# SECTION 01 11 13

# SUMMARY OF WORK

## Kasaan Bulk Fuel Upgrade Project

### Scope

This specification provides technical requirements for shop-fabricated, horizontal bulk fuel tanks and integral dispenser systems. Definitions for terms used in this specification are in accordance with those listed in UL 142 & 2085. The successful Bidder shall:

1. Provide one (1) **new** three thousand (3,000) gallon nominal volume, UL-142 Listed, double wall, horizontal, skid mounted, aboveground storage tank for diesel service. The tank shall include an integral hose reel dispensing system, meter, and related appurtenances as shown on the procurement drawings and described herein. Maximum outer tank shell dimensions shall be 8 feet in diameter by 13 feet long (see Drawing T1.1 – T1.2).

2. **Retrofit** one (1) owner-provided, 5,000-gallon, double wall, dual product, UL-2085 dispensing tank. Owner provided tank is FOB the AEA Warehouse in Anchorage, Alaska. Contractor shall provide all labor, materials, and freight to provide a fully functional system. Contractor provided tank modifications shall include lengthening the existing tank skid and installing a dual product dispenser, pumps, piping, valves, and other appurtenances as described in the specifications and procurement drawings and in accordance with the approved shop drawings. Original manufacturer shop fabrication drawings for the owner provided 5,000-gallon tank are included in the appendices. Procurement drawings are diagrammatical and do not include all required elements for a complete and functional system. Contractor is responsible for final design of the tank modifications (see Drawing T1.1 – T1.2).

Contractor is responsible for packaging and delivering the completed tank and dispenser systems to the final FOB point (City Shop Building, Kasaan Alaska) in accordance with the project schedule.

AEA reserves the right to inspect the tanks at any time during the fabrication and shipping process upon 24 hours notification to the contractor. Any deficiencies

noted during the inspections shall be corrected by the contractor to the satisfaction of the engineer prior to shipment.

### Submittals

Within two (2) weeks of project award, Contractor shall submit to the Engineer three sets of shop drawings, material lists (with catalog cuts for any proposed substitutions) and required structural calculations. All submittals must be approved prior to the start of fabrication. All deviations from this Specification and the attached Drawings shall be clearly identified as changes on the shop drawings.

### Design Service Conditions

All tank system components shall be UL listed and labeled, and shall be rated for the following service conditions:

- Fluid: Diesel fuel, Ultra Low Sulfur Diesel Fuel, and gasoline.
- Operating Temperature Range: -20°F to +100°F

## TANKS

### Tank Design Criteria

The tank design criteria shall be in accordance with the latest adopted version of the International Building Code and International Fire Code as follows:

Specific Gravity = 1.0
Classification of Structure: Category lll (IBC 2012)
Importance Factors (IBC 2009)

- Seismic = 1.50
- Snow = 1.20
- Wind = 1.15

Design Loading:

- Seismic
  $S_1$ = 0.040
  $S_S$ = 0.091
- Ground Snow load = 40 PSF
- Wind = 120 MPH Exposure D

The tanks shall be designed, or supplemented, for anticipated shipping and handling loads. Lifting connections shall be provided for tank handling where shown on the Drawings and where required for shipping and handling. Each lifting eye shall be capable of fully supporting the static weight of the completed assembly (empty) without damage.

The tanks shall include the nozzles, fittings, and appurtenances shown on the Drawings. Provide shop-built water draw assemblies and clock gage stilling wells on all new tanks as detailed on the Drawings.

For each tank compartment, provide a 10-mil laminated tank depth-to-volume chart and an approved anti-static gauge rod which displays depth in feet and inches from the inside bottom of tank.

**Tank Joints**

The new tank shall incorporate UL-142 approved weld joints (shell joints in accordance with UL 142 Figure 6.1, detail No. 1 or No. 2 and head joints in accordance with UL142 Figure 6.2).

**Tank bolt-on components (Ladders, Catwalks, Pipe Supports, etc)**

Equip tanks with exterior bolt on ladders, catwalks, and pipe supports as shown on the Drawings. All bolt-on components shall be designed by the tank manufacturer and constructed in accordance with federal OSHA, International Building Code, International Fire Code and UL 142 & 2085 requirements.

All bolt on components (ladder, catwalk, and pipe supports, etc) shall be shop assembled for field installation and hot dipped galvanized. Design shall permit field installation of bolt on components without field welding. Verify fit of all bolt-on components to tanks prior to painting. Provide temporary labeling to allow matching of tanks with pre-fit bolt on components. Remove and package bolt-on components separately for shipping.

**Tank Coatings**

New tanks and related components shall be shop coated in accordance with the following specification and in accordance with the coating manufacturer's recommendations. Note that the owner provided tank was shop coated same as below. Contractor shall touch up owner provided tank as required in accordance with manufacturer recommendations.

- Surfaces to be Coated: Exterior surface of tank, nozzles, skids, pipe supports, fittings, and pipe.
- Surfaces not Coated: Flange and nozzle faces, penetration threads, flange and manhole bolts, galvanized components.
- Surface Preparation: All surfaces to be coated shall be prepared in accordance with the Structural Steel Painting Council SSPC-SP10 near white blast criteria.

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| | Alternate methods of surface preparation which provide equal, or better, surface preparation will be considered. Identify proposed alternate surface preparation methods, if any, on bid. |
| • Coatings: | -Prime Coat- Devoe Catha-Coat 302H (3 mils minimum DFT)<br>-Intermediate Coat- Devoe Bar-Rust 236 (5-6 mils minimum DFT)<br>-Top Coat- Devoe Devthane 389 (2-3 mils DFT) |
| • Coat Colors: | All coats shall be contrasting colors. Top coat color shall be White. |
| • Touch-up Paint: | Provide 1 gallon each (3 gallons total) of prime, intermediate and top coat coatings. The touch-up coating shall be color matched to coatings applied to the tanks. |

**Tank Saddles and Skids**

Provide tanks with integral steel saddles and skid foundations in accordance with UL 142, Section 31 and the attached Drawings. Saddles to be seal welded to tank; bolt on or strap on saddles will not be accepted. Locate saddles near each end of the tank in accordance with UL 142. Provide W8x35 skids. Skids shall extend 12" beyond each end of the tank/dispenser assembly. Skids shall be capped with a ½ inch thick end plate, and be provided with 4" diameter schedule 80 steel pipe tow bars at each end to allow dragging of the tank and lifting from one end with no structural damage to the tank assembly. Skid and saddles shall be constructed such that the vertical distance between the bottom of the tank skid and the bottom of the tank is no greater than 12 inches.

**Tank Labeling**

All tanks shall be labeled in accordance with the requirements of the most recent adopted versions of the IFC and NFPA 704. All tank penetrations shall be labeled in accordance with the attached Drawings in 2” high black lettering.

**Project Equipment Specifications**

Provide tank appurtenances and equipment in accordance with the Drawings and these specifications.

Dual product retail dispenser - UL listed dual product dispenser for use with remote submersible pump. Dispenser shall be certifiable for retail sales. Gilbarco S Series two product, two hose dispenser with 5.7 color, EMV-capable Flexpay TM IV CRIND, EMV & SCR Europay installed, software upgrade for full EMV/SCR. EPP. 40.5" frame and standard graphics. Bezel door standard black, lower door painted, decaled white, side sheathing Duramax tuxedo. Dispenser activation method: lever. Fuel product unleaded and diesel. Passport version 10 service pack P or higher. Cat 5 cable for EMV transactions. CRIND display softkeys activated. No vapor recovery. Full cabinet heater installed.

Manholes: 5/16" steel lid, 1/4" mild steel ring with 7" riser height. Provide complete set of bolts and BUNA-N gasket for each lid. Clay & Bailey MR820-0600 or approved equal.

Pipe Supports, Ladders, Catwalks and Standoffs – Fabricate in accordance with UL 142 and the Drawings.

Pressure Vacuum Vent - Pressure/vacuum vent with mechanical adjustable float activated high intensity alarm, for mounting on 2-inch NPT riser. 8 ounce per square inch pressure relief setting and 1 ounce per square inch vacuum setting. Morrison Bros Model 922.

Emergency Vents - UL listed, aluminum body, brass seat, cast iron cover, flanged connections, sized in accordance with UL 142. 16 ounces per square inch pressure setting. Morrison Bros., Model 244 with companion flange for vents 6 inches or smaller, OAE.

Gauge Hatch: Brass cap, brass adapter, and brass chain, Buna-N gasket, 2-inch FPT connection. Morrison Bros Figure 307, OAE.

Clock Gauge- Clock-style gauge with readout in feet and inches up to 12 feet, accurate to ¼-inch over full scale. Aluminum body, 2-inch MPT connection, stainless steel float sized to pass through 2-inch bung opening. Morrison Figure 818 OAE.

Submersible Pump - Submersible explosion proof turbine pump with intake screen and integral leak detector specifically designed for pumping gasoline and diesel fuel. Arranged for vertical installation in 4-inch NPT tank opening.208/230 VAC, single phase, 3/4 hp motor as shown on the Contract Drawings. Red Jacket Model P75S1 with trapper intake screen OAE.

Meter- positive displacement meter rated for 100 GPM of continuous flow with a 150 psi working pressure. Accuracy shall be +/- 0.22% or better from 6-60GPM. Provide 2 inch inlet & outlet companion flanges with o-ring seals, preset counter

with direct mechanical linkage to shut-off valve, resettable register, non-resettable totalizer, air eliminator and strainer. All elastomeric seals shall be low temperature nitrile rubber (buna-n). Factory calibrate for no. 1 diesel fuel or gasoline as appropriate. Liquid controls m-7-k-1, or approved equal.

Hose reel – spring rewind hose reel capable of holding 40 feet of 1 1/2 inch i.d. Hose. Reel shall be top rewind. Hannay 922-25-26a(tr) (top rewind) with utility hose rollers and ball stop for 1 1/2 arctic hose, or approved equal.

Hose- 1 1/2 inch diameter with 1 1/2 inch npt connections at each end. Provide 18 foot long section of hose with each hose reel assembly. Goodyear arctic ortac or approved equal.

Swing check valves - (2" and larger) carbon steel body, ansi 150# raised face flanged ends, steel disc and trim, 150 psig minimum working pressure. Crane class 150 no. 147 or approved equal. (1") bonney forge bolted bonnet full/reduced threaded swing check valve

Flanged ball valves - reduced port carbon steel uni-body, ANSI 150# raised face flanged ends, stainless steel ball and trim, glass filled teflon seat, graphite seals, lockable handle, 150 psig minimum working pressure, nace mr0175 conformance, fire safe per API 607. PBV c5410-31-2236-ftnl, no substitutes. Provide all-weather padlock for each valve, all padlocks to be keyed alike.

Threaded ball valves - carbon steel body, threaded ends, stainless steel ball and trim, PTFE seat, graphite seals, lockable handle, 150 psig minimum working pressure, nace mr0175 conformance, fire safe per API607. PBV c5312-38-2236-ftnc, no substitutes. Provide all-weather padlock for each valve, all padlocks to be keyed alike.

Flanged pressure relief valves - steel body, ANSI 150# raised face flange inlet and outlet, 1/2" soft seat orifice, closed cap, size and pressure setting as indicated. Hydroseal 1flarv0o or approved equal.

Anti-siphon valves - bronze body anti-siphon valve set to open at 20-ft head pressure with special expansion relief set at 25 psi. Morrison bros. Co. Model 910er-7215 AP with expansion relief, or approved equal.

Strainer - flanged ends, carbon steel body, bottom clean-out y-strainer with blow off tapping plug. Provide #10 screen. Mueller steam specialties fig. 781, or approved equal.

Flex Fittings: Stainless steel corrugated inner core with stainless steel braided outer cover. ASME Class 150 fixed flange by floating flange ends with 18" live length or as indicated. 150 psi maximum working, factory tested to 225 psi minimum. Metraflex Metra-Mini or approved equal.

## Owner Provided Equipment Available for Contractor Use

The Owner is in possession of miscellaneous materials, tank appurtenances and equipment. In an effort to reduce fabrication costs and provide the most cost effective solution for the project, the materials and equipment listed in Table 1 below will be available to the contractor for incorporation into the work at the contractor's discretion. All materials listed in the table are new and are located FOB the AEA warehouse in Anchorage, Alaska. **Note: Only materials and equipment that meet the Project Equipment Specifications above may be utilized. The Owner does not guarantee that all items listed in Table 1 meet the specification requirements.** The Contractor shall be responsible for transport of any and all owner provided equipment utilized.

**Table 1 – Owner Provided Materials and Equipment Available for Contractor Use**

| ITEM | QUANTITY. | SIZE. | LOCATION |
|---|---|---|---|
| **BOLTS AND HARDWARE** | | | |
| WASHER | 48 | 5/8" | AEA YARD |
| THROUGH BOLT | 24 | ½" X 3 ½" | AEA YARD |
| BOLT NUT | 24 | ½" | AEA YARD |
| WASHER | 48 | ½" | AEA YARD |
| KNEE BRACE | 8 | 19 ¾"X2"X3/8" | AEA YARD |
| GRATING PANEL | 9 | 3'X5' | AEA YARD |
| GRATING PANEL | 1 | 3'X4' | AEA YARD |
| GRATING PANEL | 2 | 3'X3-11" | AEA YARD |
| GRATING PANEL | 1 | 3'X2'-10" | AEA YARD |
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| **DISPENSING RELATED EQUIPMENT** | | | |
| P75S1-T2 ¾ HP RED JACKET SUBMERSIBLE PUMP | 2 | 4" | AEA YARD |

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| P75S1-T3 ¾ HP RED JACKET SUBMERSIBLE PUMP | 3 | 4” | AEA YARD |
| 00144-194-5 RETROFIT KIT-TRAPPER | 5 | - | AEA YARD |
| 99LD-220 LEAK DETECTOR | 6 | - | AEA YARD |
| C8753KXTW2-FIL ATLAS DISPENSER | 1 | - | AEA YARD |
| CC1001 PULSE OUTPUT | - | - | AEA YARD |
| 70012 MICRON ELEMENT | 10 | 5”x3.5” | AEA YARD |
| ¾”x18” ARCTIC ORCTAC HOSE | 2 | ¾”X18” | AEA YARD |
| 66V-300 BREAK AWAY | 2 | ¾ ‘ | AEA YARD |
| 636F 000AVU EMERGENCY SHUTOFF VALVE | 2 | 1.5X1.5 636F | AEA YARD |
| 636-000AVU SHEAR VALVE | 2 | ¾” | AEA YARD |
| 1VP-0300 RED NOZZLE | 1 | - | AEA YARD |
| 1VP-0300 GREEN NOZZLE | 1 | - | AEA YARD |
| M7K METER | 2 | - | AEA YARD |
| ARCTIC ORTAC 1.5” | 2 | 1.5”I.DX15.5” | AEA YARD |
| 66SP-5150 BREAK AWAY | 2 | 1.5” | AEA YARD |
| A0.75X18” ARCTIC ORTAC HOSE | 2 | 3/4”X18” | AEA YARD |
| A0.75X18” ARCTIC ORTAC HOSE | 2 | 3/4”X18” | AEA YARD |
| FOB150MF SWIVEL | 2 | 1.5”X1.5” | AEA YARD |
| ¾”X 18’ ARCTIC ORTAC H0SE | 2 | 3/4” | AEA YARD |
| AO1.5”X30’ ARCTIC ORTAC HOSE | 2 | 1.5”X30’ | AEA YARD |
| 1290 AUTO NOZZLE | 2 | - | AEA YARD |
| SPRING REWIND HOSE REEL | 2 | - | AEA YARD |
| HGR50-75 STATIC GROUNDING REEL | 2 | - | AEA YARD |
| 15A-1000115 ADAPTOR | 2 | 1.5” | AEA YARD |
| 15V-101115 DUST CAP | 2 | 1.5” | AEA YARD |
| 10914R 340 FIRE EXTINGUISHER | 2 | 5LB | AEA YARD |
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| **VALVES AND PIPING** | | | |

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| 47F-3” GATE VALVE | 3 | 3” | AEA YARD |
| 147F-2” SWING CHECK VALVE | 2 | 2” | AEA YARD |
| 147F-3” SWING CHECK VALVE | 5 | 3” | AEA YARD |
| C5410312236FTNL-1.5” BALL VALVE | 4 | 1.5” | AEA YARD |
| C5410312236FTNL-2” BALL VALVE | 8 | 2” | AEA YARD |
| C5410312236FTNL-3” BALL VALVE1FLAX-0 SAFETY REIEF VALVE | 1 | 3” | AEA YARD |
| 910-2300AV ANTI SIPHON VALVE | 5 | 2” | AEA YARD |
| 1FLAXV-00 SAFTEY RELIEF VALVE (PRV) | 8 | 1” INLET X 9/16” OUTLET 50PSI | AEA YARD |
| PF30A-60523000 FLANGED ADAPTER | 3 | 3” | AEA YARD |
| 30V-1000110 3” DUST CAP | 3 | 3” | AEA YARD |
| 30A 3” ADAPTOR | 3 | 3” | AEA YARD |
| 10A-1000110 1” ADAPTER | 5 | 1” | AEA YARD |
| 10V-1000110 1” DUST CAP | 5 | 1” | AEA YARD |
| 718F-3” STRAINER | 3 | 3” | AEA YARD |
| FLEX CONNECT 2” | 5 | 12”X2” | AEA YARD |
| FLEX CONNECT 1.5” | 4 | 18”X1.5” MPT X FLANGED | AEA YARD |
| FLEX CONNECT 2” | 4 | 12”X2” FLANGED X FLANGED | AEA YARD |
| FLEX CONNECT 2” | 4 | 24”X2” FLANGED X FLANGED | AEA YARD |
| FUEL FILL HOUSING UNITS W. SPARE PADS | 2 UNITS, 2 FILTERS | LARGE | AEA YARD |
| EXTRA FILTER | 1 FILTER | LARGE | AEA YARD |
| FUEL FILTER MEDIUM | 6 FILTERS | MEDIUM | AEA YARD |
| **TANK APPURTANENCES** | | | |
| 922-0300AA PRESSURE VACUUM VENT | 4 | - | AEA YARD |
| 2440F-0075AV 6” EMERGENCY VENT | 2 | 6” | AEA YARD |
| 2440F-0075AV 8” EMERGENCY VENT | 1 | 8” | AEA YARD |
| 2440F-0075AV 10” | 1 | 10” | AEA YARD |

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| EMERGENCY VENT | | | |
| 354 0010 NUTS & BOLTS | 3 BOXES | 1.5” 2” | AEA YARD |
| MOR-14 NUTS AND BOLTS | 2 BOXES | .75”DIA X 2” | AEA YARD |
| 2440F-00102G GASKETS 6” | 2 | 6” | AEA YARD |
| 2440F-01102G GASKETS 8” | 1 | 8” | AEA YARD |
| 2440F-03102G GASKETS 10” | 2 | 10” | AEA YARD |
| 307-1011AC GAUGE HATCH 2” | 4 | 2” Brass W/ CAP | AEA YARD |
| LS-1900 TYPE 7,TYPE 8 FLOAT SWITCH | 4 | - | AEA YARD |
| 818-0400AG LEVEL CLOCK GAUGELS-1900 TPYE 8 FLOAT SWITCH | 8 | - | AEA YARD |
| 419-02001T DROP TUBE | 4 | 3” | AEA YARD |
| 184-27001B DOUBLE TAP BUSHING | 4 | 3X4X3 | AEA YARD |
| 4X12 NIPPLES | 6 | BLACK PIPE 4”X12” | AEA YARD |
| ORANGE STOPPERS | 2 | - | AEA YARD |
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**SHIPPING**

Bolt on components (exterior ladders, catwalks and pipe supports, etc) shall be packaged and shipped separately from tanks. Packaging shall be sufficient to prevent damage during shipping. Extra care shall be taken to protect tank stand offs to ease field installation of bolt on components.

All threaded tank openings shall be sealed for shipping with plastic or tin plugs. All flanged tank openings shall be blind flanged for shipment. Provide provision for relief of excess pressure/vacuum, which may damage the tank, while preventing precipitation or salt water spray from entering tank. Minimum vent opening shall be ½” diameter.

Tank/dispenser assemblies shall be packaged at the factory for ocean transport. Lifting eyes shall be provided in accordance with the Drawings and as required for proper tank handling.