SPECIFICATIONS
A-56-FQ-C-AW
033150 & 033250

TRUCK, TRACTOR, CONV. CAB-TANDEM, MAN TRANS. W / WET LINE (033150)
TRUCK, TRACTOR, CONV. CAB-TANDEM, AUTO TRANS. W / WET LINE (033250)

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I. GENERAL TRUCK SPECIFICATIONS: (Continued)

A. INTENT STATEMENT:

The purpose of these specifications is to describe a truck/tractor, conventional cab, with a tandem drive rear axle to be used for heavy hauling of varied road and construction machinery on and off the road. The truck shall be equipped to accommodate a drop deck, slope front, trailer.

It shall be the sole responsibility of the successful vendor to ensure compatibility with the Department's trailer(s), and not surpassing any 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 Fleet Management 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.

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.** 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.
Drawing shall be supplied of actual frame dimensions of unit being supplied by the truck manufacturer.

Unit(s) shall be delivered clean 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 Pilot unit and the subsequent delivery of each unit.

Delivery as required per Department of General Service PCID NO. 1075 Section E. 1. All units must be delivered within **240** days after receipt of the purchase order by the successful bidder.

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

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 80,000 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– MIN. 445 HP AT GOVERNED RPM, MIN. PEAK TORQUE OF 1700 LB/FT TORQUE, MIN 12.4 LITERS (ACTUAL ENGINE LITRES).

MANUAL TRANSMISSION
13 SPEED with provisions for PTO (033150)
EATON RTLO – 18913A

AUTOMATIC TRANSMISSION
ALLISION AUTOMATIC 4500 RDS with provision for PTO (033250)

REAR AXLE
DANA DD463P or D46-170HP
MACK S460
MERITOR RT46 -164

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

D. VEHICLE COMPONENTS:

1. ALARM - BACKUP:

ECCO 450 shock mounted alarm **(No substitute, standardization)**.

2. AXLE AND SUSPENSION FRONT:

12,000 LB capacity GAWR.
MERITOR, MACK or DANA
Standard suspension 12,000 LB.
Front Shock absorbers.
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. The front axle, tie rods and drag links shall have threaded grease zerks installed.
Above GAWR minimum relative to Engineering Department weight distribution chart.

3. AXLE AND SUSPENSION REAR:

There shall be an inter-axle differential lock that is manually controlled in dash.
STEMCO Guardian rear wheel seals or pre-approved equal.
Ref. Hendrickson 46,000 LB air ride. Suspension shall be tailored to axle loads and shall be adequate to sustain maximum GVW without overload or permanent set.
Rear axle ratio's 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 3 most likely candidates for consideration for a speed range up to 70 MPH maximum. This information shall be presented at the pre-build meeting, for automatic and manual.
All rear axles must provide axle shafts with a minimum diameter of 2.19 inch at the spline.
Aluminum or lightweight housing is unacceptable. Only heaviest duty housing will be accepted.
Lubricants for front axle hubs and differentials, automatic transmission, manual 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.

4. BRAKES:

Braking System: Full air antilock in compliance with the most current FMVSS requirements.

The ABS shall incorporate a diagnostic display capable of retrieving SAE fault codes. The activation switch shall be easily accessible and can be either dash or steering column mounted. A dash-mounted display that will show all SAE message descriptions for the ABS shall be easily navigated and viewed from the driver’s seat.
Air compressor with dash-mounted gauge(s). 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.

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

D. VEHICLE COMPONENTS: (Continued)

4. BRAKES: (Continued)

Parking brake warning light.
Spring-type, rear wheel parking brake, MGM 30/30 or Anchorlock 30/30 gold seal chambers. **(No substitute, standardization).**
System shall be equipped with anti-compounding valve to prevent mechanical failure of the foundation brakes, slack adjusters, etc.
Parking brake shall provide modulated emergency braking via the foot valve in the event of a rear service system failure. **(No substitute, standardization).**
Rear brake chambers mounted to provide maximum road clearance.
Automatic air reservoir drain valve. (DV-2 drain valves with heater) on first (wet) tank all other reservoirs shall have manual drain valves.
Hand-operated trailer brake control valve.
Tractor protection valve (breakaway valve) with dash-mounted manual control.
Brake valve shall be mounted away from road splashing.
Semi-trailer brake hoses, coil type, connectors, and hangers (mounted back of cab). There shall be Bendix dummy couplings (service/emergency) placed in close proximity to the tractor cab to allow the stowage of the unused hose coupling. There shall be two (2) pogo sticks to the right side of the catwalk routing hoses and power cords to the gooseneck. Hoses and couplings shall be color coded.
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. Bendix AD-IP **(No substitute, standardization)** installation made in concurrence with the air compressor manufacturer’s recommendations.
Air dryer shall be placed on the right (passenger) outside frame rail to accommodate the changing of filter cartridges without disconnecting any hoses or removing dryer base from its mounting location. All electrical connectors for drain valve and air dryer shall be covered with heat shrink material or have sealed connections.
Brake shoes are considered minimums and the current Federal guidelines for stopping requirements for Truck Tractor shall be followed per OEM.
Rear brakes: 16.5-inch x 7 inch "S" cam with quick-change type single or double pin.
Steer-axle-brake: 16.5-inch x 5 inch or a power front disc brake system providing equal performance. Quick-change type single or double anchor pin if drum type brakes are furnished.
Drum brakes: shall have automatic slack adjusters and they shall be clearance-sensing type only, with adjustment on application of the brake. **(No substitute, standardization).** Backing plates shall be installed on all drum brakes.

5. CAB: (Steel or Aluminum)

Conventional cab.
Bumper to Back of Cab (BBC) dimension excluding frame extension must be compatible with trailer.
Hood: Fiberglass or aluminum tilting. Fenders shall be part of tilting hood, not to exceed 96-inch truck width.
Cab shall have OEM air suspension system.
Air Conditioning: Highest output available as OEM option.
Air deflector: Clear or smoked, hood mounted. Deflector manufacturer's standard full width for the truck model. Access to front-end hood-tilt handle shall not be blocked, Ref: DEFLECT-SHIELD Corp.

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

D. VEHICLE COMPONENTS: (Continued)

5. CAB: (Continued)

Seats: Driver's seat shall be high-back, adjustable BOSTROM Air 915 Series with lumbar support or National 195, 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 protective skirt shall cover the seat suspension mechanism. No substitute on seat reference. Color coordinated with cab interior. Driver's seat shall have twin fold down arm rests.

If due to cab configuration a Bostrom 915 or National 195 seat cannot be used, a Bostrom 910 may be substituted. All other requirements must be met.

Passenger seat: With three-point, retractable seat belt (**Seatbelt shall be High Visibility Orange)**. Non-suspension type. Ref: Manufacturer's high-back. Color coordinated.

Deluxe fresh air hot water heater and defroster, manufacturer's highest output.

Windshield: Manufacturer's standard heated windshield. One (1) or two (2) piece construction is acceptable, must be AST-1 tinted. Safety glass throughout. Windshield shall be protected from thermal overheat.

Driver and passenger side windows shall be power.

Door locks shall be power.

Dual interior sun visors.

Exterior windshield sunshade (visor).

Dual windshield wipers: arctic type shall be the heaviest wipers, arms, motor and linkages available. 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.

Mirrors: Drivers and passengers side power mirrors, west coast style minimum 7-inch X 16-inch manufacturers standard heavy-duty breakaway arms.

Mirrors shall be heated with a lighted toggle switch dash 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 5.5-inch X 7 inch or 8-inch diameter.

A blind-spot elimination heated mirror shall be mounted on the right and left front fender and it shall be 8-inch minimum 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 triple mounting assemblies (stainless steel or aluminum). Mirror shall be mounted in rubber or vinyl.

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 No. NST4 full size, Ohio Grating No. JA21195G4 serrated, IKG. Industries Type B54 or Mack Part # 85QM423OM4

Top of the first step shall be approximately 21-inch above the ground.

CB power connections, 1 pair, at the dash per EQN-78.

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 and rubber inserts must extend the full length of the grab handle.

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

D. VEHICLE COMPONENTS: (Continued)

5. CAB: (Continued)

Exterior grab handles shall be supplied if available from OEM.
There shall be Bustin type material full length to allow for walking and standing aft of the cab, forward of the fifth wheel covering the frame rail. Sidestep shall be mounted to left side frame rail. Top of sidestep shall be level with frame walkway.
All handrails, ladders, and step configurations shall be provided for **"Three Points of Contact"** and 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.
Cab shall have reflective enhancement per EQN-127A.
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 fifth wheel ladder area per EQN – 552-1. Exact location to be determined at pre-build meeting.
There shall be a cup holder within reach of the driver's seat.
Air horn(s): With protective cover(s).
All controls and knobs shall be property identified with permanent labels.
OEM dash switch shall be provided for headache/cab protector work lights. Rear of cab shall not have hook up lights installed.
The cab floor covering shall be heavy duty closed cell rubber with heavy felt backing.
The engine components facing wheel areas, on both sides, shall be shielded.
Inside dome light.
Radio: AM/FM, weather band and hands-free cell phone connection.
Cruise control shall allow stationary operation for higher RPM during PTO operation.
Telescopic and tilt steering, wheel diameter shall be 18-inch (approx.) Manufacturer's standard.
Steering Column: Steering wheel and column shall be tilt and telescopic, infinitely adjustable to multiple positions.
Fire extinguisher (in cab) rechargeable with vehicle mount 3A:40B: C. 5lb. Mounted for easy and quick access, inside driver door-between door and drivers' seat, right side of driver seat or outside rear of cab close to driver door with weatherproof cover.
Emergency triangle warning kit with hold down (Ref: KD610-464S, KD Lamp Co., Tel. (513-621-4211) or equal, loose in cab in the cab-to be mounted by receiving county personnel. REF. EQN-66A
There shall be a first-aid kit, kit placed in the cab-to be mounted by receiving county personnel. Arbil First aid kit PN# SF00002155, no substitutes.

6. CHASSIS:

80,000 LB GCWR manufacturer's rating. A label stating this shall be affixed on the door or in the cab as the completion certification label.
Front Bumper: Heavy duty swept back design, mounted to the frame with the inner face of the bumper against the chassis frame. Bumper shall have Flag holders mounted on both driver and passenger side to allow use of "CAUTION" flags while hauling an "OVERSIZE LOAD". Two (2) flag shall be supplied with each unit.
There shall be a two-piece hinged "OVERSIZED LOAD" sign mounted on the front bumper. The sign shall be mounted in such a way to afford hinging/concealing without the use of tools.
Oversize load sign must meet current DOT regulation: Clean yellow warning sign at least 7 feet wide by at least 18 inches high and containing only the words ''OVERSIZE LOAD'' in black letters at least 10 inches high with a 2-inch letter stroke, shall be mounted on the front of the permitted oversize vehicle.

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

D. VEHICLE COMPONENTS: (Continued)

6. CHASSIS: (Continued)

Frame mounted tow hooks or eyes: Two (2) front. Using grade 8 bolts (minimum) of sufficient length, and grade 8 elastic type self-locking nuts, or by full welding, or one (1) center mounted tow hook.
Frame: single rail shall have a minimum resisting bending moment of 1,900,000 LB per side rail min.
CA shall be as short as possible and still accommodate all specified components.
Full length deck plate aluminum, Bustin Type (NST4), open grating on frame behind cab to fifth wheel. The frame must not interfere with the trailer gooseneck in the "break-down" mode, fifth wheel placed 6-inch forward of rear axle center. Tapered frame rails, as necessary, shall be included.
Two (2) spring "pogo" sticks approximately 36-inch in height shall be installed off center on catwalk to secure hydraulic hoses, trailer wire connections and air lines with adequate "slack" for turning radius.
There shall be aluminum diamond deck fenders that cover the entire tops of tandem and are full radius, removable, fenders. They shall be properly mounted in such a way as to support a 250LB operator when walked upon while being easily removable (for servicing). There shall be spray suppressant protection (REF: Schlegel Corp., Tel: (708) 437-8800) the entire length of the fenders.
License plate bracket: Front, standard size and securely mounted. Plate shall be visible regardless of oversize load sign position.
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)

7. DRIVE LINE:

Main driveline: Spicer Life XL or Meritor MXL Series. **"Factory balanced"** greaseable, (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, maintenance-free, BCI Group Size 31, with stud-type posts and anti-corrosion treatment on each terminal. 2250 total cold cranking amperes (CCA) at 0 degrees F min. 540 minutes of total reserve capacity at 80 degrees F as per SAE.
Battery Mounting: Shall include the following:
a. Thick rubber shock pad under the battery(s).
b. Box with cover. Cover shall be constructed of fiberglass, poly or aluminum (if aluminum, there shall be an insulating liner). **Mounting of accessories within the battery box is prohibited.**
c. Mounting bolts grade-8 with self-locking nuts.
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.
Alternator: Delco 36SI **(No substitute, Standardization)** 160 A minimum, high performance, solid state (brushless). Dual-drive alternator belt assembly, energy efficient belts, or prior-approved heavy-duty single.
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. Battery cable from battery negative terminal to starter motor.
Starter shall have (OCP) either built in or controlled by the Vehicle's control system, (if required)

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

D. VEHICLE COMPONENTS: (Continued)

8. ELECTRICAL: (Continued)

Alternator and starter mounting bolts: Grade 8.
All lights shall be L.E.D.
Parking lights front and rear. Five clearance lights.
Hazard lights stop and taillights, back-up lights, hook up light (cab protector) and license plate lamp.
Halogen head lights (Daytime Driving Lights).
There shall be no open wire connections, all connections shall be waterproof and sealed. External splices are not allowed. There shall be no splices made outside of a weatherproof box.
Electrical wiring: All wiring harness shall be protected at areas prone to cause chafing by installing convoluted plastic conduit and clamped using P-clamps with rubber inserts.
If an audible alarm is supplied for 4 ways and turn signals, it shall have on/off capability.
There shall be a trailer connector box on the rear frame per EQN-81A.
Charger plug: There shall be a plug and power cord supplied on the tractor to charge the auxiliary battery on the trailer, female socket shall be mounted aft of cab with the trailer air lines and trailer plug. REF. TECTRAN**.**
Plug assy. 670-19SG
Socket assy. 670-22
Bracket 670-00
Socket boot 670-722
Power cord 7DTB522MW
Radio Antenna: There shall be an antenna base, PCTEL Maxrad BMATM //NC25 and a multi-band StiCO RFMT-NT-V/U/C-A whip. Assembly shall be mounted to the stationary headache/cab protector, (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 on the underside of the dash for connection of the state radio. The lugs shall be 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. See EQN-562 drawing for details.
Each circuit shall be supplied individually, labeled, properly sized, protected from weather and sealed to be watertight.
Electrical wiring: Chassis wiring harness protected at areas prone to cause chafing by installing convoluted plastic conduit and clamped using P-clamps with rubber inserts.
A Data port, read only shall be supplied within easy access under the dash with 12-volt constant power and ground terminals for connection to department fuel system equipment **and a separate** data port, or terminating resistor shall be supplied within easy access under the dash with 12-volt constant power and ground terminals for connection to department AVL system equipment.12-volt constant and ground circuit (fuse protected) may be utilized for both the fuel system and AVL equipment. If read only data ports are supplied for both the Department’s fuel and AVL systems, the data ports, must be independent of one another.

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

D. VEHICLE COMPONENTS: (Continued)

9. ENGINE & ACCESSORIES:

Diesel, minimum 445 horsepower at governed RPM, minimum peak torque of 1700 LB/FT and a minimum 12.4 actual engine liter.

Replaceable heavy-duty full flow type fuel filter(s) and oil filter(s) as recommended by the manufacturer, bearing a legible OEM part number.

The largest factory available engine cooling capacity compatible with engines referenced and transmission referenced.

Radiator core and shell: Shall be manufacturer's heaviest construction grade radiator available. Radiator capacity for continuous high engine output under extreme temperatures and/or operating conditions due to prolonged operations in low gears and low speeds.

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 a tubing and dipstick with sufficient length to provide reasonable access for checking the oil level.

There shall be no open wire connections, all connections shall be waterproof and sealed.

Immersion type in block engine heater for cooling system with waterproof flush-mounted plug-in front sheet metal, 115V prong plug.

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

Heavy duty air cleaner. Capacity adequate for maximum performance to the engine with dash-mounted air restriction indicator graduated locking type or vehicle OEM equipped electronic dash that incorporates an air restriction gauge or indicator light, shall be required.

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

Screening system: Mounted in front of radiator that protects radiator full width and full length from stones and road debris. System to be approved by engine and truck manufacturer(s).

Diesel Fuel Filter: There shall be a DAVCO 382, or a 482-filtration unit installed 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.

Davco 382 Unit shall be equipped with engine coolant heat and 120-volt heater circuit. The 120-volt circuit and engine block heater shall be powered via the same electrical connection. **(No substitute, standardization)**

Davco 482 shall be equipped with 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).**

Engine Brake: Engine shall be equipped with a minimum 2 stage, full engine compression brake. **Brake lights shall activate when engine brake is activated**, Ref: Jacobs.

Air restriction gauge: If the vehicle is not OEM equipped with an electronic dash that incorporates an air restriction gauge or indicator light, it shall have flush, dash-mounted with indicator slide for engine air cleaner, RE: FILTER MINDER, manufactured by Engineered Products Company.

Magnetic drain plug, oil pan.

ECM shall be set to a maximum of seventy (70) miles per hour.

Governor set at manufacturer’s recommended maximum 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.

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

D. VEHICLE COMPONENTS: (Continued)

9. ENGINE & ACCESSORIES: (continued)

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.

10. EXHAUST:

DPF (diesel particulate filter) and exhaust system shall meet the latest EPA emission requirements. Exhaust system shall be a vertical muffler and tailpipe with elbow, that shall neither interfere with body nor will it be close to any fluid tank.

The DPF, muffler and tailpipe shall be shielded or insulated to protect personnel from burns when entering or exiting the cab. Shields shall be of a non-rusting material.

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. FIFTH WHEEL:

36-inch diameter, sliding fifth wheel type, mounted to provide proper turning clearance when pulling a low-boy trailer. Location of fifth wheel setting to be determined by Manufacturer's Engineering Department in order to supply a unit that is totally engineered, Ref: Fontaine model SL7MTB675024 or equal. The frame must not interfere with the trailer gooseneck in the "break-down" mode, fifth wheel placed 6-inch forward of rear axle center. Tapered frame rails, as necessary, shall be included.

Fifth wheel mounting must be made to permit proper tire swing, fender clearance and must maintain the maximum over all dimension keeping in mind all truck and trailer dimensions per all Federal and State regulations. Mounting of fifth wheel to frame by angles.

13. HEADACHE RACK:

Headache rack shall be aluminum mounted top or sides of frame aft of cab. Opening for rear window shall be protected by aluminum square or round bars. Covered chain and binder rack, lockable shall be mounted to both sides of the window cutout and extend to outermost side of headache rack. There shall also be a covered chain and binder rack, lockable installed below the window cutout full length of window. There shall be a full-length side to side chain/storage tray 12-inch-deep and minimum 8-inch-wide front to back. Chain tray shall have solid bottom with drain hole. Ref. Ref. Merritt Aluminum Products. Headache rack shall accommodate the Whelen warning light bar, work lights and state radio antenna. There shall be two (2) L.E.D. PAR36, PN# P36SLCHG (01-066C579-30C) illumination lights mounted to the headache for hookup/work lights. Lights shall be mounted in the rear upper corners below the topline of the headache rack. Lights shall be controlled with a separate “LIGHTED” on switch clearly marked and positioned in the dash. A six to eight-week lead time is required for delivery of light kits, Whelen contact is Brad Walker (740) 325-6727 or bwalker@fleetreps.com

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

D. VEHICLE COMPONENTS: (Continued)

14. INSTRUMENTATION:

All instruments illuminated and dash-mounted except where specified otherwise.
All standard instruments shall be supplied, including, but not limited to the following:
Oil pressure gauge. With warning light or audible alarm.
Coolant temperature: with warning light or audible alarm.
Air pressure: gauge(s) for dual circuit, dual indicator with low pressure audible alarm and light. Both shall work with engine running and with engine off and key on.
Fuel gauge.
Speedometer.
Parking brake indicator with light.
Tachometer.
Voltmeter.
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.
Transmission oil temperature for automatic transmission only, with warning light or audible alarm.

15. LOAD MEASURING STICK:

A load measuring stick shall be delivered with each unit. Ref: Ms. Carita, LMS 101

16. 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.
Conspicuity per EQN-127A and EQN-131.

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

D. VEHICLE COMPONENTS: (Continued)

17. STEERING:

Single integral type hydraulic power steering.
The pump shall not be the integral filter type unit.
Steering system (e.g., flow, pressure, relief valve etc.) shall be selected considering the full front-GAWR axle loading. Ref: ROSS, SHEPPARD or TRW gear assembly.
Hydraulic supply pump, vane type or roller type supply pump with sufficient oil flow to permit one (1) steering wheel revolution per second with front axle loaded to rated capacity, in a "park" condition.
Power Steering Reservoir, "remote mounted", incorporating a filter which is easy to remove and replace. The remote filter referenced above shall be factory mounted.

18. TANK(S) - FUEL:

One (1) 100-gallon minimum total capacity cylindrical or D-style aluminum or stainless steel, unpainted Safety-type fuel tank as per the requirements of FMVSS. Dual tanks are unacceptable.
Tank mounting hardware and brackets shall be for “severe duty” applications. Heavy duty aluminum or stainless steel with minimum 2-inch-wide straps and rubber gaskets.
Accessible fill pipe (located at either end of tank to avoid interference with steps).

19. TIRES/WHEELS:

Tires: Shall be 11R22.5 tubeless Goodyear or Michelin. All tires shall be steel belted radials, balanced with a minimum 25/32 tread depth. Drive tires shall be all season tread.
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 degrees tubeless steel wheels, hub piloted, 10 hole - 285.75mm bolt circle with 22mm two-piece flange nuts.
Front: Wheels: 22.5 x 8.25, 10 hole - 285.75mm bolt circle with 220mm bore, tubeless steel disc wheel rated at 7,500 LB at a maximum inflation pressure of 120 PSI. Accuride part number 28828.
Rear: Wheels: 22.5 x 8.25, 10 hole - 285.75mm bolt circle with 220mm bore, tubeless steel disc wheel rated at 7,500 LB at a maximum inflation pressure of 120 PSI. Accuride part number 28828.
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 applied over Cathodic Electro-Disposition Gray Primer.

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

D. VEHICLE COMPONENTS: (Continued)

20. TRANSMISSION AUTOMATIC / MANUAL:

AUTOMATIC (033260):
ALLISION 4500 RDS 6 SPEED
Automatic transmission cooler lines shall be stainless steel.
All vehicles shall have a transmission (auto) operated safety starting switch that will avoid engine starting with drivetrain in gear.
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. Oil cooler for transmission required to keep the transmission fluid at an acceptable operating temperature. (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.
Unit shall be programed to require a service brake application for transmission to shift into any gear from neutral.
All transmission modules shall be routed and installed in the cab
Opening for power-take-off (PTO).

MANUAL (033150):
13 SPEED with provisions for PTO
EATON RTLO – 18913A

Oil cooler for transmission required to keep the transmission fluid at an acceptable operating temperature (Water-to-oil type cooler.)
Manual transmission cooler lines shall be stainless steel or a pre-approved equal. All lines or pre-approved hoses shall be routed to prevent rub-through with hanging bracket and P-style clamps
All vehicles shall have a clutch and or a transmission-operated safety starting switch.
Opening for power-take-off (PTO).
Clutch manually adjustable **(No substitute, standardization)**, **A Solo Clutch will not be accepted**.
Cast Pressure plate, Stamped pressure plate will not be accepted.
Externally lubricated and torque limiting with a clutch brake.
Clutch shall be capable of 100 ft/lb. above peak engine torque.
Clutch adjustment shall be set to specifications prior to delivery to the Department.
There shall be a neutral safety device to ensure that the vehicle cannot be started in gear.
The transmission-input shaft shall be 2-inch spline. Dampened driven disc.

21. WARNING LIGHT:

Warning light shall be a Whelen PN# 01-0687181A1PA (R1PADOT) Mini light bar **(No substitute, standardization)** pedestal mounted, centered above cab top of headache rack. Under no circumstances will the light be roof or cab mounted. There shall be a separate lighted switch clearly marked and positioned in the dash for the Whelen R10 mini light bar. A six to eight-week lead time is required for delivery of light kits, Whelen contact is Brad Walker (740) 325-6727 or bwalker@fleetreps.com

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

D. VEHICLE COMPONENTS: (Continued)

22. WET LINE:

All units shall include a wet line system. All hoses, quick connections, hardware, fittings and hydraulic pump necessary to ensure a serviceable system shall be included. PTO switch shall be located in the dash, permanently marked and illuminated. Hydraulic hoses shall be 0.75 inch inside diameter and fittings shall be 0.75 inch. Hydraulic tank shall be mounted on right (passenger) side frame rail.
Quick disconnects shall be installed above decking aft of the cab.

Left / Driver side or Top (PRESSURE) side shall be female AEROQUIP 5100-S5-12B (wing) fitting at top of deck.
Left / Driver side or Top (PRESSURE) shall be permanently marked PRESSURE.
Right / Passenger side or Bottom (RETURN) side shall be male AEROQUIP 5100-S2-12B 3/4-14 fitting at top of deck.
Right / Passenger side or Bottom (RETURN) shall be permanently marked RETURN.
Shall include two (2) 12 foot of 0.75 hydraulic connector hoses for between truck tractor quick disconnects and trailer quick disconnects.
Each hose shall have one (1) AEROQUIP 5100-S2-12B 3/4-14 male fitting and one (1) 5100-S5-12B (wing) female fitting installed.
Two (2) spring “pogo” sticks approximately 36-inch in height shall be installed off center on catwalk to secure hydraulic hoses, trailer wire connections and air lines with adequate “slack” for turning radius.

II. DRAWINGS:

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-80B	dated	Rev.	05-16-18	1 sheet	WIRING DIAGRAM 7 WAY ROUND PIN MALE CONNECTOR
EQN-81A	dated	Rev.	02-27-07	1 sheet	7 WAY TRAILER CONNECTOR
EQN-82D	dated	Rev.	07-22-15	1 sheet	CHOCKS AND HOLDER
EQN-120Q	dated	Rev.	08-06-12	1sheet	UNIVERSAL TRUCK LIGHTING
EQN-127A	dated	Rev.	01-02-09	1 sheet	CONSPICUITY TAPE STRIPING REQUIREMENTS
EQN-131	dated	Rev.	06-23-15	sheet 1of 3	TRACTOR CONSPICUITY
EQN-351A	dated	Rev.	06-19-13	2 sheets	FAST LUBE OIL CHANGE SYSTEM (FLOCS)
EQN-552	dated	Rev.	07-25-18	1 sheet	MAX TRAVEL HEIGHT STICKER
EQN-552-1	dated	Rev.	03-23-15	1 sheet	THREE POINTS STICKER

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 Pre-build meeting.
DRAWINGS APPEAR AT THE END OF THE SPECIFICATION.

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.

Delivery of these manuals shall be completed with the delivery of each unit(s).

Manuals shall be supplied on thumb drives (in PDF format) along with paper manuals.

IV. TRAINING:

Mechanic & Operator:

The successful vendor shall provide services of qualified factory trained technicians for not more than __0__ training sessions of not more than __0__ hours at __0__ PennDOT locations to train personnel in the proper operation, safety 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, and the additional specific warranty items stated below.

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.

MANUFACTURE IN-HOUSE WARRANTY PROGRAM:

PRIOR TO BID ALL OEM CHASSIS MANUFACTURES or SELLING DEALER MUST ESTABLISH AN IN-HOUSEWARRANTY PROGRAM or SERVICE AGREEMENT DIRECTLY TO THE DEPARTMENT.
AFTER CONTRACT AWARD IF THE DEPARTMENT DESIRES TO PARTICIPATE, THE PROGRAM SHALL BE OPERATIONAL (username/password(s) established, etc., if applicable) PRIOR TO DELIVERY OF THE FIRST UNIT. ESTABLISHED WARRANTY AND SERVICE AGREEMENT SHALL REMAIN INSERVICE FOR THE FULL TERM OF EACH UNIT REGUARDLESS OF THE AMOUNT OF UNITS WITHIN THE FLEET.

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 the vendor/bidder.

V. WARRANTY: (Continued)

Any and all training for in-house warranty work will be provided by the Manufacturer at no expense to the Commonwealth.
All in-house warranty documentation shall be delivered with the pilot model. All warranty documentation (extended warranty service contracts and coverage) shall be delivered with the pilot model.
Prior to bid, the In-house warranty program shall provide the department the availability to file warranty claims directly to the OEM manufacturer/selling dealer for repairs made in-house by department personnel during the equipment's specified warranty period. Supplying manufacture shall ensure that there are authorized OEM repair facilities within the commonwealth of PA. capable and in agreement to perform repairs after the warranty period ends and throughout the department owned equipment's life cycle.

BUMPER-TO-BUMPER WARRANTY:
1 year starting from the Department's warranty start date.
This does not include wear items that must be replaced through ordinary wear and tear.

BRAKE WARRANTY:
Manufacturer's service and warranty policy for automatic slack adjusters shall be for two (2) years 100% parts only.

RADIATOR WARRANTY:
Manufacturer's standard service and warranty policy for radiator.

ENGINE WARRANTY:
The successful vendor and or supplying OEM shall provide the Department with a 100% parts and labor engine warranty FOR 60 months / 150,000 miles minimum. In addition to the engine warranty, the engine block shall be warranted against external perforation from corrosion for 10 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 minimum unlimited hours. Shall be warranted against corrosion, rust, rust thru etc. regardless of atmospheric conditions.

The oil pan shall be warranted against corrosion, rust, rust thru etc. regardless of atmospheric conditions for 5 years, 100% parts and labor.

TRANSMISSION WARRANTY:
Manufacturer's service and warranty policy for Automatic transmissions shall be three (3) years 100% parts and labor

DIFFERENTIAL/AXLE WARRANTY:
Manufacturer's service and warranty policy for differential and axles shall be for three (3) years 100% parts and labor.

HYDRAULIC PUMP
Manufacturer's service and warranty policy for hydraulic pump shall be three (3) year 100% parts and labor.

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