SPECIFICATIONS

A48-BT-A-AL

056100 thru 056550

TRUCK, SINGLE AXLE, 1,600-GAL MINIMUM, FUEL TANK BODY

1,800 GAL. DIESEL W/AUTO. TRANSMISSION (056100)

1,800 GAL. DIESEL, W/DEF FLUID TANK, W/AUTO. TRANSMISSION (056150)

1,600 GAL. DIESEL, 200 GAL. GAS, W/AUTO. TRANSMISSION (056500)

1,600 GAL. DIESEL, 200 GAL. GAS, W/DEF FLUID TANK, W/AUTO. TRANSMISSION (056550)

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October 5, 2021 GAW

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I. GENERAL TRUCK SPECIFICATIONS:

A. INTENT STATEMENT:

The purpose of these specifications is to describe a vehicle for use by the Department to service road construction and maintenance equipment with gasoline and diesel fuels (codes 056500, 056550), and or diesel fuel only (codes 056100, 056150). The vehicle shall consist of a conventional cab, dual rear wheels and a single rear axle drive, equipped with tank and dispensing equipment as described.

It shall be the sole responsibility of the successful vendor to ensure compatibility with the Department's trailer(s), to include not surpassing the 60 feet overall length ruling and meeting all bridge formulas. This is of particular note to those orders received for tractors without trailers. The vendor shall, prior to bid, inspect the Department's trailer(s) to ensure this compatibility. For trailer location contact the Equipment Division at 717-783-2371.

NOTE: Pennsylvania Department of General Services, PCID No. 1075, "*General Requirements for Bidding PENNDOT Vehicles/Equipment"*, most current version effective at the time and date of bid opening, is included as a part of this specification. PCID No. 1075 may be reviewed and downloaded from the Department of General Services website, http://www.dgs.state.pa.us.

Delivery as required per Department of General Service PCID NO. 1075 Section "G". All units must be delivered within **270** days after receipt of the purchase order by the successful bidder.

Awarded OEM vendor shall be responsible for contacting the Specification Section of the Fleet Management Division at (717) 787-1567 to set up a pre-build meeting for all chassis and body mounting component locations prior to chassis build. Any deviations to the specification must be granted in writing by the Chief of the Specification Section, previous acceptance will not be considered pre-approved. It shall be understood that any discrepancies/deviations between the specification and the completed unit(s), chassis or body up-fitter related, must be addressed and corrected prior to the delivery deadline and the Departments acceptances.

Unit shall be delivered clean, washed, with current PA state Inspection and a full tank of fuel.

All component manuals and weight distribution sheets shall be completed and supplied with the delivery of each unit.

Department representatives will review the final design of the unit before work begins on the pilot model. The successful bidder will provide detailed drawings of the various systems, i.e. heating, electrical, hydraulic, etc.

The Department reserves the right to have its representative(s) periodically inspect each unit during assembly at the successful bidder's assembly point.

I. GENERAL TRUCK SPECIFICATIONS:

B. WEIGHT DISTRIBUTION:

Weight Slip shall be provided with the pilot model for the unit supplied.

It is understood that the components specified are minimum and if the truck manufacturer's Engineering Department recommends or deems necessary, due to their particular weight distribution, a larger component or a larger GAWR totally, the burden of responsibility is hereby placed upon the Manufacturer's Engineering Department to supply a unit that is totally engineered.

1. Frame
2. Axle
3. Tires
4. Steering unit and components
5. Rims
6. Suspension
7. Brakes
8. Any other items as required

The dynamic and static loads created by the unit, plus operational stresses, must be reviewed to ensure the Commonwealth of a properly designed/engineered unit.

The vehicle shall be certified for _____LB Gross Vehicle Weight Rating (GVWR). The GVWR shall be identified in the cab or on the door as the final complete certification label (minimum rating).

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

C. POWER TRAIN OVERVIEW:

ENGINE DIESEL – **ENGINE**- CUMMINS ISL9 MIN. 320 HP AT GOVERNED RPM, MIN, 1,000 LB/FT TORQUE. SHALL MEET LATEST EPA EMMISSIONS.

TRANSMISSION – AUTOMATIC ALLISION 3500 RDS Series 6 SPEED or 3000 RDS Series 6 SPEED

REAR AXLE – 23,000 LB. Min. DANA, Meritor or Mack in accordance with the specification.

Lubricants for front axle hubs and differentials, automatic transmissions, transfer cases and all rear differentials shall meet or exceed all appropriate mil and SAE specifications for synthetic lubricants and shall have all plugs identified as synthetic or painted red.
The OEM shall provide written exemption if synthetic oil is not installed.

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

D. VEHICLE COMPONENTS:

1. AXLE AND SUSPENSION FRONT:

16,000 LB capacity, minimum.
Front spring rating shall be equal or greater than the axle rating supplied.
The front axle drag links and tie rods shall have grease zerks installed. Kingpin or bushings shall be grooved to permit grease flow. Sufficient tire clearance at maximum turning angles. Complete oil seal assembly, including hub, plug type window, and seal. Each unit shall receive a front-end alignment prior to delivery.

2. AXLE AND SUSPENSION REAR:

23,000 LB. Min. DANA, Meritor, or Mack.
Rear spring rating shall be equal or greater than the axle rating supplied.
Aluminum or lightweight housing will not be accepted.
Suspension tailored to axle loads and adequate to sustain maximum GVW without overload or permanent set.
Aluminum or lightweight housing is unacceptable. Only heaviest duty housing will be accepted.
All rear axles must provide axle shafts with a minimum diameter of 2.19 inch at the spline. All rear axle(s) shall have an extended breather tube to prevent debris buildup from entering axle housing. There shall be a torque-proportioning traction-assist device, which is full locking within the differential housing. The device shall provide maximum traction to the rear wheels when actuated and shall be a self-relieving designed to prevent gear damage and/or axle shaft breakage under extreme service conditions. The traction-assist device shall be driver actuated by a dash mounted traction control switch.
Lubricants for all rear axles shall meet or exceed all appropriate MIL and SAE specifications for synthetic lubricants and shall have all fill plugs identified as synthetic oil, or painted red.
Stemco guardian or SKF Scotseal, Chicago Rawhide rear wheel seals, or approved equal. All axles shall have magnetic drain plugs.
This information shall be presented at the pre-build meeting.
Rear axle ratio selection will be made after the award and may be a mix of ratios as required. The successful vendor/manufacturer shall present three (3) computer runs showing the three (3) most likely ratios for consideration for a speed range of 65 MPH max. This information shall be presented at the pre-build meting.

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

D. VEHICLE COMPONENTS: (Continued)

3. BRAKES:

Braking System: Full air in compliance with the most current FMVSS requirements.
The ABS shall incorporate a diagnostic fault switch that is capable of illuminating a fault light for diagnostic purposes. The switch shall be easily accessible and can be either dash or under-dash mounted. A dash-mounted display that will show all SAE message descriptions for the ABS is an acceptable means of diagnostics in lieu of the fault switch.
Rear brakes: 16.5-inch x 7 inch "S" cam with quick change type single or double pin. (No substitute - standardization).
Drum brakes shall have automatic slack adjusters and they shall be clearance sensing type only, and they shall be clearance sensing with adjustment on application of the brake (no substitute).
Steer axle brake: 16.5-inch x 5 inch or 16.5 inch in x 6 inch, "S" cam or a power front disc brake system providing equal performance. Quick change type single or double anchor pin if drum type brakes are furnished.
Backing plates on all drum brakes.
Air compressor: Per truck manufacturer's recommendation. Buzzer-type, low air pressure indicator. Compressor shall be fitted with a safety valve to prevent mechanical failure.
Low air pressure indicator: Buzzer-type and dash light. Must meet current Federal DOT guideline requirements. Air gauge shall display in 5lb. increments. Digital numerical readout is acceptable. Air gauge and low air warning buzzer shall operate with key switch **on** and engine **off**. Function shall not have capabilities of being deactivated by the operator.
Parking brake: Rear wheels, spring-type, MGM 30/30 or ANCHORLOCK 30/30 gold seal chambers (no substitute). Parking brake shall provide modulated emergency braking via the foot valve in the event of a rear service system failure.
Air tank: Automatic drain valve, with heater on wet (first) tank. Each of the remaining air tanks shall have a manual drain valve.
Air dryer: With heater, mounted away from road splashing and a minimum of 20 inches above road surface. Dryer shall be compatible with the body company clearance requirements for sub-frame, valve body, etc. Per: Haldex DRYest or Bendix AD-IP installation made in concurrence with the air compressor manufacturer's recommendations.
Air dryer shall be placed to accommodate the changing of filter cartridges without disconnecting any hoses or removing dryer base from its mounting location. Final mounting location shall be determined at Pre-Build meeting. All electrical connectors for drain valve and air dryer shall be covered with heat shrink material or have sealed connections.
Brake valve shall be mounted away from road splashing.
System shall be equipped with anti-compounding to prevent mechanical failure of the foundation brakes, slack adjusters, etc.

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

D. VEHICLE COMPONENTS: (Continued)

4. CAB:

Aluminum or steel cab.
Hood: Fiberglass, tilting. Fenders are part of tilting hood.
Fenders: Front fenders shall have a formed extension. Not to exceed 102-inch truck width.
Air deflector: Clear or smoke, hood mounted. Deflector manufacturer's standard width for the truck model. Access to front end hood tilt handle shall not be blocked. Extra handle acceptable. Ref. DEFLECT-SHIELD Corp., Tele. 1-800-247-2440.
Seats: Driver's seat shall be high back adjustable BOSTROM Air 915 Series with lumbar support or National 2000 Series with lumbar support or DuraForm Air Command Series (fabri form cushions with lumbar support) with body cloth insert and three-point retractable seat belt. **(Seatbelt shall be High Visibility Orange).** A bellow-type or protective skirt shall cover the seat suspension mechanism. There shall be an inside arm rest on the driver's seat. No substitute on seats reference. Color coordinated to cab interior.
Passenger seat: With three-point retractable seat belt. **(Seatbelt shall be High Visibility Orange)** manufacturers standard non-suspension (static), high back type. Color coordinated.
If due to cab configuration a Bostrom 915 seat cannot be used, a Bostrom 910 may be substituted. All other requirements must be met.
Deluxe fresh air hot water heater, manufacturer's highest output.
Safety glass throughout.
Windshield: One (1) or two (2) piece construction, tinted.
Dual sun visors
Cruise Control
Halogen headlights, all other cab lighting shall be L.E.D.
Dual windshield defrosters.
Drivers and passenger side windows shall be power.
Dual windshield wipers: Arctic wipers and heaviest, motor, arms and linkages available. Wiper blades, maximum length, shall follow windshield contours. They shall be minimum two (2) speed intermittent. Washer system shall be electric. Washer tank shall be a minimum capacity of two (2) quarts of washer fluid. It shall be filled with an anti-freeze type solvent. Washer fill point shall be located to be accessed from ground level, without overhead reaching. With unobstructed and unrestricted flow from a one-gallon jug.
Mirrors: Drivers and passengers side power mirrors, west coast style minimum 7-inch X 14-inch manufacturers standard heavy-duty breakaway arms.
Mirrors shall be heated with a lighted toggle switch mounted within accessible reach of the operator, automatic on/off is acceptable. The wires shall be fitted in such a way that the mirror glass/element can be changed by unplugging the two-wire lead. There shall be a heated convex mirror both sides, minimum 6-inch X 7-inch or 8-inch diameter, minimum.
A heated blind-spot elimination mirror shall be mounted on the right front fender and it shall be minimum 7-inch X 7 inch or 8-inch diameter, stainless steel or aluminum head with mirror. Mirror shall be a conventional convex mirror and shall not be of the half-round cross view type. All arm/s and hardware shall also be stainless steel. Fender type washers stainless, or aluminum, with rubber pads to be placed on both sides of the fender shall be included. Pedestal system shall be single, double or triple mounting assemblies (stainless steel or aluminum). Mirror shall be mounted in rubber or vinyl. Ref: Grote (800-628-0809).

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

D. VEHICLE COMPONENTS: (Continued)

4. CAB: (Continued)

Steps: Drivers and passenger entrance steps: Shall be aluminum, serrated. **The outer step edge must be serrated in lieu of plain. (Overlay is not acceptable).** Step design material must be the same, both left and right side. Ref: Bustin.
Top of the first step shall be approximately 21 inch above the ground.

Grab handles shall be supplied on all cab entry locations. Three points of contact shall be achievable at all cab entry locations. Handrails shall be coated with non-skid paint (non-skid tape is unacceptable) or have OEM anti-slip rubber inserts, both non-skid paint or rubber inserts must extend the full length of the grab handle.

Exterior grab handles shall be supplied if available from OEM.

There shall be a permanent decal, “Three Point Contact” located at each entry point of the truck cab and at tank ladder area per EQN – 552-1. Exact location to be determined at prebuild meeting.

There shall be a permanent decal, 2-inch-high red letters on white background affixed by the driver side door handle stating the overall maximum travel height of the completed and unloaded unit. (Example) HT-__’ __” Ref. EQN-552.

Air horn(s): Minimum 1 horn with snow-shield (not required if under hood mount).

All controls and knobs shall be properly identified.

Cab floor covering shall be heavy-duty rubber with closed cell rubber or heavy felt backing.

Covering shall seal against all mating and adjoining surfaces sealing dirt and liquid on the surface keeping it from penetrating or accessing the metal cab flooring causing corrosion from inside the cab.

The engine components facing wheel areas, on both sides, and the areas to the rear of wheels shall be shielded.

Inside dome light shall be provided.

Emergency triangle warning kit, with hold down. Warning Triangle Flare Kit, Ref: KD Lamp Co. or equal, stowed (fastened) in the cab, per EQN-66A

One (1) pair of CB Power connections, at the dash, per EQN-78.

Air conditioning: Highest output available as OEM option.

Cab shall have an air suspension system.

Steering wheel diameter shall be 18-inch (approx.). Manufactures standard.

Steering Column: Steering wheel and column shall be tilt and telescopic, infinitely adjustable to multiple positions.

AM/FM radio with weather band and wireless hands-free cell phone connection.

Cup Holder: There shall be a cup holder in the cab within easy reach of the operator.

Wiring Pass Through: All wiring entering the cab shall be made through a rubber boot assembly and be weather tight. There shall be no connectors in the wiring at the pass-through point. Wiring shall be protected against sharp edges and from rubbing / chaffing. Boot design shall be pre-approved.

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

D. VEHICLE COMPONENTS: (Continued)

5. CHASSIS:

38,000 LB GVWR, manufacturer's rating.
Cab Axle (CA) dimension: Wheelbase and CA dimension may be adjusted to provide the optimum legal weight distribution.
Axle-frame (AF) dimension: Shall incorporate a cross member at the rear of the frame.
Front Bumper: Mounted to the frame with the inner face of the bumper against the chassis frame.
Front mounted tow hooks or eyes: Two (2) front or one center mount tow pin. May be installed by the body company using grade 8-bolts (minimum) of sufficient strength and length, and self-locking nuts, or by full welding.
License plate bracket rear securely mounted.

6. ON BOARD GREASE SYSTEM

There shall be a centralized-on board chassis lubrication system installed, manufactured by SKF Lincoln Industrial Model# 94012 **(No Substitute, standardization)** Ref: EQN-501.

7. DRIVE LINE:

Main driveline: Spicer Life XL or Meritor MXL Series. **"Factory balanced"** greasable, (one zerk minimum). Heavy-duty driveline shall be engineered and be compatible to engine, drive train and transmission torque. Heavy-duty center bearing, if required, with due consideration to drive shaft angles, length, location, proper bolting based upon engine and transmission selection. Inter-axle driveline: Spicer Life XL or Meritor MXL Series.

8. ELECTRICAL:

All copper system, negative ground.
Batteries: Three (3) heavy-duty, 12-volt, field maintenance-free, BCI Group Size 31, with stud-type posts and anti-corrosion treatment on each terminal. Amperes (CCA) 2500 at 0 degrees F.
Battery Mounting: It shall include the following:

a) 0.25-inch-thick rubber shock pad under the battery.
b) Box with cover. Cover shall be constructed of fiberglass, poly, or aluminum, (if aluminum there shall be an insulating liner).
c) Mounting bolts grade-8 with self-locking nuts.

Mounting of accessories within the battery box is prohibited.
All OEM connections within the battery box shall have attached non-metallic embossed labels/tags. Labels/tags applied with self-adhesives or stickers will not be accepted.
Mounting of accessories within the battery box is prohibited. Any connections that are essential in the battery box must be pre-approved by the Chief of the Specification unit at the Fleet Management Division in writing (717) 787-1567. Any circuit deemed necessary for connection in the battery box by the body up fitter or component manufacturer shall have attached non-metallic embossed labels/tags. Labels/tags applied with self-adhesives or stickers will not be accepted.
All circuits shall be individually permanently labeled.
Cables shall conform to RCC Practice 105 with “sealed” terminal ends for stud-type battery posts.
Electrical system: Circuit-breaker-equipped, in easily accessible location, weatherproof. Fuses acceptable in circuit so identified by manufacturer as safety factor. Any fuse or circuit-breaker liable to be damaged during truck operation shall have an easily removable protective cover. All wire splices in the cab shall be heat shrink material. Ref: THOMAS & BETTS, Tel: (201) 707-2145.

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

D. VEHICLE COMPONENTS: (Continued)

8. ELECTRICAL: (Continued)

Alternator: Delco 36SI (No substitute, Standardization) 160 A minimum, high performance, solid state (brushless).
Lights: All lights shall meet all Federal and State regulations. The head Lights shall be Halogen with (DRL's) daytime running lights. Body lights shall have their own dedicated complete circuit. The chassis manufacturer shall route the dedicated body circuit/harness to the rear center portion of cab, with 4' of extra wire coiled on floor between seats. All pass-through points shall be properly sealed and protected with pass through boot. Starter motor: Delco 39 MT (No Substitute, Standardization) with thermal over-crank protection and high torque capacity. Suitable for the diesel engines offered as per starter manufacturer's recommendation.
Starter shall have (OCP) either built in or controlled by the Vehicle's control system, (if required).
Alternator and starter mounting bolts: Grade 8.
Flasher: (All) heavy-duty electrical, Ref: Tridon Model EL 12 or equal.
If an audible alarm is supplied for 4 ways and turn signals, it shall have an on/off capability.
All exposed junctions: Waterproof and sealed against salt.
Radio Antenna: There shall be an antenna base, PCTEL Maxrad NMO-52-360-XX-N and a VHF StiCO Roof-FT-NITI-M whip shall be cut to 18.0 inches per manufactures cut sheet. Assembly shall be mounted to the stationary beacon light bracket, (to the street side, of the light bar) with the antenna cable routed (within protective conduit) to the floor area between the seats. There shall be a minimum of 4 feet of antenna cable coiled at the base of the floor to allow for connection of radio on spreader control pedestal. Antenna shall be prewired with a UHF MALE connection. **(No substitute, standardization).** Antenna shall be mounted to not interfere with cab shield.
Power Distribution Center: There shall be a 4-way power/ground distribution center located near the console for connection of 800 MHz state radio. The lugs shall be labeled and configured in the following manner: (1) lug shall be a 30-ampere constant hot circuit, (1) lug shall be a 10-ampere ignition-controlled circuit. (2) lugs shall be chassis ground. All connections shall be enclosed in a weatherproof enclosure: EQN-120Q
Each circuit shall be supplied individually, labeled, properly sized, protected from weather and sealed to be watertight.

9. ENGINE:

Replaceable heavy-duty full flow type fuel filter(s) and oil filter(s) as recommended by the manufacturer, bearing a legible OEM part number.
Cooling system: The largest factory available capacity compatible with engines and transmissions referenced. With overflow recovery system and visual level indicator.
Radiator core and shell: Shall be manufacturer's heaviest construction grade radiator available. Radiator with a "cut-out" to accommodate PTO shaft will not be accepted.
The cooling system shall be fitted with provisions for visually monitoring coolant without necessitating removal of the cap from the radiator or expansion tank (e.g., sight glass, transparent expansion tank).
The oil dipstick must have tubing and dipstick with sufficient length to provide reasonable access.
Automatic idle shutdown shall be set to five (5) minutes. An audible warning alarm shall be provided to alert operator prior to engine shutting down. Automatic idle shutdown shall be programed to be overridden when the PTO Mode is engaged.
ECM shall be set to a maximum of sixty-five (65) miles per hour.

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

D. VEHICLE COMPONENTS: (Continued)

9. ENGINE: (Continued)

Engine Heater: Immersion in-block type, for cooling system, with waterproof plug flush-mounted in an accessible location at the front/roadside of the vehicle, outside the cab/hood, 110 volt, 3-prong plug. The electrical cable from the heater to plug shall be one piece and waterproof.

Coolant/filter: A non-charged spin-on coolant filter shall be installed if required by engine manufacturer.

Air Cleaner: Air cleaner shall be the manufacturer's heaviest duty air cleaner that meets of the extended engine warranty.

Fan: Thermostatically controlled, viscous type or manufacturer’s recommended automatic fan.

Screening system: Mounted in front of radiator grille that protects radiator from stones and bugs. System to be approved by engine and truck manufacturer(s).

Diesel Fuel Filter: All primary fuel filters (Racor & Davco) shall be mounted to the outside of the frame rail. There shall be a Racor fuel filter/ water separator unit installed approved for use by Cummins and mounted (Higher than fuel tank) per manufactures recommendations in a location to accommodate filter replacements, yet be protected from road debris **(No substitute, standardization)**. Mounting location to be determined at pre-build meeting. This filter is to be bid and supplied until a suitable Davco fuel filter is approved and available by the engine manufacture to supply coolant heat, 12-volt key accessory activated heat and 120-volt AC circuit that shall be powered via the same electrical connection as the engine block heater. **(No substitute, standardization)**

Racor Unit shall be equipped with engine coolant heat and 12-volt heater circuit. The 12-volt circuit shall activate as soon as the keyed ignition circuit is powered. **(No substitute, standardization)**

Davco unit shall be equipped with coolant heat, a 12 volt and 120-volt heater circuit. 12-volt heater circuit will activate with the ignition key switch, the 120-volt heater circuit and engine block heater shall be powered via the same electrical connection. **(No substitute, standardization).**

Air restriction gauge: Flush, dash-mounted with indicator slide for engine air cleaner, RE: FILTER MINDER, manufactured by Engineered Products Company. If the vehicle is OEM equipped with an electronic dash that incorporates an air restriction gauge or indicator light, shall be acceptable.

Governor: Set at manufacturer's recommended maximum engine speed (rpm).

Hoses: The air induction system and large cooling system hoses shall be clamped with 0.500-inch-wide, 150-inch LB stainless steel, constant torque, spring loaded worm clamps. RE: WITTEK Manufacturing or BREEZE Clamp Co, constant torque clamps with liner for silicone hoses. Cooling system hose under 1-inch OD may use factory standard hose clamps as a minimum acceptable standard.

Air intake hoses shall be 0.25-inch minimum thickness, molded hoses. RE: GATES, GOODYEAR or equal.

Lubricating oil lines: If hoses are used, they shall be wire braid type, "AEROQUIP" or approved equal system, minimum standard.

Engine shall be equipped with a minimum 2 stage, full engine compression brake, Ref: Jacobs.

Brake lights shall activate when engine brake is activated, Ref: Jacobs.

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

D. VEHICLE COMPONENTS: (Continued)

10. EXHAUST:

DPF (diesel particulate filter) and exhaust system shall meet the latest EPA emission requirements.
Vertical tailpipe with elbow and muffler system or approved horizontal muffler and vertical tail pipe with elbow.
The muffler, DPF and tail pipe shall be shielded or insulated to protect personnel from burns when entering or exiting the cab. The shield shall be 180 degrees to 360 degrees and shall be of non-rustable material such as stainless steel or aluminum. Any fluid tank or hoses shall not be routed close to any part of the exhaust system.
All exhaust/DEF components shall be properly shielded to protect personnel from contact, at ground level to the side and rear of cab and normal entrance and exit into cab. Exhaust components below and to the inside of the frame rails do not need shielding. Awarded OEM Model will be discussed at pre-build.

11. FAST LUBE OIL CHANGE SYSTEM (FLOCS):

This FLOCS system shall be installed with all fittings, brackets, clamps and hoses. Hose from oil pan to FLOCS fitting shall be hydraulic hose with a 100R2 rating and properly secured. The system shall be compatible with all fittings presently used by the Department. The final placement of the male half of the snap coupler, on the equipment, shall be determined at the pre-build meeting. Ref: EQN-351A.

12. FRAME:

Resisting Bending Moment (RBM): Minimum of 1,600,000-inch LB per rail, for the entire length of the frame. Minimum frame RBM shall be approved by manufacturer's Engineering Department.
Frame material: Heat treated carbon steel, at least 110,000 PSI yield strength.
Main frame: Either straight channel or offset channel, full length. Drop frames are not acceptable.

13. INSTRUMENTATION:

All instruments illuminated and dash-mounted except where specified otherwise.
All standard instruments shall be supplied, including, but not limited to the following gauges:
Oil pressure: with warning light or audible alarm.
Air pressure: gauge(s) for dual circuit, dual indicator with low pressure audible alarm.
Coolant temperature: with warning light or audible alarm.
Transmission oil temperature: for automatic transmission only, with warning light or audible alarm.
Fuel gauge.
Hour meter that records only when the engine is running. In-dash, integral with instrument panel (e.g., speedometer) is acceptable. Ref: DATCON or equal. Hour meter shall be illuminated and shall be readable from the operator’s seat.
Speedometer with odometer.
Tachometer.
Voltmeter.
Parking brake indicator light.
DEF level gauge.

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

D. VEHICLE COMPONENTS: (Continued)

13. INSTRUMENTATION: (Continued)

Low air pressure indicator: Buzzer-type and dash light. Must meet current Federal DOT guideline requirements. Air gauge shall display in 5lb. increments. Digital numerical readout is acceptable. Air gauge and low air warning buzzer shall operate with key switch **on** and engine **off**. Function shall not have capabilities of being deactivated by the operator.
Air Restriction Gauge: Vehicle OEM equipped electronic dash that incorporates an air restriction gauge or indicator light, shall be required.

14. LIGHTS - WARNING:

Head lights Ref: Halogen. Separate switch.
Headlights shall meet NHTSA requirements of "Daytime Running Lights" (DRL). DRL's shall be OEM optional equipment or after market.
All cab and body lighting shall be LED if available, to meet FMVSS code for liquid fuels transport.
Parking lights front and rear, stop, turn, taillights, back-up lights and license plate light with light bracket.
Hazard lights separate switch.
Body lights shall have their own dedicated complete circuit.
2- Whelen R10PADOT Light Bars to be pedestal mounted 1 to front of tank (with antenna mount) and 1 to rear of tank. In no case shall the light bar be mounted on the roof of the vehicle.
Light bars wired together shall have a lighted, permanently labeled toggle switch (1) located in the dash.
Body wiring shall be Grote, Trucklite, or Prior Approved Equal.
There shall be no splices outside of a sealed box or fixture.
A color-coded electrical wiring chart and schematic shall accompany each body.
Electrical chassis-wiring harness: Body lighting and wiring to be per EQN-80XF.
Flasher: (All) heavy-duty electrical, Ref: TRIDON Model EL12.
Note: If an audible alarm is supplied for 4 ways and turn signals, it shall have on/off capability.
Hazard lights stop and taillights, back-up lights.
All exposed junctions: Waterproof and sealed against salt.

15. PAINT:
Cab shall be painted with OEM manufactures standard painting process PENNDOT yellow Ref: DuPont F9885, PPG 85246, Sherwin Williams 73266, Sikkens 4017 and NAPA 73266 for shade only. Entire cab except for glass, rubber and those metallic accessories or fixtures constructed of rust-resistant (Aluminum and Stainless Steel) or plated material not normally painted. Base coat and clear coat. Ref: Axalita Imron for durability
OEM frame manufactures standard procedures shall be acceptable, all underside and attached components shall be ground to eliminate weld splatter, scale, sharp edges, rust and oils prior to a rust preventive primer and topcoat of black paint. Powder coating is acceptable. Rims shall be painted as specified in the tire and wheel section of this specification.
Body up fitter prior to painting **all** body and upfit attachments shall be ground to eliminate splatter, scale, and sharp edges. All metal surfaces shall be cleaned to eliminate rust and oils prior to primer and final painting. All surfaces to be primed and painted, except for glass, rubber and those metallic accessories or fixtures constructed of rust-resistant (Aluminum and Stainless Steel) or plated material not normally painted shall be coated with one (1) coat of a rust preventive etching primer, (1) coat of epoxy primer and two (2) coats of the body up fitters lead free Acrylic urethane black paint to match frame. Aerosol can touch up paint and primer will not be accepted and will be rejected at the time of delivery inspection.
Front bumper shall be painted black, argent or chrome.

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

D. VEHICLE COMPONENTS: (Continued)

16. SAFETY:

Alarm Backup: Ecco Model 450, shock grommet mounted **(No substitute - standardization)**.
All areas likely to be stepped/climbed/walked upon, including steps, shall be furnished with Bustin No. NST4 full size or Ohio Grating No. JA2119SG4 serrated or IKG Industries Type BS4 serrated swage lock, with end band.
Anti-slip paint is required on all handholds, for the entire length, (tape is unacceptable). All handrails, ladders, and step configurations shall be built for three points of contact.
The above details shall be reviewed at the pre-build meeting with the successful vendor, and further verified as to the manufacturer's compliance at the actual pilot model inspection.
Fire extinguisher: Rechargeable with vehicle mount. Mounted in the cab for easy and quick access. Ref: 3A:40B: C. 5lb.
Cab and body shall have reflective enhancement per EQN-127A.
There shall be wheel chocks and holders per EQN-82. Chocks (2) shall be mounted together on the left side of vehicle. (Exact location shall be determined at the pre-build meeting)
All corners shall be angled or rounded for safety.
The vehicle shall meet all the requirements set forth in EQN-118.

17. STEERING:

Power steering: single integral type hydraulic with right wheel power assist cylinder. With stops to prevent damage to system.
Glidecoat steering shaft, Bendix wedge lock lube-for-life shaft, ZF type steering shaft.
Steering system: (e.g., flow, pressure, relief valve etc.) Shall be selected considering the full front axle loading. Ref: ROSS, SHEPPARD or TRW gear assembly (No substitute, standardization.)
Hydraulic supply pump: Vane type or roller type with one (1) steering wheel revolution per second capacity in a "park" condition. BORG WARNER.
The pump shall not be the integral filter type unit.
Power Steering Reservoir: "Remote mounted", and factory mounted, minimum two (2) quart capacity, incorporating a filter which is easy to remove and replace.
The remote filter referenced above shall be certified and engineering approved in conjunction with the appropriate pump.

18. TANK - FUEL:

Safety-type fuel tanks as per the requirements of FMVSS.
80-GAL minimum total capacity, frame mounted, under the left door.
Aluminum or stainless steel, unpainted.
Heavy duty mounting straps with rubber shims/liners.
Tank mounting hardware and brackets shall be for "severe duty" applications, 2-inch-wide heavy duty aluminum or stainless steel straps and gaskets.
Accessible fill located at either end of tank to avoid interference with steps.
Dual tanks are unacceptable.

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

D. VEHICLE COMPONENTS: (Continued)

19. WHEELS/TIRES:

The truck shall be equipped with hub piloted steel disc wheels for tubeless tires. The wheel end shall be equipped with outboard cast brake drums, and 15-degree tubeless steel wheels, hub piloted, 10 hole - 285.75mm bolt circle with 22mm two-piece flange nuts.

Front: Wheels: 22.5 x 9.00, 10 hole - 285.75mm bolt circle with 220mm bore, tubeless steel disc wheel rated at 10,000 LBS at a maximum inflation pressure of 120 PSIG. Accuride part number 29039. **(No substitute, standardization).**

Rear: Wheels: 22.5 x 8.25, 10 hole - 285.75mm bolt circle with 220mm bore, tubeless steel disc wheel rated at 7,500 LBS at a maximum inflation pressure of 120 PSIG. Accuride part number 28828 or 29169. **(No substitute, standardization).**

The dual rear wheel/tire assembly shall have clearance between the tires, which permits the use of dual tire chains.

Wheel-Guard Separators: The wheel ends shall be equipped with the Accuride part number 5903 Wheel Guard Separator as follows:

Front axle - between the wheel and the brake drum.

Rear axle - between the inner dual and the brake drum and between the inner and outer duals.

Paint: The wheels shall be topcoat painted with TGIC Polyester Powder Paint MLD-82008 High Gloss Gray or equal applied over Cathodic Electro-Disposition Gray Primer.

Tires: Drive tires shall be mud/snow tread. All tires shall be radials and have minimum 25/32 thread depth.

Front Tires: 315/80R22.5 (Load Range L).

Rear Tires: 12R22.5 (Load Range H).

MANUFACTURER

Goodyear

Michelin

Bridgestone

20. TRANSMISSION:

ALLISON 3500 RDS 6 speed or 3000 RDS 6 speed.

All vehicles shall have a transmission (auto) operated safety starting switch that will avoid engine starting with drivetrain in gear.

Unit shall be programed to require a service brake application for transmission to shift into any gear from neutral.

Dash mounted console with push button shift selector or steering column mounted stalk style selector.

An external, Allison approved cooling system shall be installed regardless of whether a full engine compression brake is incorporated in the system or not. The oil cooler for transmission is required due to prolonged transmission torque converter operation in low gears. Cooler shall be sized to keep the transmission fluid at an acceptable operating temperature under these prolonged conditions (Water to oil type cooler). Automatic transmission cooler lines shall be stainless steel, Braded hoses will not be accepted, and all hoses shall be routed to prevent rub-through with hanging brackets and P-style clamps.

All transmission modules shall be routed and installed in the cab

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. TANK BODY & EQUIPMENT: (EQN-88, 352, 352A AND 352B)

1. TANK-BODY-INSTALLATION:

It shall be the responsibility of the successful vendor to have this fuel tank mounted on the specified chassis. The installation shall be engineered and approved by the vehicle and tank manufacturer and shall have no adverse effect upon either manufacturer's warranty. When any portion of the complete vehicle is to be installed by anybody other than the bidder or chassis manufacturer, the bidder shall indicate in the bid proposal the name of sub-contractor(s) performing such installation and the location of their plants and submit a detailed tank and equipment specification as well as air and electric wiring schematics.

2. TANK, CABINET:

Rear:

Continuous-type hinges, of AISI Type 304, non-magnetic stainless steel.
Watertight doors with gaskets.
Recessed door lock fitted with key-operated cylinder lock, with 2 keys (keyed alike).
Single, vertical, hinged doors.
Light(s) to illuminate cabinet, with on-off switch wired to running lights.
Two (2) louvered vents on front and rear of the cabinet top.

2a. Auxiliary Fluid Tank: RH OR LH SIDE, **OPTION, ECN Code 056100** & **056500**:

Continuous-type hinge, of AISI Type 304, non-magnetic stainless steel. Ref: EQN-89 (dimensions may be altered to allow for proper fit, clearance, and to meet all safety requirements.

2b. Auxiliary DEF Fluid **OPTION, ECN Code 056150** & **056550**:

DEF fluid: minimum 60-gallon 304 stainless steel tank, mounted to left side frame rail between cab and drive axle. Shall be self-contained with lockable compartment door (all cabinets keyed alike). compartment shall be complete with 12v DEF pump, plumbing, hose reel, 0.75-inch X 25 feet hose, automatic shutoff DEF nozzle assembly.
Tank shall have accessible and weather resistant, standard DEF nozzle fill, RSV coupler and a filtered weatherproof vent. Fluid level gauge shall be supplied.
Tank shall be fluid heated, with supply and return ports for glycol heater hose connections. 110-volt heating shall be wired in with engine block heater plug to provide standby heat while chassis engine is not in operation. Overall installed width not to exceed 96-inch.

LH, RH, OR REAR: (All Units)

There shall be a cabinet with a "New Pig" spill kit 233J (61 LBS) or equal.

All cabinets shall be keyed alike (2 keys per lock).

3. TANK CALIBRATION:

The tank manufacturer shall furnish two (2) charts for each unit showing the fuel content in gallons relative to the depth of fuel in inches. (Only 1 if diesel fuel only.)

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. TANK & BODY EQUIPMENT: (Continued)

4. TANK, CATWALK:

Anti-slip paint is required on all handholds, for the entire length, (tape is unacceptable). All handrails, ladders, and step configurations shall be built for three points of contact.
EQN-352B. There shall be a permanent decal, “Three Point Contact” located at the entry point of the tank ladder per EQN – 552-1. Exact location to be determined at prebuild meeting.

5. TANK-COMPARTMENTS:

The cargo tank shall be the latest design and construction MC qualified in accordance with the requirements of 49 CFR 178.341.

ECN Code 056500 & 056550: Two (2) compartments, 200 GAL (under no circumstances shall it exceed 300 GAL) for gasoline and 1,600 GAL minimum for diesel fuel (mounted against truck cab) separated by a double bulkhead.

ECN Code 056100 & 056150: For single product tank minimum acceptable is 1,800 GAL. Flanged and dished surge baffles, 6-inch to 8-inch concave, shall be installed in each compartment to provide a complete internal splash baffling system. Double bulkhead with 0.5-inch threaded openings at top and bottom of double bulkhead to immediately alert the operator of a bulkhead leak. The top opening is to be plugged.

The tank size shall be increased to provide the maximum payload possible without exceeding the axle laws.

Smooth skin type. Flanged, dished, 0.190-inch side shell, 0.160-inch bottom, 0.250-inch Minimum thickness.

The bottom of the tank mounting rail shall be a 0.313 inch minimum. The mounting rails shall be aluminum extrusion(s).

There shall be a fold-up manual dip stick.

6. TANK, DECALS AND SIGNS:

The placard holders must be provided in accordance with the provisions of 49CFR 172.516 and Appendix C. The front and rear of the truck shall have signs mounted where appropriate.

The tank shall have hazardous material warning decals on both sides.

Heavy duty, full width, 8-inch steel channel type rear bumper securely attached to chassis frame rails. Any alternate design shall be pre-approved, in writing from Chief, Equipment Division.

The entire rear of the tank cabinet door and both sides shall have tape applied per EQN-80XF.

Decals showing the grounding procedures for both reels shall be furnished and placed in the canopy area within view of the operator.

All required decals and signs for the fuel tank shall be as per the regulations and shall be furnished and installed by the successful vendor.

Compartments containing hazardous materials spill supplies shall be labeled.

There shall be "No Smoking" decals posted on each side of the tank.

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. TANK & BODY EQUIPMENT: (Continued)

7. TANK, FENDERS:

Jeep type.
0.125-inch (minimum) aluminum.
Fold and hem inside-and outside edges.
Brackets shall be welded to box sill of tank.
Bolted fenders, removable type, and aluminum.
18-inch mud flaps. (Front fenders).
As required mud flaps. (Rear of fenders to meet MV Code).
Rear mud flaps: 6 inch off ground level, as per EQN-66.

8. TANK FILTER SYSTEM:

The tank pumps and meters shall be protected by means of four (4) strainers to eliminate foreign material entry. Each strainer shall be easily accessible for cleaning. (Only 2 if diesel fuel only.)

9. TANK, FIRE EXTINGUISHERS:

Two (2) rechargeable 10 LB dry chemical 20-B, C rated fire extinguishers with charge condition indicator and red water-proof snap on covers. Extinguishers shall be mounted per regulations.
Shall be in compliance with NFPA Standard No. 385 - Chapter 6-3 and NFPA Standard No. 10 and General Regulations governing the Highway Transportation of Hazardous Substances and Federal Motor Carrier Safety Regulations, Title 49, Item 393.95, Item A, 2 (I).

10. TANK FLASHING:

Extruded vapor tight turret rails.
Aluminum grating between manholes, flush to flashing.
Two (2) 2-inch drains at rear of flashing.
Aluminum round stock handrails shall extend the entire length of the turret.
EQN-352A and EQN-352B.

11. TANK IDENTIFICATION:

The date of tank manufacture shall be posted.
The tank shall be identified with the information on gasoline and diesel fuels on both sides of the tank flashing. The manholes on top of the tank shall be identified as to tank content. The gallon-capacity shall also be shown. Tank concurrence with Federal requirements shall be posted.

12. TANK, LADDER:

Full length, 16-inch-wide with 12-inch step increments.
Located on left side.
First step height maximum 24 inch above ground level.
1.875 inch to 2.5-inch-wide serrated and self-cleaning aluminum step material as manufactured by BUSTIN Industrial Products, Inc., Ohio Grating or IKG Industries Inc.
A safety decal shall be furnished and installed at the ladder location.
1.625-inch approximate OD tubular handrails with BUSTIN type step material. Ladder reinforcements shall be dual and sturdy in design.
All grab handles shall be provided with anti-slip friction paint. Anti-skid tape is unacceptable. EQN-352A.

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. TANK BODY & EQUIPMENT: (Continued)

13. TANK LIGHT-WARNING:

See I.D.14 section.

14. TANK, MANHOLES AND BOTTOM LOADING:

Each compartment to consist of the following:

Betts vapor recovery manhole assembly.
EBW (air operated) 3.50-inch air operated vent with vapor recovery hood to be connected to vapor light curbside overturn rail.
Standard Bottom Loading adapter with cap, chain and API air operated interlock.
Probe sensor and holder.
(1) 3-inch aluminum rear vapor line with 4-inch x 3-inch adapter, dust cap and API air operated interlock.
(1) API air operated interlock to be installed on compartment operator.
(1) EBW starship module.
(1) EBW starflex -2 O.T.A. receptacle module for optic thermistor.
Receptacles to be capable for all terminals.
Internal deflector, internal static cable.
Grounding bolt.

System shall include, at a minimum, everything for a complete Bottom Loading/Vapor Recovery "Go Anywhere System".

15. TANK, METERS:

Two (2) (1 if only diesel fuel) "LIQUID CONTROLS" Model M-5-G-2; 1.50-inch meter with register 10:1 "LIQUID CONTROLS" electronic pulsar, Model A. 42675.
Each meter shall be equipped with reset-able ticket printer, Zero (0)-start, counter to accurately record all deliveries and pre-determined counter to indicate amount of fuel remaining in tank. Ticket printer shall be designed to accommodate tickets currently in use by the Department.
Rated from 5 GPM/19 LPM to 60 GPM/227 LPM with 150 PSI maximum working pressure.
Mounted in rear bucket box, one connected to each pump.
Ref: EQN-352.
2-inch gate valve between each meter and hose.
Air eliminator, strainer shall be furnished.
Meters shall be furnished with 40-mesh strainer for diesel fuel and 80-mesh strainer for gasoline.
Each meter shall have an exterior light to illuminate meter dials; to be wired into running lights with on-off switch.
Air eliminator lines shall be piped to product compartment in accordance with manufacturer’s specifications.
1.250-inch diesel, 1 inch gas solenoid valve (if applicable) 12 V dc of proper size in each fuel line. Ref: ITT General Control or equal in each fuel line.

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. TANK BODY & EQUIPMENT: (Continued)

16. TANK, NOZZLE, and GASOLINE: (If Applicable)

Nozzle shall be of adequate size to fit unleaded gasoline tank fill pipes and to perform safely within the velocity created by 15 GPM/57 LPM flow rate.
Nozzle shall be equipped with swivel and check valve with automatic shut-off features.
The nozzle shall be OPW-11-AP with D-907M insulators and OPW No. 285 or No. 33, 1 inch swivel. A holder to accommodate this nozzle shall be provided by tank supplier and shall be open to let excess fuel drippings drain to the ground. New units only (rebuilt units are not acceptable). Phone (513) 870-3219 for nozzle manufacturer.

17. TANK, NOZZLE, DIESEL:

Nozzle shall be of adequate size to perform safely within the velocity created by 35 GPM/132 LPM flow rate.
Nozzle shall be equipped with swivel and check valve with automatic shut-off feature.
The nozzle shall be OPW 7H-5400 and OPW No. 285 or No. 33, 1 in/254cm swivel. A holder to accommodate this nozzle shall be provided by tank supplier and shall be open to let excess fuel drippings drain to the ground. New units only (rebuilt units are not acceptable). Phone (513) 870-3219 for nozzle manufacturer.

18. TANK, PAINT:

Not applicable. Tank, fenders, cabinet, cat walks and ladders shall be aluminum. Tank, fenders, and cabinets shall be polished and sealed. Conspicuity tape per EQN-80XF.

19. TANK, PIPING:

All welded tubing with flexible coupling to relieve line strain; a minimum of five (5) flexible couplings per pump/meter system.
Pump discharge lines to be supported at two (2) locations between pump discharge and bucket box location. REF: VICTAULIC, grooved, cast type coupling.

20. TANK, POWER-TAKE-OFFS (PTO's):

Chelsea Series 221 or 270.
Two (2) heavy-duty, tubular drive-shafts with lubrication fittings.
Controls located in rear compartment with lighted indicators (including chassis cab) to alert operator that pumps are engaged. REF: Air-operated CHELSEA 221ZCAHX-A-3XD or 270RCAJPB5XD (Hot Shift).
PTO/Wheel brake interlock. REF: BENDIX-WESTINGHOUSE inversion valve no. 277340 (no substitute).

21. TANK, PUMP, GASOLINE (CODE 056500 ONLY):

One (1) BLACKMER Model TXD-2 pump.
2-inch line strainer on suction side, one 0.0625-inch perforation screen.
12 to 15 GPM/45 to 57 LPM rate of flow.
Flow divider capable of maintaining 12 to 15 GPM flow to the nozzle.
Flow divider to return excess fuel to suction side of the pump to be installed with flexible couplings. REF: BLACKMER Differential bypass valve BV2 or prior-approved equal.

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. TANK BODY & EQUIPMENT: (Continued)

22. TANK, PUMP, DIESEL FUEL:

One (1) BLACKMMR Model TXD-2 pump.
2-inch line strainer on suction side, one 0.0625-inch perforation screen.
35 GPM/132 LPM rate of flow.

23. TANK, PUMP-MOUNTING, GASOLINE & DIESEL:

Pump(s) to be mounted on common cradle, fabricated from 4-inch x 5.4 LB/feet (mm.) steel channel and bolted to chassis frame.

24. TANK, REELS:

Two (2) electrically operated hose reels (only one reel if product tank is only specified diesel) with explosion-proof motors installed in bucket box.
Each reel shall be complete with 75 feet of two-braid hose. Ref. BRIGGS RUBBER Tel. (302) 328-9471.
Gasoline system (if applicable) to have 75 feet of 1-inch hose, with built in static line, coupled male by female. Diesel system to have 100 feet of 1inch hose, coupled male by female. Hose reel shall be of sufficient size to easily accommodate the 100 feet of length.
Each length of hose shall be marked to indicate the manufacturer's recommended working pressure.
Each reel shall be equipped with a friction-brake system.
Hose reel electrical system should consist of one (1) KLIXON, CDLA-7, 70 A circuit-breaker installed as close to battery box of chassis as possible. Hose reel solenoids should be installed in conduit box and mounted away from any area in contact with fuels. Master disconnect switch, (COLE-HERSEE No. 2484) for hose reel protection, would be installed in conduit box. Hose reel switch shall be HANNAY explosion-proof style.

25. TANK EMERGENCY, SHUT-DOWN SYSTEM:

Air operated emergency shut-down cable system.
First location: Driver's side, front of tank and identified.
Second location: Rear bucket box and identified.
Air operated emergency valve.

26. TANK, SUMP:

Standard ATA sump equipped with a 3-inch bolt-on emergency valve with grooved outlet located at the lowest point of each compartment.

27. TANK, WEIGHT DISTRIBUTION:

The aluminum tank body and aluminum cabinets shall be designed to provide proper weight distribution for the chassis cab-to-axle dimension proposed. The weight of the tank assembly less chassis weight is required at the pilot model inspection.

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. TANK BODY & EQUIPMENT: (Continued)

28. TANK, WIRING AND LIGHTING:

All lights provided on tank shall meet Pennsylvania Motor Vehicle Code and Federal Motor Vehicle Standards. Two (2) red warning lights labeled gasoline and diesel shall be provided in the dashboard of truck to indicate when each pump is in gear. (1 if diesel only).

Lighting circuits shall have suitable over current protection (fuses or automatic circuit breakers). The wiring shall have sufficient carrying capacity and mechanical strength and shall be secured, insulated, and protected against physical damage, in keeping with recognized good practice. Wiring and lighting shall be per EQN-80XF.

Shelf shall be added on right side within easy reach of operator for mounting of automated fuel system. REF. EQN-80-XFA

All chassis wiring and air tubing shall be clamped every 12 to 15 inch or less and shall include wiring per EQN-352 and 352A.

Two (2) grounding plugs without cord shall be mounted on forward end of the tank top flashing and midpoint near operator's door. All solenoid switches shall be mounted away from any area in contact with the fuels.

Dual portable ground cable with connectors on both ends for grounding the equipment being fueled in the field, shall be Hannay Reels Instruction label for proper use of the above ground cable shall be mounted in the fuel truck bucket box (EQN-88).

There shall be a posi-ground system, manufactured by Garnet Instruments, LTD, Tele. (403) 467-1010, or equal.

The above procedures are outlined in Pennsylvania Department of Transportation, Hazardous Substances Transportation Board, Specific Regulations governing the Highway Transportation of Flammable Liquids and Flammable Solids and General Regulations, Governing the Highway Transportation of Hazardous Substances, Page 13, Item no. 2, Item no. B. It shall be the responsibility of the successful tank vendor to carefully read the above regulation and provide an adequate system to comply with the letter with both the safety procedures outlined and in this statement.

Ref: NFPA Standard No. 385.

29. SAFETY:

Alarm Backup: Ecco Model 450, shock grommet mounted **(No substitute - standardization)**.

Body shall have reflective enhancement per EQN-127A.

Anti-slip paint is required on all handholds, for the entire length, (tape is unacceptable). All handrails, ladders, and step configurations shall be built for three points of contact.

There shall be a permanent decal, 2-inch-high red letters on white background affixed by the driver side door handle stating the overall maximum travel height of the completed and unloaded unit. (Example) HT-__' __" Ref. EQN-552.

There shall be a permanent decal, "Three Point Contact" located at each entry point of the truck cab and at the bed ladder area per EQN – 552-1. Exact location to be determined at prebuild meeting.

Steps & Catwalk: Shall be serrated. **The outer step edge must be serrated in lieu of plain. (Overlay is not acceptable).** Step design material must be the same, throughout. Ref: Bustin.

Rear Door chevron to meet FMVSS

II. DRAWINGS:

EQN-66	dated	Rev. 07-20-09	2sheets	SPLASHGUARDS-RUBER TRAILER & TRUCK
EQN-66A	dated	Rev. 07-13-17	1 sheet	TRIANGLE STORAGE BOX
EQN-78	dated	Rev. 10-27-06	1 sheet	CB RADIO CONNECTIONS
EQN-80XF	dated	Rev. 08-07-12	3 sheets	FUEL TRUCK WIRING/LIGHTING
EQN-82D	dated	Rev. 07-22-15	1 sheet	CHOCK AND HOLDER
EQN-88	dated	Rev. 07-18-07	1 sheet	GROUNDING CABLE DIAGRAM
EQN-89	dated	Rev. 07-15-99	2 sheets	LUBE TANK (AUXILIARY) DETAILS
EQN-118	dated	Rev. 06-26-09	1 sheet	UNDERRIDE PROTECTION
EQN-120Q	dated	Rev. 01-28-20	1 sheet	UNIVERSAL TRUCK LIGHTING
EQN-127A	dated	Rev. 01-02-09	1 sheet	CONSPICUITY TAPE STRIPING REQUIREMENTS
EQN-351A	dated	Rev.06-19-13	2 sheets	FAST LUBE OIL CHANGE SYSTEM
EQN-352	dated	Rev. 08-10-12	4 sheets	AUTOMATED FUEL SYSTEM
EQN-352A	dated	Rev. 08-10-12	sheet 3 of 3	PENNDOT FUEL TRUCK
EQN-352B	dated	Rev. 04-11-06	sheet 2 of 2	PENNDOT FUEL TRUCK TANK CATWALK LOCATION
EQN-501	dated	Rev. 06-08-09	2 sheets	CENTRALIZED LUBE SYSTEM
EQN-552	dated	Rev. 07-25-18	1 sheet	MAX. TRAVEL HEIGHT STICKER
EQN-552-1	dated	Rev. 07-24-18	1 sheet	THREE POINTS OF CONTACT
EQN-562	dated	Rev. 01-08-14	1 sheet	POWER DISTRIBUTION STATE RADIO

The above referenced drawings shall become part of these specifications.
These drawings reflect the intent of the Department and any discrepancies shall be resolved at the line setting ticket meeting between the vendor and the Equipment Chief, or the pre-production inspection of the truck.

DRAWINGS APPEAR AT THE END OF THE SPECIFICATIONS.

III. MANUALS:

The successful vendor shall furnish all applicable manuals per unit:

1 Operator's

1 Parts

1 Service

1 Engine

1 Transmission (Automatic or Manual)

1 Body and Sub-frame (Parts and Service)

1 Complete set of manuals for any additional items/equipment added to a piece of equipment.

The manuals listed shall be official O.E.M. publications supplemented with technical manuals for all components as published by sub-vendors/manufacturers.

Parts Manual presented must be a relative to "all" items utilized to build these units, with appropriate part numbers.

All manuals shall be supplied on thumb drive in PDF format that can be loaded to a dedicated website.
Paper manuals may be supplied if available from manufacture. Paper manuals do not relieve the requirement for the thumb drives.

Delivery of manuals shall be completed with the delivery of each unit.

IV. TRAINING:

Mechanic & Operator:

The successful vendor shall provide services of qualified factory trained technicians for not more than ___1___ training sessions of not more than ___7.5___ hours at ___1___ PennDOT locations to train personnel in the proper operation, safety, and servicing of the equipment.

The successful vendor shall submit a training plan to the Fleet Management Division for approval within 45 days after receipt of the Purchase Order. The training plan shall consist of course outline and class schedule.

All training must be completed within 60 days after the dates established in the approved training plan unless an extension is mutually agreed to in writing by the Chief of the Fleet Management Division.

All training shall be coordinated with the District Equipment Managers, with the exception of Asphalt related training, which must be coordinated with the Statewide Training Coordinator (717) 787-4836, Fax (717) 783-4438.

V. WARRANTY: Per PCID No. 1075

Per PCID 1075: E.1. Construction Equipment - 2 years or 4000 hours whichever first occurs.
1 year starting from the Department's in-service date.
The warranty start-up date shall be defined as the date of transfer from the PennDOT Fleet Management Division to the designated county location. This will be considered the date of delivery to the county and NOT the date of delivery by the successful bidder to the Department. The PennDOT Fleet Management will supply the actual start-up date, equipment number, and serial number of the machine, via email, to the successful bidder. It is the responsibility of the successful bidder to ensure that the equipment manufacturer recognizes and applies the Department's actual warranty start-up date in their database.

This warranty is in effect as follows, starting from date of acceptance by the Department. Warranty shall not be voided due to Department operation as explained in the Intent Statement. It is understood that the components specified are minimum and if the manufacturer's Engineering Department recommends or deems necessary a more robust component, other than specified, be installed to meet the vehicles intent statement and to not void the warranty, it shall be the bidders/vendors responsibility.

ENGINE WARRANTY:
The successful vendor and or supplying OEM shall provide the Department with a 100% parts and labor engine warranty, shall include all engine components internal and external FOR 60 months / 150,000 miles minimum.
The oil pan shall be warranted against corrosion, rust, rust thru etc. regardless of atmospheric conditions for 5 years, 100% parts and labor.

EMISSION WARRANTY: The successful vendor and or supplying OEM shall provide the Department with a 100% parts and labor warranty for all emission related components to include the diesel particulate filter (DPF) FOR 60 months / 100,000 miles, unlimited engine hours. Shall be warranted against corrosion, rust, rust thru etc. regardless of atmospheric conditions.

RADIATOR WARRANTY:
Manufacturer's standard service and warranty policy for radiator minimum shall be for one (1) year, 100% parts and labor.

TRANSMISSION WARRANTY:
Manufacturer's service and warranty policy for automatic shall be three (3) years 100% parts and labor. This warranty shall include all internal and external components related to the automatic transmission.

BODY ELECTRICAL/LIGHTING:
Wiring harness shall be 5 years 100% parts. First year shall include 100% labor.
All LED lights shall be 5 years 100% parts.

WARRANTY REPAIRS SHALL BE COMPLETED AT THE MANUFACTURER'S LOCATION OR IN-HOUSE FIELD REPAIR COMPLETED BY PENNDOT. IT SHALL BE THE DEPARTMENTS DISCRETION TO REPAIR INTERNALLY OR TRANSPORT THE UNIT TO THE DEALERSHIP. THE MANUFACTURER SHALL REIMBURSE THE DEPARTMENT AT THE MANUFACTURERS STANDARD PUBLISHED IN-HOUSE LABOR RATE. THE LABOR RATE SHALL BE MUTUALLY AGREED UPON BETWEEN THE DEPARTMENT AND VENDOR/BIDDER. ALL IN-HOUSE WARRANTY DOCUMENTATION SHALL BE DELIVERED WITH THE PILOT MODEL. ALL WARRANTY DOCUMENTATION SHALL BE DELIVERED WITH THE PILOT MODEL.