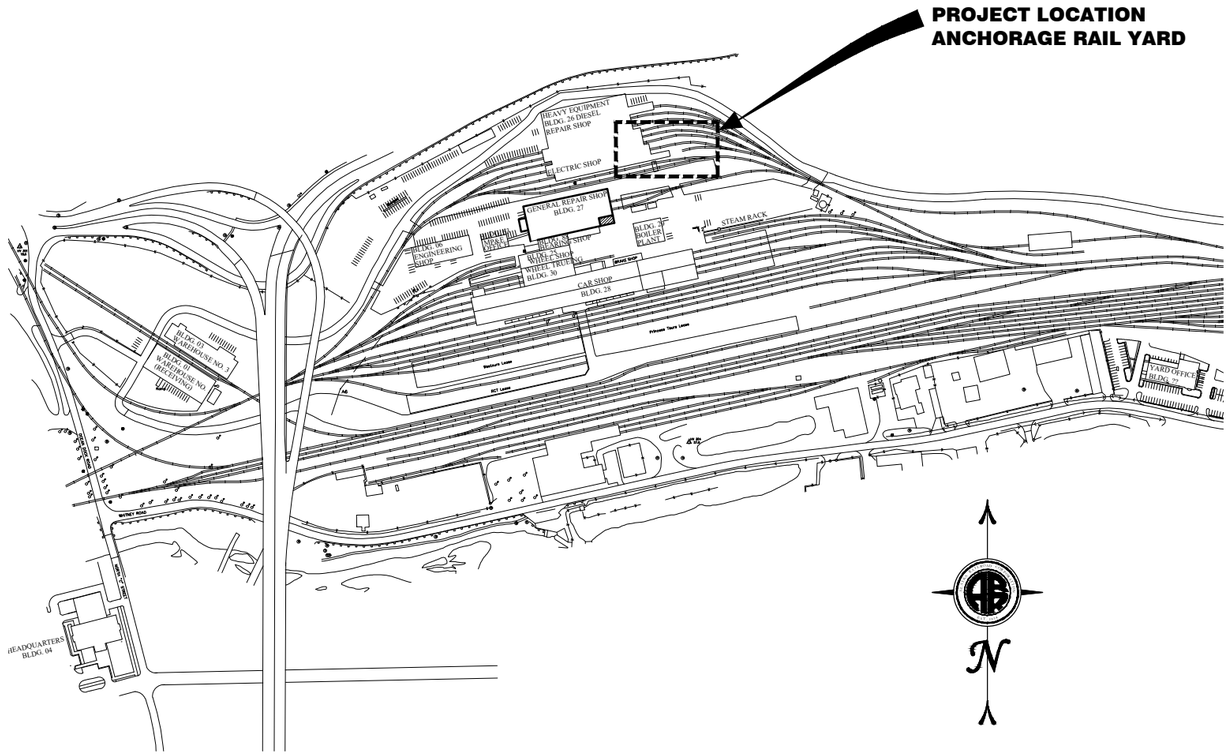
ALASKA RAILROAD CORPORATION

ENGINEERING SERVICES

P.O. BOX 107500, ANCHORAGE, ALASKA 99510-7500

LOCOMOTIVE REFUELING FACILITY ANCHORAGE ALASKA

JANUARY 2019



DRAWING INDEX

LOCATE CALL CENTER OF ALASKA, INC.
ANCHORAGE AREA PHONE NO. 278-3121
STATEWIDE TOLL FREE PHONE NO. 1-800-478-3121
CALL BEFORE YOU DIG

CALL BEFORE YOU DIG!

LOCATE CALL CENTER
ANCHORAGE AREA. 278-3121
STATEWIDE 800-478-3121

WHO WILL NOTIFY THE FOLLOWING:
ALASKA COMMUNICATIONS SYSTEMS – ALASKA DOT/ANCHORAGE STREET LIGHTS
ANCHORAGE DEPARTMENT OF PUBLIC WORKS – ANCHORAGE SCHOOL DISTRICT
ANCHORAGE WATER AND WASTEWATER UTILITY – AT&T ALASCOM
CHUGACH ELECTRIC ASSOCIATION – ENSTAR NATURAL GAS COMPANY
MUNICIPAL LIGHT & POWER DEPARTMENT – GCI

ENTERPRISE ENGINEERING, INC.

400 US ROUTE 1
NORTH SUITE B
FALMOUTH, ME 04105
TEL. (207) 869-8006
FAX (207) 869-8015

2525 GAMBELL STREET
SUITE 200
ANCHORAGE, AK 99503
TEL. (907) 563-3835
FAX (907) 563-3817

MBA Consulting Engineers, Inc.
3812 Spenard Road, Suite 200 • Anchorage, AK 99517
(907) 274-2622 • FAX (907) 274-0914

SURVEY CONTROL

1. TOPOGRAPHIC SURVEY PERFORMED BY ARRC IN APRIL 2011.
2. EASEMENT INFORMATION IS OF RECORD PLAT 96-151, ROTATING BASIS OF BEARING FROM S89°40'17" TO S89°50'08"E TO MATCH "SURVEY OF REPORT FOR ANCHORAGE TERMINAL RESERVE" DONE BY LOUNSBURY & ASSOCIATES, INC. (NOV. 2004). HOLDING MONUMENT M15.
3. BASIS OF COORDINATES IS NAD83, ALASKA STATE PLANE ZONE
4. VERTICAL DATUM IS M.O.A 1972 NGS ADJUSTMENT, BASED ON THIRD ORDER DIFFERENTIAL LEVELING HOLDING PUBLISHED ELEVATIONS FOR BENCH MARK TIDAL 12.
5. TEMPORARY BENCHMARKS:
   PNT 406 = 35.85' (MAG NAIL) N 2640487.3940, E 1661877.2560
   PNT 404 = 31.48' (MAG NAIL) N 2640376.6732, E 1661280.9938

FUEL LINE DEMOLITION NOTES

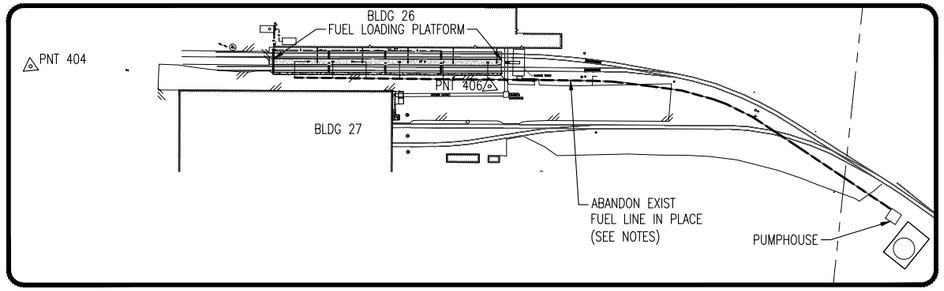
1. WHERE EXISTING FUEL LINE IS TO BE ABANDONED IN PLACE, THE CONTRACTOR SHALL FILL THE FUEL LINE FROM THE LOADING ARMS TO THE PUMPHOUSE WITH CONCRETE SLURRY AND CAP THE ENDS.
2. CONCRETE SLURRY SHALL CONSIST OF A LOW STRENGTH, FLOWABLE CEMENTITIOUS MATERIAL COMPOSED OF PORTLAND CEMENT CONFORMING TO ASTM C 150, TYPE I. CONCRETE SLURRY SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 300 PSI.

DEMOLITION NOTES

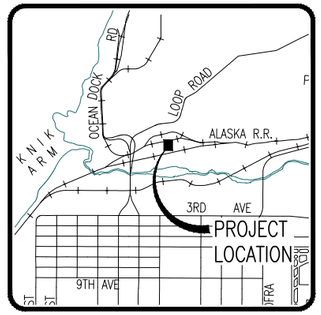
1. CONCRETE AREA (3 FT SQ.) AROUND OIL/LUBE CRANE TO REMAIN.
2. REMOVE AND DISPOSE OF GRATED TRENCHES IN SOUTH STEEL CONTAINMENT AREA. (TYP 3 LOCATIONS).
3. REMOVE AND DISPOSE OF 4" DIA CS DRAIN LINE (8'± LONG) BETWEEN NORTH AND SOUTH STEEL CONTAINMENT AREAS (TYP OF 3).

LEGEND

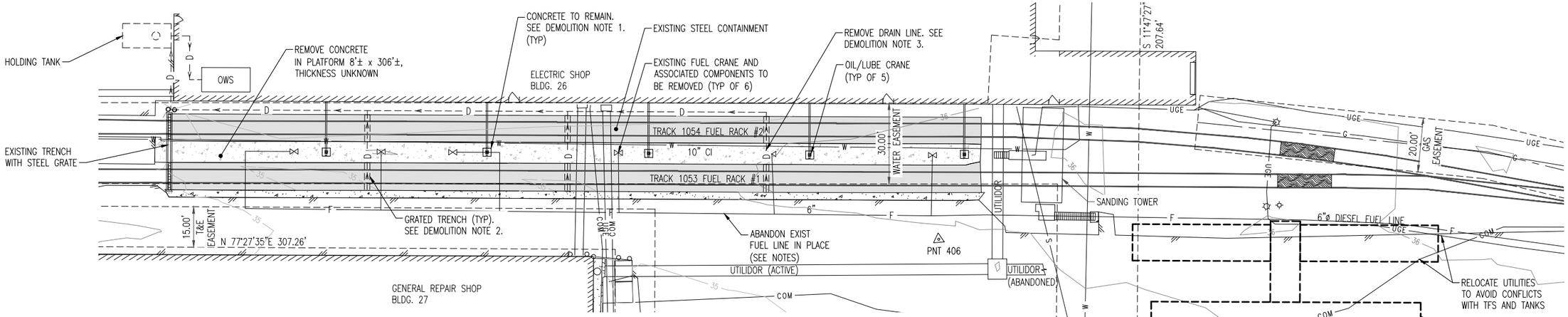
EXISTING	NEW	
		PROPERTY LINE
		EASEMENT
	GB	GRADE BREAK
		DRAINAGE SWALE
G		GASLINE
OHE		OVERHEAD ELECTRIC W/ POLE
UGE		UNDERGROUND ELECTRIC
S		SEWERLINE W/ MANHOLE
SD		STORM DRAIN
		CATCH BASIN
W		WATERLINE W/ VALVE
204		ELEVATION CONTOUR
		EDGE OF ASPHALT
		STRUCTURE
X		FENCE
+ 107.5	124.77	SPOT ELEVATION
		FIRE HYDRANT
OEM		ELECTRIC METER
		LIGHT POLE
		LOT CORNER FOUND
TB		TEST BORING
		PUMP
		LOCOMOTIVE FUEL CRANE



N FACILITY MAP
SCALE: NTS



N VICINITY MAP
SCALE: NTS



N EXISTING CONDITIONS AND DEMOLITION PLAN
SCALE: 1" = 20'

ABBREVIATIONS

ARRC	ALASKA RAILROAD CORPORATION
BLDG	BUILDING
BOP	BOTTOM OF PIPE
℄	CENTER LINE
CONT	CONTINUOUS
CLR	CLEAR
CS	CARBON STEEL
DIP	DUCTILE IRON PIPE
E	EAST
EXIST	EXISTING
EW	EACH WAY
FF	FINISH FLOOR
FG	FINISH GRADE
FV	FILTER VESSEL
GB	GRADE BREAK
INV	INVERT
MAX	MAXIMUM
ME	MATCH EXISTING
MH	MANHOLE
MIN	MINIMUM
MOA	MUNICIPALITY OF ANCHORAGE
N	NORTH
NTS	NOT TO SCALE
OC	ON CENTER
OS&Y	OUTSIDE SCREW AND YOKE
OWS	OIL/WATER SEPARATOR
PI	POINT OF INTERSECTION
PNT	POINT
PSI	POUNDS PER SQUARE INCH
PS	PIPE SUPPORT
STA	STATION
S	SOUTH
SS	STAINLESS STEEL
TFS	TRUCK FILL STAND
T&E	TELEPHONE AND ELECTRIC
T&B	TOP AND BOTTOM
TOC	TOP OF CURB
TYP	TYPICAL
UHMWPE	ULTRA-HIGH MOLECULAR WEIGHT POLYETHYLENE
W/	WITH
W	WEST

GRAPHIC SCALE
20 0 20 40 FT
SCALE: 1" = 20'

IF SHEET IS LESS THAN 22" X 34" IT IS A REDUCED PRINT – SCALE REDUCED ACCORDINGLY

REV.	DATE	BY	REVISION

STATE OF ALASKA 49TH
AARON WALKER LEWIS
CE 14663
1/11/19
REGISTERED PROFESSIONAL ENGINEER

ENTERPRISE ENGINEERING, INC.
400 US ROUTE 1 NORTH SUITE B FALMOUTH, ME 04105 TEL. (207) 869-8006 FAX (207) 869-8015
2525 GAMBELL STREET SUITE 200 ANCHORAGE, AK 99503 TEL. (907) 563-3835 FAX (907) 563-3817

ALASKA RAILROAD CORPORATION
ENGINEERING SERVICES
P.O. BOX 107500, ANCHORAGE, ALASKA 99510-7500

PROJECT: **LOCOMOTIVE REFUELING FACILITY ALASKA RAILROAD CORPORATION**

TITLE: **EXISTING CONDITIONS AND DEMOLITION PLAN**

DESIGNED BY:	AWL	SCALE: AS NOTED	C1.0
DRAWN BY:	JAR	DATE: 1-11-19	
CHECKED BY:	CAB		
APPROVED BY:			

AFE NO.:
ACAD FILE: X
DWG NO. 2 OF 31

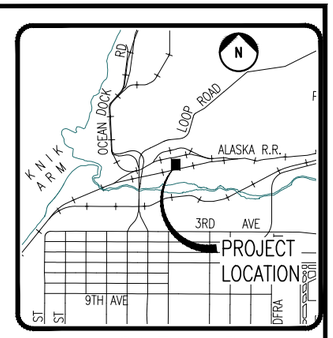
P:\projects\8669\Cad\Current Dwg %\Civil\C10_EEI.dwg

GENERAL NOTES

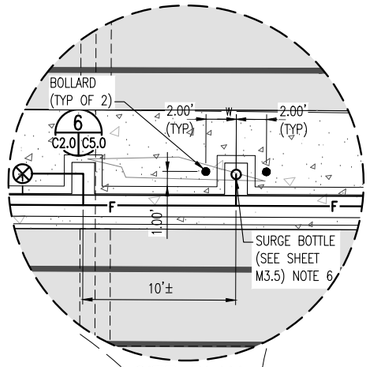
1. ALL SITEWORK CONSTRUCTION SHALL BE IN CONFORMANCE WITH THE MUNICIPALITY OF ANCHORAGE STANDARD SPECIFICATIONS (MASS), 2010.
2. LOCATIONS OF EXISTING UTILITIES ARE APPROXIMATE ONLY. CONTRACTOR SHALL VERIFY LOCATIONS BY OBTAINING UTILITY LOCATES PRIOR TO BEGINNING CONSTRUCTION.
3. SOILS INFORMATION WAS DETERMINED FROM SOILS INVESTIGATION PERFORMED BY TRYCK, NYMAN & HAYES IN MAY 1976.
4. DIMENSIONS AND RADII SHOWN ARE TO BACK OF CURB, FACE OF BUILDING, AND CENTERLINE OF FUEL CRANE UNLESS INDICATED OTHERWISE.
5. NEW ELEVATIONS ARE TO TOP OF CONCRETE, TOP OF CURB, OR EARTHWORK FINISH GRADE UNLESS INDICATED OTHERWISE.
6. ALL FILL MATERIAL SHALL BE PLACED IN LIFTS NO THICKER THAN 12 INCHES, AND COMPACTED TO MINIMUM DENSITIES AS INDICATED ON THE PLANS.
7. PROVIDE PASSING COMPACTION TESTS FOR ALL FILL AND BACKFILL PLACED AT A RATE OF ONE TEST PER 10,000 SQ. FT., PER LIFT.
8. THE SHORTEST HAUL ROUTE TO/FROM THE SITE IS SOUTH ON C ST., EAST ON 15TH AVE., SOUTH ON GAMBELL ST. WHICH TURNS INTO SEWARD HWY, EXIT WEST ON OMALLEY RD., SOUTH ON OLD SEWARD HWY., WEST ON KLATT RD., NORTH ON LANG ST. TO FINAL DESTINATION (AS&G).

PIPING INSTALLATION NOTES

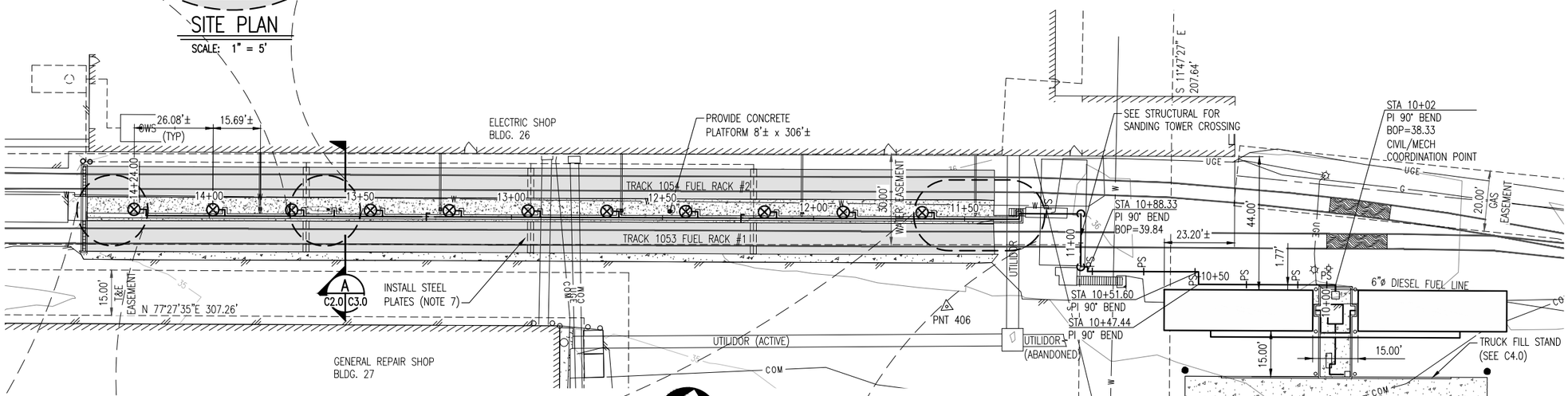
1. FUEL LINE SHALL BE CONSTRUCTED TO THE LINES AND GRADES INDICATED.
2. FUEL LINE ALIGNMENT STATIONING IS TO POINT OF INTERSECTION AT HORIZONTAL ALIGNMENT CHANGES.
3. STATIONING IS ALONG CENTERLINE OF FUEL LINE AT ALIGNMENT INDICATED. PIPE ELEVATIONS ARE BOTTOM OF PIPE UNLESS OTHERWISE NOTED.
4. PIPE SUPPORTS SHALL BE INSTALLED 17' O.C. MAX AT LOCATIONS INDICATED ON PLAN. BEGIN PIPE SUPPORTS AT STA 10+05.00. SEE 4 / C2.0 | S2.1
5. DEPTH OF UTILIDOR IS UNKNOWN. CONTRACTOR SHALL VERIFY DEPTH OF UTILIDOR AND CONTACT OWNER'S REPRESENTATIVE IMMEDIATELY IF PROPOSED PIPE TRENCH CONFLICTS WITH EXISTING UTILIDOR.
6. PROVIDE 9" DIA HOLE IN STEEL PLATE AROUND SURGE BOTTLE.
7. INSTALL 3/16" THICK x 10"± WIDE x 10'-6" LONG STEEL PLATES IN SOUTH STEEL CONTAINMENT AREA TO MATCH EXISTING (TYP 3 LOCATIONS). PLATES SHALL BE FLUSH WITH ADJACENT CONTAINMENT SURFACE.



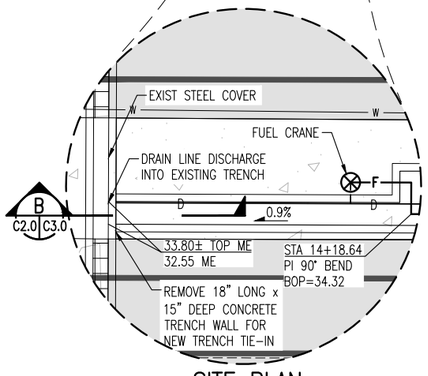
VICINITY MAP
SCALE: NTS



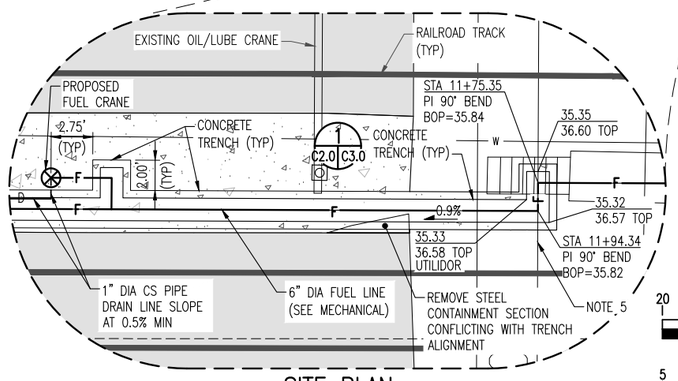
SITE PLAN
SCALE: 1" = 5'



SITE PLAN
SCALE: 1" = 20'



SITE PLAN
SCALE: 1" = 5'



SITE PLAN
SCALE: 1" = 5'

GRAPHIC SCALES

20 0 20 40 FT
SCALE: 1" = 20'

5 0 5 10 FT
SCALE: 1" = 5'

IF SHEET IS LESS THAN
22" X 34"
IT IS A REDUCED PRINT –
SCALE REDUCED ACCORDINGLY

STATE OF ALASKA
49 TH
AARON WALKER LEWIS
CE 14663
1/11/19
REGISTERED PROFESSIONAL ENGINEER

ENTERPRISE ENGINEERING, INC.
400 US ROUTE 1
NORTH SUITE B
FALMOUTH, ME 04105
TEL. (207) 869-8006
FAX (207) 869-8015
2525 GAMBELL STREET
SUITE 200
ANCHORAGE, AK 99503
TEL. (907) 563-3835
FAX (907) 563-3817

REV.	DATE	BY	REVISION

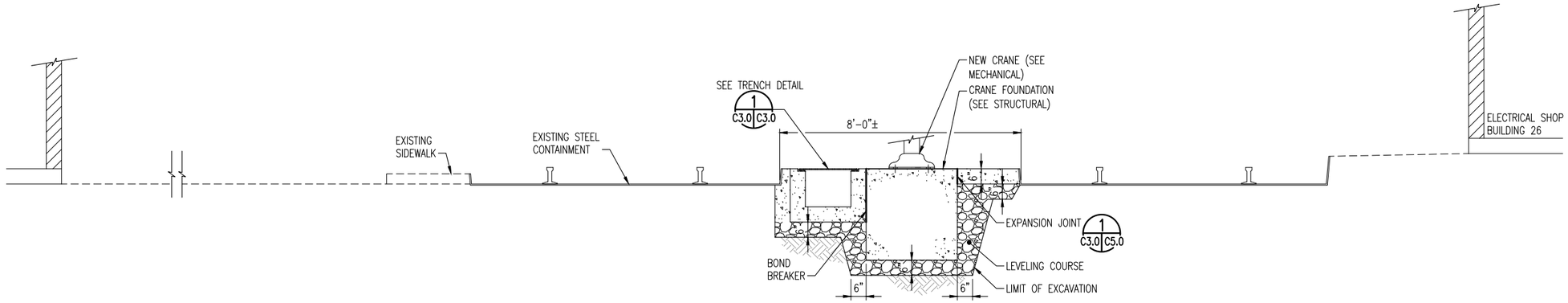
ALASKA RAILROAD CORPORATION
ENGINEERING SERVICES
P.O. BOX 107500, ANCHORAGE, ALASKA 99510-7500

PROJECT:
LOCOMOTIVE REFUELING FACILITY
ALASKA RAILROAD CORPORATION

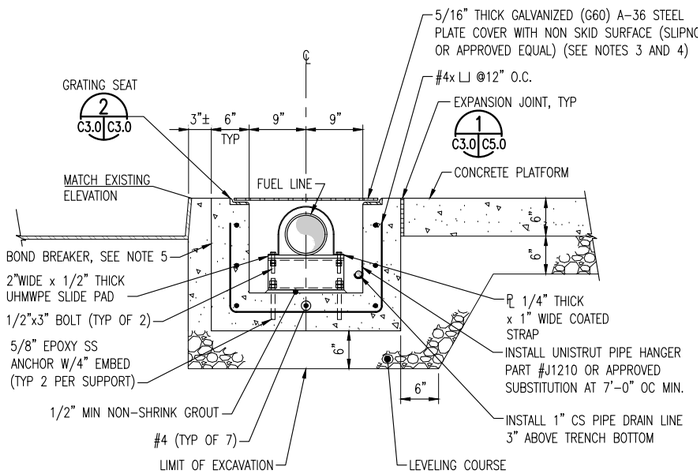
TITLE:
SITE PLAN

DESIGNED BY: AWL	SCALE: AS NOTED	C2.0	AFE NO.:
DRAWN BY: JAR			ACAD FILE:
CHECKED BY: CAB	DATE: 1-11-19		DWG NO. 3 OF 31
APPROVED BY:			

P:\projects\9669\Cad\Current Dwg %\Civil\C20_EEI.dwg

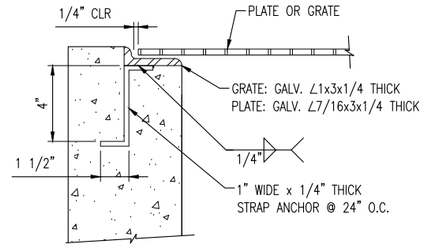


A C2.0 C3.0 **PLATFORM SECTION**
SCALE: 1/2" = 1'-0"



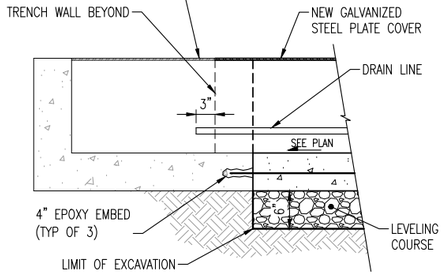
NOTES
1. SEE CONCRETE NOTES ON C4.0.
2. PIPE SUPPORT SHALL BE INSTALLED EVERY 17' O.C. (MIN).
3. STEEL COVER SHALL BE INSTALLED IN 6'-0" SECTIONS (MAX).
4. PROVIDE 2 FLUSH LIFTING HANDLES FOR EACH STEEL COVER SECTION. HANDLES SHALL BE LOCATED 4-0" APART.
5. AT THE CONTRACTOR'S OPTION THE SOUTH TRENCH WALL MAY BE SINGLE POURED WITH THE ADJACENT CONCRETE.

1 C3.0 C3.0 **TRENCH DETAIL**
SCALE: NTS



NOTES
1. STEEL COVER SHALL BE INSTALLED IN 6'-0" SECTIONS (MAX).
2. PROVIDE 2 FLUSH LIFTING HANDLES FOR EACH STEEL COVER SECTION. HANDLES SHALL BE LOCATED 4-0" APART.

2 C3.0 C3.0 **GRATING SEAT**
SCALE: NTS



NOTES
1. TIE NEW CONC. TRENCH WALLS TO EXISTING CONC. TRENCH WALLS WITH 4" EPOXY EMBED SIMILAR TO TRENCH BOTTOM. (TYP OF 2 EACH SIDE)

B C2.0 C3.0 **TRENCH CONNECTION SECTION**
SCALE: NTS

GRAPHIC SCALE
2 0 2 4 FT
SCALE: 1/2" = 1'-0"
IF SHEET IS LESS THAN 22" X 34" IT IS A REDUCED PRINT - SCALE REDUCED ACCORDINGLY

STATE OF ALASKA 49 TH
AARON WALKER LEWIS
CE 14663
9/11/19
REGISTERED PROFESSIONAL ENGINEER

ENTERPRISE ENGINEERING, INC.
400 US ROUTE 1, NORTH SUITE B, FALMOUTH, ME 04105, TEL. (207) 869-8006, FAX (207) 869-8015
2525 GAMBELL STREET, SUITE 200, ANCHORAGE, AK 99503, TEL. (907) 563-3835, FAX (907) 563-3817

REV.	DATE	BY	REVISION

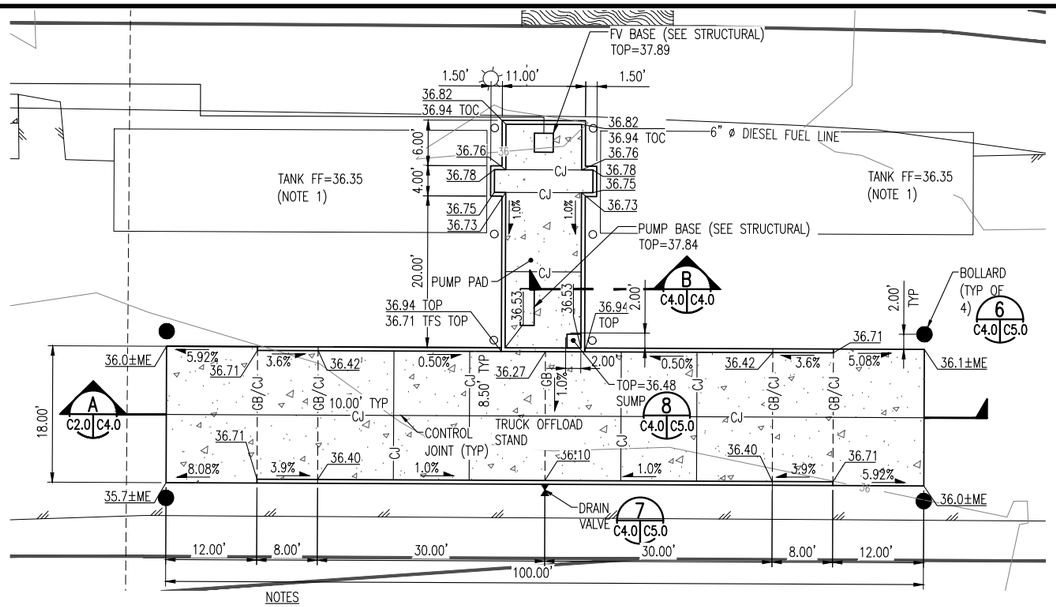
ALASKA RAILROAD CORPORATION
ENGINEERING SERVICES
P.O. BOX 107500, ANCHORAGE, ALASKA 99510-7500

PROJECT:
LOCOMOTIVE REFUELING FACILITY
ALASKA RAILROAD CORPORATION

TITLE:
SITE SECTIONS

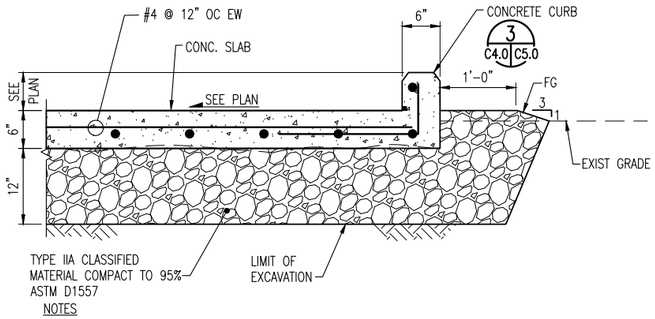
DESIGNED BY: AWL
DRAWN BY: JAR
CHECKED BY: CAB
APPROVED BY:
SCALE: AS NOTED
DATE: 1-9-19
C3.0
AFE NO.:
ACAD FILE: x
DWG NO. 4 OF 31

P:\projects\8669\Cad\Current Dwg %\Civil\C30_EEI.dwg



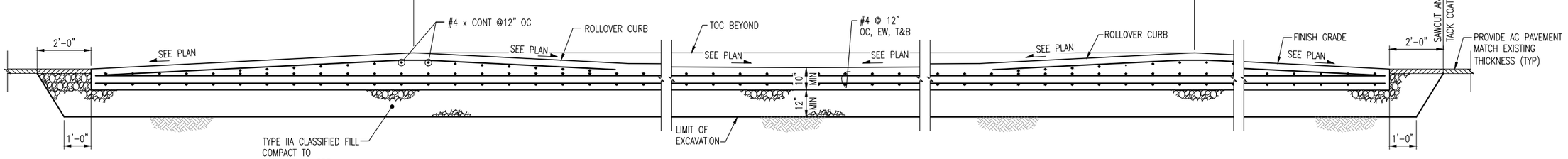
NOTES
1. PLACE 12" TYPE IIA CLASSIFIED MATERIAL BELOW TANK FOUNDATIONS TO MATCH TANK FF.
2. DOWEL PUMP PAD CURB/SLAB INTO TRUCK FILL STAND CURB/SLAB WITH 24" LONG #4 @ 12" O.C.

TRUCK OFFLOAD STAND GRADING PLAN
SCALE: 1" = 10'



NOTES
1. SEALANT AT SLAB TO CURB INTERFACES ARE NOT REQUIRED IF THE SLABS AND CURBS ARE POURED MONOLITHIC. SEE 4 C4.0 C5.0 FOR CURB JOINT DETAIL.
2. PROVIDE CURB CONTROL JOINT TO MATCH SLAB CONTROL JOINT SPACING, SEE 2 C4.0 C5.0
3. PROVIDE CONSTRUCTION JOINT AT CONTROL JOINTS WHERE REQUIRED FOR CONCRETE PLACEMENT.

B C4.0 C5.0 PUMP PAD SECTION
SCALE: 1" = 1'-0"



A C2.0 C4.0 TRUCK OFFLOAD STAND SECTION
SCALE: 1/2" = 1'-0"

CONCRETE

1. ALL MATERIALS AND WORKMANSHIP SHALL CONFORM WITH THE REQUIREMENTS OF THE INTERNATIONAL BUILDING CODE (IBC) 2012 EDITION AND ASCE 7-10 REQUIREMENTS, REINFORCED CONCRETE SHALL CONFORM TO ACI 318, THE CRSI "MANUAL OF STANDARD PRACTICE FOR DETAILING CONCRETE STRUCTURES" AND THE "ACI DETAILING MANUAL-1988" (SP-66)
2. ALL CONCRETE SHALL DEVELOP THE FOLLOWING MINIMUM ULTIMATE F'c, WITH CORRESPONDING MAXIMUM SIZE OF AGGREGATES AND SLUMPS AS FOLLOWS:

ELEMENT	28-DAY STRENGTH (PSI)	MAX SIZE AGGREGATE	SLUMP
A. SLABS	4,000	3/4"	4"

3. PORTLAND CEMENT SHALL CONFORM TO ASTM C-150 TYPE I/II.
4. AGGREGATE FOR CONCRETE SHALL CONFORM TO ALL REQUIREMENTS AND TESTS OF ASTM C-33.
5. CONCRETE MIXING OPERATION SHALL CONFORM TO ASTM C-94.
6. PLACEMENT OF CONCRETE SHALL CONFORM TO ACI STANDARD 301.
7. CLEAR COVERAGE OF CONCRETE OVER OUTER REINFORCING BARS SHALL BE AS FOLLOWS:
   CONCRETE POURED DIRECTLY AGAINST EARTH; 3" CLEAR TO REINFORCING
   WALL FACES: EXPOSED TO EARTH WITH FORMED SURFACES OR EXPOSED TO WEATHER; 1-1/2" CLEAR FOR #5 BAR & SMALLER
8. GROUT ASTM C1107, GRADE C, PREMIXED COMPOUND CONSISTING OF NONMETALLIC AGGREGATE, CAPABLE OF DEVELOPING MINIMUM COMPRESSION STRENGTH OF 5000 PSI IN 28 DAYS. ICC CERTIFICATION REQUIRED. USE SPECIFIC GROUT MIX RECOMMENDED BY THE MANUFACTURER FOR EACH GROUT APPLICATION AND FOLLOW MANUFACTURER'S INSTRUCTIONS.
9. PROJECTING CORNERS OF BEAMS, WALLS, ETC., SHALL BE FORMED WITH 3/4" CHAMFER, UNLESS OTHERWISE NOTED ON THE DRAWINGS.
10. CONCRETE ADMIXTURES CONTAINING CHLORIDE OR CHLORIDE SALTS ARE PROHIBITED.

REINFORCING STEEL

1. ALL REINFORCING STEEL SHALL BE DETAILED AND PLACED IN CONFORMANCE WITH THE "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE" (ACI 318-95), THE CRSI "MANUAL OF STANDARD PRACTICE", AND THE "ACI DETAILING MANUAL - 1988" (SP-66) AS MODIFIED BY THE PROJECT DRAWINGS AND SPECIFICATIONS.
2. STRENGTH - REINFORCING BARS SHALL BE ASTM A615, GRADE 60. STIRRUPS AND TIES SHALL BE GRADE 60.
3. SPLICE-LENGTHS SHALL BE 40 BAR DIAMETER OR 2'-0" WHICHEVER IS GREATER, UNLESS SHOWN OTHERWISE.
4. BARBENDS, HOOKS, AND OFFSETS SHALL BE IN ACCORDANCE WITH THE ACI RECOMMENDATIONS.
5. WELDING OF REINFORCING IS NOT PERMITTED.
6. REINFORCING BARS SHALL BE IN AS LONG AS PRACTICABLE AND AS DETAILED AND SHALL BE LAPPED AT SPLICES AND CORNERS NOT LESS THAN 32 BAR DIAMETER (24" MINIMUM), UNLESS OTHERWISE SHOWN. STAGGER HORIZONTAL WALL BAR SPLICES. IN GENERAL, BAR SPLICES SHALL BE MADE AT POINTS OF MINIMUM STRESS.
7. ALL METAL INSERTS AND ANCHORS SHALL BE GALVANIZED UNLESS NOTED OTHERWISE.

GRAPHIC SCALE

1 0 1 2 FT
SCALE: 1" = 1'-0"

2 0 2 4 FT
SCALE: 1/2" = 1'-0"

10 0 10 20 FT
SCALE: 1" = 10'

IF SHEET IS LESS THAN 22" X 34"
IT IS A REDUCED PRINT - SCALE REDUCED ACCORDINGLY

REV.	DATE	BY	REVISION

ENTERPRISE ENGINEERING, INC.
400 US ROUTE 1, NORTH SUITE B, FALMOUTH, ME 04105, TEL. (207) 869-8006, FAX (207) 869-8015
2525 GAMBELL STREET, SUITE 200, ANCHORAGE, AK 99503, TEL. (907) 563-3835, FAX (907) 563-3817

STATE OF ALASKA 49TH
AARON WALKER LEWIS
CE 14663
1/11/19
REGISTERED PROFESSIONAL ENGINEER

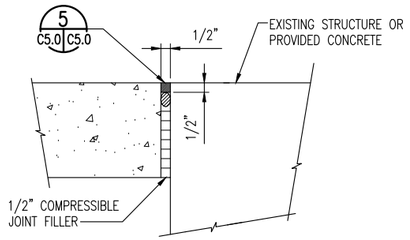
ALASKA RAILROAD CORPORATION
ENGINEERING SERVICES
P.O. BOX 107500, ANCHORAGE, ALASKA 99510-7500

PROJECT:
LOCOMOTIVE REFUELING FACILITY
ALASKA RAILROAD CORPORATION

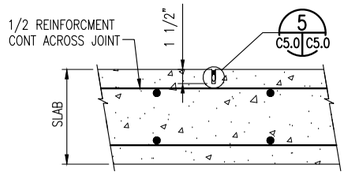
TITLE:
TRUCK OFFLOAD STAND SITE PLAN, SECTIONS AND DETAILS

DESIGNED BY:	AWL	SCALE: AS NOTED	C4.0
DRAWN BY:	JAR		AFE NO.:
CHECKED BY:	CAB	DATE: 1-11-19	ACAD FILE: x
APPROVED BY:			DWG NO. 5 OF 31

P:\projects\8669\Cad\Current Dwg %\Civil\C40_EEI.dwg

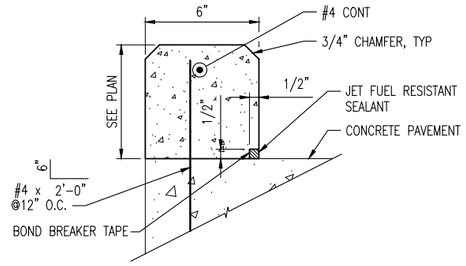


1 EXPANSION JOINT DETAIL
C3.0 C5.0 SCALE: 3" = 1'-0"



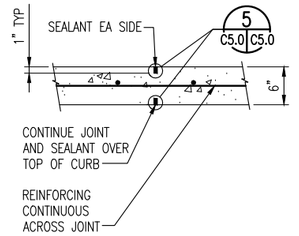
NOTE
1. CUT ALTERNATE TOP BARS 1 1/2 INCHES EACH SIDE OF CONTROL JOINT (TOTAL OF 3 INCHES PER CUT BAR REMOVED). PERFORM SAW CUTS WITHIN 12 HOURS AFTER CONCRETE PLACEMENT.

2 CONTROL JOINT DETAIL
C4.0 C5.0 SCALE: 1 1/2" = 1'-0"

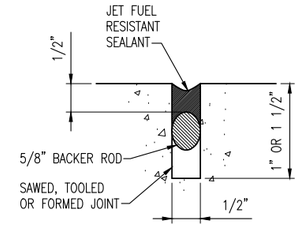


NOTES
1. SEALANT AT THE BASE OF CURB IS NOT REQUIRED IF THE SLAB AND CURB ARE MONOLITHIC.
2. PROVIDE CURB CONTROL JOINT TO MATCH SLAB CONTROL JOINT SPACING, SEE 4 C4.0 C5.0

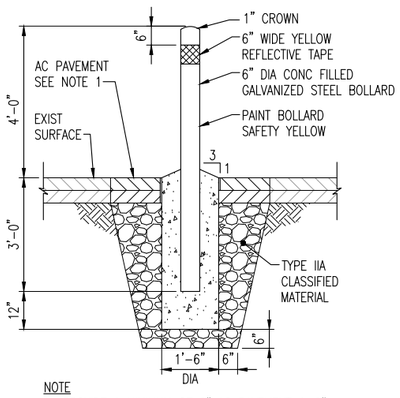
3 CONCRETE CURB DETAIL
C4.0 C5.0 SCALE: 3" = 1'-0"



4 CURB CONTROL JOINT DETAIL
C4.0 C5.0 SCALE: 1" = 1'-0"

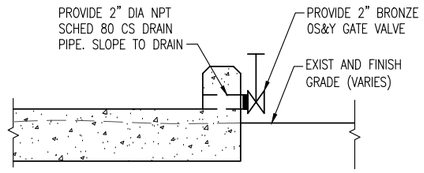


5 JOINT DETAIL
C5.0 C5.0 SCALE: NTS



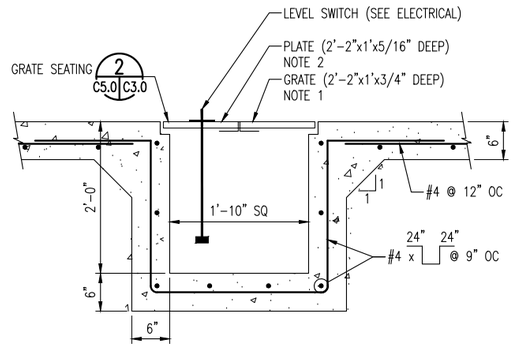
NOTE
1. PROVIDE A MINIMUM OF 2" AC PAVEMENT & 2" LEVELING COURSE TO REPLACE REMOVED PAVEMENT.

6 BOLLARD DETAIL
C4.0 C5.0 SCALE: 1/2" = 1'-0"



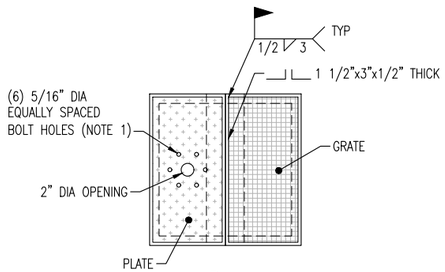
NOTES
1. CONC. REINFORCING NOT SHOWN FOR CLARITY.
2. MAINTAIN 1" MIN. CLEAR BETWEEN BOTTOM OF VALVE & FG.

7 DRAIN VALVE
C4.0 C5.0 SCALE: 1 1/2" = 1'-0"



NOTE
1. GRATE SHALL BE GALVANIZED (G60) BAR GRATING WITH BEARING BARS, W-19-4.
2. PLATE SHALL BE GALVANIZED (G60) A-36 STEEL.

SECTION



NOTE
1. COORDINATE BOLT AND OPENING HOLE LOCATIONS WITH LEVEL SWITCH MOUNTING BRACKET.

PLAN

8 SUMP DETAIL
C4.0 C5.0 SCALE: 1" = 1'-0"

GRAPHIC SCALES

1 0 1 2 FT
SCALE: 1" = 1'-0"

2 0 2 4 FT
SCALE: 1/2" = 1'-0"

1 0 1 FT
SCALE: 1 1/2" = 1'-0"

6" 0 6"
SCALE: 3" = 1'-0"

IF SHEET IS LESS THAN 22" X 34" IT IS A REDUCED PRINT - SCALE REDUCED ACCORDINGLY

STATE OF ALASKA 49 TH
AARON WALKER LEWIS
CE 14663
REGISTERED PROFESSIONAL ENGINEER

ENTERPRISE ENGINEERING, INC.
400 US ROUTE 1
NORTH SUITE B
FALMOUTH, ME 04105
TEL. (207) 869-8006
FAX (207) 869-8015
2525 GAMBELL STREET
SUITE 200
ANCHORAGE, AK 99503
TEL. (907) 563-3835
FAX (907) 563-3817

REV.	DATE	BY	REVISION

ALASKA RAILROAD CORPORATION
ENGINEERING SERVICES
P.O. BOX 107500, ANCHORAGE, ALASKA 99510-7500

PROJECT :
LOCOMOTIVE REFUELING FACILITY
ALASKA RAILROAD CORPORATION

TITLE:
DETAILS

DESIGNED BY: AWL
DRAWN BY: JAR
CHECKED BY: CAB
APPROVED BY:

SCALE: AS NOTED
DATE: 1-11-19

C5.0

AFE NO.:
ACAD FILE:
DWG NO. 6 OF 31

P:\projects\8669\Cad\Current Dwg %\Civil\C50_EEI.dwg

ABBREVIATIONS

@	AT
(A)	ABOVE
ACI	AMERICAN CONCRETE INSTITUTE
AISC	AMERICAN INSTITUTE OF STEEL CONSTRUCTION
ANSI	AMERICAN NATIONAL STANDARD INSTITUTE
ASCE	AMERICAN SOCIETY OF CIVIL ENGINEERS
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
AWS	AMERICAN WELDING SOCIETY
BMS	BEAMS
BOT	BOTTOM
C	AMERICAN STRUCTURAL CHANNELS
℄	CENTER LINE
COL	COLUMN
CONC	CONCRETE
DIA ø	DIAMETER
DIM	DIMENSION
EA	EACH
EMBED	EMBEDMENT
EW	EACH WAY
EX	EXISTING
EXP	EXPANSION
FDN	FOUNDATION
FIN	FINISH, FINISHED
FRP	FIBER REINFORCED PLASTIC
FS	FAR SIDE
FTG	FOOTING
FV	FILTER VESSEL
GR	GRADE
HSS	HOLLOW STRUCTURAL SECTION
IBC	INTERNATIONAL BUILDING CODE
ICC-ES	INTERNATIONAL CODE COUNCIL EVALUATION SERVICE
JT	JOINT
KSI	KIPS PER SQUARE INCH
LB OR #	POUND
∠	ANGLE
MAX	MAXIMUM
MECH	MECHANICAL
MIN	MINIMUM
MPH	MILES PER HOUR
NAAMM	NATIONAL ASSOCIATION OF ARCHITECTURAL METAL MANUFACTURERS
NFS	NON-FROST SUSCEPTIBLE
NO	NUMBER
NS	NEAR SIDE
NTS	NOT TO SCALE
OC	ON CENTER
PL	PLATE (STEEL)
P/S	PRESTRESSED
PS	PIPE SUPPORT
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
R	RADIUS
SCH	SCHEDULE
SEC	SECOND
SIM	SIMILAR
SQ	SQUARE
SS	STAINLESS STEEL
STD	STANDARD
STL	STEEL
THK	THICK
TOC	TOP OF CONCRETE
TOS	TOP OF STEEL
TYP	TYPICAL
U/S	UNDERSIDE
VERT	VERTICAL
W	WEST, WEIGHT, AMERICAN W-SERIES H-SHAPED STRUCTURAL MEMBER
WD	WIDE
W/	WITH
W/C	WATER CEMENT RATIO
WP	WORK POINT
WT	AMERICAN WT-SERIES STRUCTURAL TEE MEMBER

GENERAL STRUCTURAL NOTES

THE FOLLOWING NOTES APPLY UNLESS OTHERWISE INDICATED

CODE:

INTERNATIONAL BUILDING CODE (IBC), 2012 EDITION AND ASCE 7-10.

PRE-ENGINEERED BUILDING NOTES:

1. PRE-ENGINEERED STEEL CANOPY SHALL BE DESIGNED IN ACCORDANCE WITH THE METAL BUILDING MANUFACTURER'S ASSOCIATION (MBMA), METAL BUILDING SYSTEMS MANUAL, 2006 EDITION.
2. DESIGN LOADS/CRITERIA

ROOF LIVE LOAD	20 PSF
EQUIPMENT DEAD LOAD	5 PSF
GROUND SNOW LOAD	50 PSF
FLAT ROOF SNOW LOAD	40 PSF (MIN)
BASIC WIND SPEED	132 MPH
WIND IMPORTANCE FACTOR, Iw	1.0
EXPOSURE	D
MAPPED SPECTRAL RESPONSE ACCELERATIONS	S_S= 1.5, S_1= 0.55
SPECTRAL RESPONSE COEFFICIENTS	S_{DS}= 1.0, S_{D1}= 0.55
SEISMIC IMPORTANCE FACTOR, I_E	1.0
SITE CLASS	D
OCCUPANCY CATEGORY	II

3. MINOR VARIATIONS IN THE CANOPY DIMENSIONS MAY BE SUBMITTED FOR REVIEW AND POSSIBLE APPROVAL IF REQUIRED TO CONFORM TO A SPECIFIC BUILDING MANUFACTURER'S STANDARDS.
4. THE USE OF CROSS BRACING BETWEEN FRAMES IS NOT PERMITTED.
5. THE CONTRACTOR IS RESPONSIBLE FOR SUBMITTING A FOUNDATION AND CANOPY DESIGN STAMPED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF ALASKA.
6. STRUCTURAL OVERVIEW: THE CANOPY FOUNDATIONS SHALL BE DESIGNED BASED UPON THE FOLLOWING CRITERIA CONCERNING THE PRE-ENGINEERED STEEL CANOPY SUPERSTRUCTURE:
   A. FUTURE EXPANSION OR ADDITIONS TO THE CANOPY ARE NOT CONSIDERATIONS.
   B. FRAMING CONSISTS OF CLEAR-SPAN RIGID FRAMES.
   C. COLUMN REACTIONS, INCLUDING LATERAL LOADS, SHALL BE RESISTED BY PILES AND HAIRPIN TIES INTO THE CONCRETE SLAB.
   D. LATERAL LOADS PERPENDICULAR TO THE MOMENT FRAMES SHALL BE RESISTED BY THE PORTAL FRAMES.
   E. THE ROOF STRUCTURE MAY BE CROSS BRACED AS REQUIRED FOR LATERAL STABILITY.

FOUNDATIONS:

ALLOWABLE SOIL BEARING PRESSURE: ..... 2,000 PSF

COLD FOOTINGS:

CAST BOTTOM OF FOOTING BELOW FINISH GRADE AS FOLLOWS:

FROST SUSCEPTIBLE SOIL	10'-0"
NON-FROST SUSCEPTIBLE	5'-0"

THE CONTRACTOR SHALL BE RESPONSIBLE FOR EMPLOYING A QUALIFIED, REGISTERED GEOTECHNICAL INSPECTING ENGINEER AND GEOTECHNICAL LABORATORY TO INSPECT AND CERTIFY SUBGRADE PREPARATION AS WELL AS MONITOR PROOF ROLLING OF SUBGRADE AND TESTING, PLACEMENT AND COMPACTION OF NON-FROST SUSCEPTIBLE FILL.

REINFORCED CONCRETE:

ALL CONCRETE

COMPRESSIVE STRENGTH AT 28 DAYS	f'c= 4,500 PSI
CONCRETE EXPOSURE CLASSES	F2, S0, P0, C1

REINFORCING STEEL BAR
ASTM A615, GRADE 60 DEFORMED BARS

CONCRETE COVER
FOOTINGS 3"; COLUMNS 2-1/2" TO STIRRUPS OR TIES, SLABS 1-1/2"; ALL OTHER LOCATIONS

REINFORCING
SUBMIT REINFORCING STEEL SHOP DRAWINGS WITH DETAILS PER ACI 315 MANUAL OF STANDARDS PRACTICE. LAP BARS WITH A CLASS B SPLICE. WELDING OF REINFORCING STEEL IS NOT PERMITTED.

NON-SHRINK GROUT:

ASTM C1107, GRADE C, PREMIXED COMPOUND CONSISTING OF NON METALLIC AGGREGATE, CAPABLE OF DEVELOPING MINIMUM COMPRESSION STRENGTH OF 5000 PSI IN 28 DAYS. ICC-ES CERTIFICATION REQUIRED. USE SPECIFIC GROUT MIX RECOMMENDED BY THE MANUFACTURER FOR EACH GROUT APPLICATION AND FOLLOW MANUFACTURER'S INSTRUCTIONS.

ANCHOR RODS:
ASTM F1554 GRADE 36, HEADED. SET ALL ANCHOR RODS BY TEMPLATE.

DRILL-IN EXPANSION ANCHORS:
"KWIK BOLT TZ-CS" BY HILTI OR APPROVED EQUAL. ICC-ES CERTIFICATION REQUIRED.

DRILL-IN ADHESIVE ANCHOR SYSTEMS:
"HIT ADHESIVE HIT-HY 200 ANCHOR SYSTEM" FOR CONCRETE BY HILTI FASTENING SYSTEMS, OR APPROVED EQUAL. ICC-ES CERTIFICATION REQUIRED. INSTALL PER MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS.

STRUCTURAL STEEL:

SUBMIT SHOP DRAWINGS WITH LAYOUT, MARK NUMBERS AND AWS SYMBOLS. FABRICATION AND ERECTION PER AISC SPECIFICATIONS. VERIFY MATERIALS, WELDING PROCEDURES AND WELDER'S QUALIFICATIONS PRIOR TO START OF WORK.

1. W SECTIONS	ASTM A992 GR 50
2. PLATE:	ASTM A36, F_Y= 36 KSI
3. CHANNELS AND OTHER SHAPES:	ASTM A36, F_Y= 36 KSI
4. HSS SECTIONS:	ASTM A 500, GRADE C, F_Y= 50 KSI
5. PIPE SECTIONS:	ASTM A 53, TYPE E OR S, GRADE B
6. STRUCTURAL STEEL FASTENERS:	
BOLTS -	ATSM A325
NUTS -	ASTM A563
WASHERS -	ASTM F436

WELDING:
WELDING PER AWS D1.1, MINIMUM SIZE WELDS 3/16" CONTINUOUS FILLET PERFORMED BY WELDERS CERTIFIED PER AWS FOR ROD AND POSITION. ELECTRODES SHALL BE E70XX MINIMUM WITH A MINIMUM CHARPY V-NOTCH TOUGHNESS OF 20 FT-LBS AT MINUS 20 DEG. F.

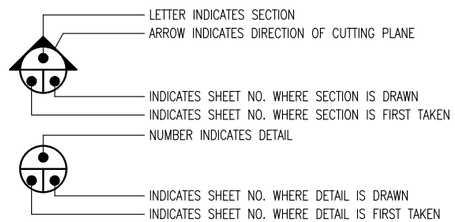
AISC CERTIFIED SHOP:
WELDING, WELD INSPECTION AND FABRICATION: FABRICATION SHOP WITH CURRENT AISC CERTIFICATION IS NOT REQUIRED TO SUBMIT WELD INSPECTION FOR THIS PROJECT. SUBMIT A COPY OF CURRENT CERTIFICATION.

PROTECTIVE COATING:
APPLY THE SAME COATING SYSTEM AS THE PIPING TO THE PIPE SUPPORT STEEL. SEE MECHANICAL.

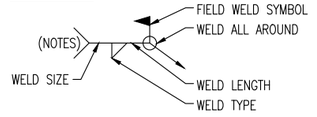
MISCELLANEOUS

REFER TO MECHANICAL AND ELECTRICAL DRAWINGS FOR SIZE AND LOCATION OF PIPING, CONDUIT, ETC., NOT SHOWN.
VERIFY ALL DIMENSIONS AND CONDITIONS AT THE PROJECT SITE PRIOR TO STARTING WORK AND NOTIFY THE CONTRACTING OFFICER IMMEDIATELY OF ANY DISCREPANCIES.
SUBMIT ALL REQUIRED SHOP DRAWINGS AND RECEIVE THEIR SATISFACTORY REVIEW FROM THE OWNER/OWNER'S REPRESENTATIVE PRIOR TO FABRICATION.
PROVIDE TEMPORARY ERECTION BRACING AND SHORING AS REQUIRED FOR STABILITY OF THE STRUCTURE DURING ALL PHASES OF CONSTRUCTION.

LEGEND



WELD SYMBOLS



ENTERPRISE
ENGINEERING, INC.
400 US ROUTE 1
NORTH SUITE B
FALMOUTH, ME 04105
TEL. (207) 869-8006
FAX (207) 869-8015

2525 GAMBELL STREET
SUITE 200
ANCHORAGE, AK 99503
TEL. (907) 563-3835
FAX (907) 563-3817

IF SHEET IS LESS THAN 22" X 34" IT IS A REDUCED PRINT - SCALE REDUCED ACCORDINGLY

REV.	DATE	BY	REVISION

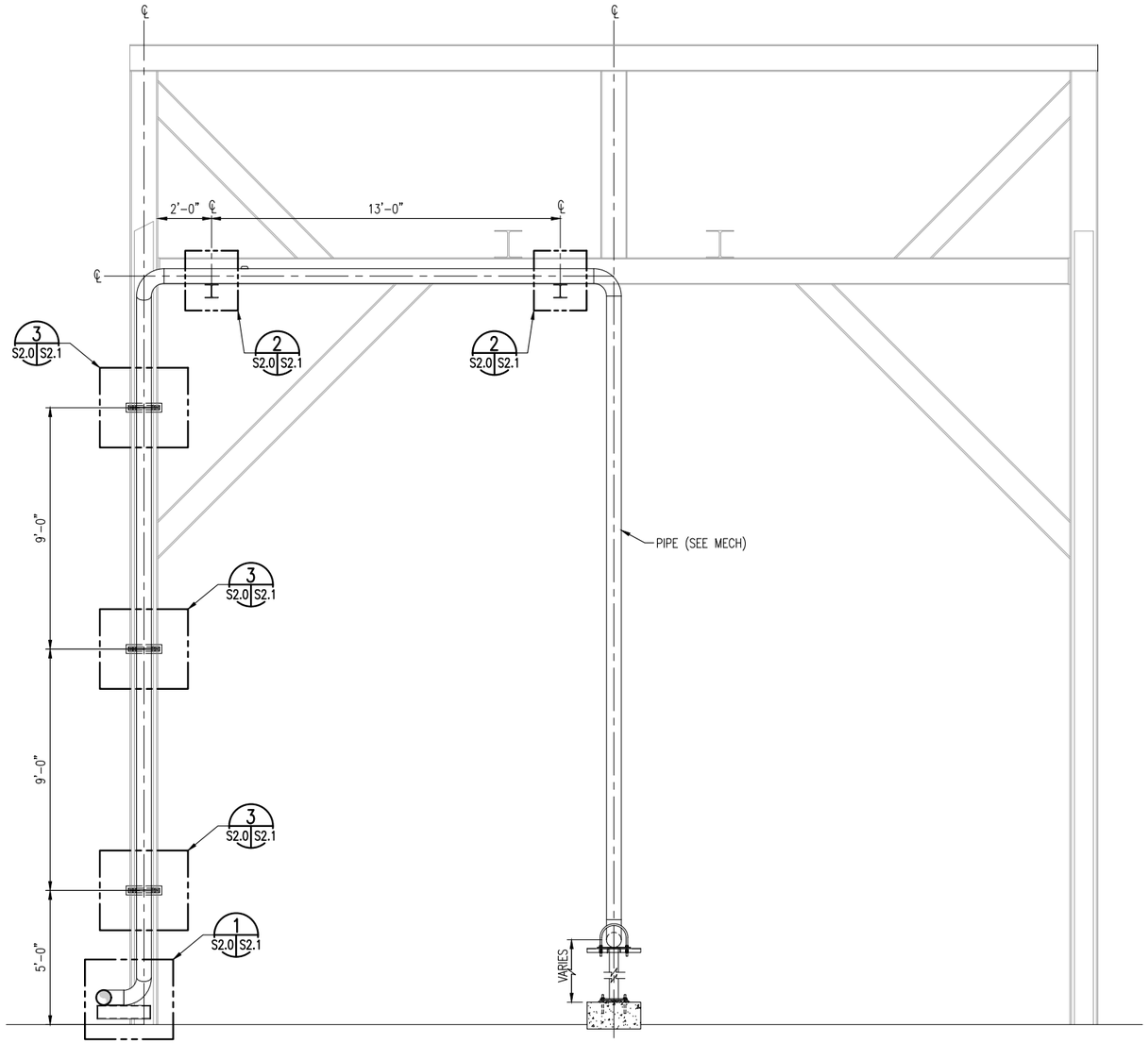
ALASKA RAILROAD CORPORATION
ENGINEERING SERVICES
P.O. BOX 107500, ANCHORAGE, ALASKA 99510-7500

PROJECT:
LOCOMOTIVE REFUELING FACILITY
ALASKA RAILROAD CORPORATION

TITLE:
GENERAL NOTES ▯ ABBREVIATIONS

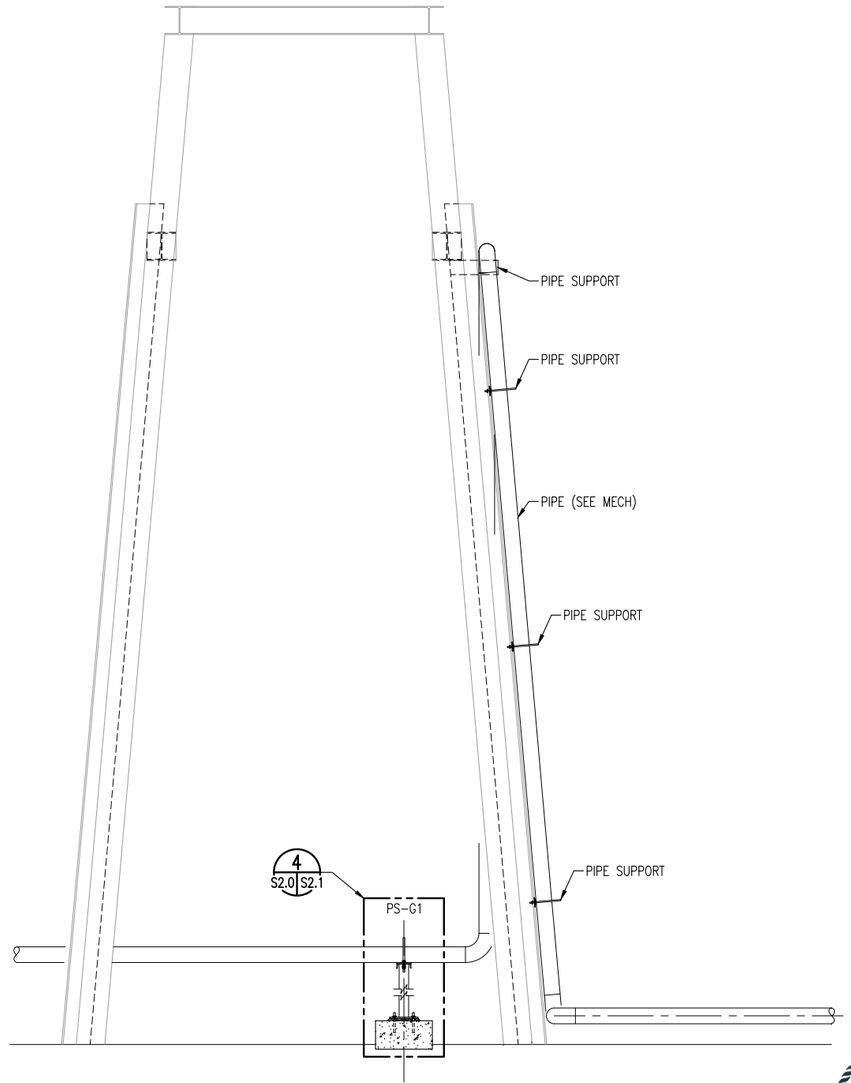
DESIGNED BY: DAS
DRAWN BY: SPTH
CHECKED BY:
APPROVED BY:
SCALE: AS NOTED
DATE: 01-11-19
S1.0
AFE NO.:
ACAD FILE:
DWG NO. 7 OF 31

P:\projects\8669\Cad\Current Dwg %\Structural\S10_EEI.dwg



SANDING TOWER FRONT ELEVATION

SCALE: 3/8" = 1'-0"



SANDING TOWER SIDE ELEVATION

SCALE: 3/8" = 1'-0"

STATE OF ALASKA 49TH 11JAN19 JAMES S. WIITA SE 14173 REGISTERED STRUCTURAL ENGINEER

GRAPHIC SCALE

2 0 2 4 6 FT

SCALE: 3/8" = 1'-0"

IF SHEET IS LESS THAN 22" X 34" IT IS A REDUCED PRINT – SCALE REDUCED ACCORDINGLY

REV.	DATE	BY	REVISION

ENTERPRISE ENGINEERING, INC.
400 US ROUTE 1, NORTH SUITE B, FALMOUTH, ME 04105, TEL. (207) 869-8006, FAX (207) 869-8015
2525 GAMBELL STREET, SUITE 200, ANCHORAGE, AK 99503, TEL. (907) 563-3835, FAX (907) 563-3817

ALASKA RAILROAD CORPORATION
ENGINEERING SERVICES
P.O. BOX 107500, ANCHORAGE, ALASKA 99510-7500

PROJECT :

LOCOMOTIVE REFUELING FACILITY
ALASKA RAILROAD CORPORATION

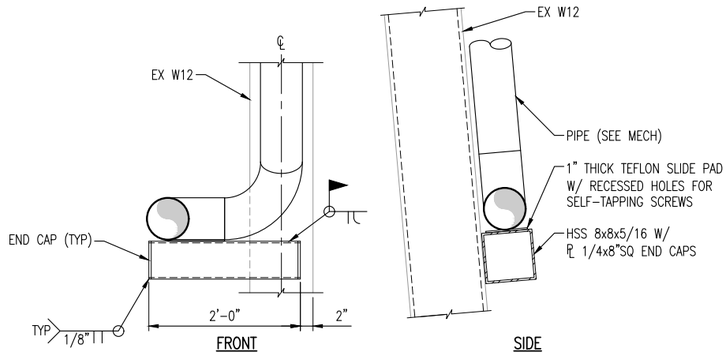
TITLE:

SANDING TOWER

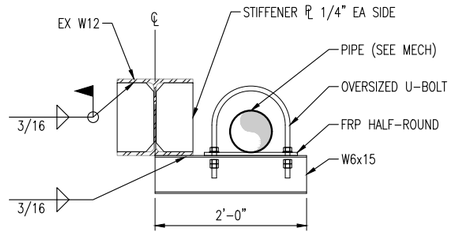
DESIGNED BY:	DAS	SCALE: AS NOTED	S2.0
DRAWN BY:	SPTH		
CHECKED BY:		DATE: 01-11-19	
APPROVED BY:			

AFE NO.:
ACAD FILE:
DWG NO. 8 OF 31

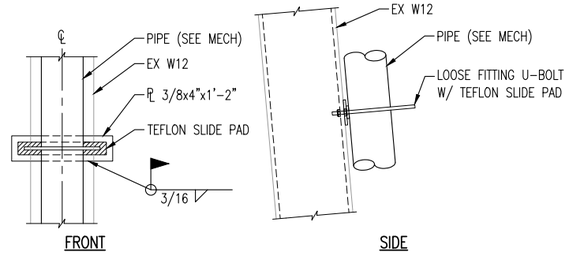
P:\projects\8669\Cad\Current Dwg #\Structural\S20_EEI.dwg



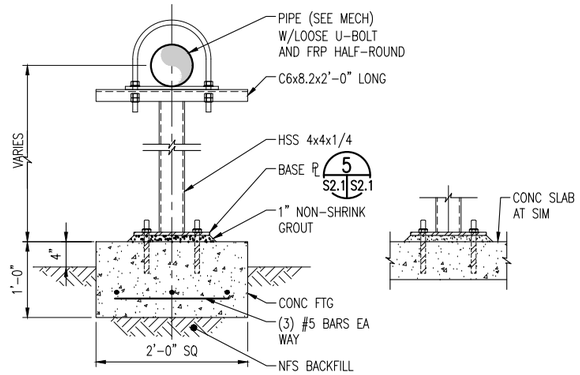
1 S2.0 S2.1 PIPE SUPPORT
SCALE: 1" = 1'-0"



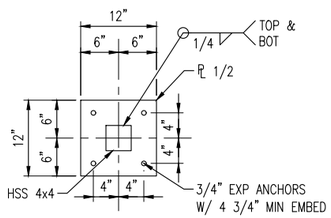
2 S2.0 S2.1 PIPE SUPPORT
SCALE: 1" = 1'-0"



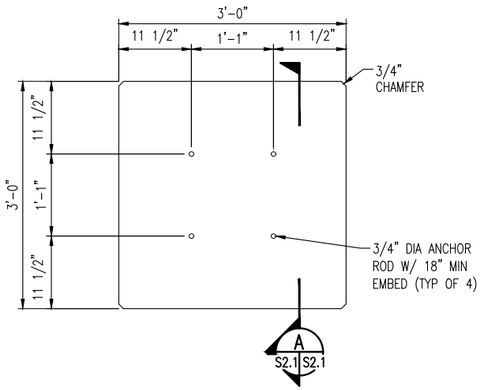
3 S2.0 S2.1 PIPE SUPPORT
SCALE: 1" = 1'-0"



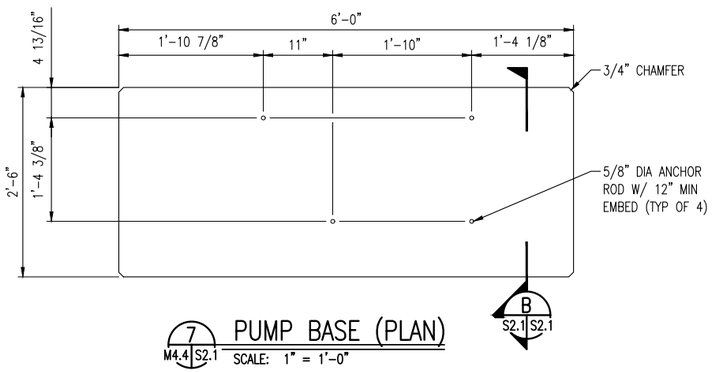
4 S2.0 S2.1 PIPE SUPPORT (PS-G1)
SCALE: 1" = 1'-0"



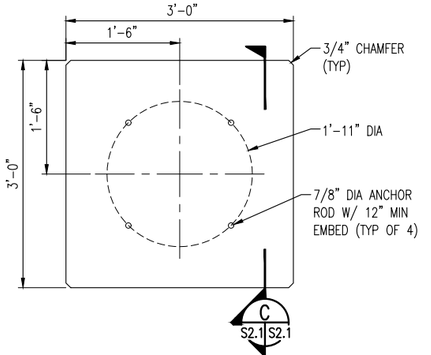
5 S2.1 S2.1 BASE PLATE
SCALE: 1" = 1'-0"



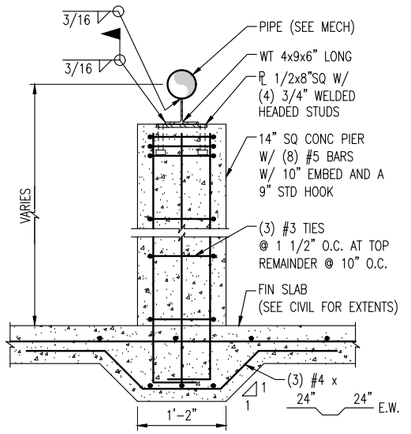
6 M4.2 S2.1 FUEL CRANE FDN (PLAN)
SCALE: 1" = 1'-0"



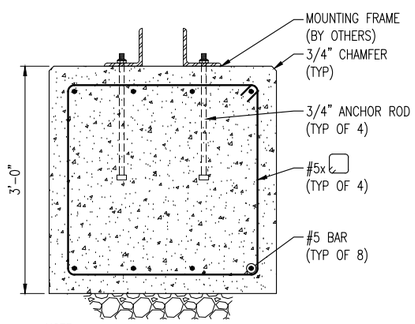
7 M4.4 S2.1 PUMP BASE (PLAN)
SCALE: 1" = 1'-0"



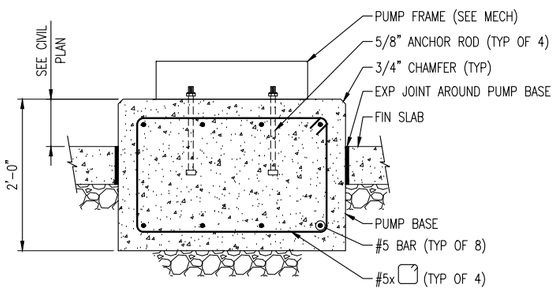
8 C4.0 S2.1 FV BASE (PLAN)
SCALE: 1" = 1'-0"



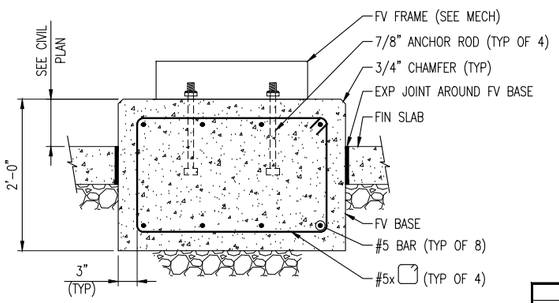
9 M3.1 S2.1 PIPE SUPPORT (PS-A1)
SCALE: 1" = 1'-0"



A S2.1 S2.1 FUEL CRANE FDN (SECTION)
SCALE: 1" = 1'-0"



B S2.1 S2.1 PUMP BASE (SECTION)
SCALE: 1" = 1'-0"



C S2.1 S2.1 FV BASE (SECTION)
SCALE: 1" = 1'-0"

GRAPHIC SCALE

1 0 1 2 FT
SCALE: 1" = 1'-0"
IF SHEET IS LESS THAN
22" X 34"
IT IS A REDUCED PRINT -
SCALE REDUCED ACCORDINGLY

STATE OF ALASKA
49TH
11JAN19
JAMES S. WIITA
SE 14173
REGISTERED STRUCTURAL ENGINEER

ENTERPRISE
ENGINEERING, INC.
400 US ROUTE 1
NORTH SUITE B
FALMOUTH, ME 04105
TEL. (207) 869-8006
FAX (207) 869-8015
2525 CAMBELL STREET
SUITE 200
ANCHORAGE, AK 99503
TEL. (907) 563-3835
FAX (907) 563-3817

REV.	DATE	BY	REVISION

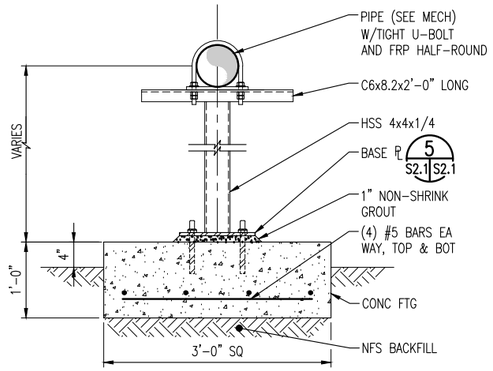
ALASKA RAILROAD CORPORATION
ENGINEERING SERVICES
P.O. BOX 107500, ANCHORAGE, ALASKA 99510-7500

PROJECT:
LOCOMOTIVE REFUELING FACILITY
ALASKA RAILROAD CORPORATION

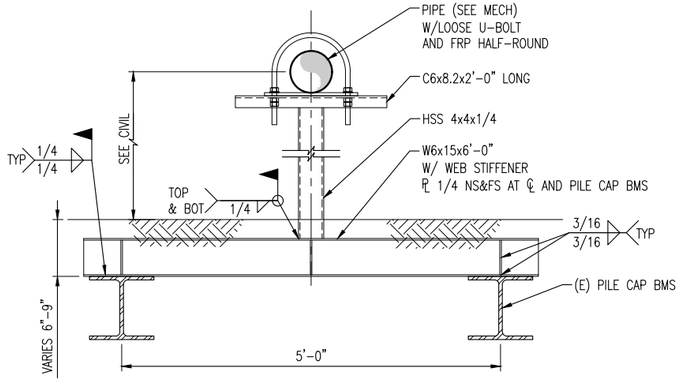
TITLE:
STRUCTURAL DETAILS

DESIGNED BY: DAS	SCALE: AS NOTED	S2.1	AFE NO.:
DRAWN BY: SPTH	DATE: 01-11-19		ACAD FILE:
CHECKED BY:			DWG NO. 9 OF 31
APPROVED BY:			

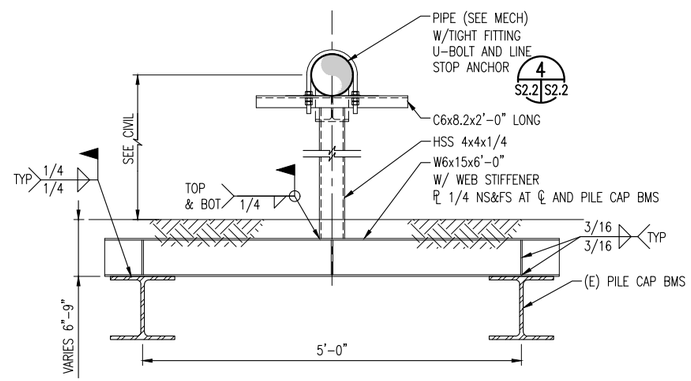
P:\projects\8669\Cad\Current Dwg %\Structural\S21_EEI.dwg



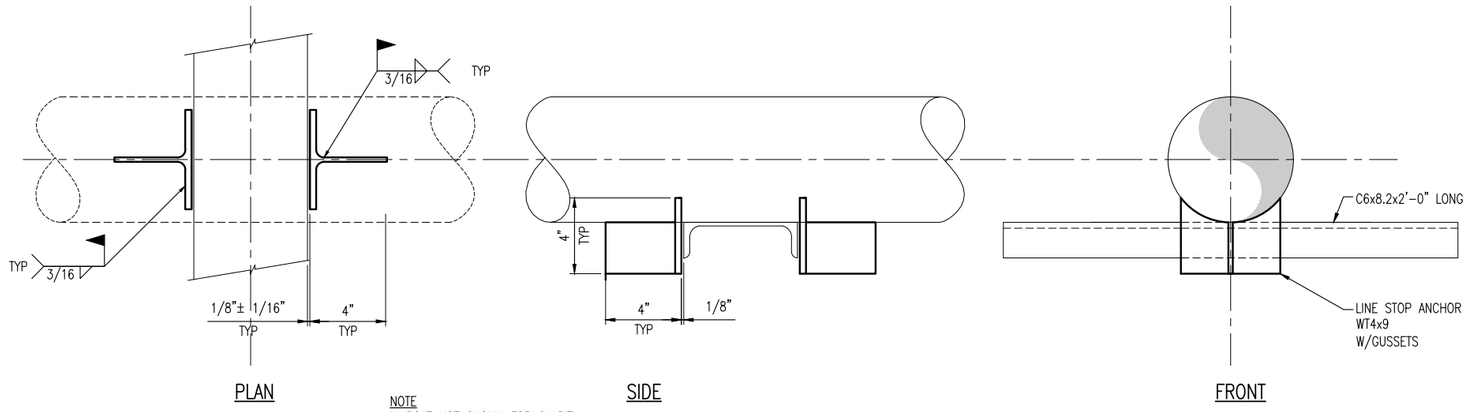
1 M3.0 S2.2 PIPE SUPPORT (PS-A2)
SCALE: 1" = 1'-0"



2 M3.0 S2.2 PIPE SUPPORT (PS-G2)
SCALE: 1" = 1'-0"



3 M3.0 S2.2 PIPE SUPPORT (PS-A3)
SCALE: 1" = 1'-0"



PLAN SIDE FRONT

NOTE
U-BOLT NOT SHOWN FOR CLARITY.

4 S2.2 S2.2 LINE STOP ANCHOR STOP DETAIL
SCALE: NTS

GRAPHIC SCALE

1 0 1 2 FT
SCALE: 1" = 1'-0"
IF SHEET IS LESS THAN
22" X 34"
IT IS A REDUCED PRINT –
SCALE REDUCED ACCORDINGLY

STATE OF ALASKA
49TH
11JAN19
JAMES S. WIITA
SE 14173
REGISTERED STRUCTURAL ENGINEER

ENTERPRISE
ENGINEERING, INC.
400 US ROUTE 1
NORTH SUITE B
FALMOUTH, ME 04105
TEL. (207) 869-8006
FAX (207) 869-8015
2525 GAMBELL STREET
SUITE 200
ANCHORAGE, AK 99503
TEL. (907) 563-3835
FAX (907) 563-3817

REV.	DATE	BY	REVISION

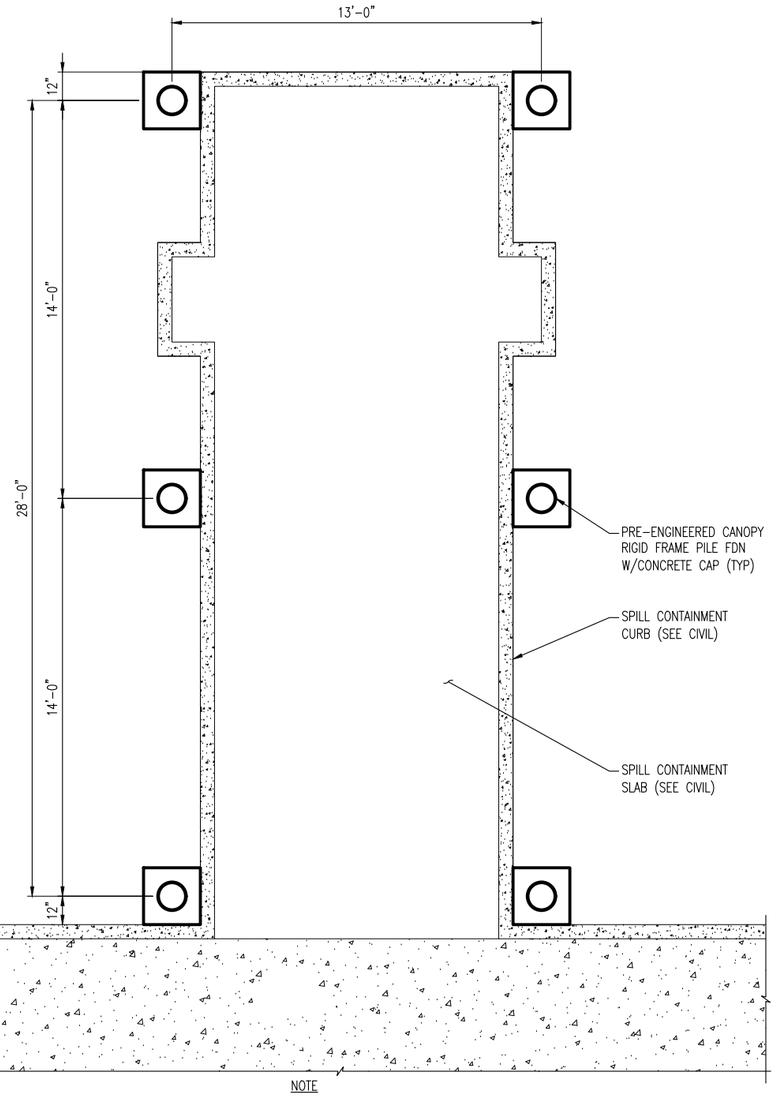
ALASKA RAILROAD CORPORATION
ENGINEERING SERVICES
P.O. BOX 107500, ANCHORAGE, ALASKA 99510-7500

PROJECT:
LOCOMOTIVE REFUELING FACILITY
ALASKA RAILROAD CORPORATION

TITLE:
STRUCTURAL DETAILS

DESIGNED BY: JW
DRAWN BY: VHM
CHECKED BY:
APPROVED BY:
SCALE: AS NOTED
DATE: 01-11-19
S2.2
AFE NO.:
ACAD FILE:
DWG NO. 10 OF 31

P:\projects\8669\Cad\Current Dwg %\Structural\S22_EEI.dwg

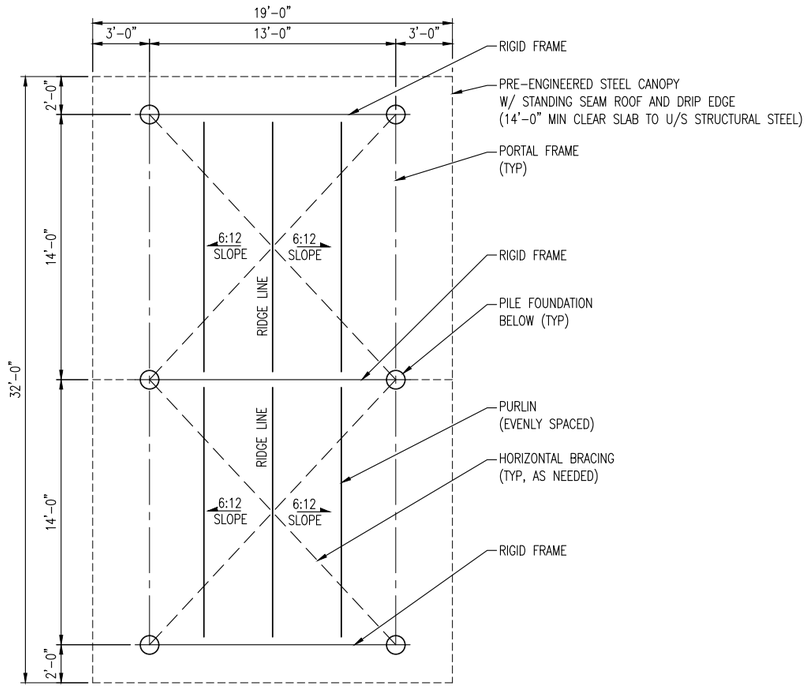


NOTE

1. TOP OF SLAB= DATUM= 0'-0"

FDN PLAN AT TRUCK OFFLOAD TANKS

SCALE: 3/8" = 1'-0"



NOTE

1. REFER TO S1.0 FOR NOTES SPECIFIC TO THE PRE-ENGINEERED CANOPY.

CANOPY ROOF PLAN

SCALE: 1/4" = 1'-0"

GRAPHIC SCALES

2 0 2 4 6 FT

SCALE: 3/8" = 1'-0"

4 0 4 8 FT

SCALE: 1/4" = 1'-0"

IF SHEET IS LESS THAN
22" X 34"
IT IS A REDUCED PRINT -
SCALE REDUCED ACCORDINGLY

STATE OF ALASKA
49TH
11JAN19
JAMES S. WIITA
SE 14173
REGISTERED STRUCTURAL ENGINEER

ENTERPRISE
ENGINEERING, INC.
400 US ROUTE 1
NORTH SUITE B
FALMOUTH, ME 04105
TEL. (207) 869-8006
FAX (207) 869-8015
2525 GAMBELL STREET
SUITE 200
ANCHORAGE, AK 99503
TEL. (907) 563-3835
FAX (907) 563-3817

REV.	DATE	BY	REVISION

ALASKA RAILROAD CORPORATION
ENGINEERING SERVICES
P.O. BOX 107500, ANCHORAGE, ALASKA 99510-7500

PROJECT :

LOCOMOTIVE REFUELING FACILITY
ALASKA RAILROAD CORPORATION

TITLE:

PRE-ENGINEERED CANOPY

DESIGNED BY:	DAS	SCALE: AS NOTED	S3.0
DRAWN BY:	SPTH	DATE: 01-11-19	
CHECKED BY:			
APPROVED BY:			

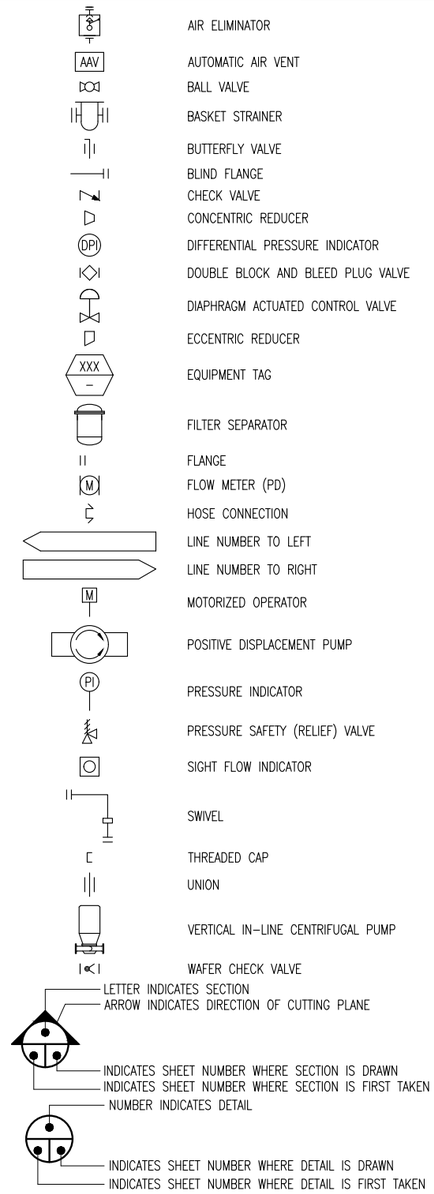
AFE NO.:
ACAD FILE:
DWG NO. 11 OF 31

P: \projects\8669\Cad\Current Dwg %\Structural\S30_EEI.dwg

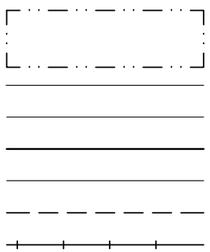
ABBREVIATIONS

AAV	AUTOMATIC AIR VENT
AE	AIR ELIMINATOR
ANSI	AMERICAN NATIONAL STANDARD INSTITUTE
APPROX	APPROXIMATELY
ASME	AMERICAN SOCIETY OF MECHANICAL ENGINEERS
AST	ABOVE GROUND STORAGE TANK
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
&	AND
API	AMERICAN PETROLEUM INSTITUTE
ATG	AUTOMATIC TANK GAUGE
@	AT
BOP	BOTTOM OF PIPE
℄	CENTERLINE
CON	CONCENTRIC
CS	CARBON STEEL
DB&B	DOUBLE BLOCK AND BLEED
DIA	DIAMETER
DP	DIFFERENTIAL PRESSURE
DPI	DIFFERENTIAL PRESSURE INDICATOR
EA	EACH
ECC	ECCENTRIC
ELEV	ELEVATION
EV	EMERGENCY VENT
ESO	EMERGENCY SHUT OFF
FOB	FLAT ON BOTTOM
FOT	FLAT ON TOP
FV	FILTER VESSEL
FT	FEET
FSL	FLOW SWITCH LOW
GPM	GALLONS PER MINUTE
H	HEIGHT
HP	HORSE POWER
HPS	HIGH PRESSURE SWITCH
HPV	HIGH POINT VENT
HZ	HERTZ
IN	INCH
L	LENGTH
LA	LEVEL ALARM
LAH	LEVEL ALARM HIGH
LAHH	LEVEL ALARM HIGH-HIGH
LAL	LEVEL ALARM LOW
LI	LEVEL INDICATOR
LRC	LOCOMOTIVE REFUELING CRANE
LPD	LOW POINT DRAIN
LT	LEVEL TRANSMITTER
MAX	MAXIMUM
MIN	MINIMUM
MFR	MANUFACTURER
MOV	MOTOR OPERATED VALVE
NPT	NATIONAL PIPE THREAD
NTS	NOT TO SCALE
NV	NORMAL VENT
OC	ON CENTER
OWS	OIL/WATER SEPARATOR
PH	PHASE
PI	PRESSURE INDICATOR
P&ID	PIPING & INSTRUMENTATION DIAGRAM
PLC	PROGRAMMABLE LOGIC CONTROLLER
PRV	PRESSURE RELIEF VALVE
PS	PIPE SUPPORT
PSI	POUNDS PER SQUARE INCH
PSID	PSI DIFFERENTIAL
PSIG	POUNDS PER SQUARE INCH, GAUGE
PSV	PRESSURE SAFETY VALVE
R	RADIUS
RED	REDUCER
RF	RAISED FACE
RPM	REVOLUTIONS PER MINUTE
S	STRAINER
SCH	SCHEDULE
SCV	SPRING CHECK VALVE
SFI	SIGHT FLOW INDICATOR
SP	SURFACE PREPARATION
SOD	SEQUENCE OF OPERATIONS
SRGS	SURGE SUPPRESSOR
SS	STAINLESS STEEL
STD	STANDARD
STP	SUBMERSIBLE TURBINE PUMP
SW	SOCKET WELD
T	TANK
THD	THREADED
TYP	TYPICAL
UL	UNDERWRITERS LABORATORY
V	VOLT
VERT	VERTICAL
W	WIDE
W/	WITH
WN	WELD NECK
WNF	WELD NECK FLANGE

MECHANICAL P&ID SYMBOLS



LINE DESIGNATIONS (P&ID)



SEQUENCE OF OPERATIONS (SOO)

FUEL RECEIPT

1. POSITION TRUCK, CHOCK, AND ATTACH GROUNDING CABLE.
2. CLOSE CONTAINMENT DRAIN VALVE.
3. CONNECT TRUCK OFFLOAD HOSE TO RECEIPT CAMLOCK.
4. ENABLE FUEL RECEIPT OPERATION AT FUEL CONTROL PANEL (FCP-1). ENABLE OPERATION TIMES OUT AFTER FOUR HOURS.
5. ALIGN VALVES FOR "RECEIPT" OPERATION. VERIFY AVAILABLE ULLAGE IN RECEIPT TANK.
6. OPEN OFFLOAD VALVE ON TRUCK.
7. OPEN HPV VALVE AT OFFLOAD POSITION AND BLEED OUT EXCESS AIR UNTIL FUEL CAN BE SEEN FLOWING IN THE SIGHT FLOW INDICATOR (SFI).
8. CLOSE HPV VALVE.
9. DEPRESS OFFLOAD PUMP, PDP-1, START PUSHBUTTON AT PUMP CONTROL STATION. FSL-1 WILL BE ON A 10 SECOND DELAY TO ALLOW FOR PUMP STARTUP.
10. OFFLOAD TRUCK, WATCHING SIGHT FLOW INDICATOR TO DETERMINE WHEN TRUCK IS EMPTY.
11. PLC WILL CAUSE PUMP SHUTDOWN ON THE FOLLOWING ALARMS:
    a. LOW FLOW SWITCH (FSL-1) TIMES OUT AFTER 5 SECONDS.
    b. FUEL LEVEL IN EITHER AST REACHES HIGH LEVEL ALARM (LAH).
    c. FUEL LEVEL IN EITHER AST REACHES HIGH-HIGH LEVEL ALARM (LAHH).
    d. ANY EMERGENCY SHUT OFF (ESO) IS ACTIVATED. ESO TO BE PROVIDED AT FCP-1 AND EACH OF FIVE LUBE OIL SUPPORT LOCATIONS.
12. UPON COMPLETION OF FUEL OFFLOAD, DEPRESS THE OFFLOAD PUMP, PDP-1, STOP PUSHBUTTON AT PUMP CONTROL STATION.
13. RETURN VALVES TO THE "NORMAL" POSITION.
14. DISCONNECT TRUCK OFFLOAD HOSE.
15. DISCONNECT AND STOW GROUNDING CABLE.
16. OPEN CONTAINMENT DRAIN VALVE.

FUEL ISSUE

1. ENABLE FUEL ISSUE OPERATION AT FUEL CONTROL PANEL (FCP-1). ENABLE OPERATION TIMES OUT AFTER FOUR HOURS. (CONTRACTOR TO COORDINATE WITH FACILITY PERONNEL TO DETERMINE APPROPRIATE TIME-OUT PERIOD).
2. SELECT ACTIVE ISSUE AST, T-1 OR T-2. VERIFY THERE IS SUFFICIENT FUEL AVAILABLE IN SELECTED TANK TO FILL LOCOMOTIVE(S).
3. ALIGN VALVES FOR "ISSUE" OPERATION.
4. POSITION LOCOMOTIVE REFUELING CRANE(S) AND NOZZLE(S) INTO LOCOMOTIVE FUEL TANK(S).
5. DEPRESS ISSUE PUMP START PUSHBUTTON(S) AT LOCOMOTIVE REFUELING CRANE CONTROL STATION(S). THE MOTOR-OPERATOR ON THE SELECTED ISSUE AST VALVE (V-5B OR V-6B) OPENS. PUMP STARTS AFTER THE AST ISSUE VALVE IS FULLY OPEN. FSL-2 AND HPS-1 WILL BE ON A 30 SECOND DELAY AFTER VALVE IS FULLY OPEN TO ALLOW FOR PUMP STARTUP.
6. THE PLC WILL COUNT THE NUMBER OF START CALLS AND TURN ON PUMPS BASED ON THE FOLLOWING LOADS:
    a. ONE PUMP CALL WILL START EITHER P-1 OR P- 2 BASED ON LEAD/LAG PLC PROGRAMMING.
    b. TWO OR MORE PUMP CALLS WILL START THE SECOND PUMP.
    c. PLC WILL ALLOW A MAX OF 10 STARTS/HR WITH A 15 MINUTE COOL DOWN TO PREVENT PUMP MOTOR FAILURE.
7. LOCOMOTIVE REFUELING CRANE NOZZLE WILL CLOSE WHEN THE LOCOMOTIVE TANK IS FULL.
8. DEPRESS THE ISSUE PUMP STOP PUSHBUTTON AT THE LOCOMOTIVE REFUELING CRANE CONTROL STATION. THE PLC WILL COUNT THE NUMBER OF STOP CALLS AND SHUT DOWN THE PUMPS BASED THE ORIGINAL START CALL LOADS. THE TANK ISSUE VALVE WILL CLOSE AFTER THE PUMP(S) ARE OFF.
    a. IF THE OPERATOR DOES NOT DEPRESS THE PUMP STOP PUSHBUTTON AND MULTIPLE STATIONS ARE REFUELING (BOTH PUMPS ARE OPERATING), THE PLC WILL SHUT DOWN ONE PUMP IF THE HIGH PRESSURE SWITCH (HPS-1) IS ACTIVATED (SWITCH SETTING ADJUSTABLE, INITIALLY SET AT 90 PSI). PUMP SHUTDOWN WILL BE DETERMINED BY THE LEAD/LAG PLC PROGRAMMING.
    b. IF ONLY ONE PUMP IS RUNNING, THE PLC WILL IGNORE THE HIGH PRESSURE SWITCH (HPS-1) INPUT.
9. PLC WILL CAUSE ISSUE PUMP SHUTDOWN ON THE FOLLOWING ALARMS:
    a. LOW FLOW SWITCH TIMES OUT AFTER 15 SECONDS.
    b. FUEL LEVEL IN AST REACHES LOW LEVEL ALARM (LAL).
    c. ANY EMERGENCY SHUT OFF (ESO) IS ACTIVATED. ESO TO BE PROVIDED AT FCP-1 AND EACH OF FIVE LUBE OIL SUPPORT LOCATIONS.
10. UPON COMPLETION OF REFUELING OPERATIONS, RETURN VALVES TO THE "NORMAL" POSITION.
11. STOW THE LOCOMOTIVE REFUELING CRANE(S).
12. DISABLE FUEL ISSUE OPERATION AT FUEL CONTROL PANEL (FCP-1).

EQUIPMENT SCHEDULE

PDM 1 — POSITIVE DISPLACEMENT METER: 450 GPM, 4-INCH ANSI CLASS 150 FLANGED CONNECTION, LIQUID CONTROLS MODEL M-40 WITH MECHANICAL REGISTER.

FV 1 — FILTER VESSEL: 62 GAL VESSEL VOLUME, DESIGN PRESSURE 150 PSIG, 6-INCH ANSI CLASS 150 FLANGED CONNECTIONS, MP-25 MICRON FILTERS, PRESSURE SAFETY VALVE, AIR ELIMINATOR, MANUAL DRAIN VALVE, DIFFERENTIAL PRESSURE GAUGE. FACET MODEL 6M-314.

AE 1 — AIR ELIMINATOR: STEEL AIR ELIMINATOR AND BASKET STRAINER COMBINATION, 350 GPM CAPACITY, ANSI CLASS 150 FLANGED CONNECTIONS. LIQUID CONTROLS FS SERIES.

SRGS 1 — SURGE SUPPRESSOR: 5 GALLON SURGE BOTTLE, CHARGE PRESSURE OF 77 PSIA, 3 INCH ANSI CLASS 150 FLANGED CONNECTION, STEEL CONSTRUCTION WITH BUNA-N SEALS AND BLADDER. YOUNG ENGINEERING MODEL 5.0BSA-27.

PDP 1 — TRUCK OFFLOAD PUMP: SLIDING VANE ROTARY STYLE POSITIVE DISPLACEMENT, 350 GPM AT 77 FT, 50 PSI INTERNAL RELIEF SETTING. 15 HP, 1800 RPM, 240V/480V/3PH/60HZ. PROVIDE CLASS 1, DIV 2 MOTOR WITH T2C TEMP CLASS. ANSI CLASS 150 FLANGED CONNECTIONS. BLACKMER MODEL X4B.

P 1 / P 2 — ISSUE PUMP: ANSI VERTICAL CENTRIFUGAL PUMP. 250 GPM, 210 FEET TOTAL HEAD, 25 HP, 3500 RPM, 240V/480V/3PH/60HZ. PROVIDE CLASS 1, DIV 2 MOTOR WITH T2C TEMP CLASS. GOULDS MODEL 3996 1.5X3-8 WITH 7.625 IN IMPELLER. PROVIDE WITH ANSI 7311 SEAL FLUSH WITH 316 STAINLESS STEEL TUBING.

T 1 / T 2 — ABOVEGROUND STORAGE TANK: 30,000 GAL NOMINAL CAPACITY, SELF-CONTAINED ABOVEGROUND STORAGE TANK. APPROX. 13'-6"(W) x 49'-2"(L) x 12'-0"(H). CONSTRUCTED IN ACCORDANCE WITH UL-142.

LRC 1 / LRC 11 — LOCOMOTIVE REFUELING CRANE: 3-INCH, 300 GPM CAPACITY, ANSI CLASS 150 FLANGED CONNECTION, 15-FOOT REACH CAPABILITY, CARBON STEEL CONSTRUCTION, STANDARD SUPPORT COLUMN CONFIGURATION. SNYDER EQUIPMENT COMPANY MODEL 104-HP-1.

FCP 1 — FUEL CONTROL PANEL (NEMA 4) HOUSING THE PLC TO CONTROL THE FUEL RECEIPT AND ISSUE OPERATIONS DETAILED IN THE SEQUENCE OF OPERATIONS. PROVIDE SYSTEM RECEIPT AND ISSUE ENABLE/DISABLE SWITCH, ISSUE TANK SELECTION, TANK LEVEL SWITCH RESET, EMERGENCY SHUT OFF AND RESET AT PANEL. PROVIDE LOCAL PUMP START/STOP BUTTONS FOR PDP-1 AT THE TRUCK OFFLOAD, AND LOCAL PUMP START/STOP BUTTONS WITH PUMP STATUS LIGHTS AT EACH LOCOMOTIVE REFUELING CRANE STATION.

SCV 1 — SPRING CHECK VALVE. 3-INCH, FLANGE INSERT, ANSI CL 150. 10 PSI SPRING CRACKING PRESSURE. CHECK-ALL MODEL F1MSSMT10.OSS

ATG 1 — AUTOMATIC TANK GAUGE SYSTEM FOR BOTH TANKS, T-1 AND T-2. MOUNT IN AN ENCLOSURE SUITABLE FOR EXTERIOR EXPOSURE. PROVIDE TANK INTERSTITAL MONITORING SENSOR AND CONNECTION TO ARRC MONITORING SYSTEM. VEEDER ROOT TLS 350.

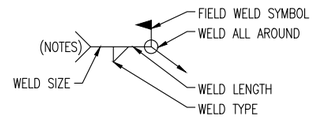
LA 1 — PROVIDE LEVEL SWITCH, STROBE, AND HORN AT EACH TANK, T-1 AND T-2. STROBE TO ACTIVATE AT LAL AND LAH. HORN TO ACTIVATE AT LAHH. PROVIDE LOCAL RESET BUTTON AT THE FUEL CONTROL PANEL. MAGNETROL MODEL C10.

FSL 1 / FSL 2 — LOW FLOW SWITCH. PROVIDE FLANGED CONNECTION. COORDINATE OUTPUT SIGNAL REQUIREMENTS. AMERITROL FX SERIES.

HPS 1 — HIGH PRESSURE SWITCH. PROVIDE FLANGED CONNECTION. COORDINATE OUTPUT SIGNAL REQUIREMENTS. SQUARE D 9012 G PRESSURE SWITCH.

MOV 4B / MOV 5B — BALL VALVE WITH ELECTRICAL ACTUATOR. ANSI CLASS 150 FLANGED CONNECTIONS. 30 SECOND MAX OPEN/CLOSE TIME. PROVIDE INDELAC CONTROLS, INC. OR SIMILAR.

WELD SYMBOLS



STATE OF ALASKA 49TH — Michael B. Morris ME-14854 2/4/19 REGISTERED PROFESSIONAL ENGINEER

ENTERPRISE ENGINEERING, INC.
400 US ROUTE 1, NORTH SUITE B, FALMOUTH, ME 04105, TEL. (207) 869-8006, FAX (207) 869-8015
2525 CAMBELL STREET, SUITE 200, ANCHORAGE, AK 99503, TEL. (907) 563-3835, FAX (907) 563-3817

REV.	DATE	BY	REVISION

ALASKA RAILROAD CORPORATION
ENGINEERING SERVICES
P.O. BOX 107500, ANCHORAGE, ALASKA 99510-7500

PROJECT: **LOCOMOTIVE REFUELING FACILITY ALASKA RAILROAD CORPORATION**

TITLE: **MECHANICAL LEGEND, ABBREVIATIONS AND EQUIPMENT SCHEDULE**

DESIGNED BY: MFF	SCALE: AS NOTED	M1.0	AFE NO.:
DRAWN BY: MFF			ACAD FILE: M1.0
CHECKED BY: TDH	DATE: 02-04-19		DWG NO. 12 OF 31
APPROVED BY: KBW			

C:\Users\bransonm\appdata\local\temp\AcPublish_15136\M1-0.dwg

MATERIALS SPECIFICATIONS

1. CARBON STEEL PIPE: ASTM A53/ A53M GRADE B, ASTM A106/ A106M GRADE B, OR API SPEC 5L GRADE B. PIPING LARGER THAN 2 INCHES SHALL BE STANDARD WEIGHT. PIPING 2 INCHES AND SMALLER SHALL BE SCHEDULE 80.
2. FLANGES:
   A. PROVIDE FLANGED END CONNECTIONS ON EQUIPMENT, FITTINGS, PIPING, PIPING COMPONENTS, ADAPTERS, COUPLERS, AND VALVES THAT CONFORM TO ASME B16.5, CLASS 150. FLANGES FOR PIPING LARGER THAN 2 INCHES SHALL BE WELD NECK TYPE. FLANGES FOR PIPING 2 INCHES AND SMALLER SHALL BE SOCKET WELD TYPE. FLANGES SHALL HAVE 1/16-INCH RAISED FACE WITH PHONOGRAPHIC FINISH, EXCEPT WHERE REQUIRED OTHERWISE TO MATCH EQUIPMENT FURNISHED. MATCH FLANGE FACE TO VALVES OR EQUIPMENT FURNISHED.
   B. CARBON STEEL FLANGES SHALL CONFORM TO ASTM A105/ A105M. STAINLESS STEEL FLANGES SHALL CONFORM TO ASTM A182/ A182M, GRADE F304 OR DUAL STAMP F304/F304L, FORGED TYPE.
   C. PROVIDE FLANGE GASKETS THAT ARE 1/8-INCH THICK AND THAT CONFORM TO ASME B16.21, RAISED-FACE TYPE UNLESS OTHERWISE INDICATED. GASKETS SHALL BE STAINLESS STEEL SPIRAL WOUND TYPE. SPIRAL WOUND TYPE SHALL ONLY BE COMPRESSED ONCE; PROVIDE A NEW GASKET EACH TIME FLANGE IS TIGHTENED.
3. FLANGE BOLTS, NUTS, AND WASHERS: BOLTS AND NUTS FOR PIPE FLANGES, FLANGED FITTINGS, VALVES AND ACCESSORIES SHALL CONFORM TO ASME B18.2.1 AND ASME B18.2.2. ANTI-SEIZE COMPOUND SHALL BE USED ON STAINLESS STEEL BOLTS.
   A. BOLTS: BOLTS SHALL BE REGULAR HEXAGONAL TYPE CONFORMING TO ASME B18.2.1 WITH MATERIAL CONFORMING TO ASTM A193/ A193M, CLASS 2, GRADE B8, STAINLESS STEEL, WHEN CONNECTIONS ARE MADE WHERE A STAINLESS STEEL FLANGE IS INVOLVED, AND GRADE B7 WHEN ONLY CARBON STEEL FLANGES ARE INVOLVED. BOLTS SHALL BE THREADED IN ACCORDANCE WITH ASME B1.1, CLASS 2A FIT, COARSE THREAD SERIES, FOR SIZES 1-INCH AND SMALLER AND EIGHT-PITCH THREAD SERIES FOR SIZES LARGER THAN 1-INCH. BOLTS SHALL BE OF SUFFICIENT LENGTH TO OBTAIN FULL BEARING ON THE NUTS AND SHALL PROJECT NO LESS THAN TWO FULL THREADS BEYOND THE NUTS WITH THE BOLTS TIGHTENED TO THE REQUIRED TORQUE. TIGHTEN BOLTS TO TORQUE AND TIGHTENING PATTERN RECOMMENDED BY GASKET MANUFACTURER.
   B. NUTS: NUTS SHALL CONFORM TO ASME B18.2.2, HEXAGONAL, HEAVY SERIES WITH MATERIAL CONFORMING TO ASTM A194/ A194M, GRADE 8, STAINLESS STEEL FOR STAINLESS STEEL BOLTS, AND GRADE 7 FOR CARBON STEEL BOLTS. NUTS SHALL BE THREADED IN ACCORDANCE WITH ASME B1.1, CLASS 2B FIT, COARSE THREAD FOR SIZES 1-INCH AND SMALLER AND EIGHT-PITCH THREAD FOR SIZES LARGER THAN 1-INCH.
   C. WASHERS: PROVIDE WASHERS UNDER BOLT HEADS AND NUTS. WASHERS TO BE ASTM F436, FLAT CIRCULAR STAINLESS STEEL FOR STAINLESS STEEL BOLTS, AND CARBON STEEL FOR CARBON STEEL BOLTS.
4. CARBON STEEL FITTINGS: END CONNECTIONS FOR PIPE OR FITTINGS 2 INCHES AND SMALLER SHALL BE FORGED, SOCKET WELD TYPE CONFORMING TO ASTM A182/ A182M AND ASME B16.11, UNLESS INDICATED OTHERWISE. END CONNECTIONS FOR PIPE OR FITTINGS 2-1/2 INCHES AND LARGER SHALL BE BUTTWELD TYPE CONFORMING TO ASTM A234/ A234M, GRADE WPB AND ASME B16.9 OF THE SAME WALL THICKNESS AS THE ADJOINING PIPE. WHERE THREADED END CONNECTIONS ARE INDICATED, PROVIDE CONNECTIONS THAT CONFORM TO ASME B16.3, CLASS 150 OR ASME B16.11.
5. STAINLESS STEEL CONTROL TUBING: SEAMLESS, FULLY ANNEALED TUBING CONFORMING TO ASTM A269, GRADE TP316, ROCKWELL HARDNESS B80 OR LESS. WALL THICKNESS FOR 1/2-INCH TUBING TO BE 0.049-INCH.
6. STAINLESS STEEL TUBE FITTINGS: FLARELESS, TYPE 316 STAINLESS STEEL FITTINGS CONFORMING TO SAE J514.
7. UNIONS: FORGED, SOCKET WELD TYPE CONFORMING TO ASTM A105/ A105M, ASME B16.11, AND MSS SP-83; 3,000 POUND MINIMUM.
8. STEEL COUPLINGS: CONFORM TO ASTM A105/ A105M AND ANSI/ASME B1.20.1; 3,000 POUND MINIMUM.
9. FORGED BRANCH FITTINGS: CONFORM TO ASTM A105/ A105M, ASME B31.3, AND MSS SP-97. FITTINGS SHALL BE REINFORCED TAPER BORE TYPE. CONNECTION TO HEADER PIPING SHALL BE BY FULL PENETRATION GROOVE WELD. OUTLET CONNECTION TO BRANCH PIPE SHALL BE THREADED, SOCKET WELDED, OR BUTTWELDED AS INDICATED. FORGED BRANCH FITTINGS SHALL ONLY BE PROVIDED WHERE INDICATED AND FOR BRANCH CONNECTIONS FOR PIPING 2 INCHES AND SMALLER.
10. WAFER CHECK VALVES: ANSI CLASS 150, DUAL-PLATE, WAFER TYPE THAT CONFORMS TO API STD 594, TYPE A. VALVE DISC SHALL BE CONSTRUCTED OF ASTM A351/ A351M, GRADE CF8M STAINLESS STEEL. VALVE SPRING, HINGE PIN, STOP PIN, AND RADIAL-THRUST BEARING MATERIALS SHALL BE CONSTRUCTED OF TYPE 316 STAINLESS STEEL. VALVE SHALL BE RATED FOR 285 PSIG (MIN) AT -20°F TO 100°F.
11. CHECK VALVES (SIZES SMALLER THAN 2-1/2 INCHES): SPRING-LOADED BALL-TYPE OR SPRING-LOADED SWING TYPE CHECK VALVE CONFORMING TO API 598, API 602, AND ASME B16.34. VALVES SHALL BE SUITABLE FOR INSTALLATION IN THE VERTICAL (UP OR DOWN) OR HORIZONTAL POSITIONS. VALVE SHALL REQUIRE A MINIMUM OPENING DIFFERENTIAL PRESSURE OF APPROXIMATELY 1 PSI. VALVES INSTALLED IN STAINLESS STEEL PIPING SYSTEMS SHALL HAVE BODIES CONSTRUCTED OF STAINLESS STEEL. VALVES INSTALLED IN CARBON STEEL PIPING SYSTEMS SHALL HAVE BODIES CONSTRUCTED OF CARBON STEEL. VALVES SHALL HAVE STAINLESS STEEL INTERNAL BALL/DISK AND SPRING. PROVIDE VALVES WITH THREADED NPT END CONNECTIONS. RATED FOR 285 PSIG (MIN) AT -20°F TO 100°F.
12. BALL VALVES (SIZES SMALLER THAN 2 INCHES): VALVE SHALL BE OF 3-PIECE CONSTRUCTION WITH ENCLOSED FASTENERS CONFORMING TO MSS SP-110. VALVE SHALL HAVE INTERCHANGEABLE END CAPS CONFORMING TO ASME B16.11 (SOCKET WELDED) AND ASME B1.20.1 (NPT); VALVE END CAPS SHALL BE REMOVED DURING WELDING TO PREVENT HEAT DAMAGE TO THE SEATS. VALVES INSTALLED IN STAINLESS STEEL PIPING SYSTEMS SHALL HAVE BODIES CONSTRUCTED OF CF8M STAINLESS STEEL. VALVES INSTALLED IN CARBON STEEL PIPING SYSTEMS SHALL HAVE BODIES CONSTRUCTED OF WCB CARBON STEEL. VALVES SHALL HAVE STAINLESS STEEL PRESSURE BALANCED SOLID BALL, STAINLESS STEEL ANTI-BLOWOUT ONE PIECE BOTTOM ENTRY STEM, AND STAINLESS STEEL HARDWARE. VALVE SHALL BE RATED FOR SERVICE AT 285 PSIG AT TEMPERATURES BETWEEN -20°F AND 100°F. VALVE SHALL HAVE A FULL-PORT BALL AND TWO POSITION LOCKING HANDLE.
13. BALL VALVES (2 INCHES AND LARGER): ANSI CLASS 150, NON-LUBRICATED, DOUBLE SEATED, SPLIT-BODY, BALL TYPE THAT CONFORMS TO REQUIREMENTS OF ASME B16.5, ASME B16.10, ASME B16.34, AND API 598. VALVE SHALL MEET THE FIRE TEST REQUIREMENTS OF API STD 607. VALVE SHALL OPERATE FROM FULLY OPEN TO FULLY CLOSED WITH 90 DEGREE ROTATION OF THE BALL. VALVE SHALL BE CAPABLE OF 2-WAY SHUTOFF. VALVES INSTALLED IN CARBON STEEL PIPING SYSTEMS SHALL HAVE A BODY CONSTRUCTED OF WCB CARBON STEEL. VALVES INSTALLED IN STAINLESS STEEL PIPING SYSTEMS SHALL HAVE A BODY CONSTRUCTED OF CF8M STAINLESS STEEL. VALVE BALL SHALL BE SOLID, NOT HOLLOW CAVITY, AND SHALL BE CONSTRUCTED OF STAINLESS STEEL. BALL VALVES SHALL HAVE VITON OR PTFE SEATS, BODY SEALS AND STEM SEALS. VALVE SHALL BE RATED FOR 285 PSIG (MIN) AT -20°F TO 100°F. EXCEPT AS OTHERWISE SPECIFIED, REDUCED PORT OR FULL PORT VALVES MAY BE PROVIDED AT THE CONTRACTOR'S OPTION. BALLS IN VALVES 10 INCHES AND LARGER FOR FULL PORT VALVES (12 INCHES AND LARGER FOR REGULAR PORT VALVES) SHALL HAVE TRUNNION TYPE SUPPORT BEARINGS. MANUALLY OPERATED VALVES 6 INCHES AND LARGER SHALL BE WORM GEAR OPERATED AND VALVES SMALLER THAN 6 INCHES SHALL BE LEVER OPERATED OR HANDWHEEL OPERATED. VALVES INSTALLED MORE THAN 8 FEET ABOVE FINISHED FLOOR SHALL HAVE CHAIN OPERATORS AND POSITION INDICATORS VISIBLE FROM GROUND LEVEL.
14. BUTTERFLY VALVE: ANSI CLASS 150. VALVE SHALL BE THE 1/4 TURN, DOUBLE OFFSET DESIGN MEETING THE APPLICABLE REQUIREMENTS OF API STD 598 AND API STD 609. VALVES SHALL BE PROVIDED WITH TAPPED LUG BODIES. SEMI-LUG STYLE LUG BODIES ARE NOT ALLOWED. VALVE SHALL MEET THE FIRE TEST REQUIREMENTS OF API STD 607. VALVE SHALL BE DESIGNED FOR BUBBLETIGHT BIDIRECTIONAL SHUTOFF SERVICE AT OPERATING CONDITIONS. VALVE BODY SHALL BE MADE FROM CARBON STEEL. DISC AND STEM SHALL BE STAINLESS STEEL. SEAL RING SHALL BE TEFLON WITH METAL BACKUP. STEM SEALS SHALL BE CAPABLE OF WITHSTANDING THE RATED PRESSURE AND TEMPERATURE OF THE VALVE SEAT. VALVE SHALL BE RATED FOR 285 PSIG (MIN) AT -20°F TO 100°F. MANUALLY OPERATED VALVES 6 INCHES AND LARGER SHALL BE WORM GEAR OPERATED AND VALVES SMALLER THAN 6 INCHES SHALL BE LEVER OPERATED OR HANDWHEEL OPERATED.
15. DOUBLE-BLOCK-AND-BLEED (DB&B) PLUG VALVES: ANSI CLASS 150, NON-LUBRICATED, RESILIENT, DOUBLE SEATED, TRUNNION MOUNTED TYPE WITH A TAPERED LIFT PLUG CAPABLE OF 2-WAY SHUTOFF THAT CONFORMS TO API SPEC 6D. RATED FOR 285 PSIG (MIN) AT -20°F TO 100°F. VALVE SHALL HAVE ELECTROPLATED NICKEL INTERIORS. VALVE PLUG SHALL BE CONSTRUCTED OF STEEL OR DUCTILE IRON WITH ELECTROPLATED NICKEL THAT IS SUPPORTED ON UPPER AND LOWER TRUNNIONS. VALVE SEALING SLIPS SHALL BE CONSTRUCTED OF STEEL OR DUCTILE IRON WITH VITON SEALS. VALVE SHALL OPERATE FROM FULLY OPEN TO FULLY CLOSED BY ROTATION OF THE HANDWHEEL TO LIFT AND TURN THE PLUG. ROTATION OF THE HANDWHEEL TOWARD CLOSED SHALL LOWER THE PLUG AFTER SEALING SLIPS ARE ALIGNED WITH THE VALVE BODY AND FORCE THE SEALING SLIPS AGAINST THE VALVE BODY FOR POSITIVE CLOSURE. WHEN VALVE IS CLOSED, SLIPS SHALL FORM A SECONDARY FIRE-SAFE METAL TO METAL SEAT ON BOTH SIDES OF THE RESILIENT SEAL. VALVES SHALL HAVE WEATHERPROOF OPERATORS WITH MECHANICAL POSITION INDICATORS. INDICATOR SHAFT SHALL BE STAINLESS STEEL. PROVIDE ALL DB&B VALVES WITH AUTOMATIC BODY CAVITY THERMAL RELIEF TO RELIEVE THE PRESSURE BUILD UP IN THE INTERNAL BODY CAVITY WHEN THE VALVE IS CLOSED. RELIEF VALVE SHALL OPEN AT 25 PSI DIFFERENTIAL PRESSURE AND SHALL DISCHARGE TO THE THROAT OF, AND TO THE UPSTREAM SIDE, OF THE VALVE. PROVIDE VALVES WITH MANUALLY OPERATED BLEED VALVES THAT CAN BE OPENED TO VERIFY THAT THE VALVES ARE NOT LEAKING WHEN IN THE CLOSED POSITION.
16. BALL VALVE WITH ELECTRICALLY OPERATED ACTUATOR: BALL VALVE, ACTUATOR AND ACCESSORIES SHALL BE PROVIDED AS A COMPLETE PACKAGE THAT IS ASSEMBLED, CALIBRATED AND TESTED BY THE ACTUATOR SUPPLIER/ MANUFACTURER.
   A. BALL VALVE: VALVE SHALL MEET THE REQUIREMENTS AS INDICATED HEREIN FOR BALL VALVES (2 INCHES AND LARGER). PROVIDE WITH REGULAR (REDUCED) PORT BALL.
   B. ELECTRIC VALVE ACTUATOR: ACTUATOR, CONTROLS AND ACCESSORIES SHALL BE THE RESPONSIBILITY OF THE ACTUATOR SUPPLIER/ MANUFACTURER FOR SIZING, ASSEMBLY, CERTIFICATION, TESTING AND ANY ADJUSTMENTS NECESSARY TO OPERATE THE VALVE AS SPECIFIED. THE ELECTRIC VALVE ACTUATOR SHALL INCLUDE AS AN INTEGRAL UNIT THE ELECTRIC MOTOR, ACTUATOR UNIT GEARING, POSITION LIMIT SWITCHES, AUXILIARY OPEN/CLOSE SWITCHES, DRIVE BUSHING OR STEM NUT, DECLUTCHING MANUAL OVERRIDE WITH HAND WHEEL, WIRING TERMINALS FOR POWER, AND VISUAL POSITION INDICATOR. THE ELECTRICALLY ACTUATED VALVE SHALL BE SET TO OPEN AND CLOSE IN 30 SECONDS AGAINST A MAXIMUM DIFFERENTIAL PRESSURE OF 100 PSIG. THE VALVE ACTUATOR SHALL BE CAPABLE OF FUNCTIONING IN AN AMBIENT ENVIRONMENT TEMPERATURE RANGING FROM -20°F TO 100°F AND SHALL BE PROVIDED WITH AN INTERNAL COMPARTMENT HEATER AND THERMOSTAT. THE ELECTRICAL ENCLOSURE SHALL BE SPECIFICALLY APPROVED FOR INSTALLATION IN CLASS 1, DIVISION 1, GROUP D LOCATIONS. PROVIDE INDELAC CONTROLS, INC. QUARTER-TURN, 2-POSITION ELECTRIC ACTUATOR.
17. PRESSURE RELIEF (SAFETY) VALVES: VALVE SHALL BE THE FULLY ENCLOSED, SPRING LOADED, ANGLE PATTERN, BALL SEATED TYPE. VALVE SHALL HAVE CORROSION-RESISTANT VALVE SEATS. VALVE STEM SHALL BE FULLY GUIDED BETWEEN THE FULLY OPENED AND FULLY CLOSED POSITIONS. VALVE SHALL BE FACTORY SET TO OPEN AT THE INDICATED PRESSURE (PLUS OR MINUS TEN PERCENT DEVIATION). VALVE SETPOINT SHALL BE FIELD ADJUSTABLE WITHIN A MINIMUM RANGE OF PLUS OR MINUS 20 PERCENT OF THE INDICATED SETPOINT. VALVE SHALL BE DIFFERENTIAL PRESSURE TYPE VALVE WHICH OPENS WHEN THE PRESSURE DIFFERENTIAL ACROSS THE VALVE EQUALS THE SET PRESSURE. THE PRESSURE IN THE DOWNSTREAM PIPING IS ALLOWED TO INFLUENCE THE OPENING PRESSURE OF THE VALVE. CARBON STEEL BODY WITH STAINLESS STEEL WETTED TRIM. RATED FOR 285 PSIG (MIN) AT -20°F TO 100°F. END CONNECTIONS AS INDICATED.
18. BASKET STRAINERS: STRAINERS SHALL BE THE IN-LINE, CLEANABLE, SIMPLEX BASKET TYPE. STRAINER BODY SHALL BE FABRICATED OF CAST STEEL WITH ANSI CLASS 150 FLANGED CONNECTIONS. STRAINER BODY SHALL INCLUDE A DRAIN CONNECTION. PROVIDE A STRAINER DRAIN THAT IS INCLUSIVE OF PIPE NIPPLES, A BALL VALVE FOR SHUTOFF, AND A CAM AND GROOVE ADAPTOR WITH DUST CAP. STRAINER SHALL BE EQUIPPED WITH A REMOVABLE COVER, VENT CONNECTION, DIFFERENTIAL PRESSURE PORTS, AND ARROW CLEARLY CAST ON THE STRAINERS SIDES THAT INDICATE THE DIRECTION OF FLOW. STRAINERS SHALL HAVE A REMOVABLE TYPE 316 STAINLESS STEEL WIRE SEDIMENT SCREEN. SCREEN MESH OPENING SHALL BE AS INDICATED. WHERE INDICATED, PROVIDE STRAINER WITH A DIRECT-READING, PISTON TYPE DIFFERENTIAL PRESSURE GAUGE THAT MEASURES THE DIFFERENTIAL PRESSURE ACROSS THE BASKET.
19. TRUCK OFFLOAD POSITIVE DISPLACEMENT METER: METER SHALL BE A ONE-WAY FLOW, TEMPERATURE COMPENSATING, POSITIVE DISPLACEMENT TYPE METER DESIGNED FOR A CONTINUOUS FLOW OF 450 GPM. METER SHALL HAVE ANSI CLASS 150 FLANGED CONNECTIONS AND A BODY WORKING PRESSURE OF 150 PSI. METER SHALL BE FACTORY CALIBRATED FOR DIESEL FUEL AND CAPABLE OF BEING CALIBRATED IN THE FIELD. THE REGISTER SHALL HAVE A NON-SETBACK TOTAL INDICATOR AND A SETBACK TYPE RUN INDICATOR. THE TOTAL INDICATOR SHALL HAVE A MINIMUM OF EIGHT FIGURES AND THE SETBACK RUN INDICATOR SHALL HAVE A MINIMUM OF FIVE FIGURES. THE REGISTER SHALL READ IN GALLONS AND THE SMALLEST UNIT OF INDICATED DELIVERY SHALL BE 1 GALLON. ACCURACY SHALL BE WITHIN +0.3 PERCENT BETWEEN TEN PERCENT AND MAXIMUM RATED FLOW. METER SHALL INCLUDE A TICKET PRINTER. PROVIDE LIQUID CONTROLS MODEL M-40 OR APPROVED SUBSTITUTION.
20. PRESSURE INDICATOR: GAUGE SHALL BE THE SINGLE STYLE TYPE THAT CONFORMS TO ASME B40.100. GAUGE SHALL HAVE A 4-1/2 INCH DIAL, STAINLESS STEEL CASE AND TUBE, PRESSURE SNUBBER, AND SCALE RANGE AS INDICATED. GAUGES SHALL BE LIQUID-FILLED WITH SILICONE.
21. DIFFERENTIAL PRESSURE INDICATOR: GAUGE SHALL BE THE DIRECT-READING, PISTON TYPE. PISTON SHALL BE SPRING-SUPPORTED, CORROSION RESISTANT AND SHALL TRAVEL VERTICALLY INSIDE A GLASS CYLINDER. GAUGE'S SCALE SHALL BE BETWEEN 0 TO 30 PSI AND SHALL HAVE AN ACCURACY OF PLUS OR MINUS 0.5 PSI. GAUGE'S SCALE SHALL HAVE 1 PSI GRADATIONS. GAUGE'S MAXIMUM PISTON TRAVEL SHALL BE 3 INCHES. GAUGE SHALL BE RATED FOR AN OPERATING PRESSURE OF 300 PSI IN EITHER DIRECTION. GLASS CYLINDER SHALL HAVE STAINLESS STEEL END FLANGES WITH VITON O-RING SEALS. GAUGE'S HIGH PRESSURE INLET SHALL HAVE A 10 MICRON PLEATED PAPER FILTER. PROVIDE A FINE MESH STAINLESS STEEL STRAINER ON THE GAUGE'S LOW PRESSURE INLET CONNECTION. GAUGE'S HIGH AND LOW PRESSURE CONNECTIONS SHALL BE 1/4 INCH NPT FEMALE WITH A STAINLESS STEEL BAR STOCK VALVE AT EACH CONNECTION. UNDER A DIFFERENTIAL PRESSURE OF 30 PSI, LEAKAGE PAST THE PISTON SHALL NOT EXCEED 120 DROPS PER MINUTE.
22. COATED U-BOLTS AND FRP HALF-ROUND: PIPE SUPPORTS SHALL BE PROVIDED WITH COATED U-BOLTS AND FRP SLIDE PADS WHERE INDICATED.
   A. COATED U-BOLTS SHALL BE STAINLESS STEEL LONG TANGENT U-BOLT (SIZED AND DESIGNED FOR USE WITH PIPING) WITH SEAMLESS, VULCANIZED POLYOLEFIN COATING. U-BOLT SHALL BE OVERSIZED OR TIGHT FITTING AS INDICATED. OVERSIZED U-BOLT SHALL PROVIDE A MINIMUM OF 1-INCH SPACE BETWEEN U-BOLT AND PIPE. COORDINATE WITH FRP HALF ROUNDS AND PRE-DRILLING OF STEEL STRUCTURES. U-BOLT SHALL BE I-ROD AND NU-BOLT AS MANUFACTURED BY DEEPWATER CORROSION SERVICES, INC. OR APPROVED SUBSTITUTION.
23. SITE FLOW INDICATOR SHALL BE CONSTRUCTED OF STAINLESS OR CARBON STEEL AND SHALL BE PROVIDED WITH FLANGED END CONNECTIONS. INDICATOR SHALL BE INCLUDED WITH AN INTERNAL ROTATING PROPELLER TO PROVIDE VISUAL FLOW INDICATION. INDICATOR HOUSING SHALL INCLUDE TEMPERED GLASS OBSERVATION PORT FOR VIEWING THE ROTATING PROPELLER. INDICATOR SHALL HAVE BUNA-N SEALS.
24. FLANGED SWIVEL JOINTS SHALL BE STAINLESS STEEL, SINGLE PLANE, AND CAPABLE OF ROTATING 360 DEGREES. SWIVEL JOINTS SHALL BE OF THE NON-LUBRICATED TYPE.
25. MECHANICAL EQUIPMENT SHALL BE PROVIDED IN ACCORDANCE WITH APPROVED EQUIPMENT SUBMITTALS.

COATING REQUIREMENTS

1. ALL PIPE SHALL BE COATED.
2. PREPARE SURFACE FOR COATING BY SP-6 COMMERCIAL BLAST CLEANING, SP-7 BRUSH-OFF BLAST CLEANING, OR SP-10 NEAR-WHITE BLAST CLEANING (REFER TO COATING SYSTEM MANUFACTURERS RECOMMENDATION).
3. AT MINIMUM THE COATING SYSTEM SHALL CONSIST OF A ZINC BASED PRIMER OF 2-4 MILS AND AN EPOXY TOP COAT OF 2-5 MILS OR A SYSTEM PROVIDING EQUIVALENT PROTECTION.

DECOMMISSIONING

1. THE FOLLOWING ABOVE GROUND EQUIPMENT WILL BE REMOVED AND DISPOSED OF:
   1.1. TWO BLACKMER PD PUMPS
   1.2. FACET FILTRATION VESSEL
   1.3. APPROXIMATELY 25 TO 50 FEET OF ABOVEGROUND PIPING AND ASSOCIATED VALVES IN EXISTING PUMPHOUSE (BUILDING 91).
   1.4. FIVE OPW REFUELING ARMS (THE EXISTING SNYDER AUTOMATIC NOZZLES ARE TO BE REUSED).
2. THE EXISTING 70,000 GALLON AST, PUMPHOUSE (BUILDING 91), AND UNDERGROUND PIPING WILL BE ABANDONED IN PLACE.
3. DEFUEL THE EXISTING SYSTEM WITH VACUUM TRUCKS. THE VACUUM TRUCKS WILL BE PROVIDED BY CONTRACTOR. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DISPOSING OF THE FUEL.
4. SWAB CLEAN THE EXISTING FUEL PIPING WITH AN ABSORBENT PAD.
5. REMOVE THE EXISTING FUELING ARMS AND POUR 8 CUBIC FEET OF SLURRY INTO THE 3 INCH FUEL PIPING.

COMMISSIONING

1. FUEL FOR TESTING WILL BE PROVIDED BY THE ALASKA RAILROAD CORPORATION.
2. TANK TRUCK WILL BE PROVIDED BY THE CONTRACTOR.
3. PRIOR TO PERFORMING A FLUSH OPERATION ON THE RECEIPT PIPING REMOVE THE METER AND INSTALL A PIPE SPOOL.
4. INITIAL FUEL INTRODUCTION: SLOWLY INTRODUCE FUEL INTO PIPING AND VESSELS. THE CONTRACTOR SHALL STATION PERSONNEL THROUGHOUT PIPING SYSTEM AT HIGH POINT VENTS TO BLEED AIR. ALL FLANGES AND EQUIPMENT WILL BE PERIODICALLY INSPECTED FOR LEAKS DURING FILLING PROCEDURES. RECEIPT FLOW RATE INTO AN EMPTY STORAGE TANK SHALL NOT EXCEED 3 FEET PER SECOND UNTIL THE OUTLET OF THE TANK FILL TUBE IS SUBMERGED. DIFFERENTIAL PRESSURE ACROSS STRAINERS SHALL BE CONTINUOUSLY MONITORED. ANYTIME A STRAINER DP REACHES 20 PSIG IT SHALL BE CLEANED.
5. HYDROSTATIC TEST WITH FUEL: PRIOR TO PERFORMING THE HYDROTEST REMOVE EACH OF THE 11 BUTTERFLY VALVES ON THE FUEL CRANES AND INSTALL A BLIND FLANGE. THE TEST SHALL BE PERFORMED AT 425-450 PSI FOR NO LESS THAN 2 HOURS.
6. FLUSHING: FLUSH A MINIMUM OF 5000 GALLONS OF FUEL THROUGH THE SYSTEM. THE FUEL SHALL BE COLLECTED AT THE END OF THE TRENCH BY A TANKER TRUCK.
7. FOLLOWING COMPLETION OF THE FLUSHING REINSTALL THE METER ON THE RECEIPT PIPING.
8. PERFORM A TEST OF THE EMERGENCY PUMP STOP TO ENSURE PROPER OPERATION.
9. STORAGE TANK TESTS: DEMONSTRATE THE FOLLOWING FEATURES:
   9.1. TANK FLOAT STOP VALVE
   9.2. LEVEL ALARM ACTUATION
   9.3. PUMP SHUTDOWN ON LEVEL ALARM ACTUATION
   9.4. START/STOP PUSH BUTTON
   9.5. TANK GAUGING SYSTEM
   9.6. PUMP SHUTDOWN ON SIGNAL FROM FLOW SWITCH
   9.7. PUMP SHUTDOWN ON SIGNAL FROM PRESSURE SWITCH
   9.8. RECEIPT METER PERFORMANCE
10. FIELD ADJUST PRESSURE SWITCH SETTING TO ENSURE PROPER SHUT-OFF OF SECOND PUMP. INITIAL SETTING SHOULD BE APPROXIMATELY 90 PSI.
11. FIELD ADJUST LOW FLOW TIMER. COORDINATE WITH FACILITY PERSONNEL TO DETERMINE REQUIRED TIME FOR FACILITY PERSONNEL TO COMPLETE FUELING OPERATIONS WITHOUT PUMPS SHUTTING DOWN DUE TO LOW FLOW. INITIAL TIMER SETTING SHOULD BE 15 SECONDS.
12. CONTRACTOR TO MEET WITH FACILITY PERSONNEL FOUR MONTHS AFTER PROJECT COMPLETION TO PROVIDE PLC PROGRAMMING ADJUSTMENTS AS REQUIRED.

STATE OF ALASKA
49 TH
Michael B. Morris
ME-14854
REGISTERED PROFESSIONAL ENGINEER

ENTERPRISE ENGINEERING, INC.
400 US ROUTE 1
NORTH SUITE B
FALMOUTH, ME 04105
TEL. (207) 869-8006
FAX (207) 869-8015

2525 GAMBELL STREET
SUITE 200
ANCHORAGE, AK 99503
TEL. (907) 563-3835
FAX (907) 563-3817

IF SHEET IS LESS THAN
22" X 34"
IT IS A REDUCED PRINT -
SCALE REDUCED ACCORDINGLY

REV.	DATE	BY	REVISION

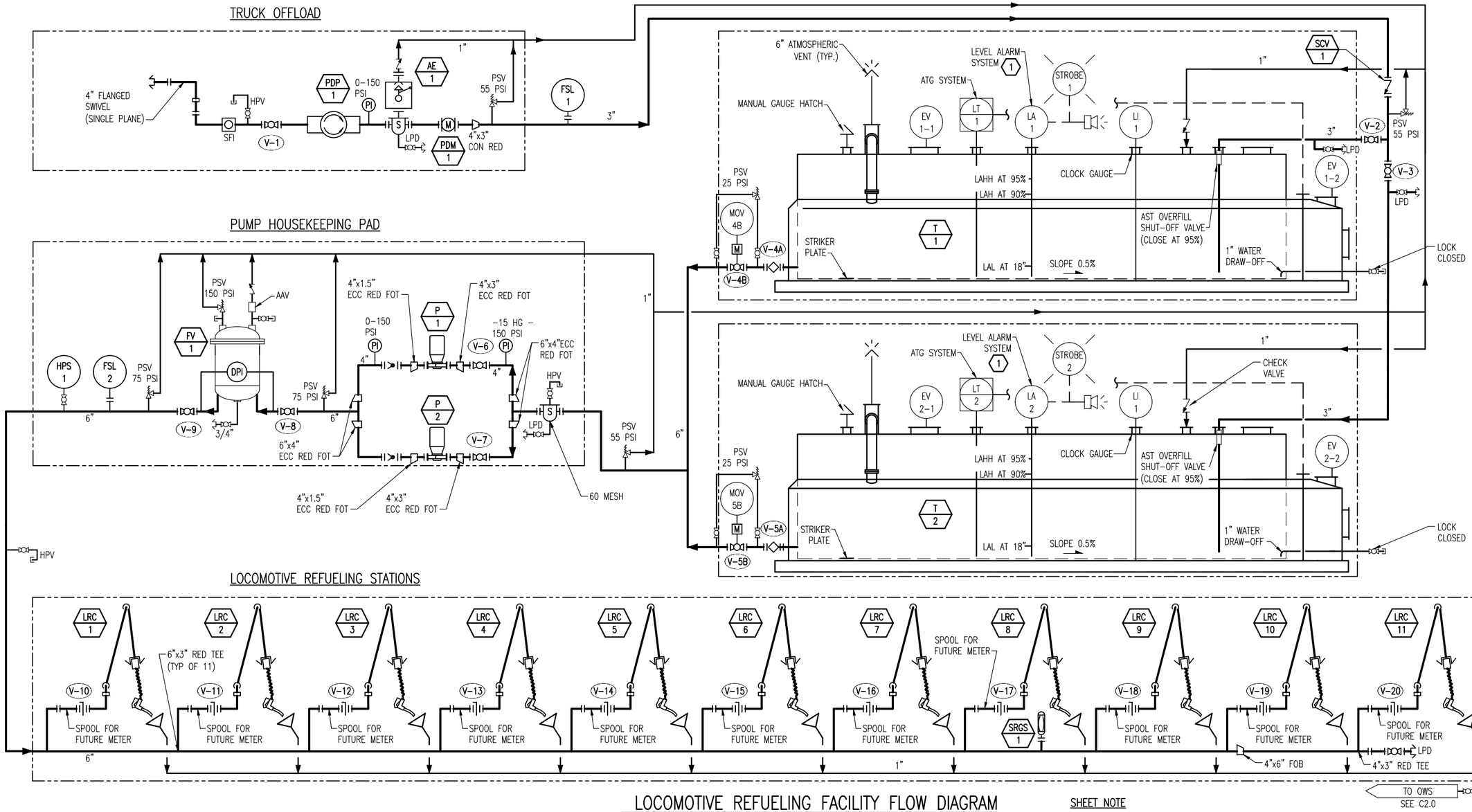
ALASKA RAILROAD CORPORATION
ENGINEERING SERVICES
P.O. BOX 107500, ANCHORAGE, ALASKA 99510-7500

PROJECT:
LOCOMOTIVE REFUELING FACILITY
ALASKA RAILROAD CORPORATION

TITLE:
MECHANICAL SPECIFICATIONS

DESIGNED BY: MFF	SCALE: NTS	M1.1	AFE NO.:
DRAWN BY: MFF			ACAD FILE:
CHECKED BY: TDH	DATE: 02-04-19		DWG NO. 13 OF 31
APPROVED BY: KBW			

P:\projects\3669\Cad\Current Dwg %\Mech\M1-1.dwg



VALVE SETTINGS		X=CLOSED	O=OPEN	
V-No	FUNCTION LOCATION	NORMAL	RECEIPT	ISSUE
V-1	OFFLOAD POINT	X	O	X
V-2	TANK 1 FILL	X	O	X
V-3	TANK 2 FILL	X	O	X
V-4A	TANK 1 ISSUE	O	X	O
V-4B	TANK 1 ISSUE (MOV)	X	X	O
V-5A	TANK 2 ISSUE	O	X	O
V-5B	TANK 2 ISSUE (MOV)	X	X	O
V-6	PUMP 1 ISOLATION	O	O	O
V-7	PUMP 2 ISOLATION	O	O	O
V-8	FV INLET	O	O	O
V-9	FV OUTLET	O	O	O

VALVE SETTINGS		X=CLOSED	O=OPEN	
V-No	FUNCTION LOCATION	NORMAL	RECEIPT	ISSUE
V-10	REFUEL STATION 1	O	O	O
V-11	REFUEL STATION 2	O	O	O
V-12	REFUEL STATION 3	O	O	O
V-13	REFUEL STATION 4	O	O	O
V-14	REFUEL STATION 5	O	O	O
V-15	REFUEL STATION 6	O	O	O
V-16	REFUEL STATION 7	O	O	O
V-17	REFUEL STATION 8	O	O	O
V-18	REFUEL STATION 9	O	O	O
V-19	REFUEL STATION 10	O	O	O
V-20	REFUEL STATION 11	O	O	O

LOCOMOTIVE REFUELING FACILITY FLOW DIAGRAM

DETAIL REFERENCES

THE FOLLOWING TYPICAL MECHANICAL/PIPING COMPONENTS ARE REFERRED TO BY NAME OR ASSOCIATED ABBREVIATION THROUGHOUT THE MECHANICAL DRAWING SET. FOR EACH COMPONENT, SEE THE GIVEN DETAIL REFERENCE:

1. PRESSURE INDICATOR (PI) — 1 / M2.0 | M5.0
2. HIGH POINT VENT (HPV) — 2 / M2.0 | M5.0
3. LOW POINT DRAIN (LPD) — 3 / M2.0 | M5.0
4. PRESSURE SAFETY VALVE (PSV OR PRV) CONNECTION — 4 / M2.0 | M5.0
5. FLOW SWITCH LOW (FSL) CONNECTION — 5 / M2.0 | M5.0
6. HIGH PRESSURE SWITCH (HPS) — 6 / M2.0 | M5.0

SHEET NOTE

1. SET STROBE TO ACTIVATE AT LAL AND LAH (90% TANK CAPACITY BY VOLUME) AND HORN TO ACTIVATE AT LAHH (95% TANK CAPACITY BY VOLUME). PLC TO SHUT OFF PUMP. PDP-1, AT LAH AND LAHH.

IF SHEET IS LESS THAN 22" X 34" IT IS A REDUCED PRINT – SCALE REDUCED ACCORDINGLY

REV.	DATE	BY	REVISION

STATE OF ALASKA 49TH — Michael B. Morris, ME-14854, 2/4/19, REGISTERED PROFESSIONAL ENGINEER

ENTERPRISE ENGINEERING, INC.
400 US ROUTE 1, NORTH SUITE B, FALMOUTH, ME 04105, TEL. (207) 869-8006, FAX (207) 869-8015
2525 GAMBELL STREET, SUITE 200, ANCHORAGE, AK 99503, TEL. (907) 563-3835, FAX (907) 563-3817

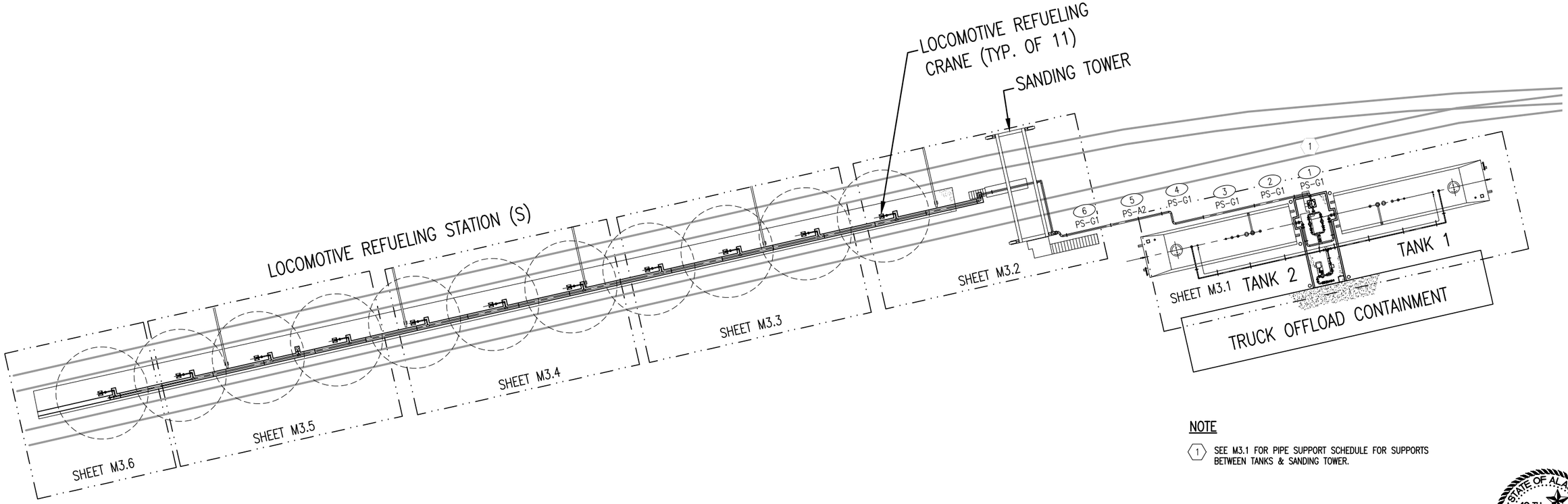
ALASKA RAILROAD CORPORATION
ENGINEERING SERVICES
P.O. BOX 107500, ANCHORAGE, ALASKA 99510-7500

PROJECT: **LOCOMOTIVE REFUELING FACILITY ALASKA RAILROAD CORPORATION**

TITLE: **MECHANICAL FLOW DIAGRAM**

DESIGNED BY:	MFF
DRAWN BY:	MFF
CHECKED BY:	TDH
APPROVED BY:	KBW
SCALE:	NTS
DATE:	02-04-19
	M2.0
AFE NO.:	
ACAD FILE:	
DWG NO.	14 OF 31

P:\projects\8669\Cad\Current Dwg %%Mech\M2-0.dwg



N

LOCOMOTIVE REFUELING FACILITY OVERALL VIEW

NOTE

(1) SEE M3.1 FOR PIPE SUPPORT SCHEDULE FOR SUPPORTS BETWEEN TANKS & SANDING TOWER.

STATE OF ALASKA 49 TH
Michael B. Morris
ME-14854
2/14/19
REGISTERED PROFESSIONAL ENGINEER

ENTERPRISE ENGINEERING, INC.
400 US ROUTE 1
NORTH SUITE B
FALMOUTH, ME 04105
TEL. (207) 869-8006
FAX (207) 869-8015

2525 GAMBELL STREET
SUITE 200
ANCHORAGE, AK 99503
TEL. (907) 563-3835
FAX (907) 563-3817

REV.	DATE	BY	REVISION

IF SHEET IS LESS THAN 22" X 34" IT IS A REDUCED PRINT – SCALE REDUCED ACCORDINGLY

ALASKA RAILROAD CORPORATION
ENGINEERING SERVICES
P.O. BOX 107500, ANCHORAGE, ALASKA 99510-7500

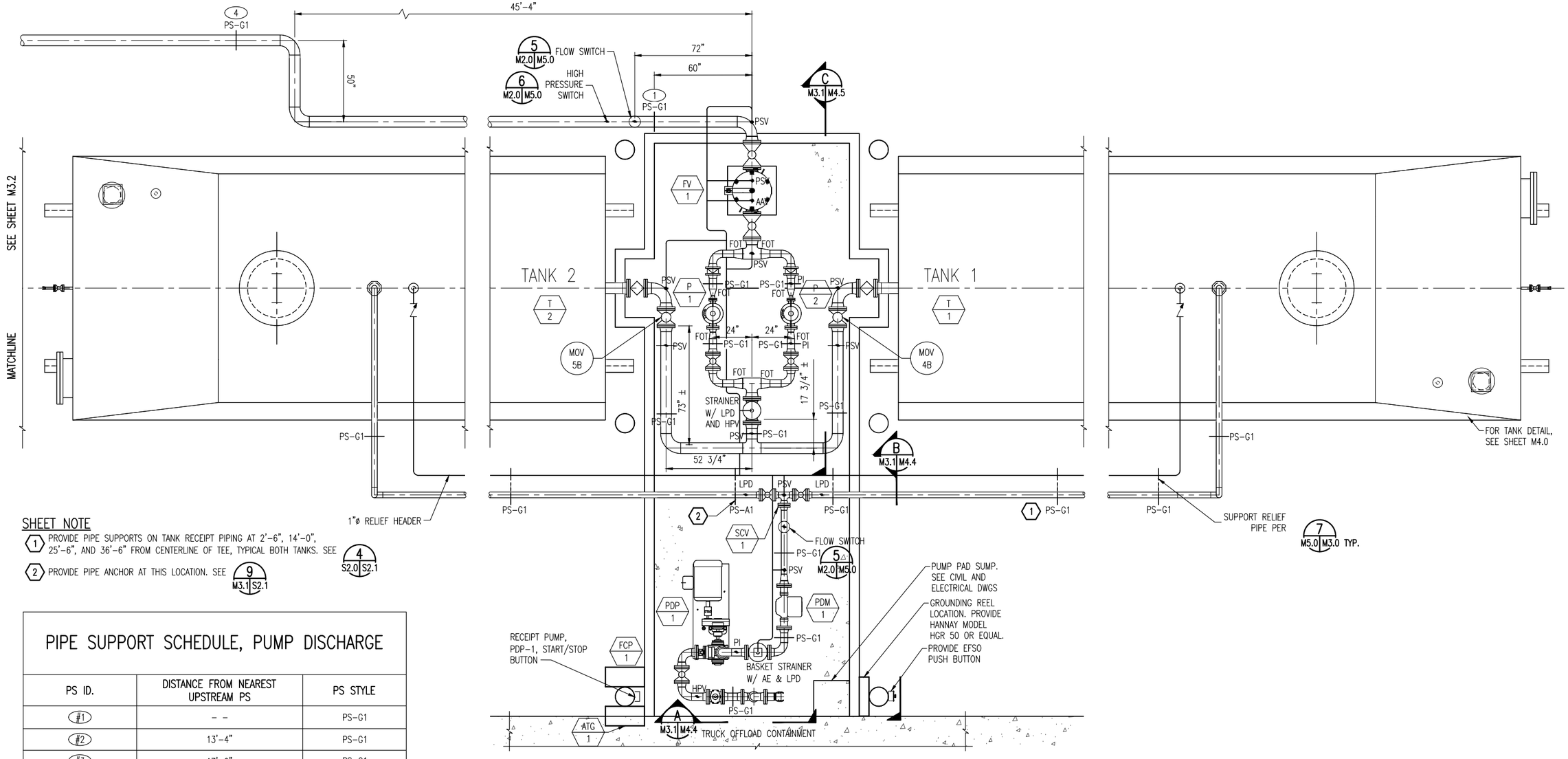
PROJECT :
LOCOMOTIVE REFUELING FACILITY
ALASKA RAILROAD CORPORATION

TITLE:
OVERALL VIEW

DESIGNED BY:	MFF	SCALE: AS NOTED	M3.0
DRAWN BY:	MFF		
CHECKED BY:	TDH	DATE: 02-04-19	
APPROVED BY:	KBW		

AFE NO.:
ACAD FILE:
DWG NO. 15 OF 31

P:\projects\8669\Cad\Current Dwg %\Mech\M3-0.dwg

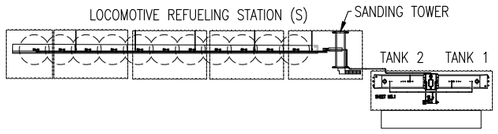


SHEET NOTE

1. PROVIDE PIPE SUPPORTS ON TANK RECEIPT PIPING AT 2'-6", 14'-0", 25'-6", AND 36'-6" FROM CENTERLINE OF TEE, TYPICAL BOTH TANKS. SEE 4 / S2.0 S2.1
2. PROVIDE PIPE ANCHOR AT THIS LOCATION. SEE 9 / M3.1 S2.1

PIPE SUPPORT SCHEDULE, PUMP DISCHARGE

PS ID.	DISTANCE FROM NEAREST UPSTREAM PS	PS STYLE
#1	- -	PS-G1
#2	13'-4"	PS-G1
#3	17'-0"	PS-G1
#4	13'-0"	PS-G1
#5	17'-0"	PS-A2
#6	14'-9"	PS-G1
#7	SEE M3.2	PS-G2
#8	SEE M3.2	PS-A3



KEY MAP
SCALE: NTS

N

SCALE: 3/8" = 1'-0"

TRUCK OFFLOAD TANKS

GRAPHIC SCALE

2 0 2 4 6 FT

SCALE: 3/8" = 1'-0"
IF SHEET IS LESS THAN
22" X 34"
IT IS A REDUCED PRINT -
SCALE REDUCED ACCORDINGLY

REV.	DATE	BY	REVISION

STATE OF ALASKA
49 TH
Michael B. Morris
ME-14854
2/4/19
REGISTERED PROFESSIONAL ENGINEER

ENTERPRISE ENGINEERING, INC.
400 US ROUTE 1
NORTH SUITE B
FALMOUTH, ME 04105
TEL. (207) 869-8006
FAX (207) 869-8015
2525 GAMBELL STREET
SUITE 200
ANCHORAGE, AK 99503
TEL. (907) 563-3835
FAX (907) 563-3817

ALASKA RAILROAD CORPORATION
ENGINEERING SERVICES
P.O. BOX 107500, ANCHORAGE, ALASKA 99510-7500

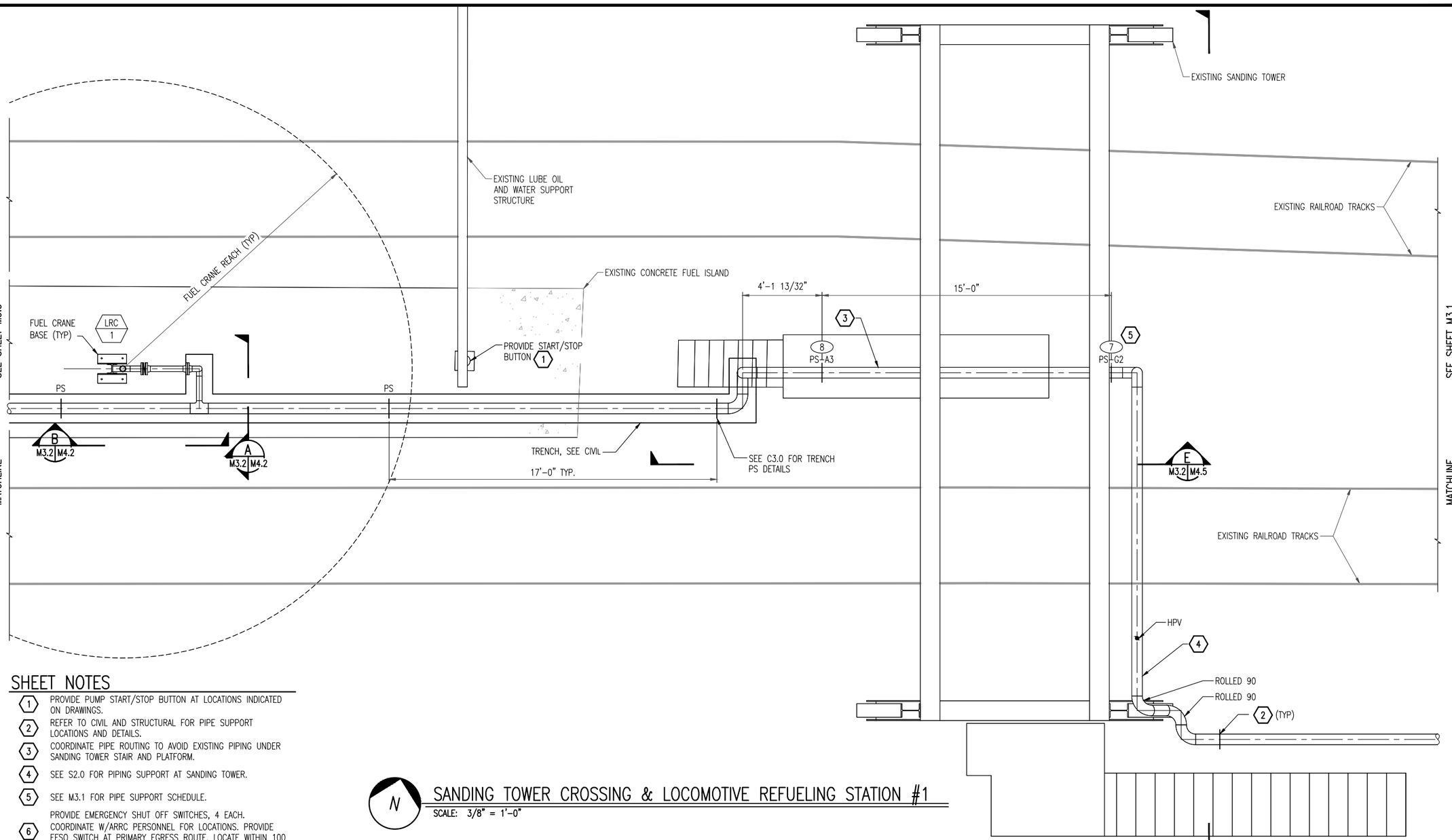
PROJECT:
LOCOMOTIVE REFUELING FACILITY
ALASKA RAILROAD CORPORATION

TITLE:
TRUCK OFFLOAD AND ISSUE PUMPS

DESIGNED BY:	MFF	SCALE: AS NOTED	M3.1
DRAWN BY:	MFF	DATE: 02-04-19	
CHECKED BY:	TDH		
APPROVED BY:	KBW		

AFE NO.:
ACAD FILE:
DWG NO. 16 OF 31

P:\projects\8669\Cad\Current Dwg %\Mech\M3-1.dwg



SHEET NOTES

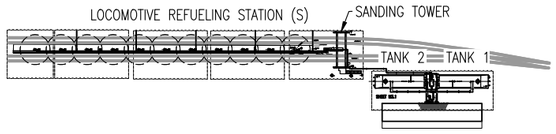
1. PROVIDE PUMP START/STOP BUTTON AT LOCATIONS INDICATED ON DRAWINGS.
2. REFER TO CIVIL AND STRUCTURAL FOR PIPE SUPPORT LOCATIONS AND DETAILS.
3. COORDINATE PIPE ROUTING TO AVOID EXISTING PIPING UNDER SANDING TOWER STAIR AND PLATFORM.
4. SEE S2.0 FOR PIPING SUPPORT AT SANDING TOWER.
5. SEE M3.1 FOR PIPE SUPPORT SCHEDULE.
6. PROVIDE EMERGENCY SHUT OFF SWITCHES, 4 EACH. COORDINATE W/ARRC PERSONNEL FOR LOCATIONS. PROVIDE EFSO SWITCH AT PRIMARY EGRESS ROUTE. LOCATE WITHIN 100 FT OF BUT NO LESS THAN 20 FT FROM FUEL CRANES.

SANDING TOWER CROSSING & LOCOMOTIVE REFUELING STATION #1

SCALE: 3/8" = 1'-0"

C M3.2 M4.1

D M3.2 M4.1



KEY MAP

SCALE: NTS

GRAPHIC SCALE

2 0 2 4 6 FT

SCALE: 3/8" = 1'-0"
IF SHEET IS LESS THAN 22" X 34"
IT IS A REDUCED PRINT – SCALE REDUCED ACCORDINGLY

REV.	DATE	BY	REVISION

STATE OF ALASKA 49 TH
Michael B. Morris
ME-14854
2/4/19
REGISTERED PROFESSIONAL ENGINEER

ENTERPRISE ENGINEERING, INC.

400 US ROUTE 1
NORTH SUITE B
FALMOUTH, ME 04105
TEL. (207) 869-8006
FAX (207) 869-8015

2525 CAMBELL STREET
SUITE 200
ANCHORAGE, AK 99503
TEL. (907) 563-3835
FAX (907) 563-3817

ALASKA RAILROAD CORPORATION
ENGINEERING SERVICES
P.O. BOX 107500, ANCHORAGE, ALASKA 99510-7500

PROJECT:

LOCOMOTIVE REFUELING FACILITY
ALASKA RAILROAD CORPORATION

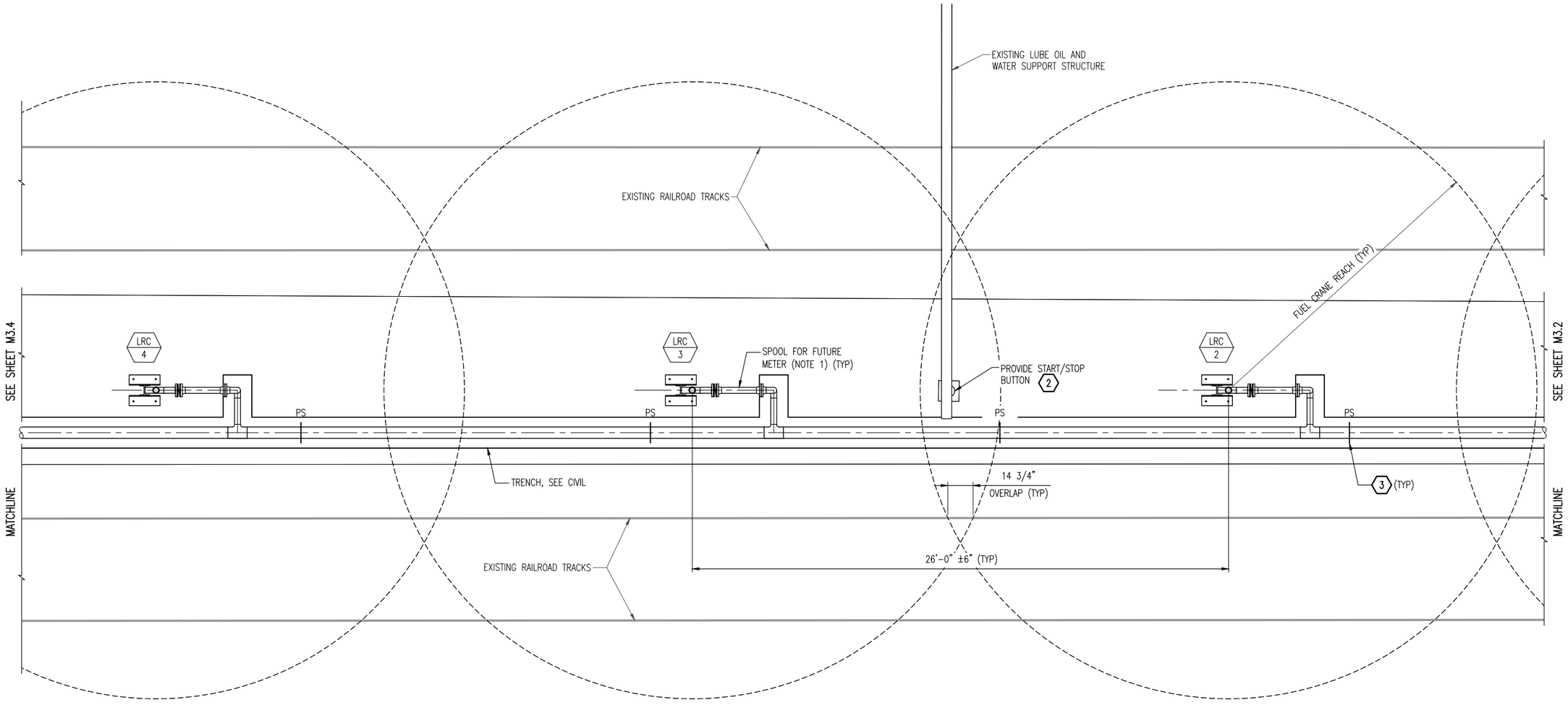
TITLE:

SANDING TOWER CROSSING

DESIGNED BY:	MFF	SCALE: AS NOTED	M3.2
DRAWN BY:	MFF	DATE: 02-04-19	
CHECKED BY:	TDH		
APPROVED BY:	KBW		

AFE NO.:
ACAD FILE:
DWG NO. 17 OF 31

P:\projects\8669\Cad\Current Dwg %\Mech\M3-2.dwg



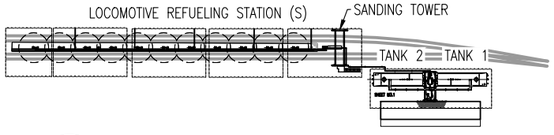
SHEET NOTES

1. SPOOL LENGTH BASED ON FUTURE LIQUID CONTROLS M-30 METER. LENGTH DOES NOT ACCOUNT FOR A STRAINER OR VALVE ASSOCIATED WITH FUTURE METER.
2. PROVIDE PUMP START/STOP BUTTON AT LOCATIONS INDICATED ON DRAWINGS.
3. REFER TO CIVIL AND STRUCTURAL SUPPORT LOCATIONS AND DETAILS.

N

LOCOMOTIVE REFUELING STATIONS #2, #3 AND #4

SCALE: 3/8" = 1'-0"



N

KEY MAP

SCALE: NTS

GRAPHIC SCALE

2 0 2 4 6 FT

SCALE: 3/8" = 1'-0"

IF SHEET IS LESS THAN
22" X 34"
IT IS A REDUCED PRINT -
SCALE REDUCED ACCORDINGLY

STATE OF ALASKA
49 TH
Michael B. Morris
ME-14854
2/4/19
REGISTERED PROFESSIONAL ENGINEER

ENTERPRISE
ENGINEERING, INC.
400 US ROUTE 1
NORTH SUITE B
FALMOUTH, ME 04105
TEL. (207) 869-8006
FAX (207) 869-8015
2525 CAMBELL STREET
SUITE 200
ANCHORAGE, AK 99503
TEL. (907) 563-3835
FAX (907) 563-3817

REV.	DATE	BY	REVISION

ALASKA RAILROAD CORPORATION
ENGINEERING SERVICES
P.O. BOX 107500, ANCHORAGE, ALASKA 99510-7500

PROJECT :

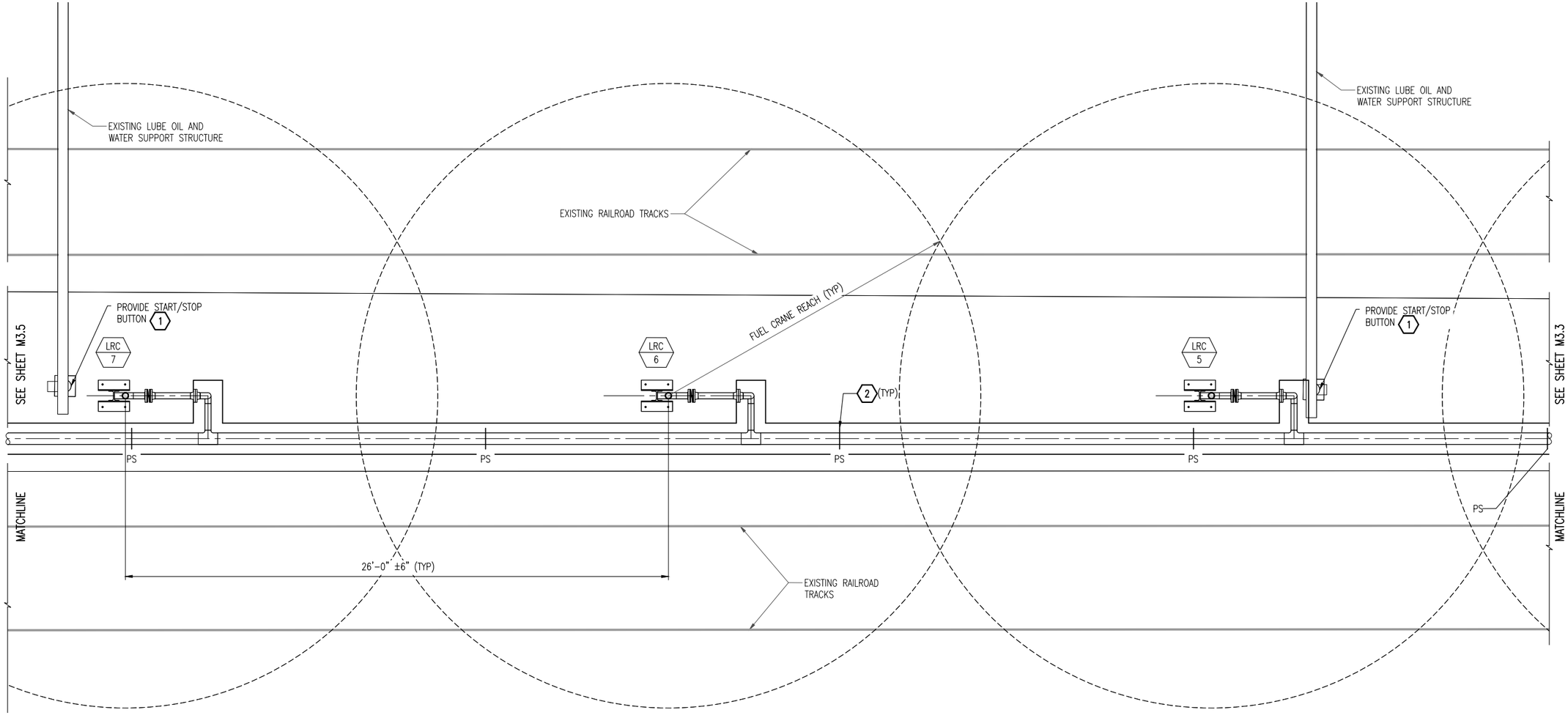
LOCOMOTIVE REFUELING FACILITY
ALASKA RAILROAD CORPORATION

TITLE:

REFUELING STATION PLAN

DESIGNED BY:	MFF	SCALE: AS NOTED	M3.3	AFE NO.:	
DRAWN BY:	MFF			ACAD FILE:	
CHECKED BY:	TDH	DATE: 02-04-19		DWG NO.	
APPROVED BY:	KBW			18 OF 31	

P:\projects\8669\Cad\Current Dwg %\Mech\M3-3.dwg



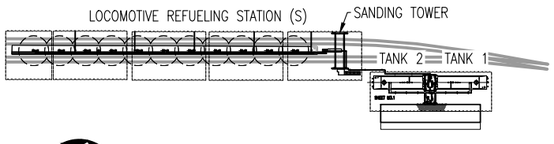
SHEET NOTES

1. PROVIDE PUMP START/STOP BUTTON AT LOCATIONS INDICATED ON DRAWING.
2. REFER TO CIVIL AND STRUCTURAL FOR PIPE SUPPORT LOCATIONS AND DETAIL.S

N

LOCOMOTIVE REFUELING STATIONS #5, #6 AND #7

SCALE: 3/8" = 1'-0"



N

KEY MAP

SCALE: NTS

GRAPHIC SCALE

2 0 2 4 6 FT

SCALE: 3/8" = 1'-0"
IF SHEET IS LESS THAN 22" X 34"
IT IS A REDUCED PRINT – SCALE REDUCED ACCORDINGLY

REV.	DATE	BY	REVISION

Michael B. Morris
ME-14854
2/4/19
REGISTERED PROFESSIONAL ENGINEER
STATE OF ALASKA 49TH

ENTERPRISE ENGINEERING, INC.
400 US ROUTE 1
NORTH SUITE B
FALMOUTH, ME 04105
TEL. (207) 869-8006
FAX (207) 869-8015

2525 GAMBELL STREET
SUITE 200
ANCHORAGE, AK 99503
TEL. (907) 563-3835
FAX (907) 563-3817

ALASKA RAILROAD CORPORATION
ENGINEERING SERVICES
P.O. BOX 107500, ANCHORAGE, ALASKA 99510-7500

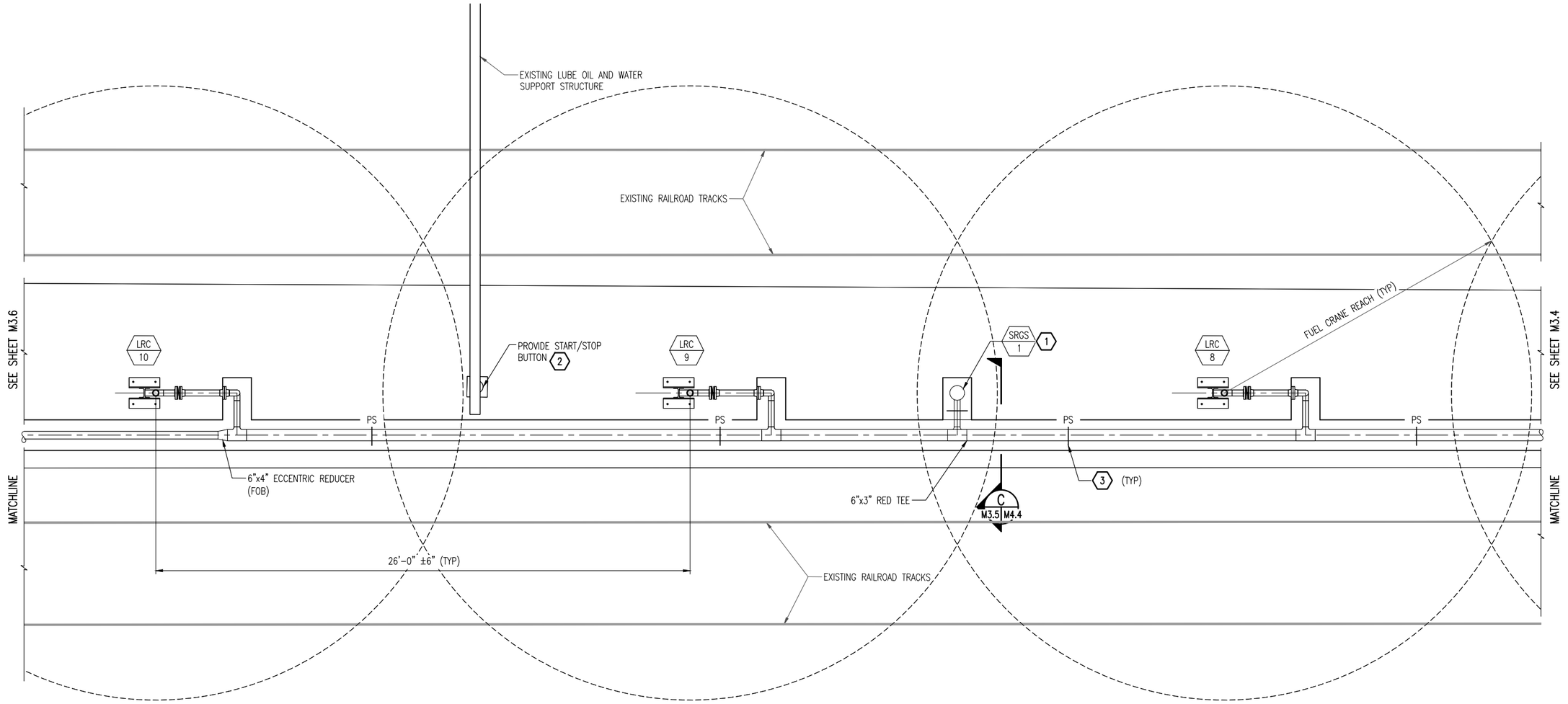
PROJECT:
LOCOMOTIVE REFUELING FACILITY
ALASKA RAILROAD CORPORATION

TITLE:
REFUELING STATION PLAN

DESIGNED BY:	MFF	SCALE: AS NOTED	M3.4
DRAWN BY:	MFF	DATE: 02-04-19	
CHECKED BY:	TDH		
APPROVED BY:	KBW		

AFE NO.:
ACAD FILE:
DWG NO. 19 OF 31

P:\projects\8669\Cad\Current Dwg %\Mech\M3-4.dwg



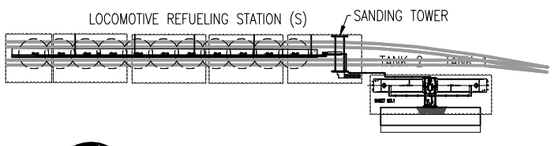
SHEET NOTES

1. PROVIDE A 9" HOLE IN TRENCH COVER. CENTERED ON THE SURGE BOTTLE.
2. PROVIDE PUMP START/STOP BUTTON AT LOCATIONS INDICATED ON DRAWINGS.
3. REFER TO CIVIL AND STRUCTURAL FOR PIPE SUPPORT LOCATIONS AND DETAILS.

N

LOCOMOTIVE REFUELING STATIONS #8, #9 AND #10

SCALE: 3/8" = 1'-0"



N

KEY MAP

SCALE: NTS

GRAPHIC SCALE

2 0 2 4 6 FT

SCALE: 3/8" = 1'-0"

IF SHEET IS LESS THAN 22" X 34" IT IS A REDUCED PRINT – SCALE REDUCED ACCORDINGLY

REV.	DATE	BY	REVISION

STATE OF ALASKA 49 TH
Michael B. Morris
ME-14854
2/4/19
REGISTERED PROFESSIONAL ENGINEER

ENTERPRISE ENGINEERING, INC.

400 US ROUTE 1
NORTH SUITE B
FALMOUTH, ME 04105
TEL. (207) 869-8006
FAX (207) 869-8015

2525 GAMBELL STREET
SUITE 200
ANCHORAGE, AK 99503
TEL. (907) 563-3835
FAX (907) 563-3817

ALASKA RAILROAD CORPORATION
ENGINEERING SERVICES
P.O. BOX 107500, ANCHORAGE, ALASKA 99510-7500

PROJECT :

LOCOMOTIVE REFUELING FACILITY
ALASKA RAILROAD CORPORATION

TITLE:

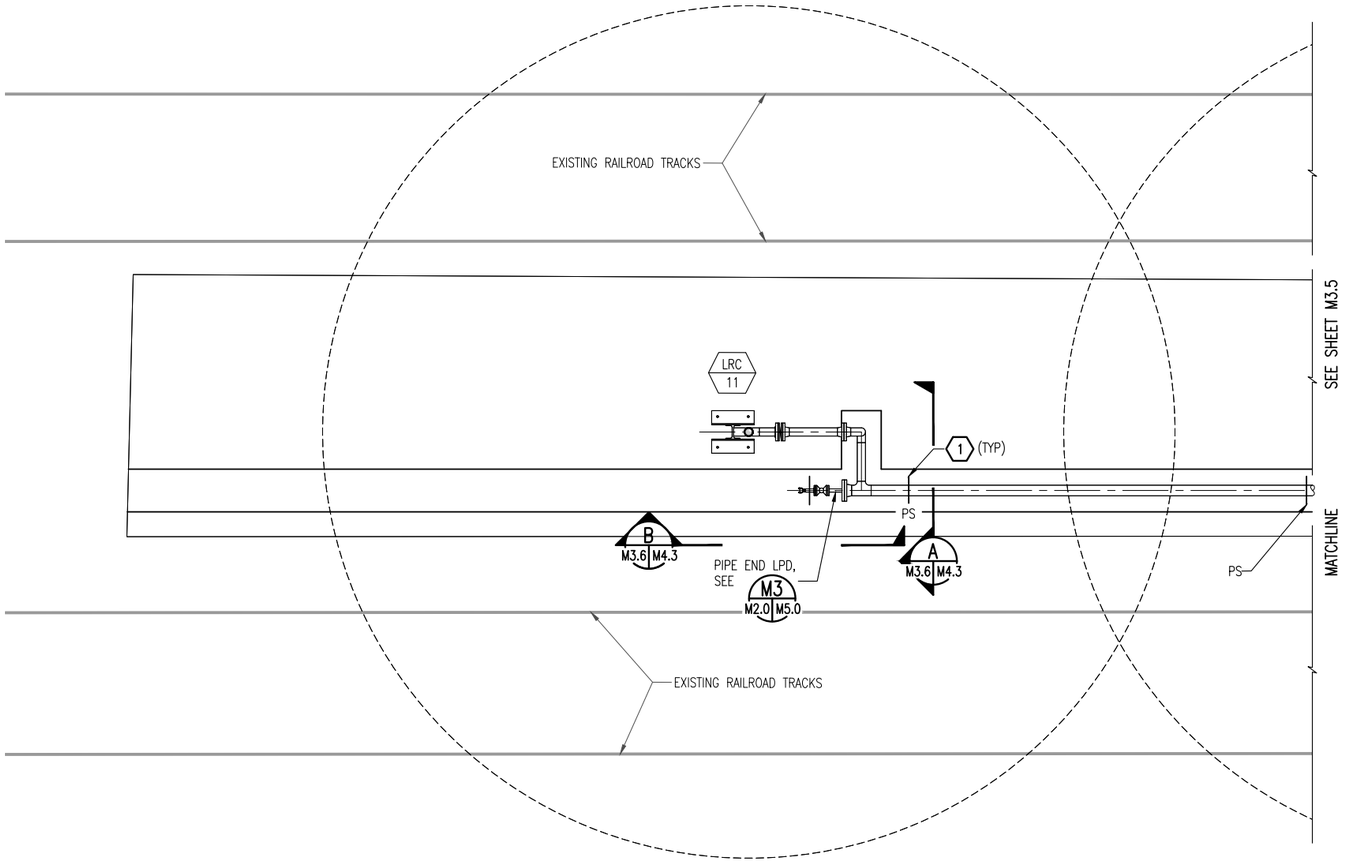
REFUELING STATION PLAN

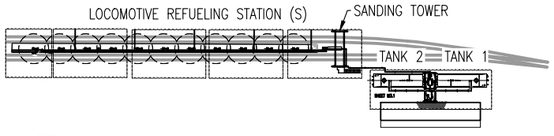
DESIGNED BY:	MFF	SCALE: AS NOTED	M3.5	AFE NO.:
DRAWN BY:	MFF			ACAD FILE:
CHECKED BY:	TDH	DATE: 02-04-19		DWG NO. 20 OF 31
APPROVED BY:	KBW			

P:\projects\8669\Cad\Current Dwg %\Mech\M3-5.dwg

SHEET NOTES

1. REFER TO CIVIL AND STRUCTURAL FOR PIPE SUPPORT LOCATIONS AND DETAILS.





N KEY MAP
SCALE: NTS

N LOCOMOTIVE REFUELING STATION #11
SCALE: 3/8" = 1'-0"

GRAPHIC SCALE
2 0 2 4 6 FT
SCALE: 3/8" = 1'-0"
IF SHEET IS LESS THAN 22" X 34" IT IS A REDUCED PRINT – SCALE REDUCED ACCORDINGLY

STATE OF ALASKA 49 TH
Michael B. Morris
ME-14854
2/4/19
REGISTERED PROFESSIONAL ENGINEER

ENTERPRISE ENGINEERING, INC.
400 US ROUTE 1
NORTH SUITE B
FALMOUTH, ME 04105
TEL. (207) 869-8006
FAX (207) 869-8015

2525 CAMBELL STREET
SUITE 200
ANCHORAGE, AK 99503
TEL. (907) 563-3835
FAX (907) 563-3817

REV.	DATE	BY	REVISION

ALASKA RAILROAD CORPORATION
ENGINEERING SERVICES
P.O. BOX 107500, ANCHORAGE, ALASKA 99510-7500

PROJECT :
LOCOMOTIVE REFUELING FACILITY
ALASKA RAILROAD CORPORATION

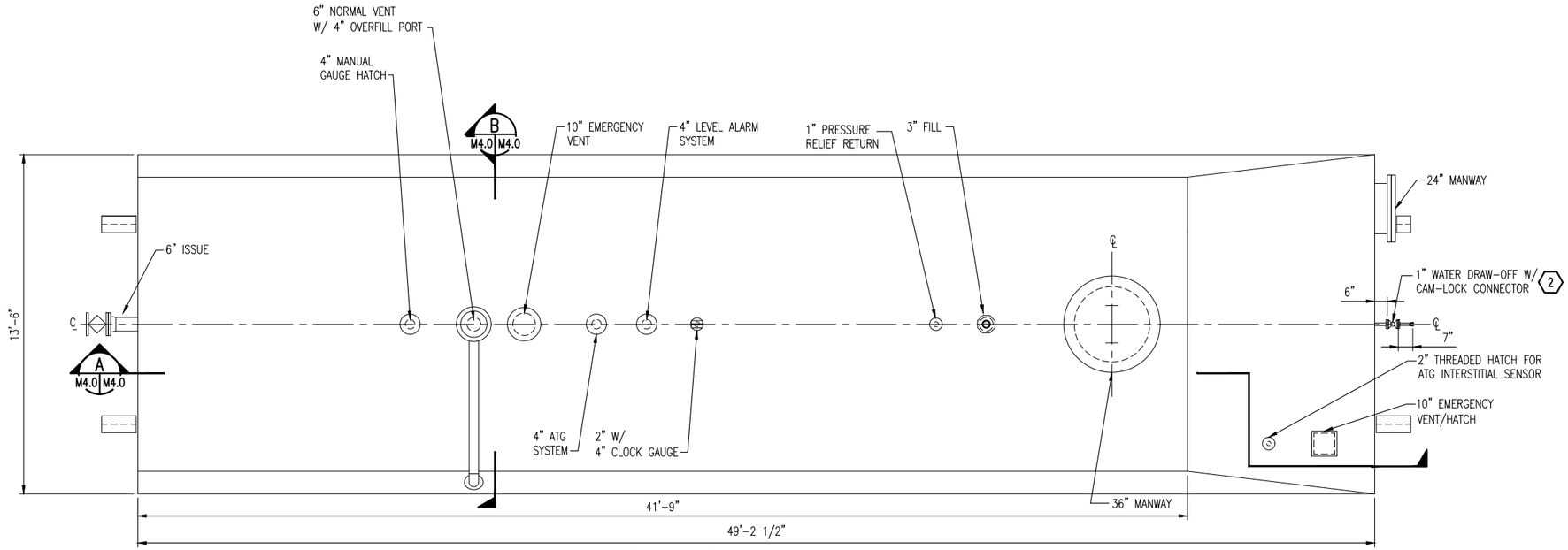
TITLE:
REFUELING STATION PLAN

DESIGNED BY: MFF
DRAWN BY: MFF
CHECKED BY: TDH
APPROVED BY: KBW
SCALE: AS NOTED
DATE: 02-04-19
M3.6
AFE NO.:
ACAD FILE:
DWG NO. 21 OF 31

P:\projects\8669\Cad\Current Dwg %\Mech\M3-6.dwg

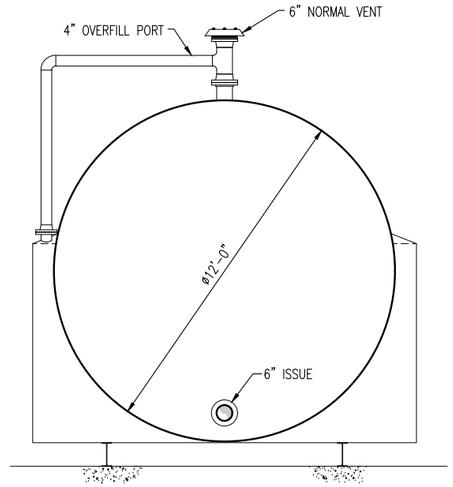
SHEET NOTES

1. INSTALL AST OVERFILL SHUT-OFF VALVE PER MFR RECOMMENDATIONS.
2. PROVIDE LOCKABLE BALL VALVE.



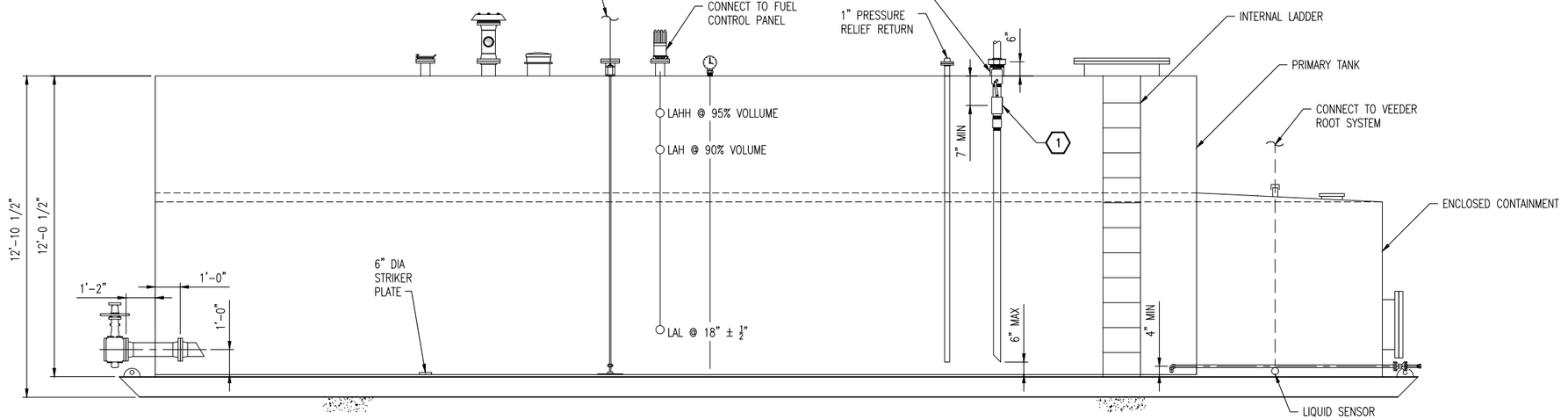
PLAN VIEW

SCALE: 3/8" = 1'-0"



B M4.0 M4.0 ELEVATION OVER FILL CONNECTION

SCALE: 3/8" = 1'-0"



A M4.0 M4.0 ELEVATION SIDE VIEW

SCALE: 3/8" = 1'-0"

GRAPHIC SCALE

2 0 2 4 6 FT

SCALE: 3/8" = 1'-0"
IF SHEET IS LESS THAN
22" X 34"
IT IS A REDUCED PRINT -
SCALE REDUCED ACCORDINGLY

REV.	DATE	BY	REVISION

ENTERPRISE
ENGINEERING, INC.
400 US ROUTE 1
NORTH SUITE B
FALMOUTH, ME 04105
TEL. (207) 869-8006
FAX (207) 869-8015
2525 GAMBELL STREET
SUITE 200
ANCHORAGE, AK 99503
TEL. (907) 563-3835
FAX (907) 563-3817

STATE OF ALASKA 49 TH
Michael B. Morris
ME-14854
2/4/19
REGISTERED PROFESSIONAL ENGINEER

ALASKA RAILROAD CORPORATION
ENGINEERING SERVICES
P.O. BOX 107500, ANCHORAGE, ALASKA 99510-7500

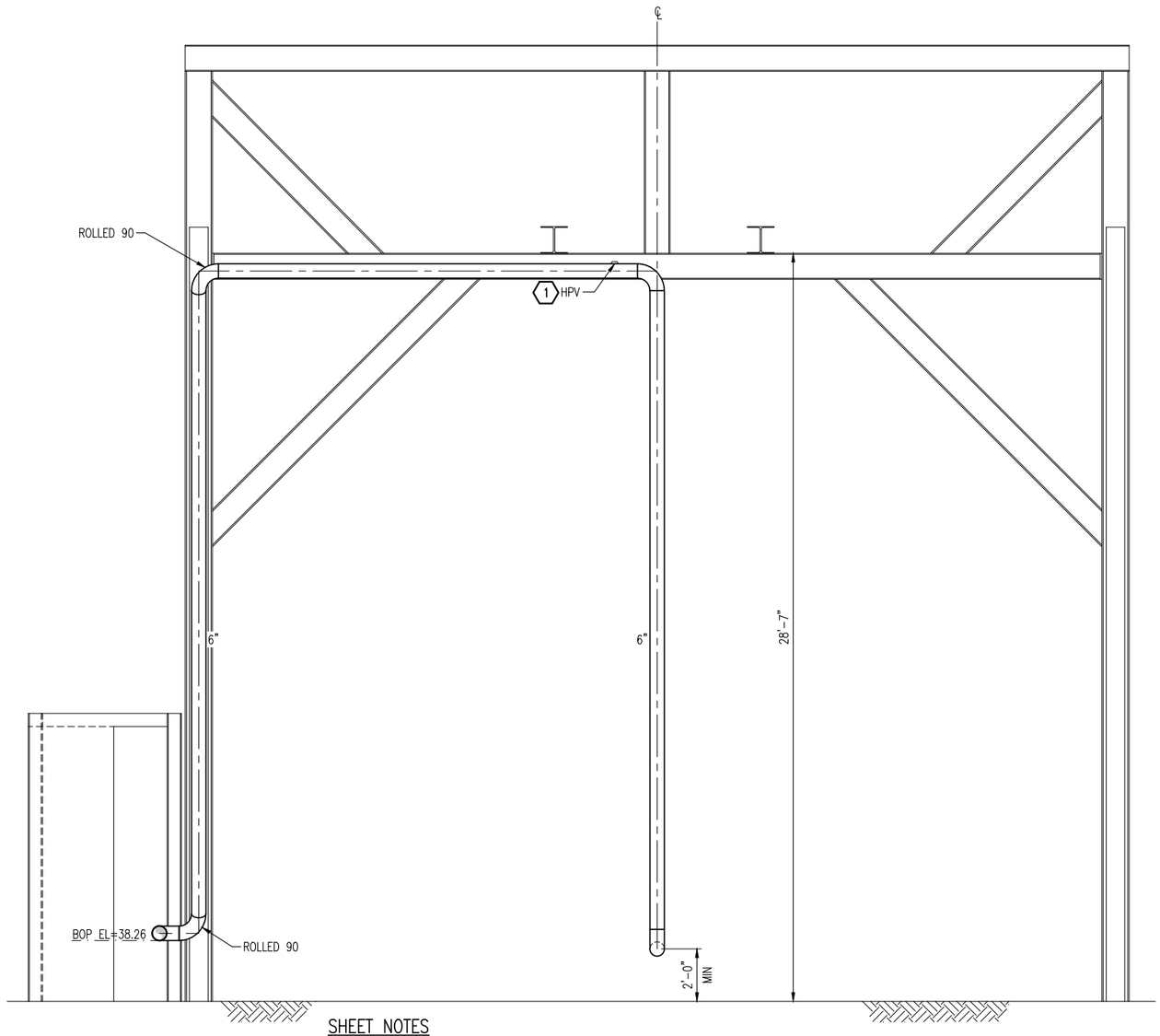
PROJECT :
LOCOMOTIVE REFUELING FACILITY
ALASKA RAILROAD CORPORATION

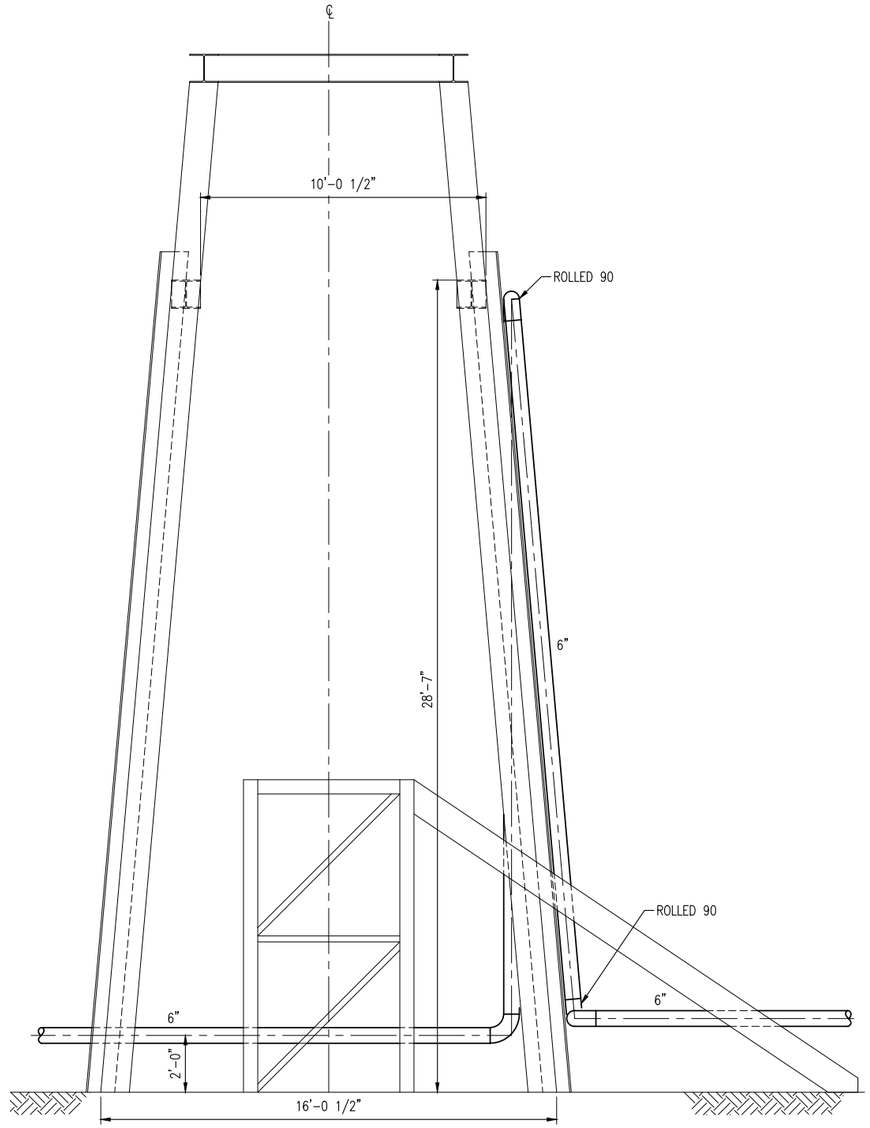
TITLE:
30K GALLON TANK DETAIL

DESIGNED BY:	MFF	SCALE: AS NOTED	M4.0
DRAWN BY:	MFF		
CHECKED BY:	TDH	DATE: 02-04-19	
APPROVED BY:	KBW		

AFE NO.:
ACAD FILE:
DWG NO. 22 OF 31

P:\projects\8669\Cad\Current Dwg #\Mech\M4-0.dwg





SHEET NOTES

1. THE HPV IS REQUIRED FOR THE COMMISSIONING HYDROTEST AND CAN BE ACCESSED BY MANLIFT. MANLIFT LIFT TO BE PROVIDED BY CONTRACTOR.
2. SEE SHEET S2.0 FOR PIPE SUPPORT LOCATIONS AND DETAILS.

D M3.2 M4.1 FRONT ELEVATION
SCALE: 3/8" = 1'-0"

C M3.2 M4.1 SIDE ELEVATION
SCALE: 3/8" = 1'-0"

STATE OF ALASKA 49 TH
Michael B. Morris
ME-14854
2/4/19
REGISTERED PROFESSIONAL ENGINEER

GRAPHIC SCALE
2 0 2 4 6 FT
SCALE: 3/8" = 1'-0"
IF SHEET IS LESS THAN 22" X 34"
IT IS A REDUCED PRINT – SCALE REDUCED ACCORDINGLY

ENTERPRISE ENGINEERING, INC.
400 US ROUTE 1
NORTH SUITE B
FALMOUTH, ME 04105
TEL. (207) 869-8006
FAX (207) 869-8015
2525 GAMBELL STREET
SUITE 200
ANCHORAGE, AK 99503
TEL. (907) 563-3835
FAX (907) 563-3817

REV.	DATE	BY	REVISION

ALASKA RAILROAD CORPORATION
ENGINEERING SERVICES
P.O. BOX 107500, ANCHORAGE, ALASKA 99510-7500

PROJECT:
LOCOMOTIVE REFUELING FACILITY
ALASKA RAILROAD CORPORATION

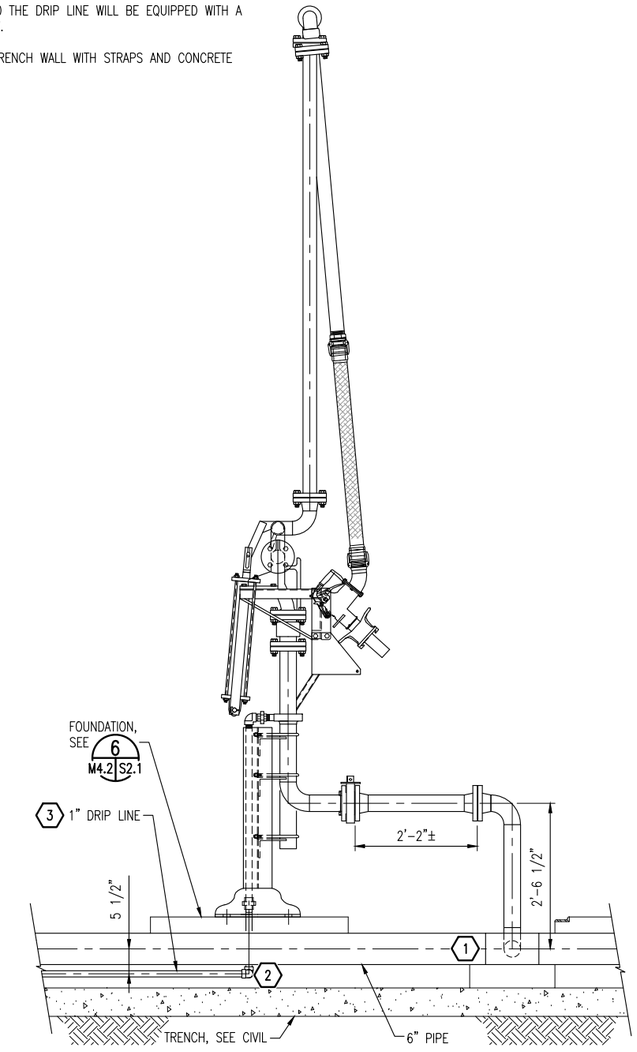
TITLE:
SANDING TOWER ELEVATIONS

DESIGNED BY:	MFF	SCALE: AS NOTED	M4.1
DRAWN BY:	SPTH	DATE: 02-04-19	AFE NO.:
CHECKED BY:	TDH		ACAD FILE:
APPROVED BY:	KBW		DWG NO. 23 OF 31

P:\projects\8669\Cad\Current Dwg %\Mech\M4-1.dwg

SHEET NOTES

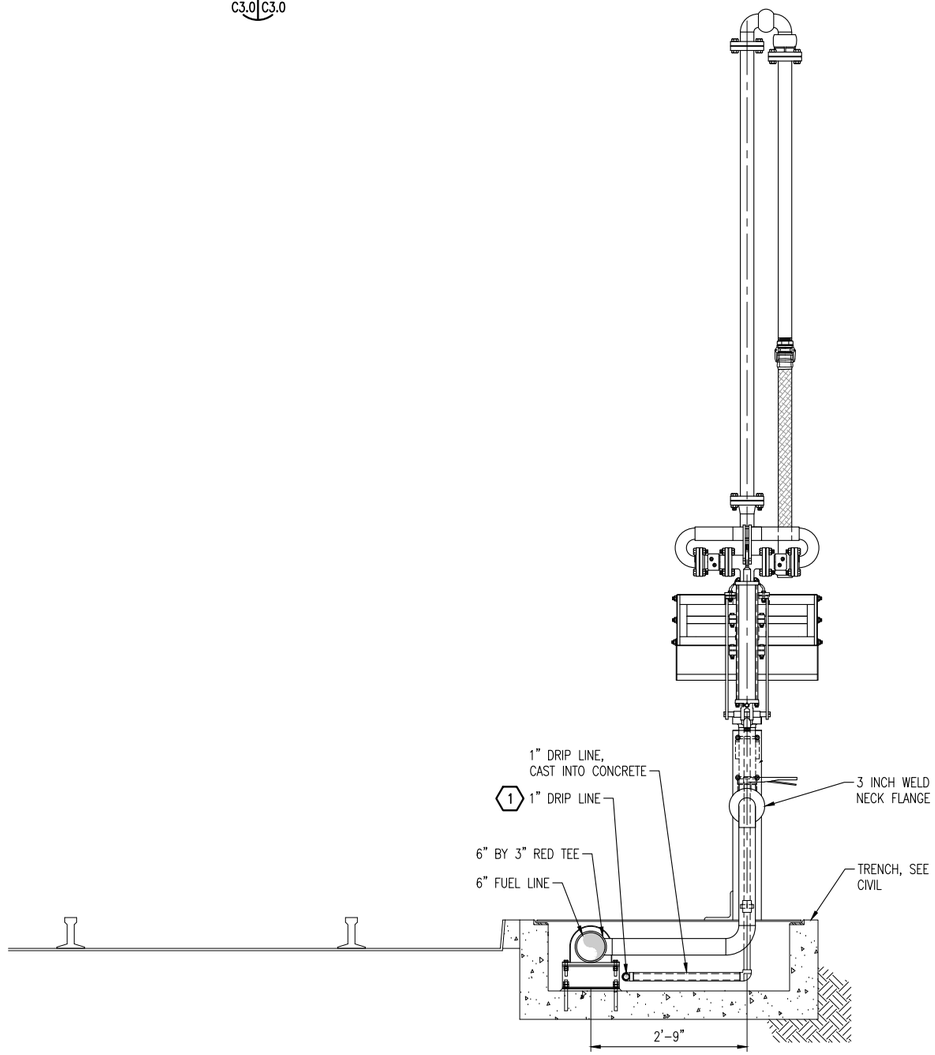
1. STATION 10 WILL BE EQUIPPED WITH A 6 INCH BY 4 INCH ECC RED DOWNSTREAM OF THE 6 BY 3 RED. TEE. (SEE SHEET M3.5).
2. FOR STATIONS 2 THROUGH 10 THE DRIP LINE WILL BE EQUIPPED WITH A TEE IN PLACE OF THE ELBOW.
3. FASTEN 1 IN DRIP LINE TO TRENCH WALL WITH STRAPS AND CONCRETE ANCHORS. SEE 1 / C3.0 | C3.0



B / M3.2 | M4.2 TRENCH SECTION WITH FUEL CRANE (TYP OF 10)
SCALE: 3/4" = 1'-0"

SHEET NOTES

1. FASTEN 1 INCH DRIP LINE TO TRENCH WALL WITH STRAPS AND CONCRETE ANCHOR BOLTS, SEE 1 / C3.0 | C3.0



A / M3.2 | M4.2 TRENCH SECTION WITH FUEL CRANE (TYP OF 10)
SCALE: 3/4" = 1'-0"

STATE OF ALASKA 49 TH
Michael B. Morris
ME-14854
2/4/19
REGISTERED PROFESSIONAL ENGINEER

GRAPHIC SCALE

1 0 1 2 3 FT

SCALE: 3/4" = 1'-0"
IF SHEET IS LESS THAN
22" X 34"
IT IS A REDUCED PRINT –
SCALE REDUCED ACCORDINGLY

REV.	DATE	BY	REVISION

ENTERPRISE ENGINEERING, INC.
400 US ROUTE 1
NORTH SUITE B
FALMOUTH, ME 04105
TEL. (207) 869-8006
FAX (207) 869-8015

2525 CAMBELL STREET
SUITE 200
ANCHORAGE, AK 99503
TEL. (907) 563-3835
FAX (907) 563-3817

ALASKA RAILROAD CORPORATION
ENGINEERING SERVICES
P.O. BOX 107500, ANCHORAGE, ALASKA 99510-7500

PROJECT:
LOCOMOTIVE REFUELING FACILITY
ALASKA RAILROAD CORPORATION

TITLE:
TRENCH SECTIONS

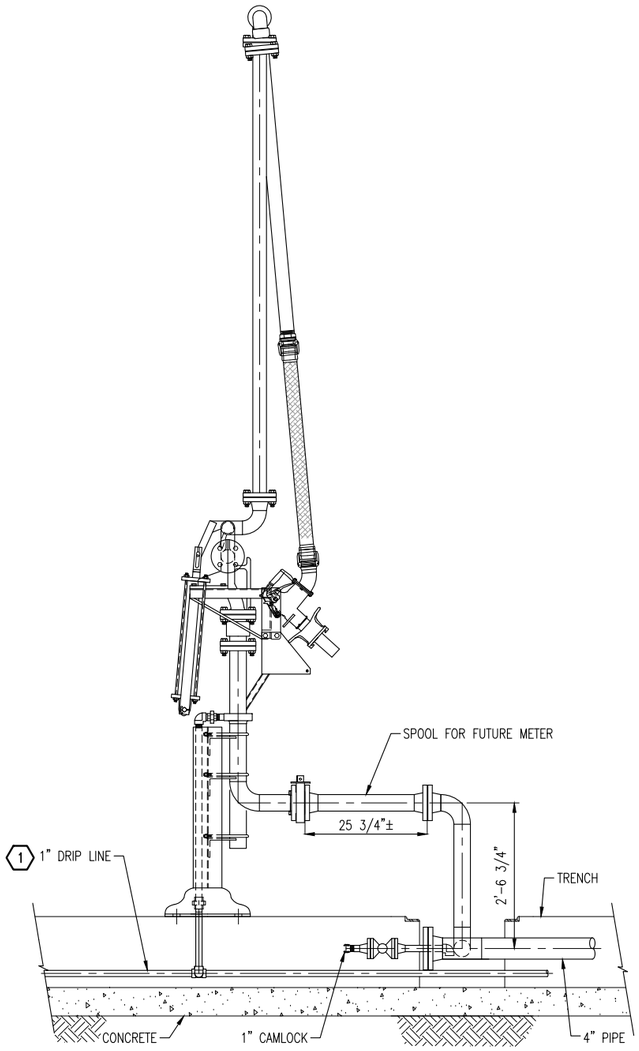
DESIGNED BY:	MFF	SCALE: AS NOTED	M4.2
DRAWN BY:	MFF	DATE: 02-04-19	
CHECKED BY:	TDH		
APPROVED BY:	KSW		

AFE NO.:
ACAD FILE:
DWG NO. 24 OF 31

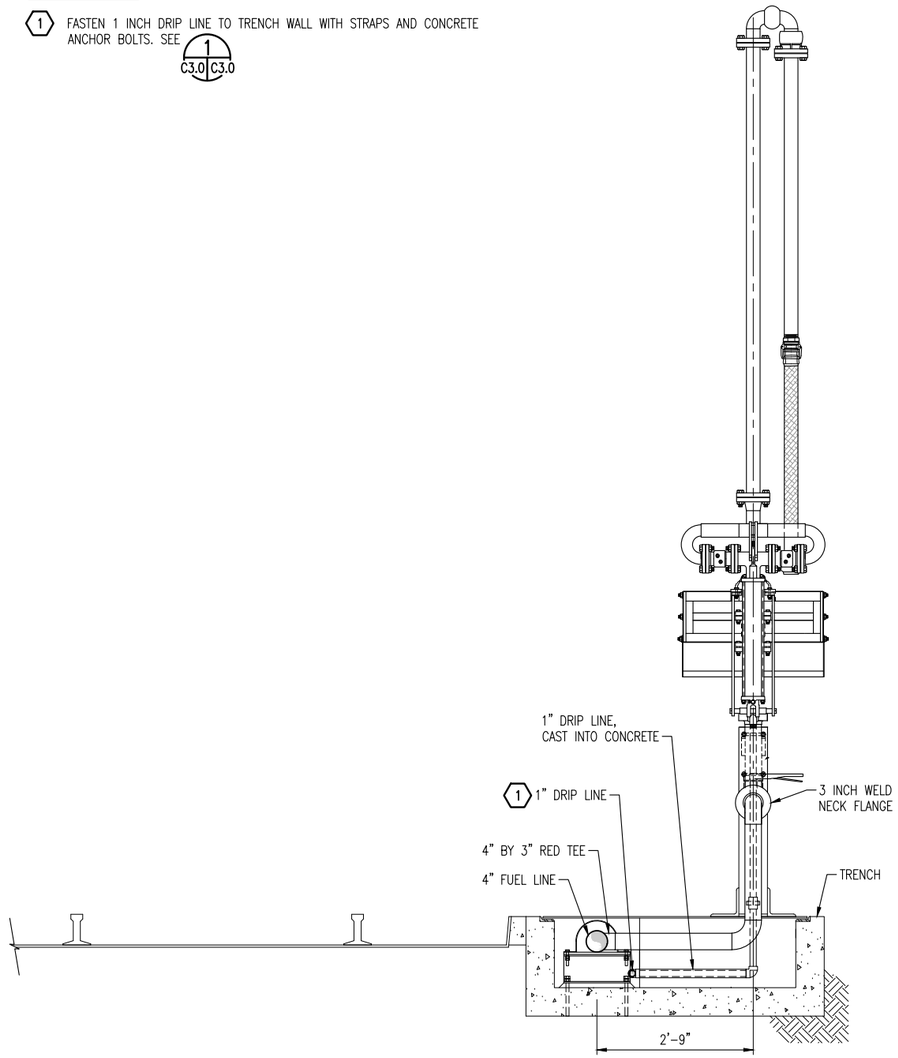
P:\projects\8669\Cad\Current Dwg %\Mech\M4-2.dwg

SHEET NOTES

(1) FASTEN 1 INCH DRIP LINE TO TRENCH WALL WITH STRAPS AND CONCRETE ANCHOR BOLTS. SEE 1 C3.0 | C3.0



B M3.6 | M4.2 END TRENCH SECTION
SCALE: 3/4" = 1'-0"



A M3.6 | M4.2 END TRENCH SECTION
SCALE: 3/4" = 1'-0"

STATE OF ALASKA 49 TH
Michael B. Morris
ME-14854
3/4/19
REGISTERED PROFESSIONAL ENGINEER

GRAPHIC SCALE

1 0 1 2 3 FT

SCALE: 3/4" = 1'-0"
IF SHEET IS LESS THAN
22" X 34"
IT IS A REDUCED PRINT -
SCALE REDUCED ACCORDINGLY

ENTERPRISE ENGINEERING, INC.
400 US ROUTE 1
NORTH SUITE B
FALMOUTH, ME 04105
TEL. (207) 869-8006
FAX (207) 869-8015

2525 GAMBELL STREET
SUITE 200
ANCHORAGE, AK 99503
TEL. (907) 563-3835
FAX (907) 563-3817

REV.	DATE	BY	REVISION

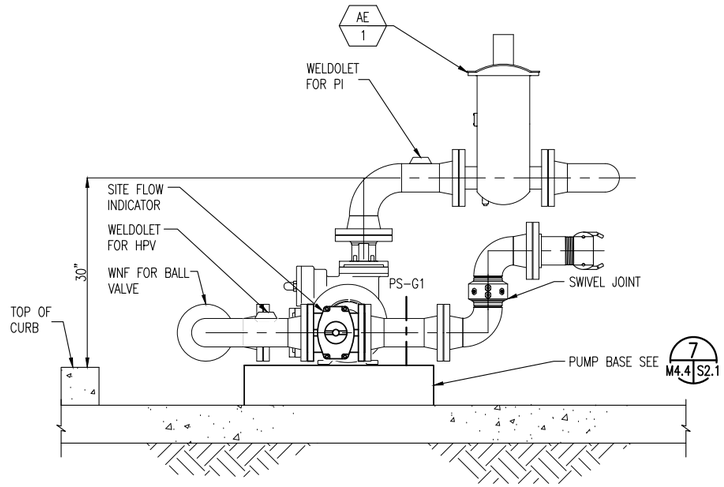
ALASKA RAILROAD CORPORATION
ENGINEERING SERVICES
P.O. BOX 107500, ANCHORAGE, ALASKA 99510-7500

PROJECT:
LOCOMOTIVE REFUELING FACILITY
ALASKA RAILROAD CORPORATION

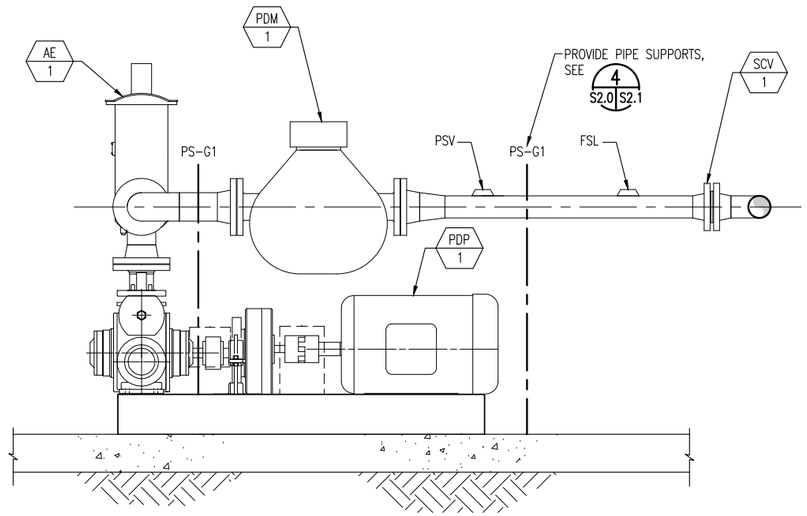
TITLE:
TRENCH SECTIONS

DESIGNED BY: MFF	SCALE: AS NOTED	M4.3	AFE NO.:
DRAWN BY: MFF			ACAD FILE:
CHECKED BY: TDH	DATE: 02-04-19		DWG NO. 25 OF 31
APPROVED BY: KSW			

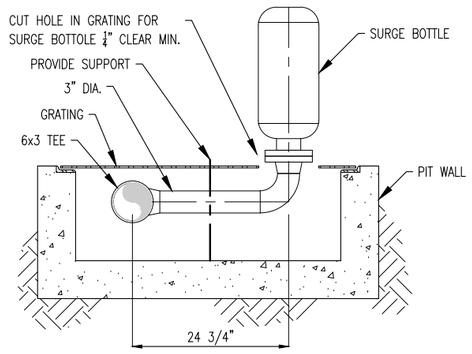
P:\projects\8669\Cad\Current Dwg #\Mech\M4-3.dwg



A TRUCK OFFLOAD PUMP SECTION
M3.1 M4.4 SCALE: 1" = 1'-0"



B TRUCK OFFLOAD PUMP SECTION
M3.1 M4.4 SCALE: 1" = 1'-0"



C SURGE BOTTLE SECTION
M3.1 M4.4 SCALE: 1" = 1'-0"

GRAPHIC SCALE

1 0 1 2 FT

SCALE: 1" = 1'-0"
IF SHEET IS LESS THAN
22" X 34"
IT IS A REDUCED PRINT -
SCALE REDUCED ACCORDINGLY

ENTERPRISE
ENGINEERING, INC.
400 US ROUTE 1
NORTH SUITE B
FALMOUTH, ME 04105
TEL. (207) 869-8006
FAX (207) 869-8015

2525 GAMBELL STREET
SUITE 200
ANCHORAGE, AK 99503
TEL. (907) 563-3835
FAX (907) 563-3817

REV.	DATE	BY	REVISION

STATE OF ALASKA
49 TH
Michael B. Morris
ME-14854
2/4/19
REGISTERED PROFESSIONAL ENGINEER

ALASKA RAILROAD CORPORATION
ENGINEERING SERVICES
P.O. BOX 107500, ANCHORAGE, ALASKA 99510-7500

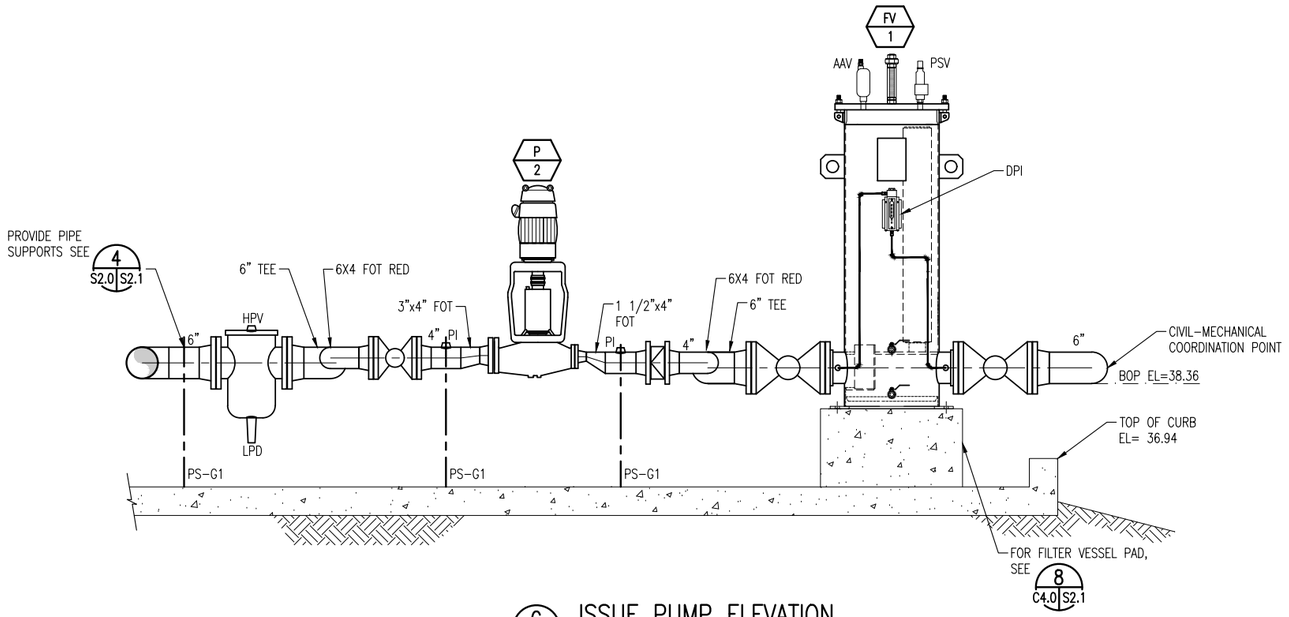
PROJECT :
LOCOMOTIVE REFUELING FACILITY
ALASKA RAILROAD CORPORATION

TITLE:
TRUCK OFFLOAD
PUMP SECTIONS

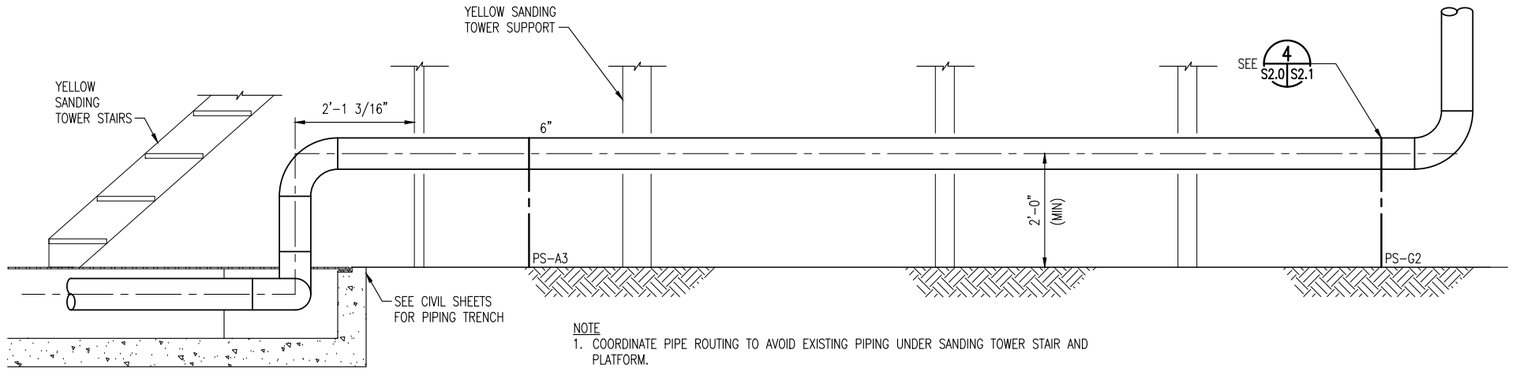
DESIGNED BY:	MFF	SCALE: AS NOTED	M4.4
DRAWN BY:	MFF		
CHECKED BY:	TDH	DATE: 02-04-19	
APPROVED BY:	KSW		

AFE NO.:
ACAD FILE:
DWG NO. 26 OF 31

P:\projects\8669\Cad\Current Dwg %\Mech\M4-4.dwg



C M3.1 M4.5 ISSUE PUMP ELEVATION
SCALE: 3/4" = 1'–0"



NOTE
1. COORDINATE PIPE ROUTING TO AVOID EXISTING PIPING UNDER SANDING TOWER STAIR AND PLATFORM.

E M3.2 M4.5 YELLOW SANDING TOWER PIPE ROUTING
SCALE: 3/4" = 1'–0"

GRAPHIC SCALE

1 0 1 2 3 FT

SCALE: 3/4" = 1'–0"

IF SHEET IS LESS THAN
22" X 34"
IT IS A REDUCED PRINT –
SCALE REDUCED ACCORDINGLY

REV.	DATE	BY	REVISION

ENTERPRISE
ENGINEERING, INC.
400 US ROUTE 1
NORTH SUITE B
FALMOUTH, ME 04105
TEL. (207) 869-8006
FAX (207) 869-8015
2525 GAMBELL STREET
SUITE 200
ANCHORAGE, AK 99503
TEL. (907) 563-3835
FAX (907) 563-3817

STATE OF ALASKA 49 TH
Michael B. Morris
ME-14854
2/4/19
REGISTERED PROFESSIONAL ENGINEER

ALASKA RAILROAD CORPORATION
ENGINEERING SERVICES
P.O. BOX 107500, ANCHORAGE, ALASKA 99510–7500

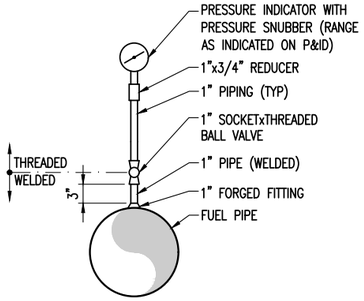
PROJECT :
LOCOMOTIVE REFUELING FACILITY
ALASKA RAILROAD CORPORATION

TITLE:
FUEL ISSUE AND
PIPING ELEVATION

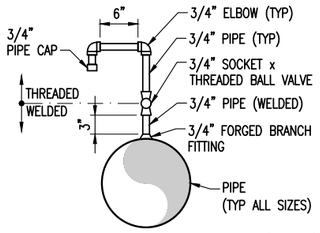
DESIGNED BY:	MFF	SCALE: AS NOTED	M4.5
DRAWN BY:	MFF		
CHECKED BY:	TDH	DATE: 02-04-19	
APPROVED BY:	KBW		

AFE NO.:
ACAD FILE:
DWG NO. 27 OF 31

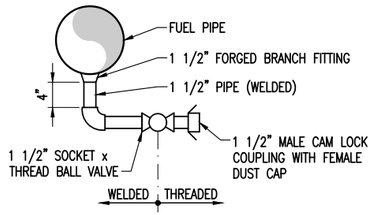
P:\projects\8669\Cad\Current Dwg %\Mech\M4-5.dwg



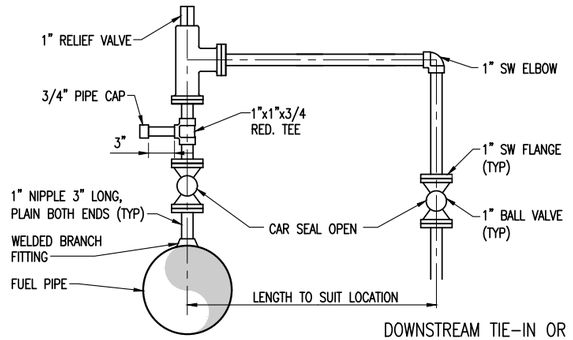
1 M2.0 M5.0 PRESSURE INDICATOR DETAIL (PI)
SCALE: NTS



2 M2.0 M5.0 HIGH POINT VENT (HPV)
NTS

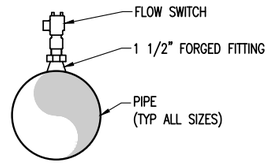


3 M2.0 M5.0 LOW POINT DRAIN (LPD)
NTS

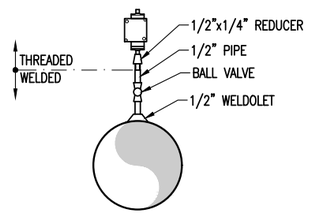


NOTES
1. ROUTE BYPASS PIPING TO CLEAR VALVE OPERATING MECHANISM, AND TO LOCATIONS AS INDICATED.
2. COMBINATION OF PIPING DOWNSTREAM OF PSV SHALL BE AS INDICATED.
3. ALL CONNECTIONS FLANGED, SOCKET WELDED OR THREADED AS INDICATED.
4. PROVIDE ∠ 1/2x1/2x1/4 SUPPORTS WITH U BOLTS TO SUPPORT PSV PIPING FROM MAIN FUEL LINES MINIMUM 6' O.C.
5. ON FILTER VESSEL DELETE BALL VALVES.

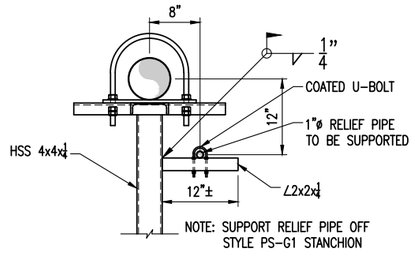
4 M2.0 M5.0 PRESSURE SAFETY VALVE CONNECTION (PSV)
NTS



5 M2.0 M5.0 FLOW SWITCH
NTS



6 M2.0 M5.0 HIGH PRESSURE SWITCH (HPS)
NTS



7 M3.1 M5.0 RELIEF PIPING SUPPORT
NTS

P:\projects\8669\Cad\Current Dwg %\Mech\M5-0.dwg

ENTERPRISE ENGINEERING, INC.
400 US ROUTE 1
NORTH SUITE B
FALMOUTH, ME 04105
TEL. (207) 869-8006
FAX (207) 869-8015
2525 GAMBELL STREET
SUITE 200
ANCHORAGE, AK 99503
TEL. (907) 563-3835
FAX (907) 563-3817

IF SHEET IS LESS THAN 22" X 34" IT IS A REDUCED PRINT – SCALE REDUCED ACCORDINGLY

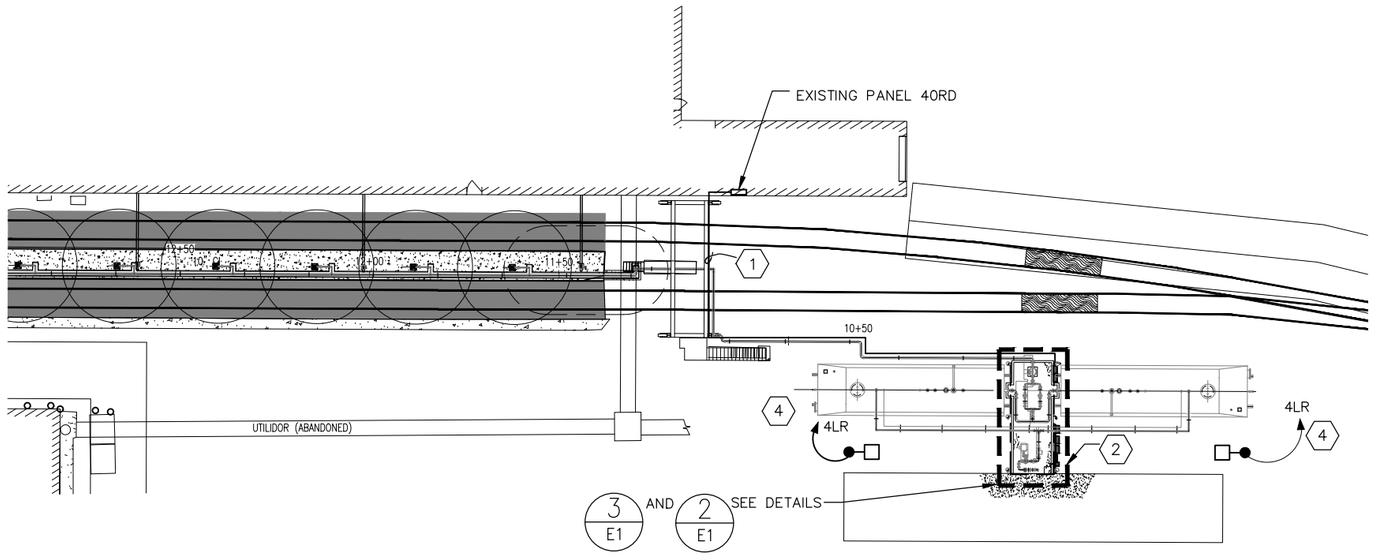
REV.	DATE	BY	REVISION

ALASKA RAILROAD CORPORATION
ENGINEERING SERVICES
P.O. BOX 107500, ANCHORAGE, ALASKA 99510-7500

PROJECT:
LOCOMOTIVE REFUELING FACILITY
ALASKA RAILROAD CORPORATION

TITLE:
MECHANICAL DETAILS

DESIGNED BY: MFF
DRAWN BY: MFF
CHECKED BY: TDH
APPROVED BY: KBW
SCALE: AS NOTED
DATE: 02-04-19
M5.0
AFE NO.:
ACAD FILE:
DWG NO. 28 OF 31



N

1 / E1 OVERALL SITE PLAN – ELECTRICAL

SCALE = 1" = 20'-0"

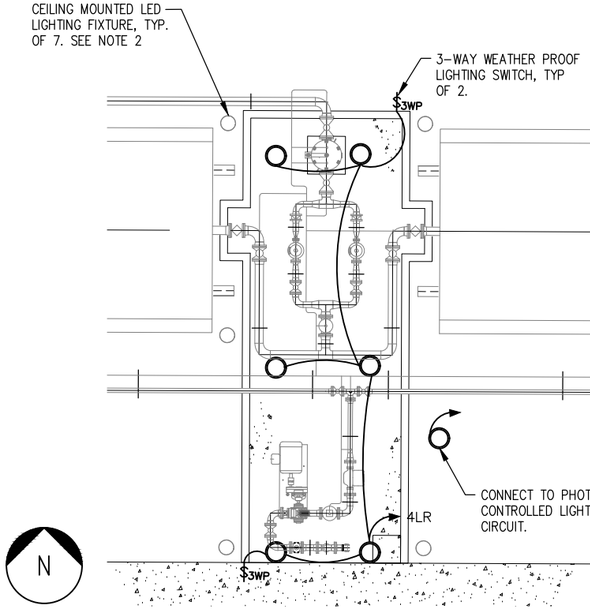
NOTES:

1. FROM PANEL 4ORD, RUN CONDUIT INSIDE BUILDING TO SANDING TOWER FRAME. PENETRATE WALL, RUN UP SANDING TOWER FRAME, OVER TRACKS, AND DOWN OTHER SIDE OF FRAME. FOLLOW PIPE ROUTING TO PUMP SHELTER.
2. NEW PANELS 4LR AND 2LR LOCATED AT PUMP SHELTER. PROVIDE SOFT START MOTOR STARTER, SQUARE D ALTISTART 48 WITH DISCONNECT AND NEMA 3R ENCLOSURE WITH THERMOSTATICALLY CONTROLLED STRIP HEATER FOR OPERATION DOWN TO –30 DEGREES F FOR EACH PUMP. PROVIDE PHOTOCELL CONTROLLED, WEATHERPROOF LED LIGHTING FIXTURE, DIALIGHT LIGHTING MODEL NUMBER LBW1C1D–HBXCU. PROVIDE COLUMN MOUNTED WEATHERPROOF DUPLEX RECEPTACLES AS SHOWN ON PLAN. PROVIDE WEATHERPROOF SWITCHES.
3. ADDITIONAL CONTROLS AND INSTRUMENTATION REQUIRED. SEE MECHANICAL DRAWING.
4. PROVIDE TWO LED STREET LIGHTS LOCATED AS SHOWN, ON 30' ALUMINUM ROUND POLES, MOUNTED ON PILING FOUNDATION. CONNECT THROUGH PHOTOCELL AND "ON–OFF–AUTO" SWITCH. COOPER LIGHTING MODEL NUMBER: RDG–E04–LED–E–U–5XQ–BK–U.
5. CLASSIFIED AREAS: NATIONAL ELECTRICAL CODE ARTICLE 500.1, SCOPE, STATES "ARTICLES 500 THROUGH 504 COVER THE REQUIREMENTS FOR ELECTRICAL AND ELECTRONIC EQUIPMENT AND WIRING...WHERE FIRE OR EXPLOSION HAZARDS MAY EXIST DUE TO...COMBUSTIBLE LIQUID PRODUCED VAPORS...". NFPA 497 DEFINES A COMBUSTIBLE LIQUID AS "ANY LIQUID THAT HAS A CLOSED CUP FLASH POINT AT OR ABOVE 100 DEGREES F...". NFPA 497 ALSO DEFINES FLASH POINT AS "THE MINIMUM TEMPERATURE AT WHICH A LIQUID GIVES OFF VAPOR IN SUFFICIENT IN SUFFICIENT CONCENTRATION TO FORM AN IGNITABLE MIXTURE WITH AIR NEAR THE SURFACE OF THE LIQUID, AS SPECIFIED BY TEST". NFPA 497 ALSO STATES "A COMBUSTIBLE LIQUID WILL FORM AN IGNITABLE MIXTURE ONLY WHEN HEATED ABOVE IT'S FLASH POINT." THE ONLY FUEL USED IN ASSOCIATION WITH THIS PROJECT IS DIESEL FUEL. THE FLASH POINT OF DIESEL FUEL IS ABOVE 100 DEGREES F. THE HIGHEST RECORDED TEMPERATURE FOR ANCHORAGE IS 86 DEGREES F. THEREFORE, DIESEL FUEL DOES NOT CREATE A CLASSIFIED AREA.
6. PROVIDE #3/0 BARE COPPER IN CONCRETE SLAB. BOND EACH COLUMN, GROUNDING REEL, AND PANEL 2LR TRANSFORMER.
7. PROVIDE UNISTRUT RACK FOR EQUIPMENT MOUNTING. SUBMIT SHOP DRAWINGS STAMPED AND SIGNED BY ALASKA REGISTERED ENGINEER FOR APPROVAL.
8. PROVIDE WEATHERPROOF FLOAT SWITCH, ANDERSON #F7–MM–S–1–1–F3–18–24, IN SUMP. CONNECT TO SHUT OFF PUMPS P–1, P–2, AND PDP–1 ON HIGH FLUID LEVEL IN SUMP. PROVIDE AMBER INDICATOR LIGHT MOUNTED ON COLUMN TO LIGHT WHEN PUMPS ARE SHUT OFF DUE TO HIGH FLUID LEVEL IN SUMP VIA FUEL CONTROL PANEL (SEE MECHANICAL). PROVIDE NAMEPLATE AT INDICATOR LIGHT TO READ "PUMP SHUTDOWN DUE TO HIGH FLUID LEVEL IN SUMP". PROVIDE WEATHERPROOF SWITCH ADJACENT TO INDICATOR LIGHT TO BY–PASS PUMP SHUTDOWN DUE TO HIGH FLUID LEVEL IN SUMP. PROVIDE NAMEPLATE AT SWITCH TO READ "PUMP SHUTDOWN BYPASS SWITCH".
9. SUMP. SEE DETAIL 8, SHEET C5.0. VERIFY LOCATION.

LEGEND

ABBR.	EXPLANATION	SYMBOL
XFMR	TRANSFORMER	T
NIC	NOT IN CONTRACT	
CKT	CIRCUIT – NUMBER AS NOTED (TYP.)	CKT–XX
UON	UNLESS OTHERWISE NOTED	
A/100	LIGHTING FIXTURE DESIGNATION – SEE SCHEDULE	
ETR	EXISTING TO REMAIN	
N.L.	NIGHT LIGHT	
WP	WEATHERPROOF	
E	EMERGENCY LIGHT, CIRCUIT, PANEL	
C	CONDUIT, CONCEALED. SIZE AS NOTED (TYP.)	
	CONDUIT, UNDERGROUND OR UNDERFLOOR	
	CONDUIT, EXPOSED	
FLEX	CONDUIT, FLEXIBLE	
	MULTI–OUTLET ASSEMBLY–RECEPTACLES AS INDICATED	—M—
	HOMERUN TO PANEL/CIRCUITS AS NOTED	
#X	WIRE COUNT OF # 12 UON/SPECIFIED	
UP	CONDUIT UP	
DN	CONDUIT DOWN	
PNL	PANELBOARD – SEE SCHEDULES	
	REFER TO INDICATED NOTE	1
RECPT	TELEPHONE RECEPTACLE	
	TELEPHONE RECEPTACLE IN FLOOR BOX	
	DUPLEX RECEPTACLE – NEMA 5–20R	
	QUADRUPLEX RECEPTACLE – NEMA 5–20R	
	DUPLEX RECEPTACLE – NEMA 5–20R GFCI TYPE	
	ISOLATED GRD DUPLEX RECEPTACLE – NEMA 5–20R	IG
	DUPLEX RECEPTACLE – NEMA 5–20R SPLIT WIRED	
	DUPLEX RECEPTACLE IN FLOOR BOX	
	RECEPTACLE – NEMA CONFIGURATION AS NOTED	
J–BOX	JUNCTION BOX	J
	SINGLE PHASE MOTOR – SIZE AS INDICATED	
	THREE PHASE MOTOR – SIZE AS INDICATED	
	MOTOR CONTROLLER	
	MOTOR DISCONNECT	
	COMBINATION STARTER/DISCONNECT	
SW	SWITCH – SINGLE POLE	$
	SWITCH – TWO POLE	$2
	SWITCH – THREE WAY	$3
	SWITCH – FOUR WAY	$4
	SWITCH – DIMMING TYPE	$D
	SWITCH – WITH PILOT LIGHT	$P
	SWITCH – THERMAL OVERLOAD	$T
	SWITCH – LOW VOLTAGE	$L
	CALL–IN SWITCH	$X
	SWITCH – WITH TIMER	TS
	PUSHBUTTON SWITCH	
PC	PHOTOCELL	PC
TC	TIMECLOCK	
	EXIT SIGN – SELF POWERED	H
	BATTERY–POWERED EMERGENCY LIGHT	
	LIGHTING FIXTURES – VARIOUS TYPES AS NOTED	

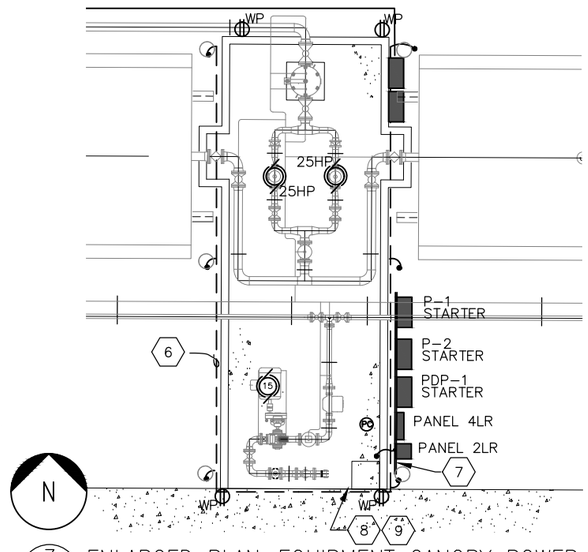
THIS IS A STANDARD LEGEND, ALL SYMBOLS SHOWN ON LEGEND ARE NOT NECESSARILY ON THE DRAWING(S).



N

2 / E1 ENLARGED PLAN–EQUIPMENT CANOPY LIGHTING

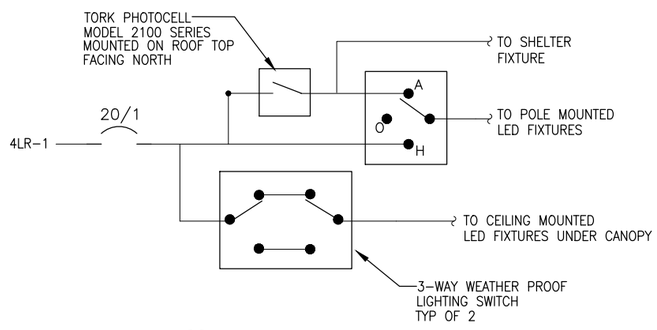
SCALE = 1" = 5'-0"



N

3 / E1 ENLARGED PLAN–EQUIPMENT CANOPY POWER

SCALE = 1" = 5'-0"



4 / E1 LIGHTING CONTROL DIAGRAM

NTS

GRAPHIC SCALE

20 0 20 40 FT

SCALE: 1" = 20'

IF SHEET IS LESS THAN 22" X 34" IT IS A REDUCED PRINT – SCALE REDUCED ACCORDINGLY

MBA Consulting Engineers, Inc.
3812 Spenard Road, Suite 200 • Anchorage, AK 99517
(907) 274-2622 • FAX (907) 274-0914

REV.	DATE	BY	REVISION

STATE OF ALASKA 49 TH
EDWARD W. CARLSON
01-11-2019
EE-9354
REGISTERED PROFESSIONAL ENGINEER

ALASKA RAILROAD CORPORATION
ENGINEERING SERVICES
P.O. BOX 107500, ANCHORAGE, ALASKA 99510–7500

PROJECT :
LOCOMOTIVE REFUELING FACILITY
ALASKA RAILROAD CORPORATION

TITLE:
SITE PLAN AND LEGEND

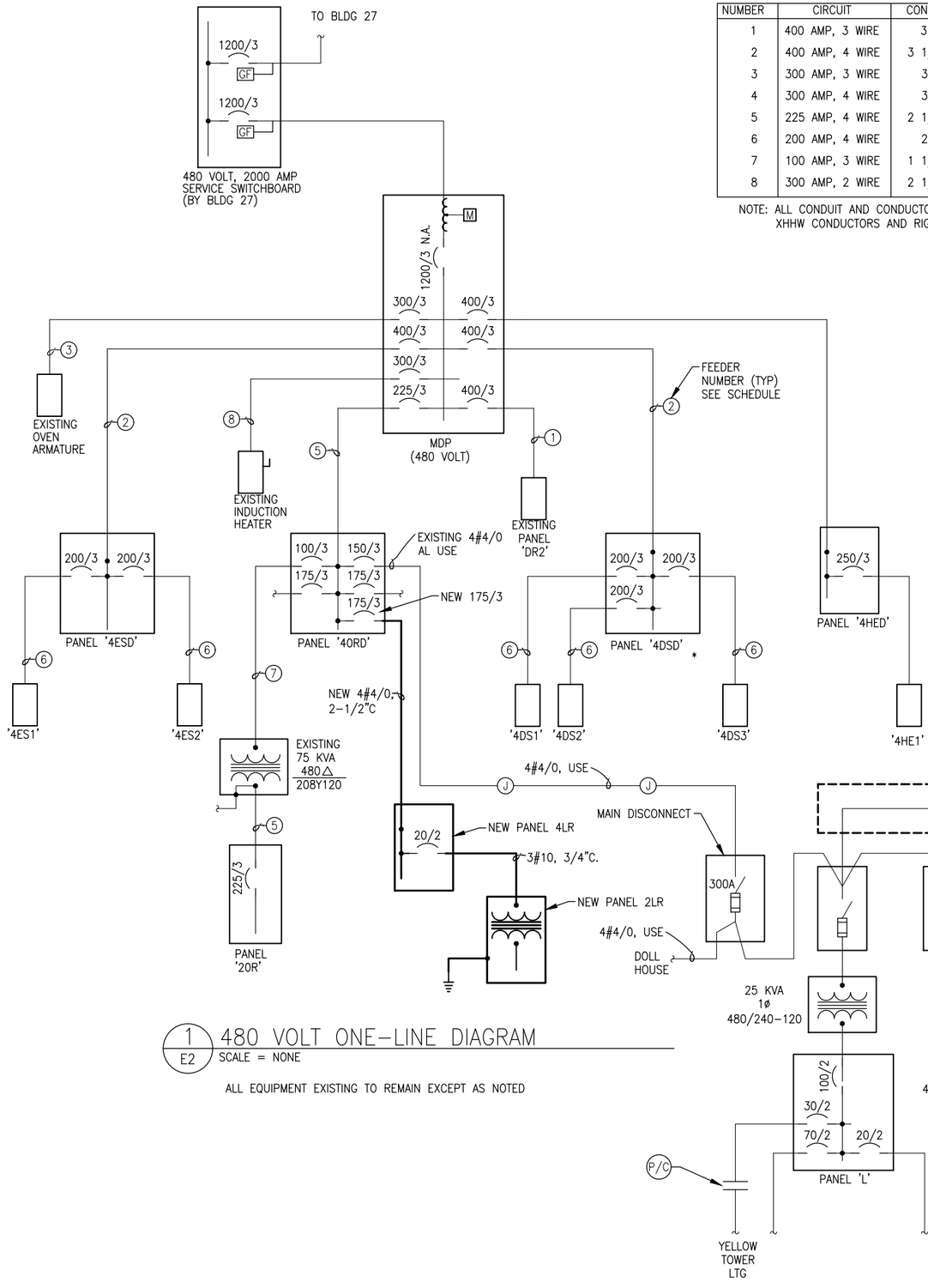
DESIGNED BY: REA	SCALE: AS NOTED	E1.0	AFE NO.:
DRAWN BY: SNS	DATE: 01–11–2019		ACAD FILE: 18037_E1.DWG
CHECKED BY: REA			DWG NO. 29 OF 31
APPROVED BY: EWC			

Z:\18037ALR – ARRC Locomotive Refueling Update\E–Working\Drawings\18037_E1.dwg

FEEDER SCHEDULE

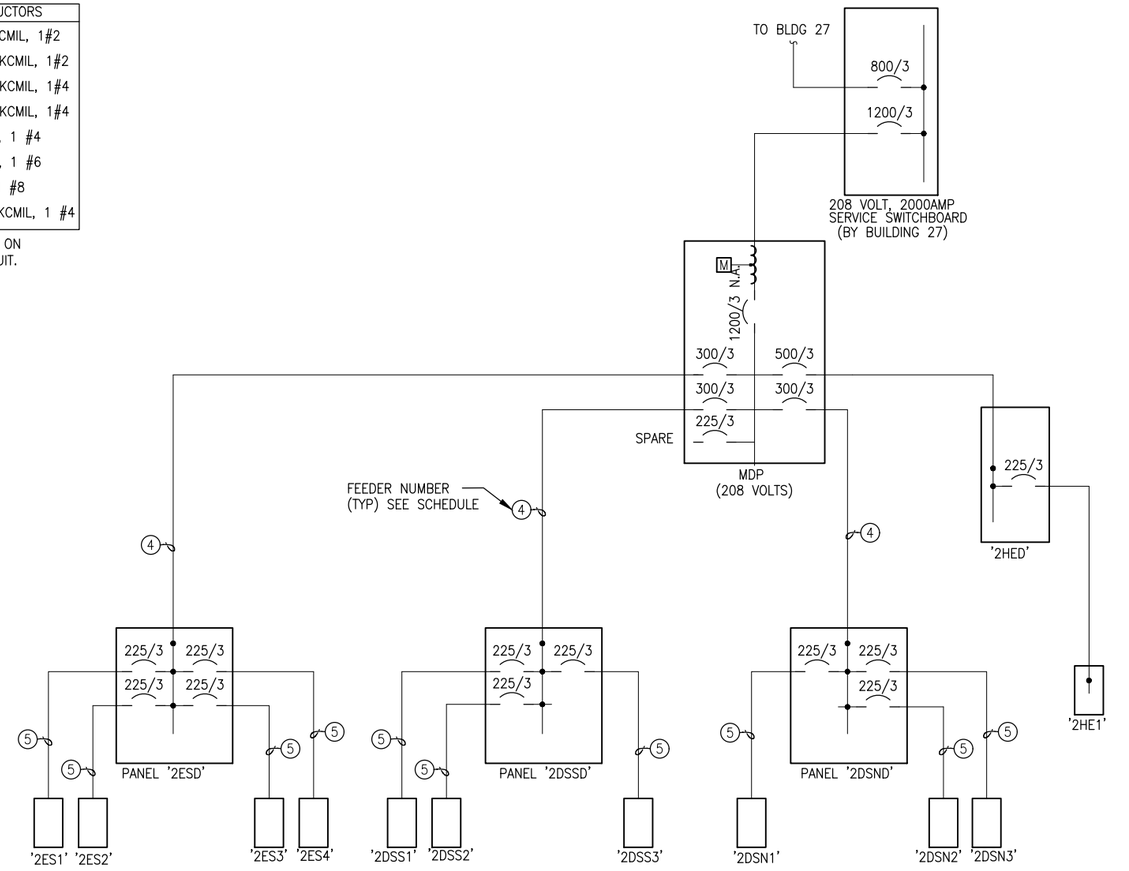
NUMBER	CIRCUIT	CONDUIT	CONDUCTORS
1	400 AMP, 3 WIRE	3"	3–500KCMIL, 1#2
2	400 AMP, 4 WIRE	3 1/2"	4–500 KCMIL, 1#2
3	300 AMP, 3 WIRE	3"	3–350 KCMIL, 1#4
4	300 AMP, 4 WIRE	3"	4–350 KCMIL, 1#4
5	225 AMP, 4 WIRE	2 1/2"	4 #4/0, 1 #4
6	200 AMP, 4 WIRE	2"	4 #3/0, 1 #6
7	100 AMP, 3 WIRE	1 1/4"	3 #2, 1 #8
8	300 AMP, 2 WIRE	2 1/2"	2 #350 KCMIL, 1 #4

NOTE: ALL CONDUIT AND CONDUCTOR SIZES BASED ON XHHW CONDUCTORS AND RIGID METAL CONDUIT.



1 E2 480 VOLT ONE-LINE DIAGRAM
SCALE = NONE

ALL EQUIPMENT EXISTING TO REMAIN EXCEPT AS NOTED



2 E2 208 VOLT ONE-LINE DIAGRAM
SCALE = NONE

STATE OF ALASKA 49TH
EDWARD W. CARLSON
01-11-2019
EE-9354
REGISTERED PROFESSIONAL ENGINEER

MBA Consulting Engineers, Inc.
3812 Spenard Road, Suite 200 • Anchorage, AK 99517
(907) 274-2622 • FAX (907) 274-0914

REV.	DATE	BY	REVISION

ALASKA RAILROAD CORPORATION
ENGINEERING SERVICES
P.O. BOX 107500, ANCHORAGE, ALASKA 99510-7500

PROJECT:
LOCOMOTIVE REFUELING FACILITY
ALASKA RAILROAD CORPORATION

TITLE:
ELECTRICAL
ONE-LINE DIAGRAM

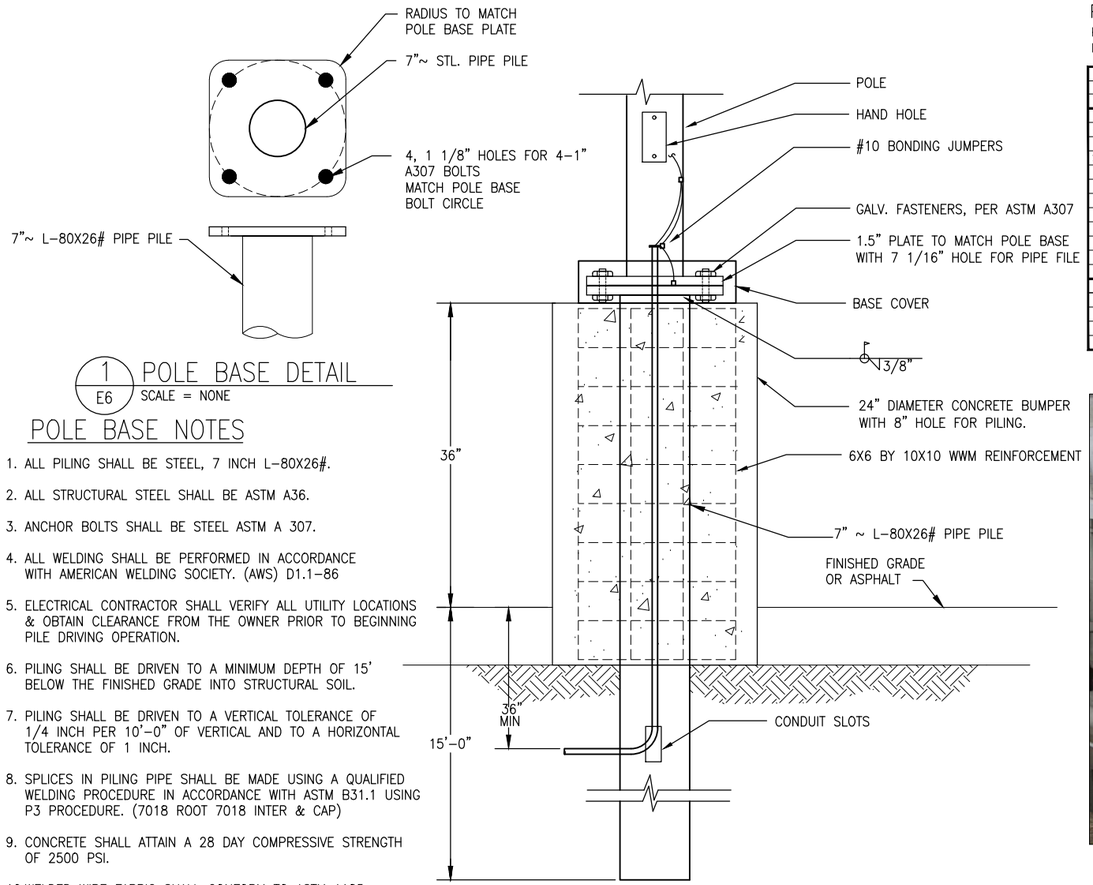
DESIGNED BY: REA
DRAWN BY: SNS
CHECKED BY: REA
APPROVED BY: EWC

SCALE: AS NOTED
DATE: 01-11-2019

E2.0

AFE NO.:
ACAD FILE:
DWG NO.
30 OF 31

Z:\18037ALR - ARRC Locomotive Refueling Update\E-Working\Drawings\18037_E2.dwg



1 / E6 POLE BASE DETAIL
SCALE = NONE

POLE BASE NOTES

1. ALL PILING SHALL BE STEEL, 7 INCH L-80X26#.
2. ALL STRUCTURAL STEEL SHALL BE ASTM A36.
3. ANCHOR BOLTS SHALL BE STEEL ASTM A 307.
4. ALL WELDING SHALL BE PERFORMED IN ACCORDANCE WITH AMERICAN WELDING SOCIETY. (AWS) D1.1-86
5. ELECTRICAL CONTRACTOR SHALL VERIFY ALL UTILITY LOCATIONS & OBTAIN CLEARANCE FROM THE OWNER PRIOR TO BEGINNING PILE DRIVING OPERATION.
6. PILING SHALL BE DRIVEN TO A MINIMUM DEPTH OF 15' BELOW THE FINISHED GRADE INTO STRUCTURAL SOIL.
7. PILING SHALL BE DRIVEN TO A VERTICAL TOLERANCE OF 1/4 INCH PER 10'-0" OF VERTICAL AND TO A HORIZONTAL TOLERANCE OF 1 INCH.
8. SPLICES IN PILING PIPE SHALL BE MADE USING A QUALIFIED WELDING PROCEDURE IN ACCORDANCE WITH ASTM B31.1 USING P3 PROCEDURE. (7018 ROOT 7018 INTER & CAP)
9. CONCRETE SHALL ATTAIN A 28 DAY COMPRESSIVE STRENGTH OF 2500 PSI.
10. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A185.

1 / E3 POLE BASE DETAIL-ELEVATION VIEW
SCALE = NONE

PANEL: 4LR

PROJECT: ARRC ANCHORAGE REFUELING FACILITY — THRUFEED LGS ☐ — SUBFEED BKR ☐
LOCATION: LUGS ☐ CB ■ — SURF ■ FLSH ☐ — SHNT TRP ☐ SBFD LGS ☐ — ISO GRND BAR ☐ SOLID NEUTRAL ■

277/480 VOLTS — 3 PH — 4 WIRE — 225 AMP — 14K AIC

CIRCUIT DESCRIPTION	KVA	AMP	CKT	CKT	AMP	KVA	CIRCUIT DESCRIPTION
LIGHTING	1.0	20/1	1	2	50/		
PANEL 2LR	5.0	20/	3	4	/	16.7	TRUCK OFFLOAD PUMP 15 HP
		/2	5	6	/3		
SPACE			7	8	80/		
			9	10	/	27.1	ISSUE PUMP #1 25 HP
			11	12	/3		
			13	14	80/		
			15	16	/	27.1	ISSUE PUMP #2 25 HP
			17	18	/3		
			19	20			SPACE
			21	22			
			23	24			

CONNECTED LOAD:	76.9	KVA	92.5	A
DEMAND LOAD:	76.9	KVA	92.5	A
DEMAND + CONT.	77.4	KVA	93.1	A
DATE:				
REV:				

REMARKS:
NON-AUTOMATIC MAIN BREAKER

3 / E3 EXISTING PUMPHOUSE
SCALE = NONE

DISCONNECT AND ABANDON IN PLACE

PANEL: '40RD' (EXISTING PANEL)

PROJECT: ARRC ANCHORAGE REFUELING FACILITY — THRUFEED LGS ☐ — SUBFEED BKR ☐
LOCATION: LUGS ■ CB ☐ — SURF ■ FLSH ☐ — SHNT TRP ☐ SBFD LGS ☐ — ISO GRND BAR ☐ SOLID NEUTRAL ☐

277/480 VOLTS — 3 PH — 4 WIRE — 225 AMP — 65K AIC

CIRCUIT DESCRIPTION	KVA	AMP	CKT	CKT	AMP	KVA	CIRCUIT DESCRIPTION
		150/	1	2	100/		
FUEL BUILDING/DOLL HOUSE	6.0	/	3	4	/	6.4	PANEL 20R VIA XFMER
		/3	5	6	/3		
		20/	7	8	20/		
USED OIL PUMP	8.7	/	9	10	/	8.7	LUBE OIL PUMP
		/3	11	12	/3		
			13	14	**175/**		
			15	16	/	**76.9**	**PANEL 4LR (1)**
			17	18	**3**		
			19	20			
			21	22			
			23	24			
			25	26			
			27	28			
			29	30			
			31	32			
			33	34			
			35	36			
			37	38			
			39	40			
			41	42			

CONNECTED LOAD:	106.7	KVA	128.4	A
DEMAND LOAD:	106.7	KVA	128.4	A
DEMAND + CONT.	107.2	KVA	129.0	A
DATE:				
REV:				**(1) NEW CIRCUIT BREAKER, NEW LOAD**

REMARKS: SQUARE D LINE HCW
ALL LOADS ARE EXISTING EXCEPT AS NOTED

PANEL: 2LR

PROJECT: ARRC ANCHORAGE REFUELING FACILITY — THRUFEED LGS ☐ — SUBFEED BKR ☐
LOCATION: LUGS ☐ CB ■ — SURF ■ FLSH ☐ — SHNT TRP ☐ SBFD LGS ☐ — ISO GRND BAR ☐ SOLID NEUTRAL ■

120/240 VOLTS — 1 PH — 3 WIRE — 10K AIC

CIRCUIT DESCRIPTION	KVA	AMP	CKT	CKT	AMP	KVA	CIRCUIT DESCRIPTION
RECEPTACLES	0.6	20/1	1	2	20/1		SPARE
FUEL CONTROL PANEL	1.0	20/1	3	4	20/1		SPARE
FUEL CONTROL PANEL	1.0	20/1	5	6			SPACE
SPARE		20/1	7	8			
SPACE			9	10			

CONNECTED LOAD:	2.6	KVA	10.8	A
DEMAND LOAD:		KVA		A
DEMAND + CONT.		KVA		A
DATE:				
REV:				

REMARKS:
SQUARE D MINI POWER ZONE #MPZ 5S40F

DISCONNECT AND ABANDON IN PLACE

5 / E3 EXISTING PUMPHOUSE
SCALE = NONE

DISCONNECT AND ABANDON IN PLACE

2 / E3 EXISTING PUMPHOUSE
SCALE = NONE

4 / E3 EXISTING PANEL 40RD
SCALE = NONE

STATE OF ALASKA 49TH
EDWARD W. CARLSON
01-11-2019
EE-9354
REGISTERED PROFESSIONAL ENGINEER

MBA Consulting Engineers, Inc.
3812 Spenard Road, Suite 200 • Anchorage, AK 99517
(907) 274-2622 • FAX (907) 274-0914

REV.	DATE	BY	REVISION

ALASKA RAILROAD CORPORATION
ENGINEERING SERVICES
P.O. BOX 107500, ANCHORAGE, ALASKA 99510-7500

PROJECT:
LOCOMOTIVE REFUELING FACILITY
ALASKA RAILROAD CORPORATION

TITLE:
ELECTRICAL
DETAIL, PANEL SCHEDULES AND PHOTOS

DESIGNED BY: REA
DRAWN BY: SNS
CHECKED BY: REA
APPROVED BY: EWC
SCALE: AS NOTED
DATE: 01-11-2019
E3.0
AFE NO.:
ACAD FILE:
DWG NO. 31 OF 31

Z:\18037ALR - ARRC Locomotive Refueling Update\E-Working\Drawings\18037_E3.dwg