



FULLY EXECUTED

Contract Number: 4400028941

Original Contract Effective Date: 12/21/2023

Valid From: 12/01/2023 To: 11/30/2024

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

Purchasing Agent

Name: Constance Ralph

Phone: 717-703-2931

Fax: 717-783-6241

Your SAP Vendor Number with us: 553249

Supplier Name/Address:

ASCENDANCE TRUCKS PENNSYLVANIA LLC
DBA FIVE STAR INTERNATIONAL
1810 S 19TH ST
HARRISBURG PA 17104-3205 US

Supplier Phone Number: 7179861500

Supplier Fax Number: 7179861510

Please Deliver To:

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

Contract Name:

Dump Trucks J&J Body

Payment Terms

NET 30

Solicitation No.: 6100059308

Issuance Date: 08/30/2023

Supplier Bid or Proposal No. (if applicable): 6500149242

Solicitation Submission Date: 09/29/2023

This contract is comprised of: The above referenced Solicitation, the Supplier's Bid or Proposal, and any documents attached to this Contract or incorporated by reference.

Item	Material/Service Desc	Qty	UOM	Price	Per Unit	Total
1	Single Axle Dump Truck Per Spec 050915-S	1.000	Each	231,925.00	1	231,925.00
Item Text Truck Chassis, Conventional cab, Tandem Axle, 66,000 LB GVWR, Automatic Transmission, Aluminum body and J&J upfitting, Certified Cirus Hydraulic system Pursuant to PA DOT equipment code specification 050915-S						
2	Single Axle Right wing plow 050915-S	1.000	Each	9,000.00	1	9,000.00
Item Text Right wing plow, Pursuant to PA DOT equipment code specifications 050915-S as applicable.						
3	Single Axle Spreader 050915-S	1.000	Each	6,000.00	1	6,000.00
Item Text Undertailgate spreader with Iowa type spinner option, Pursuant to PA DOT equipment code specification 050915-S						

Information:

Supplier's Signature _____

Title _____

Printed Name _____

Date _____



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DBA FIVE STAR INTERNATIONAL

Item	Material/Service Desc	Qty	UOM	Price	Per Unit	Total
4	Tandem Axle Dump Truck Per Spec 052662-S	1.000	Each	265,985.00	1	265,985.00
Item Text						
Truck Chassis, Conventional cab, Tandem Axle, 66,000 LB GVWR, Automatic Transmission, Aluminum body and J&J upfitting, Certified Cirus Hydraulic system Pursuant to PA DOT equipment code specification 052662-S						
5	Tandem Axle Right wing plow 052662-S	1.000	Each	9,000.00	1	9,000.00
Item Text						
Right wing plow, Pursuant to PA DOT equipment code specifications 052662-S as applicable.						
6	Tandem Axle spreader 052662-S	1.000	Each	6,000.00	1	6,000.00
Item Text						
Undertailgate spreader with Iowa type spinner option, Pursuant to PA DOT equipment code specification 052662-S						

General Requirements for all Items:

Header Text

This contract is from IFB # 6100059308 and incorporates all terms and conditions of this IFB for Dump Trucks with PennDOT specs.

Contact Information:

Ralph Constance
Commodity Specialist
555 Walnut St., 6th Floor
Harrisburg, PA 17101-1914
717.703.2931
rconstance@pa.gov
No further information for this Contract

Information:



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Item	Material/Service Desc	Qty	UOM	Price	Per Unit	Total
1	Single Axle Dump Truck Per Spec 050915-S	1.000	Each	246,925.00	1	246,925.00
2	Tandem Axle Dump Truck Per Spec 052662-S	1.000	Each	280,985.00	1	280,985.00

General Requirements for all Items:

Information:

Supplier's Signature _____

Title _____

Printed Name _____

Date _____



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Commodity Specialist
555 Walnut St., 6th Floor
Harrisburg, PA 17101-1914
717.703.2931
rconstance@pa.gov
No further information for this Contract

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PART I - GENERAL INFORMATION

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I.1 IFB-001.1 Purpose (Oct 2006)

The Commonwealth of Pennsylvania (Commonwealth) is issuing this Invitation for Bids (IFB) to meet the needs of DGS (DEPARTMENT OF GENERAL SERVICES) to satisfy a need for Dump Trucks.

I.2 IFB-005.1 Type of Contract (Oct. 2006)

If the Issuing Office enters into a contract as a result of this IFB, it will be a Established Price Contract with Escalation contract containing the Contract Terms and Conditions as shown in Part V of this IFB.

I.3 IFB-008.1C No Pre-bid Conference (Oct. 2006)

There will be no pre-bid conference for this IFB. If there are any questions, please forward them to the Issuing Office prior to the bid opening date and time.

I.4 IFB-009.1 Questions (February 2012)

All questions regarding the IFB must be submitted in writing to the email address of the Issuing Officer provided in the solicitation. While there is no set timeline for the submittal of questions, questions received within 48 hours prior to the bid due date and time will be answered at the discretion of the Commonwealth. All questions received will be answered, in writing, and such responses shall be posted to eMarketplace as an addendum to the IFB. The Issuing Officer shall not be bound by any verbal information nor shall it be bound by any written information that is not either contained within the IFB or formally issued as an addendum by the Issuing Office. The Issuing Office does not consider questions to be a protest of the specifications or of the solicitation.

I.5 IFB-010.1 Addenda to the IFB (Oct. 2006)

If the Issuing Office deems it necessary to revise any part of this IFB before the bid response date, the Issuing Office will post an addendum to its website at [HTTP://WWW.EMARKETPLACE.STATE.PA.US](http://WWW.EMARKETPLACE.STATE.PA.US) it is the Bidder's responsibility to periodically check the website for any new information or addenda to the IFB.

I.6 IFB-011.1B Submission of Bids – Electronic Submittal (May 2011)

- a. Bids are requested for the item(s) described in the Invitation For Bids and all the documents referenced in the form (collectively called the IFB). Bidders must submit their bids through the Commonwealth's electronic system (SRM).
- b. It is the responsibility of each bidder to ensure that its Bid is received through the electronic system prior to the date and time set for the opening of bids ("Bid Opening Time"). No Bid shall be considered if it arrives after the Bid Opening Time, regardless of reason for the late arrival.

Bids that are timely received prior to the Bid Opening Time shall be opened publicly in the presence of one or more witnesses at the time and place designated in this IFB for the Bid opening.

- c. Bids must be firm. If a Bid is submitted with conditions or exceptions or not in conformance with the terms

and conditions referenced in the IFB Form, it shall be rejected. The Bid shall also be rejected if the items offered by the Bidder are not in conformance with the specifications as determined by the Commonwealth.

d. The Bidder, intending to be legally bound hereby, offers and agrees, if this Bid is accepted, to provide the awarded items at the price(s) set forth in this Bid at the time(s) and place(s) specified.

I.7 IFB-024.1 Bid Protest Procedure (April 2016)

The Bid Protest Procedure is on the DGS website at

<http://www.dgs.pa.gov/Documents/Procurement%20Forms/Handbook/Pt1/Pt%20I%20Ch%2058%20Bid%20Protests.pdf>

I.8 IFB-025.1 Electronic Version of this IFB (Oct 2006)

This IFB is being made available by electronic means. If a Bidder electronically accepts the IFB, the Bidder acknowledges and accepts full responsibility to insure that no changes are made to the IFB. In the event of a conflict between a version of the IFB in the Bidder's possession and the Issuing Office's version of the IFB, the Issuing Office's version shall govern.

I.9 IFB-027.1 COSTARS Program (January 2017)

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 Members”) to participate in Commonwealth procurement contracts that the Department of General Services (“DGS”) may choose to make available to COSTARS Members. DGS has identified this Contract as one which will be made available for COSTARS Members’ participation.

A. Only those entities registered with DGS are authorized to participate as COSTARS Members in this Contract. A COSTARS Member may be either a local public procurement unit or a state-affiliated entity.

1. A “local public procurement unit” is:

- Any political subdivision (local government unit), such as a municipality, school district, or commission;
- Any public authority (including authorities formed under the Municipality Authorities Act of 1955 or other authorizing legislation, such as the Public Transportation Law or the Aviation Code);
- Any tax-exempt, nonprofit educational institution or organization;
- Any tax-exempt, nonprofit public health institution or organization;
- Any nonprofit fire, rescue, or ambulance company; and
- Any other entity that spends public funds for the procurement of supplies, services, and construction (such as a council of governments, an area government, or an organization that receives public grant funds).

The Department reserves the right to review and determine eligible applicants as Local Public Procurement Units on a case-by-case basis.

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 Education Facilities Authority, and
- The State System of Higher Education.

The COSTARS Program is not available for use by Executive Agencies and Independent Agencies as defined by the Commonwealth Procurement Code, or any agency or entity using funds appropriated to the Department of General Services through Capital Budget Project Itemization legislation for the procurement of furniture, fixtures, and equipment.

3. A complete list of local public procurement units and state-affiliated entities that have registered with DGS and that are authorized to procure items from the Contract can be found at <http://www.costars.state.pa.us/SearchCOMember.aspx>

B. COSTARS Members have the option to purchase from this Contract, from any DGS contract established exclusively for COSTARS Members 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 a COSTARS Member will place an order under this Contract, and that the decision to procure from this Contract is within the sole discretion of each COSTARS Member.

C. DGS is acting as a facilitator for COSTARS Members who may wish to purchase under this Contract. COSTARS Members that 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 COSTARS Member unless substantial interests of the Commonwealth are involved.

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

E. Those Contractors electing to permit COSTARS Members to procure from this Contract shall pay the Required Administrative Fee applicable to the Contractor’s classification:

Contractor Classification	Required Administrative Fee
DGS-verified Small Diverse Business Bidder	\$166
DGS Self-Certified Small Business Bidder	\$500
All Other Bidders	\$1,500

1. Each bidder electing to permit COSTARS Members to participate in the Contract must submit the COSTARS Program Election to Participate form with its bid submittal and pay the applicable Administrative Fee upon Contract award in order to sell the awarded items/services to COSTARS Members. If the bidder is a Department of General Services Self-Certified Small Business or Department of General Services-verified Small Diverse Business, a copy of its active Small Business Contracting Program certificate must be included with the bid submittal.

2. At the beginning of each Contract year and upon any Contract renewal, the Contractor shall submit a check for the required amount, payable to “Commonwealth of PA”. The Contractor must pay the Administrative Fee at each contract renewal date to continue to sell the awarded items/services to COSTARS Members.

F. DGS has registered the COSTARS name and logo (together, the “COSTARS Brand”) as a trademark with the Pennsylvania Department of State. Therefore, the Contractor may use the COSTARS Brand only as permitted under in this Subsection.

1. The Contractor shall pay the Administrative Fee covering its participation in the program, including without limitation any use of the COSTARS Brand, for each year of the Contract period. The fee is payable upon Contract

award and prior to the renewal date for each succeeding Contract period.

2. DGS grants the Contractor a nonexclusive license to use the COSTARS Brand, subject to the following conditions:

a. The Contractor agrees not to transfer to any third party, including without limitation any of its subcontractors or suppliers, any privileges it may have to use the COSTARS Brand under this Contract.

b. The Contractor agrees not to use the COSTARS Brand to represent or imply any Commonwealth endorsement or approval of its products or services.

c. The Contractor is permitted to use the COSTARS Brand in broadcast, or Internet media solely in connection with this Contract and any other Contract with the Commonwealth under which it has agreed to make sales to COSTARS Purchasers. The Contractor may use the COSTARS Brand on business cards, brochures, and other print publications so long as the purpose is to identify the Contractor as a COSTARS vendor, and only so long as the required Contract fee is kept current.

d. Should this Contract terminate for any reason, the Contractor agrees promptly to remove the COSTARS Brand from any and all print and electronic media and to refrain from using the COSTARS Brand for any purpose whatsoever from the date of Contract termination forward.

e. The Contractor agrees to defend, indemnify, and hold harmless the Commonwealth of Pennsylvania and DGS from and against all claims, demands, liabilities, obligations, costs, and expenses of any nature whatsoever arising out of or based upon the Contractor's use of the COSTARS Brand.

f. The Contractor agrees it has no property rights in the use of the COSTARS Brand by virtue of this nonexclusive license. The Contractor expressly waives any claims, including without limitation due process claims that may otherwise be available under the law in the event of any dispute involving these terms of use.

G. 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. The Contractor shall submit the reports through the web-based COSTARS Suppliers' Gateway of the PA Supplier Portal at <https://pasupplierportal.state.pa.us/irj/portal/anonymous> , Enterprise Applications. If a Contractor does not have access to the Internet, the Contractor shall send the reports, using the form and in the format prescribed by DGS, 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 17101-1914.

2. For each PO received, the Contractor shall include on the report the name and address of each COSTARS-Registered Purchaser that has used the Contract along with the sales date, and 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.

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

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.costars.state.pa.us , 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@pa.gov

I.10 IFB-029.1 Prices (Dec 6 2006)

The bid submitted by the successful Bidder will be incorporated into any resulting Contract and the Bidder will be required to provide the awarded item(s) at the prices quoted in its Bid.

I.11 IFB-030.1 Approved Equal (Nov 2006)

Whenever an item is defined in this IFB by trade name and catalogue number of a manufacturer or vendor, the term 'or approved equal,' if not inserted therewith shall be implied. Any reference to a particular manufacturer's product either by trade name or by limited description is solely for the purpose of more clearly indicating the minimum standard of quality desired, except where a 'no substitute' is requested. When a 'no substitute' is requested, the Issuing Office will consider Bids for the referenced product only. The term 'or approved equal' is defined as meaning any other make which, in the sole opinion of the Issuing Office, is of such character, quality, and performance equivalence as to meet the standard of quality of products specified for which it is to be used equally as well as that specified. A Bidder quoting on a product other than the referenced product shall: a) furnish complete identification in its Bid of the product it is offering by trade name, brand and/or model number; b) furnish descriptive literature and data with respect to the substitute product it proposes to furnish; and c) indicate any known specification deviations from the referenced product.

I.12 IFB-031.1 Alternates (Oct 2013)

A Bidder who wants to offer an alternate must notify the Issuing Office in writing, at least five (5) days prior to the scheduled Bid opening, that the Bidder intends to offer an alternate in its Bid. An "alternate" is a product that deviates from the requirements of the specifications in its composition, qualities, performance, size dimension, etc. The written notification from the Bidder must include a complete description of the alternate and must identify the product's deviations from the specifications. Upon receipt of the notification, the Issuing Office will determine whether the alternate is acceptable. If the Issuing Office, in its discretion, determines that the alternate is acceptable, the Issuing Office will issue a change notice to the invitation for bids that revises the specifications. If no change notice is issued revising the specification, a Bid offering the alternate will not be considered for award. If an item or items in the IFB are designated "no substitute," this provision does not apply and no alternate may be proposed by a bidder nor will any alternate be considered by the Issuing Office.

I.13 IFB-032.1 New Equipment (Nov 2006)

Unless otherwise specified in this invitation for bids, all products offered by Bidders must be new or remanufactured. A 'new' product is one that will be used first by the Commonwealth after it is manufactured or produced. A 'remanufactured' product is one which: 1) has been rebuilt, using new or used parts, to a condition which meets the original manufacturer's most recent specifications for the item; 2) does not, in the opinion of the Issuing Office, differ in appearance from a new item; and 3) has the same warranty as a new item. Unless otherwise specified in this invitation for bids, used or reconditioned products are not acceptable. This clause shall not be construed to prohibit Bidders from offering products with recycled content, provided the product is new or remanufactured.

I.14 I-IFB-033.1 Modification or Withdrawal of Bid (Nov 2006)

- a. Bid Modification Prior to Bid Opening. Bids may be modified only by written notice or in person prior to the exact hour and date specified for Bid opening.
- 1) If a Bidder intends to modify its Bid by written notice, the notice must specifically identify the Bid to be modified and must be signed by the Bidder. The Bidder must include evidence of authorization for the individual who signed the modification to modify the Bid on behalf of the Bidder. The Bid modification must be received in a sealed envelope. The sealed envelope must identify the assigned Collective Number and the Bid Opening Time, and should state that enclosed in the envelope is a Bid modification
 - 2) If a Bidder intends to modify its Bid in person, the individual who will modify the Bid must arrive in the Bid Opening Room prior to the Bid Opening Time, show a picture identification and provide evidence of his/her authorization to modify the Bid on behalf of the Bidder. If a Bidder intends to modify its Bid in person, the Bidder may do so only in the presence of an agency employee. (The agency employee will observe the actions taken by the individual to modify the Bid, but will not read the Bid or the modification).
- b. Bid Withdrawal Prior to Bid Opening. Bids may be withdrawn only by written notice or in person prior to the exact hour and date specified for Bid opening.
- 1) If a Bidder intends to withdraw its Bid by written notice, the notice shall specifically identify the Bid to be withdrawn and shall be signed by the Bidder. The Bidder must include evidence of authorization for the individual who signed the bid withdrawal to withdraw the bid on behalf of the Bidder. Except as provided in Subparagraph c, below, bid withdrawals received after the exact hour and date specified for the receipt of Bids shall not be accepted.
 - 2) If a Bidder intends to withdraw its Bid in person, the individual who will withdraw the Bid must arrive in the Bid Opening Room prior to the Bid Opening Time, show a picture identification and provide evidence of his/her authorization to withdraw the Bid on behalf of the Bidder.
- c. Bid Withdrawal After Bid Opening. Bidders are permitted to withdraw erroneous Bids after Bid opening only if the following conditions are met:
- 1) The Bidder submits a written request for withdrawal.
 - 2) The Bidder presents credible evidence with the request that the reason for the lower Bid price was a clerical mistake as opposed to a judgment mistake and was actually due to an unintentional arithmetical error or an unintentional omission of a substantial quantity of work, labor, material, or services made directly in the compilation of the Bid.
 - 3) The request for relief and supporting evidence must be received by the Issuing Office within three (3) business days after Bid opening, but before award of the contract.
 - 4) The Issuing Office shall not permit a Bid withdrawal if the Bid withdrawal would result in the award of the contract on another Bid of the same Bidder, its partner, or a corporation or business venture owned by or in which the bidder has a substantial interest.
 - 5) If a Bidder is permitted to withdraw its Bid, the Bidder cannot supply any material or labor or perform any subcontract or other work agreement for the awarded contractor, without the written approval of the Issuing Office.
- d. Firm Bid. Except as provided above, a Bid may not be modified, withdrawn, or cancelled by any Bidder for a period of sixty (60) days following the time and date designated for Bid opening, unless otherwise specified by the Bidder in its Bid. If the lowest responsible Bidder, as determined by the Issuing Office, withdraws its Bid prior to the expiration of the award period or fails to comply with the requirements set forth in the IFB including but not limited to any requirement to submit performance or payment bonds or insurance certificates within the

required time period, the Bidder shall be liable to the Commonwealth for all costs and damages associated with the re-award or re-bid including the difference between the Bidder's price and the actual cost that the Commonwealth pays for the awarded items.

- e. Clarification and Additional Information. After the receipt of Bids, the Issuing Office shall have the right to contact Bidders for the purpose of seeking:
- 1) Clarification of the Bid which confirms the Issuing Office's understanding of statements or information in the Bid or;
 - 2) Additional information on the items offered; provided the IFB does not require the rejection of the Bid for failure to include such information.

I.15 I-IFB-034.1 Rejection of Bids (Nov 2006)

The Issuing Office reserves the right to reject any and all Bids, to waive technical defects or any informality in Bids, and to accept or reject any part of any Bid if the best interests of the Commonwealth are thereby served.

I.16 Submission-001.1 Representations and Authorizations (February 2017)

By submitting its proposal, each Offeror understands, represents, and acknowledges that:

A. All of the Offeror's information and representations in the proposal are material and important, and the Issuing Office may rely upon the contents of the proposal in awarding the contract(s). The Commonwealth shall treat any misstatement, omission or misrepresentation as fraudulent concealment of the true facts relating to the Proposal submission, punishable pursuant to 18 Pa. C.S. § 4904.

B. The Offeror has arrived at the price(s) and amounts in its proposal independently and without consultation, communication, or agreement with any other Offeror or potential offeror.

C. The Offeror has not disclosed the price(s), the amount of the proposal, nor the approximate price(s) or amount(s) of its proposal to any other firm or person who is an Offeror or potential offeror for this RFP, and the Offeror shall not disclose any of these items on or before the proposal submission deadline specified in the Calendar of Events of this RFP.

D. The Offeror has not attempted, nor will it attempt, to induce any firm or person to refrain from submitting a proposal on this contract, or to submit a proposal higher than this proposal, or to submit any intentionally high or noncompetitive proposal or other form of complementary proposal.

E. The Offeror makes its proposal in good faith and not pursuant to any agreement or discussion with, or inducement from, any firm or person to submit a complementary or other noncompetitive proposal.

F. To the best knowledge of the person signing the proposal for the Offeror, the Offeror, its affiliates, subsidiaries, officers, directors, and employees are not currently under investigation by any governmental agency and have not in the last four years been convicted or found liable for any act prohibited by State or Federal law in any jurisdiction, involving conspiracy or collusion with respect to bidding or proposing on any public contract, except as the Offeror has disclosed in its proposal.

G. To the best of the knowledge of the person signing the proposal for the Offeror and except as the Offeror has otherwise disclosed in its proposal, the Offeror has no outstanding, delinquent obligations to the Commonwealth including, but not limited to, any state tax liability not being contested on appeal or other obligation of the Offeror that is owed to the Commonwealth.

H. The Offeror is not currently under suspension or debarment by the Commonwealth, any other state or the federal government, and if the Offeror cannot so certify, then it shall submit along with its proposal a written explanation of why it cannot make such certification.

I. The Offeror has not made, under separate contract with the Issuing Office, any recommendations to the Issuing Office concerning the need for the services described in its proposal or the specifications for the services described in the proposal.

J. Each Offeror, by submitting its proposal, authorizes Commonwealth agencies to release to the Commonwealth information concerning the Offeror's Pennsylvania taxes, unemployment compensation and workers' compensation liabilities.

K. Until the selected Offeror receives a fully executed and approved written contract from the Issuing Office, there is no legal and valid contract, in law or in equity, and the Offeror shall not begin to perform.

L. The Offeror is not currently engaged, and will not during the duration of the contract engage, in a boycott of a person or an entity based in or doing business with a jurisdiction which the Commonwealth is not prohibited by Congressional statute from engaging in trade or commerce.

PART II - REQUIREMENTS

PART II - REQUIREMENTS

II.1 IFB-006.1b COSTARS Program Election to Participate (July 2012)

If the bidder is willing to sell the awarded items/services at the same prices and/or discounts, and in accordance with the contractual terms and conditions, to COSTARS members, the bidder should complete and return the COSTARS Program Election to Participate form which is an attachment to this IFB. If the bidder is asserting that it is a Department of General Services Certified Small Business, the bidder must submit its active certification with the bid response.

II.2 II-IFB-008.1b Lobbying Certification and Disclosure – Electronic Submission. (Oct 2006).

With respect to an award of a federal contract, grant, or cooperative agreement exceeding \$100,000 or an award of a federal loan or a commitment providing for the United States to insure or guarantee a loan exceeding \$150,000 all recipients must certify that they will not use federal funds for lobbying and must disclose the use of non-federal funds for lobbying by filing required documentation. Offerors must complete and return the Lobbying Certification Form and the Disclosure of Lobbying Activities Form, which are attached to and made a part of this IFB. The completed and signed Lobbying Certification Form and the Disclosure of Lobbying Activities Form should be submitted with the Bid Response. Commonwealth agencies will not contract with outside firms or individuals to perform lobbying services, regardless of the source of funds.

II.3 IFB-010.1 License Required (Oct 2013)

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 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 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

II.4 IFB-011.1 Authorized Dealer/Franchiser (Oct 2006)

In order to be eligible for award, an offeror must be an Authorized/Franchised dealer representing the manufacturer of Vehicles offered to the Commonwealth.

II.5 II-IFB-016.1 Post-Submission Descriptive Literature (Dec 2006)

The Commonwealth may, during its evaluation of the bids, require any bidder to submit cuts, illustrations, drawings, prints, test data sheets, specification sheets and brochures which detail construction features, design, components, materials used, applicable dimensions and any other pertinent information which the Issuing Office may require in order to evaluate the product(s) offered. The required information must be submitted within two (2) business days after notification from the Issuing Office. Failure to submit the required information prior to the expiration of the second business day after notification shall result in the rejection of the bid as non-responsive.

II.6 II-IFB-017.1b Reciprocal Limitations Act – Electronic Submittal (February 2007)

This procurement is subject to the Reciprocal Limitations Act. Bidders must complete and submit with the Bid Response the State of Manufacture Chart, which is contained in GSPUR-89 ("Reciprocal Limitations Act Requirements") which is attached to and made part of this IFB. The completed State of Manufacture Chart should be submitted as part of the Bid Reponse

II.7 II-IFB-018.1b Iran Free Procurement Certification and Disclosure – Electronic Submittal (November 2016)

Prior to entering a contract worth at least \$1,000,000 or more with a Commonwealth entity, a bidder must: a) certify it is not on the current list of persons engaged in investment activities in Iran created by the Pennsylvania Department of General Services ("DGS") pursuant to Section 3503 of the Procurement Code and is eligible to contract with the Commonwealth under Sections 3501-3506 of the Procurement Code; or b) demonstrate it has received an exception from the certification requirement for that solicitation or contract pursuant to Section 3503(e). All bidders must complete and return the Iran Free Procurement Certification form, which is attached hereto and made part of this IFB. The completed and signed Iran Free Procurement Certification form must be submitted with the Bid Response.

See the following web page for current Iran Free Procurement list:

<http://www.dgs.pa.gov/businesses/materials%20and%20services%20procurement/procurement-resources/pages/default.aspx#.WDNfJJ>

PART III - SELECTION CRITERIA

PART III - SELECTION CRITERIA

III.1 III-IFB-001.1a Mandatory Responsiveness Requirements (Oct 2006)

To be eligible for selection, a bid must be:

- a. Timely received from a Bidder;
- b. Properly signed by the Bidder.

III.2 III-IFB-006.1f Method of Award - All Bidders (April 2011)

Award will be made to all responsive and responsible bidders.

III.3 III-IFB-007.1 Awards (May 2011)

Unless all Bids are rejected, and except as otherwise provided by law, award will be made through the issuance of a contract/purchase order in accordance with the method of award. Unless otherwise specified by the Issuing Office in the IFB form the Commonwealth reserves the right to award by item or on a total Bid basis, whichever is deemed more advantageous to the Commonwealth. In cases of discrepancies in prices, the unit price will be binding unless the unit price is obviously in error and the extended price is obviously correct, in which case the erroneous unit price will be corrected. As a condition for receipt of award of a contract/purchase order, the Bidder must be registered in the Commonwealth of Pennsylvania's Vendor Master file. In order to register, bidders must visit the Pa Supplier Portal at <https://www.pasupplierportal.state.pa.us/> or call the Customer Support Center at 877-435-7363 or 717-346-2676.

III.4 III-IFB-008.1 Tie Bids (Nov 2006)

All tie bids will be broken by the Issuing Office.

III.5 III-IFB-009.1 Prompt Payment Discounts (Nov 2006)

Prompt payment discounts will not be considered in making an award. If prompt payment discounts are offered by any Bidder, however, the Issuing Office will take advantage of such offer.

III.6 III-IFB-010.1 Option for Separate Competitive Bidding Procedure (Nov 2006)

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

III.7 III-IFB-014.1 Rebates (Nov 2006)

Any rebate applicable at the time of bid should be taken into consideration by the bidder in calculating its bid price. Bidders must specifically state in their bid proposal, when applicable, that rebates have been considered in arriving at the bid price. Following award, the Commonwealth will assign to the awarded bidder, any rebates which the bidder stated that he took into consideration. If the bidder fails to include such a statement, the Commonwealth will receive the full benefit of the manufacturer's rebate.

PART IV - WORK STATEMENT

PART IV - WORK STATEMENT

IV.1 IFB-001.1a Specifications (Nov 2006)

The Commonwealth is seeking bids to procure the item(s) set forth in the attached document entitled "Specifications."

PART V - CONTRACT TERMS and CONDITIONS

PART V - CONTRACT TERMS and CONDITIONS

V.1 CONTRACT-001.1b Contract Terms and Conditions (Nov 30, 2006)

The Contract with the awarded bidder (who shall become the "Contractor") shall include the following terms and conditions:

V.2 CONTRACT-002.1a Term of Contract – Contract (May 2012)

The initial term of the Contract shall be 01 year(s) and 00 month(s).

The term of the Contract shall commence on the Effective Date (as defined below) and shall end on the Expiration Date identified in the Contract, subject to the other provisions of the Contract.

The Effective Date shall be: a) the Effective Date printed on the Contract after the Contract has been fully executed by the Commonwealth (signed and approved as required by the Commonwealth contracting procedures) or b) the "Valid from" date printed on the Contract, whichever is later.

V.3 CONTRACT-002.2b Renewal of Contract Term – Mutual (Oct 2013)

The Contract may be mutually renewed for a maximum of 4 additional 1 year term(s), so long as the Commonwealth provides written notice to Contractor of its intention to extend the Contract by letter dated not less than 090 days prior to the expiration of the term of the agreement, or any extension thereof, and the Contractor consents to the renewal not less than 060 days prior to the expiration of the term of the agreement or any extension thereof. The renewal may be exercised as individual or multiple year terms(s). Any renewal will be under the same terms, covenants and conditions. No further document is required to be executed to renew the term of the contract.

V.4 CONTRACT-002.3 Extension of Contract Term (Nov 30 2006)

The Commonwealth reserves the right, upon notice to the Contractor, to extend any single term of the Contract for up to three (3) months upon the same terms and conditions.

V.5 CONTRACT-003.1a Signatures – Contract (July 2015)

The Contract shall not be a legally binding contract until the fully-executed Contract has been sent to the Contractor. No Commonwealth employee has the authority to verbally direct the commencement of any work or delivery of any supply under this Contract prior to the Effective Date. The Contractor hereby waives any claim or cause of action for any service or work performed prior to the Effective Date.

The Contract may be electronically signed by the Commonwealth. The electronically-printed name of the Purchasing Agent represents the signature of that individual who has the authority, on behalf of the Commonwealth, to bind the Commonwealth to the terms of the Contract. If the Contract output form does not have "Fully Executed" at the top of the first page and does not have the name of the Purchasing Agent printed in the appropriate box, the Contract has not been fully executed.

The fully-executed Contract may be sent to the Contractor electronically or through facsimile equipment. The electronic transmission of the Contract shall require acknowledgement of receipt of the transmission by the Contractor. Receipt of the electronic or facsimile transmission of the Contract shall constitute receipt of the fully-executed Contract.

The Commonwealth and the Contractor specifically agree as follows:

- a. No handwritten signature shall be required in order for the Contract to be legally enforceable.
- b. The parties agree that no writing shall be required in order to make the Contract legally binding, notwithstanding

contrary requirements in any law. The parties hereby agree not to contest the validity or enforceability of a genuine Contract or acknowledgement issued electronically under the provisions of a statute of frauds or any other applicable law relating to whether certain agreements be in writing and signed by the party bound thereby. Any genuine Contract or acknowledgement issued electronically, if introduced as evidence on paper in any judicial, arbitration, mediation, or administrative proceedings, will be admissible as between the parties to the same extent and under the same conditions as other business records originated and maintained in documentary form. Neither party shall contest the admissibility of copies of a genuine Contract or acknowledgements under either the business records exception to the hearsay rule or the best evidence rule on the basis that the Contract or acknowledgement were not in writing or signed by the parties. A Contract or acknowledgment shall be deemed to be genuine for all purposes if it is transmitted to the location designated for such documents.

c. Each party will immediately take steps to verify any document that appears to be obviously garbled in transmission or improperly formatted to include re-transmission of any such document if necessary.

V.6 CONTRACT-004.1a Definitions (Oct 2013)

As used in this Contract, these words shall have the following meanings:

a. Agency: The department, board, commission or other agency of the Commonwealth of Pennsylvania listed as the Purchasing Agency. If a COSTARS entity or external procurement activity has issued an order against this contract, that entity shall also be identified as "Agency".

b. Contracting Officer: The person authorized to administer this Contract for the Commonwealth and to make written determinations with respect to the Contract.

c. Days: Unless specifically indicated otherwise, days mean calendar days.

d. Developed Works or Developed Materials: All documents, sketches, drawings, designs, works, papers, files, reports, computer programs, computer documentation, data, records, software, samples or any other tangible material without limitation authored or prepared by Contractor as the work product covered in the scope of work for the Project.

e. Documentation: All materials required to support and convey information about the services required by this Contract. It includes, but is not necessarily restricted to, written reports and analyses, diagrams, maps, logical and physical designs, system designs, computer programs, flow charts, disks, and/or other machine-readable storage media.

f. Services: All Contractor activity necessary to satisfy the Contract.

V.7 CONTRACT-005.1c Purchase Orders - Vehicles (July 2015)

Commonwealth agencies may issue Purchase Orders against the Contract. These orders constitute the Contractor's authority to make delivery. All Purchase Orders received by the Contractor up to and including the expiration date of the Contract are acceptable and must be performed in accordance with the Contract. Each Purchase Order will be deemed to incorporate the terms and conditions set forth in the Contract.

Purchase Orders may be electronically signed by the Agency. The electronically-printed name of the purchaser represents the signature of that individual who has the authority, on behalf of the Commonwealth, to authorize the Contractor to proceed.

Purchase Orders may be issued electronically or through facsimile equipment. Receipt of the electronic or facsimile transmission of the Purchase Order shall constitute receipt of an order. Orders received by the Contractor after 4:00 p.m. will be considered received the following business day. The Contractor must acknowledge receipt of an order within ten (10) days from the day the purchase order is issued to the Contractor. In order to insure timely delivery, the Commonwealth should follow up on orders if written acknowledgment is not received within ten (10) days.

The Commonwealth and the Contractor specifically agree as follows:

a. No handwritten signature shall be required in order for the Contract or Purchase Order to be legally enforceable.

b. Any order which is issued electronically shall not give rise to any obligation to deliver on the part of the Contractor, or any obligation to receive and pay for delivered products on the part of the Commonwealth, unless and until the Commonwealth Agency transmitting the order has properly received an acknowledgement.

c. The parties agree that no writing shall be required in order to make the Purchase Order legally binding. The parties hereby agree not to contest the validity or enforceability of a Purchase Order or acknowledgement issued electronically under the provisions of a statute of frauds or any other applicable law relating to whether certain agreements be in writing and signed by the party bound thereby. Any Purchase Order or acknowledgement issued electronically, if introduced as evidence on paper in any judicial, arbitration, mediation, or administrative proceedings, will be admissible as between the parties to the same extent and under the same conditions as other business records originated and maintained in documentary form. Neither party shall contest the admissibility of copies of Purchase Orders or acknowledgements under either the business records exception to the hearsay rule or the best evidence rule on the basis that the Purchase Order or acknowledgement were not in writing or signed by the parties. A Purchase Order or acknowledgment shall be deemed to be genuine for all purposes if it is transmitted to the location designated for such documents.

d. Each party will immediately take steps to verify any document that appears to be obviously garbled in transmission or improperly formatted to include re-transmission of any such document if necessary.

V.8 CONTRACT-006.1 Independent Prime Contractor (Oct 2006)

In performing its obligations under the Contract, the Contractor will act as an independent contractor and not as an employee or agent of the Commonwealth. The Contractor will be responsible for all services in this Contract whether or not Contractor provides them directly. Further, the Contractor is the sole point of contact with regard to all contractual matters, including payment of any and all charges resulting from the Contract.

V.9 CONTRACT-007.01c Delivery – Vehicles (Oct 2013)

All vehicle(s) shall be delivered F.O.B. Destination. The Contractor agrees to bear the risk of loss, injury, or destruction of the vehicle(s) ordered prior to the receipt of the vehicle(s) by the Commonwealth. Such loss, injury, or destruction shall not release the Contractor from any contractual obligations. Except as otherwise provided in this contract, all vehicle(s) must be delivered within the time period specified in the Contract. Time is of the essence and, in addition to any other remedies, the Contract is subject to termination for failure to deliver as specified.

V.10 CONTRACT-007.02 Estimated Quantities (Nov 30 2006)

It shall be understood and agreed that any quantities listed in the Contract are estimated only and may be increased or decreased in accordance with the actual requirements of the Commonwealth and that the Commonwealth in accepting any bid or portion thereof, contracts only and agrees to purchase only the materials and services in such quantities as represent the actual requirements of the Commonwealth. The Commonwealth reserves the right to purchase materials and services covered under the Contract through a separate competitive procurement procedure, whenever Commonwealth deems it to be in its best interest.

V.11 CONTRACT-008.1a Warranty. (Oct 2006)

The Contractor warrants that all items furnished and all services performed by the Contractor, its agents and subcontractors shall be free and clear of any defects in workmanship or materials. Unless otherwise stated in the Contract, all items are warranted for a period of one year following delivery by the Contractor and acceptance by the Commonwealth. The Contractor shall repair, replace or otherwise correct any problem with the delivered item. When an item is replaced, it shall be replaced with an item of equivalent or superior quality without any additional cost to the Commonwealth.

V.12 CONTRACT-009.1c Patent, Copyright, and Trademark Indemnity (Oct 2013)

The Contractor warrants that it is the sole owner or author of, or has entered into a suitable legal agreement

concerning either: a) the design of any product or process provided or used in the performance of the Contract which is covered by a patent, copyright, or trademark registration or other right duly authorized by state or federal law or b) any copyrighted matter in any report, document or other material provided to the Commonwealth under the contract.

The Contractor shall defend any suit or proceeding brought against the Commonwealth on account of any alleged patent, copyright or trademark infringement in the United States of any of the products provided or used in the performance of the Contract.

This is upon condition that the Commonwealth shall provide prompt notification in writing of such suit or proceeding; full right, authorization and opportunity to conduct the defense thereof; and full information and all reasonable cooperation for the defense of same.

As principles of governmental or public law are involved, the Commonwealth may participate in or choose to conduct, in its sole discretion, the defense of any such action.

If information and assistance are furnished by the Commonwealth at the Contractor's written request, it shall be at the Contractor's expense, but the responsibility for such expense shall be only that within the Contractor's written authorization.

The Contractor shall indemnify and hold the Commonwealth harmless from all damages, costs, and expenses, including attorney's fees that the Contractor or the Commonwealth may pay or incur by reason of any infringement or violation of the rights occurring to any holder of copyright, trademark, or patent interests and rights in any products provided or used in the performance of the Contract.

If any of the products provided by the Contractor in such suit or proceeding are held to constitute infringement and the use is enjoined, the Contractor shall, at its own expense and at its option, either procure the right to continue use of such infringement products, replace them with non-infringement equal performance products or modify them so that they are no longer infringing.

If the Contractor is unable to do any of the preceding, the Contractor agrees to remove all the equipment or software which are obtained contemporaneously with the infringing product, or, at the option of the Commonwealth, only those items of equipment or software which are held to be infringing, and to pay the Commonwealth: 1) any amounts paid by the Commonwealth towards the purchase of the product, less straight line depreciation; 2) any license fee paid by the Commonwealth for the use of any software, less an amount for the period of usage; and 3) the pro rata portion of any maintenance fee representing the time remaining in any period of maintenance paid for. The obligations of the Contractor under this paragraph continue without time limit. No costs or expenses shall be incurred for the account of the Contractor without its written consent.

V.13 CONTRACT-009.1d Ownership Rights (Oct 2006)

The Commonwealth shall have unrestricted authority to reproduce, distribute, and use any submitted report, data, or material, and any software or modifications and any associated documentation that is designed or developed and delivered to the Commonwealth as part of the performance of the Contract.

V.14 CONTRACT-010.1a Acceptance (Oct 2006)

No item(s) received by the Commonwealth shall be deemed accepted until the Commonwealth has had a reasonable opportunity to inspect the item(s). Any item(s) which is discovered to be defective or fails to conform to the specifications may be rejected upon initial inspection or at any later time if the defects contained in the item(s) or the noncompliance with the specifications were not reasonably ascertainable upon the initial inspection. It shall thereupon become the duty of the Contractor to remove rejected item(s) from the premises without expense to the Commonwealth within fifteen (15) days after notification. Rejected item(s) left longer than fifteen (15) days will be regarded as abandoned, and the Commonwealth shall have the right to dispose of them as its own property and shall retain that portion of the proceeds of any sale which represents the Commonwealth's costs and expenses in regard to the storage and sale of the item(s). Upon notice of rejection, the Contractor shall immediately replace all such rejected item(s) with others conforming to the specifications and which are not defective. If the Contractor fails,

neglects or refuses to do so, the Commonwealth shall then have the right to procure a corresponding quantity of such item(s), and deduct from any monies due or that may thereafter become due to the Contractor, the difference between the price stated in the Contract and the cost thereof to the Commonwealth.

V.15 CONTRACT-010.2 Product Conformance (March 2012)

The Commonwealth reserves the right to require any and all Contractors to:

1. Provide certified data from laboratory testing performed by the Contractor, or performed by an independent laboratory, as specified by the Commonwealth.
2. Supply published manufacturer product documentation.
3. Permit a Commonwealth representative to witness testing at the Contractor's location or at an independent laboratory.
4. Complete a survey/questionnaire relating to the bid requirements and specifications.
5. Provide customer references.
6. Provide a product demonstration at a location near Harrisburg or the using agency location.

V.16 CONTRACT-010.3 Rejected Material Not Considered Abandoned (March 2012)

The Commonwealth shall have the right to not regard any rejected material as abandoned and to demand that the Contractor remove the rejected material from the premises within thirty (30) days of notification. The Contractor shall be responsible for removal of the rejected material as well as proper clean-up. If the Contractor fails or refuses to remove the rejected material as demanded by the Commonwealth, the Commonwealth may seek payment from, or set-off from any payments due to the Contractor under this or any other Contract with the Commonwealth, the costs of removal and clean-up. This is in addition to all other rights to recover costs incurred by the Commonwealth.

V.17 CONTRACT-011.1a Compliance With Law (Oct 2006)

The Contractor shall comply with all applicable federal and state laws and regulations and local ordinances in the performance of the Contract.

V.18 CONTRACT-013.1 Environmental Provisions (Oct 2006)

In the performance of the Contract, the Contractor shall minimize pollution and shall strictly comply with all applicable environmental laws and regulations, including, but not limited to: the Clean Streams Law Act of June 22, 1937 (P.L. 1987, No. 394), as amended 35 P.S. Section 691.601 et seq.; the Pennsylvania Solid Waste Management Act, Act of July 7, 1980 (P.L. 380, No. 97), as amended, 35 P.S. Section 6018.101 et seq. ; and the Dam Safety and Encroachment Act, Act of November 26, 1978 (P.L. 1375, No. 325), as amended , 32 P.S. Section 693.1.

V.19 CONTRACT-014.1 Post-Consumer Recycled Content (June 2016)

Except as specifically waived by the Department of General Services in writing, any products which are provided to the Commonwealth as a part of the performance of the Contract must meet the minimum percentage levels for total recycled content as specified by the Environmental Protection Agency in its Comprehensive Procurement Guidelines, which can be found at <https://www.epa.gov/smm/comprehensive-procurement-guideline-cpg-program> .

V.20 CONTRACT-014.3 Recycled Content Enforcement (February 2012)

The Contractor may be required, after delivery of the Contract item(s), to provide the Commonwealth with documentary evidence that the item(s) was in fact produced with the required minimum percentage of post-consumer and recovered material content.

V.21 CONTRACT-015.1 Compensation (Oct 2006)

The Contractor shall be required to furnish the awarded item(s) at the price(s) quoted in the Purchase Order. All item(s) shall be delivered within the time period(s) specified in the Purchase Order. The Contractor shall be compensated only for item(s) that are delivered and accepted by the Commonwealth.

V.22 CONTRACT-015.2 Billing Requirements (July 2021)

Unless the Contractor has been authorized by the Commonwealth for Evaluated Receipt Settlement or Vendor Self-Invoicing, the Contractor shall include in all of its invoices the following minimum information:

- Vendor name and "Remit to" address, including SAP Vendor number;
- SAP Purchase Order number;
- Delivery Address, including name of Commonwealth agency;
- Description of the supplies/services delivered in accordance with SAP Purchase Order (include purchase order line number if possible);
- Quantity provided;
- Unit price;
- Price extension;
- Total price; and
- Delivery date of supplies or services.

If an invoice does not contain the minimum information set forth in this paragraph, the Commonwealth may return the invoice as improper. If the Commonwealth returns an invoice as improper, the time for processing a payment will be suspended until the Commonwealth receives a correct invoice. The Contractor may not receive payment until the Commonwealth has received a correct invoice.

Contractors are required to establish separate billing accounts with each using agency and invoice them directly. Each invoice shall be itemized with adequate detail and match the line item on the Purchase Order. In no instance shall any payment be made for services to the Contractor that are not in accordance with the prices on the Purchase Order, the Contract, updated price lists or any discounts negotiated by the purchasing agency.

V.23 CONTRACT-015.9 Price Adjustment – Prospective Prices Established by Submission of New Manufacturers Price Lists (Oct 2013)

The Contractor may increase the rates to be paid by the Commonwealth under the contract by submitting new manufacturers' price lists on a/an ANNUAL basis. The Contractor shall give at least 060 days prior notice of a price increase. The Contractor's discount must remain firm.

V.24 CONTRACT-016.1 Payment (Oct 2006)

- a. The Commonwealth shall put forth reasonable efforts to make payment by the required payment date. The required payment date is: (a) the date on which payment is due under the terms of the Contract; (b) thirty (30) days after a proper invoice actually is received at the "Bill To" address if a date on which payment is due is not specified in the Contract (a "proper" invoice is not received until the Commonwealth accepts the service as satisfactorily performed); or (c) the payment date specified on the invoice if later than the dates established by (a) and (b) above. Payment may be delayed if the payment amount on an invoice is not based upon the price(s) as stated in the Contract. If any payment is not made within fifteen (15) days after the required payment date, the Commonwealth may pay interest as determined by the Secretary of Budget in accordance with Act No. 266 of

1982 and regulations promulgated pursuant thereto. Payment should not be construed by the Contractor as acceptance of the service performed by the Contractor. The Commonwealth reserves the right to conduct further testing and inspection after payment, but within a reasonable time after performance, and to reject the service if such post payment testing or inspection discloses a defect or a failure to meet specifications. The Contractor agrees that the Commonwealth may set off the amount of any state tax liability or other obligation of the Contractor or its subsidiaries to the Commonwealth against any payments due the Contractor under any contract with the Commonwealth.

- b. The Commonwealth shall have the option of using the Commonwealth purchasing card to make purchases under the Contract or Purchase Order. The Commonwealth's purchasing card is similar to a credit card in that there will be a small fee which the Contractor will be required to pay and the Contractor will receive payment directly from the card issuer rather than the Commonwealth. Any and all fees related to this type of payment are the responsibility of the Contractor. In no case will the Commonwealth allow increases in prices to offset credit card fees paid by the Contractor or any other charges incurred by the Contractor, unless specifically stated in the terms of the Contract or Purchase Order.

V.25 CONTRACT-016.2 Payment – Electronic Funds Transfer (July 2022)

- a. The Commonwealth will make contract payments through Automated Clearing House (ACH). Within 10 days of award of the contract or purchase order, the contractor must submit or must have already submitted their ACH information within their user profile in the Commonwealth's procurement system (SRM).
- b. The contractor must submit a unique invoice number with each invoice submitted. The unique invoice number will be listed on the Commonwealth of Pennsylvania's ACH remittance advice to enable the contractor to properly apply the state agency's payment to the invoice submitted.
- c. It is the responsibility of the contractor to ensure that the ACH information contained in SRM is accurate and complete. Failure to maintain accurate and complete information may result in delays in payments.

V.26 CONTRACT-017.1 Taxes (Dec 5 2006)

The Commonwealth is exempt from all excise taxes imposed by the Internal Revenue Service and has accordingly registered with the Internal Revenue Service to make tax free purchases under Registration No. 23-23740001-K. With the exception of purchases of the following items, no exemption certificates are required and none will be issued: undyed diesel fuel, tires, trucks, gas guzzler emergency vehicles, and sports fishing equipment. The Commonwealth is also exempt from Pennsylvania state sales tax, local sales tax, public transportation assistance taxes and fees and vehicle rental tax. The Department of Revenue regulations provide that exemption certificates are not required for sales made to governmental entities and none will be issued. Nothing in this paragraph is meant to exempt a construction contractor from the payment of any of these taxes or fees which are required to be paid with respect to the purchase, use, rental, or lease of tangible personal property or taxable services used or transferred in connection with the performance of a construction contract.

V.27 CONTRACT-018.1 Assignment of Antitrust Claims (Oct 2006)

The Contractor and the Commonwealth recognize that in actual economic practice, overcharges by the Contractor's suppliers resulting from violations of state or federal antitrust laws are in fact borne by the Commonwealth. As part of the consideration for the award of the Contract, and intending to be legally bound, the Contractor assigns to the Commonwealth all right, title and interest in and to any claims the Contractor now has, or may acquire, under state or federal antitrust laws relating to the products and services which are the subject of this Contract.

V.28 CONTRACT-019.1 Hold Harmless Provision (Nov 30 2006)

- a. The Contractor shall hold the Commonwealth harmless from and indemnify the Commonwealth against any and all third party claims, demands and actions based upon or arising out of any activities performed by the

Contractor and its employees and agents under this Contract, provided the Commonwealth gives Contractor prompt notice of any such claim of which it learns. Pursuant to the Commonwealth Attorneys Act (71 P.S. Section 732-101, et seq.), the Office of Attorney General (OAG) has the sole authority to represent the Commonwealth in actions brought against the Commonwealth. The OAG may, however, in its sole discretion and under such terms as it deems appropriate, delegate its right of defense. If OAG delegates the defense to the Contractor, the Commonwealth will cooperate with all reasonable requests of Contractor made in the defense of such suits.

- b. Notwithstanding the above, neither party shall enter into any settlement without the other party's written consent, which shall not be unreasonably withheld. The Commonwealth may, in its sole discretion, allow the Contractor to control the defense and any related settlement negotiations.

V.29 CONTRACT-020.1 Audit Provisions (Oct 2006)

The Commonwealth shall have the right, at reasonable times and at a site designated by the Commonwealth, to audit the books, documents and records of the Contractor to the extent that the books, documents and records relate to costs or pricing data for the Contract. The Contractor agrees to maintain records which will support the prices charged and costs incurred for the Contract. The Contractor shall preserve books, documents, and records that relate to costs or pricing data for the Contract for a period of three (3) years from date of final payment. The Contractor shall give full and free access to all records to the Commonwealth and/or their authorized representatives.

V.30 CONTRACT-021.1 Default (Oct 2013)

a. The Commonwealth may, subject to the Force Majeure provisions of this Contract, and in addition to its other rights under the Contract, declare the Contractor in default by written notice thereof to the Contractor, and terminate (as provided in the Termination Provisions of this Contract) the whole or any part of this Contract or any Purchase Order for any of the following reasons:

- 1) Failure to begin work within the time specified in the Contract or Purchase Order or as otherwise specified;
- 2) Failure to perform the work with sufficient labor, equipment, or material to ensure the completion of the specified work in accordance with the Contract or Purchase Order terms;
- 3) Unsatisfactory performance of the work;
- 4) Failure to deliver the awarded item(s) within the time specified in the Contract or Purchase Order or as otherwise specified;
- 5) Improper delivery;
- 6) Failure to provide an item(s) which is in conformance with the specifications referenced in the Contract or Purchase Order;
- 7) Delivery of a defective item;
- 8) Failure or refusal to remove material, or remove and replace any work rejected as defective or unsatisfactory;
- 9) Discontinuance of work without approval;
- 10) Failure to resume work, which has been discontinued, within a reasonable time after notice to do so;
- 11) Insolvency or bankruptcy;
- 12) Assignment made for the benefit of creditors;
- 13) Failure or refusal within 10 days after written notice by the Contracting Officer, to make payment or show

cause why payment should not be made, of any amounts due for materials furnished, labor supplied or performed, for equipment rentals, or for utility services rendered;

14) Failure to protect, to repair, or to make good any damage or injury to property;

15) Breach of any provision of the Contract;

16) Failure to comply with representations made in the Contractor's bid/proposal; or

17) Failure to comply with applicable industry standards, customs, and practice.

b. In the event that the Commonwealth terminates this Contract or any Purchase Order in whole or in part as provided in Subparagraph a. above, the Commonwealth may procure, upon such terms and in such manner as it determines, items similar or identical to those so terminated, and the Contractor shall be liable to the Commonwealth for any reasonable excess costs for such similar or identical items included within the terminated part of the Contract or Purchase Order.

c. If the Contract or a Purchase Order is terminated as provided in Subparagraph a. above, the Commonwealth, in addition to any other rights provided in this paragraph, may require the Contractor to transfer title and deliver immediately to the Commonwealth in the manner and to the extent directed by the Contracting Officer, such partially completed items, including, where applicable, reports, working papers and other documentation, as the Contractor has specifically produced or specifically acquired for the performance of such part of the Contract or Purchase Order as has been terminated. Except as provided below, payment for completed work accepted by the Commonwealth shall be at the Contract price. Except as provided below, payment for partially completed items including, where applicable, reports and working papers, delivered to and accepted by the Commonwealth shall be in an amount agreed upon by the Contractor and Contracting Officer. The Commonwealth may withhold from amounts otherwise due the Contractor for such completed or partially completed works, such sum as the Contracting Officer determines to be necessary to protect the Commonwealth against loss.

d. The rights and remedies of the Commonwealth provided in this paragraph shall not be exclusive and are in addition to any other rights and remedies provided by law or under this Contract.

e. The Commonwealth's failure to exercise any rights or remedies provided in this paragraph shall not be construed to be a waiver by the Commonwealth of its rights and remedies in regard to the event of default or any succeeding event of default.

f. Following exhaustion of the Contractor's administrative remedies as set forth in the Contract Controversies Provision of the Contract, the Contractor's exclusive remedy shall be to seek damages in the Board of Claims.

V.31 CONTRACT-022.1 Force Majeure (Oct 2006)

Neither party will incur any liability to the other if its performance of any obligation under this Contract is prevented or delayed by causes beyond its control and without the fault or negligence of either party. Causes beyond a party's control may include, but aren't limited to, acts of God or war, changes in controlling law, regulations, orders or the requirements of any governmental entity, severe weather conditions, civil disorders, natural disasters, fire, epidemics and quarantines, general strikes throughout the trade, and freight embargoes.

The Contractor shall notify the Commonwealth orally within five (5) days and in writing within ten (10) days of the date on which the Contractor becomes aware, or should have reasonably become aware, that such cause would prevent or delay its performance. Such notification shall (i) describe fully such cause(s) and its effect on performance, (ii) state whether performance under the contract is prevented or delayed and (iii) if performance is delayed, state a reasonable estimate of the duration of the delay. The Contractor shall have the burden of proving that such cause(s) delayed or prevented its performance despite its diligent efforts to perform and shall produce such supporting documentation as the Commonwealth may reasonably request. After receipt of such notification, the Commonwealth may elect to cancel the Contract, cancel the Purchase Order, or to extend the time for performance as reasonably necessary to compensate for the Contractor's delay.

In the event of a declared emergency by competent governmental authorities, the Commonwealth by notice to the

Contractor, may suspend all or a portion of the Contract or Purchase Order.

V.32 CONTRACT-023.1a Termination Provisions (Oct 2013)

The Commonwealth has the right to terminate this Contract or any Purchase Order for any of the following reasons. Termination shall be effective upon written notice to the Contractor.

a. **TERMINATION FOR CONVENIENCE:** The Commonwealth shall have the right to terminate the Contract or a Purchase Order for its convenience if the Commonwealth determines termination to be in its best interest. The Contractor shall be paid for work satisfactorily completed prior to the effective date of the termination, but in no event shall the Contractor be entitled to recover loss of profits.

b. **NON-APPROPRIATION:** The Commonwealth's obligation to make payments during any Commonwealth fiscal year succeeding the current fiscal year shall be subject to availability and appropriation of funds. When funds (state and/or federal) are not appropriated or otherwise made available to support continuation of performance in a subsequent fiscal year period, the Commonwealth shall have the right to terminate the Contract or a Purchase Order. The Contractor shall be reimbursed for the reasonable value of any nonrecurring costs incurred but not amortized in the price of the supplies or services delivered under the Contract. Such reimbursement shall not include loss of profit, loss of use of money, or administrative or overhead costs. The reimbursement amount may be paid from any appropriations available for that purpose.

c. **TERMINATION FOR CAUSE:** The Commonwealth shall have the right to terminate the Contract or a Purchase Order for Contractor default under the Default Clause upon written notice to the Contractor. The Commonwealth shall also have the right, upon written notice to the Contractor, to terminate the Contract or a Purchase Order for other cause as specified in the Contract or by law. If it is later determined that the Commonwealth erred in terminating the Contract or a Purchase Order for cause, then, at the Commonwealth's discretion, the Contract or Purchase Order shall be deemed to have been terminated for convenience under the Subparagraph a.

V.33 CONTRACT-024.1 Contract Controversies (Oct 2011)

a. In the event of a controversy or claim arising from the Contract, the Contractor must, within six months after the cause of action accrues, file a written claim with the contracting officer for a determination. The claim shall state all grounds upon which the Contractor asserts a controversy exists. If the Contractor fails to file a claim or files an untimely claim, the Contractor is deemed to have waived its right to assert a claim in any forum. At the time the claim is filed, or within sixty (60) days thereafter, either party may request mediation through the Commonwealth Office of General Counsel Dispute Resolution Program.

b. If the Contractor or the contracting officer requests mediation and the other party agrees, the contracting officer shall promptly make arrangements for mediation. Mediation shall be scheduled so as to not delay the issuance of the final determination beyond the required 120 days after receipt of the claim if mediation is unsuccessful. If mediation is not agreed to or if resolution is not reached through mediation, the contracting officer shall review timely-filed claims and issue a final determination, in writing, regarding the claim. The final determination shall be issued within 120 days of the receipt of the claim, unless extended by consent of the contracting officer and the Contractor. The contracting officer shall send his/her written determination to the Contractor. If the contracting officer fails to issue a final determination within the 120 days (unless extended by consent of the parties), the claim shall be deemed denied. The contracting officer's determination shall be the final order of the purchasing agency.

c. Within fifteen (15) days of the mailing date of the determination denying a claim or within 135 days of filing a claim if, no extension is agreed to by the parties, whichever occurs first, the Contractor may file a statement of claim with the Commonwealth Board of Claims. Pending a final judicial resolution of a controversy or claim, the Contractor shall proceed diligently with the performance of the Contract in a manner consistent with the determination of the contracting officer and the Commonwealth shall compensate the Contractor pursuant to the terms of the Contract.

V.34 CONTRACT-025.1 Assignability and Subcontracting (Oct 2013)

- a. Subject to the terms and conditions of this paragraph, this Contract shall be binding upon the parties and their respective successors and assigns.
- b. The Contractor shall not subcontract with any person or entity to perform all or any part of the work to be performed under this Contract without the prior written consent of the Contracting Officer, which consent may be withheld at the sole and absolute discretion of the Contracting Officer.
- c. The Contractor may not assign, in whole or in part, this Contract or its rights, duties, obligations, or responsibilities hereunder without the prior written consent of the Contracting Officer, which consent may be withheld at the sole and absolute discretion of the Contracting Officer.
- d. Notwithstanding the foregoing, the Contractor may, without the consent of the Contracting Officer, assign its rights to payment to be received under the Contract, provided that the Contractor provides written notice of such assignment to the Contracting Officer together with a written acknowledgement from the assignee that any such payments are subject to all of the terms and conditions of this Contract.
- e. For the purposes of this Contract, the term "assign" shall include, but shall not be limited to, the sale, gift, assignment, pledge, or other transfer of any ownership interest in the Contractor provided, however, that the term shall not apply to the sale or other transfer of stock of a publicly traded company.
- f. Any assignment consented to by the Contracting Officer shall be evidenced by a written assignment agreement executed by the Contractor and its assignee in which the assignee agrees to be legally bound by all of the terms and conditions of the Contract and to assume the duties, obligations, and responsibilities being assigned.
- g. A change of name by the Contractor, following which the Contractor's federal identification number remains unchanged, shall not be considered to be an assignment hereunder. The Contractor shall give the Contracting Officer written notice of any such change of name.

V.35 CONTRACT-026.1 Other Contractors (Oct 2006)

The Commonwealth may undertake or award other contracts for additional or related work, and the Contractor shall fully cooperate with other contractors and Commonwealth employees, and coordinate its work with such additional work as may be required. The Contractor shall not commit or permit any act that will interfere with the performance of work by any other contractor or by Commonwealth employees. This paragraph shall be included in the Contracts of all contractors with which this Contractor will be required to cooperate. The Commonwealth shall equitably enforce this paragraph as to all contractors to prevent the imposition of unreasonable burdens on any contractor.

V.36 CONTRACT-027.1 Nondiscrimination/Sexual Harassment Clause (August 2018)

The Contractor agrees:

1. In the hiring of any employee(s) for the manufacture of supplies, performance of work, or any other activity required under the contract or any subcontract, the Contractor, each subcontractor, or any person acting on behalf of the Contractor or subcontractor shall not discriminate by reason of race, gender, creed, color, sexual orientation, gender identity or expression, or in violation of the *Pennsylvania Human Relations Act* (PHRA) and applicable federal laws, against any citizen of this Commonwealth who is qualified and available to perform the work to which the employment relates.
2. Neither the Contractor nor any subcontractor nor any person on their behalf shall in any manner discriminate by reason of race, gender, creed, color, sexual orientation, gender identity or expression, or in violation of the PHRA and applicable federal laws, against or intimidate any employee involved in the

manufacture of supplies, the performance of work, or any other activity required under the contract.

3. Neither the Contractor nor any subcontractor nor any person on their behalf shall in any manner discriminate by reason of race, gender, creed, color, sexual orientation, gender identity or expression, or in violation of the PHRA and applicable federal laws, in the provision of services under the contract.

4. Neither the Contractor nor any subcontractor nor any person on their behalf shall in any manner discriminate against employees by reason of participation in or decision to refrain from participating in labor activities protected under the *Public Employee Relations Act*, *Pennsylvania Labor Relations Act* or *National Labor Relations Act*, as applicable and to the extent determined by entities charged with such Acts' enforcement, and shall comply with any provision of law establishing organizations as employees' exclusive representatives.

5. The Contractor and each subcontractor shall establish and maintain a written nondiscrimination and sexual harassment policy and shall inform their employees in writing of the policy. The policy must contain a provision that sexual harassment will not be tolerated and employees who practice it will be disciplined. Posting this Nondiscrimination/Sexual Harassment Clause conspicuously in easily-accessible and well-lighted places customarily frequented by employees and at or near where the contracted services are performed shall satisfy this requirement for employees with an established work site.

6. The Contractor and each subcontractor shall not discriminate by reason of race, gender, creed, color, sexual orientation, gender identity or expression, or in violation of PHRA and applicable federal laws, against any subcontractor or supplier who is qualified to perform the work to which the contract relates.

7. The Contractor and each subcontractor represents that it is presently in compliance with and will maintain compliance with all applicable federal, state, and local laws, regulations and policies relating to nondiscrimination and sexual harassment. The Contractor and each subcontractor further represents that it has filed a Standard Form 100 Employer Information Report ("EEO-1") with the U.S. Equal Employment Opportunity Commission ("EEOC") and shall file an annual EEO-1 report with the EEOC as required for employers' subject to *Title VII of the Civil Rights Act of 1964*, as amended, that have 100 or more employees and employers that have federal government contracts or first-tier subcontracts and have 50 or more employees. The Contractor and each subcontractor shall, upon request and within the time periods requested by the Commonwealth, furnish all necessary employment documents and records, including EEO-1 reports, and permit access to their books, records, and accounts by the contracting agency and the Bureau of Diversity, Inclusion and Small Business Opportunities for purpose of ascertaining compliance with provisions of this Nondiscrimination/Sexual Harassment Clause.

8. The Contractor shall include the provisions of this Nondiscrimination/Sexual Harassment Clause in every subcontract so that those provisions applicable to subcontractors will be binding upon each subcontractor.

9. The Contractor's and each subcontractor's obligations pursuant to these provisions are ongoing from and after the effective date of the contract through the termination date thereof. Accordingly, the Contractor and each subcontractor shall have an obligation to inform the Commonwealth if, at any time during the term of the contract, it becomes aware of any actions or occurrences that would result in violation of these provisions.

10. The Commonwealth may cancel or terminate the contract and all money due or to become due under the contract may be forfeited for a violation of the terms and conditions of this Nondiscrimination/Sexual Harassment Clause. In addition, the agency may proceed with debarment or suspension and may place the Contractor in the Contractor Responsibility File.

V.37 CONTRACT-028.1 Contractor Integrity Provisions (January 2015)

It is essential that those who seek to contract with the Commonwealth of Pennsylvania ("Commonwealth") observe high standards of honesty and integrity. They must conduct themselves in a manner that fosters public confidence in the integrity of the Commonwealth contracting and procurement process.

1. DEFINITIONS. For purposes of these Contractor Integrity Provisions, the following terms shall have the meanings found in this Section:

a. "Affiliate" means two or more entities where (a) a parent entity owns more than fifty percent of the voting stock of each of the entities; or (b) a common shareholder or group of shareholders owns more than fifty percent of the voting stock of each of the entities; or (c) the entities have a common proprietor or general partner.

b. "Consent" means written permission signed by a duly authorized officer or employee of the Commonwealth, provided that where the material facts have been disclosed, in writing, by prequalification, bid, proposal, or contractual terms, the Commonwealth shall be deemed to have consented by virtue of the execution of this contract.

c. "Contractor" means the individual or entity, that has entered into this contract with the Commonwealth.

d. "Contractor Related Parties" means any affiliates of the Contractor and the Contractor's executive officers, Pennsylvania officers and directors, or owners of 5 percent or more interest in the Contractor.

e. "Financial Interest" means either:

(1) Ownership of more than a five percent interest in any business; or

(2) Holding a position as an officer, director, trustee, partner, employee, or holding any position of management.

f. "Gratuity" means tendering, giving, or providing anything of more than nominal monetary value including, but not limited to, cash, travel, entertainment, gifts, meals, lodging, loans, subscriptions, advances, deposits of money, services, employment, or contracts of any kind. The exceptions set forth in the *Governor's Code of Conduct, Executive Order 1980-18, the 4 Pa. Code §7.153(b)*, shall apply.

g. "Non-bid Basis" means a contract awarded or executed by the Commonwealth with Contractor without seeking bids or proposals from any other potential bidder or offeror.

2. In furtherance of this policy, Contractor agrees to the following:

a. Contractor shall maintain the highest standards of honesty and integrity during the performance of this contract and shall take no action in violation of state or federal laws or regulations or any other applicable laws or regulations, or other requirements applicable to Contractor or that govern contracting or procurement with the Commonwealth.

b. Contractor shall establish and implement a written business integrity policy, which includes, at a minimum, the requirements of these provisions as they relate to the Contractor activity with the Commonwealth and Commonwealth employees and which is made known to all Contractor employees. Posting these Contractor Integrity Provisions conspicuously in easily-accessible and well-lighted places customarily frequented by employees and at or near where the contract services are performed shall satisfy this requirement.

c. Contractor, its affiliates, agents, employees and anyone in privity with Contractor shall not accept, agree to give, offer, confer or agree to confer or promise to confer, directly or indirectly, any gratuity or pecuniary benefit to any person, or to influence or attempt to influence any person in violation of any federal or state law, regulation, executive order of the Governor of Pennsylvania, statement of policy, management directive or any other published standard of the Commonwealth in connection with performance of work under this contract, except as provided in this contract.

d. Contractor shall not have a financial interest in any other contractor, subcontractor, or supplier providing services, labor or material under this contract, unless the financial interest is disclosed to the Commonwealth in writing and the Commonwealth consents to Contractor's financial interest prior to Commonwealth execution of the contract. Contractor shall disclose the financial interest to the Commonwealth at the time of bid or proposal submission, or if no bids or proposals are solicited, no later than the Contractor's submission of the contract signed by Contractor.

e. Contractor certifies to the best of its knowledge and belief that within the last five (5) years Contractor or

Contractor Related Parties have not:

- (1) been indicted or convicted of a crime involving moral turpitude or business honesty or integrity in any jurisdiction;
- (2) been suspended, debarred or otherwise disqualified from entering into any contract with any governmental agency;
- (3) had any business license or professional license suspended or revoked;
- (4) had any sanction or finding of fact imposed as a result of a judicial or administrative proceeding related to fraud, extortion, bribery, bid rigging, embezzlement, misrepresentation or anti-trust; and
- (5) been, and is not currently, the subject of a criminal investigation by any federal, state or local prosecuting or investigative agency and/or civil anti-trust investigation by any federal, state or local prosecuting or investigative agency.

If Contractor cannot so certify to the above, then it must submit along with its bid, proposal or contract a written explanation of why such certification cannot be made and the Commonwealth will determine whether a contract may be entered into with the Contractor. The Contractor's obligation pursuant to this certification is ongoing from and after the effective date of the contract through the termination date thereof. Accordingly, the Contractor shall have an obligation to immediately notify the Commonwealth in writing if at any time during the term of the contract it becomes aware of any event which would cause the Contractor's certification or explanation to change. Contractor acknowledges that the Commonwealth may, in its sole discretion, terminate the contract for cause if it learns that any of the certifications made herein are currently false due to intervening factual circumstances or were false or should have been known to be false when entering into the contract.

f. Contractor shall comply with the requirements of the *Lobbying Disclosure Act (65 Pa.C.S. §13A01 et seq.)* regardless of the method of award. If this contract was awarded on a Non-bid Basis, Contractor must also comply with the requirements of the *Section 1641 of the Pennsylvania Election Code (25 P.S. §3260a)*.

g. When contractor has reason to believe that any breach of ethical standards as set forth in law, the Governor's Code of Conduct, or these Contractor Integrity Provisions has occurred or may occur, including but not limited to contact by a Commonwealth officer or employee which, if acted upon, would violate such ethical standards, Contractor shall immediately notify the Commonwealth contracting officer or the Office of the State Inspector General in writing.

h. Contractor, by submission of its bid or proposal and/or execution of this contract and by the submission of any bills, invoices or requests for payment pursuant to the contract, certifies and represents that is has not violated any of these Contractor Integrity Provisions in connection with the submission of the bid or proposal, during any contract negotiations or during the term of the contract, to include any extensions thereof. Contractor shall immediately notify the Commonwealth in writing of any actions for occurrences that would result in a violation of these Contractor Integrity Provisions. Contractor agrees to reimburse the Commonwealth for the reasonable costs of investigation incurred by the Office of the State Inspector General for investigations of the Contractor's compliance with the terms of this or any other agreement between the Contractor and the Commonwealth that results in the suspension or debarment of the Contractor. Contractor shall not be responsible for investigative costs for investigations that do not result in the Contractor's suspension or debarment.

i. Contractor shall cooperate with the Office of the State Inspector General in its investigation of any alleged Commonwealth agency or employee breach of ethical standards and any alleged Contractor non-compliance with these Contractor Integrity Provisions. Contractor agrees to make identified Contractor employees available for interviews at reasonable times and places. Contractor, upon the inquiry or request of an Inspector General, shall provide, or if appropriate, make promptly available for inspection or copying, any information of any type or form deemed relevant by the Office of the State Inspector General to Contractor's integrity and compliance with these provisions. Such information may include, but shall not be limited to, Contractor's business or financial records, documents or files of any type or form that refer to or concern this contract. Contractor shall incorporate this paragraph in any agreement, contract or subcontract it enters into in the course of the performance of this contract/agreement solely for the purpose of obtaining subcontractor compliance with this provision. The

incorporation of this provision in a subcontract shall not create privity of contract between the Commonwealth and any such subcontractor, and no third party beneficiaries shall be created thereby.

j. For violation of any of these Contractor Integrity Provisions, the Commonwealth may terminate this and any other contract with Contractor, claim liquidated damages in an amount equal to the value of anything received in breach of these Provisions, claim damages for all additional costs and expenses incurred in obtaining another contractor to complete performance under this contract, and debar and suspend Contractor from doing business with the Commonwealth. These rights and remedies are cumulative, and the use or non-use of any one shall not preclude the use of all or any other. These rights and remedies are in addition to those the Commonwealth may have under law, statute, regulation or otherwise.

V.38 CONTRACT-029.1 Contractor Responsibility Provisions (July 2021)

For the purpose of these provisions, the term Contractor is defined as any person, including, but not limited to, a bidder, offeror, loan recipient, grantee or lessor, who has furnished or performed or seeks to furnish or perform, goods, supplies, services, leased space, construction or other activity, under a contract, grant, lease, purchase order or reimbursement agreement with the Commonwealth of Pennsylvania (Commonwealth). The term Contractor includes a permittee, licensee, or any agency, political subdivision, instrumentality, public authority, or other public entity in the Commonwealth.

1. The Contractor certifies, in writing, for itself and its subcontractors required to be disclosed or approved by the Commonwealth, that as of the date of its execution of this Bid/Contract, that neither the Contractor, nor any such subcontractors, are under suspension or debarment by the Commonwealth or any governmental entity, instrumentality, or authority and, if the Contractor cannot so certify, then it agrees to submit, along with its Bid/Contract, a written explanation of why such certification cannot be made.

2. The Contractor also certifies, in writing, that as of the date of its execution of this Bid/Contract it has no tax liabilities or other Commonwealth obligations, or has filed a timely administrative or judicial appeal if such liabilities or obligations exist, or is subject to a duly approved deferred payment plan if such liabilities exist.

3. The Contractor's obligations pursuant to these provisions are ongoing from and after the effective date of the Contract through the termination date thereof. Accordingly, the Contractor shall have an obligation to inform the Commonwealth if, at any time during the term of the Contract, it becomes delinquent in the payment of taxes, or other Commonwealth obligations, or if it or, to the best knowledge of the Contractor, any of its subcontractors are suspended or debarred by the Commonwealth, the federal government, or any other state or governmental entity. Such notification shall be made within 15 days of the date of suspension or debarment.

4. The failure of the Contractor to notify the Commonwealth of its suspension or debarment by the Commonwealth, any other state, or the federal government shall constitute an event of default of the Contract with the Commonwealth.

5. The Contractor agrees to reimburse the Commonwealth for the reasonable costs of investigation incurred by the Office of State Inspector General for investigations of the Contractor's compliance with the terms of this or any other agreement between the Contractor and the Commonwealth that results in the suspension or debarment of the contractor. Such costs shall include, but shall not be limited to, salaries of investigators, including overtime; travel and lodging expenses; and expert witness and documentary fees. The Contractor shall not be responsible for investigative costs for investigations that do not result in the Contractor's suspension or debarment.

6. The Contractor may search the current list of suspended and debarred Commonwealth contractors by visiting the eMarketplace website at <http://www.emarketplace.state.pa.us> and clicking the Debarment List tab.

V.39 CONTRACT-030.1 Americans with Disabilities Act (July 2021)

For the purpose of these provisions, the term contractor is defined as any person, including, but not limited to, a bidder, offeror, supplier, or grantee, who will furnish or perform or seeks to furnish or perform, goods, supplies, services, construction or other activity, under a purchase order, contract, or grant with the Commonwealth of Pennsylvania (Commonwealth).

During the term of this agreement, the contractor agrees as follows:

- 1 Pursuant to federal regulations promulgated under the authority of the Americans with Disabilities Act, 28 C. F. R. § 35.101 et seq., the contractor understands and agrees that no individual with a disability shall, on the basis of the disability, be excluded from participation in this agreement or from activities provided for under this agreement. As a condition of accepting and executing this agreement, the contractor agrees to comply with the "General Prohibitions Against Discrimination," 28 C. F. R. § 35.130, and all other regulations promulgated under Title II of the Americans with Disabilities Act which are applicable to the benefits, services, programs, and activities provided by the Commonwealth through contracts with outside contractors.
- 2 The contractor shall be responsible for and agrees to indemnify and hold harmless the Commonwealth from all losses, damages, expenses, claims, demands, suits, and actions brought by any party against the Commonwealth as a result of the contractor's failure to comply with the provisions of paragraph 1.

V.40 CONTRACT-031.1 Hazardous Substances (April 2017)

The Contractor shall provide information to the Commonwealth about the identity and hazards of hazardous substances supplied or used by the Contractor in the performance of the Contract. The Contractor must comply with Act 159 of October 5, 1984, known as the "Worker and Community Right to Know Act" (the "Act") and the regulations promulgated pursuant thereto at 34 Pa. Code Section 301.1 - 323.6.

a. Labeling. The Contractor shall ensure that each individual product (as well as the carton, container or package in which the product is shipped) of any of the following substances (as defined by the Act and the regulations) supplied by the Contractor is clearly labeled, tagged or marked with the information listed in Subparagraphs (1) through (4):

- 1) Hazardous substances:
 - a) The chemical name or common name,
 - b) A hazard warning, and
 - c) The name, address, and telephone number of the manufacturer.
- 2) Hazardous mixtures:
 - a) The common name, but if none exists, then the trade name,
 - b) The chemical or common name of special hazardous substances comprising .01% or more of the mixture,
 - c) The chemical or common name of hazardous substances consisting 1.0% or more of the mixture,
 - d) A hazard warning, and
 - e) The name, address, and telephone number of the manufacturer.
- 3) Single chemicals:
 - a) The chemical name or the common name,
 - b) A hazard warning, if appropriate, and
 - c) The name, address, and telephone number of the manufacturer.
- 4) Chemical Mixtures:

- a) The common name, but if none exists, then the trade name,
- b) A hazard warning, if appropriate,
- c) The name, address, and telephone number of the manufacturer, and
- d) The chemical name or common name of either the top five substances by volume or those substances consisting of 5.0% or more of the mixture.
A common name or trade name may be used only if the use of the name more easily or readily identifies the true nature of the hazardous substance, hazardous mixture, single chemical, or mixture involved.

Container labels shall provide a warning as to the specific nature of the hazard arising from the substance in the container.

The hazard warning shall be given in conformity with one of the nationally recognized and accepted systems of providing warnings, and hazard warnings shall be consistent with one or more of the recognized systems throughout the workplace. Examples are:

- NFPA 704, Identification of the Fire Hazards of Materials.
- National Paint and Coatings Association: Hazardous Materials Identification System.
- American Society for Testing and Materials, Safety Alert Pictorial Chart.
- American National Standard Institute, Inc., for the Precautionary Labeling of Hazardous Industrial Chemicals.

Labels must be legible and prominently affixed to and displayed on the product and the carton, container, or package so that employees can easily identify the substance or mixture present therein.

b. Material Safety Data Sheet. The contractor shall provide Material Safety Data Sheets (MSDS) with the information required by the Act and the regulations for each hazardous substance or hazardous mixture. The Commonwealth must be provided an appropriate MSDS with the initial shipment and with the first shipment after an MSDS is updated or product changed. For any other chemical, the contractor shall provide an appropriate MSDS, if the manufacturer, importer, or supplier produces or possesses the MSDS. The contractor shall also notify the Commonwealth when a substance or mixture is subject to the provisions of the Act. Material Safety Data Sheets may be attached to the carton, container, or package mailed to the Commonwealth at the time of shipment.

V.41 CONTRACT-032.1 Covenant Against Contingent Fees (Oct 2006)

The Contractor warrants that no person or selling agency has been employed or retained to solicit or secure the Contract upon an agreement or understanding for a commission, percentage, brokerage, or contingent fee, except bona fide employees or bona fide established commercial or selling agencies maintained by the Contractor for the purpose of securing business. For breach or violation of this warranty, the Commonwealth shall have the right to terminate the Contract without liability or in its discretion to deduct from the Contract price or consideration, or otherwise recover the full amount of such commission, percentage, brokerage, or contingent fee.

V.42 CONTRACT-033.1 Applicable Law (Oct 2006)

This Contract shall be governed by and interpreted and enforced in accordance with the laws of the Commonwealth of Pennsylvania (without regard to any conflict of laws provisions) and the decisions of the Pennsylvania courts. The Contractor consents to the jurisdiction of any court of the Commonwealth of Pennsylvania and any federal courts in Pennsylvania, waiving any claim or defense that such forum is not convenient or proper. The Contractor agrees that any such court shall have in personam jurisdiction over it, and consents to service of process in any manner authorized by Pennsylvania law.

V.43 CONTRACT- 034.1b Integration (Nov 30 2006)

This Contract, including the Invitation for Bids, the Contractor's bid, all referenced documents, and any Purchase Order constitutes the entire agreement between the parties. No agent, representative, employee or officer of either

the Commonwealth or the Contractor has authority to make, or has made, any statement, agreement or representation, oral or written, in connection with the Contract, which in any way can be deemed to modify, add to or detract from, or otherwise change or alter its terms and conditions. No negotiations between the parties, nor any custom or usage, shall be permitted to modify or contradict any of the terms and conditions of the Contract. No modifications, alterations, changes, or waiver to the Contract or any of its terms shall be valid or binding unless accomplished by a written amendment signed by both parties.

V.44 CONTRACT-034.2b Order of Precedence - IFB (Dec 6 2006)

In the event there is a conflict among the documents comprising this Contract, the Commonwealth and the Contractor agree on the following order of precedence: the Contract; the IFB; and the Contractor's Bid in Response to the IFB.

V.45 CONTRACT-034.3 Controlling Terms and Conditions (Aug 2011)

The terms and conditions of this Contract shall be the exclusive terms of agreement between the Contractor and the Commonwealth. All quotations requested and received from the Contractor are for obtaining firm pricing only. Other terms and conditions or additional terms and conditions included or referenced in the Contractor's quotations, invoices, business forms, or other documentation shall not become part of the parties' agreement and shall be disregarded by the parties, unenforceable by the Contractor and not binding on the Commonwealth.

V.46 CONTRACT-035.1a Changes (Oct 2006)

The Commonwealth reserves the right to make changes at any time during the term of the Contract or any renewals or extensions thereof: 1) to increase or decrease the quantities resulting from variations between any estimated quantities in the Contract and actual quantities; 2) to make changes to the services within the scope of the Contract; 3) to notify the Contractor that the Commonwealth is exercising any Contract renewal or extension option; or 4) to modify the time of performance that does not alter the scope of the Contract to extend the completion date beyond the Expiration Date of the Contract or any renewals or extensions thereof. Any such change shall be made by the Contracting Officer by notifying the Contractor in writing. The change shall be effective as of the date of the change, unless the notification of change specifies a later effective date. Such increases, decreases, changes, or modifications will not invalidate the Contract, nor, if performance security is being furnished in conjunction with the Contract, release the security obligation. The Contractor agrees to provide the service in accordance with the change order. Any dispute by the Contractor in regard to the performance required by any notification of change shall be handled through Contract Controversies Provision.

V.47 CONTRACT-037.1a Confidentiality (Oct 2013)

(a) The Contractor agrees to protect the confidentiality of the Commonwealth's confidential information. The Commonwealth agrees to protect the confidentiality of Contractor's confidential information. In order for information to be deemed confidential, the party claiming confidentiality must designate the information as "confidential" in such a way as to give notice to the other party (notice may be communicated by describing the information, and the specifications around its use or disclosure, in the SOW). Neither party may assert that information owned by the other party is such party's confidential information. The parties agree that such confidential information shall not be copied, in whole or in part, or used or disclosed except when essential for authorized activities under this Contract and, in the case of disclosure, where the recipient of the confidential information has agreed to be bound by confidentiality requirements no less restrictive than those set forth herein. Each copy of such confidential information shall be marked by the party making the copy with any notices appearing in the original. Upon termination or cancellation of this Contract or any license granted hereunder, the receiving party will return to the disclosing party all copies of the confidential information in the receiving party's possession, other than one copy, which may be maintained for archival purposes only, and which will remain subject to this Contract's security, privacy, data retention/destruction and confidentiality provisions (all of which shall survive the expiration of this Contract). Both parties agree that a material breach of these requirements may, after

failure to cure within the time frame specified in this Contract, and at the discretion of the non-breaching party, result in termination for default pursuant to the DEFAULT provision of this Contract, in addition to other remedies available to the non-breaching party.

(b) Insofar as information is not otherwise protected by law or regulation, the obligations stated in this Section do not apply to information:

- (1) already known to the recipient at the time of disclosure other than through the contractual relationship;
- (2) independently generated by the recipient and not derived by the information supplied by the disclosing party.
- (3) known or available to the public, except where such knowledge or availability is the result of unauthorized disclosure by the recipient of the proprietary information;
- (4) disclosed to the recipient without a similar restriction by a third party who has the right to make such disclosure; or
- (5) required to be disclosed by law, regulation, court order, or other legal process.

There shall be no restriction with respect to the use or disclosure of any ideas, concepts, know-how, or data processing techniques developed alone or jointly with the Commonwealth in connection with services provided to the Commonwealth under this Contract.

(c) The Contractor shall use the following process when submitting information to the Commonwealth it believes to be confidential and/or proprietary information or trade secrets:

- (1) Prepare an un-redacted version of the appropriate document, and
- (2) Prepare a redacted version of the document that redacts the information that is asserted to be confidential or proprietary information or a trade secret, and
- (3) Prepare a signed written statement that states:
 - (i) the attached document contains confidential or proprietary information or trade secrets;
 - (ii) the Contractor is submitting the document in both redacted and un-redacted format in accordance with 65 P.S. § 67.707(b); and
 - (iii) the Contractor is requesting that the document be considered exempt under 65 P.S. § 67.708(b)(11) from public records requests.
- (4) Submit the two documents along with the signed written statement to the Commonwealth.

V.48 CONTRACT-046.1 Manufacturer's Price Reduction (Oct 2006)

If, prior to the delivery of the awarded item(s) by the Contractor, a price reduction is announced by the original equipment manufacturer, a comparative price reduction will be given to the Commonwealth by the Contractor.

V.49 CONTRACT-047.1 Motor Vehicles to be manufactured in North America (Oct 2006)

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 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 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.

V.50 CONTRACT-047.2b General Delivery Requirements for Vehicles (Oct 2012)

The Contractor must supply the contracted vehicles that are to be delivered to the Commonwealth of Pennsylvania in accordance with the specifications attached to this IFB and any Pennsylvania Commercial Item Descriptions referenced in the specifications and attached to this IFB.

V.51 CONTRACT-047.5 Local Public Procurement Unit Participation (March 5, 2007)

Any questions or problems pertaining to acquisition of vehicles by participating Local Public Procurement Units and their use of the Contract should be accomplished in a timely manner and all contact pertaining to these questions or problems should be directed to the Bureau of Procurement, Department of General Services to the attention of the commodity specialist assigned to this contract.

V.52 CONTRACT-047.6 Additional Delivery Charges (Participating Local Public Procurement Units ONLY) (Oct 2006)

Participating Local Public Procurement Units will pick up ordered equipment at the Contractor(s)'s place of business or have the equipment delivered by the Contractor for an additional **CHARGE PER VEHICLE of \$0.00** .

V.53 CONTRACT-047.7 Taxes (Oct 2006)

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.

V.54 CONTRACT-051.1 Notice (Dec 2006)

Any written notice to any party under this Contract shall be deemed sufficient if delivered personally, or by facsimile, telecopy, electronic or digital transmission (provided such delivery is confirmed), or by a recognized overnight courier service (e.g., DHL, Federal Express, etc.) with confirmed receipt, or by certified or registered United States mail, postage prepaid, return receipt requested, and sent to following:

- a. If to the Contractor: the Contractor's address as recorded in the Commonwealth's Supplier Registration system.
- b. If to the Commonwealth: the address of the Issuing Office as set forth on the Contract.

V.55 CONTRACT-052.1 Right to Know Law (Feb 2010)

a. The Pennsylvania Right-to-Know Law, 65 P.S. §§ 67.101-3104, ("RTKL") applies to this Contract. For the purpose of these provisions, the term "the Commonwealth" shall refer to the contracting Commonwealth agency.

b. If the Commonwealth needs the Contractor's assistance in any matter arising out of the RTKL related to this Contract, it shall notify the Contractor using the legal contact information provided in this Contract. The Contractor, at any time, may designate a different contact for such purpose upon reasonable prior written notice to the Commonwealth.

c. Upon written notification from the Commonwealth that it requires the Contractor's assistance in responding to a request under the RTKL for information related to this Contract that may be in the Contractor's possession, constituting, or alleged to constitute, a public record in accordance with the RTKL ("Requested Information"), the Contractor shall:

1. Provide the Commonwealth, within ten (10) calendar days after receipt of written notification, access to, and copies of, any document or information in the Contractor's possession arising out of this Contract that the Commonwealth reasonably believes is Requested Information and may be a public record under the RTKL; and
2. Provide such other assistance as the Commonwealth may reasonably request, in order to comply with the

RTKL with respect to this Contract.

d. If the Contractor considers the Requested Information to include a request for a Trade Secret or Confidential Proprietary Information, as those terms are defined by the RTKL, or other information that the Contractor considers exempt from production under the RTKL, the Contractor must notify the Commonwealth and provide, within seven (7) calendar days of receiving the written notification, a written statement signed by a representative of the Contractor explaining why the requested material is exempt from public disclosure under the RTKL.

e. The Commonwealth will rely upon the written statement from the Contractor in denying a RTKL request for the Requested Information unless the Commonwealth determines that the Requested Information is clearly not protected from disclosure under the RTKL. Should the Commonwealth determine that the Requested Information is clearly not exempt from disclosure, the Contractor shall provide the Requested Information within five (5) business days of receipt of written notification of the Commonwealth's determination.

f. If the Contractor fails to provide the Requested Information within the time period required by these provisions, the Contractor shall indemnify and hold the Commonwealth harmless for any damages, penalties, costs, detriment or harm that the Commonwealth may incur as a result of the Contractor's failure, including any statutory damages assessed against the Commonwealth.

g. The Commonwealth will reimburse the Contractor for any costs associated with complying with these provisions only to the extent allowed under the fee schedule established by the Office of Open Records or as otherwise provided by the RTKL if the fee schedule is inapplicable.

h. The Contractor may file a legal challenge to any Commonwealth decision to release a record to the public with the Office of Open Records, or in the Pennsylvania Courts, however, the Contractor shall indemnify the Commonwealth for any legal expenses incurred by the Commonwealth as a result of such a challenge and shall hold the Commonwealth harmless for any damages, penalties, costs, detriment or harm that the Commonwealth may incur as a result of the Contractor's failure, including any statutory damages assessed against the Commonwealth, regardless of the outcome of such legal challenge. As between the parties, the Contractor agrees to waive all rights or remedies that may be available to it as a result of the Commonwealth's disclosure of Requested Information pursuant to the RTKL.

i. The Contractor's duties relating to the RTKL are continuing duties that survive the expiration of this Contract and shall continue as long as the Contractor has Requested Information in its possession.

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SPECIFICATIONS
A-15

**TRUCK – DUMP – CONVENTIONAL - 38,000 LB GVWR
HEAVY DUTY SINGLE AXLE DUMP TRUCK ALUMINUM BED (TYPE II)**

050915-S

TRUCK, DUMP, TYPE II, ALUMINUM BED, RIGHT WING PLOW, UNDER TAILGATE SPREADER
AND IOWA SPINNER **(050915-S)**

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SPECIFICATIONS
A-15

I. GENERAL TRUCK SPECIFICATIONS:

- A. Intent Statement
- B. Weight Distribution
- C. Power train Overview
- D. Vehicle Components
 - 1. Axle Front
 - 2. Axle Rear
 - 3. Brakes
 - 4. Cab
 - 5. Chassis
 - 6. Drive Line
 - 7. Electrical
 - 8. Engine
 - 9. Exhaust
 - 10. Fast Lube Oil Change System (FLOCS)
 - 11. Frame and Frame Extension
 - 12. Instrumentation
 - 13. Paint
 - 14. Steering
 - 15. Suspension: Front
 - 16. Suspension: Rear
 - 17. Tank- Fuel
 - 18. Wheels/Tires
 - 19. Transmission

August 3, 2023 JAH/JKF/GAW

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SPECIFICATIONS
A-15

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. Dump Body and Equipment Mandatory Minimum Specifications

1. Dump Body Structure, Aluminum
2. Central Hydraulic System/Hydraulics
3. Tarping System

F. General Plow Mounting/Accessories

G. Temperature Sensor

H. AVL Hardware

I. Under Tailgate Spreader with Iowa Spinner

J. Wing Plow Specifications

1. Intent Statement
2. Specifications
3. Minimum Alterations
4. Plow Identification
5. Paint
6. Conspicuity Tape
7. Wing Plow Light

K. Installation Practices

L. Safety

II. DRAWINGS:

III. MANUALS:

IV. TRAINING:

V. WARRANTY:

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SPECIFICATIONS
A-15

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

A. INTENT STATEMENT:

Intent: The purpose of these specifications is to describe a conventional cab, single axle dump truck, equipped with dual rear wheels, 11-foot dump body, 7 cubic yard approximate load capacity aluminum severe duty body, hoist, hydraulic power system and snow plow hitch. Shall be capable of one-man operation while plowing snow and simultaneously spreading granular and liquid materials 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 a front-end loader or self-propelled belt loader. The body shall be capable of having the following components connected and or mounted to it: wing plow, slide in anti-ice insert, under tailgate spreader, tarp, paver, and chipper.

The body shall be capable of being utilized in the raised position for extended use while spreading salt, anti-skid and liquid material.

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

Awarded OEM vendor shall be responsible for contacting the Specification Section of the Fleet Management Division at (717) 787-1567 to set up a pre-build meeting for all chassis and body mounting component locations prior to chassis build. Any deviations to the specification must be granted in writing by the Chief of the Specification Section. It shall be understood that any discrepancies/deviations between the specification and the completed unit(s), chassis or body up-fitter related, must be addressed and corrected prior to the delivery deadline and the Departments acceptances.

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

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

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SPECIFICATIONS
A-15

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

B. WEIGHT DISTRIBUTION:

Weight distribution charts must be submitted with the pilot model for all models being delivered. Weight distribution charts shall be submitted for two modes listed below.

1. Summer mode including the portion of the wing plow post and plow frame assembly that remains on the vehicle all year.
2. Winter mode with front plow, loaded pre-wet tank, 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 slips 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

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SPECIFICATIONS
A-15

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 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.

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SPECIFICATIONS
A-15

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

B. WEIGHT DISTRIBUTION: (Continued)

Truck GAWR's as Built (LB)

	<u>Front GAWR</u>	<u>Rear GAWR</u>
Axle	_____	_____
Tires	_____	_____
Springs	_____	_____
Rims	_____	_____

C. POWER TRAIN OVERVIEW:

ENGINE

Diesel MIN. 325 HP AT GOVERNED RPM, MIN. PEAK TORQUE OF 1,000 LB/FT TORQUE, MIN. 8.9 LITER.

TRANSMISSION

AUTOMATIC -ALLISION 3000, 3500 or 4500 RDS 6 SPEED

Automatic transmission cooler lines shall be stainless steel or a Pre-Approved no-rusting material.

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

Transmission shall require a brake application to shift into any gear from neutral with parking brake in the "OFF" position. Transmission shall stay in gear while parking brake is set to "ON" for a "Pull Test".

REAR AXLE

DANA S23 Series

MERITOR RS-23-160

MERITOR RS-23-186

MACK RA23R

Lubricants for front axle hubs, automatic transmission 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 oil, or painted red. All axles shall have magnetic drain plugs.

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SPECIFICATIONS
A-15

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

D. VEHICLE COMPONENTS:

1. AXLE FRONT:

The front axle shall be rated at 20,000 LB minimum capacity. The front axle drag links and tie rods shall have grease zerks installed. Kingpin or bushings shall be grooved to permit grease flow. Sufficient tire clearance at maximum turning angles. Complete oil seal assembly, including hub, plug type window, and seal. Each unit shall receive a front-end alignment prior to delivery. A setback axle is unacceptable.

2. AXLE REAR: Acceptable axle models

DANA S23 Series
MERITOR RS-23-160
MERITOR RS-23-186
MACK RA23R

Aluminum or lightweight housing are unacceptable. Only heaviest duty housing will be accepted.

All rear axles must provide axle shafts with a minimum diameter of 2.19 inch at the spline. All rear axle(s) shall have an extended breather tube to prevent debris buildup from entering axle housing. There shall be a torque-proportioning traction-assist device, which is full locking within the differential housing. The device shall provide maximum traction to the rear wheels when actuated and shall be a self-relieving designed to prevent gear damage and/or axle shaft breakage under extreme service conditions. The traction-assist device shall be driver actuated by a dash mounted traction control switch.

Lubricants for all rear axles shall meet or exceed all appropriate MIL and SAE specifications for synthetic lubricants and shall have all fill plugs identified as synthetic oil, or painted red.

Stemco guardian or SKF Scotseal, Chicago Rawhide rear wheel seals, or approved equal. All axles shall have magnetic drain plugs.

The following information shall be presented at the pre-build meeting.

Rear axle selection shall be made after the award and may be a mix of ratios as required. The successful vendor/manufacture shall present three (3) computer runs showing the three most likely ratios for consideration for a top speed range of 55 MPH to 65 MPH max. Gear Selections shall provide gear ranges at 25 MPH & 35 MPH with a 1600 RPM to 1900 RPM range for plowing and spreading operations.

The rear axle ratios must be "identical" throughout the entire build

3. BRAKES:

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

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

Rear brakes: 16.5-inch x 7 inch "S" cam with quick-change type double anchor pin. Meritor Q+ (**No substitute, standardization**).

Steer-axle-brake: 16.5-inch x 6 inch "S" cam with quick-change type double anchor pin. Meritor Q+ (**No substitute, standardization**).

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SPECIFICATIONS
A-15

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

D. VEHICLE COMPONENTS: (Continued)

3. BRAKES: (Continued)

Drum brakes shall have automatic slack adjusters and they shall be clearance-sensing type only, with adjustment on application of the brake. **(No substitute, standardization)**. Backing plates shall be installed on all drum brakes.

Air compressor: Per truck manufacturer's recommendation. Compressor shall be fitted with a safety valve to prevent mechanical failure.

Low air pressure indicator: Buzzer-type and dash light. Must meet current Federal DOT guideline requirements. Air gauge shall display in 5lb. increments. Digital numerical readout is acceptable. Air gauge and low air warning buzzer shall operate with key switch **on** and engine **off**. Function shall not have capabilities of being deactivated by the operator.

Parking brake: Rear wheel spring-type, MGM E 30/30 or Haldex 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.

All brake chambers, front and rear, shall be equipped with rubber boots on the brake chamber push rods. Rear service brake chambers and spring brake chambers shall be 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, mounted away from road splashing and a minimum of 20 inches above road surface. Dryer shall be compatible with the body company clearance requirements for sub-frame, valve body, etc. Bendix AD-IP **(No substitute, standardization)** installation made in concurrence with the air compressor manufacturer's recommendations.

Air dryer shall be placed outside of frame rail to accommodate the changing of filter cartridges without disconnecting any hoses or removing dryer base from its mounting location. Final mounting location shall be determined at Pre-Build meeting.

System shall be equipped with anti-compounding valve to prevent mechanical failure of the foundation brakes, slack adjusters, etc.

Trailer air brake: Unit shall be equipped with factory installed trailer air brake control package. To include dash mounted, graduated, hand operated, trailer service brake trolley control valve. Body builder to mount and install Phillips STA-LOCK glad hands (1 each part numbers 12-4906 and 12-4908), location to be determined at pre-build meeting Ref: EQN-26A.

4. CAB:

Aluminum or galvanized steel cab.

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

Exterior grab handles shall be supplied if available from OEM.

Hood: Fiberglass, tilting. Fenders shall be part of tilting hood. Grille shall be fixed. Hood shall be one-piece design, high visibility, and without any access panels.

Air suspension system for the cab shall be factory installed.

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.

Fenders: Front fenders shall have a formed extension. Not to exceed 102-inch truck width.

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 and wireless hands-free cell phone connection.

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SPECIFICATIONS
A-15

I. GENERAL TUCK SPECIFICATION: (Continued)

D. VEHICLE COMPONENTS: (Continued)

4. CAB: (Continued)

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

All controls and knobs shall be properly identified.

Brake and throttle pedal shall be suspended if available from the factory.

CB Power Connections One (1) pair, on the dash, Ref: EQN-78.

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

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

Cruise control

Cup holder in the cab within easy reach of the operator.

Dome light shall be provided

Dual sun visors.

Drivers and passenger's side windows shall be power.

Driver's and passenger's doors shall be equipped with power door locks.

Windshield: Manufacturer's standard heated windshield. One (1) or two (2) piece construction is acceptable, must be tinted. Safety glass throughout.

Dual windshield wipers, arctic type with the heaviest arms, linkages and motor available. Wipers shall be minimum 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. Washer fill point shall be located to be accessed from ground level, without overhead reaching. With unobstructed and unrestricted flow from a one-gallon jug.

Mirrors: Driver and passenger side west coast style powered mirrors with manufactures standard heavy-duty breakaway arms. Mirrors shall have a minimum 105 square inch reflective surface. Mirrors shall be heated with a lighted toggle switch mounted within accessible reach of the operator, automatic on/off is acceptable. There shall be a heated convex mirror, minimum 50 square inch reflective surface. A heated blind-spot elimination mirror shall be mounted on the right front fender and it shall be minimum 50 square inch reflective area, stainless steel or aluminum head. Mirror shall be a conventional convex mirror and shall not be of the half-round cross view type. All mirror wires shall be fitted in such a way that the mirror glass/element can be changed by unplugging the two-wire lead. All arm/s and hardware shall also be stainless steel. Fender type washers, stainless or aluminum, with rubber pads shall be placed on both sides of the fender. Pedestal system shall be single, double or triple mounting assemblies (stainless steel or aluminum). Mirror shall be mounted in rubber or vinyl.

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 (Seatbelt shall be High Visibility Orange). Seat belts shall be equipped with a comfort lock. A bellow-type or protective skirt shall cover the seat suspension mechanism. If due to cab configuration a Bostrom 915 or National 195 seat cannot be used, a Bostrom 910 may be substituted. All other requirements must be met.

There shall be an inside armrest on the driver's seat plus an outside armrest installed on the seat or the driver's door. **(No substitute, standardization)**. Color coordinated to cab interior. Passenger seat shall be the manufacturer's standard non-suspension (static) high back type and shall have a three-point retractable seat belt (Seatbelt shall be High Visibility Orange). Color coordinated.

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SPECIFICATIONS
A-15

I. GENERAL TUCK SPECIFICATION: (Continued)

D. VEHICLE COMPONENTS: (Continued)

4. CAB: (Continued)

Seat Safety Switch: Drivers seat shall be equipped with a factory safety switch to work in conjunction with the central hydraulic system. Switch shall be rated at 7 lbs. and shall allow operation of the hydraulic auger spreader and spinner system when occupied and shut down the hydraulic auger spreader and spinner system ONLY when unoccupied.

Seat switch shall have all necessary components and connections to delay seat switch deactivation of auger and spinner circuit ONLY for a minimum of five (5) seconds and maximum ten (10) seconds.

Deactivation of the seat switch system shall activate a message on the spreader control screen display "AUGER & SPINNER STOPPED", this feature shall not cause any other interruptions or faults in the hydraulic/spreader system.

Reactivation of the seat switch system shall not require any action or input from the operator for operation of the complete hydraulic/spreader system.

It shall be the sole responsibility of the OEM to ensure seat safety switch compatibility with the selected hydraulic system manufacturer control system. Aftermarket installation of this switch is unacceptable.

Steering wheel diameter shall be 18 inch (approx.), Manufacturers standard.

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

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

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

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

5. CHASSIS:

The GVWR rating of the truck shall be 38,000 LB. A label stating this shall be affixed on the door or in the cab as the completion certification label.

(CA) dimension: 119-124-inch cab to axle. Wheel base dimension 199 inch approximate. Wheelbase and CA dimension may be adjusted to provide the optimum legal weight distribution and to meet the vehicles intent statement.

The frame AF shall incorporate a cross member at the rear of the frame (Local installation is acceptable) to reinforce the body pivot point. Cross member may be deleted if body up fitter's engineering determines a cross member is not needed due to pintle plate installation. EQN-26A

Front Bumper: Heavy duty swept back design, mounted to the frame with the inner face of the bumper against the chassis frame.

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 rear securely mounted to prevent damage when backing into material piles.

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

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SPECIFICATIONS
A-15

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

D. VEHICLE COMPONENTS: (Continued)

6. DRIVE LINE:

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

7. ELECTRICAL:

All copper system, negative ground.

Alternator: Delco 36SI (**No Substitute, standardization**) 160-amp minimum, high performance, solid state, brushless, with battery cable from battery negative terminal to starter motor or frame. All alternator and starter bolts shall be grade 8.

Batteries: Three (3), heavy-duty, 12-volt, maintenance-free, BCI Group Size 31, with stud-type posts and anti-corrosion treatment on each terminal. 2500 total cold cranking amperes (CCA) at 0 degrees F. 540 minutes of total reserve capacity at 80 degrees F as per SAE.

Battery Mounting: Mounting 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). Cover shall be easily removable on completed unit.
- c.) Mounting bolts shall be grade 8 with self-locking nuts.

All OEM connections within the battery box shall have attached non-metallic embossed labels/tags. Labels/tags applied with self-adhesives or stickers will not be accepted.

Mounting of accessories within the battery box is prohibited. Any connections that are essential in the battery box must be pre-approved by the Chief of the Specification unit at the Fleet Management Division in writing (717) 787-1567. Any circuit deemed necessary for connection in the battery box by the body up-fitter or component manufacturer shall have attached non-metallic embossed labels/tags. Labels/tags applied with self-adhesives or stickers will not be accepted.

All circuits shall be individually permanently labeled.

Cables shall conform to RCC Practice 105 with "sealed" terminal ends for stud-type battery posts.

Starter motor: Delco 39MT (No Substitute, standardization) With thermal over crank protection and high torque capacity. Suitable for the diesel engines offered as per starter manufacturer's recommendation.

Electrical system: System shall be circuit-breaker-equipped, in an easily accessible location and weatherproof. Fuses acceptable in circuit so identified by manufacturer as safety factor. Any fuse or circuit breaker liable to be damaged during truck operation shall have an easily removable protective cover. All wire splices in the cab shall be insulated with heat shrink materials

Electrical chassis wiring: Factory heavy duty harness to power components in rear light module. Trailer light plug shall have brake lights operate in conjunction with the turn signals. per EQN: 80A

Flasher: (All) heavy-duty electrical, Ref: Tridon Model EL 12 or equal.

If an audible alarm is supplied for the 4-way and turn signal circuit, it shall have on/off capability.

Lights: All lights shall meet all Federal and State regulations. The head Lights shall be Halogen with (DRL's) daytime running lights. Body lights shall have their own dedicated complete circuit. The chassis manufacturer shall route the dedicated body circuit/harness to the rear center portion of cab, with 4' of extra wire coiled on floor between seats. All pass-through points shall be properly sealed and protected. This shall be the access/connection point for the Whelen Model # 01-1518839-01B, old PN# PADOTS1V. Pass-through point and/or routing location determined at Pre-build Meeting.

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SPECIFICATIONS
A-15

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

D. VEHICLE COMPONENTS: (Continued)

7. ELECTRICAL: (Continued)

Plow Lights: Shall be Trucklite Halogen head lamps Part# 80894 and 80899. **(No substitute, standardization)**. Bracket design shall be either aluminum or stainless steel. Brackets shall be designed/constructed to provide sustained support of the light assembly while offering minimum vibration. Brackets shall be designed to place center of plow light lens approximately 80 inches from ground level and be adjustable vertically 3-inch up and 3-inch down. Ref: EQN-180. The height and width of the bracket will be governed by the application and shall meet all Federal and State lighting regulations. Awarded vendor shall supply plow light bracket design drawing(s) to the Fleet Management Division Specifications section for consideration. Final design shall be approved in writing from the specifications section chief at the pre-build meeting. The factory chassis plow light circuit shall be used and all areas where the wires might contact a rub point shall be protected by grommets, loom, etc. All connections shall be made using sealed connections and dielectric grease. Ref: EQN-180.

Radio Antenna: There shall be an antenna base, PCTEL Maxrad BMATM //NC25 and a multi-band StiCO RFMT-NT-V/U/C-A whip. Assembly shall be mounted to the stationary headache/cab protector, (to the street side, of the light bar) with the antenna cable routed (within protective conduit) to the floor area between the seats. There shall be a minimum of 4 feet of antenna cable coiled at the base of the floor to allow for connection of radio on spreader control pedestal. Antenna shall be prewired with a UHF MALE connection. (No substitute, standardization). Antenna shall be mounted to not interfere with cab shield.

Power Distribution Center: There shall be a 4-way power/ground distribution center located on the underside of the dash for connection of the state radio. The lugs shall be configured in the following manner: (1) lug shall be a 30 ampere constant hot circuit, (1) lug shall be a 10 ampere ignition controlled circuit. (2) lugs shall be chassis ground. All connections shall be enclosed in a weatherproof enclosure. See EQN-562 drawing for details.

Each circuit shall be supplied individually, labeled, properly sized, protected from weather and sealed to be watertight.

A Data port, read only shall be supplied within easy access under the dash with 12-volt constant power and ground terminals for connection to department fuel system equipment **and a separate** data port, or terminating resistor shall be supplied within easy access under the dash with 12-volt constant power and ground terminals for connection to department AVL system equipment. 12-volt constant and ground circuit (fuse protected) may be utilized for both the fuel system and AVL equipment. If read only data ports are supplied for both the Department's fuel and AVL systems, the data ports, must be independent of one another.

8. ENGINE:

Automatic idle shutdown shall be set to five (5) minutes. An audible warning alarm and dash light shall be provided to alert operator prior to engine shutting down.

ECM shall be set to a maximum of sixty-five (65) miles per hour.

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 stones and debris.

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

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SPECIFICATIONS
A-15

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

D. VEHICLE COMPONENTS: (Continued)

8. ENGINE: (Continued)

Diesel Fuel Filter: Davco shall be mounted to the outside of the frame rail and mounted (Higher than fuel tank) per manufactures recommendations in a location to accommodate filter replacements, yet be protected from road debris. Mounting location to be determined at pre-build meeting.

Davco unit shall be supplied with coolant heat, 12-volt key accessory activated heat and 120-volt AC circuit that shall be powered via the same electrical connection as the engine block heater.

Cooling System: The system shall be the largest factory engine cooling capacity, compatible with engines and transmissions referenced 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. A non-charged spin-on coolant filter shall be installed if required by engine manufacturer.

Cooler guard: Mounted in front of radiator, full width and full length to protect from stones and road debris. System to be approved by engine and truck manufactures.

Engine Oil Pan: Oil pan shall be 304 stainless steel, with stainless steel or corrosion resistant mounting hardware. Stainless steel oil pan shall be compatible with the FLOCs fittings. Stainless steel oil pan shall not void OEM's warranty.

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.

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 manufacturer's recommended automatic fan.

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

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

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 hoses 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.

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

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

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SPECIFICATIONS
A-15

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

D. VEHICLE COMPONENTS: (Continued)

9. EXHAUST:

Vertical tailpipe with elbow and muffler system, horizontal muffler and vertical tail pipe with elbow. Exhaust system shall neither interfere with the operation of the dump body or equipment, nor shall it be close to any fluid tank, and **PERMIT WING PLOW AND PRE-WET TANK 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, DPF and tail pipe shall be shielded or insulated to protect personnel from burns when entering or exiting the cab. The shield shall be 180 degrees to 360 degrees and shall be of non-rustable material such as stainless steel or aluminum.

All exhaust/DEF components shall be properly shielded to protect personnel from contact, at ground level to the side and rear of cab and normal entrance and exit into cab. Exhaust components below and to the inside of the frame rails do not need shielding. Awarded OEM Model will be discussed at pre-build.

10. FAST LUBE OIL CHANGE SYSTEM (FLOCS):

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

11. FRAME AND FRAME EXTENSION:

Frame shall be a single rail; dual frame rails are unacceptable.

Resisting Bending Moment (R.B.M.) shall be a 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 one million-inch LB per rail R.B.M. will be accepted. Frame material shall be of at least 120,000-PSI yield strength. Minimum frame RBM shall be approved by manufacturer 's Engineering Department. **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 snowplow, right patrol wing plow, etc.** Mainframe and any required liners shall be either straight channel or off-set channel, full length. **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.

12. INSTRUMENTATION:

All instruments and gauges shall be illuminated and dash-mounted, except where specified otherwise.

All standard instruments shall be supplied, including, but not limited to the following:

Oil pressure gauge with warning light or audible alarm.

Air pressure gauge(s) for dual circuit, dual indicator with low-pressure audible alarm and warning light.

Coolant temperature with warning light or audible alarm.

Transmission oil temperature gauge with warning light or audible alarm.

Fuel gauge.

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SPECIFICATIONS
A-15

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

D. VEHICLE COMPONENTS: (Continued)

12. INSTRUMENTATION: (Continued)

Hour meter that records only when the engine is running. In – dash, integral with instrument panel and readable from the operator’s seat.

DEF level gauge.

Speedometer with odometer and a dual speedometer lead to interface with the ground speed spreader control system.

Low air pressure indicator: Buzzer-type and dash light. Must meet current Federal DOT guideline requirements. Air gauge shall display in 5lb. increments. Digital numerical readout is acceptable.

Air gauge and low air warning buzzer shall operate with key switch **on** and engine **off**. Function shall not have capabilities of being deactivated by the operator.

Tachometer.

Voltmeter.

Parking brake indicator light.

Hydraulic fluid level gauge shall be installed within the dash face, exterior installation will not be accepted.

Air Restriction Gauge: Vehicle OEM equipped electronic dash that incorporates an air restriction gauge or indicator light, shall be required.

13. PAINT:

Cab shall be painted with OEM manufactures standard painting process PENNDOT yellow Ref: DuPont F9885, PPG 85246, Sherwin Williams 73266, Sikkens 4017 and NAPA 73266 for shade only.

Entire cab except for glass, rubber and those metallic accessories or fixtures constructed of rust-resistant (Aluminum and Stainless Steel) or plated material not normally painted. Base coat and clear coat. Ref: Axalita Imron for durability

OEM frame manufactures standard procedures shall be acceptable, all underside and attached components shall be ground to eliminate weld splatter, scale, sharp edges, rust and oils prior to a rust preventive primer and top coat of black paint. Powder coating is acceptable. Rims shall be painted as specified in the tire and wheel section of this specification.

Body up fitter prior to painting **all** body and upfit attachments (including wing frames) shall be ground to eliminate splatter, scale and sharp edges. All metal surfaces shall be cleaned to eliminate rust and oils prior to primer and final painting. All surfaces to be primed and painted, except for glass, rubber and those metallic accessories or fixtures constructed of rust-resistant (Aluminum and Stainless Steel) or plated material not normally painted shall be coated with one (1) coat of a rust preventive etching primer, (1) coat of epoxy primer and two (2) coats of the body up fitters lead free Acrylic urethane black paint to match frame. Wing plow moldboards shall be prepared to eliminate weld splatter, scale, sharp edges, rust and oils before a rust preventive etching primer and painted front and back with non-gloss PENNDOT Yellow paint, shade Ref. DuPont F9885, PPG 85246, Sherwin Williams 73266, Sikkens 4017 and NAPA 73266. Wing plow frame and all mounting and lifting components shall be coated with one (1) coat of a rust preventive etching primer, (1) coat of epoxy primer and two (2) coats of the body up fitters lead free Acrylic urethane black paint to match chassis frame. Aerosol can touch up paint and primer will not be accepted and will be rejected at the time of delivery inspection.

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SPECIFICATIONS
A-15

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

D. VEHICLE COMPONENTS: (Continued)

14. STEERING:

Power Steering: Dual integral type hydraulic power steering with right wheel power-assist cylinder. Glidecoat steering shaft or Bendix wedge lock lube-for-life shaft. The steering system (e.g. flow, pressure, relief valve etc.) shall be selected considering the full front-GAWR axle loading. Hydraulic supply pump shall be vane or roller type design 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 shall be remote mounted, minimum 1.5 -quart capacity, incorporating a filter that 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.

15. 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. Maintenance free front spring bushings are acceptable.

16. SUSPENSION: REAR:

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

17. TANK - FUEL:

Safety- type fuel tank as per the requirements of FMVSS. Dual tanks are unacceptable. Trucks shall have one (1) 80-GAL minimum total capacity tank, frame mounted, under the left door. Tank mounting hardware and brackets shall be for "severe duty" applications. Heavy-duty aluminum or stainless steel, minimum 1.9-inch wide straps with rubber shims/liners shall be utilized. The fill pipe shall be accessible with the dump body in the down position; pipe can be located at either end of tank to avoid interference with steps. System shall be a top or side draw for suction and return lines.

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SPECIFICATIONS
A-15

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

D. VEHICLE COMPONENTS: (Continued)

18. WHEELS/TIRES:

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

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

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

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

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

Wheel Guard Separator as follows:

Front axle - between the wheel and the brake drum.

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

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

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

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

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

MANUFACTURER

Goodyear

Michelin

Bridgestone

19. TRANSMISSION:

ALLISON 3000, 3500 or 4500 RDS 6 SPEED

Automatic transmission cooler lines shall be stainless steel.

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

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

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

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

All transmission modules shall be routed and installed in the cab

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SPECIFICATIONS
A-15

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. DUMP BODY AND EQUIPMENT MANDATORY MINIMUM SPECIFICATIONS:

1. DUMP BODY STRUCTURE, ALUMINUM:

Intent: The purpose of these specifications is to describe a conventional cab, single axle dump truck, equipped with dual rear wheels, 11-foot dump body, 7 cubic yard approximate load capacity aluminum severe duty body, hoist, hydraulic power system and snow plow hitch. Shall be capable of one-man operation while plowing snow and simultaneously spreading granular and liquid materials 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 a front-end loader or self-propelled belt loader. The body shall be capable of having the following components connected and or mounted to it: wing plow, slide in anti-ice insert, under tailgate spreader, tarp, paver, and chipper.

The body shall be reinforced to withstand SEVERE duty service and be capable of being utilized in the raised position for extended use while spreading salt, anti-skid and liquid material or excavation with rip rap being dropped in the bed. **Samples of longitudinal and crossmember extrusion shall be supplied prior to build with lb./ft rating information for approval prior to pilot model build.**

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

Awarded OEM vendor shall be responsible for contacting the Specification Section of the Fleet Management Division at (717) 787-1567 to set up a pre-build meeting for all chassis and body mounting component locations prior to chassis build. Any deviations to the specification must be granted in writing by the Chief of the Specification Section. It shall be understood that any discrepancies/deviations between the specification and the completed unit(s), chassis or body up-fitter related, must be addressed and corrected prior to the delivery deadline and the Departments acceptances.

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

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

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SPECIFICATIONS
A-15

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. DUMP BODY AND EQUIPMENT MANDATORY MINIMUM SPECIFICATIONS: (Continued)

1. DUMP BODY STRUCTURE, ALUMINUM: (Continued)

Longitudinal Members:

Size – 6 inch I-Beam minimum, full-length construction.

Weight – 6.1 lb./ft minimum, **(NOT INCLUDING EXTRUSION TRACK FOR RUBBER).**

Material – 6061-T6.

Rubber track extrusion – 1.724 lb/ft min. 6061-T6 extrusion, to fit 2 inch x 3 inch rubber. Ref: EQN-76.

Cross Members: Shall be welded to bed rails with 6 inch staggered welds on both sides. Ref: EQN76.

Size – 4 inch I-Beam Minimum, full length except where it interferes with tailgate latch linkage.

Weight – 2.70 lb./ft minimum.

Material – 6061-T6.

Front extruded cross member – 4.0 lb/ft Min. 6061-T6 with grooved “J” channel for bulkhead to interlock or 1.85 lb./ft Min 4 inch “C” channel 6061-T6 cross-member.

Rear extruded cross member – 2.86 lb/ft Min. 6061-T6 or 1.85lb/ft Min 4 inch “C” channel 6061-T6 cross-member. Tailgate shall seal against rear cross-member, it shall be continuously welded to the floor.

The last four (4) cross members shall be on 8 inch centers maximum, with the balance on maximum 12 inch centers.

Heavy Gussets: minimum size of 4-inch x 6-inch x 3/8 inch thick aluminum shall be welded at all cross members on the outside. In the pivot area or at positions blocked by components/accessories they may be welded on the inside of the rail.

Rear Body Hinges: There shall be two (2) web style mounting bracket's minimum 3/8" thick steel (one per side), spanning across a minimum of two (2) cross members. There shall be a 1/4 inch steel backing plate on the inside of the bed rail with (8) 5/8 inch grade 8 bolts and lock nuts, sandwiching the I-beam long sill between the plate and web mount. The hinge pin shall be a minimum of 2 inch O.D., full length between the outer edges of both web mounts. The section of pin between the frame rails shall not be covered. Both web-mounting brackets shall have 1/2 inch wall minimum grease able bushings. Ref: EQN-76.

Rear Bolster: Shall be one-piece design, 3/8 inch x 6 inch minimum 6061-T6 aluminum, it shall be completely welded. Design shall create a flush surface below the tailgate for the under-tailgate spreader box to mount flush with no gaps between mating surfaces of the spreader to body areas. Ref: EQN-26A.

Underride protection shall be supplied in accordance with EQN-118.

Spinner and auger hydraulic lines shall be supplied in accordance with EQN-94. Lines shall be properly sized and hard piped. Each side shall have 1 each male pressure and 1 female return 5600 stainless steel series quick couplers. Hydraulic lines shall have a permanent stamped metal tags, permanently attached identifying each line, IE: Spinner, Auger & returns. Ref: EQN-94

Body Guides: There shall be steel, or aluminum body guides mounted to the longitudinal beams (both sides). There shall be mated steel reinforced guides bolted to the truck frame. Aluminum guides shall be constructed using minimum 3/8 inch aluminum. Steel guides shall be constructed using minimum 1/4 inch steel.

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SPECIFICATIONS
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I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. DUMP BODY AND EQUIPMENT MANDATORY MINIMUM SPECIFICATIONS: (Continued)

1. DUMP BODY STRUCTURE, ALUMINUM: (Continued)

Body Sides: Shall be constructed using a minimum of 1/4 inch thick abrasion resistant aluminum 5454H34 and be 30 inch high from top of bed floor to top of bed rails (one piece per side). Top rails shall be 4 inch boxed aluminum extrusion (3.00 lb./ft Min. 6061-T6), continuous welding. Top rails shall be one-piece construction: NO SPLICING. Rub rails shall have 4 inch aluminum face, width shall cover the outer rear dual tires and must be full length of the body, both sides. A minimum of three vertical extruded side braces per side shall be furnished using 2.650 lb./ft minimum 6061-T6 aluminum, evenly spaced, in addition to the front and rear corner posts, with continuous welding and shall have one bottom drain hole per brace. Outside dirt shedders shall be furnished using minimum .190 x 5 inch 5454H34 aluminum and installed between all side posts. There shall be 3/4 inch aluminum round stock from the rear of the front corner post to the front of the rear corner post on the passenger's side and from the front of the first side brace to the front of the rear corner post on the driver's side. Each shall be welded at each side post and at all corner posts. There shall be three (3) hand holds (3/4 inch aluminum stock) welded to the driver's side front corner post, location to be determined at pre-build meeting. There shall be aluminum gussets for side boards mounted to the top rail front, mid and rear. There shall be 2 inch by 6 inch, full length, rough oak side boards securely installed on both sides. A 3/8" pipe fitting with removable threaded plug shall be installed in the center line of the body approximately 12" from the floor level to allow temperature checks of hot asphalt. Threaded plug shall have three (3) inch bar stock welded for handle and be tethered to the bed to keep it from becoming separate from the truck. Ref: EQN-76.

Bed Access Ladder: Folding ladder shall be welded to left front side of body, next to left front corner post. Ladder material shall be aluminum or 201 stainless steel, to match body material. Folding half of ladder may be aluminum to provide a lighter design. Handles shall be incorporated into design to provide operators handholds for folding, unfolding and climbing ladder. Ladder rungs shall be of an open design with a serrated edge in lieu of smooth edge. Top of first step shall be 21- inch from ground level, and rungs shall be evenly spaced at approximately 12 inch. Ladder design and mounting shall provide space for operator footing past ladder rung before contacting body side. Folding ladder shall provide a 15-degree angle from side line of body. Folding section shall have two (2) positive slotted/sliding locks, one to each side. Design shall be self-locking without the use of additional spring or rubber locking devices. Inside of dump body shall have grab handle installed in the upper rear side board pocket in line with outside ladder. Two (2) steps inside dump body for single axle, single axle crew cab and tandem evenly spaced in line with outside steps. Tri-axle shall have three (3) steps evenly spaced. Open design serrated steps shall be welded to body side minimum 13 inch to a maximum 16-inch-wide and 4.5 inch away from body side. All handles shall be coated with anti-slip paint, anti-slip tape will not be accepted. Completed ladder and grab handle design shall provide a minimum 500 lb. weight rating. Ref. EQN-76 & EQN-1090

Steel Body Props: There shall be two (2) props, (one per side) welded or bolted to the long bed beam. There shall be a three (3)-pocket rest bolted to the truck frame rail on each side. When released from the cradle, the body props shall be free to fall. Props shall fall into step retainer as bed is raised, un-assisted. Ref: EQN-62.

Floor: Shall be a minimum of 3/8 inch thick abrasion resistant aluminum 5454H34 one piece and fully welded, with extruded Z side channel minimum 4.19 lb/ft 6061-T6. Floor shall have inside clean outs (dirt shedders) fully welded to the floor and side sheets, entire bed length, both sides. Ref: EQN-76.

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I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. DUMP BODY AND EQUIPMENT MANDATORY MINIMUM SPECIFICATIONS: (Continued)

1. DUMP BODY STRUCTURE, ALUMINUM: (Continued)

Front Body Bulkhead: One-piece design shall be fabricated using .190 standard aluminum 5052H32 with a full wrap around design to form the front corner posts. Front corner posts are required to have a 15 inch side face. Top of front bulkhead shall be 56 inch from bottom of front extruded cross-member. The top of bulkhead support brace shall be 3.00 lb/ft minimum aluminum extruded box channel 6061-T6 with full weld on end caps. A 4 inch aluminum reinforcement (full width of the body) shall be fully welded to the inside of the bulkhead halfway between the floor and top of the bulkhead. **Complete continuous welding.** Ref: EQN-76.

Rear Corner Posts: Shall be constructed using 1/4 inch aluminum 5052H32, both 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. There shall be two-spreader chain holders on each rear corner post (top and bottom banjo style) fully welded. Final location to be determined at pre-build meeting.

Fixed Cab Shield: One-half (1/2) cab shield constructed using .190 inch thick 5052 H32 (formable) aluminum with a 4 inch formed front face extending over the cab. Mounting uprights shall be constructed using 6 inch aluminum channel extrusion (3.63 lb./ft minimum 6061-T6). The cab shield shall have a minimum 4 inch aluminum reinforcement the width of the shield fully welded on the backside and flush with the top of the shield. There shall be a minimum of four (4) fully welded aluminum braces that extend from the front lip of the cab shield back to the 4 inch channel at the rear of cab shield. The fixed bulkhead shall have a triple top bend to assist support of the fixed cab shield weld point. The base of the fixed cab shield shall extend rearward (tanks dirt shedder) within close proximity of the body bulkhead and taper downward to prevent material buildup on the liquid tank located below. The rearward extension shall be hinged utilizing (2) 7-gauge 1/2 inch hinge pins welded to the 6 inch horizontal flange of the cab shield. Rearward hinged section shall be bolted to each vertical 6 inch channel extrusion and all vertical facing braces utilizing (2) 1/2 inch non-rusting bolts at each location. With bolts removed rearward section shall hinge up to allow the removal of the tanks for servicing. A ground cable shall be connected between the cab protector and frame rail. Ref: EQN-76, EQN-1098 & EQN-1098A.

Pre-wet: Single 190-gallon minimum poly tank and plumbing kit with stainless steel tank enclosure and mounting hardware. Pre-wet tank shall be securely mounted to the truck frame rails between the stationary cab protector and the front bed bulkhead. Final mounting location shall be determined at pre-build meeting. Pre-wet liquid supply line shall be plumbed to the rear module, with inline check valve to prevent liquid flow when pump is turned off. Ref: EQN-26A. Tank fill shall be at ground level utilizing a two-inch male cam lock fitting with dust cap. Prewet pump shall be an Oberdorfer part # 25-N4000-RS3-02, Pump shall be driven hydraulically via a love joy connection. Hydraulic motor / pump assembly shall be housed in a NEMA enclosure large enough to facilitate servicing of unit, an electronic flow meter shall be installed to properly calibrate prewet. There shall be a low-level switch to automatically shut down the prewet motor when empty and an indicator to the operator shall be supplied. Location of prewet enclosure to be determined at prebuild meeting. Prewet pump shall have a flushing system utilizing a common garden hose. Tank shall include an anti-splash vent tube mounted at the highest most point of the tank and shall have a non-collapsing one-inch minimum hose, plumbed (P type clamps shall secure hose at 12-inch intervals) to below the frame rail of the truck. All hose connections shall utilize appropriately sized worm type hose (screw) clamps. There shall be no lids or unsealed opening in the tank that could allow the unintentional release of liquid. All valves and filters shall be placed in an accessible location outside of the frame rail and away from the possible release of liquid onto any part of the truck or components. Final location to be determined at pre-build meeting. Ref: EQN-28A, EQN-1098, EQN-1098A & EQN-76

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I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. DUMP BODY AND EQUIPMENT MANDATORY MINIMUM SPECIFICATIONS: (Continued)

1. DUMP BODY STRUCTURE, ALUMINUM: (Continued)

Shovel Holder: There shall be a Buyers stainless steel shovel holder model SH675SS (No substitute) welded to the curb side of the pre-wet tank enclosure, a hook to hold shovel in upright position shall be located above to accommodate up to a 51-inch shovel handle (location of holder to be determined at the pre-build meeting) Ref. EQN-1098 & EQN-557

Tailgate: Double acting five-(5) panel tailgate shall be manufactured using 1/4 inch aluminum, grade 5454H34 and shall be a minimum of 40 inch tall. All bracing shall be minimum extruded 2.009 lb./ft, note: formed will not be acceptable. There shall be an inverted angle on top of the tailgate constructed using 1 1/2 inch aluminum or approved equal. There shall be two (2) (one per side) wings that extend the full length of the tailgate and mounted to the inside with stainless steel hardware. There shall be two (2) "J" hooks welded to the tailgate as chain holders. There shall be two (2) 3/4 inch aluminum round stock hand holds welded to the gate. There shall be four (4) tailgate chain brackets fully welded to the tailgate, two (2) on each side. The spreader chains shall be 3/8 inch and covered with black expandable braided sleeving monofilament. Tailgate latch pin shall be the full width of the body. Conspicuity required on the tailgate, Ref: EQN-76, EQN-122, EQN-26A.

Tailgate Hinges: Shall be aluminum construction severe duty attachment brackets with replaceable heavy-duty bushings and greaseable fittings. Aluminum design shall be fully welded to the top of the rear corner post and tailgate. Both hinge pins shall be a minimum of 1.25 inch with a tapered end and sufficient length for easy removal. Both pins shall be chained and of non-rotating design. Ref: EQN-76

Tailgate Latches: Shall be of steel construction, grade 50 high tensile material and mill certified, bolted into the rear corner post and grease able. Air operated tailgate shall be a spring-over-air system and fail in closed position. The actuator shall be an AIRman Tailgater B300-259-H5. **(No substitute, standardization)** Pneumatic tailgate switch shall be mounted within the central hydraulic console. Shall be dual linkage design, with a greasable cross over shaft. All air piping and connections must be D.O.T. approved, with minimum 0.25 inch nylon tubing and brass compression fittings. Ref. EQN-78A EQN-1105

Tailgate hinge and latch design shall be approved prior to build.

Tailgate Material Chute: Tailgate shall have one material chute constructed using 1/4 inch 304 stainless steel, to include the door, handle and ears. Welded ears on the chute door shall be made using 3/8 inch 304 stainless steel. There shall be two adjustable linkages per door, with an adjustable locking mechanism, and a stainless-steel handle. The material door lower corners shall be cut on a 45-degree angle to allow easy cleaning. Ref: EQN-76.

Hoist Well Opening: Shall be heavy duty 3 inch x 4 inch extrusion aluminum 3.58 lb/ft Min. 6061-T6 or 1.85lb/ft Min 4 inch "C" channel 6061-T6 cross-member.

Hoist Cylinder: Custom Hoists, part # DAT63-302-88 **(No substitute, standardization)**. Cylinder shall incorporate a metal identification tag with the manufacturers model number, serial number and manufacturers address. Shall be fitted with a remote bleeder hose connection, mounted in the area of the ladder. Ref: EQN-63.

Hoist Cylinder Mounting: The hoist cylinder shall be mounted to an upper & lower heavy-duty hoist mount with minimum 2 inch diameter pins and 2.125 inch x 1/2 inch greasable wall bushings shall be used. Note: the base shall be fabricated (no bolt together or cast mounts).

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SPECIFICATIONS
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I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. DUMP BODY AND EQUIPMENT MANDATORY MINIMUM SPECIFICATIONS: (Continued)

1. DUMP BODY STRUCTURE, ALUMINUM: (Continued)

Hitch Assembly: Pintle plate shall be made using 3/4 inch steel. It shall be inserted within the frame rails, with sufficient clearance for body dump pin. Frame rails shall not extend beyond the hitch plate. It shall extend the full width of frame rails and extend a maximum of 5 inches below the frame rails. The lower portion of the plate shall be channeled towards the front of the vehicle, with proper gussets added between frame rails and plate. There shall be two (2) safety chain D-style rings 0.750 diameter with a minimum breaking strength of 53,000 LB. mounted to the plate each equal to the hitch rating (Ref: Ken Forge PN# 797(A). There shall be a trailer break away ring securely fastened to the plate on the left side of the pintle for attaching a trailer breakaway cable. The plate shall be placed 5 inch +/- 1 inch from the edge of the rear tires. Ref: EQN-26A.

Pintle Hook: There shall be one of the following manufacturer's 25-ton pintle hooks with spring loading, swivel design mounted to the hitch assembly, Wallace Forge 2044101 or Buyers BP200. Pintle hook mounted as Ref: EQN-26A.

Rear Light Module: The rear light module shall be integrated into the Hitch assembly containing the following components:

All lighting shall be LED. Module construction shall be a minimum 0.250-inch thick steel and shall be fully enclosed to eliminate material entering housing. License plate and license plate lamp shall be surface mounted with a 1 1/4 inch protective shield welded along the top and both sides to protect the plate and light from damage. All electrical connections shall be made within the sealed module and powered through the original chassis harness, with a compression fitting used at the wire pass-through location which shall be at the bottom of the module and configured in such a way that water cannot wick from the wires into the module. A small 1/4 inch hole shall be drilled on both the left and right bottom corners to drain any water that may enter the module. All electrical connections shall be weather tight and sealed with heat shrink, all open connections within a sealed box shall be coated with di-electric grease. Component placement on the module as per EQN:26A.

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

- (1) One grommet mounted back-up alarm, Ecco model 450. **(No substitute, standardization)** Alarm shall be mounted as high as possible, without obstruction within the rear module plate.
- (1) One license plate lamp, Trucklite Model 36140C. Shall be shielded with license plate. EQN: 26A
- (2) License plate mounting holes, with stainless steel hardware included.
- (1) One Pin Type 7-way female electrical trailer plug connection. Ref EQN-80A
- (1) One 3-lamp cluster. Trucklite Part # 33740R **(No substitute, standardization)**

Body Lighting System: Whelen model # 01-1518839-01B, to include the following, model number will assign cable length and light mounting material for body configuration. Ref: EQN-26A A six to eight-week lead time is required for delivery of light kits Whelen contact is Brad Walker (740) 325-6727 or bwalker@fleetreps.com

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I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. DUMP BODY AND EQUIPMENT MANDATORY MINIMUM SPECIFICATIONS:

1. DUMP BODY STRUCTURE, ALUMINUM: (Continued)

4-Headboard Warning 01-026F523-A0

1-54 inch light bar 9SX2PPPP, wired with other amber warning. Mounted above cab shield, final location to be determined at pre-build.

2-Reverse Light 01-066G397V11

2-Brake/Tail 01-066E462-R1C

2-Rear bed warning 01-026F769-A0

2-Side Rear Warning 02-0363818-10C

1-Photo Cell 01-066D205-010

1-Spreader light 01-0686447-30F

1- Core R junction box is 01-0689004-00

4- Red 01-02634898R90

2-Amber/Yellow 01-02634898A90

Kit to include wiring (installed in body) and diagnostic board (installed in console) for Snow Away heated tail light lens. Heated Lens will **not** be included in build.

Right wing configuration, illumination light 01-0418169-01F shall be installed for each wing installed

Right wing configuration, steady "RED" light 01-066E765-500 shall be installed for each wing in conjunction with a mercury switch (mercury switch not supplied from Whelen).

All amber warning flashers shall be connected to dedicated OEM dash switch.

Wing illumination light(s) shall be connected to dedicated OEM dash switch.

Spreader illumination light shall be connected to dedicated OEM dash light.

Plow lights shall be connected to dedicated OEM dash switch.

Whelen control panel shall be mounted within the cab under passenger seat with access cover facing passenger door for easy accessibility. Whelen light kit shall include a programable flasher that turns both the rearward facing yellow strobe lights off when the turn signal, four ways and brake lights are on, then returns to normal operation. System shall also be equipped with a photo cell mounted to the right side in the chassis cab forward facing on the A-pillar that will dim all the flashing yellow strobe lights at night and return to full power in the daylight. Reward facing light modules shall be configured and provided with heated lens covers. Heated tail light lens fault light shall be mounted inside the cab, central hydraulic controller dash viewable from driver's position. Flasher module is to be fully programable with department software provided by Whelen for any combination of flash pattern. Brake lights shall operate when engine compression brake is activated.

Whelen light package shall be installed and wired so the 4-way flasher and amber lighting to continue working after engine 5 min. shut down activates. All circuits shall be individually labeled with permanent labels.

All open terminal connection shall be coated with 3M brand Scotchkote Electrical Coating FD.

All OEM connections within the battery box shall have attached non-metallic embossed labels/tags. Labels/tags applied with self-adhesives or stickers will not be accepted.

Any circuit deemed necessary for connection in the battery box by the body up-fitter or component manufacturer shall have attached non-metallic embossed labels/tags. Labels/tags applied with self-adhesives or stickers will not be accepted.

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I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. DUMP BODY AND EQUIPMENT MANDATORY MINIMUM SPECIFICATIONS: (Continued)

1. DUMP BODY STRUCTURE, ALUMINUM: (Continued)

Chain Boxes: Shall be aluminum with safety grating overlaid.

There shall be a minimum of four (4) 3/4 inch drain holes in the box floors. Final position of box to be behind the swept back front bumper and outboard of the frame channels, flush and level with top of bumper.

Chain box shall be mounted with a one (1) piece formed channel, minimum 0.250 thick steel. Formed channel shall have a minimum 3 1/2-inch flange attached to the plow frame with full weld, flange shall taper to a minimum of 2 inch at end of chain box. Formed channel mounting bracket shall be full width and end flush with outside edge of chain box.

Chain box hinge shall be full width solid round stock with a heavy wall pipe stock welded hinge and nylon bushed.

Chain box rubber latch and catch shall be installed with flush rivets. Machine screws with nuts will not be accepted.

There shall be one (1) with right wing application. Ref: EQN-32.

Splash Guards: Both front and rear splashguard assemblies shall be properly braced. Ref: EQN-66.

Rear: Aluminum 1/4 inch splashguards 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 splashguards shall be bolted to these metal splashguards using self-locking nuts and metal strips. Flaps shall meet Federal Regulation of 22 degree. Flaps shall be heavy duty anti sail/anti spray and be razor split.

Front: The forward splashguards shall be 1/4 inch aluminum and extend downward 3/4 of the length of the rear splash guard/mud flap, with a 1/4 inch 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 and have rolled edges. Splashguards shall be full length and width with no holes cut.

Spray Suppression: Spray suppression shall be installed full length between front and rear splashguards (both sides). It shall be bolted/screwed to the body. Ref: EQN-76

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SPECIFICATIONS
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I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. DUMP BODY AND EQUIPMENT MANDATORY MINIMUM SPECIFICATIONS: (Continued)

2. CENTRAL HYDRAULIC SYSTEM/HYDRAULICS:

Hydraulic Control Approved Manufacturer's:
Certified Cirrus XDS

Intent: The purpose of these specifications is to describe a conventional cab, single axle dump truck, equipped with dual rear wheels, 11-foot dump body, 7 cubic yard approximate load capacity aluminum severe duty body, hoist, hydraulic power system and snow plow hitch. Shall be capable of one-man operation while plowing snow and simultaneously spreading granular and liquid materials 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 a front-end loader or self-propelled belt loader. The body shall be capable of having the following components connected and or mounted to it: wing plow, slide in anti-ice insert, under tailgate spreader, tarp, paver, and chipper.

Intent/Installation Practices: The pressure compensated, load sensing central hydraulic system shall operate all functions (plows, dump body, spreader, auger and pre-wet 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 operation.

All system operations shall be achieved from a single pump matching all required flow and pressure demands.

Hydraulic tool operation shall 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 the 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.

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. Used filter is required to be placed in a leak proof bag and delivered with the truck to which it was removed from for proof that it was changed after the 15-minute break in period.

It shall be the sole responsibility of the successful truck manufacturer and Certified Cirrus to ensure that the chassis and the ground speed control wiring harness is totally compatible.

Seat Safety Switch: Drivers seat shall be equipped with a factory safety switch to work in conjunction with the central hydraulic system. Switch shall be rated at 7 lbs. and shall allow operation of the hydraulic spreader auger, spinner and pre-wet system when occupied and shut down the hydraulic spreader auger, spinner and pre-wet system ONLY when unoccupied.

Seat switch shall have all necessary components and connections to delay seat switch deactivation of auger spinner and pre-wet circuit ONLY for a minimum of five (5) seconds and maximum ten (10) seconds.

Deactivation of the seat switch system shall activate a message on the spreader control screen display "AUGER & SPINNER STOPPED", this feature shall not cause any other interruptions or faults in the hydraulic/spreader system.

Reactivation of the seat switch system shall not require any action or input from the operator for operation of the complete hydraulic/spreader system.

It shall be the sole responsibility of the OEM to ensure seat safety switch compatibility with the selected hydraulic system manufacturer control system. Aftermarket installation of this switch is unacceptable.

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- I. GENERAL TRUCK SPECIFICATIONS: (Continued)
 - E. DUMP BODY AND EQUIPMENT MANDATORY MINIMUM SPECIFICATIONS: (Continued)
2. CENTRAL HYDRAULIC CONTROL: (Continued)

All electronic control modules and their connections shall be mounted within the cab in a location to provide access for servicing and to prevent damage / corrosion to modules and connections. Location to be determined at pre-build meeting.

System Operation: The system shall communicate over a CAN Open system bus using CAN Open protocol and not a proprietary communication protocol. The system shall consist of four primary modules that reside on the Bus and allow flexibility in mounting configurations. The system shall be expandable and allow for additional modules to be added to the CAN Bus. All four primary components of the system shall be software upgradeable using a laptop and interface cable or a USB thumb drive. The configuration file of a calibrated system shall be saved for transfer to other systems or as a backup providing the ability to use specific configurations for varying vehicle use or operator skill level. The original configuration file shall be maintained at the factory as a secondary backup and is traceable by part number. The in-cab control system panel shall be contained in an enclosure and mounted in an easily accessed position in the cab.

Control System Requirements: Central hydraulic system shall be capable of the following requirements in their entirety.

- All functions shall be recorded, and time stamped, to include capturing all error messages.
- System shall allow data to be downloaded in a common format (Excel).
- System shall be ground speed controlled and shall respond at one MPH.
- System shall have multiple level security and be individually password protected; Administrator and Technician. Operator shall not require a password to access the system and switch between automatic and manual operation.
- System shall be calibratable to various pounds per lane mile.
- System shall capture and store storm totals by event (Event Log).
- System shall capture and store annual storm totals.
- Stored data shall be capable of being cleared at various levels of password protection. Operator shall be capable of clearing storm totals.
- System shall be programmable to a minimum of six material types.
- Materials shall be programmable to various weights.
- System shall have a programmable minimum / maximum setting for the auger and spinner.
- System shall have a feeder (Auger) sensor, and capability of turning the sensor on or off.
- Each unit shall be capable of having an individualized seven-digit equipment number stored for identification purposes.
- System shall have a programmable prewet maximum / minimum settings at one-gallon increments and capable of being set to various gallons per ton of dry material.
- System shall be capable of showing auger jam.
- System shall be capable of working in conjunction with the following products;
 - Wojanis hydraulic plow balance valve (plow saver).
 - Vasila temperature sensor.
 - Prewet flow meter.
 - OEM installed seat switch.
 - Current AVL system

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SPECIFICATIONS
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- I. GENERAL TRUCK SPECIFICATIONS: (Continued)
 - E. DUMP BODY AND EQUIPMENT MANDATORY MINIMUM SPECIFICATIONS: (Continued)
2. CENTRAL HYDRAULIC CONTROL: (Continued)
 - System shall have a manual override in the event of sensor failures.
 - Shall be capable of operating when truck is moving in forward and reverse directions.
 - Each hydraulic valve section shall have individual overrides located at each valve section.
 - No tools shall be required to calibrate the system.
 - Shall be equipped with a pause button to disable the system momentarily.
 - Shall be equipped with a blast button to allow full calibrated material to be dispensed.

Console Assembly: Shall be ergonomically designed for easy accessibility for operator from the driver's seat. Assembly shall be secured to the floor of truck as to not interfere with any original truck manufacture equipment. **Assembly shall be properly braced as to not allow any excessive movement that could be detrimental to the integrity of the floor or mounting location.**

Console shall have a padded arm rest and be adjustable to accommodate various operators' side to side and with three (3) inch adjustment down from a top height of 30 inch with positive locking. Console shall not come in contact with the driver's seat. Console shall be capable of housing all hydraulic controls and switches, including right wing plow function. Console base shall be of steel construction conforming to drawing EQN-509. Base shall include an adjustable bracket for mounting of state radio. Ref: EQN-509.

Display: The display shall be manufacturer's latest design and largest available screen, with backlighting, user adjustable positioning. The display shall be user resizable to provide maximum readability with varying display content including a status window that provides the operator with system status messages. The display shall incorporate "touch screen" switches that are defined by the system program via the display. When configured, the display shall incorporate granular rates, pre-wet rates, directional spinner position, road/air temperature, hydraulic pressure where designated, system status, error messages, plow float indication, auto/manual mode indication and material currently being used. Active functions that are not in use shall show "off" and the graphic be "grayed out" for ease of operator interpretation.

Display shall not emit "RF" frequencies or any "noise" that could interfere with any wireless or communications device utilized in any PennDOT vehicle such as a two way radio, CB, Cellphone or other communications device.

Consideration should be made when mounting display screen as not to block operator vision to passenger side mirrors.

Software: The system shall incorporate three levels of security and access that is password protected and defined by the user. The three levels of access called operator, technician and administrator shall give the user varying levels of access to system setup, data configuration fields and parameters based upon access given. The "administrator" shall have full access to all menus in the system and have the ability to make system configuration changes as well as system parameter changes. Spreader and liquid functions, when controlled utilizing closed loop feedback, shall incorporate an "auto trim" feature that will allow the system to automatically set the PWM minimums and maximums when engaged. The system shall have "over speed" protection for the liquid functions that will alert the operator and shut down the liquid function when the driver has exceeded a user defined speed. The software shall incorporate a "test speed" mode for use in testing the system safely without requiring the truck to be moving, the drive axles engaged or the parking brake to be off.

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I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. DUMP BODY AND EQUIPMENT MANDATORY MINIMUM SPECIFICATIONS: (Continued)

2. CENTRAL HYDRAULIC SYSTEM / HYDRAULICS: (Continued)

Control Console: The control console shall contain individual joysticks to control hydraulic functions including wing option. Body hoist stick shall contain an interlock button to protect against unintended operation. The plow stick shall be a two-axis joystick. All joystick functions shall be protected by software-based safety system to protect against unintended operation due to a joystick failure. The console shall contain the operator interface for the spreader control, joysticks, low oil override switch, plow balance control switch, wing float control switches, tarp switch, body up indicator light, and body limit indicator light. All controls shall be securely attached, within easy reach of operator and console mounted. All controls shall be connected to the valve/s via an electronic cable and utilize CAN network communications. **Console base shall be properly braced to eliminate floor flex.** Additional supports brackets shall be vendor's responsibility. Ref: EQN-509

Wire Harness Kit: All wiring for the kit shall be included and be TPE type wiring only to the following specification: Wiring and harness system shall meet ISO rating IP68 and NEMA 6. The connectors shall be zinc die cast E-coated, similar to a MIL spec connector. Each shall have three sealing points- the lock ring itself, a raised portion of the molded plastic around each pin, and a viton O-ring that seals the entire connector. The cable jacket shall be TPE- thermoplastic elastomer and molded to the connectors. Connectors and harness shall be rated and tested for a temperature range from – 30C to + 70C. Connectors shall be tested to be water tight when submerged in 6' of water for 24 hours, in 275' of water for 1 hour, and when subjected to a 1000-psi pressure wash. The connectors shall be designed to have NO corrosion after 500 hours in a 35C salt spray. Cabling shall be rated excellent in low temperature flexibility and in its resistance to oxidation, heat, oil, weather, sun, ozone, abrasion, electrical priorities, flame, water, acid, alkali, gasoline, benzol, toluol, degreaser solvents, alcohol, and weld slag.

Combination Tank/Valve Enclosure: Combination tank/valve enclosure shall be frame mounted, in a location not to interfere with body, wing plow or exhaust components. Final mounting location shall be determined at pre-build meeting. Unit shall be constructed of ten-gauge 304 stainless steel. The oil reservoir portion shall not be less than 40-GAL capacity, filled with ISO 32AW hydraulic oil and a baffle plate to prevent oil flow from venting directly to suction port. Tapered outlet shall be below oil level at all times to prevent air entrapment. A magnetic drain plug shall be installed into reservoir. 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. An oil level sight gauge/thermometer shall be provided on the reservoir. A suction strainer shall be installed in the suction port of the tank. There shall be a provision for a low oil float to be installed. Low level float shall thread into the side of the assembly and shall have an M12 connector. The valve portion must be of weather-tight design and utilize a gasket to seal the lid to the body of the unit. Lid shall be retained by two rubber fasteners. Handles (two) shall be welded to the lid and constructed of stainless steel. A mounting location for the hydraulic control system module(s) shall be provided as part of the enclosure design. Stainless steel shields to protect exterior wiring shall be provided. The valve shall be installed in the enclosure by the hydraulic system supplier and pre-plumbed to the outside of the enclosure

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I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. DUMP BODY AND EQUIPMENT MANDATORY MINIMUM SPECIFICATIONS: (Continued)

2. CENTRAL HYDRAULIC SYSTEM / HYDRAULICS: (Continued)

through the use of bulkhead style fittings. Enclosure shall provide space to service spool valve solenoids without removal of the hydraulic valve. No hoses shall enter the weather-tight area of the enclosure. Valve to be pre-wired inside the enclosure and **di-electric grease** shall be applied to all connections as required. Return oil flow shall be through the reservoir mounted filter assembly. Return filter shall be provided as part of the tank/valve enclosure assembly Ref: Fleetguard filter # HF302282 or equivalent **No Substitute Standardization** I. It shall be rated @10 micron. There shall be a pressure switch with boot to activate a warning message on the control system screen. Cab mounted filter contamination indicator set at 23 PSI. Return filter housing shall have provisions for a service filter switch; connection shall be made via an M12 connector. Suction line/strainer shall be 125 micron with 3 PSI bypass rated above 47gpm submerged at all times. Shall have a 1/4 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. There shall be a 5600-series 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. Final location shall be determined at the pre-build meeting. Ref. EQN-508. Wire harness covers shall be installed on the enclosure to protect the wiring harness where it enters/exits the modules.

Directional control valve: The hydraulic control valve shall be a Sauer Danfoss PVG32 with aluminum manifold to control spinner and prewet functions. (One Manual control lever is to be supplied per unit to control manual override of valve.) There shall be stainless steel threaded access plugs for access to load sense reliefs.

Sections shall be provided as follows: (non-wing)

Body hoist – PVG 32 Turbo Spool (34 GPM) section, double acting with 1500 psi down relief and 2000 psi up relief.

Plow raise/lower, double acting.

Plow angle, double acting, motor spool.

Return manifold: There shall be a return line manifold mounted on the chassis, location to be determined at the pre-build meeting. Ref: EQN-94. 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.

There shall be a 3-port valve block to control spinner, auger, and pre-wet as part of the main valve assembly. There shall be two (2) return lines from the control valve to the return manifold.

Bed Speed requirements:

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 20 seconds maximum.

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I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. DUMP BODY AND EQUIPMENT MANDATORY MINIMUM SPECIFICATIONS: (Continued)

2. CENTRAL HYDRAULIC SYSTEM / HYDRAULICS:

Body Limit Alarm System: Switch shall inform the operator by an illuminated console mounted light. An audible alarm (Steady Buzzer) Ref: Floyd Bell part # TMC-V86-948-Q shall be installed (**No substitute, standardization**). Proximity switch shall be set at 49 degrees +/- 1-degree dump angle to alert the operator and prevent the hoist cylinder from going full stroke. Proximity switch shall be mounted in an accessible area at the hoist cradle, located away from road splash. Ref: Automation direct inductive proximity sensor PN# PMW-OP-2H wired normally open with harness PN# EVT221 (**No substitute, standardization**). System shall be labeled "Body Limit".

Body-up Alarm System: Switch shall inform the operator by an illuminated console mounted light. An audible alarm (Chime) (Ref: Floyd Bell part # TCH-V86-530-QM shall be installed (**No substitute, standardization**) system shall alert the operator of the body being in the raised position. Alarm and light shall function as soon as the body is raised from the rested position. Proximity switch shall be mounted in an accessible area at the hoist cradle, located away from road splash. The proximity switch must stay in contact with dump bed in normal driving conditions on and off roadways where frame twist may occur Ref. Automation direct inductive proximity sensor PN# PMW-OP-2H wired normally closed with harness PN# EVT221 (**No substitute, standardization**). System shall be labeled "Body-up".

All wiring for both switches shall be routed to prevent damage from heat, sharp edges and moving parts. Wiring harness connections shall be soldered and covered with heat shrink, dielectric grease shall be applied to sensor plug connections.

Hydraulic Pump: Rexroth Part Number R910979162, Model A10V0100 LH rotation: KEYED Crankshaft Driven, (**No substitute, standardization**). Pump shall include low oil shut down with console-mounted override switch. Shutdown shall be direct mounted to the pump. Remote mounted valve will be unacceptable. Valve shall be a normally closed, energize to open cartridge valve. Valve shall be controlled by the hydraulic control system. The pump shall match system flow and pressure (horsepower) requirements to provide maximum fuel economy. Ref: EQN-90. An unloader or by-pass system is not an acceptable means of regulating excess oil flow. To ensure responsive controls pilot pressure shall be set to 500 psi +/- 5 psi.

Pump Mounting Bracket: Regardless of design the bracket shall be a minimum of 5/8 inch formed steel channel. The pump bracket shall be sloped to match the engine crankshaft. Width dimensions shall be full frame rail width. Bracketry to attach pump-mounting bracket to the truck frame rails shall be a minimum of 5/8 inch thickness. Brackets shall either be fully welded or use 3/4 inch grade 8 (eight) bolts of sufficient length and grade 8 (eight) locknuts, minimum of four (4) bolts per mounting side. Ref: EQN-90.

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 a tubular shaft of 1141 steel. Tubular shaft shall 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 shall be in accordance to manufacturer's recommended procedures. Slip assembly shall provide a minimum of 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. Loctite shall be used for the installation of all mounting bolts. Universal joints shall be of the non-greasable lube for life design. Ref: EQN-90.

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SPECIFICATIONS
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I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. DUMP BODY AND EQUIPMENT MANDATORY MINIMUM SPECIFICATIONS: (Continued)

2. CENTRAL HYDRAULIC SYSTEM / HYDRAULICS:

Hydraulic Hose: All hoses and hose ends shall be matched and assembled on a hose machine to prevent hose failure. All hydraulic plumbing practices shall conform to JIC H11 standards. Pressure hose from hydraulic pump to valve body shall be 100R17, pressure hoses shall be 100R2, return lines shall be 100R1 and suction lines shall be 100R4. Velocity in pressure 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. EQN-94.

Hydraulic Alarm and Shutdown System: 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 the control system. The on-screen message and audible alarm shall come on whenever the oil level drops below a safe reserve, and the pump mounted low oil shutdown manifold shall deactivate to prevent pump damage. A console mounted low-oil override switch shall be provided to allow momentary operation in an emergency.

All electronics associated with the hydraulic system shall be protected against and shall not cause interference to the operation of the vehicle or the land mobile radio communications system or AVL when properly installed in the vehicle.

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SPECIFICATIONS
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I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. DUMP BODY AND EQUIPMENT MANDATORY MINIMUM SPECIFICATIONS: (Continued)

3. TARPING SYSTEM:

Tarp System: Aero (**No substitute, standardization**)

Pricing shall be supplied for a top bed rail system.

Tarp Spool: Shall have a one-piece aluminum wind deflector, mounted onto the upper front portion of the bed bulkhead. Wind deflector shall meet stationary cab protector without interference during dumping. Provisions shall be made to position the arms below the top line of the side boards to achieve unobstructed transition from the bed ladder to the inside of the bed. It shall include an extruded aluminum roll pipe. Extrusion shall have a corrosion resistant steel stub shaft to connect it to a greasable bearing on the idler end of the roll pipe, idler bearing shall be installed on the outside of the wind deflector side plate.

Gear Motor: Shall be a 12-volt Electric Gear Motor designed to operate at fewer than 35 amps and weather resistant. Gear motor shall have protective cover. Gear case output shaft shall be corrosion resistant. Gear motor to have a minimum of a 3-year non-prorated limited warranty against wear out and manufacturing defects.

Controls: System to be operated by a low voltage rocker switch and control relay assembly. Control switch shall be located **IN** the hydraulic controller dash console, an externally mounted switch will not be accepted. For safety there is to be a weather resistant automatic reset circuit breaker mounted at the power supply to protect the complete tarp system from overload and short circuit. Location to be determined at pre-build meeting.

Power supply from chassis to bed shall be made through a spring-loaded contact plate mounted between the bed rail and chassis frame rail, mounting of contact shall be made with OEM's guidance and mounted parallel to the frame to help minimize flexing and losing contact. All wiring shall be protected from corrosion with wire terminal ends soldered and heat shrink connections. Ref. EQN-550.

Pivots & Arms: Pivots shall be mounted to the top side rails with a maximum of 1 1/2 inch clearance from the sides of the body. Pivots shall contain coated spiral torsion spring or coated double helix spiral spring. The spring must have the ability to be preloaded with tension.

Bow set shall be a 3-piece angled tempered aluminum arm extrusion. Arms shall connect to the pivots in a telescopic fashion.

The arm offset angle shall follow the front top body line and not protrude into the side board area. Provisions shall be made to position the arms ahead of the side boards pockets to achieve unobstructed transition from the bed ladder to the inside of the bed. Ref. EQN-1100

Tarp: The tarp material shall be fabric and suitable for covering asphalt and winter material/salt. Material shall be able to withstand temperatures associated with hauling hot asphalt for extended periods of time. Tarp to have 18 inch Rear Corner reinforcements.

Shall be equipped with the following: Full Flap Length Shock Cords (for tie down purposes)

- 12 inch Side Flaps
- 12 inch Tail Flap

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SPECIFICATIONS
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I. GENERAL TRUCK SPECIFICATIONS: (Continued)

F. GENERAL PLOW MOUNTING / ACCESSORIES:

Front Plow Hitch: Side-mounting plates shall be constructed using 3/4 inch Steel. Lower plow mount bracket center shall be 16 inch to 17 inch from ground (both sides). Trucks that do not have a wing, "X" braces shall be installed using .31 inch wall 2 inch x 2 inch steel tubing. There shall be a minimum of five (5) 7/8 inch grade eight (8) bolts per side with washers and lock nuts to mount the plow frame to the truck frame. Lift height shall be sufficient to afford unrestricted lift for PennDOT plows, (16 inch minimum lift). Side strengthening bars (two per side) shall be fabricated using 3/4 inch steel, 16 inch long by 2 inch wide and mounted to the external side of the plow hitch. All grease zerks shall be surrounded by a short length of pipe (welded in place) or be in a recessed hole. The zerks for the plow arm bushings shall be mounted on the underside of the bracket.

Plow hitch pins shall be 1 1/4 inch diameter, length shall be sufficient to allow 3/4 inch between bottom of plow frame and "R" pin drilled hole. Pins shall be tapered, from 1 inch to half the diameter of the pin. **(No substitute, standardization)** Ref: EQN-50.

The hydraulic connections on the plow hoist cylinder and for the two way plow connections shall be the 5100 series winged typed couplers positioned as to keep them from being stuck and damaged, while connecting or disconnecting the front plow. **All other hydraulic connections mounted to the plow frame shall also be positioned to keep them from damage.** Ref: EQN-94 **(No substitute, standardization)**

Plow hoist cylinder shall be a welded barrel type, 4 inch X 10 inch stroke, 20 inch retracted 30 inch extended. Rod shall be full size diameter. Both barrel and rod pins shall be 1 inch diameter. Pins shall be tapered, from 1 inch to half the diameter of the pin. **(No substitute, standardization)**. Ref. EQN-24

Plow Balance: There shall be a Wojanis part number WSC-072-4-00 plow balance device installed. **(No substitute, standardization)**. Plow balance shall have the following specifications:

Valve to be designed to offset a specific (adjustable) plow weight when activated. Valve to be of cartridge and manifold design, and electrically activated. The valve shall be activated by a single solenoid.

The plow balance system shall not alter the operation of any other hydraulic function on the vehicle or have an adverse effect on the performance of other hydraulically operated equipment including wing plow, body hoist, plow hoist or angle, or spreader functions. All normal operations of the plow lift/lower function must be maintained without additional tasks. Operation of any electrical switches beyond the normal up/down command to raise or lower the plow shall not be acceptable. The use of a relay circuit to allow the plow to remain in the up position shall not be acceptable.

To guarantee safe operation of the vehicle, the plow balance system must operate with the following parameters: The system will remain electrically activated when lifting the plow from the road surface. Plow lift must be immediate. It is not necessary to turn off the system for plow lift. Plow lowering and return to balance mode must be done by activating the plow lever or switch to the lower mode.

The plow balance system must be able to hold the plow in the up position indefinitely.

The plow balance manifold shall be of cartridge style valving utilizing "floating" style cartridge valves. The valve body must be constructed of aluminum and have minimum construction hole plugs. All solenoid valve coils shall have manual override capabilities. Manifold must include a pressure test point for use when checking balance pressures. The pressure test point must be capable of tapping into the system at pressures of up to 5000 PSI.

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SPECIFICATIONS
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I. GENERAL TRUCK SPECIFICATIONS: (Continued)

G. Temperature Sensor:

There shall be vaisala Surface Patrol DSP100 road/air temperature system installed with the hydraulic control system as an integrated temperature display.

H. AVL Hardware Installed:

AVL Hardware: Unit shall be equipped with a complete AVL hardware system installed and completely functional to work in conjunction with the Departments current AVL solution. Shall include but not limited to; GPS Transponder / Advanced Tele metrics System box, modem, GPS antenna, all wiring and connectors. All hardware shall be mounted within the truck cab and location shall be determined at pre-build meeting.

I. Under Tailgate Spreader and Iowa Spinner:

Flink or Swenson **(No Substitute, standardization)**

Spreader: Unit shall be equipped with a stainless steel under tailgate spreader with an Iowa type spinner assembly. Spreader and spinner shall meet the following specifications and be installed. For mounting location of spreader and Iowa spinner reference EQN-568 All references made to stainless steel shall be AISI Type 304 stainless steel.

7 gauge 0.1875-inch

10-gauge 0.1350 inch

Per EQN-568

All nuts, bolts and hardware brackets, or angle stock, unless otherwise specified, shall be stainless steel (no substitutes), with all edges deburred and rounded.

DIMENSIONS:

Overall width of vertical trough end plate shall be 96 inch.

Overall height shall be approximately 18 inch.

Overall depth shall be approximately 18 inch.

Inside trough width opening shall be 81 inch + or – 1/2 inch. EQN-568

TOP COVER:

Two-position top cover. When raised, normal spread mode. When lowered with spreader not in use, allows full dump-over capability.

Spreader material, full width, shall be a minimum 0.135-inch thick stainless steel.

Properly secured to prevent material leakage in spreading positions.

AUGER:

Per: EQN-568 & EQN-6 (Material is specified in drawing.)

AUGER BEARING:

1-1/4-inch shaft diameter.

2 bolt flanged type ends self-aligning, anti-friction, thrust, re-lube type, with retaining collar with set screw with Zerk fitting cover, eccentric type, or equal, per EQN-568.

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SPECIFICATIONS
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I. GENERAL TRUCK SPECIFICATIONS: (Continued)

I. Under Tailgate Spreader and Iowa Spinner: (Continued)

AUGER MOTOR:

The auger motor is a standard, no substitute. It is the responsibility of the successful Vendor to ensure that the spreader's assembly is designed and manufactured in such a way as to ensure compatibility and serviceability with the Department's hydraulic system/s.

Auger Motor: White Hydraulics: Model RE (no substitution), with a 50-pulse auger motor sensor installed. Kit # W80509

Displacement cu in: 32

Housing: 08 (A style 4 bolt)

Output Shaft: 14 1-1/4-inch straight

Rotation: 1 clockwise

Porting is 7/8 inch 'o' ring fitting

STAINLESS STEEL SPREADER, URETHANE SPINNER ASSEMBLY:

Spinner frame shall be an "Iowa" type. The assembly shall be mounted with the dump bed in the fully down position, the center of the spinner fan shall be positioned under the center of spreader discharge opening. Urethane spinner disc shall be per EQN-6 & EQN-568 No Substitute without prior approval. Spinner height shall be 12 inches from the ground to the disc lip. Spinner disk shall not have the ability to adjust lower than this height.

DISC:

Ref: C.U.E. Inc. Spinner Part #CC1229S EQN-568 **(No substitute without prior approval).**

HUB:

REF: C.U.E., Inc., hub Part #20559-0650 (4 bolt type hub mounted to spinner disc with locking type nuts for use with spinner motor (bolt pattern shall match for referenced spinner). No Substitute without prior approval

SPINNER MOTOR:

Gerotor type hydraulic drive motor

Hydraulic port opening: 1/2 inch NPT

Flange mount: 4 bolt.

Shaft keyway: 1-inch woodruff.

Displacement: 3.0 cubic inch/rev. maximum

PAINT:

All carbon steel surfaces shall be properly prepared by thorough cleaning, removal of dirt, grease, rust and corrosion and shall be painted with proper undercoat and a sealer. All stainless steel shall be unpainted.

COUPLERS:

One (1) 1/2 inch spinner – 5600-series-10 (Pressure Female Coupler) no substitute.

One (1) 1/2 inch spinner – 5600-series-10 (Return Male Coupler) no substitute

One (1) 3/4 inch auger - 5600-series-12 (Pressure Female Coupler) no substitute.

One (1) 3/4 inch auger - 5600-series-12 (Return Male Coupler) no substitute.

Hydraulic couplers shall be stainless steel.

All necessary hardware and fittings shall be supplied to ensure that the system is fully functional.

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SPECIFICATIONS
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I. GENERAL TRUCK SPECIFICATIONS: (Continued)

I. Under Tailgate Spreader and Iowa Spinner: (Continued)

SAFETY:

All edges and corners shall be ground to eliminate sharp edges.

Appropriate decals, instructional and WARNING/S, shall be provided and fixed.

There shall be a lock out system that will prevent the lower auger inspection pan from being lowered (opened) while the hydraulic line is connected to the auger motor. Safety Disconnect shall not interfere with operation of rear cover while dumping. Safety disconnect shall allow hydraulic couplers to swivel away from material being dumped, to prevent material buildup in couplers.

Note: Lock out to be plumbed with 3/4 inch hoses and couplers.

TROUGH:

There shall be hinged trough bottom with spring loaded latches.

Bottom shall be separate from the anti-spill/cover.

Separate one-piece bottom shall be full spreader width, minimum 7-gauge stainless steel.

Separate anti-skid/cover plate shall be minimum 10-gauge stainless steel.

Bottom shall be properly secured to prevent material leakage in spreading positions.

Bottom shall be hinged by bolts or pins (stainless steel) with a minimum of three (3) center hinge points and two (2) end points. End pieces, one piece formed front wall and rear wall, shall

be minimum seven (7) gauge stainless steel.

ANTI-FLOW PLATE OPENING:

Anti-flow plate shall be mounted over the trough opening.

Anti-flow plate shall be arched to provide a minimum of 3/4 inch clearance between the shield and the outer periphery of the auger flight. Anti-flow plate shall butt against end plate. Anti-flow plate shall be minimum 10-gauge stainless steel. Anti-flow plate length shall be 14-inch.

Discharge opening shall be approximately 6-inch-wide by 7-inch-long rectangular opening.

Discharge opening shall begin from end plate on roadside.

QUICK DETACH:

There shall be quick detach bracket per EQN-568

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SPECIFICATIONS
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I. GENERAL TRUCK SPECIFICATIONS: (Continued)

J. WING PLOW SPECIFICATIONS:

1. INTENT STATEMENT:

Reference Gledhill Road Machinery Co. Patrol Wing(s) (**No substitute, standardization**).
Right Hand Patrol Wing 11FRPW-PENNDOT

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 into the travel position for improved visibility and to allow emergency egress.

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 addition to a front mounted plow weighing approximately 3500 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 quick attach or detach independently utilizing the rear slide bracket from the A frame assembly. The front shall quick attach or detach between the front lift frame assembly and the trip mechanism utilizing a minimum 1 inch diameter pin. No part of the chassis or dump body assembly shall have to be moved or removed when attaching or detaching the wing.

When wing assembly is disconnected from the truck, no parts may extend past the bodyline of the truck. The Patrol Wing shall be installed in such a manner to ensure quick access to the battery box, engine and all accessories. Hood on dump truck shall tilt without obstruction.

All parts not specifically mentioned, which are necessary in order to provide a complete snowplow 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 and all mounting hardware shall be Grade 8.

Areas of the wing plow tubes and cylinders that are likely to be stepped on when in the down position shall be coated with anti-skid paint, tape is unacceptable.

All cylinder rods shall be Chrome or Nitride plated

The front and rear wing plow braces shall be attached in such a way that will properly distribute the load to both chassis frame rails using a cross tube design and be approximately 154 inch +/- 2 inch (No Substitute, standardization) from the center of the rear cross tube to the center of the front cross tube. Ref EQN-1097

2. SPECIFICATIONS:

Rear Wing Brace: The rear wing brace shall be (A)Frame style that will properly distribute the load to both chassis frame rails using a minimum 3 inch square cross tube and be approximately 154 inch from the center of the rear cross tube to the center of the front cross tube. EQN-1097 The (A) Frame shall incorporate 7inch x 15.3 LB/feet I Beam that will accept the rear wing post slide bracket for easy removal of the wing plow for none winter or summer modes

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SPECIFICATIONS
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I. GENERAL TRUCK SPECIFICATIONS: (Continued)

J. WING PLOW SPECIFICATIONS: (Continued)

2. SPECIFICATIONS: (Continued)

Rear Wing Post Slide Bracket: shall incorporate a manual stop so contact between wing plow and truck cannot happen when the rear of the wing plow is raised to its highest position.

The top portion of the bracket shall incorporate a minimum 4inch x 15inch double acting lift cylinder with a chrome/nitride plated piston rod. This cylinder will raise and lower the rear wing plow for transport and plowing operations This cylinder shall have a 500-PSI relief valve when in float on the down side. Ref: EQN-1099 Sheet 5

Rear Wing Post Slide Bracket: The bottom portion of the bracket shall incorporate a minimum 3inch X 27 inch double acting cylinder with a chrome/nitride plated piston. This cylinder shall extend and retract a telescoping strut that is constructed of 4inch O.D square tubing with 3inch O.D square tubing installed inside it. There shall be wear guides welded to the outside of the 3inch square tubing to prevent binding when retracting and extended the strut. There shall be a knuckle link at the end of the strut for connection to the horizontal bracing bracket on plow mold board. Ref: EQN:60A This Knuckle shall be of a one-piece cast design. (Use of welding components is unacceptable). The telescoping strut cylinder shall have an adjustable pressure relief valve installed in the hydraulic system for safety when contacting heaving objects in plowing operations. Ref: EQN-1099 Sheet 4

Front Wing Mast Bracing and support shall be attached in such a way that the load is properly distributed to both chassis frame rails using a cross tube and be approximately 154 inch from the center of the front cross tube to the center of the rear cross tube. Ref: EQN-1097 The front horizontal cross tube shall be minimum 7 inch X 4 inch X.3750. The formed wing mast mount shall be bolted to the horizontal cross tube with minimum grade 8, 0625 (5/8) bolts.

Front Wing Mast shall not block or interfere with O.E.M or aftermarket plow lights or mirrors. The front wing mast shall be minimum 7 inch x 15.3 LB/feet I Beam and shall incorporate a minimum 5/8 inch thick steel plate for the wing post slide. Minimum lift shall be 10 inch to allow sufficient clearance from bottom of plow to ground surface for transport. Front wing double acting lift cylinder shall be minimum of 3 inch X 18 inch with a chrome/nitride plated piston rod with the most weather resistant neoprene wiper seal. Ref: EQN-1099 Sheet 7

Tripping: The patrol wing shall be capable of a full trip moldboard design. The trip mechanism and linkage shall be heavy duty and be of adequate strength to handle the forces encountered when the wing moldboard is tripped. The trip mechanism shall be located at the front (nose end) of the wing moldboard. The trip mechanism shall utilize a rubber compression system that is adjustable by means of a 3/4 inch x 25 inch long threaded rod. The rubber compression spring shall be constructed from aeon A760-75 rubber. The tripping mechanism shall allow the wing moldboard to return to normal plowing position after it has encountered an obstacle. There shall be provisions to lock the plow from tripping when operations deem it necessary to have a rigid moldboard. Ref: EQN-1099 Sheet 3.

Wing Plow Hydraulics All 3 cylinders will be double acting with a chrome/nitride plated piston rod with the most weather resistant neoprene wiper seals. All the cylinders shall be connected to the truck chassis hydraulics using 5100 series winged hydraulic couplers Ref: EQN-94. All hydraulic cylinders shall be controlled by a single joystick located conveniently in the cab with the hydraulic control system. In addition, there shall be 3 spool valves added to hydraulics. One to lift and lower the front of the wing, one to extend and retract the wing and one to fold up and lower the rear of the wing.

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SPECIFICATIONS
A-15

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

J. WING PLOW SPECIFICATIONS: (Continued)

2. SPECIFICATIONS: (Continued)

Wing Plow Assembly: The wing assembly shall in no way interfere while turning either right or left with the steering tire. The wing shall not be less than 11 feet long overall, 27 inch (minimum) high at the front and 37 inch (minimum) high at the discharge end. The moldboard shall be fabricated from 0.1719-inch-thick (eight 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. Ref: EQN-16A

Suspension Load booster: There shall be a Timbren load booster added to both the driver and passenger side steering axle to help support the leaf spring suspension with the load of the wing plow.

Plow Markers/Guides: Wing plow shall have a (visual) mechanical alarm system to help alert the operator of the position of the front of the wing plow. It must be visible from the driver's seat. There shall be two vertical highly visible coated cable plow guides on the front wing post. One shall be mounted to the stationary plow frame and one shall be mounted on the lift frame. Guides shall be mounted near one another and the tops of the guides shall align when the wing plow is in the down position. There shall also be a vertical highly visible coated cable plow guide mounted on the top rear corner of the wing plow to help determine the location of the wing when in the down position. Ref: EQN-60A

Steel Blade: The cutting edge shall be of 1/2 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.

Swivel Knuckle: Swivel shall be of bolt on design to extension tube. The wing knuckle link at the rear of plow mold board connection shall be of a cast design. The use of welded together components will not be accepted.

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SPECIFICATIONS
A-15

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

J. WING PLOW SPECIFICATIONS: (Continued)

3. MINIMUM ALTERATIONS:

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.

4. 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 (riveted) non-rusting metallic tag located on the right-hand backside of the moldboard as viewed from truck operator's seat. Sticker decals **will not** be accepted

5. PAINT:

Entire wing moldboard shall be painted with 2 coats of Flat PENNDOT yellow paint Ref: DuPont F9885, PPG 85246, Sherwin Williams 73266, Sikkens 4017 and NAPA 73266 for shade only. Frame and all underside and attached components shall be ground to eliminate weld splatter, scale, sharp edges, rust and oils prior to a rust preventive primer and top coats of yellow paint.

Body up fitter prior to painting **all** frame/body and upfit wing attachments shall be ground to eliminate splatter, scale and sharp edges. All metal surfaces shall be cleaned to eliminate rust and oils prior to primer and final painting. All surfaces to be painted, except for glass, rubber and those metallic accessories or fixtures constructed of rust-resistant (Aluminum and Stainless Steel) or plated material not normally painted shall be coated with one (1) coat rust preventive etching primer (1) coat of epoxy primer and two (2) coats of the body up fitters lead free Acrylic urethane black paint to match frame. Wing plow moldboards shall be prepared to eliminate weld splatter, scale, sharp edges, rust and oils before a rust preventive etching primer (1) coat of epoxy primer and two (2) coats of the body up fitters lead free Acrylic urethane paint and painted front and back with non-gloss PENNDOT Yellow paint, shade Ref. DuPont F9885, PPG 85246, Sherwin Williams 73266, Sikkens 4017 and NAPA 73266

6. CONSPICUITY TAPE:

The rear of the wing plow shall have a strip of retro-reflective sheeting across the top and down the outside in order to outline the plow when viewed from the rear in the lowered position. Shheeting shall also be placed on the length of the extension/retraction hydraulic cylinder and vertically on the rear most frame support of the moldboard plow as to make plow more visible in the raised/stowed position. Material shall be: 2 in/5.08 cm wide Reflexite Conspicuity II System of 3M Scotchlite Conspicuity Series 980, red/silver continuous backing. Ref: EQN-60A

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SPECIFICATIONS
A-15

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

J. WING PLOW SPECIFICATIONS: (Continued)

7. WING PLOW LIGHT:

The rear of the wing plow shall have a Whelen part # 01-066E765-500 light permanently mounted facing rearward and set to be a red steady burn. Light shall be controlled by a COMUS part # CB08-90 mercury switch. Light shall be wired to be on only when the plow is in the down position. There shall be a Deutsch connector installed at the front wing hinge point to allow for easy removal. All wiring connections shall be sealed and water tight. The wing plow manufacturer shall weld a 1/2 inch ID steel pipe on the rearward face of the plow, prior to painting. Pipe shall serve as a conduit to run the wiring for the light. Pipe shall be mounted toward the top and run across the entire length of plow webbing. Ref: EQN-60A

There shall be a Whelen part # 01-0418169-01F light to illuminate the wing plow. There shall be 1 light for each wing plow mounted on the same side as the wing (Dual wing will get 2 lights 1 on each side). Location will be determined at prebuild meeting. There shall be a dedicated OEM dash mounted switch that is properly labeled and illuminates.

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SPECIFICATIONS
A-15

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

K. INSTALLATION PRACTICES:

- Any place steel and aluminum contact each other Mylar (**No Substitute, standardization**) shall be used as a buffer. Laminate rubber is unacceptable.
- 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 shall be continuous welds with full penetration.
- All corners shall be angled or rounded for safety.
- All mounting procedures shall be in accordance with NTEA standards.
- All hoses shall be routed as to not interfere with any components, shall be protected from rubbing / chaffing other hoses or components.
- All hydraulic circuits shall be tested for proper operation and flow. Control systems shall be tested/calibrated and programmed for Department material spread rates prior to delivery. Material spread rates will be disclosed at the pre-build meeting.
- All electrical connections shall be treated with di-electric grease.
- All electrical wiring and harnesses shall have an engineered strain relief system designed to eliminate stress on electrical connections, harnesses, control modules and any other associated electrical system components.
- Each electrical circuit shall be supplied individually and properly sized, protected from weather and sealed to be watertight
- All OEM connections within the battery box shall have attached non-metallic embossed labels/tags. Labels/tags applied with self-adhesives or stickers will not be accepted.
- Any circuit deemed necessary for connection in the battery box by the body up-fitter or component manufacturer shall have attached non-metallic embossed labels/tags. Labels/tags applied with self-adhesives or stickers will not be accepted.
- All open terminal connection shall be coated with 3M brand Scotchkote Electrical Coating FD.**

The use of any of the following items or practices WILL NOT BE ACCEPTED.

- The use of accumulators or auxiliary pumps.
- 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.
- Laminated Rubber.
- All zerk fittings shall be threaded.

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SPECIFICATIONS
A-15

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

L. SAFETY:

Anti-slip paint is required on all handholds and areas designed to be walked/stepped on, for the entire length, (tape is unacceptable).

All handrails, ladders, and step configurations shall be built for three points of contact.

There shall be two-wheel chocks per truck Ref: buyers WC1467 or equal with a rope. Mounting location will be determined at pre-build meeting. EQN-82B.

All corners shall be angled or rounded for safety.

Compliance shall be made per EQN-118.

Cab and body shall have reflective enhancement per EQN-122.

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, 3A: 40B: C minimum. Mounted in the cab for easy and quick access.

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

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

II. DRAWINGS:

EQN-6	dated	Rev.	09-20-07	3 sheets	SPREADER AUGER
EQN-16A	dated	Rev.	08-09-18	2 sheets	STEEL CUTTING EDGES
EQN-24	dated	Rev.	12-11-06	2 sheets	PLOW RAM
EQN-26A	dated	Rev.	07-21-23	3 sheets	REAR MODULE WITH RECESSED LICENSE PLATE
EQN-28A	dated	Rev.	08-11-17	1 sheet	SINGLE PRE-WET BRINE TANK
EQN-32	dated	Rev.	07-24-18	1 sheet	DUMP TRUCK CHAIN BOXES
EQN-50	dated	Rev.	08-02-18	4 sheets	FRONT PLOW HITCH ASSEMBLY
EQN-60A	dated	Rev.	07-06-17	2 sheets	SNOWPLOW PATROL WING
EQN-62	dated	Rev.	06-05-14	2 sheets	BED PROP SYSTEM
EQN-63	dated	Rev.	07-02-12	1 sheet	DUMP TRUCK HOIST CYLINDER BLEEER

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SPECIFICATIONS
A-15

II. DRAWINGS: (Continued)

EQN-66	dated	Rev.	07-20-09	2 sheets	SPLASH GUARDS–RUBBER TRAILER & TRUCK
EQN-66A	dated	Rev.	07-13-17	1 sheet	TRIANGLE STORAGE BOX
EQN-76	dated	Rev.	08-08-19	8 sheets	SINGLE AXLE DUMP BODY
EQN-78	dated	Rev.	10-27-06	1 sheet	CB RADIO CONNECTIONS
EQN-78A	dated	Rev.	07-13-17	3 sheets	AIR TAILGATE, HARDWARE
EQN-80A	dated	Rev.	08-02-18	1 sheet	WIRING DIAGRAM 7-WAY ROUND PIN FEMALE CONNECTOR
EQN-82B	dated	Rev.	07-17-17	1 sheet	CHOCK AND HOLDER
EQN-90	dated	Rev.	07-25-18	2 sheets	PUMP MOUNTING BRACKET & PTO ASSEMBLY
EQN-94	dated	Rev.	08-02-18	5 sheets	HYDRAULIC HOSE MOUNTING & REQUIREMENTS
EQN-118	dated	Rev.	06-26-09	1 sheet	UNDERRIDE PROTECTION
EQN-122	dated	Rev.	07-24-18	3 sheets	DUMP BODY REFLECTIVE SHEETING
EQN-180	dated	Rev.	07-26-18	2 sheets	HEADLIGHT ADJUSTMENT BRACKET
EQN-351A	dated	Rev.	06-19-13	2 sheets	FAST LUBE OIL CHANGE SYSTEM
EQN-501	dated	Rev.	06-09-09	2 sheets	CENTRALIZED LUBE SYSTEM
EQN-507B	dated	Rev.	07-24-18	1 sheets	DUMP TRUCK WEIGHT DISTRIBUTION MINIMUM DATA REQUIRED
EQN-508	dated	Rev.	11-03-09	1 sheet	VALVE ENCLOSURE TANK COMBO
EQN-509	dated	Rev.	08-01-18	1 sheet	DUMP TRUCK SPREADER CONTROL BASE WITH RADIO BRACKET
EQN-550	dated	Rev.	07-20-23	1 sheet	WIRELESS CONNECT AND TARP
EQN-552	dated	Rev.	07-25-18	1 sheet	MAX HEIGHT STICKER
EQN-552-1	dated	Rev.	07-06-17	1 sheet	THREE POINTS OF CONTACT STICKER
EQN-557	dated	Rev.	05-20-13	1 sheet	SHOVEL HOLDER
EQN-562	dated	Rev.	01-08-14	1 sheet	POWER DISTRIBUTION BOX
EQN-568	dated	Rev.	08-02-19	14 sheets	UNDER TAILGATE SPREADER AND IOWA SPINNER
EQN-1090	dated	Rev.	08-08-22	2 sheets	FLIP STEP
EQN-1097	dated	Rev.	07-12-19	1 sheet	WING PLOW TOLERANCE
EQN-1098	dated	Rev.	08-08-19	5 sheets	CAB PROTECTOR & PRE WET DEFLECTOR
EQN-1098A	dated	Rev.	05-23-23	1 sheet	195 GALLON PRE-WET TANKS
EQN-1099	dated	Rev.	07-18-19	4 sheets	WING PLOW MOUNTS

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SPECIFICATIONS
A-15

II. DRAWINGS: (Continued)

EQN-1100	dated	Rev.	08-06-19	sheet 2	DUMP TRUCK TARP ARMS
EQN-1105	date	Rev.	07-29-19	1 sheet	TAILGATE LATCH

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 pre-build meeting between the vendor and the Chief of the Fleet Management Division.

DRAWINGS APPEAR AT THE END OF THE SPECIFICATIONS.

III. MANUALS:

The successful vendor shall furnish all applicable manuals per unit:

- 1 Operator's
- 1 Parts
- 1 Service complete engine and chassis Service
- 1 Engine
- 1 Transmission (Automatic)
- 1 Body and Sub-frame (Parts and Service)
- 1 Complete set of manuals for any additional items/equipment added to a piece of equipment.
- 1 Electrical System Charts
- 1 Control System/Hydraulic and Electrical System Schematics
- 1 Lube System Grease/Electrical Schematics

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

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

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SPECIFICATIONS
A-15

III. MANUALS: (continued)

Delivery of these manuals, including manual revisions shall be completed with delivery of the first unit in a series and with the pilot of a new build, VIN and body serial specific.

Any changes requested by the Department or deviations granted by the department to the OEM chassis or body up fitter shall have updated manuals supplied with serial number specified. Delivery of these manuals shall be completed with delivery of the first unit of each series.

Manuals shall be supplied on thumb drive in lieu of paper manuals for each new build or at any time a change is made to series.

Manuals may be supplied on a dedicated website (OEM chassis ONLY) in lieu of paper manuals.

It shall be the responsibility of the OEM chassis and or the sub vendors to provide revisions to corresponding / Subsequent specific manuals with any changes specific to chassis or body serial numbers.

IV. TRAINING:

See training information attachment in the bid package.

V. WARRANTY:

Per PCID No. 1075, and the additional specific warranty items stated below.

1 year starting from the Department's in-service date.

The warranty start-up date shall be defined as the date of transfer from the PennDOT Fleet Management Division to the designated county location. This will be considered the date of delivery to the county and NOT the date of delivery by the successful bidder to the Department. The PennDOT Fleet Management will supply the actual start-up date, equipment number, and serial number of the machine, via email, to the successful bidder. It is the responsibility of the successful bidder to ensure that the equipment manufacturer recognizes and applies the Department's actual warranty start-up date in their database.

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

MANUFACTURE IN-HOUSE WARRANTY PROGRAM:

PRIOR TO BID ALL OEM CHASSIS MANUFACTURES or SELLING DEALER MUST ESTABLISH AN IN-HOUSEWARRANTY PROGRAM or SERVICE AGREEMENT DIRECTLY TO THE DEPARTMENT.

AFTER CONTRACT AWARD IF THE DEPARTMENT DESIRES TO PARTICIPATE, THE PROGRAM SHALL BE OPERATIONAL (user name/password(s) established, etc.,if applicable) PRIOR TO DELIVERY OF THE FIRST UNIT. ESTABLISHED WARRANTY AND SERVICE AGREEMENT SHALL REMAIN INSERVICE FOR THE FULL TERM OF EACH UNIT REGARDLESS OF THE AMOUNT OF UNITS WITHIN THE FLEET.

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SPECIFICATIONS
A-15

V. WARRANTY: (Continued)

Warranty repairs shall be completed at the manufacturer's location or in-house field repair completed by PENNDOT. It shall be the Department's discretion to repair internally or transport the unit to the dealership. The manufacturer shall reimburse the Department at the manufacturer's standard published in-house labor rate. The labor rate shall be mutually agreed upon between the Department and the vendor/bidder.

Any and all training for in-house warranty work will be provided by the Manufacturer at no expense to the Commonwealth.

All in-house warranty documentation shall be delivered with the pilot model. All warranty documentation (extended warranty service contracts and coverage) shall be delivered with the pilot model.

Prior to bid, the In-house warranty program shall provide the department the availability to file warranty claims directly to the OEM manufacturer/selling dealer for repairs made in-house by department personnel during the equipment's specified warranty period. Supplying manufacturer shall ensure that there are authorized OEM repair facilities within the commonwealth of PA. capable and in agreement to perform repairs after the warranty period ends and throughout the department owned equipment's life cycle.

BUMPER-TO-BUMPER WARRANTY:

1 year starting from the Department's acceptance date.

RADIATOR WARRANTY:

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

ENGINE WARRANTY:

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

ENGINE OIL PAN:

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

EMISSION WARRANTY:

The successful vendor and or supplying OEM shall provide the Department with a 100% parts and labor warranty for all emission related components to include the diesel particulate filter (DPF) FOR 60 months / 100,000 miles minimum, unlimited engine hours.

TRANSMISSION WARRANTY:

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

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SPECIFICATIONS
A-15

V. WARRANTY: (Continued)

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:

Structural Integrity and workmanship of body shall be guaranteed for five (5) years, parts and labor. A decal shall be affixed to the driver's door, on the inside, stating the company's name, model, serial number, address and phone number.

Body hoist assembly 3 years, 100% parts and labor.

Tailgate spring-over-air cylinder system, 3 years 100% parts and labor.

CENTRAL HYDRAULIC SYSTEM:

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

- Saur Danfoss Valve
- Controller
- Electronic Joysticks

All wiring harnesses shall be warranted for 5 years 100% parts and labor.

HYDRAULIC PUMP:

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

UNDER TAILGATE SPREADER if Equipped:

Warranty will be for a minimum of one (1) calendar year on the entire spreader, and two (2) calendar years for hydraulic motors (spinner & auger) and sensor or manufacturer's standard commercial term (whichever is greater), from date of departments acceptance. If the manufacturer neglects or fails to correct defect(s) during the warranty period, their responsibility shall continue until such time as it takes to correct the defect(s). The manufacturer is expected to respond to warranty problems and administer effective solutions in the best interest of the Commonwealth. The successful bidder shall be an authorized dealer for the proposed spreader/s and shall comply with the manufacturer's warranty or authorize a qualified dealer in the locality in which the unit is assigned, to do whatever is required to comply with the manufacturer's warranty without cost to the Commonwealth.

The vendor will replace, free of charge within two (2) years from date of county acceptance, any spinner, auger motors and sensors which in the judgment of the manufacturer has failed because of defective material or workmanship, provided it is shown to be properly mounted, and not subject to abuse in operation or assembly.

The successful bidder shall be an authorized dealer for the proposed spreader/s and shall comply with the manufacturer's warranty or authorize a qualified dealer in the locality in which the unit is assigned, to do whatever is required to comply with the manufacturer's warranty without cost to the Commonwealth.

BODY ELECTRICAL/LIGHTING:

Wiring harness shall be 5 years 100% parts. First year shall include 100% labor.

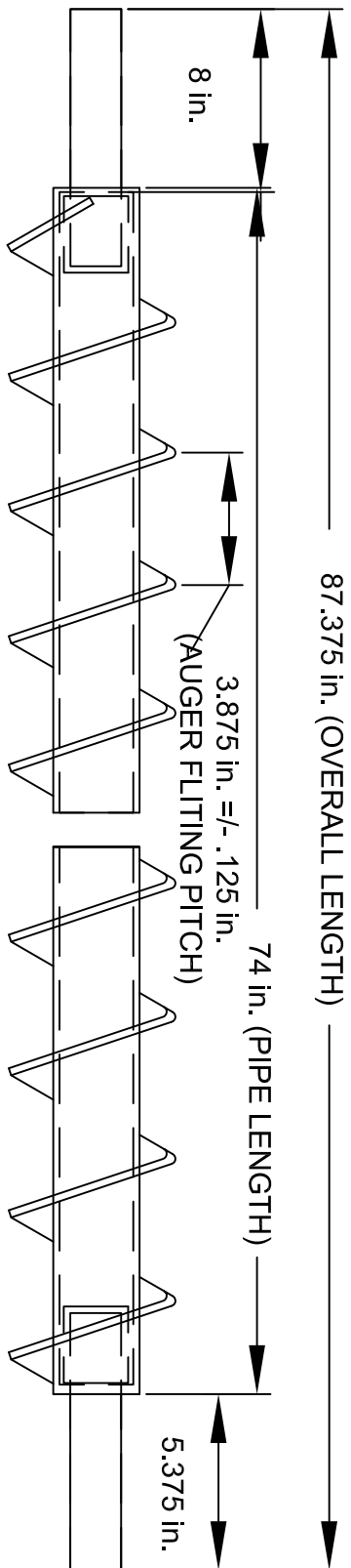
All LED lights and lighting system controller shall be 5 years 100% parts.

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SPECIFICATIONS
A-15

V. WARRANTY: (Continued)

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.



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)

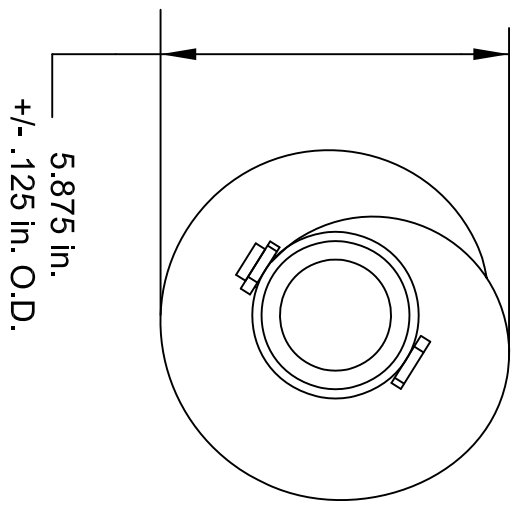
VIEW SHOWING COMPLETE
 AUGER WELDMENT

2 in. (2.375 O.D.)
 SCHEDULE 80 (.20 in. WALL)
 CARBON STEEL PIPE
 (PIPE SIZE E.R.W. TUBING ACCEPTABLE)

- SPECIFICATION NOTES**
1. PIPE PORTIONED WORTH (WITH WELDED FITTING) TO BE STRAIGHT TO GIVE MAXIMUM OF .20 IN. TOTAL RUNOUT
 2. BOTH STUB SHAFT CENTERLINES TO LIE ON PIPE CENTERLINE TO GIVE MAXIMUM OF .20 IN. TOTAL RUNOUT
 3. ALL SURFACES OF SLEEVE, SHAFT, AND OTHER 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 DEG
DECIMAL MACHINING	0.0- +/- .040
	0.00- +/- .020
	0.000- +/- .005

IMPLIED TOLERANCES DO NOT APPLY TO REFERENCE DIMENSIONS



PA DEPARTMENT OF TRANSPORTATION

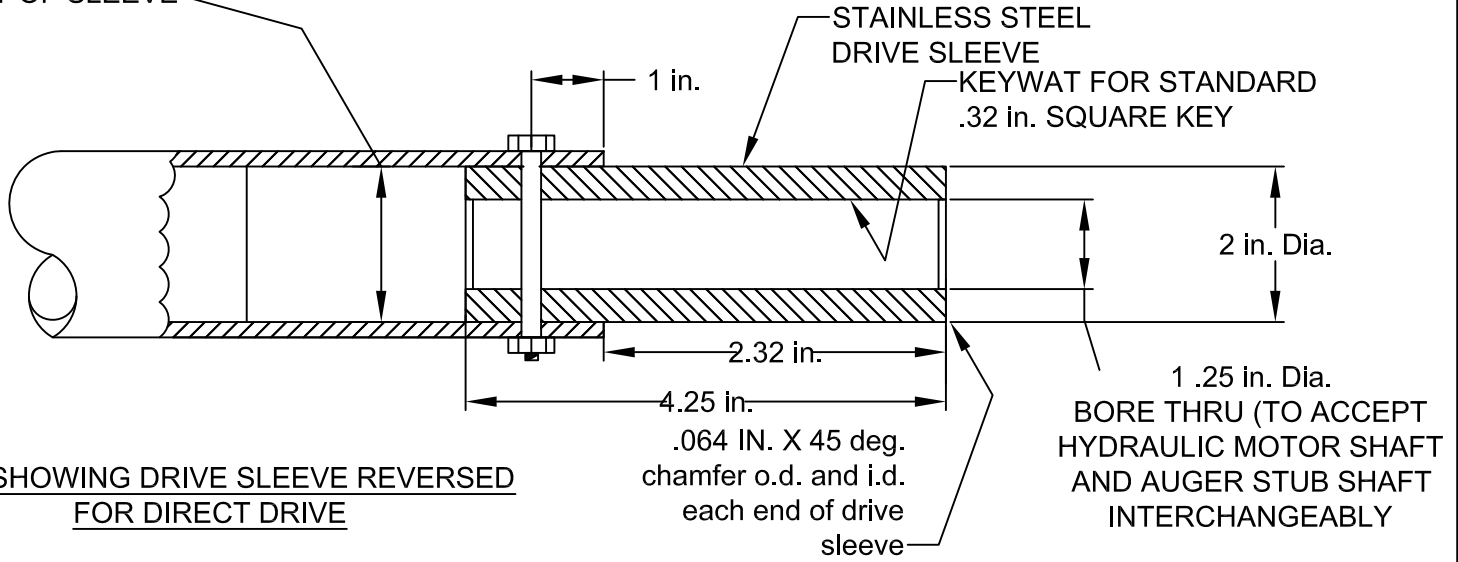
REVISIONS

NO.	DATE	BY	DESCRIPTION
1	01-09-98	DLW	
2	05-28-02	DWG	
3	9-20-07	BAG	

PennDOT SPREADER AUGER DETAIL
 (S/S & RUBBER TROUGH)

DRAWN BY	DLW	SCALE	N/A	EQU-6
DATE	01-09-98	CHKD BY	WHM	SHEET 1 OF 3

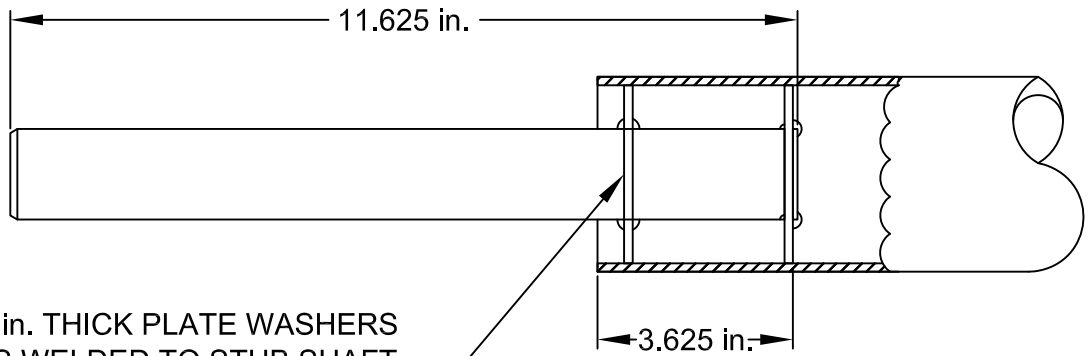
I.D. OF PIPE BORED
FOR CLOSE SLIDING
FIT OF SLEEVE



VIEW SHOWING DRIVE SLEEVE REVERSED
FOR DIRECT DRIVE

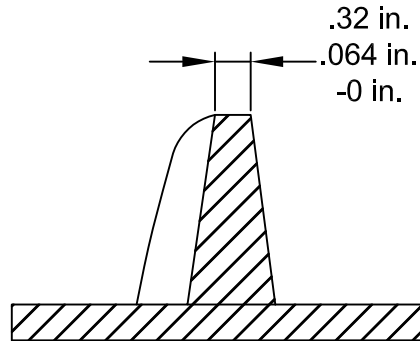
PA DEPARTMENT OF TRANSPORTATION

REVISIONS			PennDOT SPREADER AUGER DETAIL (S/S & RUBBER THROUGH)		
NO.	DATE	BY	DRAWN BY	SCALE	
1	01-09-98	DLW			
2	05-28-02	DWG	DLW	N/A	EQN-6
3	9-20-07	BAG	01-09-98	WHM	SHEET 2 OF 3



.125 in. THICK PLATE WASHERS
CONTINUOUS WELDED TO STUB SHAFT
AND AUGER PIPE

WASHERS TO FIT I.D. OF PIPE WITH
CLOSE SLIDING FIT SO NO FLEXING
OF SHAFT EXISTS AFTER FINAL WELDING



**FLITING THICKNESS SPECIFICATION
(BEFORE HARDSURFACING)**

.125 in. (MINIMUM)
HARDSURFACE

CONTINUOUS WELD
BOTH SIDES OF
FLITING



OUTER FLITE PERIPHERY CONTINUOUSLY
HARDSURFACED WITH ABRASIVE RESISTANCE
WELDING ROD (OR WIRE) EQUIVALENT TO
STUDY 121 (ROCKWELL HARDNESS C-44),
AND TO BE FULL WIDTH OF FLITING
THICKNESS AT OUTEREDGE

WELDING AND HARDSURFACE SPECIFICATION

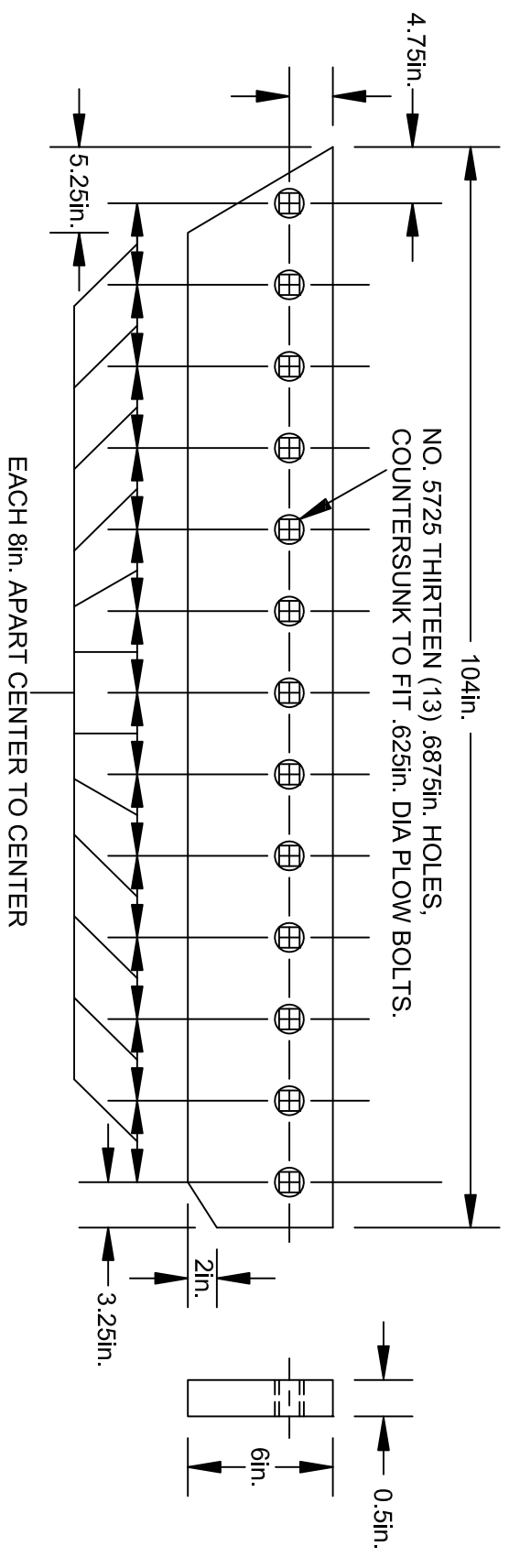
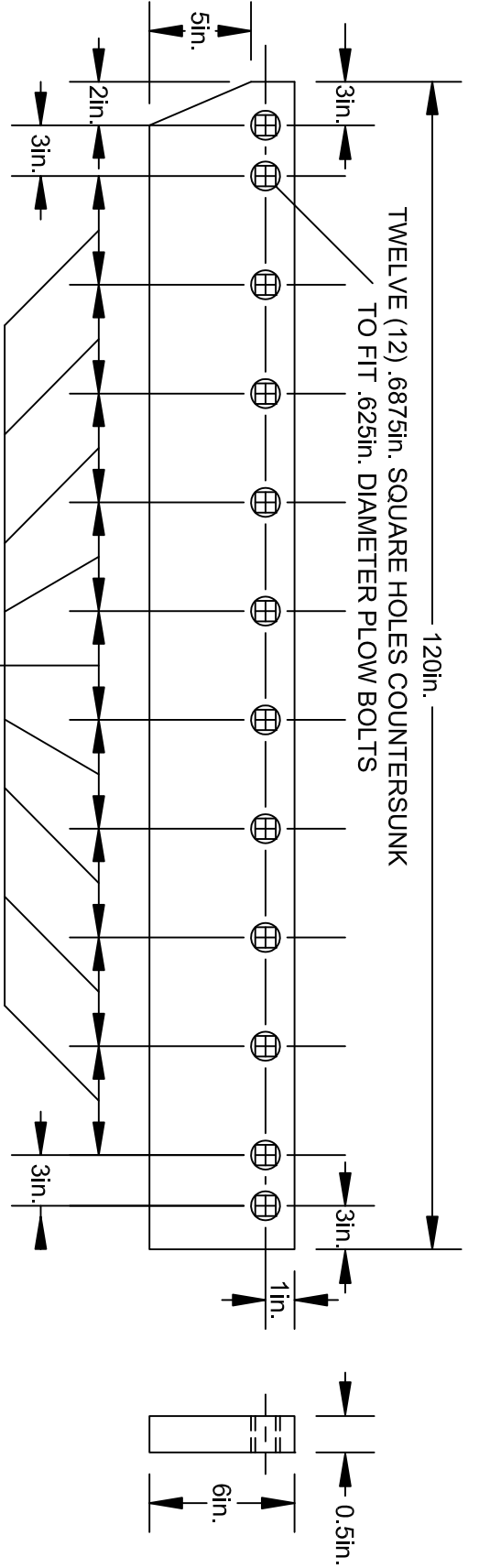
PA DEPARTMENT OF TRANSPORTATION

REVISIONS

NO.	DATE	BY
1	1-09-98	DLW
2	05-28-02	DWG
3	09-20-07	BAG

PennDOT SPREADER AUGER DETAIL
(S/S & RUBBER THROUGH)

DRAWN BY	DLW	SCALE	N/A	EQN-6
DATE	01-09-98	CHK'D BY	WHM	SHEET 3 OF 3

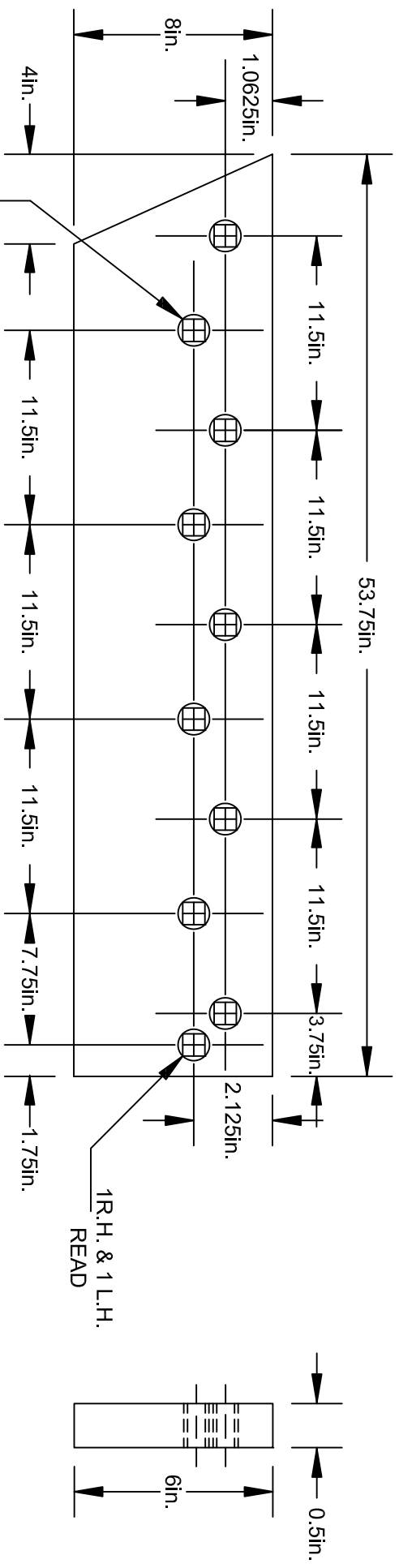


- NOTES:
1. ALL DIMENSIONS ARE IN INCHES.
 2. MATERIAL: CARBON STEEL AISI 1080-1085
BRINELL HARDNESS 250-325*

EACH BLADE SECTION SHALL BE PUNCHED WITH A DATE OF MANUFACTURE AND THE MANUFACTURER'S NAME.

*STEEL SPECIFICATION.

PA DEPARTMENT OF TRANSPORTATION			STEEL CUTTING EDGES FOR SNOW PLOWS		
REVISIONS			DRAWN BY		
NO.	DATE	BY	DLW	DATE	EQN-16A
1	06-14-07	KNH	DLW	02-06-96	EQU-16A
2	07-29-15	JJB	JJB	02-06-96	EQU-16A
3	08-09-18	KBD	KBD	02-06-96	EQU-16A



TEN (10) .6875in.
 SQUARE HOLES,
 COUNTERSUNK TO
 FIT .625in. DIA.
 PLOW BOLTS.

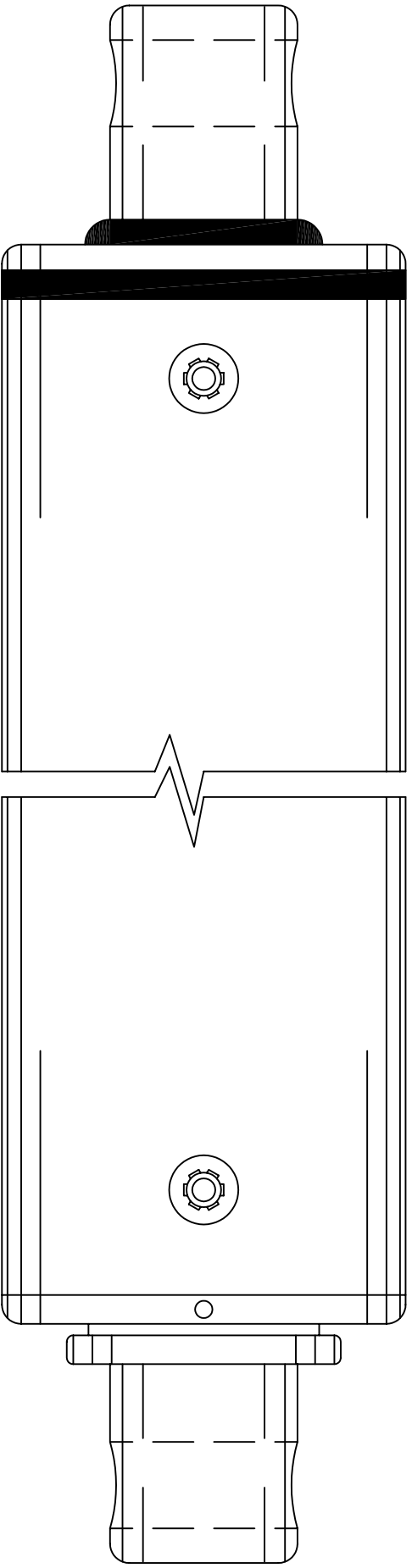
NOTES:

1. ALL DIMENSIONS ARE IN INCHES.
2. MATERIAL: CARBON STEEL AISI 1080-1085
 BRINELL HARDNESS 250-325*

EACH BLADE SECTION SHALL BE PUNCHED WITH A DATE OF
 MANUFACTURE AND THE MANUFACTURERS NAME.

*STEEL SPECIFICATION.

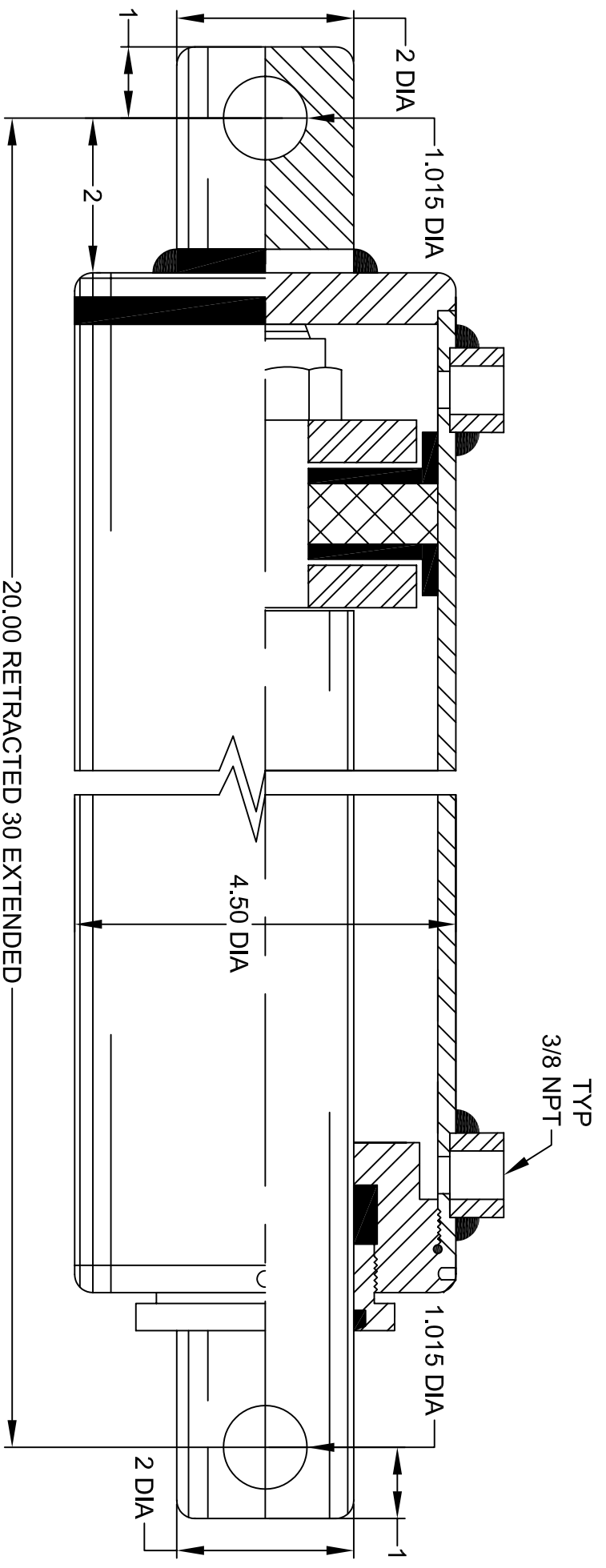
PA DEPARTMENT OF TRANSPORTATION			STEEL CUTTING EDGES FOR SNOW PLOWES		
REVISIONS					
NO.	DATE	BY	DRAWN BY	DATE	
1	06-14-07	KNH	DLW	02-06-96	
2	07-29-15	JJB	Checked VTH	CHKD BY	Scale
3	08-09-18	KBD			
			EQU-16A		
			SHEET 2 OF 2		



PA DEPARTMENT OF TRANSPORTATION

REVISIONS			PLOW RAM		
NO.	DATE	BY			
1					
2					
3					
4					
5					

			DRAWN BY	CJW	SCALE	N/A	EQN-24
			DATE	12-11-06	CHECK'D BY	KGK	SHEET 1 OF 2



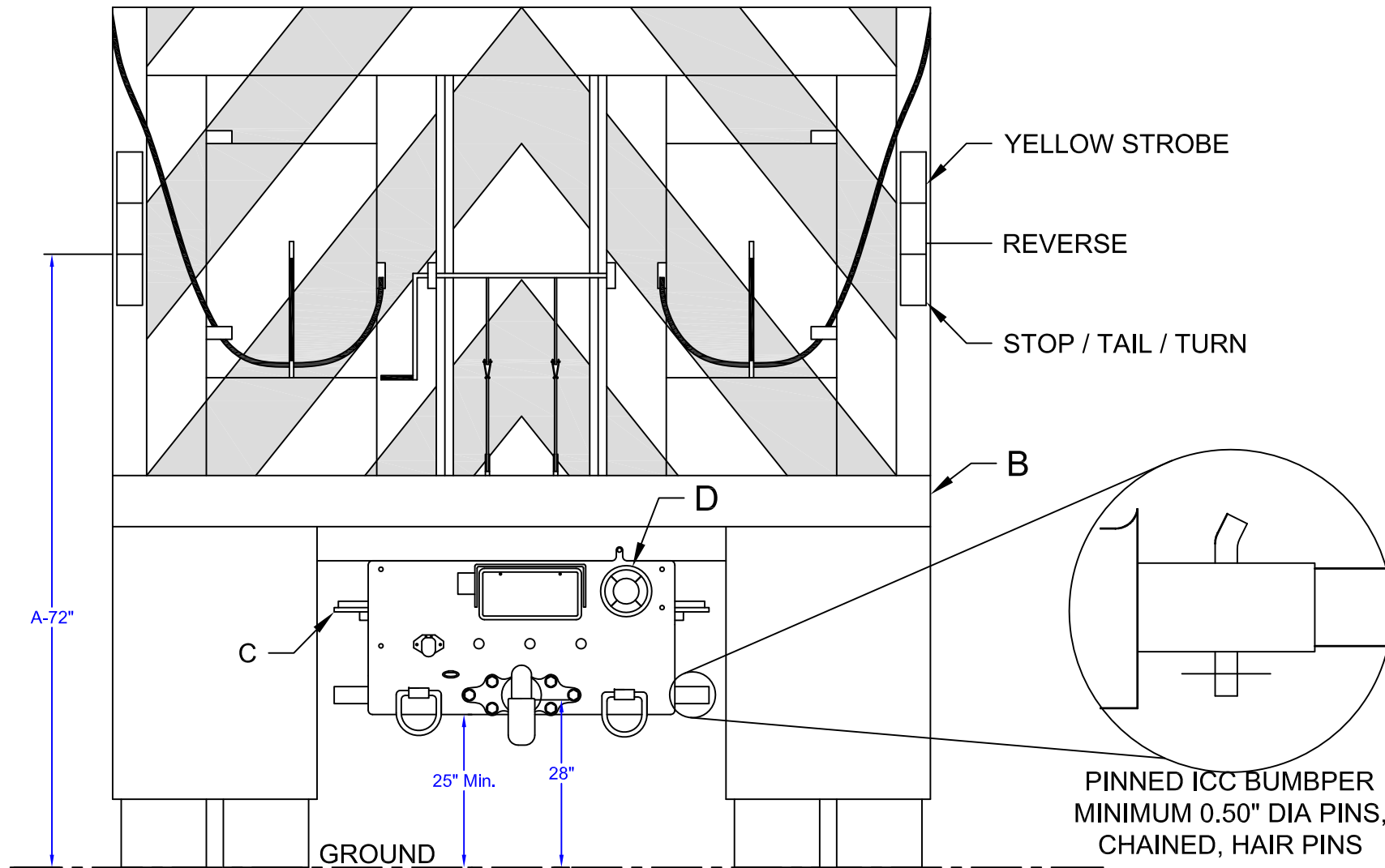
PA DEPARTMENT OF TRANSPORTATION

REVISIONS			PLOW RAM		
NO.	DATE	BY			
1					
2					
3					
4					
5					

NO.	DATE	BY	SCALE	SHEET
1				
2				
3				
4				
5				

DRAWN BY **CJW** SCALE **N/A** EQN-24

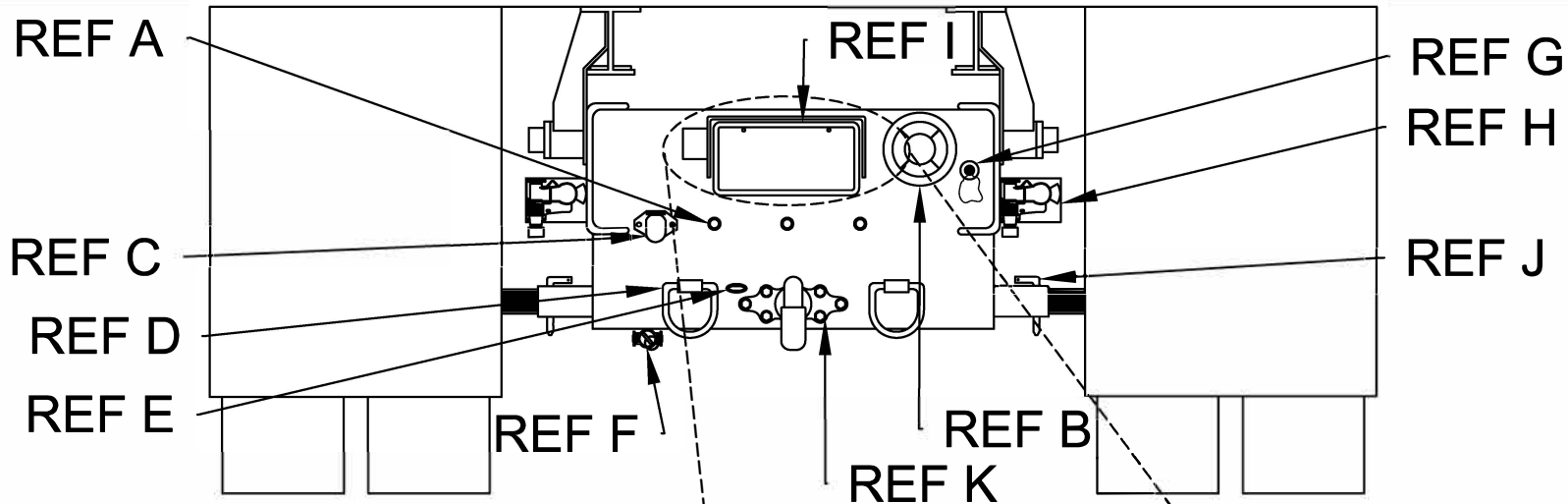
DATE **12-11-06** CHECKED BY **KGK** SHEET **2 OF 2**



NOTES:

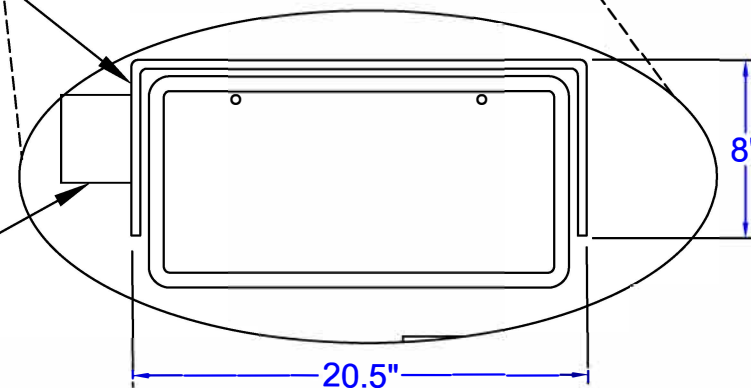
- A. HEIGHT OF LIGHTS SHLL NOT EXCEED 72". MEASURED FROM GROUND LEVEL TO TOP OF STOP / TAIL / TURN LIGHT WHEN IS BODY UNLOADED.
- B. SHALL BE ONE PIECE DESIGN, $\frac{3}{8}$ " X 6" MINIMUM 60661-T6. IT SHALL BE COMPLETELY WELDED AND SURFACE SHALL BE FLUSH FULL LENGTH TO ALLOW MOUNTING OF THE SPREADER WITH NO GAPS.
- C. AIR BRAKES & GLAD HANDS
- D. PLACE AS HIGH AS POSSIBLE ON REAR MODULE.

PA DEPARTMENT OF TRANSPORTATION					
REVISIONS			REAR MODULE WITH RECESSED LICENSE PLATE		
NO.	DATE	BY			
1	07-26-18	KBD			
2	08-08-19	KBD	DRAWN BY	JJB	Combined With EQN-26A
3	07-21-23	DVC	DATE	08-02-16	Scale N/A/N/A
					EQN-26A
					SHEET 1 OF 3



1 1/4" WIDTH STEEL FRAME TO GO AROUND LICENSE PLATE

LICENSE PLATE LIGHT

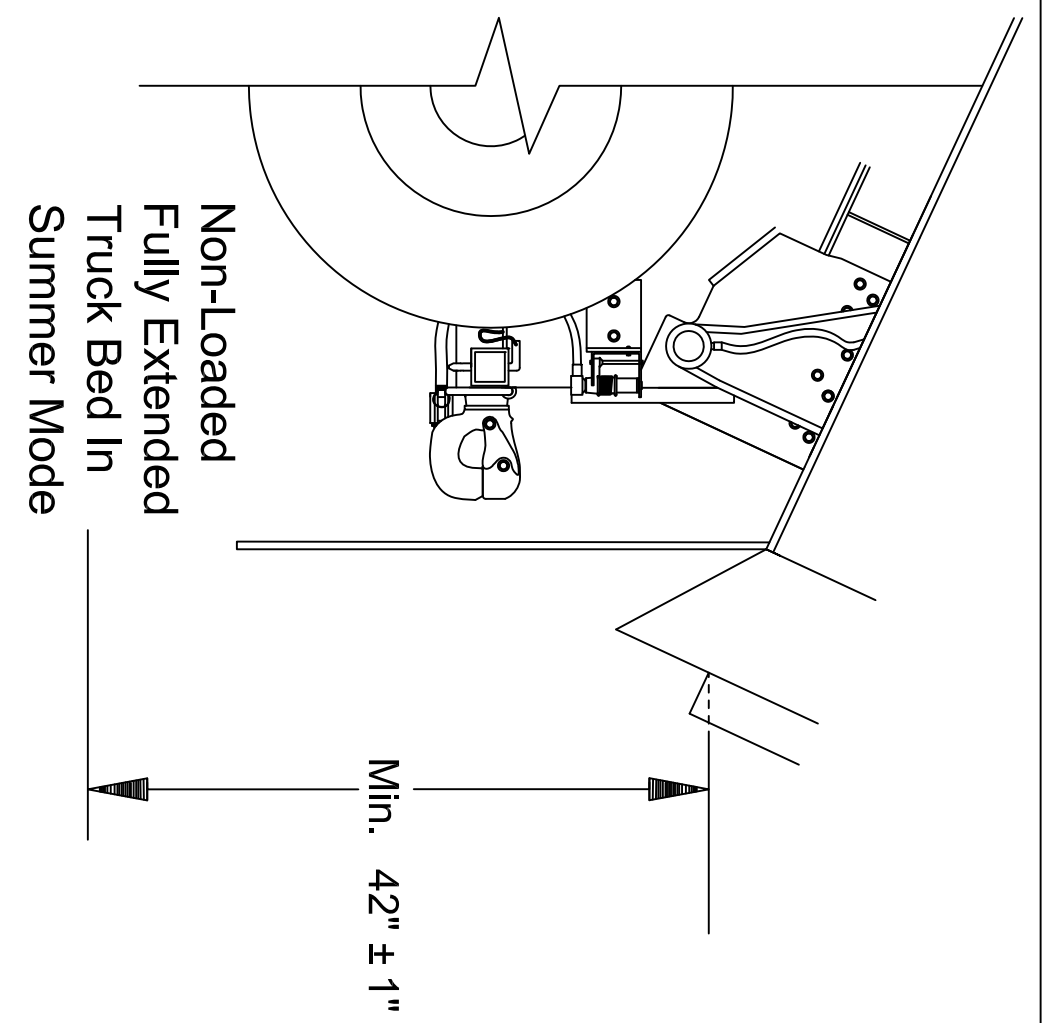
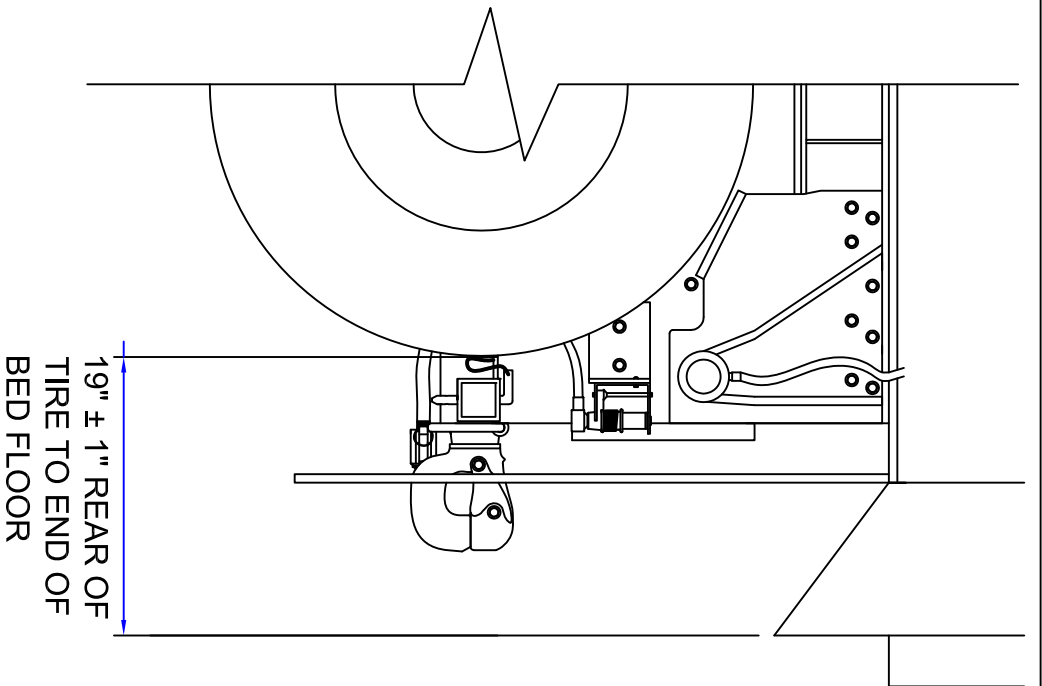


Note: Lisence plate with stainsteel hardware including locking nuts.

NOTES:

- A. REFLECTORIZED M/C LAMP (RED)
- B. ECCO 450 BACK UP ALARM
- C. TRAILER 7 ROUND PIN TYPE RECEIVER
- D. EACH "D" RING - MINIMUM BREAKING STRENGTH EQUIVALENT TO HITCH WEIGHT
- E. TRAILER BRAKE-AWAY RING
- F. PRE WET LIQUID SUPPLY
- G. AUGER SENSOR
- H. TRAILER AIR BRAKE GLAD HANDS MUST NOT EXTEND PAST FRAME RAIL
- I. LICENSE PLATE
- J. MIN .5" DIA. PIN, CHAINED, HAIR PINS
- K. HITCH

PA DEPARTMENT OF TRANSPORTATION				
REVISIONS			REAR MODULE WITH RECESSED LICENSE PLATE	
NO.	DATE	BY		
1	07-26-18	KBD		
2	08-08-19	KBD	DRAWN BY JJB	Combined With EQN-81X
3	07-21-23	DVC	DATE 08-02-16	Scale N/A
				EQN-26A
				SHEET 2 OF 3



Non-Loaded
 Fully Extended
 Truck Bed In
 Summer Mode

Min. 42" ± 1"

DUMP TRUCK REAR MODULE

THIS DRAWING IS NOT INTENDED TO SHOW ACTUAL BODY HINGE PIN
 PLACEMENT. CORRECT BODY HINGE PIN PLACEMENT TO MEET THE
 VEHICLES INTENT STATEMENT IS THE VENDORS RESPONSIBILITY.

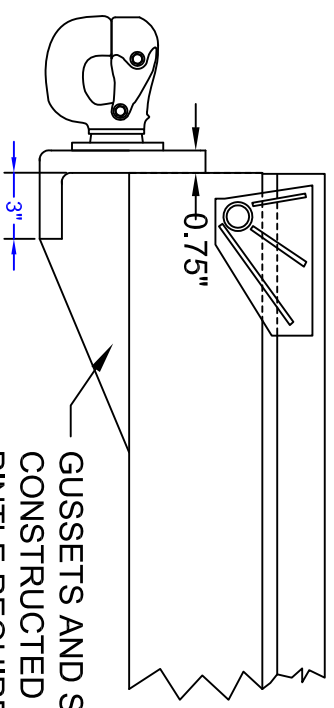
PA DEPARTMENT OF TRANSPORTATION

REVISIONS

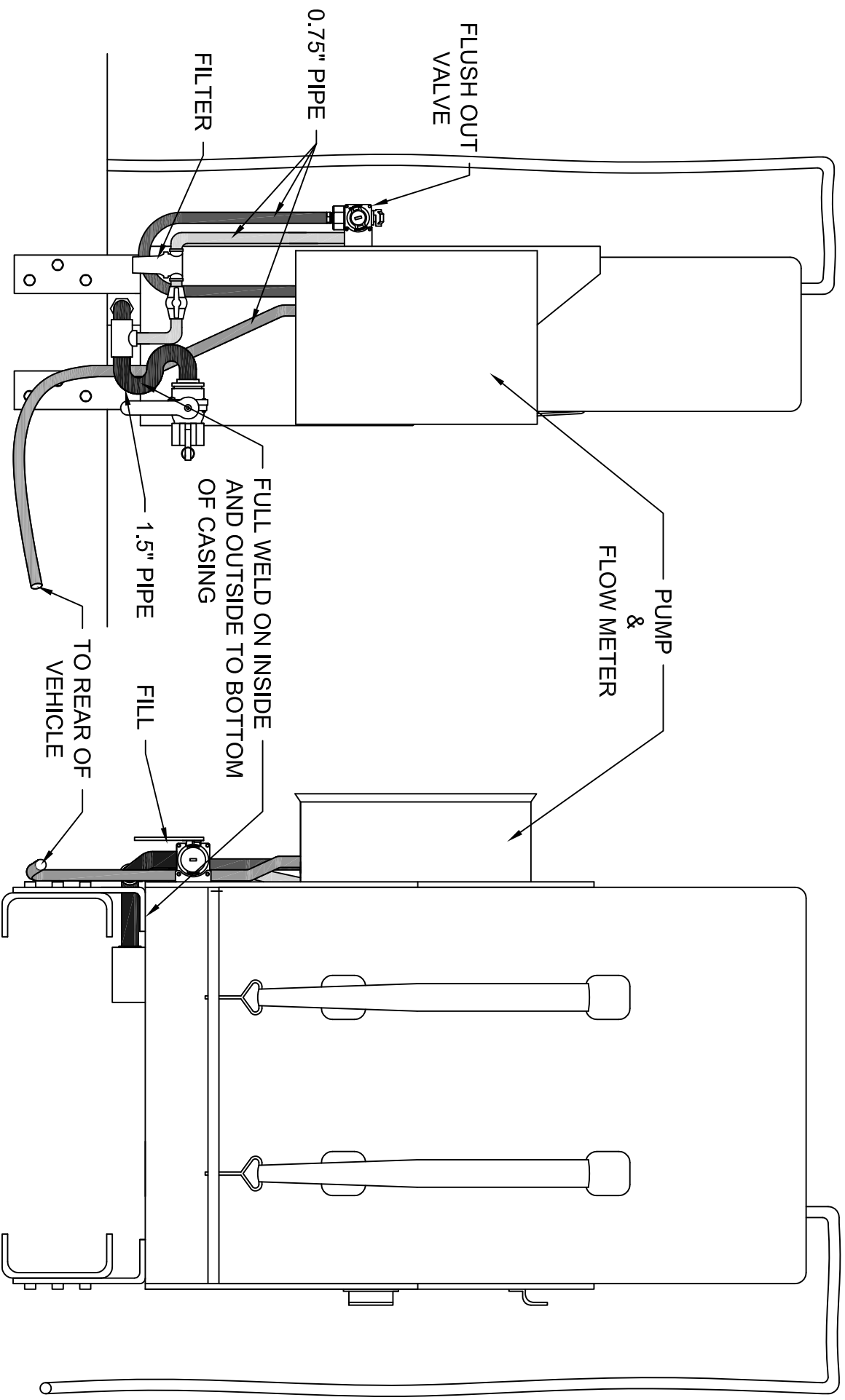
NO.	DATE	BY	REASON
1	08-08-19	KBD	
2	07-21-23	DVC	
3			

SINGLE AXLE DUMP TRUCK
 REAR MODULE

DRAWN BY KBD DATE 07-26-18	CHECKED BY EQN-26A SCALE N/A	SHEET 3 OF 3
-------------------------------------	---------------------------------------	--------------



GUSSETS AND SUPPORTS SHALL BE
 CONSTRUCTED TO MEET 25 TON
 PINTLE REQUIREMENTS.



SIDE VIEW

FRONT VIEW

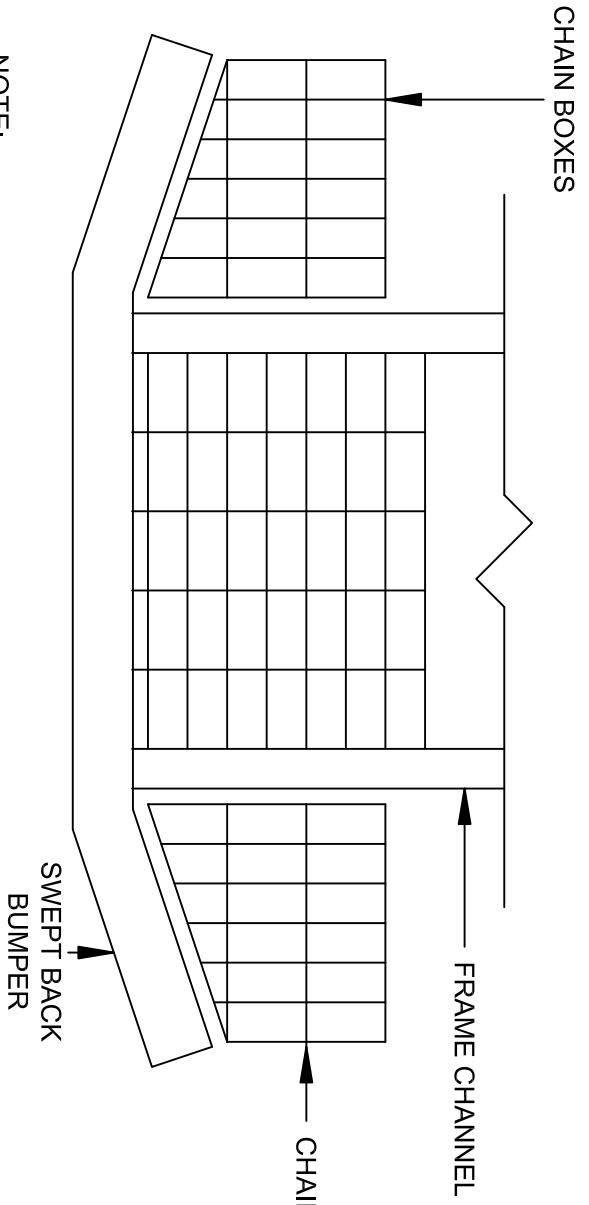
NOTE:
CASING TO BE STAINLESS STEEL

PA DEPARTMENT OF TRANSPORTATION

REVISIONS		VERTICAL SINGLE PRE-WET BRINE TANK	
NO.	DATE	BY	
1			
2			
3			

DRAWN BY	HMR	SCALE	N/A	EQN-28A
DATE	08-11-17	CHG'D BY		SHEET 1 OF 1

AERIAL VIEW

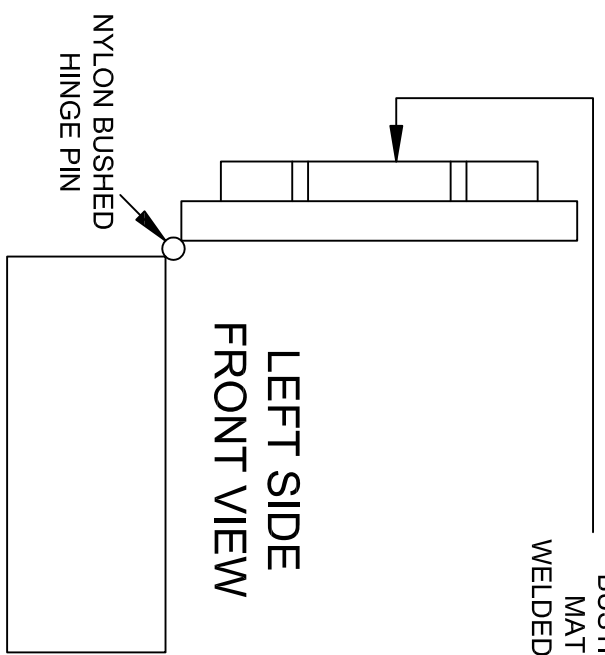


* LEFT SIDE BOX SHOWN, REVERSE FOR RIGHT SIDE.
 * GIVEN DIMENSIONS ARE APPROXIMATE AND MAY REQUIRE ALTERATION TO ADAPT TO MAKE / MODEL OF TRUCK AND STYLE OF BUMPER.

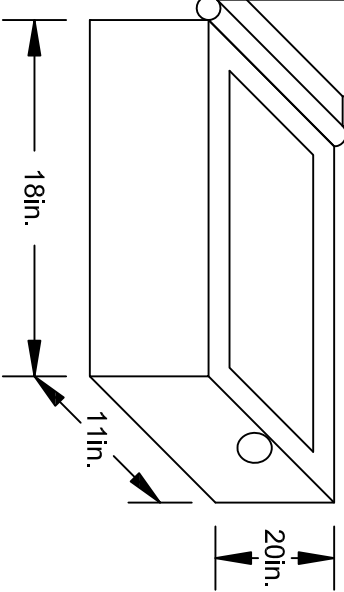
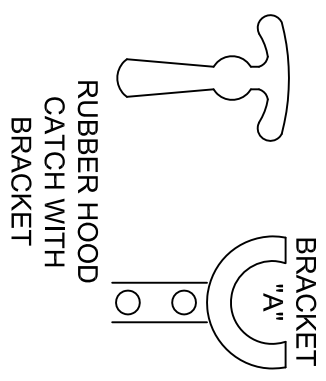
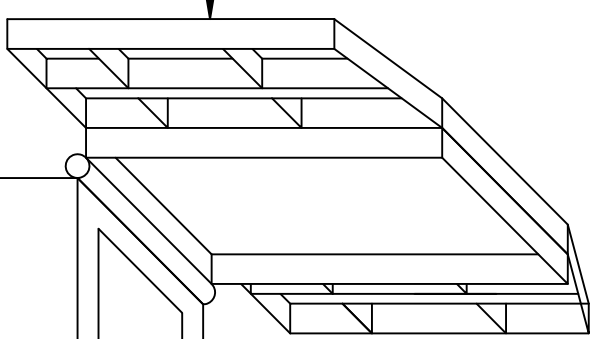
NOTE:
 THERE SHALL BE SUFFICIENT ALUMINUM BUSTIN TYPE MATERIAL TO COVER THE ENTIRE AREA FROM GRILL TO BUMPER AND FRAME RAIL TO FRAME RAIL.

ALUMINUM BUSTIN TYPE MATERIAL WELDED IN PLACE

LEFT SIDE FRONT VIEW



GRILL TO BUMPER AND BOXES SHALL BE SUPPORTED IN SUCH A WAY TO ENSURE SUPPORT OF A 200 lb. MAN IN ANY 12in. AREA.



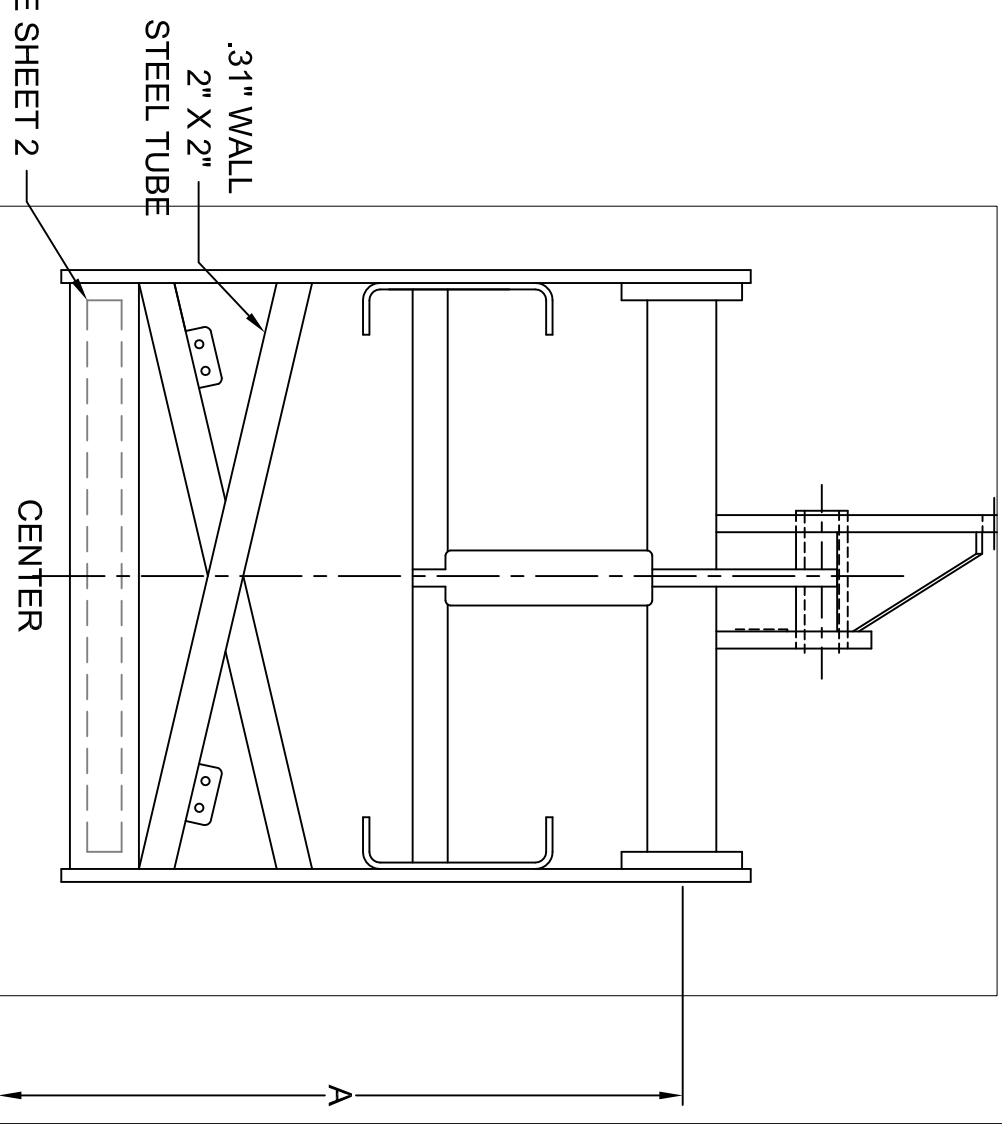
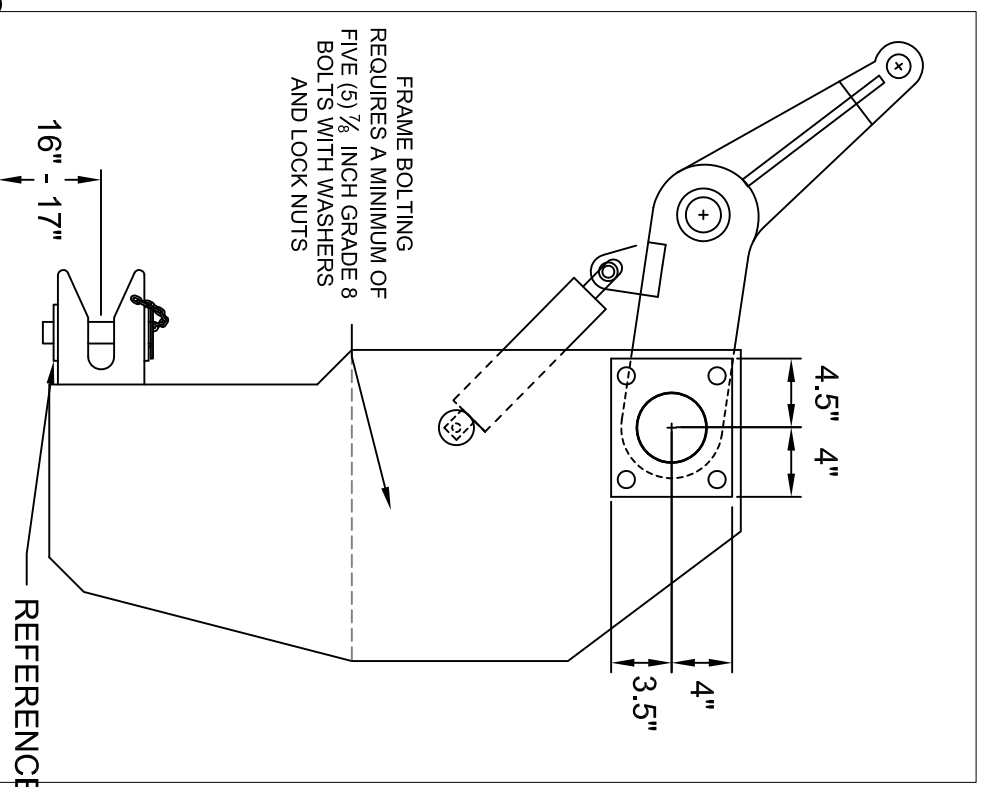
PA DEPARTMENT OF TRANSPORTATION

REVISIONS

NO.	DATE	BY	DWG	SCALE	EQN
1	05-22-02	KNH	KNH	N/A	EQN-32
2	07-17-07	KNH	KNH	N/A	EQN-32
3	07-24-18	KBD	KBD	N/A	EQN-32

DUMP TRUCK CHAIN BOXES

GRADE 8 BOLTS MINIMUM QUANTITY 4
 MINIMUM OF FOUR 0.75in. DRAIN HOLES



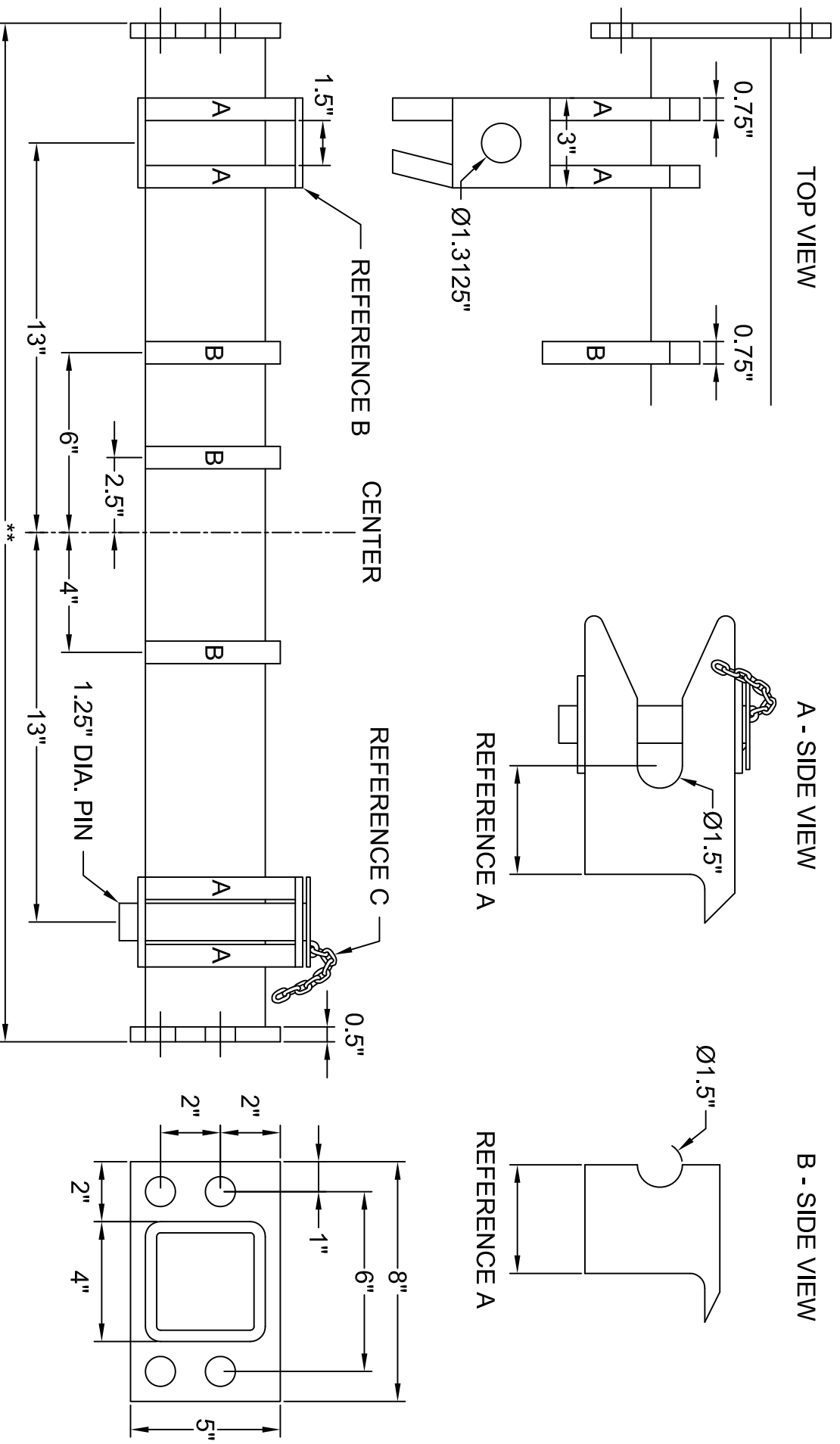
NOTES:

- ALL GREASE ZERKS SHALL BE SURROUNDED BY A SHORT LENGTH OF PIPE (WELDED IN PLACE) OR PLACED IN A RECESSED HOLE.
- "A" - HEIGHT SHALL BE SUFFICIENT TO AFFORD UNRESTRICTED LIFT FOR PENNDOT PLOWS. 16 INCH MINIMUM LIFT.
- ALL HYDRAULIC CONNECTIONS TO THE PLOW HOIST CYLINDER SHALL BE POSITIONED TO THE SIDES OR REAR TO PREVENT HOSE DAMAGE WHILE CONNECTING / DISCONNECTION TO THE FRONT PLOW.
- ALL FINAL DIMENSIONS AND ANGLES SHALL BE VERIFIED THROUGH FIELD VISITATIONS AND CORRESPONDING WITH THE FLEET MANAGEMENT DIVISION.

PA DEPARTMENT OF TRANSPORTATION

REVISIONS

NO.	DATE	BY	FRONT PLOW HITCH ASSEMBLY
1	04-27-15	GAW	
2	12-19-16	JJB	
3	08-02-18	KBD	



NOTES:

- A. CENTER SUPPORT RADIUS OF SUPPORT "A" SHALL BE IN DIRECT LINE WITH PLOW PUSH BAR.
- B. SUPPORT "A" SHALL HAVE 0.25" THICK PLATES ON TOP AND BOTTOM.
- C. PLOW PINS SHALL BE ATTACHED WITH CHAIN TO PLOW FRAME.

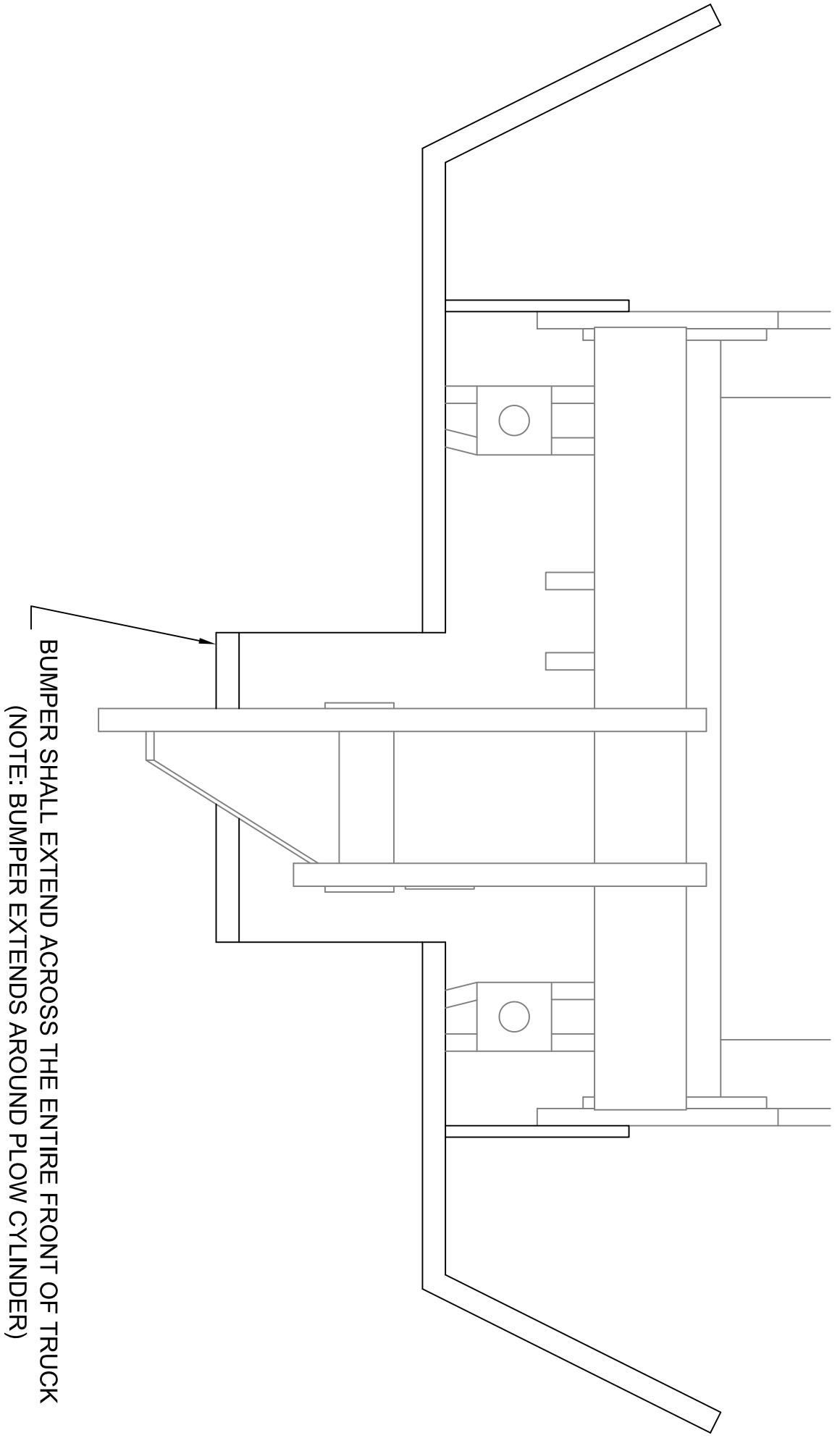
* VARIABLE WIDTH ASSEMBLY, CHECK CHASSIS FRAME RAIL WIDTH *
 ALL FINAL DIMENSIONS AND ANGLES SHALL BE VERIFIED THROUGH FIELD VISITATION AND CORRESPONDENCE WITH THE FLEET MANAGEMENT DIVISION.

PA DEPARTMENT OF TRANSPORTATION

FRONT PLOW HITCH ASSEMBLY

REVISIONS		FRONT PLOW HITCH ASSEMBLY	
NO.	DATE	BY	
1	04-27-15	GAW	
2	12-19-16	JJB	
3	08-02-18	KBD	

NO.	DATE	BY	SCALE	SHEET
1	04-27-15	GAW	N/A	EQN-50
2	12-19-16	JJB	N/A	EQN-50
3	08-02-18	KBD	N/A	EQN-50



ADDITIONAL BUMPER SUPPORTS SHALL BE FABRICATED AND
 INSTALLED TO INSURE BUMPER RIGIDITY

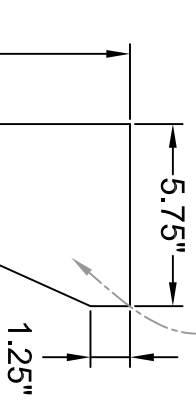
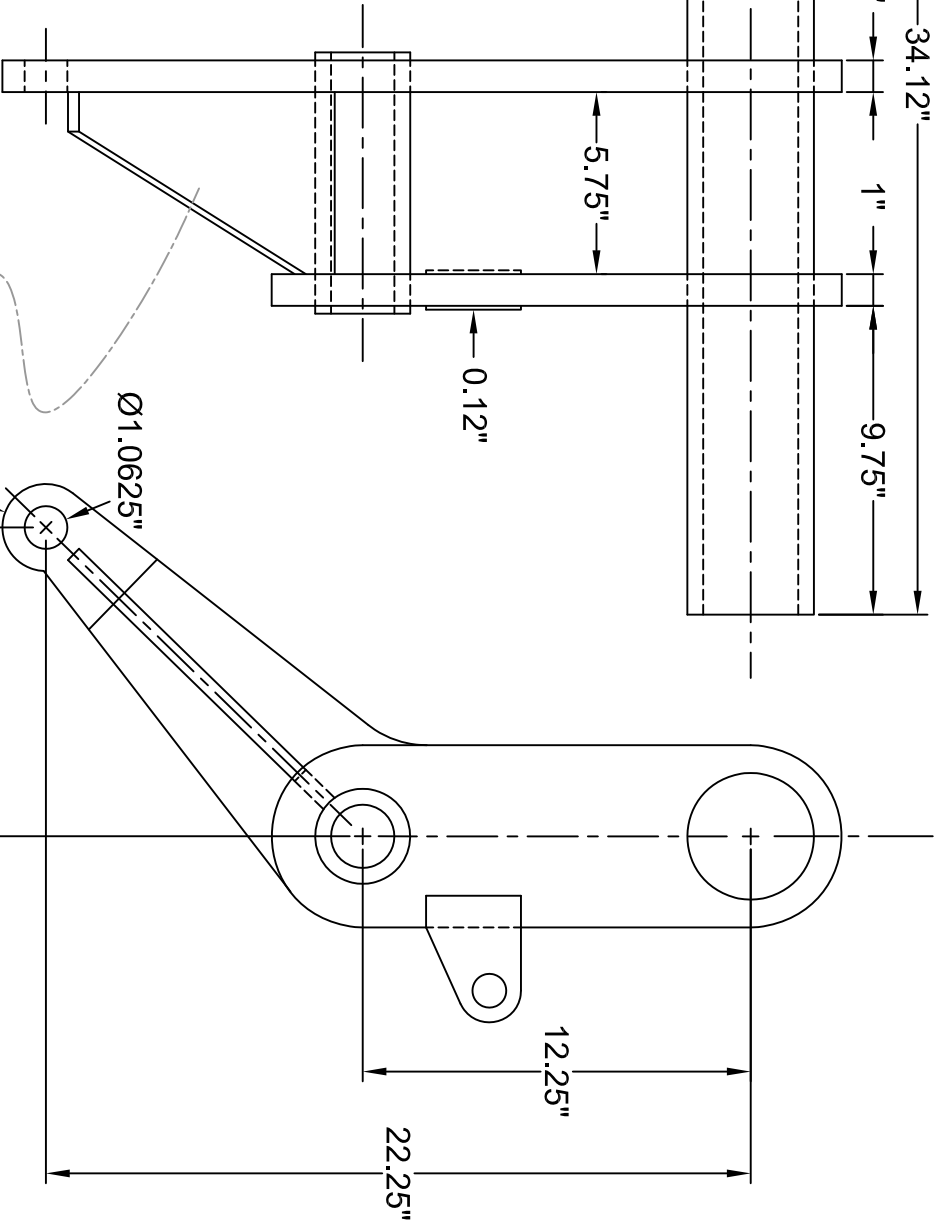
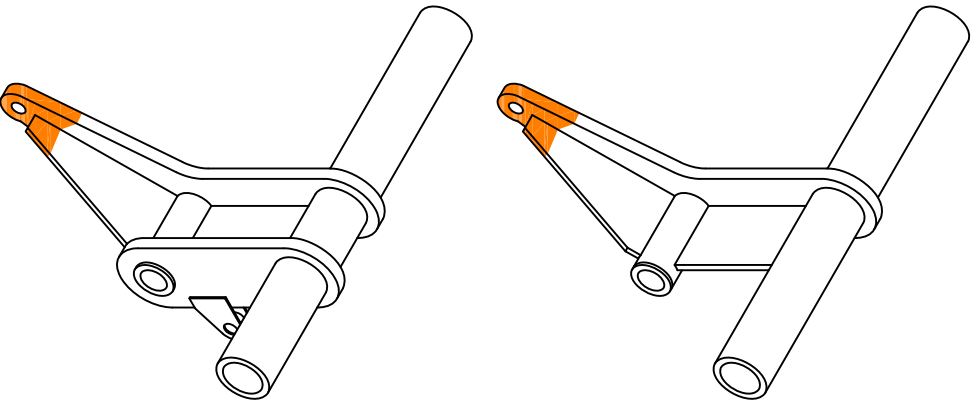
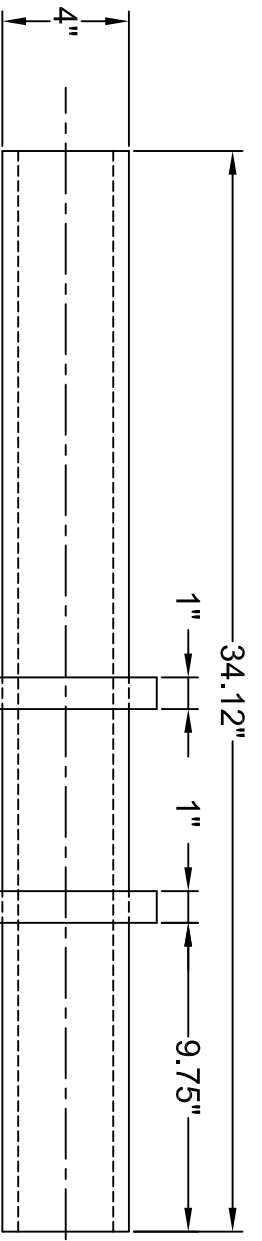
BUMPER SHALL EXTEND ACROSS THE ENTIRE FRONT OF TRUCK
 (NOTE: BUMPER EXTENDS AROUND PLOW CYLINDER)

PA DEPARTMENT OF TRANSPORTATION

FRONT PLOW HITCH ASSEMBLY

REVISIONS			
NO.	DATE	BY	
1	04-27-15	GAW	
2	12-19-16	JJB	
3	08-02-18	KBD	

FRONT PLOW HITCH ASSEMBLY	SCALE	EQN-50
DRAWN BY	WHM	
DATE	11-05-95	
CHKD BY	WHM	SHEET 3 OF 4



PAINT ENTIRE END FLUORESCENT ORANGE

PA DEPARTMENT OF TRANSPORTATION

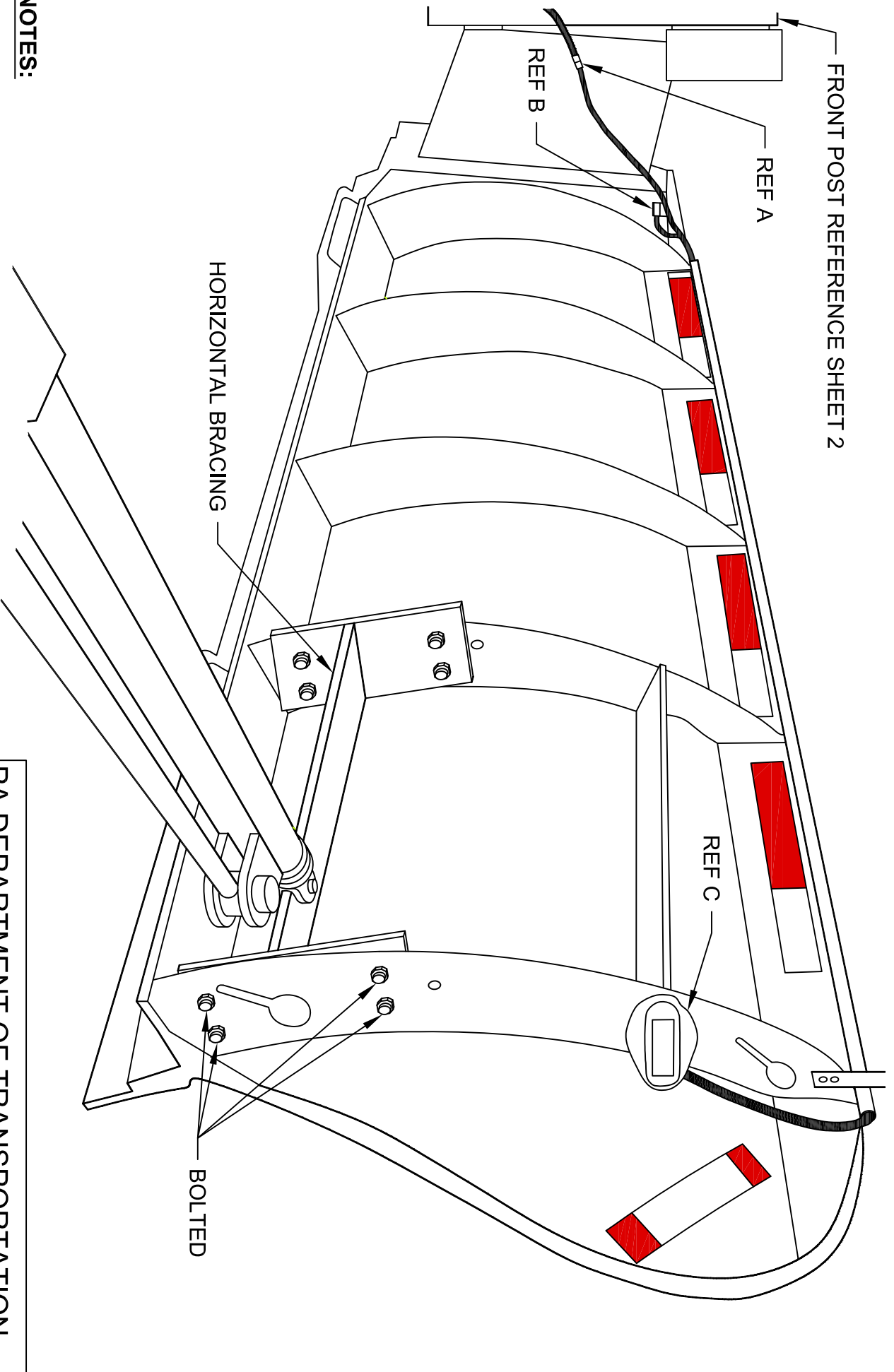
REVISIONS

NO.	DATE	BY	SCALE
1	04-27-15	GAW	
2	12-19-16	JJB	
3	08-02-18	KBD	

FRONT PLOW HITCH ASSEMBLY

NO.	DATE	BY	SCALE
1	04-27-15	GAW	
2	12-19-16	JJB	
3	08-02-18	KBD	

FRONT POST REFERENCE SHEET 2



NOTES:

- A. ALL WIRING CONNECTIONS SHALL BE SEALED AND WEATHER TIGHT. 2 PRONG DEUTSCHE CONNECTOR, MALE FROM WING AND FEMALE FROM VEHICLE.
- B. MERCURY SWITCH, SHALL BE COMUS # CB08-90.
- C. WING LIGHT, SHALL BE WHELEN MODEL # PAWINGWR.

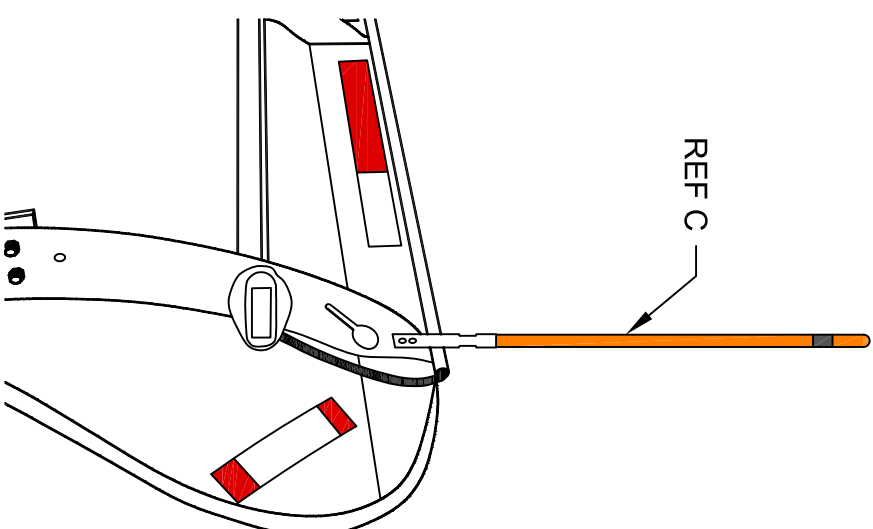
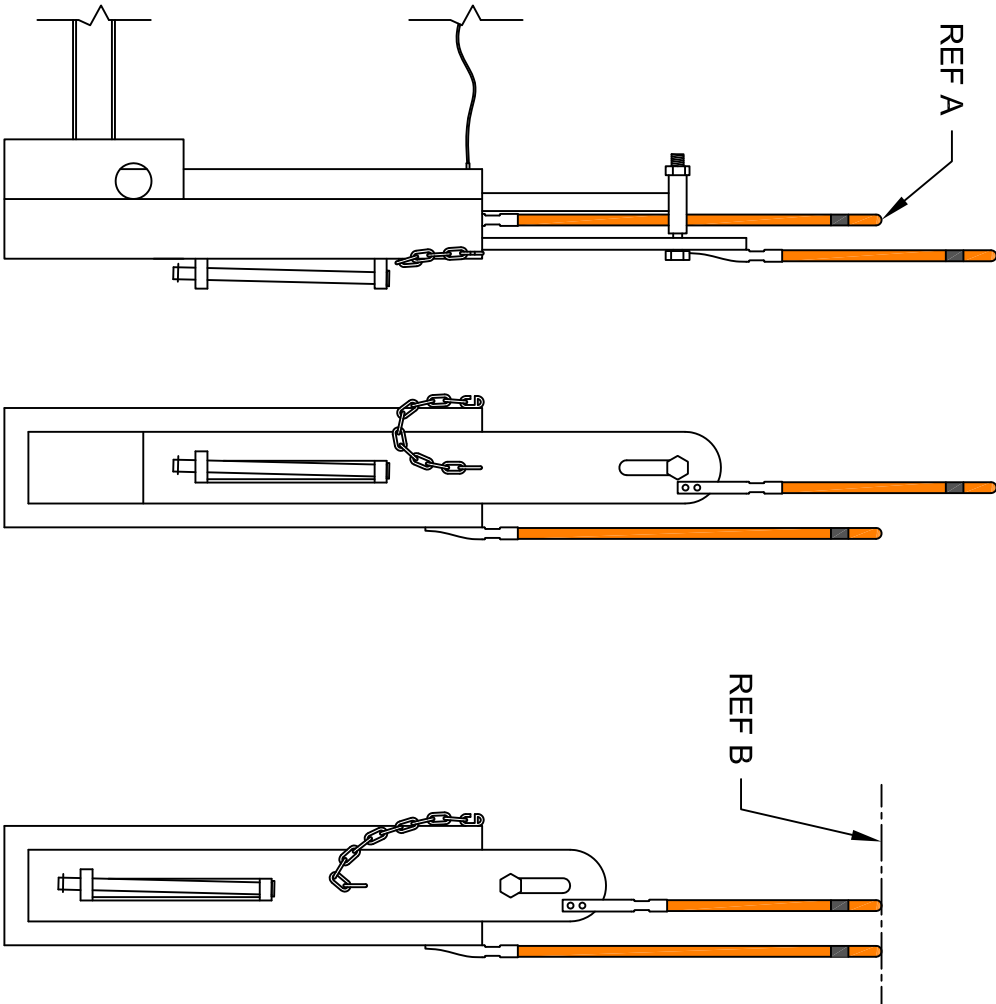
PA DEPARTMENT OF TRANSPORTATION

REVISIONS			DRAWN BY		
NO.	DATE	BY	DATE	SCALE	EQN-60A
1	12-19-16	JJB	07-15-15	N/A	
2	07-06-17	HMR			
3					

SNOWPLOW PATROL WING,
MOUNTING ARRANGEMENTS

NOTES:

- ALL PLOW GUIDES SHALL BE $\frac{3}{4}$ " x 36" GALVANIZED STEEL CABLE HIGH VISIBILITY ORANGE, 2 BOLTS
- A. TWO PLOW GUIDES SHALL BE MOUNTED ON THE FRONT POST. A MINIMUM OF THE TOP 3 INCHES OF THE STATIONARY GUIDE SHALL BE VISIBLE FROM CAB.
 - B. BOTH PLOW GUIDES ON THE MAST SHALL BE LEVEL WHEN PLOW IS IN THE LOWERED POSITION AND RESTING ON A LEVEL SURFACE.
 - C. ONE PLOW GUIDE SHALL BE MOUNTED ON REAR OF WING PLOW.



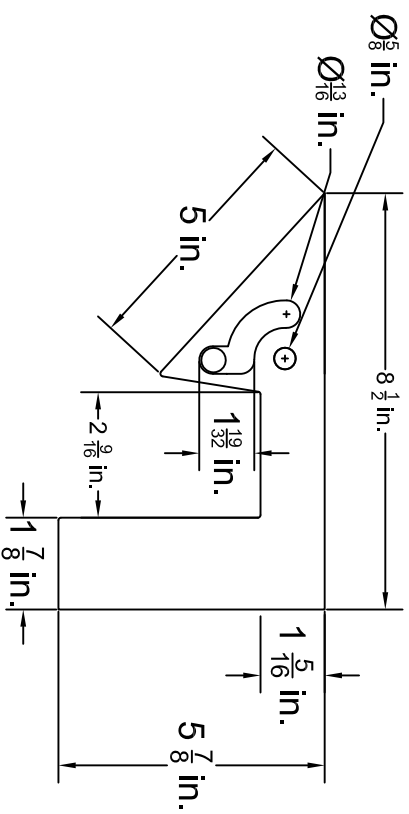
PA DEPARTMENT OF TRANSPORTATION

REVISIONS		DRAWN BY		SCALE	
NO.	DATE	BY			
1	07-03-14	ACT	RAR	N/A	EQN-60A
2	12-19-16	JJB	RAR	N/A	EQN-60A
3	07-06-17	HMR	RAR	N/A	EQN-60A

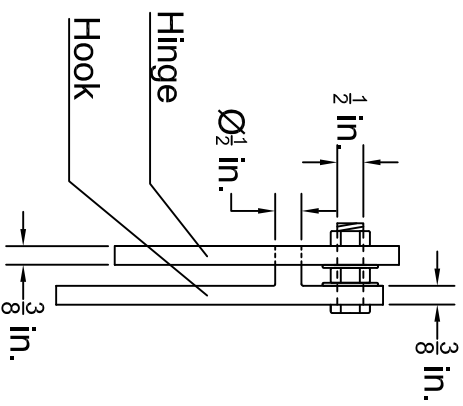
**SNOWPLOW PATROL WING,
MOUNTING ARRANGEMENTS**

RAISED POSITION

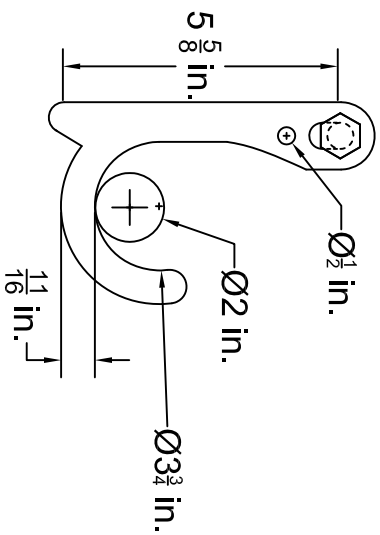
LOWERED POSITION



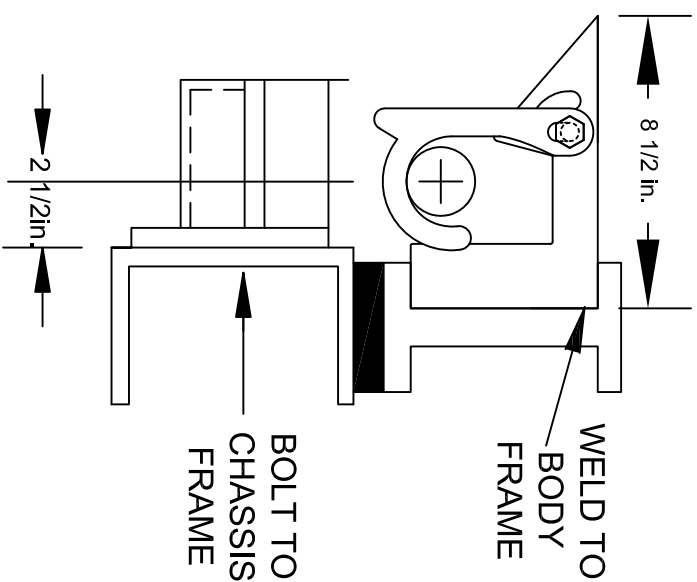
HINGE FRONT VIEW



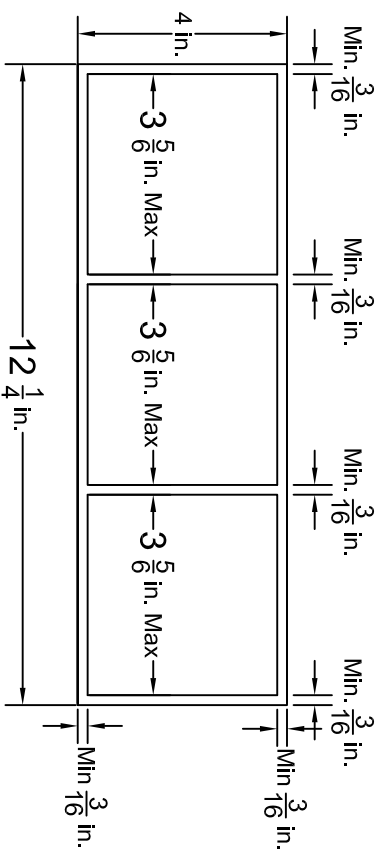
HOOK-HINGE SYSTEM
SIDE VIEW



HOOK FRONT VIEW



SYSTEM FRONT VIEW



PROP STOP TOP VIEW

PA DEPARTMENT OF TRANSPORTATION

REVISIONS

NO.	DATE	BY	TOD	WHM	N/A	EQN-62
1	7-13-09	TOD				
2	7-02-12	MJW				
3	6-05-14	ACT				

BED PROP SYSTEM

DRAWN BY WHM SCALE N/A EQN-62

DATE 11-06-89 CHRG BY RED SHEET 1 OF 2

BILL OF MATERIAL

DESCRIPTION

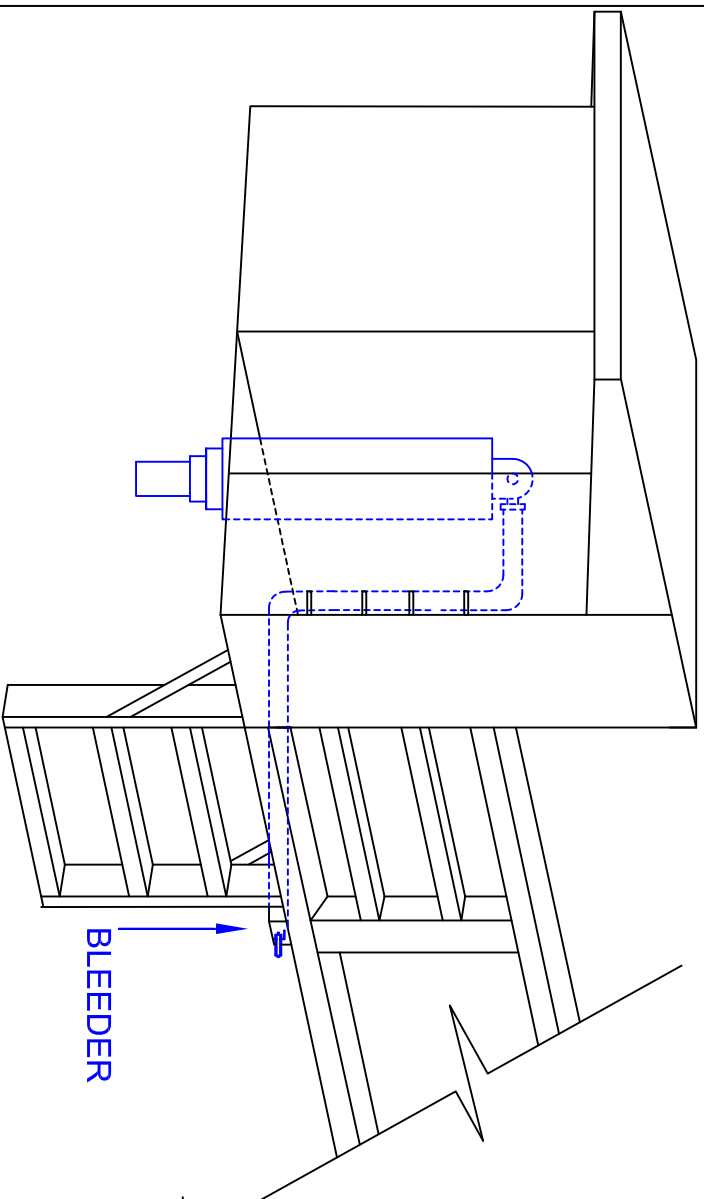
A.	PROP STOP- 12 1/4 in. X 4 in. MINIMUM 3/16 in. STEEL CONSTRUCTION
B.	HINGE- 6 in. X 6 in. MINIMUM 3/16 in. ALUMINUM CONSTRUCTION
C.	POST- 2in. X 27in. (SCH80) STEEL PIPE
D.	HOOK- 4 in. X 6 1/2 in. MINIMUM 3/16 in. STEEL CONSTRUCTION

NOTES

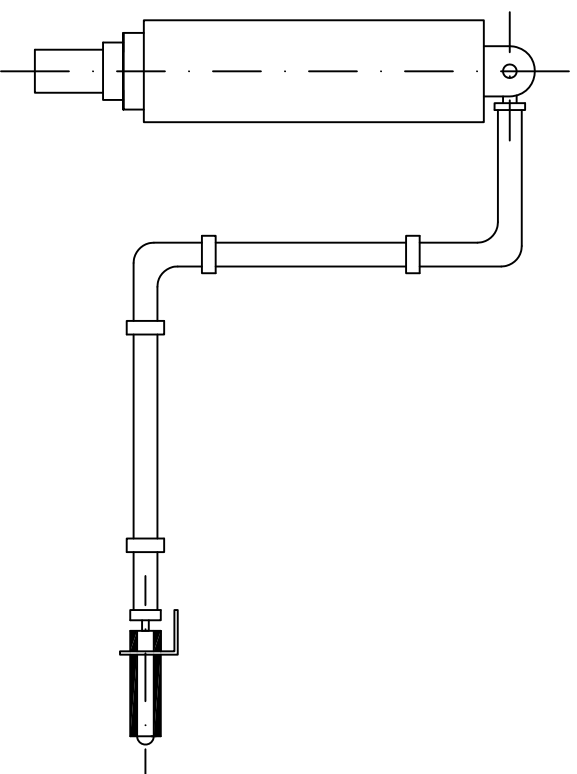
- TWO (2) SAFETY PROPS ARE REQUIRED PER VEHICLE.
- WHEN RELEASED FROM CRADLE, THE BED PROP SHALL BE FREE TO FREE-FALL. PROPS SHALL FALL INTO STOP "A" AS BED IS RAISED, UN-ASSISTED. HINGE "B" SHALL BE DESIGNED TO NOT ALLOW THE BED PROP TO TRAVEL PAST THE LAST POCKET ON THE PROP STOP "A".
- BOLTS SHALL BE GRADE 8 WITH GRADE 8 LOCK NUTS.
- ALL EDGES SHALL BE SMOOTH.

PA DEPARTMENT OF TRANSPORTATION

REVISIONS		BED PROP SYSTEM DUMP TRUCK	
NO.	DATE	BY	DRAWN BY
1	7-13-09	TOD	WHM
2	7-02-12	MJW	SCALE N/A
3	6-05-14	ACT	DATE 11-06-89



LINE SHALL BE SECURED WITH EXTRUDED CUSHION LOOP CLAMPS EVERY 12 inches (min) UTILIZING STUDS OR BOLTS.



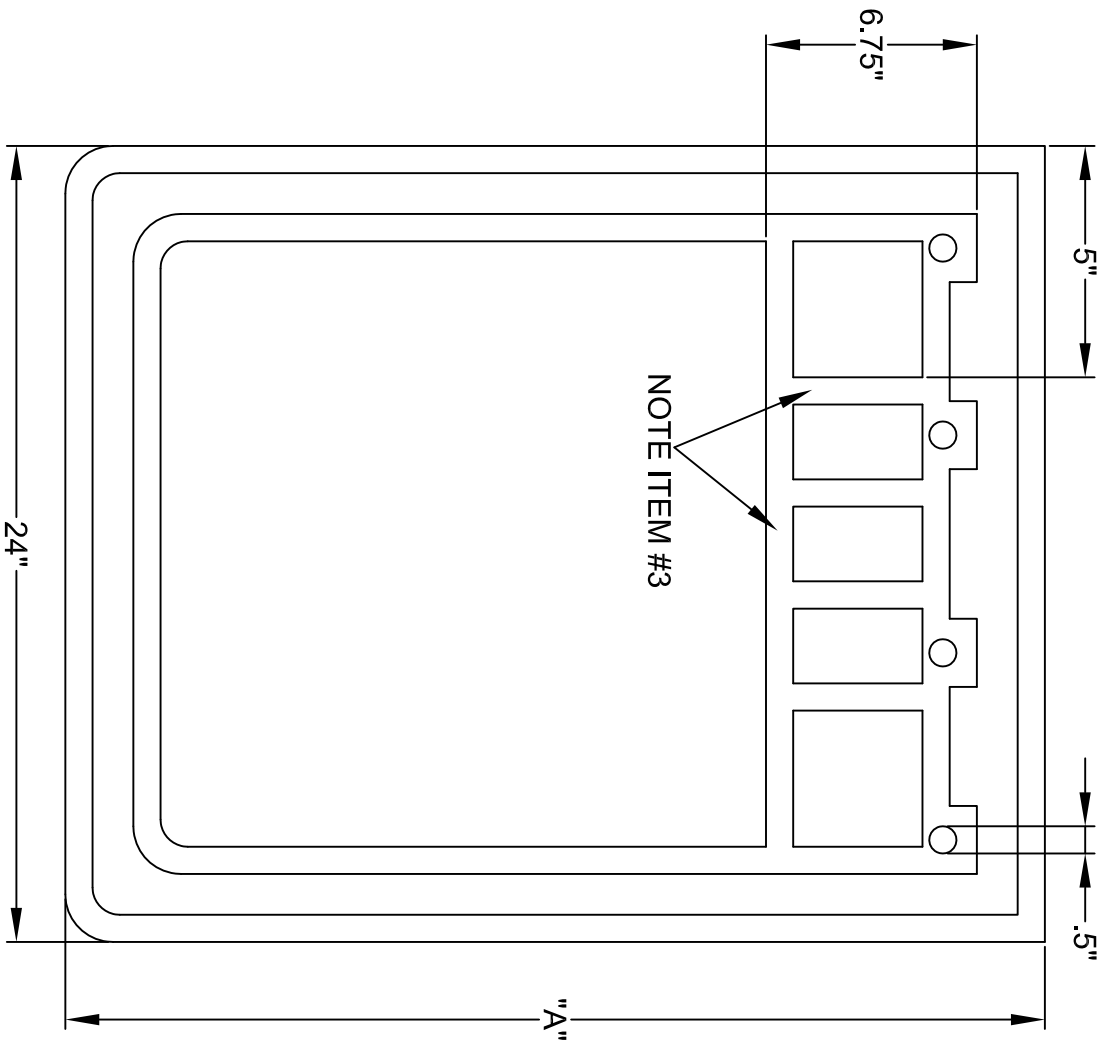
PA DEPARTMENT OF TRANSPORTATION

REVISIONS

NO.	DATE	BY	SCALE	DATE	SHEET
1	10-24-06	CJW			
2	7-13-09	TOD			
3	7-02-12	MJW			

DUMP TRUCK HOIST CYLINDER BLEEDER

DRAWN BY	DLW	EQN-63
SCALE	N/A	
CHECKED BY	WHM	
DATE	08-14-97	



SAFETY

- NOTE:**
1. DIMENSION "A" DEPENDANT ON REQUISITION.
 2. MUD FLAPS SHALL BE "UNMARKED"

PA DEPARTMENT OF TRANSPORTATION

SPLASH GUARDS-RUBBER TRAILER & TRUCK

REVISIONS			DRAWN BY		
NO	DATE	BY	DATE	SCALE	
1	05-28-02	DWG	11-18-87	N/A	EQN-66
2	11-28-06	CJW			
3	07-20-09	TOD			

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

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

NOTE:

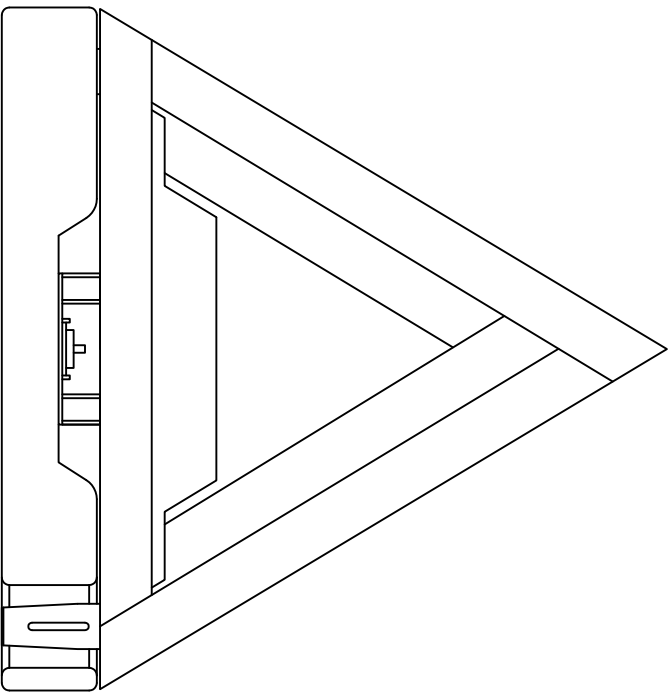
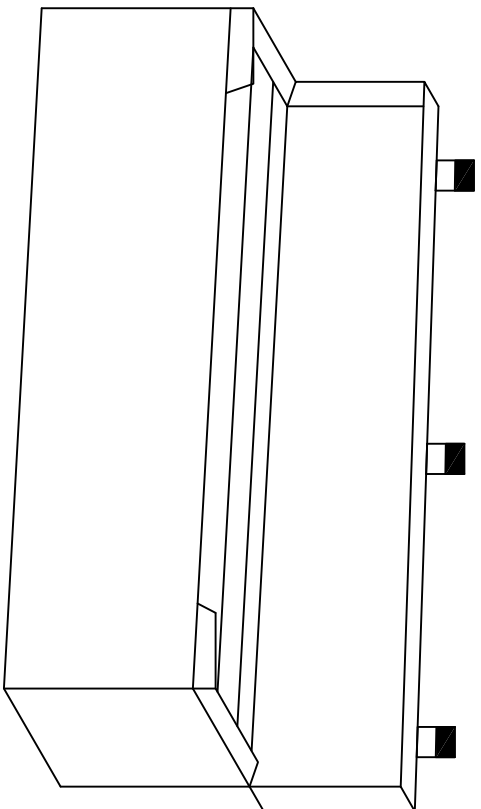
1. MATERIAL: MOLDED NATURAL OR SYNTHETIC BLACK TIRE CHORD IMPREGNATED RUBBER. OIL AND SALT RESISTANT.
2. ANTI-SAIL NOT ACCEPTABLE.
3. MANUFACTURERS STANDARD SIZE ACCEPTABLE IF ALL MINIMUM THICKNESS, DIMENSIONS, AND WEIGHT SPECIFICATIONS ARE MET.
4. AS PER PA VEHICLES EQUIPMENT AND INSPECTION REGULATIONS,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

PA DEPARTMENT OF TRANSPORTATION

REVISIONS		DRAWN BY		SCALE	
NO	DATE	BY			
1	05-28-02	DWG	S.T.	N/A	EQN-66
2	11-28-06	CJW			
3	07-20-09	TOD	DATE 11-18-87	CHG'D BY RED	SHEET 2 OF 2

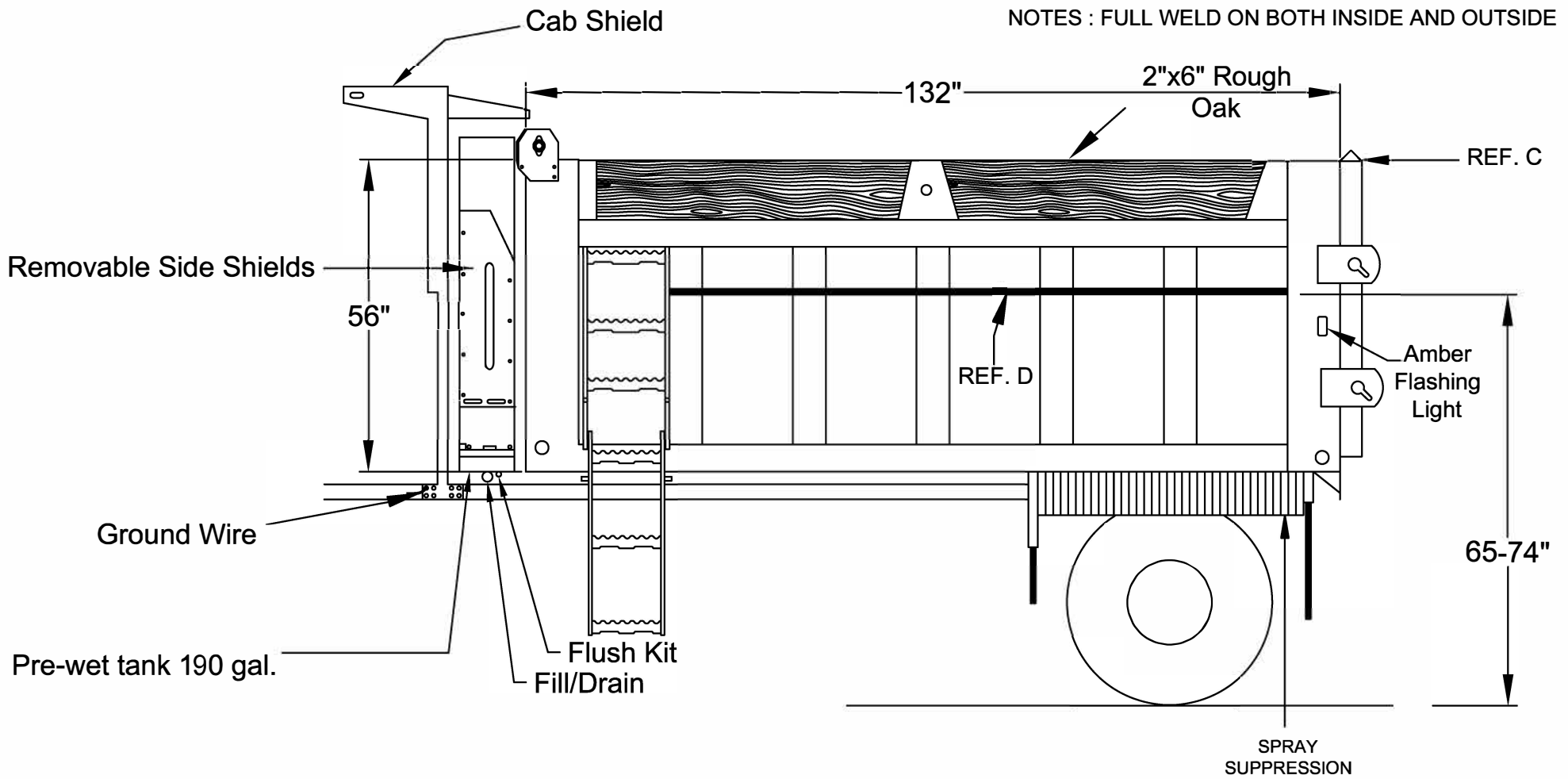
SPLASH GUARDS-RUBBER TRAILER & TRUCK

JAMES KING & CO.
 TRIANGLE PART #1005
 OR APPROVED EQUAL



PA DEPARTMENT OF TRANSPORTATION

REVISIONS			DRAWN BY			SCALE		
NO.	DATE	BY	DATE	CHK'D BY	SHEET	TRIANGLE STORAGE BOX AND BRACKET		
1	05-31-07	KNH		WHM	N/A	EQN-66A		
2	07-20-09	TOD		RED		SHEET 1 OF 1		
3	07-13-17	HMR						



NOTES:

A. LADDER SHALL BE ALUMINUM. LADDER SHALL BE WELDED, MOUNTED ON CENTER BETWEEN THE REAR OF THE DRIVERS SIDE FRONT CORNER POST AND THE FRONT OF THE FIRST VERTICAL SIDE BRACE.

B. STEPS SHALL BE FULL WIDTH BETWEEN VERTICAL SIDE BRACES AND FLUSH WITH OUTSIDE EDGE OF BRACES

C. INVERTED 1 1/2 INCH ANGLE ALUMINUM.

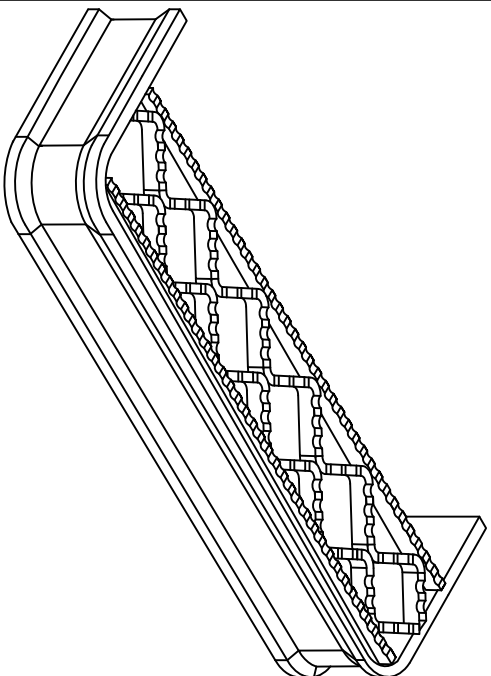
D. 3/4 INCH ALUMINUM ROUND STOCK FOR TARP TIE DOWN.

PRE-WET / FILL DRAIN / FLUSH KIT LOCATEED ON OUTSIDE OF FRAME RAIL.

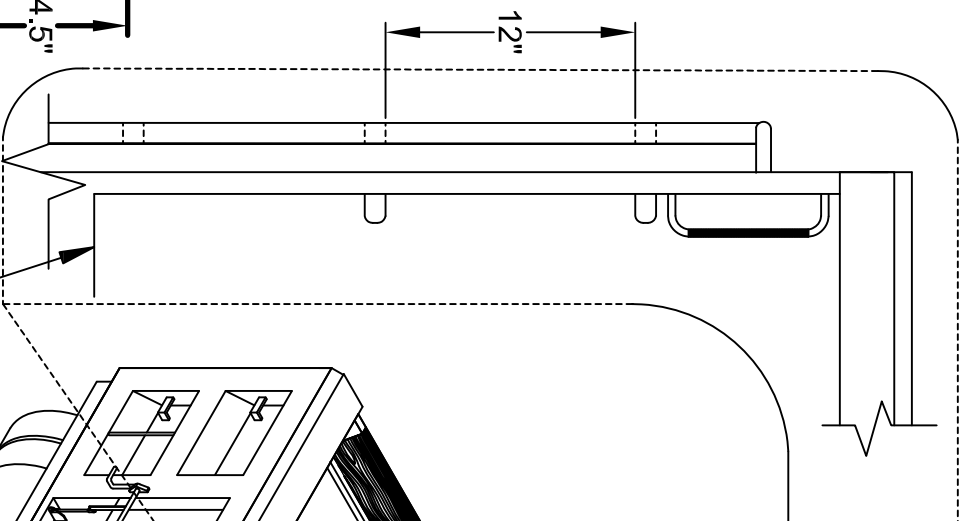
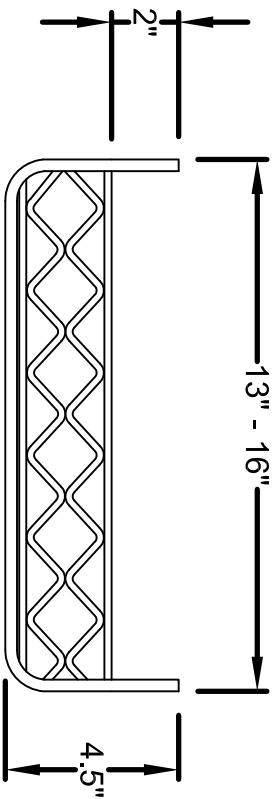
PA DEPARTMENT OF TRANSPORTATION						
REVISIONS			SINGLE AXLE DUMP BODY			
NO.	DATE	BY	DRAWN BY		Combined With	
1	4-27-15	GAW	DLW		EQN-81Y & 557	EQN-76
2	07-25-18	KBD	DATE	11-05-97	CHKD BY	Scale
3	08-08-19	KBD			N/A	N/A
						SHEET 1 OF 8

Inner Step

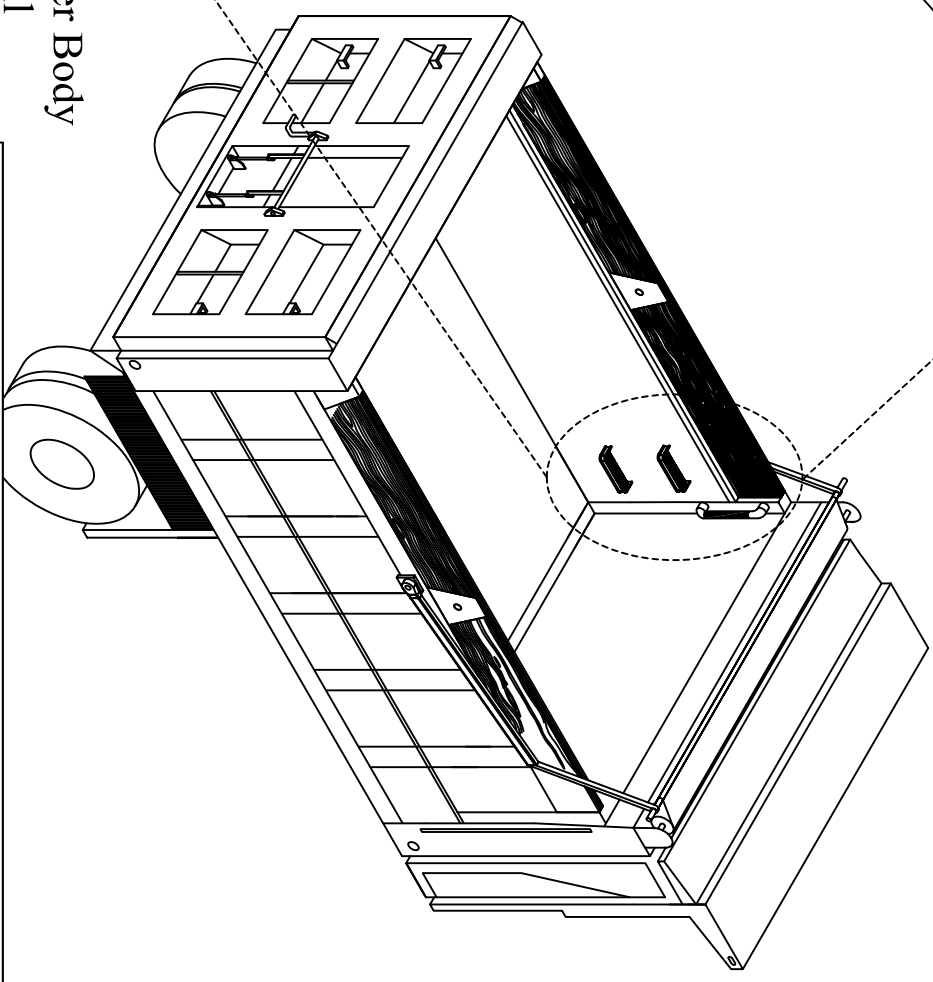
Single & Tandem Axle



Inner Step Top View



Inner Body Wall



PA DEPARTMENT OF TRANSPORTATION

REVISIONS

SINGLE & TANDEM

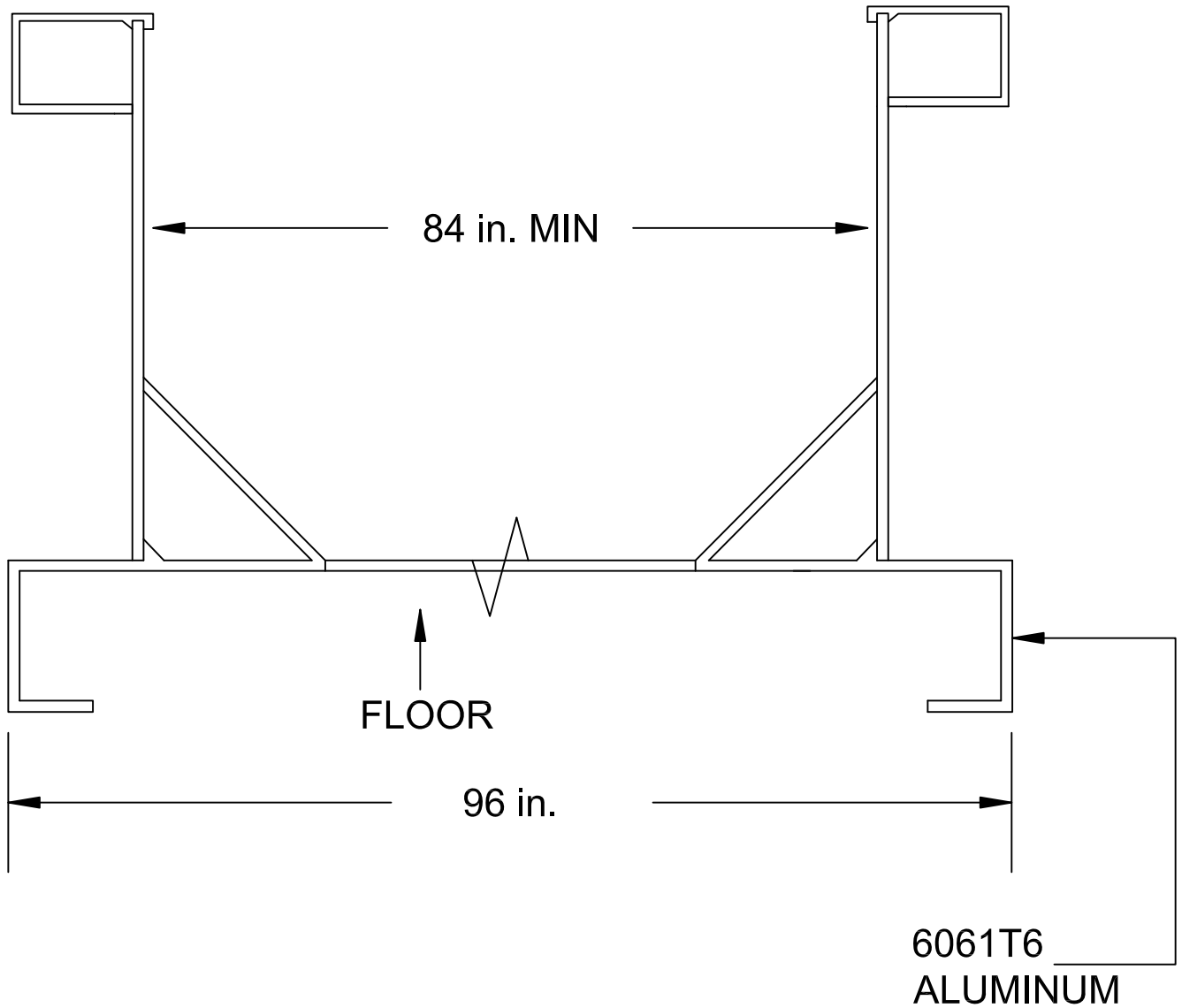
AXLE DUMP BODY INSIDE

STEPS

NO.	DATE	BY	DRAWN BY	CHK'D BY	DATE	SHEET
1	08-02-18	KBD	MJW	N/A	07-02-12	8
2	08-08-19	KBD	MJW	N/A	07-02-12	8
3						

EQN-76

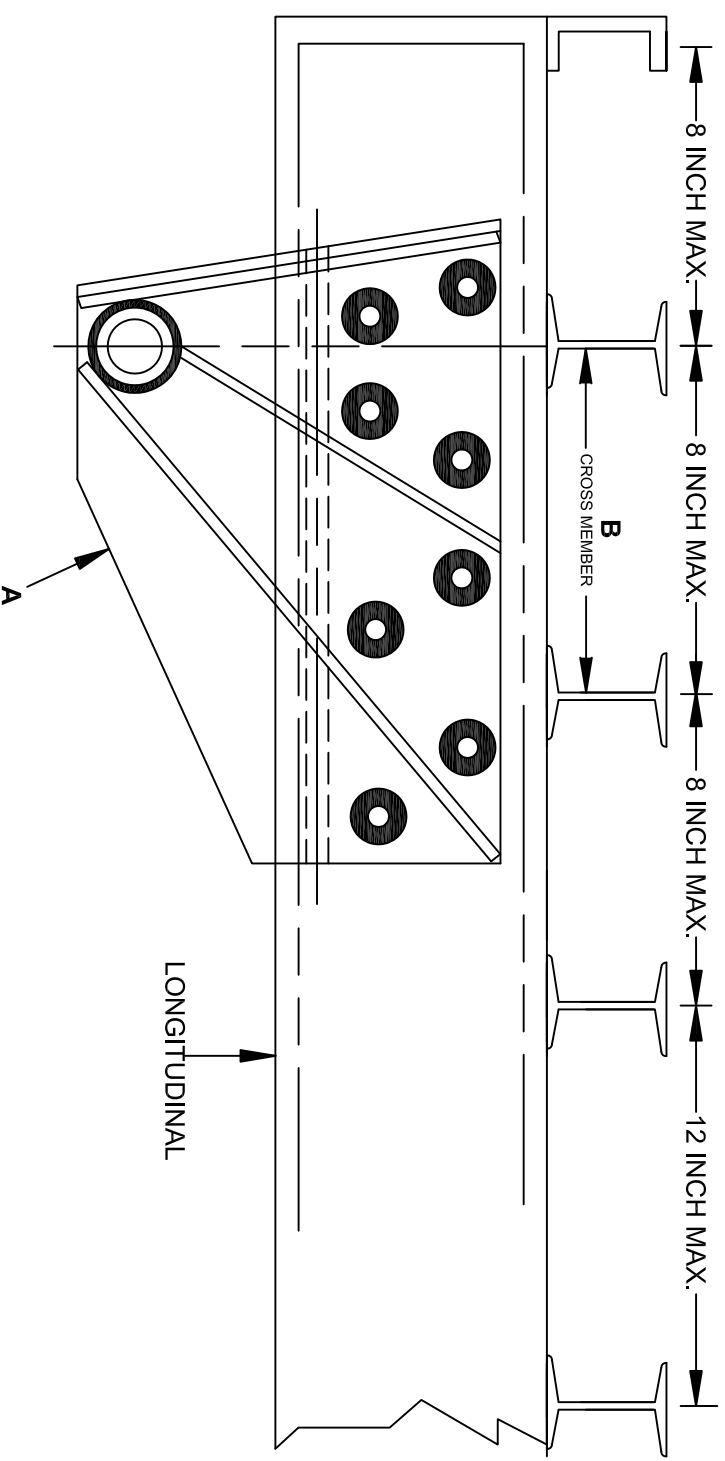
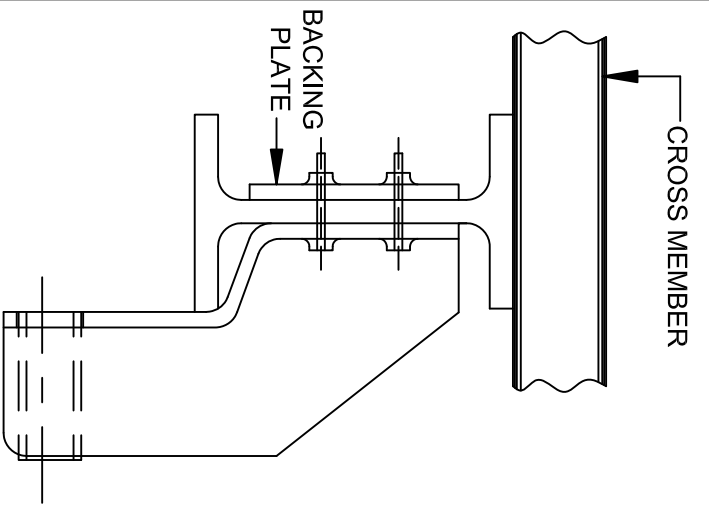
SHEET 2 OF 8



FLOOR:

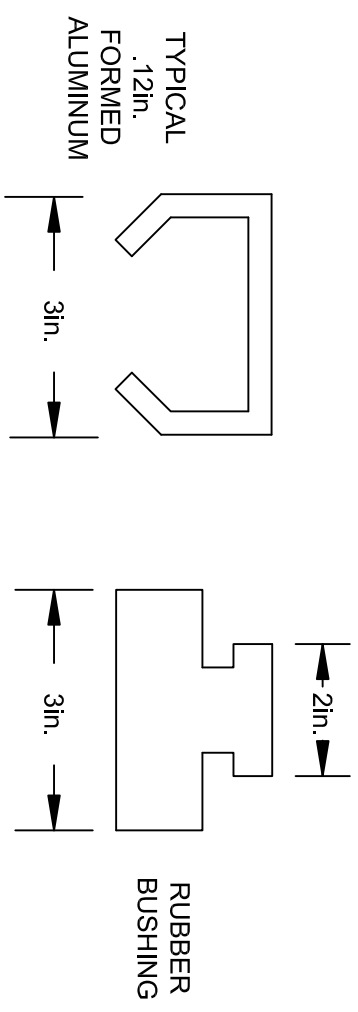
1. ONE-PIECE BODY FLOOR SHALL BE .375 in. MINIMUM THICK ABRASION-RESISTANT ALUMINUM OF GRADE 5454H 34.
2. THE MATERIALS HAULED IN THESE VEHICLES WILL BE SALT, ABRASIVE AGGREGATE, WET MUD, ETC.
3. ALL DIMENSIONS IN INCHES.

PA DEPARTMENT OF TRANSPORTATION					
REVISIONS			SINGLE AXLE DUMP BODY		
NO.	DATE	BY			
1	4-27-15	GAW			
2	07-25-18	KBD	DRAWN BY	DLW	Combined With
3	08-08-19	KBD	DATE	11-05-97	EQN-76
			CHK'D BY	N/A	Scale
				N/A	SHEET 3 OF 8

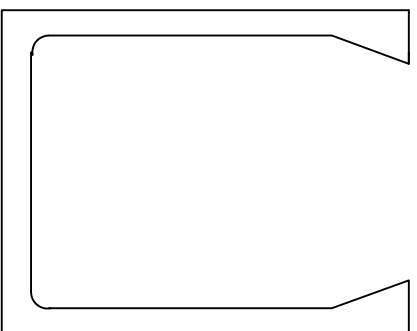


NOTES:

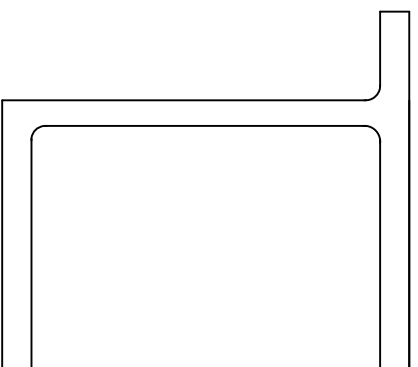
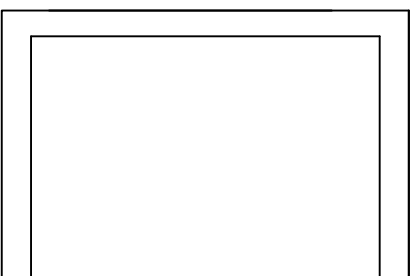
- A. BED MOUNTING BRACKETS SHALL BE A WEB STYLE DESIGN AND SPAN ACCROSS TWO CROSS MEMBERS. THE WEB MOUNT SHALL BE DESIGNED FOR SEVERE DUTY SERVICE. THE BOLTS (8 MINIMUM) SHALL BE OF GRADE 8 MINIMUM WITH SELF-LOCKING GRADE 8 NUTS.
 - B. THE LAST FOUR CROSS-MEMBERS SHALL BE PLACED ON 8 INCH MAXIMUM CENTERS, WITH THE BALANCE ON 12 INCH MAXIMUM CENTERS.
- THE BODY SHALL BE SHOCK MOUNTED TO AVOID STRESS ON ROUGH ROADS WHEN EMPTY.
 - "FULL-LENGTH" BODY TO FRAME RUBBER MOUNTING SYSTEM.
 - THE REAR PIN HINGE SHALL BE A MINIMUM OF 2 INCH DIAMETER, AND SHALL HAVE A GREASABLE HINGE BUSHING 1/2 INCH WALL. THERE SHALL BE MYLAR OR APPROVED EQUAL BETWEEN METAL BRACKETS AND ALUMINUM LONGITUDINAL RAILS



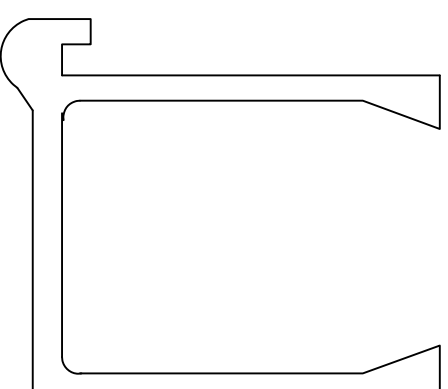
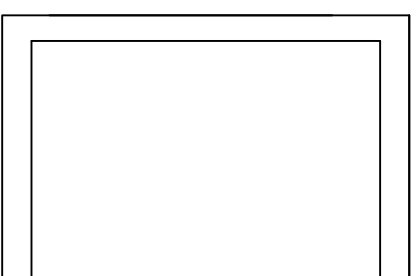
PA DEPARTMENT OF TRANSPORTATION			
REVISIONS			
NO.	DATE	BY	SINGLE AXLE DUMP BODY
1	4-27-15	GAW	
2	07-25-18	KBD	
3	08-08-19	KBD	EQU-76



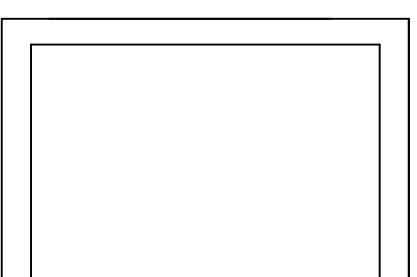
APPROVED HOIST CYLINDER
CHANNEL EXTRUSIONS



APPROVED REAR
CROSSMEMBER EXTRUSIONS



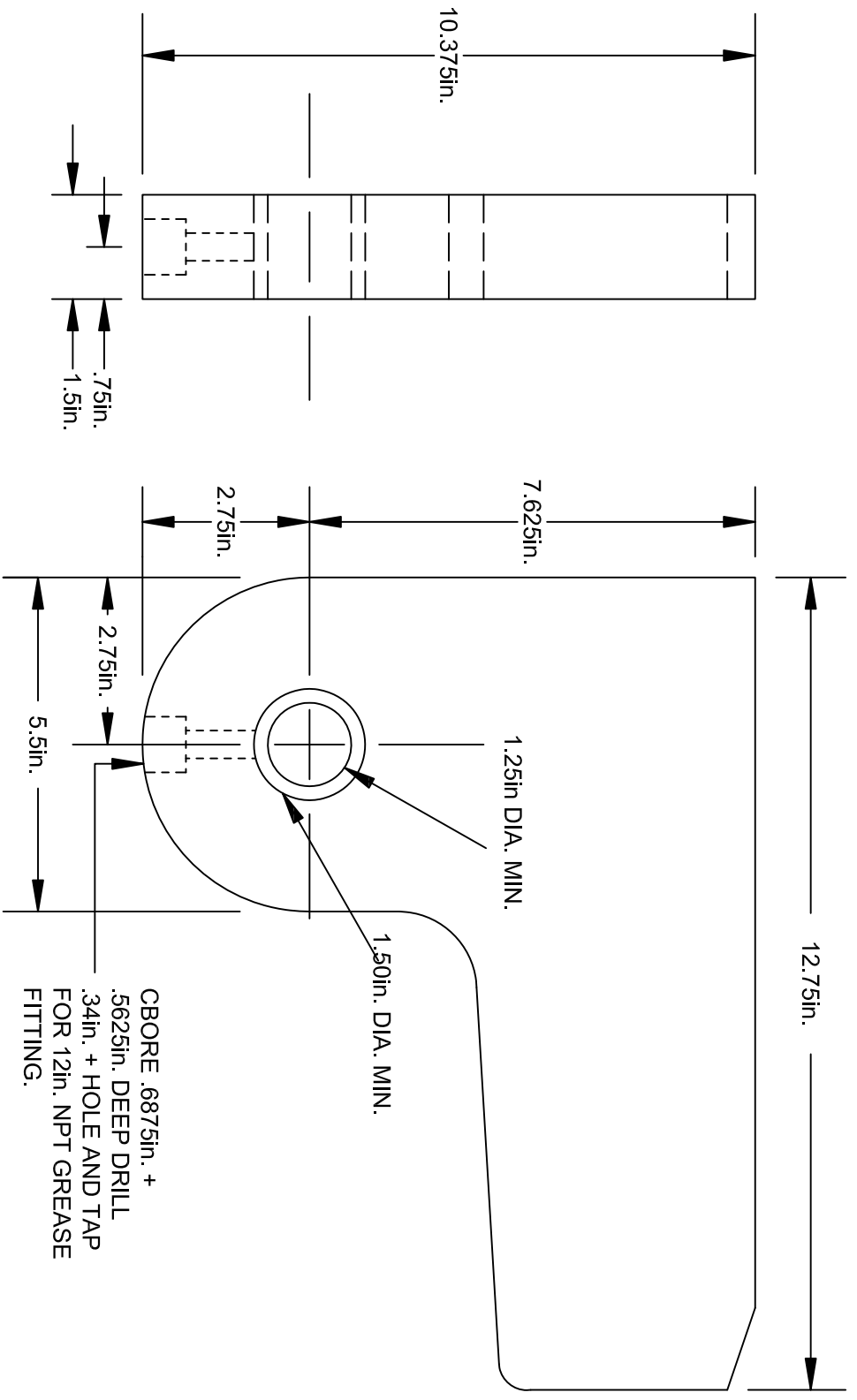
APPROVED FRONT CROSS
MEMBER EXTRUSION



PA DEPARTMENT OF TRANSPORTATION

REVISIONS

NO.	DATE	BY	SINGLE AXLE DUMP BODY		
1	4-27-15	GAW	DRAWN BY	DLW	Combined with
2	07-25-18	KBD	DATE	11-05-97	EQN-76
3	08-08-19	KBD	CHK'D BY	N/A	Scale



PA DEPARTMENT OF TRANSPORTATION

REVISIONS

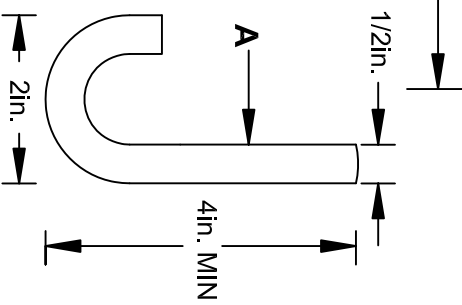
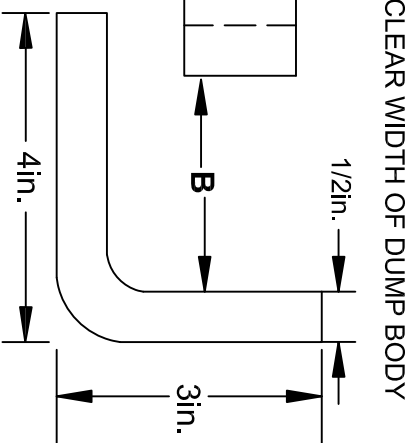
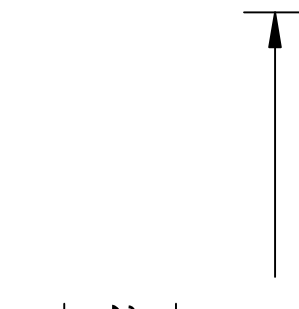
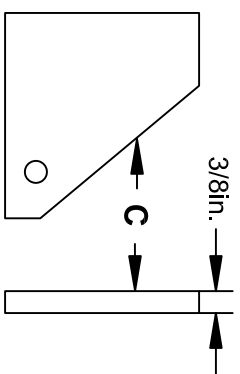
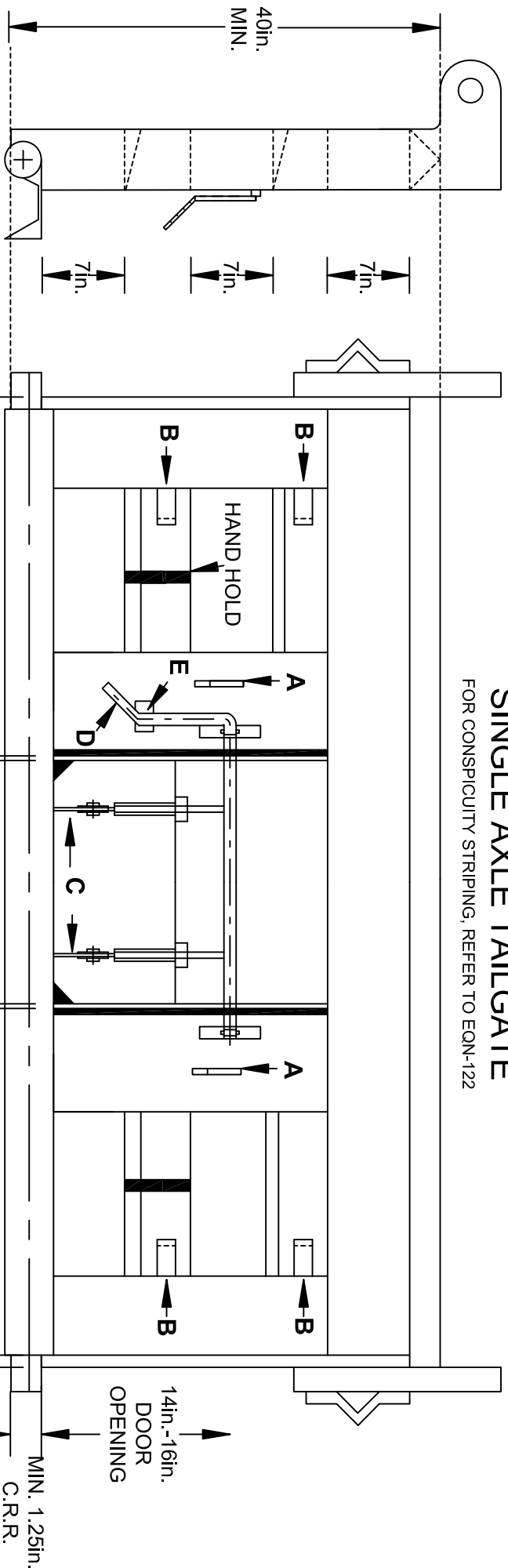
NO.	DATE	BY	DESCRIPTION
1	4-27-15	GAW	
2	07-25-18	KBD	
3	08-08-19	KBD	

SINGLE AXLE DUMP BODY

DRAWN BY	DLW	CHECKED BY	N/A	SCALE	N/A	EQU-76
DATE	11-05-97					SHEET 6 OF 8

SINGLE AXLE TAILGATE

FOR CONSPICUITY STRIPING, REFER TO EQN-122



NOTES:

- A. THERE SHALL BE 2 "J" HOOKS PER TAILGATE AND SHALL BE FULLY WELDED AS CHAIN HOLDERS.
- B. THERE SHALL BE 4 TAILGATE CHAIN BRACKETS FULLY WELDED TO THE TAILGATE.
- C. THERE SHALL BE 2 EARS MADE OF 3/8 INCH 304 STAINLESS STEEL FULLY WELDED TO THE MATERIAL CHUTE DOOR.
- D. 1in. DIA. H.R.R. LIFT HANDLE WITH GRIP COVER. SUFFICIENT CLEARANCE AS TO NOT HIT KNUCKLES OF HAND WHEN APPLYING.
- E. STRIKE PLATE SHALL BE SUFFICIENT DIMENSION TO COVER HANDLE STRIKING AREA, MINIMUM 3/16 INCH MATERIAL THICKNESS.
- HORIZONTAL CROSS-MEMBER ABOVE THE DOOR SHALL BE ONE CONTINUOUS RUN ACROSS TAILGATE.
- 1/4 INCH SLIDING GATE TYPE 304 STAINLESS STEEL.

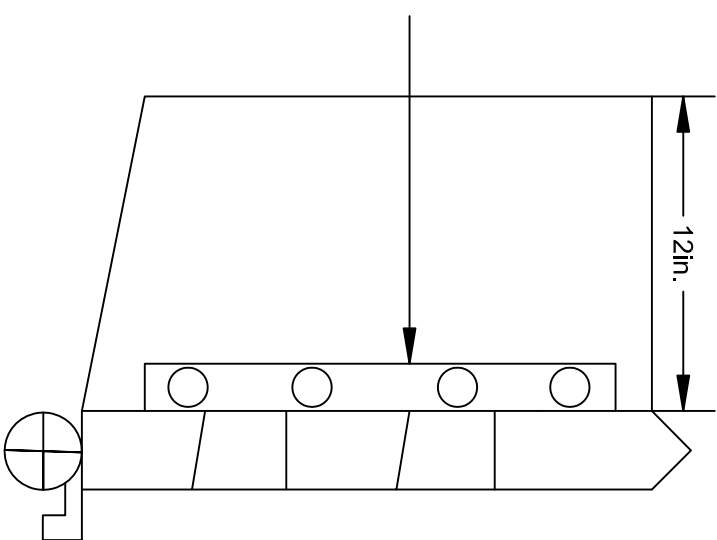
PA DEPARTMENT OF TRANSPORTATION

REVISIONS			SINGLE AXLE DUMP BODY		
NO.	DATE	BY	DRAWN BY	DATE	EQU-76
1	4-27-15	GAW	DLW	11-05-97	Checked with EQN-17 & 557
2	07-25-18	KBD			Scale
3	08-08-19	KBD			N/A

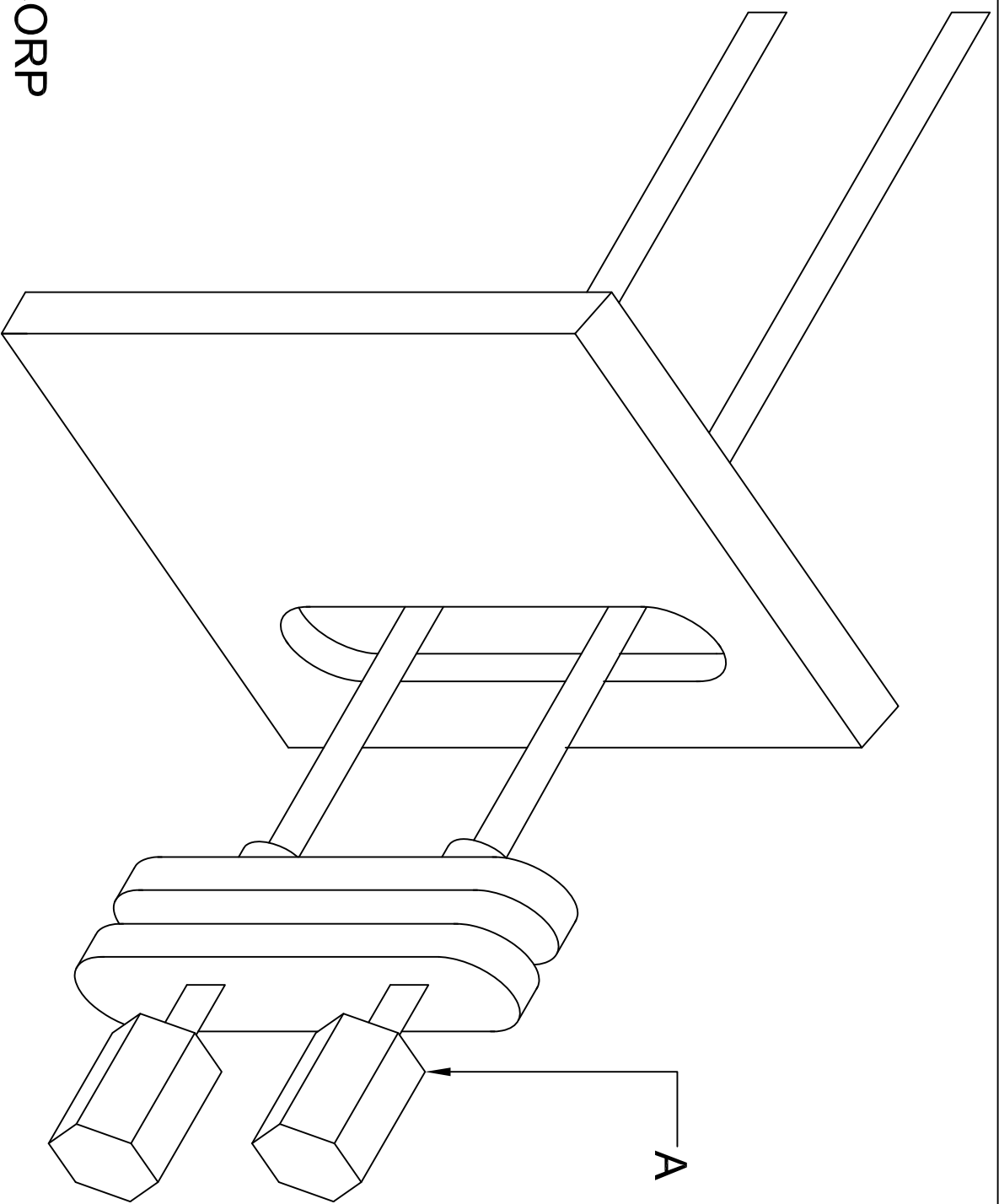
SHEET 7 OF 8

TAILGATE WINGS LEFT AND RIGHT INSIDE

NOTES:
 2in. ANGLE ALUMINUM WITH 4
 SLOTTED HOLES .375in. X 1in. ON
 OUTER SIDE. .375in. STAINLESS
 STEEL COUNTERSUNK MACHINE
 SCREWS WITH STAINLESS STEEL
 NUTS AND FLAT WASHERS SHALL
 BE USED.



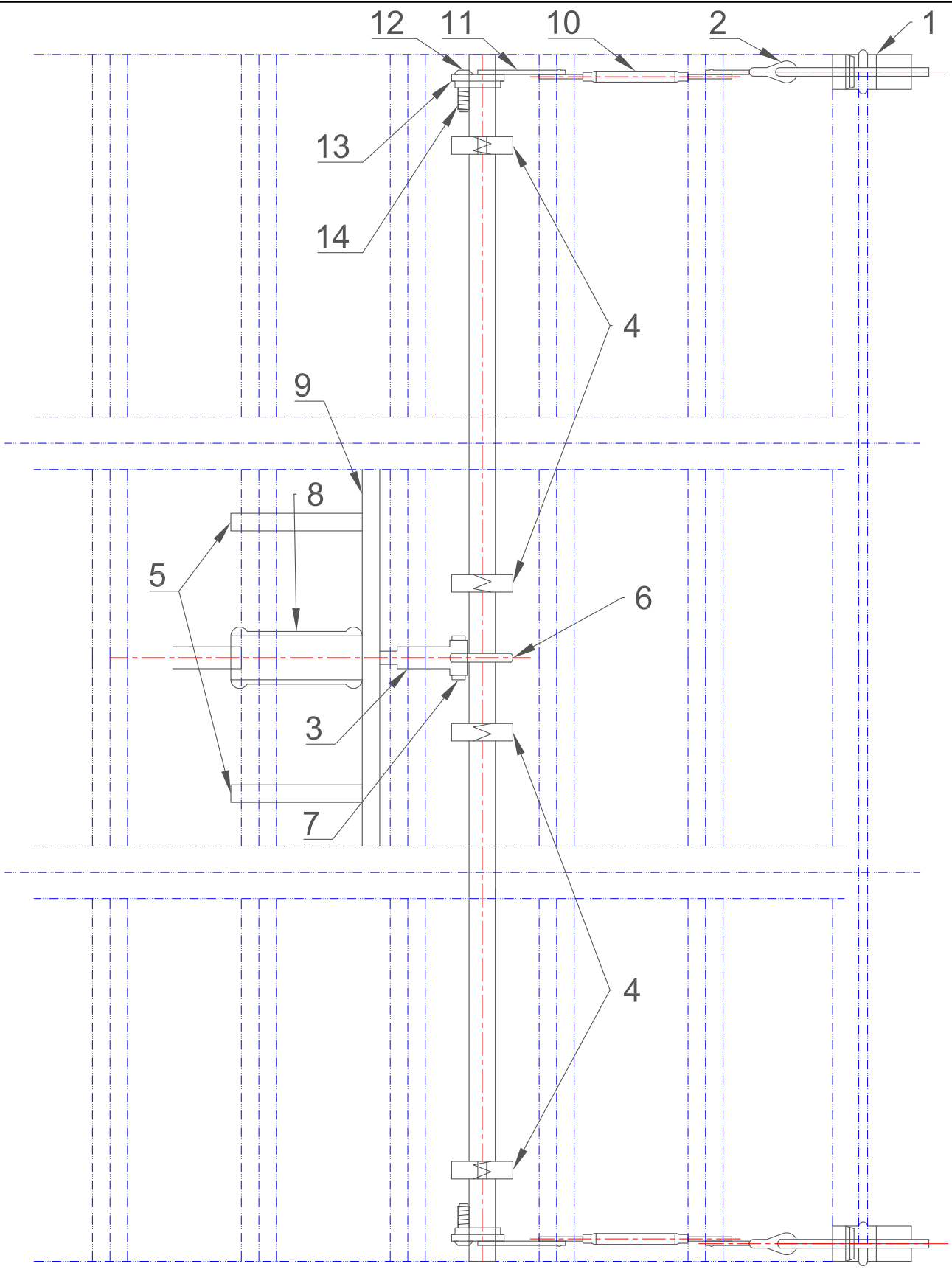
PA DEPARTMENT OF TRANSPORTATION			
REVISIONS		SINGLE AXLE DUMP BODY	
NO.	DATE	BY	
1	4-27-15	GAW	
2	07-25-18	KBD	DRAWN BY DLW
3	08-08-19	KBD	CHECKED BY N/A
		DATE	SHEET
		11-05-97	8 OF 8
		EQU-76	



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

PART #531 277 C1

PA DEPARTMENT OF TRANSPORTATION			C.B. RADIO CONNECTIONS		
REVISIONS					
NO.	DATE	BY			
1	08-15-90	WHM			
2	07-02-97	DLW			
3	10-27-06	CJW			
		DRAWN BY	WHM	SCALE	EQN-78
		DATE	08-15-90	CHECK BY	RED
		SHEET 1 OF 1			



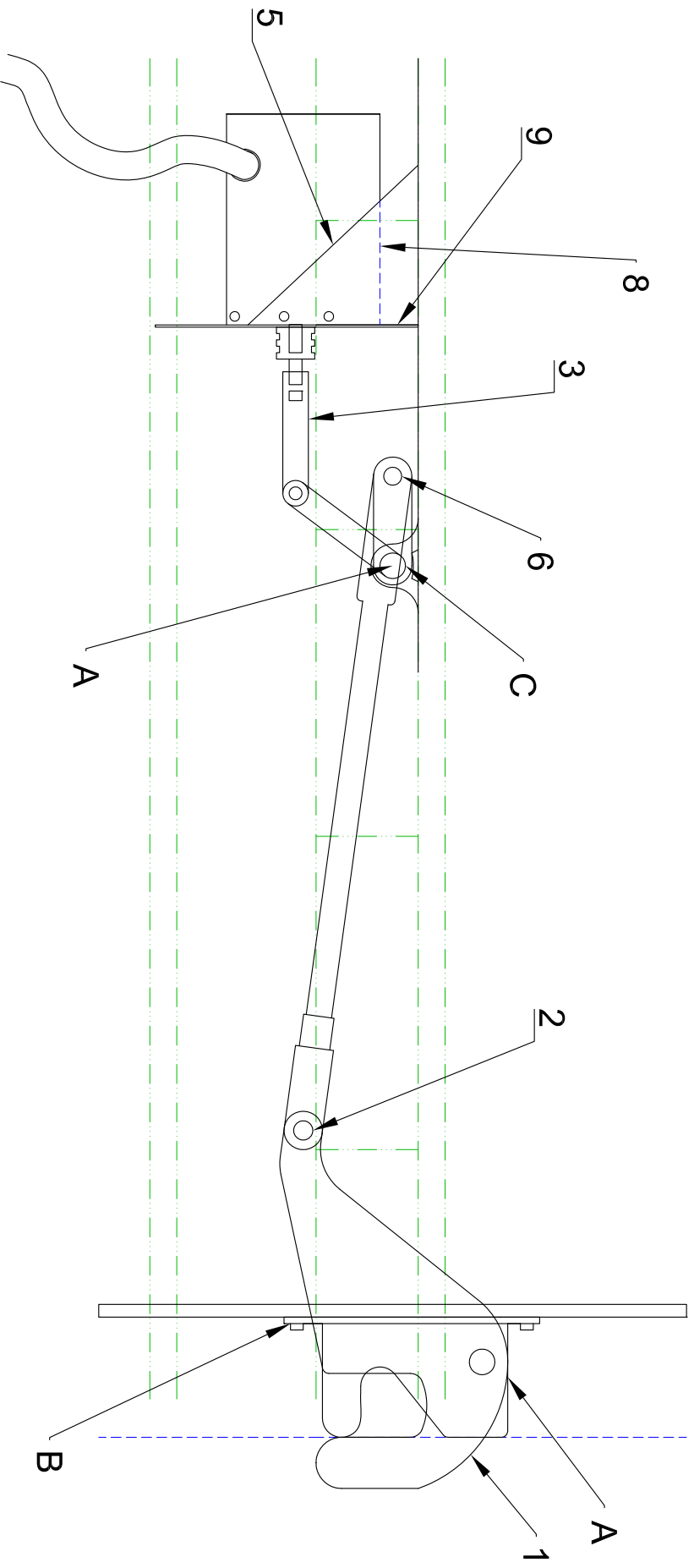
PA DEPARTMENT OF TRANSPORTATION

REVISIONS

NO.	DATE	BY
1	10-06-97	DLW
2	06-03-02	DWG
3	07-13-17	JFM

AIR TAILGATE, HARDWARE
(DUMP TRUCK)

DRAWN BY	WHM	SCALE	3:1	EQN-78A
DATE	08-04-95	CHK'D BY	RED	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

B - TAILGATE LATCHES MUST BE BOLTED IN, WELDED NOT ACCEPTABLE.

C - MUST BE ABLE TO BE ADJUSTED OVER CENTER INTO A LOCKING POSITION.

PA DEPARTMENT OF TRANSPORTATION

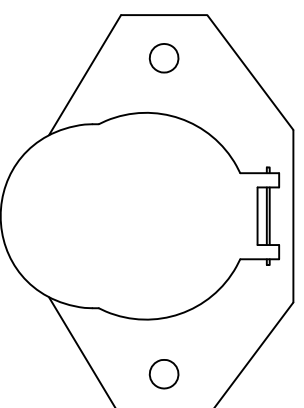
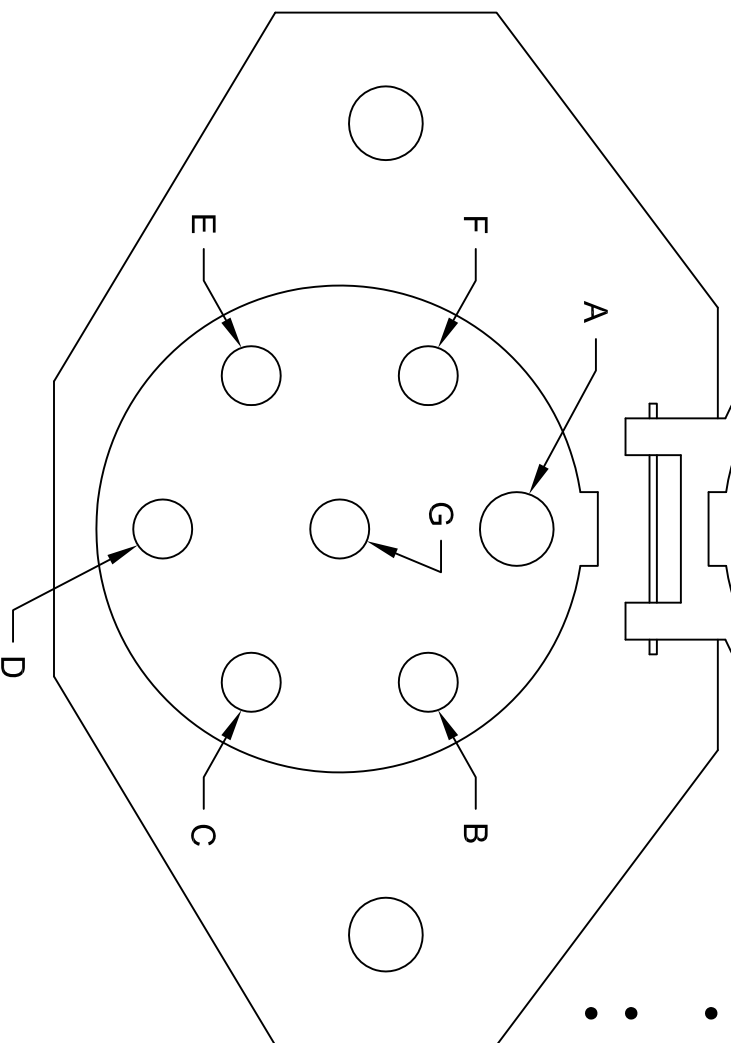
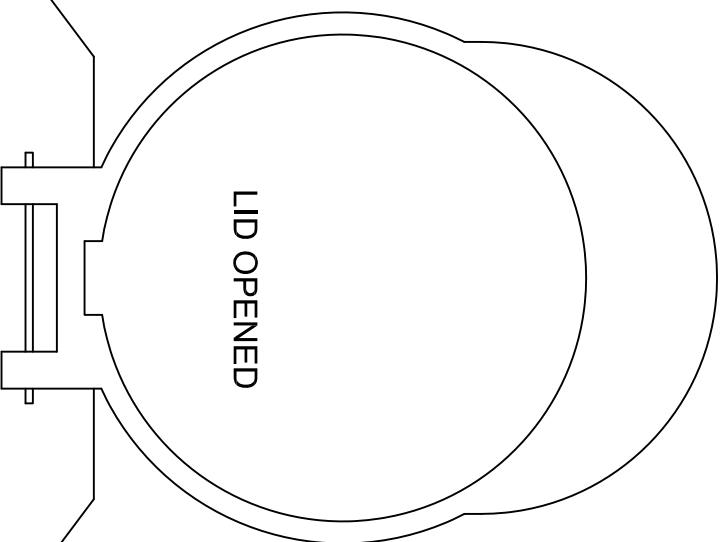
REVISIONS			AIR TAILGATE, HARDWARE (DUMP TRUCK)		
NO.	DATE	BY	DATE	SCALE	
1	06-03-02	DWG			
2	05-30-13	JFM	08-04-95	2:1	EQN-78A
3	07-13-17	HMR			

BILL OF MATERIAL (PARTIAL LIST)

<u>ITEM</u>	<u>QTY</u>	<u>DESCRIPTION</u>
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/ .75in.)
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

PA DEPARTMENT OF TRANSPORTATION

REVISIONS			AIR TAILGATE, HARDWARE (DUMP TRUCK)		
NO.	DATE	BY			
1	10-06-97	DLW			
2	06-03-02	DWG	<small>DRAWN BY</small> WHM	<small>SCALE</small> N/A	EQN-78A
3	7-13-17	JFM	<small>DATE</small> 08-04-95	<small>CHK'D BY</small> RED	SHEET 3 OF 3



LID CLOSED

NOTES:

- VIEW OF FEMALE CONNECTOR, STANDING AT REAR OF TRUCK, LOOKING AT THE CONNECTOR.
- BRAKE LIGHTS SHALL FUNCTION WITH TURN SIGNALS.
- WIRE SHALL BE 7 WAY (1-10 GAUGE; 6-12 GAUGE) PER ATA COLOR CODE, CLAMPED EVERY 18" MINIMUM.
- CONNECTION SHALL BE MADE USING FACTORY OEM TRAILER WIRING HARNESS.
- ALL CONNECTIONS SHALL BE WATER TIGHT.
- ALL PINS SHALL BE ROUND STYLE.

WIRING NOTES:

- A. WHITE: GROUND - 10
- B. BLACK: MARKER -12
- C. YELLOW: LEFT TURN & BRAKE - 12
- D. RED: STOP / BRAKE -12
- E. GREEN: RIGHT TURN & BRAKE - 12
- F. BROWN: TAIL - 12
- G. BLUE: ABS -12

PA DEPARTMENT OF TRANSPORTATION

REVISIONS

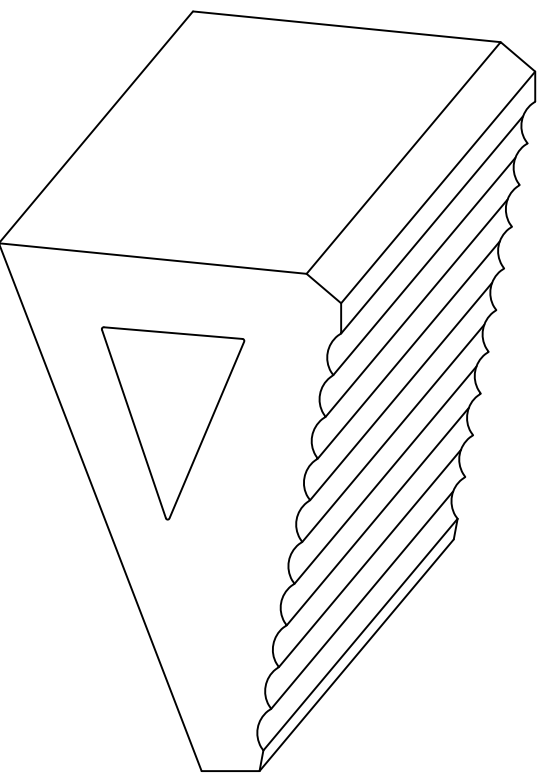
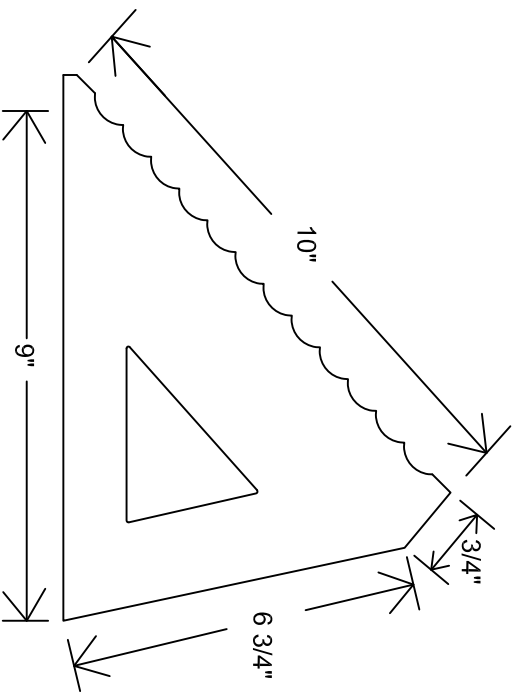
NO.	DATE	BY	DESCRIPTION
1	08-02-18	KBD	WIRING DIAGRAM / 7 WAY ROUND PIN FEMALE CONNECTOR
2			
3			

WIRING DIAGRAM / 7 WAY ROUND

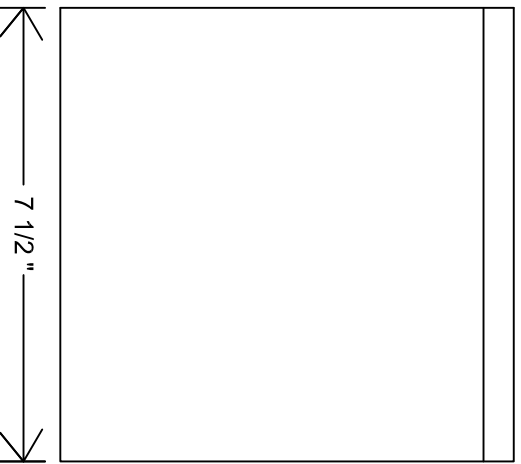
PIN FEMALE CONNECTOR

DRAWN BY JJB EQN-80A

DATE 08-02-16 SHEET 1 OF 1



FINAL MOUNTING LOCATION SHALL BE DETERMINED AT THE PRE-BUILD MEETING. CHOCK HOLDERS SHALL BE ALUMINUM OR STAINLESS STEEL. TWO CHOCKS PER TRUCK SHALL BE SUPPLIED. CHOCKS SHALL HAVE 4 FEET OF $\frac{3}{8}$ INCH NYLON ROPE CONNECTING THE TWO CHOCKS TOGETHER.



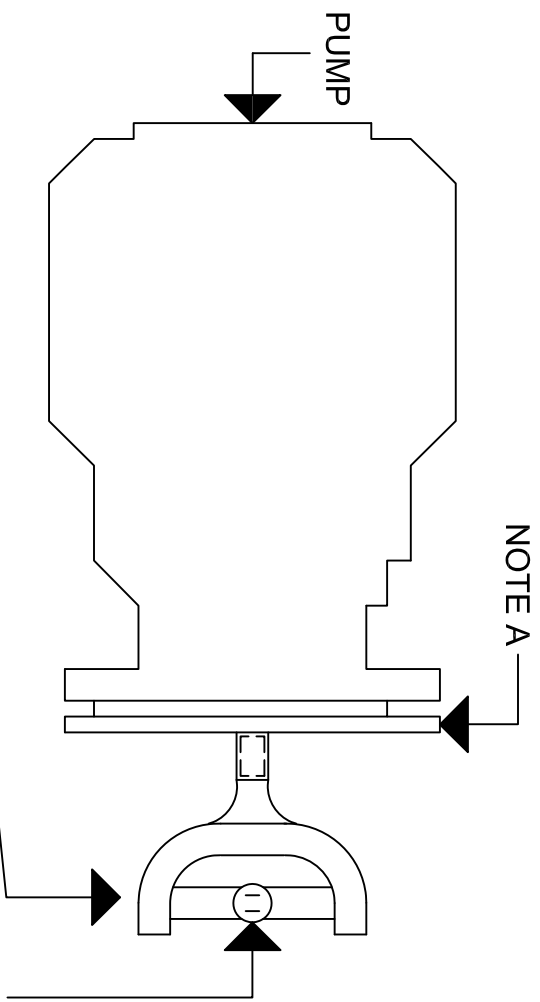
PA DEPARTMENT OF TRANSPORTATION

REVISIONS			6 3/4" X 9" X 7 1/2" CHOCK AND HOLDER		
NO.	DATE	BY	DRAWN BY	SCALE	EQN-82B
1			HMR	N/A	
2					
3					

DATE 07-17-17

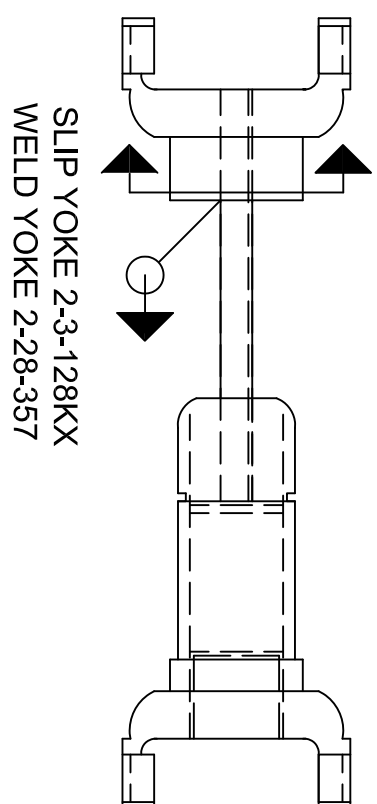
CHCK'D BY

SHEET 1 OF 1



COMPANION FLANGE ADAPTER
NO. N3-1-1013-8 OR 35SF-1.50-37

JOURNAL &
BEARING
NO. 5-1310X OR
APPROVED EQUAL

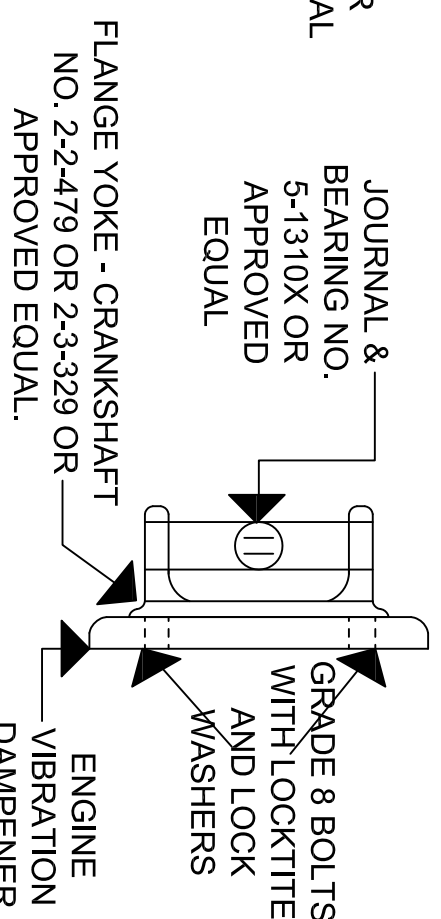


SLIP YOKE 2-3-128KX
WELD YOKE 2-28-357

NOTE A
PUMP MOUNTING BRACKET SHALL BE $\frac{5}{8}$ in.,
MINIMUM, FORMED STEEL CHANNEL. AS
PER EQN - 90 SHEET 2

NOTES:

- 1.) DRIVESHAFT ASSEMBLY SHALL BE FACTORY BALANCED.
- 2.) SPICER 1310 SERIES, OR NEAPCO. NO SUBSTITUTE.
STANDARDIZATION.
- 3.) SLEEVE YOKE SHALL BE 1.375 in. I.D. 16 SPLINES.
- 4.) END YOKE ADAPTER SHALL ACCOMMODATE 1.5 in.,
KEYED SHAFT.
- 5.) JOURNAL & BEARING NO. 5-1310X OR APPROVED EQUAL
SHALL BE EQUIPED WITH LUBE FOR LIFE.



JOURNAL &
BEARING NO.
5-1310X OR
APPROVED
EQUAL

FLANGE YOKE - CRANKSHAFT
NO. 2-2-479 OR 2-3-329 OR
APPROVED EQUAL.

ENGINE
VIBRATION
DAMPENER

GRADE 8 BOLTS
WITH LOCKTITE
AND LOCK
WASHERS

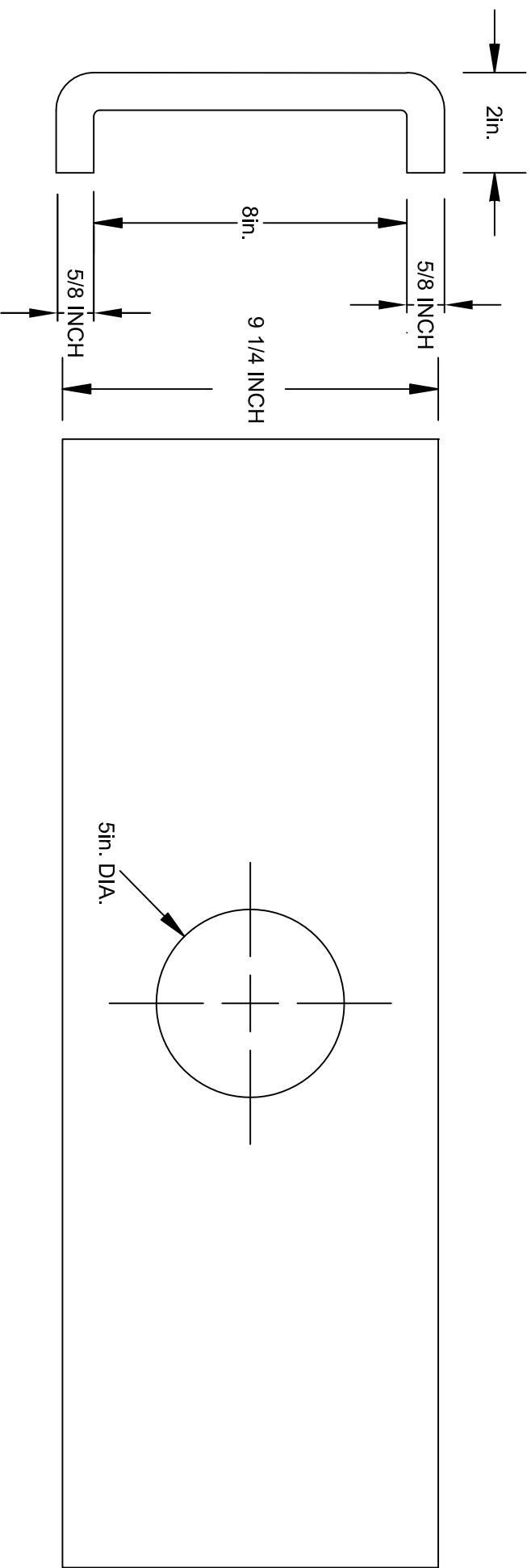
PA DEPARTMENT OF TRANSPORTATION

REVISIONS

NO.	DATE	BY	REASON
1	4-6-07	KNH	
2	07-20-09	TOD	
3	07-25-18	KBD	

DUMP TRUCK PTO ASSEMBLY

DRAWN BY	DLW	Checked With	
DATE	07/17/97	CHKD BY	Scale
			EQN-90
			SHEET 1 OF 2



PUMP MOUNTING BRACKET, REGARDLESS OF DESIGN, SHALL BE A MINIMUM 5/8 in. FORMED STEEL CHANNEL. THE PUMP BRACKET SHALL BE SLOPED TO MATCH THE ENGINE CRANKSHAFT. WIDTH DIMENSION SHALL BE FULL FRAME RAIL WIDTH. BRACKETRY TO ATTACH PUMP MOUNTING BRACKET TO TRUCK FRAME RAILS SHALL BE MINIMUM 5/8 in. THICKNESS. BRACKETS SHALL BE EITHER FULLY WELDED OR USE 3/4 in. GRADE 8 BOLTS OF SUFFICIENT LENGTH AND GRADE 8 LOCK NUTS, MINIMUM TWO BOLTS PER MOUNTING SURFACE.

PA DEPARTMENT OF TRANSPORTATION

REVISIONS

NO.	DATE	BY	PUMP MOUNTING BRACKET	
1	06-03-02	DWG	DRAWN BY	SWW
2	07-20-09	TOD	Checked VTR	EQN-90
3	07-25-18	KBD	DATE	12-04-95
			CHK'D BY	Scale

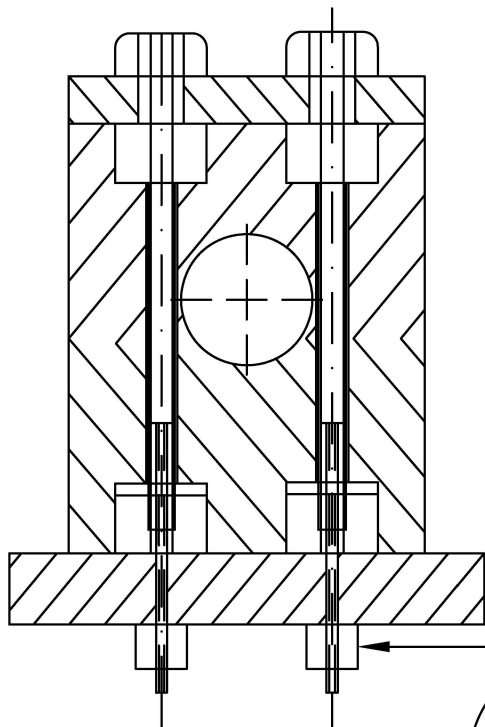
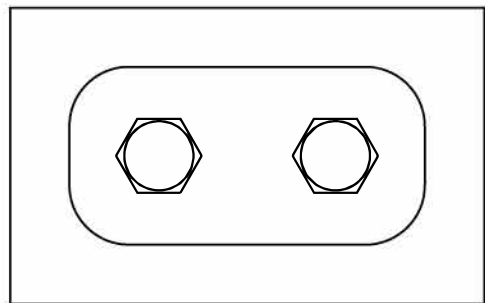
HYDRAULIC HOSES/ FITTINGS

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

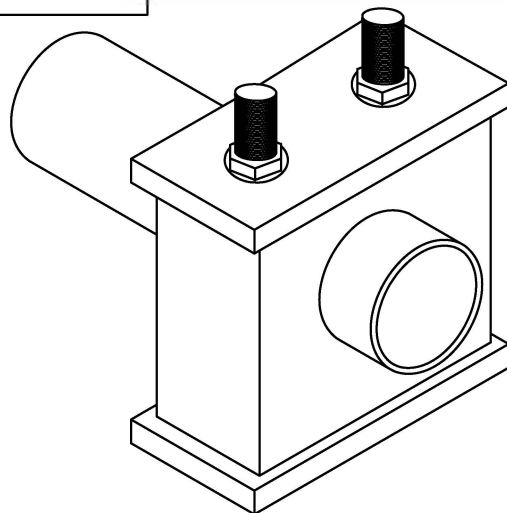
HYCON CLAMPS AS REQUIRED TO PREVENT CHAFFING OR RUBBING. DUE TO THE VARIATIONS OF SIZES PART NUMBERS HAVE NOT BEEN INCLUDED. WELD-ON OR BOLT-ON ARE ACCEPTABLE. AVAILABLE IN STANDARD AND HEAVY DUTY SERIES. LOCATIONS TO BE APPROVED BY CHIEF, FLEET MANAGEMENT DIVISION
REF: HYCON CORPORATION, LEHIGH VALLEY,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

NOTE:

ALL BOLTS/NUTS SHALL BE COATED WITH NEVER SIEZE.



BOLT SHALL EXTEND BEYOND BASE



PA DEPARTMENT OF TRANSPORTATION						
REVISIONS			Hydraulic Hose Mounting & Requirements			
NO.	DATE	BY	DRAWN BY	Checked With		
1	10-02-06	CJW				
2	12-20-16	JJB	RED	EQN-23	EQN-94	
3	08-02-18	KBD	DATE	11-03-78	CHK'D BY	Scale
					N/A	N/A
						SHEET 1 OF 5

FRONT COUPLERS SHALL BE MOUNTED TO A MANIFOLD PLATE POSITIONED IN THE CENTER OF THE FRONT FRAME EXTENSION WHICH HOUSES THE PTO ASSEMBLY. MOUNTING SEQUENCE SHALL BE AS FOLLOWS MOVING TOP TO BOTTOM WHEN FACING THE RIGHT SIDE OF THE VEHICLE:

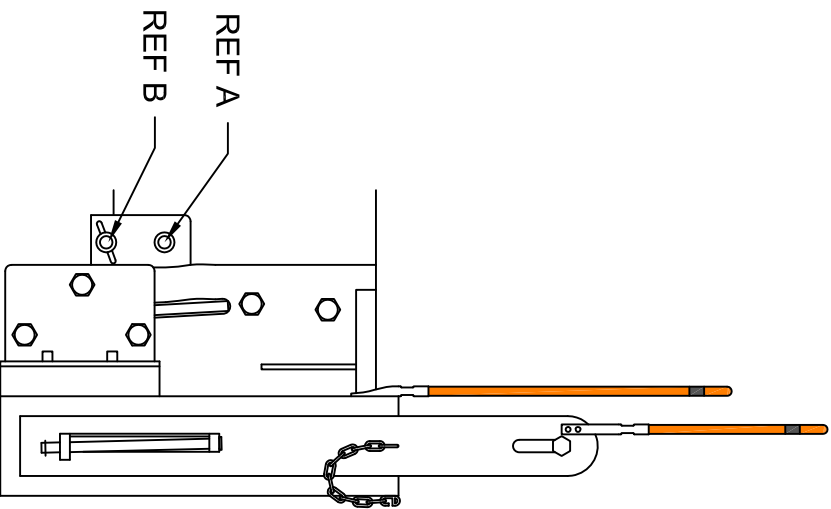
TWO (2) WING COUPLERS: UPPER BEING 5100-S2-8B AERROQUIP MALE AND LOWER BEING 5100-S1-8B AERROQUIP FEMALE

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 TOP TO BOTTOM WHEN FACING THE RIGHT SIDE OF THE VEHICLE:

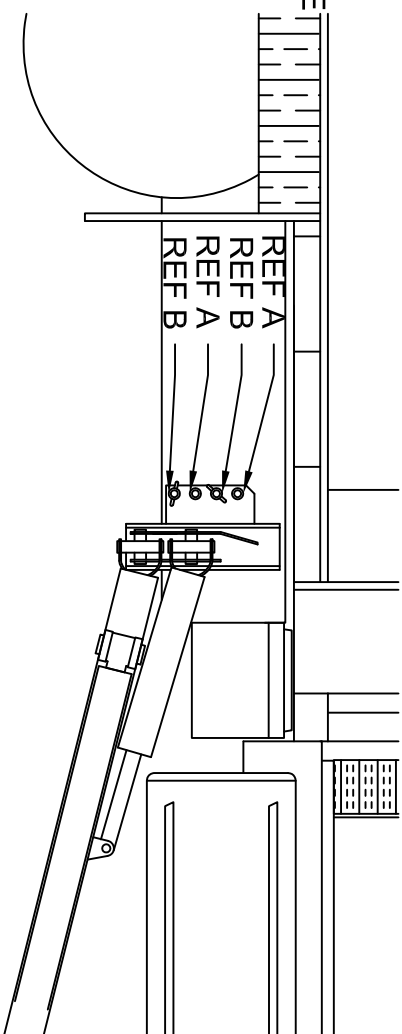
TWO (2) LIFT WING COUPLERS: UPPER BEING 5100-S2-8B AERROQUIP MALE AND LOWER BEING 5100-S1-8B AERROQUIP FEMALE

TWO (2) EXTEND WING COUPLERS: UPPER BEING 5100-S2-8B AERROQUIP MALE AND LOWER BEING 5100-S1-8B AERROQUIP FEMALE

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



NOTES:
 A. 5100-S2-8B MALE
 B. 5100-S1-8B FEMALE



FRONT COUPLERS

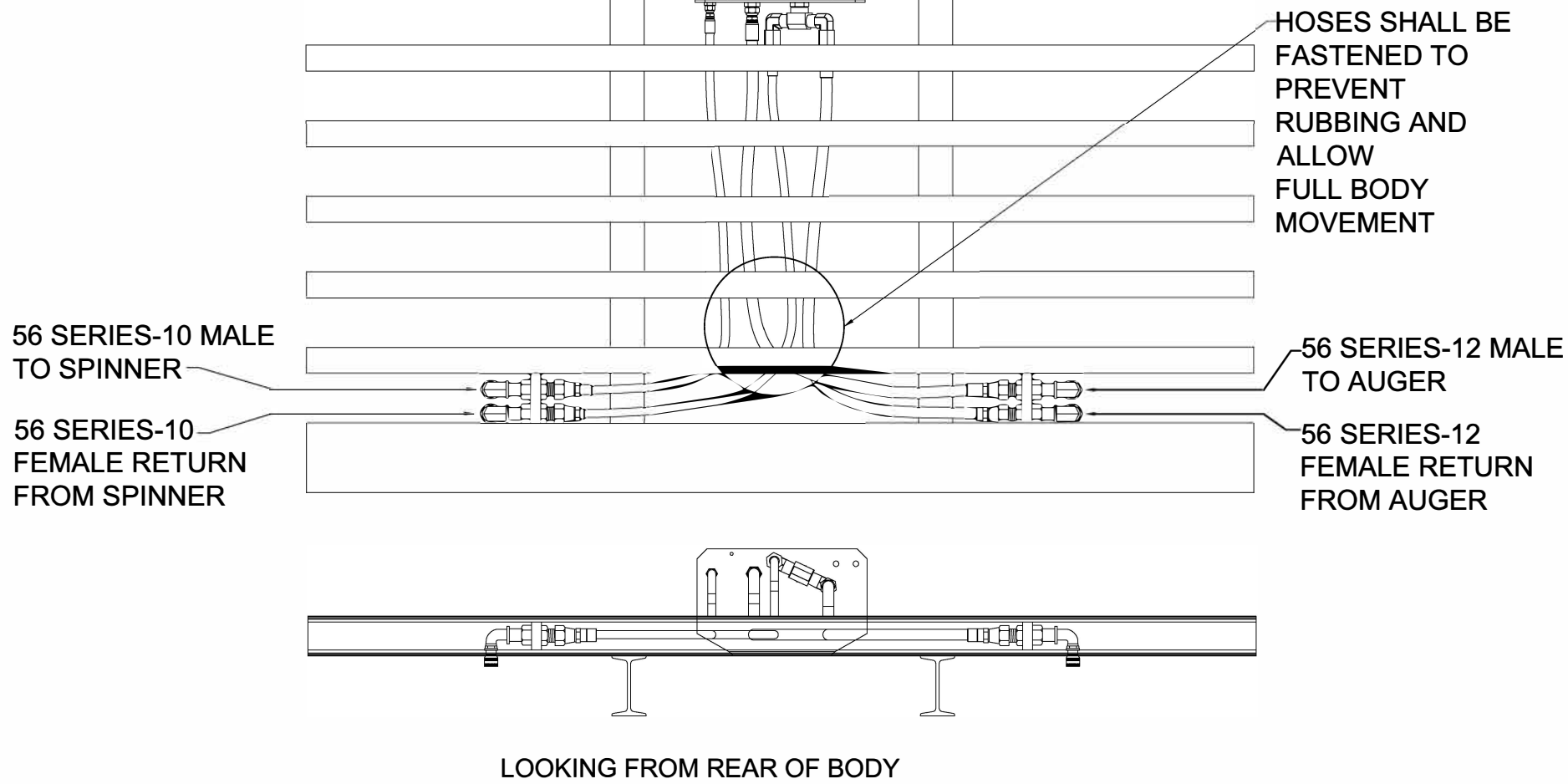
PA DEPARTMENT OF TRANSPORTATION

REVISIONS

NO.	DATE	BY	DESCRIPTION
1	12-20-16	JJB	
2	07-13-17	HMR	
3	08-02-18	KBD	

Wing Plow Couplers

DATE	11-03-78	CHK'D BY	N/A	Scale	N/A	EQUIN-94
DRAWN BY	RED	Combined With	EQM-23			SHEET 2 OF 5



5600 SERIES STAINLESS STEEL, 1 EACH (MALE & FEMALE) ON EACH SIDE, QUICK COUPLERS MUST BE USED FOR SPINNER & AUGER CONNECTIONS

4,000 PSI HOSES WITH JIC HOSE ENDS SHALL BE USED.

ONLY APPROVED STAINLES STEEL HYDRAULIC FITTINGS SHALL BE USED.

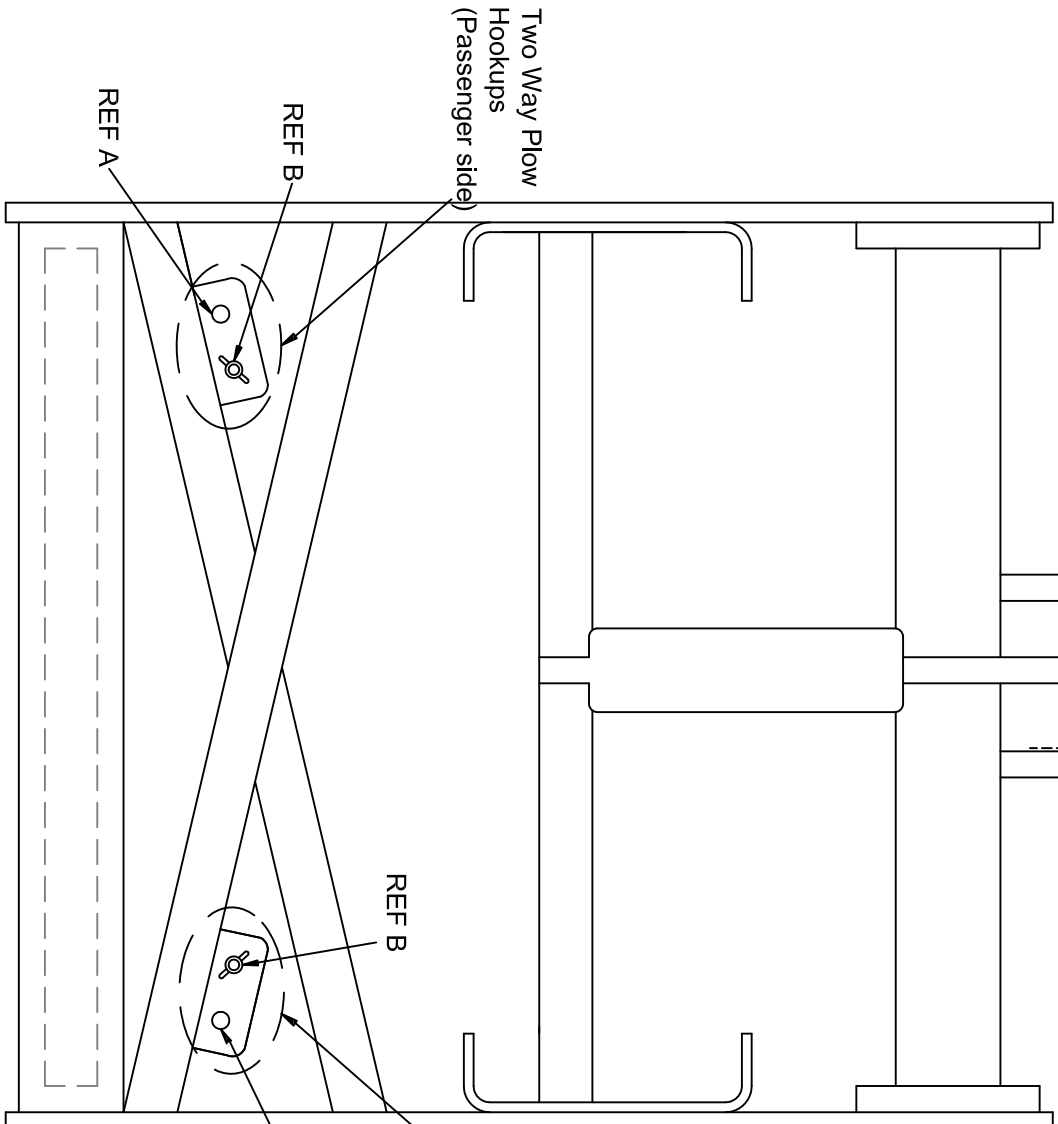
COUPLERS SHALL HAVE DUST PLUGS AFFIXED WITH CHAINS TO PREVENT LOSS OF CAPS.

PA DEPARTMENT OF TRANSPORTATION				
REVISIONS			Rear Hose Manifold	
NO.	DATE	BY		
1	8/1/13	JFM		
2	07-13-17	HMR	DRAWN BY JDS	Combined With EQN-23
3	08-02-18	KBD	DATE 6/15/12	Scale N/A
			EQN-94	
			SHEET 3 OF 5	

Two (2) Plow Hitch Couplers: LOCATED ON DRIVER SIDE OF HITCH ASSEMBLY RIGHT COUPLER BEING 5100-S2-8B AERROQUIP MALE ATTACHING TO FEMALE COUPLER ON PLOW RAM AND LEFT COUPLER BEING 5100-S1-8B AERROQUIP FEMALE ATTACHING TO MALE COUPLER ON PLOW RAM.

Two (2) Two Way Plow Couplers: LOCATED ON PASSENGER SIDE OF HITCH ASSEMBLY LEFT COUPLER BEING 5100-S2-8B AERROQUIP MALE ATTACHING TO FEMALE COUPLER ON TWO WAY PLOW AND RIGHT COUPLER BEING 5100-S1-8B AERROQUIP FEMALE ATTACHING TO MALE COUPLER ON TWO WAY PLOW.

FRONT VIEW



HYDRAULIC HOSES SHOULD'NT INTERFEAR WITH ANYTHING WHILE TWO WAY PLOW AND PLOW HITCH IS IN MOTION AND AT REST TO PREVENT DAMAGE TO HOSES.

NOTES:

- A. 5100-S2-8B MALE
- B. 5100-S1-8B FEMALE

Plow Ram Hooks (Driver Side)

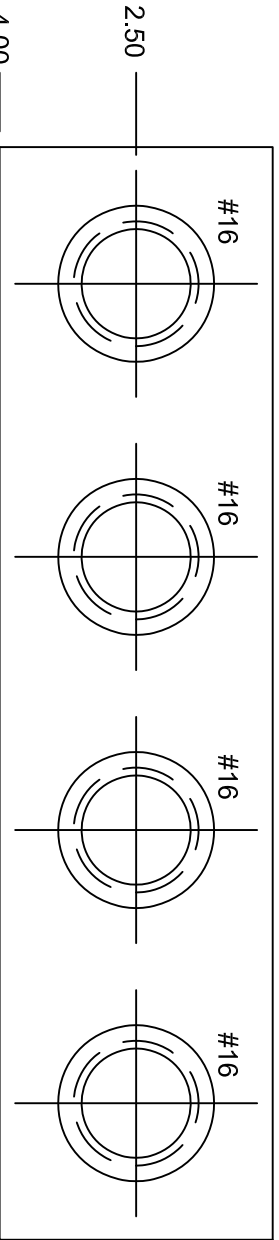
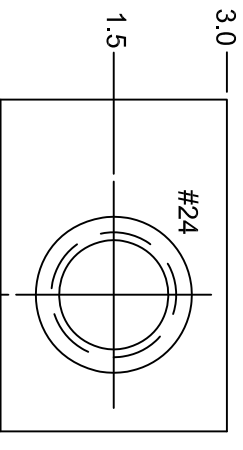
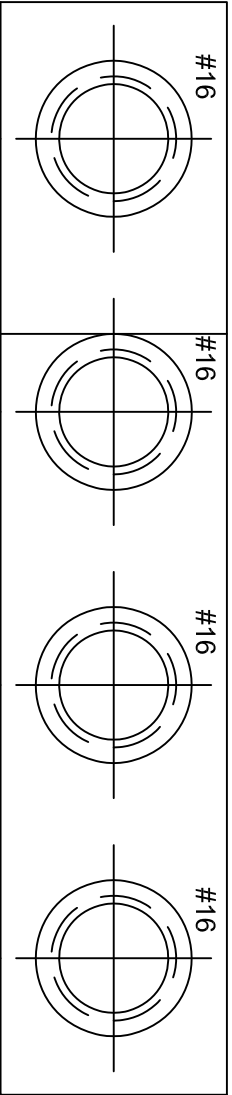
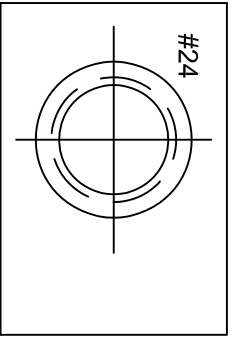
Two Way Plow Hooks (Passenger side)

PA DEPARTMENT OF TRANSPORTATION

REVISIONS

NO.	DATE	BY	DESCRIPTION
1	04-27-15	GAW	Ram Plow & Two Way Plow Couplers
2	12-19-16	JJB	
3	08-02-18	KBD	

DRAWN BY	SWW	CONTINUED WITH	EQN-94
CHECKED BY	N/A	SCALE	
DATE	09-25-95		SHEET 4 OF 5



PA DEPARTMENT OF TRANSPORTATION

REVISIONS

2 Hydraulics Components Overview

Header Block

NO.	DATE	BY	DRAWN BY	DATE	CHECKED BY	SCALE	SHEET
1	08-03-01	DWG	GAH	03-01-00	N/A	N/A	5 OF 5
2	11-02-06	CJW	GAH	03-01-00	N/A	N/A	5 OF 5
3	08-02-18	KBD	GAH	03-01-00	N/A	N/A	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 MANUFACTURE OF 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 BUMPERS OR 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 REAR OF THE VEHICLE; (E) AND THE BUMPER OR DEVICES SHALL BE SUBSTANTIALLY CONSTRUCTED AND FIRMLY ATTACHED. 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.

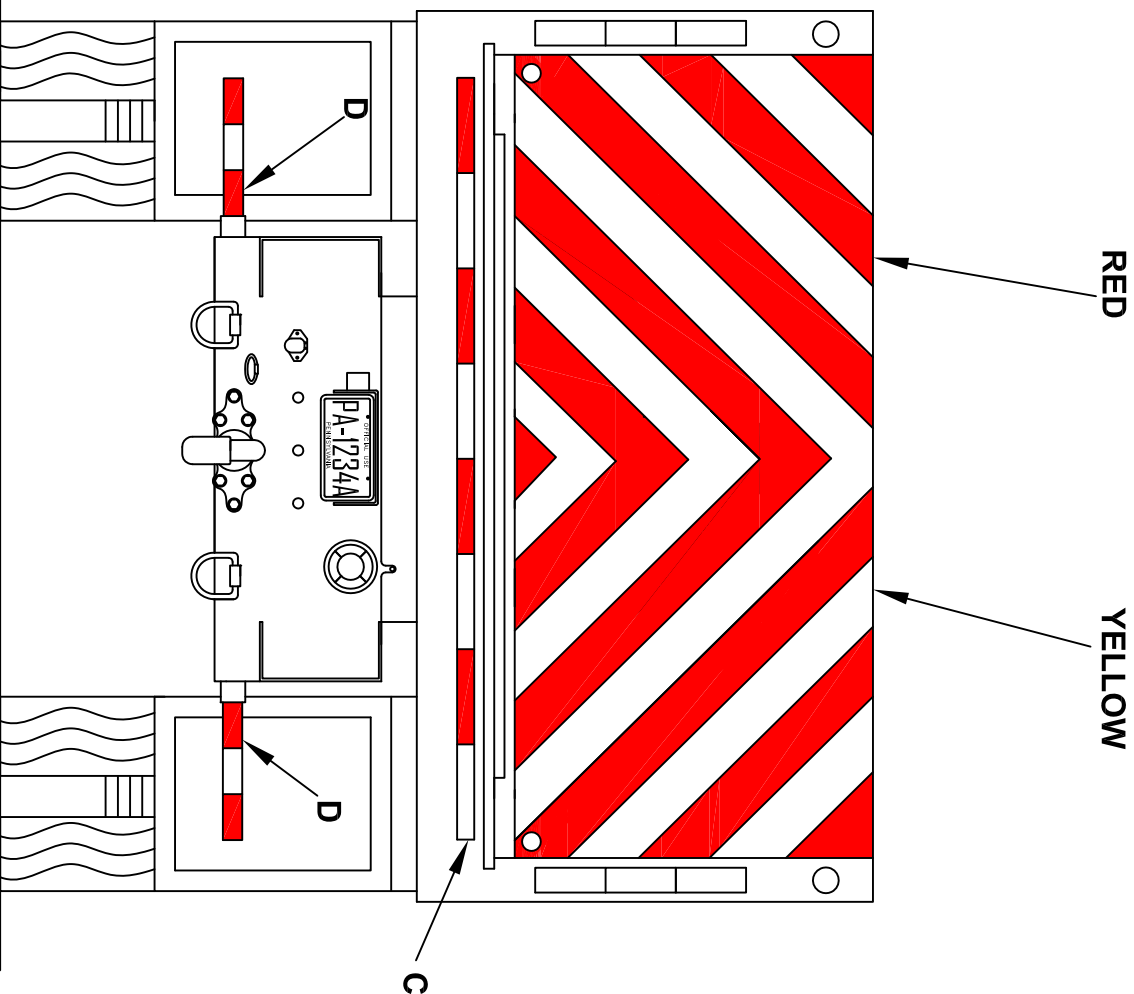
**COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION**

REVISIONS

UNDERRIDE PROTECTION

NO	DATE	BY	SCALE	SHEET
1	07/08/97	DLW	N/A	EQN -118
2	07/01/03	KGK	RR	SHEET 1 OF 1
3	06/26/09	TOD	RR	SHEET 1 OF 1

**ANY / ALL REVISIONS SHALL
SUPERSEDE THE ABOVE**



A THE ALUMINUM TAILGATE SHALL BE UNPAINTED. THE TAILGATE SHALL BE STRIPED AS SHOWN WITH 8" WIDE ALTERNATING RED/YELLOW BANDS CREATING A CHEVRON (INVERTED V) AT 45 DEGREE ANGLES, ACROSS THE GATE TO SERVE AS A SAFETY WARNING SYSTEM.

B TAPE SHALL BE REFLEXITE DAYBRIGHT V92 CONSPICUITY SHEETING. RED - SRH14R PN# 18716, LIME - SRH14Y PN# 18836 VC 312. TWO 4" SHEETS CAN BE COMBINED TO EQUAL THE 8" REQUIREMENT.

C THE ENTIRE WIDTH DIRECTLY UNDER THE TAILGATE SHALL BE COVERED WITH 1 1/2" WIDE SCOTCHLITE CONSPICUITY SHEETING SERIES 980 OR REFLEXITE CONSPICUITY II SYSTEM. MATERIAL SHALL BE RED/SILVER, CONTINUOUS BACKING.

D THE ENTIRE LENGTH OF BOTH ICC BARS SHALL BE COVERED WITH 1 1/2" WIDE SCOTCHLITE CONSPICUITY SHEETING SERIES 980 OR REFLEXITE CONSPICUITY II SYSTEM. MATERIAL SHALL BE RED/SILVER, CONTINUOUS BACKING.

THIS DRAWING SHALL BE FOR CONSPICUITY REFERENCE ONLY, NOT TAILGATE CONSTRUCTION.

THIS VEHICLE SHALL COMPLY WITH THE RULES OF THE NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION (NHTSA). THE MOST CURRENT REGULATIONS SHALL BE ADHERED TO.

PA DEPARTMENT OF TRANSPORTATION

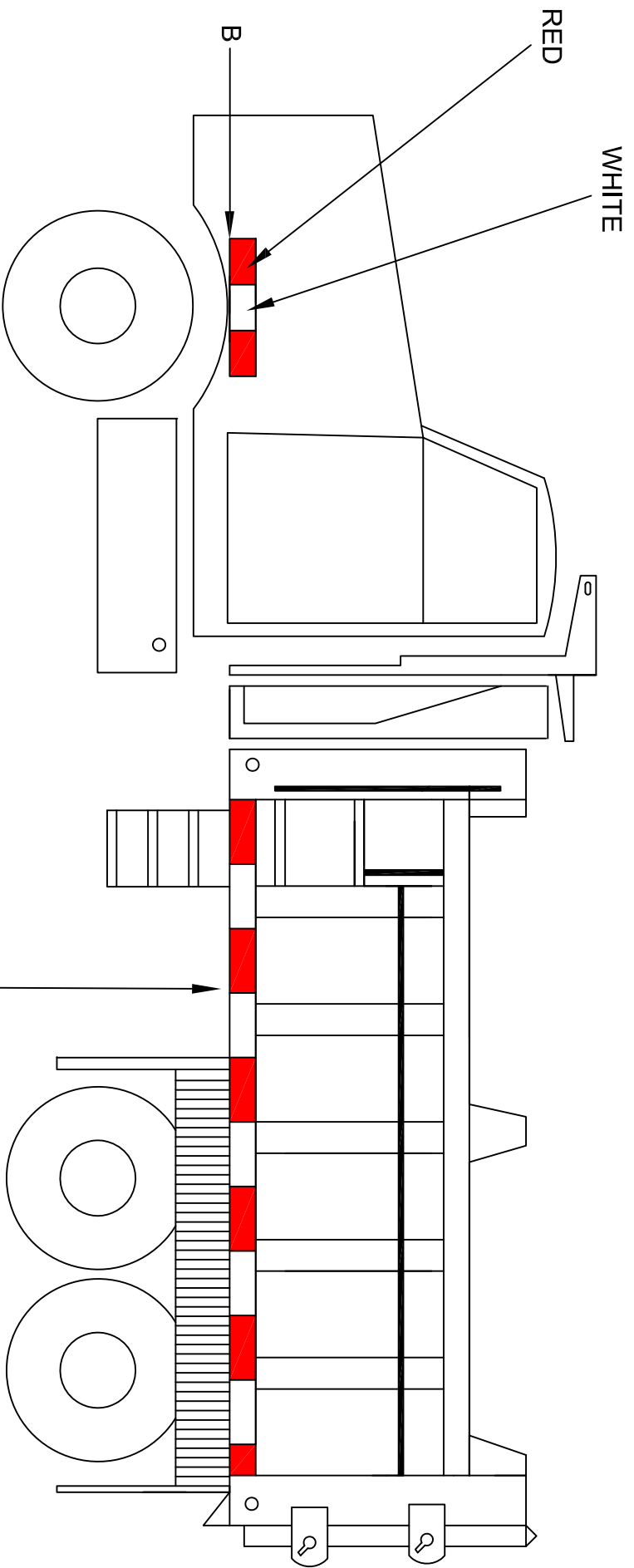
REVISIONS

NO.	DATE	BY	REASON
1	05-20-13	JFM	REFLECTIVE SHEETING
2	06-30-14	ACT	REFLECTIVE SHEETING
3	07-24-18	KBD	REFLECTIVE SHEETING

DUMP BODY

REFLECTIVE SHEETING

NO.	DATE	BY	REASON
1	05-20-13	JFM	REFLECTIVE SHEETING
2	06-30-14	ACT	REFLECTIVE SHEETING
3	07-24-18	KBD	REFLECTIVE SHEETING



A THE ENTIRE LENGTH OF BODY RUB RAILS SHALL BE COVERED WITH 2" WIDE SCOTCHLITE CONSPICUITY SHEETING SERIES 980 OR REFLEXITE CONSPICUITY II SYSTEM MATERIAL SHALL BE RED/SILVER, CONTINUOUS BACKING.

B THE AREA ABOVE FRONT TIRES SHALL BE COVERED WITH MINIMUM 18 INCHES, 2" WIDE SCOTCHLITE CONSPICUITY SHEETING SERIES 980 OR REFLEXITE CONSPICUITY II SYSTEM MATERIAL SHALL BE RED/SILVER, CONTINUOUS BACKING. ITEM B NEEDS TO BE AS CLOSE AS POSSIBLE IN A STRAIGHT LINE WITH ITEM A. ALTERNATE PLACEMENT OF ITEM B NEEDS TO BE APPROVED BY THE CHIEF OF THE EQUIPMENT DIVISION

THE CHIEF OF THE EQUIPMENT DIVISION SHALL APPROVE ALL STRIPING AND MONITOR THE PRODUCTION BY THE SUCCESSFUL VENDOR. ALL DIMENSIONS IN INCHES.

PA DEPARTMENT OF TRANSPORTATION

REVISIONS			DRAWN BY		DATE	
NO.	DATE	BY	TOD		07-14-09	
1	05-20-13	JFM	Combined With		Scale	
2	06-30-14	ACT	EQU-122		SHEET 2 OF 3	
3	07-24-18	KBD				

DUMP BODY REFLECTIVE SHEETING

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

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

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

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

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

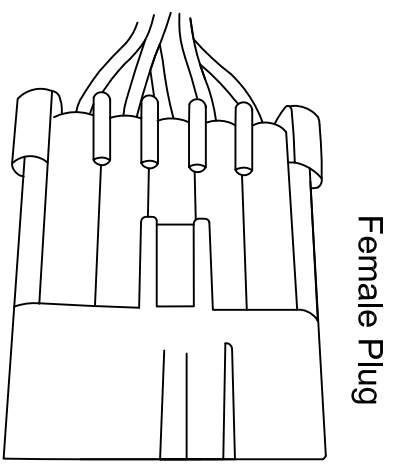
THE MOST CURRENT REGULATIONS SHALL BE ADHERED TO.

PA DEPARTMENT OF TRANSPORTATION			
REVISIONS		CONSPICUITY TAPE STRIPING REQUIREMENTS	
NO.	DATE	BY	
1	11-03-06	CJW	
2	01-02-09	MHH	DRAWN BY DLW
3	07-24-18	KBD	Checked With Scale
			DATE 11-07-97
			EQN-122
			SHEET 3 OF 3

NOTE : THIS LIGHT DESIGN IS ONE OF TWO LIGHT DESIGN THAT ARE ACCEPTABLE

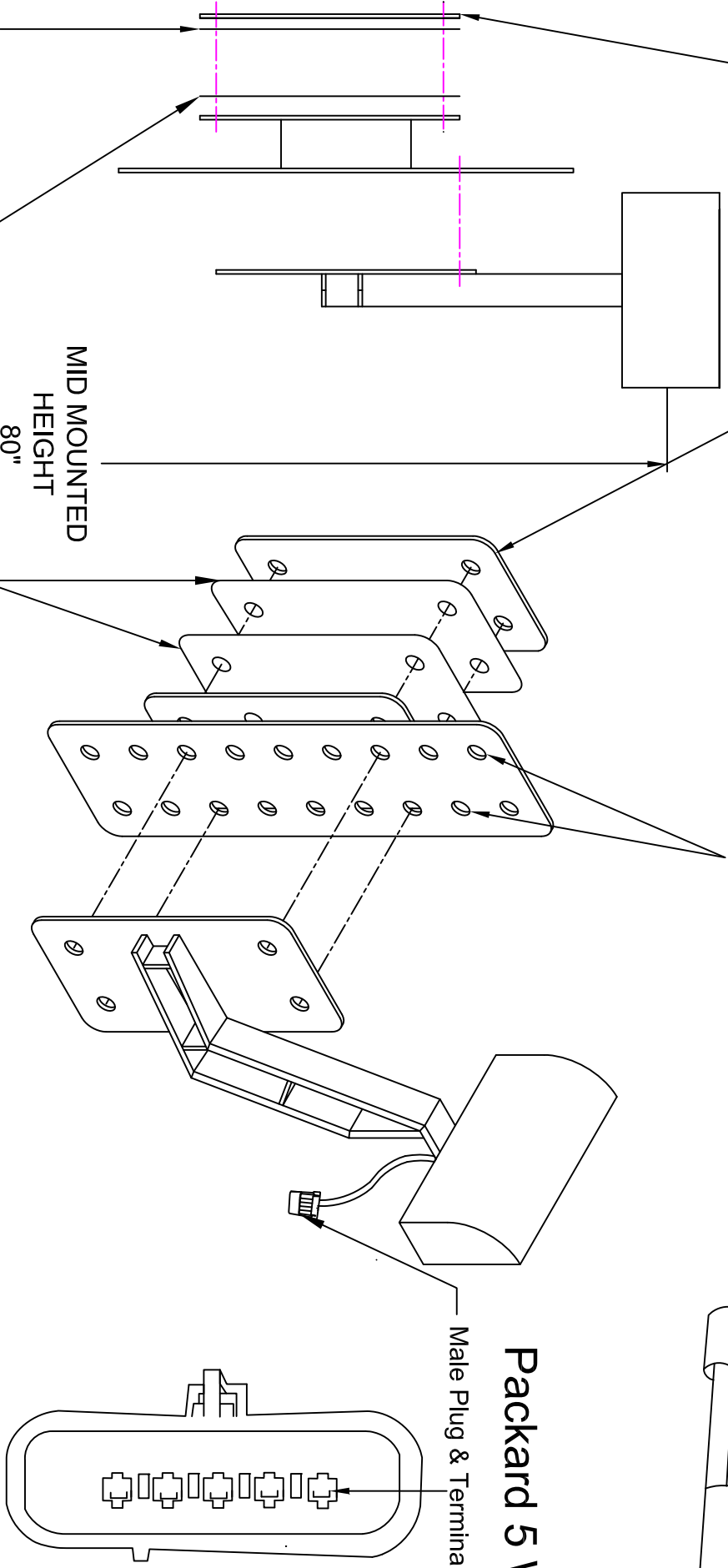
PLATE MOUNTED FAST TO TRUCK

ADDITIONAL HOLES TO ALLOW 6" OF VERTICAL HEIGHT ADJUSTMENT (3" UP AND 3" DOWN FROM ORIGINAL HEIGHT)



Packard 5 Way

Male Plug & Terminals



GROUND LEVEL

PA DEPARTMENT OF TRANSPORTATION

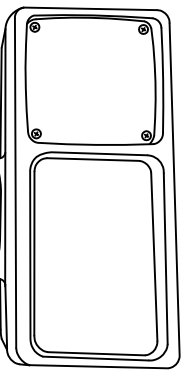
REVISIONS

HEADLIGHT ADJUSTMENT BRACKET

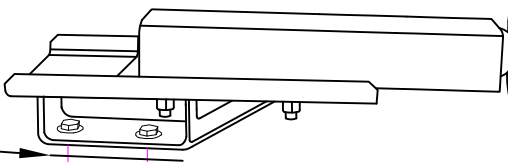
NO.	DATE	BY	DRAWN BY	DATE	CHG BY	TERMIN	COMBINED WITH	EQN-180
1	07-26-18	KBD	JJB	07-19-16	N/A	N/A		
2								
3								

NOTE : THIS LIGHT DESIGN IS ONE OF TWO LIGHT DESIGN THAT ARE ACCEPTABLE

Packard 5 Way



Light Front View

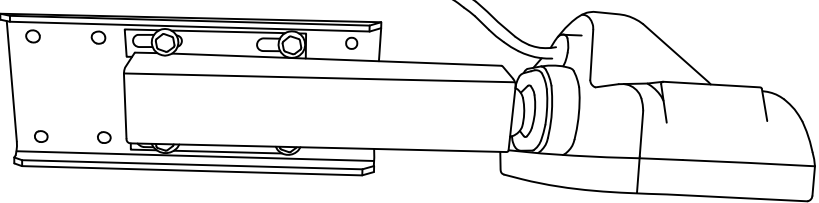
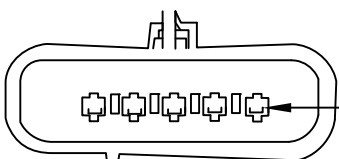
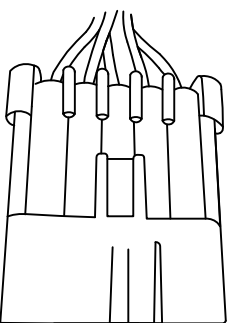


Protective Liner

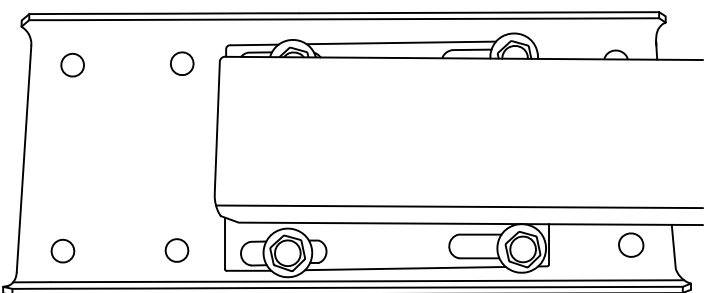


Light Bracket

Female Plug



Light Side View



PA DEPARTMENT OF TRANSPORTATION

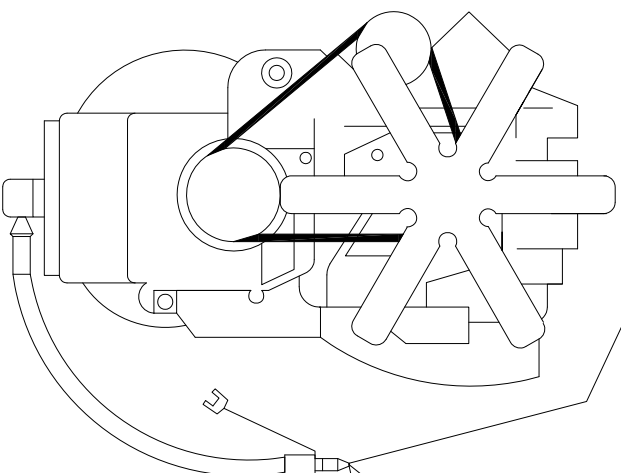
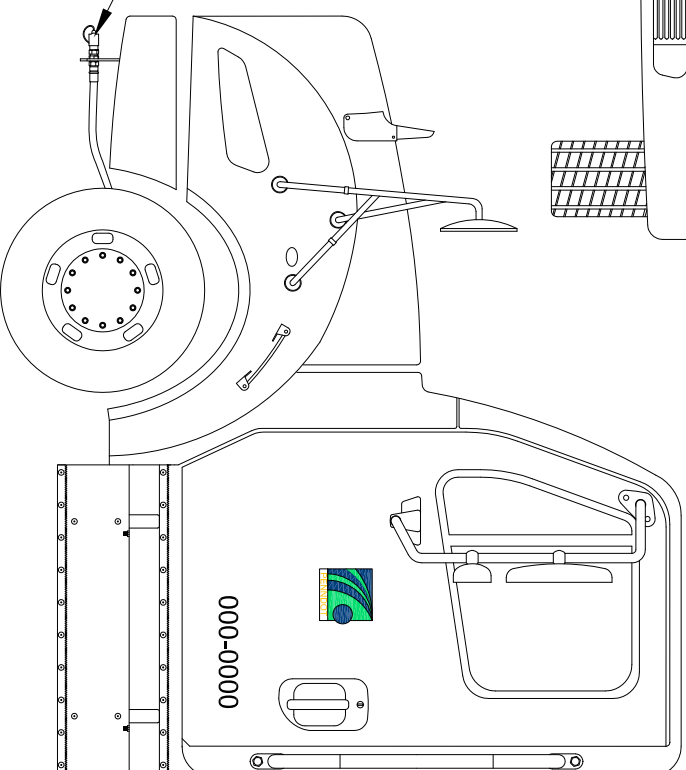
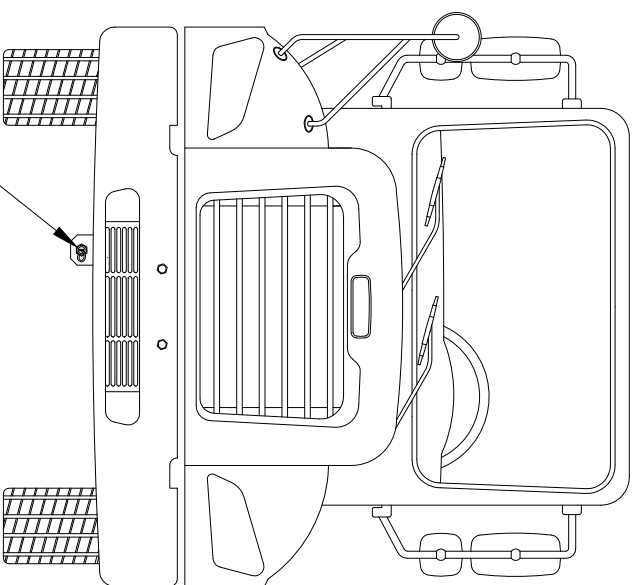
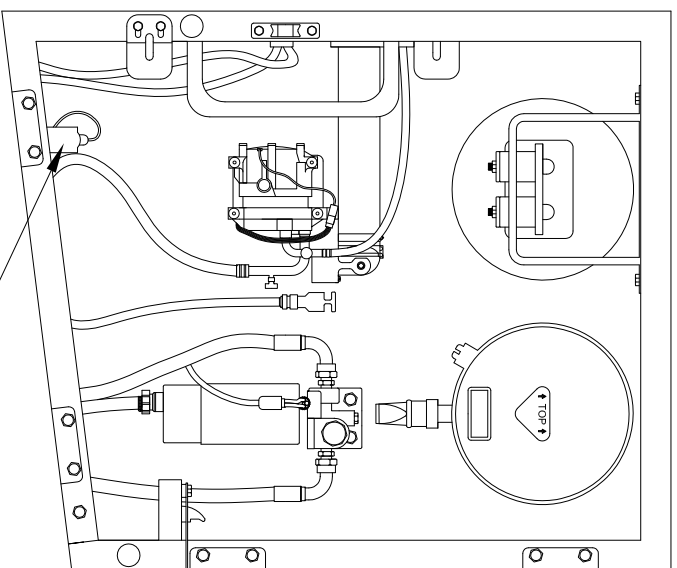
REVISIONS

NO. DATE BY

Plow Truck Light & Bracket

NO.	DATE	BY	DRAWN BY	CHECKED BY	SCALE	SHEET NO.	TOTAL SHEETS
1			KBD			EQN-180	
2							
3							

DATE 07-26-18
 N/A
 N/A
 Sheet 2 OF 2



DISCONNECT
COUPLING
FLOCS
ENGINE KIT

PA DEPARTMENT OF TRANSPORTATION

REVISIONS

NO.	DATE	BY	SCALE
1	07-01-03	BLD	N/A
2	10-20-06	CJW	N/A
3	06-19-13	JFM	N/A

**FAST LUBE OIL CHANGE SYSTEM
OVERVIEW AND PARTS LIST**

NO.	DATE	BY	SCALE
1	07-01-03	BLD	N/A
2	10-20-06	CJW	N/A
3	06-19-13	JFM	N/A

000-0000



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

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

FLOCS SHALL INCLUDE, BUT NOT LIMITED TO:

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

PA DEPARTMENT OF TRANSPORTATION

REVISIONS		FAST LUBE OIL CHANGE SYSTEM OVERVIEW AND PARTS LIST	
NO	DATE	BY	
1	07-01-03	BLD	
2	10-20-06	CJW	
3	06-19-13	JFM	

DRAWN BY	DLW	SCALE	N/A	EQN-351A
DATE	08-22-97	CHECKED BY	WHM	SHEET 2 OF 2

Centralized Lubrication System On Road Equipment EQN - 501

There shall be an automatic centralized lubrication system professionally installed to maintain all the daily, weekly, and monthly lubrication points. Only electrically controlled, #2 chassis grease systems shall be accepted. The use of pneumatic systems is unacceptable. The requirements for the lubrication system components and installation procedures are outlined below. It is the responsibility of the vendor to ensure that the automatic lubrication system complies with all of these requirements.

1. Performance Requirements

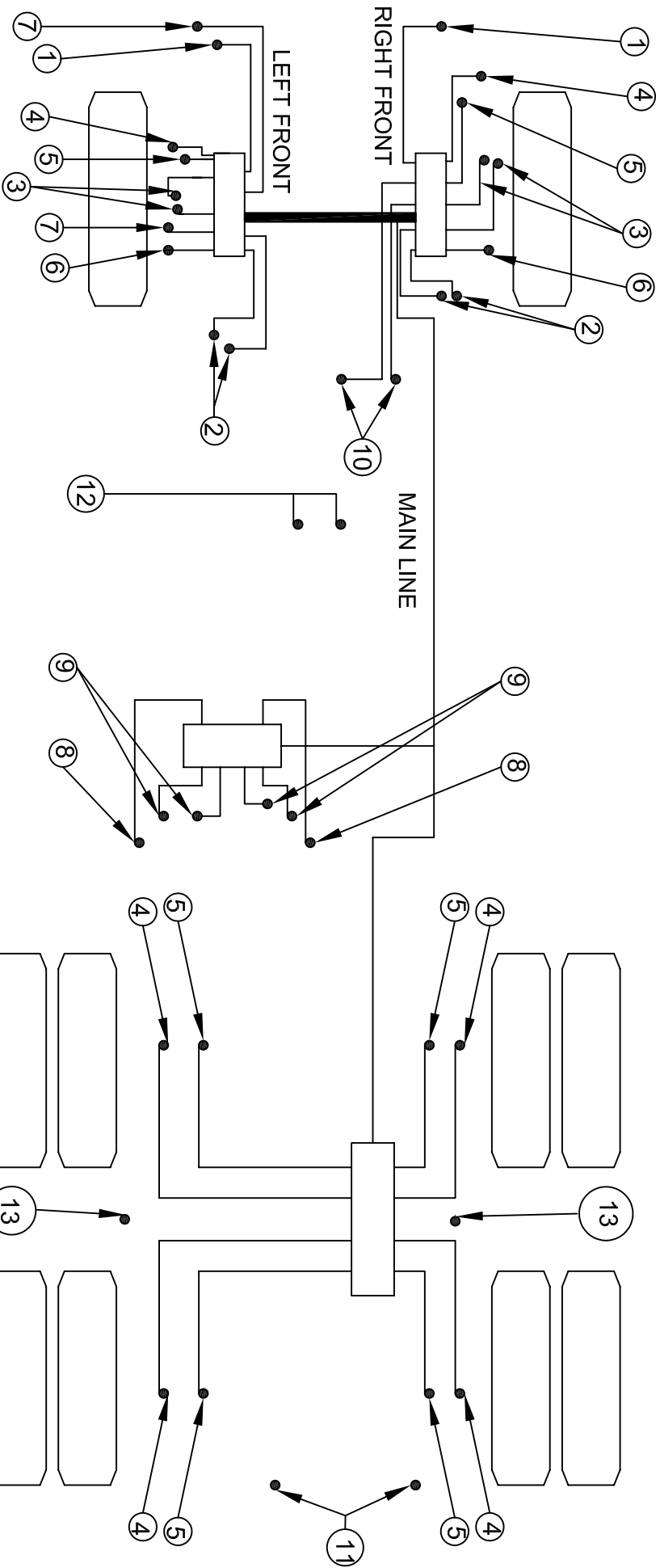
- The system pump shall be capable of delivering NLGI #2 grease over a temperature range of minus 10 degrees Fahrenheit to 120 degrees Fahrenheit.
- The pump shall have an integral adjustable timer to change the grease delivery intervals as needed.
- The system shall use a fused electric pump, either 12 Volt DC or 24 Volt DC depending on application. Pneumatic pumps are not acceptable.
- The pump shall be equipped with a pressure relief valve device at the pump outlet to protect the pump from damage due to over pressure.
- For ease of service, the pump shall have a pumping element located on the side that can be removed and replaced or repaired as needed without having to remove or disassemble the pump.
- The pump shall use a clear or translucent reservoir to allow for visual inspection of the grease level. Reservoir shall have a full level indicator. Bladder type reservoirs are not acceptable.
- The grease reservoir shall be a minimum four pound capacity.
- The system shall have a cab mounted fault light that will notify the operator of a lube system fault and low grease level. If any point in the system will not take grease, the fault light shall illuminate.
- The system shall be a positive displacement series progressive type, using primary and secondary valves.
- All secondary valves shall be non-segmented to minimize the potential leak path and or sources of contamination.
- All valves shall be made of corrosion resistant coated carbon steel.
- The positive displacement proportioning valves shall have a tee and high back pressure grease fittings at each valve inlet for manual filling, system testing, and to fill repaired lines.
- The system shall have a manual override fitting to enable the system to be manually operated if the pump is inoperable.
- Equipment shall have a 2 year manufacturer's warranty.

2. Installation Requirements - On Road

- The system shall use only high pressure hose (4,000 psig operating, 10,000 psig burst). All hoses are to be of US standard sizes (1/8" ID hose 5/16 OD) and readily available from local sources.
- All hoses shall use a two piece re-usable hose end with quick disconnects at the valve outlet for ease of inspection and repair.
- All lines from the secondary valves to the chassis or body inlet points shall be flexible with at least a 500 PSI working pressure. All tubing shall be standard size (1/4 inch OD) and readily available from local sources.
- All line runs will be secured to the chassis or air lines via tie wraps. Protective wrap shall be used for all lines run over any edge of the chassis and especially at the termination points for front suspension including upper & lower king pins, tie rod ends and any exposed lines that are not fixed. The use of steel tubing is prohibited.
- The pump shall be installed in a safe location on the truck chassis that is protected and easy to monitor the grease level and refill. For exact mounting location, contact PennDOT Equipment Division, Specification Unit - 717.787.2123
- Ground Level filling shall be provided for all lube systems. Remote lines are acceptable if reservoir is viewable from remote fill location.
- Installations shall be warranted for 2 years of operation.

PA DEPARTMENT OF TRANSPORTATION				
REVISIONS			CENTRALIZED LUBE SYSTEM	
NO.	DATE	BY		
1			<small>SCALE</small> N/A	EQN-501
2			<small>DRAWN BY</small> TOD	
3			<small>DATE</small> 6-9-09	<small>CHK'D BY</small> SHEET 1 OF 2

MINIMUM TYPICAL LUBE POINTS TANDEM AXLE



MINIMUM TYPICAL
VEHICLE LUBE POINTS.

*ALL LUBRICATION
POINTS SHALL BE
INCORPORATED INTO
THE ON-BOARD GREASE
SYSTEM, INCLUDING ALL
CHASSIS AND BODY
POINTS, EXCEPT
LOCATIONS RESTRICTED
BY ROTATING DESIGN; IE:
DRIVESHAFT & PTO

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 (IF APPLICABLE)
9. FIFTH WHEEL PLATE (IF APPLICABLE)
10. CLUTCH CROSS SHAFT
11. REAR DUMP BED HINGE (1 EACH SIDE)
12. TOP AND BOTTOM OF HOIST CYL.

13. DEPENDING ON APPLICATION, ALL REAR SUSPENSION,
TRUIONS, LEAF SPRINGS

PA DEPARTMENT OF TRANSPORTATION

REVISIONS		CENTRALIZED LUBE SYSTEM GENERIC ARRANGEMENT	
NO.	DATE	BY	
1	12-15-00	GAH	
2	01-02-07	CJW	
3	06-09-09	TOD	
4			
5			

DRAWN BY		SCALE	
DATE	BY		
8-31-99	GAH	N/A	EQN-501
	LHA		SHEET 2 OF 2

ITEM NUMBER	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.	SPREADER					
7.	PLOW FRAME					
8.	SNOW PLOW					*
9.	FRONT PTO, ADAPTER & PUMP					
10.	PAYLOAD					
11.	HYDRAULIC OIL & TANK					
12.	PATROL STYLE WING PLOW					
13.	FRONT WING POST (PATROL)					
14.	REAR WING POST (PATROL)					
15.	PREWET TANK ___ GALLON					

NOTES:

- (1) THE INFO. SHALL BE SUBMITTED IN ITS ENTIRETY & 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.

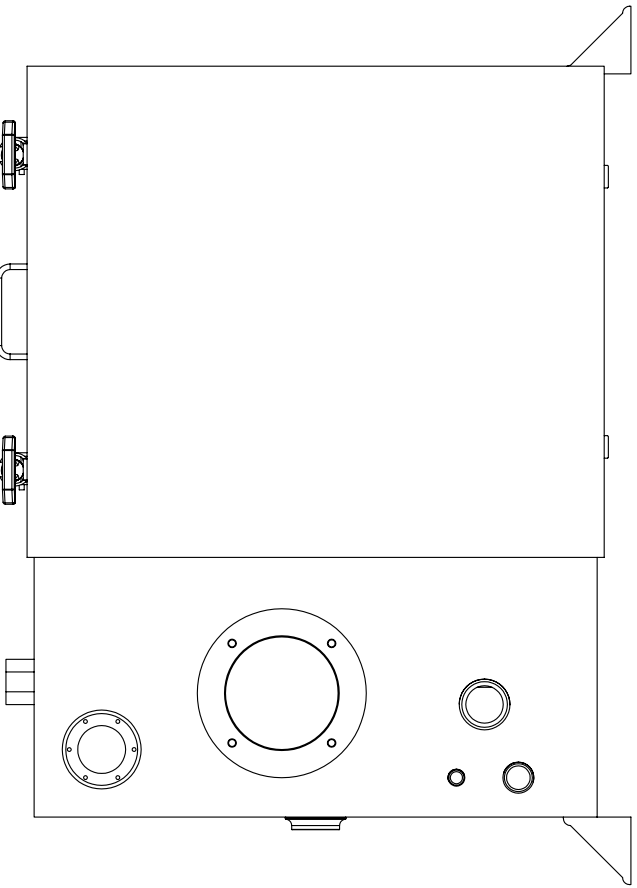
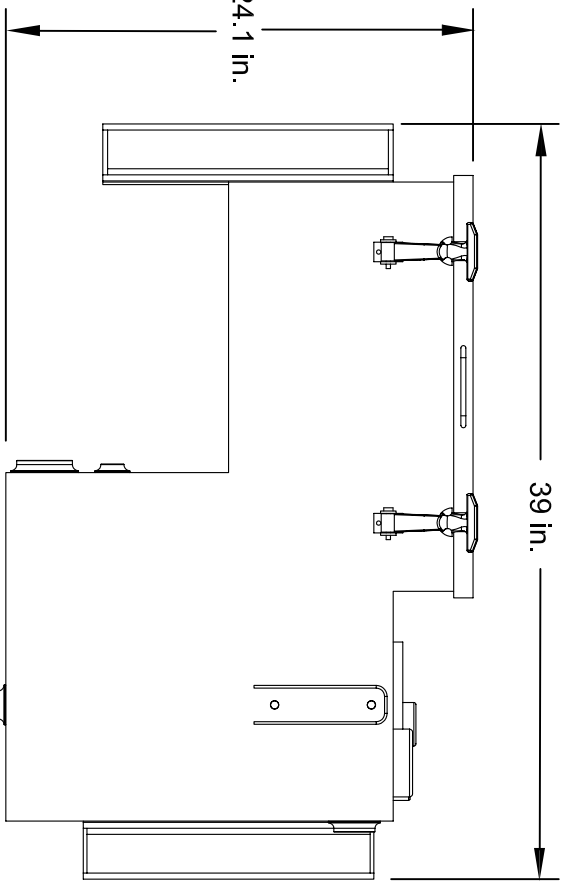
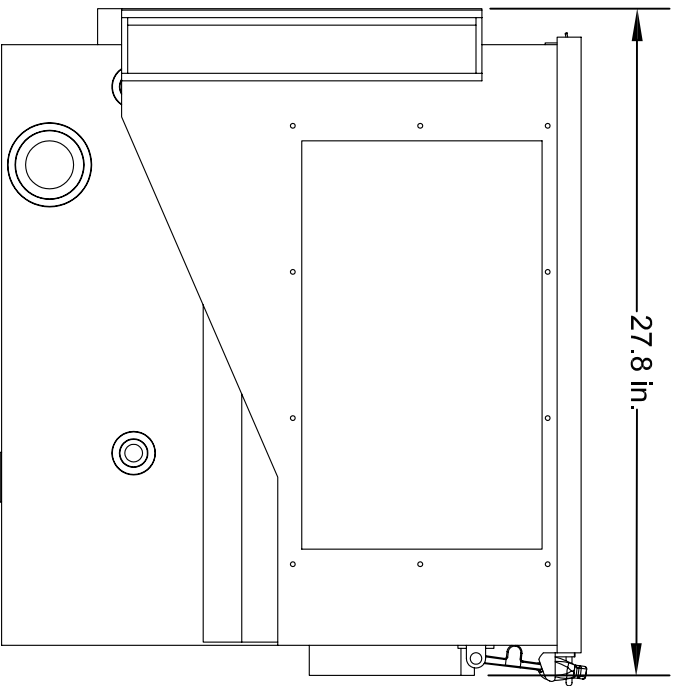
PA DEPARTMENT OF TRANSPORTATION

REVISIONS

NO.	DATE	BY	MINIMUM TRUCK WEIGHT DISTRIBUTION	MINIMUM DATA REQUIRED
1	05-16-07	KNH		
2	07-20-09	TOD		
3	07-24-18	KBD		

DUMP TRUCK WEIGHT DISTRIBUTION

DATE	DRAWN BY	SCALE	CHKD BY
07-14-97	DLW	N/A	WHM



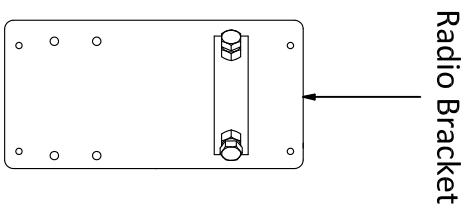
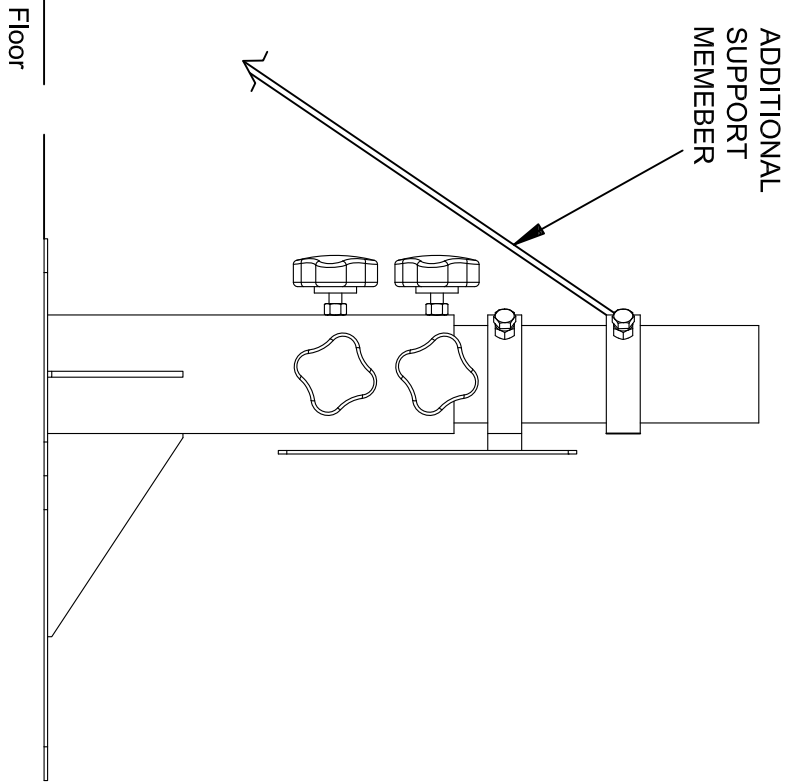
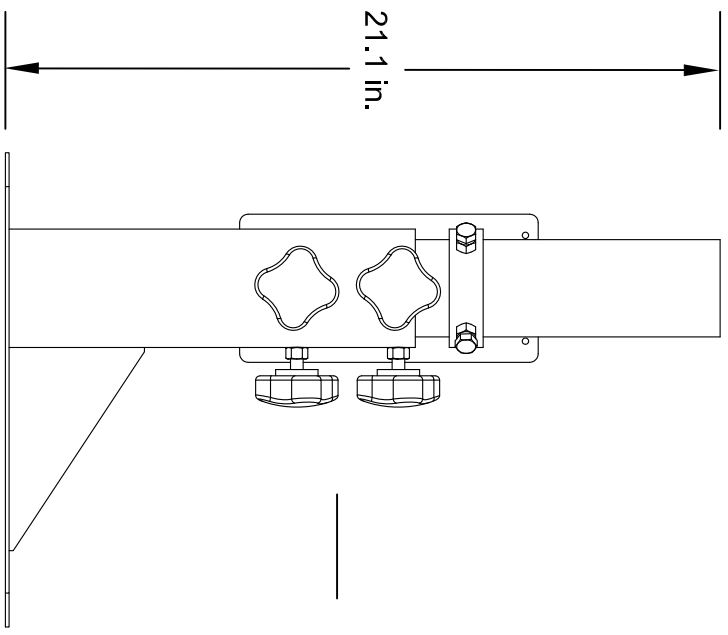
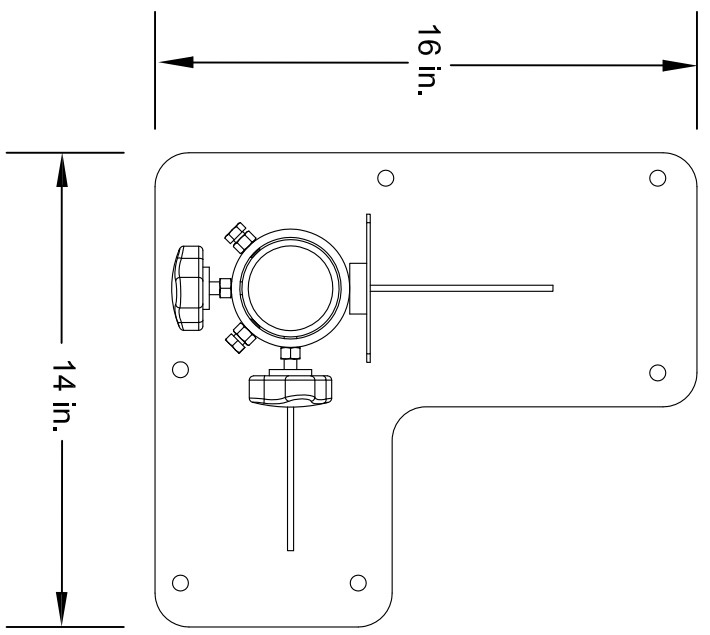
PA DEPARTMENT OF TRANSPORTATION

REVISIONS			DRAWN BY		
NO.	DATE	BY	ENCLOSURE / TANK COMBO		
1			ENCLOSURE / TANK COMBO		
2			ENCLOSURE / TANK COMBO		
3			ENCLOSURE / TANK COMBO		

DRAWN BY		SCALE		EQU-508	
TOD		N/A		EQU-508	
DATE 11-03-09		CHKD BY DMA		SHEET 1 OF 1	

NOTE: SPREADER CONTROL BASE SHALL BE PROPERLY BRACED TO ELIMINATE FLOOR FLEX. ADDITIONAL SUPPORT BRACKET SHALL BE VENDORS RESPONSIBILITY.

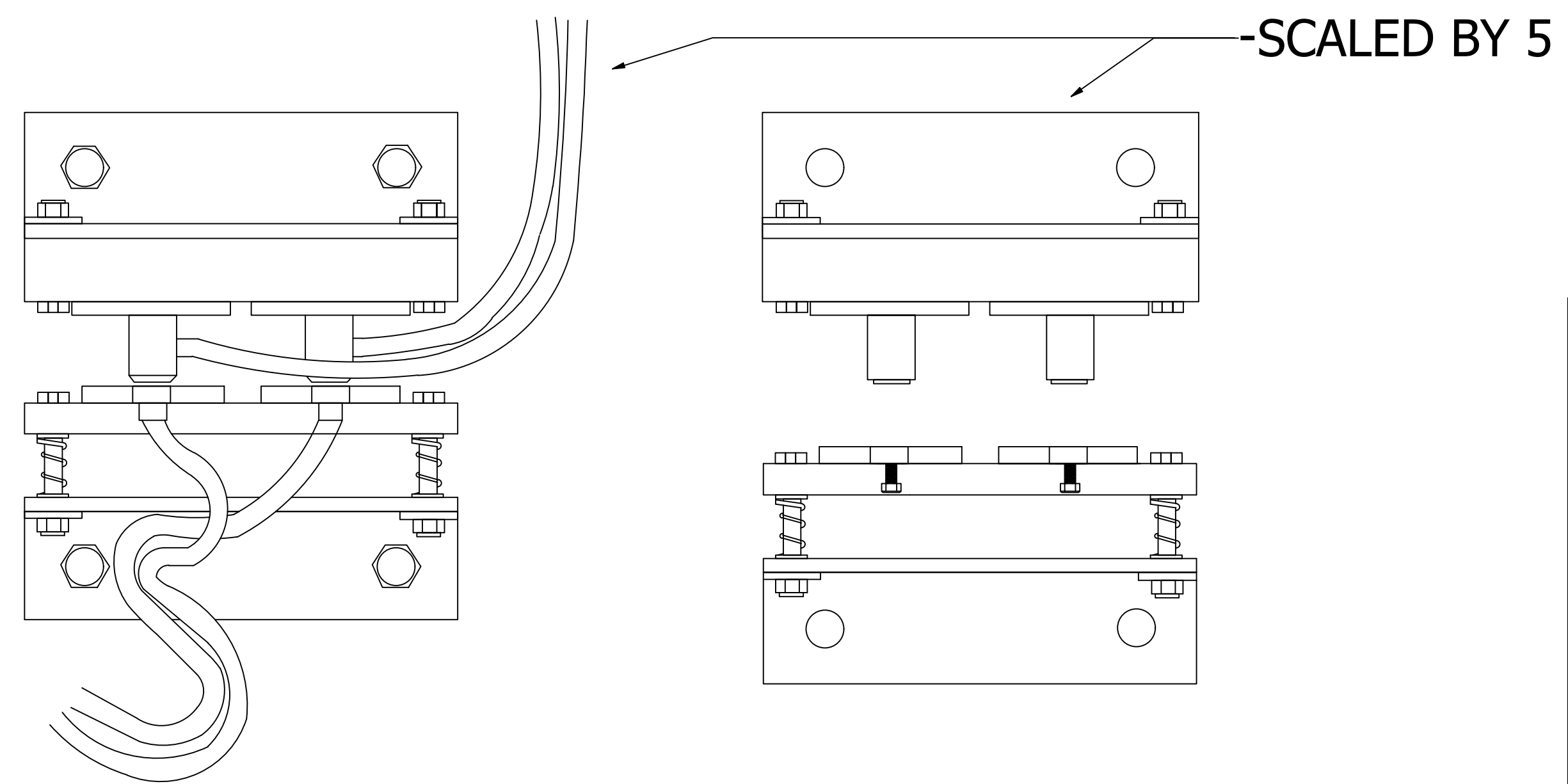
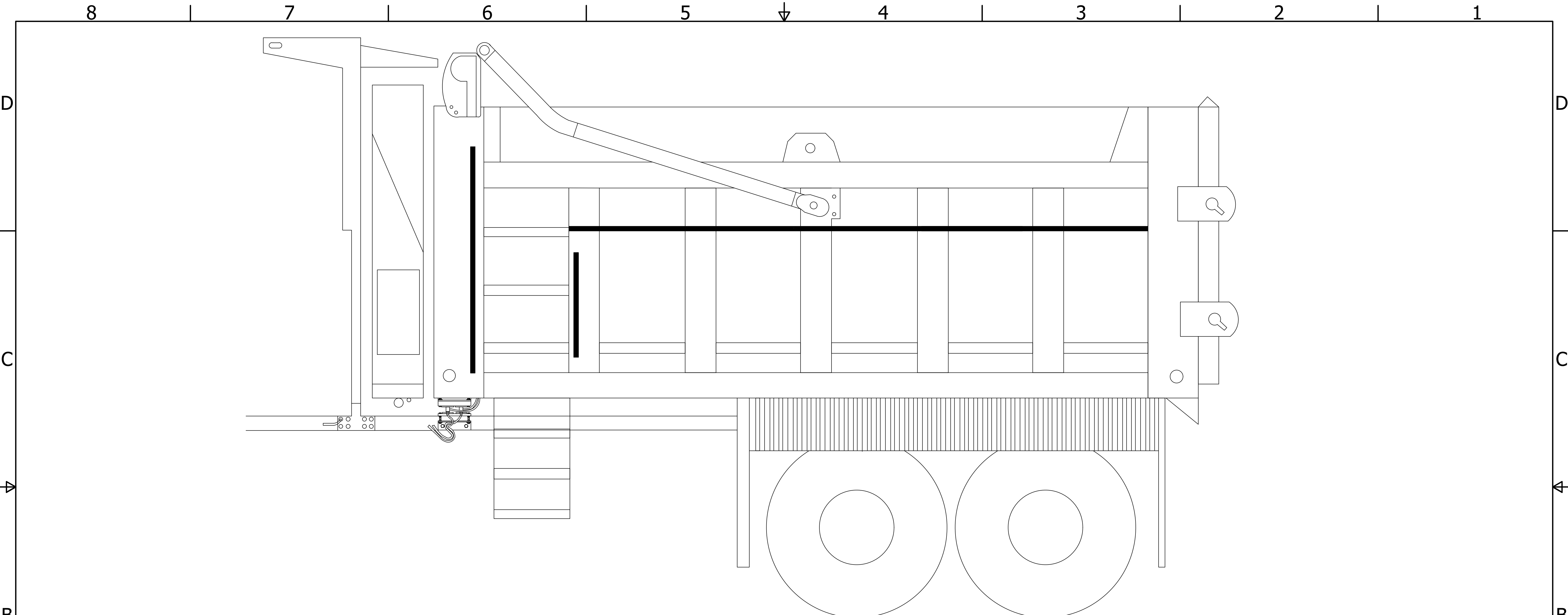
ADDITIONAL SUPPORT BRACKETS SHALL BE USED TO ELIMINATE CONSOLE VIBRATION. SPREADER CONTROL BASE SHALL BE PROPERLY POSITIONED TO ELIMINATE FLOOR FLEX. CAB FLOOR SHALL BE REINFORCED TO ELIMINATE FLEX. ADDITIONAL SUPPORT BRACKETS AND REINFORCEMENTS SHALL BE VENDORS RESPONSIBILITY.



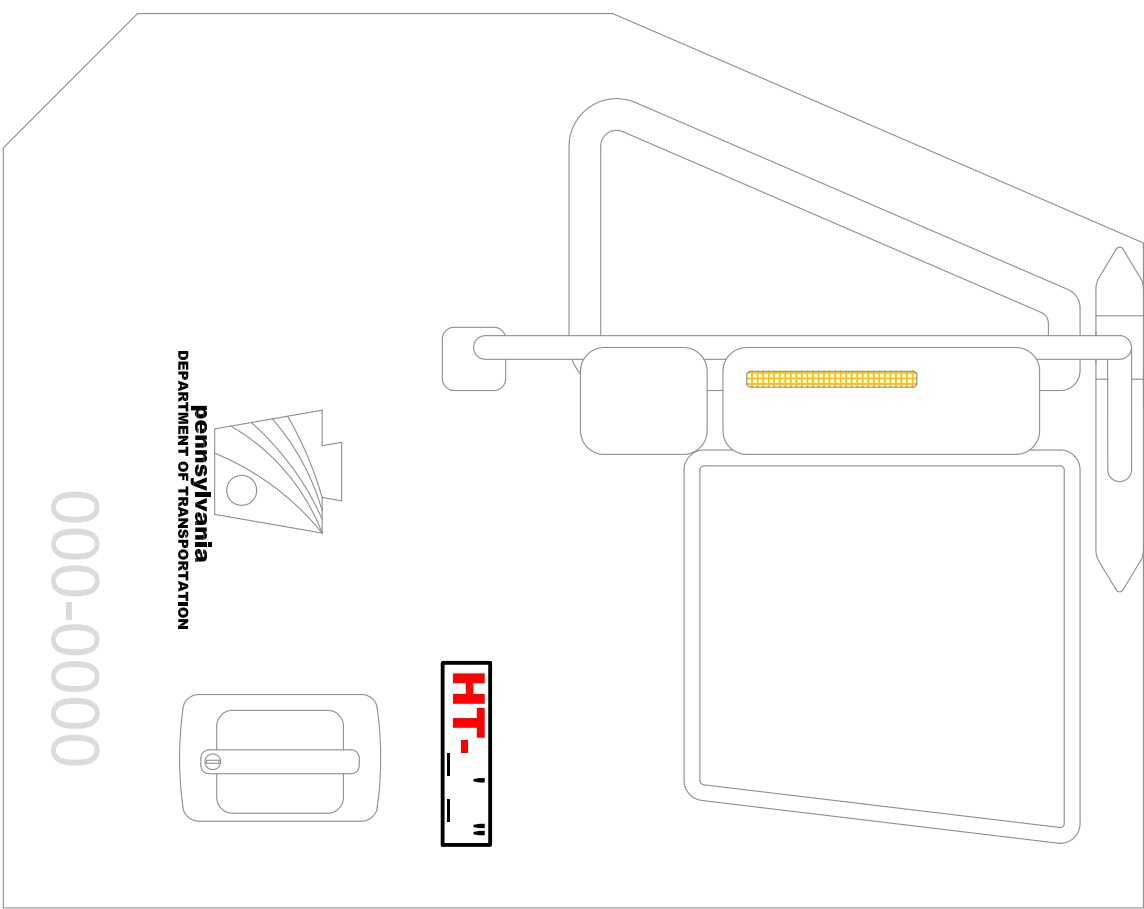
PA DEPARTMENT OF TRANSPORTATION

REVISIONS		DUMP TRUCK SPREADER CONTROL BASE WITH RADIO BRACKET	
NO.	DATE	BY	
1	8-01-18	KBD	
2			
3			

DRAWN BY	TOD	SCALE	N/A	EQN-509
DATE	11-03-09	CHRG BY	DMA	SHEET 1 OF 1



PA DEPARTMENT OF TRANSPORTATION					
REVISIONS			WIRELESS CONNECT AND TARP		
NO.	DATE	BY			
1	07-20-23	DVC			
2			DRAWN BY	SCALE	
3			JFM	N/A	EQN 550
			DATE	CHECKED BY	
			05-28-13	INT	SHEET 1 OF 1



THERE SHALL BE A PERMANENT DECAL, 2 INCH HIGH RED LETTERS ON WHITE BACKGROUND AFFIXED BY THE DRIVER SIDE DOOR HANDLE OR OPERATOR STATION STATING THE OVERALL MAXIMUM TRAVEL HEIGHT OF THE COMPLETED AND UNLOADED UNIT.

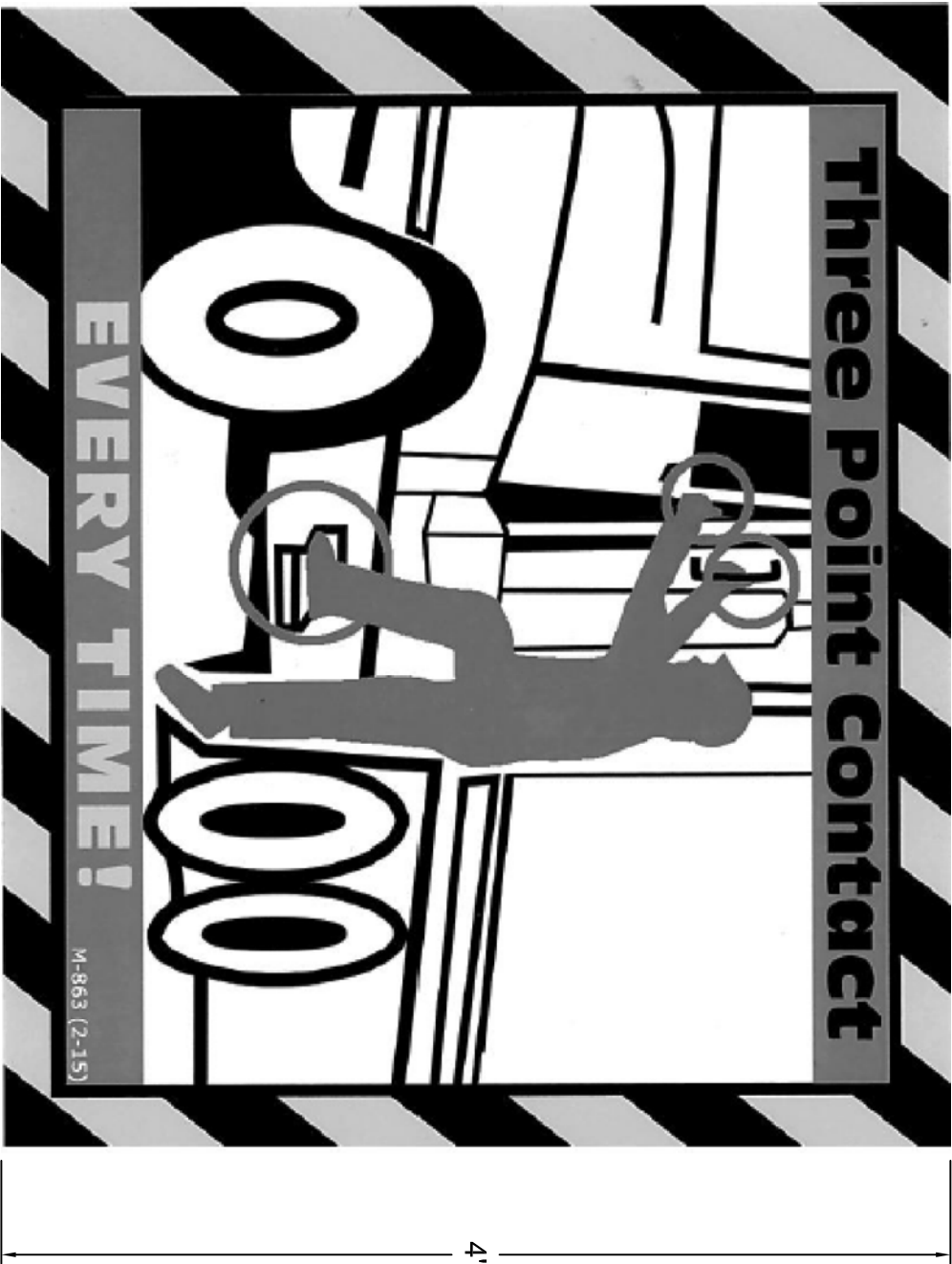
PA DEPARTMENT OF TRANSPORTATION

REVISIONS

NO.	DATE	BY
1	07-06-17	HMR
2	07-25-18	KBD
3		

MAX TRAVEL HEIGHT STICKER

DRAWN BY	JFM	Checked With	
DATE	05-29-13	DATE	05-29-13
SCALE	2		
			EQN-552
			SHEET 1 OF 1

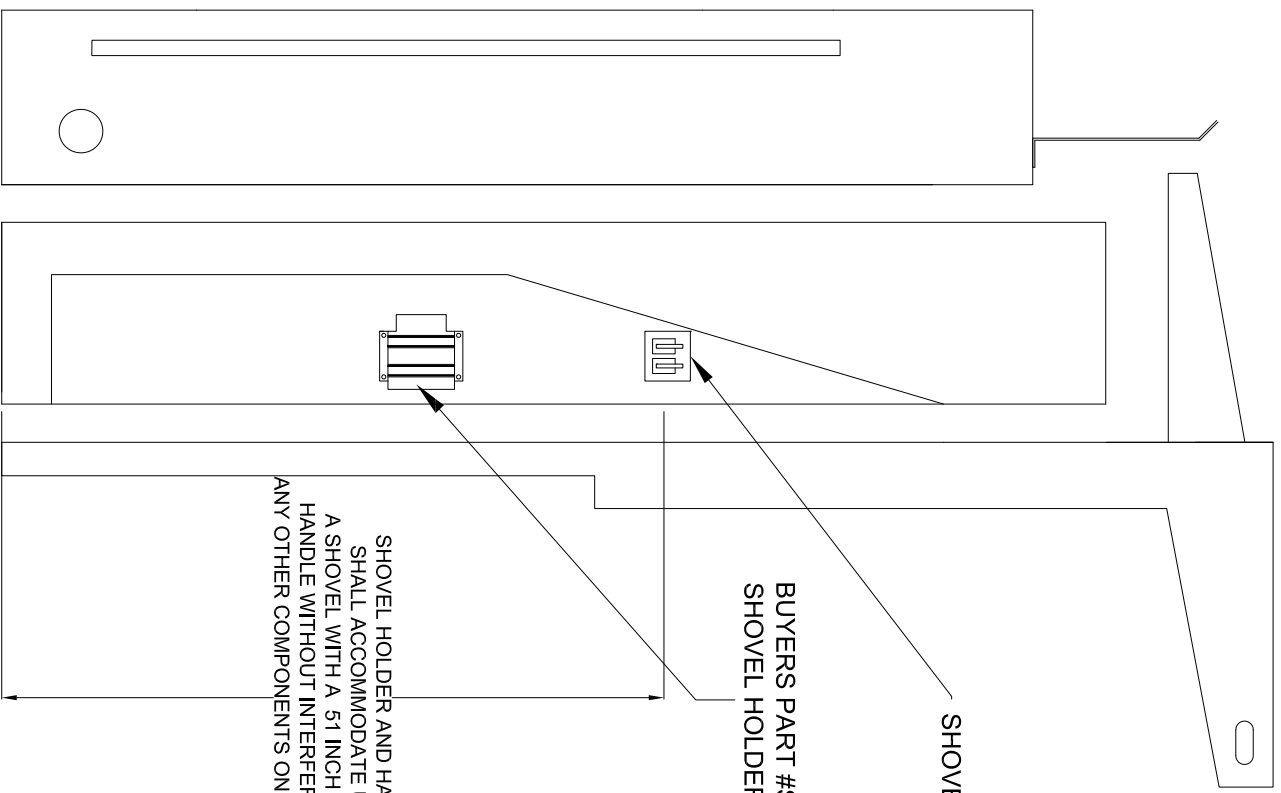


THERE SHALL BE A PERMANENT DECAL AFFIXED BY EACH ENTRY POINT. THE SAME PERMANENT DECAL SHALL BE AFFIXED BY EACH LADDER, PLATFORM OR STEP DESIGNED TO BE CLIMBED OR STEPPED ON. MEASUREMENTS OF DECAL ARE REFERENCED ABOVE.

PA DEPARTMENT OF TRANSPORTATION

REVISIONS		THREE POINTS OF CONTACT STICKER	
NO.	DATE	BY	
1	12-20-16	JJB	
2	07-06-17	HMR	
3			

	DRAWN BY	GAW	SCALE	N/A	EQN-552-1
	DATE	03-23-15	CHG'D BY	TOD	SHEET 1 OF 1



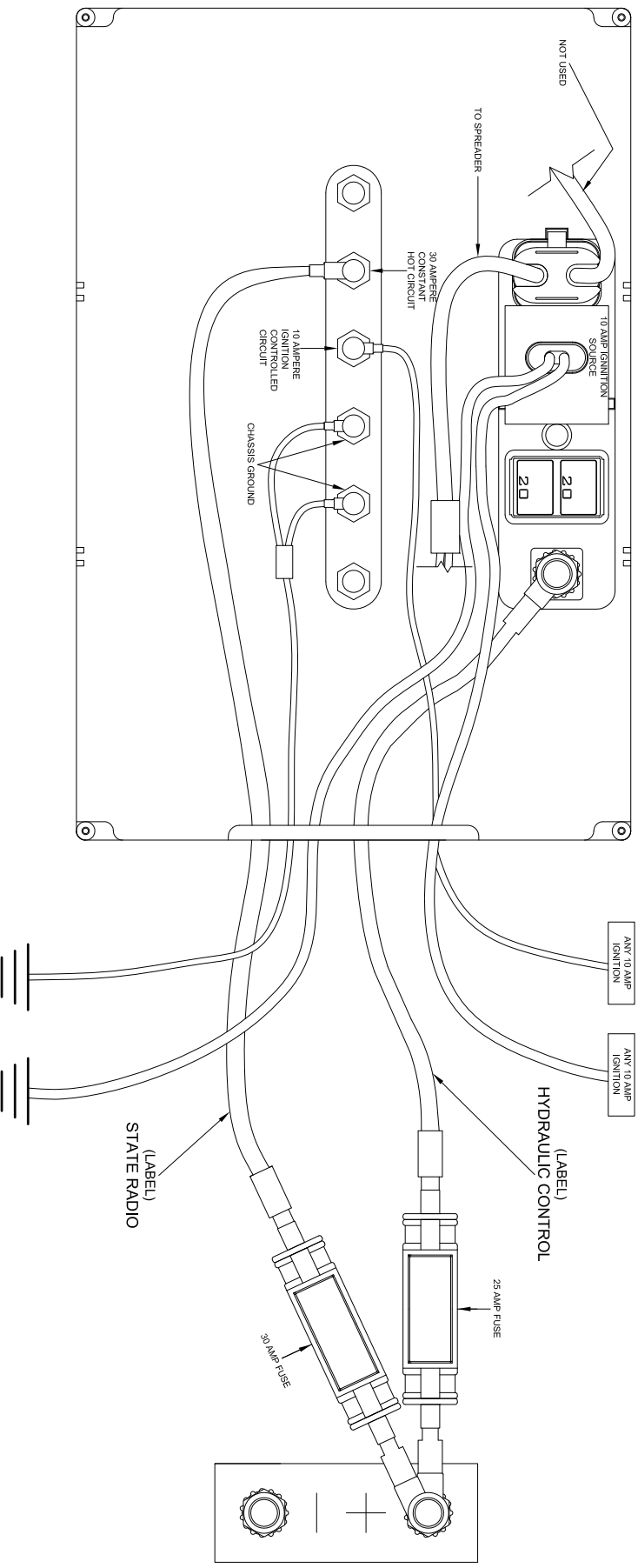
PA DEPARTMENT OF TRANSPORTATION

SHOVEL HOLDER

REVISIONS

NO.	DATE	BY	SCALE	SHEET
1	00-00-00	INT		
2				
3				

DRAWN BY: JFM
 DATE: 05-20-13
 SCALE: 2.2
 CHECKED BY: INT
 EQN-557
 SHEET 1 OF 1



NOTE:

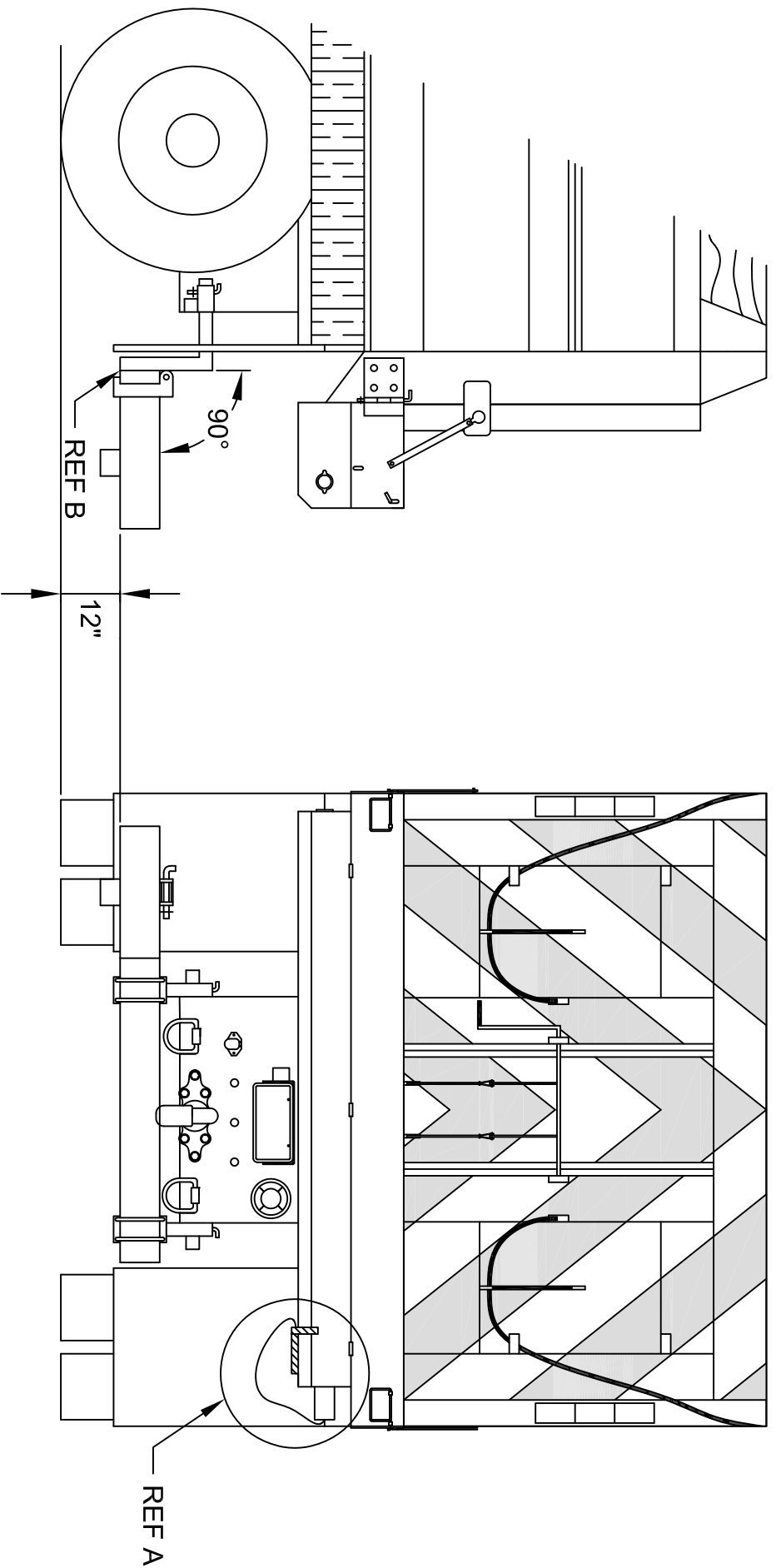
EACH CIRCUIT SHALL BE SUPPLIED INDIVIDUALLY, LABELED, PROPERLY SIZED, PROTECTED FROM WEATHER, AND SEALED TO BE WATERTIGHT.

PA DEPARTMENT OF TRANSPORTATION

POWER DISTRIBUTION BOX FOR STATE RADIO AND SPREADER CONTROLS

NO.	DATE	BY	REVISIONS
1	00-00-00	INT	
2			
3			

DATE	01-08-14	CHK'D BY	INT	SHEET	1 OF 1
DRAWN BY	JFM	SCALE	N/A	EQN-562	



MEASURED FROM GROUND TO BOTTOM OF SPINNER PLATE.
 (WHEN SPINNER IS MOUNTED AT LOWEST SETTING.
 REFERENCE SHEET 6)

NOTES:

- A. STANDARD OEM HYDRAULIC LOCK OUT MECHANISM.
- B. SPINNER MUST BE PERPENDICULAR TO BODY & AT LOWEST SETTING MUST BE LEVEL WITH VERTICAL SQUARE TUBE

PA DEPARTMENT OF TRANSPORTATION

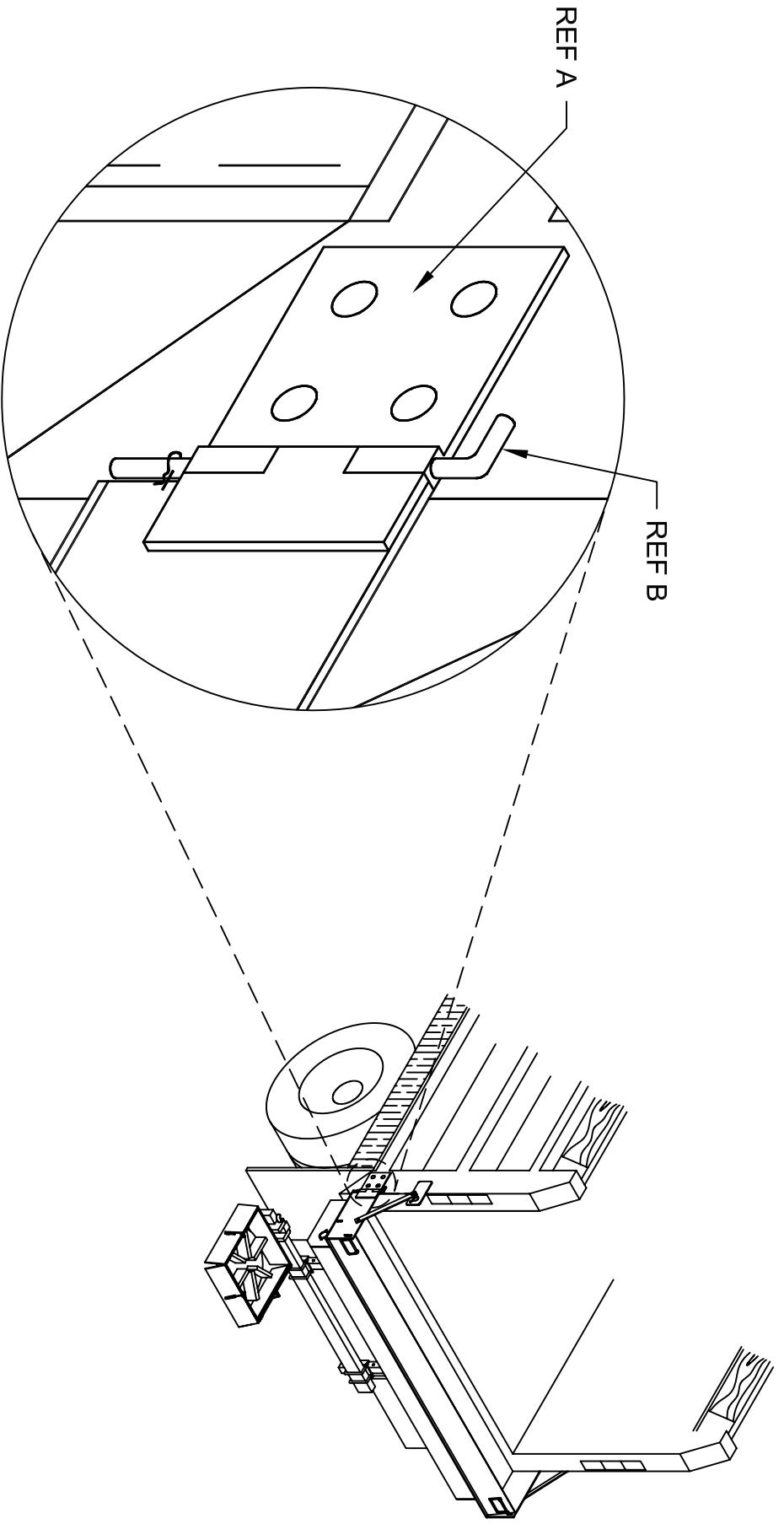
REVISIONS

NO.	DATE	BY	DESCRIPTION
1	07-25-18	KBD	UNDER TAILGATE SPREADER WITH IOWA SPINNER
2	08-02-19	KBD	
3			

DRAWN BY: JJB
 DATE: 01-09-98

Checked With: EQM-3 & 3A & 9 & 9A & 10
 DATE: 01-09-98

EQN-568
 SHEET 1 OF 14



NOTES:

- A. MOUNTING HARDWARE. TO RECEIVE BOTTOM CONTACT POINT OF SPREADER. REFERENCE EQN-3A.
- B. PIN WITH R CLIP. TO ALLOW QUICK DISCONNECT FROM TRUCK.

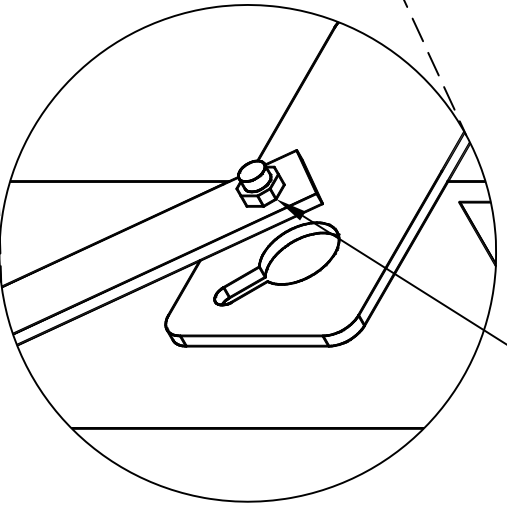
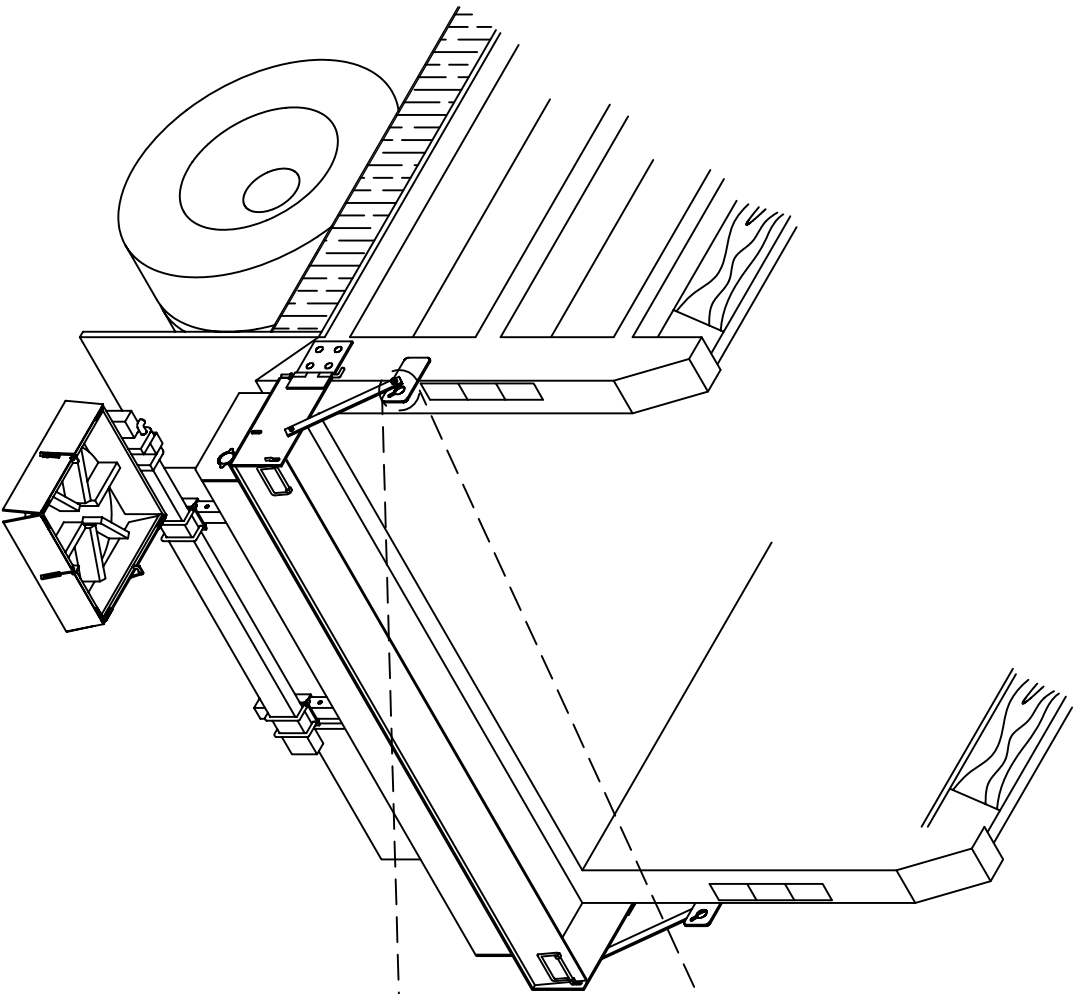
PA DEPARTMENT OF TRANSPORTATION

REVISIONS

NO.	DATE	BY	DESCRIPTION
1	07-25-18	KBD	
2	08-02-19	KBD	
3			

UNDER TAILGATE SPREADER WITH IOWA SPINNER

DRAWN BY	JJB	Combined With	EQN-568
DATE	01-09-98	CHG'D BY	EQN-3 & 3A & 9 & 9A & 10
		SCALE	N/A
			N/A
			SHEET 2 OF 14



REF A

NOTES:

- A. WELDED PLATE WITH HOLE. SHALL BE BOLTED. TO RECEIVE TOP CONTACT POINT OF SPREADER. REFERENCE EQN-3A.

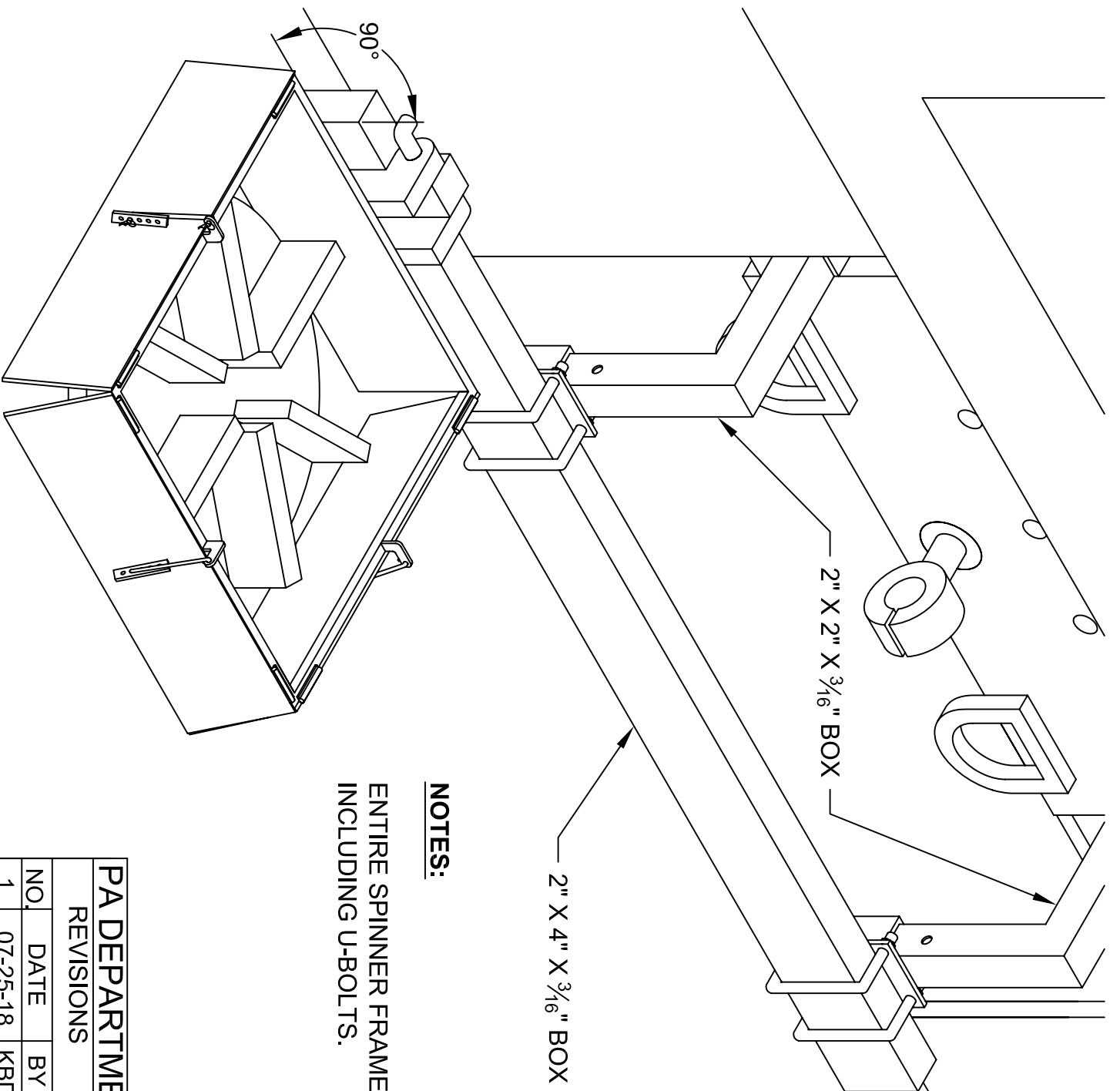
PA DEPARTMENT OF TRANSPORTATION

REVISIONS

NO.	DATE	BY	DESCRIPTION
1	07-25-18	KBD	
2	08-02-18	KBD	
3			

UNDER TAILGATE SPREADER WITH IOWA SPINNER

DRAWN BY	JJB	Checked With	EQN-3 & 3A & 9 & 9A & 10	EQN-568
DATE	01-09-98	CHG'D BY	N/A	SHEET 3 OF 14



2" X 4" X 3/16" BOX

2" X 2" X 3/16" BOX

NOTES:

ENTIRE SPINNER FRAME SHALL BE STAINLESS STEEL INCLUDING U-BOLTS.

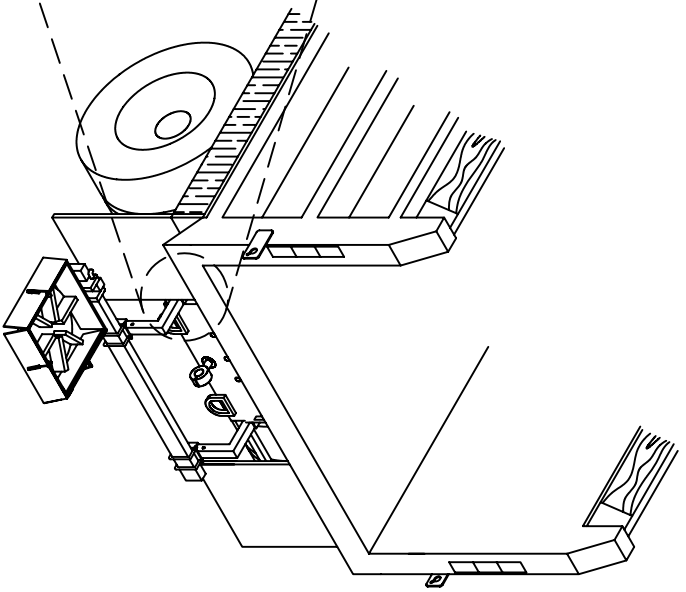
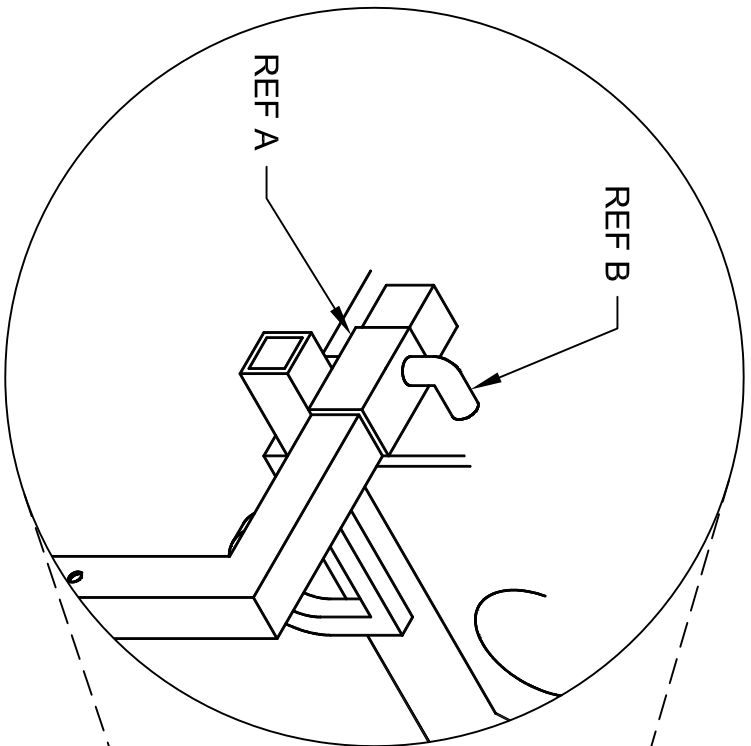
PA DEPARTMENT OF TRANSPORTATION

REVISIONS

NO.	DATE	BY
1	07-25-18	KBD
2	08-02-19	KBD
3		

UNDER TAILGATE SPREADER WITH IOWA SPINNER

DRAWN BY	JJB	Combined With	
DATE	01-09-98	CHG'D BY	EQN-568
		EQN-3 & 3A & 8 & 9A & 10	
		DATE	
		N/A	N/A
			SHEET 4 OF 14



- NOTES:**
- A. WELDED 2 INCH RECEIVER. SHALL BE MOUNTED TO NOT INTERFERE WITH ICC BUMPER.
 - B. PIN WITH R CLIP. TO SECURE SPINNER MOUNT TO CHASSIS.

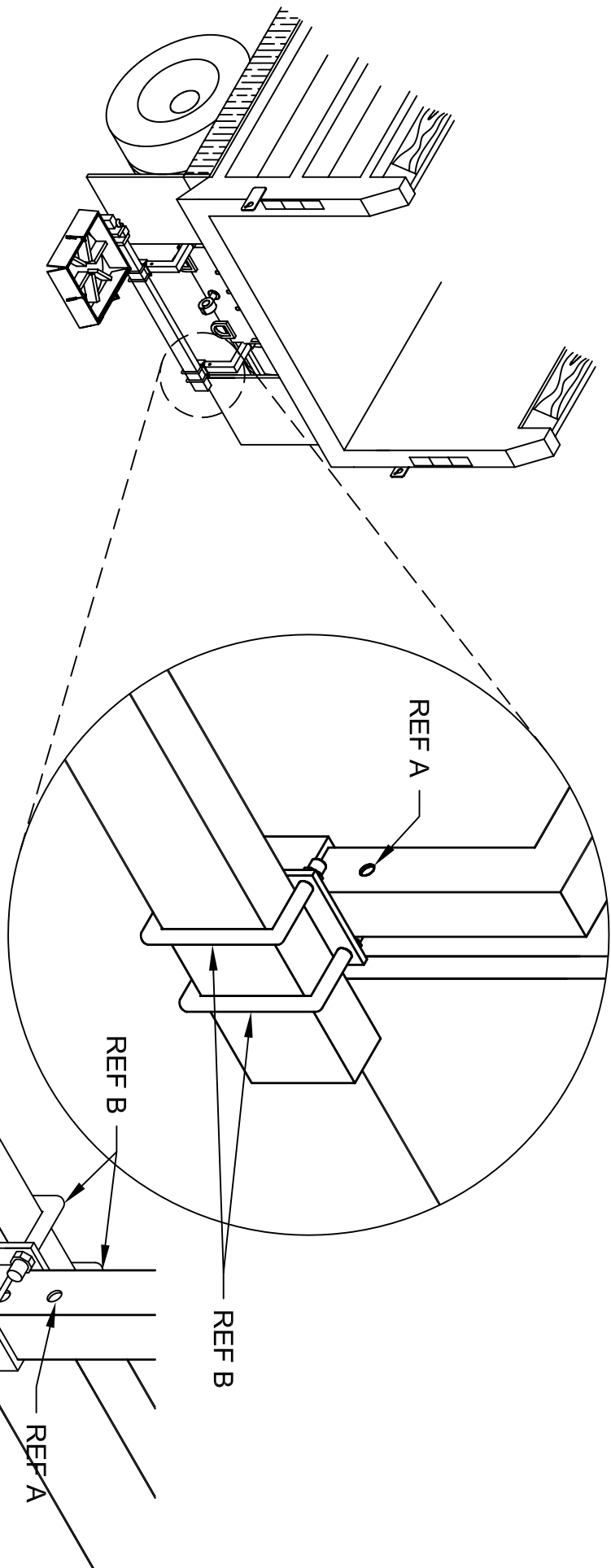
PA DEPARTMENT OF TRANSPORTATION

REVISIONS

NO.	DATE	BY	DESCRIPTION
1	07-25-18	KBD	
2	08-02-19	KBD	
3			

UNDER TAILGATE SPREADER WITH IOWA SPINNER

DRAWN BY	JJB	Combined With	EQN-568
DATE	01-09-98	CHG'D BY	EQN-3 & 3A & 9 & 9A & 10
		TESTED	
		N/A	N/A



NOTES:

- A. VERTICAL ADJUSTMENT HOLES. 2 INCH SPACING ON CENTER.
- B. U BOLTS. TO ALLOW HORIZONTAL ADJUSTMENT OF SPINNER.
- C. PIN WITH R CLIP. TO ALLOW VERTICAL ADJUSTMENT OF SPINNER.

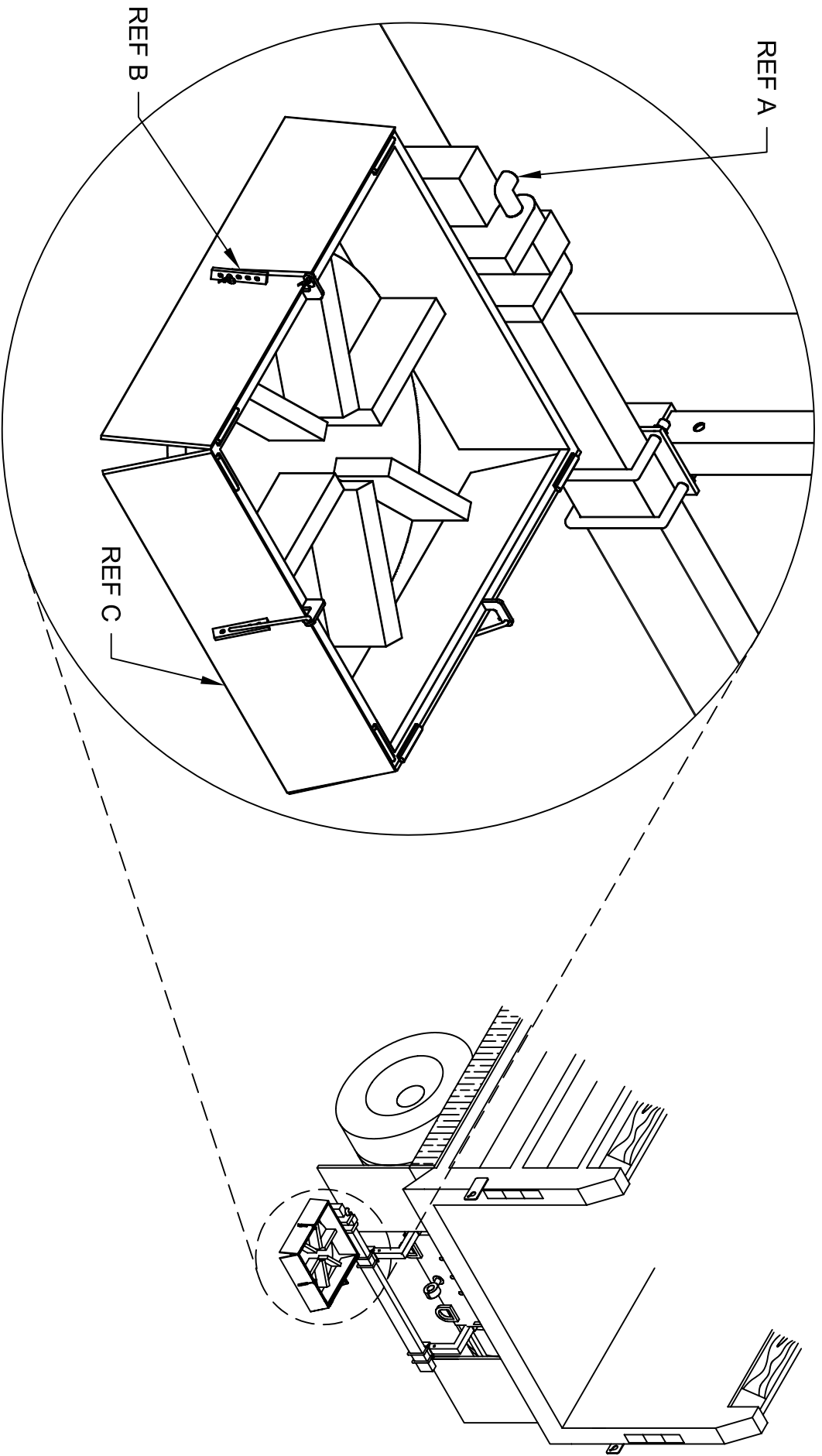
PA DEPARTMENT OF TRANSPORTATION

REVISIONS

NO.	DATE	BY	DESCRIPTION
1	07-25-18	KBD	Initial Design
2	08-02-19	KBD	Revised for production
3			

UNDER TAILGATE SPREADER WITH IOWA SPINNER

DRAWN BY	JJB	Checked With	EQN-3 & 3A & 9 & 9A & 10
DATE	01-09-98	CHG BY	N/A
		DATE	N/A



- NOTES:**
- A. PINNED MECHANISM WITH R CLIP. TO ALLOW VERTICAL MOVEMENT OF SPINNER IF CONTACTED BY THE GROUND.
 - B. FLAP BRACKET. TO ALLOW HEIGHT ADJUSTMENT OF SPINNER FLAPS.
 - C. IOWA STYLE SPINNER FLAPS. TO ALLOW DIRECTIONAL SPREADING OF MATERIAL.

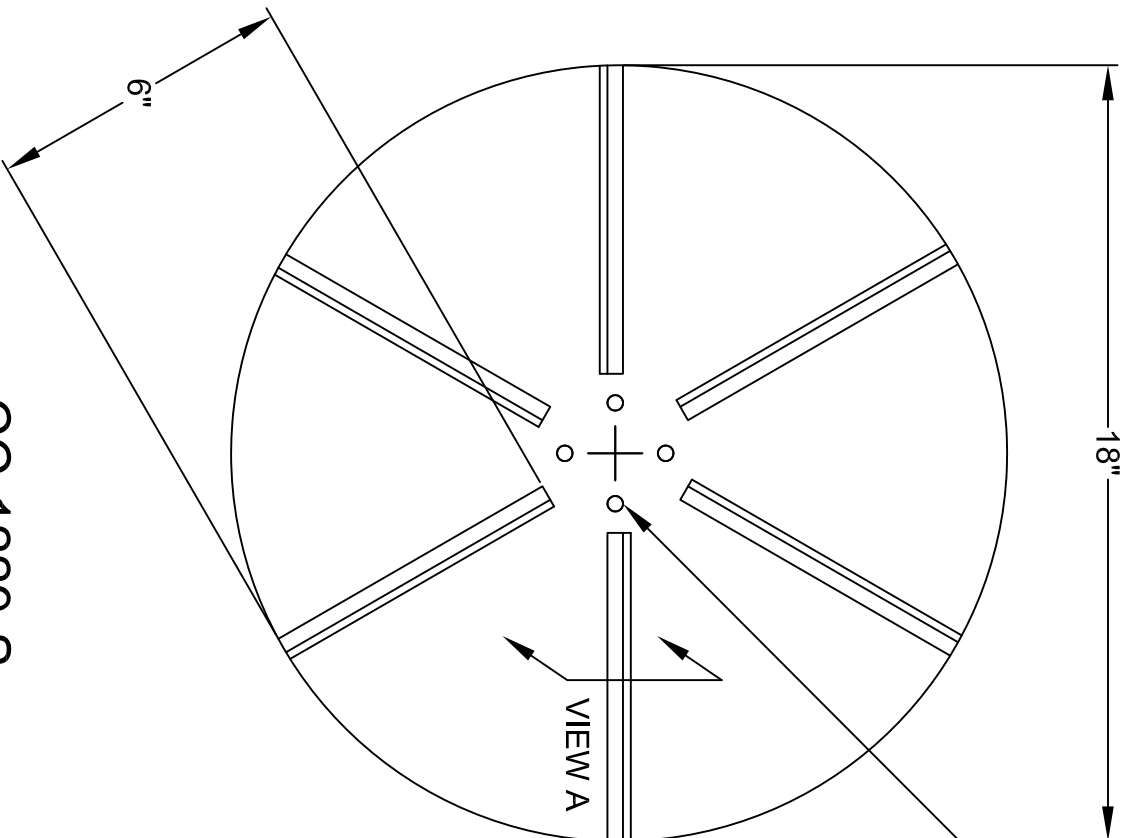
PA DEPARTMENT OF TRANSPORTATION

REVISIONS

NO.	DATE	BY	DESCRIPTION
1	07-25-18	KBD	
2	08-02-19	KBD	
3			

UNDER TAILGATE SPREADER WITH IOWA SPINNER

DRAWN BY	JJB	Combined With	EQN-568
DATE	01-09-98	CHG'D BY	
		EQM-3 & 3A & 9 & 9A & 10	
		N/A	
		N/A	
			SHEET 7 OF 14

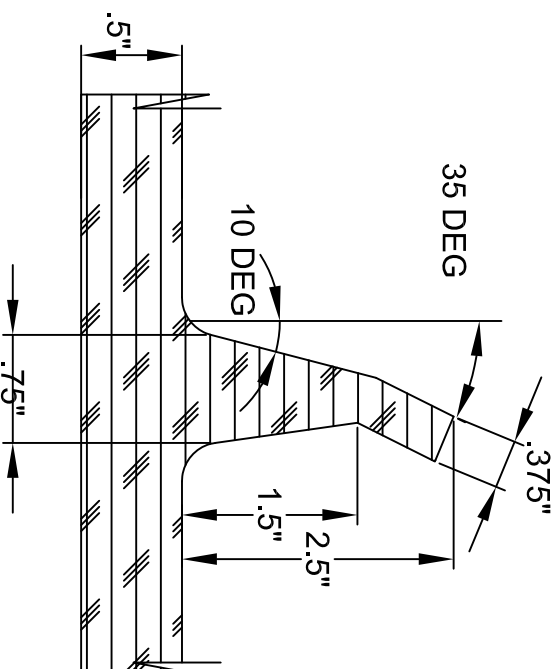


CC-1229-S

C.U.E. Inc
 11 Leonberg Township
 16066 U.S.A.

.375 Dia. HOLE REINFORCED
 WITH STEEL WASHERS (4)
 PLACES ON 4" B.C.

- NOTES:
1. MATERIAL 80 DURO. URETHANE
 2. WEIGHT 8.1 lbs. PER PIECE
 3. ROTATION: COUNTER CLOCKWISE
 4. ALL DIMENSIONS IN INCHES.



PA DEPARTMENT OF TRANSPORTATION

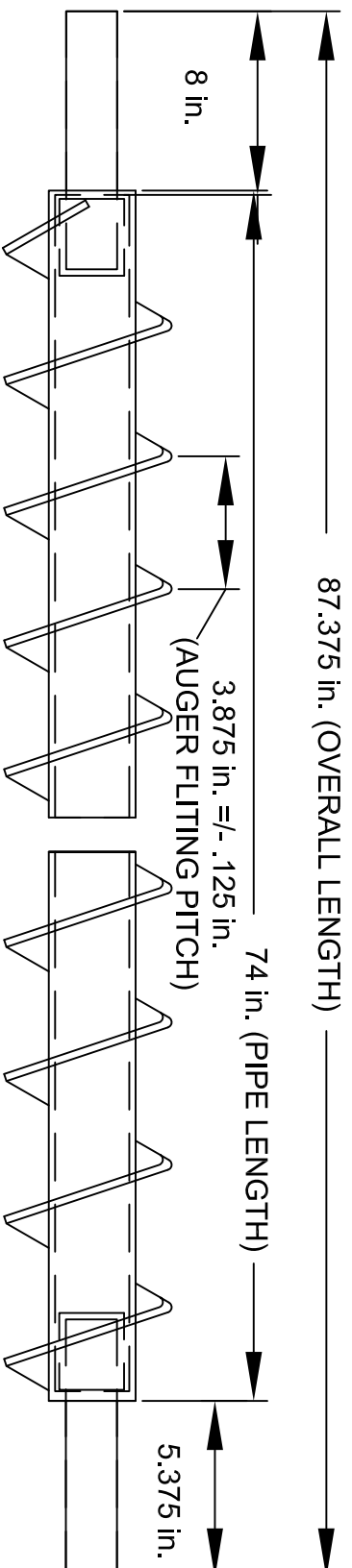
REVISIONS

NO.	DATE	BY	DRAWN BY	DATE	CHK'D BY	Scale
1	05-23-07	CJW	JJB	01-09-98	N/A	N/A
2	07-25-18	KBD	JJB	01-09-98	N/A	N/A
3	08-02-19	KBD	JJB	01-09-98	N/A	N/A

SPINNER / SPREADER TAILGATE
 URETHANE

EQN-568

SHEET 8 OF 14



HELICOID FLIGHT (RIGHT HAND)
SINGLE CONTINUOUS SCREW TYPE
(BAR SIZE, BEFORE ROLLING, TO BE
SUCH THAT FITTING O.D. IS AS SHOWN
IN END VIEW AT RIGHT, AND OUTER
EDGE THICKNESS IS AS SHOWN IN
FLITTING THICKNESS SPECIFICATION)

VIEW SHOWING COMPLETE
AUGER WELDMENT

2 in. (2.375 O.D.)
SCHEDULE 80 (.20 in. WALL)
CARBON STEEL PIPE
(PIPE SIZE E.R.W. TUBING ACCEPTABLE)

8 in.

87.375 in. (OVERALL LENGTH)

74 in. (PIPE LENGTH)

3.875 in. +/- .125 in.
(AUGER FLITTING PITCH)

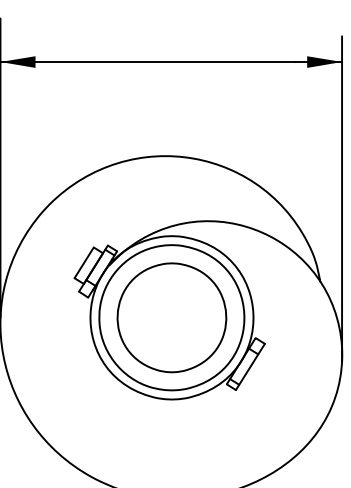
5.375 in.

SPECIFICATION NOTES

1. PIPE PORTIONED WORTH (WITH WELDED FITTING) TO BE STRAIGHT TO GIVE MAXIMUM OF .20 IN. TOTAL RUNOUT
2. BOTH STUB SHAFT CENTERLINES TO LIE ON PIPE CENTERLINE TO GIVE MAXIMUM OF .20 IN. TOTAL RUNOUT
3. ALL SURFACES OF SLEEVE, SHAFT, AND OTHER 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 DEG
DECIMAL MACHINING	0.00- +/- .020
	0.000- +/- .005

IMPLIED TOLERANCES DO NOT APPLY TO REFERENCE DIMENSIONS



5.875 in.
+/- .125 in. O.D.

PA DEPARTMENT OF TRANSPORTATION

REVISIONS

Penndot Spreader Auger

NO.	DATE	BY	DRAWN BY	DATE	SCALE	SHEET
1	9-20-07	BAG	JJB	01-09-98	AS SHOWN	9 OF 14
2	7-25-18	KBD	JJB			
3	08-02-19	KBD	JJB			

DETAIL (S/S & RUBBER THROUGH)

EQN-568
SHEET 9 OF 14

DRIVE BEARINGS:

THE FOLLOWING SHALL INDICATE MINIMUM REQUIREMENTS INCLUDING ALL GENUINE PARTS, ACCESSORIES, EQUIPMENT, AND SAFETY FEATURES CONSIDERED STANDARD, WHETHER MENTIONED HEREIN OR NOT. THE VEHICLE SHALL COMPLY WITH ALL CURRENT APPLICABLE FEDERAL SAFETY STANDARDS AND OSHA REQUIREMENTS.

THE PURPOSE OF THESE SPECIFICATIONS IS TO DESCRIBE A BEARING CAPABLE OF BEING USED ON OUR TAILGATE SPREADERS.

UNLESS OTHERWISE SPECIFIED, EACH UNIT SHALL INCLUDE ALL SPECIFIED PARTS, MADE AVAILABLE FOR THE INDICATED MODEL BY THE EQUIPMENT MANUFACTURER. SPECIFIED ITEMS NOT AVAILABLE THROUGH THE EQUIPMENT MANUFACTURER SHALL CONFORM TO THE BEST QUALITY STANDARDS KNOWN TO THAT PARTICULAR INDUSTRY.

EACH UNIT SHALL BE CLEAN, LUBRICATED, AND SERVICED READY FOR IMMEDIATE OPERATION.

PERFORMANCE:

THE PROPOSED UNIT SHALL BE IDENTICAL WITH THE STANDARD OR IMPROVED MODEL AND A CURRENT PRODUCTION UNIT IN USE BY THE INDUSTRY FOR THE PAST TWELVE MONTHS PRECEDING THIS BID OPENING. IT SHALL BE THE RESPONSIBILITY OF THE BIDDER TO ASSURE THAT THE PROPOSED EQUIPMENT CONFORMS TO THE SPECIFICATIONS AND PERFORMS SATISFACTORILY ACCORDING TO THESE SPECIFICATIONS.

GRADE:

REFERENCE:AMERICAN FRICTION BEARING MANUFACTURERS ASSOCIATION #1, PRECISION

TYPE:

SELF-ALIGNING, ANTI-FRICTION, THRUST, RE-LUBE TYPE.

MOUNTING:

2 BOLT UNIT FLANGED UNIT TYPE. SEE DRAWING.

PA DEPARTMENT OF TRANSPORTATION

REVISIONS

NO.	DATE	BY
-----	------	----

1	4-4-07	KNH
---	--------	-----

2	07-25-18	KBD
---	----------	-----

3	08-02-19	KBD
---	----------	-----

**SPREADER BEARING
INFORMATION**

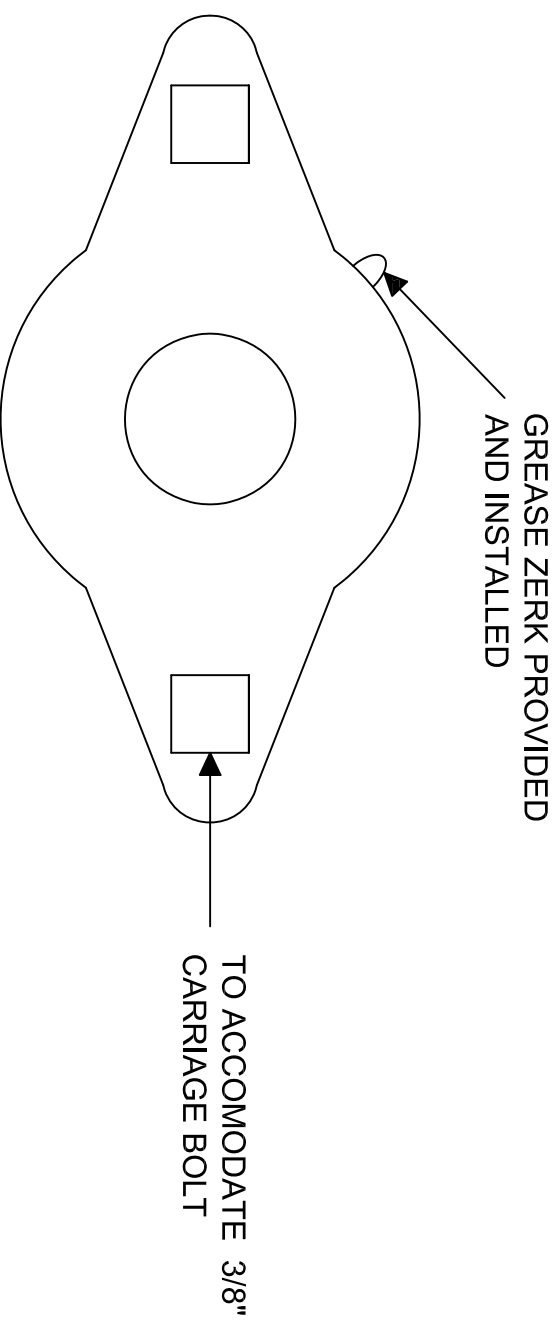
DRAWN BY: JJB

DATE: 01-09-98

Checked with
EQN-568 & 5A & 5A 5/0

Scale: N/A
SHEET 10 OF 14

MOUNTINGS:
 2 BOLT (SQUARE HOLES) FLANGED UNIT TYPE. SEE DRAWING.



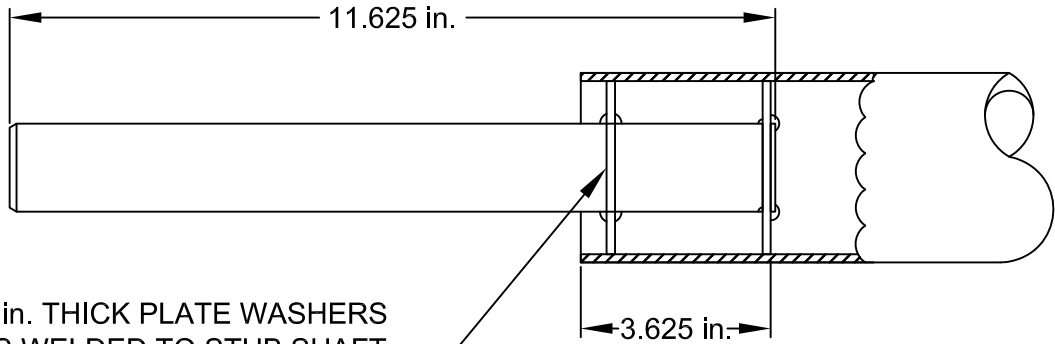
SHAFT DIAMETER: 1-1/4"

LOCKING: RETAINING COLLAR SHALL BE ECCENTRIC WITH SET SCREW.

HOUSING: CASE, DUCTILE OR MALLEABLE IRON.

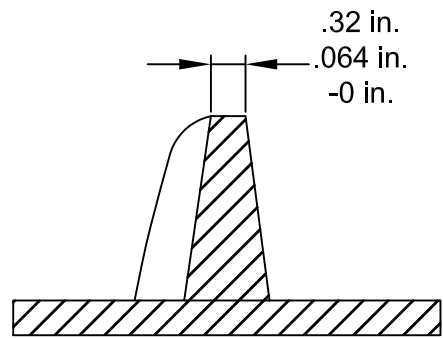
REFERENCE: LINK BELT FXWG 2E2ou, FAFNIR GVFTDS, ROBERTS FBPZ-20L, BROWNING MODEL #VF2E-120SM, SST MODEL #SAFG 206-20G, IPTCI MODEL SALF 206-20

PA DEPARTMENT OF TRANSPORTATION			
REVISIONS		SPREADER BEARING INFORMATION	
NO.	DATE	BY	
1	4-4-07	KNH	
2	07-25-18	KBD	<small>DRAWN BY</small> JJB <small>Checked With</small> <small>EQU-3 & 3A & 3 & 3A & 10</small>
3	08-02-19	KBD	<small>DATE</small> 01-09-98 <small>CHKD BY</small> N/A <small>Scale</small> N/A <small>EQU-568</small>
			SHEET 11 OF 14



.125 in. THICK PLATE WASHERS
CONTINUOUS WELDED TO STUB SHAFT
AND AUGER PIPE

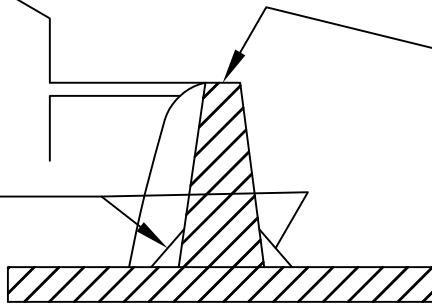
WASHERS TO FIT I.D. OF PIPE WITH
CLOSE SLIDING FIT SO NO FLEXING
OF SHAFT EXISTS AFTER FINAL WELDING



**FLITING THICKNESS SPECIFICATION
(BEFORE HARDSURFACING)**

.125 in. (MINIMUM)
HARDSURFACE

CONTINUOUS WELD
BOTH SIDES OF
FLITING



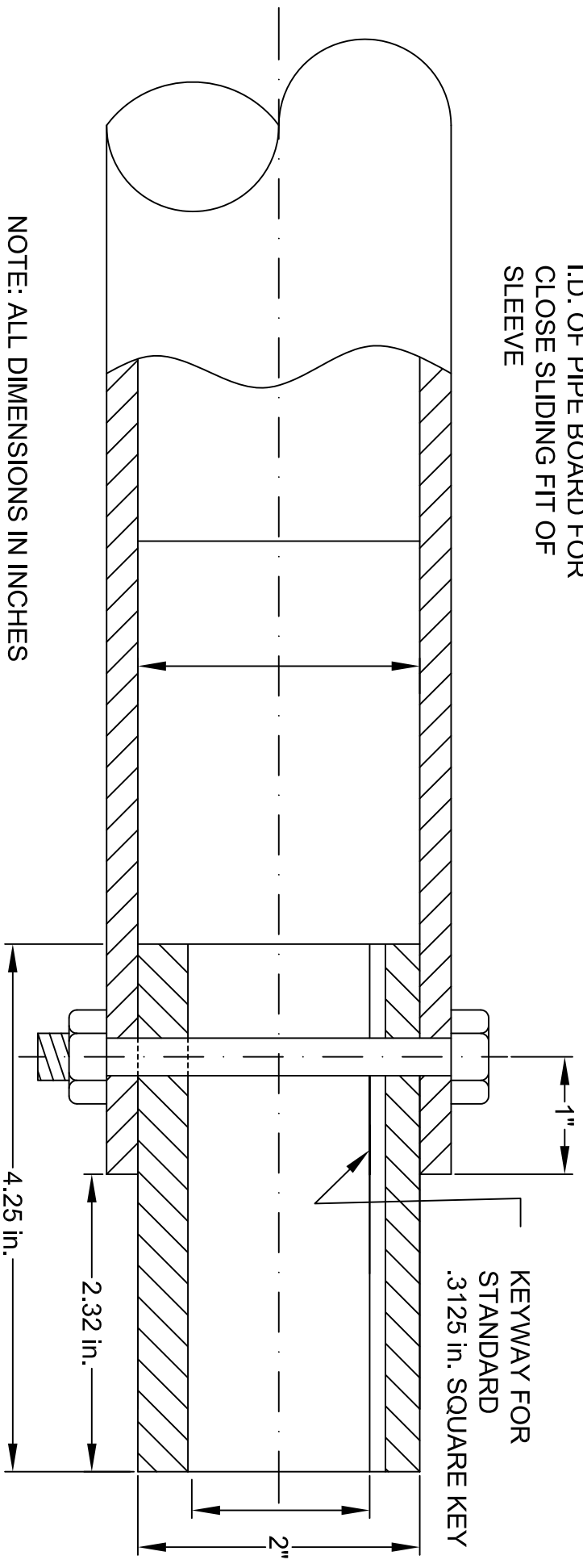
OUTER FLITE PERIPHERY CONTINUOUSLY
HARDSURFACED WITH ABRASIVE RESISTANCE
WELDING ROD (OR WIRE) EQUIVALENT TO
STUDY 121 (ROCKWELL HARDNESS C-44),
AND TO BE FULL WIDTH OF FLITING
THICKNESS AT OUTEREDGE

WELDING AND HARDSURFACE SPECIFICATION

PA DEPARTMENT OF TRANSPORTATION					
REVISIONS			UNDER TAILGATE SPREADER WITH IOWA SPINNER		
NO.	DATE	BY	DRAWN BY	Combined With	
1	05-28-02	DWG		EQN-3 & 3A & 9 & 9A & 10	EQN-568
2	09-20-07	BAG	JJB		
3	07-25-18	KBD	DATE 01-09-98	CHK'D BY N/A	Scale N/A SHEET 12 OF 14

VIEW SHOWING DRIVE, STAINLESS AND RUBBER THROUGH SPREADERS

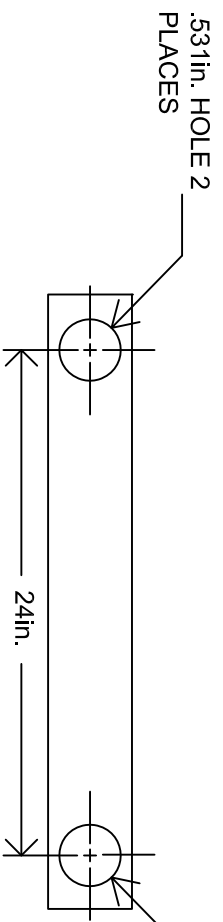
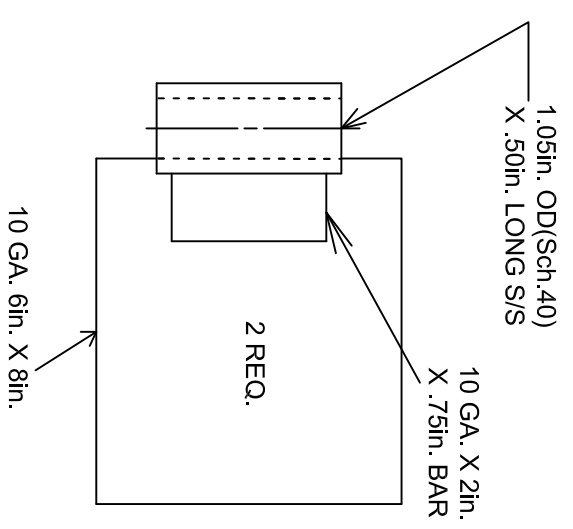
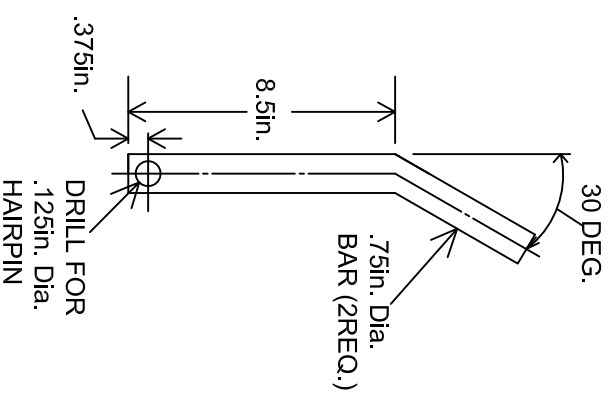
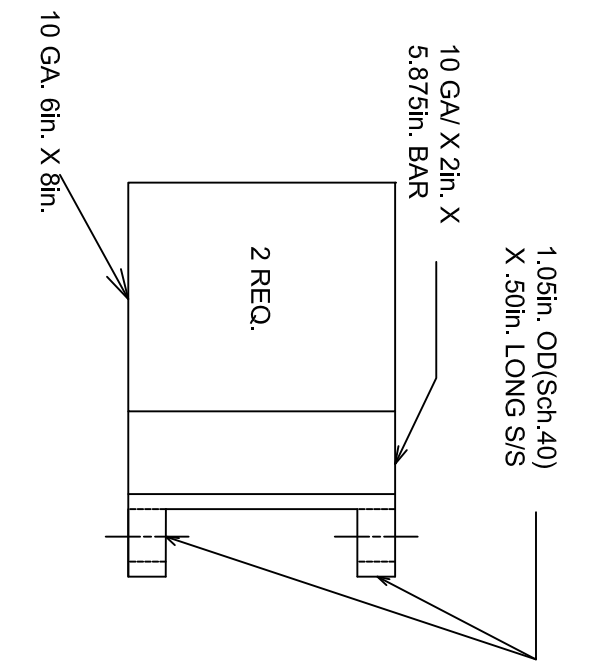
I.D. OF PIPE BOARD FOR
CLOSE SLIDING FIT OF
SLEEVE



1.25 in. Dia BORE
THROUGH (TO ACCEPT
HYDRAULIC MOTOR SHAFT AND AUGER
STUB SHAFT INTERCHANGEABLY)

SPREADER TAILGATE

PA DEPARTMENT OF TRANSPORTATION			
REVISIONS		AUGER DRIVE SLEEVE INSTRUCTION	
NO.	DATE	BY	
1	10-02-06	CJW	
2	07-25-18	KBD	DRAWN BY JJB
3	08-02-19	KBD	DATE 01-09-98
			EQU-568
			SHEET 13 OF 14

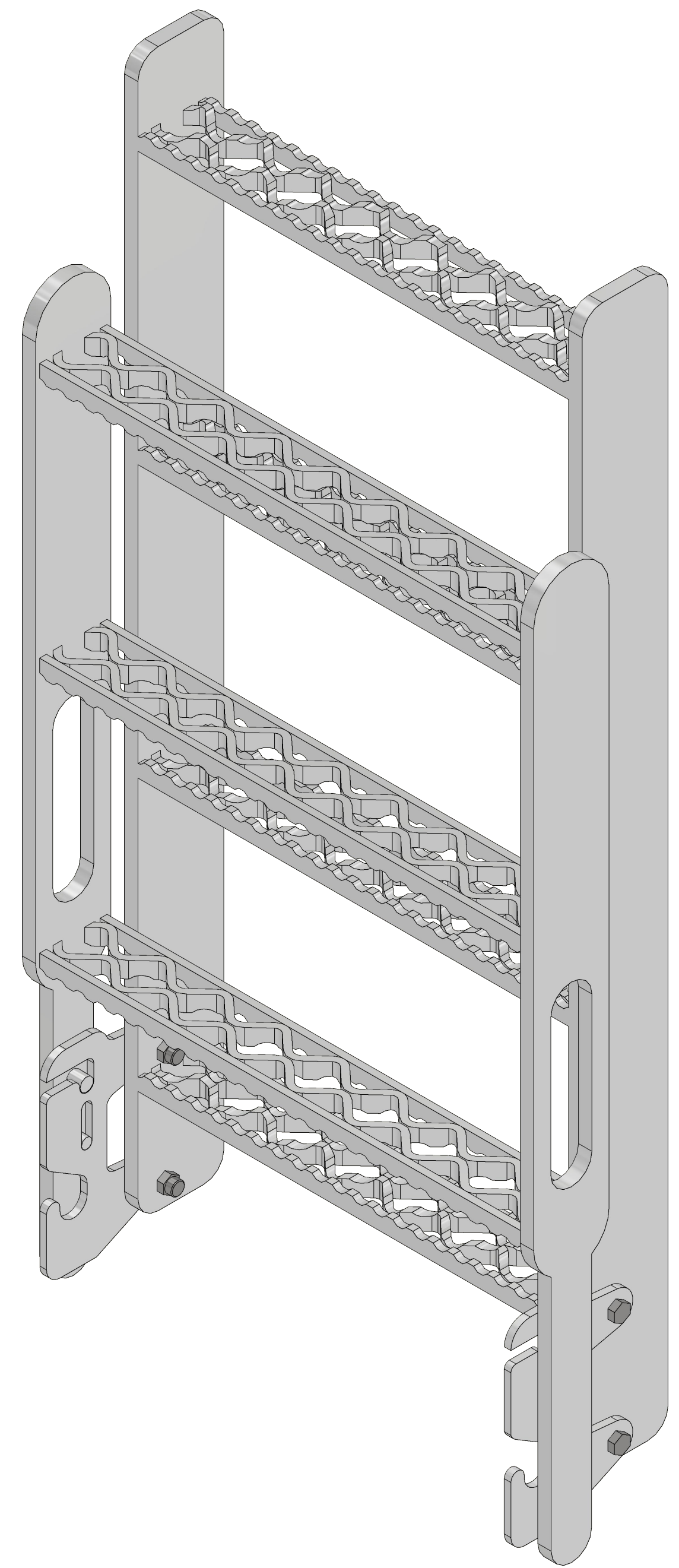
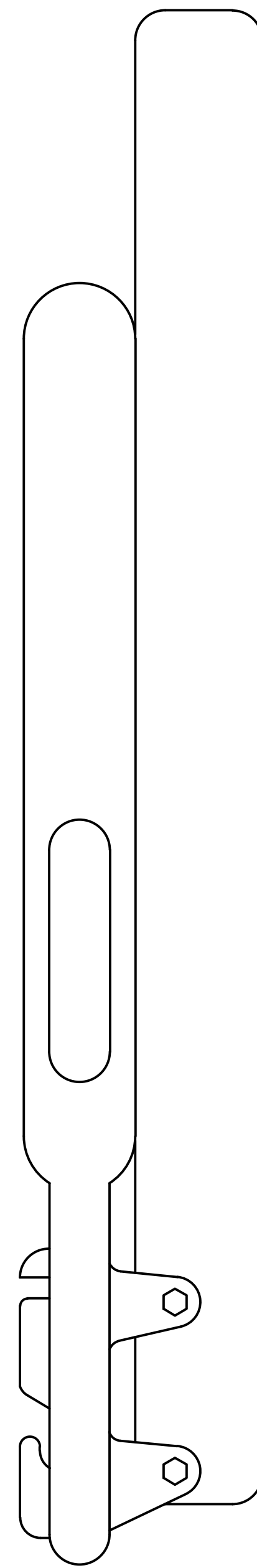
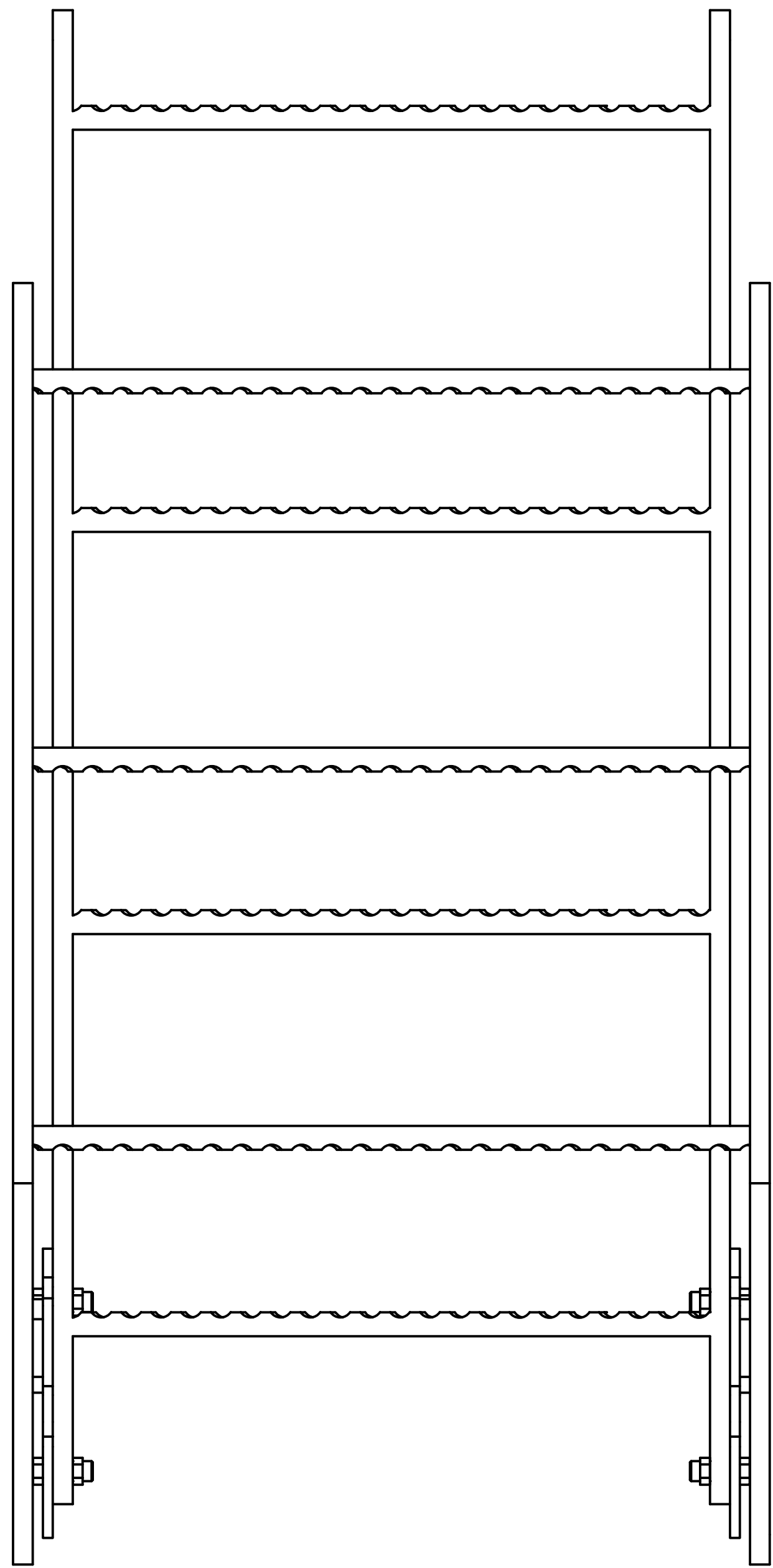
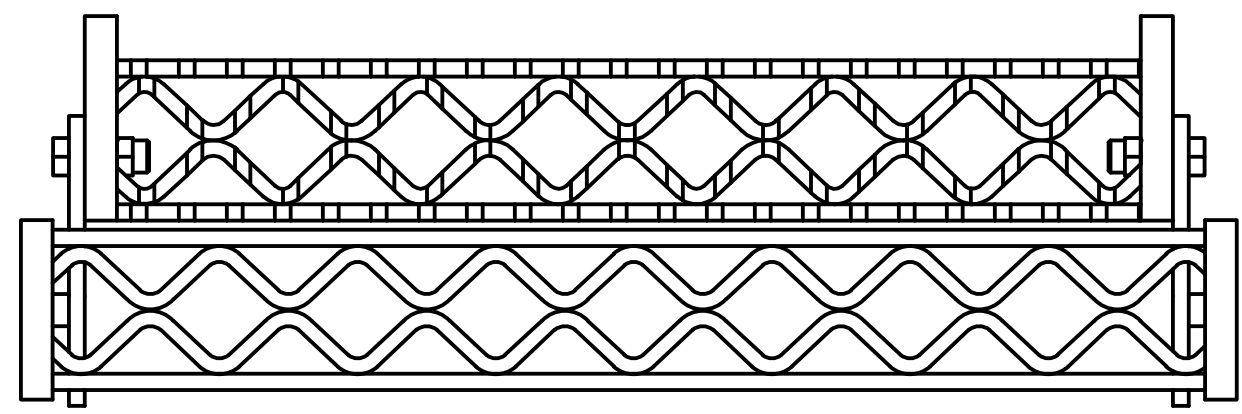


.125in. X 1.50in. X 26in. HANGER BRACE (2 REQ.) W/TWO (2) .50in. X 1.25in. STAINLESS STEEL BOLTS AND NUTS. DRILL FOR .125in. HAIR PIN (STAINLESS STEEL, LENGTH AS REQUIRED, QTY. 4).

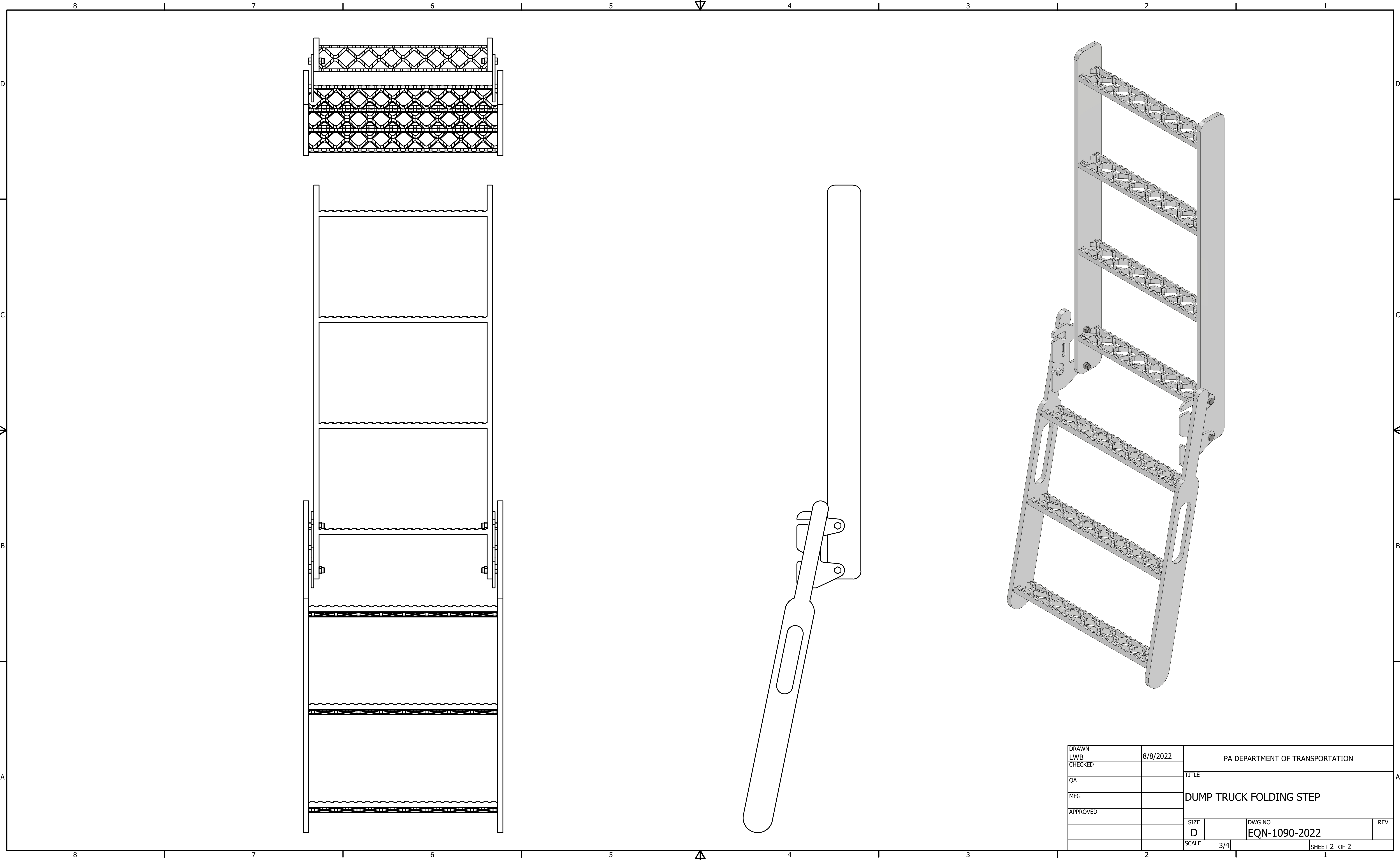
- NOTES:
1. ALL DIMENSIONS IN INCHES
 2. MATERIAL OF CONSTRUCTION: STAINLESS STEEL THROUGHOUT, AISI TYPE 304.

PA DEPARTMENT OF TRANSPORTATION

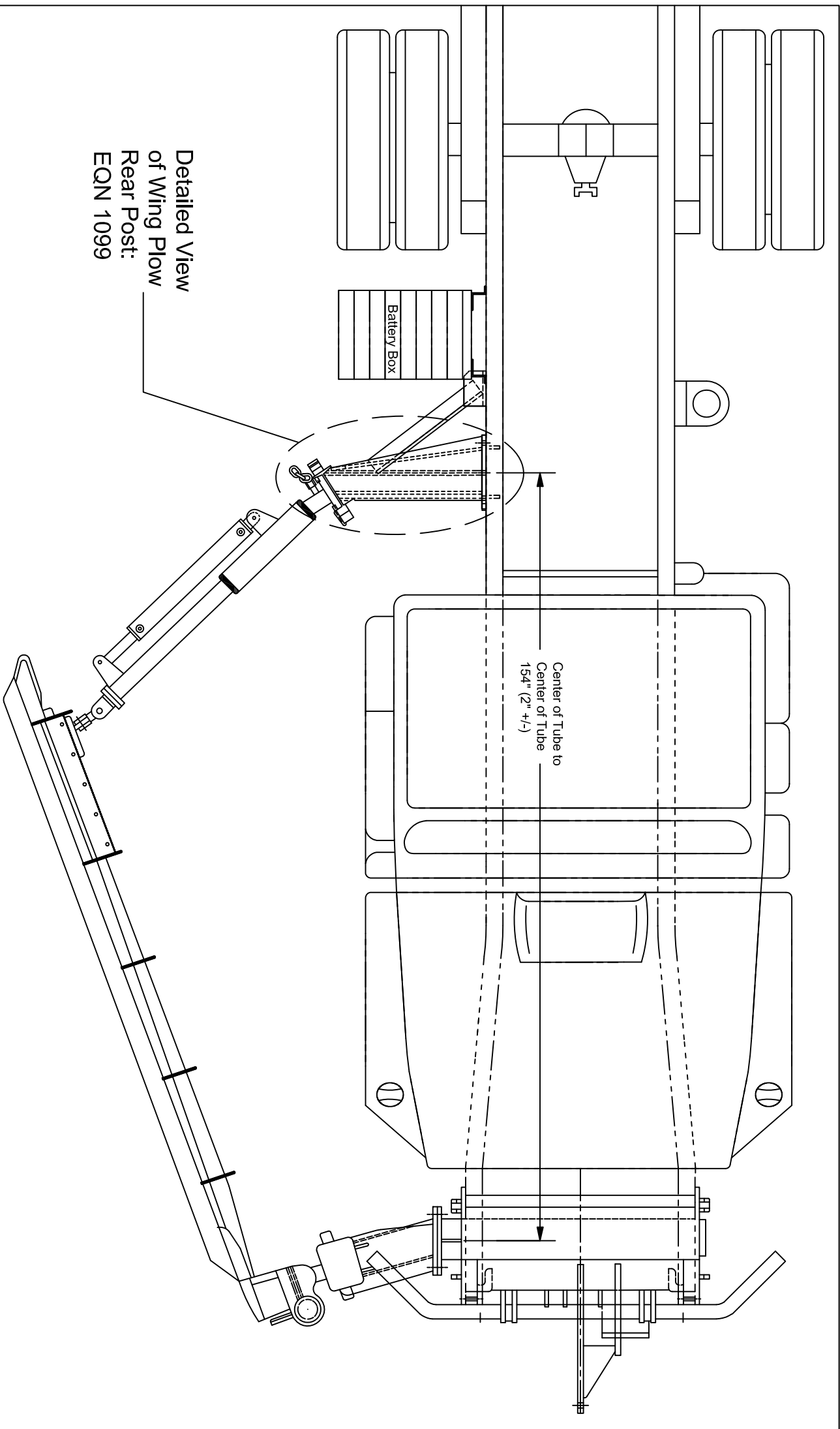
REVISIONS			QUICK DETACH SPREADER KIT		
NO.	DATE	BY	DRAWN BY	DATE	SCALE
1	05/23/02	DWG	JJB	01-09-98	Combined With EQM-3 & SA & 9 & BA & 4.0
2	07/25/18	KBD	JJB		
3	08/02-19	KBD	KBD		



DRAWN	8/8/2022	PA DEPARTMENT OF TRANSPORTATION		
CHECKED		TITLE		
QA		DUMP TRUCK FOLDING STEP		
MFG		SIZE	DWG NO	REV
APPROVED		D	EQN-1090-2022	
		SCALE	1 : 1	SHEET 1 OF 2



DRAWN	8/8/2022	PA DEPARTMENT OF TRANSPORTATION	
CHECKED		TITLE	
QA		DUMP TRUCK FOLDING STEP	
MFG		SIZE	DWG NO
APPROVED		D	EQN-1090-2022
		SCALE	3/4
			SHEET 2 OF 2



Detailed View
of Wing Plow
Rear Post:
EQN 1099

Center of Tube to
Center of Tube
154" (2" +/-)

Battery Box

PA DEPARTMENT OF TRANSPORTATION

REVISIONS

NO.	DATE	BY	Wing Plow Tolerance
1			
2			
3			

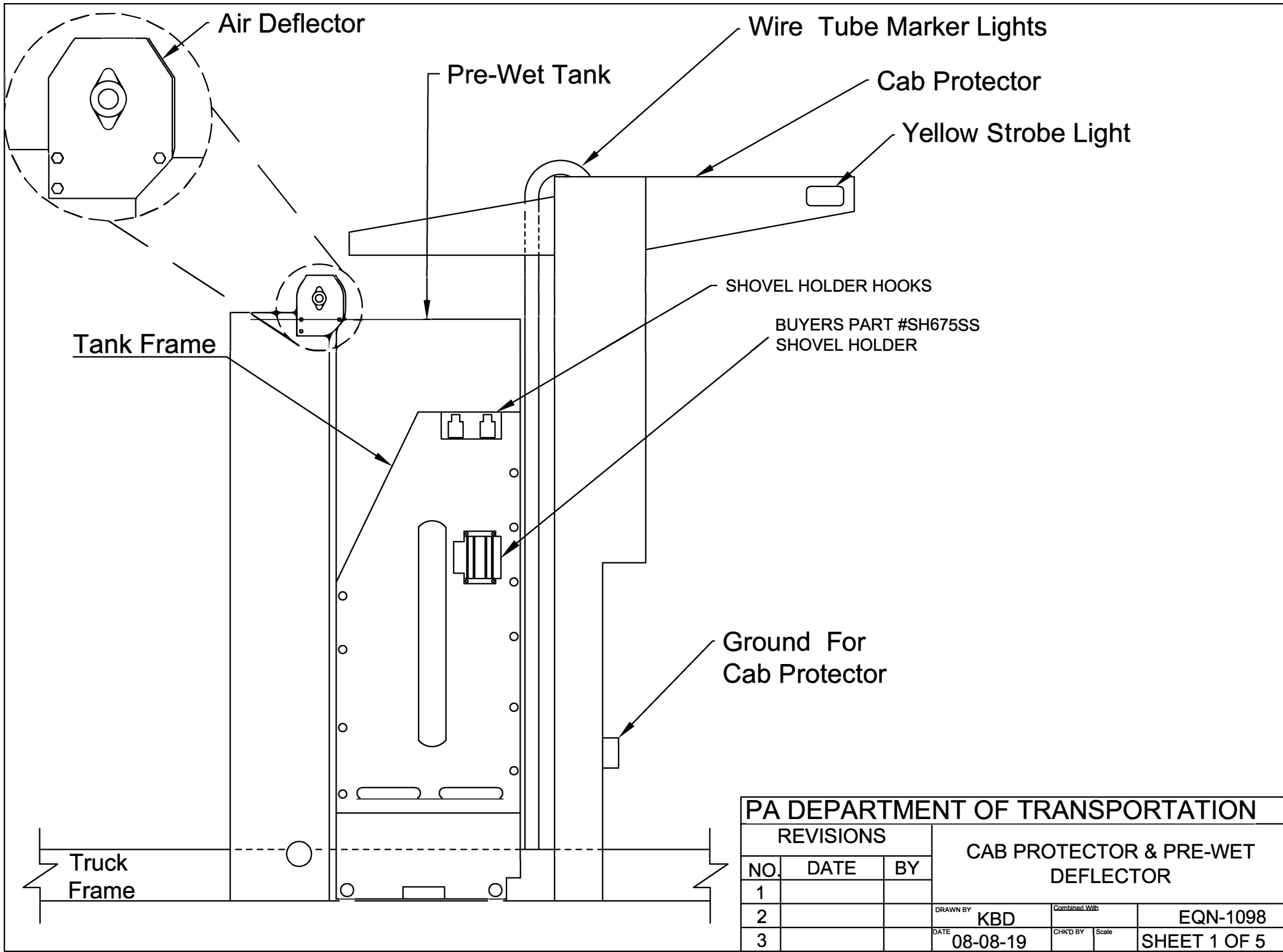
Wing Plow Tolerance

DRAWN BY
KBD

DATE
07-12-19

EQN-1097

Checked With
Scale



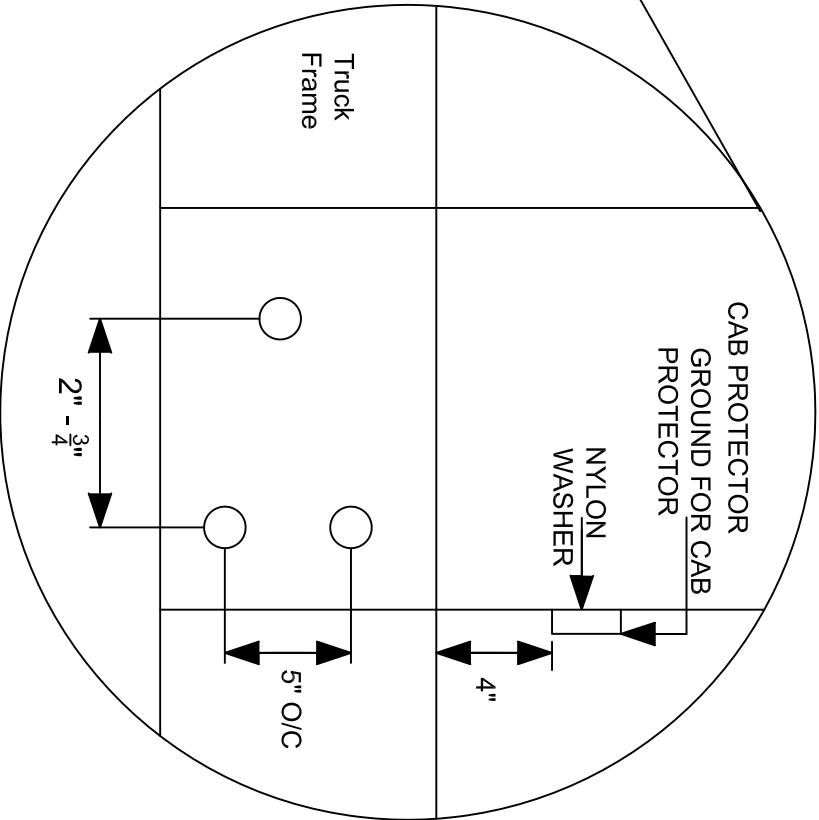
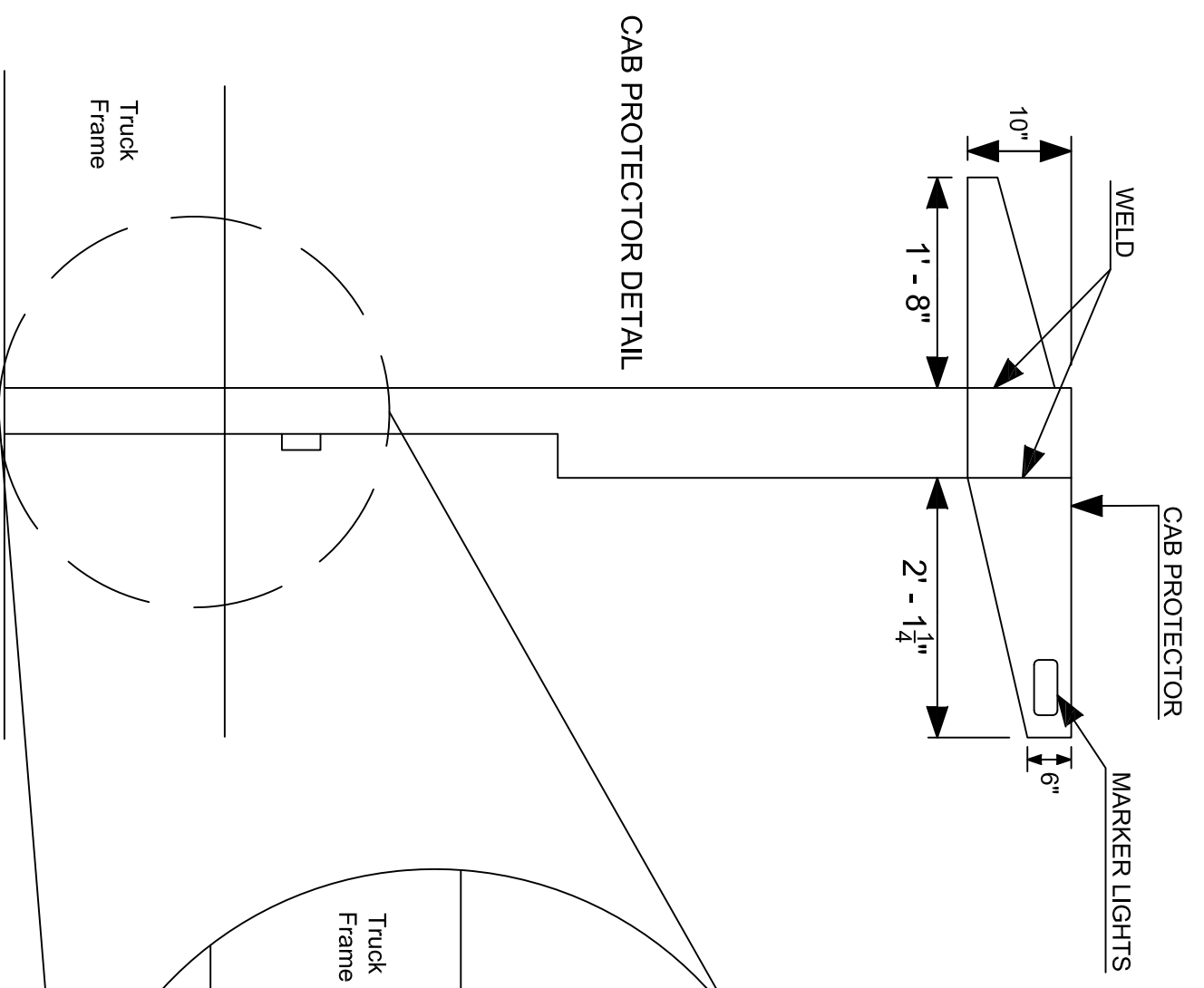
PA DEPARTMENT OF TRANSPORTATION

REVISIONS

**CAB PROTECTOR & PRE-WET
DEFLECTOR**

NO.	DATE	BY
1		
2		
3		

DRAWN BY	KBD	Combined With	
DATE	08-08-19	CHKD BY	Scale
			EQN-1098
			SHEET 1 OF 5



NOTE:

- TOP OF CAB PROTECTOR IS WELDED LIKE SHOWN IN DRAWINGS.
- CAB PROTECTOR IS BOLTED TO TRUCK FRAME.
- WHITE NYLON WASHER TO BE PLACED BETWEEN NUT/BOLT OF GROUND AND ALUMINUM CAB PROTECTOR.

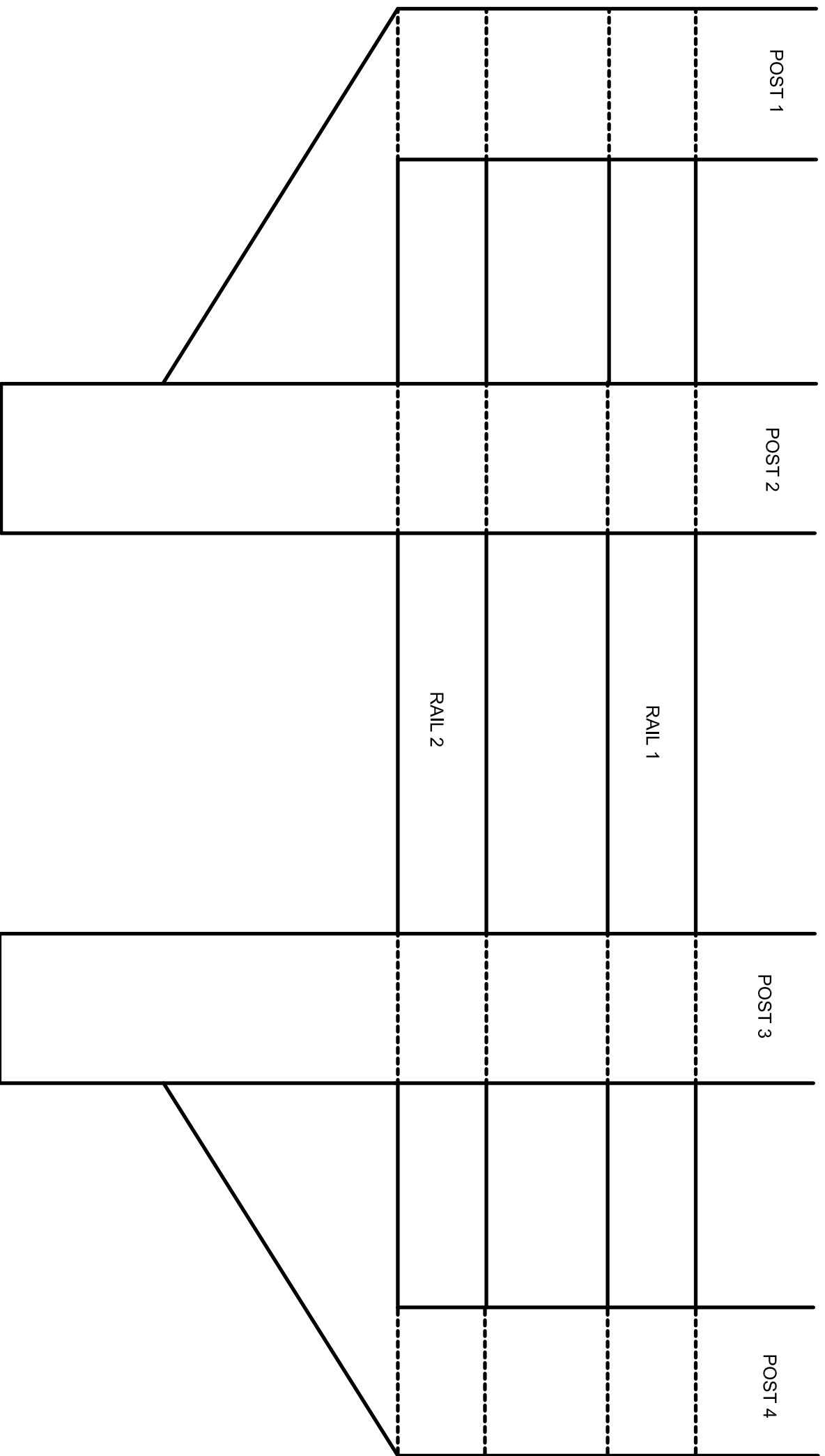
PA DEPARTMENT OF TRANSPORTATION

REVISIONS

NO.	DATE	BY
1		
2		
3		

CAB PROTECTOR & PRE-WET DEFLECTOR

DRAWN BY	KBD	Checked With		EQN-1098
DATE	08-08-19	Checked By	N/A	SHEET 2 OF 5



POST 1

POST 2

POST 3

POST 4

RAIL 1

RAIL 2

PA DEPARTMENT OF TRANSPORTATION

REVISIONS

NO.	DATE	BY	DESCRIPTION
1			
2			
3			

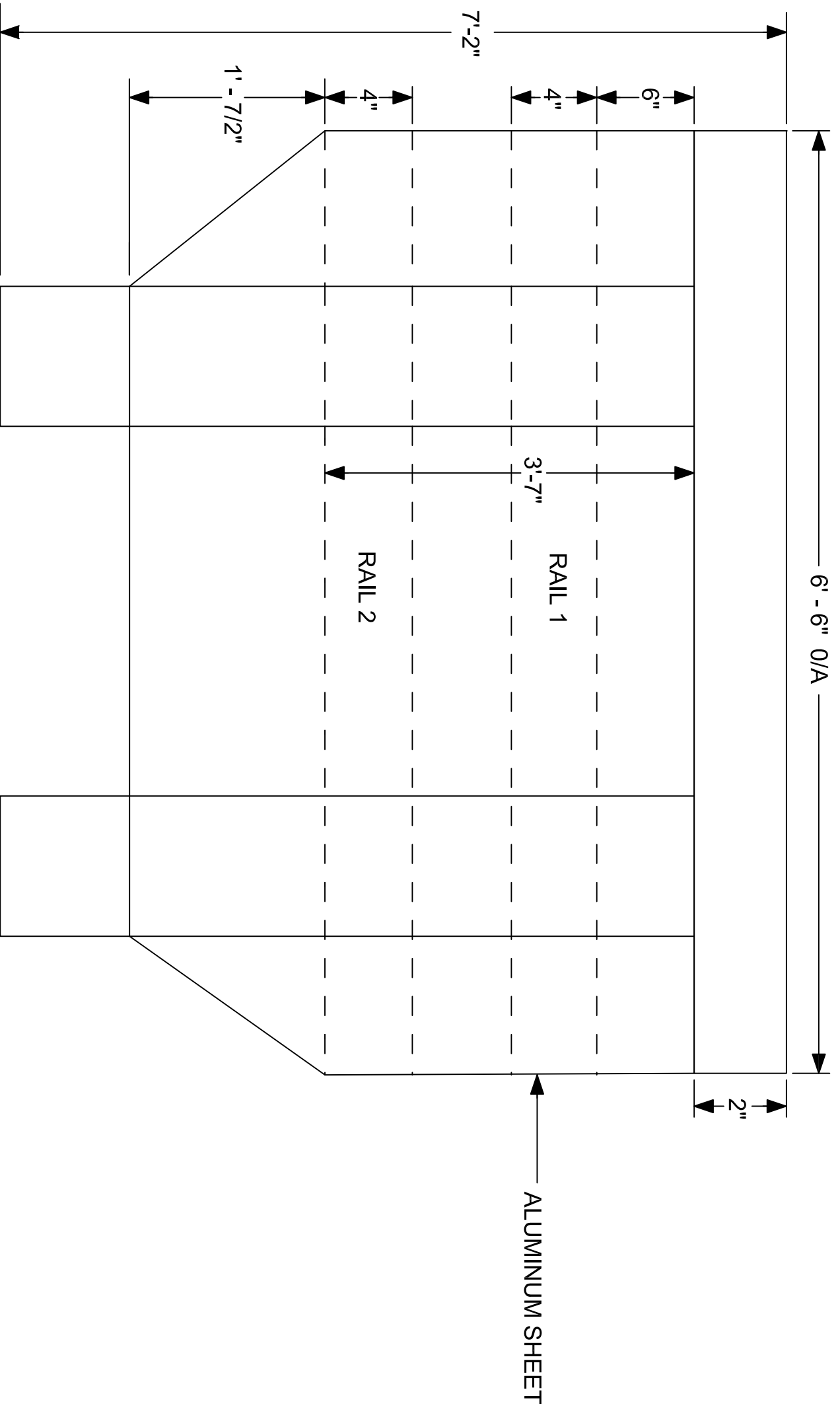
CAB PROTECTOR & PRE-WET TANK DEFLECTOR

DRAWN BY **KBD** CHECKED BY **N/A** SCALE **N/A** SHEET **3 OF 5**

CAB PROTECTOR

LOOKING FROM BACK

DATE **08-08-19** EQUIN-1098



6'-6" O/A

7'-2"

6"

4"

4"

4"

1'-7 1/2"

3'-7"

RAIL 1

RAIL 2

2"

ALUMINUM SHEET

CAB PROTECTOR

LOOKING FROM FRONT

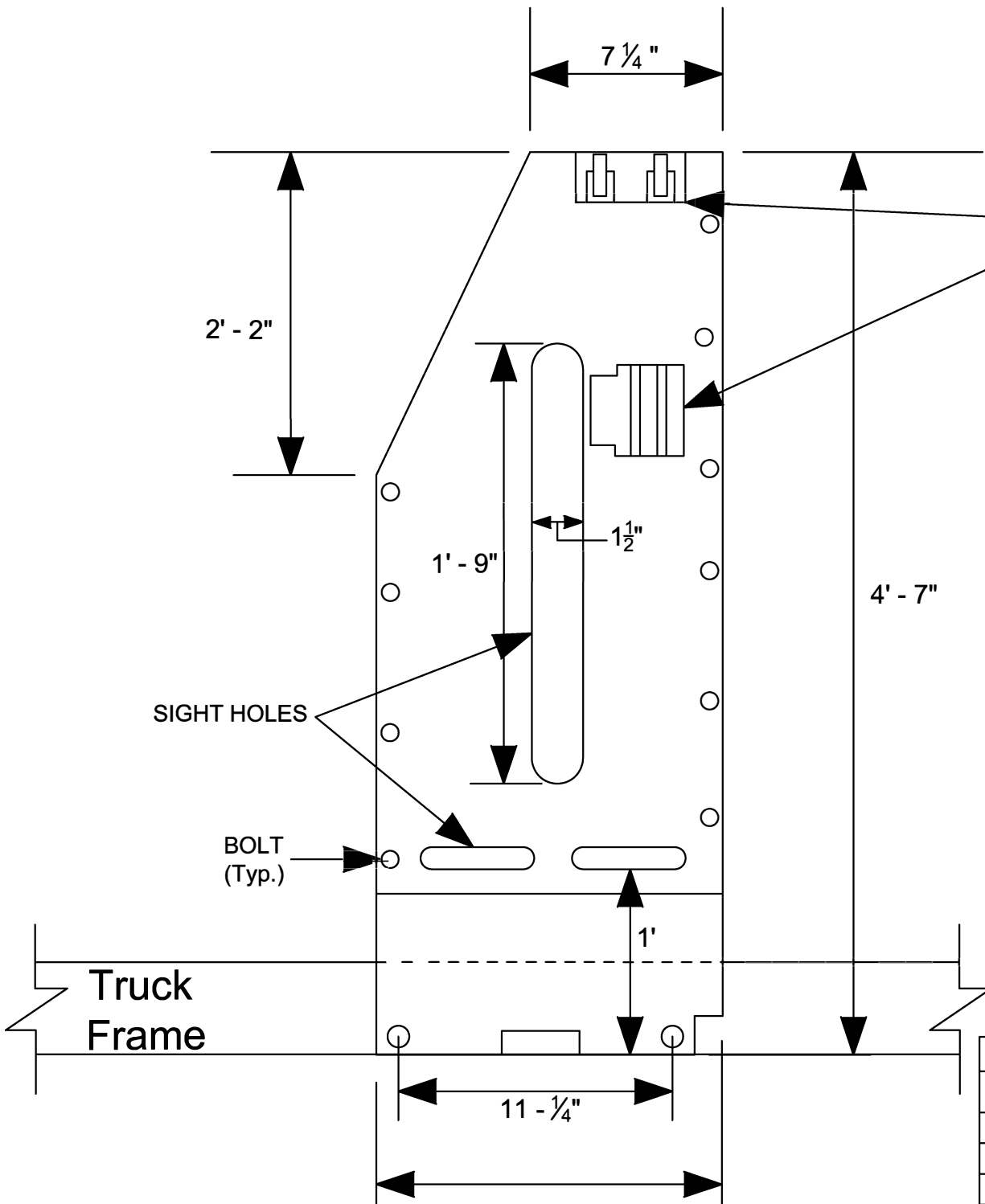
PA DEPARTMENT OF TRANSPORTATION

REVISIONS

NO.	DATE	BY	DESCRIPTION
1			
2			
3			

CAB PROTECTOR & PRE-WET TANK DEFLECTOR

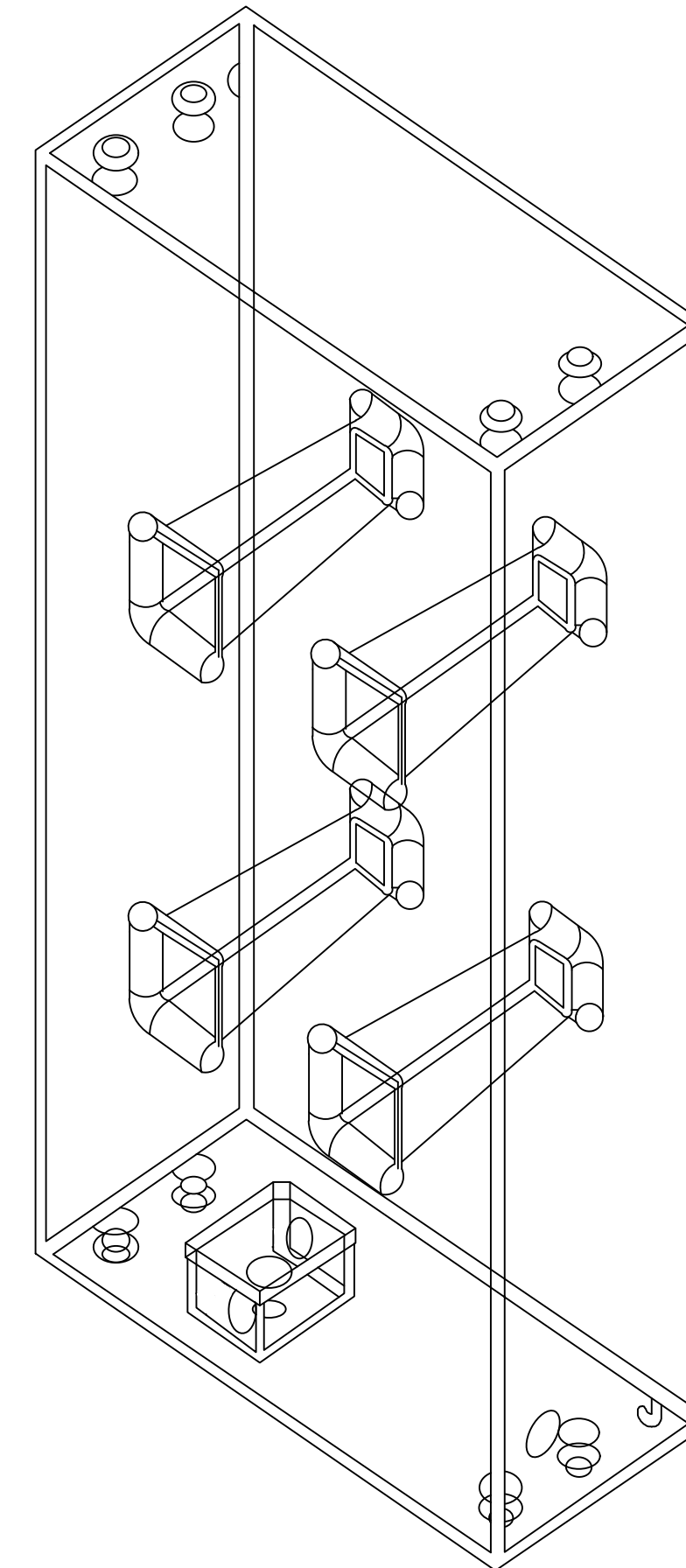
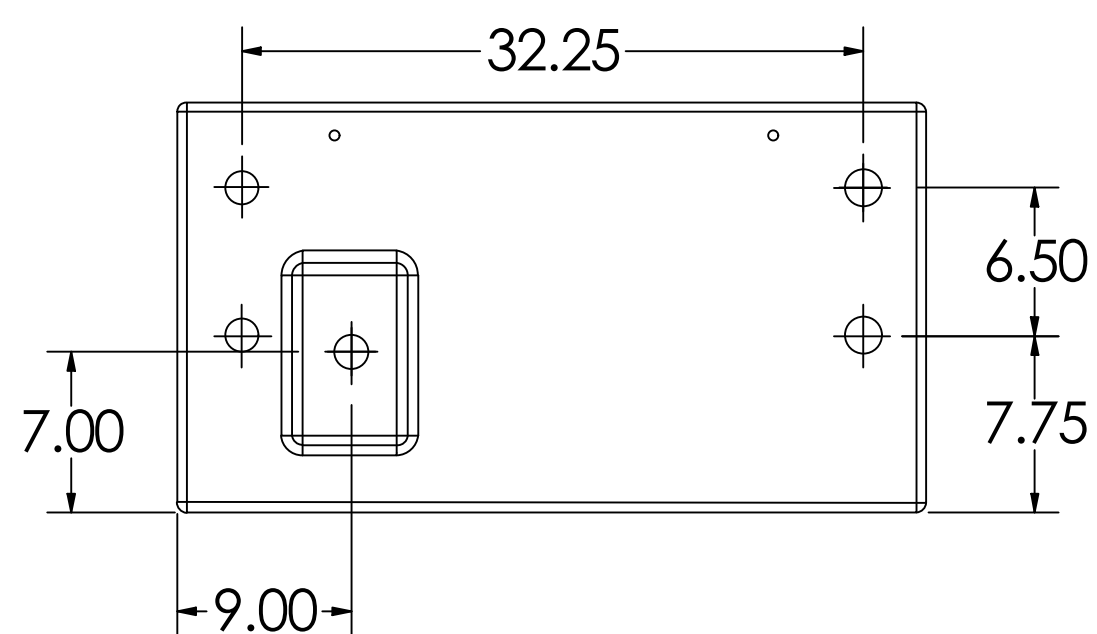
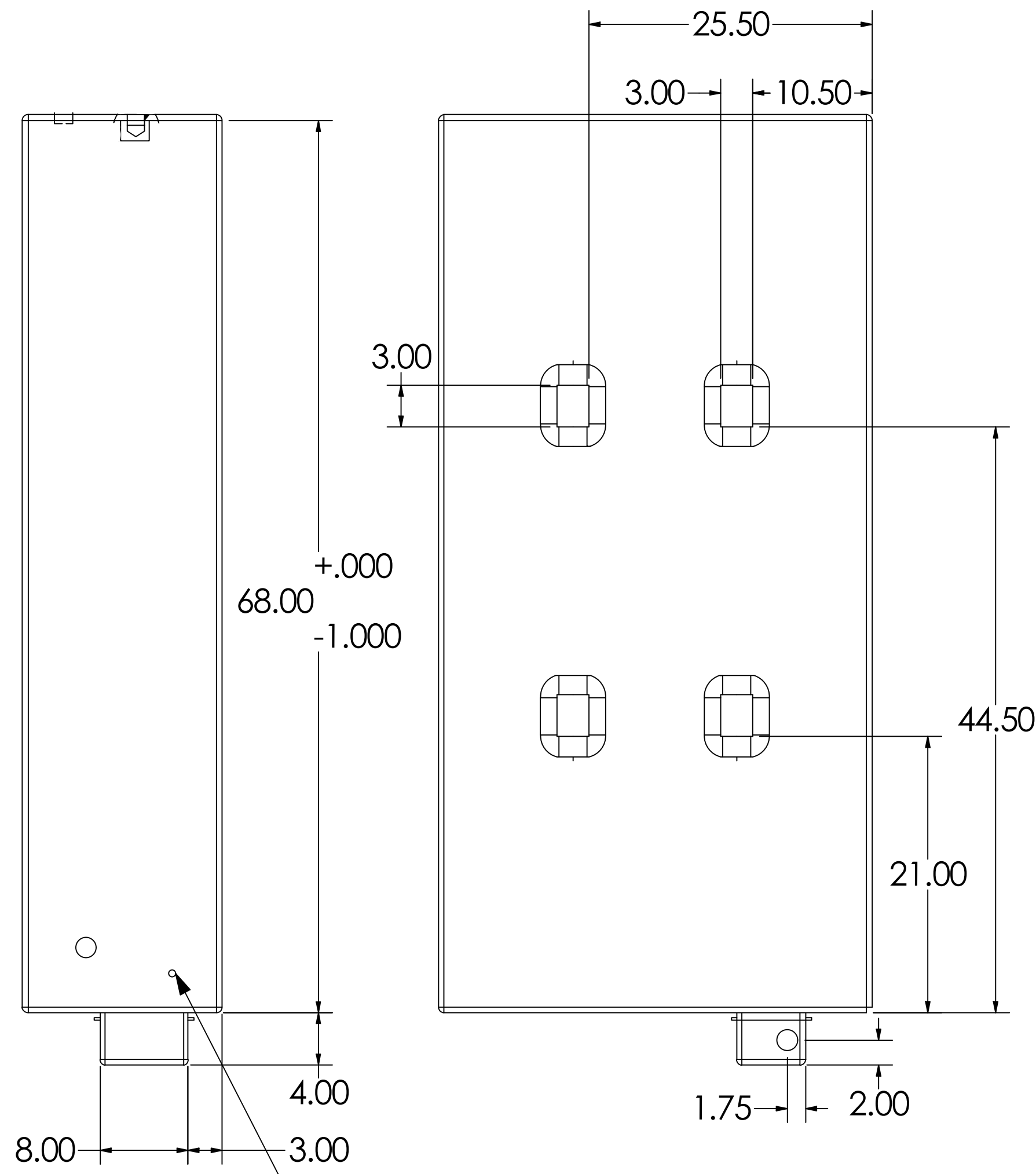
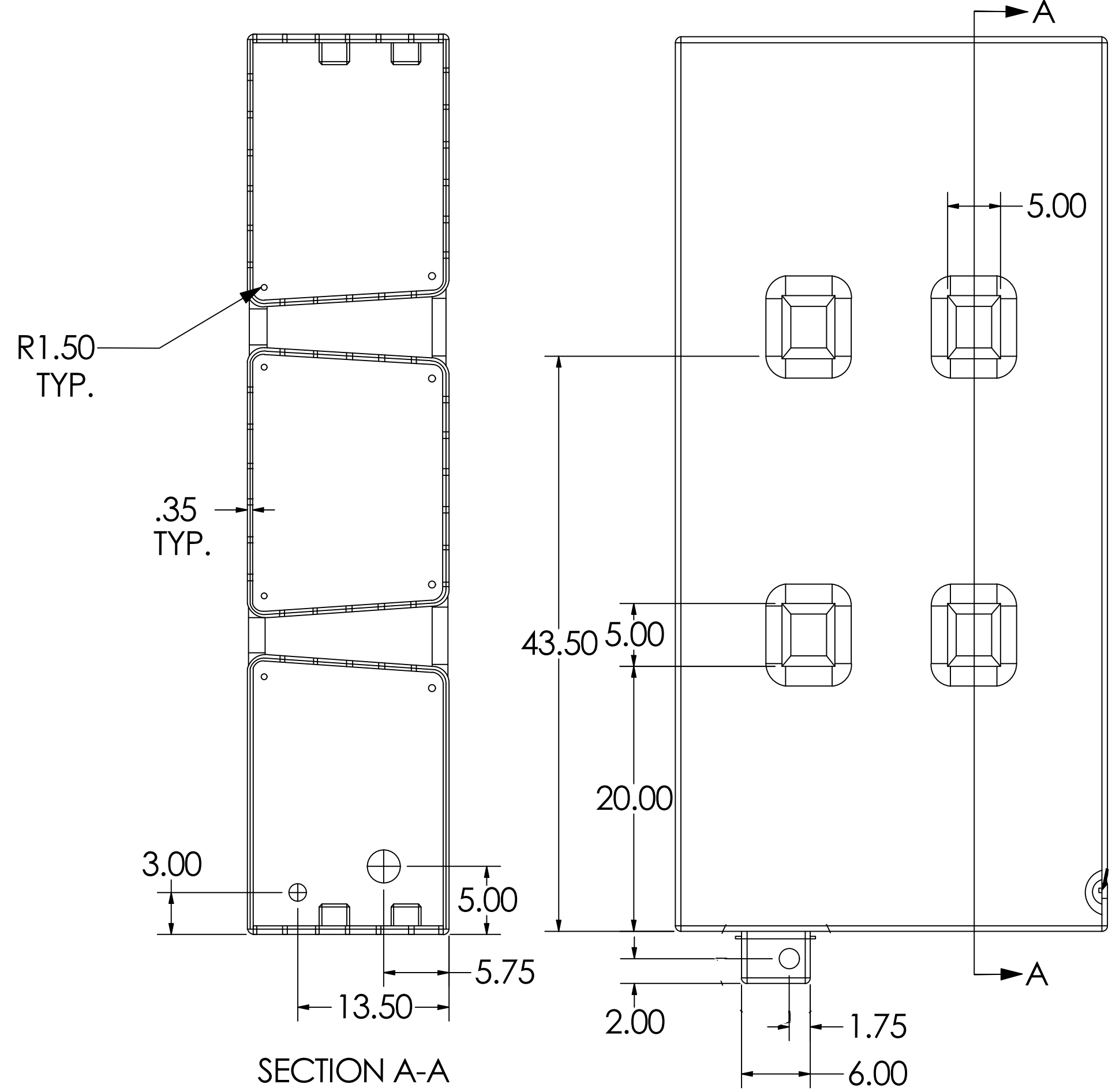
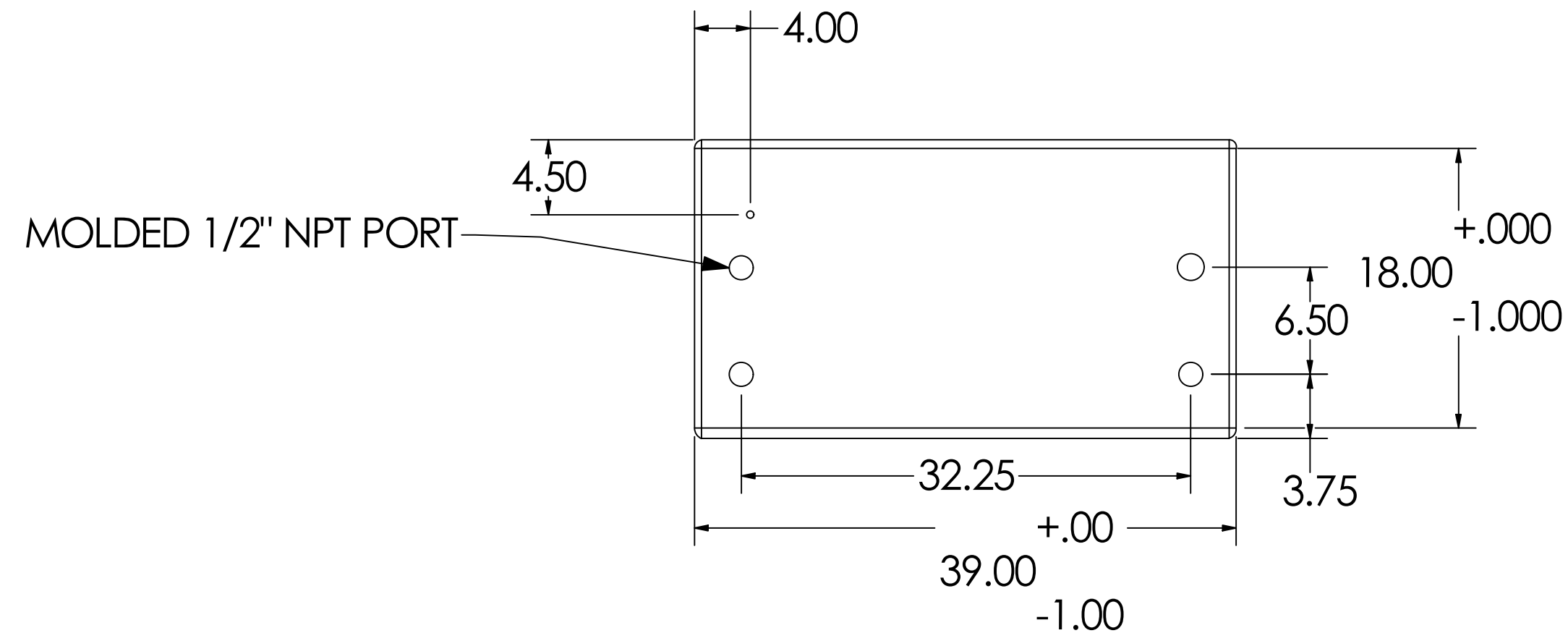
DRAWN BY: KBD
 CHECKED BY: N/A
 DATE: 08-08-19
 Scale: N/A
 EQN-1098
 SHEET 4 OF 5



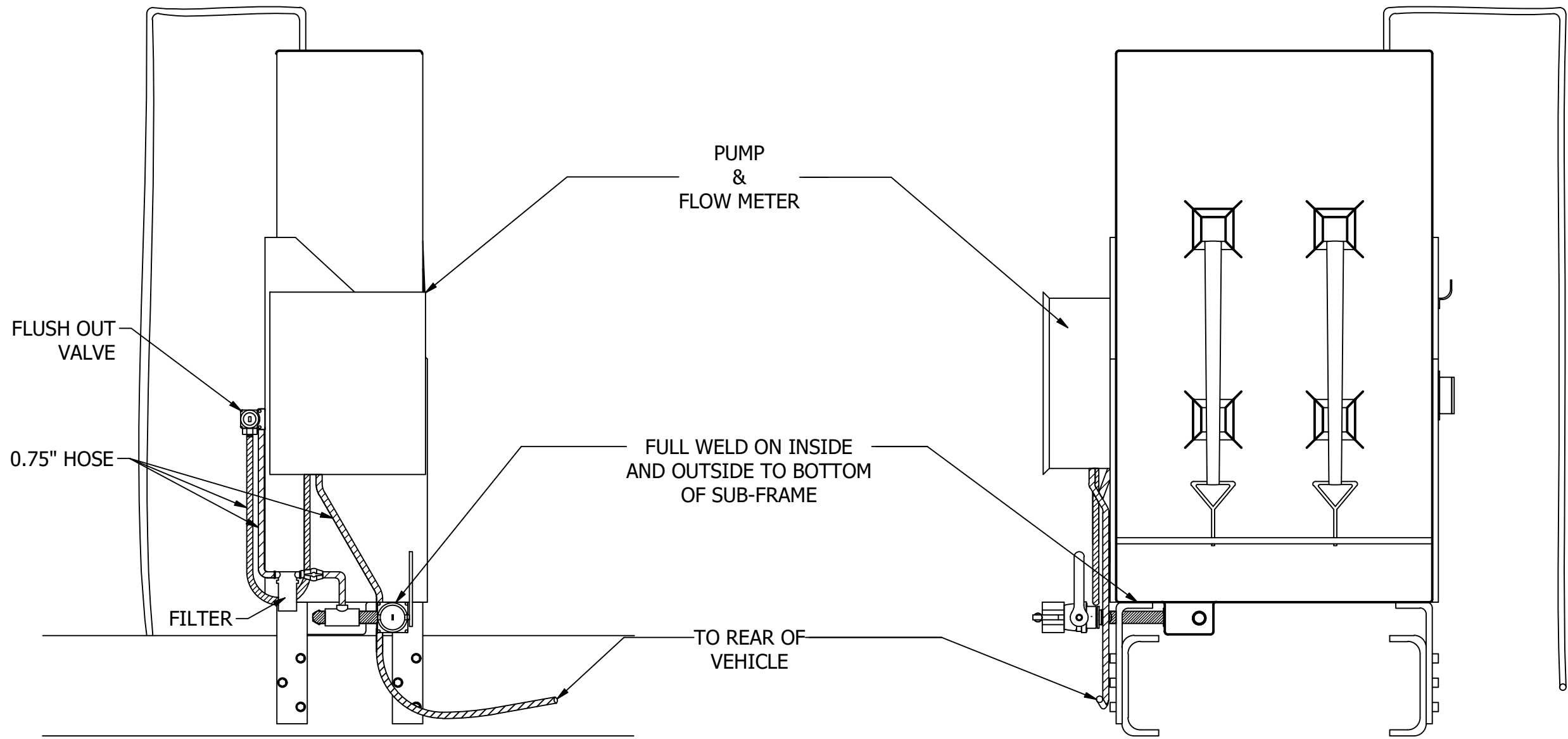
SHOVEL HOLDER

NOTE:
 - Shovel holder should be able to hold a 51" shovel without interfering with other components.

PA DEPARTMENT OF TRANSPORTATION				
REVISIONS			CAB PROTECTOR & PRE-WET DEFLECTOR	
NO.	DATE	BY		
1				
2			DRAWN BY	Combined With
			KBD	EQN-1098
3			DATE	CHK'D BY Scale
			08-08-19	N/A N/A SHEET 5 OF 5



REVISIONS			PA DEPARTMENT OF TRANSPORTATION	
NO.	DATE	BY	TITLE	
1	5-23-23	DVC	Dump Trucks 190 Pre-wet Tanks	
2				
3				
			DATE	DWG NO
			9-16-2020	EQN-1098A
			SHEET 1 of 2	

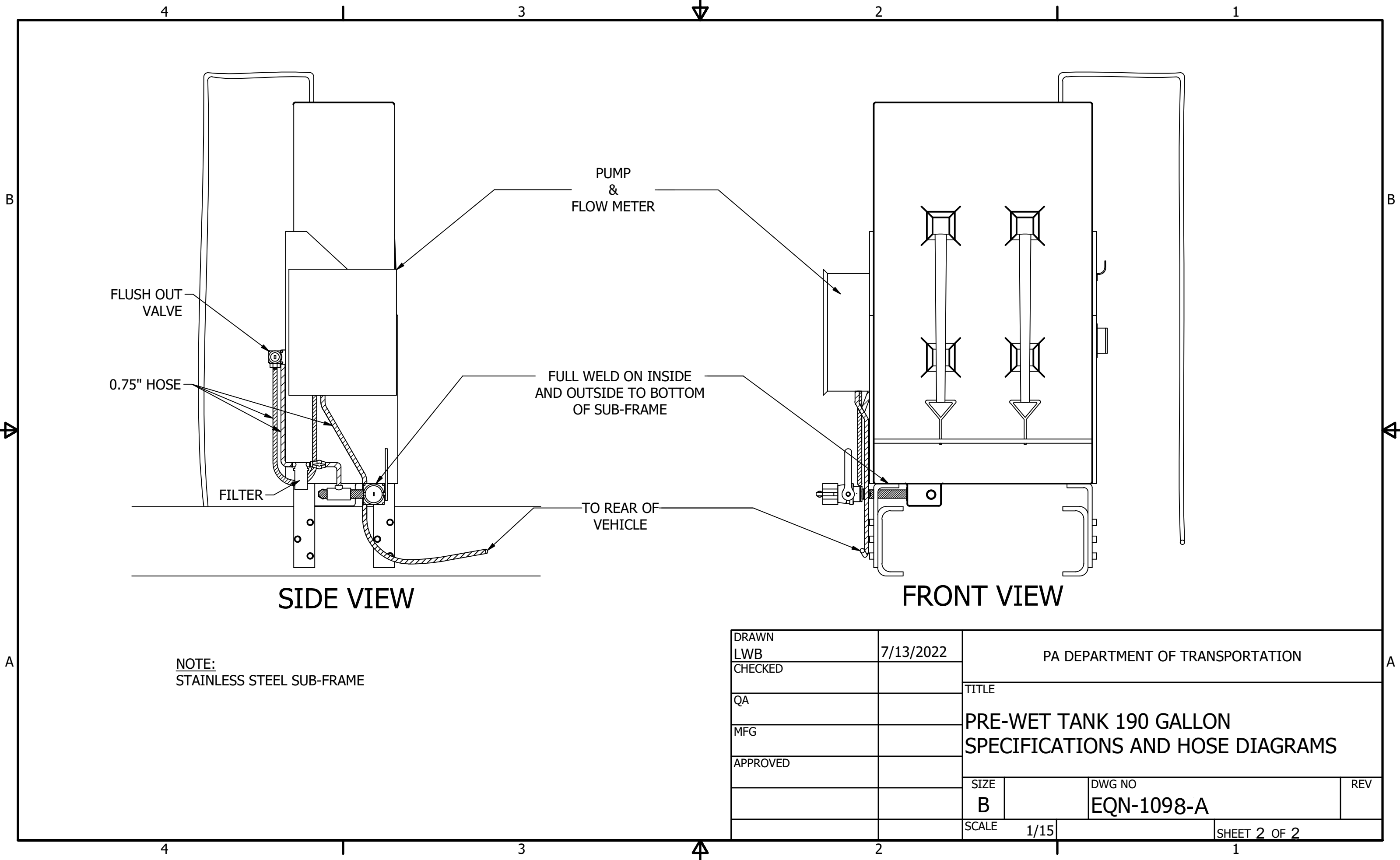


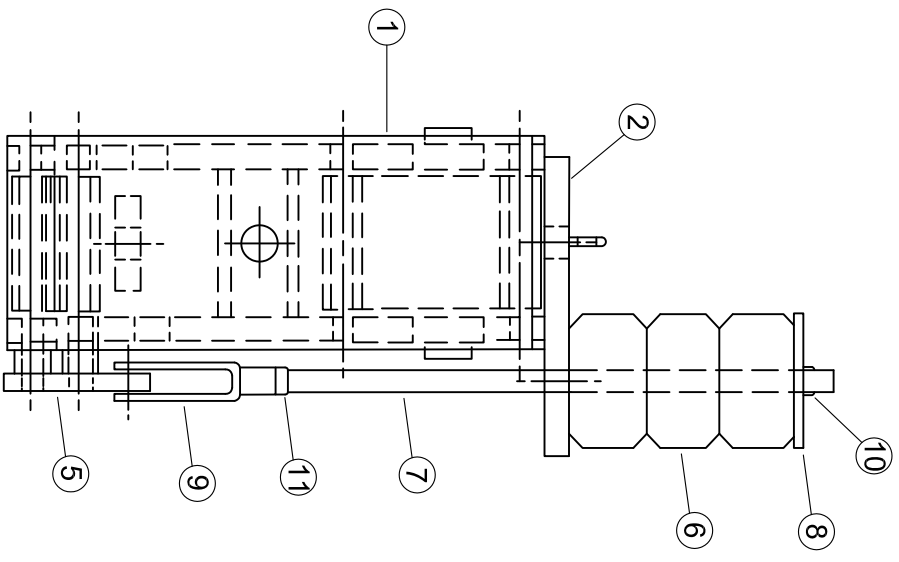
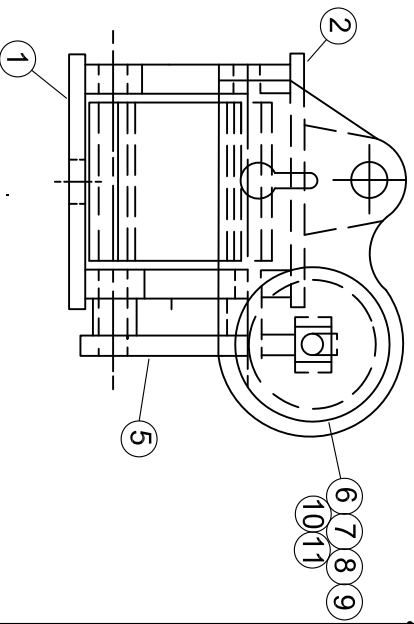
SIDE VIEW

FRONT VIEW

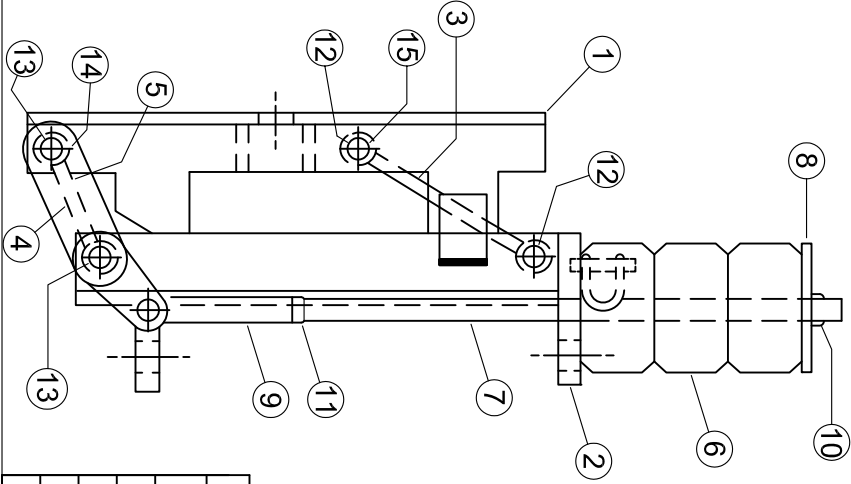
NOTE:
STAINLESS STEEL SUB-FRAME

DRAWN	LWB	7/13/2022	PA DEPARTMENT OF TRANSPORTATION	
CHECKED			TITLE	
QA			PRE-WET TANK 190 GALLON	
MFG			SPECIFICATIONS AND HOSE DIAGRAMS	
APPROVED			SIZE	DWG NO
			B	EQN-1098-A
			SCALE	1/15
			SHEET 2 OF 2	





ITEM	PART NO.	DESCRIPTION	REQ'D	NAME
1	17477-B	SEE DRWG.	1	FRONT MTG. PLATE WLDMT
2	17481-B	SEE DRWG.	1	REAR MTG PLATE WLDMT.
3	17485-A	SEE DRWG.	1	TOP LINKAGE
4	17486-A	SEE DRWG.	1	BOTTOM LINKAGE
5	17488-A	SEE DRWG.	1	SIDE LINKAGE
6	P-116-838	AEON A760-75	1	TIMBREN SPRING
7	17489-A	3/4" DIA. ROD x 25 LG. C.F.	1	ADJUSTING ROD
8	17490-A	----	1	SPACER
9	P-116-839	----	1	YOKE
10	P-130-68	3/4" LOCK NUT	1	LOCK NUT
11	P-130-23	3/4" NUT	2	NUT
12	5308-A477	7/8 - 9 UNC x 9 - 1/2 LG. w/LOCK NUT	2	CAPSCREW GR. 8
13	5308-A478	7/8 - 9 UNC x 12 LG. w/LOCK NUT	3	CAPSCREW GR. 8
14	P-129-2	1/8" NPT (SCREW IN STRAIGHT)	1	ZERK
15	P-129-178	1/8" NPT (SCREW IN 45 DEG)	1	ZERK
16	17565-A	SEE DRWG.	1	HINGE PIN



R.H. SHOWN
L.H. OPPOSITE

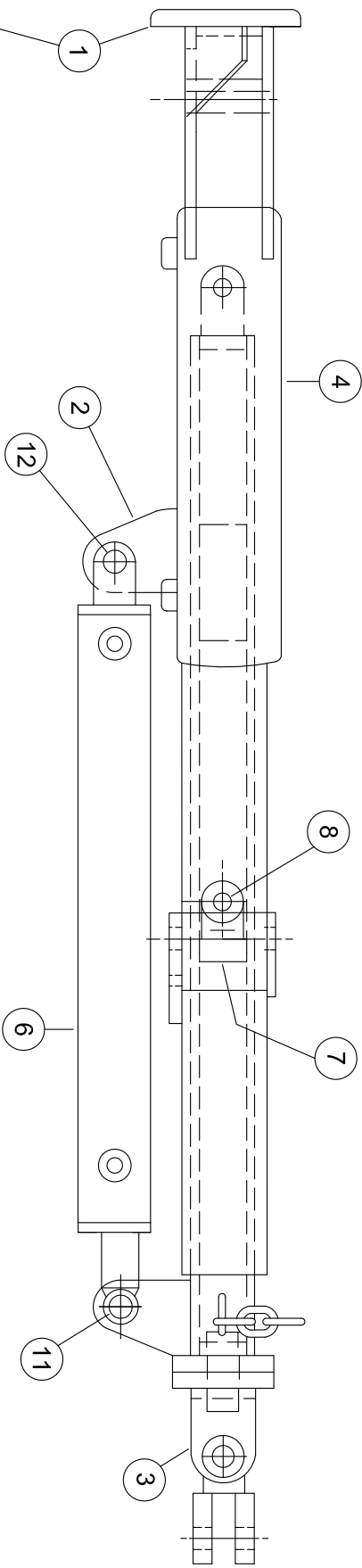
1 REQ'D PER UNIT

PA DEPARTMENT OF TRANSPORTATION

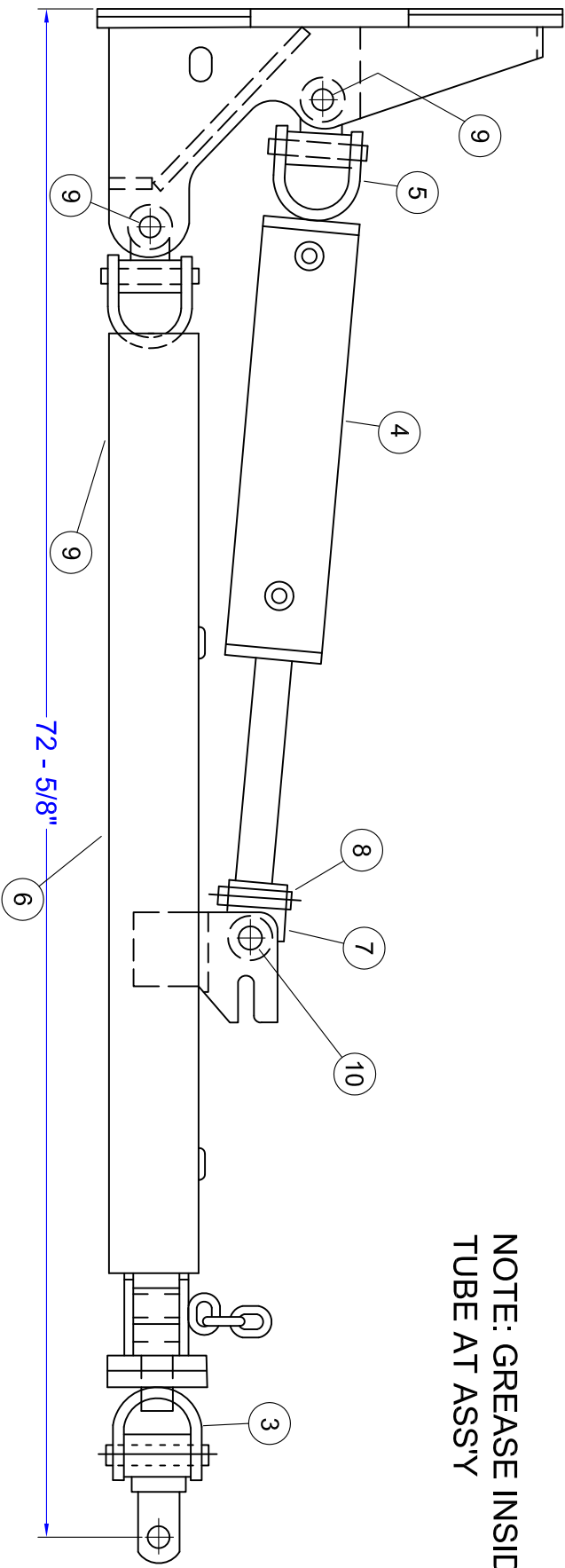
REVISIONS

TRIP LINKAGE FOR WING
PLOW

NO.	DATE	BY	DRAWN BY	Checked With	EQN-1099
1			KBD		
2					
3					



NOTE: GREASE INSIDE
TUBE AT ASS'Y



ITEM	PART NO.	REQ'D	NAME	DESCRIPTION
1	17543-B	1	REAR POST SLIDE	SEE DRWG.
2	17550-B	1	OUTER PUSH BRACE	SEE DRWG.
3	17557-B	1	INNER PUSH BRACE	SEE DRWG.
4	P-114-110	1	TOP HYD. CYLINDER	4 X 13-1/4 S.A
5	17551-A	1	SWIVEL FLANGE	SEE DRWG. (USED CYL. ITEM #4)
6	P-114-109	1	SIDE HYD. CYLINDER	3 X 24 D.A.
7	17551-A	1	CYL. ROD END SWIVEL TUBE	SEE DRWG.
8	F-159-4	1	PIN	1" DIA. x 3-1/2" LG. CRR
9	11685-A10	2	PIN	1" DIA. x 5" LG. w/HAIR PIN
10	5308-A377	1	CAPSCREW GR. 8	1" -8 UNC x 6 LG. w/JAM NUT
11	5308-A479	1	CAPSCREW GR. 8	1" -8 UNC x 4 LG. w/JAM NUT
12	5308-A480	1	CAPSCREW GR. 8	1" -8 UNC x 3-1/2 LG. w/JAM NUT

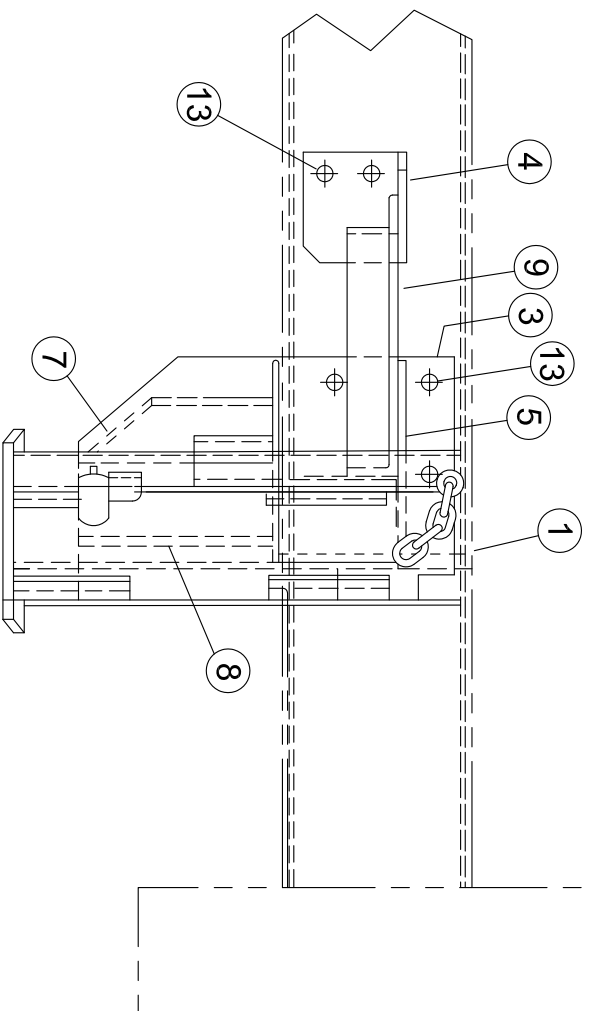
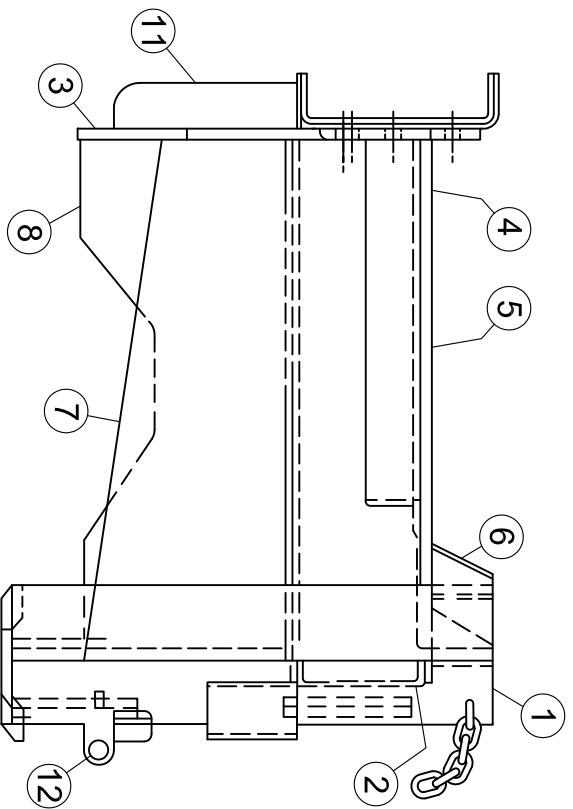
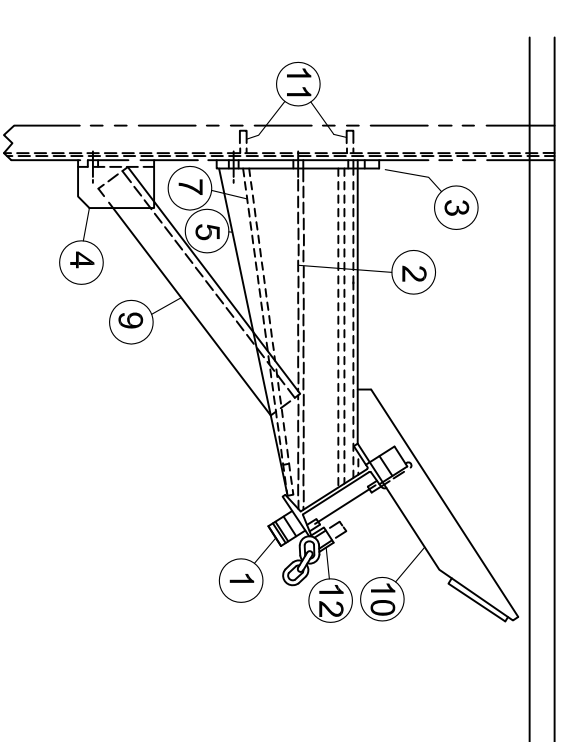
PA DEPARTMENT OF TRANSPORTATION

REVISIONS

NO.	DATE	BY	REVISIONS
1			
2			
3			

REAR WING PUSH BRACE
FOR WING PLOW

DRAWN BY	Checked/Title	EQN-1099
KBD	Scale	
DATE	07-18-19	Sheet 4 of 14



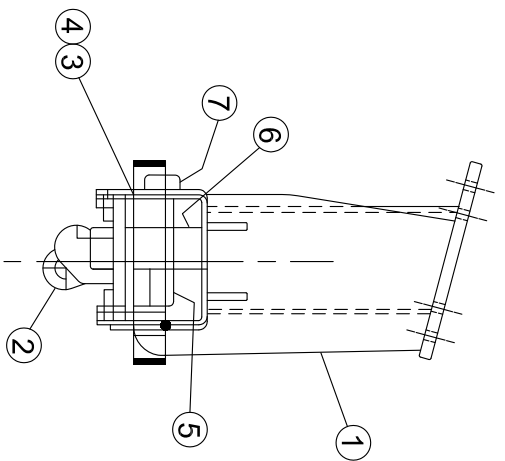
ITEM	PART NO.	REQ.	NAME	DESCRIPTION
1	17569-B	1	I-BEAM W/LD.MT.	SEE DRWG.
2	17570-A	1	RECT. TUBE	SEE DRWG.
3	17571-A	1	SIDE PLATE	
4	17572-A	1	MTG. ANGLE	
5	17573-A	2	REINF. PLATE	
6	5855-A-141	2	GUSSET	
7	17574-A	1	GUSSET	
8	17575-A	1	REINF. BAR	
9	F-118-46	1	REINF. ANGLE	
10	17626-A	1	WING UP STOP	SEE DRWG.
11	14658-A20	2	REINF. BAR	
12	17134-A3	1	PIN	1" DIA. x 5-1/2 LG. w/HAIR PIN
13	5308-A261	7	CAPSCREW GR. 8	3/4-10 UNC x 2-1/2 LG. w/LOCK NUT

PA DEPARTMENT OF TRANSPORTATION

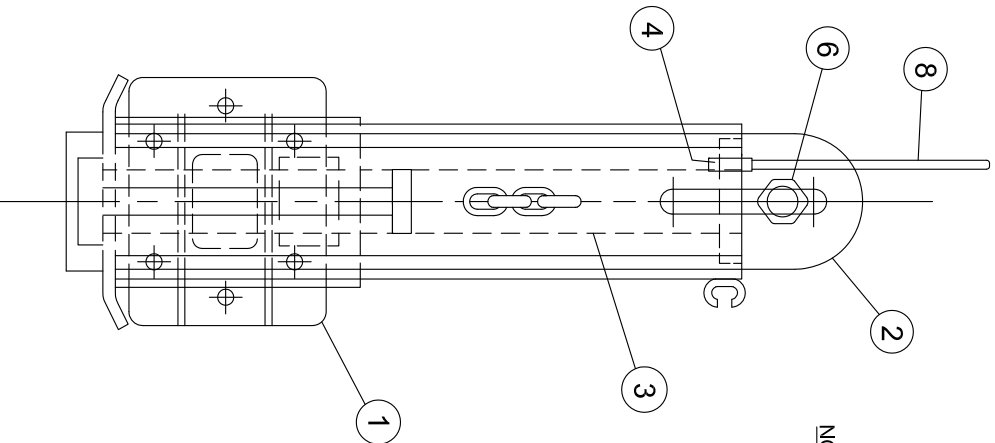
REVISIONS

NO.	DATE	BY
1		
2		
3		

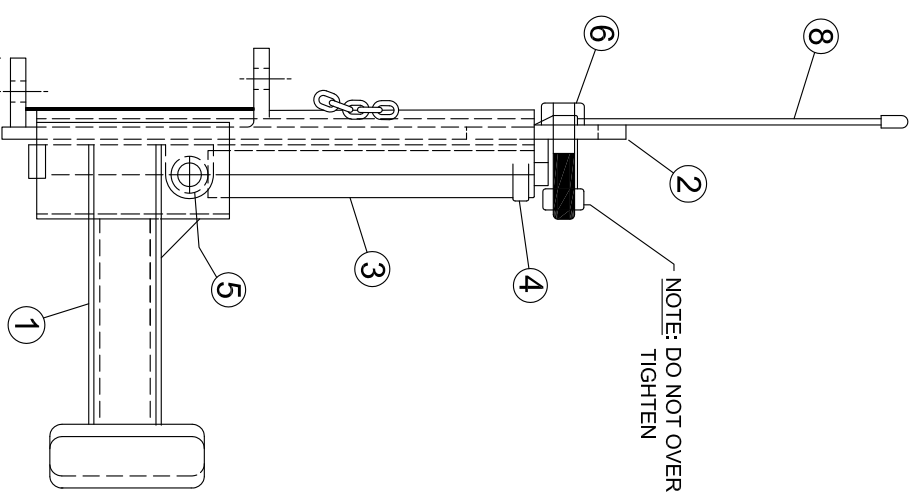
PASS. SIDE REAR POST		FOR WING FLOW	
DRAWN BY	KBD	Checked With	EQN-1099
DATE	07-18-19	CHK'D BY	Scale
			Sheet 5 of 14



NOTE: GREASE SLIDE
PLATE AT ASSY



ITEMS	PART NO.	REQ.	NAME	DESCRIPTION
1	17492-D	1	FRONT POST W/LDMT.	SEE DRWG.
2	17502-C	1	SLIDE W/LDMT.	SEE DRWG.
3	P-114-108	1	HYD. CYLINDER	2-1/2 x 15 D.A.
4	17504-A	1	CYL. HOLD DOWN	
5	F-176-3	1	PIN (BOTTOM CYL.)	1-1/2 DIA. x 7-1/2 LG. HRR
6	5308-A475	1	CAPSCREW GR. 8	1-1/4-7 UNC x 6 LG. w/LOCK NUT
7	5308-A476	1	CAPSCREW GR. 8	1/4-20 UNC x 3 LG. w/LOCK NUT
8	P-116-637	1	MARKER POLE	BUYERS



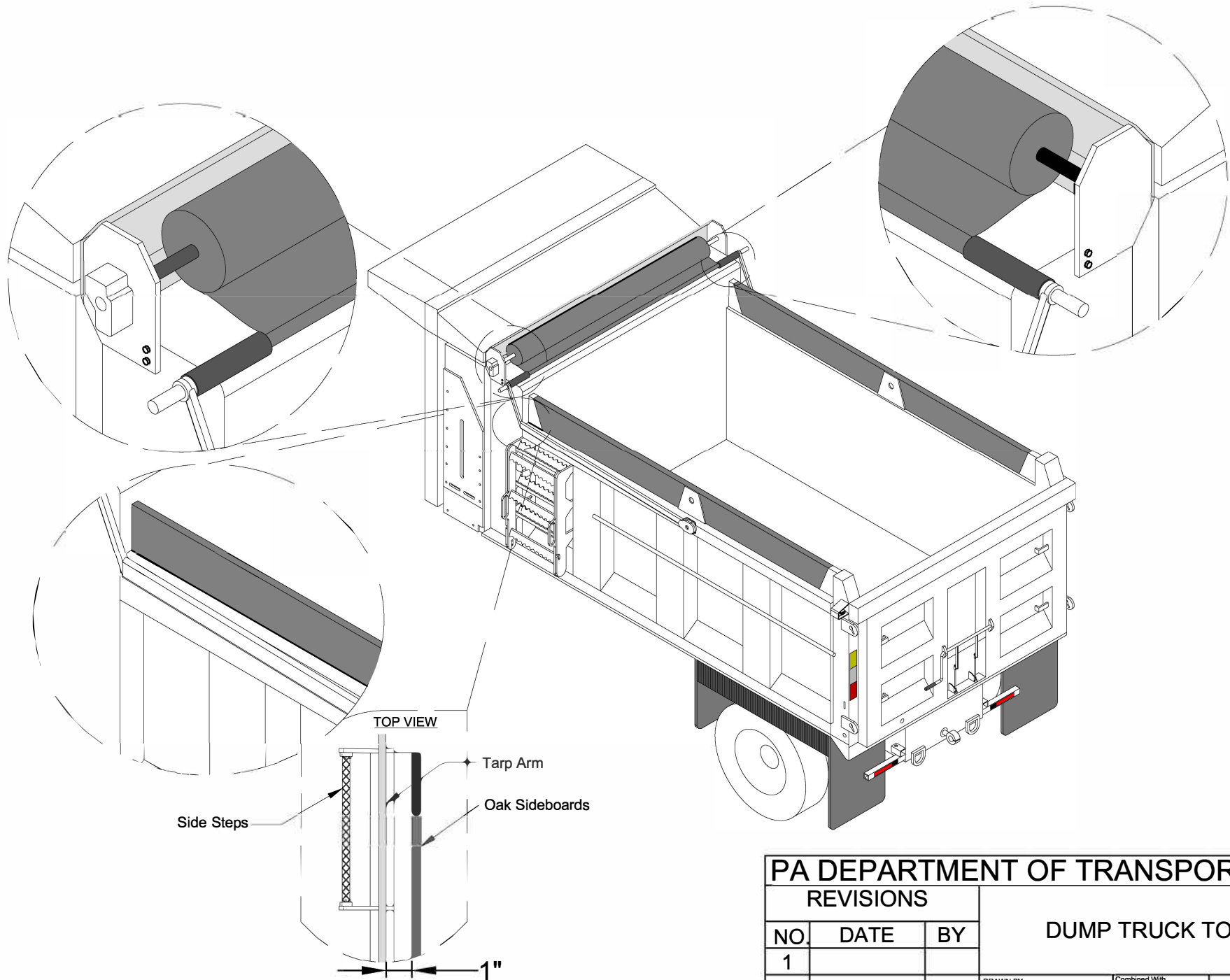
PA DEPARTMENT OF TRANSPORTATION

REVISIONS

NO.	DATE	BY	DESCRIPTION
1			
2			
3			

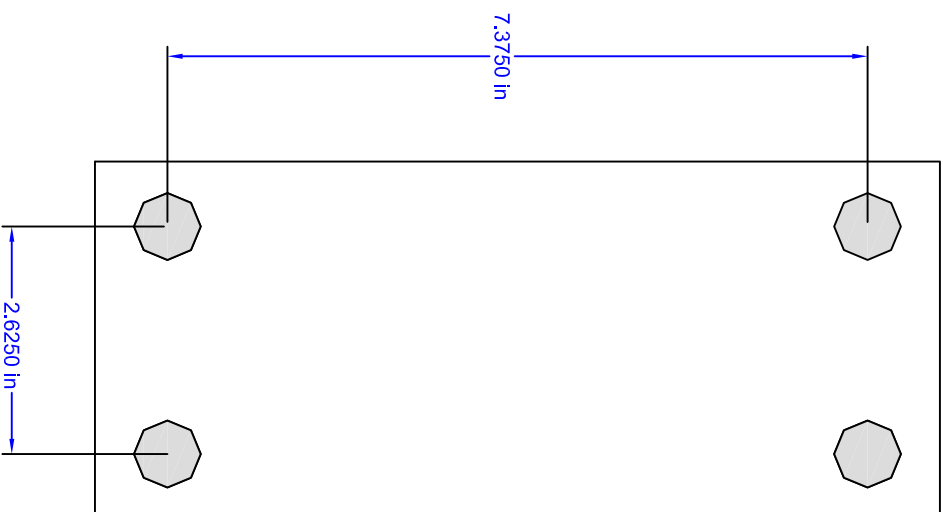
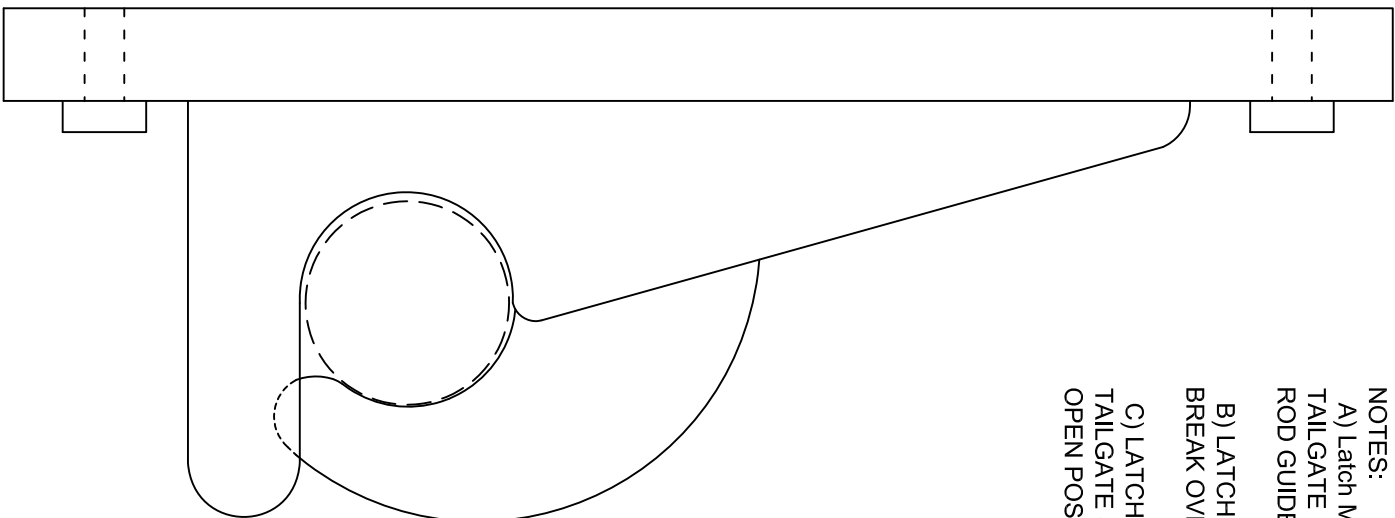
FRONT POST ASS'Y

DRAWN BY	KBD	Checked with	EQN-1099
DATE	07-18-19	CHK'D BY	Scale
			Sheet 7 of 14



PA DEPARTMENT OF TRANSPORTATION				
REVISIONS			DUMP TRUCK TOP TARP	
NO.	DATE	BY		
1				
2			DRAWN BY KBD	Combined With EQN-1100
3			DATE 08-06-19	CHKD BY Scale SHEET 2 OF 2

- NOTES:
- A) Latch MUST FULLY CLOSE ON TAILGATE ROD AND ENGAGE TAILGATE ROD GUIDE FINGERS.
 - B) LATCH SHALL BE ADJUSTED TO BREAK OVER CENTER WHEN CLOSED.
 - C) LATCH SHALL NOT INTERFERE WITH TAILGATE SWING WHEN LATCH IS IN THE OPEN POSITION.



PA DEPARTMENT OF TRANSPORTATION

REVISIONS

NO.	DATE	BY	Dump Truck Latch		
1			DRAWN BY	KBD	Continued With
2			DATE	07-29-19	EQN-1105
3			CHK'D BY	Scale	SHEET 1 OF 1

SPECIFICATIONS

A-A1

**TRUCK – DUMP – CONVENTIONAL – 66,000 LB GVWR
HEAVY DUTY TANDEM AXLE DUMP TRUCK, ALUMINUM BED (TYPE IV)**

TRUCK, DUMP, TYPE IV, ALUMINUM BED, RIGHT WING PLOW, UNDER TAILGATE SPREADER
AND IOWA SPINNER **(052662-S)**

I. GENERAL TRUCK SPECIFICATIONS:

- A. Intent Statement
- B. Weight Distribution
- C. Power train Overview
- D. Vehicle Components
 - 1. Axle Front
 - 2. Axle Rear
 - 3. Brakes
 - 4. Cab
 - 5. Chassis
 - 6. Drive Line
 - 7. Electrical
 - 8. Engine
 - 9. Exhaust
 - 10. Fast Lube Oil Change System (FLOCS)
 - 11. Frame and Frame Extension
 - 12. Instrumentation
 - 13. Paint
 - 14. Steering
 - 15. Suspension: Front
 - 16. Suspension: Rear
 - 17. Tank- Fuel
 - 18. Wheels/Tires
 - 19. Transmission

August 17, 2023 JF, JH & GW

SPECIFICATIONS

A-A1

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. Dump Body and Equipment Mandatory Minimum Specifications

1. Dump Body Structure, Aluminum
2. Central Hydraulic System/Hydraulics
3. Tarping System

F. General Plow Mounting/Accessories

G. Temperature Sensor

H. AVL Hardware

I. Under Tailgate Spreader with Iowa Spinner

J. Right Wing Plow Specifications

1. Intent Statement
2. Specifications
3. Minimum Alterations
4. Plow Identification
5. Paint
6. Conspicuity Tape
7. Wing Plow Light

L. Installation Practices

M. Safety

II. DRAWINGS:

III. MANUALS:

IV. TRAINING:

V. WARRANTY:

SPECIFICATIONS

A-A1

I. GENERAL TRUCK SPECIFICATIONS:

A. Intent Statement:

Intent: The purpose of these specifications is to describe a conventional cab, tandem axle dump truck, equipped with dual rear wheels, 13.5 foot dump body, 12 cubic yard approximate load capacity aluminum severe duty body, hoist, hydraulic power system and snow plow hitch. Shall be capable of one-man operation while plowing snow and simultaneously spreading granular and liquid materials 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 a front-end loader or self-propelled belt loader. The body shall be capable of having the following components connected and or mounted to it: wing plow, slide in anti-ice insert, under tailgate spreader, tarp, paver, and chipper.

The body shall be capable of being utilized in the raised position for extended use while spreading salt, anti-skid and liquid material.

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

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

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

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

SPECIFICATIONS

A-A1

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

B. WEIGHT DISTRIBUTION:

Weight distribution charts must be submitted with the pilot model for all models being delivered. Weight distribution charts shall be submitted for two modes listed below.

1. Summer mode including the portion of the wing plow post and plow frame assembly that remains on the vehicle all year.
2. Winter mode with front plow, loaded pre-wet tank, 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 slips 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-A1

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 66,000 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-A1

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

B. WEIGHT DISTRIBUTION: (Continued)

Truck GAWR's as Built (LB)

	<u>Front GAWR</u>	<u>Rear GAWR</u>
Axle	_____	_____
Tires	_____	_____
Springs	_____	_____
Rims	_____	_____

C. POWER TRAIN OVERVIEW:

ENGINE

DIESEL, MIN. 425 HP AT GOVERNED RPM, MIN. PEAK TORQUE OF 1540 LB/FT TORQUE, MIN. 12.4 LITER (actual engine liters).

TRANSMISSION

AUTOMATIC ALLISION 4500 RDS 6 SPEED

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

Transmission shall require a brake application to shift into any gear from neutral with parking brake in the "OFF" position. Transmission shall stay in gear while parking brake is set to "ON" for a "Pull Test".

REAR AXLE

DANA DT463P
MERITOR RT46 -164 -P
MACK S462

Lubricants for front axle hubs, automatic transmission and all rear axle differentials shall meet or exceed all appropriate MIL and SAE specifications for synthetic lubricants and shall have all plugs identified as synthetic oil, or painted red. All axles shall have magnetic drain plugs.

SPECIFICATIONS

A-A1

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

D. VEHICLE COMPONENTS:

1. AXLE FRONT:

20,000 lb. axle manufactures standard wheel seal
MERITOR MFS-2
MACK FXL 20
DANA D-20000F

The front axle shall be rated at 20,000 LB minimum capacity. The front axle drag links and tie rods shall have grease zerks installed. Kingpin or bushings shall be grooved to permit grease flow. Sufficient tire clearance at maximum turning angles. Complete oil seal assembly, including hub, plug type window, and seal. Each unit shall receive a front-end alignment prior to delivery. A setback axle is unacceptable.

2. AXLE REAR:

DANA DT463P
MERITOR RT46 -164 -P
MACK S462

Rear axles shall be rated at 23,000 LB. each.

Aluminum or lightweight housing is unacceptable. Only heaviest duty housing will be accepted.

All rear axles must provide axle shafts with a minimum diameter of 2.19 inch at the spline. All rear axle(s) shall have an extended breather tube to prevent debris buildup from entering axle housing. There shall be a torque-proportioning traction-assist device, which is full locking within the differential housing. The device shall provide maximum traction to the rear wheels when actuated and shall be a self-relieving designed to prevent gear damage and/or axle shaft breakage under extreme service conditions. The traction-assist device shall be driver actuated by a dash mounted traction control switch.

Lubricants for all rear axles shall meet or exceed all appropriate MIL and SAE specifications for synthetic lubricants and shall have all fill plugs identified as synthetic oil, or painted red.

Stemco guardian or SKF Scotseal, Chicago Rawhide rear wheel seals, or approved equal. All axles shall have magnetic drain plugs.

The following information shall be presented at the pre-build meeting.

Rear axle selection shall be made after the award and may be a mix of ratios as required. The successful vendor/manufacturer shall present three (3) computer runs showing the three most likely ratios for consideration for a top speed range of 55 MPH to 65 MPH max. Gear Selections shall provide gear ranges at 25 MPH & 35 MPH with a 1600 RPM to 1900 RPM range for plowing and spreading operations.

The rear axle ratios must be "identical" throughout the entire build.

SPECIFICATIONS

A-A1

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

D. VEHICLE COMPONENTS: (Continued)

3. BRAKES:

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

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

Rear brakes: 16.5-inch x 7 inch "S" cam with quick-change type double anchor pin. Meritor Q+ (**No substitute, standardization**).

Steer-axle-brake: 16.5-inch x 6 inch "S" cam with quick-change type double anchor pin. Meritor Q+ (**No substitute, standardization**).

Drum brakes shall have automatic slack adjusters and they shall be clearance-sensing type only, with adjustment on application of the brake. (**No substitute, standardization**). Backing plates shall be installed on all drum brakes.

Air compressor: Per truck manufacturer's recommendation. Compressor shall be fitted with a safety valve to prevent mechanical failure.

Low air pressure indicator: Buzzer-type and dash light. Must meet current Federal DOT guideline requirements. Air gauge shall display in 5lb. increments. Digital numerical readout is acceptable. Air gauge and low air warning buzzer shall operate with key switch **on** and engine **off**. Function shall not have capabilities of being deactivated by the operator.

Parking brake: Rear wheel spring-type, MGM E 30/30 or Haldex 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.

All brake chambers, front and rear, shall be equipped with rubber boots on the brake chamber push rods.

Rear service brake chambers and spring brake chambers shall be 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, mounted away from road splashing and a minimum of 20 inches above road surface. Dryer shall be compatible with the body company clearance requirements for sub-frame, valve body, etc. Bendix AD-IP (**No substitute, standardization**) installation made in concurrence with the air compressor manufacturer's recommendations.

Air dryer shall be placed outside of frame rail to accommodate the changing of filter cartridges without disconnecting any hoses or removing dryer base from its mounting location. **Final mounting location shall be determined at Pre Build meeting.**

System shall be equipped with anti-compounding valve to prevent mechanical failure of the foundation brakes, slack adjusters, etc.

Trailer air brake: Unit shall be equipped with factory installed trailer air brake control package. To include dash mounted, graduated, hand operated, trailer service brake trolley control valve. Body builder to mount and install Phillips STA-LOCK glad hands (1 each part numbers 12-4906 and 12-4908), location to be determined at pre build meeting Ref: EQN-26B.

SPECIFICATIONS

A-A1

I. GENERAL TUCK SPECIFICATION: (Continued)

D. VEHICLE COMPONENTS: (Continued)

4. CAB:

Aluminum or galvanized steel cab.

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

Exterior grab handles shall be supplied if available from OEM.

Hood: Fiberglass, tilting. Fenders shall be part of tilting hood. Grille shall be fixed and constructed of a non-rusting material. Hood shall be one piece design, high visibility, and without any access panels.

Air suspension system for the cab shall be factory installed.

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.

Fenders: Front fenders shall have a formed extension. Not to exceed 102 inch truck width.

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 and wireless hands free cell phone connection.

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

All controls and knobs shall be properly identified.

Brake and throttle pedal shall be suspended if available from the factory.

CB Power connections One (1) pair, on the dash, Ref: EQN-78.

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

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

Cruise control

Cup holder in the cab within easy reach of the operator

Dome light shall be provided

Dual sun visors

Drivers and passenger's side windows shall be power.

Driver's and passenger's doors shall be equipped with power door locks.

Windshield: Manufacturer's standard heated windshield. One (1) or two (2) piece construction is acceptable, must be tinted. Safety glass throughout.

Dual windshield wipers, arctic type with the heaviest arms, linkages and motor available. Wipers shall be minimum 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. Washer fill point shall be located to be accessed from ground level, without overhead reaching. With unobstructed and unrestricted flow from a one-gallon jug.

Mirrors: Driver and passenger side west coast style powered mirrors with manufactures standard heavy-duty breakaway arms. Mirrors shall have a minimum 105 square inch reflective surface. Mirrors shall be heated with a lighted toggle switch mounted within accessible reach of the operator, automatic on/off is acceptable. There shall be a heated convex mirror, minimum 50 square inch reflective surface. A heated blind-spot elimination mirror shall be mounted on the right front fender and it shall be minimum 50 square inch reflective area, stainless steel or aluminum head. Mirror shall be a conventional convex mirror and shall not be of the half-round cross view type. All mirror wires shall be fitted in such a way that the mirror glass/element can be changed by unplugging the two-wire lead. All arm/s and hardware shall also be stainless steel. Fender type washers, stainless or aluminum, with rubber pads shall be placed on both sides of the fender. Pedestal system shall be single, double or triple mounting assemblies (stainless steel or aluminum). Mirror shall be mounted in rubber or vinyl.

SPECIFICATIONS

A-A1

I. GENERAL TUCK SPECIFICATION: (Continued)

D. VEHICLE COMPONENTS: (Continued)

4. CAB: (Continued)

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 (Seatbelt shall be High Visibility Orange). Seat belts shall be equipped with a comfort lock. A bellow-type or protective skirt shall cover the seat suspension mechanism. If due to cab configuration a Bostrom 915 or National 195 seat cannot be used, a Bostrom 910 may be substituted. All other requirements must be met.

There shall be an inside armrest on the driver's seat plus an outside armrest installed on the seat or the driver's door. **(No substitute, standardization)**. Color coordinated to cab interior. Passenger seat shall be the manufacturer's standard non-suspension (static) high back type and shall have a three-point retractable seat belt (Seatbelt shall be High Visibility Orange). Color coordinated.

Seat Safety Switch: Drivers seat shall be equipped with a factory safety switch to work in conjunction with the central hydraulic system. Switch shall be rated at 7 lbs. and shall allow operation of the hydraulic auger spreader and spinner system when occupied and shut down the hydraulic auger spreader and spinner system ONLY when unoccupied.

Seat switch shall have all necessary components and connections to delay seat switch deactivation of auger and spinner circuit ONLY for a minimum of five (5) seconds and maximum ten (10) seconds.

Deactivation of the seat switch system shall activate a message on the spreader control screen display "AUGER & SPINNER STOPPED", this feature shall not cause any other interruptions or faults in the hydraulic/spreader system.

Reactivation of the seat switch system shall not require any action or input from the operator for operation of the complete hydraulic/spreader system.

It shall be the sole responsibility of the OEM to ensure seat safety switch compatibility with the selected hydraulic system manufacturer control system. Aftermarket installation of this switch is unacceptable.

Steering wheel diameter shall be 18 inch (approx.), Manufacturers standard.

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

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

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

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

SPECIFICATIONS

A-A1

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

D. VEHICLE COMPONENTS: (Continued)

5. CHASSIS:

The GVWR rating of the truck shall be 66,000 LB. A label stating this shall be affixed on the door or in the cab as the completion certification label.

CT dimension: 126.9 inch approximate cab to center of trunnion. Wheel base dimension 214 inch approximate. Wheelbase and CT dimension may be adjusted to provide the optimum legal weight distribution and to meet the vehicles intent statement.

The frame AF shall incorporate a cross member at the rear of the frame (Local installation is acceptable) to reinforce the body pivot point. Cross member may be deleted if body up fitter's engineering determines a cross member is not needed due to pintle plate installation. EQN-26B

Front Bumper: Heavy duty swept back design, mounted to the frame with the inner face of the bumper against the chassis frame.

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 rear securely mounted to prevent damage when backing into material piles. EQN-26B

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

6. DRIVE LINE:

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

7. ELECTRICAL:

All copper system, negative ground.

Alternator: Delco 36SI (**No substitute, standardization**) 160 amp minimum, high performance, solid state, brushless, with battery cable from battery negative terminal to starter motor or frame. All alternator and starter bolts shall be grade 8

Batteries: Three (3), heavy-duty, 12 volt, maintenance-free, BCI Group Size 31, with stud-type posts and anti-corrosion treatment on each terminal. 2500 total cold cranking amperes (CCA) at 0 degrees F. 540 minutes of total reserve capacity at 80 degrees F as per SAE.

Battery Mounting: Mounting 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). Cover shall be easily removable on completed unit.
- c.) Mounting bolts shall be grade 8 with self-locking nuts.

All OEM connections within the battery box shall have attached non-metallic embossed labels/tags. Labels/tags applied with self-adhesives or stickers will not be accepted.

Mounting of accessories within the battery box is prohibited. Any connections that are essential in the battery box must be pre-approved by the Chief of the Specification unit at the Fleet Management Division in writing (717) 787-1567. Any circuit deemed necessary for connection in the battery box by the body up-fitter or component manufacturer shall have attached non-metallic embossed labels/tags. Labels/tags applied with self-adhesives or stickers will not be accepted.

SPECIFICATIONS

A-A1

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

D. VEHICLE COMPONENTS: (Continued)

7. ELECTRICAL: (Continued)

All circuits shall be individually permanently labeled.

Cables shall conform to RCC Practice 105 with "sealed" terminal ends for stud-type battery posts.

Starter motor: Delco 39MT (**No substitute, standardization**) With thermal over crank protection and high torque capacity. Suitable for the diesel engines offered as per starter manufacturer's recommendation.

Electrical system: System shall be circuit-breaker-equipped, in an easily accessible location and weatherproof. Fuses acceptable in circuit so identified by manufacturer as safety factor. Any fuse or circuit breaker liable to be damaged during truck operation shall have an easily removable protective cover. All wire splices in the cab shall be insulated with heat shrink materials

Electrical chassis wiring: Factory heavy duty harness to power components in rear light module. Trailer light plug shall have brake lights operate in conjunction with the turn signals. per EQN: 80A

Flasher: (All) heavy-duty electrical, Ref: Tridon Model EL 12 or OEM Heavy Duty Electronic Flasher.

If an audible alarm is supplied for the 4-way and turn signal circuit, it shall have on/off capability.

Lights: All lights shall meet all Federal and State regulations. The head Lights shall be Halogen with (DRL's) daytime running lights. Body lights shall have their own dedicated complete circuit. The chassis manufacturer shall route the dedicated body circuit/harness to the rear center portion of cab, with 4' of extra wire coiled on floor between seats. All pass-through points shall be properly sealed and protected. This shall be the access/connection point for the Whelen Model # 01-1518839-3AB, old PN# PADOTS3V. Pass-through point and/or routing location determined at Pre-build Meeting.

Plow Lights: Shall be Trucklite Halogen head lamps Part# 80894 and 80899. (**No substitute, standardization**). Bracket design shall be either aluminum or stainless steel. Brackets shall be designed/constructed to provide sustained support of the light assembly while offering minimum vibration. Brackets shall be designed to place center of plow light lens approximately 80 inches from ground level and be adjustable vertically 3-inch up and 3-inch down. Ref: EQN-180. The height and width of the bracket will be governed by the application and shall meet all Federal and State lighting regulations. Awarded vendor shall supply plow light bracket design drawing(s) to the Fleet Management Division Specifications section for consideration. Final design shall be approved in writing from the specifications section chief at the pre-build meeting. The factory chassis plow light circuit shall be used and all areas where the wires might contact a rub point shall be protected by grommets, loom, etc. All connections shall be made using sealed connections and dielectric grease. Ref: EQN-180.

Radio Antenna: There shall be an antenna base, PCTEL Maxrad BMATM //NC25 and a multi-band Stico RFMT-NT-V/U/C-A whip. Assembly shall be mounted to the stationary headache/cab protector, (to the street side, of the light bar) with the antenna cable routed (within protective conduit) to the floor area between the seats. There shall be a minimum of 4 feet of antenna cable coiled at the base of the floor to allow for connection of radio on spreader control pedestal. Antenna shall be prewired with a UHF MALE connection. (No substitute, standardization). Antenna shall be mounted to not interfere with cab shield.

Power Distribution Center: There shall be a 4-way power/ground distribution center located on the underside of the dash for connection of the state radio. The lugs shall be configured in the following manner: (1) lug shall be a 30 ampere constant hot circuit, (1) lug shall be a 10 ampere ignition controlled circuit. (2) lugs shall be chassis ground. All connections shall be enclosed in a weatherproof enclosure. See EQN-562 drawing for details.

Each circuit shall be supplied individually, labeled, properly sized, protected from weather and sealed to be watertight.

SPECIFICATIONS

A-A1

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

D. VEHICLE COMPONENTS: (Continued)

7. ELECTRICAL: (Continued)

A Data port, read only shall be supplied within easy access under the dash with 12-volt constant power and ground terminals for connection to department fuel system equipment **and a separate** data port, or terminating resistor shall be supplied within easy access under the dash with 12-volt constant power and ground terminals for connection to department AVL system equipment. 12-volt constant and ground circuit (fuse protected) may be utilized for both the fuel system and AVL equipment. If read only data ports are supplied for both the Department's fuel and AVL systems, the data ports, must be independent of one another.

8. ENGINE:

Automatic idle shutdown shall be set to five (5) minutes. An audible warning alarm and dash light shall be provided to alert operator prior to engine shutting down.

ECM shall be set to a maximum of sixty five (65) miles per hour.

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, belts and areas behind tires from stones and debris.

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

Diesel Fuel Filter: There shall be a DAVCO 382 filtration unit installed and mounted higher than fuel tank per manufactures recommendations in a location to accommodate filter replacements, yet be protected from road debris. Mounting location to be determined at pre-build meeting.

Davco 382 Unit shall be equipped with engine coolant heat, 12-volt key accessory activated heat and 120-volt heater circuit. The 120-volt circuit and engine block heater shall be powered via the same electrical connection.

Cooling System: The system shall be the largest factory engine cooling capacity, compatible with engines and transmissions referenced 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. A non-charged spin-on coolant filter shall be installed if required by engine manufacturer.

Cooler guard: Mounted in front of radiator, full width and length to protect from stones and road debris. System to be approved by engine and truck manufactures.

Engine Oil Pan: Oil pan shall be 304 stainless steel, with stainless steel or corrosion resistant mounting hardware. Stainless steel oil pan shall be compatible with the FLOCs fittings. Stainless steel oil pan shall not void OEM's warranty.

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.

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

SPECIFICATIONS

A-A1

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

D. VEHICLE COMPONENTS: (Continued)

8. ENGINE: (Continued)

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

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

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

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

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 hoses 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.

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

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

9. EXHAUST:

Vertical tailpipe with elbow and muffler system or horizontal muffler and vertical tail pipe with elbow.

Exhaust system shall neither interfere with the operation of the dump body or equipment, nor shall it be close to any fluid tank, and **PERMIT WING FLOW AND PRE-WET TANK 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, DPF and tail pipe shall be shielded or insulated to protect personnel from burns when entering or exiting the cab. The shield shall be 180 degrees to 360 degrees and shall be of non-rustable material such as stainless steel or aluminum.

All exhaust/DEF components shall be properly shielded to protect personnel from contact, at ground level to the side and rear of cab and normal entrance and exit into cab. Exhaust components below and to the inside of the frame rails do not need shielding. Awarded OEM Model will be discussed at pre-build.

10. FAST LUBE OIL CHANGE SYSTEM (FLOCS):

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

SPECIFICATIONS

A-A1

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

D. VEHICLE COMPONENTS: (Continued)

11. FRAME AND FRAME EXTENSION:

Frame shall be a single rail; dual frame rails are unacceptable.

Resisting Bending Moment (R.B.M.) shall be a 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 one million inch LB per rail R.B.M. will be accepted.

Frame material shall be of at least 120,000-PSI yield strength. Minimum frame RBM shall be approved by manufacturer 's Engineering Department. **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 snowplow, right and/or left patrol wing plow, etc.** Mainframe and any required liners shall be either straight channel or offset channel, full length. **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.

12. INSTRUMENTATION:

All instruments and gauges shall be illuminated and dash-mounted, except where specified otherwise.

All standard instruments shall be supplied, including, but not limited to the following:

Oil pressure gauge with warning light or audible alarm.

Air pressure gauge(s) for dual circuit, dual indicator with low-pressure audible alarm and warning light.

Coolant temperature with warning light or audible alarm.

Transmission oil temperature gauge with warning light or audible alarm.

Fuel gauge.

Hour meter that records only when the engine is running. In – dash, integral with instrument panel and readable from the operator's seat.

DEF level gauge.

Speedometer with odometer and a dual speedometer lead to interface with the ground speed spreader control system.

Low air pressure indicator: Buzzer-type and dash light. Must meet current Federal DOT guideline requirements. Air gauge shall display in 5lb. increments. Digital numerical readout is acceptable.

Air gauge and low air warning buzzer shall operate with key switch **on** and engine **off**. Function shall not have capabilities of being deactivated by the operator.

Tachometer.

Voltmeter.

Parking brake indicator light.

Hydraulic fluid level gauge shall be installed within the dash face, exterior installation will not be accepted.

Air Restriction Gauge: Vehicle OEM equipped electronic dash that incorporates an air restriction gauge or indicator light, shall be required.

SPECIFICATIONS

A-A1

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

D. VEHICLE COMPONENTS: (Continued)

13. PAINT:

Cab shall be painted with OEM manufactures standard painting process PENNDOT yellow Ref: DuPont F9885, PPG 85246, Sherwin Williams 73266, Sikkens 4017 and NAPA 73266 for shade only.

Entire cab except for glass, rubber and those metallic accessories or fixtures constructed of rust-resistant (Aluminum and Stainless Steel) or plated material not normally painted. Base coat and clear coat. Ref: Axalita Imron for durability

OEM frame manufactures standard procedures shall be acceptable, all underside and attached components shall be ground to eliminate weld splatter, scale, sharp edges, rust and oils prior to a rust preventive primer and top coat of black paint. Powder coating is acceptable. Rims shall be painted as specified in the tire and wheel section of this specification.

Body up fitter prior to painting **all** body and upfit attachments (including wing frames) shall be ground to eliminate splatter, scale and sharp edges. All metal surfaces shall be cleaned to eliminate rust and oils prior to primer and final painting. All surfaces to be primed and painted, except for glass, rubber and those metallic accessories or fixtures constructed of rust-resistant (Aluminum and Stainless Steel) or plated material not normally painted shall be coated with one (1) coat of a rust preventive etching primer, (1) coat of epoxy primer and two (2) coats of the body up fitters lead free Acrylic urethane black paint to match frame. Wing plow moldboards shall be prepared to eliminate weld splatter, scale, sharp edges, rust and oils before a rust preventive etching primer and painted front and back with non-gloss PENNDOT Yellow paint, shade Ref. DuPont F9885, PPG 85246, Sherwin Williams 73266, Sikkens 4017 and NAPA 73266. Wing plow frame and all mounting and lifting components shall be coated with one (1) coat of a rust preventive etching primer, (1) coat of epoxy primer and two (2) coats of the body up fitters lead free Acrylic urethane black paint to match chassis frame. Aerosol can touch up paint and primer will not be accepted and will be rejected at the time of delivery inspection.

14. STEERING:

Power Steering: Dual integral type hydraulic power steering with right wheel power-assist cylinder. Glidecoat steering shaft or Bendix wedge lock lube-for-life shaft. The steering system (e.g. flow, pressure, relief valve etc.) shall be selected considering the full front-GAWR axle loading. Hydraulic supply pump shall be vane or roller type design 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 shall be remote mounted, minimum 1.5 -quart capacity, incorporating a filter that 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.

15. SUSPENSION: FRONT:

10,000 LB capacity at ground, each front spring. Springs shall be multi leaf design. 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. Maintenance free front spring bushings are acceptable.

SPECIFICATIONS

A-A1

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

D. VEHICLE COMPONENTS: (Continued)

16. SUSPENSION: REAR:

23,000 LB capacity at ground, each rear spring. Suspension shall be tailored to axle loads and shall be adequate to sustain maximum GVW, without overload or permanent set. 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 grease able 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.

17. TANK - FUEL:

Safety- type fuel tank as per the requirements of FMVSS. Dual tanks are unacceptable. Truck shall have one (1) 100 GAL minimum total capacity tank, frame mounted, under the left door. Tank mounting hardware and brackets shall be for "severe duty" applications. Heavy-duty aluminum or stainless steel, minimum 1.9-inch wide straps with rubber shims/liners shall be utilized. The fill pipe shall be accessible with the dump body in the down position; pipe can be located at either end of tank to avoid interference with steps. System shall be a top or side draw for suction and return lines.

18. WHEELS/TIRES:

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

Front: Wheels: 22.5 x 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 29807. **(No substitute, standardization).**

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

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

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

Wheel Guard Separator as follows:

Front axle - between the wheel and the brake drum.

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

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

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

Front Tires: 425/65R22.5 (Load Range L).

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

MANUFACTURER

Goodyear

Michelin

Bridgestone

SPECIFICATIONS

A-A1

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

D. VEHICLE COMPONENTS: (Continued)

19. TRANSMISSION:

AUTOMATIC:

ALLISON 4500 RDS 6 SPEED

Automatic transmission cooler lines shall be stainless steel.

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

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

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

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

Transmission shall require a brake application to shift into any gear from neutral with parking brake in the "OFF" position. Transmission shall stay in gear while parking brake is set to "ON" for a "Pull Test".

All transmission modules shall be routed and installed in the cab

SPECIFICATIONS

A-A1

I. GENERAL TRUCK SPECIFICATIONS

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. DUMP BODY AND EQUIPMENT MANDATORY MINIMUM SPECIFICATIONS:

1. DUMP BODY STRUCTURE, ALUMINUM:

Intent: The purpose of these specifications is to describe a conventional cab, tandem axle dump truck, equipped with dual rear wheels, 13.5 foot dump body, 12 cubic yard approximate load capacity aluminum severe duty body, hoist, hydraulic power system and snow plow hitch. Shall be capable of one-man operation while plowing snow and simultaneously spreading granular and liquid materials 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 a front-end loader or self-propelled belt loader. The body shall be capable of having the following components connected and or mounted to it: wing plow, slide in anti-ice insert, under tailgate spreader, tarp, paver, and chipper. Ref. EQN79A

The body shall be reinforced to withstand SEVERE duty service and be capable of being utilized in the raised position for extended use while spreading salt, anti-skid and liquid material or excavation with rip rap being dropped in the bed. **Samples of longitudinal and crossmember extrusion shall be supplied prior to build with lb./ft rating information for approval prior to pilot model build.**

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

Awarded OEM vendor shall be responsible for contacting the Specification Section of the Fleet Management Division at (717) 787-1567 to set up a pre-build meeting for all chassis and body mounting component locations prior to chassis build. Any deviations to the specification must be granted in writing by the Chief of the Specification Section. It shall be understood that any discrepancies/deviations between the specification and the completed unit(s), chassis or body up-fitter related, must be addressed and corrected prior to the delivery deadline and the Departments acceptances.

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

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

SPECIFICATIONS

A-A1

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. DUMP BODY AND EQUIPMENT MANDATORY MINIMUM SPECIFICATIONS: (Continued)

1. DUMP BODY STRUCTURE, ALUMINUM: (Continued)

Longitudinal Members:

Size – 6 inch I-Beam minimum, full-length construction.

Weight – 6.1 lb./ft minimum, **(NOT INCLUDING EXTRUSION TRACK FOR RUBBER).**

Material – 6061-T6.

Rubber track extrusion – 1.724 lb./ft min. 6061-T6 extrusion, to fit 2 inch x 3 inch rubber. Ref:

EQN-79A

Cross Members: Shall be welded to bed rails with 6 inch staggered welds on both sides. Ref: EQN-79A

Size – 4 inch I-Beam Minimum, full length except where it interferes with tailgate latch linkage.

Weight – 2.70 lb./ft minimum.

Material – 6061-T6.

Front extruded cross member – 4.0 lb./ft Min. 6061-T6 with grooved “J” channel for bulkhead to interlock or 1.85lb/ft Min 4 inch “C” channel 6061-T6 cross-member.

Rear extruded cross member – 2.86 lb./ft Min. 6061-T6 or 1.85lb/ft Min 4 inch “C” channel 6061-T6 cross-member. Tailgate shall seal against rear cross-member, it shall be continuously welded to the floor.

The last four (4) cross members shall be on 8 inch centers maximum, with the balance on maximum 12 inch centers.

Heavy Gussets: minimum size of 4 inch x 6 inch x 3/8 inch thick aluminum shall be welded at all cross members on the outside. In the pivot area or at positions blocked by components/accessories they may be welded on the inside of the rail.

Rear Body Hinges: There shall be two (2) web style mounting bracket's minimum 3/8 inch thick steel (one per side), spanning across a minimum of two (2) cross members. There shall be a 1/4 inch steel backing plate on the inside of the bed rail with (8) 5/8 inch grade 8 bolts and lock nuts, sandwiching the I-beam long sill between the plate and web mount. The hinge pin shall be a minimum of 2 inch O.D., full length between the outer edges of both web mounts. The section of pin between the frame rails shall not be covered. Both web-mounting brackets shall have 1/2 inch wall minimum grease able bushings. Ref: EQN-79A.

Rear Bolster: Shall be one-piece design, 3/8 inch x 6 inch minimum 6061-T6 aluminum, it shall be completely welded Design shall create a flush surface below the tailgate for the under tailgate spreader box to mount flush with no gaps between mating surfaces of the spreader to body areas. Ref: EQN-26B.

Underride protection shall be supplied in accordance with EQN-118.

Spinner and auger hydraulic lines shall be supplied in accordance with EQN-94. Lines shall be properly sized and hard piped. Each side shall have 1 each male pressure and 1 female return 5600 stainless steel series quick couplers. Hydraulic lines shall have a permanent stamped metal tags, permanently attached identifying each line, IE: Spinner, Auger & returns. Ref: EQN-94

Body Guides: There shall be steel, or aluminum body guides mounted to the longitudinal beams (both sides). There shall be mated steel reinforced guides bolted to the truck frame. Aluminum guides shall be constructed using minimum 3/8 inch aluminum. Steel guides shall be constructed using minimum 1/4 inch steel.

SPECIFICATIONS

A-A1

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. DUMP BODY AND EQUIPMENT MANDATORY MINIMUM SPECIFICATIONS: (Continued)

1. DUMP BODY STRUCTURE, ALUMINUM: (Continued)

Body Sides: Shall be constructed using a minimum of 1/4 inch thick abrasion resistant aluminum 5454H34 and be 40 inch high from top of bed floor to top of bed rails (one piece per side). Top rails shall be 4 inch boxed aluminum extrusion (3.00 lb./ft Min. 6061-T6), continuous welding. Top rails shall be one-piece construction: NO SPLICING. Rub rails shall have 4 inch aluminum face, width shall cover the outer rear dual tires and must be full length of the body, both sides. A minimum of five vertical extruded side braces per side shall be furnished using 2.650 lb./ft minimum 6061-T6 aluminum, evenly spaced, in addition to the front and rear corner posts, with continuous welding and shall have one bottom drain hole per brace. Outside dirt shedders shall be furnished using minimum 0.190 x 5 inch 5454H34 aluminum and installed between all side posts. There shall be 3/4 inch aluminum round stock from the rear of the front corner post to the front of the rear corner post on the passenger's side and from the front of the first side brace to the front of the rear corner post on the driver's side. Each shall be welded at each side post and at all corner posts. There shall be three (3) hand holds (3/4 inch aluminum stock) welded to the driver's side front corner post, location to be determined at pre-build meeting. There shall be aluminum gussets for side boards mounted to the top rail front, mid and rear. There shall be 2 inch by 6 inch, full length, rough oak side boards securely installed on both sides. A 3/8" pipe fitting with removable threaded plug shall be installed in the center line of the body approximately 12" from the floor level to allow temperature checks of hot asphalt. Threaded plug shall have three (3) inch bar stock welded for handle and be tethered to the bed to keep it from becoming separate from the truck. Ref: EQN-79A.

Bed Access Ladder: Folding ladder shall be welded to left front side of body, next to left front corner post. Ladder material shall be aluminum or 201 stainless steel, to match body material. Folding half of ladder may be aluminum to provide a lighter design. Handles shall be incorporated into design to provide operators handholds for folding, unfolding and climbing ladder. Ladder rungs shall be of an open design with a serrated edge in lieu of smooth edge. Top of first step shall be 21- inch from ground level, and rungs shall be evenly spaced at approximately 12 inch. Ladder design and mounting shall provide space for operator footing past ladder rung before contacting body side. Folding ladder shall provide a 15-degree angle from side line of body. Folding section shall have two (2) positive slotted/sliding locks, one to each side. Design shall be self-locking without the use of additional spring or rubber locking devices. Inside of dump body shall have grab handle installed in the upper rear side board pocket in line with outside ladder. Two (2) steps inside dump body for single axle, single axle crew cab and tandem evenly spaced in line with outside steps. Tri-axle shall have three (3) steps evenly spaced. Open design serrated steps shall be welded to body side minimum 13 inch to a maximum 16-inch-wide and 4.5 inch away from body side. All handles shall be coated with anti-slip paint, anti-slip tape will not be accepted. Completed ladder and grab handle design shall provide a minimum 500 lb. weight rating. Ref. EQN-79A & EQN-1090

Steel Body Props: There shall be two (2) props, (one per side) welded or bolted to the long bed beam. There shall be a three (3)-pocket rest bolted to the truck frame rail on each side. When released from the cradle, the body props shall be free to fall. Props shall fall into step retainer as bed is raised, un-assisted. Ref: EQN-62.

Floor: Shall be a minimum of 3/8 inch thick abrasion resistant aluminum 5454H34 one piece and fully welded, with extruded Z side channel minimum 4.19 lb./ft 6061-T6. Floor shall have inside clean outs (dirt shedders) fully welded to the floor and side sheets, entire bed length, both sides. Ref: EQN-79A.

SPECIFICATIONS

A-A1

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. DUMP BODY AND EQUIPMENT MANDATORY MINIMUM SPECIFICATIONS: (Continued)

1. DUMP BODY STRUCTURE, ALUMINUM: (Continued)

Front Body Bulkhead: One-piece design shall be fabricated using 0.190 inch standard aluminum 5052H32 with a full wrap around design to form the front corner posts. Front corner posts are required to have a 15 inch side face. Top of front bulkhead shall be 56 inch from bottom of front extruded cross member. The top of bulkhead support brace shall be 3.00 lb./ft minimum aluminum extruded box channel 6061-T6 with full weld on end caps. A 4 inch aluminum reinforcement (full width of the body) shall be fully welded to the inside of the bulkhead halfway between the floor and top of the bulkhead. **Complete continuous welding.** Ref: EQN-79A.

Rear Corner Posts: Shall be constructed using 1/4 inch aluminum 5052H32, both 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. There shall be two-spreader chain holders on each rear corner post (top and bottom banjo style) fully welded. Final location to be determined at pre build meeting.

Fixed Cab Shield: One-half (1/2) cab shield constructed using 0.190 inch thick 5052 H32 (formable) aluminum with a 4 inch formed front face extending over the cab. Mounting uprights shall be constructed using 6 inch aluminum channel extrusion (3.63 lb./ft minimum 6061-T6). The cab shield shall have a minimum 4 inch aluminum reinforcement the width of the shield fully welded on the backside and flush with the top of the shield. There shall be a minimum of four (4) fully welded aluminum braces that extend from the front lip of the cab shield back to the 4 inch channel at the rear of cab shield. The fixed bulkhead shall have a triple top bend to assist support of the fixed cab shield weld point. The base of the fixed cab shield shall extend rearward (tanks dirt shedder) within close proximity of the body bulkhead and taper downward to prevent material buildup on the liquid tank located below. The rearward extension shall be hinged utilizing (2) 7 gauge 1/2 inch hinge pins welded to the 6 inch horizontal flange of the cab shield. Rearward hinged section shall be bolted to each vertical 6 inch channel extrusion and all vertical facing braces utilizing (2) 1/2 inch non-rusting bolts at each location. With bolts removed rearward section shall hinge up to allow the removal of the tanks for servicing. A ground cable shall be connected between the cab protector and frame rail Ref: EQN-79A, EQN-1098 & EQN-1098B.

Pre-wet: Twin 190 gallon minimum poly tanks and plumbing kit with stainless steel tank enclosure and mounting hardware. Pre-wet tanks shall be securely mounted to the truck frame rails between the stationary cab protector and the front bed bulkhead. Final mounting location shall be determined at pre-build meeting. Pre-wet tanks shall empty simultaneously from each tank. Pre-wet liquid supply line shall be plumbed to the rear module, with inline check valve to prevent liquid flow when pump is turned off. Ref: EQN-26B. Tank fill shall be at ground level utilizing a two inch male cam lock fitting with dust cap. Prewet pump shall be an Oberdorfer part # 25-N4000-RS3-02, Pump shall be driven hydraulically via a love joy connection. Hydraulic motor / pump assembly shall be housed in a NEMA enclosure large enough to facilitate servicing of unit, an electronic flow meter shall be installed to properly calibrate prewet. There shall be a low level switch to automatically shut down the prewet motor when empty and an indicator to the operator shall be supplied. Location of prewet enclosure to be determined at prebuild meeting. Prewet pump shall have a flushing system utilizing a common garden hose. Ref. EQN-1098B.

SPECIFICATIONS

A-A1

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. DUMP BODY AND EQUIPMENT MANDATORY MINIMUM SPECIFICATIONS: (Continued)

1. DUMP BODY STRUCTURE, ALUMINUM: (Continued)

Each tank shall include an anti-splash vent tube mounted at the highest most point of the tank and shall have a non-collapsing one inch minimum hose, plumbed (P type clamps shall secure hose at 12 inch intervals) to below the frame rail of the truck. All hose connections shall utilize appropriately sized worm type hose (screw) clamps. There shall be no lids or unsealed opening in the tank that could allow the unintentional release of liquid. All valves and filters shall be placed in a location outside of the frame rail and away from the possible release of liquid onto any part of the truck or components. Final location to be determined at pre-build meeting. Ref: EQN-28C, EQN-1098, EQN-1098B & EQN-79A

Shovel Holder: There shall be a Buyers stainless steel shovel holder model SH675SS (No substitute) welded to the curb side of the pre-wet tank enclosure, a hook to hold shovel in upright position shall be located above to accommodate up to a 51 inch shovel handle (location of holder to be determined at the pre-build meeting) Ref. EQN-1098 & EQN-557

Tailgate: Double acting five-(5) panel tailgate shall be manufactured using 1/4 inch aluminum, grade 5454H34 and shall be a minimum of 48 inch tall. All bracing shall be minimum extruded 2.009 lb./ft, note: formed will not be acceptable. There shall be an inverted angle on top of the tailgate constructed using 1 1/2 inch aluminum or approved equal. There shall be two (2) (one per side) wings that extend the full length of the tailgate and mounted to the inside with stainless steel hardware. There shall be two (2) "J" hooks welded to the tailgate as chain holders. There shall be two (2) 3/4 inch aluminum round stock hand holds welded to the gate. There shall be four (4) tailgate chain brackets fully welded to the tailgate, two (2) on each side. The spreader chains shall be 3/8 inch and covered with black expandable braided sleeving monofilament. Tailgate latch pin shall be the full width of the body. Conspicuity required on the tailgate, Ref: EQN-122, EQN79A & EQN-26B

Tailgate Hinges: Shall be aluminum construction severe duty attachment brackets with replaceable heavy-duty bushings and greaseable fittings. Aluminum design shall be fully welded to the top of the rear corner post and tailgate. Both hinge pins shall be a minimum of 1.25 inch with a tapered end and sufficient length for easy removal. Both pins shall be chained and of non-rotating design. Ref: EQN-79A

Tailgate Latches: Shall be of steel construction, grade 50 high tensile material and mill certified, bolted into the rear corner post and grease able. Air operated tailgate shall be a spring-over-air system and fail in the closed position. The actuator shall be an AIRman Tailgater B300-259-H5. **(No substitute, standardization)**. Pneumatic tailgate switch shall be mounted within the central hydraulic console. Shall be dual linkage design, with a greasable cross over shaft. All air piping and connections must be D.O.T. approved, with minimum 0.25 inch nylon tubing and brass compression fittings.

Tailgate hinge and latch design shall be approved prior to build. Ref: EQN-78A & EQN-1105

Tailgate Material Chute: Tailgate shall have one material chute constructed using 1/4 inch 304 stainless steel, to include the door, handle and ears. Welded ears on the chute door shall be made using 3/8 inch 304 stainless steel. There shall be two adjustable linkages per door, with an adjustable locking mechanism, and a stainless steel handle. The material door lower corners shall be cut on a 45-degree angle to allow easy cleaning. Ref: EQN-79A.

Hoist Well Opening: Shall be heavy duty 3 inch x 4 inch extrusion aluminum 3.58 lb./ft Min. 6061-T6 or 1.85lb/ft Min 4 inch "C" channel 6061-T6 cross-member.

Hoist Cylinder: Custom Hoists, part # DAT63-327-110. **(No substitute, standardization)**. Cylinder shall incorporate a metal identification tag with the manufacturers model number, serial number and manufacturers address. Shall be fitted with a remote bleeder hose connection, mounted in the area of the ladder. Ref: EQN-63.

SPECIFICATIONS

A-A1

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. DUMP BODY AND EQUIPMENT MANDATORY MINIMUM SPECIFICATIONS:

1. DUMP BODY STRUCTURE, ALUMINUM: (Continued)

Hoist Cylinder Mounting: The hoist cylinder shall be mounted to an upper & lower heavy-duty hoist mount with minimum 2 inch diameter pins and 2.125 inch x 1/2 inch greaseable wall bushings shall be used. Note: the base shall be fabricated (no bolt together or cast mounts).

Hitch Assembly: Pintle plate shall be made using 3/4 inch steel. It shall be inserted within the frame rails, with sufficient clearance for body dump pin. Frame rails shall not extend beyond the hitch plate. It shall extend the full width of frame rails and extend a maximum of 5 inches below the frame rails. The lower portion of the plate shall be channeled towards the front of the vehicle, with proper gussets added between frame rails and plate. There shall be two (2) safety chain D-style rings 0.750 diameter with a minimum breaking strength of 53,000 LB mounted to the plate each equal to the hitch rating (Ref: Ken Forge PN# 797. There shall be a trailer break away ring securely fastened to the plate on the left side of the pintle for attaching a trailer breakaway cable. The plate shall be placed 5 inch +/- 1 inch from the edge of the rear tires. Ref: EQN-26B.

Pintle Hook: There shall be one of the following manufacturer's 25-ton pintle hooks with spring loading, swivel design mounted to the hitch assembly, Wallace Forge 2044101 or Buyers BP200. Pintle hook mounted as Ref: EQN-26B

Rear Light Module: The rear light module shall be integrated into the Hitch assembly containing the following components:

All lighting shall be LED. Module construction shall be a minimum 0.250-inch thick steel and shall be fully enclosed to eliminate material entering housing. License plate and license plate lamp shall be surface mounted with a 1 1/4 inch protective shield welded along the top and both sides to protect the plate and light from damage. All electrical connections shall be made within the sealed module and powered through the original chassis harness, with a compression fitting used at the wire pass-through location which shall be at the bottom of the module and configured in such a way that water cannot wick from the wires into the module. A small 1/4 inch hole shall be drilled on both the left and right bottom corners to drain any water that may enter the module. All electrical connections shall be weather tight and sealed with heat shrink, all open connections within a sealed box shall be coated with di-electric grease. Component placement on the module as per EQN-26B.

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

(1) One grommet mounted back-up alarm, Ecco model 450. **(No substitute, standardization)** Alarm shall be mounted as high as possible, without obstruction within the rear module plate.

(1) One license plate lamp, Trucklite Model 36140C. Shall be shielded with license plate. EQN: 26B

(2) License plate mounting holes, with stainless steel hardware included.

(1) One Pin Type 7-way female electrical trailer plug connection. Ref EQN-80A

(1) One 3-lamp cluster. Trucklite Part # 33740R **(No substitute, standardization)**

SPECIFICATIONS

A-A1

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. DUMP BODY AND EQUIPMENT MANDATORY MINIMUM SPECIFICATIONS:

1. DUMP BODY STRUCTURE, ALUMINUM: (Continued)

Body Lighting System: Whelen model # 01-1518839-3AB, to include the following, model number will assign cable length and light mounting material for body configuration. Ref: EQN-26B A six to eight-week lead time is required for delivery of light kits Whelen contact is Brad Walker (740) 325-6727 or bwalker@fleetreps.com

4-Headboard Warning 01-026F523-A0

1-54 inch light bar 9SX2PPPP, wired with other amber warning. Mounted above cab shield, final location to be determined at pre-build.

2-Reverse Light 01-066G397V11

2-Brake/Tail 01-066E462-R1C

2-Rear bed warning 01-026F769-A0

2-Side Rear Warning 02-0363818-10C

1-Photo Cell 01-066D205-010

1-Spreader light 01-0686447-30F

1- Core R junction box 01-0689004-00

4- Red 01-02634898R90

2-Amber/Yellow 01-02634898A90

Kit to include wiring (installed in body) and diagnostic board (installed in console) for Snow Away heated tail light lens. Heated Lens will **not** be included in build.

Right wing configuration, illumination light 01-0418169-01F shall be installed.

Right wing configuration, steady "RED" light 01-066E765-500 shall be installed in conjunction with a mercury switch (mercury switch not supplied from Whelen).

All amber warning flashers shall be connected to dedicated OEM dash switch.

Right wing illumination light shall be connected to dedicated OEM dash switch.

Spreader illumination light shall be connected to dedicated OEM dash light.

Plow lights shall be connected to dedicated OEM dash switch.

Whelen control panel shall be mounted within the cab under passenger seat with access cover facing passenger door for easy accessibility. Whelen light kit shall include a programable flasher that turns both the rearward facing yellow strobe lights off when the turn signal, four ways and brake lights are on, then returns to normal operation. System shall also be equipped with a photo cell mounted to the right side in the chassis cab forward facing on the A-pillar that will dim all the flashing yellow strobe lights at night and return to full power in the daylight. Reward facing light modules shall be configured and provided with heated lens covers. Heated tail light lens fault light shall be mounted inside the cab, central hydraulic controller dash viewable from driver's position. Flasher module is to be fully programable with department software provided by Whelen for any combination of flash pattern. Brake lights shall operate when engine compression brake is activated.

Whelen light package shall be installed and wired so the 4-way flasher and amber lighting to continue working after engine 5 min. shut down activates. All circuits shall be individually labeled with permanent labels.

All open terminal connection shall be coated with 3M brand Scotchkote Electrical Coating FD.

All OEM connections within the battery box shall have attached non-metallic embossed labels/tags. Labels/tags applied with self-adhesives or stickers will not be accepted.

Any circuit deemed necessary for connection in the battery box by the body up-fitter or component manufacturer shall have attached non-metallic embossed labels/tags. Labels/tags applied with self-adhesives or stickers will not be accepted.

SPECIFICATIONS

A-A1

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. DUMP BODY AND EQUIPMENT MANDATORY MINIMUM SPECIFICATIONS:

1. DUMP BODY STRUCTURE, ALUMINUM: (Continued)

Chain Boxes: Shall be aluminum with safety grating overlaid.

There shall be a minimum of four (4) 3/4 inch drain holes in the box floors. Final position of these boxes to be behind the swept back front bumper and outboard of the frame channels, flush and level with top of bumper.

Chain boxes shall be mounted with a one (1) piece formed channel, minimum 0.250 thick steel. Formed channel shall have a minimum 3 1/2-inch flange attached to the plow frame with full weld, flange shall taper to a minimum of 2 inch at end of chain box. Formed channel mounting bracket shall be full width and end flush with outside edge of chain box.

Chain box hinge shall be full width solid round stock with a heavy wall pipe stock welded hinge and nylon bushed.

Chain box rubber latch and catch shall be installed with flush rivets. Machine screws with nuts will not be accepted.

There shall be one (1) with right wing application. Ref: EQN-32.

Splash Guards: Both front and rear splashguard assemblies shall be properly braced. Ref: EQN-66.

Rear: Aluminum 1/4 inch splashguards 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 splashguards shall be bolted to these metal splashguards using self-locking nuts and metal strips. Flaps shall meet Federal Regulation of 22 degree. Flaps shall be heavy duty anti sail/anti spray and be razor split.

Front: The forward splashguards shall be 1/4 inch aluminum and extend downward 3/4 inch of the length of the rear splash guard/mud flap, with a 1/4 inch 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 and have rolled edges. Splashguards shall be full length and width with no holes cut.

Spray Suppression: Spray suppression shall be installed full length between front and rear splashguards (both sides). It shall be bolted/screwed to the body. Ref: EQN-79A.

SPECIFICATIONS

A-A1

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. DUMP BODY AND EQUIPMENT MANDATORY MINIMUM SPECIFICATIONS: (Continued)

2. CENTRAL HYDRAULIC CONTROL:

Hydraulic Control Approved Manufacturer's:
Certified Cirrus XDS.

Intent: The purpose of these specifications is to describe a conventional cab, tandem axle dump truck, equipped with dual rear wheels, 13.5 foot dump body, 12 cubic yard approximate load capacity aluminum severe duty body, hoist, hydraulic power system and snow plow hitch. Shall be capable of one-man operation while plowing snow and simultaneously spreading granular and liquid materials 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 a front-end loader or self-propelled belt loader. The body shall be capable of having the following components connected and or mounted to it: wing plow, slide in anti-ice insert, under tailgate spreader, tarp, paver, and chipper.

Intent/Installation Practices: The pressure compensated, load sensing central hydraulic system shall operate all functions (plows, dump body, spreader, and pre-wet 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 operation.

All system operations shall be achieved from a single pump matching all required flow and pressure demands.

Hydraulic tool operation shall 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 the successful bidder.

All wiring shall be securely clamped at approximately 12 inch intervals, shielded from exhaust and include a protective sleeve where necessary to prevent damage and/or failure.

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. Used filter is required to be placed in a leak proof bag and delivered with the truck to which it was removed from for proof that it was changed after the 15 minute break in period.

It shall be the sole responsibility of the successful truck manufacturer and Certified Cirrus to ensure that the chassis and the ground speed control wiring harness is totally compatible.

Seat Safety Switch: Drivers seat shall be equipped with a factory safety switch to work in conjunction with the central hydraulic system. Switch shall be rated at 7 lbs. and shall allow operation of the hydraulic spreader auger, spinner and pre-wet system when occupied and shut down the hydraulic spreader auger, spinner and pre-wet system ONLY when unoccupied.

Seat switch shall have all necessary components and connections to delay seat switch deactivation of auger spinner and pre-wet circuit ONLY for a minimum of five (5) second and maximum ten (10) second.

Deactivation of the seat switch system shall activate a message on the spreader control screen display "AUGER & SPINNER STOPPED", this feature shall not cause any other interruptions or faults in the hydraulic/spreader system.

SPECIFICATIONS

A-A1

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. DUMP BODY AND EQUIPMENT MANDATORY MINIMUM SPECIFICATIONS: (Continued)

2. CENTRAL HYDRAULIC CONTROL: (Continued)

Reactivation of the seat switch system shall not require any action or input from the operator for operation of the complete hydraulic/spreader system.

It shall be the sole responsibility of the OEM to ensure seat safety switch compatibility with the selected hydraulic system manufacturer control system. Aftermarket installation of this switch is unacceptable.

All electronic control modules and their connections shall be mounted within the cab in a location to provide access for servicing and to prevent damage / corrosion to modules and connections. Location to be determined at pre build meeting.

System Operation: The system shall communicate over a CAN Open system bus using CAN Open protocol and not a proprietary communication protocol. The system shall consist of four primary modules that reside on the Bus and allow flexibility in mounting configurations. The system shall be expandable and allow for additional modules to be added to the CAN Bus. All four primary components of the system shall be software upgradeable using a laptop and interface cable or a USB thumb drive. The configuration file of a calibrated system shall be saved for transfer to other systems or as a backup providing the ability to use specific configurations for varying vehicle use or operator skill level. The original configuration file shall be maintained at the factory as a secondary backup and is traceable by part number. The in-cab control system panel shall be contained in an enclosure and mounted in an easily accessed position in the cab.

Control System Requirements: Central hydraulic system shall be capable of the following requirements in their entirety.

- All functions shall be recorded, and time stamped, to include capturing all error messages.
- System shall allow data to be downloaded in a common format (Excel).
- System shall be ground speed controlled and shall respond at one MPH.
- System shall have multiple level security and be individually password protected; Administrator and Technician. Operator shall not require a password to access the system and switch between automatic and manual operation.
- System shall be calibratable to various pounds per lane mile.
- System shall capture and store storm totals by event (Event Log).
- System shall capture and store annual storm totals.
- Stored data shall be capable of being cleared at various levels of password protection. Operator shall be capable of clearing storm totals.
- System shall be programmable to a minimum of six material types.
- Materials shall be programmable to various weights.
- System shall have a programmable minimum / maximum setting for the auger and spinner.
- System shall have a feeder (Auger) sensor, and capability of turning the sensor on or off.
- Each unit shall be capable of having an individualized seven digit equipment number stored for identification purposes.
- System shall have a programmable prewet maximum / minimum settings at one gallon increments and capable of being set to various gallons per ton of dry material.
- System shall be capable of showing auger jam.

SPECIFICATIONS

A-A1

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. DUMP BODY AND EQUIPMENT MANDATORY MINIMUM SPECIFICATIONS: (Continued)

2. CENTRAL HYDRAULIC CONTROL: (Continued)

- System shall be capable of working in conjunction with the following products;
 - Wojanis hydraulic plow balance valve (plow saver).
 - Vasila road temperature sensor.
 - Prewet flow meter.
 - OEM installed seat switch.
 - Current AVL system
- System shall have a manual override in the event of sensor failures.
- Shall be capable of operating when truck is moving in forward and reverse directions.
- Each hydraulic valve section shall have individual overrides located at each valve section.
- No tools shall be required to calibrate the system.
- Shall be equipped with a pause button to disable the system momentarily.
- Shall be equipped with a blast button to allow full calibrated material to be dispensed.

Console Assembly: Shall be ergonomically designed for easy accessibility for operator from the driver's seat. Assembly shall be secured to the floor of truck as to not interfere with any original truck manufacture equipment. **Assembly shall be properly braced as to not allow any excessive movement that could be detrimental to the integrity of the floor or mounting location.**

Console shall have a padded arm rest and be adjustable to accommodate various operators' side to side and with three (3) inch adjustment down from a top height of 30 inch with positive locking. Console shall not come in contact with the driver's seat. Console shall be capable of housing all hydraulic controls and switches, including right wing plow functions. Console base shall be of steel construction conforming to drawing EQN-509 or prior approved equal. Base shall include an adjustable bracket for mounting of state radio. Ref: EQN-509.

Display: The display shall be manufacturer's latest design and largest available screen, with backlighting, user adjustable positioning. The display shall be user resizable to provide maximum readability with varying display content including a status window that provides the operator with system status messages. The display shall incorporate "touch screen" switches that are defined by the system program via the display. When configured, the display shall incorporate granular rates, pre-wet rates, directional spinner position, road/air temperature, hydraulic pressure where designated, system status, error messages, plow float indication, auto/manual mode indication and material currently being used. Active functions that are not in use shall show "off" and the graphic be "grayed out" for ease of operator interpretation.

Display shall not emit "RF" frequencies or any "noise" that could interfere with any wireless or communications device utilized in any PennDOT vehicle such as a two way radio, CB, Cellphone or other communications device.

Consideration should be made when mounting display screen as not to block operator vision to passenger side mirrors.

Software: The system shall incorporate three levels of security and access that is password protected and defined by the user. The three levels of access called operator, technician and administrator shall give the user varying levels of access to system setup, data configuration fields and parameters based upon access given. The "administrator" shall have full access to all menus in the system and have the ability to make system configuration changes as well as system parameter changes. Spreader and liquid functions, when controlled utilizing closed loop feedback, shall incorporate an "auto trim" feature that will allow the system to automatically set the PWM minimums and maximums when engaged. The system shall have "over speed" protection for the liquid functions that will alert the operator and shut down the liquid function when the driver has exceeded a user defined speed. The software shall incorporate a "test speed" mode for use in testing the system safely without requiring the truck to be moving, the drive axles engaged or the parking brake to be off.

SPECIFICATIONS

A-A1

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. DUMP BODY AND EQUIPMENT MANDATORY MINIMUM SPECIFICATIONS: (Continued)

2. CENTRAL HYDRAULIC SYSTEM / HYDRAULICS: (Continued)

Control Console: The control console shall contain individual joysticks to control hydraulic functions including right wing. Body hoist stick shall contain an interlock button to protect against unintended operation. The plow stick shall be a two axis joystick. All joystick functions shall be protected by software based safety system to protect against unintended operation due to a joystick failure. The console shall contain the operator interface for the spreader control, joysticks, low oil override switch, plow balance control switch, wing float control switches, tarp switch, body up indicator light, and body limit indicator light. All controls shall be securely attached, within easy reach of operator and console mounted. All controls shall be connected to the valve/s via an electronic cable and utilize CAN network communications. Console base shall be of steel construction conforming to drawing EQN-509. Base shall include an adjustable bracket for mounting of state radio. Ref: EQN-509. Unit shall be capable of adjustment vertically and horizontally to allow for comfortable positioning for the operator. **Console base shall be properly braced to eliminate floor flex.** Additional supports brackets shall be vendor's responsibility.

Wire Harness Kit: All wiring for the kit shall be included and be TPE type wiring only to the following specification: Wiring and harness system shall meet ISO rating IP68 and NEMA 6. The connectors shall be zinc die cast E-coated, similar to a MIL spec connector. Each shall have three sealing points- the lock ring itself, a raised portion of the molded plastic around each pin, and a viton O-ring that seals the entire connector. The cable jacket shall be TPE- thermoplastic elastomer and molded to the connectors. Connectors and harness shall be rated and tested for a temperature range from – 30C to + 70C. Connectors shall be tested to be water tight when submerged in 6' of water for 24 hours, in 275' of water for 1 hour, and when subjected to a 1000-psi pressure wash. The connectors shall be designed to have NO corrosion after 500 hours in a 35C salt spray. Cabling shall be rated excellent in low temperature flexibility and in its resistance to oxidation, heat, oil, weather, sun, ozone, abrasion, electrical priorities, flame, water, acid, alkali, gasoline, benzol, toluol, degreaser solvents, alcohol, and weld slag.

Combination Tank/Valve Enclosure: Combination tank/valve enclosure shall be frame mounted, in a location not to interfere with body, wing plow or exhaust components. Final mounting location shall be determined at pre-build meeting. Unit shall be constructed of ten gauge 304 stainless steel. The oil reservoir portion shall not be less than 40 GAL capacity, filled with ISO 32AW hydraulic oil and a baffle plate to prevent oil flow from venting directly to suction port. Tapered outlet shall be below oil level at all times to prevent air entrapment. A magnetic drain plug shall be installed into reservoir. 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. An oil level sight gauge/thermometer shall be provided on the reservoir. A suction strainer shall be installed in the suction port of the tank. There shall be a provision for a low oil float to be installed. Low level float shall thread into the side of the assembly and shall have an M12 connector. The valve portion must be of weather-tight design and utilize a gasket to seal the lid to the body of the unit. Lid shall be retained by two rubber fasteners. Handles (two) shall be welded to the lid and constructed of stainless steel. A mounting location for the hydraulic control system module(s) shall be provided as part of the enclosure design. Stainless steel shields to protect exterior wiring shall be provided. The valve shall be installed in the enclosure by the hydraulic system supplier and pre-plumbed to the outside of the enclosure through the use of bulkhead style fittings. Enclosure shall provide space to service spool valve solenoids without removal of the hydraulic valve.

SPECIFICATIONS

A-A1

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. DUMP BODY AND EQUIPMENT MANDATORY MINIMUM SPECIFICATIONS: (Continued)

2. CENTRAL HYDRAULIC SYSTEM / HYDRAULICS: (Continued)

No hoses shall enter the weather-tight area of the enclosure. Valve to be pre-wired inside the enclosure and **di-electric grease** shall be applied to all connections as required. Return oil flow shall be through the reservoir mounted filter assembly. Return filter shall be provided as part of the tank/valve enclosure assembly Ref: Fleetguard filter # HF302282 or equivalent **No substitute Standardization**. It shall be rated @10 micron. There shall be a pressure switch with boot to activate a warning message on the control system screen. Cab mounted filter contamination indicator set at 23 PSI. Return filter housing shall have provisions for a service filter switch; connection shall be made via an M12 connector. Suction line/strainer shall have a 125 micron with 3 PSI bypass rated above 47gpm submerged at all times. Shall have a 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. There shall be a 5600 series 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. Final location shall be determined at the pre-build meeting. REF: EQN-508. Wire harness covers shall be installed on the enclosure to protect the wiring harness where it enters/exits the modules.

Directional control valve: The hydraulic control valve shall be a Sauer Danfoss PVG32 with aluminum manifold to control spinner and prewet functions. (One Manual control lever is to be supplied per unit to control manual override of valve.) There shall be stainless steel threaded access plugs for access to load sense reliefs.

Sections shall be provided as follows: (non-wing)

Body hoist – PVG 32 Turbo Spool (34 GPM) section, double acting with 1500 psi down relief and 2000 psi up relief.

Plow raise/lower, double acting.

Plow angle, double acting, motor spool.

Return manifold: There shall be a return line manifold mounted on the chassis, location to be determined at the pre-build meeting. Ref: EQN-94. 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.

There shall be a 3 port valve block to control spinner, auger, and pre-wet as part of the main valve assembly. There shall be two (2) return lines from the control valve to the return manifold.

Bed Speed requirements:

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

Bed speed full up shall be 20 seconds maximum.

Bed speed full down shall be 25 seconds maximum.

SPECIFICATIONS

A-A1

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. DUMP BODY AND EQUIPMENT MANDATORY MINIMUM SPECIFICATIONS: (Continued)

2. CENTRAL HYDRAULIC SYSTEM / HYDRAULICS:

Body Limit Alarm System: Switch shall inform the operator by an illuminated console mounted light. An audible alarm (Steady Buzzer) Ref: Floyd Bell part # TMC-V86-948-Q shall be installed (**No substitute, standardization**). Proximity switch shall be set at 49 degrees +/- 1-degree dump angle to alert the operator and prevent the hoist cylinder from going full stroke. Proximity switch shall be mounted in an accessible area at the hoist cradle, located away from road splash. Ref: Automation direct inductive proximity sensor PN# PMW-OP-2H wired normally open with harness PN# EVT221 (**No substitute, standardization**). System shall be labeled "Body Limit".

Body-up Alarm System: Switch shall inform the operator by an illuminated console mounted light. An audible alarm (Chime) (Ref: Floyd Bell part # TCH-V86-530-QM shall be installed (**No substitute, standardization**) system shall alert the operator of the body being in the raised position. Alarm and light shall function as soon as the body is raised from the rested position. Proximity switch shall be mounted in an accessible area at the hoist cradle, located away from road splash. The proximity switch must stay in contact with dump bed in normal driving conditions on and off roadways where frame twist may occur Ref. Automation direct inductive proximity sensor PN# PMW-OP-2H wired normally closed with harness PN# EVT221 (**No substitute, standardization**). System shall be labeled "Body-up".

All wiring for both switches shall be routed to prevent damage from heat, sharp edges and moving parts. Wiring harness connections shall be soldered and covered with heat shrink, dielectric grease shall be applied to sensor plug connections.

Hydraulic Pump: Rexroth Part Number R910979162, Model A10V0100 LH rotation: KEYED Crankshaft Driven, (**No substitute, standardization**). Pump shall include low oil shut down with console-mounted override switch. Shutdown shall be direct mounted to the pump. Remote mounted valve will be unacceptable. Valve shall be a normally closed, energize to open cartridge valve. Valve shall be controlled by the hydraulic control system. The pump shall match system flow and pressure (horsepower) requirements to provide maximum fuel economy. Ref: EQN-90. An unloader or by-pass system is not an acceptable means of regulating excess oil flow. To ensure responsive controls pilot pressure shall be set to 500 psi +/- 5 psi.

Pump Mounting Bracket: Regardless of design the bracket shall be a minimum of 5/8 inch formed steel channel. The pump bracket shall be sloped to match the engine crankshaft. Width dimensions shall be full frame rail width. Bracketry to attach pump-mounting bracket to the truck frame rails shall be a minimum of 5/8 inch thickness. Brackets shall either be fully welded or use 3/4 inch grade 8 (eight) bolts of sufficient length and grade 8 (eight) locknuts, minimum of four (4) bolts per mounting side. Ref: EQN-90.

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 a tubular shaft of 1141 steel. Tubular shaft shall 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 shall be in accordance to manufacturer's recommended procedures. Slip assembly shall provide a minimum of 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. Loc-tite shall be used for the installation of all mounting bolts. Universal joints shall be of the non-greasable lube for life design. Ref: EQN-90.

SPECIFICATIONS

A-A1

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. DUMP BODY AND EQUIPMENT MANDATORY MINIMUM SPECIFICATIONS: (Continued)

2. CENTRAL HYDRAULIC SYSTEM / HYDRAULICS:

Hydraulic Hose: All hoses and hose ends shall be matched and assembled on a hose machine to prevent hose failure. All hydraulic plumbing practices shall conform to JIC H11 standards. Pressure hose from hydraulic pump to valve body shall be 100R17, pressure hoses shall be 100R2, return lines shall be 100R1 and suction lines shall be 100R4. Velocity in pressure 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. Ref: EQN-94.

Hydraulic Alarm and Shutdown System: 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 the control system. The on screen message and audible alarm shall come on whenever the oil level drops below a safe reserve, and the pump mounted low oil shutdown manifold shall deactivate to prevent pump damage. A console mounted low-oil override switch shall be provided to allow momentary operation in an emergency.

All electronics associated with the hydraulic system shall be protected against and shall not cause interference to the operation of the vehicle or the land mobile radio communications system or AVL when properly installed in the vehicle.

SPECIFICATIONS

A-A1

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

E. DUMP BODY AND EQUIPMENT MANDATORY MINIMUM SPECIFICATIONS: (Continued)

3. TARPING SYSTEM:

Tarp System: Aero (**No substitute, standardization**)

Pricing shall be supplied for a top bed rail system.

Tarp Spool: Shall have a one-piece aluminum wind deflector, mounted onto the upper front portion of the bed bulkhead. Wind deflector shall meet stationary cab protector without interference during dumping. Provisions shall be made to position the arms below the top line of the side boards to achieve unobstructed transition from the bed ladder to the inside of the bed. It shall include an extruded aluminum roll pipe. Extrusion shall have a corrosion resistant steel stub shaft to connect it to a greasable bearing on the idler end of the roll pipe, idler bearing shall be installed on the outside of the wind deflector side plate.

Gear Motor: Shall be a 12-volt Electric Gear Motor designed to operate at fewer than 35 amps and weather resistant. Gear motor shall have protective cover. Gear case output shaft shall be corrosion resistant. Gear motor to have a minimum of a 3-year non-prorated limited warranty against wear out and manufacturing defects.

Controls: System to be operated by a low voltage rocker switch and control relay assembly. Control switch shall be located **IN** the hydraulic controller dash console, an externally mounted switch will not be accepted. For safety there is to be a weather resistant automatic reset circuit breaker mounted at the power supply to protect the complete tarp system from overload and short circuit. Location to be determined at pre-build meeting.

Power supply from chassis to bed shall be made through a spring-loaded contact plate mounted between the bed rail and chassis frame rail, mounting of contact shall be made with OEM's guidance and mounted parallel to the frame to help minimize flexing and losing contact. All wiring shall be protected from corrosion with wire terminal ends soldered and heat shrink connections. Ref. EQN-550.

Pivots & Arms: Pivots shall be mounted to the top side rails with a maximum of 1 1/2 inch clearance from the sides of the body. Pivots shall contain coated spiral torsion spring or coated double helix spiral spring. The spring must have the ability to be preloaded with tension.

Bow set shall be a 3-piece angled tempered aluminum arm extrusion. Arms shall connect to the pivots in a telescopic fashion.

The arm offset angle shall follow the front top body line and not protrude into the side board area. Provisions shall be made to position the arms ahead of the side boards pockets to achieve unobstructed transition from the bed ladder to the inside of the bed. Ref. EQN-1100

Tarp: The tarp material shall be fabric and suitable for covering asphalt and winter material/salt. Material shall be able to withstand temperatures associated with hauling hot asphalt for extended periods of time. Tarp to have 18 inch Rear Corner reinforcements.

Shall be equipped with the following: Full Flap Length Shock Cords (for tie down purposes)

- 12 inch Side Flaps
- 12 inch Tail Flap

SPECIFICATIONS

A-A1

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

F. GENERAL PLOW MOUNTING / ACCESSORIES:

Front Plow Hitch: Side-mounting plates shall be constructed using 3/4 inch Steel. Lower plow mount bracket center shall be 16 inch to 17 inch from ground (both sides). Trucks that do not have a wing, "X" braces shall be installed using .31 inch wall 2 inch x 2 inch steel tubing. There shall be a minimum of five (5) 7/8 inch grade eight (8) bolts per side with washers and lock nuts to mount the plow frame to the truck frame. Lift height shall be sufficient to afford unrestricted lift for PennDOT plows, (16 inch minimum lift). Side strengthening bars (two per side) shall be fabricated using 3/4 inch steel, 16 inch long by 2 inch wide and mounted to the external side of the plow hitch. All grease zerks shall be surrounded by a short length of pipe (welded in place) or be in a recessed hole. The zerks for the plow arm bushings shall be mounted on the underside of the bracket.

Plow hitch pins shall be 1 1/4 inch diameter, length shall be sufficient to allow 3/4 inch between bottom of plow frame and "R" pin drilled hole. Pins shall be tapered, from 1 inch to half the diameter of the pin. **(No substitute, standardization)** Ref: EQN-50.

The hydraulic connections on the plow hoist cylinder and for the two way plow connections shall be the 5100 series winged typed couplers positioned as to keep them from being stuck and damaged, while connecting or disconnecting the front plow. **All other hydraulic connections mounted to the plow frame shall also be positioned to keep them from damage.** Ref: EQN-94 **(No substitute, standardization)**

Plow hoist cylinder shall be a welded barrel type, 4 inch X 10 inch stroke, 20 inch retracted 30 inch extended. Rod shall be full size diameter. Both barrel and rod pins shall be 1 inch diameter. Pins shall be tapered, from 1 inch to half the diameter of the pin. **(No substitute, standardization)**. Ref. EQN-24

Plow Balance: There shall be a Wojanis part number WSC-072-4-00 plow balance device installed. **(No substitute, standardization)**. Plow balance shall have the following specifications:

Valve to be designed to offset a specific (adjustable) plow weight when activated. Valve to be of cartridge and manifold design, and electrically activated. The valve shall be activated by a single solenoid.

The plow balance system shall not alter the operation of any other hydraulic function on the vehicle or have an adverse effect on the performance of other hydraulically operated equipment including wing plow, body hoist, plow hoist or angle, or spreader functions. All normal operations of the plow lift/lower function must be maintained without additional tasks. Operation of any electrical switches beyond the normal up/down command to raise or lower the plow shall not be acceptable. The use of a relay circuit to allow the plow to remain in the up position shall not be acceptable.

To guarantee safe operation of the vehicle, the plow balance system must operate with the following parameters: The system will remain electrically activated when lifting the plow from the road surface. Plow lift must be immediate. It is not necessary to turn off the system for plow lift. Plow lowering and return to balance mode must be done by activating the plow lever or switch to the lower mode.

The plow balance system must be able to hold the plow in the up position indefinitely.

The plow balance manifold shall be of cartridge style valving utilizing "floating" style cartridge valves.

The valve body must be constructed of aluminum and have minimum construction hole plugs. All solenoid valve coils shall have manual override capabilities. Manifold must include a pressure test point for use when checking balance pressures. The pressure test point must be capable of tapping into the system at pressures of up to 5000 PSI.

SPECIFICATIONS

A-A1

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

G. Temperature Sensor:

There shall be vaiala Surface Patrol DSP100 road/air temperature system installed with the hydraulic control system as an integrated temperature display.

H. AVL Hardware Installed:

AVL Hardware: Unit shall be equipped with a complete AVL hardware system installed and completely functional to work in conjunction with the Departments current AVL solution. Shall include but not limited to; GPS Transponder / Advanced Tele metrics System box, modem, GPS antenna, all wiring and connectors. All hardware shall be mounted within the truck cab and location shall be determined at pre-build meeting.

I. Under Tailgate Spreader and Iowa Spinner Specifications:
Bonnell/Flink or Swenson (No Substitute, standardization)

Spreader: Unit shall be equipped with a stainless steel under tailgate spreader with an Iowa type spinner assembly. Spreader and spinner shall meet the following specifications and be installed. For mounting location of spreader and Iowa spinner reference EQN-568

All references made to stainless steel shall be AISI Type 304 stainless steel.

7 gauge 0.1875-inch

10 gauge 0.1350 inch

Per EQN-568

All nuts, bolts and hardware brackets, or angle stock, unless otherwise specified, shall be stainless steel (no substitutes), with all edges deburred and rounded.

DIMENSIONS:

Overall width of vertical trough end plate shall be 96 inch.

Overall height shall be approximately 18 inch.

Overall depth shall be approximately 18 inch.

Inside trough width opening shall be 81 inch + or – 1/2 inch. EQN-568

TOP COVER:

Two-position top cover. When raised, normal spread mode. When lowered with spreader not in use, allows full dump-over capability.

Spreader material, full width, shall be a minimum 0.135-inch thick stainless steel.

Properly secured to prevent material leakage in spreading positions.

AUGER:

Per: EQN-568 & EQN-6. (Material is specified in drawing.)

AUGER BEARING:

1-1/4 inch shaft diameter.

2 bolt flanged type ends self-aligning, anti-friction, thrust, re-lube type, with retaining collar with set screw with Zerk fitting cover, eccentric type, or equal, per EQN-568.

SPECIFICATIONS

A-A1

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

I. Under Tailgate Spreader and Iowa Spinner Specifications: (Continued)

AUGER MOTOR:

NOTE: The auger motor is a standard, no substitute. It is the responsibility of the successful Vendor to ensure that the spreader's assembly is designed and manufactured in such a way as to ensure compatibility and serviceability with the Department's hydraulic system/s.

Auger Motor: White Hydraulics: Model RE (no substitution), with a 50 pulse auger motor sensor installed. Kit # W80509

Displacement cu in: 32

Housing: 08 (A style 4 bolt)

Output Shaft: 14 1-1/4 inch straight

Rotation: 1 clockwise

Note: Porting is 7/8 inch 'o' ring fitting

STAINLESS STEEL SPREADER, URETHANE SPINNER ASSEMBLY:

Spinner frame shall be an "Iowa" type. The assembly shall be mounted with the dump bed in the fully down position, the center of the spinner fan shall be positioned under the center of spreader discharge opening. Urethane spinner disc shall be per EQN-6 & EQN-568 No Substitute without prior approval. Spinner height shall be 12 inches from the ground to the disc lip. Spinner disk assembly shall not have the ability to adjust lower than this height.

DISC:

Ref: C.U.E. Inc. Spinner Part #CC1229S per EQN-568 **(No substitute without prior approval).**

HUB:

REF: C.U.E., Inc., hub Part #20559-0650 (4 bolt type hub mounted to spinner disc with locking type nuts for use with spinner motor (bolt pattern shall match for referenced spinner). No Substitute without prior approval

SPINNER MOTOR:

Gerotor type hydraulic drive motor

Hydraulic port opening: 1/2 inch NPT

Flange mount: 4 bolt.

Shaft keyway: 1 inch woodruff

Displacement: 3.0 cubic inch/rev. maximum.

PAINT:

All carbon steel surfaces shall be properly prepared by thorough cleaning, removal of dirt, grease, rust and corrosion and shall be painted with proper undercoat and a sealer. All stainless steel shall be unpainted.

COUPLERS:

One (1) 1/2 inch spinner – 5600-series-10 (Pressure Female Coupler) no substitute.

One (1) 1/2inch spinner – 5600-series-10 (Return Male Coupler) no substitute

One (1) 3/4 inch auger - 5600-series-12 (Pressure Female Coupler) no substitute.

One (1) 3/4 inch auger - 5600-series-12 (Return Male Coupler) no substitute.

Hydraulic couplers shall be stainless steel.

All necessary hardware and fittings shall be supplied to ensure that the system is fully functional.

SPECIFICATIONS

A-A1

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

I. Under Tailgate Spreader and Iowa Spinner Specifications: (Continued)

SAFETY:

All edges and corners shall be ground to eliminate sharp edges.

Appropriate decals, instructional and WARNING/S, shall be provided and fixed.

There shall be a lock out system that will prevent the lower auger inspection pan from being lowered (opened) while the hydraulic line is connected to the auger motor. Safety Disconnect shall not interfere with operation of rear cover while dumping. Safety disconnect shall allow hydraulic couplers to swivel away from material being dumped, to prevent material buildup in couplers.

Note: Lock out to be plumbed with 3/4 inch hoses and couplers.

TROUGH:

There shall be hinged trough bottom with spring loaded latches.

Bottom shall be separate from the anti-spill/cover.

Separate one piece bottom shall be full spreader width, minimum 7-gauge stainless steel.

Separate anti-skid/cover plate shall be minimum 10-gauge stainless steel.

Bottom shall be properly secured to prevent material leakage in spreading positions.

Bottom shall be hinged by bolts or pins (stainless steel) with a minimum of three (3) center hinge points and two (2) end points. End pieces, one piece formed front wall and rear wall, shall be minimum seven (7) gauge stainless steel.

ANTI-FLOW PLATE OPENING:

Anti-flow plate shall be mounted over the trough opening.

Anti-flow plate shall be arched to provide a minimum of 3/4 inch clearance between the shield and the outer periphery of the auger flight. Anti-flow plate shall butt against end plate.

Anti-flow plate shall be minimum 10-gauge stainless steel. Anti-flow plate length shall be 14 inch.

Discharge opening shall be approximately 6 inch wide by 7 inch long rectangular opening.

Discharge opening shall begin from end plate on roadside.

QUICK DETACH:

There shall be quick detach bracket per EQN-568.

SPECIFICATIONS

A-A1

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

J. RIGHT WING PLOW SPECIFICATIONS:

1. INTENT STATEMENT:

Reference Gledhill Road Machinery Co. Patrol Wing(s) (**No substitute, standardization**).
Right Hand Patrol Wing 11FRPW-PENNDOT

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 into the travel position for improved visibility and to allow emergency egress.

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 addition to a front mounted plow weighing approximately 3500 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 quick attach or detach independently utilizing the rear slide bracket from the A frame assembly. The front shall quick attach or detach between the front lift frame assembly and the trip mechanism utilizing a minimum 1 inch diameter pin. No part of the chassis or dump body assembly shall have to be moved or removed when attaching or detaching the wing.

When wing assembly is disconnected from the truck, no parts may extend past the bodyline of the truck. The Patrol Wing shall be installed in such a manner to ensure quick access to the battery box, engine and all accessories. Hood on dump truck shall tilt without obstruction.

All parts not specifically mentioned, which are necessary in order to provide a complete snowplow 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 and all mounting hardware shall be Grade 8.

Areas of the wing plow tubes and cylinders that are likely to be stepped on when in the down position shall be coated with anti-skid paint, tape is unacceptable.

All cylinder rods shall be Chrome or Nitride plated

The front and rear wing plow braces shall be attached in such a way that will properly distribute the load to both chassis frame rails using a cross tube design and be approximately 154 inch +/- 2 inch (No Substitute, standardization) from the center of the rear cross tube to the center of the front cross tube. Ref: EQN-1097.

SPECIFICATIONS

A-A1

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

J. RIGHT WING PLOW SPECIFICATIONS: (Continued)

2. SPECIFICATIONS:

Rear Wing Brace: The rear wing brace shall be (A)Frame style that will properly distribute the load to both chassis frame rails using a minimum 3 inch square cross tube and be approximately 154 inch from the center of the rear cross tube to the center of the front cross tube. Ref: EQN-1097 The (A) Frame shall incorporate 7inch x 15.3 LB/feet I Beam that will accept the rear wing post slide bracket for easy removal of the wing plow for none winter or summer modes

Rear Wing Post Slide Bracket: shall incorporate a manual stop so contact between wing plow and truck cannot happen when the rear of the wing plow is raised to its highest position.

The top portion of the bracket shall incorporate a minimum 4inch x 15inch double acting lift cylinder with a chrome/nitride plated piston rod. This cylinder will raise and lower the rear wing plow for transport and plowing operations This cylinder shall have a 500-PSI relief valve when in float on the down side Ref: EQN-1099 Sheet 5

Rear Wing Post Slide Bracket: The bottom portion of the bracket shall incorporate a minimum 3inch X 27 inch double acting cylinder with a chrome/nitride plated piston. This cylinder shall extend and retract a telescoping strut that is constructed of 4inch O.D square tubing with 3inch O.D square tubing installed inside it. There shall be wear guides welded to the outside of the 3inch square tubing to prevent binding when retracting and extended the strut. There shall be a knuckle link at the end of the strut for connection to the horizontal bracing bracket on plow mold board. Ref: EQN:60A This Knuckle shall be of a one-piece cast design. (Use of welding components is unacceptable). The telescoping strut cylinder shall have an adjustable pressure relief valve installed in the hydraulic system for safety when contacting heaving objects in plowing operations. Ref:EQN-1099 Sheet 4

Front Wing Mast Bracing and support shall be attached in such a way that the load is properly distributed to both chassis frame rails using a cross tube and be approximately 154 inch from the center of the front cross tube to the center of the rear cross tube. Ref: EQN-1097 The front horizontal cross tube shall be minimum 7 inch X 4 inch X.3750. The formed wing mast mount shall be bolted to the horizontal cross tube with minimum grade 8, 0625 (5/8) bolts.

Front Wing Mast shall not block or interfere with O.E.M or aftermarket plow lights or mirrors. The front wing mast shall be minimum 7 inch x 15.3 LB/feet I Beam and shall incorporate a minimum 5/8 inch thick steel plate for the wing post slide. Minimum lift shall be 10 inch to allow sufficient clearance from bottom of plow to ground surface for transport. Front wing double acting lift cylinder shall be minimum of 3 inch X 18 inch with a chrome/nitride plated piston rod with the most weather resistant neoprene wiper seal. Ref: EQN-1099 Sheet 7

Tripping: The patrol wing shall be capable of a full trip moldboard design. The trip mechanism and linkage shall be heavy duty and be of adequate strength to handle the forces encountered when the wing moldboard is tripped. The trip mechanism shall be located at the front (nose end) of the wing moldboard. The trip mechanism shall utilize a rubber compression system that is adjustable by means of a 3/4 inch x 25 inch long threaded rod. The rubber compression spring shall be constructed from aeon A760-75 rubber. The tripping mechanism shall allow the wing moldboard to return to normal plowing position after it has encountered an obstacle. There shall be provisions to lock the plow from tripping when operations deem it necessary to have a rigid moldboard. Ref: EQN-1099 Sheet 3

Wing Plow Hydraulics All 3 cylinders will be double acting with a chrome/nitride plated piston rod with the most weather resistant neoprene wiper seals. All the cylinders shall be connected to the truck chassis hydraulics using 5100 series winged hydraulic couplers Ref: EQN-94. All hydraulic cylinders shall be controlled by a single joystick located conveniently in the cab with the hydraulic control system. In addition, there shall be 3 spool valves added to hydraulics. One to lift and lower the front of the wing, one to extend and retract the wing and one to fold up and lower the rear of the wing.

SPECIFICATIONS

A-A1

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

J. RIGHT WING PLOW SPECIFICATIONS: (Continued)

2. SPECIFICATIONS: (Continued)

Wing Plow Assembly: The wing assembly shall in no way interfere while turning either right or left with the steering tire. The wing shall not be less than 11 feet long overall, 27 inch (minimum) high at the front and 37 inch (minimum) high at the discharge end. The moldboard shall be fabricated from 0.1719-inch-thick (eight 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 Ref: EQN-16A

Suspension Load booster: There shall be a Timbren load booster added to both the driver and passenger side steering axle to help support the leaf spring suspension with the load of the wing plow(s).

Plow Markers/Guides: Wing plow shall have a (visual) mechanical alarm system to help alert the operator of the position of the front of the wing plow. It must be visible from the driver's seat. There shall be two vertical highly visible coated cable plow guides on the front wing post. One shall be mounted to the stationary plow frame and one shall be mounted on the lift frame. Guides shall be mounted near of one another and the tops of the guides shall align when the wing plow is in the down position. There shall also be a vertical highly visible coated cable plow guide mounted on the top rear corner of the wing plow to help determine the location of the wing when in the down position. Ref: EQN-60A

Steel Blade: The cutting edge shall be of 1/2 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.

Swivel Knuckle: Swivel shall be of bolt on design to extension tube. The wing knuckle link at the rear of plow mold board connection shall be of a cast design. The use of welded together components will not be accepted.

3. MINIMUM ALTERATIONS:

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

- a. Suspension Load booster: There shall be a Timbren load booster added to both the driver and passenger side steering axle to help support the leaf spring suspension with the load of the wing plow(s).
- 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.

4. 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 (riveted) non-rusting metallic tag located on the right-hand backside of the moldboard as viewed from truck operator's seat. Sticker decals **will not** be accepted

SPECIFICATIONS

A-A1

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

J. RIGHT WING PLOW SPECIFICATIONS: (Continued)

5. PAINT:

Entire wing moldboard shall be painted with 2 coats of Flat PENNDOT yellow paint Ref: DuPont F9885, PPG 85246, Sherwin Williams 73266, Sikkens 4017 and NAPA 73266 for shade only. Frame and all underside and attached components shall be ground to eliminate weld splatter, scale, sharp edges, rust and oils prior to a rust preventive primer and top coats of yellow paint.

Body up fitter prior to painting **all** frame/body and upfit wing attachments shall be ground to eliminate splatter, scale and sharp edges. All metal surfaces shall be cleaned to eliminate rust and oils prior to primer and final painting. All surfaces to be painted, except for glass, rubber and those metallic accessories or fixtures constructed of rust-resistant (Aluminum and Stainless Steel) or plated material not normally painted shall be coated with one (1) coat rust preventive etching primer (1) coat of epoxy primer and two (2) coats of the body up fitters lead free Acrylic urethane black paint to match frame. Wing plow moldboards shall be prepared to eliminate weld splatter, scale, sharp edges, rust and oils before a rust preventive etching primer (1) coat of epoxy primer and two (2) coats of the body up fitters lead free Acrylic urethane paint and painted front and back with non-gloss PENNDOT Yellow paint, shade Ref. DuPont F9885, PPG 85246, Sherwin Williams 73266, Sikkens 4017 and NAPA 73266

6. CONSPICUITY TAPE:

The rear of the wing plow shall have a strip of retro-reflective sheeting across the top and down the outside in order to outline the plow when viewed from the rear in the lowered position. Shheeting shall also be placed on the length of the extension/retraction hydraulic cylinder and vertically on the rear most frame support of the moldboard plow as to make plow more visible in the raised/stowed position. Material shall be: 2 in/5.08 cm wide Reflexite Conspicuity II System of 3M Scotchlite Conspicuity Series 980, red/silver continuous backing. Ref: EQN-60A.

7. WING PLOW LIGHT:

The rear of the wing plow shall have a Whelen part # 01-066E765-500 light permanently mounted facing rearward and set to be a red steady burn. Light shall be controlled by a COMUS part # CB08-90 mercury switch. Light shall be wired to be on only when the plow is in the down position. There shall be a Deutsch connector installed at the front wing hinge point to allow for easy removal. All wiring connections shall be sealed and water tight. The wing plow manufacturer shall weld a 1/2 inch ID steel pipe on the rearward face of the plow, prior to painting. Pipe shall serve as a conduit to run the wiring for the light. Pipe shall be mounted toward the top and run across the entire length of plow webbing. Ref: EQN-60A

There shall be a Whelen part # 01-0418169-01F light to illuminate the wing plow. There shall be 1 light for each wing plow mounted on the same side as the wing (Dual wing will get 2 lights 1 on each side). Location will be determined at prebuild meeting. There shall be a dedicated OEM dash mounted switch that is properly labeled and illuminates.

SPECIFICATIONS

A-A1

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

L. INSTALLATION PRACTICES:

Any place steel and aluminum contact each other Mylar (**No Substitute, standardization**) shall be used as a buffer. Laminate rubber is unacceptable.

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 shall be continuous welds with full penetration.

All corners shall be angled or rounded for safety.

All mounting procedures shall be in accordance with NTEA standards.

All hoses shall be routed as to not interfere with any components, shall be protected from rubbing / chaffing other hoses or components.

All hydraulic circuits shall be tested for proper operation and flow. Control systems shall be tested/calibrated and programmed for Department material spread rates prior to delivery. Material spread rates will be disclosed at the pre-build meeting.

All electrical connections shall be treated with di-electric grease.

All electrical wiring and harnesses shall have an engineered strain relief system designed to eliminate stress on electrical connections, harnesses, control modules and any other associated electrical system components.

Each electrical circuit shall be supplied individually and properly sized, protected from weather and sealed to be watertight

All OEM connections within the battery box shall have attached non-metallic embossed labels/tags. Labels/tags applied with self-adhesives or stickers will not be accepted.

Any circuit deemed necessary for connection in the battery box by the body up-fitter or component manufacturer shall have attached non-metallic embossed labels/tags. Labels/tags applied with self-adhesives or stickers will not be accepted.

All open terminal connection shall be coated with 3M brand Scotchkote Electrical Coating FD.

The use of any of the following items or practices WILL NOT BE ACCEPTED.

The use of accumulators or auxiliary pumps

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

Laminated Rubber

All zerk fittings shall be threaded

SPECIFICATIONS

A-A1

I. GENERAL TRUCK SPECIFICATIONS: (Continued)

M. SAFETY:

Anti-slip paint is required on all handholds and areas designed to be walked/stepped on, for the entire length, (tape is unacceptable).

All handrails, ladders, and step configurations shall be built for three points of contact.

There shall be two-wheel chocks per truck Ref: buyers WC1467 or equal with a rope. Mounting location will be determined at pre-build meeting. EQN-82B.

All corners shall be angled or rounded for safety.

Compliance shall be made per EQN-118.

Cab and body shall have reflective enhancement per EQN-122.

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, 3A: 40B: C minimum. Mounted in the cab for easy and quick access.

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

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

II. DRAWINGS:

EQN-6	dated	Rev.	09-20-07	3 sheets	SPREADER AUGER
EQN-16A	dated	Rev.	08-09-18	2 sheets	STEEL CUTTING EDGES
EQN-24	dated	Rev.	12-11-06	2 sheets	PLOW RAM
EQN-26B	dated	Rev.	07-21-23	3 sheets	REAR MODULE WITH RECESSED LICENSE PLATE
EQN-28C	dated	Rev.	08-08-17	1 sheet	DOUBLE PRE-WET BRINE TANK
EQN-32	dated	Rev.	07-24-18	1 sheet	DUMP TRUCK CHAIN BOXES
EQN-50	dated	Rev.	08-02-18	4 sheets	FRONT PLOW HITCH ASSEMBLY
EQN-60A	dated	Rev.	07-06-17	2 sheets	SNOW PLOW PATROL WING
EQN-62	dated	Rev.	06-05-14	2 sheets	BED PROP SYSTEM
EQN-63	dated	Rev.	07-02-12	1 sheet	DUMP TRUCK HOIST CYLINDER BLEEDER
EQN-66	dated	Rev.	07-20-09	2 sheets	SPLASH GUARDS-RUBBER TRAILER & TRUCK
EQN-66A	dated	Rev.	07-13-17	1 sheet	TRIANGLE STORAGE BOX
EQN-78	dated	Rev.	10-27-06	1 sheet	CB RADIO CONNECTIONS
EQN-78A	dated	Rev.	07-13-17	3 sheets	AIR TAILGATE, HARDWARE
EQN-79A	dated	Rev.	08-08-19	9 sheets	TYPE IV DUMP BODY
EQN-80A	dated	Rev.	08-02-18	1 sheet	WIRING DIAGRAM 7 WAY ROUND PIN FEMALE CONNECTOR

SPECIFICATIONS

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II. DRAWINGS: (Continued)

EQN-82B	dated	Rev.	07-17-17	1 sheet	CHOCK AND HOLDER
EQN-90	dated	Rev.	07-25-18	2 sheets	PUMP MOUNTING BRACKET & PTO ASSEMBLY
EQN-94	dated	Rev.	08-02-18	5 sheets	HYDRAULIC HOSE MOUNTING & REQUIREMENTS
EQN-118	dated	Rev.	06-26-09	1 sheet	UNDERRIDE PROTECTION
EQN-122	dated	Rev.	07-24-18	3 sheets	DUMP BODY REFLECTIVE SHEETING
EQN-180	dated	Rev.	07-26-18	2 sheets	HEADLIGHT ADJUSTMENT BRACKET
EQN-351A	dated	Rev.	06-19-13	2 sheets	FAST LUBE OIL CHANGE SYSTEM
EQN-501	dated	Rev.	06-09-09	2 sheets	CENTRALIZED LUBE SYSTEM
EQN-507B	dated	Rev.	07-24-18	1 sheet	DUMP TRUCK WEIGHT DISTRIBUTION MINIMUM DATA REQUIRED
EQN-508	dated	Rev.	11-03-09	1 sheet	VALVE ENCLOSURE TANK COMBO
EQN-509	dated	Rev.	08-01-18	1 sheet	DUMP TRUCK SPREADER CONTROL BASE WITH RADIO BRACKET
EQN-550	dated	Rev.	07-20-23	1 sheet	WIRELESS CONNECT AND TARP
EQN-552	dated	Rev.	07-25-18	1 sheet	MAX TRAVEL HEIGHT STICKER
EQN-552-1	dated	Rev.	07-06-17	1 sheet	THREE POINTS OF CONTACT STICKER
EQN-557	dated	Rev.	05-20-13	1 sheet	SHOVEL HOLDER
EQN-562	dated	Rev.	01-08-14	1 sheet	POWER DISTRIBUTION BOX
EQN-568	dated	Rev.	08-02-19	14 sheets	UNDER TAILGATE SPREADER WITH IOWA SPINNER
EQN-1090	dated	Rev.	08-08-22	2 sheets	FLIP STEP
EQN-1097	dated	Rev.	07-12-19	1 sheet	WING PLOW TOLERANCE
EQN-1098	dated	Rev.	08-08-19	5 sheets	CAB PROTECTOR & PRE-WET DEFLECTOR
EQN-1098B	dated	Rev.	07-19-23	1 sheet	DUMP TRUCKS 195 PRE-WET TANKS
EQN-1099	dated	Rev.	07-18-19	4 sheets	WING PLOW MOUNTS
EQN-1100	dated	Rev.	08-06-19	sheet 2	DUMP TRUCK TARP ARMS
EQN-1105	dated	Rev.	07-29-19	1 sheet	DUMP TRUCK LATCH

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 pre-build meeting between the vendor and the Chief of the Fleet Management Division.

DRAWINGS APPEAR AT THE END OF THE SPECIFICATIONS.

SPECIFICATIONS

A-A1

III. MANUALS:

The successful vendor shall furnish all applicable manuals per unit:

- 1 Operator's
- 1 Parts
- 1 Service complete engine and chassis
- 1 Engine
- 1 Transmission (Automatic)
- 1 Body and Sub-frame (Parts and Service)
- 1 Complete set of manuals for any additional items/equipment added to a piece of equipment.
- 1 Electrical System Charts
- 1 Control System/Hydraulic and Electrical System Schematics
- 1 Lube System Grease/Electrical Schematics

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

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

III. MANUALS: (Continued)

Delivery of these manuals, including manual revisions shall be completed with delivery of the first unit in a series and with the pilot of a new build, VIN and body serial specific.

Any changes requested by the Department or deviations granted by the department to the OEM chassis or body up fitter shall have updated manuals supplied with serial number specified. Delivery of these manuals shall be completed with delivery of the first unit of each series.

Manuals shall be supplied on thumb drive in lieu of paper manuals for each new build or at any time a change is made to series.

Manuals may be supplied on a dedicated website (OEM chassis ONLY) in lieu of paper manuals.

It shall be the responsibility of the OEM chassis and or the sub vendors to provide revisions to corresponding / Subsequent specific manuals with any changes specific to chassis or body serial numbers.

IV. TRAINING:

See training information attachment in the bid package.

SPECIFICATIONS

A-A1

V. WARRANTY:

Per PCID No. 1075, and the additional specific warranty items stated below.

1 year starting from the Department's in-service date.

The warranty start-up date shall be defined as the date of transfer from the PennDOT Fleet Management Division to the designated county location. This will be considered the date of delivery to the county and NOT the date of delivery by the successful bidder to the Department. The PennDOT Fleet Management will supply the actual start-up date, equipment number, and serial number of the machine, via email, to the successful bidder. It is the responsibility of the successful bidder to ensure that the equipment manufacturer recognizes and applies the Department's actual warranty start-up date in their database.

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

MANUFACTURE IN-HOUSE WARRANTY PROGRAM:

PRIOR TO BID ALL OEM CHASSIS MANUFACTURES or SELLING DEALER MUST ESTABLISH AN IN-HOUSEWARRANTY PROGRAM or SERVICE AGREEMENT DIRECTLY TO THE DEPARTMENT.

AFTER CONTRACT AWARD IF THE DEPARTMENT DESIRES TO PARTICIPATE, THE PROGRAM SHALL BE OPERATIONAL (user name/password(s) established, etc.,if applicable) PRIOR TO DELIVERY OF THE FIRST UNIT. ESTABLISHED WARRANTY AND SERVICE AGREEMENT SHALL REMAIN INSERVICE FOR THE FULL TERM OF EACH UNIT REGARDLESS OF THE AMOUNT OF UNITS WITHIN THE FLEET.

Warranty repairs shall be completed at the manufacturer's location or in-house field repair completed by PENNDOT. It shall be the Departments discretion to repair internally or transport the unit to the dealership. The manufacturer shall reimburse the Department at the manufacturers standard published in-house labor rate. The labor rate shall be mutually agreed upon between the Department and the vendor/bidder.

Any and all training for in-house warranty work will be provided by the Manufacturer at no expense to the Commonwealth.

All in-house warranty documentation shall be delivered with the pilot model. All warranty documentation (extended warranty service contracts and coverage) shall be delivered with the pilot model.

Prior to bid, the In-house warranty program shall provide the department the availability to file warranty claims directly to the OEM manufacturer/selling dealer for repairs made in-house by department personnel during the equipment's specified warranty period. Supplying manufacture shall ensure that there are authorized OEM repair facilities within the commonwealth of PA. capable and in agreement to perform repairs after the warranty period ends and throughout the department owned equipment's life cycle.

SPECIFICATIONS

A-A1

V. WARRANTY: (Continued)

BUMPER-TO-BUMPER WARRANTY:

1 year starting from the Departments acceptance date.

RADIATOR WARRANTY:

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

ENGINE WARRANTY:

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

ENGINE OIL PAN:

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

EMISSION WARRANTY:

The successful vendor and or supplying OEM shall provide the Department with a 100% parts and labor warranty for all emission related components to include the diesel particulate filter (DPF) FOR 60 months / 100,000 miles minimum, unlimited engine hours.

TRANSMISSION WARRANTY:

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

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:

Structural Integrity and workmanship of body shall be guaranteed for five (5) years, parts and labor. A decal shall be affixed to the driver's door, on the inside, stating the company's name, model, serial number, address and phone number.

Body hoist assembly 3 years, 100% parts and labor.

Tailgate spring-over-air cylinder system, 3 years 100% parts and labor.

CENTRAL HYDRAULIC SYSTEM:

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

- Saur Danfoss Valve
- Controller
- Electronic Joysticks

All wiring harnesses shall be warranted for 5 years 100% parts and labor.

SPECIFICATIONS

A-A1

V. WARRANTY: (Continued)

HYDRAULIC PUMP

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

UNDER TAILGATE SPREADER if Equipped:

Warranty will be for a minimum of one (1) calendar year on the entire spreader, and two (2) calendar years for hydraulic motors (spinner & auger) and sensor or manufacturer's standard commercial term (whichever is greater), from date of departments acceptance. If the manufacturer neglects or fails to correct defect(s) during the warranty period, their responsibility shall continue until such time as it takes to correct the defect(s). The manufacturer is expected to respond to warranty problems and administer effective solutions in the best interest of the Commonwealth. The successful bidder shall be an authorized dealer for the proposed spreader/s and shall comply with the manufacturer's warranty or authorize a qualified dealer in the locality in which the unit is assigned, to do whatever is required to comply with the manufacturer's warranty without cost to the Commonwealth.

The vendor will replace, free of charge within two (2) years from date of county acceptance, any spinner, auger motors and sensors which in the judgment of the manufacturer has failed because of defective material or workmanship, provided it is shown to be properly mounted, and not subject to abuse in operation or assembly.

The successful bidder shall be an authorized dealer for the proposed spreader/s and shall comply with the manufacturer's warranty or authorize a qualified dealer in the locality in which the unit is assigned, to do whatever is required to comply with the manufacturer's warranty without cost to the Commonwealth.

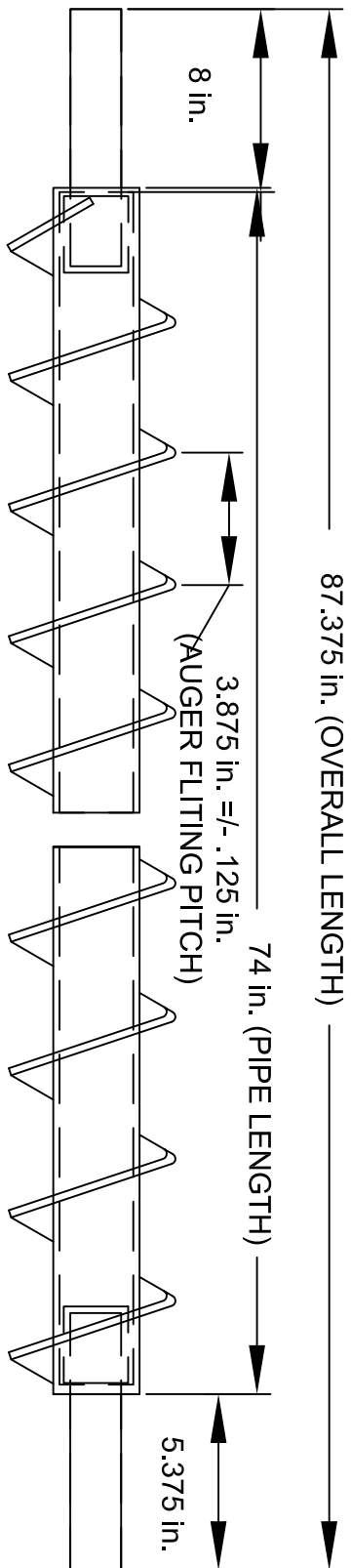
BODY ELECTRICAL/LIGHTING:

Wiring harness shall be 5 years 100% parts. First year shall include 100% labor.

All LED lights and lighting system controller shall be 5 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.



VIEW SHOWING COMPLETE AUGER WELDMENT

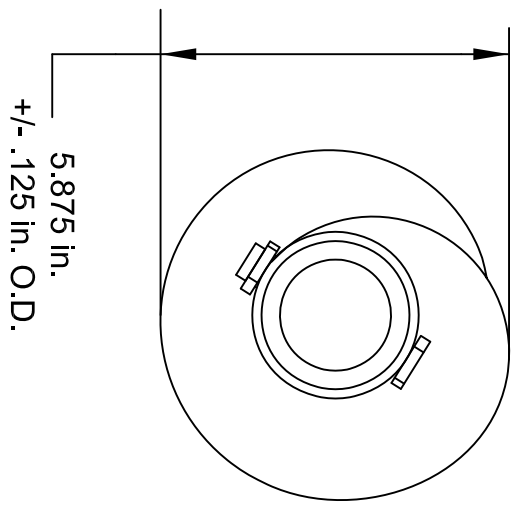
2 in. (2.375 O.D.)
 SCHEDULE 80 (.20 in. WALL)
 CARBON STEEL PIPE
 (PIPE SIZE E.R.W. TUBING ACCEPTABLE)

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)

SPECIFICATION NOTES

1. PIPE PORTIONED WORTH (WITH WELDED FITTING) TO BE STRAIGHT TO GIVE MAXIMUM OF .20 IN. TOTAL RUNOUT
2. BOTH STUB SHAFT CENTERLINES TO LIE ON PIPE CENTERLINE TO GIVE MAXIMUM OF .20 IN. TOTAL RUNOUT
3. ALL SURFACES OF SLEEVE, SHAFT, AND OTHER 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 DEG
DECIMAL MACHINING	0.0- +/- .040
	0.00- +/- .020
	0.000- +/- .005
IMPLIED TOLERANCES DO NOT APPLY TO REFERENCE DIMENSIONS	

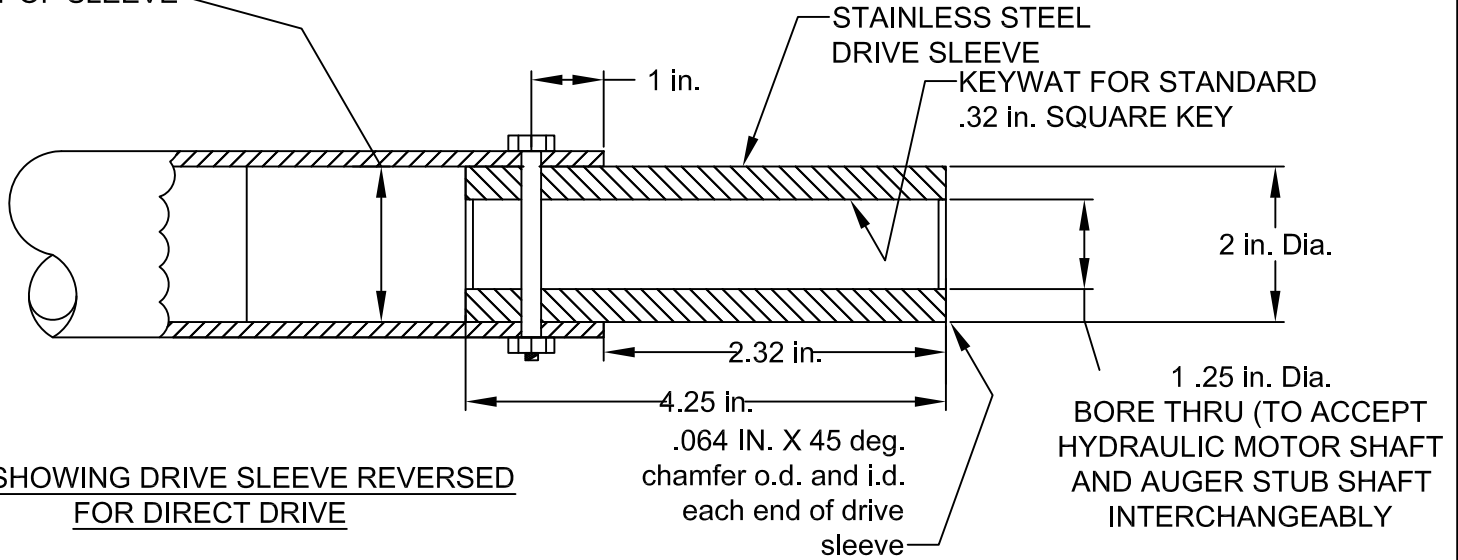


PA DEPARTMENT OF TRANSPORTATION

PennDOT SPREADER AUGER DETAIL
 (S/S & RUBBER TROUGH)

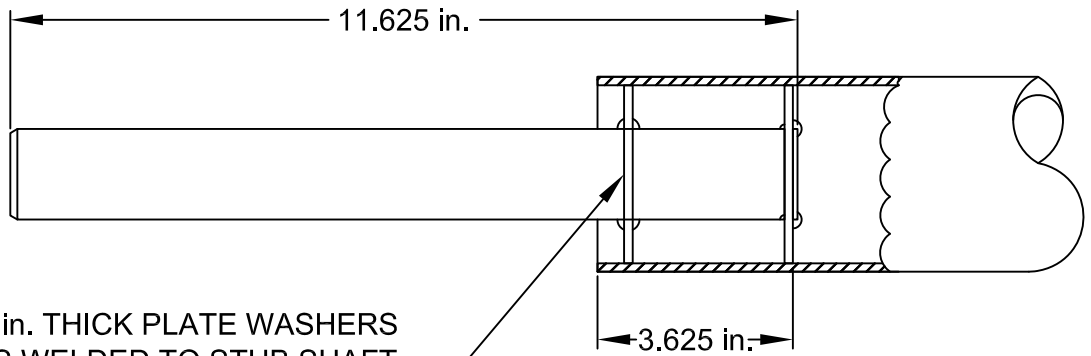
REVISIONS		DRAWN BY		SCALE	
NO.	DATE	BY			
1	01-09-98	DLW	DLW	N/A	EQN-6
2	05-28-02	DWG			
3	9-20-07	BAG	DATE	CHKD BY	SHEET
			01-09-98	WHM	1 OF 3

I.D. OF PIPE BORED
FOR CLOSE SLIDING
FIT OF SLEEVE



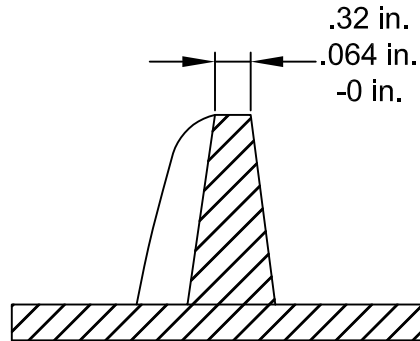
PA DEPARTMENT OF TRANSPORTATION

REVISIONS			PennDOT SPREADER AUGER DETAIL (S/S & RUBBER THROUGH)		
NO.	DATE	BY	DRAWN BY	SCALE	
1	01-09-98	DLW			
2	05-28-02	DWG	DLW	N/A	EQN-6
3	9-20-07	BAG	01-09-98	WHM	SHEET 2 OF 3



.125 in. THICK PLATE WASHERS
CONTINUOUS WELDED TO STUB SHAFT
AND AUGER PIPE

WASHERS TO FIT I.D. OF PIPE WITH
CLOSE SLIDING FIT SO NO FLEXING
OF SHAFT EXISTS AFTER FINAL WELDING



**FLITING THICKNESS SPECIFICATION
(BEFORE HARDSURFACING)**

.125 in. (MINIMUM)
HARDSURFACE

CONTINUOUS WELD
BOTH SIDES OF
FLITING



OUTER FLITE PERIPHERY CONTINUOUSLY
HARDSURFACED WITH ABRASIVE RESISTANCE
WELDING ROD (OR WIRE) EQUIVALENT TO
STUDY 121 (ROCKWELL HARDNESS C-44),
AND TO BE FULL WIDTH OF FLITING
THICKNESS AT OUTEREDGE

WELDING AND HARDSURFACE SPECIFICATION

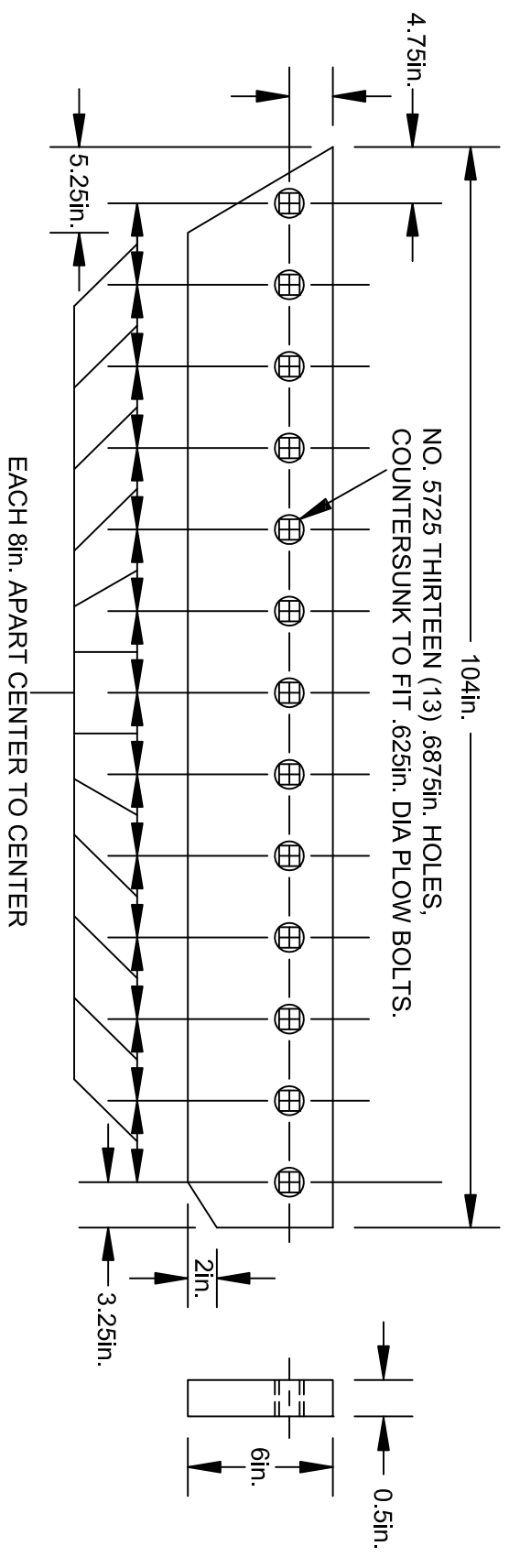
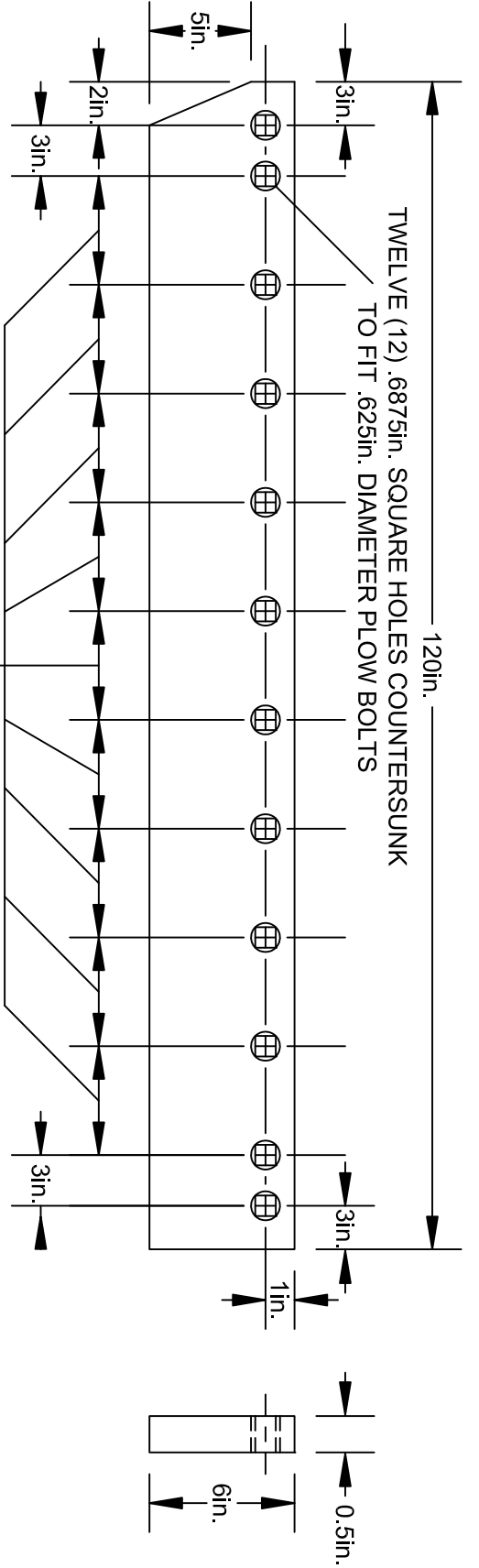
PA DEPARTMENT OF TRANSPORTATION

REVISIONS

NO.	DATE	BY
1	1-09-98	DLW
2	05-28-02	DWG
3	09-20-07	BAG

PennDOT SPREADER AUGER DETAIL
(S/S & RUBBER THROUGH)

DRAWN BY	DLW	SCALE	N/A	EQN-6
DATE	01-09-98	CHK'D BY	WHM	SHEET 3 OF 3

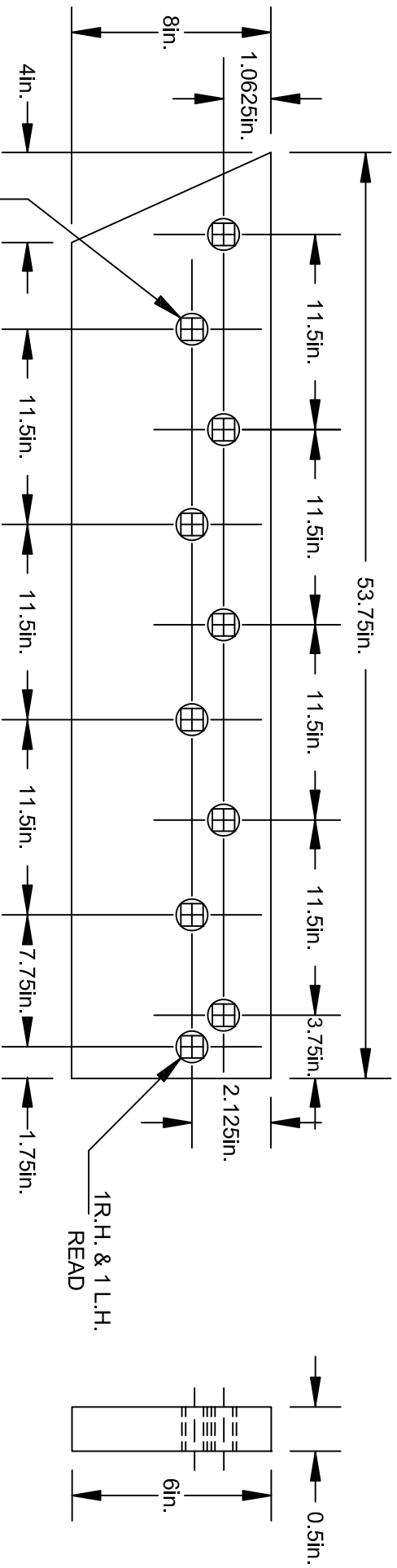


- NOTES:
1. ALL DIMENSIONS ARE IN INCHES.
 2. MATERIAL: CARBON STEEL AISI 1080-1085
BRINELL HARDNESS 250-325*

EACH BLADE SECTION SHALL BE PUNCHED WITH A DATE OF MANUFACTURE AND THE MANUFACTURER'S NAME.

*STEEL SPECIFICATION.

PA DEPARTMENT OF TRANSPORTATION			STEEL CUTTING EDGES FOR SNOW PLOWS		
REVISIONS			DRAWN BY		
NO.	DATE	BY	DLW	CHKD BY	SCALE
1	06-14-07	KNH	DLW		
2	07-29-15	JJB	DLW		
3	08-09-18	KBD	DLW		



TEN (10) .6875in.
 SQUARE HOLES,
 COUNTERSUNK TO
 FIT .625in. DIA.
 PLOW BOLTS.

NOTES:

1. ALL DIMENSIONS ARE IN INCHES.
2. MATERIAL: CARBON STEEL AISI 1080-1085
 BRINELL HARDNESS 250-325*

EACH BLADE SECTION SHALL BE PUNCHED WITH A DATE OF
 MANUFACTURE AND THE MANUFACTURER'S NAME.

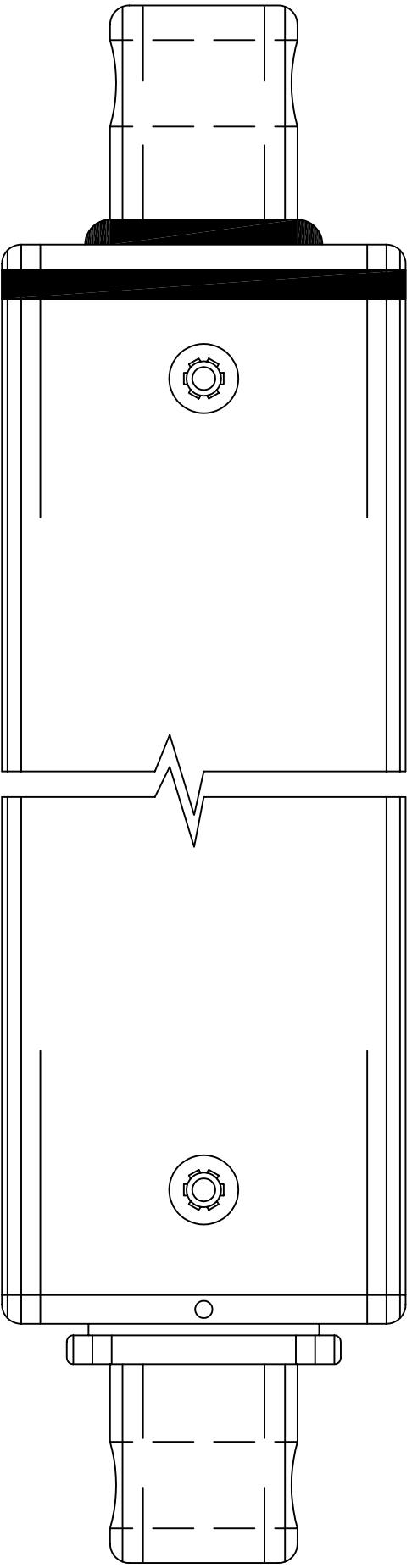
*STEEL SPECIFICATION.

PA DEPARTMENT OF TRANSPORTATION

REVISIONS

NO.	DATE	BY	DRAWN BY	DATE	CHKD BY	SCALE	EQUATION
1	06-14-07	KNH					
2	07-29-15	JJB	DLW	02-06-96			EQN-16A
3	08-09-18	KBD					SHEET 2 OF 2

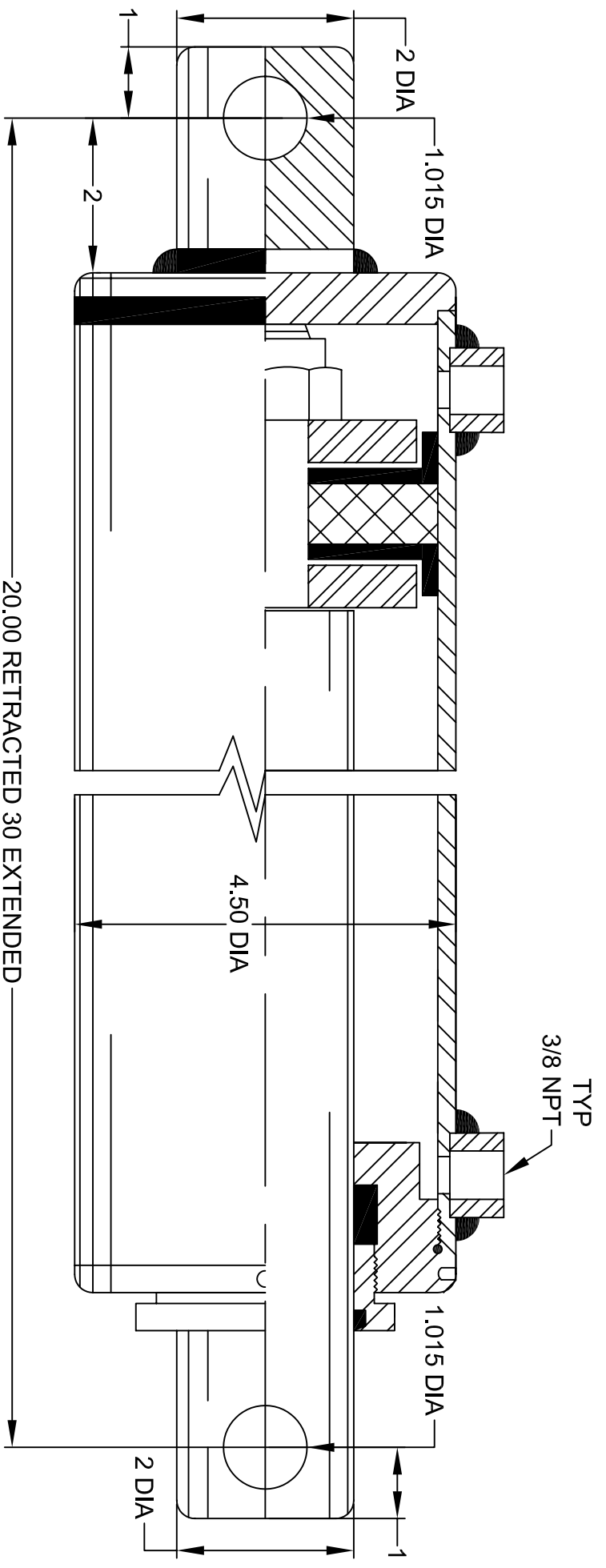
**STEEL CUTTING EDGES FOR
 SNOW PLOWS**



PA DEPARTMENT OF TRANSPORTATION

REVISIONS			PLOW RAM		
NO.	DATE	BY			
1					
2					
3					
4					
5					

			DRAWN BY	CJW	SCALE	N/A	EQN-24
			DATE	12-11-06	CHECK'D BY	KGK	SHEET 1 OF 2



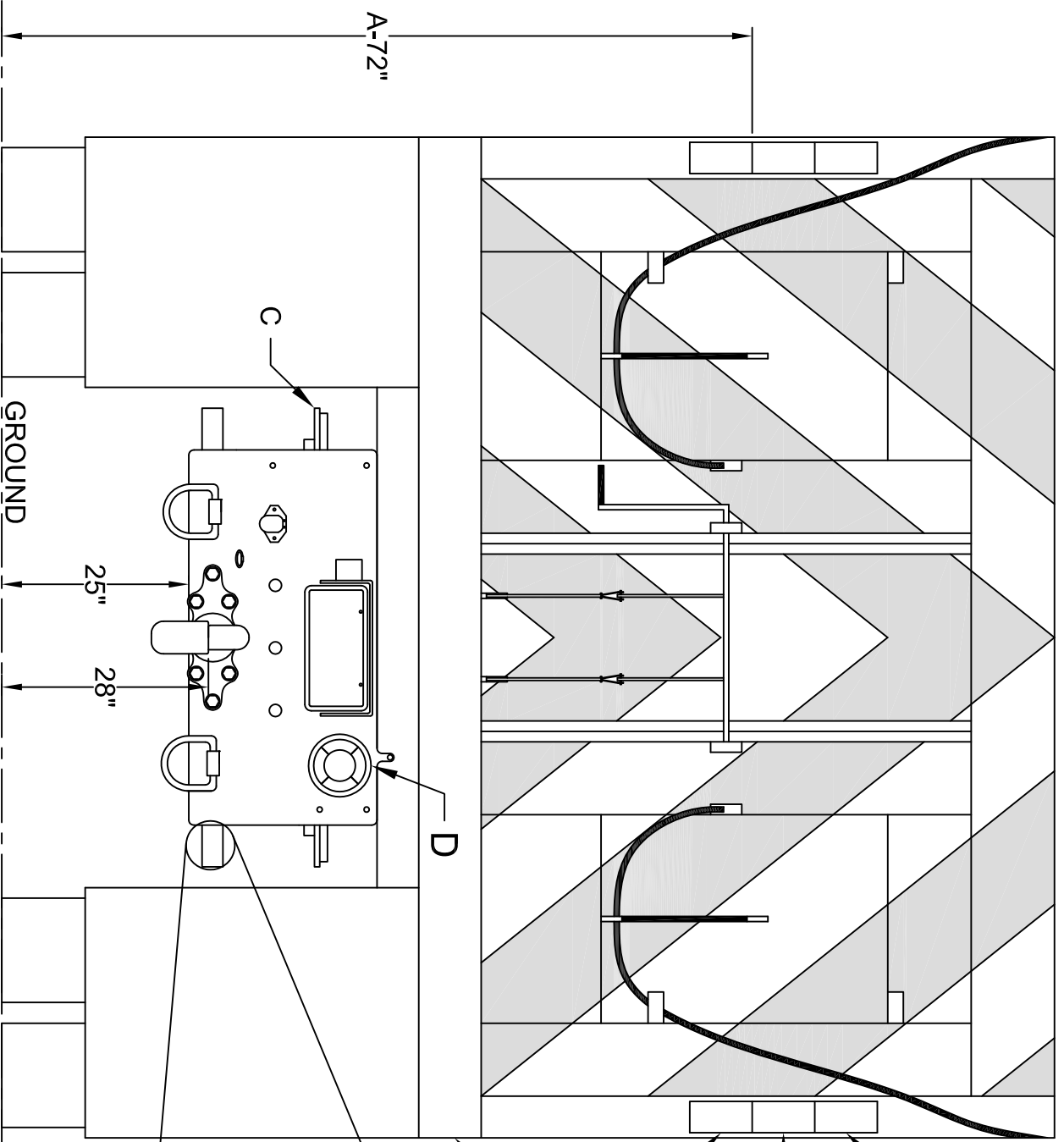
PA DEPARTMENT OF TRANSPORTATION

REVISIONS			PLOW RAM		
NO.	DATE	BY			
1					
2					
3					
4					
5					

NO.	DATE	BY	PLOW RAM		
1					
2					
3					
4					
5					

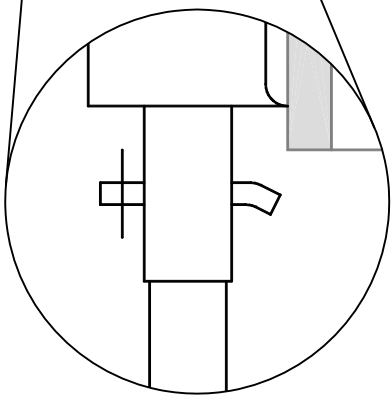
DRAWN BY: CJW SCALE: N/A EQN-24

DATE: 12-11-06 CHECKED BY: KGK SHEET 2 OF 2



YELLOW STROBE
 REVERSE
 STOP / TAIL / TURN

PINNED ICC BUMPER
 MINIMUM 0.50" DIA PINS,
 CHAINED, HAIR PINS

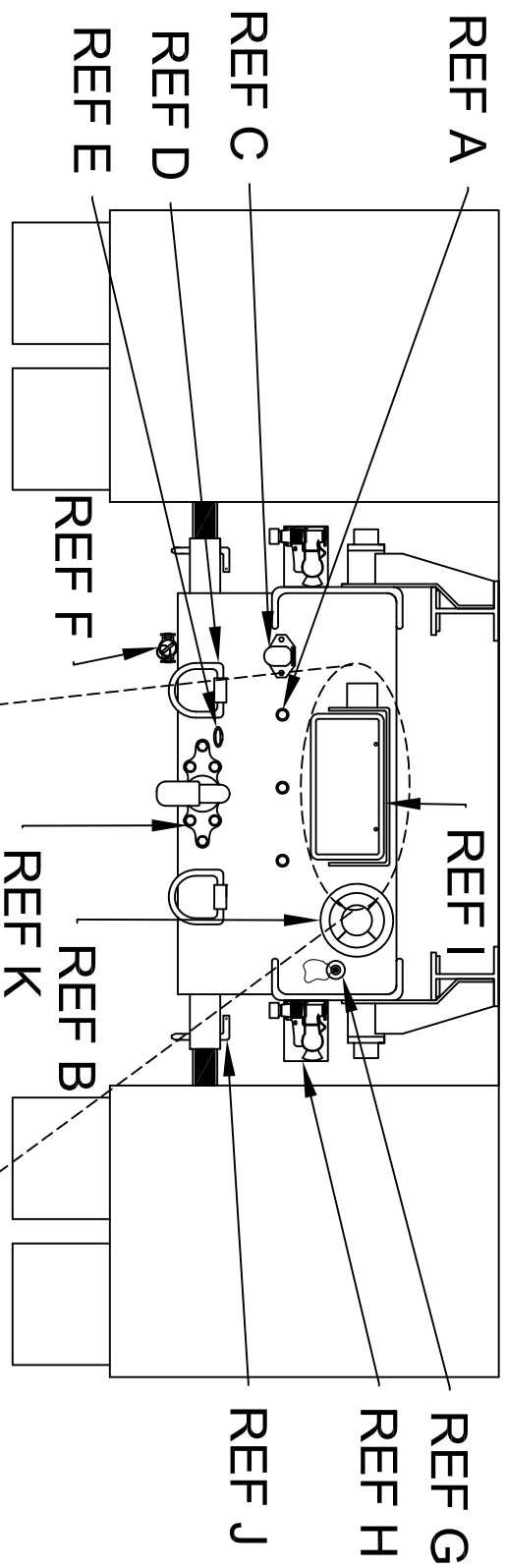


- NOTES:**
- A. HEIGHT OF LIGHTS SHLL NOT EXCEED 72". MEASURED FROM GROUND LEVEL TO TOP OF STOP / TAIL / TURN LIGHT WHEN IS BODY UNLOADED.
 - B. SHALL BE ONE PIECE DESIGN, 3/8" X 6" MINIMUM 60661-T6. IT SHALL BE COMPLETELY WELDED AND SURFACE SHALL BE FLUSH FULL LENGTH TO ALLOW MOUNTING OF THE SPREADER WITH NO GAPS.
 - C. GLAD HANDS
 - D. PLACE AS HIGH AS POSSIBLE ON REAR MODULE.

PA DEPARTMENT OF TRANSPORTATION

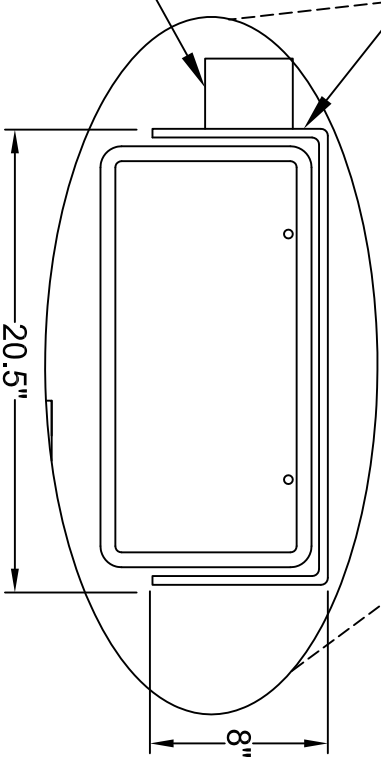
REVISIONS

NO.	DATE	BY	REAR MODULE WITH RECESSED LICENSE PLATE
1	08-08-19	KBD	
2	07-21-23	DVC	
3			



1 $\frac{1}{4}$ " WIDTH STEEL FRAME TO
GO AROUND LICENSE PLATE

LICENSE PLATE LIGHT



Note: Lisence plate with stainless hardware
with locking nuts

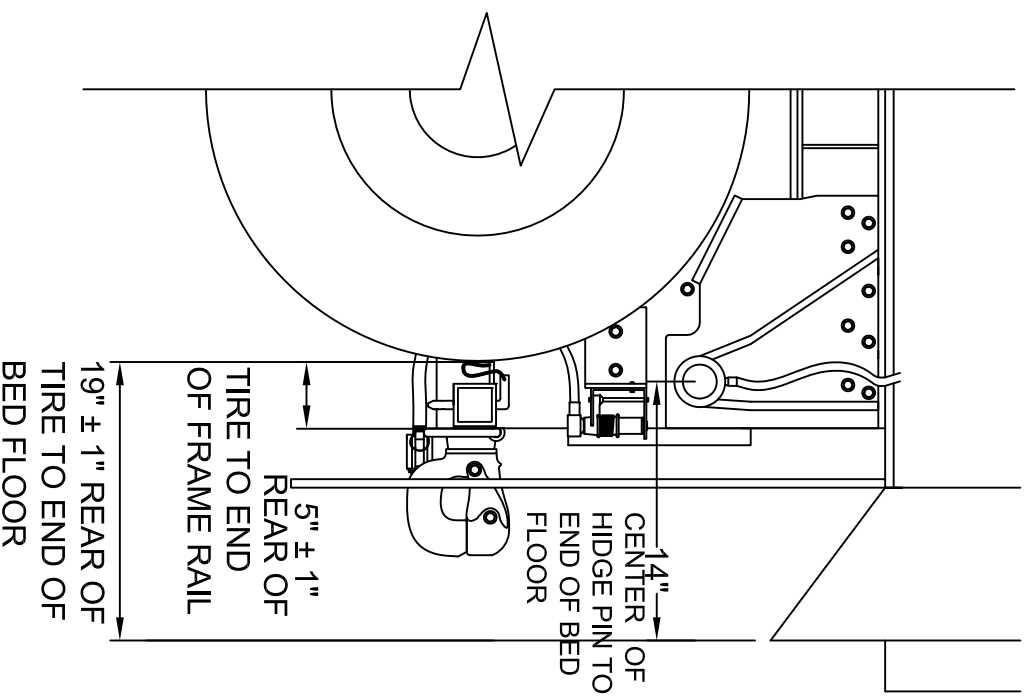
NOTES:

- A. REFLECTORIZED M/C LAMP (RED)
- B. ECCO 450 BACK UP ALARM
- C. TRAILER 7 ROUND PIN TYPE RECEIVER
- D. EACH "D" RING - MINIMUM BRAKING STRENGTH EQUIVALENT TO HITCH WEIGHT
- E. TRAILER BRAKE-AWAY RING
- F. PRE WET LIQUID SUPPLY
- G. AUGER SENSOR
- H. TRAILER AIR BRAKE GLAD HANDS MUST NOT EXTEND PAST FRAME RAIL
- I. LICENSE PLATE
- J. MIN .5" DIA PINS, CHAINED, HAIR PINS
- K. HITCH

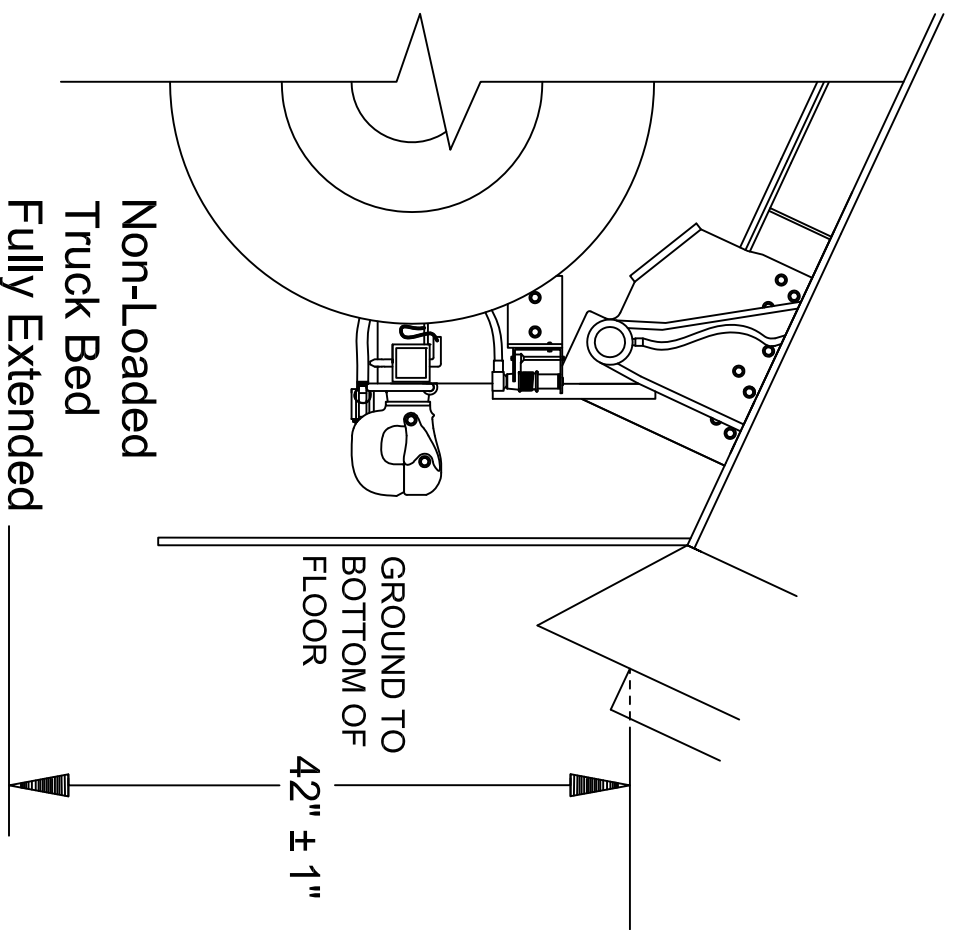
PA DEPARTMENT OF TRANSPORTATION

REAR MODULE WITH RECESSED LICENSE PLATE

REVISIONS		DRAWN BY		SCALE		DATE	
NO.	DATE	BY					
1	08-08-19	JJB	JJB	N/A			
2	07-21-23	DVC	JJB	N/A			
3							



SIDE VIEW



DUMP TRUCK REAR MODULE

THIS DRAWING IS NOT INTENDED TO SHOW ACTUAL BODY HINGE PIN PLACEMENT. CORRECT BODY HINGE PIN PLACEMENT TO MEET THE VEHICLES INTENT STATEMENT IS THE VENDORS RESPONSIBILITY.

PA DEPARTMENT OF TRANSPORTATION

REVISIONS

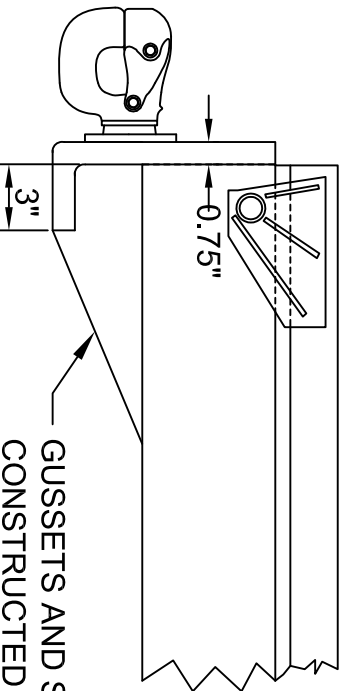
NO.	DATE	BY	REASON
1	08-08-19	KBD	REAR MODULE
2	07-21-23	DVC	
3			

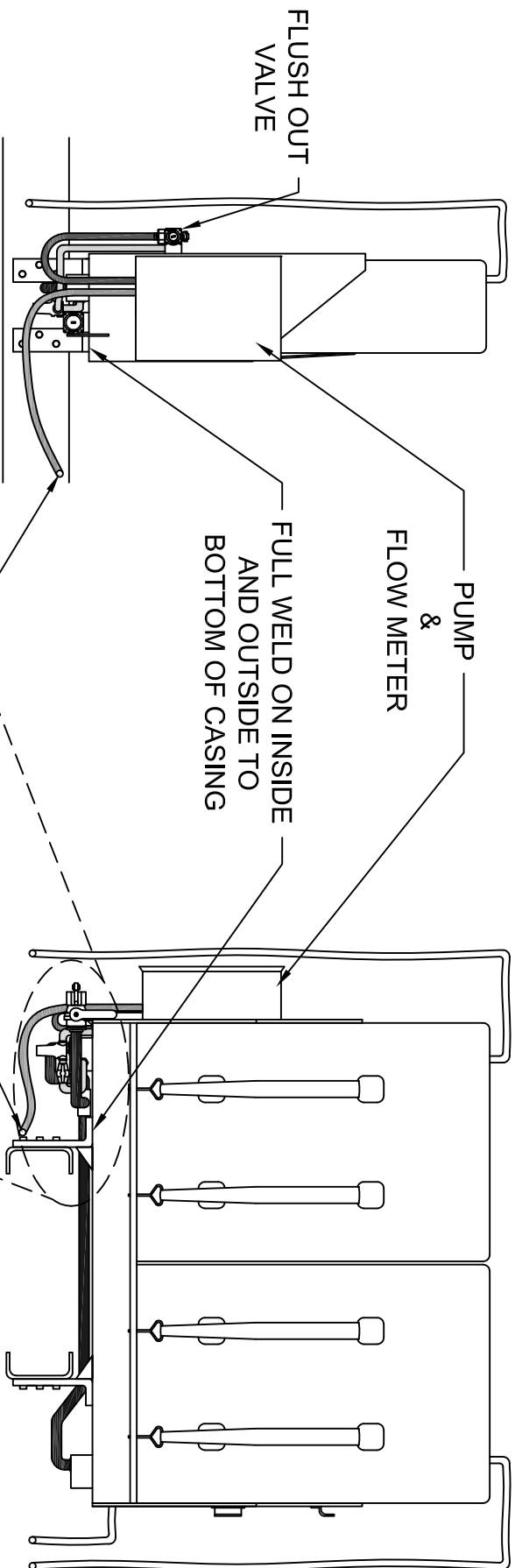
TANDEM AXLE DUMP TRUCK REAR MODULE

DRAWN BY: **KBD** SCALE: **EQN-26B**

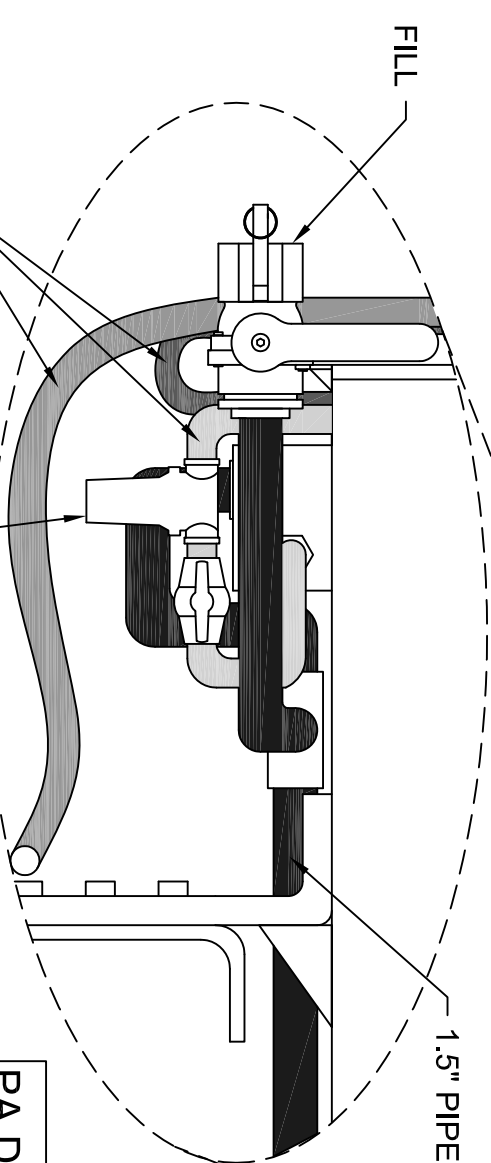
DATE: 07-15-18 CHECKED BY: **Sheet 3 of 3**

GUSSETS AND SUPPORTS SHALL BE CONSTRUCTED TO MEET 25 TON PINTLE REQUIREMENTS.





SIDE VIEW



FRONT VIEW

NOTE:
CASING TO BE STAINLESS STEEL

PA DEPARTMENT OF TRANSPORTATION

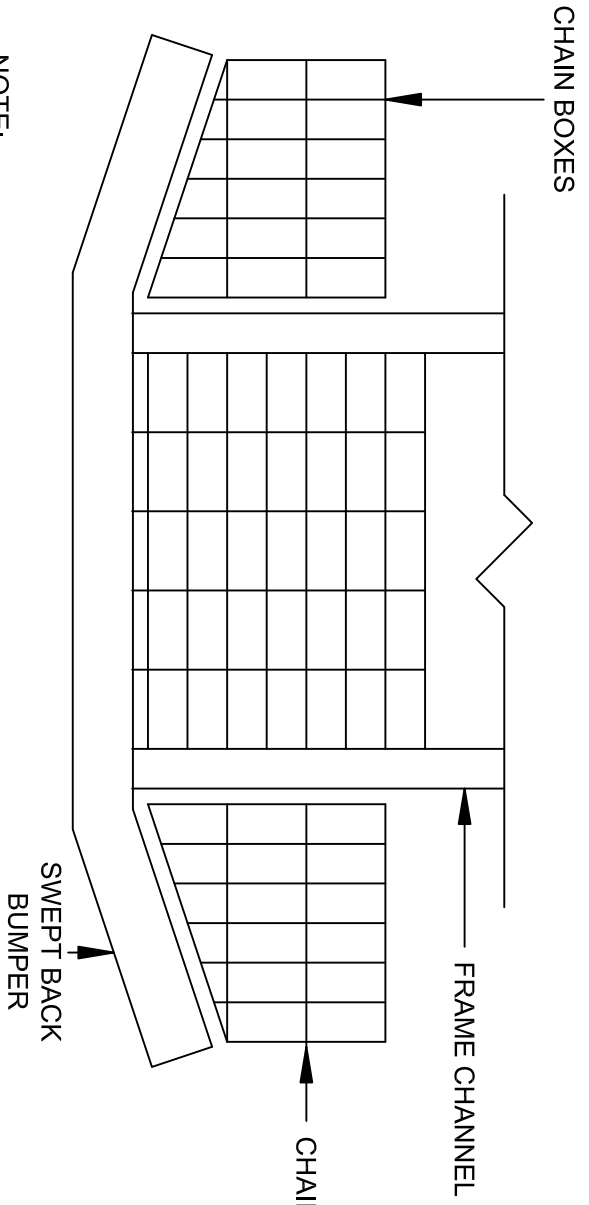
DOUBLE PRE-WET BRINE TANK

REVISIONS			DRAWN BY			SCALE		
NO.	DATE	BY	DATE	CHK'D BY				
1			08-08-17	HMR	N/A			
2								
3								

EQN-28C

SHEET 1 OF 1

AERIAL VIEW

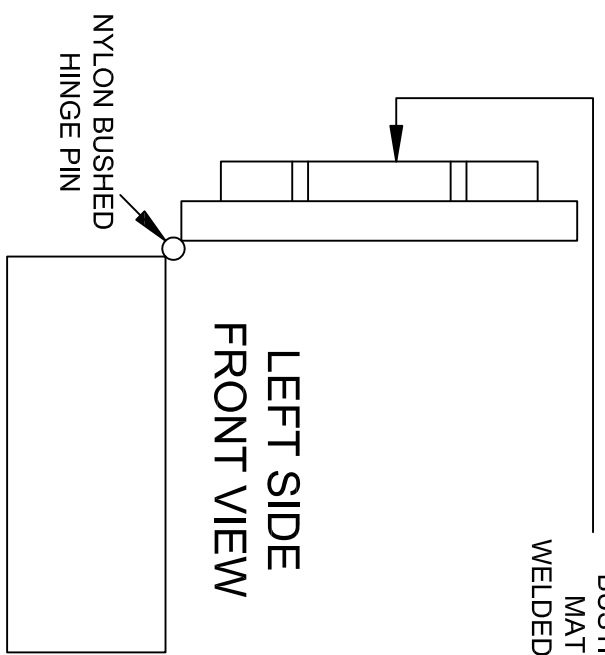


* LEFT SIDE BOX SHOWN, REVERSE FOR RIGHT SIDE.
 * GIVEN DIMENSIONS ARE APPROXIMATE AND MAY REQUIRE ALTERATION TO ADAPT TO MAKE / MODEL OF TRUCK AND STYLE OF BUMPER.

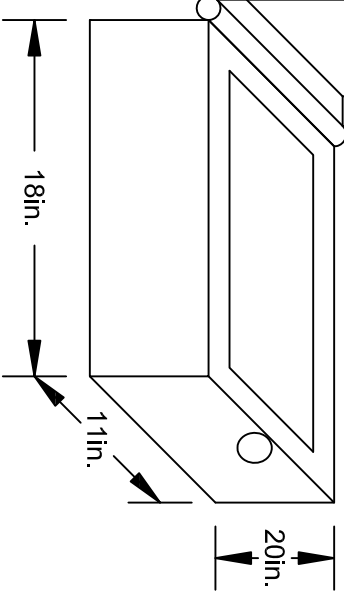
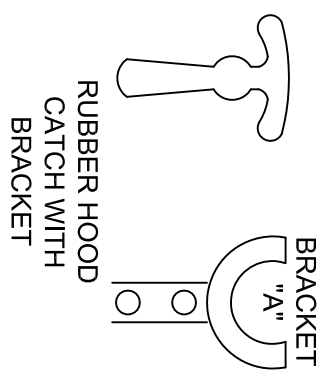
NOTE:
 THERE SHALL BE SUFFICIENT ALUMINUM BUSTIN TYPE MATERIAL TO COVER THE ENTIRE AREA FROM GRILL TO BUMPER AND FRAME RAIL TO FRAME RAIL.

ALUMINUM BUSTIN TYPE MATERIAL WELDED IN PLACE

LEFT SIDE FRONT VIEW



GRILL TO BUMPER AND BOXES SHALL BE SUPPORTED IN SUCH A WAY TO ENSURE SUPPORT OF A 200 lb. MAN IN ANY 12in. AREA.

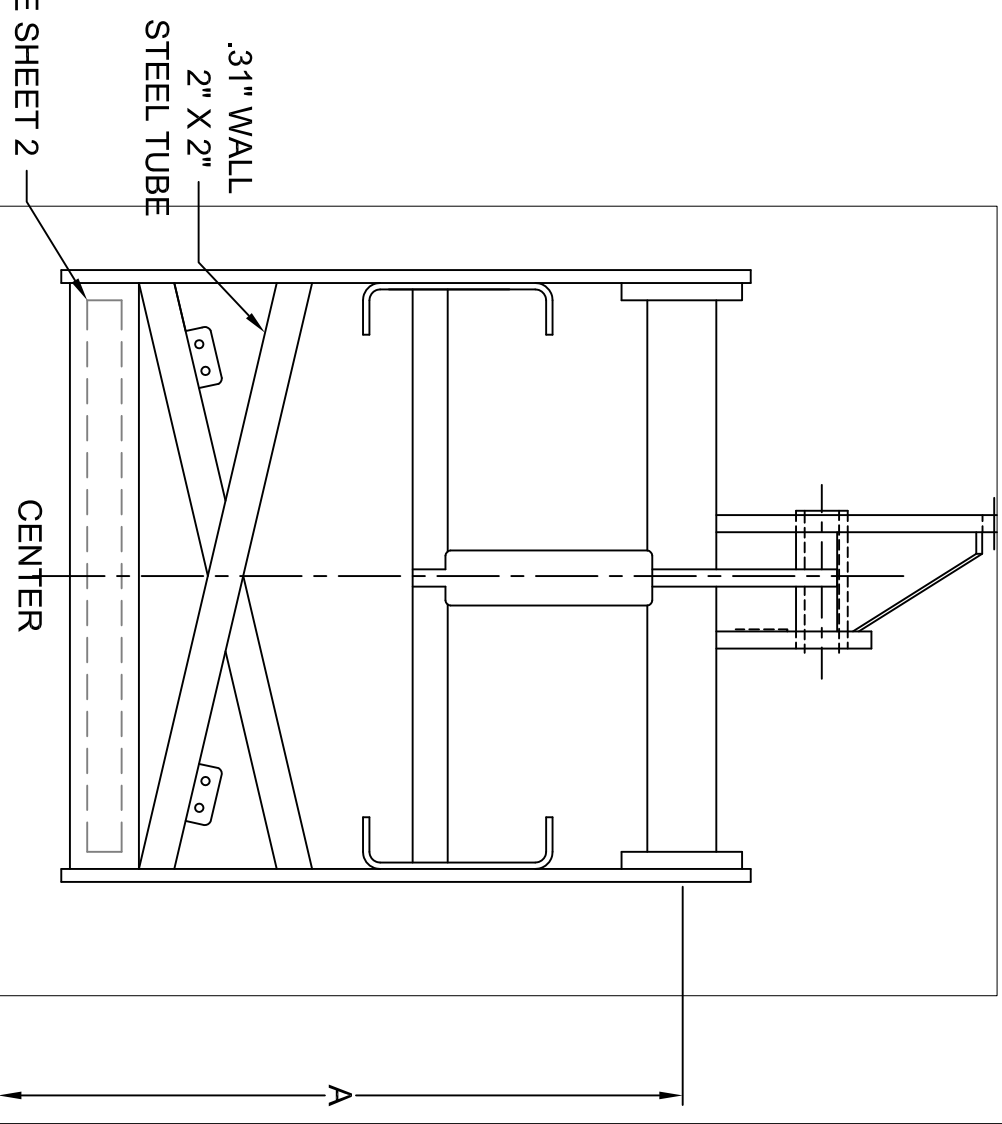
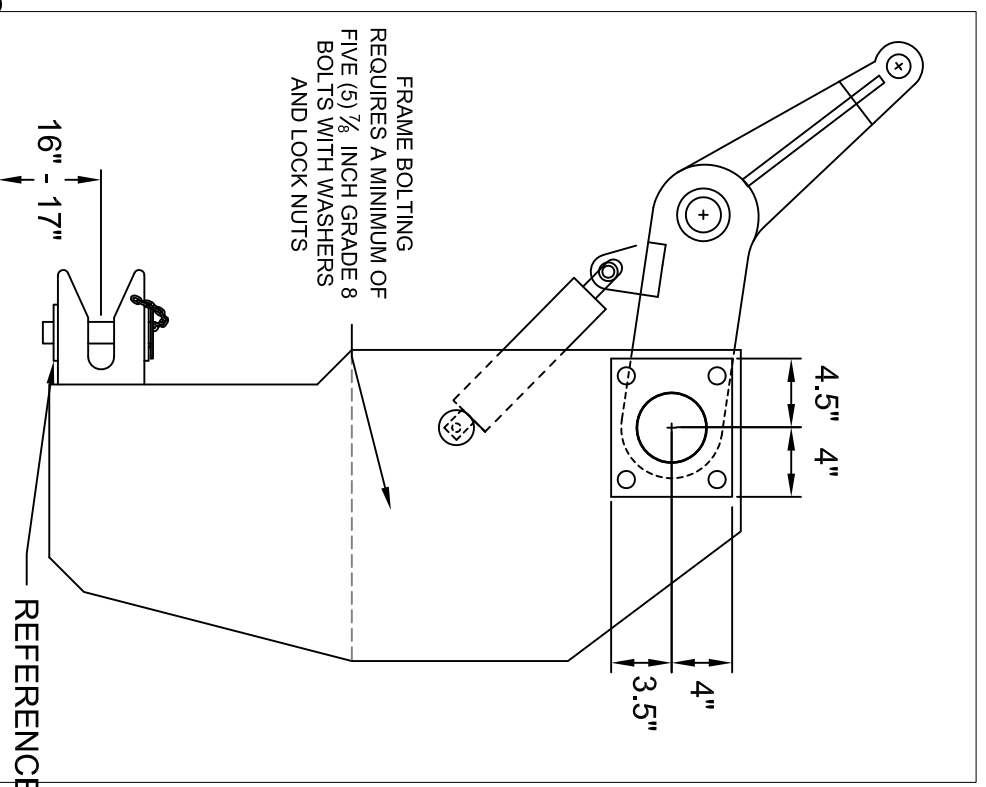


PA DEPARTMENT OF TRANSPORTATION

REVISIONS		DUMP TRUCK CHAIN BOXES	
NO.	DATE	BY	DWG
1	05-22-02	KNH	DWG
2	07-17-07	KNH	DWG
3	07-24-18	KBD	DWG

DRAWN BY	WHM	SCALE	N/A	EQN-32
DATE	05-13-93	CHG'D BY	RED	SHEET 1 OF 1

GRADE 8 BOLTS MINIMUM QUANTITY 4
 MINIMUM OF FOUR 0.75in. DRAIN HOLES



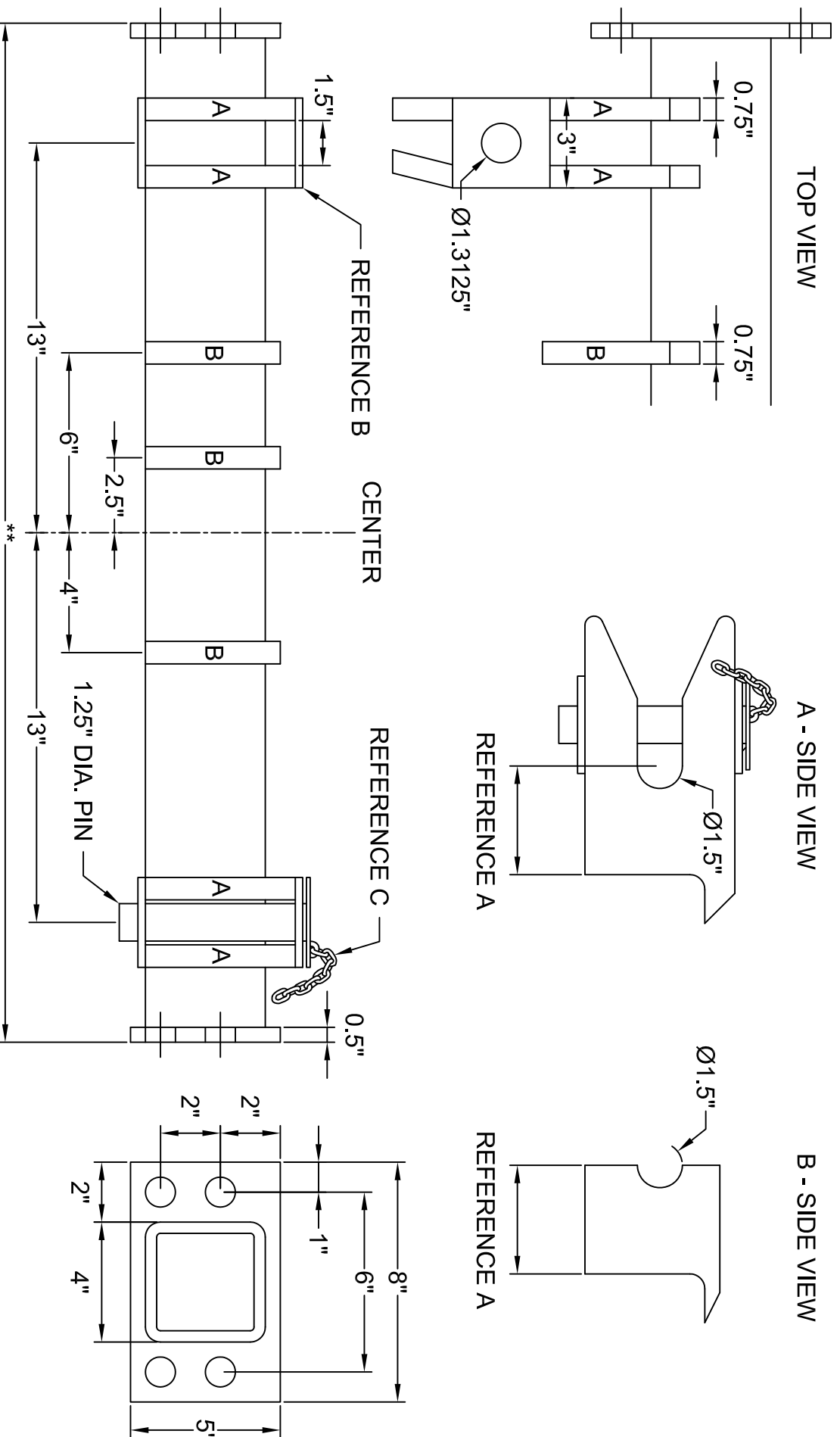
NOTES:

- ALL GREASE ZERKS SHALL BE SURROUNDED BY A SHORT LENGTH OF PIPE (WELDED IN PLACE) OR PLACED IN A RECESSED HOLE.
- "A" - HEIGHT SHALL BE SUFFICIENT TO AFFORD UNRESTRICTED LIFT FOR PENNDOT PLOWS. 16 INCH MINIMUM LIFT.
- ALL HYDRAULIC CONNECTIONS TO THE PLOW HOIST CYLINDER SHALL BE POSITIONED TO THE SIDES OR REAR TO PREVENT HOSE DAMAGE WHILE CONNECTING / DISCONNECTION TO THE FRONT PLOW.
- ALL FINAL DIMENSIONS AND ANGLES SHALL BE VERIFIED THROUGH FIELD VISITATIONS AND CORRESPONDING WITH THE FLEET MANAGEMENT DIVISION.

PA DEPARTMENT OF TRANSPORTATION

REVISIONS

NO.	DATE	BY	FRONT PLOW HITCH ASSEMBLY
1	04-27-15	GAW	
2	12-19-16	JJB	
3	08-02-18	KBD	



NOTES:

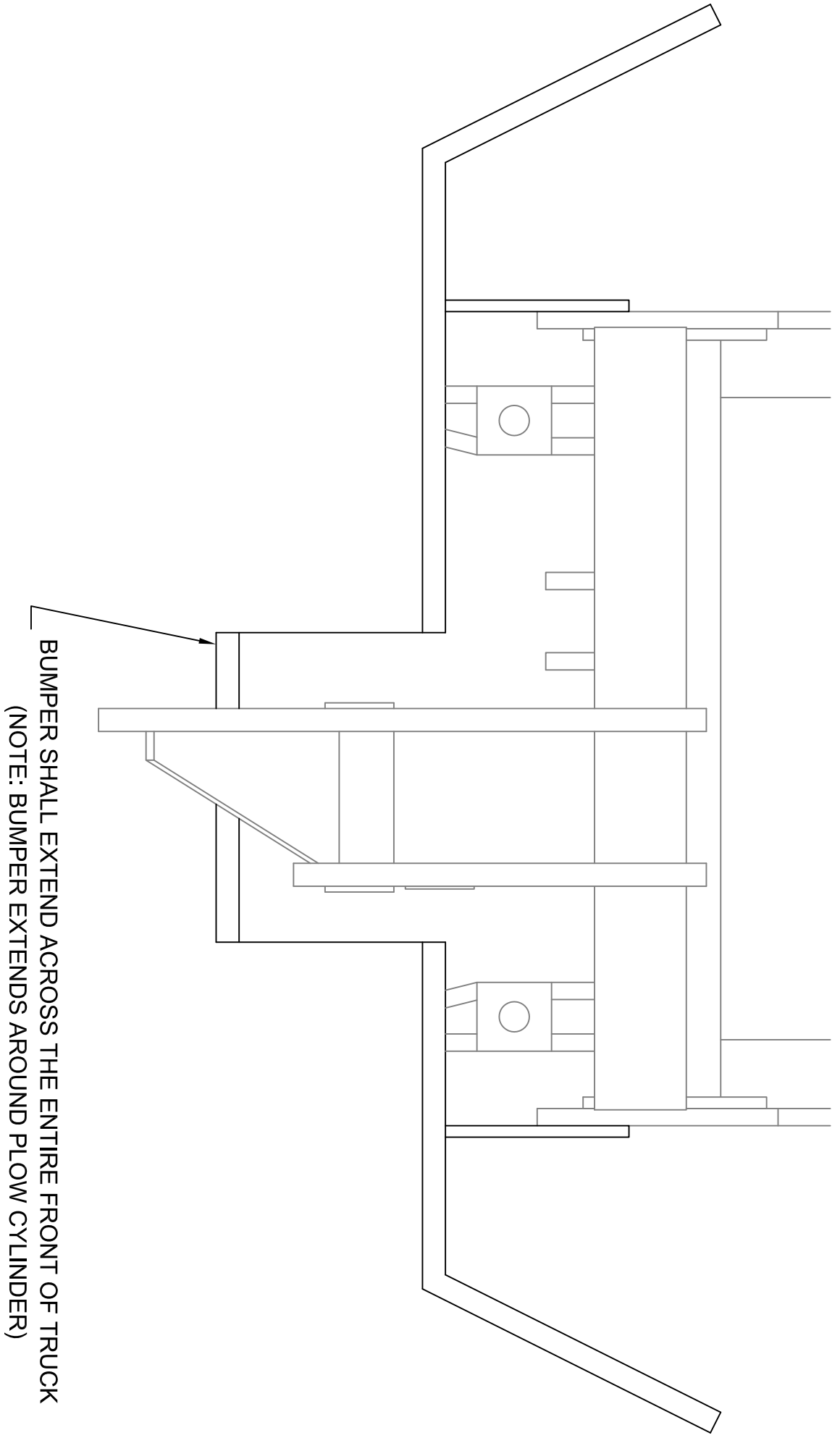
- A. CENTER SUPPORT RADIUS OF SUPPORT "A" SHALL BE IN DIRECT LINE WITH PLOW PUSH BAR.
- B. SUPPORT "A" SHALL HAVE 0.25" THICK PLATES ON TOP AND BOTTOM.
- C. PLOW PINS SHALL BE ATTACHED WITH CHAIN TO PLOW FRAME.

* VARIABLE WIDTH ASSEMBLY, CHECK CHASSIS FRAME RAIL WIDTH *
 ALL FINAL DIMENSIONS AND ANGLES SHALL BE VERIFIED THROUGH FIELD VISITATION AND CORRESPONDENCE WITH THE FLEET MANAGEMENT DIVISION.

PA DEPARTMENT OF TRANSPORTATION

REVISIONS		FRONT PLOW HITCH ASSEMBLY	
NO.	DATE	BY	
1	04-27-15	GAW	
2	12-19-16	JJB	
3	08-02-18	KBD	

NO.	DATE	BY	SCALE	SHEET
1	04-27-15	GAW	N/A	EQN-50
2	12-19-16	JJB	N/A	
3	08-02-18	KBD	N/A	



ADDITIONAL BUMPER SUPPORTS SHALL BE FABRICATED AND
 INSTALLED TO INSURE BUMPER RIGIDITY

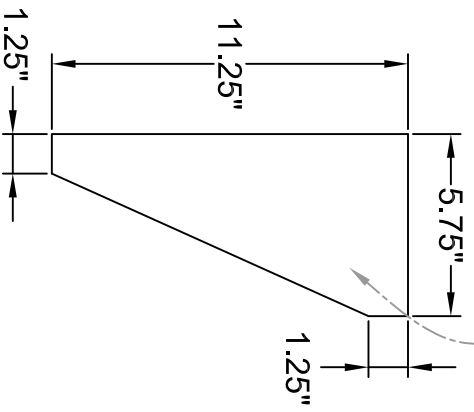
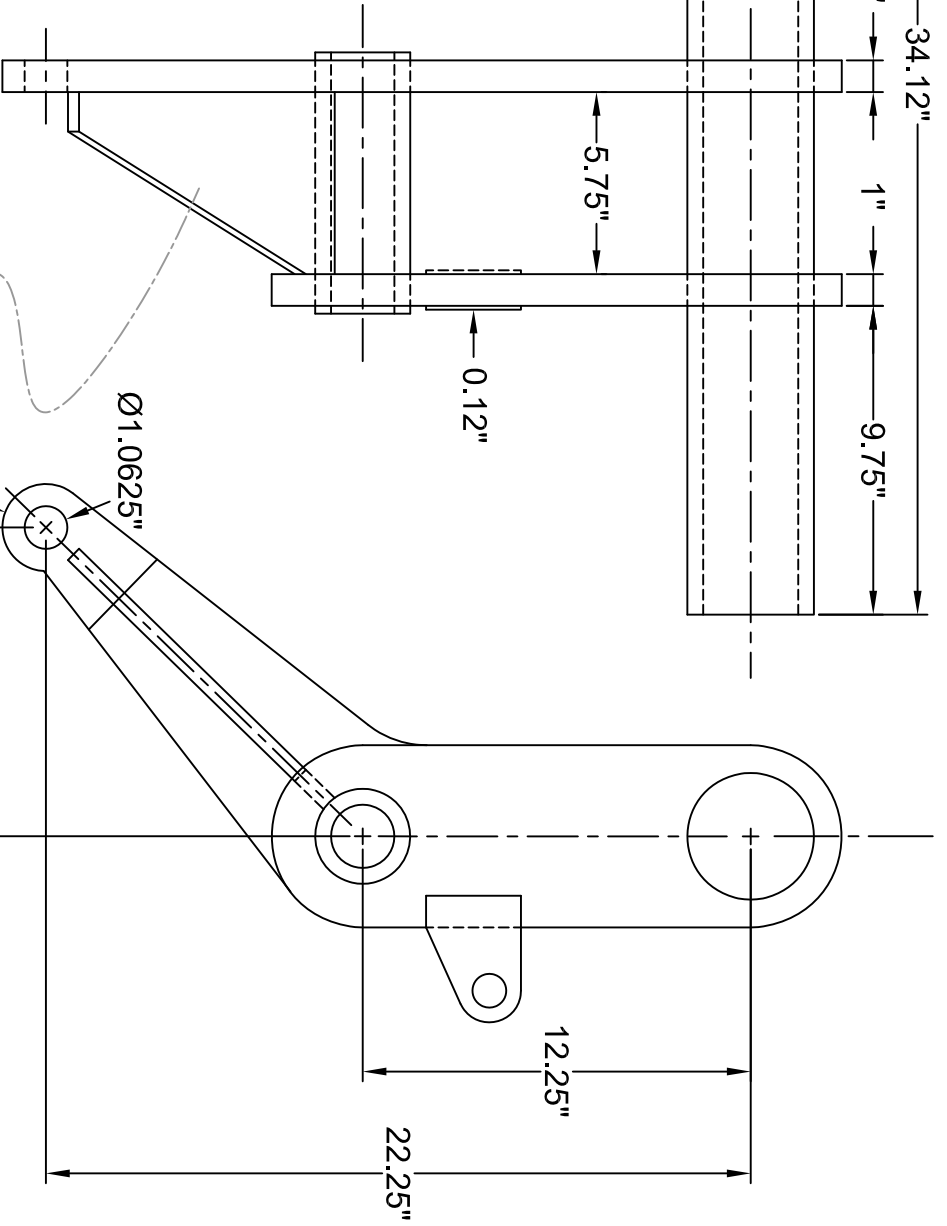
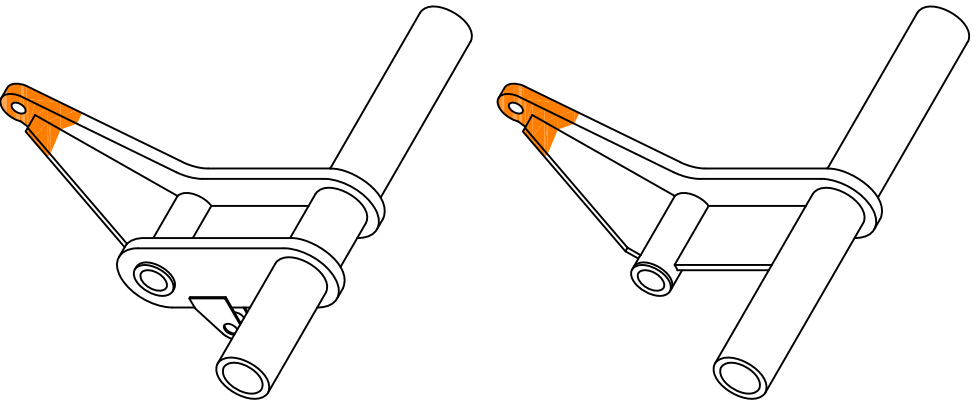
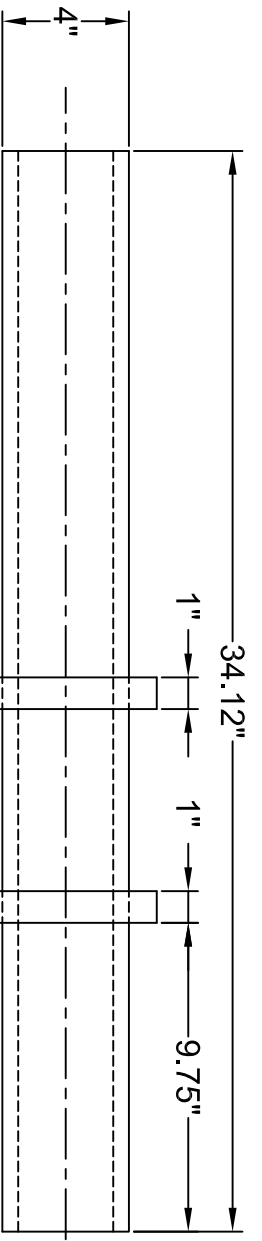
BUMPER SHALL EXTEND ACROSS THE ENTIRE FRONT OF TRUCK
 (NOTE: BUMPER EXTENDS AROUND PLOW CYLINDER)

PA DEPARTMENT OF TRANSPORTATION

FRONT PLOW HITCH ASSEMBLY

REVISIONS			
NO.	DATE	BY	
1	04-27-15	GAW	
2	12-19-16	JJB	
3	08-02-18	KBD	

FRONT PLOW HITCH ASSEMBLY	SCALE	EQN-50
DRAWN BY	WHM	
DATE	11-05-95	
CHKD BY	WHM	SHEET 3 OF 4



PAINT ENTIRE END FLUORESCENT ORANGE

PA DEPARTMENT OF TRANSPORTATION

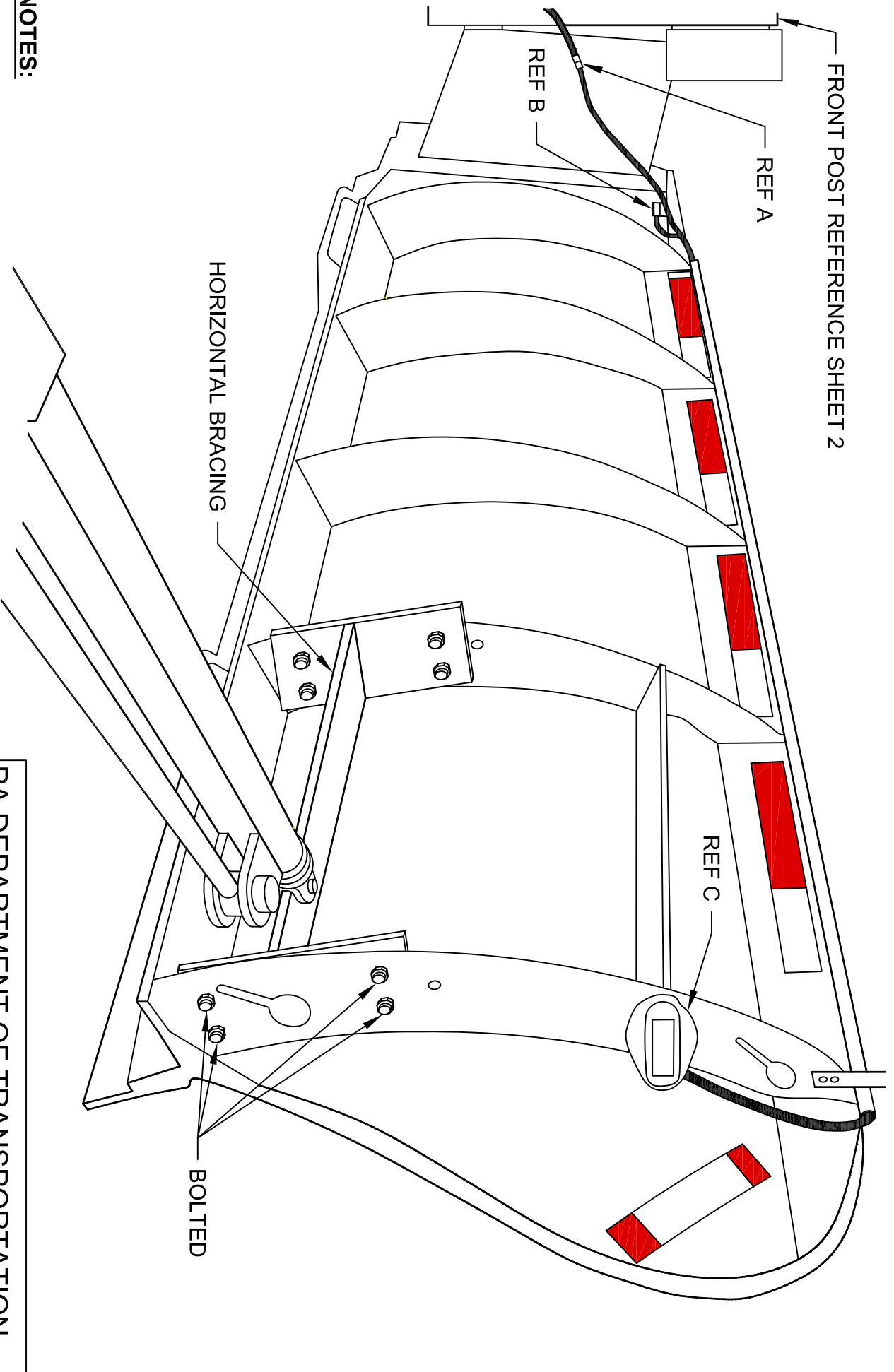
REVISIONS

NO.	DATE	BY	SCALE
1	04-27-15	GAW	
2	12-19-16	JJB	
3	08-02-18	KBD	

FRONT PLOW HITCH ASSEMBLY

NO.	DATE	BY	SCALE
1	04-27-15	GAW	
2	12-19-16	JJB	
3	08-02-18	KBD	

FRONT POST REFERENCE SHEET 2



NOTES:

- A. ALL WIRING CONNECTIONS SHALL BE SEALED AND WEATHER TIGHT. 2 PRONG DEUTSCHE CONNECTOR, MALE FROM WING AND FEMALE FROM VEHICLE.
- B. MERCURY SWITCH, SHALL BE COMUS # CB08-90.
- C. WING LIGHT, SHALL BE WHELEN MODEL # PAWINGWR.

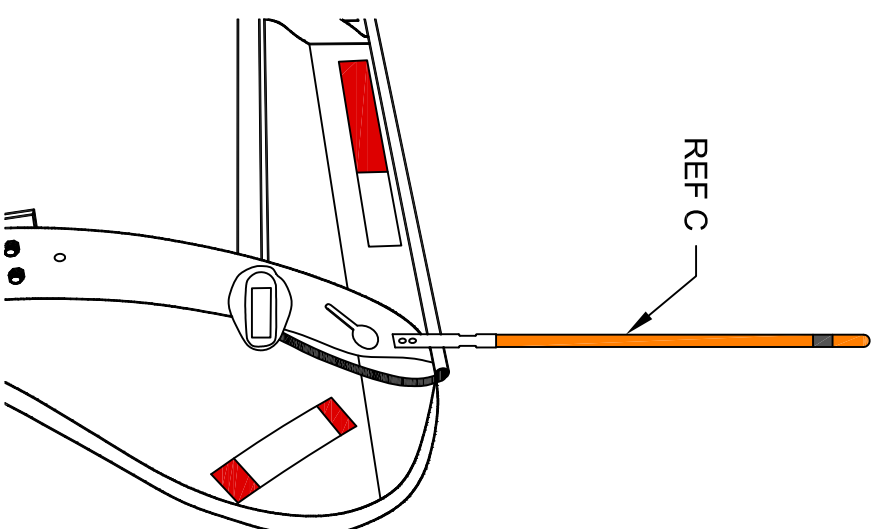
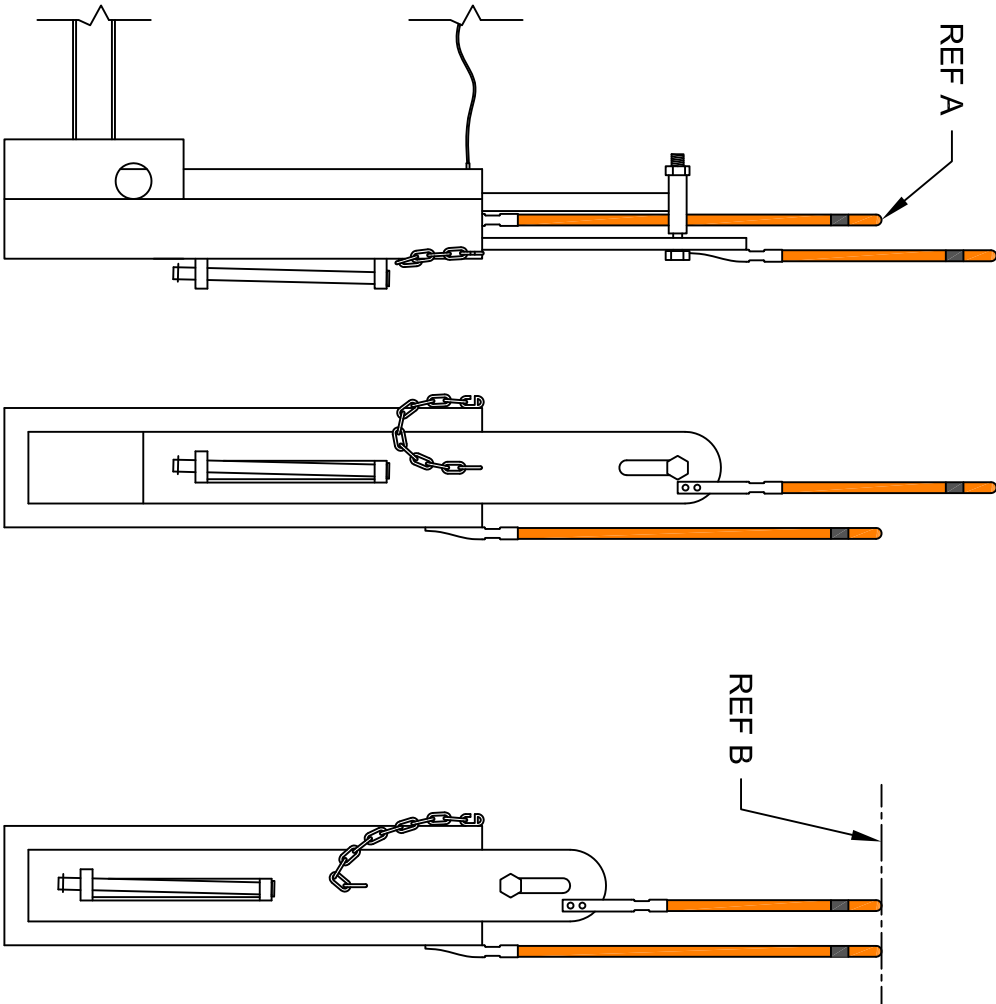
PA DEPARTMENT OF TRANSPORTATION

REVISIONS			DRAWN BY		
NO.	DATE	BY	DATE	SCALE	EQN-60A
1	12-19-16	JJB	07-15-15	N/A	
2	07-06-17	HMR			
3					

SNOWPLOW PATROL WING,
MOUNTING ARRANGEMENTS

NOTES:

- ALL PLOW GUIDES SHALL BE $\frac{3}{4}$ " x 36" GALVANIZED STEEL CABLE HIGH VISIBILITY ORANGE, 2 BOLTS
- A. TWO PLOW GUIDES SHALL BE MOUNTED ON THE FRONT POST. A MINIMUM OF THE TOP 3 INCHES OF THE STATIONARY GUIDE SHALL BE VISIBLE FROM CAB.
 - B. BOTH PLOW GUIDES ON THE MAST SHALL BE LEVEL WHEN PLOW IS IN THE LOWERED POSITION AND RESTING ON A LEVEL SURFACE.
 - C. ONE PLOW GUIDE SHALL BE MOUNTED ON REAR OF WING PLOW.



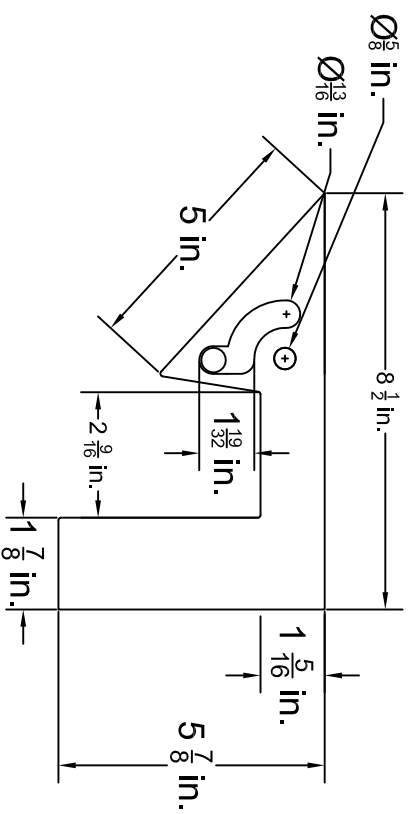
RAISED POSITION

LOWERED POSITION

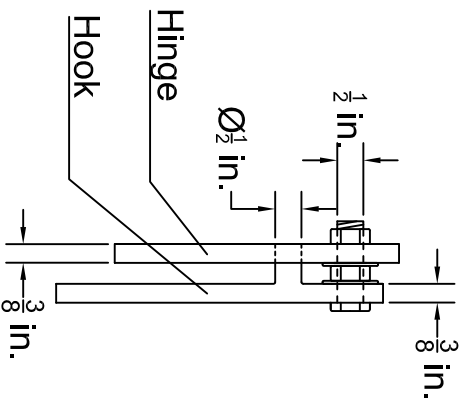
PA DEPARTMENT OF TRANSPORTATION

REVISIONS		DRAWN BY		SCALE	
NO.	DATE	BY			
1	07-03-14	ACT	RAR	N/A	EQN-60A
2	12-19-16	JJB	RAR	N/A	EQN-60A
3	07-06-17	HMR	RAR	N/A	EQN-60A

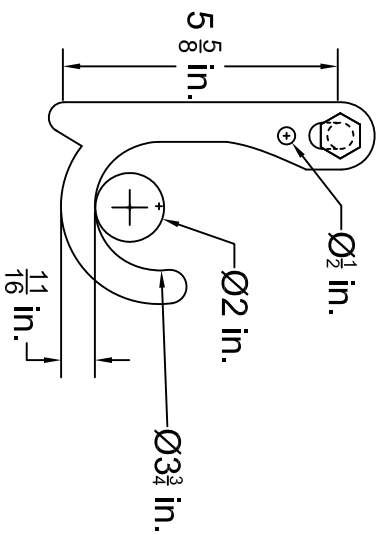
**SNOWPLOW PATROL WING,
MOUNTING ARRANGEMENTS**



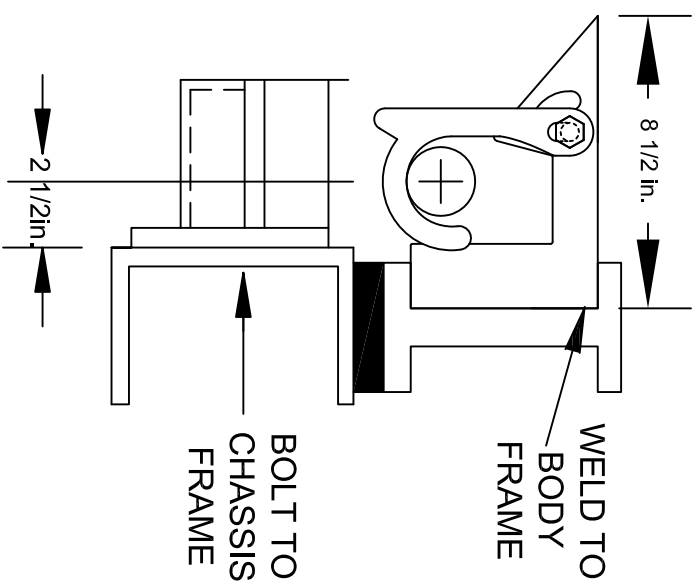
HINGE FRONT VIEW



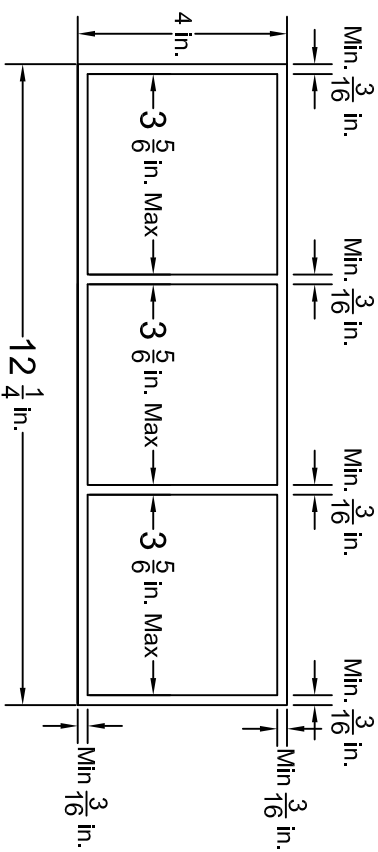
HOOK-HINGE SYSTEM
SIDE VIEW



HOOK FRONT VIEW



SYSTEM FRONT VIEW



PROP STOP TOP VIEW

PA DEPARTMENT OF TRANSPORTATION

REVISIONS

NO.	DATE	BY	TOD	SCALE	EQN-62
1	7-13-09	TOD			
2	7-02-12	MJW			
3	6-05-14	ACT			

BED PROP SYSTEM

BILL OF MATERIAL

DESCRIPTION

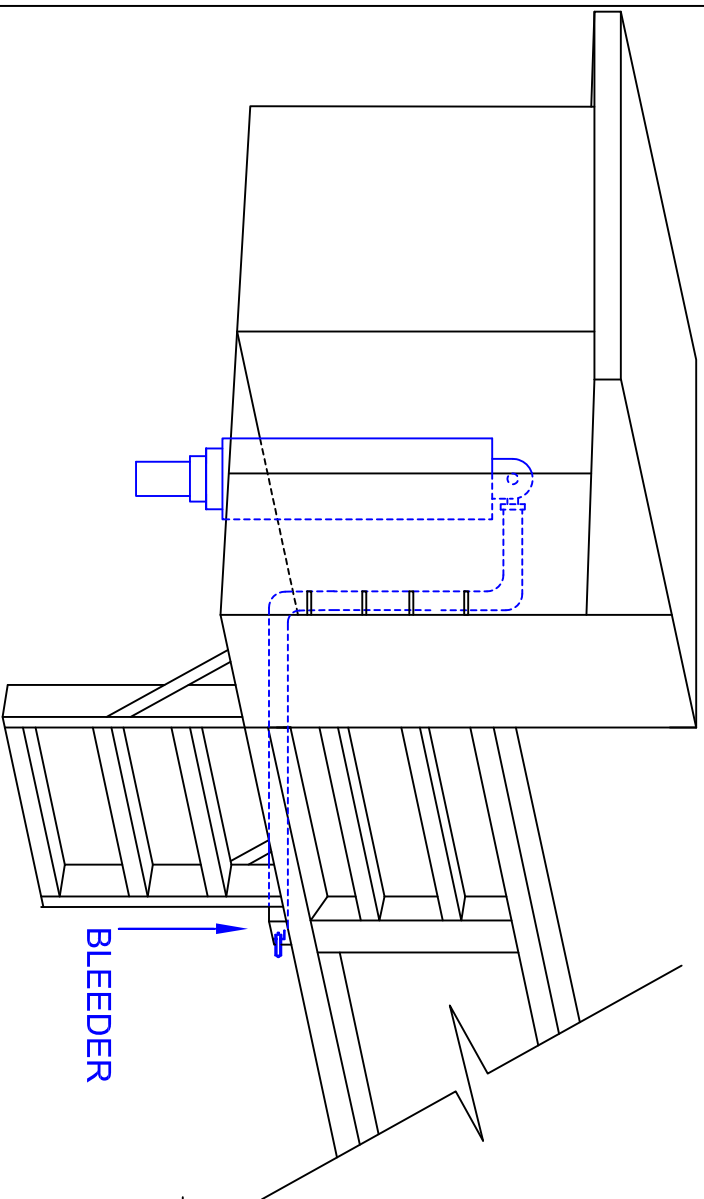
A.	PROP STOP- 12 1/4 in. X 4 in. MINIMUM 3/16 in. STEEL CONSTRUCTION
B.	HINGE- 6 in. X 6 in. MINIMUM 3/16 in. ALUMINUM CONSTRUCTION
C.	POST- 2in. X 27in. (SCH80) STEEL PIPE
D.	HOOK- 4 in. X 6 1/2 in. MINIMUM 3/16 in. STEEL CONSTRUCTION

NOTES

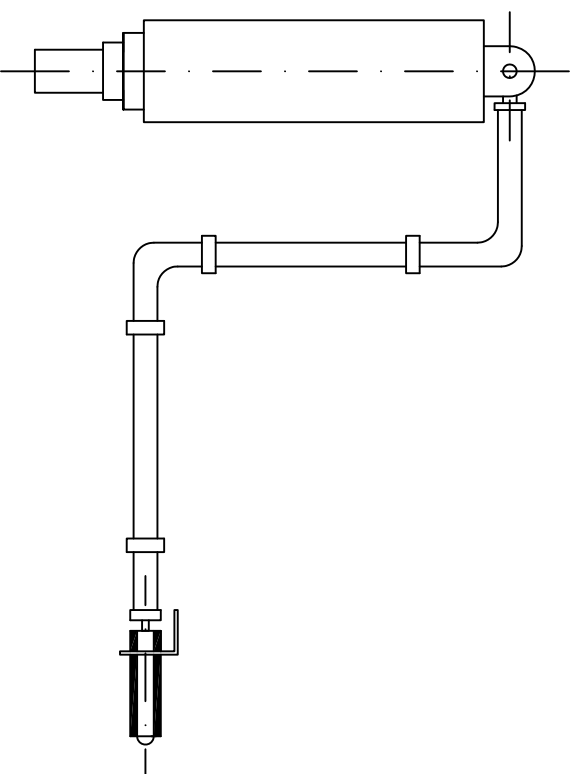
- TWO (2) SAFETY PROPS ARE REQUIRED PER VEHICLE.
- WHEN RELEASED FROM CRADLE, THE BED PROP SHALL BE FREE TO FREE-FALL. PROPS SHALL FALL INTO STOP "A" AS BED IS RAISED, UN-ASSISTED. HINGE "B" SHALL BE DESIGNED TO NOT ALLOW THE BED PROP TO TRAVEL PAST THE LAST POCKET ON THE PROP STOP "A".
- BOLTS SHALL BE GRADE 8 WITH GRADE 8 LOCK NUTS.
- ALL EDGES SHALL BE SMOOTH.

PA DEPARTMENT OF TRANSPORTATION

REVISIONS		BED PROP SYSTEM DUMP TRUCK	
NO.	DATE	BY	DRAWN BY
1	7-13-09	TOD	WHM
2	7-02-12	MJW	SCALE N/A
3	6-05-14	ACT	DATE 11-06-89



LINE SHALL BE SECURED WITH EXTRUDED CUSHION LOOP CLAMPS EVERY 12 inches (min) UTILIZING STUDS OR BOLTS.

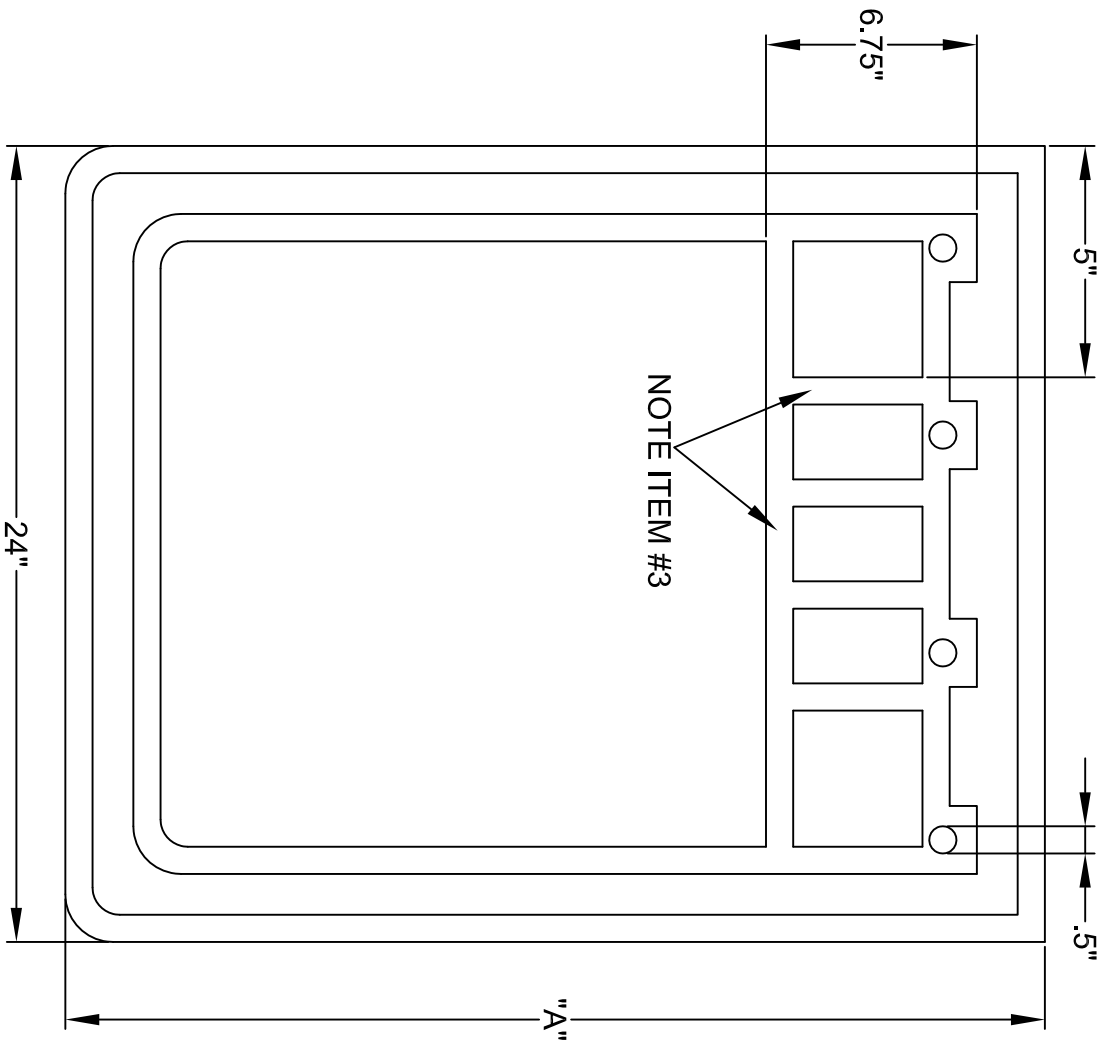


PA DEPARTMENT OF TRANSPORTATION

DUMP TRUCK HOIST CYLINDER BLEEDER

REVISIONS		DRAWN BY		SCALE	
NO.	DATE	BY			
1	10-24-06	CJW	DLW	N/A	EQN-63
2	7-13-09	TOD			
3	7-02-12	MJW			

DATE 08-14-97
 CHECKED BY WHM
 SHEET 1 OF 1



SAFETY

- NOTE:**
1. DIMENSION "A" DEPENDANT ON REQUISITION.
 2. MUD FLAPS SHALL BE "UNMARKED"

PA DEPARTMENT OF TRANSPORTATION

SPLASH GUARDS-RUBBER TRAILER & TRUCK

REVISIONS			DRAWN BY		
NO	DATE	BY	DATE	SCALE	
1	05-28-02	DWG	11-18-87	N/A	EQN-66
2	11-28-06	CJW			
3	07-20-09	TOD			

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

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

NOTE:

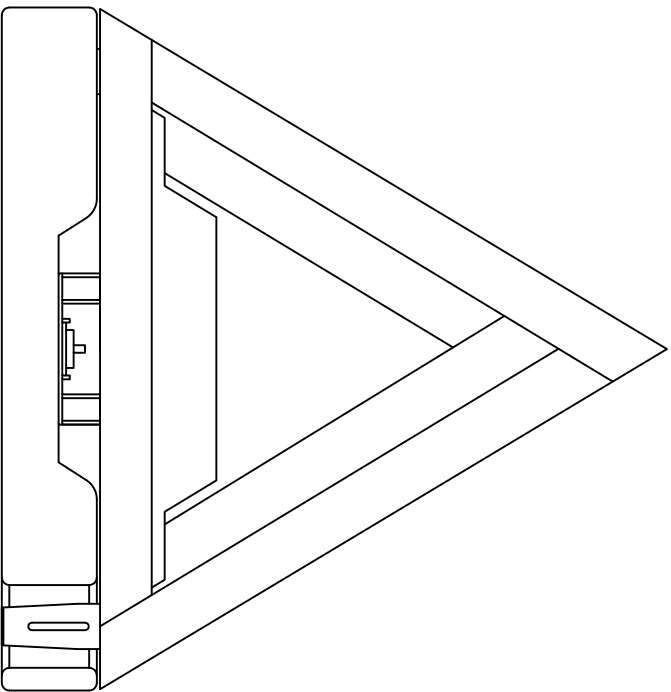
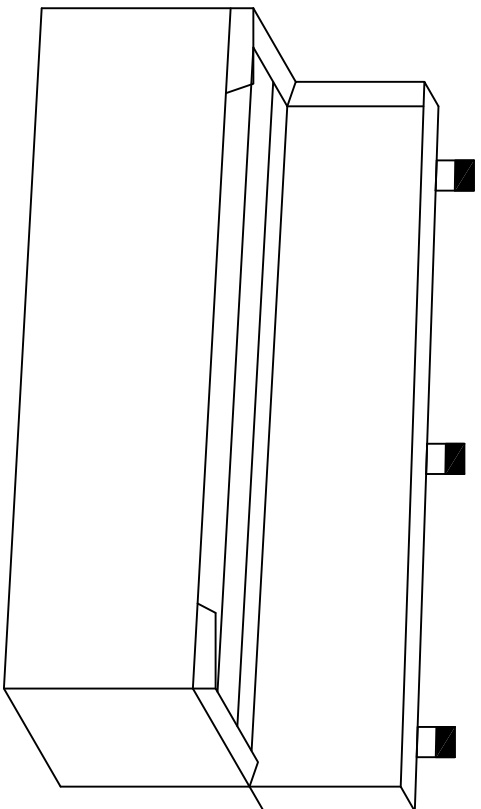
1. MATERIAL: MOLDED NATURAL OR SYNTHETIC BLACK TIRE CHORD IMPREGNATED RUBBER. OIL AND SALT RESISTANT.
2. ANTI-SAIL NOT ACCEPTABLE.
3. MANUFACTURERS STANDARD SIZE ACCEPTABLE IF ALL MINIMUM THICKNESS, DIMENSIONS, AND WEIGHT SPECIFICATIONS ARE MET.
4. AS PER PA VEHICLES EQUIPMENT AND INSPECTION REGULATIONS,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

PA DEPARTMENT OF TRANSPORTATION

REVISIONS		DRAWN BY		SCALE	
NO	DATE	BY			
1	05-28-02	DWG	S.T.	N/A	EQN-66
2	11-28-06	CJW			
3	07-20-09	TOD	DATE 11-18-87	CHG'D BY RED	SHEET 2 OF 2

SPLASH GUARDS-RUBBER TRAILER & TRUCK

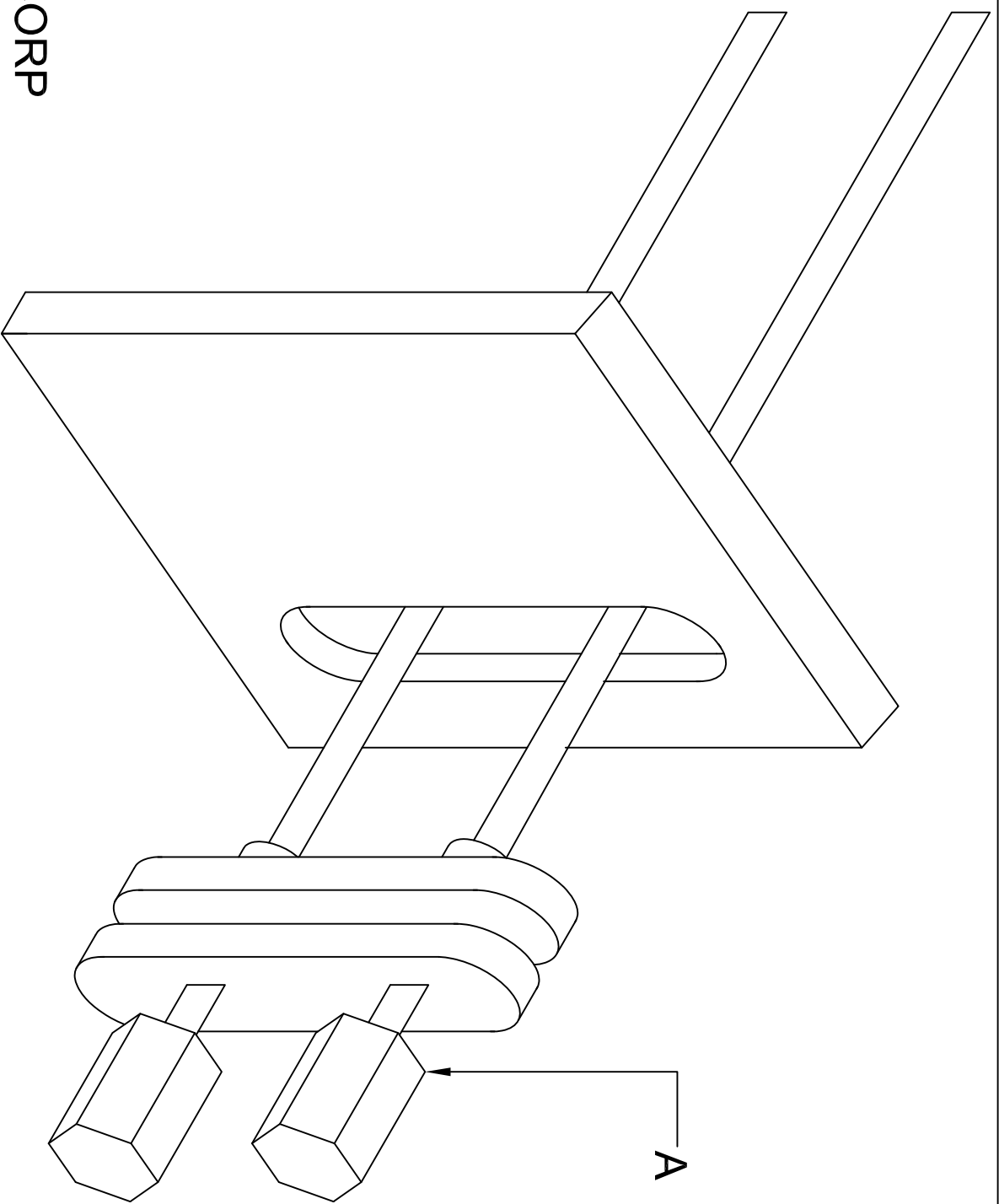
JAMES KING & CO.
 TRIANGLE PART #1005
 OR APPROVED EQUAL



PA DEPARTMENT OF TRANSPORTATION

REVISIONS			DRAWN BY			SCALE		
NO.	DATE	BY	DATE	DATE	BY			
1	05-31-07	KNH	WHM	N/A	EQN-66A			
2	07-20-09	TOD	DATE	RED	SHEET 1 OF 1			
3	07-13-17	HMR	DATE	RED	SHEET 1 OF 1			

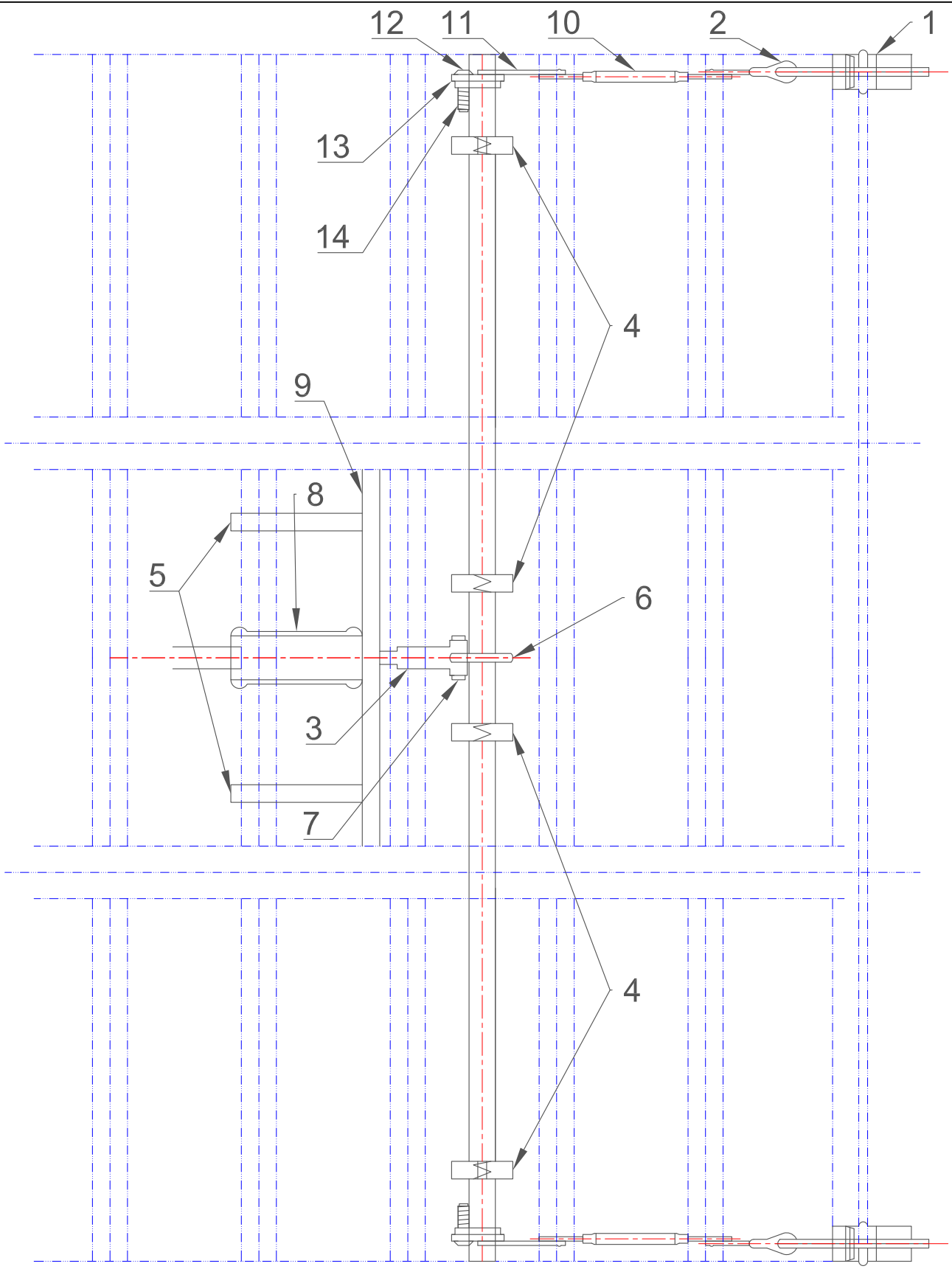
**TRIANGLE STORAGE BOX AND
 BRACKET**



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

PART #531 277 C1

PA DEPARTMENT OF TRANSPORTATION			C.B. RADIO CONNECTIONS		
REVISIONS					
NO.	DATE	BY			
1	08-15-90	WHM			
2	07-02-97	DLW			
3	10-27-06	CJW			
		DRAWN BY	WHM	SCALE	EQN-78
		DATE	08-15-90	CHECK BY	RED
		SHEET 1 OF 1			



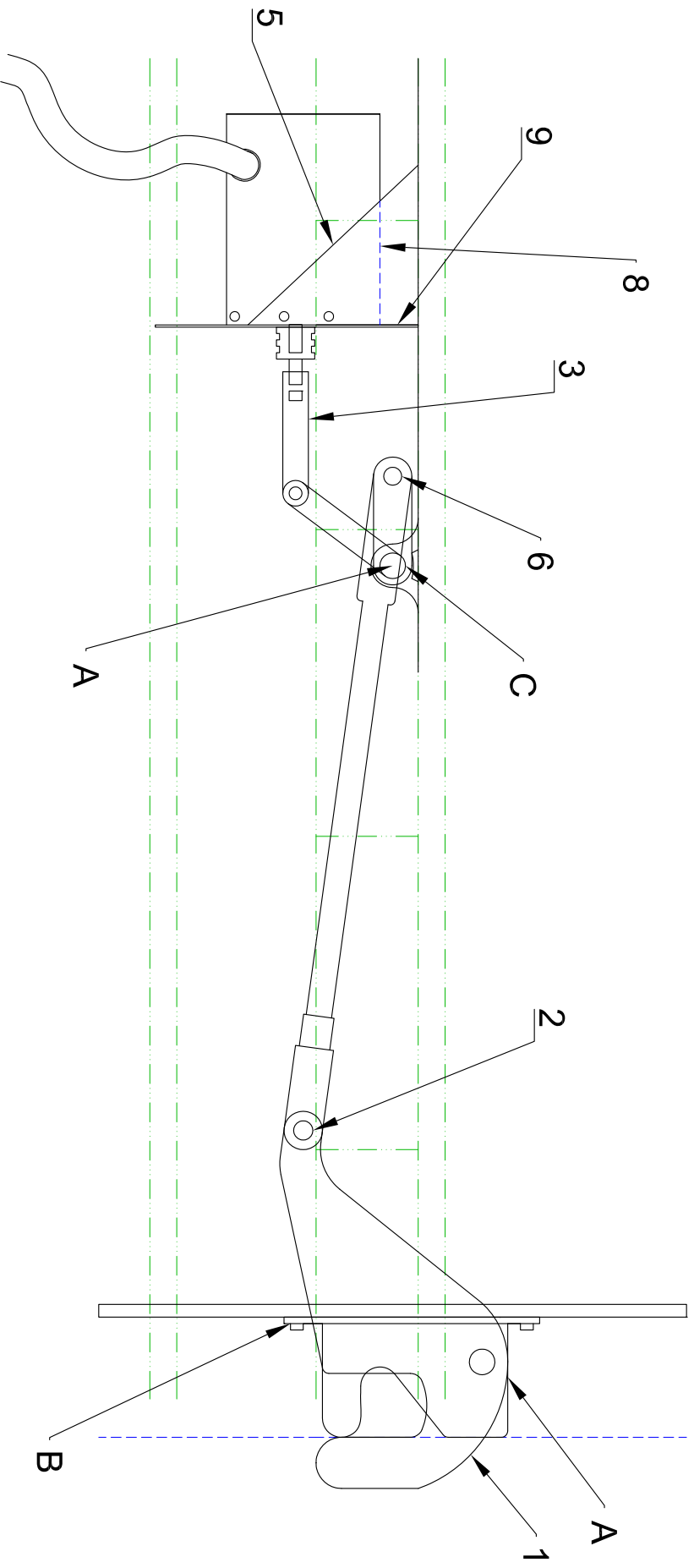
PA DEPARTMENT OF TRANSPORTATION

REVISIONS

NO.	DATE	BY
1	10-06-97	DLW
2	06-03-02	DWG
3	07-13-17	JFM

AIR TAILGATE, HARDWARE
(DUMP TRUCK)

DRAWN BY	WHM	SCALE	3:1	EQN-78A
DATE	08-04-95	CHK'D BY	RED	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

B - TAILGATE LATCHES MUST BE BOLTED IN, WELDED NOT ACCEPTABLE.

C - MUST BE ABLE TO BE ADJUSTED OVER CENTER INTO A LOCKING POSITION.

PA DEPARTMENT OF TRANSPORTATION

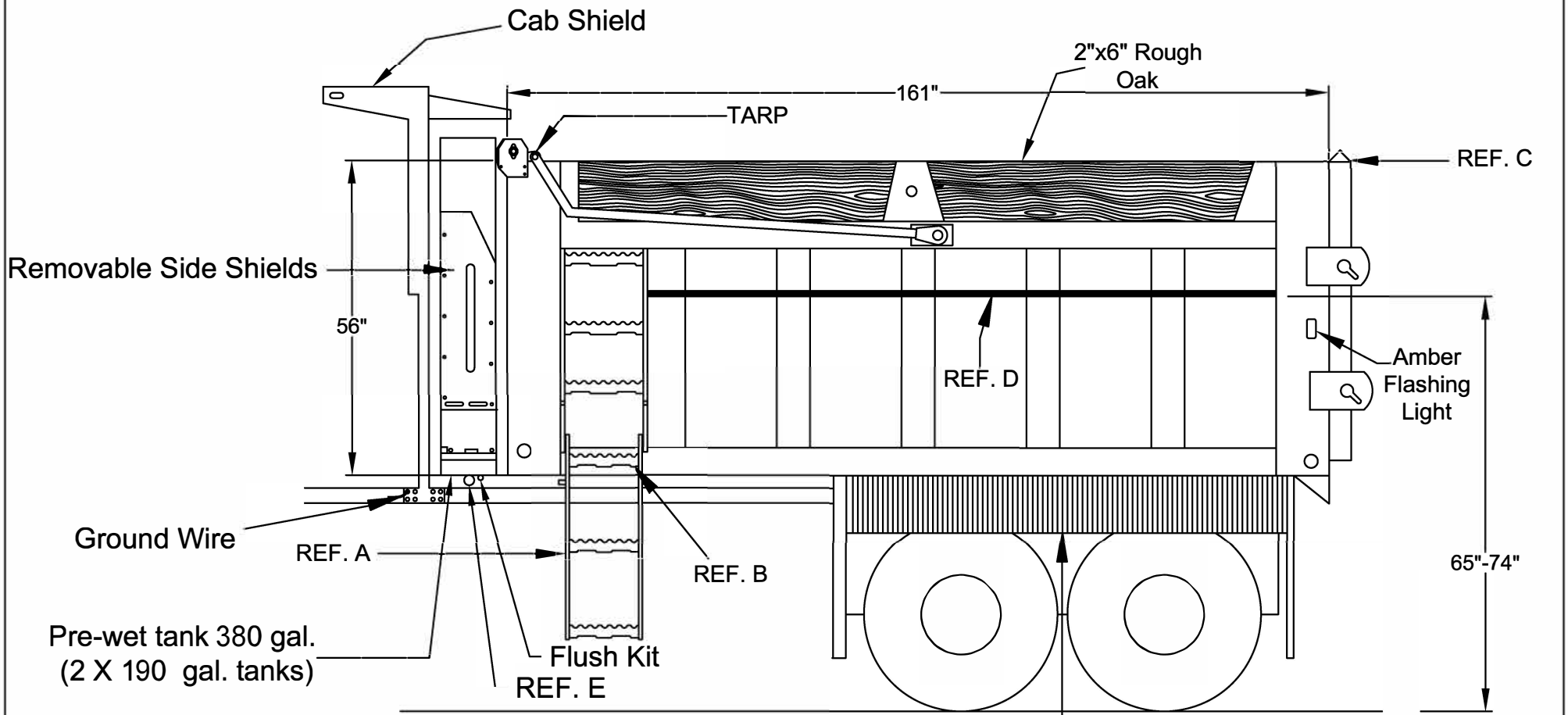
REVISIONS			AIR TAILGATE, HARDWARE (DUMP TRUCK)		
NO.	DATE	BY	DATE	SCALE	
1	06-03-02	DWG			
2	05-30-13	JFM	08-04-95	2:1	EQN-78A
3	07-13-17	HMR			

BILL OF MATERIAL (PARTIAL LIST)

<u>ITEM</u>	<u>QTY</u>	<u>DESCRIPTION</u>
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/ .75in.)
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

PA DEPARTMENT OF TRANSPORTATION

REVISIONS			AIR TAILGATE, HARDWARE (DUMP TRUCK)		
NO.	DATE	BY			
1	10-06-97	DLW			
2	06-03-02	DWG	<small>DRAWN BY</small> WHM	<small>SCALE</small> N/A	EQN-78A
3	7-13-17	JFM	<small>DATE</small> 08-04-95	<small>CHK'D BY</small> RED	SHEET 3 OF 3



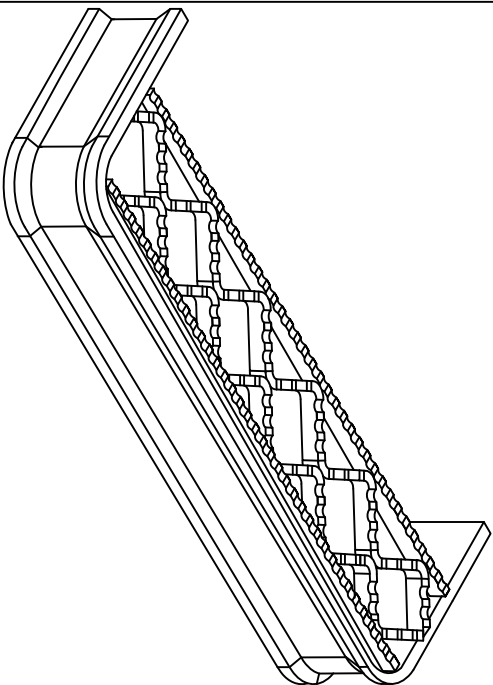
- NOTES:**
- A. LADDER SHALL BE ALUMINUM. LADDER SHALL BE WELDED, MOUNTED ON CENTER BETWEEN THE REAR OF THE DRIVERS SIDE FRONT CORNER POST AND THE FRONT OF THE FIRST VERTICAL SIDE BRACE.
 - B. STEPS SHALL BE FULL WIDTH BETWEEN VERTICAL SIDE BRACES AND FLUSH WITH OUTSIDE EDGE OF BRACES, 2" WIDTH X 1" HIGH X 1/4" THICKNESS WITH SERRATED EDGES OR EQUAL.
 - C. INVERTED 1 1/2 INCH ANGLE ALUMINUM..
 - D. 3/4 INCH ALUMINUM ROUND STOCK FOR TARP TIE DOWN.
 - E. FILL LEVER 1" (MIN.) FROM TANK FRAME AND BYPASS 1' (MIN.) FROM TANK FRAME OR AT A 30 DEGREE ANGLE DOWN.

PRE-WET / FILL DRAIN / FLUSH KIT LOCATED ON THE OUTSIDE OF FRAME RAIL .

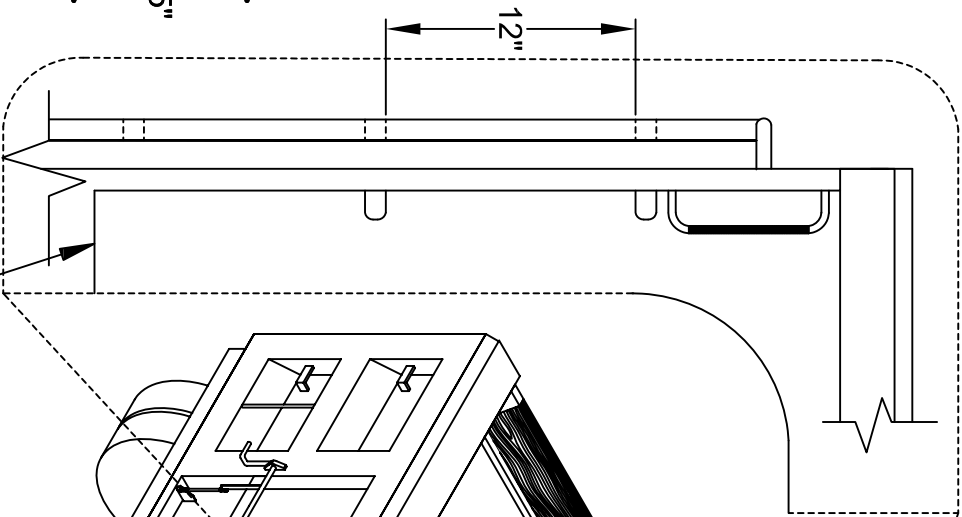
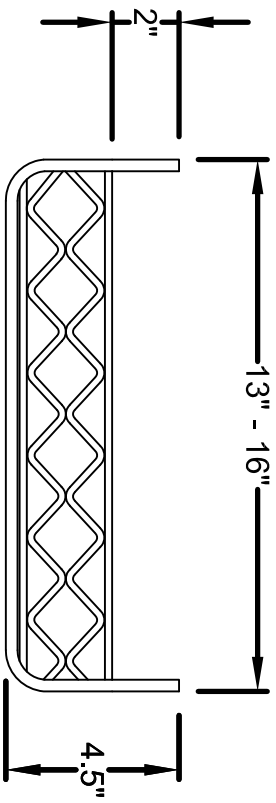
PA DEPARTMENT OF TRANSPORTATION					
REVISIONS			TYPE IV DUMP BODY		
NO.	DATE	BY			
1	12-20-16	JJB			
2	08-02-18	KBD	DRAWN BY	DLW	Combined With EQN-81Y & 557
3	08-08-19	KBD	DATE	10-08-97	CHK'D BY Scale
			N/A	N/A	EQN-79A
			SHEET 1 OF 9		

Inner Step

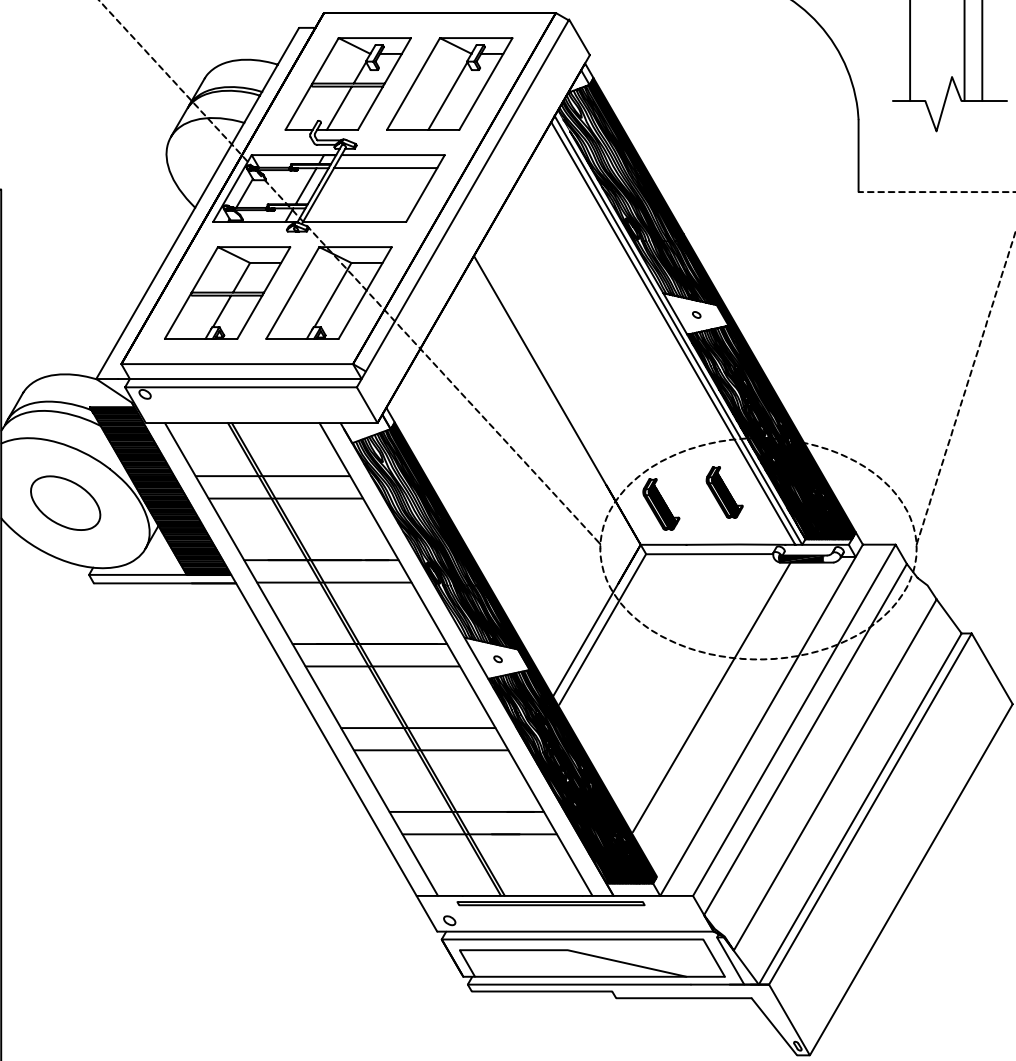
Single & Tandem Axle



Inner Step Top View



Inner Body Wall



PA DEPARTMENT OF TRANSPORTATION

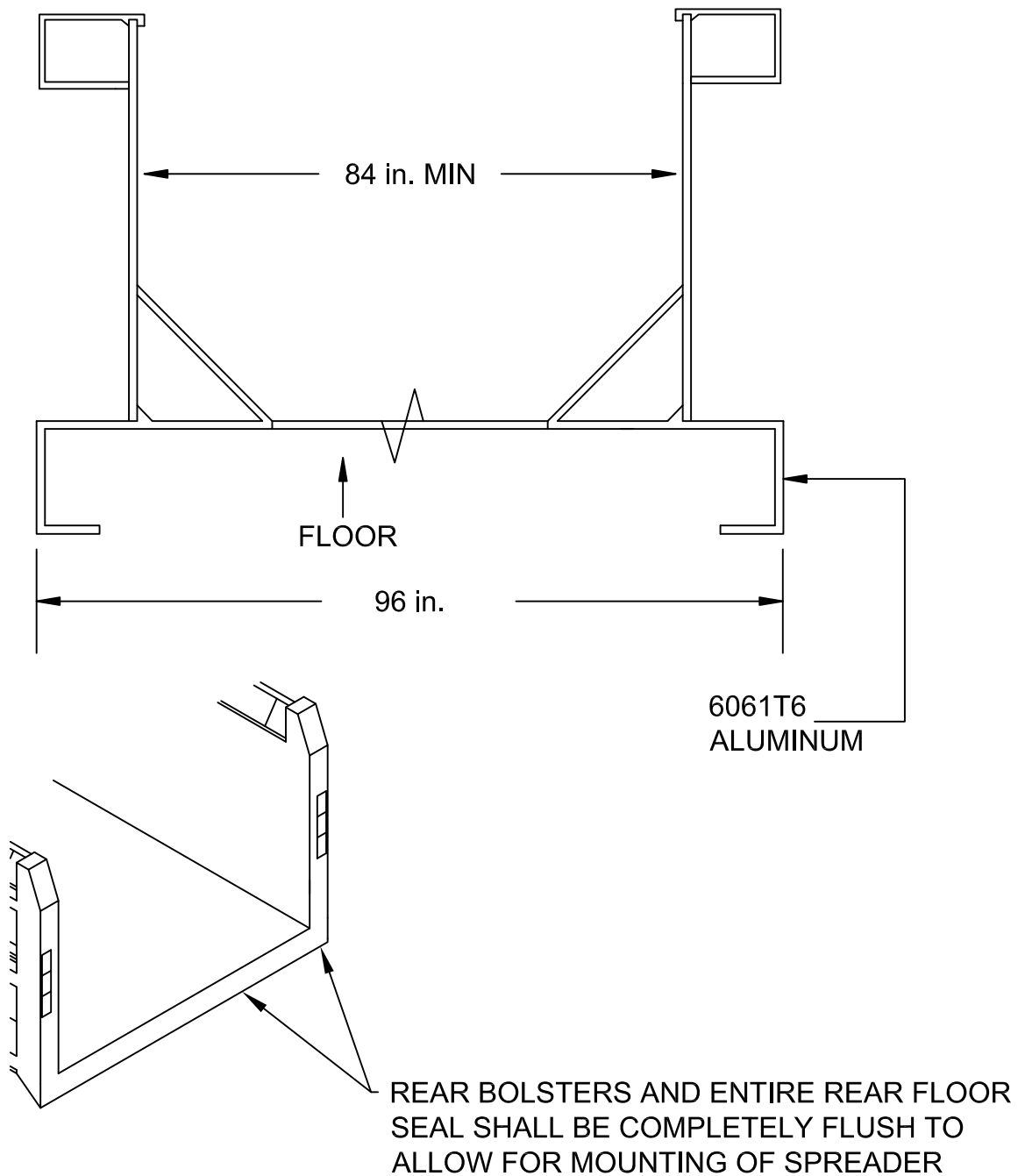
REVISIONS

NO.	DATE	BY
1	08-02-18	KBD
2	08-08-19	KBD
3		

AXLE DUMP BODY INSIDE STEPS

NO.	DATE	BY	DATE	BY
1	08-02-18	KBD	07-02-12	N/A
2	08-08-19	KBD		
3				

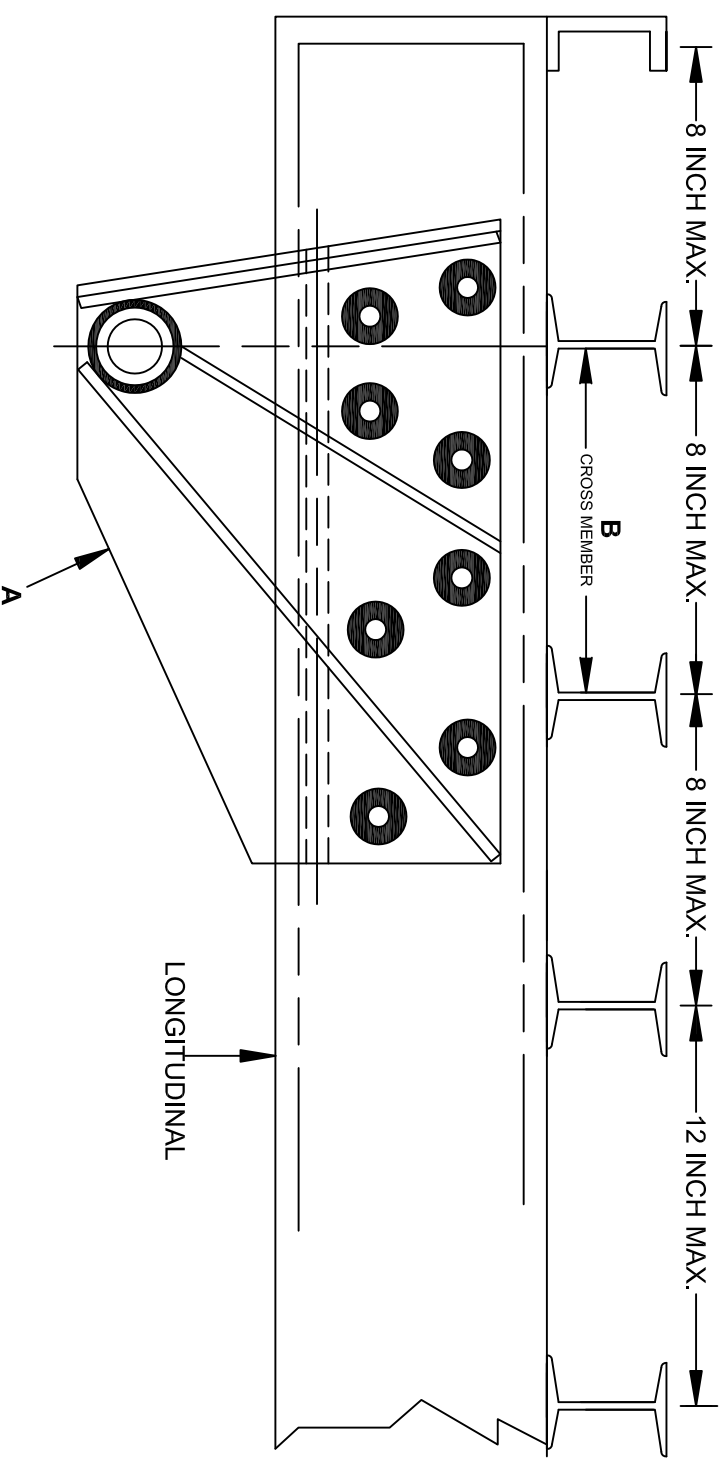
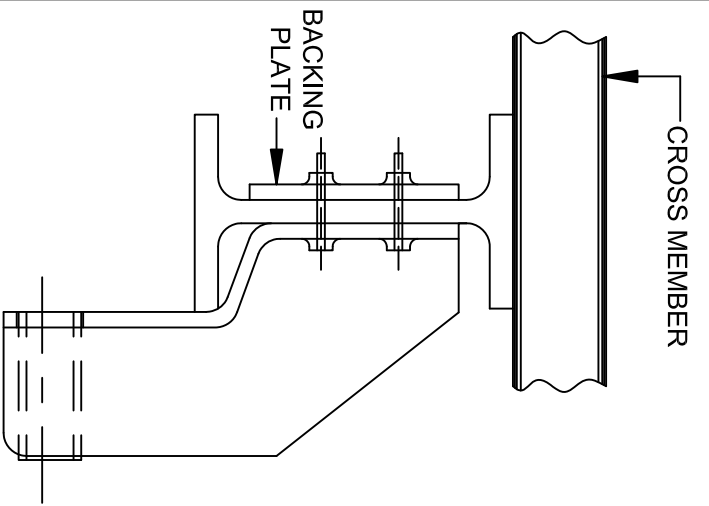
PA DEPARTMENT OF TRANSPORTATION	DRIVEN BY	MJW	Checked by	EQN-79A
REVISIONS	DATE	BY	DATE	BY
1	08-02-18	KBD	07-02-12	N/A
2	08-08-19	KBD		
3				
SHEET 2 OF 9				



NOTES

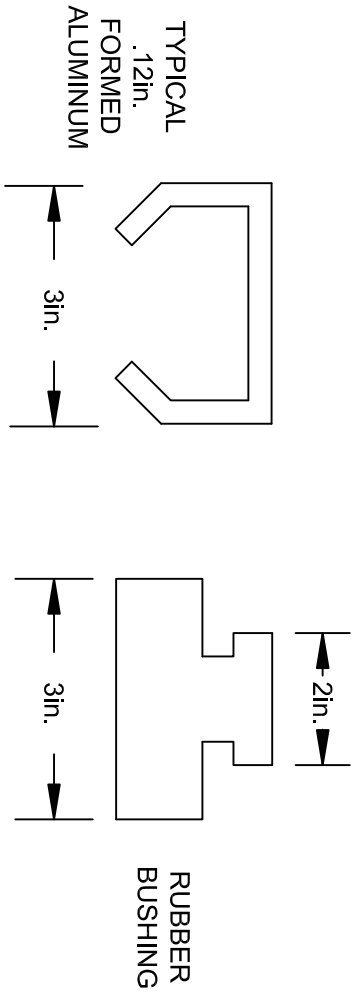
1. ONE-PIECE BODY FLOOR SHALL BE .375 in. MINIMUM THICK ABRASION-RESISTANT ALUMINUM OF GRADE 5454H 34.
2. THE MATERIALS HAULED IN THESE VEHICLES WILL BE SALT, ABRASIVE AGGREGATE, WET MUD, ETC.
3. OVERALL WIDTH OF BODY SHALL NOT EXCEED 96 INCHES.

PA DEPARTMENT OF TRANSPORTATION					
REVISIONS			TYPE IV DUMP BODY		
NO.	DATE	BY			
1	12-20-16	JJB			
2	08-02-18	KBD	DRAWN BY	DLW	Combined With EQN-81Y & 557
3	08-08-19	KBD	DATE	11-05-97	EQN-79A
			CHK'D BY	N/A	Scale N/A
					SHEET 3 OF 9



NOTES:

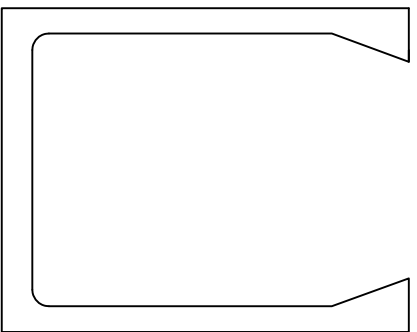
- A. BED MOUNTING BRACKETS SHALL BE A WEB STYLE DESIGN AND SPAN ACCROSS TWO CROSS MEMBERS. THE WEB MOUNT SHALL BE DESIGNED FOR SEVERE DUTY SERVICE. THE BOLTS (8 MINIMUM) SHALL BE OF GRADE 8 MINIMUM WITH SELF-LOCKING GRADE 8 NUTS.
 - B. THE LAST FOUR CROSS-MEMBERS SHALL BE PLACED ON 8 INCH MAXIMUM CENTERS, WITH THE BALANCE ON 12 INCH MAXIMUM CENTERS.
- THE BODY SHALL BE SHOCK MOUNTED TO AVOID STRESS ON ROUGH ROADS WHEN EMPTY.
 - "FULL-LENGTH" BODY TO FRAME RUBBER MOUNTING SYSTEM.
 - THE REAR PIN HINGE SHALL BE A MINIMUM OF 2 INCH DIAMETER, AND SHALL HAVE A GREASABLE HINGE BUSHING 1/2 INCH WALL. THERE SHALL BE MYLAR OR APPROVED EQUAL BETWEEN METAL BRACKETS AND ALUMINUM LONGTUDINAL RAILS



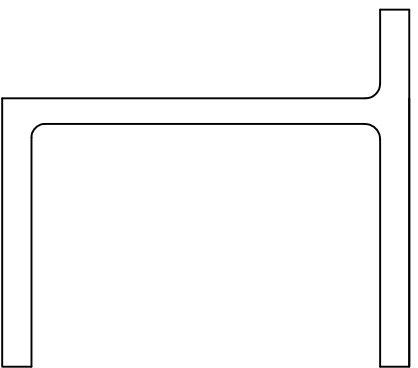
PA DEPARTMENT OF TRANSPORTATION

TYPE IV DUMP BODY

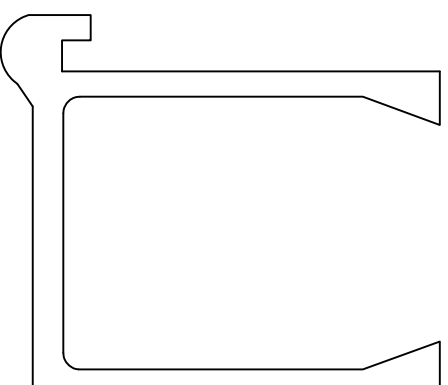
REVISIONS			DRAWN BY		
NO.	DATE	BY	DLW	DATE	BY
1	12-20-16	JJB	DLW	11-05-97	KBD
2	08-02-18	KBD	DLW	N/A	N/A
3	08-08-19	KBD	DLW	N/A	N/A



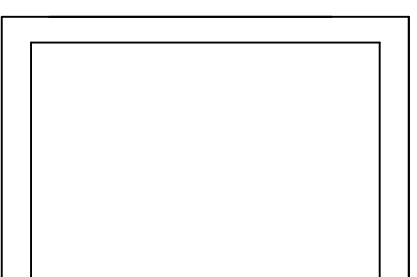
APPROVED HOIST CYLINDER
CHANNEL EXTRUSIONS



APPROVED REAR
CROSSMEMBER EXTRUSIONS



APPROVED FRONT CROSS
MEMBER EXTRUSION



PA DEPARTMENT OF TRANSPORTATION

REVISIONS

TYPE IV DUMP BODY

NO.	DATE	BY	DRAWN BY	TOD	Checked With EQU-817 & 837	EQU-79A
1	04-27-15	GAW				
2	08-02-18	KBD				
3	08-08-19	KBD		07-13-09	N/A	SHEET 5 OF 9

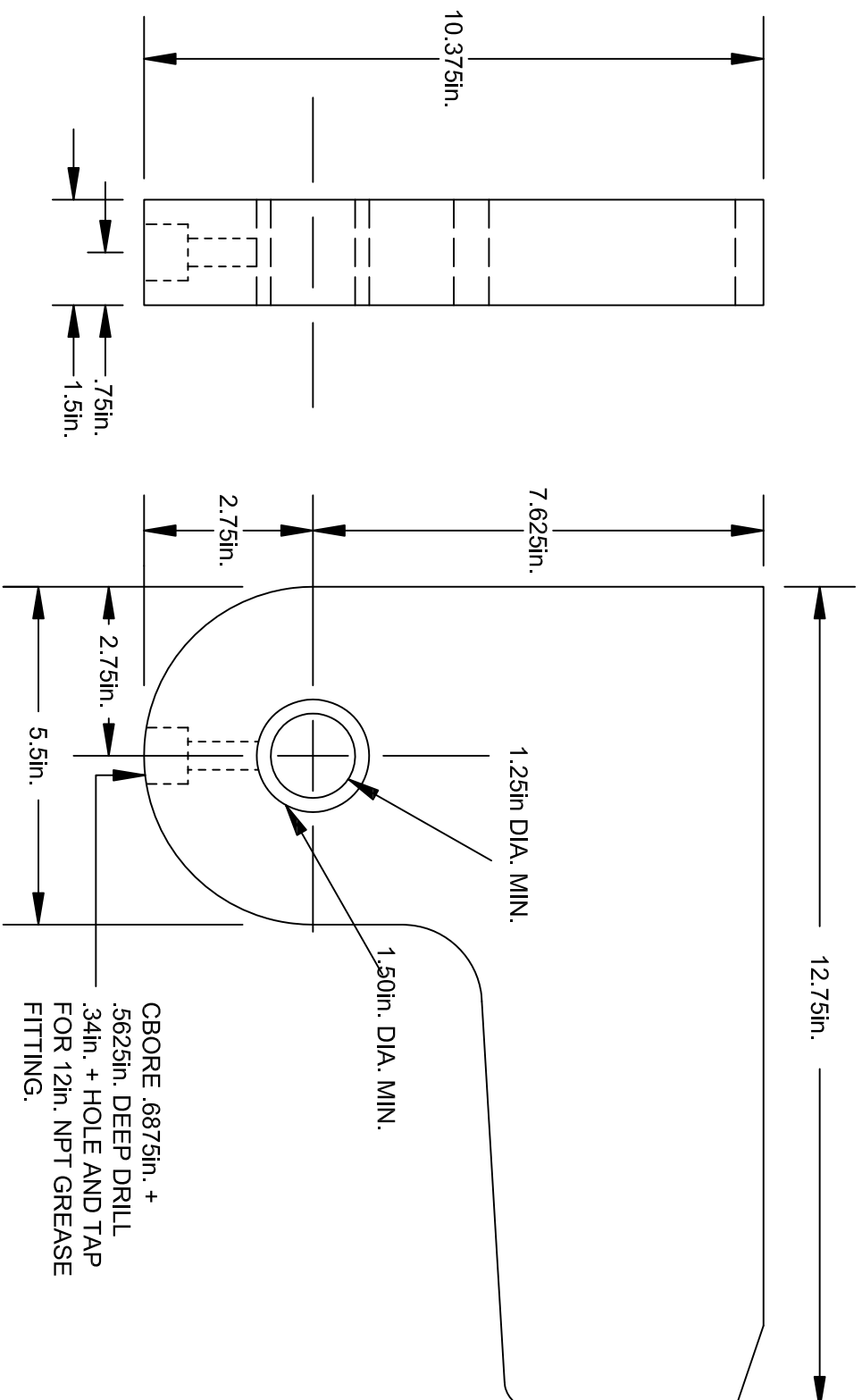
08-08-19

KBD

07-13-09

N/A

SHEET 5 OF 9



PA DEPARTMENT OF TRANSPORTATION

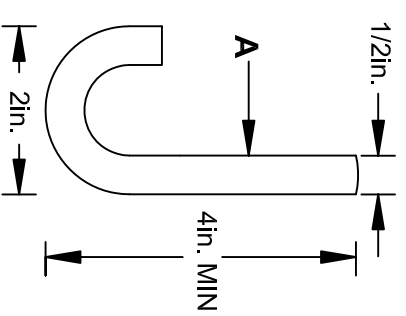
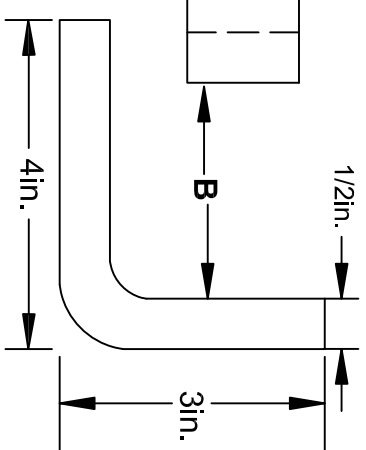
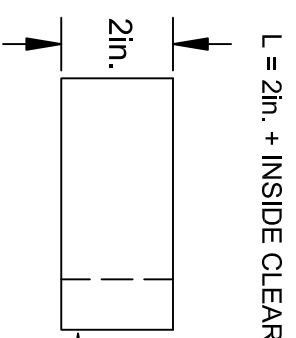
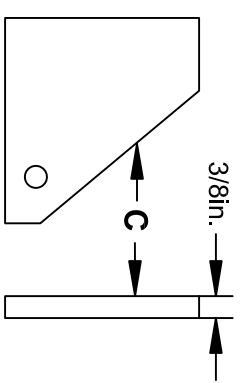
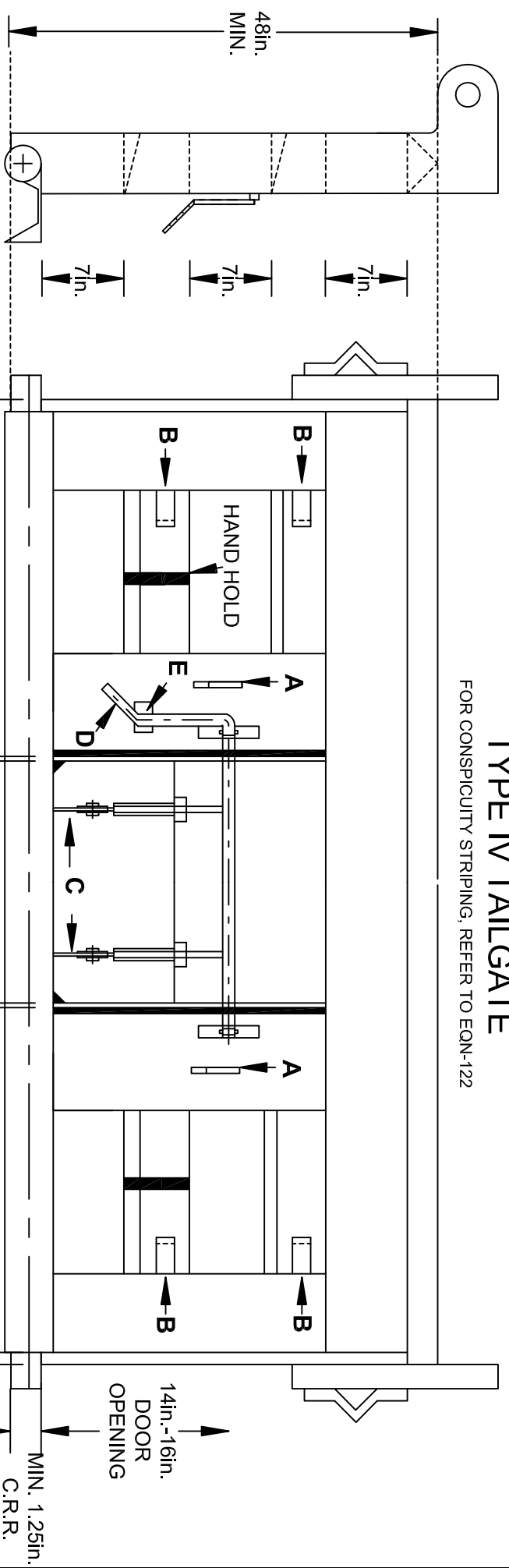
REVISIONS

TYPE IV DUMP BODY

NO.	DATE	BY	DRAWN BY	DATE	CHK'D BY	Scale	Combined Title
1	04-27-15	GAW	DLW	11-05-97	N/A	N/A	EQN-79A
2	08-02-18	KBD					
3	08-08-19	KBD					

TYPE IV TAILGATE

FOR CONSPICUITY STRIPING, REFER TO EQN-122



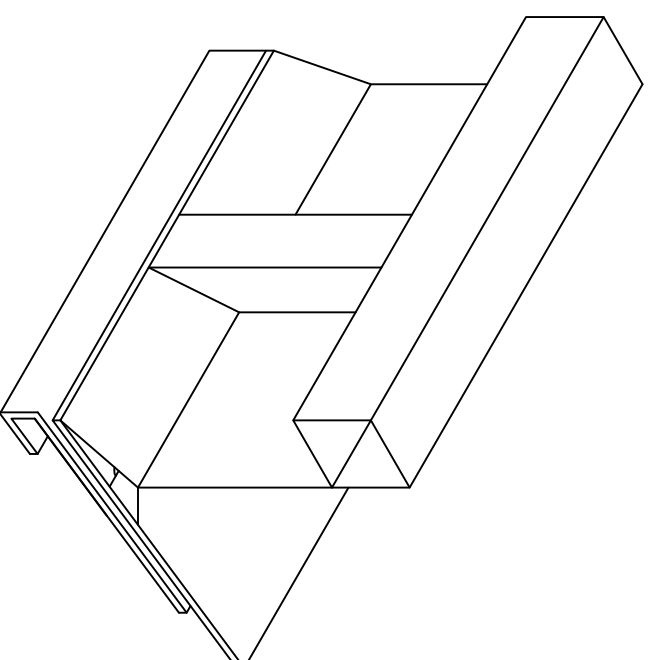
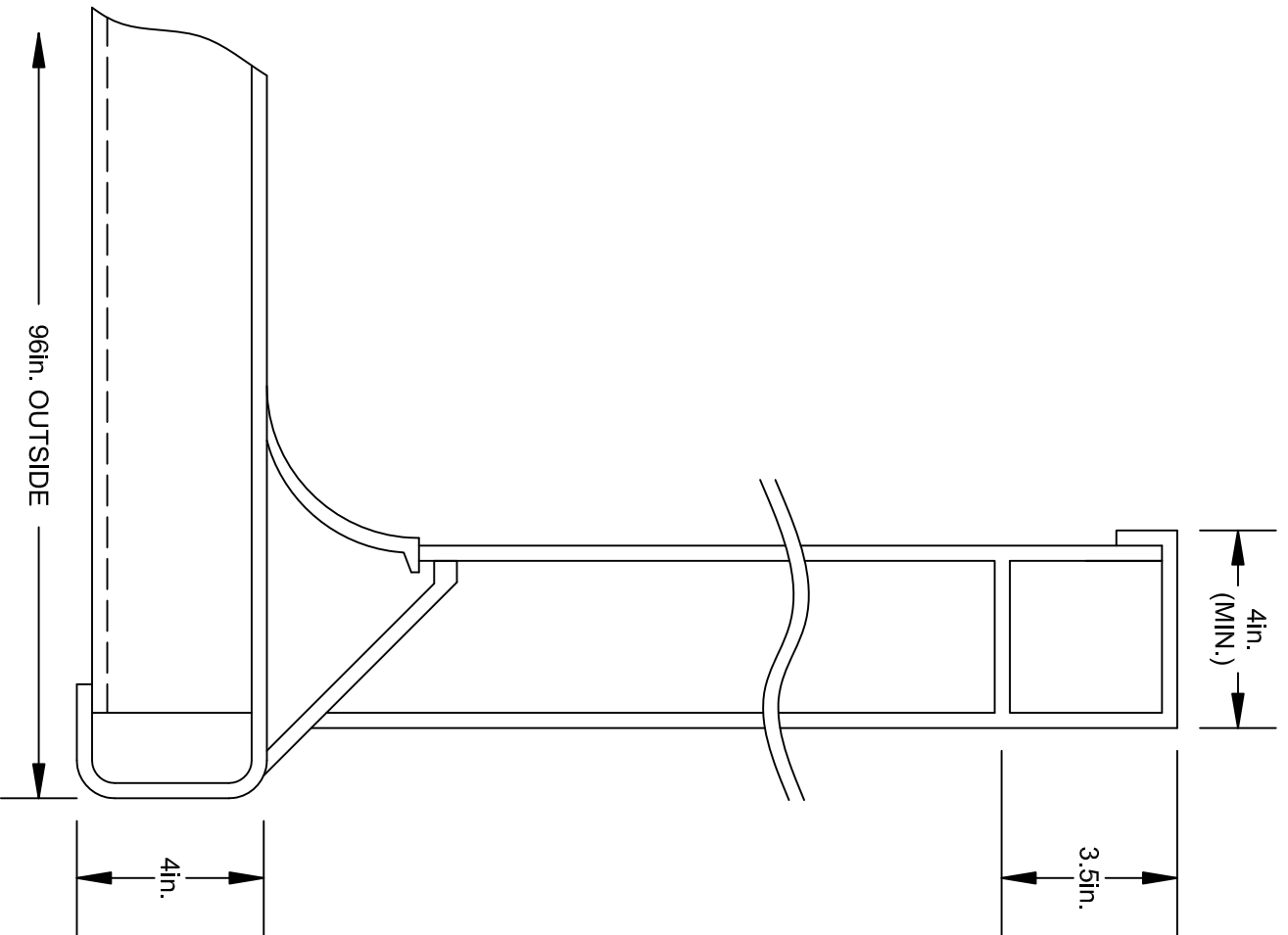
- NOTES:**
- THERE SHALL BE 2 "J" HOOKS PER TAILGATE AND SHALL BE FULLY WELDED AS CHAIN HOLDERS.
 - THERE SHALL BE 4 TAILGATE CHAIN BRACKETS FULLY WELDED TO THE TAILGATE.
 - THERE SHALL BE 2 EARS MADE OF 3/8 INCH 304 STAINLESS STEEL FULLY WELDED TO THE MATERIAL CHUTE DOOR.
 - 1in. DIA. H.R.R. LIFT HANDLE WITH GRIP COVER. SUFFICIENT CLEARANCE AS TO NOT HIT KNUCKLES OF HAND WHEN APPLYING. STRIKE PLATE SHALL BE SUFFICIENT DIMENSION TO COVER HANDLE STRIKING AREA, MINIMUM 3/16 INCH MATERIAL THICKNESS.
 - HORIZONTAL CROSS-MEMBER ABOVE THE DOOR SHALL BE ONE CONTINUOUS RUN ACROSS TAILGATE.
 - 1/4 INCH SLIDING GATE TYPE 304 STAINLESS STEEL.

PA DEPARTMENT OF TRANSPORTATION

REVISIONS

NO.	DATE	BY	TYPE IV DUMP BODY
1	04-27-15	GAW	
2	08-02-18	KBD	
3	08-08-19	KBD	

NO.	DATE	BY	TYPE IV DUMP BODY
1	04-27-15	GAW	
2	08-02-18	KBD	
3	08-08-19	KBD	



PA DEPARTMENT OF TRANSPORTATION

REVISIONS

NO.	DATE	BY	DRAWN BY	DATE	CHK'D BY	Scale	Part No.
1	04-27-15	GAW	DLW	09-25-97	N/A	N/A	EQN-79A
2	08-02-18	KBD	DLW	09-25-97	N/A	N/A	EQN-79A
3	08-08-19	KBD	DLW	09-25-97	N/A	N/A	EQN-79A

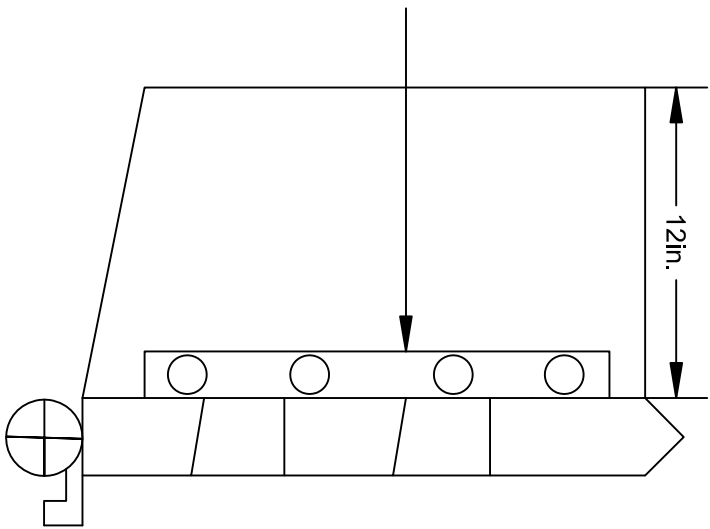
**TYPE IV 62,000 lb. TANDEM
ALUMINUM BODY**

Combined with
EON-617 & 637

SHEET 8 OF 9

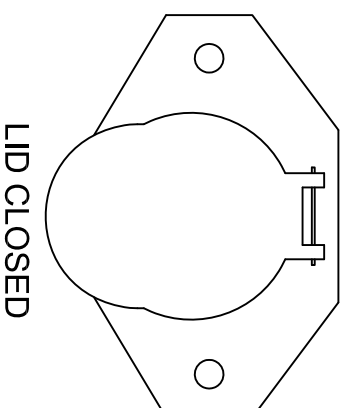
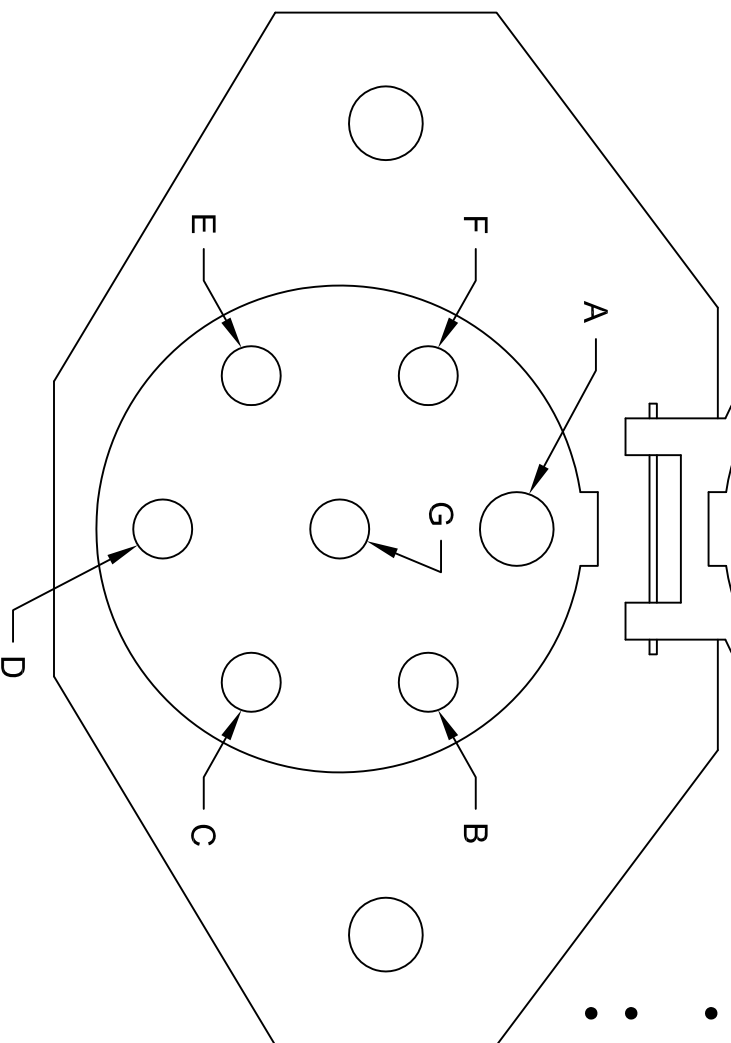
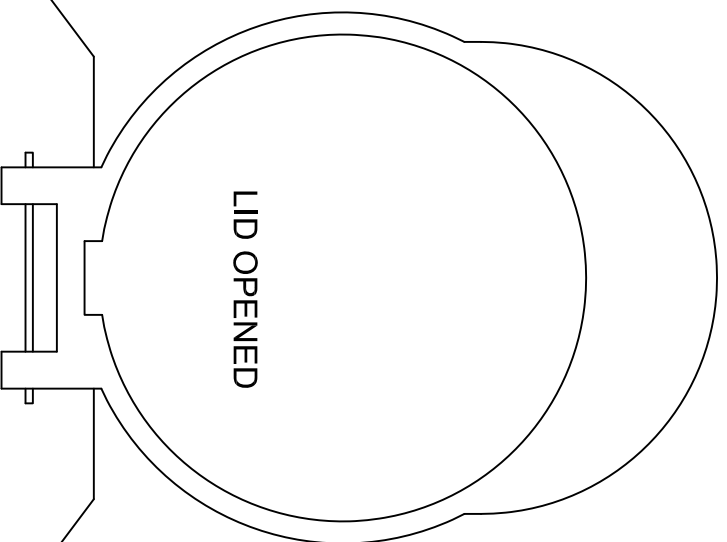
TAILGATE WINGS LEFT AND RIGHT INSIDE

NOTES:
 2in. ANGLE ALUMINIUM WITH 4
 SLOTTED HOLES .375in. X 1in. ON
 OUTER SIDE. .375in. STAINLESS
 STEEL COUNTERSUNK MACHINE
 SCREWS WITH STAINLESS STEEL
 NUTS AND FLAT WASHERS SHALL
 BE USED.



PA DEPARTMENT OF TRANSPORTATION

REVISIONS			TYPE IV DUMP BODY		
NO.	DATE	BY	DRAWN BY	DATE	SHEET
1	04-27-15	GAW	SM	08-11-93	9 OF 9
2	08-02-18	KBD	<small>Checked With EON-817 & 557</small>		EON-79A
3	08-08-19	KBD	<small>Checked By Scale</small>		SHEET 9 OF 9



LID CLOSED

NOTES:

- VIEW OF FEMALE CONNECTOR, STANDING AT REAR OF TRUCK, LOOKING AT THE CONNECTOR.
- BRAKE LIGHTS SHALL FUNCTION WITH TURN SIGNALS.
- WIRE SHALL BE 7 WAY (1-10 GAUGE; 6-12 GAUGE) PER ATA COLOR CODE, CLAMPED EVERY 18" MINIMUM.
- CONNECTION SHALL BE MADE USING FACTORY OEM TRAILER WIRING HARNESS.
- ALL CONNECTIONS SHALL BE WATER TIGHT.
- ALL PINS SHALL BE ROUND STYLE.

WIRING NOTES:

- A. WHITE: GROUND - 10
- B. BLACK: MARKER -12
- C. YELLOW: LEFT TURN & BRAKE - 12
- D. RED: STOP / BRAKE -12
- E. GREEN: RIGHT TURN & BRAKE - 12
- F. BROWN: TAIL - 12
- G. BLUE: ABS -12

PA DEPARTMENT OF TRANSPORTATION

REVISIONS

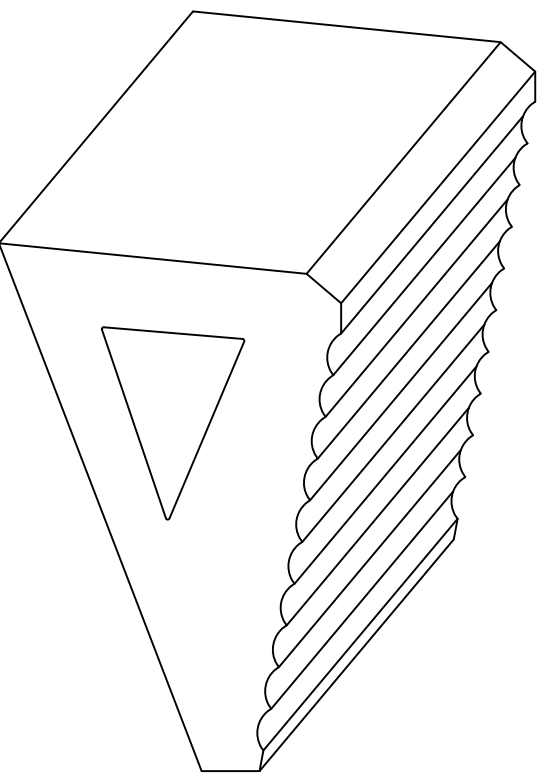
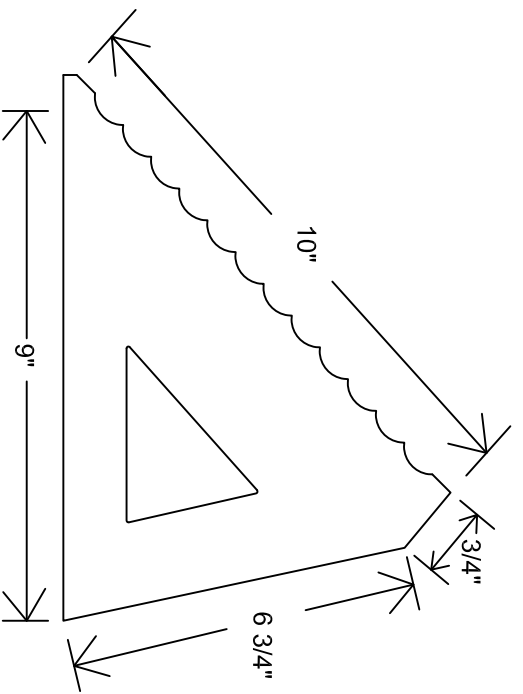
NO.	DATE	BY	DESCRIPTION
1	08-02-18	KBD	WIRING DIAGRAM / 7 WAY ROUND PIN FEMALE CONNECTOR
2			
3			

WIRING DIAGRAM / 7 WAY ROUND
PIN FEMALE CONNECTOR

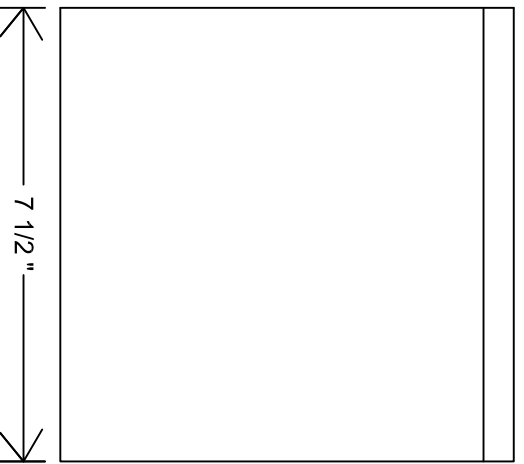
PA DEPARTMENT OF TRANSPORTATION

DRAWN BY JJB EQN-80A

DATE 08-02-16 SHEET 1 OF 1

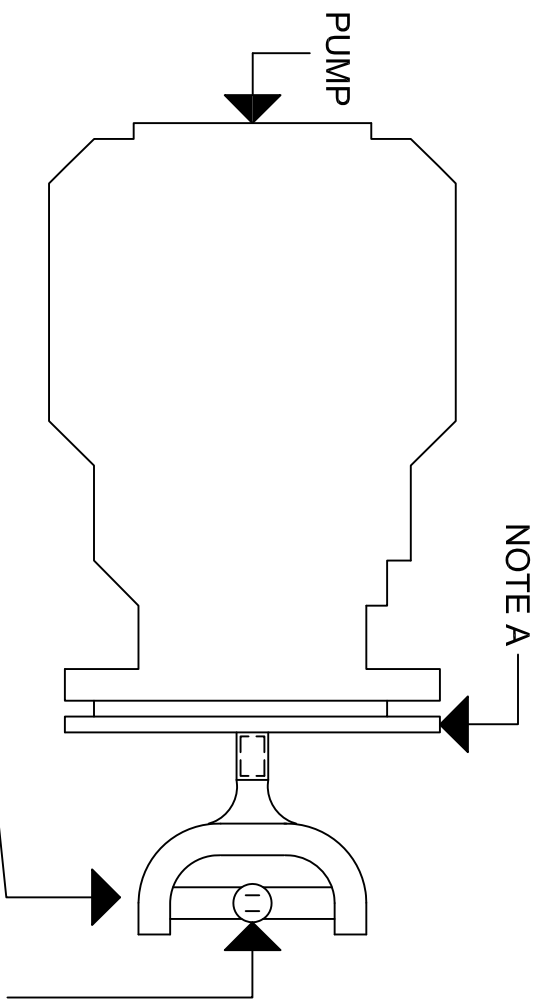


FINAL MOUNTING LOCATION SHALL BE DETERMINED AT THE PRE-BUILD MEETING. CHOCK HOLDERS SHALL BE ALUMINUM OR STAINLESS STEEL. TWO CHOCKS PER TRUCK SHALL BE SUPPLIED. CHOCKS SHALL HAVE 4 FEET OF $\frac{3}{8}$ INCH NYLON ROPE CONNECTING THE TWO CHOCKS TOGETHER.



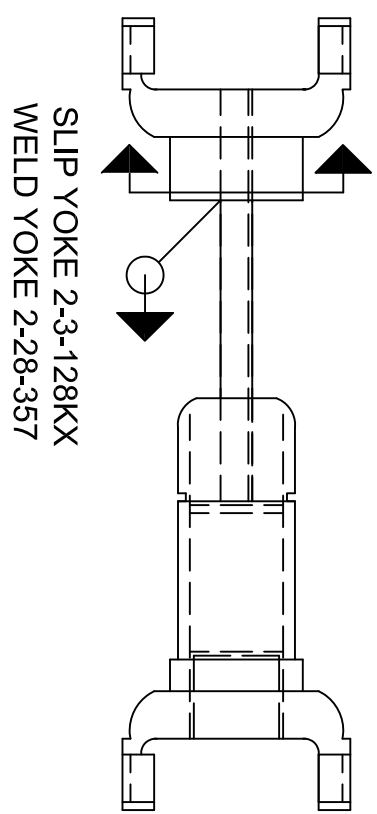
PA DEPARTMENT OF TRANSPORTATION

REVISIONS			6 3/4" X 9" X 7 1/2" CHOCK AND HOLDER		
NO.	DATE	BY	DRAWN BY	SCALE	CHECKED BY
1			HMR	N/A	
2					
3					



COMPANION FLANGE ADAPTER
NO. N3-1-1013-8 OR 35SF-1.50-37

JOURNAL &
BEARING
NO. 5-1310X OR
APPROVED EQUAL

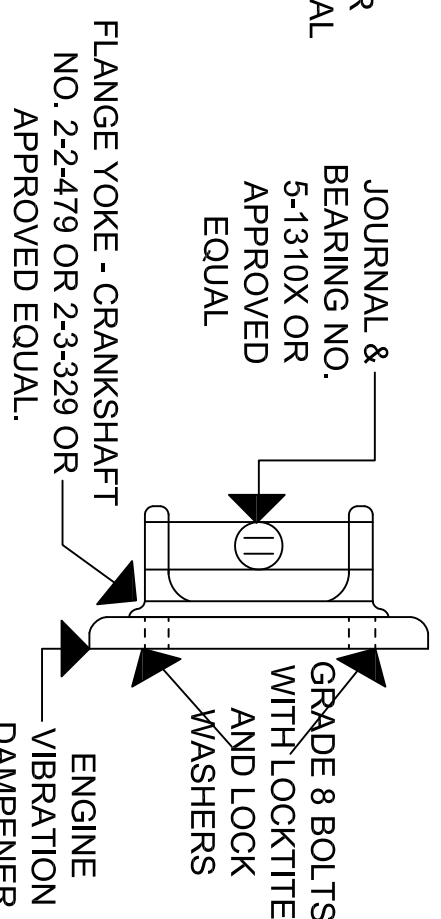


SLIP YOKE 2-3-128KX
WELD YOKE 2-28-357

NOTE A
PUMP MOUNTING BRACKET SHALL BE $\frac{5}{8}$ in.,
MINIMUM, FORMED STEEL CHANNEL. AS
PER EQN - 90 SHEET 2

NOTES:

- 1.) DRIVESHAFT ASSEMBLY SHALL BE FACTORY BALANCED.
- 2.) SPICER 1310 SERIES, OR NEAPCO. NO SUBSTITUTE.
STANDARDIZATION.
- 3.) SLEEVE YOKE SHALL BE 1.375 in. I.D. 16 SPLINES.
- 4.) END YOKE ADAPTER SHALL ACCOMODATE 1.5 in.,
KEYED SHAFT.
- 5.) JOURNAL & BEARING NO. 5-1310X OR APPROVED EQUAL
SHALL BE EQUIPED WITH LUBE FOR LIFE.



JOURNAL &
BEARING NO.
5-1310X OR
APPROVED
EQUAL

FLANGE YOKE - CRANKSHAFT
NO. 2-2-479 OR 2-3-329 OR
APPROVED EQUAL.

GRADE 8 BOLTS
WITH LOCKTITE
AND LOCK
WASHERS

ENGINE
VIBRATION
DAMPENER

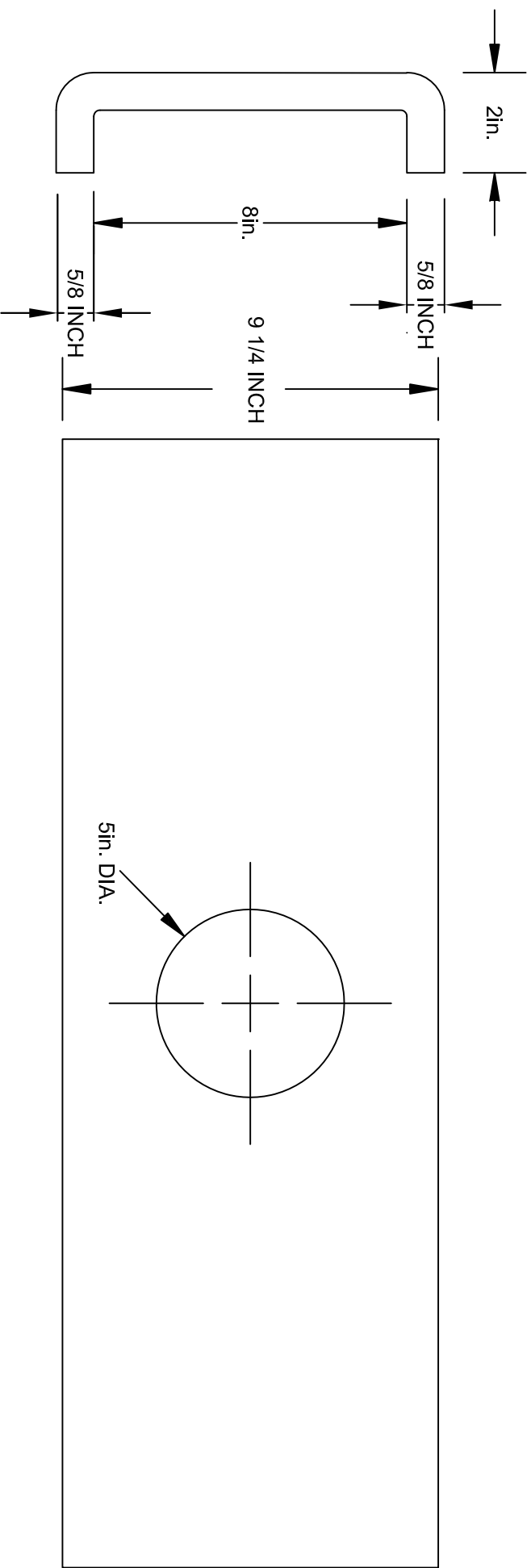
PA DEPARTMENT OF TRANSPORTATION

REVISIONS

NO.	DATE	BY	REVISIONS
1	4-6-07	KNH	
2	07-20-09	TOD	
3	07-25-18	KBD	

DUMP TRUCK PTO ASSEMBLY

DRAWN BY	DLW	Checked With	
DATE	07/17/97	CHKD BY	Scale
			EQN-90
			SHEET 1 OF 2



PUMP MOUNTING BRACKET, REGARDLESS OF DESIGN, SHALL BE A MINIMUM 5/8 in. FORMED STEEL CHANNEL. THE PUMP BRACKET SHALL BE SLOPED TO MATCH THE ENGINE CRANKSHAFT. WIDTH DIMENSION SHALL BE FULL FRAME RAIL WIDTH. BRACKETRY TO ATTACH PUMP MOUNTING BRACKET TO TRUCK FRAME RAILS SHALL BE MINIMUM 5/8 in. THICKNESS. BRACKETS SHALL BE EITHER FULLY WELDED OR USE 3/4 in. GRADE 8 BOLTS OF SUFFICIENT LENGTH AND GRADE 8 LOCK NUTS, MINIMUM TWO BOLTS PER MOUNTING SURFACE.

PA DEPARTMENT OF TRANSPORTATION

REVISIONS

NO.	DATE	BY	PUMP MOUNTING BRACKET		
1	06-03-02	DWG	DRAWN BY	SWW	Combined with EQN-90
2	07-20-09	TOD	DATE	12-04-95	CHK'D BY Scale
3	07-25-18	KBD	DATE	12-04-95	SHEET 2 OF 2

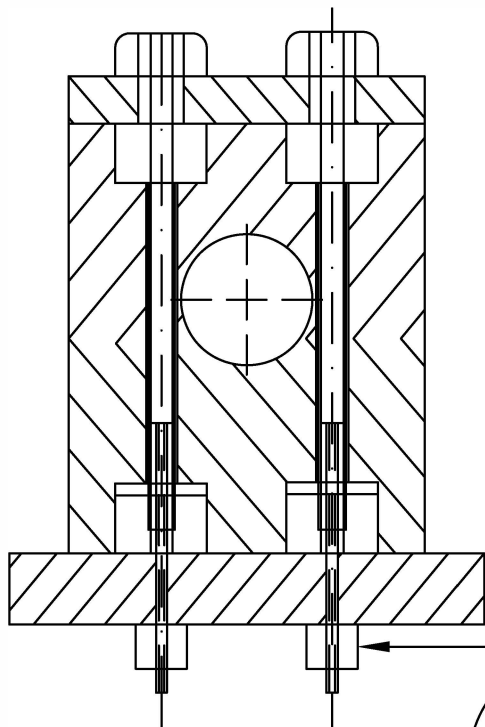
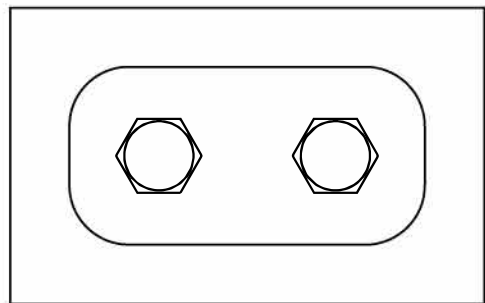
HYDRAULIC HOSES/ FITTINGS

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

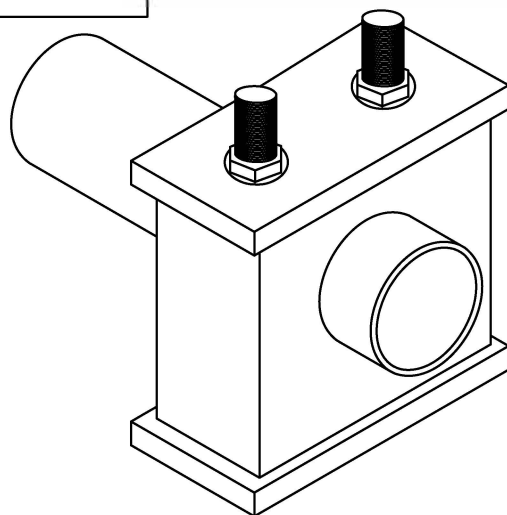
HYCON CLAMPS AS REQUIRED TO PREVENT CHAFFING OR RUBBING. DUE TO THE VARIATIONS OF SIZES PART NUMBERS HAVE NOT BEEN INCLUDED. WELD-ON OR BOLT-ON ARE ACCEPTABLE. AVAILABLE IN STANDARD AND HEAVY DUTY SERIES. LOCATIONS TO BE APPROVED BY CHIEF, FLEET MANAGEMENT DIVISION
REF: HYCON CORPORATION, LEHIGH VALLEY,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

NOTE:

ALL BOLTS/NUTS SHALL BE COATED WITH NEVER SIEZE.



BOLT SHALL EXTEND BEYOND BASE



PA DEPARTMENT OF TRANSPORTATION						
REVISIONS			Hydraulic Hose Mounting & Requirements			
NO.	DATE	BY	DRAWN BY		Combined With	
1	10-02-06	CJW	RED		EQN-23	EQN-94
2	12-20-16	JJB	DATE		CHK'D BY	Scale
3	08-02-18	KBD	11-03-78		N/A	N/A
						SHEET 1 OF 5

FRONT COUPLERS SHALL BE MOUNTED TO A MANIFOLD PLATE POSITIONED IN THE CENTER OF THE FRONT FRAME EXTENSION WHICH HOUSES THE PTO ASSEMBLY. MOUNTING SEQUENCE SHALL BE AS FOLLOWS MOVING TOP TO BOTTOM WHEN FACING THE RIGHT SIDE OF THE VEHICLE:

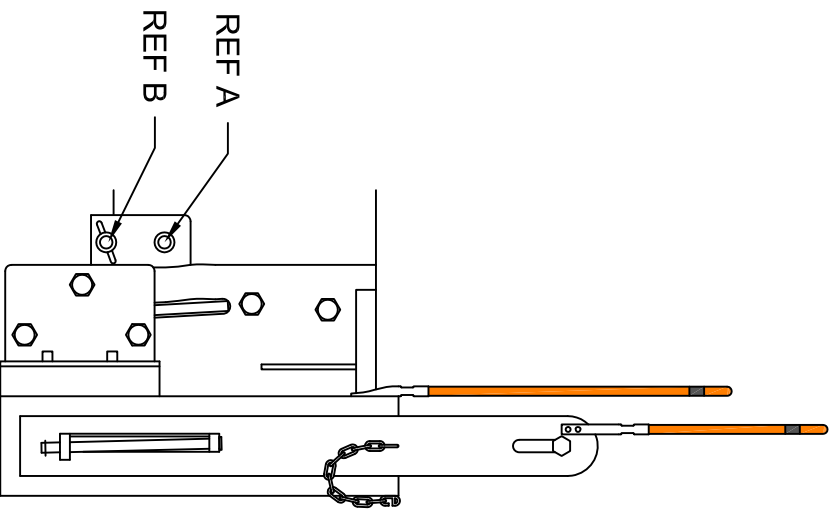
TWO (2) WING COUPLERS: UPPER BEING 5100-S2-8B AEROQUIP MALE AND LOWER BEING 5100-S1-8B AEROQUIP FEMALE

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 TOP TO BOTTOM WHEN FACING THE RIGHT SIDE OF THE VEHICLE:

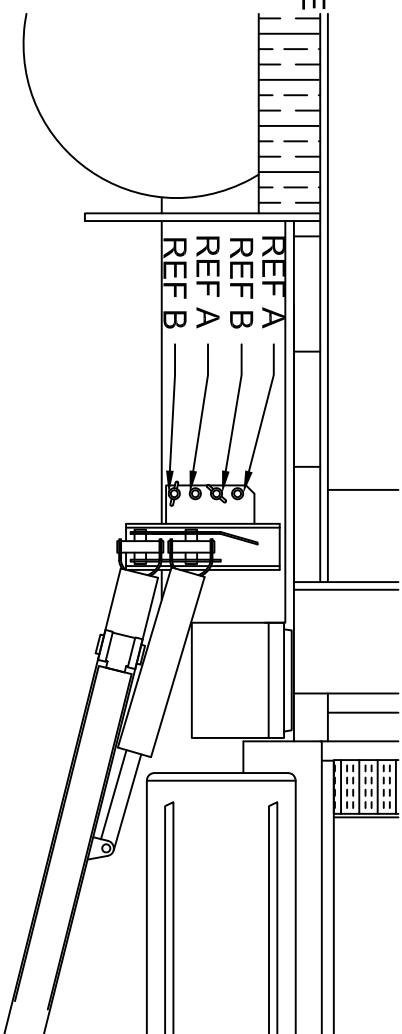
TWO (2) LIFT WING COUPLERS: UPPER BEING 5100-S2-8B AEROQUIP MALE AND LOWER BEING 5100-S1-8B AEROQUIP FEMALE

TWO (2) EXTEND WING COUPLERS: UPPER BEING 5100-S2-8B AEROQUIP MALE AND LOWER BEING 5100-S1-8B AEROQUIP FEMALE

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



- NOTES:
 A. 5100-S2-8B MALE
 B. 5100-S1-8B FEMALE



FRONT COUPLERS

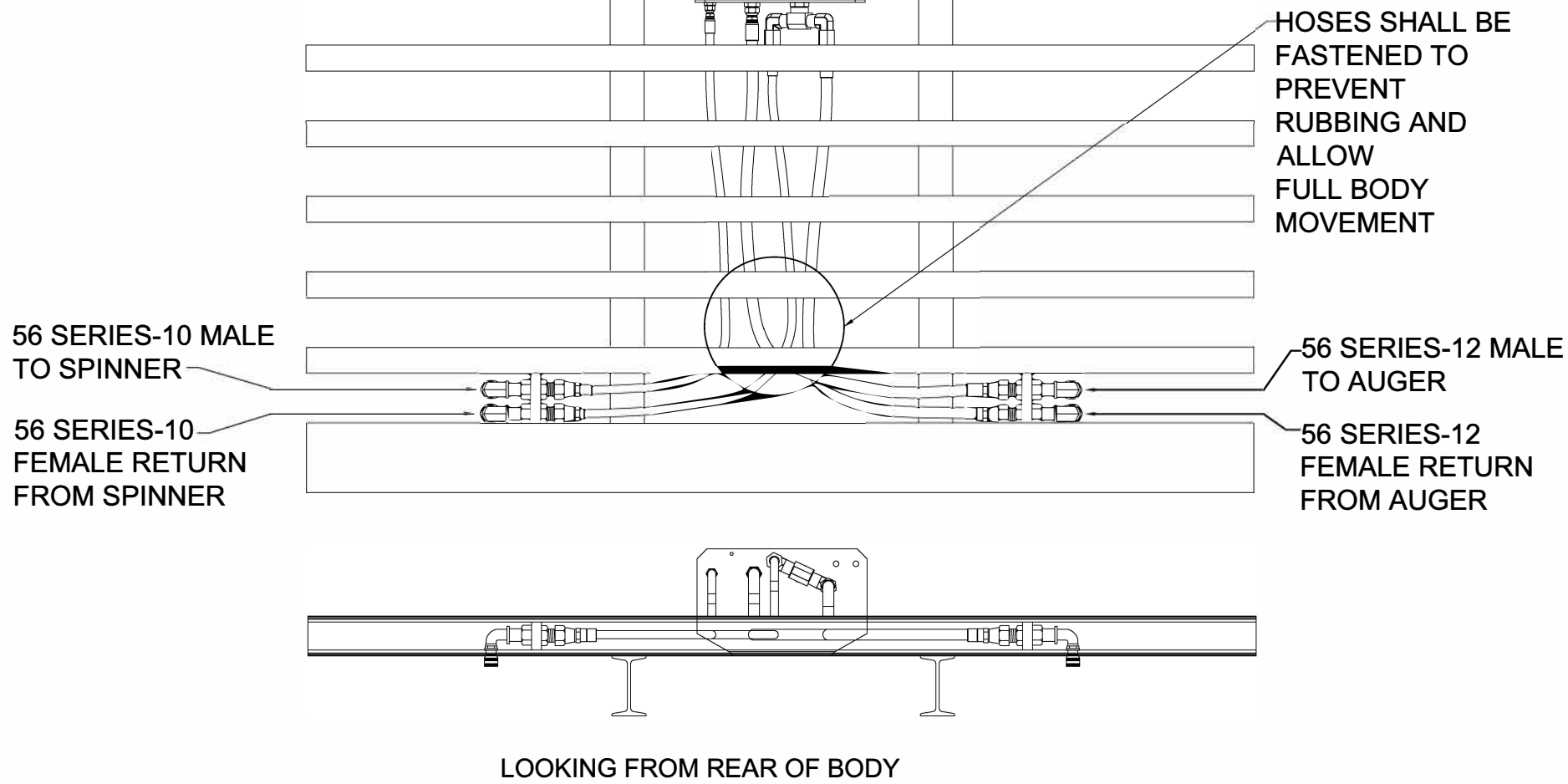
PA DEPARTMENT OF TRANSPORTATION

REVISIONS

NO.	DATE	BY	DESCRIPTION
1	12-20-16	JJB	
2	07-13-17	HMR	
3	08-02-18	KBD	

Wing Plow Couplers

DRAWN BY	RED	DATE	11-03-78
CHECKED BY	N/A	SCALE	N/A
Combined With	EQN-94		
			SHEET 2 OF 5



5600 SERIES STAINLESS STEEL, 1 EACH (MALE & FEMALE) ON EACH SIDE, QUICK COUPLERS MUST BE USED FOR SPINNER & AUGER CONNECTIONS

4,000 PSI HOSES WITH JIC HOSE ENDS SHALL BE USED.

ONLY APPROVED STAINLES STEEL HYDRAULIC FITTINGS SHALL BE USED.

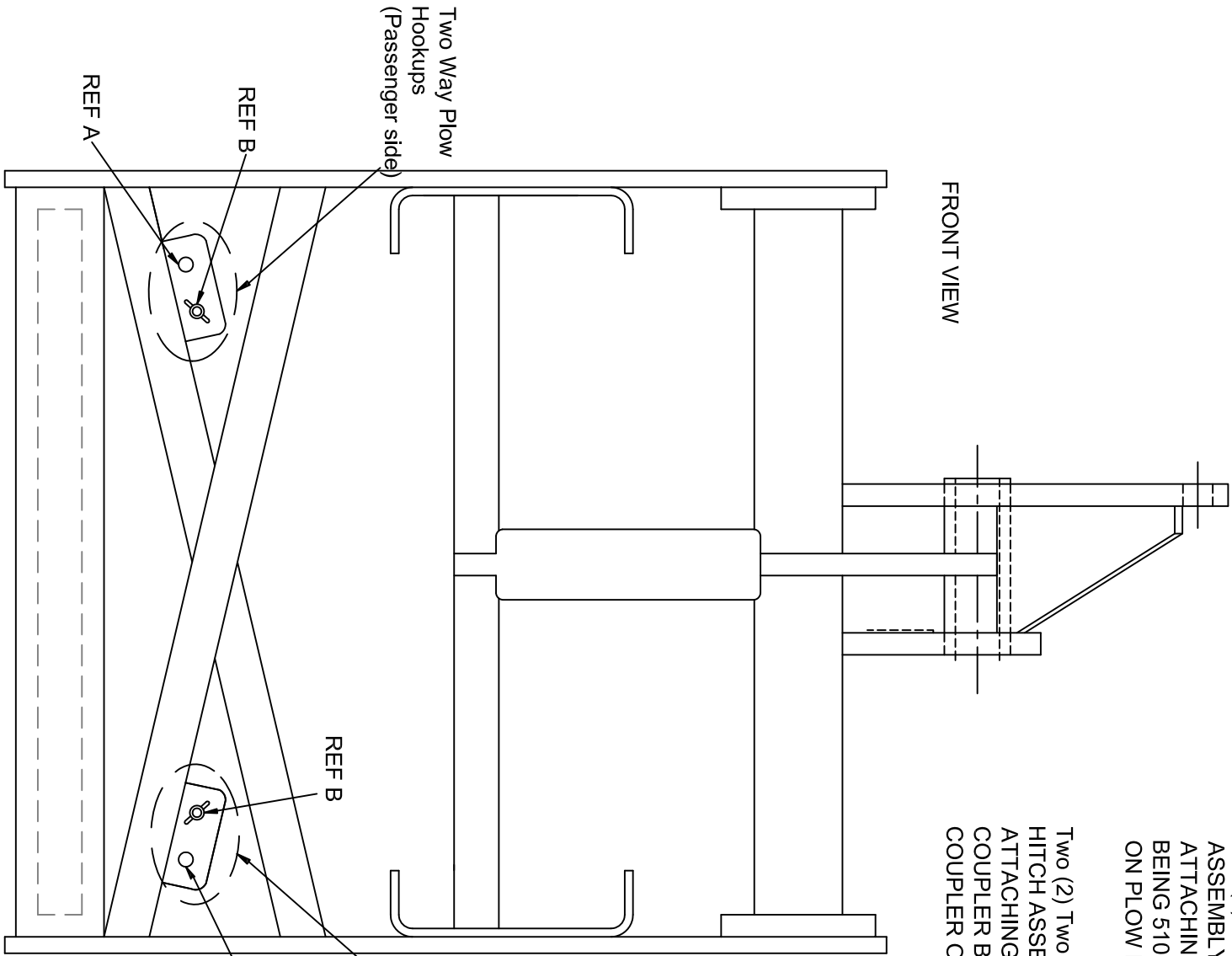
COUPLERS SHALL HAVE DUST PLUGS AFFIXED WITH CHAINS TO PREVENT LOSS OF CAPS.

PA DEPARTMENT OF TRANSPORTATION					
REVISIONS			Rear Hose Manifold		
NO.	DATE	BY			
1	8/1/13	JFM			
2	07-13-17	HMR	DRAWN BY JDS	Combined With EQN-23	EQN-94
3	08-02-18	KBD	DATE 6/15/12	CHK'D BY N/A	Scale N/A

Two (2) Plow Hitch Couplers: LOCATED ON DRIVER SIDE OF HITCH ASSEMBLY RIGHT COUPLER BEING 5100-S2-8B AERROQUIP MALE ATTACHING TO FEMALE COUPLER ON PLOW RAM AND LEFT COUPLER BEING 5100-S1-8B AERROQUIP FEMALE ATTACHING TO MALE COUPLER ON PLOW RAM.

Two (2) Two Way Plow Couplers: LOCATED ON PASSENGER SIDE OF HITCH ASSEMBLY LEFT COUPLER BEING 5100-S2-8B AERROQUIP MALE ATTACHING TO FEMALE COUPLER ON TWO WAY PLOW AND RIGHT COUPLER BEING 5100-S1-8B AERROQUIP FEMALE ATTACHING TO MALE COUPLER ON TWO WAY PLOW.

FRONT VIEW



HYDRAULIC HOSES SHOULD'NT INTERFEAR WITH ANYTHING WHILE TWO WAY PLOW AND PLOW HITCH IS IN MOTION AND AT REST TO PREVENT DAMAGE TO HOSES.

NOTES:

- A. 5100-S2-8B MALE
- B. 5100-S1-8B FEMALE

Plow Ram Hookups (Driver Side)

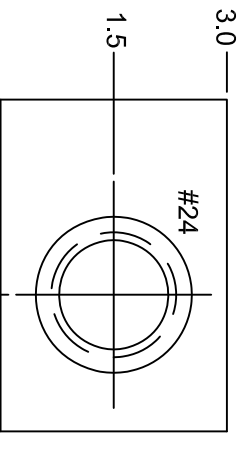
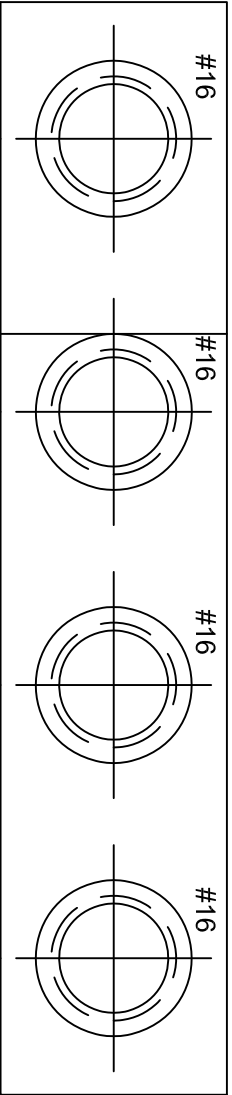
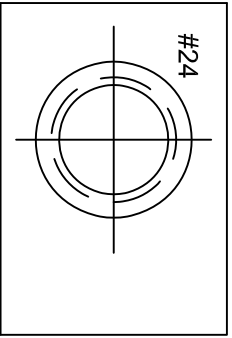
Two Way Plow Hookups (Passenger side)

PA DEPARTMENT OF TRANSPORTATION

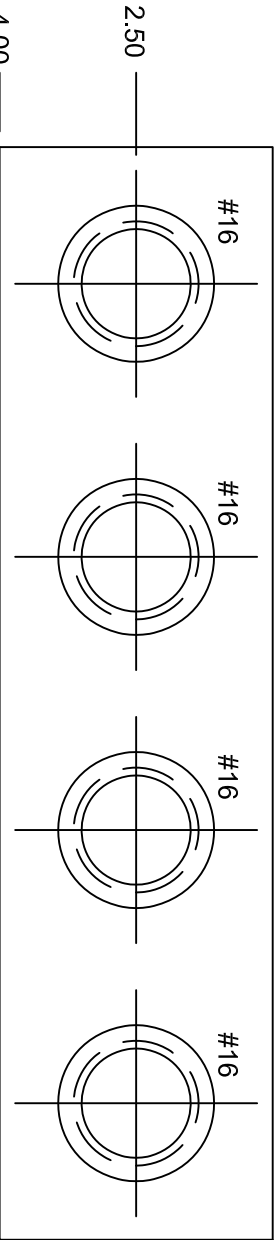
REVISIONS

NO.	DATE	BY	REVISIONS
1	04-27-15	GAW	Ram Plow & Two Way Plow Couplers
2	12-19-16	JJB	
3	08-02-18	KBD	

DRAWN BY	DATE	CHECKED BY	DATE
SWW	09-25-95	N/A	N/A
Continued from	EQN-94	Scale	SHEET 4 OF 5



1.8750
4.6250
7.3750
10.1250
12.0000



4.00

PA DEPARTMENT OF TRANSPORTATION

REVISIONS

2 Hydraulics Components Overview

Header Block

NO.	DATE	BY	DRAWN BY	DATE	CHECKED BY	SCALE	SHEET
1	08-03-01	DWG	GAH	03-01-00	N/A	N/A	5 OF 5
2	11-02-06	CJW	GAH	03-01-00	N/A	N/A	5 OF 5
3	08-02-18	KBD					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 MANUFACTURE OF 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 BUMPERS OR 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 REAR OF THE VEHICLE; (E) AND THE BUMPER OR DEVICES SHALL BE SUBSTANTIALLY CONSTRUCTED AND FIRMLY ATTACHED. 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).

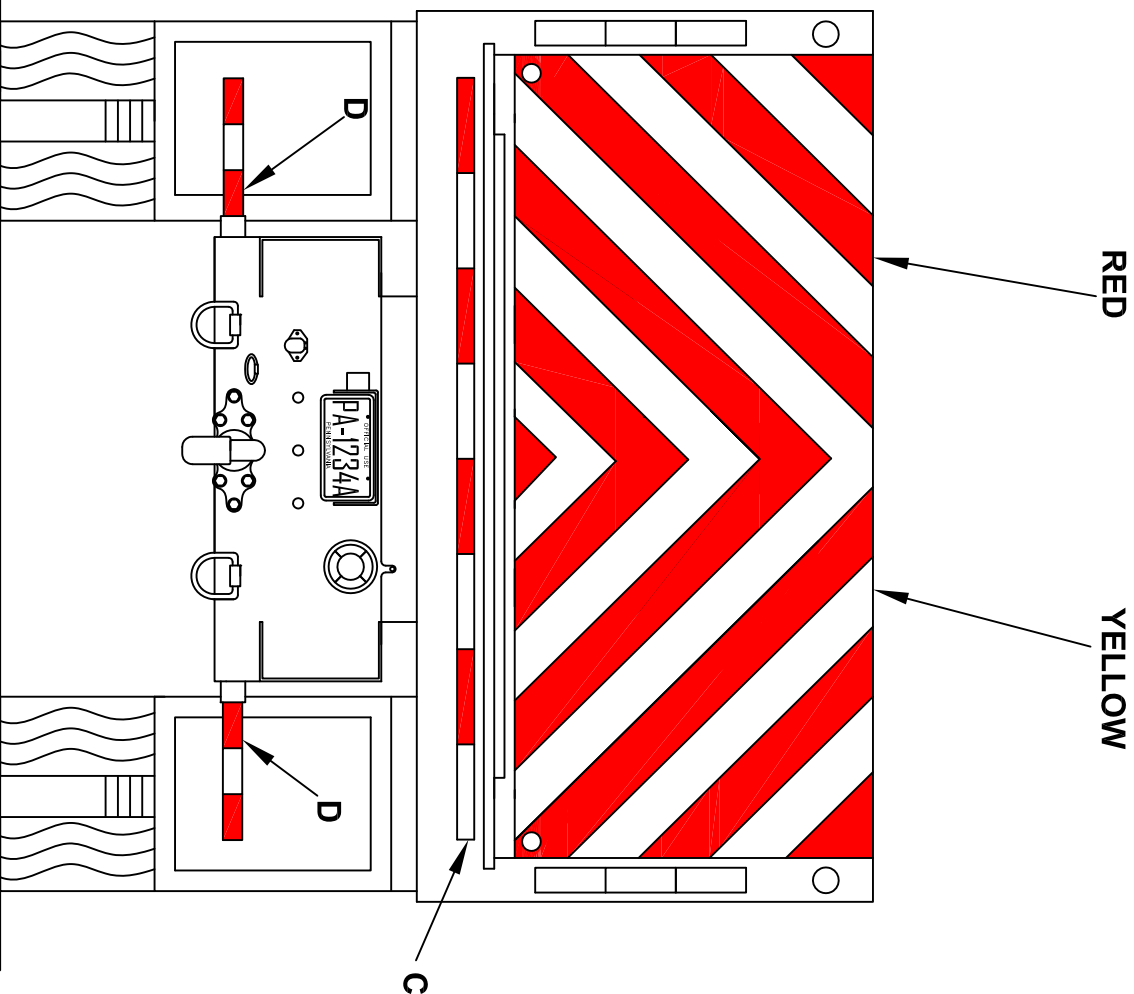
ALTHOUGH SECTION 393.86 DOES NOT SET FORTH SPECIFIC PERFORMANCE REQUIREMENTS FOR THE REAR END PROTECTION STRUCTURE, SUBPART J - SPECIFICATIONS FOR CONTAINERS FOR MOTOR VEHICLE TRANSPORTATION OF PART 178 - SHIPPING CONTAINER SPECIFICATIONS OF SUBCHAPTER C - HAZARDOUS MATERIAL REGULATIONS OF CHAPTER I - 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.

**COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION**

REVISIONS

NO	DATE	BY	UNDERRIDE PROTECTION		
1	07/08/97	DLW			
2	07/01/03	KGK	DLW	N/A	EQN -118
3	06/26/09	TOD	DATE 02-04-92	CHK'D BY RR	SHEET 1 OF 1

**ANY / ALL REVISIONS SHALL
SUPERSEDE THE ABOVE**



A THE ALUMINUM TAILGATE SHALL BE UNPAINTED. THE TAILGATE SHALL BE STRIPED AS SHOWN WITH 8" WIDE ALTERNATING RED/YELLOW BANDS CREATING A CHEVRON (INVERTED V) AT 45 DEGREE ANGLES, ACROSS THE GATE TO SERVE AS A SAFETY WARNING SYSTEM.

B TAPE SHALL BE REFLEXITE DAYBRIGHT V92 CONSPICUITY SHEETING. RED - SRH14R PN# 18716, LIME - SRH14Y PN# 18836 VC 312. TWO 4" SHEETS CAN BE COMBINED TO EQUAL THE 8" REQUIREMENT.

C THE ENTIRE WIDTH DIRECTLY UNDER THE TAILGATE SHALL BE COVERED WITH 1 1/2" WIDE SCOTCHLITE CONSPICUITY SHEETING SERIES 980 OR REFLEXITE CONSPICUITY II SYSTEM. MATERIAL SHALL BE RED/SILVER, CONTINUOUS BACKING.

D THE ENTIRE LENGTH OF BOTH ICC BARS SHALL BE COVERED WITH 1 1/2" WIDE SCOTCHLITE CONSPICUITY SHEETING SERIES 980 OR REFLEXITE CONSPICUITY II SYSTEM. MATERIAL SHALL BE RED/SILVER, CONTINUOUS BACKING.

THIS DRAWING SHALL BE FOR CONSPICUITY REFERENCE ONLY, NOT TAILGATE CONSTRUCTION.

THIS VEHICLE SHALL COMPLY WITH THE RULES OF THE NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION (NHTSA). THE MOST CURRENT REGULATIONS SHALL BE ADHERED TO.

PA DEPARTMENT OF TRANSPORTATION

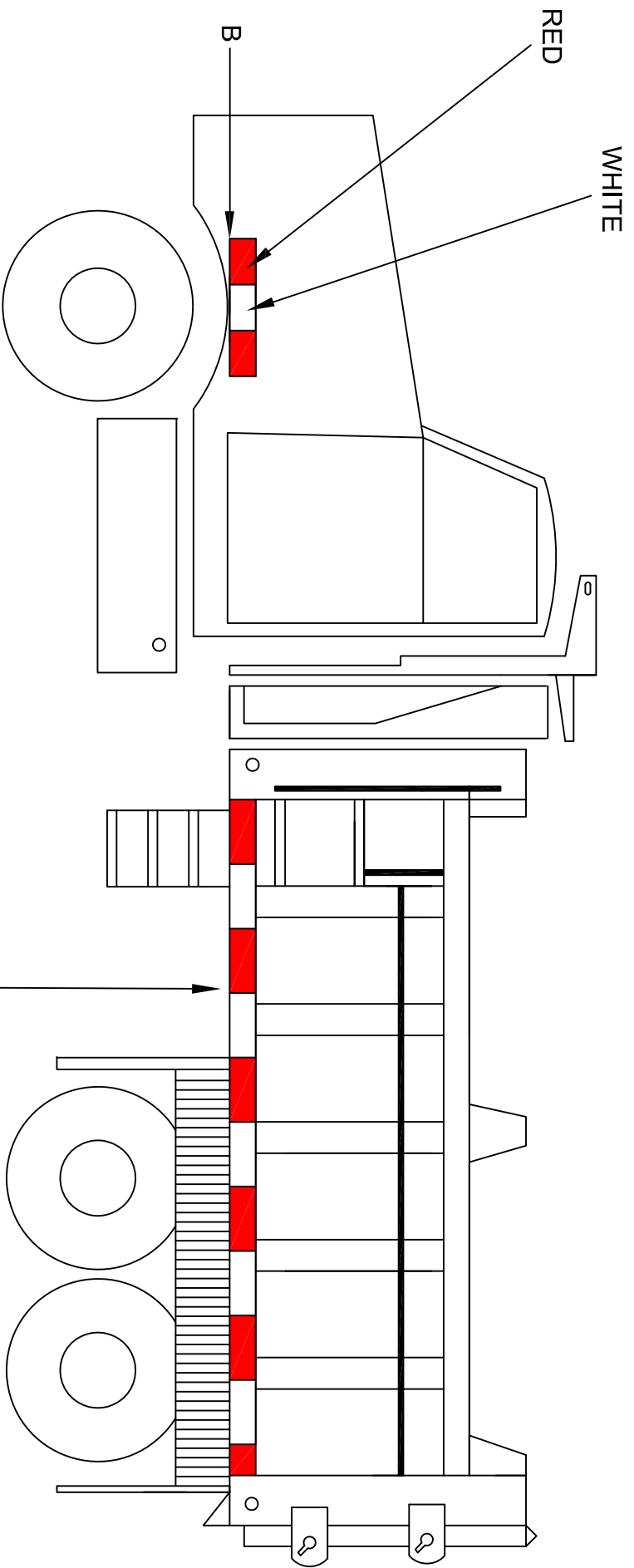
REVISIONS

NO.	DATE	BY	REASON
1	05-20-13	JFM	REFLECTIVE SHEETING
2	06-30-14	ACT	REFLECTIVE SHEETING
3	07-24-18	KBD	REFLECTIVE SHEETING

DUMP BODY

REFLECTIVE SHEETING

NO.	DATE	BY	REASON
1	10-11-94	GRL	REFLECTIVE SHEETING



A THE ENTIRE LENGTH OF BODY RUB RAILS SHALL BE COVERED WITH 2" WIDE SCOTCHLITE CONSPICUITY SHEETING SERIES 980 OR REFLEXITE CONSPICUITY II SYSTEM MATERIAL SHALL BE RED/SILVER, CONTINUOUS BACKING.

B THE AREA ABOVE FRONT TIRES SHALL BE COVERED WITH MINIMUM 18 INCHES, 2" WIDE SCOTCHLITE CONSPICUITY SHEETING SERIES 980 OR REFLEXITE CONSPICUITY II SYSTEM MATERIAL SHALL BE RED/SILVER, CONTINUOUS BACKING. ITEM B NEEDS TO BE AS CLOSE AS POSSIBLE IN A STRAIGHT LINE WITH ITEM A. ALTERNATE PLACEMENT OF ITEM B NEEDS TO BE APPROVED BY THE CHIEF OF THE EQUIPMENT DIVISION

THE CHIEF OF THE EQUIPMENT DIVISION SHALL APPROVE ALL STRIPING AND MONITOR THE PRODUCTION BY THE SUCCESSFUL VENDOR. ALL DIMENSIONS IN INCHES.

PA DEPARTMENT OF TRANSPORTATION

REVISIONS

NO.	DATE	BY	DRAWN BY	DATE	CHK'D BY	Scale
1	05-20-13	JFM	TOD	07-14-09		
2	06-30-14	ACT				
3	07-24-18	KBD				

**DUMP BODY
REFLECTIVE SHEETING**

EQN-122

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

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

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

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

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

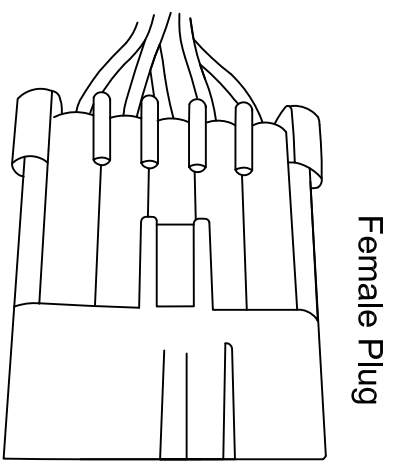
THE MOST CURRENT REGULATIONS SHALL BE ADHERED TO.

PA DEPARTMENT OF TRANSPORTATION			CONSPICUITY TAPE STRIPING REQUIREMENTS		
REVISIONS			DRAWN BY		
NO.	DATE	BY	DLW	Checked VTR	EQN-122
1	11-03-06	CJW			
2	01-02-09	MHH		CHKD BY	
3	07-24-18	KBD	DATE	Scale	SHEET 3 OF 3
			11-07-97		

NOTE : THIS LIGHT DESIGN IS ONE OF TWO LIGHT DESIGN THAT ARE ACCEPTABLE

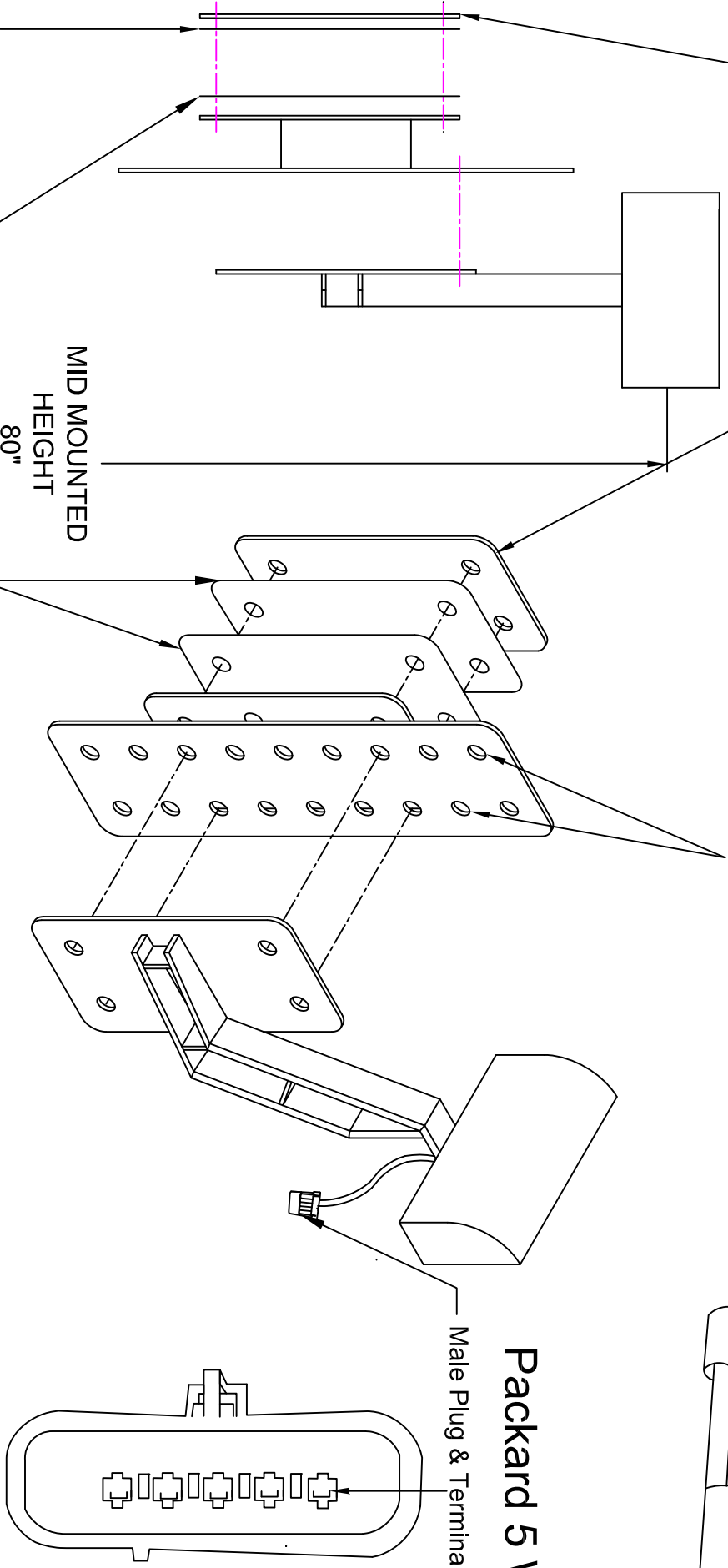
PLATE MOUNTED FAST TO TRUCK

ADDITIONAL HOLES TO ALLOW 6" OF VERTICAL HEIGHT ADJUSTMENT (3" UP AND 3" DOWN FROM ORIGINAL HEIGHT)



Packard 5 Way

Male Plug & Terminals



GROUND LEVEL

PA DEPARTMENT OF TRANSPORTATION

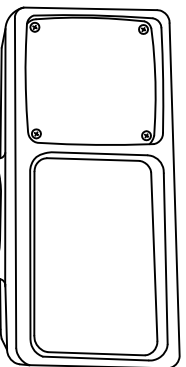
REVISIONS

HEADLIGHT ADJUSTMENT BRACKET

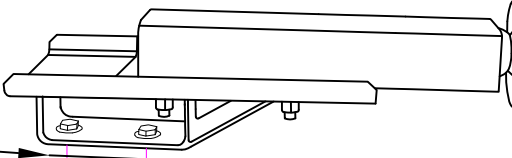
NO.	DATE	BY	DRAWN BY	DATE	CHG BY	TERMIN	COMBINED WITH	EQN-180
1	07-26-18	KBD	JJB	07-19-16	N/A	N/A		
2								
3								

NOTE : THIS LIGHT DESIGN IS ONE OF TWO LIGHT DESIGN THAT ARE ACCEPTABLE

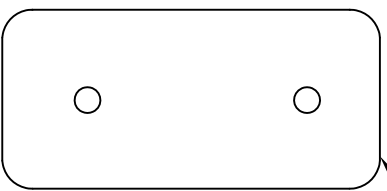
Packard 5 Way



Light Front View

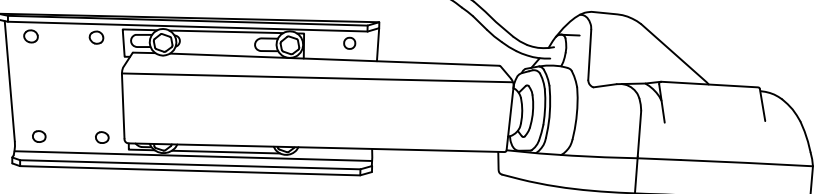
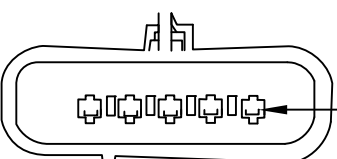
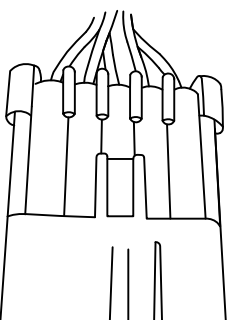


Protective Liner

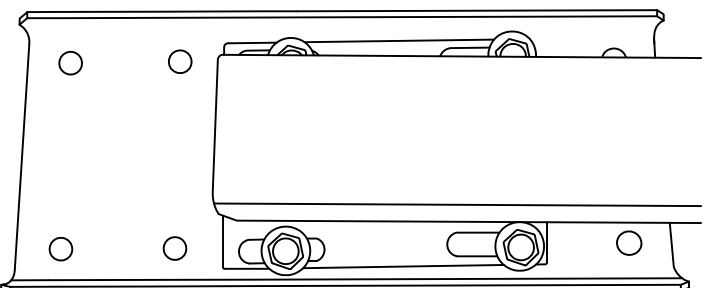


Light Bracket

Female Plug



Light Side View

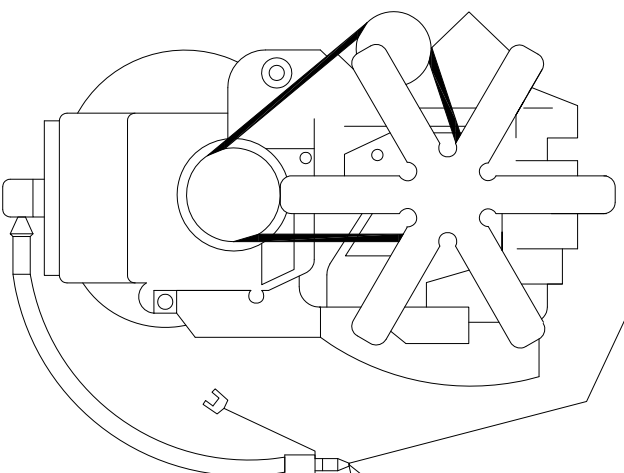
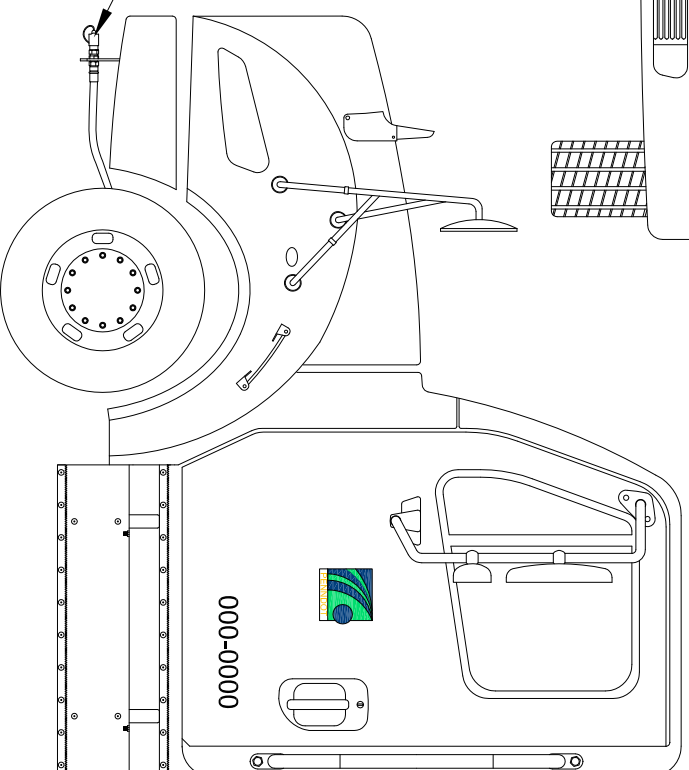
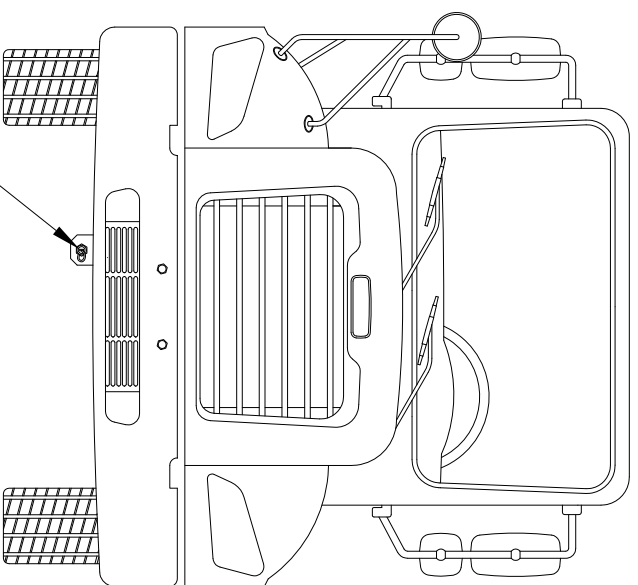
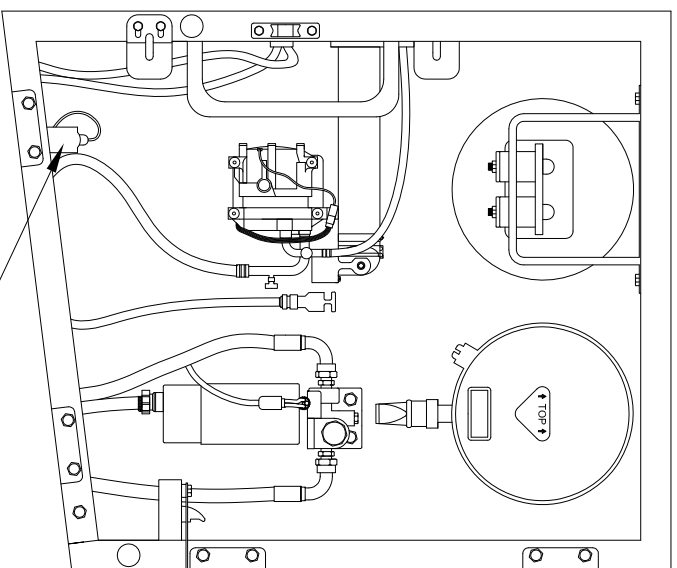


PA DEPARTMENT OF TRANSPORTATION

REVISIONS

Plow Truck Light & Bracket

NO.	DATE	BY	DRAWN BY	CHECKED BY	SCALE	SHEET NO.	TOTAL SHEETS
1			KBD			EQN-180	
2							
3							



DISCONNECT
COUPLING
FLOCS
ENGINE KIT

PA DEPARTMENT OF TRANSPORTATION

REVISIONS

NO	DATE	BY
1	07-01-03	BLD
2	10-20-06	CJW
3	06-19-13	JFM

**FAST LUBE OIL CHANGE SYSTEM
OVERVIEW AND PARTS LIST**

SCALE	DATE
N/A	08-22-97

000-0000



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

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

FLOCS SHALL INCLUDE, BUT NOT LIMITED TO:

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

PA DEPARTMENT OF TRANSPORTATION

REVISIONS			FAST LUBE OIL CHANGE SYSTEM OVERVIEW AND PARTS LIST		
NO	DATE	BY	SCALE	CHK'D BY	
1	07-01-03	BLD	DLW	N/A	EQN-351A
2	10-20-06	CJW			
3	06-19-13	JFM			

Centralized Lubrication System On Road Equipment EQN - 501

There shall be an automatic centralized lubrication system professionally installed to maintain all the daily, weekly, and monthly lubrication points. Only electrically controlled, #2 chassis grease systems shall be accepted. The use of pneumatic systems is unacceptable. The requirements for the lubrication system components and installation procedures are outlined below. It is the responsibility of the vendor to ensure that the automatic lubrication system complies with all of these requirements.

1. Performance Requirements

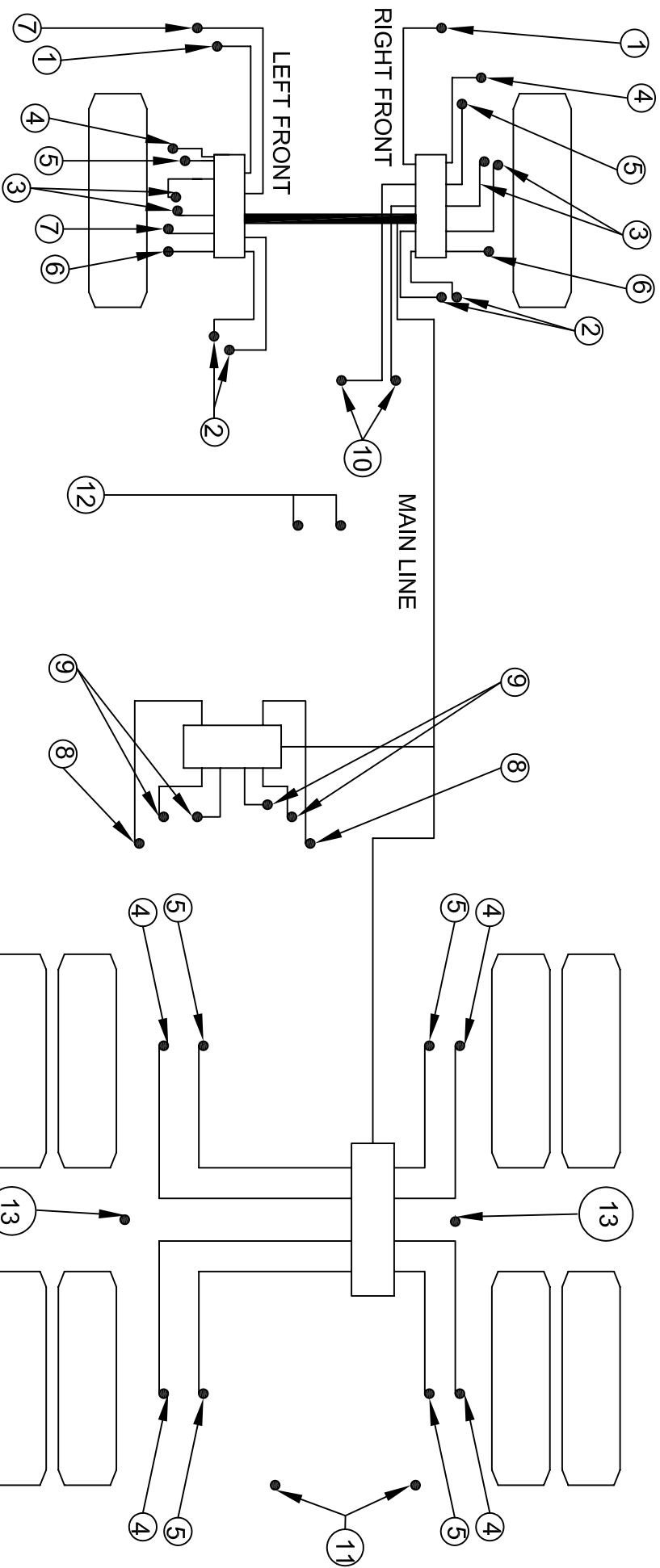
- The system pump shall be capable of delivering NLGI #2 grease over a temperature range of minus 10 degrees Fahrenheit to 120 degrees Fahrenheit.
- The pump shall have an integral adjustable timer to change the grease delivery intervals as needed.
- The system shall use a fused electric pump, either 12 Volt DC or 24 Volt DC depending on application. Pneumatic pumps are not acceptable.
- The pump shall be equipped with a pressure relief valve device at the pump outlet to protect the pump from damage due to over pressure.
- For ease of service, the pump shall have a pumping element located on the side that can be removed and replaced or repaired as needed without having to remove or disassemble the pump.
- The pump shall use a clear or translucent reservoir to allow for visual inspection of the grease level. Reservoir shall have a full level indicator. Bladder type reservoirs are not acceptable.
- The grease reservoir shall be a minimum four pound capacity.
- The system shall have a cab mounted fault light that will notify the operator of a lube system fault and low grease level. If any point in the system will not take grease, the fault light shall illuminate.
- The system shall be a positive displacement series progressive type, using primary and secondary valves.
- All secondary valves shall be non-segmented to minimize the potential leak path and or sources of contamination.
- All valves shall be made of corrosion resistant coated carbon steel.
- The positive displacement proportioning valves shall have a tee and high back pressure grease fittings at each valve inlet for manual filling, system testing, and to fill repaired lines.
- The system shall have a manual override fitting to enable the system to be manually operated if the pump is inoperable.
- Equipment shall have a 2 year manufacturer's warranty.

2. Installation Requirements - On Road

- The system shall use only high pressure hose (4,000 psig operating, 10,000 psig burst). All hoses are to be of US standard sizes (1/8" ID hose 5/16 OD) and readily available from local sources.
- All hoses shall use a two piece re-usable hose end with quick disconnects at the valve outlet for ease of inspection and repair.
- All lines from the secondary valves to the chassis or body inlet points shall be flexible with at least a 500 PSI working pressure. All tubing shall be standard size (1/4 inch OD) and readily available from local sources.
- All line runs will be secured to the chassis or air lines via tie wraps. Protective wrap shall be used for all lines run over any edge of the chassis and especially at the termination points for front suspension including upper & lower king pins, tie rod ends and any exposed lines that are not fixed. The use of steel tubing is prohibited.
- The pump shall be installed in a safe location on the truck chassis that is protected and easy to monitor the grease level and refill. For exact mounting location, contact PennDOT Equipment Division, Specification Unit - 717.787.2123
- Ground Level filling shall be provided for all lube systems. Remote lines are acceptable if reservoir is viewable from remote fill location.
- Installations shall be warranted for 2 years of operation.

PA DEPARTMENT OF TRANSPORTATION				
REVISIONS			CENTRALIZED LUBE SYSTEM	
NO.	DATE	BY		
1			SCALE N/A	EQN-501
2			DRAWN BY TOD	
3			DATE 6-9-09	CHK'D BY SHEET 1 OF 2

MINIMUM TYPICAL LUBE POINTS TANDEM AXLE



MINIMUM TYPICAL
VEHICLE LUBE POINTS.

*ALL LUBRICATION
POINTS SHALL BE
INCORPORATED INTO
THE ON-BOARD GREASE
SYSTEM, INCLUDING ALL
CHASSIS AND BODY
POINTS, EXCEPT
LOCATIONS RESTRICTED
BY ROTATING DESIGN; IE:
DRIVESHAFT & PTO

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 (IF APPLICABLE)
9. FIFTH WHEEL PLATE (IF APPLICABLE)
10. CLUTCH CROSS SHAFT
11. REAR DUMP BED HINGE (1 EACH SIDE)
12. TOP AND BOTTOM OF HOIST CYL.

13. DEPENDING ON APPLICATION, ALL REAR SUSPENSION,
TRUIONS, LEAF SPRINGS

PA DEPARTMENT OF TRANSPORTATION

REVISIONS		CENTRALIZED LUBE SYSTEM GENERIC ARRANGEMENT	
NO.	DATE	BY	SCALE
1	12-15-00	GAH	N/A
2	01-02-07	CJW	N/A
3	06-09-09	TOD	N/A
4			
5			

NO.	DATE	BY	DATE	SHEET
1	12-15-00	GAH	8-31-99	2 OF 2
2	01-02-07	CJW		
3	06-09-09	TOD		
4				
5				

ITEM NUMBER	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.	SPREADER					
7.	PLOW FRAME					
8.	SNOW PLOW					*
9.	FRONT PTO, ADAPTER & PUMP					
10.	PAYLOAD					
11.	HYDRAULIC OIL & TANK					
12.	PATROL STYLE WING PLOW					
13.	FRONT WING POST (PATROL)					
14.	REAR WING POST (PATROL)					
15.	PREWET TANK ___ GALLON					

NOTES:

- (1) THE INFO. SHALL BE SUBMITTED IN ITS ENTIRETY & 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.

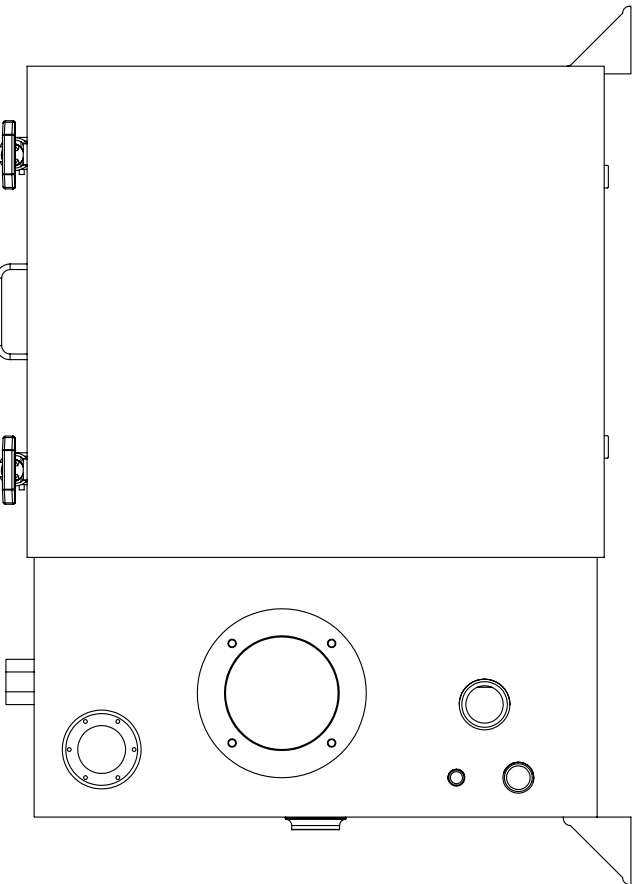
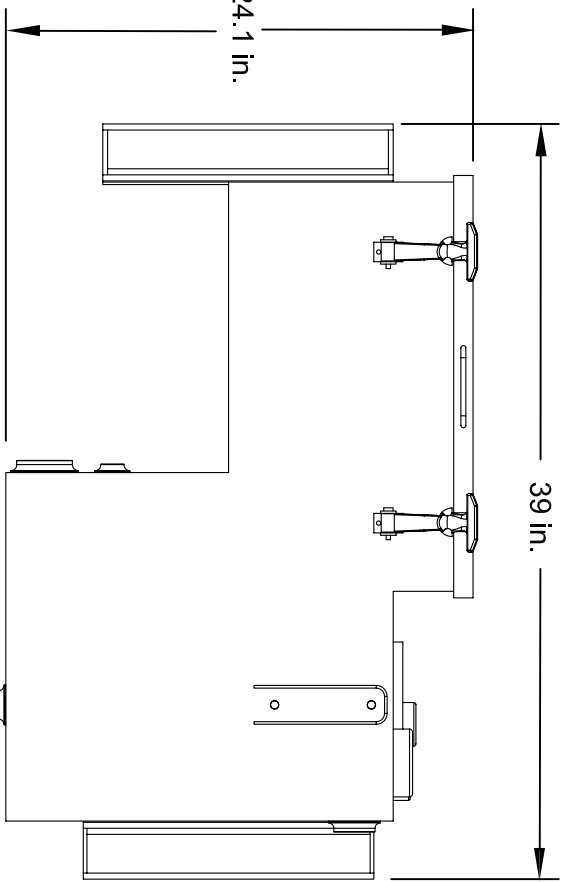
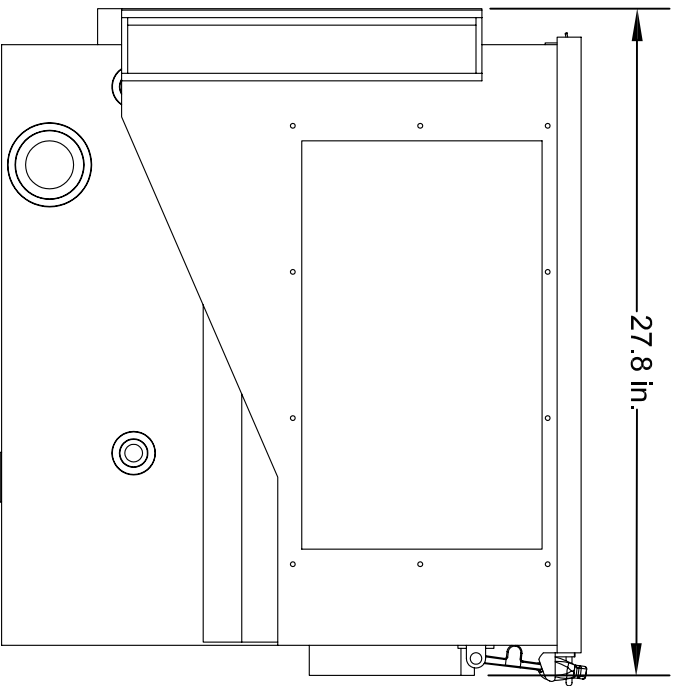
PA DEPARTMENT OF TRANSPORTATION

REVISIONS

NO.	DATE	BY	MINIMUM TRUCK WEIGHT DISTRIBUTION	MINIMUM DATA REQUIRED
1	05-16-07	KNH		
2	07-20-09	TOD		
3	07-24-18	KBD		

DUMP TRUCK WEIGHT DISTRIBUTION

DATE	DRAWN BY	SCALE	CHKD BY	SHEET
07-14-97	DLW	N/A	WHM	EQN-507B SHEET 1 OF 1



PA DEPARTMENT OF TRANSPORTATION

REVISIONS			DRAWN BY		
NO.	DATE	BY	ENCLOSURE / TANK COMBO		
1			TOD		
2			SCALE N/A		
3			DATE 11-03-09		
			CHECKED BY DMA		
			SHEET 1 OF 1		

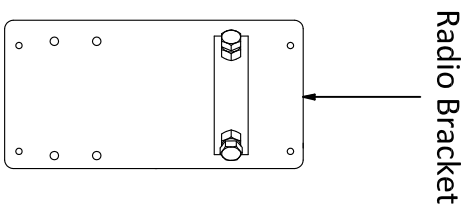
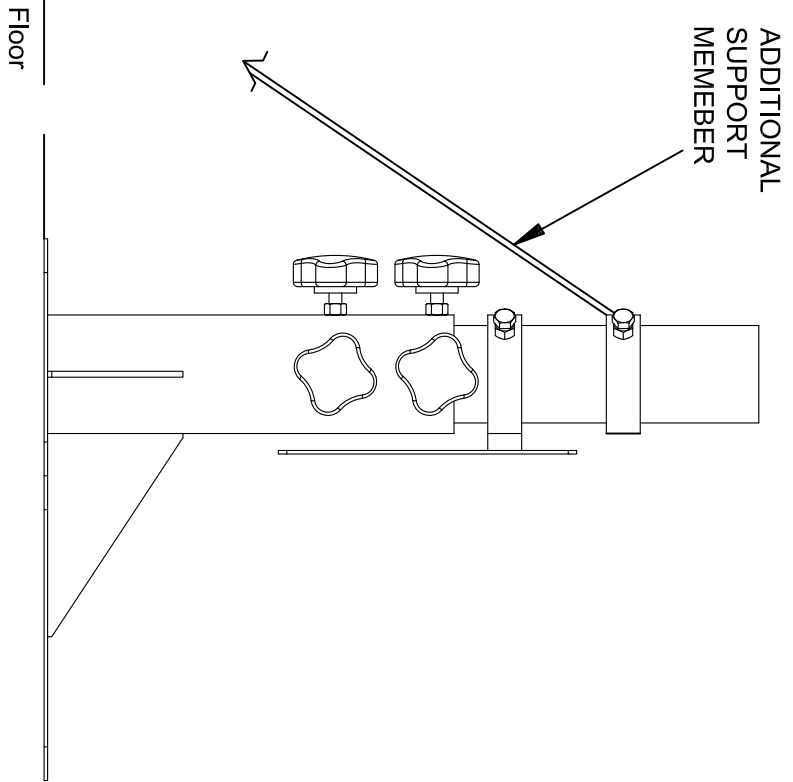
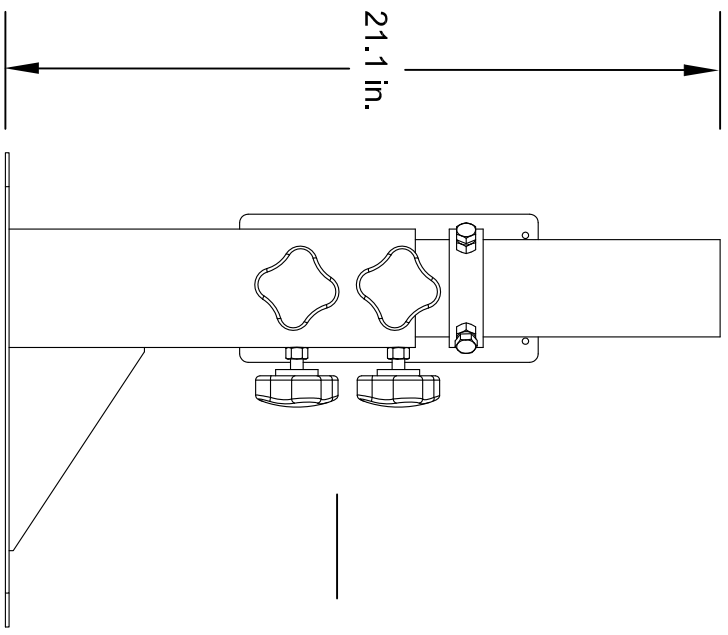
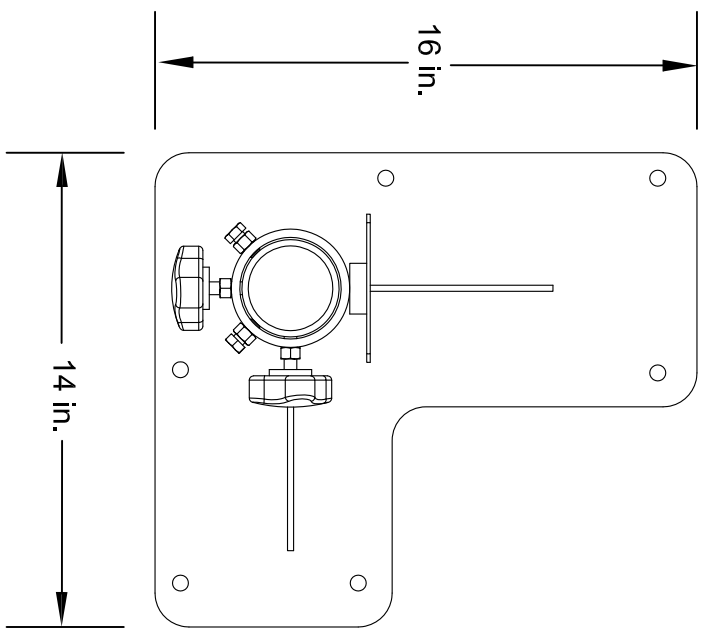
DUMP TRUCK VALVE

ENCLOSURE / TANK COMBO

EQN-508

NOTE: SPREADER CONTROL BASE SHALL BE PROPERLY BRACED TO ELIMINATE FLOOR FLEX. ADDITIONAL SUPPORT BRACKET SHALL BE VENDORS RESPONSIBILITY.

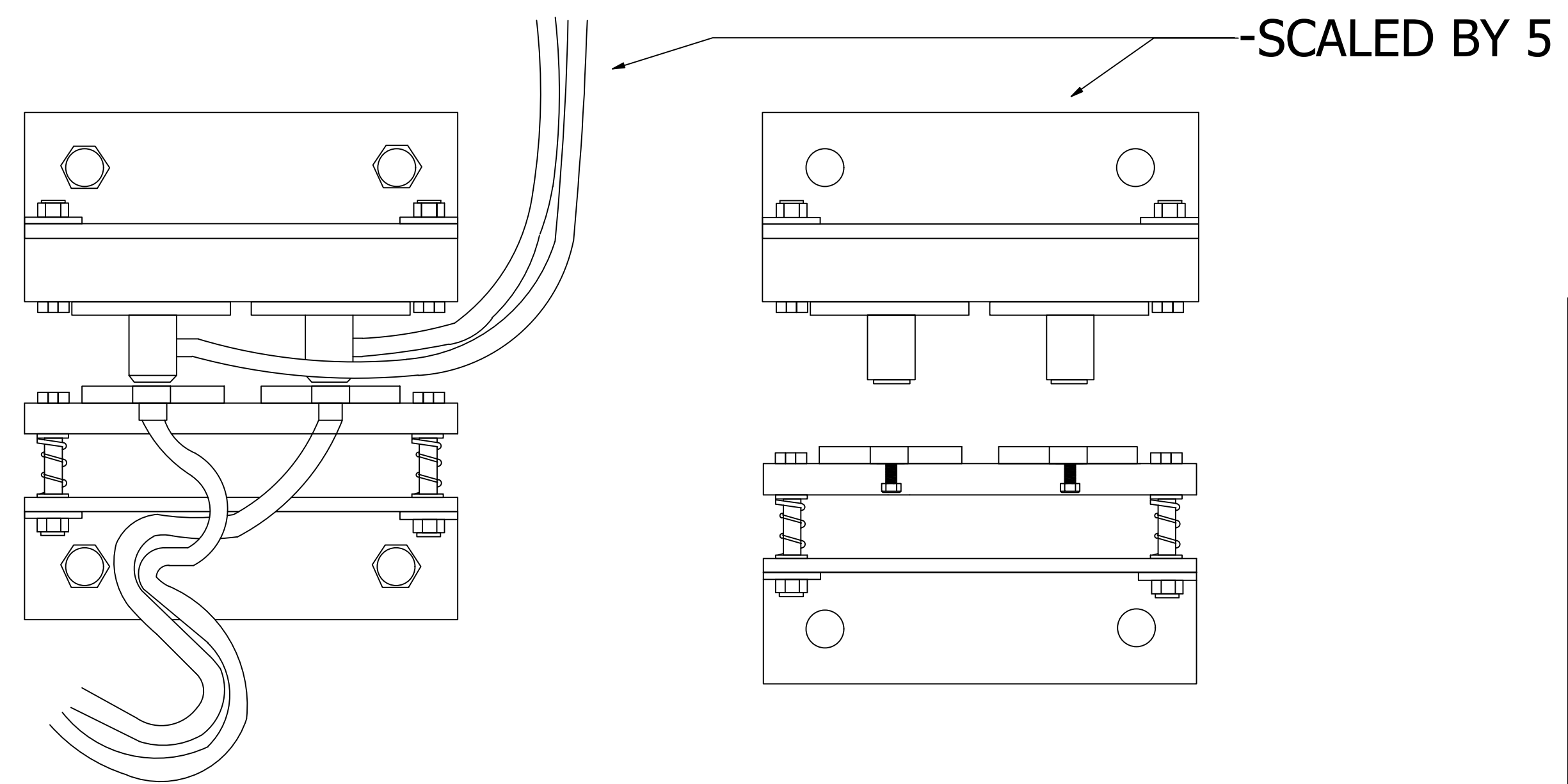
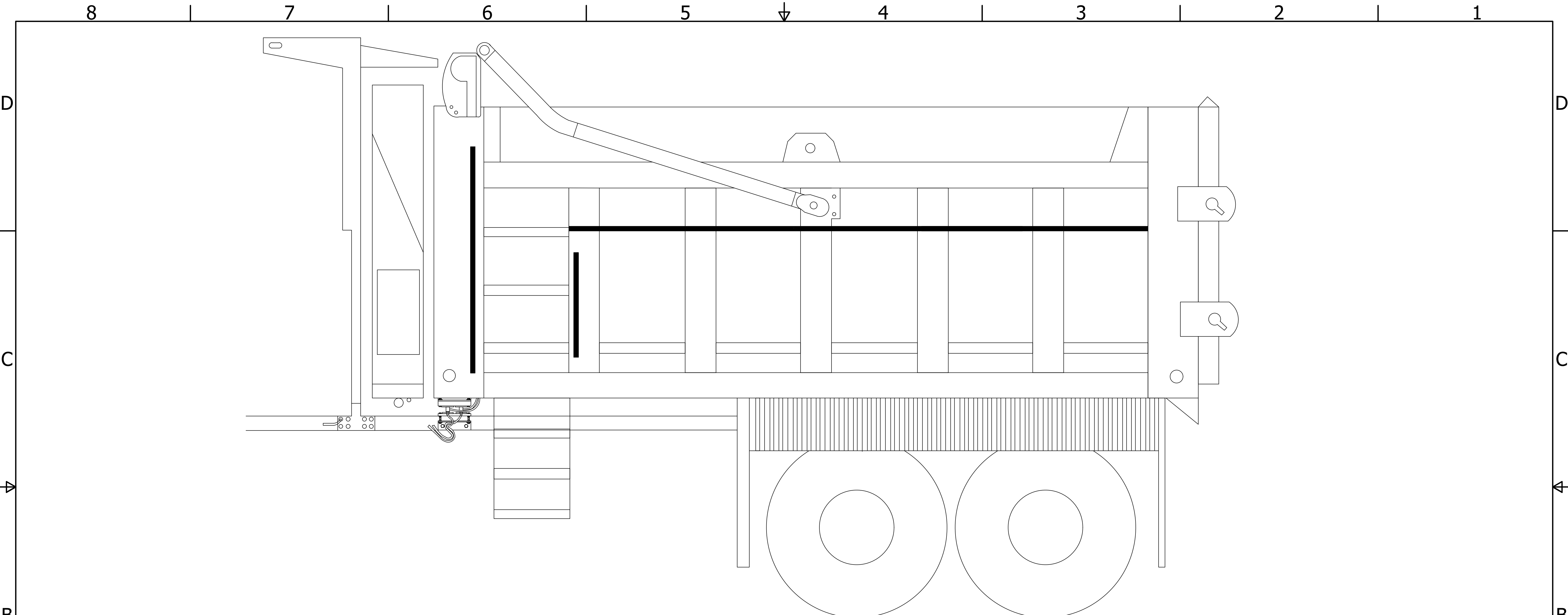
ADDITIONAL SUPPORT BRACKETS SHALL BE USED TO ELIMINATE CONSOLE VIBRATION. SPREADER CONTROL BASE SHALL BE PROPERLY POSITIONED TO ELIMINATE FLOOR FLEX. CAB FLOOR SHALL BE REINFORCED TO ELIMINATE FLEX. ADDITIONAL SUPPORT BRACKETS AND REINFORCEMENTS SHALL BE VENDORS RESPONSIBILITY.



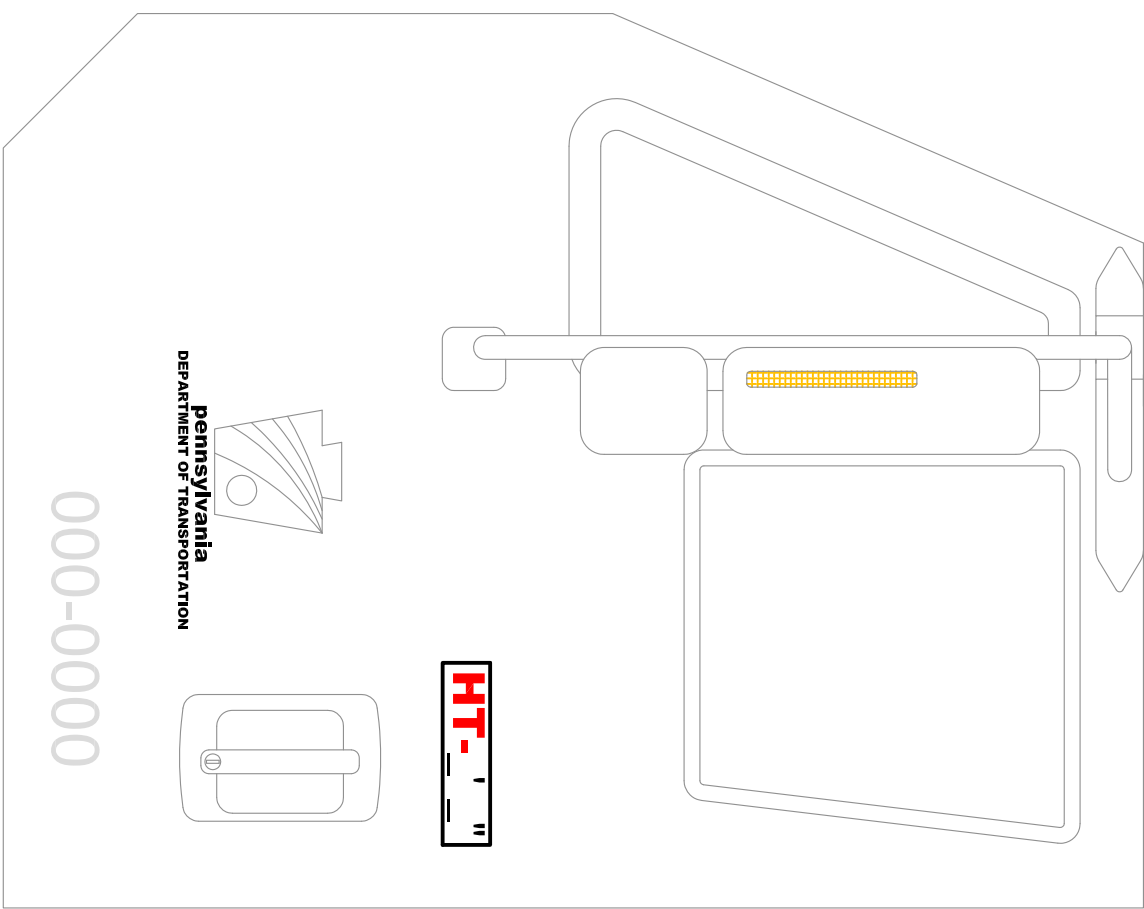
PA DEPARTMENT OF TRANSPORTATION

REVISIONS		DUMP TRUCK SPREADER CONTROL BASE WITH RADIO BRACKET	
NO.	DATE	BY	
1	8-01-18	KBD	
2			
3			

DRAWN BY	TOD	SCALE	N/A	EQN-509
DATE	11-03-09	CHRG BY	DMA	SHEET 1 OF 1

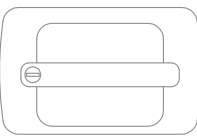
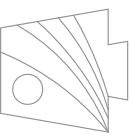


PA DEPARTMENT OF TRANSPORTATION						
REVISIONS			WIRELESS CONNECT AND TARP			
NO.	DATE	BY				
1	07-20-23	DVC				
2			DRAWN BY	JFM	SCALE	N/A
3			DATE	05-28-13	CHECKED BY	INT
			EQN 550			
			SHEET 1 OF 1			



000-0000

pennsylvania
DEPARTMENT OF TRANSPORTATION



THERE SHALL BE A PERMANENT DECAL, 2 INCH HIGH RED LETTERS ON WHITE BACKGROUND AFFIXED BY THE DRIVER SIDE DOOR HANDLE OR OPERATOR STATION STATING THE OVERALL MAXIMUM TRAVEL HEIGHT OF THE COMPLETED AND UNLOADED UNIT.

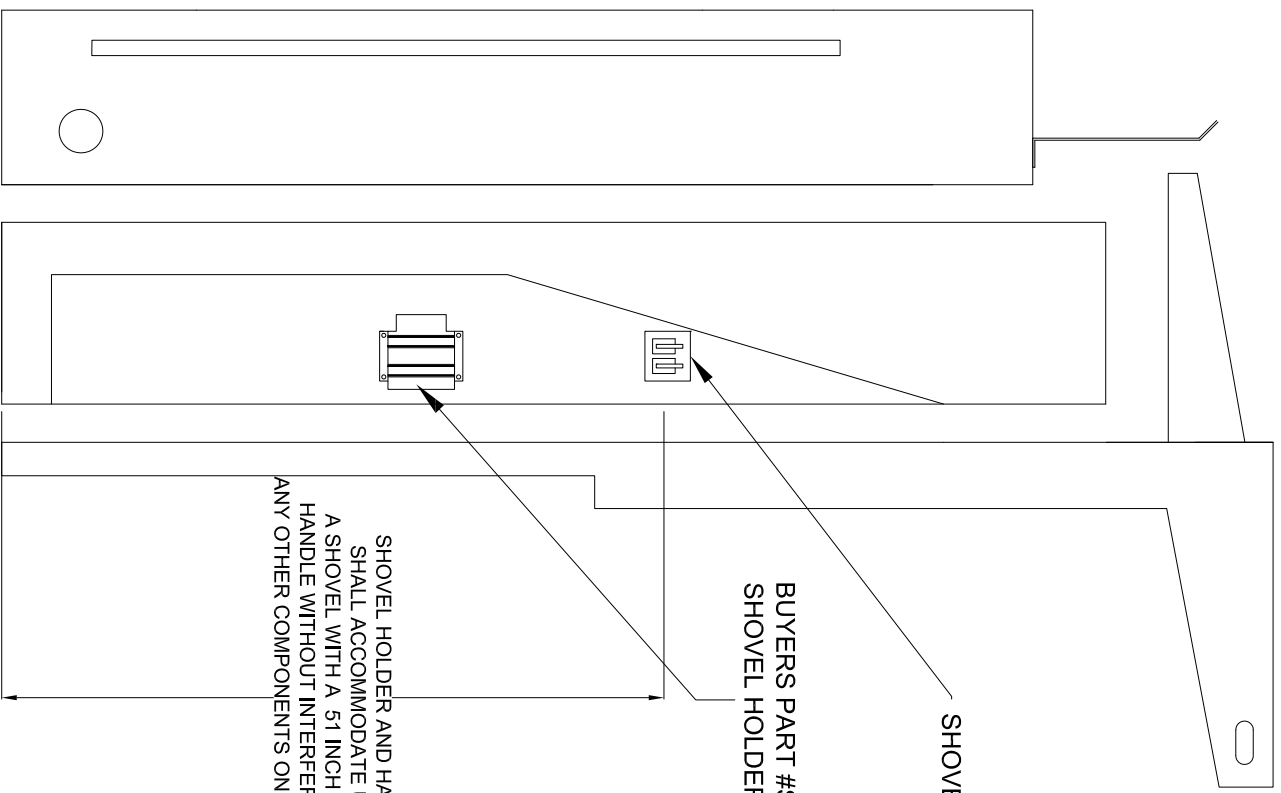
PA DEPARTMENT OF TRANSPORTATION

REVISIONS

NO.	DATE	BY
1	07-06-17	HMR
2	07-25-18	KBD
3		

MAX TRAVEL HEIGHT STICKER

DRAWN BY	JFM	Checked With	
DATE	05-29-13	CHG'D BY	N/A
		Scale	2
			EQN-552
			SHEET 1 OF 1

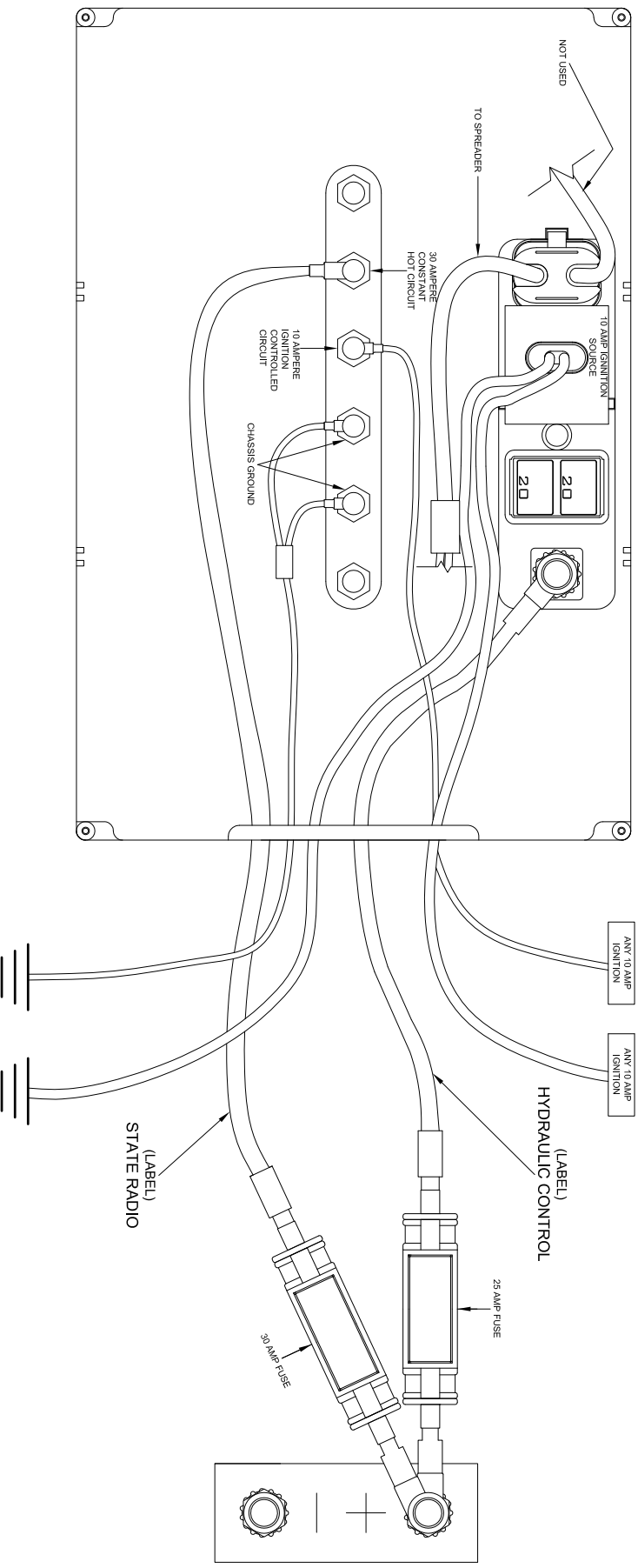


PA DEPARTMENT OF TRANSPORTATION

SHOVEL HOLDER

REVISIONS		
NO.	DATE	BY
1	00-00-00	INT
2		
3		

DRAWN BY	JFM	SCALE	2.2	EQN-557
DATE	05-20-13	CHECKED BY	INT	SHEET 1 OF 1



NOTE:

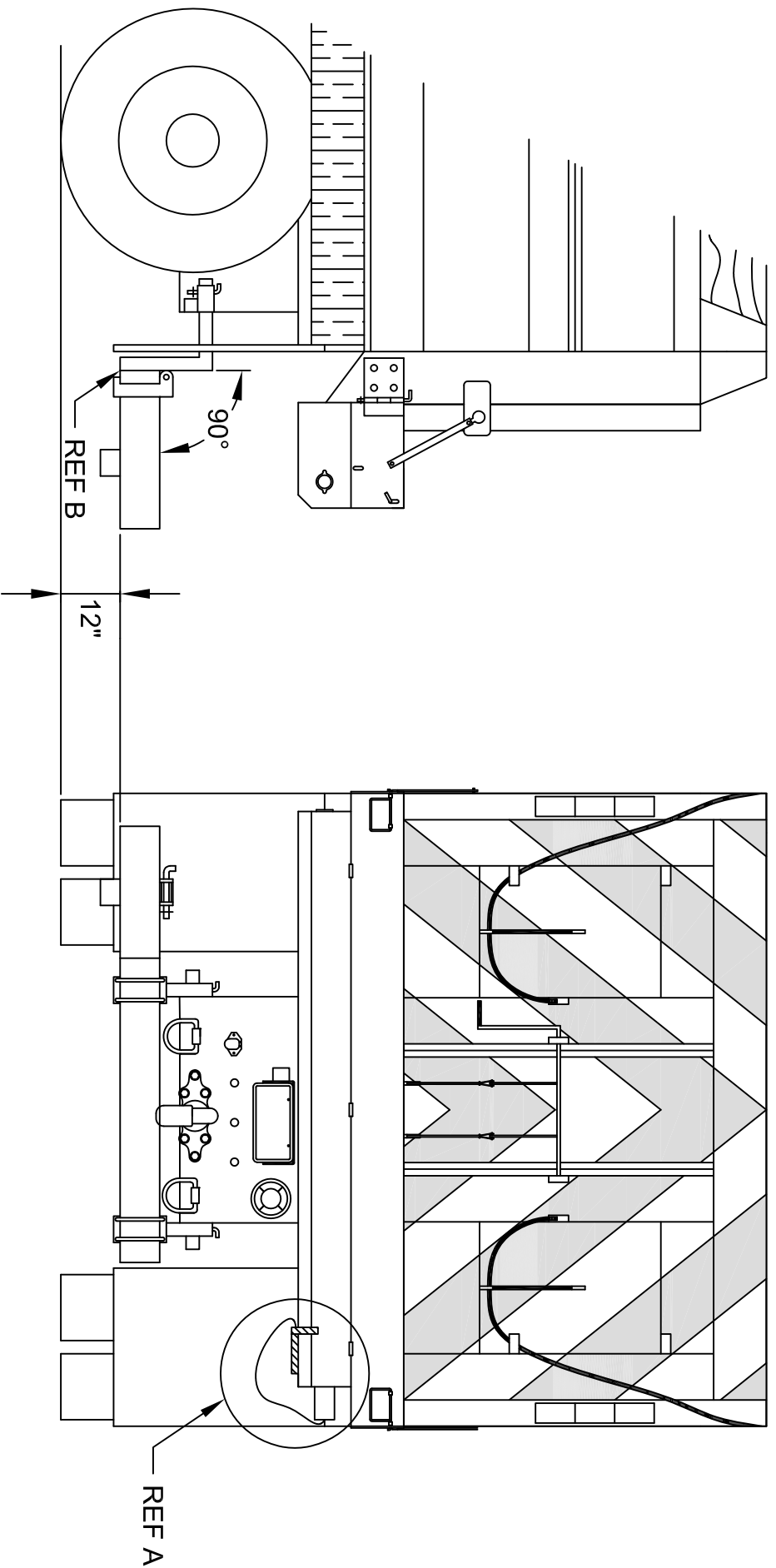
EACH CIRCUIT SHALL BE SUPPLIED INDIVIDUALLY, LABELED, PROPERLY SIZED, PROTECTED FROM WEATHER, AND SEALED TO BE WATERTIGHT.

PA DEPARTMENT OF TRANSPORTATION

POWER DISTRIBUTION BOX FOR STATE RADIO AND SPREADER CONTROLS

NO.	DATE	BY	REVISIONS
1	00-00-00	INT	
2			
3			

DATE	01-08-14	CHK'D BY	INT	SHEET	1 OF 1
DRAWN BY	JFM	SCALE	N/A	EQN-562	



MEASURED FROM GROUND TO BOTTOM OF SPINNER PLATE.
 (WHEN SPINNER IS MOUNTED AT LOWEST SETTING.
 REFERENCE SHEET 6)

NOTES:

- A. STANDARD OEM HYDRAULIC LOCK OUT MECHANISM.
- B. SPINNER MUST BE PERPENDICULAR TO BODY & AT LOWEST SETTING MUST BE LEVEL WITH VERTICAL SQUARE TUBE

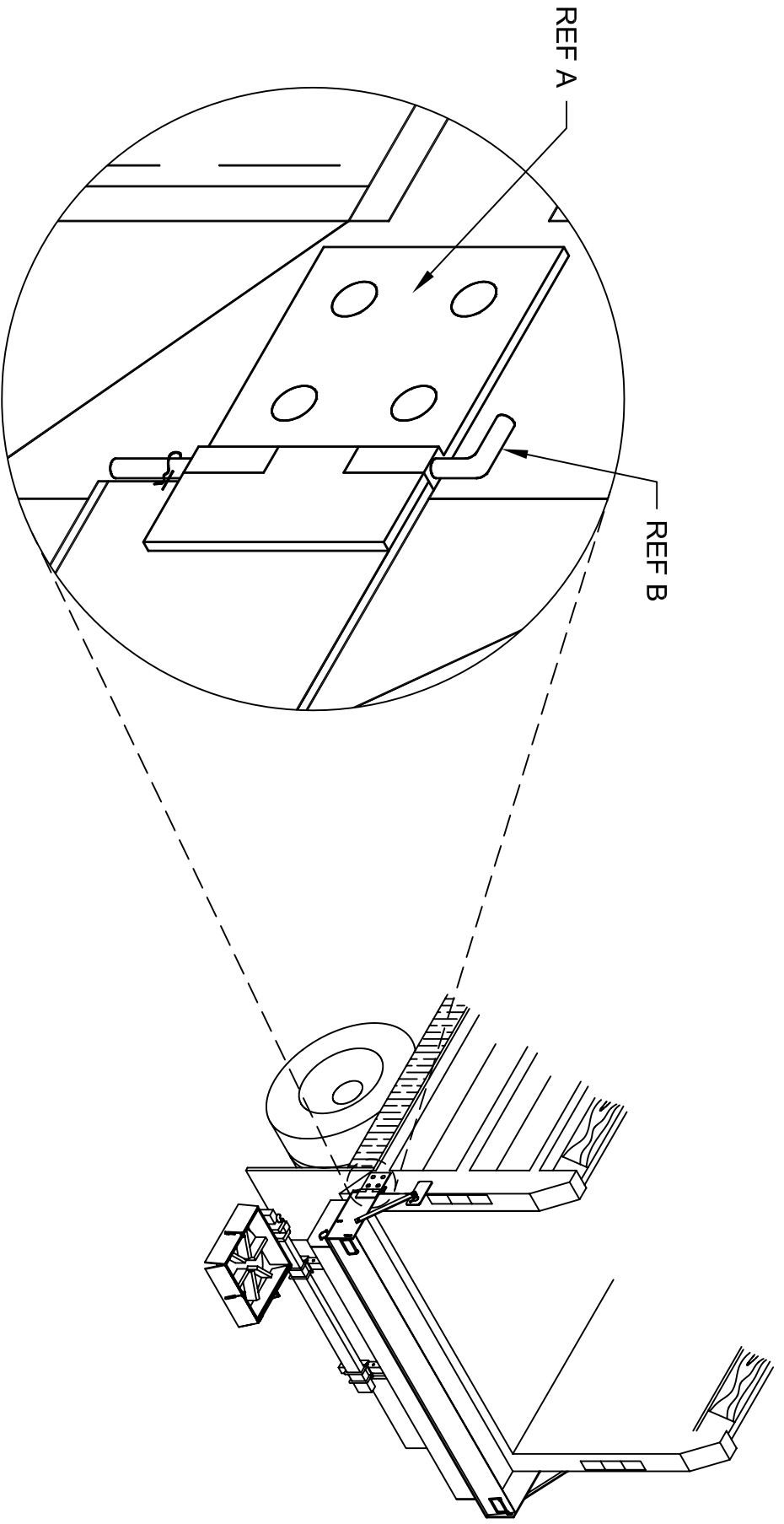
PA DEPARTMENT OF TRANSPORTATION

REVISIONS

UNDER TAILGATE SPREADER WITH IOWA SPINNER

NO.	DATE	BY	DATE	BY
1	07-25-18	KBD		
2	08-02-19	KBD		
3				

DRAWN BY	JJB	Checked With	
DATE	01-09-98	EQM-3 & 3A & 9 & 9A & 10	
CHG'D BY	TSB		
	N/A		



NOTES:

- A. MOUNTING HARDWARE. TO RECEIVE BOTTOM CONTACT POINT OF SPREADER. REFERENCE EQN-3A.
- B. PIN WITH R CLIP. TO ALLOW QUICK DISCONNECT FROM TRUCK.

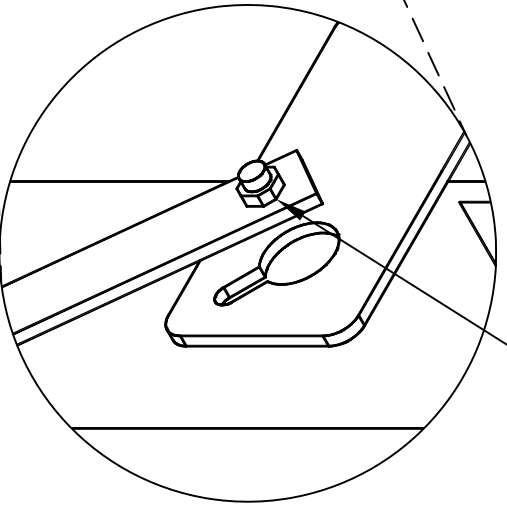
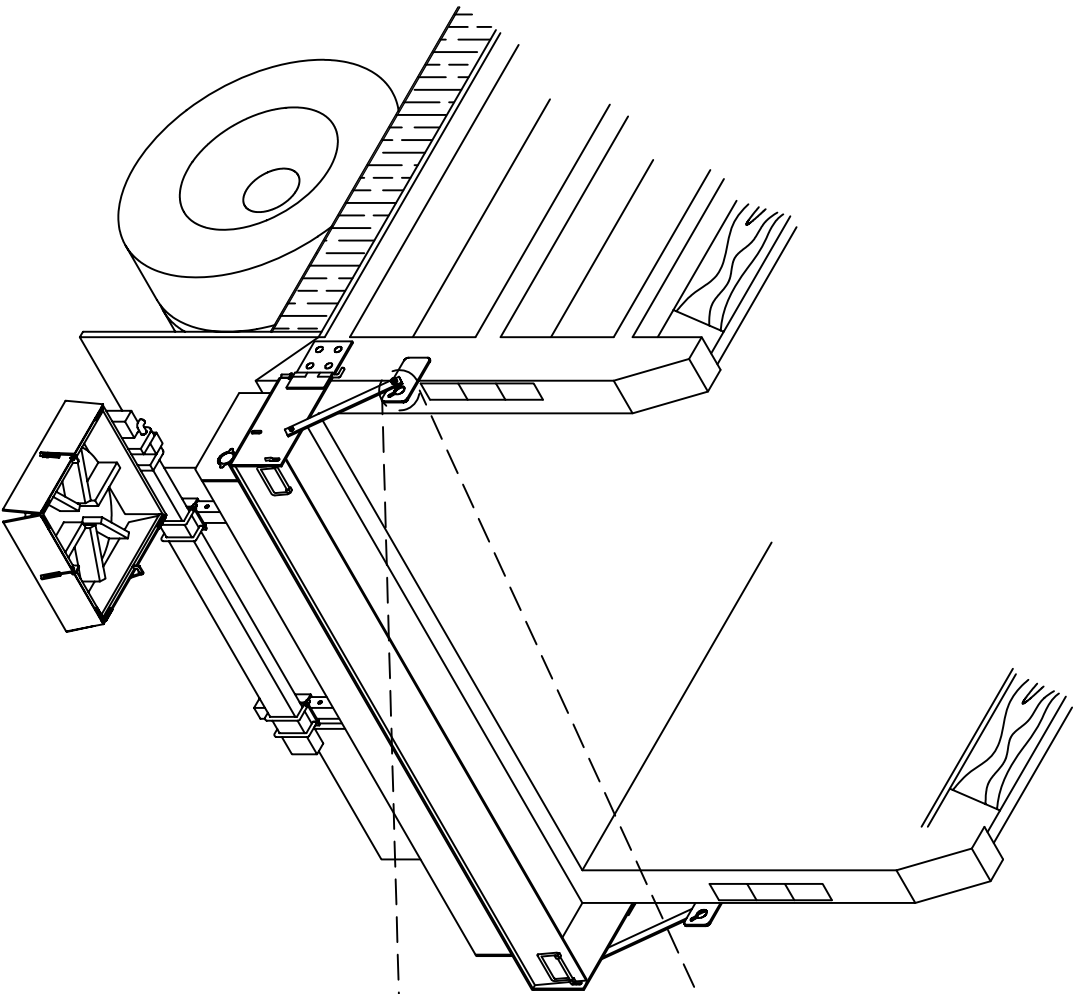
PA DEPARTMENT OF TRANSPORTATION

REVISIONS

NO.	DATE	BY	DESCRIPTION
1	07-25-18	KBD	
2	08-02-19	KBD	
3			

UNDER TAILGATE SPREADER WITH IOWA SPINNER

DRAWN BY	JJB	Combined With EQN-3 & 3A & 9 & 9A & 10	EQN-568
DATE	01-09-98	CHG'D BY	SHEET 2 OF 14
		N/A	



NOTES:

- A. WELDED PLATE WITH HOLE. SHALL BE BOLTED. TO RECEIVE TOP CONTACT POINT OF SPREADER. REFERENCE EQN-3A.

PA DEPARTMENT OF TRANSPORTATION

REVISIONS

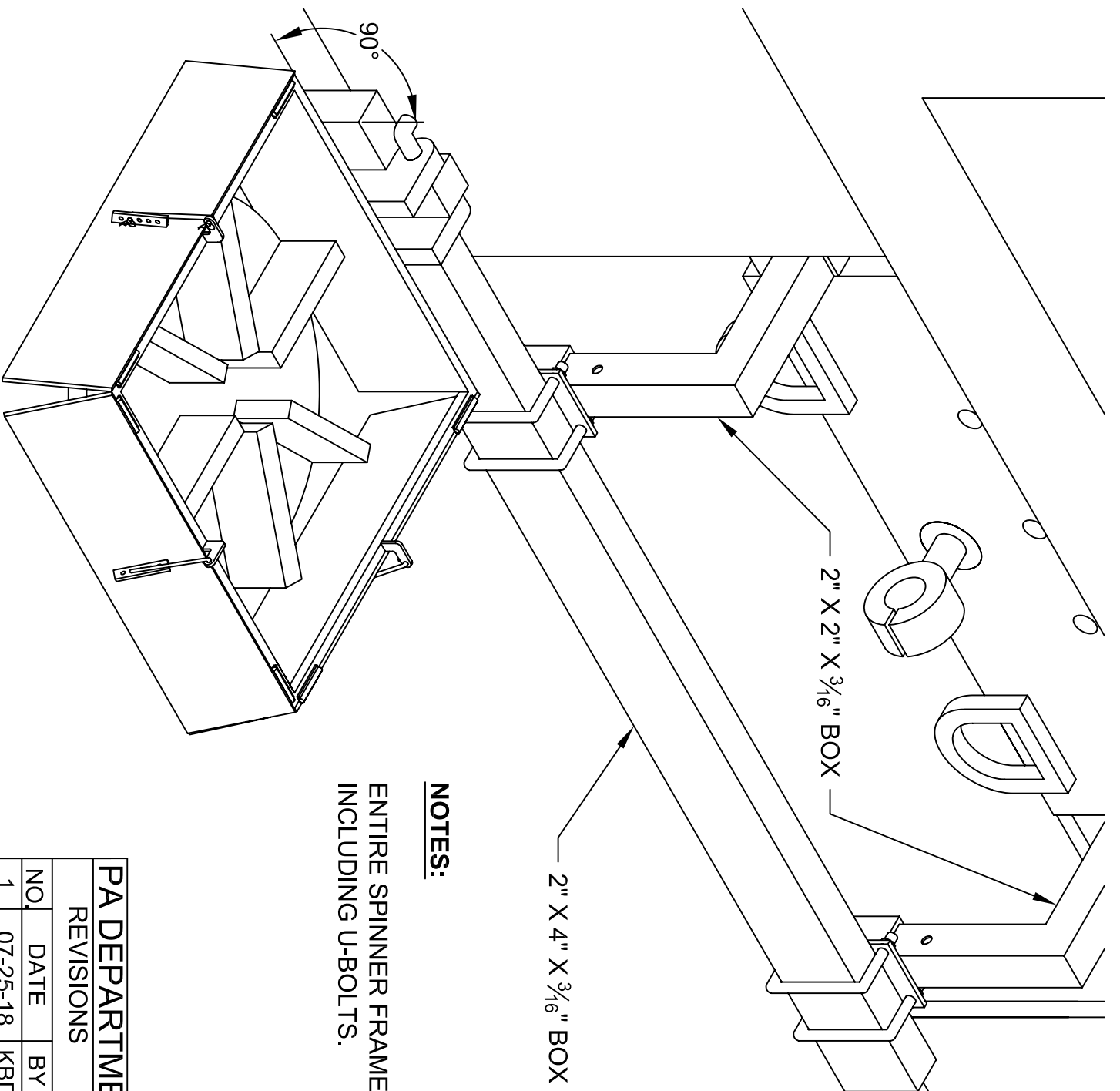
NO.	DATE	BY	DESCRIPTION
1	07-25-18	KBD	
2	08-02-19	KBD	
3			

UNDER TAILGATE SPREADER WITH IOWA SPINNER

DRAWN BY	JJB	Checked With	EQN-3 & 3A & 9 & 9A & 10
DATE	01-09-98	CHG'D BY	N/A
		SCALE	N/A

EQN-568

SHEET 3 OF 14



2" X 4" X 3/16" BOX

2" X 2" X 3/16" BOX

NOTES:

ENTIRE SPINNER FRAME SHALL BE STAINLESS STEEL INCLUDING U-BOLTS.

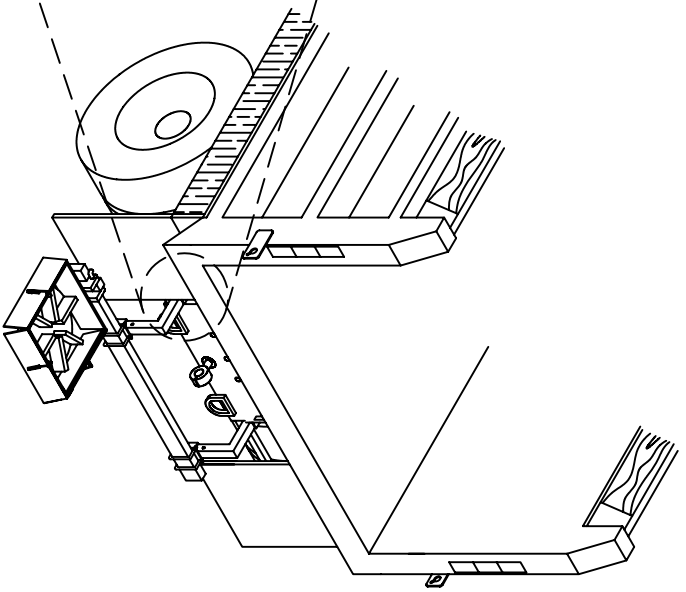
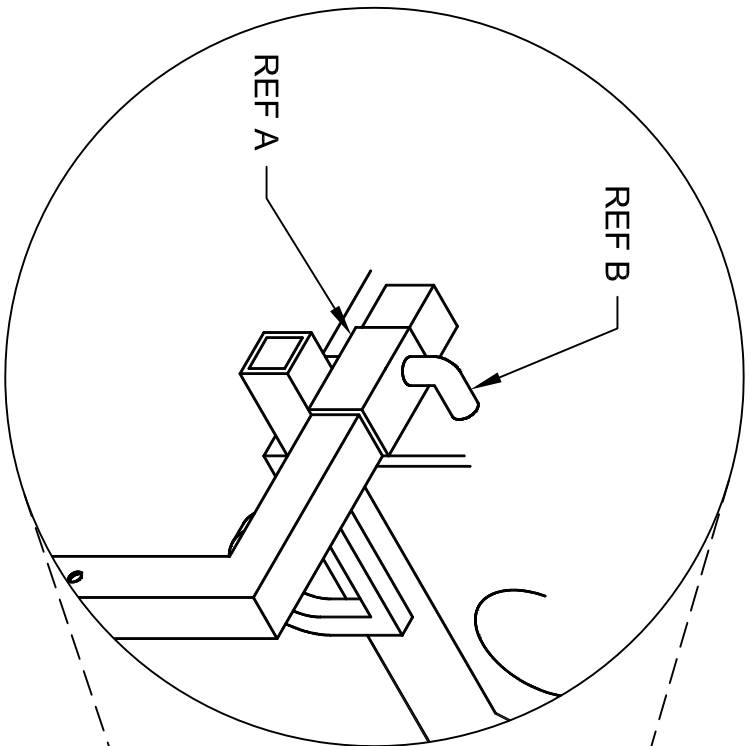
PA DEPARTMENT OF TRANSPORTATION

REVISIONS

NO.	DATE	BY
1	07-25-18	KBD
2	08-02-19	KBD
3		

UNDER TAILGATE SPREADER WITH IOWA SPINNER

DRAWN BY	JJB	Combined With	
DATE	01-09-98	CHG'D BY	EQN-568
		EQN-3 & 3A & 8 & 9A & 10	
		DATE	
		N/A	N/A
			SHEET 4 OF 14



NOTES:

- A. WELDED 2 INCH RECEIVER. SHALL BE MOUNTED TO NOT INTERFERE WITH ICC BUMPER.
- B. PIN WITH R CLIP. TO SECURE SPINNER MOUNT TO CHASSIS.

PA DEPARTMENT OF TRANSPORTATION

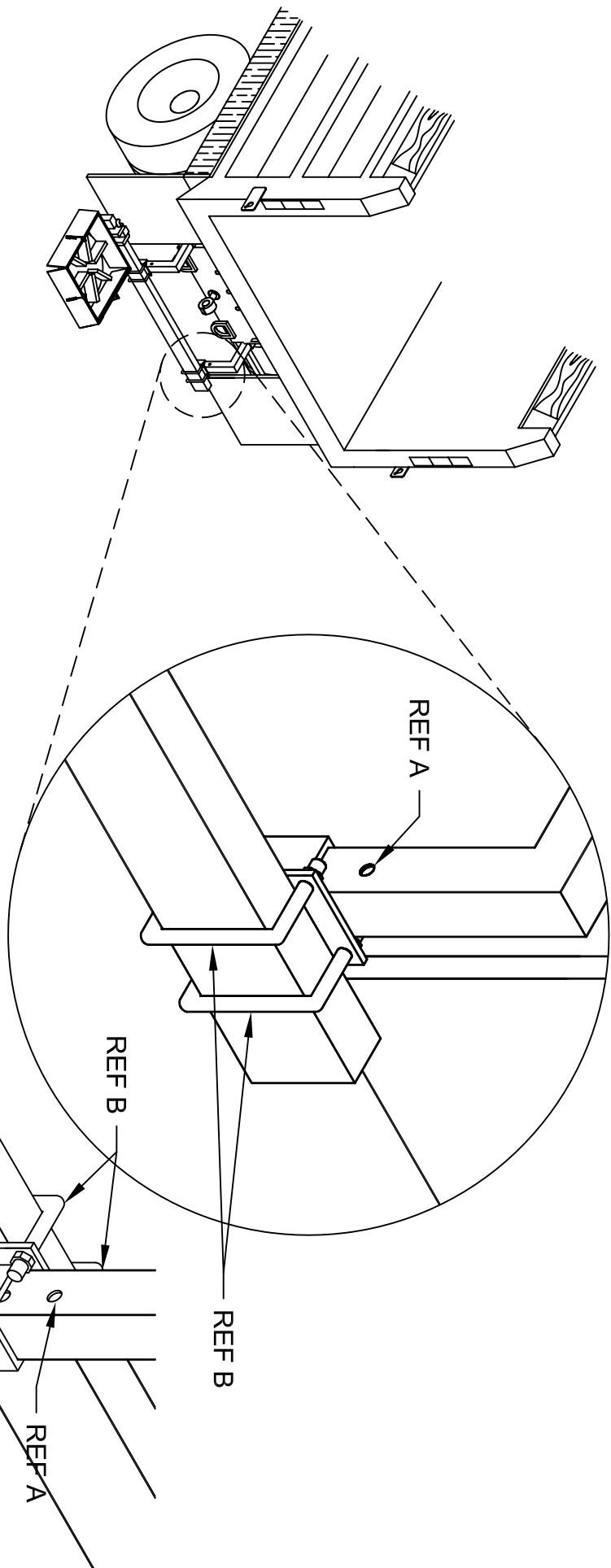
REVISIONS

NO.	DATE	BY
1	07-25-18	KBD
2	08-02-19	KBD
3		

NO.	DATE	BY
1	07-25-18	KBD
2	08-02-19	KBD
3		

UNDER TAILGATE SPREADER WITH IOWA SPINNER

DRAWN BY		JJB	Combined With		EQN-568
DATE	01-09-98	CHG'D BY	N/A	TRK'D	SHEET 5 OF 14
			N/A	N/A	



NOTES:

- A. VERTICAL ADJUSTMENT HOLES. 2 INCH SPACING ON CENTER.
- B. U BOLTS. TO ALLOW HORIZONTAL ADJUSTMENT OF SPINNER.
- C. PIN WITH R CLIP. TO ALLOW VERTICAL ADJUSTMENT OF SPINNER.

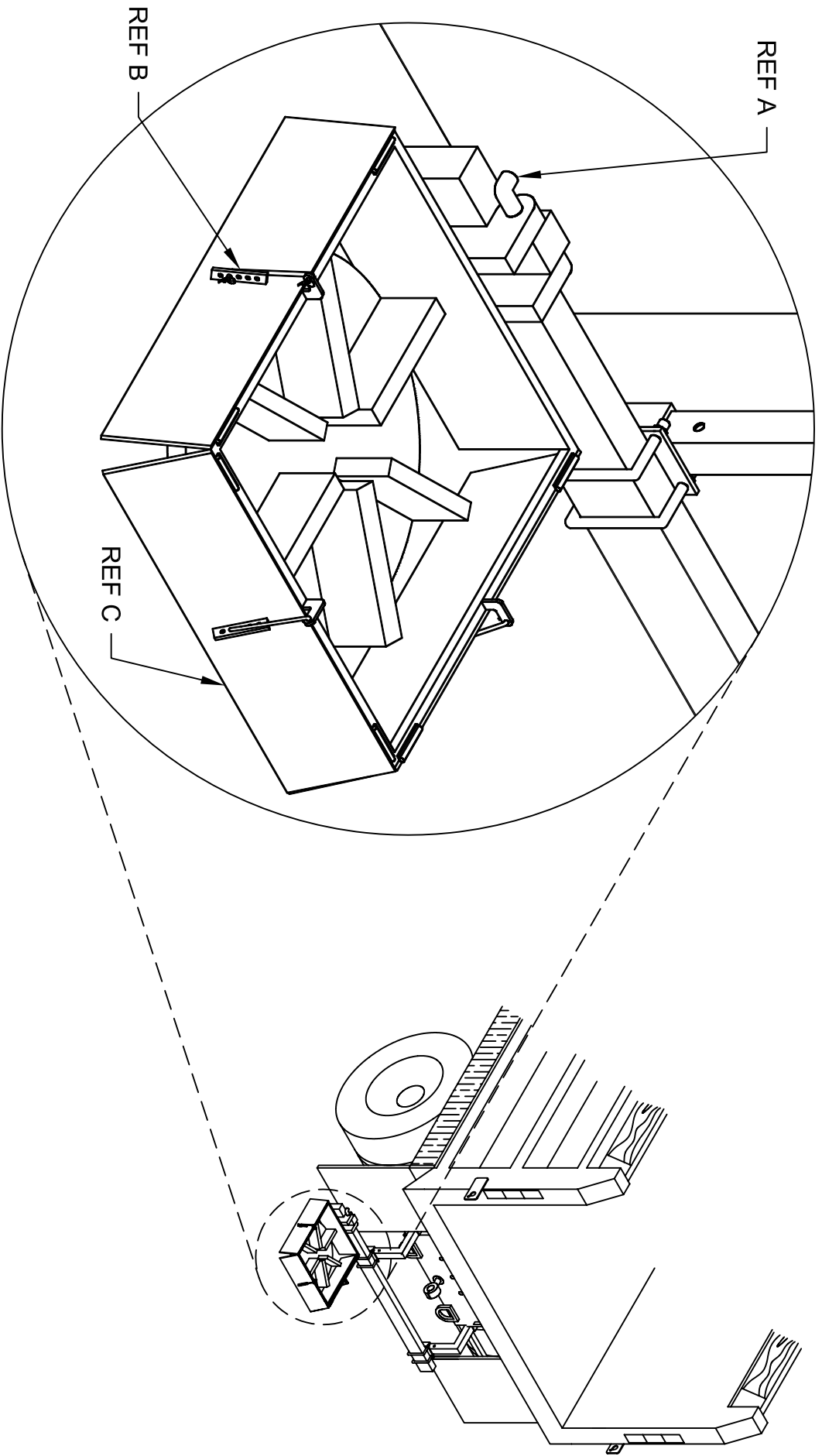
PA DEPARTMENT OF TRANSPORTATION

REVISIONS

NO.	DATE	BY	DESCRIPTION
1	07-25-18	KBD	Initial Design
2	08-02-19	KBD	Revised Design
3			

UNDER TAILGATE SPREADER WITH IOWA SPINNER

DRAWN BY	JJB	Checked With	EQN-3 & 3A & 9 & 9A & 10	EQN-568
DATE	01-09-98	CHG'D BY	N/A	SHEET 6 OF 14



NOTES:

- A. PINNED MECHANISM WITH R CLIP. TO ALLOW VERTICAL MOVEMENT OF SPINNER IF CONTACTED BY THE GROUND.
- B. FLAP BRACKET. TO ALLOW HEIGHT ADJUSTMENT OF SPINNER FLAPS.
- C. IOWA STYLE SPINNER FLAPS. TO ALLOW DIRECTIONAL SPREADING OF MATERIAL.

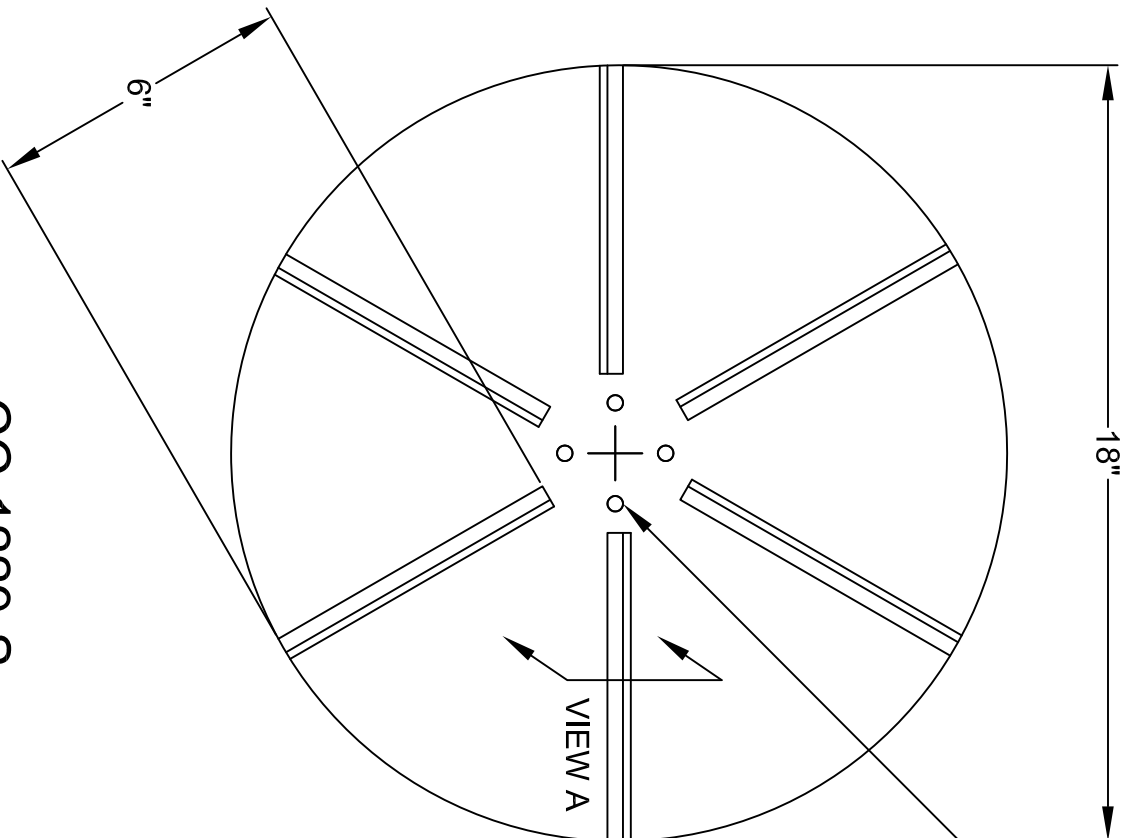
PA DEPARTMENT OF TRANSPORTATION

REVISIONS

NO.	DATE	BY	DESCRIPTION
1	07-25-18	KBD	
2	08-02-19	KBD	
3			

UNDER TAILGATE SPREADER WITH IOWA SPINNER

DRAWN BY	JJB	Combined With	EQN-568
DATE	01-09-98	CHG'D BY	N/A
		DATE	N/A
			SHEET 7 OF 14



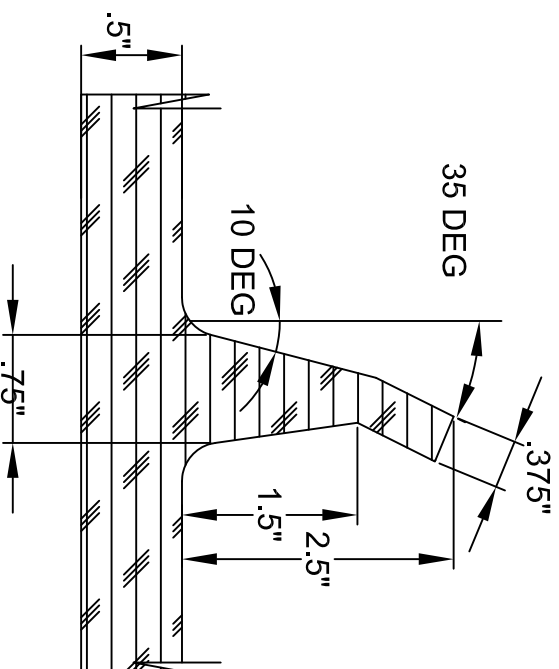
CC-1229-S

C.U.E. Inc
 11 Leonberg Township
 16066 U.S.A.

.375 Dia. HOLE REINFORCED
 WITH STEEL WASHERS (4)
 PLACES ON 4" B.C.

NOTES:

1. MATERIAL 80 DURO. URETHANE
2. WEIGHT 8.1 lbs. PER PIECE
3. ROTATION: COUNTER CLOCKWISE
4. ALL DIMENSIONS IN INCHES.

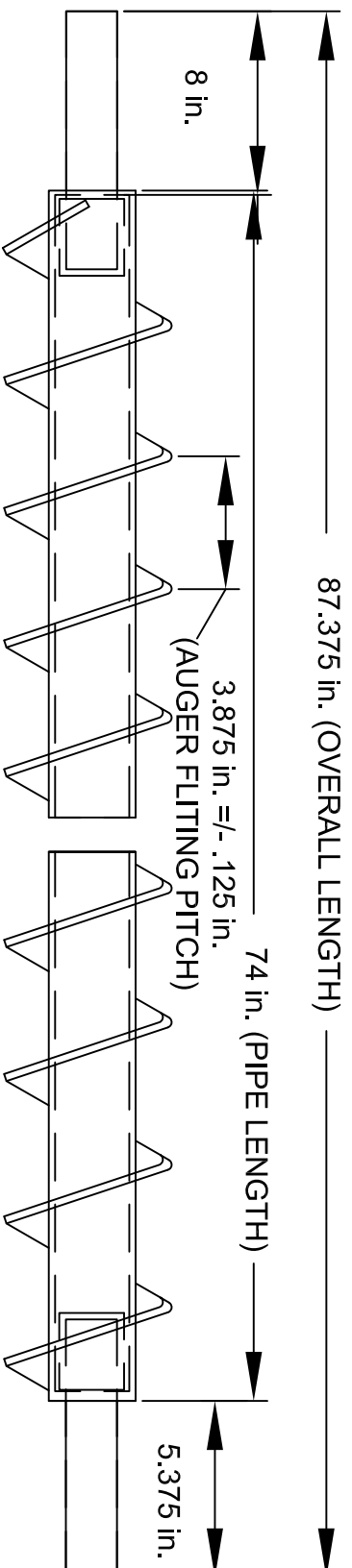


PA DEPARTMENT OF TRANSPORTATION

REVISIONS

NO.	DATE	BY	DRAWN BY	DATE	CHK'D BY	Scale	EQN-568
1	05-23-07	CJW	JJB	01-09-98	N/A	N/A	EQN-568
2	07-25-18	KBD	JJB	01-09-98	N/A	N/A	EQN-568
3	08-02-19	KBD	JJB	01-09-98	N/A	N/A	EQN-568

SPINNER / SPREADER TAILGATE
 URETHANE



HELICOID FLIGHT (RIGHT HAND)
SINGLE CONTINUOUS SCREW TYPE
(BAR SIZE, BEFORE ROLLING, TO BE
SUCH THAT FITTING O.D. IS AS SHOWN
IN END VIEW AT RIGHT, AND OUTER
EDGE THICKNESS IS AS SHOWN IN
FLITTING THICKNESS SPECIFICATION)

VIEW SHOWING COMPLETE
AUGER WELDMENT

2 in. (2.375 O.D.)
SCHEDULE 80 (.20 in. WALL)
CARBON STEEL PIPE
(PIPE SIZE E.R.W. TUBING ACCEPTABLE)

8 in.

87.375 in. (OVERALL LENGTH)

74 in. (PIPE LENGTH)

3.875 in. +/- .125 in.
(AUGER FLITTING PITCH)

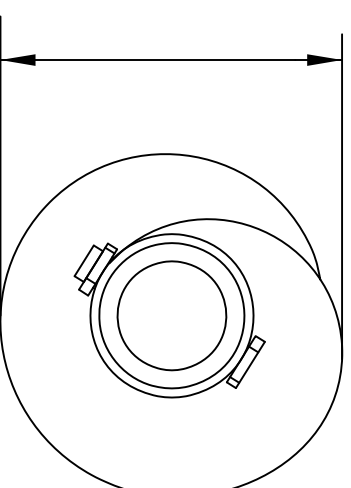
5.375 in.

SPECIFICATION NOTES

1. PIPE PORTIONED WORTH (WITH WELDED FITTING) TO BE STRAIGHT TO GIVE MAXIMUM OF .20 IN. TOTAL RUNOUT
2. BOTH STUB SHAFT CENTERLINES TO LIE ON PIPE CENTERLINE TO GIVE MAXIMUM OF .20 IN. TOTAL RUNOUT
3. ALL SURFACES OF SLEEVE, SHAFT, AND OTHER 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 DEG
DECIMAL MACHINING	0.00- +/- .040 0.00- +/- .020 0.000- +/- .005

IMPLIED TOLERANCES DO NOT APPLY
TO REFERENCE DIMENSIONS



5.875 in.
+/- .125 in. O.D.

PA DEPARTMENT OF TRANSPORTATION

REVISIONS

**Penndot SPREADER AUGER
DETAIL (S/S & RUBBER
THROUGH)**

NO.	DATE	BY	DRAWN BY	DATE	Scale	EQN-568
1	9-20-07	BAG	JJB	01-09-98	AS SHOWN	
2	7-25-18	KBD				
3	08-02-19	KBD				

DRIVE BEARINGS:

THE FOLLOWING SHALL INDICATE MINIMUM REQUIREMENTS INCLUDING ALL GENUINE PARTS, ACCESSORIES, EQUIPMENT, AND SAFETY FEATURES CONSIDERED STANDARD, WHETHER MENTIONED HEREIN OR NOT. THE VEHICLE SHALL COMPLY WITH ALL CURRENT APPLICABLE FEDERAL SAFETY STANDARDS AND OSHA REQUIREMENTS.

THE PURPOSE OF THESE SPECIFICATIONS IS TO DESCRIBE A BEARING CAPABLE OF BEING USED ON OUR TAILGATE SPREADERS.

UNLESS OTHERWISE SPECIFIED, EACH UNIT SHALL INCLUDE ALL SPECIFIED PARTS, MADE AVAILABLE FOR THE INDICATED MODEL BY THE EQUIPMENT MANUFACTURER. SPECIFIED ITEMS NOT AVAILABLE THROUGH THE EQUIPMENT MANUFACTURER SHALL CONFORM TO THE BEST QUALITY STANDARDS KNOWN TO THAT PARTICULAR INDUSTRY.

EACH UNIT SHALL BE CLEAN, LUBRICATED, AND SERVICED READY FOR IMMEDIATE OPERATION.

PERFORMANCE:

THE PROPOSED UNIT SHALL BE IDENTICAL WITH THE STANDARD OR IMPROVED MODEL AND A CURRENT PRODUCTION UNIT IN USE BY THE INDUSTRY FOR THE PAST TWELVE MONTHS PRECEDING THIS BID OPENING. IT SHALL BE THE RESPONSIBILITY OF THE BIDDER TO ASSURE THAT THE PROPOSED EQUIPMENT CONFORMS TO THE SPECIFICATIONS AND PERFORMS SATISFACTORILY ACCORDING TO THESE SPECIFICATIONS.

GRADE:

REFERENCE: AMERICAN FRICTION BEARING MANUFACTURERS ASSOCIATION #1, PRECISION

TYPE:

SELF-ALIGNING, ANTI-FRICTION, THRUST, RE-LUBE TYPE.

MOUNTING:

2 BOLT UNIT FLANGED UNIT TYPE. SEE DRAWING.

PA DEPARTMENT OF TRANSPORTATION

REVISIONS

NO.	DATE	BY
-----	------	----

1	4-4-07	KNH
---	--------	-----

2	07-25-18	KBD
---	----------	-----

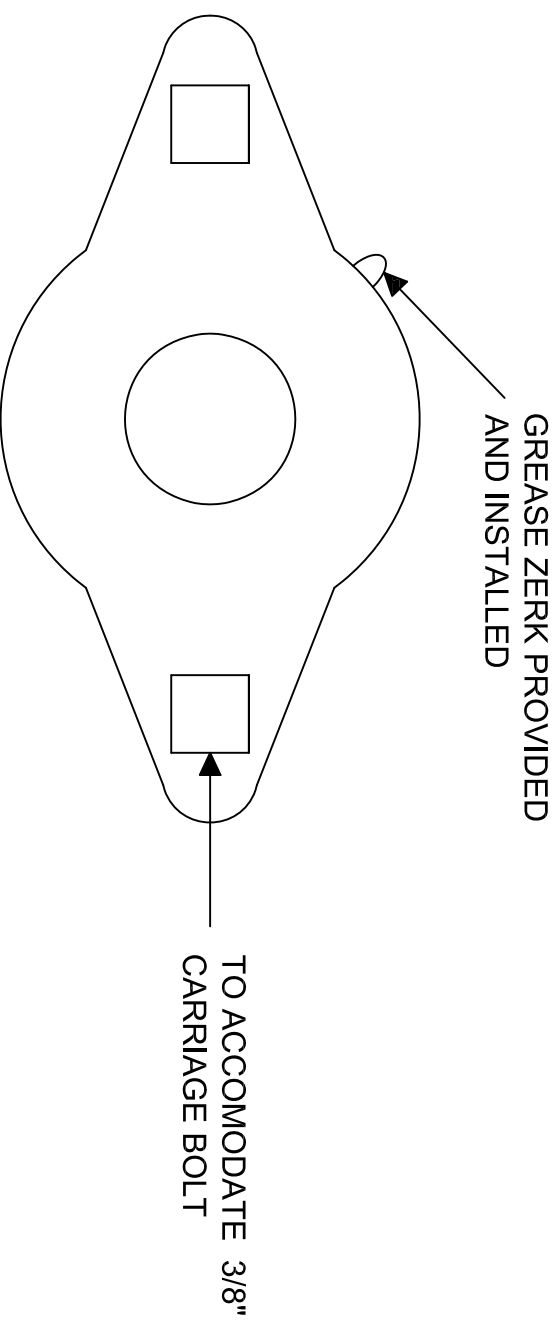
3	08-02-19	KBD
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**SPREADER BEARING
INFORMATION**

NO.	DATE	BY
-----	------	----

1	4-4-07	KNH
2	07-25-18	KBD
3	08-02-19	KBD

MOUNTINGS:
 2 BOLT (SQUARE HOLES) FLANGED UNIT TYPE. SEE DRAWING.



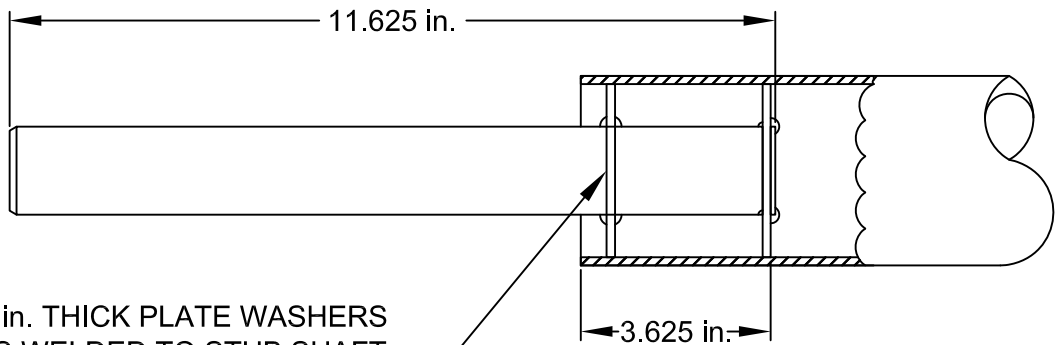
SHAFT DIAMETER: 1-1/4"

LOCKING: RETAINING COLLAR SHALL BE ECCENTRIC WITH SET SCREW.

HOUSING: CASE, DUCTILE OR MALLEABLE IRON.

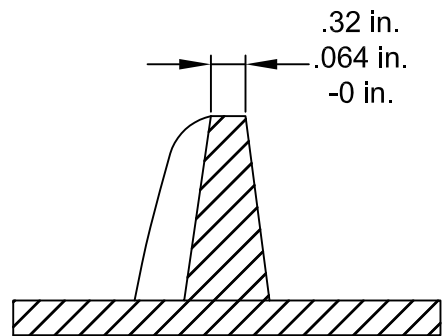
REFERENCE: LINK BELT FXWG 2E2ou, FAFNIR GVF TDS, ROBERTS FBPZ-20L, BROWNING MODEL #VF2E-120SM, SST MODEL #SAFG 206-20G, IPTCI MODEL SALF 206-20

PA DEPARTMENT OF TRANSPORTATION			
REVISIONS		SPREADER BEARING INFORMATION	
NO.	DATE	BY	
1	4-4-07	KNH	
2	07-25-18	KBD	<small>DRAWN BY</small> JJB <small>Checked With</small> <small>EQN-5 3A & 3 & 3A 3/10</small>
3	08-02-19	KBD	<small>DATE</small> 01-09-98 <small>CHKD BY</small> N/A <small>Scale</small> N/A <small>EQN-568</small>
			SHEET 11 OF 14



.125 in. THICK PLATE WASHERS
CONTINUOUS WELDED TO STUB SHAFT
AND AUGER PIPE

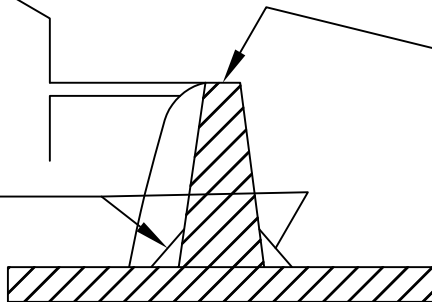
WASHERS TO FIT I.D. OF PIPE WITH
CLOSE SLIDING FIT SO NO FLEXING
OF SHAFT EXISTS AFTER FINAL WELDING



**FLITING THICKNESS SPECIFICATION
(BEFORE HARDSURFACING)**

.125 in. (MINIMUM)
HARDSURFACE

CONTINUOUS WELD
BOTH SIDES OF
FLITING



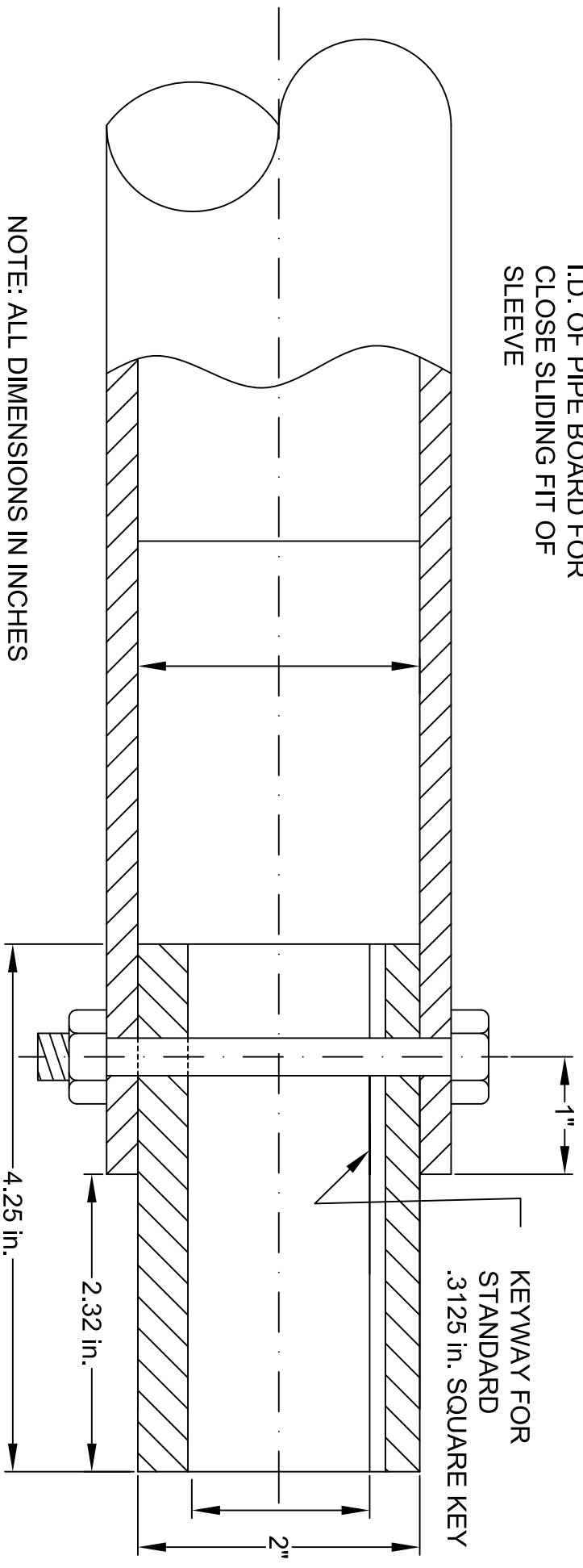
OUTER FLITE PERIPHERY CONTINUOUSLY
HARDSURFACED WITH ABRASIVE RESISTANCE
WELDING ROD (OR WIRE) EQUIVALENT TO
STUDY 121 (ROCKWELL HARDNESS C-44),
AND TO BE FULL WIDTH OF FLITING
THICKNESS AT OUTEREDGE

WELDING AND HARDSURFACE SPECIFICATION

PA DEPARTMENT OF TRANSPORTATION					
REVISIONS			UNDER TAILGATE SPREADER WITH IOWA SPINNER		
NO.	DATE	BY			
1	05-28-02	DWG			
2	09-20-07	BAG	DRAWN BY	JJB	Combined With EQN-3 & 3A & 9 & 9A & 10
3	08-02-19	KBD	DATE	01-09-98	EQN-568
			CHKD BY	N/A	Scale N/A
			SHEET 12 OF 14		

VIEW SHOWING DRIVE, STAINLESS AND RUBBER THROUGH SPREADERS

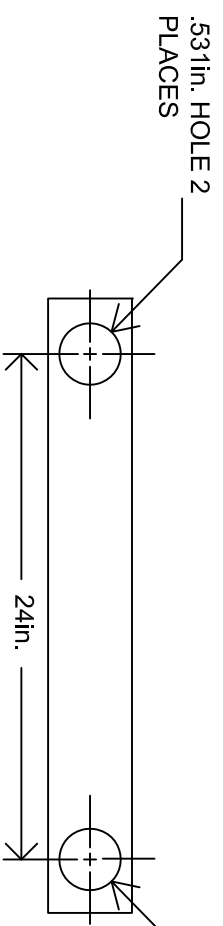
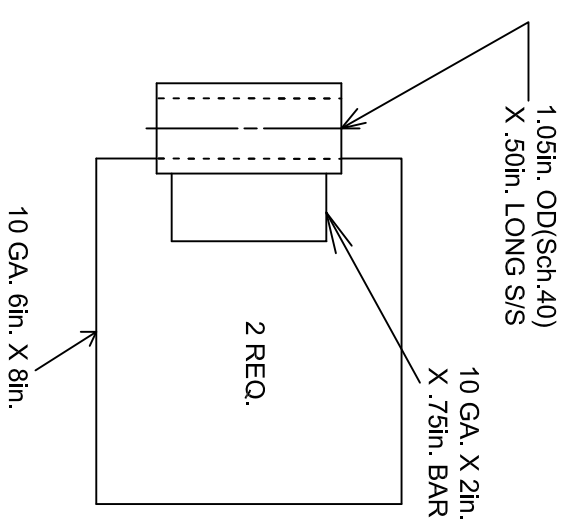
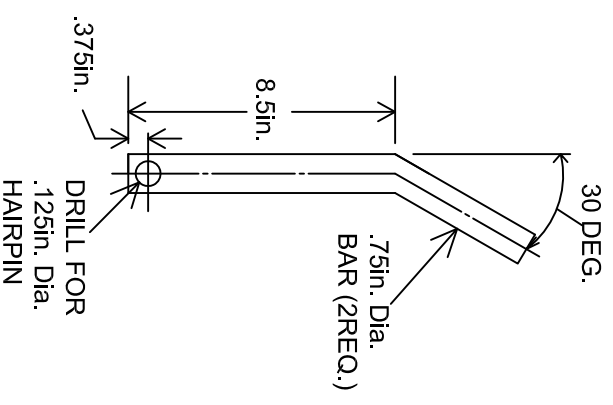
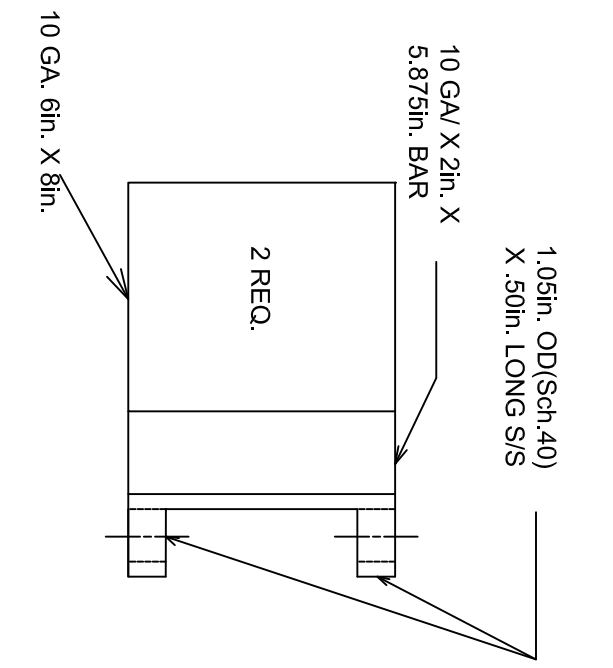
I.D. OF PIPE BOARD FOR
CLOSE SLIDING FIT OF
SLEEVE



1.25 in. Dia BORE
THROUGH (TO ACCEPT
HYDRAULIC MOTOR SHAFT AND AUGER
STUB SHAFT INTERCHANGEABLY)

SPREADER TAILGATE

PA DEPARTMENT OF TRANSPORTATION			
REVISIONS		AUGER DRIVE SLEEVE INSTRUCTION	
NO.	DATE	BY	DRAWN BY
1	10-02-06	CJW	JJB
2	07-25-18	KBD	Combined with EQN-5 & 3A & 9 & 3A & 10
3	08-02-19	KBD	DATE 01-09-98

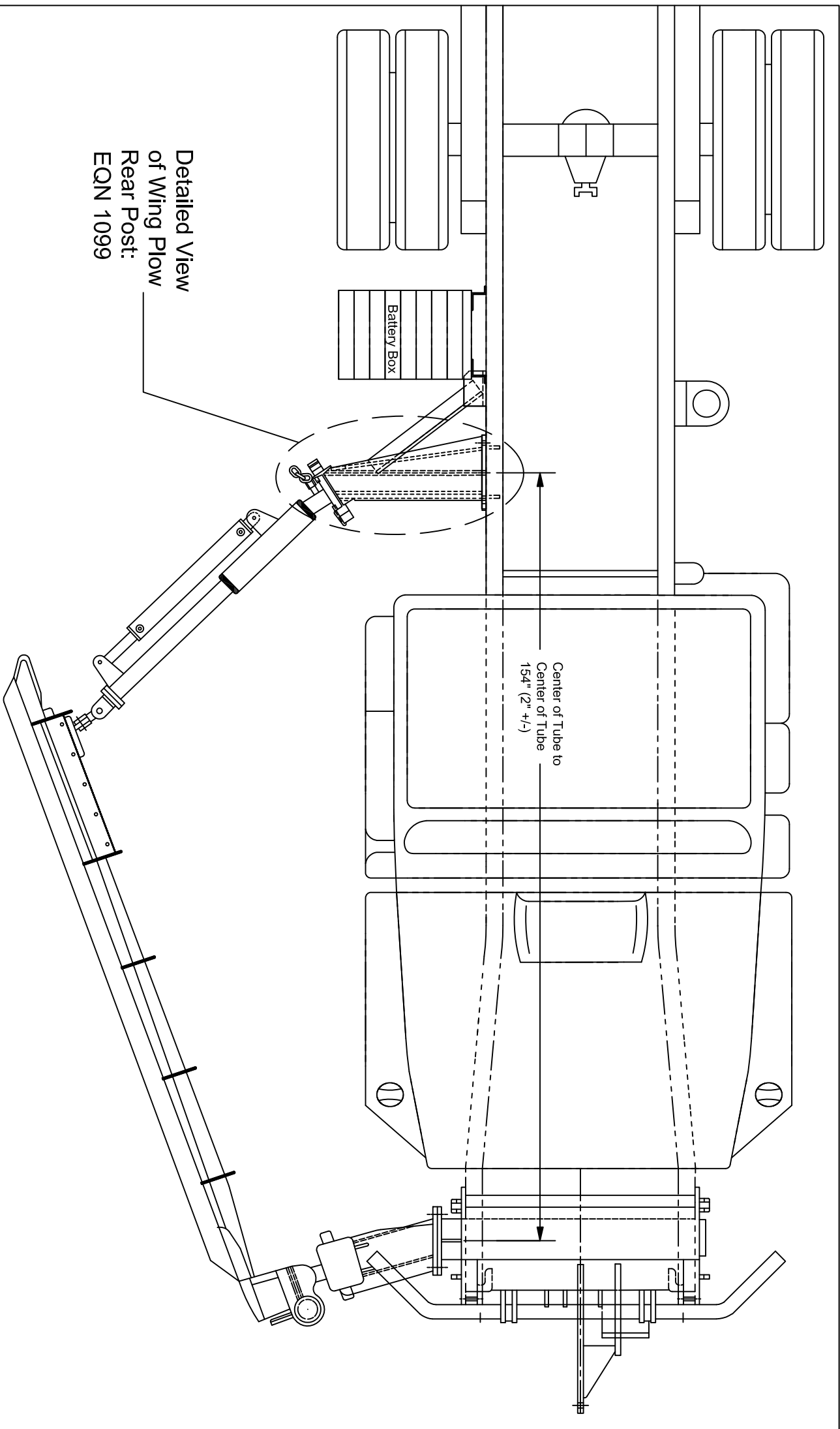


.125in. X 1.50in. X 26in. HANGER BRACE (2 REQ.) W/TWO (2) .50in. X 1.25in. STAINLESS STEEL BOLTS AND NUTS. DRILL FOR .125in. HAIR PIN (STAINLESS STEEL, LENGTH AS REQUIRED, QTY. 4).

- NOTES:
1. ALL DIMENSIONS IN INCHES
 2. MATERIAL OF CONSTRUCTION: STAINLESS STEEL THROUGHOUT, AISI TYPE 304.

PA DEPARTMENT OF TRANSPORTATION

REVISIONS			QUICK DETACH SPREADER KIT		
NO.	DATE	BY	DRAWN BY	DATE	SCALE
1	05/23/02	DWG	JJB	01-09-98	Combined With EQN-5 & 6 & 9 & 10 & 11
2	07/25/18	KBD	JJB		EQN-568
3	08/02-19	KBD	KBD		SHEET 14 OF 14



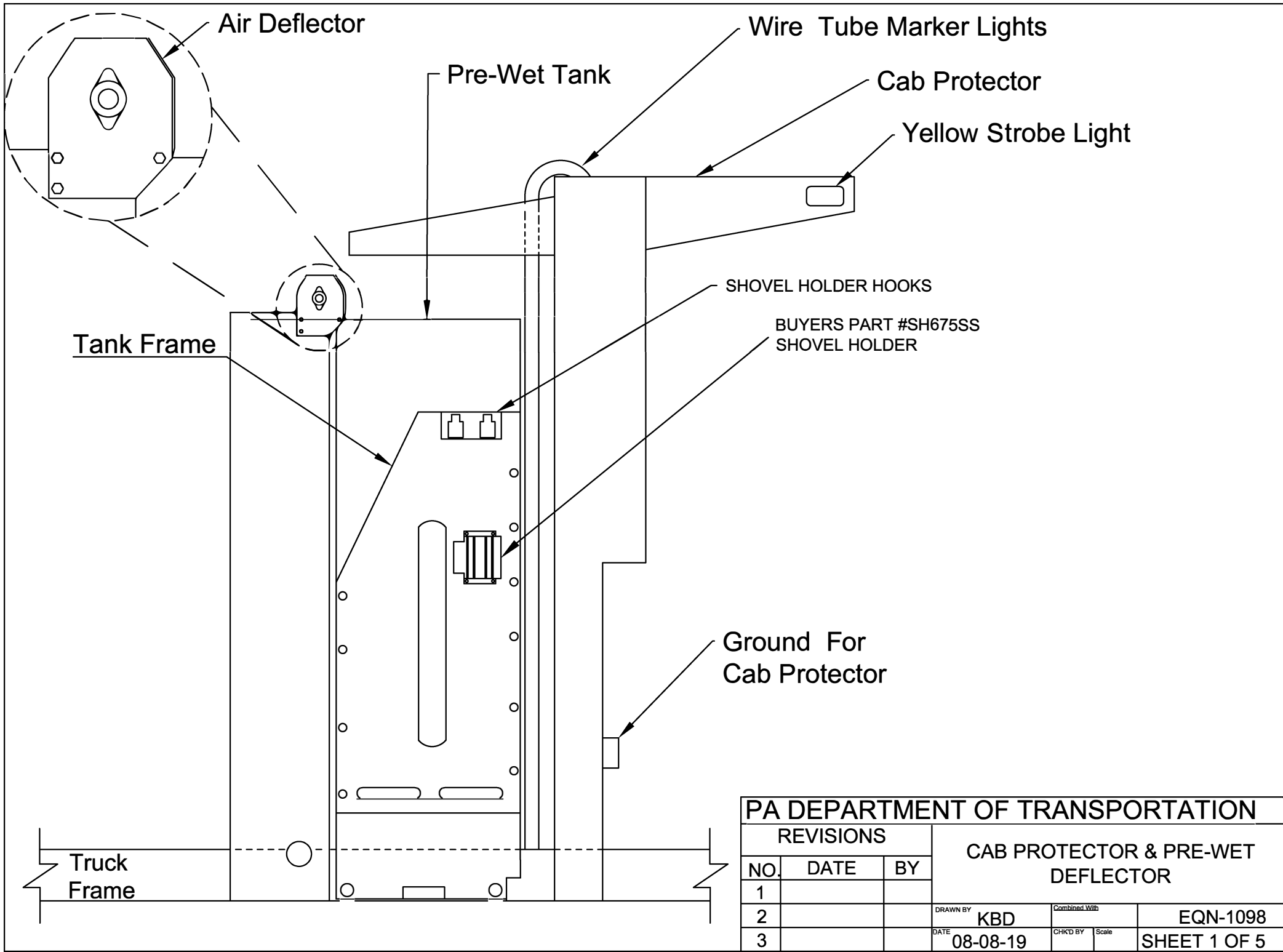
PA DEPARTMENT OF TRANSPORTATION

REVISIONS

NO.	DATE	BY	DESCRIPTION
1			
2			
3			

Wing Plow Tolerance

DRAWN BY: KBD
 DATE: 07-12-19
 CHECKED BY: []
 SCALE: []
 EQN-1097



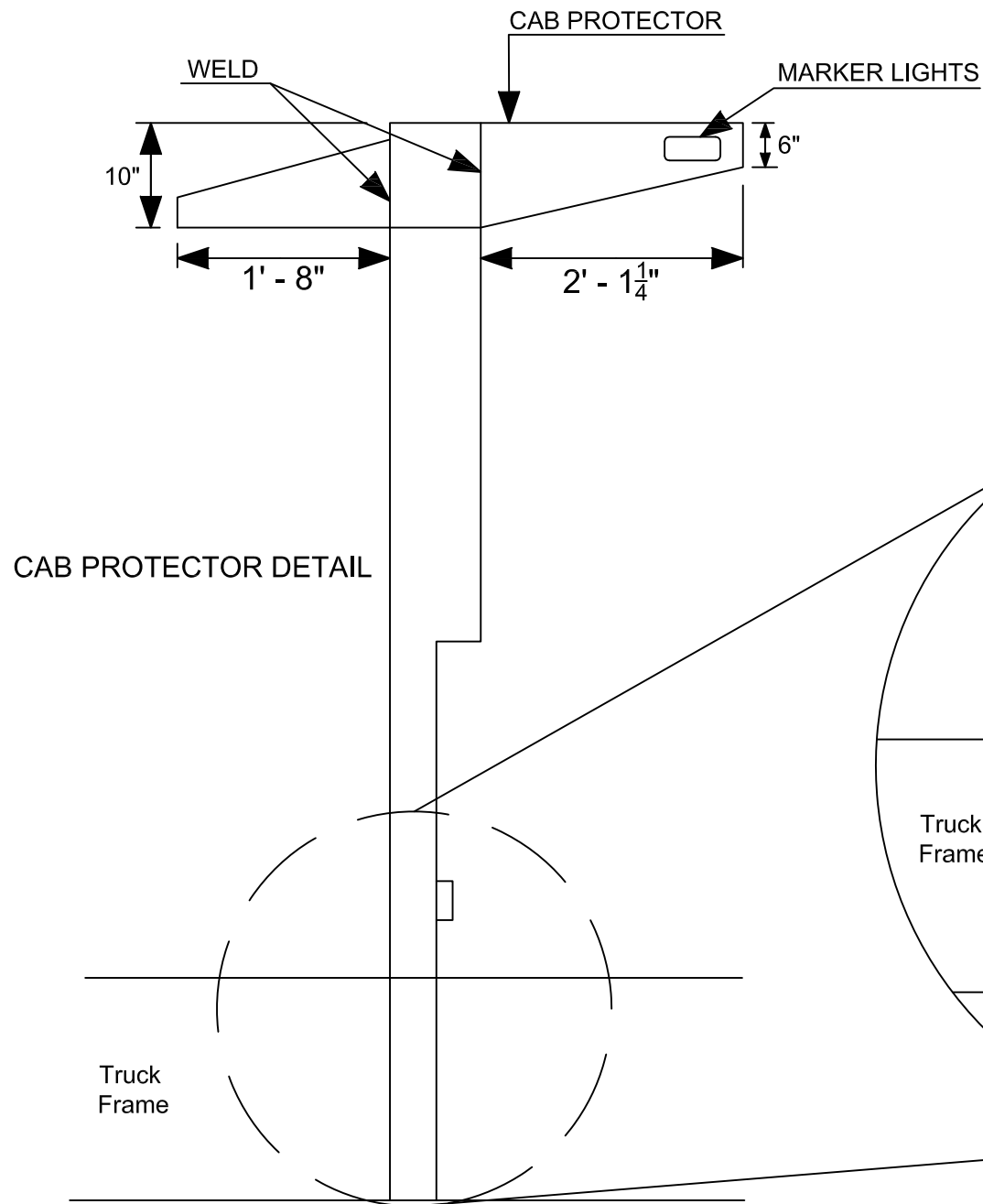
PA DEPARTMENT OF TRANSPORTATION

REVISIONS

CAB PROTECTOR & PRE-WET DEFLECTOR

NO.	DATE	BY
1		
2		
3		

DRAWN BY	KBD	Combined With	
DATE	08-08-19	CHKD BY	Scale
			EQN-1098
			SHEET 1 OF 5

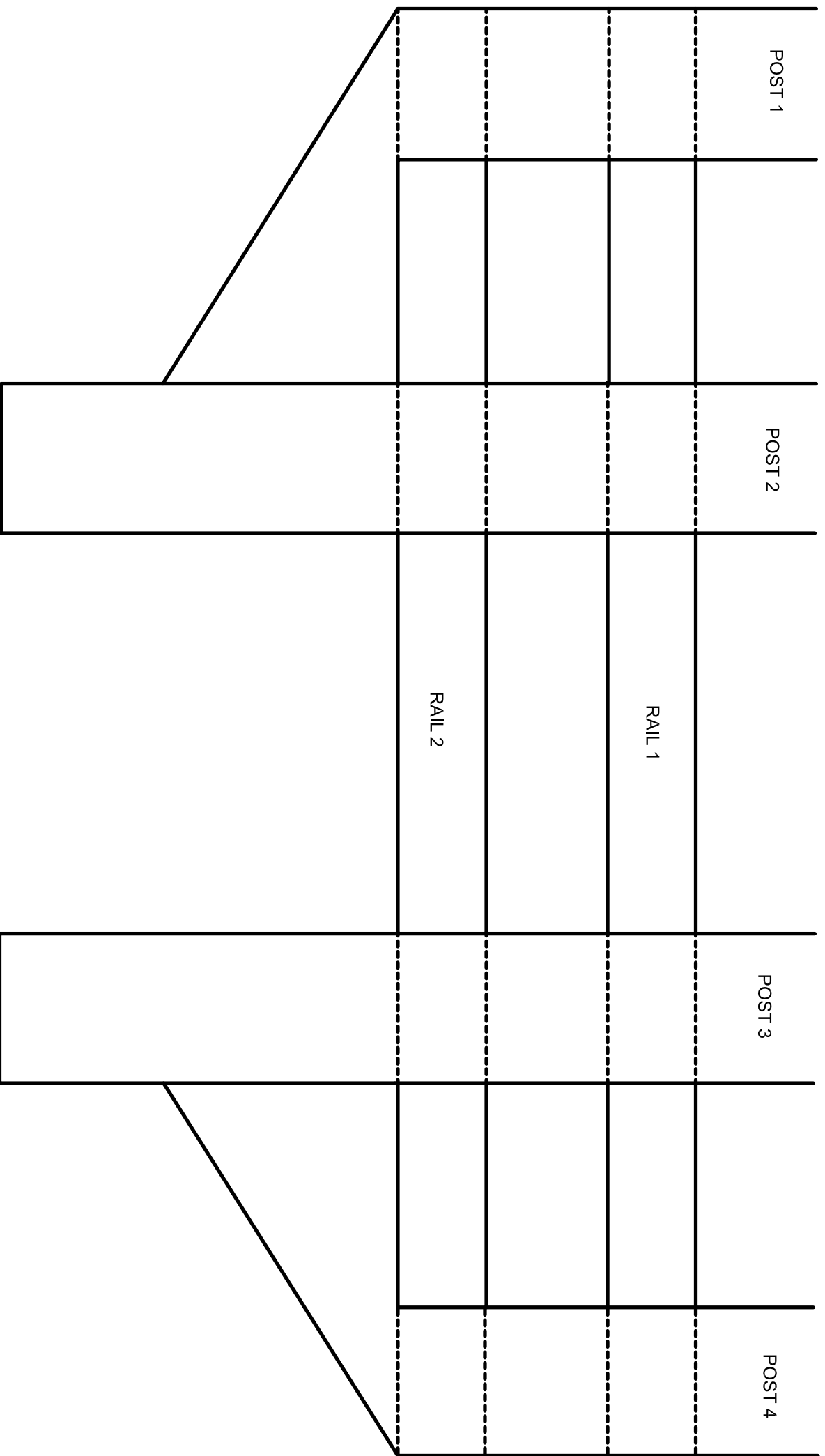


NOTE:

- TOP OF CAB PROTECTOR IS WELDED LIKE SHOWN IN DRAWINGS.
- CAB PROTECTOR IS BOLTED TO TRUCK FRAME.
- WHITE NYLON WASHER TO BE PLACED BETWEEN NUT/BOLT OF GROUND AND ALUMINUM CAB PROTECTOR.

PA DEPARTMENT OF TRANSPORTATION

REVISIONS			CAB PROTECTOR & PRE-WET DEFLECTOR		
NO.	DATE	BY			
1					
2			DRAWN BY	KBD	Combined With
3			DATE	08-08-19	EQN-1098
			CHKD BY	N/A	Scale
				N/A	SHEET 2 OF 5



POST 1

POST 2

POST 3

POST 4

RAIL 1

RAIL 2

PA DEPARTMENT OF TRANSPORTATION

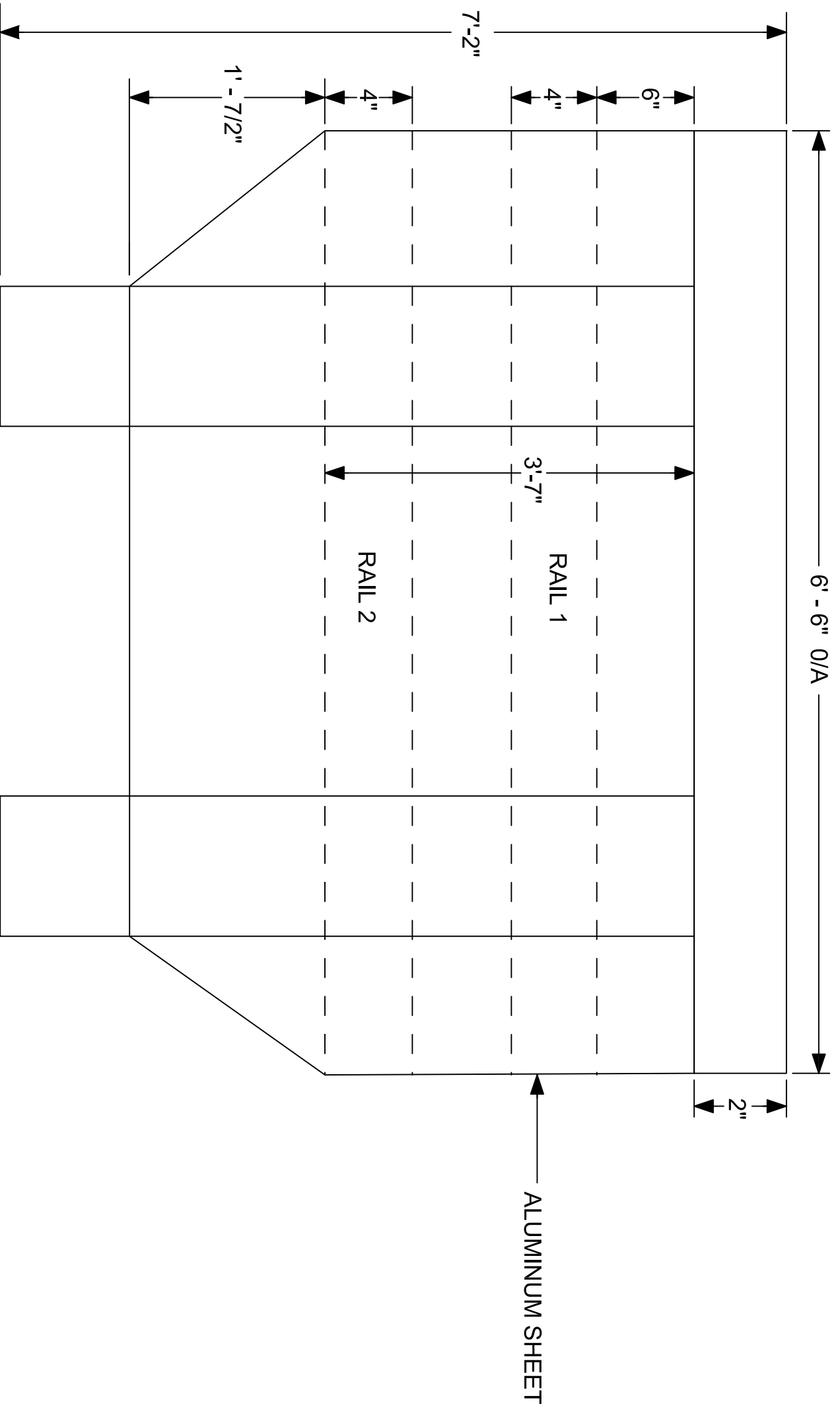
REVISIONS

NO.	DATE	BY	DESCRIPTION
1			
2			
3			

CAB PROTECTOR & PRE-WET TANK DEFLECTOR

CAB PROTECTOR
LOOKING FROM BACK

DRAWN BY	KBD	Checked With	EQN-1098
DATE	08-08-19	CHK'D BY	N/A
		Scale	N/A
			SHEET 3 OF 5



6'-6" O/A

7'-2"

6"

4"

4"

4"

1'-7 1/2"

3'-7"

RAIL 1

RAIL 2

2"

ALUMINUM SHEET

CAB PROTECTOR

LOOKING FROM FRONT

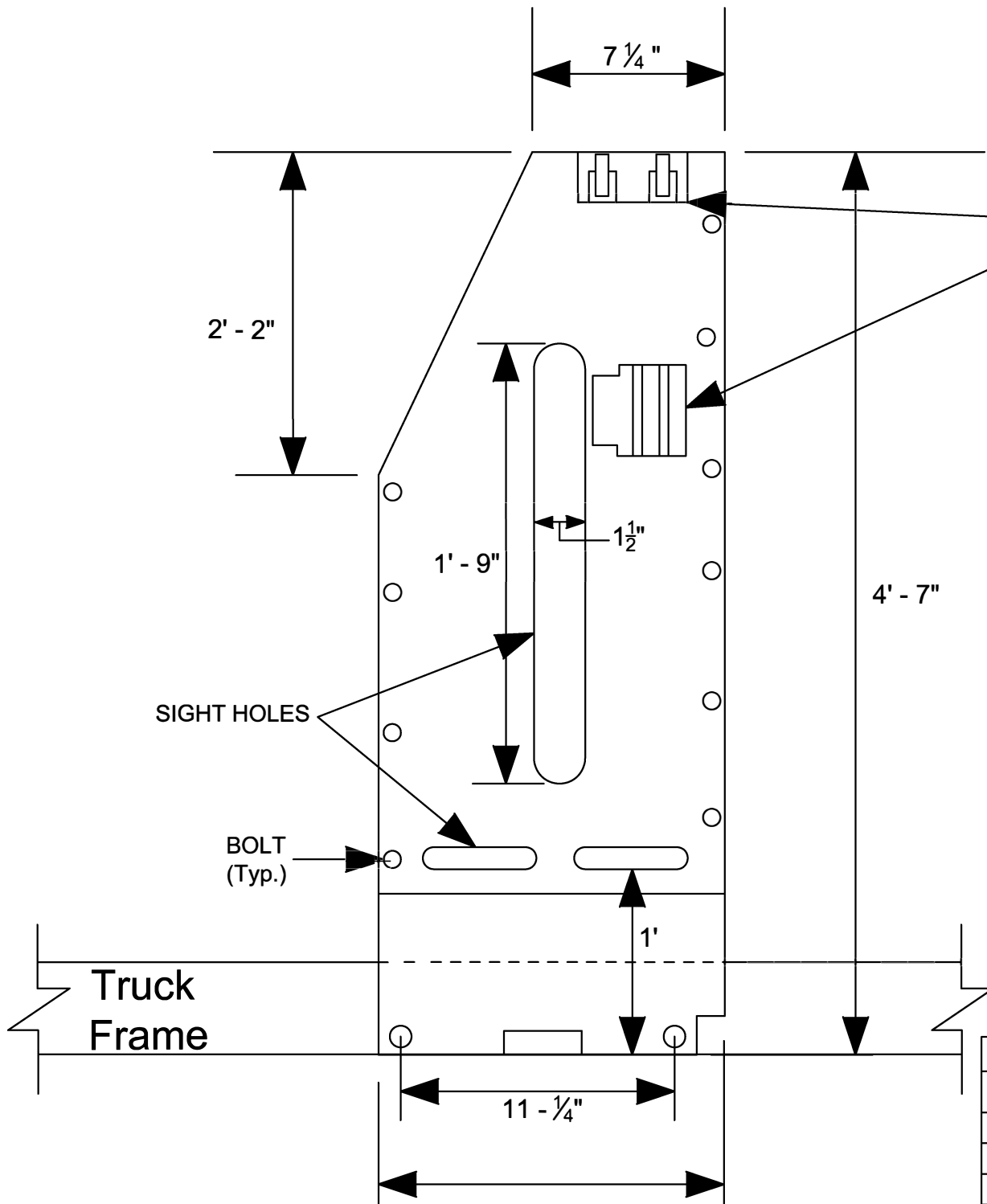
PA DEPARTMENT OF TRANSPORTATION

REVISIONS

NO.	DATE	BY	DESCRIPTION
1			
2			
3			

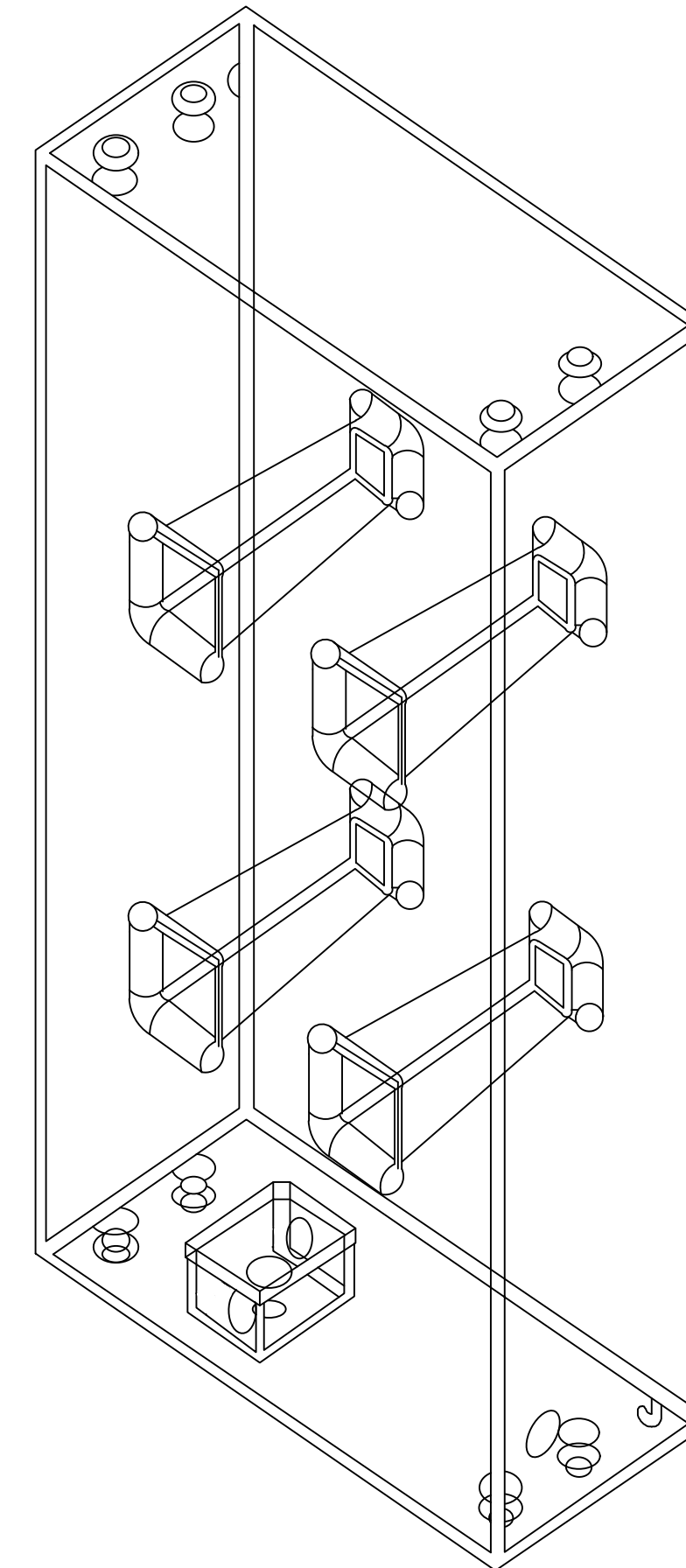
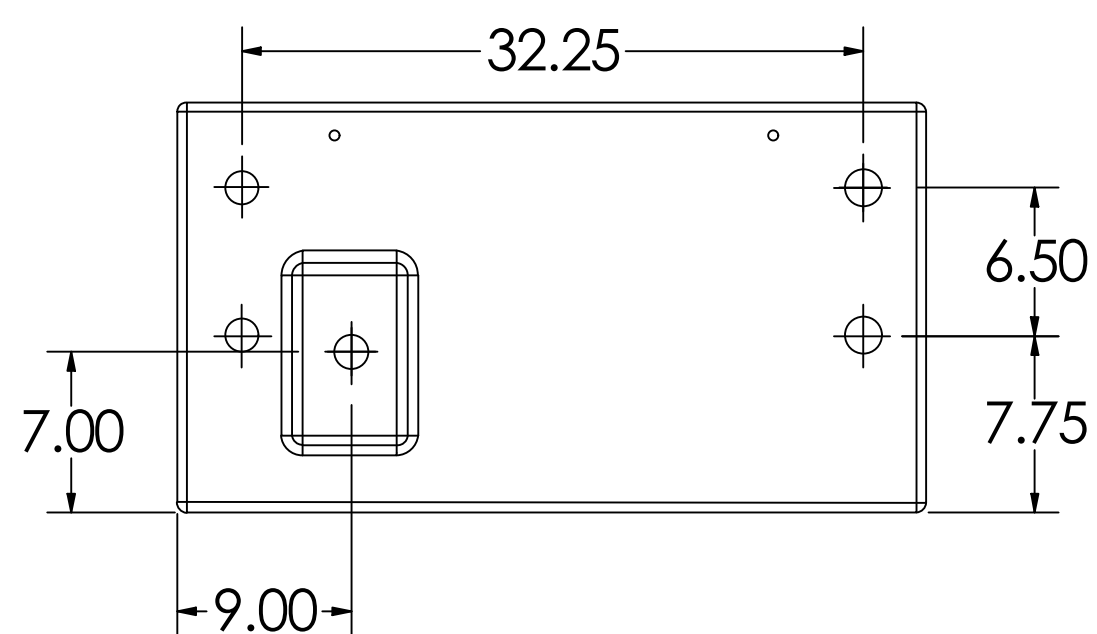
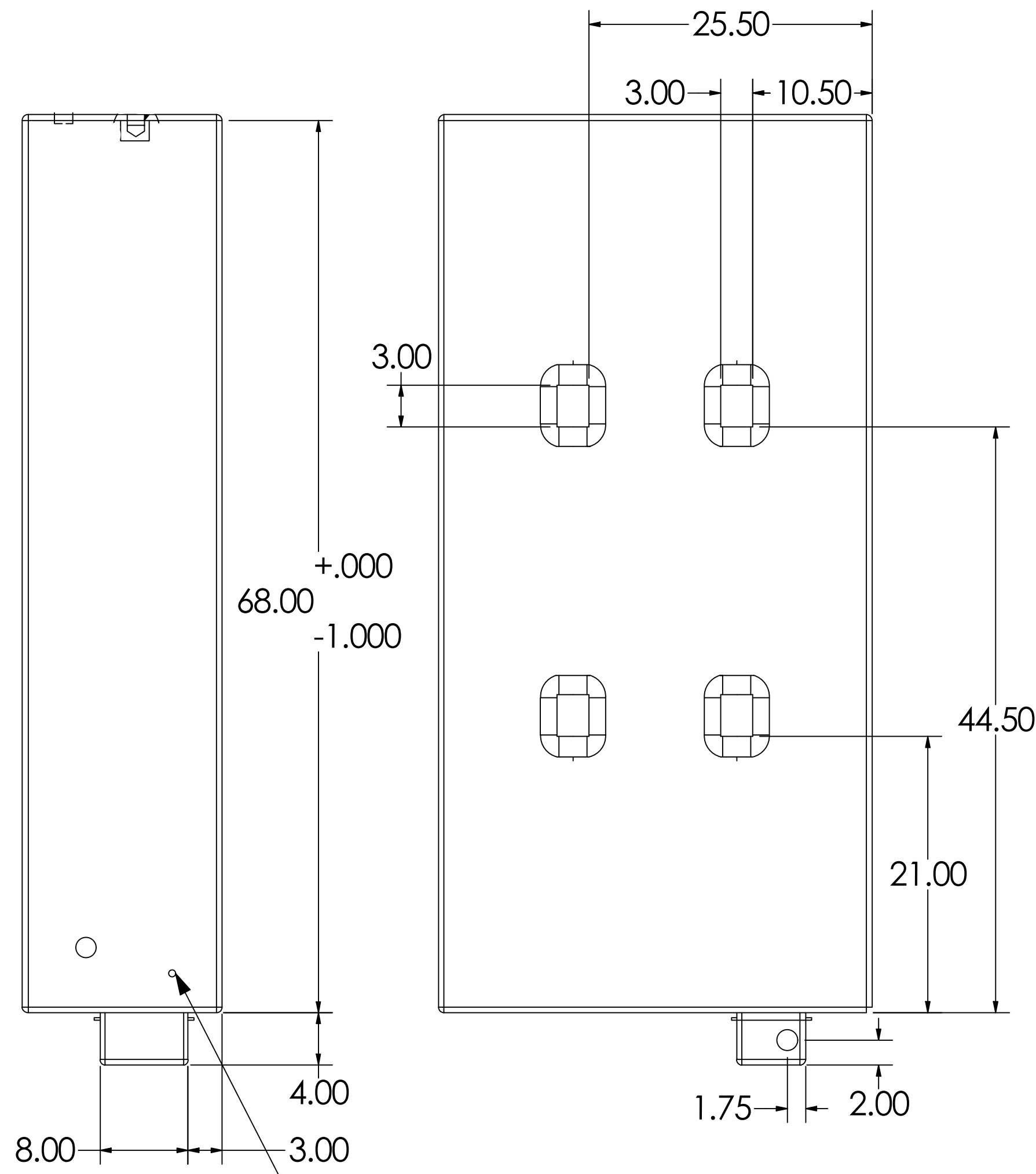
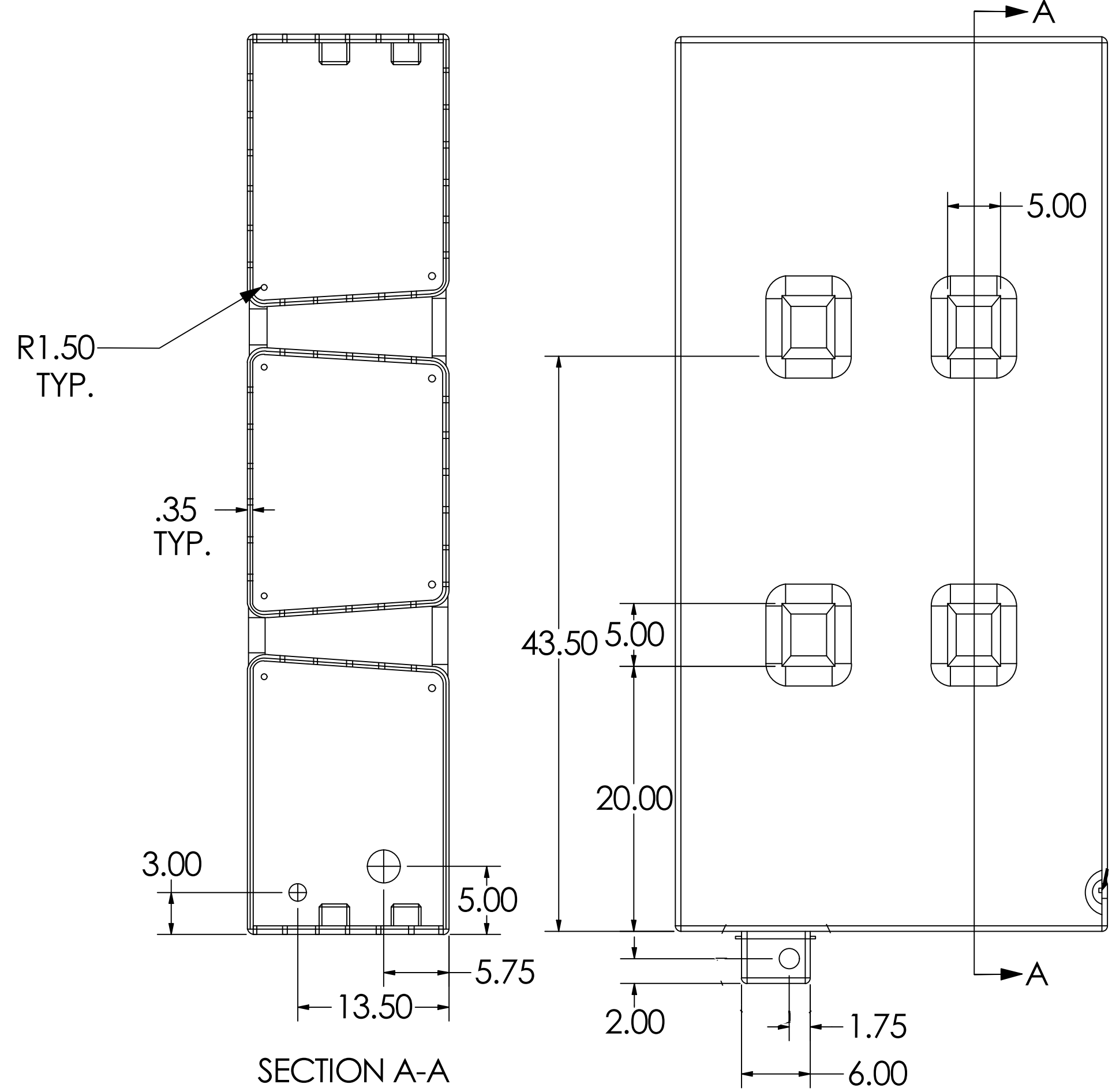
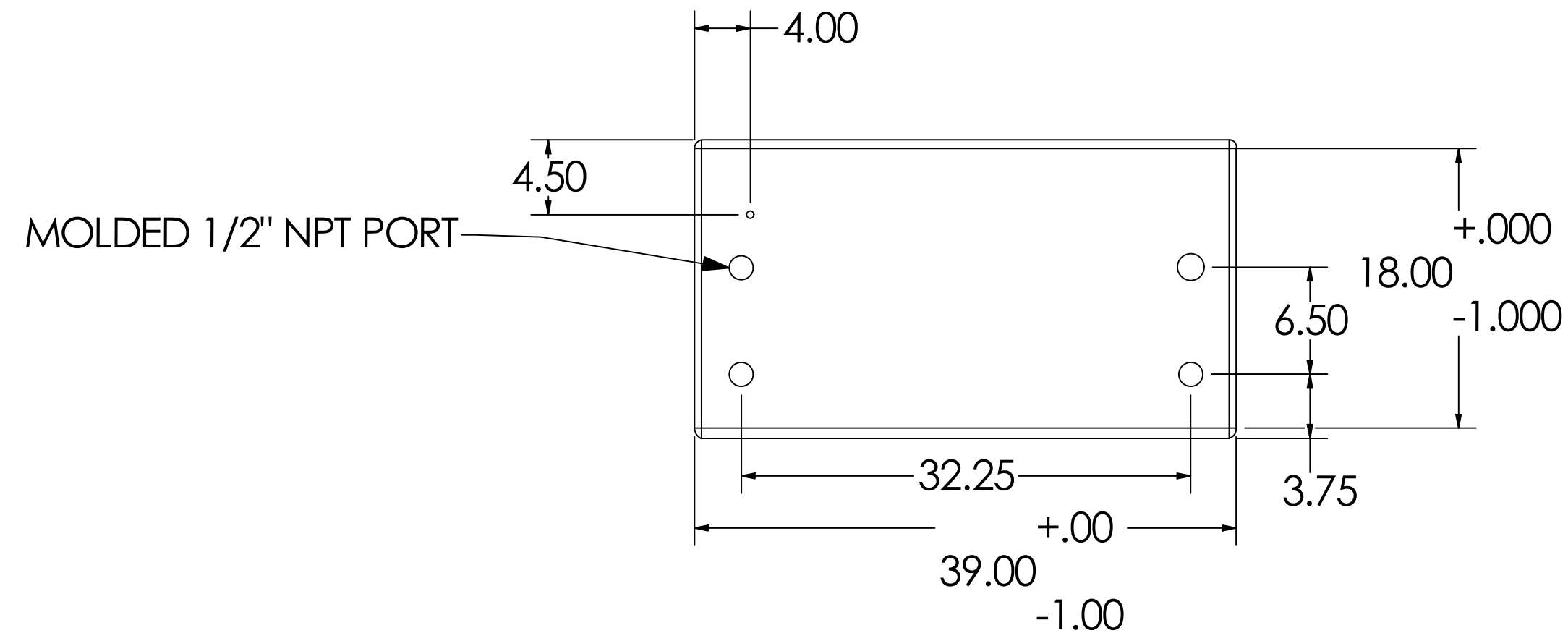
CAB PROTECTOR & PRE-WET TANK DEFLECTOR

DRAWN BY: KBD
 CHECKED BY: N/A
 DATE: 08-08-19
 Scale: N/A
 EQN-1098
 SHEET 4 OF 5

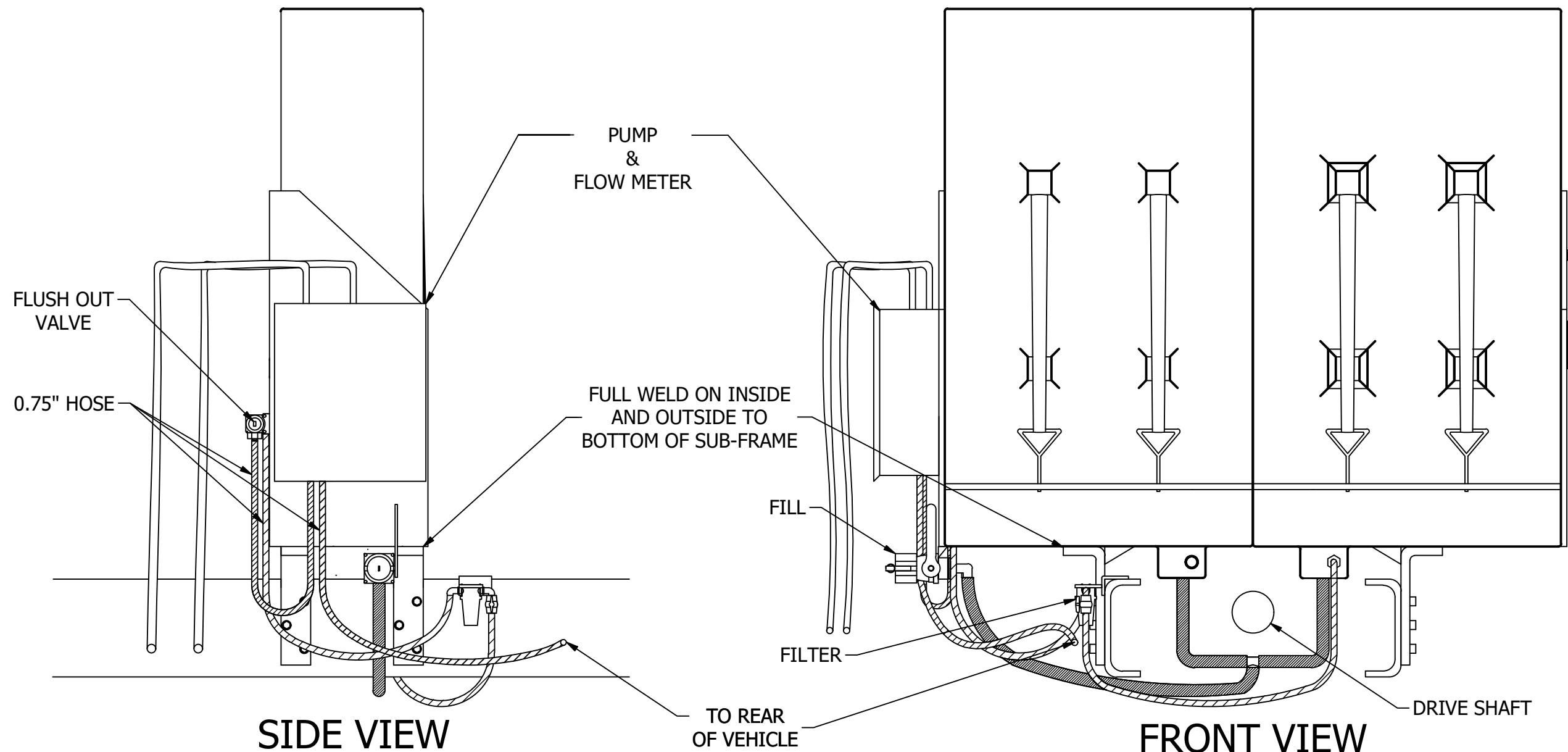


NOTE:
 - Shovel holder should be able to hold a 51" shovel without interfering with other components.

PA DEPARTMENT OF TRANSPORTATION				
REVISIONS			CAB PROTECTOR & PRE-WET DEFLECTOR	
NO.	DATE	BY		
1				
2			DRAWN BY	Combined With
			KBD	EQN-1098
3			DATE	CHK'D BY Scale
			08-08-19	N/A N/A SHEET 5 OF 5

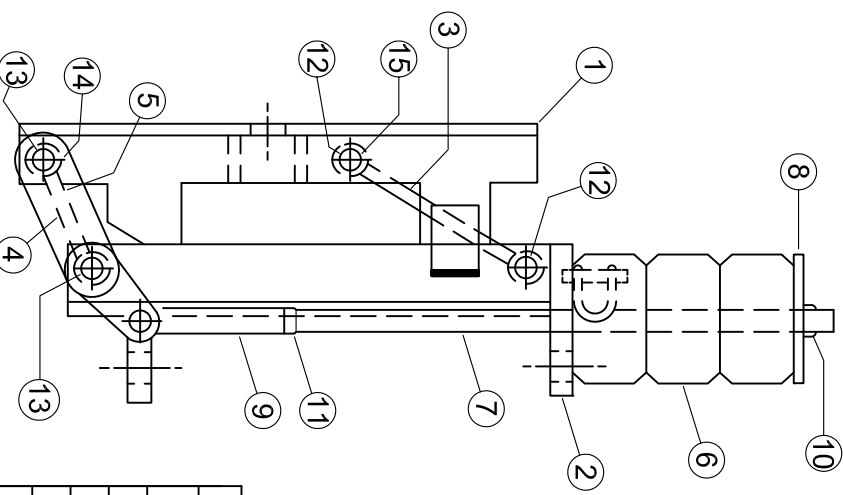
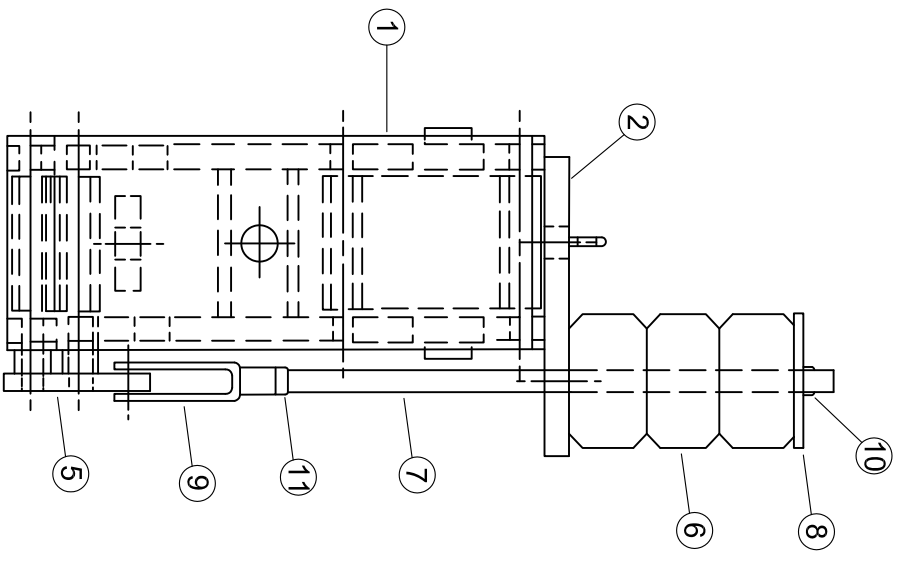
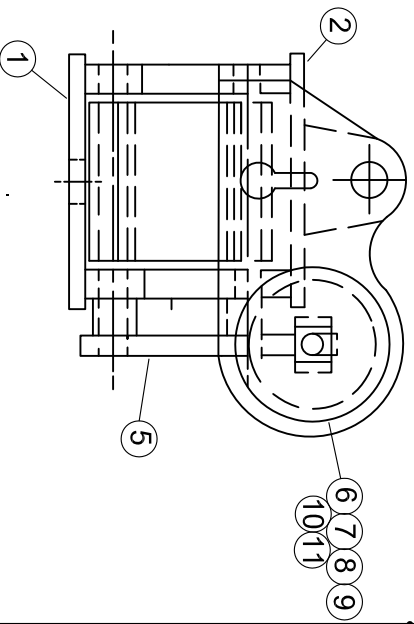


REVISIONS			PA DEPARTMENT OF TRANSPORTATION	
NO.	DATE	BY	TITLE	
1	5-23-23	DVC	Dump Trucks 190 Pre-wet Tanks	
2				
3				
			DATE	DWG NO
			9-16-2020	EQN-1098 B
			SHEET 1 of 2	



NOTE:
STAINLESS STEEL SUB-FRAME

DRAWN LWB	7/13/2022	PA DEPARTMENT OF TRANSPORTATION		
CHECKED		TITLE		
QA		PRE-WET TANK 190 GALLON SPECIFICATIONS AND HOSE DIAGRAMS		
REVISIONS		SIZE	DWG NO	REV
DVC	7-19-23	B	EQN-1098-B	
		SCALE	1/15	SHEET 2 OF 2



ITEM	PART NO.	DESCRIPTION	REQ'D	NAME
1	17477-B	SEE DRWG.	1	FRONT MTG. PLATE WLDMT
2	17481-B	SEE DRWG.	1	REAR MTG PLATE WLDMT.
3	17485-A	SEE DRWG.	1	TOP LINKAGE
4	17486-A	SEE DRWG.	1	BOTTOM LINKAGE
5	17488-A	SEE DRWG.	1	SIDE LINKAGE
6	P-116-838	AEON A760-75	1	TIMBREN SPRING
7	17489-A	3/4" DIA. ROD x 25 LG. C.F.	1	ADJUSTING ROD
8	17490-A	----	1	SPACER
9	P-116-839	----	1	YOKE
10	P-130-68	3/4" LOCK NUT	1	LOCK NUT
11	P-130-23	3/4" NUT	2	NUT
12	5308-A477	7/8 - 9 UNC x 9 - 1/2 LG. w/LOCK NUT	2	CAPSCREW GR. 8
13	5308-A478	7/8 - 9 UNC x 12 LG. w/LOCK NUT	3	CAPSCREW GR. 8
14	P-129-2	1/8" NPT (SCREW IN STRAIGHT)	1	ZERK
15	P-129-178	1/8" NPT (SCREW IN 45 DEG)	1	ZERK
16	17565-A	SEE DRWG.	1	HINGE PIN

R.H. SHOWN
L.H. OPPOSITE

1 REQ'D PER UNIT

PA DEPARTMENT OF TRANSPORTATION

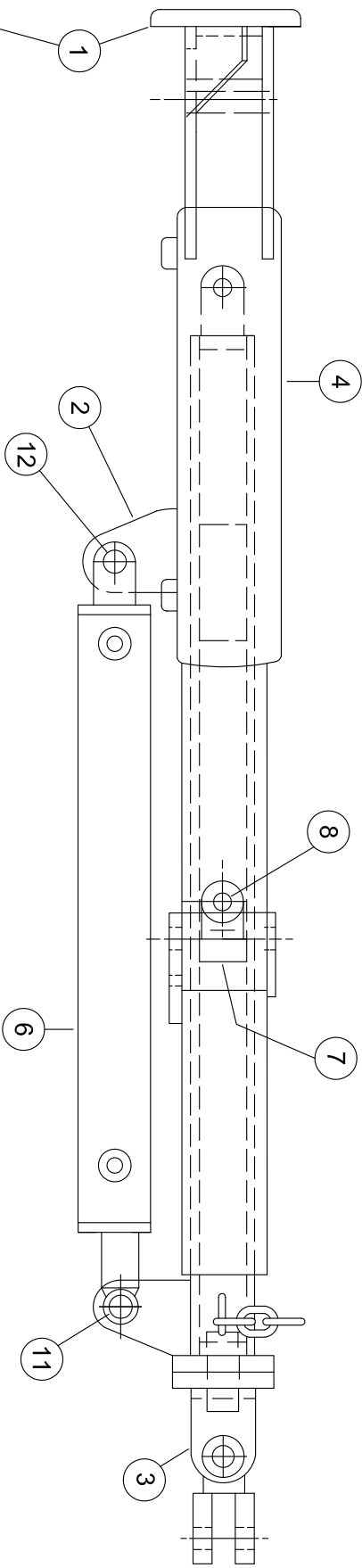
REVISIONS

TRIP LINKAGE FOR WING

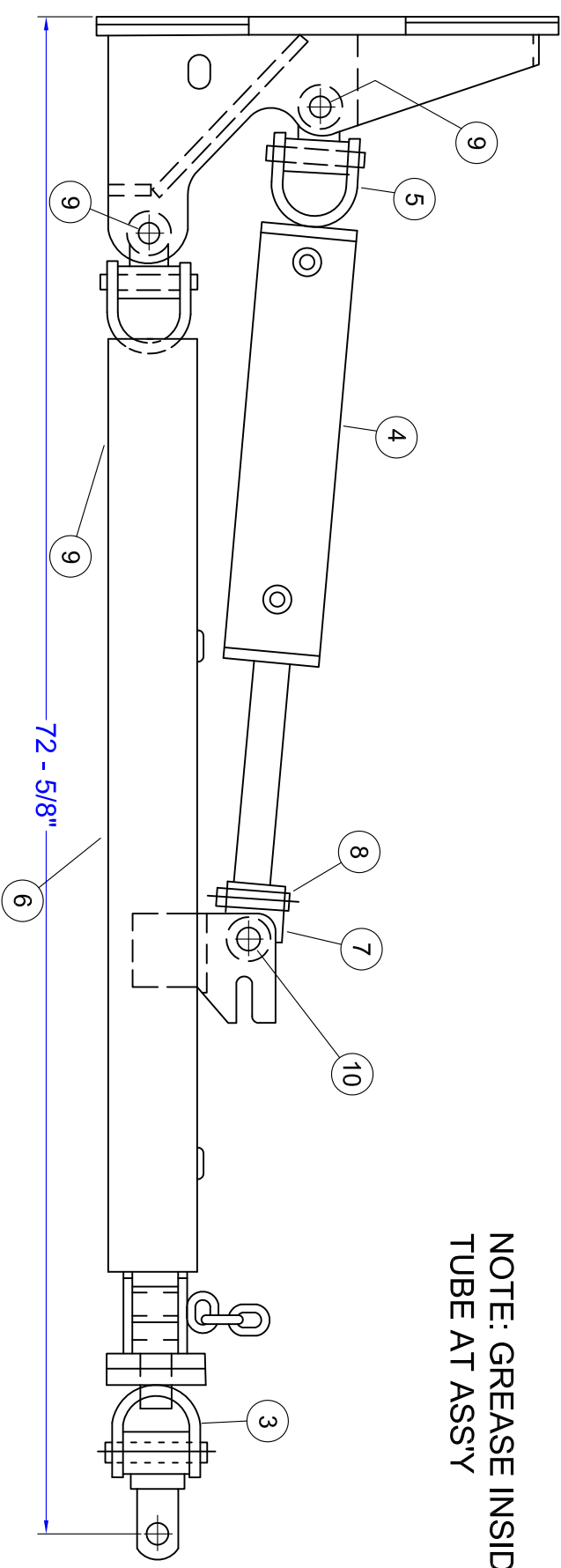
PLOW

NO.	DATE	BY	DRAWN BY	Checked With	EQN-1099
1			KBD		
2					
3					

DATE	CHK'D BY	Scale	Sheet
07-18-19			3 of 14



NOTE: GREASE INSIDE
TUBE AT ASS'Y

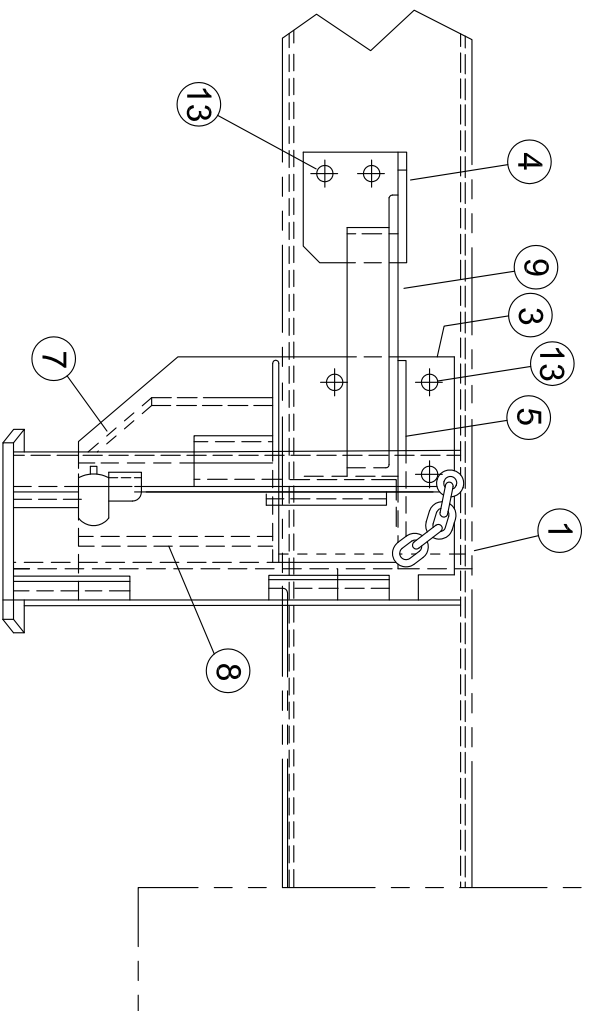
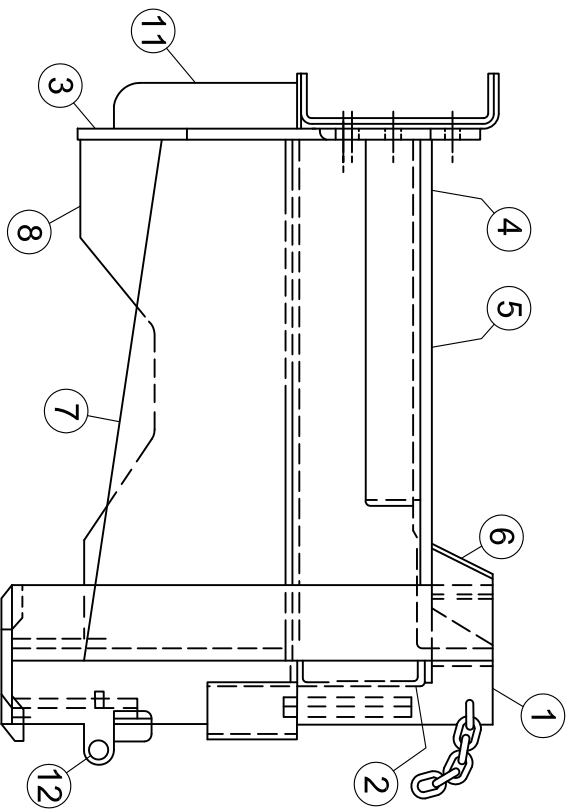
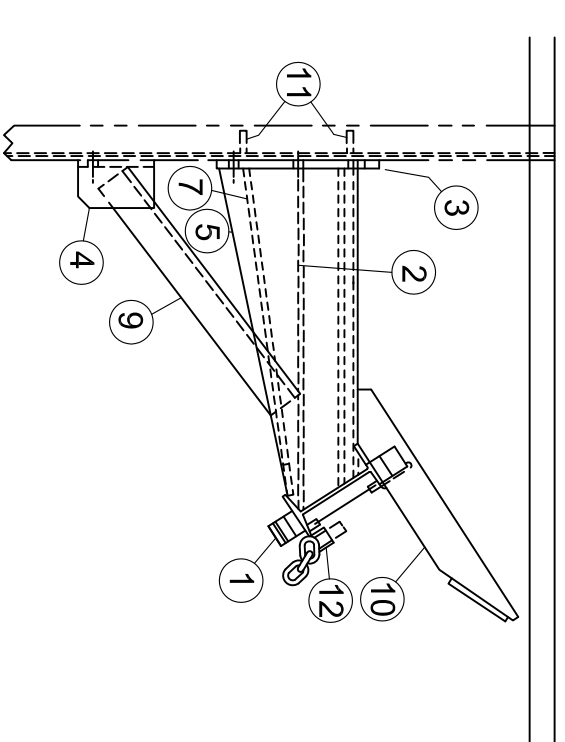


ITEM	PART NO.	REQ'D	NAME	DESCRIPTION
1	17543-B	1	REAR POST SLIDE	SEE DRWG.
2	17550-B	1	OUTER PUSH BRACE	SEE DRWG.
3	17557-B	1	INNER PUSH BRACE	SEE DRWG.
4	P-114-110	1	TOP HYD. CYLINDER	4 X 13-1/4 S.A
5	17551-A	1	SWIVEL FLANGE	SEE DRWG. (USED CYL. ITEM #4)
6	P-114-109	1	SIDE HYD. CYLINDER	3 X 24 D.A.
7	17551-A	1	CYL. ROD END SWIVEL TUBE	SEE DRWG.
8	F-159-4	1	PIN	1" DIA. x 3-1/2" LG. CRR
9	11685-A10	2	PIN	1" DIA. x 5" LG. w/HAIR PIN
10	5308-A377	1	CAPSCREW GR. 8	1" -8 UNC x 6 LG. w/JAM NUT
11	5308-A479	1	CAPSCREW GR. 8	1" -8 UNC x 4 LG. w/JAM NUT
12	5308-A480	1	CAPSCREW GR. 8	1" -8 UNC x 3-1/2 LG. w/JAM NUT

PA DEPARTMENT OF TRANSPORTATION

REAR WING PUSH BRACE
FOR WING PLOW

REVISIONS			DRAWN BY		CHECKED BY		DATE	
NO.	DATE	BY	KBD	Scale	Scale	Scale	Scale	Scale
1								
2								
3								



ITEM	PART NO.	REQ.	NAME	DESCRIPTION
1	17569-B	1	I-BEAM W/LD.MT.	SEE DRWG.
2	17570-A	1	RECT. TUBE	SEE DRWG.
3	17571-A	1	SIDE PLATE	
4	17572-A	1	MTG. ANGLE	
5	17573-A	2	REINF. PLATE	
6	5855-A-141	2	GUSSET	
7	17574-A	1	GUSSET	
8	17575-A	1	REINF. BAR	
9	F-118-46	1	REINF. ANGLE	
10	17626-A	1	WING UP STOP	SEE DRWG.
11	14658-A20	2	REINF. BAR	
12	17134-A3	1	PIN	1" DIA. x 5-1/2 LG. w/HAIR PIN
13	5308-A261	7	CAPSCREW GR. 8	3/4-10 UNC x 2-1/2 LG. w/LOCK NUT

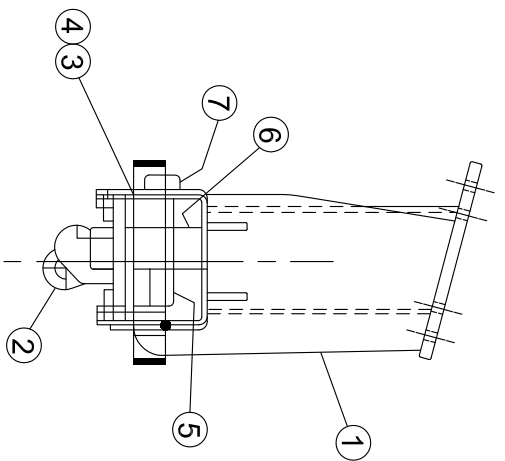
PA DEPARTMENT OF TRANSPORTATION

REVISIONS

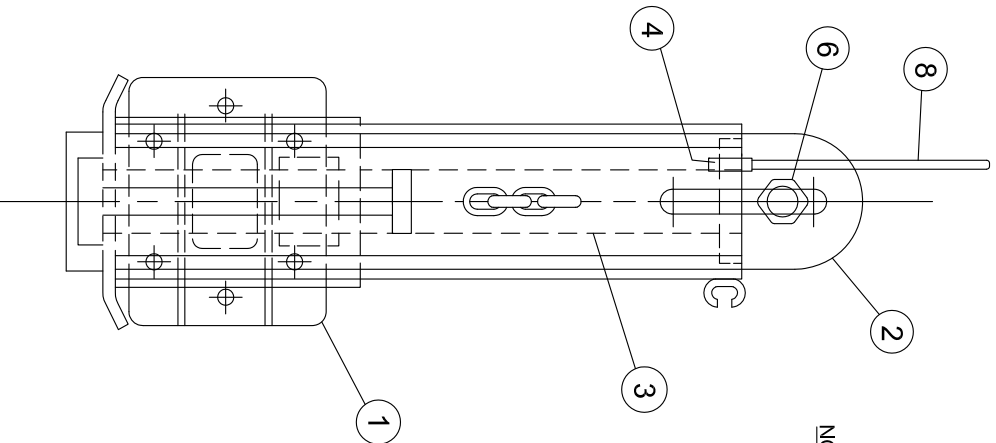
NO.	DATE	BY
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PASS. SIDE REAR POST FOR WING FLOW

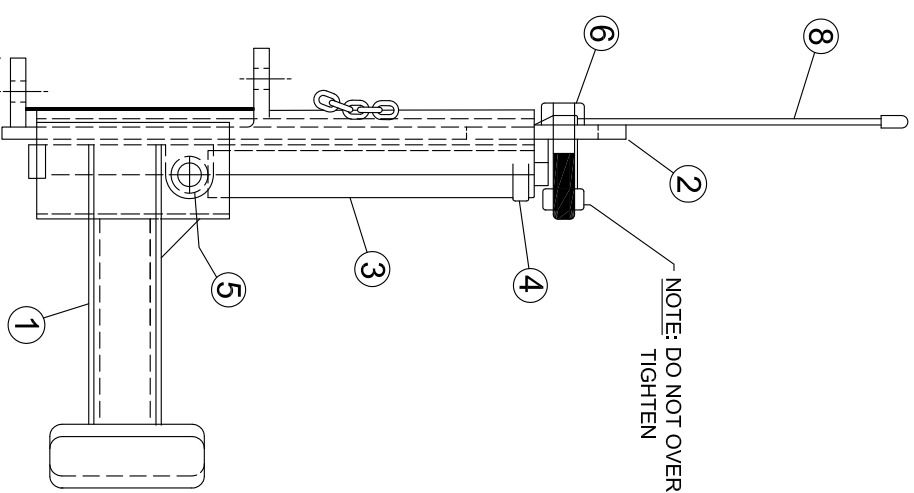
DRAWN BY **KBD** Checked With **EQN-1099**
 DATE **07-18-19** CH'D BY **Scale** Sheet 5 of 14



NOTE: GREASE SLIDE
PLATE AT ASSY



ITEMS	PART NO.	REQ.	NAME	DESCRIPTION
1	17492-D	1	FRONT POST W/LDMT.	SEE DRWG.
2	17502-C	1	SLIDE W/LDMT.	SEE DRWG.
3	P-114-108	1	HYD. CYLINDER	2-1/2 x 15 D.A.
4	17504-A	1	CYL. HOLD DOWN	
5	F-176-3	1	PIN (BOTTOM CYL.)	1-1/2 DIA. x 7-1/2 LG. HRR
6	5308-A475	1	CAPSCREW GR. 8	1-1/4-7 UNC x 6 LG. w/LOCK NUT
7	5308-A476	1	CAPSCREW GR. 8	1/4-20 UNC x 3 LG. w/LOCK NUT
8	P-116-637	1	MARKER POLE	BUYERS



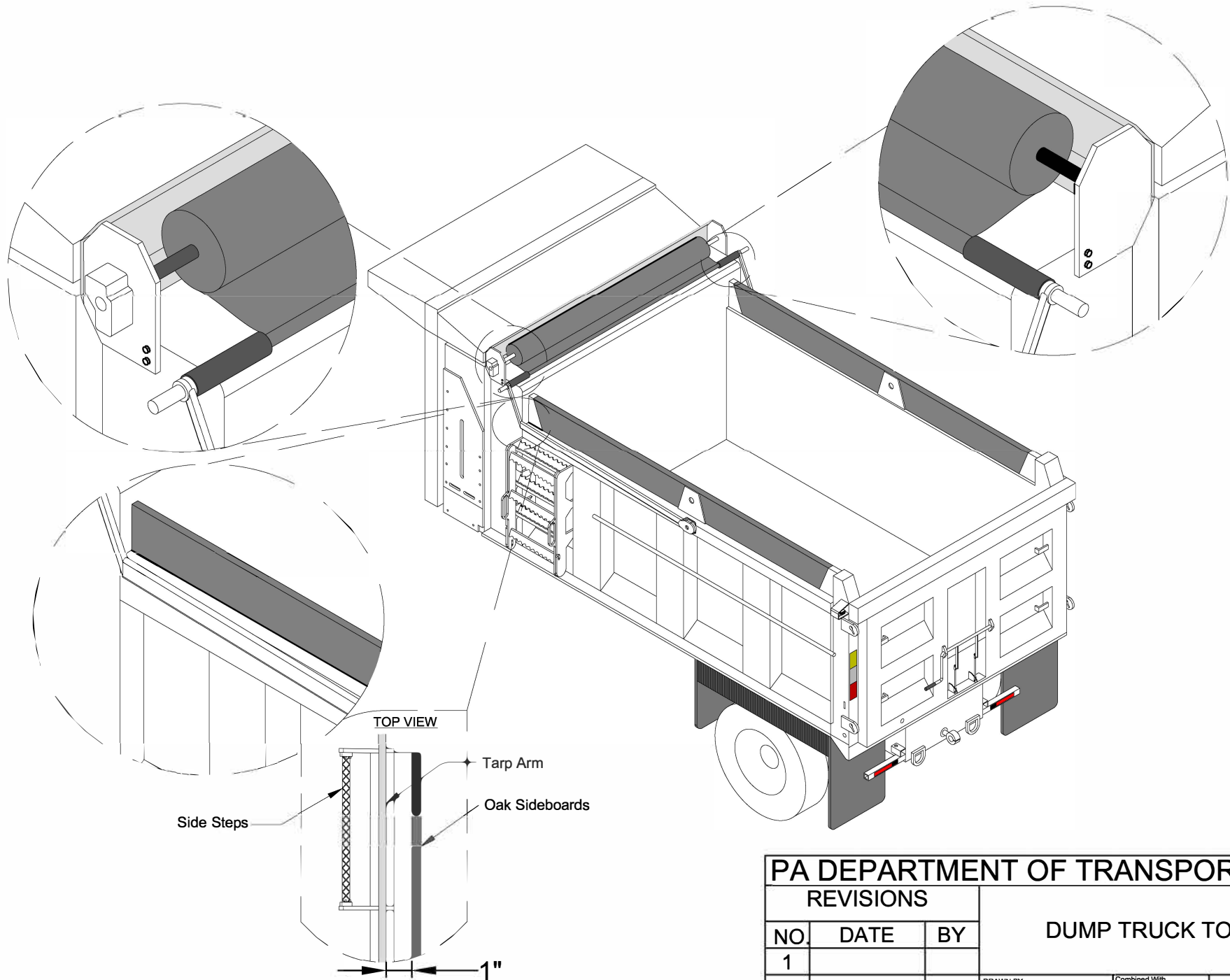
PA DEPARTMENT OF TRANSPORTATION

REVISIONS

NO.	DATE	BY	DESCRIPTION
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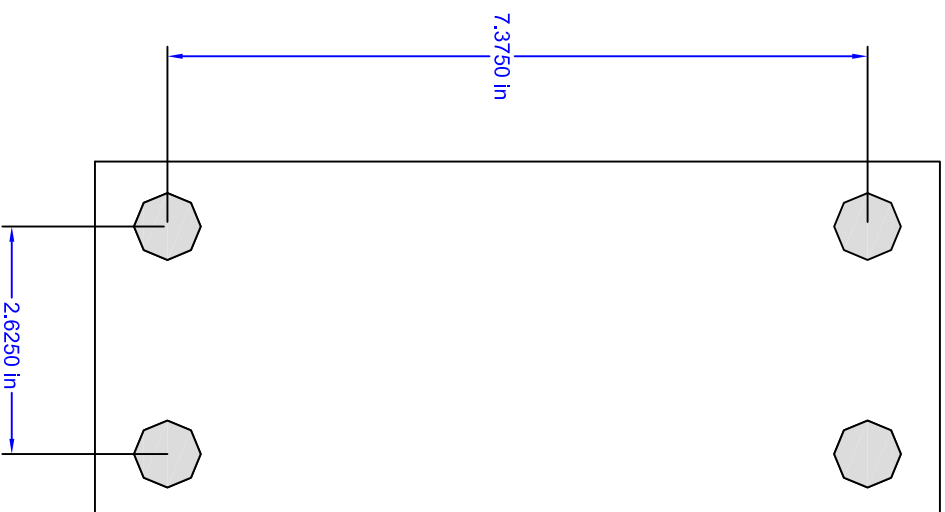
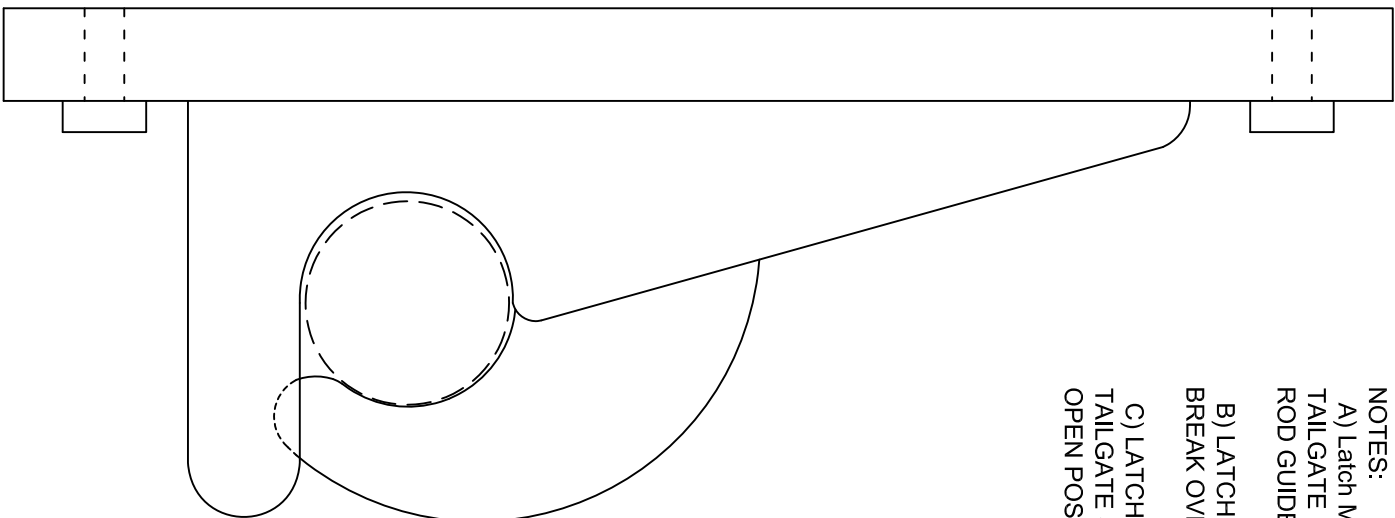
FRONT POST ASS'Y

DRAWN BY	KBD	Checked with	EQN-1099
DATE	07-18-19	CHK'D BY	Scale
			Sheet 7 of 14



PA DEPARTMENT OF TRANSPORTATION				
REVISIONS			DUMP TRUCK TOP TARP	
NO.	DATE	BY		
1				
2			DRAWN BY KBD	Combined With EQN-1100
3			DATE 08-06-19	CHKD BY Scale SHEET 2 OF 2

- NOTES:
- A) Latch MUST FULLY CLOSE ON TAILGATE ROD AND ENGAGE TAILGATE ROD GUIDE FINGERS.
 - B) LATCH SHALL BE ADJUSTED TO BREAK OVER CENTER WHEN CLOSED.
 - C) LATCH SHALL NOT INTERFERE WITH TAILGATE SWING WHEN LATCH IS IN THE OPEN POSITION.



PA DEPARTMENT OF TRANSPORTATION

REVISIONS

NO.	DATE	BY
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Dump Truck Latch

DRAWN BY	KBD	Checked With	EQN-1105
DATE	07-29-19	CHK'D BY	Scale
			SHEET 1 OF 1

IFB # 6100059308 Dump Trucks SPECIFICATIONS – PART 1

NON-EVALUATED COSTS: In addition to the pricing, the Commonwealth is also requesting pricing for Training Pricing. Bidders must complete these documents by pricing the services requested and return them with their Bid. While these costs are part of the bid response and would be part of any contract resulting from this solicitation, these costs will not be evaluated for the purposes of award.

DELIVERY: The contractor must deliver all units within **Two-Hundred Seventy (270) calendar days** after receipt of a purchase order, issued against the contract. It shall be assumed by all parties that the contractor received the purchase order on the third business day following the day on the purchase order, unless the contractor provides credible evidence that the order was received on a later date. Delivery shall be in accordance to PCID 1067 (Exhibit 8) or PCID 1075 (Exhibit 9) requirements.

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.

SHIPPING: Any contract items shipped shall be in accordance with normal industry standards and at FOB Destination terms.

SPECIFICATION CHANGES: In order to facilitate mid-contract production changes, the ordering agency may agree to specification changes up-to and including \$10,000.00 as determined based on dealer invoice pricing.

Changes shall be noted on the PO header or line item text and the PO shall reflect the adjusted price. A copy of the dealer invoice with the applicable items changed, clearly marked shall accompany the vehicle at delivery.

PRICE ADJUSTMENTS: Contractor's pricing for each group shall remain firm for the initial twelve (12) months of the contract. The Commonwealth recognizes the volatile nature of the current vehicle manufacturing industry which has made the timing of the release of model year pricing from the manufacturers unpredictable. After the first twelve (12) months, the contract rates may be adjusted based on a manufacture price increase only. In response, the Contractor shall be permitted to submit once per model year, a manufacturer's price change at the time it becomes available. The Contractor shall submit new pricing and supporting documentation to the DGS Issuing Officer within 10 days of receiving the new model year pricing from the manufacturer. If the Commonwealth determines, after receiving the manufacturer's price changes, that it is in the best interest of the Commonwealth to accept the new pricing, the Commonwealth shall provide written notice to the Contractor. The new pricing will become effective upon public posting of a revised Contract that reflects the price changes.

Any and all renewals will be under the same terms, covenants and conditions.

WARRANTY:

As stated in all spec sheets; The **Manufacture and the dealer must agree and comply to the Manufacture In-House Warranty Program. A signed letter from the manufacture on the manufacturer's letterhead must be included with the bid. The signed letter must agree to the Commonwealth's Manufacture In-House terms as set out in this IFB.**

INQUIRIES: Direct all inquiries to the following

**IFB # 6100059308 Dump Trucks
SPECIFICATIONS – PART 1**

Ralph Constance, Commodity Specialist
Department of General Services
Bureau of Procurement
6th Floor, Forum Place, 555 Walnut Street
Harrisburg, Pennsylvania 17101-1914
Telephone No. (717) 703-2931

Fax No. (717) 346-3820
rconstance@pa.gov



COMMONWEALTH OF PENNSYLVANIA
PENNSYLVANIA COMMERCIAL ITEM DESCRIPTION (PCID)

General Requirements for Delivery of Vehicles

(This item description supersedes PCID 1067, effective January 3, 2019)

PCID NO. 1067

Eff. 10/10/19

The following delivery requirements shall apply to the vehicle as specified by the ordering agency. These requirements are in addition to, but not limited to, the vehicle specification provided as part of the solicitation document. Unless otherwise noted on the request for proposals or invitation for bids, deliveries shall be made to the Department of General Services (DGS), Commonwealth Garage, 22nd and Forster Streets, Harrisburg, Pennsylvania, phone (717) 787-4252.

NOTE: Deliveries for the Department of Transportation (PennDOT) shall be made to the PennDOT Equipment Division, headquartered in Harrisburg, Pennsylvania, phone (717) 787-2123. Deliveries for the Pennsylvania State Police (PSP) shall be made to the PSP Transportation Division headquartered in Harrisburg, Pennsylvania, phone (717) 787-1318.

1.0 GENERAL REQUIREMENTS SECTION

1.1 The vehicle Manufacturer's model name and/or model number shall be indicated on a decal affixed inside the door.

1.2 Standard solid exterior colors with standard interior trim shall be selected after the award is made unless otherwise indicated in the proposal.

1.3 Tire size and type shall be original equipment brand or as indicated in the proposal or specification sheet. Tire inflation monitors shall be supplied as required by Federal Motor Vehicle Safety Standard (FMVSS) 138.

1.4 All vehicles shall be new and of the model year indicated in the proposal.

1.5 All vehicles shall include all genuine parts, accessories and equipment considered standard by the manufacturer for the vehicle offered by the supplier.

1.6 All vehicles shall have a valid PA state inspection sticker and a valid PA emissions inspections sticker (for all vehicles subject to the PA I/M Program). NOTE: New or current model year vehicles with less than 5,000 miles, subject to the PA I/M program, must display a valid PA emissions inspection sticker with an exemption indicator. All Pennsylvania state inspection requirements are the sole responsibility of the supplier.

1.7 All vehicles shall have completed the manufacturers' recommended pre-delivery service.

1.8 All vehicles shall be clean, lubricated, serviced, fuel tank filled to full recommended capacity, all adjustments completed, all mechanical and electrical components fully functional and operational, and the vehicle will be "road ready" for immediate use.

NOTE: Supplier shall not remove the manufacturer's MSRP (Monroney) sticker and/or dealer sticker price prior to delivery. Stickers should be affixed to an interior surface of the vehicle window and legible from outside of the vehicle. Stickers shall be easily removable without any permanent marking left on the glass. Incomplete chassis shall have the sticker included loose with the delivery documents.

1.9 All vehicles shall have appropriately placed decals or manuals indicating the types of required fuels or lubricants and the capacity of each fluid's reservoir in accordance with the manufacturer's recommendation.

1.10 All vehicles shall have permanent antifreeze in each vehicle to protect it at a level of -35°F.

1.11 All vehicles shall be free from all dealer signs/emblems.

1.12 All vehicles 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.

1.13 All vehicles shall include a copy of the manufacturer's warranty and service policy with all warranty vouchers, certificates and coupons.

1.14 It is the supplier's responsibility to complete the Application for Certificate of Title and Registration in accordance with 75 Pa. C.S., Chapter 11 and 13 and to obtain a Pennsylvania registration card and plate for the vehicle. All costs and fees associated with titling and registering the vehicle shall be borne by the supplier.

1.15 At the time of vehicle delivery, the successful supplier shall furnish an original and three copies of the invoice which shall include the key number, vehicle color and Commonwealth purchase order number, contract number (if applicable) and indicate ordering agency. To ensure prompt payment the dollar amount of the supplier's invoice must match the purchase order amount.

1.16 The successful supplier shall comply with the manufacturer's warranty, or authorize a qualified dealer in the locality in which the unit is assigned to do whatever is required to comply with the manufacturer's warranty.

1.17 The successful supplier shall submit at least two (2) copies of all service/technical bulletins, recall notices, etc. to the Director, Bureau of Vehicle Management, Department of General Services, 2221 Forster Street, Harrisburg, Pennsylvania 17125. These documents shall be submitted on a continual basis to keep the Bureau of Vehicle Management informed regarding improvements, changes and/or problems concerning Commonwealth owned vehicles and their component parts.

1.18 The Department of General Services, Bureau of Vehicle Management, will inspect all vehicles prior to acceptance. It will be the responsibility of the supplier to remove any vehicle rejected by the Bureau of Vehicle Management within two (2) working days after notification, and return the vehicle to the Commonwealth Garage upon correction of deficiencies. Date in service will be the date the vehicle is accepted by the Commonwealth, not the date of delivery.

1.19 The Commonwealth disclaims any liability for damage to vehicles not unconditionally accepted by the Commonwealth.

1.20 Unless otherwise indicated, all items requested in this specification which are listed in the manufacturer's specification book as standard or optional equipment shall be factory installed and operative. Vehicles delivered to the Commonwealth in a condition considered to be below retail customer acceptance levels will not be accepted. Items which determine this acceptance level shall include, but not be limited to, the general appearance of the interior and exterior of the vehicle for completeness and quality of workmanship, lubrication and fluid levels, with any leaks corrected, mechanical operation of the vehicle and all electrical components operational. Allied equipment specified to be furnished and installed which is not available through the vehicle manufacturer shall conform to the best quality standards known to that particular industry, both product and installation.

1.21 Trucks with snow plows being delivered to the Commonwealth Garage for inspection, are required to have the snow plow stored in the truck bed. Failure to do so will show cause for rejection of inspection.

1.22 All vehicle deliveries shall be coordinated through the DGS Bureau of Vehicle Management. Suppliers shall call (717) 787-4252 for delivery schedule at least 48 hours in advance. When vehicles are purchased by Pennsylvania State Police, the successful supplier shall call (717) 787-1318 (PSP). When vehicles are purchased by Pennsylvania Department of Transportation, the successful supplier shall call (717) 787-2123 (PennDOT) for information regarding invoicing and delivery.

Vehicle Delivery Requirements

PCID NO. 1067

1.23 Vehicle Delivery: Mileage limitations are placed upon vehicles delivered in accordance to these requirements as indicated below. If the mileage upon delivery exceeds these limits, a credit of \$5.00 per mile will be applied against the awarded supplier's purchase order as damages and deducted at time of payment. If the awarded supplier uses a towing device to tow another vehicle to the Commonwealth Garage for delivery, the towing device may not be attached in a way that holes are drilled in the bumpers of the vehicles being towed. Drilling of holes in the vehicle bumpers is not permitted. Any bumper damage caused by a towing device will be replaced by the awarded supplier at no charge to the Commonwealth. If a vehicle is being towed by another vehicle, the vehicle being towed must have the drive shaft disconnected to eliminate unnecessary mileage.

1.23.1 Class 1 to 3 factory completed vehicles: mileage displayed on the vehicle odometer shall not exceed 400 miles.

1.23.2 Class 2 to 6, factory incomplete vehicle: mileage displayed on the vehicle odometer upon delivery with final stage manufacturer certification shall not exceed 1,000 miles.

1.24 Pennsylvania Clean Vehicles Program Requirement: Supplier is responsible to ensure that all supplied vehicles are compliant with all applicable Title 25 requirements (25 Pa. Code, Chapter 126, Subchapters D or E). This compliance shall be evidenced on the manufacturer's certificate of origin (MCO), or, alternatively, by submission of a completed MV-9. If supplied vehicles are not compliant, they cannot be titled in Pennsylvania and the delivering supplier shall be responsible to pick up and return the vehicle by replacing it with a California or "50-state" emissions certified vehicle that is compliant with all Title 25 requirements

2.0 REQUIRED EQUIPMENT SECTION

The following items shall be supplied on all vehicles as **Minimum** required equipment, unless otherwise superceded in the request for proposals or invitation for bids.

2.1 Lug wrench on all trucks and jacks on trucks up to and including 10,000 lbs. GVWR.

2.2 Air conditioning integral with the heater and defrosters.

2.3 Dual electric intermittent windshield wipers.

2.4 The rustproofing shall be factory or locally applied in compliance with Federal Standard 297A. Warranty coupon for five (5) years, at no cost to the Commonwealth, shall be furnished with each vehicle*.

* NOT APPLICABLE IF THE VEHICLE FURNISHED IS FACTORY WARRANTED AGAINST CORROSION FOR NOT LESS THAN 5 YEARS AT NO COST TO THE COMMONWEALTH OF PENNSYLVANIA. WARRANTY INDICATING COMPLIANCE IS REQUIRED WITH EACH VEHICLE.

2.5 Emergency warning triangle kit (on vehicles with GVWR of 10,000 lbs. or higher; aftermarket installation if necessary).

2.6 First aid kit, 10 person with mountable cabinet (on vehicles with GVWR of 10,000 lbs. or higher; aftermarket installation if necessary).

2.7 Fire extinguisher, rechargeable, with vehicle mount, reference 2A:10B:C, 5 pound (on vehicles with GVWR of 10,000 lbs. or higher; aftermarket installation if necessary).

2.8 Powerport.

2.9 Back-up alarm on all vehicles with GVWR of 10,000 lbs. or higher.

2.10 If a flexible fuel or an alternate fuel option is offered by the manufacturer, it shall be provided at no additional charge.

Vehicle Delivery Requirements

PCID NO. 1067

3.0 MATERIAL MASTERS: No Material Masters established for this delivery PCID.

Quality Assurance Specialist: Gerald Grecek, CPPB *GG*

Quality Assurance Supervisor: Brian Vulgaris *CV*



COMMONWEALTH OF PENNSYLVANIA
PENNSYLVANIA COMMERCIAL ITEM DESCRIPTION (PCID)

GENERAL REQUIREMENTS FOR BIDDING PennDOT VEHICLES/EQUIPMENT

(This item description supersedes PCID No. 1075 eff. 5/15/18)

PCID NO. 1075
Eff. 01/29/2020

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. Only the most current production year will be accepted unless permission is granted in writing by specification section chief prior to delivery.
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. Rear axle selection shall be made after the award and may be a mix of ratios as required. The successful vendor/manufacturer shall present three (3) computer runs showing the three most likely ratios for consideration for a top speed range of 55 MPH to 65 MPH max. Gear Selections shall provide gear ranges at 25 MPH & 35 MPH with a 1600 RPM to 1900 RPM range for plowing and spreading operations

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 Fleet Management Division by calling (717) 783-2371. 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. A detailed invoice listing all equipment, PO number, VIN numbers and price. 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, Fleet Management 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 GVWR 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 and Trailers designated for on-road/off-road use shall meet the following requirements:
 - a. Shall have a valid Pennsylvania state inspection sticker, if applicable.

- b. Shall have completed the manufacturers recommended pre-delivery service.

D. ON BOARD VEHICLE/EQUIPMENT REQUIREMENTS:(Continued)

- c. Shall have the vehicle and trailers manufacturer's model name and model number stated on a decal affixed to the inside of the driver's side door, if applicable.
- d. Shall be clean, lubricated, serviced, fuel tank filled to recommended capacity, propane units to include manufacturers recommended tank filled to recommended capacity, all adjustments completed, all mechanical and electrical motors and components fully functional and operational, and the vehicle will be "work 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. Hydraulic systems shall be compatible with Universal Tractor Fluid (UTF).
- i. Shall include a copy of the manufacturer's warranty and service policy with all warranty vouchers, certificates and coupons as in accordance with section E (GENERAL WARRANTY REQUIREMENTS) as listed below.
- 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.
- k. There shall be paper Operator, Maintenance and Repair manuals along with an electronic form of each manual on a USB thumb drive in Adobe PDF format. The paper operator's manual shall have a weather resistant holder attached to the unit.

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, 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, **without deductibles** 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. All warranty policies shall be from the OEM and repairs shall be made at any authorized OEM warranty repair facility or in-house by Department personnel. Multiple repair facilities shall be located regionally around the State to support warrantable repairs.

1. A. CONSTRUCTION EQUIPMENT:

The construction and agricultural equipment manufacturer's service and warranty program for full machine ("bumper to bumper") shall be for a minimum of two (2) years or two thousand (2,000) hours whichever first occurs. Warranty requirements for the vehicle chassis, if unit is mounted on a truck chassis, must be met based on the GVWR of the vehicle. (Examples: aerial bucket truck, mini forestry unit, broom truck, etc.).

E. GENERAL WARRANTY REQUIREMENTS: (Continued)

2. A. LIGHT/MEDIUM DUTY TRUCKS & VANS (up to 26,000# GVWR):

The chassis manufacturer's service and warranty program shall consist of a 3 year/ 36,000mile bumper to bumper warranty at minimum. The manufacturer's standard powertrain warranty will be accepted, if it meets the minimum requirement of 5 years/ 60,000 miles. If the manufacturer's standard warranties exceed the specified warranties, the manufacturer's standard warranties will apply.

2.B. SERVICE/UTILITY BODY AND ASSOCIATED COMPONENTS WARRANTY (up to 26,000# GVWR)

Service/Utility bodies shall be warranted for five (5) years to include color fading and or any defects in the paint (cracking, poor adhesion, etc.) 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.

2.C. FLAT BED WARRANTY (up to 26,000# GVWR)

A vehicle's flatbed 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

3. A. HEAVY DUTY CAB & CHASSIS (26,000# GVWR or higher):

The chassis manufacturer's service and warranty program shall be for one (1) year/unlimited mileage. This warranty is defined as the base warranty covering the entire chassis. Additional warranty requirements can be found below.

3. ADDITIONAL SPECIFIC WARRANTY ITEMS (Applies to all vehicles 26,000# GVWR or higher)

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.

E. GENERAL WARRANTY REQUIREMENTS: (Continued)

3. HEAVY DUTY CAB & CHASSIS (26,000# GVWR or higher): (Continued)

d. SERVICE/UTILITY BODY AND ASSOCIATED COMPONENTS WARRANTY

Service/Utility bodies shall be warranted for five (5) years to include color fading and or any defects in the paint (cracking, poor adhesion, etc.) 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 and oil pan. The transmission (automatic/manual) will be fully covered by the warranty and service program for three (3) years and will not be limited by mileage or hours. Electronic fuel delivery components, electronic control modules and emission control components shall be covered for five (5) years or 100,000 miles whichever first occurs. After treatment Device/DPF shall be warranted for minimum 5 years or 100,000 miles.

f. WARRANTY START UP DATE

The warranty startup date shall be defined as the date of transfer from PennDOT Fleet Management Division to the designated county location. This will be considered the day of delivery to the county and NOT the date of delivery by the successful bidder to the department. The PennDOT Fleet Management will supply the actual start-up date, equipment number and serial number of the machine, via email, to the successful bidder. It is the responsibility of the successful bidder to ensure that the equipment manufacturer recognizes and applies the departments actual warranty start-up date in their database.

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:

Any deviations to the specification must be granted in writing by the Chief of the Specification Section prior to delivery, previous acceptance will not be considered pre-approved. It shall be understood that any discrepancies/deviations between the specification and the completed unit(s), chassis or body up-fitter related, must be addressed and corrected prior to the delivery deadline and the Departments acceptances.

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 **the completed unit(s) wheeled and unwheeled at ground level (stacked loads are unacceptable)** to the Fleet Management Division, 17th Street and Arsenal Blvd. Harrisburg, PA 17120. All deliveries shall be made on a working day between 7:00 AM and 2:30 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.

Paper work provided by the manufacturer, vendor or carrier company at time of delivery that requires a signature, will only be signed for verification of delivery. The signature will not endorse that the delivered equipment is free of defects or that the equipment meets the specifications or quote.

Upon delivery the department will review the equipment to ensure it follows the bid specifications and to ensure the unit is in satisfactory working condition. If it is determined that the unit has deficiencies, they must be corrected and addressed, to the satisfaction of the department in a timely manner before acceptance and a request for payment can be issued.

Each vehicle, trailer, attachment or 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. A detailed invoice listing all equipment, PO number, VIN numbers and price. 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, Fleet Management Division, 17th Street and Arsenal Blvd., Harrisburg, PA 17120 (ATTN: Specifications Unit). All these forms and certificates will be delivered with the vehicle, trailer, attachment or unit at time of delivery to Fleet Management Division.

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, Fleet Management Division, 17th St. & Arsenal Blvd., Harrisburg, PA 17120, ATTN: Specification Unit Chief, Fleet Management 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.

If mileage costs will be charged to the Department for the diagnosis or repair of a warrantable item, an estimate of these costs shall be given to the County Equipment Manager prior to the repair agreement.

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.

K. MATERIAL MASTERS: No Material Masters established for this delivery PCID.

APPROVALS:

Quality Assurance Specialist: Gerald Grecek, CPPB

Quality Assurance Supervisor: Brian Vulgaris

Sample Forms (Instruction Sheet)

The Following Documents Shall Be Completed and Emailed / Shipped To

Email: Contact the Automotive Equipment Specialist @ The Fleet Management Division @ 717-705-2124 (This is an Excel Spread Sheet; a Work Copy will be Emailed to You)

**Mail: Fleet Management Division
17th & Arsenal Blvd.
Harrisburg, Pa. 17120
Attn: Specifications Division**

Note: These Forms Must Be Delivered to The Fleet Management 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 717-705-2124**
- 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 Manufacturer**
- 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**

LUBE AND COMPONENT 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				
Pump, Water				
Radiator				
Rexroth Valve				
Starter				
Steering Gear				
Suspension System				

Tank Fuel Capacity				
Tire Size Front LR				
Tire Size Rear LR				
Transaxle				
Transfer Case				
Transmission				
Wing Plow				

LUBE AND COMPONENT 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	Material#	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				

Description	Manufacturer	Model Number	Part Number				Warranty
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							
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							