTROL DEVICE LABELED WITH SETTING OR ADJUSTABLE RANGE OF CONTROL.

SHOP DRAWINGS: SUBMITTAL DRAWINGS SHALL BE PREPARED AND SUBMITTED FOR APPROVAL PRIOR TO CONSTRUCTION. SUBMITTAL FORMAT SHALL BE BASED ON A 22X34 SIZE SHEET WITH EITHER VENDOR'S OR VSW BORDER. HARD COPY SUBMITTALS SHALL BE 1/2 SIZE (11X17) ON BOND PAPER AND A SINGLE COPY OF A ".PDF" FILE AND A .DWG FILE IN AUTOCAD 2010 WITH CTB FILE FOR PRINTING. ELECTRONIC MEDIA SHALL BE SUBMITTED ON CD FORMATTED FOR READING ON INTEL-BASED PC'S (NOT MAC). DATA TO BE INCLUDED ON THE SUBMITTAL DRAWINGS INCLUDE:

- DIMENSIONED OPERATOR DOOR AND BACK PANEL LAYOUT SHOWING ALL COMPONENTS.
- BILL OF MATERIALS WITH MANUFACTURER AND RELEVANT PART NUMBERS.
- SCHEMATIC DIAGRAM. POWER, SIGNAL, AND CONTROL WIRING.
- DIFFERENTIATE BETWEEN MANUFACTURER-INSTALLED AND FIELD-INSTALLED WIRING.
- DETAILS OF CONTROL PANEL FACES, INCLUDING CONTROLS, INSTRUMENTS, AND LABELING.
- TERMINAL ASSIGNMENTS WITH ALL EXTERNAL COMPONENT TERMINATIONS SHOWN.
- DETAIL EQUIPMENT ASSEMBLIES AND INDICATE DIMENSIONS, WEIGHTS, LOADS, REQUIRED CLEARANCES, METHOD OF FIELD ASSEMBLY, COMPONENTS, AND LOCATION AND SIZE OF EACH FIELD CONNECTION.
- WRITTEN DESCRIPTION OF SEQUENCE OF OPERATION.
- MAINTENANCE DATA INCLUDE THE FOLLOWING:
  - MAINTENANCE INSTRUCTIONS AND LISTS OF SPARE PARTS FOR EACH TYPE OF CONTROL DEVICE. INTERCONNECTION WIRING DIAGRAMS WITH IDENTIFIED AND NUMBERED SYSTEM COMPONENTS AND DEVICES.
  - STEP-BY-STEP PROCEDURES INDEXED FOR EACH OPERATOR FUNCTION. INSPECTION PERIOD, CLEANING METHODS, CLEANING MATERIALS RECOMMENDED, AND CALIBRATION TOLERANCES. CALIBRATION RECORDS AND LIST OF SET POINTS.

PROJECT RECORD DOCUMENTS: SUBMIT ALL CUT-SHEETS, O&M INFORMATION AND INSTRUCTIONS IN EITHER MS WORD (.DOC) OR ADOBE (.PDF) FORMAT ON CD FORMATTED FOR USE ON INTEL-BASED PC'S.

QUALITY ASSURANCE: ALL CONTROL/ALARM PANELS PROVIDED FOR THIS PROJECT SHALL BE LISTED OR LABELED AS AN ELECTRICAL ASSEMBLY BY AN AGENCY ACCEPTABLE TO THE STATE OF ALASKA DEPARTMENT OF LABOR – MECHANICAL INSPECTIONS DIVISION. CONSTRUCTION SHALL PROCEED ONLY AFTER THE OWNER APPROVES THE REQUIRED SUBMITTALS.

AS-BUILT DRAWINGS: UPON RECEIPT OF APPROVED SUBMITTALS AND AFTER CONSTRUCTION OF THE PANEL(S), PREPARE AS-BUILT DRAWINGS USING THE APPROVED SUBMITTAL FILES. SUBMIT 3 SETS OF FULL SIZE DRAWINGS ENCLOSED WITHIN EACH PANEL AND A CD WITH A COPY OF AUTOCAD FILES (22X34 DRAWING SIZE) OF THE SUBMITTAL DRAWINGS EDITED TO AS-BUILT STATUS. PROVIDE ONE CD FOR EACH PANEL.

O&M MATERIAL: PROVIDE AS-BUILT VERSIONS OF PROJECT RECORD DOCUMENTS, CURRENT PRICE AND SOURCE FOR ALL REPLACEABLE COMPONENTS (I.E. PLUG-IN RELAYS, PILOT LIGHT LAMPS, ETC). IF A COMMON COMPONENT IS USED IN SEVERAL PANELS, A SINGLE CUT SHEET/DESCRIPTOR IS ACCEPTABLE IF ALL APPLICABLE PANELS ARE ANNOTATED ON THE SUBMITTAL. ALL PREPARED O&M MATERIAL SHALL BE TYPED IN MS WORD OR SCANNED AND CONVERTED TO .PDF FORMAT. O&M DATA CAN BE FURNISHED ON THE SAME CD WITH AS-BUILT DWGS.

PRODUCTS
CONTROL PANEL: ENCLOSURES SHALL BE NEMA 4X NON-METALLIC. CONTROL PANEL ENCLOSURE INTERIOR SHALL BE PROVIDED WITH A STEEL BACK PANEL FOR MOUNTING OF CONTROL AND POWER DISTRIBUTION COMPONENTS. HOFFMAN OR EQUAL.

WIRE MARKERS: SHALL CONSIST OF WHITE OR YELLOW, SLIP-ON ELASTIC SLEEVES SIZED TO TIGHTLY GRIP THE WIRE INSULATION AND MARKED IN BLOCK PRINTING WITH THE LETTERS OR NUMBERS TO IDENTIFY THE CIRCUIT.

TERMINAL BLOCKS: SHALL BE ALLEN BRADLEY 1492 SERIES OR EQUAL. POWER TERMINATIONS FOR SUPPLY AND MOTOR LOADS A MINIMUM RATING OF 600 VOLTS AC AND 35 AMPS. CONTROL AND SENSOR TERMINALS SHALL BE DETERMINED BY THE MANUFACTURER AND BASED ON UPSTREAM OVER CURRENT PROTECTION, FAULT DUTY ETC. WHEN INDIVIDUAL DEVICES OR COMPONENT TERMINAL BLOCKS ARE ENCOUNTERED WITH SCREW TERMINALS, TERMINATION SHALL BE BY SLIP ON SPADE TONGUE INSULATED COMPRESSION TERMINATORS.

NAMEPLATES: SHALL BE INSTALLED PLUMB AND PARALLEL TO THE LINES OF DOORS OR STRUCTURE TO WHICH THEY ARE ATTACHED. A NAMEPLATE SHALL BE PROVIDED FOR EACH PANEL. IT SHALL BE 2"X6" MINIMUM SIZE WITH 1/2 INCH MINIMUM ENGRAVED LETTERS. THE ENGRAVING SHALL BE AS SHOWN ON THE DRAWINGS FOR THE IDENTIFICATION OF EACH PANEL.

PANEL COMPONENTS SHALL BE AS LISTED UNDER THE COMPONENT SCHEDULE.

INSTALLATION
CONTROL PANELS: SHALL BE FACTORY OR SHOP FABRICATED UNITS COMPLETELY ASSEMBLED, WIRED AND TESTED IN THE PRESENCE OF AN OWNER REPRESENTATIVE BEFORE SHIPMENT TO THE JOB SITE. PANEL CONSTRUCTION SHALL, IN GENERAL, MEET APPLICABLE NEMA AND IEEE STANDARDS. THE PANELS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE STANDARDS OF AND BEAR THE LABEL OF AN ACCREDITED NATIONALLY RECOGNIZED TESTING LABORATORY.

THE ASSEMBLED PANEL SHALL BE MEGGERED AND TESTED TO BE FREE FROM GROUNDS AND SHORTS. ALL CONTROLLERS, CIRCUITS AND INTERLOCKS SHALL BE RUNG OUT AND TESTED TO ASSURE THAT THEY FUNCTION CORRECTLY BEFORE THE PANEL IS SHIPPED. REVISE ALL DRAWINGS UPON COMPLETION OF THE WORK TO SHOW "AS SHIPPED" CONDITION OF THE PANEL. AFTER COMPLETION OF SHOP ASSEMBLY AND TESTING, PANELS SHALL BE ENCLOSED IN HEAVY-DUTY POLYETHYLENE ENVELOPES OR SECURED SHEETING TO PROVIDE COMPLETE PROTECTION FROM DUST AND MOISTURE. DEHUMIDIFIERS SHALL BE PLACED INSIDE THE POLYETHYLENE COVERING. THE EQUIPMENT SHALL THEN BE SKID-MOUNTED FOR FINAL TRANSPORT. SHIPPING WEIGHT SHALL BE SHOWN ON SHIPPING TAGS, TOGETHER WITH INSTRUCTIONS FOR UNLOADING, TRANSPORTING, STORING, AND HANDLING ON JOB SITE.

WIRING DUCT: SHALL BE PROVIDED FOR WIRING WITHIN THE PANEL ENCLOSURE INCLUDING ALL FIELD WIRING. WIRING WITHIN THE PANEL SHALL BE LABELED WITH WIRE NUMBERS AND RUN IN WIRING DUCT NEATLY TIED AND BUNDLED WITH TIE WRAPS OR SIMILAR MATERIALS.
LINE VOLTAGE (120 VOLT OR HIGHER) WIRING IN PANELS SHALL BE CLASS C STRANDED COPPER CONDUCTOR #14AWG, WITH TYPE MTW OR SIS INSULATION. COLOR CODING OF INSULATION SHALL BE:

- BLACK: UNGROUNDED LINE, LOAD, AND CONTROL CONDUCTORS AT LINE VOLTAGE.
- RED: UNGROUNDED AC CONTROL CONDUCTORS, AT LESS THAN LINE VOLTAGE.
- BLUE: UNGROUNDED DC CONTROL CONDUCTORS.
- YELLOW: UNGROUNDED CONTROL CIRCUIT CONDUCTORS THAT MAY REMAIN ENERGIZED WHEN THE MAIN DISCONNECTING MEANS IS IN THE OFF POSITION. THESE CONDUCTORS SHALL BE YELLOW THROUGHOUT THE ENTIRE CIRCUIT, INCLUDING WIRING IN THE CONTROL PANEL AND THE EXTERNAL FIELD WIRING.
- WHITE OR NATURAL GRAY: GROUNDED CIRCUIT CONDUCTOR.
- WHITE WITH BLUE STRIPE: GROUNDED (CURRENT-CARRYING) DC CIRCUIT CONDUCTORS.

WIRING WHICH IS AN INTERNAL PART OF A DEVICE AND IS NOT CONNECTED TO EXTERNAL TERMINAL BLOCKS MAY BE WIRED USING THE MANUFACTURER'S STANDARD WIRE DESIGNATIONS. WIRE WHICH CONNECTS TO EXTERNAL CIRCUITS, TO TERMINAL BLOCKS, OR THE NUMBERS SHOWN ON THE ELEMENTARY WIRING DIAGRAMS SHALL IDENTIFY OTHER DEVICES THAT ARE CONNECTED TO EXTERNAL CIRCUITS. EVERY WIRE TERMINATION, INCLUDING ALL JUMPERS, SHALL BE IDENTIFIED WITH WIRE MARKERS. WIRE MARKERS SHALL BE INSTALLED OVER WIRE TERMINATORS OR DIRECTLY ADJACENT TO THEM. MARKERS SHALL BE ARRANGED TO PERMIT READING OF IDENTIFICATION.

TERMINAL BLOCKS SHALL BE PROVIDED FOR THE TERMINATION OF POWER AND CONTROL WIRING. WHERE MULTIPLE TERMINAL BLOCKS ARE SHOWN FOR A GIVEN WIRE NUMBER, ADDITIONAL BLOCKS SHALL BE PROVIDED AND JUMPERED AS NECESSARY TO PROVIDE TERMINAL SPACES FOR EACH INDIVIDUAL OUTGOING WIRE. TERMINAL STRIPS SHALL BE MOUNTED ON A FLAT STEEL CHANNEL OR STRUT WHICH RAISES THEM TO THE LEVEL OF THE ADJACENT WIRE GUTTERS (2 INCH TO 3 INCH ABOVE BACKPLATE). PROVIDE SPACE FOR A MINIMUM OF 10 PERCENT ADDITIONAL CONTROL WIRING TERMINAL BLOCKS ON EACH SIDE.

NAMEPLATES SHALL BE PROVIDED FOR ALL RELAYS, TIMERS, TRANSFORMERS, FUSES, TERMINAL BLOCK, SWITCHES MOUNTED INTERNALLY, AND OTHER COMPONENTS THAT ARE MOUNTED TO THE INTERNAL MOUNTING PANEL. THESE NAMEPLATES SHALL BE SIZED TO THE SCALE OF THE DEVICE TO WHICH THEY REFER. THE ENGRAVING SHALL BE AS SHOWN FOR THE DEVICE ON THE ELEMENTARY WIRING DIAGRAMS.

OPERATION: AFTER THE PANEL INSTALLATION HAS BEEN INSPECTED AND APPROVED, VENDOR SHALL VERIFY AND DEMONSTRATE TO THE PROJECT MANAGER, OR HIS DESIGNATED REPRESENTATIVE, PROPER OPERATION OF EACH FUNCTION AS DESCRIBED IN THESE SPECIFICATIONS.

EACH FUNCTION WILL BE TESTED – SIMULATED INPUTS AND OR FAILURES WILL BE USED WHERE THE ACTUAL CONDITIONS ARE NOT POSSIBLE (I.E. OVERLOAD TRIP). ANY DISCREPANCY NOTED SHALL BE CORRECTED AND PROPER FUNCTION DEMONSTRATED TO PROJECT MANAGER OR DESIGNATED REPRESENTATIVE.

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EDNA BAY, ALASKA
BULK FUEL UPGRADE
ELECTRICAL CONTROL SPECIFICATIONS

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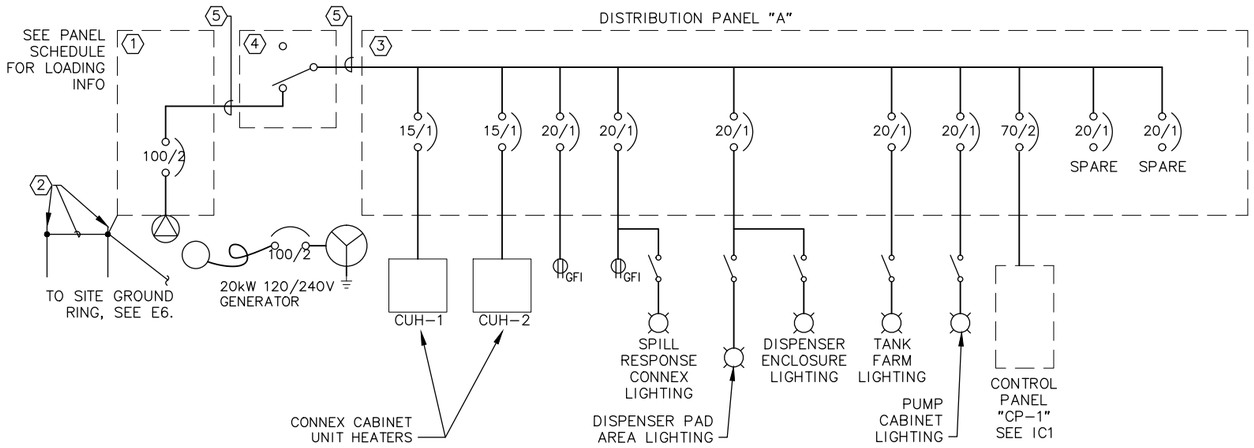
Sheet No. E3
SHEET E3 OF E9

NOTES

1. MARINE DUTY RATED MOTOR INLET (REVERSE RECEPTACLE) AND INTERLOCKED DISCONNECT/MAIN. SEE NOTE 9, E7.
2. 3/4"X10' COOPER CLAD STEEL GROUND RODS CONNECTED WITH #2 bcu. BOND GROUND TO SERVICE USING #6 bcu.
3. 100A, 120/240V, 1φ, 3 WIRE, 12 SPACE NEMA 3R SURFACE MOUNT PANEL.
4. 100A 3P 240V TRANSFER SWITCH. NEMA4X
5. 1-1/2"C, 3#2, 1#4G.



1 / E4 **POWER ONE-LINE**
Scale: NTS

PANEL "A" SCHEDULE

Location:		CONNEX	100 A MAINS				10,000 AIC	
Served from		GENERATOR	240/120V				NEMA 3R	
POLE #	AMP TRIP	LOAD DESCRIPTION	POLE Kva	MLO L1	MLO L2	POLE Kva	LOAD DESCRIPTION	AMP TRIP	POLE #
1	15/1	RECEPTACLES	0.2	1.0		0.8	TANK FARM & DISPENSER LTS	60/2	2
3	20/1	CONNEX RECEPTACLES, LTS	0.3		0.3	0.0	SPARE	20/1	4
5	20/1	DISPENSER PAD/ENCLOSURE LTS	0.4	4.5		4.1	CP-1	15/2	6
7	20/1	SPARE	0.0		4.1	4.1			8
9	15/2	CUH-1	0.8	1.5		0.8	CUH-2	15/2	10
11			0.8		1.5	0.8			12
				7.0	5.9		Total kVA =	12.9	kVA
							Total Amps @ 240V =	53.8	A

2 / E4 **PANEL A SCHEDULE**
Scale: NTS

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EDNA BAY, ALASKA
BULK FUEL UPGRADE
POWER ONE-LINE

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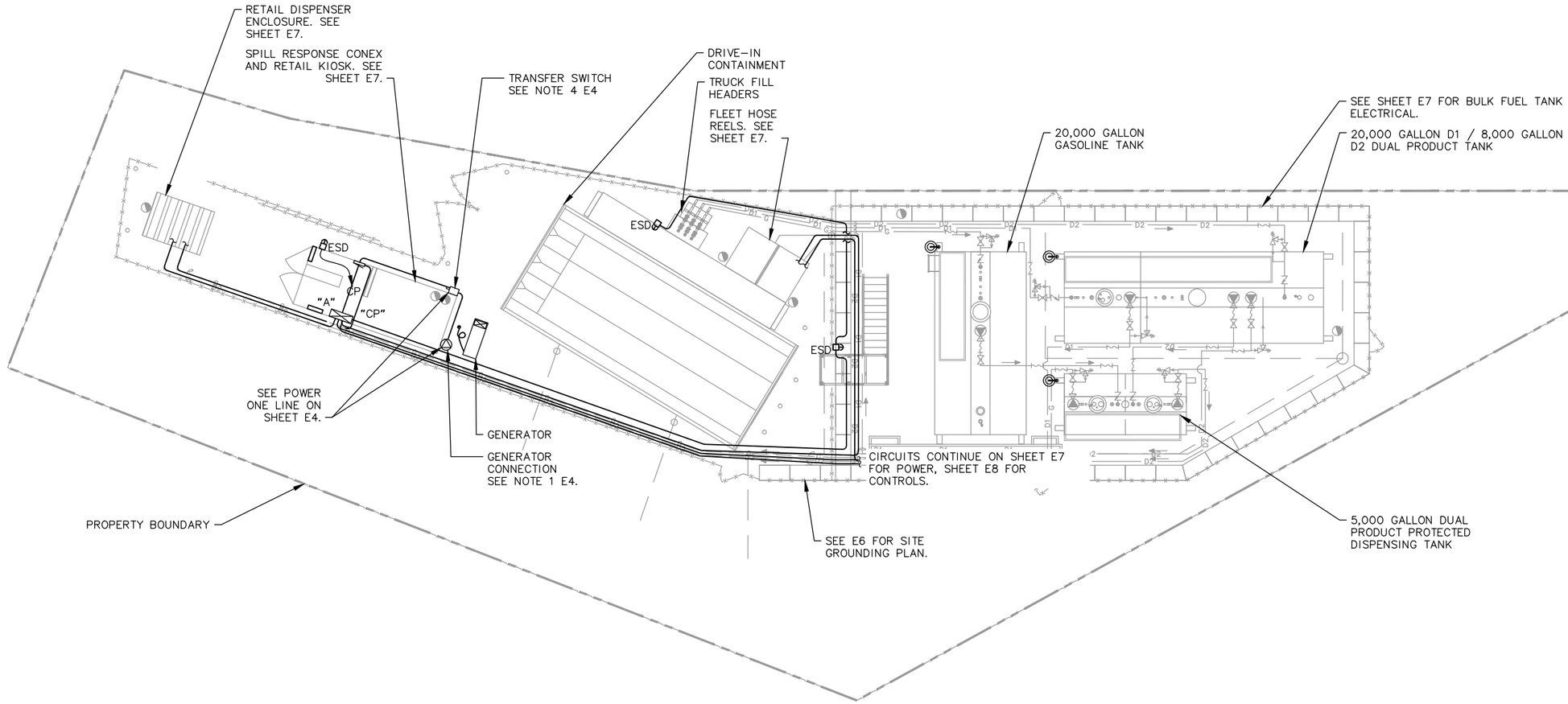

1 / E5 ELECTRICAL SITE PLAN
Scale: GRAPHIC

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EDNA BAY, ALASKA
BULK FUEL UPGRADE
ELECTRICAL SITE PLAN

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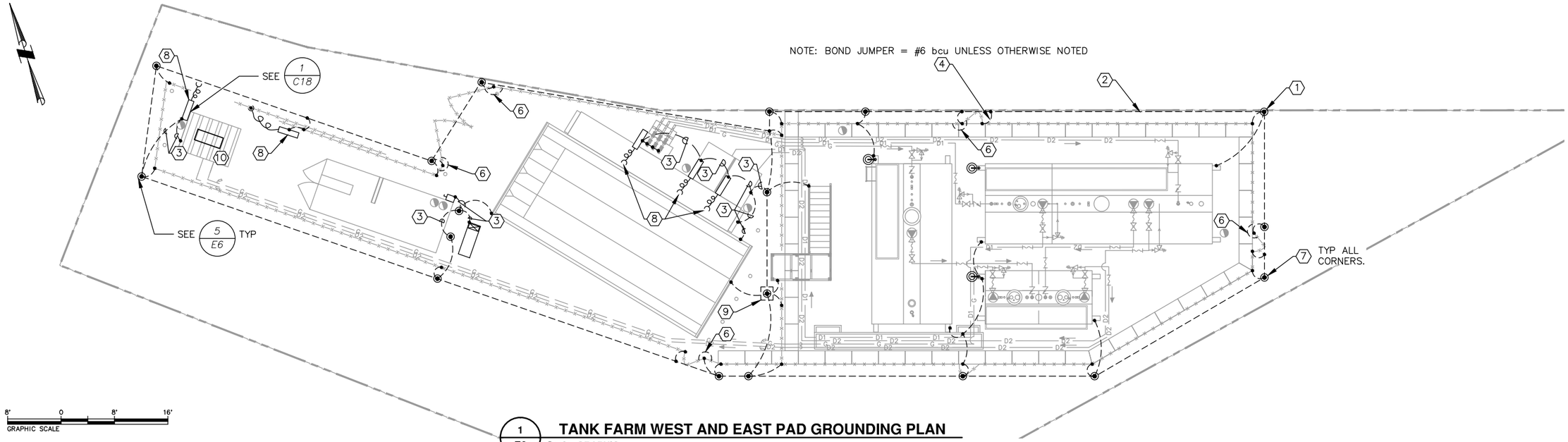
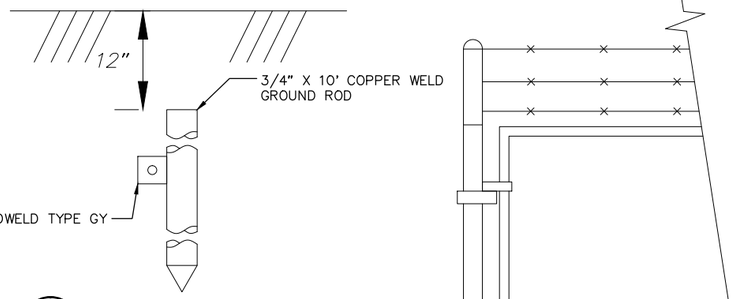
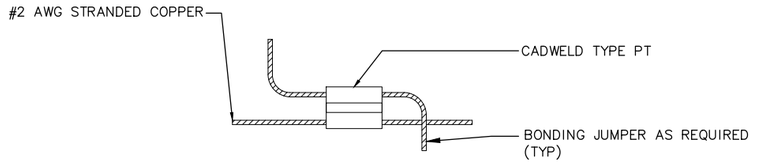


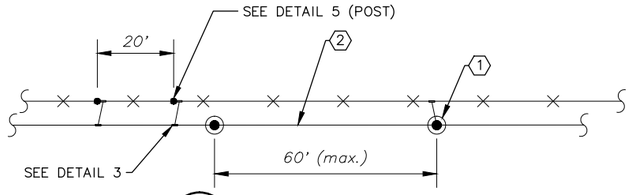
1 / E6 TANK FARM WEST AND EAST PAD GROUNDING PLAN
Scale: GRAPHIC



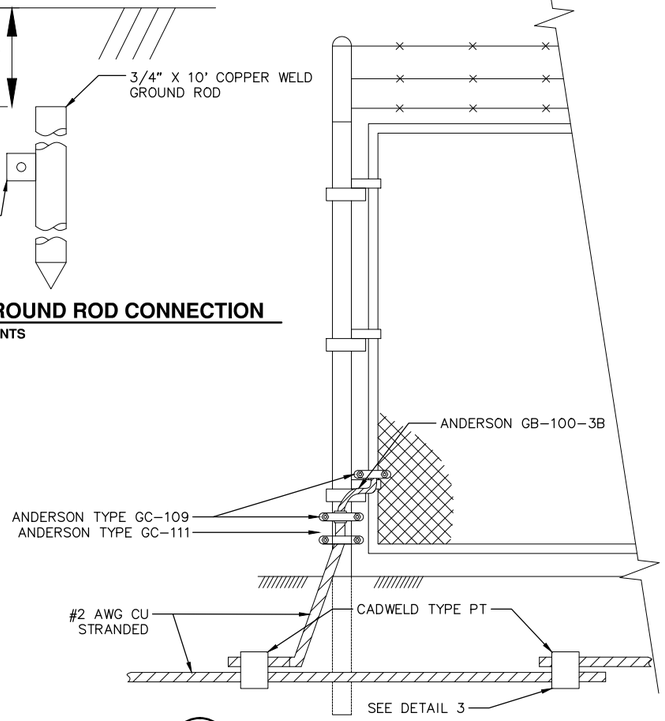
2 / E6 GROUND ROD CONNECTION
Scale: NTS



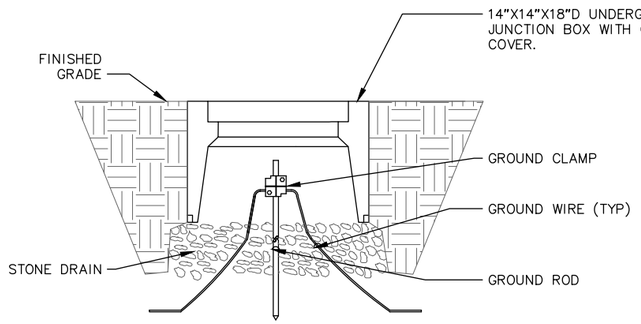
3 / E6 GROUND RING CONNECTION
Scale: NTS



4 / E6 FENCE GROUNDING
Scale: NTS



5 / E6 POST/GATE/DOOR GROUNDING (TYP)
Scale: NTS



6 / E6 GROUND TEST POINT ELEVATION
Scale: NTS

NOTES

1. *3/4"X10' COPPER CLAD GROUND ROD.*
2. *#2 bcu GROUND RING BURIED MIN 30" BELOW GRADE.*
3. *#4 bcu GROUND*
4. *#6 bcu JUMPER.*
5. *BELOW GRADE BOND: EXOTHERMIC WELDMENT*
   ABOVE GRADE BOND: FENCEPOST/STAIRS, SPLIT BOLT
   TANK SKID: EXOTHERMIC WELDMENT, DO NOT WELD TO TANK, TOUCH UP AND PAINT AREA AFFECTED WHEN WELD IS COMPLETE.
6. *#6 BRAID TO GATE.*
7. *EXTEND #6 GROUND TO BARBED WIRE AND BOND AT ALL CORNERS AND WHERE SHOWN.*
8. *PROVIDE ATTACHMENT POINT FOR GROUND REEL AS SHOWN. COORDINATE LOCATION AND CONNECTION MEANS WITH GROUND REEL SUPPLIER.*
9. *GROUND TEST POINT, SEE 6/E6 FOR DETAILS.*
10. *GROUND DUAL DISPENSER PER MANUFACTURER RECOMMENDATIONS.*

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EDNA BAY, ALASKA
BULK FUEL UPGRADE
ELECTRICAL GROUNDING PLANS

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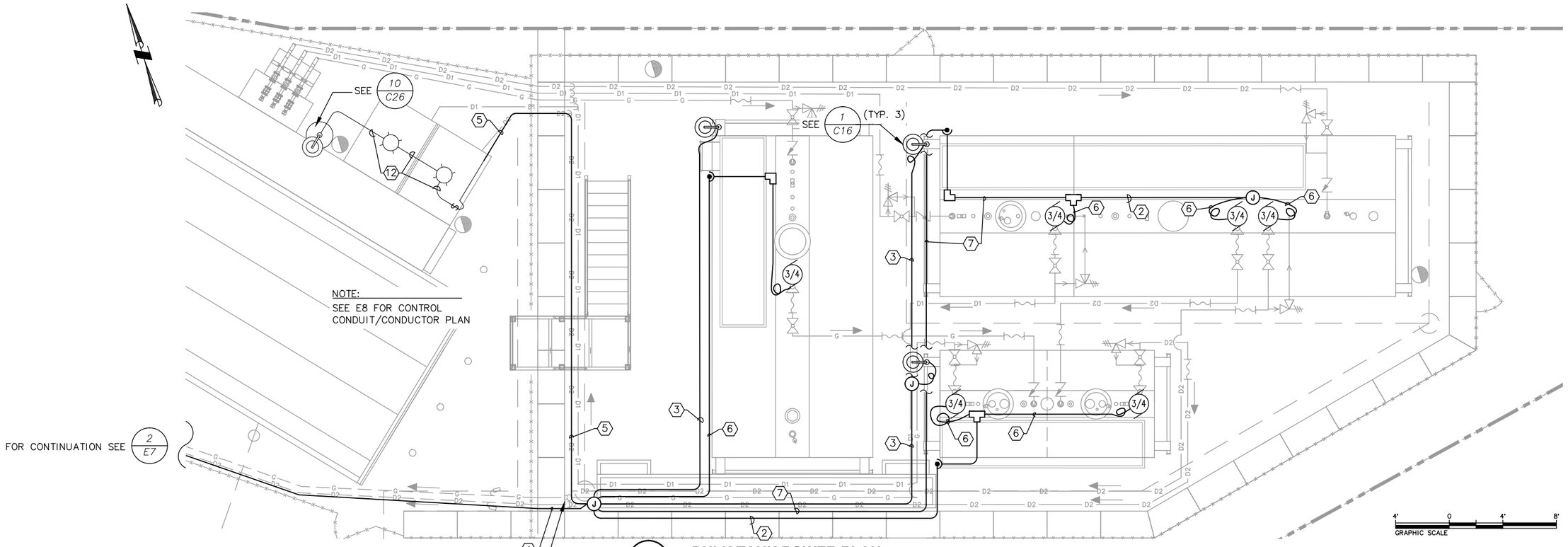
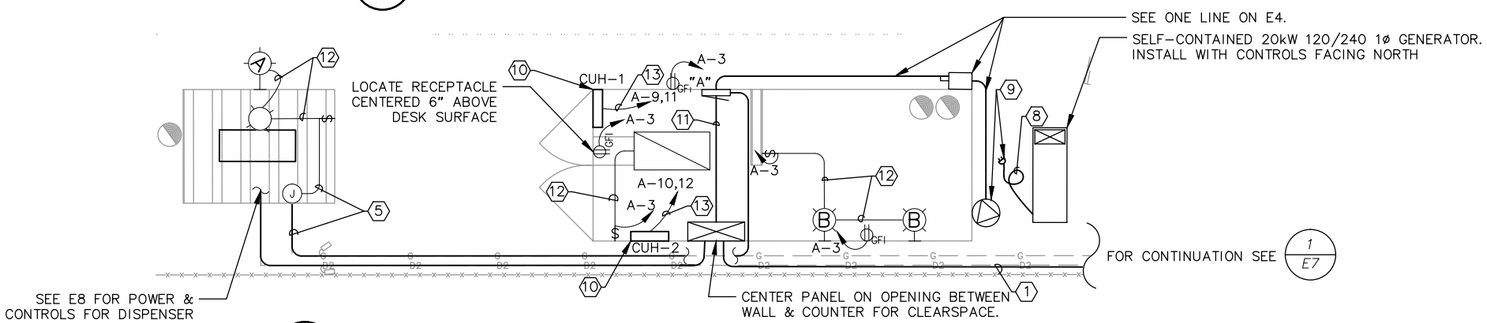
NOTES

1. 1–1/2"C, 15#10(12 H PUMP, 1H/1N LIGHTS, G) DERATING APPLIES.
2. 3/4"C, 5#10(4H PUMP, G)
3. 1/2"C, 3#10(N,G,SWITCH LEG)
4. 1/2"C, 4#10(H,N,G,SWITCH LEG)
5. 1/2"C, 3#10(H,N,G)
6. 1/2"C, 3#10(2H PUMP, G)
7. 3/4"C, 7#10(6H PUMP, G)
8. 3c #2 W/GND ARCTIC CABLE.
9. 100A, REVERSE RECEPTACLE AND MATCHING CONNECTOR BODY 4P 4W.
10. CHROMALOX CABINET CONVECTION UNIT HEATER WITH BUILT–IN THERMOSTAT. CCAS12F2153102B9
11. 1"C, 4#6(2H,N,G)
12. 1/2"C, 3#12(N,G,SWITCH LEG)
13. 1/2"C, 3#12(2H,G)



1 E7 **BULK TANK POWER PLAN**
Scale: GRAPHIC



2 E7 **SPILL RESPONSE CONEX/DISPENSER POWER PLAN**
Scale: GRAPHIC

SEE E9 FOR AREA CLASSIFICATION PROVIDE EQUIPMENT AND METHODS REQUIRED

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BULK FUEL UPGRADE
ELECTRICAL POWER PLANS

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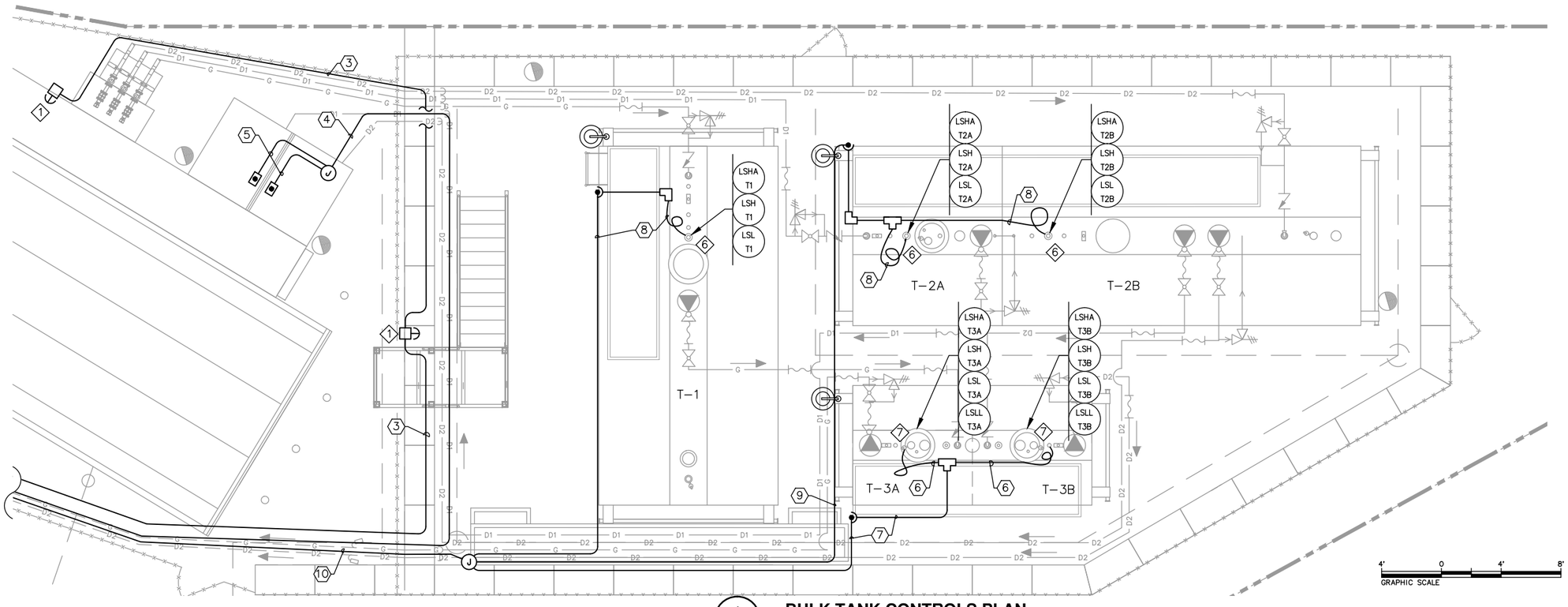
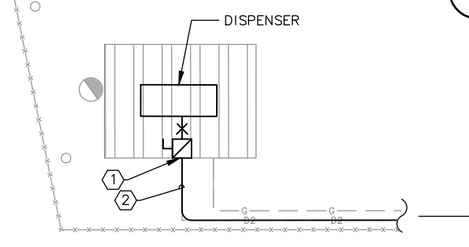
NOTES

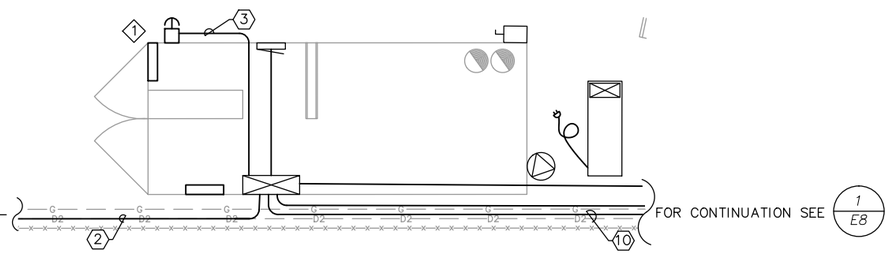
1. PROVIDE DISPENSER DISCONNECT 4P 20A NEMA 3R LOCKABLE SWITCH.
2. 3/4"C, 5#10(H,N,G, 2 OFF-HOOK)
3. 1/2"C, 3#12(G,2 ESD)
4. 3/4"C, 7#12(6 DISP, G)
5. 1/2"C, 4#12 (3 DISP, G)
6. 3/4"C, 6#12(H,G, 4 FLOAT)
7. 3/4"C, 10#12(H,G, 8 FLOAT)
8. 1/2"C, 5#12(H,G, 3 FLOAT)
9. 3/4"C, 8#12(H,G, 6 FLOAT)
10. 1-1/4"C, 19#12(H,G, 17 FLOAT)



1/E7 BULK TANK CONTROLS PLAN
Scale: GRAPHIC



2/E7 RETAIL DISPENSER CONTROLS PLAN
Scale: GRAPHIC



3/E7 SPILL RESPONSE CONEX CONTROLS PLAN
Scale: GRAPHIC

SEE E9 FOR AREA CLASSIFICATION PROVIDE EQUIPMENT AND METHODS REQUIRED

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ELECTRICAL CONTROLS PLANS

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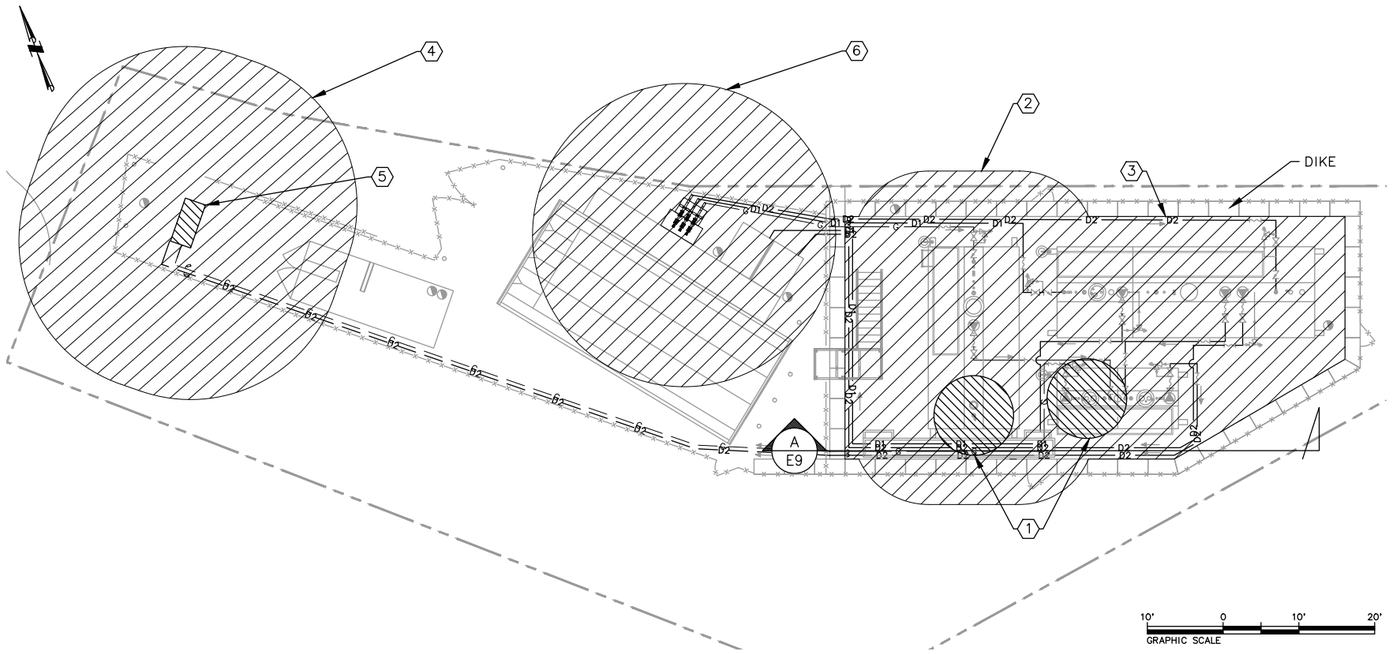
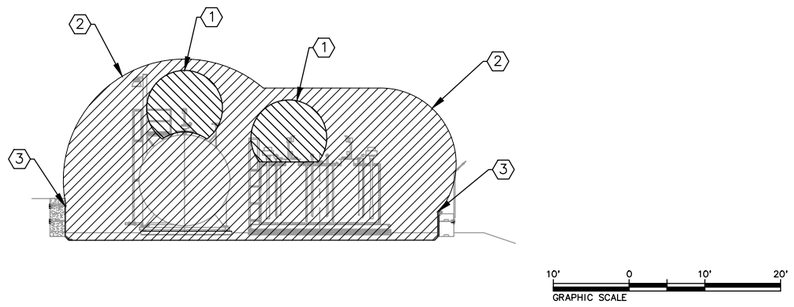


1 / E9 **TANK FARM AREA CLASSIFICATION PLAN**
Scale: GRAPHIC



A / E9 **GASOLINE & DUAL PRODUCT TANK CLASSIFICATION ELEVATION**
Scale: GRAPHIC

CLASSIFICATION LEGEND

- CLASS 1, DIVISION 1
- CLASS 1, DIVISION 2

NOTES

1. CLASS 1, DIVISION 1 RATING EXTENDS 5' IN ALL DIRECTIONS AROUND GASOLINE TANK VENTS.
2. CLASS 1, DIVISION 2 RATING EXTENDS 10' IN ALL DIRECTIONS OF GASOLINE TANKS.
3. SPACE INSIDE DIKE LEVEL TO THE TOP OF THE DIKE IS RATED CLASS 1, DIVISION 2.
4. THE AREA 18" ABOVE GRADE WITHIN 20' OF RETAIL DISPENSER IS CLASS 1, DIVISION 2 RATED.
5. THE AREA INSIDE THE RETAIL DISPENSER AND INSIDE AND BELOW THE PAN BASIN IS CLASS 1, DIVISION 1 RATED.
6. THE AREA 18" ABOVE GRADE WITHIN 20' OF GASOLINE HEADER IS CLASS 1, DIVISION 2 RATED.

ALL WORK IN CLASSIFIED AREAS SHALL BE DONE IN STRICT COMPLIANCE WITH ARTICLES 500, 501, 514 AND 515 OF THE NATIONAL ELECTRICAL CODE. PROVIDE SEAL-OFFS ON ALL CONDUIT PENETRATING CLASSIFIED LOCATIONS AS REQUIRED BY CODE.

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EDNA BAY, ALASKA
BULK FUEL UPGRADE
HAZARDOUS AREA PLAN

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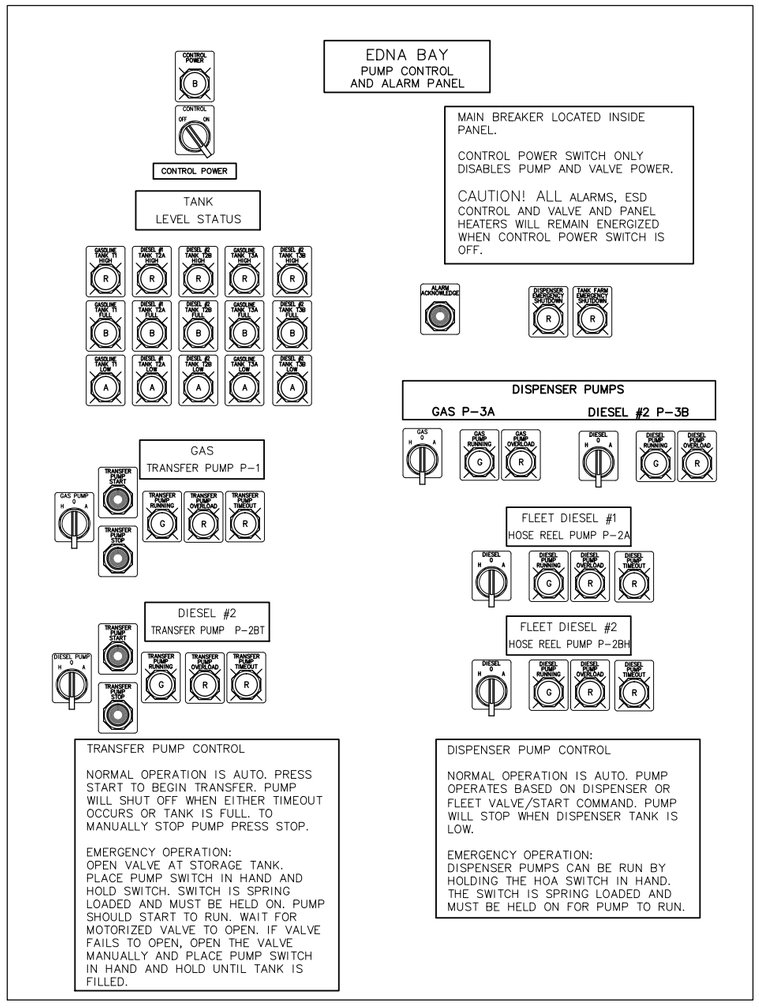

1 / E11 **TANK FARM PANEL CP-1 LAYOUT**
Scale: NTS

2 / E11 **FLEET DISPENSING CONTROL LAYOUT TYP. 2**
Scale: NTS

ALARM AND PUMP CONTROL NARRATIVE

The control panel provides critical high alarms for 5 bulk fuel tanks, the two product dispensing tank, controls the transfer of fuel from the bulk tanks to the gasoline and diesel dispensing tanks, operates the gasoline and diesel retail dispensing pumps, the Fleet hose reel pump and provides emergency shutdown for the entire fuel system.

ALARMS

Each storage tank is equipped with a CRITICAL HIGH (LSHA – XX, XX = Tank ID) Level Float switch that, when fuel reaches its level, opens a circuit (fails safe) and causes an alarm horn/strobe to signal a CRITICAL HIGH Level has been reached. The CRITICAL HIGH Level condition is indicated on the front of the panel as well, identifying the tank(s) with high level(s).

The operator can acknowledge the alarm by pressing the ALARM ACKNOWLEDGE button on the control panel. This extinguishes the strobe and silences the horn, but the front panel light will remain illuminated until sufficient fuel is drained from the tank to drop its fuel level below the CRITICAL HIGH float's sensing point. At that time the front panel light will extinguish.'

The control logic for alarms is set up so that each new alarm condition will cause the audible and visual alarms to annunciate, regardless of any existing (acknowledged) alarm conditions.

In addition to the storage tank alarms, the dispensing tanks are equipped with CRITICAL HIGH level float switches and alarms as well. These alarms function the same as the bulk fuel alarms.

The Emergency shutdown system, when engaged, will cause the alarm horn/strobe to be energized. There are three emergency shutdown stations; one by the dispensers, one by the spill control equipment building and one at the fuel tank farm. The alarm is enabled by pushing the ESD button and is extinguished by pulling the Emergency push button "out", clearing the signal. When an ESD button is pushed, all powered conductors to the dispensers are disconnected and all pumps are shut down. The motorized valves are all sent a CLOSE signal and after a brief time delay to allow them to close they too will be disconnected from all current carrying conductors. Lighting and alarms are NOT de–energized and will remain active.

FUEL TRANSFER

The fuel transfer between the bulk and dispensing tanks can be either manual or semi–automatic. The following applies to both the Gasoline and Diesel systems.

Manual operation

By placing (and holding) the HOA switch in the HAND position, the transfer pump will start and run. Its RUN light will be illuminated confirming the pump is powered. The pump will continue running until either it experiences an overload condition where the motor starter control is opened internally, the CRITICAL HIGH level float is reached or the operator releases the HOA switch. If an overload causes the shutdown, a pilot light on the panel front will be energized (no other indication will be given, other than the pump stopping) The HOA switch is spring loaded so that upon release it will return to OFF from the HAND position. The HAND or manual mode is provided for maintenance and testing however it could be used to fill the dispensing tank should automatic controls fail. The manual fill operation would require two people to perform safely.

When ever a transfer pump is started, an "Open" signal is also sent to its associated motorized valve which opens. When the pump is shut down, the motorized valve receives a "Close" signal and it closes. OPEN and CLOSED status is displayed on the panel.

NOTE: See ALARMS section above for Emergency Shutdown

SEMI–Automatic operation

AUTO mode is the intended continuous mode for these controls. In AUTO, the operation of the transfer pump is controlled by a pushbutton on the control panel and the LSH and LSHA floats in the dispensing tank. When fuel level drops to below the LSL float's level a panel mounted pilot light, GAS/DIESEL DISPENSING TANK LOW is energized. The operator must press the PUMP START pushbutton to begin transfer. If pumping is successful, the low level light will extinguish after a few minutes. Internal controls linked to the LSH float keep the pump running until the LSH float level is attained or pumping lasts for more than 15 minutes. (NOTE: There is a timer that starts when the pump starts and is set for 15 minute timeout. A pilot light on the front panel will be energized, indicating PUMP TIMEOUT has occurred. If timeout is the cause of shutdown, the HOA switch must be turned OFF then back to AUTO for the transfer operation to resume.)

Should pumping be completed before timeout, a pilot light on the front panel will be energized once the LSH float level is reached (GAS/DIESEL DISPENSING TANK FULL). When no tank level pilot lights are on, the tank level lies somewhere between low level and full. Should the pump continue to run after the HIGH float was reached, and fuel levels increase the LSHA float will also attempt to shut the pump down as well as sounding the alarm and enabling its pilot light on the front panel (GAS/DIESEL DISPENSING TANK HIGH).

DISPENSING PUMPS

The dispenser pumps can be either manual or automatic. The following applies to both the Gas and Diesel systems.

Normal operation is for the pumps to operate in AUTO mode. The dispensing tanks are equipped with Low Level Floats (LSL). If tank fuel level drops below the float, the associated pump will stop until transfer is completed.

Manual operation

By placing (and holding) the HOA switch in the HAND position, the dispenser pump will start and run. Its RUN light will turn on and the pump will continue running until either it experiences an overload condition where either the panel mounted motor starter control is opened internally, or an internal temperature sensor in the motor detects an overheat condition or the operator releases the HOA switch. If a panel–based overload causes the shutdown, a pilot light on the panel front will be energized (no other indication will be given, other than the pump stopping). A RESET pushbutton on the pump motor starter located inside the panel must be pressed to clear the overload relay in order to allow the pump to restart. The HOA switch is spring loaded so that upon release it will return to OFF from the HAND position. The HAND or manual mode is provided for maintenance and testing however it could be used to operate the Fleet Dispensing system in the event of control failure.

Automatic operation

AUTO mode is the intended continuous mode for these controls. In AUTO, the operation of the gas and diesel dispenser pumps is controlled by the dispenser. Other operating parameters are identical to the manual mode.

The Fleet dispensing STOP START remote operates the pump associated with the Fleet dispensing pump.

When the Fleet dispenser pump is running a timer is activated and when the preset time has elapsed the pump is shut down. The timer resets the pump controls only – it does not affect the operation of the integral fuel meter valve that allows a preset amount of fuel to flow before closing. Should the timer shut the pump down before the required amount of fuel is provided, pushing the START button would cause the timing to reset allowing the pump to resume operation.

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EDNA BAY, ALASKA
BULK FUEL UPGRADES
CONTROL PANEL

NO.	REVISION	BY	DATE
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Plot Date 4/9/15
Designed WMM
Drawn JSJ
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Sheet No. IC1
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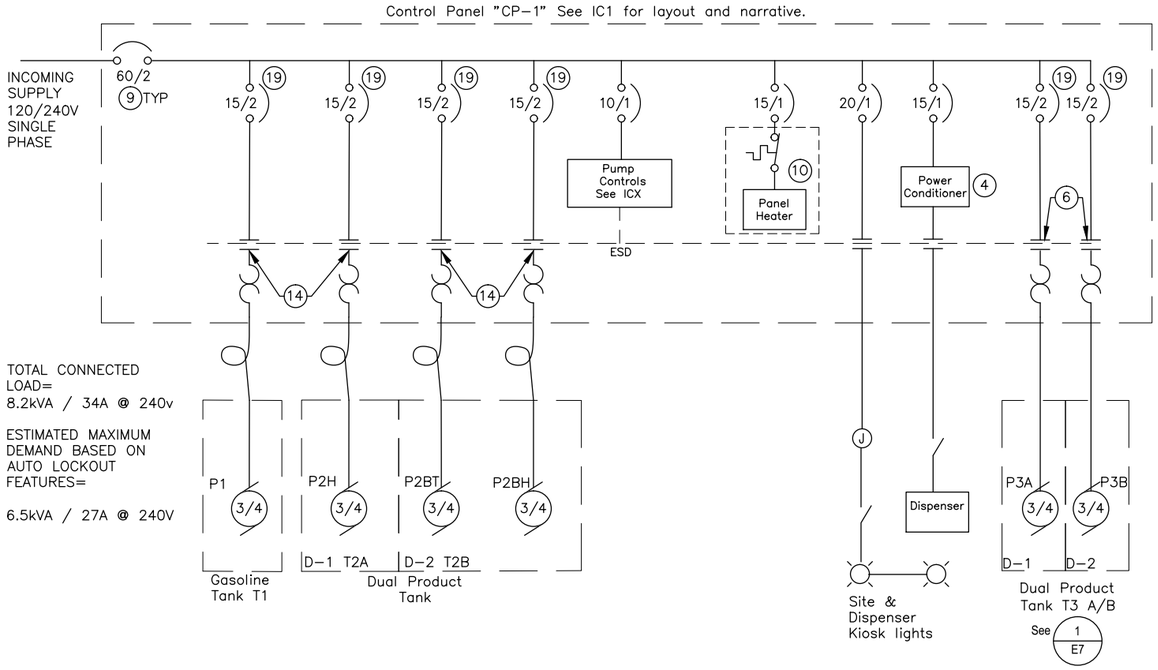
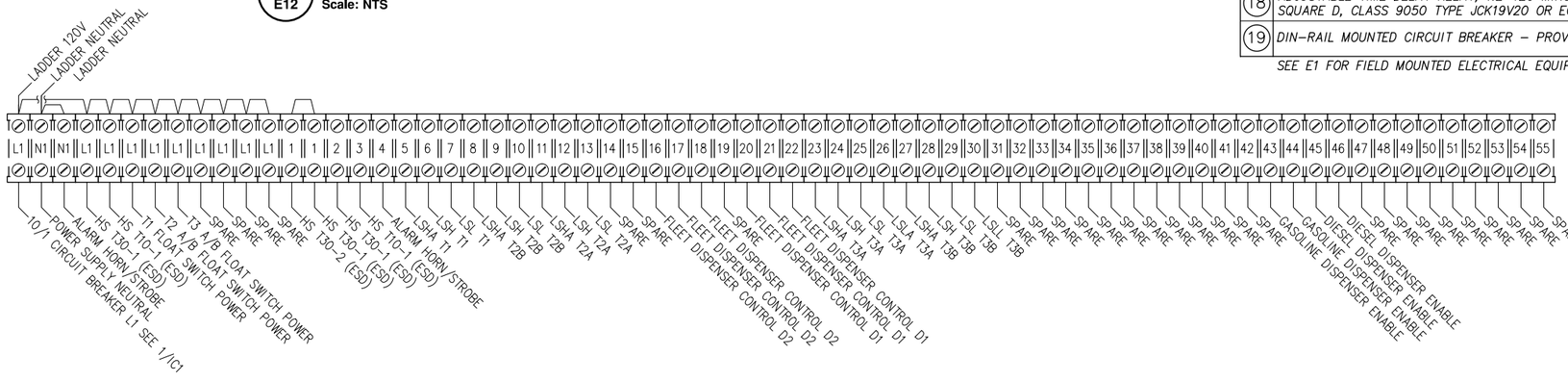


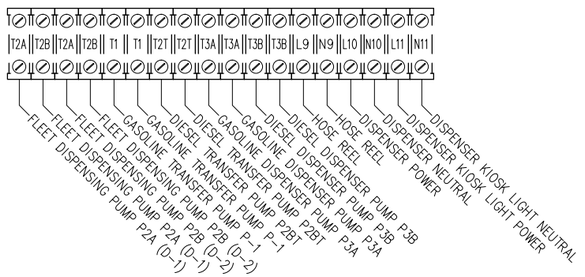
1 E12 **CP-1 AND FIELD EQUIPMENT POWER ONE-LINE**

Scale: NTS

COMPONENT SCHEDULE	
#	ITEM
1	PILOT LIGHT, 120V, LED, NEMA 4X, LENS TINT AS SHOWN, SQUARE D, CLASS 9001 TYPE SKP
2	120V RELAY, 3PDT, 11-PIN OCTAL SOCKET MOUNT WITH PILOT LIGHT SQUARE D TYPE KP13P14V20.
3	PILOT LIGHT, PUSH TO TEST, 120V, LED, NEMA 4X, LENS TINT AS SHOWN SQUARE D CLASS 9001, TYPE SKT
4	DIN RAIL MOUNTED POWER CONDITIONER. HARDWIRED SOLA CVW SERIES, 1kVA, 120V, ±1% REGULATION. P/N 22-23-210-8.
5	3-POSITION SELECTOR SWITCH, 120V, NEMA 4X, HAND-OFF-AUTO, WITH SPRING RETURN FROM HAND TO OFF POSITION, SQUARE D, CLASS 9001 TYPE SKS63B .
6	2-POLE, SINGLE PHASE, 600V, COMBINATION MOTOR CONTROLLER WITH NEMA SIZE 00 FVNR CONTACTOR SUITABLE FOR GROUP MOTOR PROTECTION. PROVIDE WITH O/L AND AUX CONTACT SETS AS REQUIRED. CUTLER-HAMMER N307UNSAX3N OR EQUAL W C320TR11 TRIP AND C3320SA20 AUX
7	MULTI-POLE CONTACTOR, 120V COIL, 20A RATED CONTACTS. # OF CONTACTS AS REQUIRED.
8	ALARM STROBE, 120V, FEDERAL ELECTRA FLASH #141 W/ RED LEXAN DOME.
9	INTEGRAL POWER DISTRIBUTION.
10	120V, PANEL HEATER W/ INTEGRAL THERMOSTAT WATTAGE AS REQUIRED, HOFFMAN SERIES #D-AH.
11	NORMALLY OPEN PUSHBUTTON, 120V, 10A, NEMA 4X, SQUARE D CLASS 9001, TYPE SKR1 - CONTACT BLOCKS AS REQUIRED.
12	NORMALLY CLOSED PUSHBUTTON, 120V, 10A, NEMA 4X, SQUARE D CLASS 9001, TYPE SKR1 - CONTACT BLOCKS AS REQUIRED.
13	2-POSITION SELECTOR SWITCH, 120V, NEMA 4X, ON-OFF, 10A RATED CONTACTS, SQUARE D, CLASS 9001.
14	2-POLE, SINGLE PHASE, 600V, COMBINATION MOTOR CONTROLLER WITH NEMA SIZE 0 FVNR CONTACTOR SUITABLE FOR GROUP MOTOR PROTECTION. PROVIDE WITH AUX CONTACT SETS AS REQUIRED. CUTLER-HAMMER N307XNS0X3N OR EQUAL W C320TR11 TRIP AND C3320SA20 AUX
15	MULTI-POLE CONTACTOR, 120V COIL, 10A RATED CONTACTS. # OF CONTACTS AS REQUIRED.
16	NEMA 12 RATED ENCLOSURE WITH LOCKABLE FRONT DOOR. HOFFMAN OR EQUAL. SIZE AS REQUIRED.
17	ADJUSTABLE TIME DELAY RELAY, 1.8-180 SECOND ON DELAY, 120V, DPDT, SQUARE D, CLASS 9050 TYPE JCK15V20 OR EQUAL.
18	ADJUSTABLE TIME DELAY RELAY, 1.2-120 MINUTE ON DELAY, 120V, DPDT, SQUARE D, CLASS 9050 TYPE JCK19V20 OR EQUAL.
19	DIN-RAIL MOUNTED CIRCUIT BREAKER - PROVIDE LOCKING ATTACHMENT

SEE E1 FOR FIELD MOUNTED ELECTRICAL EQUIPMENT SCHEDULE.





2 E12 **CP-1 WIRE LIST**

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EDNA BAY, ALASKA

BULK FUEL UPGRADE

CONTROL PANEL ONE-LINE & WIRE LIST

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Sheet No. IC2
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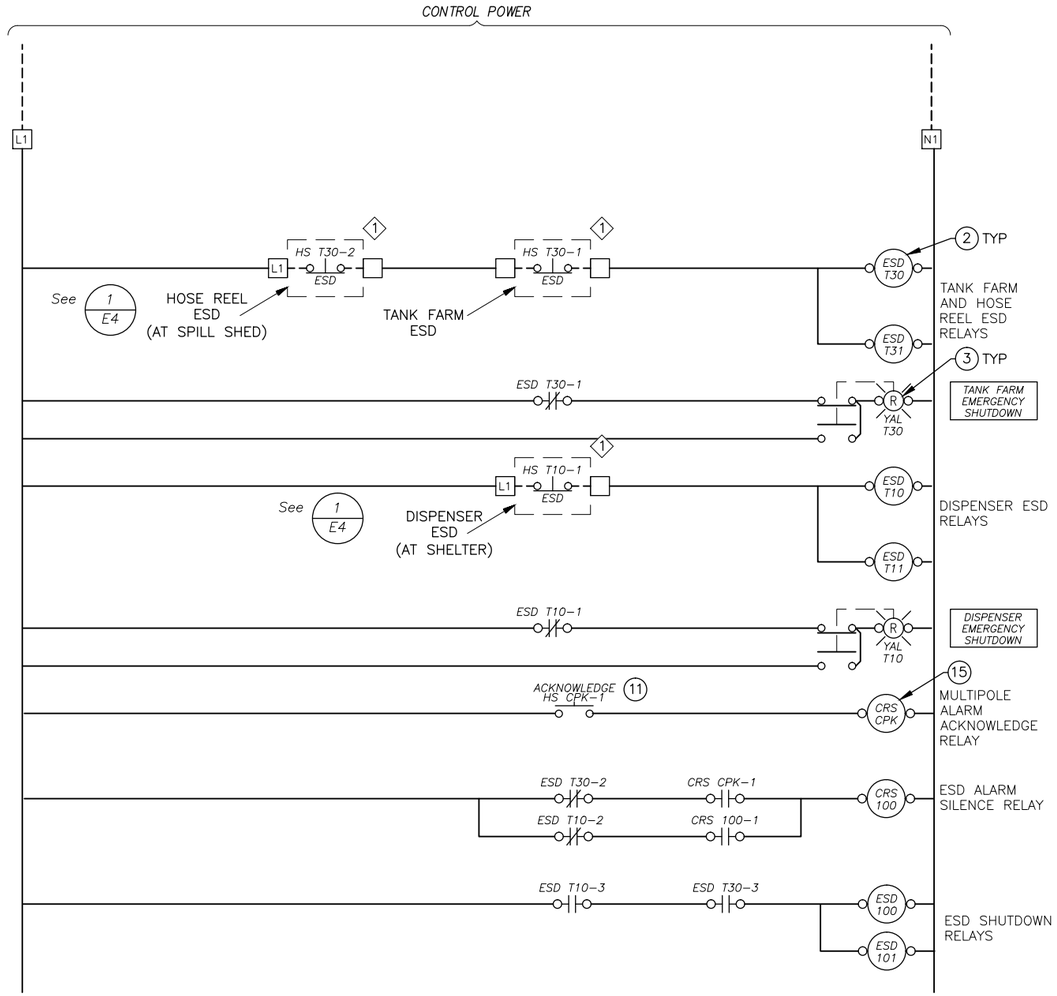

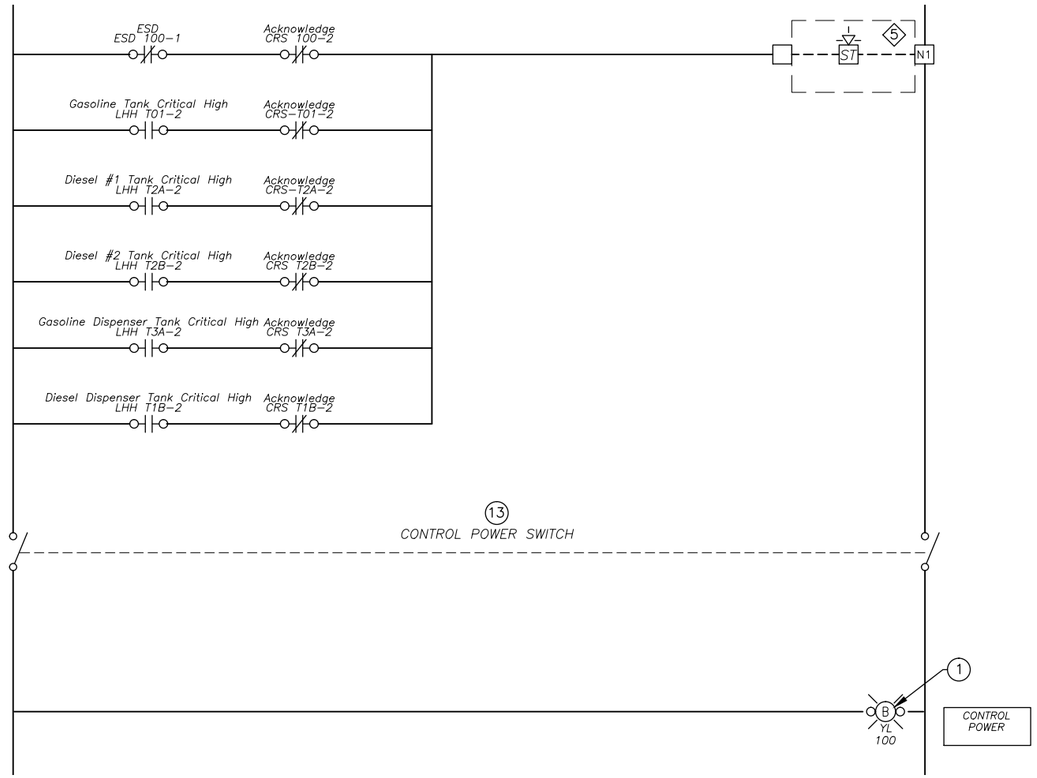

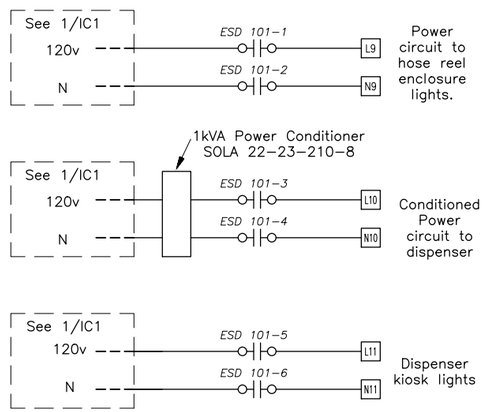

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BULK FUEL UPGRADE

CONTROL PANEL CONTROLS

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Sheet No. IC3
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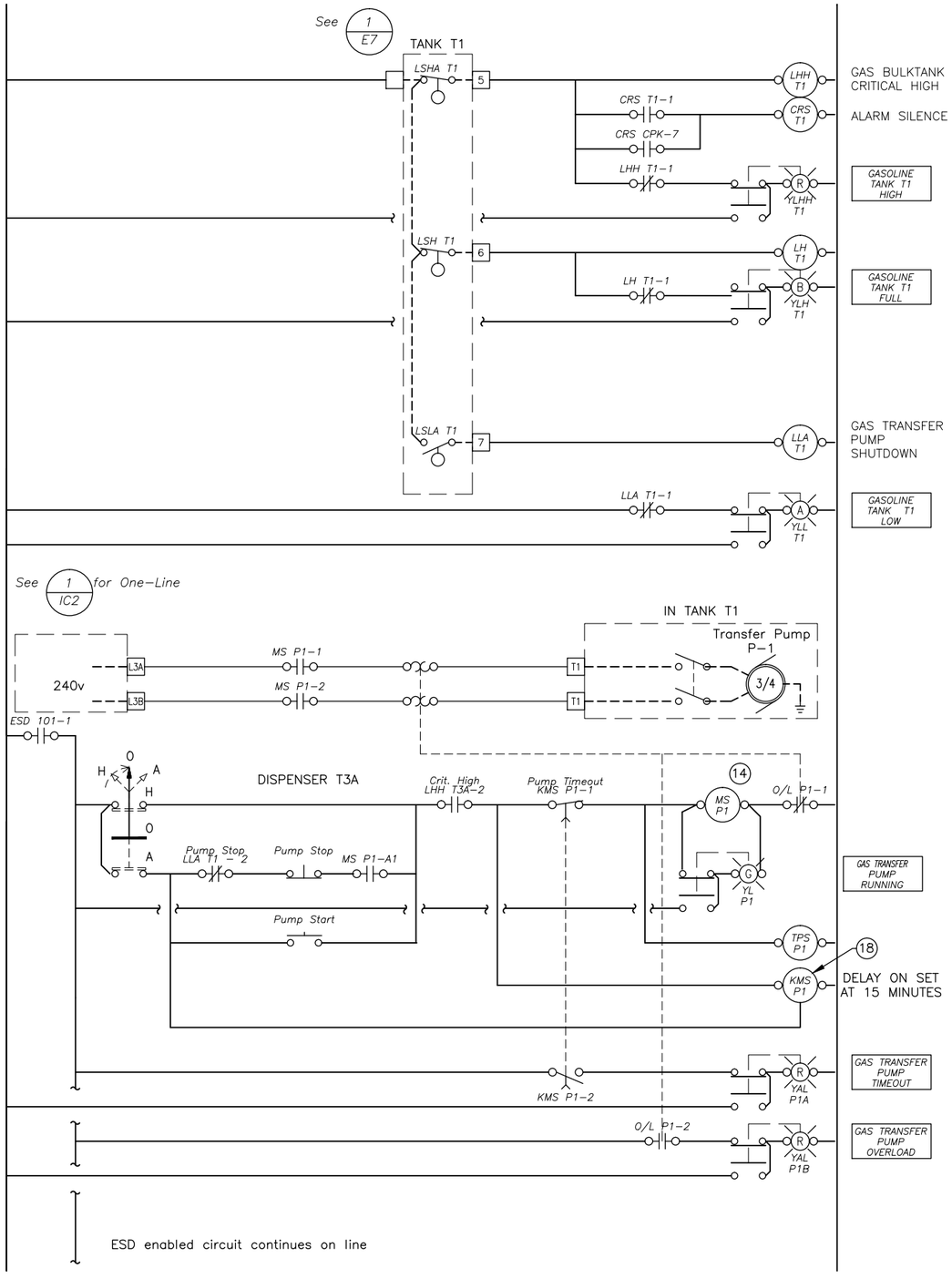

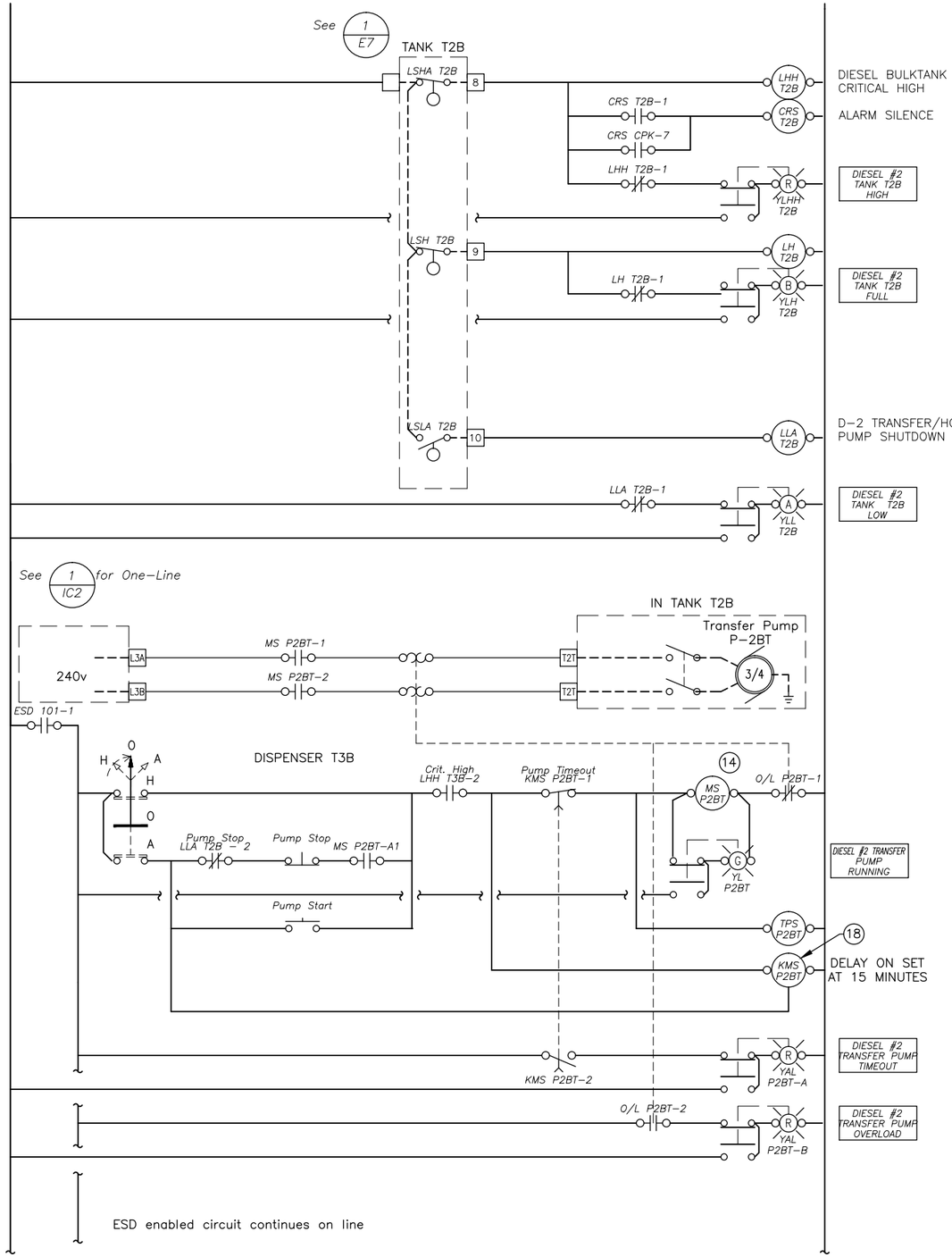

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BULK FUEL UPGRADE

TRANSFER PUMP CONTROLS

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Sheet No. IC4
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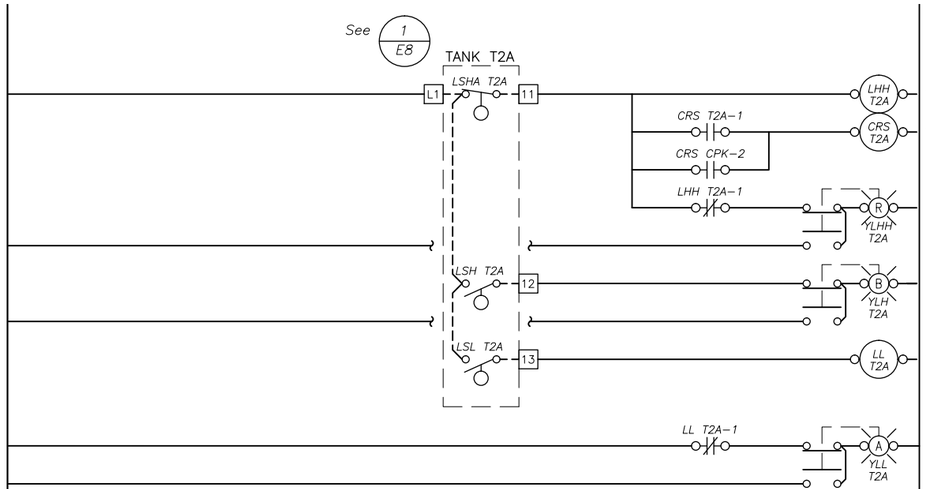

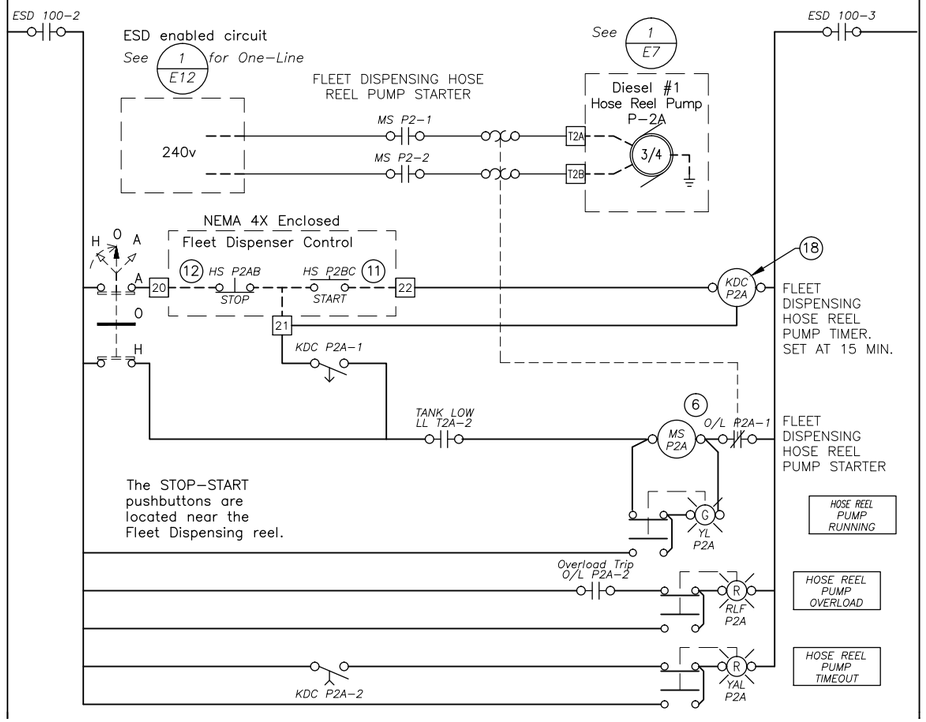

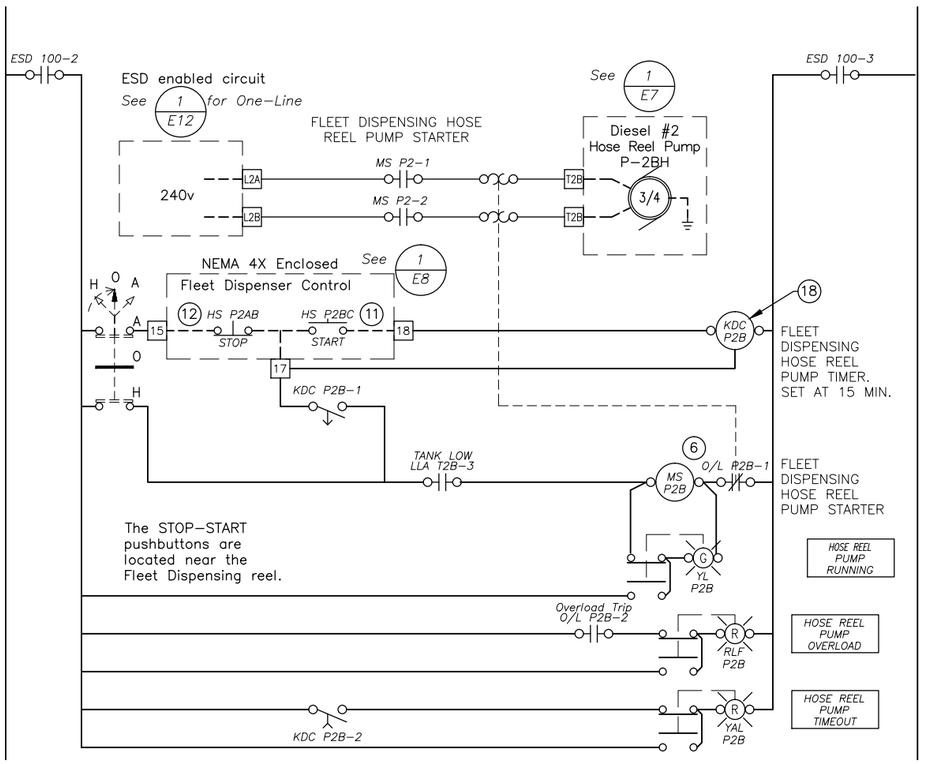

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BULK FUEL UPGRADES

HOSE REEL CONTROLS

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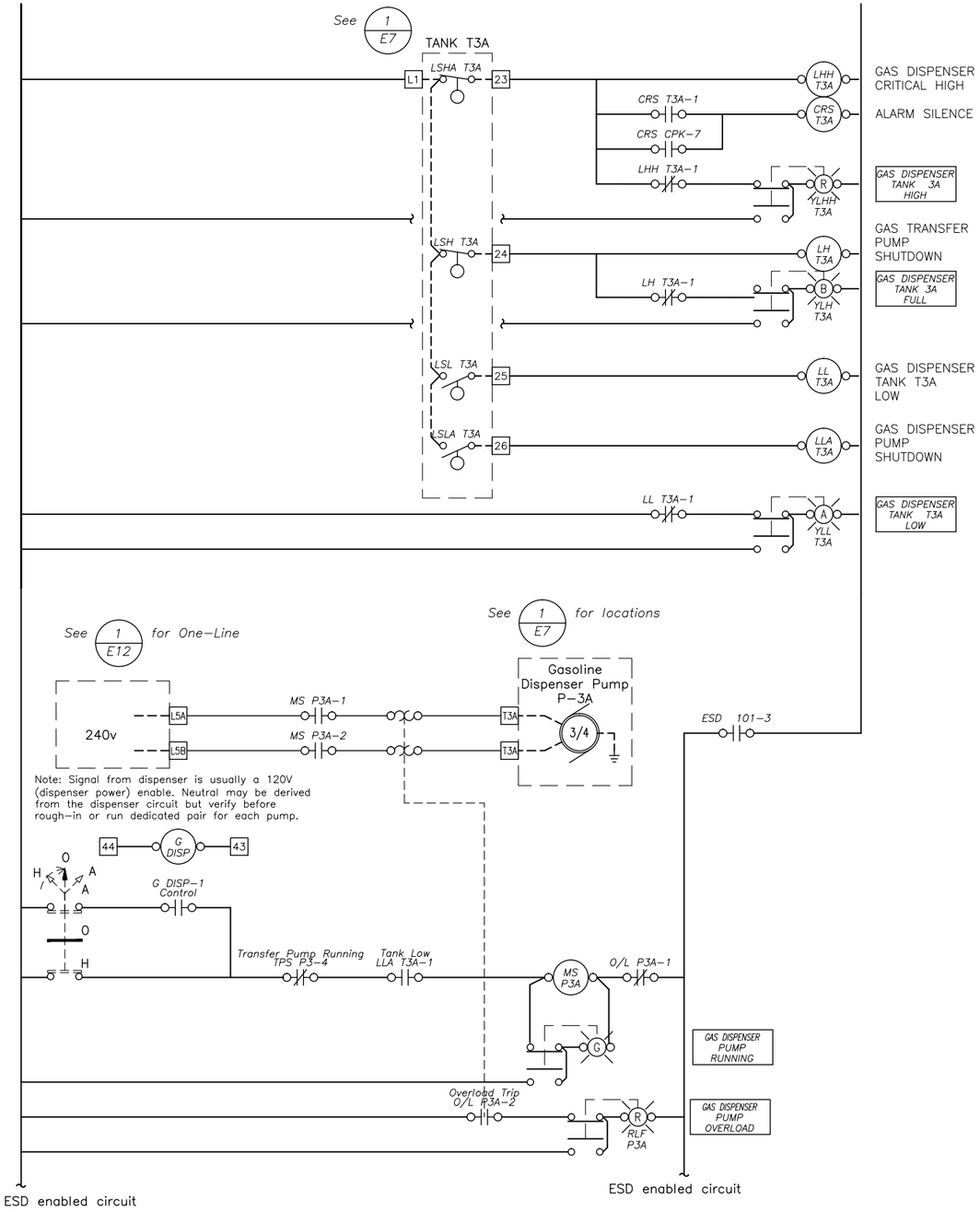

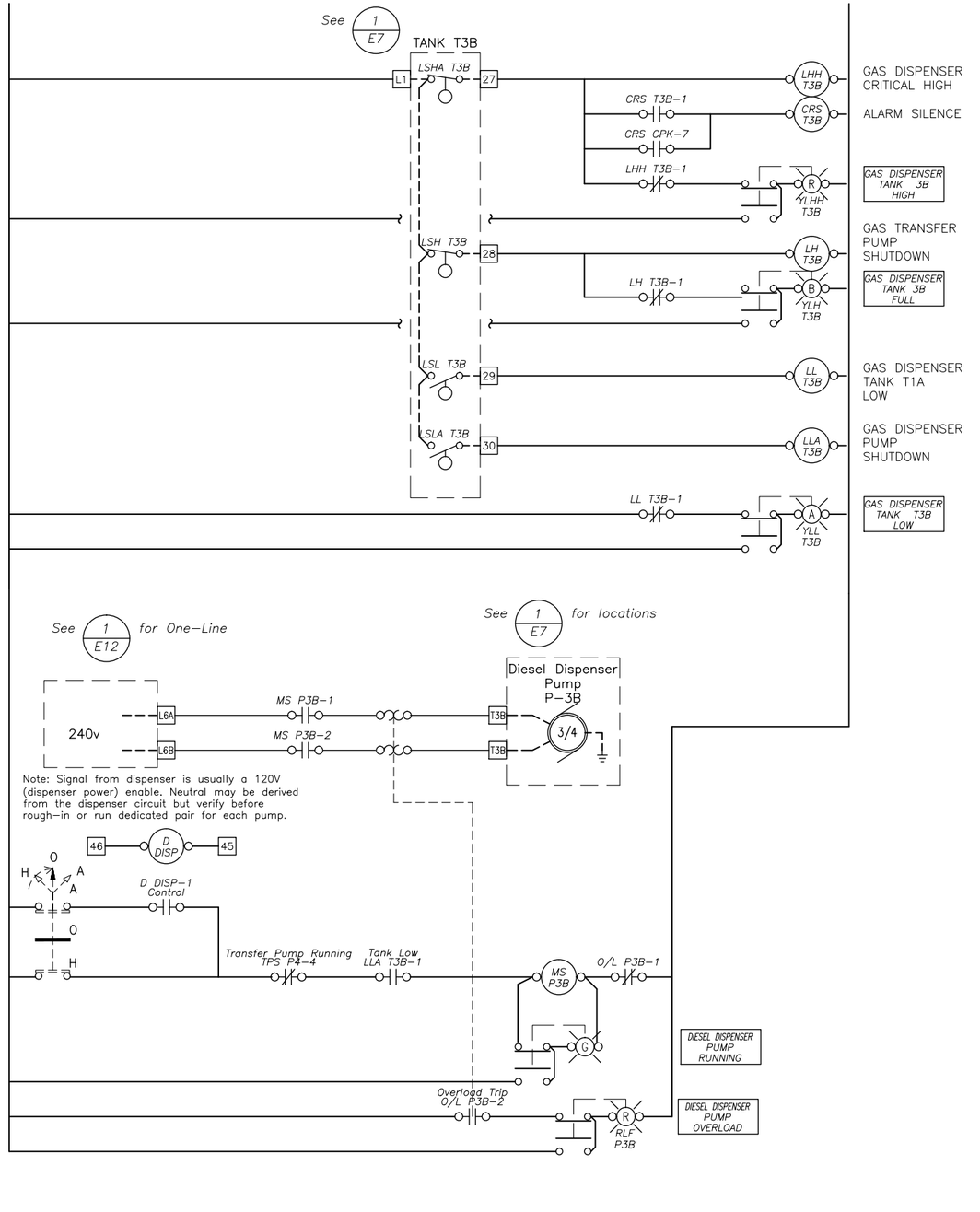

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BULK FUEL UPGRADE

DISPENSER K10SK CONTROLS

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