Overview for Contract
CN00025064 (2310-07 Supp)

Prior to utilizing a contract, the user should read the contract in it's entirety.

CONTRACT DESCRIPTION

▶ This Contract supplement is for the purchase of Highway line painting trucks.
Three different specifications are included , original designed for three different districts

CONTRACT INFO

Material or Service	Material	
Title & Contract # (s)	2310-07 Highway Support Vehicles (Supplement) Mack Trucks Inc, SRM Child Contract: 4400001483, Parent Contract: 4400001481	
Number of Suppliers	1	**Pcard enabled: No**
Validity Period	04/02/2007 -08/31/20008	
DGS BOP Point of Contact	Robert Isenberg	
Contact Phone #	717.703.2930	
Email	risenberg@state.pa.us	

PRICING HIGHLIGHTS

▶ **Line 10 $368,158.00**
Line 20 $359,442.00
Line 30 $369,651.00
No Minimum purchase.

PROCESS TO ORDER

▶ **Place Purchase order with Mack Truck Inc. PO Box M, Allentown, PA 18105-5500**

Attachment A
Highway Support Vehicles
Contract 2310-07 Supplement

SPECIAL CONTRACT TERMS AND CONDITIONS

These **Special Contract Terms and Conditions** supplement the **Standard Contract Terms and Conditions for Statewide Contracts for Supplies**.

1. Purpose of Contract.

This Contract Supplement provides for the procurement of Highway Support Vehicles – Paint Trucks with approved options for Commonwealth agencies and participating local public procurement units. The specifications for the Highway Support Vehicles and the delivery requirements are found in Pennsylvania Commercial Item Description (PCID) No. 1067, "***General Requirements for Delivery of Vehicles,*** Pennsylvania Commercial Item Description No. 1075 ***GENERAL REQUIREMENTS FOR BIDDING Penn DOT VEHICLES/EQUIPMENT and the Attached SPECIFICATIONS***. The most current version of PCID No. 1067 and 1075, effective at the time and date of bid opening, is incorporated by reference and made a part of this invitation for bids. PCID No. 1067 and 1075 may be reviewed and downloaded from the Department of General Services website, http://www.dgs.state.pa.us.

2. Cooperative Purchasing Program.

COSTARS Purchasers. Section 1902 of the Commonwealth Procurement Code, 62 Pa.C.S. § 1902 ("Section 1902"), authorizes local public procurement units and state-affiliated entities (together, "COSTARS Purchasers") to participate in Commonwealth procurement contracts that the Department of General Services ("DGS") may choose to make available to COSTARS Purchasers. DGS has identified this Contract as one suitable for COSTARS Purchaser participation.

A. Only those COSTARS Purchasers registered with DGS may participate as COSTARS Purchasers in a Commonwealth contract. Several thousand COSTARS Purchasers are currently registered with DGS; therefore, the Contractor agrees to permit **only** to DGS-registered COSTARS members to make COSTARS purchases from this Contract.

1.A "local public procurement unit" is:

- Any political subdivision;
- Any public authority;
- Any tax exempt, nonprofit educational or public health institution or organization;
- Any nonprofit fire, rescue, or ambulance company; and
- To the extent provided by law, any other entity, including a council of governments or an area government that expends public funds for the procurement of supplies, services, and construction.

2. A state-affiliated entity is a Commonwealth authority or other Commonwealth entity that is not a Commonwealth agency. The term includes the Pennsylvania Turnpike Commission, the Pennsylvania Housing Finance Agency, the Pennsylvania Municipal Retirement System, the Pennsylvania Infrastructure Investment Authority, the State Public School Building Authority, the Pennsylvania Higher Educational Facilities Authority and the State System of Higher Education.

B. COSTARS Purchasers have the option to purchase from a Contract awarded under this procurement, from any DGS contract established exclusively for COSTARS Purchasers in accordance with the requirements of Section 1902, from any other cooperative procurement contracts, or from their own procurement contracts established in accordance with the applicable laws governing such procurements. The Contractor understands and acknowledges that there is no guarantee that any prospective COSTARS Purchaser will place an order under this Contract, and that it is within the sole discretion of the registered COSTARS Purchaser whether to procure from this Contract or to use another procurement vehicle.

C. DGS is acting as a facilitator for COSTARS Purchasers who may wish to purchase under this Contract. Registered COSTARS Purchasers who participate in this Contract and issue purchase orders ("POs") to Contractors are third party beneficiaries who have the right to sue and be sued for breach of this contract without joining the Commonwealth or DGS as a party. The Commonwealth will not intervene in any action between a Contractor and a Purchaser unless substantial interests of the Commonwealth are involved.

D. Registered COSTARS Purchasers electing to participate in this Contract will order items directly from the Contractor and be responsible for payment directly to the Contractor.

E. The Contractor shall furnish to the DGS COSTARS Program Office a quarterly electronic Contract sales report detailing the previous quarter's Contract purchasing activity, using the form and in the format prescribed by DGS. The Contractor shall submit its completed quarterly report no later than the fifteenth calendar day of the succeeding Contract quarter.

1. **Until such time as DGS may provide the Contractor written notice of automated report filing, the Contractor shall either e-mail the reports to GS-PACostars@state.pa.us or send the reports on compact disc via US Postal Service to the DGS COSTARS Program Office, Bureau of Procurement, 6th Floor Forum Place, 555 Walnut Street, Harrisburg, PA 17101. When DGS has instituted automated reporting, the Contractor shall comply with DGS's written notice and instructions on automated Contract reports. DGS will provide these instructions with sufficient advance time to permit the Contractor to undertake automated reporting.**

2. **The Contractor shall include on each report the Contractor's name and address, the Contract number, and the period covered by the report. For each PO received, the Contractor shall include on the report the name of each COSTARS-Registered Purchaser that has used the Contract along with the total dollar volume of sales to the specific Purchaser for the reporting period.**

3. **DGS may suspend the Contractor's participation in the COSTARS Program for failure to provide the Quarterly Sales Report within the specified time.**

F. Additional information regarding the COSTARS Program is available on the DGS COSTARS Website at www.dgs.state.pa.us/costars.

1. If the Contractor is aware of any qualified entity not currently registered and wishing to participate in the COSTARS Program, please refer the potential purchaser to the DGS COSTARS Website at www.dgs.state.pa.us/costars, where it may register by completing the online registration form and receiving DGS confirmation of its registration. To view a list of currently-registered COSTARS member entities, please visit the COSTARS website.

2. Direct all questions concerning the COSTARS Program to:

Department of General Services
COSTARS Program
555 Walnut Street, 6th Floor
Harrisburg, PA 17101

Telephone: 1-866-768-7827
E-mail GS-PACostars@state.pa.us

3. Order of Precedence.

To the extent that these Special Contract Terms and Conditions conflict with the Standard Contract Terms and Conditions For Statewide Contracts for Supplies, these Special Contract Terms and Conditions shall prevail.

4. Contract Term.

The Contract shall commence on the Effective Date, which shall be no earlier than September 1, 2006 and expire on August 31, 2007 or until awarded contractor's stock is depleted and cannot be restocked by manufacturer, whichever comes first.

5. Option to Extend.

The Department of General Services reserves the right, upon notice to the contractor, to extend the Contract or any part of the Contract for up to three (3) months upon the same terms and conditions. This will be utilized to prevent a lapse in Contract coverage and only for the time necessary, up to three (3) months, to enter into a new contract.

6. Renewal.

The Contract or any part of the Contract may be renewed for four (4) additional one (1) year terms by mutual agreement between the Department of General Services and the contractor. If the Contract is renewed, the same terms and conditions shall apply. The contractor's past performance under the contract will be one criterion that the Department will consider in its decision as to whether to renew. **See paragraph 15 Quarterly Business Review Meeting.**

7. Option for Separate Competitive Bidding Procedure.

The Department of General Services reserves the right to purchase supplies covered under this Contract through a separate competitive bidding procedure, whenever the department deems it to be in the best interest of the Commonwealth. The right will generally be exercised only when a specific need for a large quantity of the supply exists or the price offered is significantly lower than the Contract price.

8. Acknowledgement of Order.

The contractor must acknowledge receipt of an order within ten (10) calendar days from the day the purchase order is issued to the contractor. In order to insure timely delivery, the ordering Commonwealth agency and participating local public procurement units should follow up on orders if written acknowledgement is not received within ten (10) calendar days.

9. Delivery Time.

The contractor(s) must make delivery **as described in each attached specification** after acknowledgement of purchase order for Highway Support Vehicles. Failure to deliver within these time periods shall result in the contractor's payment of liquidated damages in accordance with Paragraph 12, of these Special Contract Terms and Conditions. Liquidated damages shall not apply under the circumstances specified in Paragraph 20, Force Majeure, of the Standard Contract Terms and Conditions For Statewide Contracts for Supplies.

Vehicles purchased by Pennsylvania Department of Transportation will be delivered FOB to: PA Department of Transportation, Equipment Division, 17th & Arsenal Blvd., Harrisburg, PA 17120. Call 717-787-2123, Larry Allen, for inspection appointment, title, and MV1 instructions.

Pennsylvania Turnpike Commission.

The requirements contained in Attachment D-PCID No. 1075 and in these Special Bid and Contract Terms and Conditions are applicable to orders issued by the Pennsylvania Turnpike Commission with the following exceptions:

It shall be understood that any reference in the PCID to the "Pennsylvania Department of Transportation" or to "Commonwealth agencies" shall be replaced with "Pennsylvania Turnpike Commission".

Any reference to delivery location, mailing address and contact phone number shall be replaced as follows:

DELIVERY LOCATION:
Pennsylvania Turnpike Maintenance Facility
Milepost 243.8 (New Cumberland)
519 Marsh Run Road
New Cumberland, PA 17070
CONTACT PHONE NO:
(717) 939-9551 ext. 5100

MAILING ADDRESS*:
Pennsylvania Turnpike Commission
Route 283

P.O. Box 67676
Harrisburg, PA 17106

Note: this name and address shall also be indicated on Form MV-1 "Application for Title"

Vehicles purchased by the Pennsylvania State Police will be delivered FOB to: Pennsylvania State Police, Transportation Division, 20th & Herr Sts., Harrisburg, PA 17103. Call 717-787-6909, Rick Binker (Director), for inspection appointment, title, and MV1 instructions.

All other vehicles will be delivered FOB to: Department of General Services, Bureau of Vehicle Management, 2221 Forster St., Harrisburg, PA 17125, with all proper paperwork as stated in the body of the specification sheets.

Cab shall be made available in all manufacturer's standard available colors, as well as Omaha Orange, 9215 for shade only and PENNDOT yellow, DuPont 6808 for shade only; as specified by the ordering agency

10. Additional Delivery Charges (Participating Local Public Procurement Units ONLY).
Participating local public procurement units may pick up ordered equipment at the awarded contractor's place of business or have the equipment delivered by the contractor for an additional **CHARGE PER VEHICLE, of $400.00.**

11. Liquidated Damages.
If any item is not delivered within the time limits specified in Paragraph 10, Delivery Time, of these Special Contract Terms and Conditions, the delay will interfere with the proper implementation of the Commonwealth's programs and utilizing the item, to the loss and damage of the Commonwealth. From the nature of the case it would be impractical and extremely difficult to fix the actual damage sustained in the event of any such action. The Department of General Services and the contractor, therefore, presume that in the event of any such delay the amount of damage which will be sustained from a delay will be **$20.00** per calendar day per vehicle, and they agree that in the event of any such delay, the contractor shall pay such amount as liquidated damages and not as a penalty. A Commonwealth agency may, at its option, for amounts due the agency as liquidated damages, deduct such from any money payable to the contractor or may bill the contractor as a separate item. The Commonwealth agency shall notify the contractor in writing of any claims for liquidated damages pursuant to this paragraph before the date the Commonwealth agency deducts such sums from money payable to the contractor. Delivery of an item, which is rejected by the Commonwealth agency, shall not toll the running of the days for purposes of determining the amount of liquidated damages.

Note: See Standard Contract Terms and Conditions For Statewide Contracts for Supplies, Paragraph 20, Force Majeure, for exceptions to the application of liquidated damages.

For Participating Local Public Procurement Units Only: The amount of any liquidated damages against the contractor may be deducted from the total amount due the contractor from a local public procurement unit.

12. Taxes.

All participating local public procurement units will be required to indicate on their purchase orders the Internal Revenue Service Registration Number for exemption from Federal Excise Tax, if applicable.

13. Local Public Procurement Unit Participation.

Those local public procurement units and any other Commonwealth purchasing agencies, which issue orders under the Contract, are intended beneficiaries under the Contract and are real parties in interest with the right to sue and be sued without joining the Department of General Services as a party.

Local public procurement units, and any other Commonwealth purchasing agencies, that elect to participate in the Contract may issue orders or enter into participating agreements directly with the contractor and will be responsible for payment directly to the contractor.

The contractor(s), who is awarded the Contract, agrees to provide vehicles at the awarded price, in accordance with the contractual terms and conditions, to all local public procurement units and Commonwealth purchasing agencies that decide to participate. The contractor shall notify the Department of General Services in writing of any and all orders and participating agreements with local public procurement units.

Any questions or problems pertaining to acquisition of Highway Support Vehicles by participating Local Public Procurement Units and their use of the Contract should be accomplished in a timely manner and all contact pertaining to these questions or problems should be directed to Robert L. Isenberg at risenberg@state.pa.us or 717-703-2930.

14. Monthly Purchase Reports.

The contractor shall furnish to the Department of General Services monthly electronic reports no later than the fifteenth calendar day of the month for the previous month's purchasing activity. Failure to provide this information may result in termination of the contract.

Each report shall indicate name and address of the contractor, contract number, and period covered by the report. The following information shall be listed on the report for each order received.

SAP Item No.
Material Number
COMMONWEALTH Agency
Public Procurement Unit
Make
Model
Model year
Additional Options
Vehicle Cost
Delivery Charge
Quantity
Order Date
Delivery Date

All such reports shall be created using a template provided by the Department. The final format and types of data to be included must be approved by the Department. Reports shall be sent to:

Department of General Services
Attn: Robert Isenberg
555 Walnut Street
6th Floor, Forum Place
Harrisburg PA 17101
risenberg@state.pa.us

15. Quarterly Business Review Meetings.

The contractor shall actively participate in Quarterly Business Review meetings with the Commonwealth agency commodity manager and fleet managers from Department of Transportation and Department of Vehicle Management to evaluate past performance, address any issues, discuss upcoming vehicle changes, identify additional cost savings opportunities, and report build-out dates. These meetings shall be scheduled by the Department of General Services.

16. Motor Vehicles to be manufactured in North America. [To be used only for the procurement of passenger cars and trucks as those terms are defined in Section 102 of the Vehicle Code, 75 Pa.C.S. Section102].

All motor vehicles furnished by the contractor pursuant to the Contract must be manufactured in North America. North America is defined as the United States, Canada, and Mexico. A motor vehicle is manufactured in North America if a substantial majority of the principal components are assembled into the final products in an assembly plant in North America. The contractor shall be prepared to prove that the motor vehicles that will be, or have been, furnished to the Commonwealth agency will be or are, in fact, manufactured in North America in accordance with Sections 3731-3736 of the Commonwealth Procurement Code (62 Pa. C.S. Sections 3731-3736), known as the Motor Vehicle Procurement Act. No payment shall be made to the contractor unless the Commonwealth agency is satisfied that the contractor has complied with these provisions and the Motor Vehicle Procurement Act. Any payments made to the contractor, which should not have been made, shall be recoverable directly from the contractor. In addition to the withholding of payments, any person who willfully violates any of the provisions of the Motor Vehicle Procurement Act may be prohibited by any public agency from participation in contracts awarded by the public agency for a period of five years from the date of determination that a violation has occurred.

17. License Required.

It is unlawful for any individual, corporation, partnership, association or other entity foreign or domestic to engage in the business of salesperson, broker, dealer, manufacturer, factory branch, distributor, distributor branch, factory or distributor representative or wholesaler within the Commonwealth unless he has secured a license as required by Act No. 84 of 1983, known as the Board of Vehicles Act. Before a contract is awarded to any bidder and before a bidder sells the Commonwealth any vehicle covered by this requisition, he must hold or secure an appropriate license issued by the State Board of Vehicle Manufacturers, Dealers and Salespersons. Information and/or an application in regard to the license requirement can be obtained from:

Department of State
Bureau of Professional and Occupational Affairs
State Board of Motor Vehicle Manufacturers, Dealers and Salesmen
P. O. Box 2649
Harrisburg, PA 17105-2649

SPECIAL NOTE:

Out-Of-State Dealers are not required to secure a license under Act No. 84 of 1983, and therefore, do not need to comply with this “License Required” Section.

18. Pick-up Site.

The contractor must have a site within the confines of the Commonwealth of Pennsylvania for Commonwealth agencies and participating local public procurement units to pick up their vehicle(s), rather than have the vehicle(s) delivered.

19. Contract Implementation

The contractor will work with the CWOPA buyer to provide a complete list of specifications for each awarded vehicle on the Contract.

SPECIFICATIONS
A-48-DH

059500

TRUCK, PAINT, WATER BORNE, AUTOMATIC

DISTRICT 2-0

INDEX

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SPECIFICATIONS
A-48-DH

I. GENERAL TRUCK SPECIFICATION: (Continued)

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SPECIFICATIONS
A-48-DH

I. GENERAL TRUCK SPECIFICATIONS:

A. INTENT STATEMENT:

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 **320** days after receipt of the purchase order by the successful bidder.

The maximum height of the paint striper and appurtenances **shall not exceed 11ft 6 inch** in a working mode.
It is the intent and purpose of this specification to secure a truck-mounted, self-contained striping machine. The machine shall apply reflectorized lines utilizing solvent or water borne traffic paint. The equipment must maintain and be capable of applying the paint and/or marking material at ambient temperatures as low as 40 degrees F, on a clean and dry surface. The machine shall also maintain and be capable of applying conventional or fast-dry traffic paint materials at speeds of up to 22 MPH at a maximum .015 millage/0.381 wet without beads. The intent is to comply with federal safety standards for noise, noise emission generated by the unit (and they shall not exceed federal regulations in the chassis cab, right rear operator's seat, and left rear operator's seat). The machine shall be capable of simultaneously applying three lines in two colors of the marking material in either a solid or skip pattern or combination of these patterns at the operating conditions specified above. All truck parts and materials shall conform to the truck manufacturer's recommendations and the applicable S.A.E., A.W.S. and A.S.M.E. minimum standards. Certified A.S.M.E. welders shall perform all welding on the entire unit, where such certification is required.

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

The successful low bidder will be required to construct a pilot machine, and this machine must be delivered to the Department of Transportation for inspection and testing per I.A. This machine must meet all the mechanical requirements of the specifications and then must be field tested and fully meet all the performance tests required in the specifications.

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

Center lines (solid and skip) and edge lines, individually and simultaneously, shall be applied by the machine using the above-specified paints. The lines shall be applied at a rate of 0.012 in/0.030cm ± 0.002 inch for edge lines and 0.015 inch ± 0.002 inch for centerlines. Lines shall be clearly defined with sharp clean edges and ends. Drop on type glass beads that meet Pennsylvania specification shall be applied at a rate of 6 to 12 pounds per gallon, ± ¼ LB, of paint applied to the road surface.

The machine shall be required to satisfactorily apply white and yellow standard dry and white and yellow fast-dry paints. This paint material and an appropriate quantity of glass beads shall be supplied by the Pennsylvania Department of Transportation for testing.

SPECIFICATIONS
A-48-DH

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

A. INTENT STATEMENT: (Continued)

The appearance of the lines produced by the paint striper shall be uniform in appearance, free from variations in line width and line length (skip cycle). Also variations created by action of the paint pumps will not be accepted. As an example, when a right white edge line (solid line) is being applied simultaneously with a skip white lane line, there shall exist no visible change in the solid white edge line at the point where the skip white lane line gun cuts turns on or off. Any non-uniformity which exists in either line (visible to the human eye, either day or night) shall be causes for rejection of the paint striper.

The vehicle shall have a gradeability of 15% when loaded to maximum G.V.W.R. without exceeding the engine manufacturer's recommended maximum R.P.M., based on maximum net torque. Painting speeds of 5 MPH to 22 MPH must be obtainable without erratic shifting of the automatic transmission. The ratio of the rear axle and transmission shall be geared to maintain a 65 MPH reasonable speed for inter job transporting on expressways without exceeding recommended engine R.P.M. of approximately 2100 to produce the most fuel efficient unit possible without excessive engine R.P.M. and premature wear.

The below-described schedule shall be followed with the successful vendor in the delivery inspection.

After the prototype machine is delivered to the specified location, as shown on the purchase order, the first 10 working days shall be utilized by inspecting the machine to determine whether or not the machine complies with the specifications.

The performance tests shall not begin until (if it does meet the specifications in the initial inspection) the striping unit complies exactly with the mechanical and electronic/electrical requirements of the specifications.

After the completion of the inspection of the mechanical and electronic/electrical components of the machine, performance tests for acceptance shall begin. Performance tests require the machine to use Commonwealth of Pennsylvania standard traffic line marking paints.

Thirty (30) calendar days, weather permitting, (in initial paint season) shall be allowed for the manufacturer to complete the performance tests as specified in the following paragraphs of these specifications. The 30-calendar day performance test period shall begin after the machine complies exactly with the specifications for mechanical and electronic/electrical components.

If the manufacturer's machine does not perform as required with the 30 calendar days, then the Department reserves the right to reject it. In addition, if this prototype machine is rejected, the manufacturer shall not be allowed to supply the type of machinery described in this specification on the re-bid of the truck-mounted striper machines by the Department.

The Department's Traffic Engineering Division personnel and Equipment Division personnel shall make final inspection and performance tests and acceptance of the machine. Prior to acceptance, the machine shall be successfully operated to the satisfaction of the Traffic Engineering Division personnel, and the Equipment Division personnel with and without assistance form technicians furnished by the vendor.

SPECIFICATIONS
A-48-DH

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

A. INTENT STATEMENT: (Continued)

If the prototype machine meets all the mechanical requirements, electrical/electronic requirements, and then successfully passes the performance tests, then permission will be granted by the Department to the bidder to proceed with fabrication of other machines covered under this contract. If the prototype machine fails to pass the mechanical requirements, electrical/electronic requirements, or the performance test requirements as specified in this contract, the Department reserves the right to reject the prototype machine and any subsequent machines listed on this order.

B. WEIGHT DISTRIBUTION:

The complete unit in the full mode shall be weighed to verify that each G.A.W.R. is sufficient relative to the final product presented. The chassis weight and paint body weights shall be furnished separately. The C/G of "both" chassis and paint body shall be provided by means of an engineering drawing(s) at the pre-build meeting.

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 components
5. Rims
6. Suspension
7. Brakes
8. Any other items as required

The power package required must be compatible with respect to the engine, transmission, axles, hydraulic system, and power steering in order to meet the requirements specified herein.

SPECIFICATIONS
A-48-DH

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

B. WEIGHT DISTRIBUTION: (Continued)

The following information is required:

TRUCK FRONT		TRUCK REAR	TOTAL
	Chassis Weight		
	Diesel Fuel Gal. @ 7 LB per Gallon		
250	Truck Driver & Misc. Weight		
	Body & Related Platform Components		
	Paint Payload @ 13.0 LB per Gallon		
	Beads Payload @ 7000 LB		
	Paint operators 2 @ 200 LB Each		
	TOTAL WEIGHT		

Any weight distribution sheets reflecting total in excess of the Pennsylvania legal truck weight laws will not be acceptable.

Vendor shall submit this information with the pilot model and each unit weighed by a certified weigh master and signed.

Chassis _____Front Axle
Without Paint _____Rear Axle
_____Total

Truck GAWR's as Built

	Front GAWR:	Rear GAWR:
Axle	_____	_____
Tires	_____	_____
Springs	_____	_____
Rims	_____	_____
Brakes	_____	_____

SPECIFICATIONS
A-48-DH

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

B. WEIGHT DISTRIBUTION: (Continued)

The successful vendor shall provide two (2) decals with the above information inside the truck operator door and the height information on Page 3. A copy of the decals shall be provided with the pilot model.

Engineering Concurrence:

This specification and all specified components must be reviewed and approved by the successful Original Equipment Manufacturer (OEM). The installation of the specified components must be approved by the successful manufacturer's Engineering Department.

PENNSYLVANIA WEIGHT LAWS

* * * * * * * * * * * * * * * * *

Maximum GVWR for tandem axle truck is 54,000 LBS on the Federal Interstate System.
Maximum GVWR for tandem axle truck is 58, 400 LBS on State secondary road System.
Example: 18,000 LB is maximum legal weight on each tandem rear axle.
Federal Interstate.
36,000 LB is maximum legal weight on a tandem rear axle,
46,800 LB is maximum legal weight on a tandem rear axle,
State System.

C. POWER TRAIN OVERVIEW:

NOTE: LUBRICANTS FOR FRONT AXLE HUBS AND DIFFERENTIALS, MANUAL AND 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).

ENGINE

Minimum 370 hp NOTE: If additional HP is available, It may be included in an effort to give the Department the maximum available.

TRANSMISSION AUTOMATIC

Allison RDS 4500 6 speed per line item award.

REAR AXLE

46,000 LB axle/s-total.
Rear axle ratio (502) shall be selected using operation requirements defined in the intent statement.
Two other axle ratio computer runs shall be presented at the pre-build meeting.

SPECIFICATIONS
A-48-DH

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

D. VEHICLE COMPONENTS:

1. ALARM - BACKUP:

ECCO 450 shock mounted.

2. AXLE FRONT:

20,000 LB capacity "I" beam type, minimum, relative to weight distribution.
The front axle grease fitting locations must be provided with zerks.
Stemco, oil seal assembly or approved equal.
RE: Above GAWR minimum relative to Engineering Department weight distribution chart.

3. AXLE REAR:

Air ride suspension.
Suspension shall be tailored to axle loads and shall be adequate to sustain maximum GVW without overload or permanent set.
Stemco rear wheel seals, (Guardian).
All rear axle hardware shall be grade 8, with self-locking nuts.
The rear axle housings shall not be aluminum or lightweight component type.

NOTE: Twin screw rear. Power in both rear axles with driver controlled diff lock.

4. BRAKES:

Full air anti-lock in compliance with the most current FMVSS requirements.
Air compressor with dash-mounted gauge(s).
The air tank or tanks shall be mounted as required by the paint machine manufacturer.
Buzzer-type, low air pressure with light as indicator.
Parking brake warning light.
Spring-type, rear wheel-parking brake, size 30/30 chambers with proper brackets to obtain the following.

SPECIAL NOTE: Rear brake chambers mounted to provide adequate road clearance and for paint gun carriage mounted forward or above axle REF: MGM Model 30 chambers. (No substitute, standardization).

Automatic air tank drain valve with heater on the (first) tank. (Ref: Bendix). DV-2 drain valves with heater. Each of the remaining air tanks shall have a manual drain valve.
Air dryer installed with heater. Per: Haldex Dryest or Bendix AD-IP
Dryer installation shall be in concurrence with the air compressor manufacturer’s recommendations.
16.50 inch x 7 inch or 18 inch x 7 inch rear brakes.
“S” cam single anchor pin or quick-change type, double-anchor pin.

SPECIFICATIONS
A-48-DH

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

D. VEHICLE COMPONENTS: (Continued)

4. BRAKES: (Continued)

16.50 inch x 6 inch “S” cam steer axle brake (no substitute, standardization).
16.50 inch x 7 inch or 18 inch x 7 inch rear brakes.
“S” cam single anchor pin or quick-change type, double-anchor pin.
16.50 inch x 6 inch “S” cam steer axle brake (no substitute, standardization).
Quick change type single or double anchor pin if drum-type brakes are furnished.
All electrical connectors for drain valve and air dryer shall be covered with heat shrink material or have sealed connections.
Drum brakes shall have automatic slack adjusters and they shall be clearance-sensing type only with adjustment on application of the brake (no substitute).

5. CAB:

Aluminum or steel cab (low tilting type).
One or two-piece windshield. The windshield shall provide optimum square footage of glass to ensure operator visibility.
Seats: Driver's seat and passenger seat shall be high back adjustable BOSTROM Air 905 Series with lumbar support or National 195 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. A bellow-type protective skirt shall cover the seat suspension mechanism. Color coordinated to cab interior.
Deluxe fresh air hot water heater, manufacturers highest output.
LED Cab clearance lights
Dual windshield defrosters.
Dual windshield wipers: Heaviest arms and linkages available, maximum length.
Washer tank: Minimum capacity one (1) GAL of washer fluid. Shall be filled with an anti-freeze type solvent.
Inside dome lights, two (2), one over each seat.
All grab handles: Adequate entry and exit handles shall be furnished to provide "optimum safety" for field personnel. Handles shall be covered with non-skid paint.
Dual inside sun visor.
Mirror(s): On both sides. 6 inch x 16 inch, minimum, west coast type convex mirrors. Mirrors and arms maybe stainless steel, aluminum or chrome.
Dual electric horns and air horn.
Tinted safety glass throughout AST-l.
Door windows shall be roll down type if available from O.E.M.
All controls and knobs shall be properly identified.

SPECIFICATIONS
A-48-DH

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

D. VEHICLE COMPONENTS: (Continued)

5. CAB: (Continued)

Areas likely to be walked or stepped on shall be Bustin No. NST4 full size or Ohio Grating No. JA2119SG4 serrated or IKG Industries Type B54 serrated swage lock, with end band. The size and strength shall be in accordance with the truck manufacturer's step design but the material shall be as noted above. The outer step edge must be serrated in lieu of plain, smooth metal edge. All edges shall be banded (skirting) on the outer perimeter. Overlay not acceptable. Top of the first step shall be (approximately) 21 inch above ground. Step design and material shall be the same design and material on the left and right side.

The cab floor covering shall be heavy-duty rubber with closed cell rubber or heavy felt backing.
Driver armrest left and right side.
CB power connectors, (1) one pair, dash mounted. Both male/female ends shall be supplied per EQN -78.
Emergency triangle warning kit, with hold down, (Ref: KD610-4645, KD Lamp Co. Tel: (513-621-4211) or equal stored (fastened) in the cab.
If air ride cab suspension is available, it shall be included.
Steering wheel diameter shall be 18 inch (approx.).
AM/FM radio with weather band
There shall be a Roadwatch PN #849-0006-000 installed (Sprague Controls, Tel: 1-800-441-2048).

6. AIR CONDITIONING:

Integral air conditioner with heater. Manufacturer's highest output available.
Cab and rear shelter shall be separate systems

7. CHASSIS:

C.A. dimension, and wheelbase shall be determined by the manufacturer to provide optimum weight distribution.
The main frame shall be full length, including the required AF for paint gun carriage.
License plate bracket rear.
Splash guards per EQN-66

8. DRIVE LINE/CENTER BEARINGS:

Heavy-duty driveline shall be engineered and be compatible with the engine, drive train and transmission.
GLIDECOAT splines, or approved equal.
"Factory balanced" with two Zerks per universal joint.
SPICER 1760 or ROCKWELL 176N drive line, minimum.
The heavy-duty center bearing shall be engineered with due consideration to the drive shaft angles, length, location, proper bolting based upon engine and transmission selection.
This applies if center bearing is required.

SPECIFICATIONS
A-48-DH

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

D. VEHICLE COMPONENTS: (Continued)

9. ELECTRICAL:

Primary wire and battery cables shall be copper, negative ground.
Batteries: Four (4), heavy-duty, 12-volt, maintenance-free, BCI Group Size 31, with stud-type posts and anti-corrosion treatment on each terminal. 2500 total cold cranking amperes (CCA) at 0 degrees F. 882 minutes of total reserve capacity at 80 degrees F as per SAE, REF. DELCO.

Battery Mounting: It shall include the following:

a) 0.25 inch 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).
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. All wire splices must take place inside corrosion proof weather resistant box. Splices outside of these boxes are not permitted.
Alternator: Delco 160 amp minimum, high performance, solid state.
Starter motor: With thermal overcrank protection and high torque capacity. Suitable for the diesel engines offered as per starter manufacturer's recommendation. Ref: Delco - Remy, 37 MT (with OCF) for engines up to 500 cubic inch (unless replaced by Delco 41 MT) or 42 MT (with OCP) for engines 501 cu in and above. (No substitute, standardization). Battery cable from battery negative terminal to starter motor or frame.
Alternator and starter mounting bolts: Grade 8.
Electrical chassis wiring harness: Body lighting and wiring Truck-Lite or Grote. All lights shall be sealed, and shock mounted.
Flasher: Heavy-duty electrical.
Note: If an audible alarm is supplied for 4 ways and turn signals, it shall have on/off capability.
All exposed junctions: Waterproof and sealed against salt.

10. ENGINE:

See POWER TRAIN OVERVIEW for acceptable engines.
Replaceable heavy-duty, full-flow type filter(s) and oil filter(s) as recommended by the engine manufacturer, bearing a legible OEM part number.
Cooling system: The largest factory available capacity compatible with engines and transmission referenced. With overflow recovery system and visual level indicator.
Radiator core and shell: Shall be manufacturer's heaviest construction grade radiator available.

SPECIFICATIONS
A-48-DH

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

D. VEHICLE COMPONENTS: (Continued)

11. ENGINE ACCESSORIES:

The oil dipstick must have tubing and dipstick of sufficient length to provide reasonable access.

Coolant filter/conditioner: Sized for and compatible with the cooling system. Ref: PERRY, Tel: (405) 672-2311 or manufacturers recommended system.

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

Fan: Auto/manual controlled fan as per manufacturer's recommendations.

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).

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, it shall be acceptable.

Cruise control: Factory

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

Hoses: The air induction system and large cooling-system hoses shall be clamped with 0.625 in wide, 150 in. lb stainless steel, constant-torque spring-loaded worm clamps. Ref:: WITTEK MANUFACTURING 312-492-9400, BREEZ CLAMP CO. Tel: 4l2-639-39-3571, constant-torque clamps with liner for silicone hoses. Cooling system hoses 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. Ref: GATES, GOODYEAR or equal. Silicone radiator and heater hoses.

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

Drive belts: Cog belts, or serpentine.

SAE #1 engine bolt circle to accommodate transmission specified.

Engine Alarm System: High temperature, and low oil, and low water level shall incorporate a bell and light system.

Minimum 2 stage compression engine brake. Engine brake shall be concurrent with OEM's recommendations while offering maximum capability.

12. EXHAUST:

Vertical tailpipe and muffler system or approved horizontal muffler and vertical tail pipe. System shall be directed straight up to offer maximum platform availability.

Tailpipe with raincap or elbow.

The muffler and tail pipe shall be shielded or insulated to protect personnel from burns when entering or exiting the cab and platform area. The shield shall be 180 degrees to 360 degrees and shall be of non-rustable material such as stainless steel or aluminum. RE: RIKER or equal.

SPECIFICATIONS
A-48-DH

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

D. VEHICLE COMPONENTS: (Continued)

13. FAST LUBE OIL CHANGE SYSTEM (FLOCS):

This system will be installed with all the fittings, brackets, clamps and hoses. The system will be compatible with all fittings presently used by the Department. The Chief, Equipment Division, prior to installation will approve the final placement of the male half of the snap coupler on the equipment.
REF: AEOQUIP or prior-approved equal.
Ref: No. **EQN-351A**.
There shall be a "FLOCS connections" decal to direct the operator.

14. FRAME AND FRAME EXTENSTION:

The Resisting Bending Moment (RBM) shall be a minimum of 1,000,000 inch LB per rail, for the entire length of the frame including any frame liners, except where engine and radiator adjustments are required. Frame material shall be of at least 110,000-psi yield strength. (Drop frames are not acceptable).
Minimum frame REM shall be approved by manufacturer's Engineering Department.
Main frame and any required liners shall be either straight channel or offset channel, full length. No welding shall be done and no holes drilled on the main frame rails without approval of the frame manufacturer.
There shall be no front or rear frame extension. Bolt-on or welded extension will not be accepted. The vendor shall select main frame rails of adequate length to suit the body/platform.
Front bumper shall be steel. Bumper shall be directly mounted to the frame.

15. 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 gauge 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
Hourmeter that records only when the engine is running, Ref: DATCON or equal shall be readable from the driver's seat.
Speedometer with odometer.
Tachometer
Voltmeter
Parking brake indicator light.
Digital speedometer mounted within operator's line of sight.

16. PAINT:
Cab, shelter and all above deck items and wheels shall be painted PENNDOT yellow, Ref: Dupont 6808 for shade only.
Aluminum deck, rail/railings and ladders shall not be painted.
Conspicuity per **EQN-127A**.

SPECIFICATIONS
A-48-DH

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

D. VEHICLE COMPONENTS: (Continued)

17. SAFETY:

All Grab Handles: Adequate entry and exit steps shall be furnished to provide "optimum safety" for field personnel. Handles shall be painted with non-skid paint. Ref: E-Z Trac, 1-800-527-9921

All steps shall be BUSTIN No. NST4 full size or OHIO GRATING No. JA2119SG4 serrated or IKG INDUSTRIES Type BS4 serrated swage lock with end band. The size and strength shall be in accordance with the truck manufacturer's step design but the material shall be as noted above. The outer step edge must be serrated in lieu of plain, smooth metal edge. All edges shall be banded (skirting) on the outer perimeter. All steps shall be reinforced to ensure that they can support 250 LBS per square feet. Overlay not acceptable.

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 or externally in close proximity to the cab (if external, it shall have a weatherproof cover) for easy and quick access. Ref: 2A: 10B:C.

All exposed coolers and/or evaporators shall have expandable metal covers.

There shall be a minimum of one (1) warning light mounted on the shelter and one (1) on a pedestal just aft and above cab. One (1) light shall be visible for on-coming traffic and one (1) light for traffic from the rear. The lights shall be per **EQN-210A**.

18. STEERING:

Power steering: Dual integral or single integral types hydraulic with right wheel power assist cylinder. With stops to prevent damage to system.

GLIDECOAT steering shaft.

Steering system (e.g. flow, pressure, relief valve etc.) shall be selected considering the full front axle loading. Ref: ROSS or SHEPPARD gear assembly.

Hydraulic supply pump: Vane type or roller type, with sufficient oil flow to permit one (1) steering wheel revolution per second, in a "park" condition. Ref:: VICKERS Inc. V-20 Tel: 215-638-4700, Eaton or 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.

19. TANK - FUEL:

Safety - type fuel tank(s) as per the requirements of FMVSS.

100 GAL minimum total capacity, single, mounted tank.

Cylindrical shaped with formed sump.

Aluminum or stainless steel unpainted.

Tank mounting hardware and brackets shall be stainless or aluminum heavy duty brackets with rubber gaskets.

Dual tanks are unacceptable.

SPECIFICATIONS
A-48-DH

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

D. VEHICLE COMPONENTS: (Continued)

20. TRANSMISSION: See POWER TRAIN OVERVIEW for acceptable transmission.

The transmission must be capable of maintaining a constant speed of 5 to 15 MPH without upshifting or downshifting. Equipped with a single or three gear charging pump.
Console control shall incorporate all hold identifications.

External auxiliary oil cooler for transmission as required due to prolonged transmission converter operation in second gear, maximum cooler size must be provided to keep oil at acceptable operating temperature. (Water to oil type cooler).

The transmission and rear axle shall be geared to provide a working or operating ground speed of 0 to 900 feet per minute and a road speed of up to 60 MPH.

The truck transmission and rear axle shall be geared for efficient operational speeds of between 5 and 15 MPH at a maximum grade of 17%. The transmission hold system shall be furnished to provide these operational speeds without the transmission overshifting and seeking a new gear as these needs vary regardless of highway gradient.

21. WHEELS/TIRES:

GENERAL:

The truck/s shall be equipped with Accuride 10 hole (No Substitute) hub piloted steel disc wheels for radial tubeless tires front and rear.
The wheel end shall be equipped with outboard cast brake drums.
All tires will be radials no substitute.
The front tires shall be the widest possible while satisfying all OEM requirements.
Truck and body company shall ensure proper sized tires and wheels for GVWR provided.

Wheel-Guard Separators:

The wheel ends shall be equipped with the Accuride 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.

22. COLLISION AVOIDANCE SYSTEM:

There shall be a CAS installed. Monitor 5.6 inch LCD color monitor min. shall be cab mounted.
Camera shall be mounted on the rear of the truck.
CAS shall be weatherproof.
Ref: Wintron Technologies 1-800-865-5351
Preco Safety Products 1-800-453-1141

SPECIFICATIONS
A-48-DH

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. PAINT MACHINE OVERVIEW:

1. PAINT:

The complete machine and all components, including tanks, compressor, etc., shall be painted PENNDOT yellow. Ref: Dupont 6808 for shade only.

2. PLATFORM:

The vendor shall supply and install on the chassis a steel platform of adequate size to accommodate all relevant equipment. The platform framing shall be constructed of a minimum 2 inch x 4 inch steel structural channels so as to support all required equipment mounted on it, spaced on approximately 16 inch centers. The spacing of these cross members shall not exceed 17 inch.

The platform shall be supported by either two (2) structural steel I beams or structural "C" channel. "U" bolts or grade 8 bolts with self-locking nuts and two (2) shear plates shall be utilized to secure the platform to the truck chassis frame. Mounting practices in accordance with N.T.E.A. standards.

The platform shall be fabricated to provide adequate spacing for servicing and maintenance of the paint supply lines, fittings, and valves. Spacers utilized between the truck frame and body longitudinal shall be manufactured to support a fully loaded platform without flexing or twisting.

The platform ladders and handrails shall be steel. The platform shall be a minimum 8 GA non-skid steel safety tread surface. All handrails shall be covered with anti-skid paint. A minimum of four (2 per side, 1 front side and 1 rear side) ladders shall be furnished to provide easy access to the platform. Ladders shall be Bustin aluminum No. NST4 full size or Ohio Grating No. JA2119SG4 serrated or IKG Industries Type BS4 serrated swage lock, with end band. The size and strength shall be in accordance with the truck manufacturer's step design, but the material shall be as noted above. The outer step edge must be serrated in lieu of plain, smooth metal edge. All edges shall be banded (skirting) on the outer perimeter. Overlay not acceptable. Top of the first step shall be (approximately) 21 inch above ground. Step design and material shall be the same design and material on the left and right side. Ladder/s safety chain shall be no more than 72 inches from ground level.

Rear wheel fenders, aluminum, for protection of the rear axle tires, shall be affixed to the bottom of the platform. Fenders shall be constructed in accordance with the Commonwealth's vehicle inspection requirements.

A one inch minimum steel OD railing shall be installed around the platform where necessary and bolted in place. The height of the railing shall be a minimum of 42 inch. Railing shall be properly supported (e.g. plates and/or gussets) at its base to eliminate flexing of the deck.

The installation shall be engineered and approved by the vehicle manufacturer and shall have no adverse effect upon the manufacturer's warranty.

SPECIFICATIONS
A-48-DH

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. PAINT MACHINE OVERVIEW: (Continued)

3. BUMPER - REAR:

The rear bumper shall be a minimum of nine 9 inch wide and extend across the rear of the truck platform. It shall be at least 22in/55cm above the road surface and have an open grip strut surface. The bumper support shall be at least 4 inch x .1875 inch channel steel on both sides and the bumper should be of (minimum) .250 inch thick aluminum channel with welded end section forming a strong box section. Piping shall not extend below rear bumper. Rear bumper shall be properly supported to ensure it can support 250 LBS per square feet. Final design shall be approved at the pre-build meeting.

4. TOOL BOX:

Two aluminum weatherproof, lockable tool boxes, 16 inch x 19 inch x 18 inch (approximately) shall be supplied. The box shall have a drop door with safety latch. Any special tools needed for. adjustments or disassembly of the various machine components shall be furnished in each box. Final locations of these toolboxes shall be decided at the pre-build meeting.

5. REAR SHELTER AND EQUIPMENT:

Ref: **EQN-370** – 60”
The entire shelter shall be structurally self sufficient and rubber shock mounted to the cross channels.

Seats: Two (2) shall be high back adjustable BOSTROM Air 915 Series with mechanical lumbar support or National 195 Series with mechanical lumbar support or DuraForm Air Command Series (fabri form cushions with mechanical lumbar support) with body cloth insert and three-point retractable seat belt. A bellow-type protective skirt shall cover the seat suspension mechanism. No substitute on seats referenced. Color coordinated to cab interior.
There shall be one armrest left/right side, mounted to the inside shelter wall at each window.
Fire Extinguishers Quantity of two (2) rechargeable dry-chemical 10 ABC-rated fire extinguishers (1 per l.D.17 and 1 in or in close proximity to the rear shelter) with charge condition indicator (gauge) and red waterproof snap-on covers.
Extinguishers shall be in compliance with NEPA #385 and federal motor carrier safety regulation.
C.B. power connectors (1 pair) in rear operator's cab per **EQN-78**.
Both male/female ends shall be supplied
Installed 40 channel CB radio mounted in the truck cab and rear shelter with antenna
There shall be a shelter operated emergency paint shut-off for the paint supply. There shall be one at the pump and one on each side at the rear of the truck.
There shall be black rubber matting throughout the inside of the shelter floor.
Air Conditioning - The paint machine shelter shall be air conditioned with duct work to both operators,, utilizing a separate system.
Six (6) accessory hooks - 2 front and 4 rear.
Two (2) lights inside rear operators cab one over each operator station.

SPECIFICATIONS
A-48-DH

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. PAINT MACHINE OVERVIEW: (Continued)

5. REAR SHELTER AND EQUIPMENT: (Continued)

Heater with fan shall be provided with controls in the paint operator area. A summer by-pass valve shall be provided to eliminate heat in cab in summer months. Hoses shall be protected against bursting hot water on operators in case a hose bursts. Silicone heater hoses shall be utilized and previously specified clamps in the truck specifications. Heater shall have sufficient BTU output to keep this area comfortable and shall be a copper cored unit.
Inside bulkheads and roof shall be insulated. (Ref: D B Engineering "tan" cab insulation, Tel: (214) 484-8890, or equal. All edges shall be sealed with a silicone sealer.
Tinted safety glass throughout AST-I or metal panels in the bottom of the shelter to be determined at the pre-build meeting.
There shall be a sliding front access door.
The top step entering the rear shelter shall be approximately 9 inches deep.

6. INTERCOM SYSTEM:

David Clark Communication System Model U-3800 (no substitute).
12 VDC power source.
The intercom system shall be for a four (4) station intercom system.
System to include two each “one ear” headset/microphones in the truck drivers cab Ultra Lite #40410-G-02.
Two (2) each on the rear bulkhead behind seats and all related equipment.
Headsets shall cover two (2) ears.

All station shall have necessary jumper cords to assure when headsets are plugged into the master station or remote headset stations that the headset cords do not interfere with the user.

7. GUIDANCE SYSTEMS:

Optical Sight: An optical sight, Holovision or Equal mounted to the front of the chassis cab, shall have minimum projection beyond the front bumper. The sight shall include the necessary light source, lens system and mirrors to project a virtual image of a luminous sighting pattern onto a distant target. A housing, mounting and adjustment linkage shall be provided for positioning and clamping the optical sight in the best location for the vehicle operation.
Truck cab must be able to tilt with site installed.

LASER DOT GL-3000-P on cab roof.

SPECIFICATIONS
A-48-DH

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. PAINT MACHINE OVERVIEW: (Continued)

8. CONTROL CENTER:

Aluminum or steel control center shall be provided, per **EQN-370**. The control center shall be shock mounted to the platform assembly mounted inside the rear shelter in a manner to allow ample access for servicing and repair.

Control panel shall be mounted in an inclined position, so that it can be observed from either operator's position

Each gauge and valve on the control panel will be identified with a photosensitive label, metallic type and/or engraved laminated plastic.

A removable plate will allow access to the interior for service.

A 125 PSI safety valve shall be located on the rear of the panel air manifold.

(REF: EQN-220 and EQN-221)

9. SPRAY EQUIPMENT CONTROL BOXES:

Each striping machine supplied shall be provided with two additional control boxes for use as a spare (one for the left gun carriage and the other for the right gun carriage).

The spray equipment shall be electrically controlled by means of solenoid valves and individual push button switches. The switches mounted in a portable control box at each operator's position.

The control box shall also contain a master control light and indicating light to "ready" positions and an advance-retard control skip-line mechanism to cover the new line over the one already on the road. A plug, coiled cord and thumb-button control for manual restriping shall be provided at each location.

Wiring harness shall be connected to control boxes by means of a male, female type connect for quick replacement of control boxes.

All line pattern combinations, skip line mechanism actuation, and skip line combinations can be obtained by activating only one switch that also simultaneously activates or resets the skip line mechanism. The remaining push buttons shall be an off switch (master), connected in such a way that when activated, it will turn off and cancel any of the above selected patterns, as well as automatically reset the skip line mechanism to a ready position. Provision shall be made so that sphere gun(s) may be controlled by activating a switch on the portable control box for independent and/or simultaneous binder and glass sphere operation. Each sphere gun shall have a separate switch for activation.

The entire switch assembly shall be removable from the control box holder for servicing and is attached by a pin connector type harness to an electrical junction box.

Carriage up/down switch shall be mounted in the control boxes.

10. ELECTRONIC SKIP LINE SYSTEM:

The M-B Model 3000 paint line controller is a micro processor based control unit based on the Intel MCS-51 series of micro controller IC's or LDI Model SE-88 Micro Processor based on the Electronic Counters & Controls, Inc., Model 484 Series of micro processors.

Two skip line systems shall be included in the striping unit that will allow remote application of various pre-selected line patterns on the fly.

Each skip line system shall be capable of regulating separate cycle lengths. The system shall also be capable of automatic and manual regulations of all guns on both the left and right carriages. It shall also include advance/retard controls and automatic reset, located on control boxes.

SPECIFICATIONS
A-48-DH

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. PAINT MACHINE OVERVIEW: (Continued)

10. ELECTRONIC SKIP LINE SYSTEM:: (Continued)

The controller shall be of plug-in design, panel mounted.
The system shall retain programmed and accumulated information, even if the emergency off (Master) switch is activated, or the unit is removed from the vehicle.
The unit shall operate entirely upon 12 V.D.C.
Calibration to the vehicle is performed electronically by the controller programming.
The microprocessor shall include a feature to allow short skips to be painted left and/or right side/s (independently only).
Controls and functions of the controller shall be programmable by means of membrane touch panel switches to the nearest .1 of a feet.
The unit shall be capable of accuracy to within .1 of a feet at speeds of up to 40 MPH.
Paint and cycle lengths may be varied from .1 feet to 99.9 feet. There shall be provisions for reset, to zero or instant start of stripe for full cycle lengths. Also, there shall be provision for instant-off.
The controller may be configured to begin the painting cycle with the paint line or the skip interval.
There shall be provision to move the stripe/cycle function ahead or back while the vehicle is in motion.
The controller will be equipped with a LCD or LED display having a capability of displaying a minimum of 6 characters of a minimum .500 inch height.
Vehicle speed to nearest .1 MPH and time will be displayed simultaneously on the readout of the controller.
An odometer function will indicate the total distance the vehicle has traveled. The controller will accumulate and display, upon command, the total length in feet and miles of paint applied by each individual gun and the total length of feet or miles of paint applied by all guns.
The controller shall provide for delay of glass bead application for complete coverage of painted line.

The controller shall have two auxiliary gun outputs. These outputs will follow the paint gun output and will be individually programmable by the operator for two separate, simultaneous parameters.

a. Preset speed - the auxiliary gun outputs will be enabled when the vehicle speed is at or above a present value.
b. Gun spacing delay - the auxiliary gun outputs will go on at a preset distance after the paint gun output goes on, and will turn off at the same preset distance after the paint gun goes off.

Printer shall, upon command, print out the date, headings for each gun, the number of feet of paint applied (total) by each gun and the total number of feet of paint applied by all paint guns, upon command. A conversion of feet to miles shall be available upon command (calculator is unacceptable).

Digital speed meter system: A digital speed meter shall be included on the striping unit that will allow the truck operator to read his speed in three digits to aid him in maintaining a desired speed.

The system shall include a digital control meter having three .6250 inch high digits, readable without error from approximately 20 feet with the last digit reading 1/10 MPH and having and accuracy of 1/2% of full scale.

SPECIFICATIONS
A-48-DH

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. PAINT MACHINE OVERVIEW: (Continued)

10. ELECTRONIC SKIP LINE SYSTEM:: (Continued)

The signal source shall be a logic level pulsating unit driven by the transmission or driveline. The 12 VDC power for the system shall be provided by the truck alternator and be separately fused.

Footage counters A 6 digit reset type footage meter shall be provided mounted in the cab console, one for each gun position capable of measuring actual number of feet of line applied (adjustable).
Printer shall be included.

11. BINDER SPRAY EQUIPMENT:

The binder spray guns shall be a KAMBER Model 38-20 with shrouds (largest size possible) of the non- bleeder type, capable of processing material in quantities which will yield a 4 inch line of .015 inch wet film thickness to be put down at speeds of 3 to 22 MPH.

Paint sensors n/a

A moisture injection system shall be incorporated on each paint gun air atomized inlet port. This system shall include a manual shot-off needle valve which shall monitor the amount of water to be injected in the air atomized line of the gun, and a double check valve with mixing chamber valve to mix the water with the air at the inlet.

There shall be a "Tip Cleaning System" that allows for water to be injected into the airline without necessitating the turning off of the air.

12. PAINT TANKS:

This machine shall have paint storage capacity of a minimum 1000 GAL in an un-pressurized container designed for two-color paint application.
One compartment baffled for yellow, minimum 600 GAL.
One compartment baffled for white, minimum 400 GAL.
Each tank shall have an air type mixer. On/off speed controls in rear shelter – N/A.
The top of each compartment shall be painted with anti-skid surface to prevent foot slippage when wet or damp.
A Bustin type aluminum thread stepladder with handrails covered in anti-skid paint should be affixed to the platform side of the paint compartment for access to the inspection lids.

Paint Tank Low Level Indicator System – n/a

Liquid Level Calibration Rod -Two inverted aluminum direct reading rods calibrated in gallons shall be provided to indicate the paint quantity in each paint compartment. There shall be provisions made to store these rods vertically for traveling with a removable paint cup catch basin.
The container shall be constructed of minimum 10 gauge, 300 series, and stainless steel sheet. Appropriate baffling shall be installed inside each compartment.

SPECIFICATIONS
A-48-DH

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. PAINT MACHINE OVERVIEW: (Continued)

12. PAINT TANKS: (Continued)

The bottom of the container shall be constructed of .1875 inch type 300 series stainless steel sheet sloped to allow drainage from each compartment.
The internal structure of the paint tank shall include boltable removable stainless splash plates beginning a minimum of 2 inch from the top of tank.
The two compartments shall be fitted with individual removable top inspection openings.
Minimum diameter of the inspection opening shall be 9 inch.
The top of the storage containers shall be removable for ease of cleaning.
There shall be holes cut into internal baffles to facilitate pressure equalization.
There shall be 6 inch remaining at the top of the tank providing a splash area for sudden stops thus preventing paint from getting on lid gaskets or splashing on the platform.

Stainless steel formed channel, horizontal bracing shall include 10 gauge, 1.750 inch x 20 inch, gussets spaced approximately 10 inch between the formed channels, and fitted with a removable top.
Provisions shall be made for recirculation of heated paint in and out of each paint heater. The system shall include stainless steel valving and gauges to regulate the recirculating flow from the rear control panel.
There shall be a recirculation control handle mounted left and right side inside and outside the rear shelter.

The material supply system shall be so arranged as to permit the simultaneous operation of one or two spray guns on the left carriage and one or two spray guns on the right carriage.

13. PAINT STRAINERS:

Two strainers, having a minimum surface area of 100 square inch, shall be inserted in each system. One strainer shall be located at the bottom of the paint compartment and the other located at the bottom of the heat exchanger within the heat manifold. Clean out covers on the heat manifold shall be positioned such that they are readily accessible. Paint line outlets on the clean out covers will not be acceptable. The strainer assembly shall be connected to the paint supply lines by means of a union coupler. Valving shall be provided to isolate the strainer from the feed line for the cleaning of all piping, strainer, valves, and clean out fittings. The intent of this submission is to ensure that the paint machine is plumbed such that: all valves are readily accessible to operators, a clean out fitting is provided at each junction and strainer clean outs are conveniently located for periodic maintenance. The inlet and outlets to the paint supply pumps shall not be hard piped. They shall be flexible to allow for variations in chassis movement and pump variations.

SPECIFICATIONS
A-48-DH

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. PAINT MACHINE OVERVIEW: (Continued)

14. PAINT PUMPS- TOTAL OF (2) TWO PUMPS

There shall be a shelter operated emergency paint shut-off for the paint supply.
Two pumps, one for white and one for yellow minimum, for supplying paint to the spray guns shall be "Wilden" model T-8, Proflow anti stall air diaphragm type using type 300 series stainless steel wetted parts. The pump housing shall be of stainless steel. The pumps shall be equipped with Neoprene diaphragms and ball valves.
The pumps shall be air driven, and shall have means to control the paint pressure to provide the required line width and wet film thickness of .012 inch to .015 inch when operating in the range of 10 to 22 MPH.

Each pump shall be equipped with an automatic pressure dampening device, which shall be speed-regulated volume controlled.
The pumps are to be supplied with mufflers
There shall be an additional oilier line and filter to dissipate moisture in the pump.
Valve seats and clamp bands shall be stainless steel.
Pumps shall have stainless steel wing-nuts included at all accessible connections available.
The pumps shall be mounted at a highly accessible location and plumbed by means of unions or another acceptable method to provide pump repair or replacement in a matter of minutes.
The quick attach system must be provided for both pumps, to be removed from both sides.

15. GLASS SPRAY EQUIPMENT:

The glass guns shall be KAMBER Model 90 except the shroud, shall be chrome-plated and mounted behind each paint spray gun.
The automatic sphere guns shall be capable of dispensing 30 LBS of spheres per minute with 60 LBS air pressure on the glass tank.

To ensure the proper angle of entry of the glass sphere spray into all types of fast-dry paint spray and to ensure maximum sphere dispersion and retention the distance between the spray gun orifice and sphere gun orifice must be adjustable. Also the entry angle for the glass sphere spray must be adjustable and the glass sphere dispersion pattern shall be controlled by a water knife mounted at the head of each glass sphere gun.

The spray equipment shall be controlled by means of solenoid valves and toggle switches mounted in lightweight, portable control boxes, assembled in such a manner that various standard line combinations can be obtained by one, but not more than two toggle switches. The glass guns shall be coordinated with the binder guns for simultaneous operations to provide complete coverage to the paint line as the vehicle speed varies.

SPECIFICATIONS
A-48-DH

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. PAINT MACHINE OVERVIEW: (Continued)

15. GLASS SPRAY EQUIPMENT: (Continued)

An individual control switch shall be incorporated in the glass system for independent operation of each glass gun. An emergency recessed shutdown switch activating a ball type valve through an air-operated cylinder shall be mounted within the reach of each operating station, or a single system ”main valve" shutdown system.

16. GLASS SUPPLY:

A.S.M.E. pressure vessel (1), shall be supplied having a minimum total capacity of 7,000 LBS of glass spheres.

The container shall be tested for 110 PSI working pressure; hydrostatically tested at 165 PSI. Be of all steel construction and shall have a top opening not less than 24 inch diameter. It shall be equipped with an air release valve, a 0-160 PSI pressure gauge and a 110 PSI pressure relief valve. Pressure vessel shall be piped in such a way as to insure that total capacity can be utilized. A filter shall be sized (volume) at system requirement plus 50% to allow for quick delivery.

A vacuum glass fill unit having a minimum capacity of 250 LBS of glass per minute, under a 20 inch suction lift at 20% humidity with dry beads. By creating a vacuum in the glass tank, glass shall be drawn into the tank without contaminating the vacuum unit. The glass spheres shall be conveyed under pressure to automatic glass sphere dispensing guns through rubber pressure hoses. A heavy-duty self-evacuating oil and moisture remover shall be installed in the airline after a finned after cooler extending from the compressor to the air control center.

The glass filling system shall include a 17 feet long, 2 inch I.D. fill hose with male and female quick coupler fittings. Glass beads and paper bag remnants shall be strained through two mesh strainers securely attached to the funnel. The splitter bar shall be recessed from the top of the container.

The Department will accept an approved equal vacuum fill glass sphere system. Any approved equal system shall have written approval by Chief, Equipment Division.

Each bead manifold shall have an end cleanout plug of at least 2 inch in diameter
There shall be a bead shut-off control valve after the manifold at each carriage.

There shall be a minimum 1 inch I.D. line from compressor to jet pump to allow for increased vacuum for beads.
Vibrators – n/a
Bead Tank Low Level Indicator System – n/a

17. SPRAY GUN CARRIAGE ASSEMBLIES:

Two-gun carriage assemblies shall be supplied, mounted behind the vehicle's rear wheels to support and align the spray guns.

The main carnage, mounted on the left side of the vehicle, shall have provisions for attaching three (3) single color spray guns, and three (3) glass sphere guns.

SPECIFICATIONS
A-48-DH

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. PAINT MACHINE OVERVIEW: (Continued)

17. SPRAY GUN CARRIAGE ASSEMBLIES: (Continued)

One (1) wheel, mounted on a caster axle, mounted on the front of each carriage shall support the carriage and maintain it at a fixed height from the road surface. A parallel system shall connect the carriage to a cross slide and maintain the spray guns normal to the road surface at all times.

A pneumatic lift cylinder electronically controlled from the operator's position shall be used to raise the carriage and a safety chain to support it during transporting.

There shall be an automatic carriage stops for 6 inch and 8 inch lines.

Trucks shall be able to paint 4-6-8 inch wide lines.

The cross slide supporting the carriages shall allow the carriages to be positioned for transport within the width of the vehicle platform, and permit its use anywhere from this location outward for a distance of 60 inch. The slide mechanism shall consist of a square tube within a square tube telescoping design with adjustable UHMW, self-lubricating material bearing areas. The outer tubing shall contain a two-channel bearing mater configuration, mounted on a retainer, which will permit adjustment as the material wears. The inner slide will have four pads of the UHMW material bolted and shimmed to its innermost slide section. The pads shall allow shimming of the pads, as the pads wear, without disassembly of the slide.

The second spray gun carriage shall be provided and mounted on the right side of the striping unit approximately on the same lateral axis as the main carriage to align and support two (2) single color spray gun and two (2) glass sphere guns. The design of this carriage shall be identical to the main carriage and it shall also extend 60 inch from the edge of the platform.

Each carriage slide shall be equipped with a hydraulic cylinder for moving the carriage to any point within its operating range. The cylinder shall be double action, controlled by a power steering control, and the steering wheel with check valves shall be conveniently located for the operator.

Hydraulic power for the operation shall be supplied by a high pressure hydraulic pump driven by the auxiliary engine.

Stacked body, quick acting solenoid valves with a manual override feature shall be mounted on each carriage. Valves shall be equipped with balanced spool design to minimize backpressure or restriction in exhaust. The valves shall be of a one-piece aluminum design body and mounted inside a weatherproof steel box with a removable lid for servicing.

All bearings or pivots on the carriage, linkage or slide, where relative motion occurs, shall be fitted with replaceable, anti-friction bearings or replaceable bearing and pressure lubrication fittings.

With both carriages extended a span of 17feet between the inner edges of the two lines shall be obtained.

Each carriage shall be provided with 2 L.E.D. safety lights (amber –forward, red - rear). Both lights on each carriage to flash alternately.

18. HEATING SYSTEM - PAINT:

The paint heating system shall maintain a minimum paint temperature of 120 degrees F at the material spray guns during operation with all three guns in simultaneous use at an ambient temperature of 40 degrees F and a vehicle speed of 5 MPH – 22 MPH. A digital thermostatic control unit shall have a variance of no more than +/- 3 degrees. Glycol temperature shall be a minimum of 140 degrees (operating range 140 degrees to 170 degrees F).

SPECIFICATIONS
A-48-DH

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. PAINT MACHINE OVERVIEW: (Continued)

18. HEATING SYSTEM - PAINT: (Continued)

A tubular liquid heater built in accordance with the A.S.M.E. Boiler and Pressure Vessel Code and carrying the appropriate official A.S.M.E. code symbol shall be provided. The heater shall have wet base construction with the combustion area surrounded by liquid backed heating surface at the top, bottom, sides and back. Each heater tube shall have an “economizer" which causes the gases to rub against the sides of the tubes to increase heat absorption and efficiency. The entire heating surface shall be accessible for cleaning.

A gun type burner shall fire the heater. The burner shall have an adjustable combustion heat assembly, which permits regulation of the air distribution, whether the firing rate is at the low, intermediate, or high portion of the firing range. The burner shall operate with zero to a trace of smoke and shall be insensitive to draft or moderate backpressure variation, and highly resistant to pulsation. Most importantly, the burner shall be easy to install adjust and service. The heater exhaust shall be primed by a draft eductor. The vertical exhaust shall be shielded by stainless steel or chrome (360 degrees around) its entire length.

RE: Gun type burner Wayne no substitute. The unit shall include, but not be limited to all controls, and shall receive its fuel from the compressor’s fuel tank as referenced under air compressor.

The heater unit shall be capable of supplying a minimum of 326,250 BTU/HR to heat the traffic line marking material. The heater shall have the necessary safety devices to prevent overheating or excessive water pressure. One digital thermostat shall be provided, which will cycle the heater to maintain the proper operating temperature within plus or minus 5 degrees F. The fuel supply shall be filtered through a replaceable fuel filter conveniently located in the fuel supply line. Fuel supply lines shall be braced and protected.

The paint heating system shall include two shells and tube type heat exchangers, having stainless steel tubes, shells and end bonnets. They shall be 4-pass type units each having a minimum heat transfer area of 87 square feet. Structural steel brackets shall be provided for mounting the exchangers in a vertical position with the inlet and outlet extending below the vehicle platform. Each exchanger shall be mounted in a separate housing with double hinged doors to reduce the length of the circulating hoses and should be located as close to the outriggers as practical.

A circulating pump for the heated hoses shall be provided along with a fiberglass insulation blanket and an aluminum cover around each exchanger shall retain heat with in the exchangers.

Three 12-volt DC electric motor driven circulating pumps shall be provided. The pumps shall have a minimum rating of 25 GPM when pumping the heated water/ethylene glycol solution. The pumps shall control:

Pump A: Circulation to the white paint heat exchanger
Pump B: Circulation to the yellow paint heat exchanger
Pump C: Recirculation system

One digital thermostatic heat control shall monitor the paint temperature in each heat exchanger. These controls shall turn off or on the pump feed to the heat exchangers at the temperature setting required by the paint manufacturer. The thermostat for water shall be mounted in the top of the heat exchanger. Paint thermostat shall be mounted in the bottom of the heat exchanger outlet side.

SPECIFICATIONS
A-48-DH

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. PAINT MACHINE OVERVIEW: (Continued)

18. HEATING SYSTEM - PAINT: (Continued)

Incorporated in the water/glycol system will be an expansion tank at a convenient location to either fill or check the fluid level of the system. A 14 LB. automotive type pressure cap shall be used to regulate the system. An overflow tube from the cap neck down through the platform shall safely vent any overflow to the ground.

Three (3) automatic air vents shall be installed in the heating system to vent any excess air that gets trapped in the heating system. One air vent shall be in the expansion tank line at the top of the boiler and one on each heat exchanger. (MANUAL AIR VENTS WILL NOT BE ACCEPTED).

There shall be sufficient ball valves installed on the heating system to isolate any and all component(s) without draining the entire system. IE heat exchanger shall have one ball valve on the inlet and outlet.

All pipes shall be insulated to thermally retain glycol/paint temperatures.

The furnace shall have a remote reset button in the vehicle cab.

NOTE: PROBES SHALL BE STAINLESS STEEL.

19. PIPING/VALVES:

All hard piping that comes in contact with paint shall be stainless. All other hard piping systems glycol, air (except for air atomization) and bead systems shall be piped using galvanized pipe. All valves that are used in conjunction with the paint shall be stainless flange-type with Teflon inserts or a three piece bolted in-line valve. (The DynaQuip three piece bolted in-line maintenance valve, or equal is acceptable.) All hardware for bolting flanges shall be, at a minimum; cadmium plated nuts, bolts and washers. All valve handles shall be heavy-duty type cast or minimum .250 inch thick material. All piping, tubing or hosing used on the vehicle shall be firmly attached to the frame or bed, except where flexible conduits are required for proper operation or service. Clamps shall be per attached drawing EQN-94. Rigid piping paint lines and fittings shall be 2 inch standard weight stainless steel. Non-rigid paint conductors shall be flexible Teflon solvent resistant material of at least .500 inch ID and shall be capable of withstanding pressures up to 200 PSI. Non-rigid airlines shall be at least .3750 inch ID, flexible Teflon solvent resistant material. Additionally all nipples, plugs, reducers shall be stainless. Piping between the pump and heat exchanger shall be 2 inch (min). Nylon braided Teflon lined hosing shall not be incorporated. Hard pipe shall be used.

Each conductor to the spray guns shall be the totally enclosed core of a circulating hot water glycol heated system that extends to within 6 inch of the spray gun. To prevent heat loss, there will be no more than 14 inch of paint plumbing without jacketed conductor after the heat exchangers.

All external-atomizing airlines shall be at least .3750 inch Teflon or nylon tubing.

The pumps, hoses, fittings, valves and all components that are in contact with the marking materials, solvent trays, water tank(s) and lines shall be stainless steel and impervious to the standard paint solvents, including: (1) V M & P Naptha, (2) Acetone, (3) Lactol Spirits, (4) Hexane, (5) Methyl Ethyl Keton and (6) Water.

SPECIFICATIONS
A-48-DH

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. PAINT MACHINE OVERVIEW: (Continued)

19. PIPING/VALVES: (Continued)

The paint fill supply piping shall be furnished with 2 inch quick coupler male fittings and cover caps when not in use. Two 16 feet hoses shall be furnished with female quick couplers compatible with the male fittings. RE: Pipe nipples and quick couplers. All paint fills shall be at curbside.
There shall be shields mounted over each of the paint supply line shut-off actuators.
Clamping: REF:**EQN-94**.

20. AIR COMPRESSOR AND ACCESSORIES:

Oil flooded rotary screw type. Unit to equipped anti-friction 100,000 hour average minimum life bearings. Shall be completely manufacturer and assembled by the manufacturer of the utility air compressor.

The compressor shall be equipped with an external single point lifting bail and exhaust rain cap. The compressor shall be designed to meet EPA sound level requirements of 76 DBA at 7 meters. There shall be an access step provided curbside.

Housing:A sheet metal housing shall be provided to enclose the machine. The enclosure shall be constructed so as to be easily removed and have sufficient accessible openings such that normal maintenance may be performed. Removable side panels for total access shall be provided. All panels to be padlock able. There shall be easy access to the oil dipstick. The exterior of the entire cabinet shall be painted PENNDOT yellow (Ref: Dupont 6808 for shade only). There shall be nothing mounted directly to the compressor. Any accessories to be mounted in this area shall be mounted on a table assembly above the compressor. The compressor shall be easily removable from left or right side without necessitating extensive plumbing removal.

Mounting: Engine and compressor to be securely mounted on a welded steel frame with vibration isolators. Forklift pockets to be located on each end of the machine for ease of installation and removal. Length shall not exceed 86 inch and width shall not exceed 38 inch. Approximate height shall be 51 inch.

Engine: John Deere 4045 or pre-approved equal water-cooled diesel engine. The engine shall have an intermittent horsepower rating sufficient to properly and adequately operate the compressor and all auxiliaries at the speed required to develop rated compressor capacity. The engine shall be equipped with a full flow oil filter and auxiliary PTO drive and third sleeve. Rated speed shall not exceed the manufacturer's published intermittent speed for compressor application. The exhaust muffler shall be located within the enclosure, and the exhaust pipe shall extend above the enclosure a minimum of 18 inch.

SPECIFICATIONS
A-48-DH

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. PAINT MACHINE OVERVIEW: (Continued)

20. AIR COMPRESSOR AND ACCESSORIES: (Continued)

Exhaust: The unit's exhaust shall be directed topside as is main engine exhaust. All pipes shall be rigidly supported to eliminate noise. Exhaust fumes in the area of the rear operator's compartment will not be acceptable. All exposed exhausted pipes shall be shielded and insulated to protect the operators with stainless steel or chrome shield. The I.D. of the exhaust shall be engineered to minimize engine backpressure so as not to affect the engine's warranty provisions.

FLOCS: Fast oil change system with all fittings, brackets, clamps and hoses as per attached drawing **EQN-351A**. The placement of the male half of the snap coupler will be on the curbside of the vehicle. A FLOCS connection decal shall direct the operator. Ref: Aeroquip or approved equal.

Drains: Remote compressor oil drain/s shall be provided for ease of maintenance.

Starting: The engine shall be equipped with a 12-volt electrical starter and alternator. Alternator shall be solid state minimum 78 amp. Maintenance-free batteries rated at a minimum l200CCA shall be provided. Delco 1110 or Gould G-27, no substitute. Batteries shall be located accessible through a removable panel for ease of maintenance.

Air Filter: Separate two-stage, heavy duty, dry type air filters shall be provided for the engine and the compressor. Filters shall be located inside the enclosure and so located to draw ambient air into the intake filters.

Air Receiver: The compressor shall be 250 CFM.
The receiver shall be ASLME code approved rated at a minimum of 175 PS10 working pressure. It shall be equipped with an ASME air pressure relief valve located upstream of the final oil separator and two .750 inch service valves located adjacent to the instrument panel. The receiver shall be of a size equal to 1.4 cubic feet for every 250-CFM of air delivered.

Desiccant Filter: Desiccant filter and unit. It shall be placed in the airline at the compressor output end, after the cooler, with adequate drainage control. One(1) on each side, before carriage Units shall be mounted away from the frame rail for ease of maintenance. One (1) water separator shall be provided before the desiccant filters.

Cooler: There shall be a cooler installed after the air compressor. The cooler shall be of sufficient size to ensure dry air is delivered.

INSTRUMENTS: A lockable instrument panel, protected against vandalism shall be supplied. Panel to include compressor air pressure gauge, hourmeter, engine water temperature and oil pressure gauge, air compressor discharge temperature gauge, start-stop control, automatic idle warm up button, and circuit breaker. Operating instructions shall be located on or adjacent to the instrument panel such that they are visible when facing the panel.

Controls: Pneumatic inlet control system automatically modulates engine speed and compressor output from zero to 100 percent in response to air demand.

SPECIFICATIONS
A-48-DH

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. PAINT MACHINE OVERVIEW: (Continued)

20. AIR COMPRESSOR AND ACCESSORIES: (Continued)

Cooling: Engine and compressor cooling system shall allow rated air delivery and pressure operation continuously in 120 degree F ambient temperatures. Cool outside ambient air to be drawn through finned tube oil to air heat exchangers by an efficient engine mounted fan. Compressor fan guard shall be provided. Oil cooler face accessible for cleaning by means of a service door. Engine radiator maximum top tank temperature 90 degrees F above ambient. Oil cooler rated at 150 PSIG with maximum cooler inlet temperature of 120 degrees F above ambient.

Protection: Machine to automatically shut down in case of high compressor temperature, high engine coolant temperature or low engine oil pressure. Additional protective features to be provided to include automatic blowdown valve, receiver relief valve, and minimum pressure valve with integral check valve.
Air compressor shall automatically shut down in case of high compressor temperature, high engine coolant temperature, or low engine oil pressure. Additional protective features to be provided to include automatic blowdown valve, receiver relief valve and minimum pressure valve with integral check valve.

Fuel tank: The compressor shall draw fuel from the truck fuel tank. A check valve shall be incorporated into the fuel line to prevent fuel returning to the tank.
There shall also be a shut-off (isolation) valve.
The compressor fuel tank shall be utilized to fire the burner/boiler. Tank shall be marked kerosene only. It shall be behind a pad lockable door.

21. SOLVENT SYSTEM:

An air operated, solvent gun cleaning system shall be installed on the striping machine.
It shall consist of one (1) 30 gallon A.S.M.E. stainless steel pressure tank with safety valve and valves and piping necessary to introduce solvent into the atomizing airline of the paint gun, as well as valved into each paint line. The system shall be installed so that the spray gun tip can be cleaned. A Teflon sealed pug valve for the guns shall be installed in the control panel for this purpose. A solvent injector system shall be piped into the heated hose after the main line valve at the outlet of the heat exchanger. This system must be as close as possible to the outlet of the heat exchanger to clean the heated manifolds and hoses for overnight storage.
There shall be a drain line for each tank one left and one right side of the truck.
All piping to be solvent resistant type. The tank construction shall be with a 4 inch threaded top opening and a full steel skirt support.

SPECIFICATIONS
A-48-DH

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. PAINT MACHINE OVERVIEW: (Continued)

22. FIRE SUPPRESSION SYSTEM:

There shall be a fire suppression system installed for the truck engine compartment and for the 250-CFM air compressor cabinet compartment.

A unit shall be mounted in each compartment in such a manner as to allow for maximum coverage of the affected area. The unit shall be an automatic system, while retaining the ability to be manually actuated from the cab. There shall be an audible and visual alarm in clear sight for the vehicle operator.
System shall be a Jomarr Model VT-6 Fire Suppression System (Tel: 717-346-5330).

23. REAR WARNING DEVICE:

Message Board with Radar::

The striping unit shall have a LED changeable message board with radar mounted on the rear of the unit. The message board shall be 36 inch X 72 inch with a pivot type mount. Operational controls for message board shall be in the rear shelter, within easy reach of an operator.

Ref: American Signal Model GP-232 SERIES with radar

NOTE: MESSAGE BOARD WITH RADAR ONLY, SHALL BE PROVIDED.

24. NIGHT LIGHTS:

Five (5) 12V floodlights to illuminate the striper during night time operations. The lights shall be located as follows:
One (1) light located on the front of the truck cab, to illuminate the pointer, with control switch inside the truck cab.
Four (4) lights total, 2 on each carriage location one front and one rear. A switch for these lights shall be located in the rear operators control panel.
Two (2) lights inside rear operators cab one over each operator station

25. HOSE REELS:

There shall be one 25 foot air hose reel, location to be determined at the pre-build meeting.
There shall be one 25 foot water hose reel mounted pm the rear step bumper curbside.

SPECIFICATIONS
A-48-DH

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. PAINT MACHINE OVERVIEW: (Continued)

26. SPARE PARTS:

There shall be one spare spray system gun.
There shall be six spare spray system gun tips.
There shall be one spare bead gun.
There shall be one spare regulator repair kit.
There shall be two control boxes, one left, and one right.

Two (2) paint pump overhaul kits per truck, for pumps supplied with striper.

The successful manufacturer shall furnish a suggested parts stocking overview listing an essential parts inventory to support the field in areas of high turnover items frequently required to keep our units in an uptime mode.

27. MISCELLANEOUS ITEMS:

a. Equipment Identification:

All valves, switches, gauges and controls shall be labeled with permanent tags as to their function. There shall be a written operator's manual that shows all valve functions.

b. Decals and Signs (Tank):

The tanks shall have material warning decals on both sides to alert nearby personnel of tank contents and operational hazards. Paint white or yellow, solvent, beads, etc. (See attached regulation. NOTE: Any and all regulation(s) that are current shall supersede the attached).

The truck shall have warning placards located on the front, back and both sides. All markings as required by HAZMAT Regulations shall be employed.

c. Wiring and Lighting:

All lights provided on the paint body shall meet the Pennsylvania Motor Vehicle code and all wiring shall be run in vapor-proof type tubing with screwed junction box connections. Wiring shall conform in gauge and color with ATA standard. Combination turn signals and brake lights, side marker lights and reflectors, as manufactured by Grote, shall be rubber shock mounted. No splices shall be made outside of a sealed junction box.
The location of these junction box/s for service access will be decided at the pre-build meeting.

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II. DRAWINGS:

EQN-66	dated	Rev.	11-28-06	2 sheets	SPLASH GUARDS-RUBBER
EQN-78	dated	Rev.	10-27-06	1 sheet	CB CONNECTORS
EQN-94	dated	Rev.	10-02-06	1 of 2 sheets	HOSES &COUPLER
EQN-127A	dated	Rev.	11-03-06	1 sheet	CONSPICUITY
EQN-210A	dated	Rev.	01-25-07	1 & 2 of 3 sheets	REVOLVING WARNING LIGHT
EQN-220	dated	Rev.	11-27-06	1 sheet	CONSOLE LAYOUT
EQN-221	dated	Rev.	11-27-06	1 sheet	CONSOLE LAYOUT
EQN-330	dated	Rev.	01-09-02	3 sheets	OPERATING MODES
EQN-351A	dated		10-20-06	2 sheets	FLOCS
EQN-370	dated	Rev.	05-22-02	3 sheets	PAINT TRUCK-REAR SHELTER

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 between the vendor and the Specification Unit.

DRAWINGS APPEAR AT THE END OF THE SPECIFICATIONS.

SPECIFICATIONS
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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 within a maximum of 90 days after the pilot model is accepted.

Manuals may be supplied on CD Disc in lieu of paper manuals.

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IV. TRAINING:

Mechanic:

The successful vendor shall provide services of qualified factory trained technicians for not more than __1__ training sessions of not more than __30__ hours at __1__ PennDOT locations to train personnel for in-depth preventive maintenance, overhaul and review of the proper usage of parts and service manuals, as well as component/system adjustments that need to be monitored at specified service intervals.

Operator:

The successful vendor shall provide services of qualified factory trained technicians for not more than __1__ training sessions of not more than __30__ 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 Equipment 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 Equipment 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. Section E.3.

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A-48-DH

059500

TRUCK, PAINT, WATER BORNE, AUTOMATIC

DISTRICT 4-0

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19. Tank - Fuel
20. Transmission
21. Wheels/Tires
22. Collision Avoidance System

SPECIFICATIONS
A-48-DH

I. GENERAL TRUCK SPECIFICATION: (Continued)

E. Paint Machine Overview

1. Paint
2. Platform
3. Bumper
4. Toolbox
5. Rear Shelter and Equipment
6. Intercom System
7. Guidance Systems
8. Control Center
9. Spray Equipment Control Boxes
10. Electronic Skipline System
11. Binder Spray Equipment
12. Paint Tanks
13. Paint Strainers
14. Paint Pumps
15. Glass Spray Equipment
16. Glass Supply
17. Spray Gun Carriage Assemblies
18. Heating System - Paint
19. Piping/Valves
20. Air Compressor and Accessories
21. Solvent System
22. Fire Suppression System
23. Rear Warning Device
24. Night Lights
25. Hose Reels
26. Spare Parts
27. Miscellaneous Items

II. DRAWINGS

III. MANUALS

IV. TRAINING

V. WARRANTY

SPECIFICATIONS
A-48-DH

I. GENERAL TRUCK SPECIFICATIONS:

A. INTENT STATEMENT:

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 **240** days after receipt of the purchase order by the successful bidder.

The maximum height of the paint striper and appurtenances **shall not exceed 11ft 6inch** in a working mode.

It is the intent and purpose of this specification to secure a truck-mounted, self-contained striping machine. The machine shall apply reflectorized lines utilizing solvent or water borne traffic paint. The equipment must maintain and be capable of applying the paint and/or marking material at ambient temperatures as low as 40 degrees F, on a clean and dry surface. The machine shall also maintain and be capable of applying conventional or fast-dry traffic paint materials at speeds of up to 22 MPH at a maximum .015 millage/0.381 wet without beads. The intent is to comply with federal safety standards for noise, noise emission generated by the unit (and they shall not exceed federal regulations in the chassis cab, right rear operator's seat, and left rear operator's seat). The machine shall be capable of simultaneously applying three lines in two colors of the marking material in either a solid or skip pattern or combination of these patterns at the operating conditions specified above. All truck parts and materials shall conform to the truck manufacturer's recommendations and the applicable S.A.E., A.W.S. and A.S.M.E. minimum standards. Certified A.S.M.E. welders shall perform all welding on the entire unit, where such certification is required.

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

The successful low bidder will be required to construct a pilot machine, and this machine must be delivered to the Department of Transportation for inspection and testing per I.A. This machine must meet all the mechanical requirements of the specifications and then must be field tested and fully meet all the performance tests required in the specifications.

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

Center lines (solid and skip) and edge lines, individually and simultaneously, shall be applied by the machine using the above-specified paints. The lines shall be applied at a rate of 0.012 inch ± 0.002 in/0.005cm for edge lines and 0.015 in/0.038cm ± 0.002 inch for centerlines. Lines shall be clearly defined with sharp clean edges and ends. Drop on type glass beads that meet Pennsylvania specification shall be applied at a rate of 6 to 12 pounds per gallon, ± 1/4 LB, of paint applied to the road surface.

The machine shall be required to satisfactorily apply white and yellow standard dry and white and yellow fast-dry paints. This paint material and an appropriate quantity of glass beads shall be supplied by the Pennsylvania Department of Transportation for testing.

SPECIFICATIONS
A-48-DH

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

A. INTENT STATEMENT: (Continued)

The appearance of the lines produced by the paint striper shall be uniform in appearance, free from variations in line width and line length (skip cycle). Also variations created by action of the paint pumps will not be accepted. As an example, when a right white edge line (solid line) is being applied simultaneously with a skip white lane line, there shall exist no visible change in the solid white edge line at the point where the skip white lane line gun cuts turns on or off. Any non-uniformity which exists in either line (visible to the human eye, either day or night) shall be causes for rejection of the paint striper.

The vehicle shall have a gradeability of 15% when loaded to maximum G.V.W.R. without exceeding the engine manufacturer's recommended maximum R.P.M., based on maximum net torque. Painting speeds of 5 MPH to 22 MPH must be obtainable without erratic shifting of the automatic transmission. The ratio of the rear axle and transmission shall be geared to maintain a 65 MPH reasonable speed for inter job transporting on expressways without exceeding recommended engine R.P.M. of approximately 2100 to produce the most fuel efficient unit possible without excessive engine R.P.M. and premature wear.

The below-described schedule shall be followed with the successful vendor in the delivery inspection.

After the prototype machine is delivered to the specified location, as shown on the purchase order, the first 10 working days shall be utilized by inspecting the machine to determine whether or not the machine complies with the specifications.

The performance tests shall not begin until (if it does meet the specifications in the initial inspection) the striping unit complies exactly with the mechanical and electronic/electrical requirements of the specifications.

After the completion of the inspection of the mechanical and electronic/electrical components of the machine, performance tests for acceptance shall begin. Performance tests require the machine to use Commonwealth of Pennsylvania standard traffic line marking paints.

Thirty (30) calendar days, weather permitting, (in initial paint season) shall be allowed for the manufacturer to complete the performance tests as specified in the following paragraphs of these specifications. The 30-calendar day performance test period shall begin after the machine complies exactly with the specifications for mechanical and electronic/electrical components.

If the manufacturer's machine does not perform as required with the 30 calendar days, then the Department reserves the right to reject it. In addition, if this prototype machine is rejected, the manufacturer shall not be allowed to supply the type of machinery described in this specification on the re-bid of the truck-mounted striper machines by the Department.

The Department's Traffic Engineering Division personnel and Equipment Division personnel shall make final inspection and performance tests and acceptance of the machine. Prior to acceptance, the machine shall be successfully operated to the satisfaction of the Traffic Engineering Division personnel, and the Equipment Division personnel with and without assistance form technicians furnished by the vendor.

SPECIFICATIONS
A-48-DH

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

A. INTENT STATEMENT: (Continued)

If the prototype machine meets all the mechanical requirements, electrical/electronic requirements, and then successfully passes the performance tests, then permission will be granted by the Department to the bidder to proceed with fabrication of other machines covered under this contract. If the prototype machine fails to pass the mechanical requirements, electrical/electronic requirements, or the performance test requirements as specified in this contract, the Department reserves the right to reject the prototype machine and any subsequent machines listed on this order.

B. WEIGHT DISTRIBUTION:

The complete unit in the full mode shall be weighed to verify that each G.A.W.R. is sufficient relative to the final product presented. The chassis weight and paint body weights shall be furnished separately. The C/G of "both" chassis and paint body shall be provided by means of an engineering drawing(s) at the pre-build meeting.

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 components
5. Rims
6. Suspension
7. Brakes
8. Any other items as required

The power package required must be compatible with respect to the engine, transmission, axles, hydraulic system, and power steering in order to meet the requirements specified herein.

SPECIFICATIONS
A-48-DH

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

B. WEIGHT DISTRIBUTION: (Continued)

The following information is required:

TRUCK FRONT		TRUCK REAR	TOTAL
	Chassis Weight		
	Diesel Fuel Gal. @ 7 LB per Gallon		
250	Truck Driver & Misc. Weight		
	Body & Related Platform Components		
	Paint Payload @ 13.0 LB per Gallon		
	Beads Payload @ 7000 LB		
	Paint operators 2 @ 200 LB Each		
	TOTAL WEIGHT		

Any weight distribution sheets reflecting total in excess of the Pennsylvania legal truck weight laws will not be acceptable.

Vendor shall submit this information with the pilot model and each unit weighed by a certified weigh master and signed.

Chassis _____Front Axle
Without Paint _____Rear Axle
_____Total

Truck GAWR's as Built

	Front GAWR:	Rear GAWR:
Axle	_____	_____
Tires	_____	_____
Springs	_____	_____
Rims	_____	_____
Brakes	_____	_____

SPECIFICATIONS
A-48-DH

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

B. WEIGHT DISTRIBUTION: (Continued)

The successful vendor shall provide two (2) decals with the above information inside the truck operator door and the height information on Page 10. A copy of the decals shall be provided with the pilot model.

Engineering Concurrence:

This specification and all specified components must be reviewed and approved by the successful Original Equipment Manufacturer (OEM). The installation of the specified components must be approved by the successful manufacturer's Engineering Department.

PENNSYLVANIA WEIGHT LAWS

* * * * * * * * * * * * * * * * *

Maximum GVWR for tandem axle truck is 54,000 LBS on the Federal Interstate System.
Maximum GVWR for tandem axle truck is 58, 400 LBS on State secondary road System.
Example: 18,000 LB is maximum legal weight on each tandem rear axle.
Federal Interstate.
36,000 LB is maximum legal weight on a tandem rear axle,
46,800 LB is maximum legal weight on a tandem rear axle,
State System.

C. POWER TRAIN OVERVIEW:

NOTE: LUBRICANTS FOR FRONT AXLE HUBS AND DIFFERENTIALS, AUTOMATIC AND 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).

ENGINE

Minimum 370 hp NOTE: If additional HP is available, it may be included in an effort to give the Department the maximum available.

TRANSMISSION AUTOMATIC

ALLISON RDS 4500 6 SPEED PER LINE ITEM AWARD

REAR AXLE

46,000 LB axle/s-total.
Rear axle ratio (502) shall be selected using operation requirements defined in the intent statement.
Two (2) other axle ratio computer runs shall be presented at the pre-build meeting.

SPECIFICATIONS
A-48-DH

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

D. VEHICLE COMPONENTS:

1. ALARM - BACKUP:

ECCO 450 shock mounted.

2. AXLE FRONT:

20,000 LB capacity "I" beam type, minimum, relative to weight distribution.
The front axle grease fitting locations must be provided with zerks.
Stemco, oil seal assembly or approved equal.
RE: Above GAWR minimum relative to Engineering Department weight distribution chart.

3. AXLE REAR:

Air ride suspension.
Suspension shall be tailored to axle loads and shall be adequate to sustain maximum GVW without overload or permanent set.
Stemco rear wheel seals, (Guardian) (no substitute, standardization).
All rear axle hardware shall be grade 8, with self-locking nuts.
The rear axle housings shall not be aluminum or lightweight component type.

NOTE: Twin screw rear. Power in both rear axles with driver controlled diff lock.

4. BRAKES:

Full air antilock in compliance with the most current FMVSS requirements.
Air compressor with dash-mounted gauge(s).
The air tank or tanks shall be mounted as required by the paint machine manufacturer.
Buzzer-type, low air pressure with light as indicator.
Parking brake warning light.
Spring-type, rear wheel-parking brake, size 30/30 chambers with proper brackets to obtain the following.

SPECIAL NOTE: Rear brake chambers mounted to provide adequate road clearance and for paint gun carriage mounted forward or above axle REF: MGM Model 30 chambers. (No substitute, standardization).

Automatic air tank drain valve with heater on the (first) tank. (Ref: Bendix). DV-2 drain valves with heater. Each of the remaining air tanks shall have a manual drain valve.
Air dryer installed with heater. Per: Haldex DRYest or Bendix AD-IP
Dryer installation shall be in concurrence with the air compressor manufacturer’s recommendations.
16.50 inch x 7 inch or 18 inch x 7 inch rear brakes.
“S” cam single anchor pin or quick-change type, double-anchor pin.

SPECIFICATIONS
A-48-DH

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

D. VEHICLE COMPONENTS: (Continued)

4. BRAKES: (Continued)

16.50 inch x 6 inch “S” cam steer axle brake (no substitute, standardization).
16.50 inch x 7 inch or 18 inch x 7 inch rear brakes.
“S” cam single anchor pin or quick-change type, double-anchor pin.
16.50 inch x 6 inch “S” cam steer axle brake (no substitute, standardization).
Quick change type single or double anchor pin if drum-type brakes are furnished.
All electrical connectors for drain valve and air dryer shall be covered with heat shrink material or have sealed connections.
Drum brakes shall have automatic slack adjusters and they shall be clearance-sensing type only with adjustment on application of the brake (no substitute).

5. CAB:

Aluminum or steel cab (low tilting type).
One or two-piece windshield. The windshield shall provide optimum square footage of glass to ensure operator visibility.
Drivers and passenger windows shall be roll down type. Sliding are unacceptable.
Seats: Driver's seat and passenger seat shall be high back adjustable BOSTROM Air 905 Series with lumbar support or National 195 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. A bellow-type protective skirt shall cover the seat suspension mechanism. Color coordinated to cab interior.
Deluxe fresh air hot water heater, manufacturers highest output.
Cab clearance lights
Dual windshield defrosters.
Dual windshield wipers: Heaviest arms and linkages available, maximum length.
Washer tank: Minimum capacity one (1) GAL of washer fluid. Shall be filled with an anti-freeze type solvent.
Inside dome lights, two (2), one over each seat.
All grab handles: Adequate entry and exit handles shall be furnished to provide "optimum safety" for field personnel. Handles shall be covered with non-skid paint.
Dual inside sun visor.
Mirror(s): On both sides. 6 inch x 16 inch, minimum, west coast type heated with round convex mirrors heated. The wires shall be fitted in such a way that the mirror glass/element can be changed by unplugging the two-wire lead. Mirrors and arms maybe stainless steel, aluminum or chrome. There shall be an automatic control box for changing lanes, backing, merging, etc. as per Lanescan – ARCM Corp. 877-272-6111 Mirrors shall be mounted as far forward as possible.
Dual electric horns and air horn.
Tinted safety glass throughout AST-l.
Door windows shall be roll down type if available from OEM.
All controls and knobs shall be properly identified.

SPECIFICATIONS
A-48-DH

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

D. VEHICLE COMPONENTS: (Continued)

5. CAB: (Continued)

Areas likely to be walked or stepped on shall be Bustin No. NST4 full size or Ohio Grating No. JA2119SG4 serrated or IKG Industries Type B54 serrated swage lock, with end band. The size and strength shall be in accordance with the truck manufacturer's step design but the material shall be as noted above. The outer step edge must be serrated in lieu of plain, smooth metal edge. All edges shall be banded (skirting) on the outer perimeter. Overlay not acceptable. Top of the first step shall be (approximately) 21 inch above ground. Step design and material shall be the same design and material on the left and right side.

The cab floor covering shall be heavy-duty rubber with closed cell rubber or heavy felt backing.
Driver armrest left side and right side.
CB power connectors, (1) one pair, dash mounted. Both male/female ends shall be supplied per EQN -78.
Emergency triangle warning kit, with hold down, (Ref: KD610-4645, KD Lamp Co. Tel: (513-621-4211) or equal stored (fastened) in the cab.
If air ride cab suspension is available, it shall be included.
Steering wheel diameter shall be 18 inch (approx.).
AM/FM radio with cassette
There shall be a Roadwatch PN #849-0006-000 installed (Sprague Controls, Tel: 1-800-441-2048).

6. AIR CONDITIONING:

Integral air conditioner with heater. Manufacturer's highest output available.
Cab and rear shelter shall be separate systems

7. CHASSIS:

C.A. dimension, and wheelbase shall be determined by the manufacturer to provide optimum weight distribution.
The main frame shall be full length, including the required AF for paint gun carriage.
License plate bracket rear.
Splash guards per EQN-66

8. DRIVE LINE/CENTER BEARINGS:

Heavy-duty driveline shall be engineered and be compatible with the engine, drive train and transmission.
GLIDECOAT splines, or approved equal.
"Factory balanced" with two Zerks per universal joint.
SPICER 1760 or ROCKWELL 176N drive line, minimum.
The heavy-duty center bearing shall be engineered with due consideration to the drive shaft angles, length, location, proper bolting based upon engine and transmission selection.
This applies if center bearing is required.

SPECIFICATIONS
A-48-DH

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

D. VEHICLE COMPONENTS: (Continued)

9. ELECTRICAL:

Primary wire and battery cables shall be copper, negative ground.
Batteries: Four (4), heavy-duty, 12-volt, maintenance-free, BCI Group Size 31, with stud-type posts and anti-corrosion treatment on each terminal. 2500 total cold cranking amperes (CCA) at 0 degrees F. 882 minutes of total reserve capacity at 80 degrees F as per SAE, REF. DELCO.

Battery Mounting: It shall include the following:

a) 0.25 inch 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).
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. All wire splices must take place inside corrosion proof weather resistant box. Splices outside of these boxes are not permitted.
Alternator: Delco 160-amp minimum, high performance, solid state.
Starter motor: With thermal overcrank protection and high torque capacity. Suitable for the diesel engines offered as per starter manufacturer's recommendation. Ref: Delco - Remy, 37 MT (with OCF) for engines up to 500 cubic inch (unless replaced by Delco 41 MT) or 42 MT (with OCP) for engines 501 cubic inch and above. (No substitute, standardization). Battery cable from battery negative terminal to starter motor or frame.
Alternator and starter mounting bolts: Grade 8.
Electrical chassis wiring harness: Body lighting and wiring Truck-Lite or Grote. All lights shall be sealed, and shock mounted.
Flasher: Heavy-duty electrical.
Note: If an audible alarm is supplied for 4 ways and turn signals, it shall have on/off capability.
All exposed junctions: Waterproof and sealed against salt.

10. ENGINE:

See POWER TRAIN OVERVIEW for acceptable engines.
Replaceable heavy-duty, full-flow type filter(s) and oil filter(s) as recommended by the engine manufacturer, bearing a legible OEM part number.
Cooling system: The largest factory available capacity compatible with engines and transmission referenced. With overflow recovery system and visual level indicator.
Radiator core and shell: Shall be manufacturer's heaviest construction grade radiator available.

SPECIFICATIONS
A-48-DH

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

D. VEHICLE COMPONENTS: (Continued)

11. ENGINE ACCESSORIES:

The oil dipstick must have tubing and dipstick of sufficient length to provide reasonable access.

Coolant filter/conditioner: Sized for and compatible with the cooling system. Ref: PERRY, Tel: (405) 672-2311 or manufacturers recommended system.

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

Fan: Auto/manual controlled fan as per manufacturer's recommendations.

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).

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, it shall be acceptable.

Cruise control: Factory

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

Hoses: The air induction system and large cooling-system hoses shall be clamped with 0.625 in wide, 150 inch LB stainless steel, constant-torque spring-loaded worm clamps. Ref:: WITTEK MANUFACTURING 312-492-9400, BREEZ CLAMP CO. Tel: 4l2-639-39-3571, constant-torque clamps with liner for silicone hoses. Cooling system hoses 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. Ref: GATES, GOODYEAR or equal. Silicone radiator and heater hoses.

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

Drive belts: Cog belts, or serpentine.

SAE #1 engine bolt circle to accommodate transmission specified.

Engine Alarm System: High temperature, and low oil, and low water level shall incorporate a bell and light system.

Minimum 2 stage compression engine brake. Engine brake shall be concurrent with OEM's recommendations while offering maximum capability.

12. EXHAUST:

Vertical tailpipe and muffler system or approved horizontal muffler and vertical tail pipe. System shall be directed straight up to offer maximum platform availability.

Tailpipe with raincap or elbow.

The muffler and tail pipe shall be shielded or insulated to protect personnel from burns when entering or exiting the cab and platform area. The shield shall be 180 degrees to 360 degrees and shall be of non-rustable material such as stainless steel or aluminum. RE: RIKER or equal.

SPECIFICATIONS
A-48-DH

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

D. VEHICLE COMPONENTS: (Continued)

13. FAST LUBE OIL CHANGE SYSTEM (FLOCS):

This system will be installed with all the fittings, brackets, clamps and hoses. The system will be compatible with all fittings presently used by the Department. The Chief, Equipment Division, prior to installation will approve the final placement of the male half of the snap coupler on the equipment.
REF: AEOQUIP or prior-approved equal.
Ref: No. **EQN-351A**.
There shall be a "FLOCS connections" decal to direct the operator.

14. FRAME AND FRAME EXTENSTION:

The Resisting Bending Moment (RBM) shall be a minimum of 1,000,000 inch LB per rail, for the entire length of the frame including any frame liners, except where engine and radiator adjustments are required. Frame material shall be of at least 110,000 PSI yield strength. (Drop frames are not acceptable).
Minimum frame REM shall be approved by manufacturer's Engineering Department.
Main frame and any required liners shall be either straight channel or offset channel, full length. No welding shall be done and no holes drilled on the main frame rails without approval of the frame manufacturer.
There shall be no front or rear frame extension. Bolt-on or welded extension will not be accepted. The vendor shall select main frame rails of adequate length to suit the body/platform.
Front bumper shall be steel. Bumper shall be directly mounted to the frame.

15. 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 gauge 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.
Hourmeter that records only when the engine is running, Ref: DATCON or equal shall be readable from the driver's seat.
Speedometer with odometer.
Tachometer
Voltmeter
Parking brake indicator light.
Digital speedometer mounted within operator's line of sight.

16. PAINT:

Cab, shelter, deck and all above deck items and wheels shall be painted PENNDOT yellow, Ref: Dupont 6808 for shade only.
Conspicuity per **EQN-127A**.

SPECIFICATIONS
A-48-DH

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

D. VEHICLE COMPONENTS: (Continued)

17. SAFETY:

All Grab Handles: Adequate entry and exit steps shall be furnished to provide "optimum safety" for field personnel. Handles shall be painted with non-skid paint. Ref: E-Z Trac, 1-800-527-9921

All steps shall be BUSTIN No. NST4 full size or OHIO GRATING No. JA2119SG4 serrated or IKG INDUSTRIES Type BS4 serrated swage lock with end band. The size and strength shall be in accordance with the truck manufacturer's step design but the material shall be as noted above. The outer step edge must be serrated in lieu of plain, smooth metal edge. All edges shall be banded (skirting) on the outer perimeter. All steps shall be reinforced to ensure that they can support 250 LBS per square feet. Overlay not acceptable.

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 or externally in close proximity to the cab (if external, it shall have a weatherproof cover) for easy and quick access. Ref: 2A: 10B:C.

All exposed coolers and/or evaporators shall have expandable metal covers.

There shall be a minimum of one (1) warning light mounted on the shelter and one (1) on a pedestal just aft and above cab. One (1) light shall be visible for on-coming traffic and one (1) light for traffic from the rear. The lights shall be per **EQN-210A**.

18. STEERING:

Power steering: Dual integral or single integral types hydraulic with right wheel power assist cylinder. With stops to prevent damage to system.

GLIDECOAT steering shaft.

Steering system (e.g. flow, pressure, relief valve etc.) shall be selected considering the full front axle loading. Ref: ROSS or SHEPPARD gear assembly.

Hydraulic supply pump: Vane type or roller type, with sufficient oil flow to permit one (1) steering wheel revolution per second, in a "park" condition. Ref:: VICKERS Inc. V-20 Tel: 215-638-4700, Eaton or 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.

19. TANK - FUEL:

Safety - type fuel tank(s) as per the requirements of FMVSS.

80 gallon minimum total capacity, single, mounted tank.

Cylindrical shaped with formed sump.

Aluminum or stainless steel unpainted.

Tank mounting hardware and brackets shall be stainless or aluminum heavy duty brackets with rubber gaskets.

Dual tanks are unacceptable.

SPECIFICATIONS
A-48-DH

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

D. VEHICLE COMPONENTS: (Continued)

20. TRANSMISSION: See POWER TRAIN OVERVIEW for acceptable transmission.

The transmission must be capable of maintaining a constant speed of 5 to 15 MPH without upshifting or downshifting. Equipped with a single or three gear charging pump.
Console control shall incorporate all hold identifications.

External auxiliary oil cooler for transmission as required due to prolonged transmission converter operation in second gear, maximum cooler size must be provided to keep oil at acceptable operating temperature. (Water to oil type cooler).

The transmission and rear axle shall be geared to provide a working or operating ground speed of 0 to 900 feet per minute and a road speed of up to 60 MPH.

The truck transmission and rear axle shall be geared for efficient operational speeds of between 5 and 15 MPH at a maximum grade of 17%. The transmission hold system shall be furnished to provide these operational speeds without the transmission overshifting and seeking a new gear as these needs vary regardless of highway gradient.

21. WHEELS/TIRES:

GENERAL:

The truck/s shall be equipped with Accuride 10 hole (No Substitute) hub piloted steel disc wheels for radial tubeless tires front and rear.
The wheel end shall be equipped with outboard cast brake drums.
All tires will be radials no substitute.
The front tires shall be the widest possible while satisfying all OEM requirements. Ref: 425
Truck and body company shall ensure proper sized tires and wheels for GVWR provided.

Wheel-Guard Separators:

The wheel ends shall be equipped with the Accuride 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.

22. COLLISION AVOIDANCE SYSTEM:

There shall be a CAS installed. Monitor 5.6 inch LCD color monitor min. shall be cab mounted.
Camera shall be mounted on the rear of the truck.
CAS shall be weatherproof.
Ref: Wintron Technologies 1-800-865-5351
Preco Safety Products 1-800-453-1141

SPECIFICATIONS
A-48-DH

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. PAINT MACHINE OVERVIEW:

1. PAINT:

The complete machine and all components, including tanks, compressor, etc., shall be painted PENNDOT yellow. Ref: Dupont 6808 for shade only.

2. PLATFORM:

The vendor shall supply and install on the chassis a steel platform of adequate size to accommodate all relevant equipment. The platform framing shall be constructed of a minimum 2 inch x 4 inch steel structural channels so as to support all required equipment mounted on it, spaced on approximately 16 inch centers. The spacing of these cross members shall not exceed 17 inch.

The platform shall be supported by either two (2) structural steel I beams or structural "C" channel. "U" bolts or grade 8 bolts with self-locking nuts and two (2) shear plates shall be utilized to secure the platform to the truck chassis frame. Mounting practices in accordance with N.T.E.A. standards.

The platform shall be fabricated to provide adequate spacing for servicing and maintenance of the paint supply lines, fittings, and valves. Spacers utilized between the truck frame and body longitudinal shall be manufactured to support a fully loaded platform without flexing or twisting.

The platform ladders and handrails shall be steel. The platform shall be a minimum 8 GA non-skid steel safety tread surface. All handrails shall be covered with anti-skid paint. A minimum of four (2 per side, 1 front side and 1 rear side) ladders shall be furnished to provide easy access to the platform. Ladders shall be Bustin steel full size or Ohio Grating serrated or IKG Industries serrated swage lock, with end band. The size and strength shall be in accordance with the truck manufacturer's step design, but the material shall be as noted above. The outer step edge must be serrated in lieu of plain, smooth metal edge. All edges shall be banded (skirting) on the outer perimeter. Overlay is not acceptable. Top of the first step shall be (approximately) 21 inch above ground. Step design and material shall be the same design and material on the left and right side. Ladder/s safety chain shall be no more than 72 inches from ground level. (Ladder location to be determined at pre-build.)

Rear wheel fenders, aluminum, for protection of the rear axle tires, shall be affixed to the bottom of the platform. Fenders shall be constructed in accordance with the Commonwealth's vehicle inspection requirements.

A one inch minimum steel OD railing shall be installed around the platform where necessary and bolted in place. The height of the railing shall be a minimum of 42 inch. Railing shall be properly supported (e.g. plates and/or gussets) at its base to eliminate flexing of the deck.

The installation shall be engineered and approved by the vehicle manufacturer and shall have no adverse effect upon the manufacturer's warranty.

SPECIFICATIONS
A-48-DH

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. PAINT MACHINE OVERVIEW: (Continued)

3. BUMPER - REAR:

The rear bumper shall be a minimum of nine 9 inch wide and extend across the rear of the truck platform. It shall be at least 22 inch above the road surface and have an open grip strut surface. The bumper support shall be at least 4 inch x .1875 inch-channel steel on both sides and the bumper should be of (minimum) .250 inch thick aluminum channel with welded end section forming a strong box section. Piping shall not extend below rear bumper. Rear bumper shall be properly supported to ensure it can support 250 LB per square feet. Final design shall be approved at the pre-build meeting.

4. TOOL BOX:

Two aluminum weatherproof, lockable tool boxes, 16 inch x 19 inch x 18 inch (approximately) shall be supplied. The box shall have a drop door with safety latch. Any special tools needed for. adjustments or disassembly of the various machine components shall be furnished in each box. Final locations of these toolboxes shall be decided at the pre-build meeting.

5. REAR SHELTER AND EQUIPMENT:

Ref: **EQN-370** – 60".
The entire shelter shall be structurally self sufficient and rubber shock mounted to the cross channels.

Seats: Two (2) shall be high back adjustable BOSTROM Air 915 Series with mechanical lumbar support or National 195 Series with mechanical lumbar support or DuraForm Air Command Series (fabri form cushions with mechanical lumbar support) with body cloth insert and three-point retractable seat belt. A bellow-type protective skirt shall cover the seat suspension mechanism. No substitute on seats referenced. Color coordinated to cab interior.
There shall be one armrest left/right side, mounted to the inside shelter wall at each window.
Fire Extinguishers Quantity of two (2) rechargeable dry-chemical 10 ABC-rated fire extinguishers (1 per I.D.17 and 1 in or in close proximity to the rear shelter) with charge condition indicator (gauge) and red waterproof snap-on covers.
Extinguishers shall be in compliance with NEPA #385 and federal motor carrier safety regulation.
C.B. power connectors (1 pair) in rear operator's cab per **EQN-78**.
Both male/female ends shall be supplied
CB shall not be supplied.
There shall be a shelter operated emergency paint shut-off for the paint supply.
Bubble windows (tinted) with bottom slide pigeon holes for both sides of shelter shall be supplied and installed.
There shall be black rubber matting throughout the inside of the shelter floor.
Air Conditioning - The paint machine shelter shall be air conditioned with a roof mounted unit if available or wall mounted unit with duct work to both operators. This unit is a separate system from the truck.
AM/FM radio
Six (6) accessory hooks - 2 front and 4 rear.
Two (2) lights inside rear operators cab one over each operator station.

SPECIFICATIONS
A-48-DH

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. PAINT MACHINE OVERVIEW: (Continued)

5. REAR SHELTER AND EQUIPMENT: (Continued)

Heater with fan shall be provided with controls in the paint operator area. A summer by-pass valve shall be provided to eliminate heat in cab in summer months. Hoses shall be protected against bursting hot water on operators in case a hose bursts. Silicone heater hoses shall be utilized and previously specified clamps in the truck specifications. Heater shall have sufficient BTU output to keep this area comfortable and shall be a copper cored unit.
Inside bulkheads and roof shall be insulated. (Ref: D B Engineering "tan" cab insulation, Tel: (214) 484-8890, or equal. All edges shall be sealed with a silicone sealer.
Tinted safety glass throughout AST-I unless a safety type plexglass is available. There shall be metal panels in the bottom of the shelter.
There shall be a sliding front access door.
The top step entering the rear shelter shall be approximately 9 inches deep.

6. INTERCOM SYSTEM:

David Clark Communication System Model U-3800 (no substitute).
12 VDC power source.
The intercom system shall be for a four (4) station intercom system.
System to include two each headset/microphones in the truck drivers cab, Drivers set shall be a "one ear" unit.
Two (2) each on the rear bulkhead behind seats and all related equipment.
Headsets shall cover two (2) ears.
All station shall have necessary jumper cords to assure when headsets are plugged into the master station or remote headset stations that the headset cords do not interfere with the user.

7. GUIDANCE SYSTEMS:

An optical sight, Holovision or equal mounted to the front of the chassis cab, shall have minimum projection beyond the front bumper. The sight shall include the necessary light source, lens system and mirrors to project a virtual image of a luminous sighting pattern onto a distant target. A housing, mounting and adjustment linkage shall be provided for positioning and clamping the optical sight in the best location for the vehicle operation.

The truck cab must be able to tilt with the optical sight installed.

LASER DOT GL-3000-P on cab roof.

SPECIFICATIONS
A-48-DH

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. PAINT MACHINE OVERVIEW: (Continued)

8. CONTROL CENTER:

Aluminum or steel control center shall be provided, per **EQN-370**. The control center shall be shock mounted to the platform assembly mounted inside the rear shelter in a manner to allow ample access for servicing and repair.

Control panel shall be mounted in an inclined position, so that it can be observed from either operator's position

Each gauge and valve on the control panel will be identified with a photosensitive label, metallic type and/or engraved laminated plastic.

A removable plate will allow access to the interior for service.

A 125 PSI safety valve shall be located on the rear of the panel air manifold.

(REF: EQN-220 and EQN-221)

9. SPRAY EQUIPMENT CONTROL BOXES:

Each striping machine supplied shall be provided with two additional control boxes for use as a spare (one for the left gun carriage and the other for the right gun carriage).

The spray equipment shall be electrically controlled by means of solenoid valves and individual toggle switches. The switches mounted in a portable control box at each operator's position.

The control box shall also contain a master control light and indicating light to "ready" positions and an advance-retard control skip-line mechanism to cover the new line over the one already on the road. A plug, coiled cord and thumb-button control for manual restriping shall be provided at each location.

Wiring harness shall be connected to control boxes by means of a male, female type connect for quick replacement of control boxes.

All line pattern combinations, skip line mechanism actuation, and skip line combinations can be obtained by activating only one switch that also simultaneously activates or resets the skip line mechanism.

NOTE: SKIPLINE SHORT & LONG FOR BOTH SIDES SHALL WORK INDEPENDENT OF EACH OTHER.

The remaining toggle shall be an off switch (master), connected in such a way that when activated, it will turn off and cancel any of the above selected patterns, as well as automatically reset the skip line mechanism to a ready position. Provision shall be made so that sphere gun(s) may be controlled by activating a switch on the portable control box for independent and/or simultaneous binder and glass sphere operation. Each sphere gun shall have a separate switch for activation.

The entire switch assembly shall be removable from the control box holder for servicing and is attached by a pin connector type harness to an electrical junction box.

10. ELECTRONIC SKIP LINE SYSTEM:

The M-B Model 3000 paint line controller is a micro processor based control unit based on the Intel MCS-51 series of micro controller IC's or LDI Model SE-88 Micro Processor based on the Electronic Counters & Controls, Inc., Model 484 Series of micro processors.

Two skip line systems shall be included in the striping unit that will allow remote application of various pre-selected line patterns on the fly.

NOTE: SKIPLINE SHORT & LONG FOR BOTH SIDES SHALL WORK INDEPENDENT OF EACH OTHER.

SPECIFICATIONS
A-48-DH

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. PAINT MACHINE OVERVIEW: (Continued)

10. ELECTRONIC SKIP LINE SYSTEM: (Continued)

Each skip line system shall be capable of regulating separate cycle lengths. The system shall also be capable of automatic and manual regulations of all guns on both the left and right carriages. It shall also include advance/retard controls and automatic reset.
The controller shall be of plug-in design, panel mounted.
The system shall retain programmed and accumulated information, even if the emergency off (Master) switch is activated, or the unit is removed from the vehicle.
The unit shall operate entirely upon 12 V.D.C.
Calibration to the vehicle is performed electronically by the controller programming.
The microprocessor shall include a feature to allow short skips to be painted left and/or right side/s (independently or in parallel).
Controls and functions of the controller shall be programmable by means of membrane touch panel switches to the nearest .1 of a feet.
The unit shall be capable of accuracy to within .1 of a feet at speeds of up to 40 MPH.
Paint and cycle lengths may be varied from .1 feet to 99.9 feet. There shall be provisions for reset, to zero or instant start of stripe for full cycle lengths. Also, there shall be provision for instant-off.
The controller may be configured to begin the painting cycle with the paint line or the skip interval.
There shall be provision to move the stripe/cycle function ahead or back while the vehicle is in motion.
The controller will be equipped with a LCD or LED display having a capability of displaying a minimum of 6 characters of a minimum .500 inch height.
Vehicle speed to nearest .1 MPH and time will be displayed simultaneously on the readout of the controller.
An odometer function will indicate the total distance the vehicle has traveled. The controller will accumulate and display, upon command, the total length in feet and miles of paint applied by each individual gun and the total length of feet or miles of paint applied by all guns.
The controller shall provide for delay of glass bead application for complete coverage of painted line.

The controller shall have two auxiliary gun outputs. These outputs will follow the paint gun output and will be individually programmable by the operator for two separate, simultaneous parameters.

a. Preset speed - the auxiliary gun outputs will be enabled when the vehicle speed is at or above a present value.
b. Gun spacing delay - the auxiliary gun outputs will go on at a preset distance after the paint gun output goes on, and will turn off at the same preset distance after the paint gun goes off.

Printer (Supplied) shall, upon command, print out the date, headings for each gun, the number of feet of paint applied (total) by each gun and the total number of feet of paint applied by all paint guns, upon command. A conversion of feet to miles shall be available upon command (calculator is unacceptable).

Digital speed meter system: A digital speed meter shall be included on the striping unit that will allow the truck operator to read his speed in three digits to aid him in maintaining a desired speed.

The system shall include a digital control meter having three .6250 inch high digits, readable without error from approximately 20 feet with the last digit reading 1/10 MPH and having and accuracy of 1/2% of full scale.

SPECIFICATIONS
A-48-DH

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. PAINT MACHINE OVERVIEW: (Continued)

10. ELECTRONIC SKIP LINE SYSTEM: (Continued)

The signal source shall be a logic level pulsating unit driven by the transmission or driveline. The 12 VDC power for the system shall be provided by the truck alternator and be separately fused.

Footage counters A 6-digit reset type adjustable footage meter shall be provided mounted in the cab console, one for each gun position capable of measuring actual number of feet of line applied.

Printer shall be included.

11. BINDER SPRAY EQUIPMENT:

The binder spray guns shall be a Binks Model 30-A with shrouds (largest size possible) of the non- bleeder type, capable of processing material in quantities which will yield a 4 inch line of .015 inch wet film thickness to be put down at speeds of 3 to 22 MPH.

Line blowers - manufactures standard.
Moisture injection system N/A
Paint sensors N/A

There shall be a "Tip Cleaning System" that allows for water to be injected into the airline without necessitating the turning off of the air.

12. PAINT TANKS:

This machine shall have paint storage capacity of a minimum 1000 GAL in an un-pressurized container designed for two-color paint application.
One compartment baffled for yellow, minimum 500 GAL.
One compartment baffled for white, minimum 500 GAL.
Each tank shall have a hydraulic type mixer. On/off speed controls in rear shelter.
Mixer shall be removable without unbolting the entire top of the paint tank.
The top of each compartment shall be painted with anti-skid surface to prevent foot slippage when wet or damp.
A Bustin type steel thread stepladder with handrails covered in anti-skid paint should be affixed to the platform side of the paint compartment for access to the inspection lids.

Paint Tank Low Level Indicator System – n/a

Liquid Level Calibration Rod -Two inverted aluminum direct reading rods calibrated in gallons shall be provided to indicate the paint quantity in each paint compartment. There shall be provisions made to store these rods vertically for traveling with a removable paint cup catch basin.
The container shall be constructed of minimum 10 gauge, 300 series, and stainless steel sheet. Appropriate baffling shall be installed inside each compartment.

SPECIFICATIONS
A-48-DH

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. PAINT MACHINE OVERVIEW: (Continued)

12. PAINT TANKS: (Continued)

The bottom of the container shall be constructed of .1875 inch type 300 series stainless steel sheet sloped to allow drainage from each compartment.
The internal structure of the paint tank shall include boltable removable stainless splash plates beginning a minimum of 2 inch from the top of tank.
The two compartments shall be fitted with individual removable top inspection openings.
Minimum diameter of the inspection opening shall be 9 inch.
The top of the storage containers shall be removable for ease of cleaning.
There shall be holes cut into internal baffles to facilitate pressure equalization.
There shall be 6 inch remaining at the top of the tank providing a splash area for sudden stops thus preventing paint from getting on lid gaskets or splashing on the platform.

Stainless steel formed channel, horizontal bracing shall include 10 gauge, 1.750 inch x 20 inch, gussets spaced approximately 10 inch between the formed channels, and fitted with a removable top.
Provisions shall be made for recirculation of heated paint in and out of each paint heater. The system shall include stainless steel valving and gauges to regulate the recirculating flow from the rear control panel.
There shall be a recirculation control handle mounted left and right side inside and outside the rear shelter.

The material supply system shall be so arranged as to permit the simultaneous operation of one or two spray guns on the left carriage and one or two spray guns on the right carriage.

13. PAINT STRAINERS:

Two strainers, having a minimum surface area of 100 square inch shall be inserted in each system. One strainer shall be located at the bottom of the paint compartment and the other located at the bottom of the heat exchanger within the heat manifold. Clean out covers on the heat manifold shall be positioned such that they are readily accessible. Paint line outlets on the clean out covers will not be acceptable. The strainer assembly shall be connected to the paint supply lines by means of a union coupler. Valving shall be provided to isolate the strainer from the feed line for the cleaning of all piping, strainer, valves, and clean out fittings. The intent of this submission is to ensure that the paint machine is plumbed such that: all valves are readily accessible to operators, a clean out fitting is provided at each junction and strainer clean outs are conveniently located for periodic maintenance. The inlet and outlets to the paint supply pumps shall not be hard piped. They shall be flexible to allow for variations in chassis movement and pump variations.

14. PAINT PUMPS – TOTAL OF (2) TWO PUMPS

There shall be a shelter operated emergency paint shut-off for the paint supply.
Two pumps, one for white and one for yellow minimum, for supplying paint to the spray guns shall be "Wilden" model PV-8, Proflow anti stall air diaphragm type using type 300 series stainless steel wetted parts. The pump housing shall be of stainless steel. The pumps shall be equipped with Neoprene diaphragms and ball valves.

SPECIFICATIONS
A-48-DH

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. PAINT MACHINE OVERVIEW: (Continued)

14. PAINT PUMPS: (Continued)

The pumps shall be air driven, and shall have means to control the paint pressure to provide the required line width and wet film thickness of .012 inch to .015 inch. when operating in the range of 10 to 22 MPH.

Each pump shall be equipped with an automatic pressure dampening device, which shall be speed-regulated volume controlled.

The pumps are to be supplied with mufflers

There shall be an additional oilier line and filter to dissipate moisture in the pump.

Valve seats and clamp bands shall be stainless steel.

Pumps shall have stainless steel wing-nuts included at all accessible connections available.

The pumps shall be mounted at a highly accessible location and plumbed by means of unions or another acceptable method to provide pump repair or replacement in a matter of minutes.

The quick attach system must be provided for both pumps, to be removed from both sides.

Location of pump shut off to be determined at the pre-build meeting.

15. GLASS SPRAY EQUIPMENT:

The glass guns shall be Binks Model 30A tip size except the shroud, shall be chrome-plated and mounted behind each paint spray gun with bead sensors.

The automatic sphere guns shall be capable of dispensing 30 LBS of spheres per minute with 60 LBS air pressure on the glass tank.

To ensure the proper angle of entry of the glass sphere spray into all types of fast-dry paint spray and to ensure maximum sphere dispersion and retention the distance between the spray gun orifice and sphere gun orifice must be adjustable. Also the entry angle for the glass sphere spray must be adjustable and the glass sphere dispersion pattern shall be controlled by a water knife mounted at the head of each glass sphere gun.

The spray equipment shall be controlled by means of solenoid valves and toggle switches mounted in lightweight, portable control boxes, assembled in such a manner that various standard line combinations can be obtained by one, but not more than two toggle switches. The glass guns shall be coordinated with the binder guns for simultaneous operations to provide complete coverage to the paint line as the vehicle speed varies.

An individual control switch shall be incorporated in the glass system for independent operation of each glass gun. An emergency recessed shutdown switch activating a ball type valve through an air-operated cylinder shall be mounted within the reach of each operating station, or a single system ”main valve" shutdown system.

SPECIFICATIONS
A-48-DH

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. PAINT MACHINE OVERVIEW: (Continued)

16. GLASS SUPPLY:

A.S.M.E. pressure vessel (1), shall be supplied having a minimum total capacity of 7,000 LBS of glass spheres.

The container shall be tested for 110 PSI working pressure; hydrostatically tested at 165 PSI. Be of all steel construction and shall have a top opening not less than 24 inch diameter. It shall be equipped with an air release valve, a 0-160 PSI pressure gauge and a 110 PSI pressure relief valve. Pressure vessel shall be piped in such a way as to insure that total capacity can be utilized. A filter shall be sized (volume) at system requirement plus 50% to allow for quick delivery.

A vacuum glass fill unit having a minimum capacity of 250 LBS of glass per minute, under a 20 in/50cm suction lift at 20% humidity with dry beads. By creating a vacuum in the glass tank, glass shall be drawn into the tank without contaminating the vacuum unit. The glass spheres shall be conveyed under pressure to automatic glass sphere dispensing guns through rubber pressure hoses. A heavy-duty self-evacuating oil and moisture remover shall be installed in the airline after a finned after cooler extending from the compressor to the air control center.

The glass filling system shall include a 17 feet long, 2 inch I.D. fill hose with male and female quick coupler fittings. Including a new, unused 24 inch diameter 55 GAL metal drum with a combination bag splitter and strainer top. Glass beads and paper bag remnants shall be strained through two mesh strainers securely attached to the funnel. The splitter bar shall be recessed from the top of the container.

The Department will accept an approved equal vacuum fill glass sphere system. Any approved equal system shall have written approval by Chief, Equipment Division.

Console mounted regulator for each bead gun.

Each bead manifold shall have an end cleanout plug of at least 2 inch in diameter

There shall be a bead shut-off control valve after the manifold at each carriage.

There shall be a minimum 1 inch I.D. line from compressor to jet pump to allow for increased vacuum for beads.

Vibrators shall be included.

Bead Tank Low Level Indicator System – n/a

17. SPRAY GUN CARRIAGE ASSEMBLIES:

Two-gun carriage assemblies shall be supplied, mounted behind the vehicle's rear wheels to support and align the spray guns.

The main carnage, mounted on the left side of the vehicle, shall have provisions for attaching three (3) single color spray guns, and three (3) glass sphere guns.

Two (2) wheel, mounted on a caster axle, mounted on the front of each carriage shall support the carriage and maintain it at a fixed height from the road surface. A parallel system shall connect the carriage to a cross slide and maintain the spray guns normal to the road surface at all times.

A pneumatic lift cylinder electronically controlled from the operator’s position shall be used to raise the carriage and a safety chain to support it during transporting.

Carriages shall be adjusted to provide maximum ground clearance.

SPECIFICATIONS
A-48-DH

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. PAINT MACHINE OVERVIEW: (Continued)

17. SPRAY GUN CARRIAGE ASSEMBLIES: (Continued)

There shall be an automatic carriage stops for 6 inch and 8 inch lines.
Trucks shall be able to paint 4-6-8 inch wide lines.
The cross slide supporting the carriages shall allow the carriages to be positioned for transport within the width of the vehicle platform, and permit its use anywhere from this location outward for a distance of 60 inch. The slide mechanism shall consist of a square tube within a square tube telescoping design with adjustable UHMW, self-lubricating material bearing areas. The outer tubing shall contain a two-channel bearing mater configuration, mounted on a retainer, which will permit adjustment as the material wears. The inner slide will have four pads of the UHMW material bolted and shimmed to its innermost slide section. The pads shall allow shimming of the pads, as the pads wear, without disassembly of the slide. (Carriage shall be lever controlled)
The second spray gun carriage shall be provided and mounted on the right side of the striping unit approximately on the same lateral axis as the main carriage to align and support two (2) single color spray gun and two (2) glass sphere guns. The design of this carriage shall be identical to the main carriage and it shall also extend 60 inch from the edge of the platform.
Each carriage slide shall be equipped with a hydraulic cylinder for moving the carriage to any point within its operating range. The cylinder shall be double action, controlled by a power steering control, and the right side controlled by a steering wheel with check valves shall be conveniently located for the operator.
Hydraulic power for the operation shall be supplied by a high pressure hydraulic pump driven by the auxiliary engine.
Stacked body, quick acting solenoid valves with a manual override feature shall be mounted on each carriage. Valves shall be equipped with balanced spool design to minimize backpressure or restriction in exhaust. The valves shall be of a one-piece aluminum design body and mounted inside a weatherproof steel box with a removable lid for servicing.
All bearings or pivots on the carriage, linkage or slide, where relative motion occurs, shall be fitted with replaceable, anti-friction bearings or replaceable bearing and pressure lubrication fittings.
With both carriages extended a span of 17feet between the inner edges of the two lines shall be obtained.
Each carriage shall be provided with L.E.D. safety lights (amber –forward, red - rear). Both lights on each carriage to flash alternately.

18. HEATING SYSTEM - PAINT:

The paint heating system shall maintain a minimum paint temperature of 120 degrees F at the material spray guns during operation with all three guns in simultaneous use at an ambient temperature of 40 degrees F and a vehicle speed of 5 MPH – 22 MPH. A digital thermostatic control unit shall have a variance of no more than +/- 3 degrees. Glycol temperature shall be a minimum of 140 degrees (operating range 140 degrees to 170 degrees F).
A tubular liquid heater built in accordance with the A.S.M.E. Boiler and Pressure Vessel Code and carrying the appropriate official A.S.M.E. code symbol shall be provided. The heater shall have wet base construction with the combustion area surrounded by liquid backed heating surface at the top, bottom, sides and back. Each heater tube shall have an “economizer" which causes the gases to rub against the sides of the tubes to increase heat absorption and efficiency. The entire heating surface shall be accessible for cleaning.

SPECIFICATIONS
A-48-DH

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. PAINT MACHINE OVERVIEW: (Continued)

18. HEATING SYSTEM - PAINT: (Continued)

A gun type burner shall fire the heater. The burner shall have an adjustable combustion heat assembly, which permits regulation of the air distribution, whether the firing rate is at the low, intermediate, or high portion of the firing range. The burner shall operate with zero to a trace of smoke and shall be insensitive to draft or moderate backpressure variation, and highly resistant to pulsation. Most importantly, the burner shall be easy to install adjust and service. The heater exhaust shall be primed by a draft eductor. The vertical exhaust shall be shielded by stainless steel or chrome (360 degrees around) its entire length.

RE: Gun type burner Wayne no substitute. The unit shall include, but not be limited to all controls, and shall receive its fuel from the trucks fuel tank.

The heater unit shall be capable of supplying a minimum of 326,250 BTU/HR to heat the traffic line marking material. The heater shall have the necessary safety devices to prevent overheating or excessive water pressure. One digital thermostat shall be provided, which will cycle the heater to maintain the proper operating temperature within plus or minus 5 degrees F. The fuel supply shall be filtered through a replaceable fuel filter conveniently located in the fuel supply line. Fuel supply lines shall be braced and protected.

The paint heating system shall include two shells and tube type heat exchangers, having stainless steel tubes, shells and end bonnets. They shall be 4-pass type units each having a minimum heat transfer area of 64 square feet. Structural steel brackets shall be provided for mounting the exchangers in a vertical position with the inlet and outlet extending below the vehicle platform. Each exchanger shall be mounted in a separate housing with double hinged doors to reduce the length of the circulating hoses and should be located as close to the outriggers as practical.

A circulating pump for the heated hoses shall be provided along with a fiberglass insulation blanket and an aluminum cover around each exchanger shall retain heat with in the exchangers.

Three 12-volt DC electric motor driven circulating pumps shall be provided. The pumps shall have a minimum rating of 25 GPM when pumping the heated water/ethylene glycol solution. The pumps shall control:

Pump A: Circulation to the white paint heat exchanger
Pump B: Circulation to the yellow paint heat exchanger
Pump C: Recirculation system

One digital thermostatic heat control shall monitor the paint temperature in each heat exchanger. These controls shall turn off or on the pump feed to the heat exchangers at the temperature setting required by the paint manufacturer. The thermostat for water shall be mounted in the top of the heat exchanger. Paint thermostat shall be mounted in the bottom of the heat exchanger outlet side.

Incorporated in the water/glycol system will be an expansion tank at a convenient location to either fill or check the fluid level of the system. A 14 LB automotive type pressure cap shall be used to regulate the system. An overflow tube from the cap neck down through the platform shall safely vent any overflow to the ground.

SPECIFICATIONS
A-48-DH

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. PAINT MACHINE OVERVIEW: (Continued)

18. HEATING SYSTEM - PAINT: (Continued)

Three (3) automatic air vents shall be installed in the heating system to vent any excess air that gets trapped in the heating system. One air vent shall be in the expansion tank line at the top of the boiler and one on each heat exchanger. (MANUAL AIR VENTS WILL NOT BE ACCEPTED).

There shall be sufficient ball valves installed on the heating system to isolate any and all component(s) without draining the entire system. IE heat exchanger shall have one ball valve on the inlet and outlet.

All pipes shall be insulated to thermally retain glycol/paint temperatures.

The furnace shall have a remote reset button in the vehicle cab.

NOTE: PROBES SHALL BE STAINLESS STEEL.

Exchangers shall be easily removed without disconnecting any pipes. There shall be shut off vales so the entire system is not drained down when removal is necessary.

19. PIPING/VALVES:

All hard piping that comes in contact with paint shall be stainless. All other hard piping systems glycol, air (except for air atomization) and bead systems shall be piped using galvanized pipe. All valves that are used in conjunction with the paint shall be stainless flange-type with Teflon inserts or a three piece bolted in-line valve. (The DynaQuip three piece bolted in-line maintenance valve, or equal is acceptable.) All hardware for bolting flanges shall be, at a minimum; cadmium plated nuts, bolts and washers. All valve handles shall be heavy-duty typecast or minimum .250 inch thick material. All piping, tubing or hosing used on the vehicle shall be firmly attached to the frame or bed, except where flexible conduits are required for proper operation or service. Clamps shall be per attached drawing EQN-94. Rigid piping paint lines and fittings shall be 2 inch standard weight stainless steel. Non-rigid paint conductors shall be flexible Teflon solvent resistant material of at least .500 inch ID and shall be capable of withstanding pressures up to 200 PSI. Non-rigid airlines shall be at least .3750 inch ID, flexible Teflon solvent resistant material. Additionally all nipples, plugs, reducers shall be stainless. Piping between the pump and heat exchanger shall be 2 inch (min). Nylon braided Teflon lined hosing shall not be incorporated. Hard pipe shall be used.

Each conductor to the spray guns shall be the totally enclosed core of a circulating hot water glycol heated system that extends to within 6 inch of the spray gun. To prevent heat loss, there will be no more than 14 inch of paint plumbing without jacketed conductor after the heat exchangers.

All external-atomizing airlines shall be at least .3750 inch Teflon or nylon tubing.

The pumps, hoses, fittings, valves and all components that are in contact with the marking materials, solvent trays, water tank(s) and lines shall be stainless steel and impervious to the standard paint solvents, including: (1) V M & P Naptha, (2) Acetone, (3) Lactol Spirits, (4) Hexane, (5) Methyl Ethyl Keton and (6) Water.

The paint fill supply piping shall be furnished with 2 inch quick coupler male fittings and cover caps when not in use. Two 16 feet hoses with 42 inch standard pipe shall be furnished with female quick couplers compatible with the male fittings. RE: Pipe nipples and quick couplers. All paint fills shall be at curbside.

There shall be shields mounted over each of the paint supply line shut-off actuators.

Clamping: REF: **EQN-94**.

SPECIFICATIONS
A-48-DH

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. PAINT MACHINE OVERVIEW: (Continued)

19. PIPING/VALVES: (Continued)

Piping valves shall be designed for quick disconnect. All 2" valves shall be a full 2" inside dia. Pipe threads shall be sealed with a soft type thread sealer to ease separation during service. Quick disconnect connectors shall be utilized at the carriages.

20. AIR COMPRESSOR AND ACCESSORIES:

Oil flooded rotary screw type. Unit to equipped anti-friction 100,000 hour average minimum life bearings. Shall be completely manufacturer and assembled by the manufacturer of the utility air compressor.

The compressor shall be equipped with an external single point lifting bail and exhaust rain cap. The compressor shall be designed to meet EPA sound level requirements of 76 DBA at 7 meters. There shall be an access step provided curbside.

Housing:A sheet metal housing shall be provided to enclose the machine. The enclosure shall be constructed so as to be easily removed and have sufficient accessible openings such that normal maintenance may be performed. Removable side panels for total access shall be provided. All panels to be padlock able. There shall be easy access to the oil dipstick. The exterior of the entire cabinet shall be painted PENNDOT yellow (Ref: Dupont 6808 for shade only). There shall be nothing mounted directly to the compressor. Any accessories to be mounted in this area shall be mounted on a table assembly above the compressor. The compressor shall be easily removable from left or right side without necessitating extensive plumbing removal.

Mounting: Engine and compressor to be securely mounted on a welded steel frame with vibration isolators. Forklift pockets to be located on each end of the machine for ease of installation and removal. Length shall not exceed 86 inch and width shall not exceed 38 inch. Approximate height shall be 51 inch.

Engine: John Deere 4045 or pre-approved equal water-cooled diesel engine. The engine shall have an intermittent horsepower rating sufficient to properly and adequately operate the compressor and all auxiliaries at the speed required to develop rated compressor capacity. The engine shall be equipped with a full flow oil filter and auxiliary PTO drive and third sleeve. Rated speed shall not exceed the manufacturer's published intermittent speed for compressor application. The exhaust muffler shall be located within the enclosure, and the exhaust pipe shall extend above the enclosure a minimum of 18 in/45cm.

Exhaust: The unit's exhaust shall be directed topside as is main engine exhaust. All pipes shall be rigidly supported to eliminate noise. Exhaust fumes in the area of the rear operator's compartment will not be acceptable. All exposed exhausted pipes shall be shielded and insulated to protect the operators with stainless steel or chrome shield. The I.D. of the exhaust shall be engineered to minimize engine backpressure so as not to affect the engine's warranty provisions.

SPECIFICATIONS
A-48-DH

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. PAINT MACHINE OVERVIEW: (Continued)

20. AIR COMPRESSOR AND ACCESSORIES: (Continued)

FLOCS: Fast oil change system with all fittings, brackets, clamps and hoses as per attached drawing **EQN-351A**. The placement of the male half of the snap coupler will be on the curbside of the vehicle. A FLOCS connection decal shall direct the operator. Ref: Aeroquip or approved equal.

Drains: Remote compressor oil drain/s shall be provided for ease of maintenance.

Starting: The engine shall be equipped with a 12-volt electrical starter and alternator. Alternator shall be solid state minimum 78 amp. Maintenance-free batteries rated at a minimum l200CCA shall be provided. Delco 1110 or Gould G-27, no substitute. Batteries shall be located accessible through a removable panel for ease of maintenance.

Air Filter: Separate two-stage, heavy duty, dry type air filters shall be provided for the engine and the compressor. Filters shall be located inside the enclosure and so located to draw ambient air into the intake filters.

Air Receiver: The compressor shall be 250 CFM.
The receiver shall be ASLME code approved rated at a minimum of 175 PS10 working pressure. It shall be equipped with an ASME air pressure relief valve located upstream of the final oil separator and two .750 inch service valves located adjacent to the instrument panel. The receiver shall be of a size equal to 1.4 cubic feet for every 250-CFM of air delivered.

Water Separator – shall be provided before the desiccant filder.

Desiccant Filter: Desiccant filter and unit. It shall be placed in the airline at the compressor output end, after the cooler, with adequate drainage control. One (1) on each side before carriage. Unit shall be mounted away from the frame rail for ease of maintenance.

Cooler: There shall be a cooler installed after the air compressor. The cooler shall be of sufficient size to ensure dry air is delivered.

INSTRUMENTS: A lockable instrument panel, protected against vandalism shall be supplied. Panel to include compressor air pressure gauge, hourmeter, engine water temperature and oil pressure gauge, air compressor discharge temperature gauge, start-stop control, automatic idle warm up button, and circuit breaker. Operating instructions shall be located on or adjacent to the instrument panel such that they are visible when facing the panel.

Controls: Pneumatic inlet control system automatically modulates engine speed and compressor output from zero to 100 percent in response to air demand.

SPECIFICATIONS
A-48-DH

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. PAINT MACHINE OVERVIEW: (Continued)

20. AIR COMPRESSOR AND ACCESSORIES: (Continued)

Cooling: Engine and compressor cooling system shall allow rated air delivery and pressure operation continuously in 120-degree F ambient temperatures. Cool outside ambient air to be drawn through finned tube oil to air heat exchangers by an efficient engine mounted fan. Compressor fan guard shall be provided. Oil cooler face accessible for cleaning by means of a service door. Engine radiator maximum top tank temperature 90 degrees F above ambient. Oil cooler rated at 150 PSIG with maximum cooler inlet temperature of 120 degrees F above ambient.

Protection: Machine to automatically shut down in case of high compressor temperature, high engine coolant temperature or low engine oil pressure. Additional protective features to be provided to include automatic blowdown valve, receiver relief valve, and minimum pressure valve with integral check valve.
Air compressor shall automatically shut down in case of high compressor temperature, high engine coolant temperature, or low engine oil pressure. Additional protective features to be provided to include automatic blowdown valve, receiver relief valve and minimum pressure valve with integral check valve.

Fuel tank: A check valve shall be incorporated into the fuel line to prevent fuel returning to the tank. There shall also be a shut-off (isolation) valve.
The compressor fuel tank shall be utilized to fire the burner/boiler. Tank shall be marked kerosene only.
The compressor shall draw fuel from the truck fuel tank.

All compressor air hoses shall be crimped. Hose clamps are unacceptable.

21. SOLVENT SYSTEM:

An air operated, solvent gun cleaning system shall be installed on the striping machine.
It shall consist of one (1) 40 gallon A.S.M.E. stainless steel pressure tank with safety valve and valves and piping necessary to introduce solvent into the atomizing airline of the paint gun, as well as valved into each paint line. The system shall be installed so that the spray gun tip can be cleaned. A Teflon sealed pug valve for the guns shall be installed in the control panel for this purpose. A solvent injector system shall be piped into the heated hose after the main line valve at the outlet of the heat exchanger. This system must be as close as possible to the outlet of the heat exchanger to clean the heated manifolds and hoses for overnight storage.
There shall be a drain line for each tank one left and one right side of the truck.
All piping to be solvent resistant type. The tank construction shall be with a 4 inch threaded top opening and a full steel skirt support.

All controls shall be accessible at ground level.

Location tank to be determined at pre-build meeting.

SPECIFICATIONS
A-48-DH

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. PAINT MACHINE OVERVIEW: (Continued)

22. FIRE SUPPRESSION SYSTEM:

There shall be a fire suppression system installed for the truck engine compartment and for the 250-CFM air compressor cabinet compartment.

A unit shall be mounted in each compartment in such a manner as to allow for maximum coverage of the affected area. The unit shall be an automatic system, while retaining the ability to be manually actuated from the cab. There shall be an audible and visual alarm in clear sight for the vehicle operator.
System shall be a Jomarr Model VT-6 Fire Suppression System (Tel: 717-346-5330).

23. REAR WARNING DEVICE:

Operational controls for arrow board shall be in the rear shelter, within easy reach of an operator.
REF: Arrow Board – TRAFCON Model MB-4-15, 36x72 with cut out.

24. NIGHT LIGHTS:

Seven (7) 12V floodlights to illuminate the striper during night time operations. The lights shall be located as follows:
One (1) light located on the front of the truck cab, to illuminate the pointer, with control switch inside the truck cab.
Four (4) lights total, 2 on each carriage location one front and one rear. A switch for these lights shall be located in the rear operators control panel.
Two (2) lights inside rear operators cab one over each operator station
1 – on front of rear shelter
1 – telescopic pole mounted on compressor

25. HOSE REELS:

There shall be one 50 foot air hose reel, location to be determined at the pre-build meeting.
There shall be one 50 foot water hose reel, location to be determined at the pre-build meeting.

26. SPARE PARTS:

There shall be one spare spray system gun.
There shall be six spare spray system gun tips.
There shall be one spare bead gun.
There shall be one spare regulator repair kit.
There shall be two control boxes, one left, and one right.
One (1) complete pump.
Two (2) paint pump overhaul kits per truck, for pumps supplied with striper.

The successful manufacturer shall furnish a suggested parts stocking overview listing an essential parts inventory to support the field in areas of high turnover items frequently required to keep our units in an uptime mode.

SPECIFICATIONS
A-48-DH

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. PAINT MACHINE OVERVIEW: (Continued)

27. MISCELLANEOUS ITEMS:

a. Equipment Identification:

All valves, switches, gauges and controls shall be labeled with permanent tags as to their function. There shall be a written operator's manual that shows all valve functions.

b. Decals and Signs (Tank):

The tanks shall have material warning decals on both sides to alert nearby personnel of tank contents and operational hazards. Paint white or yellow, solvent, beads, etc. (See attached regulation. NOTE: Any and all regulation(s) that are current shall supersede the attached).

The truck shall have warning placards located on the front, back and both sides. All markings as required by HAZMAT Regulations shall be employed.

c. Wiring and Lighting:

All lights provided on the paint body shall meet the Pennsylvania Motor Vehicle code and all wiring shall be run in vapor-proof type tubing with screwed junction box connections. Wiring shall conform in gauge and color with ATA standard. Combination turn signals and brake lights, side marker lights and reflectors, as manufactured by Grote, shall be rubber shock mounted. No splices shall be made outside of a sealed junction box.
The location of these junction box/s for service access will be decided at the pre-build meeting.

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II. DRAWINGS:

EQN-66	dated	Rev.	11-28-06	2 sheets	SPLASH GUARDS-RUBBER
EQN-78	dated	Rev.	10-27-06	1 sheet	CB CONNECTORS
EQN-94	dated	Rev.	10-02-06	1 of 2 sheets	HOSES &COUPLER
EQN-127A	dated	Rev.	11-03-06	1 sheet	CONSPICUITY
EQN-210A	dated	Rev.	01-25-07	1 & 2 of 3 sheets	REVOLVING WARNING LIGHT
EQN-220	dated	Rev.	11-27-06	1 sheet	CONSOLE LAYOUT
EQN-221	dated	Rev.	11-27-06	1 sheet	CONSOLE LAYOUT
EQN-330	dated	Rev.	01-09-02	3 sheets	OPERATING MODES
EQN-351A	dated	Rev.	10-20-06	2 sheets	FLOCS
EQN-370	dated	Rev.	05-22-02	3 sheets	PAINT TRUCK-REAR SHELTER

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 between the vendor and the Specification Unit.

DRAWINGS APPEAR AT THE END OF THE SPECIFICATIONS.

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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 within a maximum of 90 days after the pilot model is accepted.

Manuals may be supplied on CD Disc in lieu of paper manuals.

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IV. TRAINING:

Mechanic:

The successful vendor shall provide services of qualified factory trained technicians for not more than __1__ training sessions of not more than __30__ hours at __1__ PennDOT locations to train personnel for in-depth preventive maintenance, overhaul and review of the proper usage of parts and service manuals, as well as component/system adjustments that need to be monitored at specified service intervals.

Operator:

The successful vendor shall provide services of qualified factory trained technicians for not more than __1__ training sessions of not more than __30__ 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 Equipment 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 Equipment 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. Section E. 3.

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059500

TRUCK, PAINT, WATER BORNE, AUTOMATIC

DISTRICT 8-0

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SPECIFICATIONS
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I. GENERAL TRUCK SPECIFICATIONS:

A. INTENT STATEMENT:

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 240 days after receipt of the purchase order by the successful bidder.

The maximum height of the paint striper and appurtenances **shall not exceed 11ft 6inch** in a working mode.

It is the intent and purpose of this specification to secure a truck-mounted, self-contained striping machine. The machine shall apply reflectorized lines utilizing solvent or water borne traffic paint. The equipment must maintain and be capable of applying the paint and/or marking material at ambient temperatures as low as 40 degrees F, on a clean and dry surface. The machine shall also maintain and be capable of applying conventional or fast-dry traffic paint materials at speeds of up to 22 MPH at a maximum .015 millage/0.381 wet without beads. The intent is to comply with federal safety standards for noise, noise emission generated by the unit (and they shall not exceed federal regulations in the chassis cab, right rear operator's seat, and left rear operator's seat). The machine shall be capable of simultaneously applying three lines in two colors of the marking material in either a solid or skip pattern or combination of these patterns at the operating conditions specified above. All truck parts and materials shall conform to the truck manufacturer's recommendations and the applicable S.A.E., A.W.S. and A.S.M.E. minimum standards. Certified A.S.M.E. welders shall perform all welding on the entire unit, where such certification is required.

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

The successful low bidder will be required to construct a pilot machine, and this machine must be delivered to the Department of Transportation for inspection and testing per I.A. This machine must meet all the mechanical requirements of the specifications and then must be field tested and fully meet all the performance tests required in the specifications.

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

Center lines (solid and skip) and edge lines, individually and simultaneously, shall be applied by the machine using the above-specified paints. The lines shall be applied at a rate of 0.012 inch ± 0.002 in/0.005cm for edge lines and 0.015 in/0.038cm ± 0.002 inch for centerlines. Lines shall be clearly defined with sharp clean edges and ends. Drop on type glass beads that meet Pennsylvania specification shall be applied at a rate of 6 to 12 pounds per gallon, ± 1/4 LB, of paint applied to the road surface.

The machine shall be required to satisfactorily apply white and yellow standard dry and white and yellow fast-dry paints. This paint material and an appropriate quantity of glass beads shall be supplied by the Pennsylvania Department of Transportation for testing.

SPECIFICATIONS
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I. GENERAL TRUCK SPECIFICATIONS: (Continued)

A. INTENT STATEMENT: (Continued)

The appearance of the lines produced by the paint striper shall be uniform in appearance, free from variations in line width and line length (skip cycle). Also variations created by action of the paint pumps will not be accepted. As an example, when a right white edge line (solid line) is being applied simultaneously with a skip white lane line, there shall exist no visible change in the solid white edge line at the point where the skip white lane line gun cuts turns on or off. Any non-uniformity which exists in either line (visible to the human eye, either day or night) shall be causes for rejection of the paint striper.

The vehicle shall have a gradeability of 15% when loaded to maximum G.V.W.R. without exceeding the engine manufacturer's recommended maximum R.P.M., based on maximum net torque. Painting speeds of 5 MPH to 22 MPH must be obtainable without erratic shifting of the automatic transmission. The ratio of the rear axle and transmission shall be geared to maintain a 65 MPH reasonable speed for inter job transporting on expressways without exceeding recommended engine R.P.M. of approximately 2100 to produce the most fuel efficient unit possible without excessive engine R.P.M. and premature wear.

The below-described schedule shall be followed with the successful vendor in the delivery inspection.

After the prototype machine is delivered to the specified location, as shown on the purchase order, the first 10 working days shall be utilized by inspecting the machine to determine whether or not the machine complies with the specifications.

The performance tests shall not begin until (if it does meet the specifications in the initial inspection) the striping unit complies exactly with the mechanical and electronic/electrical requirements of the specifications.

After the completion of the inspection of the mechanical and electronic/electrical components of the machine, performance tests for acceptance shall begin. Performance tests require the machine to use Commonwealth of Pennsylvania standard traffic line marking paints.

Thirty (30) calendar days, weather permitting, (in initial paint season) shall be allowed for the manufacturer to complete the performance tests as specified in the following paragraphs of these specifications. The 30-calendar day performance test period shall begin after the machine complies exactly with the specifications for mechanical and electronic/electrical components.

If the manufacturer's machine does not perform as required with the 30 calendar days, then the Department reserves the right to reject it. In addition, if this prototype machine is rejected, the manufacturer shall not be allowed to supply the type of machinery described in this specification on the re-bid of the truck-mounted striper machines by the Department.

The Department's Traffic Engineering Division personnel and Equipment Division personnel shall make final inspection and performance tests and acceptance of the machine. Prior to acceptance, the machine shall be successfully operated to the satisfaction of the Traffic Engineering Division personnel, and the Equipment Division personnel with and without assistance form technicians furnished by the vendor.

SPECIFICATIONS
A-48-DH

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

A. INTENT STATEMENT: (Continued)

If the prototype machine meets all the mechanical requirements, electrical/electronic requirements, and then successfully passes the performance tests, then permission will be granted by the Department to the bidder to proceed with fabrication of other machines covered under this contract. If the prototype machine fails to pass the mechanical requirements, electrical/electronic requirements, or the performance test requirements as specified in this contract, the Department reserves the right to reject the prototype machine and any subsequent machines listed on this order.

B. WEIGHT DISTRIBUTION:

The complete unit in the full mode shall be weighed to verify that each G.A.W.R. is sufficient relative to the final product presented. The chassis weight and paint body weights shall be furnished separately. The C/G of "both" chassis and paint body shall be provided by means of an engineering drawing(s) at the pre-build meeting.

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 components
5. Rims
6. Suspension
7. Brakes
8. Any other items as required

The power package required must be compatible with respect to the engine, transmission, axles, hydraulic system, and power steering in order to meet the requirements specified herein.

SPECIFICATIONS
A-48-DH

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

B. WEIGHT DISTRIBUTION: (Continued)

The following information is required:

TRUCK FRONT		TRUCK REAR	TOTAL
	Chassis Weight		
	Diesel Fuel Gal. @ 7 LB per Gallon		
250	Truck Driver & Misc. Weight		
	Body & Related Platform Components		
	Paint Payload @ 13.0 LB per Gallon		
	Beads Payload @ 7000 LB		
	Paint operators 2 @ 200 LB Each		
	TOTAL WEIGHT		

Any weight distribution sheets reflecting total in excess of the Pennsylvania legal truck weight laws will not be acceptable.

Vendor shall submit this information with the pilot model and each unit weighed by a certified weigh master and signed.

Chassis _____Front Axle
Without Paint _____Rear Axle
_____Total

Truck GAWR's as Built

	Front GAWR:	Rear GAWR:
Axle	_____	_____
Tires	_____	_____
Springs	_____	_____
Rims	_____	_____
Brakes	_____	_____

SPECIFICATIONS
A-48-DH

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

B. WEIGHT DISTRIBUTION: (Continued)

The successful vendor shall provide two (2) decals with the above information inside the truck operator door and the height information on Page 10. A copy of the decals shall be provided with the pilot model.

Engineering Concurrence:

This specification and all specified components must be reviewed and approved by the successful Original Equipment Manufacturer (OEM). The installation of the specified components must be approved by the successful manufacturer's Engineering Department.

PENNSYLVANIA WEIGHT LAWS

* * * * * * * * * * * * * * * * *

Maximum GVWR for tandem axle truck is 54,000 LBS on the Federal Interstate System.
Maximum GVWR for tandem axle truck is 58, 400 LBS on State secondary road System.
Example: 18,000 LB is maximum legal weight on each tandem rear axle.
Federal Interstate.
36,000 LB is maximum legal weight on a tandem rear axle,
46,800 LB is maximum legal weight on a tandem rear axle,
State System.

C. POWER TRAIN OVERVIEW:

NOTE: LUBRICANTS FOR FRONT AXLE HUBS AND DIFFERENTIALS, AUTOMATIC AND 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).

ENGINE

Minimum 370 hp NOTE: If additional HP is available, it may be included in an effort to give the Department the maximum available.

TRANSMISSION AUTOMATIC

Allison RDS 4500 6 speed per line item award

REAR AXLE

46,000 LB axle/s – total.
Rear axle ratio (502) shall be selected using operation requirements defined in the intent statement.
Two other axle ratio computer runs shall be presented at the pre-build meeting.

SPECIFICATIONS
A-48-DH

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

D. VEHICLE COMPONENTS:

1. ALARM - BACKUP:

ECCO 450 shock mounted.

2. AXLE FRONT:

20,000 LB capacity "I" beam type, minimum, relative to weight distribution.
The front axle grease fitting locations must be provided with zerks.
Stemco, oil seal assembly or approved equal.
RE: Above GAWR minimum relative to Engineering Department weight distribution chart.

3. AXLE REAR:

Air ride suspension.
Suspension shall be tailored to axle loads and shall be adequate to sustain maximum GVW without overload or permanent set.
Stemco rear wheel seals, (Guardian).
All rear axle hardware shall be grade 8, with self-locking nuts.
The rear axle housings shall not be aluminum or lightweight component type.

NOTE: Twin screw rear. Power in both rear axles with driver controlled diff lock.

4. BRAKES:

Full air anti-lock in compliance with the most current FMVSS requirements.
Air compressor with dash-mounted gauge(s).
The air tank or tanks shall be mounted as required by the paint machine manufacturer.
Buzzer-type, low air pressure with light as indicator.
Parking brake warning light.
Spring-type, rear wheel-parking brake, size 30/30 chambers with proper brackets to obtain the following.

SPECIAL NOTE: Rear brake chambers mounted to provide adequate road clearance and for paint gun carriage mounted forward or above axle REF: MGM Model 30 chambers. (No substitute, standardization).

Automatic air tank drain valve with heater on the (first) tank. (Ref: Bendix). DV-2 drain valves with heater. Each of the remaining air tanks shall have a manual drain valve.
Air dryer installed with heater. Per: Haldex DRYest or Bendix AD-IP
Dryer installation shall be in concurrence with the air compressor manufacturer’s recommendations.
16.50 inch x 7 inch or 18 inch x 7 inch rear brakes.
“S” cam single anchor pin or quick-change type, double-anchor pin.

SPECIFICATIONS
A-48-DH

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

D. VEHICLE COMPONENTS: (Continued)

4. BRAKES: (Continued)

16.50 inch x 6 inch “S” cam steer axle brake (no substitute, standardization).
16.50 inch x 7 inch or 18 inch x 7 inch rear brakes.
“S” cam single anchor pin or quick-change type, double-anchor pin.
16.50 inch x 6 inch “S” cam steer axle brake (no substitute, standardization).
Quick change type single or double anchor pin if drum-type brakes are furnished.
All electrical connectors for drain valve and air dryer shall be covered with heat shrink material or have sealed connections.
Drum brakes shall have automatic slack adjusters and they shall be clearance-sensing type only with adjustment on application of the brake (no substitute).

5. CAB:

Aluminum or steel cab (low tilting type).
One or two-piece windshield. The windshield shall provide optimum square footage of glass to ensure operator visibility.
Drivers and passenger windows shall be roll down type. Sliding are unacceptable.
Seats: Driver's seat and passenger seat shall be high back adjustable BOSTROM Air 905 Series with lumbar support or National 195 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. A bellow-type protective skirt shall cover the seat suspension mechanism. Color coordinated to cab interior.
Deluxe fresh air hot water heater, manufacturers highest output.
Cab clearance lights
Dual windshield defrosters.
Dual windshield wipers: Heaviest arms and linkages available, maximum length.
Washer tank: Minimum capacity one (1) GAL of washer fluid. Shall be filled with an anti-freeze type solvent.
Inside dome lights, two (2), one over each seat.
All grab handles: Adequate entry and exit handles shall be furnished to provide "optimum safety" for field personnel. Handles shall be covered with non-skid paint.
Dual inside sun visor.
Mirror(s): On both sides. 6 inch x 16 inch, minimum, west coast type heated with round convex mirrors heated. The wires shall be fitted in such a way that the mirror glass/element can be changed by unplugging the two-wire lead. Mirrors and arms maybe stainless steel, aluminum or chrome. There shall be an automatic control box for changing lanes, backing, merging, etc. as per Lanescan – ARCM Corp. 877-272-6111 Mirrors shall be mounted as far forward as possible.
Dual electric horns and air horn.
Tinted safety glass throughout AST-l.
Door windows shall be roll down type if available from OEM.
All controls and knobs shall be properly identified.

SPECIFICATIONS
A-48-DH

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

D. VEHICLE COMPONENTS: (Continued)

5. CAB: (Continued)

Areas likely to be walked or stepped on shall be Bustin No. NST4 full size or Ohio Grating No. JA2119SG4 serrated or IKG Industries Type B54 serrated swage lock, with end band. The size and strength shall be in accordance with the truck manufacturer's step design but the material shall be as noted above. The outer step edge must be serrated in lieu of plain, smooth metal edge. All edges shall be banded (skirting) on the outer perimeter. Overlay not acceptable. Top of the first step shall be (approximately) 21 inch above ground. Step design and material shall be the same design and material on the left and right side.

The cab floor covering shall be heavy-duty rubber with closed cell rubber or heavy felt backing.
Driver armrest left side and right side.
CB power connectors, (1) one pair, dash mounted. Both male/female ends shall be supplied per EQN -78.
Emergency triangle warning kit, with hold down, (Ref: KD610-4645, KD Lamp Co. Tel: (513-621-4211) or equal stored (fastened) in the cab.
If air ride cab suspension is available, it shall be included.
Steering wheel diameter shall be 18 inch (approx.).
AM/FM radio with cassette
There shall be a Roadwatch PN #849-0006-000 installed (Sprague Controls, Tel: 1-800-441-2048).

6. AIR CONDITIONING:

Integral air conditioner with heater. Manufacturer's highest output available.
Cab and rear shelter shall be separate systems

7. CHASSIS:

C.A. dimension, and wheelbase shall be determined by the manufacturer to provide optimum weight distribution.
The main frame shall be full length, including the required AF for paint gun carriage.
License plate bracket rear.
Splash guards per EQN-66

8. DRIVE LINE/CENTER BEARINGS:

Heavy-duty driveline shall be engineered and be compatible with the engine, drive train and transmission.
GLIDECOAT splines, or approved equal.
"Factory balanced" with two Zerks per universal joint.
SPICER 1760 or ROCKWELL 176N drive line, minimum.
The heavy-duty center bearing shall be engineered with due consideration to the drive shaft angles, length, location, proper bolting based upon engine and transmission selection.
This applies if center bearing is required.

SPECIFICATIONS
A-48-DH

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

D. VEHICLE COMPONENTS: (Continued)

9. ELECTRICAL:

Primary wire and battery cables shall be copper, negative ground.
Batteries: Four (4), heavy-duty, 12-volt, maintenance-free, BCI Group Size 31, with stud-type posts and anti-corrosion treatment on each terminal. 2500 total cold cranking amperes (CCA) at 0 degrees F. 882 minutes of total reserve capacity at 80 degrees F as per SAE, REF. DELCO.

Battery Mounting: It shall include the following:

a) 0.25 inch 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).
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. All wire splices must take place inside corrosion proof weather resistant box. Splices outside of these boxes are not permitted.
Alternator: Delco 160-amp minimum, high performance, solid state.
Starter motor: With thermal overcrank protection and high torque capacity. Suitable for the diesel engines offered as per starter manufacturer's recommendation. Ref: Delco - Remy, 37 MT (with OCF) for engines up to 500 cubic inch (unless replaced by Delco 41 MT) or 42 MT (with OCP) for engines 501 cubic inch and above. (No substitute, standardization). Battery cable from battery negative terminal to starter motor or frame.
Alternator and starter mounting bolts: Grade 8.
Electrical chassis wiring harness: Body lighting and wiring Truck-Lite or Grote. All lights shall be sealed, and shock mounted.
Flasher: Heavy-duty electrical.
Note: If an audible alarm is supplied for 4 ways and turn signals, it shall have on/off capability.
All exposed junctions: Waterproof and sealed against salt.

10. ENGINE:

See POWER TRAIN OVERVIEW for acceptable engines.
Replaceable heavy-duty, full-flow type filter(s) and oil filter(s) as recommended by the engine manufacturer, bearing a legible OEM part number.
Cooling system: The largest factory available capacity compatible with engines and transmission referenced. With overflow recovery system and visual level indicator.
Radiator core and shell: Shall be manufacturer's heaviest construction grade radiator available.

SPECIFICATIONS
A-48-DH

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

D. VEHICLE COMPONENTS: (Continued)

11. ENGINE ACCESSORIES:

The oil dipstick must have tubing and dipstick of sufficient length to provide reasonable access.

Coolant filter/conditioner: Sized for and compatible with the cooling system. Ref: PERRY, Tel: (405) 672-2311 or manufacturers recommended system.

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

Fan: Auto/manual controlled fan as per manufacturer's recommendations.

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).

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, it shall be acceptable.

Cruise control: Factory

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

Hoses: The air induction system and large cooling-system hoses shall be clamped with 0.625 in wide, 150 inch LB stainless steel, constant-torque spring-loaded worm clamps. Ref:: WITTEK MANUFACTURING 312-492-9400, BREEZ CLAMP CO. Tel: 4l2-639-39-3571, constant-torque clamps with liner for silicone hoses. Cooling system hoses 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. Ref: GATES, GOODYEAR or equal. Silicone radiator and heater hoses.

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

Drive belts: Cog belts, or serpentine.

SAE #1 engine bolt circle to accommodate transmission specified.

Engine Alarm System: High temperature, and low oil, and low water level shall incorporate a bell and light system.

Minimum 2 stage compression engine brake. Engine brake shall be concurrent with OEM's recommendations while offering maximum capability.

12. EXHAUST:

Vertical tailpipe and muffler system or approved horizontal muffler and vertical tail pipe. System shall be directed straight up to offer maximum platform availability.

Tailpipe with raincap or elbow.

The muffler and tail pipe shall be shielded or insulated to protect personnel from burns when entering or exiting the cab and platform area. The shield shall be 180 degrees to 360 degrees and shall be of non-rustable material such as stainless steel or aluminum. RE: RIKER or equal.

SPECIFICATIONS
A-48-DH

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

D. VEHICLE COMPONENTS: (Continued)

13. FAST LUBE OIL CHANGE SYSTEM (FLOCS):

This system will be installed with all the fittings, brackets, clamps and hoses. The system will be compatible with all fittings presently used by the Department. The Chief, Equipment Division, prior to installation will approve the final placement of the male half of the snap coupler on the equipment.
REF: AEOQUIP or prior-approved equal.
Ref: No. **EQN-351A**.
There shall be a "FLOCS connections" decal to direct the operator.

14. FRAME AND FRAME EXTENSTION:

The Resisting Bending Moment (RBM) shall be a minimum of 1,000,000 inch LB per rail, for the entire length of the frame including any frame liners, except where engine and radiator adjustments are required. Frame material shall be of at least 110,000 PSI yield strength. (Drop frames are not acceptable).
Minimum frame REM shall be approved by manufacturer's Engineering Department.
Main frame and any required liners shall be either straight channel or offset channel, full length. No welding shall be done and no holes drilled on the main frame rails without approval of the frame manufacturer.
There shall be no front or rear frame extension. Bolt-on or welded extension will not be accepted. The vendor shall select main frame rails of adequate length to suit the body/platform.
Front bumper shall be steel. Bumper shall be directly mounted to the frame.

15. 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 gauge 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.
Hourmeter that records only when the engine is running, Ref: DATCON or equal shall be readable from the driver's seat.
Speedometer with odometer.
Tachometer
Voltmeter
Parking brake indicator light.
Digital speedometer mounted within operator's line of sight.

16. PAINT:

Cab, shelter, deck and all above deck items and wheels shall be painted PENNDOT yellow, Ref: Dupont 6808 for shade only.
Conspicuity per **EQN-127A**.

SPECIFICATIONS
A-48-DH

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

D. VEHICLE COMPONENTS: (Continued)

17. SAFETY:

All Grab Handles: Adequate entry and exit steps shall be furnished to provide "optimum safety" for field personnel. Handles shall be painted with non-skid paint. Ref: E-Z Trac, 1-800-527-9921

All steps shall be BUSTIN No. NST4 full size or OHIO GRATING No. JA2119SG4 serrated or IKG INDUSTRIES Type BS4 serrated swage lock with end band. The size and strength shall be in accordance with the truck manufacturer's step design but the material shall be as noted above. The outer step edge must be serrated in lieu of plain, smooth metal edge. All edges shall be banded (skirting) on the outer perimeter. All steps shall be reinforced to ensure that they can support 250 LBS per square feet. Overlay not acceptable.

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 or externally in close proximity to the cab (if external, it shall have a weatherproof cover) for easy and quick access. Ref: 2A: 10B:C.

All exposed coolers and/or evaporators shall have expandable metal covers.

There shall be a minimum of one (1) warning light mounted on the shelter and one (1) on a pedestal just aft and above cab. One (1) light shall be visible for on-coming traffic and one (1) light for traffic from the rear. The lights shall be per **EQN-210A**.

18. STEERING:

Power steering: Dual integral or single integral types hydraulic with right wheel power assist cylinder. With stops to prevent damage to system.

GLIDECOAT steering shaft.

Steering system (e.g. flow, pressure, relief valve etc.) shall be selected considering the full front axle loading. Ref: ROSS or SHEPPARD gear assembly.

Hydraulic supply pump: Vane type or roller type, with sufficient oil flow to permit one (1) steering wheel revolution per second, in a "park" condition. Ref:: VICKERS Inc. V-20 Tel: 215-638-4700, Eaton or 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.

19. TANK - FUEL:

Safety - type fuel tank(s) as per the requirements of FMVSS.

80 gallon minimum total capacity, single, mounted tank.

Cylindrical shaped with formed sump.

Aluminum or stainless steel unpainted.

Tank mounting hardware and brackets shall be stainless or aluminum heavy duty brackets with rubber gaskets.

Dual tanks are unacceptable.

SPECIFICATIONS
A-48-DH

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

D. VEHICLE COMPONENTS: (Continued)

20. TRANSMISSION: See POWER TRAIN OVERVIEW for acceptable transmission.

The transmission must be capable of maintaining a constant speed of 5 to 15 MPH without upshifting or downshifting. Equipped with a single or three gear charging pump.
Console control shall incorporate all hold identifications.

External auxiliary oil cooler for transmission as required due to prolonged transmission converter operation in second gear, maximum cooler size must be provided to keep oil at acceptable operating temperature. (Water to oil type cooler).

The transmission and rear axle shall be geared to provide a working or operating ground speed of 0 to 900 feet per minute and a road speed of up to 60 MPH.

The truck transmission and rear axle shall be geared for efficient operational speeds of between 5 and 15 MPH at a maximum grade of 17%. The transmission hold system shall be furnished to provide these operational speeds without the transmission overshifting and seeking a new gear as these needs vary regardless of highway gradient.

21. WHEELS/TIRES:

GENERAL:

The truck/s shall be equipped with Accuride 10 hole (No Substitute) hub piloted steel disc wheels for radial tubeless tires front and rear.
The wheel end shall be equipped with outboard cast brake drums.
All tires will be radials no substitute.
The front tires shall be the widest possible while satisfying all OEM requirements. Ref: 425
Truck and body company shall ensure proper sized tires and wheels for GVWR provided.

Wheel-Guard Separators:

The wheel ends shall be equipped with the Accuride 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.

22. COLLISION AVOIDANCE SYSTEM:

There shall be a CAS installed. Monitor 5.6 inch LCD color monitor min. shall be cab mounted.
Camera shall be mounted on the rear of the truck.
CAS shall be weatherproof.
Ref: Wintron Technologies 1-800-865-5351
Preco Safety Products 1-800-453-1141

SPECIFICATIONS
A-48-DH

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. PAINT MACHINE OVERVIEW:

1. PAINT:

The complete machine and all components, including tanks, compressor, etc., shall be painted PENNDOT yellow. Ref: Dupont 6808 for shade only.

2. PLATFORM:

The vendor shall supply and install on the chassis a steel platform of adequate size to accommodate all relevant equipment. The platform framing shall be constructed of a minimum 2 inch x 4 inch steel structural channels so as to support all required equipment mounted on it, spaced on approximately 16 inch centers. The spacing of these cross members shall not exceed 17 inch.

The platform shall be supported by either two (2) structural steel I beams or structural "C" channel. "U" bolts or grade 8 bolts with self-locking nuts and two (2) shear plates shall be utilized to secure the platform to the truck chassis frame. Mounting practices in accordance with N.T.E.A. standards.

The platform shall be fabricated to provide adequate spacing for servicing and maintenance of the paint supply lines, fittings, and valves. Spacers utilized between the truck frame and body longitudinal shall be manufactured to support a fully loaded platform without flexing or twisting.

The platform ladders and handrails shall be steel. The platform shall be a minimum 8 GA non-skid steel safety tread surface. All handrails shall be covered with anti-skid paint. A minimum of four (2 per side, 1 front side and 1 rear side) ladders shall be furnished to provide easy access to the platform. Ladders shall be Bustin steel full size or Ohio Grating serrated or IKG Industries serrated swage lock, with end band. The size and strength shall be in accordance with the truck manufacturer's step design, but the material shall be as noted above. The outer step edge must be serrated in lieu of plain, smooth metal edge. All edges shall be banded (skirting) on the outer perimeter. Overlay is not acceptable. Top of the first step shall be (approximately) 21 inch above ground. Step design and material shall be the same design and material on the left and right side. Ladder/s safety chain shall be no more than 72 inches from ground level.

Rear wheel fenders, aluminum, for protection of the rear axle tires, shall be affixed to the bottom of the platform. Fenders shall be constructed in accordance with the Commonwealth's vehicle inspection requirements.

A one inch minimum steel OD railing shall be installed around the platform where necessary and bolted in place. The height of the railing shall be a minimum of 42 inch. Railing shall be properly supported (e.g. plates and/or gussets) at its base to eliminate flexing of the deck.

The installation shall be engineered and approved by the vehicle manufacturer and shall have no adverse effect upon the manufacturer's warranty.

SPECIFICATIONS
A-48-DH

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. PAINT MACHINE OVERVIEW: (Continued)

3. BUMPER - REAR:

The rear bumper shall be a minimum of nine 9 inch wide and extend across the rear of the truck platform. It shall be at least 22 inch above the road surface and have an open grip strut surface. The bumper support shall be at least 4 inch x .1875 inch-channel steel on both sides and the bumper should be of (minimum) .250 inch thick aluminum channel with welded end section forming a strong box section. Piping shall not extend below rear bumper. Rear bumper shall be properly supported to ensure it can support 250 LB per square feet. Final design shall be approved at the pre-build meeting.

4. TOOL BOX:

Two aluminum weatherproof, lockable tool boxes, 16 inch x 19 inch x 18 inch (approximately) shall be supplied. The box shall have a drop door with safety latch. Any special tools needed for. adjustments or disassembly of the various machine components shall be furnished in each box. Final locations of these toolboxes shall be decided at the pre-build meeting.

5. REAR SHELTER AND EQUIPMENT:

Ref: **EQN-370**.
The entire shelter shall be structurally self sufficient and rubber shock mounted to the cross channels.

Seats: Two (2) shall be high back adjustable BOSTROM Air 915 Series with mechanical lumbar support or National 195 Series with mechanical lumbar support or DuraForm Air Command Series (fabri form cushions with mechanical lumbar support) with body cloth insert and three-point retractable seat belt. A bellow-type protective skirt shall cover the seat suspension mechanism. No substitute on seats referenced. Color coordinated to cab interior.
There shall be one armrest left/right side, mounted to the inside shelter wall at each window.
Fire Extinguishers Quantity of two (2) rechargeable dry-chemical 10 ABC-rated fire extinguishers (1 per I.D.17 and 1 in or in close proximity to the rear shelter) with charge condition indicator (gauge) and red waterproof snap-on covers.
Extinguishers shall be in compliance with NEPA #385 and federal motor carrier safety regulation.
C.B. power connectors (1 pair) in rear operator's cab per **EQN-78**.
Both male/female ends shall be supplied
CB shall not be supplied.
There shall be a shelter operated emergency paint shut-off for the paint supply.
Bubble windows (tinted) with bottom slide pigeon holes for both sides of shelter shall be supplied and installed.
There shall be black rubber matting throughout the inside of the shelter floor.
Air Conditioning - The paint machine shelter shall be air conditioned with a roof mounted unit if available or wall mounted unit with duct work to both operators. This unit is a separate system from the truck.
AM/FM radio
Six (6) accessory hooks - 2 front and 4 rear.
Two (2) lights inside rear operators cab one over each operator station.

SPECIFICATIONS
A-48-DH

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. PAINT MACHINE OVERVIEW: (Continued)

5. REAR SHELTER AND EQUIPMENT: (Continued)

Heater with fan shall be provided with controls in the paint operator area. A summer by-pass valve shall be provided to eliminate heat in cab in summer months. Hoses shall be protected against bursting hot water on operators in case a hose bursts. Silicone heater hoses shall be utilized and previously specified clamps in the truck specifications. Heater shall have sufficient BTU output to keep this area comfortable and shall be a copper cored unit.
Inside bulkheads and roof shall be insulated. (Ref: D B Engineering "tan" cab insulation, Tel: (214) 484-8890, or equal. All edges shall be sealed with a silicone sealer.
Tinted safety glass throughout AST-l unless a safety type plexglass is available. There shall be metal panels in the bottom of the shelter.
There shall be a sliding front access door.
The top step entering the rear shelter shall be approximately 9 inches deep.

6. INTERCOM SYSTEM:

David Clark Communication System Model U-3800 (no substitute).
12 VDC power source.
The intercom system shall be for a four (4) station intercom system.
System to include two each headset/microphones in the truck drivers cab, Drivers set shall be a "one ear" unit.
Two (2) each on the rear bulkhead behind seats and all related equipment.
Headsets shall cover one ear – (Ultra Lite) – David Clark # 40410-G-02
All station shall have necessary jumper cords to assure when headsets are plugged into the master station or remote headset stations that the headset cords do not interfere with the user.

7. GUIDANCE SYSTEMS:

An optical sight, Holovision or equal mounted to the front of the chassis cab, shall have minimum projection beyond the front bumper. The sight shall include the necessary light source, lens system and mirrors to project a virtual image of a luminous sighting pattern onto a distant target. A housing, mounting and adjustment linkage shall be provided for positioning and clamping the optical sight in the best location for the vehicle operation.

The truck cab must be able to tilt with the optical sight installed.

LASER DOT GL-3000-P mounted on cab roof.

SPECIFICATIONS
A-48-DH

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. PAINT MACHINE OVERVIEW: (Continued)

8. CONTROL CENTER:

Aluminum or steel control center shall be provided, per **EQN-370**. The control center shall be shock mounted to the platform assembly mounted inside the rear shelter in a manner to allow ample access for servicing and repair.

Control panel shall be mounted in an inclined position, so that it can be observed from either operator's position

Each gauge and valve on the control panel will be identified with a photosensitive label, metallic type and/or engraved laminated plastic.

A removable plate will allow access to the interior for service.

A 125 PSI safety valve shall be located on the rear of the panel air manifold.

(REF: EQN-220 and EQN-221)

9. SPRAY EQUIPMENT CONTROL BOXES:

Each striping machine supplied shall be provided with two additional control boxes for use as a spare (one for the left gun carriage and the other for the right gun carriage).

The spray equipment shall be electrically controlled by means of solenoid valves and individual toggle switches. The switches mounted in a portable control box at each operator's position.

The control box shall also contain a master control light and indicating light to "ready" positions and an advance-retard control skip-line mechanism to cover the new line over the one already on the road. A plug, coiled cord and thumb-button control for manual restriping shall be provided at each location.

Wiring harness shall be connected to control boxes by means of a male, female type connect for quick replacement of control boxes.

All line pattern combinations, skip line mechanism actuation, and skip line combinations can be obtained by activating only one switch that also simultaneously activates or resets the skip line mechanism.

NOTE: SKIPLINE SHORT & LONG FOR BOTH SIDES SHALL WORK INDEPENDENT OF EACH OTHER.

The remaining toggle shall be an off switch (master), connected in such a way that when activated, it will turn off and cancel any of the above selected patterns, as well as automatically reset the skip line mechanism to a ready position. Provision shall be made so that sphere gun(s) may be controlled by activating a switch on the portable control box for independent and/or simultaneous binder and glass sphere operation. Each sphere gun shall have a separate switch for activation.

The entire switch assembly shall be removable from the control box holder for servicing and is attached by a pin connector type harness to an electrical junction box.

10. ELECTRONIC SKIP LINE SYSTEM:

The M-B Model 3000 paint line controller is a micro processor based control unit based on the Intel MCS-51 series of micro controller IC's or LDI Model SE-88 Micro Processor based on the Electronic Counters & Controls, Inc., Model 484 Series of micro processors.

Two skip line systems shall be included in the striping unit that will allow remote application of various pre-selected line patterns on the fly.

NOTE: SKIPLINE SHORT & LONG FOR BOTH SIDES SHALL WORK INDEPENDENT OF EACH OTHER.

SPECIFICATIONS
A-48-DH

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. PAINT MACHINE OVERVIEW: (Continued)

10. ELECTRONIC SKIP LINE SYSTEM: (Continued)

Each skip line system shall be capable of regulating separate cycle lengths. The system shall also be capable of automatic and manual regulations of all guns on both the left and right carriages. It shall also include advance/retard controls and automatic reset.
The controller shall be of plug-in design, panel mounted.
The system shall retain programmed and accumulated information, even if the emergency off (Master) switch is activated, or the unit is removed from the vehicle.
The unit shall operate entirely upon 12 V.D.C.
Calibration to the vehicle is performed electronically by the controller programming.
The microprocessor shall include a feature to allow short skips to be painted left and/or right side/s (independently or in parallel).
Controls and functions of the controller shall be programmable by means of membrane touch panel switches to the nearest .1 of a feet.
The unit shall be capable of accuracy to within .1 of a feet at speeds of up to 40 MPH.
Paint and cycle lengths may be varied from .1 feet to 99.9 feet. There shall be provisions for reset, to zero or instant start of stripe for full cycle lengths. Also, there shall be provision for instant-off.
The controller may be configured to begin the painting cycle with the paint line or the skip interval.
There shall be provision to move the stripe/cycle function ahead or back while the vehicle is in motion.
The controller will be equipped with a LCD or LED display having a capability of displaying a minimum of 6 characters of a minimum .500 inch height.
Vehicle speed to nearest .1 MPH and time will be displayed simultaneously on the readout of the controller.
An odometer function will indicate the total distance the vehicle has traveled. The controller will accumulate and display, upon command, the total length in feet and miles of paint applied by each individual gun and the total length of feet or miles of paint applied by all guns.
The controller shall provide for delay of glass bead application for complete coverage of painted line.

The controller shall have two auxiliary gun outputs. These outputs will follow the paint gun output and will be individually programmable by the operator for two separate, simultaneous parameters.

a. Preset speed - the auxiliary gun outputs will be enabled when the vehicle speed is at or above a present value.
b. Gun spacing delay - the auxiliary gun outputs will go on at a preset distance after the paint gun output goes on, and will turn off at the same preset distance after the paint gun goes off.

Printer (Supplied) shall, upon command, print out the date, headings for each gun, the number of feet of paint applied (total) by each gun and the total number of feet of paint applied by all paint guns, upon command. A conversion of feet to miles shall be available upon command (calculator is unacceptable).

Digital speed meter system: A digital speed meter shall be included on the striping unit that will allow the truck operator to read his speed in three digits to aid him in maintaining a desired speed.

The system shall include a digital control meter having three .6250 inch high digits, readable without error from approximately 20 feet with the last digit reading 1/10 MPH and having and accuracy of 1/2% of full scale.

SPECIFICATIONS
A-48-DH

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. PAINT MACHINE OVERVIEW: (Continued)

10. ELECTRONIC SKIP LINE SYSTEM: (Continued)

The signal source shall be a logic level pulsating unit driven by the transmission or driveline. The 12 VDC power for the system shall be provided by the truck alternator and be separately fused.

Footage counters A 6-digit reset type footage meter shall be provided mounted in the cab console, one for each gun position capable of measuring actual number of feet of line applied. (Adjustable)

11. BINDER SPRAY EQUIPMENT:

The binder spray guns shall be a Binks Model 30A with shrouds (largest size possible) of the non- bleeder type, capable of processing material in quantities which will yield a 4 inch line of .015 inch wet film thickness to be put down at speeds of 3 to 22 MPH.

Line blowers - manufactures standard.
Moisture injection system N/A
Paint sensors N/A

There shall be a "Tip Cleaning System" that allows for water to be injected into the airline without necessitating the turning off of the air. Flush on the fly to be provided.

12. PAINT TANKS:

This machine shall have paint storage capacity of a minimum 1000 GAL in an un-pressurized container designed for two-color paint application.
One compartment baffled for yellow, minimum 600 GAL.
One compartment baffled for white, minimum 400 GAL.
Each tank shall have a hydraulic type mixer. On/off speed controls in rear shelter.
Mixer shall be removable without unbolting the entire top of the paint tank.
The top of each compartment shall be painted with anti-skid surface to prevent foot slippage when wet or damp.
A Bustin type steel thread stepladder with handrails covered in anti-skid paint should be affixed to the platform side of the paint compartment for access to the inspection lids.

Paint Tank Low Level Indicator System – n/a

Liquid Level Calibration Rod -Two inverted aluminum direct reading rods calibrated in gallons shall be provided to indicate the paint quantity in each paint compartment. There shall be provisions made to store these rods vertically for traveling with a removable paint cup catch basin.
The container shall be constructed of minimum 10 gauge, 300 series, and stainless steel sheet. Appropriate baffling shall be installed inside each compartment.

SPECIFICATIONS
A-48-DH

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. PAINT MACHINE OVERVIEW: (Continued)

12. PAINT TANKS: (Continued)

The bottom of the container shall be constructed of .1875 inch type 300 series stainless steel sheet sloped to allow drainage from each compartment.
The internal structure of the paint tank shall include boltable removable stainless splash plates beginning a minimum of 2 inch from the top of tank.
The two compartments shall be fitted with individual removable top inspection openings.
Minimum diameter of the inspection opening shall be 9 inch.
The top of the storage containers shall be removable for ease of cleaning.
There shall be holes cut into internal baffles to facilitate pressure equalization.
There shall be 6 inch remaining at the top of the tank providing a splash area for sudden stops thus preventing paint from getting on lid gaskets or splashing on the platform.

Stainless steel formed channel, horizontal bracing shall include 10 gauge, 1.750 inch x 20 inch, gussets spaced approximately 10 inch between the formed channels, and fitted with a removable top.
Provisions shall be made for recirculation of heated paint in and out of each paint heater. The system shall include stainless steel valving and gauges to regulate the recirculating flow from the rear control panel.
There shall be a recirculation control handle mounted left and right side inside and outside the rear shelter.

The material supply system shall be so arranged as to permit the simultaneous operation of one or two spray guns on the left carriage and one or two spray guns on the right carriage.

13. PAINT STRAINERS:

Two strainers, having a minimum surface area of 100 square inch shall be inserted in each system. One strainer shall be located at the bottom of the paint compartment and the other located at the bottom of the heat exchanger within the heat manifold. Clean out covers on the heat manifold shall be positioned such that they are readily accessible. Paint line outlets on the clean out covers will not be acceptable. The strainer assembly shall be connected to the paint supply lines by means of a union coupler. Valving shall be provided to isolate the strainer from the feed line for the cleaning of all piping, strainer, valves, and clean out fittings. The intent of this submission is to ensure that the paint machine is plumbed such that: all valves are readily accessible to operators, a clean out fitting is provided at each junction and strainer clean outs are conveniently located for periodic maintenance. The inlet and outlets to the paint supply pumps shall not be hard piped. They shall be flexible to allow for variations in chassis movement and pump variations.

14. PAINT PUMPS – TOTAL OF (4) FOUR

There shall be a shelter operated emergency paint shut-off for the paint supply.
Two pumps, one for white and one for yellow minimum, for supplying paint to the spray guns shall be "Wilden" model PV800-SSAA/WFS/WF/WF. The pump housing shall be of stainless steel. The pumps shall be equipped with Neoprene diaphragms and ball valves.

SPECIFICATIONS
A-48-DH

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. PAINT MACHINE OVERVIEW: (Continued)

14. PAINT PUMPS: (Continued)

The pumps shall be air driven, and shall have means to control the paint pressure to provide the required line width and wet film thickness of .012 inch to .015 inch. when operating in the range of 10 to 22 MPH.

Each pump shall be equipped with an automatic pressure dampening device, which shall be speed-regulated volume controlled.

The pumps are to be supplied with mufflers

There shall be an additional oilier line and filter to dissipate moisture in the pump.

Valve seats and clamp bands shall be stainless steel.

Pumps shall have stainless steel wing-nuts included at all accessible connections available.

The pumps shall be mounted at a highly accessible location and plumbed by means of unions or another acceptable method to provide pump repair or replacement in a matter of minutes.

The quick attach system must be provided for both pumps, to be removed from both sides.

Two pumps, one for white and one for yellow, shall be plumbed in such a manner that material can be pumped from the shipping drums to the storage containers on the striping unit. The pumps shall be rated at a minimum of 90 GPM. Pumps shall be mounted on top of the deck. Final location shall be determined at the pre-build meeting.

15. GLASS SPRAY EQUIPMENT:

The glass guns shall be Binks Model 30A tip size except the shroud, shall be chrome-plated and mounted behind each paint spray gun with bead sensors.

The automatic sphere guns shall be capable of dispensing 30 LBS of spheres per minute with 60 LBS air pressure on the glass tank.

To ensure the proper angle of entry of the glass sphere spray into all types of fast-dry paint spray and to ensure maximum sphere dispersion and retention the distance between the spray gun orifice and sphere gun orifice must be adjustable. Also the entry angle for the glass sphere spray must be adjustable and the glass sphere dispersion pattern shall be controlled by a water knife mounted at the head of each glass sphere gun.

The spray equipment shall be controlled by means of solenoid valves and toggle switches mounted in lightweight, portable control boxes, assembled in such a manner that various standard line combinations can be obtained by one, but not more than two toggle switches. The glass guns shall be coordinated with the binder guns for simultaneous operations to provide complete coverage to the paint line as the vehicle speed varies.

An individual control switch shall be incorporated in the glass system for independent operation of each glass gun. An emergency recessed shutdown switch activating a ball type valve through an air-operated cylinder shall be mounted within the reach of each operating station, or a single system ”main valve" shutdown system.

SPECIFICATIONS
A-48-DH

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. PAINT MACHINE OVERVIEW: (Continued)

16. GLASS SUPPLY:

A.S.M.E. pressure vessel (1), shall be supplied having a minimum total capacity of 7,000 LBS of glass spheres.

The container shall be tested for 110 PSI working pressure; hydrostatically tested at 165 PSI. Be of all steel construction and shall have a top opening not less than 24 inch diameter. It shall be equipped with an air release valve, a 0-160 PSI pressure gauge and a 110 PSI pressure relief valve. Pressure vessel shall be piped in such a way as to insure that total capacity can be utilized. A filter shall be sized (volume) at system requirement plus 50% to allow for quick delivery.

A vacuum glass fill unit having a minimum capacity of 250 LBS of glass per minute, under a 20 in/50cm suction lift at 20% humidity with dry beads. By creating a vacuum in the glass tank, glass shall be drawn into the tank without contaminating the vacuum unit. The glass spheres shall be conveyed under pressure to automatic glass sphere dispensing guns through rubber pressure hoses. A heavy-duty self-evacuating oil and moisture remover shall be installed in the airline after a finned after cooler extending from the compressor to the air control center.

The glass filling system shall include a 17 feet long, 2 inch I.D. fill hose with male and female quick coupler fittings. Including a new, unused 24 inch diameter 55 GAL metal drum with a combination bag splitter and strainer top. Glass beads and paper bag remnants shall be strained through two mesh strainers securely attached to the funnel. The splitter bar shall be recessed from the top of the container.

The Department will accept an approved equal vacuum fill glass sphere system. Any approved equal system shall have written approval by Chief, Equipment Division.

Each bead manifold shall have an end cleanout plug of at least 2 inch in diameter

There shall be a bead shut-off control valve after the manifold at each carriage.

There shall be a minimum 1 inch I.D. line from compressor to jet pump to allow for increased vacuum for beads.

Vibrators shall be provided.

Bead Tank Low Level Indicator System – n/a

17. SPRAY GUN CARRIAGE ASSEMBLIES:

Two-gun carriage assemblies shall be supplied, mounted behind the vehicle's rear wheels to support and align the spray guns.

The main carnage, mounted on the left side of the vehicle, shall have provisions for attaching three (3) single color spray guns, and three (3) glass sphere guns.

Two (2) wheel, mounted on a caster axle, mounted on the front of each carriage shall support the carriage and maintain it at a fixed height from the road surface. A parallel system shall connect the carriage to a cross slide and maintain the spray guns normal to the road surface at all times.

A pneumatic lift cylinder electronically controlled from the operator’s position shall be used to raise the carriage and a safety chain to support it during transporting.

Carriages shall be adjusted to provide maximum ground clearance.

SPECIFICATIONS
A-48-DH

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. PAINT MACHINE OVERVIEW: (Continued)

17. SPRAY GUN CARRIAGE ASSEMBLIES: (Continued)

There shall be an automatic carriage stops for 6 inch and 8 inch lines.
Trucks shall be able to paint 4-6-8 inch wide lines.
The cross slide supporting the carriages shall allow the carriages to be positioned for transport within the width of the vehicle platform, and permit its use anywhere from this location outward for a distance of 60 inch. The slide mechanism shall consist of a square tube within a square tube telescoping design with adjustable UHMW, self-lubricating material bearing areas. The outer tubing shall contain a two-channel bearing mater configuration, mounted on a retainer, which will permit adjustment as the material wears. The inner slide will have four pads of the UHMW material bolted and shimmed to its innermost slide section. The pads shall allow shimming of the pads, as the pads wear, without disassembly of the slide.
The second spray gun carriage shall be provided and mounted on the right side of the striping unit approximately on the same lateral axis as the main carriage to align and support two (2) single color spray gun and two (2) glass sphere guns. The design of this carriage shall be identical to the main carriage and it shall also extend 60 inch from the edge of the platform.
Each carriage slide shall be equipped with a hydraulic cylinder for moving the carriage to any point within its operating range. The cylinder shall be double action, controlled by a power steering control, and the steering wheel with check valves shall be conveniently located for the operator.
Hydraulic power for the operation shall be supplied by a high pressure hydraulic pump driven by the auxiliary engine.
Stacked body, quick acting solenoid valves with a manual override feature shall be mounted on each carriage. Valves shall be equipped with balanced spool design to minimize backpressure or restriction in exhaust. The valves shall be of a one-piece aluminum design body and mounted inside a weatherproof steel box with a removable lid for servicing.
All bearings or pivots on the carriage, linkage or slide, where relative motion occurs, shall be fitted with replaceable, anti-friction bearings or replaceable bearing and pressure lubrication fittings.
With both carriages extended a span of 17feet between the inner edges of the two lines shall be obtained.
Each carriage shall be provided with 2 L.E.D. safety lights (amber –forward, red - rear). Both lights on each carriage to flash alternately.

18. HEATING SYSTEM - PAINT:

The paint heating system shall maintain a minimum paint temperature of 120 degrees F at the material spray guns during operation with all three guns in simultaneous use at an ambient temperature of 40 degrees F and a vehicle speed of 5 MPH – 22 MPH. A digital thermostatic control unit shall have a variance of no more than +/- 3 degrees. Glycol temperature shall be a minimum of 140 degrees (operating range 140 degrees to 170 degrees F).
A tubular liquid heater built in accordance with the A.S.M.E. Boiler and Pressure Vessel Code and carrying the appropriate official A.S.M.E. code symbol shall be provided. The heater shall have wet base construction with the combustion area surrounded by liquid backed heating surface at the top, bottom, sides and back. Each heater tube shall have an “economizer" which causes the gases to rub against the sides of the tubes to increase heat absorption and efficiency. The entire heating surface shall be accessible for cleaning.

SPECIFICATIONS
A-48-DH

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. PAINT MACHINE OVERVIEW: (Continued)

18. HEATING SYSTEM - PAINT: (Continued)

A gun type burner shall fire the heater. The burner shall have an adjustable combustion heat assembly, which permits regulation of the air distribution, whether the firing rate is at the low, intermediate, or high portion of the firing range. The burner shall operate with zero to a trace of smoke and shall be insensitive to draft or moderate backpressure variation, and highly resistant to pulsation. Most importantly, the burner shall be easy to install adjust and service. The heater exhaust shall be primed by a draft eductor. The vertical exhaust shall be shielded by stainless steel or chrome (360 degrees around) its entire length.

RE: Gun type burner Wayne no substitute. The unit shall include, but not be limited to all controls, and shall receive its fuel from the trucks fuel tank.

The heater unit shall be capable of supplying a minimum of 326,250 BTU/HR to heat the traffic line marking material. The heater shall have the necessary safety devices to prevent overheating or excessive water pressure. One digital thermostat shall be provided, which will cycle the heater to maintain the proper operating temperature within plus or minus 5 degrees F. The fuel supply shall be filtered through a replaceable fuel filter conveniently located in the fuel supply line. Fuel supply lines shall be braced and protected.

The paint heating system shall include two shells and tube type heat exchangers, having stainless steel tubes, shells and end bonnets. They shall be 4-pass type units each having a minimum heat transfer area of 64 square feet. Structural steel brackets shall be provided for mounting the exchangers in a vertical position with the inlet and outlet extending below the vehicle platform. Each exchanger shall be mounted in a separate housing with double hinged doors to reduce the length of the circulating hoses and should be located as close to the outriggers as practical.

A circulating pump for the heated hoses shall be provided along with a fiberglass insulation blanket and an aluminum cover around each exchanger shall retain heat with in the exchangers.

Three 12-volt DC electric motor driven circulating pumps shall be provided. The pumps shall have a minimum rating of 25 GPM when pumping the heated water/ethylene glycol solution. The pumps shall control:

Pump A: Circulation to the white paint heat exchanger
Pump B: Circulation to the yellow paint heat exchanger
Pump C: Recirculation system

One digital thermostatic heat control shall monitor the paint temperature in each heat exchanger. These controls shall turn off or on the pump feed to the heat exchangers at the temperature setting required by the paint manufacturer. The thermostat for water shall be mounted in the top of the heat exchanger. Paint thermostat shall be mounted in the bottom of the heat exchanger outlet side.

Incorporated in the water/glycol system will be an expansion tank at a convenient location to either fill or check the fluid level of the system. A 14 LB automotive type pressure cap shall be used to regulate the system. An overflow tube from the cap neck down through the platform shall safely vent any overflow to the ground.

SPECIFICATIONS
A-48-DH

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. PAINT MACHINE OVERVIEW: (Continued)

18. HEATING SYSTEM - PAINT: (Continued)

Three (3) automatic air vents shall be installed in the heating system to vent any excess air that gets trapped in the heating system. One air vent shall be in the expansion tank line at the top of the boiler and one on each heat exchanger. (MANUAL AIR VENTS WILL NOT BE ACCEPTED).

There shall be sufficient ball valves installed on the heating system to isolate any and all component(s) without draining the entire system. IE heat exchanger shall have one ball valve on the inlet and outlet.

All pipes shall be insulated to thermally retain glycol/paint temperatures.

The furnace shall have a remote reset button in the vehicle cab.

NOTE: PROBES SHALL BE STAINLESS STEEL.

Exchangers shall be easily removed without disconnecting any pipes. There shall be shut off vales so the entire system is not drained down when removal is necessary.

19. PIPING/VALVES:

All hard piping that comes in contact with paint shall be stainless. All other hard piping systems glycol, air (except for air atomization) and bead systems shall be piped using galvanized pipe. All valves that are used in conjunction with the paint shall be stainless flange-type with Teflon inserts or a three piece bolted in-line valve. (The DynaQuip three piece bolted in-line maintenance valve, or equal is acceptable.) All hardware for bolting flanges shall be, at a minimum; cadmium plated nuts, bolts and washers. All valve handles shall be heavy-duty typecast or minimum .250 inch thick material. All piping, tubing or hosing used on the vehicle shall be firmly attached to the frame or bed, except where flexible conduits are required for proper operation or service. Clamps shall be per attached drawing EQN-94. Rigid piping paint lines and fittings shall be 2 inch standard weight stainless steel. Non-rigid paint conductors shall be flexible Teflon solvent resistant material of at least .500 inch ID and shall be capable of withstanding pressures up to 200 PSI. Non-rigid airlines shall be at least .3750 inch ID, flexible Teflon solvent resistant material. Additionally all nipples, plugs, reducers shall be stainless. Piping between the pump and heat exchanger shall be 2 inch (min). Nylon braided Teflon lined hosing shall not be incorporated. Hard pipe shall be used.

Each conductor to the spray guns shall be the totally enclosed core of a circulating hot water glycol heated system that extends to within 6 inch of the spray gun. To prevent heat loss, there will be no more than 14 inch of paint plumbing without jacketed conductor after the heat exchangers.

All external-atomizing airlines shall be at least .3750 inch Teflon or nylon tubing.

The pumps, hoses, fittings, valves and all components that are in contact with the marking materials, solvent trays, water tank(s) and lines shall be stainless steel and impervious to the standard paint solvents, including: (1) V M & P Naptha, (2) Acetone, (3) Lactol Spirits, (4) Hexane, (5) Methyl Ethyl Keton and (6) Water.

The paint fill supply piping shall be furnished with 2 inch quick coupler male fittings and cover caps when not in use. Two 16 feet hoses with 42 inch standard pipe shall be furnished with female quick couplers compatible with the male fittings. RE: Pipe nipples and quick couplers. All paint fills shall be at curbside.

There shall be shields mounted over each of the paint supply line shut-off actuators.

Clamping: REF: **EQN-94**.

SPECIFICATIONS
A-48-DH

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. PAINT MACHINE OVERVIEW: (Continued)

19. PIPING/VALVES: (Continued)

Piping valves shall be designed for quick disconnect. All 2" valves shall be a full 2" inside dia. Pipe threads shall be sealed with a soft type thread sealer to ease separation during service. Quick disconnect connectors shall be utilized at the carriages.

20. AIR COMPRESSOR AND ACCESSORIES:

Oil flooded rotary screw type. Unit to equipped anti-friction 100,000 hour average minimum life bearings. Shall be completely manufacturer and assembled by the manufacturer of the utility air compressor.

The compressor shall be equipped with an external single point lifting bail and exhaust rain cap. The compressor shall be designed to meet EPA sound level requirements of 76 DBA at 7 meters. There shall be an access step provided curbside.

Housing:A sheet metal housing shall be provided to enclose the machine. The enclosure shall be constructed so as to be easily removed and have sufficient accessible openings such that normal maintenance may be performed. Removable side panels for total access shall be provided. All panels to be padlock able. There shall be easy access to the oil dipstick. The exterior of the entire cabinet shall be painted PENNDOT yellow (Ref: Dupont 6808 for shade only). There shall be nothing mounted directly to the compressor. Any accessories to be mounted in this area shall be mounted on a table assembly above the compressor. The compressor shall be easily removable from left or right side without necessitating extensive plumbing removal.

Mounting: Engine and compressor to be securely mounted on a welded steel frame with vibration isolators. Forklift pockets to be located on each end of the machine for ease of installation and removal. Length shall not exceed 86 inch and width shall not exceed 38 inch. Approximate height shall be 51 inch.

Engine: John Deere 4045 or pre-approved equal water-cooled diesel engine. The engine shall have an intermittent horsepower rating sufficient to properly and adequately operate the compressor and all auxiliaries at the speed required to develop rated compressor capacity. The engine shall be equipped with a full flow oil filter and auxiliary PTO drive and third sleeve. Rated speed shall not exceed the manufacturer's published intermittent speed for compressor application. The exhaust muffler shall be located within the enclosure, and the exhaust pipe shall extend above the enclosure a minimum of 18 in.

Exhaust: The unit's exhaust shall be directed topside as is main engine exhaust. All pipes shall be rigidly supported to eliminate noise. Exhaust fumes in the area of the rear operator's compartment will not be acceptable. All exposed exhausted pipes shall be shielded and insulated to protect the operators with stainless steel or chrome shield. The I.D. of the exhaust shall be engineered to minimize engine backpressure so as not to affect the engine's warranty provisions.

SPECIFICATIONS
A-48-DH

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. PAINT MACHINE OVERVIEW: (Continued)

20. AIR COMPRESSOR AND ACCESSORIES: (Continued)

FLOCS: Fast oil change system with all fittings, brackets, clamps and hoses as per attached drawing **EQN-351A**. The placement of the male half of the snap coupler will be on the curbside of the vehicle. A FLOCS connection decal shall direct the operator. Ref: Aeroquip or approved equal.

Drains: Remote compressor oil drain/s shall be provided for ease of maintenance.

Starting: The engine shall be equipped with a 12-volt electrical starter and alternator. Alternator shall be solid state minimum 78 amp. Maintenance-free batteries rated at a minimum l200CCA shall be provided. Delco 1110 or Gould G-27, no substitute. Batteries shall be located accessible through a removable panel for ease of maintenance.

Air Filter: Separate two-stage, heavy duty, dry type air filters shall be provided for the engine and the compressor. Filters shall be located inside the enclosure and so located to draw ambient air into the intake filters.

Air Receiver: The compressor shall be 250 CFM.
The receiver shall be ASLME code approved rated at a minimum of 175 PS10 working pressure. It shall be equipped with an ASME air pressure relief valve located upstream of the final oil separator and two .750 inch service valves located adjacent to the instrument panel. The receiver shall be of a size equal to 1.4 cubic feet for every 250-CFM of air delivered.

Desiccant Filter: Desiccant filter and unit. It shall be placed in the airline at the compressor output end, after the cooler, with adequate drainage control. Unit shall be mounted away from the frame rail for ease of maintenance. One (1) water separator shall be provided before the desiccant filter.

Cooler: There shall be a cooler installed after the air compressor. The cooler shall be of sufficient size to ensure dry air is delivered.

INSTRUMENTS: A lockable instrument panel, protected against vandalism shall be supplied. Panel to include compressor air pressure gauge, hourmeter, engine water temperature and oil pressure gauge, air compressor discharge temperature gauge, start-stop control, automatic idle warm up button, and circuit breaker. Operating instructions shall be located on or adjacent to the instrument panel such that they are visible when facing the panel.

Controls: Pneumatic inlet control system automatically modulates engine speed and compressor output from zero to 100 percent in response to air demand.

Cooling: Engine and compressor cooling system shall allow rated air delivery and pressure operation continuously in 120-degree F ambient temperatures. Cool outside ambient air to be drawn through finned tube oil to air heat exchangers by an efficient engine mounted fan. Compressor fan guard shall be provided. Oil cooler face accessible for cleaning by means of a service door. Engine radiator maximum top tank temperature 90 degrees F above ambient. Oil cooler rated at 150 PSIG with maximum cooler inlet temperature of 120 degrees F above ambient.

SPECIFICATIONS
A-48-DH

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. PAINT MACHINE OVERVIEW: (Continued)

20. AIR COMPRESSOR AND ACCESSORIES: (Continued)

Protection: Machine to automatically shut down in case of high compressor temperature, high engine coolant temperature or low engine oil pressure. Additional protective features to be provided to include automatic blowdown valve, receiver relief valve, and minimum pressure valve with integral check valve.
Air compressor shall automatically shut down in case of high compressor temperature, high engine coolant temperature, or low engine oil pressure. Additional protective features to be provided to include automatic blowdown valve, receiver relief valve and minimum pressure valve with integral check valve.

Fuel tank: A check valve shall be incorporated into the fuel line to prevent fuel returning to the tank.
There shall also be a shut-off (isolation) valve.
The compressor fuel tank shall be utilized to fire the burner/boiler. Tank shall be marked kerosene only.
The compressor shall draw fuel from the truck fuel tank.

All compressor air hoses shall be crimped. Hose clamps are unacceptable.

21. SOLVENT SYSTEM:

An air operated, solvent gun cleaning system shall be installed on the striping machine.
It shall consist of one (1) 40 gallon A.S.M.E. stainless steel pressure tank with safety valve and valves and piping necessary to introduce solvent into the atomizing airline of the paint gun, as well as valved into each paint line. The system shall be installed so that the spray gun tip can be cleaned. A Teflon sealed pug valve for the guns shall be installed in the control panel for this purpose. A solvent injector system shall be piped into the heated hose after the main line valve at the outlet of the heat exchanger. This system must be as close as possible to the outlet of the heat exchanger to clean the heated manifolds and hoses for overnight storage.
There shall be a drain line for each tank one left and one right side of the truck.
All piping to be solvent resistant type. The tank construction shall be with a 4 inch threaded top opening and a full steel skirt support.

All controls shall be accessible at ground level.

22. FIRE SUPPRESSION SYSTEM:

There shall be a fire suppression system installed for the truck engine compartment and for the 250-CFM air compressor cabinet compartment.

A unit shall be mounted in each compartment in such a manner as to allow for maximum coverage of the affected area. The unit shall be an automatic system, while retaining the ability to be manually actuated from the cab. There shall be an audible and visual alarm in clear sight for the vehicle operator.
System shall be a Jomarr Model VT-6 Fire Suppression System (Tel: 717-346-5330).

SPECIFICATIONS
A-48-DH

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. PAINT MACHINE OVERVIEW: (Continued)

23. REAR WARNING DEVICE:

Message Board with Radar::

The striping unit shall have a LED changeable message board with radar mounted on the rear of the unit. The message board shall be 36 inch X 72 inch with a pivot type mount. Operational controls for message board shall be in the rear shelter, within easy reach of an operator.

Ref: PSI
American Signal with radar
ADDCO
Solar Tech

24. NIGHT LIGHTS:

Five (5) 12V floodlights to illuminate the striper during night time operations. The lights shall be located as follows:
One (1) light located on the front of the truck cab, to illuminate the pointer, with control switch inside the truck cab.
Four (4) lights total, 2 on each carriage location one front and one rear. A switch for these lights shall be located in the rear operators control panel.
Two (2) lights inside rear operators cab one over each operator station

25. HOSE REELS:

There shall be one 50 foot air hose reel, location to be determined at the pre-build meeting.
There shall be one 50 foot water hose reel, location to be determined at the pre-build meeting.

26. SPARE PARTS:

There shall be one spare spray system gun.
There shall be six spare spray system gun tips.
There shall be one spare bead gun.
There shall be one spare regulator repair kit.
There shall be two control boxes, one left, and one right.

Two (2) paint pump overhaul kits per truck, for pumps supplied with striper.

The successful manufacturer shall furnish a suggested parts stocking overview listing an essential parts inventory to support the field in areas of high turnover items frequently required to keep our units in an uptime mode.

SPECIFICATIONS
A-48-DH

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. PAINT MACHINE OVERVIEW: (Continued)

27. MISCELLANEOUS ITEMS:

a. Equipment Identification:

All valves, switches, gauges and controls shall be labeled with permanent tags as to their function. There shall be a written operator's manual that shows all valve functions.

b. Decals and Signs (Tank):

The tanks shall have material warning decals on both sides to alert nearby personnel of tank contents and operational hazards. Paint white or yellow, solvent, beads, etc. (See attached regulation. NOTE: Any and all regulation(s) that are current shall supersede the attached).

The truck shall have warning placards located on the front, back and both sides. All markings as required by HAZMAT Regulations shall be employed.

c. Wiring and Lighting:

All lights provided on the paint body shall meet the Pennsylvania Motor Vehicle code and all wiring shall be run in vapor-proof type tubing with screwed junction box connections. Wiring shall conform in gauge and color with ATA standard. Combination turn signals and brake lights, side marker lights and reflectors, as manufactured by Grote, shall be rubber shock mounted. No splices shall be made outside of a sealed junction box.
The location of these junction box/s for service access will be decided at the pre-build meeting.

SPECIFICATIONS
A-48-DH

II. DRAWINGS:

EQN-66	dated	Rev.	11-28-06	2 sheets	SPLASH GUARDS-RUBBER
EQN-78	dated	Rev.	10-27-06	1 sheet	CB CONNECTORS
EQN-94	dated	Rev.	10-02-06	1 of 2 sheets	HOSES &COUPLER
EQN-127A	dated		11-03-06	1 sheet	CONSPICUITY
EQN-210A	dated	Rev.	01-25-07	1 & 2 of 3 sheets	REVOLVING WARNING LIGHT
EQN-220	dated	Rev.	11-27-06	1 sheet	CONSOLE LAYOUT
EQN-221	dated	Rev.	11-27-06	1 sheet	CONSOLE LAYOUT
EQN-330	dated	Rev.	01-09-02	3 sheets	OPERATING MODES
EQN-351A	dated		10-20-06	2 sheets	FLOCS
EQN-370	dated	Rev.	05-22-02	3 sheets	PAINT TRUCK-REAR SHELTER

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 between the vendor and the Specification Unit.

DRAWINGS APPEAR AT THE END OF THE SPECIFICATIONS.

SPECIFICATIONS
A-48-DH

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 within a maximum of 90 days after the pilot model is accepted.

Manuals may be supplied on CD Disc in lieu of paper manuals.

SPECIFICATIONS
A-48-DH

IV. TRAINING:

Mechanic:

The successful vendor shall provide services of qualified factory trained technicians for not more than __1__ training sessions of not more than __30__ hours at __1__ PennDOT locations to train personnel for in-depth preventive maintenance, overhaul and review of the proper usage of parts and service manuals, as well as component/system adjustments that need to be monitored at specified service intervals.

Operator:

The successful vendor shall provide services of qualified factory trained technicians for not more than __1__ training sessions of not more than __30__ 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 Equipment 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 Equipment 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. Section E. 3.

All using Agencies of the Commonwealth, Participating Political Subdivision, Authorities, Private Colleges and Universities

Contract No. 4600011790

Contract Original Approval Date: 04/18/2007

Purchasing Agent:

Name: Susan Reinhold

Phone: 717-703-2931

Fax: 717 346-3820

Valid from/to: 04/02/2007 - 08/31/2007

Your SAP Vendor Number With Us: 114765

Supplier Name/Address:

MACK TRUCKS INC
PO BOX M
ALLENTOWN PA 18105-5000
USA
Supplier Telephone No: 610-709-3388
Supplier Fax No.:

Please Deliver To:

To be determined at the time of the Purchase Order unless specified below

Your Quotation: Date:
Collective No.:
Our Quotation: 6000133527

Payment Terms:

NET 30

The Commonwealth of Pennsylvania, through the Department of General Services, accepts the submission of the Bidder/Contractor for the awarded item(s) at the price(s) set forth below in accordance with: 1) the RFQ submitted by the Bidder/Contractor, if any; 2) the documents attached to this Contract or incorporated by reference, if any, and 3) the contract terms and conditions stored on the website address at www.dgs.state.pa.us for this type of Contract as of the date of the RFQ, if any, or other solicitation for this Contract, all of which, as appropriate, are incorporated herein by reference. When the Bidder/Contractor receives an order from a Commonwealth agency, the order constitutes the Bidder/Contractor's authority to furnish the item(s) to the agency at the time(s) and place(s) specified in the order. RFQ, as used herein, means Request for Quotations, Invitation for Bids, Invitation to Qualify, or Request for Proposals, as appropriate.

Item	Material/Service Desc	Est Qty	UOM	Net Price	Per Unit	Total
10	TRUCK,PAINT,WATER BORNE,AUTOMATIC	0.00	Each	368,158.00	1 Each	0.00

Item Text

TRUCK, PAINT, WATER BORNE,AUTOMATIC
District 8-0 in Accordance with attached Specification.
Allision RDS 45000 Transmission.

Chasis Make/Model __2008/Mack/MRU613_

Engine Make/Model/HP __Mack/MP7/365HP__

GVWR __66,000__

Front GAWR _20,000_Rear GAWR__46,000_

SEE LAST PAGE FOR ESTIMATED TOTAL VALUE INFORMATION

Contract No. 4600011790

Contract Original Approval Date: 04/18/2007

Supplier Name:
MACK TRUCKS INC

Item	Material/Service Desc	Est Qty	UOM	Net Price	Per Unit	Total
20	TRUCK,PAINT,WATER BORNE,AUTOMATIC	0.00	Each	359,442.00	1 Each	0.00

Item Text

TRUCK, PAINT, WATER BORNE,AUTOMATIC
District 4-0 in Accordance with attached Specification.
Allision RDS 45000 Transmission.

Chasis Make/Model __2008/Mack/MRU613_

Engine Make/Model/HP __Mack/MP7/365HP__

GVWR __66,000__

Front GAWR _20,000_Rear GAWR__46,000_

Item	Material/Service Desc	Est Qty	UOM	Net Price	Per Unit	Total
30	TRUCK,PAINT,WATER BORNE,AUTOMATIC	0.00	Each	369,651.00	1 Each	0.00

Item Text

TRUCK, PAINT, WATER BORNE,AUTOMATIC
District 2-0 in Accordance with attached Specification.
Allision RDS 45000 Transmission.

Chasis Make/Model __2008/Mack/MRU613_

Engine Make/Model/HP __Mack/MP7/365HP__

GVWR __66,000__

Front GAWR _20,000_Rear GAWR__46,000_

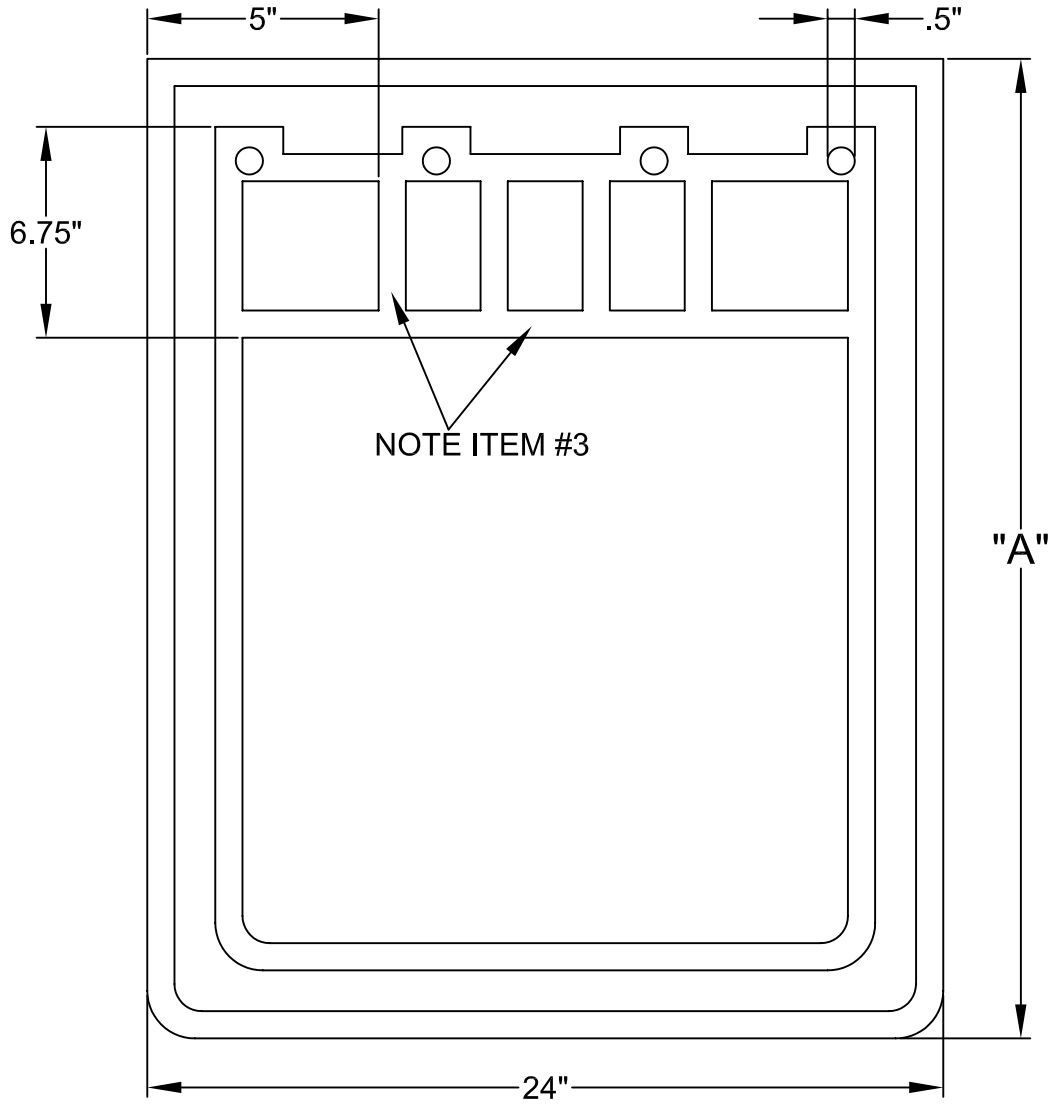
General Requirements for all Items:

Header Text

Contact:
Mack Trucks, Inc.
2100 Mack Blvd.
Allentown, PA 18103
610-709-2489
Dan Wickline

No futher information for this contract.

Estimated Total Value:
$ 1,482,300.00
Currency: USD



NOTE: DIMENSION "A" DEPENDANT ON REQUISITION

SAFETY

PA DEPARTMENT OF TRANSPORTATION

REVISIONS			SPLASH GUARDS-RUBBER TRAILER & TRUCK		
NO.	DATE	BY			
1	10-22-90	RSM			
2	10-24-95	SWW	DRAWN BY S.T.	SCALE N/A	EQN-66
3	07-02-97	DLW	DATE 11-18-87	CHK'D BY RED	SHEET 1 OF 2
4	05-28-02	DWG			
5	11-28-06	CJW			

FENDERS AND FLAPS: VEHICLES SPECIFIED UNDER THIS SUBCHAPTER SHALL BE EQUIPPED WITH FENDERS WHICH PROVIDE AT LEAST AS MUCH COVERAGE OF THE WHEEL AS THE ORIGINAL EQUIPMENT. ALL WHEELS SHALL BE SUFFICIENTLY COVERED WITH FENDERS OR FLAPS SO AS TO PREVENT LOOSE OBJECTS, RAIN, SNOW, AND THE LIKE FROM BEING THROWN ABOUT IN A MANNER WHICH MAY INTERFERE WITH OTHER PERSONS USING THE HIGHWAY.

REAR WHEEL SHIELDS: VEHICLE SPECIFIED UNDER THIS SUBCHAPTER EXCEPT TRUCK-TRACTOR WHILE TOWING A TRAILER SHALL BE CONSTRUCTED OR EQUIPPED AS FAR AS TO BAR WATER OR OTHER ROAD SURFACES THROWN FROM REAR WHEELS OF SUCH VEHICLE OR COMBINATION AT TANGENTS ESCEEDING 22.5 DEGREES, MEASURED FROM ROAD SURFACE FROM PASSING IN STRAIGHT LINE TO THE REAR OF SUCH VEHICLE. SEE 75 PA C554533 (RELATING TO REAR WHEEL SHIELDS)

AREA 6.75"x24" ACROSS THE TOP IS ACCEPTABLE IN SOLID VIS RIBS PROVIDED IT MEASURES .225" IN THICKNESS

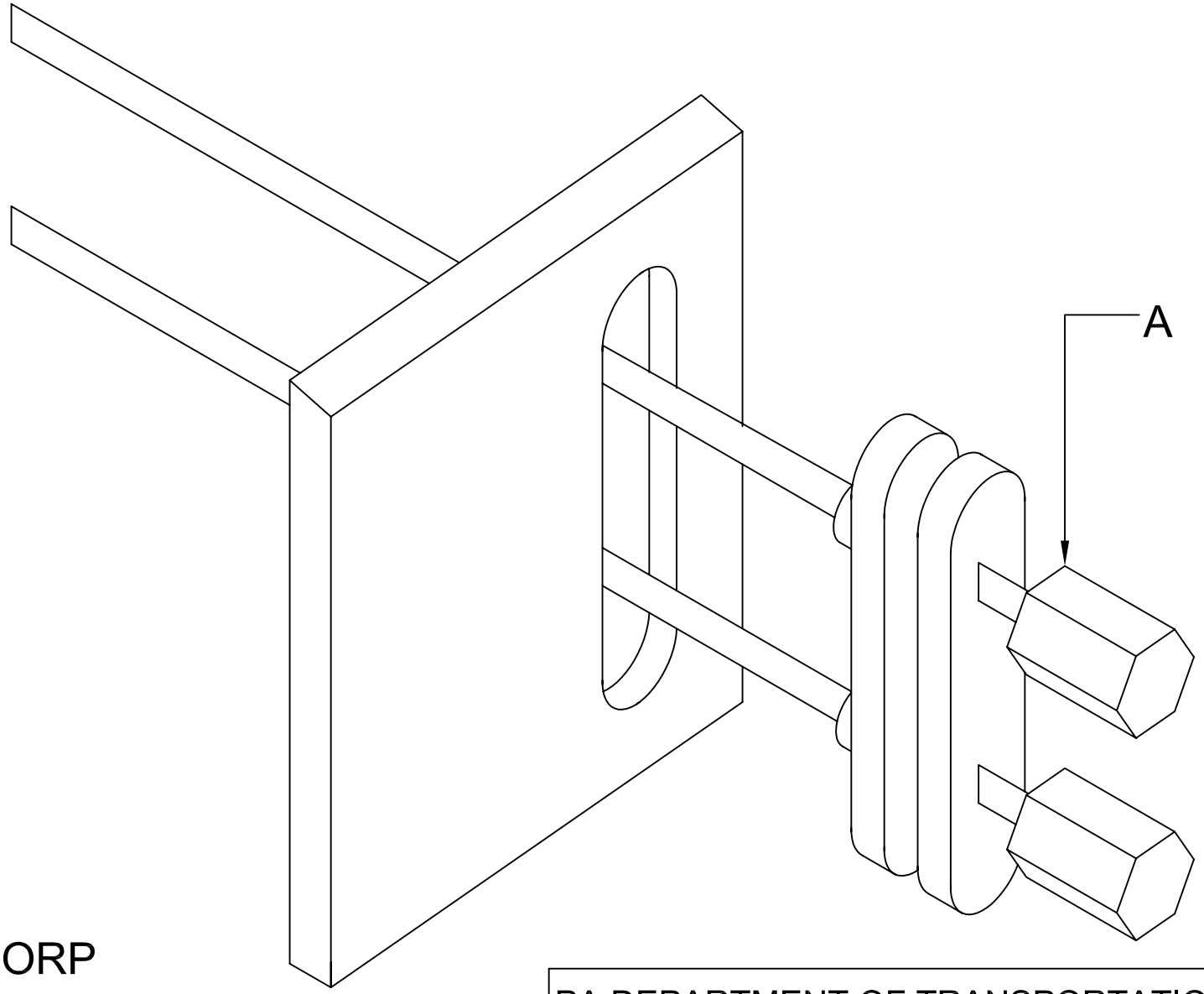
THE BODY OF SPLASH GUARD SHALL BE A MINIMUM OF .09375" THE TRIM AREA SHALL BE $\frac{3}{8}$" MINIMUM THICKNESS. THE BODY AREA IS THE AREA WITHIN THE OUTSIDE DIMENSIONS OF 24"x36" TOLERANCES +/- .250" THE WEIGHT OF THE SPLASH GUARD SHALL BE 6LBS FOR 24"x30" AND 7.5lbs x 24" x 36" MINIMUM.

NOTE:

1. MATERIAL: MOLDED NATURAL OR SYNTHETIC BLACK TIRE CHORD IMPREGNATED RUBBER. OIL AND SALT RESISTANT
2. ANTI-SAIL NOT ACCEPTABLE
3. MANUFACTURERS STANDARD SIZE ACCEPTABLE IF ALL MINIMUM THICKNESS, DIMENSIONS, AND WEIGHT SPECIFICATIONS ARE MET
4. AS PER PA VEHICLES EQUIPMENT AND INSPECTION REGULATIONS, SECTION 175-108.
5. DIMENSION "A" WILL BE 30" OF 36" AS NECESSARY, WHEN INSTALLED TO MEET PA MOTOR VEHICLE CODE OR AS SPECIFIED ON THE CONTRACT.

PA DEPARTMENT OF TRANSPORTATION

REVISIONS			SPLASH GUARDS-RUBBER TRAILER & TRUCK		
NO.	DATE	BY			
1	10-22-90	RSM			
2	10-24-95	SWW	DRAWN BY S.T.	SCALE N/A	EQN-66
3	07-02-97	DLW	DATE 11-18-87	CHK'D BY RED	SHEET 2 OF 2
4	05-28-02	DWG			
5	11-28-06	CJW			

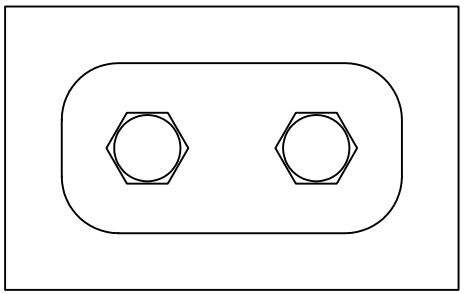


A.
PANA PACIFIC CORP
541 DIVISION STREET
CAMPBELL, CALIFORNIA 95008
408-374-7900

PART #531 277 C1

PA DEPARTMENT OF TRANSPORTATION

REVISIONS			C.B. RADIO CONNECTIONS		
NO.	DATE	BY			
1	08-15-90	WHM			
2	07-02-97	DLW	DRAWN BY WHM	SCALE N/A	EQN-78
3	10-27-06	CJW	DATE 08-15-90	CHK'D BY RED	SHEET 1 OF 1
4					
5					

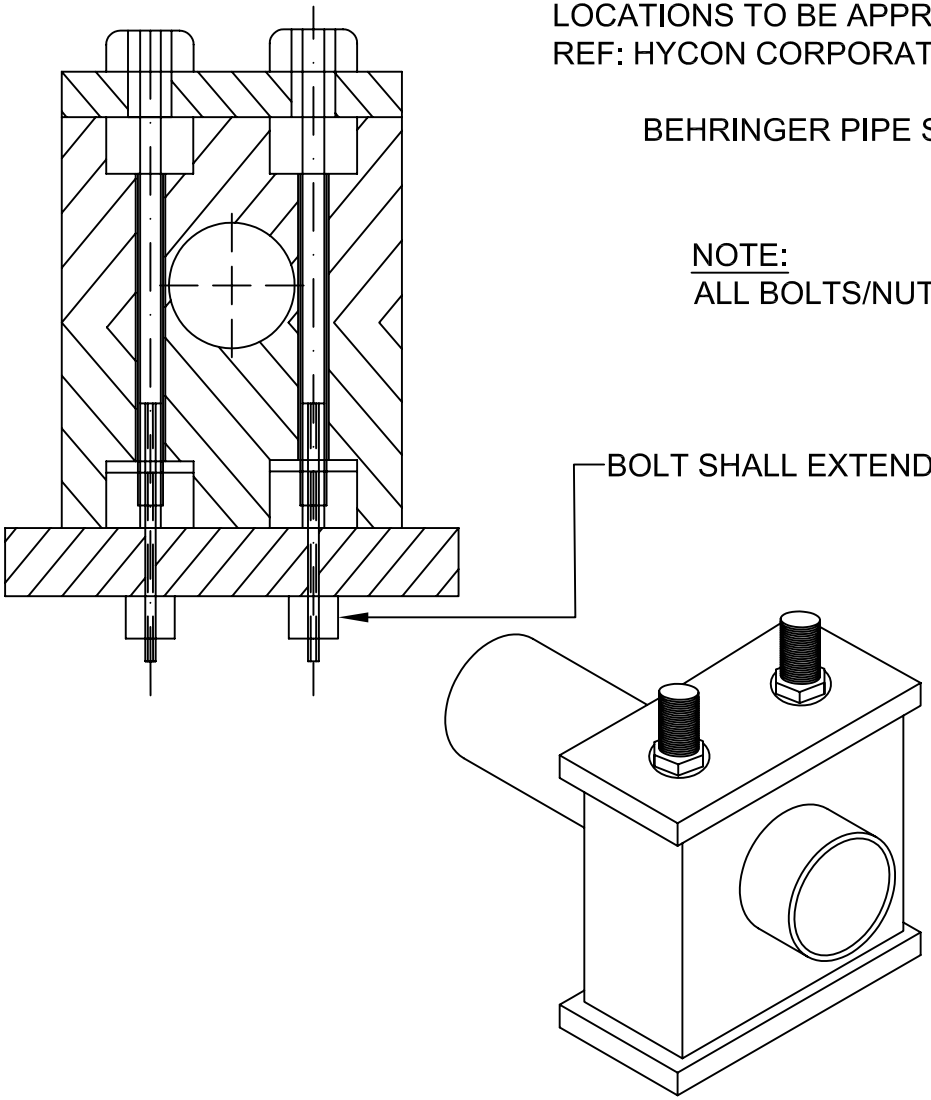


HYDRAULIC HOSES/ FITTINGS

HYDRAULIC HOSES SHALL NOT EXTEND BELOW THE TOP OF THE FRONT AXLE. ALL HYDRAULIC HOSES SHALL BE ADEQUATELY CLAMPED, SHIELDED FROM EXHAUST SYSTEM AND PREVENTED FROM RUBBING UP AGAINST ANY PART OF THE TRUCK FRAME BODY.

HYCON CLAMPS AS REQUIRED TO PREVENT CHAFFING OR RUBBING. DUE TO THE VARIATIONS OF SIZES PART NUMBERS HAVE NOT BEEN INCLUDED. WELD-ON OR BOLT-ON ARE ACCEPTABLE. AVAILABLE IN STANDARD AND HEAVY DUTY SERIES. LOCATIONS TO BE APPROVED BY CHIEF, EQUIPMENT DIVIVSION
REF: HYCON CORPORATION, LEHIGH VALLEY, PA, PHONE: 800-755-0546
OR
BEHRINGER PIPE SYSTEM INC., TEL: 201-589-0546

NOTE:
ALL BOLTS/NUTS SHALL BE COATED WITH NEVER SIEZE.



PA DEPARTMENT OF TRANSPORTATION

REVISIONS			HOSES AND CLAMPS HYCON		
NO.	DATE	BY			
1	12-05-84				
2	07-03-91	WHM	DRAWN BY LM	SCALE N/A	EQN-94
3	08-21-91	WHM	DATE RED	CHK'D BY 11-03-78	SHEET 1 OF 2
4	11-22-95	SWW			
5	08-15-97	DLW			
6	10-02-06	CJW			

FRONT COUPLERS SHALL BE MOUNTED TO A MANIFOLD PLATE POSITIONED IN THE CENTER OF THE FRONT FRAM EXTENSION WHICH HOUSES THE PTO ASSEMBLY. MOUNTING SEQUANCE SHALL BE AS FOLLOWS MOVING LEFT TO RIGHT WHEN FACING THE FRONT OF THE VEHICLE:

TWO (2) REVERSIBLE PLOW COUPLERS 5100-S2-8B AEROQUIP MALE, 5100-S2-8B AEROQUIP FEMALE

TWO (2) PLOW HOIST CYLINDER COUPLER 5100-S2-8B AEROQUIP MALE, RIGHT OF PUMP, OR SNAP TITLE 78-N8-6F

REAR COUPLERS SHALL BE MOUNTED TO A MANIFOLD PLATE ATTACHED AND CENTERED TO THE BOTTOM OF REAR FRAME CROSS MEMBER OR MOUNTED THROUGH REAR CROSS MEMBER IF POSSIBLE. MOUNTING SEQUENCE SHALL BE AS FOLLOWS MOVING LEFT TO RIGHT WHEN FACING THE REAR OF THE VEHICLE:

$\frac{1}{2}$" SPINNERS-5100-S2-10B AEROQUIP, MALE, OR SNAP TITE 78N12F
$\frac{3}{4}$" AUGER-5100-S2-12B AEROQUIP MALE, OR SNAP-TITE 78N12-12F
1" RETURN-5100-S2-16B AEROQUIP MALE, OR SNAP-TIE 78N16-16F

COUPLERS SHALL HAVE DUST PLUGS AFFIXED CHAINS TO PREVENT LOSS OF CAPS.

ADDITIONAL COUPLER/CAP INFORMATION

AEROQUIP	SNAP-TITE	PARKER-HANNFIN	FASTER
5100-S7-8S	78DC-8		
5100-S2-8B	78N8-6F		
5100-S2-10B	78N12-8F	6105-08	
5100-S2-12B	78N12-12F	6105-12	FB 12/34NPT-M5
5100-S2-16B	78N16-16F	6105-16	FB 16/1NPT-M5
5100-S7-12S	78DC-12	6105-12	FB-12/34NPT-F5
5100-S7-16S	78DC-16	6105-16	FB-16/1NPT-F5

NOTE: Aeroquip 1-800-230-1996
SnapTite 814-838-5700

PA DEPARTMENT OF TRANSPORTATION

REVISIONS			HOSES AND CLAMPS HYCON		
NO.	DATE	BY			
1	12-05-84				
2	07-03-91	WHM	DRAWN BY LM	SCALE N/A	EQN-94
3	08-21-91	WHM	DATE RED	CHK'D BY 11-03-78	SHEET 2 OF 2
4	11-22-95	SWW			
5	08-15-97	DLW			
6	10-02-06	CJW			

THIS VEHICLE SHALL COMPLY WITH THE RULES OF THE NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION (NHTSA) IN THAT:

THE MOUNTING HEIGHT OF THE HORIZONTAL STRIPES ARE RESTRICTED TO THE SAME HEIGHT AS OTHER RETROFLECTIVE DEVICES CURRENTLY REQUIRED BY STANDARD NUMBER 108. THE CENTER OF THE MATERIAL MUST NOT BE LESS THAN 15in. ABOVE THE ROAD SURFACE, AND THE UPPER EDGE NOT MORE THAN 60in. ABOVE IT.

REFLECTIVE MATERIAL SHALL BE APPLIED TO THE HORIZONTAL BAR OF THE REAR UNDERRIDE DEVICE IN ADDITION TO THE FLOOR LEVEL HORIZONTAL STRIPE. THE UPPER CORNERS ARE TO BE MARKED BY TWO 90 DEGREE ANGLE BRACKETS OF WHITE STRIPES 12in. BY TWO INCHES WIDE, INDICATING THE WIDTH AND HEIGHT OF THE TRAILER.

THE CONFIGURATION SHALL IDENTIFY THE VEHICLE AS TO ITS ESTIMATED SIZE AND THE CLOSEING DISTANCE TO IT. THE DISTRIBUTION OF SACES AND MATERIALS SHALL BE AS UNIFORM AS PRACTICAL AND INDICATE THE FULL LENGTH AND WIDTH OF THE VEHICLE. THE COLORS SHALL BE PLACED IN ALTERNATING SEQUENCE WITH MORE THAAN TWO-THIRDS OF THE MATERIAL IN COLOR.

CONSPICUITY TAPE SHALL BE REFLECTORIZED, 2in. WIDE, MATERIAL SHALL BE APPLIED. MATERIAL SHALL BE RED/SILVER CONTINUOUS BACKING REFLEXITE CONSPICUITY II SYSTEM OR 3M SCOTCHLITE CONSPICUITY SHEETING SERIES 980.

MORE CURRENT REGULATIONS SHALL BE ADHERED TO

PA DEPARTMENT OF TRANSPORTATION

REVISIONS			CONSPICUITY TAPE STRIPPING REQIREMENTS		
NO.	DATE	BY			
1	05-16-02	DWG			
2	11-03-06	CJW	DRAWN BY DLW	SCALE N/A	EQN-127A
3			DATE 11-07-97	CHK'D BY WHM	SHEET 1 OF 1
4					
5					

SPECIFICATIONS
REVOLVING WARNING LIGHTS

THE WARNING LIGHTS DESCRIBED HERIN WILL BE USED ON OFF/ON ROAD EQUIPMENT SUCH AS CARS, TRUCKS, MOTOR GRADERS, LOADERS, ETC. REQUIRING SAFETY LIGHTS.

1. THE LIGHT SHALL OPERATE FROM NOMINAL 12V DC POWER SOURCE HOUSING SHALL PROVIDE RIGID SUPPORT TO THE LAMP, MOTOR, AND DRIVE TRAIN.

2. DIMENSIONS (MINIMUM) HEIGHT: 7.25", DIAMETER: 8.4375".

3. LAMPS SHALL CONSIST OF TWO PAR 36 SEALED BEAM INCANDESCENT LAMPS TO PROVIDE 35,000 BEAM CANDLE-POWER. ROTATION OF SEALED BEAM LAMPS SHALL PRODUCE APPROXIMATELY 80 FLASHES PER MINUTE.

4. LAMP- HOLDER SHALL BE F REINFORCED THERMOPLASTIC. SPRING CLIPS SHALL BE USED TO HOLD LAMP IN HOLDER , AND ELECTRICAL CONNECTION TO THE LAMP SHALL BE MADE WHEN THE LAMP IS PROPERLY PLACED IN HOLDER. SCREW TERMINALS OR SPADE CONNECTIONS TO THE LAMP ARE UNNACCEPTABLE.

5. MOTOR SHALL BE PERMANENTLY LUBRICATED, TOTALLY ENCLOSED, HIGH TORQUE, PERMANENT MAGNET TYPE OPERATING FROM NOMINAL 12 VOLT DC POWER SOURCE AND SHALL BE FILTERED TO ELIMINATE RADIO FREQUENCY INTERFERENCE.

6. DRIVE TRAIN SHALL UTILIZE A GEAR DRIVE ASSEMBLY WITH THE WORM-GEAR BEING PART OF THE MOTOR ARMATURE. A SLIP CLUTCH ARRANGEMENT TO PREVENT MOTOR DAMAGE SHALL BE INCORPORATED IN THE DRIVE TRAIN. RUBBER BANDS OR FRICTION DRIVE UNITS ARE UNACCEPTABLE.

7. THE LENS RETRAINER SHALL BE FABRICATED FROM A NONCORROSIVE METAL OR MOLDED FROM A HEAVY DUTY PLASTIC. THE PLASTIC SHALL BE POLYCARBONATE, ABS, OR EQUAL. THE RETRAINER SHALL BE SECURED BY A STAINLESS STEEL BOLT AND NUT. LUGGAGE-CLAMP TYPE FASTENERS ARE NOT ACCEPTABLE. LENS SHALL BE CAPABLE OF REMOVAL WITHOUT DISTURBING THE HOUSING OR MOUNTING.

LIGHTNING

PA DEPARTMENT OF TRANSPORTATION

REVISIONS			8" ROUND REVOLVING WARNING LIGHTS		
NO.	DATE	BY			
1	11-13-98	SWW			
2	09-15-99	WHM	DRAWN BY UNK	SCALE N/A	EQN-210A
3	05-28-02	DJA	DATE 02-26-86	CHK'D BY RED	SHEET 1 OF 3
4	05-28-02	DJA			
5	01-25-07	CJW			

SPECIFICATIONS
REVOLVING WARNING LIGHTS

8. UNIT SHALL BE CAPABLE OF BEING MOUNTED ON A SURFACED, OR ON A SELF-LEVELING MOUNT. ALL MOUNTING HARDWARE INCLUDING WIRE (20 FT OF 24 GUAGE, MIN.), LIGHTED TOGGLE SWITCH, AND ROOF MOUNTING BOLTS SHALL BE INCLUDED. A SOFT RUBBER GASKET OR MOUNTING PAD SHALL BE PROVIDED TO FORM A WEATHERPROOF SEAL BETWEEN HOUSING AND VEHICLE ROOF, WHILE AFFORDING MAXIMUM VIBRATION ISOLATION.

9. LENS SHALL BE CLEAR, AMBER IN COLOR AND SHALL BE MADE OF HEAT RESISTANT, IMPACT RESISTANT PLASTIC. LENS SIZE SHALL MEET THE FOLLOWING SPECIFIICATIONS TO MAINTAIN INTERCHANGEABILITY OF LENS. NO DEVIATION. OUTSIDE DIAMETER-MAXIMUM 8.375" MEASURED AT BOTTOM, INCLUDING THE LIP. OUTSIDE DIAMETER-7.75" MINIMUM, 7.126" MAXIMUM AT BOTTOM.

10. THE LENS SHALL COMPLY WITH SAE-J575, "TEST FOR MOTOR VEHICLE LIGHTING DEVICES AND COMPONENTS, SECTION 4.8 FOR WARPAGE, AND ITS COLOR WITH SAE STANDARD J-578", "COLOR SPECIFICATION FOR ELECTRIC SIGNAL LIGHTING DEVICES" FOR CHROMATICITY.

11. WARRANTY SHALL BE FOR TWO YEARS ON ALL PARTS AND WORKMANSHIP.

12. EQUIPMENT BID SHALL BE SAE APPROVED FOR VIBRATION, CORROSION, COLOR, MOISTURE, DUST, TEMPERATURE, AND PHOTOMETRIC.

REF: THE FOLLOWING LIGHTS ARE ACCEBTABLE MEETING THESES SPECIFICATIONS, OR PRIOR TO BID APPROVED IN WRITING BY CHIEF, EQUIPMENT DIVISION.
ARROW MODEL 530 OR 550, MODIFIED (99005).
01 - 7622 - 88 GROTE
444 - 112 - 02 FEDERAL SIGNAL

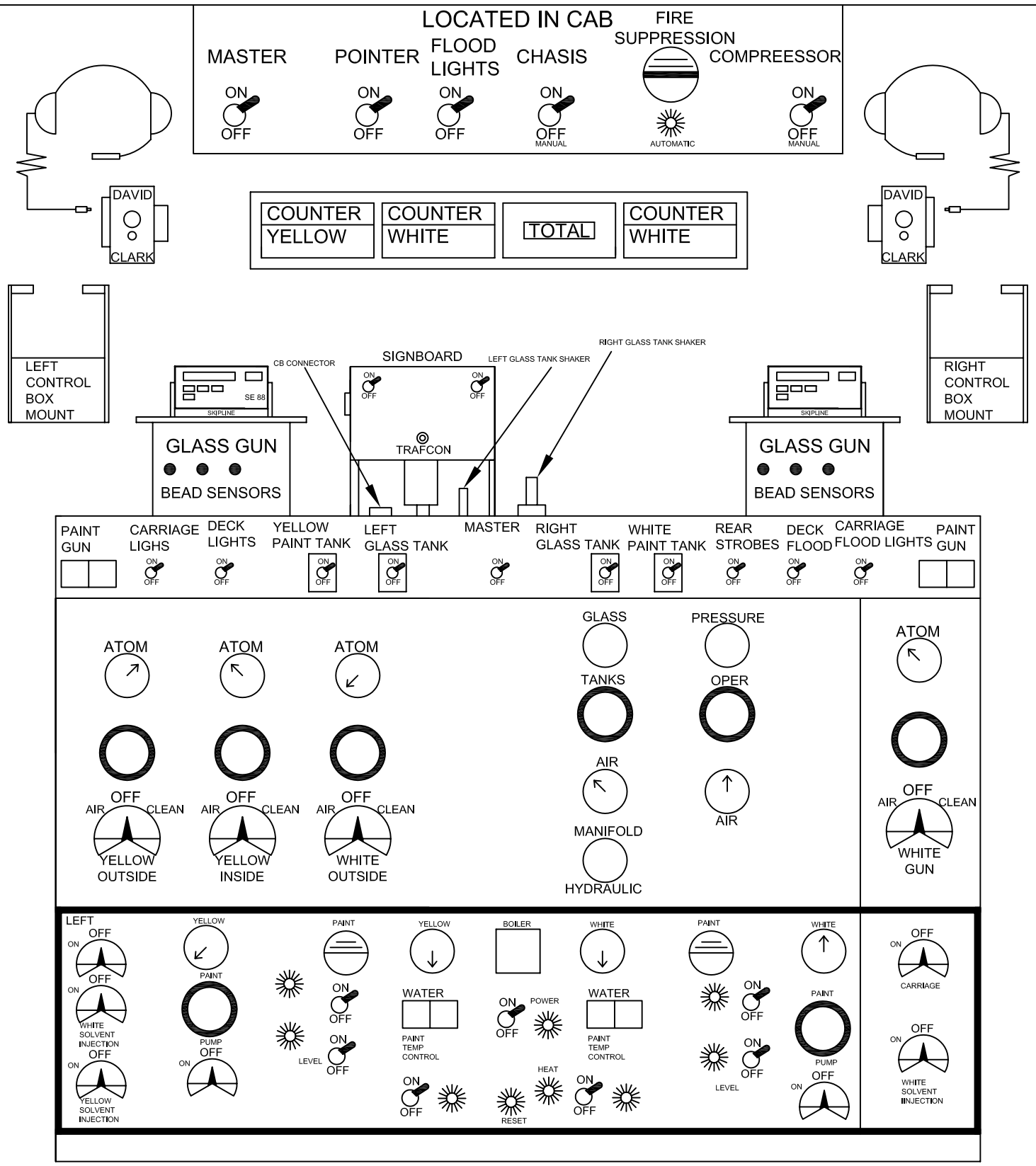
FEDERAL SIGNAL MODEL TARGET TECK - 444112 - 02 PDOT

IMPORTANT: ANY EXCEPTION TO THE ABOVE SPECIFICATIONS MUST BE CLEARLY STATED IN YOUR BID OR IT SHALL BE CONSIDERED AS "NON-RESPONSIVE"

LIGHTNING

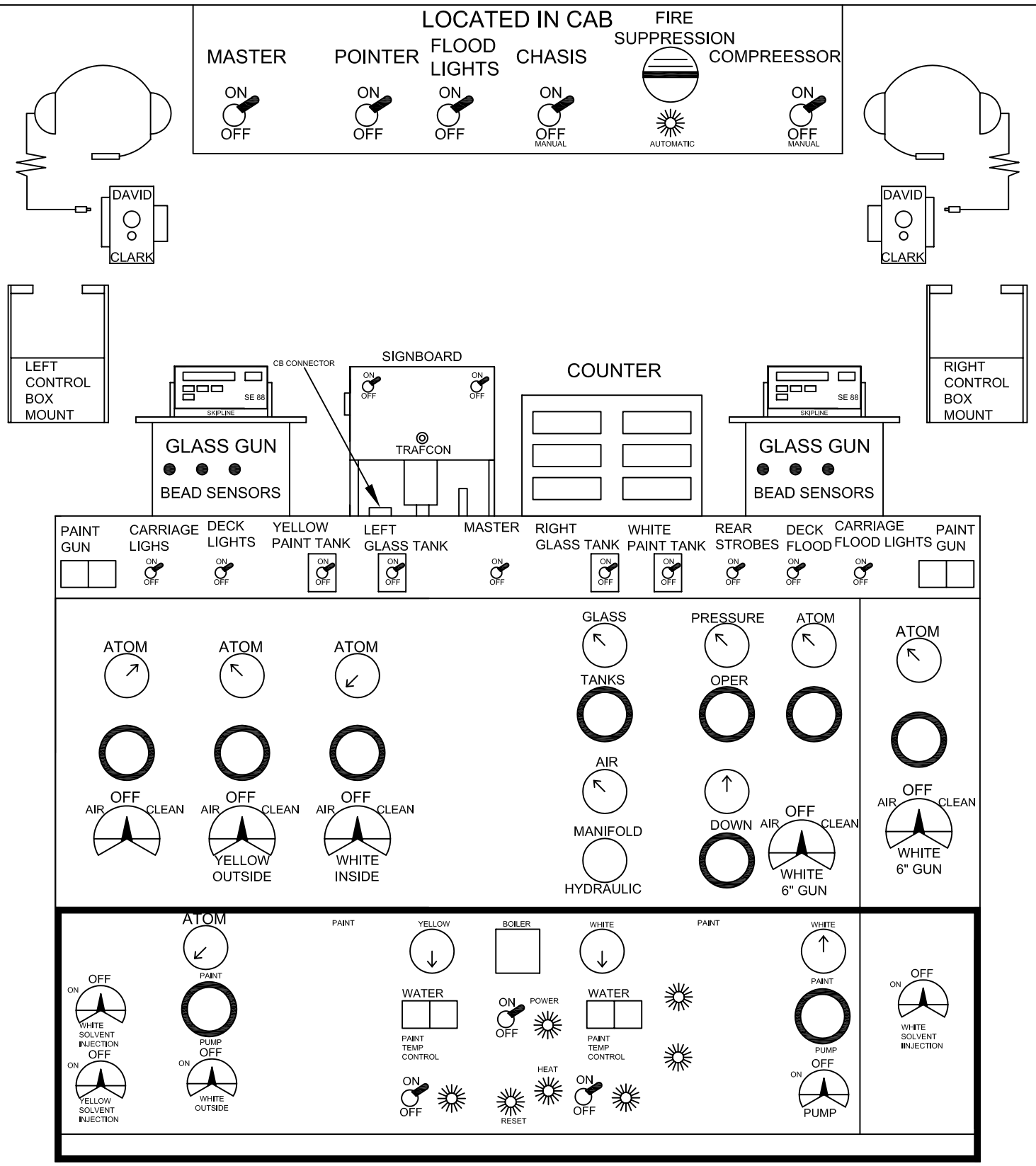
PA DEPARTMENT OF TRANSPORTATION

REVISIONS			8" ROUND REVOLVING WARNING LIGHTS		
NO.	DATE	BY			
1	11-13-98	SWW			
2	09-15-99	WHM	DRAWN BY UNK	SCALE N/A	EQN-210A
3	05-28-02	DJA	DATE 02-26-86	CHK'D BY RED	SHEET 2 OF 3
4	05-28-02	DJA			
5	01-25-07	CJW			



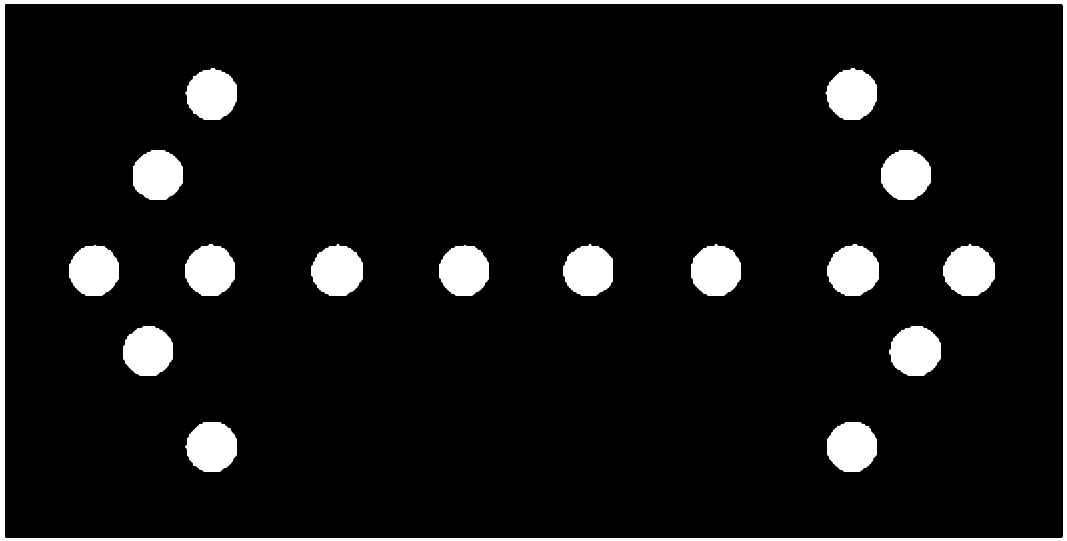
PA DEPARTMENT OF TRANSPORTATION

REVISIONS			CONSOLE LAYOUT		
NO.	DATE	BY			
1	02-28-00	GAH			
2	11-27-06	CJW	DRAWN BY GAH	SCALE N/A	EQN-220
3			DATE 09-27-99	CHK'D BY LHA	SHEET 1 OF 1
4					
5					



PA DEPARTMENT OF TRANSPORTATION

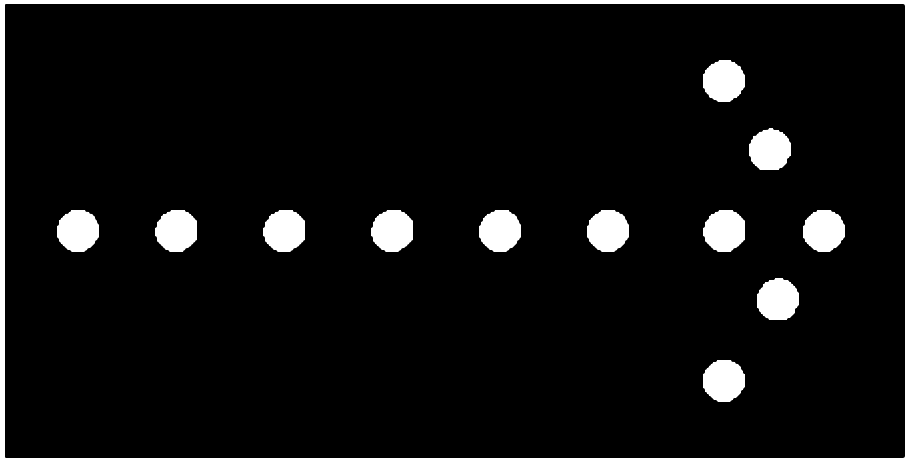
REVISIONS			CONSOLE LAYOUT WITH FOOT COUNTERS -NO PRINTER		
NO.	DATE	BY			
1	02-28-00	GAH			
2	01-09-02	DWG	DRAWN BY GAH	SCALE N/A	EQN-221
3	11-27-06	CJW	DATE 09-27-99	CHK'D BY LHA	SHEET 1 OF 1
4					
5					

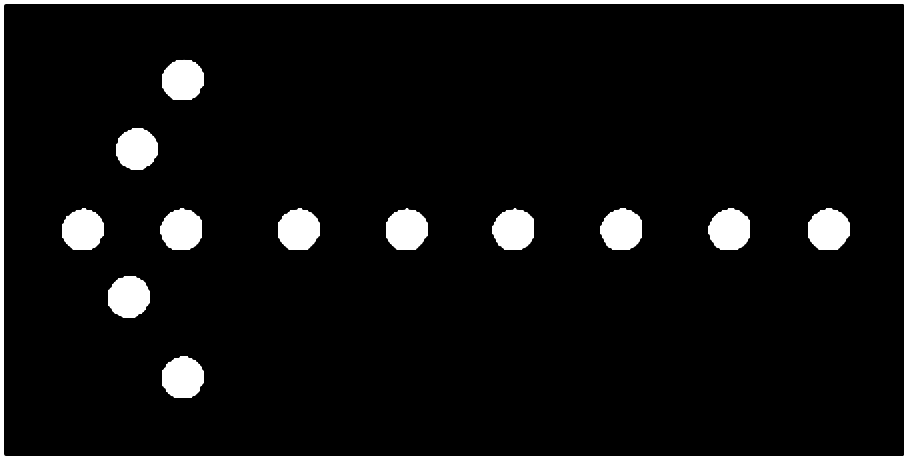


DOUBLE FLASHING ARROW MODE

REVISIONS			COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION		
N0.	DATE	BY			
1	08/07/95	WHM	OPERATING MODES (15 LIGHT)		
2	10/18/99	GAH			
3	01/9/02	DWG	DRAWN BY MELVYN D.	SCALE N / A	MATERIAL
4			CHK'D	DATE 02/08/89	DRW NO. EQN-330
5					SHEET 1 OF 3

SINGLE FLASHING ARROW RIGHT MODE

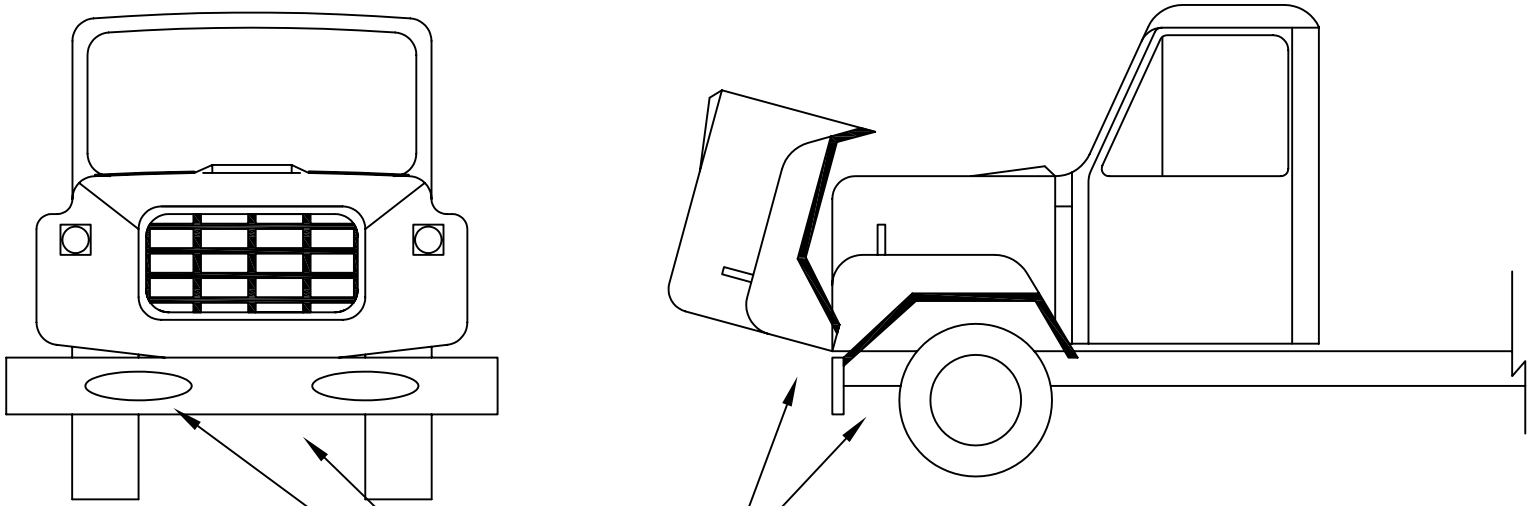




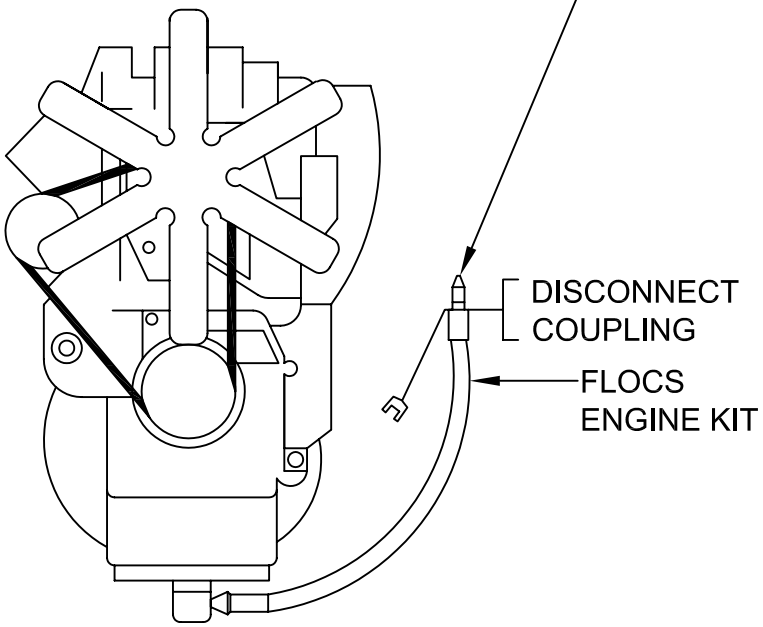
SINGLE FLASHING ARROW LEFT MODE

REVISIONS			COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION		
N0.	DATE	BY			
1	08/07/95	WHM	OPERATING MODES (15 LIGHT)		
2	10/18/99	GAH			
3			DRAWN BY MELVYN D.	SCALE N / A	MATERIAL
4			CHK'D	DATE 02/08/89	DRW NO. EQN-330
5					SHEET 2 OF 3

REVISIONS			COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION		
N0.	DATE	BY			
1	8/07/95	WHM	OPERATING MODES (15 LIGHT)		
2	10/18/99	GAH			
3			DRAWN BY MELVYN D.	SCALE N / A	MATERIAL
4			CHK'D LA	DATE 02/08/89	DRW NO. EQN-330
5					SHEET 3 OF 3



"TYPICAL"



PA DEPARTMENT OF TRANSPORTATION

REVISIONS			FAST LUBEOIL CHANGE SYSTEM OVERVIEW AND PARTS LIST		
NO.	DATE	BY			
1	07-01-03	BLD			
2	10-20-06	CJW	DRAWN BY DLW	SCALE N/A	EQN-351A
3			DATE 08-22-97	CHK'D BY WHM	SHEET 1 OF 2
4					
5					

1. CONTACT AEROQUIP WITH YOUR DRAIN PAN PLUG SIZE
2. AEROQUIP DEALER TELEPHONE NUMBERS:

ADVANCED FLUID CONNECTORS.....717-757-1068
AIR BRAKE & POWER EQUIPMENT CO..717-622-6188
AMERICAN BEARING & POWER.....717-569-3291
GOODALL RUBBER COMPANY.....610-534-2100
POWER DRIVES INC.....814-833-8181
R L MILLER INC.....412-833-6800
R L MILLER INC.....814-456-8900
SRG/BEVCO.....610-358-3100
VOTO MANUFACTURERS SALES CO....814-226-7101

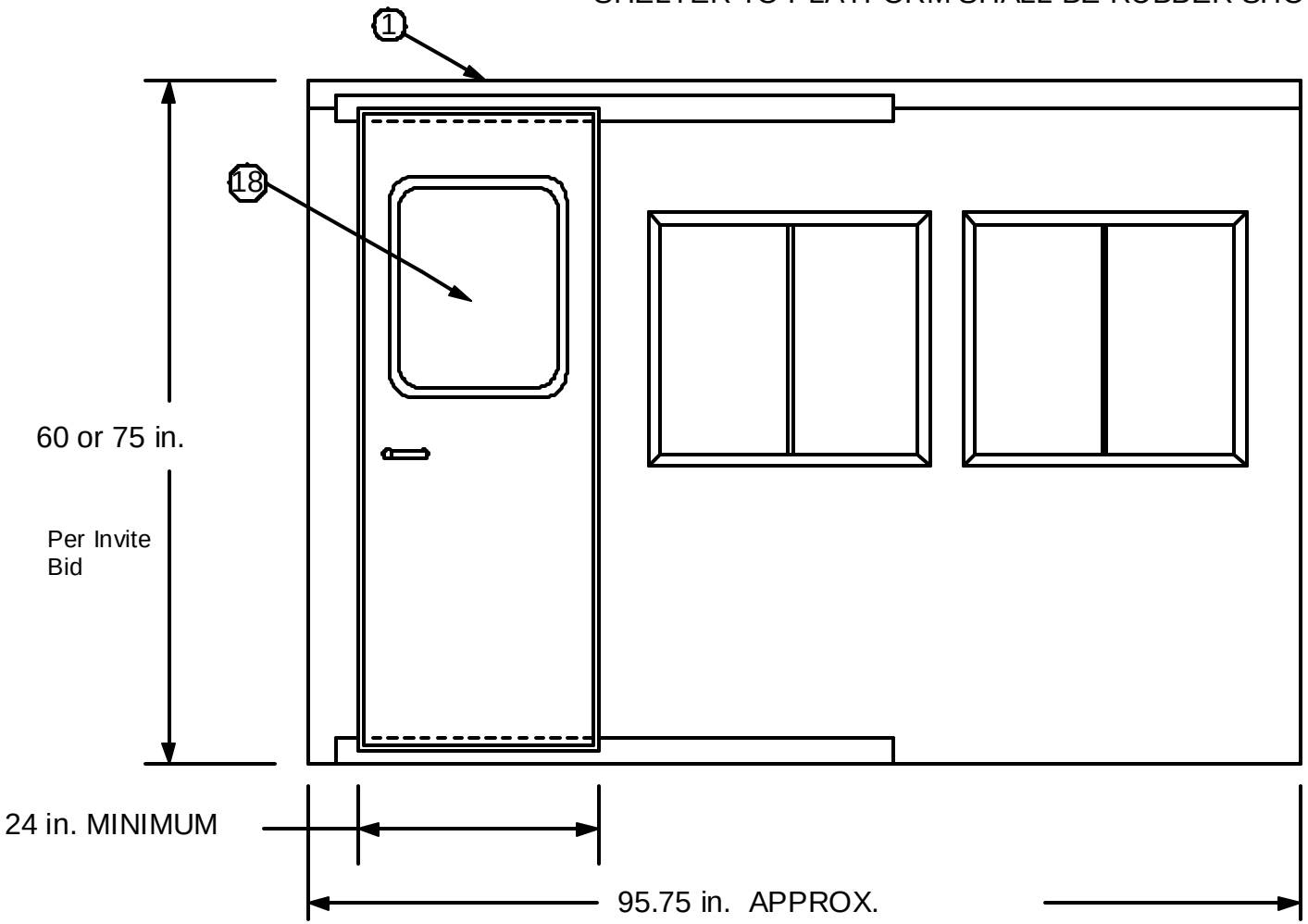
FLOCS SHALL INCLUDE, BUT NOT LIMITED TO:

A. DUST CAP 5657-12
B. HOSE TO SUIT LENGTH
C. HOSE FITTING TO SUIT
D. ADAPTER TO SUIT
E. HOSE CLAMP #900729-6
F. BRACKET TO SUIT
G. COUPLING 5602-12-12S

PA DEPARTMENT OF TRANSPORTATION

REVISIONS			FAST LUBEOIL CHANGE SYSTEM OVERVIEW AND PARTS LIST		
NO.	DATE	BY			
1	07-01-03	BLD			
2	10-20-06	CJW	DRAWN BY DLW	SCALE N/A	EQN-351A
3			DATE 08-22-97	CHK'D BY WHM	SHEET 2 OF 2
4					
5					

SHELTER TO PLATFORM SHALL BE RUBBER SHOCK MOUNTED.



WINDOW TRACKS SHALL BE ON THE OUTSIDE OR CONSTRUCTED IN SUCH A WAY AS TO NOT ALLOW WATER TO DRIP OR FLOW INTO THE INSIDE OF THE CAB. SIDE BUBBLE WINDOWS SHALL BE INSTALLED BY THE SUCCESSFUL VENDOR.

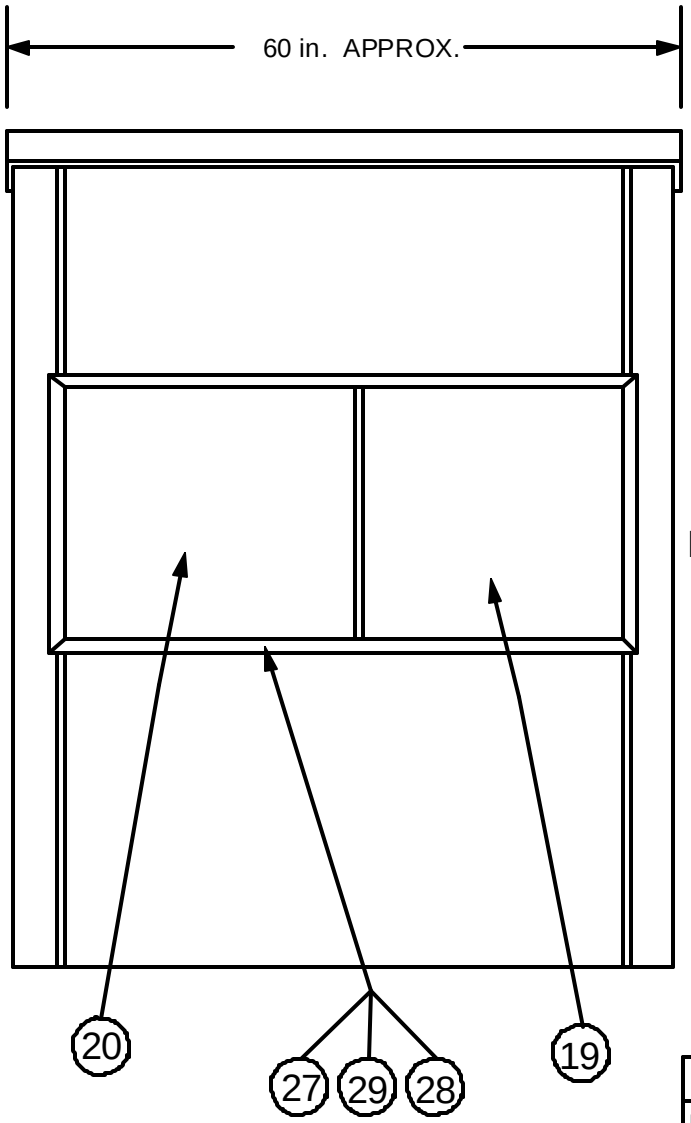
FRONT

REVISIONS		
N0.	DATE	BY
1	10/14/99	GAH
2	01/9/02	DWG
3	05/22/02	DWG
4		
5		

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

PAINT TRUCK REAR SHELTER

DRAWN BY DLW	SCALE N / A	MATERIAL	
CHK'D WHM	DATE 12 / 30 / 97	DRW NO. EQN-370	
		SHEET 1 OF 3	



SIDE

AST-I-Tinted Automotive Glass.

The entire inside of structure-walls & roof shall be covered in sound deadening, insulating material, Ref.: Allied Insulation Co. 1" foam Insulation,tan perforated vinyl with polyester pad. All seams shall be silicone sealed.

Doors shall be furnished with full length piano hinges. The hardware shall be flush type heavy-duty automotive style and lockable with all locks keyed alike. The door shall hinge in such a manner as not to obstruct the operators mounting or dismounting from the deck area.

All window opening heights in relationship to the seat heights shall provide a reasonable and comfortable height for optimum operator comfort.

19	Pane - Sliding
18	Pane - Door
17	Handle - Lock
16	Lock - Door
15	Bracket
14	Hinge - Door 1/8 Pin x 24"
1	Roof

31	Weather Strip
30	Lock - Window
29	Rubber - Strip
28	Molding - Window
27	Channel Flexible
22	Pane - Stationary
21	Pane - Sliding
20	Pane-Side, Stationary

REVISIONS		
NO.	DATE	BY
1	10/14/99	GAH
2	05/22/02	DWG
3		
4		
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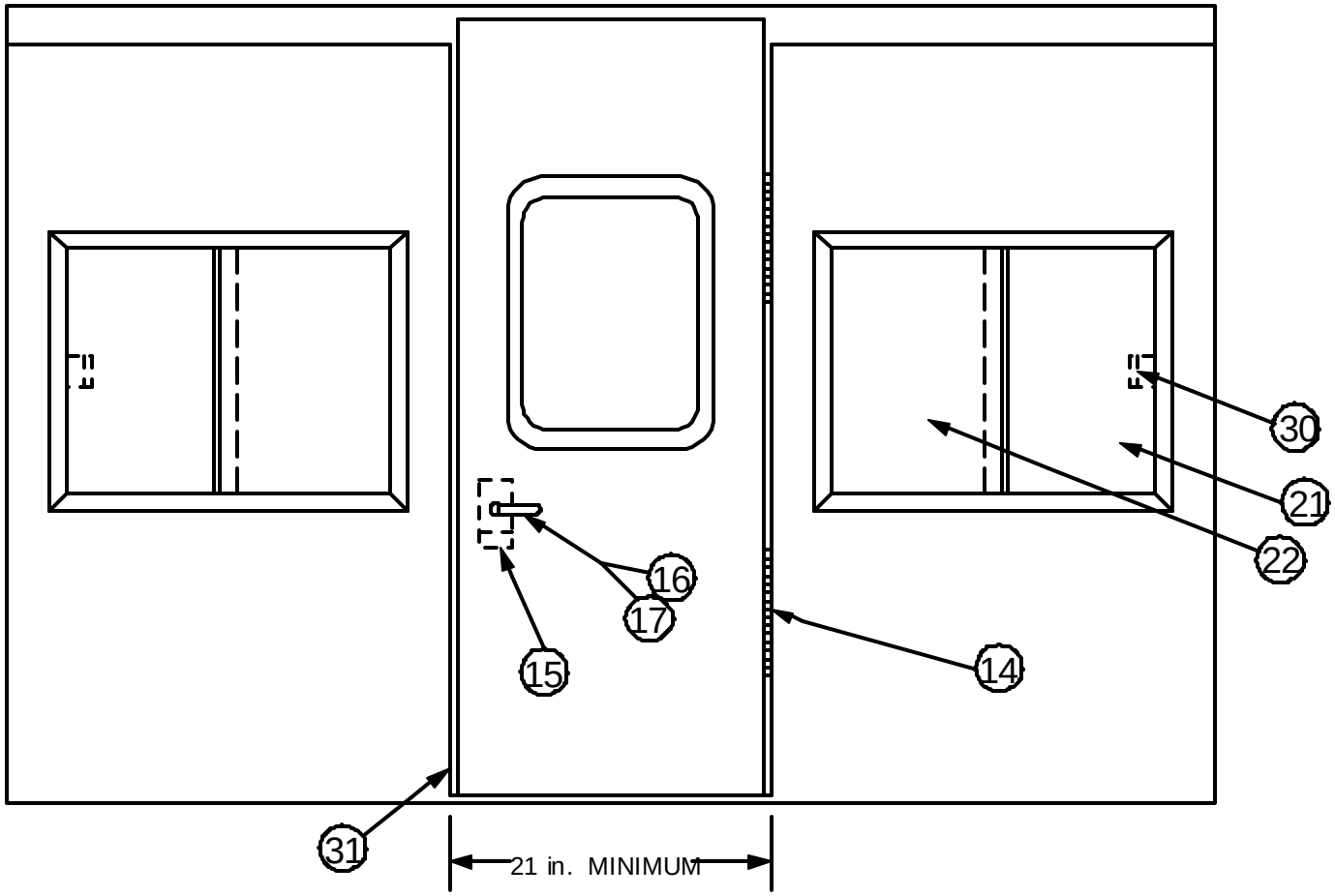
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

PAINT TRUCK REAR SHELTER

DRAWN BY	DLW	SCALE	N / A	MATERIAL	
CHK'D	WHM	DATE	12 / 30 / 97	DRW NO.	EQN-370
				SHEET	2 OF 3



REAR

REVISIONS			COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION		
N0.	DATE	BY			
1	10/14/99	GAH	PAINT TRUCK REAR SHELTER		
2	01/9/02	DWG			
3	05/22/02	DWG	DRAWN BY DLW	SCALE N / A	MATERIAL
4			CHK'D WHM	DATE 12 / 30 / 97	DRW NO. EQN-370
5					SHEET 3 OF 3

COMMONWEALTH OF PENNSYLVANIA
PENNSYLVANIA COMMERCIAL ITEM DESCRIPTION (PCID)

GENERAL REQUIREMENTS FOR BIDDING PennDOT VEHICLES/EQUIPMENT

(This item description supersedes PCID No. 1075 eff. 6/21/02)

PCID NO. 1075
Eff. June 25, 2003

These General Requirements shall apply to all on-road and off-road vehicles, highway equipment, agricultural equipment and construction equipment, procured for use by the Department of Transportation, Commonwealth of Pennsylvania (PennDOT). These requirements are in addition to any supplemental specifications identified in the invitation for bids. The following shall be considered MINIMUM requirements.

A. STANDARDS, CODES, RULES, REGULATIONS:

1. Each vehicle or unit of equipment shall conform to any and all requirements contained in the Pennsylvania Motor Vehicle Code.

2. Each vehicle or unit of equipment shall comply with all current applicable Federal Motor Vehicle Safety Standards, Federal and Pennsylvania Exhaust Emission and Noise Standards, and EPA and OSHA requirements. The appropriate decals indicating compliance shall be affixed to the vehicle/equipment.

3. Each vehicle or unit of equipment shall be manufactured in accordance with any codes, standards and engineering practices as recommended by the following professional organizations for the specific vehicle/equipment:

   American Institute of Steel Construction (AISC)
   American National Standards Institute (ANSI)
   American Society of Mechanical Engineers (ASME)
   American Society for Testing and Materials (ASTM)
   American Trucking Association (ATA)
   American Welding Society (AWS)
   American Wood-Preservers Association (AWPA)
   Battery Council International (BCI)
   British Standards Institute (BSI): Limits and Fits
   Compressed Air and Gas Institute (CAGI)
   Industrial Fastener Institute (IFI)
   International Standards Organization (ISO)
   Joint Industrial Council (JIC)
   National Fire Protection Association (NFPA)
   National Truck and Equipment Association (NTEA)
   Power Crane and Shovel Association (PSCA)
   Society of Automotive Engineers (SAE)
   Society of Manufacturing Engineers (SME)
   Steel Structure Painting Council (SSPC)
   Tire and Rim Association (TRA)

B. COMPONENTS, PARTS AND ACCESSORIES:

1. When “No Substitute” components, parts or accessories are designated, only this type of component, part or accessory is acceptable.

2. All equipment and parts furnished shall be of the manufacturer's most current design, shall be included in its most current published list of models in stock and shall satisfy, these specifications.

3. The same model components shall be utilized on all units supplied by the successful bidder under the specifications.

4. All electronic systems associated with the vehicle/equipment shall be properly insulated so as not to not cause any interference with the operation of the vehicle or the land mobile radio communications system, when properly installed in the vehicle.

5. Power systems must be compatible with the engine, transmission, axles, hydraulic system and power steering, etc., in order to meet the requirements specified herein.

6. Vehicles shall meet the maximum gradeability of the manufacturer when loaded to maximum Gross Vehicle Weight Rating ("GVWR") without exceeding the engine manufacturer's recommended maximum revolutions per minute ("RPM") based on maximum net torque.

7. The ratio of the rear axle and transmission shall be geared to maintain a road speed of approximately 65 mph on a level road, when operating at maximum GVWR without exceeding the recommended engine rpm figure. This is not applicable to construction type equipment.

C SITE VISITS:

Prior to submission of its bid, a bidder may contact PennDOT and schedule a site visit to inspect vehicles/equipment (as available) in PennDOT's current inventory in order to further clarify any drawings, pictures and specifications. Units may be available in the field for bidders to inspect at one or more of PennDOT's Maintenance Districts, but the Commonwealth makes no guarantee that any particular vehicle/equipment shall be located at a site convenient to the bidder's place of business. The site visit must be scheduled with the Equipment Division by calling (717) 787-1567. It is the bidder's responsibility to complete the site visit in time to submit a bid. All travel will be at the bidder's expense.

D. ON BOARD VEHICLE/EQUIPMENT REQUIREMENTS:

1. Each vehicle and unit of equipment shall include the proper forms to apply for a Pennsylvania title and license. These forms will include: the original manufacturer's statement of origin signed by the successful bidder and notarized. All title papers shall be properly prepared and executed. The application for title, Form MV-1 shall indicate the name and address exactly as follows: Pa. Dept. of Transportation, Equipment Division, 17th Street and Arsenal Blvd., Harrisburg, PA 17120 (ATTN: Specifications Unit).

2. Trucks and trailers shall be certified to meet or exceed requirements to obtain a Pennsylvania license. For medium and heavy-duty trucks and vans, the GWVR shall be identified in the vehicle's cab as the final complete certification label (minimum rating). The Gross Combined Weight Rating (GCWR) shall be identified by decal in the cab to indicate the approved weight, which can be towed, if applicable.

3. Vehicles designated for on-road use shall meet the following requirements:

   a. Shall have a valid Pennsylvania state inspection sticker.

   b. Shall have completed the manufacturers' recommended pre-delivery service.

   c. Shall have the vehicle manufacturer's model name and model number stated on a decal affixed to the inside of the driver's side door.

   d. Shall be clean, lubricated, serviced, gas tank filled to full recommended capacity, all adjustments completed, all mechanical and electrical motors and components fully functional and operational, and the vehicle will be "road ready" for immediate use.

   e. Shall have appropriately placed decals indicating the types of required fuels or lubricants and the capacity of each fluid's reservoir that is required by the vehicle.

f. Shall have permanent antifreeze in each vehicle to protect it at a level of -35°F. Only a low silicate type anti-freeze will be used for vehicles having diesel engines.

g. Shall be free from all dealer signs/emblems.

h. Shall have all required rust proofing applied to the exterior and underside of the vehicle. No rustproofing compound can be on the personnel compartment's items or the exterior of the body in unsightly or unintended areas.

i. Shall include a copy of the manufacturer's warranty and service policy with all warranty vouchers, certificates and coupons.

j. Shall have each vehicle and major component identified with a metal identification tag that provides the OEM's name, model number and individual serial number. Tags will be affixed in an accessible and readable position on the item.

The above items are pre-delivery service items, and bidders should not misconstrue these requirements with warranty problems that arise after the Commonwealth accepts the completed unit which complies with the written specifications.

All charges for any of the aforementioned administrative and technical services and equipment are considered minimum acceptable requirements for delivery and shall be included in the bid price.

E. GENERAL WARRANTY REQUIREMENTS

The following warranty requirements are considered minimum unless otherwise stated in the invitation for bids. If the manufacturer's standard warranty exceeds the specified warranty, the manufacturer's standard warranty will apply. Manufacturer's warranty shall be provided in written or electronic form. All warranties will cover all labor and parts replacement during the warranty period, except as may be otherwise stated below or in the invitation for bids. This warranty, however, does not include items that must be replaced through ordinary wear and tear, but those parts ordinarily replaced through the servicing program will be replaced as part of the servicing program of equipment/vehicles, if appropriate. Parts replaced under this warranty will be of original equipment manufacturer (OEM) quality or higher. Service to the vehicle/equipment will be at a level to maintain or meet the manufacturer's requirements to sustain the warranty.

1. MEDIUM DUTY/HEAVY DUTY CAB & CHASSIS (19,501# GVWR or higher)**:**

   The chassis manufacturer's service and warranty program shall be for one (1) year or 12,000 miles (whichever first occurs).

2. LIGHT DUTY TRUCKS & VANS (up to 19,500# GVWR):

   The chassis and cab manufacturer's service and warranty program shall be for three (3) years or 36,000 miles (whichever first occurs), including powertrain. A two (2) year, unlimited mileage warranty is acceptable in lieu of a three year, 36,000-mile warranty. The vehicle shall be certified as having a capacity of towing 1,000 pounds without voiding the warranty.

3. CONSTRUCTION EQUIPMENT: The construction and agricultural equipment manufacturer's service and warranty program shall be for a minimum of two (2) years or four thousand (4,000) hours whichever first occurs.

4. ADDITIONAL SPECIFIC WARRANTY ITEMS (Applies to light, medium and heavy duty trucks only)

   a. RUST PROOFING WARRANTY

      Cabs/cowls shall be warranted for five (5) full years with no mileage or hourly limitations. This will include rusting through or perforation from within. This warranty and service program covers both

labor and parts for the full warranty period. Surface rust caused by chip, scratches, or damage caused by PennDOT employees is not covered by this warranty.

b. FRAME RAILS AND CROSSMEMBERS (Chassis)

For medium/heavy duty trucks, frame rails and cross members are warranted for five (5) full years with no mileage or hourly limitations. This warranty covers both parts and labor for the full warranty period. For light duty trucks and vans, the manufacturer's standard frame rail and crossmember warranty is acceptable.

c. FLAT BED WARRANTY

A vehicle's flat bed shall be warranted for three (3) years. This warranty covers both parts and labor for the full warranty period. A decal will be placed on the inside driver's door stating the warranty's terms and the name, address and telephone number of the contact person to initiate warranty claim services.

d. SERVICE/UTILITY BODY AND ASOCIATED COMPONENTS WARRANTY

Fiberglass bodies will be warranted for five (5) years to include color fading. Steel service and utility bodies shall be warranted for five (5) years against defects and corrosion, including rust through or perforation from within. Surface rust caused by chip, scratches, or damage caused by PennDOT employees is not covered by this warranty. Associated components such as cranes, air compressors, and snowplows shall be covered by manufacturer's standard warranty. Manufacturer's standard warranty shall be provided in written or electronic form.

e. ENGINE AND TRANSMISSION WARRANTY

The engines for all Heavy/Medium Duty equipment/vehicles will be warranted for parts and labor for five (5) years or 150,000 miles (whichever first occurs). The engine warranty will include all items named or included within the valve covers, cylinder heads block, oil pan and injection pump. The transmission (automatic/manual) will be fully covered by the warranty and service program for two (2) years and will not be limited by mileage or hours. For light duty trucks and vans, the manufacturer's standard frame engine and transmission warranty is acceptable

f. WARRANTY CARD PROCEDURES

The successful bidder shall complete the warranty card except for the warranty start date. The PennDOT Equipment Division shall inform the successful bidder of the following: model number of vehicle; serial number of vehicle, equipment number, and location assigned; date released to the counties.

F. PILOT MODEL:

PennDOT reserves the right to require the successful bidder to make mutually agreeable arrangements to deliver a "pilot model" for initial inspection. Pilot models(s) shall be delivered to the Department of Transportation, 17th St., & Arsenal Blvd., Harrisburg, PA 17120 for inspection, testing and approval. The remaining units shall not be delivered for inspection, testing and approval until after the pilot model has been accepted by PennDOT. The remaining units shall fully meet the requirements of the specifications and must be indistinguishable from the approved pilot model. Presentation of a pilot model will not be required if the quantity is only one (1) unit. The pilot model must meet all the mechanical requirements of the specifications. PennDOT may field test the equipment to determine if it meets the performance requirements of the specifications. Performance testing results will normally be completed within two (2) weeks of date of delivery. There are administrative items that are required to be presented at the pilot model inspection. It is imperative that all of these items be presented at this time so they are ready for shipment, when the balance of the units are delivered. PennDOT may withhold payment, where deemed necessary, pending receipt of these items. PennDOT disclaims any liability for damage to equipment that has not been unconditionally accepted by the PennDOT.

G. DELIVERY:

Time is of the essence. All units must be delivered within the number of days, specified in the invitation for bids, after receipt of the purchase order by the successful bidder. It shall be assumed by the parties that the successful bidder received the purchase order on the third business day following the date of the purchase order, unless the successful bidder provides credible evidence that the order was received on a later date. Bidders must specify delivery time in their bid. Phrases such as "as required", "as soon as possible", or "prompt" have no meaning and may be cause for rejection of the bid. The successful bidder shall deliver at ground level the complete unit(s) to the Equipment Division, 17th Street and Arsenal Blvd. Harrisburg, PA 17120. All deliveries shall be made on a working day between 7:00 AM and 3:30 PM. There is a loading dock at this location; however, any additional unloading cost shall be borne by the successful bidder. The terms of delivery are also controlled by other provisions in the invitation for bids.

The successful bidder shall submit to the PennDOT "on a continuing basis", all service bulletins and technical letters as regularly issued by a manufacturer to dealers or large fleets. All the relevant information shall be supplied for the unit(s) forwarded to the Commonwealth to inform PennDOT of any improvements, changes and/or problems concerning the unit and its component parts. This information shall be addressed to the Pennsylvania Department of Transportation, % Equipment Division, 17th St. & Arsenal Blvd., Harrisburg, PA 17120, ATTN: Chief, Equipment Division. PennDOT reserves the right to have its representative(s) periodically inspect each unit during assembly at the successful bidder's assembly point.

H. PROCEDURE FOR IMPLEMENTING REPAIRS:

In the event that a breakdown occurs, the repair work is to be performed by the successful bidder of record or his duly authorized representative within the Commonwealth. A copy of the successful bidder's work orders shall be supplied to the PennDOT County Equipment Manager and District Equipment Manager. Repairs assigned to the successful bidder can be performed at the successful bidder's place of business, at his duly authorized representative's place of business and, whenever possible, at the county maintenance facility or field locations. If services are to be performed at PennDOT's county maintenance facilities or in the field, the successful bidder must provide proof of insurance as stated in the contract attachments. County Equipment Managers shall notify the successful bidder or his duly authorized service representatives that the vehicle/equipment is down for component repairs and follow PennDOT standard procedure for handling warranty problems in accordance with the benefits of this warranty. At this time of notification, the location of repair is to be mutually agreed upon based on the most timely and cost effective basis to the Department. All work orders against the warranted repair shall be kept in PennDOT's Equipment History File at the county maintenance facility.

When repairs are to be performed at the successful bidder's place of business or his duly authorized representative's place of business, transportation of the vehicle/equipment within the Commonwealth of Pennsylvania shall be made by PennDOT. If determined by PennDOT that repairs cannot be handled within the Commonwealth, then transportation to and from the Commonwealth of Pennsylvania shall be the responsibility of the successful bidder.

I. LUBRICATION AND COMPONENT INFORMATION:

The successful bidder shall provide lubrication and component information (as applicable) upon request by PennDOT. This information may be provided by copying and completing the sample forms attached to this document, or may be presented on forms prepared by the successful bidder and/or manufacturer. (see attached sample forms – 4 pages).

J. SUCCESSFUL BIDDER'S RIGHTS:

The successful bidder shall have the right to make periodic inspections to ascertain that the maintenance techniques and/or repair procedures are being administered in accordance with the guidelines set forth in this document. Preventive maintenance shall be performed by PennDOT in accordance with the component manufacturer's recommended procedures, or as modified during the contract through supplements. All internal parts of the components shall be the repair responsibility of the successful bidder, except maintenance adjustments.

APPROVALS:

Quality Assurance Specialist: Craig E. Wolford, CPPB

Quality Assurance Supervisor: Tom DiMartile, CPPB

Quality Assurance Manager: Paul Wolf, C.P.M., CPPB

Sample Forms (Instruction Sheet)

The Following Documents Shall Be Completed And Emailed / Shipped To

Email: Contact the Automotive Equipment Specialist @ The Equipment Division @ 717-783-1395 (This is an Excel Spread Sheet, a Work Copy will be Emailed to You)

Mail: Equipment Division
17th & Arsenal Blvd.
Harrisburg, Pa. 17120
Attn: Specifications Division

Note: These Forms Must Be Delivered to The Equipment Division With The Pilot Model!

Instructions To Vendor For Completing The Attached Form (We Would Prefer Having This Completed Electronically)

Electronic:

1. **Obtain Work Copy By Calling 717-783-1395**
2. **All Sections Are to be Filled Out**
3. **Insert N/A in All Sections That Do Not Apply, Do Not Leave any Sections Blank**
4. **Manufacturer, Model No. And Part No. Should Reflect The Actual <u>Component Manufacture</u>**
5. **Warranty Section Should Reflect The Coverage, The <u>Vendor And/Or Equipment (Truck) Manufacturer</u> Will Supply, <u>Not</u> The Component Manufacturer.**

Paper:

1. **Same As Above, but Type or Print All Information**

SPEC SHEET

Equipment # Series	**Effective Date**	
PO Number	**Unit Warranty Period**	
Year	**Engine Manufacturer**	
Make	**Engine Model**	
Model		
VIN Number		
Vendor	**Trans. Manufacturer**	
Contact Person	**Trans. Model**	
Contact Phone Num.	**Body Manufacturer**	
	Body Number	

Oils & Lubes		Filters	Qty. of Filters	Part Number	Com. Code 2810-	Make	Change Interval	Filters Stocked
Engine Oil		**Engine Oil Filter**						
		Engine Oil Filter Secondary						
Transmission Oil		**Transmission Filter**						
		Aux. Trans. Filter						
Fuel		**Fuel Filter Primary**						
		Fuel Filter Secondary						
Rear Axle / Axles								
Steering Oil		**Steering Filter**						
Hydraulic Oil		**Hydraulic Filter Suction**						
		Hydraulic Filter Return						
Coolant		**Coolant Filter**						
Transfer Case								
Front Axle		**Air Filter Primary**						
Brake Fluid		**Air Filter Secondary**						
		Air Compressor Filter						

Description	Manufacturer	Model Number	Part Number	Warranty
Air Compressor				
Air Dryer				
Alternator				
Auto Slack Adjuster				
Auto Lube System				
Axle Front				
Axle Rear				
Battery				
Belt Air Compressor				
Belt Alternator				
Belt Fan				
Belt Power Steering				
Brake Chamber (FRT)				
Brake Chamber (REAR)				
Brake Lining (FRT)				
Brake Lining (REAR)				
Clutch Assembly				
Differential				
Dump Body				
Electronic Joysticks				
Engine (AUX)				
Engine (MAIN)				
Fan				
GL 400				
GL 400 Wiring				
Grote Wiring Harness				
Hoist Cylinder				
Hydraulic Pump - Main				
Pump, Fuel				
Pump, Hydraulic Aux.				
Pump, Steering				

Description	Manufacturer	Model Number	Part Number	Warranty
Pump, Water				
Radiator				
Rexroth Valve				
Starter				
Steering Gear				
Suspension System Tand				
Tank Fuel Capacity				
Tire Size Front LR				
Tire Size Rear LR				
Transaxle				
Transfer Case				
Transmission				
Wing Plow				

Contract Reference Number: 2310-07 Supp
Collective Number: CN00025064
SAP Contract Number: 4600011790
Change Number: 1
Change Effective Date: 8/13/2007

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG

For:	All using Agencies of the Commonwealth
Subject:	Highway Support Vehicles
Contract Period:	Effective date of 4/19/2007 and Expiration date of 8/31/2007 **(Renewed thru 8/31/2008)**
Commodity Specialist Name:	**Robert L. Isenberg 717-703-2930 risenberg@state.pa.us**

CHANGE SUMMARY:

In accordance with the Contract's "RENEWAL" clause, SAP Contract Number 4600011790 will be renewed for the period 9/01/2007 through 8/31/2008.

ALL OTHER TERMS AND CONDITIONS OF THIS AGREEMENT NOT CHANGED BY THIS CHANGE NOTICE REMAIN AS ORIGINALLY WRITTEN.

Contract Reference Number: 2310-07 Supp
Collective Number: CN00025064
SRM/SAP Contract Number: 4400001483
Change Number: 2
Change Effective Date: 12/27/2007

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG

For:	All using Agencies of the Commonwealth
Subject:	Highway Support Vehicles
Contract Period:	Effective date of 4/19/2007 and Expiration date of 8/31/2007 **(Renewed thru 8/31/2008)**
Commodity Specialist Name:	**Robert L. Isenberg 717-703-2930 risenberg@state.pa.us**

CHANGE SUMMARY:

In accordance with the Contract's "RENEWAL" clause, SAP Contract Number 4600011790 was renewed for the period 9/01/2007 through 8/31/2008 and has been **replicated in SRM with child contract number 4400001483**. Parent contract number is 4400001481.

ALL OTHER TERMS AND CONDITIONS OF THIS AGREEMENT NOT CHANGED BY THIS CHANGE NOTICE REMAIN AS ORIGINALLY WRITTEN.