

**Meeting Date:** 11/17/2015

**Report Type:** Consent

**Report ID:** 2015-00952

**Title: Cooperative Purchase Agreements: Replacement Fire Apparatus (Published for Review 11/05/2015)**

**Location:** Citywide

**Recommendation:** Pass a Motion 1) approving the use of the cooperative purchase agreement (Contract No. FS12-13) between the Houston-Galveston Area Council (HGAC) and: a) Siddons-Martin Emergency Group for the purchase of four brush trucks in an amount not to exceed \$761,544; and b) Pierce Manufacturing, Inc. for the purchase of four pumper trucks in an amount not to exceed \$2,465,012; and 2) authorizing the City Manager or the City Manager's designee to execute the purchases specified above.

**Contact:** Iseña Garcia, Program Specialist, (916) 808-1163; Mark Stevens, Fleet Manager, (916) 808-5869, Department of Public Works

**Presenter:** None

**Department:** Public Works Department

**Division:** Fleet Management

**Dept ID:** 15003211

**Attachments:**

1-Description/Analysis

2-Agreement

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### **City Attorney Review**

Approved as to Form  
Sari Myers Dierking  
11/3/2015 12:08:21 PM

### **Approvals/Acknowledgements**

Department Director or Designee: Jerry Way - 10/15/2015 5:57:52 PM

## Description/Analysis

**Issue Detail:** The Department of Public Works (DPW), Fleet Management Division, has a customer requirement to purchase replacement brush trucks and pumper trucks for the Fire Department. Four brush trucks and two pumper trucks are scheduled for replacement in FY2015/16. Two existing pumper trucks (equipment number 8928 and 8929) are early replacements; however, both trucks have high maintenance and repair costs. Given these high costs and the current production lead time of 345 days for the replacement trucks, Fleet Management recommends replacing all eight trucks at this time.

**Policy Considerations:** The recommendations in this report are in accordance with City Code Chapter 3.56 and Resolution No. 2013-0367, which requires additional posting time for labor agreements and agreements greater than \$1 million.

**Economic Impacts:** None

### Environmental Considerations:

**California Environmental Quality Act (CEQA):** No environmental review is necessary because the recommendations in this report involve the purchase of vehicles and are not considered to be a project in accordance with Section 15378(b)(2) of the CEQA guidelines.

**Sustainability:** The recommended purchases are consistent with the Fleet Sustainability Policy adopted by City Council on February 16, 2010 (Resolution No. 2010-083).

**Commission/Committee Action:** None

**Rationale for Recommendation:** After reviewing the available purchase options, Fleet Management has determined that using the HGAC cooperative purchase agreements with Siddons-Martin Emergency Group and Pierce Manufacturing, Inc. represents the most advantageous purchasing strategy. Time is of the essence because the recommended cooperative agreements will expire on November 30, 2015 and the cost of these trucks is anticipated to increase. The contracts were competitively bid nationally and HGAC receives greater discounts from the manufacturer, due to higher purchase volume, than the City would receive if issuing its own bid.

In an ongoing effort to maximize cost savings and staff resources, many government agencies share contracting efforts through cooperative purchasing. This procurement method increases pricing competitiveness and lowers capital costs through volume buying. When comparing the administrative costs of procurement, staff considers product research, source selection, specifications, advertising, staff reports, awarding, protest, and administration of the contract. It is often more cost-effective to eliminate the cost and time spent on these administrative processes and purchase items and services through a cooperative purchasing program.

The City has used both regional and national cooperative purchase agreements to complement its own contracting initiatives. Cooperative purchasing enables City departments to evaluate a broader range of contracting opportunities and to share resources with other jurisdictions. Cooperative purchasing also leverages internal and external resources to maximize cost savings opportunities for the City.

**Financial Considerations:** The recommended purchases in a total amount not to exceed \$3,226,556 will be made from the DPW FY2015/16 operating budget (Fleet Fund, Fund 6501) and charged to the Fire Apparatus Equipment capital improvement project (F12000300, General Fund, Fund 1001). Sufficient funding is available in each of these budgets to make the recommended purchases. The following table provides the detailed information for these purchases.

<b>Houston-Galveston Area Council (HGAC) Cooperative Contracts</b>				
Company	Item	Quantity	Unit Cost	Total
Siddons-Martin Emergency Group	Brush trucks	4	\$190,386	\$761,544
Pierce Manufacturing, Inc.	Pumper trucks	4	\$616,253	\$2,465,012
			Total	\$3,226,556

**Local Business Enterprise (LBE):** Siddons-Martin Emergency Group and Pierce Manufacturing, Inc. are not LBEs. The minimum LBE participation requirement is waived for the City’s use of cooperative purchase agreements that have been competitively bid, evaluated, and awarded by other governmental agencies that may or may not have similar LBE programs.

A CONTRACT BETWEEN  
HOUSTON-GALVESTON AREA COUNCIL  
Houston, Texas  
AND  
SIDMONS-MARTIN EMERGENCY GROUP  
Denton, Texas

This Contract is made and entered into by the **Houston-Galveston Area Council of Governments**, hereinafter referred to as **H-GAC**, having its principal place of business at 3555 Timmons Lane, Suite 120, Houston, Texas 77027, AND, **Siddons-Martin Emergency Group**, hereinafter referred to as the **CONTRACTOR**, having its principal place of business at 3500 Shelby Lane, Denton, Texas 76207.

**ARTICLE 1: SCOPE OF SERVICES**

The parties have entered into a **Fire Service Apparatus (All Types)** Contract to become effective as of December 1, 2013, and to continue through November 30, 2015 (the "Contract"), subject to extension upon mutual agreement of the **CONTRACTOR** and **H-GAC**. **H-GAC** enters into the Contract as Agent for participating governmental agencies, each hereinafter referred to as **END USER**, for the purchase of **Fire Service Apparatus (All Types)** offered by the **CONTRACTOR**. The **CONTRACTOR** agrees to sell **Fire Service Apparatus (All Types)** through the **H-GAC** Contract to **END USERS**.

**ARTICLE 2: THE COMPLETE AGREEMENT**

The Contract shall consist of the documents identified below in order of precedence:

1. The text of this Contract form, including but not limited to, Attachment A
2. General Terms and Conditions
3. Bid Specifications No: **FS12-13**, including any relevant suffixes
4. **CONTRACTOR's** Response to Bid No: **FS12-13**, including but not limited to, prices and options offered

All of which are either attached hereto or incorporated by reference and hereby made a part of this Contract, and shall constitute the complete agreement between the parties hereto. This Contract supersedes any and all oral or written agreements between the parties relating to matters herein. Except as otherwise provided herein, this Contract cannot be modified without the written consent of both parties.

**ARTICLE 3: LEGAL AUTHORITY**

**CONTRACTOR** and **H-GAC** warrant and represent to each other that they have adequate legal counsel and authority to enter into this Contract. The governing bodies, where applicable, have authorized the signatory officials to enter into this Contract and bind the parties to the terms of this Contract and any subsequent amendments thereto.

**ARTICLE 4: APPLICABLE LAWS**

The parties agree to conduct all activities under this Contract in accordance with all applicable rules, regulations, directives, issuances, ordinances, and laws in effect or promulgated during the term of this Contract.

**ARTICLE 5: INDEPENDENT CONTRACTOR**

The execution of this Contract and the rendering of services prescribed by this Contract do not change the independent status of **H-GAC** or **CONTRACTOR**. No provision of this Contract or act of **H-GAC** in performance of this Contract shall be construed as making **CONTRACTOR** the agent, servant or employee of **H-GAC**, the State of Texas or the United States Government. Employees of **CONTRACTOR** are subject to the exclusive control and supervision of **CONTRACTOR**. **CONTRACTOR** is solely responsible for employee payrolls and claims arising therefrom.

**ARTICLE 6: END USER AGREEMENTS**

**H-GAC** acknowledges that the **END USER** may choose to enter into an End User Agreement with the **CONTRACTOR** through this Contract and that the term of said Agreement may exceed the term of the **H-GAC** Contract. However this acknowledgement is not to be construed as **H-GAC's** endorsement or approval of the End User Agreement terms and conditions. **CONTRACTOR** agrees not to offer to, agree to or accept from **END USER** any terms or conditions that conflict with or contravene those in **CONTRACTOR's H-GAC** contract. Further, termination of this Contract for any reason shall not result in the termination of the underlying End User Agreements entered into between **CONTRACTOR** and any **END USER** which shall, in each instance, continue pursuant to their stated terms and duration. The only effect of termination of this Contract is that **CONTRACTOR** will no longer be able to enter into any new End User Agreements with **END USERS** pursuant to this Contract. Applicable **H-GAC** order processing charges will be due and payable to **H-GAC** on any End User Agreements surviving termination of this Contract between **H-GAC** and **CONTRACTOR**.

**ARTICLE 7:****SUBCONTRACTS & ASSIGNMENTS**

**CONTRACTOR** agrees not to subcontract, assign, transfer, convey, sublet or otherwise dispose of this Contract or any right, title, obligation or interest it may have therein to any third party without prior written notice to **H-GAC**. **H-GAC** reserves the right to accept or reject any such change. **CONTRACTOR** shall continue to remain responsible for all performance under this Contract regardless of any subcontract or assignment. **H-GAC** shall be liable solely to **CONTRACTOR** and not to any of its Subcontractors or Assignees.

**ARTICLE 8:****EXAMINATION AND RETENTION OF CONTRACTOR'S RECORDS**

**CONTRACTOR** shall maintain during the course of its work, complete and accurate records of items that are chargeable to **END USER** under this Contract. **H-GAC**, through its staff or its designated public accounting firm, the State of Texas, or the United States Government shall have the right at any reasonable time to inspect copy and audit those records on or off the premises of **CONTRACTOR**. Failure to provide access to records may be cause for termination of this Contract. **CONTRACTOR** shall maintain all records pertinent to this Contract for a period of not less than five (5) calendar years from the date of acceptance of the final contract closeout and until any outstanding litigation, audit or claim has been resolved. The right of access to records is not limited to the required retention period, but shall last as long as the records are retained. **CONTRACTOR** further agrees to include in all subcontracts under this Contract, a provision to the effect that the subcontractor agrees that **H-GAC'S** duly authorized representatives, shall, until the expiration of five (5) calendar years after final payment under the subcontract or until all audit findings have been resolved, have access to, and the right to examine and copy any directly pertinent books, documents, papers, invoices and records of such subcontractor involving any transaction relating to the subcontract.

**ARTICLE 9:****REPORTING REQUIREMENTS**

**CONTRACTOR** agrees to submit reports or other documentation in accordance with the General Terms and Conditions of the Bid Specifications. If **CONTRACTOR** fails to submit to **H-GAC** in a timely and satisfactory manner any such report or documentation, or otherwise fails to satisfactorily render performance hereunder, such failure may be considered cause for termination of this Contract.

**ARTICLE 10:****MOST FAVORED CUSTOMER CLAUSE**

If **CONTRACTOR**, at any time during this Contract, routinely enters into agreements with other governmental customers within the State of Texas, and offers the same or substantially the same products/services offered to **H-GAC** on a basis that provides prices, warranties, benefits, and or terms more favorable than those provided to **H-GAC**, **CONTRACTOR** shall notify **H-GAC** within ten (10) business days thereafter of that offering and this Contract shall be deemed to be automatically amended effective retroactively to the effective date of the most favorable contract, wherein **CONTRACTOR** shall provide the same prices, warranties, benefits, or terms to **H-GAC** and its **END USER**. **H-GAC** shall have the right and option at any time to decline to accept any such change, in which case the amendment shall be deemed null and void. If **CONTRACTOR** is of the opinion that any apparently more favorable price, warranty, benefit, or term charged and/or offered a customer during the term of this Contract is not in fact most favored treatment, **CONTRACTOR** shall within ten (10) business days notify **H-GAC** in writing, setting forth the detailed reasons **CONTRACTOR** believes aforesaid offer which has been deemed to be a most favored treatment, is not in fact most favored treatment. **H-GAC**, after due consideration of such written explanation, may decline to accept such explanation and thereupon this Contract between **H-GAC** and **CONTRACTOR** shall be automatically amended, effective retroactively, to the effective date of the most favored agreement, to provide the same prices, warranties, benefits, or terms to **H-GAC**.

The Parties accept the following definition of routine: A prescribed, detailed course of action to be followed regularly; a standard procedure. *EXCEPTION: This clause shall not be applicable to prices and price adjustments offered by a bidder, proposer or contractor, which are not within bidder's/ proposer's control [example; a manufacturer's bid concession], or to any prices offered to the Federal Government and its agencies.*

**ARTICLE 11:****SEVERABILITY**

All parties agree that should any provision of this Contract be determined to be invalid or unenforceable, such determination shall not affect any other term of this Contract, which shall continue in full force and effect.

**ARTICLE 12:****DISPUTES**

Any and all disputes concerning questions of fact or of law arising under this Contract, which are not disposed of by agreement, shall be decided by the Executive Director of **H-GAC** or his designee, who shall reduce his decision to writing and provide notice thereof to **CONTRACTOR**. The decision of the Executive Director or his designee shall be final and conclusive unless, within thirty (30) days from the date of receipt of such notice, **CONTRACTOR** requests a rehearing from the Executive Director of **H-GAC**. In connection with any rehearing under this Article, **CONTRACTOR** shall be afforded an opportunity to be heard and offer evidence in support of its position. The decision of the Executive Director after any such rehearing shall be final and conclusive. **CONTRACTOR** may, if it elects to do so, appeal the final and conclusive decision of the Executive Director to a court of competent jurisdiction. Pending final decision of a dispute hereunder, **CONTRACTOR** shall proceed diligently with the performance of this Contract and in accordance with **H-GAC'S** final decision.

**ARTICLE 13: LIMITATION OF CONTRACTOR'S LIABILITY**

Except as specified in any separate writing between the CONTRACTOR and an END USER, CONTRACTOR's total liability under this Contract, whether for breach of contract, warranty, negligence, strict liability, in tort or otherwise, but excluding its obligation to indemnify H-GAC described in Article 14, is limited to the price of the particular products/services sold hereunder, and CONTRACTOR agrees either to refund the purchase price or to repair or replace product(s) that are not as warranted. In no event will CONTRACTOR be liable for any loss of use, loss of time, inconvenience, commercial loss, lost profits or savings or other incidental, special or consequential damages to the full extent such use may be disclaimed by law. CONTRACTOR understands and agrees that it shall be liable to repay and shall repay upon demand to END USER any amounts determined by H-GAC, its independent auditors, or any agency of State or Federal government to have been paid in violation of the terms of this Contract.

**ARTICLE 14: LIMIT OF H-GAC'S LIABILITY AND INDEMNIFICATION OF H-GAC**

H-GAC's liability under this Contract, whether for breach of contract, warranty, negligence, strict liability, in tort or otherwise, is limited to its order processing charge. In no event will H-GAC be liable for any loss of use, loss of time, inconvenience, commercial loss, lost profits or savings or other incidental, special or consequential damages to the full extent such use may be disclaimed by law. Contractor agrees, to the extent permitted by law, to defend and hold harmless H-GAC, its board members, officers, agents, officials, employees, and indemnities from any and all claims, costs, expenses (including reasonable attorney fees), actions, causes of action, judgments, and liens arising as a result of CONTRACTOR's negligent act or omission under this Contract. CONTRACTOR shall notify H-GAC of the threat of lawsuit or of any actual suit filed against CONTRACTOR relating to this Contract.

**ARTICLE 15: TERMINATION FOR CAUSE**

H-GAC may terminate this Contract for cause based upon the failure of CONTRACTOR to comply with the terms and/or conditions of the Contract; provided that H-GAC shall give CONTRACTOR written notice specifying CONTRACTOR'S failure. If within thirty (30) days after receipt of such notice, CONTRACTOR shall not have either corrected such failure, or thereafter proceeded diligently to complete such correction, then H-GAC may, at its option, place CONTRACTOR in default and the Contract shall terminate on the date specified in such notice. CONTRACTOR shall pay to H-GAC any order processing charges due from CONTRACTOR on that portion of the Contract actually performed by CONTRACTOR and for which compensation was received by CONTRACTOR.

**ARTICLE 16: TERMINATION FOR CONVENIENCE**

Either H-GAC or CONTRACTOR may cancel or terminate this Contract at any time by giving thirty (30) days written notice to the other. CONTRACTOR may be entitled to payment from END USER for services actually performed; to the extent said services are satisfactory to END USER. CONTRACTOR shall pay to H-GAC any order processing charges due from CONTRACTOR on that portion of the Contract actually performed by CONTRACTOR and for which compensation is received by CONTRACTOR.

**ARTICLE 17: CIVIL AND CRIMINAL PROVISIONS AND SANCTIONS**

CONTRACTOR agrees that it will perform under this Contract in conformance with safeguards against fraud and abuse as set forth by H-GAC, the State of Texas, and the acts and regulations of any funding entity. CONTRACTOR agrees to notify H-GAC of any suspected fraud, abuse or other criminal activity related to this Contract through filing of a written report promptly after it becomes aware of such activity.

**ARTICLE 18: GOVERNING LAW & VENUE**

This Contract shall be governed by the laws of the State of Texas. Venue and jurisdiction of any suit or cause of action arising under or in connection with this Contract shall lie exclusively in Harris County, Texas. Disputes between END USER and CONTRACTOR are to be resolved in accord with the law and venue rules of the state of purchase. CONTRACTOR shall immediately notify H-GAC of such disputes.

**ARTICLE 19: PAYMENT OF H-GAC ORDER PROCESSING CHARGE**

CONTRACTOR agrees to sell its products to END USERS based on the pricing and other terms of this Contract, including, but not limited to, the payment of the applicable H-GAC order processing charge. On notification from an END USER that an order has been placed with CONTRACTOR, H-GAC will invoice CONTRACTOR for the applicable order processing charge. Upon delivery of any product/service by CONTRACTOR and acceptance by END USER, CONTRACTOR shall, within thirty (30) calendar days or ten (10) business days after receipt of payment, whichever is less, pay H-GAC the full amount of the applicable order processing charge, whether or not CONTRACTOR has received an invoice from H-GAC. For sales made by CONTRACTOR based on this contract, including sales to entities without Interlocal Contracts, CONTRACTOR shall pay the applicable order processing charges to H-GAC. Further, CONTRACTOR agrees to encourage entities who are not members of H-GAC's Cooperative Purchasing Program to execute an H-GAC Interlocal Contract. H-GAC reserves the right to take appropriate actions including, but not limited to, contract termination if CONTRACTOR fails to promptly remit H-GAC's order processing charge. In no event shall H-GAC have any liability to CONTRACTOR for any goods or services an END USER procures from CONTRACTOR.

**ARTICLE 20:**

**LIQUIDATED DAMAGES**

Any liquidated damages terms will be determined between CONTRACTOR and END USER at the time END USER's purchase order is placed.

**ARTICLE 21:**

**PERFORMANCE AND PAYMENT BOND FOR INDIVIDUAL ORDERS**

H-GAC's contractual requirements DO NOT include a Performance & Payment Bond (PPB), and offered pricing should reflect this cost saving. However, CONTRACTOR must be prepared to offer a PPB to cover any specific order if so requested by END USER. CONTRACTOR shall quote a price to END USER for provision of any requested PPB, and agrees to furnish the PPB within ten business (10) days of receipt of END USER's purchase order.

**ARTICLE 22:**

**CHANGE OF CONTRACTOR STATUS**

CONTRACTOR shall immediately notify H-GAC, in writing, of ANY change in ownership, control, dealership/franchisee status, Motor Vehicle license status, or name, and shall also advise whether or not this Contract shall be affected in any way by such change. H-GAC shall have the right to determine whether or not such change is acceptable, and to determine what action shall be warranted, up to and including cancellation of Contract.

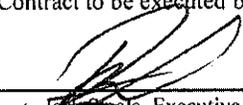
**ARTICLE 23:**

**LICENSING REQUIRED BY TEXAS MOTOR VEHICLE BOARD [IF APPLICABLE]**

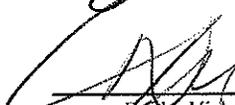
CONTRACTOR will for the duration of this Contract maintain current licenses that are required by the Texas Motor Vehicle Commission Code. If at any time during this Contract period, any CONTRACTOR'S license is not renewed, or is denied or revoked, CONTRACTOR shall be deemed to be in default of this Contract unless the Motor Vehicle Board issues a stay or waiver. Contractor shall promptly provide copies of all current applicable Texas Motor Vehicle Board documentation to H-GAC upon request.

IN WITNESS WHEREOF, the parties have caused this Contract to be executed by their duly authorized representatives.

Signed for Houston-Galveston  
Area Council, Houston, Texas:

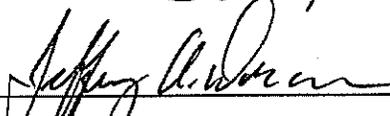
  
\_\_\_\_\_  
Jack Steele, Executive Director

Attest for Houston-Galveston  
Area Council, Houston, Texas:

  
\_\_\_\_\_  
Leidre Vick, Director of Public Services

Date: Dec 9, 2015

Signed for Siddons-Martin Emergency Group  
Denton, Texas:

  
\_\_\_\_\_  
Jeffrey A. Doran - Sales Manager

Printed Name & Title: Jeffrey A. Doran - Sales Manager

Date: 11-29 2013

Attest for Siddons-Martin Emergency Group  
Denton, Texas:

  
\_\_\_\_\_  
Connie Oubre - Acct.

Printed Name & Title: Connie Oubre - Acct.

Date: 11-29 2013

**Attachment A**  
**Siddons-Martin Emergency Group**  
**Fire Service Apparatus (All Types)**  
**Contract No. FS12-13**

<b>T. Oshkosh</b>		
<b>F. Airport Rescue Fire-Fighting Vehicles</b>		
TF01	Oshkosh Striker 1500, 2-Door, Aluminum Cab, 5 Passenger Seating, Roof Turret (375/750 gpm), bumper Turret (300 gpm), Two Handlines (Foam/Water) one each side, Water Tank Capacity (1500 gal.), Foam Tank Capacity (210 gal.), Fire Pump (Power divider driven Waterous CRQA, Single Stage Centrifugal, 1950 gpm at 240 psi)	\$ 633,100.00
TF02	Oshkosh Striker 3000, 2-Door, Aluminum Cab, 5 Passenger Seating, Roof Turret (600/1200 gpm), bumper Turret (300 gpm), Two Handlines (Foam/Water) one each side, Water Tank Capacity (3000 gal.), Foam Tank Capacity (420 gal.), Fire Pump (Power divider driven Waterous CRQA, Single Stage Centrifugal, 1950 gpm at 240 psi)	\$ 684,033.28
TF03	Oshkosh Striker 4500, 2-Door, Aluminum Cab, 5 Passenger Seating, Roof Turret (600/1200 gpm), bumper Turret (300 gpm), Two Handlines (Foam/Water) one each side, Water Tank Capacity (4500 gal.), Foam Tank Capacity (420 gal.), Fire Pump (Power divider driven Waterous CRQA, Single Stage Centrifugal, 1950 gpm at 240 psi)	\$ 858,760.46
TF05	Oshkosh Stinger Class 2 ARFF vehicle; 2-Door Ford 4x4 F550 Cab/chassis, 2 Passenger Seating, Bumper Turret, one (1) twin agent handline, Water Tank Capacity (300 gal.), Foam Tank Capacity (40 gal.), Dry Chemical 500 pounds, All-pneumatic dry agent discharge, 250-gpm pump module.	\$ 291,110.00
<b>U. Pierce</b>		
<b>A. Aerials (Booms/Platforms, Ladders, Ladder/Platforms)</b>		
UA01	Pierce Saber Chassis, 4-Door Full Tilt Aluminum Cab, Formed Aluminum Body, Single Axle, 75' Rear-Mounted Telescoping Ladder (500#)	\$ 610,000.00
UA02	Pierce Arrow Chassis, 4-Door Full Tilt Aluminum Cab, Formed Aluminum Body, Single Axle, 75' Rear-Mounted Telescoping Ladder (500#)	\$ 684,817.00
UA03	Pierce Arrow Chassis, 4-Door Full Tilt Aluminum Cab, Formed Aluminum Body, Tandem Axle, 75' Rear-Mounted Telescoping Ladder (500#)	\$ 703,240.00
UA04	Pierce Arrow Chassis, 4-Door Full Tilt Aluminum Cab, Formed Aluminum Body, Tandem Axle, 105' Rear-Mounted Telescoping Ladder (500#)	\$ 804,930.00
UA06	Pierce Arrow Chassis, 4-Door Full Tilt Aluminum Cab, Formed Aluminum Body, Tandem Axle, 100' Mid-Mounted Telescoping Ladder (#500)	\$ 885,653.00
UA07	Pierce Arrow Chassis, 4-Door Full Tilt Aluminum Cab, Formed Aluminum Body, Tandem Axle, 85' Rear-Mounted Telescoping Ladder with Platform (750#)	\$ 864,959.00
UA08	Pierce Arrow Chassis, 4-Door Full Tilt Aluminum Cab, Formed Aluminum Body, Tandem Axle, 95' Mid-Mounted Telescoping Ladder with Platform (750#)	\$ 996,580.00
UA09	Pierce Arrow Chassis, 4-Door Full Tilt Aluminum Cab, Formed Aluminum Body, Tandem Axle, 100' Rear-Mounted Telescoping Ladder with Platform (750#)	\$ 951,663.00
UA10	Pierce Arrow Chassis, 4-Door Full Tilt Aluminum Cab, Formed Aluminum Body, Single Axle, 100' Tractor Drawn - Mid-Mounted Telescoping Ladder (#500)	\$ 901,810.00
UA11	Pierce Arrow Chassis, 4-Door Full Tilt Aluminum Cab, Formed Aluminum Body, Tandem Axle, 114' Rear Mounted Telescopic, Articulating Platform	\$ 1,308,114.00
<b>B. Wildland Fire Apparatus (Brush Fire)</b>		
UB03	Pierce Brush Fire Apparatus, Ford F550, Formed Aluminum Flatbed	\$ 109,888.00
UB05	Pierce Brush Fire Apparatus, Ford F550, Formed Aluminum Utility Body	\$ 122,324.00
UB07	Freightliner 4-Door 4 x 4 Wildland, 500 water, 1000 gpm Pump	\$ 324,942.00
<b>C. Pumper Fire Apparatus</b>		
UC01	M2 Freightliner, 2-Door, OEM Cab, Aluminum Body, Single Axle, 1250 GPM Pump, Mid-Mounted Pumper	\$ 196,514.00
UC02	IHC, 2-Door, OEM Cab, Aluminum Body, Single Axle, 1250 GPM Pump, Mid-Mounted Pumper	\$ 198,338.00
UC03	KW, 2-Door, OME Cab, Aluminum Body, Single Axle, 1250 GPM Pump, Mid-Mounted Pumper	\$ 199,023.00

UC04	Peterbilt, 2-Door, OME Cab, Aluminum Body, Single Axle, 1250 GPM Pump, Mid-Mounted Pumper	\$ 205,619.00
UC05	Pierce Saber, 4-Door, Full-Tilt, Aluminum Cab, Aluminum Body, Single Axle, 1250 GPM Pump, Mid-Mounted Pumper	\$ 307,311.00
UC06	Pierce Arrow XT, 4-Door, Full-Tilt, Aluminum Cab, Aluminum Body, Single Axle, 1250 GPM Pump, Mid-Mounted Pumper	\$ 393,280.00
UC07	Pierce Dash CF, 4-Door, Full-Tilt, Aluminum Cab, Aluminum Body, Single Axle, 1250 GPM Pump, Mid-Mounted Pumper	\$ 445,411.00
<b>D. Special Service Apparatus (Walk-In &amp; Non-Walk-in Bodies) Multi-use: Rescue, Re-Hab, Hazmat, Mobile</b>		
UD01	Ford F-550 4-Door, 12 Non-Walk-in Formed Aluminum Body	\$ 128,264.00
UD02	M2 Freightliner, 2-Door, OEM Cab, Single Axle, Formed Aluminum Body, Non-Walk-In Body	\$ 178,802.00
UD03	IHC, 2-Door, OEM Cab, Single Axle, Formed Aluminum Body, Non-Walk-In Body	\$ 183,454.00
UD04	Kenworth, 2-Door, OEM Cab, Single Axle, Formed Aluminum Body, Non-Walk-In Body	\$ 186,290.00
UD05	Peterbilt, 2-Door, OEM Cab, Single Axle, Formed Aluminum Body, Non-Walk-In Body	\$ 192,835.00
UD06	Pierce Saber, Full-Tilt, Aluminum Cab, Single Axle, Formed Aluminum Body, Non-Walk-In Body	\$ 292,516.00
UD07	Pierce Arrow XT 4-Door, Full Tilt, Aluminum Cab, Single Axle, Formed Aluminum Body, Non Walk-in Body	\$ 373,354.00
UD08	M2 Freightliner, 2-Door, OEM Cab, Single Axle, Formed Aluminum Body, Walk-In Body	\$ 195,637.00
UD09	IHC, 2-Door, OEM Cab, Single Axle, Formed Aluminum Body, Walk-In Body	\$ 200,259.00
UD10	Kenworth, 2-Door, OEM Cab, Single Axle, Formed Aluminum Body, Walk-In Body	\$ 203,125.00
UD11	Peterbilt, 2-Door, OEM Cab, Single Axle, Formed Aluminum Body, Walk-In Body	\$ 209,476.00
UD12	Pierce Saber 4-Door, Full-Tilt, Aluminum Cab, Single Axle, Formed Aluminum Body, Walk-In Body	\$ 309,351.00
UD13	Pierce Arrow XT 4-Door, Full Tilt, Aluminum Cab, Single Axle, Formed Aluminum Body, Walk-in Body	\$ 401,562.00
<b>E. Pumper/Tankers &amp; Tankers</b>		
UE01	Freightliner 2 Door, Single Axle Tanker, Aluminum Body w/2100 water & 1000 pump	\$ 196,506.00
UE02	International 2dr Single Axle Tanker, Aluminum Body w/2100 water & 1000 pump	\$ 199,334.00
UE03	Kenworth 2dr Single Axle Tanker, Aluminum Body w/2100 water & 1000 pump	\$ 199,216.00
UE04	Peterbilt 2dr Single Axle Tanker, Aluminum w/2100 water & 1000 pump	\$ 205,925.00
UE05	Pierce Saber, 4-Door, Full-Tilt, Aluminum Cab, Pumper/Tanker, Aluminum Body, Single Axle, 1500 GPM Pump, Mid-Mounted	\$ 334,265.00
UE06	Pierce Impel, 4-Door, Full-Tilt, Aluminum Cab, Pumper/Tanker, Aluminum Body, Tandem Axle, 1250 GPM Pump, Mid-Mounted	\$ 434,775.00
UE07	Freightliner 2dr, Tandem Axle Tanker, Aluminum Body w/3000 water & 500 pump	\$ 209,929.00
UE08	International 2dr Tandem Axle Tanker, Aluminum Body w/3000 water & 500 pump	\$ 230,955.00
UE09	Kenworth 2dr Tandem Axle Tanker, Aluminum Body w/3000 water & 500 pump	\$ 219,563.00
UE10	Peterbilt 2dr Tandem Axle Tanker, Aluminum w/3000 water & 500 pump	\$ 228,527.00
UE11	Pierce Saber, 4-Door, Full-Tilt, Aluminum Cab, Aluminum Body, Single Axle, 1250 GPM Pump, Mid-Mounted Elliptical Tanker	\$ 352,143.00
UE12	Pierce Impel, 4-Door, Full-Tilt, Aluminum Cab, Aluminum Body, Tandem Axle, 1250 GPM Pump, Mid-Mounted Elliptical Tanker	\$ 445,834.00
<b>X. Siddons-Martin</b>		
<b>B. Wildland Fire Apparatus (Brush Fire)</b>		
XB01	Slip In Unit: Complete Slip in firefighting package for flatbed or pickup bed. Heavy Duty frame, 200 GPM pump, 250 gallon poly tank. 200' hose reel. Hose Tray. Stainless steel plumbing.	\$ 13,850.00
XB02	Skeeter Type 3 or 4 F-750: Brush unit, Large (33,000 gvw). Custom firefighting body. 750 gallon poly tank. 200-750 gpm pump. 150' hose reel. Stainless steel plumbing. Hose tray. Tool tray. Side body compartments.	\$144,155.00
XB03	Skeeter Type 5 F-550: Brush unit, Medium (19,500 gvw). Custom firefighting body. 400 gallon poly tank. 200 gpm pump. 150' hose reel. Stainless steel plumbing. Hose tray. Tool tray. Side body compartments.	\$102,777.00

<b>XB04</b>	Skeeter Type 6 F-350: Brush unit, Small (13,000 gvw). Custom firefighting body. 300 gallon poly tank. 200 gpm pump. 150' hose reel. Stainless steel plumbing. Hose tray. Tool tray. Side body compartments.	\$79,845.00
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## PROPOSAL FOR FIRE APPARATUS

City of Sacramento
5770 Freeport Blvd, Suite 2
Sacramento, CA 95822

<b>DATE</b>	October 12, 2015
<b>QUOTE NO.</b>	91012-15
<b>EXPIRES</b>	November 30, 2015
<b>SALES REP.</b>	Ryan Wright

The undersigned is prepared to manufacture for you, upon an order being placed by you, for final acceptance by Skeeter Brush Trucks, LLC, at its home office in Kirby, Texas, the apparatus and equipment herein named and for the following prices:

### **OPTION A: 100% PRE-PAYMENT AT TIME OF CONTRACT SIGNING**

#	Description	Each	Extension
A	Four (4) Skeeter Type 5 Patrols (HGAC contract # FS12-13, XB03)	157,123.00	628,492.00
B	Fire Fighting Equipment (per separate list)	14,427.00	57,708.00
C	Factory Inspection Trip (1 trip for 2 SFD representatives)	800.00	3,200.00
D	Delivery / Dealer Preparation	3,000.00	12,000.00
E	DISCOUNT FOR FULL PAYMENT AT CONTRACT SIGNING	<b>(1,750.00)</b>	<b>(7,000.00)</b>
F	<b>SUBTOTAL</b>	<b>173,600.00</b>	<b>694,400.00</b>
G	State Sales Tax @ 8.50%	14,756.00	59,024.00
H	Performance Bond	2,029.97	8,119.88
I	<b>TOTAL PURCHASE PRICE</b>	<b>190,385.97</b>	<b>761,543.88</b>

#### OPTION A - FULL PAYMENT AT CONTRACT SIGNING TERMS AND CONDITIONS:

- 1) The Grand Total pricing is only valid if four (4) units are purchased at the same time, on the same contract (or purchase order).
- 2) The City of Sacramento pay the purchase price of **\$761,543.88** for the Product within fifteen (15) calendar days of contract signing directly to Skeeter Brush Trucks, LLC.
- 3) The proposed delivery timeframe for the Product will not begin until Skeeter Brush Trucks, LLC approves the contract (or purchase order) and receives full payment of the purchase price of **\$761,543.88**.
- 4) If payment of **\$761,543.88** is late and if the City of Sacramento elects not to have the delivery extended, **\$200.00 per calendar day** will be added to the final invoice.

Said apparatus and equipment are to be built and shipped in accordance with the specifications hereto attached, delays due to strikes, war, or intentional conflict, failures to obtain chassis, materials, or other causes beyond our control not preventing, within about 240 TO 270 CALENDAR DAYS after receipt of this order and the acceptance thereof at our office at Kirby, Texas, and to be delivered to you at SACRAMENTO, CALIFORNIA.

The specifications herein contained shall form a part of the final contract, and are subject to changes desired by the purchaser, provided such alterations are interlined prior to the acceptance by the company of the order to purchase, and provided such alterations do not materially affect the cost of the construction of the apparatus.

The proposal for fire apparatus conforms with all Federal Department of Transportation (DOT) rules and regulations in effect at the time of bid, and with all National Fire Protection Association (NFPA) Guidelines for Automotive Fire Apparatus as published at the time of bid, except as modified by customer specifications. Any increased costs incurred by first party because of future changes in or additions to said DOT or NFPA standards will be passed along to the customers as an addition to the price set forth above. Unless accepted by November 30, 2015 the right is reserved to withdraw this proposition.

Respectfully Submitted,

A handwritten signature in black ink, appearing to read "Rep. Wright", written in a cursive style.

Authorized Sales Representative



Specification for:  
**Rescue Side Skeeter Type 5**

Submitted To:

**Sacramento, City of**  
5770 Freeport Blvd, Suite 2 Sacramento, CA 95822

Specification 1444  
**September 30, 2015**

Prepared by:  
**Ryan Wright**  
**Skeeter Brush Trucks, LLC**

## **Proposal**

We are pleased to submit the following specifications to you for a **Rescue Side Skeeter Type 5** per your request for quotation. The following paragraphs will describe in detail the apparatus proposed. Loose equipment not specifically requested will not be provided.

Skeeter Brush Trucks, LLC. a wholly owned company of Siddons-Martin Emergency Group, is a custom fire apparatus manufacturer specializing in Brush-Grass-Wildland fire fighting vehicles. Our 22,000 square foot manufacturing facility is located in Kirby, Texas and is operated by some of the most experienced wildland firefighting vehicle manufacturing individuals in the business. Our performance and quality minded approach to manufacturing generates some of the most reliable vehicles in the industry, thus yielding a very high return on investment.

Skeeter Brush Trucks, LLC. provides the very best sole source product and service solutions to the fire service. Skeeter Brush Trucks LLC carries \$1,000,000 in liability insurance, with \$3,000,000 in excess umbrella liability insurance. The opportunity to place this Skeeter Brush Truck in your department is greatly appreciated and we are certain it will fulfill your every requirement. We look forward to working for you.

Siddons-Martin Emergency Group sales and service professionals are dedicated and experienced in all aspects of the fire apparatus business. Our core business is the sales and service of fire apparatus.

## **Service Advantage**

Siddons-Martin Emergency Group currently staffs eleven (11) service centers located throughout Texas, Louisiana, and New Mexico, and maintains a fleet of service vehicles to provide on-site service of your SKEETER Brush Truck. The Siddons-Martin Emergency Group Service Department is dedicated to the fire service and provides service and maintenance exclusively on fire apparatus. Siddons-Martin Emergency Group employs numerous EVT trained technicians and is constantly engaged in continuing factory and EVT training classes and programs in order to stay abreast of the rapidly improving technologies incorporated within today's fire apparatus. SMEG is an authorized sales and service dealer for Pierce Mfg., and an authorized service center for Waterous, Hale, and Darley fire pumps, and an OEM distributor for all major fire equipment accessories.

## **Construction and Design**

Skeeter Brush Trucks body and component designs are engineered. Body construction (unless otherwise noted) is done in-house, using the best in design and materials. RBM's for body frames are among the very highest in the industry. Wiring harnesses are custom manufactured in-house, and meet or exceed OEM standards. All wiring is protected, run through conduit, and distributed through one, easily accessed, sealed control box.

## **Chassis Operation Manual**

The chassis manufacturer shall provide one (1) operational manual. This manual may be in either a notebook type binder, with reference tabs or a compact disk (CD) with all of the printed material in an electronic format (Adobe Acrobat PDF).

## **Fire Pump Operational Manual**

A fire pump service, instruction, and operational manual shall be supplied. This manual may be in either a notebook type binder, with reference tabs or a compact disk (CD) with all of the printed material in an electronic format (Adobe Acrobat PDF).

## **Foam System Operational Manual**

A foam system service, instruction, and operational manual shall be supplied. This manual may be in either a notebook type binder, with reference tabs or a compact disk (CD) with all of the printed material in an electronic format (Adobe Acrobat PDF).

## **Apparatus Operational Manuals**

The fire apparatus manufacturer shall provide two (2) operational manuals. These manuals may be in either a notebook type binder, with reference tabs or a compact disk (CD) with all of the printed material in an electronic format (Adobe Acrobat PDF).

## **Compliance To Standards**

This vehicle shall meet or exceed State and Federal Motor Vehicle Standards. Please note: the vehicle being proposed is "non-compliant" to all NFPA standards. The purchaser assumes all liability and full responsibility for this vehicle specification, and the inclusion or exclusion of any NFPA provisions or equipment on the vehicle.

### **100044.3 - PAINT**

1. Cab Color: Vermilion Red
2. Cab Secondary Color: N/A
3. Description: Solid Red
4. Bumper Color: Brushed Aluminum
5. Wheel Color: Black
6. Body Color: Brushed Aluminum
7. Cab Steps: Black Bed Liner

### **100034.2 - CHASSIS SPECIFICATIONS**

#### CHASSIS SPECIFICATIONS

One (1) FORD F-550 two axle drive 4 x 4, dual rear wheels (DRW), Super Cab (extended) door XL cab and chassis

GVWR: 19,500 pounds

Wheelbase: 161.8"

Cab to Axle: 60"

Grille: black

Tow Hooks: front loops

Driving Front Axle and Suspension: 7,000# HD front package, 7,000# suspension package, stabilizer bar, front shocks, manual hubs

Transfer Case: cab manual control high and low range HD front package, stabilizer bar, front shocks, manual hubs

Tires: two (2) front tires shall be 225/70R19.50, radial all weather highway tread

Front Wheels: two (2) 19.50" x 6.00" steel disc, ten (10)-hole pattern steel disc wheels

Rear Axle and Suspension: 14,706# wide track rear axle, 14,706# suspension package, stabilizer bar, limited slip

Tires: four (4) 225/70R19.50 all weather type radial tires

Rear Wheels: four (4) 19.50" x 6.00" steel disc, ten (10)-hole pattern steel disc wheels

Braking System: four (4) wheel disc brake system with an Anti Lock (ABS)

Engine:

- Model: 6.8L V-10 SOHC, EFI, Flex Fuel gasoline engine
- Number of Cylinders: Ten (10) "V" configuration
- Displacement: 6.8 liters
- Rated Brake Horsepower: 362 @ 5750 rpm
- Torque: 457 @ 3250 ft lbs

Cooling System: a coolant mixture protected to -30 degrees Fahrenheit

Exhaust System: horizontally mounted, discharge on right side aft of wheels

Fuel Tank: 40 gallon rear mounted, left side filler extension

Transmission: six speed automatic

Steering: power steering system

Battery: 78 amp-hr 650CCA 12-volt battery

Alternator: single 175 amp 12 volt

Cab Construction: XL Series two (2) door steel construction, sun visors, tinted glass, roof clearance lights, grab handles interior

Cab Paint: single color, air bags front and air curtains side

Climate Controls: controls for heat, defroster, and air conditioning

Air Bags: driver's and passenger's front, seat side, and side curtain

Cab Instruments: standard type, four (4) rocker switches

Drivers and Passenger Seat: 40/20/40 vinyl bucket type seats with three (3) point safety harness, center flip down seat back. Flip rear bench.

Printed Manuals: one (1) printed chassis operation manual

Cab Accessories: AM/FM radio, two radio speakers and antenna

Jack lug wrench set

Color: Ford Vermilion Red [More](#)

### **100037.1 - POWER PACKAGE**

The chassis shall be equipped with power locks, windows, and mirrors.

### **100046.1 - CHASSIS LIFT KIT**

A 6" Fabtech heavy duty, 4 link, off road suspension lift kit with heavy-duty off road shocks shall be installed on the chassis. The system is designed to significantly increase wheel travel, in addition to giving the chassis increased ground clearance.

NOTE: THE END USER MUST BE AWARE THAT LIFTING THE CHASSIS AND ADDING LARGER TIRES WILL ALTER THE VEHICLES CENTER OF GRAVITY. THIS WILL AFFECT THE VEHICLES HANDLING CHARACTERISTICS.

IN ADDITION, THE LARGER TIRES WILL AFFECT STOPPING DISTANCE. THE SYSTEM IS NOT RECOMMENDED FOR VEHICLES THAT OPERATE PRIMARILY IN AN ON ROAD ENVIRONMENT. THE SYSTEM IS HIGHLY RECOMMENDED FOR VEHICLES THAT OPERATE IN OFF ROAD OR ROUGH TERRAIN ENVIRONMENTS.

TURNING RADIUS MAY BE REDUCED (if needed) 1-3 DEGREES TO PREVENT TIRE RUB.

### **100048.1 - FRONT AND REAR SUPER SINGLE TIRES AND WHEELS**

The front and rear tires will be 335/80R20 22PR, severe service radial all terrain tread. The tire weight rating shall be load range "M", and match the rim rating. Wheels for the front and rear axles will be 20" x 11.00" steel disc, ten (10)-hole pattern special order for Military/Government off road application. The weight rating of the rims will be 6,750 each.

### **100053.1 - SPARE SUPER SINGLE TIRE AND WHEEL**

One (1) spare wheel and tire shall be 335/80R20 22PR, severe service radial all terrain tread. The tire weight rating shall be load range "M", and match the rim rating. Wheel for the spare shall be 20" x 11.00" steel disc, ten (10)-hole pattern special order for Military/Government off road application. The weight rating of the rim will be 6,750 each.

### **100055.1 - MOUNTING SPARE TIRE AND WHEEL**

The spare tire and wheel shall be mounted on top of the water tank. An aluminum plate shall be installed with a mounting assembly for the wheel and tire.

### **100062.1 - FRONT BUMPER**

The factory bumper shall be removed and replaced with a custom fabricated, heavy duty aluminum bumper and grille protection assembly. The bumper extension unit shall be brushed aluminum finish.

### **043370.2 - FRONT LICENSE PLATE HOLDER**

There shall be a flip-up license plate holder installed on the front winch fairlead.

Location: Front Bumper

### **100058.1 - REAR MUD FLAPS**

The chassis shall be supplied with mud flaps with the manufacturer's logo. The mud flaps shall be installed behind the rear wheels.

### **100111.2 - CAB STEPS**

The cab shall be equipped with black steel tubing step assemblies, on each side of the cab. The steps shall be covered in black bed liner.

### **100086.3 - CUSTOM FABRICATED CONSOLE AND SWITCH PANEL**

A custom fabricated poly (plastic) electrical console and enclosure shall be located between the driver's and passenger's seats. It shall house the siren, switches, cup holder, and auxiliary equipment.

The console will stop at the cup holder, and will not have a map box. This will facilitate rear leg room.

### **100081.1 - WINCH -- FRONT MOUNTED**

A Warn Winch Company Model #M15000 PN47801 15,000 pound capacity 12-volt electric powered winch shall be permanently installed at the front center bumper extension area. The unit shall include the following:

- a) 3.86 feet per minute pulling speed at 12,000 lb rated load
- b) 440 amps at full capacity
- c) Cable roller guide assembly
- d) 90 feet of 7/16" diameter galvanized cable and hawse fairlead & safety hook assembly shall be supplied.
- e) Winch speed shall be constant with forward and reverse modes controlled with a push button device at the end of a 12 feet (12') minimum control cable which connects to the winch through a weatherproof receptacle.

### **100243.1 - FIRE PUMP SPECIFICATIONS**

A Hale HPX200-B18 fire pump shall be installed on the apparatus. The pump/engine shall perform to the standards of ISO 9 and NFPA 1906 low-pressure pump rating. Typical pump performance from 4 foot draft at sea level using a 2.5" suction line and a 2.5" discharge shall be.

240 GPM @ 10 PSI  
190 GPM @ 75 PSI  
150 GPM @ 100 PSI.  
60 GPM @ 150 PSI.

#### **Pump**

The pump body shall be made of alloy aluminum castings coupled together with a stainless steel band clamp with an O-ring seal which allows quick pump volute removal for servicing. The pump end shall be factory hydrostatically tested to 350 PSI for 10 minutes. The impeller shall be bronze. The renewable clearance rings shall be made of anodic plated bronze to inhibit galvanic corrosion. The impeller shall be 4.87 inches in diameter and designed with a sleeve back end to prevent water from coming in contact with the engine shaft. The pump shaft seal shall be an automatically adjusting, maintenance free, mechanical type. The pump body shall be equipped with a petcock drain valve.

#### **Engine**

The engine shall be a four cycle gasoline Briggs and Stratton Vanguard series V-Twin, overhead valve, air cooled design. Engine rating shall be 18 BHP at 4000. Engine displacement shall be 570cc and shall be designed to meet CARB (California Air Resources Board) standards. A 12-volt electric system shall be provided with electric starter and a 16 amp alternator. Recoil backup engine starting shall be provided. Engine shall be equipped with a residential muffler with USDA approved spark arrestor.

### **100423.1 - THERMAL RELIEF UNIT**

There shall be a Trident model brass thermal relief valve installed in the manifold allowing auto dump at 143° water temperature. The thermal relief valve shall auto close at 118° water temp. There shall be a hose directing water under the body, but in a location visible by the pump operator.

### **100272.1 - STAINLESS STEEL PLUMBING SYSTEM**

The auxiliary fire pump plumbing system shall be built completely of stainless steel piping, fittings, and connections. Victaulic couplings shall be installed to permit flexing of the plumbing system and allow for quick removal of piping or valves for service. Tank connections and remote plumbing shall use high-pressure flexible piping. Flexible hose couplings shall be

threaded stainless steel or Victaulic connections.

### **100285.1 - VALVES**

All valves used in the plumbing installation shall be stainless steel quarter turn full flow type.

The plumbing installation shall include quarter turn ball valves with local "on-valve" handle control, with custom embossed labeling for each valve.

### **100470.1 - NO PUMP EXHUAUST**

#### **100265.2 - PUMP PANEL ENCLOSURE**

A pump panel enclosure shall be installed. The enclosure shall be fabricated of .125" aluminum with a DA finish, bolted in place with a pump instrument panel installed.

A Hale engine and pump control panel shall be provided at the rear of the vehicle. The following shall be located at the operator's position:

2.5" discharge pressure gauge  
tachometer  
start/stop control  
throttle control  
low oil pressure warning light

The pump control panel shall be mounted at the right rear corner of the body, recessed, in the vertical body wall (like the Type 3 panels).

#### **100418.1 - REMOTE PUMP PANEL CONTROL PANEL IN CAB**

The cab shall be equipped with a secondary remote electrically controlled pump instrument control panel in the cab. There shall be a remote pressure gauge, start/stop switch, and electronic throttle control.

#### **100267.1 - FUEL SYSTEM FROM CHASSIS FUEL TANK**

The fuel system for the auxiliary fire pump shall be plumbed from the chassis fuel system. There shall be a separate fuel pickup tube mounted in the chassis fuel tank specifically for a separate engine driven pump assembly.

There shall be an electric fuel pump with spin on fuel filter and flexible fuel hose furnished between the chassis fuel tank and the auxiliary pump.

#### **100256.1 - ELECTRIC START WIRING TO CHASSIS**

The 12 volt positive and negative cables shall be provided from the chassis battery to the fire pump area, wired through the master disconnect solenoid system. The cables shall have a circuit breaker installed at the chassis battery.

#### **100254.1 - PUMP ENGINE OIL DRAIN**

The fire pump engine shall have an oil drain line installed. It shall allow for easy oil draining.

#### **100255.1 - AUXILIARY FIRE PUMP MOUNTING PROVISIONS**

The auxiliary fire pump shall be installed at the right side rear of the body. The sub-structure shall have welded in mounting sub-plates between the structural members. The pump shall be mounted on a di-electric surface under pump and bolts through the sub-plates.

#### **100273.1 - FRONT BUMPER MANIFOLD SUPPLY**

There shall be an 1.5" stainless steel valve, with a flexible supply hose installed to feed the front discharge manifold.

#### **100270.1 - 2-1/2" GATED INTAKE -- REAR**

One (1) 2-1/2" gated suction intake shall be installed on rear area to supply the fire pump from an external water supply. The valve shall be a controlled with a direct quarter-turn ball valve control handle and shall have 2-1/2" NH female thread with removable screen with plug. The color coded label shall be installed near the control handle.

#### **100283.1 - TANK TO PUMP LINE INSTALLATION**

The 2.5" tank to pump line shall be installed with a flexible hump hose connection and stainless steel clamps to the water

tank. The valve shall be controlled with a manually operated handle directly on the valve.

### **100281.1 - WATER TANK FILL AND COOLING LINE**

One (1) 1" fire pump to water tank refill and bypass cooler line shall be provided. The pump to tank valve shall be a 1" full flow quarter turn ball valve with local control handle. A 1" flex hose shall be installed to the water tank. A nameplate label shall be installed next to the valve.

### **100277.1 - 1-1/2" PRE-CONNECT DISCHARGE -- REAR HOSEBED**

One (1) 1-1/2" pre-connect discharge shall be installed on the rear hosebed, controlled by a quarter turn ball valve with direct local control handle in pump area. The discharge shall have 1-1/2" NH male hose threads and nameplate label adjacent the valve control handle.

The valve shall be on the manifold, with a feed line to the rear of the tray.

### **100426.5 - 1.5" FRONT BUMPER DISCHARGE -- LEFT SIDE**

One (1) 1.5" discharge shall be piped front bumper area, located on the left side. The discharge shall be piped with flexible 1.5" hose. The outlet shall terminate with stainless steel or chrome plated brass chicksan swivel outlet with 1.5" male threads.

Two (2) 1" manually operated quarter turn ball valves shall be installed, one (1) at the bumper area and one (1) rear manifold area, with nameplate label provided at valve control area.

There shall be a hose tray/holder capable of holding 15' of 1.5" hose with a nozzle.

### **100288.1 - HOSE REEL**

One (1) Hannay aluminum hose reel shall be installed. The reel shall have leak proof ball bearing swing joint, adjustable friction brake, electric 12 volt rewind and manual crank rewind provisions.

The reel shall be mounted on the left side rear corner of the flatbed body.

### **100292.2 - REEL CAPACITY**

The hose reel shall have a capacity of 150 feet of hose.

There shall be no hose included, the department shall supply the hose.

### **100295.1 - HOSE REEL DISCHARGE**

One (1) 1" discharge shall be piped from the fire pump to the hose reel with flexible high pressure hose. The quarter turn ball valve shall be controlled on pump panel. A nameplate label shall be provided near the valve control handle.

### **100259.1 - CLASS A FOAM SYSTEM**

A Scotty Model #4171 Class A through-the-pump foam system shall be installed to supply all discharges. The unit shall be mounted between the discharge and suction side of a pump. The unit shall be adjustable, permitting various foam ratio percentages to be educted depending on the nozzles in use. Foam selection percentages between .3 and 1% shall be available. The foam system has been designed for simplicity of operation and maintenance. A flush system will be installed.

### **100226.1 - WATER TANK GAUGES**

A Class1 "Intelli-Tank" water tank level gauge shall be installed on pump panel. The tank level gauge shall indicated the liquid level on an easy to read LED display and show increments of 1/8 of a tank. A pressure transducer mounted on the outside of the tank in an easily accessible area.

CAB MOUNTED -

One (1) Class1 112124 "Intelli-Tank" mini water tank level gauge shall be installed in the cab or center console (if so equipped). The tank level gauge shall indicate the liquid level on an easy to read LED display and show increments of 1/8 of a tank. A pressure transducer mounted on the outside of the tank in an easily accessible area.

### **100200.1 - WATER TANK SPECIFICATIONS**

The water tank shall have a capacity of 400 gallons.

### **100205.1 - NFPA COMPLIANCE**

The water tank construction shall conform to applicable NFPA standards.

### **100213.1 - TANK TO PUMP CONNECTION**

A 3" pipe shall be provided on the water tank for connection of the tank to the suction side of the pump with a flexible hump hose assembly. The tank suction valve and hump hose required to complete this connection shall be supplied by the final assembler.

### **100227.1 - FOAM TANK SPECIFICATIONS**

The Class A foam tank shall have a capacity of 10 gallons.

### **100239.1 - FOAM TANK GAUGES**

One (1) Class 1 foam tank level gauge shall be installed on pump panel. The tank level gauge shall indicate the liquid level on an easy to read LED display and show increments of 1/8 of a tank. A pressure transducer mounted on the outside of the tank in an easily accessible area.

One (1) Class1 112124 "Intelli-Tank" mini foam tank level gauge shall be installed in the cab or center console (if so equipped). The tank level gauge shall indicate the liquid level on an easy to read LED display and show increments of 1/8 of a tank. A pressure transducer mounted on the outside of the tank in an easily accessible area.

### **100549.2 - CUSTOM RESCUE SIDE ALUMINUM BODY**

The body will be a custom fabricated severe service rescue-side type, constructed of all aluminum. The body shall be 114" long by 96" wide, designed for a 60" cab to axle dimension. The body shall be specifically designed and engineered for off-road wildland firefighting.

#### **FLAT-BED SUB-STRUCTURE**

The body shall have 5" x 1.75" structural aluminum channel main frame rails. The body frame rails shall be isolated from the truck frame by .500" industrial isolators.

#### **FLAT-BED CROSS-MEMBER SUB-STRUCTURE**

The cross-members shall be 3" x 2 5/16" structural aluminum I beams with cross-members on 12" centers.

#### **FLAT-BED MOUNTING**

The body shall be bolted to the chassis frame rails at the rear end of the frame. There shall be brackets installed at the middle of the body frame to prevent side to side movement. The body shall be spring mounted at the front of the body frame. The flexible mounting system shall allow for body/chassis flexing during extreme off road conditions.

#### **SQUARE CORNERS -- FLAT-BED**

The front corners of the flat-bed body shall be square.

#### **HEADACHE RACK**

The front of the body shall have a 2" formed aluminum tube headache rack. The rack shall extend the full width of the body and be attached to the front body corners. The assembly shall extend above the chassis cab and have mounting platform for installation of the light bar and two work lights. Wiring for the lights will be placed inside the tubing for protection. The headache rack shall have four (4) vertical 2" tubes for extra strength.

#### **FUEL FILLER**

The fuel filler tube and cap shall be installed at the left hand side, rear of the body.

#### **FENDER PANELS**

The lower portion of the flat-bed body shall have fender panels over and aft of the rear wheel panel area. The panels shall be constructed of polished aluminum tread plate. The wheel well openings will be cut out to conform to the wheels.

#### **REAR BODY PANEL**

A vertical body panel shall be installed at the rear of the body constructed of .190" smooth aluminum. The panel shall house the running lights, taillights, back-up lights, and emergency lights. The body panel shall be angled to allow for a 30 degree angle of departure.

#### **PROTECTIVE RAILS**

The upper body area shall be protected with radius corner 1" diameter aluminum tube railing assembly installed around the top of the body. The corners of the body shall have vertical risers space in critical areas. The railings shall act a protection to the upper body structures when off road in heavy brush conditions. The rear upper body corner rails shall house the upper

emergency lights and work lights.

#### **SIDE BODY COMPARTMENTS, FRONT BODY -- RIGHT AND LEFT SIDES**

Two (2) body equipment storage compartments shall be installed at the front of the body just behind the headache rack, one each side of the apparatus. The dimensions shall be approximately: 30" wide, 44" high, and 24" deep. The compartments shall be constructed of .125" aluminum tread plate on all exterior surfaces. Each compartment shall be equipped with a vertically hinged door with a single latch installed. The doors shall be equipped with gas operated door opening assistant cylinders.

Each vertical compartment shall have one (1) fixed shelf.

The compartment floors shall be lined with turtle tile.

#### **100121.1 - ANGLED CORNERS, FLAT-BED**

The front corners of the flat-bed body will be angled at approximately 45 degrees.

#### **100141.1 - FRONT BODY TRANSVERSE COMPARTMENT**

A transverse compartment 96" long x 18" wide x 24" high will be installed in front of the water tank. The compartment floor shall be lined with Turtle Tile.

#### **100462.5 - TOOL STORAGE TRAY/TRANSVERSE -- FRONT OF TANK, ABOVE**

A tool storage compartment shall be installed in front of the water tank, above the lower compartments. The dimensions shall be approximately: 72" long, 22" wide, 12" high. The front corner shall be angled to match the angle of the body if necessary.

The compartment shall be constructed of expanded aluminum plate, and be open on top.

#### **100144.1 - DRIVERS SIDE UPPER BODY COMPARTMENT**

A body equipment storage compartment shall be installed on the flatbed surface, right side of the apparatus. The dimensions shall be approximately 48" wide, 24" high, and 18" deep. The compartment shall be constructed of .125" aluminum tread plate on all exterior surfaces. The compartment shall be equipped with a lift up door with latch installed. The door shall be equipped with dual gas operated door opening assistant cylinders. Turtle tile shall be installed on the floor.

#### **100148.1 - PASSENGERS SIDE UPPER BODY COMPARTMENT**

A body equipment storage compartment shall be installed on the flatbed surface, left side of the apparatus. The dimensions shall be approximately 48" wide, 24" high, and 18" deep. The compartment shall be constructed of .125" aluminum tread plate on all exterior surfaces. The compartment shall be equipped with a lift up door with latch installed. The door shall be equipped with dual gas operated door opening assistant cylinders. Turtle tile shall be installed on the floor.

#### **043365.7 - PASSENGERS SIDE UPPER BODY COMPARTMENT, REARWARD**

A body equipment storage compartment shall be installed on the flatbed surface, right side of the apparatus. The dimensions shall be approximately 24" wide, 24" high, and 18" deep. The compartment shall be constructed of .125" aluminum tread plate on all exterior surfaces. The compartment shall be equipped with a lift up door with latch installed. The door shall be equipped with dual gas operated door opening assistant cylinders. Turtle tile shall be installed on the floor.

Location: Pass Side Body, Rearward of 48" Comp

#### **100544.2 - CUSTOM COMPARTMENT SHELVING**

A horizontal shelf with 1" lip shall be installed in the passenger's side compartments.

There shall be a vertical divider in both of the passenger's side compartments. They shall be installed under the horizontal shelf.

#### **100152.2 - UNDER BODY COMP, REAR DRIVER'S SIDE**

An under flat bed equipment storage compartment shall be installed under the flatbed surface, on the driver's side of the apparatus, in behind the rear axle. The dimensions shall be approximately: 24" wide, 15" high, and 24" deep. The compartment shall be constructed of .125" aluminum tread plate on all exterior surface. The compartment shall be equipped with a vertically hinged door with latch installed. The compartment shall have turtle tile installed.

#### **100157.1 - UNDER BODY COMP, REAR PASS SIDE**

An under flat bed equipment storage compartment shall be installed under the flatbed surface, on the passenger's side of the apparatus behind the rear axle. The dimensions shall be approximately: 24" wide, 15" high, and 22" deep. The compartment shall be constructed of .125" aluminum tread plate on all exterior surface. The compartment shall be equipped with a vertically hinged door with latch installed. The compartment shall have turtle tile installed.

#### **100159.1 - UNDER BODY COMPARTMENT -- REAR CENTER**

An under body equipment storage compartment shall be installed under the flatbed surface located in the center rear of the apparatus. The dimensions shall be approximately: 33" wide, 5" high, and 96" front to rear. The compartment shall be for by the vertical body beams, upper floor surface, and an aluminum lower floor area. The compartment shall be equipped with a hinged drop down door with dual latches installed.

#### **100166.1 - REAR SLIDE-OUT TRAY**

The rear center compartment shall be equipped with an .190" aluminum slide out tray on UHMW plastic slide pads. The tray shall be full width and full length of the compartment interior.

#### **100161.1 - COMPARTMENT DOOR KEY LOCKS**

The hinged compartment doors shall be equipped with key type door locks.

#### **100162.2 - COMPARTMENT LIGHTING, LED**

Four (4) compartments shall be each be equipped with one (1) Grote 61E41, 4" diameter rubber mounted LED light.

The rear under body compartments shall have two (2) recessed clear LED lights each.

#### **100163.2 - AUTOMATIC COMPARTMENT DOOR LIGHT SWITCHES**

Each exterior compartment light shall be automatically controlled by a door activated switch.

#### **100164.1 - DOOR OPEN LIGHT**

A "door open" or equipment operation warning light shall be installed on cab dash. The light shall be flashing LED light with a red lens.

#### **043367.3 - DOOR AJAR ALARM**

There shall be an audible alarm that sounds when a compartment door is open.

Location: Console

#### **100169.1 - HOSE TRAY -- LEFT SIDE**

A hose storage tray shall be installed over the left side equipment compartment, on the left side of the apparatus. The dimensions shall be approximately: 16" wide, 8" high, and 72" long. The hose tray shall be constructed entirely of .125" aluminum tread plate on all exterior surfaces. The assembly shall be equipped with a hinged lift up aluminum tread plate door on top, enclosed front panel, and open rear area. The hose tray shall be equipped with Turtle Tile floor covering.

#### **100382.1 - TOOL STORAGE TRAY/COMPARTMENT - RIGHT SIDE**

A tool storage compartment shall be installed over the right side equipment compartment, on the left side of the apparatus. The dimensions shall be approximately: 16" wide, 8" high, and 72" long. The compartment shall be constructed of .125" aluminum tread plate on all exterior surfaces. The compartment shall be equipped with a hinged lift up aluminum tread plate door with a latch installed. The compartment shall be equipped with Turtle Tile floor covering.

#### **100180.1 - REAR PULL OUT STEP**

There shall be a rear "Pull-Out-Fold-Down" step located at the rear of the apparatus, step shall be stowed in a pocket under the rear of the unit. Storage pocket shall be fabricated to allow easy access to deploying for operation.

#### **100181.1 - FOLDING STEP**

A Signature 4 lighted 8" square folding step of die cast zinc shall be installed. The step shall comply with NFPA non-slip standards and shall be installed on the rear left side of the body. The step shall be equipped with lighting to NFPA standard.

#### **043256.5 - I ZONE HOSE BRACKETS**

There shall be two (2) fold down temporary hose brackets (I Zone Style) installed on the vertical uprights at the rear of the body. The brackets shall be designed to drop down when needed, and fold up quickly for stowing. The brackets shall be used for quick containment of deployed hose.

The brackets shall match the design displayed in the photograph: "Attachment A".

Location: Rear Body Uprights

### **100325.1 - ELECTRICAL ENCLOSURE**

An electric wiring enclosure for the 12 volt wiring shall be installed in the forward wall of the right side compartment with a removable panel. The dimensions of the enclosures shall be approximately 20" high, 18" wide, and 4" deep.

### **100326.1 - 12 VOLT ELECTRICAL SPECIFICATIONS**

The following describes the low voltage electrical system on the apparatus including all panels, electrical components, switches and relays, wiring harnesses and other electrical components. The apparatus manufacturer shall conform to the latest Federal DOT standards, current automotive electrical system standards and the applicable requirements of the NFPA.

Wiring shall be stranded copper or copper alloy conductors of a gauge rated to carry 125 percent of the maximum current for which the circuit is protected. Voltage drops shall not exceed 10 percent in all wiring from the power source to the using device. The wiring and wiring harness and insulation shall be in conformance to applicable SAE and NFPA standards. The wiring harness shall conform to SAE J-1128 with GXL temperature properties. Exposed wiring shall be run in a loom with a minimum 289 degree Fahrenheit rating. Wiring looms shall be properly supported and attached to body members. Electrical conductors shall be constructed in accordance with applicable SAE standards, except when good engineering practice requires special construction.

All wiring connections and terminations shall provide positive mechanical and electrical connections and be installed in accordance with the device manufacturer's instructions. When wiring passes through metal panels, electrical connections shall be with mechanical type fasteners and rubber grommets

Wiring between cab and body shall be split using Deutsche type connectors or enclosed in a terminal junction panel allowing body removal with minimal impact on the apparatus electrical system. Connections shall be crimp-type with heat shrink tubing with insulated shanks to resist moisture and foreign debris such as grease and road grime. Weather resistant connectors shall be provided throughout the system.

Electrical junction or terminal boxes shall be weather resistant and located away from water spray conditions. When required, automatic reset breakers and relays shall be housed in the main body junction panel.

There shall be no exposed electrical cabling, harnesses, or terminal connections located in compartments, unless enclosed in an electrical junction box or covered with a removable electrical panel. Wiring shall be secured in place and protected against heat, liquid contaminants and damage.

Low voltage overcurrent protective devices shall be provided for the electrical circuits. The devices shall be accessible and located in required terminal connection locations or weather resistant enclosures. Overcurrent protection devices shall be automatic reset type suitable for electrical equipment and meet SAE standards. All electrical equipment, switches, relays, terminals, and connectors shall have a direct current rating of 125 percent of maximum current for which the circuit is protected. Electro-magnetic interference suppression shall be provided in the system as required in applicable SAE standards.

The electrical system shall include the following:

Electrical terminals in weather exposed areas shall have a non-conductive grease or spray applied. All terminal plugs located outside of the cab or body shall be treated with a corrosion preventative compound.

All electrical wiring shall be placed in a protective loom or be harnessed.

Exposed connections shall be protected by heat shrink material and sealed connectors.

Large fender washers shall be used when fastening equipment to the underside of the cab roof and all holes made in the roof shall be caulked with silicone.

Electrical components installed in exposed areas shall be mounted in a manner that will not allow moisture to accumulate inside.

A coil of wire must be provided behind an electrical appliance to allow them to be pulled away from mounting area for inspection and service work.

All lights in a weather exposed area that have their sockets shall have corrosion preventative compound added to the socket terminal area.

Warning lights shall be switched in the chassis cab with labeled rocker type switches located in an accessible location. Individual rocker switches shall be provided only for warning lights provided exceeding the minimum level of warning lights in either the stationary or moving modes. All electrical equipment switches shall be appropriately identified as to their function and mounted on a switch panel mounted in the cab convenient to the operator. For easy nighttime operation, an integral indicator light shall be provided to indicate when a circuit is energized.

A single warning light switch shall activate all required warning lights. This switch will allow the vehicle to respond to an emergency "calling for the right of way". When the parking brake is activated, a "blocking the right of way" system shall be automatically activated per NFPA requirements. "Clear" warning lights shall be automatically shed on actuation of parking brake.

### **100327.1 - ELECTRICAL HARNESS AND WIRING**

All wiring shall be hidden, enclosed, or protected under the body in protective material, or within the apparatus body components. In addition, split loom conduits shall be installed and enclosed, suitably secured and protected against heat and physical damage.

### **100090.1 - BATTERY MASTER DISCONNECT**

A battery disconnect system shall be installed to control the 12 volt power supply from the battery system to the body and cab final stage manufacturer installed equipment. The solenoid shall be controlled by the standard key starter switch.

### **100094.2 - 120 VOLT SHORE POWER RECEPTACLE**

A Kussmaul model 091-55-20-120 20 amp "auto-eject" shore power receptacle shall be provided with hinged weatherproof cover and an enclosure for protection from dirt and damage. The shore power plug shall be "ejected" when the chassis's engine starter is engaged and the receptacle shall be wired to any 120 volt A/C equipment requiring shore power.

The auto eject cover shall be RED.

Location shall be: Determined at the Pre-Construction conference.

### **100328.1 - DOT IDENTIFICATION LIGHTS**

All LED identification lights shall be installed on the vehicle as required by applicable highway regulations.

### **100329.1 - LICENSE PLATE MOUNTING**

An LED license plate light shall be installed on the rear vertical wall of the body.

### **100330.1 - BRAKE, TURN, TAIL LIGHTS**

Two (2) Whelen M6 Series Model M6BTT 4-5/16" x 6-3/4" brake, turn, tail lights with M6FC chrome flanges shall be provided. The warning lights shall incorporate Linear Super-LED and Smart LED technology. The light-heads configuration shall consist of 18 red Super-LEDs and a clear optic polycarbonate lens. The light-heads shall be surface mountable via two screws.

The light-heads shall utilize an optic collimator and a chrome vacuum metalized reflector for maximum illumination. The light-head shall include 164 flash patterns including: a variety of CA Title 13 compliant, sinkable, left/right, top/bottom, in/out, and steady burn. The light-heads shall have the Whelen exclusive NERM (Non-Emergency Recognition Mode) feature.

The lens/reflector assembly shall be wet sealed and resistant to: water, moisture, dust, and other environmental conditions. The outer lens shall have a hard coating applied to increase strength and ensure longevity. The light engine shall be installed at the rear of the unit and be completely sealed. The pc board shall be conformal coated for additional protection.

The lights shall be furnished with five 6" wire pigtails, a Santoprene rubber gasket and the #M6FC chrome flanges shall be included for installation.

### **100331.1 - BACK-UP LIGHTS**

Two (2) Whelen M-Series, 4" x 6" rear LED back-up lights shall be installed.

### **100068.1 - OFF-ROAD LIGHTS**

There shall be two (2) Warn 4" HID (High Intensity Discharge) lights installed on front bumper/grille guard.

### **100071.1 - GROUND LIGHTS - FRONT BUMPER**

Two (2) Grote #61E41 LED ground lights shall be installed under the front bumper, one (1) on each side of the apparatus, wired to parking brake circuit and a switch in the cab.

### **100073.1 - GROUND LIGHTS - CAB**

Two (2) Grote #61E41 LED ground lights shall be installed under the cab step area in compliance with NFPA standards, one (1) on each side of the apparatus, wired to parking brake circuit and a switch in the cab.

### **100182.1 - GROUND LIGHTS - UNDER REAR STEP**

Two (2) Grote #61E41 LED ground lights shall be installed under the rear step area, one on each side of the apparatus, wired to parking brake circuit.

### **100184.1 - WORK LIGHTS**

Four (4) Grote #61E41 LED step lights with clear lens shall be installed, wired to switch on the cab dash. Location shall be: in each corner of the protective tubing assembly to light the pump panel and the front body walkway area.

### **100318.1 - FRONT BUMPER SCENE LIGHTS**

A Rigid Manufacturing E series 12031 20" spot/flood light shall be installed. The LED scene lights shall incorporate clear LED's with a clear optic polycarbonate lens for maximum illumination.

Location shall be: front bumper/grille

### **100322.1 - SCENE LIGHTS**

Six (6) Rigid Manufacturing Dually 20211 scene lights shall be installed. The LED scene lights shall incorporate clear LED's with a clear optic polycarbonate lens for maximum illumination.

Location shall be: Two (2) outward facing, each side of body, two (2) rear facing.

### **100438.1 - GPS UNIT**

A Garmin NUVI 52 LM dash mounted GPS unit shall be installed. It has a 5" display, lane assist with junction view, displays speed limit with accurate arrival time, and spoken turn-by-turn directions.

### **100503.1 - TILT METER, DIGITAL**

A Teraflex digital tilt meter/inclinometer shall be installed on the dashboard.

### **100107.1 - BACK-UP CAMERA SYSTEM**

One (1) Rear View Systems camera system shall be furnished utilizing a camera which provides a wide field of view and picture quality. A sealed camera enclosure shall be utilized along with electronic connections. The color monitor shall be installed in cab.

One (1) camera shall cover the rear of the apparatus, which will activate during back-up mode and during normal operations if needed.

### **100100.1 - RADIO INSTALLATION**

Two (2) fire radios shall be supplied by the purchaser to be installed.

### **100324.1 - BACK-UP ALARM**

One (1) Buyers #BA107 back up alarm shall be installed.

### **100312.1 - ELECTRONIC SIREN**

One (1) Whelen, Model #CCSRN3 CENCOM siren and twenty-one (21) auxiliary switches with noise canceling microphone shall be provided. Siren head will be mounted low on the front dash in easy reach of the driver.

### **100313.1 - SIREN SPEAKER**

One (1) Whelen Model #SA315P Projector Series siren speaker shall be provided with bracket. The 100 watt siren speaker shall be designed in a black nylon composite housing with 123 decibel rating.

Location shall be: Behind the front bumper.

### **100310.1 - MOUNTING OF LIGHT BAR WITH PROTECTIVE GUARD**

The cab bar light shall be mounted on the headache bar shelf with an aluminum brush guard protective guard assembly.

### **100309.2 - LIGHTBAR**

A Whelen Legacy low profile Super-LED NFPA lightbar shall be installed. The 54" lightbar shall be designed to meet the minimum clearing requirements for Zone A Upper. The internal components of the lightbar shall be housed within a two piece extruded aluminum base/top. The outer shell shall be clear optic polycarbonate lenses designed to maximize light

output and shield against environmental elements.

The lightbar shall utilize snap-in brackets to hold in the lighthoods. The brackets shall give the end user the ability to make quick repairs. The lightbar shall have all solid state components. The lightbar shall have two wire harnesses exiting the unit: one (1) 17 conductor 22 gauge control cable which controls all internal light functions; and one (1) 2 conductor 10 gauge cable for main power and ground. Each cable shall be 15' long.

The lightbar shall have four (4) red Linear Super-LED corner modules to provide off angle protection for the front and rear of the vehicle. Each corner module shall consist of twelve (12) Super-LEDs mounted within a vacuum metalized parabolic reflector. The corner module shall also utilize an optic collimator for maximum light output. The twelve (12) LEDs shall be mounted in one straight line.

The solid state I/O board shall be microprocessor controlled. The I/O board shall have built-in reverse-polarity protection and output-short protection. The board shall have the ability to flash sixteen (16) LED warning lights. There shall be a data bank of 13 Scan-Lock flash patterns including steady burn. The board shall also have outputs to add takedown and alley lights. Low power and cruise light function shall also be included. The cruise light function shall allow the user to employ the four (4) corner modules as marker courtesy lights.

The lightbar shall include clear "Take Down" and "Alley Lights" included.

The lightbars shall have an amber "Traffic Advisor" built into the rear portion of the lightbar.

One (1) red module shall be constant red to comply with California State Law.

### **100315.1 - NFPA WARNING LIGHTS**

#### **ZONE A -- LOWER FRONT WARNING LIGHTS**

Two (2) Whelen M-7 Series Model #M7R 3" x 7" warning lights and a chrome flange shall be in the front forward facing area of the front bumper. The warning lights shall incorporate Linear Super-LED and Smart LED technology. The lighthoods configuration shall consist of 18 red Super-LEDs and a clear optic polycarbonate lens. The lighthoods shall be surface mountable via two screws. The lighthoods shall utilize an optic collimator and a chrome vacuum metalized reflector for maximum illumination.

#### **ZONE B AND D -- INTERSECTION LIGHTS**

Two (2) Whelen M-7 Series Model #M7R 3" x 7" warning lights and a M6FC chrome flange shall be installed on bumper extension, as far forward as possible. The warning lights shall incorporate Linear Super-LED and Smart LED technology. The light-heads configuration shall consist of 18 red Super-LEDs and a clear optic polycarbonate lens.

#### **ZONE B AND D -- LOWER REAR CORNER WARNING LIGHTS**

Two (2) Whelen M-7 Series Model #M7R 3" x 7" warning lights and a chrome flange shall be installed in lower rear side corner body area. The warning lights shall incorporate Linear Super-LED and Smart LED technology. The lighthoods configuration shall consist of 18 red Super-LEDs and a clear optic polycarbonate lens.

#### **ZONE B AND D -- UPPER SIDE REAR WARNING LIGHTS**

Two (2) Whelen M-7 Series Model #M7R 3" x 7" warning lights and a M6FC chrome flange shall be installed in the upper rear body side panel. The warning lights shall incorporate Linear Super-LED and Smart LED technology. The lighthoods configuration shall consist of 18 red Super-LEDs and a clear optic polycarbonate lens.

#### **ZONE B AND D -- UPPER REAR WARNING LIGHTS**

Two (2) Whelen M-7 Series Model #M7R 3" x 7" warning lights and a chrome flange shall be installed in the upper rear corner of the handrails. The warning lights shall incorporate Linear Super-LED and Smart LED technology. The lighthoods configuration shall consist of 18 red Super-LEDs and a clear optic polycarbonate lens.

#### **ZONE C -- LOWER REAR WARNING LIGHTS**

Two (2) Whelen M-7 Series Model #M7R 3" x 7" warning lights and a chrome flange shall be lower rear of body. The warning lights shall incorporate Linear Super-LED and Smart LED technology. The lighthoods configuration shall consist of 18 red Super-LEDs and a clear optic polycarbonate lens.

### **100332.3 - CAB REFLECTIVE LETTERING**

The cab lettering shall be Scotchlite reflective material, shaded in black.

"SCR" shall be installed on all four sides of the apparatus as the State Identifier. They shall be 3" white reflective with black shadow.

There shall be a 2 digit vehicle ID number installed adjacent to the SCR identifier on all four sides of the apparatus. They shall be 10" white reflective with no black shadow. It shall be installed on a flat plate on the rear passenger's side compartment.

"PATROL" shall be installed on both sides of the apparatus, in RED reflective. It shall be installed in 3" red reflective with a black shadow letters inside the 4" white strip on the body compartments. It shall also be installed on the rear of the apparatus vertical wall.

### **100335.3 - CUSTOM GRAPHICS**

There shall be one (1) pair of decals furnished by the fire department and applied by the apparatus manufacturer.

### **100338.2 - REFLECTIVE STRIPING**

The sides of the vehicle shall be provided with a 1" x 4" x 1" wide 3M brand Scotchlite reflective multi-stripe. There shall be a 1" gap between each of the stripes. The striping shall be placed up to 60" above ground level and shall conform to NFPA reflectivity requirements. At least 50% of the perimeter length of each side shall have reflective striping.

The striping shall match existing SFD apparatus.

### **100343.1 - FRONT CHEVRON STRIPING**

There shall be alternating chevron striping installed across the front bumper where permitted. The chevron striping shall consist of 6" diamond grade striping in the following colors:

The first color shall be red diamond grade

The second color shall be lime yellow diamond grade

### **100345.1 - REAR CHEVRON STRIPING**

There shall be alternating chevron striping installed on the rear vertical body panel. The chevron striping shall consist of 6" diamond grade striping in the following colors:

The first color shall be red diamond grade.

The second color shall be lime yellow diamond grade.

### **100346.1 - CAPACITIES PLACARD**

The apparatus shall have a reflective placard that provides the following information:

Water Tank Capacity  
Pump Capacities  
NWCG Typing  
Skeeter Contact Information

### **100350.1 - SPANNER AND HYDRANT WRENCH SET WITH MOUNTING BRACKET**

One (1) Kocheck lightweight spanner wrench holder shall be installed. The bracket shall hold one (1) hydrant wrench and two (2) universal spanners. It shall be mounted on the rear vertical exterior panel of the left side compartment.

### **100369.1 - WATER TANK WARRANTY**

MANUFACTURE LIMITED WARRANTY AND NOTICE OF DISCLAIMER OF EXPRESS AND IMPLIED WARRANTIES

Manufacture issues this limited warranty to the customer who is the original retail purchaser ("Customer") of a polypropylene tank (the "Tank") (10 to 4000) gallons.

Manufactures specific warranty will be issued at pre-construction meeting.

### **100365.1 - ROAD TEST**

A road test will be conducted with the apparatus fully loaded and a continuous run of no less than ten (10) miles. During that time the apparatus will show no loss of power nor will it overheat. The transmission drive shaft or shafts and the axles will run quietly and be free of abnormal vibration or noise.

### **100366.1 - APPARATUS WARRANTY SKEETER MANUFACTURED ITEMS**

A five (5) year parts and labor warranty on items manufactured by Skeeter Brush Trucks. Skeeter Brush Trucks is a subsidiary of Siddons/Martin Emergency Group, a Pierce Platinum Dealer, which has 13 service centers between Texas, Louisiana, and New Mexico. In the event the apparatus is deployed outside of its normal area of operational, warranty and service can be performed at any Siddons-Martin facility at the discretion of the fire department. For warranty issues please contact your local Siddons-Martin or Skeeter Brush Truck service center and request warranty from the service advisor at that location.

### **100361.1 - FIRE PUMP TEST**

The fire pump shall undergo factory fire pump run-in tests for a minimum of 2 hours prior to delivery of the completed apparatus. The factory pump testing results shall be furnished on delivery.

### **100362.1 - ELECTRICAL LOAD ANALYSIS**

A 12 volt electrical load analysis shall be provided to denote response and stationary modes of electrical amp load.

### **100363.1 - COMPLIANCE**

The fire apparatus shall be built to the purchaser's requirements in compliance to all State, Local, and Federal highway safety requirements. The vehicle is not intended to meet any or all standards of the NFPA.

### **100364.1 - FACTORY FIRE PUMP TEST**

The pump shall undergo an full in factory fire pump test, which shall be witnessed and certified test by the factory engineer, prior to delivery of the completed apparatus. The factory test acceptance certificate shall be furnished with the apparatus on delivery.

### **100368.1 - FIRE PUMP WARRANTY**

Hale Products, Inc., herein referred to as "Hale", warrants products of its manufacture to be free from defects in material and workmanship, under normal use and service, for a period of three years (3). This limited warranty is effective only if the equipment or apparatus is used as directed, is not subjected to misuse, negligence or accident, and is not altered, treated or repaired by someone other than Hale or its designee. Items not manufactured by Hale shall bear only the limited warranties offered by their respective manufacturers.

The exclusive remedy for breach of this warranty shall be to give Hale written notice thereof and to request a Returned Goods Authorization. Upon receipt of the Returned Goods Authorization, the buyer will return the non-conforming material to Hale F.O.B. its plant within thirty days after the buyer has received the Returned Goods Authorization. Thereupon Hale at its own election shall repair or replace the same or repay the price thereof. No proximate, incidental, consequential or other damages shall be recoverable. Hale shall not be liable for consequential damages or contingent liabilities including; but not limited to, loss of life, personal injury, loss of crops, loss due to fire or water property damage, and consequential trade or other commercial loss arising out of the failure of Manufacturer's product.

HALE MAKES NO WARRANTIES OF FREEDOM FROM PATENT INFRINGEMENT, OF MERCHANTABILITY, OF FITNESS FOR A PARTICULAR PURPOSE OR ARISING FROM A COURSE OF DEALING OR USAGE OF TRADE OR OTHER LIKE OR DIFFERENT EXPRESS OR IMPLIED WARRANTIES EXCEPT AS MADE ABOVE. [More](#)

### **100196.1 - FINAL ASSEMBLY AND APPARATUS FINISHING PREP SPECIFICATIONS**

The apparatus shall be assembled in a high quality and controlled environment. The fit, form, and finish of the body shall be to the highest level fire apparatus manufacturing standards. On completion, the apparatus shall be totally ready for final inspection and road testing as required by the general requirement section for this specified vehicle.

### **100136.1 - SKEETER BRUSH TRUCK EMBLEMS**

Three (3) Skeeter Brush Trucks emblems will be affixed to the cab and body.

### **100042.1 - WARNING LABEL -- SEAT BELT USAGE**

A warning label for use of seat belts shall be installed in the cab by the chassis manufacturer.

### **100043.1 - LOUD NOISE WARNING LABEL**

A final stage manufacturer shall install "hearing loss" potential warning labels on the vehicle in any areas or fixed equipment that produces excessive noise levels. (exhaust outlet, sirens and air horns shall not be required for such equipment.)

### **100135.1 - WARNING LABEL -- NO RIDING ON REAR**

A warning label stating: "NO RIDING ON REAR OF APPARATUS" shall be installed on rear of the apparatus. The label shall be applied to the vehicle at the rear step area. The label shall warn personnel that riding in or on these areas, while the vehicle is in motion, is prohibited.

**100041.1 - SEATING**

There shall be a label identifying the number of seat belted locations on the unit.

**100040.1 - CHASSIS PREPARATION**

The chassis cab shall be "prepped" for fire apparatus production as follows:

- a) Wash and clean chassis
- b) Weight chassis for NFPA reports
- c) Quality control check in.

**100351.1 - PRE-CONSTRUCTION MEETING**

A pre-construction meeting shall be conducted at the manufacturer's plant. The transportation to this meeting shall be the responsibility of purchaser.

**100353.1 - TERMS OF PAYMENT AND PREPAYMENT PROVISIONS**

Terms of payment for the specified vehicle shall be only cash on delivery and acceptance for the unit. No bid will be considered which requires the purchaser to deposit with the bidder a down payment, prepayment of chassis, or any other such consideration as a condition of the bid. Such a requirement shall be grounds for immediate rejection of the bid.

**100356.1 - DEMONSTRATION AND FAMILIARIZATION OF VEHICLE**

The bidder shall demonstrate and familiarize the purchaser regarding the vehicle's operation. This shall included operation of chassis, major components, review of delivery information and documentation. This demonstration shall be completed at Skeeter Brush Trucks factory location in Kirby, Texas.

**100358.1 - DELIVERY REQUIREMENTS**

The apparatus shall be picked up at the manufacturer's plant by the purchaser.



## Component List

Customer:	Sacramento, City of	Spec Number:	1444
Address:	5770 Freeport Blvd, Suite 2	Job Number:	
City, State Zip:	Sacramento CA 95822	Spec Date:	April 3, 2015
Contact:		Body:	Rescue Side, Alum, 114
Sales Rep:	Ryan Wright	Chassis:	Ford F550 - 4x4 - Gas - EXT Cab
Dealership:	Golden State Fire Apparatus, I	Tank:	400 Gallons, Poly

Line	Option	Qty	Description
001	100044.3	1	Cab/Body Paint Layout (Single Color)
002	100034.2	1	Ford F550 - 4x4 - Gas - EXT Cab <a href="#">Detail</a>
003	100037.1	1	Ford Power Package (Electric Windows, Locks, Mirrors, 4x4 Switch)
004	100046.1	1	Lift Kit, 4x4, 6" Fabtech, Heavy-Duty, Off-Road
005	100048.1	1	Tires and Wheels, Super Single 335/80 R20 (4)
006	100053.1	1	Spare Tire and Wheel, Super Single 335/80 R20 (1)
007	100055.1	1	Spare Tire, Top of Tank
008	100062.1	1	Skeeter Aluminum Custom Bumper
009	043370.2	1	FRONT LICENSE PLATE HOLDER Location: Font Bumper
010	100058.1	1	Mud Flaps, Rear Wheels, SBT Logo, S/S Brackets
011	100111.2	1	Cab Steps, Custom Lined, (4) Door or Extended Cab, FORD
012	100186.1	1	NO -- Cab Protection
013	100086.3	1	Cab Console, Poly, Custom
014	100372.1	1	NO -- Back Seat Plastic
015	100081.1	1	Winch, Warn, #M15000, Electric, Front Mount, 15,000#
016	100243.1	1	Pump, Hale, Aux, Gas, HPX-200-B18, 18hp B&S
017	100423.1	1	Thermal Relief Valve
018	100272.1	1	Standard Stainless Steel Manifold
019	100285.1	1	Valves, S/S, Quarter Turn
020	100470.1	1	No Pump Exhaust
021	100195.1	1	No -- Pump House
022	100265.2	1	Pump Panel - Gas Pump
023	100418.1	1	Remote Pump Control in Cab (Gas)
024	100267.1	1	Pump Fuel from Chassis
025	100256.1	1	Battery Supply, 12V, Chassis, Master Switch & Solenoid
026	100254.1	1	Pump Engine Oil Drain, Hale
027	100255.1	1	Aux Fire Pump Mntg, Rear Right Side, Bolted
028	100273.1	1	Upgrade Manifold for Bumper Discharges
029	100270.1	1	Intake, Gated, 2.5"FM, Rear, w/2.5" Plug, Aux Pump, Direct Vlv Cntrl
030	100283.1	1	Tank-To-Pump, Water Tank, 2.5", Install
031	100281.1	1	Tank Fill and Cooling Line, Water Tank, 1", Aux Pump
032	100277.1	1	Discharge, 1.5", Rear, Pre-connect
033	100426.5	1	Discharge, 1.5", Front Bumper
034	100288.1	1	Hose Reel, Hannay, D/S Mount, Elec Rewind, Alum
035	100292.2	1	150 Foot Reel Capacity
036	100295.1	1	Hose Reel Discharge, 1" Valve and Flex-Hose, Local Cntrl
037	100306.1	1	No -- Whip Lines
038	100259.1	1	Foam system, Scotty #4171, Through-the-pump, Built-in, Aux Pump

039	100226.1	1	Water Tank Gauge, Class 1, Rear & Chassis
040	100200.1	1	Water Tank Capacity, 400 Gallons, Poly
041	100203.1	1	Water Tank, Specs
042	100204.1	1	Water Tank Shape, Rectangular
043	100205.1	1	Water Tank, NFPA Compliance
044	100213.1	1	Tank to Pump, Piping Connection, 3", 350 GPM Flow
045	100227.1	1	Foam Tank Capacity, 10 Gallons, Class A, Poly
046	100239.1	1	Foam Tank Gauge, Class 1, Class A, Rear & Cab
047	100549.2	1	Rescue Side, Alum, 114" x 96", 60CA
048	100121.1	1	Flat Bed, Front, 45 deg Corners
049	100141.1	1	Transverse Compartment (Rescue) 18"W
050	100462.5	1	Transverse Tool Storage Front of Tank Above
051	100144.1	1	Compartment, Drivers Side, Lift-Up Door
052	100148.1	1	Compartment, Passengers Side, Lift-Up Door
053	043365.7	1	Compartment, Passenger's Side, Lift-Up Door, Rearward Location: Pass Side Body, Rearward of 48" Comp
054	100544.2	1	Custom Compartment Shelving
055	100152.2	1	Cmpt Under Rear Bdy Dr Pass Side, Alum T/P, 24"W x 15"H x 24"D, Vert Hngd Dr
056	100157.1	1	Cmpt Under Rear Bdy Pass Side, Alum T/P, 24"W x 15"H x 22"D, Vert Hngd Dr
057	100159.1	1	Rear Center Under Body Cmpt, 96"Dx33"Wx5"H, Drop Down Door
058	100166.1	1	Equipment Tray, Alum, 94"L, UHMW slide
059	100161.1	1	Key Locks, Compartments, Hinged Doors
060	100162.2	2	Compartment Lights, Ceiling, Grote 61E41-3, 4" LED
061	100163.2	3	Compartment Light Door Switches, Automatic (6)
062	100164.1	1	Door Open Light, Flashing LED, Red Lens
063	043367.3	1	Door Ajar Alarm Location: Console
064	100169.1	1	Hose Tray, Drivers Side, 72 in. long
065	100173.1	1	NO -- Hose Tray, Passenger Side
066	100175.1	1	NO -- Tool Tray, Drivers Side
067	100382.1	1	Tool Tray, Passenger Side, 72 in. long.
068	100180.1	1	Rear Step, Pull out and drop down
069	100181.1	1	Step, Sig-4, Folding, Lighted, LH Front (1)
070	043256.5	1	I Zone Hose Brackets Location: Rear Body Uprights
071	100325.1	1	Fuse Box
072	100326.1	1	Chassis Harness
073	100327.1	1	Wiring Harness, Body Electrical
074	100090.1	1	Battery Master Disconnect, 12V
075	100094.2	1	Shore Power Plug, Kussmaul Auto-Eject #091-55-20-120, 20 Amp
076	100328.1	1	Clearance Lights, LED, DOT
077	100329.1	1	License Plate, Mount, Lighting
078	100330.1	1	Stop/Tail/Turn Lights, Whelen M6BTT/M6FC
079	100331.1	1	Back up Lights, Whelen M6 Series, LED,
080	100095.1	1	NO -- Trailer Plug
081	100068.1	1	HID Off-Road Lights, 4" Warn (2)
082	100071.1	1	Ground Lights, Front Bumper, LED (2) Grote 61E41
083	100073.1	1	Ground Lights, Cab, 2 Door, LED (2) Grote 61E41
084	100182.1	1	Ground Lights, Under Rear Step, LED (2), Grote 61E41
085	100184.1	1	Work Lights, LED, (4), Grote #61E41
086	100318.1	1	Scene Light, Combo, Rigid 20"
087	100322.1	1	Scene Light, (6) Rigid Dually
088	100438.1	1	GPS Unit NUVI 52 LM

089	100503.1	1	Digital Tilt Meter
090	100107.1	1	Back-Up Camera, Rear View Safety, (1) camera
091	100100.1	1	Radio, Fire, Installation, Purchaser Supplied (2)
092	100101.1	1	NO -- Intercom System
093	100324.1	1	Back Up Alarm, Buyers, #BA107
094	100312.1	1	Siren, Electronic, Whelen, CCSRN3. CEN COM
095	100313.1	1	Speaker, Whelen, #SA315P, 100 Watt
096	100310.1	1	Lightbar Mounting, Headache Rack, Alum, Enclosure Protection
097	100309.2	1	Lightbar, Whelen, Legacy, 54"
098	100315.1	1	Warning Lights, Whelen, M-7 Series (12) Lights
099	100332.3	1	Lettering, Cab, 3" Scotchlite Reflective, 50 Letters
100	100335.3	1	Door Graphic Emblems, (2) Custom
101	100338.2	1	Stripe, Cab/Body, Triple Reflective, 1" x 4" x 1"
102	100340.1	1	NO -- Keep Back Lettering
103	100343.1	1	Stripe, Reflective, SCOTCHLITE, Chevron, Front Bumper, Alum Bumper
104	100345.1	1	Stripe, Reflective, SCOTCHLITE, Chevron, Rear
105	100346.1	1	Capacities Placard, Reflective
106	100347.1	1	NO -- Nozzles
107	100350.1	1	Spanner Set, Kocheck, 2-Spanner / Hydrant, Mounted
108	100369.1	1	Tank Warranty, Limited Lifetime
109	100365.1	1	Road Test, 10 miles
110	100366.1	1	Skeeter Warranty, 5-Year Parts & Labor
111	100361.1	1	Pump Test, Factory Test, SBT Brush Truck
112	100362.1	1	Certificate, 12V Electrical Load Analysis
113	100363.1	1	Certificate, NFPA, Non-Compliance
114	100364.1	1	Performance Testing, Pump Test, Factory
115	100368.1	1	Pump Warranty, 3-Year Parts & Labor <a href="#">Detail</a>
116	100196.1	1	Final Assembly, Skeeter Brush Trucks, Kirby, TX
117	100136.1	1	Emblems, Skeeter Brush Trucks (3)
118	100042.1	1	Label, Data, Seat Belt, Chassis Manufacturer Supplied
119	100043.1	1	Label, Noise Danger, Personnel
120	100135.1	1	Label, Data, "Do Not Ride On Rear Step"
121	100041.1	1	Label Seating (Based upon # of Seated Positions)
122	100040.1	1	Chassis Prep, Commercial Chassis
123	100351.1	1	Pre-Construction Meeting, At Factory
124	100353.1	1	Payment Terms, 100% on Delivery and Acceptance
125	100356.1	1	Training, Factory Supplied, Factory location
126	100358.1	1	Delivery, Purchaser Pickup

\* This unit may be available through [BuyBoard 399-12](#) (45-48) and [H-GAC FS12-13](#) (XB01-XB04) cooperative purchasing.



## FIRE FIGHTING EQUIPMENT

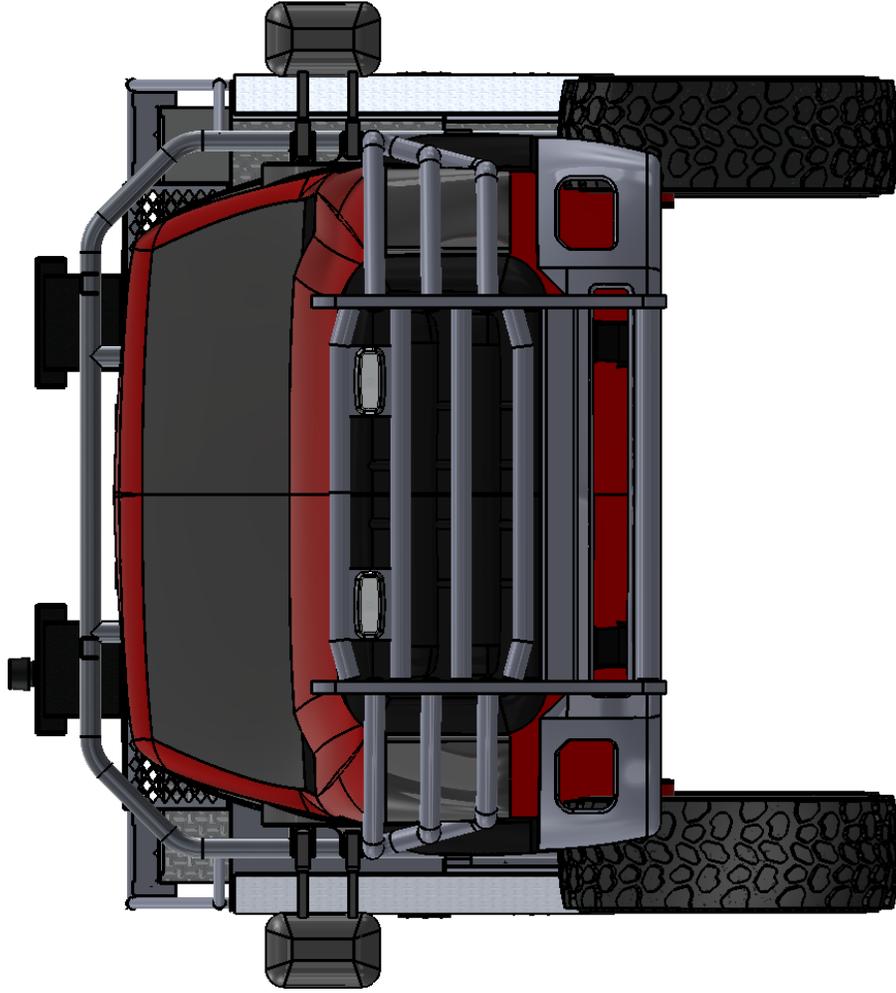
The following loose equipment list is PER UNIT and will be provided by the sales organization and prior to final delivery:

QTY	DESCRIPTION	MAKE/MODEL
<b>WILDLAND NOZZLES</b>		
3	1" Nozzle	NFES# 1081
1	1" Ball shut off w/ pistol grip	D100DP TFT
4	1 1/2" Nozzle	NFES# 1082
4	1 1/2" Ball shut-off	NFES# 1207
<b>HAND TOOLS</b>		
1	Extinguisher:	2 1/4 gal water
1	Extinguisher Shoulder Strap	Fire Hooks Unlimited
1	30" Bolt Cutter: heavy duty	Cascade #40242
1	Wire Cutter	
1	Pry-Bar: 48"	Council #100PP
2	Wrench-Pipe	14"
1	Mallet-Rubber	
1	Bailing Wire, 328', #572-365	Home Depot
1	Stanley 6" retractable utility knife, #184-861	Home Depot
1	Craftsman 8 pc. Screwdriver, #47136	Sears
1	Stanley 6 way screwdriver, 68-012	Sears
1	Craftsman 20" steel tool box	Sears
1	Irwin channel lock combo., 8", 10", 2078709	Sears
1	Craftsman 3 pc. pliers set, 45412	Sears
1	Craftsman bypass lopper, 29035	Sears
1	Irwin vise grip 2 pc. combo, 5', 10', 00374	Sears
1	Craftsman 2 pc. combo comfort grip hex keys, 46006	Sears
1	Craftsman 7 in 1 torx set, 46004	Sears
1	tree pruner, 8', 09712	Harbor Freight
1	bow saw 21", 66545	Harbor Freight
1	plastic ammo box, 61451	Harbor Freight
1	2 pc. brush set, 42595	Harbor Freight
1	21 pc. 3/8 socket set, sae/metric, 62190	Harbor Freight
1	3 pc. adjustable wrench set, 47099	Harbor Freight

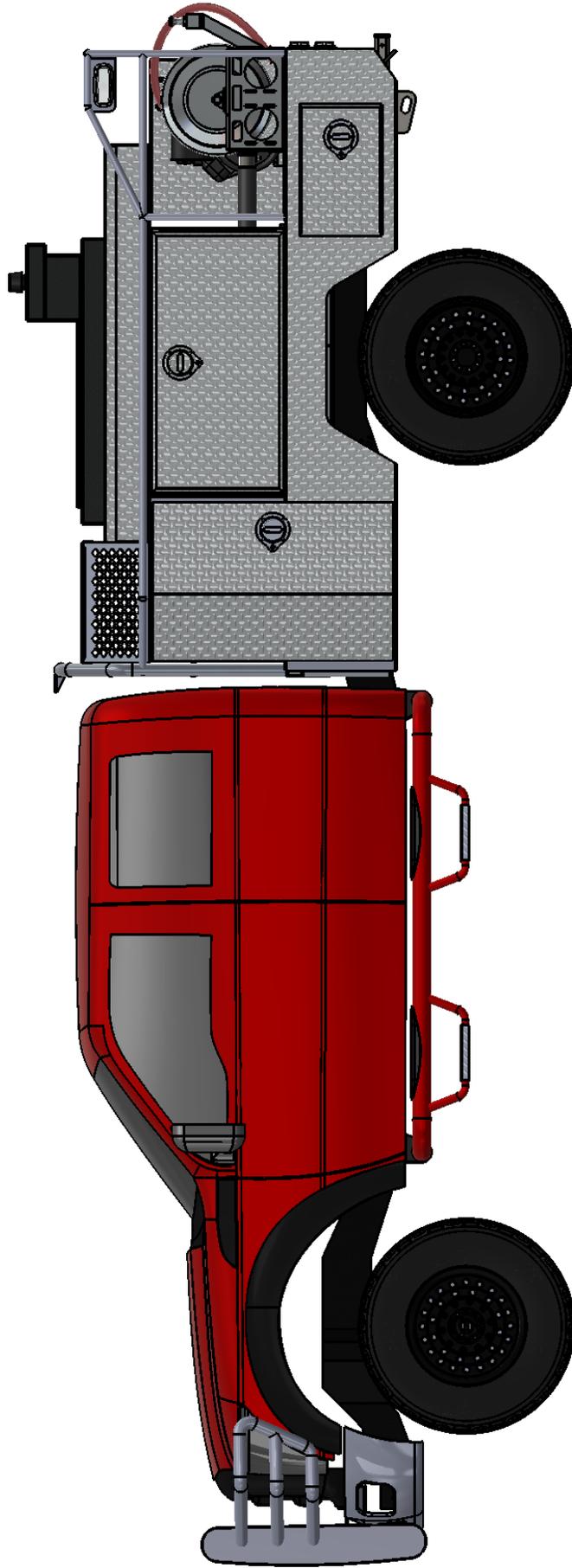
1	22 pc box wrench, sae/metric, 69314	Harbor Freight
1	10" cable cutter, 40607	Harbor Freight
1	9-1/2" lineman plier, 38395	Harbor Freight
1	12" bolt cutter, 41147	Harbor Freight
1	4lb. dead blow, 69004	Pittsburg brand
1	3lb. hardwood hammer, 67817	Pittsburg brand
1	16oz. fiberglass hammer, 47873	Pittsburg brand
1	14" pipe wrench, 61349	Pittsburg brand
<b>WILDLAND APPLIANCES</b>		
1	Gate Wye-2 1/2" x 1 1/2"	Elkhart- B100-A
4	Water T's, 1-1/2" NH x 1-1/2" NH x 1" NPSH	
2	Gated wye - 1 1/2" x 1 1/2", Forestry	
<b>2 1/2" FITTINGS/ADAPTERS</b>		
1	2 1/2" double male	Red Head # Style 35
1	2 1/2" double female	Red Head # Style 36
2	2 1/2" female x 1 1/2" male:	Red Head # Style 37
<b>1 1/2" FITTINGS/ADAPTERS</b>		
1	1 1/2" double male	Red Head # Style 35
2	1 1/2" double female	Red Head # Style 36
3	1 1/2" NH female x 1" NPSH male	Red Head # Style 35
<b>1" FITTINGS/ADAPTERS</b>		
3	1"NH female x 1" NPSH male adapter	
<b>MISC TOOLS/ FITTINGS/ADAPTERS</b>		
1	4 1/2" x 2 1/2" reducer	
1	5 hole hydrant wrench	
1	Spanner/hydrant set:	Red Head # S-148-3
2	Spanner wrench: bar-way 3/4" - 1"	Red Head # Style 103
2	Forestry Spanners	Cascade # 11201
1	Fuel can, 1 gal -round w/spout	Just rite
1	Jerry Can, DOT 5 gal	Nat'l FF #STJ2050LM
1	Wildland Fussee	
<b>HOSE</b>		
3	1" Booster Line x 100' each length	
6	1"	
8	1 1/2"	
<b>WILDLAND TOOLS</b>		
1	Drip Torch w/ mounting bracket	Cascade # 12000
1	Combi tool	NFES# 1180
2	McCloud	NFES# 0296
2	Pulaski	NFES# 0146
1	Shovel	NFES# 0171

1	Ditch Pump w/ suction hose	Honda WH15XK2
1	Back Pack Pump	NFES# 1149
4	Wildland hose clamps	
1	Hose Roller w/ bracket	Cascade Hose Roller #14042
<b>CHAIN SAW</b>		
1	Chain saw w/ file kit	Stihl MS460
1	3/8" .050 Full Chisel, Semi skip chains for 20" bar	
1	3/8" .050 Full Chisel, Semi skip chains for 25" bar	
1	20" bar	
1	25" bar	
1	bar covers, 20-24"	True North
1	dolmar fuel can, 1 1/2" gal	
2	Chaps, 36"	NFES# 0078
2	Wedge, 12"	
2	Wedge, 8"	
<b>BAGS/CASES/PACKS</b>		
4	Hose Packs, Donut Roll Hose Pack	True North
<b>STRIKE TEAM NEEDS</b>		
1	Water Cooler: 2 1/2" Gal w/ spigot	Igloo
<b>RECOVERY EQUIPMENT</b>		
1	30' Master Pull Super Yanker 1 1/4 rated @ 52,000	Sacramento Wire Rope
1	ARB Ultra Lite Snatch Block rated @ 38,500 Break Strength	Sacramento Wire Rope
1	ARB 16' Tree trunk protector rated @ 12,000 kg - 26,500 lbs	Sacramento Wire Rope
1	50' Master Pull Super Line 10mm winch extension rope	Sacramento Wire Rope
1	12' Peerless 3/8 Grade 100 chain with Grab hooks	Sacramento Wire Rope
1	ARB Recovery Damper	Sacramento Wire Rope
8	3/4 Screw Pin Shackles Van Beest 62,000 lb. rating	Sacramento Wire Rope
1	Husky 16 in. Large Mouth Bag with Tool Wall	Sacramento Wire Rope

END OF FIRE FIGHTING EQUIPMENT



DRAWN BY: Hector G	TITLE: Sacramento FD Front View
PRINT DATE: 4/13/2015	
CREATED DATE: 4/13/2015	DWG. NO. SHEET 1 OF 6



DRAWN BY: Hector G TITLE: Sacramento FD Driver Side

PRINT DATE: 4/13/2015

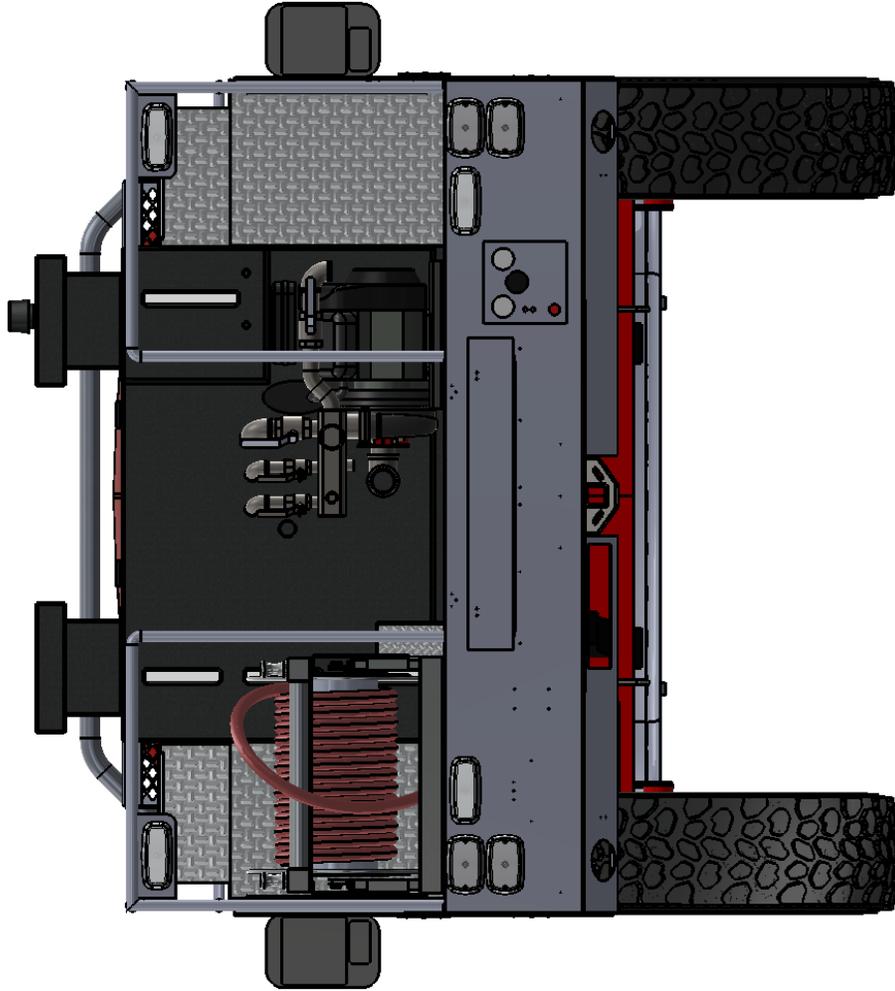
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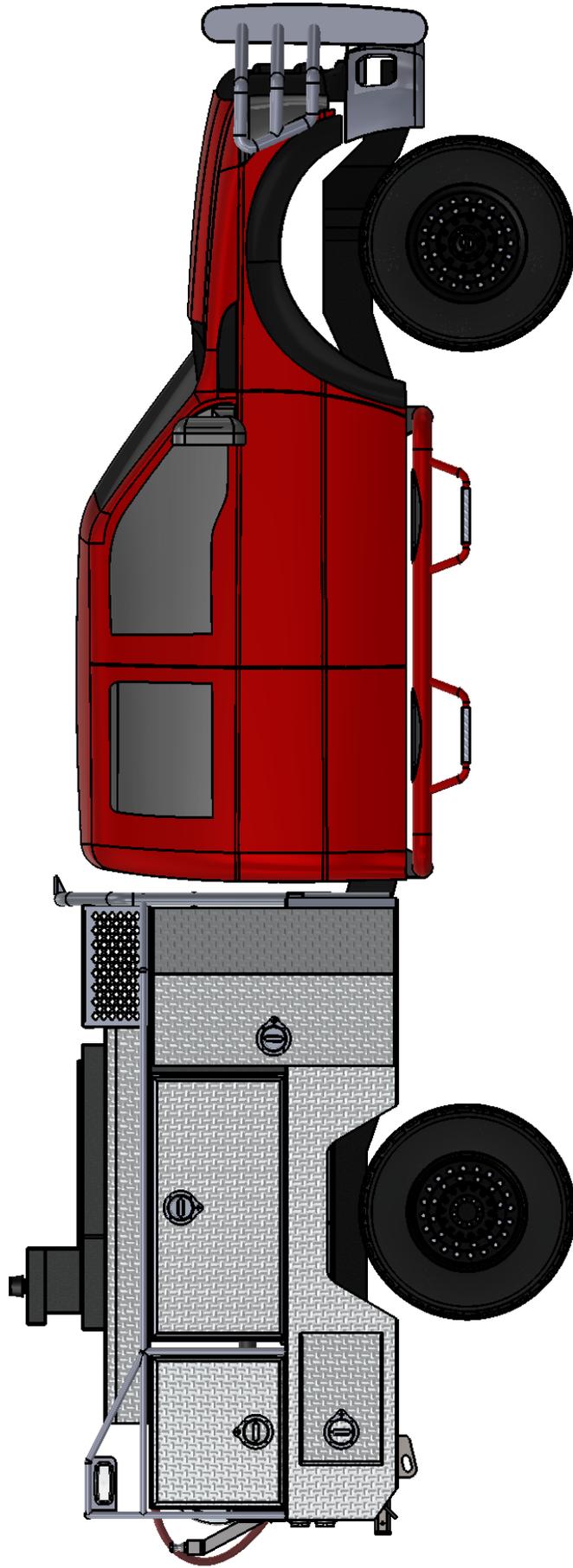
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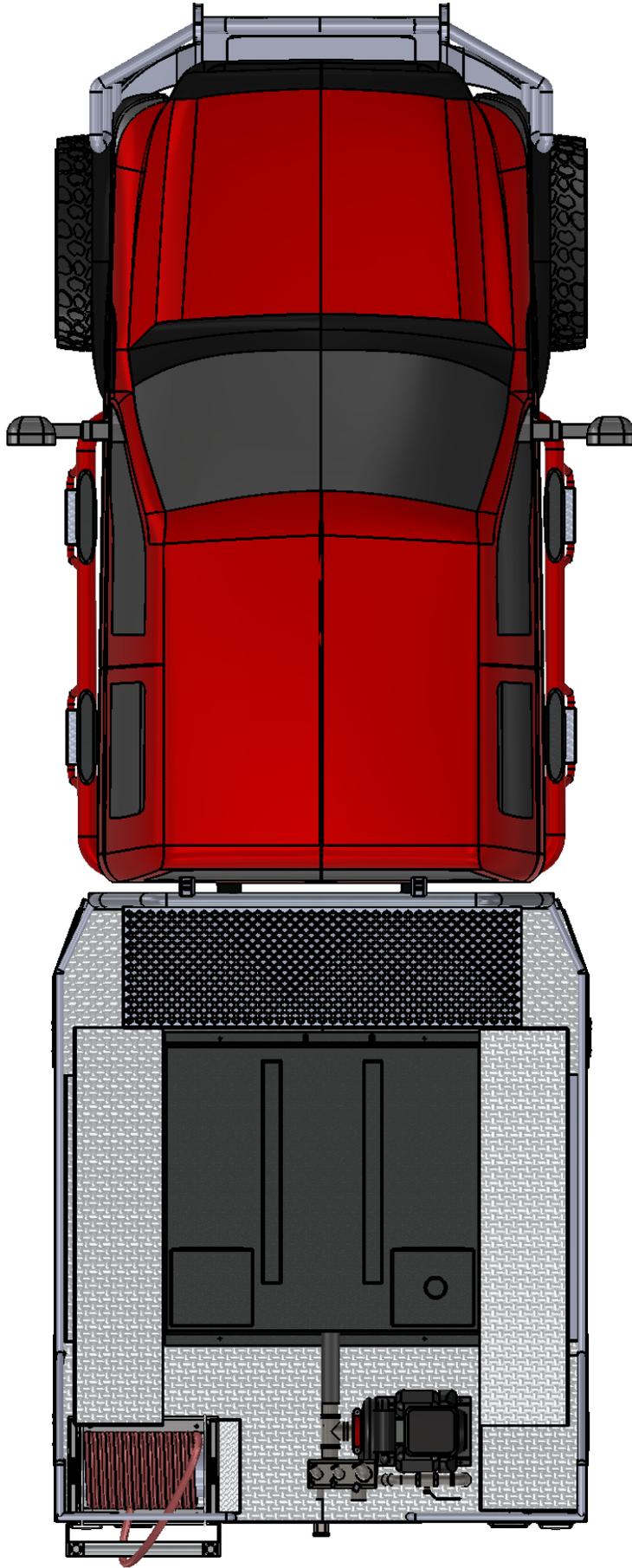
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PRINT DATE: 4/13/2015	DWG. NO. SHEET 4 OF 6
CREATED DATE: 7/30/2014	

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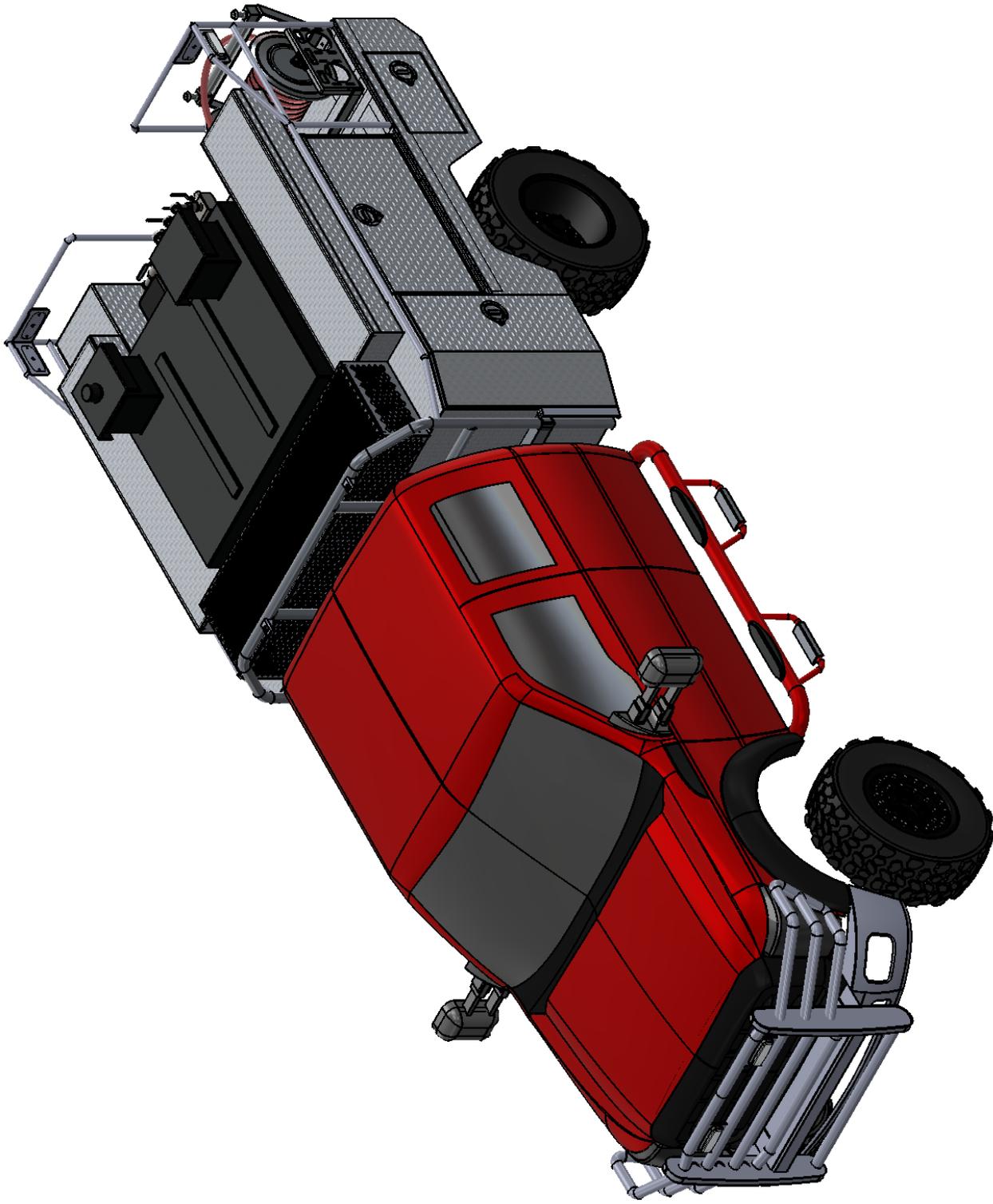
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DRAWN BY: Hector G  
 PRINT DATE: 4/13/2015  
 CREATED DATE: 7/30/2014

TITLE: Sacramento FD Top View  
 DWG. NO.

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DRAWN BY: Hector G	TITLE: Sacramento FD
PRINT DATE: 4/13/2015	
CREATED DATE: 7/30/2014	DWG. NO. SHEET 6 OF 6

A CONTRACT BETWEEN  
HOUSTON-GALVESTON AREA COUNCIL  
Houston, Texas  
AND  
PIERCE MANUFACTURING, INC.  
Appleton, Wisconsin

This Contract is made and entered into by the **Houston-Galveston Area Council of Governments**, hereinafter referred to as **H-GAC**, having its principal place of business at 3555 Timmons Lane, Suite 120, Houston, Texas 77027, AND, **Pierce Manufacturing, Inc.**, hereinafter referred to as the **CONTRACTOR**, having its principal place of business at 2600 American Drive, Appleton, Wisconsin 54914.

**ARTICLE 1:** SCOPE OF SERVICES

The parties have entered into a **Fire Service Apparatus (All Types)** Contract to become effective as of December 1, 2013, and to continue through November 30, 2015 (the "Contract"), subject to extension upon mutual agreement of the **CONTRACTOR** and **H-GAC**. **H-GAC** enters into the Contract as Agent for participating governmental agencies, each hereinafter referred to as **END USER**, for the purchase of **Fire Service Apparatus (All Types)** offered by the **CONTRACTOR** in states other than Texas. The **CONTRACTOR** agrees to sell **Fire Service Apparatus (All Types)** through the **H-GAC** Contract to **END USERS** in states other than Texas.

**ARTICLE 2:** THE COMPLETE AGREEMENT

The Contract shall consist of the documents identified below in order of precedence:

1. The text of this Contract form, including but not limited to, Attachment A
2. General Terms and Conditions
3. Bid Specifications No: **FS12-13**, including any relevant suffixes
4. **CONTRACTOR's** Response to Bid No: **FS12-13**, including but not limited to, prices and options offered

All of which are either attached hereto or incorporated by reference and hereby made a part of this Contract, and shall constitute the complete agreement between the parties hereto. This Contract supersedes any and all oral or written agreements between the parties relating to matters herein. Except as otherwise provided herein, this Contract cannot be modified without the written consent of both parties.

**ARTICLE 3:** LEGAL AUTHORITY

**CONTRACTOR** and **H-GAC** warrant and represent to each other that they have adequate legal counsel and authority to enter into this Contract. The governing bodies, where applicable, have authorized the signatory officials to enter into this Contract and bind the parties to the terms of this Contract and any subsequent amendments thereto.

**ARTICLE 4:** APPLICABLE LAWS

The parties agree to conduct all activities under this Contract in accordance with all applicable rules, regulations, directives, issuances, ordinances, and laws in effect or promulgated during the term of this Contract.

**ARTICLE 5:** INDEPENDENT CONTRACTOR

The execution of this Contract and the rendering of services prescribed by this Contract do not change the independent status of **H-GAC** or **CONTRACTOR**. No provision of this Contract or act of **H-GAC** in performance of this Contract shall be construed as making **CONTRACTOR** the agent, servant or employee of **H-GAC**, the State of Texas or the United States Government. Employees of **CONTRACTOR** are subject to the exclusive control and supervision of **CONTRACTOR**. **CONTRACTOR** is solely responsible for employee payrolls and claims arising therefrom.

**ARTICLE 6:** END USER AGREEMENTS

**H-GAC** acknowledges that the **END USER** may choose to enter into an End User Agreement with the **CONTRACTOR** through this Contract and that the term of said Agreement may exceed the term of the **H-GAC** Contract. However this acknowledgement is not to be construed as **H-GAC's** endorsement or approval of the End User Agreement terms and conditions. **CONTRACTOR** agrees not to offer to, agree to or accept from **END USER** any terms or conditions that conflict with or contravene those in **CONTRACTOR's** **H-GAC** contract. Further, termination of this Contract for any reason shall not result in the termination of the underlying End User Agreements entered into between **CONTRACTOR** and any **END USER** which shall, in each instance, continue pursuant to their stated terms and duration. The only effect of termination of this Contract is that **CONTRACTOR** will no longer be able to enter into any new End User Agreements with **END USERS** pursuant to this Contract. Applicable **H-GAC** order processing charges will be due and payable to **H-GAC** on any End User Agreements surviving termination of this Contract between **H-GAC** and **CONTRACTOR**.

**ARTICLE 7:****SUBCONTRACTS & ASSIGNMENTS**

**CONTRACTOR** agrees not to subcontract, assign, transfer, convey, sublet or otherwise dispose of this Contract or any right, title, obligation or interest it may have therein to any third party without prior written notice to **H-GAC**. **H-GAC** reserves the right to accept or reject any such change. **CONTRACTOR** shall continue to remain responsible for all performance under this Contract regardless of any subcontract or assignment. **H-GAC** shall be liable solely to **CONTRACTOR** and not to any of its Subcontractors or Assignees.

**ARTICLE 8:****EXAMINATION AND RETENTION OF CONTRACTOR'S RECORDS**

**CONTRACTOR** shall maintain during the course of its work, complete and accurate records of items that are chargeable to **END USER** under this Contract. **H-GAC**, through its staff or its designated public accounting firm, the State of Texas, or the United States Government shall have the right at any reasonable time to inspect copy and audit those records on or off the premises of **CONTRACTOR**. Failure to provide access to records may be cause for termination of this Contract. **CONTRACTOR** shall maintain all records pertinent to this Contract for a period of not less than five (5) calendar years from the date of acceptance of the final contract closeout and until any outstanding litigation, audit or claim has been resolved. The right of access to records is not limited to the required retention period, but shall last as long as the records are retained. **CONTRACTOR** further agrees to include in all subcontracts under this Contract, a provision to the effect that the subcontractor agrees that **H-GAC'S** duly authorized representatives, shall, until the expiration of five (5) calendar years after final payment under the subcontract or until all audit findings have been resolved, have access to, and the right to examine and copy any directly pertinent books, documents, papers, invoices and records of such subcontractor involving any transaction relating to the subcontract.

**ARTICLE 9:****REPORTING REQUIREMENTS**

**CONTRACTOR** agrees to submit reports or other documentation in accordance with the General Terms and Conditions of the Bid Specifications. If **CONTRACTOR** fails to submit to **H-GAC** in a timely and satisfactory manner any such report or documentation, or otherwise fails to satisfactorily render performance hereunder, such failure may be considered cause for termination of this Contract.

**ARTICLE 10:****MOST FAVORED CUSTOMER CLAUSE**

If **CONTRACTOR**, at any time during this Contract, routinely enters into agreements with other governmental customers within the State of Texas, and offers the same or substantially the same products/services offered to **H-GAC** on a basis that provides prices, warranties, benefits, and or terms more favorable than those provided to **H-GAC**, **CONTRACTOR** shall notify **H-GAC** within ten (10) business days thereafter of that offering and this Contract shall be deemed to be automatically amended effective retroactively to the effective date of the most favorable contract, wherein **CONTRACTOR** shall provide the same prices, warranties, benefits, or terms to **H-GAC** and its **END USER**. **H-GAC** shall have the right and option at any time to decline to accept any such change, in which case the amendment shall be deemed null and void. If **CONTRACTOR** is of the opinion that any apparently more favorable price, warranty, benefit, or term charged and/or offered a customer during the term of this Contract is not in fact most favored treatment, **CONTRACTOR** shall within ten (10) business days notify **H-GAC** in writing, setting forth the detailed reasons **CONTRACTOR** believes aforesaid offer which has been deemed to be a most favored treatment, is not in fact most favored treatment. **H-GAC**, after due consideration of such written explanation, may decline to accept such explanation and thereupon this Contract between **H-GAC** and **CONTRACTOR** shall be automatically amended, effective retroactively, to the effective date of the most favored agreement, to provide the same prices, warranties, benefits, or terms to **H-GAC**.

The Parties accept the following definition of routine: A prescribed, detailed course of action to be followed regularly; a standard procedure.

*EXCEPTION: This clause shall not be applicable to prices and price adjustments offered by a bidder, or contractor, which are not within bidder's control [example; a manufacturer's bid concession], or to any prices offered to the Federal Government and its agencies.*

**ARTICLE 11:****SEVERABILITY**

All parties agree that should any provision of this Contract be determined to be invalid or unenforceable, such determination shall not affect any other term of this Contract, which shall continue in full force and effect.

**ARTICLE 12:****DISPUTES**

Any and all disputes concerning questions of fact or of law arising under this Contract, which are not disposed of by agreement, shall be decided by the Executive Director of **H-GAC** or his designee, who shall reduce his decision to writing and provide notice thereof to **CONTRACTOR**. The decision of the Executive Director or his designee shall be final and conclusive unless, within thirty (30) days from the date of receipt of such notice, **CONTRACTOR** requests a rehearing from the Executive Director of **H-GAC**. In connection with any rehearing under this Article, **CONTRACTOR** shall be afforded an opportunity to be heard and offer evidence in support of its position. The decision of the Executive Director after any such rehearing shall be final and conclusive. **CONTRACTOR** may, if it elects to do so, appeal the final and conclusive decision of the Executive Director to a court of competent jurisdiction. Pending final decision of a dispute hereunder, **CONTRACTOR** shall proceed diligently with the performance of this Contract and in accordance with **H-GAC'S** final decision.

**ARTICLE 13: LIMITATION OF CONTRACTOR'S LIABILITY**

Except as specified in any separate writing between the CONTRACTOR and an END USER, CONTRACTOR's total liability under this Contract, whether for breach of contract, warranty, negligence, strict liability, in tort or otherwise, but excluding its obligation to indemnify H-GAC described in Article 14, is limited to the price of the particular products/services sold hereunder, and CONTRACTOR agrees either to refund the purchase price or to repair or replace product(s) that are not as warranted. In no event will CONTRACTOR be liable for any loss of use, loss of time, inconvenience, commercial loss, lost profits or savings or other incidental, special or consequential damages to the full extent such use may be disclaimed by law. CONTRACTOR understands and agrees that it shall be liable to repay and shall repay upon demand to END USER any amounts determined by H-GAC, its independent auditors, or any agency of State or Federal government to have been paid in violation of the terms of this Contract.

**ARTICLE 14: LIMIT OF H-GAC'S LIABILITY AND INDEMNIFICATION OF H-GAC**

H-GAC's liability under this Contract, whether for breach of contract, warranty, negligence, strict liability, in tort or otherwise, is limited to its order processing charge. In no event will H-GAC be liable for any loss of use, loss of time, inconvenience, commercial loss, lost profits or savings or other incidental, special or consequential damages to the full extent such use may be disclaimed by law. Contractor agrees, to the extent permitted by law, to defend and hold harmless H-GAC, its board members, officers, agents, officials, employees, and indemnities from any and all claims, costs, expenses (including reasonable attorney fees), actions, causes of action, judgments, and liens arising as a result of CONTRACTOR's negligent act or omission under this Contract. CONTRACTOR shall notify H-GAC of the threat of lawsuit or of any actual suit filed against CONTRACTOR relating to this Contract.

**ARTICLE 15: TERMINATION FOR CAUSE**

H-GAC may terminate this Contract for cause based upon the failure of CONTRACTOR to comply with the terms and/or conditions of the Contract; provided that H-GAC shall give CONTRACTOR written notice specifying CONTRACTOR'S failure. If within thirty (30) days after receipt of such notice, CONTRACTOR shall not have either corrected such failure, or thereafter proceeded diligently to complete such correction, then H-GAC may, at its option, place CONTRACTOR in default and the Contract shall terminate on the date specified in such notice. CONTRACTOR shall pay to H-GAC any order processing charges due from CONTRACTOR on that portion of the Contract actually performed by CONTRACTOR and for which compensation was received by CONTRACTOR.

**ARTICLE 16: TERMINATION FOR CONVENIENCE**

Either H-GAC or CONTRACTOR may cancel or terminate this Contract at any time by giving thirty (30) days written notice to the other. CONTRACTOR may be entitled to payment from END USER for services actually performed; to the extent said services are satisfactory to END USER. CONTRACTOR shall pay to H-GAC any order processing charges due from CONTRACTOR on that portion of the Contract actually performed by CONTRACTOR and for which compensation is received by CONTRACTOR.

**ARTICLE 17: CIVIL AND CRIMINAL PROVISIONS AND SANCTIONS**

CONTRACTOR agrees that it will perform under this Contract in conformance with safeguards against fraud and abuse as set forth by H-GAC, the State of Texas, and the acts and regulations of any funding entity. CONTRACTOR agrees to notify H-GAC of any suspected fraud, abuse or other criminal activity related to this Contract through filing of a written report promptly after it becomes aware of such activity.

**ARTICLE 18: GOVERNING LAW & VENUE**

This Contract shall be governed by the laws of the State of Texas. Venue and jurisdiction of any suit or cause of action arising under or in connection with this Contract shall lie exclusively in Harris County, Texas. Disputes between END USER and CONTRACTOR are to be resolved in accord with the law and venue rules of the state of purchase. CONTRACTOR shall immediately notify H-GAC of such disputes.

**ARTICLE 19: PAYMENT OF H-GAC ORDER PROCESSING CHARGE**

CONTRACTOR agrees to sell its products to END USERS based on the pricing and other terms of this Contract, including, but not limited to, the payment of the applicable H-GAC order processing charge. On notification from an END USER that an order has been placed with CONTRACTOR, H-GAC will invoice CONTRACTOR for the applicable order processing charge. Upon delivery of any product/service by CONTRACTOR and acceptance by END USER, CONTRACTOR shall, within thirty (30) calendar days or ten (10) business days after receipt of payment, whichever is less, pay H-GAC the full amount of the applicable order processing charge, whether or not CONTRACTOR has received an invoice from H-GAC. For sales made by CONTRACTOR based on this contract, including sales to entities without Interlocal Contracts, CONTRACTOR shall pay the applicable order processing charges to H-GAC. Further, CONTRACTOR agrees to encourage entities who are not members of H-GAC's Cooperative Purchasing Program to execute an H-GAC Interlocal Contract. H-GAC reserves the right to take appropriate actions including, but not limited to, contract termination if CONTRACTOR fails to promptly remit H-GAC's order processing charge. In no event shall H-GAC have any liability to CONTRACTOR for any goods or services an END USER procures from CONTRACTOR.

**ARTICLE 20: LIQUIDATED DAMAGES**

Any liquidated damages terms will be determined between CONTRACTOR and END USER at the time END USER's purchase order is

placed.

**ARTICLE 21: PERFORMANCE AND PAYMENT BOND FOR INDIVIDUAL ORDERS**

H-GAC's contractual requirements DO NOT include a Performance & Payment Bond (PPB), and offered pricing should reflect this cost saving. However, CONTRACTOR must be prepared to offer a PPB to cover any specific order if so requested by END USER. CONTRACTOR shall quote a price to END USER for provision of any requested PPB, and agrees to furnish the PPB within ten business (10) days of receipt of END USER's purchase order.

**ARTICLE 22: CHANGE OF CONTRACTOR STATUS**

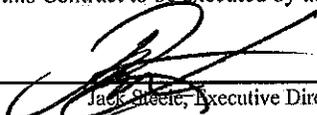
CONTRACTOR shall immediately notify H-GAC, in writing, of ANY change in ownership, control, dealership/franchisee status, Motor Vehicle license status, or name, and shall also advise whether or not this Contract shall be affected in any way by such change. H-GAC shall have the right to determine whether or not such change is acceptable, and to determine what action shall be warranted, up to and including cancellation of Contract.

**ARTICLE 23: LICENSING REQUIRED BY TEXAS MOTOR VEHICLE BOARD [IF APPLICABLE]**

CONTRACTOR will for the duration of this Contract maintain current licenses that are required by the Texas Motor Vehicle Commission Code. If at any time during this Contract period, any CONTRACTOR'S license is not renewed, or is denied or revoked, CONTRACTOR shall be deemed to be in default of this Contract unless the Motor Vehicle Board issues a stay or waiver. Contractor shall promptly provide copies of all current applicable Texas Motor Vehicle Board documentation to H-GAC upon request.

IN WITNESS WHEREOF, the parties have caused this Contract to be executed by their duly authorized representatives.

Signed for Houston-Galveston  
Area Council, Houston, Texas:

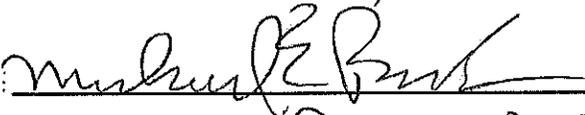
  
\_\_\_\_\_  
Jack Sheet, Executive Director

Attest for Houston-Galveston  
Area Council, Houston, Texas:

  
\_\_\_\_\_  
Debra Wick, Director of Public Services

Date: Dec 20, 2013

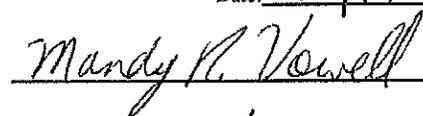
Signed for Pierce Manufacturing, Inc.  
Appleton, Wisconsin:

  
\_\_\_\_\_

Printed Name & Title: Michael E. Pack VP Finance

Date: 12/19 2013

Attest for Pierce Manufacturing, Inc.  
Appleton, Wisconsin:

  
\_\_\_\_\_

Printed Name & Title: Mandy R. Vowell Executive Assistant

Date: 12/19 2013

**Attachment A**  
**Pierce Manufacturing, Inc.**  
**Fire Service Apparatus (All Types)**  
**Contract No. FS12-13**

<b>U. Pierce</b>		
<b>A. Aerials (Booms/Platforms, Ladders, Ladder/Platforms)</b>		
UA01	Pierce Saber Chassis, 4-Door Full Tilt Aluminum Cab, Formed Aluminum Body, Single Axle, 75' Rear-Mounted Telescoping Ladder (500#)	\$ 610,000.00
UA02	Pierce Arrow Chassis, 4-Door Full Tilt Aluminum Cab, Formed Aluminum Body, Single Axle, 75' Rear-Mounted Telescoping Ladder (500#)	\$ 684,817.00
UA03	Pierce Arrow Chassis, 4-Door Full Tilt Aluminum Cab, Formed Aluminum Body, Tandem Axle, 75' Rear-Mounted Telescoping Ladder (500#)	\$ 703,240.00
UA04	Pierce Arrow Chassis, 4-Door Full Tilt Aluminum Cab, Formed Aluminum Body, Tandem Axle, 105' Rear-Mounted Telescoping Ladder (500#)	\$ 804,930.00
UA06	Pierce Arrow Chassis, 4-Door Full Tilt Aluminum Cab, Formed Aluminum Body, Tandem Axle, 100' Mid-Mounted Telescoping Ladder (#500)	\$ 885,653.00
UA07	Pierce Arrow Chassis, 4-Door Full Tilt Aluminum Cab, Formed Aluminum Body, Tandem Axle, 85' Rear-Mounted Telescoping Ladder with Platform (750#)	\$ 864,959.00
UA08	Pierce Arrow Chassis, 4-Door Full Tilt Aluminum Cab, Formed Aluminum Body, Tandem Axle, 95' Mid-Mounted Telescoping Ladder with Platform (750#)	\$ 996,580.00
UA09	Pierce Arrow Chassis, 4-Door Full Tilt Aluminum Cab, Formed Aluminum Body, Tandem Axle, 100' Rear-Mounted Telescoping Ladder with Platform (750#)	\$ 951,663.00
UA10	Pierce Arrow Chassis, 4-Door Full Tilt Aluminum Cab, Formed Aluminum Body, Single Axle, 100' Tractor Drawn - Mid-Mounted Telescoping Ladder (#500)	\$ 901,810.00
UA11	Pierce Arrow Chassis, 4-Door Full Tilt Aluminum Cab, Formed Aluminum Body, Tandem Axle, 114' Rear Mounted Telescopic, Articulating Platform	\$ 1,308,114.00
<b>B. Wildland Fire Apparatus (Brush Fire)</b>		
UB03	Pierce Brush Fire Apparatus, Ford F550, Formed Aluminum Flatbed	\$ 109,888.00
UB05	Pierce Brush Fire Apparatus, Ford F550, Formed Aluminum Utility Body	\$ 122,324.00
UB07	Freightliner 4-Door 4 x 4 Wildland, 500 water, 1000 gpm Pump	\$ 324,942.00
<b>C. Pumper Fire Apparatus</b>		
UC01	M2 Freightliner, 2-Door, OEM Cab, Aluminum Body, Single Axle, 1250 GPM Pump, Mid-Mounted Pumper	\$ 196,514.00
UC02	IHC, 2-Door, OEM Cab, Aluminum Body, Single Axle, 1250 GPM Pump, Mid-Mounted Pumper	\$ 198,338.00
UC03	KW, 2-Door, OME Cab, Aluminum Body, Single Axle, 1250 GPM Pump, Mid-Mounted Pumper	\$ 199,023.00
UC04	Peterbilt, 2-Door, OME Cab, Aluminum Body, Single Axle, 1250 GPM Pump, Mid-Mounted Pumper	\$ 205,619.00
UC05	Pierce Saber, 4-Door, Full-Tilt, Aluminum Cab, Aluminum Body, Single Axle, 1250 GPM Pump, Mid-Mounted Pumper	\$ 307,311.00
UC06	Pierce Arrow XT, 4-Door, Full-Tilt, Aluminum Cab, Aluminum Body, Single Axle, 1250 GPM Pump, Mid-Mounted Pumper	\$ 393,280.00
UC07	Pierce Dash CF, 4-Door, Full-Tilt, Aluminum Cab, Aluminum Body, Single Axle, 1250 GPM Pump, Mid-Mounted Pumper	\$ 445,411.00
<b>D. Special Service Apparatus (Walk-In &amp; Non-Walk-in Bodies) Multi-use: Rescue, Re-Hab, Hazmat, Mobile</b>		
UD01	Ford F-550 4- Door, 12' Non-Walk-in Formed Aluminum Body	\$ 128,264.00
UD02	M2 Freightliner, 2-Door, OEM Cab, Single Axle, Formed Aluminum Body, Non-Walk-In Body	\$ 178,802.00
UD03	IHC, 2-Door, OEM Cab, Single Axle, Formed Aluminum Body, Non-Walk-In Body	\$ 183,454.00
UD04	Kenworth, 2-Door, OEM Cab, Single Axle, Formed Aluminum Body, Non-Walk-In Body	\$ 186,290.00
UD05	Peterbilt, 2-Door, OEM Cab, Single Axle, Formed Aluminum Body, Non-Walk-In Body	\$ 192,835.00
UD06	Pierce Saber, Full-Tilt, Aluminum Cab, Single Axle, Formed Aluminum Body, Non-Walk-In Body	\$ 292,516.00

UD07	Pierce Arrow XT 4-Door, Full Tilt, Aluminum Cab, Single Axle, Formed Aluminum Body, Non Walk-in Body	\$ 373,354.00
UD08	M2 Freightliner, 2-Door, OEM Cab, Single Axle, Formed Aluminum Body, Walk-In Body	\$ 195,637.00
UD09	IHC, 2-Door, OEM Cab, Single Axle, Formed Aluminum Body, Walk-In Body	\$ 200,259.00
UD10	Kenworth, 2-Door, OEM Cab, Single Axle, Formed Aluminum Body, Walk-In Body	\$ 203,125.00
UD11	Peterbilt, 2-Door, OEM Cab, Single Axle, Formed Aluminum Body, Walk-In Body	\$ 209,476.00
UD12	Pierce Saber 4-Door, Full-Tilt, Aluminum Cab, Single Axle, Formed Aluminum Body, Walk-In Body	\$ 309,351.00
UD13	Pierce Arrow XT 4-Door, Full Tilt, Aluminum Cab, Single Axle, Formed Aluminum Body, Walk-in Body	\$ 401,562.00
<b>E. Pumper/Tankers &amp; Tankers</b>		
UE01	Freightliner 2 Door, Single Axle Tanker, Aluminum Body w/2100 water & 1000 pump	\$ 196,506.00
UE02	International 2dr Single Axle Tanker, Aluminum Body w/2100 water & 1000 pump	\$ 199,334.00
UE03	Kenworth 2dr Single Axle Tanker, Aluminum Body w/2100 water & 1000 pump	\$ 199,216.00
UE04	Peterbilt 2dr Single Axle Tanker, Aluminum w/2100 water & 1000 pump	\$ 205,925.00
UE05	Pierce Saber, 4-Door, Full-Tilt, Aluminum Cab, Pumper/Tanker, Aluminum Body, Single Axle, 1500 GPM Pump, Mid-Mounted	\$ 334,265.00
UE06	Pierce Impel, 4-Door, Full-Tilt, Aluminum Cab, Pumper/Tanker, Aluminum Body, Tandem Axle, 1250 GPM Pump, Mid-Mounted	\$ 434,775.00
UE07	Freightliner 2dr, Tandem Axle Tanker, Aluminum Body w/3000 water & 500 pump	\$ 209,929.00
UE08	International 2dr Tandem Axle Tanker, Aluminum Body w/3000 water & 500 pump	\$ 230,955.00
UE09	Kenworth 2dr Tandem Axle Tanker, Aluminum Body w/3000 water & 500 pump	\$ 219,563.00
UE10	Peterbilt 2dr Tandem Axle Tanker, Aluminum w/3000 water & 500 pump	\$ 228,527.00
UE11	Pierce Saber, 4-Door, Full-Tilt, Aluminum Cab, Aluminum Body, Single Axle, 1250 GPM Pump, Mid-Mounted Elliptical Tanker	\$ 352,143.00
UE12	Pierce Impel, 4-Door, Full-Tilt, Aluminum Cab, Aluminum Body, Tandem Axle, 1250 GPM Pump, Mid-Mounted Elliptical Tanker	\$ 445,834.00

2600 AMERICAN DRIVE  
 POST OFFICE BOX 2017  
 APPLETON, WISCONSIN 54912-2017  
 920-832-3000 • FAX 920-832-3208  
 www.piercemfg.com



## PROPOSAL FOR PIERCE® FIRE APPARATUS

City of Sacramento
5770 Freeport Blvd, Suite 2
Sacramento, CA 95822

<b>DATE</b>	October 15, 2015
<b>QUOTE NO.</b>	91015-15
<b>EXPIRES</b>	November 30, 2015
<b>SALES REP.</b>	Ryan Wright

The undersigned is prepared to manufacture for you, upon an order being placed by you, for final acceptance by Pierce Manufacturing, Inc., at its home office in Appleton, Wisconsin, the apparatus and equipment herein named and for the following prices:

### OPTION A: FULL PAYMENT AT CONTRACT SIGNING

#	Description	Each	Extension
A	Four (4) Enforcer 1500 GPM Pumpers (HGAC FS12-13, UC06)	584,612.57	2,338,450.28
B	Factory Inspection Trip (2 trips, 5 SFD representatives)	3,500.00	14,000.00
C	Delivery / Dealer Preparation	4,250.00	17,000.00
D	<b>DISCOUNT FOR FULL PAYMENT AT CONTRACT SIGNING</b>	<b>(26,047.56)</b>	<b>(104,190.24)</b>
E	<b>SUBTOTAL</b>	<b>566,315.01</b>	<b>2,265,260.04</b>
F	State Sales Tax @ 8.50%	48,136.78	192,547.12
G	Performance Bond	1,800.34	7,201.36
H	<b>TOTAL PURCHASE PRICE</b>	<b>616,252.13</b>	<b>2,465,008.52</b>

#### OPTION A - FULL PAYMENT AT CONTRACT SIGNING TERMS AND CONDITIONS:

- 1) The Grand Total pricing is only valid if four (4) units are purchased at the same time, on the same contract (or purchase order).
- 2) The City of Sacramento pay the purchase price of **\$2,465,008.52** for the Product within fifteen (15) calendar days of contract signing directly to Pierce Manufacturing Inc.
- 3) The proposed delivery timeframe for the Product will not begin until Pierce Manufacturing Inc. approves the contract and receives full payment of the purchase price of **\$2,465,008.52**.
- 4) If payment of **\$2,465,008.52** is late and if the City of Sacramento elects not to have the delivery extended, **\$500.00 per calendar day** will be added to the final invoice.

Said apparatus and equipment are to be built and shipped in accordance with the specifications hereto attached, delays due to strikes, war, or intentional conflict, failures to obtain chassis, materials, or other causes beyond our control not preventing, within about 315 TO 345 calendar days after receipt of this order and the acceptance thereof at our office at Appleton, Wisconsin, and to be delivered to you at SACRAMENTO, CALIFORNIA.

The specifications herein contained shall form a part of the final contract, and are subject to changes desired by the purchaser, provided such alterations are interlined prior to the acceptance by the company of the order to purchase, and provided such alterations do not materially affect the cost of the construction of the apparatus.

The proposal for fire apparatus conforms with all Federal Department of Transportation (DOT) rules and regulations in effect at the time of bid, and with all National Fire Protection Association (NFPA) Guidelines for Automotive Fire Apparatus as published at the time of bid, except as modified by customer specifications. Any increased costs incurred by first party because of future changes in or additions to said DOT or NFPA standards will be passed along to the customers as an addition to the price set forth above.

*Any Purchase Order (PO) issued as a result of this proposal should be made out to Pierce Manufacturing Inc.*

Unless accepted by November 30, 2015, the right is reserved to withdraw this proposition.

Respectfully Submitted,

A handwritten signature in black ink, appearing to read "Ryan Wright". The signature is written in a cursive, flowing style.

Authorized Sales Representative

Proposal for **City of Sacramento Fire Department**

Prepared by *Golden State Fire Apparatus, Inc.*

10/15/2015 (REV2)



**PERFORM. LIKE NO OTHER.™**

# CITY OF SACRAMENTO FIRE DEPARTMENT

Specifications for **FOUR (4)** Pierce Enforcer 1500 GPM Pumpers (REV2)

October 15, 2015 (Quote Number 91015-15)

Golden State Fire Apparatus Inc is pleased to submit a proposal to City of Sacramento for **four (4)** **Pierce® Triple Combination Pumpers** per your request for quotation. The following paragraphs will describe in detail the apparatus, construction methods, and equipment proposed. This proposal will indicate size, type, model and make of components parts and equipment, providing proof of compliance with each and every item (except where noted) in the departments advertised specifications.

PIERCE MANUFACTURING was founded in 1913. Since then we have been building bodies with one philosophy, "BUILD THE FINEST". Our skilled craftsmen take pride in their work, which is reflected, in the final product. We have been building fire apparatus since the early "forties" giving Pierce Manufacturing over 60 years of experience in the fire apparatus market. Pierce Manufacturing has built and put into service more than 51,000 apparatus, including more than 27,000 on Pierce custom chassis designed and built specifically for fire and emergency applications. Our Appleton, Wisconsin facility has over 757,000 total square feet of floor space situated on approximately 97 acres of land. Our Bradenton, Florida facility has 300,000 square feet of floor space situated on approximately 38 acres of land.

Our beliefs in high ethical standards are carried through in all of our commitments and to everyone with whom we do business. Honesty, Integrity, Accountability and Citizenship are global tenets by which we all live and work. Consequently, we neither engage in, nor have we ever been convicted of price fixing, bid rigging, or collusion in any domestic or international fire apparatus market.

Pierce has only one brand of fire apparatus "Pierce", ensuring you are receiving top of the line product that meets your specification.

In accordance with the current edition of NFPA 1901 standards, this proposal will specify whether the fire department, manufacturer, or apparatus dealership will provide required loose equipment.

Images and illustrative material in this proposal are as accurate as known at the time of publication, but are subject to change without notice. Images and illustrative material is for reference only, and may include optional equipment and accessories and may not include all standard equipment.

## **GENERAL DESIGN AND CONSTRUCTION**

To control quality, ensure compatibility, and provide a single source for service and warranty, the custom cab, chassis, pump module and body will be entirely designed, assembled/welded and painted in Pierce owned manufacturing facilities. This includes, but not limited to the cab weldment, the pumphouse module assembly, the chassis assembly, the body and the electrical system.

## **QUALITY AND WORKMANSHIP**

Pierce has set the pace for quality and workmanship in the fire apparatus field. Our tradition of building the highest quality units with craftsmen second to none has been the rule right from the beginning and we demonstrate that ongoing commitment by: Ensuring all steel welding follows American Welding

# CITY OF SACRAMENTO FIRE DEPARTMENT

Specifications for **FOUR (4)** Pierce Enforcer 1500 GPM Pumpers (**REV2**)

**October 15, 2015** (Quote Number **91015-15**)

Society D1.1-2004 recommendations for structural steel welding. All aluminum welding follows American Welding society and ANSI D1.2-2003 requirements for structural welding of aluminum. All sheet metal welding follows American welding Society B2.1-2000 requirements for structural welding of sheet metal. Our flux core arc welding uses alloy rods, type 7000 and is performed to American Welding Society standards A5.20-E70T1. Furthermore, all employees classified as welders are tested and certified to meet the American welding Society codes upon hire and every three (3) years thereafter. Pierce also employs an American Welding Society certified welding inspector in plant during working hours to monitor weld quality.

Pierce Manufacturing operates a Quality Management System under the requirements of ISO 9001. These standards sponsored by the International Organization for Standardization (ISO) specify the quality systems that are established by the manufacturer for design, manufacture, installation and service. A copy of the certificate of compliance is included with this proposal.

In addition to the Quality Management system, we also employ a Quality Achievement Supplier program to insure the vendors and suppliers that we utilize meet the high standards we demand. That is just part of our overall "Quality at the Source" program at Pierce.

To demonstrate the quality of our products and services, a list of at least ten (10) fire departments/municipalities that have purchased vehicles for a second time is provided.

## **FLUID SERVICING (Engine and Transmission)**

Each apparatus will receive a fluid service prior to final delivery consisting of:

1. Change engine oil
2. Change engine filters
3. Change transmission fluid

The above items will be performed by the service center and prior to final delivery.

## **VEHICLE REGISTRATION**

The dealer WILL apply for the title, secure vehicle registration, and obtain license plates for the purchaser through the Department of Motor Vehicles (DMV).

## **MODIFICATION**

The purchaser, at any time prior to the delivery date specified on the contract or purchase order, may issue a written change order for any modification. Such modifications shall be the result of negotiation and agreement between both parties.

Oral change orders are not permitted. No change on this purchase order shall be made unless the purchaser gives its prior written approval by its authorized representative. The contractor shall be liable for all costs resulting from any unauthorized changes to the purchase order.

# CITY OF SACRAMENTO FIRE DEPARTMENT

Specifications for **FOUR (4)** Pierce Enforcer 1500 GPM Pumpers (**REV2**)

**October 15, 2015** (Quote Number **91015-15**)

No change order shall be made unless it is documented in writing, signed by the contractor and countersigned by the purchaser.

## **PAYMENT**

Terms of payment shall be 100% payment to be made within thirty (30) calendar days upon the completed apparatus departing the manufacturing facility (unless an alternative payment option is elected).

The date used as the basis for payment shall be the date that the completed apparatus departs the manufacturing facility.

## **DEALER PREPARATION**

The dealer shall provide and/or complete the following services (if applicable to the specification):

- **Proposal Compliance** - Inspect apparatus for compliance with proposal.
- **Fluid Levels** - Inspect for correct capacities of the following: engine oil, coolant, power steering fluid, washer reservoir fluid, transmission fluid, rear end fluid, pump transmission oil, and primer oil.
- **Visual Inspection** - Inspect tires and wheels for proper pressure and lug torquing. Tighten any loose hardware and repair reasonable paint scratches or chips. Lubricate valve rods and check doors for correct adjustment.
- **Electrical Inspection** - Operate all lights, sirens, and other electrical accessories.
- **Pump Operation** - Vacuum test the pump to hold for 15 minutes. After vacuum test, operate transfer valve and check pump shift.
- **Leak Inspection** - Fill water tank to check for leaks. Inspect water level gauge and check for calibration. Operate relief valve.
- **Gauge Inspection** - With caps loose, rapid test all individual gauges and main gauges for calibration.
- **Foam System Inspection** - Tighten caps and connect foam lines. Test selector, valves, metering valve and operation of foam system (including flush).
- **Road Test** - Run a road test with tank full. Empty tank, drain pump, and drain all lines when above steps are completed.
- **Fuel Tank** - Fuel tank shall be filled to capacity prior to final delivery.
- **Cleaning / Detailing** - The apparatus shall be thoroughly washed and detailed at the dealership prior to final delivery to the purchaser. This includes removal of any metal shavings.

The purchaser shall have the option to inspect the apparatus at the contractor's service facility prior to final delivery.

## **DELIVERY**

All equipment / material, spare parts and supplies shall be delivered F.O.B. destination, delivery charges prepaid and added, to the following location:

City of Sacramento  
Fleet Management  
5730 24th Street, Bldg 1

# CITY OF SACRAMENTO FIRE DEPARTMENT

Specifications for **FOUR (4)** Pierce Enforcer 1500 GPM Pumpers **(REV2)**  
**October 15, 2015** (Quote Number **91015-15**)

Sacramento, CA 95822

## **TRAINING PROGRAM**

After delivery the successful bidder shall provide a qualified and responsible instructor to familiarize the personnel in the basic operation of the apparatus and its components. An on-site structured program covering proper operation and preventative maintenance shall be presented.

The training sessions shall be scheduled at times mutually agreed upon between the bidder and the purchaser.

## **MANUAL AND SERVICE INFORMATION**

At time of delivery, complete operation and maintenance manuals covering the apparatus will be provided. A permanent plate will be mounted in the driver's compartment specifying the quantity and type of fluids required including engine oil, engine coolant, transmission, pump transmission lubrication, pump primer and drive axle.

## **SAFETY VIDEO**

At the time of delivery Pierce will also provide one (1) 39-minute, professionally produced apparatus safety video, in DVD format. This video will address key safety considerations for personnel to follow when they are driving, operating, and maintaining the apparatus, including the following: vehicle pre-trip inspection, chassis operation, pump operation, aerial operation, and safety during maintenance.

## **PERFORMANCE TESTS**

A road test will be conducted with the apparatus fully loaded and a continuous run of no less than ten (10) miles. During that time the apparatus will show no loss of power nor will it overheat. The transmission drive shaft or shafts and the axles will run quietly and be free of abnormal vibration or noise. The apparatus when fully loaded will not have less than 25 percent nor more than 50 percent on the front axle, and not less than 50 percent nor more than 75 percent on the rear axle. The apparatus will meet NFPA 1901 acceleration and braking requirements.

## **SERVICE AND WARRANTY SUPPORT**

Pierce dealership support will be provided by Golden State Emergency Vehicle Service Inc by operating a Pierce authorized service center. The service center will have factory-trained mechanics on staff versed in Pierce fire apparatus. The service facility will be located within fifty (50) miles of the fire department.

In addition to the dealership, Pierce has service facilities located in both, Weyauwega, Wisconsin and Bradenton, Florida. Pierce also maintains a dedicated parts facility of over 100,000 square feet in Appleton, Wisconsin. The parts facility stocks in excess of \$5,000,000 in parts dedicated to service and replacement parts. The parts facility employs a staff dedicated solely for the distribution and shipment of service and replacement parts.

# CITY OF SACRAMENTO FIRE DEPARTMENT

Specifications for **FOUR (4) Pierce Enforcer 1500 GPM Pumpers (REV2)**

**October 15, 2015 (Quote Number 91015-15)**

Service parts for the apparatus being proposed can be found via Pierceparts.com which, is an interactive online tool that delivers information regarding your specific apparatus as well as the opportunity to register for training classes.

As a Pierce customer you have the ability to view the complete bill of materials for your specific apparatus, including assembly drawings, piece part drawings, and beneficial parts notations. You will also have the ability to search the complete Pierce item master through a parts search function which offers all Pierce SKU's and descriptions offered on all Pierce apparatus. Published component catalogs, which include proprietary systems along with an extensive operators manual library is available for easy reference.

Pierce Manufacturing maintains a dedicated service and warranty staff of over 35 personnel, dedicated to customer support, which also maintains a 24 hour 7 day a week toll free hot line, four (4) on staff EVT's, and offers hands-on repair and maintenance training classes multiple times a year.

## **COMMERCIAL GENERAL LIABILITY INSURANCE**

Certification of insurance coverage will be enclosed.

## **SINGLE SOURCE MANUFACTURER**

Pierce Manufacturing, Inc. provides an integrated approach to the design and manufacture of our products that delivers superior apparatus and a dedicated support team. From our facilities, the chassis, cab weldment, cab, pumphouse (including the sheet metal enclosure, valve controls, piping and operators panel) and body will be entirely designed, tested, and hand assembled to the customer's exact specifications. The electrical system either hardwired or multiplexed, will be both designed and integrated by Pierce Manufacturing. The warranties relative to these major components (excluding component warranties such as engine, transmission, axles, pump, etc.) will be provided by Pierce as a single source manufacturer. Pierce's single source solution adds value by providing a fully engineered product that offers durability, reliability, maintainability, performance, and a high level of quality.

Your apparatus will be manufactured in Appleton, Wisconsin.

## **NFPA 2009 STANDARDS**

This unit will comply with the NFPA standards effective January 1, 2009, except for fire department directed exceptions. These exceptions will be set forth in the Statement of Exceptions.

Certification of slip resistance of all stepping, standing and walking surfaces will be supplied with delivery of the apparatus.

A plate that is highly visible to the driver while seated will be provided. This plate will show the overall height, length, and gross vehicle weight rating.

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The manufacturer will have programs in place for training, proficiency testing and performance for any staff involved with certifications.

An official of the company will designate, in writing, who is qualified to witness and certify test results.

## **NFPA COMPLIANCY**

Apparatus proposed by the bidder will meet the applicable requirements of the National Fire Protection Association (NFPA) as stated in current edition at time of contract execution. Fire department's specifications that differ from NFPA specifications will be indicated in the proposal as "non-NFPA".

## **VEHICLE INSPECTION PROGRAM CERTIFICATION**

To assure the vehicle is built to current NFPA standards, the apparatus, in its entirety, will be third-party, audit-certified through Underwriters Laboratory (UL) that it is built and complies to all applicable standards in the current edition of NFPA 1901. The certification will include: all design, production, operational, and performance testing of not only the apparatus, but those components that are installed on the apparatus.

A placard will be affixed in the driver's side area stating the third party agency, the date, the standard and the certificate number of the whole vehicle audit.

## **PUMP TEST**

Underwriters Laboratory (UL) will test, approved, and certify the pump. The test results and the pump manufacturer's certification of hydrostatic test; the engine manufacturer's certified brake horsepower curve; and the pump manufacturer's record of pump construction details will be forwarded to the Fire Department.

## **INSPECTION TRIPS**

The bidder will provide two (2) factory inspection trips for five (5) City of Sacramento representative(s). The inspection trip(s) will be scheduled at times mutually agreed upon between the manufacturer's representative and the customer. All costs such as travel, lodging and meals will be the responsibility of the bidder.

## **PRODUCT CHANGES AND IMPROVEMENTS**

Our components and processes, as described in this proposal document, are as accurate as known at the time of bid submission, but are subject to change for the purpose of product or process improvements, or changes in industry standards providing the change does not affect the meaning or definition of the bid specifications.

## **PERFORMANCE BOND, 1 YEAR**

The successful bidder will furnish a Performance and Payment bond (Bond) equal to 100 percent of the total contract amount within 30 days of the notice of award. Such Bond will be in a form acceptable to the Owner and issued by a surety company included within the Department of Treasury's Listing of

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Approved Sureties (Department Circular 570) with a minimum A.M. Best Financial Strength Rating of A and Size Category of XV. In the event of a bond issued by a surety of a lesser Size Category, a minimum Financial Strength rating of A+ is required.

Bidder and Bidder's surety agree that the Bond issued hereunder, whether expressly stated or not, also includes the surety's guarantee of the vehicle manufacturer's Basic One (1) Year Limited Warranty period included within this proposal. Owner agrees that the penal amount of this bond will be simultaneously amended to 25 percent of the total contract amount upon satisfactory acceptance and delivery of the vehicle(s) included herein. Notwithstanding anything contained within this contract to the contrary, the surety's liability for any warranties of any type will not exceed one (1) year from the date of such satisfactory acceptance and delivery, or the actual Basic One (1) Year Limited Warranty period, whichever is shorter.

## **APPROVAL DRAWING**

A drawing of the proposed apparatus will be prepared and provided to the purchaser for approval before construction begins. The Pierce sales representative will also be provided with a copy of the same drawing. The finalized and approved drawing will become part of the contract documents. This drawing will indicate the chassis make and model, location of the lights, siren, horns, compartments, major components, etc.

A "revised" approval drawing of the apparatus will be prepared and submitted by Pierce to the purchaser showing any changes made to the approval drawing.

## **ENFORCER CHASSIS**

The Pierce Enforcer™ is the custom chassis developed exclusively for the fire service. Chassis provided will be a new, tilt-type custom fire apparatus. The chassis will be manufactured in the apparatus body builder's facility eliminating any split responsibility. The chassis will be designed and manufactured for heavy-duty service, with adequate strength, capacity for the intended load to be sustained, and the type of service required. The chassis will be the manufacturer's first line tilt cab.

## **MAXIMUM OVERALL HEIGHT**

The maximum overall height of the apparatus will be 114.00" (9'-6.00").

## **MAXIMUM OVERALL LENGTH**

The maximum overall length of the apparatus will be 367.25".

## **WHEELBASE**

The wheelbase of the vehicle will be 187.50".

## **GVW RATING**

The gross vehicle weight rating will be 43,500 lbs.

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## **FRAME**

The chassis frame will be built with two (2) steel channels bolted to five (5) cross members or more, depending on other options of the apparatus. The side rails will be heat-treated steel measuring 10.25" x 3.50" x .375".

Each rail will have a section modulus of 16.00 cubic inches, yield strength of 120,000 psi, and a resisting bending moment (rbm) of 1,921,069 inch-pounds.

## **FRONT NON DRIVE AXLE**

The Oshkosh TAK-4® front axle will be of the independent suspension design with a ground rating of 19,500 lb.

Upper and lower control arms will be used on each side of the axle. Upper control arm castings will be made of 100,000-psi yield strength 8630 steel and the lower control arm casting will be made of 55,000-psi yield ductile iron.

The center cross members and side plates will be constructed out of 80,000-psi yield strength steel.

Each control arm will be mounted to the center section using elastomer bushings. These rubber bushings will rotate on low friction plain bearings and be lubricated for life. Each bushing will also have a flange end to absorb longitudinal impact loads, reducing noise and vibrations.

There will be nine (9) grease fittings supplied, one (1) on each control arm pivot and one (1) on the steering gear extension.

The upper control arm will be shorter than the lower arm so that wheel end geometry provides positive camber when deflected below rated load and negative camber above rated load.

Camber at load will be zero degrees for optimum tire life.

The ball joint bearing will be of low friction design and be maintenance free.

Toe links that are adjustable for alignment of the wheel to the center of the chassis will be provided.

The wheel ends must have little to no bump steer when the chassis encounters a hole or obstacle.

The steering linkage will provide proper steering angles for the inside and outside wheel, based on the vehicle wheelbase.

The axle will have a third party certified turning angle of 45 degrees. Front discharge, front suction, or aluminum wheels will not infringe on this cramp angle.

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## **FRONT SUSPENSION**

Front Oshkosh TAK-4™ independent suspension will be provided with a minimum ground rating of 19,500 lb.

The independent suspension system will be designed to provide maximum ride comfort. The design will allow the vehicle to travel at highway speeds over improved road surfaces and at moderate speeds over rough terrain with minimal transfer of road shock and vibration to the vehicle's crew compartment.

Each wheel will have torsion bar type spring. In addition, each front wheel end will also have energy absorbing jounce bumpers to prevent bottoming of the suspension.

The suspension design will be such that there is at least 10.00" of total wheel travel and a minimum of 3.75" before suspension bottoms.

The torsion bar anchor lock system allows for simple lean adjustments, without the use of shims. One can adjust for a lean within 15 minutes per side. Anchor adjustment design is such that it allows for ride height adjustment on each side.

The independent suspension was put through a durability test that simulated 140,000 miles of inner city driving.

## **FRONT SHOCK ABSORBERS**

KONI heavy-duty telescoping shock absorbers will be provided on the front suspension.

## **FRONT OIL SEALS**

Oil seals with viewing window will be provided on the front axle.

## **FRONT TIRES**

The front tires will be Michelin 385/65R22.50 radials, 18 ply XFE wide base tread, rated for 19,840 lb maximum axle load and 75 mph maximum speed.

The tires will be mounted on Alcoa 22.50" x 12.25" polished aluminum disc type wheels with a ten (10)stud, 11.25" bolt circle.

## **REAR AXLE**

The rear axle will be a Meritor™, Model RS-24-160, with a capacity of 24,000 lb.

## **TOP SPEED OF VEHICLE**

A rear axle ratio will be furnished to allow the vehicle to reach a top speed of 68 mph.

## **REAR SUSPENSION**

The rear suspension will be Standens, semi-elliptical, 3.00" wide x 53.00" long, 12-leaf pack with a ground rating of 27,000 lb. The spring hangers will be castings.

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The two (2) top leaves will wrap the forward spring hanger pin, and the rear of the spring will be a slipper style end that will ride in a rear slipper hanger. To reduce bending stress due to acceleration and braking, the front eye will be a berlin eye that will place the front spring pin in the horizontal plane within the main leaf.

A steel encased rubber bushing will be used in the spring eye. The steel encased rubber bushing will be maintenance free and require no lubrication.

## **REAR OIL SEALS**

Oil seals will be provided on the rear axle.

## **REAR TIRES**

Rear tires will be four (4) Michelin 12R22.50 radials, 16 ply "all position" XZE\* tread, rated for 27,120 lb maximum axle load and 75 mph maximum speed.

The tires will be mounted on Alcoa 22.50" x 8.25" polished aluminum disc wheels with a ten (10) stud 11.25" bolt circle.

## **TIRE BALANCE**

All tires will be balanced with Counteract balancing beads. The beads will be inserted into the tire and eliminate the need for wheel weights.

## **TIRE PRESSURE MANAGEMENT**

There will be a VECSAFE LED tire alert pressure management system provided that will monitor each tire's pressure. A chrome plated brass sensor will be provided on the valve stem of each tire for a total of six (6) tires.

The sensor will calibrate to the tire pressure when installed on the valve stem for pressures between 20 and 120 psi. The sensor will activate an integral battery operated LED when the pressure of that tire drops 8 psi.

Removing the cap from the sensor will indicate the functionality of the sensor and battery. If the sensor and battery are in working condition, the LED will immediately start blinking.

## **MUD FLAPS**

Mud flaps with a Pierce logo will be installed behind the front and rear wheels.

## **WHEEL CHOCKS**

There will be one (1) pair of folding Ziamatic, Model SAC-44-E, aluminum alloy, Quick-Choc wheel blocks, with easy-grip handle provided.

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## **WHEEL CHOCK BRACKETS**

There will be one (1) pair of Zico, Model SQCH-44-H, horizontal mounting wheel chock brackets provided for the Ziamatic, Model SAC-44-E, folding wheel chocks. The brackets will be made of aluminum and consist of a quick release spring loaded rod to hold the wheel chocks in place. The brackets will be mounted forward of the left side rear tire.

## **ANTI-LOCK BRAKE SYSTEM**

The vehicle will be equipped with a Meritor WABCO 4S4M, anti-lock braking system. The ABS will provide a 4-channel anti-lock braking control on both the front and rear wheels. A digitally controlled system that utilizes microprocessor technology will control the anti-lock braking system. Each wheel will be monitored by the system. When any particular wheel begins to lockup, a signal will be sent to the control unit. This control unit then will reduce the braking of that wheel for a fraction of a second and then reapply the brake. This anti-lock brake system will eliminate the lockup of any wheel thus helping to prevent the apparatus from skidding out of control.

## **BRAKES**

The service brake system will be full air type.

The front brakes will be Knorr/Bendix disc type with a 17.00" ventilated rotor for improved stopping distance.

The brake system will be certified, third party inspected, for improved stopping distance.

The rear brakes will be Meritor™ 16.50" x 7.00" cam operated with automatic slack adjusters. Dust shields will be provided.

## **AIR COMPRESSOR, BRAKE SYSTEM**

The air compressor will be a Cummins/WABCO with 18.7 cubic feet per minute output.

## **BRAKE SYSTEM**

The brake system will include:

- Bendix® brake treadle valve with vinyl covered foot surface
- Heated automatic moisture ejector on air dryer
- Total air system minimum capacity of 4,272 cubic inches
- Two (2) air pressure gauges with a red warning light and an audible alarm, that activates when air pressure falls below 60 psi
- Spring set parking brake system
- Parking brake operated by a push-pull style control valve
- A parking "brake on" indicator light on instrument panel

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- Park brake relay/inversion and anti-compounding valve, in conjunction with a double check valve system, with an automatic spring brake application at 40 psi
- A pressure protection valve to prevent all air operated accessories from drawing air from the air system when the system pressure drops below 80 psi (550 kPa)

The air tank will be primed and painted to meet a minimum 750 hour salt spray test.

To reduce the effects of corrosion, the air tank will be mounted with stainless steel brackets.

## **BRAKE SYSTEM AIR DRYER**

The air dryer will be a WABCO System Saver 1200 IWT, with internal wet tank, spin-on coalescing filter cartridge and 100 watt heater.

## **BRAKE LINES**

Wire braided reinforced rubber brake lines will be provided for the chassis air brake system. This also includes the brake lines between the frame and brake chambers. The brake lines will not be painted.

Coupler fittings for chassis brake lines will be installed forward of the front axle. They will be a separation point for those air lines going to the cab. The air lines going into the cab will be nylon wrapped in loom.

## **AIR INLET/OUTLET**

One (1) air inlet/outlet will be installed with the female coupling located on the driver side pump panel. This system will tie into the "wet" tank of the brake system and include a check valve in the inlet line and an 85 psi pressure protection valve in the outlet line. The air outlet will be controlled by a needle valve.

A mating male fitting will be provided with the loose equipment.

The air inlet will allow a shoreline air hose to be connected to the vehicle. This will allow station air to be supplied to the brake system of the vehicle to insure constant air pressure.

## **MANUAL MOISTURE EJECTORS**

Manual moisture ejectors for a single axle pumper reservoir capacity will be installed in the brake system.

The moisture ejector(s) will be remote mounted on the driver side of vehicle, as close to the edge of vehicle as possible.

A loop will be provided at the moisture ejector, to allow for ease of pulling the drain.

Each moisture ejector will have a label directly under the ejector, stating air tank drain.

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Nylon tubing, .38" diameter, will be routed from the air tank to the moisture ejector. The nylon tubing will be covered with protective split loom.

The moisture ejector(s) will be provided on the each reservoir(s).

## **ENGINE**

The chassis will be powered by an electronically controlled engine as described below:

Make:	Cummins
Model:	ISL9
Power:	450 hp at 2100 rpm
Torque:	1250 lb-ft at 1400 rpm
Governed Speed:	2200 rpm
Emissions Level:	EPA 2016
Fuel:	Diesel
Cylinders:	Six (6)
Displacement:	543 cubic inches (8.9L)
Starter:	Delco 39MT™
Fuel Filters:	Spin-on style primary filter with water separator and water-in-fuel sensor. Secondary spin-on style filter.

The engine will include On-board diagnostics (OBD), which provides self diagnostic and reporting. The system will give the owner or repair technician access to state of health information for various vehicle sub systems. The system will monitor vehicle systems, engine and after treatment. The system will illuminate a malfunction indicator light on the dash console if a problem is detected.

## **HIGH IDLE**

A high idle switch will be provided, inside the cab, on the instrument panel, that will automatically maintain a preset engine rpm. A switch will be installed, at the cab instrument panel, for activation/deactivation.

The high idle will be operational only when the parking brake is on and the truck transmission is in neutral. A green indicator light will be provided, adjacent to the switch. The light will illuminate when the above conditions are met. The light will be labeled "OK to Engage High Idle."

## **ENGINE BRAKE**

A Jacobs® engine brake is to be installed with the controls located on the instrument panel within easy reach of the driver.

The driver will be able to turn the engine brake system on/off and have a high, medium and low setting.

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The engine brake will activate when the system is on and the throttle is released.

The high setting of the brake application will activate and work simultaneously with the variable geometry turbo (VGT) provided on the engine.

The engine brake will be installed in such a manner that when the engine brake is slowing the vehicle the brake lights are activated.

The ABS system will automatically disengage the auxiliary braking device, when required.

## **CLUTCH FAN**

A fan clutch will be provided. The fan clutch will be automatic when the pump transmission is in "Road" position, and constantly engaged when in "Pump" position.

## **ENGINE AIR INTAKE**

The engine air intake will be located above the engine cooling package. It will draw fresh air from the front of the apparatus through the radiator grille.

A stainless steel metal screen will be installed at the inlet of the air intake system that will meet NFPA 1901 requirements.

The air cleaner and stainless steel screen will be easily accessible by tilting the cab.

## **EXHAUST SYSTEM**

The exhaust system will be stainless steel from the turbo to the inlet of the selective catalytic reduction (SCR) device, and will be 4.00" in diameter. The exhaust system will include a diesel particulate filter (DPF) and an SCR device to meet current EPA standards. An insulation wrap will be provided on all exhaust pipes between the turbo and DPF to minimize the transfer of heat to the cab. The exhaust will terminate horizontally ahead of the passenger side rear wheels. A tailpipe diffuser will be provided to reduce the temperature of the exhaust as it exits. Heat deflector shields will be provided to isolate chassis and body components from the heat of the tailpipe diffuser.

## **RADIATOR**

The radiator and the complete cooling system will meet or exceed NFPA and engine manufacturer cooling system standards.

For maximum corrosion resistance and cooling performance, the entire radiator core will be constructed using long life aluminum alloy. The radiator core will consist of aluminum fins, having a serpentine design, brazed to aluminum tubes.

The radiator core will have a minimum front area of 1060 square inches.

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Supply and return tanks will be made of heavy duty glass-reinforced nylon that will be crimped onto the core assembly using header tabs and a compression gasket to complete the radiator core assembly. There will be a full steel frame around the inserts to enhance cooling system durability and reliability.

The radiator will be compatible with commercial antifreeze solutions.

The radiator assembly will be isolated from the chassis frame rails with rubber isolators to prevent the development of leaks caused by twisting or straining when the apparatus operates over uneven terrain.

The radiator will include a de-aeration/expansion tank. For visual coolant level inspection, the radiator will have a built-in sight glass. The radiator will be equipped with a 15 psi pressure relief cap.

A drain port will be located at the lowest point of the cooling system and/or the bottom of the radiator to permit complete flushing of the coolant from the system.

Shields or baffles will be provided to prevent recirculation of hot air to the inlet side of the radiator.

## **COOLANT LINES**

Gates, or Goodyear, rubber hose will be used for all engine coolant lines installed by Pierce Manufacturing.

Hose clamps will be stainless steel constant torque type to prevent coolant leakage. They will expand and contract according to coolant system temperature thereby keeping a constant clamping pressure on the hose.

## **FUEL TANK**

A 65 gallon fuel tank will be provided and mounted at the rear of the chassis. The tank will be constructed of 12-gauge, hot rolled steel. It will be equipped with swash partitions and a vent. To eliminate the effects of corrosion, the fuel tank will be mounted with stainless steel straps.

A 0.75" drain plug will be located in a low point of the tank for drainage.

A fill inlet will be located on the left hand side of the body and is covered with a hinged, spring loaded, stainless steel door that is marked "Ultra Low Sulfur - Diesel Fuel Only."

A 0.50" diameter vent will be installed from tank top to just below fuel fill inlet.

The fuel tank will meet all FHWA 393.67 requirements including a fill capacity of 95 percent of tank volume.

All fuel lines will be provided as recommended by the engine manufacturer.

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## **DIESEL EXHAUST FLUID TANK**

A 4.5 gallon diesel exhaust fluid (DEF) tank will be provided and mounted in the driver's side body forward of the rear axle.

A 0.50" drain plug will be provided in a low point of the tank for drainage.

A fill inlet will be located on the driver's side of the body and be covered with a hinged, spring loaded, polished stainless steel door that is marked "Diesel Exhaust Fluid Only".

The tank will meet the engine manufacturer's requirement for 10 percent expansion space in the event of tank freezing.

The tank will include an integrated heater unit that utilizes engine coolant to thaw the DEF in the event of freezing.

## **FUEL COOLER**

An air to fuel cooler will be installed in the engine fuel return line.

## **TRANSMISSION**

An Allison 5th generation, Model EVS 3000P, electronic torque converting automatic transmission will be provided.

The transmission will be equipped with prognostics to monitor oil life, filter life, and transmission health. A wrench icon on the shift selector's digital display will indicate when service is due.

Two (2) PTO openings will be located on both sides of converter housing (positions 4 o'clock and 8 o'clock) as viewed from the rear.

A transmission temperature gauge with red light and audible alarm will be installed on the cab dash.

## **TRANSMISSION SHIFTER**

A five (5)-speed push button shift module will be mounted to right of driver on console. Shift position indicator will be indirectly lit for after dark operation.

The transmission ratio will be:

1st	3.49 to 1.00
2nd	1.86 to 1.00
3rd	1.41 to 1.00
4th	1.00 to 1.00
5th	0.75 to 1.00
R	5.03 to 1.00

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## **DOWNSHIFT MODE (w/engine brake)**

The transmission will be provided with an aggressive downshift mode.

This will provide earlier transmission downshifts to 3rd gear, resulting in improved engine braking performance.

## **TRANSMISSION COOLER**

A Modine plate and fin transmission oil cooler will be provided using engine coolant to control the transmission oil temperature.

## **TRANSMISSION FLUID**

The transmission will be provided with TranSynd, or other Allison approved TES-295 heavy duty synthetic transmission fluid.

## **DRIVELINE**

Drivelines will be a heavy-duty metal tube and be equipped with Spicer® 1710 universal joints.

The shafts will be dynamically balanced before installation.

A splined slip joint will be provided in each driveshaft, slip joint will be coated with Glidecoat® or equivalent.

## **STEERING**

Dual Sheppard, Model M110, steering gears, with integral heavy-duty power steering, will be provided. For reduced system temperatures, the power steering will incorporate an air to oil cooler and an Eaton, Model VN20, hydraulic pump with integral pressure and flow control. All power steering lines will have wire braded lines with crimped fittings.

A tilt and telescopic steering column will be provided to improve fit for a broader range of driver configurations.

## **STEERING WHEEL**

The steering wheel will be 18.00" in diameter, have tilting and telescoping capabilities, and a 4-spoke design.

## **LOGO AND CUSTOMER DESIGNATION ON HORN BUTTON**

The steering wheel will have an emblem containing the Pierce logo and customer name. The emblem will have three (3) rows of text for the customer's department name. There will be a maximum of eight (8) characters in the first row, 11 characters in the second row and 11 characters in the third row.

The first row of text will be: CITY

The second row of text will be: OF

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The third row of text will be: SACRAMENTO

## **FRONT BUMPER**

A one (1) piece, ten (10) gauge 304-2B polished stainless steel bumper, minimum of 10.00" high, will be attached to the front of the chassis frame.

A 9.00" formed steel channel will be mounted directly behind bumper for additional strength.

## **FRONT BUMPER GRAVEL PAN**

A gravel pan, constructed of bright aluminum treadplate, will be furnished between the bumper and cab face.

## **FRONT BUMPER TOW EYES**

Two (2) chrome tow eyes will be mounted through the front face of the bumper.

The inner and outer edges of the tow eyes will have a .25" radius.

Tow eyes will be mounted directly to the bumper frame.

Cutouts will be provided in the front face of stainless steel bumper to allow tow eyes to extend out the front.

The tow eyes will be designed and positioned to allow up to a 9,000 lb straight horizontal pull in line with the centerline of the vehicle. The tow eyes will not be used for lifting of the apparatus.

## **FRONT BUMPER TOW ANCHORS**

Two (2) fabricated steel tow anchors will be installed under the front of the chassis, attached to the front frame members. The tow anchors will not be used for lifting of the apparatus.

## **FRONT BUMPER LICENSE PLATE BRACKET**

A non-illuminated license plate bracket will be mounted on the front bumper. The bracket will be formed from bright stainless steel.

## **CAB**

The Enforcer cab will be designed specifically for the fire service and manufactured by the chassis builder.

The cab will be built by the apparatus manufacturer in a facility located on the manufacturer's premises.

For reasons of structural integrity and enhanced occupant protection, the cab will be a heavy duty design, constructed to the following minimal standards.

The cab will have 12 main vertical structural members located in the A-pillar (front cab corner posts), B-pillar (side center posts), C-pillar (rear corner posts), and rear wall areas. The A-pillar will be

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constructed of solid A356-T5 aluminum castings. The B-pillar and C-pillar will be constructed from 0.13" wall extrusions. The rear wall will be constructed of two (2) 2.00" x 2.00" outer aluminum extrusions and two (2) 2.00" x 1.00" inner aluminum extrusions. All main vertical structural members will run from the floor to 4.625" x 3.864" x 0.090" thick roof extrusions to provide a cage-like structure with the A-pillar and roof extrusions being welded into a 0.25" thick corner casting at each of the front corners of the roof assembly.

The front of the cab will be constructed of a 0.13" firewall plate, covered with a 0.090" front skin (for a total thickness of 0.22"), and reinforced with a full width x 0.50" thick cross-cab support located just below the windshield and fully welded to the engine tunnel. The cross-cab support will run the full width of the cab and weld to each A-pillar, the 0.13" firewall plate, and the front skin.

The cab floors will be constructed of 0.125" thick aluminum plate and reinforced at the firewall with an additional 0.25" thick cross-floor support providing a total thickness of 0.375" of structural material at the front floor area. The front floor area will also be supported with two (2) triangular 0.30" wall extrusions that also provides the mounting point for the cab lift. This tubing will run from the floor wireway of the cab to the engine tunnel side plates, creating the structure to support the forces created when lifting the cab.

The cab will be 96.00" wide (outside door skin to outside door skin) to maintain maximum maneuverability.

The overall height (from the cab roof to the ground) of approximately 99.00". The overall height listed will be calculated based on a truck configuration with the lowest suspension weight rating, the smallest diameter tires for the suspension, no water weight, no loose equipment weight, and no personnel weight. Larger tires, wheels, and suspension will increase the overall height listed.

The floor to ceiling height inside the crew cab will be 54.50" in the center and outboard positions.

The crew cab floor will measure 46.00" from the rear wall to the back side of the rear facing seat risers.

The medium block engine tunnel, at the rearward highest point (knee level), will measure 61.50" to the rear wall. The big block engine tunnel will measure 51.50" to the rear wall.

The crew cab will be a totally enclosed design with the interior area completely open to improve visibility and verbal communication between the occupants.

The cab will be a full tilt cab style.

A 3-point cab mount system with rubber isolators will improve ride quality by isolating chassis vibrations from the cab.

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## **CAB ROOF DRIP RAIL**

For enhanced protection from inclement weather, a drip rail will be furnished on the sides of the cab. The drip rail will be painted to match the cab roof, and bonded to the sides of the cab. The drip rail will extend the full length of the cab roof.

## **INTERIOR CAB INSULATION**

The cab will include 1.00" insulation in the ceiling, 1.50" insulation in the side walls, and 2.00" insulation in the rear wall to maximize acoustic absorption and thermal insulation.

## **FENDER LINERS**

Full circular inner fender liners in the wheel wells will be provided.

## **PANORAMIC WINDSHIELD**

A one (1)-piece safety glass windshield will be provided with over 2,775 square inches of clear viewing area. The windshield will be full width and will provide the occupants with a panoramic view. The windshield will consist of three (3) layers: outer light, middle safety laminate, and inner light. The outer light layer will provide superior chip resistance. The middle safety laminate layer will prevent the windshield glass pieces from detaching in the event of breakage. The inner light will provide yet another chip resistant layer. The cab windshield will be bonded to the aluminum windshield frame using a urethane adhesive. A custom frit pattern will be applied on the outside perimeter of the windshield for a finished automotive appearance.

## **WINDSHIELD WIPERS**

Three (3) electric windshield wipers with washer will be provided that meet FMVSS and SAE requirements.

The washer reservoir will be able to be filled without raising the cab.

## **ENGINE TUNNEL**

Engine hood side walls will be constructed of 0.375" aluminum. The top will be constructed of 0.125" aluminum and will be tapered at the top to allow for more driver and passenger elbow room.

The engine hood will be insulated for protection from heat and sound. The noise insulation keeps the dBA level within the limits stated in the current NFPA 1901 standards.

The engine tunnel will be no higher than 17.00" off the crew cab floor.

## **ENGINE TUNNEL SCUFFPLATE**

A bright aluminum treadplate scuffplate will be provided on the entire rear vertical surface of the engine tunnel.

# CITY OF SACRAMENTO FIRE DEPARTMENT

Specifications for **FOUR (4)** Pierce Enforcer 1500 GPM Pumpers (**REV2**)

**October 15, 2015** (Quote Number **91015-15**)

## **INTERIOR CREW CAB REAR WALL ADJUSTABLE SEATING (PATENT PENDING)**

The interior rear wall of the crew cab will have mounting holes every 2.75" to allow for adjustability of the forward facing crew cab seating along the rear wall. Seats will be adjustable with use of simple hand tools allowing departments flexibility of their seating arrangement should their department needs change.

## **CAB REAR WALL EXTERIOR COVERING**

The exterior surface of the rear wall of the cab will be overlaid with bright aluminum treadplate except for areas that are not typically visible when the cab is lowered.

## **CAB LIFT**

A hydraulic cab lift system will be provided consisting of an electric powered hydraulic pump, dual lift cylinders, and necessary hoses and valves.

Hydraulic pump will have a manual override for backup in the event of electrical failure.

Lift controls will be located on the right side pump panel or front area of the body in a convenient location. A "cab unlocked" indicator light will be located at the controls that will indicate when the cab is not in the locked position for safe road travel.

The cab will be capable of tilting 43 degrees to accommodate engine maintenance and removal.

The cab will be locked down by a 2-point normally closed spring loaded hook type latch that fully engages after the cab has been lowered. The system will be hydraulically actuated to release the normally closed locks when the cab lift control is in the raised position and cab lift system is under pressure. When the cab is completely lowered and system pressure has been relieved, the spring loaded latch mechanisms will return to the normally closed and locked position.

For increased safety, a redundant mechanical stay arm will be provided that must be manually put in place on the right side between the chassis and cab frame when the cab is in the raised position. This device will be manually stowed to its original position before the cab can be lowered.

## **CAB LIFT INTERLOCK**

The cab lift system will be interlocked to the parking brake. The cab tilt mechanism will be active only when the parking brake is set and the ignition switch is in the on position. If the parking brake is released, the cab tilt mechanism will be disabled.

## **GRILLE**

A bright finished aluminum mesh grille screen, inserted behind a bright finished grille surround, will be provided on the front center of the cab.

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Specifications for **FOUR (4)** Pierce Enforcer 1500 GPM Pumpers (**REV2**)

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## **MIRRORS**

A Retrac, Model 613423, dual vision, motorized, west coast style mirror, with chrome finish, will be mounted on each side of the front cab door with spring loaded retractable arms. The flat glass and convex glass will be heated and adjustable with remote control within reach of the driver.

## **DOORS**

To enhance entry and egress to the cab, the forward cab doors will be a minimum of 37.50" wide x 75.50" high. The crew cab doors will be located on the sides of the cab and will be constructed in the same manner as the forward cab doors. The crew cab door openings will be a minimum of 34.30" wide x 75.50" high.

The forward cab and crew cab doors will be constructed of extruded aluminum with a nominal material thickness of 0.093". The exterior door skins will be constructed from 0.090" aluminum.

A customized, vertical, pull-down type door handle will be provided on the exterior of each cab door. The exterior handle will be designed specifically for the fire service to prevent accidental activation, and will provide 4.00" wide x 2.00" deep hand clearance for ease of use with heavy gloved hands.

Each door will also be provided with an interior flush, open style paddle handle that will be readily operable from fore and aft positions, and be designed to prevent accidental activation. The interior handles will provide 4.00" wide x 1.25" deep hand clearance for ease of use with heavy gloved hands.

The cab doors will be provided with both interior (rotary knob) and exterior (keyed) locks exceeding FMVSS standards. The locks will be capable of activating when the doors are open or closed. The doors will remain locked if locks are activated when the doors are opened, then closed.

A full length, heavy duty, stainless steel, piano-type hinge with a 0.38" pin and 11 gauge leaf will be provided on all cab doors. There will be double automotive-type rubber seals around the perimeter of the door framing and door edges to ensure a weather-tight fit.

A chrome grab handle will be provided on the inside of each cab door for ease of entry.

The cab steps at each cab door location will be located inside the cab doors to protect the steps from weather elements.

## **DOOR PANELS**

The inner cab door panels will be constructed out of brushed stainless steel.

## **ELECTRIC OPERATED CAB DOOR WINDOWS**

All four (4) cab doors will be equipped with electric operated windows with one (1) flush mounted automotive style switch on each door. The driver's door will have four (4) switches, one (1) to control each door window.

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Each switch will allow intermittent or auto down operation for ease of use. Auto down operation will be actuated by holding the window down switch for approximately half a second.

## **CAB STEPS**

The forward cab and crew cab access steps will be a full size two (2) step design to provide largest possible stepping surfaces for safe ingress and egress. The bottom steps will be designed with a grip pattern punched into bright aluminum treadplate material to provide support, slip resistance, and drainage. The bottom steps will be a bolt-in design to minimize repair costs should they need to be replaced. The forward cab steps will be a minimum 25.00" wide, and the crew cab steps will be 21.65" wide with a 10.00" minimum depth. The inside cab steps will not exceed 16.50" in height. A slip-resistant handrail will be provided adjacent to each cab door opening to assist during cab ingress and egress.

The vertical surfaces of the step well will be painted.

## **CAB STEP LIGHTS**

There shall be six (6) white LED step lights installed for cab and crew cab access steps.

- One (1) light for the driver's access steps.
- Two (2) lights for the driver's side crew cab access steps.
- Two (2) lights for the passenger's side crew cab access steps.
- One (1) light for the passenger's side access step.

In order to ensure exceptional illumination, each light shall provide a minimum of 25 foot-candles (fc) covering an entire 15" x 15" square placed ten (10) inches below the light and a minimum of 1.5 fc covering an entire 30" x 30" square at the same ten (10) inch distance below the light.

The lights shall be activated when the battery switch is on and the adjacent door is opened.

## **CAB FENDER CROWNS**

Stainless steel fender crowns will be installed at the cab wheel openings.

## **GRAB HANDLES (INTERIOR CREW CAB DOORS)**

A black rubber covered grab handle will be mounted on the door post of the driver's and passenger's side crew cab door to assist in entering the cab. The grab handle will be securely mounted to the hinge side of the door frame.

## **WINDOW TINT**

Crew cab door roll-up windows will be provided with increased tint to 14 percent to reduce light transmission. The following windows are included:

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Specifications for **FOUR (4)** Pierce Enforcer 1500 GPM Pumps (REV2)

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## **MOUNTING PLATE ON ENGINE TUNNEL**

Equipment installation provisions will be installed on the engine tunnel.

A .25" smooth aluminum plate will be bolted to the top surface of the engine tunnel. The plate will follow the contour of the engine tunnel and will run the entire length of the engine tunnel. The plate will be spaced off the engine tunnel 1.00" to allow for wire routing below the plate.

The mounting surface will be painted to match the cab interior.

## **CAB INTERIOR**

The cab interior will be constructed of primarily metal (painted aluminum) to withstand the severe duty cycles of the fire service.

The officer side dash will be a flat faced design to provide easy maintenance and will be constructed out of painted aluminum.

The instrument cluster will be surrounded with a high impact ABS plastic contoured to the same shape of the instrument cluster.

The engine tunnel will be painted aluminum to match the cab interior.

The headliner will be installed in both forward and rear cab sections. Headliner material will be vinyl. A sound barrier will be part of its composition. Material will be installed on aluminum sheet and securely fastened to interior cab ceiling.

Forward portion of cab headliner will permit easy access for service of electrical wiring or other maintenance needs.

All wiring will be placed in metal raceways.

## **CAB INTERIOR UPHOLSTERY**

The cab interior upholstery will be dark silver gray.

## **CAB INTERIOR PAINT**

A rich looking interior will be provided by painting all the metal surfaces inside the cab fire smoke gray, vinyl texture paint.

## **CAB FLOOR**

The cab and crew cab floor areas will be covered with Polydamp™ acoustical floor mat consisting of a black pyramid rubber facing and closed cell foam decoupler.

The top surface of the material has a series of raised pyramid shapes evenly spaced, which offer a superior grip surface. Additionally, the material has a 0.25" thick closed cell foam (no water absorption) which offers a sound dampening material for reducing sound levels.

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Specifications for **FOUR (4)** Pierce Enforcer 1500 GPM Pumpers **(REV2)**

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## **CAB DEFROSTER**

To provide maximum defrost and heating performance, a 43,500 BTU heater-defroster unit with 350 CFM of air flow will be provided inside the cab. The defroster unit will be strategically located under the center forward portion of the vacuum formed instrument panel. For easy access, a removable vacuum formed cover will be installed over the defroster unit. The defroster will include an integral aluminum frame air filter, high performance dual scroll blowers, and ducts designed to provide maximum defrosting capabilities for the 1-piece windshield. The defroster ventilation will be built into the design of the cab dash instrument panel and will be easily removable for maintenance. The defroster will be capable of clearing 98 percent of the windshield and side glass when tested under conditions where the cab has been cold soaked at 0 degrees Fahrenheit for 10 hours, and a 2 ounce per square inch layer of frost/ice has been able to build up on the exterior windshield. The defroster system will meet or exceed SAE J382 requirements.

## **CAB/CREW CAB HEATER**

Two (2) 44,180 BTU auxiliary heaters with 276 CFM (each unit) of air flow will be provided inside the crew cab, one (1) in each outboard rear-facing seat riser. The heaters will include high performance dual scroll blowers, one (1) for each unit. Outlets for the heaters will be located below each rear facing seat riser and below the fronts of the driver and passenger seats, for efficient airflow. An extruded aluminum plenum will be incorporated in the cab structure that will transfer heat to the forward cab seating positions.

The heater/defroster and crew cab heaters will be controlled by a single integral electronic control panel. The heater control panel will allow the driver to control heat flow to the front and rear simultaneously. The control panel will include variable adjustment for temperature and fan control, and be conveniently located on the dash in clear view of the driver. The control panel will include highly visible, progressive LED indicators for both fan speed and temperature.

## **AIR CONDITIONING**

A high performance, customized air conditioning system will be furnished inside the cab and crew cab.

The air conditioning system will be capable of cooling the average cab temperature from 100 degrees Fahrenheit to 75 degrees Fahrenheit within 30 minutes at 50 percent relative humidity. The cooling performance test will be run only after the cab has been heat soaked at 100 degrees Fahrenheit for a minimum of 4 hours.

A radiator mounted condenser with a 59,644 BTU output that meets and exceed the performance specification will be installed. Mounting the condenser below the cab or body would reduce the performance of the system and will not be acceptable.

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Specifications for **FOUR (4)** Pierce Enforcer 1500 GPM Pumpers **(REV2)**

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One (1) evaporator unit will be installed in the center roof with two (2) cores, one (1) for the cab and one (1) for the crew cab. The evaporator unit will have an adequate BTU rating to meet the performance specifications.

Adjustable air outlets will be strategically located on the evaporator cover per the following:

- Four (4) will be directed towards the driver's location
- Four (4) will be directed towards the officer's location
- Seven (7) will be directed towards the crew cab area

The air conditioner refrigerant will be R-134A and will be installed by a certified technician.

The air conditioner will be controlled by a single electronic control panel. For ease of operation, the control panel will include variable adjustment for temperature and fan control and be conveniently located on the dash in clear view of the driver.

## **SUN VISORS**

Two (2) smoked Lexan™ sun visors provided. The sun visors will be located above the windshield with one (1) mounted on each side of the cab.

There will be a black plastic thumb latch provided to help secure each sun visor in the stowed position.

## **GRAB HANDLES**

A black rubber covered grab handle will be mounted on the door post of the driver and officer's side cab door to assist in entering the cab. The grab handles will be securely mounted to the post area between the door and windshield.

## **ENGINE COMPARTMENT LIGHT**

An engine compartment light will be installed under the engine hood, of which the switch is an integral part. Light will have a .125" diameter hole in its lens to prevent moisture retention.

## **ACCESS TO ENGINE DIPSTICKS**

For access to the engine oil and transmission fluid dipsticks, there will be a door on the engine tunnel, inside the crew cab. The door will be on the rear wall of the engine tunnel, on the vertical surface.

The engine oil dipstick will allow for checking only. The transmission dipstick will allow for both checking and filling.

The door will have a rubber seal for thermal and acoustic insulation. One (1) flush latch will be provided on the access door.

## **GLOVE DISPENSER BOX, SINGLE**

There will be two (2) storage boxes designed to hold and dispense boxes of latex gloves provided.

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Specifications for **FOUR (4)** Pierce Enforcer 1500 GPM Pumpers (**REV2**)

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Each box will be constructed of aluminum and located as directed at pre-construction.

Each storage box will be 10.00" wide x 5.00" deep x 3.50" high and painted to match the cab interior. A slot will be provided on the top of each box to dispense the gloves.

## **GLOVE DISPENSER BOX, TRIPLE**

There will be one (1) storage rack(s) provided, designed to hold and dispense three (3) boxes of latex gloves.

The rack will be constructed of aluminum and located as directed at pre-construction. The rack will be painted to match the cab interior.

Each individual storage box will be 5.00" wide x 3.50" deep x 10.00" high. A slot will be provided on the front of each box to dispense the gloves.

## **MAP BOX**

A map box with five (5) bins, open at the top, will be installed mount at pick up. Each bin will be 12.50" wide x 3.00" high x 12.00" deep and will slant 30 degrees from horizontal. The map box will be constructed of .125" aluminum and will be painted to match the cab interior.

## **SEATING CAPACITY**

The seating capacity in the cab will be six (6).

## **DRIVER SEAT**

A seat will be provided in the cab for the driver. The seat design will be a cam action type, with air suspension. For increased convenience, the seat will include a manual control to adjust the horizontal position (6.00" travel). The manual horizontal control will be a towel-bar style located below the forward part of the seat cushion. To provide flexibility for multiple driver configurations, the seat will have an adjustable reclining back. The seat back will be a high back style with side bolster pads for maximum support. For optimal comfort, the seat will be provided with 17.00" deep foam cushions designed with EVC (elastomeric vibration control).

## **OFFICER SEAT**

A seat will be provided in the cab for the passenger. The seat will be a fixed type with no suspension. For optimal comfort, the seat will be provided with 17.00" deep foam cushions designed with EVC (elastomeric vibration control).

The seat back will be an SCBA back style with 5 degree fixed recline angle. The SCBA cavity will be adjustable from front to rear in 1.00" increments, to accommodate different sized SCBA cylinders. Moving the SCBA cavity will be accomplished by unbolting, relocating, and re-bolting it in the desired location.

# CITY OF SACRAMENTO FIRE DEPARTMENT

Specifications for **FOUR (4)** Pierce Enforcer 1500 GPM Pumpers (**REV2**)

**October 15, 2015** (Quote Number **91015-15**)

## **OFFICER RADIO COMPARTMENT**

A radio compartment will be provided under the officer's seat.

The inside compartment dimensions will be 16.00" wide x 7.50" high x 15.00" deep, with the back of the compartment angled up to match the cab structure.

A drop-down door with a chrome plated lift and turn latch will be provided for access.

The compartment will be constructed of smooth aluminum and painted to match the cab interior.

## **REAR FACING DRIVER SIDE EMS COMPARTMENT**

A rear facing EMS compartment will be provided in the crew cab at the driver side outboard position.

The compartment will be mounted off the edge of the seat riser so that it is flush with the crew cab door jamb.

The compartment will be 24.50" wide x 34.00" high x 22.00" deep.

The compartment will provide access from outside the cab only with a double pan lap style door having a clear door opening of 17.00" wide x 26.00" high. The door will include a non-locking D-ring latch and will be located on the side of the cab over the wheelwell.

The compartment will be constructed of smooth aluminum and painted to match the cab interior. The exterior door will be painted to match the cab.

There will be two (2) white Amdor, LED strip lights installed, one (1) each side of the compartment opening. The lights will be controlled by an automatic door switch.

## **REAR FACING PASSENGER SIDE EMS COMPARTMENT**

A rear facing EMS compartment will be provided in the crew cab at the passenger side outboard position. The compartment shall be mounted off the edge of the seat riser so that it is flush with the crew cab door jamb.

The compartment will be 24.50" wide x 34.00" high x 22.00" deep.

The compartment will provide access from outside the cab only with a double pan lap style door having a clear door opening of 17.00" wide x 26.00" high. The door will include a non-locking D-ring latch and will be located on the side of the cab over the wheelwell.

The compartment will be constructed of smooth aluminum and painted to match the cab interior. The exterior door will be painted to match the cab.

There will be two (2) white Amdor, LED strip lights installed, one (1) each side of the compartment opening. The lights will be controlled by an automatic door switch.

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Specifications for **FOUR (4)** Pierce Enforcer 1500 GPM Pumpers **(REV2)**

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## **MATTING IN EMS COMPARTMENT**

Vinyl grating will be provided in two (2) EMS compartments, one in each rear facing EMS compartment. . Tile color will be red. The vinyl grating will be 0.50" thick and be cross bonded by 0.25" diameter ribbed sections spaced for aeration. The trim edge will not be installed at the edge of the tile.

Turtle Tile vinyl matting will be provided in two (2) EMS compartment shelves, one in each rear facing EMS compartment. . Tile color will be red. The matting will be 0.50" thick and be cross bonded by 0.25" diameter ribbed sections spaced for aeration.

## **EMS COMPARTMENT SHELVING**

There will be two (2) shelves provided. Each shelf will be constructed of 0.090" aluminum with a 1.25" up-turned lip. Shelving will be infinitely adjustable by means of a threaded tightener sliding in a track.

The location will be one (1) shelf in the driver side rear facing EMS cabinet and one (1) shelf in the passenger side rear facing EMS cabinet.

## **FORWARD FACING DRIVER SIDE OUTBOARD SEAT**

There will be one (1) forward facing, foldup seat provided at the driver side outboard position in the crew cab. For optimal comfort, the seat will be a minimum of 15.00" from the front of the cushion to the face of the seat back and designed with EVC (elastomeric vibration control).

The seat back will be an SCBA style with 90 degree back. The SCBA cavity will be adjustable from front to rear in 1.00" increments, to accommodate different sized SCBA cylinders. Moving the SCBA cavity will be accomplished by unbolting, relocating, and re-bolting it in the desired location.

## **FORWARD FACING CENTER SEAT**

There will be one (1) forward facing seat provided at the center position in the crew cab. For optimal comfort, the seat will be provided with 15.00" deep foam cushion designed with EVC (elastomeric vibration control).

The seat back will be an SCBA style with 90 degree back. The SCBA cavity will be adjustable from front to rear in 1.00" increments, to accommodate different sized SCBA cylinders. Moving the SCBA cavity will be accomplished by unbolting, relocating, and re-bolting it in the desired location.

## **FORWARD FACING PASSENGER SIDE OUTBOARD SEAT**

There will be one (1) forward facing, foldup seat provided at the passenger side outboard position in the crew cab. For optimal comfort, the seat will be a minimum of 15.00" from the front of the cushion to the face of the seat back and designed with EVC (elastomeric vibration control).

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Specifications for **FOUR (4)** Pierce Enforcer 1500 GPM Pumpers **(REV2)**

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The seat back will be an SCBA style with 90 degree back. The SCBA cavity will be adjustable from front to rear in 1.00" increments, to accommodate different sized SCBA cylinders. Moving the SCBA cavity will be accomplished by unbolting, relocating, and re-bolting it in the desired location.

## **SEAT UPHOLSTERY**

All seat upholstery will be gray woven with black Imperial 1200 material.

## **AIR BOTTLE HOLDERS**

All SCBA type seats in the cab will have a "Hands-Free" auto clamp style bracket in its backrest. For efficiency and convenience, the bracket will include an automatic spring clamp that allows the occupant to store the SCBA bottle by simply pushing it into the seat back. For protection of all occupants in the cab, in the event of an accident, the inertial components within the clamp will constrain the SCBA bottle in the seat and will exceed the NFPA standard of 9G. Bracket designs with manual restraints (belts, straps, buckles) that could be inadvertently left unlocked and allow the SCBA to move freely within the cab during an accident, will not be acceptable.

There will be a quantity of four (4) SCBA brackets.

## **SEAT BELTS**

All seating positions will be furnished with a three (3)-point, shoulder type red seat belt. Each seat belt will include height adjustment. This adjustment will optimize the belts effectiveness and comfort for the seated firefighter. To provide quick, easy use for occupants wearing bunker gear, the seat belt will have a minimum 120.00" shoulder length and 55.00" lap length. The seat belt tongue will be stored at waist position for quick application by the seat occupant. The seat belt receptacle will be provided on a cable conveniently nested next to the seat cushion, providing easy accessibility. The seat belt will be furnished with dual automatic retractors that will provide ease of operation in the normal seating position.

The belts will also include the Ready Reach® D-loop assembly to the shoulder belt system. The Ready Reach feature adds an extender arm to the D-loop location placing the D-loop in a closer, easier to reach location.

To ensure safe operation, the seat will be equipped with seat belt sensors in the seat cushion and belt receptacle that shall activate an alarm indicating a seat is occupied but not buckled.

## **SEAT BELT MONITORING ON COMMAND ZONE COLOR DISPLAY**

A seat belt monitoring screen will be provided on the Command Zone, color display. The system will be capable of monitoring up to ten (10) seating positions in the cab with green and red seating icons illuminated as follows:

- Seat Occupied & Buckled = Green
- Seat Occupied & Unbuckled = Red

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Specifications for **FOUR (4)** Pierce Enforcer 1500 GPM Pumpers (**REV2**)

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- No Occupant & Buckled = Red
- No Occupant & Unbuckled = Not Illuminated

The seat belt monitoring screen will become active on the Command Zone, color display when:

- The park brake is released:
  - and there is any occupant seated but not buckled or any belt buckled without an occupant:
  - and there are no other Do Not Move Truck conditions present. As soon as all Do Not Move Truck conditions are cleared, the seat belt monitoring screen will be deactivated.

The seat belt monitoring screen will be manually selected anytime the Command Zone, color display is powered.

## **AUDIBLE ALARM**

The seat belt monitoring screen will be accompanied by an audible alarm that will activate when a red seat icon condition exists and the parking brake is released.

## **HELMET STORAGE, PROVIDED BY FIRE DEPARTMENT**

NFPA 1901, 2009 edition, section 14.1.8.4.1 requires a location for helmet storage be provided.

There is no helmet storage on the apparatus as manufactured. The fire department will provide a location for storage of helmets.

## **CAB DOME LIGHTS**

There will be four (4) Weldon 808\* series, dual LED dome lights with grey bezels provided. Two (2) lights will be mounted above the inside shoulder of the driver and officer and two (2) lights will be installed and located, one (1) on each side of the crew cab.

The color of the LED's will be red and white.

The white LED's will be controlled by the door switches and the lens switch.

The color LED's will be controlled by the lens switch.

## **STREAMLIGHT SURVIVOR FLASHLIGHTS**

There will be four (4) Streamlight, Model Survivor 90503, LED flashlights with chargers and AC/DC chords provided and installed as directed at pre-construction.

## **STREAMLIGHT VULCAN FLASHLIGHTS**

There will be 12v Streamlight, model #44001, Vulcan lights mounted (1) each on inboard face of the rear facing EMS cabinets with bottom of charger base flush with "defroster riser". Lighthoods are to point up towards the ceiling (SEE PHOTO) JPEG 0008. There will be two (2) lights provided and will be yellow in color.

# CITY OF SACRAMENTO FIRE DEPARTMENT

Specifications for **FOUR (4)** Pierce Enforcer 1500 GPM Pumpers **(REV2)**

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## **CAB INSTRUMENTATION**

The cab instrument panel will be a molded ABS panel and include gauges, an LCD display, telltale indicator lamps, control switches, alarms, and a diagnostic panel. The function of the instrument panel controls and switches will be identified by a label adjacent to each item. Actuation of the headlight switch will illuminate the labels in low light conditions. Telltale indicator lamps will not be illuminated unless necessary. The cab instruments and controls will be conveniently located within the forward cab section, forward of the driver. The gauge assembly and switch panels are designed to be removable for ease of service and low cost of ownership.

## **GAUGES**

The gauge panel will include the following ten (10) black faced gauges with black bezels to monitor vehicle performance:

- Voltmeter gauge (volts):
  - Low volts (11.8 VDC)
    - Amber caution indicator on the information center with intermittent alarm
    - Amber caution light on gauge assembly
  - High volts (15.5 VDC)
    - Amber caution indicator on the information center with intermittent alarm
    - Amber caution light on gauge assembly
  - Very low volts (11.3 VDC)
    - Red warning indicator on the information center with a steady alarm
    - Amber caution light on gauge assembly
  - Very high volts (16.0 VDC)
    - Red warning indicator on the information center with a steady alarm
    - Amber caution light on gauge assembly
- Engine Tachometer (RPM)
- Speedometer MPH (Major Scale), KM/H (Minor Scale)
- Fuel level gauge (Empty - Full in fractions):
  - Low fuel (1/8 full)
    - Amber caution indicator on the information center with intermittent alarm
    - Amber caution light on gauge assembly
  - Very low fuel (1/32 full)
    - Red caution indicator on the information center with steady alarm
    - Amber caution light on gauge assembly
- Engine Oil pressure Gauge (PSI):
  - Low oil pressure to activate engine warning lights and alarms
    - Red caution indicator on the information center with steady alarm
    - Amber caution light on gauge assembly

# CITY OF SACRAMENTO FIRE DEPARTMENT

Specifications for **FOUR (4)** Pierce Enforcer 1500 GPM Pumpers **(REV2)**

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- Front Air Pressure Gauges (PSI):
  - Low air pressure to activate warning lights and alarm
    - Red warning indicator on the information center with a steady alarm
    - Amber caution light on gauge assembly
- Rear Air Pressure Gauges (PSI):
  - Low air pressure to activate warning lights and alarm
    - Red warning indicator on the information center with a steady alarm
    - Amber caution light on gauge assembly
- Transmission Oil Temperature Gauge (Fahrenheit):
  - High transmission oil temperature activates warning lights and alarm
    - Amber caution indicator on the information center with intermittent alarm
    - Amber caution light on gauge assembly
- Engine Coolant Temperature Gauge (Fahrenheit):
  - High engine temperature activates an engine warning light and alarms
    - Amber caution indicator on the information center with intermittent alarm
    - Amber caution light on gauge assembly
- Diesel Exhaust Fluid Level Gauge (Empty - Full in fractions):
  - Low fluid (1/8 full)
    - Amber indicator light in gauge dial

All gauges will perform prove out at initial power-up to ensure proper performance.

## **INDICATOR LAMPS**

To promote safety, the following telltale indicator lamps will be located on the instrument panel in clear view of the driver. The indicator lamps will be "dead-front" design that is only visible when active. The colored indicator lights will have descriptive text or symbols.

The following amber telltale lamps will be present:

- Low coolant
- Trac cntl (traction control) (where applicable)
- Check engin
- Check trans (check transmission)
- Aux brake overheat (Auxiliary brake overheat)
- Air rest (air restriction)
- Caution (triangle symbol)
- Water in fuel
- DPF (engine diesel particulate filter regeneration)
- Trailer ABS (where applicable)

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- Wait to start (where applicable)
- HET (engine high exhaust temperature) (where applicable)
- ABS (antilock brake system)
- MIL (engine emissions system malfunction indicator lamp) (where applicable)
- Side roll fault (where applicable)
- Front air bag fault (where applicable)

The following red telltale lamps will be present:

- Warning (stop sign symbol)
- Seat belt
- Parking brake
- Stop engine
- Rack down

The following green telltale lamps will be provided:

- Left turn
- Right turn
- Battery on

The following blue telltale lamp will be provided:

- High beam

## **ALARMS**

**Audible steady tone warning alarm:** A steady audible tone alarm will be provided whenever a warning message is present.

**Audible pulsing tone caution alarm:** A pulsing audible tone alarm (chime/chirp) will be provided whenever a caution message is present without a warning message being present.

**Alarm silence:** Any active audible alarm will be able to be silenced by holding the ignition switch at the top position for three (3) to five (5) seconds. For improved safety, silenced audible alarms will intermittently chirp every 30 seconds until the alarm condition no longer exists. The intermittent chirp will act as a reminder to the operator that a caution or warning condition still exists. Any new warning or caution condition will enable the steady or pulsing tones respectively.

## **INDICATOR LAMP AND ALARM PROVE-OUT**

A system will be provided which automatically tests telltale indicator lights and alarms located on the cab instrument panel. Telltale indicators and alarms will perform prove-out at initial power-up to ensure proper performance.

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## CONTROL SWITCHES

For ease of use, the following controls will be provided immediately adjacent to the cab instrument panel within easy reach of the driver. All switches will have backlit labels for low light applications.

Headlight/Parking light switch: A three (3)-position maintained rocker switch will be provided. The first switch position will deactivate all parking and headlights. The second switch position will activate the parking lights. The third switch will activate the headlights.

Panel back lighting intensity control switch: A three (3)-position momentary rocker switch will be provided. Pressing the top half of the switch, "Panel Up" increases the panel back lighting intensity and pressing the bottom half of the switch, "Panel Down" decreases the panel back lighting intensity. Pressing the half or bottom half of the switch several times will allow back lighting intensity to be gradually varied from minimum to maximum intensity level for ease of use.

Ignition switch: A three (3)-position maintained/momentary rocker switch will be provided. The first switch position will turn off and deactivate vehicle ignition. The second switch position will activate vehicle ignition and will perform prove-out on the telltale indicators and alarms for 3 to 5 seconds after the switch is turned on. A green indicator lamp is activated with vehicle ignition. The third momentary position will temporarily silence all active cab alarms. An alarm "chirp" may continue as long as alarm condition exists. Switching ignition to off position will terminate the alarm silence feature and reset function of cab alarm system.

Engine start switch: A two (2)-position momentary rocker switch will be provided. The first switch position is the default switch position. The second switch position will activate the vehicle's engine. The switch actuator is designed to prevent accidental activation.

Hazard switch will be provided on the instrument panel or on the steering column.

Heater, defroster, and optional air conditioning control panel: A control panel with membrane switches will be provided to control heater/defroster temperature and heater, defroster, and air conditioning fan speeds. A green LED status bar will indicate the relative temperature and fan speed settings.

Turn signal arm: A self-canceling turn signal with high beam headlight and windshield wiper/washer controls will be provided. The windshield wiper control will have high, low, and intermittent modes.

Parking brake control: An air actuated push/pull park brake control valve will be provided.

Chassis horn control: Activation of the chassis horn control will be provided through the center of the steering wheel.

Chassis horn control: Activation of the chassis horn control will be provided through the center of the steering wheel.

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High idle engagement switch: A momentary rocker switch with integral indicator lamp will be provided. The switch will activate and deactivate the high idle function. The "OK To Engage High Idle" indicator lamp must be active for the high idle function to engage. A green indicator lamp integral to the high idle engagement switch will indicate when the high idle function is engaged.

"OK To Engage High Idle" indicator lamp: A green indicator light will be provided next to the high idle activation switch to indicate that the interlocks have been met to allow high idle engagement.

Emergency switching will be controlled by a single Emergency Master switch which controls all emergency warning lights including lightbars, cab warning lights, body warning lights and high beam flash.

An additional "Emergency Master" button will be provided on the lower left hand corner of the gauge panel to allow convenient control of the "Emergency Master" system from inside the driver's door when standing on the ground.

## **CUSTOM SWITCH PANELS**

The design of cab instrumentation will allow for emergency lighting and other switches to be placed within easy reach of the operator thus improving safety. There will be positions for up to four (4) switch panels in the lower instrument console and up to six (6) switch panels in the overhead visor console. All switches have backlit labels for low light conditions.

## **DIAGNOSTIC PANEL**

A diagnostic panel will be accessible while standing on the ground and located inside the driver's side door left of the steering column. The diagnostic panel will allow diagnostic tools such as computers to connect to various vehicle systems for improved troubleshooting providing a lower cost of ownership. Diagnostic switches will allow engine and ABS systems to provide blink codes should a problem exist.

The diagnostic panel will include the following:

- Engine diagnostic port
- Transmission diagnostic port
- ABS diagnostic port
- Roll sensor diagnostic port
- Command Zone USB diagnostic port
- Engine diagnostic switch (blink codes flashed on check engine telltale indicator)
- ABS diagnostic switch (blink codes flashed on ABS telltale indicator)
- Diesel particulate filter regeneration switch (where applicable)
- Diesel particulate filter regeneration inhibit switch (where applicable)

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## **CAB LCD DISPLAY**

A digital four (4)-row by 20-character dot matrix display will be integral to the gauge panel. The display will be capable of showing simple graphical images as well as text. The display will be split into three (3) sections. Each section will have a dedicated function. The upper left section will display the outside ambient temperature.

The upper right section will display the following, along with other configuration specific information:

- Odometer
- Trip mileage
- PTO hours
- Fuel consumption
- Engine hours

The bottom section will display INFO, CAUTION, and WARNING messages. Text messages will automatically activate to describe the cause of an audible caution or warning alarm. The LCD will be capable of displaying multiple text messages should more than one caution or warning condition exist.

## **AIR RESTRICTION INDICATOR**

A high air restriction warning indicator light LCD message with amber warning indicator and audible alarm will be provided.

## **"DO NOT MOVE APPARATUS" INDICATOR**

There will be a Whelen, Model VTX609R, red LED indicator light with chrome trim located in the driving compartment. This light will be illuminated automatically per the current NFPA requirements. The light will be labeled "Do Not Move Apparatus If Light Is On."

The same circuit that activates the Do Not Move Apparatus indicator will activate a pulsing alarm when the parking brake is released.

## **DO NOT MOVE TRUCK MESSAGES**

Messages will be displayed on the Command Zone™, color display located within sight of the driver whenever the Do Not Move Truck light is active. The messages will designate the item or items not in the stowed for vehicle travel position (parking brake disengaged).

The following messages will be displayed (where applicable):

- Do Not Move Truck
- DS Cab Door Open (Driver Side Cab Door Open)
- PS Cab Door Open (Passenger's Side Cab Door Open)
- DS Crew Cab Door Open (Driver Side Crew Cab Door Open)

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- PS Crew Cab Door Open (Passenger's Side Crew Cab Door Open)
- DS Body Door Open (Driver Side Body Door Open)
- PS Body Door Open (Passenger's Side Body Door Open)
- Rear Body Door Open
- DS Ladder Rack Down (Driver Side Ladder Rack Down)
- PS Ladder Rack Down (Passenger Side Ladder Rack Down)
- Deck Gun Not Stowed
- Lt Tower Not Stowed (Light Tower Not Stowed)
- Hatch Door Open
- Fold Tank Not Stowed (Fold-A-Tank Not Stowed)
- Aerial Not Stowed (Aerial Device Not Stowed)
- Stabilizer Not Stowed
- Steps Not Stowed
- Handrail Not Stowed

Any other device that is opened, extended, or deployed that creates a hazard or is likely to cause major damage to the apparatus if the apparatus is moved will be displayed as a caution message after the parking brake is disengaged.

## **SWITCH PANELS**

The built-in switch panels will be located in the lower console or overhead console of the cab.

The switches will be membrane-type and also act as an integral indicator light. For quick, visual indication the entire surface of the switch will be illuminated white whenever back lighting is activated and illuminated green whenever the switch is active. For ease of use, a two (2)-ply, scratch resistant laser engraved Gravoply label indicating the use of each switch will be placed in the center of the switch. The label will allow light to pass through the letters for ease of use in low light conditions.

## **WIPER CONTROL**

Wiper control will consist of a two (2)-speed windshield wiper control with intermittent feature and windshield washer controls.

## **SPARE CIRCUIT #1**

There will be two (2) pair of wires, including a positive and a negative, installed on the apparatus. The above wires will have the following features:

- The positive wire will be connected directly to the battery power.
- The negative wire will be connected to ground.
- Wires will be protected to 30 amps at 12 volts DC.

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- Power and ground will terminate from the radio transceivers on one end (on wall behind officer's seat) to the control heads on the other end (overhead panel above the officer). Provide 12.00" minimum of slack on each end of the cable run.
- Termination will be with heat shrinkable butt splicing.
- Wires will be sized to 125% of the protection.

This circuit(s) may be load managed when the parking brake is set.

## **SPARE CIRCUIT #2**

There will be four (4) pair of wires, including a positive and a negative, installed on the apparatus. The above wires will have the following features:

- The positive wire will be connected directly to the battery power
- The negative wire will be connected to ground
- Wires will be protected to 15 amps at 12 volts DC
- Power and ground will terminate to be determined at pre-construction
- Termination will be with 15 amp, power point plug with rubber cover
- Wires will be sized to 125 percent of the protection

The circuit(s) may be load managed when the parking brake is set.

## **SPARE CIRCUIT #3**

There will be one (1) pair of wires, including a positive and a negative, installed on the apparatus. The above wires will have the following features:

- The positive wire will be connected directly to the battery power.
- The negative wire will be connected to ground.
- Wires will be protected to 20 amps at 12 volts DC.
- Power and ground will terminate on the outside wall adjacent to the far PS forward facing seat and up high. Provide 12" of slack (this is for the Advance Tech conditioning charger bank to be installed at a later date).
- Termination will be to a Blue Sea System, Model 5025, 6 circuit with negative bus bar. The terminal block will include a cover with circuit labels.
- Wires will be sized to 125% of the protection.

This circuit(s) may be load managed when the parking brake is set.

## **CUSTOMER SUPPLIED RADIO WIRING**

There will be two (2) 12 volt combination wiring leads of which each will include one (1) battery switched, one (1) ignition and one (1) negative for use with radio equipment.

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Each lead will be 18.00" long and be provided from the main power bus on one end to the radio transceiver on the other end (on wall behind officer's seat). The leads will be clearly marked in a coil and terminate with butt splices.

A breaker rated for 30 amps will be provided for circuit protection of the battery switched lead with a minimum of 10 gauge wire.

A breaker rated for 7.5 amps will be provided for circuit protection of the ignition lead.

The wires will be colored coded as follows:

- red for battery switched
- yellow for ignition
- black for ground

## **PROGRAMMABLE REMOTE CONTROL**

There will be a wired remote control integrated into the switch panel centered above instrument panel location #3. The remote will have three (3) individually programmable buttons for most garage door openers, and gate operators as well as the capability of controlling many lighting and security systems.

## **RADIO WITH CD PLAYER**

A Panasonic AM/FM stereo radio with compact disc player will be included.

The compact disc stereo radio will be mounted within reach of the driver.

The quantity and location of the speakers will be one (1) pair of 5.25" speakers in the cab and one (1) pair of 5.25" speakers in the crew cab.

The type and location of the antenna will be a roof-mounted rubber antenna located in an open space, on the cab roof.

## **INFORMATION CENTER**

An information center employing a 7.00" diagonal touch screen color LCD display will be encased in an ABS plastic housing.

The information center will have the following specifications:

- Operate in temperatures from -40 to 185 degrees Fahrenheit
- An Optical Gel will be placed between the LCD and protective lens
- Five weather resistant user interface switches
- Grey with black accents
- Sunlight Readable
- Linux operating system

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- Minimum of 1000nits rated display
- Display can be changed to an available foreign language
- A LCD display integral to the cab gauge panel will be included as outlined in the cab instrumentation area.
- Programmed to read US Customary

## **GENERAL SCREEN DESIGN**

Where possible, background colors will be used to provide "At a Glance" vehicle information. If information provided on a screen is within acceptable limits, a green background will be used.

If a caution or warning situation arises the following will occur:

- An amber background/text color will indicate a caution condition
- A red background/text color will indicate a warning condition
- The information center will utilize an "Alert Center" to display text messages for audible alarm tones. The text messages will be written to identify the item(s) causing the audible alarm to sound. If more than one (1) text message occurs, the messages will cycle every second until the problem(s) have been resolved. The background color for the "Alert Center" will change to indicate the severity of the "warning" message. If a warning and a caution condition occur simultaneously, the red background color will be shown for all alert center messages.
- A label for each button will exist. The label will indicate the function for each active button for each screen. Buttons that are not utilized on specific screens will have a button label with no text or symbol.

## **HOME/TRANSIT SCREEN**

This screen will display the following:

- Vehicle Mitigation (if equipped)
- Water Level (if equipped)
- Foam Level (if equipped)
- Seat Belt Monitoring Screen
- Tire Pressure Monitoring (if equipped)
- Digital Speedometer
- Active Alarms

## **ON SCENE SCREEN**

This screen will display the following and will be auto activated with pump engaged (if equipped):

- Battery Voltage
- Fuel

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- Oil Pressure
- Coolant Temperature
- RPM
- Water Level (if equipped)
- Foam Level (if equipped)
- Foam Concentration (if equipped)
- Water Flow Rate (if equipped)
- Water Used (if equipped)
- Active Alarms

## **VIRTUAL BUTTONS**

There will be four (4) virtual switch panel screens that match the overhead and lower lighting and HVAC switch panels.

## **PAGE SCREEN**

The page screen will display the following and allow the user to progress into other screens for further functionality:

- Diagnostics
  - Faults
    - Listed by order of occurrence
    - Allows to sort by system
  - Interlock
    - Throttle Interlocks
    - Pump Interlocks (if equipped)
    - Aerial Interlocks (if equipped)
    - PTO Interlocks (if equipped)
  - Load Manager
    - A list of items to be load managed will be provided. The list will provide a description of the load.
    - The lower the priority numbers the earlier the device will be shed should a low voltage condition occur.
    - The screen will indicate if a load has been shed (disabled) or not shed.
    - "At a glance" color features are utilized on this screen.
  - Systems
    - Command Zone
      - Module type and ID number
      - Module Version
      - Input or output number

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- Circuit number connected to that input or output
    - Status of the input or output
    - Power and Constant Current module diagnostic information
  - Foam (if equipped)
  - Pressure Controller (if equipped)
  - Generator Frequency (if equipped)
- Live Data
  - General Truck Data
- Maintenance
  - Engine oil and filter
  - Transmission oil and filter
  - Pump oil (if equipped)
  - Foam (if equipped)
  - Aerial (if equipped)
- Setup
  - Clock Setup
  - Date & Time
    - 12 or 24 hour format
    - Set time and date
  - Backlight
    - Daytime
    - Night time
    - Sensitivity
  - Unit Selection
  - Home Screen
  - Virtual Button Setup
  - On Scene Screen Setup
  - Configure Video Mode
    - Set Video Contrast
    - Set Video Color
    - Set Video Tint
- Do Not Move
  - The screen will indicate the approximate location and type of item that is open or is not stowed for travel. The actual status of the following devices will be indicate
    - Driver Side Cab Door
    - Passenger's Side Cab Door
    - Driver Side Crew Cab Door
    - Passenger's Side Crew Cab Door

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- Driver Side Body Doors
- Passenger's Side Body Doors
- Rear Body Door(s)
- Ladder Rack (if applicable)
- Deck Gun (if applicable)
- Light Tower (if applicable)
- Hatch Door (if applicable)
- Stabilizers (if applicable)
- Steps (if applicable)
- Notifications
  - View Active Alarms
    - Shows a list of all active alarms including date and time of the occurrence is shown with each alarm
    - Silence Alarms - All alarms are silenced
- Timer Screen
- HVAC (if equipped)
- Tire Information (if equipped)

Button functions and button labels may change with each screen.

## **VEHICLE DATA RECORDER**

A vehicle data recorder (VDR) will be provided. The VDR will be capable of reading and storing vehicle information.

The information stored on the VDR can be downloaded through a USB port mounted in a convenient location determined by cab model. A CD provided with the apparatus will include the programming to download the information from the VDR. A USB cable can be used to connect the VDR to a laptop to retrieve required information.

The vehicle data recorder will be capable of recording the following data via hardwired and/or CAN inputs:

- Vehicle Speed - MPH
- Acceleration - MPH/sec
- Deceleration - MPH/sec
- Engine Speed - RPM
- Engine Throttle Position - % of Full Throttle
- ABS Event - On/Off
- Seat Occupied Status - Yes/No by Position (7-12 Seating Capacity)
- Seat Belt Buckled Status - Yes/No by Position (7-12 Seating Capacity)

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- Master Optical Warning Device Switch - On/Off
- Time - 24 Hour Time
- Date - Year/Month/Day

## **INTERCOM SYSTEM**

There will be a six (6) position intercom system with dual radio interface capability at the driver, officer, and pump positions, with remote radio push to transmit buttons for the driver and officer located as directed at pre-construction. Three (3) crew cab positions at three (3) forward facing seats, will have radio listen / intercom only.

The following David Clark components will be supplied with this system:

- Two (2) U3805 Radio cord junction modules
- Three (3) U3816 Radio interface modules (Driver, Officer, Pump)
- Four (4) Remote Push To Transmit kits (2 Driver, 2 Officer)
- One (1) U3800 Intercom unit. (2 adjacent crew)
- One (1) C3820 Power cable
- One (1) U3801 Remote headset station (1 crew)
- All necessary station cables and connectors

## **RADIO INTERFACE NOT REQUIRED**

The apparatus manufacturer will not provide a radio/intercom interface.

## **UNDER THE HELMET HEADSET**

There shall be five (5) under the helmet headset(s) provided driver, officer and 3 crew.

Each David Clark, Model H3342, headset shall feature:

- 5' Coiled cord
- M1/DC microphone
- Chrome microphone boom rotates 200 degrees for left or right dress
- Microphone on/off button
- Foam ear-seals

## **HEADSET HANGERS**

There will be five (5) headset hanger(s) installed driver's seat, officer's seat, driver's side outboard forward facing seat and passenger's side outboard forward facing seat. The hanger(s) will meet NFPA 1901, Section 14.1.11, requirement for equipment mounting.

## **COMPLETE MDT INSTALLATION**

There will be one (1) customer supplied Mobile Data Terminal (MDT), Docking station, Mounting bracket, power supply, antenna, GPS, modem, and all cabling sent to the apparatus manufacturers

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preferred installer to be installed as directed at pre-construction. Specific shipping requirements will be followed.

## **TIC CHARGER INSTALLATION**

There shall be one (1) customer supplied Thermal Imaging camera charging bracket(s) sent to the apparatus manufacturers preferred installer to be installed as directed at pre-construction.

Specific shipping requirements will be followed.

## **RADIO ANTENNA MOUNT**

There will be four (4) standard 1.125", 18 thread antenna-mounting base(s) installed at least 18.00" from other antennas or roof mounted objects. **IMPORTANT:** All antenna cabling should be loosely run with minimal bending, and encased in protective loom in areas of abrasive or sharp objects on the cab roof with high efficiency, low loss, coaxial cable(s) routed to behind the officer seat. A weatherproof cap will be installed on the mount.

## **COMBO ANTENNA**

There will be one (1) Antenna Plus, Model AP-NAV-CWG, bolt on, low profile antenna(s) for Cellular, PCS, WiFi, LTE, and GPS, installed on the cab roof. The antenna color will be white. The cables will be routed within the cab to the as directed at pre-construction, as directed at pre-construction, and the as directed at pre-construction.

## **ELECTRICAL POWER CONTROL SYSTEM**

The primary power distribution will be located forward of the officer's seating position and be easily accessible while standing on the ground for simplified maintenance and troubleshooting. Additional electrical distribution centers will be provided throughout the vehicle to house the vehicle's electrical power, circuit protection, and control components. The electrical distribution centers will be located strategically throughout the vehicle to minimize wire length. For ease of maintenance, all electrical distribution centers will be easily accessible. All distribution centers containing fuses, circuit breakers and/or relays will be easily accessible.

Distribution centers located throughout the vehicle will contain battery powered studs for supplying customer installed equipment thus providing a lower cost of ownership.

Circuit protection devices, which conform to SAE standards, will be utilized to protect electrical circuits. All circuit protection devices will be rated per NFPA requirements to prevent wire and component damage when subjected to extreme current overload. General protection circuit breakers will be Type-I automatic reset (continuously resetting). When required, automotive type fuses will be utilized to protect electronic equipment. Control relays and solenoid will have a direct current rating of 125 percent of the maximum current for which the circuit is protected per NFPA.

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## **SOLID-STATE CONTROL SYSTEM**

A solid-state electronics based control system will be utilized to achieve advanced operation and control of the vehicle components. A fully computerized vehicle network will consist of electronic modules located near their point of use to reduce harness lengths and improve reliability. The control system will comply with SAE J1939-11 recommended practices.

The control system will operate as a master-slave system whereas the main control module instructs all other system components. The system will contain patented Mission Critical software that maintains critical vehicle operations in the unlikely event of a main controller error. The system will utilize a Real Time Operating System (RTOS) fully compliant with OSEK/VDX™ specifications providing a lower cost of ownership.

For increased reliability and simplified use the control system modules will include the following attributes:

- Green LED indicator light for module power
- Red LED indicator light for network communication stability status
- Control system self test at activation and continually throughout vehicle operation
- No moving parts due to transistor logic
- Software logic control for NFPA mandated safety interlocks and indicators
- Integrated electrical system load management without additional components
- Integrated electrical load sequencing system without additional components
- Customized control software to the vehicle's configuration
- Factory and field re programmable to accommodate changes to the vehicle's operating parameters
- Complete operating and troubleshooting manuals
- USB connection to the main control module for advanced troubleshooting

To assure long life and operation in a broad range of environmental conditions, the solid-state control system modules will meet the following specifications:

- Module circuit board will meet SAE J771 specifications
- Operating temperature from -40C to +70C
- Storage temperature from -40C to +70C
- Vibration to 50g
- IP67 rated enclosure (Totally protected against dust and also protected against the effect of temporary immersion between 15 centimeters and one (1) meter)
- Operating voltage from eight (8) volts to 16 volts DC

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The main controller will activate status indicators and audible alarms designed to provide warning of problems before they become critical.

## **CIRCUIT PROTECTION AND CONTROL DIAGRAM**

Copies of all job-specific, computer network input and output (I/O) connections will be provided with each chassis. The sheets will indicate the function of each module connection point, circuit protection information (where applicable), wire numbers, wire colors and load management information.

## **ON-BOARD ELECTRICAL SYSTEM DIAGNOSTICS**

Advanced on-board diagnostic messages will be provided to support rapid troubleshooting of the electrical power and control system. The diagnostic messages will be displayed on the information center located at the driver's position.

The on-board information center will include the following diagnostic information:

- Text description of active warning or caution alarms
- Simplified warning indicators
- Amber caution indication with intermittent alarm
- Red warning indication with steady tone alarm

## **PROGNOSTICS**

A software based vehicle tool will be provided to predict remaining life of the vehicles critical fluid and events (no exceptions).

The system will send automatic indications to the Command Zone, color display and/or wireless enabled device to proactively alert of upcoming service intervals.

Prognostics will include:

- Engine oil and filter
- Transmission oil and filter
- Pump oil (if equipped)
- Foam oil (if equipped)
- Aerial oil and filter (if equipped)

## **ADVANCED DIAGNOSTICS**

An advanced, Windows-based, diagnostic software program will be provided for this control system. The software will provide troubleshooting tools to service technicians equipped with a Windows-based computer or wireless enabled device.

The service and maintenance software will be easy to understand and use and have the ability to view system input/output (I/O) information.

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## **TECH MODULE WITH WIFI**

An in cab module will provide Wifi wireless interface and data logging capability. The Wifi interface will comply with IEEE 802.11 b/g/n capabilities while communicating at 2.4 Gigahertz. The module will provide an external antenna connection allowing a line of site communication range of up to 300 feet with a roof mounted antenna.

The module will transmit a password protected web page to a wifi enabled device (i.e. most smart phones, tablets or laptops) allowing two levels of user interaction. The firefighter level will allow vehicle monitoring of the vehicle and firefighting systems on the apparatus. The technician level will allow diagnostic access to inputs and outputs installed on the Command Zone, control and information system.

The data logging capability will record faults from the engine, transmission, ABS and Command Zone, control and information systems as they occur. No other data will be recorded at the time the fault occurs. The data logger will provide up to 2 Gigabytes of data storage.

A USB connection will be provided on the Tech Module. It will provide a means to download data logger information and update software in the device.

## **INDICATOR LIGHT AND ALARM PROVE-OUT SYSTEM**

A system will be provided which automatically tests basic indicator lights and alarms located on the cab instrument panel.

## **VOLTAGE MONITOR SYSTEM**

A voltage monitoring system will be provided to indicate the status of the battery system connected to the vehicle's electrical load. The system will provide visual and audible warning when the system voltage is below or above optimum levels.

The alarm will activate if the system falls below 11.8 volts DC for more than two (2) minutes.

## **POWER AND GROUND STUDS**

Spare circuits will be provided in the primary distribution center for two-way radio equipment.

The spare circuits will consist of the following:

- One (1) 12-volt DC, 30 amp battery direct spare
- One (1) 12-volt DC ground and un-fused switched battery stud located in or adjacent to the power distribution center

## **ENHANCED SOFTWARE**

The solid-state control system will include the following software enhancements:

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All perimeter lights and scene lights (where applicable) will be deactivated when the parking brake is released.

Cab and crew cab dome lights will remain on for ten (10) seconds for improved visibility after the doors close. The dome lights will dim after ten (10) seconds or immediately if the vehicle is put into gear.

Cab and crew cab perimeter lights will remain on for ten (10) seconds for improved visibility after the doors close. The dome lights will dim after ten (10) seconds or immediately if the vehicle is put into gear.

## **EMI/RFI PROTECTION**

To prevent erroneous signals from crosstalk contamination and interference, the electrical system will meet, at a minimum, SAE J551/2, thus reducing undesired electromagnetic and radio frequency emissions. An advanced electrical system will be used to ensure radiated and conducted electromagnetic interference (EMI) or radio frequency interference (RFI) emissions are suppressed at their source.

The apparatus will have the ability to operate in the electromagnetic environment typically found in fire ground operations to ensure clean operations. The electrical system will meet, without exceptions, electromagnetic susceptibility conforming to SAE J1113/25 Region 1, Class C EMR for 10Khz-1GHz to 100 Volts/Meter. The vehicle OEM, upon request, will provide EMC testing reports from testing conducted on an entire apparatus and will certify that the vehicle meets SAE J551/2 and SAE J1113/25 Region 1, Class C EMR for 10Khz-1GHz to 100 Volts/Meter requirements. Component and partial (incomplete) vehicle testing is not adequate as overall vehicle design can impact test results and thus is not acceptable by itself.

EMI/RFI susceptibility will be controlled by applying appropriate circuit designs and shielding. The electrical system will be designed for full compatibility with low-level control signals and high-powered two-way radio communication systems. Harness and cable routing will be given careful attention to minimize the potential for conducting and radiated EMI/RFI susceptibility.

## **ELECTRICAL**

All 12-volt electrical equipment installed by the apparatus manufacturer will conform to modern automotive practices. All wiring will be high temperature crosslink type. Wiring will be run, in loom or conduit, where exposed and have grommets where wire passes through sheet metal. Automatic reset circuit breakers will be provided which conform to SAE Standards. Wiring will be color, function and number coded. Function and number codes will be continuously imprinted on all wiring harness conductors at 2.00" intervals. Exterior exposed wire connectors will be positive locking, and environmentally sealed to withstand elements such as temperature extremes, moisture and automotive fluids.

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Electrical wiring and equipment will be installed utilizing the following guidelines:

1. All holes made in the roof will be caulked with silicon, rope caulk is not acceptable. Large fender washers, liberally caulked, will be used when fastening equipment to the underside of the cab roof.
2. Any electrical component that is installed in an exposed area will be mounted in a manner that will not allow moisture to accumulate in it. Exposed area will be defined as any location outside of the cab or body.
3. Electrical components designed to be removed for maintenance will not be fastened with nuts and bolts. Metal screws will be used in mounting these devices. Also a coil of wire will be provided behind the appliance to allow them to be pulled away from mounting area for inspection and service work.
4. Corrosion preventative compound will be applied to all terminal plugs located outside of the cab or body. All non-waterproof connections will require this compound in the plug to prevent corrosion and for easy separation (of the plug).
5. All lights that have their sockets in a weather exposed area will have corrosion preventative compound added to the socket terminal area.
6. All electrical terminals in exposed areas will have silicon (1890) applied completely over the metal portion of the terminal.

All lights and reflectors, required to comply with Federal Motor Vehicle Safety Standard #108, will be furnished. Rear identification lights will be recessed mounted for protection. Lights and wiring mounted in the rear bulkheads will be protected from damage by installing a false bulkhead inside the rear compartments.

An operational test will be conducted to ensure that any equipment that is permanently attached to the electrical system is properly connected and in working order.

The results of the tests will be recorded and provided to the purchaser at time of delivery.

## **BATTERY SYSTEM**

There will be six (6) 12 volt Exide®, Model 31S950X3W, batteries that include the following features will be provided:

- 950 CCA, cold cranking amps
- 190 amp reserve capacity
- High cycle
- Group 31
- Rating of 5700 CCA at 0 degrees Fahrenheit
- -140 minutes of reserve capacity
- Threaded stainless steel studs

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Each battery case will be a black polypropylene material with a vertically ribbed container for increased vibration resistance. The cover will be manifold vented with a central venting location to allow a 45 degree tilt capacity.

The inside of each battery will consist of a "maintenance free" grid construction with poly wrapped separators and a flooded epoxy bottom anchoring for maximum vibration resistance.

## **BATTERY SYSTEM**

There will be a single starting system with an ignition switch and starter button provided and located on the cab instrument panel.

## **MASTER BATTERY SWITCH**

There will be a master battery switch provided within the cab within easy reach of the driver to activate the battery system.

An indicator light will be provided on the instrument panel to notify the driver of the status of the battery system.

## **BATTERY COMPARTMENTS**

Batteries will be placed on non-corrosive mats and stored in well ventilated compartments located under the cab.

Heavy-duty, 2/0 gauge, color coded battery cables will be provided. Battery terminal connections will be coated with anti-corrosion compound.

Battery solenoid terminal connections will be encapsulated with semi-permanent rubberized compound.

## **JUMPER STUDS**

One (1) set of battery jumper studs with plastic color-coded covers will be included on the battery compartments.

## **BATTERY CHARGER**

There will be a Newmar, Model EV-40, battery charger with a Newmar, Model 023-5353-1, meter indicating the state of charge.

The vehicle battery output will be capable of supplying up to 40 amps for charging the batteries. The charger will include a 15 amp battery saver connection to charge hand lights, batteries, radios or power a 12 volt compressor.

The battery charger will be wired to the AC shoreline inlet through an AC receptacle adjacent to this battery charger.

Battery charger will be located in the cab EMS compartment, mounted driver's side.

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The battery charger indicator will be located in the driver's step area.

## **AUTO EJECT FOR SHORELINE**

There will be one (1) Kussmaul™, Model 091-55-20-120, 20 amp 120 volt AC shoreline inlet(s) provided to operate the dedicated 120 volt AC circuits on the apparatus.

The shoreline inlet(s) will include red weatherproof flip up cover(s).

There will be a release solenoid wired to the vehicle's starter to eject the AC connector when the engine is starting.

The shoreline(s) will be connected to the battery charger.

There will be a mating connector body supplied with the loose equipment.

There will be a label installed near the inlet(s) that state the following:

- Line Voltage
- Current Rating (amps)
- Phase
- Frequency

The shoreline receptacle will be located on the driver side exterior of cab, behind crew cab door.

## **ALTERNATOR**

A Leece-Neville, Model 4962PA, alternator will be provided. It will have a rated output current of 320 amps, as measured by SAE method J56. The alternator will feature an integral, self diagnostic regulator and rectifier. The alternator will be connected to the power and ground distribution system with heavy-duty cables sized to carry the full rated alternator output.

## **ELECTRONIC LOAD MANAGER**

An electronic load management (ELM) system will be provided that monitors the vehicles 12-volt electrical system, automatically reduces the electrical load in the event of a low voltage condition, and automatically restores the shed electrical loads when the low voltage condition expires. This ensures the integrity of the electrical system. The ELM will monitor the vehicle's voltage while at the scene (parking brake applied).

The system will include the following features:

- System voltage monitoring.
- Load Managing will not start for 30 seconds after engine start up.
- Five (5) minute cycle time, to prevent load activation and quick deactivation.

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- Automatic High Idle Activation, to activate before any electric loads are shed and deactivate with the service brake.
- If enabled, Load Man Hi-Idle On will display on the information center. Sixteen available electronic load shedding levels.
- Priority levels can be set for individual outputs.
- Individual switch "on" indicator to flash when the particular load has been shed.
- The information center shows system voltage.
- Green indicator in the Indicator Light display, Load Manager is active.

The information center includes a "Load Manager" screen indicating the following:

- Load managed items list, with priority levels and item condition.
- Individual load managed item condition:
  - ON = not shed
  - SHED = shed
  - OVRD = overridden

## **SEQUENCER**

A warning light sequencer will be provided that automatically turns the emergency lights on and off in a preset sequence.

The sequencer will be wired in conjunction with the emergency master light switch.

When the switch is activated the lights will be turned on in sequence one by one at 1/2 second intervals thereby protecting the alternator from power surges. Sequenced light switch LED's will flash while waiting for activation.

When turned off, the same process will deactivate the warning lights in sequence to allow a gradual decrease in alternator output, rather than dumping the load.

The on/off switch for this system will be removed.

## **HEADLIGHTS**

There will be four (4) JW Speaker®, rectangular LED lights mounted in the front quad style, chrome housing on each side of the cab grille:

- The outside light on each side will contain a Model 8800-12V - DOT/ECE LB LED, low beam module.
- The inside light on each side will contain a Model 8800 -12V - DOT/ECE HB LED, high beam module.

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## **DIRECTIONAL LIGHTS**

There will be two (2) Whelen, Model 60A00TAR, amber LED populated arrow directional lights provided on the front of the cab, above the headlights. Each light will be housed in the same quad common bezel as the front warning light.

## **ADDITIONAL DIRECTIONAL LIGHT**

There will be two (2) Whelen, Model 60A00TAR, amber LED populated arrow directional lights provided exterior back of the cab, one (1) on each side.

Each light will be surface mounted in a 15 degree angle bracket.

## **INTERMEDIATE LIGHT**

There will be two (2) Truck-Lite, kit number 30080Y with Model 30279Y 2.24" round LED lamps, gray flanges and plugs mounted, one (1) each side in the rear fender panel. The light will double as a turn signal and marker light. This installation will include a stainless steel cover.

## **CAB CLEARANCE/MARKER/ID LIGHTS**

There will be five (5) amber LED lights provided to indicate the presence and overall width of the vehicle in the following locations:

- Three (3) amber LED identification lights will be installed in the center of the cab above the windshield.
- Two (2) amber LED clearance lights will be installed, one (1) on each outboard side of the cab above the windshield.

## **FRONT CAB SIDE DIRECTIONAL/MARKER LIGHTS**

There will be two (2) Weldon, Model 9186-8580-29, amber LED lights installed front of the cab door, one (1) on each side of the cab.

The lights will activate as marker lights with the headlight switch and directional lights with the corresponding directional circuit.

## **REAR CLEARANCE/MARKER/ID LIGHTING**

There will be three (3) Truck-Lite®, Model 35200R, LED lights used as identification lights located at the rear of the apparatus per the following:

- As close as practical to the vertical centerline
- Centers spaced not less than 6.00" or more than 12.00" apart
- Red in color
- All at the same height

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There will be two (2) Truck-Lite, Model 35200R, LED lights installed at the rear of the apparatus used as clearance lights located at the rear of the apparatus per the following:

- To indicate the overall width of the vehicle
- One (1) each side of the vertical centerline
- As near the top as practical
- Red in color
- To be visible from the rear
- All at the same height

There will be two (2) Truck-Lite, Model 35200R, LED lights installed on the side of the apparatus as marker lights as close to the rear as practical per the following:

- To indicate the overall length of the vehicle
- One (1) each side of the vertical centerline
- As near the top as practical
- Red in color
- To be visible from the side
- All at the same height

There will be two (2) red reflectors located on the rear of the truck facing to the rear. One (1) each side, as far to the outside as practical, at a minimum of 15.00", but no more than 60.00", above the ground.

There will be two (2) red reflectors located on the side of the truck facing to the side. One (1) each side, as far to the rear as practical, at a minimum of 15.00", but no more than 60.00", above the ground.

Per FMVSS 108 and CMVSS 108 requirements.

## **RUBBER ARM MARKER LIGHTS**

There will be one (1) pair of amber and red, Britax, Model L427.203.L12, LED marker lights with rubber arm, located one (1) each side at the rear of the body aft of the D1/P1 roll-up doors. The amber lens will face the front and the red lens will face the rear of the truck and be the most rearward marker light.

These lights will be activated with the running lights of the vehicle.

## **REAR FMVSS LIGHTING**

There will be the following stop/tail and directional lighting provided at the rear of the truck:

- Two (2) Whelen®, Model 60BTT\*, red LED stop/tail lights with color lenses
- Two (2) Whelen, Model 60A00TAR, amber LED directional lights

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- Two (2) Whelen Model 60J000CU backup lights will be provided.

The lights shall be mounted in a polished combination housing.

## **LICENSE PLATE BRACKET**

There will be one (1) license plate bracket mounted on the rear of the body.

A white LED light will illuminate the license plate. A polished stainless steel light shield will be provided over the light that will direct illumination downward, preventing white light to the rear.

## **LIGHTING BEZEL**

Two (2) Whelen, Model CAST4V, four (4) light aluminum housings will be provided for mounting four (4) Whelen 600 lights.

## **BACK-UP ALARM**

A PRECO, Model 1040, solid-state electronic audible back-up alarm that actuates when the truck is shifted into reverse will be provided. The device will sound at 60 pulses per minute and automatically adjust its volume to maintain a minimum ten (10) dBA above surrounding environmental noise levels.

## **INTERLOCK NFPA MIDSHIP LIGHTS**

The NFPA midship lights will be disabled when the pump is put into gear. The lights will be disabled to allow the pump operator to work at the pump panels without the interference from the flashing lights.

## **WARNING LIGHT FLASH PATTERN**

The flash pattern of all the exterior warning lights will be set to meet the certified California, Title XIII flash pattern by either the light manufacturer's default flash pattern or by a conversion change to the certified flash pattern.

## **CAB PERIMETER SCENE LIGHTS**

There will be four (4) Amdor LumaBar H2O, Model AY-9500-020, 20.00" white LED strip lights provided, one (1) for each cab door.

These lights will be activated automatically when the battery switch is on and the exit doors are opened or by the same means as the body perimeter scene lights.

## **PUMP HOUSE PERIMETER LIGHTS**

There will be two (2) Amdor LumaBar H2O, Model AY-9500-020, 20.00" LED weatherproof strip lights with brackets provided under the pump panel running boards, one (1) each side.

The lights will be controlled by the same means as the body perimeter lights.

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## **BODY PERIMETER SCENE LIGHTS**

There will be two (2) Amdor LumaBar H2O™, Model AY-9500-020, 20.00" 12 volt DC LED strip lights provided at the rear step area of the body, one (1) each side shining to the rear.

The perimeter scene lights will be activated when a switch within reach of the driver is activated and the parking brake is applied.

## **BODY STEP LIGHTS**

Four (4) white LED step lights will be provided. One (1) step light will be provided on each side, on the front compartment face and two (2) step lights at the rear to illuminate the tailboard.

In order to ensure exceptional illumination, each light will provide a minimum of 25 foot-candles (fc) covering an entire 15.00" x 15.00" square placed 10.00" below the light and a minimum of 1.5 fc covering an entire 30.00" x 30.00" square at the same 10.00" distance below the light.

These step lights will be actuated with the pump panel light switch.

All other steps on the apparatus will be illuminated per the current edition of NFPA 1901.

## **12 VOLT LIGHTING, VISOR**

There will be one (1) Whelen® Pioneer™, Model PCP2\*, 12 volt LED combination spot/flood light(s) provided on the front visor, centered.

The painted parts of this light assembly to be white.

The light(s) will be controlled by a switch at the driver's side switch panel AND a switch at the pump operator's panel.

These light(s) may be load managed when the parking brake is set.

## **12 VOLT LIGHTING, DS REAR OF CAB**

There will be one (1) Whelen Model PCP2P, 12 volt DC LED combination spot/floodlight(s) installed on the apparatus.

The painted parts of this light assembly to be white.

The lights will be installed on extendable poles driver's side rear of cab with the lighthouse just above the level of the cab so that the lights can be stored facing out to the sides of the vehicle Photo 6811.

The light(s) to be installed on a side body/surface mount push-up pole(s).

The length of the outside pole to be 12.00".

The inside pole length to be 57.00" long or as long as practical to fit in the location selected.

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The light pole(s) to be installed with handle holder(s) and a not stowed sensor connected to the Do Not Move Truck Indicator Light in the cab.

The lights will be controlled by a switch at the driver's side switch panel AND a switch at the pump operator's panel.

These light(s) may be load managed when the parking brake is applied.

## **12 VOLT LIGHTING, PS REAR OF CAB**

There will be one (1) Whelen Model PCP2P, 12 volt DC LED combination spot/floodlight(s) installed on the apparatus.

The painted parts of this light assembly to be white.

The lights will be installed passenger's side rear of cab with the lighthouse just above the level of the cab so that the lights can be stored facing out to the sides of the vehicle Photo 6811.

The light(s) to be installed on a side body/surface mount push-up pole(s).

The length of the outside pole to be 12.00".

The inside pole length to be 57.00" long or as long as practical to fit in the location selected.

The light pole(s) to be installed with handle holder(s) and a not stowed sensor connected to the Do Not Move Truck Indicator Light in the cab.

The lights will be controlled by a switch at the driver's side switch panel AND a switch at the pump operator's panel.

These light(s) may be load managed when the parking brake is applied.

## **FENDER SCENE LIGHTS**

There will be two (2) Ziamatic, Model ZQL-SS-LED, LED scene light(s) with stainless steel housing, installed on the side of the apparatus, one (1) each side in the rear fender area low, Note there is to be one switch provided for both options (#0550452 and #0542284) to control both sets of lights. Lights are also to point downwards Photo 6825.

A control for the light(s) selected above will be a switch at the driver's side switch panel

These lights may be load managed when the parking brake is set.

## **REAR WORK AREA LIGHTS**

There will be two (2) Whelen®, part number 01-066C520-10, 3.00" x 7.00" white LED scene lights installed at the rear of the vehicle, under the tailboard, facing the rear. The lights will have 12 white

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LEDs and have no internal optics. The lights will be mounted on brackets below the truck so as to not interfere with the angle of departure.

The lights will be controlled when the parking brake is applied.

## **HOSE BED LIGHTS**

There will be Amdor LumaBar H2O, Model AY-9500-0\*\*, white 12 volt DC LED light strips provided to light the hose bed area.

- Light strip(s) will be installed the entire length of the driver's side of the hose bed.
- Light strip(s) will be installed the entire length of the passenger's side of the hose bed.

The lights will be activated when the hosebed cover is raised.

## **WATER TANK**

Booster tank will have a capacity of 500 gallons and be constructed of polypropylene plastic by United Plastic Fabricating, Incorporated.

Tank joints and seams will be nitrogen welded inside and out.

Tank will be baffled in accordance with NFPA Bulletin 1901 requirements.

Baffles will have vent openings at both the top and bottom to permit movement of air and water between compartments.

Longitudinal partitions will be constructed of .38" polypropylene plastic and will extend from the bottom of the tank through the top cover to allow for positive welding.

Transverse partitions will extend from 4.00" off the bottom of the tank to the underside of the top cover.

All partitions will interlock and will be welded to the tank bottom and sides.

Tank top will be constructed of .50" polypropylene. It will be recessed .38" and will be welded to the tank sides and the longitudinal partitions.

Tank top will be sufficiently supported to keep it rigid during fast filling conditions.

Construction will include 2.00" polypropylene dowels spaced no more than 30.00" apart and welded to the transverse partitions. Two (2) of the dowels will be drilled and tapped (.50" diameter, 13.00" deep) to accommodate lifting eyes.

A sump that is 8.00" long x 8.00" wide x 6.00" deep will be provided at the bottom of the water tank.

Sump will include a drain plug and the tank outlet.

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Tank will be installed in a fabricated cradle assembly constructed of structural steel.

Sufficient crossmembers will be provided to properly support bottom of tank. Crossmembers will be constructed of steel bar channel or rectangular tubing.

Tank will "float" in cradle to avoid torsional stress caused by chassis frame flexing. Rubber cushions, .50" thick x 3.00" wide, will be placed on all horizontal surfaces that the tank rests on.

Stops or other provision will be provided to prevent an empty tank from bouncing excessively while moving vehicle.

Mounting system will be approved by the tank manufacturer.

Fill tower will be constructed of .50" polypropylene and will be a minimum of 8.00" wide x 14.00" long.

Fill tower will be furnished with a .25" thick polypropylene screen and a hinged cover.

An overflow pipe, constructed of 4.00" schedule 40 polypropylene, will be installed approximately halfway down the fill tower and extend through the water tank and exit to the rear of the rear axle.

Two (2) sleeves will be provided in the water tank for a 3.00" pipe to the rear.

## **HOSE BED**

The hose bed will be fabricated of 12-gauge galvanized steel.

The sides will not form any portion of the fender compartments.

Standard hose bed width will be minimum of 68.00" inside.

Upper and rear edges of side panels will have a double break for rigidity, a split tube finish will not be acceptable.

The upper inside area of the beavertails will be covered with brushed stainless steel to prevent damage to painted surface when hose is removed.

Flooring of the hose bed will be removable aluminum grating with the top surface corrugated to aid in hose aeration. The grating slats will be a minimum of 0.50" x 4.50" with spacing between slats for hose ventilation.

Hose bed will accommodate (from right to left): 450' x 3.00" D.J.C.R.L / 450' x 2.50" D.J.C.R.L / 1000' x 5.00" D.J.C.R.L .

## **HOSEBED DIVIDER**

Two (2) adjustable hosebed dividers will be furnished for separating hose.

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The height of the hose bed divider(s) will be 24.00".

Each divider will be constructed of a .125" brushed aluminum sheet fitted and fastened into a slotted, 1.50" diameter radiused extrusion along the top, bottom, and rear edge.

Divider will be fully adjustable by sliding in tracks, located at the front and rear of the hose bed.

Divider will be held in place by tightening bolts, at each end.

Acorn nuts will be installed on all bolts in the hose bed which have exposed threads.

A cross-divider will be provided just behind the fill tower. The divider will be bolted to the side sheet.

There shall be one (1) additional dividers furnished for separating hose. These dividers shall be approximately 15.00" high. The rear 24.00" upper section shall be cut off.

Each divider will be constructed of a .25" brushed aluminum sheet.

Divider will be held in place by tightening two (2) bolts, one (1) at each end.

Acorn nuts will be installed on all bolts in the hose bed which have exposed threads.

## **HOSE BED COVER**

A two (2) section hose bed cover, constructed of .125" bright aluminum treadplate will be furnished. The cover will be hinged with full length stainless steel piano hinge. The sides will be slanted down with the center of the cover supported by a stationary bridgework support. Passenger's side cover will open first and the driver's side to open second.

The cover shall be reinforced so that it can support the weight of a man walking on the cover.

If access to water tank fill tower is blocked by the hose bed cover, then a hinged door shall be provided in it so that tank may be filled without raising cover doors.

Chrome grab handles and four (4) gas filled cylinders with metal ends will be provided to assist in opening and closing the cover. A positive stay arm will be provided at the front of the cover.

## **HOSE BED END FLAPS**

A red vinyl flap shall be installed on the rear of the bright aluminum treadplate hose bed cover. The vinyl cover shall be install directly to the aluminum treadplate cover in place the rear bridgework. An aluminum angle shall be attached to the bottom of the aluminum cover that extends approximately 2.00" past the bridgework. The vinyl cover then shall be attached to the inside of the aluminum angle. The vinyl flap must be able to move with the aluminum cover while it is being raised and lowered. A total of four (4) hooked loop bungee cord hold down straps, two (2) per flap shall be provided.

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## **RUNNING BOARDS**

Running boards will be fabricated of .125" bright aluminum treadplate.

Each running board will be supported by a welded 2.00" square tubing and channel assembly, which will be bolted to the pump compartment substructure.

Running boards will be 12.75" deep and spaced .50" away from the pump panel.

A splash guard will be provided above the running board treadplate.

## **RUNNING BOARD HOSE TRAYS**

Two (2) hose trays will be recessed one (1) in each side running board.

Capacity of the tray will be 30' of 5.00".

Rubber matting will be installed on the floor of the tray to provide proper ventilation.

Two (2) hose trays will have two (2) 20" Velcro straps to secure items located in the hose tray. The location will be one (1) in each side running board.

## **TAILBOARD**

The tailboard will also be constructed of .125" bright aluminum treadplate and spaced .50" from the body, as well as supported by a structural steel assembly.

The tailboard area will be 16.00" deep.

The exterior side will be flanged down and in for increased rigidity of tailboard structure.

## **REAR WALL, SMOOTH ALUMINUM/BODY MATERIAL**

The rear facing surfaces of the center rear wall will be smooth aluminum.

The bulkheads, the surface to the rear of the side body compartments, will be smooth and the same material as the body.

Any inboard facing surfaces below the height of the hosebed will be aluminum diamondplate.

## **TOW BAR**

A tow bar will be installed under the tailboard at center of truck.

Tow bar will be fabricated of 1.00" CRS bar rolled into a 3.00" radius.

Tow bar assembly will be constructed of .38" structural angle. When force is applied to the bar, it will be transmitted to the frame rail.

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Tow bar assembly will be designed and positioned to allow up to a 30-degree upward angled pull of 17,000 lb, or a 20,000 lb straight horizontal pull in line with the centerline of the vehicle.

Tow bar design will have been fully tested and evaluated using strain gauge testing and finite element analysis techniques.

## **COMPARTMENTATION**

Body and compartments will be fabricated of galvanized steel.

Side compartments will be an integral assembly with the rear fenders.

Circular fender liners will be provided for prevention of rust pockets and ease of maintenance.

Compartment flooring will be 12 gauge and of the sweep out design, with the floor higher than the compartment door lip.

The compartment door opening will be framed by flanging the edges in 1.75" and bending out again .75" to form an angle.

Drip protection will be provided above the doors by means of bright aluminum extrusion, formed bright aluminum treadplate, or polished stainless steel.

The top of the compartment will be covered with bright aluminum treadplate rolled over the edges on the front, rear, and outward side. These covers will have the corners TIG welded.

Side compartment covers will be separate from the compartment tops.

Front facing compartment walls will be covered with bright aluminum treadplate.

All screws and bolts which protrude into a compartment will have acorn nuts on the ends to prevent injury.

## **UNDERBODY SUPPORT SYSTEM**

Due to the severe loading requirements of this pumper, a method of body and compartment support suitable for the intended load will be provided.

The backbone of the support system will be the chassis frame rails, which is the strongest component of the chassis and designed for sustaining maximum loads.

The support system will include .375" thick steel vertical angle supports bolted to the chassis frame rails with .625" diameter bolts.

Attached to the bottom of the steel vertical angles will be horizontal angles, with gussets welded to the vertical members, which extend to the outside edge of the body.

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A steel frame will be mounted on the top of these supports to create a floating substructure, which results in a 500 lb equipment support rating per lower compartment.

The floating substructure will be separated from the horizontal members with neoprene elastomer isolators. These isolators will reduce the natural flex stress of the chassis from being transmitted to the body.

The isolators will have a broad load range, proven viability in vehicular applications, be of a fail safe design and allow for all necessary movement in three (3) transitional and rotational modes.

The neoprene isolators will be installed in a modified V three (3)-point mounting pattern to reduce the natural flex of the chassis being transmitted to the body.

## **AGGRESSIVE WALKING SURFACE**

All exterior surfaces designated as stepping, standing, and walking areas will comply with the required average slip resistance of the current NFPA standards.

## **LOUVERS**

Louvers will be stamped into compartment walls to provide the proper airflow inside the body compartments and to prevent water from dripping into the compartment. Where these louvers are provided, they will be formed into the metal and not added to the compartment as a separate plate.

## **TESTING OF BODY DESIGN**

Body structural analysis has been fully tested. Proven engineering and test techniques such as finite element analysis, model analysis, stress coating and strain gauging have been performed with special attention given to fatigue, life and structural integrity of the cab, body and substructure.

The body will be tested while loaded to its greatest in-service weight.

The criteria used during the testing procedure will include:

- Raising opposite corners of the vehicle tires 9.00", simulating the twisting a truck may experience when driving over a curb.
- Making a 90 degree turn while at 20 mph, simulating aggressive driving conditions.
- Driving the vehicle at 35 mph on a washboard road.
- Driving the vehicle at 55 mph on a smooth road.
- Accelerating the vehicle fully, until reaching the approximate speed of 45 mph, on rough pavement.

Evidence of actual testing techniques will be made available upon request.

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## **COMPARTMENTATION, DRIVER'S SIDE**

A full height, rollup door compartment ahead of the rear wheels will be provided. The interior dimensions of this compartment will be 34.50" wide x 57.25" high x 25.88" deep in the lower 25.00" of the compartment and 12.00" deep in the remaining upper portion. The height of the compartment will be measured from the compartment floor to the bottom edge of the door roll. The depth of the compartment will be calculated with the compartment door closed. The compartment interior will be fully open from the compartment ceiling to the compartment floor and designed so that no permanent dividers are required between the upper and lower sections. The clear door opening of this compartment will be 28.75" wide x 57.25" high.

Closing of the door will not require releasing, unlocking, or unlatching any mechanism and will easily be accomplished with one hand.

A rollup door compartment over the rear wheels will be provided. The interior dimensions of this compartment will be 66.50" wide x 25.38" high x 12.00" deep. The height of the compartment will be measured from the compartment floor to the bottom edge of the door roll. The depth of the compartment will be calculated with the compartment door closed. The clear door opening of this compartment will be 58.25" wide x 25.12" high.

Closing of the door will not require releasing, unlocking, or unlatching any mechanism and will easily be accomplished with one hand.

A full height, rollup door compartment behind the rear wheels will be provided. The interior dimensions of this compartment will be 47.50" wide x 58.25" high x 25.88" deep in the lower 26.00" of height and 12.00" deep in the remaining upper section of the compartment. The height of the compartment will be measured from the compartment floor to the bottom edge of the door roll. The depth of the compartment will be calculated with the compartment door closed. The compartment interior will be fully open from the compartment ceiling to the compartment floor and designed so that no permanent dividers are required between the upper and lower sections. The clear door opening of this compartment will be 44.75" wide x 58.25" high.

Closing of the door will not require releasing, unlocking, or unlatching any mechanism and will easily be accomplished with one hand.

## **COMPARTMENTATION, PASSENGER'S SIDE**

A roll-up door compartment in the lower area ahead of the rear wheels will be provided. The interior dimensions of this compartment will be 34.50" wide x 26.00" high x 25.88" deep. The height of the compartment will be measured from the compartment floor to the bottom edge of the door roll. The depth of the compartment will be calculated with the compartment door closed. The clear door opening of this compartment will be 28.75" wide x 25.87" high. Closing of the door will not require releasing, unlocking, or unlatching any mechanism and will easily be accomplished with one hand.

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A roll-up door compartment in the lower area behind the rear wheels will be provided. The interior dimensions of this compartment will be 47.50" wide x 26.00" high x 25.88" deep. The height of the compartment will be measured from the compartment floor to the bottom edge of the door roll. The depth of the compartment will be calculated with the compartment door closed. The clear door opening of this compartment will be 46.00" wide x 25.87" high. Closing of the door will not require releasing, unlocking, or unlatching any mechanism and will easily be accomplished with one hand.

## **ROLLUP DOOR, SIDE COMPARTMENTS**

There will be six (6) compartment doors installed on the side compartments. The doors will be double faced aluminum construction, an anodized satin finish and manufactured by A&A Manufacturing (Gortite).

Lath sections will be an interlocking rib design and will be individually replaceable without complete disassembly of door.

Between each slat at the pivoting joint will be a PVC inner seal to prevent metal to metal contact and prevent dirt or moisture from entering the compartments. Seals will allow door to operate in extreme temperatures ranging from plus 180 to minus 40 degrees Fahrenheit. Side, top and bottom seals will be provided to resist ingress of dirt and weather and be made of Santoprene.

All hinges, barrel clips and end pieces will be nylon 66. All nylon components will withstand temperatures from plus 300 to minus 40 degrees Fahrenheit.

A polished stainless steel lift bar to be provided for each roll-up door. Lift bar will be located at the bottom of door and have latches on the outer extrusion of the doors frame. A ledge will be supplied over lift bar for additional area to aid in closing the door.

Doors will be constructed from an aluminum box section. The exterior surface of each slat will be flat. The interior surfaces will be concave to provide strength and prevent loose equipment from jamming the door from inside.

To conserve space in the compartments, the spring roller assembly will not exceed 3.00" in diameter.

The header for the rollup door assembly will not exceed 4.00".

A heavy-duty magnetic switch will be used for control of open compartment door warning lights.

## **COMPARTMENTATION, REAR**

A rollup door compartment above the rear tailboard will be provided.

The interior dimensions of this compartment will be 40.00" wide x 40.63" high x 25.88" deep in the lower 32.38" of height and 15.75" deep in the remaining upper portion. The depth of the compartment will be calculated with the compartment door closed.

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For a chassis with a rear mounted fuel tank, a louvered removable access panel will be furnished on the back wall of the compartment.

The rear compartment will be open into the rear side compartments.

The clear door opening of this compartment will be 33.25" wide x 32.38" high.

Closing of the door will not require releasing, unlocking, or unlatching any mechanism and will easily be accomplished with one hand.

## **ROLLUP DOOR, REAR COMPARTMENT**

There will be a rear rollup door. The door will be double faced aluminum construction, an anodized satin finish and manufactured by A&A Manufacturing (Gortite).

Lath sections will be an interlocking rib design and will be individually replaceable without complete disassembly of door.

Between each slat at the pivoting joint will be a PVC inner seal to prevent metal to metal contact and prevent dirt or moisture from entering the compartments. Seals will allow door to operate in extreme temperatures ranging from plus 180 to minus 40 degrees Fahrenheit. Side, top and bottom seals will be provided to resist ingress of dirt and weather and be made of Santoprene.

All hinges, barrel clips and end pieces will be nylon 66. All nylon components will withstand temperatures from plus 300 to minus 40 degrees Fahrenheit.

A polished stainless steel lift bar to be provided for each roll-up door. Lift bar will be located at the bottom of door and have latches on the outer extrusion of the doors frame. A ledge will be supplied over lift bar for additional area to aid in closing the door.

Door will be constructed from an aluminum box section. The exterior surface of each slat will be flat. The interior surface will be concave to provide strength and prevent loose equipment from jamming the door from inside.

To conserve space in the compartments, the spring roller assembly will not exceed 3.00" in diameter.

The header for the rollup door assembly will not exceed 4.00".

A heavy-duty magnetic switch will be used for control of open compartment door warning lights.

## **DOOR GUARD**

There will be six (6) compartment doors that will include a guard/drip pan designed to protect the roll-up door from damage when in the retracted position and contain any water spray. The guard will be fabricated from stainless steel and installed all body compartments.

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## **COMPARTMENT LIGHTING**

There will be six (6) compartments with Amdor, Model AY-9220, white 12 volt DC LED compartment light strips. The lights will be mounted with mechanical fasteners.

There will be two (2) strip lights installed vertically in each compartment opening per the latest NFPA requirements.

The lights will be activated when the battery switch is on and the respective compartment door is opened.

## **MOUNTING TRACKS**

There will be six (6) sets of tracks for mounting shelf(s) in D3, D2, D1, R1, P1 and P2. These tracks will be installed vertically to support the adjustable shelf(s), and will be full height of the compartment. The tracks will be unpainted with a natural finish.

## **ADJUSTABLE SHELVES**

There will be eight (8) shelves with a capacity of 500 lb provided. The shelf construction will consist of .188" aluminum with 2.00" sides. Each shelf will be painted to match the compartment interior. Each shelf will be infinitely adjustable by means of a threaded fastener, which slides in a track.

The shelves will be held in place by .12" thick stamped plated brackets and bolts.

The location will be one in P1 lower 12 1/16" from tile, one in P2 lower 14 3/16" from tile, two upper D1, one in D2 7 1/4" from tile, two in upper D3 & and 1 in R1 19 11/16" from the tile .

## **SLIDE-OUT ADJUSTABLE HEIGHT TRAY**

There will be one (1) slide-out tray provided.

Each tray will have 2.00" high sides and a minimum capacity rating of 250 lb in the extended position.

Each tray will be sized as large as possible to fit the compartment. The tray will be constructed of aluminum painted to match compartment interior.

Each tray will be mounted on a pair of side mounted slides. The slide mechanisms will have ball bearings for ease of operation and years of dependable service. The slides will be mounted to shelf tracks to allow the tray to be adjustable up and down within the designated mounting location.

An automatic lock will be provided for both the in and out tray positions. The lock trip mechanism will be located at the front of the tray and will be easily operated with a gloved hand.

The tray(s) will be located lower D3 per Photo 6849.

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## **SLIDE-OUT FLOOR MOUNTED TRAY**

There will be one (1) floor mounted slide-out tray(s) with 2.00" sides provided D1 Per Photo 6846. Each tray will be rated for up to 500lb in the extended position. The tray(s) will be constructed of a minimum .13" aluminum with welded corners. The finish will be painted to match compartment interior.

The trays will be designed for maximum compartment width and depth.

There will be two undermount-roller bearing type slides rated at 250lb each provided. The pair of slides will have a safety factor rating of 2.

To ensure years of dependable service, the slides will be coated with a finish that is tested to withstand a minimum of 1,000 hours of salt spray per ASTM B117.

To ensure years of easy operation, the slides will require no more than a 50lb force for push-in or pull-out movement when fully loaded after having been subjected to a 40 hour vibration (shaker) test under full load. The vibration drive file will have been generated from accelerometer data collected from a heavy truck chassis driven over rough gravel roads in an unloaded condition. Proof of compliance will be provided upon request.

Automatic locks will be provided for both the "in" and "out" positions. The trip mechanism for the locks will be located at the front of the tray for ease of use with a gloved hand.

## **MATTING, COMPARTMENT SHELVING**

Turtle Tile compartment matting will be provided in seven (7) shelves. The locations are, all adjustable shelves (8 total) and all slide-out trays (2 total) Per Photo #6826, 6835, 6846, and 6849.

The color of the Turtle Tile will be red.

## **MATTING, COMPARTMENT FLOOR**

Turtle Tile compartment matting will be provided in five (5) compartments on the compartment floor. The locations are, D2, D3, R1, P1 & P2 per Photo #6826, 6835, 6846, and 6849.

The Turtle Tile will be red and the leading edge of the matting will include the beveled edge. The beveled edge will be red.

## **BACKBOARD STORAGE**

A transverse area over the pump and rearward of the crosslays will hold one (1) storage trough.

A blister will be supplied at each side to enclose the backboards due to their length.

The backboards will be accessible from either side of the vehicle through the polished stainless steel door(s) with a pair of lift and turn latches.

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The size of the backboard(s) to be stored will be 74" L X 18" W X 3" thick clear inside dimension. Photo 6809.

## **CARGO FLOOR ACCESS PANEL**

The bright aluminum treadplate flooring on the driver's side of the cargo compartment will be hinged with quarter turn latches for access to the pump and plumbing.

## **RUB RAIL**

Bottom edge of the side compartments will be trimmed with a bright aluminum extruded rub rail.

Trim will be 2.12" high with 1.38" flanges turned outward for rigidity.

The rub rails will not be an integral part of the body construction, which allows replacement in the event of damage.

## **BODY FENDER CROWNS**

Stainless steel fender crowns will be provided around the rear wheel openings.

A rubber welting will be installed between the body and the crown to seal the seam and restrict moisture from entering.

A dielectric barrier will be provided between the fender crown fasteners (screws) and the fender sheet metal to prevent corrosion.

## **HARD SUCTION HOSE TROUGHS**

Hard suction hose will be carried above the left compartment in v-shaped troughs and held in place by chrome plated, quarter turn, spring loaded clamps. Troughs will be sized 120.00" (10'-0.00") Per Photo #6824 & 6828.

The troughs will be constructed of aluminum and painted.

## **HANDRAILS**

The handrails will be 1.25" diameter anodized aluminum extrusion, with a ribbed design, to provide a positive gripping surface.

Chrome plated end stanchions will support the handrail. Plastic gaskets will be used between end stanchions and any painted surfaces.

Drain holes will be provided in the bottom of all vertically mounted handrails.

Handrails will be provided to meet NFPA 1901 section 15.8 requirements. The handrails will be installed as noted on the sales drawing.

One (1) vertical handrail, not less than 29.00" long, will be located on each rear beavertail.

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One (1) full width horizontal handrail will be provided below the hose bed at the rear of the apparatus.

Two (2) handrails will be provided mounted on the top rear of the hosebed cover on each side.

## **AIR BOTTLE STORAGE (DOUBLE)**

A quantity of two (2) air bottle compartments, 15.25" wide x 7.75" tall x 26.00" deep, will be provided on the passenger side forward of the rear wheels and on the passenger side rearward of the rear wheels . A polished stainless steel door with a chrome plated flush lift & turn latch will be provided to contain the air bottle. A dielectric barrier will be provided between the door hinge, hinge fasteners and the body sheet metal.

Inside the compartment, "W" shaped insert formed of composite materials will be provided.

## **EXTINGUISHER STORAGE**

A total of two (2) extinguisher compartments will be provided. Two installed on the driver's side rear fender panel. . The extinguisher compartment will be in the form of a square tube (8.25" minimum) and of adequate depth to accommodate different size extinguishers. Flooring will be rubber lined and have a drain hole. A stainless steel door with a chrome plated latch will be provided to contain the air bottle. A dielectric barrier will be provided between the door hinge, hinge fasteners (screws) and the body sheet metal.

## **EXTENSION LADDER**

There will be a 24', two-section, aluminum, Duo-Safety, Series 900-A extension ladder provided.

## **ROOF LADDER**

There will be a 14' aluminum, Duo-Safety, Series 775-A roof ladder provided.

## **FOLDING LADDER**

One (1) 10.00' aluminum, Series 585-A, Duo-Safety folding ladder will be provided.

The mounting tube will be installed on the inside of the side sheet ladder mounting brackets. A stop will be provided to keep the ladder from sliding forward in the bracket. A nylon strap will be provided at the rear of the tube to retain the ladder.

## **LADDER BRACKETS**

The ladders will be installed on the right side of the hose body in lined brackets and held in place by chrome plated, quarter-turn spring loaded clamps. The clamps will be such that when the roof ladder is removed, the clamps can be moved a half turn to hold the extension ladder in place. The ladder brackets will be adjustable up and down.

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## **PIKE POLE, 10'**

One (1) pike pole, Fire Hooks Unlimited, Model NYFG-10, 10' long New Yorker style hook with a ram knob end, will be provided and located in the pike pole tube.

## **PIKE POLE, 6'**

There will be one (1) Fire Hooks Unlimited NY roof hook RH-6, 6 foot pike pole(s) with steel handles and pry end provided in pike pole tube.

## **PIKE POLE STORAGE**

Aluminum tubing will be used for the storage of two (2) pike poles and will be located mounted behind the ladders on the side sheet, passenger's side. If the head of a pike pole can come in contact with a painted surface, a stainless steel scuffplate will be provided.

The notch will be (1) for Fire Hooks Unlimited model APH-6' Z-Bar with fiberglass D Handle and (1) Fire Hooks Unlimited model NTFG-10' pike pole with fiberglass handle.

## **FRONT STEPS**

A folding step will be provided on the driver side front bulkhead. The step will be a bright finished, non-skid step with a luminescent coating that is rechargeable from any light source and can hold a charge for up to 24 hours. The step will incorporate an LED light to illuminate the stepping surface. The step can be used as a hand hold with two openings wide enough for a gloved hand.

Two (2) additional folding steps will be located driver's side above the standard step. . The step(s) will be bright finished, non-skid, with a luminescent coating. The luminescent coating is rechargeable from any light source and can hold a charge for up to 24 hours. Each step will incorporate an LED light to illuminate the stepping surface. The step(s) can be used as a hand hold with two openings wide enough for a gloved hand.

## **REAR STEPS**

Aluminum treadplate corner steps and bright finished, non-skid folding steps will be provided at the rear. The folding steps will have a luminescent coating that is rechargeable from any light source and can hold a charge for up to 24 hours. Each folding step will incorporate an LED light to illuminate the stepping surface. The folding steps can be used as a hand hold with two openings wide enough for a gloved hand. All steps will provide adequate surface for stepping.

## **PUMP**

Pump will be a Waterous CSU, 1500 gpm single (1) stage midship mounted centrifugal type.

Pump will be the class "A" type.

Pump will deliver the percentage of rated discharge at pressures indicated below:

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- 100% of rated capacity at 150 psi net pump pressure.
- 70% of rated capacity at 200 psi net pump pressure.
- 50% of rated capacity at 250 psi net pump pressure.

Pump body will be close-grained gray iron, bronze fitted, and horizontally split in two (2) sections for easy removal of the entire impeller shaft assembly (including wear rings).

Pump will be designed for complete servicing from the bottom of the truck, without disturbing the pump setting or apparatus piping.

Pump case halves will be bolted together on a single horizontal face to minimize chance of leakage and facilitate ease of reassembly. No end flanges will be used.

Discharge manifold of the pump will be cast as an integral part of the pump body assembly and will provide a minimum of three (3) 3.50" openings for flexibility in providing various discharge outlets for maximum efficiency.

The three (3) 3.50" openings will be located as follows: one (1) outlet to the right of the pump, one (1) outlet to the left of the pump, and one (1) outlet directly on top of the discharge manifold.

Impeller shaft will be stainless steel, accurately ground to size. It will be supported at each end by sealed, anti-friction ball bearings for rigid precise support. Impeller will have flame plated hubs assuring maximum pump life and efficiency despite any presence of abrasive matter in the water supply.

Bearings will be protected from water and sediment by suitable stuffing boxes, flinger rings, and oil seals. No special or sleeve type bearings will be used.

Pump will be equipped with a self-adjusting, maintenance-free, mechanical shaft seal.

The mechanical seal will consist of a flat, highly polished, spring fed carbon ring that rotates with the impeller shaft. The carbon ring will press against a highly polished stainless steel stationary ring that is sealed within the pump body.

In addition, a throttling ring will be pressed into the steel chamber cover, providing a very small clearance around the rotating shaft in the event of a mechanical seal failure. The pump performance will not deteriorate, nor will the pump lose prime, while drafting if the seal fails during pump operation.

Wear rings will be bronze and easily replaceable to restore original pump efficiency and eliminate the need to replace the entire pump casing due to wear.

## **PUMP TRANSMISSION**

The pump transmission will be made of a three (3) piece, aluminum, horizontally split casing. Power transfer to pump will be through a high strength Morse HY-VO silent drive chain. By the use of a chain

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rather than gears, 50% of the sprocket will be accepting or transmitting torque, compared to two (2) or three (3) teeth doing all the work.

Drive shafts will be 2.35" diameter hardened and ground alloy steel and supported by ball bearings. The case will be designed to eliminate the need for water cooling.

## **AIR PUMP SHIFT**

Pump shift engagement will be made by a two (2) position sliding collar, actuated pneumatically (by air pressure), with a three (3) position air control switch located in the cab. A manual back-up shift control will also be located on the pump operator's pump panel.

Two (2) indicator lights will be provided adjacent to the pump shift inside the cab. One (1) green light will indicate the pump shift has been completed and be labeled "pump engaged". The second green light will indicate when the pump has been engaged, and that the chassis transmission is in pump gear. This indicator light will be labeled "OK to pump".

Another green indicator light will be installed adjacent to the hand throttle on the pump panel and indicate either the pump is engaged and the road transmission is in pump gear, or the road transmission is in neutral and the pump is not engaged. This indicator light will be labeled "Warning: Do not open throttle unless light is on".

The pump shift control in the cab will be illuminated to meet NFPA requirements.

## **TRANSMISSION LOCK-UP**

The direct gear transmission lock-up for the fire pump operation will engage automatically when the pump shift control in the cab is activated.

## **AUXILIARY COOLING SYSTEM**

A supplementary heat exchange cooling system will be provided to allow the use of water from the discharge side of the pump for cooling the engine water. The heat exchanger will be cylindrical type and will be a separate unit. The heat exchanger will be installed in the pump or engine compartment with the control located on the pump operator's control panel. Exchanger will be plumbed to the master drain valve.

## **INTAKE RELIEF VALVE**

An Elkhart relief valve will be installed on the suction side of the pump preset at 175 psig.

Relief valve will have a working range of 75 psig to 250 psig.

Outlet will terminate below the frame rails with a 2.50" National Standard hose thread adapter and will have a "do not cap" warning tag.

Control will be located behind an access door at the right (passenger's) side pump panel.

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## **PRESSURE GOVERNOR**

This apparatus will be equipped with a Class1 "Total Pressure Governor" engine/pump governor/throttle system that is connected directly to the Electronic Control Module (ECM) mounted on the engine. The "Total Pressure Governor" is to operate as a pressure sensor (regulating) governor (PSG).

A special preset feature will permit a predetermined pressure or RPM to be set. The preset pressure or RPM will be displayed on the message display of the "Total Pressure Governor". The preset will be easily adjustable by the operator

The pressure sensor governor system will be operable only after the vehicle parking brake has been set, the transmission is the pumping mode, and the fire pump has been engaged.

The pressure sensor governor system will have two (2) modes of operation: pressure mode or rpm mode.

When in the pressure mode, the PSG system will automatically maintain the discharge pressure set by the operator regardless of flow (within engine/pump operating capabilities).

In the rpm mode, the PSG system will automatically maintain a set engine speed, regardless of engine load (within engine operation capabilities).

A pump cavitation protection feature will be provided which will return the engine to idle should the pump cavitate.

The pressure controller will incorporate monitoring for engine coolant temperature, oil pressure, and battery voltage.

## **PRIMER SYSTEM**

A Waterous electric pump priming system conforming to standards outlined in the current edition of NFPA 1901 will be furnished with the apparatus.

One (1) VPO electric motor driven rotary vane primer will be provided.

One (1) VAP vacuum activated priming valve will be plumbed main pump.

One (1) momentary push-button control will be located at the pump operator's panel.

The push button control system control will operate an electric priming motor and the priming valve will automatically open during priming and close when the primer is deactivated.

## **PRIMER VALVE CABLE CLAMP**

The priming valve cable will be clamped with a u-bolt per the photo in the R:Drive. Use a nylock nut for proper fit to allow the primer tee handle to return to rest after the tee handle is pulled.

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## **THERMAL RELIEF VALVE**

A Watrous Overheat Protection Manager (OPM) will be included on the pump that monitors pump water temperature and opens to relieve water to cool the pump when the temperature of the pump water exceeds 140 Degrees F (60 C) and a red warning light that is triggered when the water in the pump reaches 180 F (82 C).

The warning light will act as an additional protection device if the temperature in the pump keeps rising after the valve opens. The warning light with a test switch will be mounted on the pump operator panel.

The discharge line will be plumbed to ground.

## **PUMP MANUALS**

There will be a total of two (2) pump manuals provided by the pump manufacturer and furnished with the apparatus. The manuals will be provided by the pump manufacturer in the form of two (2) CDs. Each manual will cover pump operation, maintenance, and parts.

## **PLUMBING**

All inlet and outlet plumbing, 3.00" and smaller, will be plumbed with either stainless steel pipe or synthetic rubber hose reinforced with high-tensile polyester braid. Small diameter secondary plumbing such as drain lines will be stainless steel, brass or hose.

Where vibration or chassis flexing may damage or loosen piping or where a coupling is required for servicing, the piping will be equipped with victaulic or rubber couplings.

Plumbing manifold bodies will be ductile cast iron or stainless steel.

All lines will drain through a master drain valve or will be equipped with individual drain valves. All individual drain lines for discharges will be extended with a hose to drain below the chassis frame.

All water carrying gauge lines will be of flexible polypropylene tubing.

All foam piping that is in contact with the foam concentrate or foam/water solution will be stainless steel.

## **MAIN PUMP INLETS**

A 6.00" pump manifold inlet will be provided on each side of the vehicle. The suction inlets will include removable die cast zinc screens that are designed to provide cathodic protection for the pump, thus reducing corrosion in the pump.

## **SHORT SUCTION TUBE**

The suction tubes on the mid-ship pump will have short suction tubes to allow for installation of adapters without excessive overhang.

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## **VALVES**

All ball valves will be Akron® Brass. The Akron valves will be the 8000 series heavy-duty style with a stainless steel ball and a simple two-seat design. No lubrication or regular maintenance is required on the valve.

Valves will have a **ten (10) year** warranty.

## **LEFT SIDE INLET**

There will be one (1) auxiliary inlet with a 2.50" valve at the left side pump panel, terminating with a 2.50" (F) National Standard hose thread adapter.

The auxiliary inlet will be provided with a strainer, chrome swivel and plug.

## **RIGHT SIDE INLET**

There will be one (1) auxiliary inlet with a 2.50" valve at the right side pump panel, terminating with a 2.50" (F) National Standard hose thread adapter.

The auxiliary inlet will be provided with a strainer, chrome swivel and plug.

The location of the valve for the two (2) inlets will be recessed behind the pump panel.

## **ANODE, INLET**

A pair of sacrificial zinc anodes will be provided in the water pump inlets to protect the pump from corrosion.

## **INLET CONTROL**

The side auxiliary inlet(s) will incorporate a quarter-turn ball valve with the control located at the inlet valve. The valve operating mechanism will indicate the position of the valve.

## **INLET BLEEDER VALVE**

A 0.75" bleeder valve will be provided for each side gated inlet. The valves will be located behind the panel with a swing style handle control extended to the outside of the panel. The handles will be chrome plated and provide a visual indication of valve position. The swing handle will provide an ergonomic position for operating the valve without twisting the wrist and provides excellent leverage. The water discharged by the bleeders will be routed below the chassis frame rails.

## **TANK TO PUMP**

The booster tank will be connected to the intake side of the pump with 3.00" piping and a quarter turn 3.50" Waterous valve with the control remotely located at the operator's panel. Tank to pump line will run straight (no elbows) from the pump into the front face of the water tank and angle down into the tank sump. A rubber coupling will be included in this line to prevent damage from vibration or chassis flexing.

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A check valve will be provided in the tank to pump supply line to prevent the possibility of "back filling" the water tank.

## **TANK REFILL**

A 1.50" combination tank refill and pump re-circulation line will be provided, using a quarter-turn full flow ball valve controlled from the pump operator's panel.

## **LEFT SIDE DISCHARGE OUTLETS**

There will be two (2) discharge outlets with a 2.50" valve on the left side of the apparatus, terminating with 2.50" (M) National Standard hose thread adapter.

## **RIGHT SIDE DISCHARGE OUTLETS**

There will be one (1) discharge outlet with a 2.50" valve on the right side of the apparatus, terminating with a 2.50" (M) National Standard hose thread adapter.

## **LARGE DIAMETER DISCHARGE OUTLET**

There will be a 4.00" discharge outlet with a 3.50" Akron valve with a 3.00" ball, installed on the right side of the apparatus, terminating with a 4.00" (M) National Standard hose thread adapter.

There will be an Akron electric valve controllers provided at the pump panel. The controller unit will be of true position feedback design, requiring no clutches in the motor or current limiting. The controller will be completely sealed with two (2) button open and close valve position capability and a full color LCD display with backlight.

## **REAR DISCHARGE OUTLET**

There will be two (2) discharge outlets piped to the rear of the hose bed, one (1) each side, installed so proper clearance is provided for spanner wrenches or adapters. Plumbing will consist of 2.50" piping along with a 2.50" full flow ball valve with the control from the pump operator's panel.

## **DISCHARGE CAPS**

Chrome plated, rocker lug, caps with stainless steel cables will be furnished for all discharge outlets.

The auxiliary inlet plugs will have stainless steel cables.

## **OUTLET BLEEDERS**

A 0.75" bleeder valve will be provided for each outlet 1.50" or larger. Automatic drain valves are acceptable with some outlets if deemed appropriate with the application.

The valves will be located behind the panel with a swing style handle control extended to the outside of the side pump panel. The handles will be chrome plated and provide a visual indication of valve position. The swing handle will provide an ergonomic position for operating the valve without twisting the wrist and provides excellent leverage. Bleeders will be located at the bottom of the pump panel.

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They will be properly labeled identifying the discharge they are plumbed in to. The water discharged by the bleeders will be routed below the chassis frame rails.

## **LEFT SIDE OUTLET ELBOWS**

The 2.50" discharge outlets, located on the left side pump panel, will be furnished with a 2.50" (F) National Standard hose thread x 2.50" (M) National Standard hose thread, chrome plated, 30 degree elbow.

The elbow will be Pierce VLH, which incorporates an exclusive thread design to automatically relieve stored pressure in the line when disconnected.

## **RIGHT SIDE OUTLET ELBOWS**

The 2.50" discharge outlets, located on the right side pump panel, will be furnished with a 2.50" (F) National Standard hose thread x 2.50" (M) National Standard hose thread, chrome plated, 30 degree elbow.

The elbow will be Pierce VLH, which incorporates an exclusive thread design to automatically relieve stored pressure in the line when disconnected.

## **REAR OUTLET ELBOWS**

The 2.50" discharge outlets, located at the rear of the apparatus, will be furnished with a 2.50" (F) National Standard hose thread x 2.50" (M) National Standard hose thread, chrome plated, 30 degree elbow.

The elbow will be Pierce VLH, which incorporates an exclusive thread design to automatically relieve stored pressure in the line when disconnected.

## **DISCHARGE OUTLET CONTROLS**

The discharge outlets will incorporate a quarter-turn ball valve with the control located at the pump operator's panel. The valve operating mechanism will indicate the position of the valve.

If a handwheel control valve is used, the control will be a minimum of a 3.9" diameter stainless steel handwheel with a dial position indicator built in to the center of the handwheel.

## **DELUGE RISER, W/DUAL CONTROL**

Three (3) inch deluge riser plumbing shall be installed and routed above the pump in such a manner that a monitor can be mounted and used effectively.

The riser plumbing shall be gated and controlled at the pump operator's panel by a handwheel control with position indicator.

A second handwheel control without position indicator shall be provided above the pump adjacent to the outlet.

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Plumbing shall consist of 3.00" piping and a 3.00" valve.

Piping shall be installed securely so no movement develops when the line is charged.

## **MONITOR**

An Elkhart Model 8297 "Stinger" monitor will be properly installed on the deluge riser.

This monitor will include both a fixed base and a portable base with a 5.00" Storz inlet.

The monitor will be painted as provided by monitor manufacturer.

## **MONITOR NOZZLE**

An Elkhart #SM-1250 Select-O-Matic manual pattern control master stream nozzle will be provided.

Also included is an Elkhart ST-194 Quad stack tips and 282A shaper.

## **MONITOR MOUNTING BASE**

An Elkhart Model 8298 deck mount base for an Elkhart "Stinger" monitor will be properly installed on the deluge riser via the 3.00" four bolt flange. This base will be painted to match the body.

## **MOUNTING BRACKET FOR MONITOR**

An Elkhart Model 8297MB mounting bracket, for the monitor portable base unit, will be shipped loose.

## **MONITOR EXTENSION**

An Elkhart 18.00" extension pipe will be shipped with loose equipment.

## **CROSSLAY HOSE BEDS**

Two (2) crosslays with 1.50" outlets will be provided. Each bed to be capable of carrying 200' of 1.75" double jacketed hose and will be plumbed with 2.00" i.d. pipe and gated with a 2.00" quarter turn ball valve.

Outlets to be equipped with a 1.50" National Standard hose thread 90 degree swivel located in the hose bed so that hose may be removed from either side of apparatus.

The crosslay controls will be at the pump operator's panel.

The center crosslay dividers will be fabricated of 0.25" aluminum and will provide adjustment from side to side. The divider will be unpainted with a brushed finish.

Vertical scuffplates constructed of stainless steel will be provided at the front and rear ends of the bed on each side of vehicle.

Crosslay bed flooring will consist of removable perforated brushed aluminum.

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## **CROSSLAY HOSE BED, 2.50"**

One (1) crosslay with a 2.50" outlet will be provided. The bed will be capable of carrying 150' of 2.50" single stacked 26.25" high and will be plumbed with 2.50" i.d. pipe and gated with a 2.50" quarter turn ball valve.

The outlet will be equipped with a 2.50" National Standard hose thread 90 degree swivel located in the hose bed so that hose may be removed from either side of apparatus.

The crosslay control will be at the pump operator's panel.

The center crosslay dividers will be fabricated of .25" aluminum and will provide adjustment from side to side. The divider will be unpainted with a brushed finish. The remainder of the crosslay bed will be painted job color.

Stainless steel vertical scuffplates will be provided at hose bed ends (each side of vehicle). Bottom of hose bed ends (each side) will also be equipped with a stainless steel scuffplate.

Crosslay bed flooring will consist of removable perforated brushed aluminum.

## **CROSSLAY COVER**

An aluminum treadplate cover, hinged at the front will be installed over the top of the crosslay/deadlay(s). It will include a latch at each end of the cover to hold it securely in place, a chrome grab handle at each end for opening and closing the cover and a foam rubber gasket where the cover comes into contact to a painted surface. The cover will be provided with rubber latch hold open device.

## **CROSSLAY END FLAPS**

A red vinyl cover with two web straps with Velcro and footman loops along the bottom edge and quarter turn fasteners at the top corners will be provided over the ends of the crosslay hose beds.

## **BOOSTER HOSE REEL**

A Hannay electric rewind booster hose reel will be installed over the pump in a recessed open compartment on the right side of the apparatus.

The exterior finish of the reel will be painted job color matching the body exterior.

A polished stainless steel roller and guide assembly will be mounted on the reel side of the apparatus. There will be one (1) additional polished stainless steel roller and guide assembly mounted on top of the driver's side pump module side sheet.

Discharge control will be provided at the pump operator's panel. Plumbing to the reel will consist of 1.50" Aeroquip hose and a 1.50" valve.

Reel motor will be protected from overload with a 50 amp automatic reset circuit breaker.

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One (1) foot actuated, stirrup type, electric rewind control (switch) will be installed on the passenger's side below the running board or below the body compartment. Two (2) push-button switches will be provided on the pump panels, one (1) switch each side.

Booster hose, 1.00" diameter and 150 feet in length, with chrome plated Barway, or equal couplings will be provided. The couplings will have 1" NPSH threads.

The hose will be coupled in three (3) sections. Three 50' sections will be provided.

Working pressure of the booster hose will be a minimum of 800 psi.

Capacity of the hose reel will be 150 feet of 1.00" booster hose.

## **HOSEREEL ACCESS**

A cutout will be provided in the side sheet next to the booster hose reel. This cutout will allow access to the hose and provide a window to view the reel. Stainless steel trim will be mounted horizontally and vertically around the cutout.

## **NOZZLE CUP AND BRACKET**

A Zico nozzle cup and chrome plated mounting bracket will be provided for storage of the booster reel nozzle.

There will be one (1) provided. The nozzle cup(s) will have a 3-1/2" inside diameter and will be located as directed at pre-construction (note cup is to be a Zico part #3070-130-000 with part #3070-135-000 mounting bracket).

## **FOAM CONCENTRATE PROPORTIONING SYSTEM**

A Hypro FoamPro®, Model 2001, foam system will be provided as the means for the proportioning of foam concentrate into the water stream. The FoamPro is an electronic, fully automatic, variable speed, direct injection, discharge side foam proportioning system.

This system will be capable of handling Class A foam concentrates, as well as most Class B foam concentrates.

The foam system will be plumbed to five (5) discharges. The discharges capable of dispensing foam will be reel, both 1.50" crosslays, one (1) 2.50" discharge on the left pump panel and one (1) 2.50" discharge DS REAR.

The foam proportioning system operation will be based on a direct measurement of water flows, and remain consistent within the specified flow and pressure. The system will be equipped with a digital electronic control display on the pump panel. Incorporated within the control display will be a microprocessor, which receives input from the system flow meter while also monitoring the foam

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concentrate pump output. The microprocessor will compare the values of the water flow versus the foam flow, to ensure the proportion rate is accurate.

One (1) paddle wheel will be installed to monitor all foam discharges.

Push button control for the form proportioning rate will allow a ratio from .1 percent to 3 percent in .1 percent increments.

The rated capacity of this system will be 85 gpm at 3 percent and 500 gpm at .5 percent.

A 2.5 gpm @150 psi, positive displacement foam pump will be powered by a 1/2 hp 12 vdc electric motor.

One (1) check valve will be installed in the plumbing to prevent foam from contaminating the water pump. The check valve will be approved by the foam system manufacturer.

## **FOAM TANK**

The foam tank will be an integral portion of the polypropylene water tank. The cell will have a capacity of 20 gallons of foam with the intended use of Class A foam. The foam cell will not reduce the capacity of the water tank. The foam cell will have a screen in the fill dome and a breather in the lid.

## **FOAM TANK DRAIN**

The foam tank drain will be a 1.00" drain valve located inside the pump compartment accessible through a door on the passenger's side pump panel.

## **PUMP COMPARTMENT**

The pump compartment will be separate from the hose body and compartments so that each may flex independently of the other. It will be a fabricated assembly of steel tubing, angles and channels which supports both the fire pump and the side running boards.

The pump compartment will be mounted on the chassis frame rails with rubber biscuits in a four point pattern to allow for chassis frame twist.

Pump compartment, pump, plumbing and gauge panels will be removable from the chassis in a single assembly.

## **PUMP MOUNTING**

Pump will be mounted to a substructure which will be mounted to the chassis frame rail using rubber isolators. The mounting will allow chassis frame rails to flex independently without damage to the fire pump.

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## **PUMP CONTROL PANELS (LEFT SIDE CONTROL)**

All pump controls and gauges will be located at the left (driver's) side of the apparatus and properly identified.

Layout of the pump control panel will be ergonomically efficient and systematically organized.

The pump operator's control panel will be removable in two (2) main sections for ease of maintenance:

The upper section will contain sub panels for the mounting of the pump pressure control device, engine monitoring gauges, electrical switches, and foam controls (if applicable). Sub panels will be removable from the face of the pump panel for ease of maintenance. Below the sub panels will be located all valve controls and line pressure gauges.

The lower section of the panel will contain all inlets, outlets, and drains.

All push/pull valve controls will have 1/4 turn locking control rods with polished chrome plated zinc tee handles. Guides for the push/pull control rods will be chrome plated zinc castings securely mounted to the pump panel. Push/pull valve controls will be capable of locking in any position. The control rods will pull straight out of the panel and will be equipped with universal joints to eliminate binding.

## **IDENTIFICATION TAGS**

The identification tag for each valve control will be recessed in the face of the tee handle.

All discharge outlets will have color coded identification tags, with each discharge having its own unique color. Color coding will include the labeling of the outlet and the drain for each corresponding discharge.

All line pressure gauges will be mounted directly above the corresponding discharge control tee handles and recessed within the same chrome plated casting as the rod guide for quick identification. The gauge and rod guide casting will be removable from the face of the pump panel for ease of maintenance. The casting will be color coded to correspond with the discharge identification tag.

All remaining identification tags will be mounted on the pump panel in chrome plated bezels.

The pump panel on the right (passenger's) side will be removable with lift and turn type fasteners.

Trim rings will be installed around all inlets and outlets.

The trim rings for the side discharge outlets will be color coded and labeled to correspond with the discharge identification tag.

## **PUMP PANEL CONFIGURATION**

The pump panel configuration will be arranged and installed in an organized manner that will provide user-friendly operation.

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This pump panels drivers and passengers, shall match previous job #15731 as close as possible with changes requested. Photo's 6812 - 6818 & 6850 - 6852. .

## **PUMP AND GAUGE PANEL**

The pump and gauge panels will be constructed of stainless steel with a brushed finish. A polished aluminum trim molding will be provided on both sides of the pump panel.

The passenger's side pump panel will be removable and fastened with swell type fasteners.

## **PUMP COMPARTMENT LIGHT**

A pump compartment light will be provided inside the right side pump enclosure and accessible through a door on the pump panel.

A .125" weep hole will be provided in each light lens, preventing moisture retention.

## **PUMP PANEL GAUGES AND CONTROLS**

The following will be provided on the pump and gauge panels in a neat and orderly fashion. These gauges will be in addition to what is provided with the pressure controller.

- Engine Oil Pressure Gauge: With visual and audible warning
- Engine Water Temperature Gauge: With visual and audible warning
- Tachometer: Electric
- Master Pump Drain Control
- Voltmeter

## **INDICATOR LIGHTS @ PUMP PANEL**

The following indicator lights will be provided at the pump panel. These will be in addition to the indicators included with the pressure controller.

- Check Transmission Warning Indicator Light
- Stop Engine Warning Indicator Light
- Check Engine Warning Indicator Light.

## **AIR HORN BUTTON**

An air horn control button will be provided at the pump operator's control panel. This button will be properly labeled and put within easy reach of the operator.

## **DRAIN LOCATIONS**

The drains on the passengers side pump panel will be located to keep the area under the main pump inlet clear for customer installed piston intake valve.

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The drains on the drivers side pump panel will be located to keep the area under the main pump inlet clear for customer installed piston intake valve.

## **OUTLET TRIM RINGS**

The drivers side discharges and auxiliary inlet valves will be recessed behind the panel and have larger holes provided in the pump panel to facilitate removal of the valves without removing the complete pump panel. Stainless steel trim plates will be provided to trim the holes.

## **VACUUM AND PRESSURE GAUGES**

The pump vacuum and pressure gauges will be liquid filled and manufactured by Class 1 Incorporated ©.

The gauges will be a minimum of 6.00" in diameter and will have white faces with black lettering, with a pressure range of 30.00"-0-600#.

The pump pressure and vacuum gauges will be installed adjacent to each other at the pump operator's control panel.

Test port connections will be provided at the pump operator's panel. One will be connected to the intake side of the pump, and the other to the discharge manifold of the pump. They will have 0.25 in. standard pipe thread connections and polished stainless steel plugs. They will be marked with a label.

## **PRESSURE GAUGES**

The individual "line" pressure gauges for the discharges will be interlube filled and manufactured by Class 1©.

They will be a minimum of 2.50" in diameter and the dial will have white faces with black markings.

Gauges will have a pressure rating of 30.00" 0-400 psi.

The individual pressure gauge will be installed as close to the outlet control as practical.

## **WATER LEVEL GAUGE**

There will be an electronic water level gauge provided on the operator's panel that registers water level by means of five (5) colored LED lights. The lights will be durable, ultra-bright five (5) LED design viewable through 180 degrees. The water level indicators will be as follows:

- 100 percent = Green
- 75 percent = Yellow
- 50 percent = Yellow
- 25 percent = Yellow
- Refill = Red

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The light will flash when the level drops below the given level indicator to provide an eighth of a tank indication. To further alert the pump operator, the lights will flash sequentially when the water tank is empty.

The level measurement will be based on the sensing of head pressure of the fluid in the tank.

The display will be constructed of a solid plastic material with a chrome plated die cast bezel to reduce vibrations that can cause broken wires and loose electronic components. The encapsulated design will provide complete protection from water and environmental elements. An industrial pressure transducer will be mounted to the outside of the tank. The field calibratable display measures head pressure to accurately show the tank level.

## **FOAM LEVEL GAUGE**

An electronic foam level gauge will be provided on the operator's panel that registers foam level by means of five (5) colored LED lights. The lights will be durable, ultra-bright five (5) LED design viewable through 180 degrees. The foam level indicators will be as follows:

- 100 percent = Green
- 75 percent = Yellow
- 50 percent = Yellow
- 25 percent = Yellow
- Refill = Red

The light will flash when the level drops below the given level indicator to provide an eighth of a tank indication. To further alert the pump operator, the lights will flash sequentially when the foam tank is empty.

The level measurement will be based on the sensing of head pressure of the fluid in the tank.

The display will be constructed of a solid plastic material with a chrome plated die cast bezel to reduce vibrations that can cause broken wires and loose electronic components. The encapsulated design will provide complete protection from foam and environmental elements. An industrial pressure transducer will be mounted to the outside of the tank. The display will be able to be calibrated in the field and will measure head pressure to accurately show the tank level.

## **STEP/LIGHT SHIELD**

There will be an aluminum treadplate stepping surface no less than 8.00" deep and properly reinforced to support a man's weight, installed over the pump operator's panel.

- There will be 12 volt DC white LED lights installed under the step to illuminate the controls, switches, essential instructions, gauges, and instruments necessary for the operation of the

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apparatus. These lights will be activated by the pump panel light switch. Additional lights will be included every 18.00" depending on the size of the pump house.

- One (1) pump panel light will come on when the pump is in ok to pump mode.

There will be a light activated above the pump panel light switch when the parking brake is set. This is to afford the operator some illumination when first approaching the control panel.

There will be a green pump engaged indicator light activated on at the operator's panel when the pump is shifted into gear from inside the cab.

There will be one (1) white LED, step light provided above this step. In order to ensure exceptional illumination, each step light will provide a minimum of 25 foot-candles (fc) covering an entire 15.00" x 15.00" square placed 10.00" below the light and a minimum of 1.5 fc covering an entire 30.00" x 30.00" square at the same 10.00" distance below the light. The step light will be activated by the pump panel light switch.

## **AIR HORN SYSTEM**

One (1) chrome finish, stutter tone, Grover model 1510 air horn approximately 24.50" long will be provided and installed in the front bumper, recessed on the driver's side just to the exterior of the frame rail. The air horn system will be piped to the air brake system wet tank utilizing .38" tubing. A pressure protection valve will be installed to prevent the loss of air in the brake system.

## **AIR HORN CONTROL**

The air horn will be actuated by a chrome push button switch located on the officer side of the engine tunnel and by a foot switch on the driver's side.

## **ELECTRONIC SIREN**

A Whelen®, Model 295SLSA1, electronic siren with noise canceling microphone will be provided.

This siren to be active when the battery switch is on and that emergency master switch is on.

Electronic siren head will be recessed in the passenger side inside switch panel.

The electronic siren will be controlled on the siren head only. No horn button or foot switches will be provided.

## **ELECTRONIC SIREN SPEAKER**

There will be one (1) speaker provided. Each speaker will be a Whelen®, Model SA315P, black nylon composite, 100-watt, with through bumper mounting brackets and polished stainless steel grille. Each speaker will be connected to the siren amplifier.

The speaker(s) will be recessed in the front bumper on the driver's side.

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## **MECHANICAL SIREN**

There will be one (1) Federal, Model Q2B, mechanical siren furnished. A siren brake button will be installed on the switch panel.

The control solenoid will be powered up after the emergency master switch is activated and will be interlocked to the parking brake so that the siren cannot be accidentally activated when the parking brake is applied.

The mechanical siren will be recessed in the front bumper in the center. The siren will be properly supported using the bumper framework.

## **MECHANICAL SIREN CONTROL**

The mechanical siren will be actuated by a push button located on the officer's side instrument panel and by a foot switch on the driver's side.

## **BRACKET, FOOT SWITCHES**

A wedge style bracket will be provided on the driver's side of cab floor. The bracket will be large enough to hold two (2) foot switches.

## **LIGHTBAR, CAB ROOF**

There will be one (1) 82.00" Whelen Freedom, Model FN\*\*QLED lightbar mounted on the cab roof.

The lightbar will include the following:

- Six (6) red flashing LED lights facing forward.
- Two (2) red steady burn LED lights facing forward.
- Two (2) white flashing LED lights facing forward.
- Two (2) red flashing corner LED modules, one in each front corner.
- One (1) red flashing LED light facing the driver side.
- One (1) red flashing LED light facing the pass side.
- One (1) GTT, Model 795 LED Opticom™ traffic light controller with national standard high priority.

The color of the lenses will be the same color as the LED's.

There will be two (2) switches, located on a cab switch panel, to control this lightbar.

- One (1) switch will control all the warning lights.
- One (1) switch will control the traffic light controller.

The white warning lights and the traffic light controller will be disabled when the parking brake is applied.

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## **ADDITIONAL CAB ROOF LIGHTBARS**

There will be two (2) 24.00" Whelen, Freedom Mini LED lightbars mounted on the roof, one (1) on each side, over the crew cab doors.

Each lightbar will include the following:

- Two (2) red flashing corner LED modules.
- Two (2) red flashing LED lights.

The color of the lenses will be the same color as the LED's.

These lightbars will be controlled with the roof light.

These lightbars may be load managed when the parking brake is applied.

## **FRONT ZONE LOWER LIGHTING**

There will be one (1) pair of Whelen, Model 60\*02F\*R, flashing LED lights installed on the cab face above the headlights, in a common bezel with the directional lights.

The color of these lights will be red Super LED/red lens.

There will be a switch located in the cab on the switch panel to control the lights.

## **HEADLIGHT FLASHER**

The high beam headlights will flash alternately between the left and right side.

There will be a switch installed in the cab on the switch panel to control the high beam flash. This switch will be live when the battery switch and the emergency master switches are on.

The flashing will automatically cancel when the hi-beam headlight switch is activated or when the parking brake is set.

## **SIDE ZONE LOWER LIGHTING**

There will be six (6) Whelen®, Model 60\*02F\*R, flashing LED lights located at the following positions:

- Two (2) lights located, one (1) each side on the front cab corner
  - The color of these lights will be red Super LED/red lens each side
- Two (2) lights located, one (1) each side of cab rearward of crew cab doors
  - The color of these lights will be red Super LED/red lens each side
- Two (2) lights located, one (1) each side on the rear fender panel
  - The color of these lights will be red Super LED/red lens each side

There will be a switch located in the cab on the switch panel to control the lights.

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These lights will be installed with two (2) pairs of flange kits.

## **RUBRAIL WARNING LIGHTS**

There will be four (4) Whelen, Model WIONSMC\* LED light(s) provided and located in the body rub rails one (1) each mounted in the rubrail and centered below the following compartments: D1, D3, P1 and P3. The lights will NOT be mounted with the rubber gasket behind the light which will allow the light(s) to fit in the rub rails.

The color of each light will be red LED with a clear lens.

Each light will be provided with a chrome plated ABS flange.

The light(s) will be activated with the side warning switch.

## **REAR ZONE LOWER LIGHTING**

There will be two (2) Whelen®, Model 60\*02F\*R, red Super LED/red lens lights located at the rear of the apparatus.

Each light will be mounted in a housing.

There will be a switch located in the cab on the switch panel to control the lights.

## **REAR ZONE UPPER LIGHTING**

There will be two (2) Whelen, Model B6MLRZP, combination LED beacon and LED scene light provided at the rear of the truck, one (1) each side.

Each beacon will contain flashing LED warning light in a 360 degree arrangement and a LED scene light mounted in a polished aluminum housing.

The LED beacons will be red with both domes red.

These beacons will be mounted so that the scene lights face to the rear.

There will be two (2) switches provided to activate these lights

- One (1) switch in the cab will control both beacons.
- One (1) switch in the cab will control both rear facing scene lights.

The scene lights may be load managed when the parking brake is set.

The rear warning lights will be mounted on stainless steel brackets with all wiring totally enclosed. These brackets will also support the clearance/marker lights. The rear deck lights will be mounted on the beavertail flange to keep the overall height as low as possible.

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## **TRAFFIC DIRECTING LIGHT**

There will be one (1) Whelen model TAL85 46.81" long x 2.84" high x 2.24" deep, amber LED traffic directing light installed at the rear of the apparatus.

The Whelen model TACTLD1 control head will be included with this installation.

The auxiliary warning mode will be activated with the emergency master switch.

This traffic directing light will be surface mounted over the rear door, at the rear of the apparatus as high as practical.

The traffic directing light control head will be located in the driver side overhead switch panel in the right panel position.

## **120 VOLT RECEPTACLE**

There will be one (1), 20 amp 120 volt AC three (3) wire straight blade duplex receptacle(s) installed mounted high and rear ward in compartment P1. See photo. The NEMA configuration for the receptacles will be 5-20R.

The receptacle(s) will be powered from the shoreline inlet.

There will be a label installed near the receptacle(s) that state the following:

- Line Voltage
- Current Rating (amps)
- Phase
- Frequency
- Power Source

## **SPARE FASTENERS**

One (1) bag of chrome, stainless steel, or cadmium plated screws, nuts, bolts and washers, as used in the construction of the unit will be provided.

## **LOOSE EQUIPMENT**

The following loose equipment list is PER UNIT and will be provided by the sales organization and prior to final delivery:

<b>NO</b>	<b>APPLIANCES</b>	<b>MANUFACTURER &amp; MODEL #</b>	<b>QTY</b>
1	<b>Intake Relief Valve:</b> w/free-swivel locking storz inlet x 6" NST long-handle female outlet.	Task Force Tips # AB3ST-NX	2
2	2 1/2" <b>60 degree elbow</b>	Akron #631	1

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3	<b>LDH Water Thief:</b> 5" Storz swivel inlet & outlet, 2-2 1/2" gated outlets	Elkhart #9843	1
6	<b>"The Pipe":</b> mounting bracket	Elkhart #82998EX-MB	1
10	<b>Anchor Kit:</b>	Elkhart #81204	1
11	<b>Mercury Portable Monitor:</b> 500 gpm	Akron #34430003	1
12	<b>Mounting bracket:</b> Mercury Monitor	Akron #34430001	1
13	<b>500 Master Stream Nozzle:</b> 500gpm @ 100psi	Akron # 4445	1
14	<b>Hydrant Gate Valve</b>	Elkhart #X-86A	1
15	<b>2.5" Water Thief</b>	Elkhart BG-104A	1
16	<b>2.5" Gated Wye</b>	Elkhart B-97A	1
17	<b>2.5" In-Line Gauge</b>	Red-Head #S-155	1
18	2-1/2" inlet, (2) 1-1/2" gated outlets, No gauge	Elkhart PN# B-100A	1
19	1 3/4" Chief Nozzle tip: 150 gpm / 50 psi (orange bumper)	Elkhart # 4000-14	4
20	1 " Shut-off, w/ pistol grip: NSPH male thread, 1" waterway, w/ red horse-shoe handle & pistol grip	Elkhart # SB-275GA	1
21	1 3/4" Shut-off w/ 7/8" slug: orange handle solid ball, orange horseshoe handle, orange grip	Elkhart # B-375-AT	4
22	1 1/8" Hand line tip	Elkhart # 187A	1
23	Stream Shaper	Elkhart #281A	1
24	2 1/2" Chief Nozzle tip: 250 gpm/ 50 psi (yellow bumper)	Elkhart # 4000-24	3
25	2 1/2" Chief Nozzle tip: Twist shut-off w/ 250 gpm / 50 psi, w/ 2.5" base. (orange bumper)	Elkhart # 4000-22	1
26	2 1/2" Shut-off w/ pistol grip: 1 1/4" slug tip, w/ yellow handle & pistol grip, and short 2.5" inlet	Elkhart # DB-275-GAT	3
27	2 1/2" Jumbo ball shut-off	Elkhart # JB-275A	1
28	1 1/2" Forestry Shut-off: NST threads	Cascade # 40701	2

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29	1 1/2" Forestry nozzle: 20/60 gpm	Cascade # 10902	2
30	1" Forestry nozzle: (NPSH thread) 10-30 gpm. (booster line)	Cascade # 10921	1
31	1" Forestry nozzle: 30 gpm w/ NPSH male thread	Cascade # 40663	2
32	1 3/4" Shut-off w/ pistol grip: 1.75 waterway, w/ yellow handle & pistol grip.	Elkhart # B-275 GA	2
33	5" Storz Barrel Strainer, K-Brite	Kochek #BS507	1
34	5" Storz x 4 1/2" NST female, 30 E-LH	Red Head #Style SE-LH	2
35	5" Storz x 2 1/2" NST male, RL	Red Head # S-36	1
36	5" Storz x 2 1/2" NST male, RL chrome	Red Head # KS-36	1
37	5" Storz x 2 1/2" NST female, E-LH	Red Head # Style SE-LH	2
38	5" Storz x 4" NST female, 30 elbow, RL, chrome	Red Head # Style KSE-SS	1
39	4 1/2" NST female x 2 1/2" NST male, LH	Red Head # Style 56	1
40	3 1/2" NST female x 2 1/2" NST male: red powder coat	Kochek # 37R	1
41	2 1/2" NST double male	Red Head # Style 35	2
42	2 1/2" NST double female	Red Head # Style 36	3
43	2 1/2" NST female x 1 1/2" NST male	Red Head # Style 37	4
44	2 1/2" NST female x 1 1/2" NST male chrome	Red Head # Style K-37	2
45	1 1/2" NST double male	Red Head # Style 35	1
46	1 1/2" NST double female	Red Head # Style 36	1
47	1 1/2" NST cap, w/ chain (chrome)	Red Head # Style K-36	2
48	1 1/2" NST cap w/ chain	Red Head # Style -36	4
49	2 1/2" NST female x garden hose male	Red Head # Style 37	1

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50	Storz/Rocker Spanner Wrench set	Kochek # KS34	1
51	Hydrant / Spanner set:	Red Head # Style 148-3	2
52	Spanner wrench: bar-way 3/4"-1"	Red Head # Style 103	2
53	Gated wye: 1.5" x 1.5"		1
54	4.5" female to 2.5" male reducer		1
55	Forestry Hose Tee: 1-1/2" male/female NH threads, with 1" Male NPSH threads at the "T"	Cascade #11151	2
56	Foam Container Wrench	Zico UFCW	1
57	LDH hose roller	Harrington # HHR-2	1
58	Forestry hose clamp	Cascade # 11213	3
59	Back-pump: 5-gal. collapsible	Indian # 500FSV	1
60	1 1/2" swivel gasket: NST	Cascade # 12103	5
61	2 1/2" swivel gasket	Cascade # 12105	5
62	4 1/2" swivel gasket	Cascade # 12109	5
63	5" Storz gasket: pressure	Cascade # 11592	5
64	5" Storz gasket: suction	Cascade # 11594	5
65	1 1/2" tall gasket: SJ	Red Head # 14012	5
66	1 3/4" tall gasket: thin wall DJ	Red Head # 14140	5
67	2 1/2" tall gasket: thin wall DJ	Cascade # 12124	5
68	Coupling mount: 1 1/2"	Zico # CM 1.5	1
69	EZ-lok Holder: 1 1/2"	Akron # 373	2
70	Coupling Mount: 2 1/2"	Zico CM 2.5	3
71	EZ-lok Holder: 2 1/2"	Akron # 373	3
72	Coupling Mount: 5" Storz	Zico # SCM 5.0	7
73	Coupling Mount Extension	Zico # CME-1	1

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74	Irons Nest: Mounting Bracket	Pac Mount- Ironslok #K5003	1
75	Tool Bracket: Z-Hook, Axes, etc	Fire Hooks Unlimited: # HB-1	5
80	Hydrant Bucket: canvas w/ plastic bottom	Bashiin # 23-P	1
81	Hose/Ladder strap: 40"	Akron # Style 78	2
82	Fire Fighter Drop Bag: (RED)	First In # 97063R	4
83	High-Rise Bag: (RED) w/ carrying handle & shoulder strap	First-In: Quick Attack Bag # 97041R	1
84	Metro-Pak Strap	Janak & Scurfield	2
85	Water Thief Strap:	Janak & Scurfield	1
86	2 1/2" Hose Pack Strap, 25"	Janak & Scurfield	6
88	Spyder gear pack-Sac City custom spec	SGSC210	4
89	"Donut Roll Hose Pack"	True North # HP100	3
90	Water Can Harness	Fire Hooks Unlimited #CH312	1
92	Duct Tape:		1
93	Shovel: round point w/ 48" FG handle	Nupla # RP-14L	1
94	Shovel: square point w/ 48" FG handle	Nupla # SP-14L	1
95	48" McCleod	TRUE Temper # 24006	1
96	Pickhead Axe- 6lbs Fire Axe Inc 32" fiberglass handle (Item PHA)	<a href="http://www.firefighteraxe.com">www.firefighteraxe.com</a>	2
99	Marrying strap	Fire Hooks Unlimite, #MS-1	1
100	30" HOOLIGAN TOOL FORGED STEEL with WITH 2-EYELETS	22000680 PARATECH	2
101	Flathead Axe- 8lbs Fire Axe Inc 36" fiberglass handle (Item FLT8)	<a href="http://www.firefighteraxe.com">www.firefighteraxe.com</a>	1

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102	New Generation Fire Shelter	Anchor Industries (Large)	4
103	Canteen: plastic 1 liter bottle	L.N. Curtis	8
104	18" Bolt Cutter: Heavy-Duty	HK- Porter #	1
105	36" Bolt Cutter: Heavy-Duty	HK- Porter # 0390MC	1
106	Carry-All	Cascade # 24316	1
107	Car-Entry Kits:	Big Easy	1
108	Pry-Bar 48"	Council # 100PP	1
109	Traffic cones: 30" (75cm) Extreme PRO 4 PAC	Pack-A-Cone: Item# PAC-412-30 www.packacone.cone	1
110	Strobe Light Kit: 1 red, 2 clear lens cover	Lightman 1200 & 3000 (clear lenses)	1
111	Fussee, highway- 20 min		1
112	Plug N Dike, dry granular mix, 1 gal	PND Corp.	1
113	Flashlight: W/ DC charger	Streamlight # SL-20X (part #20202)	4
115	Barrier Tape: " Fire Line Do Not Cross" (yellow tape)	Darley: # AJ35104	2
116	Barrier Tape: " Danger" (red)	Darley: # AJ35107	1
117	Clip Board: Posse box (red)	Galls: #CP092	1
118	Citation Organizer	Galls: #CP093	1
119	2.5 Gal Water Extinguisher	General # WS/LS-900A	1
120	20-lb ABC Dry Chem Extinguisher, w/ mounting bracket	Amerex A411	1
121	Hand Tool: Pulaski	#375MA	1
122	Handle: Specialty Push Broom, 18"	Grainger# Tough Guy 3U775	1
123	Broom: Fiber threaded handle	Grainger# Tough Guy	1

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		1NFF5	
124	Radio Chest Single Universal Harness	True North Gear: Cordura® - Item: RH220C	5
125	Radio Integration Straps	True North Gear: Grey - Item: RH500	5
126	PFD'S	Item #PF7660, Fury (RED), 3 to be XL, 1 to be L	4
127	Knife / Scabbard	Gerber River Shorty 30- 000967	4
128	Whistle, w/ lanyard	Fox # 40 180021	4
129	Rescue Helmet: (red)	Petzl Ecrin- ROC	1
130	Rescue Helmet: (white)	Petzl Ecrin- ROC	3
131	Water Throw Bags: Hi-Ten throwline set	CMC # 291275	4
132	Cyalume Lightstick: Green	CMC # 108018	12
133	Cyalume Lightstick: Red	CMC # 108013	12
134	Mesh Gear Bag: LA Rescue	LA8775B	2
135	8mm Drop-Line: (red) 75' ea	CMC # 293038	4
136	Carabiner: (ORANGE)	SMC # 300169	4
137	Thermal Imaging Camera: (TIC)	LEE & Associates ISG K1000	1
138	Cord: accessory, 4mm (knife attachment stock) (1'-0.00' in length)	4mm accessory cord	8
139	5" x 100 feet: 5" Storz couplings		11
140	3" x 50 feet: 2.5" NST couplings		13
141	3" x 30 feet: 2.5" NST couplings		1
142	3" x 10 feet: 2.5" NST couplings		1

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143	2 1/2" x 50 feet: 2.5" NST couplings		24
144	2 1/2" x 2 feet: w/ 2.5" NST couplings		1
145	1 3/4" x 100 feet: 1.5" NST couplings		4
146	1 3/4" x 50 feet: 1.5: NST couplings		14
147	1 3/4" x 2 feet: w/ 1.5" NST couplings		2
148	1 1/2" x 100 feet: w/ Red Head 1.5" forestry couplings		6
149	1" x 100 feet: w/ anodized Red Head NPSH couplings		2
150	6.00" x 10' suction hose – 5.00" Storz Couplings with folding handles		2
152	5" x 30 feet: 5" Storz couplings		1
153	5"x50': 5" Storz couplings		1
154	Fire Aide Foam, 5 Gallons		5
165	Craftsman: 20 in. hand box #59320		1
166	Craftsman 8 pc. Standard Pawless Ratching combination wrench set #35414		1
167	Craftsman 8 pc. Metric Pawless Ratching combination wrench set #22985		1
168	Grainger: Hex Key, T Handle, 1/4 In # 1FX72		1
169	Craftsman: hex key set Item #0094670500, model #46705		1
170	Craftsman: 7 pc torx set #34449		1
171	Craftsman: 8 pc screw driver set #47136		1
172	Craftsman: 8" adjustable wrench #44603		1
173	Craftsman: 12" adjustable wrench #44605		1

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174	Craftsman: 9 pc. Standard 6 pt. Combination Wrench Set #47234		1
175	Craftsman: 9 pc. Metric 6 pt. Combination Wrench Set #47235		1
176	Craftsman: tape measure, 30' #37393		1
177	Craftsman: 14" pipe wrench #51652		3
178	Craftsman: 10" vice grip pliers #45714		1
179	Craftsman: 7" Linesman pliers #45093		1
180	12" Duckbill snips, Grainger #2VU98		1
181	Craftsman: Hammer, 20 oz (claw) #38273		1
182	Craftsman: 13.50" nail pry bar #141		1
183	Craftsman: Knife, utility #94832		1
184	Blades, utility knife (5/pkg) Grainger #2ZRK7		4
185	Craftsman 22 pc. Metric Easy Read Socket Wrench Set, 6 pt. 1/4 & 3/8 in. Dr. #34875		1
186	Circuit tester, Westward #19T234		1
187	High Tension Hacksaw Frame, for 12" blade: Lenox # 12132-HT50		1
188	American Saw & Mfg: Lenox V214HE 10 pack		1
189	File: flat-bastard-10" #31257		4
190	Milton inflator Gauge #16388		1
191	Air Hose: self-coupling nylon x 25' #16180		1

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192	1/4" coupler kit (air hose) #16377		1
193	Radio 800 MHZ	Motorola XTL-2500	1
194	Radio VHF	Kenwood TK-790	1
195	Power Cable: power cable radio install	Motorola HKN #4137	2
196	Power Cable: power cable radio/ control head	Motorola KHN #6169A	2
197	Power cable: power cable control head to ignition	Motorola HLN #6863A	2
198	Battery Charger: portable radio battery charger	Advance Tech #AT4-2051 IFD	1
204	Firecom MR52X 10' Motorola Radio Interface Cable		1
205	Firecom MR55X 10' Kenwood Radio Interface Cable		1
206	Firecom PP-20 water resistant module		1
207	GPS Device, Veh Diag, USA	Zonar HSV2J01	1
208	Inspection Systems	Zonar HSEVI01	1
209	5 Pin Data I/O Cable	Zonar 80059	1
210	J3 Diagnostic Cable	Zonar 80144	1
211	GPS Antenna Kit	Zonar HSANT01	1

## **LOOSE EQUIPMENT INSTALLATION**

A loose equipment mounting allowance of \$9,000.00 is included in the bid price to cover the cost of mounting the applicable equipment per the direction of the City of Sacramento. If the City of Sacramento exceeds the loose equipment mounting allowance, additional work can be performed at an additional cost of \$105.00 per hour.

## **PAINT - BODY PAINTED TO MATCH CAB**

The exterior custom cab and body painting procedure will consist of a seven (7) step finishing process as follows:

1. **Manual Surface Preparation** - All exposed metal surfaces on the custom cab and body will be thoroughly cleaned and prepared for painting. Imperfections on the exterior surfaces will be removed and sanded to a smooth finish. Exterior seams will be sealed before painting. Exterior

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surfaces that will not be painted include; chrome plating, polished stainless steel, anodized aluminum and bright aluminum treadplate.

2. Chemical Cleaning and Pretreatment - All surfaces will be chemically cleaned to remove dirt, oil, grease, and metal oxides to ensure the subsequent coatings bond well. The aluminum surfaces will be properly cleaned and treated using a high pressure, high temperature 4 step Acid Etch process. The steel and stainless surfaces will be properly cleaned and treated using a high temperature 3 step process specifically designed for steel or stainless. The chemical treatment converts the metal surface to a passive condition to help prevent corrosion. A final pure water rinse will be applied to all metal surfaces.
3. Surfacer Primer - The Surfacer Primer will be applied to a chemically treated metal surface to provide a strong corrosion protective basecoat. A minimum thickness of 2 mils of Surfacer Primer is applied to surfaces that require a Critical aesthetic finish. The Surfacer Primer is a two-component high solids urethane that has excellent sanding properties and an extra smooth finish when sanded.
4. Finish Sanding - The Surfacer Primer will be sanded with a fine grit abrasive to achieve an ultra-smooth finish. This sanding process is critical to produce the smooth mirror like finish in the topcoat.
5. Sealer Primer - The Sealer Primer is applied prior to the Basecoat in all areas that have not been previously primed with the Surfacer Primer. The Sealer Primer is a two-component high solids urethane that goes on smooth and provides excellent gloss hold out when topcoated.
6. Basecoat Paint - Two coats of a high performance, two component high solids polyurethane basecoat will be applied. The Basecoat will be applied to a thickness that will achieve the proper color match. The Basecoat will be used in conjunction with a urethane clear coat to provide protection from the environment.
7. Clear Coat - Two (2) coats of Clear Coat will be applied over the Basecoat color. The Clear Coat is a two-component high solids urethane that provides superior gloss and durability to the exterior surfaces. Lap style and roll-up doors will be Clear Coated to match the body. Paint warranty for the roll-up doors will be provided by the roll-up door manufacture.

Specifications are written to define cyclic corrosion testing, physical strengths, durability and minimum appearance requirements must be met in order for an exterior paint finish to be considered acceptable as a Pierce quality finish.

Each batch of basecoat color is checked for a proper match before painting of the cab and the body. After the cab and body are painted, the color is verified again to make sure that it matches the color standard. Electronic color measuring equipment is used to compare the color sample to the color standard entered into the computer. Color specifications are used to determine the color match. A Delta E reading is used to determine a good color match within each family color.

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All removable items such as brackets, compartment doors, door hinges, and trim will be removed and separately if required, to ensure paint behind all mounted items. Body assemblies that cannot be finish painted after assembly will be finish painted before assembly.

The cab will be two-tone, with the roof section painted #20 White Upper and lower section of the cab and body painted #356 RED Lower.

## **PAINT - ENVIRONMENTAL IMPACT**

Contractor will meet or exceed all current State regulations concerning paint operations. Pollution control will include measures to protect the atmosphere, water and soil. Controls will include the following conditions:

- Topcoats and primers will be chrome and lead free.
- Metal treatment chemicals will be chrome free. The wastewater generated in the metal treatment process will be treated on-site to remove any other heavy metals.
- Particulate emission collection from sanding operations will have a 99.99% efficiency factor.
- Particulate emissions from painting operations will be collected by a dry filter or water wash process. If the dry filter is used, it will have an efficiency rating of 98.00%. Water wash systems will be 99.97% efficient
- Water from water wash booths will be reused. Solids will be removed on a continual basis to keep the water clean.
- Paint wastes are disposed of in an environmentally safe manner.
- Empty metal paint containers will be to recover the metal.
- Solvents used in clean-up operations will be recycled on-site or sent off-site for distillation and returned for reuse.

Additionally, the finished apparatus will not be manufactured with or contain products that have ozone depleting substances. Contractor will, upon demand, present evidence that the manufacturing facility meets the above conditions and that it is in compliance with his State EPA rules and regulations.

## **PAINT CHASSIS FRAME ASSEMBLY**

The chassis frame assembly will be painted black before the installation of the cab and body, and before installation of the engine and transmission assembly, air brake lines, electrical wire harnesses, etc.

Components that are included with the chassis frame assembly that will be painted not e-coated are:

- Frame rails
- Cross members
- Axles
- Suspensions
- Steering gear

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- Battery boxes
- Bumper extension weldment
- Frame extensions
- Body mounting angles
- Rear Body support substructure (front and rear)
- Pump house substructure
- Air tanks
- Fuel tank
- Castings
- Individual piece parts used in chassis and body assembly

Components treated with epoxy E-coat protection prior to paint:

- Two (2) C-channel frame rails

The E-coat process will meet the technical properties shown.

## **COMPARTMENT INTERIOR PAINT**

The compartment interior will be painted with a gray spatter finish for ease of cleaning and to make it easier to touch up scratches and nicks.

## **REFLECTIVE STRIPES**

Three (3) reflective stripes will be provided across the front of the vehicle and along the sides of the body. The reflective band will consist of a 1.00" white stripe at the top with a 1.00" gap then a 4.00" white stripe with a 1.00" gap and a 1.00" white stripe on the bottom.

The reflective band provided on the cab face will be at the headlight level.

## **CHEVRON STRIPING, REAR**

There will be alternating chevron striping located on the rear-facing vertical surface of the apparatus. The rear surface, excluding the rear compartment door, will be covered.

The colors will be red and fluorescent yellow green diamond grade.

Each stripe will be 6.00" in width.

This will meet the requirements of NFPA 1901, 2009 edition, which states that 50% of the rear surface will be covered with chevron striping.

## **JOG(S) IN REFLECTIVE BAND**

The reflective band located on each side of the apparatus body will contain one (1) jog(s) and will be angled at approximately a 45 degrees when installed.

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## **REFLECTIVE STRIPE INSIDE COMPARTMENT DOOR**

A 4.00" white reflective stripe will be provided inside two (2) compartment doors. Inside each EMS compartment door.

## **REFLECTIVE STRIPE, CAB DOORS**

A 6.00" x 16.00" white reflective stripe will be provided across the interior of each cab door. The stripe will be located approximately 1.00" up from the bottom, on the door panel.

This stripe will meet the NFPA 1901 requirement.

## **GOLD LEAF BODY STRIPE**

There will be a genuine gold leaf stripe provided on each side of the body, over the fender.

## **GOLD LEAF CAB STRIPE**

There will be a genuine gold leaf stripe on each side of the cab, low and over the fender.

## **GOLD LEAF LETTERING**

The lettering will be totally encapsulated between two (2) layers of clear vinyl.

Forty-one (41) to sixty (60) genuine gold leaf lettering, 3.00" high, with outline and shade will be provided.

## **REFLECTIVE LETTERING**

There will be reflective lettering, 3.00" high, with outline and shade provided. There will be 22 letters provided.

There will be reflective lettering, 10.00" high, with no outline or shade provided. There will be four (4) letters provided.

There will be reflective lettering, 6.00" high, with outline and shade provided. There will be six (6) letters provided.

There will be reflective lettering, 12.00" high, with outline and shade provided. There will be two (2) letters provided.

There will be reflective lettering, 8.00" high, with no outline or shade provided. There will be two (2) letters provided.

There will be reflective lettering, 1.00" high, with no outline or shade provided. There will be 15 letters provided.

There will be one (1) set/s of reflective lettering, "KEEP BACK 300 FEET", supplied and installed on the R1. The lettering will be ruby red in color and 4.00" in size.

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## **VINYL LETTERING**

There will be non-reflective vinyl lettering, 12.00" high, with no outline or shade provided. There will be two (2) letters provided.

There will be non-reflective vinyl lettering, 9.00" high, with no outline or shade provided. There will be ten (10) letters provided.

## **REFLECTIVE INSET LETTERING, "DIAL 911"**

Two sets of ruby red "inset" reflective lettering, "DIAL 911", will be supplied and installed inset in reflective band.

The reflective stripe will stop and "DIAL 911" will be placed within the break of the stripe.

"DIAL" will be vertical and as tall as the stripe. The "911" will be horizontal and as tall as the stripe.

## **CAB GRILLE DESIGN**

An American flag design will be painted on the cab grille.

## **EAGLE HEAD/FLAG EMBLEMS**

A pair of emblems, 13.00" or less in diameter, featuring a "Flying American Flag" and an "Eagle Head", will be installed behind crew cab door upper 5x7 Freedom Flag . The design will be color imaged.

## **MALTESE CROSS INSTALLATION**

There will be one (1) pair of Maltese crosses, comprised of genuine gold leaf material, provided and installed on cab doors.

## **DEPT. EMBLEM, PAIR**

There will be (1) one pair of vinyl emblems applied between the cab and crew cab doors. Emblems will be approximately 7.00" x 7.00" per graphics quote.

## **DEPT. EMBLEM, EACH**

There will be (1) one of vinyl emblem applied driver's side rear compartment bulkhead up high. . Emblems will be approximately 7.00" x 7.00" per graphics quote.

## **MANUAL, FIRE APPARATUS PARTS**

Two (2) custom parts manuals for the complete fire apparatus will be provided in hard copy with the completed unit.

One (1) compact disc (CD) will also be provided that will include all of the information from the above manual.

The manual will contain the following:

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- Job number
- Part numbers with full descriptions
- Table of contents
- Parts section sorted in functional groups reflecting a major system, component, or assembly
- Parts section sorted in Alphabetical order
- Instructions on how to locate parts

The manual will be specifically written for the chassis and body model being purchased. It will not be a generic manual for a multitude of different chassis and bodies.

## **SERVICE PARTS INTERNET SITE**

The service parts information included in this manual is also available on the Pierce website. The website offers additional functions and features not contained in this manual, such as digital photographs and line drawings of select items. The website also features electronic search tools to assist in locating parts quickly.

## **MANUALS, CHASSIS SERVICE**

Two (2) chassis service manuals containing parts and service information on major components will be provided with the completed unit.

One (1) compact disk (CD) will also be provided that will include all of the information from the above manual.

The manuals will contain the following sections:

- Job number
- Table of contents
- Troubleshooting
- Front Axle/Suspension
- Brakes
- Engine
- Tires
- Wheels
- Cab
- Electrical, DC
- Air Systems
- Plumbing
- Appendix

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The manual will be specifically written for the chassis model being purchased. It will not be a generic manual for a multitude of different chassis and bodies.

## **MANUALS, CHASSIS OPERATION**

Two (2) chassis operation manuals will be provided.

One (1) compact disk (CD) will also be provided that will include all of the information from the above manual.

## **ELECTRICAL WIRING DIAGRAMS**

Two (2) electrical wiring diagrams, prepared for the model of chassis and body, will be provided.

## **ONE (1) YEAR MATERIAL AND WORKMANSHIP**

A Pierce basic apparatus limited warranty certificate, WA0008, is included with this proposal.

## **ENGINE WARRANTY**

A Cummins five (5) year limited engine warranty will be provided. A limited warranty certificate, WA0181, is included with this proposal.

## **STEERING GEAR WARRANTY**

A Sheppard **three (3) year** limited steering gear warranty shall be provided. A copy of the warranty certificate shall be submitted with the bid package.

## **FIFTY (50) YEAR STRUCTURAL INTEGRITY**

The Pierce custom chassis frame limited warranty certificate, WA0013, is included with this proposal.

## **FRONT AXLE THREE (3) YEAR MATERIAL AND WORKMANSHIP WARRANTY**

The Pierce TAK-4 suspension limited warranty certificate, WA0050, is included with this proposal.

## **REAR AXLE TWO (2) YEAR MATERIAL AND WORKMANSHIP WARRANTY**

A Meritor axle limited warranty certificate, WA0046, is included with this proposal.

## **ABS BRAKE SYSTEM THREE (3) YEAR MATERIAL AND WORKMANSHIP WARRANTY**

A Meritor Wabco™ABS brake system limited warranty certificate, WA0232, is included with this proposal.

## **TEN (10) YEAR STRUCTURAL INTEGRITY**

The Pierce custom cab limited warranty certificate, WA0012, is included with this proposal.

## **TEN (10) YEAR PRO-RATED PAINT AND CORROSION**

A Pierce cab limited pro-rated paint warranty certificate, WA0055, is included with this proposal.

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## **FIVE (5) YEAR MATERIAL AND WORKMANSHIP**

The Pierce Command Zone electronics limited warranty certificate, WA0014, is included with this proposal.

## **TRANSMISSION WARRANTY**

The transmission will have a **five (5) year/unlimited mileage** warranty covering 100 percent parts and labor. The warranty will be provided by Allison Transmission.

Note: The transmission cooler is not covered under any extended warranty you may be getting on your Allison Transmission. Please review your Allison Transmission warranty for coverage limitations.

## **TRANSMISSION COOLER WARRANTY**

The transmission cooler will carry a five (5) year parts and labor warranty (exclusive to the transmission cooler). In addition, a collateral damage warranty will also be in effect for the first three (3) years of the warranty coverage and will not exceed \$10,000 per occurrence. A copy of the warranty certificate will be submitted with the bid package.

## **WATER TANK WARRANTY**

A UPF poly water tank limited warranty certificate, WA0195, is included with this proposal.

## **TEN (10) YEAR STRUCTURAL INTEGRITY**

The Pierce apparatus body limited warranty certificate, WA0009, is included with this proposal.

## **ROLL UP DOOR MATERIAL AND WORKMANSHIP WARRANTY**

A Gortite roll-up door limited warranty will be provided. The mechanical components of the roll-up door will be warranted against defects in material and workmanship for the lifetime of the vehicle. A **six (6) year** limited warranty will be provided on painted and satin roll up doors.

The limited warranty certificate, WA0190, is included with this proposal.

## **PUMP WARRANTY**

A Waterous pump limited warranty certificate, WA0225, is included with this proposal.

## **TEN (10) YEAR PUMP PLUMBING WARRANTY**

The Pierce apparatus plumbing limited warranty certificate, WA0035, is included with this proposal.

## **TEN (10) YEAR PRO-RATED PAINT AND CORROSION**

A Pierce body limited pro-rated paint warranty certificate, WA0057, is included with this proposal.

## **THREE (3) YEAR MATERIAL AND WORKMANSHIP**

The Pierce Goldstar gold leaf lamination limited warranty limited warranty certificate, WA0018, is included with this proposal.

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## **VEHICLE STABILITY CERTIFICATION**

The fire apparatus manufacturer will provide a certification stating the apparatus complies with NFPA 1901, current edition, section 4.13, Vehicle Stability. The certification will be provided at the time of bid.

## **ENGINE INSTALLATION CERTIFICATION**

The fire apparatus manufacturer will provide a certification, along with a letter from the engine manufacturer stating they approve of the engine installation in the bidder's chassis. The certification will be provided at the time of delivery.

## **POWER STEERING CERTIFICATION**

The fire apparatus manufacturer will provide a certification stating the power steering system as installed meets the requirements of the component supplier. The certification will be provided at the time of bid.

## **CAB INTEGRITY CERTIFICATION**

The fire apparatus manufacturer will provide a cab crash test certification with this proposal. The certification will state that a specimen representing the substantial structural configuration of the cab has been tested and certified by an independent third party test facility. Testing events will be documented with photographs, real-time and high-speed video, vehicle accelerometers, cart accelerometers, and a laser speed trap. The fire apparatus manufacturer will provide a state licensed professional engineer to witness and certify all testing events. Testing will meet or exceed the requirements below:

- European Occupant Protection Standard ECE Regulation No.29.
- SAE J2422 Cab Roof Strength Evaluation - Quasi-Static Loading Heavy Trucks.
- SAE J2420 COE Frontal Strength Evaluation - Dynamic Loading Heavy Trucks.
- Roof Crush: The cab will be subjected to a roof crush force of 22,500 lb. This value meets the ECE 29 criteria, and is equivalent to the front axle rating up to a maximum of ten (10) metric tons.
- Side Impact: The same cab will be subjected to dynamic preload where a 13,275-lb moving barrier is slammed into the side of the cab at 5.50 mph, striking with an impact of 13,000 ft-lb of force. This test is part of the SAE J2422 test procedure and more closely represents the forces a cab will see in a rollover incident.
- Frontal Impact: The same cab will withstand a frontal impact of 32,600 ft-lb of force using a moving barrier in accordance with SAE J2420.
- Additional Frontal Impact: The same cab will withstand a frontal impact of 65,200 ft-lb of force using a moving barrier. (Twice the force required by SAE J2420)

The same cab will withstand all tests without any measurable intrusion into the survival space of the occupant area.

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## **CAB DOOR DURABILITY CERTIFICATION**

Robust cab doors help protect occupants. Cab doors will survive a 200,000 cycle door slam test where the slamming force exceeds 20 G's of deceleration. The bidder will certify that the sample doors similar to those provided on the apparatus have been tested and have met these criteria without structural damage, latch malfunction, or significant component wear.

## **WINDSHIELD WIPER DURABILITY CERTIFICATION**

Visibility during inclement weather is essential to safe apparatus performance. Windshield wipers will survive a 3 million cycle durability test in accordance with section 6.2 of SAE J198 *Windshield Wiper Systems - Trucks, Buses and Multipurpose Vehicles*. The bidder will certify that the wiper system design has been tested and that the wiper system has met these criteria.

## **ELECTRIC WINDOW DURABILITY CERTIFICATION**

Cab window roll-up systems can cause maintenance problems if not designed for long service life. The window regulator design will complete 30,000 complete up-down cycles and still function normally when finished. The bidder will certify that sample doors and windows similar to those provided on the apparatus have been tested and have met these criteria without malfunction or significant component wear.

## **SEAT BELT ANCHOR STRENGTH**

Seat belt attachment strength is regulated by Federal Motor Vehicle Safety Standards and should be validated through testing. Each seat belt anchor design will withstand 3000 lb of pull on both the lap and shoulder belt in accordance with FMVSS 571.210 Seat Belt Assembly Anchorages. The bidder will certify that each anchor design was pull tested to the required force and met the appropriate criteria.

## **SEAT MOUNTING STRENGTH**

Seat attachment strength is regulated by Federal Motor Vehicle Safety Standards and should be validated through testing. Each seat mounting design will be tested to withstand 20 G's of force in accordance with FMVSS 571.207 Seating Systems. The bidder will certify, at time of delivery, that each seat mount and cab structure design was pull tested to the required force and met the appropriate criteria.

## **CAB DEFROSTER CERTIFICATION**

Visibility during inclement weather is essential to safe apparatus performance. The defroster system will clear the required windshield zones in accordance with SAE J381 Windshield Defrosting Systems Test Procedure And Performance Requirements - Trucks, Buses, And Multipurpose Vehicles. The bidder will certify that the defrost system design has been tested in a cold chamber and passes the SAE J381 criteria.

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## **CAB HEATER CERTIFICATION**

Good cab heat performance and regulation provides a more effective working environment for personnel, whether in-transit, or at a scene. The cab heaters will warm the cab 77 degrees Fahrenheit from a cold-soak, within 30 minutes when tested using the coolant supply methods found in SAE J381. The bidder will certify, at time of delivery, that a substantially similar cab has been tested and has met these criteria.

## **CAB AIR CONDITIONING PERFORMANCE CERTIFICATION**

Good cab air conditioning temperature and air flow performance keeps occupants comfortable, reduces humidity, and provides a climate for recuperation while at the scene. The cab air conditioning system will cool the cab from a heat-soaked condition at 100 degrees Fahrenheit to an average of 78 degrees Fahrenheit in 30 minutes. The bidder will certify that a substantially similar cab has been tested and has met these criteria.

## **AMP DRAW REPORT**

The bidder will provide, at the time of bid and delivery, an itemized print out of the expected amp draw of the entire vehicle's electrical system.

The manufacturer of the apparatus will provide the following:

- Documentation of the electrical system performance tests.
- A written load analysis, which will include the following:
  - The nameplate rating of the alternator.
  - The alternator rating under the conditions specified per:
    - Applicable NFPA 1901 or 1906 (Current Edition).
  - The minimum continuous load of each component that is specified per:
    - Applicable NFPA 1901 or 1906 (Current Edition).
  - Additional loads that, when added to the minimum continuous load, determine the total connected load.
  - Each individual intermittent load.

All of the above listed items will be provided by the bidder per the applicable NFPA 1901 or 1906 (Current Edition).

**END OF SPECIFICATION**

