Overview for Contract
CN00022979 (1302-02)

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

DESCRIPTION

► 38,000 LB GVWR Crew Cab Single Axle Dump with options
38,000 LB GVWR Conv Cab Single Axle Dump with options
62,000 LB GVWR Tandem Axle Dump with options
72,000 LB GVWR Tri-Axle Dump with options
39,000 LB GVWR Single Axle Dump with options
66,000 LB GVWR Tandem Axle Dump with options
See contract for a list of options available for each type dump truck

CONTRACT INFO

Material or Service	Material	
Title & Contract # (s)	CN00022979 (1302-02) Dump Trucks	
Number of Suppliers	**2**	**Pcard enabled: Y/N No**
Validity Period	12/05/2006 to 9/30/2008	
DGS Point of Contact	Robert L. Isenberg, Sr.	
Contact Phone #	(717) 703-2930	
Email	risenberg@state.pa.us	

PRICING HIGHLIGHTS

No Minimum purchase.

► Dump trucks and options are line item specific.
Basic unit is ordered by line item with each option added per contract line item.
Awarded prices valid for the term of the contract.

PROCESS TO ORDER

► **SAP orders by State Agencies**
COSTARS Program for eligible local public procurement units

4600010878 Five Star International LLC
4600010880 Mack Trucks Inc

Attachment A
Heavy Dump Truck Contract 1302-02
CN00022979

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 provides for the procurement of Heavy Dump Trucks with approved options for Commonwealth agencies and participating local public procurement units. The specifications for the Heavy Dump Trucks and the delivery requirements are found in the Pennsylvania Commercial Item Description (PCID) No. 1075, "*General Requirements for Bidding PennDot Vehicles/Equipment".* The most current version of PCID No. 1075, effective at the time and date of bid opening, is included and made a part of this invitation for bids. PCID No. 1075 may be reviewed and downloaded from the Department of General Services website, http://www.dgs.state.pa.us. In addition to PCID No. 1075, the following specifications shall apply: Attachment J-PCID 1103 Single Axle, Attachment K-Crew Cab, Attachment L-Conventional Cab Single Axle, Attachment M-Tandem Axle, Attachment N-Tri-Axle, Attachment O-PCID 1118 Single Axle PA Turnpike and Attachment P-PCID 1119 Tandem Axle PA Turnpike. Also attached are the EQN Drawings which are Attachments Q through W.

2. Pennsylvania Turnpike Commission.

The requirements contained in 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"

3. 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

4. Selection.

A Commonwealth agency or participating local public procurement unit that needs a Heavy Dump Truck shall select a contractor from the awarded contractors to furnish truck(s) to the agency or unit based upon best value. In making its best value selection, an agency or unit shall evaluate and compare all pertinent factors, but primarily the purchase price and life cycle costs. In selecting the best value contractor, the agency or unit may do one or more of the following: 1) request a best value offer which represents a reduction in the contract price; 2) conduct an online auction for the purpose of obtaining a lower price; or 3) negotiate with the contractor(s) for better contract terms such as warranty, maintenance or delivery.

5. Contract Term.

The Contract shall commence on the Effective Date, which shall be no earlier than October 1, 2006 and expire on September 30, 2007.

6. 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.

7. 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.

8. 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.

9. 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.

10. Delivery Time.

The contractor(s) must make delivery no later than 270 calendar days after acknowledgement of purchase order for Heavy Dump Trucks. Failure to deliver within these time periods shall result in payment of liquidated damages in accordance with Paragraph 12, of these Special Bid and 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.

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.

11. 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.**

12. 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.

13. 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
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 L. Isenberg, Sr
Commodity Specialist
Bureau of Procurement
Forum Place 6th Floor
555 Walnut Street
Harrisburg PA 17101-1914
risenberg@state.pa.us

14. Quarterly Business Review Meetings.

The contractor shall actively participate in Quarterly Business Review meetings with the Commonwealth agency commodity managers and fleet managers from Department of Transportation and the Pennsylvania Turnpike Commission 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.

15. 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.

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. Authorized Dealer/Franchiser.

In order to be eligible for award, a bidder must be an Authorized/Franchised dealer representing the manufacturer of Heavy Dump Trucks offered to the Commonwealth.

18. 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.

19. 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.

20. 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 Heavy Dump Trucks 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, Sr. at risenberg@state.pa.us and 717-703-2930.

21. Order of Precedence.

To the extent that these Special Bid and 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.

SAP Contract 4600010878 CN00022979 Dump Trucks 1302-02

Item #	SAP Material Group #	Item Description	Unit Price
10	25101601	Truck, Dump Conventional, Type II, Crew Cab, 38,000 LB GVWR, Manual, in accordance with most current DOT specification A-15-BU-A-AM Make/Model:INTERNATIONAL/7400 SFA 4X2	$ 114,065.00
20	25173813	Automatic transmission option, in accordance with most current DOT specification A-15-BU-A-AM Transmission Make/Model: ALLISON/3500RDSP	$ 4,431.00
30	22101710	Right wing plow, in accordance with most current DOT specification A-15-BU-A-AM Make/Model:HENKE PW10PADOT06	$ 11,996.00
40	25101601	Truck, Dump, Conventional, Type II, 38,000 LB GVWR, Manual, in accordance with most current DOT specification A-15-BU-A-AM Make/Model:INTERNATIONAL/7400 SFA 4X2	$ 76,857.00
50	25173805	Driver controlled locking differential, in accordance with most current DOT specification A-15-BU-A-AM Make/Model:MERITOR RS-23-160	$ 375.00
60	25173813	Allison Automatic Transmission, in accordance with most current DOT specification A-15-BU-A-AM Make/Model:ALLISON/3500RDSP	$ 4,712.00
70	22101710	Roadwatch System, in accordance with most current DOT specification A-15-BU-A-AM Make/Model:ROADWATCH RWI	$ 638.00
80	25181602	Centralized, on board chassis lubrication system, in accordance with most current DOT specification A-15-BU-A-AM Make/Model:LINCOLN SINGLE AXLE	$ 1,950.00
90	25172800	Component Technology hydraulic controller, in accordance with most current DOT specification A-15-BU-A-AM Make/Model:COMPONENT TECH SG08020015	$ 13,686.00

100	25172800	Pre wet system, in accordance with most current DOT specification A-15-BU-A-AM Make/Model:COMPONENT TECH PREWET	$ 2,335.00
110	22101710	Right wing plow, in accordance with most current DOT specification A-15-BU-A-AM Make/Model:HENKE PW10PADOT06	$ 11,296.00
120	22101710	Left wing plow, in accordance with most current DOT specification A-15-BU-A-AM Make/Model:HENKE PW10PADOT06	$ 11,296.00
150	25101601	Truck, Dump, Type II, Crew Cab, Almn, Auto includes item 10 @ 114,065, item 20 @ 4,431 FOR PENNDOT USE ONLY	$ 118,496.00
180	25101601	Truck, Dump, Type II, Almn, Auto includes item 40 @ 76,857, item 50 @ 375.00, item 60 @ 4,712, item 70 @ 638.00, item 80 @ 1,950, item 90 @ 13,686, item 100 @ 2,335 FOR PENNDOT USE ONLY	$ 100,553.00
200	25101601	Truck, Dump, Type II, Almn, Mnl includes item 40 @ 76,857, item 50 @ 375.00, item 70 @ 638.00, item 80 @ 1,950, item 90 @ 13,686, item 100 @ 2,335 FOR PENNDOT USE ONLY	$ 95,841.00
	VENDOR INFORMATION		
	Company Name:	FIVE STAR INTERNATIONAL LLC	
	Vendor Number:	136083	
	Contact Person:	BILL BECK	
	Address:	PO BOX 1747 HARRISBURG, PA 17105	
	Phone Number:	7179861500	
	Fax Number:	7179861510	
	E-mail Address:	bill.beck@fivestar-international.com	
	Pick-up Site Address:	1810 S 19th ST HARRISBURG, PA 17104	

Group I
Information Sheet for Truck – Dump –
Crew Cab – 38,000* LB GVWR

Cab & Chassis Make/Model: **International/7400 SFA 4X2**

Engine Make/Model/Displacement/HP/Torque: **International/Maxxforce DT/7.6 liters 260HP/800Tq**

Automatic Transmission Make/Model: **Allison/3500 RDS P**

Manual Transmission Make/Model: **Fuller/FR 9210B**

Aluminum Body Make/Model: **J & J Aluminum Dynahauler**

Frame RBM: **2,654,400**

Front/Rear Wheel Mfg. & Part #: **Accuride 29039/28828**

Hydraulic System Console Make/Model: **Component Technology SG7**

Hydraulic Control Valve Make/Model: **Rexroth M4**

Hydraulic Pump Make/Model: **Rexroth A10V0100**

Plow Wing Make/Model: **Henke PW10PADOT06**

Group 2
Information Sheet for Truck – Dump –
Single Axle – 38,000* LB GVWR

Cab & Chassis Make/Model: **International/7400 SFA 4X2**

Engine Make/Model/Displacement/HP/Torque: **Int'l/Maxxforce DT/7.6/260 HP/800Tq**

Automatic Transmission Make/Model: **Allison/3500 RDS P**

Manual Transmission Make/Model: **Fuller RT 8709 B**

Aluminum Body Make/Model: **J & J Aluminum Dynahauler**

Frame RBM: **2,654,400**

Front/Rear Wheel Mfg. & Part #: **Accuride 29039/28828**

Hydraulic System Console Make/Model: **Component Technology SG7**

Hydraulic Control Valve Make/Model: **Rexroth M4**

Hydraulic Pump Make/Model: **Rexroth A10V0100**

Plow Wing Make/Model: **Henke PW10PADOT06**

TRAINING:

Training sessions may or may not be utilized.

Training pricing must be submitted with the bid package and will not affect the final outcome of the bid.

FIELD TRAINING SESSIONS

May be performed in any or all of the Regional locations listed (See attachment A)

Mechanic:

The successful vendor shall provide services of qualified factory trained technicians for not more than ___16___ students. Training sessions of not more than ___15___ hours 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. Travel, lodging and meal expenses are the responsibility of the awarded vendor.

The successful vendor shall submit a training plan to the Equipment Division for approval within 30 days after receipt of the Purchase Order. The training plan shall consist of course outline and material handouts.

The successful vendor shall be responsible for providing all material and training aids as needed.

All training must be coordinated and completed within 30 days after the dates established in the approved training plan unless an extension is mutually agreed to in writing with the Statewide Training Coordinator (717) 787-4836, Fax (717) 783-4438.

INSTRUCTOR TRAINING:

To be performed at a certified factory location.

The successful vendor shall provide services of qualified factory trained technicians for not more than ___15___ hours for a maximum of __14__ people at A FACTORY CERTIFED LOCATION TO TRAIN PENNDOT INSTRUCTOR PERSONAL on electrical and hydraulic systems. Travel, lodging and meal expenses are the responsibility of the Department of Transportation.

The successful vendor shall provide services of qualified factory trained technicians for not more than __37.5___ hours for a maximum of __14__ people at A FACTORY CERTIFED LOCATION TO TRAIN PENNDOT INSTRUCTOR PERSONAL on chassis engine and driveline. Travel, lodging and meal expenses are the responsibility of the Department of Transportation.

The successful vendor shall submit a training plan and all instructor training shall be coordinated with the Mechanic Training Administrator (717) 705-6771, Fax (717) 705-2125 within 30 days after receipt of the Purchase Order.

PennDot Mechanic Training: Complete price per training event; training event is defined as 2 consecutive days of not more than 15 hours for not more than 16 students.

REGION ONE $3500 Per Event

PENNDOT District 1-0
255 Elm Street
P.O. Box 398
Oil City, PA 16301
Phone: (814) 678-7043
Fax: (814) 678-7040

PENNDOT District 2-0
1924-30 Daisy Street
P.O. Box 342
Clearfield, PA 16830
Phone: (814) 765-0504
Fax: (814) 765-0487

PENNDOT District 10-0
2550 Oakland Ave.
P.O. Box 429
Indiana, PA 15701-0429
Phone: (724) 357-2816
Fax: (724) 357-1904

TURNPIKE
Western Regional Office
2200 North Center Avenue
New Stanton Pa. 15672
724-755-5000

REGION TWO $3500 Per Event

PENNDOT District 3-0
715 Jordan Avenue
Montoursville, PA 17754
Phone: (570) 368-4217
Fax: (570) 368-4343

PENNDOT District 4-0
P.O. Box 111

Scranton, PA 18501
Phone: (570) 963-4032
Fax: (570) 963-4245

REGION THREE $3500 Per Event

PENNDOT District 5-0
1713 Lehigh Street
Allentown, PA 18103-4727
Phone: (610) 798-4184
Fax: (610) 798-4193

PENNDOT District 6-0
7000 Geerdes Blvd.
King of Prussia, PA 19406-1525
Phone: (610) 205-6744
Fax: (610) 205-6909

PENNDOT District 8-0
2140 Herr Street
Harrisburg, PA 17103-1699
Phone: (717) 787-4339
Fax: (717) 772-0975

Equipment Division
17th and Arsenal Blvd.
Harrisburg, Pa. 17120
Phone: (717) 787-1567
Fax: (717) 783-0971

TURNPIKE
Eastern Regional Office
251 Flint Hill Road
King of Prussia Pa. 19406
610 279-3778

REGION FOUR $3500 Per Event

PENNDOT District 9-0
1620 North Juniata Street
Hollidaysburg, PA 16648
Phone: (814) 696-7112
Fax: (814) 696-7121

PENNDOT District 11-0
45 Thomas Run Road
Bridgeville, PA 15017
Phone: (412) 429-4942
Fax: (412) 429-5069

PENNDOT District 12-0
P.O. Box 459
North Gallatin Avenue Extension
Uniontown, PA 15401-0459
Phone: (724) 439-7362
Fax: (724) 439-7360

Instructor Training at Certified Factory Location for Electric and Hydraulics:
Complete price for 2 consecutive days of not more than 15 hours for no more than 14 students. $3500 Per Event

Instructor Training at Certified Factory Location for Chassis Engine and Driveline:
Complete price for 5 consecutive days of not more than 37.5 hours for not more than 14 students. $3500 Per Event

SAP Contract 4600010880
CN00022979 1302-02

Item #	SAP Material Group #	Item Description	Unit Price
10	25101601	62,000# GVWR conventional cab tandem axle aluminum body dump truck (Type IV), with manual transmission, in accordance with most current DOT specification A-15-BU-C-AS. Make/Model **Mack GU713, Thiele Titan**	$ 106,050.00
20	25173813	Automatic transmission option, in accordance with most current DOT specification A-15-BU-C-AS. Make/Model **Allison RDS-4500-6**	$ 10,058.00
30	25172800	Component Technology hydraulic controller, in accordance with most current DOT specification A-15-BU-C-AS Make/Model **4200 Package**	$ 16,406.00
40	25172800	Pre wet system, in accordance with most current DOT specification A-15-BU-C-AS Make/Model **4200 Package**	$ 1,768.50
50	22101710	Right wing plow, in accordance with most current DOT specification A-15-BU-C-AS. Make/Model **Gledhill/PennDot PAT Wing**	$ 6,591.00
60	22101710	Left wing plow, in accordance with most current DOT specification A-15-BU-C-AS. Make/Model **Gledhill/Penn Dot PAT Wing**	$ 6,591.00
70	22101710	Dual wing plows, in accordance with most currentDOT specification A-15-BU-C-AS. Make/Model **Gledhill/Penn Dot PAT Wing**	$ 14,432.00
80	25101601	72,000# GVWR conventional cab tri-axle aluminum body dump truck, with manual transmission, in accordance with most current DOT specification A-15-BU-F-AW. Make/Model **GU713, Thiele Titan**	$ 130,479.00
90	25173813	Automatic transmission option, in accordance with most current DOT specification A-15-BU-F-AW. Make/Model **Allison RDS-4500-6**	$ 10,058.00
100	22101710	Right wing plow, in accordance with most current DOT specification A-15-BU-F-AW. Make/Model **Gledhill/Penn Dot PAT Wing**	$ 6,591.00
110	25172300	Heated windshield, if available from manufacturer	$ 417.90

SAP Contract 4600010880
CN00022979 1302-02

120	25191700	Electronic engine and vehicle diagnostic software: Media: **CD, Manuals** Restrictions:_____	$	758.00
130	25101601	39,000# GVWR Truck complete with Dump Body and Manual Transmission, in accordance with PCID-1118, Make/Model **GU712, Thiele Titan**	$	91,555.00
140	22101710	Roadwatch System, in accordance with PCID-1118, paragraph 3.21 Make/Model **Roadwatch II**	$	683.00
150	25181708	Heavy duty trailer tow package, in accordance with PCID-1118, paragraph 3.6 Make/Model **Holland PH 760**	$	612.00
160	25181602	Centralized, on board chassis lubrication system, in accordance with PCID-1118, paragraph 3.16 Make/Model **Groenvald**	$	1,615.00
170	26111703	Maintenance free batteries with three (3) year non prorated warranty, in accordance with PCID-1118, paragraph 3.8 Make/Model **Dynacell DY31DC**	$	196.00
180	31250000	Basic Hydraulic CS-230 hydraulic controller, in accordance with PCID-1118, paragraph 3.37 Make/Model **Q PA Turnpke 061010-Pre Wet**	$	12,530.00
190	25172800	Component Technology hydraulic controller, in accordance with PCID-1118, paragraph 3.37A Make/Model **4200 package**	$	12,214.00
200	31250000	Pre wet system, in accordance with PCID-1118, paragraphs 3.55 through 3.55.9 Make/Model **Q PA Turnpike 061010-Pre Wet**	$	3,426.50
210	22101610	Stainless steel tailgate spreader, in accordance with PCID-1118, paragraphs 3.54 through 3.54.6 Make/Model **Monroe UT-MS966-RF-DD 304**	$	2,108.00
220	27111509	Auger reverse feature, in accordance with PCID-1118, paragraph 3.38	$	200.00
230	20142200	Inline fuel warmer, stainless steel, in accordance with PCID-1118, paragraph 3.9	$	204.00
240	25172300	Heated windshield, if available from manufacturer, in accordance with PCID-1118, paragraph 3.56	$	417.90
250	25101601	66,000# GVWR Truck complete with Dump Body and Manual Transmission, in accordance with PCID-1119 Make/Model **Mack GU713, Thiele Titan**	$	104,410.00

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260	22101710	Roadwatch System, in accordance with PCID-1119, paragraph 3.21 Make/Model **Roadwatch II**	$	683.00
270	26111703	CCA Maintenance free batteries with three (3) year non prorated warranty, in accordance with PCID-1119, paragraph 3.8 Make/Model **Dynacell DY31DC**	$	196.00
280	25181708	Heavy duty trailer tow package, in accordance with most current PCID-1119, paragraph 3.6 Make/Model **Holland PH 760**	$	612.00
290	31250000	Basic Hydraulic CS-230 hydraulic controller, in accordance with PCID-1119, paragraph 3.37 Make/Model **Q PA Turnpike 061010-2 axle**	$	16,597.00
300	25172800	Component Technology hydraulic controller, in accordance with PCID-1119, paragraph 3.37A Make/Model **4200 package**	$	15,952.00
310	31250000	Pre wet system, in accordance with PCID-1119, paragraphs 3.55 through 3.55.9 Make/Model **Q PA Turnpike 011010-2 axle**	$	3,426.50
320	22101710	Right wing plow, in accordance with PCID-1119, paragraph 3.56 Make/Model **Gledhill**	$	6,140.00
330	22101610	Stainless steel tailgate spreader, in accordance with PCID-1119, paragraphs 3.54 through 3.54.6 Make/Model **Monroe**	$	2,108.00
340	27111509	Auger reverse feature, in accordance with PCID-1119, paragraph 3.38	$	200.00
350	20142200	In-line fuel warmer, A/C powered, in accordance PCID-1119, paragraph 3.9	$	204.00
360	25172300	Heated windshield, if available from manufacturer, in accordance with PCID-1119, paragraph 3.57	$	417.90
370	25101601	Truck, Dump, Type IV, Almn, Auto includes item 10 @ 106,050, item 20 @ 10,058, item 30 @ 16,406, item 40 @ 1,768.50. item 110 @ 417.90 FOR PENNDOT USE ONLY	$	134,700.40
410	25101601	Truck, Dump, Type IV, Almn, Mnl, includes item 10 @ 106,050, item 30 @ 16,406, item 40 @ 1,768.50, item 110 @ 417.90 FOR PENNDOT USE ONLY	$	124,642.40
450	25101601	Truck, Dump, Tri-axle, Alum, Auto includes item 80 @ 130,479, item 90 @ 10,058, item 110 @ 417.90 FOR PENNDOT USE ONLY	$	140,954.90
	VENDOR INFORMATION			
	Company Name:	Mack Trucks, Inc.		
	Vendor Number:	114765		
	Contact Person:	Danton R. Wickline		
	Address:	2100 Mack Blvd., Allentown PA 18103		
	Phone Number:	610-709-2489		

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	Fax Number:	610-709-2895	
	E-mail Address:	danton.wickline@macktrucks.com	
	Pick-up Site Address:	2100 Mack Blvd. Allentown PA 18103	

Group 3
Information Sheet for Truck – Dump –
Tandem Axle – 62,000* LB GVWR

Cab & Chassis Make/Model: **Mack GU-713**

Engine Make/Model/Displacement/HP/Torque: **Mack/MP- 8/13.0L/425HP/1550 lb.ft.**

Automatic Transmission Make/Model: **Allison/4500-RDS-6**

Manual Transmission Make/Model: **Fuller/RTO-16908LL**

Aluminum Body Make/Model: **Thiele/Titan**

Frame RBM: **3,580,000 in. lbs. per rail**

Front/Rear Wheel Mfg. & Part #: **Accuride #29806, #28828**

Hydraulic System Console Make/Model: **Component Technology/ 4200 Pckge.**

Hydraulic Control Valve Make/Model: **RexRoth M4**

Hydraulic Pump Make/Model: **RexRoth – A10V01D0**

Plow Wing Make/Model: **Gledhill/PAT**

Group 4
Information Sheet for Truck – Dump –
Tri-Axle – 72,000* LB GVWR

Cab & Chassis Make/Model: **Mack GU-713**

Engine Make/Model/Displacement/HP/Torque: **Mack/MP-8/13.0L/425 HP/1550 lb ft.**

Automatic Transmission Make/Model: **Allison/4500-RDS-6**

Manual Transmission Make/Model: **Fuller/RTO-16908LL**

Aluminum Body Make/Model: **Thiele/Titan**

Frame RBM: **3,580,000in. lbs. per Rail**

Front/Rear Wheel Mfg. & Part #: **Accuride #29806, #28828**

Hydraulic System Console Make/Model: **Component Technology/4200 Pckge**

Hydraulic Control Valve Make/Model: **RexRoth-M4**

Hydraulic Pump Make/Model: **RexRoth – A10V01D0**

Plow Wing Make/Model: **Gledhill/PAT**

Group 5
Information Sheet for Truck – Dump –
Single Axle – 39,000* LB GVWR

Cab & Chassis Make/Model: **Mack – GU-712**

Engine Make/Model/Displacement/HP/Torque: **Mack/MP7/11.0L/345 HP/1360 lb. ft.**

Automatic Transmission Make/Model: **Allison/4500-RDS-6**

Manual Transmission Make/Model: **RTO-16908LL**

Aluminum Body Make/Model: **Thiele/Titan**

Frame RBM: **2,137,200 in. lbs. per rail**

Front/Rear Wheel Mfg. & Part #: **Accuride #29300, #28828**

Hydraulic System Console Make/Model: **SG7/GL400S.6**

Hydraulic Control Valve Make/Model: **RexRoth-M4**

Hydraulic Pump Make/Model: **RexRoth-A10V01D0**

Plow Wing Make/Model: **Gledhill/PAT**

Group 6
Information Sheet for Truck – Dump –
Tandem Axle – 66,000* LB GVWR

Cab & Chassis Make/Model: **Mack – GU713**

Engine Make/Model/Displacement/HP/Torque: **Mack/MP7/11.0L/395 HP/1560 lb. ft.**

Automatic Transmission Make/Model: **Allison/4500-RDS-6**

Manual Transmission Make/Model: **Fuller/RTO-16908LL**

Aluminum Body Make/Model: **Thiele/Titan**

Frame RBM: **2,820,000 in. lbs. per rail**

Front/Rear Wheel Mfg. & Part #: **Accuride #29806, #28828**

Hydraulic System Console Make/Model: **SG7/GL400-S.6**

Hydraulic Control Valve Make/Model: **RexRoth – M4**

Hydraulic Pump Make/Model: **RexRoth – A10V01D0**

Plow Wing Make/Model: **Gledhill/PAT**

TRAINING:

Training sessions may or may not be utilized.

Training pricing must be submitted with the bid package and will not affect the final outcome of the bid.

FIELD TRAINING SESSIONS

May be performed in any or all of the Regional locations listed (See attachment A)

Mechanic:

The successful vendor shall provide services of qualified factory trained technicians for not more than ___16___ students. Training sessions of not more than ___15___ hours 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. Travel, lodging and meal expenses are the responsibility of the awarded vendor.

The successful vendor shall submit a training plan to the Equipment Division for approval within 30 days after receipt of the Purchase Order. The training plan shall consist of course outline and material handouts.

The successful vendor shall be responsible for providing all material and training aids as needed.

All training must be coordinated and completed within 30 days after the dates established in the approved training plan unless an extension is mutually agreed to in writing with the Statewide Training Coordinator (717) 787-4836, Fax (717) 783-4438.

INSTRUCTOR TRAINING:

To be performed at a certified factory location.

The successful vendor shall provide services of qualified factory trained technicians for not more than ___15___ hours for a maximum of __14__ people at A FACTORY CERTIFED LOCATION TO TRAIN PENNDOT INSTRUCTOR PERSONAL on electrical and hydraulic systems. Travel, lodging and meal expenses are the responsibility of the Department of Transportation.

The successful vendor shall provide services of qualified factory trained technicians for not more than __37.5___ hours for a maximum of __14__ people at A FACTORY CERTIFED LOCATION TO TRAIN PENNDOT INSTRUCTOR PERSONAL on chassis engine and driveline. Travel, lodging and meal expenses are the responsibility of the Department of Transportation.

The successful vendor shall submit a training plan and all instructor training shall be coordinated with the Mechanic Training Administrator (717) 705-6771, Fax (717) 705-2125 within 30 days after receipt of the Purchase Order.

****FAILURE TO PROVIDE THE REQUIRED TRAINING AND PRICING MAY RESULT IN REJECTION OF YOUR BID.**

PennDot Mechanic Training: Complete price per training event; training event is defined as 2 consecutive days of not more than 15 hours for not more than 16 students.

REGION ONE $6,000.00 Per Event

PENNDOT District 1-0
255 Elm Street
P.O. Box 398
Oil City, PA 16301
Phone: (814) 678-7043
Fax: (814) 678-7040

PENNDOT District 2-0
1924-30 Daisy Street
P.O. Box 342
Clearfield, PA 16830
Phone: (814) 765-0504
Fax: (814) 765-0487

PENNDOT District 10-0
2550 Oakland Ave.
P.O. Box 429
Indiana, PA 15701-0429
Phone: (724) 357-2816
Fax: (724) 357-1904

TURNPIKE
Western Regional Office
2200 North Center Avenue
New Stanton Pa. 15672
724-755-5000

REGION TWO $6,000.00 Per Event

PENNDOT District 3-0
715 Jordan Avenue
Montoursville, PA 17754
Phone: (570) 368-4217
Fax: (570) 368-4343

PENNDOT District 4-0
P.O. Box 111
Scranton, PA 18501
Phone: (570) 963-4032
Fax: (570) 963-4245

REGION THREE $6,000.00 Per Event

PENNDOT District 5-0
1713 Lehigh Street
Allentown, PA 18103-4727
Phone: (610) 798-4184
Fax: (610) 798-4193

PENNDOT District 6-0
7000 Geerdes Blvd.
King of Prussia, PA 19406-1525
Phone: (610) 205-6744
Fax: (610) 205-6909

PENNDOT District 8-0
2140 Herr Street
Harrisburg, PA 17103-1699
Phone: (717) 787-4339
Fax: (717) 772-0975

Equipment Division
17th and Arsenal Blvd.
Harrisburg, Pa. 17120
Phone: (717) 787-1567
Fax: (717) 783-0971

TURNPIKE
Eastern Regional Office
251 Flint Hill Road
King of Prussia Pa. 19406
610 279-3778

REGION FOUR $6,000.00 Per Event

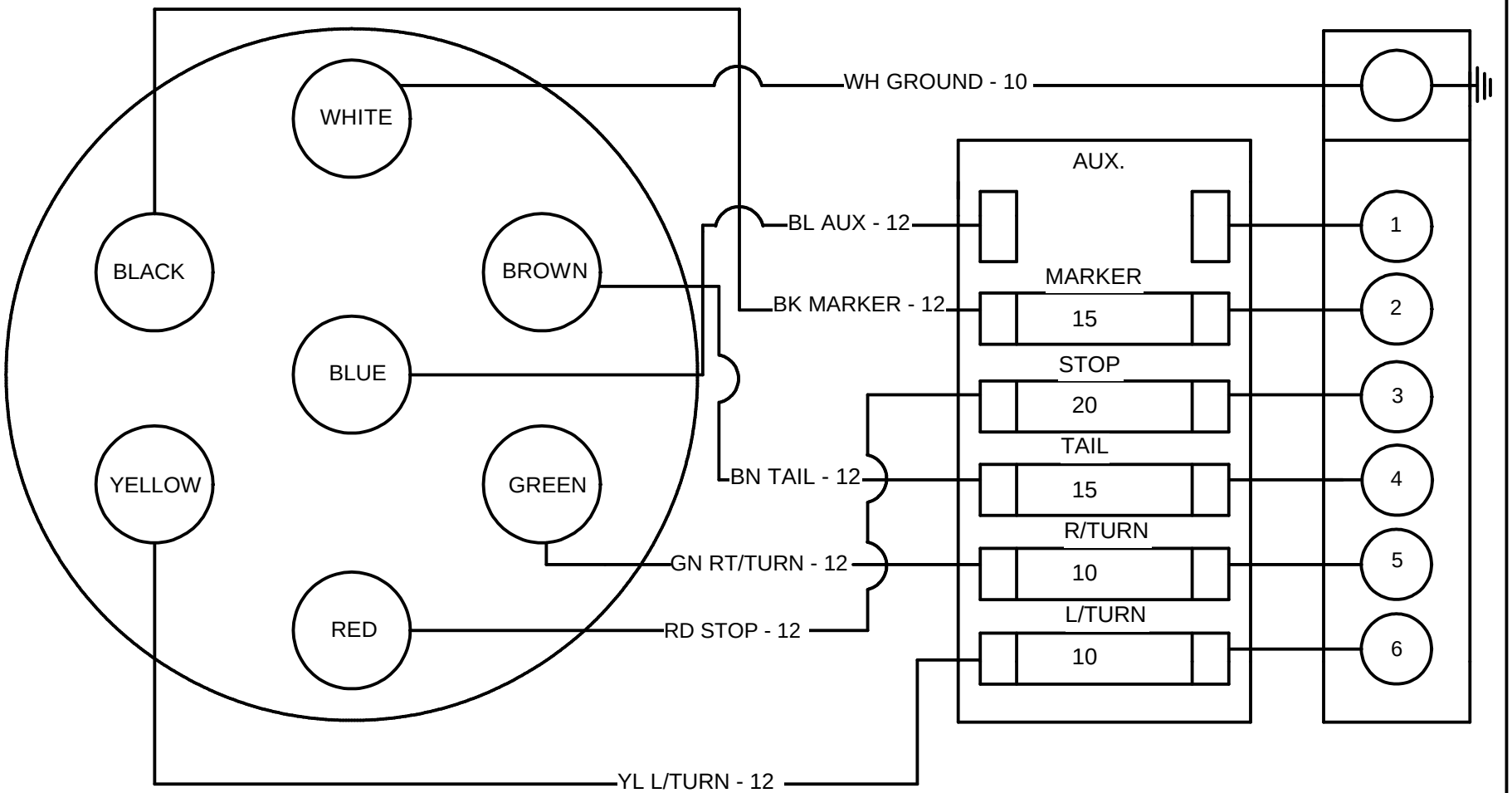
PENNDOT District 9-0
1620 North Juniata Street
Hollidaysburg, PA 16648
Phone: (814) 696-7112
Fax: (814) 696-7121

PENNDOT District 11-0
45 Thomas Run Road
Bridgeville, PA 15017
Phone: (412) 429-4942
Fax: (412) 429-5069

PENNDOT District 12-0
P.O. Box 459
North Gallatin Avenue Extension
Uniontown, PA 15401-0459
Phone: (724) 439-7362
Fax: (724) 439-7360

Instructor Training at Certified Factory Location for Electric and Hydraulics:
Complete price for 2 consecutive days of not more than 15 hours for no more than 14 students. $6,000.00 Per Event

Instructor Training at Certified Factory Location for Chassis Engine and Driveline:
Complete price for 5 consecutive days of not more than 37.5 hours for not more than 14 students. $25,650.00 Per Event



NOTES:

1) Wire shall be 7 way (1-10 gauge; 6-12 gauge) per ATA color code with eyelets at junction box, clamped every 18" min.
2) Wiring from junction box to auxilary lights shall not have external splices.

REVISIONS			COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION		
N0.	DATE	BY			
1	12-23-88		WIRING DIAGRAM / AUXILARY LIGHTS		
2	02-08-95	WHM			
3	7-22-95	DJA	DRAWN BY	SCALE N / A	MATERIAL
4	07-22-98	WHM	CHK'D	DATE 12-11-87	DRW NO. EQN-80A
5	03/30/00	GAH			SHEET 1 OF 1

SPECIFICATIONS
A-15-BU-F-AW

TRUCK - DUMP - CONVENTI0NAL - 72,000 LB GVWR
HEAVY DUTY DUMP TRUCK (TRI-AXLE)

053500 thru 0539000

TRUCK, DUMP, TRI-AXLE, ALUM, AUTO (053500)
TRUCK, DUMP, TRI-AXLE, ALUM, AUTO, W/RIGHT WING PLOW (053510)
TRUCK, DUMP, TRI-AXLE, ALUM, AUTO, W/LEFT WING PLOW (053520)
TRUCK, DUMP, TRI-AXLE, ALUM, AUTO, W/DUAL WING PLOW (053530)

TRUCK, DUMP, TRI-AXLE, ALUM, W/AUTO SHIFT (053700)
TRUCK, DUMP, TRI-AXLE, ALUM, W/AUTO SHIFT, W/RIGHT WING PLOW (053710)
TRUCK, DUMP, TRI-AXLE, ALUM, W/AUTO SHIFT, W/LEFT WING PLOW (053720)
TRUCK, DUMP, TRI-AXLE, ALUM,W/AUTO SHIFT, W/DUAL WING PLOW (053730)

TRUCK, DUMP, TRI-AXLE, ALUM, MNL (053900)
TRUCK, DUMP, TRI-AXLE, ALUM, MNL, W/RIGHT WING PLOW (053910)
TRUCK, DUMP, TRI-AXLE, ALUM, MNL, W/LEFT WING PLOW (053920)
TRUCK, DUMP, TRI-AXLE, ALUM, MNL, W/DUAL WING PLOW (053930)

SPECIFICATIONS
A-15-BU-F-AW

INDEX

SPECIFICATIONS
A-15-BU-F-AW

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

F. Body Equipment:

1. Accessory Plate
2. Bed Up Alarm
3. Chain Box
4. Hoist Cylinder
5. Hoist Hardware
6. Plow Frame
7. Safety
8. Splash Guards
9. Welding
10. Central Hydraulic System
11. Console and Power Distribution Center
12. Directional Control Valve
13. Hydraulic Alarm and Safety
14. Hydraulic Hose
15. Hydraulic Pump
16. Hydraulic Pump Driveline
17. Plow Saver
18. Oil Reservoir and Accessories
19. Test Port
20. Installation Practices
21. Bed Speed Requirements

II. General Wing Plow Specifications

A. Intent Statement
B. Plow Components

III. DRAWINGS:

IV. MANUALS:

V. TRAINING:

VI. WARRANTY:

SPECIFICATIONS
A-15-BU-F-AW

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

The purpose of these specifications is to describe a conventional, tandem-rear axle dump truck, with a tag axle (in front) equipped with dual rear wheels, dump body, hoist, hydraulic power system and snow plow hitch. It shall be capable of one -man operation while plowing snow and simultaneously spreading anti-skid materials or salt during winter operations, and of hauling, stockpiling and unloading maintenance materials into a chip spreader or paver during summer operations. Further it shall be capable of being loaded with front-end loader or self-propelled belt loader.

B. WEIGHT DISTRIBUTION:

Weight distribution charts must be submitted with the pilot model for all models per Invitation To Bid. Weight distribution charts shall be submitted for two modes listed below. The weight distribution charts submitted with the pilot model shall be reviewed for their reasonableness, and any inconsistencies shall be clarified with the awarded vendor at the "pre-build" meeting.

1. Summer mode including that portion of the wing plow post and plow frame assembly that remains on the vehicle all year.

2. Winter mode with front plow, spreader and complete wing plow.

Each item listed on Drawing EQN-507B shall be noted and individually calculated in the vendor's submission.

Engineering certified weigh slip shall be provided with the pilot model and signed by the Manufacturer's Engineering Department.

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

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

SPECIFICATIONS
A-15-BU-F-AW

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

B. WEIGHT DISTRIBUTION: (Continued)

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

b. Front and rear axle legal weight distribution apply to non-emergency applications only!. Winter weight distributions are required for payload information purposes only since winter plowing and spreading operations are exempt from legal weight restrictions. However, the total weight rating shall not exceed the manufacturer's GVWR for the vehicle that is offered. The weight imposed on the front and rear axles using the total GVWR shall be shown. (Overweight shown on the axles in these winter modes is for information only).

In addition to the Engineering Certified weight distribution provided at the pilot model inspection, the following information is required with the pilot model.

The vehicle shall be certified for 72,000 LB Gross Vehicle Weight Rating (GVWR). The GVWR shall be identified in the cab or on the door as the final complete certification label (minimum rating).

ACTUAL TRUCK WEIGHT: (LB)

"Chassis only" (shall be signed by a certified weigh master.)

_____ Front Axle

_____ Rear Axle

_____ Total

"Chassis with body" (shall be signed by a certified weigh master).

_____Front Axle

_____Rear Axle

_____Total

The above may be performed by the body company.

SPECIFICATIONS
A-15-BU-F-AW

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

B. WEIGHT DISTRIBUTION: (Continued)

Truck GAWR's as Built (LB)

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

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 – MIN. 450 HP AT GOVERNED RPM, MIN. PEAK TORQUE OF 1550 LB/FT TORQUE, MIN 13.0 LITER

ENGINE (AUTOMATIC TRANSMISSION ONLY) – MIN. 425 HP AT GOVERNED RPM, MIN. PEAK TORQUE OF 1550 LB/FT TORQUE, MIN 13.0 LITER

TRANSMISSION – EATON RTO – 16908LL
MACK T-310M

EATON AUTO-SHIFT RTO-14910(B OR C) - AS2
EATON AUTO-SHIFT RTO-16910(B OR C) – AS2
(Dependant upon engine RPM/axle ratio)

AUTOMATIC ALLISION 4500 RDS 6 SPEED

REAR AXLE – DANA DS463P
MACK S 440 OR S462
MERITOR RT46 -160 - P

NOTE: All rear axles must provide axle shafts with a minimum diameter of 2.19 inch at the spline.

NOTE: REAR AXLE/S SHALL HAVE AN EXTENDED BREATHER TUBE TO PREVENT DEBRIS BUILDUP.

SPECIFICATIONS
A-15-BU-F-AW

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

D. VEHICLE COMPONENTS:

1. ALARM - BACKUP:

Ref: EQN-74

2. AXLE FRONT:

20,000 LB capacity minimum.
The front axle, drag links and tie rods shall have grease zerks installed.
Kingpin or bushings shall be grooved to permit grease flow.
Sufficient tire clearance at maximum turning angles.
Complete “Stemco” oil seal assembly, including hub, plug type window, and "Guardian" seal, (no substitute, standardization).
Each unit shall have the front end aligned.

3. AXLE REAR:

ALUMINUM OR LIGHTWEIGHT HOUSING IS NOT ACCEPTABLE.
STEMCO GUARDIAN rear wheel seals, (no substitute standardization).
Drain plug, magnetic.
There shall be an inter-axle differential lock that is manually cab controlled.

NOTE: Rear axle selection will be made after the award and may be a mix of ratios as required. The successful vendor/manufacturer shall present three (3) computer runs showing 3 most likely ratios for consideration for a speed range of 55 MPH to 65 MPH max. This information shall be presented at the pre-build meeting. The rear axle ratios must be the "identical" ratios.

3A. PUSHER AXLE:

Pusher Axle: Mounted forward of rear tandems, and shall incorporate air lift. Ref: Neway tag series with AL series air lift, Turner/Hendrickson, Watson & Chalin WCAL-2200 Series (no substitute). Height of lift to be determined by successful vendor. Successful vendor shall utilize 12R22.5H tires, if possible. If not attainable (engineering) vendor shall show proof at the pre-build meeting. Vendor is responsible for legal air reserves. Axle shall include in-cab controls and air pressure gauge. Pusher axle shall include hub piloted wheels with radial tires.

SPECIFICATIONS
A-15-BU-F-AW

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

D. VEHICLE COMPONENTS: (Continued)

BRAKES

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

ABS shall incorporate an ABS diagnostic fault switch that is capable of illuminating a fault light for diagnostic purposes. The switch shall be easily accessible. The switch mounted under or on the dashboard.
ABS Diagnostic Switch
Rear brakes: 16.5 inch x 7 inch "S" cam with quick-change type single or double pin. (No substitute, standardization).
Steer-axle-brake: 16.5 inch x 6 inch "S" cam or a power front disc brake system providing equal performance. Quick change type single or double anchor pin if drum type brakes are furnished.
Drum brakes shall have automatic slack adjusters and they shall be clearance sensing type only, with adjustment on application of the brake (no substitute).
Backing plates on all drum brakes.
Air compressor: Per truck manufacturers recommendation
Buzzer-type, low air pressure indicator. Compressor shall be fitted with a safety valve to prevent mechanical failure.
Parking brake: Rear wheel spring-type, MGM E 30/30 or Anchorlock 30/30 gold seal chambers (no substitute). Parking brake shall provide modulated emergency braking via the foot valve in the event of a rear service system failure.
Rear service brake chambers and spring brake chambers mounted to provide adequate clearance for backing into bituminous paving machines.
Air tank: Automatic drain valve, with heater on wet (first) tank. Each of the remaining air tanks shall have a manual drain valve.
Air dryer: With heater, inboard mounted, away from road splashing and 20 inch above road surface. Dryer shall be compatible with the body company clearance requirements for sub-frame, valve body, etc. Per: Haldex DRYest or Bendix AD-IP Installation made in concurrence with the air compressor manufacturer's recommendations.
All electrical connectors for drain valve and air dryer shall be covered with heat shrink material or have sealed connections.
Brake valve shall be mounted away from road splashing.
System shall be equipped with anti-compounding to prevent mechanical failure of the foundation brakes, slack adjusters, etc.

SPECIFICATIONS
A-15-BU-F-AW

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

D. VEHICLE COMPONENTS: (Continued)

5. CAB:

Aluminum or steel cab, 111 inch minimum to 125 inch maximum BBC (Bumper to Back of Cab) dimension excluding frame extension.
Hood: Fiberglass, tilting. Fenders are part of tilting hood. Grille shall be fixed.
Air suspension system for the cab shall be factory or aftermarket installation is acceptable
Air deflector: Clear or smoke, hood mounted. Manufacturer's standard full width for the truck model. Access to front-end hood tilt handle shall not be blocked. Extra handle acceptable.
Fenders: Front fenders shall have a 5 inch minimum extension.
Deluxe fresh air hot water heater and defroster, manufacturer's highest output.
Air Conditioning: Highest output available as OEM option.
AM/FM radio with weather band.
Air horn(s): with snow-shield.
All controls and knobs shall be properly identified.
CB Power connections One (1) pair, at the dash, per EQN-78.
Cab floor covering shall be heavy-duty rubber with closed cell rubber or heavy felt backing.
Cruise control
Cup holder in the cab within easy reach of the operator.
Dome light shall be provided
Dual sun visors.

Windshield: One (1) or two (2) piece construction, tinted. Safety glass throughout.
Heated windshield per invitation to bid.
Drivers and passenger side windows shall be power.

Dual windshield wipers artic type with heaviest arms and linkages available. Wipers shall be min. 2 speed electric with intermittent feature.
Washer system shall be electric. Minimum capacity of two (2) quarts of washer fluid and shall be filled with an anti-freeze type solvent.

Mirrors: Driver's and passenger side power mirrors , west coast style minimum 6 inch X 16 inch manufacturers standard heavy duty break away arms.
Mirrors shall be heated with a lighted toggle switch mounted within accessible reach of the operator, automatic on/off is acceptable. The wires shall be fitted in such a way that the mirror glass/element can be changed by unplugging the two-wire lead.
There shall be a heated convex mirror both sides, minimum 5.5 inch X 8.8 inch.
Roadwatch system with digital display shall be installed. Ref: Sprague Controls

Blind-spot elimination mirror heated (conventional cab only) shall be mounted on the right front fender and it shall be 8 inch, minimum, diameter stainless steel or aluminum head with mirror. Mirror shall be a conventional convex mirror, and shall not be of the half-round cross view type. All arm/s and hardware shall also be stainless steel. Fender type washers stainless or aluminum, with rubber pads to be placed on both sides of the fender shall be included. Pedestal system shall be single, double or triple mounting assemblies (stainless steel or aluminum). Mirror shall be mounted in rubber or vinyl. Ref: Grote (800-628-0809)

SPECIFICATIONS
A-15-BU-F-AW

I. GENERAL TUCK SPECIFICATION: (Continued)

D. VEHICLE COMPONENTS: (Continued)

5. CAB: (Continued)

STEPS: Drivers and passenger entrance steps: Shall be aluminum, serrated. The outer step edge must be serrated in lieu of plain. (Overlay is not acceptable).
Step design material must be the same both left and right side.
Ref: Bustin No. NST4 full size, Ohio Grating No. JA21195G4 serrated, IKG. Industries Type B54 or Mack Part # 85QM423OM4
Top of the first step shall be approximately 21 inch above the ground.

Seats: Driver's seat shall be high back adjustable Bostrom air 915 Series with lumbar support or National 195 Series with lumbar or DuraForm Air Command Series (fabri form cushions with lumbar support) with body cloth insert and three-point retractable seat belt. A bellow-type or protective skirt shall cover the seat suspension mechanism. There shall be an inside armrest on the driver's seat plus an outside armrest installed on the seat or the drivers door. No substitute on seats reference. Color coordinated to cab interior.
Passenger seat: With three-point retractable seat belt, manufacturers standard non-suspension (static), and high black type. Color coordinated.

6. CHASSIS:

The GVWR rating of the truck shall be 72,000 LB on the door or in the cab as the final complete certification label. (minimum rating).
Cab axle (CA) dimension and wheelbase dimension shall be determined by the successful vendor with consideration to axles, 17feet dump body, optimum legal weight distribution and proper bed over hang.
The frame AF shall incorporate a cross member at the rear of the frame to reinforce the body pivot point. (Local installation is acceptable).
Front Bumper: Heavy duty swept back. Mounted to the frame with the inner face of the bumper against the chassis frame.
Lights: mounted on the rear of the frame shall be shock mounted to prevent damage from backing into material piles (Ref: EQN-74).
Frame mounted tow hooks or eyes: Two (2) front. These may be installed by the body company after completion of the plow hitch mounting using grade 8 bolts (minimum) of sufficient length, and grade 8 elastic type self-locking nuts, or by full welding.
License plate bracket: Front and rear. Securely mounted to prevent damage when backing into material piles.
NOTE: (Hydraulic fittings shall be mounted above the module, and the vertical apron shall be cut out above the frame to facilitate their placement.)

There shall be a centralized on board chassis lubrication system installed. The system shall have a fault light that will illuminate when there is a malfunction with the system. The light shall be cab mounted so the operator can visually monitor the system. Steel tubing (hard pipe) shall be utilized where/when ever possible and practical: Ref: EQN-160

SPECIFICATIONS
A-15-BU-F-AW

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

D. VEHICLE COMPONENTS: (Continued)

6. CHASSIS: (Continued)

Ref: Grease Jockey
Groeneveld Lube system
Lincoln Lube system
Vogel Lubrication Inc.

7. CLUTCH: (if applicable)

Externally lubricated with an extended lube hose if applicable, Eaton/Fuller EZ pedal or Meritor with torque limiting clutch brake.
Clutch adjustment shall be set to specifications prior to delivery to the Department.
There shall be a neutral safety device to ensure that the vehicle cannot be started in gear.
NOTE: The transmission-input shaft shall be 2 inch spline. Dampened driven disc.

8. DRIVE LINE:

Main drive line: Spicer Life XL or Meritor RPL Series. "Factory balanced" greasable, (1 zerk minimum).
Heavy-duty drive line shall be engineered and be compatible to engine, drive train and transmission torque.
Heavy-duty center bearing, if required, with due consideration to drive shaft angles, length, location, proper bolting based upon engine and transmission selection.
Interaxle driveline: Spicer Life XL Series.

9. ELECTRICALS:

All copper system, negative ground.
Alternator and starter mounting bolts: Grade 8.
Alternator: 160 amp minimum, high performance, solid state. Ref: Delco 33 SI (no substitute, standardization).
Battery cable from battery negative terminal to starter motor or frame.
Batteries: Three (3), heavy-duty, 12 volt, field maintenance-free, BCI Group Size 31, with stud-type posts and anti-corrosion treatment on each terminal. 2500 total cold cranking amperes (CCA) at 0 degrees F. 640 minutes of total reserve capacity at 80 degrees F as per SAE.
Battery Mounting: It shall include the following:

a.) 0.25 inch thick rubber shock pad under the battery.
b.) Box with cover. Cover shall be constructed of fiberglass, poly, or aluminum (if aluminum there shall be an insulated 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 circuit breaker liable to be damaged during truck operation shall have an easily removable protective cover. All wire splices in the cab shall be heat shrink materials. Ref: Thomas & Betts, Tel: (210) 707-2145.
Electrical chassis-wiring harness: Body lighting and wiring to be per EQN-80X.

SPECIFICATIONS
A-15-BU-F-AW

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

D. VEHICLE COMPONENTS: (Continued)

9. ELECTRICALS: (Continued)

Body plug: Truck manufacturer and Grote Industries shall supply a body builder plug. All lights, body and chassis shall be protected by the truck manufacturers fuse block assembly.
Final location of the plug shall be decided at the pre-build meeting.
All exposed junctions: Waterproof and sealed against salt.
Flasher: (All) heavy-duty electrical, Ref: Tridon Model EL 12 or EQUAL.
Note: If an audible alarm is supplied for 4 ways and turn signal, it shall have on/off capability.
All lights for chassis and body shall be LED per EQN-80Xand meeting all Federal and state regulations.
The switch for parking light circuit shall be able to handle an additional 3 A load of a light bar.
Head Lights: shall be Halogen with Daytime running lights factory or aftermarket installation.
Dump body lights shall have their own dedicated complete circuit.
Plow lights to be fender mounted and meet all requirements of Pennsylvania Motor Vehicle Laws.
Ref: EQN-124 or approved body company design.
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 OCP for engines up to 600 cubic inch (unless replaced by Delco 41 MT) or 42 MT with OCP for engines 601 cubic inch and above. No substitute, standardization.

10. ENGINE:

The engine components facing wheel areas, on both sides, and the areas to the rear of wheels shall be shielded. The shield shall protect the engine, fan, radiator and areas behind tires from the stones and debris.
Replaceable heavy-duty fuel filter(s) and oil filter(s) as recommended by the manufacturer bearing a legible OEM part number.
Diesel Fuel Filter: Shall be DAVCO filtration unit. Size and location per engine manufacturer recommendation.
Cooling System: The largest factory available engine cooling capacity compatible with engines and transmissions referenced and for continuous high engine output under extreme temperatures and/or operating conditions due to prolonged snow plowing operations in low gears. The water pump shall be adequately sized to provide proper cooling and be of sufficient size to accommodate the larger pulley to adequately handle the specified options.
Shall be fitted with provisions for visually monitoring coolant without necessitating removal of the cap from the radiator or expansion tank (e.g. sight glass, transparent expansion tank).
The antifreeze solution shall meet all applicable EPA requirements.

SPECIFICATIONS
A-15-BU-F-AW

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

D. VEHICLE COMPONENTS: (Continued)

11. ENGINE ACCESSORIES:

Radiator core and shell: Shall be manufacturer's heaviest construction grade radiator available, with overflow recovery system and visual level indicator.

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

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

Coolant/filter: A spin-on filter element and the HA 350 Mounting Kit. Perry system size S-4 or approved equal.

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

The air intake system shall be fitted with inside/outside air.

Fan: Thermostatically controlled viscous type or manufacturers recommended automatic fan.

Screening System: that protect radiator from stones and bugs.

Engine Vibration Dampened: At PTO flange yoke. Ref: EQN-90.

Diesel Fuel Filter: Shall be engine manufacturers recommendation.

Air Restriction Gauge: Flush, dash-mounted with indicator slide for engine air cleaner, Ref: 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.

Governor: Set at manufacturer's recommended maximum rpm.

Hoses: The air induction system and large radiator cooling system hoses shall be clamped with 0.500 inch wide, 150 inch LB stainless steel, constant torque, spring loaded worm clamps. Ref: Wittek Manufacturing (Tel: (312) 492-9400) or Breeze Clamp Co, Constant Torque clamps with liner for silicone hoses. Cooling system hose under 1 inch OD may use factory standard hose clamps, as a minimum acceptable standard.

Air intake hoses shall be 0.250 inch minimum thickness, molded hoses. Ref: Gates, Goodyear or equal. Silicone radiator and heater hoses. Hoses shall not be painted.

Lubricating Oil Lines: High quality flexible wire-braid type, "Aeroquip" or approved equal system, minimum standard if hoses are used.

Drive Belts: Cog belts or serpentine (cog belts not required for power steering).

Engine Brake: Minimum two stage, full engine compression brake, ref: Jacobs.

SPECIFICATIONS
A-15-BU-F-AW

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

D. VEHICLE COMPONENTS: (Continued)

12. EXHAUST:

Vertical tailpipe and muffler system or approved horizontal muffler and vertical tail pipe.
Tailpipe with elbow.
Exhaust system shall neither interfere with the operation of the dump body or equipment nor will it be close to any fluid tank, and **PERMIT WING PLOW INSTALLATION**.
The tail pipe shall be installed in a manner that will keep the muffler and tail pipe away from dump truck body. The flex in the body when operating on an uneven terrain must be considered in the design.
The muffler and tail pipe shall be shielded or insulated to protect personnel from burns when entering or exiting the cab. The shield shall be 180 degrees to 360 degrees and shall be of non-rustable material such as stainless steel or aluminum. Ref: Riker or equal.

13. FAST LUBE OIL CHANGE SYSTEM (FLOCS):

This system will be installed with all fittings, brackets, clamps and hoses. The system will be compatible with all fittings presently used by the Department. The final placement of the male half of the snap coupler on the equipment will be approved by, the Chief of the Equipment Division prior to installation. Ref: Aeroquip or prior approved equal. Ref: EQN-351A.

14. FRAME AND FRAME EXTENSION:

Resisting Bending Moment (R.B.M.): Minimum of 2.5 million inch LB per rail, including extension, for the entire length of the frame, including any frame liners. Where engine and radiator adjustments are required, a minimum of, 1 million inch LB per rail (R.B.M.) will be excepted. Frame material shall be of at least, 110,000 PSI yield strength.
If a larger RBM is required to perform the specified operational duties, the vendor shall bid a frame concurrent with the intent and spirit of this contract. RE: Snow removal operations, full payload snow plow, right and/or left patrol wing plow, etc.
Main frame and any required liners shall be either straight channel or offset channel, full length.
Minimum frame REM shall be approved by manufacturer 's Engineering-Department.
Bolt-on or welded extension will not be accepted.
Front frame shall accommodate the Department's standard hydraulic PTO shaft and pump (Ref: EQN-90) and the plow frame. It shall provide easy service accessibility.
The truck offered must be designed to accommodate a right and/or left patrol style wing plow.

SPECIFICATIONS
A-15-BU-F-AW

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

D. VEHICLE COMPONENTS: (Continued)

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 lo-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. In – dash, integral with instrument panel be illuminated and shall be readable from the operator's seat.
Speedometer with odometer with a dual speedometer lead to interface with the Component Technology system.
Tachometer
Voltmeter
Parking brake indicator light.
Hydraulic fluid level gauge.

16. LIGHT – WARNING:

One (1) revolving warning light shall be mounted on the drivers side of the body cab protector, Ref: EQN-210B.

LIGHT - WARNING - MOUNTING BRACKET - WIRING:

Ref: EQN-210B.
The wire shall be protected along the entire under side of the cab shield and down the front of the bulkhead.
A grounding wire shall be provided between the internal and external bracket at the pivot point.

17. PAINT:

Cab shall be painted PENNDOT yellow. Ref: DuPont 6808 for color only.
Frame: All underside components, shall be primed and painted black.
Front bumper shall be painted black.
Plow frame shall be painted black with acrylic enamel (with hardener) low VOC.
Proper surface preparation is the sole responsibility of the OEM and body builder to comply with V. D.

SPECIFICATIONS
A-15-BU-F-AW

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

D. VEHICLE COMPONENTS: (Continued)

18. SAFETY:

Cab and body shall have reflective enhancement per EQN-127.
Emergency triangle warning kit, with hold down. Warning Triangle Flare Kit, Ref: KD 610-4645, KD Lamp Co. (Tel: (513) 621-4211) or equal, stowed (fastened) in the cab. Ref: EQN-66A
Fire extinguisher: Rechargeable with vehicle mount. Mounted in the cab for easy and quick access. Ref: 2A: 10B: C.
Grab handles (2): Shall be furnished to provide "0ptimum safety" for entering the truck cab. Manufactures standard or aftermarket. Non-skid paint or rubber may be utilized, (non-skid tape is unacceptable). Ref: Non skid paint, Gamma Laboratories (Tel. 304-489-2828.)

19. STEERING:

Power Steering: Dual integral or single integral type hydraulic power steering with right wheel power-assist cylinder.
Glidecoat steering shaft, or Bendix wedgelock lube-for-life shaft.
Steering System: (e.g. flow, pressure, relief valve etc.) Shall be selected considering the full front-GAWR axle loading.
Hydraulic Supply Pump: Vane type or roller type with sufficient oil flow to permit one (1) steering wheel revolution per second with front axle loaded to rated capacity, with plow on, in a "park" condition. Ref: Vickers V-20, Eaton or Borg Warner.
The pump shall not be the integral filter type unit.
Power Steering Reservoir: "Remote mounted", minimum 2 quart capacity, incorporating a filter which is easy to remove and replace.
The remote filter referenced above shall be factory mounted, certified and engineering approved in conjunction with the appropriate pump.
Cogged belts not required on power steering system.

20. SUSPENSION: FRONT:

10,000 LB capacity at ground each front spring.
The six (6) front spring pins or bearings/bushing shall be furnished with 360-degree grease grooves to insure adequate lubricant penetration.
Spring hangers shall be heavy castings with sufficient pin and bearing surface to render trouble free service.

21. SUSPENSION: REAR:

Suspension shall be tailored to axle loads and shall be adequate to sustain maximum GVW without overload or permanent set.
Suspension shall be mechanical (no air).
The spring hanger brackets shall be severe duty castings with sufficient bearing surface/wall thickness to prevent premature bolt wear.
The spring center bolts shall be a minimum of .4375 inch size, preferably .5000 inch.
The rear spring hanger pins shall be the greaseable type.
Bolts must be of sufficient length to go through the washer, spring bracket and truck frame with sufficient length to install a self-locking nut.

SPECIFICATIONS
A-15-BU-F-AW

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

D. VEHICLE COMPONENTS: (Continued)

22. TANK - FUEL:

Safety - type fuel tank as per the requirements of FMVSS. **Dual tanks are unacceptable.**
Trucks with no wing and Trucks with a right wing shall have one (1) 100 GAL minimum total capacity, frame mounted, under the left door.
Left wing and dual wing trucks shall have one (1) 80 GAL (useable) minimum total capacity, frame mounted, under the left door.
Tank mounting hardware and brackets shall be for "severe duty" applications. Heavy-duty aluminum or stainless steel with minimum 2 inch wide straps with rubber shims/liners.
Accessible fill pipe with dump body down (located at either end of tank to avoid interference with steps).
System shall be a top draw and top return line.

23. WHEELS/TIRES:

GENERAL:

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

Front: Wheels: 22.5 x 12.25, 10 hole - 285.75mm bolt circle with 220mm bore, tubeless steel disc wheel rated at 10,500 LBS at a maximum inflation pressure of 120 PSIG. Accuride part number 29806.

Rear: Wheels: 22.5 x 8.25, 10 hole - 285.75mm bolt circle with 220mm bore, tubeless steel disc wheel rated at 7,500 LBS at a maximum inflation pressure of 120 PSIG. Accuride part number 28828.

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

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

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

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

TIRE: (No substitute. All tires will be radials).
Tires: 425/65R22.5 (18 ply min).
Tires: 12R22.5H

MANUFACTURER	FRONT TIRE	REAR TIRE
Goodyear	G-286 SS	G-124 or 164RTD
Michelin	XZY - WB	XDE-A/T

SPECIFICATIONS
A-15-BU-F-AW

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

D. VEHICLE COMPONENTS: (Continued)

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

OPTION #1 – MANUAL:

Geared for PTO application, right and left side or right side and bottom.
Magnetic drain plug.
Input transmission shaft: 2 inch.
12 to 1, minimum 1st gear and reverse ratio.

OPTION #2 - AUTOMATIC:

Dash mounted console with push button shift selector.
There shall be an external oil cooler.
Oil cooler for transmission required due to prolonged transmission torque converter operation in low gears. Cooler size must be provided to keep the transmission fluid at an acceptable operating temperature under these prolonged conditions. (Water to oil type cooler). An Allison approved cooling system shall be installed regardless of whether retarder is incorporated in the system or not.
Retarder system shall have a foot control. There shall be a master switch on the dash that will totally disarm the retarder system. A switch in the retarder circuit shall automatically activate the brake lights during retarder operation.

E. DUMP BODY AND EQUIPMENT:

1. DUMP BODY, ALUMINUM:

DETAILS - Ref: EQN-79T
The dump body capacity shall be minimum of 20.0 cubic yards water level.
Side board pockets shall accommodate a standard 2 inch x 4 inch (wood).
Tailgate 64 inches, body sides 60 inch (approx.)
Front Body Bulkhead: Minimum 0.15625 inch standard aluminum 5454H34, and shall be a minimum of 12 inch above body sides. There shall be a shovel holder assembly mounted on the left front of bulkhead (final position to be determined at the pre-build meeting). Ref: Akron Foundry AT-2.
Rear Corner Posts: On both sides shall be full depth, one-piece construction from the top of the tailgate to the bottom of the rear bolster and shall be free of holes.
Rear Bolster: One piece, full depth and full width.
Spreader chain holders: On both sides, top and bottom of the rear corner posts.
All body welding shall be full welding.

SPECIFICATIONS
A-15-BU-F-AW

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. DUMP BODY AND EQUIPMENT: (Continued)

1. DUMP BODY, ALUMINUM: (Continued)

Bed prop There shall be two (2), three position, self positioning stow away bed props per EQN-62.
Aluminum shall not be painted.
There shall be midway sideboard supports (left and right).

2. TAILGATE, ALUMINUM:

Ref: EQN-79T EQN-81T and EQN-64. NOTE: Approx. 6° angle.
Manufactured from grades 5454H34 and 6061T6.
64 inch (minimum), body sides 60 inch (approx.).
Double acting five (5) panel tailgate with offset hinges.
Two (2) "J" hooks welded to the tailgate for chain hangers.
1.50 inch dia. greaseable self-aligning top hinge pins with tapered end and with sufficient length for easy removal. Pins shall be affixed with chains to prevent loss and be non-rotating.
1.5 inch thick top hinge plate, aluminum, offset style. Minimum edge distance shall be 1.7500 inch. Severe duty.
0.375 inch spreader chain, non-rusting and able to accommodate 0.5 inch in thick aluminum chain holder or 0.375 inch an thick steel chain holder.
Tailgate chains shall be covered with expandable braided sleeving of monafilament construction. Ref: Fairmont, (Tel: (304) 366-4600) Part No. Expando Grade DM -color black or yellow.
Four (4) tailgate chain brackets. Two (2) on each side.
Severe duty tailgate attaching brackets with replaceable heavy-duty bushings and greaseable fittings shall be provided. Tailgate shall utilize hardware as listed in EQN-79T, page 9 of 9, except for manual handle. Tailgate shall be a pneumatic actuated system with cab control.
Body Lighting: - Ref: paragraph I.D.9 ELECTRICAL CHASSIS - WIRING HARNESS, and EQN-81X.
Coal chute gate with levers and operating handle. AISI Type 304 stainless steel.
Ref: EQN-64 Aluminum
Air operated Tailgate per EQN-78A: Tailgate must be operated via an in-cab dash mounted switch.. All air piping and connections must be D.O.T. approved with .250 inch nylon tubing and brass compression fittings. Spring-over-air or air to air is acceptable.

3. BODY SIDES, ALUMINUM:

The sides shall be minimum .250 inch thick aluminum 5454H34.
Top rails shall be fully boxed and completely closed by "continuous" welding, both sides.
One piece construction for side top and bottom rails; no splices.
Running board width shall cover the outer rear dual tires and shall be full length of the body, both sides.

SPECIFICATIONS
A-15-BU-F-AW

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. DUMP BODY AND EQUIPMENT: (Continued)

3. BODY SIDES, ALUMINUM: (Continued)

A minimum of five (5) vertical side braces per side on proper centers shall be furnished in addition to the front and rear corner posts. Side braces and front posts shall be furnished with bottom drain holes with safety self cleaning type grid steps welded, both sides, between vertical braces, full length, and flush with outer edge of vertical braces per EQN-76.

Aluminum body shall be isolated from the steel frame rails at the hinge by installing Mylar material.

4. FLOOR, ALUMINUM:

One (1) piece body floor shall be .3750 inch thick minimum, abrasion-resistant aluminum 5454H34. Ref: EQN-79T.

5. BODY STRUCTURE, ALUMINUM:

Ref: EQN-79T.

The body shall be “stacked construction” aluminum.

Dump Body		Aluminum
Longitudinal member	Size	6 inch I-Beam min.
	Wt.	6.1 LB/feet
	Material	Al 6061T6
Cross-member	Size	4 inch I-Beam min.
	Wt.	2.70 LB/feet
	Material	A1 6061T6

4 inch channel Cross members of equal strength are permitted at the front and rear of body to finish the unit, and in the area where hoist box is located.

The body shall be reinforced to withstand SEVERE duty service. RE: Dump body up while spreading salt and anti-skid material, or excavation rip rap being dropped in the bed.

The longitudinal I-beams and channels specified are minimums and may exceed dimensions to permit proper hoist mounting.

Heavy gussets of minimum size 4 inch x 6 inch x 0.375 inch thick for aluminum shall be furnished at all cross members on the outside. Where not possible, they will be furnished on the inside.

SPECIFICATIONS
A-15-BU-F-AW

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. DUMP BODY AND EQUIPMENT: (Continued)

6. CAB SHIELD, ALUMINUM:

Ref: EQN-79T. Full width cab shield with no off-set for exhaust stack.
Body front bulkhead and cab shield shall be minimum 0.15625 inch thick aluminum 5454H34.
Continuous welding on front and cab shield throughout.
One-half (1/2) cab shield with four (4) inch lip on front extending over cab.
The body cab shield shall have sufficient clearance to ensure that the shield will not hit the exhaust system when dumping on uneven terrain.
If full wing posts are specified, cab shield shall be modified with approval of the Chief of the Equipment Division.

F. BODY EQUIPMENT:

NOTE: All mounting procedures shall be in accordance with TBEA standards.
1. Integrally designed/engineered to eliminate body side shifting on uneven terrain.
2. Capable of being utilized in raised position for extended use while spreading salt and anti-skid materials.
NOTE: (Hydraulic fittings shall be mounted above the module, and the vertical apron shall be cut out above the frame to facilitate their placement.) Receiver pin shall be located on the outside of the module.

NOTE: Acceptable body companies: (No Substitute, prior to bid approval necessary).

J & J Truck Bodies & Trailers - Somerset PA.,
Benson International, Inc, Mineral Wells W.Va.
Warren, Inc, Collins, MS
Thiele, Inc, Windber, PA
R/S Body Co, Richmond, KY
Godwin Man. Co., Dunn, NC
Tibrook, Brookville, PA

1. ACCESSORY PLATE:

There shall be an accessory mounting plate installed ref: EQN-22. Location to be determined at the pre-build meeting.

2. BED UP ALARM:

A safety warning light dash mounted and alarm installed. Switch shall be set at 49 degrees +/-1 degree dump angle to alert the operator and to prevent the hoist cylinder from going full stroke. Switch shall be mounted in accessible area of the body of the dump bed located away from road splash etc.
NOTE: SWITCH SHALL BE MECHANICAL, MECURY TYPE SWITCHS are not ACCEPTABLE.

Ref: Scott Electric (Simines) Switch – SIA3SEO3-AR1
Lever - SIA3SXO3-KL200

SPECIFICATIONS
A-15-BU-F-AW

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

F. BODY EQUIPMENT: (Continued)

3. CHAIN BOX:

The final size and location shall be determined at the pre-build meeting.

2 boxes – with no wing, 1 box - with left or right wing , 0 box – with dual wing.

Chain boxes per EQN-32. The boxes shall be aluminum with aluminum safety grating overlaid. There shall be a minimum of four (4) .750 inch dia. Drain holes in the boxes flooring. The hinge shall be rod with nylon bushings. Piano hinge is unacceptable. Final positioning of these boxes shall be behind the swept back bumper and outboard of the left and right frame channels.

4. HOIST CYLINDER:

The hoist cylinder shall incorporate a metal identification tag with the manufacturer's model number, serial number and manufacturers address.

The hoist cylinder shall be mounted to the cross shaft in a tube base. The base may be cast or fabricated (no bolts and angle).

Hoist cylinder reference: Commercial No. SD74DD-1-150 or Custom No. 74-100-150 (2.5 inch pin size both ends. No substitute, standardization.

A safety warning light and alarm, on the dash, shall be incorporated at 49 degree dump angle + 2 degrees to alert operator

Upper pin shall be fitted with a remote grease connection per EQN-63.

NOTE: Necessary sequence valves, plumbing and hydraulic fittings shall be supplied to ensure the requirements of 22 seconds full up to full down travel. Recommendations to other hoist cylinders must meet or exceed the aforementioned.

5. HOIST HARDWARE AND DETAILS:

Ref: 79A

The rubber cushion, 2 inch thick, the width to be equal to width of frame rail, shall attach to longitudinal body member with counter-sunk bolts, incorporating a flat head bolt and a wedge washer and locking nut assembly or slotted rubber and track assembly integral with body longitudinals.

Note: Any other concepts of attaching rubber cushion to the long member must be approved by, Chief of the Equipment Division, prior to bidding. Laminated rubber is unacceptable.

Dump hinges shall be fully welded to long member if steel and aluminum must be bolted with grade 8 bolts, and steel plates in a sandwich type construction with a minimum of 8 bolts.

All pivot points shall have (2) accessible grease zerks at opposite ends to ensure adequate greasing.

Thirty-five (35) U.S. ton net payload capacity.

Double acting, hydraulic power-up and down cylinder.

2 inch dia. min. hoist hinge pin sized to withstand severe use. Full width.

2 inch dia. min. lift pins.

SPECIFICATIONS
A-15-BU-F-AW

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

F. BODY EQUIPMENT: (Continued)

5. HOIST HARDWARE AND DETAILS: (Continued)

Ref:

EQN-79A	EQN-20X
EQN-123	EQN-79W
EQN-94	EQN-95
EQN-91	

Detail A - Chain holder
Banjo type cut-out to hold tail gate chain
All corners must be angled or rounded for safety
Full welding
Aluminum 500 inch thick.
Carbon Steel 0.3750 inch thick.
Ref: EQN-79A-Aluminum/EQN-79W-Steel.

Detail B - Tailgate hinge
Replaceable bushing with greasing capability
The edge distance shall be minimum of 1-3/4 inch thickness
Aluminum, 1-1/2 inch thick material.

Detail C - Tailgate chain bracket
Two (2) per side, total of 4 per tailgate
Aluminum

Detail D - J Hooks
Two (2) per tailgate

Detail E - Top Tailgate pins
1-1/4 inch dia. steel pin with tapered end.
C-1020 HRS Steel.

6. PLOW FRAME:

Plow frame shall be furnished and installed as per attached drawings and shall be approved by the truck manufacturer's engineering department. The plow frame shall be per EQN-50.
Zerk fittings shall be protected per EQN-64.
Snow plow lights to be installed Ref: EQN-124 or approved body builder design.

SPECIFICATIONS
A-15-BU-F-AW

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

F. BODY EQUIPMENT: (Continued)

7. SAFETY:

A slide in type, Ref: Bustin Industrial Products, two or three-step ladder, 15 inch wide x approximately 32 inch high, formed and braced to the dump body on the driver's side between the first and second vertical side body braces, shall be welded to the underside of the running board ref: EQN-56. Any other configuration shall be approved by, Chief of the Equipment Division.

There shall be a pair of wheel chocks with holder/s (location of holder to be determined at the pre-build meeting) As per EQN-82.

All entrance steps shall be Bustin No. NST4 full size, or Ohio Gating No. JA2ll9SG4 serrated or IKG Industries Type BS4 serrated swage lock, with end band for aluminum body.

The body step material shall be BUSTIN 628 for steel body.

A short piece of bar stock shall be used above steps to serve as a grab safety handle for body entry. Steps (minimum of two) made from "Bustin" type safety step material, are required on the driver's side inside the bed for safe entry and exit.

Compliance shall be made per EQN-118.

8. SPLASH GUARDS:

Ref: EQN-66.

Steel 0.172 inch (8-gauge U.S. Standard) or aluminum 0.250 inch splash guards shall be attached to the dump body on each side, behind the rearmost dual wheel, and extend downward to accommodate a 30 inch or 36 inch flap in order to meet Pennsylvania State Inspection Requirements. Mud flap sizes permitted are 30 inch or 36 inch. (No substitute, standardization) The rubber splash guards shall be bolted to these metal splash guards using self-locking nuts and metal strips.

The forward splash guards shall be steel for steel body or aluminum for aluminum body, and extend downward 3/4 of the length of the rear splash guard/mud flap, with a 1/4 length, unmarked mud flap attached for the remaining distance.

Forward splash guard shall have a 1 inch lip for entire length-outside extremity (90 degree) with bottom outside corner rounded.

Both front and rear splash guard assemblies shall be properly braced, and have rolled edges.

Splash guards shall be full length and width with no holes cut in it to accommodate salt lights.

9. WELDING:

All welding shall be in accordance with standard welding practices as set forth by the American Welding Society.

All vertical and horizontal seams of the body sides and ends shall be continuous welds, full penetration, without skip welds.

SPECIFICATIONS
A-15-BU-F-AW

I. GENERAL TRUCK SPECIFICATONS: (Continued)

F. BODY EQUIPMENT: (Continued)

10. CENTRAL HYDRAULIC SYSTEM:

The pressure compensated, load sensing central hydraulic system shall operate all functions (plows, dump body, spreader and auger circuits) from an electric/ hydraulic system independently and simultaneously, without interruption of any other hydraulic functions.
All controls and components shall be of the latest design and installed to provide simple and convenient operations.
All system operations shall be achieved from a single pump matching all required flow and pressure demands.
The use of accumulators or auxiliary pumps is not acceptable.
Hydraulic tool operation will be included through both spreader circuits and will not require any type of cooling.
This system shall provide the most fuel efficient, safest, simplest and consistent operation possible.
All hydraulic components shall be installed and serviced by a single manufacturer.
Full responsibility for a serviceable system lies with successful bidder.
All wiring shall be securely clamped at approximately 18 inch intervals, shielded from exhaust and include a protective sleeve where necessary to prevent damage and/or failure.
All electrical connectors shall be treated with die-electric grease.
All systems shall be thoroughly tested and calibrated before delivery.
Upon start up the hydraulic system shall be operated at maximum flow for not less than 15 minutes and then have a new hydraulic filter installed on the truck.
It shall be the sole responsibility of the successful truck manufacturer and Component Technology to ensure that the chassis and the ground control wiring harness is totally compatible.
An operation manual, parts and maintenance manual shall be provided with each unit.
A schematic as well as a parts list shall be provided with the completed unit.

11. CONSOLE AND POWER DISTRIBUTION CENTER:

Console Assembly: Shall be Component Technology MultiGuard SG7 with all joysticks being fully proportional, NO SUBSTITUTE STANDARDIZATION.
Kit number SG08020017 Type IV and Tri-axle No Wing
SG08020018 Type IV and Tri-axle Single Wing (Left or Right)
SG08020019 Type IV and Tri-axle Dual Wing
Kit shall include GL-400-5.6.
All wiring for the kit shall be included and be TPE type wiring only.
Hydraulic system digital pressure gauge – Wika 907.15.506 w/TYPEc10 TRANSDUCER
Valve enclosure
Bulkhead fitting for auger wiring shall be mounted in the rear module
Prewet system Part Number SG06070008
80 gallon poly tank and plumbing kit with stainless steel tailgate brackets installed on the rear of the truck. Reference: Component Technology tank part number SG06030024, plumbing kit SG0609001. The tank assembly shall be installed utilizing an extended upper hinge pin. The bottom of the tank shall not cover the main integrated lights in the tailgate. The tank bracket shall be stainless steel. Reference Benson Body, part number PD-0801.

SPECIFICATIONS
A-15-BU-F-AW

I. GENERAL TRUCK SPECIFICATONS: (Continued)

F. BODY EQUIPMENT: (Continued)

11. CONSOLE AND POWER DISTRIBUTION CENTER: (continued)

All hydraulic valve operations shall be achieved from within the cab by a single operator.
All controls shall be securely attached, within easy reach of operator and console mounted.
All controls shall be connected to the valve/s via electronic cable and power distribution center.
All electronics associated with the PDC and console shall be protected against and shall not cause interference to the operation of the vehicle or the land mobile radio communications system when properly installed in the vehicle.
Base shall be of steel construction conforming to drawing included in EQN-95.
Cabinet shall be constructed with 14 gauge steel, and will provide an access panel for ease of service.
Unit shall contain circuit protection for up to 12 auxiliary functions that control 15-ampere relays with automatic reset breakers.
Unit shall contain a terminal strip capable of interfacing with the specified body wiring harness if applicable. Terminal strip will be located inside base unit and have at least three unused sections for further expansion.
Unit shall be capable of adjustment vertically ad horizontally to allow for comfortable positioning for the operator.
Unit shall come with full wiring schematic documentation.
Unit shall come with pin-outs for customer accessories such as two-way radio, etc.
Main electrical connection shall be protected by a 80 ampere manual reset circuit.

12. DIRECTIONAL CONTROL VALVE:

The hydraulic control valve shall be a REXROTH: M4 Series No substitute, standardization. There shall be a 3 port valve block to control spinner, auger, and pre-wet .as part of the main valve assembly. Will be included in the following part numbers: Part Number SG04190002

Main control valve and enclosure shall be mounted outboard on the curb side frame rail ref: EQN-23 all valves, coils, end covers and power beyond ports must be accessible.
There shall be two (2) return lines from the valve to the return manifold

13. HYDRAULIC ALARM AND SHUTOFF:

There shall be a low hydraulic oil alarm system to alert the operator of a low hydraulic oil situation and allow ample time to take preventative action and avoid damage to the central hydraulic system pump.
It shall be operated via a 12 volt system. All wiring shall be routed to prevent damage from heat, sharp edges and moving parts.
An in-tank float switch shall be mounted to provide a signal to a dash mounted light. The dash light shall come on whenever the oil level drops below a ten (10) Gallon reserve. Assembly shall be an MP Products, Inc. RIG1-Series. All switch wires shall be hermetically sealed in high grade epoxy. The indicator light shall be console mounted. Indicator light lens shall be red in color. Light shall be clearly identified “Low Hyd. Oil”. Switch shall be adjusted to ensure that light does not prematurely illuminate (i.e., bed being raised, with adequate reservoir oil, should not cause light to illuminate).

SPECIFICATIONS
A-15-BU-F-AW

I. GENERAL TRUCK SPECIFICATONS: (Continued)

F. BODY EQUIPMENT: (Continued)

14. HYDRAULIC HOSE:

All hose and hose ends shall be matched and assembled on a matched hose machine to prevent hose failure. All hydraulic plumbing practices shall conform to JIC H11 standards. Pressure hoses shall be 100R2, return lines shall be 100R1, and suction lines shall be 100R4. Velocity in pressure sure lines shall not exceed twenty (20) feet per second, return lines not to exceed ten (10) feet per second, and not to exceed four (4) feet per second in suction lines. All hoses shall include JIC female swivel ends with the exception of the suction line. All hydraulic components shall have SAE porting wherever possible.

All hydraulic hoses shall be securely clamped at approximately 18 in/46cm intervals, shielded from exhaust and include a protective sleeve where necessary to prevent damage and/or failure. All hoses shall have JIC swivel connections at each end and be located in such a manner to aid in easy component replacement. Per EQN-94

15. HYDRAULIC PUMP:

PUMP shall include a low oil shut DOWN WITH OVERRIDE Shutdown shall be direct mounted to the pump. Remote mounted valve will be unacceptable.

The pump shall match system flow and pressure (horsepower) requirements to provide maximum fuel economy. Ref: EQN-90, EQN-91
No unloader or by-pass system will be an acceptable means of regulating excess oil flow.

Pump part number: Parker Hannifin PAVC10092L4AP22X3392 KEYED Crankshaft Mounted,

Full flow relief valve to be installed between pump and control valve. Relief valve setting shall be factory pre-set at 2500 PSI. Relief valve may be mounted inside the main valve enclosure or in the return manifold.

Or

Pump part number: Rexroth Model A10V01OO LH ROTATION: BH00979162

16. HYDRAULIC PUMP DRIVELINE:

Hydraulic pump SHALL BE DRIVEN by a Spicer 1310 series or NEAPCO factory balanced drive shaft. No substitute, standardization.
Driveline shall be capable of 130 foot pounds of torque and have a tubular shaft of 1141 steel. Tubular shaft will have 16 spline heat treated to 40 Rockwell hardness.
A groove shall be machined the length of the shaft to provide proper phasing of universal joints at time of shaft assembly.
Driveline installation should be in accordance to manufacturer's recommended procedures.
Slip assembly shall provide not less than 2.25 inch of travel to allow ease of engine drive belt replacement.

SPECIFICATIONS
A-15-BU-F-AW

I. GENERAL TRUCK SPECIFICATONS: (Continued)

F. BODY EQUIPMENT: (Continued)

16. HYDRAULIC PUMP DRIVELINE: (continued)

The truck engine radiator and frame construction shall readily accommodate the installation of a front mounted crankshaft driven hydraulic pump.
The engine crankshaft pulley or vibration damper shall be drilled and tapped to accommodate a power take off drive shaft adapter plate required under hydraulic system section of these specifications.
Referenced models, Mack FWPTO, Cummins REPTO or approved equal. Ref: EQN-90.

17. PLOW SAVER:

There shall be a plow saver device COMPONENT TECHNOLOGY PART NUMBER - SG03020008 installed.

18. OIL RESERVOIR AND ACCESSORIES:

Aluminum or stainless steel, all welded construction
The oil reservoir shall not be less than 45 GAL capacity, filled with 150 32 hydraulic oil
Cylindrical with flat or shallow dish sides, steps shall be included
Tank straps shall be heavy duty (minimum 2 inch wide) stainless steel or aluminum with rubber shims/liners.
Liners shall interlock around the tank strap edges to eliminate them from walking.
Center mounted baffle plate to prevent oil flow from venting directly to section port
A drop tube shall discharge all return oil flow through the 1.50 female NPT port
Tapered outlet shall be below oil level at all times to prevent air entrapment
A magnetic dipstick shall be mounted into reservoir from a top NPT female port
Tank shall be mounted under the right door
Tank shall be clearly labeled " HYDRAULIC FLUID ONLY"
Lockable tank filler cap assembly, model 57XL-40 (40 micron with chain) L.C. as manufactured by Lenz. Tel: (937) 277-9364
Suction line/strainer: 125 micron with 3 PSI bypass rated above 47gpm submerged at all times
¼ turn, 2.5 inch full flow ball valve in the suction line as close to the tank as possible
Strainer integral mounted in a 4 inch NPT female opening in the bottom of reservoir with a 3" female NPT opening
Return manifold: There shall be a return line manifold mounted on the curbside frame rail, location to be determined at the pre-build meeting. Ref: EQN - 23
Return manifold shall be an 8 port header block with 8 # 6SAE openings and 2 #24 SAE openings at each end. Header shall be an Alamo, Damon or Hycoa or equal.
Return line filter: Filter with spring controlled by-pass set at 25 PSI shall be mounted on the outside of the curbside frame rail
Filter shall be a Parker microglas part #80CN-210Q-15739, 300L @10 micron or MPFiltri – LMP2602BAF1A012M 300L @ 10 micron
There shall be a differential pressure switch with boot to activate a warning light mounted within the console.
Cab mounted filter contamination indicator set at 23 PSID

SPECIFICATIONS
A-15-BU-F-AW

I. GENERAL TRUCK SPECIFICATONS: (Continued)

F. BODY EQUIPMENT: (Continued)

19. TEST PORT:

There shall be a 5101-6B complete quick coupler or hydraulic gauge (with dust cover) located in the pressure line entering the main valve assembly located inside the valve enclosure. Quick disconnect shall be bracket mounted to the inside of the enclosure, easily accessible so that a shop pressure gauge (not to be installed or included) maybe easily visible for test purposes. Ref: EQN-20X. Final location shall be determined at the pre-build meeting.

20. INSTALLATION PRACTICES:

The use of any of the following items or practices WILL NOT BE ACCEPTED.
Non-steel fittings on hydraulic pressure lines.
Excessive use of elbows on hydraulic lines.
Use of thread tape on hydraulic fittings.
Use of galvanized fittings or components on hydraulic system.
Improper hydraulic line size.
Use of high-pressure hose for hydraulic suction line.
Scotchlok-type wire splices.
Non-insulated wire splices.
Improper hose or wire routing near exhaust, over-sharp edges or through holes without grommets, or sharp edges.
Improperly prepared, primed and painted surfaces.
Non-fused electric circuits.
Hydraulic circuits without pressure relief protection.

21. BED SPEED REQUIREMENTS:

Bed speed shall be tested at 1500 rpm at normal operating temperature
Bed speed full-up shall be 25 seconds maximum
Bed speed full down shall be 18 seconds maximum

SPECIFICATIONS
A-15-BU-F-AW

II. GENERAL WING PLOW SPECIFICATIONS:

A. INTENT STATEMENT:

The purpose of these specifications is to describe a full floating patrol wing plow with tripping action and telescoping action mechanism and a capability to lower the assembly in the travel position for improved visibility and to allow emergency egress. Ref: Tenco or approved equal.

It shall be the responsibility of the vendor to certify through proper chassis stress analysis the adequacy of the existing truck frames to accommodate the patrol wing plow in combination with a front mounted plow weighing approximately 3000 LB.

The aforementioned plow will be used for "severe duty" high-speed plowing by the Pennsylvania Department of Transportation. The attached drawings and written text are to be considered minimum and the manufacturer shall reinforce the plow, framing and hydraulic cylinders by means of gussets, or increased material strength or thickness to present a plow designed to meet the severe duty" operational setting.

The Patrol Wing shall be designed to be attached or detached independently from the frame assembly. It shall be installed in such a manner as to ensure quick access to the engine and all accessories. (Hood on dump truck shall tilt without obstruction, if applicable.)

All parts not specifically mentioned, which are necessary in order to provide a complete snow plow shall be furnished by the successful bidder. The plow fabrication and assembly shall be to the latest engineering techniques.

All steel unless otherwise specified, shall be hot-rolled steel (HRS) as per ASTM A-36.

When wing assembly is disconnected from the truck, no parts may extend past the body line of the truck.

All bolts shall be grade 8.

A complete set of drawings showing all details and dimensions, sizes, etc., and literature of the plow proposed to be furnished.

SPECIFICATIONS
A-15-BU-F-AW

II. GENERAL WING PLOW SPECIFICATIONS: (Continued)

B. PLOW COMPONENTS:

SHOCK ABSORBING REAR WING BRACE:

The rear wing brace shall be a minimum of a single fixed hinge pin type with an adjustable bottom wing brace, or the formed type wing tube support to attach to a single fixed hinge pin.

The rear wing brace shall be equipped with a telescoping arm and an adjustable type tension spring. If required by manufacturer.

The rear wing "A" frame support strut/girder arrangement of MC 7 inch x 22.7 LB/feet, minimum channel, or fabricated from 7 inch x 12.25 LB/feet channel, 6 inch x 8.2 LB/feet channel, .500 inch plate, 6 inch x 4 inch x .3750 inch structural tubing and other component pieces. It shall be attached in such a way that the load is properly distributed to both chassis frame rails. "A" frame shall be detachable for summer use. Ref: EQN-60A.

One (1) top wing brace cylinder constructed of 3 inch x 15 inch minimum double acting ram, chrome plated piston rods.

Adjustable trip-spring mounted from wing lift cylinder housing to the back of wing.

The rear brace shall be equipped with a 3 inch x 24 inch or 3 inch x 15 inch DA cylinder to actuate the telescoping strut with cross-over relief.

Bottom wing brace constructed of 4 inch O.D. square outer tubing with a 3 inch O.D. square inner tube. Wear guides are welded to inner side of 4 inch tube and to the outside of the 3 inch tube to prevent binding.

The rear wing lift cylinder will be a double acting 3 inch x 27 inch minimum cylinder, chrome plated piston rods with neoprene packing. Cylinder shall float with a 500 PSI relief on the down side.

The tripping spring/eyon rubber compression will be mounted to allow the wing to trip in any of the telescoping positions. The spring/eyon rubber compression shall be adjustable and have a quick release handle to remove tension for detaching the wing. The spring/eyon rubber compression will also be mounted to have tension on the wing in all telescoping positions.

The telescoping strut cylinder shall have incorporated in the hydraulic system an adjustable pressure relief valve for safety, when contacting heavy objects.

FRONT WING SUPPORT, OR FRONT WING POST:

Front Wing Mast:

Wing mast shall not block the O.E.M. headlight.

I beam 7 inch x 15.3 LB/feet minimum, wing post.

.6250 inch minimum wing post slide lift with 10 inch minimum lift from ground to bottom of plow edge for travel.

Front wing post cylinder double acting ram - direct (no cables) with float and 500 PSI relief on the down side.

Chrome plated piston rods, adjustable chevron type packing, neoprene wipers and bleed screw.

Hydraulic hoses, to SAE 100RZ, 022700, AEROQUIP-195, Hi-Impulse, (no substitute, standardization).

SPECIFICATIONS
A-15-BU-F-AW

II. GENERAL WING PLOW SPECIFICATIONS: (Continued)

B. PLOW COMPONENTS: (Continued)

FRONT WING SUPPORT, OR FRONT WING POST: (Continued)

Front Wing Mast:

Front wing post and support strut/girder arrangement shall be attached in such a way that the load is properly distributed to both chassis frame rails without the use of bracing tubes.
Support struts shall be 1.250 inch diameter schedule 80 ASTM A106 Grade A or B seamless pipe brace, minimum of two.
One strut shall be mounted to chassis frame.
One strut shall be mounted to plow frame.
Horizontal support girder 7 inch cross channel or 7 inch ship and car channel at 22.7 LB/feet or tubing 7 inch x 4 inch x .3750 inch.
Bolts shall be minimum grade 8, .6250 inch N.C.
Hinge assembly shall be detachable from the slider assembly of the wing mast.
Formed wing post mounted on cross tube mounted to truck frame members.
Wing slide plate bears on flanged surfaces of formed channel enclosing single acting cylinder, which provides full power up.

Wing Plow Alarm (Mechanical): Wing plow shall have a mechanical alarm system to alert the operator of the position of the plow. It must be visible from the driver's seat. Ref: EQN-60A.

HYDRAULIC POWER:

The front wing mast shall have a double acting cylinder vertical lift type, hydraulically controlled by a double acting cylinder direct lift. The front cylinder shall have quick connect coupler/s.

Single Acting Cylinder:

A 3 inch x 15 inch minimum single acting cylinder from rear "A" frame to mold board to raise the rear of the wing and fold the wing close to the truck for transport.

SNOW LEVELING WING:

The wing assembly shall in no way interfere with the turning of the right or left front tire. The wing shall not be less than 11 feet long overall, 29 inch high at the front and 36 inch (minimum) high at the discharge end. The moldboard shall be fabricated from 0.1719 inch thick (8 USS gauge) minimum steel and weigh a minimum of 755 LBS.

It shall be drilled to accept standard AASHTO spacing as shown on attached drawing EQN-16A sketch attached and equipped with either a steel or rubber blade as specified.

SPECIFICATIONS
A-15-BU-F-AW

II. GENERAL WING PLOW SPECIFICATIONS: (Continued)

B. PLOW COMPONENTS: (Continued)

SNOW LEVELING WING: (Continued)

a. Rubber Blade:

The patrol wing shall be equipped with a 1.500 inch x 10 inch x 120 inch rubber cutting edge manufactured by Goodyear Tire & Rubber Company or an approved equal, secured to the wing moldboard by .6250 inch grade 8 plow bolts through a .3750 inch x 4 inch steel facing plate. The rubber blade shall be slotted 3.500 inch x .6875 inch to provide adjustment and shall be reversible to provide maximum wear.

b. Steel Blade:

The cutting edge shall be of .500 inch x 6 inch C1090 steel, at least 10 feet long. Per attached plow blade drawing, EQN-16A.
The wing plow shall have two cast wing shoes.
The patrol wing shall be hydraulically operated with the controls conveniently mounted, (to be discussed at pre-build meeting) in the truck cab with the addition of three valves to the existing valve bank. These valves shall provide lift to the front of wing, the rear of the wing and the folding of the wing toward the cab and control in and out of the strut. The front of the wing shall be controlled by a single acting ram mounted within wing post that permits the front of the wing to be vertically lifted for transportation purposes.
The rear of the wing shall be power hydraulically controlled and attached to tele-strut and a 3 inch x 24 inch double acting cylinder with .3750 inch quick disconnects, (male, female, cap and plug) which shall be connected to a 7 inch sloped channel located under the dump body and at the rear of the truck cab. The 7 inch channel shall be adequately supported by brackets and cross braces to the truck frame. Bottom bracing shall extend to the rear with bridge type bracing.

c. Tripping:

The wing shall be of the full tripping type consisting of a special spring-loaded front end. Tripping actuation shall be accomplished through a .8750 inch diameter wire torsion spring at the front end and a tension spring attached to the front and rear of the wing or eyon rubber compression system.
Each spring shall be adjustable and shall automatically return the wing to its normal plowing position after it has passed over the obstruction encountered.
Provision for locking out the tripping action shall be supplied for operations requiring a rigid wing.

SPECIFICATIONS
A-15-BU-F-AW

II. GENERAL WING PLOW SPECIFICATIONS: (Continued)

B. PLOW COMPONENTS: (Continued)

The following minimum alterations shall be the responsibility of the successful vendor:

a. Add two Timbren load booster or active ride control stabilizers.

b. Brace right hand side plate to truck frame.

c. Add additional steel to side plates to provide increased strength and more substantial mounting for the 7 inch cross channel.

d One (1) manually adjustable plow storage jack per EQN-60A.
NOTE: Pages 1 and 2 of EQN-60A indicate the general mounting arrangement desired.

INSTALLATION PRACTICES:

The use of any of the following items or practices WILL NOT BE ACCEPTED.
Non-steel fittings on hydraulic pressure lines.
Excessive use of elbows on hydraulic lines.
Use of thread tape on hydraulic fittings.
Use of galvanized fittings or components on hydraulic system.
Improper hydraulic line size.
Use of high-pressure hose for hydraulic suction line.
Scotchlok-type wire splices.
Non-insulated wire splices.
Improper hose or wire routing near exhaust, over-sharp edges or through holes without grommets, or sharp edges.
Improperly prepared, primed and painted surfaces.
Non-fused electric circuits.
Hydraulic circuits without pressure relief protection.

DIRECTIONAL CONTROL VALVE: (for a Single Right or Left Hand Wing)

The hydraulic control valve shall be a REXROTH: No substitute, standardization as provided in the Dump Truck Specification.

Dual Wing Plow
Rexroth M4 series valve (To be installed on accessory plate. Section I.F.I.) Component Technology model SG04190003 shall control the following functions, Wing plow front post, and wing plow rear post and wing plow rear telescopic.

Electronic joystick shall be of the proportional type and be of the same design as provided in the main console assembly.

SPECIFICATIONS
A-15-BU-F-AW

II. GENERAL WING PLOW SPECIFICATIONS: (Continued)

B. PLOW COMPONENTS: (Continued)

PLOW IDENTIFICATION:

Each unit shall bear the manufacturer's model number, serial number and weight affixed to the plow, by means of a permanently affixed non-rusting metallic tag located on the right hand backside of the moldboard as viewed from truck operator's seat.

PAINT:

Color: PennDOT yellow, DuPont 6808 for shade only. All metal surfaces shall be cleaned prior to primer and final painting.

NOTE: All zerk fittings shall be threaded.

CONSPICUITY TAPE:

The Rear of the wing plow shall have a strip of retro-flective sheeting across the top and down the out-side in order to outline the plow when viewed from the rear. Material shall be: 2 inch wide Re-flexite Conspicuity II System of 3M Scotchlite Conspicuity Series 980, red/silver continuous backing.

TEMPLATE:

The successful vendor shall provide a metal template of the moldboard contour, including cutting edge cut out with each pilot.

SPECIFICATIONS
A-15-BU-F-AW

III. DRAWINGS:

EQN-16A	rev	09-11-06	3 sheets	STEEL CUTTING EDGES FOR SNOW PLOW
EQN-20X	rev	05-22-03	3 sheets	HYDRALIC SYSTEM SCHEMATIC
EQN-22	rev	07-01-03	1 sheet	FRAME MOUNTED ACCESSORY PLATE
EQN-23	rev	08-03-01	5 sheets	HYDRAULIC COMPONENT OVERVIEW
EQN-32	rev	05-22-03	1 sheet	DUMP TRUCK CHAIN BOXES
EQN-50	dated	09-13-06	5 sheets	LOW PROFILE PLOW MOUNTING
EQN-56	rev	06-16-05	3 sheets	SLIDING LADDER
EQN-60A	dated	01-29-00	3 sheets	SNOW PLOW PATROL WING GENERIC MOUNTING ARRANGEMENT
EQN-62	dated	05-28-02	2 sheets	DUMP TRUCK BED PROP SYSTEM
EQN-63	dated	09-14-06	1 sheet	DUMP TRUCK REMOTE GREASE CONNECTION
EQN-64	dated	05-22-03	4 sheets	COAL SHUTE TAILGATE-DUMPTRUCK BODY W/ALUMINUM TAILGATE
EQN-66	dated	05-28-02	2 sheets	SPLASH GUARDS – RUBBER – TRAILER & TRUCK
EQN-66A	rev	09-07-06	1 sheet	FUSEE STORAGE BOX/BRACKET
EQN-74	rev	08-25-06	4 sheets	TRUCK TYPE II & IV REAR MODULE
EQN-78	dated	07-02-97	1 sheet	CB RADIO CONNECTIONS
EQN-78A	dated	06-03-02	3 sheets	AIR TAILGATE, HARDWARE (DUMP TRUCK)
EQN-79T	dated	06-03-02	8 sheets	TRI-AXLE ALUMINUM BODY
EQN-80X	rev	05-22-03	7 sheets	DUMP TRUCK WIRING TYPE II & IV
EQN-81T	dated	06-03-02	1 sheets	ALUMINUM TAILGATE WITH BUILT-IN LIGHT BAR
EQN-82	rev	09-06-06	1 sheet	CHOCK AND HOLDER
EQN-90	rev	05-23-03	page 1 of 3	PUMP ASSEMBLY
EQN-91	dated	06-03-02	1 sheet	PUMP MOUNTING BRACKET
EQN-94	dated	08-15-97	2 sheets	HOSES AND COUPLERS PENNDOT DUMP TRUCK
EQN-95	rev	05-23-03	5 sheets	CONSOLE PEDESTAL
EQN-118	rev	07-01-03	1sheet	UNDER RIDE PROTECTION
EQN-122	rev	05-16-02	1 sheet	DUMP BODY TAILGATE REFLECTING SHEETING

SPECIFICATIONS
A-15-BU-F-AW

III. DRAWINGS: (Continued)

EQN-124	dated	05-16-02	1 sheet	AUX. SNOW PLOW LIGHT PACKAGE
EQN-127	rev	05-16-02	1 sheet	REFLECTIVITY ENHANCEMENT
EQN-160	rev	02-15-00	1 sheet	CENTRALIZED LUBE SYSTEM
EQN-210B	rev	07-01-03	3 sheets	REVOLVING WARNING LIGHTS
EQN-351A	rev	07-01-03	2 sheets	FAST LUBE OIL CHANGE SYSTEM
EQN-507B	dated	05-28-02	3 sheets	CONVENTIONAL DUMP TRUCK WEIGHT DISTRIBUTION MINIMUM DATA REQUIRED / SUMMER MODE

NOTE: Drawings appear in SAE.

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

DRAWINGS APPEAR AT THE END OF THE SPECIFICATIONS.

SPECIFICATIONS
A-15-BU-F-AW

IV. MANUALS:

See manual information attachment in the bid package

V. TRAINING:

See training information attachment in the bid package

SPECIFICATIONS
A-15-BU-F-AW

VI. WARRANTY:

Per PCID No. 1075 Section E.1. and additional specific warranty items.
This warranty is in effect as follows, starting from date of acceptance by the Department:

BRAKE WARRANTY:

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

RADIATOR WARRANTY:

Manufacturers service and warranty policy for radiator shall be for two (2) years, 100% parts and labor plus an additional two (2) years, 100% parts only.

ENGINE WARRANTY:

The successful vendor and or supplying OEM shall provide the Department with a 100% parts and labor engine warranty FOR 60 months/ 150,000 miles minimum.

The successful vendor shall supply a copy of all items covered under their published extended engine warranty.

NOTE: the oil pan shall be warranted against corrosion, rust, rust thru etc. regardless of atmospheric conditions for 3 years, 100% parts only.

The published warranty shall be supplied with the pilot model.

TRANSMISSION WARRANTY:

Manufacturers service and warranty policy for Manual, Autoshift and Automatic transmissions shall be three (3) years 100% parts and labor

DIFFERENTIAL/AXLE WARRANTY:

Manufacturers service and warranty policy for differential and axles shall be for three (3) years 100% parts and labor.

DUMP BODY WARRANTY:

Constructability and durability of body shall be guaranteed for four (4) years, parts and labor. A decal shall be affixed to the driver's door on the inside outlining this benefit and the company's name, address, phone number, and contact personnel. (Full warranty except wear and negligence).

Body hoist assembly shall be guaranteed for 3 years, 100% parts and labor.

Tailgate spring-over-air cylinder system and air to air system 2 years 100% parts and labor. .

SPECIFICATIONS
A-15-BU-F-AW

VI. WARRANTY: (Continued)

CENTRAL HYDRAULIC SYSTEM:

Complete Central Hydraulic system and components 1 year 100% parts and labor including but not limited to the following:
Rexroth Valve
GL-400 Controller
Electronic Joysticks
Complete external TPE wiring harness shall be warranted for 3 years parts only.

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

ELECTRICAL:
Grote wiring harness shall be 7 years 100% parts. First year shall include 100% labor.
All LED lights shall be 10 years 100% parts.

WING PLOW WARRANTY:

The manufacturers standard service and warranty policy shall be for a minimum of two (2) years. This warranty shall start on the final date of acceptance of the entire order and continue for the two (2) years thereafter, (2) full winter plowing seasons.

NOTE: WARRANTY FOR LABOR SHALL BE AT THE MANUFACTURES LOCATION OR IF A FIELD REPAIR IS COMPLETED BY PENNDOT THE MANUFACTURER SHALL REIMBURSE PENNDOT AT THE MANUFACTURES STANDARD PUBLISHED LABOR RATE.

SPECIFICATIONS
A-15-BU-A-AM

050500 thru 050705

TRUCK DUMP CONVENTIONAL 38,000 LB GVWR
CREW CAB

TRUCK, DUMP, TYPE II, CREW CAB, AUTOMATIC (050500)
TRUCK, DUMP, TYPE II, CREW CAB, AUTOMATIC, WITH RIGHT WING PLOW (050510)
TRUCK, DUMP, TYPE II, CREW CAB, AUTOMATIC, WITH LEFT WING PLOW (050520)

TRUCK, DUMP, TYPE II, CREW CAB, MANUAL (050700)
TRUCK, DUMP, TYPE II, CREW CAB, MANUAL, WITH RIGHT WING PLOW (050710)
TRUCK, DUMP, TYPE II, CREW CAB, MANUAL, WITH LEFT WING PLOW (050720)

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A-15-BU-A-AM

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1. Dump Body, Aluminum
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3. Body Sides, Aluminum
4. Floor, Aluminum
5. Body Structure, Aluminum
6. Cab Shield, Aluminum

F. Body Equipment: (Aluminum)

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2. Bed Up Alarm
3. Chain Box/s
4. Hoist Cylinder
5. Hoist Hardware
6. Plow Frame
7. Safety
8. Splash Guards
9. Welding
10. Central Hydraulic System
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13. Alarm and Shutoff
14. Hydraulic Hose
15. Hydraulic Pump
16. Hydraulic Pump Driveline
17. Plow Saver
18. Oil Reservoir and Accessories
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21. Requirements for Bed Speed

II. GENERAL WING PLOW SPECIFICATIONS:

III. DRAWINGS

IV. MANUALS

V. TRAINING

VI. WARRANTY

SPECIFICATIONS
A-15-BU-A-AM

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 purpose of these specifications is to describe a conventional, crew cab, single-rear-axle, two-wheel-drive dump truck, equipped with dual rear wheels, dump body, tool carrier, hoist, hydraulic power system and snow plow hitch. It shall be capable of one person operation while plowing snow and simultaneously spreading anti-skid materials or salt during winter operations, and hauling and unloading maintenance materials into a chip spreader or paver during summer operations. Further it shall be capable of being loaded with front-end loader or self-propelled belt loader.

B. WEIGHT DISTRIBUTION:

Weight distribution charts must be submitted with the bid for all models referenced in Section II.D. Weight distribution charts shall be submitted for the two modes listed below. The weight distribution charts submitted with the bid shall be reviewed for their reasonableness, and any inconsistencies shall be clarified with the awarded vendor at the "pre-build" meeting. Weight distribution charts must accompany the bids, but except for their inclusion, shall not be used in determining bid award.

1. Summer mode including that portion of the wing plow post tandem axle and plow frame assembly which remains on the vehicle all year.

2. Winter mode with front plow, spreader and complete wing plow.

Each item listed on Drawing EQN-507C shall be noted and individually calculated in the vendor's submission.

Weigh Slip: Engineering-certified weigh slip shall be provided with the pilot model and signed by the manufacturer's Engineering Department.

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

SPECIFICATIONS
A-15-BU-A-AM

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

B. WEIGHT DISTRIBUTION: (Continued)

a. The dynamic and static loads created by the unit, plus operational stresses, must be reviewed to insure the Commonwealth of a properly designed/engineered unit.
b. Front and rear axle legal weight distribution apply to summer applications only! Winter weight distributions are required for payload information purposes only since winter plowing and spreading operations are exempt from legal weight restrictions. However, the total weight shall not exceed the manufacturer's GVWR for the vehicle which is offered. The weight imposed on the front and rear axles using the total GVWR shall be shown. (Overweight shown on the axles in these winter modes is for information only).

In addition to the Engineering Certified weight distribution provided at the pilot model inspection, the following information is required with the pilot model.
The vehicle shall be certified for 38,000 LB Gross Vehicle Weight Rating (GVWR). The GVWR shall be identified in the cab or on the door as the final complete certification label (minimum rating).

ACTUAL TRUCK WEIGHT: (LB)

"Chassis only" (shall be signed by a certified weigh master.)

_____Front Axle

_____Rear Axle

_____Total

"Chassis with body" (shall be signed by a certified weigh master).

_____Front Axle

_____Rear Axle

_____Total

The above may be performed by the body company.

Truck GAWR's as Built (LB)

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

SPECIFICATIONS
A-15-BU-A-AM

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

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 – MIN. 250 HP AT GOVERNED RPM, MIN. 800 LB/FT TORQUE, MIN 6.0 LITER

TRANSMISSION –
EATON RT 8709B
EATON RT 8608L – LOWER REV.
EATON RTO 14908LL
MACK TM-308
FULLER FR9210B
AUTOMATIC ALLISION 3000 RDS Series 6 Speed
3500 RDS Series 6 Speed
4500 RDS Series 6 Speed

REAR AXLE – 23,000 LB. Min.

DANA 23090D
DANA 23431
MERITOR RS23160
MACK - RA23

NOTE: All rear axles must provide axle shafts with a minimum diameter of 2.19 inch at the spline.

NOTE: REAR AXLE/S SHALL HAVE AN EXTENDED BREATHER TUBE TO PREVENT DEBRIS BUILDUP.

SPECIFICATIONS
A-15-BU-A-AM

I. GENERAL TRUCK SPECIFICATION:

D. VEHICLE COMPONENTS:

1. ALARM - BACKUP:

Ref: EQN-74

2. AXLE FRONT:

18,000 LB capacity, minimum.
The front axle, drag links and tie rods shall have grease zerks installed.
Sufficient tire clearance at maximum turning angles.
Complete "Stemco" oil seal assembly, including hub, plug type window and "Guardian" seal, or approved equal.
Each unit shall have the front end aligned.
The front axle king pin bushings shall be the bronze type.
The king pins shall be manufactured to produce even flow of grease to all vital front end areas of the knuckle assembly.
The pin or bushing shall be grooved to permit grease flow.
Setback front axle is unacceptable. Setback axle constitutes measurement from bumper-to-axle (before frame extension) "BA", not to exceed 39 inch.

3. AXLE REAR: (See powertrain overview for acceptable axle.)

ALUMINUM OR LIGHTWEIGHT HOUSING IS NOT ACCEPTABLE.
STEMCO GUARDIAN rear wheel seals, or approved equal.
Drain plug, magnetic.
Torque-proportioning traction-assist device or a traction device which is full locking is required within the differential housing. The device shall provide maximum traction to rear wheels when actuated and shall incorporate a self-relieving mechanism designed to prevent gear damage and/or axle shaft breakage under extreme service conditions. The traction-assist device shall be driver actuated by a dash mounted traction control switch.

NOTE: Rear axle ratio selection will be made after the award and may be a mix of ratios as required. The successful vendor/manufacturer shall present three (3) computer runs showing three (3) most likely ratios for consideration for a speed range of 55 MPH to 65 MPH max. This information shall be presented at the pre-build meeting.

4. BRAKES

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

ABS shall incorporate an ABS diagnostic fault switch that is capable of illuminating a fault light for diagnostic purposes. The switch shall be easily accessible. The switch mounted under or on the dashboard.

Rear brakes: 16.5 inch x 7 inch "S" cam with quick change type single or double pin. (No substitute - standardization).

SPECIFICATIONS
A-15-BU-A-AM

I. GENERAL TRUCK SPECIFICATION: (Continued)

D. VEHICLE COMPONENTS: (Continued)

4. BRAKES: (Continued)

Steer axle brake: 16.5 inch in x 6 inch, "S" cam or a power front disc brake system providing equal performance. Quick change type single or double anchor pin if drum type brakes are furnished.
Drum brakes shall have automatic slack adjusters and they shall be clearance sensing type only, with adjustment on application of the brake (no substitute).
Backing plates on all drum brakes.
Air compressor: Per truck manufacture recommendation.
Buzzer-type, low air pressure indicator. Compressor shall be fitted with a safety valve to prevent mechanical failure.
Parking brake: Rear wheels, spring-type, MGM E 30/30 or Anchorlock 30/30 gold seal chambers. Parking brake shall provide modulated emergency braking via the foot valve in the event of a rear service system failure.
Rear service parking brake chambers shall be front or top mounted to provide adequate clearance for backing into a bituminous paving machine.
Air tank: Automatic drain valve, with heater on wet (first) tank. Each of the remaining air tanks shall have a manual drain valve.
Air dryer: With heater, inboard mounted, away from road splashings and 20 inch above road surface. Dryer shall be compatible with the body company clearance requirements for sub-frame, valve body, etc. Per: Haldex DRYest or Bendix AD-IP Installation made in concurrence with the air compressor manufacturer ' s recommendations.
All electrical connectors for drain valve and air dryer shall be covered with heat shrink material or have sealed connections.
Brake valve shall be mounted away from road splashings.
System shall be equipped with anti-compounding to prevent mechanical failure of the foundation brakes, slack adjusters, etc.

5. CAB:

Aluminum or steel cab, 104 inch minimum to 116 inch maximum Bumper to Back of Cab (BBC) dimension excluding frame extension.
Hood: Fiberglass, tilting. Fenders are part of tilting hood. Grille shall be fixed.
Air suspension system for the cab shall be factory or aftermarket installation is acceptable
Air deflector: Clear or smoke, hood mounted. Manufacturer's standard full width for the truck model. Access to front-end hood tilt handle shall not be blocked. Extra handle acceptable.
Fenders: Front fenders shall have a 6 inch rubber extension.
Deluxe fresh air hot water heater and defroster, manufacturer's highest output.
Air Conditioning: Highest output available as OEM option.
AM/FM radio with weather band.
Air horn(s): with snow-shield.
All controls and knobs shall be properly identified.
Brake pedal, clutch pedal and throttle shall be suspended if available from the factory.
CB Power connections One (1) pair, at the dash, per EQN-78.
Cab floor covering shall be heavy-duty rubber with closed cell rubber or heavy felt backing.

SPECIFICATIONS
A-15-BU-A-AM

I. GENERAL TRUCK SPECIFICATION: (Continued)

D. VEHICLE COMPONENTS: (Continued)

5. CAB: (Continued)

Cruise control
Cup holder in the cab within easy reach of the operator.
Dome light shall be provided
Dual sun visors.
Windshield: One (1) or two (2) piece construction, tinted. Safety glass throughout.
Heated windshield per invitation to bid.
Drivers and passenger side windows shall be power.
Dual windshield wipers artic type with heaviest arms and linkages available. Wipers shall be min. 2 speed electric with intermittent feature.
Washer system shall be electric. Minimum capacity of two (2) quarts of washer fluid and shall be filled with an anti-freeze type solvent.

Mirrors: Driver's and passenger side power mirrors , west coast style minimum 6 inch X 16 inch manufacturers standard heavy duty break away arms.
Mirrors shall be heated with a lighted toggle switch mounted within accessible reach of the operator, automatic on/off is acceptable. The wires shall be fitted in such a way that the mirror glass/element can be changed by unplugging the two-wire lead.
There shall be a heated convex mirror both sides, minimum 5.5 inch X 8.8 inch or 8" diameter.
Roadwatch system with digital display shall be installed. Ref: Sprague Controls
Blind-spot elimination mirror heated (conventional cab only) shall be mounted on the right front fender and it shall be 8 in, minimum, diameter stainless steel or aluminum head with mirror. Mirror shall be a conventional convex mirror, and shall not be of the half-round cross view type. All arm/s and hardware shall also be stainless steel. Fender type washers stainless or aluminum, with rubber pads to be placed on both sides of the fender shall be included. Pedestal system shall be single, double or triple mounting assemblies (stainless steel or aluminum). Mirror shall be mounted in rubber or vinyl. Ref: Grote (800-628-0809)
STEPS: Drivers and passenger entrance steps: Shall be aluminum, serrated. The outer step edge must be serrated in lieu of plain. (Overlay is not acceptable).
Step design material must be the same both left and right side.
Ref: Bustin No. NST4 full size, Ohio Grating No. JA21195G4 serrated, IKG. Industries Type B54 or Mack Part # 85QM423OM4
Top of the first step shall be approximately 21 inch above the ground.
Seats: Driver's seat shall be high back adjustable Bostrom air 915 Series with lumbar support or National 195 Series with lumbar or DuraForm Air Command Series (fabri form cushions with lumbar support) with body cloth insert and three-point retractable seat belt. A bellow-type or protective skirt shall cover the seat suspension mechanism. There shall be an inside armrest on the driver's seat plus an outside armrest installed on the seat or the drivers door. No substitute on seats reference. Color coordinated to cab interior.
Passenger seat: With three-point retractable seat belt, manufacturers standard non-suspension (static), and high black type. Color coordinated.
Full rear bench seat to be provided.
Steering wheel diameter shall be 18 inch (approx).

SPECIFICATIONS
A-15-BU-A-AM

I. GENERAL TRUCK SPECIFICATION: (Continued)

D. VEHICLE COMPONENTS: (Continued)

6. CHASSIS:

Cab Axle (CA) dimension: Approximately 96 CA dimension may be adjusted to provide the optimum legal weight distribution and proper bed over hang.

Axle-frame (AF) dimension: Shall incorporate a cross member at the rear of the frame to reinforce the body pivot point. (Local installation is acceptable.)

Front Bumper: Heavy-duty swept back. Mounted to the frame with the inner face of the bumper against the chassis frame.

Chain Box: There shall be two chain boxes per EQN-32. The boxes shall be aluminum with aluminum safety grating overlayed. There shall be a minimum of four (4) .750 inch dia. drain holes in the boxes flooring. The hinge shall be rod with nylon bushings. Piano hinge is unacceptable. Final positioning of these boxes shall be behind the swept back bumper and outboard of the left and right frame channels.

Safety grille mounted between bumper and radiator on outside of frame extension.

Plow frame bumper bracket spacers on frame rail, both sides.

Lights: Mounted on the rear of the frame shall be shock mounted to prevent damage from backing into material piles (Ref: EQN-74).

Front mounted tow hooks or eyes: Two (2) front. These may be installed by the body company after completion of the plow hitch mounting using grade 8 bolts (minimum) of sufficient strength and length, and self-locking nuts, or by full welding.

License plate bracket: Front and rear. Securely mounted to prevent damage when backing into material piles.

There shall be a centralized on board chassis lubrication system installed. The system shall have a fault light that will illuminate when there is a malfunction with the system. The light shall be cab mounted so the operator can visually monitor the system. Steel tubing (hard pipe) shall be utilized where/when ever possible and practical: Ref: EQN-160

Ref: Grease Jockey
Groeneveld Lube system
Lincoln Lube system
Vogel Lubrication Inc.

7. CLUTCH: (if applicable)

Externally lubricated with an extended lube hose if applicable, Eaton/Fuller EZ pedal or Meritor with torque limiting clutch brake.

Clutch adjustment shall be set to specifications prior to delivery to the Department.

There shall be a neutral safety device to ensure that the vehicle cannot be started in gear.

Note: The transmission-input shaft shall be 2 inch spline. Dampened driven disc.

SPECIFICATIONS
A-15-BU-A-AM

I. GENERAL TRUCK SPECIFICATION: (Continued)

D. VEHICLE COMPONENTS: (Continued)

8. DRIVE LINE:

Main drive line: Spicer Life XL, Meritor RPL Series or approved equal.
Heavy-duty drive line shall be engineered and be compatible to engine, drive train and transmission torque.
Heavy-duty center bearing, if required, with due consideration to drive shaft angles, length, location, proper bolting based upon engine and transmission selection.
SPICER-GLIDECOTE splines
"Factory balanced" greasable, (1 zerk minimum).

9. ELECTRICAL:

All copper system, negative ground.
Alternator and starter mounting bolts: Grade 8.
Alternator: 160 amp minimum, high performance, solid state brushless.
Battery cable from battery negative terminal to starter motor or frame.
Batteries: Three (3), heavy-duty, 12 volt, field maintenance-free, BCI Group Size 31, with stud-type posts and anti-corrosion treatment on each terminal. 2500 total cold cranking amperes (CCA) at 0 degrees F. 640 minutes of total reserve capacity at 80 degrees F as per SAE.
Battery Mounting: It shall include the following:
a.) 0.25 inch thick rubber shock pad under the battery.
b.) Box with cover. Cover shall be constructed of fiberglass, poly, or aluminum (if aluminum there shall be an insulated 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 circuit breaker liable to be damaged during truck operation shall have an easily removable protective cover. All wire splices in the cab shall be heat shrink materials. Ref: Thomas & Betts, Tel: (210) 707-2145.
Electrical chassis-wiring harness: Body lighting and wiring to be per EQN-80X.
Body plug: Truck manufacturer and Grote Industries shall supply a body builder plug and bracket. All lights, body and chassis shall be protected by the truck manufacturers fuse block assembly.
Final location of the plug and bracket shall be decided at the pre-build meeting.
All exposed junctions: Waterproof and sealed against salt.
Flasher: (All) heavy-duty electrical, Ref: Tridon Model EL 12 or EQUAL.
Note: If an audible alarm is supplied for 4 ways and turn signal, it shall have on/off capability.
All lights for chassis and body shall be LED per EQN-80Xand meeting all Federal and state regulations.
The switch for parking light circuit shall be able to handle an additional 3 A load of a light bar.
Head Lights: shall be Halogen with Daytime running lights factory or aftermarket installation.
Dump body lights shall have their own dedicated complete circuit.
Plow lights to be fender mounted and meet all requirements of Pennsylvania Motor Vehicle Laws.
Ref: EQN-124 or approved body company design.

Starter motor: With thermal overcrank protection and high torque capacity. Suitable for the diesel engines offered as per starter manufacturer’s recommendation.

SPECIFICATIONS
A-15-BU-A-AM

I. GENERAL TRUCK SPECIFICATION: (Continued)

D. VEHICLE COMPONENTS: (Continued)

10. ENGINE:

The engine components facing wheel areas, on both sides, and the areas to the rear of wheels shall be shielded. The shield shall protect the engine, fan, radiator and areas behind tires from the stones and debris.

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

Cooling System: The largest factory available engine cooling capacity compatible with engines and transmissions referenced and for continuous high engine and output under extreme temperatures and/or operating conditions due to prolonged snow plowing operations in low gears. The water pump shall be adequately sized to provide proper cooling and be of sufficient size to accommodate the larger pulley to adequately handle the specified options.

Shall be fitted with provisions for visually monitoring coolant without necessitating removal of the cap from the radiator or expansion tank (e.g. sight glass, transparent expansion tank).

The anti-freeze solution shall meet all applicable EPA requirements.

11. ENGINE ACCESSORIES:

Radiator core and shell: Shall be manufacturer's heaviest construction grade radiator available, with overflow recovery system and visual level indicator. The oil dipstick must have tubing and dipstick with sufficient length to provide reasonable access for checking the oil level.

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

Coolant/filter: Sized for and compatible with the cooling system. Ref: Perry, Tel: (405) 672-2311.

Air Cleaner: Air cleaner shall be manufacturer's heaviest duty air cleaner. The air intake system shall be fitted with inside/outside air.

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

Screening system: Installed to protect radiator from stones and bugs.

Engine vibration dampener: at PTO flange yoke. Ref: EQN-90.

Diesel Fuel Filter: Shall be DAVCO filtration unit. Size and location per engine manufacturer recommendation.

Air restriction gauge: Flush, dash-mounted with indicator slide fro engine air cleaner, Ref: Filter Minder, manufactured by Engineered Products Company Tel: (319) 234-0231. If the vehicle is OEM equipped with an electronic dash that incorporates an air restriction gauge or indicator light, it shall be acceptable.

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

Hoses: The air induction system and large cooling system hoses shall be clamped with 0.500 inch wide, 150 inch LB stainless steel, constant torque, spring loaded worm clamps. Ref: Wittek clamps with liner for premium hoses. Cooling system hose under 1 inch OD may use factory standard hose clamps as a minimum acceptable standard.

SPECIFICATIONS
A-15-BU-A-AM

I. GENERAL TRUCK SPECIFICATION: (Continued)

D. VEHICLE COMPONENTS: (Continued)

11. ENGINE ACCESSORIES: (Continued)

Air intake hoses shall be 0.25 inch minimum thickness, molded hoses. Ref: Gates, Goodyear or equal. Premium radiator and heater hoses. Hoses shall not be painted.
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 (cog belts are not required for power steering.)

12. EXHAUST:

Vertical tailpipe and muffler system or approved horizontal muffler and vertical tail pipe.
Tailpipe with elbow.
Exhaust system shall neither interfere with the operation of the dump body or equipment nor will it be close to any fluid tank, and **PERMIT WING PLOW INSTALLATION**.
The tail pipe shall be installed in a manner that will keep the muffler and tail pipe away from dump truck body. The flex in the body when operating on an uneven terrain must be considered in the design.
The muffler and tail pipe shall be shielded or insulated to protect personnel from burns when entering or exiting the cab. The shield shall be 180 degrees to 360 degrees and shall be of non-rustable material such as stainless steel or aluminum. RE: RIKER or equal.

13. FAST LUBE OIL CHANGE SYSTEM (FLOCS):

This system will be installed with all fittings, brackets, clamps and hoses. The system will be compatible with all fittings presently used by the Department. The final placement of the male half of the snap coupler on the equipment will be approved by the Chief of the Equipment Division prior to installation. RE: Aeroquip or equal. Ref: EQN-351A.

14. FRAME AND FRAME EXTENSION:

Resisting Bending Moment (RBM): Minimum of 1,908,000 inch LB per rail, for the entire length of the frame, including extension, except where engine and radiator adjustments are required. Minimum frame RBM shall be approved by manufacturer's Engineering Department.
Frame material: Heat treated carbon steel, at least 120,000 PSI yield strength.
Main frame: Either straight channel or offset channel, full length. Drop frames are not acceptable.
Bolt on or welded extension will not be accepted.
Front frame shall accommodate the Department's standard hydraulic PTO shaft and pump (EQN-90), and the plow frame (EQN-50). It shall provide easy service accessibility.
The truck offered must be designed to accommodate a right and/or left patrol style wing plow.
If a larger RBM is required to perform the specified operational duties, the vendor shall bid a frame concurrent with the intent and spirit of this contract. RE: Snow removal operations, full payload snow plow, right and/or left patrol wing plow, etc.

SPECIFICATIONS
A-15-BU-A-AM

I. GENERAL TRUCK SPECIFICATION: (Continued)

D. VEHICLE COMPONENTS: (Continued)

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 lo-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. In – dash, integral with instrument panel be illuminated and shall be readable from the operator's seat.
Speedometer with odometer with a dual speedometer lead to interface with the Component
Technology system.
Tachometer
Voltmeter
Parking brake indicator light.
Hydraulic fluid level gauge.

16. LIGHT – WARNING:

One (1) revolving warning light shall be mounted on the drivers side of the body cab protector,
Ref: EQN-210B.

LIGHT – WARNING – MOUNTING BRACKET – WIRING:
Ref: EQN-210B.
The wire shall be protected along the entire underside of the cab shield and down the front of the bulkhead.
Location of light on cab shield shall be determined at the pre-build meeting.
A grounding wire shall be provided between the internal and external bracket at the pivot point.

17. PAINT:

Cab shall be painted PennDOT yellow. Ref: DuPont 6808 for color only.
Frame: all underside components, shall be primed and painted black. Running boards shall be primed and painted black or yellow.
Front bumper shall be painted black.
Cab and body shall have reflective enhancement per EQN-127.

Steel dump body and plow frame shall be painted with acrylic enamel (with hardner) low VOC.
Proper surface preparation is the sole responsibility of the OEM and body builder to comply with V.D.

SPECIFICATIONS
A-15-BU-A-AM

I. GENERAL TRUCK SPECIFICATION: (Continued)

D. VEHICLE COMPONENTS: (Continued)

18. SAFETY:

Cab and body shall have reflective enhancement per EQN-127.
Emergency triangle warning kit, with hold down. Warning Triangle Flare Kit, Ref: KD 610-4645, KD Lamp Co. (Tel: (513) 621-4211) or equal, stowed (fastened) in the cab. Ref: EQN - 66A
Fire extinguisher: Rechargeable with vehicle mount. Mounted in the cab for easy and quick access. Ref: 2A: 10B: C.
Grab handles (2): Shall be furnished to provide "0ptimum safety" for entering the truck cab. Manufactures standard or aftermarket. Non-skid paint or rubber may be utilized, (non-skid tape is unacceptable).
Ref: Non skid paint, Gamma Laboratories

19. STEERING:

Power steering: Dual integral or single integral type hydraulic with 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.
Hydraulic supply pump: Vane type or roller type sufficient oil flow to permit one (1) steering wheel revolution per second with front axle loaded to rated capacity, with plow on, in a "park" condition.
Ref: Vickers V-20, 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) quarter capacity, incorporating a filter which is easy to remove and replace.
The remote filter referenced above shall be certified and engineering approved in conjunction with the appropriate pump.
Cogged belts not required on power steering system.

20. SUSPENSION: FRONT

9,000 LB capacity at ground each front spring.
The six (6) front spring pins or bearings/bushing shall be furnished with 360-degree grease grooves to insure adequate lubricant penetration.
Spring hangers shall be heavy castings with sufficient pin and bearing surface to render trouble free service.

21. SUSPENSION: REAR

Suspension shall be tailored to axle loads and shall be adequate to sustain maximum GVW without overload or permanent set.
11,500 LB capacity at ground each rear spring.
2,250 LB capacity, separate auxiliary spring each side.

SPECIFICATIONS
A-15-BU-A-AM

I. GENERAL TRUCK SPECIFICATION: (Continued)

D. VEHICLE COMPONENTS: (Continued)

21. SUSPENSION: REAR: (Continued)

The spring hanger brackets shall be severe duty castings with sufficient bearing surface/wall thickness to prevent premature bolt wear.
The spring center bolts shall be a minimum of .4375 inch size, preferably .5000 inch.
The rear spring hanger pins shall be the greaseable type.
All bolt torque values shall be identified on the Preventive Maintenance Chart.
Bolts must be of sufficient length to go through the washer, spring bracket and truck frame with sufficient length to install a self-locking nut.

22. TANK - FUEL:

Safety-type fuel tank as per the requirements of FMVSS.
One (1) 70 GAL (useable) minimum total capacity, frame mounted, under the left door.
Aluminum or stainless steel, unpainted.
Heavy duty mounting straps with rubber shims/liners.
Tank mounting hardware and brackets shall be for "sever duty" applications. Heavy duty aluminum or stainless steel with minimum 2 inch wide straps and gaskets.
Accessible fill pipe with dump body down (located at either end of tank to avoid interference with steps).
For steps ref: I.D.5.
System shall be a top draw and top return line.
Dual tanks are unacceptable.

23. WHEELS/TIRES:

GENERAL:

The truck shall be equipped with hub piloted steel disc wheels for tubeless tires. The wheel end shall be equipped with outboard cast brake drums, and 15° tubeless steel wheels, hub piloted, 10 hole – 285-75mm bolt circle with 22 mm two-piece flange nuts.
Front: Wheels: 22.5 x 9.00, 10 hole – 285.75mm bolt circle with 220mm bore, tubeless steel disc wheel rated at 10,000 LBS at a maximum inflation pressure of 130 PSIG. Accuride part number 29039 – no substitute.
Tires: 315/80R22.5 - J
Rear: Wheels: 22.5 x 8.25, 10 hole - 285.75mm bolt circle with 220mm bore, tubeless steel disc wheel rated at 7,500 LBS at a maximum inflation pressure of 120 PSIG. Accuride part number 28828 – no substitute.
Tires: 12R22.5H
The dual rear wheel/tire assembly shall have clearance between the tires which permits the use of dual tire chains.
Wheel-Guard Separators: The wheel ends shall be equipped with the Accuride part number 5903 Wheel Guard Separator as follows:

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

SPECIFICATIONS
A-15-BU-A-AM

I. GENERAL TRUCK SPECIFICATION: (Continued)

D. VEHICLE COMPONENTS: (Continued)

23. WHEELS/TIRES: (Continued)

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.

TIRE: (No substitute. All tires will be radials).

MANUFACTURER	FRONT TIRE	REAR TIRE
Goodyear	G-291	G-124
Michelin	PILOT XZY-I	XDE-A/T

Note : The above tire manufacturers and models are for reference only. Approved equal manufactures and models will be acceptable.
Tire speed rating to be considered as part of equivalency.

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

OPTION #1 - MANUAL:

Geared for PTO application, right and left side or right side and bottom.
Magnetic drain plug.
The torque capacity shall be greater than the peak torque capacity of the engine.
Input transmission shaft: 2 inch.
12 to 1, minimum 1st gear and reverse ratio.

OPTION #2 - AUTOMATIC:

Dash mounted console with lever shift selector.
Console shall incorporate the 2-3 hold identification.
There shall be an external oil cooler.
Oil cooler for transmission required due to prolonged transmission torque converter operation in low gears. Cooler size must be provided to keep the transmission fluid at an acceptable operating temperature under these prolonged conditions. (Water-to-oil type cooler).

NOTE: All vehicles shall have a clutch-operated or transmission-operated safety starting switch.

SPECIFICATIONS
A-15-BU-A-AM

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. DUMP BODY, ALUMINUM:

1. DUMP BODY, ALUMINUM:

Five yard (approx.) water level without sideboards.
Seven yard (approx.) water level with sideboards.
Ref: EQN-77.
Front body bulkhead: Minimum 0.15625 inch aluminum with a minimum of 12 inch above body sides. There shall be a shovel holder assembly mounted on the left front of bulkhead (final position to be determined at the pre-build meeting). Ref: Akron Foundry AT-2
Rear corner posts: On both sides, full depth, one piece construction from the top of the tailgate to the bottom of the rear bolster and free of holes.
Rear bolster: One piece, full depth and full width.
Spreader chain holders: Both sides, top and bottom of the rear corner posts.
All body welding shall be full welding.
Bed prop There shall be two (2), three position, self positioning stow away bed props per EQN-62.
There shall be midway side board supports (left and right)

2. TAILGATE, ALUMINUM:

Tailgate 40 inch (minimum), body sides 30 - 34 inch (approx.)
Double acting five (5) panel tailgate with offset hinges.
Two (2) "J" hooks welded to the tailgate for chain hangers.
1.25 inch dia. greaseable self-aligning top hinge pins with tapered end and with sufficient length for easy removal. Pins shall be affixed with chains to prevent loss and be non-rotating.
Top hinge plate, aluminum, or steel with replaceable heavy duty bushings and greaseable fittings.
0.375 inch spreader chain, non-rusting and able to accommodate 0.5 inch thick aluminum chain holder or 0.375 inch thick steel chain holder. Minimum edge distance 1.5 inch.
Tailgate chains shall be covered with expandable braided sleeving of monafilament construction. Ref: Fairmont, (Tel: (304) 366-4600) Part No. Expando Grade DM -color black or yellow.
Four (4) tailgate chain brackets. Two (2) on each side.
Severe duty tailgate attaching brackets.
Aluminum tailgate with built in light bar. Ref: EQN-81X.
Body lighting: - Ref: II.D.9 ELECTRICAL CHASSIS - WIRING HARNESS, and EQN-81X.
Coal chute gate with levers and operating handle. AISI Type 304 stainless steel. Ref: EQN-64 Aluminum.
Air operated Tailgate (Per EQN-78A): Tailgate must be operated via an in-cab dash mounted push/pull type or slider type with protective guard air valve and a body mounted spring-over-air cylinder. Air valve must be dash mounted left of the steering column, clearly labeled and within easy reach of operator. All air piping and connections must be D.O.T. approved with .250 inch nylon tubing and brass compression fittings. Spring-over-air cylinders shall be warranted for a minimum 3 years. Air to air is acceptable.

SPECIFICATIONS
A-15-BU-A-AM

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. DUMP BODY, ALUMINUM: (Continued)

3. BODY SIDES, ALUMINUM:

Ref: EQN-77.
Material: 0.25 inch thick aluminum of grade 5454H34 for aluminum body.
Top rails: Fully boxed and completely closed by "continuous" welding. Both sides.
Vertical side braces: A minimum of three (3) per side on proper centers in addition to the front and rear corner posts. Side braces and front posts shall be furnished with bottom drain holes.
Aluminum body shall be isolated from the steel frame rails at the hinge by installing Mylar material.

4. FLOOR, ALUMINUM:

Ref: EQN-77.
Material: .3750 inch thick minimum, abrasion-resistant aluminum 5454H34 for aluminum body.
One (1) piece construction, welded to all cross members, side panels and longitudinal members. Area reinforcements where necessary.

5. BODY STRUCTURE, ALUMINUM:

Ref: EQN-77.

The body shall be “stacked construction” aluminum.

Dump Body		Aluminum
Longitudinal member	Size	6 inch I-Beam mm.
	Wt.	6.1 LB
	Material	Al 6061T6
Cross-member	Size	4 inch I-Beam min.
	Wt.	2.70 LB
	Material	A1 6061T6

4 inch channel cross members of equal strength are permitted at the front and rear of body to finish the unit, and in the area where hoist box is located.
The body shall be reinforced to withstand SEVERE duty service. RE: Dump body up while spreading salt and anti-skid material or excavation rip rap being dropped in the bed.
The longitudinal Ibeams and channels specified are minimums and may exceed dimensions to permit proper hoist mounting.
Heavy gussets of minimum size 4 inch x 6 inch x 0.375 inch thick for aluminum shall be furnished at all cross members on the outside. Where not possible, they will be furnished on the inside.
The Chief of the Equipment Division will approve all methods of alternate design.
Gang box: Ref: EQN-70. There shall be a minimum 12 inch deep x 94 inch width x 36 inch high gang box constructed of .2500 inch aluminum. Doors (2) to be hinged forward. Doors shall allow for access from left or right side of vehicle.

SPECIFICATIONS
A-15-BU-A-AM

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. DUMP BODY, ALUMINUM: (Continued)

6. CAB SHIELD, ALUMINUM:

Ref: EQN-77. Full width cab shield, with no off-set for the exhaust stack.
Material: Minimum 0.15625 inch thick aluminum.
Continuous welding on front and cab shield throughout.
One-half (1/2) cab shield with a minimum of four (4) inch lip on front extending over cab.
The body cab shield shall have sufficient clearance to insure that the shield will not hit the exhaust system when dumping on uneven terrain.

NOTE: All mounting procedures shall be in accordance with NTEA standards.

1. Integrally designed/engineered to eliminate body side shifting on uneven terrain.

2. Capable of being utilized in raised position for extended use while spreading salt and ant-skid materials.

NOTE: Hydraulic fittings shall be mounted above the module, and the vertical apron shall be cut out above the frame to facilitate their placement. Receiver pin shall be located on the outside of the module.

NOTE: Acceptable body companies: (No Substitute, prior to bid approval necessary).

J & J Truck Bodies & Trailers – Somerset P.A.
Benson International, Inc, Mineral Wells W. Va.
Warren, Inc. Collins, MS
Thiele, Inc, Windber, PA
R/S Body Co, Richmond , KY
Godwin Man. Co., Dunn, NC
Tibrook, Brookville, PA

F. BODY EQUIPMENT (Aluminum):

1. ACCESSORY PLATE:

There shall be an accessory mounting plate installed Ref: EQN-22.
Final Location shall be determined at the pre-build meeting.

SPECIFICATIONS
A-15-BU-A-AM

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

F. BODY EQUIPMENT: (Aluminum) (Continued)

2. BED UP ALARM:

A safety warning light dash mounted and alarm installed. Switch shall be set at 49 degrees +/-1 degree dump angle to alert the operator and to prevent the hoist cylinder from going fullstroke. Switch shall be mounted in accessible area of the body of the dump bed located away from road splash etc.
NOTE: SWITCH SHALL BE MECHANICAL, MECURY TYPE SWITCHS are not ACCEPTABLE.
Ref: Scott Electric (Simines) Switch – SIA3SEO3-AR1
Lever - SIA3SXO3-KL200

3. CHAIN BOX/s:

The final size and location shall be determined at the pre-build meeting.

2 boxes – with no wing, 1 box - with left or right wing / 0 box – with dual wing.

Chain boxes per EQN-32. The boxes shall be aluminum with aluminum safety grating overlaid. There shall be a minimum of four (4) .750 inch dia. Drain holes in the boxes flooring. The hinge shall be rod with nylon bushings. Piano hinge is unacceptable. Final positioning of these boxes shall be behind the swept back bumper and outboard of the left and right frame channels.

4. HOIST CYLINDER:

There shall be a metal identification tag with the manufacturer's model number, serial number and address. Mounted to the cross shaft in a tube base. The base may be cast or fabricated (no bolts and angle).
Hoist cylinder reference: Commercial No. SD63CB – 78 (2 inch pin size both ends) or Custom No. DAT 63-78 (2 inch pin size both ends option 8 for rod end and option 3 for base end). (No substitute, standardization.)
Ref: EQN-76C.
Upper pin shall be fitted with a remote grease connection per EQN-63.

5. HOIST HARDWARE:

The rubber cushion minimum 2 inch thick, and the width equal to width of frame rail, shall attach to longitudinal body member with slotted rubber and track assembly integral with body longitudinals. Note: Laminated rubber is unacceptable.
All mounting procedures shall be in accordance with NTEA standards.

1. Integrally designed/engineered to eliminate body side shifting on uneven terrain.

2. Capable of being utilized in raised position for extended use while spreading salt and anti-skid materials.

Dump hinges shall be fully welded to long member if steel and aluminum shall be bolted with grade 8 bolts (minimum 8 bolts).

SPECIFICATIONS
A-15-BU-A-AM

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

F. BODY EQUIPMENT: (Aluminum) (Continued)

5. HOIST HARDWARE: (Continued)

A three-position stow-away safety prop shall be furnished. (Self positioning), per EQN-62.
All pivot points shall have a minimum of one (1) accessible grease zerk to insure adequate greasing.
20 US ton net payload capacity.
Double acting, hydraulic power-up and down cylinder.
49 degrees plus or minus 2 degrees dumping angle with bumper stops and safety chain or approved device in segmented conduit.
Mounted in a channel nest assembly attached to chassis frame.
There shall be a relief mechanism incorporated within the hydraulic system to prevent damage.
2 inch dia. Min. hoist hinge pin sized to withstand severe use. Full width.
2 inch dia. Min. Lift pins.

Ref: EQN-20X
Ref: EQN-76
Ref: EQN-91
Ref: EQN-94
Ref: EQN-95
Ref: EQN-123

Detail A – Chain holder
Banjo type cut-out to hold tail gate chain
All corners must be angled or rounded for safety
Full welding
Ref: EQN-76

Detail A – Chain holder
Carbon steel 0.375 inch thick for steel body or aluminum 0.5 inch thick for aluminum body.

Detail B – Tailgate hinge
Replaceable bushing with greasing capability
The edge distance shall be minimum of 1.75 inch thickness

Detail B – Top Tailgate pins
1.25 inch dia. Steel pin with tapered end.
C-1020 HRS Steel.

Detail C – Tailgate chain bracket
Two (2) per side, total of four per tailgate
Aluminum

Detail D – J Hooks
Two (2) per tailgate

SPECIFICATIONS
A-15-BU-A-AM

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

F. BODY EQUIPMENT (Aluminum): (Continued)

6. PLOW FRAME:

Plow frame shall be furnished and installed as per attached drawings and shall be approved by the truck manufacturer's engineering department. The plow frame shall be per EQN-50.
Zerk fittings shall be protected per EQN-64.
Snow plow lights to be installed Ref: EQN-124 or approved body builder design.

7. SAFETY:

Safety self-cleaning type grid steps welded to both sides between vertical braces, full length and flush with outer edge of vertical braces per EQN-76.
A slide-in type, Ref: Bustin Industrial products, two or three-step ladder, 15 inch wide x approximately 32 inch high, mounted under the dump body on the driver's side between the first and second vertical side body braces. Brackets shall be welded to the underside of the running board. Ref: EQN- 56.
The body and ladder step material shall be per EQN-76 sheet 1 of 10 steel or aluminum. (Aluminum only on aluminum body.)
A short piece of bar stock shall be used above steps to serve as a grab safety handle for body entry. Steps (minimum of two) made from Bustin, Ohio Grating, or IKG Industries safety step material, are required on the driver's side and inside the bed for safe entry and exit.
There shall be a pair of wheel chocks with holders (location of holder to be determined at pre-build meeting). Ref: EQN-82
Under ride protection shall meet all the requirements set forth in EQN-118.

8. SPLASH GUARDS:

Ref: EQN-66.
Aluminum 0.250 splash guards shall be attached to the dump body on each side behind the rear most dual wheel and extend downward to accommodate a 30 inch or 36 inch flap in order to meet Pennsylvania State Inspection requirements. Mud flap sizes permitted are 30 inch or 36 inch. (No substitute, standardization). The rubber splashguards shall be bolted to these metal splash guards using self-locking nuts and metal strips.
The forward splash guards shall be aluminum for aluminum body, and extend downward ¾ of the length of the rear splash guard/mud flap, with a ¼ length, unmarked mud flap attached for the remaining distance.
Forward splashguard shall have a 1 inch lip for entire length-outside extremity (90 degree) with bottom outside corner rounded.
Both front and rear splash guard assemblies shall be properly braced.
Splashguards shall be full length and width with no holes cut in it to accommodate salt lights.

SPECIFICATIONS
A-15-BU-A-AM

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

F. BODY EQUIPMENT (Aluminum): (Continued)

9. WELDING:

All welding shall be in accordance with standard welding practices as set forth by the American Welding Society.
All vertical and horizontal seams of the body sides and ends shall be continuous welds, full penetration, without skip welds.

10. CENTRAL HYDRAULIC SYSTEM:

The pressure compensated, load sensing central hydraulic system shall operate all functions (plows, dump body, spreader and auger circuits) from an electric/ hydraulic system independently and simultaneously, without interruption of any other hydraulic functions.
All controls and components shall be of the latest design and installed to provide simple and convenient operations.
All system operations shall be achieved from a single pump matching all required flow and pressure demands.
The use of accumulators or auxiliary pumps is not acceptable.
Hydraulic tool operation will be included through both spreader circuits and will not require any type of cooling.
This system shall provide the most fuel efficient, safest, simplest and consistent operation possible.
All hydraulic components shall be installed and serviced by a single manufacturer.
Full responsibility for a serviceable system lies with successful bidder.
All wiring shall be securely clamped at approximately 18 inch intervals, shielded from exhaust and include a protective sleeve where necessary to prevent damage and/or failure.
All electrical connectors shall be treated with die-electric grease.
All systems shall be thoroughly tested and calibrated before delivery.
Upon start up the hydraulic system shall be operated at maximum flow for not less than 15 minutes and then have a new hydraulic filter installed on the truck.
It shall be the sole responsibility of the successful truck manufacturer and Component Technology to ensure that the chassis and the ground control wiring harness is totally compatible.
An operation manual, parts and maintenance manual shall be provided with each unit.
A schematic as well as a parts list shall be provided with the completed unit.

11. CONSOLE AND POWER DISTRIBUTION CENTER:

Console Assembly: Shall be Component Technology MultiGuard SG7 with all joysticks being fully proportional, NO SUBSTITUTE STANDARDIZATION.
Kit number SG08020015 TYPE II No Wing
SG08020016 TYPE II With Wing
Kit shall include GL-400-5-6.

SPECIFICATIONS
A-15-BU-A-AM

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

F. BODY EQUIPMENT Aluminum: (Continued)

11. CONSOLE AND POWER DISTRIBUTION CENTER: (Continued)

All wiring for the kit shall be included and be TPE type wiring external to the cab.
Hydraulic system digital pressure gauge – Wika 907.15.506 w/TYPEc10 TRANSDUCER
Valve enclosure
Bulkhead fitting for auger wiring shall be mounted in the rear module
Prewet system part number SG06070008
80 gallon poly tank and plumbing kit with stainless steel tailgate brackets installed on the rear of the truck. Reference: Component Technology tank part number RES-80-POMNIBUS, plumbing kit SG0609001. The tank assembly shall be installed utilizing an extended upper hinge pin. The bottom of the tank shall not cover the main integrated lights in the tailgate. The tank bracket shall be stainless steel. Reference Benson Body, part number PD-0800.
All hydraulic valve operations shall be achieved from within the cab by a single operator.
All controls shall be securely attached, within easy reach of operator and console mounted.
All controls shall be connected to the valve/s via electronic cable and power distribution center.
All electronics associated with the PDC and console shall be protected against and shall not cause interference to the operation of the vehicle or the land mobile radio communications system when properly installed in the vehicle.
Base shall be of steel construction conforming to drawing included in EQN-95.
Cabinet shall be constructed with 14 gauge steel, and will provide an access panel for ease of service.
Unit shall contain circuit protection for up to 12 auxiliary functions that control 15-ampere relays with automatic reset breakers.
Unit shall contain a terminal strip capable of interfacing with the specified body wiring harness if applicable.
Terminal strip will be located inside base unit and have at least three unused sections for further expansion.
Unit shall be capable of adjustment vertically ad horizontally to allow for comfortable positioning for the operator.
Unit shall come with full wiring schematic documentation.
Unit shall come with pin-outs for customer accessories such as two-way radio, etc.
Main electrical connection shall be protected by a 80 ampere manual reset circuit.

12. DIRECTIONAL CONTROL VALVE:

The hydraulic control valve shall be a REXROTH: or approved equal. There shall be a 4 port valve block to control pre-wet etc. as part of the main valve assembly. Part # as listed below.

WITHOUT WING PLOW: SG04190001 Rexroth M4 series 3 section valve w/ 3 function end cover

WITH WING PLOW SG04190002 Rexroth M4 series 6 section valve w/ 3 function end cover

Main control valve and enclosure shall be mounted outboard on the curbside frame rail ref: EQN-23 all valve coils, end covers and the power beyond port must be accessible.
There shall be one (1) return lines from the valve to the return manifold.

SPECIFICATIONS
A-15-BU-A-AM

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

F. BODY EQUIPMENT (Aluminum): (Continued)

13. HYDRAULIC ALARM AND SHUTOFF:

There shall be a low hydraulic oil alarm system to alert the operator of a low hydraulic oil situation and allow ample time to take preventative action and avoid damage to the central hydraulic system pump.

It shall be operated via a 12 volt system. All wiring shall be routed to prevent damage from heat, sharp edges and moving parts.

An in-tank float switch shall be mounted to provide a signal to a dash mounted light. The dash light shall come on whenever the oil level drops below a ten (10) Gallon reserve. Assembly shall be an MP Products, Inc. RIG1-Series. All switch wires shall be hermetically sealed in high grade epoxy. The indicator light shall be console mounted. Indicator light lens shall be red in color. Light shall be clearly identified “Low Hyd. Oil”. Switch shall be adjusted to ensure that light does not prematurely illuminate (i.e., bed being raised, with adequate reservoir oil, should not cause light to illuminate).

14. HYDRAULIC HOSE:

All hose and hose ends shall be matched and assembled on a matched hose machine to prevent hose failure. All hydraulic plumbing practices shall conform to JIC H11 standards. Pressure hoses shall be 100R2, return lines shall be 100R1, and suction lines shall be 100R4. Velocity in pressure sue lines shall not exceed twenty (20) feet per second, return lines not to exceed ten (10) feet per second, and not to exceed four (4) feet per second in suction lines. All hoses shall include JIC female swivel ends with the exception of the suction line. All hydraulic components shall have SAE porting wherever possible.

All hydraulic hoses shall be securely clamped at approximately 18 inch intervals, shielded from exhaust and include a protective sleeve where necessary to prevent damage and/or failure. All hoses shall have JIC swivel connections at each end and be located in such a manner to aid in easy component replacement per EQN-94.

15. HYDRAULIC PUMP:

PUMP shall include a low oil shut DOWN WITH OVERRIDE Shutdown shall be direct mounted to the pump. Remote mounted valve will be unacceptable.

The pump shall match system flow and pressure (horsepower) requirements to provide maximum fuel economy. Ref: EQN-90, EQN-91

No unloader or by-pass system will be an acceptable means of regulating excess oil flow.

Pump part number: Parker Hannifin PAVC10092L4AP22X3392 KEYED Crankshaft Mounted,

Full flow relief valve to be installed between pump and control valve. Relief valve setting shall be factory pre-set at 2500 PSI. Relief valve may be mounted inside the main valve enclosure or in the return manifold.

Or

Pump part number: Rexroth Model A10V01OO LH ROTATION: BH00979162

SPECIFICATIONS
A-15-BU-A-AM

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

F. BODY EQUIPMENT Aluminum: (Continued)

16. HYDRAULIC PUMP DRIVELINE:

Hydraulic pump SHALL BE DRIVEN by a 1310 Spicer series or NEAPCO factory balanced drive shaft, no substitute standardization.
Driveline shall be capable of 130 foot pounds of torque and have tubular shaft of 1141 steel. Tubular shaft will have 16 spline heat treated to 40 Rockwell hardness.
A groove shall be machined the length of the shaft to provide proper phasing of universal joints at time of shaft assembly.
Driveline installation should be in accordance to manufacturer's recommended procedures.
Slip assembly shall provide not less than 2.25 inch of travel to allow ease of engine drive belt replacement.
The truck engine radiator and frame construction shall readily accommodate the installation of a front mounted crankshaft driven hydraulic pump.
The engine crankshaft pulley or vibration damper shall be drilled and tapped to accommodate a power take off drive shaft adapter plate required under hydraulic system section of these specifications.

Referenced models, Mack FWPTO, Cummins REPTO or approved equal. Ref: EQN-90.

17. PLOW SAVER:

There shall be a plow saver device COMPONENT TECHNOLOGY PART NUMBER SG03020008 installed.

18. OIL RESERVOIR AND ACCESSORIES:

Aluminum or stainless steel, all welded construction
The oil reservoir shall not be less than 45 GAL capacity, filled with 150 32 hydraulic oil
Cylindrical with flat or shallow dish sides, steps shall be included
Tank straps shall be heavy duty (minimum 2 inch wide) stainless steel or aluminum with rubber shims/liners.
Liners shall interlock around the tank strap edges to eliminate them from walking.
Center mounted baffle plate to prevent oil flow from venting directly to section port
A drop tube shall discharge all return oil flow from venting directly to section port
Tapered outlet shall be below oil level at all times to prevent air entrapment
A magnetic dip stick shall be mounted into reservoir from a top NPT female port
Tank shall be mounted under the right door
Tank shall be clearly labeled "HYDRAULIC FLUID ONLY"
Lockable tank filler cap assembly, model 57XL-40 (40 micron with chain) L.C. as manufactured by Lenz. Tel: (937) 277-9364
Suction line/strainer: 125 micron with 3 PSI bypass rated above 47 gpm submerged at all times ¼ turn, 2.5 inch full flow ball valve in the suction line as close to the tank as possible Strainer integral mounted in a 4 inch NPT female opening in the bottom of reservoir with a 3 inch female NPT opening.

SPECIFICATIONS
A-15-BU-A-AM

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

F. BODY EQUIPMENT Aluminum: (Continued)

18. OIL RESERVOIR AND ACCESSORIES: (Continued)

Return manifold: There shall be a return line manifold mounted on the curbside frame rail, final location to be determined at the pre-build meeting.
Return manifold shall be an 8 port header block with 8 # 16 SAE openings and 2 # 24 SAE openings at each end.
Header shall be an Alamo, Damon or Hycoa or equal.
Return line filter: Filter shall be mounted on the outside of the curbside frame rail
Filter shall be a Parker microglas part #80CN-210Q-15739, 300L @10 micron or MPFiltri – LMP2602BAF1A012M 300L @ 10 micron
There shall be a differential pressure switch with boot to activate a warning light mounted within the console.
Filter shall be remote mounted with spring controlled by-pass set at 25 PSI
Cab mounted filter contamination indicator set at 23 PSID.

19. TEST PORT:

There shall be a 5101-6B complete quick coupler (with dust cover located in the pressure line entering the main valve assembly located inside the valve enclosure. Quick disconnect shall be bracket mounted to the inside of the enclosure, easily accessible so that a shop pressure gauge (not to be installed or included) maybe easily visible for test purposes. Ref: EQN-20X.
A test gauge may be installed in place of the quick disconnect.

20. INSTALLATION PRACTICES:

THE USE OF ANY OF THE FOLLOWING ITEMS OR PRACTICES WILL NOT BE ACCEPTED.
Non-steel fittings on hydraulic pressure lines.
Excessive use of elbows on hydraulic pressure lines.
Use of thread tape on hydraulic fittings.
Use of galvanized fittings or components on hydraulic system.
Improper hydraulic line size.
Use of high-pressure hose for hydraulic suction line.
Scotchlok-type wire splices.
Non-insulated wire splices.
Improper hose or wire routing near exhaust, over-sharp edges or through holes without grommets, or sharp edges.
Improperly prepared, primed and painted surfaces.
Non-fused electric circuits.
Hydraulic circuits without pressure relief protection.

SPECIFICATIONS
A-15-BU-A-AM

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

F. BODY EQUIPMENT Aluminum : (Continued)

21. REQUIREMENTS FOR BED SPEED;

Bed speed shall be tested at 1500 rpm at normal operating temperature

Bed speed full-up shall be 15 seconds maximum

Bed speed full down shall be 10 seconds maximum

SPECIFICATIONS
A-15-BU-A-AM

II. GENERAL WING PLOW SPECIFICATIONS:

A. INTENT STATEMENT:

The purpose of these specifications is to describe a full floating patrol wing plow with tripping action and telescoping action mechanism and a capability to lower the assembly in the travel position for improved visibility and to allow emergency egress. Ref: Tenco or approved equal.

It shall be the responsibility of the vendor to certify through proper chassis stress analysis the adequacy of the existing truck frames to accommodate the patrol wing plow in combination with a front mounted plow weighing approximately 3000 LB.

The aforementioned plow will be used for "severe duty" high-speed plowing by the Pennsylvania Department of Transportation. The attached drawings and written text are to be considered minimum and the manufacturer shall reinforce the plow, framing and hydraulic cylinders by means of gussets, or increased material strength or thickness to present a plow designed to meet the severe duty" operational setting.

The Patrol Wing shall be designed to be attached or detached independently from the frame assembly. It shall be installed in such a manner as to ensure quick access to the engine and all accessories. (Hood on dump truck shall tilt without obstruction, if applicable.)

All parts not specifically mentioned, which are necessary in order to provide a complete snow plow shall be furnished by the successful bidder. The plow fabrication and assembly shall be to the latest engineering techniques.

All steel unless otherwise specified, shall be hot-rolled steel (HRS) as per ASTM A-36.

When wing assembly is disconnected from the truck, no parts may extend past the body line of the truck.

All bolts shall be grade 8.

A complete set of drawings showing all details and dimensions, sizes, etc., and literature of the plow proposed to be furnished.

B. PLOW COMPONENTS:

SHOCK ABSORBING REAR WING BRACE:

The rear wing brace shall be a minimum of a single fixed hinge pin type with an adjustable bottom wing brace, or the formed type wing tube support to attach to a single fixed hinge pin.

SPECIFICATIONS
A-15-BU-A-AM

II. GENERAL WING PLOW SPECIFICATIONS: (Continued)

B. PLOW COMPONENTS: (Continued)

SHOCK ABSORBING REAR WING BRACE: (Continued)

The rear wing brace shall be equipped with a telescoping arm and an adjustable type tension spring. If required by manufacturer.
The rear wing "A" frame support strut/girder arrangement of MC 7 inch x 22.7 LB/feet, minimum channel, or fabricated from 7 inch x 12.25 LB/feet channel, 6 inch/feet x 8.2 LB/feet channel, .500 inch plate, 6 inch x 4 inch x .3750 inch structural tubing and other component pieces. It shall be attached in such a way that the load is properly distributed to both chassis frame rails. "A" frame shall be detachable for summer use. Ref: EQN-60A.
One (1) top wing brace cylinder constructed of 3 inch x 15 inch minimum double acting ram, chrome plated piston rods.
Adjustable trip-spring mounted from wing lift cylinder housing to the back of wing.
The rear brace shall be equipped with a 3 inch x 24 inch or 3 inch x 15 inch DA cylinder to actuate the telescoping strut with cross-over relief.
Bottom wing brace constructed of 4 in/10cm O.D. square outer tubing with a 3 inch O.D. square inner tube. Wear guides are welded to inner side of 4 in/10cm tube and to the outside of the 3 inch tube to prevent binding.
The rear wing lift cylinder will be a double acting 3 inch x 27 inch minimum cylinder, chrome plated piston rods with neoprene packing. Cylinder shall float with a 500 PSI relief on the down side.
The tripping spring/eyon rubber compression will be mounted to allow the wing to trip in any of the telescoping positions. The spring/eyon rubber compression shall be adjustable and have a quick release handle to remove tension for detaching the wing. The spring/eyon rubber compression will also be mounted to have tension on the wing in all telescoping positions.
The telescoping strut cylinder shall have incorporated in the hydraulic system an adjustable pressure relief valve for safety, when contacting heavy objects.

FRONT WING SUPPORT, OR FRONT WING POST:

Front Wing Mast:

Wing mast shall not block the O.E.M. headlight.
I beam 7 inch x 15.3 LB/feet minimum, wing post.
.6250 inch minimum wing post slide lift with 10inch minimum lift from ground to bottom of plow edge for travel.
Front wing post cylinder double acting ram - direct (no cables) with float and 500 PSI relief on the down side.
Chrome plated piston rods, adjustable chevron type packing, neoprene wipers and bleed screw.
Hydraulic hoses, to SAE 100RZ, 022700, AEROQUIP-195, Hi-Impulse, (no substitute, standardization).

SPECIFICATIONS
A-15-BU-A-AM

II. GENERAL WING PLOW SPECIFICATIONS: (Continued)

B. PLOW COMPONENTS: (Continued)

Front Wing Mast: (Continued)

Front wing post and support strut/girder arrangement shall be attached in such a way that the load is properly distributed to both chassis frame rails without the use of bracing tubes.
Support struts shall be 1.250 inch diameter schedule 80 ASTM A106 Grade A or B seamless pipe brace, minimum of two.
One strut shall be mounted to chassis frame.
One strut shall be mounted to plow frame.
Horizontal support girder 7 inch cross channel or 7 inch ship and car channel at 22.7 LB/feet or tubing 7 inch x 4 inch x .3750 inch.
Bolts shall be minimum grade 8, .6250 inch N.C.
Hinge assembly shall be detachable from the slider assembly of the wing mast.
Formed wing post mounted on cross tube mounted to truck frame members.
Wing slide plate bears on flanged surfaces of formed channel enclosing single acting cylinder, which provides full power up.
Wing Plow Alarm (Mechanical): Wing plow shall have a mechanical alarm system to alert the operator of the position of the plow. It must be visible from the driver's seat. Ref: EQN-60A.

HYDRAULIC POWER:

The front wing mast shall have a double acting cylinder vertical lift type, hydraulically controlled by a double acting cylinder direct lift. The front cylinder shall have quick connect coupler/s.

Double Acting Cylinder:

A 3 inch x 15 inch minimum double acting cylinder from rear "A" frame to mold board to raise the rear of the wing and fold the wing close to the truck for transport.

SNOW LEVELING WING:
The wing assembly shall in no way interfere with the turning of the right or left front tire. The wing shall not be less than 11 feet long overall, 29 inch high at the front and 36 inch (minimum) high at the discharge end. The moldboard shall be fabricated from 0.1719 inch thick (8 USS gauge) minimum steel and weigh a minimum of 755 LBS.
It shall be drilled to accept standard AASHTO spacing as shown on attached drawing EQN-16A sketch attached and equipped with either a steel or rubber blade as specified.

SPECIFICATIONS
A-15-BU-A-AM

II. GENERAL WING PLOW SPECIFICATIONS: (Continued)

B. PLOW COMPONENTS: (Continued)

1. Rubber Blade:

The patrol wing shall be equipped with a 1.500 inch x 10 inch x 120 inch rubber cutting edge manufactured by Goodyear Tire & Rubber Company or an approved equal, secured to the wing moldboard by .6250 inch grade 8 plow bolts through a .3750 inch x 4 inch steel facing plate. The rubber blade shall be slotted 3.500 inch x .6875 inch to provide adjustment and shall be reversible to provide maximum wear.

2. Steel Blade:

The cutting edge shall be of .500 inch x 6 inch C1090 steel, at least 10 feet long. Per attached plow blade drawing, EQN-16A.

The wing plow shall have two cast wing shoes.

The patrol wing shall be hydraulically operated with the controls conveniently mounted, (to be discussed at pre-build meeting) in the truck cab with the addition of three valves to the existing valve bank. These valves shall provide lift to the front of wing, the rear of the wing and the folding of the wing toward the cab and control in and out of the strut. The front of the wing shall be controlled by a single acting ram mounted within wing post that permits the front of the wing to be vertically lifted for transportation purposes.

The rear of the wing shall be power hydraulically controlled and attached to tele-strut and a 3 inch x 24 inch double acting cylinder with .3750 inch quick disconnects, (male, female, cap and plug) which shall be connected to a 7 inch sloped channel located under the dump body and at the rear of the truck cab. The 7 inch channel shall be adequately supported by brackets and cross braces to the truck frame. Bottom bracing shall extend to the rear with bridge type bracing.

3. Tripping:

The wing shall be of the full tripping type consisting of a special spring-loaded front end. Tripping actuation shall be accomplished through a .8750 inch diameter wire torsion spring at the front end and a tension spring attached to the front and rear of the wing or eyon rubber compression system.

Each spring shall be adjustable and shall automatically return the wing to its normal plowing position after it has passed over the obstruction encountered.

Provision for locking out the tripping action shall be supplied for operations requiring a rigid wing.

SPECIFICATIONS
A-15-BU-A-AM

II. GENERAL WING PLOW SPECIFICATIONS: (continued)

B. PLOW COMPONENTS: (Continued)

The following minimum alterations shall be the responsibility of the successful vendor:

1. Add two Timbren load booster or active ride control stabilizers.

2. Brace right hand side plate to truck frame.

3. Add additional steel to side plates to provide increased strength and more substantial mounting for the 7 inch cross channel.

4. One (1) manually adjustable plow storage jack per EQN-60A.
NOTE: Pages 1 and 2 of EQN-60A indicate the general mounting arrangement desired.

INSTALLATION PRACTICES:

The use of any of the following items or practices WILL NOT BE ACCEPTED.
Non-steel fittings on hydraulic pressure lines.
Excessive use of elbows on hydraulic lines.
Use of thread tape on hydraulic fittings.
Use of galvanized fittings or components on hydraulic system.
Improper hydraulic line size.
Use of high-pressure hose for hydraulic suction line.
Scotchlok-type wire splices.
Non-insulated wire splices.
Improper hose or wire routing near exhaust, over-sharp edges or through holes without grommets, or sharp edges.
Improperly prepared, primed and painted surfaces.
Non-fused electric circuits.
Hydraulic circuits without pressure relief protection.
NOTE: All zerk fittings shall be threaded.

DIRECTIONAL CONTROL VALVE: (for a Single Right or Left Hand Wing)

The hydraulic control valve shall be a REXROTH and shall be part of the dump truck valve assemby: No substitute, standardization as provided in the Dump Truck Specification
Valves shall control the following functions, Wing plow front post, and wing plow rear post and wing plow rear telescopic
Electronic joysticks shall be PROPORTIONAL

SPECIFICATIONS
A-15-BU-A-AM

II. GENERAL WING PLOW SPECIFICATIONS: (continued)

B. PLOW COMPONENTS: (continued)

PLOW IDENTIFICATION:

Each unit shall bear the manufacturer's model number, serial number and weight affixed to the plow, by means of a permanently affixed non-rusting metallic tag located on the right hand backside of the moldboard as viewed from truck operator's seat.

PAINT:

Color: PENNDOT yellow, DuPont 6808 for shade only. All metal surfaces shall be cleaned prior to primer and final painting.

CONSPICUITY TAPE:

The Rear of the wing plow shall have a strip of retro-flective sheeting across the top and down the outside in order to outline the plow when viewed from the rear. Material shall be: 2 inch wide Reflexite Conspicuity II System of 3M Scotchlite Conspicuity Series 980, red/silver continuous backing.

TEMPLATE:

The successful vendor shall provide a metal template of the moldboard contour, including cutting edge cut out with each pilot.

SPECIFICATIONS
A-15-BU-A-AM

III. DRAWINGS:

EQN-20X	rev.	05-22-03	3 sheets	HYDRAULIC SYSTEM SCHEMATIC
EQN-22	rev.	07-01-03	1 sheet	FRAME MOUNTED ACCESSORY PLATE
EQN-23	rev.	08-03-01	5 sheets	HYDRAULIC COMPONENT OVERVIEW
EQN-32	dated	05-22-03	1 sheet	DUMP TRUCK CHAIN BOXES
EQN-50	dated	09-13-06	5 sheets	LOW PROFILE PLOW MOUNTING
EQN-56	rev.	06-16-05	3 sheets	SLIDING BED LADDER
EQN-62	dated	05-28-02	2 sheets	DUMP TRUCK BED PROP SYSTEM
EQN-63	dated	09-14-06	1 sheet	DUMP TRUCK REMOTE GREASE CONNECTION
EQN-64	dated	05-22-03	4 sheets	COAL CHUTE & TAILGATE APRON DUMP TRUCK BODY W/ALUMINUM TAILGATE
EQN-66	dated	05-28-02	2 sheets	SPLASH GUARDS-RUBBER-TRAILER AND TRUCK
EQN-66A	dated	03-19-03	1 sheet	FUSEE STORAGE BOX/BRACKET
EQN-70	dated	05-28-02	1 sheet	GANG BOX
EQN-74	rev.	05-22-03	4 sheets	TRUCK-II AND IV REAR MODULE
EQN-77	dated	04-11-06	7 sheets	38,000 LB/17,236 KG GVWR CREW CAB DUMP
EQN-78	dated	07-02-97	1 sheet	CB RADIO CONNECTIONS
EQN-78A	dated	06-03-02	3 sheets	AIR TAILGATE, HARDWARE (DUMP TRUCK)
EQN-80X	rev.	03-22-03	7 sheets	DUMP TRUCK WIRING-TYPE II & IV
EQN-81X	dated	06-03-02	2 sheets	ALUMINUM TAILGATE WITH BUILT-IN LIGHT BAR
EQN-82	dated	05-22-03	1 sheet	CHOCK AND HOLDER
EQN-90	dated	05-23-03	page 1 of 3	PUMP ASSEMBLY
EQN-91	rev.	06-03-02	1 sheet	PUMP MOUNTING BRACKET

SPECIFICATIONS
A-15-BU-A-AM

III. DRAWINGS: (Continued)

EQN-94	dated	08-15-97	2 sheets	HOSES AND COUPLERS
EQN-95	rev.	05-23-03	5 sheets	CONSOLE PEDESTAL
EQN-118	rev.	07-01-03	1 sheet	UNDERRIDE PROTECTION
EQN-122	rev.	05-16-02	1 sheet	DUMP BODY TAILGATE REFLECTING SHEETING
EQN-124	rev.	05-16-02	1 sheet	AUX. SNOW PLOW LIGHT PACKAGE
EQN-128	rev.	05-16-02	1 sheet	REFLECTIVITY ENHANCEMENT-38,000/17,236 KG GVWR CREW CAB
EQN-160	rev.	02-15-00	1 sheet	CENTRALIZED LUBE SYSTEM
EQN-210B	rev.	07-01-03	3 sheets	REVOLVING WARNING LIGHT
EQN-351A	rev.	07-01-03	2 sheets	FAST LUBE OIL CHANGE SYSTEM
EQN-507C	rev.	02-28-00	2 sheets	38,000 LB CREW CAB DUMP BODY WEIGHT DISTRIBUTION MINIMUM DATA REQUIRED.

NOTE: Drawings appear in SAE

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

DRAWINGS CHARTS APPEAR AT THE END OF THE SPECIFICATIONS.

SPECIFICATIONS
A-15-BU-A-AM

IV. MANUALS:

See manual information attachment in the bid package

V. TRAINING:

See training information attachment in the bid package

SPECIFICATIONS
A-15-BU-A-AM

VI. WARRANTY:

Per PCID No. 1075 Section E.1. and additional specific warranty items.
This warranty is in effect as follows, starting from date of acceptance by the Department:

BRAKE WARRANTY:

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

RADIATOR WARRANTY:

Manufacturers service and warranty policy for radiator shall be for two (2) years, 100% parts and labor plus an additional two (2) years, 100% parts only.

ENGINE WARRANTY:
The successful vendor and or supplying OEM shall provide the Department with a 100% parts and labor engine warranty FOR 60 months/ 150,000 miles minimum.

The successful vendor shall supply a copy of all items covered under their published extended engine warranty.

NOTE: the oil pan shall be warranted against corrosion, rust, rust thru etc. regardless of atmospheric conditions for 3 years, 100% parts only.

The published warranty shall be supplied with the pilot model.

TRANSMISSION WARRANTY:

Manufacturer's service and warranty policy for Manual, Autoshift and Automatic transmissions shall be three (3) years 100% parts and labor

DIFFERENTIAL/AXLE WARRANTY:

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

DUMP BODY WARRANTY:

Constructability and durability of body shall be guaranteed for four (4) years, parts and labor. A decal shall be affixed to the driver's door on the inside outlining this benefit and the company's name, address, phone number, and contact personnel. (Full warranty except wear and negligence).

Body hoist assembly shall be guaranteed for 3 years, 100% parts and labor.

Tailgate spring-over-air cylinder and air to air system - 2 years 100% parts and labor.

SPECIFICATIONS
A-15-BU-A-AM

VI. WARRANTY: (Continued)

CENTRAL HYDRAULIC SYSTEM:

Complete Central Hydraulic system and components 1 year 100% parts and labor including but not limited to the following:

Rexroth Valve
GL-400 Controller
Electronic Joysticks
Complete external TPE wiring harness shall be warranted for 3 years parts only.

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

ELECTRICAL:
Grote wiring harness shall be 7 years 100% parts. First year shall include 100% labor.
All LED lights shall be 10 years 100% parts.

WING PLOW WARRANTY:

The manufacturer's standard service and warranty policy shall be for a minimum of two (2) years. This warranty shall start on the final date of acceptance of the entire order and continue for the two (2) years thereafter, (2) full winter plowing seasons.

NOTE: WARRANTY FOR LABOR SHALL BE AT THE MANUFACTURES LOCATION OR IF A FIELD REPAIR IS COMPLETED BY PENNDOT THE MANUFACTURER SHALL REIMBURSE PENNDOT AT THE MANUFACTURES STANDARD PUBLISHED LABOR RATE.

SPECIFICATIONS
A-15-BU-A-AM

TRUCK – DUMP – CONVENTIONAL – 38,000 LB GVWR
TYPE II

050900 thru 051120

TRUCK DUMP, TYPE II, ALUMINUM, AUTOMATIC (050900)
TRUCK DUMP, TYPE II, ALUMINUM, AUTOMATIC WITH RIGHT WING PLOW (050910)
TRUCK DUMP, TYPE II, ALUMINUM, AUTOMATIC WITH LEFT WING PLOW (050920)

TRUCK, DUMP, TYPE II, ALUMINUM, MANUAL (051100)
TRUCK, DUMP, TYPE II, ALUMINUM, MANUAL WITH RIGHT WING PLOW (051110)
TRUCK, DUMP, TYPE II, ALUMINUM, MANUAL WITH LEFT WING PLOW (051120)

I. GENERAL TRUCK SPECIFICATIONS:

A. Intent Statement
B. Weight Distribution
C. Powertrain Overview
D. Vehicle Components

1. Alarm - Backup
2. Axle Front
3. Axle Rear
4. Brakes
5. Cab
6. Chassis
7. Clutch
8. Drive Line
9. Electrical
10. Engine
11. Engine Accessories
12. Exhaust
13. Fast Lube Oil Change System (FLOCS)
14. Frame and Frame Extension
15. Instrumentation
16. Light - Warning
17. Paint
18. Safety
19. Steering
20. Suspension: Front
21. Suspension: Rear
22. Tank - Fuel
23. Wheels/Tires
24. Transmission

SPECIFICATIONS
A-15-BU-A-AM

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. Dump Body Equipment

1. Dump Body, Aluminum
2. Tailgate, Aluminum
3. Body Sides, Aluminum
4. Floor, Aluminum
5. Body Structure, Aluminum
6. Cab Shield, Aluminum

F. Body Equipment: (Aluminum)

1. Accessory plate
2. Bed up alarm
3. Chain box/s
4. Hoist Cylinder
5. Hoist Hardware and details
6. Plow Frame
7. Safety
8. Splash Guards
9. Welding
10. Central Hydraulic System
11. Console and Power Distribution Center
12. Directional Control Valve
13. Hydraulic Alarm and Shutoff
14. Hydraulic Hose
15. Hydraulic Pump
16. Hydraulic Pump Driveline
17. Plow Saver
18. Oil Reservoir and accessories
19. Test Port
20. Installation Practices
21. Requirement For Bed Speed

II. GENERAL WING PLOW SPECIFICATIONS:

III. DRAWINGS

IV MANUALS

V. TRAINING

VI. WARRANTY

SPECIFICATIONS
A-15-BU-A-AM

I. GENERAL TRUCK SPECIFICATIONS:

A. INTENT STATEMENT:

The purpose of these specifications is to describe a conventional, single-rear-axle, two-wheel-drive dump truck, equipped with dual rear wheels, dump body, hoist, hydraulic power system and snow plow hitch. It shall be capable of one person operation while plowing snow and simultaneously spreading ant-skid materials or salt during winter operations, and hauling and unloading maintenance materials into a chip spreader or paver during summer operations. Further it shall be capable of being loaded with front-end loader or self-propelled belt loader.

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

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

B. WEIGHT DISTRIBUTION:

Weight distribution charts must be submitted with the pilot model for all models per Invitation To Bid. Weight distribution charts shall be submitted for the two modes listed below. The weight distribution charts submitted with the pilot model shall be reviewed for their reasonableness, and any inconsistencies shall be clarified with the awarded vendor at the "pre-build" meeting.

1. Summer mode including that portion of the wing plow post and plow frame assembly, which remains on the vehicle all year.

2. Winter mode with front plow, spreader and complete wing plow.

Each item listed on Drawing EQN-507B shall be noted and individually calculated in the vendor's submission.

Weigh Slip: Engineering-certified weight slip shall be provided with the pilot model and signed by the manufacturer's Engineering Department.

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 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

SPECIFICATIONS
A-15-BU-A-AM

I. GENERAL TRUCK SPECIFI CATIONS: (Continued)

B. WEIGHT DISTRIBUTION: (Continued)

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

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

b. Front and rear axle legal weight distribution applies to summer applications only!
Winter weight distributions are required for payload information purposes only since winter plowing and spreading operations are exempt from legal weight restrictions. However, the total weight shall not exceed the manufacturer's GVWR for the vehicle, which is offered. The weight imposed on the front and rear axles using the total GVWR shall be shown. (Overweight shown on the axles in these winter modes is for information only).

In addition to the Engineering Certified weight distribution provided at the pilot model inspection, the following information is required with the pilot model.
The vehicle shall be certified for 38, 000 LB Gross Vehicle Weight Rating (GVWR). The GVWR shall be identified in the cab or on the door as the final complete certification label (minimum rating).

ACTUAL TRUCK WEIGHT: (LB)

"Chassis only" (shall be signed by a certified weigh master.)
_____Front Axle

_____Rear Axle

_____Total

"Chassis with body" (shall be signed by a certified weight master).
_____Front Axle

_____Rear Axle

_____Total

THE ABOVE MAY BE PERFORMED BY THE BODY COMPANY.

SPECIFICATIONS
A-15-BU-A-AM

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

B. WEIGHT DISTRIBUTION: (Continued)

Truck GAWR's as Built (LB)

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

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 – MIN. 250 HP AT GOVERNED RPM , MIN. 800 LB/FT TORQUE, MIN 6.0 LITER

TRANSMISSION – EATON RT 8709B
EATON RT 8608L – LOWER REV.
EATON RTO 14908LL
MACK TM-308

AUTOMATIC ALLISION 3000 RDS Series 6 Speed
3500 RDS Series 6 Speed
4500 RDS Series 6 Speed

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

NOTE: All rear axles must provide axle shafts with a minimum diameter of 2.19 inch at the spline.

NOTE: REAR AXLE/S SHALL HAVE AN EXTENDED BREATHER TUBE TO PREVENT DEBRIS BUILDUP.

SPECIFICATIONS
A-15-BU-A-AM

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

D. VEHICLE COMPONENTS:

1. ALARM – BACKUP:

Ref: EQN-74

2. AXLE FRONT:

18,000 LB capacity, minimum.
The front axle, drag links and tie rods shall have grease zerks installed.
Kingpin or bushings shall be grooved to permit ease of grease flow
Sufficient tire clearance at maximum turning angles.
Complete "Stemco" oil seal assembly, including hub, plug type window and "Guardian" seal, (no substitute, standardization).
Each unit shall have the front end aligned.
Setback front axle is unacceptable. Setback axle constitutes measurement from bumper-to-axle (before frame extension) "BA", inch.

3. AXLE REAR: (See powertrain overview for acceptable axle.)

ALUMINUM OR LIGHTWEIGHT HOUSING IS NOT ACCEPTABLE.
STEMCO GUARDIAN rear wheel seals, (no substitute, standardization).
Drain plug, magnetic.
Torque-proportioning traction-assist device or a traction device, which is full locking, is required within the differential housing. The device shall provide maximum traction to rear wheels when actuated and shall be self-relieving designed to prevent gear damage and/or axle shaft breakage under extreme service conditions. The traction-assist device shall be driver actuated by a dash mounted traction control switch.

NOTE: Rear axle ratio selection will be made after the award and may be a mix of ratios as required. The successful vendor/manufacturer shall present three (3) computer runs showing three (3) most likely ratios for consideration for a speed range of 55 MPH to 65 MPH max. This information shall be presented at the pre-build meeting.

4. BRAKES

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

ABS shall incorporate an ABS diagnostic fault switch that is capable of illuminating a fault light for diagnostic purposes. The switch shall be easily accessible. The switch mounted under or on the dashboard.

Rear brakes: 16.5 inch x 7 inch "S" cam with quick change type single or double pin. (No substitute – standardization.)
Steer axle brake: 16.5 inch x 6 inch, "S" cam or a power front disc brake system providing equal performance. Quick change type single or double anchor pin if drum type brakes are furnished.

SPECIFICATIONS
A-15-BU-A-AM

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

D. VEHICLE COMPONENTS:

4. BRAKES: (Continued)

Drum brakes shall have automatic slack adjusters and they shall be clearance sensing type only, with adjustment on application of the brake.
Backing plates on all drum brakes.
Air compressor: Per truck manufacturers recommendation.
Buzzer-type, low air pressure indicator. Compressor shall be fitted with a safety valve to prevent mechanical failure.
Parking brake: Rear wheels, spring-type, MGM E 30/30 or Anchorlock 30/30 gold seal chambers. Parking brake shall provide modulated emergency braking via the foot valve in the event of a rear service system failure.
Rear service parking brake chambers shall be front or top mounted to provide adequate clearance for backing into a bituminous paving machine.
Air tank: Automatic drain valve, with heater on wet (first) tank. Each of the remaining air tanks shall have a manual drain valve.
Air dryer: With heater, inboard mounted, away from road splashings and 20 inch above road surface. Dryer shall be compatible with the body company clearance requirements for sub-frame, valve body, etc. Per: Haldex DRYest or Bendix AD-IP Installation made in concurrence with the air compressor manufacturer ' s recommendations.
System shall be equipped with anti-compounding to prevent mechanical failure of the foundation brakes, slack adjusters, etc.

5. CAB:

Aluminum or steel cab, 104 inch minimum to 116 inch maximum Bumper to Back of Cab (BBC) dimension excluding frame extension.
Hood: Fiberglass, tilting. Fenders are part of tilting hood. Grille shall be fixed.
Air suspension system for the cab shall be factory or aftermarket installation is acceptable
Air deflector: Clear or smoke, hood mounted. Manufacturer's standard full width for the truck model. Access to front-end hood tilt handle shall not be blocked. Extra handle acceptable.
Fenders: Front fenders shall have a 6 inch rubber extension.
Deluxe fresh air hot water heater and defroster, manufacturer's highest output.
Air Conditioning: Highest output available as OEM option.
AM/FM radio with weather band.
Air horn(s): with snow-shield.
All controls and knobs shall be properly identified.
Brake pedal, clutch pedal and throttle shall be suspended if available from the factory.
CB Power connections One (1) pair, at the dash, per EQN-78.
Cab floor covering shall be heavy-duty rubber with closed cell rubber or heavy felt backing.
Cruise control
Cup holder in the cab within easy reach of the operator.

SPECIFICATIONS
A-15-BU-A-AM

I. GENERAL TUCK SPECIFICATION: (Continued)

D. VEHICLE COMPONENTS: (Continued)

5. CAB: (Continued)

Dome light shall be provided
Dual sun visors.
Windshield: One (1) or two (2) piece construction, tinted. Safety glass throughout.
Heated windshield per invitation to bid.
Drivers and passenger side windows shall be power.

Dual windshield wipers artic type with heaviest arms and linkages available. Wipers shall be min. 2 speed electric with intermittent feature.
Washer system shall be electric. Minimum capacity of two (2) quarts of washer fluid and shall be filled with an anti-freeze type solvent.

Mirrors: Driver's and passenger side power mirrors , west coast style minimum 6 inch X 16 inch manufacturers standard heavy duty break away arms.
Mirrors shall be heated with a lighted toggle switch mounted within accessible reach of the operator, automatic on/off is acceptable. The wires shall be fitted in such a way that the mirror glass/element can be changed by unplugging the two-wire lead.
There shall be a heated convex mirror both sides, minimum 5.5 inch X 8.8 inch.
Roadwatch system with digital display shall be installed. Ref: Sprague Controls

Blind-spot elimination mirror heated (conventional cab only) shall be mounted on the right front fender and it shall be 8 in, minimum, diameter stainless steel or aluminum head with mirror. Mirror shall be a conventional convex mirror, and shall not be of the half-round cross view type. All arm/s and hardware shall also be stainless steel. Fender type washers stainless or aluminum, with rubber pads to be placed on both sides of the fender shall be included. Pedestal system shall be single, double or triple mounting assemblies (stainless steel or aluminum). Mirror shall be mounted in rubber or vinyl. Ref: Grote (800-628-0809)

STEPS: Drivers and passenger entrance steps: Shall be aluminum, serrated. The outer step edge must be serrated in lieu of plain. (Overlay is not acceptable).
Step design material must be the same both left and right side.
Ref: Bustin No. NST4 full size, Ohio Grating No. JA21195G4 serrated, IKG. Industries Type B54 or Mack Part # 85QM423OM4
Top of the first step shall be approximately 21 inch above the ground.

Seats: Driver's seat shall be high back adjustable Bostrom air 915 Series with lumbar support or National 195 Series with lumbar or DuraForm Air Command Series (fabri form cushions with lumbar support) with body cloth insert and three-point retractable seat belt. A bellow-type or protective skirt shall cover the seat suspension mechanism. There shall be an inside armrest on the driver's seat plus an outside armrest installed on the seat or the drivers door. No substitute on seats reference. Color coordinated to cab interior.
Passenger seat: With three-point retractable seat belt, manufacturers standard non-suspension (static), and high black type. Color coordinated.
Steering wheel diameter shall be 18 inch (approx).

SPECIFICATIONS
A-15-BU-A-AM

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

D. VEHICLE COMPONENTS: (Continued)

6. CHASSIS:

Cab Axle (CA) dimension: 84 inch wheelbase and CA dimension may be adjusted to provide the optimum legal weight distribution.
Axle-frame (AF) dimension: Shall incorporate a cross member at the rear of the frame to reinforce the body pivot point. (Local installation is acceptable)
Front Bumper: Heavy duty swept back. Mounted to the frame with inner face of the bumper against the chassis frame.
Plow frame bumper bracket spacers on frame rail, both sides.
Lights: Mounted on the rear of the frame shall be shock mounted to prevent damage from backing into material piles (Ref: EQN-74).
Front mounted tow hooks or eyes: Two (2) front. These may be installed by the body company after completion of the plow hitch mounting using grade 8 bolts of sufficient strength and length and self locking nuts or by full welding.
License plate bracket: Front and rear. Securely mounted to prevent damage when backing into material piles.
There shall be a centralized on board chassis lubrication system installed. The system shall have a fault light that will illuminate when there is a malfunction with the system. The light shall be cab mounted so the operator can visually monitor the system. Steel tubing (hard pipe) shall be utilized where/when ever possible and practical: Ref: EQN-160

Ref: Grease Jockey
Groeneveld Lube system
Lincoln Lube system
Vogel Lubrication Inc.

7. CLUTCH: (if applicable)

Externally lubricated with an extended lube hose if applicable, Eaton/Fuller EZ pedal or Meritor with torque limiting clutch brake.

Clutch adjustment shall be set to specifications prior to delivery to the Department.
There shall be a neutral safety device to ensure that the vehicle cannot be started in gear.
Note: The transmission-input shaft shall be 2 inch spline. Dampened driven disc.

8. DRIVE LINE:

Main driveline: Spicer Life XL OR Meritor RPL Series. “Factory balanced” grease able, (1 zerk minimum).
Heavy-duty driveline shall be engineered and be compatible to engine, drive train and transmission torque.
Heavy-duty center bearing, if required, with due consideration to drive shaft angles, length, location, proper bolting based upon engine and transmission selection.

SPECIFICATIONS
A-15-BU-A-AM

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

D. VEHICLE COMPONENTS: (Continued)

9. ELECTRICAL:

All copper system, negative ground.
Alternator and starter mounting bolts: Grade 8.
Alternator: 160 amp minimum, high performance, solid state brushless.
Battery cable from battery negative terminal to starter motor or frame.
Batteries: Three (3), heavy-duty, 12 volt, field maintenance-free, BCI Group Size 31, with stud-type posts and anti-corrosion treatment on each terminal. 2500 total cold cranking amperes (CCA) at 0 degrees F. 640 minutes of total reserve capacity at 80 degrees F as per SAE.
Battery Mounting: It shall include the following:

a.) 0.25 inch thick rubber shock pad under the battery.
b.) Box with cover. Cover shall be constructed of fiberglass, poly, or aluminum (if aluminum there shall be an insulated 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 circuit breaker liable to be damaged during truck operation shall have an easily removable protective cover. All wire splices in the cab shall be heat shrink materials. Ref: Thomas & Betts, Tel: (210) 707-2145.
Electrical chassis-wiring harness: Body lighting and wiring to be per EQN-80X.
Body plug: Truck manufacturer and Grote Industries shall supply a body builder plug and bracket. All lights, body and chassis shall be protected by the truck manufacturers fuse block assembly.
Final location of the plug shall be decided at the pre-build meeting.
All exposed junctions: Waterproof and sealed against salt.
Flasher: (All) heavy-duty electrical, Ref: Tridon Model EL 12 or EQUAL.
Note: If an audible alarm is supplied for 4 ways and turn signal, it shall have on/off capability.
All lights for chassis and body shall be LED per EQN-80Xand meeting all Federal and state regulations.
The switch for parking light circuit shall be able to handle an additional 3 A load of a light bar.
Head Lights: shall be Halogen with Daytime running lights factory or aftermarket installation.
Dump body lights shall have their own dedicated complete circuit.
Plow lights to be fender mounted and meet all requirements of Pennsylvania Motor Vehicle Laws. Ref: EQN-124 or approved body company design.
Starter motor: With thermal overcrank protection and high torque capacity. Suitable for the diesel engines offered as per starter manufacturer’s recommendation.

SPECIFICATIONS
A-15-BU-A-AM

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

D. VEHICLE COMPONENTS: (Continued)

10. ENGINE:

The engine components facing wheel areas, on both sides, and the areas to the rear of wheels shall be shielded. The shield shall protect the engine, fan, radiator and areas behind tires from the stones and debris.

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

Cooling System: The largest factory available engine cooling capacity compatible with engines and transmissions referenced and for continuous high engine and output under extreme temperatures and/or operating conditions due to prolonged snow plowing operations in low gears. The water pump shall be adequately sized to provide proper cooling and be of sufficient size to accommodate the larger pulley to adequately handle the specified options.

Shall be fitted with provisions for visually monitoring coolant without necessitating removal of the cap from the radiator or expansion tank (e.g. sight glass, transparent expansion tank).

Extended life anti-freeze solution shall meet all applicable EPA requirements.

11. ENGINE ACCESSORIES:

Radiator core and shell: Shall be manufacturer's heaviest construction grade radiator available, with overflow recovery system and visual level indicator. The oil dipstick must have tubing and dipstick with sufficient length to provide reasonable access for checking the oil level.

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

Coolant/filter: Sized for and compatible with the cooling system. Ref: Perry, Tel: (405) 672-2311.

Air Cleaner: Air cleaner shall be manufacturer's heaviest duty air cleaner. The air intake system shall be fitted with inside/outside air.

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

Screening system: Installed to protect radiator from stones and bugs.

Engine vibration dampener: at PTO flange yoke. Ref: EQN-90.

Diesel Fuel Filter: Shall be DAVCO filtration unit. Size and location per engine manufacturer recommendation.

Air restriction gauge: Flush, dash-mounted with indicator slide fro engine air cleaner, Ref: Filter Minder, manufactured by Engineered Products Company Tel: (319) 234-0231. If the vehicle is OEM equipped with an electronic dash that incorporates an air restriction gauge or indicator light, it shall be acceptable.

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

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

SPECIFICATIONS
A-15-BU-A-AM

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

D. VEHICLE COMPONENTS: (Continued)

11. ENGINE ACCESSORIES: (Continued)

Air intake hoses shall be 0.25 inch minimum thickness, molded hoses. Ref: Gates, Goodyear or equal. Silicone radiator and heater hoses. Hoses shall not be painted.
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 (cog belts are not required for power steering.)

12. EXHAUST:

Vertical tailpipe and muffler system or approved horizontal muffler and vertical tail pipe.
Tail pipe with elbow.
Exhaust system shall neither interfere with the operation of the dump body or equipment nor will it be close to any fluid tank, and **PERMIT WING PLOW INSTALLATION.**
The tail pipe shall be installed in a manner that will keep the muffler and tail pipe away from dump truck body. The flex in the body when operating on an uneven terrain must be considered in the design.
The muffler and tail pipe shall be shielded or insulated to protect personnel from burns when entering or exiting the cab. The shield shall be 180 degrees to 360 degrees and shall be of non-rustable material such as stainless steel or aluminum. Ref: Riker or equal.

13. FAST LUBE OIL CHANGE SYSTEM (FLOCS):

This system will be installed with all fittings, brackets, clamps and hoses. The system will be compatible with all fittings presently used by the Department. The final placement of the male half of the snap coupler on the equipment will be determined at the pre-build meeting. Aeroquip or equal. Ref: EQN-351A.

14. FRAME AND FRAME EXTENSION:

Resisting Bending Moment (RBM): minimum of 1,908,000 inch LB per rail, for the entire length of the frame, including extension, except where engine and radiator adjustments are required. Minimum frame RBM shall be approved by manufacturer's Engineering Department.
Frame material: Heat-treated carbon steel, at least 120, 000 PSI yield strength.
Main frame: Either straight channel or offset channel full length. Drop frames are not acceptable.
Bolt on or welded extension will not be accepted.
Front frame shall accommodate the Department's standard hydraulic PTO shaft and pump (per EQN-90), and the plow frame (per EQN-50). It shall provide easy service accessibility.
The truck offered must be designed to accommodate a right and/or left patrol style wing plow.
If a larger RBM is required to perform the specified operational duties, the vendor shall bid a frame concurrent with the intent and spirit of this contract. RE: Snow removal operations, full payload snowplow, right and/ or left patrol wing plow, etc.

SPECIFICATIONS
A-15-BU-A-AM

I. GENERAL TRUCK SPECIFICATION: (Continued)

D. VEHICLE COMPONENTS: (Continued)

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 lo-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. In – dash, integral with instrument panel be illuminated and shall be readable from the operator's seat.
Speedometer with odometer with a dual speedometer lead to interface with the Component Technology system.
Tachometer
Voltmeter
Parking brake indicator light.
Hydraulic fluid level gauge.

16. LIGHT – WARNING:

One (1) revolving warning light shall be mounted on the drivers side of the body cab protector, Ref: EQN-210B.

LIGHT – WARNING – MOUNTING BRACKET – WIRING:
Ref: EQN-210B.
The wire shall be protected along the entire underside of the cab shield and down the front of the bulkhead.
Location of light on cab shield shall be determined at the pre-build meeting.
A grounding wire shall be provided between the internal and external bracket at the pivot point.

17. PAINT:

Cab shall be painted PENNDOT yellow. Ref: DuPont 6808 for color only.
Frame: all underside components shall be primed and painted black.
Front bumper shall be painted black.
Plow frame shall be painted black with acrylic enamel (with hardener) low VOC.
Proper surface preparation is the sole responsibility of the OEM and body builder to comply with V.D.

SPECIFICATIONS
A-15-BU-A-AM

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

D. VEHICLE COMPONENTS: (Continued)

18. SAFETY:

Fire extinguisher: Rechargeable with vehicle mount. Mounted in the cab for easy and quick access. Ref: 2A: 10B: C.
Emergency triangle warning kit, with hold down. Warning Triangle Flare Kit, Ref: KD 610-4645, KD Lamp Co. (Tel: (513) 621-4211) or equal, stowed (fastened) in the cab. Ref: EQN - 66A
Cab and body shall have reflective enhancement per EQN-127.
Grab handles (2): Shall be furnished to provide "0ptimum safety" for entering the truck cab. Manufactures standard or aftermarket. Non-skid paint or rubber may be utilized, (non-skid tape is unacceptable).
Ref: Non skid paint, Gamma Laboratories (Tel. 304-489-2828.)

19. STEERING:

Power steering: Dual integral or single integral type hydraulic with 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.
Hydraulic supply pump: Vane type or roller type sufficient oil flow to permit one (1) steering wheel revolution per second with front axle loaded to rated capacity, with plow on, in a “park” condition. Ref: Vickers V-20 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) quarter capacity, incorporating a filter which is easy to remove and replace.
The remote filter referenced above shall be certified and engineering approved in conjunction with the appropriate pump.
Cogged belts not required on power steering system.

20. SUSPENSION: FRONT

9,000 LB capacity at ground each front spring (Min).
The six (6) front spring pins or bearing/bushing shall be furnished with 360-degree grease grooves to insure adequate lubricant penetration.
Spring hangers shall be heavy castings with sufficient pin and bearing surface to render trouble free service.

21. SUSPENSION: REAR

Suspension shall be tailored to axle loads and shall be adequate to sustain maximum GVW without overload or permanent set.
11,500 LB capacity at ground each rear spring.
2,250 LB capacity, separate auxiliary spring each side.

SPECIFICATIONS
A-15-BU-A-AM

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

D. VEHICLE COMPONENTS: (Continued)

21. SUSPENSION: REAR: (Continued)

The spring hanger brackets shall be severe duty castings with sufficient bearing surface/wall thickness to prevent premature bolt wear.
The spring center bolts shall be a minimum of .4375 inch size preferably .5000 inch
The rear spring hanger pins shall be the greaseable type.
Bolts must be of sufficient length to go through the washer, spring bracket and truck frame with sufficient length to install a self-locking nut.

22. TANK – FUEL:

Safety-type fuel tank as per the requirements of FMVSS. **Dual tanks are unacceptable.**
One (1) 80 GAL minimum total capacity aluminum or stainless steel unpainted, frame mounted, under the left door.
Tank mounting hardware and brackets shall be for "sever duty" applications. Heavy-duty aluminum or stainless steel with minimum 2 inch wide straps with rubber shims/liners.
Accessible fill pipe with dump body down (located at either end of tank to avoid interference with steps).
System shall be a top draw and top return line.

23. WHEELS/TIRES:

GENERAL:

The truck shall be equipped with hub piloted steel disc wheels for tubeless tires. The wheel end shall be equipped with outboard cast brake drums, and 15 degree tubeless steel wheels, hub piloted, 10 hole—285-75 mm bolt circle with 22 mm two-piece flange nuts.

Front: Wheels: 22.5 x 9.00 10 hole---285.75 mm bolt circle with 220 mm bore, tubeless steel disc wheel rated at 10,000 LBS at a maximum inflation pressure of 130 PSIG. Accuride part number 29039.

Rear: Wheels: 22.5 x 8.25, 10 hole – 285.75 mm bolt circle with 220 mm bore, tubeless steel disc wheel rated at 7,500 LBS at a maximum inflation pressure of 120 PSIG. Accuride part number 28828.

The dual rear wheel/tire assembly shall have clearance between the tires, which permits the use of dual tire chains.
Wheel-Guard Separators: The wheel ends shall be equipped with the Accuride part number 5903 Wheel Guard Separator as follows:

Front axle – between the wheel and the brake drum.
Rear axle – between the inner dual and the brake drum and between the inner and outer duals.

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

SPECIFICATIONS
A-15-BU-A-AM

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

D. VEHICLE COMPONENTS: (Continued)

23. WHEELS/TIRES: (Continued)

TIRES: ALL TIRES WILL BE RADIALS
FRONT – 315/80R 22.5 LOAD RANGE L
REAR - 12R22.5 LOAD RANGE H

MANUFACTURER	FRONT TIRE	REAR TIRE
Goodyear	G – 291	G – 124 or 164RTD
Michelin	XZY-3	XDE-A/T

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

OPTION # 1 - MANUAL:

Geared for PTO application, right and left side or right side and bottom.
Magnetic drain plug.
Input transmission shaft: 2 inch
12 to 1, minimum 1st gear and reverse ratio.

OPTION #2 – AUTOMATIC:

Dash mounted console with push button shift selector.
There shall be an external oil cooler.
Oil cooler for transmission required due to prolonged transmission torque converter operation in low gears.
Cooler size must be provided to keep the transmission fluid at an acceptable operating temperature under these prolonged conditions. (Water-to-oil type cooler).
An Allison approved cooling system shall be installed regardless of whether retarder is incorporated in the system or not.

SPECIFICATIONS
A-15-BU-A-AM

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. DUMP BODY AND EQUIPMENT:

1. DUMP BODY, ALUMINUM:

Five yard (approx.) water level without sideboards.
Seven yard (approx.) water level with sideboards.
Ref: EQN-76.
Front Body bulkhead: Minimum 0.15625 inch aluminum with a minimum of 12 inch above body sides.
There shall be a shovel holder assembly mounted on the left front of bulkhead (final position to be determined at the pre-build meeting). Ref: Akron Foundry AT-2.
Rear corner posts: On both sides, full depth, on-piece construction from the top of the tailgate to the bottom of the rear bolster and free of holes.
Rear bolster: One piece, full depth and full width.
Spreader chain holders: Both sides, top and bottom of the rear corner posts.
All body welding shall be full welding.
Bed Prop: There shall be two (2), three position, self positioning stow away bed props per EQN-62.
There shall be midway sideboard supports (left and right)

2. TAILGATE, ALUMINUM:

Ref: EQN-76.
Tailgate, manufactured from grades 5454H34 and 6061T6
Tailgate 40 inch (minimum), body sides 30-34 inch (approx.)
Double acting five (5) panel tailgate with offset hinges.
Two (2) "J" hooks welded to the tailgate for chain hangers.
1.25 inch dia. Greaseable self-aligning top hinge pins with tapered end and with sufficient length for easy removal. Pins shall be affixed with chains to prevent loss and be non-rotating.
Top hinge plate, aluminum, or steel with replaceable heavy-duty bushings and greaseable fittings.
0.375 inch spreader chain, non-rusting and able to accommodate 0.5 inch thick aluminum chain holder or 0.375 inch thick steel chain holder. Minimum edge distance 1.5 inch.
Tailgate chains shall be covered with expandable braided sleeving of monafilament construction. Ref:Fairmont, (Tel: 304) 366-4600) Part No. Expando Grade DM –color black or yellow.
Four (4) tailgate chain brackets. Two (2) on each side.
Severe duty tailgate attaching brackets.
Aluminum tailgate with built in light bar. Ref: EQN-81X.
Body lighting: -Ref: paragraph I.D.9 ELECTRICAL CHASSIS – WIRING HARNESS, AND EQN-81X.
Coal chute gate with levers and operating handle. AISI Type 304 stainless steel. Ref: EQN-64 Aluminum.
Air operated Tailgate per EQN-78A: Tailgate must be operated via an in-cab dash mounted switch.. All air piping and connections must be D.O.T. approved with .250 inch nylon tubing and brass compression fittings. Spring-over-air or air to air is acceptable.

SPECIFICATIONS
A-15-BU-A-AM

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. DUMP BODY AND EQUIPMENT: (Continued)

3. BODY SIDES, ALUMINUM:

Ref: EQN-76.
0.25 inch thick aluminum of grade 5454H34 for aluminum body.
Top rails: Fully boxed and completely closed by "continuous" welding. Both sides.
Vertical side braces: A minimum of three (3) per side on proper centers in addition to the front and rear corner posts. Side braces and front posts shall be furnished with bottom drain holes.
Aluminum body shall be isolated from the steel frame rails at the hinge by installing Mylar material.

4. FLOOR, ALUMINUM:

Material: .3750 inch thick minimum, abrasion-resistant aluminum 545H34 for aluminum body.
One (1) piece construction, welded to all cross members, side panels and longitudinal members. Area reinforcements where necessary. Ref: EQN-76.

5. BODY STRUCTURE, ALUMINUM: The body shall be "stacked construction" aluminum.

Dump Body		Aluminum
Longitudinal member	Size	6 inch I-Beam mm.
	Wt.	6.1 LB/feet
	Material	Al 6061T6
Cross-member	Size	4 inch/I-Beam min.
	Wt.	2.70 LB/feet
	Material	A1 6061T6

4 inch channel cross members of equal strength are permitted at the front and rear of body to finish the unit, and in the area where hoist box is located.

5. BODY STRUCTURE, ALUMINUM

The body shall be reinforced to withstand SEVERE duty service. Ref: Dump body up while spreading salt and anti-skid material or excavation rip rap being dropped in the bed.
The longitudinal beams and channels specified are minimums and may exceed dimensions to permit proper hoist mounting.
Heavy gussets of minimum size 4 inch x 6 inch 0.375 inch thick for aluminum shall be furnished at all cross members on the outside. Where not possible, they will be furnished on the inside.

6. CAB SHIELD, ALUMINUM:

Ref: EQN-76. Full width cab shield with no offset for exhaust stack.
Material: Minimum 0.15625 inch thick aluminum.
Continuous welding on front and cab shield throughout.
One-half (1/2) cab shield with a minimum of four (4) inch lip on front extending over cab.
The body cab shield shall have sufficient clearance to insure that the shield will not hit the exhaust system when dumping on uneven terrain.

SPECIFICATIONS
A-15-BU-A-AM

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

F. BODY EQUIPMENT Aluminum:

NOTE: All mounting procedures shall be in accordance with NTEA standards.

1. Integrally designed/engineered to eliminate body side shifting on uneven terrain.

2. Capable of being utilized in raised position for extended use while spreading salt and ant-skid materials.

NOTE: Hydraulic fittings shall be mounted above the module, and the vertical apron shall be cut out above the frame to facilitate their placement. Receiver pin shall be located on the outside of the module.

NOTE: Acceptable body companies: (No Substitute, prior to bid approval necessary).

J & J Truck Bodies & Trailers – Somerset P.A.
Benson International, Inc, Mineral Wells W. Va.
Warren, Inc. Collins, MS
Thiele, Inc, Windber, PA
R/S Body Co, Richmond , KY
Godwin Man. Co., Dunn, NC
Tibrook, Brookville, PA

1. ACCESSORY PLATE:

There shall be an accessory mounting plate installed Ref: EQN-22.
Final Location shall be determined at the pre-build meeting.

2. BED UP ALARM:

A safety warning light dash mounted and alarm installed. Switch shall be set at 49 degrees +/-1 degree dump angle to alert the operator and to prevent the hoist cylinder from going fullstroke. Switch shall be mounted in accessible area of the body of the dump bed located away from road splash etc.
NOTE: SWITCH SHALL BE MECHANICAL, MECURY TYPE SWITCHS are not ACCEPTABLE.
Ref: Scott Electric (Simines) Switch – SIA3SEO3-AR1
Lever - SIA3SXO3-KL200

3. CHAIN BOX/s:

The final size and location shall be determined at the pre-build meeting.

2 boxes – with no wing, 1 box - with left or right wing / 0 box – with dual wing.

Chain boxes per EQN-32. The boxes shall be aluminum with aluminum safety grating overlaid. There shall be a minimum of four (4) .750 inch dia. Drain holes in the boxes flooring. The hinge shall be rod with nylon bushings. Piano hinge is unacceptable. Final positioning of these boxes shall be behind the swept back bumper and outboard of the left and right frame channels.

SPECIFICATIONS
A-15-BU-A-AM

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

F. BODY EQUIPMENT Aluminum: (Continued)

4. HOIST CYLINDER:

There shall be a metal identification tag with the manufacturer's model number, serial number and address. Mounted to the cross shaft in a tube base. The base may be cast or fabricated (no bolts and angle).
Hoist cylinder reference: Commercial No. SD63CB – 78 (2 inch pin size both ends) or Custom No. DAT 63-197-78 (2 inch pin size both ends option 8 for rod end and option 3 for base end). (No substitute, standardization.)
Ref: EQN-76C.
Upper pin shall be fitted with a remote grease connection per EQN-63.

5. HOIST HARDWARE:

The rubber cushion minimum 2 inch thick, and the width equal to width of frame rail, shall attach to longitudinal body member with slotted rubber and track assembly integral with body longitudinals. Note: Laminated rubber is unacceptable.
All mounting procedures shall be in accordance with NTEA standards.

1. Integrally designed/engineered to eliminate body side shifting on uneven terrain.

2. Capable of being utilized in raised position for extended use while spreading salt and anti-skid materials.

Dump hinges shall be fully welded to long member if steel and aluminum shall be bolted with grade 8 bolts (minimum 8 bolts).
A three-position stow-away safety prop shall be furnished. (Self positioning), per EQN-62.
All pivot points shall have a minimum of one (1) accessible grease zerk to insure adequate greasing.
20 US ton net payload capacity.
Double acting, hydraulic power-up and down cylinder.
49 degrees plus or minus 2 degrees dumping angle with bumper stops and safety chain or approved device in segmented conduit.
Mounted in a channel nest assembly attached to chassis frame.
There shall be a relief mechanism incorporated within the hydraulic system to prevent damage.
2 inch dia. Min. hoist hinge pin sized to withstand severe use. Full width.
2 inch dia. Min. Lift pins.

SPECIFICATIONS
A-15-BU-A-AM

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

F. BODY EQUIPMENT Aluminum: (Continued)

6. HOIST HARDWARE DETAILS:

Ref: EQN-20X
Ref: EQN-76
Ref: EQN-91
Ref: EQN-94
Ref: EQN-95
Ref: EQN-123

Detail A – Chain holder
Banjo type cut-out to hold tail gate chain
All corners must be angled or rounded for safety
Full welding
Ref: EQN-76

Detail A – Chain holder
Aluminum 0.5 inch thick for aluminum body.

Detail B – Tailgate hinge
Replaceable bushing with greasing capability
The edge distance shall be minimum of 1.75 inch thickness

Detail B – Top Tailgate pins
1.25 inch dia. Steel pin with tapered end.
C-1020 HRS Steel.

Detail C – Tailgate chain bracket
Two (2) per side, total of four per tailgate
Aluminum

Detail D – J Hooks
Two (2) per tailgate

6. PLOW FRAME:

Plow frame shall be furnished and installed as per attached drawings and shall be approved by the truck manufacturer's engineering department. The plow frame shall be per EQN-50.
Zerk fittings shall be protected per EQN-64.
Snow plow lights to be installed Ref: EQN-124 or approved body builder design.

SPECIFICATIONS
A-15-BU-A-AM

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

F. BODY EQUIPMENT Aluminum: (Continued)

7. SAFETY:

Safety self-cleaning type grid steps welded to both sides between vertical braces, full length and flush with outer edge of vertical braces per EQN-76.

A slide-in type, Ref: Bustin Industrial products, two or three-step ladder, 15 inch wide x approximately 32 inch high, mounted under the dump body on the driver's side between the first and second vertical side body braces. Brackets shall be welded to the underside of the running board. Ref: EQN- 56.

The body and ladder step material shall be per EQN-76 sheet 1 of 10 steel or aluminum. (Aluminum only on aluminum body.)

A short piece of bar stock shall be used above steps to serve as a grab safety handle for body entry. Steps (minimum of two) made from Bustin, Ohio Grating, or IKG Industries safety step material, are required on the driver's side and inside the bed for safe entry and exit.

There shall be a pair of wheel chocks with holders (location of holder to be determined at pre-build meeting). Ref: EQN-82

Under ride protection shall meet all the requirements set forth in EQN-118.

8. SPLASH GUARDS:

Ref: EQN-66.

Steel, 0.172 inch (8-gauge U.S. Standard) or aluminum 0.250 splash guards shall be attached to the dump body on each side behind the rear most dual wheel and extend downward to accommodate a 30 inch or 36 inch flap in order to meet Pennsylvania State Inspection requirements. Mud flap sizes permitted are 30 inch or 36 inch. (No substitute, standardization). The rubber splashguards shall be bolted to these metal splash guards using self-locking nuts and metal strips.

The forward splash guards shall be steel for steel body or aluminum for aluminum body, and extend downward ¾ of the length of the rear splash guard/mud flap, with a ¼ length, unmarked mud flap attached for the remaining distance.

Forward splashguard shall have a 1 inch lip for entire length-outside extremity (90 degree) with bottom outside corner rounded.

Both front and rear splash guard assemblies shall be properly braced.

Splashguards shall be full length and width with no holes cut in it to accommodate salt lights.

9. WELDING:

All welding shall be in accordance with standard welding practices as set forth by the American Welding Society.

All vertical and horizontal seams of the body sides and ends shall be continuous welds, full penetration, without skip welds.

SPECIFICATIONS
A-15-BU-A-AM

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

F. BODY EQUIPMENT Aluminum: (Continued)

10. CENTRAL HYDRAULIC SYSTEM:

The pressure compensated, load sensing central hydraulic system shall operate all functions (plows, dump body, spreader and auger circuits) from an electric/ hydraulic system independently and simultaneously, without interruption of any other hydraulic functions.
All controls and components shall be of the latest design and installed to provide simple and convenient operations.
All system operations shall be achieved from a single pump matching all required flow and pressure demands.
The use of accumulators or auxiliary pumps is not acceptable.
Hydraulic tool operation will be included through both spreader circuits and will not require any type of cooling.
This system shall provide the most fuel efficient, safest, simplest and consistent operation possible.
All hydraulic components shall be installed and serviced by a single manufacturer.
Full responsibility for a serviceable system lies with successful bidder.
All wiring shall be securely clamped at approximately 18 inch intervals, shielded from exhaust and include a protective sleeve where necessary to prevent damage and/or failure.
All electrical connectors shall be treated with die-electric grease.
All systems shall be thoroughly tested and calibrated before delivery.
Upon start up the hydraulic system shall be operated at maximum flow for not less than 15 minutes and then have a new hydraulic filter installed on the truck.
It shall be the sole responsibility of the successful truck manufacturer and Component Technology to ensure that the chassis and the ground control wiring harness is totally compatible.
An operation manual, parts and maintenance manual shall be provided with each unit.
A schematic as well as a parts list shall be provided with the completed unit.

11. CONSOLE AND POWER DISTRIBUTION CENTER:

Console Assembly: Shall be Component Technology MultiGuard SG7 with all joysticks being fully proportional, NO SUBSTITUTE STANDARDIZATION.
Kit number SG08020015 TYPE II No Wing
SG08020016 TYPE II with Wing
Kit shall include GL-400-5-6.
All wiring for the kit shall be included and be TPE type wiring external to the cab.
Hydraulic system digital pressure gauge – Wika 907.15.506 w/TYPEc10 TRANSDUCER
Valve enclosure
Bulkhead fitting for auger wiring shall be mounted in the rear module
Prewet system part number SG06070008
80 gallon poly tank and plumbing kit with stainless steel tailgate brackets installed on the rear of the truck. Reference: Component Technology tank part number RES-80-POMNIBUS, plumbing kit SG0609001. The tank assembly shall be installed utilizing an extended upper hinge pin. The bottom of the tank shall not cover the main integrated lights in the tailgate. The tank bracket shall be stainless steel. Reference Benson Body, part number PD-0800.

SPECIFICATIONS
A-15-BU-A-AM

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

F. BODY EQUIPMENT Aluminum: (Continued)

11. CONSOLE AND POWER DISTRIBUTION CENTER: (Continued)

All hydraulic valve operations shall be achieved from within the cab by a single operator.
All controls shall be securely attached, within easy reach of operator and console mounted.
All controls shall be connected to the valve/s via electronic cable and power distribution center.
All electronics associated with the PDC and console shall be protected against and shall not cause interference to the operation of the vehicle or the land mobile radio communications system when properly installed in the vehicle.
Base shall be of steel construction conforming to drawing included in EQN-95.
Cabinet shall be constructed with 14 gauge steel, and will provide an access panel for ease of service.
Unit shall contain circuit protection for up to 12 auxiliary functions that control 15-ampere relays with automatic reset breakers.
Unit shall contain a terminal strip capable of interfacing with the specified body wiring harness if appliciable. Terminal strip will be located inside base unit and have at least three unused sections for further expansion.
Unit shall be capable of adjustment vertically ad horizontally to allow for comfortable positioning for the operator.
Unit shall come with full wiring schematic documentation.
Unit shall come with pin-outs for customer accessories such as two-way radio, etc.
Main electrical connection shall be protected by a 80 ampere manual reset circuit.

12. DIRECTIONAL CONTROL VALVE:

The hydraulic control valve shall be a REXROTH: No substitute, standardization. There shall be a 4 port valve block to control pre-wet etc. as part of the main valve assembly. Part # as listed below.

WITHOUT WING PLOW: SG04190001 Rexroth M4 3 section valve w/ 3 function end cover

WITH WING PLOW SG04190002 Rexroth M4 6 section valve w/ 3 function end cover

Main control valve and enclosure shall be mounted outboard on the curbside frame rail ref: EQN-23 all valve coils, end covers and the power beyond port must be accessible.
There shall be one (1) return lines from the valve to the return manifold.

SPECIFICATIONS
A-15-BU-A-AM

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

F. BODY EQUIPMENT Aluminum: (Continued)

13. HYDRAULIC ALARM AND SHUTOFF:

There shall be a low hydraulic oil alarm system to alert the operator of a low hydraulic oil situation and allow ample time to take preventative action and avoid damage to the central hydraulic system pump.

It shall be operated via a 12 volt system. All wiring shall be routed to prevent damage from heat, sharp edges and moving parts.

An in-tank float switch shall be mounted to provide a signal to a dash mounted light. The dash light shall come on whenever the oil level drops below a ten (10) Gallon reserve. Assembly shall be an MP Products, Inc. RIG1-Series. All switch wires shall be hermetically sealed in high grade epoxy. The indicator light shall be console mounted. Indicator light lens shall be red in color. Light shall be clearly identified “Low Hyd. Oil”. Switch shall be adjusted to ensure that light does not prematurely illuminate (i.e., bed being raised, with adequate reservoir oil, should not cause light to illuminate).

14. HYDRAULIC HOSE:

All hose and hose ends shall be matched and assembled on a matched hose machine to prevent hose failure. All hydraulic plumbing practices shall conform to JIC H11 standards. Pressure hoses shall be 100R2, return lines shall be 100R1, and suction lines shall be 100R4. Velocity in pressure sue lines shall not exceed twenty (20) feet per second, return lines not to exceed ten (10) feet per second, and not to exceed four (4) feet per second in suction lines. All hoses shall include JIC female swivel ends with the exception of the suction line. All hydraulic components shall have SAE porting wherever possible.

All hydraulic hoses shall be securely clamped at approximately 18 inch intervals, shielded from exhaust and include a protective sleeve where necessary to prevent damage and/or failure. All hoses shall have JIC swivel connections at each end and be located in such a manner to aid in easy component replacement per EQN-94.

15. HYDRAULIC PUMP:

PUMP shall include a low oil shut DOWN WITH OVERRIDE Shutdown shall be direct mounted to the pump. Remote mounted valve will be unacceptable.

The pump shall match system flow and pressure (horsepower) requirements to provide maximum fuel economy. Ref: EQN-90, EQN-91

No unloader or by-pass system will be an acceptable means of regulating excess oil flow.

Pump part number: Parker Hannifin PAVC10092L4AP22X3392 KEYED Crankshaft Mounted,

Full flow relief valve to be installed between pump and control valve. Relief valve setting shall be factory pre-set at 2500 PSI. Relief valve may be mounted inside the main valve enclosure or in the return manifold.

Or

Pump part number: Rexroth Model A10V01OO LH ROTATION: BH00979162

SPECIFICATIONS
A-15-BU-A-AM

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

F. BODY EQUIPMENT Aluminum: (Continued)

16. HYDRAULIC PUMP DRIVELINE:

Hydraulic pump SHALL BE DRIVEN by a 1310 Spicer series or NEAPCO factory balanced drive shaft, or approved equal.
Driveline shall be capable of 130 foot pounds of torque and have tubular shaft of 1141 steel. Tubular shaft will have 16 spline heat treated to 40 Rockwell hardness.
A groove shall be machined the length of the shaft to provide proper phasing of universal joints at time of shaft assembly.
Driveline installation should be in accordance to manufacturer's recommended procedures.
Slip assembly shall provide not less than 2.25 inch of travel to allow ease of engine drive belt replacement.
The truck engine radiator and frame construction shall readily accommodate the installation of a front mounted crankshaft driven hydraulic pump.
The engine crankshaft pulley or vibration damper shall be drilled and tapped to accommodate a power take off drive shaft adapter plate required under hydraulic system section of these specifications.

Referenced models, Mack FWPTO, Cummins REPTO or approved equal. Ref: EQN-90.

17. PLOW SAVER:

There shall be a plow saver device COMPONENT TECHNOLOGY PART NUMBER SG03020008 installed.

18. OIL RESERVOIR AND ACCESSORIES:

Aluminum or stainless steel, all welded construction
The oil reservoir shall not be less than 45 GAL capacity, filled with 1SO 32AW hydraulic oil
Cylindrical with flat or shallow dish sides, steps shall be included
Tank straps shall be heavy duty (minimum 2 inch wide) stainless steel or aluminum with rubber shims/liners.
Liners shall interlock around the tank strap edges to eliminate them from walking.
Center mounted baffle plate to prevent oil flow from venting directly to section port
A drop tube shall discharge all return oil flow from venting directly to section port
Tapered outlet shall be below oil level at all times to prevent air entrapment
A magnetic dip stick shall be mounted into reservoir from a top NPT female port
Tank shall be mounted under the right door
Tank shall be clearly labeled "HYDRAULIC FLUID ONLY"
Lockable tank filler cap assembly, model 57XL-40 (40 micron with chain) L.C. as manufactured by Lenz. Tel: (937) 277-9364
Suction line/strainer: 125 micron with 3 PSI bypass rated above 47 gpm submerged at all times ¼ turn, 2.5 inch full flow ball valve in the suction line as close to the tank as possible Strainer integral mounted in a 4 inch NPT female opening in the bottom of reservoir with a 3 inch female NPT opening.

SPECIFICATIONS
A-15-BU-A-AM

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

F. BODY EQUIPMENT Aluminum: (Continued)

18. OIL RESERVOIR AND ACCESSORIES: (continued)

Return manifold: There shall be a return line manifold mounted on the curbside frame rail, final location to be determined at the pre-build meeting.
Return manifold shall be an 8 port header block with 8 # 16 SAE openings and 2 # 24 SAE openings at each end.
Header shall be an Alamo, Damon or Hycoa or equal.
Return line filter: Filter shall be mounted on the outside of the curbside frame rail
Filter shall be a Parker microglas part #80CN-210Q-15739, 300L @10 micron or MPFiltri – LMP2602BAF1A012M 300L @ 10 micron
There shall be a differential pressure switch with boot to activate a warning light mounted within the console.
Filter shall be remote mounted with spring controlled by-pass set at 25 PSI
Cab mounted filter contamination indicator set at 23 PSID

19. TEST PORT:

There shall be a hydraulic gauge or a 5101-6B complete quick coupler or hydraulic gauge (with dust cover located in the pressure line entering the main valve assembly located inside the valve enclosure. Quick disconnect shall be bracket mounted to the inside of the enclosure, easily accessible so that a shop pressure gauge (not to be installed or included) maybe easily visible for test purposes. Ref: EQN-20X.

20. INSTALLATION PRACTICES:

THE USE OF ANY OF THE FOLLOWING ITEMS OR PRACTICES WILL NOT BE ACCEPTED.
Non-steel fittings on hydraulic pressure lines.
Excessive use of elbows on hydraulic pressure lines.
Use of thread tape on hydraulic fittings.
Use of galvanized fittings or components on hydraulic system.
Improper hydraulic line size.
Use of high-pressure hose for hydraulic suction line.
Scotchlok-type wire splices.
Non-insulated wire splices.
Improper hose or wire routing near exhaust, over-sharp edges or through holes without grommets, or sharp edges.
Improperly prepared, primed and painted surfaces.
Non-fused electric circuits.
Hydraulic circuits without pressure relief protection.

21. REQUIREMENTS for bed speed;

Bed speed shall be tested at 1500 rpm at normal operating temperature

Bed speed full-up shall be 15 seconds maximum

Bed speed full down shall be 10 seconds maximum

SPECIFICATIONS
A-15-BU-A-AM

II. GENERAL WING PLOW SPECIFICATIONS:

A. INTENT STATEMENT:

The purpose of these specifications is to describe a full floating patrol wing plow with tripping action and telescoping action mechanism and a capability to lower the assembly in the travel position for improved visibility and to allow emergency egress. Ref: Tenco or approved equal.

It shall be the responsibility of the vendor to certify through proper chassis stress analysis the adequacy of the existing truck frames to accommodate the patrol wing plow in combination with a front mounted plow weighing approximately 3000 LB.

The aforementioned plow will be used for "severe duty" high-speed plowing by the Pennsylvania Department of Transportation. The attached drawings and written text are to be considered minimum and the manufacturer shall reinforce the plow, framing and hydraulic cylinders by means of gussets, or increased material strength or thickness to present a plow designed to meet the severe duty" operational setting.

The Patrol Wing shall be designed to be attached or detached independently from the frame assembly. It shall be installed in such a manner as to ensure quick access to the engine and all accessories. (Hood on dump truck shall tilt without obstruction, if applicable.)

All parts not specifically mentioned, which are necessary in order to provide a complete snow plow shall be furnished by the successful bidder. The plow fabrication and assembly shall be to the latest engineering techniques.

All steel unless otherwise specified, shall be hot-rolled steel (HRS) as per ASTM A-36.

When wing assembly is disconnected from the truck, no parts may extend past the body line of the truck.

All bolts shall be grade 8.

A complete set of drawings showing all details and dimensions, sizes, etc., and literature of the plow proposed to be furnished.

B. PLOW COMPONENTS:

SHOCK ABSORBING REAR WING BRACE:

The rear wing brace shall be a minimum of a single fixed hinge pin type with an adjustable bottom wing brace, or the formed type wing tube support to attach to a single fixed hinge pin.

SPECIFICATIONS
A-15-BU-A-AM

II. GENERAL WING PLOW SPECIFICATIONS: (Continued)

B. PLOW COMPONENTS: (Continued)

SHOCK ABSORBING REAR WING BRACE: (Continued)

The rear wing brace shall be equipped with a telescoping arm and an adjustable type tension spring. If required by manufacturer.

The rear wing "A" frame support strut/girder arrangement of MC 7 inch x 22.7 LB/feet, minimum channel, or fabricated from 7 inch x 12.25 LB/feet channel, 6 inch/feet x 8.2 LB/feet channel, .500 inch plate, 6 inch x 4 inch x .3750 inch structural tubing and other component pieces. It shall be attached in such a way that the load is properly distributed to both chassis frame rails. "A" frame shall be detachable for summer use. Ref: EQN-60A.

One (1) top wing brace cylinder constructed of 3 inch x 15 inch minimum double acting ram, chrome plated piston rods.

Adjustable trip-spring mounted from wing lift cylinder housing to the back of wing.

The rear brace shall be equipped with a 3 inch x 24 inch or 3 inch x 15 inch DA cylinder to actuate the telescoping strut with cross-over relief.

Bottom wing brace constructed of 4 in/10cm O.D. square outer tubing with a 3 inch O.D. square inner tube. Wear guides are welded to inner side of 4 in/10cm tube and to the outside of the 3 inch tube to prevent binding.

The rear wing lift cylinder will be a double acting 3 inch x 27 inch minimum cylinder, chrome plated piston rods with neoprene packing. Cylinder shall float with a 500 PSI relief on the down side.

The tripping spring/eyon rubber compression will be mounted to allow the wing to trip in any of the telescoping positions. The spring/eyon rubber compression shall be adjustable and have a quick release handle to remove tension for detaching the wing. The spring/eyon rubber compression will also be mounted to have tension on the wing in all telescoping positions.

The telescoping strut cylinder shall have incorporated in the hydraulic system an adjustable pressure relief valve for safety, when contacting heavy objects.

FRONT WING SUPPORT, OR FRONT WING POST:

Front Wing Mast:

Wing mast shall not block the O.E.M. headlight.

I beam 7 inch x 15.3 LB/feet minimum, wing post.

.6250 inch minimum wing post slide lift with 10inch minimum lift from ground to bottom of plow edge for travel.

Front wing post cylinder double acting ram - direct (no cables) with float and 500 PSI relief on the down side.

Chrome plated piston rods, adjustable chevron type packing, neoprene wipers and bleed screw.

Hydraulic hoses, to SAE 100RZ, 022700, AEROQUIP-195, Hi-Impulse, (no substitute, standardization).

SPECIFICATIONS
A-15-BU-A-AM

II. GENERAL WING PLOW SPECIFICATIONS: (Continued)

B. PLOW COMPONENTS: (Continued)

Front Wing Mast: (Continued)

Front wing post and support strut/girder arrangement shall be attached in such a way that the load is properly distributed to both chassis frame rails without the use of bracing tubes.
Support struts shall be 1.250 inch diameter schedule 80 ASTM A106 Grade A or B seamless pipe brace, minimum of two.
One strut shall be mounted to chassis frame.
One strut shall be mounted to plow frame.
Horizontal support girder 7 inch cross channel or 7 inch ship and car channel at 22.7 LB/feet or tubing 7 inch x 4 inch x .3750 inch.
Bolts shall be minimum grade 8, .6250 inch N.C.
Hinge assembly shall be detachable from the slider assembly of the wing mast.
Formed wing post mounted on cross tube mounted to truck frame members.
Wing slide plate bears on flanged surfaces of formed channel enclosing single acting cylinder, which provides full power up.

Wing Plow Alarm (Mechanical): Wing plow shall have a mechanical alarm system to alert the operator of the position of the plow. It must be visible from the driver's seat. Ref: EQN-60A.

HYDRAULIC POWER:

The front wing mast shall have a double acting cylinder vertical lift type, hydraulically controlled by a double acting cylinder direct lift. The front cylinder shall have quick connect coupler/s.

Double Acting Cylinder:

A 3 inch x 15 inch minimum double acting cylinder from rear "A" frame to mold board to raise the rear of the wing and fold the wing close to the truck for transport.

SNOW LEVELING WING:

The wing assembly shall in no way interfere with the turning of the right or left front tire. The wing shall not be less than 11 feet long overall, 29 inch high at the front and 36 inch (minimum) high at the discharge end. The moldboard shall be fabricated from 0.1719 inch thick (8 USS gauge) minimum steel and weigh a minimum of 755 LBS.

It shall be drilled to accept standard AASHTO spacing as shown on attached drawing EQN-16A sketch attached and equipped with either a steel or rubber blade as specified.

SPECIFICATIONS
A-15-BU-A-AM

II. GENERAL WING PLOW SPECIFICATIONS: (Continued)

B. PLOW COMPONENTS: (Continued)

1. Rubber Blade:

The patrol wing shall be equipped with a 1.500 inch x 10 inch x 120 inch rubber cutting edge manufactured by Goodyear Tire & Rubber Company or an approved equal, secured to the wing moldboard by .6250 inch grade 8 plow bolts through a .3750 inch x 4 inch steel facing plate. The rubber blade shall be slotted 3.500 inch x .6875 inch to provide adjustment and shall be reversible to provide maximum wear.

2. Steel Blade:

The cutting edge shall be of .500 inch x 6 inch C1090 steel, at least 10 feet long. Per attached plow blade drawing, EQN-16A.

The wing plow shall have two cast wing shoes.

The patrol wing shall be hydraulically operated with the controls conveniently mounted, (to be discussed at pre-build meeting) in the truck cab with the addition of three valves to the existing valve bank. These valves shall provide lift to the front of wing, the rear of the wing and the folding of the wing toward the cab and control in and out of the strut. The front of the wing shall be controlled by a single acting ram mounted within wing post that permits the front of the wing to be vertically lifted for transportation purposes.

The rear of the wing shall be power hydraulically controlled and attached to tele-strut and a 3 inch x 24 inch double acting cylinder with .3750 inch quick disconnects, (male, female, cap and plug) which shall be connected to a 7 inch sloped channel located under the dump body and at the rear of the truck cab. The 7 inch channel shall be adequately supported by brackets and cross braces to the truck frame. Bottom bracing shall extend to the rear with bridge type bracing.

3. Tripping:

The wing shall be of the full tripping type consisting of a special spring-loaded front end. Tripping actuation shall be accomplished through a .8750 inch diameter wire torsion spring at the front end and a tension spring attached to the front and rear of the wing or eyon rubber compression system.

Each spring shall be adjustable and shall automatically return the wing to its normal plowing position after it has passed over the obstruction encountered.

Provision for locking out the tripping action shall be supplied for operations requiring a rigid wing.

SPECIFICATIONS
A-15-BU-A-AM

II. GENERAL WING PLOW SPECIFICATIONS: (continued)

B. PLOW COMPONENTS: (Continued)

The following minimum alterations shall be the responsibility of the successful vendor:

1. Add two Timbren load booster or active ride control stabilizers.

2. Brace right hand side plate to truck frame.

3. Add additional steel to side plates to provide increased strength and more substantial mounting for the 7 inch cross channel.

4. One (1) manually adjustable plow storage jack per EQN-60A.
NOTE: Pages 1 and 2 of EQN-60A indicate the general mounting arrangement desired.

INSTALLATION PRACTICES:

The use of any of the following items or practices WILL NOT BE ACCEPTED.
Non-steel fittings on hydraulic pressure lines.
Excessive use of elbows on hydraulic lines.
Use of thread tape on hydraulic fittings.
Use of galvanized fittings or components on hydraulic system.
Improper hydraulic line size.
Use of high-pressure hose for hydraulic suction line.
Scotchlok-type wire splices.
Non-insulated wire splices.
Improper hose or wire routing near exhaust, over-sharp edges or through holes without grommets, or sharp edges.
Improperly prepared, primed and painted surfaces.
Non-fused electric circuits.
Hydraulic circuits without pressure relief protection.
NOTE: All zerk fittings shall be threaded.

DIRECTIONAL CONTROL VALVE: (for a Single Right or Left Hand Wing)

The hydraulic control valve shall be a REXROTH and shall be part of the dump truck valve assemby: No substitute, standardization as provided in the Dump Truck Specification
Valves shall control the following functions, Wing plow front post, and wing plow rear post and wing plow rear telescopic
Electronic joysticks shall be PROPORTIONAL

SPECIFICATIONS
A-15-BU-A-AM

II. GENERAL WING PLOW SPECIFICATIONS: (continued)

B. PLOW COMPONENTS: (continued)

PLOW IDENTIFICATION:

Each unit shall bear the manufacturer's model number, serial number and weight affixed to the plow, by means of a permanently affixed non-rusting metallic tag located on the right hand backside of the moldboard as viewed from truck operator's seat.

PAINT:

Color: PENNDOT yellow, DuPont 6808 for shade only. All metal surfaces shall be cleaned prior to primer and final painting.

CONSPICUITY TAPE:

The Rear of the wing plow shall have a strip of retro-flective sheeting across the top and down the outside in order to outline the plow when viewed from the rear. Material shall be: 2 inch wide Reflexite Conspicuity II System of 3M Scotchlite Conspicuity Series 980, red/silver continuous backing.

TEMPLATE:

The successful vendor shall provide a metal template of the moldboard contour, including cutting edge cut out with each pilot.

SPECIFICATIONS
A-15-BU-A-AM

III. DRAWINGS:

EQN-16A	rev.	05-16-02	3 sheets	STEEL CUTTING EDGES FOR SNOW PLOW
EQN-20X	rev.	05-22-03	3 sheets	HYDRAULIC SYSTEM SCHEMATIC
EQN-22	rev.	07-01-03	1 sheet	FRAME MOUNTED ACCESSORY PLATE
EQN-23	rev.	03-03-00	5 sheets	HYDRAULIC COMPONENT OVERVIEW
EQN-32	dated	05-22-03	1 sheet	DUMP TRUCK CHAIN BOXES
EQN-50	dated	05-28-02	5 sheets	LOW PROFILE PLOW MOUNTING
EQN-56	rev.	06-16-05	3 sheets	SLIDING LADDER
EQN-60A	dated	01-29-00	3 sheets	SNOW PLOW PATROL WING GENERIC MOUNTING ARRANGEMENT
EQN-62	rev.	05-28-02	2 sheets	DUMP TRUCK BED PROP SYSTEM
EQN-63	dated	05-28-02	1 sheet	DUMP TRUCK REMOTE GREASE CONNECTION
EQN-64	dated	05-22-03	4 sheets	COAL CHUTE & TAILGAE APRON DUMP TRUCK BODY W/ALUMINUM TAILGATE
EQN-66	dated	05-28-02	2 sheets	SPLASH GUARDS-RUBBER-TRAILER AND TRUCK
EQN-66A	dated	03-19-03	1 sheet	FUSEE STORAGE BOX AND BRACKET
EQN-74	rev.	05-22-03	4 sheets	TRUCK-II AND IV REAR MODULE
EQN-76	dated	05-22-03	7 sheets	TYPE II DUMP BODY DETAILS 38,000 LB GVWR-SINGLE AXLE
EQN-78	dated	07-02-97	1 sheet	CB RADIO CONNECTIONS
EQN-78A	dated	06-03-02	3 sheets	AIR TAILGATE, HARDWARE (DUMP TRUCK)
EQN-80X	rev.	05-22-03	7 sheets	DUMP TRUCK WIRING-TYPE II & IV
EQN-81X	rev.	06-03-02	2 sheets	ALUMINUM TAILGATE WITH BUILT-IN LIGHT BAR
EQN-82	rev.	05-22-03	1 sheet	CHOCK AND HOLDER
EQN-90	rev.	05-23-03	page 1 of 3	PUMP ASSEMBLY

SPECIFICATIONS
A-15-BU-A-AM

III. DRAWINGS: (Continued)

EQN-91	dated	06-03-02	1 sheet	PUMP MOUNTING BRACKET
EQN-94	rev.	08-15-97	2 sheets	HOSES AND COUPLERS PENNDOT DUMP TRUCK
EQN-95	rev.	05-23-03	5 sheets	CONSOLE PEDESTAL
EQN-118	rev.	07-01-03	1 sheet	UNDERRIDE PROTECTION
EQN-122	dated	05-16-02	1 sheet	DUMP BODY TAILGATE REFLECTING SHEETING
EQN-124	dated	05-16-02	1 sheet	AUX. SNOW PLOW LIGHT PACKAGE
EQN-127	dated	05-16-02	1 sheet	REFLECTIVITY ENHANCEMENT
EQN-160	rev.	02-15-00	1 sheet	CENTRALIZED LUBE SYSTEM
EQN-210B	rev.	07-01-03	3 sheets	REVOLVING WARNING LIGHT
EQN-351A	rev.	07-01-03	2 sheets	FAST LUBE OIL CHANGE SYSTEM
EQN-507B	rev.	05-28-02	3 sheets	CONVENTIONAL DUMP TRUCK WEIGHT DISTRIBUTION MINIMUM DATA REQUIRED

NOTE: Drawings appear in sae/metric.

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

DRAWINGS APPEAR AT THE END OF THE SPECIFICATIONS.

SPECIFICATIONS
A-15-BU-A-AM

IV. MANUALS:

See manual information attachment in the bid package.

V. TRAINING:

See training information attachment in the bid package.

SPECIFICATIONS
A-15-BU-A-AM

VI. WARRANTY:

Per PCID No. 1075 Section E.1. and additional specific warranty items.
This warranty is in effect as follows, starting from date of acceptance by the Department:

BRAKE WARRANTY:

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

RADIATOR WARRANTY:

Manufacturers service and warranty policy for radiator shall be for two (2) years, 100% parts and labor plus an additional two (2) years, 100% parts only.

ENGINE WARRANTY:
The successful vendor and or supplying OEM shall provide the Department with a 100% parts and labor engine warranty FOR 60 months/ 150,000 miles minimum.

The successful vendor shall supply a copy of all items covered under their published extended engine warranty.

NOTE: the oil pan shall be warranted against corrosion, rust, rust thru etc. regardless of atmospheric conditions for 3 years, 100% parts only.

The published warranty shall be supplied with the pilot model.

TRANSMISSION WARRANTY:

Manufacturer's service and warranty policy for Manual, Autoshift and Automatic transmissions shall be three (3) years 100% parts and labor

DIFFERENTIAL/AXLE WARRANTY:

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

DUMP BODY WARRANTY:

Constructability and durability of body shall be guaranteed for four (4) years, parts and labor. A decal shall be affixed to the driver's door on the inside outlining this benefit and the company's name, address, phone number, and contact personnel. (Full warranty except wear and negligence).

Body hoist assembly shall be guaranteed for 3 years, 100% parts and labor.

Tailgate spring-over-air cylinder and air to air system - 2 years 100% parts and labor.

SPECIFICATIONS
A-15-BU-A-AM

VI. WARRANTY: (Continued)

CENTRAL HYDRAULIC SYSTEM:

Complete Central Hydraulic system and components 1 year 100% parts and labor including but not limited to the following:

Rexroth Valve
GL-400 Controller
Electronic Joysticks

Complete external TPE wiring harness shall be warranted for 3 years parts only.

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

ELECTRICAL:
Grote wiring harness shall be 7 years 100% parts. First year shall include 100% labor.
All LED lights shall be 10 years 100% parts.

WING PLOW WARRANTY:

The manufacturer's standard service and warranty policy shall be for a minimum of two (2) years. This warranty shall start on the final date of acceptance of the entire order and continue for the two (2) years thereafter, (2) full winter plowing seasons.

NOTE: WARRANTY FOR LABOR SHALL BE AT THE MANUFACTURES LOCATION OR IF A FIELD REPAIR IS COMPLETED BY PENNDOT THE MANUFACTURER SHALL REIMBURSE PENNDOT AT THE MANUFACTURES STANDARD PUBLISHED LABOR RATE.

SPECIFICATIONS
A-15-BU-C-AS

TRUCK – DUMP – CONVENTIONAL - 62,000 LB GVWR
HEAVY DUTY TANDEM DUMP TRUCK (TYPE IV)

052650 thru 053450

TRUCK, DUMP, TYPE IV, ALMN, AUTO (052650)
TRUCK, DUMP, TYPE IV, ALMN, AUTO, WITH RIGHT WING PLOW (052660)
TRUCK, DUMP, TYPE IV, ALMN, AUTO, WITH LEFT WING PLOW (052670)
TRUCK, DUMP, TYPE IV, ALMN, AUTO, WITH DUAL WING PLOW (052680)

TRUCK, DUMP, TYPE IV, ALMN. WITH AUTOSHIFT (052700)
TRUCK, DUMP, TYPE IV, ALMN, WITH AUTOSHIFT, WITH RIGHT WING PLOW (052710)
TRUCK, DUMP, TYPE IV, ALMN, WITH AUTOSHIFT, WITH LEFT WING PLOW (052720)
TRUCK, DUMP, TYPE IV, ALMN, WITH AUTOSHIFT, WITH DUAL WING PLOW (052730)

TRUCK, DUMP, TYPE IV, ALUMINUM, MNL (052800)
TRUCK, DUMP, TYPE IV, ALMN, MNL, WITH RIGHT WING PLOW (052810)
TRUCK, DUMP, TYPE IV, ALMN, MNL, WITH LEFT WING PLOW (052820)
TRUCK, DUMP, TYPE IV, ALMN, MNL, WITH DUAL WING PLOW (052830)

I. GENERAL TRUCK SPECIFICATIONS:

A. Intent Statement
B. Weight Distribution
C. Powertrain Overview
D. Vehicle Components

1. Alarm - Backup
2. Axle Front
3. Axle Rear
4. Brakes
5. Cab
6. Chassis
7. Clutch
8. Drive Line
9. Electrical
10. Engine
11. Engine Accessories
12. Exhaust
13. Fast Lube Oil Change System (FLOCS)
14. Frame and Frame Extension
15. Instrumentation

SPECIFICATIONS
A-15-BU-C-AS

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

D. Vehicle Components

16. Light - Warning
17. Paint
18. Plow Frame and Lights
19. Safety
20. Steering
21. Suspension: Front
22. Suspension: Rear
23. Tank- Fuel
24. Wheels/Tires
25. Transmission

E. Dump Body and Equipment

1. Dump Body, Aluminum
2. Tailgate, Aluminum
3. Body Sides, Aluminum
4. Floor, Aluminum
5. Body Structure, Aluminum
6. Cab Shield, Aluminum

F. Body Equipment: (Aluminum)

1. Accessory Plate
2. Bed Up Alarm
3. Chain Box/s
4. Hoist Cylinder
5. Hoist Hardware and Details
6. Plow Frame
7. Safety
8. Splash Guards
9. Welding
10. Central Hydraulic System
11. Console and Power Distribution Center
12. Directional Control Valve
13. Hydraulic Alarm and Shutoff
14. Hydraulic Hose
15. Hydraulic Pump
16. Hydraulic Pump Driveline
17. Plow Saver
18. Oil Reservoir and Accessories
19. Test Port
20. Installation Practices
21. Requirement for Bed Speed

SPECIFICATIONS
A-15-BU-C-AS

II. GENERAL WING PLOW SPECIFICATION:

A. Intent Statement
B. Plow Components
1. Shock Absorbing Rear Wing Brace
2. Front Wing Support or Front Wing Post
3. Hydraulic Power
4. Snow Leveling Wing
5. Installation Practices
6. Directional Control Valve
7. Plow Identification
8. Paint
9. Conspicuity Tape
10. Template

III. DRAWINGS:

IV. MANUALS:

V. TRAINING:

VI. WARRANTY:

SPECIFICATIONS
A-15-BU-C-AS

I. GENERAL TRUCK SPECIFICATIONS:

A. INTENT STATEMENT:

The purpose of these specifications is to describe a conventional, tandem-rear axle dump truck, equipped with dual rear wheels, dump body, hoist, hydraulic power system and snow plow hitch. It shall be capable of one-man operation while plowing snow and simultaneously spreading anti-skid materials or salt during winter operations, and of hauling, stockpiling and unloading maintenance materials into a chip spreader or paver during summer operations. Further it shall be capable of being loaded with front-end loader or self-propelled belt loader.

NOTE: Pennsylvania Department of General Services, PCID No. 1075, "*General Requirements for Bidding PENNDOT Vehicles/Equipment*", most current version effective at the time and date of bid opening, is included as a part of this specification. PCID No. 1075 may be reviewed and downloaded from the Department of General Services website, http://www.dgs.state.pa.us.
Delivery as required per Department of General Service PCID NO. 1075 Section "G". All units must be delivered within **270** days after receipt of the purchase order by the successful bidder.

B. WEIGHT DISTRIBUTION:

Weight distribution charts must be submitted with the pilot model for all models per Invitation To Bid. Weight distribution charts shall be submitted for two modes listed below. The weight distribution charts submitted with the pilot model shall be reviewed for their reasonableness, and any inconsistencies shall be clarified with the awarded vendor at the "pre-build" meeting.

1. Summer mode including that portion of the wing plow post and plow frame assembly that remains on the vehicle all year.

2. Winter mode with front plow, spreader and complete wing plow.

Each item listed on Drawing EQN-507B shall be noted and individually calculated in the vendor's submission.
Engineering certified weigh slip shall be provided with the pilot model and signed by the Manufacturer's Engineering Department.
It is understood that the components specified are minimum and manufacturer's Engineering Department recommends or deems necessary, particular weight distribution, a larger component or a larger GAWR totally. The burden of responsibility is hereby placed upon the Manufacturer's Engineering Department to supply a unit that is totally engineered.

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

SPECIFICATIONS
A-15-BU-C-AS

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

B. WEIGHT DISTRIBUTION: (Continued)

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

2. Front and rear axle legal weight distribution apply to non-emergency applications only! Winter weight distributions are required for payload information purposes only since winter plowing and spreading operations are exempt from legal weight restrictions. However, the total weight rating shall not exceed the manufacturer's GVWR for the vehicle that is offered. The weight imposed on the front and rear axles using the total GVWR shall be shown. (Overweight shown on the axles in these winter modes is for information only).

In addition to the Engineering Certified weight distribution provided at the pilot model inspection, the following information is required with the pilot model.

The vehicle shall be certified for 62,000 LB Gross Vehicle Weight Rating (GVWR). The GVWR shall be identified in the cab or on the door as the final complete certification label (minimum rating).

ACTUAL TRUCK WEIGHT: (LB)

"Chassis only" (shall be signed by a certified weigh master.)

_____ Front Axle

_____ Rear Axle

_____ Total

"Chassis with body" (shall be signed by a certified weigh master).

_____Front Axle

_____Rear Axle

_____Total

THE ABOVE MAY BE PERFORMED BY THE BODY COMPANY.

SPECIFICATIONS
A-15-BU-C-AS

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

B. WEIGHT DISTRIBUTION: (Continued)

Truck GAWR's as Built (LB)

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

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 – DIESEL, MIN. 425 HP AT GOVERNED RPM, MIN. PEAK TORQUE OF 1550 LB/FT TORQUE, MIN. 13.0 LITER

TRANSMISSION –

EATON RTO – 14908LL
EATON RTO – 16908LL
MACK T-310M

EATON AUTO-SHIFT RTO-14910(B OR C) - AS2
EATON AUTO-SHIFT RTO-16910(B OR C) – AS2
(Dependant upon engine RPM/axle ratio)

AUTOMATIC ALLISION 4500 RDS 6 SPEED

REAR AXLE – DANA DS463P
MACK S 440 OR S462
MERITOR RT46 -160 -P

NOTE: All rear axles must provide axle shafts with a minimum diameter of 2.19 inch at the spline.

NOTE: REAR AXLE/S SHALL HAVE AN EXTENDED BREATHER TUBE TO PREVENT DEBRIS BUILDUP.

SPECIFICATIONS
A-15-BU-C-AS

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

D. VEHICLE COMPONENTS:

1. ALARM - BACKUP:

Ref: EQN-74

2. AXLE FRONT:

20,000 LB capacity minimum.
The front axle, drag links and tie rods shall have grease zerks installed.
Kingpin or bushings shall be grooved to permit grease flow.
Sufficient tire clearance at maximum turning angles.
Complete “Stemco” oil seal assembly, including hub, plug type window, and "Guardian" seal, or approved equal.
Each unit shall have the front end aligned.

3. AXLE REAR: - (See powertrain overview for acceptable models.)

ALUMINUM OR LIGHTWEIGHT HOUSING IS NOT ACCEPTABLE.
STEMCO GUARDIAN rear wheel seals, or approved equal.
Drain plug, magnetic.

There shall be an inter-axle differential lock that is manually cab controlled.

NOTE: Rear axle selection will be made after the award and may be a mix of ratios as required. The successful vendor/manufacturer shall present three (3) computer runs showing 3 most likely ratios for consideration for a speed range of 55 MPH to 65 MPH max. This information shall be presented at the pre-build meeting. The rear axle ratios must be the "identical" ratios.

4. BRAKES

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

ABS shall incorporate an ABS diagnostic fault switch that is capable of illuminating a fault light for diagnostic purposes. The switch shall be easily accessible. The switch mounted under or on the dashboard.
Rear brakes: 16.5 inch x 7 inch "S" cam with quick-change type single or double pin. (No substitute, standardization).
Steer-axle-brake: 16.5 inch x 6 inch or a power front disc brake system providing equal performance. Quick change type single or double anchor pin if drum type brakes are furnished.
Drum brakes shall have automatic slack adjusters and they shall be clearance sensing type only, with adjustment on application of the brake (no substitute).
Backing plates on all drum brakes.
Air compressor: Per truck manufacturers recommendation
Buzzer-type, low air pressure indicator. Compressor shall be fitted with a safety valve to prevent mechanical failure.

SPECIFICATIONS
A-15-BU-C-AS

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

D. VEHICLE COMPONENTS: (Continued)

4. BRAKES: (Continued)

Parking brake: Rear wheel spring-type, MGM E 30/30 or Anchorlock 30/30 gold seal chambers. Parking brake shall provide modulated emergency braking via the foot valve in the event of a rear service system failure.
Rear service brake chambers and spring brake chambers mounted to provide adequate clearance for backing into bituminous paving machines.
Air tank: Automatic drain valve, with heater on wet (first) tank. Each of the remaining air tanks shall have a manual drain valve.
Air dryer: With heater, inboard mounted, away from road splashings and 20 inch above road surface. Dryer shall be compatible with the body company clearance requirements for sub-frame, valve body, etc. Per: Haldex DRYest or Bendix AD-IP Installation made in concurrence with the air compressor manufacturer ' s recommendations.
All electrical connectors for drain valve and air dryer shall be covered with heat shrink material or have sealed connections.
System shall be equipped with anti-compounding to prevent mechanical failure of the foundation brakes, slack adjusters, etc.

5. CAB:

Aluminum or galvanized steel cab, 111 inch minimum to 125 inch maximum BBC (Bumper to Back of Cab) dimension excluding frame extension.
Hood: Fiberglass, tilting. Fenders are part of tilting hood. Grille shall be fixed.
Air suspension system for the cab shall be factory or aftermarket installation is acceptable
Air deflector: Clear or smoke, hood mounted. Manufacturer's standard full width for the truck model. Access to front-end hood tilt handle shall not be blocked. Extra handle acceptable.
Fenders: Front fenders shall have a minimum 5 inch minimum extension.
Deluxe fresh air hot water heater and defroster, manufacturer's highest output.
Air Conditioning: Highest output available as OEM option.
AM/FM radio with weather band.
Air horn(s): with snow-shield (not required if underhood mount).
All controls and knobs shall be properly identified.
Brake pedal, clutch pedal and throttle shall be suspended if available from the factory.
CB Power connections One (1) pair, at the dash, per EQN-78.
Cab floor covering shall be heavy-duty rubber with closed cell rubber or heavy felt backing.
Cruise control
Cup holder in the cab within easy reach of the operator.
Dome light shall be provided
Dual sun visors.

SPECIFICATIONS
A-15-BU-C-AS

I. GENERAL TUCK SPECIFICATION: (Continued)

D. VEHICLE COMPONENTS: (Continued)

5. CAB: (Continued)

Windshield: One (1) or two (2) piece construction, tinted. Safety glass throughout.
OPTIONAL: Heated windshield per invitation to bid.
Drivers and passenger side windows shall be power.

Dual windshield wipers artic type with heaviest arms and linkages available. Wipers shall be min. 2 speed electric with intermittent feature.
Washer system shall be electric. Minimum capacity of two (2) quarts of washer fluid and shall be filled with an anti-freeze type solvent.

Mirrors: Driver's and passenger side power mirrors , west coast style minimum 6 inch X 16 inch manufacturers standard heavy duty break away arms.
Mirrors shall be heated with a lighted toggle switch mounted within accessible reach of the operator, automatic on/off is acceptable. The wires shall be fitted in such a way that the mirror glass/element can be changed by unplugging the two-wire lead.
There shall be a heated convex mirror both sides, minimum 5.5 inch X 8.8 inch or 8" diameter, minimum.
Roadwatch system with digital display shall be installed. Ref: Sprague Controls

Blind-spot elimination mirror heated (conventional cab only) shall be mounted on the right front fender and it shall be 8 inch, minimum, diameter stainless steel or aluminum head with mirror. Mirror shall be a conventional convex mirror, and shall not be of the half-round cross view type. All arm/s and hardware shall also be stainless steel. Fender type washers stainless or aluminum, with rubber pads to be placed on both sides of the fender shall be included. Pedestal system shall be single, double or triple mounting assemblies (stainless steel or aluminum). Mirror shall be mounted in rubber or vinyl. Ref: Grote (800-628-0809)

STEPS: Drivers and passenger entrance steps: Shall be aluminum, serrated. The outer step edge must be serrated in lieu of plain. (Overlay is not acceptable).
Step design material must be the same both left and right side.
Ref: Bustin No. NST4 full size, Ohio Grating No. JA21195G4 serrated, IKG. Industries Type B54 or Mack Part # 85QM423OM4
Top of the first step shall be approximately 21 inch above the ground.

Seats: Driver's seat shall be high back adjustable Bostrom air 915 Series with lumbar support or National 195 Series with lumbar or DuraForm Air Command Series (fabri form cushions with lumbar support) with body cloth insert and three-point retractable seat belt. A bellow-type or protective skirt shall cover the seat suspension mechanism. There shall be an inside armrest on the driver's seat plus an outside armrest installed on the seat or the drivers door. No substitute on seats reference. Color coordinated to cab interior.
Passenger seat: With three-point retractable seat belt, manufacturers standard non-suspension (static), and high black type. Color coordinated.
Steering wheel diameter shall be 18 inch (approx).

SPECIFICATIONS
A-15-BU-C-AS

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

D. VEHICLE COMPONENTS: (Continued)

6. CHASSIS:

The GVWR rating of the truck shall be 62,000 LB on the door or in the cab as the final complete certification label. (minimum rating).
96 inch to 102 inch cab axle (CA) dimension. Wheel base dimension 186 inch approximate. Wheel base and CA dimension may be adjusted to provide the optimum legal weight distribution.
The frame AF shall incorporate a cross member at the rear of the frame to reinforce the body pivot point. (Local installation is acceptable).
Front Bumper: Heavy duty swept back. Mounted to the frame with the inner face of the bumper against the chassis frame.
Lights: mounted on the rear of the frame shall be shock mounted to prevent damage from backing into material piles (Ref: EQN-74).
Frame mounted tow hooks or eyes: Two (2) front. These may be installed by the body company after completion of the plow hitch mounting using grade 8 bolts (minimum) of sufficient length, and grade 8 elastic type self-locking nuts, or by full welding.
License plate bracket: Front and rear. Securely mounted to prevent damage when backing into material piles.
There shall be a centralized on board chassis lubrication system installed. The system shall have a fault light that will illuminate when there is a malfunction with the system. The light shall be cab mounted so the operator can visually monitor the system. Steel tubing (hard pipe) shall be utilized where/when ever possible and practical: Ref: EQN-160

Ref: Grease Jockey
Groeneveld Lube system
Lincoln Lube system
Vogel Lubrication Inc.

7. CLUTCH: (if applicable)

Externally lubricated with an extended lube hose if applicable, Eaton/Fuller EZ pedal or Meritor with torque limiting clutch brake.
Clutch adjustment shall be set to specifications prior to delivery to the Department.
There shall be a neutral safety device to ensure that the vehicle cannot be started in gear.
NOTE: The transmission-input shaft shall be 2 inch spline. Dampened driven disc.

8. DRIVE LINE:

Main drive line: Spicer Life XL or Meritor RPL Series. "Factory balanced" greasable, (1 zerk minimum).
Heavy-duty drive line shall be engineered and be compatible to engine, drive train and transmission torque.
Heavy-duty center bearing, if required, with due consideration to drive shaft angles, length, location, proper bolting based upon engine and transmission selection.
Interaxle driveline: Spicer Life XL Series.

SPECIFICATIONS
A-15-BU-C-AS

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

D. VEHICLE COMPONENTS: (Continued)

9. ELECTRICAL:

All copper system, negative ground.
Alternator and starter mounting bolts: Grade 8.
Alternator: 160 amp minimum, high performance, solid state, brushless. Battery cable from battery negative terminal to starter motor or frame.
Batteries: Three (3), heavy-duty, 12 volt, field maintenance-free, BCI Group Size 31, with stud-type posts and anti-corrosion treatment on each terminal. 2500 total cold cranking amperes (CCA) at 0 degrees F. 640 minutes of total reserve capacity at 80 degrees F as per SAE.
Battery Mounting: It shall include the following:
a.) 0.25 inch thick rubber shock pad under the battery.
b.) Box with cover. Cover shall be constructed of fiberglass, poly, or aluminum (if aluminum there shall be an insulated 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 circuit breaker liable to be damaged during truck operation shall have an easily removable protective cover. All wire splices in the cab shall be heat shrink materials. Ref: Thomas & Betts, Tel: (210) 707-2145.
Electrical chassis-wiring harness: Body lighting and wiring to be per EQN-80X.
Body plug: Truck manufacturer and Grote Industries shall supply a body builder plug and bracket. All lights, body and chassis shall be protected by the truck manufacturers fuse block assembly.
Final location of the plug and bracket shall be decided at the pre-build meeting.
All exposed junctions: Waterproof and sealed against salt.
Flasher: (All) heavy-duty electrical, Ref: Tridon Model EL 12 or EQUAL.
Note: If an audible alarm is supplied for 4 ways and turn signal, it shall have on/off capability.
All lights for chassis and body shall be LED per EQN-80Xand meeting all Federal and state regulations.
The switch for parking light circuit shall be able to handle an additional 3 A load of a light bar.
Head Lights: shall be Halogen with Daytime running lights factory or aftermarket installation.
Dump body lights shall have their own dedicated complete circuit.
Starter motor: With thermal overcrank protection and high torque capacity. Suitable for the diesel engines offered as per starter manufacturer's recommendation.

SPECIFICATIONS
A-15-BU-C-AS

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

D. VEHICLE COMPONENTS: (Continued)

10. ENGINE:

The engine components facing wheel areas, on both sides, and the areas to the rear of wheels shall be shielded. The shield shall protect the engine, fan, radiator and areas behind tires from the stones and debris.

Replaceable heavy-duty oil filter(s) as recommended by the manufacturer bearing a legible OEM part number.

Diesel Fuel Filter: Shall be DAVCO filtration unit. Size and location per engine manufacturer recommendation.

Cooling System: The largest factory available engine cooling capacity compatible with engines and transmissions referenced and for continuous high engine output under extreme temperatures and/or operating conditions due to prolonged snow plowing operations in low gears. The water pump shall be adequately sized to provide proper cooling and be of sufficient size to accommodate the larger pulley to adequately handle the specified options.

Shall be fitted with provisions for visually monitoring coolant without necessitating removal of the cap from the radiator or expansion tank (e.g. sight glass, transparent expansion tank).

The antifreeze solution shall meet all applicable EPA requirements.

11. ENGINE ACCESSORIES:

Radiator core and shell: Shall be manufacturer's heaviest construction grade radiator available, with overflow recovery system and visual level indicator.

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

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

Coolant/filter: A spin-on filter element and the HA 350 Mounting Kit. Perry system size S-4 or approved equal.

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

The air intake system shall be fitted with inside/outside air.

Fan: Thermostatically controlled viscous type or manufacturers recommended automatic fan.

Screening System: that protect radiator from stones and bugs.

Engine Vibration Dampened: At PTO flange yoke. Ref: EQN-90.

Air Restriction Gauge: Flush, dash-mounted with indicator slide for engine air cleaner, Ref: 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.

SPECIFICATIONS
A-15-BU-C-AS

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

D. VEHICLE COMPONENTS: (Continued)

11. ENGINE ACCESSORIES: (Continued)

Governor: Set at manufacturer's recommended maximum rpm.
Hoses: The air induction system and large radiator cooling system hoses shall be clamped with 0.500 inch wide, 150 inch LB stainless steel, constant torque, spring loaded worm clamps. Ref: Wittek Manufacturing (Tel: (312) 492-9400) or Breeze Clamp Co, Constant Torque clamps with liner for silicone hoses. Cooling system hose under 1 inch OD may use factory standard hose clamps, as a minimum acceptable standard.
Air intake hoses shall be 0.250 inch minimum thickness, molded hoses. Ref: Gates, Goodyear or equal. Silicone or premium rubber, radiator and heater hoses. Hoses shall not be painted.
Lubricating Oil Lines: High quality flexible wire-braid type, "Aeroquip" or approved equal system, minimum standard if hoses are used.
Drive Belts: Cog belts or serpentine (cog belts not required for power steering).
Engine Brake: Minimum 2 stage, full engine compression brake, ref. Jacobs.

12. EXHAUST:

Vertical tailpipe and muffler system or approved horizontal muffler and vertical tail pipe.
Tailpipe with elbow.
Exhaust system shall neither interfere with the operation of the dump body or equipment nor will it be close to any fluid tank, and **PERMIT WING PLOW INSTALLATION**.
The tail pipe shall be installed in a manner that will keep the muffler and tail pipe away from dump truck body. The flex in the body when operating on an uneven terrain must be considered in the design.
The muffler and tail pipe shall be shielded or insulated to protect personnel from burns when entering or exiting the cab. The shield shall be 180 degrees to 360 degrees and shall be of non-rustable material such as stainless steel or aluminum. Ref: Riker or equal.

13. FAST LUBE OIL CHANGE SYSTEM (FLOCS):

This system will be installed with all fittings, brackets, clamps and hoses. The system will be compatible with all fittings presently used by the Department. The final placement of the male half of the snap coupler on the equipment will be determined at the pre-build meeting. Ref: Aeroquip or prior approved equal. Ref: EQN-351A.

SPECIFICATIONS
A-15-BU-C-AS

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

D. VEHICLE COMPONENTS: (Continued)

14. FRAME AND FRAME EXTENSION:

Resisting Bending Moment (R.B.M.): Minimum of 2.5 million inch LB per rail, including extension, for the entire length of the frame, including any frame liners. Where engine and radiator adjustments are required, a minimum of, 1 million inch LB per rail (R.B.M.) will be excepted. Frame material shall be of at least, 110,000 PSI yield strength.

If a larger RBM is required to perform the specified operational duties, the vendor shall bid a frame concurrent with the intent and spirit of this contract. Ref: Snow removal operations, full payload snow plow, right and/or left patrol wing plow, etc.

Main frame and any required liners shall be either straight channel or offset channel, full length.

Minimum frame RBM shall be approved by manufacturer 's Engineering-Department.

Bolt-on or welded extension will not be accepted.

Front frame shall accommodate the Department's standard hydraulic PTO shaft and pump (Ref: EQN-90) and the plow frame. It shall provide easy service accessibility.

The truck offered must be designed to accommodate a right and/or left patrol style wing plow.

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 lo-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. In – dash, integral with instrument panel be illuminated and shall be readable from the operator's seat.
- Speedometer with odometer with a dual speedometer lead to interface with the Component Technology system.
- Tachometer
- Voltmeter
- Parking brake indicator light.
- Hydraulic fluid level gauge.

16. LIGHT – WARNING:

One (1) revolving warning light shall be mounted on the drivers side of the body cab protector, Ref: EQN-210B.

SPECIFICATIONS
A-15-BU-C-AS

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

D. VEHICLE COMPONENTS: (Continued)

17. LIGHT - WARNING - MOUNTING BRACKET - WIRING:

Ref: EQN-210B.
The wire shall be protected along the entire under side of the cab shield and down the front of the bulkhead.
A grounding wire shall be provided between the internal and external bracket at the pivot point.

18. PAINT:

Cab shall be painted PENNDOT yellow. Ref: DuPont 6808 for color only or Omaha Orange, Ref: DuPont 9215.
Frame: All underside components, shall be primed and painted black.
Front bumper shall be painted black.
Plow frame shall be painted black with acrylic enamel (with hardener) low VOC.

19. SAFETY:

Cab and body shall have reflective enhancement per EQN-127.
Emergency triangle warning kit, with hold down. Warning Triangle Flare Kit, Ref: KD 610-4645, KD Lamp Co. (Tel: (513) 621-4211) or equal, stowed (fastened) in the cab. Ref: EQN-66A
Fire extinguisher: Rechargeable with vehicle mount. Mounted in the cab for easy and quick access. Ref: 2A: 10B: C.
Grab handles (2): Shall be furnished to provide "0ptimum safety" for entering the truck cab. Manufactures standard or aftermarket. Non-skid paint or rubber may be utilized, (non-skid tape is unacceptable).
Ref: Non skid paint, Gamma Laboratories

20. STEERING:

Power Steering: Dual integral or single integral type hydraulic power steering with right wheel power-assist cylinder.
Glidecoat steering shaft, or Bendix wedgelock lube-for-life shaft.
Steering System: (e.g. flow, pressure, relief valve etc.) Shall be selected considering the full front-GAWR axle loading.
Hydraulic Supply Pump: Vane type or roller type with sufficient oil flow to permit one (1) steering wheel revolution per second with front axle loaded to rated capacity, with plow on, in a "park" condition. Ref: Vickers V-20, Eaton or Borg Warner.
The pump shall not be the integral filter type unit.
Power Steering Reservoir: "Remote mounted", minimum 2 quart capacity, incorporating a filter which is easy to remove and replace.
The remote filter referenced above shall be factory mounted, certified and engineering approved in conjunction with the appropriate pump.
Cogged belts not required on power steering system.

SPECIFICATIONS
A-15-BU-C-AS

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

D. VEHICLE COMPONENTS: (Continued)

21. SUSPENSION: FRONT:

10,000 LB capacity at ground each front spring.
The six (6) front spring pins or bearings/bushing shall be furnished with 360-degree grease grooves to insure adequate lubricant penetration.
Spring hangers shall be heavy castings with sufficient pin and bearing surface to render trouble free service.

22. SUSPENSION: REAR:

Suspension shall be tailored to axle loads and shall be adequate to sustain maximum GVW without overload or permanent set.
23,000 LB capacity at ground, each rear spring.
The spring hanger brackets shall be severe duty castings with sufficient bearing surface/wall thickness to prevent premature bolt wear.
The spring center bolts shall be a minimum of .4375 inch size, preferably .5000 inch.
The rear spring hanger pins shall be the greaseable type.
Bolts must be of sufficient length to go through the washer, spring bracket and truck frame with sufficient length to install a self-locking nut.

23. TANK - FUEL:

Safety - type fuel tank as per the requirements of FMVSS. **Dual tanks are unacceptable.**
Trucks with no wing and Trucks with a right wing shall have one (1) 100 GAL minimum total capacity, frame mounted, under the left door.
Left wing and dual wing trucks shall have one (1) 80 GAL minimum total capacity, frame mounted, under the left door.
Tank mounting hardware and brackets shall be for “severe duty” applications. Heavy-duty aluminum or stainless steel with minimum 2 inch wide straps with rubber shims/liners.
Accessible fill pipe with dump body down (located at either end of tank to avoid interference with steps).
System shall be a top draw and top return line.

SPECIFICATIONS
A-15-BU-C-AS

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

D. VEHICLE COMPONENTS: (Continued)

24. WHEELS/TIRES:

GENERAL:

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

Front: Wheels: 22.5 x 12.25, 10 hole - 285.75mm bolt circle with 220mm bore, tubeless steel disc wheel rated at 10,500 LBS at a maximum inflation pressure of 120 PSIG. Accuride part number 29806, no substitute.

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

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

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

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

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

TIRE: All tires will be radials.
Tires: 425/65R22.5 (18 ply min).
Tires: 12R22.5H

MANUFACTURER	FRONT TIRE	REAR TIRE
Goodyear	G-286 SS	G-124 or 164RTD
Michelin	XZY - WB	XDE-A/T

NOTE: The above referenced tire manufacturers and models are for reference only. Approved equal manufacturers/models will be acceptable. Tire speed rating to be considered as part of equivalency.

SPECIFICATIONS
A-15-BU-C-AS

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

D. VEHICLE COMPONENTS: (Continued)

25. TRANSMISSION: See POWER TRAIN OVERVIEW for acceptable transmission.
Transmission type per invitation to bid

MANUAL:

Geared for PTO application, right and left side or right side and bottom.
Magnetic drain plug.
Input transmission shaft: 2 inch.
12 to 1, minimum 1st gear and reverse ratio.

AUTOMATIC:

Dash mounted console with push button shift selector.
There shall be an external oil cooler.
Oil cooler for transmission required due to prolonged transmission torque converter operation in low gears. Cooler size must be provided to keep the transmission fluid at an acceptable operating temperature under these prolonged conditions. (Water to oil type cooler). An Allison approved cooling system shall be installed regardless of whether retarder is incorporated in the system or not.
Retarder system shall have a foot control. There shall be a master switch on the dash that will totally disarm the retarder system. A switch in the retarder circuit shall automatically activate the brake lights during retarder operation.

E. DUMP BODY AND EQUIPMENT:

1. DUMP BODY, ALUMINUM:

DETAILS - Ref: EQN-79A
The dump body capacity shall be minimum of 11.0 cubic yards water level.
Side board pockets and tailgate height shall provide additional carrying capacities of 2 and 5 cubic yards.
Front Body Bulkhead: Minimum 0.15625 inch standard aluminum 5454H34, and shall be a minimum of 12 inch above body sides. There shall be a shovel holder assembly mounted on the left front of bulkhead (final position to be determined at the pre-build meeting). Ref: Akron Foundry AT-2
Rear Corner Posts: On both sides shall be full depth, one-piece construction from the top of the tailgate to the bottom of the rear bolster and shall be free of holes.
Rear Bolster: One piece, full depth and full width.
Spreader chain holders: On both sides, top and bottom of the rear corner posts.
All body welding shall be full welding.
Bed prop: There shall be two (2), three position, self positioning stow away bed props per EQN-62.
There shall be midway sideboard supports (left and right).

SPECIFICATIONS
A-15-BU-C-AS

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. DUMP BODY AND EQUIPMENT: (Continued)

2. TAILGATE, ALUMINUM:

NOTE: Tailgate shall be interchangeable between aluminum and stainless steel bodies by manufacture.
Ref: EQN-79A EQN-81X and EQN-64.
Manufactured from grades 5454H34 and 6061T6.
48 inch (minimum), body sides 38 - 42 inch (approx.).
Double acting five (5) panel tailgate with offset hinges.
Two (2) "J" hooks welded to the tailgate for chain hangers.
1.25 inch dia. greaseable self-aligning top hinge pins with tapered end and with sufficient length for easy removal. Pins shall be affixed with chains to prevent loss and be non-rotating.
Top hinge plate, aluminum, or steel with replaceable heavy duty bushings and greaseable fittings.
0.375inch spreader chain, non-rusting and able to accommodate 0.5/1.27cm in thick aluminum chain holder or 0.375 inch an thick steel chain holder.
Minimum edge distance 1.5 inch.
Tailgate chains shall be covered with expandable braided sleeving of monafilament construction. Ref: Fairmont, (Tel: (304) 366-4600) Part No. Expando Grade DM -color black or yellow.
Four (4) tailgate chain brackets. Two (2) on each side.
Severe duty tailgate attaching brackets.
Aluminum tailgate with built in light bar. Ref: EQN-81X.
Body Lighting: - Ref: paragraph I.D.9 ELECTRICAL CHASSIS - WIRING HARNESS, and EQN-81X.
Coal chute gate with levers and operating handle. AISI Type 304 stainless steel. Ref: EQN-64 aluminum
Air operated Tailgate per EQN-78A: Tailgate must be operated via an in-cab dash mounted switch (switch mounted under dash is unacceptable). All air piping and connections must be D.O.T. approved with .250 inch nylon tubing and brass compression fittings. Spring-over-air or air to air is acceptable.

3. BODY SIDES, ALUMINUM:

The sides shall be minimum .250 inch thick aluminum 5454H34.
Top rails shall be fully boxed and completely closed by "continuous" welding, both sides.
One piece construction for side top and bottom rails; no splices.
Running board width shall cover the outer rear dual tires and shall be full length of the body, both sides.
A minimum of five (5) vertical side braces per side on proper centers shall be furnished in addition to the front and rear corner posts. Side braces and front posts shall be furnished with bottom drain holes with safety self cleaning type grid steps welded, both sides, between vertical braces, full length, and flush with outer edge of vertical braces per EQN-76.
Aluminum body shall be isolated from the steel frame rails at the hinge by installing Mylar material.

SPECIFICATIONS
A-15-BU-C-AS

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. DUMP BODY AND EQUIPMENT: (Continued)

4. FLOOR, ALUMINUM:

One (1) piece body floor shall be .3750 inch thick minimum, abrasion-resistant aluminum 5454H34. Ref: EQN-79A.

5. BODY STRUCTURE, ALUMINUM:

Ref: EQN-76.

The body shall be "stacked construction" aluminum.

Dump Body		Aluminum
Longitudinal member	Size	6 inch I-Beam min.
	Wt.	6.1 LB/feet
	Material	Al 6061T6
Cross-member	Size	4 inch I-Beam min.
	Wt.	2.70 LB/feet
	Material	A1 6061T6

4 inch channel Cross members of equal strength are permitted at the front and rear of body to finish the unit, and in the area where hoist box is located.
The body shall be reinforced to withstand SEVERE duty service. Ref: Dump body up while spreading salt and anti-skid material, or excavation rip rap being dropped in the bed.
The longitudinal I-beams and channels specified are minimums and may exceed dimensions to permit proper hoist mounting.
Heavy gussets of minimum size 4 inch x 6 inch x 0.375 inch thick for aluminum shall be furnished at all cross members on the outside. Where not possible, they will be furnished on the inside.

6. CAB SHIELD, ALUMINUM:

Ref: EQN-79A. Full width cab shield with no off-set for exhaust stack.
Body front bulkhead and cab shield shall be minimum 0.15625inch thick aluminum 5454H34.
Continuous welding on front and cab shield throughout.
One-half (1/2) cab shield with four (4) inch lip on front extending over cab.
The body cab shield shall have sufficient clearance to ensure that the shield will not hit the exhaust system when dumping on uneven terrain.

SPECIFICATIONS
A-15-BU-C-AS

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

G. BODY EQUIPMENT: (ALUMINUM)

NOTE: All mounting procedures shall be in accordance with NTEA standards.

1. Integrally designed/engineered to eliminate body side shifting on uneven terrain.

2. Capable of being utilized in raised position for extended use while spreading salt and anti-skid materials.

NOTE: (Hydraulic fittings shall be mounted above the module, and the vertical apron shall be cut out above the frame to facilitate their placement.) Receiver pin shall be located on the outside of the module.

NOTE: Acceptable body companies: (No Substitute, prior to bid approval necessary).

J & J Truck Bodies & Trailers - Somerset PA.,
Benson International, Inc, Mineral Wells W.Va.
Warren, Inc, Collins, MS
Thiele Inc, Windber, PA
R/S Body Co, Richmond, KY
Godwin Man. Co., Dunn, NC
Tibrook, Brookville, PA

SPECIFICATIONS
A-15-BU-C-AS

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

G. BODY EQUIPMENT: (ALUMINUM)

1. ACCESSORY PLATE:

There shall be an accessory mounting plate installed ref: EQN-22. Location to be determined at the pre-build meeting.

2. BED UP ALARM:

A safety warning light dash mounted and alarm installed. Switch shall be set at 49 degrees +/-1 degree dump angle to alert the operator and to prevent the hoist cylinder from going fullstroke. Switch shall be mounted in accessible area of the body of the dump bed located away from road splash etc.
NOTE: SWITCH SHALL BE MECHANICAL, MECURY TYPE SWITCHS are not ACCEPTABLE.

Ref: Scott Electric (Simines) Switch – SIA3SEO3-AR1
Lever - SIA3SXO3-KL200

3. CHAIN BOX/S:

The final size and location shall be determined at the pre-build meeting.

2 boxes – with no wing, 1 box - with left or right wing , 0 box – with dual wing.

Chain boxes per EQN-32. The boxes shall be aluminum with aluminum safety grating overlaid. There shall be a minimum of four (4) .750 inch dia. Drain holes in the boxes flooring. The hinge shall be rod with nylon bushings. Piano hinge is unacceptable. Final positioning of these boxes shall be behind the swept back bumper and outboard of the left and right frame channels.

4. HOIST CYLINDER:

The hoist cylinder shall incorporate a metal identification tag with the manufacturer's model number, serial number and manufacturers address.
The hoist cylinder shall be mounted to the cross shaft in a tube base. The base may be cast or fabricated (no bolts and angle).
*Hoist cylinder reference: Commercial No. SD63-DB-9-110 (2 inch pin size both ends) or Custom No. (DAT 63-245-110) (2 inch pin size both ends option 8 for rod end and option 3 for base end). (No substitute, standardization).
A safety warning light and alarm, on the dash, shall be incorporated at 49 degree dump angle + 2 degrees to alert operator and to shut off power at the control valve.
Upper pin shall be fitted with a remote grease connection per EQN-63.

SPECIFICATIONS
A-15-BU-C-AS

I. GENERAL TRUCK SPECIFICATONS: (Continued)

G. BODY EQUIPMENT: (ALUMINUM) (Continued)

5. HOIST HARDWARE AND DETAILS:

Ref: 79A
The rubber cushion, 2 inch thick, the width to be equal to width of frame rail, shall attach to longitudinal body member with counter-sunk bolts, incorporating a flat head bolt and a wedge washer and locking nut assembly or slotted rubber and track assembly integral with body longitudinals.
Note: Any other concepts of attaching rubber cushion to the long member must be approved by, Chief of the Equipment Division, prior to bidding. Laminated rubber is unacceptable.
Dump hinges shall be fully welded to long member if steel and aluminum must be bolted with grade 8 bolts, and steel plates in a sandwich type construction with a minimum of 8 bolts.
All pivot points shall have (2) accessible grease zerks at opposite ends to ensure adequate greasing.
Thirty-five (35) U.S. ton net payload capacity.
Double acting, hydraulic power-up and down cylinder.
2 inch dia. min. hoist hinge pin sized to withstand severe use. Full width.
2 inch dia. min. lift pins.

Ref:

EQN-79A	EQN-20X
EQN-123	EQN-79W
EQN-94	EQN-95
EQN-91	

Detail A - Chain holder
Banjo type cut-out to hold tail gate chain
All corners must be angled or rounded for safety
Full welding
Aluminum 500 inch thick.
Carbon Steel 0.3750 inch thick.
Ref: EQN-79A-Aluminum/EQN-79W-Steel.

Detail B - Tailgate hinge
Replaceable bushing with greasing capability
The edge distance shall be minimum of 1-3/4 inch thickness
Aluminum, 1-1/2 inch thick material.

Detail C - Tailgate chain bracket
Two (2) per side, total of 4 per tailgate
Aluminum

Detail D - J Hooks
Two (2) per tailgate

Detail E - Top Tailgate pins
1-1/4 inch dia. steel pin with tapered end.
C-1020 HRS Steel.

SPECIFICATIONS
A-15-BU-C-AS

I. GENERAL TRUCK SPECIFICATONS: (Continued)

G. BODY EQUIPMENT: (ALUMINUM) (Continued)

6. PLOW FRAME:

Plow frame shall be furnished and installed as per attached drawings and shall be approved by the truck manufacturer's engineering department. The plow frame shall be per EQN-50.
Zerk fittings shall be protected per EQN-64.
Snow plow lights to be installed Ref: EQN-124 or approved body builder design.
All metal surfaces shall be cleaned prior to primer and final painting.

7. SAFETY:

A slide in type, Ref: Bustin Industrial Products, pn SAL300, two or three-step ladder, 15 inch wide x approximately 32 inch high, formed and braced to the dump body on the driver's side between the first and second vertical side body braces, shall be bolted to the underside of the running board ref: EQN-56. Any other configuration shall be approved by, Chief of the Equipment Division.
There shall be a pair of wheel chocks with holder/s (location of holder to be determined at the pre-build meeting) As per EQN-82.
All entrance steps shall be Bustin No. NST4 full size, or Ohio Gating No. JA2ll9SG4 serrated or IKG Industries Type BS4 serrated swage lock, with end band for aluminum body.
The body step material shall be BUSTIN 628 for steel body.
A short piece of bar stock shall be used above steps to serve as a grab safety handle for body entry. Steps (minimum of two) made from "Bustin" type safety step material, are required on the driver's side inside the bed for safe entry and exit.
Compliance shall be made per EQN-118.

8. SPLASH GUARDS:

Ref: EQN-66.
Stainless steel 0.172 inch (8-gauge U.S. Standard) or aluminum 0.250 inch splash guards shall be attached to the dump body on each side, behind the rearmost dual wheel, and extend downward to accommodate a 30 inch or 36 inch flap in order to meet Pennsylvania State Inspection Requirements. Mud flap sizes permitted are 30 inch or 36 inch. (No substitute, standardization) The rubber splash guards shall be bolted to these metal splash guards using self-locking nuts and metal strips.
The forward splash guards shall be stainless steel for stainless steel body or aluminum for aluminum body, and extend downward 3/4 of the length of the rear splash guard/mud flap, with a 1/4 length, unmarked mud flap attached for the remaining distance.
Forward splash guard shall have a 1 inch lip for entire length-outside extremity (90 degree) with bottom outside corner rounded.
Both front and rear splash guard assemblies shall be properly braced, and have rolled edges.
Splash guards shall be full length and width with no holes cut in it to accommodate salt lights.

SPECIFICATIONS
A-15-BU-C-AS

I. GENERAL TRUCK SPECIFICATONS: (Continued)

G. BODY EQUIPMENT: (ALUMINUM) (Continued)

9. WELDING:

All welding shall be in accordance with standard welding practices as set forth by the American Welding Society.
All vertical and horizontal seams of the body sides and ends shall be continuous welds, full penetration, without skip welds.

10. CENTRAL HYDRAULIC SYSTEM:

The pressure compensated, load sensing central hydraulic system shall operate all functions (plows, dump body, spreader and auger circuits) from an electric/ hydraulic system independently and simultaneously, without interruption of any other hydraulic functions.
All controls and components shall be of the latest design and installed to provide simple and convenient operations.
All system operations shall be achieved from a single pump matching all required flow and pressure demands.
The use of accumulators or auxiliary pumps is not acceptable.
Hydraulic tool operation will be included through both spreader circuits and will not require any type of cooling.
This system shall provide the most fuel efficient, safest, simplest and consistent operation possible.
All hydraulic components shall be installed and serviced by a single manufacturer.
Full responsibility for a serviceable system lies with successful bidder.
All wiring shall be securely clamped at approximately 18 inch intervals, shielded from exhaust and include a protective sleeve where necessary to prevent damage and/or failure.
All electrical connectors shall be treated with die-electric grease.
All systems shall be thoroughly tested and calibrated before delivery.
Upon start up the hydraulic system shall be operated at maximum flow for not less than 15 minutes and then have a new hydraulic filter installed on the truck.
It shall be the sole responsibility of the successful truck manufacturer and Component Technology to ensure that the chassis and the ground control wiring harness is totally compatible.
An operation manual, parts and maintenance manual shall be provided with each unit.
A schematic as well as a parts list shall be provided with the completed unit.

SPECIFICATIONS
A-15-BU-C-AS

I. GENERAL TRUCK SPECIFICATONS: (Continued)

G. BODY EQUIPMENT: (ALUMINUM & STAINLESS STEEL) (Continued)

11. CONSOLE AND POWER DISTRIBUTION CENTER:

Console Assembly: Shall be Component Technology MultiGuard SG7 with all joysticks being fully proportional, NO SUBSTITUTE STANDARDIZATION.
Kit number SG08020017 Type IV No Wing
SG08020018 Type IV Single Wing (Left or Right)
SG08020019 Type IV Dual Wing
Kit shall include GL-400-5.6.
All wiring for the kit shall be included and be TPE type wiring only.
Hydraulic system digital pressure gauge – Wika 907.15.506 w/TYPEc10 TRANSDUCER
Valve enclosure
Bulkhead fitting for auger wiring shall be mounted in the rear module
Prewet system Part Number SG06070008
135 gallon poly tank and plumbing kit with stainless steel tailgate brackets installed on the rear of the truck. Reference: Component Technology tank part number SG06030024, plumbing kit SG0609001. The tank assembly shall be installed utilizing an extended upper hinge pin. The bottom of the tank shall not cover the main integrated lights in the tailgate. The tank bracket shall be stainless steel. Reference Benson Body, part number PD-0801.
All hydraulic valve operations shall be achieved from within the cab by a single operator.
All controls shall be securely attached, within easy reach of operator and console mounted.
All controls shall be connected to the valve/s via electronic cable and power distribution center.
All electronics associated with the PDC and console shall be protected against and shall not cause interference to the operation of the vehicle or the land mobile radio communications system when properly installed in the vehicle.
Base shall be of steel construction conforming to drawing included in EQN-95.
Cabinet shall be constructed with 14 gauge steel, and will provide an access panel for ease of service.
Unit shall contain circuit protection for up to 12 auxiliary functions that control 15-ampere relays with automatic reset breakers.
Unit shall contain a terminal strip capable of interfacing with the specified body wiring harness if applicable. Terminal strip will be located inside base unit and have at least three unused sections for further expansion.
Unit shall be capable of adjustment vertically ad horizontally to allow for comfortable positioning for the operator.
Unit shall come with full wiring schematic documentation.
Unit shall come with pin-outs for customer accessories such as two-way radio, etc.
Main electrical connection shall be protected by a 80 ampere manual reset circuit.

12. DIRECTIONAL CONTROL VALVE:

The hydraulic control valve shall be a REXROTH M4 series. There shall be a 3 port valve block to control spinner, auger, and pre-wet .as part of the main valve assembly. Will be included in the following part numbers: Part Number SG04190002
Main control valve and enclosure shall be mounted outboard on the curb side frame rail ref: EQN-23 all valves, coils, end covers and power beyond ports must be accessible.
There shall be two (2) return lines from the valve to the return manifold

SPECIFICATIONS
A-15-BU-C-AS

I. GENERAL TRUCK SPECIFICATONS: (Continued)

G. BODY EQUIPMENT: (ALUMINUM) (Continued)

13. HYDRAULIC ALARM AND SHUTOFF:

There shall be a low hydraulic oil alarm system to alert the operator of a low hydraulic oil situation and allow ample time to take preventative action and avoid damage to the central hydraulic system pump.

It shall be operated via a 12 volt system. All wiring shall be routed to prevent damage from heat, sharp edges and moving parts.

An in-tank float switch shall be mounted to provide a signal to a dash mounted light. The dash light shall come on whenever the oil level drops below a ten (10) Gallon reserve. Assembly shall be an MP Products, Inc. RIG1-Series. All switch wires shall be hermetically sealed in high grade epoxy. The indicator light shall be console mounted. Indicator light lens shall be red in color. Light shall be clearly identified “Low Hyd. Oil”. Switch shall be adjusted to ensure that light does not prematurely illuminate (i.e., bed being raised, with adequate reservoir oil, should not cause light to illuminate).

14. HYDRAULIC HOSE:

All hose and hose ends shall be matched and assembled on a matched hose machine to prevent hose failure. All hydraulic plumbing practices shall conform to JIC H11 standards. Pressure hoses shall be 100R2, return lines shall be 100R1, and suction lines shall be 100R4. Velocity in pressure sure lines shall not exceed twenty (20) feet per second, return lines not to exceed ten (10) feet per second, and not to exceed four (4) feet per second in suction lines. All hoses shall include JIC female swivel ends with the exception of the suction line. All hydraulic components shall have SAE porting wherever possible.

All hydraulic hoses shall be securely clamped at approximately 18 inch intervals, shielded from exhaust and include a protective sleeve where necessary to prevent damage and/or failure. All hoses shall have JIC swivel connections at each end and be located in such a manner to aid in easy component replacement. Per EQN-94

15. HYDRAULIC PUMP:

PUMP shall include a low oil shut DOWN WITH OVERRIDE Shutdown shall be direct mounted to the pump. Remote mounted valve will be unacceptable.

The pump shall match system flow and pressure (horsepower) requirements to provide maximum fuel economy. Ref: EQN-90, EQN-91

No unloader or by-pass system will be an acceptable means of regulating excess oil flow.

Pump part number: Parker Hannifin PAVC10092L4AP22X3392 KEYED Crankshaft Mounted,

Full flow relief valve to be installed between pump and control valve. Relief valve setting shall be factory pre-set at 2500 PSI. Relief valve may be mounted inside the main valve enclosure or in the return manifold.

Or

Pump part number: Rexroth Model A10V01OO LH ROTATION: BH00979162

SPECIFICATIONS
A-15-BU-C-AS

I. GENERAL TRUCK SPECIFICATONS: (Continued)

G. BODY EQUIPMENT: (ALUMINUM) (Continued)

16. HYDRAULIC PUMP DRIVELINE:

Hydraulic pump SHALL BE DRIVEN by a Spicer 1310 series or NEAPCO factory balanced drive shaft.
Driveline shall be capable of 130 foot pounds of torque and have, tubular shaft of 1141 steel. Tubular shaft will have 16 spline heat treated to 40 Rockwell hardness.
A groove shall be machined the length of the shaft to provide proper phasing of universal joints at time of shaft assembly.
Driveline installation should be in accordance to manufacturer's recommended procedures.
Slip assembly shall provide not less than 2.25 inch of travel to allow ease of engine drive belt replacement.
The truck engine radiator and frame construction shall readily accommodate the installation of a front mounted crankshaft driven hydraulic pump.
The engine crankshaft pulley or vibration damper shall be drilled and tapped to accommodate a power take off drive shaft adapter plate required under hydraulic system section of these specifications.
Referenced models, Mack FWPTO, Cummins REPTO or approved equal. Ref: EQN-90.

17. PLOW SAVER:

There shall be a plow saver device COMPONENT TECHNOLOGY PART NUMBER - SG03020008 installed.

18. OIL RESERVOIR AND ACCESSORIES:

Aluminum or stainless steel, all welded construction
The oil reservoir shall not be less than 45 GAL capacity, filled with 1SO 32AW hydraulic oil
Cylindrical with flat or shallow dish sides, steps shall be included
Tank straps shall be heavy duty (minimum 2 inch wide) stainless steel or aluminum with rubber shims/liners.
Liners shall interlock around the tank strap edges to eliminate them from walking.
Center mounted baffle plate to prevent oil flow from venting directly to section port
A drop tube shall discharge all return oil flow through the 1.50 female NPT port
Tapered outlet shall be below oil level at all times to prevent air entrapment
A magnetic dipstick shall be mounted into reservoir from a top NPT female port
Tank shall be mounted under the right door
Tank shall be clearly labeled " HYDRAULIC FLUID ONLY"
Lockable tank filler cap assembly, model 57XL-40 (40 micron with chain) L.C. as manufactured by Lenz. Tel: (937) 277-9364
Suction line/strainer: 125 micron with 3 PSI bypass rated above 47gpm submerged at all times
¼ turn, 2.5 inch full flow ball valve in the suction line as close to the tank as possible
Strainer integral mounted in a 4 inch NPT female opening in the bottom of reservoir with a 3" female NPT opening

SPECIFICATIONS
A-15-BU-C-AS

I. GENERAL TRUCK SPECIFICATONS: (Continued)

G. BODY EQUIPMENT: (ALUMINUM) (Continued)

18. OIL RESERVOIR AND ACCESSORIES: (Continued)

Return manifold: There shall be a return line manifold mounted on the curbside frame rail, location to be determined at the pre-build meeting. Ref: EQN - 23
Return manifold shall be an 8 port header block with 8 # 16 SAE openings and 2 #24 SAE openings at each end. Header shall be an Alamo, Damon or Hycoa or equal.
Return line filter: Filter with spring controlled by-pass set at 25 PSI shall be mounted on the outside of the curbside frame rail
Filter shall be a Parker microglas part #80CN-210Q-15739, 300L @10 micron or MPFiltri – LMP2602BAF1A012M 300L @ 10 micron
There shall be a differential pressure switch with boot to activate a warning light mounted within the console.
Cab mounted filter contamination indicator set at 23 PSID

19. TEST PORT:

There shall be a 5101-6B complete quick coupler or hydraulic gauge (with dust cover) located in the pressure line entering the mainvalve assembly located inside the valve enclosure. Quick disconnect shall be bracket mounted to the inside of the enclosure, easily accessible so that a shop pressure gauge (not to be installed or included) maybe easily visible for test purposes. Ref: EQN-20X. Final location shall be determined at the pre-build meeting.

20. INSTALLATION PRACTICES:

The use of any of the following items or practices WILL NOT BE ACCEPTED.
Non-steel fittings on hydraulic pressure lines.
Excessive use of elbows on hydraulic lines.
Use of thread tape on hydraulic fittings.
Use of galvanized fittings or components on hydraulic system.
Improper hydraulic line size.
Use of high-pressure hose for hydraulic suction line.
Scotchlok-type wire splices.
Non-insulated wire splices.
Improper hose or wire routing near exhaust, over-sharp edges or through holes without grommets, or sharp edges.
Improperly prepared, primed and painted surfaces.
Non-fused electric circuits.
Hydraulic circuits without pressure relief protection.

21. BED SPEED REQUIREMENTS:

Bed speed shall be tested at 1500 rpm at normal operating temperature
Bed speed full-up shall be 25 seconds maximum
Bed speed full down shall be 18 seconds maximum

SPECIFICATIONS
A-15-BU-C-AS

II. GENERAL WING PLOW SPECIFICATIONS:

A. INTENT STATEMENT:

The purpose of these specifications is to describe a full floating patrol wing plow with tripping action and telescoping action mechanism and a capability to lower the assembly in the travel position for improved visibility and to allow emergency egress. Ref: Tenco or approved equal.

It shall be the responsibility of the vendor to certify through proper chassis stress analysis the adequacy of the existing truck frames to accommodate the patrol wing plow in combination with a front mounted plow weighing approximately 3000 LB.

The aforementioned plow will be used for "severe duty" high-speed plowing by the Pennsylvania Department of Transportation. The attached drawings and written text are to be considered minimum and the manufacturer shall reinforce the plow, framing and hydraulic cylinders by means of gussets, or increased material strength or thickness to present a plow designed to meet the severe duty" operational setting.

The Patrol Wing shall be designed to be attached or detached independently from the frame assembly. It shall be installed in such a manner as to ensure quick access to the engine and all accessories. (Hood on dump truck shall tilt without obstruction, if applicable.)

All parts not specifically mentioned, which are necessary in order to provide a complete snow plow shall be furnished by the successful bidder. The plow fabrication and assembly shall be to the latest engineering techniques.

All steel unless otherwise specified, shall be hot-rolled steel (HRS) as per ASTM A-36.

When wing assembly is disconnected from the truck, no parts may extend past the body line of the truck.

All bolts shall be grade 8.

A complete set of drawings showing all details and dimensions, sizes, etc., and literature of the plow proposed to be furnished.

SPECIFICATIONS
A-15-BU-C-AS

II. GENERAL WING PLOW SPECIFICATIONS: (Continued)

B. PLOW COMPONENTS:

1. SHOCK ABSORBING REAR WING BRACE:

The rear wing brace shall be a minimum of a single fixed hinge pin type with an adjustable bottom wing brace, or the formed type wing tube support to attach to a single fixed hinge pin.

The rear wing brace shall be equipped with a telescoping arm and an adjustable type tension spring. If required by manufacturer.

The rear wing "A" frame support strut/girder arrangement of MC 7 inch x 22.7 LB/feet, minimum channel, or fabricated from 7 inch x 12.25 LB/feet channel, 6 inch/feet x 8.2 LB/feet channel, .500 inch plate, 6 inch x 4 inch x .3750 inch structural tubing and other component pieces. It shall be attached in such a way that the load is properly distributed to both chassis frame rails. "A" frame shall be detachable for summer use. Ref: EQN-60A.

One (1) top wing brace cylinder constructed of 3 inch x 15 inch minimum double acting ram, chrome plated piston rods.

Adjustable trip-spring mounted from wing lift cylinder housing to the back of wing.

The rear brace shall be equipped with a 3 inch x 24 inch or 3 inch x 15 inch DA cylinder to actuate the telescoping strut with cross-over relief.

Bottom wing brace constructed of 4 in/10cm O.D. square outer tubing with a 3 inch O.D. square inner tube. Wear guides are welded to inner side of 4 in/10cm tube and to the outside of the 3 inch tube to prevent binding.

The rear wing lift cylinder will be a double acting 3 inch x 27 inch minimum cylinder, chrome plated piston rods with neoprene packing. Cylinder shall float with a 500 PSI relief on the down side.

The tripping spring/eyon rubber compression will be mounted to allow the wing to trip in any of the telescoping positions. The spring/eyon rubber compression shall be adjustable and have a quick release handle to remove tension for detaching the wing. The spring/eyon rubber compression will also be mounted to have tension on the wing in all telescoping positions.

The telescoping strut cylinder shall have incorporated in the hydraulic system an adjustable pressure relief valve for safety, when contacting heavy objects.

2. FRONT WING SUPPORT, OR FRONT WING POST:

Front Wing Mast:

Wing mast shall not block the O.E.M. headlight.

I beam 7 inch x 15.3 LB/feet minimum, wing post.

.6250 inch minimum wing post slide lift with 10inch minimum lift from ground to bottom of plow edge for travel.

Front wing post cylinder double acting ram - direct (no cables) with float and 500 PSI relief on the down side.

Chrome plated piston rods, adjustable chevron type packing, neoprene wipers and bleed screw.

Hydraulic hoses, to SAE 100RZ, 022700, AEROQUIP-195, Hi-Impulse.

SPECIFICATIONS
A-15-BU-C-AS

II. GENERAL WING PLOW SPECIFICATIONS: (Continued)

B. PLOW COMPONENTS: (Continued)

2. FRONT WING SUPPORT, OR FRONT WING POST: (Continued)

Front Wing Mast: (Continued)

Front wing post and support strut/girder arrangement shall be attached in such a way that the load is properly distributed to both chassis frame rails without the use of bracing tubes.
Support struts shall be 1.250 inch diameter schedule 80 ASTM A106 Grade A or B seamless pipe brace, minimum of two.
One strut shall be mounted to chassis frame.
One strut shall be mounted to plow frame.
Horizontal support girder 7 inch cross channel or 7 inch ship and car channel at 22.7 LB/feet or tubing 7 inch x 4 inch x .3750 inch.
Bolts shall be minimum grade 8, .6250 inch N.C.
Hinge assembly shall be detachable from the slider assembly of the wing mast.
Formed wing post mounted on cross tube mounted to truck frame members.
Wing slide plate bears on flanged surfaces of formed channel enclosing single acting cylinder, which provides full power up.
Wing Plow Alarm (Mechanical): Wing plow shall have a mechanical alarm system to alert the operator of the position of the plow. It must be visible from the driver's seat. Ref: EQN-60A.

3. HYDRAULIC POWER:

The front wing mast shall have a double acting cylinder vertical lift type, hydraulically controlled by a double acting cylinder direct lift. The front cylinder shall have quick connect coupler/s.

Double Acting Cylinder:

A 3 inch x 15 inch minimum double acting cylinder from rear "A" frame to mold board to raise the rear of the wing and fold the wing close to the truck for transport.

4. SNOW LEVELING WING:

The wing assembly shall in no way interfere with the turning of the right or left front tire. The wing shall not be less than 11 feet long overall, 29 inch high at the front and 36 inch (minimum) high at the discharge end. The moldboard shall be fabricated from 0.1719 inch thick (8 USS gauge) minimum steel and weigh a minimum of 755 LBS.
It shall be drilled to accept standard AASHTO spacing as shown on attached drawing EQN-16A sketch attached and equipped with either a steel or rubber blade as specified.

SPECIFICATIONS
A-15-BU-C-AS

II. GENERAL WING PLOW SPECIFICATIONS: (Continued)

B. PLOW COMPONENTS: (Continued)

4. SNOW LEVELING WING: (Continued)

a. Rubber Blade:

The patrol wing shall be equipped with a 1.500 inch x 10 inch x 120 inch rubber cutting edge manufactured by Goodyear Tire & Rubber Company or an approved equal, secured to the wing moldboard by .6250 inch grade 8 plow bolts through a .3750 inch x 4 inch steel facing plate. The rubber blade shall be slotted 3.500 inch x .6875 inch to provide adjustment and shall be reversible to provide maximum wear.

b. Steel Blade:

The cutting edge shall be of .500 inch x 6 inch C1090 steel, at least 10 feet long. Per attached plow blade drawing, EQN-16A.

The wing plow shall have two cast wing shoes.

The patrol wing shall be hydraulically operated with the controls conveniently mounted, (to be discussed at pre-build meeting) in the truck cab with the addition of three valves to the existing valve bank. These valves shall provide lift to the front of wing, the rear of the wing and the folding of the wing toward the cab and control in and out of the strut. The front of the wing shall be controlled by a single acting ram mounted within wing post that permits the front of the wing to be vertically lifted for transportation purposes.

The rear of the wing shall be power hydraulically controlled and attached to tele-strut and a 3 in/7.6cm x 24 in/61cm double acting cylinder with .3750 inch quick disconnects, (male, female, cap and plug) which shall be connected to a 7 inch sloped channel located under the dump body and at the rear of the truck cab. The 7 inch channel shall be adequately supported by brackets and cross braces to the truck frame. Bottom bracing shall extend to the rear with bridge type bracing.

c. Tripping:

The wing shall be of the full tripping type consisting of a special spring-loaded front end. Tripping actuation shall be accomplished through a .8750 inch diameter wire torsion spring at the front end and a tension spring attached to the front and rear of the wing or eyon rubber compression system.

Each spring shall be adjustable and shall automatically return the wing to its normal plowing position after it has passed over the obstruction encountered.

Provision for locking out the tripping action shall be supplied for operations requiring a rigid wing.

SPECIFICATIONS
A-15-BU-C-AS

II. GENERAL WING PLOW SPECIFICATIONS: (Continued)

B. PLOW COMPONENTS: (Continued)

4. SNOW LEVELING WING: (Continued)

The following minimum alterations shall be the responsibility of the successful vendor:

a. Add two Timbren load booster or active ride control stabilizers.

b. Brace right hand side plate to truck frame.

c. Add additional steel to side plates to provide increased strength and more substantial mounting for the 7 inch cross channel.

d One (1) manually adjustable plow storage jack per EQN-60A.
NOTE: Pages 1 and 2 of EQN-60A indicate the general mounting arrangement desired.

5. INSTALLATION PRACTICES:

The use of any of the following items or practices WILL NOT BE ACCEPTED.
Non-steel fittings on hydraulic pressure lines.
Excessive use of elbows on hydraulic lines.
Use of thread tape on hydraulic fittings.
Use of galvanized fittings or components on hydraulic system.
Improper hydraulic line size.
Use of high-pressure hose for hydraulic suction line.
Scotchlok-type wire splices.
Non-insulated wire splices.
Improper hose or wire routing near exhaust, over-sharp edges or through holes without grommets, or sharp edges.
Improperly prepared, primed and painted surfaces.
Non-fused electric circuits.
Hydraulic circuits without pressure relief protection.

6. DIRECTIONAL CONTROL VALVE: (for a Single Right or Left Hand Wing)

The hydraulic control valve shall be a REXROTH: as provided in the Dump Truck Specification

Dual Wing Plow (052680, 052730, 052830, 053370, 053410, 053450)
Rexroth valve (To be installed on accessory plate Section I.G.I)
Component Technology model SG04190003 3 section M4 series valve.
Electronic joystick shall be of the proportional type and be of the same design as provided in the main console assembly.

SPECIFICATIONS
A-15-BU-C-AS

II. GENERAL WING PLOW SPECIFICATIONS: (Continued)

B. PLOW COMPONENTS: (Continued)

7. PLOW IDENTIFICATION:

Each unit shall bear the manufacturer's model number, serial number and weight affixed to the plow, by means of a permanently affixed non-rusting metallic tag located on the right hand backside of the moldboard as viewed from truck operator's seat.

8. PAINT:

Color: PENNDOT yellow, DuPont 6808 for shade only or Omaha Orange, Ref. DuPont 9215. All metal surfaces shall be cleaned prior to primer and final painting.

NOTE: All zerk fittings shall be threaded.

9. CONSPICUITY TAPE:

The Rear of the wing plow shall have a strip of retro-flective sheeting across the top and down the outside in order to outline the plow when viewed from the rear. Material shall be: 2 in/5.08 cm wide Reflexite Conspicuity II System of 3M Scotchlite Conspicuity Series 980, red/silver continuous backing.

10. TEMPLATE:

The successful vendor shall provide a metal template of the moldboard contour, including cutting edge cut out with each pilot.

SPECIFICATIONS
A-15-BU-C-AS

III. DRAWINGS:

EQN-16A	rev	09-11-06	3 sheets	STEEL CUTTING EDGES FOR SNOW PLOW
EQN-20X	rev	05-22-03	3 sheets	HYDRAULIC SYSTEM SCHEMATIC
EQN-22	rev	07-01-03	1 sheet	FRAME MOUNTED ACCESSORY PLATE
EQN-23	rev	08-03-01	5 sheets	HYDRAULIC COMPONENT OVERVIEW
EQN-32	dated	05-22-03	1 sheet	DUMP TRUCK CHAIN BOXES
EQN-50	dated	09-13-06	5 sheets	LOW PROFILE PLOW MOUNTING
EQN-56	rev	06-16-05	3 sheets	SLIDING LADDER
EQN-60A	dated	01-29-00	3 sheets	SNOW PLOW PATROL WING GENERIC MOUNTING ARRANGEMENT
EQN-62	rev	05-28-02	2 sheets	DUMP TRUCK BED PROP SYSTEM
EQN-63	rev	09-14-06	1 sheet	DUMP TRUCK REMOTE GREASE CONNECTION
EQN-64	rev	05-22-03	4 sheets	COAL SHUTE TAILGATE APRON DUMP TRUCK BODY W/ALUMINUM TAILGATE
EQN-66	rev	05-28-02	2 sheets	SPLASH GUARDS – RUBBER TRAILER & TRUCK
EQN-66A	rev	09-07-06	1 sheet	FUSEE STORAGE BOX AND BRACKET
EQN-74	rev	08-25-06	4 sheets	TRUCK-TYPE II & IV REAR MODULE
EQN-78	dated	07-02-97	1 sheet	CB RADIO CONNECTIONS
EQN-78A	rev	06-03-02	3 sheets	AIR TAILGATE, HARDWARE (DUMP TRUCK)
EQN-79A	rev	06-03-02	10 sheets	TYPE IV, TANDEM, ALUM. BODY
EQN-80X	rev	05-22-03	7 sheets	DUMP TRUCK WIRING TYPE II & IV
EQN-81X	rev	06-03-02	2 sheets	ALUMINUM TAILGATE WITH BUILT-IN LIGHT BAR
EQN-82	rev	09-06-06	1 sheet	CHOCK AND HOLDER
EQN-90	rev	05-23-03	page 1 of 3	PUMP ASSEMBLY
EQN-91	rev	06-03-02	1 sheet	PUMP MOUNTING BRACKET
EQN-94	dated	08-15-97	2 sheets	HOSES AND COUPLERS PENNDOT DUMP TRUCK
EQN-95	rev	05-23-03	5 sheets	CONSOLE PEDESTAL
EQN-118	rev	07-01-03	1 sheet	UNDERRIDE PROTECTION

SPECIFICATIONS
A-15-BU-C-AS

III. DRAWINGS: (Continued)

EQN-122	rev	05-16-02	1 sheet	DUMP BODY TAILGATE REFLECTING SHEETING
EQN-124	rev	05-16-02	1 sheet	AUX. SNOW PLOW LIGHT PACKAGE
EQN-127	rev	05-16-02	1 sheet	REFLECTIVITY ENHANCEMENT
EQN-160	rev	02-15-00	1 sheet	CENTRALIZED LUBE SYSTEM
EQN-210B	rev	07-01-03	3 sheets	REVOLVING WARNING LIGHTS
EQN-351A	rev	07-01-03	2 sheets	FAST LUBE OIL CHANGE SYSTEM
EQN-507B	rev	05-28-02	3 sheets	CONVENTIONAL DUMP TRUCK WEIGHT DISTRIBUTION MINIMUM DATA REQUIRED

NOTE: Drawings appear in SAE.

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

DRAWINGS APPEAR AT THE END OF THE SPECIFICATIONS.

SPECIFICATIONS
A-15-BU-C-AS

IV. MANUALS:

See manual information attachment in the bid package.

V. TRAINING:

See training information attachment in the bid package.

SPECIFICATIONS
A-15-BU-C-AS

VI. WARRANTY:

Per PCID No. 1075 Section E.1. and additional specific warranty items.
This warranty is in effect as follows, starting from date of acceptance by the Department:

BRAKE WARRANTY:

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

RADIATOR WARRANTY:

Manufacturer's service and warranty policy for radiator shall be for two (2) years, 100% parts and labor plus an additional two (2) years, 100% parts only.

ENGINE WARRANTY:

The successful vendor and or supplying OEM shall provide the Department with a 100% parts and labor engine warranty FOR 60 months/ 150,000 miles minimum.

The successful vendor shall supply a copy of all items covered under their published extended engine warranty.

NOTE: the oil pan shall be warranted against corrosion, rust, rust thru etc. regardless of atmospheric conditions for 3 years, 100% parts only.

The published warranty shall be supplied with the pilot model.

TRANSMISSION WARRANTY:

Manufacturers service and warranty policy for Manual, Autoshift and Automatic transmissions shall be three (3) years 100% parts and labor

DIFFERENTIAL/AXLE WARRANTY:

Manufacturers service and warranty policy for differential and axles shall be for three (3) years 100% parts and labor.

DUMP BODY WARRANTY:

Constructability and durability of body shall be guaranteed for four (4) years, parts and labor. A decal shall be affixed to the driver's door on the inside outlining this benefit and the company's name, address, phone number, and contact personnel. (Full warranty except wear and negligence).

Body hoist assembly shall be guaranteed for 3 years, 100% parts and labor.

Tailgate spring-over-air cylinder and air to air system 2 years 100% parts and labor.

SPECIFICATIONS
A-15-BU-C-AS

VI. WARRANTY: (Continued)

CENTRAL HYDRAULIC SYSTEM:

Complete Central Hydraulic system and components 1 year 100% parts and labor including but not limited to the following:

Rexroth Valve
GL-400 Controller
Electronic Joysticks

Complete external TPE wiring harness shall be warranted for 3 years parts only.

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

ELECTRICAL:
Grote wiring harness shall be 7 years 100% parts. First year shall include 100% labor.
All LED lights shall be 10 years 100% parts.

WING PLOW WARRANTY:

The manufacturers standard service and warranty policy shall be for a minimum of two (2) years. This warranty shall start on the final date of acceptance of the entire order and continue for the two (2) years thereafter, (2) full winter plowing seasons.

NOTE: WARRANTY FOR LABOR SHALL BE AT THE MANUFACTURES LOCATION OR IF A FIELD REPAIR IS COMPLETED BY PENNDOT THE MANUFACTURER SHALL REIMBURSE PENNDOT AT THE MANUFACTURES STANDARD PUBLISHED LABOR RATE.

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:

Attachment D P.C.I.D. 1075

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 Component Manufacture**
5. **Warranty Section Should Reflect The Coverage, The Vendor And/Or Equipment (Truck) Manufacturer Will Supply, Not 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				

COMMONWEALTH OF PENNSYLVANIA
PENNSYLVANIA COMMERCIAL ITEM DESCRIPTION (PCID)

PCID NO. 1118 Single Axle Dump Truck, PA Turnpike
Eff. 20 October 2006 (Draft)

1.0 SCOPE: The unit shall be new and of the latest standard model. Strengthening of standard model is permitted if necessary to meet the special requirements of these specifications. They shall conform in all respects with the law of the Commonwealth of Pennsylvania governing such equipment. They shall be of the conventional dual wheel single rear-axle drive type and are for general hauling of materials, towing trailer, and snow removal work. The truck dimensions shall conform to the specifications identified on the attached drawings.

2.0 G.V.W.R.: 39,000 G.V.W.R. truck (Minimum), complete with dump body in accordance with the following conditions, requirements and specifications. The following shall indicate MINIMUM requirements including all genuine parts, accessories, and equipment and safety features considered standard whether mentioned herein or not.

3.0 GENERAL TRUCK SPECIFICATIONS:

3.1 WHEELBASE: Shall be sufficient to provide a cab to axle dimension of 84 inches to properly mount a dump body ten feet long and seven feet wide as hereinafter specified with approximate twelve inch overhang from center line of hinge to end of body.

3.2 STEERING: Shall have power steering, which meets or exceeds an 18,000 lb. front axle.

3.3 FUEL TANK: Shall be aluminum or stainless steel unpainted with a MINIMUM capacity of 70 gallons. Open mesh self cleaning aluminum or stainless steel external safety steps (Bustin NST or approved equal) shall be provided; full length between stainless steel bands. The fuel cap shall be a minimum of 3 ½ inches.

3.4 CLUTCH: Clutch shall be two-plate type compatible with engine. Eaton E-Z pedal (No substitute, standardization) with extended grease zerk fitting for throw -out bearing.

3.5 FRAME: Shall be heat treated 110,000 p.s.i. steel having a minimium resisting bending moment of not less than 1,956,900 in. lbs., (double frames not acceptable). Continuous frame side rails shall reach sufficiently ahead of radiator to allow mounting of hydraulic pump and snowplow equipment. Bolted, tapered, riveted or welded frame extensions not acceptable. Fish plate not acceptable. Install open mesh type aluminum tread plate between bumper and fender (Bustin NST or approved equal).

3.6 OPTIONAL HEAVY DUTY TRALIER TOW PACKAGE: A Holland PH-760 pintle hook shall be installed at 33 inches above ground on a 5/8" steel plate properly supported to frame and cross member. REF: Drawing No. 13B43 Steel heavy-duty 3/8" Minimum extended front bumper with tapered ends, tow hooks mounted on front frame section. The truck shall be

equipped with a full trailer air brake package. The controls are to be located in the cab; Hand control valve for trailer only. The glad hand connections shall be located at the rear of the truck.

3.7 ENGINE: The engine shall be diesel powered 10.8 Liter Minimum, Peak HP, 345 @1500-1700 RPM Electronic Minimum, torque, 1350 lbs. Ft @ 1200 RPM. Engine must be compliant and certified to meet the U.S. E.P.A 2007 Emissions Standards.

Engine shall be equipped with 160 amp, 12-volt brushless alternator (as manufactured by Delco Remy #33SI or Denso brushless, or approved equal, 12 volt starting motor Ref: Delco Remy # 39MT H.D. with over crank protection or Denso P5.0 (no substitute, standardization). Alternator and starter to include a 3 year 300,000 mile warranty. DAVCO #382 fuel filter with heater. Tachometer with engine hour-meter. Electrical system must be shielded to prevent interference by 2-way radio. Manufacturer's standard governor setting, crankshaft PTO adapter installed on front of crankshaft with clearance needed for PTO driveshaft, low oil pressure/high engine temperature alarm system and low coolant level warning device. Radiator shall be tube and fin type, maximum heavy duty size possible to be compatible with engine, and approved by engine manufacturer with an automatic fan, E.D.P.M. radiator and heater hoses with constant torque clamps Ref: Gates Blue Stripe. The exhaust pipe shall be vertical with a 180 degree heat shield made of aluminum or stainless steel and a 90-degree turn-out extending past the outside edge of the cab protector. Inside/outside air intake with in cab control and in cab filter restriction indicator. Engine shall be equipped with 1500 watt, 110V single-phase electric pre-heater with thermostat, with 1500 watt, 120 V single-phase electric pre-heater with thermostat.

3.8 OPTIONAL BATTERIES: Three 12 volt maintenance free batteries, 2100 CCA to be Dynacel model DY31DC with a 3 year non-prorated warranty (no substitute vendor contact 215-788 2236 and protected by an approved anti-corrosive non rusting battery box and cover with a ¼" shock pad.

3.9 OPTIONAL STAINLESS STEEL INLINE FUEL WARMER: Stainless Steel inline fuel warmer with thermostat and electric preheat 120 volt. REF; Artic Fox model I-704BTEH, both the engine pre-heater and the fuel warmer shall be wired via a "Y" cord with the male plug installed on the left side of the cowl panel.

3.10 ENGINE COOLANT: Extended Life Coolant/Anti-Freeze Employing Organic Acid Technology REF: Rotella Extended Life Coolant/Anti-Freeze, CAT-ECI or equal.

3.11 FRONT AXLE: The axle shall be conventional or set forward type with a maximum of 37" from the centerline of the front axle to the front of the front bumper. A SET BACK AXLE IS NOT PERMITTED. The front axle assembly shall be rated by the manufacturer at 18,000 lbs. with 18,000 lbs. suspension. Glass faced wheel-bearing hubcap, shortest possible depth, STEMCO with Sentinel ESP (extended service plug) or sealed grease type.

3.12 REAR AXLE: The axle shall be a 23,000 LB. single speed EATON MODEL #23105S (no substitute, standardization). Ratio to be determined after final bid.

3.13 SPRINGS: Must be adequate for service stated and satisfactory for use with front and rear axles specified. Rear helper springs to be included.

3.14 TRANSMISSION: Transmission shall be an Eaton/Fuller #RTO 16908LL. (No Substitute Standardization) Driveline shall be Dana Spicer 1810 with full circle clips or equal.

3.15 LUBRICANTS: Lubricants for front axle, rear axles, and transmission shall meet, or exceed, all appropriate MIL and SAE specifications for synthetic lubricants.

3.16 OPTIONAL CENTRALIZED LUBRICATION SYSTEM:
There shall be an on-board centralized lubrication system installed on the truck chassis, dump body and tailgate spreader. The unit shall be operated by air or 12 volt D.C. and designed to utilize any lubricants of NLGI grades from #000 up through NLGI # 2 with a reservoir capacity of 2 liters steel tubing shall be utilized where/whenever practical. REF: Vogel #KFU2-40 12 volt vendor contact 757-380-8585, J&A Lube Central # JA KFU240 12 volt vendor contact 610-213-0060, Lubriquip Trabon vendor contact 610-353-5000,or Groeneveld 42-CC vendor contact 330-325-4949 Vendor to provide a two year unconditional warranty and mechanic training on the operation and testing of the system.

3.17 DRAIN PLUGS: All drain plugs for axles, transmission, and hydraulic system shall be magnetic.

3.18 TIRES AND WHEELS:
The truck shall be equipped with hub piloted steel disc wheels for tubeless tires. The wheel end shall be equipped with outboard cast brake drums, and 15-degree tubeless steel wheels, hub piloted, 10 hole –285-75mm bolt circle with 22 mm two-piece flange nuts.

Front: Wheels: 22.5 x 9.00, 10 hole- 285.75mm bolt circle with 220mm bore, tubeless steel disc wheel rated at 10,000 lbs/4,536 kg at a maximum inflation pressure of 130 PSIG. Accuride, part number 29300 or equal.
Tires: 315/80R22.5 Load Range J REF: Goodyear G-291. Michelin XZY-3, No Substitute.
Rear: Wheels: 22.5 x 8.25, 10 hole – 285.75mm bolt circle with 220mm bore, tubeless steel disc wheel rated at 7,500 lbs/3,402 kg at a maximum inflation pressure of 120 PSIG. Accuride, part number 28828 or equal.
Tires: 11R.22.5 Load Range H REF: Goodyear G-164RTD. Michelin XDE-AT No Substitute.
The dual rear wheel/tire assembly shall have clearance between the tires, which permits the use of dual tire chains.

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

Front axle – between the wheel and the brake drum.
Rear axle – between the inner dual and the brake and the drum between the inner and outer duals.
Paint: The wheels shall be topcoat painted with TGIC Polyester Powder Paint MD: -82008 High Gray or equal applied over Cathodic Electro-Disposition Gray Primer.

3.19 BRAKES: Vehicle shall be equipped with self-adjusting cam brakes front 16.5 x 6 and rear 16.5 x 7 with backing plates. Full air service complete with low-pressure buzzer indicator and air dryer with heater Reference Bendix AD-IP with heater. Rear parking brakes shall be spring-loaded. Reference MGM, Model #LTR-L3 Long Life with stainless steel yoke pin and a six year warranty. The seven pole non-conductive corrosive resistant receptacle shall be Truck-Lite # 50861 or equal.

3.20 CAB: Cab, shall be galvanized steel or aluminum; hood and fenders shall be fiberglass or other non-corrosive material manufacturer's standard conventional with air ride, OEM air conditioning and AM/FM radio. The tilt hood, or tilt hood and fender assembly must be

designed to clear the plow hitch. Bug deflector to be provided. Tinted glass shall be included. Driver's seat shall be adjustable BOSTROM AIR 915 Talladega high back with body cloth insert and retractable three (3) point seat belt or equal. A bellow-type protective skirt shall cover the seat suspension mechanism. Individual passenger seat, non-suspension type. Ref: BOSTROM 900R with cloth insert and three-point seat belt or prior approved equal, color to match. An infinitely adjustable steering column shall be furnished. The cab selected shall be 106" minimum standard BBC and shall provide room for the hydraulic control console. Dual inside sun visors, arm rest on driver's side door, dome light to be activated by both doors. Mirror on both sides. 6in/15cm x 16in/40.6cm, minimum, West Coast type with four (4) heavy-duty extension arms. Mirrors and arms shall be stainless steel with mirror glass shock mounted and sealed. The heating element shall affect a minimum of 95% of the rear surface on the glass. The wires shall be fitted; in such a way that unplugging two-wire leads can change the mirror glass/element. There shall be a lighted toggle switch for the mirror mounted within accessible reach of the operator. There shall be heated convex mirrors, 8'' round or 5.5'' rectangular, both sides. Arms, brackets, and hardware shall be stainless steel, or aluminum. Right and left grab handles to be provided on inside of door panel and on exterior of cab. All grab handles shall be furnished with non-skid paint to provide "optimum safety" for field personnel (non-skid tape is unacceptable). Ref: Valspar (vendor phone 1-800-323-5129). A single air horn with snow shield shall be included. Artic-type wiper blades, electric operated two speed intermittent windshield wipers and washers with four-quart washer tank. The cab floor covering shall be heavy-duty rubber with closed cell rubber backing. The engine components facing wheel areas, on both sides, shall be shielded to protect the engine, fan and radiator from the stones, water and debris. A stainless steel or approved equal stone guard to protect radiator to be provided. Any protective system shall be prior approved by the Fleet/Equipment Operations Manager.

3.21 OPTIONAL ROADWATCH SYSTEM: There shall be a ROADWATCH system, part #849-0006-000 installed as manufactured by Sprague Controls, (no substitute, standardization) the gage shall be mounted in the dash panel.

3.22 ELECTRICAL: A completely designed and coordinated twelve- volt, negative ground system shall be provided, computer voltage may vary. The system shall be designed that all components are permanently grounded (-) and positively (+) energized where possible. All components must be selected to meet severe service. All wiring shall have lug type terminal ends or push-on type with locking modular plugs. The circuit breakers shall conform to the SAE JSS3 standard, type III, manual reset, and type I automatic reset mounted in a gang type terminal block inside the cab, and must be readily accessible for resetting. All fuses shall conform to the SAE J1284, J2077 and JSS4 standards. All terminals and splice clips shall conform to the SAE J163 standard. The use of Scotch-Loc or equal connectors will not be acceptable. All high current shall be distributed through power relays and installed in each circuit. It is recommended that each circuit have both primary and secondary protection devices. The primary device may be a fusible link, an automatic reset circuit breaker, or a manual reset circuit breaker. The secondary protection device may be a circuit breaker or a fuse. It is preferred that the protection device be as close to the power source as practical. The circuit protection shall provide both high and low resistance short circuit protection, while at the same time allowing normal overload conditions (for example, light bulb inrush current or motor start up) Each circuit shall have the proper size wiring for the protection device, and the load draw shall not exceed 80% of the protection device. All wiring harness shall have protective coverings to provide extra protection against operating and environmental conditions. The harness coverings may include tape, plastic sleeving or conduit, braid, nonmetallic loom, or other suitable shielding or covering. The edges of all metal members through which the harness passes shall be de-burred and rolled or bushed with suitable grommets. The wiring harnesses

shall be secured or supported at intervals no greater than eighteen (18) inches to prevent rubbing or chafing due to wire movement. Wiring shall be located to afford protection from heat, road splash, stones, abrasion, grease, oil and fuel. Various types of plastic and metal clips, clamps and ties shall be used to support wiring harnesses. All external terminal connections shall be soldered and sealed with heat shrink or other approved coatings. The OEM shall provide outlets for 2-way radio and in dash switches with indicators and labels for snow lights, beacon lights, spreader light, rear amber flashers, low oil override (must be momentary contact) power float for snow plow, pre-wet system and (2) two spares complete with circuit protection, wiring and a junction block for the body builders hook-up. All switches shall be in accessible reach of the operator. The wiring for the snow plow lights shall terminate in the grille area for the body builders hook-up of the snow plow lights, the wiring shall have an extend lead minimum, 24 inches. Note: Wiring for the snowplow lights must comply with the Pa. State Vehicle Safety Inspection Laws. Note: The electrical wiring routing shall be of professional quality.

3.23 SAFETY EQUIPMENT:
Supply (3) three safety reflective triangles in a protective case. Supply two each wheel chocks REF: Buyers Company # WC796R, REF: PA.Dot Drawing # EQN-82.

3.24 LIGHTING: All body, cab marker, back-up lights, rear turn signals and tail lights shall be LED, REF; Truck-Lite or approved equal. The stop and taillights on the rear of the chassis shall be Truck-Lite Super 44 # 44302R. The back-up light shall be Truck-Lite # 44205C. The dump body lighting and wiring shall be as follows: All lights shall be sealed and shock mounted. All wiring shall be compliant with the standards in the electrical section of the specifications. The Dump body wiring shall be REF: Truck-Lite series 88 or Grote Blue with manufacturer's standard warranty, harness wiring throughout. The spinner/spreader light shall be Truck-Lite 80360. The clearance and marker lights shall be LED 2-1/2" Truck-Lite Series 10 Red # 10250R, Yellow #10250Y

3.25 WARNING LIGHTS:
In addition to lights required by state and federal regulations, the following shall also be provided: Two Federal Model 100 rotating reflectors with 55 Halogen bulb beacon mounted on a self-leveling bracket Federal Model 417SB shall be mounted at both sides of the bed cab protector REF: PADOT Drawing No. EQN-210A. (Note: Delete item # 3 on drawing EQN-210A) Shall be properly wired to provide bed movement. In addition to an approved FMVSS 108 lighting system located at the rear most section of the truck chassis, a hinged stainless steel light bar assembly of LED shock mounted tail lights REF: Truck-Lite Super 44 (brake lights, turn signals, backup lights and clearance lights) shall be provided as per attached drawings REF: PTC Bar Light Drawing. Light bar trailer plug to be sealed and seven pole plug to be provided. Note if a flasher is used to operate the flashing amber lamps it must be mounted inside of the truck cab. A pilot model of a totally sealed wiring harness with a rear lamp assembly to be approved by the Fleet Equipment Operations Manager - Maintenance prior to installation. The location of snowplow lights to be determined on the pilot model REF: Pa. Dot Drawing EQN-124.

3.26 DAYTIME RUNNING LIGHTS:
Daytime running lights are to be provided, SEE ME BRAND or approved equal. The system must be connected to the plow lights as well as the standard headlights.

3.27 BACKUP ALARM: Alarm shall be self-adjusting from 87 to 112 decibels. Reference ECCO SA917 with unlimited lifetime warranty (No Substitute, Standardization).

3.28 FLOCS: Fast Lube Oil Change System (FLOCS)
This system will be installed with all the fittings, brackets, clamps and hoses as specified by the Equipment Operations Manager. The system will be compatible with all fittings presently used by the Pennsylvania Turnpike Commission. The Fleet/Equipment Operations Manager - Maintenance will approve the final placement of the male half of the snap coupler on the equipment prior to installation. Aero quip (No Substitute Standardization) REF: PaDot Drawing EQN-351A.

3.29 DUMP BODY: Shall be five-yard capacity water level measure without the use of sideboards. . Sideboard pockets and tailgate height shall provide additional carrying capacities of 2 cubic yards. The body vertical sides shall have not less than three braces per side and arranged for the use of sideboards. The tailgate shall be fitted with offset hinges and 3/8" spreader chain to allow gate to be set at any desired opening. The gate shall be properly reinforced and extend not less than six inches above body sides. The rear corner posts of body shall be substantially braced to withstand heavy use without tailgate. The front of the dump body shall be equipped with a 1/2 cab protector. It shall also have brackets mounted on each corner and slotted to permit the use of sideboards to full height. The bed shall be fitted with one continuous safety grab rail each side, one continuous tarp rail each side. Bed shall be fitted with safety tread steps on drivers side REF: Bustin 627 or Equal. A 5/8 inch X 10 inch X 24 inch plate shall be provided on the right lower side of the cross members for mounting a dump body vibrator. Note the PTC will provide and mount the dump body vibrators. The body shall be constructed of not less than 1/4" minimum wall thickness of aluminum unless stated otherwise, except the bottom, which shall be 3/8" minimum. Floor shall be 5454-H34 alloys, all extrusion 6061-T6 and remaining sheet and plate 5454-H34. The body shall be thoroughly reinforced and continuous welded construction throughout. The body shall be mounted on full-length rubber mounting sills with the lowest possible mounting allowing proper clearance between underside of dump body and dual tires with chains. **Note: The dump body shall extend a minimum of 4 inches beyond the chassis frame without the use of an extended apron. **Note: Air tailgate hardware per PADot Drawing EQN-78A.

3.29.1 DIMENSIONS:

Inside length: 120”

Inside width: 88"

Outside width: 96"

Crossmember spacing: approximately 12" o.c. (avg.)

Vertical side support spacing: approximately 22-1/2" o.c. (avg.) 3 min. per side

Cab protector: 24" long x 96" wide x 4" deep

Side height: 26"

Tailgate height: 34"

Floor: 3/8" thickness

Sides: 1/4" thickness

Front & Rear Posts: 3/16" thickness

Vertical Side Braces: 1/4" thickness

Top Side Rails: 1/4" thickness

Bottom Rails: 1/4" thickness

Front Bulkhead: 3/16" thickness

Tailgate Plate: 1/4" thickness

Tailgate Braces: 3/16" thickness

Cab Protector: 3/16" thickness

Cross members I-Beam: 4" x 3.373 lb. per ft. or approved equal

Longitudinal I-Beam: 6" x 7.38 lb. per ft.
(Square Flange)

Underbody Gussets: 3/16" min. thickness

Hoist Well: 1/4" top & sides min. thickness

Hydraulic Oil Tank – 40 gal. Capacity to meet DOT test # 51

All Aluminum Extrusions shall be 6061-T6 Alloy

3.29.2 GENERAL SPECS: All welding inside the dump body must be continuous and free of skip welds. All posts, rails, and braces shall be continuous welded completely enclosed.

The floor shall be perpendicular to the interior sidewalls and have a 6" wide by 1/4" thick plate welded to a 45 degree angle in the corner where the side meets the floor to prevent buildup of materials and provide additional side support. 4" integral extruded bottom rail is acceptable.

The bottom rail shall incorporate 3/16" thick x 5" min. wide (dirt shedders) at 45 degree angle. A one-piece front and rear corner posts with three (3) intermediate vertical side braces measuring 7" min. width shall be provided.

The top horizontal side rails shall measure min. of 4” high x 4" deep and be fully boxed.

The bottom rails shall be formed or extruded channel measuring 4-1/2" deep and have a minimum 1-1/4" bottom return flange.

Sideboard Gussets: (Inner and outer) with 2 x 8 oak wood sideboards (3/16" thick) located at front and rear posts (total of 8). Return bends shall be curled for maximum safety.

3.29.3 FENDERS: Unit shall have spray Mate Fender and Accessories; two full round fenders part number FLE-031-01520 (Black Polly Fenders), with spray Mate curved brush kit part number FLE-031-01536, and stainless steel end mount kits part number FLE-031- 01251 or equal as manufactured by Fleet Engineering, Inc., Contact # 800-333-7890. Mud flaps shall be installed below the fenders and must comply with the Pa. State Vehicle Safety Inspection Laws.

3.29.4 HOIST: Shall be front mounted telescopic, hydraulically operated, with a lifting capacity of 15 tons as certified by the National Truck Equipment Association (NTEA). The hoist shall be capable of raising the body to a 50-degree dumping angle plus or minus 4 degrees. The hoist shall be double acting (power up and down) and be equipped with 2" diameter minimum upper and lower hinge pins. The hoist shall be mounted in a lower base and attached to chassis frame. All pivot points shall have accessible grease zerks to insure adequate lubrication. Bleeder and grease line to be remote mounted on left rub rail per PADot Drawing EQN-63. The hoist and subsequent mounting hardware shall be capable of being raised for extended periods while spreading salt and anti-skid materials as vehicle is in motion. Bolt on removable pin stop to be provided; weld on stop not acceptable.

The hoist shall be lowered in no more than 20 seconds with an empty bed and an anti-cavitation device shall be utilized.

Hoist cylinder shall be 6” 3 Stage 88”. With layered hard chrome plated plungers. (2”/5.08CM Pin Size Both Ends) #DAT63-279-88 as manufactured by Custom Hoist inc. Phone 800-837-4668 or equal.

3.29.5 TAILGATE: The tailgate shall be constructed of 1/4" aluminum (5454-H34) heavy-duty type, sturdily braced to resist bending. The tailgate shall be double acting. The upper hinges shall be offset, easy open type and shall be equipped with high-pressure grease fittings. The upper hinge pins shall be quipped with retaining chains and greaseless bronze bearings. The bottom of the tailgate shall pivot in brackets and shall be held in place by tailgate control hooks. The tailgate shall be an air operated gate using a 4-1/2” diameter cylinder with chrome plated piston rod, over center adjustable hardware, bearing blocks in lieu of plain bushing, complete with in cab-mounted controls.

The tailgate hardware including chains shall be designed for heavy duty service. The chains shall be 3/8" plated Hi-test type. Four (4) 1/2" plate aluminum banjo eyes shall be installed in each corner post, two (2) each side of tailgate (one top and one bottom). Two (2) hooks or holding trays shall be installed for the storage of the tailgate chains. The hooks shall be located on the upper portion of the vertical end box sections of the tailgate (one left box section and one right box section) 5/8" eyebolts shall be used to secure the chains to the upper portion of the aluminum gooseneck.

The tailgate shall be equipped with top lift eyes; devices to attach spreader chains; tailgate guides mounted at top and bottom of rear corner posts; top hinges to have captive pins and retainer chains welded to body to prevent pin loss; 3/4" receivers and 1" aluminum gooseneck cut from 5454-H34 aluminum plate or approved bolt-on tailgate hinge REF: PADot Drawing #EQN-76. Minimum edge distance to be 2-1/4" from center of hole to edge of gooseneck. Hinge pins to have captured heads to prevent pins from turning and elongating top hardware holes. The exterior of the tailgate shall be with coal chute as referenced in the

drawings attached REF: PADot EQN-64. Coal chute gate and operating handle all to be ASI Type 304 Stainless Steel.

3.29.6 AIR OPERATED TAILGATE (PER EQN-78A):
Tailgate must be operated via an in-cab dash mounted air valve and a body mounted spring-over-air cylinder. Air valve must be dash mounted left of the steering column, clearly labeled and within easy reach of operator. All air piping and connections must be D.O.T. approved with .250 in. nylon tubing and brass compression fittings. Spring-over-air cylinder shall be warranted for a minimum of three (3) years.

3.30 CAB PROTECTOR: The cab protector shall be 96" wide, 24" long and 4" deep at front. A 1" slope in the floor front to rear shall be provided.

Cab protector sides shall be formed channel with minimum 1-1/2" flanges of 3/16". Additional gussets provided each side under cab protector sides and front bulkhead plate.

Approximately 3" clearance above highest point of truck cab and bottom of cab protector shall be provided.

3.31 UNDERBODY: The underbody shall consist of 4" x 3.373 lb./ft. I-beam cross-members located on approximately 12" centers, in addition to a front and rear member.

The body will use a heavy duty 6" extruded I-beam and will be 6061-T6 alloy with a 1/2" web and 3" flange. The I-beam shall have an integral 2" rubber-landing pad. It shall be mounted within a track that is an actual section of the I-beam.

Floor cross-members shall be welded with approximately five (5) welds on each side measuring approximately six (6) inches in length with equal spacing between welds minimum.

An OSHA approved, single position body support prop shall be furnished to prevent body from lowering during maintenance operations. REF: PADot Drawing EQN-62.

Shovel brackets installed for easy accessibility. Left front of bed.

Two (2) stirrup type steps 12" Minimum wide shall be securely attached below side rail on each side of body. The steps on both sides shall be retractable design; these steps shall be able to hold a 250-pound person, REF: Bustin # 649-APA-010 (no substitute standardization)

Two (2) non-slip grab handles above the steps, 20" length, shall be provided.

3.32 PLOW MOUNTING: To be low profile plow mounting as per PA Dot Drawing EQN-50 and must be the same as provided on the 2006 single axle dump trucks. Note: 16” dimension to be 14”. Fleet/Equipment Operations Manager must approve hitch assembly. The hydraulic cylinder to be double acting type with chrome plated rod and include high-pressure hydraulic hoses. Hoses to be permanently attached to truck up to front bumper with hydraulic couplers at bumper. The vendor is responsible for inspecting existing plow hitch to assure compatibility. Dump Truck chain boxes and hydraulic pump cover shall be aluminum Bustin type material sufficient to cover entire area from the grill to the bumper frame rail REF: PADot Drawing EQN-32.

3.33 PAINT: The chassis, front bumper, snowplow attachments, frame, and aprons shall be finished black. The cab is to be "Omaha" Orange, Dupont #31LF for shade only. Cab and chassis paint shall be manufacturer's standard professional quality polyurethane. Primer, two coats of primer (2 MIL minimum) under base coating. All steel parts are to be primed and painted to prevent rusting.

3.34 RUSTPROOFING: May be dealer's standard as long as it carries a written five (5) year warranty. Rustproofing shall extend to complete cab, hood, fenders, and chassis.

3.35 CENTRAL HYDRAULIC SYSTEM:
The hydraulic system shall be of the central type, all hydraulic functions are to be powered hydraulically using a single, pressure and flow control (load sensing) pump REF: Bosch Rexroth A10V071DFR/31LPKC92N00, or most current model Multiple hydraulic functions such as, auger/conveyor, spinner, body lift/lower, plow lift/lower and plow power reverse must be of functioning simultaneously without stopping the action of any one or more hydraulic functions. All electrically operated solenoid valves will have a neutral or de-energized position that automatically positions the pump to a zero flow and low pressure stand by condition. The hydraulic system shall be of the pressure port blocked closed center design. Entire system (hydraulic and electrical) shall have two-year warranty.

3.35.1 HYDRAULIC PUMP: Hydraulic pump REF: Bosch Rexroth A10-103616 shall be a direct driven, heavy-duty, pressure/flow compensated, load sensing variable displacement design. Output flow shall be no less than 35 GPM at 1800 engine RPM. No less than 4.33 cubic inch displacement output is acceptable. Input shaft of pump is of keyed or splined design to standardize mounting configuration. Low-pressure stand by is to be adjustable between 150-300 PSI for best system operation.

3.35.2 PUMP CONTROL: The pump control through hydraulic system logic must automatically select and adjust discharge pressure and flow in regard to the highest load demand regardless of the number of functions engaged or the engine RPM.

3.35.3 PUMP DRIVE: The pump shall be driven off of the front of the engine crankshaft using a flexible driveline of the U-joint type and be installed in reference to alignment as per manufacturer's specifications. The driveline shall be of the solid stub shaft design and constructed of C-1137 C.D. bar stock. The 1.375-16 splined section of the stub shaft must be hardened to RC48-53 surface hardness. The complete driveline must be rated to accept a working torque of a minimum of 130 foot-pounds.

3.35.4 HYDRAULIC TANK: Aluminum hydraulic tank of approximately 40-gallon capacity at normal operating oil level shall be flex mounted to chassis frame rail. Tank to be equipped with locking filler cap and be equipped with a 1 1/4 inch NPTF pipe bung to install low oil warning sensor, a 4 inch NPTF bung for the suction line, a 1 inch NPTF for the drain, and a ten micron breather. Tank must have a strainer clean out. A minimum of two internal baffles shall be provided. All return line oil to be discharged into tank, through a filter assembly, not less than six (6) inches below normal operating oil level. Tank outlet will incorporate a 2" full flow ball valve with handle secured in the open position. Tank to be permanently stenciled in 1-1/2" letters "Hydraulic Oil." Tank level switch connection to be DIN43650 with "S0" type wiring. Tank shall be equipped with a self-pressurizing filler/breather cap of no greater than 5 P.S.I. to insure constant inlet line pressure. A dash mounted level indicator shall be provided. REF: Snyder Tank Corp. # 51093.

3.35.5 FILTRATION: Hydraulic system to include two 10 micron, replaceable spin-on cartridge type return line filters of 60 G.P.M. capacity with integral 15 P.S.I, by-pass valve plumbed parallel. Suction line is to be isolated from reservoir by a non-restrictive full flow type brass ball valve with 2" NPT minimum porting. The filter unit shall be equipped with a pressure gauge to indicate filter condition by means of a central control console mounted indicator lamp. Filter to be mounted on outside of frame rail. One extra replacement filter shall be provided for each truck. Return line filter to be REF: HYDAC MFBN180610E.0112.2-B3.

3.35.6 HYDRAULIC VALVING: All the central hydraulic system valving shall be of mobile design made to withstand exposure of de-icing chemicals and severe weather conditions and shall be mounted in a watertight enclosure. Enclosure shall be type 304 stainless steel (No Substitute, Standardization). Valving shall be Rexroth MP18 or most current series horizontally stackable with end power beyond for power float, all electric. (No substitute, standardization). Each functional directional control system must have a built-in flow and pressure compensator to allow simultaneous operation regardless of any other system function. Directional control valves shall be positioned within the assembly by order of flow/pressure to minimize overall differential pressure drop. Spreader controls shall utilize PWM proportional solenoid valving. All sections are to have control solenoids, manual overrides, and stroke limiters. All valving shall be in one main valve assembly. Multiple valve assemblies are unacceptable. Mounting of the hydraulic valving shall be outboard of frame rails in an enclosure. Cover shall be removable to allow mechanics access. Valve assembly to incorporate integral load checks to prevent function dropping when valve is shifted. Manual overrides for all hydraulic functions to be adjustable and maintain a desired flow in case of a total electronic failure. Dump body valve shall allow an empty body to retract in 20 seconds or less. An anticavitation device shall be utilized.

3.36 ELECTRONIC CONTROL PANEL: Shall be a REF: Bosch Rexroth CS140, 490 Westside Drive, Welland, ONT L3B5R6 (No substitute, standardization).
Approximate size and construction: 11" overall length, 7" in height, 8" deep. Control panel shall have a sloped top panel for ease of operator visual identification of functions to be controlled. Material to be 18 gauge steel minimum. All functions shall be identified and back lit. All switches shall be replaceable without a soldering tool. Enclosure will have hinged design for ease of future maintenance. For safety reasons and to eliminate operator confusion, the control shall incorporate two separate joysticks. (1) For plow raise/lower and plow angling functions, (2) for dump body function. Panel shall be securely mounted with at least, three (3) bolts on a heavy duty pedestal using 4" square tubing and steel plate bolted to the cap floor.

THE ELECTRICAL CONTROL PANEL SHALL CONTAIN THE FOLLOWING SWITCHES:

3.36.1 POWER SWITCH: Rocker type/fully illuminated (red). This switch sends a signal to a high voltage power relay which is supplied with the system. Once the power relay is energized, power is sent to all circuits excluding safety and warning lights, including backlighting circuits. This switch shall only activate if ignition switch is on.

3.36.2 BODY CONTROL: Joystick type single axis/heavy duty (Telemecanique, Model # XD2CC1010H2) (No Substitute Standardization). This single axis joystick with spring center neutral position will control body functions.

3.36.3 PLOW CONTROL: Joystick type dual axis/heavy duty (Telemecanique, Model # XD2CC1111H2) (No Substitute Standardization). This dual axis joystick with spring center

neutral position will control all plow functions. Note: The body and plow joysticks shall be independent for safety purposes (separate joystick).

3.36.4 LOW OIL SHUTDOWN OVERRIDE: Rocker type/momentary design/amber lens. This switch allows operator or maintenance personnel to operate hydraulic system in case of low oil.

3.36.5 DUMP LOCK: Key type/on-off, a key switch shall be installed to cut out dump body raise power, if a V-box type spreader is used. If a tailgate type spreader is used, the key switch shall be utilized to limit the body raise height. The switch shall be able to be switched and maintained in either position, with the key removed.

Standard keys shall be used for all electrical control panels manufactured, such that the same key will allow this lock-out on all units. Two (2) keys shall be supplied with each unit. This key shall be same as one used on spreader control panel if utilized.

3.36.6 ANNUNCIATORS: Located on the main control panel.

#1 Change return filter = red
#2 low oil = red
#3 maximum dump angle = red with audible alarm.
#4 auger-jam

3.36.7 LOW OIL SHUTDOWN: A single normally open, two position, two-way poppet type solenoid valve REF: Bosch Rexroth142246 must be mounted directly to the hydraulic pump discharge port in such a way as to stop all oil flow to the hydraulic system when energized. The solenoid valve must be wired directly to an in-tank mounted level indicator. The level indicator shall be of the float type, and mounted from the top of the reservoir. When the float switch contacts close the shutdown valve blocks pump flow and an enunciator on the main control will be activated. The momentary switch shall be mounted in the main control console for low oil shutdown override. This switch shall be wired in such a way as to de-energize the system shutdown to facilitate fault finding and equipment stowing.

3.36.8 BODY LIMITING SWITCH: A double pole limit switch must be mounted on the body in such a way as to indicate that the bed is in the raised position. The switch must be totally enclosed and be impervious to environment. A key lock switch in the main control panel shall enable this limit switch to control body height.

3.37 OPTIONAL SPREADER CONTROL: Shall be Bosch Rexroth #CS230 or most current model (No Substitute, Standardization). The spreader control system is ground speed oriented to maintain a pre-determined application rate regardless of vehicle speed. Control shall be microprocessor for high control accuracy, automatic calibration and flexibility of programming. Controls for spinner and auger shall be of the rotary knob design. Each selector to have a minimum of 10 selection positions (0-9) or LCD/LED display of selected rate. The unit shall provide independent programmability of bit auger and spinner speeds through all selection positions zero (0) through nine (9). Rheostat design switches are unacceptable. For extremely high accuracy, control shall be ground speed orientated closed loop. System must also be capable of operating ground speed orientated-open loop and manually. Operation mode selection is obtained by supervisors and mechanics only via lockout key or digital programming access code not at the discretion of the drivers. A digital display is required to enable the operator to monitor either the real application rate in lbs. per mile of ground speed in MPH. This display must also enunciate error messages when the microprocessor's self-diagnostic system

detects any loss of control or accuracy. System must have infrared data link to allow for calibration, and data logging information.

3.37A OPTIONAL SPREADER CONTROL: Shall be Component Technology part # SG08020041. System will include the following components:RexrothA10V071DFR/31LPKC92N00 hydraulic pump configured for crankshaft drive. Power beyond shall be provided, but not utilized. Plow Balance Valve (Power Float) to be installed per manufacturer's specifications. Electronic control panel shall be a Component Technology model # SG72 Series arm rest style unit. Control will contain 2 seperate joysticks, one configured foor polw functions and configured for dump body hoist with OSHA interlock. Spreader control model GL400-5.6 shall be provided and mounted integral to the control console. In-cab controls will be provided as part of the SG72 control panel.

3.38 OPTIONAL REVERSE FEATURE: A momentary switch on the control panel will reverse the auger, in case of clogging or other stoppage, under operator control. This switch will also cut out power to the proportional control for the spinner.

3.39 BLAST FEATURE: Blast mode shall be controlled by means of a push type switch. Blast amount is programmable from 1-100 percent of hydraulic capacity. A separate and clearing defined audible warning alarm shall sound when blast button is in the "on" position, for longer than the pre-set blast time.

3.40 POWER-FLOAT: A power-float system REF: Rexroth 123768 shall be installed in conjunction with the present hydraulic system. The system shall include shuttle valve, power-float manifold and all necessary hydraulic hoses and electrical controls.

3.41 CABLE ASSEMBLIES: All electrical cables supplied must come complete with attached watertight "quick disconnect" connectors, shielded, heavy-duty industrial and anti-scuff and cut sheating. Wire joints must be soldered and heat shrink tubing used in all appropriate locations.

3.42 HYDRAULIC HOSES: All hydraulic hoses are to meet or exceed specifications. Each hose assembly (hose with hose ends), except for suction hose. Shall be fitted with JIC swivel connectors on ends were connection to system component is made. All pressure line hoses shall meet or exceed SAE specification 100R2 and shall equal to GATES high pressure hose, type C2AT for sizes up to and including 1"ID. Suction hose to be 2" nominal ID SAE specification 100R4 braided fiber, spiral wire reinforced, rubber-covered hose with replaceable bolt on type fittings. All hydraulic hoses to be fully installed and ready for operation. Spreader control valve pressure lines and reservoir tank return line to be manifold mounted at center of frame rear cross member. These lines to be equipped with complete 5100 series Aeroquip quick disconnects (coupler and nipple to be supplied) and metal cap and plugs in the following sizes: spinner pressure 1/2"; conveyor pressure 3/4"; return tank line 1-1/4". Use of iron or galvanized iron pipe for fittings and connectors is not acceptable. All fittings and connectors to be of the steel type designed for hydraulic system use. Use of pipe thread ported components and connectors shall be used only when the specific component is not available with SAE or JIC porting.

All pipe thread connectors that are used are to be coated with liquid Teflon pipe sealer before assembly. Teflon tape is not acceptable.

Hoses run to the front of truck chassis for snowplow functions shall be manifold mounted behind the front bumper with sufficient access for pump assembly service and snowplow hitch

installation. These lines shall be equipped with complete 1/2" "Aeroquip" Model 5100 Series quick disconnects (coupler and nipple to be supplied) and metal caps and plugs. All hydraulic lines shall be routed and clamped with rubber lined (2) two bolt type steel hangers and positioned with maximum available clearance from chassis exhaust system, wear points and service items such as engine filter etc.

NOTE: The hose routing shall be of professional quality.

3.42.1 REQUIREMENTS: Any items not specifically stated herein, but necessary for proper system operation, shall comply with recommended hydraulic industry standards. The vendor shall be responsible for initial servicing and pre-testing of hydraulic system, which shall include the following:

1. Initial fill of reservoir with a high grade of hydraulic fluid to approximately 40-gallon level.

2. Start up and initial high pressure run of all hydraulic system components, check for leaks, excess heat buildup, system efficiency, pressure settings etc. Vendor shall be responsible for replacing any defective components, except where previously stated. Vendor will not be responsible for initial test of spreader and plow circuits if equipment is not available to do so; however, vendor will be responsible for any defects in hydraulic system components discovered at the time of installation of the spreader and plow.

3. After initial start-up and system check, vendor will recheck oil level in reservoir.

4. Any hydraulic lines located within 10" of exhaust system shall be metal lines, or heat shielded.

5. Hydraulic oil specifications must be I.S.O. 32 compatible with Pennsylvania Turnpike Commission's Specifications.

3.43 INSPECTION: Vehicle shall be inspected to conform to the latest Pennsylvania Motor Vehicle Code. License plates to be issued by the Pennsylvania Turnpike Commission.

3.44 STATEMENT OF ORIGIN:
Statement of Origin to be furnished by the vendor.

3.45 PILOT MODEL: Contractor shall not make delivery to the Turnpike Commission until a complete pilot model has been approved by the Commission. The Commission will cooperate with the contractor to the extent of inspecting the pilot model at the manufacturer's plant and/or at the contractor's place of business depending on the need.

The contractor shall furnish a pilot model truck with body and hoist mounted, also snow plow attachment, hydraulic equipment and controls mounted and in operating condition, painted and complete in every detail of these specifications for the inspection and approval of the Turnpike Commission or an authorized representative.

3.46 WARRANTY: The vendors shall warranty, without any cost to the Pennsylvania Turnpike Commission, furnish 100% material, labor and parts, completely installed for the complete vehicle two years or 50,000 miles, whichever comes first, after date of acceptance of each unit except as hereinafter modified. Copies of all warranties to be furnished to the Fleet/Equipment Operations Manager- Maintenance. The normal wear items are to be excluded. Manufacture to

supply list. The cab, engine, turbo charger, transmission, rear axle, water pump and injectors shall be covered by the O.E.M. manufacturer's warranty of 100% material parts and labor for 60 months, or 100,000 miles whichever comes first. The oil pan shall be warranted against corrosion regardless of atmospheric conditions for five years 100% parts only. The radiator shall be covered by the O.E.M. manufacturer's warranty of 100% material parts and labor for one full year and 4 years of 100% material parts.

3.47 PARTS & COMPONENTS LIST:
The vendor shall supply a list of the following parts with the O.E.M. part numbers:

All Filters Engine Belts Glow Plugs Radiator

In addition the vendor shall supply a copy of the manufacturer's line setting ticket for each vehicle.

3.48 MANUALS: Twelve copies of custom parts, repair and service manuals covering the truck and all major components shall be provided. A schematic and parts list for the hydraulic system, dump body, ground oriented controls. CD ROM in lieu of manuals is acceptable.

3.49 TRAINING: The vendor shall arrange for (2) Two, three-day mechanic training session on several or all of the following functions of the vehicle:

Engine ABS Brake System Electrical

The location format and instruction of the training shall be agreed upon by the Pennsylvania Turnpike Commission. The vender shall further provide on-site trouble shooting as necessary for the limits of the warranty.

3.50 MISCELLANEOUS: The vendor is responsible to furnish a vehicle that is properly engineered and that conforms to all and any laws governing such equipment and shall certify that the equipment, its various systems and sub system have been in general use in the maintenance industry for at least 12 months prior to the bid date.

3.51 DELIVERY: All units to be inspected at the dealer prior to delivery to the Pennsylvania Turnpike Commission. The vendor shall make delivery of the finished units at the rate of not less than five-eight units a week beginning no later than 60 days following written approval of the completed pilot model.

3.52 INVOICE: The vendor shall invoice each unit separately dated the day of acceptance.

3.53 LIST OF COMPONENTS: The vendor shall furnish a list of the model, manufacturer and brief description of the following component with the bid documents:

a. Chassis
b. Cab
c. Engine
d. Rear Axle
e. Front Axle
f. Transmission and Clutch
i. Hydraulic System

3.54 OPTIONAL STAINLESS STEEL TAILGATE SPREADER

3.54.1 GENERAL: The unit bid shall include all standard equipment as published in the manufacture's specifications brochure. The unit bid shall be identical with the latest standard model in use by the construction industry for the past (6) months and any modifications in that period shall be included to withstand rugged usage encountered in highway construction and maintenance. Units are to be installed on the truck.

3.54.2 TYPE OF SPREADER: Shall be of the single spinner, single Auger type with hopper which will universally mount on any standard dump body below the tailgate, and will not interfere with normal dump body operation and is independent of body tailgate. Loads may be dumped over or under the tailgate and the truck can be used for its normal work without removing the spreader hopper. The discharge opening shall have a 7-gauge stainless steel shield to prevent the loss of free flowing materials when auger is idle. The complete spreader, spinner mount assembly and all hardware including quick detach hinges and pins shall be constructed of 7 gauges ASCII-304 stainless steel. The trough shall be so designed that the entire rear section shall open for ready access to the auger chamber to permit rapid clean out and drainage. This rear plate shall also act as the auger chamber cover plate. The spinner assembly shall not be attached to the rear cover plate.

3.54.3 FEED MECHANISM: Auger shall be mild steel ASTM A-36 six inches O.D. minimum with 3/8" THICK HARD FACED FLIGHTS and a 4" maximum helix pitch feeding in both directions to the discharge opening 18.75" from left the auger, drive sleeves and stub shaft shall be as per PA. Dot Drawing EQN-6 PTC Modified (no substitute standardization). The left side of the auger shaft shall be supported by (1) one self-aligning two (2) bolt flange, anti-friction, thrust, re-lube type SURVIOR Series Corrosion Resistant bearing REF: Timkin # YCJT 1¼'' PT (no substitute standardization). The bearing shall be attached to the removable ¼" ASCII-304 stainless steel end plates. The right side of the auger shaft shall be supported by the drive motor.

3.54.4 AUGER DRIVE, MOTOR: Auger drive motor shall have a displacement of 17.9 cubic inch per revolution, maximum Reference: White Model RS1801210Z. (No substitute standardization) Auger motor shall be direct drive. Drive motor must have internally mounted feedback sensor. This sensor will be Hall Effect design and come complete with cable assembly to connect ITT/Cannon Surge seal type connection.

3.54.5 SPINNER: Single spinner shall be 18" in diameter and consist of a disc and (6) vanes formed into a single unit from polyurethane, to give a flat trajectory-spreading pattern. The spinner assembly shall be adjustable allowing for variable spreading patterns left, center or right. The entire spinner shall be easily removed by pulling two (2) pins and uncoupling two (2) hydraulic quick disconnect hoses. The spinner assembly shall be linked to the truck frame with a universally mounted parallel arm to keep the spinner horizontal to the road at all dump angles. The spinner hangers shall be a minimum of ¼" thick 2" in width. The spinner assembly shall have a minimum horizontal adjustment of 10". The spinner drive motor shall have a displacement of 3.0 cubic inch per revolution maximum. REF: Char-Lynn Model 101-1001-009 (no substitute standardization.) The spinner hub shall be 4-bolt type hub to mount spinner disc with locking type nuts, (must match bolt pattern for reference spinner). Hub material shall be ASCII-304 stainless steel.

3.54.6 HOSES: All hydraulic hoses and quick couplers needed to attach the spreader system to the truck hydraulic system shall be furnished. NOTE: The installation of the spreader and hose routing shall be of professional quality.

3.55 OPTIONAL Pre-Wetting Liquid On-Board Spray System

3.55.1 DESCRIPTION: The truck mounted hydraulic tailgate dispenser system shall be designed to be capable of maintaining a consistent ratio of liquid deicing material to pre-determined granular deicing material output. This system will operate in conjunction with existing ground speed oriented spreader controls, providing a linear chemical flow at vehicle speeds ranging from 3 to 50 mph.

The system will operate with auger reverse, without any backpressure on the system components.

Upon delivery, this system will be mounted and operational with all components in working order and with no system leaks. There shall be quick-disconnects for all hydraulic and deicing material hoses.

3.55.2 COMPONENT CONFIGURATION: The reservoir tank and hydraulic system enclosure shall be mounted on a stainless steel carrier, which will attach to the tailgate of salt spreader truck. The stainless steel carrier shall be constructed of ¼" hot rolled steel or equal and is designed for quick installation and removal from the tailgate. The carrier must be designed to accommodate a light bar that is presently mounted on the dump body tailgate.

The chemical pump outlet is connected to the spreader mounted spray nozzles by nylon reinforced PVC hose. A dripless quick coupler shall be used which is compatible with the fill pump connector used by the Commission.

The system controls shall be cab-mounted and shall be connected to the power unit via suitable 4-wire control cable and 4-prong plug connector.

3.55.3 HYDRAULIC POWER UNIT: All hydraulic components must be enclosed in stainless steel housing. All additional hardware must be stainless steel. The system must incorporate a full flow bypass valve that will divert all hydraulic flow from the system. This valve must be capable of handling full flow in reverse. The system must use an adjustable ratio flow controller to allow for proportional liquid material adjustment. A hydraulic motor shall drive the product pump capable of 2000 rpm's. All hydraulic tubing must be stainless steel with flared ends. A peristaltic pump is required that delivers the liquid through a fixed displacement design that has minimal contact with metal parts. The system shall have an over-speed protection incorporated in the hydraulics manifold to protect the system from backpressure. An in line relief valve must be installed on the pressure hose of the spray nozzle.

3.55.4 POWER UNIT ENCLOSURE: The stainless steel enclosure, with stainless steel hinges and latches. All additional hardware must be stainless steel. The latches must be designed to lock.

3.55.5 TANK: Capacity of at least 80 gallons and designed to hold materials with specific gravity of up to 16 lbs. /gal. The tank shall have molded anti-slosh baffles.

3.55.6 SPRAY NOZZLES: Construction of brass, or PVC the spray nozzles shall be designed to maintain a 120-degree fan spray through the system's chemical flow rates. The nozzles used to apply liquid directly on granular shall incorporate a primary and secondary arraignment. The primary nozzle works once the product pump starts to put out material. The secondary nozzles will not apply material until system pressure exceeds 10 P.S.I.

3.55.7 FITTINGS AND VALVES: All chemical plumbing fittings and valves shall be PVC. All hoses must be nylon re-enforced PVC. All hose clamps shall be stainless steel. The system must use an easily accessible in-line chemical strainer that has a clear bowl. The fill point should use a 1" quick connect polypropylene coupling and must be "bottom fill" system. The tank must be properly vented.

3.55.8 IN-CAB CONTROLS: Mounted so as to be easily accessible to the driver, the control console is complete with pump “on/off” rocker switch with an indicator light and a tank low-pressure indicator light. In addition, an audible buzzer and system shutdown relay must be integrated into the circuitry.

3.55.9 LEVEL SENSOR: Level sensor should be "Low Material Output"; a pressure switch will monitor pump output. This switch is to be of stainless steel construction with a Buna-N diaphragm. This pressure will activate an indicator light on the control console when a low level or clogged filter situation occurs. NOTE: The installation of the pre-wet system and hose routing shall be of professional quality**.**

3.56 OPTIONAL HEATED WINDSHIELD:

DRAWINGS ATTACHED

PADot Drawings

EQN-6 PTC Modified
EQN-32
EQN-50
EQN-56
EQN-62
EQN-63
EQN-64
EQN-76
EQN-78A
EQN-80A
EQN-82
EQN-122
EQN-124
EQN-127
EQN-210A
EQN-351A

Pennsylvania Turnpike Drawings

13B-43
Light Module

Prepared By: Gerald Grecek, CPPB, Quality Assurance Specialist
DGS Bureau of Procurement, Quality Assurance Division

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Quality Assurance Manager: Paul Wolf, C.P.M., CPPB

COMMONWEALTH OF PENNSYLVANIA
PENNSYLVANIA COMMERCIAL ITEM DESCRIPTION (PCID)

PCID NO. 1119 Tandem Axle Truck with Aluminum Dump Body, PA Turnpike
Eff. 20 October 2006 (Draft)

1.0 SCOPE: The unit shall be new and of the latest standard model. Strengthening of standard model is permitted if necessary to meet the special requirements of these specifications. They shall conform in all respects with the laws of the Commonwealth of Pennsylvania governing such equipment. They shall be of the conventional dual wheel tandem rear-axle drive type and are for general hauling of materials, towing trailer, and snow removal work. The following shall indicate MINIMUM requirements including all genuine parts, accessories, and equipment and safety features considered standard whether mentioned herein or not. The truck dimensions shall conform to the specifications identified on the attached drawings.

2.0 G.V.W.R.: 66,000 lbs. G.V.W.R. truck (Minimum) complete with 13 foot 6 inch dump body in accordance with the following conditions, requirements and specifications.

3.0 GENERAL TRUCK SPECIFICATIONS:

3.1 WHEELBASE: Shall be 187 inch Minimum, sufficient to provide a cab to axle dimension of 108 inches, aft frame to be a minimum of 49 inches to properly mount a 13 foot, 6 inch Dump Body.

3.2 STEERING: Shall have power steering, which meets or exceeds a 20,000 lb. front axle.

3.3 FUEL TANK: Shall be aluminum or stainless steel unpainted with a MINIMUM usable capacity of 70 gallons. Open meshes self-cleaning aluminum or stainless steel external safety steps (Bustin NST or approved equal) shall be provided. Full length between stainless steel bands. The fuel cap shall be a minimum of 3 ½ inches.

3.4 CLUTCH: Clutch shall be self-adjusting two-plate type compatible with engine, Eaton E-Z pedal (No substitute, standardization) with extended grease zerk fittings for throw out bearing.

3.5 FRAME: Shall be heat treated 110,000 P.S.I. steel having a resisting bending moment of not less than 2,620,000 inch lbs., (double frames not acceptable). Continuous frame side rails shall reach sufficiently ahead of radiator to allow mounting of hydraulic pump. Bolted, tapered, riveted or welded frame extensions are not acceptable. Fishplate is not acceptable. Install open mesh type aluminum tread plate between bumper and fender (Bustin NST or approved equal).

3.6 OPTIONAL HEAVY DUTY TRAILER TOW PACKAGE: Holland PH-760 pintle hook shall be installed at 33 inches above ground on a 5/8" steel plate properly supported to frame and cross member. REF: Pennsylvania Turnpike Drawing # 13B43 Steel heavy-duty 3/16" Minimum extended front bumper with tapered ends, tow hooks mounted on front frame section. The truck

shall be equipped with a full trailer air brake package. The controls are to be located in the cab; Hand control valve for trailer only. The glad hand connections shall be located at the rear of the truck.

3.7 ENGINE: The engine shall be diesel powered 10.8 Liter Minimum, Peak HP 395 @ 1500-1700 RPM, Electronic Minimum, torque, 1550 lbs. Ft @ 1200 RPM. Engine must be compliant and certified to meet the U.S. E.P.A 2007 Emissions Standards.

Engine shall be equipped with 160 amps, 12-volt brushless alternator (as manufactured by Delco Remy #33SI or Denso brushless, or approved equal, 12 volt starting motor Ref: Delco Remy # 39MT H.D. with over crank protection or Denso P5.0 (no substitute, standardization). Alternator and starter to include a 3 year 350,000 mile warranty. DAVCO #382 fuel filter with heater. Tachometer with engine hour-meter. Electrical system must be shielded to prevent interference by 2-way radio. Manufacturer's standard governor setting, crankshaft PTO adapter installed on front of crankshaft with clearance needed for PTO driveshaft, low oil pressure/high engine temperature alarm system and low coolant level warning device. Radiator shall be tube and fin type, maximum heavy duty size possible to be compatible with engine, and approved by engine manufacturer with an automatic fan, E.D.P.M. radiator and heater hoses with constant torque clamps Ref: Gates Blue Stripe. The exhaust pipe shall be vertical with a 90-degree turnout and a 180 degrees heat shield made of aluminum or stainless steel. Inside/outside air intake with in cab control and in cab filter restriction indicator. Engine shall be equipped with 1500 watt, 115V single-phase electric pre-heater with thermostat.

3.8 OPTIONAL BATTERIES: Three 12 volt maintenance free batteries, 2100 CCA to be Dynacel model DY31DC with a 3 year non-prorated warranty (no substitute vendor contact 215-788 2236 and protected by an approved anti-corrosive non rusting battery box and cover with a ¼" shock pad.

3.9 OPTIONAL STAINLESS STEEL INLINE FUEL WARMER: Stainless Steel inline fuel warmer with thermostat and electric preheat 120 volt. REF; Artic Fox model I-704BTEH, both the engine pre-heater and the fuel warmer shall be wired via a "Y" cord with the male plug installed on the left side of the cowl panel.

3.10 ENGINE COOLANT: Extended Life Coolant/Anti-Freeze Employing Organic Acid Technology REF: Rotella Extended Life Coolant/Anti-Freeze, CAT-ECI or equal.

3.11 FRONT AXLE: The axle shall be conventional or set forward type with a maximum of 37" from the centerline of the front axle to the front of the front bumper. SET BACK AXLE IS NOT PERMITTED. The front axle assembly shall be rated by the manufacturer at 20,000 lbs. with 20,000-lbs. suspension. Glassfaced wheel bearing hubcap, shortest possible depth, STEMCO with Sentinel ESP (extended service plug) or equal.

3.12 REAR AXLE: The axle shall be a 46,000 LB. single speed, dual-reduction tandem axle (no substitution, standardization). Aluminum or lightweight housings are not acceptable. Ratio to be determined after final bid. There shall be an inter-axle differential lock that is manually controlled by switch in cab.

3.13 SPRINGS: Must be adequate for service stated and satisfactory for use with front and rear axles specified.

3.14 TRANSMISSION: Transmission shall be Eaton/Fuller #RTOF16908 LL or Mack T-310, (no substitute, standardization) Driveline shall be Dana 1810 with full circle clips or equal.

3.15 LUBRICANTS: Lubricants for front axle, rear axles, and transmission shall meet, or exceed, all appropriate MIL and SAE specifications for synthetic lubricants.

3.16 OPTIONAL CENTRALIZED LUBRICATION SYSTEM:

There shall be an on-board centralized lubrication system installed for truck chassis dump body or combination body, steel tubing shall be utilized where/whenever practical. The unit shall be operated by air or 12 volt D.C. and designed to utilize any lubricants of NLGI grades from #000 up through NLGI #2 with a reservoir capacity of 2 liters steel tubing shall be utilized where/whenever practical. REF: Vogal # KFU2-40 12 volt vendor contact 757-380-8585, J&A Lube Central # JA KFU240 12 volt vendor contact 610-213-0060, Lubriquip Trabon vendor contact 610-3535-5000, or Groeneveld 42-CC vendor contact 330-325-4949 Vendor to provide a two-year unconditional warranty and mechanic training on the operation and testing of the system.

3.17 DRAIN PLUGS: All drain plugs for axles, transmission, and hydraulic system shall be magnetic. All lubricant fill plugs shall be painted red.

3.18 TIRES AND WHEELS:

The truck shall be equipped with hub piloted steel disc wheels for tubeless tires. The wheel end shall be equipped with outboard cast brake drums, and 15degree tubeless steel wheels, hub piloted, 10- hole –285-75mm bolt circle with 22 two-piece flange nuts.

Front: Wheels: 22.5 x 12.25 10 hole- 285.75mm bolt circle with 220mm bore, tubeless steel disc wheel rated at 10,000 lbs/4,536 kg at a maximum inflation pressure of 130 PSIG. Accuride, Part Number 29806.
Tires: 385/65 R22.5 – J Tires to be REF: Goodyear G-286. Michelin XZY-3, No Substitute.
Rear: Wheels: 22.5 x 8.25, 10 hole – 285.75mm bolt circle with 220mm bore, tubeless steel disc wheel rated at 7,500 lbs/3,402 kg at a maximum inflation pressure of 120 PSIG. Accuride, part number 28828.
Tires: 12R.22.5 Load Range H REF: Goodyear G-164 RTD, Michelin XDE-AT, No Substitute.

The dual rear wheel/tire assembly shall have clearance between the tires, which permits the use of dual tire chains.
Wheel-Guard Separators: The wheel ends shall be equipped with the Accuride, part number 5903 Wheel Guard Separator as follows:

Front axle – between the wheel and the brake drum.
Rear axle – between the inner dual and the brake and the drum between the inner and outer duals.
Paint: The wheels shall be topcoat painted with TGIC Polyester Powder Paint MD: 82008 High Gray or equal applied over Cathodic Electro-Disposition Gray Primer.

3.19 BRAKES: Vehicle shall be equipped with self- adjusting cam brakes front 16.5 x 6 and rear 16.5 x 7. Full air service, complete with low-pressure buzzer indicator and air dryer with heater Reference Bendix AD-IP with heater. Rear parking brakes shall be spring- loaded. Reference MGM, Model LTR-L3 stainless steel yoke pin or equal with a six-year warranty and air actuated release. The seven pole non-conductive corrosive resistant receptacle shall be Truck-Lite # 50861 or equal.

3.20 CAB: Cab, shall be galvanized or aluminum; hood and fenders shall be fiberglass or other non-corrosive material manufacturer's standard conventional with air ride, OEM air conditioning and AM/FM radio. The tilt hood, or tilt hood and fender assembly must be designed to clear the plow hitch. Bug deflector to be provided. Tinted glass shall be included. Driver's seat shall be adjustable BOSTROM AIR 915 Talladega high back with body cloth insert and retractable three (3) -point seat belts or prior approved equal. A bellow-type protective skirt shall cover the seat suspension mechanism. Individual passenger, seat with belt non-suspension type. Ref: BOSTROM 900R with cloth insert and three (3)-point seat belt or prior approved equal color to match. The cab selected shall be 112" minimum standard BBC and shall provide room for the hydraulic control console. Dual inside sun visors, arm rest on driver's side door, dome light to be activated by both doors. Power mirrors on both sides with Lan-Scan Model LSCR 7168006 as Mgf. by Collision Avoidance Systems. 6in/15cm x 16in/40.6cm, minimum, West Coast type, with four (4) heavy-duty extension arms. Mirrors and arms shall be stainless steel with mirror glass shock mounted and sealed. The heating element shall affect a minimum of 95% of the rear surface on a first surface chrome glass. The wires shall be fitted in such a way, that the mirror glass/element can be changed by unplugging two-wire leads. There shall be a lighted toggle switch for the mirror mounted within accessible reach of the operator. There shall be heated convex mirrors 8” round or 5.5” rectangular both sides. Arms, brackets, and hardware shall be stainless steel, aluminum. Right and left grab handles to be provided on inside of door panel and on exterior of cab. All grab handles shall be furnished with non-skid paint to provide “optimum safety” for field personnel (non-skid tape is unacceptable). Ref: Valspar (Vendor Phone 1-800-323-5129). Single air horn with snow shield shall be included. Artic-type wiper blades, electric operated two speed intermittent windshield wipers and washers with four-quart washer tank. The cab floor covering shall be heavy-duty rubber with closed cell rubber backing. The engine components facing wheel areas, on both sides, shall be shielded to protect the engine, fan and radiator from the stones, water and debris. Stainless steel or approved equal stone guard to protect radiator to be provided. Any protective system shall be prior approved by the Fleet/Equipment Operations Manager.

3.21 OPTIONAL ROADWATCH SYSTEM: There shall be a ROADWATCH system, part #849-0006-000 installed as manufactured by Sprague Controls, (no substitute, standardization) the gage shall be mounted in the dash panel.

3.22 ELECTRICAL: A completely designed and coordinated twelve- volt, negative ground system shall be provided, computer voltage may vary. The system shall be designed that all components are permanently grounded (-) and positively (+) energized where possible. All components must be selected to meet severe service. All wiring shall have lug type terminal ends or push-on type with locking modular plugs. The circuit breakers shall conform to the SAE JSS3 standard, type III, manual reset, and type I automatic reset mounted in a gang type terminal block inside the cab and furnished with two (2) spares. They must be readily accessible for resetting. All fuses shall conform to the SAE J1284, J2077 and JSS4 standards. All terminals and splice clips shall conform to the SAE J163 standard. The use of Scotch-Loc or equal connectors will not be acceptable. All additional added power feed circuits for accessories i.e. hydraulic controls, snow plow lights, revolving beacon lights, or any other systems which are not standard to the truck chassis, shall have adequate circuit protection. All high current shall be distributed through power relays and installed in each circuit. It is recommended that each circuit have both primary and secondary protection devices. The primary device may be either a fusible link, an automatic reset circuit breaker, or a manual reset circuit breaker. The secondary protection device may be a circuit breaker or a fuse. It is preferred that the protection device be as close to the power source as practical. The circuit protection shall provide both high and low

resistance short circuit protection, while at the same time allowing normal overload conditions (for example, light bulb inrush current or motor start up) Each circuit shall have the proper size wiring for the protection device, and the load draw shall not exceed 80% of the protection device. All wiring harness shall have protective coverings to provide extra protection against operating and environmental conditions. The harness coverings may include tape, plastic sleeving or conduit, braid, nonmetallic loom, or other suitable shielding or covering. The edges of all metal members through which the harness passes shall be de-burred and rolled or brushed with suitable grommets. The wiring harnesses
Shall be secured or supported at intervals no greater than eighteen (18) inches to prevent rubbing or chafing due to wire movement. Wiring shall be located to afford protection from heat, road splash, stones, abrasion, grease, oil and fuel. Various types of plastic and metal clips, clamps and ties shall be used to support wiring harnesses. All external terminal connections shall be soldered and sealed with heat shrink or other approved coatings. The OEM shall provide outlets for 2-way radio and in dash switches with indicator and labels for snow lights, beacon lights, spreader light, rear amber flashers low oil override (must be momentary contact) power float for snow plow, pre-wet system and (2) two spares complete with circuit protection, wiring and a junction block for the body builders hook-up. All switches shall be in accessible reach of the operator. The wiring for the snowplow lights shall terminate in the grille area for the body builders hook-up of the snow plow lights, the wiring shall have an extend lead minimum, 24 inches. Note: Wiring for the snowplow lights must comply with the PA State Vehicle Safety Inspection Laws. Note: The electrical wiring routing shall be of professional quality.

3.23 SAFETY EQUIPMENT::
Supply (3) three safety reflective triangles in a protective case. Supply two each wheel chocks REF: Buyers Company # WC796R, REF: Pa Dot Drawing # EQN-82.

3.24 LIGHTING: All body, cab marker, back-up lights, rear turn signals and tail lights shall be LED, REF; Truck-Lite or approved equal. The stop and taillights on the rear of the chassis shall be Truck-Lite Super 44 # 44302R. The back-up light shall be Truck-Lite # 44205C. The dump body lighting and wiring shall be as follows: All lights shall be sealed and shock mounted. All wiring shall be compliant with the standards in the electrical section of the specifications. The Dump body wiring shall be REF; Truck-Lite series 88 or Grote Blue with manufacturer's standard warranty, harness wiring throughout. The spinner/spreader light shall be Truck-Lite 80360. The clearance and marker lights shall be LED 2-1/2" Truck-Lite Series 10 Red # 10250R, Yellow #10250Y

3.25 WARNING LIGHTS:
In addition to lights required by state and federal regulations, the following shall also be provided: Two Federal Signal Model 100 rotating reflectors with 55 Halogen bulb beacon shall be mounted on self-leveling brackets Federal Model 417SB at both sides of the bed cab protector REF: PA Dot Drawing No. EQN-210A. (Note: Delete Item #3 on drawing EQN-210A). Shall be properly wired to provide bed movement. In addition to an approved FMVSS 108 lighting system located at the rear most section of the truck chassis, a hinged light bar assembly of LED shock mounted tail lights REF: Truck-Lite Super 44 (brake lights, turn signals, backup lights and clearance lights) shall be provided as per attached drawings. REF: Pa. Turnpike Bar Light Drawing. Light bar trailer plug to be sealed and seven-pole plug to be provided. Note: If a flasher is used to operate the flashing amber lamps it must be mounted inside of the truck cab. A pilot model of a totally sealed wiring harness with a rear lamp assembly to be approved by the Fleet/Equipment Operations Manager - Maintenance prior to installation. The location of snowplow lights to be determined on the pilot model. REF: Pa Dot Drawing # EQN-124.

3.26 DAYTIME RUNNING LIGHTS:
Daytime running lights are to be provided, SEE ME BRAND or approved equal. The system must be connected to the plow lights as well as the standard headlights.

3.27 BACKUP ALARM: Alarm shall be self-adjusting from 87 to 112 decibels. Reference ECCO SA917 with unlimited lifetime warranty (no substitution, standardization).

3.28 FLOCS: Fast Lube Oil Change System (FLOCS)
This system will be installed with all the fittings, brackets, clamps and hoses as specified by the Fleet/Equipment Operations Manager. The system will be compatible with all fittings presently used by the Pennsylvania Turnpike Commission. The Fleet/Equipment Operations Manager - Maintenance will approve the final placement of the male half of the snap coupler on the equipment, prior to installation. Aeroquip (No substitute, standardization) REF: PaDot Drawing # EQN-351A.

3.29 DUMP BODY– ALUMINUM:
Details – Ref Drg. EQN-79A. The dump body capacity shall be minimum of 11.0 cubic yards water level. Sideboard pockets and tailgate height shall provide additional carrying capacities 5 cubic yards. Tailgate 48 in (minimum), body sides 38 – 42 in (approx). The front body bulkhead shall be .15625 in min standard aluminum 5454H34, and shall be a minimum of 12 in. above body sides. There shall be an Akron Foundry At-2 shovel holder assembly mounted on the left front of bulkhead (final position to be determined at the pre-build meeting). The rear corner posts on both sides shall be full depth, one-piece construction from the top of the tailgate to the bottom of the rear bolster and shall be free of holes. The rear bolster shall be one piece, full depth and full width. Spreader chain holders, on sides, top and bottom of the rear corner posts. All body welding shall be full welding. There shall be bed props (2), system per EQN-62. There shall be midway sideboard supports (left and right).

3.29.1 TAILGATE – ALUMINUM:
Refer Drawing No. EQN-81X and EQN-64. Tailgate, manufactured from grades 5454H34 and 6061T6. Double acting five (5)-panel tailgate with offset hinges. Two (2) “J” hooks welded to the tailgate for chain hangers.1.25 in. diameter greaseable self-aligning top hinge pins with tapered end and with sufficient length for easy removal. Pins shall be affixed with chains to prevent loss and be non-rotating. Top hinge plate, aluminum, or steel with replaceable heavy duty bushings and greasable fittings. 0.375 in. spreader chain, non-rusting and able to accommodate 0.5 in. thick aluminum chain holder or 0.375 in. thick steel chain holder. Minimum edge distance 1.5 in. Four (4) tailgate chain brackets. Two (2) on each side. Severe duty tailgate attaching brackets. Aluminum tailgate with built in light bar. Ref Drg. No. EQN-81X. Body lighting: Refer paragraph Electrical Chassis – Wiring Harness, and EQN-81X. Coal chute gate with levers and operating handle. AISI type 304 stainless steel.

3.29.2 AIR OPERATED TAILGATE (PER EQN-78A):
Tailgate must be operated via an in-cab dash mounted air valve and a body mounted spring-over-air cylinder. Air valve must be dash mounted left of the steering column, clearly labeled and within easy reach of operator. All air piping and connections must be D.O.T. approved with .250 in. nylon tubing and brass compression fittings. Spring-over-air cylinder shall be warranted for a minimum of three (3) years.

3.29.3 BODY SIDES – ALUMINUM:

The sides shall be minimum .250 in. thick aluminum 5454H34. Top rails shall be fully boxed and completely closed by "continuous" welding. Both sides. One-piece construction for side top and bottom rails; not splices. Running board width shall cover the outer rear dual tires and shall be full length of the body, both sides. A minimum of five 95) vertical side braces per side on proper centers shall be furnished in addition to the front and rear corner posts. Side braces and front posts shall be furnished with bottom drain holes.
Aluminum body shall be isolated from steel frame rails at the hinge by installing mylar material.

3.29.4 FLOOR – ALUMINUM:
One (1) piece body floor shall be .3750 in. thick minimum, abrasion-resistant aluminum 5454H34. Refer EQN-79A.

3.29.5 BODY STRUCTURE – ALUMINUM:
Refer. Drg. No. EQN-79A. The body shall be "Stacked Construction" Aluminum. Longitudinal member shall be minimum 6 in. I bean @ minimum weight 6.1 lb/ft., AL6061T6 (Squared flange). Cross-member shall be minimum 4 in. I bean, 2.70 lb/ft, Al6061T6. 4 in. channel cross-member of equal strength are permitted at the front and rear of body to finish the unit, and in the area where hoist box is located. The body and body sub-frame shall be reinforced to withstand SEVERE duty service. For example dump body up while spreading salt and anti-skid material, or excavation rip-rap being dropped in the bed. The Fleet/Equipment Division will approve all methods of alternate design. The longitudinal I-beams and channels specified are minimum and may be exceeded to permit proper hoist mounting. Heavy gussets of minimum size 4 in. x 6 in. x 0.3750 in thick shall be furnished at all cross-members on the outside. Where not possible, they will be furnished on the inside.

Two (2) stirrup type steps 12" Minimum wide shall be securely attached below side rail on each side of body. The steps on both sides shall be retractable design; these steps shall be able to hold a 250-pound person, Ref: Bustin# 649-APA-010 (No Substitute Standardization). This will replace EQN Drawing 79A Section B.

Two (2) non-slip grab handles above the steps, 20" length, shall be provided.

3.29.6 CAB SHIELD – ALUMINUM:
Ref. Drg. No. EQN-79A. Body front bulkhead and cab shield shall be minimum 0.15625 in. thick aluminum 5454H34. Continuous welding on front and back shield throughout. One-half (1/2) cab shield shall have sufficient clearance to ensure that the shield will not hit the exhaust system when dumping on uneven terrain. If full wing posts are specified, cab shield shall be modified with approval of the Fleet/Equipment Operations Manager.

3.29.7 FENDERS: Unit shall have Spray Mate fender and accessories; two full round fender sets two (2) fenders per set) part number FLE-031-01520 (Polly Fenders), two (2) spray Mate curved brush kits (two (2) brushes per kit) part number FLE-031-01536 and, eight stainless steel end mount kits part number FLE-031-00826. Black rubber splashguards (mud flaps) with shall be provided behind rear wheels to meet federal regulations including 22-1/2 degrees tangent mounting angle.

3.29.8 HOIST: The hoist shall be double acting Shall be front mounted telescopic, hydraulically operated, with a lifting capacity of 15 tons as certified by the National Truck Equipment Association (NTEA). The hoist shall be capable of raising the body to a 50-degree dumping angle plus or minus 4 degrees. (power up and down) and be equipped with 2" diameter minimum upper and lower hinge pins. The hoist shall be mounted in a lower base and attached

to chassis frame. All pivot points shall have accessible grease zerks to insure adequate lubrication. Bleeder and grease line to be remote mounted on left rub rail per PADot Drawing EQN-63. The hoist and subsequent mounting hardware shall be capable of being raised for extended periods while spreading salt and anti-skid materials as vehicle is in motion. Bolt on removable pin stop to be provided; weld on stop not acceptable.

The hoist shall be lowered in no more than 20 seconds with an empty bed and an anti-cavitation device shall be utilized.

Hoist cylinder shall be 6” 3 Stage 110”. With layered hard chrome plated plungers. (2”/5.08CM Pin Size Both Ends) #DAT63-284-110 as manufactured by Custom Hoist inc. Phone 800-837-4668 or equal.

3.30 CAB PROTECTOR: The cab protector shall be 96" wide, 24" long and 4" deep at front. A 1" slope in the floor front to rear shall be provided.

Cab protector sides shall be formed channel with minimum 1-1/2" flanges of 3/16". Additional gussets provided each side under cab protector sides and front bulkhead plate.

Approximately 3" clearance above highest point of truck cab and bottom of cab protector shall be provided.

3.31 UNDERBODY: The underbody shall consist of 4" x 3.373 lb./ft. I-beam cross-members located on approximately 12" centers, in addition to a front and rear member.

The body will use a heavy duty 6" extruded I-beam and will be 6061-T6 alloy with a 1/2" web and 3" flange. The I-beam shall have an integral 2" rubber-landing pad. It shall be mounted within a track that is an actual section of the I-beam.

Floor cross-members shall be welded with approximately five (5) welds on each side measuring approximately six (6) inches in length with equal spacing between welds minimum.

An OSHA approved, single position body support prop shall be furnished

3.32 PLOW MOUNTING: Shall be low profile plow mounting as per Pa. Dot EQN-50. Note: 16” dimension to be 14”. Fleet/Equipment Operations Manager must approve the hitch assembly. The hydraulic cylinder to be double acting type with chrome plated rod and includes high-pressure hydraulic hoses. Hoses to be permanently attached to truck up to front bumper with hydraulic couplers at bumper. The vendor is responsible for inspecting existing plow hitch to assure compatibility. Dump Truck chain boxes and hydraulic pump cover shall be aluminum Bustin type material sufficient to cover entire area from the grill to the bumper frame rail. REF: PaDot Drawing # EQN-32.

3.33 PAINT: The chassis, front bumper, snowplow attachments, frame, and aprons shall be finished black. The wheels are to be O.E.M standard. The cab is to be "Omaha" Orange, Dupont #31LF for shade only. Cab and chassis paint shall be manufacturer's standard professional quality polyurethane. Primer, two coats of primer (2 MIL minimum) under base coating. All steel parts are to be primed and painted to prevent rusting.

3.34 RUSTPROOFING: May be dealers standard as long as it carries a written five (5) year warranty. Rust proofing shall extend to complete cab, hood, fenders, and chassis.

3.35 CENTRAL HYDRAULIC SYSTEM:
The hydraulic system shall be of the central type, all hydraulic functions are to be powered hydraulically using a single, pressure and flow control (load sensing) pump REF: Bosch RexrothA10V071DFR/31LPKC92N00, or most current model (no substitute standardization). Multiple hydraulic functions such as, auger/conveyor, spinner, body lift/lower, plow lift/lower and plow power reverse must be of functioning simultaneously without stopping the action of any one or more hydraulic functions. All electrically operated solenoid valves will have a neutral or de-energized position that automatically positions the pump to a zero flow and low pressure stand by condition. The hydraulic system shall be of the pressure port blocked closed center design. Entire system (hydraulic and electrical) shall have two-year warranty.

3.35.1 HYDRAULIC PUMP:
Hydraulic pump REF: Bosch Rexroth A10.-103616 shall be a direct driven, heavy-duty, pressure/flow compensated, load sensing variable displacement design. Output flow shall be no less than 35 GPM at 1800 engine RPM. No less than 4.33 cubic inch displacement output is acceptable. Input shaft of pump is of keyed or splined design to standardize mounting configuration. Low-pressure stand by is to be adjustable between 150-300 PSI for best system operation.

3.35.2 PUMP CONTROL: The pump control through hydraulic system logic must automatically select and adjust discharge pressure and flow in regard to the highest load demand regardless of the number of functions engaged or the engine RPM.

3.35.3 PUMP DRIVE: The pump shall be driven off of the front of the engine crankshaft using a flexible driveline of the U-joint type and be installed in reference to alignment as per manufacturer's specifications. The driveline shall be of the solid stub shaft design and constructed of C-1137 C.D. bar stock. The 1.375-16 splined section of the stub shaft must be hardened to RC48-53 surface hardness. The complete driveline must be rated to accept a working torque of a minimum of 130 foot-pounds.

3.35.4 HYDRAULIC TANK: Aluminum hydraulic tank of approximately 40-gallon capacity at normal operating oil level shall be flex mounted to chassis frame rail. Tank to be equipped with locking filler cap and be equipped with a 1 1/4 inch NPTF pipe bung to install low oil warning sensor, a 4 inch NPTF bung for the suction line, a 1 inch NPTF for the drain, and a ten micron breather. Tank must have a strainer clean out. A minimum of two internal baffles shall be provided. All return line oil to be discharged into tank, through a filter assembly, not less than six (6) inches below normal operating oil level. Tank outlet will incorporate a 2" full flow ball valve with handle secured in the open position. Tank to be permanently stenciled in 1-1/2" letters "Hydraulic Oil." Tank level switch connection to be DIN43650 with "S0" type wiring. Tank shall be equipped with a self-pressurizing filler/breather cap of no greater than 5 P.S.I. to insure constant inlet line pressure. A dash mounted level indicator shall be provided. REF: Snyder Tank Corp. # 51093.

3.35.5 FILTRATION: Hydraulic system to include two 10 micron, replaceable spin-on cartridge type return line filters of 60 G.P.M. capacity with integral 15 P.S.I, by-pass valve plumbed parallel. Suction line is to be isolated from reservoir by a non-restrictive full flow type brass ball valve with 2” NPT minimum porting. The filter unit shall be equipped with a pressure gauge to indicate filter condition by means of a central control console mounted indicator lamp. Filter to

be mounted on outside of frame rail. One extra replacement filter shall be provided for each truck. Return line filter to be HYDAC MFBN18061E1.0112.2-B3.

3.35.6 HYDRAULIC LINES AND PLUMBING: All hydraulic lines, pipes, hoses and fittings shall be of sufficient capacity to accommodate the volume of oil without undue heating or turbulence in the system. A 2" suction line with a minimum SAE rating of 100-R4 must be used between the reservoir and the inlet of the pump. All of the pressure hoses, including the signal sensing line to the pump, must have JIC swivel fittings on both ends and have a minimum SAE rating of 100-R2. Return lines and the case drain line must have a minimum SAE rating of 100-R2. A detailed hydraulic schematic shall be provided.

3.35.7HYDRAULIC VALVING: All the central hydraulic system valving shall be of mobile design made to withstand exposure of de-icing chemicals and severe weather conditions and shall be mounted in a watertight enclosure, the eclosure shall be type 304 stainless steel (No Substitute, Standardization). Valving shall be Rexroth MP18 or most current series horizontally stackable with end power beyond for power, float all electric. (No substitute, standardization). Each functional directional control system must have a built-in flow and pressure compensator to allow simultaneous operation regardless of any other system function. Directional control valves shall be positioned within the assembly by order of flow/pressure to minimize overall differential pressure drop. Spreader controls shall utilize PWM proportional solenoid valving. All sections are to have control solenoids, manual overrides, and stroke limiters. All valving shall be in one main valve assembly. Multiple valve assemblies are unacceptable. Mounting of the hydraulic valving shall be outboard of frame rails in an enclosure. Cover shall be removable to allow mechanics access. Valve assembly to incorporate integral load checks to prevent function dropping when valve is shifted. Manual overrides for all hydraulic functions to be adjustable and maintain a desired flow in case of a total electronic failure. Dump body valve shall allow an empty body to retract in 20 seconds or less. An anti-cavitation device shall be utilized.

3.36 ELECTRONIC CONTROL PANEL: Shall be a REF: Bosch Rexroth CS140, 490 Westside Drive, Welland, ONT L3B5R6 (No substitute, standardization).
Approximate size and construction: 11" overall length, 7" in height, 8" deep. Control panel shall have a sloped top panel for ease of operator visual identification of functions to be controlled. Material to be 18 gauge steel minimum. All functions shall be identified and back lit. All switches shall be replaceable without a soldering tool. Enclosure will have hinged design for ease of future maintenance. For safety reasons and to eliminate operator confusion, the control shall incorporate two separate joysticks. (1) For plow raise/lower and plow angling functions, (2) for dump body function. Panel shall be securely mounted with at least, three (3) bolts on a heavy duty pedestal using 4" square tubing and steel plate bolted to the cap floor.

THE ELECTRICAL CONTROL PANEL SHALL CONTAIN THE FOLLOWING SWITCHES:

3.36.1 POWER SWITCH: Rocker type/fully illuminated (red). This switch sends a signal to a high voltage power relay which is supplied with the system. Once the power relay is energized, power is sent to all circuits excluding safety and warning lights, including backlighting circuits. This switch shall only activate if ignition switch is on.

3.36.2 BODY CONTROL: Joystick type single axis/heavy duty (Telemecanique, Model # XD2CC1010H2) (No Substitute Standardization). This single axis joystick with spring center neutral position will control body functions.

3.36.3 PLOW CONTROL: Joystick type dual axis/heavy duty (Telemecanique, Model # XD2CC1111H2) (No Substitute Standardization). This dual axis joystick with spring center neutral position will control all plow functions. Note: The body and plow joysticks shall be independent for safety purposes (separate joystick).

3.36.4 ANNUNCIATORS: Located on the main control panel.

#1 Change return filter = red
#2 low oil = red
#3 maximum dump angle = red with audible alarm.
#4 auger-jam

3.36.5 LOW OIL SHUTDOWN: A single normally open, two position, two-way poppet type solenoid valve REF: Bosch Rexroth 142246 must be mounted directly to the hydraulic pump discharge port in such a way as to stop all oil flow to the hydraulic system when energized. The solenoid valve must be wired directly to an in-tank mounted level indicator. The level indicator shall be of the float type, and mounted from the top of the reservoir. When the float switch contacts close the shutdown valve blocks pump flow, an enunciator on the main control will be activated. The momentary switch shall be mounted in the main control console for low oil shutdown override. This switch shall be wired in such a way as to de-energize the system shutdown to facilitate fault finding and equipment stowing.

3.36.6 BODY LIMITING SWITCH: A double pole limit switch must be mounted on the body in such a way as to indicate that the bed is in the raised position. The switch must be totally enclosed and be impervious to environment. A key lock switch in the main control panel shall enable this limit switch to control body height.

3.37 OPTIONAL SPREADER CONTROL: Shall be a Bosch Rexroth Model #CS230 or most current model (No Substitute, Standardization). The spreader control system is ground speed oriented to maintain a pre-determined application rate regardless of vehicle speed. Control shall be microprocessor for high control accuracy, automatic calibration and flexibility of programming. Controls for spinner and auger shall be of the rotary knob design. Each selector to have a minimum of 10 selection positions (0-9) or LCD/LED display of selected rate. The unit shall provide independent programmability of bit auger and spinner speeds through all selection positions zero (0) through nine (9). Rheostat design switches are unacceptable. For extremely high accuracy, control shall be ground speed orientated closed loop. System must also be capable of operating ground speed orientated-open loop and manually. Operation mode selection is obtained by supervisors and mechanics only via lockout key or digital programming access code not at the discretion of the drivers. A digital display is required to enable the operator to monitor either the real application rate in lbs. per mile of ground speed in MPH. This display must also enunciate error messages when the microprocessor's self-diagnostic system detects any loss of control or accuracy. System must have infrared data link to allow for calibration, and data logging information.

3.37A OPTIONAL SPREADER CONTROL: Shall be Component Technology part # SG08020041. System will include the following components:RexrothA10V071DFR/31LPKC92N00 hydraulic pump configured for crankshaft drive. Power beyond shall be provided, but not utilized. Plow Balance Valve (Power Float) to be installed per manufacturer's specifications. Electronic control panel shall be a Component Technology model # SG72 Series arm rest style unit. Control will contain 2 seperate joysticks, one configured foor polw functions and configured for dump body hoist with OSHA interlock.

Spreader control model GL400-5.6 shall be provided and mounted integral to the control console. In-cab controls will be provided as part of the SG72 control panel.

3.38 OPTIONAL REVERSE FEATURE: A momentary switch on the control panel will reverse the auger, in case of clogging or other stoppage, under operator control. This switch will also cut out power to the proportional control for the spinner.

3.39 BLAST FEATURE: Blast mode shall be controlled by means of a push type switch. Blast amount is programmable from 1-100 percent of hydraulic capacity. A separate and clearing defined audible warning alarm shall sound when blast button is in the "on" position longer than pre-set blast time.

3.40 POWER-FLOAT: A power-float system REF: Bosch Rexroth 123768 shall be installed in conjunction with the present hydraulic system. The system shall include shuttle valve, power-float manifold and all necessary hydraulic hoses and electrical controls.

3.41 CABLE ASSEMBLIES: All electrical cables supplied must come complete with attached watertight "quick disconnect" connectors, shielded, heavy-duty industrial and anti-scuff and cut sheating. Wire joints must be soldered and heat shrink tubing used in all appropriate locations.

3.42 HYDRAULIC HOSES: All hydraulic hoses are to meet or exceed specifications. Each hose assembly (hose with hose ends), except for suction hose. Shall be fitted with JIC swivel connectors on ends were connection to system component is made. All pressure line hoses shall meet or exceed SAE specification 100R2 and shall equal to GATES high pressure hose, type C2AT for sizes up to and including 1"ID. Suction hose to be 2" nominal ID SAE specification 100R4 braided fiber, spiral wire reinforced, rubber-covered hose with replaceable bolt on type fittings. All hydraulic hoses to be fully installed and ready for operation. Spreader control valve pressure lines and reservoir tank return line to be manifold mounted at center of frame rear cross member. These lines to be equipped with complete 5100 series Aeroquip quick disconnects (coupler and nipple to be supplied) and metal cap and plugs in the following sizes: spinner pressure 1/2"; conveyor pressure 3/4"; return tank line 1-1/4". Use of iron or galvanized iron pipe for fittings and connectors is not acceptable. All fittings and connectors to be of the steel type designed for hydraulic system use. Use of pipe thread ported components and connectors shall be used only when the specific component is not available with SAE or JIC porting.

All pipe thread connectors that are used are to be coated with liquid Teflon pipe sealer before assembly. Teflon tape is not acceptable.

Hoses run to the front of truck chassis for snowplow functions shall be manifold mounted behind the front bumper with sufficient access for pump assembly service and snowplow hitch installation. These lines shall be equipped with complete 1/2" "Aeroquip" Model 5100 Series quick disconnects (coupler and nipple to be supplied) and metal caps and plugs. All hydraulic lines shall be routed and clamped with rubber lined (2) two bolt type steel hangers and positioned with maximum available clearance from chassis exhaust system, wear points and service items such as engine filter etc.

NOTE: The hose routing shall be of professional quality.

3.42.1 REQUIREMENTS: Any items not specifically stated herein, but necessary for proper system operation, shall comply with recommended hydraulic industry standards. The vendor

shall be responsible for initial servicing and pre-testing of hydraulic system, which shall include the following:

1. Initial fill of reservoir with a high grade of hydraulic fluid to approximately 40-gallon level.

2. Start up and initial high pressure run of all hydraulic system components, check for leaks, excess heat buildup, system efficiency, pressure settings etc. Vendor shall be responsible for replacing any defective components, except where previously stated. Vendor will not be responsible for initial test of spreader and plow circuits if equipment is not available to do so; however, vendor will be responsible for any defects in hydraulic system components discovered at the time of installation of the spreader and plow.

3. After initial start-up and system check, vendor will recheck oil level in reservoir.

4. Any hydraulic lines located within 10" of exhaust system shall be metal lines, or heat shielded.

5. Hydraulic oil specifications must be I.S.O. 32 compatible with Pennsylvania Turnpike Commission's Specifications.

3.43 INSPECTION: Vehicle shall be inspected to conform to the latest Pennsylvania Motor Vehicle Code. License plates to be issued by the Pennsylvania Turnpike Commission.

3.44 STATEMENT OF ORIGIN:
Statement of Origin to be furnished by the vendor.

3.45 PILOT MODEL: Contractor shall not make delivery to the Turnpike Commission until the Commission has approved a complete pilot model. The Commission will cooperate with the contractor to the extent of inspecting the pilot model at the manufacturer's plant and/or at the contractor's place of business depending on the need.

The contractor shall furnish a pilot model truck with body and hoist mounted, also snow plow attachment, hydraulic equipment and controls mounted and in operating condition, painted and complete in every detail of these specifications for the inspection and approval of the Turnpike Commission or an authorized representative.

3.46 WARRANTY: The vendors shall warranty, without any cost to the Pennsylvania Turnpike Commission, furnish 100% material, labor and parts, completely installed for the complete vehicle two years or 50,000 miles, whichever comes first, after date of acceptance of each unit except as hereinafter modified. Copies of all warranties to be furnished to the Equipment Operations Manager- Maintenance. The normal ware items are to be excluded. Manufacture to supply list. The cab, engine, turbo charger, transmission, rear axle, water pump and injectors shall be covered by the O.E.M. manufacturer's warranty of 100% material parts and labor for 60 months, or 100,000 miles whichever comes first. The oil pan shall be warranted against corrosion regardless of atmospheric conditions for five years 100% parts only. The radiator shall be covered by the O.E.M. manufacturer's warranty of 100% material parts and labor for one full year and 4 years of 100% material parts.

3.47 PARTS & COMPONENTS LIST:
The vendor shall supply a list of the following parts with the O.E.M. part numbers:

All Filters Engine Belts Glow Plugs Radiator

In addition the vendor shall supply a copy of the manufacturer's line setting ticket for each vehicle.

3.48 MANUALS: Two (2) copies of custom parts, repair and service manuals covering the truck and all major components shall be provided. A schematic and parts list for the hydraulic system, dump body and ground oriented controls shall be provided.

3.49 TRAINING: The vendor shall arrange for a one-day mechanic training session on hydraulics system and spreader controller. The Pennsylvania Turnpike Commission shall agree upon the location format and instruction of the training. The vender shall further provide on-site trouble shooting as necessary for the limits of the warranty.

3.50 MISCELLANEOUS: The vendor is responsible to furnish a vehicle that is properly engineered and that conforms to any and all laws governing such equipment and shall certify that the equipment, its various systems and sub systems have been in general use in the maintenance industry for at least 12 months prior to the bid date.

3.51 DELIVERY: All units to be inspected at the dealer prior to delivery to the Pennsylvania Turnpike Commission.

3.52 INVOICE: The vendor shall invoice each unit separately dated the day of acceptance.

3.53 LIST OF COMPONENTS: The vendor shall furnish a list of the model, manufacturer and brief description of the following component with the bid documents:

a. Chassis
b. Cab
c. Engine
d. Rear Axle
e. Front Axle
f. Transmission and Clutch
i. Hydraulic System

3.54 OPTIONAL STAINLESS STEEL TAILGATE SPREADER

3.54.1 GENERAL: The unit bid shall include all standard equipment as published in the manufacture's specifications brochure. The unit bid shall be identical with the latest standard model in use by the construction industry for the past (6) months and any modifications in that period shall be included to withstand rugged usage encountered in highway construction and maintenance. Units are to be installed on the truck.

3.54.2 TYPE OF SPREADER: Shall be of the single spinner, single Auger type with hopper which will universally mount on any standard dump body below the tailgate, and will not interfere with normal dump body operation and is independent of body tailgate. Loads may be dumped over or under the tailgate and the truck can be used for its normal work without removing the spreader hopper. The discharge opening shall have a 7-gauge stainless steel shield to prevent the loss of free flowing materials when auger is idle. The complete spreader, spinner mount assembly and all hardware including quick detach hinges and pins shall be constructed of 7

gauges ASCII-304 stainless steel. The trough shall be so designed that the entire rear section shall open for ready access to the auger chamber to permit rapid clean out and drainage. This rear plate shall also act as the auger chamber cover plate. The spinner assembly shall not be attached to the rear cover plate.

3.54.3 FEED MECHANISM: Auger shall be mild steel ASTM A-36 six inches O.D. minimum with 3/8" THICK HARD FACED FLIGHTS and a 4" maximum helix pitch feeding in both directions to the discharge opening 18.75" from left the auger, drive sleeves and stub shaft shall be as per PA. Dot Drawing EQN-6 PTC Modified (no substitute standardization). The left side of the auger shaft shall be supported by (1) one self-aligning two (2) bolt flange, anti-friction, thrust, re-lube type SURVIOR Series Corrosion Resistant bearing REF: Timkin # YCJT 1¼'' PT (no substitute standardization). The bearing shall be attached to the removable ¼" ASCII-304 stainless steel end plates. The right side of the auger shaft shall be supported by the drive motor.

3.54.4 AUGER DRIVE, MOTOR: Auger drive motor shall have a displacement of 17.9 cubic inch per revolution, maximum Reference: White Model RS1801210Z. (No substitute standardization) Auger motor shall be direct drive. Drive motor must have internally mounted feedback sensor. This sensor will be Hall Effect design and come complete with cable assembly to connect ITT/Cannon Surge seal type connection.

3.54.5 SPINNER: Single spinner shall be 18" in diameter and consist of a disc and (6) vanes formed into a single unit from polyurethane, to give a flat trajectory-spreading pattern. The spinner assembly shall be adjustable allowing for variable spreading patterns left, center or right. The entire spinner shall be easily removed by pulling two (2) pins and uncoupling two (2) hydraulic quick disconnect hoses. The spinner assembly shall be linked to the truck frame with a universally mounted parallel arm to keep the spinner horizontal to the road at all dump angles. The spinner hangers shall be a minimum of ¼" thick 2" in width. The spinner assembly shall have a minimum horizontal adjustment of 10". The spinner drive motor shall have a displacement of 3.0 cubic inch per revolution maximum. REF: Char-Lynn Model 101-1001-009 (no substitute standardization.) The spinner hub shall be 4-bolt type hub to mount spinner disc with locking type nuts, (must match bolt pattern for reference spinner). Hub material shall be ASCII-304 stainless steel.

3.54.6 HOSES: All hydraulic hoses and quick couplers needed to attach the spreader system to the truck hydraulic system shall be furnished. NOTE: The installation of the spreader and hose routing shall be of professional quality.

3.55 OPTIONAL Pre-Wetting Liquid On-Board Spray System

3.55.1 DESCRIPTION: The truck mounted hydraulic tailgate dispenser system shall be designed to be capable of maintaining a consistent ratio of liquid deicing material to pre-determined granular deicing material output. This system will operate in conjunction with existing ground speed oriented spreader controls, providing a linear chemical flow at vehicle speeds ranging from 3 to 50 mph.

The system will operate with auger reverse, without any backpressure on the system components.

Upon delivery, this system will be mounted and operational with all components in working order and with no system leaks. There shall be quick-disconnects for all hydraulic and deicing material hoses.

3.55.2 COMPONENT CONFIGURATION: The reservoir tank and hydraulic system enclosure shall be mounted on a stainless steel carrier, which will attach to the tailgate of salt spreader truck. The stainless steel carrier shall be constructed of ¼" hot rolled steel or equal and is designed for quick installation and removal from the tailgate. The carrier must be designed to accommodate a light bar that is presently mounted on the dump body tailgate.

The chemical pump outlet is connected to the spreader mounted spray nozzles by nylon reinforced PVC hose. A dripless quick coupler shall be used which is compatible with the fill pump connector used by the Commission.

The system controls shall be cab-mounted and shall be connected to the power unit via suitable 4-wire control cable and 4-prong plug connector.

3.55.3 HYDRAULIC POWER UNIT: All hydraulic components must be enclosed in stainless steel housing. All additional hardware must be stainless steel. The system must incorporate a full flow bypass valve that will divert all hydraulic flow from the system. This valve must be capable of handling full flow in reverse. The system must use an adjustable ratio flow controller to allow for proportional liquid material adjustment. A hydraulic motor shall drive the product pump capable of 2000 rpm's. All hydraulic tubing must be stainless steel with flared ends. A peristaltic pump is required that delivers the liquid through a fixed displacement design that has minimal contact with metal parts. The system shall have an over-speed protection incorporated in the hydraulics manifold to protect the system from backpressure. An in line relief valve must be installed on the pressure hose of the spray nozzle.

3.55.4 POWER UNIT ENCLOSURE: The stainless steel enclosure, with stainless steel hinges and latches. All additional hardware must be stainless steel. The latches must be designed to lock.

3.55.5 TANK: Capacity of at least 80 gallons and designed to hold materials with specific gravity of up to 16 lbs. /gal. The tank shall have molded anti-slosh baffles.

3.55.6 SPRAY NOZZLES: Construction of brass or PVC, the spray nozzles shall be designed to maintain a 120-degree fan spray through the system's chemical flow rates. The nozzles used to apply liquid directly on granular shall incorporate a primary and secondary arraignment. The primary nozzle works once the product pump starts to put out material. The secondary nozzles will not apply material until system pressure exceeds 10 P.S.I.

3.55.7 FITTINGS AND VALVES: All chemical plumbing fittings and valves shall be PVC. All hoses must be nylon re-enforced PVC. All hose clamps shall be stainless steel. The system must use an easily accessible in-line chemical strainer that has a clear bowl. The fill point should use a 1" quick connect polypropylene coupling and must be "bottom fill" system. The tank must be properly vented.

3.55.8 IN-CAB CONTROLS: Mounted so as to be easily accessible to the driver, the control console is complete with pump “on/off” rocker switch with an indicator light and a tank low-

pressure indicator light. In addition, an audible buzzer and system shutdown relay must be integrated into the circuitry.

3.55.9 LEVEL SENSOR: Level sensor should be "Low Material Output"; a pressure switch will monitor pump output. This switch is to be of stainless steel construction with a Buna-N diaphragm. This pressure will activate an indicator light on the control console when a low level or clogged filter situation occurs. NOTE: The installation of the pre-wet system and hose routing shall be of professional quality.

3.56 OPTIONAL HEAVY DUTY LEVELING WING PLOW

3.56.1 WING PLOW:
Shall have an overall length of 12 feet, a nose height of 29", and a discharge height of 38". The moldboard shall be fabricated from 8 Ga. H.R.S., the top of which shall incorporate an integral channel shaped continuation of the same so to enhance rigidity. The bottom cutting edge reinforcement shall be from not less than 6" x 4" x 3/4" structural angle with 1/2" reinforcing gussets welded along its entire length.

The moldboard shall be provided with not less than five- (5) vertical reinforcing ribs from 1/2" thick plate. Located between the two (2) outside vertical ribs, at the discharge end of the moldboard, shall be four (4) horizontal ribs also from 1/2" thick plate (two (2) upper and two (2) lower); all with a series of vertically punched holes so to provide a selection attachment points for the upper and lower stand-off arms. Additionally, the front nose portion of the wing shall include a selection of two (2) 1-9/16" diameter holes for attachment with a 1-1/2" hex head bolt at the front mast hinge.

The wing shall be fitted with a 1/2" x 6" x 12 ' C-1085 steel cutting edge punched on 12" A.A.S.H.O. centers and secured with 5/8" x 2-1/2" Grade 5 carriage bolts and locknuts. Included at the discharge end shall be a 10degree-moldboard shoe from abrasion resistant steel (minimum Brinell hardness of 360).

3.56.2 FRONT MAST:
The front mast shall be fabricated from an 8" "I" beam at 18.4 #/ft. A 3" diameter x 11" stroke, double acting hydraulic cylinder shall be located on the hitch side of the front mast beam. This cylinder shall be connected to the wing slide at the top of the front mast beam. There shall be an oval slot cut in the top of wing slide where the cylinder rod connects. This slot shall allow the front of the wing to float over obstructions. The wing slide and cylinder shall extend above the front mast when extended to raise the wing. The front mast shall not extend vertically any higher than possible.

3.56.3 REAR SUPPORT:
There shall be a 7" x 4" x 3/8" wall rectangular, structural tube supplied to extend across the truck hitch. This tube shall connect the front wing mast to the truck hitch. The wing mast shall attach to this cross tube with (4) four, grade 5 bolts. There shall also be a minimum of (2) pipe braces included to attach front mast to truck hitch.

3.56.4 STAND-OFF ARMS:
The stand-off arms shall be of the full moldboard tripping style with the inner arms fabricated from 2-1/8" solid bar stock, and the outer arms fabricated from 2-1/2" schedule 80 pipe. Both upper and lower arms shall be equipped with a swivel so to prevent damage to the arms when the wing is lifted to the carry position. Both arms shall be adjustable in length from 61" to 76",

with the upper arm offering five (5) positions and the lower arm offering three (3) positions of adjustment.

The upper arm shall be fitted with an extension spring not less than 3-3/16" O.D. x 29" long from 19/32" diameter alloy wire. This extension spring will allow for spring loaded telescopic action of the top arm, whenever the wings cutting edge encounters surface obstructions, and when used in conjunction with a 7/8" dia. wire x 3-3/4" O.D. alloy torsion spring loaded hinge at the front mast full tripping capability of the wing moldboard is possible. Both the rear extension spring and the front torsion spring shall be load adjustable, and shall be equipped with lock out pins so it provide a rigid wing when shelving operations so dictate.

3.56.5 WING BRACE CONTROL:
Joystick type single axis/heavy duty (Telemecanique, Model # XD2CC1010H2) No substitute standardization. This single axis joystick with spring center neutral position will control wing brace functions.

3.56.6 WING TOE AND WING HEEL CONTROL:
Joystick type dual axis/heavy duty (Telemecanique, Model # XD2CC1111H2) No Substitute standardization. This dual axis joystick with spring center neutral position will control all other plow functions. Note: Both joysticks shall be independent for safety purposes (separate joystick).

3.56.7 CONTROL PANEL:
The control panel shall be mounted within the operator's reach and be secured with Velcro type material so the wing plow operator can remove it. All functions shall be identified and backlit. All switches shall be replaceable without a soldering tool. The power cord shall have a disconnect plug that the control panel can be removed and stored during off seasons. The control panel shall have rounded corners and have handles on each end.

Approximated Size
Overall Length 9"
Height Tapered 2-3/4" to 5-1/4"
Depth 6-1/2"
HARDWARE PLATING:
All nuts, bolts and chain shall be zinc plated**.**

3.56.8 PAINT:
The wing plow shall be shot blasted and painted with one (1 coat of primer and one (1) coat of finish paint. REF: Omaha Orange Dupont 31LF for shade purpose, all other components shall be painted with one (1 coat of primer and one (1) coat of black finish paint.

3.57 OPTIONAL HEATED WINDSHIELD:

DRAWINGS ATTACHED

1. CHAIN BOXES EQN-32

2. PLOW HITCH EQN-50

3. **DUMP BODY SUPPORT EQN-62**
4. **REMOTE GREASE CONNECTION EQN-63**
5. **COAL CHUTE & TAILGATE APRON EQN-64**
6. **DUMP TRUCK 62,000LB. GVWR EQN-79A**
7. **ALUMINUM TAILGATE WITH BUIL-IN LIGHT BAR EQN-81X**
8. **WHEEL CHOCKS EQN-82**
9. **REFLECTING SHEETING EQN-122**
10. **AUXILIARY SNOW PLOW LIGHT PACKAGE EQN-124**
11. **REFLECTIVITY ENHANCEMENT EQN-127**
12. **FAST LUBE OIL CHANGE SYSTEM EQN-351A**

PENNSYLVANIA TURNPIKE COMMISSION'S DRAWINGS

1. **LIGHT MODULE**
2. **PINTLE HOOK MOUNT ON 5/8"STEEL PLATE 13B-43**

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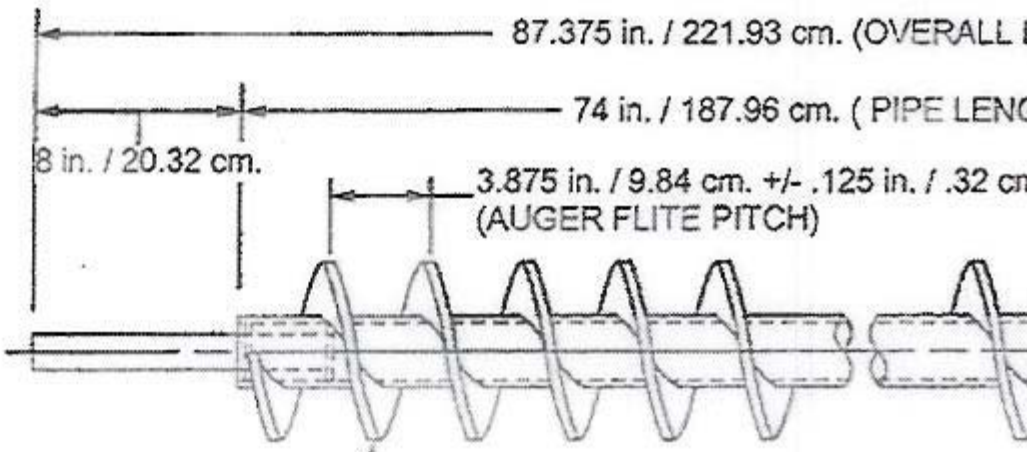


VIEW SHOWING COMPLETE AUGER WELDMENT

HELICOID FLIGHT (RIGHT HAND) SINGLE CONTINUOUS SCREW TYPE (BAR SIZE, BEFORE ROLLING, TO BE SUCH THAT FLITING O.D. IS AS SHOWN IN END VIEW AT RIGHT, AND OUTER EDGE THICKNESS IS AS SHOWN IN FLITING THICKNESS SPECIFICATION BELOW).

DO NOT SCALE D
TOLERANC
(unless otherwise

FLAME CUTTING, NIBBL & WELDING	
SHEARING & FORMING	
PUNCHING	
HOLE DIAMETERS	
ANGLES	
DECIMAL MACHINING	

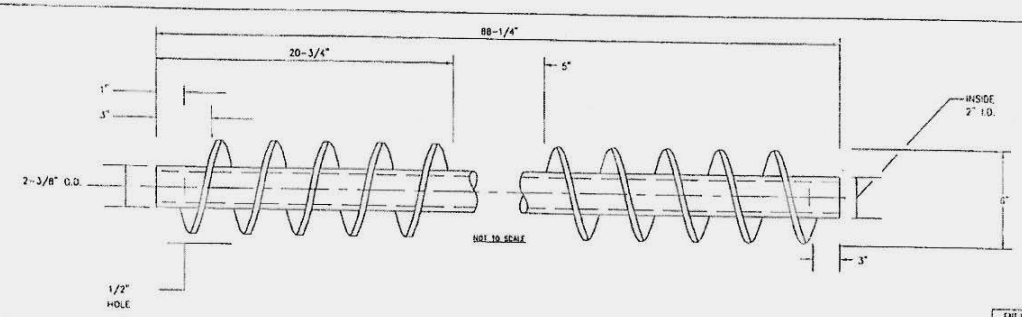
IMPLIED TOLERANCES
TO REFERENCE DIMS

SPECIFICATION NOTES

1. PIPE PORTIONED WITH (WITH WELDED FITTING) TO BE STRAIGHT TO GIVE MAXIMUM OF .20 in. / .51 cm. TOTAL RUNOUT.
2. BOTH STUB SHAFT CENTERLINES TO LIE ON PIPE CENTERLINE TO GIVE MAXIMUM OF .003 in. / .08 cm. TOTAL RUNOUT.
3. ALL SURFACES OF SLEEVE, SHAFT, AND PIPE WHICH MAKE CONTACT WITH EACH OTHER TO BE COATED WITH ANTI-SEIZE COMPOUND.
4. SHAFT IS REMOVED, AND NOT USED, WHEN AUGER IS USED IN A DIRECT DRIVE APPLICATION.

REVISIONS

NO.	DATE	
1	12 / 29 / 92	W
2	01 / 26 / 96	SV
3	01 / 09 / 98	DI
4		
5		



COUNTY | DISTRICT

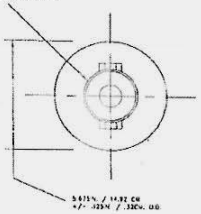
VIEW SHOWING COMPLETE AUGER ASSEMBLY

HELICOID FLIGHT (LEFT HAND)
SINGLE CONTINUOUS SCREW TYPE (BAR SIZE, BEFORE ROLLING, TO BE SUCH THAT FLITING O.D. IS AS SHOWN IN END VIEW AT RIGHT, AND OUTER EDGE THICKNESS IS AS SHOWN IN FLITING THICKNESS SPECIFICATION BELOW).

HELICOID FLIGHT (RIGHT HAND)
SINGLE CONTINUOUS SCREW TYPE (BAR SIZE, BEFORE ROLLING, TO BE SUCH THAT FLITING O.D. IS AS SHOWN IN END VIEW AT RIGHT, AND OUTER EDGE THICKNESS IS AS SHOWN IN FLITING THICKNESS SPECIFICATION BELOW)

EXIT POSITION	"A"
RIGHT	62-1/2"
CENTER	
FLIGHTING	6" O.D. X 3/8"
PITCH	4"

2 in. /5.08 cm. (2.375 O.D.)
SCHEDULE 80 (.70 in. / 1.51 cm. WALL)
CARBON STEEL PIPE
(PIPE SIZE E.R.W. TUBING ACCEPTABLE)



5.875 in. / 14.92 cm
+/- .125 in / .32 cm. O.D.

SPECIFICATION NOTES

1. PIPE PURCHASED WITH (WITH WELDED FITTING) TO BE STRAIGHT TO WITHIN MAXIMUM OF .20 in. / .51 cm. TOTAL RUNOUT.
2. BOTH STUB SHAFT CENTERLINES TO LIE ON PIPE CENTERLINE TO WITHIN MAXIMUM OF .003 in. / .08 cm. TOTAL RUNOUT
3. ALL SURFACES OF SLEEVE, SHAFT, AND PIPE WHICH MAKE CONTACT WITH EACH OTHER TO BE COATED WITH ANTI-SEIZE COMPOUND
4. SHAFT IS REMOVED, AND NOT USED, WHEN AUGER IS USED IN A DIRECT DRIVE APPLICATION.

DO NOT SCALE DRAWING
TOLERANCES
(unless otherwise noted)

FLAME CUTTING, NIBBLING & WELDING	+/- .060
SHEARING & FORMING	+/- .030
PUNCHING	+/- .020
HOLE DIAMETERS	+.015/-.005
ANGLES -	+/- 2 DEC.
DECIMAL MACHINING	0.0 +/- .040 0.00 +/- .020 0.000+/- .005

IMPLIED TOLERANCES DO NOT APPLY TO REFERENCE DIMENSIONS

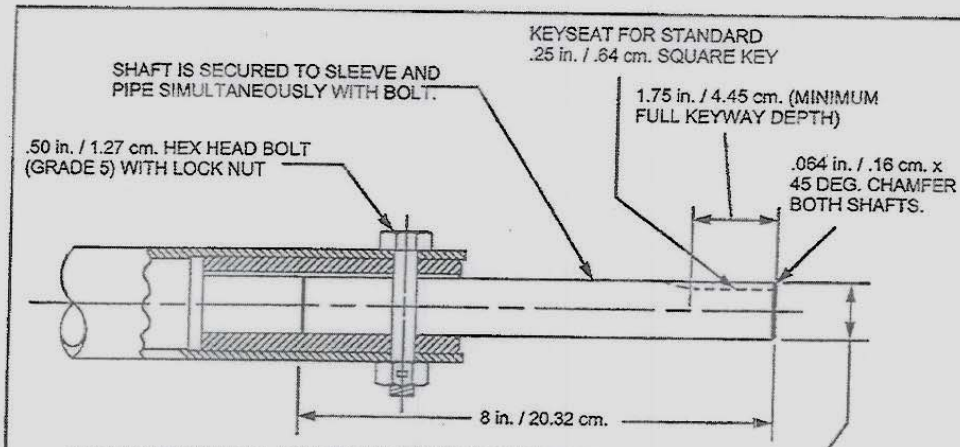
NO.	REVISIONS	DATE	APP'D
DESIGNED	CH'D.	DRAWN	CH'D.

PENNSYLVANIA TURNPIKE COMMISSION

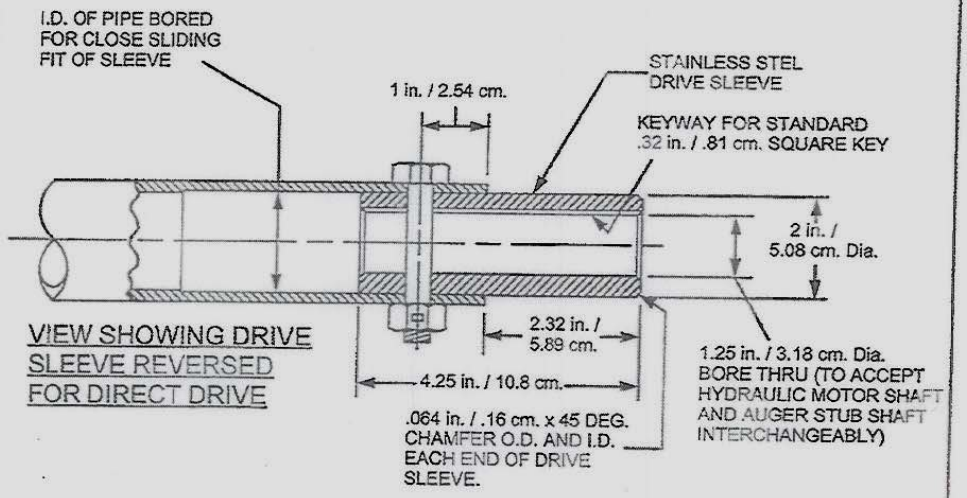
PTC AUGER DETAIL

EQN-6
PTC MODIFIED

DWG. NAME: AUGER		STRUCTURE NO.	
SCALE: N.T.S	CONTRACT NO.	DWG. NO.	SHEET NO. 1 OF 3

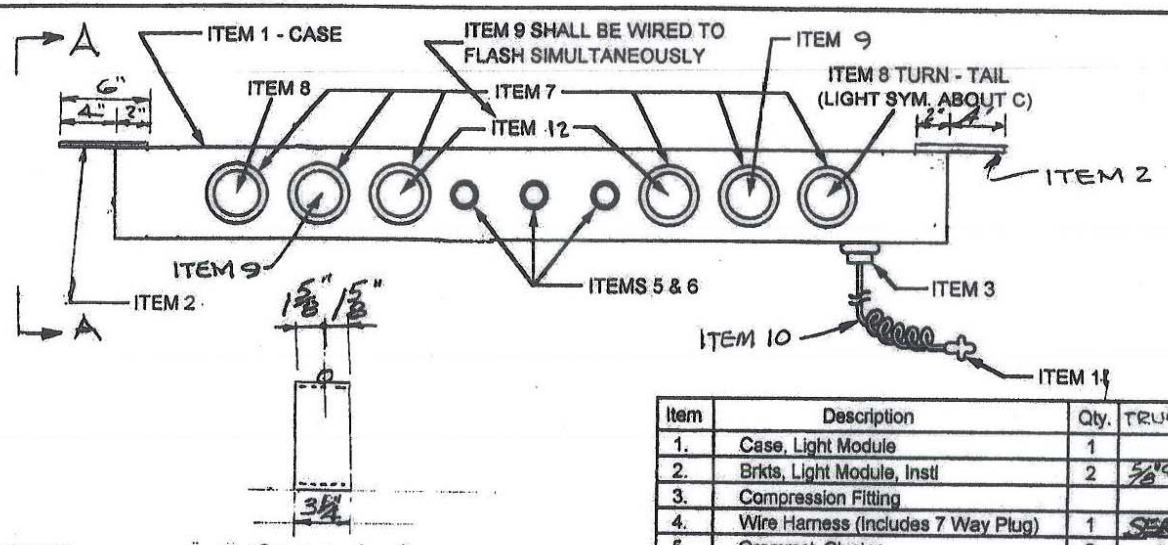


VIEW SHOWING DRIVE SLEEVE INSERTED FOR CHAIN AND SPROCKET DRIVE



VIEW SHOWING DRIVE SLEEVE REVERSED FOR DIRECT DRIVE

REVISIONS			COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION		
NO.	DATE	BY			
1	12 / 29 / 92	WHM	PennDOT SPREADER AUGER DETAIL (S/S & RUBBER TROUGH)		
2	01 / 26 / 96	SWW			
3	01 / 09 / 98	DLW	DRAWN BY WHM	SCALE N/A	MATERIAL
4			CHK'D RAR	DATE 02 / 23 / 88	DRW NO. EQN-6
5					SHEET 2 OF 3



NOTE:

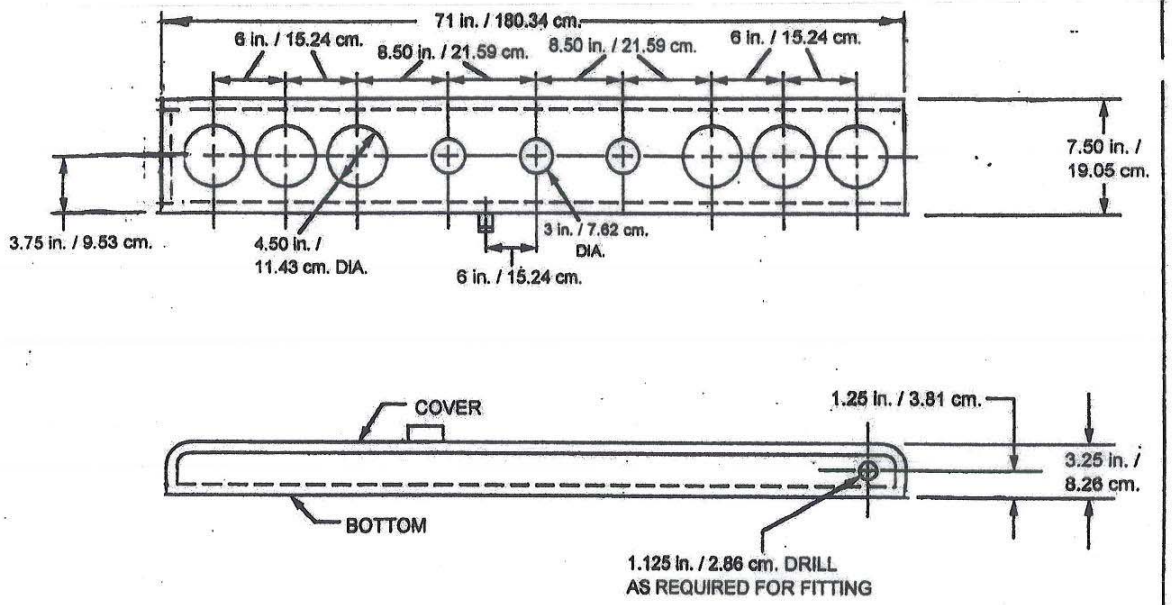
Assy to be delivered completely assembled and ready for installation.
3M type connectors are unacceptable.
Items 10-13 shall be Stainless Steel.
All connections shall be sealed plug-in coated with dielectric grease.

* One end severed and hard wired within case.

HEAVY DUTY FLASHER REQUIRED FOR AMBER LIGHT LAMPS.
7-WAY WIRE LEGEND:ATA COLOR CODE-ASTM-D-1693

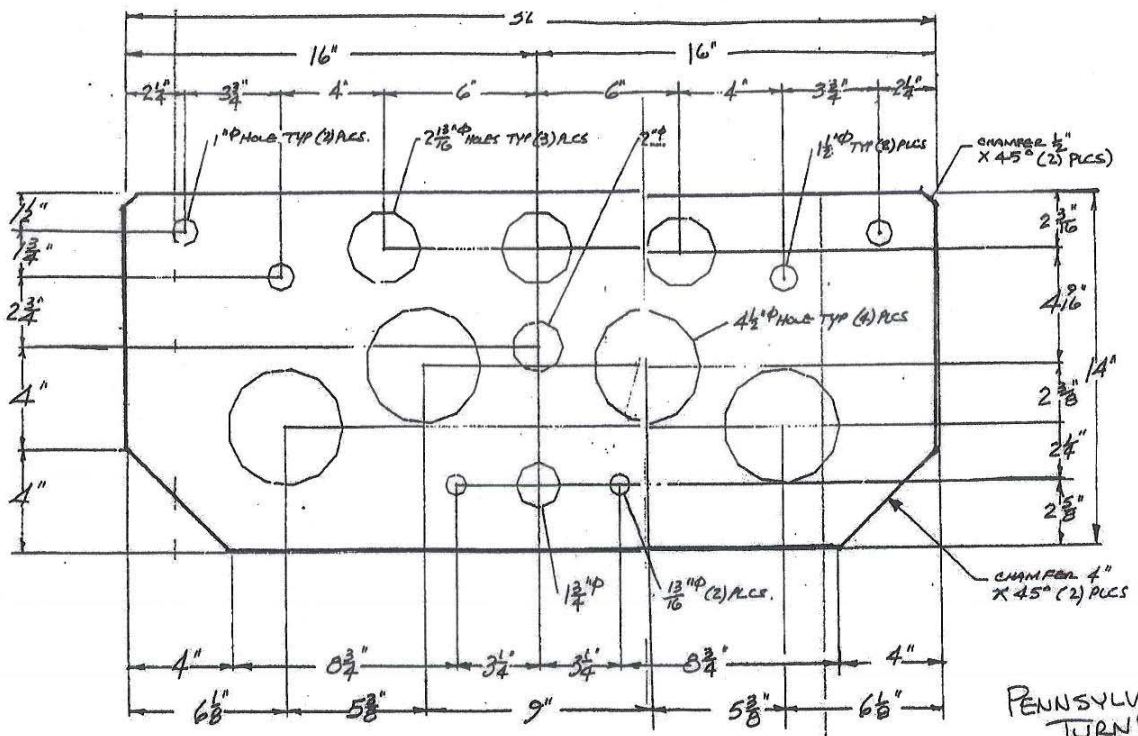
	Item	Description	Qty.	TRUCK LITE
	1.	Case, Light Module	1	
	2.	Brkts, Light Module, Instl	2	5/8"ΦR00 x 0'-6
	3.	Compression Fitting		
	4.	Wire Harness (Includes 7 Way Plug)	1	SERIES 50
	5.	Grommet, Cluster	3	10700
	6.	Light, Cluster	3	10250R
	7.	Grommet, 4 in.	6	40700
REV 2 →	8.	Sealed Light, s/t/t Dbl Con	2	44202R
REV 2 →	9.	Amber Lamp	2	44203Y
	10.	POWER CORD 6'	1	
	11	PLUG	1	97158
REV 2 →	12	BACK-UP LIGHT	2	44205C

REVISIONS			PENNSYLVANIA TURNPIKE COMMISSION		
NO.	DATE	BY	LIGHT MODULE		
1	2-26-02	HM			
2	5-15-03	HM			
3			DRAWN BY HM	SCALE N/A	MATERIAL
4			CHK'D	DATE 4-10-00	DRW NO.
5					SHEET 1 OF 2



* ACCESS REQUIRED TO SERVICE UNIT SHALL BE MADE THRU LIGHT HOLE/S

REVISIONS			P.T.C.		
NO.	DATE	BY	LIGHT MODULE		
1					
2					
3			DRAWN BY HM	SCALE N/A	MATERIAL
4			CHK'D	DATE 4-10-00	DRW NO.
5					SHEET 2 OF 2

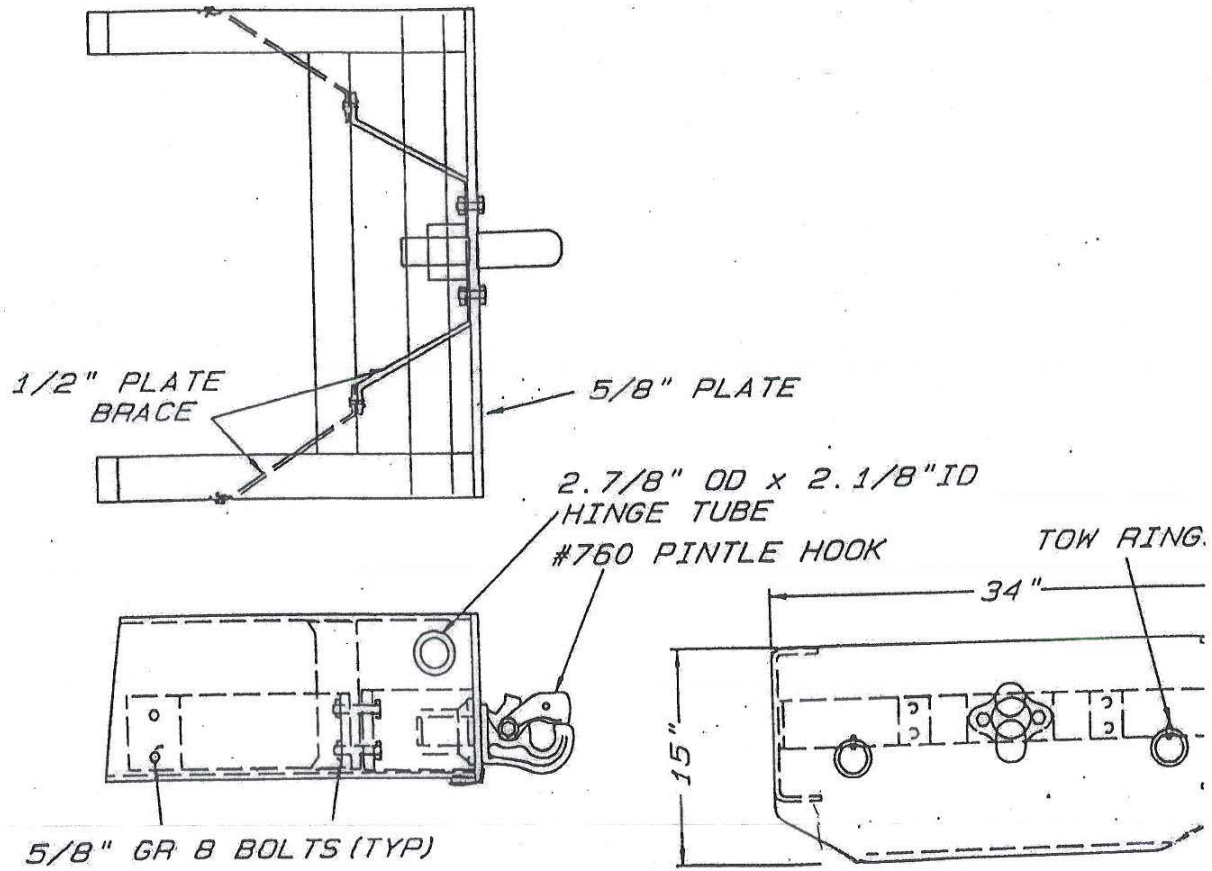


MATERIAL 5/8" A-36 PLATE STEEL

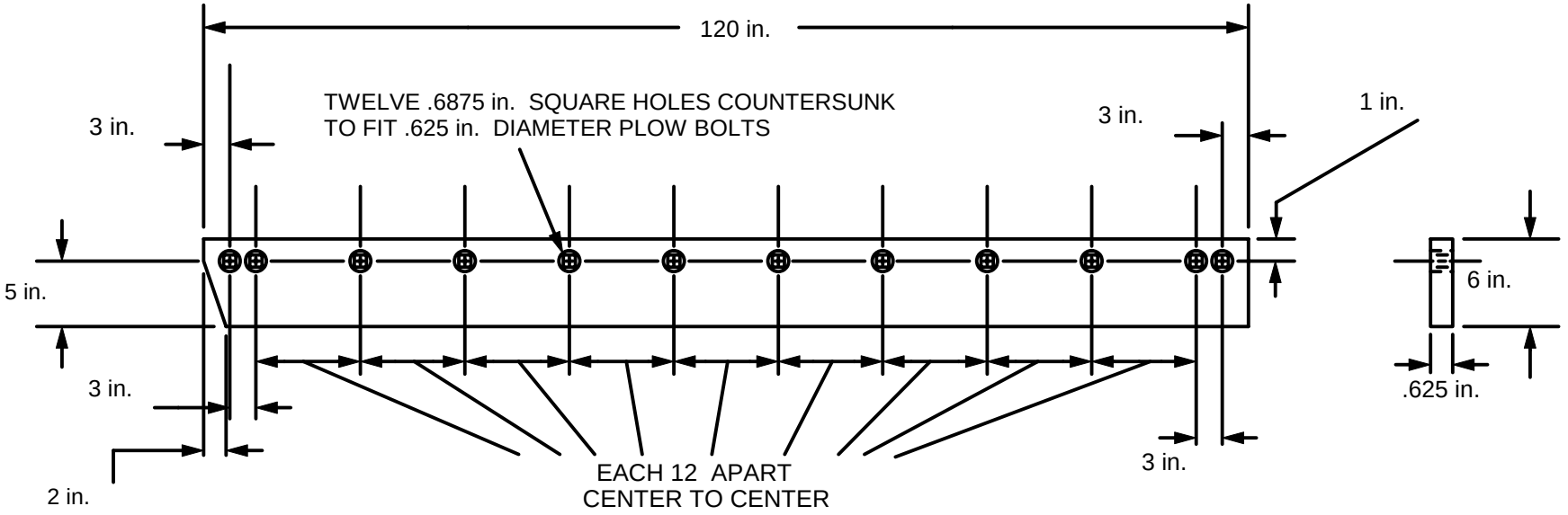
ALL LIGHTS TO BE SHOCK MOUNTED
STOP & TAIL TO BE TRUCK LITE SUPER #44
CLEARANCE LIGHTS TO BE TRUCK LITE SERIES #10

PENNSYLVANIA TURNPIKE COMMISS
DWG 13 B 43
Pg 1 of 2

PINTLE HOOK MOUNT ON 5/8" STEEL PLATE SUPPORTED TO FRAME AND CROSSMEMBER



13B-43
Pg2



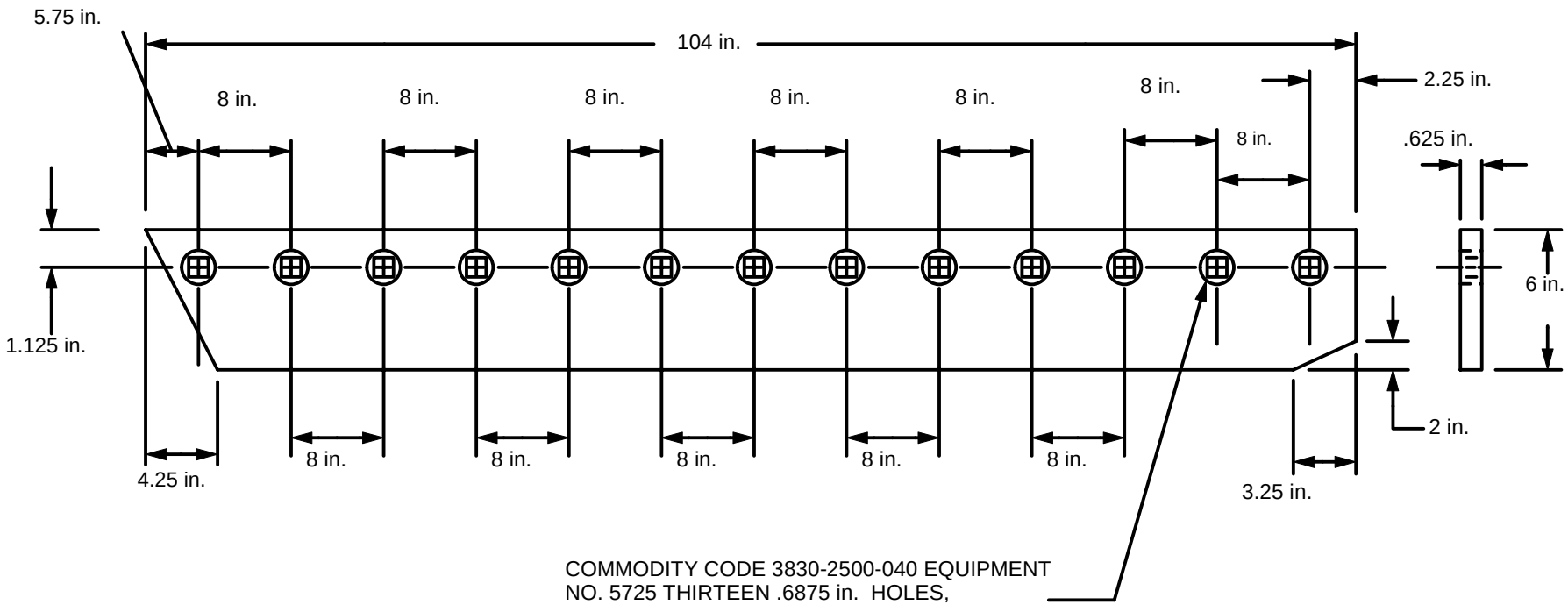
COMMODITY CODE 3830-2500-0500

NOTES:
1. ALL DIMENSIONS IN INCHES.
2. MATERIAL: CARBON STEEL AISI 1080-1085
   BRINELL HARDNESS 250-325*

EACH BLADE SECTION SHALL BE PUNCHED WITH THE DATE OF MANUFACTURE AND THE MANUFACTURER'S NAME.

* STEEL SPECIFICATION

REVISIONS			COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION		
N0.	DATE	BY	STEEL CUTTING EDGES FOR SNOW PLOWS		
1	07-19-94	GL			
2	02-06-96	SWW			
3	05-13-98	DLW	DRAWN BY DLW	SCALE N / A	MATERIAL
4	05-16-02	DWG	CHK'D WHM	DATE 02 / 06 / 96	DRW NO. EQN-16A
5	09-07-06	CJW			SHEET 1 OF 3



COMMODITY CODE 3830-2500-040 EQUIPMENT
NO. 5725 THIRTEEN .6875 in. HOLES,
COUNTERSUNK TO FIT.625 in. Dia.
PLOW BOLTS

NOTES:

1. ALL DIMENSIONS IN INCHES.
2. MATERIAL: CARBON STEEL AISI 1080-1085
   BRINELL HARDNESS 250-325*

EACH BLADE SECTION SHALL BE PUNCHED WITH THE DATE OF MANUFACTURE AND THE MANUFACTURER'S NAME.

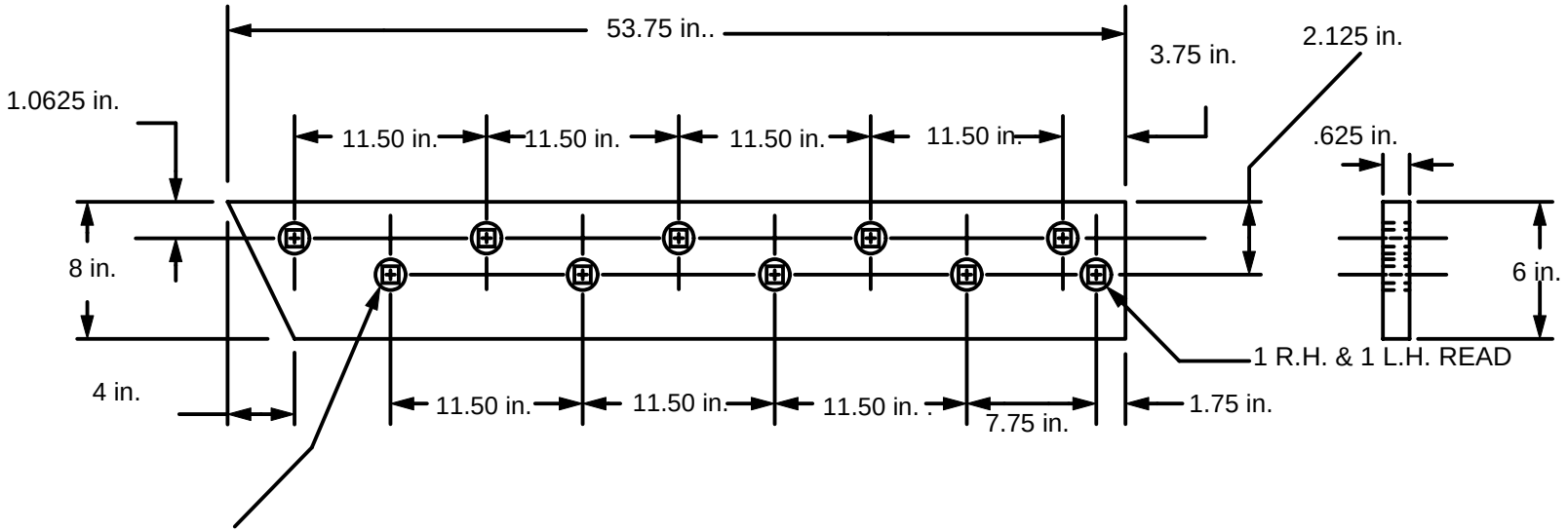
* STEEL SPECIFICATION

REVISIONS		
N0.	DATE	BY
1	07-19-94	GL
2	02-06-96	SWW
3	05-13-98	DLW
4	05-16-02	DWG
5	09-11-06	CJW

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

STEEL CUTTING EDGES
FOR SNOW PLOWS

DRAWN BY DLW	SCALE N / A	MATERIAL	
CHK'D WHM	DATE 05 / 13 / 98	DRW NO. EQN-16A	
		SHEET 2 OF 3	



TEN .6875 in. SQUARE
HOLES, COUNTERSUNK TO FIT
.625 in. . Diameter
PLOW BOLTS

COMMODITY CODE 3830-2500-070
(EQUIPMEN NUMBER 5712)

NOTES:

1. ALL DIMENSIONS IN INCHES
2. MATERIAL: CARBON STEEL AISI 1080-1085
   BRINELL HARDNESS 250-325*

EACH BLADE SECTION SHALL BE PUNCHED WITH THE DATE OF MANUFACTURE AND THE MANUFACTURER'S NAME.

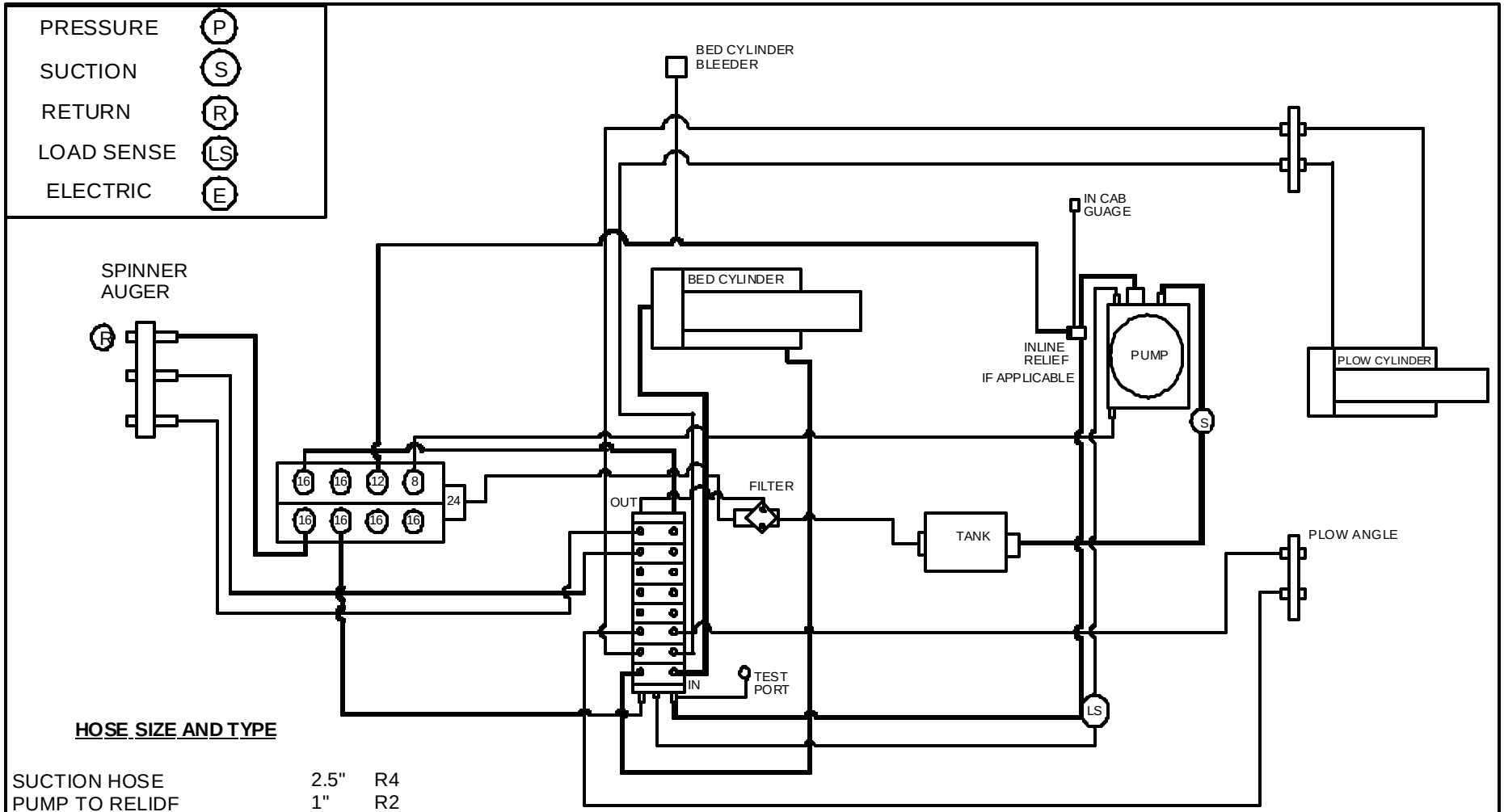
*STEEL SPECIFICATION

REVISIONS		
N0.	DATE	BY
1	07-19-94	GL
2	02-06-96	SWW
3	05-13-98	DLW
4	05-13-98	DWG
5	09-11-06	CJW

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

STEEL CUTTING EDGES
FOR SNOW PLOWS

DRAWN BY DLW	SCALE N / A	MATERIAL	
CHK'D WHM	DATE 05 / 13 / 98	DRW NO.	EQN-16A
		SHEET	3 OF 3



HOSE SIZE AND TYPE

SUCTION HOSE	2.5"	R4
PUMP TO RELIDF	1"	R2
RELIEF TO VALVE	1"	R2
RELIEF TO TANK	1"	R1
VALVE TO BED UP	1"	R2
VALVE TO BED DOWN	3/4"	R2
VALVE TO PLOW FUNCTIONS	1/2"	R2
VALVE TO AUGER	3/4"	R2
VALVE TO SPINNER	1/2"	R2
AUGER/SPINNER RETURN	1"	R1
PUMP DRAIN	1/2"	R1
PUMP LOADSENSE LINE	1/4"	R2
GAUGE TAP LINE	1/4"	R2
BED BLEEDER	1/4"	R2
VALVE TO TANK	1"	R1
WING PLODW FUNCTIONS	3/8"	R2

REVISIONS

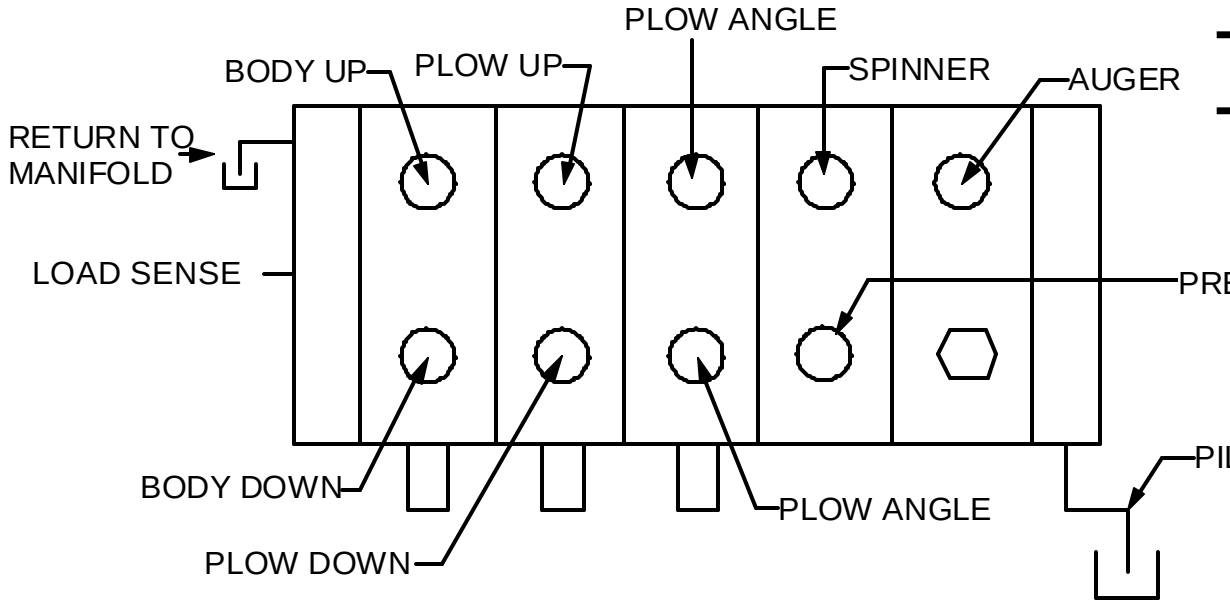
NO	DATE	BY
1	07/18/97	DJA
2	02/07/00	GAH
3	03/01/00	GAH
4	05/22/03	PJC
5		

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

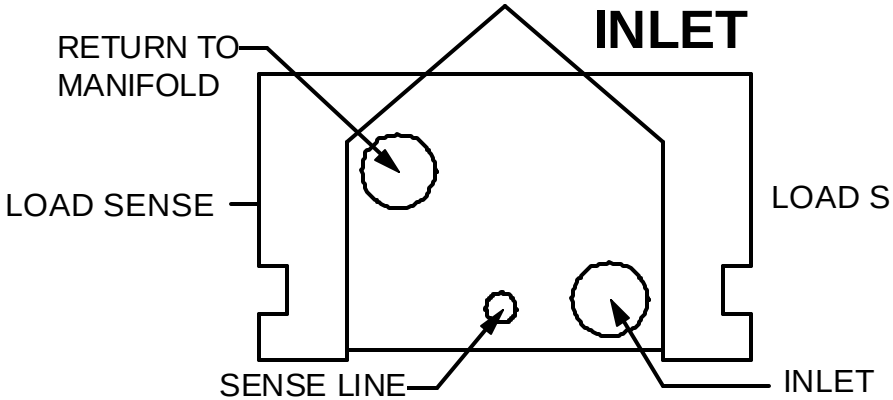
HYDRAULIC SYSTEM SCHEMATIC

DRAWN BY DJA	SCALE N / A	MATERIAL	
CHK'D RED	DATE 07/18/97	DRW NO. EQN-20X	
		SHEET 1 OF 3	

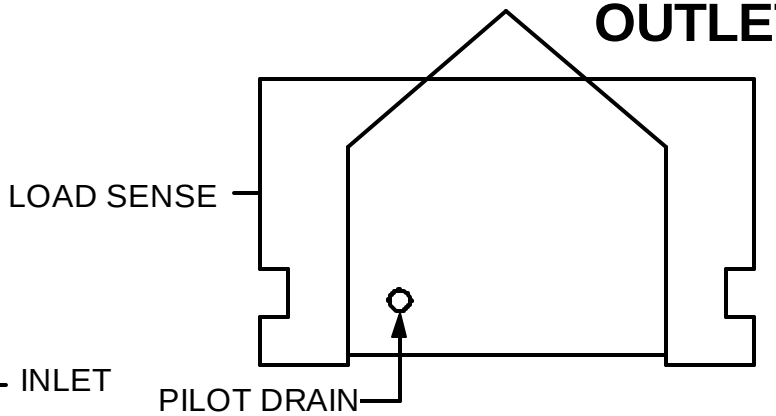
TYPE II
TYPICAL LAYOUT



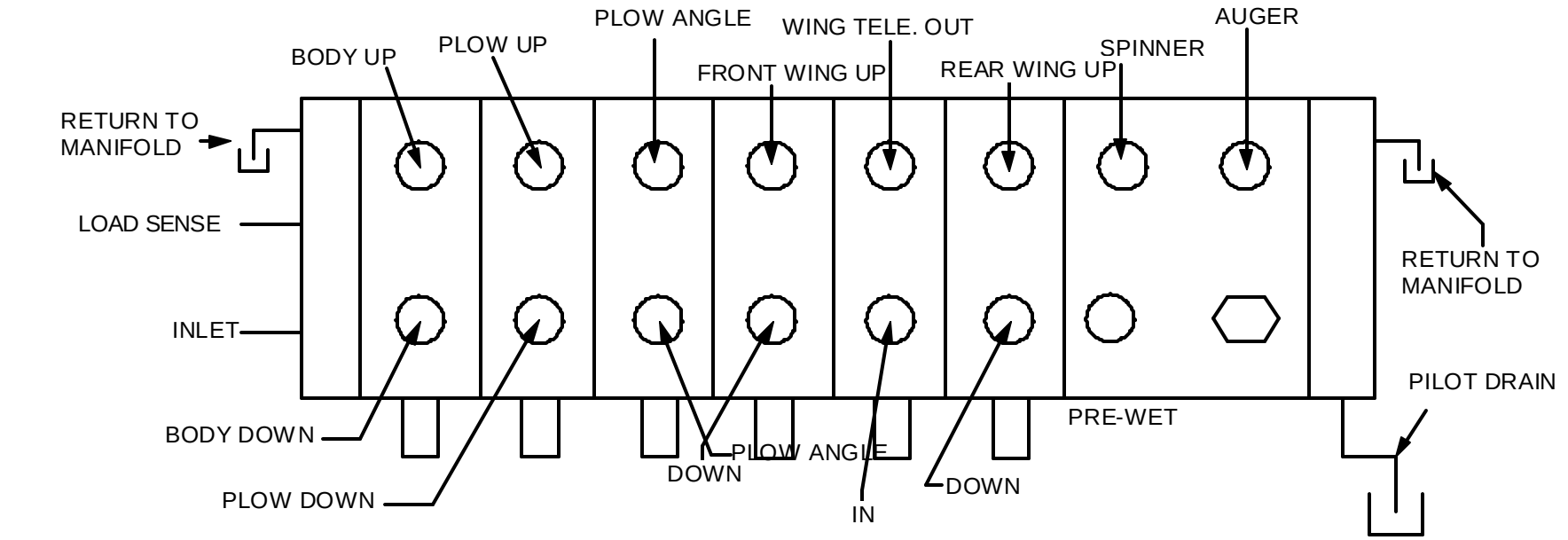
INLET

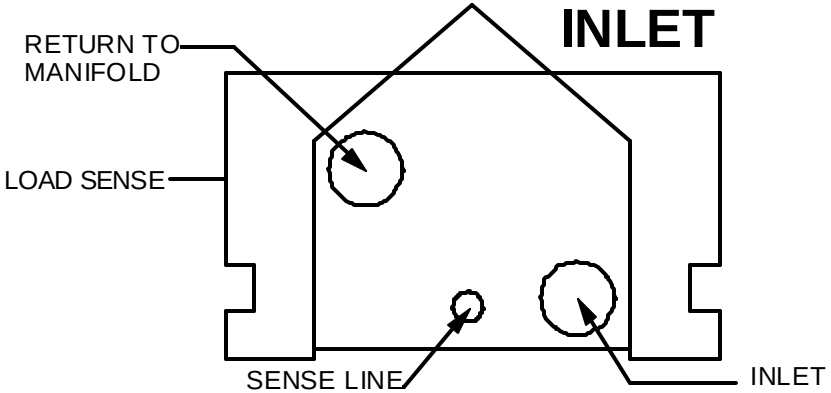


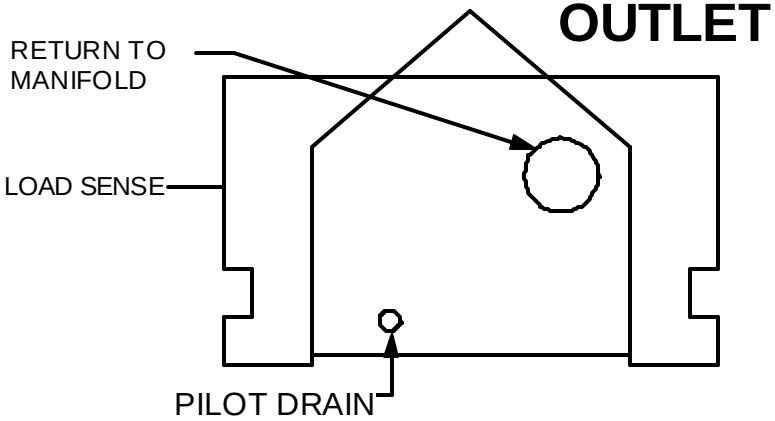
OUTLET



REVISIONS			COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION		
NO	DATE	BY			
1	12/08/95	SWW	HYDRAULIC SYSTEM SCHEMATIC		
2	04/01/96	SWW			
3	07/18/97	DLW	DRAWN BY SWW	SCALE N/A	MATERIAL
4	03/01/00	GAH	CHK'D RED	DATE 12 / 08 / 95	DRW NO. EQN-20X
5	05/22/03	PJC			SHEET 2 OF 3







BOTH RETURN TO MANIFOLD LINES SHALL BE INDEPENDENTLY PLUMBED TO RETURN MANIFOLD

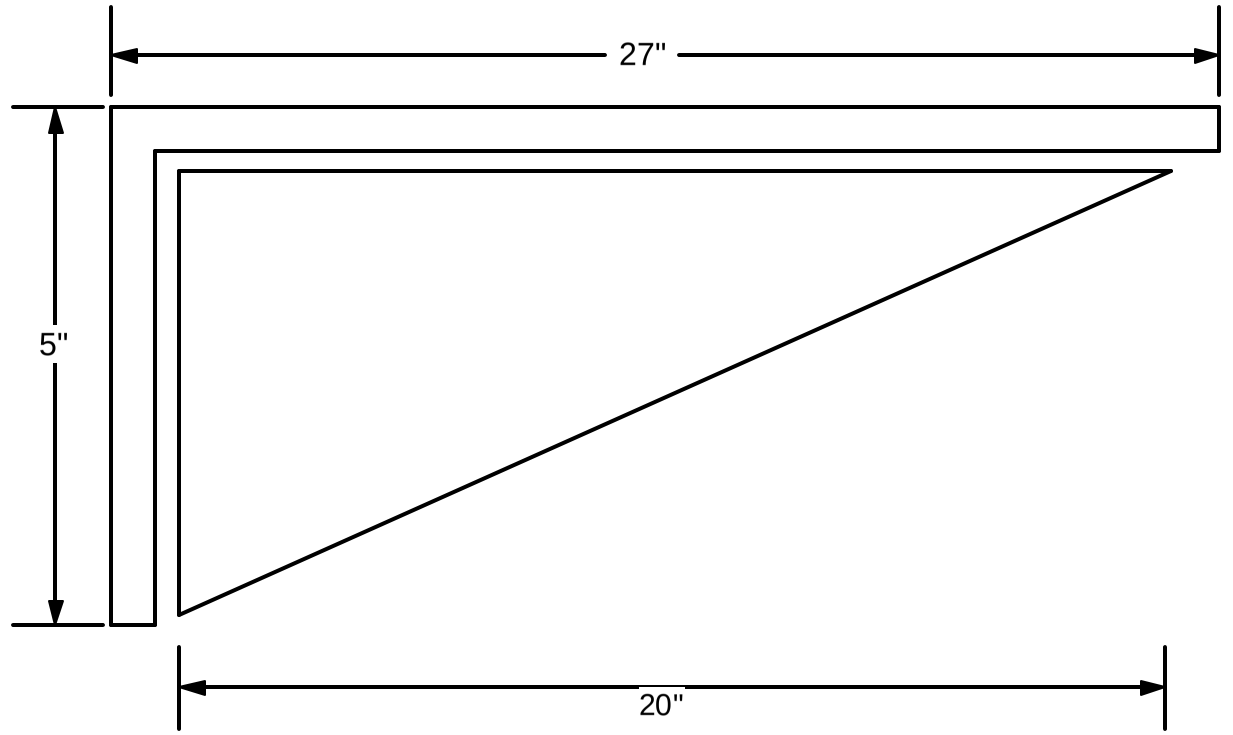
TYPE IV & TRI - AXLE TYPICAL LAYOUT

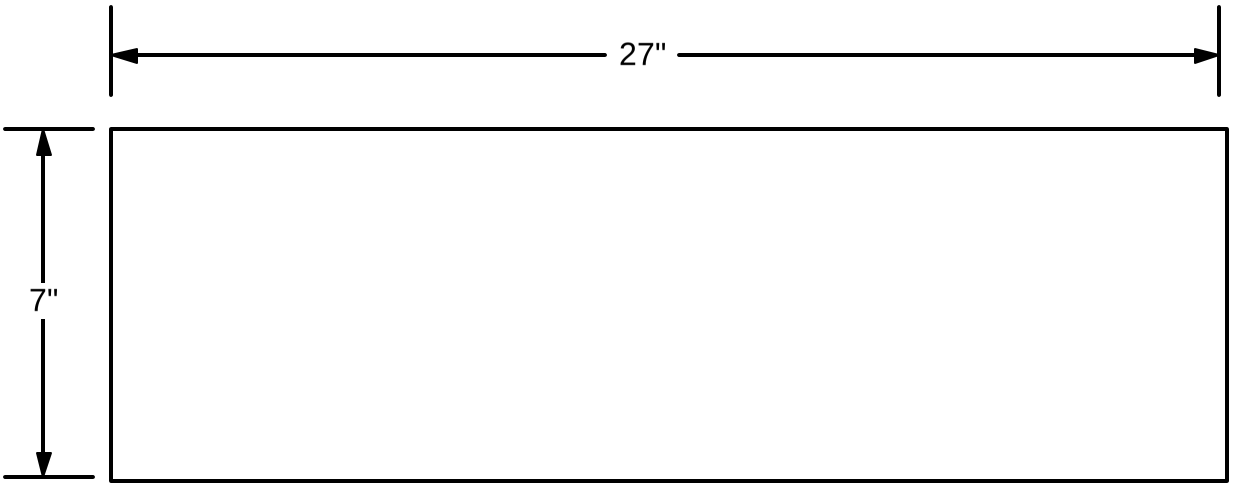
REVISIONS		
NO	DATE	BY
1	12/08/95	SWW
2	04/01/96	SWW
3	07/18/97	DLW
4	03/01/00	GAH
5	05/22/03	PJC

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

HYDRAULIC SYSTEM SCHEMATIC

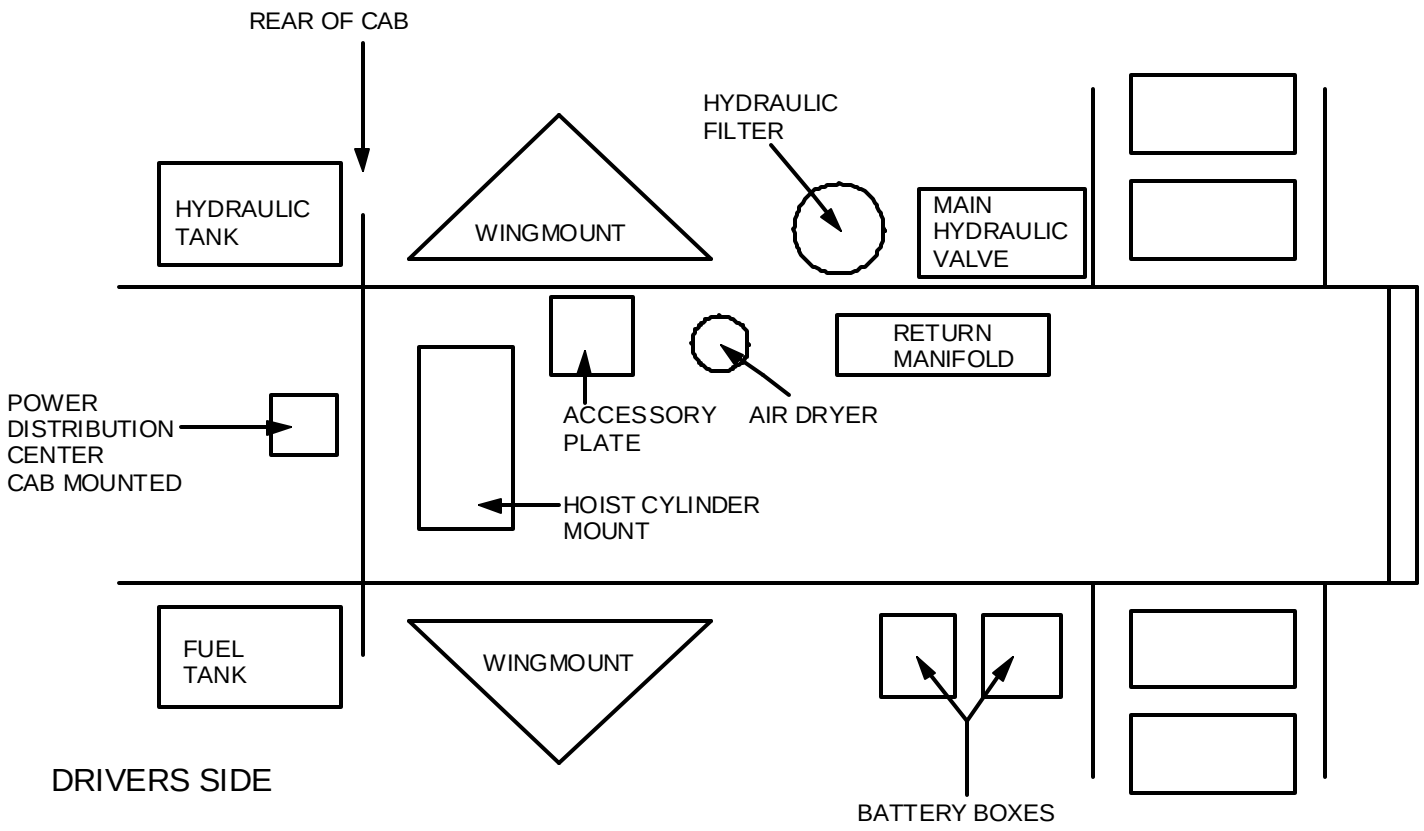
DRAWN BY SWW	SCALE N/A	MATERIAL	
CHK'D RED	DATE 12 / 08 / 95	DRW NO. EQN-20X	
		SHEET 3 OF 3	





3/8" MILD STEEL PLATE TO BE MOUNTED INSIDE RIGHT FRAME RAIL

REVISIONS			COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION		
N0.	DATE	BY			
1	07/01/03	KGK	FRAME MOUNTED ACCESSORY PLATE		
2					
3			DRAWN BY GAH	SCALE N/A	MATERIAL
4			CHK'D LA	DATE 02/16/00	DRW NO. EQN-22
5					SHEET 1 OF 1



ACCESSORY PLATE
MAY BE UTILIZED
FOR
-EXTRA WING PLOW SECTIONS OR PLOW SAVER
-IF ANY OTHER ITEM IS PLACED IN THIS LOCATION
IT MUST HAVE PRIOR APPROVAL

FINAL LOCATIONS TO BE DETERMINED
AT THE PRE-BUILD MEETING

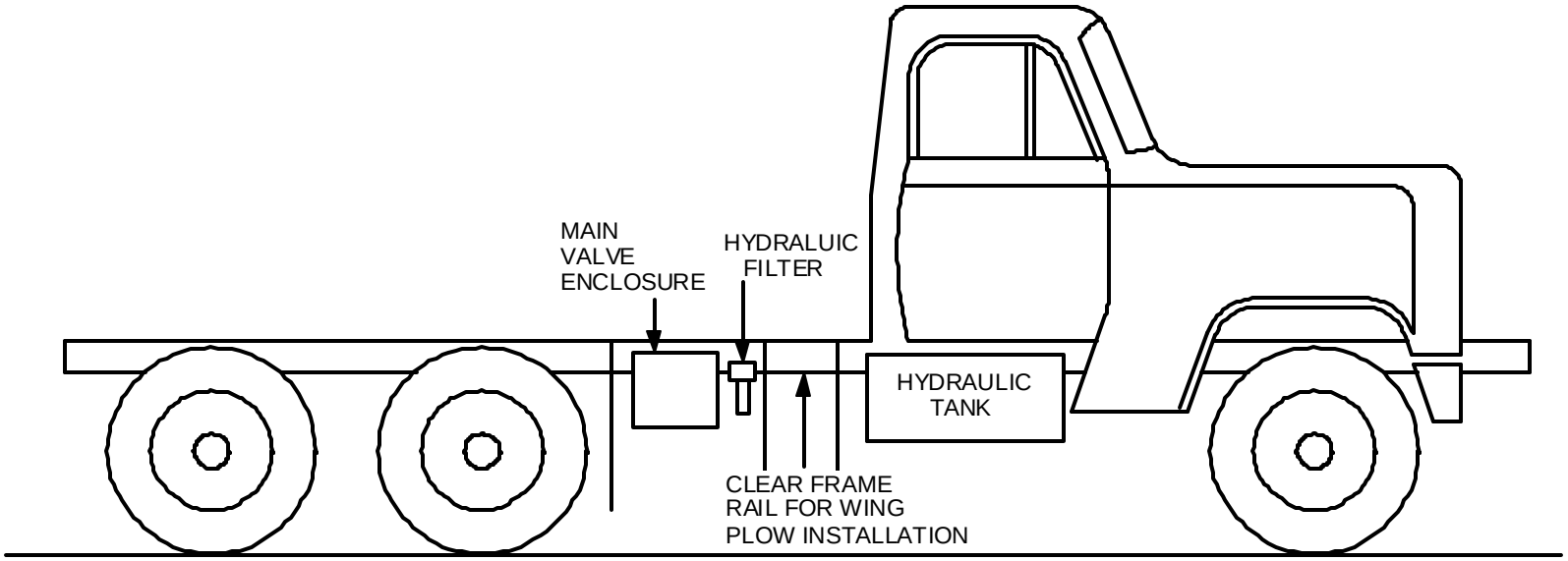
REVISIONS		
N0.	DATE	BY
1	03-03-00	GAH
2		
3		
4		
5		

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

HYDRAULIC COMPONET OVERVIEW
CHASSIS

DRAWN BY GAH	SCALE N / A	MATERIAL	
CHK'D LA	DATE 03/01/00	DRW NO. EQN-23	
		SHEET 1 OF 5	

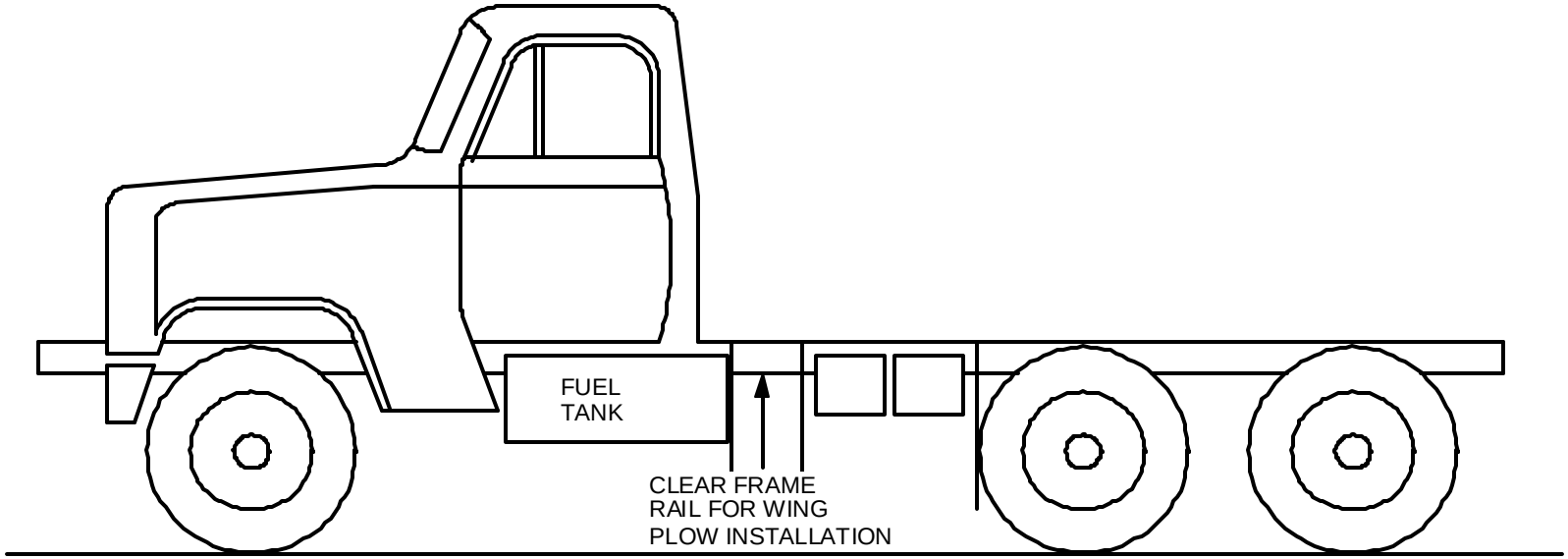
CURB SIDE



FINAL LOCATIONS SHALL BE DETERMINED AT THE PRE-BUILD MEETING

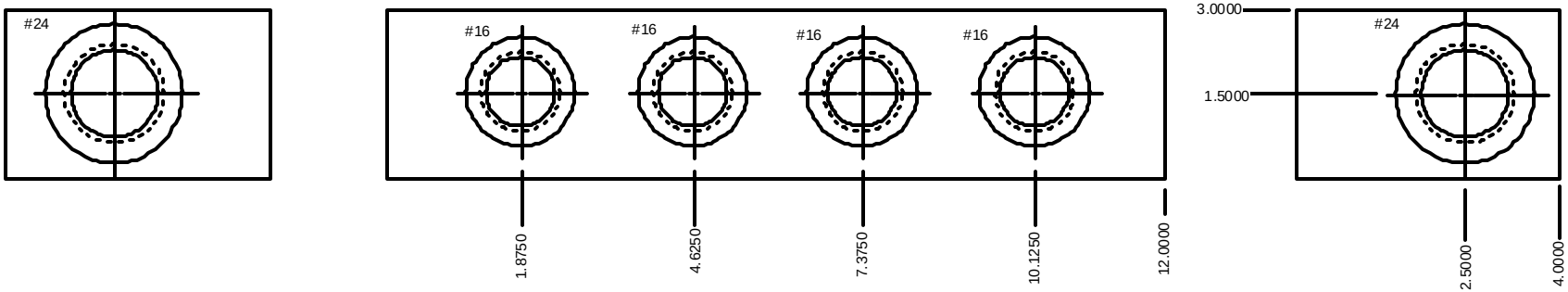
REVISIONS			COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION		
N0.	DATE	BY	HYDRAULIC COMPONET OVERVIEW CURB SIDE		
1	03-03-00	GAH			
2	8/3/01	DWG			
3			DRAWN BY GAH	SCALE N / A	MATERIAL
4			CHK'D LA	DATE 03/01/00	DRW NO. EQN-23
5					SHEE 2 OF 5

DRIVERS SIDE

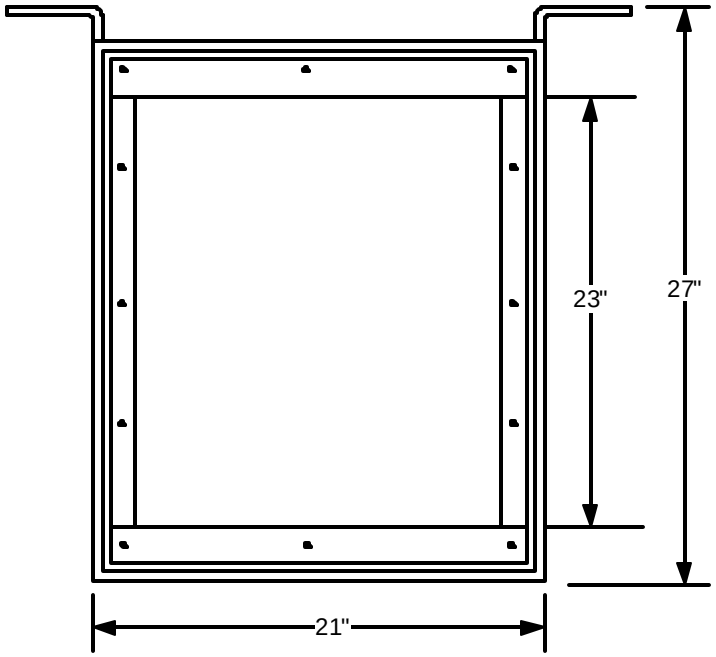


FINAL LOCATIONS SHALL BE DETERMINED AT THE PRE-BUILD MEETING

REVISIONS			COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION		
N0.	DATE	BY			
1	03-03-00	GAH	HYDRAULIC COMPONET OVERVIEW DRIVERS SIDE		
2	8/3/01	DWG			
3			DRAWN BY GAH	SCALE N / A	MATERIAL
4			CHK'D LA	DATE 03/01/00	DRW NO. EQN-23
5					SHEE 3 OF 5

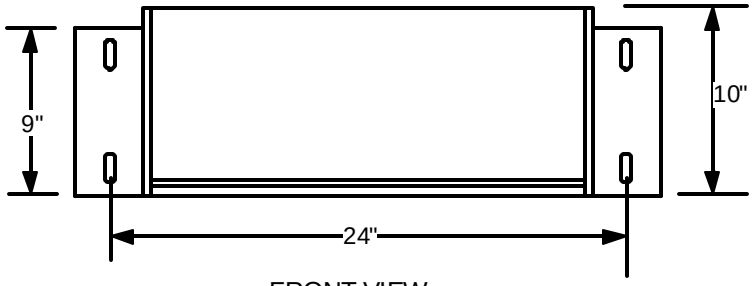


REVISIONS			COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION		
N0.	DATE	BY	HYDRAULIC COMPONET OVERVIEW		
1	03-03-00	GAH	HEADER BLOCK		
2					
3			DRAWN BY GAH	SCALE N / A	MATERIAL
4			CHK'D LH	DATE 03/01/00	DRW NO. EQN-23
5					SHEET 4 OF 5



TOP VIEW

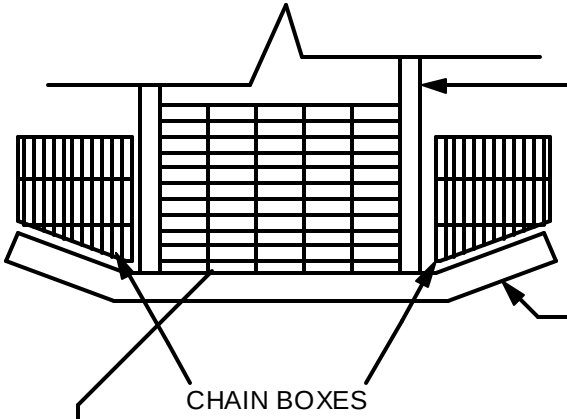
SIDE VIEW



FRONT VIEW

REVISIONS			COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION		
N0.	DATE	BY			
1			HYDRAULIC COMPONET OVERVIEW VALVE ENCLOSURE		
2					
3			DRAWN BY GAH	SCALE N / A	MATERIAL
4			CHK'D LA	DATE 03/03/00	DRW NO. EQN-23
5					SHEET 5 OF 5

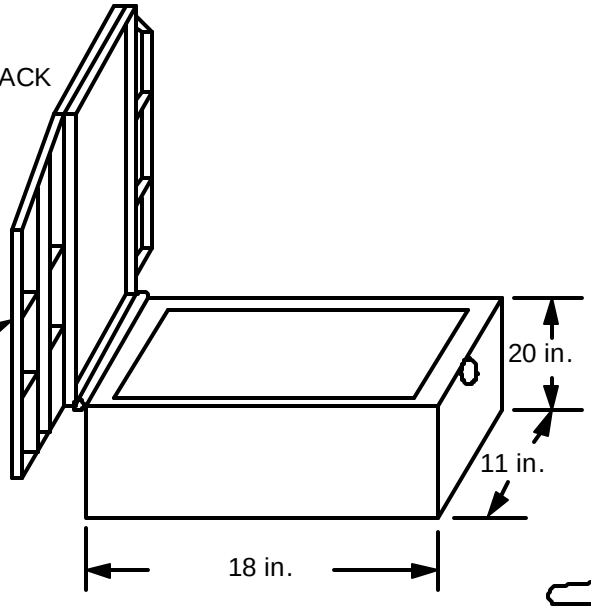
AERIAL VIEW

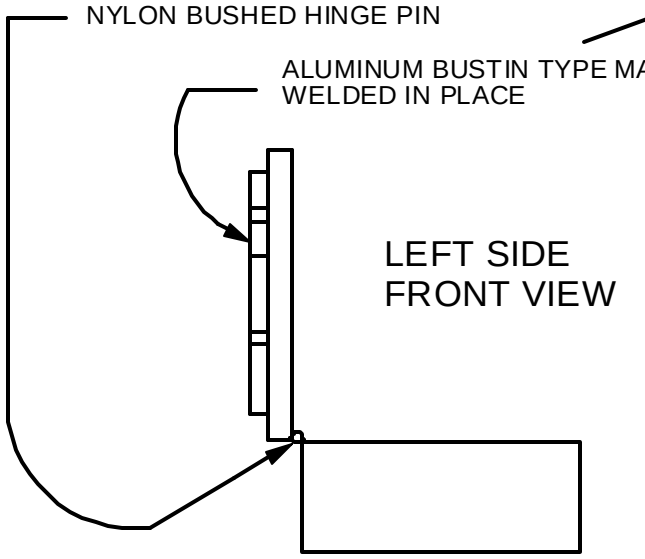


* LEFT SIDE BOX SHOWN, REVERSE FOR RIGHT SIDE

* GIVEN DIMENSIONS ARE APPROXIMATE AND MAY REQUIRE ALTERATION TO ADAPT TO MAKE / MODEL OF TRUCK AND STYLE OF BUMPER.

NOTE:
THERE SHALL BE SUFFICIENT ALUMINUM BUSTIN TYPE MATERIAL TO COVER THE ENTIRE AREA FROM GRILL TO BUMPER AND FRAME REAIL TO FRAME RAIL.



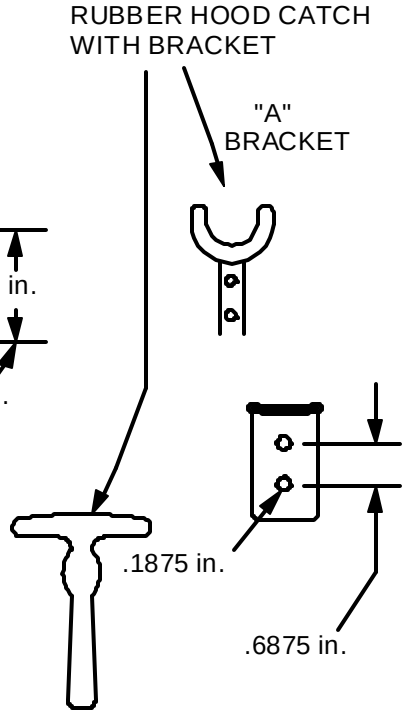


LEFT SIDE
FRONT VIEW

GRADE 8 BOLTS MINIMUM QUANTITY 4

MINIMUM OF FOUR .750 IN.
(DRAIN HOLES)

GRILL TO BUMPER AND BOXES SHALL BE SUPPORTED IN SUCH A WAY TO ENSURE SUPPORT OF A 200 lb. / 90 kg. MAN IN ANY 12 in. area

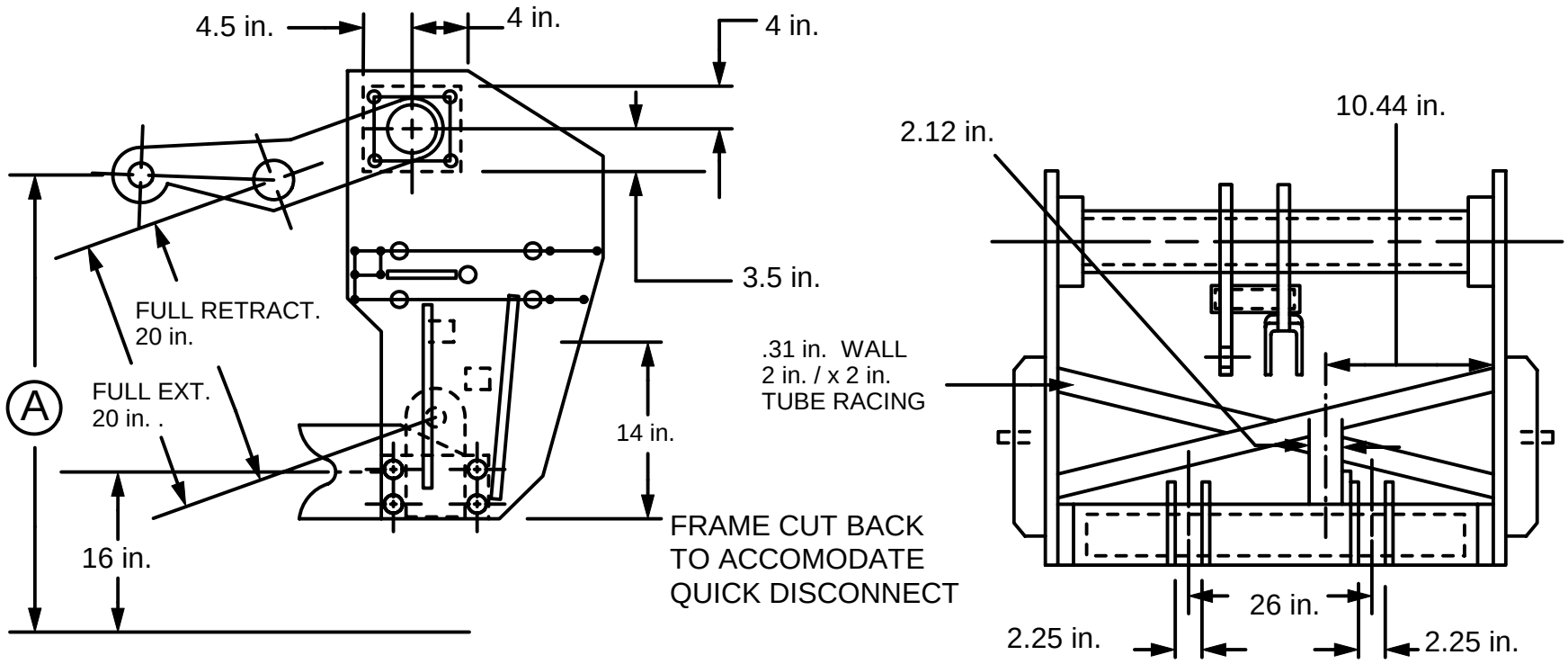


REVISIONS		
NO	DATE	BY
1	09/28/95	SWW
2	08/08/97	DLW
3	11/10/98	DJA
4	05/22/02	DWG
5	05/22/03	PJC

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

DUMP TRUCK CHAIN BOXES

DRAWN BY WHM	SCALE N / A	MATERIAL	
CHK'D RED	DATE 05 / 13 / 93	DRW NO. EQN-32	
		SHEET 1 OF 1	



NOTE:

ALL GREASE ZERKS SHALL BE SURROUNDED BY A SHORT LENGTH OF PIPE (WELDED IN PLACE) OR BE PLACED IN A RECESSED HOLE.

(A) HEIGHT SHALL BE SUFFICIENT TO AFFORD UNRESTRICTED LIFT FOR PENN D.O.T. PLOWS

NOTE:

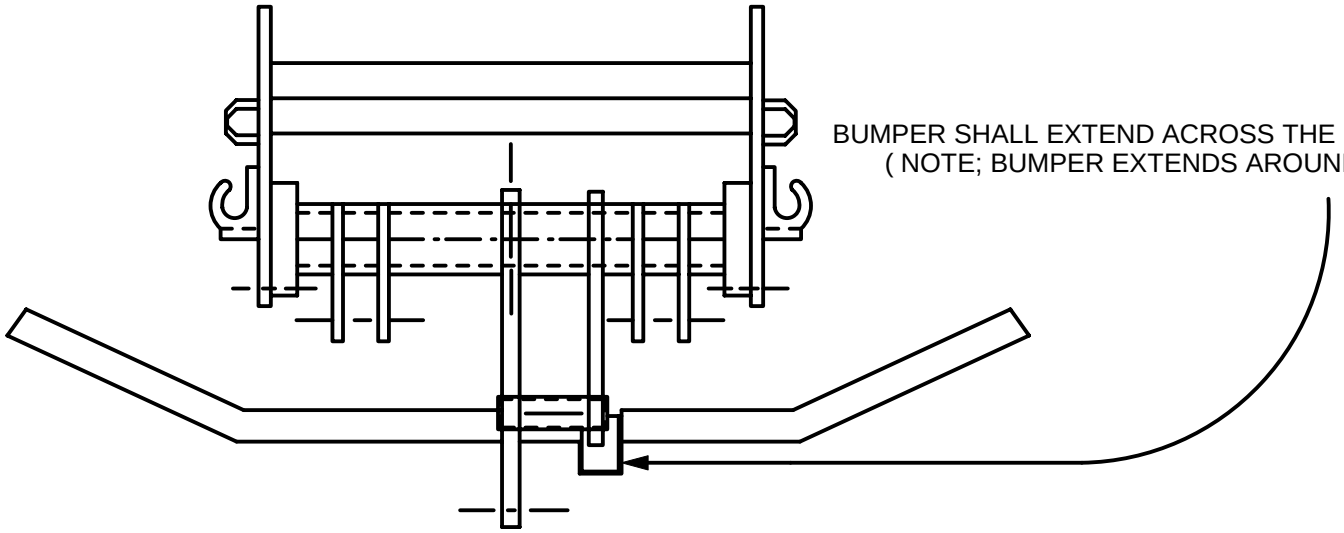
ALL FINAL DIMENSIONS AND ANGLES SHALL BE VERIFIED THROUGH FIELD VISITATION AND CORRESPONDENCE WITH EQUIPMENT DIVISION.

REVISIONS		
NO.	DATE	BY
1	09/25/95	SWW
2	11/05/95	WHM
3	08/14/97	DLW
4	05/28/02	DWG
5	09/13/06	CJW

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

LOW PROFILE MOUNTING

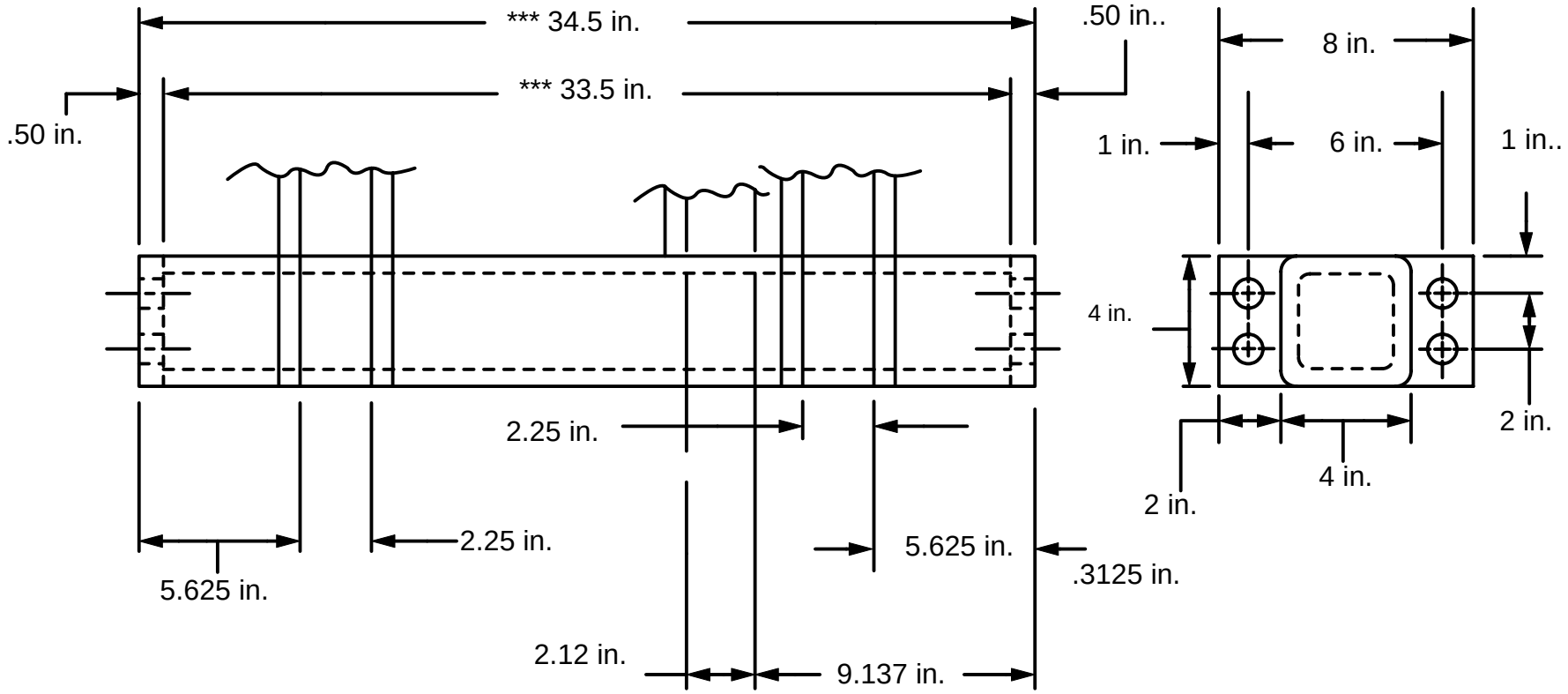
DRAWN BY DLW	SCALE N / A	MATERIAL	
CHK'D WHM	DATE 08 / 14 / 97	DRW NO.	EQN-50
		SHEET 1 OF 5	



BUMPER SHALL EXTEND ACROSS THE ENTIRE FRONT OR REAR
(NOTE; BUMPER EXTENDS AROUND PLOW CYLINDER)

ADDITIONAL BUMPER SUPPORTS SHALL BE FABRICATED
AND INSTALLED TO INSURE BUMPER RIGIDIITY

REVISIONS			COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION		
N0.	DATE	BY	LOW PROFILE MOUNTING		
1	09/25/95	SWW			
2	11/05/95	WHM			
3	08/14/97	DLW	DRAWN BY DLW	SCALE N / A	MATERIAL
4			CHK'D WHM	DATE 08 / 14 / 97	DRW NO. EQN-50
5					SHEET 2 OF 5



*** VARIABLE WIDTH ASSEMBLY CHECK CHASSIS RAIL WIDTH

ALL FINAL DIMENSIONS AND ANGLES SHALL BE VERIFIED THROUGH FIELD VISITATION AND CORRESPONDENCE WITH THE EQUIPMENT DIVISION.

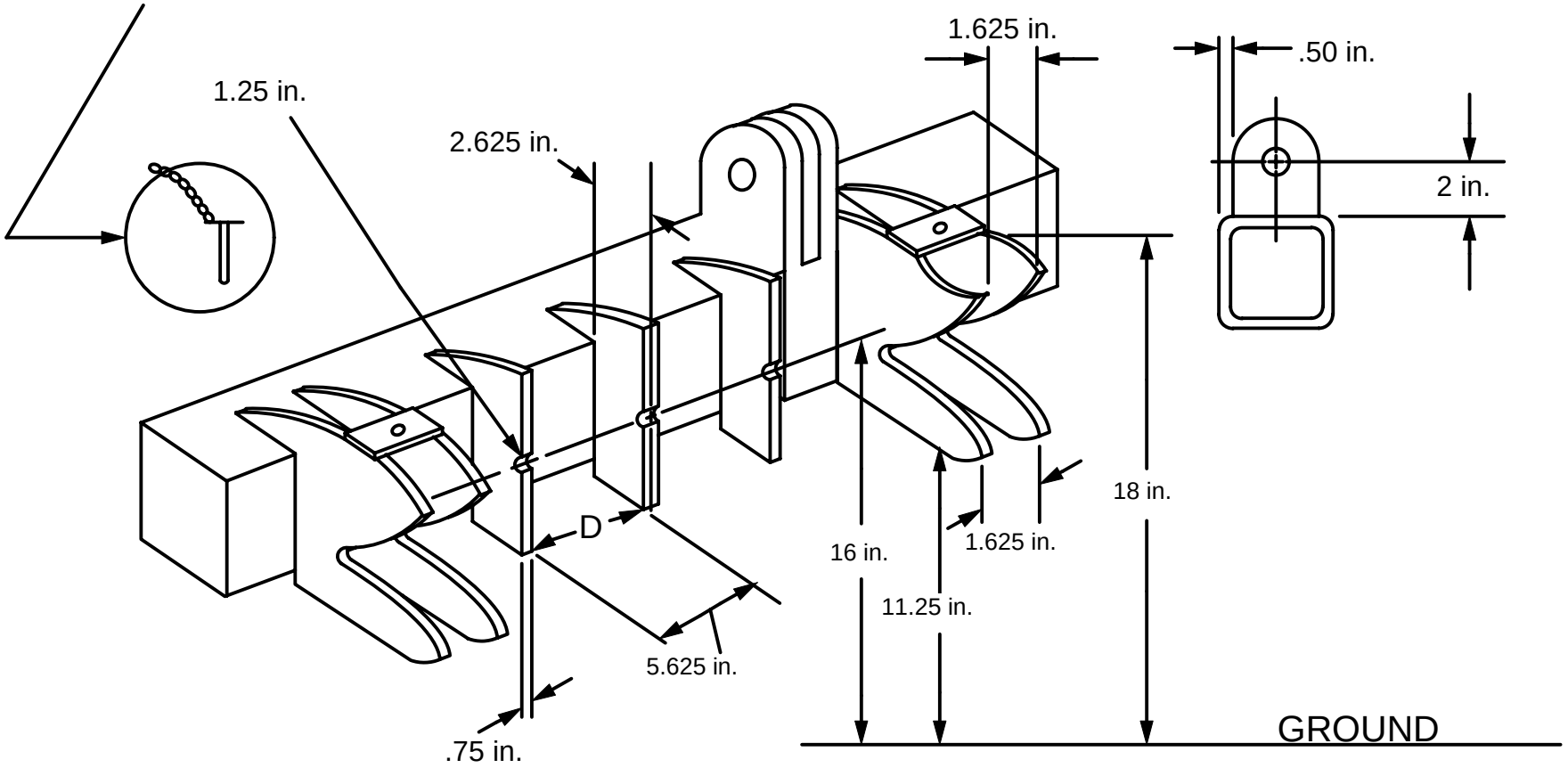
REVISIONS		
N0.	DATE	BY
1	09/25/95	SWW
2	11/05/95	WHM
3	08/14/97	DLW
4	05/28/02	DWG
5		

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

LOW PROFILE MOUNTING

DRAWN BY DLW	SCALE N / A	MATERIAL
CHK'D WHM	DATE 08 / 14 / 97	DRW NO EQN-50
		SHEET 3 OF 5

1.25 in. DIA PIN x 7 in. LONG WITH TAPERED END FITTED WITH A HAIR PIN. TOP SHALL HAVE A WELDED CHAIN TO RETAIN PIN.



NOTE:

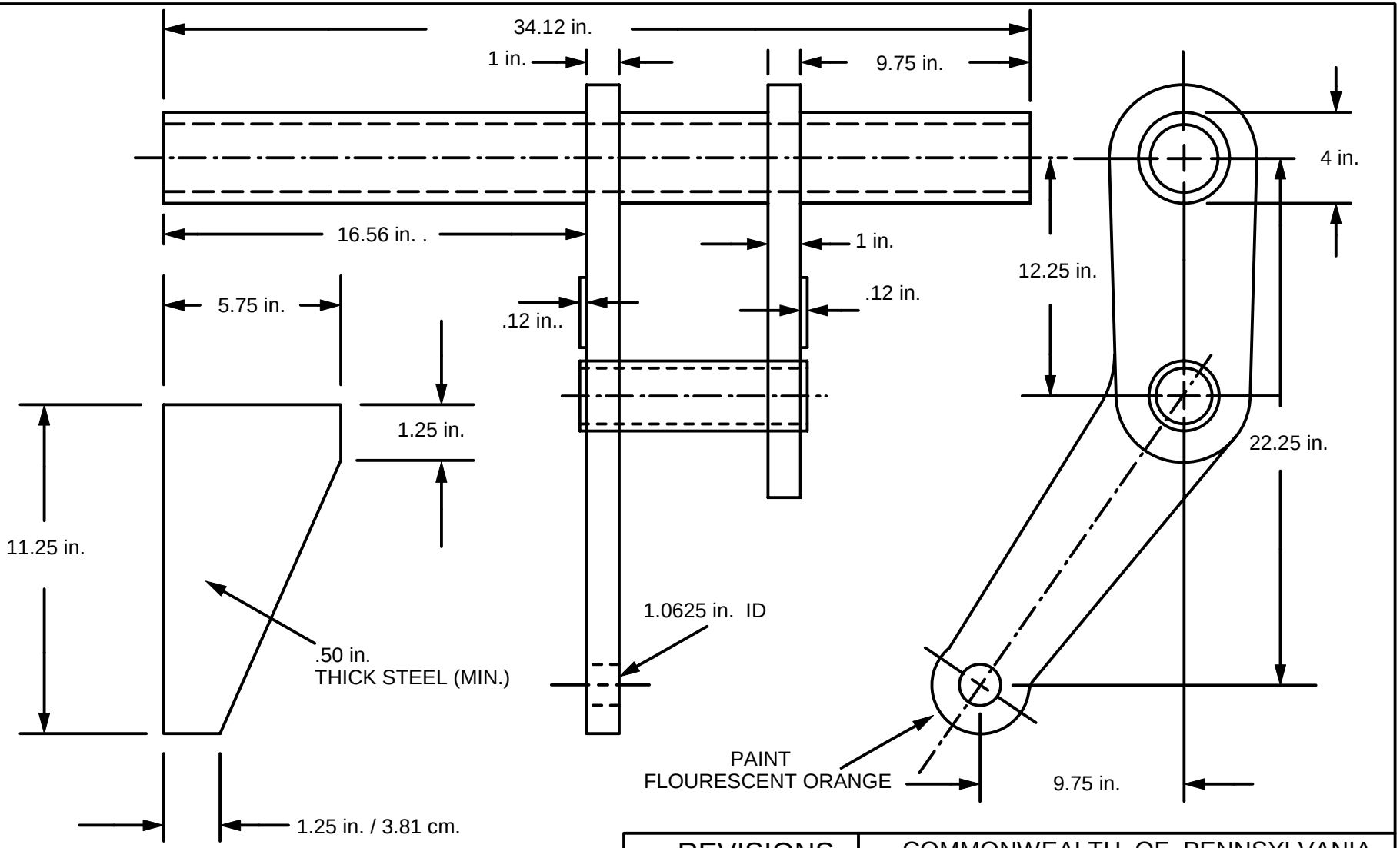
DIMENSION "D" SHALL BE 2 in. / 5.08 cm. OFFSET TO THE LEFT OF CENTER (AS VIEWED FROM THE DRIVERS SEAT)

REVISIONS		
N0.	DATE	BY
1	09/25/95	SWW
2	1/05/95	WHM
3	08/14/97	DLW
4	05/28/02	DWG
5	11/03/05	KNH

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

LOW PROFILE MOUNTING

DRAWN BY DLW	SCALE N / A	MATERIAL	
CHK'D WHM	DATE 08 / 14 / 97	DRW NO. EQN-50	
		SHEET 4 OF 5	



FULL WELD BOTH SIDES DIMENSIONS ARE APPROX

ALL FINAL DIMENSIONS AND ANGLES SHALL BE BE VERIFIED THROUGH FIELD VISITATION AND CORRESPONDENCE WITH THE EQUIPMENT DIVISION.

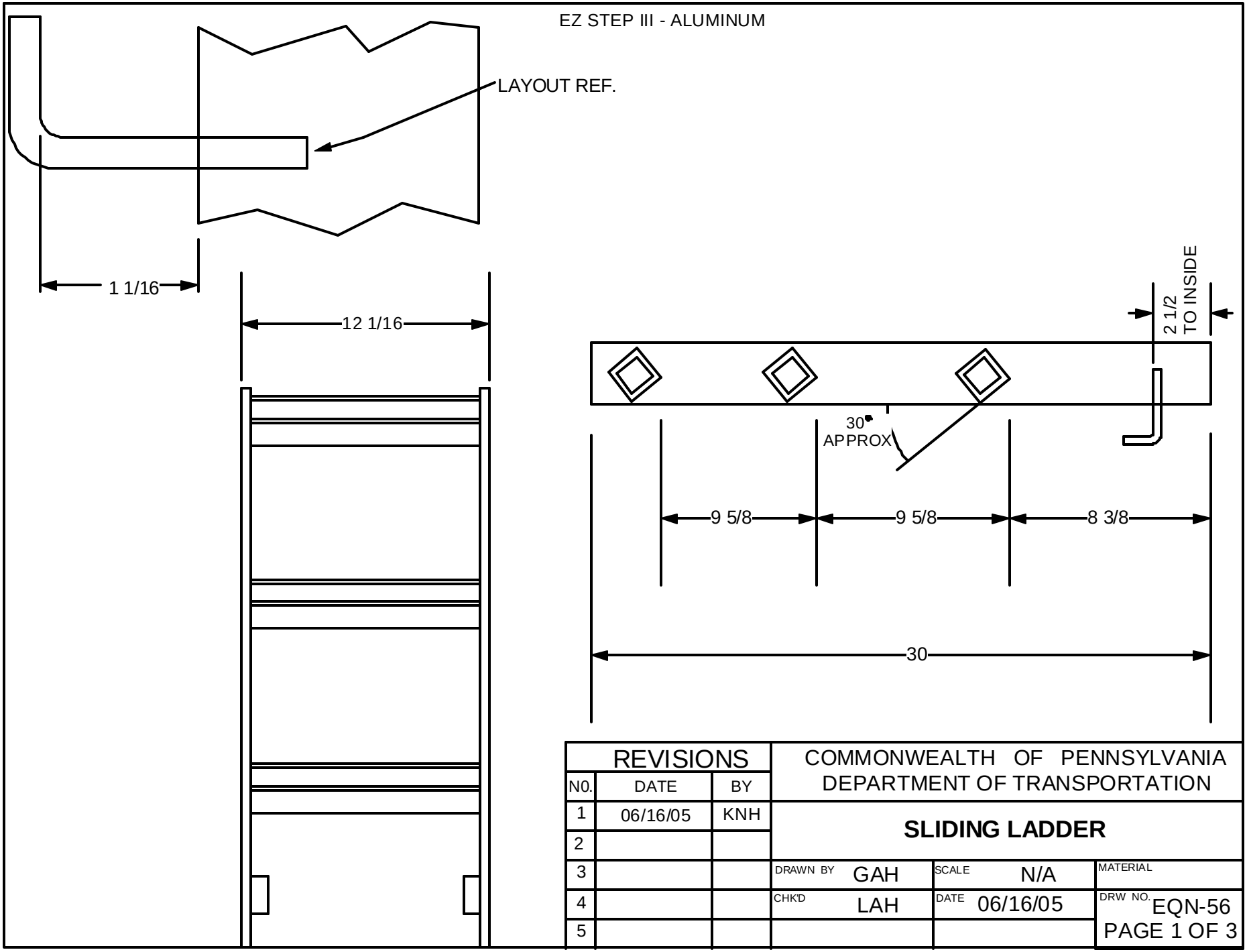
REVISIONS		
N0.	DATE	BY
1	09/25/95	SWW
2	1/05/95	WHM
3	08/14/97	DLW
4	05/28/02	DWG
5		

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

LOW PROFILE MOUNTING

DRAWN BY DLW	SCALE N / A	MATERIAL	
CHK'D WHM	DATE 08 / 14 / 97	DRW NO.	EQN-50
		SHEET 5 OF 5	

EZ STEP III - ALUMINUM



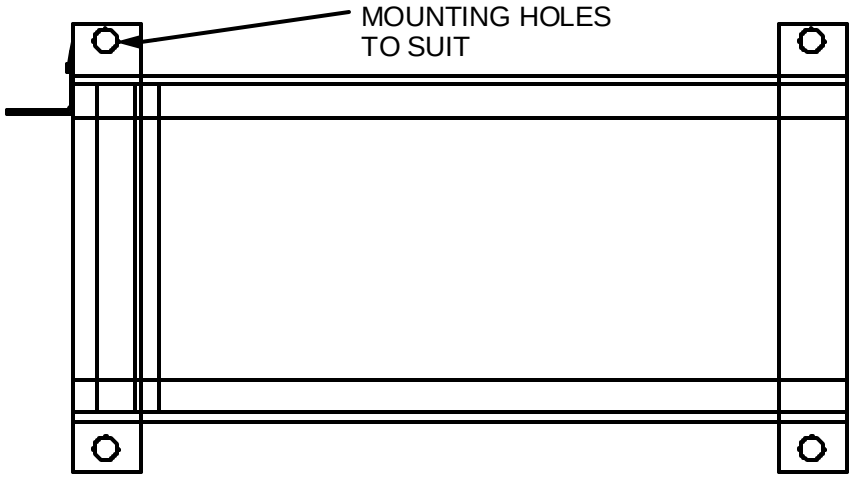
REVISIONS		
N0.	DATE	BY
1	06/16/05	KNH
2		
3		
4		
5		

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

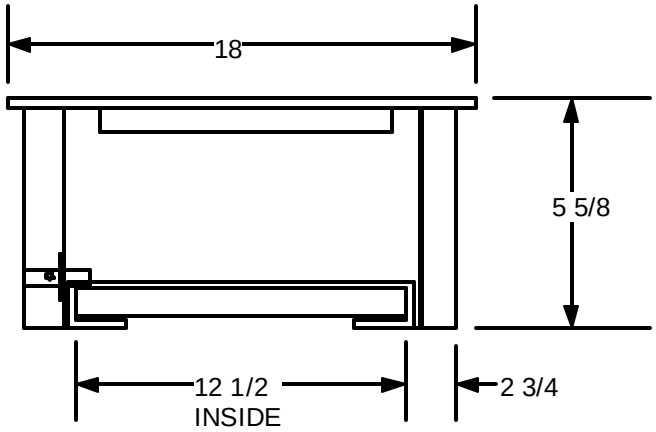
SLIDING LADDER

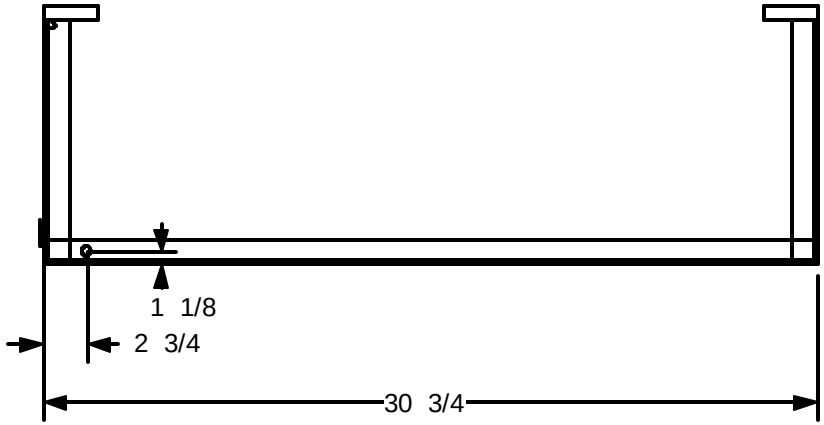
DRAWN BY GAH	SCALE N/A	MATERIAL
CHK'D LAH	DATE 06/16/05	DRW NO. EQN-56
		PAGE 1 OF 3

EZ STEP III - ALUMINUM
MOUNTING BRKT.



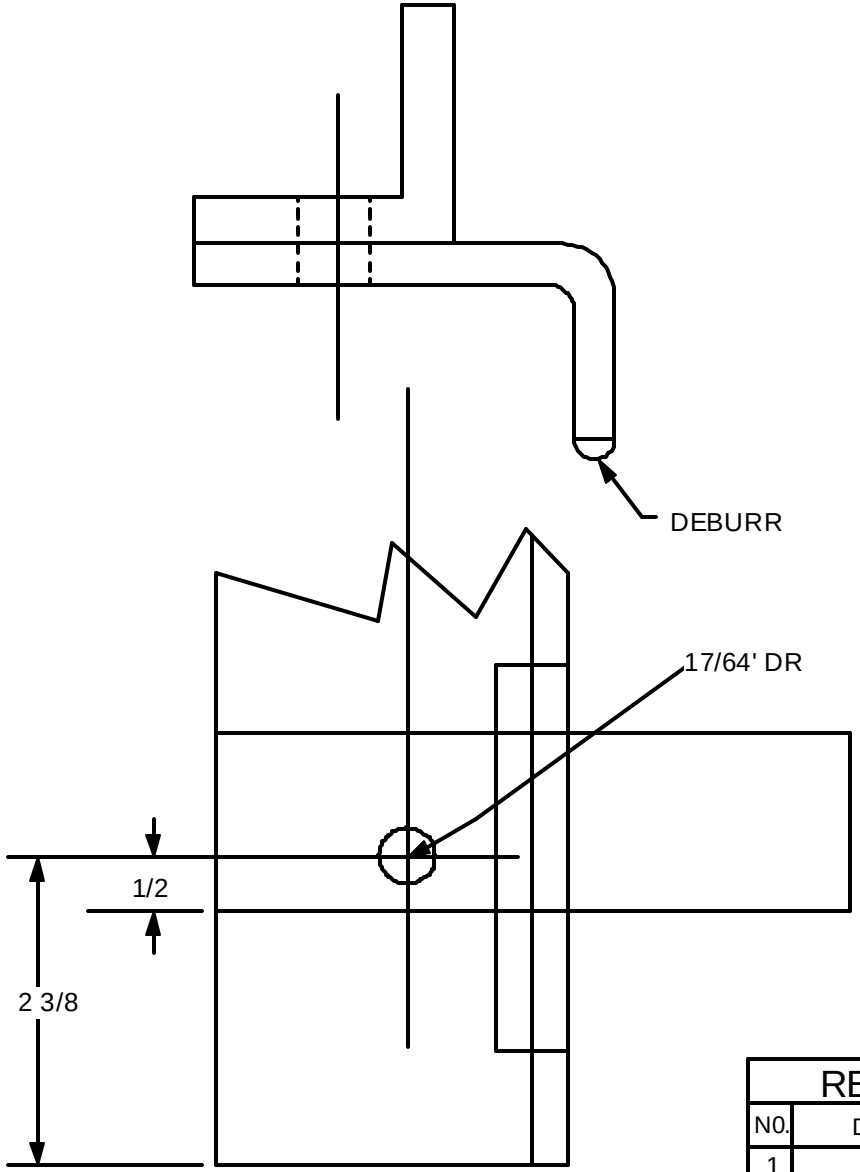
2PCS	16	3/6 X 2 1/2	ALUM 3.27
4PCS	S 1/4	2 X 2 X 1/4 ANG	ALUM 1.91
2PCS	30 3/4	2 X 2 X 1/4 ANG	ALUM 5.69
2PCS	12 1/2	1 ROD	ALUM 1.92
2PCS	12 1/2	1/8 X 1 1/2	ALUM 0.23
1PC	2 3/4	1/8 X 1/2	ALUM 0.02
1PC	4 3/4	1/8 X 1	ALUM 0.06
1PC	1/4 - 20 X 1'	HHCS WITH NUT & WASHER	

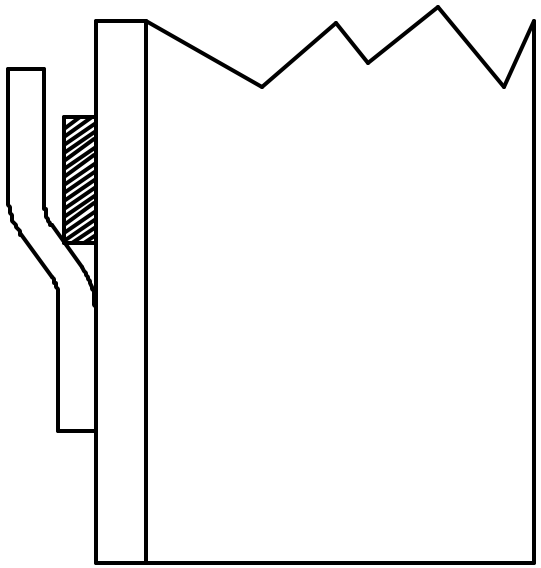




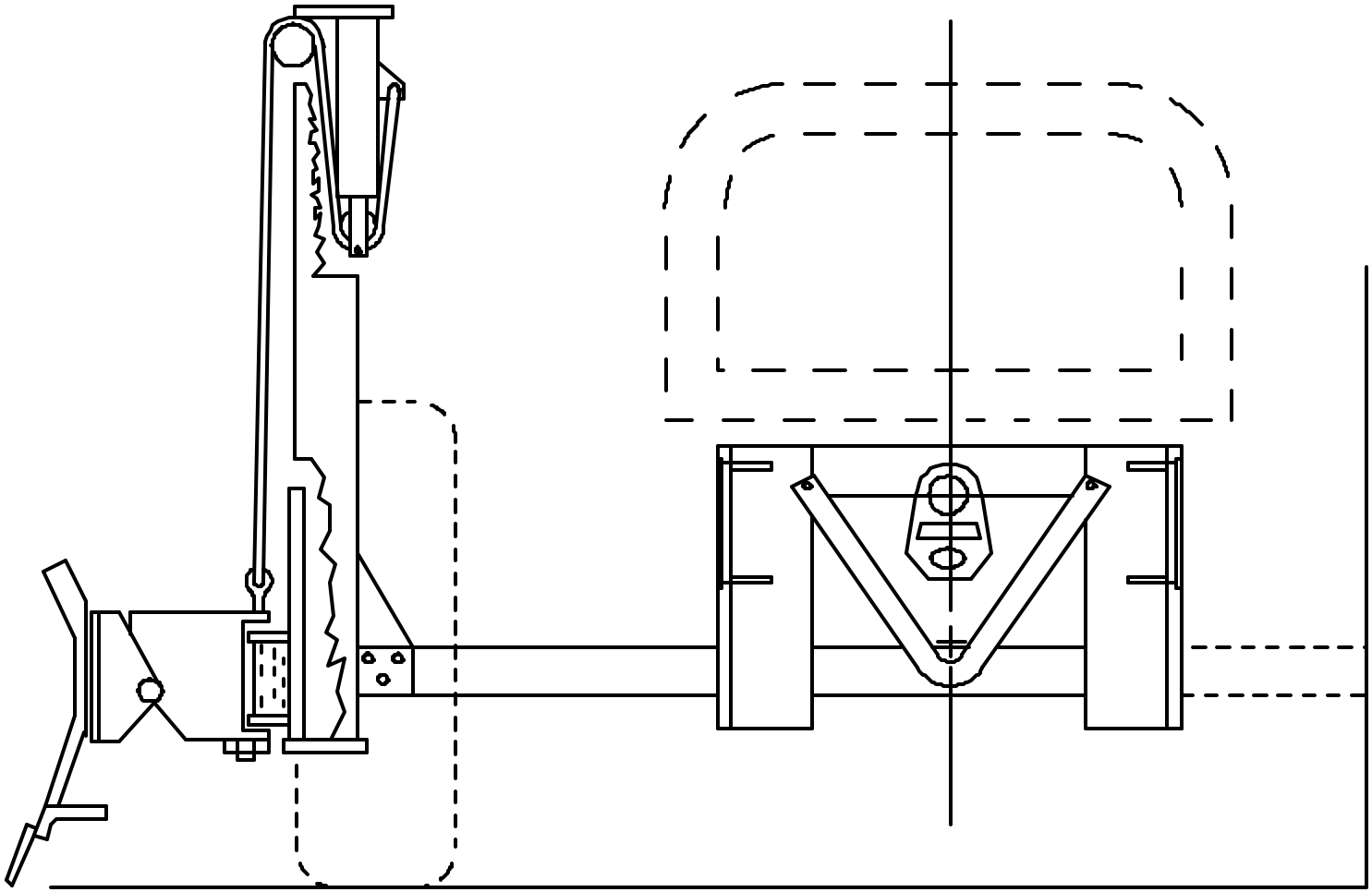
REVISIONS			COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION		
N0.	DATE	BY	SLIDING LADDER		
1					
2					
3			DRAWN BY GAH	SCALE N / A	MATERIAL
4			CHK'D	DATE 01/02/00	DRW NO. EQN-56
5					PAGE 2 OF 3

EZ STEP III - ALUMINUM
MOUNTING BRKT





REVISIONS			COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION		
N0.	DATE	BY			
1			SLIDING LADDER		
2					
3			DRAWN BY GAH	SCALE N / A	MATERIAL ALUM.
4			CHK'D	DATE 01/02/00	DRW NO. EQN-56
5					PAGE 3 OF3



NOTES:

1. SKETCH SHOWS RIGHT WING PLOW MOUNTED ON AN INTERNATIONAL DUMP TRUCK MODEL S-2554 (EQUIPMENT NO. 2064).

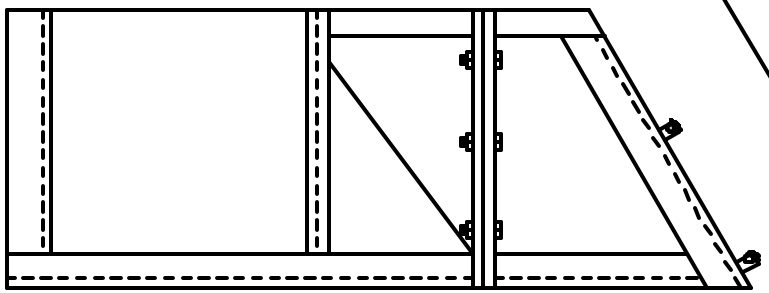
2. LEFT PATROL WING SIMILAR EXCEPT OPPOSITE HAND MOUNTING.

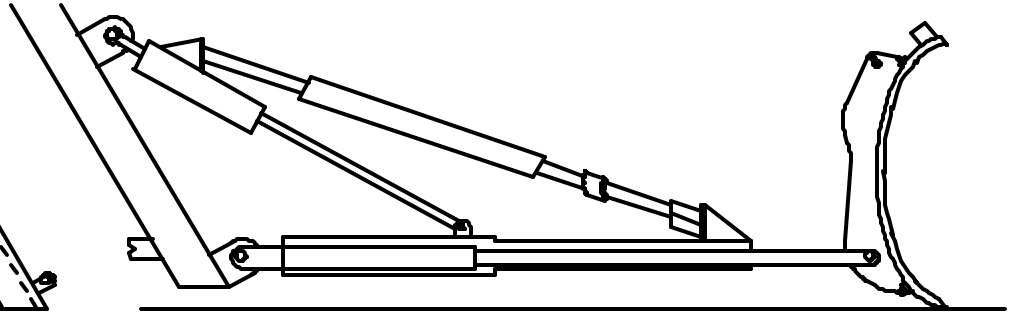
REVISIONS		
N0.	DATE	BY
1	06/21/93	SM
2	01/14/00	GAH
3		
4		
5		

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

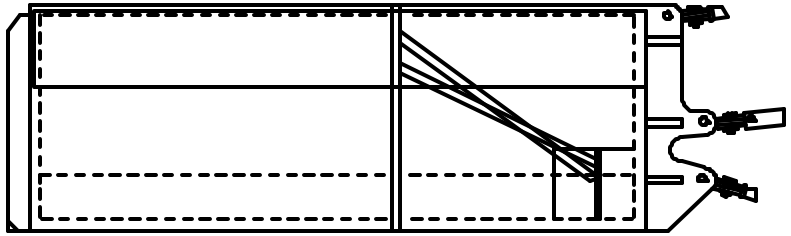
SNOWPLOW PATROL WING, GENERIC, MOUNTING ARRANGEMENTS

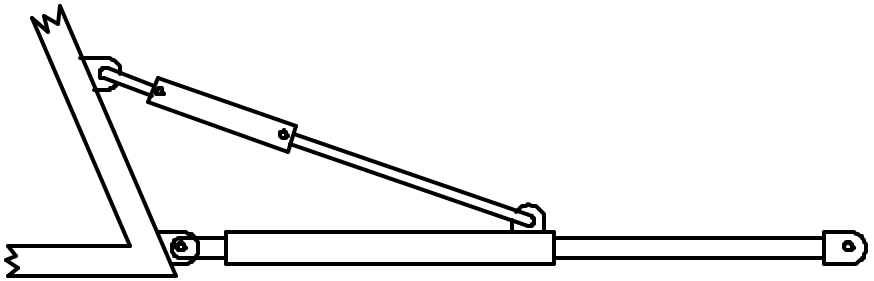
DRAWN BY MELVYN D.	SCALE N / A	MATERIAL
CHK'D RAR	DATE 03/22/89	DRW NO. EQN-60A
		SHEET 1 OF 3

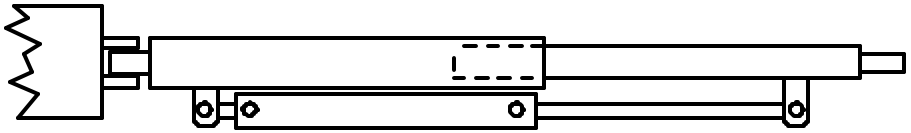


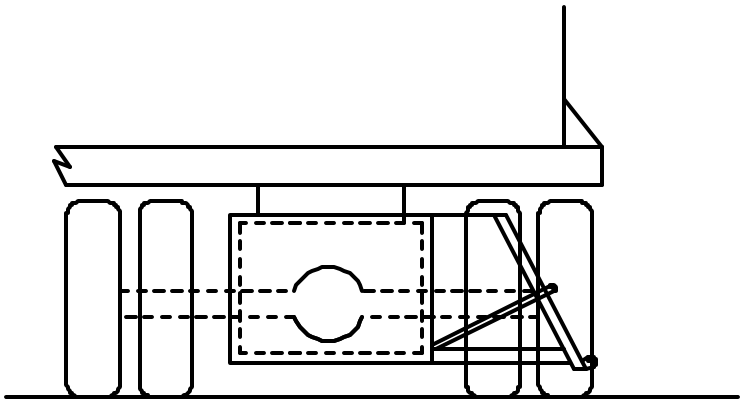


DETACHABLE "A" FRAME
(REMOVABLE FOR SUMMER USE)

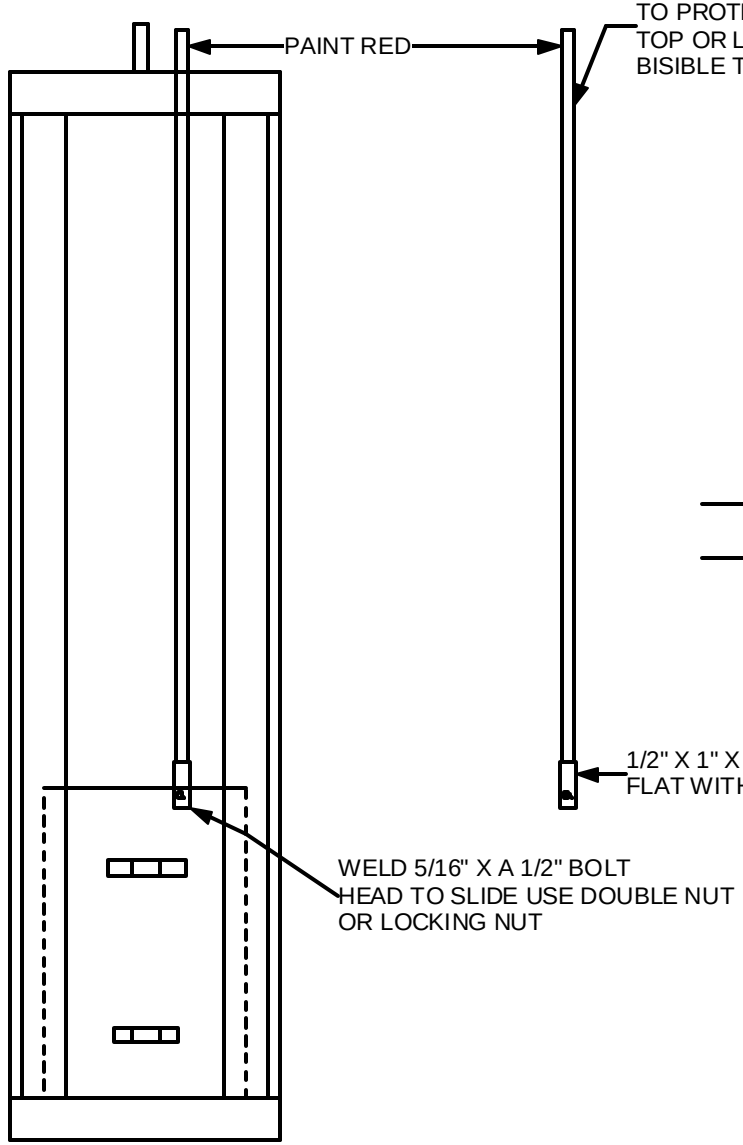




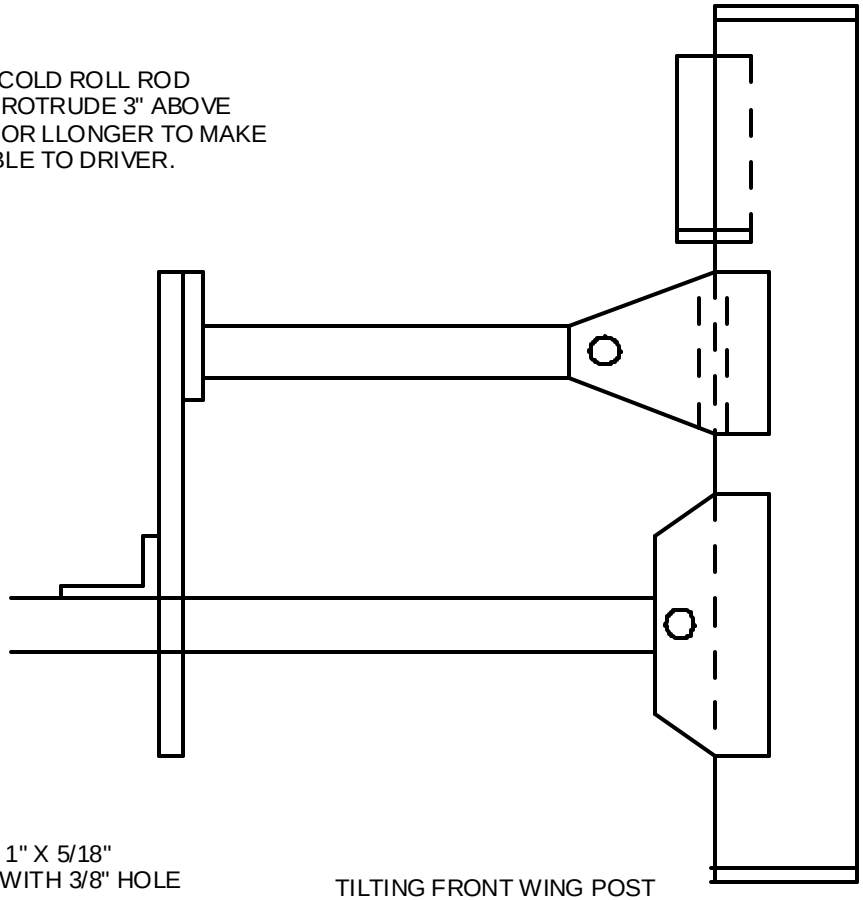




REVISIONS			COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION		
N0.	DATE	BY	**SNOWPLOW PATROL WING, GENERIC, MOUNTING ARRANGEMENTS**		
1	**06/21/93**	**SM**			
2	**01/27/00**	**GAH**			
3			DRAWN BY **MELVYN D.**	SCALE N / A	MATERIAL
4			CHK'D RAR	DATE 03/22/89	DRW NO. **EQN-60A**
5					**SHEET 2 OF 3**

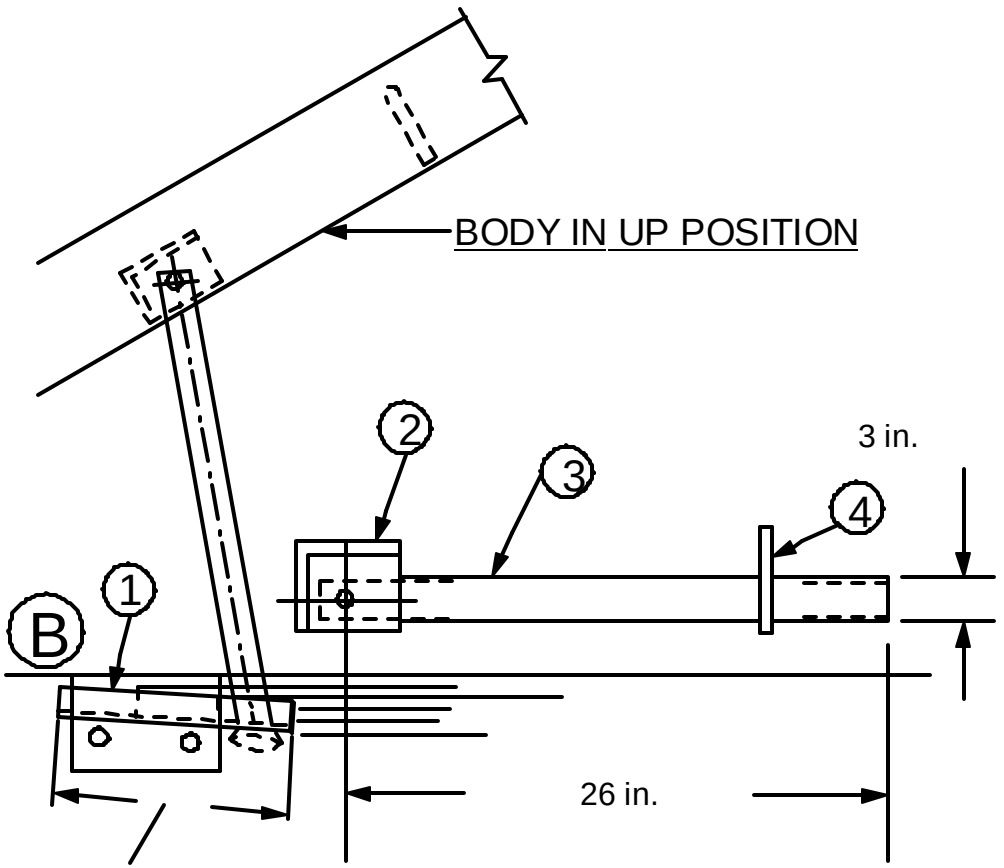


MECHANICAL PATROL WING FRONT POST GUIDE

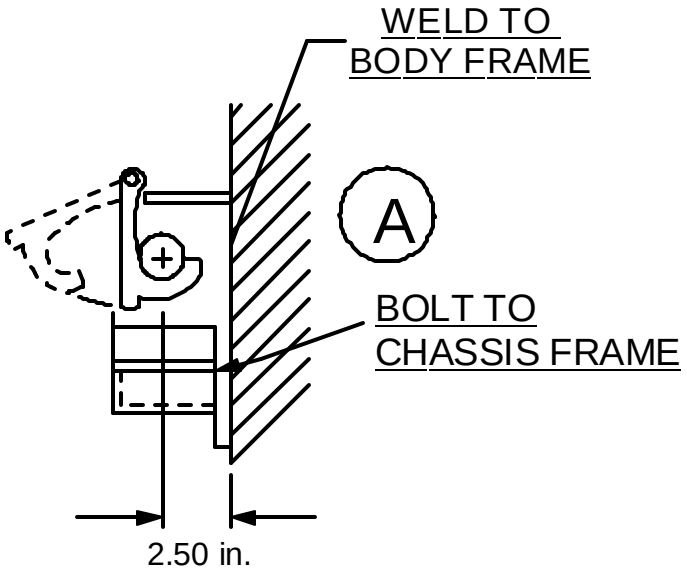


TILTING FRONT WING POST

REVISIONS			COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION		
N0.	DATE	BY	SNOWPLOW PATROL WING, GENERIC, MOUNTING ARRANGEMENTS		
1	06/21/93	SM			
2	01/29/00	GAH			
3			DRAWN BY S. MADER	SCALE N / A	MATERIAL
4			CHK'D RAR	DATE 03/22/89	DRW NO. EQN-60A
5					SHEET 3 OF 3



CURBSIDE VIEW



REVISIONS			COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION		
N0.	DATE	BY	DUMP TRUCK BED PROP SYSTEM		
1	11/06/89	WHM			
2	11/08/93	SM			
3	10/10/95	SWW	DRAWN BY WHM	SCALE N / A	MATERIAL
4	09/08/97	DLW	CHK'D RED	DATE 11 / 06 / 89	DRW NO. EQN-62
5	05/28/02	DWG			SHEET 1 OF 2

BILL OF MATERIAL	
NO.	DESCRIPTION
1.	STOP- 5.4 in. / 12 in.
2.	HINGE- 3 in. x .3125 in. / 4 in.
3.	POST- PIPE (SCH80) x 1.5 in. (SCH80) x 2' 3"
4.	HOOK- .375 in. x 4 in. x 6.5 in.

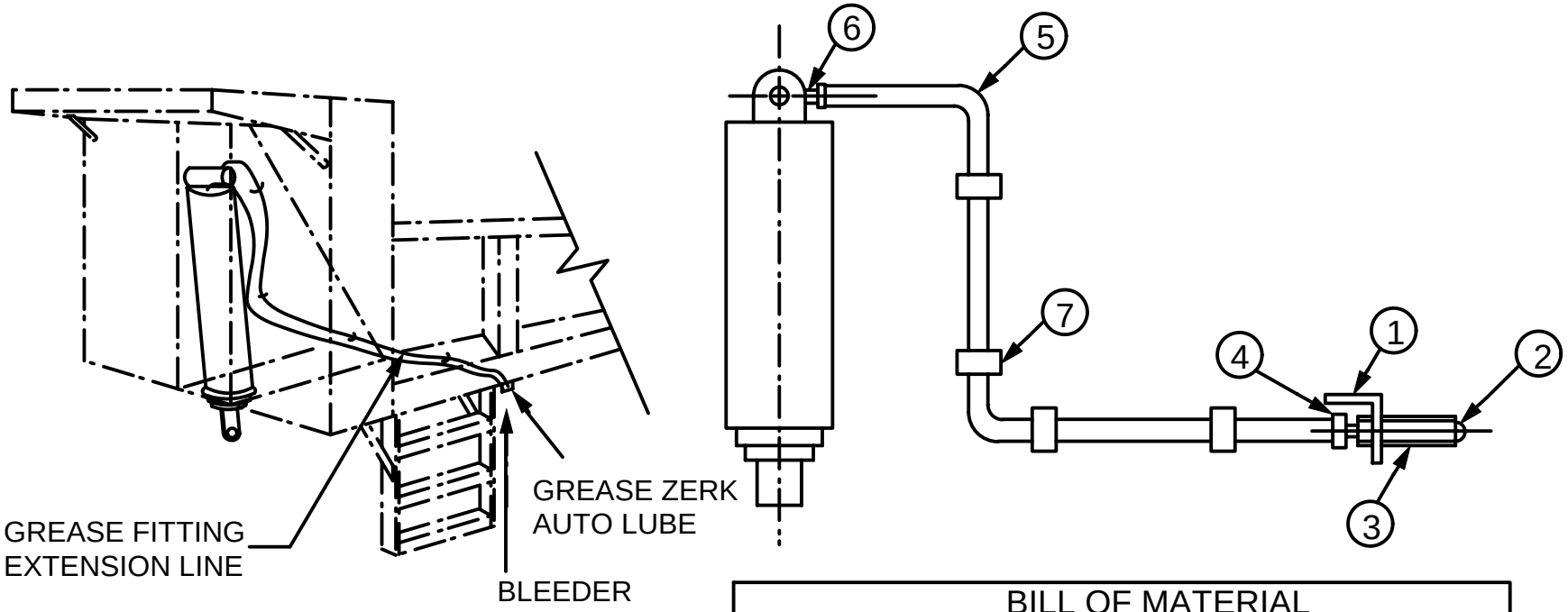
I. 2 SAFETY PROPS REQUIRED PER VEHICLE
II. WHEN RELEASED FROM CRADLE A BED PROP SHALL BE FREE TO FREE-FALL. PROP SHALL FALL INTO STEP RETAINER B AS BED IS RAISED, UN-ASSISTED.
III. BOLTS SHALL BE GRADE 8.
IV. BED PROPS SHALL BE POSITIONED IN SUCH A WAY TO ALLOW THE BODY TO BE AT FULL EXTENSION WHEN PROP IS IN THE LAST POCKET.
V. ANY ALTERNATIVE DESIGNS MUST BE APPROVED BY, CHIEF EQUIPMENT DIVISION, AT PRE-BUILD MEETING.

REVISIONS		
NO	DATE	BY
1	11/06/89	WHM
2	11/08/93	SM
3	10/10/95	SWW
4	09/08/97	DLW
5	05/28/02	DWG

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

DUMP TRUCK BED PROP SYSTEM

DRAWN BY WHM	SCALE N / A	MATERIAL
CHK'D RED	DATE 11 / 06 / 89	DRW NO. EQN-62
		SHEET 2 OF 2



BILL OF MATERIAL		
ITEM	DESCRIPTION	QTY.
1	MOUNTING CLIP CYLINDER REMOTE LUBE	1
2	GREASE FITTING	1
3	ADAPTER	1
4	SAE 37 SWIV. HOSE	1
5	HP HOSE	1
6	HALF PIPE FIT	1
7	SUPPORT CLAMP	4 (MIN.)

LINE SHALL BE AISI TYPE 304 STEEL TUBING WITH MINIMUM .1875 ID.

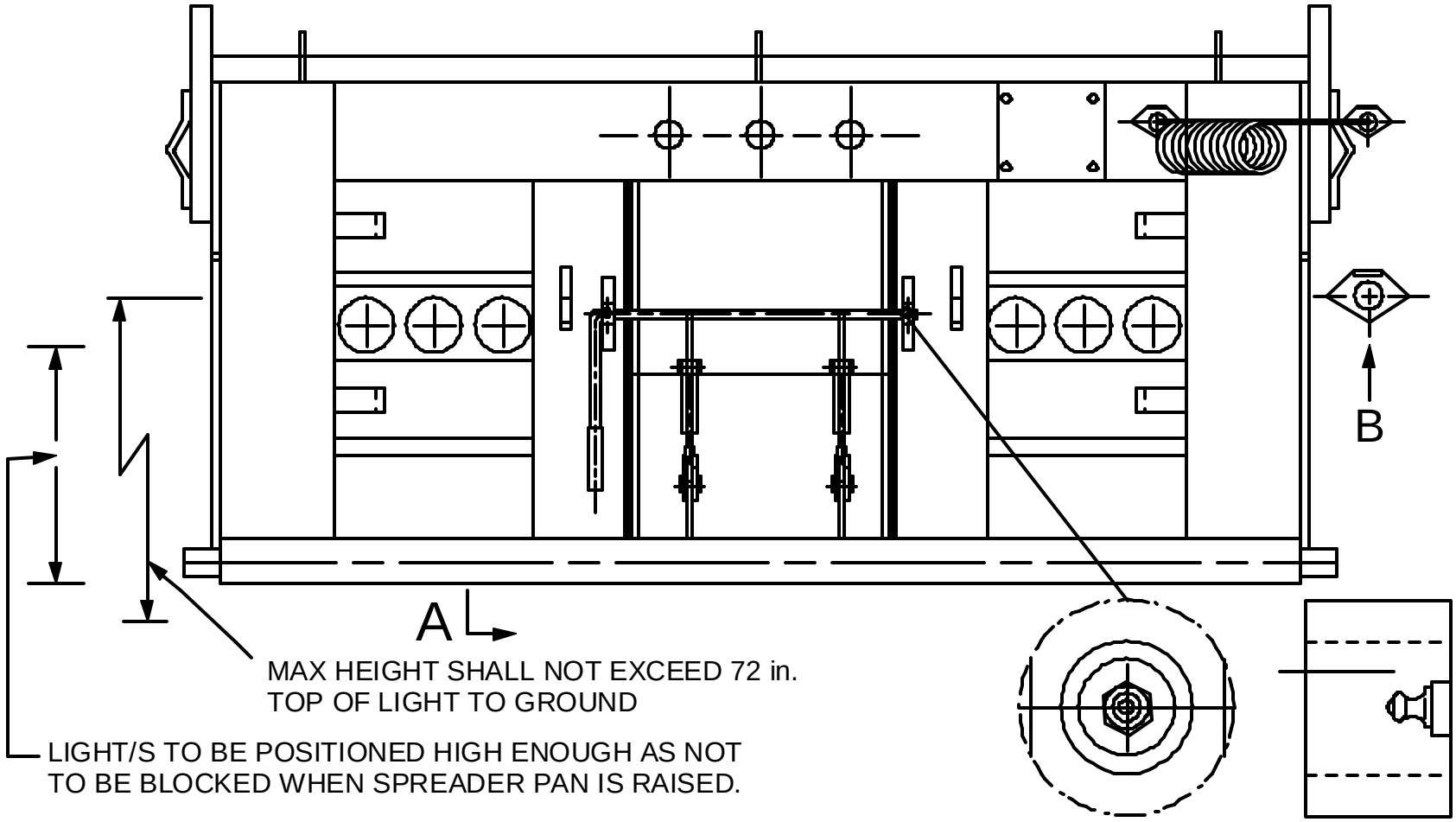
LINE SHALL BE SECURED WITH EXTRUDED CUSHION LOOP CLAMPS EVERY 12 inches (min.) UTILIZING STUDS OR BOLTS.

REVISIONS		
N0.	DATE	BY
1	10/19/90	R.R.
2	10/10/95	SWW
3	08/14/97	DLW
4	05/28/97	DWG
5	09/14/06	CJW

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

DUMP TRUCK
REMOTE GREASE CONNECTION

DRAWN BY DLW	SCALE N / A	MATERIAL	
CHK'D WHM	DATE 08 / 14 / 97	DRW NO. EQN-63	
		SHEET 1 OF 1	



B. HEIGHT TO BE DETERMINED AT
THE PRE-PILOT MEETING

NOTE: ALL HOLES FOR LIGHTS SHALL
BE PUNCHED OR HOLE BORED -
HAND CUTTING IS UNACCEPTABLE.

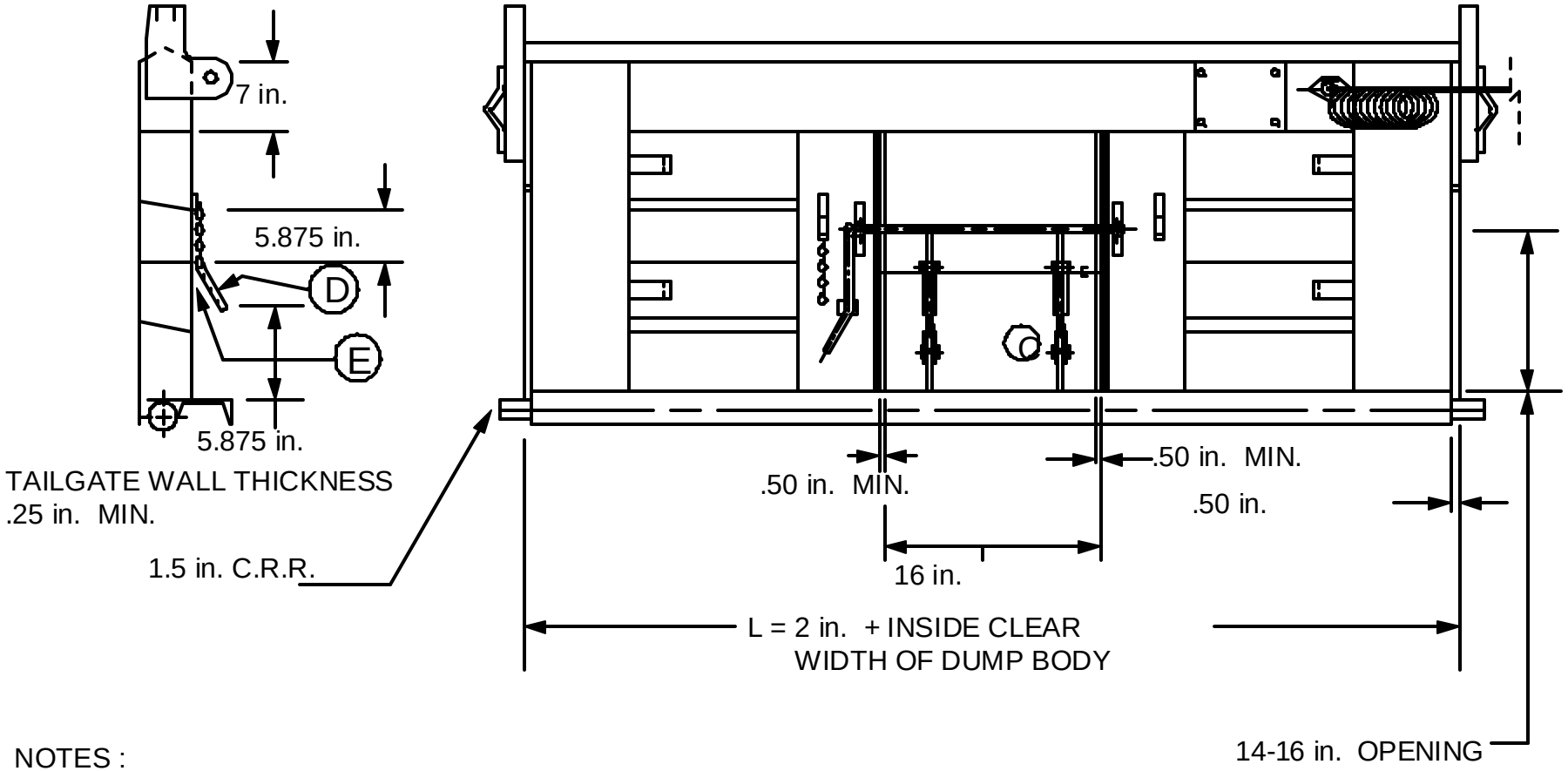
REVISIONS		
NO	DATE	BY
1	12/06/95	SWW
2	10/17/96	WHM
3	08/01/97	DLW
4	05/28/02	DWG
5	05/22/03	PJC

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

COAL CHUTE & TAILGATE APRON
DUMP TRUCK BODY W/ ALUMINUM TAILGATE

DRAWN BY S.M.	SCALE N / A	MATERIAL	
CHK'D RED	DATE 08 / 11 / 93	DRW NO.	EQN-64
		SHEET	1 OF 4

TAILGATE SHOWN FOR COAL CHUTE PURPOSES



NOTES :

HORIZONTAL CROSS-MEMBERS ABOVE THE DOORS SHALL BE ONE CONTINUOUS RUN ACROSS.

C. .25 in. SLIDING GATE TYPE 304 STAINLESS STEEL.

D. 1 in. DIA. H.R.R. LIFT HANDLE WITH GRIP COVER. SUFFICIENT CLEARANCE AS TO NOT HIT KNUCKLES OF HAND WHEN APPLYING.

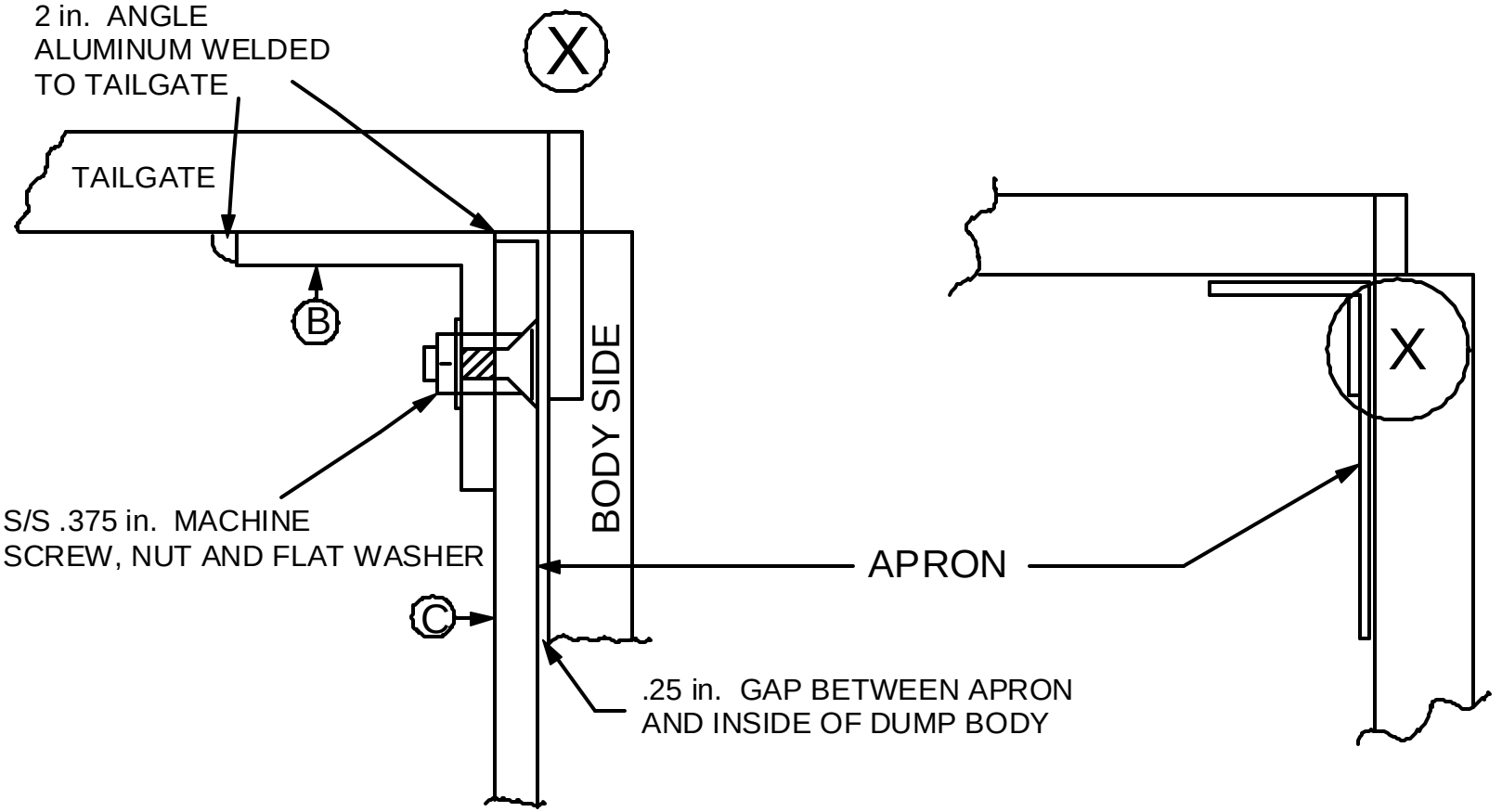
E. STRIKE PLATE.

REVISIONS		
NO.	DATE	BY
1	12/06/95	SWW
2	10/17/96	WHM
3	08/01/97	DLW
4	05/28/02	DWG
5	05/22/03	PJC

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

COAL CHUTE & TAILGATE APRON
DUMP TRUCK BODY W/ ALUMINUM TAILGATE

DRAWN BY S.M.	SCALE N / A	MATERIAL	
CHK'D RED	DATE 8 / 11 / 93	DRW NO. EQN-64	
		SHEET 2 OF 4	



NOTE: ATTACHMENTS SHALL BE PER DRAWINGS - ANY ALTERNATIVE METHOD MUST BE APPROVED IN WRITING BY CHIEF, EQUIPMENT DIVISION.

TAILGATE APRON
(LEFT INSIDE SHOWN)

REVISIONS		
N0.	DATE	BY
1	12/06/95	SWW
2	10/17/96	WHM
3	08/01/97	DLW
4	05/28/02	DWG
5	05/22/03	PJC

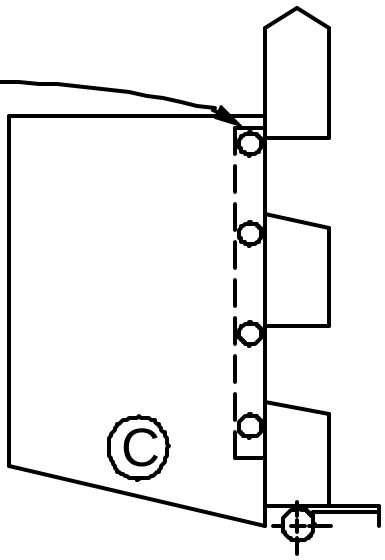
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

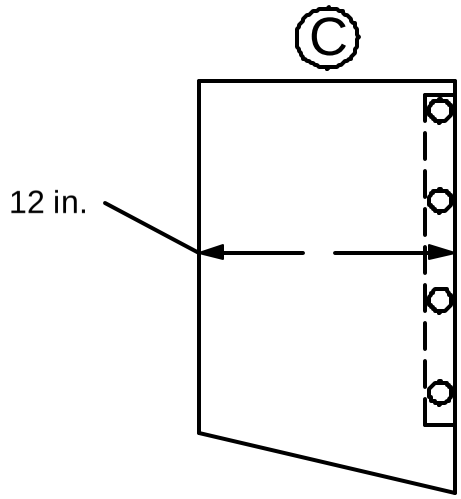
COAL CHUTE AND TAILGATE APRON
DUMP TRUCK BODY W / ALUMINUM

DRAWN BY S.M.	SCALE N / A	MATERIAL
CHK'D RED	DATE 08 / 11 / 93	DRW NO. EQN-64
		SHEET 3 OF 4

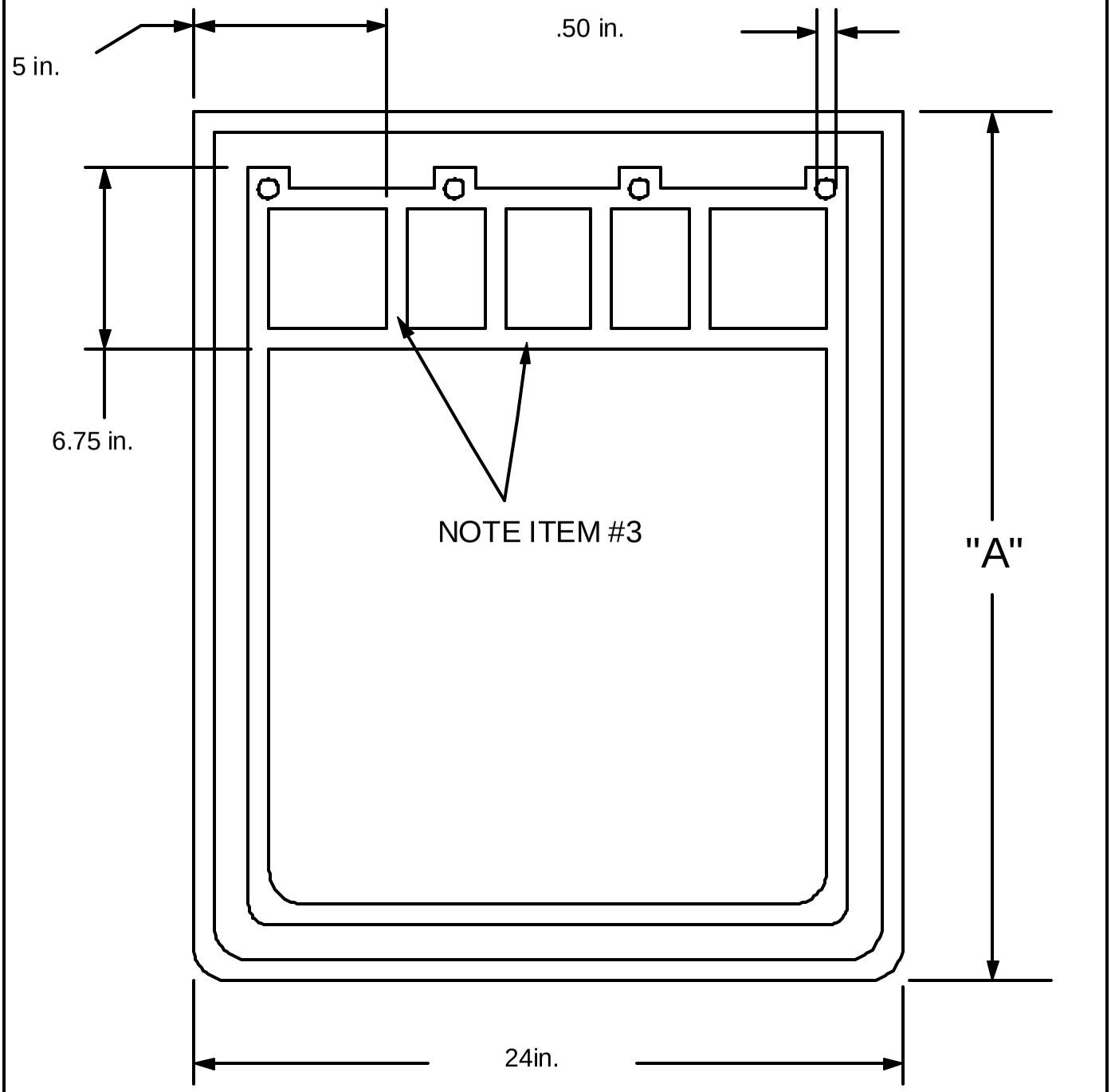
TAILGATE APRONS
LEFT AND RIGHT INSIDE

NOTE :
2 in. ANGLE ALUMINUM WITH 4 SLOTTED HOLES .375 in. x 1 in. ON OUTER SIDE. .375 in. STAINLESS STEEL COUNTERSUNK MACHINE SCREWS WITH STAINLESS STEEL NUTS AND FLAT WASHERS SHALL BE USED.





REVISIONS			COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION		
NO.	DATE	BY			
1	12/06/95	SWW	COAL CHUTE AND TAILGATE APRON DUMP TRUCK BODY W/ ALUMINUM TAILGATE		
2	10/17/96	WHM			
3	08/01/97	DLW	DRAWN BY S.M.	SCALE N/A	MATERIAL
4	05/28/02	DWG	CHK'D RED	DATE 08 / 11 / 93	DRW NO. EQN-64
5	05/22/03	PJC			SHEET 4 OF 4



NOTE: DIMENSION "A" DEPENDANT ON REQUISITION.

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

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 EXCEEDING 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)

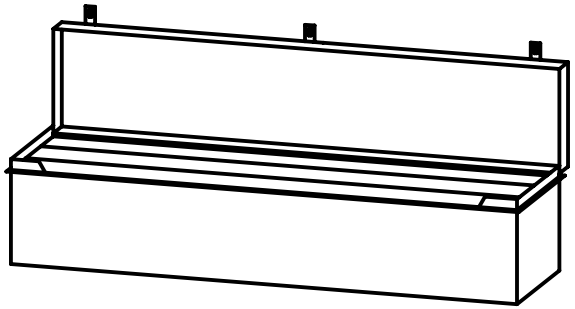
AREA 6.75 in. x 24 in. ACROSS THE TOP IS ACCEPTABLE IN SOLID VIS RIBS PROVIDED IT MEASURES .225 in. IN THICKNESS.

THE BODY OF SPLASH GUARD SHALL BE A MINIMUM OF .09375 in. THE TRIM AREA SHALL BE 3/8 in. MINIMUM THICKNESS. THE BODY AREA IS THE AREA WITHIN THE OUTSIDE DIMENSIONS OF 24 in. x 36 in. TOLERANCES +/- .250 in. THE WEIGHT OF THE SPLASH GUARD SHALL BE 6 lbs. FOR 24 in. x 30 in. AND 7.5 lbs. x 24 in. x 36 in. MINIMUM.

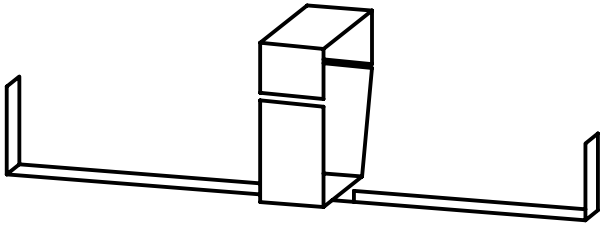
NOTE:

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 in. OF 36 in. AS NECESSARY, WHEN INSTALLED TO MEET PA MOTOR VEHICLE CODE, OR AS SPECIFIED ON THE CONTRACT.

REVISIONS			COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION		
N0.	DATE	BY			
1	10/22/90	RSM	SPLASH GUARDS - RUBBER TRAILER & TRUCK.		
2	10/24/95	SWW			
3	07/02/97	DLW	DRAWN BY S.T.	SCALE N/A	MATERIAL
4	05/28/02	DWG	CHK'D RED	DATE 11/18/87	DRW NO. EQN-66
5					SHEET 2 OF 2



HELLA, INC.
84301 BOX ONLY
OR
KD
40462-401

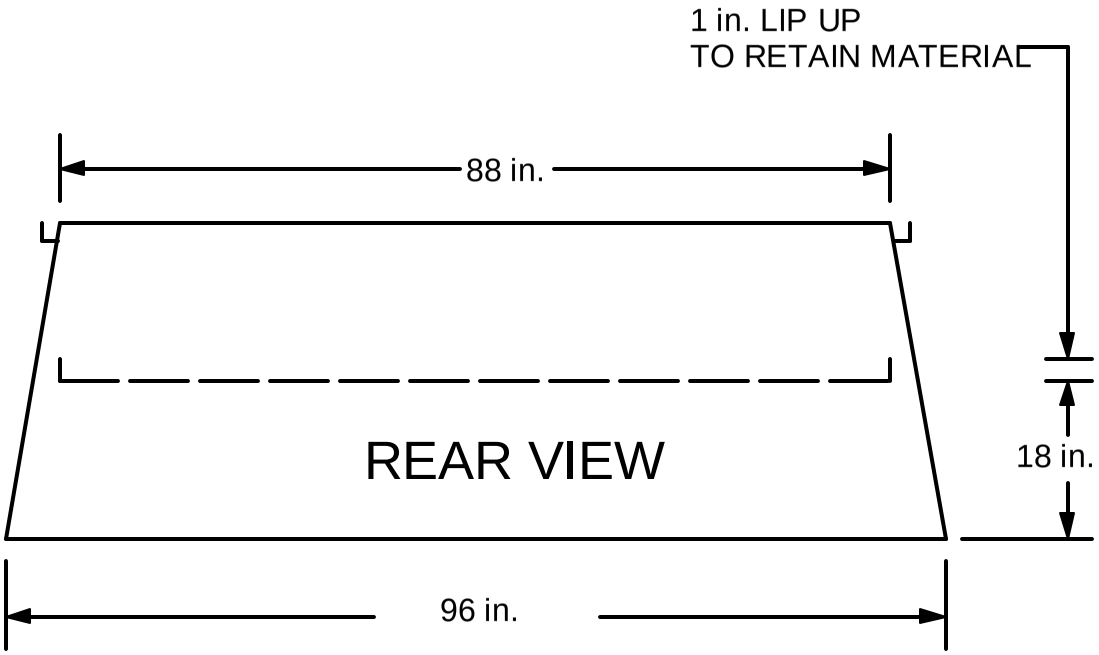


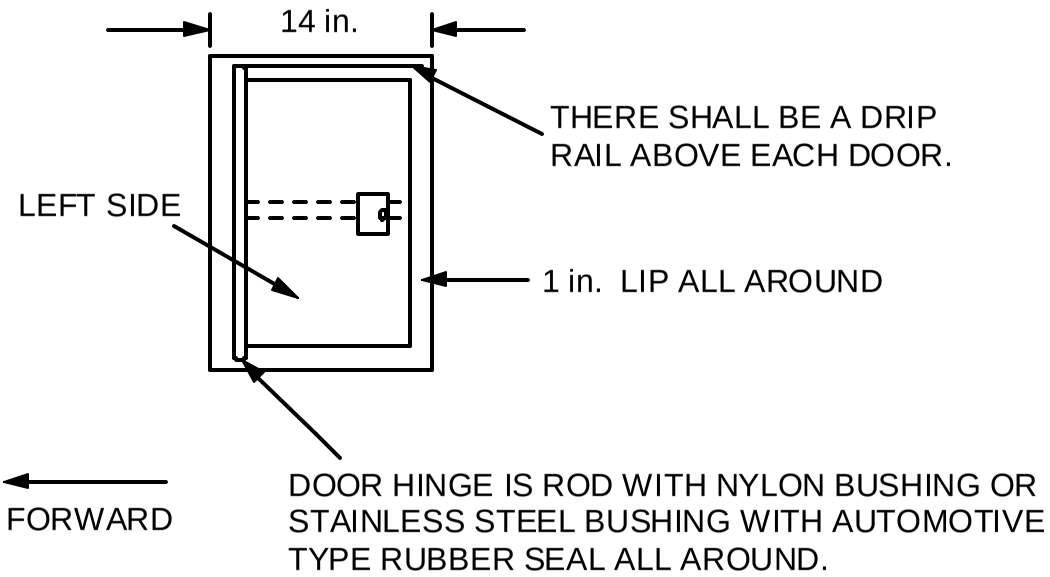
HELLA, INC.
KIT BRACKET 84303
OR
KD
616-9000

SELF TAPPING SCREWS WITH FENDER WASHERS OR BOLTS, NUTS AND FENDER WASHERS MAY BE USED AS AN ALTERNATIVE MEANS OF SECURING.

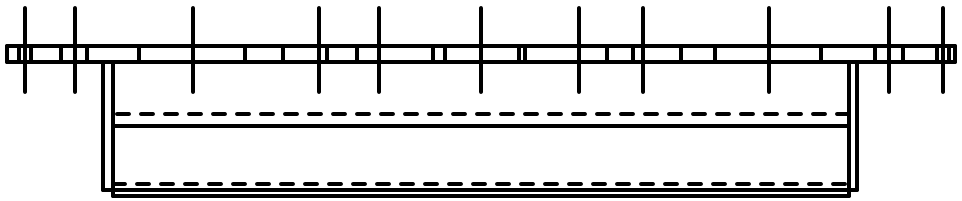
HELLA, INC. (201) 272-1400
OR
KD (513)621-4211

REVISIONS			COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION		
N0.	DATE	BY			
1	9/7/06	CJW	FUSEE STORAGE BOX / BKT.		
2					
3			DRAWN BY DLW	SCALE N / A	MATERIAL
4			CHK'D WHM	DATE 09 / 25 / 97	DRW NO. EQN-66A
5					SHEET 1 OF 1





REVISIONS			COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION		
NO.	DATE	BY			
1	07/02/97	DLW	GANG BOX		
2	05/28/02	DWG			
3			DRAWN BY DLW	SCALE N/A	MATERIAL
4			CHK'D WHM	DATE 07/02/97	DRW NO. EQN-70
5					SHEET 1 OF 1

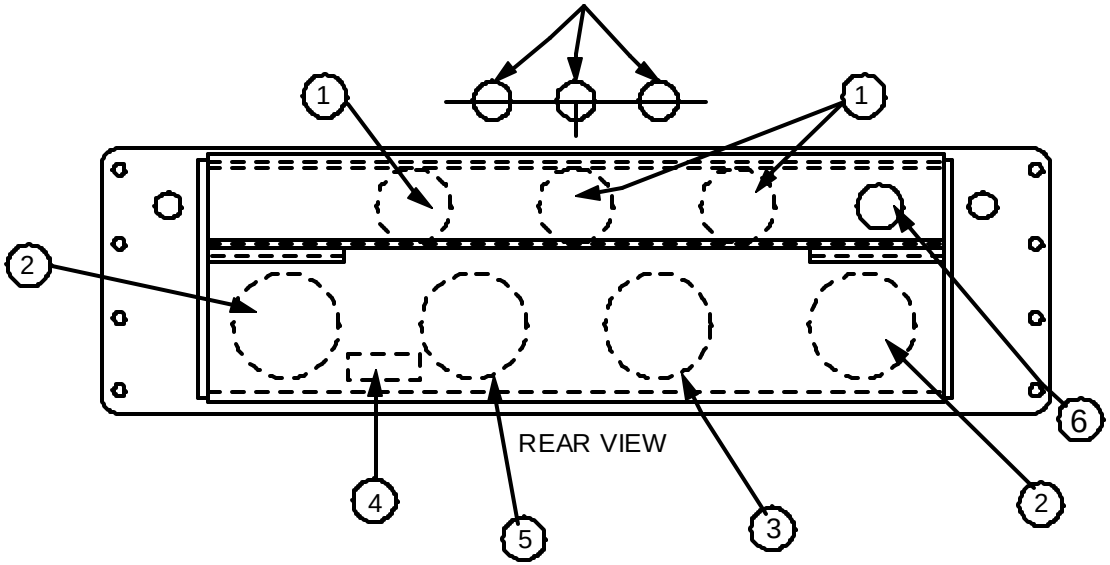


THE MODULE (6 SIDED) SHALL BE A MIN. \ 0.250 in. THICK ALUMINUM

MODULE SHALL BE HELD FIRMLY IN PLACE BY THE USE OF A MINIMUM OF 4 BOLTS. THE MODULE HEIGHT AND WIDTH SHALL BE FULL WIDTH AND HEIGHT (ID) OF THE FRAME RAILS.

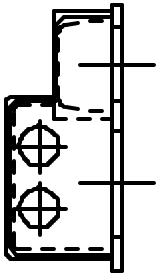
14" X 5 1/2" .L.P.L. MOUNTING EAR

HYDRAULIC CONNECTIONS



REAR VIEW

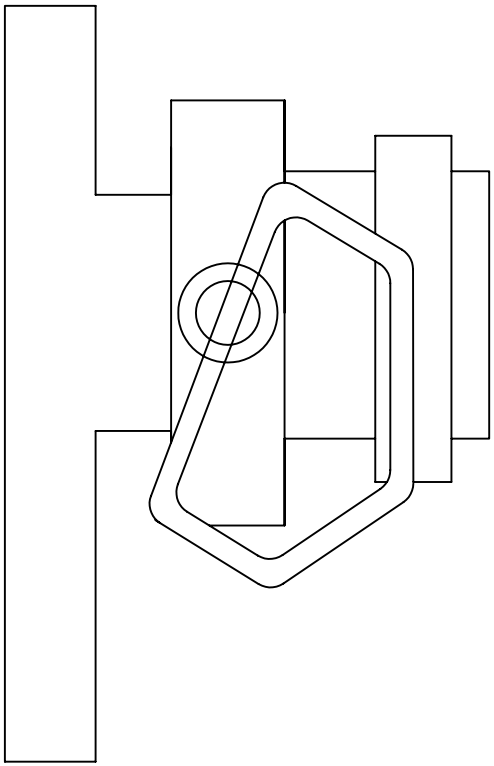
ALL LAMPS, REF EQN-80X

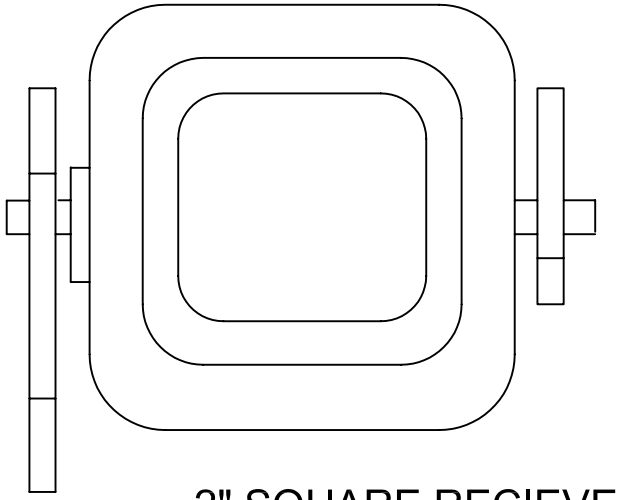


1. REFLECTORIZED M/C LAMP (RED)
2. 4" T/T BRAKE LAMP (RED)
3. BACKUP LIGHT
4. LICENSE PLATE LIGHT
5. ECCO MODEL 450
6. AUGER HARNESS CONNECTOR

NOTE: THERE SHALL BE A COMPRESSION FITTING WHERE WIRE / S ENTER / EXIT MODULE

REVISIONS			COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION		
N0.	DATE	BY	TRUCK - TYPE II AND IV REAR MODULE		
1	10/27/98	DJA			
2	02/28/00	GAH			
3	9/27/00	JLB	DRAWN BY WHM	SCALE N / A	MATERIAL
4	05/30/02	DWG	CHK'D RED	DATE 10/06/89	DRW NO. EQN-74
5	5/22/03	PJC			SHEET 1 OF 4





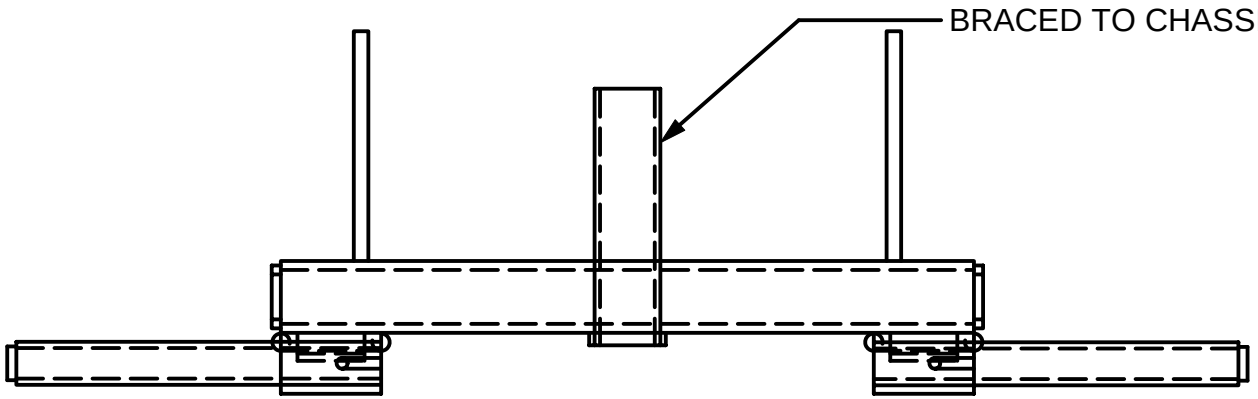
2" SQUARE RECIEVER
RATED AT 16,000 MINIMUM GTW
(GROSS TRAILER WEIGHT)
(MUST BE IDENTIFIED AS 16,000
LBS OR GREATER.)

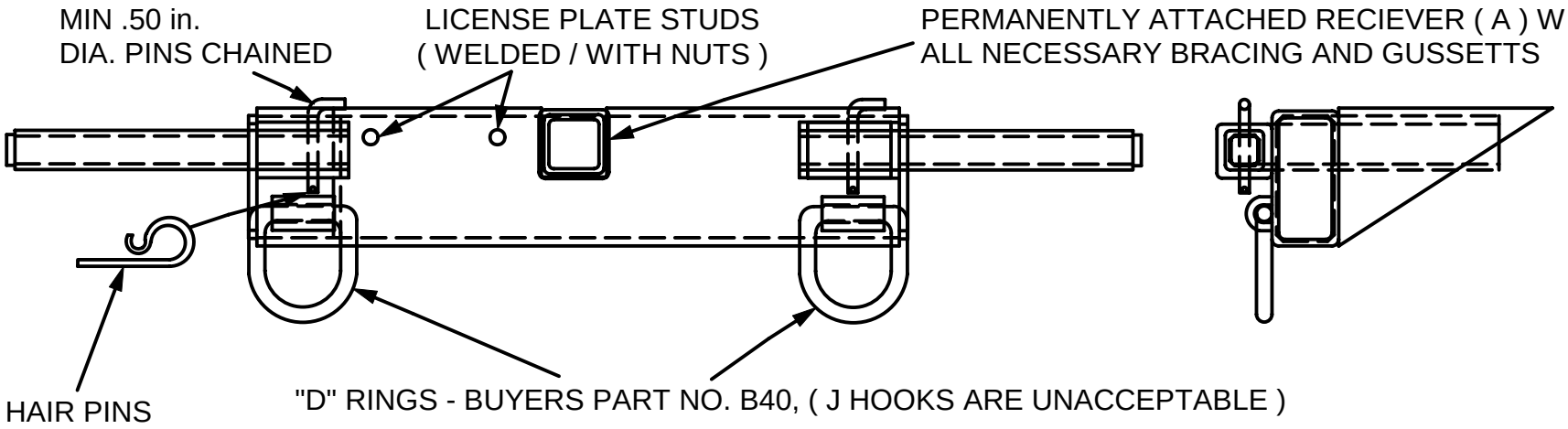
HITCH PIN SHALL BE EASILY
ACCESSABLE ON OUTSIDE
OF FRAME.

PA DEPARTMENT OF TRANSPORTATION

REVISIONS			TRUCK-TYPE II AND IV REAR MODULE		
NO.	DATE	BY			
1	10/27/98	DJA	DRAWN BY RED	SCALE N/A	EQN-74
2	02/28/00	GAH	DATE 10/06/98	CHK'D BY KGK	SHEET 2 OF 4
3	9/27/00	JLB			
4	05/30/03	DWG			
5	8/25/06	CJW			

NOTE:
RECIEVER SHALL BE MOUNTED NO LOWER THAN THE BOTTOM FRAME RAIL

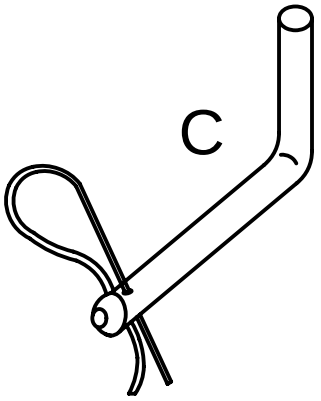


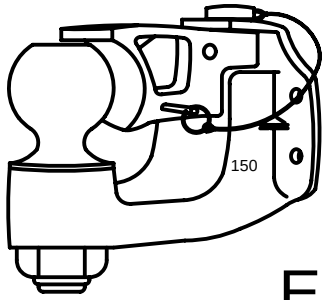


KERINS OR EQUAL MUST
HAVE A MINIMUM WEIGHT
RATING OF 16,000 LBS.

REVISIONS			COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION		
N0	DATE	BY			
1	8/22/06	CJW	TRUCK - TYPE II AND IV REAR MODULE		
2					
3			DRAWN BY DLW	SCALE N / A	MATERIAL
4			CHK'D KGK	DATE 04 / 27 / 98	DRW NO. EQN-74
5					SHEET 3 OF 4

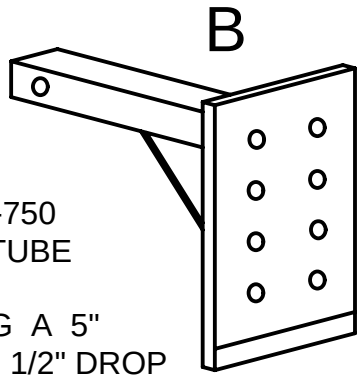
ITEM	REMARKS / PART NO'S
A	FASTENERS
B	SQUARE TUBE ADAPTER -KERINS K-750 OR EQUAL
C	HITCH PIN ASSY WITH HAIRPIN
D	2" BALL ASSEMBLY RATED AT 16,000 LBS GROSS TRAILER WEIGHT MINIMUM 3,000 LBS VERTICAL LOAD MINIMUM
E	MULTI-HITCH OR COMBO HITCH 16,000 LB. GROSS TRAILER WEIGHT RATING KERINS OR EQUAL



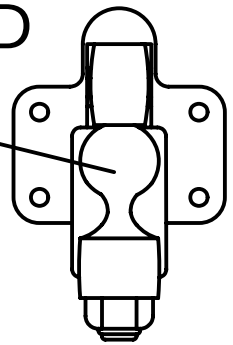


KERINS OR EQUAL
MULTI-HITCH
16,000 LB (GTW)
GROSS TRAILER WEIGHT

VENDOR MUST PROVIDE CERTIFICATION
OF RECIEVER AND HITCH ASSEMBLY
WEIGHT RATING CAPACITY
(PROVIDE TEST RESULTS)



KERINS K-750
SQUARE TUBE
ADAPTOR
ALLOWING A 5"
RISE OR 5 1/2" DROP



2" BALL
WITH
16,000LBS.
GROSS
TRAILER
WEIGHT
(MUST BE
STAMPED AS
16,000 LBS)

A

CONTAINS:

FOUR (4) .50 in. x 2 in. LONG
GRADE 8 CAP SCREWS.
FOUR (4) .50 in. GRADE 8 HEX NUTS
FOUR (4) .50 in. HEAVY LOCK WASHERS

REVISIONS			COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION		
N0	DATE	BY	TRUCK - TYPE II AND IV REAR MODULE		
1	8/24/2006	CJW			
2					
3			DRAWN BY DLW	SCALE N / A	MATERIAL
4			CHK'D WHM	DATE 04 / 27 / 98	DRW NO. EQN-74
5					SHEET 4 OF 4

NOTES:

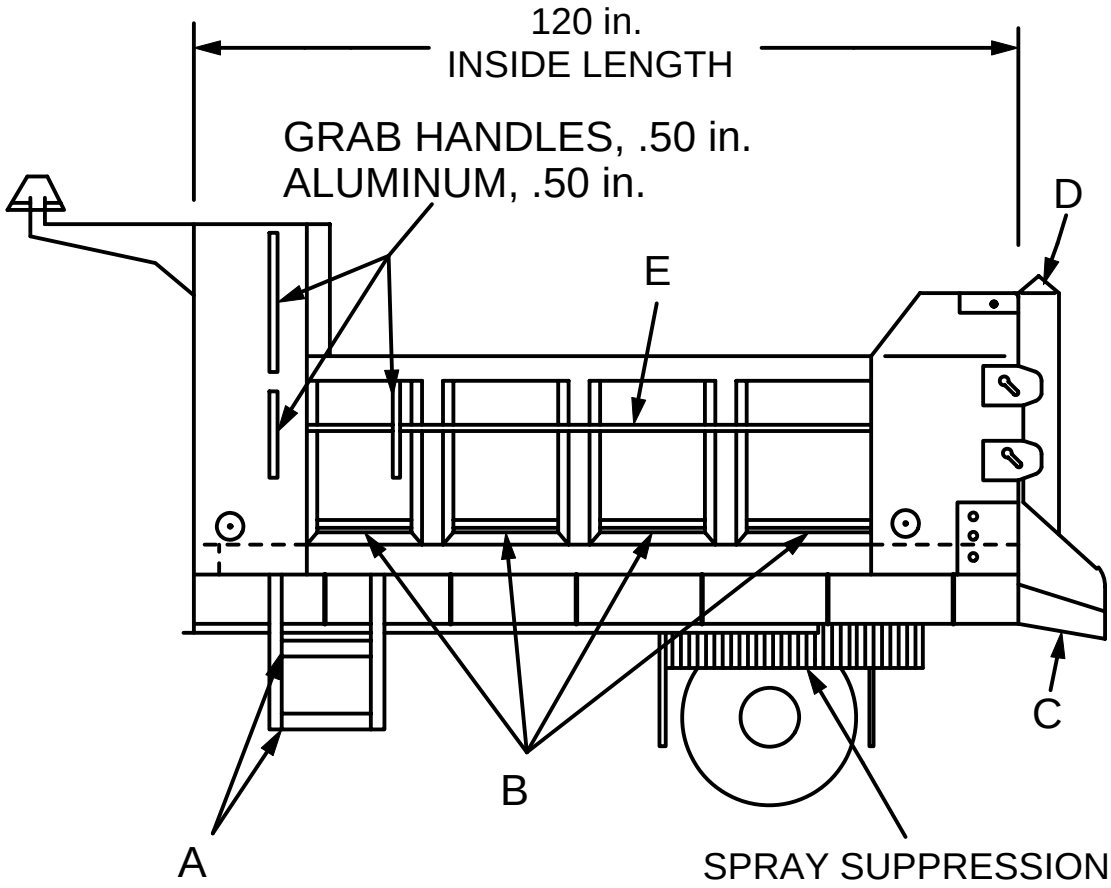
A. BUSTIN ALUMINUM #NST4 FULL SIZE OR OHIO GRATING #JA2119SG4 SERATED OR IKA INDUSTRIES TYPE BS4 SERATED SWAGE LOCK, END BAND ALUMINUM OR STEEL DEPENDING ON BODY MATERIAL, (MINIMUM STEP WITH 15 in. / 38 cm.) FINAL MOUNTING AND LOCATION OF B, AND GRAB HANDLES TO BE DETERMINED AT PREBUILD MEETING.

B. SAME AS "A" WITH MINIMUM WIDTH 2.625 in.

C. 13 in. (MINIMUM) WIDTH ALUMINUM APRON, BOLTED. MINIMUM OVERHANG 9 in. APRON TO BE PLACED 75 (+/-) 5 DEGREE ANGLE. (BOLTS, NUTS, AND WASHERS USED FOR RETAINING APRON SHALL BE STAINLESS STEEL WITH THREADS COATED WITH NEVER SIEZE.)

D. INVERTED 1.5 in. ANGLE ALUMINUM OR STEEL.

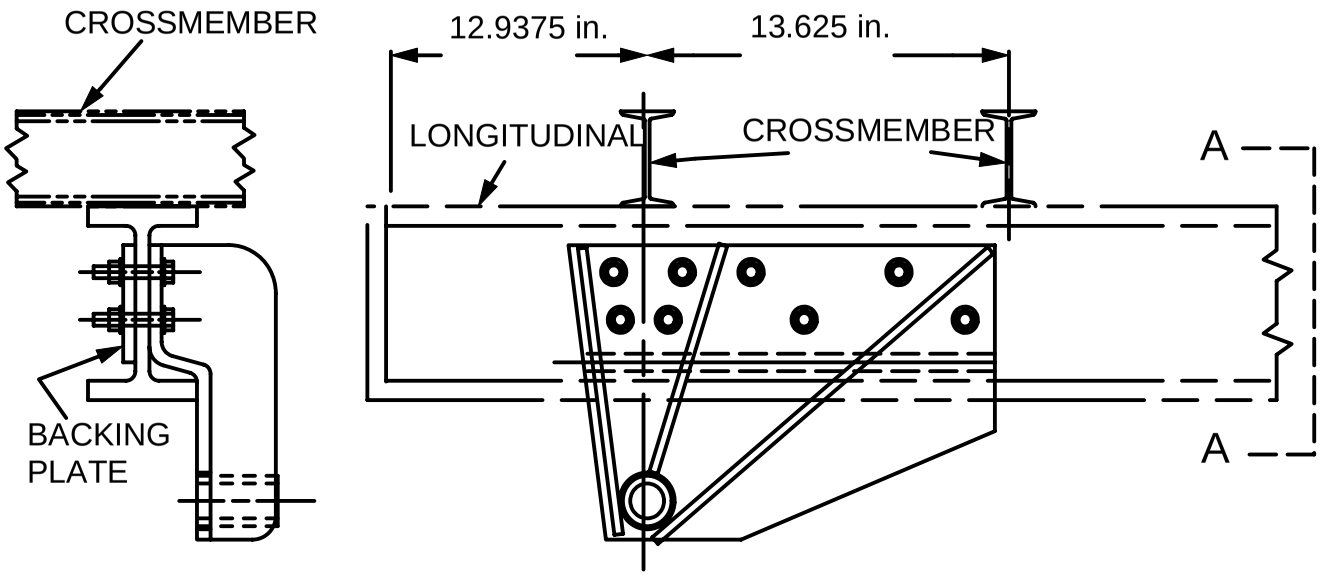
E. .75 in. / 1.91 cm. ALUMINUM STOCK RAIL (FOR ALUMINUM BODY) TARP RAIL, FULL LENGTH, BOTH SIDES OR .75 in. STEEL ROUND STOCK (FOR STEEL BODIES) TARP RAIL, FULL LENGTH, BOTH SIDES.



REVISIONS			COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION		
N0.	DATE	BY	TYPE II DUMP BODY DETAILS 38,000 GVWR - SINGLE AXLE		
1	05-30-02	DWG			
2	05-22-03	PJC			
3			DRAWN BY DLW	SCALE N / A	MATERIAL
4			CHK'D WHM	DATE 09 / 09 / 97	DRW NO. EQN-76
5					SHEET 1 OF 7

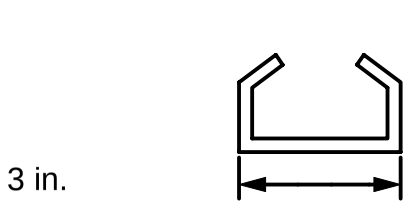
VIEW A-A

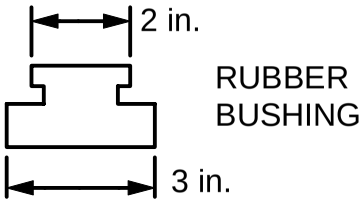
WEB MOUNTED PIVOT
PASSENGER SIDE



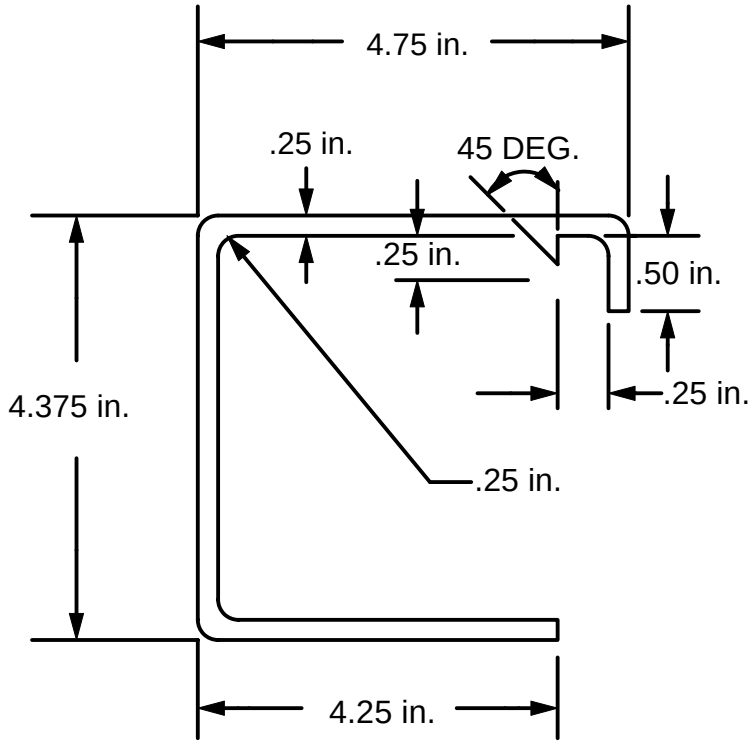
NOTES:

1. THE ABOVE STRUCTURE SHALL BE FURNISHED ON THE LAST FOUR CROSS-MEMBERS.
2. THE LAST FOUR CROSS-MEMBERS SHALL BE PLACED ON 8 in. CENTERS, WITH THE BALANCE ON 12 in. CENTERS.
3. THE BODY SHALL BE SHOCK MOUNTED TO AVOID STRESS ON ROUGH ROADS WHEN EMPTY.
4. THE WEB MOUNT SHALL BE DESIGNED FOR SEVERE DUTY SERVICE.
5. THE BOLTS SHALL BE OF GRADE 8 MINIMUM WITH SELF-LOCKING GRADE 8 NUTS.
6. THE REAR PIN HINGE SHALL BE A MINIMUM OF 2.2 in. DIA., AND THE HINGE BUSHING (GREASABLE) SHALL BE A 2.875 in. OD x 2.12 in. ID, MINIMUM TOLERANCES AND SIZES. PIN SIZES SMALLER THAN 2.116 in. ARE ACCEPTABLE IF THEY ARE STANDARD WITH A VENDOR.
7. ALL DIMENSIONS IN INCHES/cm.
8. "FULL LENGTH" BODY TO FRAME RUBBER MOUNTING SYSTEM.
9. ANY VARIATION TO THIS DESIGN REQUIRES, PRIOR TO BUILD, WRITTEN AUTHORIZATION.

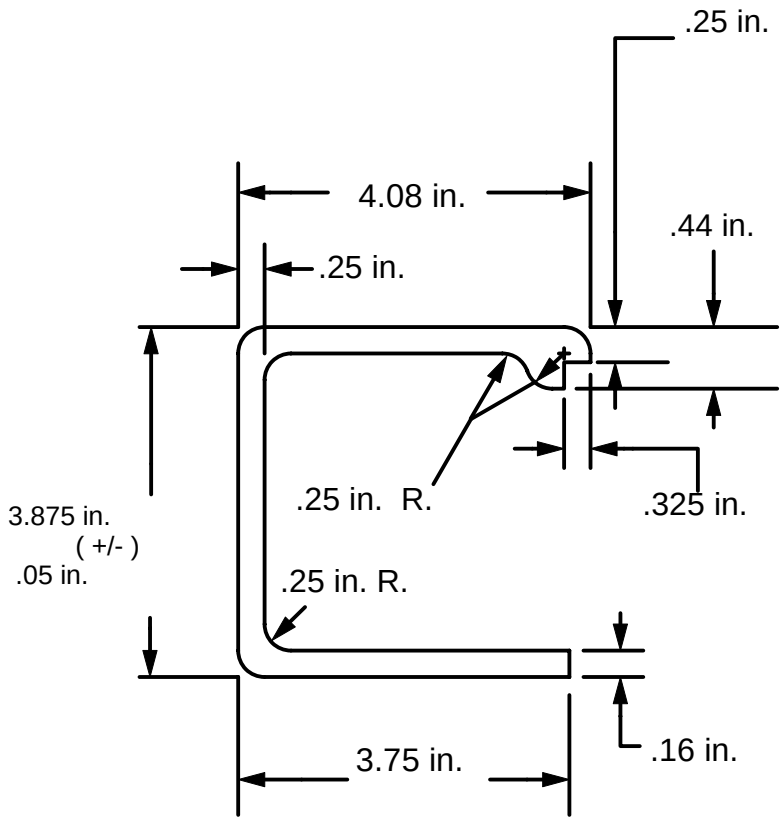




REVISIONS			COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION		
NO.	DATE	BY	TYPE II DUMP BODY DETAILS 38,000 GVWR - SINGLE AXLE		
1	05/30/02	DWG			
2	05/22/03	PJC			
3			DRAWN BY DLW	SCALE N/A	MATERIAL
4			CHK'D WHM	DATE 09 / 09 / 97	DRW NO. EQN-76
5					SHEET 2 OF 7

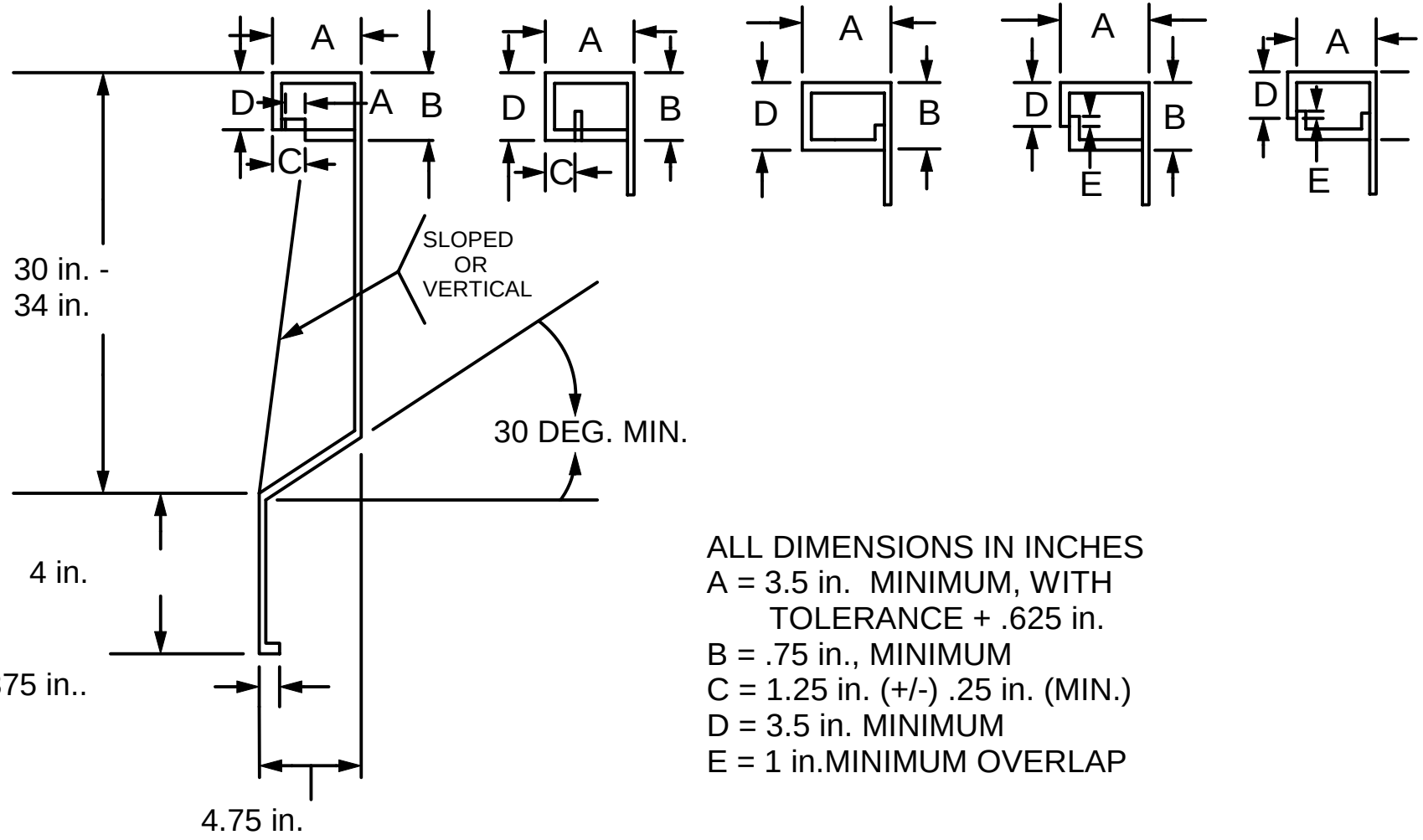


ALUMINUM / STEEL



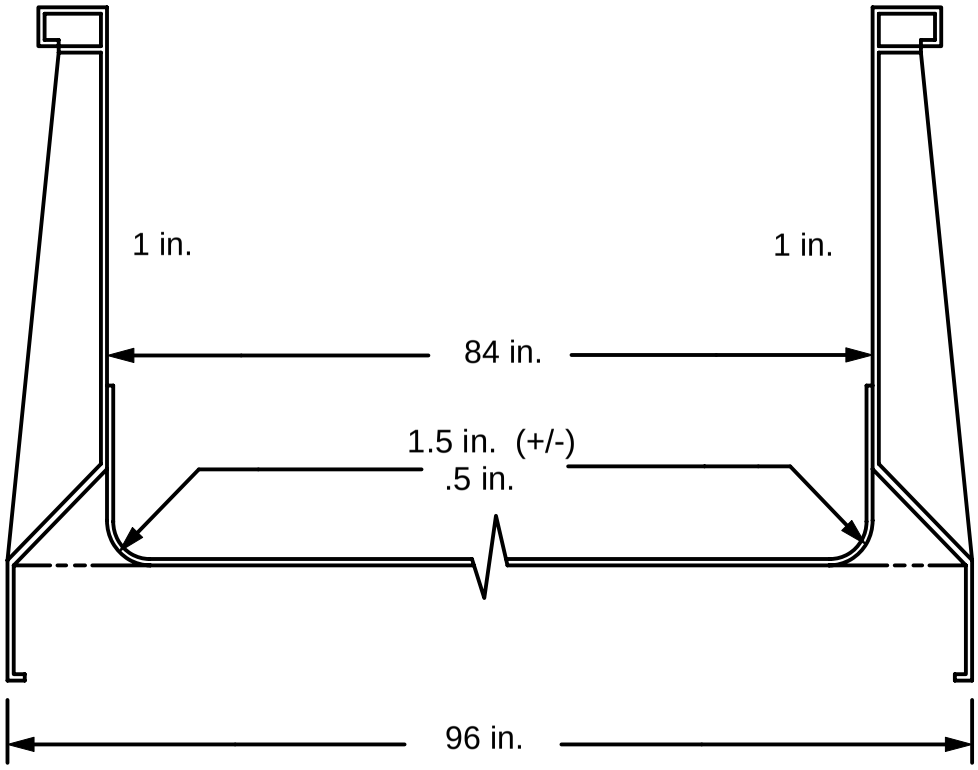
ALUMINUM / STEEL

REVISIONS			COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION		
N0.	DATE	BY	TYPE II DUMP BODY DETAILS 38,000 GVWR - SINGLE AXLE		
1	05/30/02	DWG			
2	05/22/03	PJC			
3			DRAWN BY DLW	SCALE N / A	MATERIAL
4			CHK'D WHM	DATE 09 / 09 / 97	DRW NO. EQN-76
5					SHEET 3 OF 7



ALL DIMENSIONS IN INCHES
A = 3.5 in. MINIMUM, WITH
TOLERANCE + .625 in.
B = .75 in., MINIMUM
C = 1.25 in. (+/-) .25 in. (MIN.)
D = 3.5 in. MINIMUM
E = 1 in.MINIMUM OVERLAP

REVISIONS			COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION		
N0.	DATE	BY			
1	05/30/02	DWG	TYPE II DUMP BODY DETAILS 38,000 GVWR - SINGLE AXLE		
2	05/22/03	PJC			
3			DRAWN BY DLW	SCALE N / A	MATERIAL
4			CHK'D WHM	DATE 09 / 09 / 97	DRW NO. EQN-76
5					SHEET 4 OF 7



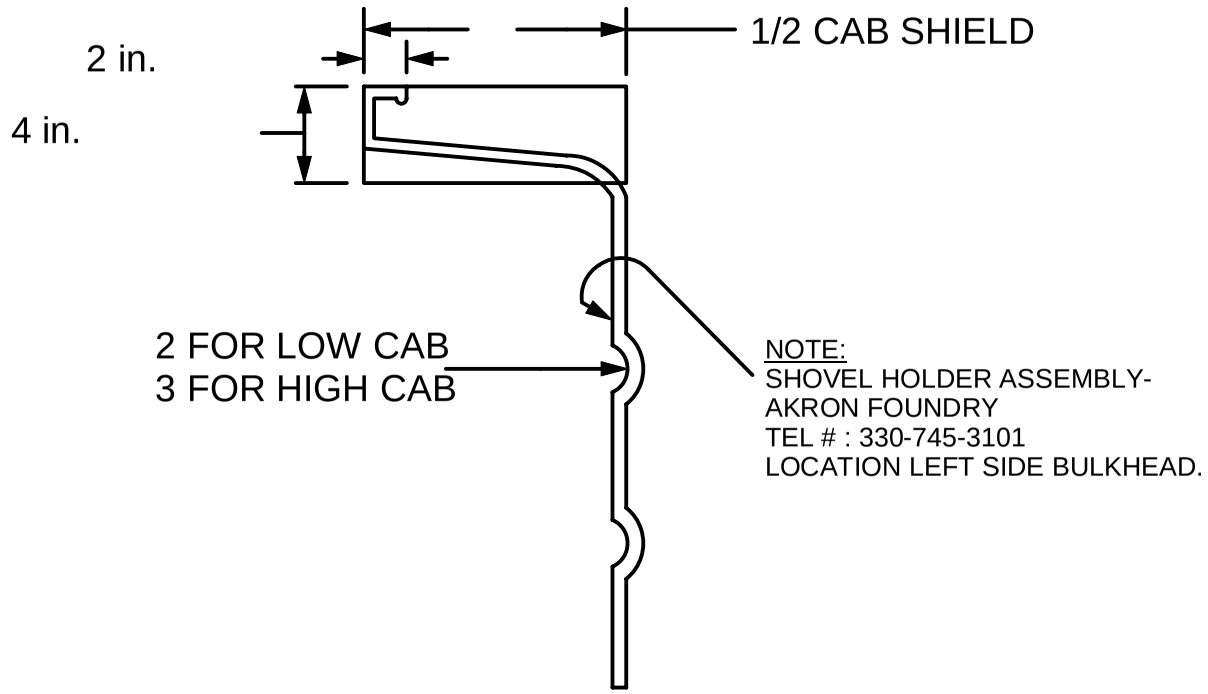
DIMENSIONS:

84 in. INSIDE WIDTH ONLY (APPROX.)
96 in. OUTSIDE WIDTH MAXIMUM
120 in. FLOOR LENGTH INSIDE (APPROX.)

SIDES SHALL BE ASTM 8 GUAGE STANDARD U.S. STEEL, OR ALUMINUM .25 in.
FULLY BOXED TOP RAIL BOTH SIDES MAY BE FORMED OR CHANNELED, OR EXTRUDED PER SHEETS 3 AND 4. ONE PIECE CONSTRUCTION FOR SIDE AND RUNNING BOARD, BOTH SIDES.
SLOPED RUNNING BOARD FULL LENGTH BOTH SIDES.
RUNNING BOARD WIDTH TO COVER OUTER REAR DUAL TIRES FULL LENGTH BOTH SIDES.

ONE PIECE BODY FLOOR SHALL BE A .25 in. (MIN.) THICK ABRASION RESISTANT STEEL, OR .375 in. (MIN) THICK ABRASION RESISTANT ALUMINUM.

REVISIONS			COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION		
N0.	DATE	BY	TYPE II DUMP BODY DETAILS 38,000 GVWR - SINGLE AXLE		
1	05/30/02	DWG			
2	05/22/03	PJC			
3			DRAWN BY DLW	SCALE N/A	MATERIAL
4			CHK'D WHM	DATE 09 / 09 / 97	DRW NO. EQN-76
5					SHEET 5 OF 7

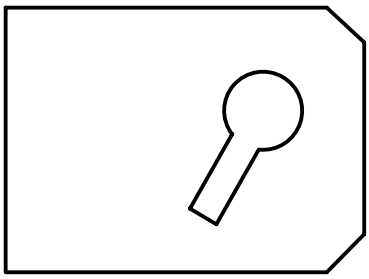


ONE PIECE FRONT AND CABSHIELD

NOTES:

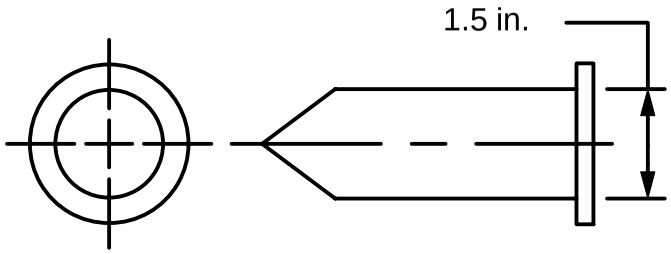
1. BODY FRONT AND CAB SHIELD SHALL BE A MINIMUM OF 0.15625 in. AND SHALL EXTEND AT A MINIMUM OVER THE CENTER OF MID CAB.
2. CONTINUOUS WELDING ON FRONT AND CAB SHIELD THROUGHOUT, IS REQUIRED.
3. ONE-HALF (1/2 CAB SHIELD.)
4. 4 in. LIP ON FRONT. (MIN.)
5. UNIVERSAL TYPE CAB SHIELD SHALL HAVE A MINIMUM OF 3 BRACES.
6. THE BODY CAB SHIELD SHALL HAVE SUFFICIENT CLEARANCE TO PREVENT THE CAB SHIELD FROM HITTING THE EXHAUST SYSTEM WHEN DUMPING ON UNEVEN TERRAIN.
7. ALTERNATE DESIGNS OF RIBS SHALL BE APPROVED PRIOR TO BUILD, BY THE CHIEF EQUIPMENT DIVISION.
8. ALL DIMENSIONS IN INCHES / CENTIMETERS.
9. FOR ALUMINUM DUMP BODIES, ANY USE OF STEEL REQUIRES CORROSION CONTROL (PAINTING) AND ELECTRO GALVANIC PROTECTION.

REVISIONS			COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION		
N0	DATE	BY			
1	05/30/02	DWG	TYPE II DUMP BODY DETAILS 38,000 GVWR - SINGLE AXLE		
2	05/22/03	PJC			
3	09/14/06	CJW	DRAWN BY DLW	SCALE N/A	MATERIAL
4			CHK'D WHM	DATE 09 / 09 / 97	DRW NO. EQN-76
5					SHEET 6 OF 7

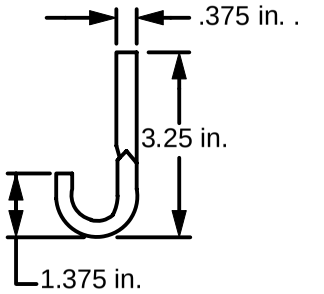


DETAIL "A"
CHAIN HOLDER

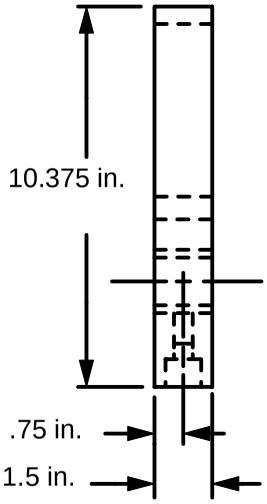
CAST OR FORGED ALUMINUM IS UNACCEPTABLE. .5 in. / 1.27 cm. 6061 ALUMINUM FOR ALUMINUM BODIES OR .375 in. HOLDER SHALL BE OVERLAPPED AND WELDED.

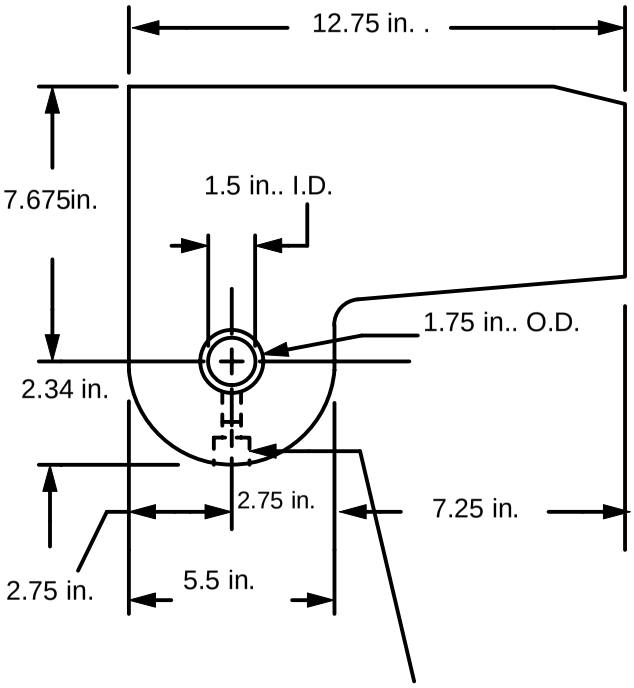


TAILGATE PIN
PIN LENGTH SHALL BE DETERMINED BY MFG'S DESIGN BUT SHALL BE OF SUFFICIENT LENGTH FOR EASE OF INSTALLATION AND REMOVAL. PIN SHALL HAVE LOCKING CHAIN OR PLATE TO PREVENT LOSS. NON-ROTATING. C-1020 H.R.S. STEEL BAR. PIN BUSHINGS SHALL BE REAMED TO ALLOW FOR FREE ROTATION BY HAND.



'J' HOOK
2 HOOKS PER TAILGATE





C BORE .68 in.. x .56 in.
DEEP DRILL .34 in.+ HOLE AND
TAP FOR .12 in. NPT GREASE FITTING.

ANY ALTERNATIVE DESIGN OR MEASUREMENTS REQUIRE A THREE YEAR, 100 % PARTS AND LABOR WARRANTY AND AN ADDITIONAL TWO YEARS FOR A TOTAL OF FIVE YEARS PARTS ONLY WARRANTY.

REVISIONS		
N0.	DATE	BY
1	05/30/02	DWG
2	05/22/03	PJC
3		
4		
5		

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

TYPE II DUMP BODY DETAILS
38,000 GVWR - SINGLE AXLE

DRAWN BY DLW	SCALE N/A	MATERIAL	
CHK'D WHM	DATE 09 / 09 / 97	DRW NO.	EQN-76
		SHEET 7 OF 7	

NOTES:

A. BUSTIN ALUMINUM #NST4 FULL SIZE OR OHIO GRATING #JA2119SG4 SERRATED OR IKG INDUSTRIES TYPE BS4 SERRATED SWAGE LOCK, WITH END BAND ALUMINUM (MINIMUM STEP WIDTH 15 in.) FINAL MOUNTING AND LOCATION OF A,D, AND GRAB HANDLES TO BE DETERMINED AT PREBUILD MEETING.

B. SAME AS "A" WITH WIDTH 2.625 in.

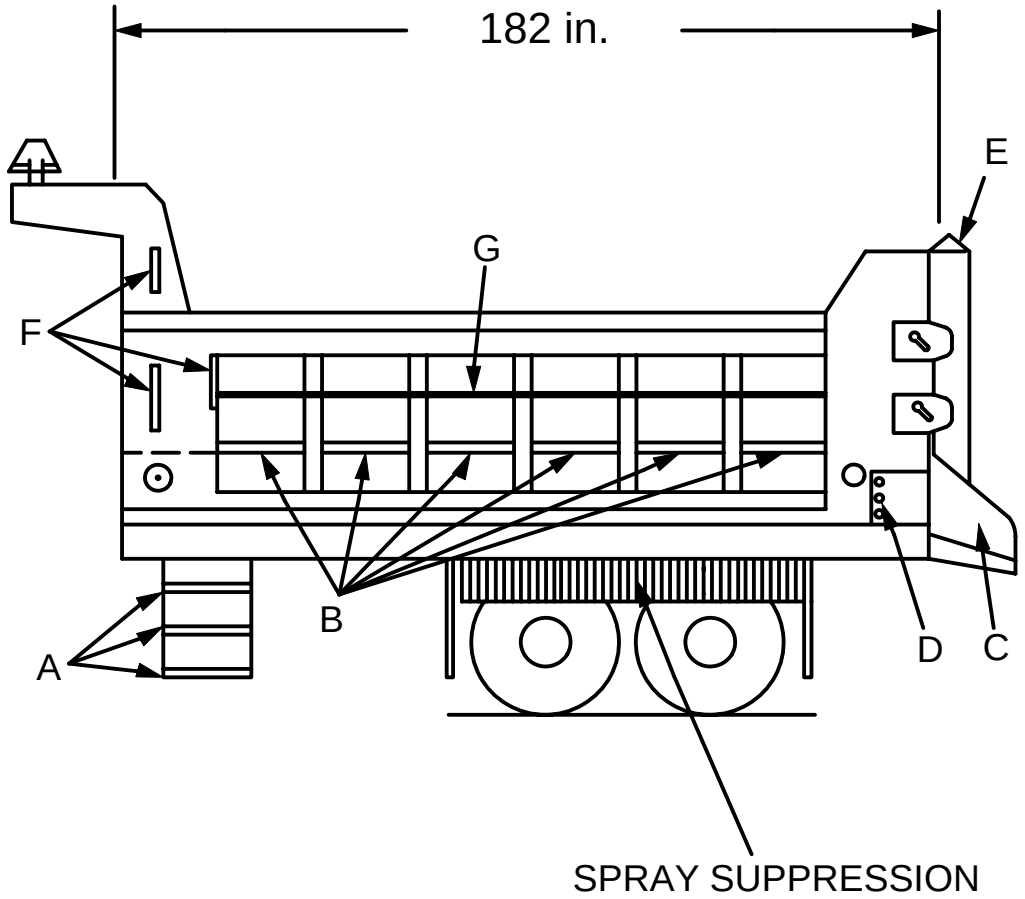
C. 13 in. (MINIMUM) WIDTH ALUMINUM APRON, BOLTED. MINIMUM OVERHANG 9 in. TO BE PLACED 75 (+/-) 5 DEGREE ANGLE.

D. MINIMUM SIDE SKIRT WIDTH SHALL BE 6 in.. A MINIMUM OF THREE (3) .50 in. BOLTS MOUNTED NO CLOSER THAN *2.50 in.. FROM EDGE. (BOLTS, NUTS, AND WASHERS USED FOR RETAINING APRON SHALL BE STAINLESS STEEL WITH THREADS COATED WITH NEVER SIEZE.)

E. INVERTED 1.50 in. ANGLE ALUMINUM.

F. GRAB HANDLES, .50 in. ALUMINUM.

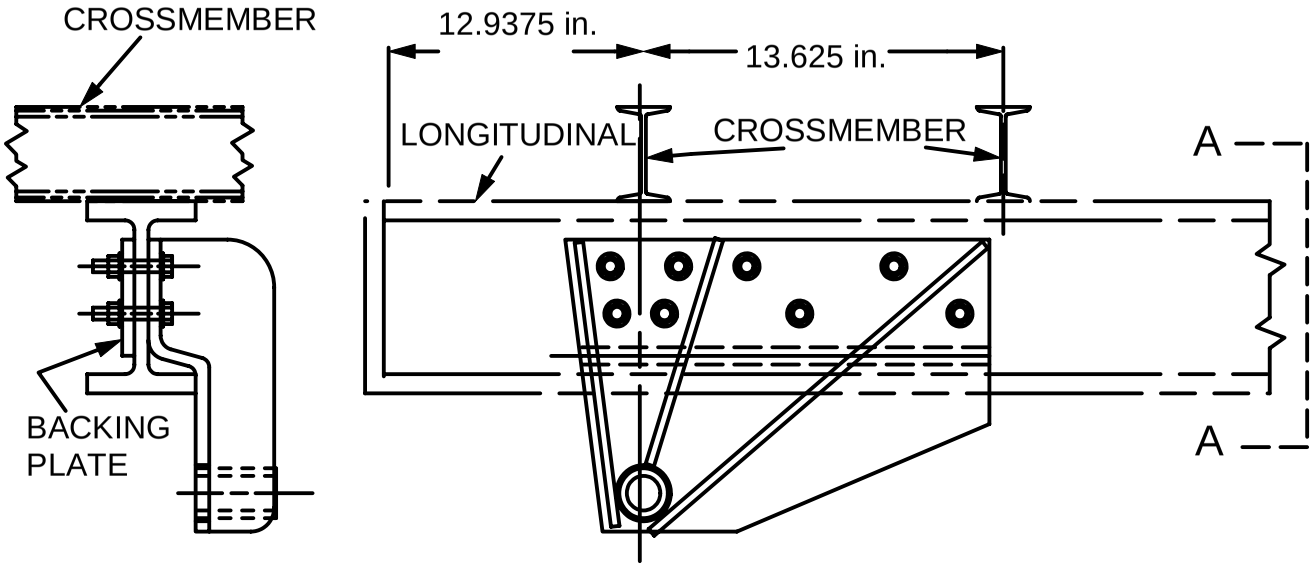
G. .75 in. ALUMINUM ROUND STOCK FOR TARP TIE DOWN.



REVISIONS			COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION		
NO.	DATE	BY			
1	05/30/02	DWG	38,000 GVWR CREW CAB DUMP BODY		
2	04/11/06	KNH			
3	09/15/06	CJW	DRAWN BY DLW	SCALE N / A	MATERIAL
4			CHK'D WHM	DATE 10 / 08 / 97	DRW NO. EQN-77
5					SHEET 1 OF 7

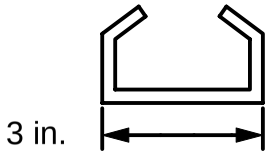
VIEW A-A

WEB MOUNTED PIVOT
PASSENGER SIDE

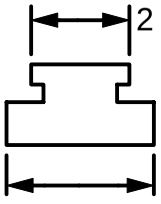


NOTES:

1. THE ABOVE STRUCTURE SHALL BE FURNISHED ON THE LAST FOUR CROSS-MEMBERS.
2. THE LAST FOUR CROSS-MEMBERS SHALL BE PLACED ON 8 in. CENTERS, WITH THE BALANCE ON 12 in. CENTERS.
3. THE BODY SHALL BE SHOCK MOUNTED TO AVOID STRESS ON ROUGH ROADS WHEN EMPTY.
4. THE WEB MOUNT SHALL BE DESIGNED FOR SEVERE DUTY SERVICE.
5. THE BOLTS SHALL BE OF GRADE 8 MINIMUM WITH SELF-LOCKING GRADE 8 NUTS.
6. THE REAR PIN HINGE SHALL BE A MINIMUM OF 2.2 in. DIA., AND THE HINGE BUSHING (GREASABLE) SHALL BE A 2.875 in. . OD x 2.12 in. ID, MINIMUM TOLERANCES AND SIZES. PIN SIZES SMALLER THAN 2.116 in. ARE ACCEPTABLE IF THEY ARE STANDARD WITH A VENDOR.
7. ALL DIMENSIONS IN INCHES/cm.
8. "FULL LENGTH" BODY TO FRAME RUBBER MOUNTING SYSTEM.
9. ANY VARIATION TO THIS DESIGN REQUIRES, PRIOR TO BUILD, WRITTEN AUTHORIZATION.

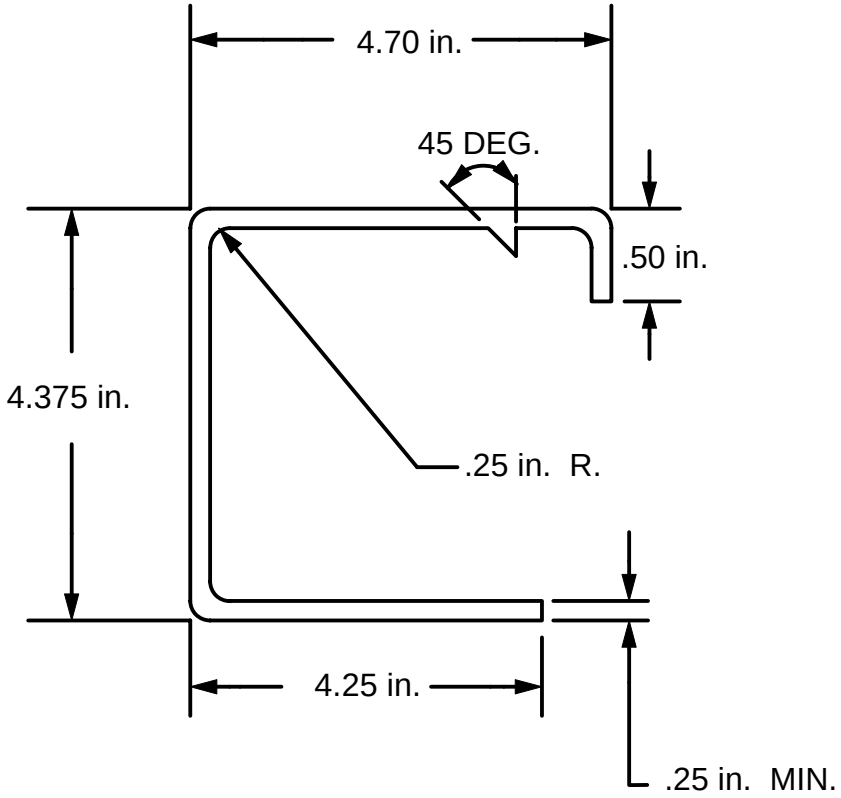


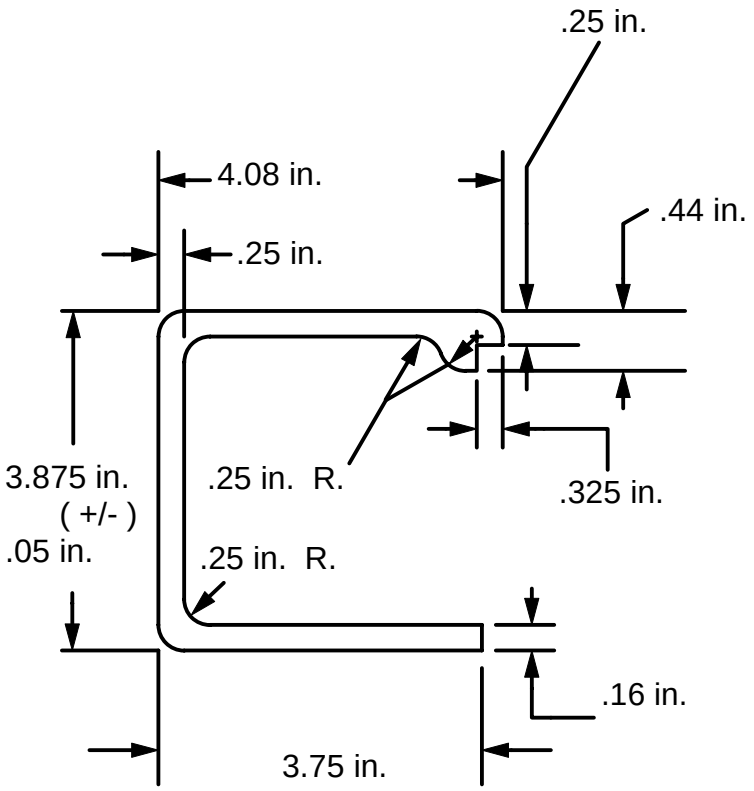
TYPICAL
.12 in.
FORMED
ALUMINUM



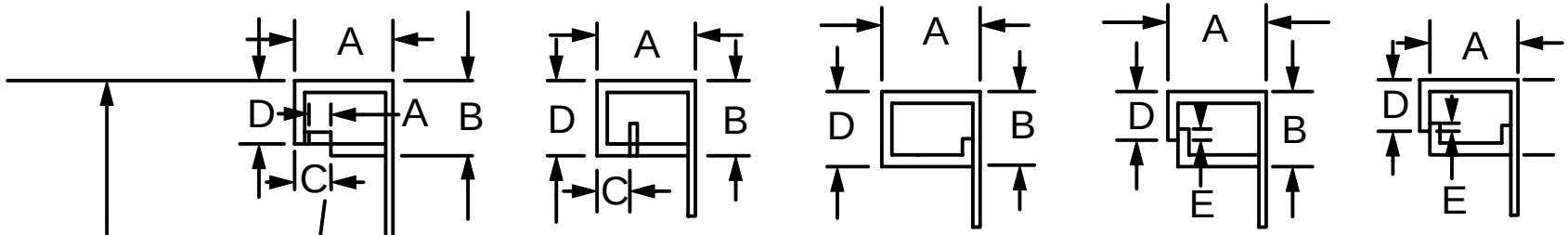
RUBBER
BUSHING

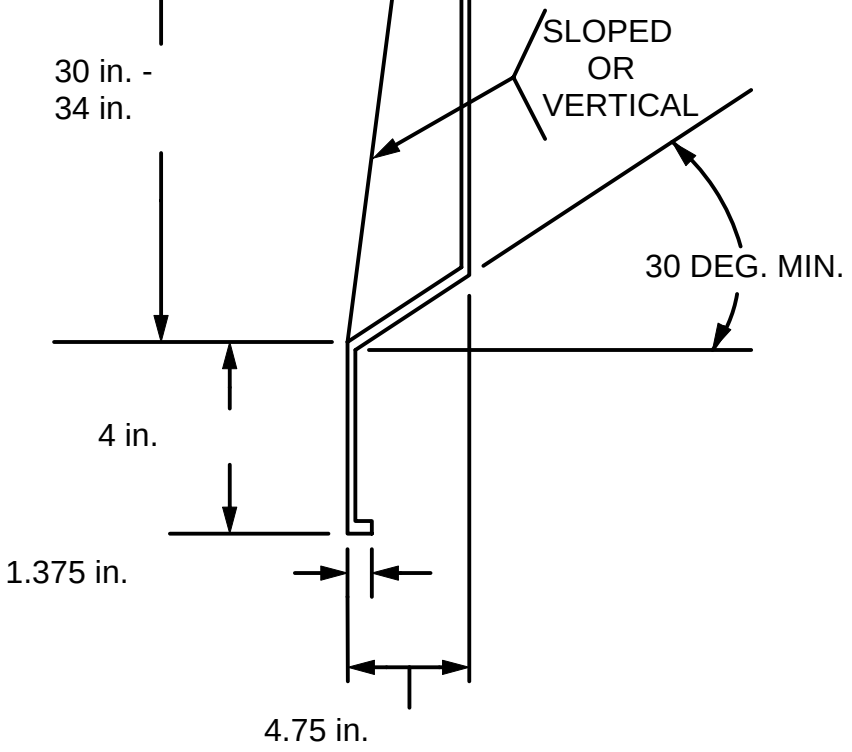
REVISIONS			COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION		
N0.	DATE	BY			
1	05/30/02	DWG	38,000 GVWR CREW CAB DUMP BODY		
2					
3			DRAWN BY DLW	SCALE N/A	MATERIAL
4			CHK'D WHM	DATE 10 / 08 / 97	DRW NO. EQN-77
5					SHEET 2 OF 7





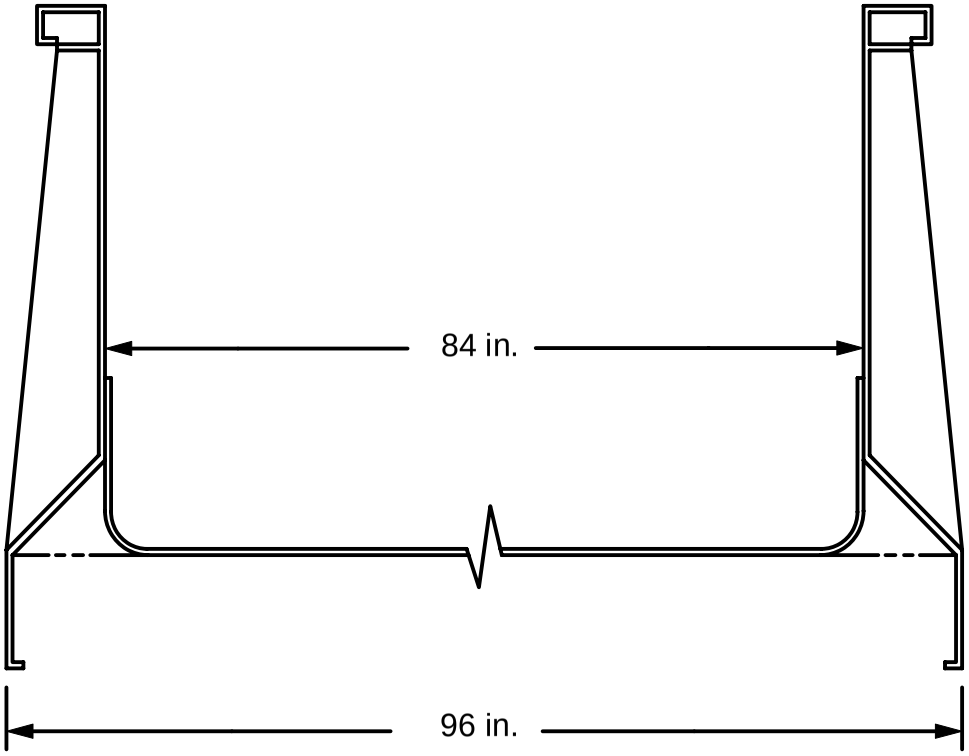
REVISIONS			COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION		
N0.	DATE	BY	38,000 GVWR CREW CAB DUMP BODY		
1	02/28/00	GAH			
2	05/30/02	DWG			
3			DRAWN BY DLW	SCALE N / A	MATERIAL
4			CHK'D WHM	DATE 10 / 08 / 97	DRW NO. EQN-77
5					SHEET 3 OF 7





ALL DIMENSIONS IN INCHES / CM.
A = 3.50 in. MINIMUM, WITH
TOLERANCE + .625 in.
B = .75 in., MINIMUM
C = 1.25 in. (+/-) .25 in. (MIN.)
D = 3.50 in. MINIMUM
E = 1.00 in. MINIMUM OVERLAP

REVISIONS			COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION		
N0.	DATE	BY	38,000 GVWR CREW CAB DUMP BODY		
1	05/30/02	DWG			
2					
3			DRAWN BY DLW	SCALE N / A	MATERIAL
4			CHK'D WHM	DATE 10 / 08 / 97	DRW NO. EQN-77
5					SHEET 4 OF 7



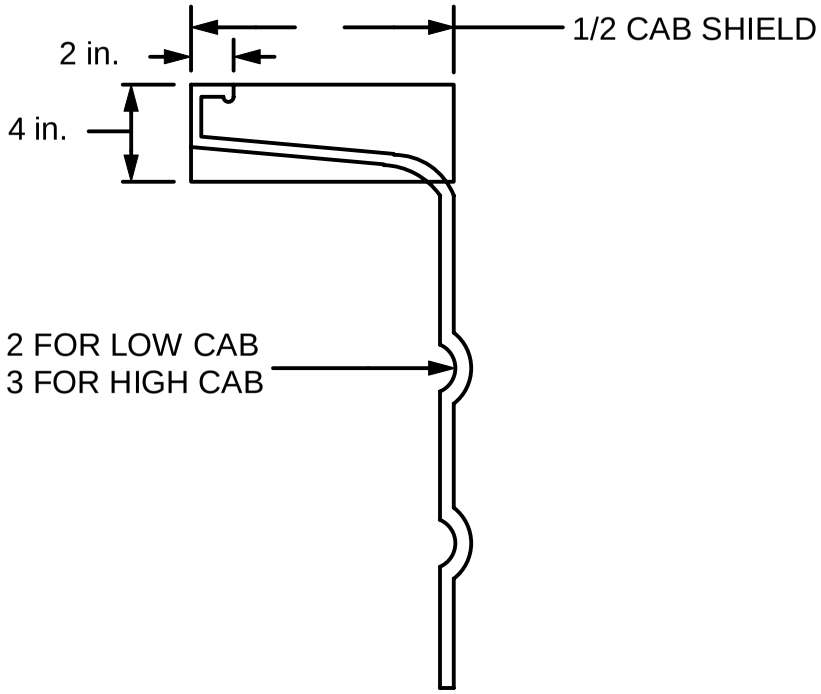
DIMENSIONS:

84 in. . INSIDE WIDTH ONLY (APPROX.)
96 in. OUTSIDE WIDTH MAXIMUM
120 in. FLOOR LENGTH INSIDE (APPROX.)

SIDES SHALL BE ASTM 8 GUAGE STANDARD U.S. STEEL, OR ALUMINUM .25 in.
FULLY BOXED TOP RAIL BOTH SIDES MAY BE FORMED OR CHANNELED, OR EXTRUDED.
ONE PIECE CONSTRUCTION FOR SIDE AND RUNNING BOARD, BOTH SIDES.
SLOPED RUNNING BOARD FULL LENGTH BOTH SIDES.
RUNNING BOARD WIDTH TO COVER OUTER REAR DUAL TIRES FULL LENGTH BOTH SIDES.

ONE PIECE BODY FLOOR SHALL BE A .25 in. (MIN.) THICK ABRASION
RESISTANT STEEL, OR .375 in. (MIN.) THICK ABRASION RESISTANT ALUMINUM.

REVISIONS			COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION		
N0	DATE	BY			
1	05/30/02	DWG	38,000 GVWR CREW CAB DUMP BODY		
2					
3			DRAWN BY DLW	SCALE N/A	MATERIAL
4			CHK'D WHM	DATE 10 / 08 / 97	DRW NO. EQN-77
5					SHEET 5 OF 7



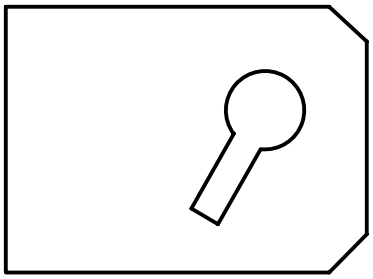
ONE PIECE FRONT AND CABSHIELD

NOTES:

1. BODY FRONT AND CAB SHIELD SHALL BE A MINIMUM OF 0.15625 in. AND SHALL EXTEND AT A MINIMUM OVER THE CENTER OF THE CAB.
2. CONTINUOUS WELDING ON FRONT AND CAB SHIELD THROUGHOUT, IS REQUIRED.
3. ONE-HALF (1/2) CAB SHIELD.
4. 4 in. LIP ON FRONT. (MIN.)
5. UNIVERSAL TYPE CAB SHIELD SHALL HAVE A MINIMUM OF 3 BRACES.
6. THE BODY CAB SHIELD SHALL HAVE SUFFICIENT CLEARANCE TO PREVENT THE CAB SHIELD FROM HITTING THE EXHAUST SYSTEM WHEN DUMPING ON UNEVEN TERRAIN.
7. ALTERNATE DESIGNS OF RIBS SHALL BE APPROVED PRIOR TO BUILD, BY THE CHIEF EQUIPMENT DIVISION.
8. ALL DIMENSIONS IN INCHES / METRIC.
9. FOR ALUMINUM DUMP BODIES, ANY USE OF STEEL REQUIRES CORROSION CONTROL (PAINTING) AND ELECTRO GALVANIC PROTECTION.

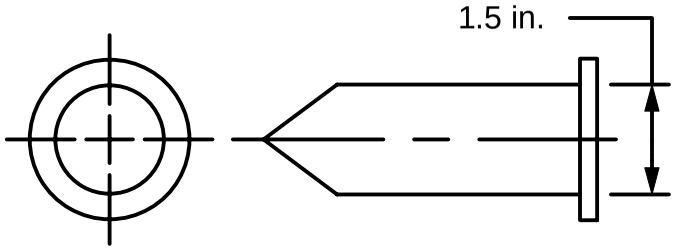
REVISIONS			COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION		
NO.	DATE	BY			
1	05/30/02	DWG	38,00 GVWR CREW CAB DUMP BODY		
2	05/22/03	PJC			
3			DRAWN BY DLW	SCALE N/A	MATERIAL
4			CHK'D WHM	DATE 10 / 08 / 97	DRW NO. EQN-77
5					SHEET 6 OF 7

PIN BUSHINGS SHALL BE REAMED TO ALLOW FOR FREE ROTATION.

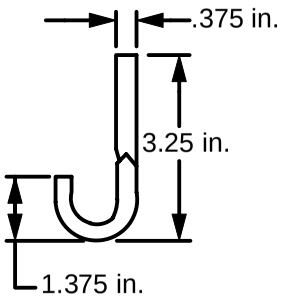


DETAIL "A"
CHAIN HOLDER

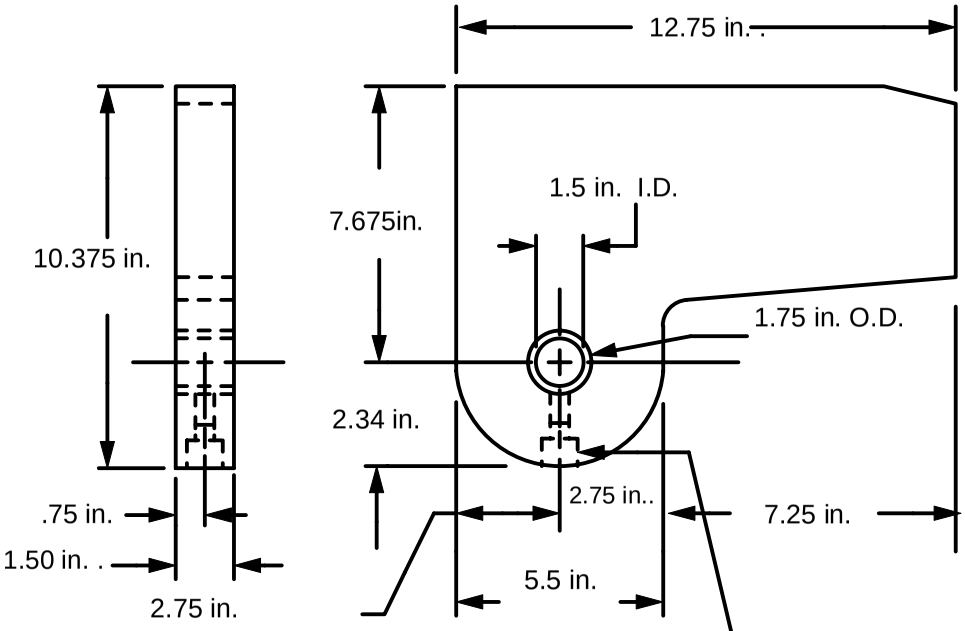
CAST OR FORGED STEEL OR ALUMINUM IS UNACCEPTABLE. 50 in. 6061 ALUMINUM FOR ALUMINUM BODIES OR .375 in. FOR STEEL, SHALL BE OVERLAPPED AND WELDED.



TAILGATE PIN
PIN LENGTH SHALL BE DETERMINED BY MFG'S DESIGN BUT SHALL BE OF SUFFICIENT LENGTH FOR EASE OF INSTALLATION AND REMOVAL. PIN SHALL HAVE LOCKING CHAIN OR PLATE TO PREVENT LOSS. NON-ROTATING. C-1020 H.R.S. STEEL BAR.



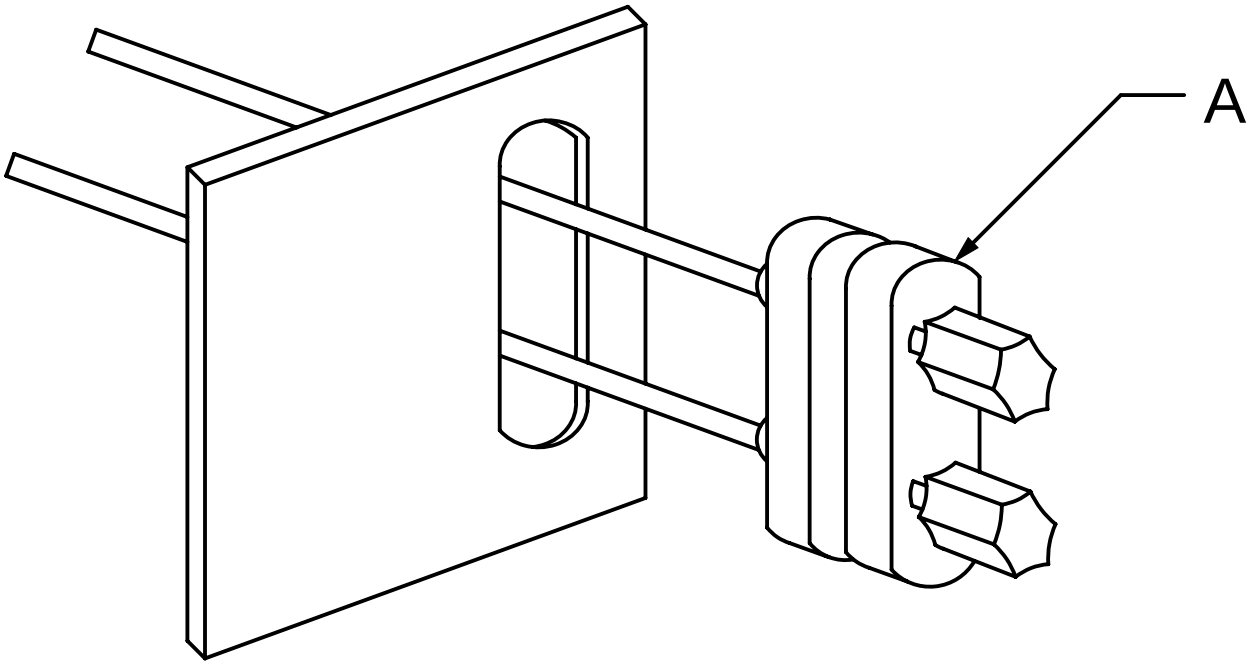
'J' HOOK
2 HOOKS PER TAILGATE



ANY ALTERNATIVE DESIGN OR MEASUREMENTS REQUIRE A THREE YEAR, 100 % PARTS AND LABOR WARRANTY AND AN ADDITIONAL TWO YEARS FOR A TOTAL OF FIVE YEARS PARTS ONLY WARRANTY.

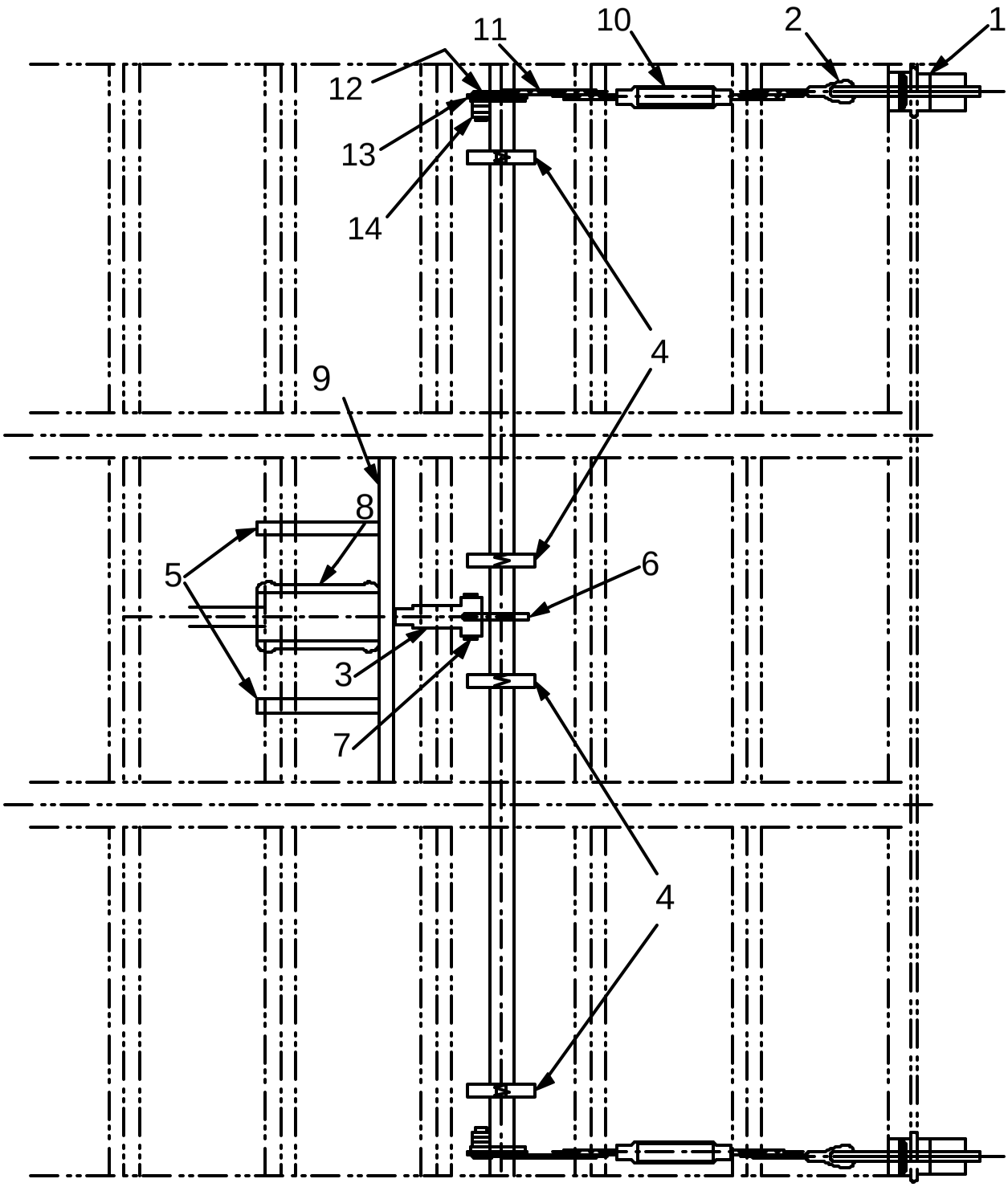
C BORE .68 in. x .56 in. DEEP DRILL .34 in. + HOLE AND TAP FOR .12 in. NPT GREASE FITTING.

REVISIONS			COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION		
N0.	DATE	BY			
1	05/30/02	DWG	38,000 GVWR CREW CAB DUMP BODY		
2					
3			DRAWN BY DLW	SCALE N/A	MATERIAL
4			CHK'D WHM	DATE 10 / 08 / 97	DRW NO. EQN-77
5					SHEET 7 OF 7

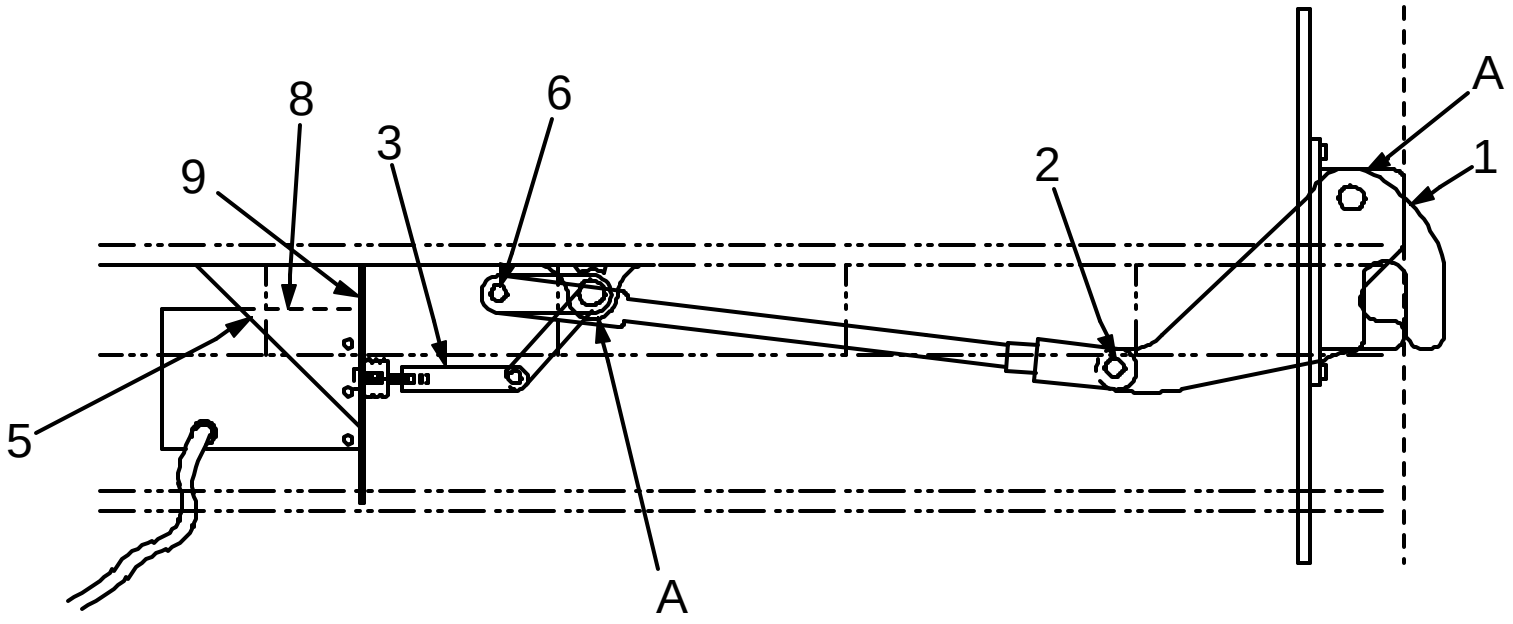


A. PANA PACIFIC CORP.
559-457-4700

REVISIONS			COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION		
N0.	DATE	BY			
1			C.B. RADIO CONNECTIONS		
2					
3			DRAWN BY DLW	SCALE N/A	MATERIAL
4			CHK'D WHM	DATE 7 / 2 / 97	DRW NO. EQN-78
5					SHEET 1 OF 1



REVISIONS			COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION		
NO.	DATE	BY			
1	08/04/95	WHM	AIR TAILGATE, HARDWARE (DUMP TRUCK)		
2	11/09/95	SWW			
3	10/06/97	DLW	DRAWN BY WHM	SCALE N/A	MATERIAL
4	06/3/02	DWG	CHK'D RED	DATE 08/04/95	DRW NO. EQN-78A
5					SHEET 1 OF 3



AIR HOSE SHALL BE OF PROPER LENGTH AND CLAMPED SUFFICIENTLY TO ELIMINATE CHAFING. AIR LINE SHALL BE COVERED IN PLASTIC LOOM WHERE IT EXTENDS THROUGH THE BULKHEAD FITTING/S.

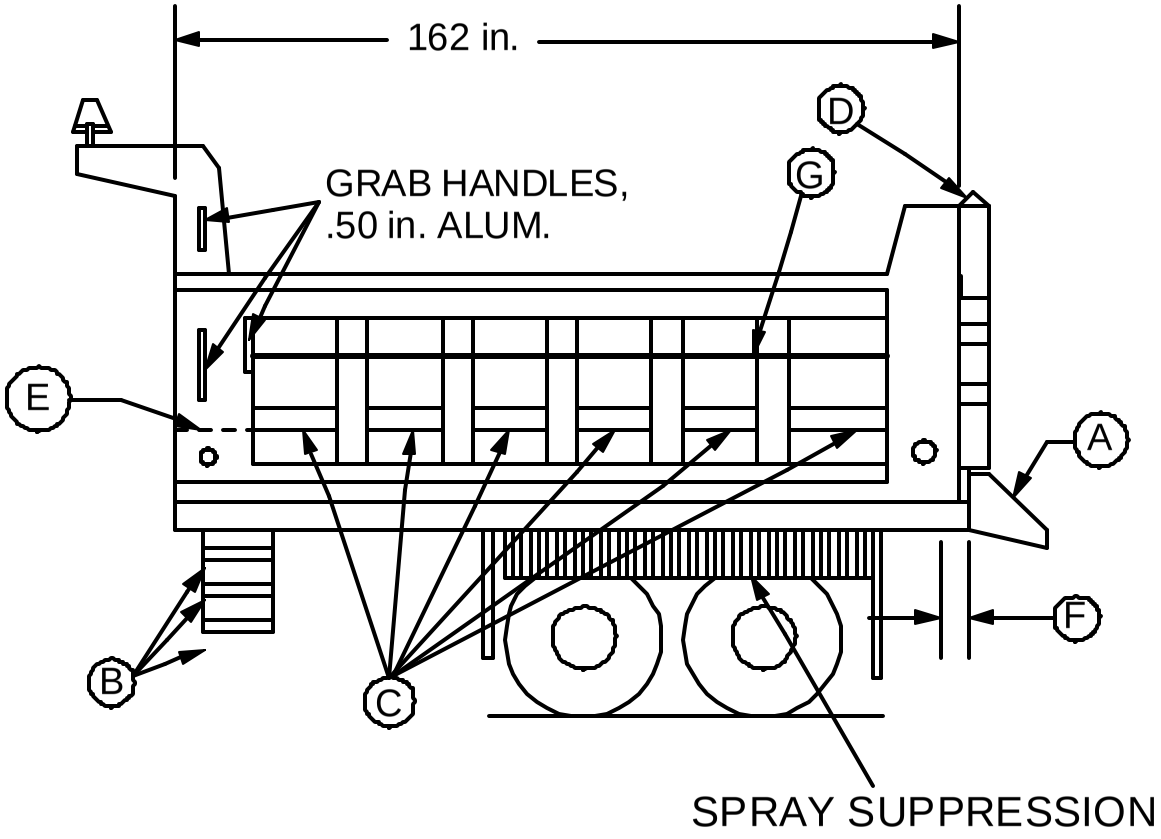
NOTES: A - DRILLED AND TAPED WITH ZERK FITTING OR NYLON BUSHING
BUYERS TEL. (440) 974-8888

REVISIONS			COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION		
N0.	DATE	BY			
1	08/04/95	WHM	AIR TAILGATE, HARDWARE (DUMP TRUCK)		
2	11/09/95	SWW			
3	10/06/97	DLW	DRAWN BY WHM	SCALE N / A	MATERIAL
4	8/10/01	DWG	CHK'D RED	DATE 08 / 04 / 95	DRW NO. EQN-78A
5	06/3/02	DWG			SHEET 2 OF 3

BILL OF MATERIAL (PARTIAL LIST)

ITEM	QTY	DESCRIPTION
1	2	HEAVY HARDWARE ASSEMBLY (LATCHING)
2	2	CLEVIS (BUYERS #2708-6C/ .50 in.)
3	1	AIR CYLINDER CLEVIS
4	4	BEARING BLOCK ASSEMBLY (WITH ZERK FITTING)
5	2	GUSSET
6	1	CAM / LINKAGE
7	1	YOKE PIN (BUYERS #B2708-1/2-8A/ .75 in.)
8	1	AIR CYLINDER (AIR OVER SPRING OR AIR OVER AIR)
9	1	CYLINDER SUPPORT PLATE
10	2	TURNBUCKLE .625 in. x 6 in.
11	2	REAR LENGTH BAR
12	2	BOLT .625 in. x 2 in.
13	2	FLAT WASHER .625 in.
14	3	NUT .625 in. NYLON LOCK

REVISIONS			COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION		
NO.	DATE	BY			
1	08/04/95	WHM	AIR TAILGATE, HARDWARE (DUMP TRUCK)		
2	11/09/95	SWW			
3	10/06/97	DLW	DRAWN BY WHM	SCALE N/A	MATERIAL
4	06/3/02	DWG	CHK'D RED	DATE 08 / 04 / 95	DRW NO EQN-78A
5					SHEET 3 OF 3



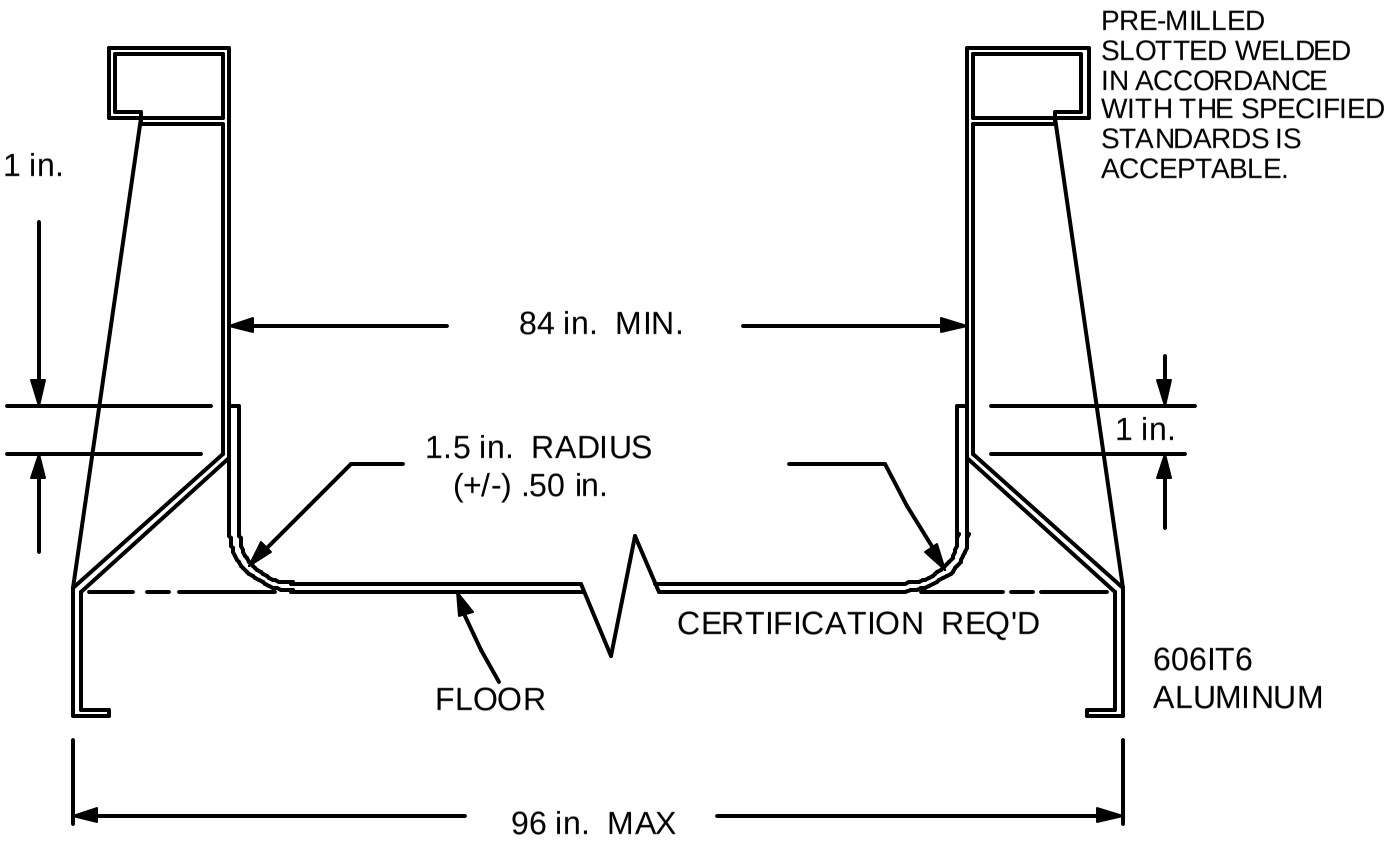
REVISIONS			COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION		
N0.	DATE	BY			
1	09/08/95	WHM	DUMP TRUCK 62,000 lb. GVWR DEPT. TYPE IV TANDEM ALUMINUM BODY		
2	12/07/95	SWW			
3	08/01/96	WHM	DRAWN BY ED K/LLM	SCALE N/A	MATERIAL
4	09/25/97	DLW	CHK'D RED	DATE 04/12/88	DRW NO. EQN-79A
5	06/03/02	DWG			SHEET 1 OF 10

NOTES:

MINIMUM FIVE (5) VERTICAL SIDE BRACES PER SIDE, ON PROPER CENTERS.
FULL-DEPTH, FULL-WIDTH, ONE-PIECE REAR BOLSTER.
FULL DEPTH ONE-PIECE REAR CORNER POSTS.
SIDE BOARD ARRANGEMENTS BOTH SIDES AS SPECIFIED.
ALL BODY WELDING SHALL BE FULL WELD.
49 (+/-) 1 DEGREE DUMPING ANGLE WITH STOPS AND SAFETY DEVICES.
HOLDING DEVICES FOR TAILGATE CONTROL LEVER WITH LATCH OR SAFETY DEVICES.
ALL DIMENSIONS IN INCHES

A. 13 in. (MIN.) WIDTH ALUMINUM APRON, BOLTED. MINIMUM OVERHANG 9 in. APRON TO BE PLACED 75 (+/-) 5 DEGREE ANGLE.
B. BUSTIN #NST4 FULL SIZE OHIO GRATING #JA2119SG4 SERRATED OR IKG INDUSTRIES TYPE BS4 SERRATED SWAGE LOCK, WITH END BAND ALUMINUM OR STEEL DEPENDING ON BODY, (MINIMUM STEP WIDTH 15 in. / FINAL MOUNTING AND LOCATION OF B,E, AND GRAB HANDLES TO BE DETERMINED AT PREBUILD MEETING.
C. SAME AS (B) WIDTH 2.625 in.
D. INVERTED 1.5 in. ANGLE ALUMINUM.
E. STEP, INSIDE BED.
F. MINIMUM SIDE SKIRT WIDTH SHALL BE 6 in. A MINIMUM OF THREE (3) .50 in. BOLTS MOUNTED NO CLOSER THAN 2.5 in. FROM EDGE. (BOLTS, NUTS, AND WASHERS USED FOR RETAINING APRON SHALL BE STAINLESS STEEL WITH THREADS COATED WITH NEVER-SEIZE.)
G. .75 in. ALUMINUM ROUND STOCK, TARP RAIL, FULL LENGTH, BOTH SIDES.

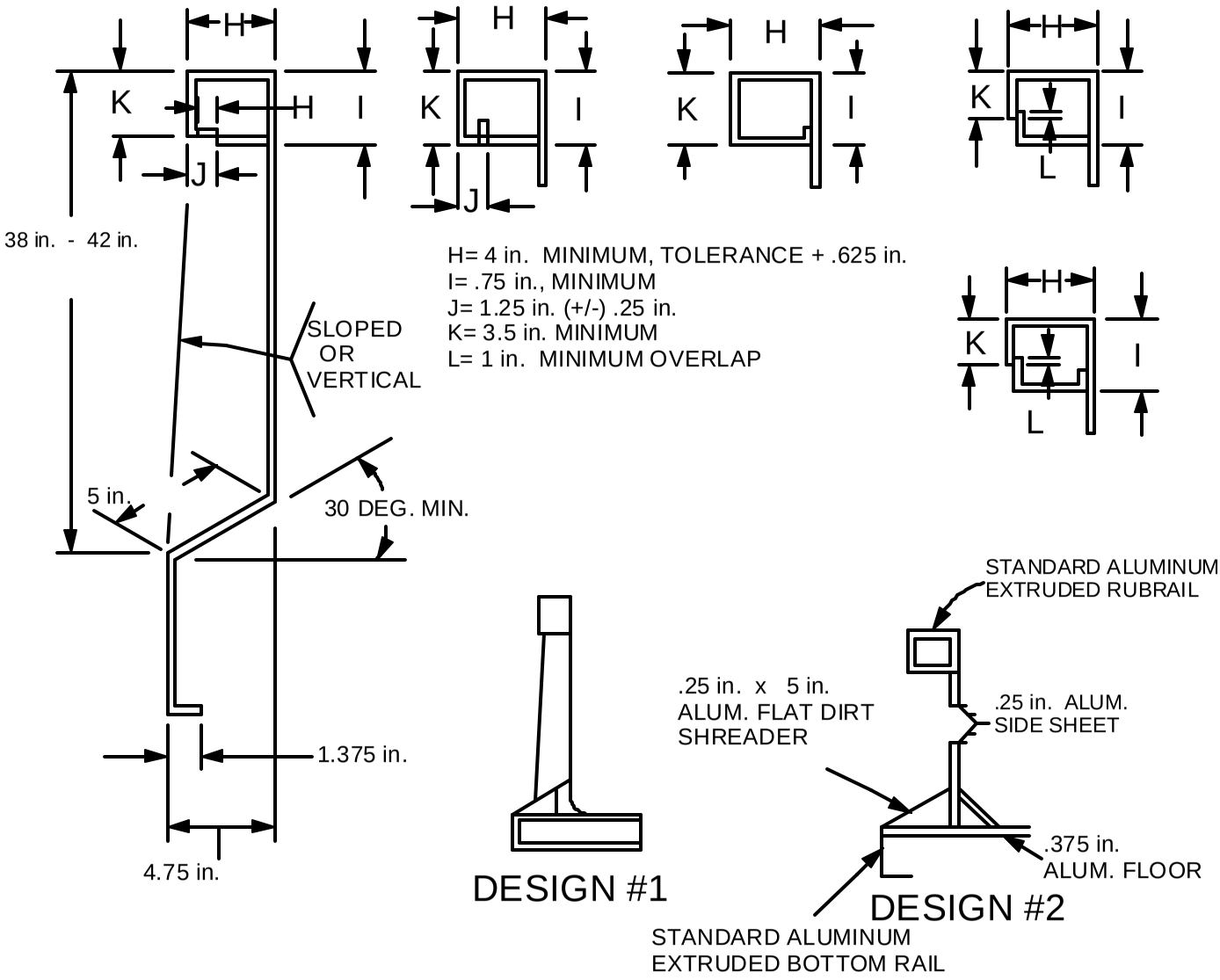
REVISIONS			COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION		
NO.	DATE	BY			
1	09/08/95	WHM	DUMP TRUCK 62,000 lb. GVWR DEPT. TYPE IV TANDEM ALUMINUM BODY		
2	12/07/95	SWW			
3	08/01/96	WHM	DRAWN BY ED K/LLM	SCALE N/A	MATERIAL
4	09/25/97	DLW	CHK'D RED	DATE 04/12/88	DRW NO. EQN-79A
5	06/03/02	DWG			SHEET 2 OF 10



FLOOR:

1. ONE-PIECE BODY FLOOR SHALL BE .375 in. MINIMUM THICK ABRASION-RESISTANT ALUMINUM OF GRADE 5454H 34.
2. THE MATERIALS HAULED IN THESE VEHICLES WILL BE SALT, ABRASIVE AGGREGATE, WET MUD, ETC.
3. ALL DIMENSIONS IN INCHES .

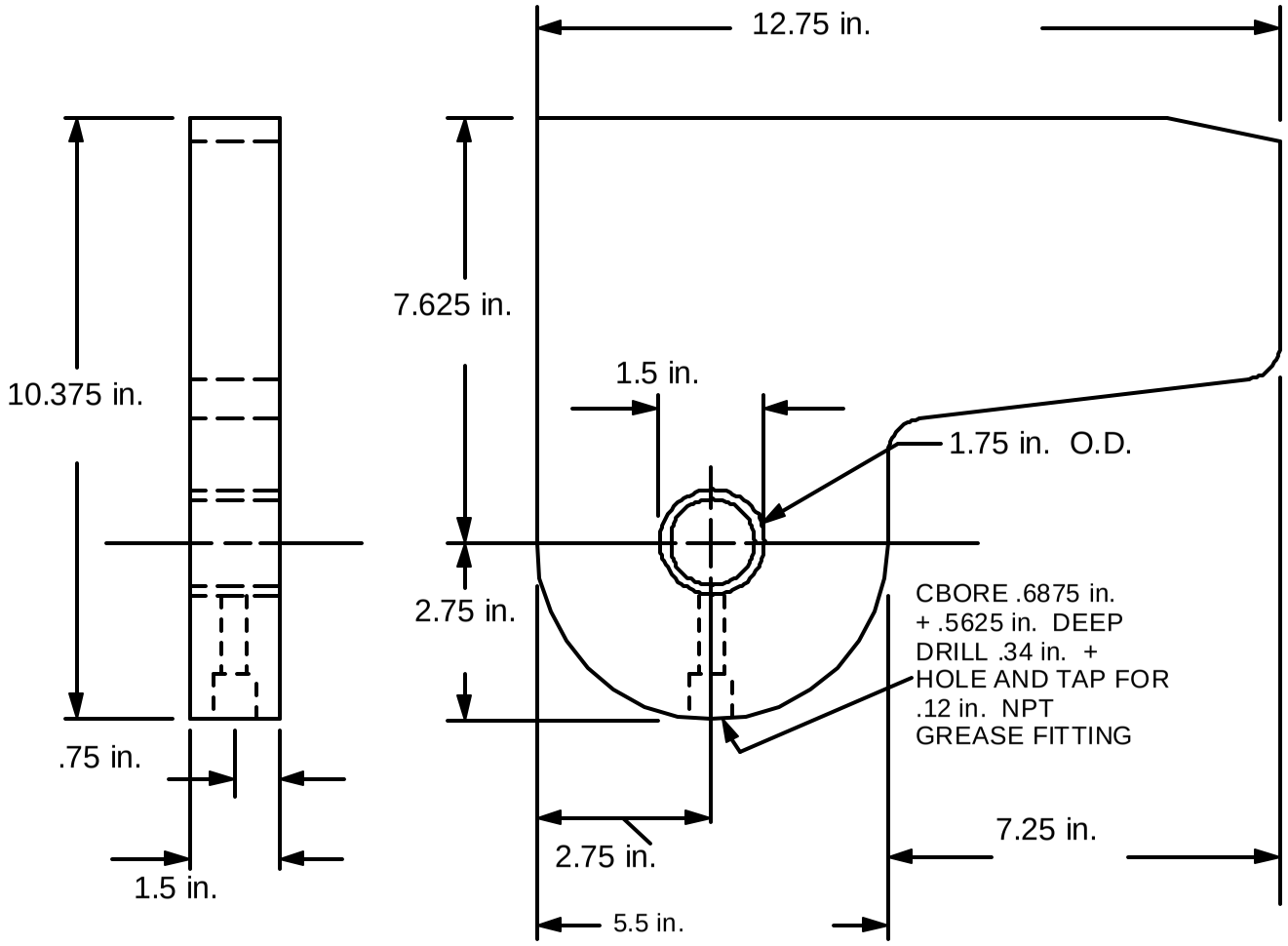
REVISIONS			COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION		
NO.	DATE	BY			
1	09/08/95	WHM	DUMP TRUCK 62,000 lb. GVWR DEPT. TYPE IV TANDEM ALUMINUM BODY		
2	12/07/95	SWW			
3	08/01/96	WHM	DRAWN BY ED K/LLM	SCALE N/A	MATERIAL
4	09/25/97	DLW	CHK'D RED	DATE 04 / 12 / 88	DRW NO. EQN-79A
5	06/03/02	DWG			SHEET 3 OF 10



NOTES:
SIDE SHALL BE .25 in. U.S. STANDARD ALUMINUM. TWO BEND TOP RAIL BOTH SIDED. FULLY BOXED TOP RAIL BOTH SIDED. BOXED TOP RAIL MAY BE FORMED OR CHANNELED OR EXTRUDED. BOXED TOP RAIL SHALL BE COMPLETELY CLOSED BY CONTINUOUS WELDING ON TOP. ONE PIECE CONSTRUCTION FOR SIDE AND RUNNING BOARD, BOTH SIDES. SLOPED RUNNING BOARD, BOTH SIDES. RUNNING BOARD WIDTH TO COVER OUTER REAR DUAL TIRES FULL LENGTH BOTH SIDES. FRONT BODY WALL SHALL BE 0.156 in. STANDARD ALUMINUM 5454H3. ALL DIMENSIONS IN INCHES.

REVISIONS			COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION		
N0.	DATE	BY	DUMP TRUCK 62,000 lb. GVWR DEPT. TYPE IV TANDEM ALUMINUM BODY		
1	06/03/02	DWG			
2					
3			DRAWN BY DLW	SCALE N/A	MATERIAL
4			CHK'D WHM	DATE 09 / 25 / 97	DRW NO. EQN-79A
5					SHEET 4 OF 10

ALL DIMENSIONS IN INCHES. PRESSED BUSHING WITH GREASABLE CAPABILITY. THE EDGE DISTANCE SHALL BE A MINIMUM OF 1.75 in. THICKNESS.

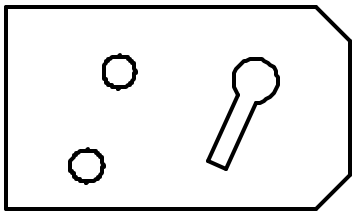


DETAIL M TAILGATE HINGE

ALL STEEL HARDWARE MUST BE PRIMED AND PAINTED AND BOLTED TO PRESENT A TROUBLE FREE, NON-CORROSION SYSTEM.

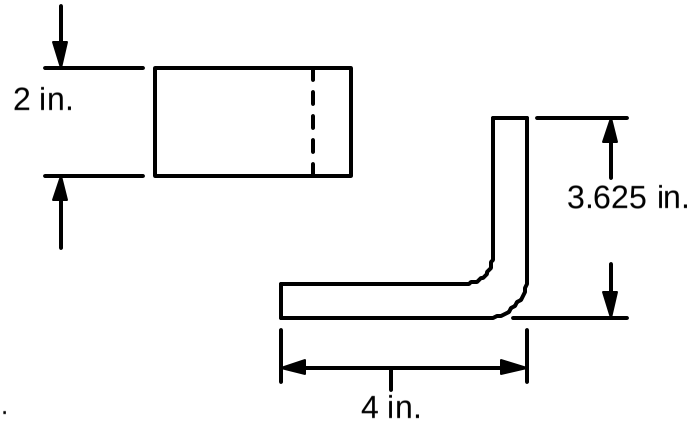
ANY ALTERNATIVE DESIGN OR MEASUREMENTS REQUIRE A THREE YEAR, 100 % PARTS AND LABOR WARRANTY AND AN ADDITIONAL TWO YEARS FOR A TOTAL OF FIVE YEARS PARTS ONLY WARRANTY.

REVISIONS			COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION		
N0.	DATE	BY			
1	06/03/02	DWG	DUMP TRUCK 62,000 lb. GVWR DEPT. TYPE IV TANDEM AUMINUM BODY		
2					
3			DRAWN BY DLW	SCALE N/A	MATERIAL
4			CHK'D WHM	DATE 09 / 25 / 97	DRW NO. EQN-79A
5					SHEET 5 OF 10



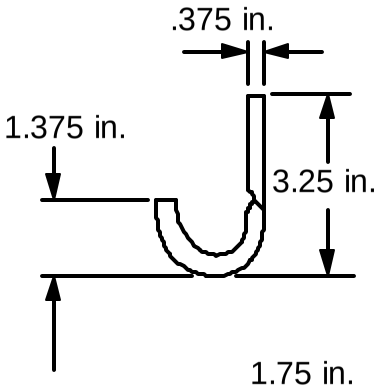
DETAIL A
CHAIN HOLDER

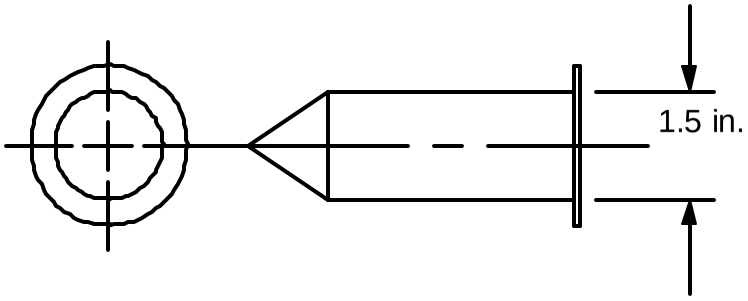
CAST OR FORGED ALUMINUM IS UNACCEPTABLE. .5 in. / 1.27 cm. 6061 ALUMINUM FOR ALUMINUM BODIES OR .375 in. / .95 cm. STEEL FOR STEEL BODIES SHALL BE OVERLAPPED AND WELDED.



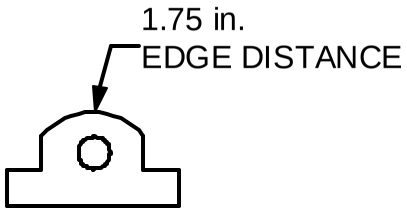
DETAIL C
TAILGATE CHAIN BRACKET

(2) PER SIDE, TOTAL OF (4) PER TAILGATE.
MATERIAL - ALUMINUM



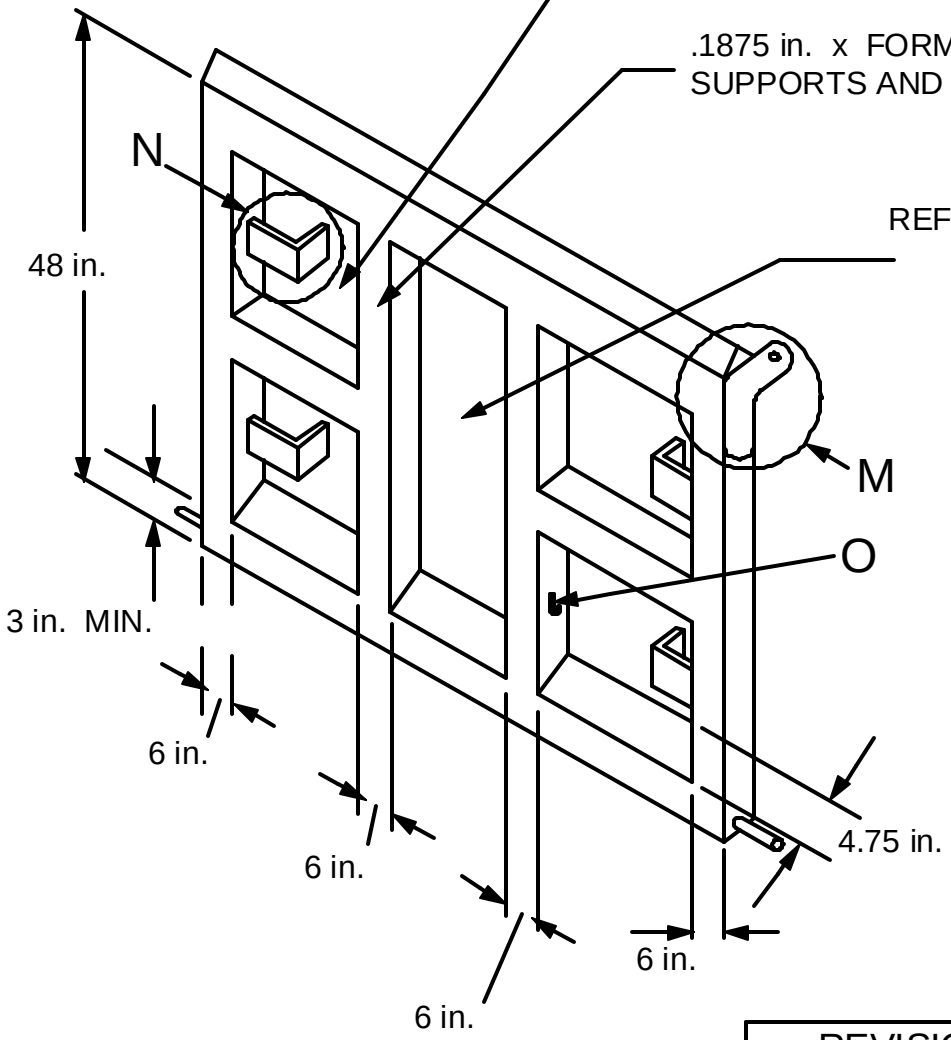


PIN LENGTH SHALL BE DETERMINED BY MFG'S DESIGN BUT SHALL BE OF SUFFICIENT LENGTH FOR EASE OF INSTALLATION AND REMOVAL.
PIN WITH LOCKING CHAIN OR PLATE TO PREVENT LOSS.
NON-ROTATING.
C-1020 H.R.S. STEEL BAR.
PIN BUSHINGS SHALL BE REAMED TO ALLOW FOR FREE ROTATION, BY HAND.



SEVERE DUTY TAILGATE MOUNTING EARS WITH HD BUSHINGS, GREASE FITTINGS SHALL BE PROVIDED. THIS IS A VERY IMPORTANT AREA AND MAY BE STEEL OR ALUMINUM BUT MUST BE SEVERE DUTY HARDWARE. EARS SHALL BE FULL WELD.

REVISIONS			COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION		
N0.	DATE	BY			
1	06/03/02	DWG	DUMP TRUCK 62,000 lb. GVWR DEPT. TYPE IV TANDEM ALUMINUM BODY		
2					
3			DRAWN BY DLW	SCALE N/A	MATERIAL
4			CHK'D WHM	DATE 09 / 25 / 97	DRW NO. EQN-79A
5					SHEET 6 OF 10



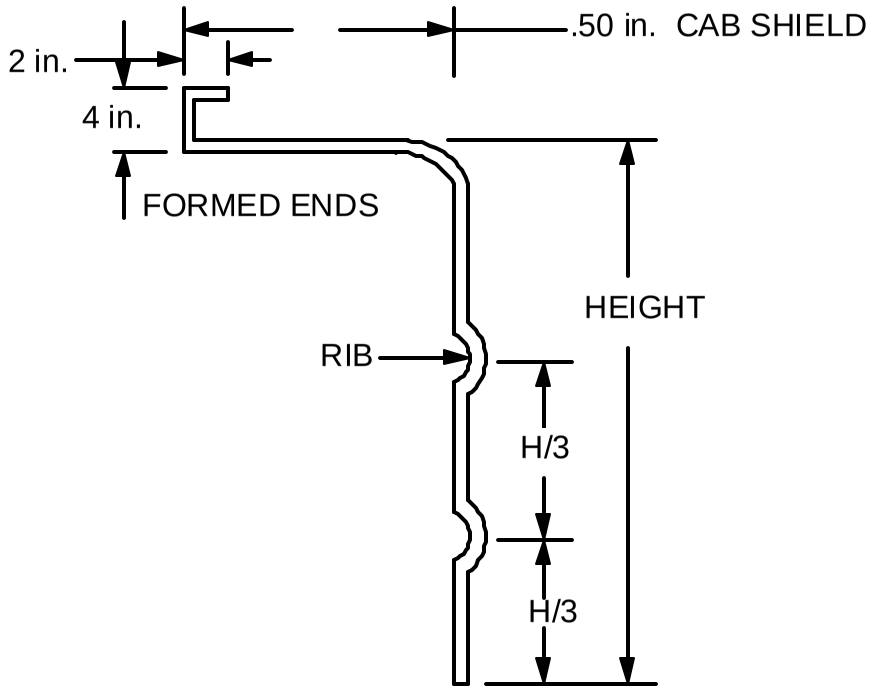
REF: EQN - 64
COAL CHUTE DOOR DETAILS

M) TOP HINGE
N) CHAIN HOLDERS
O) 'J' HOOKS

NOTE: 1.50 in. (MIN.) DIA. BOTTOM HINGE PIN, FULL WIDTH.
.375 in. SPREADER CHAIN, NON RUSTING TYPE CHAIN TO SUIT
.50 in. THICK CHAIN HOLDER.

TAILGATE SLOPE REQUIRES LIGHTS TO BE CANTERED BACK

REVISIONS			COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION		
NO	DATE	BY			
1	06/03/02	DWG	DUMP TRUCK 62,000 lbs. GVWR DEPT. TYPE II AND IV ALUMINUM BODY		
2					
3			DRAWN BY DLW	SCALE N / A	MATERIAL
4			CHK'D WHM	DATE 09 / 25 / 97	DRW NO. EQN-79A
5					SHEET 7 OF 10



BODY FRONT AND CABSHIELD

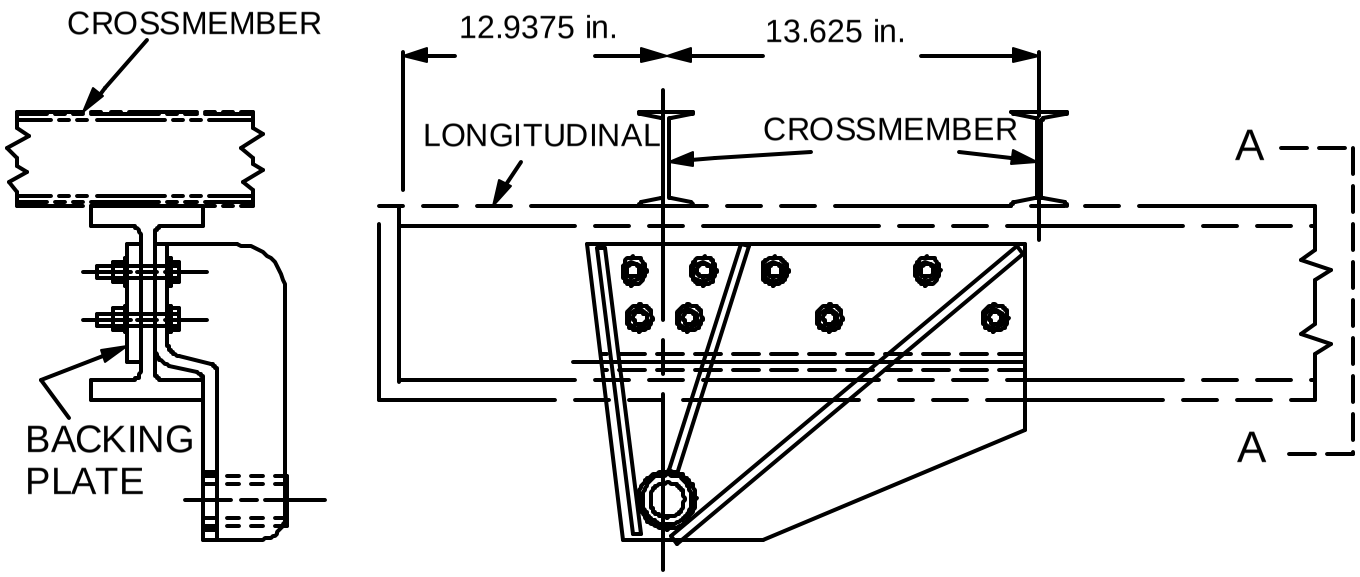
NOTES:

1. BODY FRONT AND CAB SHIELD SHALL BE A MINIMUM OF 0.15625 in. AND SHALL EXTEND AT A MINIMUM OVER THE CENTER OF MID CAB.
2. CONTINUOUS WELDING ON FRONT AND CAB SHIELD THROUGHOUT.
3. ONE-HALF (1/2) CAB SHIELD.
4. 4 in. LIP ON FRONT. (MIN.)
5. UNIVERSAL TYPE CAB SHIELD SHALL HAVE A MINIMUM OF THREE BRACES.
6. THE BODY CAB SHIELD SHALL HAVE SUFFICIENT CLEARANCE TO PREVENT THE CAB SHIELD FROM HITTING THE EXHAUST SYSTEM WHEN DUMPING ON UNEVEN TERRAIN.
7. ALTERNATIVE DESIGN OF RIBS SHALL BE PRE-APPROVED BY THE EQUIPMENT DIVISION.
8. FOR UNITS EQUIPPED WITH FULL POST WINGS, MODIFY CAB SHIELD.
9. FOR ALUMINUM DUMP BODIES, ANY USE OF STEEL REQUIRES CORROSION CONTROL (PAINTING) AND ELECTRO GALVANIC PROTECTION.
10. ALL DIMENSIONS IN INCHES .

REVISIONS			COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION		
NO.	DATE	BY			
1			DUMP TRUCK 62,000 lbs. GVWR DEPT. TYPE IV TANDEM ALUMINUM BODY		
2					
3			DRAWN BY DLW	SCALE N/A	MATERIAL
4			CHK'D WHM	DATE 09 / 25 / 97	DRW NO. EQN-79A
5					SHEET 8 OF 10

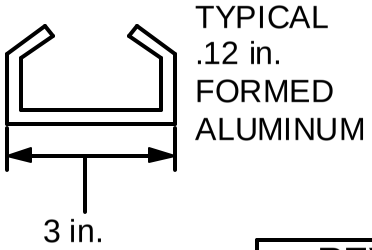
VIEW A-A

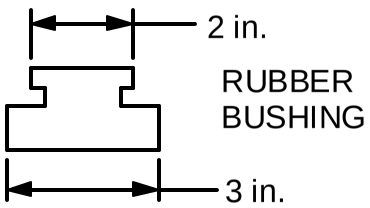
WEB MOUNTED PIVOT
PASSENGER SIDE



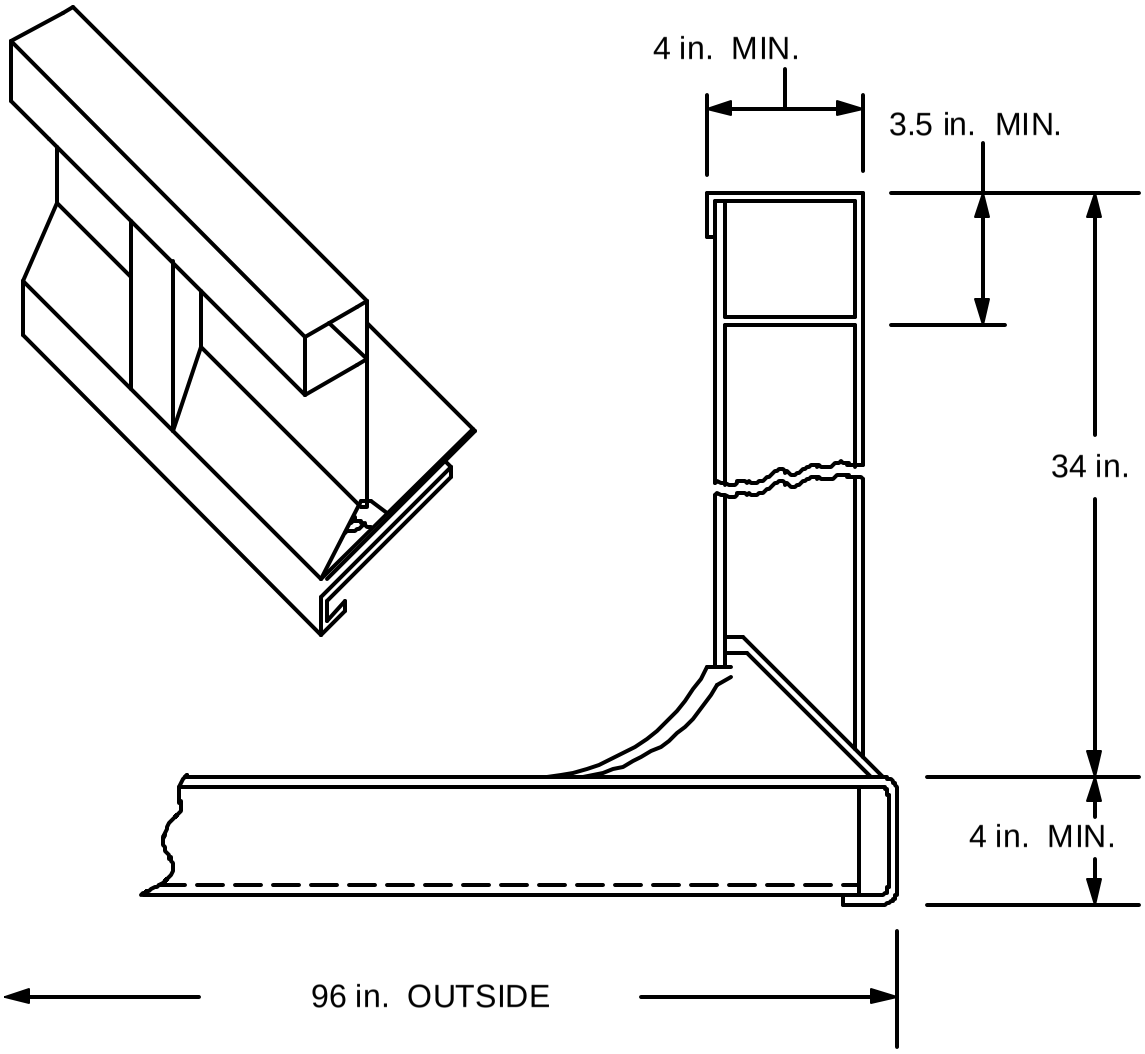
NOTES:

1. THE ABOVE STRUCTURE SHALL BE FURNISHED ON THE LAST FOUR CROSS-MEMBERS.
2. THE LAST FOUR CROSS-MEMBERS SHALL BE PLACED ON 8 in. CENTERS, WITH THE BALANCE ON 12 in. CENTERS.
3. THE BODY SHALL BE SHOCK MOUNTED TO AVOID STRESS ON ROUGH ROADS WHEN EMPTY.
4. THE WEB MOUNT SHALL BE DESIGNED FOR SEVERE DUTY SERVICE.
5. THE BOLTS SHALL BE OF GRADE 8 MINIMUM WITH SELF-LOCKING GRADE 8 NUTS.
6. THE REAR PIN HINGE SHALL BE A MINIMUM OF 2.2 in. DIA., AND THE HINGE BUSHING (GREASABLE) SHALL BE A 2.875 in. OD x 2.12 in. ID, MINIMUM TOLERANCES AND SIZES. PIN SIZES SMALLER THAN 2.116 in. ARE ACCEPTABLE IF THEY ARE STANDARD WITH A VENDOR.
7. ALL DIMENSIONS IN INCHES.
8. "FULL LENGTH" BODY TO FRAME RUBBER MOUNTING SYSTEM.
9. ANY VARIATION TO THIS DESIGN REQUIRES, PRIOR TO BUILD, WRITTEN AUTHORIZATION.

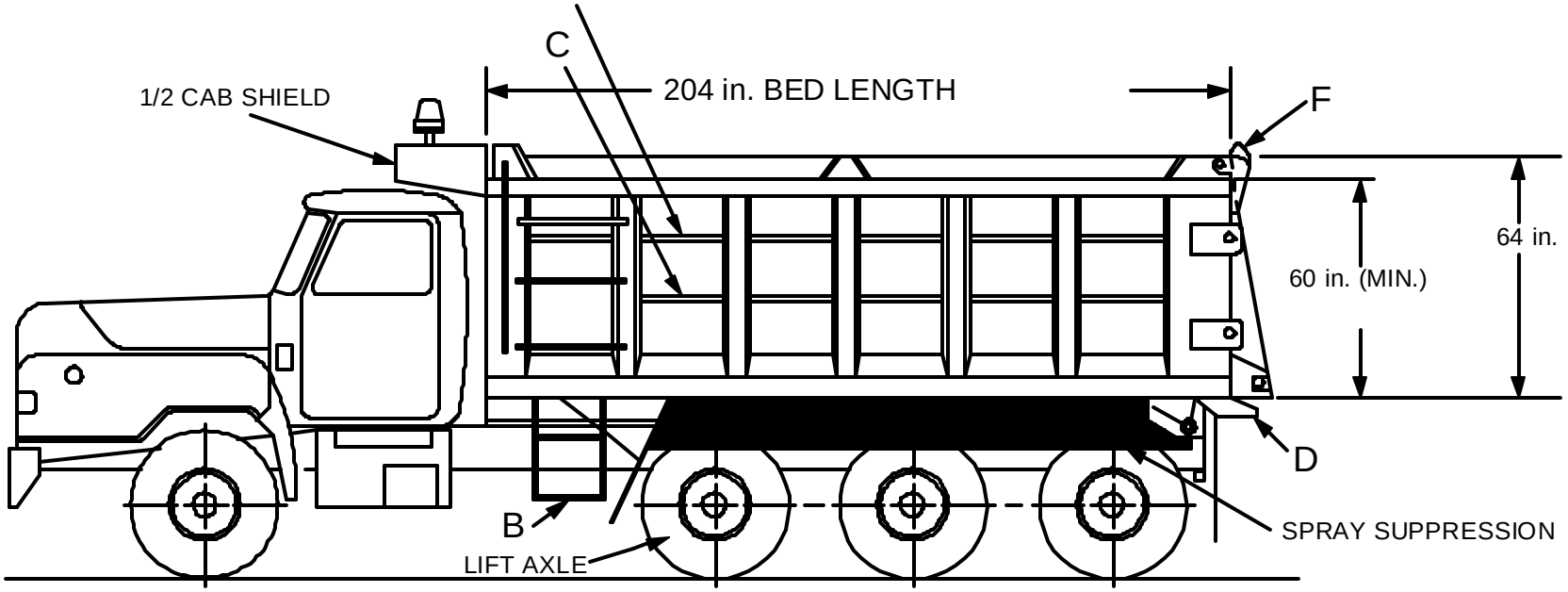




REVISIONS			COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION		
NO.	DATE	BY			
1	06/03/02	DWG	DUMP TRUCK 62,000 LB. GVWR DEPT. TYPE IV TANDEM ALUMINUM BODY		
2					
3			DRAWN BY DLW	SCALE N/A	MATERIAL
4			CHK'D WHM	DATE 09 / 25 / 97	DRW NO. EQN-79A
5					SHEET 9 OF 10



REVISIONS			COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION		
N0.	DATE	BY			
1	06/03/02	DWG	DUMP TRUCK 62,000 lb. GVWR DEPT. TYPE IV TANDEM ALUMINUM BODY		
2					
3			DRAWN BY DLW	SCALE N/A	MATERIAL
4			CHK'D WHM	DATE 09 / 25 / 97	DRW NO. EQN-79A
5					SHEET 10 OF 10



B. ALUMINUM BUSTIN #NST4 FULL SIZE OR OHIO GRATING #JAZ1195G4 SERRATED OR IKG INDUSTRIES TYPE BS4 SERRATED SWAGE LOCK, WITH END BAND ALUMINUM MINIMUM WIDTH OF STEP IS 15 in. FINAL MOUNTING AND LOCATION OF B, C, AND G SHALL BE DETERMINED AT THE PRE-BUILD MEETING.
C. SAME AS B WITH MINIMUM 2.625 in. DEPTH OF ENTIRE LEFT AND RIGHT SIDES BETWEEN RIBS.
D. 13 in. MINIMUM SKIRT WIDTH. MINIMUM OVERHANG 9 in. WITH APRON PLACED (+/-) 5 DEGREE ANGLE.
F. INVERTED 1.50 in. ANGLE ALUMINUM.

NOTES:
MINIMUM SIX (6) VERTICAL SIDE BRACES PER SIDE, ON PROPER CENTERS.
FULL DEPTH, FULL WIDTH, ONE PIECE BOLSTER.
FULL DEPTH ONE-PIECE REAR CORNER POSTS.
ALL BODY WELDING SHALL BE FULL WELD.
HOLDING DEVICE (CHAIN / LINK) FOR TAILGATE CONTROL LEVER.

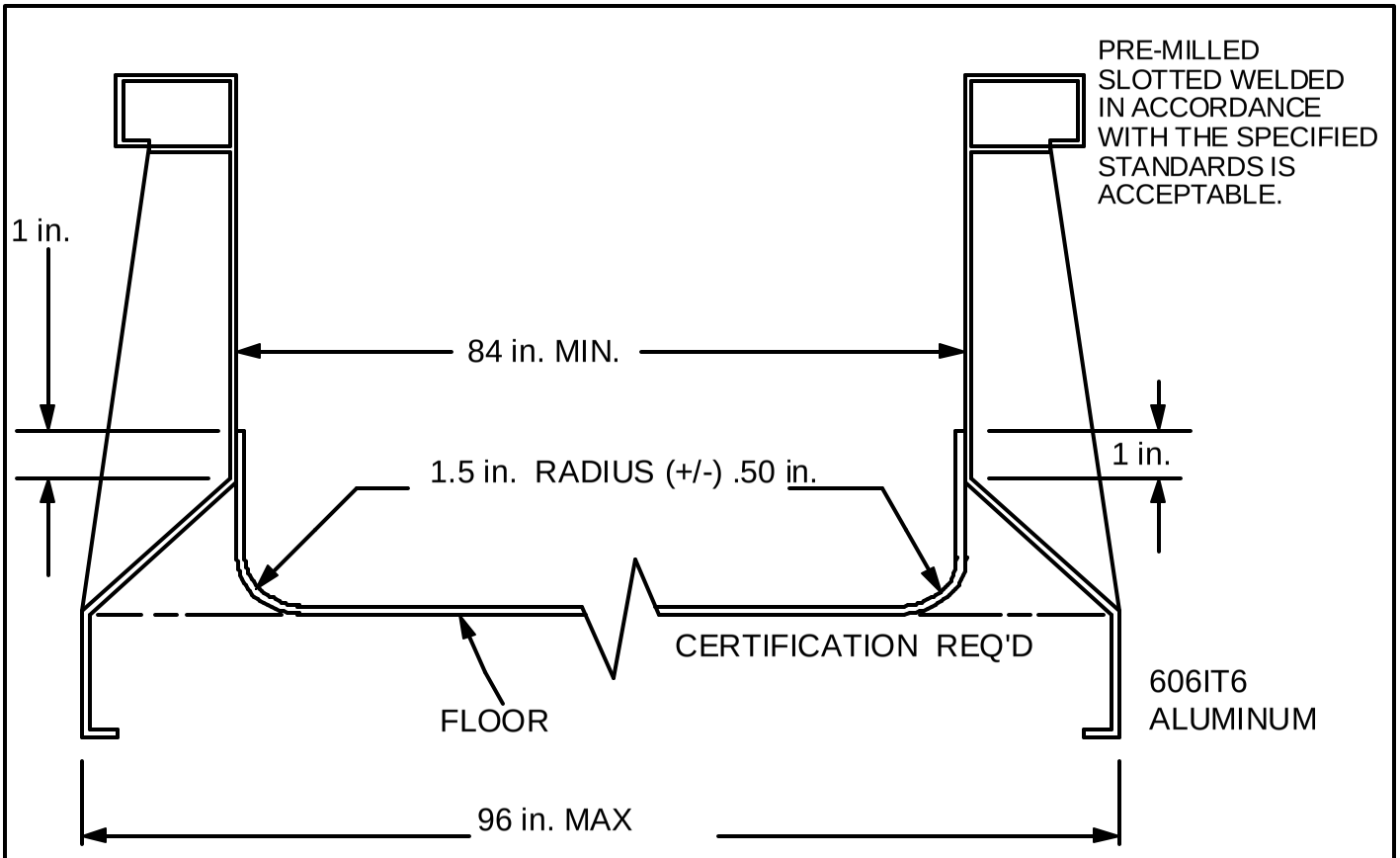
TAILGATE SHALL SLOPE OUT AT THE BOTTOM APPROXIMATELY 6 DEGREES.

REVISIONS		
N0.	DATE	BY
1	12/19/95	SWW
2	10/19/96	WHM
3	10/05/97	DLW
4	06/03/02	DWG
5		

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

72,000 GVWR TRI-AXLE
DUMP TRUCK

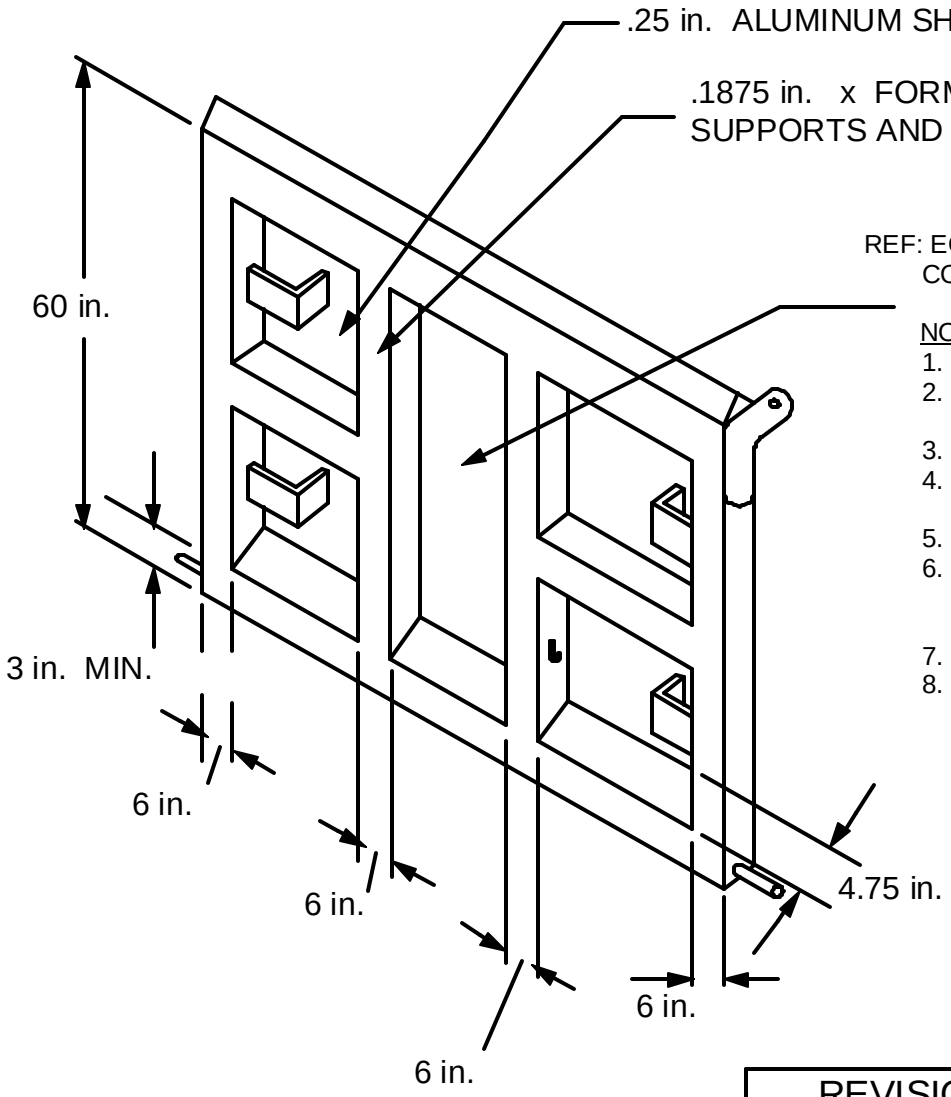
DRAWN BY DLW	SCALE N / A	MATERIAL ALUM./STL.
CHK'D WHM	DATE 11/05/97	DRW NO. EQN-79T
		SHEET 1 OF 8



FLOOR:

1. ONE-PIECE BODY FLOOR SHALL BE .375 in. MINIMUM THICK ABRASION-RESISTANT ALUMINUM OF GRADE 5454H 34.
2. THE MATERIALS HAULED IN THESE VEHICLES WILL BE SALT, ABRASIVE AGGREGATE, WET MUD, ETC.
3. ALL DIMENSIONS IN INCHES

REVISIONS			COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION		
NO.	DATE	BY			
1	12/19/95	SWW	DUMP TRUCK 62,000 lb. GVWR DEPT. TYPE IV TANDEM ALUMINUM BODY		
2	10/19/96	WHM			
3	10/05/97	DLW	DRAWN BY DLW	SCALE N/A	MATERIAL ALUM. / STL.
4	06/03/02	DWG	CHK'D WHM	DATE 10/05/97	DRW NO. EQN-79T
5					SHEET 2 OF 8



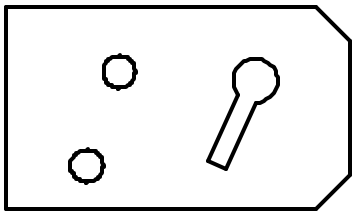
REF: EQN - 64
COAL CHUTE DOOR DETAILS

NOTES:

1. 23 CUBIC YARDS CAPACITY TAILGATE.
2. MINIMUM DOUBLE ACTING FIVE PANEL TAILGATE WITH OFFSET HINGES.
3. TWO ' J' HOOKS.
4. MINIMUM1.50 in. DIA, HINGE PIN BOTTOM, FULL WIDTH.
5. TOP HINGE PLATE, FLAME CUT, OFFSET STYLE.
6. .375 in. SPREADER CHAIN, NON-RUSTING TYPE CHAIN, TO SUIT .50 in. THICK CHAIN HOLDER.
7. FOUR TAILGATE CHAIN BRACKETS.
8. REINFORCED GATE EXTENDED NOT MORE THAN 8 in. ABOVE SIDES.

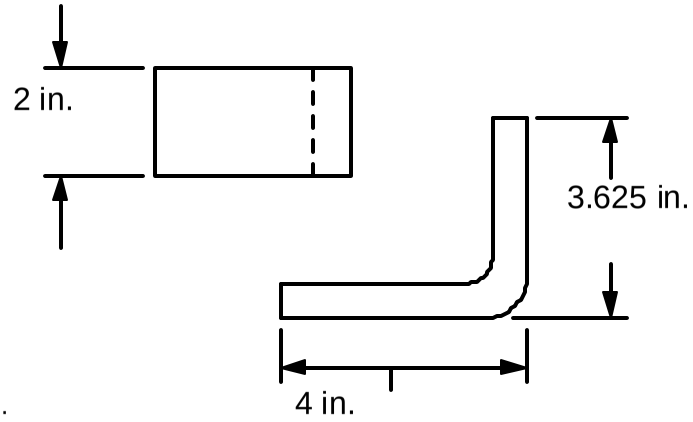
TAILGATE SLOPE REQUIRES LIGHTS TO BE CANTERED BACK

REVISIONS			COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION		
NO	DATE	BY			
1	12/19/95	SWW	72,000 GVWR TRI-AXLE DUMP TRUCK		
2	10/19/96	WHM			
3	10/05/97	DLW	DRAWN BY DLW	SCALE N / A	MATERIAL ALUM. / STL.
4	06/03/02	DWG	CHK'D WHM	DATE 10/05/97	DRW NO. EQN-79T
5					SHEET 3 OF 8



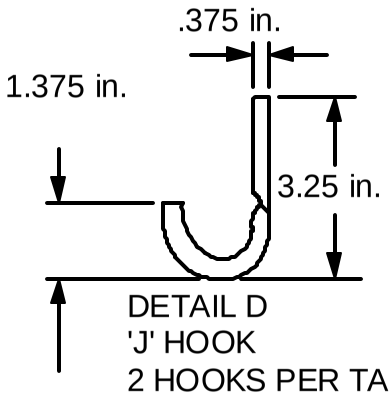
DETAIL A
CHAIN HOLDER

CAST OR FORGED ALUMINUM IS UNACCEPTABLE. .5 in. / 1.27 cm. 6061 ALUMINUM FOR ALUMINUM BODIES OR .375 in. / .95 cm. STEEL FOR STEEL BODIES SHALL BE OVERLAPPED AND WELDED.

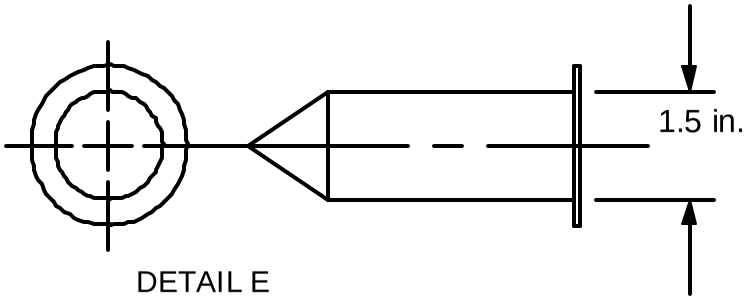


DETAIL C
TAILGATE CHAIN BRACKET

TWO PER SIDE, TOTAL OF FOUR PER TAILGATE. MATERIAL - ALUMINUM

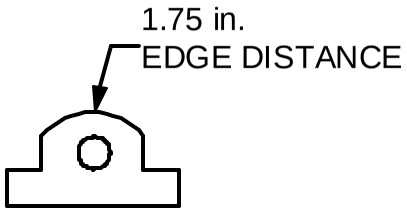


DETAIL D
'J' HOOK
2 HOOKS PER TAILGATE



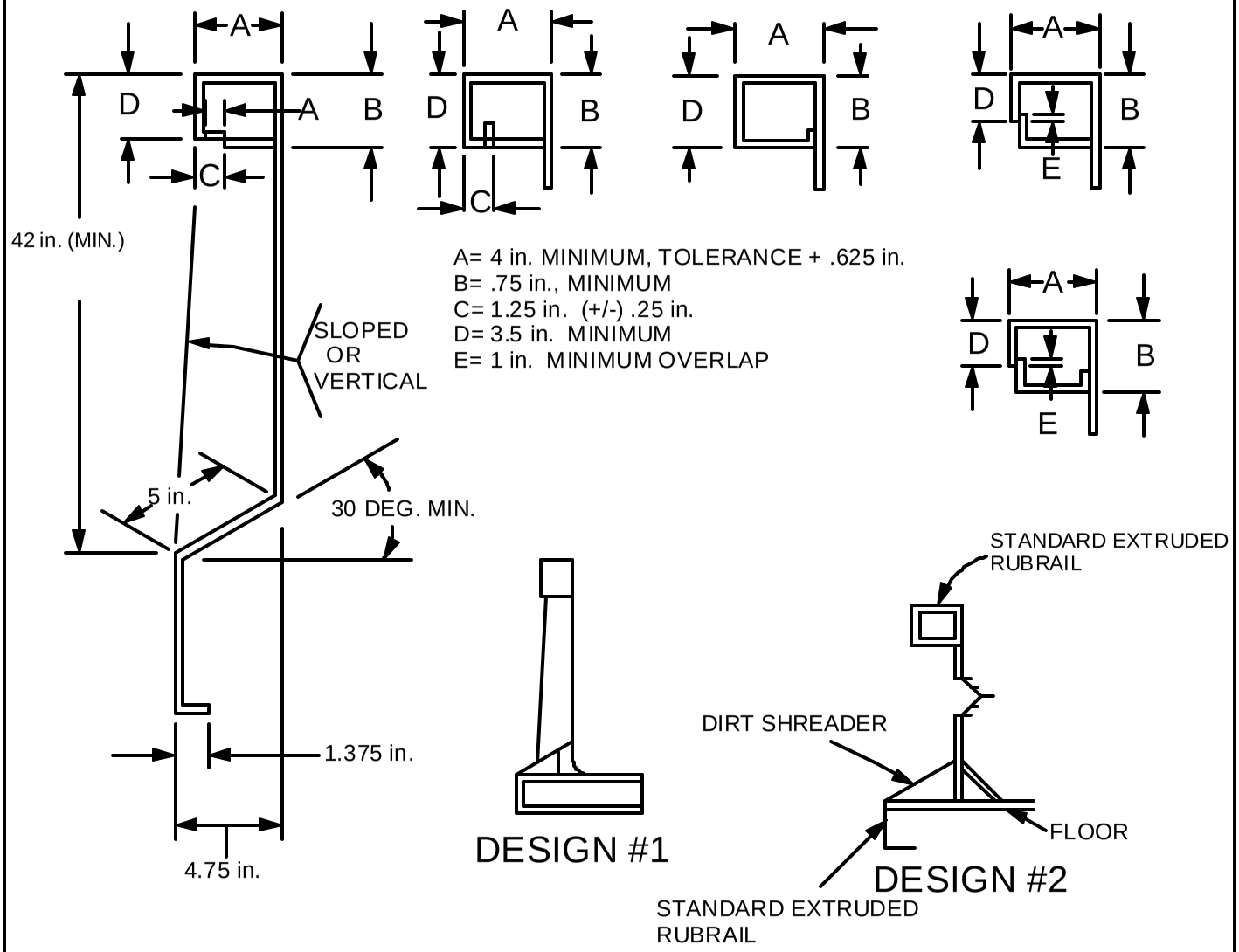
DETAIL E
TAILGATE PIN

PIN LENGTH SHALL BE DETERMINED BY MFG'S DESIGN BUT SHALL BE OF SUFFICIENT LENGTH FOR EASE OF INSTALLATION AND REMOVAL.
PIN WITH LOCKING CHAIN OR PLATE TO PREVENT LOSS. NON-ROTATING.
C-1020 H.R.S. STEEL BAR.
PIN BUSHINGS SHALL BE REAMED TO ALLOW FOR FREE ROTATION.



SEVERE DUTY TAILGATE MOUNTING EARS WITH HD BUSHINGS, GREASE FITTINGS SHALL BE PROVIDED. THIS IS A VERY IMPORTANT AREA AND MAY BE STEEL OR ALUMINUM BUT MUST BE SEVERE DUTY HARDWARE. EARS SHALL BE FULL WELD.

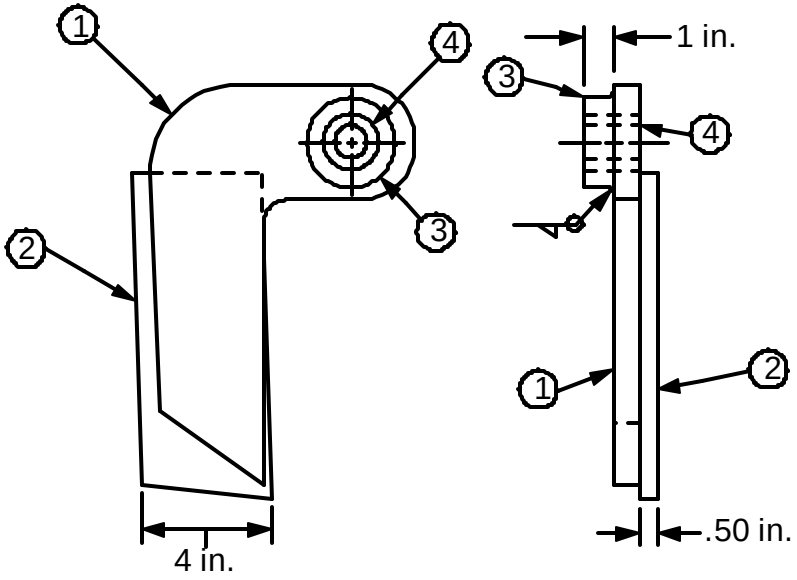
REVISIONS			COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION		
NO.	DATE	BY	72,000 GVWR TRI-AXLE DUMP TRUCK		
1	12/19/95	SWW			
2	10/19/96	WHM			
3	10/05/97	DLW	DRAWN BY DLW	SCALE N/A	MATERIAL ALUM. / STL.
4	06/03/02	DWG	CHK'D WHM	DATE 10/05/97	DRW NO. EQN-79T
5					SHEET 4 OF 8



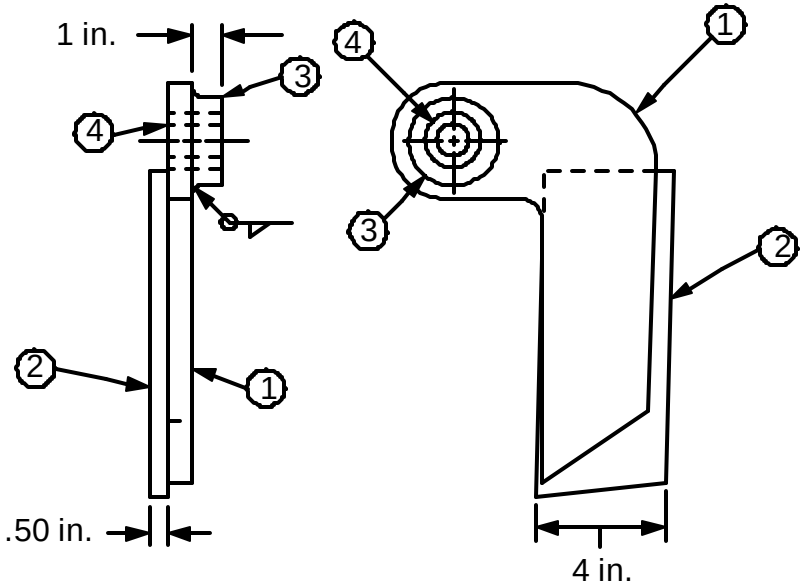
NOTES:
SIDE SHALL BE .25 in. U.S. STANDARD ALUMINUM OR ASTM 8 GUAGE U.S. STEEL.
TWO BEND TOP RAIL MINIMUM.
FULLY BOXED TOP RAIL BOTH SIDED.
BOXED TOP RAIL MAY BE FORMED OR CHANNELED OR EXTRUDED.
BOXED TOP RAIL SHALL BE COMPLETELY CLOSED BY CONTINUOUS WELDING ON TOP.
ONE PIECE CONSTRUCTION FOR SIDE AND RUNNING BOARD, BOTH SIDES.
SLOPED RUNNING BOARD, BOTH SIDES.
RUNNING BOARD WIDTH TO COVER OUTER REAR DUEL TIRES FULL LENGTH BOTH SIDES.
FRONT BODY WALL SHALL BE .16 in. STANDARD STANDARD ALUMINUM 5454H3 OR
ASTM 8 GUAGE U.S. STEEL.
ALL DIMENSIONS IN INCHES .

REVISIONS			COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION		
N0.	DATE	BY	72,000 GVWR TRI-AXLE DUMP TRUCK		
1	12/19/95	SWW			
2	10/19/96	WHM			
3	10/05/97	DLW	DRAWN BY DLW	SCALE N/A	MATERIAL ALUM. / STL.
4	06/03/02	DWG	CHK'D WHM	DATE 10/05/97	DRW NO. EQN-79T
5					SHEET 5 OF 8

DETAIL B TAILGATE HINGE



L.H. ASSEMBLY



R.H. ASSEMBLY

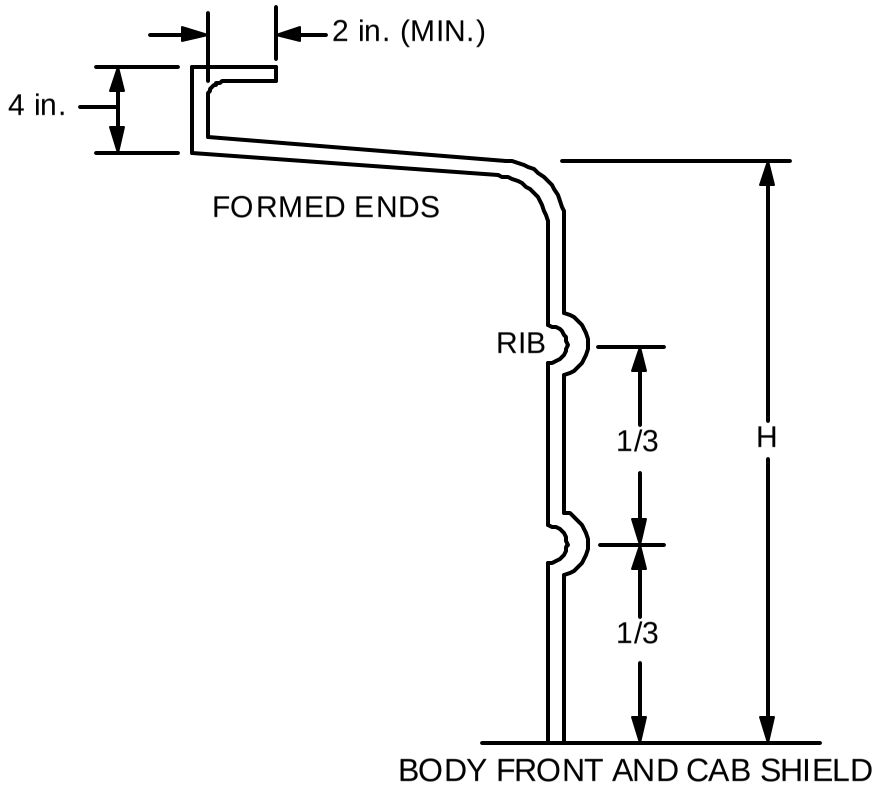
ANY STEEL HARDWARE MUST BE PRIMED, PAINTED, AND BOLTED TO PRESENT A TROUBLE FREE, NON-CORROSION SYSTEM. ANY ALTERNATIVE DESIGNS OR MEASUREMENTS REQUIRES A THREE YEAR, 100% PARTS AND LABOR WARRANTY AND AN ADDITIONAL TWO YEARS FOR A TOTAL OF FIVE YEARS PARTS ONLY WARRANTY.

1. 6061 - T6, FLT 6 in. x 1 in. x 20 in.
2. 6061 - T6, FLT 4 in. x .50 in. x 2 in. LG
3. 6061 - , TUBE - MIN. 3 in. OD
4. BUSH , TUBE - 1.50 in. ID AND MIN. 1.75 in. OD

ALL DIMENSIONS IN INCHES. PRESSED BUSHING WITH C'BORE .6875 in. x .5625 in. DEEP DRILL .34 in. + HOLE & TAP FOR .125 in. NPT GREASE FITTING GREASABLE CAPABILITY. THE EDGE DISTANCE SHALL BE MINIMUM OF 1.75 in. THICKNESS.

REVISIONS			COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION		
N0.	DATE	BY	72,000 GVWR TRI-AXLE DUMP TRUCK		
1	12/19/95	SWW			
2	10/19/96	WHM			
3	10/05/97	DLW	DRAWN BY DLW	SCALE N / A	MATERIAL ALUM. / STL.
4	06/03/02	DWG	CHK'D WHM	DATE 10/05/97	DRW NO. EQN-79T
5					SHEET 6 OF 8

1/2 CAB SHIELD



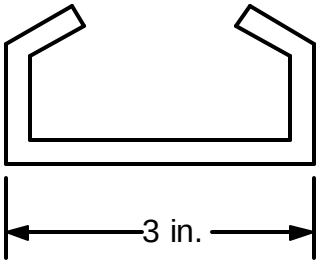
NOTES:

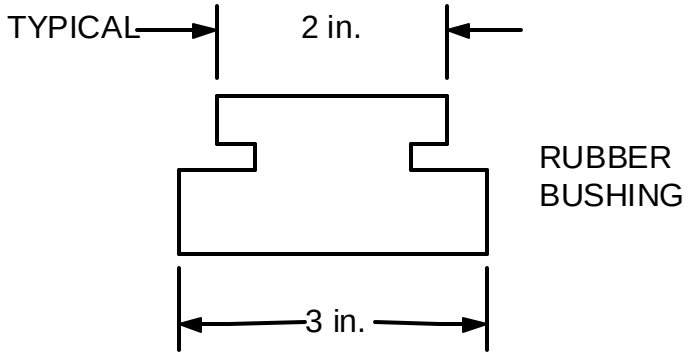
1. BODY FRONT AND CAB SHIELD SHALL BE A MINIMUM OF 0.15625 in., AND SHALL EXTEND AT A MINIMUM OVER THE CENTER OF THE CAB.
2. CONTINUOUS WELDING ON FRONT AND CAB SHIELD THROUGHOUT.
3. ONE-HALF (1/2) CAB SHIELD.
4. 4 in. LIP ON FRONT.
5. UNIVERSAL TYPE CAB SHIELD SHALL HAVE MINIMUM OF THREE (3) BRACES.
6. THE BODY CAB SHIELD SHALL HAVE SUFFICIENT CLEARANCE TO PREVENT CAB SHIELD FROM HITTING THE EXHAUST SYSTEM WHILE DUMPING ON UNEVEN TERRAIN.
7. ALTERNATE DESIGN OF RIBS SHALL BE PRE-APPROVED BY THE EQUIPMETN DIVISION.
8. FOR UNITS EQUIPPED WITH FULL POST WINGS, MODIFY CAB SHIELD.
9. FOR ALUMINUM DUMPE BODIES, ANY USE OF STEEL REQUIRES CORROSION CONTROL (PAINTING) AND ELECTRO GALVANIC PROTECTION.
10. ALL DIMENSIONS IN INCHES.

REVISIONS			COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION		
N0.	DATE	BY			
1	12/19/95	SWW	72,000 GVWR TRI-AXLE DUMP TRUCK		
2	10/19/96	WHM			
3	10/05/97	DLW	DRAWN BY DLW	SCALE N/A	MATERIAL ALUM. / STL.
4	06/03/02	DWG	CHK'D WHM	DATE 10/05/97	DRW NO. EQN-79T
5					SHEET 7 OF 8

DUMP BODY REAR HINGE PIN SHALL BE OF THE " INTEGRAL WITH FRAME, SOLID TUBE TYPE. " HINGE TUBING SHALL BE ONE PIECE, 4 in. O.D. x 3 in. I.D. D.O.M. MATERIAL, INSERTED THROUGH THE RIGHT AND LEFT FRAME RAILS AND WELDED INTO A SINGLE UNIT. HINGE PIN TUBING SHALL SERVE AS AN ADDITIONAL REAR FRAME CROSSMEMBER TO AID IN CHASSIS STABILITY. RIGHT AND LEFT BODY HINGE ASSEMBLIES SHALL BE .375 in. x 16 in. x 20 in. HRR FORMED TO FIT THE I BEAM LONG MEMBER VERTICAL WEB, INCLUDE TWO .375 in. x 4 in. x 12 in. GUSSETS AND 4 in. x 4 in. O.D. x 3 in. I.D. TUBING. EACH BODY HINGE ASSEMBLY SHALL BE WELDED INTO A SINGLE UNIT WITH A MINIMUM .375 in. SOLID FILLET WELD. A .25 in. x 4.50 in. x 20 in. HRR PLATE SHALL BE PROVIDED AS A BACKING PLATE TO THE LONGMEMBER I BEAM WEB. BODY HINGE ASSEMBLIES (HINGE AND BACKING PLATE) SHALL EACH BE ATTACHED TO LONG MEMBER WITH A MINIMUM OF SIX .625 in. DIA. x 2 in. GRADE EIGHT BOLTS WITH ELASTIC LOCK NUTS. ALL STEEL TO ALUMINUM CONTACTS SHALL HAVE A VINYL SPACER TO PREVENT ELECTROLYSISES. HINGE PIN SHALL BE ONE PIECE, FULL LENGTH, 2.9375 in. DIA. OF 1018 CRR. HINGE PIN SHALL BE OF ADEQUATE LENGTH TO ALLOW USE OF A 1.50 in. THICK RETAINER BUSHING WITH A .625 in. x 5 in. GRADE EIGHT BOLT ON EACH SIDE. RETAINING BUSHINGS SHALL BE LOCATED TO ASSIST IN PREVENTING SIDE MOVEMENT OF BODY HINGE ASSEMBLIES.

"FULL LENGTH" BODY TO FRAME RUBBER MOUNTING SYSTEM.





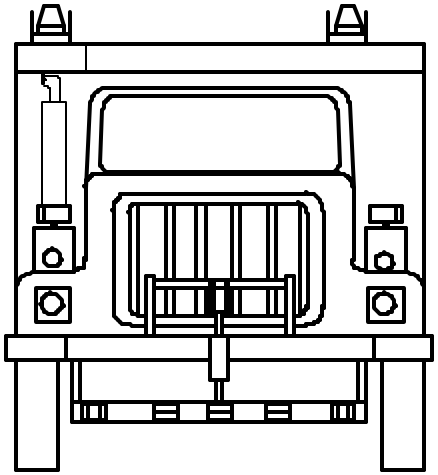
REVISIONS		
N0.	DATE	BY
1	12/19/95	SWW
2	10/19/96	WHM
3	10/05/97	DLW
4	06/03/02	DWG
5		

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

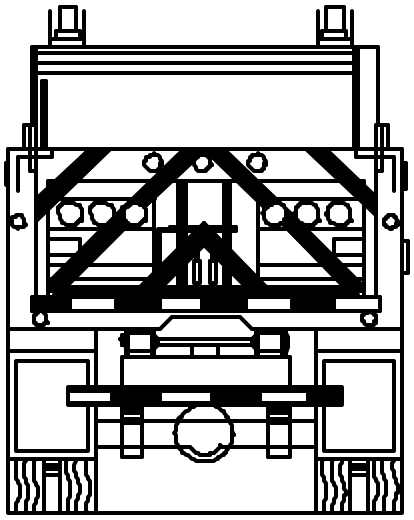
72,000 GVWR TRI-AXLE
DUMP TRUCK

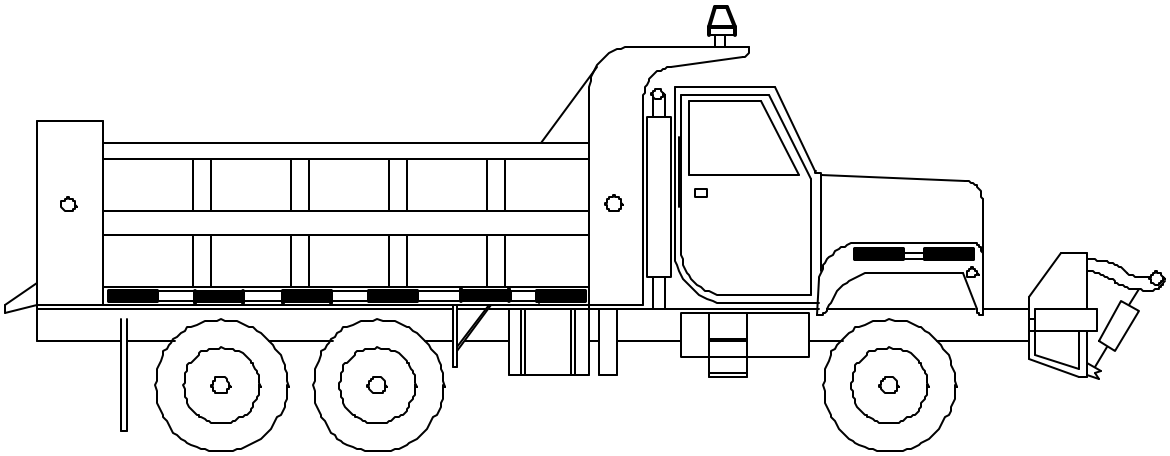
DRAWN BY	SCALE	MATERIAL
DLW	N / A	ALUM. / STL.
CHK'D	DATE	DRW NO.
WHM	10/05/97	EQN-79T

SHEET 8 OF 8



AUX. MAIN	MAIN HARNESS
WHITE - GROUND	WHITE - GROUND
BLACK - MARKERS	BLACK - MARKERS
RED - MERCURY SWITCH	YELLOW - BRAKE/ROADSIDE STOP/TURN
BLUE - ROTO BEACONS	GREEN - BRAKE/ROADSIDE STOP/TURN (CURBSIDE)
BROWN - SALT LAMP	BROWN - TAIL LIGHT
	BLUE - TAIL GATE FLASHING LAMPS





REVISIONS		
N0.	DATE	BY
1	07/16/97	DLW
2	03/03/00	GAH
3	04/25/00	GAH
4	8/22/01	DWG
5	5/22/03	PJC

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

DUMP TRUCK WIRING
TYPE II & IV

DRAWN BY SWW	SCALE N / A	MATERIAL	
CHK'D RED	DATE 10 / 25 / 95	DRW NO. EQN-80X	
		SHEET 1 OF 7	

NOTE:

ALL EXTERNAL WIRES MUST BE SECURED EVERY 12 in. - 15 in.

IN NO CASE WILL SPLICES BE ACCEPTABLE EXCEPT IN A WEATHERPROOF JUNCTION BOX.
(HEAT SHRINK IS UNACCEPTABLE)

GROUNDING SHALL BE ACCOMPLISHED BY USING A GROUND WIRE THROUGHOUT THE MAIN POWER CABLE, 7 WIRE (MINIMUM 10 GUAGE GROUND WIRE).
GROUNDING TO THE BODY IS UNACCEPTABLE.

ALL BODY THROUGH HOLES SHALL HAVE GROMMETS.

THE CHASSIS WIRING HARNESS SHALL MEET THE MAIN WIRING SYSTEM WITHIN THE CAB.

IF REFLECTORS OTHER THAN THOSE BUILT INTO CLEARANCE LIGHTS ARE USED (DISCRETION OF THE BODY COMPANY), THEY SHALL BE PETERSON SPITFIRE (NO SUBSTITUTE).

NOTE: SUCCESSFUL WIRING SYSTEM VENDOR SHALL SUPPLY ONE COMPLETE HARNESS TO THE CHIEF OF THE EQUIPMENT DIVISION NO LATER THAN 30 DAYS AFTER THE AWARD OF THE BID. HARNESS WILL BE INSPECTED AND ACCEPTED OR INSPECTED AND REJECTED, IN WRITING, WITHIN 15 WORKING DAYS OF THE RECEIPT. SUCCESSFUL BODY COMPANY SHALL NOT UTILIZE HARNESS WITHOUT WRITTEN ACCEPTANCE.

A PARTS / NOUN LISTING, DEPICTING ITEMS LISTED ON SHEET 3 OF 3, SHALL ALSO BE PRESENTED.

ANY LAMP / WIRING COMPANY DESIRING TO PARTICIPATE REQUIRES, IN WRITING, PRIOR TO BID APPROVAL.

REVISIONS			COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION		
N0.	DATE	BY			
1	07/16/97	DLW	DUMP TRUCK WIRING TYPE II & IV		
2	03/03/00	GAH			
3	04/25/00	GAH	DRAWN BY SWW	SCALE N / A	MATERIAL
4	8/22/01	DWG	CHK'D RED	DATE 10 / 25 / 95	DRW NO. EQN-80X
5	5/22/03	PJC			SHEET 2 OF 7

1	Grote #:	Catalog # :	Qty:	Description :
2	01-3650-83	01-3650-83	1	UBS JUMPER, ID LAMPS IN THE TAILGATE
3	01-3650-C5	01-3650-C5	1	UBS JUMPER, CAB SHIELD MARKER LAMPS
4	01-3650-C6	01-3650-C6	1	UBS JUMPER, 2 WIRE ROADSIDE DUMP BODY MARKER LAMPS
5	01-3651-86	01-3651-86	1	UBS JUMPER, ID/LICENSE LAMPS IN THE CHASSIS LAMP BOX
6	01-4453-03	01-4453-03	1	FLASHER, 12 LAMP 2 PIN
7	01-4582-22	01-4582-22	1	MARKER LAMP US30 2" SEALED RED LOW FLUID LEVEL WARNING LAMP
8	01-4712-22	01-4712-22	3	MARKER LAMP US10 2.5" SEALED LED, RED
9	01-4712-23	01-4712-23	7	MARKER LAMP US10 2.5" SEALED LED, RED
10	01-4712-33	01-4712-33	4	MARKER LAMP, US10 2.5" SEALED LED, YELLOW
11	01-5321-22	01-5321-22	2	4" STOP/TURN/TAIL LAMP, US40 LED SEALED GROMMET MOUNT M/P, RED
12	01-6028-02	01-6028-02	1	LICENSE LAMP, US15 SEALED KIT (60261 LAMP + 43830 BRACKET) CLEAR
13	01-6221-12	01-6221-12	1	4" BACK-UP LAMP, US40 LED SEALED GROMMET MOUNT M/P, CLEAR
14	01-6429-14	01-6429-14	1	SNOW PLOW LAMP, #HP6545 LEXAN S/B #2357 W/PC PAIR, CLEAR
15	01-6493-90	01-6493-90	1	PAR 36 RUBBER SALT LAMP, KIT 64545 LEXAN S/B #2357 W/PC PAIR, CLEAR
16	01-6601-88	01-6601-88	1	UBS REAR SILL HARNESS, 4 WAY US40 USBO, 30"/42"
17	01-6605-T1	01-6605-T1	2	UBS SNOW PLOW HARNESS, W/PC, 204"
18	01-6615-P5	01-6615-P5	1	UBS JUMPER, MERCURY SWITCH RED SLM/BC, 3' OR 36"
19	01-6615-X9	01-6615-X9	1	UBS JUMPER, BLUE NOSE/FLASH TERMINAL, 18"
20	01-6617-U5	01-6617-E1	1	UBS PIGTAIL, 4 WAY/MP STT, DSLF/SLF 9"/12"
21	01-6617-U6	01-6617-E2	1	UBS PIGTAIL, 4 WAY/MP STT/BU, STDF, 9"/12"
22	01-6617-P4	01-6617-P4	1	UBS MAIN HARNESS, 4 WIRE W/PC/BC, MACK ONLY PA DOT, 96"
23	01-6633-93	01-6633-93	1	UBS DOUBLES MAIN HARNESS, 7 WIRE 8/10/12 W/44" DROP DOT, 396"
24	01-6664-91	01-6664-91	1	UBS MAIN HARNESS, TRUCK CHASSIS TO DUMP BODY 7-PIN, DOT, 132"
25	01-6681-43	01-6681-43	2	UBS PIGTAIL, Y ADAPTOR M/P STT US40 US60. 12"
26	01-6681-D2	01-6681-D2	1	UBS JUMPER, 3 WIRE BLK/SLM-GRN/NOSE-WHT/STDF-STT,30"
27	01-6681-G4	01-6681-G4	1	UBS JUMPER,3 WIRE ADAPTOR EXTENTION CABLE FOR TRI-AXLE STT,30"
28	01-6682-G5	01-6682-G5	1	UBS JUMPER, 3 WIRE ADAPTOR EXTENTION CABLE FOR TRI-AXLE STT, 30"

TYPE II & IV
TYPE II 4x4, TYPE II CREW CAB, 17ft. TRI-AXLE
DUMP BODY
CHASSIS AND BODY
WIRING ELECTRICAL SYSTEM

REVISIONS		
NO.	DATE	BY
1	07/16/97	DLW
2	03/03/00	GAH
3	04/25/00	GAH
4	8/22/01	DWG
5	5/22/03	PJC

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

DUMP TRUCK WIRING
TYPE II & IV

DRAWN BY GAH	SCALE N / A	MATERIAL
CHK'D RED	DATE 10/25/95	DRW NO. EQN-80X
		SHEET 3 OF 7

1	Grote #:	Catalog #:	Qty:	Description:
29	01-7313-70	01-7313-70	1	BACK-UP ALARM,4" GROMMET MOUNT, 97 DECIBEL SLM/SLM, 16"
30	01-7622-88	01-7622-88	2	EMERGENCY, ROTO BEACON, YELLOW
31	01-8702-02	01-8702-02	1	ULTRALINK, 500 POWER CORD 10/12, 12' COIL/S/S, BLUE
32	01-8725-03	01-8725-03	3	UBS 7-PIN RECEPTACLE, 2 HOLE MOUNT
33	01-9140-03	01-9140-03	3	GROMMET, US10 LAMP 2/25/32" HOL3E
34	01-9141-03	01-9141-03	11	GROMMET, US10 LAMP 3" HOLE
35	01-9195-03	91950-3	2	GROMMET, US40 CLOSED BACK 4" FLASHING SEALED BEAMS
36	01-9212-03	92120-3	1	GROMMET, US30 2" SEALED LOW FLUID LEVEL LAMP
37	01-5321-22	53212	2	4" STOP/TURN/TAIL LAMP, US40 LED SEALED GROMMET MOUNT M/P, RED
38	01-9958-02	99580	1	DIELECTRIC SILICONE COMPOUND, 1 1/4 OZ.TUBE
39	01-9999-01	01-9999-01	1	UBS PIGTAIL, 2W WHT/SLM RED/SLM M/P BU, 8'11" OR 106"
40	01-9999-02	01-9999-02	1	UBS GIHTAIL, 2W RED/SLM M/P BU, 2'6"OR 30"
41	01-9999-03	01-9999-03	1	DIELECTRIC SILICONE COMPOUND, 1 1/4 OZ. TUBE
42	05-2000-58	05-2011-49	1	UBS JUMPER, 2 WIRE EXTENTION CABLE FOR TRI-AXLE & 4 X 4, SLF/SLM 30"
43	05-2011-49	05-20000-58	1	UBS JUMPER, 12 GA. NOSE/BSLF, 8"
44	05-2013-55	05-2013-55	2	UBS JUMPER, CURBSIDE BODY MARKER LAMPS STDM/STDM 3-DSEAL, 36"/38"/216"/291"
45	16-9036-03	16-9036-03	7	FLASHER, TERMINAL BLOCK 2 PIN W/PC (2973385
46	21-1269-01	43770	1	FLASHER BRACKET 12/16 LAMP (43770) 4453 / 4469
47	40-0041-13	40-0041-13	1	PAR 36 FLASHING SEALED BEAM (4415A), YELLOW
48	60-1025-01	91740-3	1	GROMMET, US40 4" LAMP, 91740
49	80-1000-L6	80-1000-L6	1	UBS ROADSIDE FLASHING SEALED BEAM JUMPER 108" DOT
50	80-1000-L7	80-1000-L7	1	UBS JUMPER, 2 WIRE FLASHER TERMINAL-MRT/2-DSLF DOT, 6"
51	80-1001-L2	80-1001-L2	1	UBS MAIN HARNESS 5 WIRE TO #80-1001-L1 OR L7 HARNESS DOT
52	80-1001-L4	80-1001-L4	1	UBS JUMPER, 2 WIRE BL-BL/MRT-MRT (HYDRAULIC FLUID BLOCK TO TANK), 168"
53	80-1001-L5	80-1001-L5	1	UBS JUMPER, 2 WIRE BL-BL/DSEAL (LOW FLUID LEVEL_, 144"

TYPE II & IV
TYPE II 4x4, TYPE II CREW CAB, 17ft. TRI-AXLE
DUMP BODY
CHASSIS AND BODY
WIRING ELECTRICAL SYSTEM

REVISIONS		
N0.	DATE	BY
1	07/16/97	DLW
2	03/03/00	GAH
3	04/25/00	GAH
4	8/22/01	DWG
5	5/22/03	PJC

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

DUMP TRUCK WIRING
TYPE II & IV

DRAWN BY GAH	SCALE N / A	MATERIAL
CHK'D RED	DATE 10/25/95	DRW NO. EQN-80X
		SHEET 4 OF 7

1	Grote # :	Catalog # :	Qty:	Description :
54	80-14001-L6	80-1001-L6	1	UBS JUMPER, 2 WIRE BL-BL/MRT-MRT (CONTAMINATION FILTER), 252"
55	80-1001-L7	80-1001-L7	1	UBS MAIN HARNESS, 5 WIRE TO ROADSIDE BODY #80-1001-L2 DOT, 368"
56	80-1001-L8	80-1001-L8	1	UBS JUMPER, 2 WIRE 12GA SLM/STDM BC/BC #80-1001-L2 DOT, 444"
57	80-1001-N8	80-1001-N8	1	UBS JUMPER, CURBSIDE FLASHING SEALED BEAM DOT, 36"
58	80-1001-X9	80-1001-X9	1	UBS JUMPER, 2 WIRE FLAT BC/BC RT/RT #80-1001-L8 DOT, 72"
59	80-1001-Y1	80-1001-Y1	1	UBS MAIN HARNESS, CHASSIS TO DUMP BODY 7-PIN, 12-" OR 12'
60	?	?	2	UBS JUMPERS, OVAL BACK-UP LAMPS
61	?	?	1	UBS JUMPERS, OVAL BACK-UP ADAPTOR
62	01-4064-12	40641	1	CONSPICUITY TAPE (WHITE)
63	01-4105-02	41050	1	CONSPICUITY TAPE (RED & WHITE), 6" X 6"
64				
65	01-6655-??	01-6655-??	1	PA DOT LED CHASSIS KIT
66	01-6655-??	01-6655-??	1	PA DOT LED BODY KIT

TYPE .I & IV
TYPE II 4 X 4, TYPE II CREW CAB, 17 FT. TRI - AXLE
DUMP BODY
CHASSIS AND BODY
WIRING ELECTRICAL SYSTEM

REVISIONS

N0.	DATE	BY
1	07/16/97	DLW
2	03/03/00	GAH
3	04/25/00	GAH
4	8/22/01	DWG
5	5/22/03	PJC

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

DUMP TRUCK WIRING
TYPE II & IV

DRAWN BY	GAH	SCALE	N / A	MATERIAL	
CHK'D	LA	DATE	10/25/95	DRW NO.	EQN-80X
					SHEET 5 OF 7

NO.	DESCRIPTION	QTY.	PART NO: GROTE
42	BODY CURBSIDE & REAR MARKER LAMPS HARNESS FOR TYPE II & IV, TYPE II 4x4 & TYPE II CREW CAB BODY	1	05-2000-53
	BODY CURBSIDE & REAR MARKER LAMPS HARNESS FOR 17 ft. TRI-AXLE BODY	1	05-2000-55
43	BODY ROTO-BEACON JUMPER FOR TYPE II & IV, TYPE II, 4x4 & CREW CAB, 17 ft. TRI-AXLE (444 in.) BODY	1	80-1001-L8
44	BODY POWER COIL CORD	1	87020
	TOOL KITS		
1	TRUCK CHASSIS SYSTEM GROUP TYPE II & IV, TYPE II 4x4 & CREW CAB BODY	1	01-6655-79
2	DUMP BODY SYSTEM GROUP TYPE II &IV, TYPE II 4x4*, TYPE II CREW CAB BODY	1	01-6655-80
3	DUMP BODY SYSTEM GROUP 17 ft. TRI-AXLE BODY	1	01-6655-82
4	9 ft. SERVICE SHOP TRUCK SYSTEM	1	01-6655-83

NOTE: * SEE LIST

REVISIONS		
N0.	DATE	BY
1	07/16/97	DLW
2	03/03/00	GAH
3	04/25/00	GAH
4	8/22/01	DWG
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COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

DUMP TRUCK WIRING
TYPE II & IV

DRAWN BY	SCALE	MATERIAL
SWW	N / A	
CHK'D	DATE	DRW NO.
RED	10 / 25 / 95	EQN-80X
		SHEET 6 OF 7

PA DOT Type II & Type IV Dump Body
Chassis to Body Harness Connectors

Primary Main Harness Connector

Deutsch # HDP24-		+	Deutsch # HDP26-18-8PN with
Pole	Fused	Function	Grote Primary Main Harness
A	NA	Ground	White
B	15A	Tail Lamps	Brown
C	15A	Clearance Marker Lamps	Black
D	20A10A	Stop/Turn Left Roadside	Yellow
E	20A10A	Stop/Turn Right Curbside	Green
F	15A	Reverse/Back-Up lamps	Red
G	10A, IGN	Rear Hazard (Flasher) Switch	Blue
H	30A	Trailer Electric Brake/Stop	Blue/Striped

Auxilary Main Harness Connector

Deutsch # HDP24-		+	Deutsch # HDP26-18-8SN with
Pole	Fused	Function	Grote Auxillary Main Harness
A	NA	Ground	Yellow
B	15A,IGN	Clearance Marker Lamps	Black
C	10A,IGN	Salt Spreader Light Switch	Brown
D	20A,IGN	Strobe Lamp Switch	Green
E	10A,IGN	Tarp "IN" Switch Output	?
F	10A,IGN	Tarp"OUT" Switch Output	?
G	10A,IGN	Vibrator Switch	?
H	NA	Not Used	Dummy Plug

Chassis MFG will supply the mating Connector Listed with Dummy Plugs installed for the Body Builder.
Also Connector Mounting location will be determinaed at the pre-build meeting.

REVISIONS		
NO.	DATE	BY
1	07/16/97	DLW
2	03/03/00	GAH
3	04/25/00	GAH
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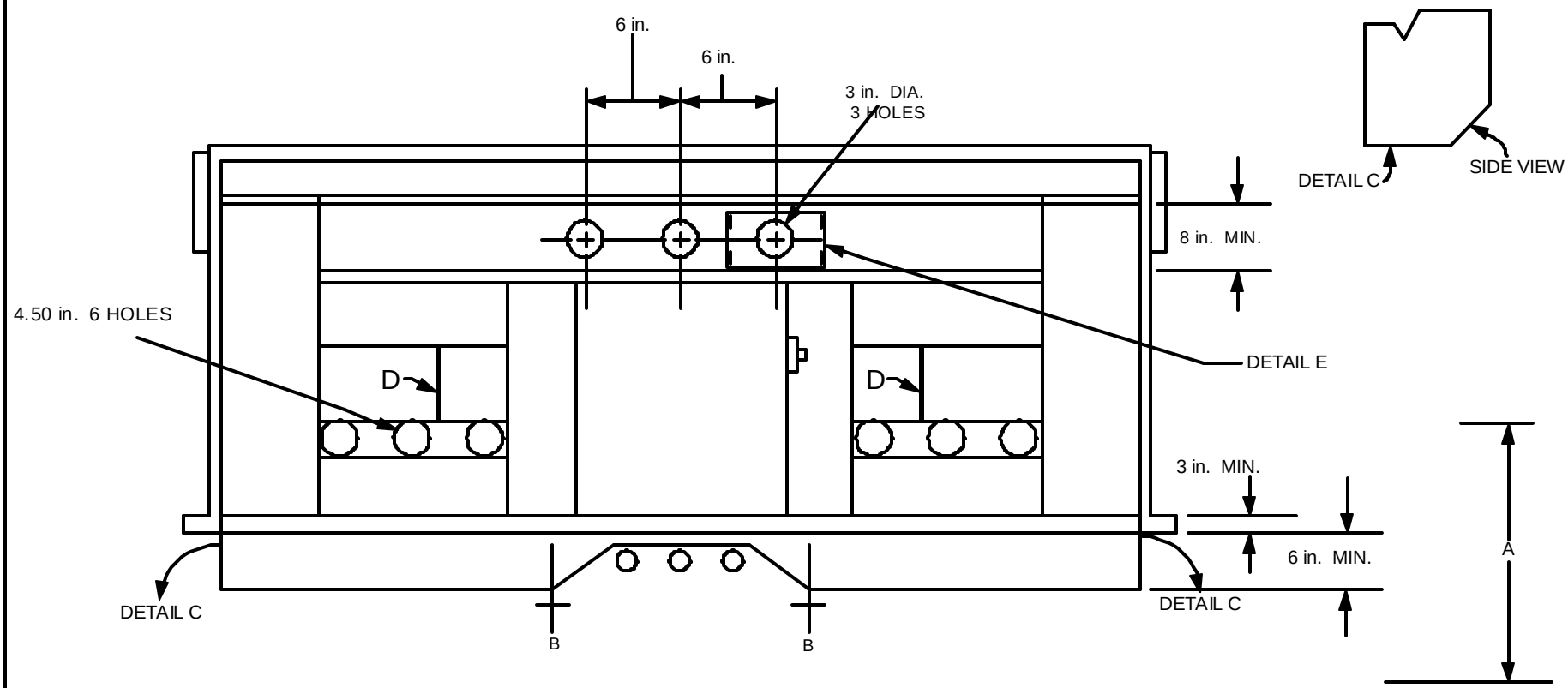
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

DUMP TRUCK WIRING
TYPE II & IV

DRAWN BY PJC	SCALE N / A	MATERIAL
CHK'D LAJ	DATE 05/22/03	DRW NO. EQN-80X
		SHEET 7 OF 7



A. HEIGHT OF LIGHTS SHALL NO EXCEED 72 in. FROM TOP OF LIGHT TO GROUND, BODY UNLOADED. ARRANGEMENTS OF LIGHTS SHALL BE GOVERNED BY TAILGATE DESIGN AND OVERALL HEIGHT RESTRICTION.
B. CENTERLINE OF FRAME RAILS.
C. MINIMUM .375 in. ALUMINUM. IT SHALL BE ONE PIECE, NO SEAMS (ENTIRE WIDTH OF TRUCK AND SIDES).
D. .50 in. ALUMINUM ROUND STOCK WELDED ON BOTH ENDS (HAND HOLD).
E. MINIMUM 6 in. x 4 in. SEALED ACCESS PANEL (ALUMINUM). PANEL IS TYPICAL AND CAN BE DELETED FROM DESIGN.

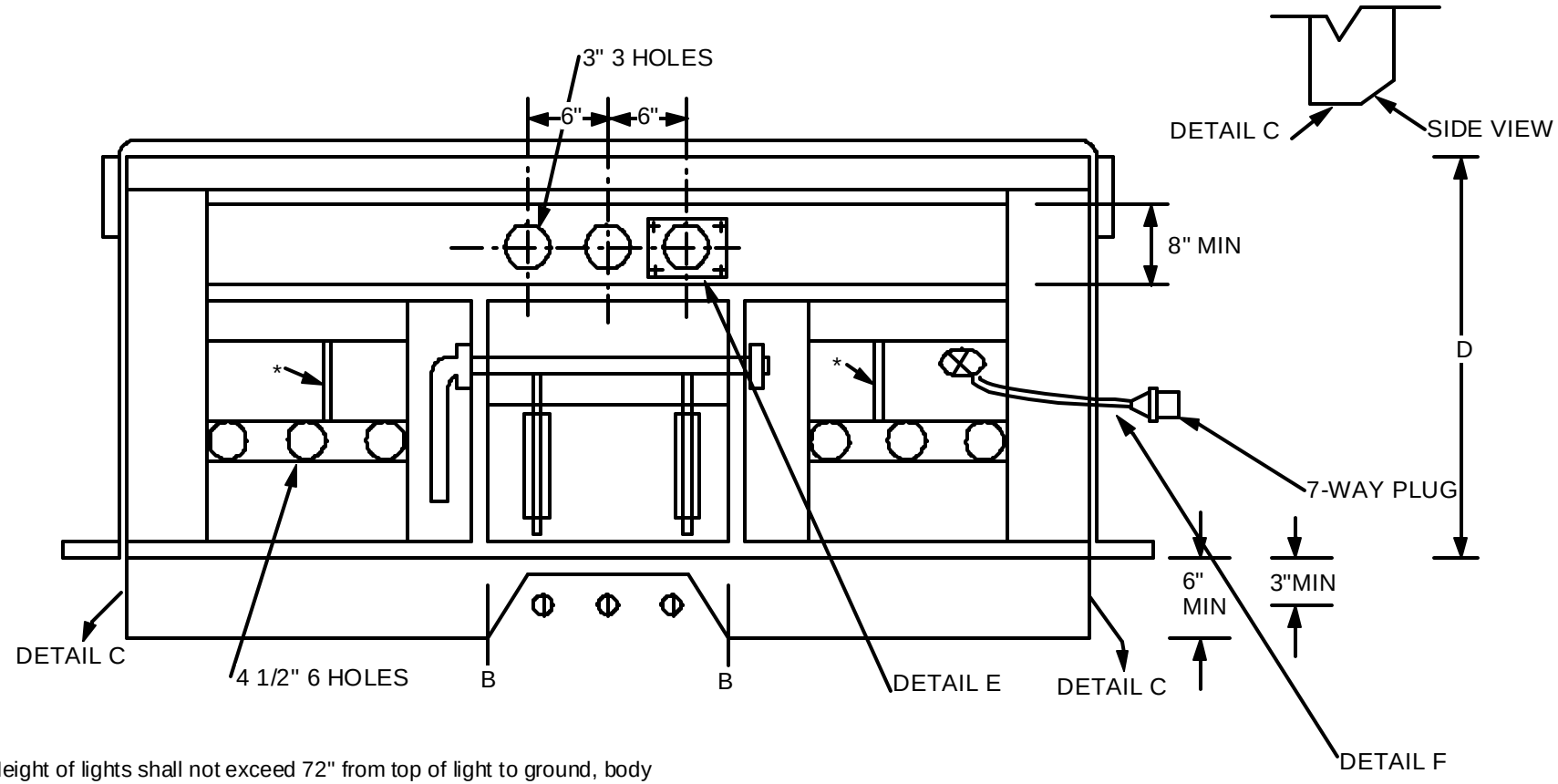
NOTE: PAN SHALL BE IN LINE ALONG ENTIRE WIDTH. SPACER BLOCKS ARE UNACCEPTABLE AS THEY ALLOW FOR ANTI-SKID TO FALL IN FRONT OF SPREADER.

REVISIONS		
N0.	DATE	BY
1	12/19/95	SWW
2	11/01/96	WM
3	11/03/97	DLW
4	06/03/02	DWG
5		

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

ALUMINUM TAILGATE WITH BUILT IN LIGHT BAR

DRAWN BY DLW	SCALE N / A	MATERIAL
CHK'D WHM	DATE 11/03/97	DRW NO. EQN-81T
		SHEET 1 OF 1



A. Height of lights shall not exceed 72" from top of light to ground, body unloaded. Arrangement of lights shall be governed by tailgate designed overall height restriction.
B. Centerline of frame rails.
C. Minimum 3/8" aluminum or steel depending on bed material specified. It shall be one piece, no seams (entire width of truck and sides).
D. Minimum tailgate height Type II = 40" : Type IV = 48".
E, Minumum 6" x 4" Sealed Access Panel (Aluminum). Panel is typical and can be deleted from design.
F. Pollak 15-212 or equal (dual plug).
Internal pins shall be coated with dielectric grease.
X. Final location or plug/end shall be made at the prebuild meeting.

NOTE: Pan shall be in line along entire width. Spacer blocks are unacceptable as they allow for anti-skid to fall in front of spreader.

* 1/2" Aluminum round stock welded both ends (Hand Hold).

REVISIONS		
N0.	DATE	BY
1	11/02/93	WHM
2	2/15/95	WHM
3	3/8/98	DJA
4	06/03/02	DWG
5		

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

ALUMINUM TAILGATE WITH
BUILT - IN LIGHT BAR

DRAWN BY WHM	SCALE N / A	MATERIAL
CHK'D RED	DATE 11 / 02 / 93	DRW NO. EQN-81X
		SHEET 1 OF 2

A. HEIGHT OF LIGHTS SHALL NOT EXCEED 72 in. FROM TOP OF LIGHTS TO GROUND, BODY UNLOADED.

B. CENTER LINE OF FRAME RAILS.

C. MINIMUM .375 in. ALUMINUM OR STEEL DEPENDING ON BED MATERIAL SPECIFIED. IT SHALL BE ONE PIECE, NO SEAMS (ENTIRE WIDTH OF TRUCK AND SIDES).

D. MINIMUM TAILGATE HEIGHT TYPE II = 40 in. : TYPE IV = 48 in.

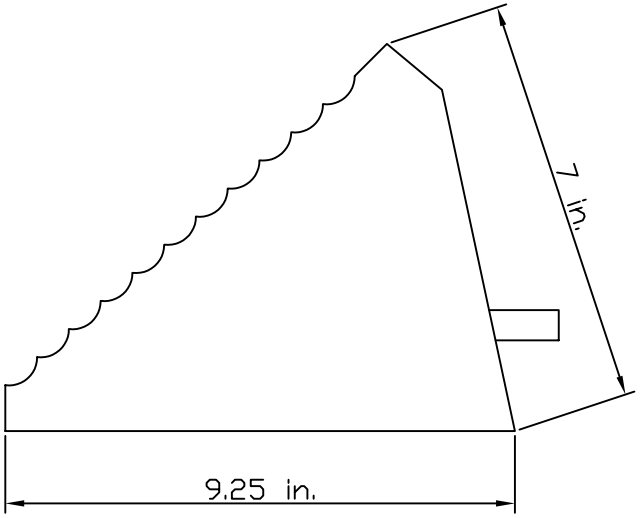
E. MINIMUM 6 in. SEALED ACCESS PANEL (ALUMINUM). PANEL IS TYPICAL AND CAN BE DELETED FROM DESIGN.

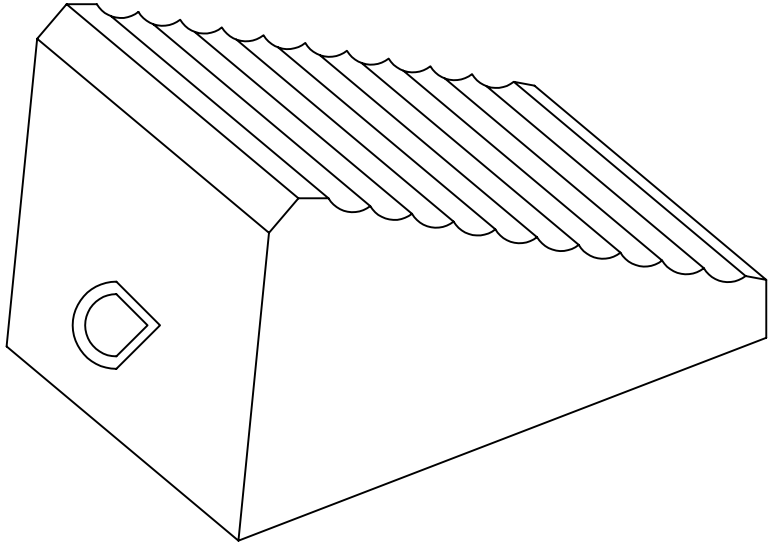
* 0.50 in. ALUMINUM ROUND STOCK WELDED BOTH ENDS (HAND HOLD)

NOTE: HINGE PIN SHALL BE IN LINE ALONG ENTIRE WIDTH. SPACER BLOCKS ARE UNACCEPTABLE AS THEY ALLOW FOR ANTI-SKID TO FALL IN FRONT OF SPREADER.

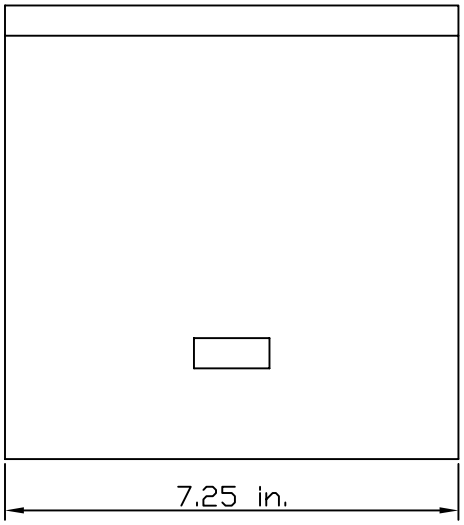
REVISIONS			COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION		
N0.	DATE	BY			
1	11/02/93	WHM	ALUMINUM TAILGATE WITH BUILT IN LIGHT BAR		
2	02/15/95	WHM			
3	11/21/95	SWW	DRAWN BY WHM	SCALE N / A	MATERIAL
4	07/03/97	DLW	CHK'D RED	DATE 11 / 02 / 93	DRW NO. EQN-81X
5	06/03/02	DWG			SHEET 2 OF 2

CHOCK REF. BUYERS WC1467 OR EQUAL WITH ROPE



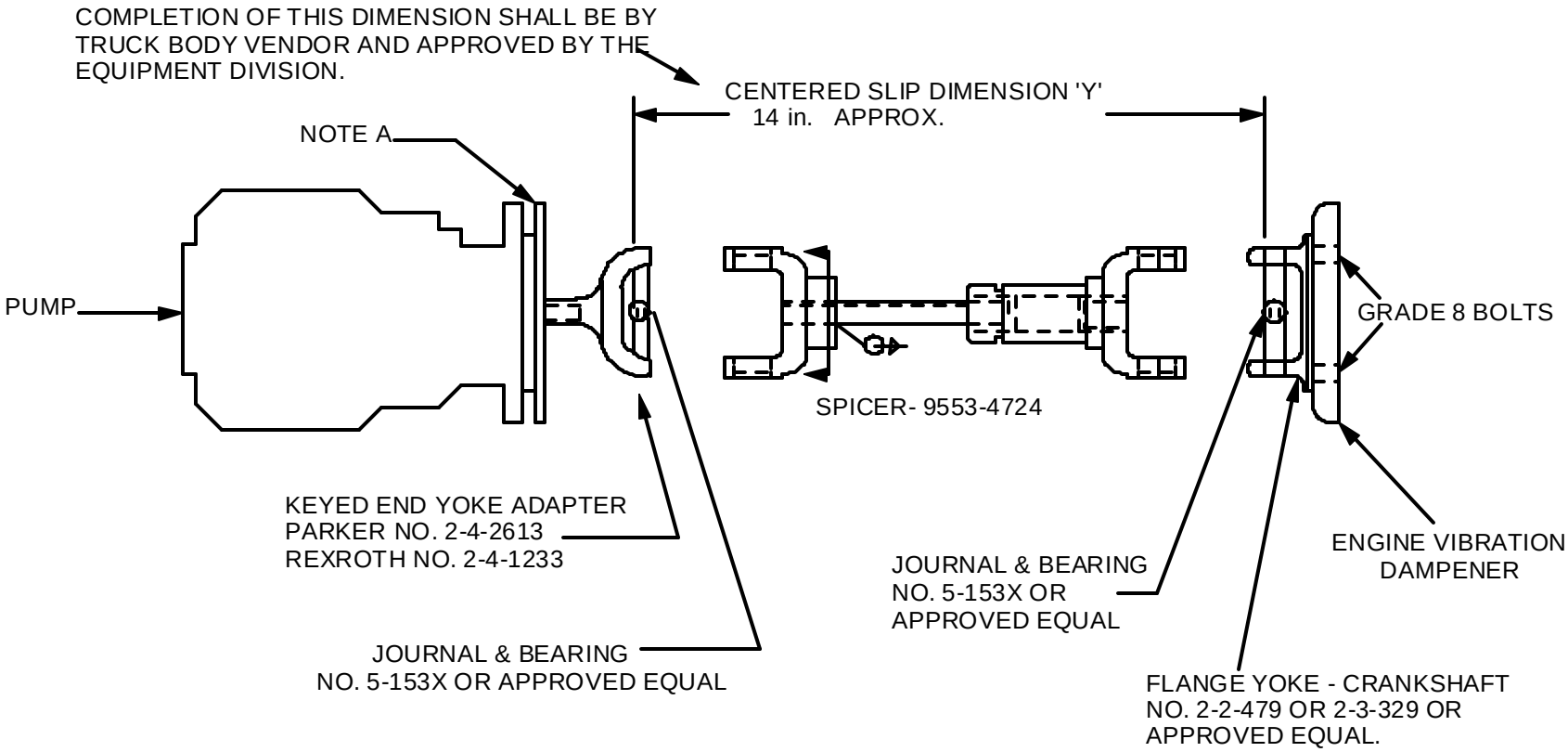


FINAL LOCATIONS SHALL BE DETERMINED AT THE PRE-BUILD MEETING. HOLDERS SHALL BE ALUMINUM FOR ALUMINUM BODY TRUCKS AND ALUMINUM OR STEEL FOR STAINLESS STEEL BODY TRUCKS.



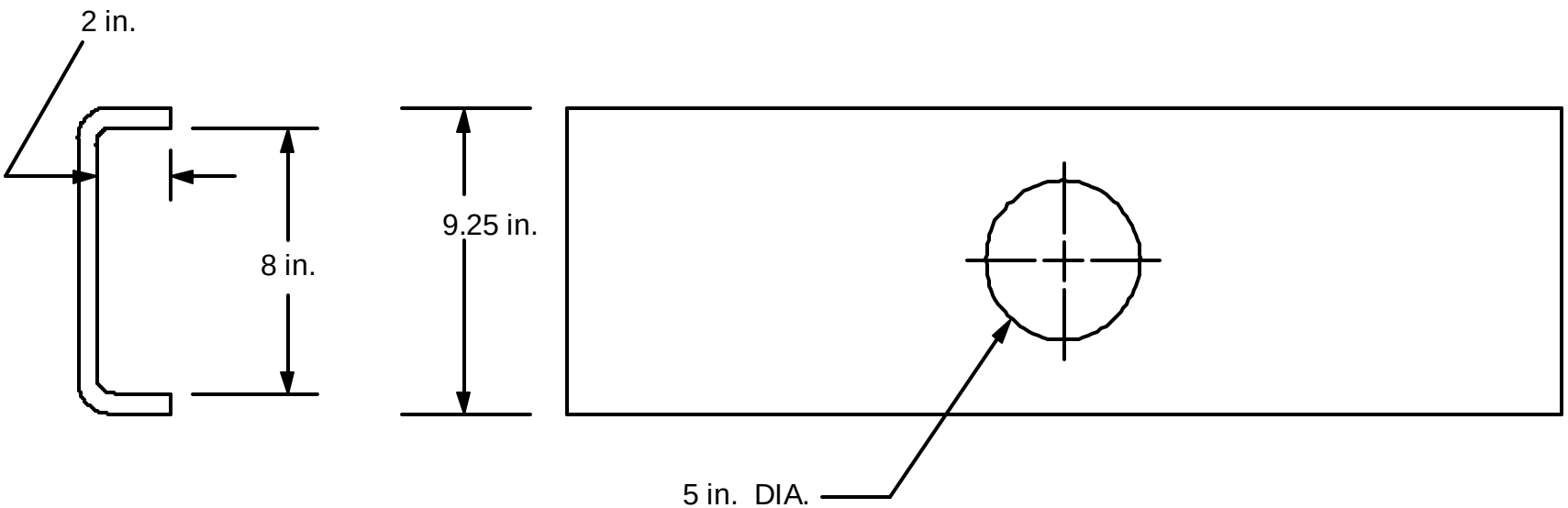
PA DEPARTMENT OF TRANSPORTATION

REVISIONS			CHOCK AND HOLDER		
NO.	DATE	BY			
1	11-21-95	SWW	DRAWN BY KNH	SCALE N/A	EQN-82
2	11-04-96	WHM	DATE 07/19/05	CHK'D BY KGK	SHEET 1 OF 1
3	09-23-97	DLW			
4	06-03-02	DWG			
5	05-22-03	PJC			
6	09/06/06	CJW			



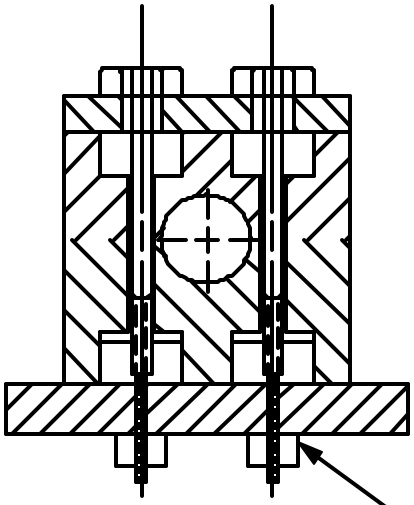
NOTES: 1) DIMENSIONS 'Y' SHALL BE MEASURED WITH PTO ASSEMBLED AND SLIP STUBSHAFT COMPRESSED HALF-WAY.

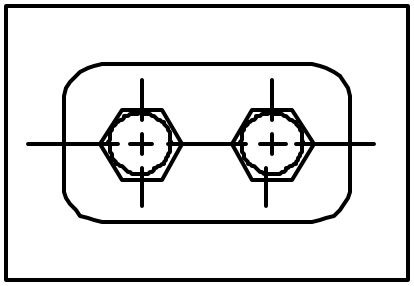
REVISIONS			COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION		
N0.	DATE	BY	PUMP ASSEMBLY		
1	11/28/94	GL			
2	12/15/94	WHM			
3	07/17/97	DLW	DRAWN BY GL	SCALE N / A	MATERIAL
4	06/03/02	DWG	CHK'D RED	DATE 11 / 28 / 94	DRW NO. EQN-90
5	05/23/03	PJC			SHEET 1 OF 3



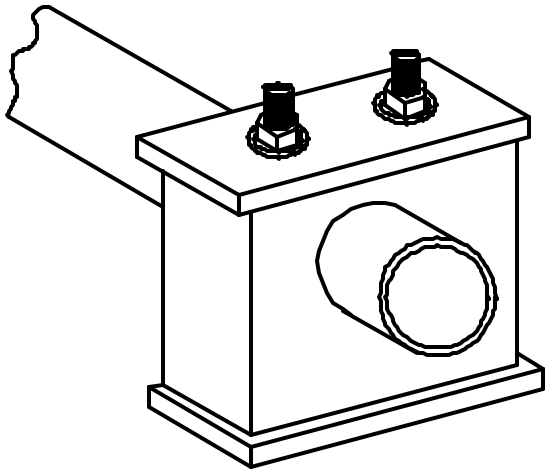
PUMP MOUNTING BRACKET SHOWN IS FOR REFERENCE. PUMP MOUNTING BRACKET, REGARDLESS OF DESIGN, SHALL BE A MINIMUM .6250 in. THICK STEEL MATERIAL. THE PUMP BRACKET SHALL BE SLOPED TO MATCH THE ENGINE CRANKSHAFT. WIDTH DIMENSION WILL BE DETERMINED BY FRAME RAIL WIDTH.

REVISIONS			COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION		
N0	DATE	BY			
1	12/04/95	SWW	PUMP MOUNTING BRACKET		
2	11/04/96	WHM			
3	07/03/97	DLW	DRAWN BY SWW	SCALE N/A	MATERIAL
4	06/03/02	DWG	CHK'D RED	DATE 12 / 04 / 95	DRW NO. EQN-91
5					SHEET 1 OF 1





BOLT SHALL EXTEND BEYOND BASE



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 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/S TO BE APPROVED BY CHIEF, EQUIPMENT DIVISION.
REF: HYCON CORPORATION, LEHIGH VALLEY, PA, PHONE: 800-755-2674
OR
BEHRINGER PIPE SYSTEM INC., TEL: 201-589-0546

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

REVISIONS		
N0.	DATE	BY
1	12/05/84	
2	07/03/91	WHM
3	08/21/91	WHM
4	11/22/95	SWW
5	08/15/97	DLW

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

HOSES AND COUPLERS
PENNDOT DUMP TRUCK

DRAWN BY	LM	SCALE	N / A	MATERIAL	
CHK'D	RED	DATE	11 / 03 / 78	DRW NO.	EQN-94
				SHEET	1 OF 2

FRONT COUPLERS SHALL BE MOUNTED TO A MANIFOLD PLATE POSITIONED IN THE CENTER OF THE FRONT FRAME EXTENSION WHICH HOUSES THE P.T.O. ASSEMBLY. MOUNTING SEQUENCE SHALL BE AS FOLLOWS MOVING LEFT TO RIGHT WHEN FACING THE FRONT OF VEHICLE:

TWO (2) REVERSIBLE PLOW COUPLERS 5100-S2-8B AEROQUIP MALE, 5100-S1-8B 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 WHENFACING THE REAR OF VEHICLE:

1/2 "SPINNER-5100-S2-10B AEROQUIP, MALE, OR SNAP-TITE 78N12F
3/4" AUGER-5100-S2-12B AEROQUIP MALE, OR SNAP-TITE 78N12-12F
1" RETURN-5100-S2-16B AEROQUIP MALE, OR SNAP-TITE 78N16-16F

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

ADDITIONAL COUPLER/CAP INFORMATION

AEROQUIP	SNAP-TITE	PARKER-HANNIFIN	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	6108-12	FB-12/34NPT-F5
5100-S7-16S	78DC-16	6108-16	FB 16/1NPT-F5

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

REVISIONS		
N0.	DATE	BY
1	12/05/84	
2	07/03/91	WHM
3	08/21/91	WHM
4	11/22/95	SWW
5	08/15/97	DLW

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

HOSES AND COUPLERS
PENNDOT DUMP TRUCK

DRAWN BY LM	SCALE N/A	MATERIAL
CHK'D RED	DATE 11 / 03 / 78	DRW NO. EQN-94
		SHEET 2 OF 2

The console shall be a Component Technology
The console shall be capable of housing three electronic joysticks:
One joystick for the dump body operation
One joystick for the plow up/down and side to side
One joystick for wing plow operation. This joystick will not be provided with a new truck.

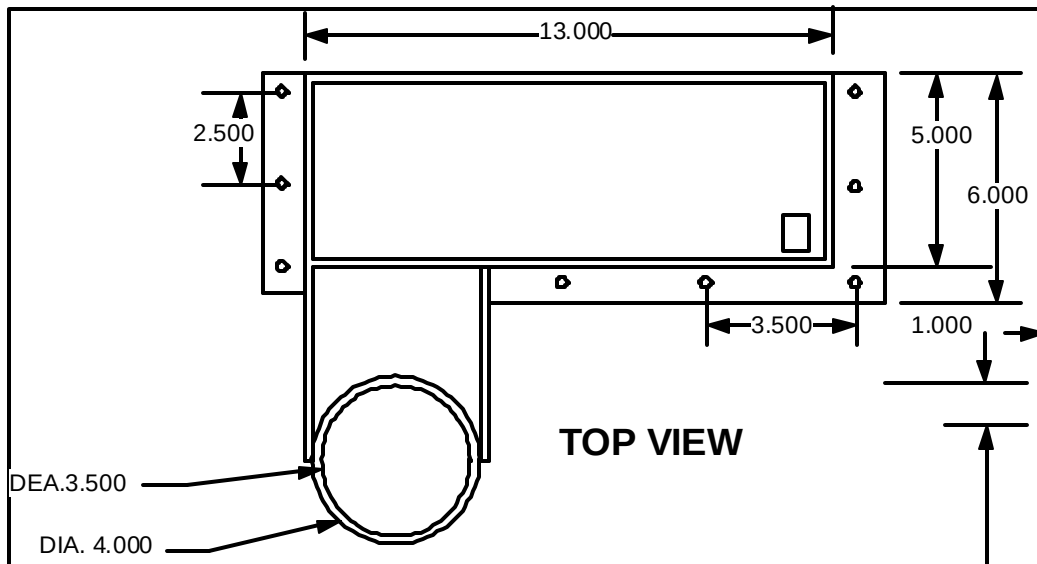
The console shall include four Sprague rocker switches with scribed lens for switch identification.
The light switches shall have lights behind the lens to indicate when an operation is "on."
The switches shall be labeled.

There shall be two lighted indicators to indicate body up and change hydraulic filter.
The console shall have a sonic alarm to alert the driver when the body is extended in the raised position. All circuitry shall have ample circuit breaker protection.

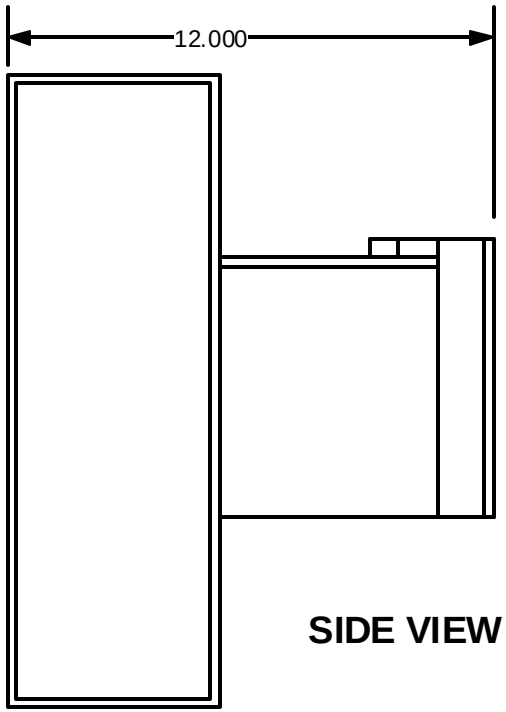
There shall be a power distribution center. Per EQN-95

REVISIONS			COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION		
NO	DATE	BY			
1	11/13/96	WHM	CONSOLE / PEDESTAL		
2	09/23/97	DLW			
3	02/28/00	GAH	DRAWN BY WHM	SCALE N / A	MATERIAL
4	05/23/03	PJC	CHK'D KGK	DATE 06/27/05	DRW NO. EQN-95
5					SHEET 1 OF 5

PART # KCC - BU - 1102

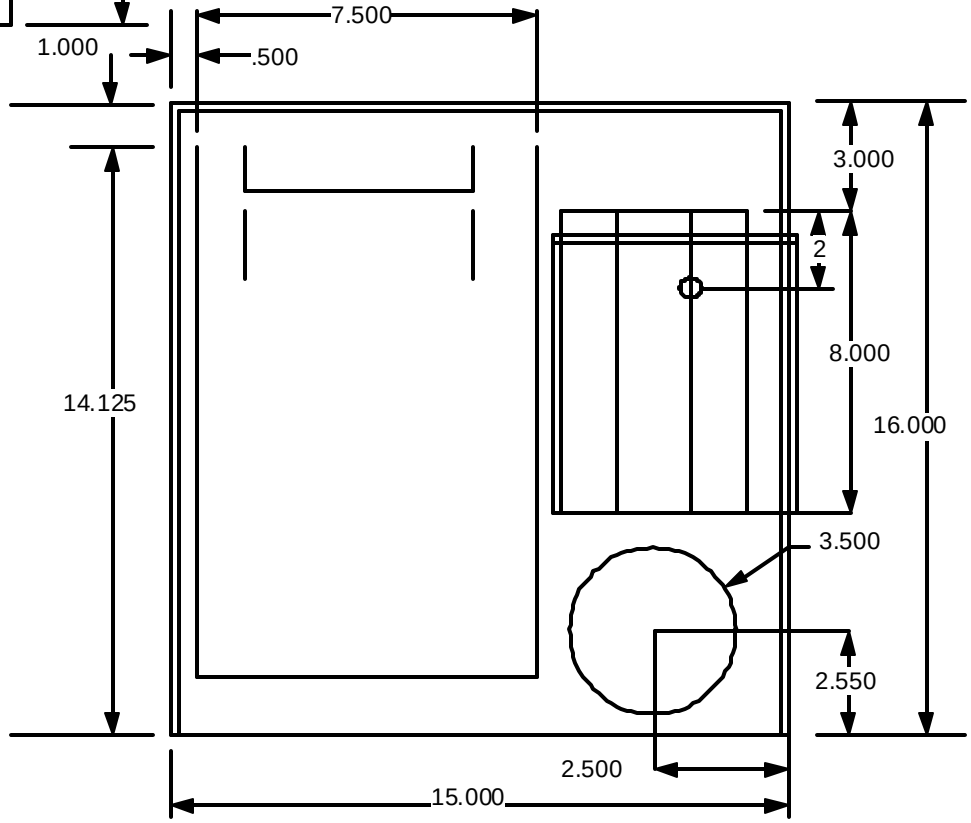


TOP VIEW



SIDE VIEW

FRONT VIEW



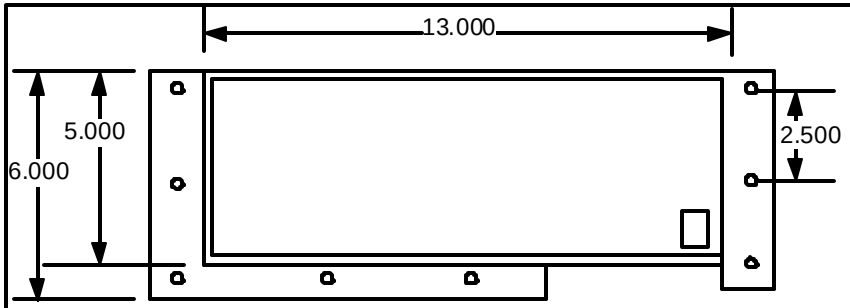
REVISIONS		
N0.	DATE	BY
1		
2		
3		
4		
5		

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

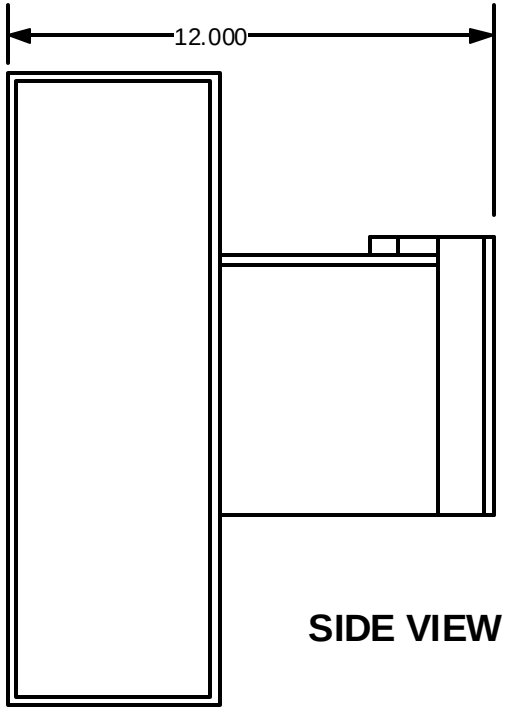
CONSOLE / PEDESTAL

DRAWN BY GAH	SCALE N / A	MATERIAL
CHK'D KGK	DATE 06/27/05	DRW NO. EQN-95
		SHEET 2 OF 5

PART # KCC - BU - 1102

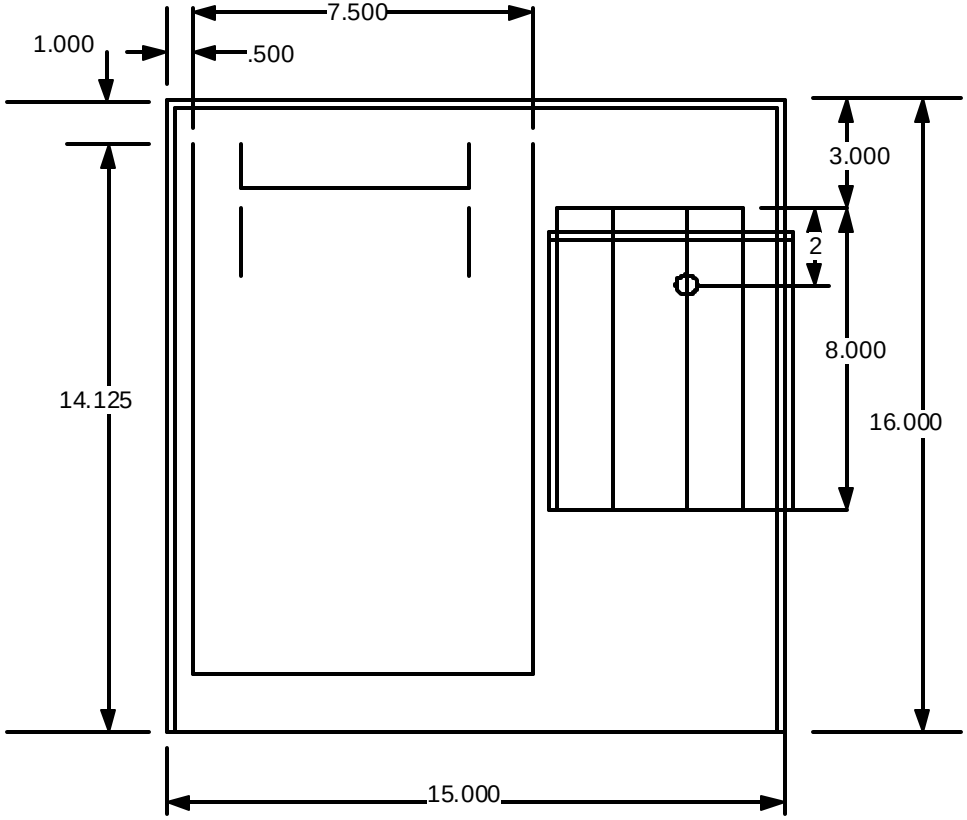


TOP VIEW



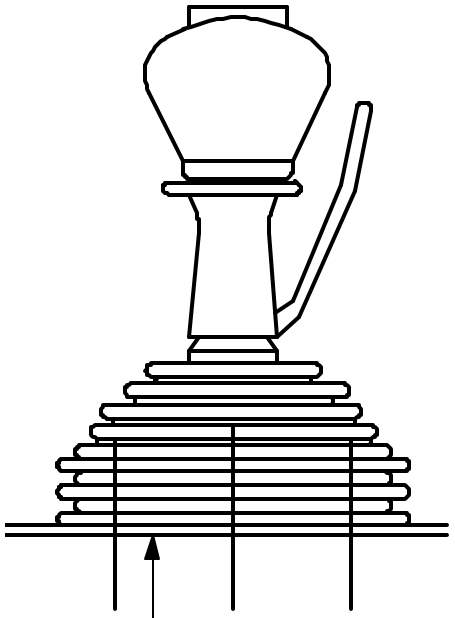
SIDE VIEW

FRONT VIEW



REVISIONS			COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION		
N0.	DATE	BY			
1			POWER DISTRIBUTION BOX		
2					
3			DRAWN BY GAH	SCALE N / A	MATERIAL
4			CHK'D KGK	DATE 06/27/05	DRW NO. EQN-95
5					SHEET 3 OF 5

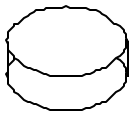
Passenger Side



Front of Truck

Electronic WingPlow Joystick
with Functional Switch

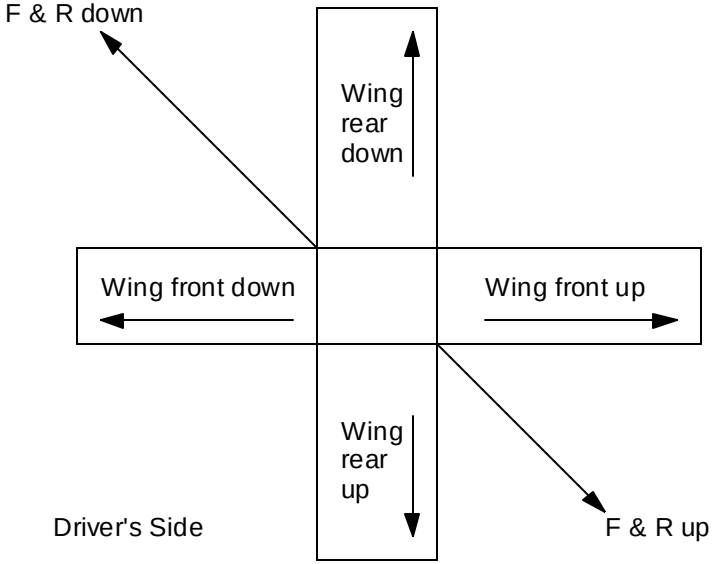
Button depressed



Telescope out

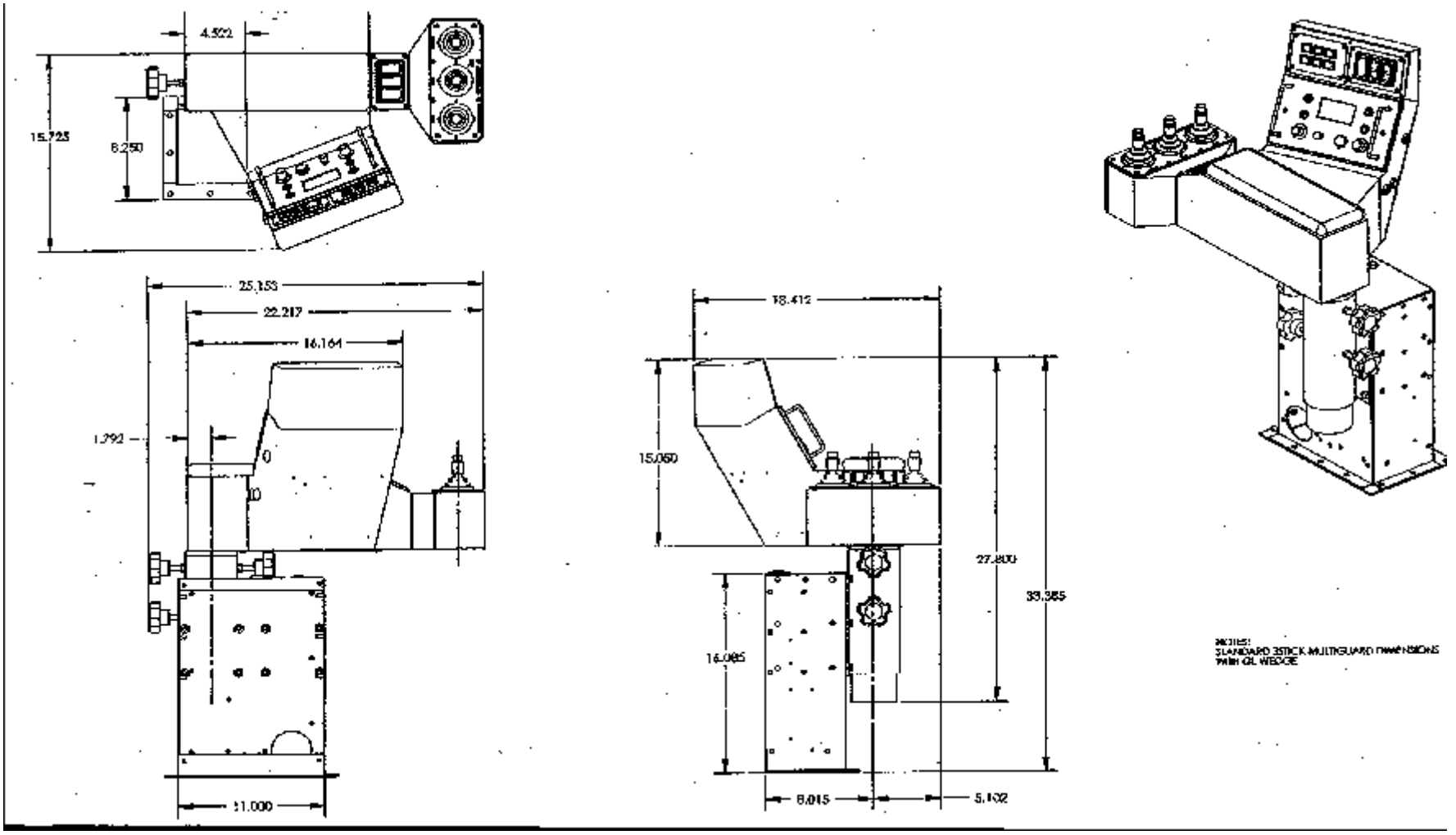
Telescope in

Rear of Truck



Driver's Side

REVISIONS			COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION		
NO.	DATE	BY			
1			CONSOLE /PEDESTAL		
2					
3			DRAWN BY DWG	SCALE N/A	MATERIAL
4			CHK'D KGK	DATE 06/27/05	DRW NO. EQN - 95
5					SHEET 4OF 5



REVISIONS			COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION		
N0	DATE	BY			
1	11/13/96	WHM	CONSOLE / PEDESTAL		
2	09/23/97	DLW			
3	02/28/00	GAH	DRAWN BY WHM	SCALE N / A	MATERIAL
4	05/23/03	PJC	CHK'D RED	DATE 05/23/03	DRW NO. EQN-95
5					SHEET 5 OF 5

SECTION 393.86 READS AS FOLLOWS:: "EVERY MOTOR VEHICLE, EXCEPT TRUCK-TRACTORS, POLE TRAILERS, AND VEHICLES IN DRIVEWAY-TOWAWAY OPERATIONS, THE DATE OF MANUFACTUREOF WHICH IS SUBSEQUENT TO DECEMBER 31, 1952, WHICH IS SO CONSTRUCTED THAT THE BODY OR THE CHASSIS ASSEMBLY IF WITHOUT A BODY HAS A CLEARANCE AT THE REAR END OF MORE THAN 30 in. FROM THE GROUND WHEN EMPTY, SHALL BE PROVIDED WITH BUMPERS OR DEVICES SERVING SIMILAR PURPOSES WHICH SHALL BE SO CONSTRUCTED AND LOCATED THAT: (A) THE CLEARANCE BETWEEN THE EFFECTED BOTTOM OF THE BUMPERSOR DEVICES AND THE GROUND SHALL NOT EXCEED 30 in. WITH VEHICLE EMPTY; (B) THE MAXIMUM DISTANCE BETWEEN THE CLOSEST POINTS BETWEEN BUMPERS, OR DEVICES, IF MORE THAN ONE IS USED, SHALL NOT EXCEED 24 in.; (C) THE MAXIMUM TRANSVERSE DISTANCE FROM THE WIDEST PART OF THE MOTOR VEHICLE AT THE REAR TO THE BUMPER OR DEVICE SHALL NOT EXCEED 18 in.; (D) THE BUMPER OR DEVICES SHALL BE LOCATED NOT MORE THAN 24 in. FORWARD OF THE EXTREME REAROF THE VEHICLE; (E) AND THE BUMPER OR DEVICES SHALL BE SUBSTANTIALLY CONSTRUCTED AND FIRMLYATTACHED. MOTOR VEHICLES CONSTRUCTED AND MAINTAINED SO THAT THE BODY, CHASSIS, OR OTHER PARTS OF THE VEHICLE AFFORD THE REAR END PROTECTION CONTEMPLATED SHALL BE DEEMED TO BE IN COMPLIANCE WITH THIS SECTION."

THE REGULATIONS ALSO REQUIRE ALL MOTOR VEHICLES TRANSPORTING HAZARDOUS MATERIALS REQUIRING PLACARDING BE EQUIPPED WITH REAR END PROTECTION (REFERANCE 49CFR PART 397, 49 CFR SECTION 177.823, 49 CFR PART 172, AND 49 CFR SECTION 171.12A).

ALTHOUGH SECTION 393.86 DOES NOT SET FORTH SPECIFIC PERFORMANCE REQUIREMENTS FOR THE REAR END PROTECTION STRUCTURE, SUBPART J - SPECIFICATIONS FOR CONTAINERS FOR MOTOR VEHICLE TRANSPORTATION OF PART 178 - SHIPPING CONTAINER SPECIFICATIONS OF SUBCHAPTER C - HAZARDOUS MATERIAL REGULATIONS OF CHAPTER I - RESEARCH AND SPECIAL PROGRAMS ADMINISTRATION DOES CONTAIN SPECIFIC PERFORMANCE REQUIREMENTS FOR REAR END PROTECTION ON CARGO TANK MOTOR VEHICLES (REFERENCE SECTIONS 178.337-10(D), 178.338-10(C), 178.345-8(D), 178.346-8, 178.347-8, AND 178.348-8). PENNSYLVANIA HAS ADOPTED 49 CFR 393.86 REAR END PROTECTION FOR COMMERCIAL MOTOR VEHICLES WITH A GVW OF 17,000 lbs. / 7711.07 kg. OR MORE OPERATED IN INTRASTATE COMMERCE, AND ANY SIZE VEHICLE HAULING HAZARDOUS MATERIALS REQUIRING PLACARDS WITH AN ADDITIONAL REQUIREMENT: "SOME PART OF THE HORIZONTAL BUMPER BAR SHALL FALL WITHIN 16-30in. / 40.64-76.2cm. ABOVE GROUND LEVEL." SEE TITLE 67 CHAPTER 175 OF THE PENNSYLVANIA CODE FOR THE SPECIFIC REQUIREMENTS FOR REAR END PROTECTION ON COMMERCIAL MOTOR VEHICLES WITH A GVW OF 10,001-17,000 lbs. / 4536.38-7711.07 kg. OPERATED IN INTRASTATE COMMERCE.

ANY / ALL REVISIONS SHALL SUPERSEDE THE ABOVE.

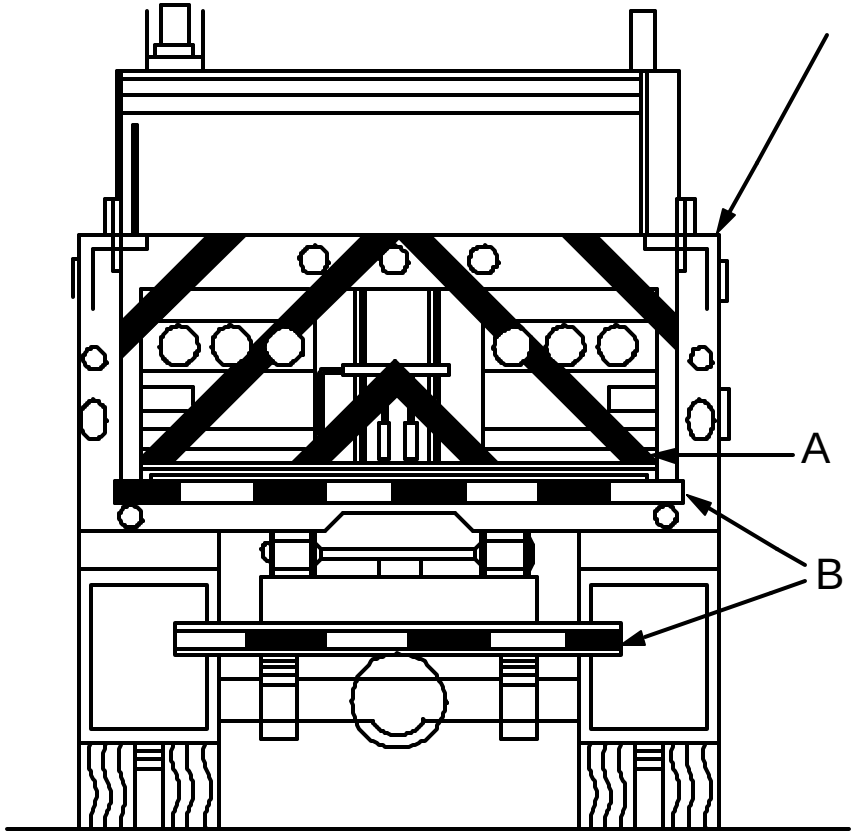
REVISIONS		
N0.	DATE	BY
1	02/01/93	WHM
2	12/05/95	SWW
3	07/08/97	DLW
4	07/01/03	
5		

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

UNDERRIDE PROTECTION

DRAWN BY DLW	SCALE N / A	MATERIAL		
CHK'D RR	DATE : 02/04/92	DRW NO. EQN-118		
		SHEET 1 OF 1		

THE UPPER CORNERS ARE TO BE MARKED BY TWO 90 DEG. ANGLE BRACKETS OF WHITE 12in. x 2in. WIDE.



A - THE ALUMINUM TAILGATE SHALL BE UNPAINTED. THE TAILGATE SHALL BE STRIPPED AS SHOWN WITH 4in. WIDE BLACK BANDS AT 45 DEG. AND 11in. APART TO SERVE AS A SAFETY/WARNING SYSTEM. THE AREAS TO BE STRIPPED WILL BE ACID ETCHED AND HAVE 3M REFLECTING SHEETING - BLACK "C" - SCOTCHLITE NO.580-85 OR REFLEXITE AP 1000M BLACK INSTALLED.

THE CHIEF OF THE EQUIPMENT DIVISION SHALL APPROVE ALL STRIPPING AND MONITOR THE PRODUCTION BY THE SUCCESSFUL VENDOR.ALL DIMENSIONS IN INCHES.

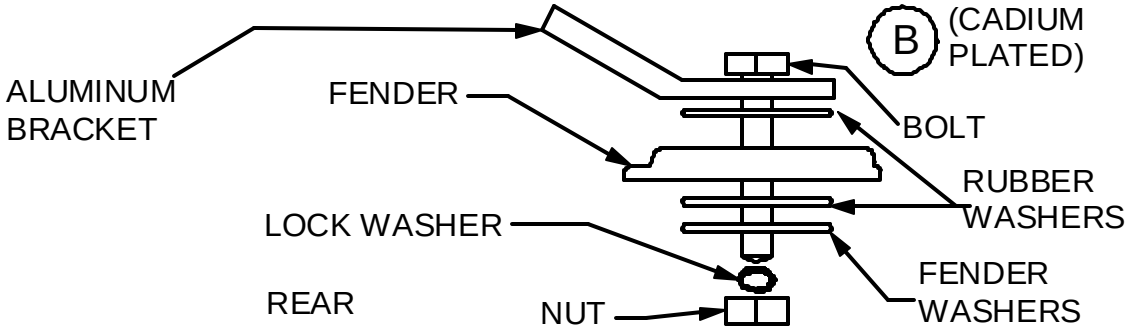
B - THERE SHALL BE A MINIMUM OF 46 LINEAR INCHES OF 2in. WIDE, SCOTCHLITE CONSPICUITY SHEETING SERIES 980 OR REFLEXITE CONSPICUITY II SYSTEM MATERIAL SHALL BE RED/SILVER, CONTINUOUS BACKING.

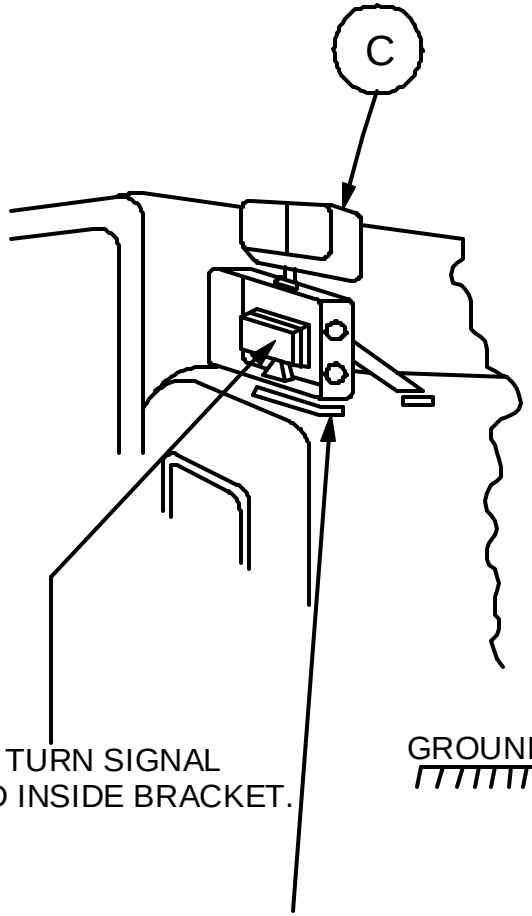
REVISIONS		
N0.	DATE	BY
1	10/11/94	GRL
2	07/08/97	DLW
3	02/28/00	GAH
4	05/16/02	DWG
5		

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

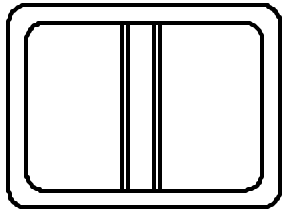
DUMP BODY TAILGATE REFLECTING SHEETING

DRAWN BY GRL	SCALE N / A	MATERIAL	
CHK'D RED	DATE 10 / 11 / 94	DRW NO. EQN-122	
		SHEET 1 OF 1	





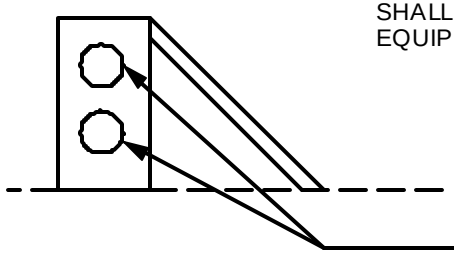
REAR



B. PROPOSED BRACKET MUST BE MOUNTED IN A WAY TO AFFORD A MINIMUM OF TWO (2) ATTACHING POINTS.
C. GROTE 64261-4 WITH SEALED LAMP JUMPER HARNESS.

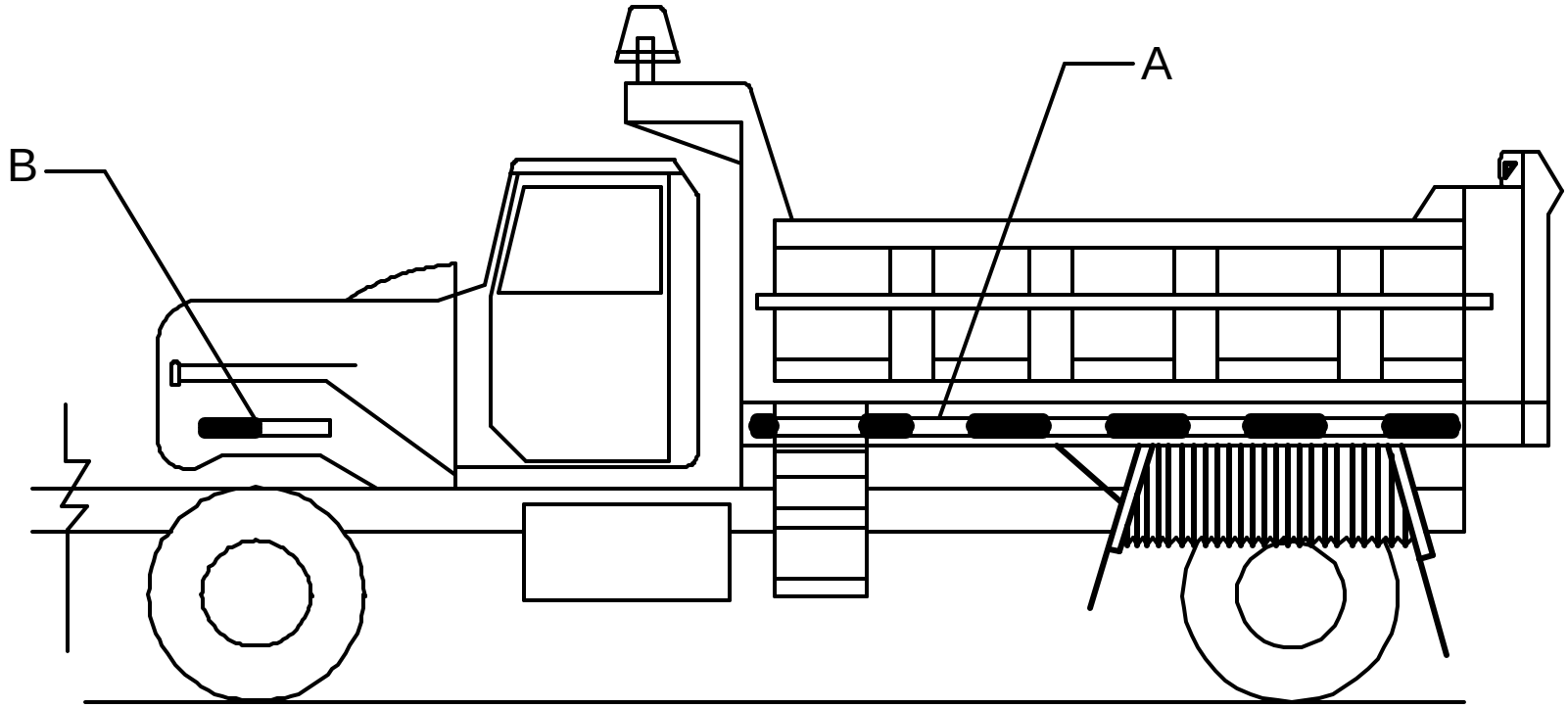
NOTE: BRACKET DIMENSIONS ARE NOT GIVEN DUE TO THE MANY VARIABLES. BRACKETS MUST BE CONSTRUCTED OF MATERIALS CAPABLE OF SUSTAINED SUPPORT OF THE LIGHT ASSEMBLY WHILE OFFERING MINIMUM VIBRATION/JIGGLE. THE HEIGHT AND WIDTH OF THE BRACKET WILL BE GOVERNED BY APPLICATION AND SHALL MEET THE PENNSYLVANIA MOTOR VEHICLE CODE, AND SHALL HAVE FINAL ACCEPTANCE BY THE CHIEF, EQUIPMENT DIVISION.

SIDE



HOLES SHALL BE PUNCHED TO ALLOW FOR VISUAL OF SIDE MARKER LAMP. (MIN. 1in.)

REVISIONS			COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION		
N0.	DATE	BY			
1	09/07/89	WHM	AUXIILIARY SNOW PLOW LIGHT PACKAGE		
2	10/04/89	WHM			
3	07/10/97	DLW	DRAWN BY WHM	SCALE N / A	MATERIAL
4	05/16/02	DWG	CHK'D RED	DATE 11/15/88	DRW NO. EQN-124
5					SHEET 1 OF 1



NOTE:

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

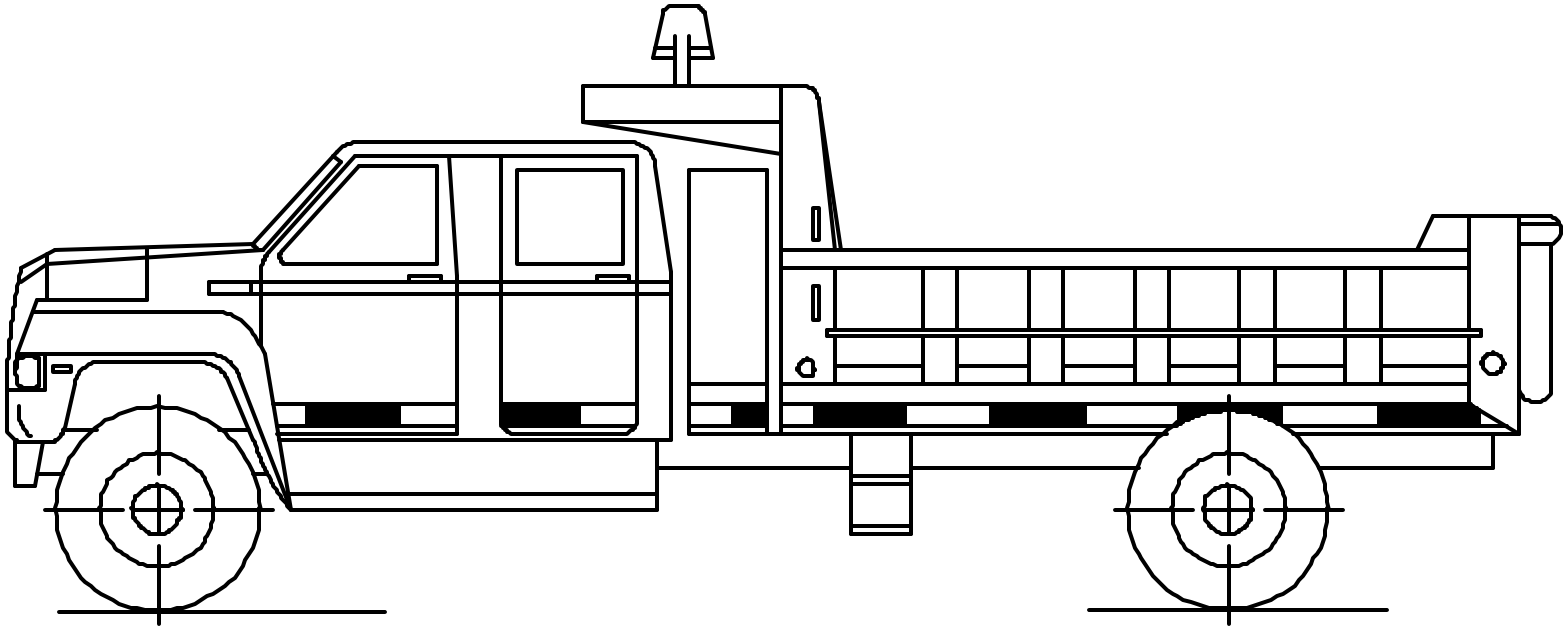
ITEM A SHALL BE STRIPED FULL LENGTH.
ITEM B SHALL BE STRIPED IF A STRAIGHT LINE CAN BE USED IN CONJUNCTION WITH A.

REVISIONS		
N0.	DATE	BY
1	12/02/94	GRL
2	06/27/97	DLW
3	02/28/00	GAH
4	05/16/02	DWG
5		

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

REFLECTIVITY ENHANCEMENT

DRAWN BY GRL	SCALE N/A	MATERIAL
CHK'D RED	DATE 12 / 02 / 94	DRW NO. EQN-127
		SHEET 1 OF 1

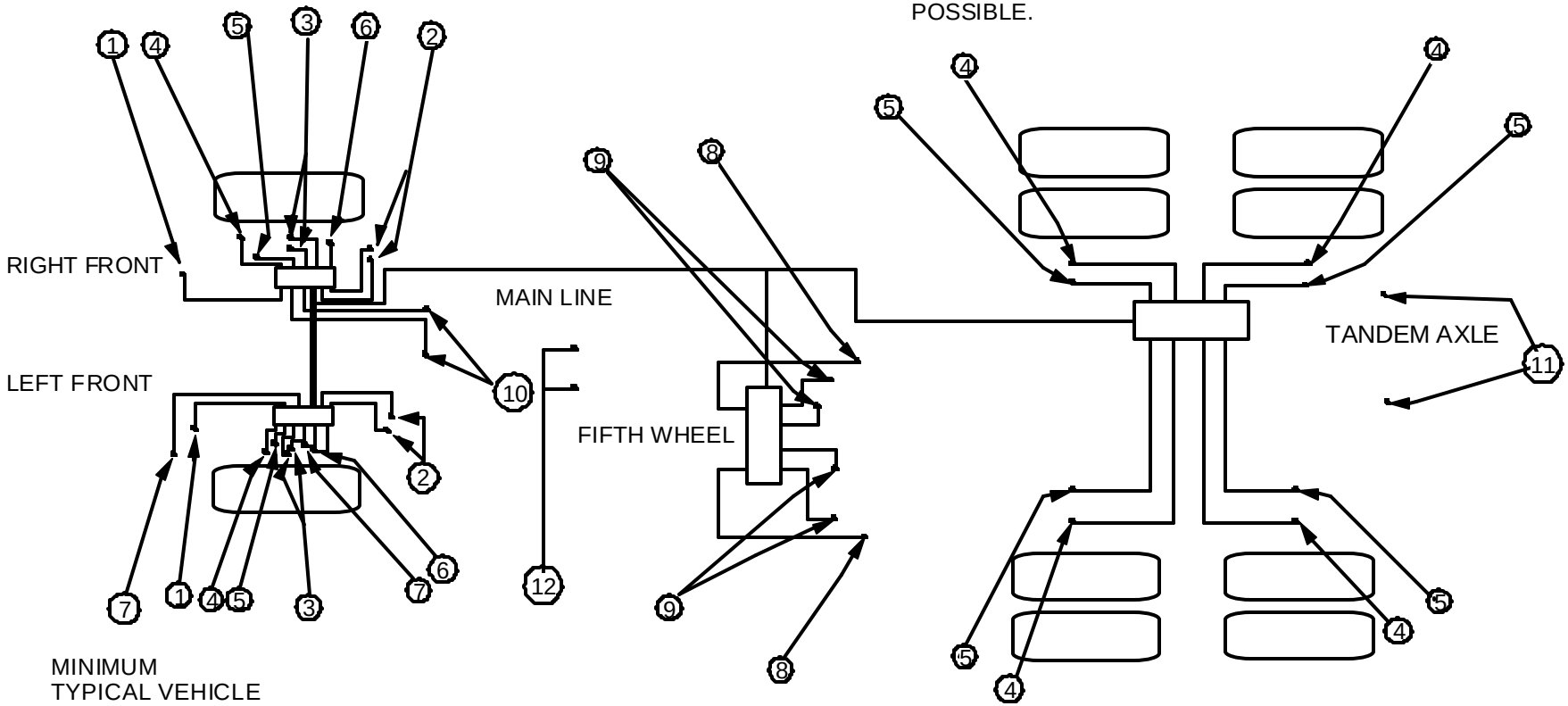


NOTE:

REFLECTORIZED 2 in. WIDE MARKING SHALL BE APPLIED. REFLECTIVE TAPE LENGTH IS NOT GIVEN, AND WILL REQUIRE ALTERATION TO SUIT APPLICABILITY. MATERIAL SHALL BE RED/SILVER CONTINUOUS BACKING REFLEXITE CONSPICUITY II SYSTEM OR 3M SCOTCHLITE CONSPICUITY SHEETE\ING SERIES 980.

REVISIONS			COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION		
N0.	DATE	BY			
1	12/19/95	SWW	38,000 GVWR CREW CAB REFLECTIVITY ENHANCEMENT		
2	07/10/97	DLW			
3	05/16/02	DWG	DRAWN BY DLW	SCALE N / A	MATERIAL
4			CHK'D WHM	DATE 7 / 10 / 97	DRW NO. EQN-128
5					SHEET 1 OF 1

A SINGLE MAIN LINE FROM THE CENTRALLY LOCATED PUMP SUPPLIES INJECTOR MANIFOLD MODULES (AVG. OF 4) LOCATED CLOSE TO THE LUBE POINTS AS POSSIBLE. HARD PIPE SHALL BE USED WHEN / WHERE EVER POSSIBLE.



MINIMUM
TYPICAL VEHICLE
LUBE POIONTS

1. FRONT SPRING PIN
2. FRONT SPRING SHACKLES (UPPER AND LOWER)
3. KING PIN (UPPER AND LOWER)
4. BRAKE CAM SHAFT
5. BRAKE SLACK ADJUSTER
6. TIE ROD
7. DRAG LINK
8. FIFTH WHEEL PIVOT
9. FITH WHEEL PLATE
10. CLUTCH CROSS SHAFT
11. REAR DUMP BED HINGE (2 EACH SIDE)
12. BOTTOM OF HOIST CYL. (2 EACH SIDE)

REVISIONS			COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION		
N0.	DATE	BY	CENTRALIZED LUBE SYSTEM		
1	02/15/00	GAH			
2					
3			DRAWN BY GAH	SCALE N / A	MATERIAL
4			CHK'D LHA	DATE 8/31/99	DRW NO. EQN-160
5					SHEET 1 OF 1

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. THE PRIMARY WARNING SYSTEM SHALL CONSIST OF 2 INDEPENDENT MOTOR DRIVEN PARABOLIC REFLECTORS AND A MIRROR ASSEMBLY.

3. THE MOTORS SHALL BE A HIGH TORQUE, LONG LIFE (RATED FOR 10,000 HOURS), PERMANENT MAGNET MOTOR, 12 VOLTS DC. EACH MOTOR SHALL HAVE RFI SUPPRESSION FOR RADIO FREQUENCY INFERENCE.

4. THE PARABOLIC REFLECTORS SHALL ROTATE AROUND A STATIONARY H1, 55-WATT HALOGEN HEAVY-DUTY LONG LIFE LAMP (RATED AT 800 HOURS PLUS). EACH PARABOLIC REFLECTOR, BULB AND MOTOR ASSEMBLE SHALL BE DESIGNED OF A SNAP IN DESIGN FOR EASY ASSEMBLY REPLACEMENT. NO FASTENERS HOLDING THIS ASSEMBLY TO THE BASE ARE ALLOWED.

5. UNIT MUST MEET SAE J845, CLASS 1 SPECIFICATIONS AND CERTIFIED BY INDEPENDENT TEST LABORATORY. THE LIGHT MUST BE ALSO CERTIFIED BY AMECA.

6. UNIT MUST BE CAPABLE OF BEING MOUNTED ON A SURFACE, OR ON A SELF-LEVELING MOUNT. ALL MOUNTING HARDWARE INCLUDING WIRE (20FT.), OF 14 GAUGE 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.

REVISIONS			COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION		
NO.	DATE	BY	REVOLVING WARNING LIGHTS		
1	5/14/02	DWG			
2	07/01/03	BLD			
3			DRAWN BY DWG	SCALE N/A	MATERIAL
4			CHK'D	DATE 04/04/02	DRW NO. EQN-210B
5					SHEET 1 OF 3

SPECIFICATIONS
REVOLVING WARNING LIGHTS

7. THE LENS SHALL BE OF AMBER COLOR AND MEETS SAE 575 SPECIFICATIONS. MATERIAL MUST BE OF LENS GRADE POLYCARBONATE.

   THE TOP OF THE LENS SHALL BE TEXTURED TO PREVENT SUNLIGHT FROM ENTERING AND DEGRADING THE WARNING LIGHT EFFECTIVENESS. THE SUN-SCREEN SHALL ALSO PREVENT THE APPEARANCE THAT THE LIGHTBAR SIGNAL MAY BE ON DUE TO LIGHT BOUNCING OFF THE REFLECTORS AND MIRROR.

8. THE BASE OF THE LIGHTBAR SHALL BE MADE OF IMPACT-RESISTANT POLY-CARBONATE FOR NON-CORROSION.

   THE LENGTH SHALL BE A MINIMUM OF 15 INCHES AND NOT EXCEED 16 INCHES. WIDTH SHALL BE A MINIMUM OF 6 INCHES AND NOT TO EXCEED 8 INCHES. THE HEIGHT SHALL BE A MINIMUM OF 4 INCHES.

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

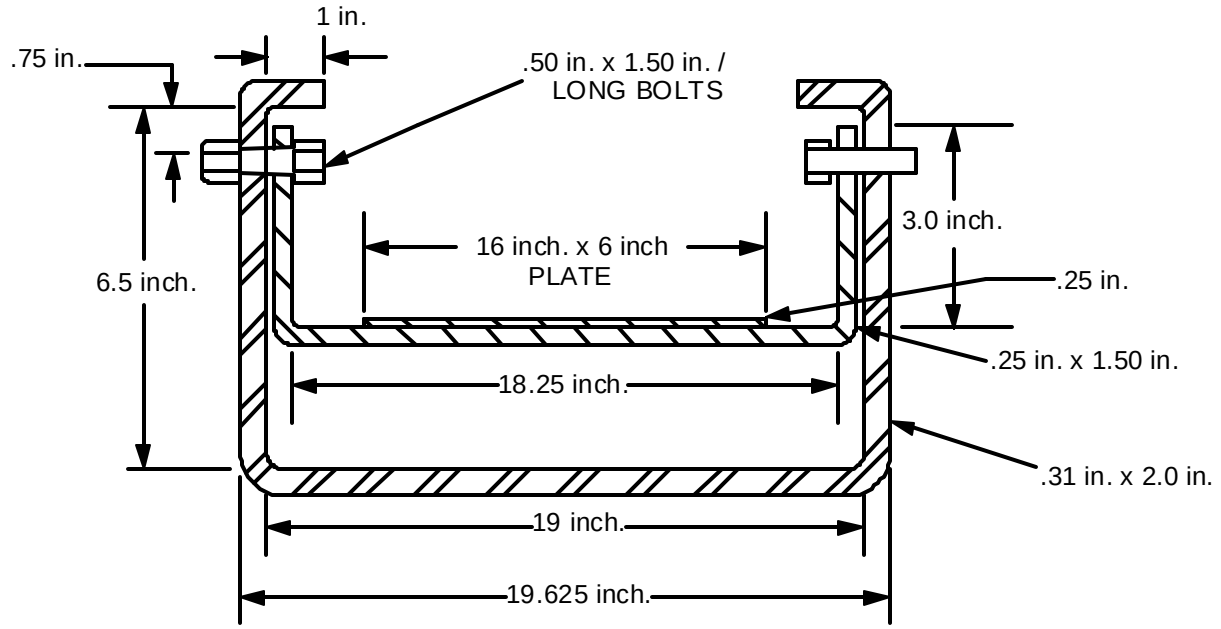
REFERENCE: FEDERAL SIGNAL 450112-02 PDOT.

REVISIONS		
N0.	DATE	BY
1	5/14/02	DWG
2	7/01/03	BLD
3		
4		
5		

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

REVOLVING WARNING LIGHTS

DRAWN BY DWG	SCALE N/A	MATERIAL
CHK'D	DATE 04/04/02	DRW NO. EQN-210B
		SHEET 2 OF 3



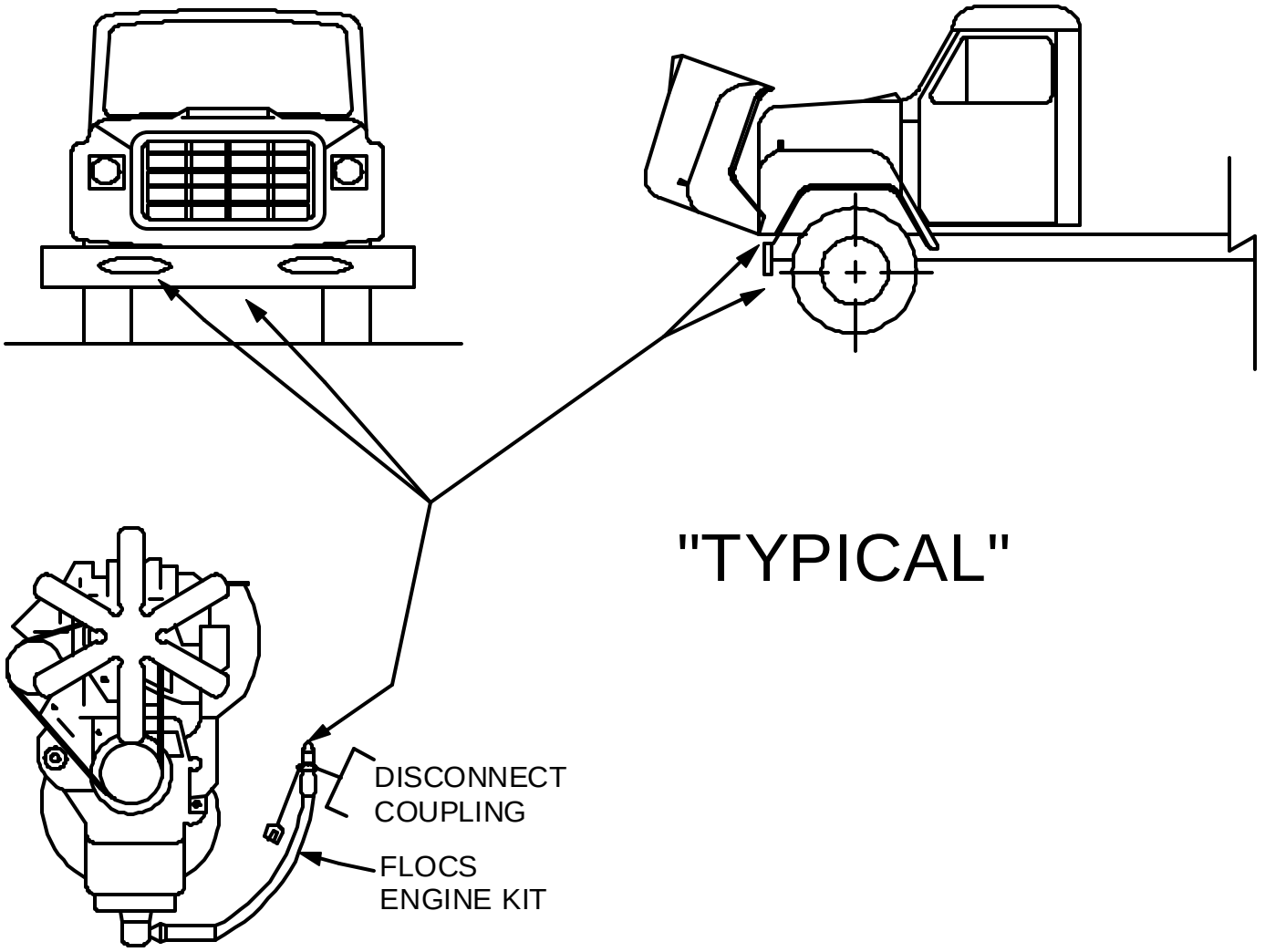
THE ALUMINUM WARNING LIGHT MOUNTING BRACKET SHALL BE A SELFLEVELING TYPE OF SUFFICIENT WEIGHT TO KEEP OSCILLATION TO A MINIMUM. IT SHALL BE CONSTRUCTED TO BE IN BALANCE WITH THE WARNING LIGHT AND MAINTAIN THE LIGHT IN A HORIZONTAL POSITION WITH THE TRUCK BODY RAISED UP TO AN ANGLE OF 50 DEGREES. OUTER BRACKET SHALL BE EQUIPPED WITH * TEFLON, NYLON, OR BRONZE BUSHINGS IN PIVOTS AND STOPS TO PREVENT THE LIGHT FROM TIPPING MORE THAN 50 DEGREES FROM CENTER OF BRACKET. INNER BRACKET SHALL BE CONSTRUCTED WITH A FULL SIZE MINIMUM .25 in. THICK ALUMINUM PLATE WITH A DIAMETER EQUAL TO THE BASE OF THE LIGHT AND A PIPE NIPPLE OR A SUITABLE DEVICE TO MOUNT THE LIGHT. THE INNER BRACKET SHALL BE SUPPORTED BY OFFSET BOLTS (ALUMINUM, BRASS, OR STAINLESS STEEL) PIVOTING IN THE OUTER BRACKET * BUSHINGS. ONE OFFSET BOLT SHALL BE DRILLED TO ALLOW A WIRE TO PASS THROUGH FOR CONNECTION TO THE LIGHT. SPACER (S), IF NECESSARY, SHALL BE PROVIDED TO PREVENT SIDEWAY SWINGS.

REVISIONS		
N0.	DATE	BY
1	05/14/02	DWG
2	07/01/03	BLD
3		
4		
5		

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

REVOLVING WARNING LIGHTS
MOUNTING BRACKETS

DRAWN BY DWG	SCALE N / A	MATERIAL
CHK'D	DATE 04/04/02	DRW NO. EQN-210 B
		SHEET 3 OF 3



"TYPICAL"

REVISIONS			COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION		
N0.	DATE	BY			
1	07/01/03	BLD	FAST LUBE OIL CHANGE SYSTEM		
2					
3			DRAWN BY DLW	SCALE N / A	MATERIAL
4			CHK'D WHM	DATE 08 / 22 / 97	DRW NO. EQN-351A
5					SHEET 1 OF 2

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 BE 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

REVISIONS			COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION		
N0.	DATE	BY			
1	07/01/03	BLD	FAST LUBE OIL CHANGE SYSTEM		
2					
3			DRAWN BY DLW	SCALE N / A	MATERIAL
4			CHK'D WHM	DATE 08 / 22 / 97	DRW NO. EQN-351A
5					SHEET 2 OF 2

SUMMER MODE

ITEM NO.	DESCRIPTION	TRUCK REAR LB.	TRUCK REAR KG.	TRUCK FRONT LB.	TRUCK FRONT KG.	TOTAL LB/OR/KG
1.	CHASSIS WEIGHT					
2.	DIESEL FUEL					
3.	DRIVER					200 lb.
4.	BODY					
5.	BODY HOIST					
6.	PLOW FRAME					500 lb.
7.	FRONT PTO, ADAPTER & PUMP					150 lb.
8.	PAYLOAD					
9.	HYDRAULIC OIL AND TANK					365 lb.
10.	REAR WING POST (PATROL) (IF APPLICABLE)					250 lb.

REVISIONS		
N0.	DATE	BY
1	05/28/02	DWG
2		
3		
4		
5		

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

CONVENTIONAL DUMP TRUCK WEIGHT DISTRIBUTION
MINIMUM DATA REQUIRED / SUMMER MODE

DRAWN BY	SCALE	MATERIAL
DLW	N / A	
CHK'D	DATE	DRW NO.
WHM	7 / 14 / 97	EQN-507B

SHEET 1 OF 3

WINTER MODE

ITEM NO.	DESCRIPTION	TRUCK REAR LB.	TRUCK REAR KG.	TRUCK FRONT LB.	TRUCK FRONT KG.	TOTAL LB/OR/KG
1.	CHASSIS WEIGHT					
2.	DIESEL FUEL GAL. @ 7 lb./GAL					
3.	DRIVER					200 lb.
4.	BODY					
5.	BODY HOIST					
6.	SPREADER					600 lb.
7.	PLOW FRAME					500 lb.
8.	SNOW PLOW					*
9.	FRONT PTO, ADAPTER & PUMP					150 lb.
10.	PAYLOAD					250 lb.
11.	HYDRAULIC OIL AND TANK					365 lb.
12.	PATROL STYLE WING PLOW					1000 lb.
13.	FRONT WING POST (PATROL)					300 lb.
14.	REAR WING POST (PATROL)					250 lb.

REVISIONS		
N0.	DATE	BY
1	05/28/02	DWG
2		
3		
4		
5		

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

CONVENTIONAL DUMP TRUCK WEIGHT DISTRIBUTION
MINIMUM DATA REQUIRED / WINTER MODE

DRAWN BY DLW	SCALE N / A	MATERIAL	
CHK'D WHM	DATE 7 / 14 / 97	DRW NO. EQN-507B	
		SHEET 2 OF 3	

NOTES:

(1) THE PREVIOUS INFORMATION SHALL BE SUBMITTED IN ITS ENTIRETY AND SUBMITTED WITH BID.

(2) ALL THE ACCESSORIES REQUIRED TO BE "FULLY OPERATIONAL" MUST BE INCLUDED IN THE CALCULATION OF WEIGHTS, AS APPLICABLE.

(3) FOR INFORMATION:
MATERIAL WEIGHTS:
SALT 2,000 lb. PER CUBIC YARD
AGGREGATE 2,800 lb. PER CUBIC YARD

(*) TYPE II = 2,900 lb. TYPE IV = 3,500 lb.

REVISIONS			COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION		
N0.	DATE	BY			
1	05/28/02	DWG	CONVENTIONAL DUMP TRUCK WEIGHT DISTRIBUTION MINIMUM DATA REQUIRED		
2					
3			DRAWN BY DLW	SCALE N / A	MATERIAL
4			CHK'D WHM	DATE 7 / 14 / 97	DRW NO. EQN-507B
5					SHEET 3 OF 3

WINTER MODE

ITEM NO.	DESCRIPTION	TRUCK FRONT LB.	TRUCK FRONT KG.	TRUCK REAR LB.	TRUCK REAR KG.	TOTAL LB.	TOTAL KG.
1	CHASSIS WEIGHT						
2	DIESEL FUEL GAL. @ 7 LB./GAL.					600	1323
3	DRIVER					200	441
4	BODY						
5	BODY HOIST						
6	SPREADER					600	1323
7	PLOW FRAME					200	1323
8	SNOW PLOW					*	*
9	FRONT PTO, ADAPTER & PUMP					200	1323
10	PAYLOAD						
11	HYDRAULIC OIL AND TANK					300	661

NOTES:

(1) THE ABOVE INFORMATION SHEET SHALL BE COMPLETED IN IT'S ENTIRETY AND SUBMITTED WITH BID.
(2) ALL THE ACCESSORIES REQUIRED TO BE "FULLY OPERATIONAL" MUST BE INCLUDED IN THE CALCULATION OF WEIGHTS, AS APPLICABLE.
(3) FOR INFORMATION:

MATERIAL WEIGHTS:
SALT 2,000 LB. PER CUBIC YARD.
AGGREGATE 2,800 LB. PER CUBIC YARD.

*2,900

REVISIONS		
N0.	DATE	BY
1	02/28/00	GAH
2		
3		
4		
5		

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

38,000 CREW CAB DUMP BODY WEIGHT DISTRIBUTION MINIMUM DATA REQUIRED

DRAWN BY	SCALE	MATERIAL
DLW	N / A	
CHK'D WHM	DATE 10 / 21 / 97	DRW NO. EQN-507C
		SHEET 1 OF 2

SUMMER MODE

ITEM NO.	DESCRIPTION	TRUCK FRONT LB.	TRUCK FRONT KG.	TRUCK REAR LB.	TRUCK REAR KG.	TOTAL LB.	TOTAL KG.
1	CHASSIS WEIGHT						
2	DIESEL FUEL GAL. @ 7 LB./GAL.					600	1323
3	DRIVER AND CREW					1200	2646
4	BODY						
5	BODY HOIST						
6	PLOW FRAME					600	1323
7	FRONT PTO, ADAPTER & PUMP					250	551
8	PAYLOAD						
9	HYDRAULIC OIL AND TANK					300	661

NOTES:

(1) THE ABOVE INFORMATION SHEET SHALL BE COMPLETED IN IT'S ENTIRETY AND SUBMITTED WITH BID.
(2) ALL THE ACCESSORIES REQUIRED TO BE "FULLY OPERATIONAL" MUST BE INCLUDED IN THE CALCULATION OF WEIGHTS, AS APPLICABLE.
(3) FOR INFORMATION:

MATERIAL WEIGHTS:
SALT 2,000 LB. PER CUBIC YARD.
AGGREGATE 2,800 LB. PER CUBIC YARD.

*2,900

REVISIONS		
N0.	DATE	BY
1		
2		
3		
4		
5		

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

38,000 CREW CAB DUMP BODY WEIGHT DISTRIBUTION MINIMUM DATA REQUIRED

DRAWN BY	SCALE	MATERIAL
DLW	N / A	
CHK'D WHM	DATE 10 / 21 / 97	DRW NO. EQN-507C
		SHEET 2 OF 2

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 in., DIAMETER: 8.5 in.

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 OF 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 UNACCEPTABLE.

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 RETAINER SHALL BE FABRICATED FROM A NONCORROSIVE METAL OR MOLDED FROM A HEAVY DUTY PLASTIC. THE PLASTIC SHALL BE POLYCARBONATE, ABS, OR EQUAL. THE RETAINER 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.

REVISIONS			COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION		
N0.	DATE	BY	REVOLVING WARNING LIGHTS		
1	09/21/93	WHM			
2	09/12/94	GRL			
3	09/26/95	SWW	DRAWN BY UNK	SCALE N/A	MATERIAL
4	05/03/96	WHM	CHK'D RED	DATE 02 / 26 / 86	DRW NO. EQN-210A
5	05/28/02	DJA			SHEET 1 OF 3

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), 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 SPECIFICATIONS TO MAINTAIN INTERCHANGEABILITY OF LENS. NO DEVIATION. OUTSIDE DIAMETER - MAXIMUM 8.375 in. MEASURED AT BOTTOM, INCLUDING THE LIP. OUTSIDE DIAMETER - 7.75 in. MINIMUM, 7.875 in. MAXIMUM, AT THE 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.

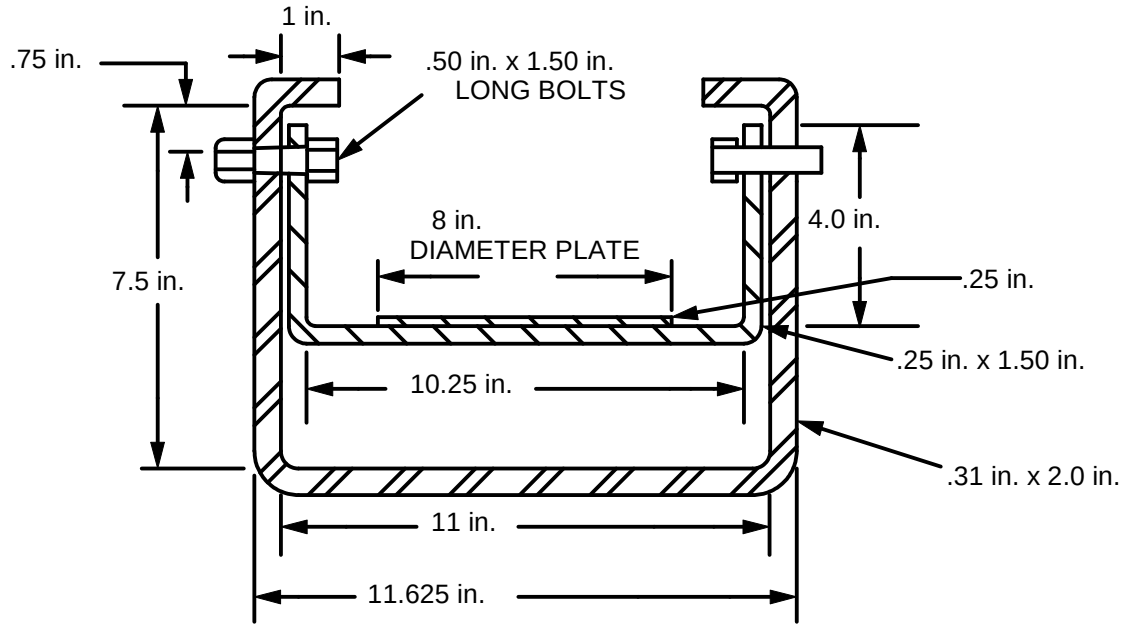
11. WARRANTY SHALL BE FOR TWO YEARS ON ALL PARTS AND WORKMANSHIP.

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

REF: THE FOLLOWING LIGHTS ARE ACCEPTABLE MEETING THESE 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

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

REVISIONS			COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION		
NO.	DATE	BY	REVOLVING WARNING LIGHTS		
1	09/26/95	SWW			
2	05/03/96	DLW			
3	11/13/98	DJA	DRAWN BY UNK	SCALE N/A	MATERIAL
4	09/15/99	GAH	CHK'D RED	DATE 02 / 26 / 86	DRW NO. EQN-210A
5	05/28/02	DWG			SHEET 2 OF 3



THE ALUMINUM WARNING LIGHT MOUNTING BRACKET SHALL BE A SELFLEVELING TYPE OF SUFFICIENT WEIGHT TO KEEP OSCILLATION TO A MINIMUM. IT SHALL BE CONSTRUCTED TO BE IN BALANCE WITH THE WARNING LIGHT AND MAINTAIN THE LIGHT IN A HORIZONTAL POSITION WITH THE TRUCK BODY RAISED UP TO AN ANGLE OF 50 DEGREES. OUTER BRACKET SHALL BE EQUIPPED WITH * TEFLON, NYLON, OR BRONZE BUSHINGS IN PIVOTS AND STOPS TO PREVENT THE LIGHT FROM TIPPING MORE THAN 50 DEGREES FROM CENTER OF BRACKET. INNER BRACKET SHALL BE CONSTRUCTED WITH A ROUND FULL SIZE MINIMUM .25 in. THICK ALUMINUM PLATE WITH A DIAMETER EQUAL TO THE BASE OF THE LIGHT AND A PIPE NIPPLE OR A SUITABLE DEVICE TO MOUNT THE LIGHT. THE INNER BRACKET SHALL BE SUPPORTED BY OFFSET BOLTS (ALUMINUM, BRASS, OR STAINLESS STEEL) PIVOTING IN THE OUTER BRACKET * BUSHINGS. ONE OFFSET BOLT SHALL BE DRILLED TO ALLOW A WIRE TO PASS THROUGH FOR CONNECTION TO THE LIGHT. SPACER (S), IF NECESSARY, SHALL BE PROVIDED TO PREVENT SIDEWAY SWINGS.

REVISIONS			COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION		
N0.	DATE	BY			
1	09/21/93	WHM	REVOLVING WARNING LIGHTS MOUNTING BRACKETS		
2	09/12/94	GRL			
3	09/26/95	SWW	DRAWN BY UNK	SCALE N / A	MATERIAL
4	05/03/96	WHM	CHK'D RED	DATE 02 / 26 / 86	DRW NO. EQN-210 A
5	05/28/02	DLW			SHEET 3 OF 3

Contract Reference Number: 1302-02
Collective Number: CN00022979
SAP Contract Numbers: 4600010878 & 4600010880
Change Number: 1
Change Effective Date: 8/27/2007

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG

For:	All using Agencies of the Commonwealth
Subject:	Dump Trucks
Contract Period:	Effective date of 12/05/2006 and Expiration date of 9/30/2007 **(Renewed thru 9/30/2008)**
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 Numbers 4600010878 & 4600010880 will be renewed for the period 10/01/2007 through 9/30/2008.

ALL OTHER TERMS AND CONDITIONS OF THIS AGREEMENT NOT CHANGED BY THIS CHANGE NOTICE REMAIN AS ORIGINALLY WRITTEN.