

# Town of Colchester, Connecticut

127 Norwich Avenue, Colchester, Connecticut 06415

Gregg Schuster, First Selectman

**Board of Selectmen Agenda  
Special Meeting  
Wednesday, August 28, 2013  
Colchester Town Hall – at 12:00 PM**

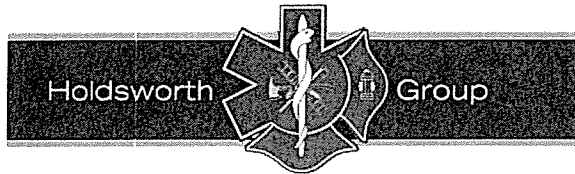
NANCY A. BRAY  
TOWN CLERK

*Nancy A. Bray*

2013 AUG 27 AM 11:42

RECEIVED  
COLCHESTER, CT

1. Call to Order
2. Boards and Commissions – Interviews and/or Possible Appointments and Resignations
  - a. Fire Department Task Force. Resignation of Bob Holdsworth.
  - b. Fire Department Task Force. Resignation of William Curran.
  - c. Fire Department Task Force. Discussion and Possible Appointment of Member - Clifford Bartiss, Jr. was interviewed on 08/15/13.
3. Discussion and Possible Action on Fire Truck Rescue Bid Contract Award
4. Adjourn



August 19, 2013

Gregg Schuster, First Selectman  
Town of Colchester  
127 Norwich Ave.  
Colchester, CT 06415

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COLCHESTER, CT  
2013 AUG 19 PM 2:45  
*Nancy A. Bray*  
NANCY A. BRAY  
TOWN CLERK

Dear Mr. Schuster,

I regret to have to inform you that due to changed project schedules and upcoming travel dates at work I find that I must resign from the Colchester Fire Department Task Force.

When I applied for the appointment several of these projects were not even on the radar, yet in the changing EMS environment several projects were bid, awarded and now our team must fulfill our contract obligations.

I wish you, and the Task Force members, success in the review of and potential modifications to the Fire Department's recruitment and retention process. Stabilizing the volunteer component is in the best interest of all of us in Town.

Respectfully,

Bob Holdsworth


August 21, 2013

Gregg Schuster  
First Selectman  
Colchester Town Hall  
127 Norwich Avenue  
Colchester CT 06415

Dear Gregg,

In order to serve on the Board of Finance, I hereby resign my position on the Fire Department Task Force effective this date.

Best regards



William Curran  
3 Granite Court  
Colchester, Ct 06415

*Nancy A. Bray*  
NANCY A. BRAY  
TOWN CLERK

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COLCHESTER, CT  
2013 AUG 22 AM 9:45



**EMERGENCY VEHICLE SALES CONTRACT**

**BUYER:**

Town of Colchester  
 127 Norwich Ave.  
 Colchester, Connecticut 06415

**SELLER:**

Marion Body Works, Inc.  
 211 West Ramsdell Street  
 Marion, WI 54950

**1. AGREEMENT TO SELL AND TO PURCHASE**

The seller (referred to as MARION or SELLER) agrees to sell, and buyer (referred to as TOWN OF COLCHESTER or BUYER) agrees to purchase, on the terms and conditions set forth in this Agreement, the following described apparatus and equipment (collectively, the APPARATUS) according to the specifications set forth in Schedule A attached hereto and made a part hereof (the SPECIFICATIONS).

(a) <b><u>DESCRIPTION OF APPARATUS</u></b>	<b><u>PRICE</u></b>
One (1) Marion custom aluminum rescue mounted on a 2014 Spartan Metro-star chassis per SPECIFICATIONS	\$449,790.00
Optional Roll-over occupancy roll-over protection	\$ 5,500.00
Optional rescue tool reels plumbed to pumps in specified locations	\$ 5,600.00
	=====
Total Price, F.O.B. Delivered, excluding all Federal, State and Local Taxes (the PURCHASE PRICE)	<b><u>\$460,890.00</u></b>

(b) **TRADE-IN**

A trade-in of BUYER's 1990 SVI rescue truck No. 128 (the TRADE-IN) is made part of this Agreement, and the trade-in value is reflected in the PURCHASE PRICE. BUYER shall keep the TRADE-IN in its current good working order, maintained and/or returned to same working condition/order at time of its turn over to SELLER for sale, normal wear and tear excepted. At the time of its turn over to SELLER, the TRADE-IN shall have its major components left on the vehicle (such as reels, trays, light tower, and the like). The Colchester Fire Department shall assist in showing the TRADE-IN and its records relating to the TRADE-IN to prospective buyers and keep the TRADE-IN clean and ready for sale/showing to prospective customers. Time of transfer of the TRADE-IN to SELLER's local sales representative shall be mutually agreed upon in conjunction with delivery of the new APPARATUS to BUYER.

**2. CONFORMANCE TO LAWS AND NFPA STANDARDS**

SELLER shall manufacture the APPARATUS in accordance with all applicable National Fire Protection Association (NFPA) standards and all applicable laws. SELLER certifies to BUYER that the SPECIFICATIONS conform to all applicable laws and NFPA standards as of the date of acceptance by SELLER. Any increased costs incurred by SELLER because of future NFPA standards issued during the manufacture of the APPARATUS will be passed on to BUYER as an addition to the PURCHASE PRICE; provided, however, that SELLER shall promptly inform BUYER of any such future NFPA standards that may affect the PURCHASE PRICE. As of the date of this Agreement, SELLER has no

actual knowledge of any pending or possible additional NFPA standards that could affect the manufacture of the APPARATUS.

### **3. COMPLETION SCHEDULE**

The APPARATUS is expected to be completed in spring of 2014. The above completion date estimate is based on timely approval by BUYER of submitted drawings and specifications, timely receipt of the chassis, and is subject to any events beyond the reasonable control of MARION. Subject to the foregoing sentence, SELLER shall be subject to a penalty of One Hundred and 00/100 Dollars (\$100.00) per day that the APPARATUS is not delivered to BUYER commencing October 30, 2014.

### **4. LICENSE**

It is understood that SELLER has the right and license to use the APPARATUS for trade show/ demonstration purposes over several months, as needed, from the date of completion of the APPARATUS until the date of final delivery to BUYER on approximately September 30, 2014. During such period and until delivery to and acceptance of the APPARATUS by BUYER:

(a) SELLER shall provide normal maintenance for the APPARATUS. Some mileage will accrue (estimated 10,000 miles) as well as minor scuffs, foot traffic marks, etc. associated with product promotion; provided, however, that such scuffs, marks and any and all damage other than normal wear and tear shall be promptly repaired by SELLER at SELLER's sole cost and expense prior to delivery to BUYER.

(b) The APPARATUS shall be fully insured for casualty and liability during such time by SELLER. The scope and amount of such insurance shall be subject to the reasonable approval of BUYER's counsel, and BUYER shall be listed on such insurance as an additional insured or loss payee, as applicable. SELLER shall provide a certificate of such insurance to BUYER.

(c) SELLER shall indemnify and hold BUYER, its officials, employees and agents, harmless from and against any and all damages, losses, liabilities, claims and expenses (including reasonable attorney's fees) arising out of or in any way connected with the exercise of the rights granted in this Section 4. This provision shall survive termination of this Agreement.

(d) SELLER assumes all risk of loss with respect to the APPARATUS or personal property of SELLER, or its agents or invitees, located anywhere on or about the APPARATUS. In no event shall BUYER be liable for the damage, destruction, theft or other disappearance of any such personal property. This provision shall survive termination of this Agreement.

### **5. WARRANTY**

The standard Marion Emergency Vehicle Warranties shall be in effect upon delivery of the APPARATUS as outlined below:

- A two (2) year material and workmanship warranty.
- A fifteen (15) year structural warranty.
- A five (5) year paint warranty.
- A five (5) year electrical warranty.

### **6. CONSEQUENTIAL DAMAGES AND OTHER LIABILITY**

MARION shall not be liable for and disclaims all consequential, incidental and contingent damages.

## **7. CANCELLATION**

MARION's remedies shall be as follows in the event of cancellation of this Agreement by BUYER so long as MARION is not in default hereof:

(a) in the event of cancellation of this Agreement by BUYER prior to MARION's commencement of production of the APPARATUS, MARION shall be entitled to reimbursement by BUYER of the pre-production costs MARION has incurred prior to the date of such cancellation, but not including any costs relating to responding to the RFP (as hereinafter defined) or preparing or negotiating this Agreement. Notwithstanding the foregoing, in no event shall BUYER's reimbursement payments to MARION pursuant to this subsection (a) exceed ten percent (10%) of the PURCHASE PRICE.

(b) in the event of cancellation of this Agreement by BUYER following MARION's commencement of production of the APPARATUS, MARION shall be entitled to reimbursement by BUYER of the costs MARION has incurred prior to the date of such cancellation, but not including any costs relating to responding to the RFP or preparing or negotiating this Agreement. In the event all or any portion of the APPARATUS is utilized by SELLER in a future sale or manufacture, SELLER shall reimburse BUYER for any money already paid by BUYER therefor, less an equitable administration fee.

## **8. PAYMENT**

The PURCHASE PRICE shall be paid as follows:

(a) BUYER shall pay SELLER Two Hundred Fifty Thousand and 00/100 Dollars (\$250,000.00) upon completion of the chassis and delivery of the chassis to MARION. SELLER shall notify BUYER in writing of such delivery, and BUYER shall make such payment within thirty (30) days of BUYER's receipt of such notice.

(b) BUYER shall pay SELLER One Hundred Fifty Thousand and 00/100 Dollars (\$150,000.00) upon completion of the APPARATUS and inspection thereof by BUYER. SELLER shall notify BUYER in writing of such completion, and BUYER shall make such payment within thirty (30) days of BUYER's receipt of such notice.

(c) BUYER shall pay SELLER the balance of the PURCHASE PRICE upon delivery and acceptance of the completed APPARATUS to BUYER's station, and SELLER shall provide a full title certificate to BUYER.

(d) A finance charge of one percent (1%) per month (annual percentage rate of twelve percent (12%)) will be added to all accounts over thirty (30) days due.

(e) BUYER shall make such payments to the address of SELLER first set forth in this Agreement, unless SELLER provides a different address to BUYER in writing.

## **9. INCORPORATION OF RFP**

The request for proposals for the APPARATUS, entitled: "TOWN OF COLCHESTER COLCHESTER FIRE DEPARTMENT 1990 SVI Heavy Rescue Re-Chassis & Rescue Body Refurbish R.F.P. Specifications NFPA 1901 2011" (the RFP), is attached hereto as Schedule B and made a part hereof. The specifications set forth in

the RFP shall be construed as minimum specifications, which the SPECIFICATIONS may exceed but shall not fall below.

Notwithstanding the foregoing, the parties acknowledge and agree that the RFP provides for a refurbished rescue, and the SPECIFICATIONS provide for a new rescue. Therefore, the SPECIFICATIONS shall supersede the RFP to the extent the SPECIFICATIONS provide for a new rather than a refurbished rescue. All other provisions of the RFP, including, but not limited to, the provisions addressing insurance, bonds, warranties, inspection, acceptance and contract changes, shall bind the parties and be and remain in full force and effect.

## 10. ENTIRE AGREEMENT

This Agreement including its appendices is the entire understanding between the parties, and merges all prior discussion and agreements between them. Any changes to this contract, including appendices, must be in writing and signed by an authorized representative of the BUYER and SELLER.

## 11. NOTICES

All notices or communications given under this Agreement shall be in writing and shall be sent to the addresses set forth below or to such other addresses as the parties may designate by written notice, and shall be sent by: (a) hand delivery, or (b) nationally recognized overnight courier service with proof of delivery, or (c) U.S. mail, postage prepaid, or (d) confirmed facsimile transmission (if a copy thereof is also sent on the same day by a nationally recognized overnight courier service). Any such notice or communication shall be deemed to have been given (a) in the case of hand delivery, at the time of such hand delivery, (b) in the case of overnight delivery service, on the next business day, or (c) in the case of U.S. mail, three (3) business days after postmarked, and (d) in the case of confirmed facsimile transmission, on the business day so delivered.

If to SELLER: Marion Body Works, Inc.  
211 West Ramsdell Street  
Marion, WI 54950  
Attn: \_\_\_\_\_  
Fax No.: (\_\_\_\_) \_\_\_\_\_

If to BUYER: Town of Colchester  
127 Norwich Avenue  
Colchester, CT 06415  
Attention: First Selectman  
Fax No.: (860) 537-0547

## 12. BONDS

Promptly upon execution of this Agreement, SELLER shall provide performance and payment bonds to BUYER in the form attached hereto as Schedule C.

## 13. MISCELLANEOUS

(a) If any provision of this Agreement shall to any extent be held invalid or unenforceable, then only such provision shall be deemed ineffective and the remainder of this Agreement shall not be affected.

(b) SELLER shall not assign this Agreement without the prior written consent of BUYER, which may be withheld in BUYER's sole discretion, and any such purported assignment shall be void.

(c) This Agreement shall be construed in accordance with the laws of the State of Connecticut.

(d) This Agreement may be executed in one or more counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument.

[SIGNATURE PAGE FOLLOWS]



IN WITNESS WHEREOF, the parties have caused this Agreement to be executed, with the effective date being the date of the latest signature below.

**TOWN OF COLCHESTER**

By: \_\_\_\_\_  
Gregg B. Schuster  
First Selectman  
Date Signed: \_\_\_\_\_

**MARION BODY WORKS, INC.**

By: \_\_\_\_\_  
Name:  
Title:  
Date Signed: \_\_\_\_\_

## **SCHEDULE A**

The SPECIFICATIONS consist of the following attachments:

1. Town of Colchester, Connecticut Colchester Fire Department 2013 Rescue Fire Apparatus Bid Form
2. Summary of Proposal
3. Clarifications
4. Specification
5. Colchester Rescue Body

**SCHEDULE B**

Attached RFP

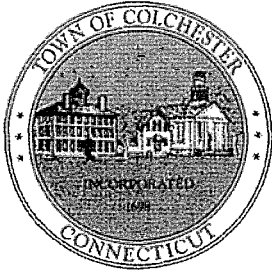
**SCHEDULE C**

Attached Form of Bonds

## **SCHEDULE A**

The SPECIFICATIONS consist of the following attachments:

1. Town of Colchester, Connecticut Colchester Fire Department 2013 Rescue Fire Apparatus Bid Form
2. Summary of Proposal
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5. Colchester Rescue Body



TOWN OF COLCHESTER, CONNECTICUT  
COLCHESTER FIRE DEPARTMENT  
2013 RESCUE FIRE APPARATUS BID FORM



**Bidder:**

Name: MARION BODY WORKS, INC.

Address: 211 W. RAMSDEN

City / State: MARION, WI 54950

Phone: 715-754-5261

FAX: 715-754-1301

Contact Person: JON SCHRUMM

Phone: (if different than above) 203-217-5809

FAX (if different than above) 203-272-6833

Base Bid: \$ 449,790 thousand, dollars, and 00 cents.

*FOR NEW RESCUE BODY WITH TRADE-IN AND SNOW TOW*

**Alternate #1— SIDE ROLLOVER & AIR BAG PROTECTION**

The apparatus shall be equipped with a side rollover air bag protection system consisting of the following major components:

**Inflatable Tubular Structures (ITS)**

The ITS portion of the system consists of a tubular side airbag designed to protect the occupant's head during a rollover. The airbags shall be installed outboard of the driver and officer's seating positions. The airbag is attached to the vehicle at each end. Before deployment, it is normally stowed above the side window. As the diameter of the airbag increases during inflation, its length decreases. The deployed airbag; generates tension between attachment points and is positioned to protect the specified range of occupants. While stowed in the vehicle, the airbag is contained inside a trim cover. The trim cover opens and releases the airbag during deployment. The trim components are elastomeric extrusions that are attached to the vehicle interior. They are integrated into the vehicle interior to meet styling and functional requirements. The system uses a stored-gas inflator to generate inflation gases.

**Suspension Seat Safety System**

The seat and occupant pretensioning system using a stored gas powered actuator to pretension the front occupant's belt and pull down the suspension seat during a roll over. It is designed to "safely" move an occupant ranging from a 5th percentile female to a 95th percentile male, from an elevated position relative to normal driving conditions, to the seats lowest position while maintaining a tightened belt. This action {will/shall} occur in 100 to 180 milliseconds. For the S4S mechanism to provide adequate impulse to move the mass of a 95th percentile occupant in the prescribed time, it is necessary that the device produce a substantial force.

**Inflatable Head Curtain (IHC)**

The Inflatable Head Curtain shall be a state-of-the-art, pyrotechnic device designed to be compact and modular, assembly shall be installed outboard of the driver, officer and outboard crew seating position within the apparatus.

**Integrated Buckle Pretensioner (IBP)**

The Buckle Pretensioner is a pretensioning system using a micro gas generator to pretension the occupant's belt during a roll over. The Buckle Pretensioner is mounted in all protected static seating positions. The pretensioner deploys upon receiving a signal from the rollover sensor.

**FOR THE ADDITIONAL SUM OF \$** 5,500.00

**Interior 12 Volt And 120 Volt Lighting**

Remove existing 12 volt and 120 volt interior ceiling lighting.

**Interior Bench Seat And Safety Belts**

Remove existing interior bench seat and safety belts.

**Body Interior Diamond Plate**

Remove existing flooring and side walls.

**Body Interior Ceiling**

Remove existing ceiling material.

**Underbody Lights**

Remove existing underbody "Ground Effect" lights.

**Body Rub Rail**

Remove existing Stainless Steel Rub Rail.

**Exterior Compartment Lighting**

Remove 12-volt incandescent light fixtures in the exterior compartments.

**SVI Light Tower And Associated Components**

Remove the current SVI light tower located in compartments L5 – R-5 along with associated plumbing wiring. Remove from compartment R-1 all SVI light tower controls and associated equipment.

FOR THE TOTAL SAVINGS OF \$ NO BID



**Alternate #3— LOOSE EQUIPMENT**

Each bidder shall quote the following loose equipment list. They shall show individual pricing. The Colchester Fire Department reserves the right to choose any, all or none of these items. If any item/s are chosen, it will be an add-on to the main bid price.

One (1) 20# ABC fire extinguisher with vehicle mounting bracket  
FOR THE SUM OF \$ 150.00

One (1) 15# CO2 fire extinguisher with vehicle mounting bracket  
FOR THE SUM OF \$ 250.00

One (1) 2-1/2 gallon pressurized water fire extinguisher w/fire hooks unlimited shoulder strap #CH-312  
FOR THE SUM OF \$ 120.00

One (1) 2-1/2 gallon pressurized AFFF fire extinguisher w/ fire hooks unlimited shoulder strap #CH-312  
FOR THE SUM OF \$ 140.00

One (1) Fire Hooks Unlimited Lock-Slot 8lb Forcible Entry Axe  
FOR THE SUM OF \$ 100.00

One (1) Fire Hooks Unlimited Lock-Slot 8lb Forcible Entry Axe  
FOR THE SUM OF \$ 100.00

One (1) Fire Hooks Unlimited Maximus Forcible Entry Tool  
FOR THE SUM OF \$ 200.00

One (1) Fire Hooks Unlimited Maximus Forcible Entry Tool  
FOR THE SUM OF \$ 200.00

One (1) Fire Hooks Unlimited 6' NY Roof Hook.  
FOR THE SUM OF \$ 100.00

One (1) 36" Bolt cutter  
FOR THE SUM OF \$ 190.00

One (1) Fire Hooks Unlimited 10lb Sledge Hammer  
FOR THE SUM OF \$ 90.00

One (1) 17' Little Giant Type IA-300 lb rated, Model 10102  
FOR THE SUM OF \$ 450.00

One (1) Tempest 16" Ventmaster Chainsaw Model # 576HD-DG  
FOR THE SUM OF \$ 1650.00

One (1) Res-Q-Jack ALX-4PTX Aluminum X Deluxe 4-Point Kit  
FOR THE SUM OF \$ 2,000.00

Two (2) 100 foot lengths of TNT Rescue Tool reel hose P/N **HRH-100-NEX**. 3/8"ID twin line 10,500 psi reel hose with Nexus connector on one end and #4 JIC on the reel end.  
FOR THE SUM OF \$ 7,000

**FOR THE TOTAL ADDITIONAL SUM OF \$ \_\_\_\_\_**

Alt #3

\$ 18,740

**Alternate #4—SPEEDI DRI STORAGE DELIVERY SYSTEM**

Add speedy-dri storage and dispensing system in the top of compartment L-5. A dispensing tube and control valve shall be provided at the rear of the apparatus. The storage system shall hold 200lb's of martial. The exact location to be determined during the pre-construction conference.

**FOR THE ADDITIONAL SUM OF \$** 1,900.00

**Alternate #5— REAR HITCH RECEIVER**

A hitch receiver shall be installed at the rear of the apparatus. The hitch shall be constructed of heavy steel tubing and reinforced to the truck framework, for the receiving portion, including a heavy-duty slide-in tube with a ball. This shall be a class IV trailer hitch. The class IV rating is 10,000 pounds towing and 1000 pounds tongue with weight disturbing hitch. The slide-in portion shall be held in place by two (2) safety pins with clips. A seven-prong trailer-wiring plug and a 12-volt winch electrical plug shall be provided at the rear with a weatherproof snap cover.

**FOR THE ADDITIONAL SUM OF \$** 1,000.00

**Alternate #6— SIDE HITCH RECEIVERS**

An anchor point hitch receiver shall be installed at the sides of the apparatus in front of the rear wheels. The hitch shall be constructed of heavy steel tubing and reinforced to the truck framework, for the receiving portion, including a heavy-duty slide-in tube with a D Ring anchor point. The slide-in portion shall be held in place with a safety pin with a clip. The hitch shall have a 10,000 lb rating. A heavy gauge 12-volt wire and electrical plug with weather proof snap cover shall be provided mounted adjacent to the hitch receiver with a weatherproof snap cover.

**FOR THE ADDITIONAL SUM OF \$** 3,200.00

**Alternate #7— MINI REFRIGERATOR**

Provide and install in the interior rear street side compartment a mini refrigerator. The size and proper drainage to be recommended by the bidder.

**FOR THE ADDITIONAL SUM OF \$** 500.00

**Alternate #8— HYDRAULIC REEL WITH CAPACITY FOR 100' OF HOSE**

Provide two (2) new hydraulic hose reels located in compartments L-2 and R-2. There will be one (1) provided in each compartment along with the existing hose reels in each compartment. Compartments L-2 and R-2 will have a total of two (2) reels in each. One (1) existing and one (1) new in each compartment. The reel shall be operated by a 12 volt electric motor controlled by a rewind switch. The motor shall be protected by a circuit breaker and the rewind circuit shall be protected by a fuse. The switch shall be guarded to prevent accidental operation and installed at a height not to exceed 72 inches above the operators standing position.

The reel capacity shall be able to fit a 100 foot length of TNT Rescue Tool reel hose with 3/8" ID twin line 10,500 psi with Nexus connector on one end and #4 JIC on the reel end. Surfaces where the hose comes in contact with the reel roller shall be constructed of stainless steel, chrome plated steel or plastic. A captive roller assembly shall be provided to aid in the payout and loading of the reel.

**FOR THE ADDITIONAL SUM OF \$** 5,600.00

**All Alternates**

**Additional Cost of:** \$ \_\_\_\_\_, \_\_\_\_\_ thousand, dollars, and \_\_\_\_\_ cents.

TOWN OF COLCHESTER, CONNECTICUT FIRE DEPARTMENT

2013 RESCUE FIRE APPARATUS BID FORM

Delivery and Acceptance shall be completed within 390 calendar days from the date of contract execution.

The company does does not carry product liability insurance. If carried, the amount is \$ 10,000,000. Claims against product liability;

Claims NONE Amounts \_\_\_\_\_

Claims \_\_\_\_\_ Amounts \_\_\_\_\_

Claims \_\_\_\_\_ Amounts \_\_\_\_\_

Claims against the company for other liabilities.

Claims NONE Amounts \_\_\_\_\_

Claims \_\_\_\_\_ Amounts \_\_\_\_\_

Claims \_\_\_\_\_ Amounts \_\_\_\_\_

TOWN OF COLCHESTER, CONNECTICUT FIRE DEPARTMENT

2013 RESCUE FIRE APPARATUS BID FORM

References;

1. Number of years the Bidder has been engaged in the manufacture of fire apparatus:

50 years.

2. List the dollar volume of fire apparatus sales for the previous year.

\$ 25,000,000.00

3. List six (6) recent deliveries or those under construction of fire apparatus of similar construction on similar chassis. Provide those customers closest to Colchester, Ct.

Customer	Amount of contract	Del. Date
1. <u>Mystic, CT</u>	<u>420,000</u>	<u>9/13</u>
2. <u>Trumbull, CT</u>	<u>525,000</u>	<u>9/11</u>
3. <u>Norwalk, CT</u>	<u>430,000</u>	<u>5/10</u>
4. <u>East Fishkill, NY</u>	<u>520,000</u>	<u>7/10</u>
5. <u>Storford, CT</u>	<u>458,000</u>	<u>11/11</u>
6. <u>North Storingdon, CT</u>	<u>500,000</u>	<u>7/08</u>

Provide an additional list of fifteen customers of fire apparatus within the past 3 years. Attached to this Bid Form .

4. Has the Bidder ever failed to deliver work awarded; if so, state customer's name and why:

No

5. Surety:

Fidelity and Deposit Company, Waukesha, Wisconsin

6. Bank Reference:

U.S. BANK  
ALAN HOLMAN 414-765-5692

TOWN OF COLCHESTER, CONNECTICUT FIRE DEPARTMENT

2013 RESCUE FIRE APPARATUS BID FORM

7. Major Material Suppliers:

1. Gordon Aluminum
2. Allegis Corp.
3. Elson Electric
4. Whelen Engineering
5. Hale Fire Pump

8. List the Name, address and telephone of the repair facility nearest to Colchester, Ct. where warranty and service work will be conducted:

Cab and Chassis, NORTHEASTERN FIRE  
128 BLACKS ROAD  
CHESHIRE, CT 06410

Rescue Body SAME

9. Provide the name, and address of the factory where the proposed fire apparatus will be manufactured: MARION, WI

10. Provide the name, and address of the factory where the proposed cab and chassis will be manufactured: SPARTAN MOTORS, CHARLOTTE, NC

TOWN OF COLCHESTER, CONNECTICUT FIRE DEPARTMENT

2013 RESCUE FIRE APPARATUS BID FORM

The undersigned agrees to provide all necessary materials and labor for the construction, delivery, and acceptance and to provide warranty services for the periods stipulated for the construction of the proposed Fire Apparatus for the Colchester Fire Department, Town of Colchester, Connecticut listing all exceptions to the Bid Specifications.

The undersigned also warrants to the Town of Colchester that the company, its agents or employees have not participated in any collusion with any other agent or employee of any other bidder in setting of the Bid prices herein.

Rob Rosenau, PROJECT ADMINISTRATOR  
Authorized Signature Title

ROB ROSENAU, 7-9-13  
Corporate Seal

Print Name of Signature Date 7/09/13

Witnessed Signature by  
Notary Lynn M. Kroening  
Lynn M. Kroening  
Notary Seal

## Summary of Proposal

In reviewing your RFP and the scope of the body remounting, it became apparent that the logistic, engineering, fabrication, and disposal of existing rescue chassis were going to be as costly as a new unit. In an effort to optimize this undertaking we propose the following:

Instead of remounting the existing body on a new chassis, Marion would build a new rescue in entirety and take the other rescue in trade. By keeping the old rescue intact, we believe there is residual value to be unlocked keeping it whole and reselling it. Your fire department does not have to be without the use of the rescue vehicle during modifications and transport as would otherwise be the case.

With the construction of a new rescue body, marriage to the new chassis would be smoother and design changes desired by the department can be more readily accommodated. Holes for lights, doors, etc. do not have to be filled and fit up for new equipment would be better and more up to date revisions incorporated into the design. Interior/exterior compartments can be laid out in a more useful manner as well as light tower recess, matching roof, etc.

In exchange for this discounted new unit, Marion would have the opportunity take this new state of the art completed vehicle to trade-shows/demos during next year's summer show season, delivering the truck to your department in the fall of 2014. It would be delivered in "new condition" with a more comprehensive factory warranty beginning at that date. This offer assumes prompt ordering and submittal process and reasonable acceptance of the offer on the part of the Town of Colchester. It would be understood the old rescue truck to be turned over in same good working order as it is at time of agreement after new unit is placed in-service for sale.



## Clarifications

- 1) Terms for proposed unit: \$250,000.00 upon delivery of chassis to our plant. \$150,000.00 upon completion with balance upon delivery.
- 2) Stainless body option – Add \$15,000.00 to the price of our proposal.
- 3) Because of cab dimensional changes, body size may need to change to keep in same size footprint.
- 4) Because of axle sizes selected, disc brakes may be required.
- 5) Because of proposal for a new body, we are offering a 15 year warranty on the body, exceeding your requirements.

# *Specification*

## **MODEL**

The chassis shall be a Metro Star model. The cab and chassis shall include design considerations for multiple emergency vehicle applications, rapid transit and maneuverability. The chassis shall be manufactured for heavy duty service with the strength and capacity to support a fully laden apparatus, one hundred (100) percent of the time.

## **MODEL YEAR**

The chassis shall have a vehicle identification number that reflects a 2013 model year.

## **COUNTRY OF SERVICE**

The chassis shall be put in service in the country of United States of America (USA).

The chassis will meet applicable U.S.A. federal motor vehicle safety standards per CFR Title 49 Chapter V Part 571 as clarified in the incomplete vehicle book per CFR Title 49 Chapter V Part 568 Section 4 which accompanies each chassis. Spartan Chassis is not responsible for compliance to state, regional, or local regulations. Dealers should identify those regulations and order any necessary optional equipment from Spartan Chassis or their OEM needed to be in compliance with those regulations.

## **APPARATUS TYPE**

The apparatus shall be a rescue vehicle designed for emergency service use which shall include the functions of a multipurpose vehicle which primarily provides support services at emergency scenes.

## **VEHICLE TYPE**

The chassis shall be manufactured for use as a straight truck type vehicle and designed for the installation of a permanently mounted apparatus behind the cab. The apparatus of the vehicle shall be supplied and installed by the apparatus manufacturer.

## **AXLE CONFIGURATION**

The chassis shall feature a 4 x 2 axle configuration consisting of a single rear drive axle with a single front steer axle.

## **GROSS AXLE WEIGHT RATINGS FRONT**

The front gross axle weight rating (GAWR) of the chassis shall be 22,800 pounds.

This front gross axle weight rating shall be adequate to carry the weight of the completed apparatus including all equipment and personnel.

## **GROSS AXLE WEIGHT RATINGS REAR**

The rear gross axle weight rating (GAWR) of the chassis shall be 27,000 pounds.

This rear gross axle weight rating shall be adequate to carry the weight of the completed apparatus including all equipment and personnel.

## **CAB STYLE**

The cab shall be a custom, fully enclosed, ELFD model with a 24.00 inch raised roof over the driver, officer, and crew area, designed and built specifically for use as an emergency response vehicle by a company specializing in cab and chassis design for all emergency response applications. The cab shall be designed for heavy-duty service utilizing superior strength and capacity for the application of protecting the occupants of the vehicle. This style of cab shall offer up to ten (10) seating positions.

The cab shall incorporate a fully enclosed design with side wall roof supports, allowing for a spacious cab area with no partition between the front and rear sections of the cab. To provide a superior finish by reducing welds that fatigue cab metal; the roof, the rear wall and side wall panels shall be assembled using a combination of welds and proven industrial adhesives designed specifically for aluminum fabrication for construction.

The cab shall be constructed using multiple aluminum extrusions in conjunction with aluminum plate, which shall provide proven strength and the truest, flattest body surfaces ensuring less expensive paint repairs if needed. All aluminum welding shall be completed to the American Welding Society and ANSI D1.2-96 requirements for structural welding of aluminum.

All interior and exterior seams shall be sealed for optimum noise reduction and to provide the most favorable efficiency for heating and cooling retention.

The cab shall be constructed of 5052-H32 corrosion resistant aluminum plate. The cab shall incorporate tongue and groove fitted 6061-T6 0.13 & 0.19 inch thick aluminum extrusions for extreme duty situations. A single formed, one (1) piece extrusion shall be used for the "A" pillar, adding strength and rigidity to the cab as well as additional roll-over protection. The cab side walls and lower roof skin shall be 0.13 inch thick; the rear wall and raised roof skins shall be 0.09 inch thick; the front cab structure shall be 0.19 inch thick.

The exterior width of the cab shall be 94.00 inches wide with a minimum interior width of 88.00 inches. The overall cab length shall be 151.10 inches with 74.00 inches from the centerline of the front of the axle to the back of the cab.

The cab interior shall be designed to afford the maximum usable interior space and attention to ergonomics with hip and legroom while seated which exceeds industry standards. The crew cab floor shall be flat across the entire walking area for ease of movement inside the cab.

The cab shall offer an interior height of 57.50 inches from the front floor to the headliner and a rear floor to headliner height of 79.00 inches in the raised roof area, at a minimum. The cab shall offer an interior measurement at the floor level from the rear of the engine tunnel to the rear wall of the cab of 69.88 inches. All interior measurements shall include the area within the interior trimmed surfaces and not to any unfinished surface.

The cab shall include a driver and officer area with two (2) cab doors large enough for personnel in full firefighting gear. The front doors shall offer a clear opening of 40.25 inches wide X 53.50 inches high, from the cab floor to the top of the door opening. The cab shall also include a crew area with up to two (2) cab doors, also large enough for personnel in full firefighting gear. The rear doors shall offer a clear opening of 32.25 inches wide X 71.00 inches high, from the cab floor to the top of the door opening.

The cab shall incorporate a progressive two (2) step configuration from the ground to the cab floor at each door opening. The progressive steps are vertically staggered and extend the full width of each step well allowing personnel in full firefighting gear to enter and exit the cab easily and safely.

The first step for the driver and officer area shall measure approximately 11.50 inches deep X 31.50 inches wide. The intermediate step shall measure approximately 8.50 inches deep X 33.00 inches wide. The height from the first step to the intermediate step and the intermediate step to the cab floor shall not exceed 11.00 inches.

The first step for the crew area shall measure approximately 11.50 inches deep X 21.50 inches wide. The intermediate step shall measure approximately 10.25 inches deep X 22.50 inches wide. The height from the first step to the intermediate step and the intermediate step to the cab floor shall not exceed 12.50 inches.

### **CAB FRONT FASCIA**

The front cab fascia shall be constructed of 5052-H32 Marine Grade, 0.13 of an inch thick aluminum plate which shall be an integral part of the cab.

The cab fascia will encompass the entire front of the aluminum cab structure from the bottom of the windshield to the bottom of the cab and shall be the "Classic" design.

The front cab fascia shall include two (2) molded plastic modules on each side accommodating a total of up to four (4) Hi/Low beam headlights and two (2) turn signal lights or up to four (4) warning lights. A chrome plated molded plastic bezel shall be provided on each side around each set of four lamps.

### **FRONT GRILLE**

The front fascia shall include a box style, 304 stainless steel front grille 44.45 inches wide X 33.50 inches high X 1.50 inches deep. The grille shall include a minimum free air intake of 732.00 square inches.

### **CAB UNDERCOAT**

There shall be a rubberized undercoating applied to the underside of the cab that provides abrasion protection, sound deadening and corrosion protection.

### **CAB SIDE DRIP RAIL**

There shall be a drip rail along the top radius of each cab side. The drip rails shall help prevent water from the cab roof running down the cab side.

### **CAB PAINT EXTERIOR**

The cab shall be painted prior to the installation of glass accessories and all other cab trim to ensure complete paint coverage and the maximum in corrosion protection of all metal surfaces.

All metal surfaces on the entire cab shall be ground by disc to remove any surface oxidation or surface debris which may hinder the paint adhesion. Once the surface is machine ground a high quality acid etching of base primer shall be applied. Upon the application of body fillers and their preparation, the cab shall be primed with a coating designed for corrosion resistance and surface paint adhesion. The maximum thickness of the primer coat shall be 2.00 mils.

The entire cab shall then be coated with an intermediate solid or epoxy surfacing agent that is designed to fill any minor surface defects, provide an adhesive bond between the primer and the paint and improve the color and gloss retention of the color. The finish to this procedure shall be a sanding of the cab with 360 grit paper followed by sealing the seams with SEM brand seam sealer.

The cab shall then be painted the specific color designated by the customer with an acrylic urethane type system designed to retain color and resist acid rain and most atmospheric chemicals found on the fire ground or emergency scene. The paint shall have a minimum thickness of 2.00 mils, followed by a clear top coat not to exceed 2.00 mils. The entire cab shall then be baked at 180 degrees for one (1) hour to speed the curing process of the coatings.

#### **CAB PAINT MANUFACTURER**

The cab shall be painted with PPG Industries paint.

#### **CAB PAINT PRIMARY/LOWER COLOR**

The primary/lower paint color shall be PPG FBCH 83210 Yellow.

#### **CAB PAINT SECONDARY/UPPER COLOR**

The secondary/upper paint color shall be:

#### **CAB PAINT EXTERIOR BREAKLINE**

The upper and lower paint shall meet at a breakline on the cab which shall be located approximately 1.00 inch below the door windows on each side of the cab. The breakline shall curve down at the front cab corners to approximately 5.00 inches below the windshields on the front of the cab.

#### **CAB PAINT PINSTRIPE**

Where the upper and lower paint colors meet a temporary 0.50 inch wide black pinstripe shall be applied over this break line to offer a more finished look prior to the final pinstripe being installed by the OEM.

#### **CAB PAINT WARRANTY**

The cab and chassis shall be covered by a limited manufacturer paint warranty which shall be in effect for ten (10) years from the first owner's date of purchase or in service or the first 100,000 actual miles, whichever occurs first.

#### **CAB PAINT INTERIOR**

The visible interior cab structure surfaces shall be painted with a Zolatone #20-72 silver gray texture finish.

#### **CAB ENTRY DOORS**

The cab shall include four (4) entry doors, two (2) front doors and two (2) crew doors designed for ease of entering and egress when outfitted with an SCBA. The doors shall be constructed of extruded aluminum with a nominal thickness of 0.13 inch. The exterior skins shall be constructed of 0.13 inch aluminum plate.

The doors shall include a double rolled style automotive rubber seal around the perimeter of each door frame and door edge which ensures a weather tight fit.

All door hinges shall be hidden within flush mounted cab doors for a pleasing smooth appearance and perfect fit along each side of the cab. Each door hinge shall be piano style with a 0.38 inch pin and shall be constructed of stainless steel.

### **CAB ENTRY DOOR TYPE**

All cab entry doors shall be full length in design to fully enclose the lower cab steps.

### **LH EXTERIOR REAR COMPARTMENT**

The cab shall offer an exterior compartment on the left side of the cab behind the rear door. The compartment opening shall be 17.00 inches wide X 21.19 inches high. The compartment size shall be 17.34 inches wide X 21.19 inches high X 21.19 inches deep. The compartment shall have a 16.63 inch wide, 32.00 inch high and 1.50 inch thick hinged box pan style flush mount door with a bright aluminum tread plate inner panel and a bent D-ring slam latch. There shall be a switch to activate a light inside the compartment and the open compartment warning light in the cab in the event the door is left ajar.

### **LEFT HAND EXTERIOR REAR COMPARTMENT LIGHTING**

There shall be one (1) SoundOff Signal brand LED strip light installed to illuminate the exterior rear compartment on the left side of the cab. The strip light shall be 10.00 inches long and shall include three (3) bright white Gen3 LEDs.

### **LH EXTERIOR COMPARTMENT INTERIOR FINISH**

The interior of the left hand exterior compartment shall have a DA sanded finish.

### **RH EXTERIOR REAR COMPARTMENT**

The cab shall offer an exterior compartment on the right side of the cab behind the rear door. The compartment opening shall be 17.00 inches wide X 21.19 inches high. The compartment size shall be 17.34 inches wide X 21.19 inches high X 21.19 inches deep. The compartment shall have a 16.63 inch wide, 32.00 inch high and 1.50 inch thick hinged box pan style flush mount door with a bright aluminum tread plate inner panel and a bent D-ring slam latch. There shall be a switch to activate a light inside the compartment and the open compartment warning light in the cab in the event the door is left ajar.

### **RIGHT HAND EXTERIOR REAR COMPARTMENT LIGHTING**

There shall be one (1) SoundOff Signal brand LED strip light installed to illuminate the exterior rear compartment on the right side of the cab. The strip light shall be 10.00 inches long and shall include three (3) bright white Gen3 LEDs.

### **RH EXTERIOR COMPARTMENT INTERIOR FINISH**

The interior of the right hand exterior compartment shall have a DA sanded finish.

### **REAR CAB WALL CUTOUT**

The rear wall of the cab shall include a cut out which measures 36.00 inches wide X 76.50 inches tall to accommodate a walk through application.

### **CAB STRUCTURAL WARRANTY**

The cab structure shall be warranted for a period of ten (10) years or one hundred thousand (100,000) miles which ever may occur first. Warranty conditions may apply and shall be listed in the detailed warranty document that shall be provided upon request.

### **CAB TEST INFORMATION**

The cab shall have successfully completed the preload side impact, static roof load application and frontal impact without encroachment to the occupant survival space when tested in accordance with Section 4 of SAE J2420 COE Frontal Strength Evaluation Dynamic Loading Heavy Trucks, Section 5 of SAE J2422 Cab Roof Strength Evaluation Quasi –Static Loading Heavy Trucks and ECE R29 Uniform Provisions Concerning the Approval of Vehicles with regard to the Protection of the Occupants of the Cab of a Commercial Vehicles Annex 3 Paragraph 5.

The above tests have been witnessed by and attested to by an independent third party. The test results were recorded using cameras, high speed imagers, accelerometers and strain gauges. Documentation of the testing shall be provided upon request.

### **ELECTRICAL SYSTEM**

The chassis shall include a single starting electrical system which shall include a 12 volt direct current system, suppressed per SAE J551. The wiring shall be appropriate gauge cross link with 311 degree Fahrenheit insulation. All SAE wires in the chassis shall be color coded and shall include the circuit number and function where possible. The wiring shall be protected by 275 degree Fahrenheit minimum high temperature flame retardant loom.

### **APPARATUS WIRING PROVISION**

An apparatus wiring panel shall be installed in the center dash area behind the rocker switch panel which shall include eight (8) open circuits consisting of three (3) 20 amp, one (1) 30 amp, three (3) 10 amp, and one (1) 15 amp circuit, with relays and breakers with trigger wires which shall be routed to the rocker switch panel.

### **LOAD MANAGEMENT SYSTEM**

The apparatus shall be equipped with a Class 1 Total System Manager (TSM) for performing electrical load management. The TSM shall have sixteen (16) programmable outputs to supply warning and load switching requirements. Outputs one (1) through twelve (12) shall be independently programmable to activate during the scene mode, the response mode, or both. These outputs can also be programmed to activate with the ignition or master warning switch, or to sequence and shed along with the priority. Output thirteen (13) shall be designated to activate a fast idle system. Output fourteen (14) shall provide a low voltage warning for an isolated battery. Output fifteen (15) is a user configurable output and shall be programmable for activating between 10.50 and 15.00 volts. Output sixteen (16) shall provide a low voltage alarm that activates at the NFPA required 11.80 volts. The TSM shall have a digital display to indicate system voltage in normal operation mode and also indicate the output configuration during programming mode. The TSM shall be protected against reverse polarity and shorted outputs and be enclosed in a metal enclosure to enhance EMI/RFI protection.

### **DATA RECORDING SYSTEM**

The chassis shall have a Class One Vehicle Data Recorder (VDR) system installed. The system shall be designed to meet NFPA 1901. The following information shall be recorded:

- Vehicle Speed
- Acceleration
- Deceleration
- Engine Speed
- Engine Throttle Position
- ABS Event
- Seat Occupied Status

- Seat Belt Status
- Master Optical Warning Device Switch Position
- Time
- Date

Each portion of the data shall be recorded at the specified intervals and stored for the specified length of time to meet NFPA 1901 guidelines and shall be retrievable by connecting a laptop computer to the VDR system. The laptop connection shall be a panel mounted female type B USB connection point, remotely mounted in the left side foot well of the cab.

#### **ACCESSORY POWER DISTRIBUTION PANEL**

An accessory power distribution panel shall be installed behind the officers' seat. The panel shall feature ten (10) blade type fuses protected by a 40 amp fuse. The panel shall be capable of carrying up to a maximum 40 amp battery direct load.

#### **ACCESSORY POWER**

The electrical distribution panel shall include two (2) power studs. The studs shall be size #10 and each of the power studs shall be circuit protected with a fuse of the specified amperage. One (1) power stud shall be capable of carrying up to a 40 amp battery direct load. One (1) power stud shall be capable of carrying up to a 15 amp ignition switched load. The two (2) power studs shall share one (1) #10 ground stud.

#### **AUXILIARY ACCESSORY POWER**

An auxiliary set of power and ground studs shall be provided and installed in the driver side under seat storage compartment. The power and ground studs shall be circuit protected with a 40 amp breaker. The studs shall be 0.38 inch diameter and be capable of carrying up to a 40 amp battery direct load.

#### **ADDITIONAL ACCESSORY POWER**

An additional set of power and ground studs shall be provided and installed behind the electrical center cover with a 40 amp breaker. The studs shall be 0.38 inch diameter and capable of carrying up to a 40 amp battery direct load.

#### **EXTERIOR ELECTRICAL TERMINAL COATING**

All terminals exposed to the elements will be sprayed with a high visibility protective rubberized coating to prevent corrosion.

#### **ENGINE**

The chassis engine shall be a Cummins ISL9 engine. The ISL9 engine shall be an in-line six (6) cylinder, four cycle diesel powered engine. The engine shall offer a rating of 450 horse power at 2100 RPM and shall be governed at 2200 RPM. The torque rating shall feature 1250 foot pounds of torque at 1400 RPM with 543 cubic inches (8.9 liter) of displacement.

The ISL9 engine shall feature a VGT™ Turbocharger, a high pressure common rail fuel system, fully integrated electronic controls with an electronic governor, and shall be EPA certified to meet the 2010 emissions standards using cooled exhaust gas recirculation and selective catalytic reduction technology.

The engine shall include an engine mounted combination full flow/by-pass oil filter with replaceable spin on cartridge for use with the engine lubrication system. The engine shall include Citgo brand



Citgard 500, or equivalent SAE 15W40 CJ4 low ash engine oil which shall be utilized for proper engine lubrication.

A wiring harness shall be supplied ending at the back of the cab. The harness shall include a connector which shall allow an optional harness for the pump panel. The included circuits shall be provided for a tachometer, oil pressure, engine temperature, hand throttle, high idle and a PSG system. A circuit for J1939 data link shall also be provided at the back of the cab.

#### **CAB ENGINE TUNNEL**

The cab interior shall include an integrated engine tunnel constructed of 5052-H32 Marine Grade, 0.19 of an inch thick aluminum. The tunnel shall be a maximum of 41.50 inches wide X 25.50 inches high.

#### **DIESEL PARTICULATE FILTER CONTROLS**

There shall be two (2) controls for the diesel particulate filter. One (1) control shall be for regeneration and one (1) control shall be for regeneration inhibit.

#### **ENGINE PROGRAMMING HIGH IDLE SPEED**

The engine high idle control shall maintain the engine idle at approximately 1200 RPM when engaged.

#### **ENGINE HIGH IDLE CONTROL**

The vehicle shall be equipped with a high-idle speed control rocker switch, which shall be pre-set to maintain the engine idle at a pre-determined rate when activated manually. This device shall operate when the master switch is activated and safely interlocked only to function when the transmission is in neutral with the parking brake set.

#### **ENGINE PROGRAMMING ROAD SPEED GOVERNOR**

The engine shall include programming which will govern the top speed of the vehicle.

#### **AUXILIARY ENGINE BRAKE**

A compression brake, for the six (6) cylinder engine shall be provided. A cutout relay shall be installed to disable the compression brake when in pump mode or when an ABS event occurs. The engine compression brake shall activate upon 0% accelerator when in operation mode and actuate the vehicle's brake lights.

The engine shall utilize a variable geometry turbo (VGT) as an integrated auxiliary engine brake to offer a variable rate of exhaust flow, which when activated in conjunction with the compression brake shall enhance the engine's compression braking capabilities.

#### **AUXILIARY ENGINE BRAKE CONTROL**

An engine compression brake control device shall be included. The electronic control device shall monitor various conditions and shall activate the engine brake only if all of the following conditions are simultaneously detected:

- A valid gear ratio is detected.
- The driver has requested or enabled engine compression brake operation.
- The throttle is at a minimum engine speed position.
- The electronic controller is not presently attempting to execute an electronically controlled final drive gear shift.

The compression brake shall be controlled through an on/off switch and a low/medium/high selector switch.

### **ELECTRONIC ENGINE OIL LEVEL INDICATOR**

The engine oil shall be monitored electronically and shall send a signal to activate a warning in the instrument panel when levels fall below normal. The warning shall activate in a low oil situation upon turning on the master battery and ignition switches without the engine running.

### **FLUID FILLS**

The engine oil, coolant, transmission, and power steering fluid fills shall be located under the cab. The windshield washer fill shall be accessible through the front left side mid step.

### **ENGINE DRAIN PLUG**

The engine shall include an original equipment manufacturer installed oil drain plug.

### **ENGINE WARRANTY**

The Cummins engine shall be warranted for a period of five (5) years or 100,000 miles, whichever occurs first.

### **ENGINE PROGRAMMING REMOTE THROTTLE**

The engine ECM (Electronic Control Module) discreet wire remote throttle circuit shall be turned off for use with a J1939 based pump controller or when the discreet wire remote throttle controls are not required.

### **ENGINE PROGRAMMING IDLE SPEED**

The engine low idle speed will be programmed at 700 rpm.

### **ENGINE FAN DRIVE**

The engine cooling system fan shall incorporate a thermostatically controlled, Horton clutched type fan drive.

When the clutched fan is disengaged it shall facilitate improved vehicle performance, cab heating in cold climates, and fuel economy. The fan clutch design shall be fail safe so that if the clutch drive fails the fan shall engage to prevent engine overheating due to the fan clutch failure.

### **ENGINE COOLING SYSTEM**

There shall be a heavy-duty aluminum cooling system designed to meet the demands of the emergency response industry. The cooling system shall have the capacity to keep the engine properly cooled under all conditions of road and pumping operations. The cooling system shall be designed and tested to meet or exceed the requirements specified by the engine and transmission manufacturer and all EPA requirements. The complete cooling system shall be mounted to isolate the entire system from vibration or stress. The individual cores of the cooling system shall be mounted in a manner to allow expansion and contraction at various rates without inducing stress into the adjoining cores.

The cooling system shall utilize a charge air cooler to radiator serial flow package that provides the maximum cooling capacity for the specified engine as well as serviceability. The main components shall include a surge tank, an air to air charge air cooler bolted to the front of the radiator, recirculation shields, a shroud, a fan, and required tubing.

The radiator shall be a down-flow design constructed with aluminum cores, plastic end tanks, and a steel frame. The radiator shall be equipped with a drain cock to drain the coolant for serviceability.

The cooling system shall include a one piece injection molded polymer eleven (11) blade fan with a fiberglass fan shroud.

The cooling system shall be equipped with a surge tank that is capable of removing entrained air from the system. The surge tank shall be equipped with a low coolant probe and sight glass to monitor the level of the coolant. The surge tank shall have a dual seal cap that meets the engine manufacturer's pressure requirements, and allows for expansion and recovery of coolant into a separate integral expansion chamber.

All radiator tubes shall be formed from aluminized steel tubing. Recirculation shields shall be installed where required to prevent heated air from reentering the cooling package and affecting performance.

The charge air cooler shall be a cross-flow design constructed completely of aluminum with cast tanks. All charge air cooler tubes shall be formed from aluminized steel tubing and installed with silicone hump hoses and stainless steel "constant torque" style clamps meeting the engine manufacturer's requirements.

#### **ENGINE COOLING SYSTEM PROTECTION**

The engine cooling system shall include a recirculation shield designed to act as a light duty skid plate below the radiator to provide additional protection for the engine cooling system from light impacts, stones, and road debris.

#### **ENGINE COOLANT**

The cooling package shall include Extended Life Coolant (ELC). The use of ELC provides longer intervals between coolant changes over standard coolants providing improved performance. The coolant shall contain a 50/50 mix of ethylene glycol and de-ionized water to keep the coolant from freezing to a temperature of -34 degrees Fahrenheit.

Proposals offering supplemental coolant additives (SCA) shall not be considered, as this is part of the extended life coolant makeup.

#### **ELECTRONIC COOLANT LEVEL INDICATOR**

The instrument panel shall feature a low engine coolant indicator light which shall be located in the center of the instrument panel. An audible tone alarm shall also be provided to warn of a low coolant incident.

#### **COOLANT HOSES**

The cooling system hoses shall be silicone heater hose with rubber hoses in the cab interior. The radiator hoses shall be formed silicone coolant hoses with formed aluminized steel tubing. All heater hose, silicone coolant hose, and tubing shall be secured with stainless steel constant torque band clamps.

#### **ENGINE AIR INTAKE**

The engine air intake system shall include an ember separator air intake filter which shall be located in the front of the cab behind the right hand side fascia. This filter shall protect the downstream air filter from embers using a combination of unique flat and crimped metal screens constructed into a corrosion resistant steel frame. This multilayered screen shall be designed to trap embers or allow them to burn

out before passing through the pack, while creating only minimal air flow restriction through the system. Periodic cleaning or replacement of the screen shall be all that is required after installation.

The engine shall also include an air intake filter which shall be bolted to the frame and located under the front of the cab on the right hand side. The dry type filter shall ensure dust and debris safely contained inside the disposable housing, eliminating the chance of contaminating the air intake system during air filter service via a leak-tight seal.

The air flow distribution and dust loading shall be uniform throughout the high-performance filter cone pack, which shall result in pressure differential for improved horsepower and fuel economy. The air intake shall be mounted within easy access via a hinged panel behind the right hand side headlight module. The air intake system shall include a restriction indicator light in the warning light cluster on the instrument panel, which shall activate when the air cleaner element requires replacement.

### **ENGINE EXHAUST SYSTEM**

The exhaust system shall include a diesel particulate filter (DPF), a diesel oxidation catalyst, and a selective catalytic reduction (SCR) catalyst to meet current EPA standards. The selective catalytic reduction catalyst utilizes a diesel exhaust fluid solution consisting of urea and purified water to convert NOx into nitrogen, water, and trace amounts of carbon dioxide. The solution shall be injected into the system through the decomposition tube between the DPF and SCR.

The system shall utilize 0.07 inch thick stainless steel exhaust tubing between the engine turbo and the DPF. Zero leak clamps seal all system joints between the turbo and DPF.

The DPF, the decomposition tube, and the SCR canister through the end of the tailpipe shall be connected with zero leak clamps. The discharge shall terminate horizontally on the right side of the vehicle ahead of the rear tires.

The exhaust system shall be mounted below the frame in the outboard position with the SCR canister in line rearward of the DPF. The exhaust system canisters shall be mounted using T-shaped drop down angle brackets. The exhaust outlet shall be a fixed pipe connected directly to the side outlet of the SCR.

### **DIESEL EXHAUST FLUID TANK**

The exhaust system shall include a molded cross linked polyethylene tank for Diesel Exhaust Fluid (DEF). The tank shall have a capacity of six (6) usable gallons and shall be mounted on the left hand side of the chassis frame behind the batteries below the frame.

The DEF tank shall be designed with capacity for expansion in case of fluid freezing. Engine coolant, which shall be thermostatically controlled, shall be run through lines in the tank to help prevent the DEF from freezing and to provide a means of thawing the fluid if it should become frozen.

The tank fill tube shall be routed under the rear of the cab with the fill neck and splash guard accessible in the top rear step.

### **ENGINE EXHAUST ACCESSORIES**

An exhaust temperature mitigation device shall be shipped loose for installation by the body manufacturer on the vehicle. The temperature mitigation device shall lower the temperature of the exhaust by combining ambient air with the exhaust gasses at the exhaust outlet.

### **ENGINE EXHAUST WRAP**

The exhaust tubing between the engine turbo and the diesel particulate filter (DPF) shall be wrapped with a thermal cover in order to retain the necessary heat for DPF regeneration. The exhaust wrap shall also help protect surrounding components from radiant heat which can be transferred from the exhaust.

### **TRANSMISSION**

The drive train shall include an Allison model EVS 3000 torque converting, automatic transmission which shall include electronic controls. The transmission shall feature two (2) 10-bolt PTO pads located on the converter housing.

The transmission shall include two (2) internal oil filters and Castrol TranSynd™ synthetic TES 295 transmission fluid which shall be utilized in the lubrication of the EVS transmission. An electronic oil level sensor shall be included with the readout located in the shift selector.

The transmission gear ratios shall be:

1st	3.49:1
2nd	1.86:1
3rd	1.41:1
4th	1.00:1
5th	0.75:1
6th	0.65:1 (if applicable)
Rev	5.03:1

### **TRANSMISSION MODE PROGRAMMING**

The transmission, upon start-up, will automatically select a four (4) speed operation. The fifth speed over drive shall be available with the activation of the mode button on the shifting pad.

### **TRANSMISSION FEATURE PROGRAMMING**

The Allison Gen IV-E EVS group package number 127 shall contain the 199 vocational package in consideration of the duty of this apparatus for rescue. This package shall incorporate an automatic neutral with selector override. This feature commands the transmission to neutral when the park brake is applied, regardless of drive range requested on the shift selector. This requires re-selecting drive range to shift out of neutral for the override.

An eight (8) pin Delphi connector will be provided which will contain the following input/output circuits to the transmission control module. The Gen IV-E transmission shall include prognostic diagnostic capabilities. These capabilities shall include the monitoring of the fluid life, filter change indication, and transmission clutch maintenance.

Function ID	Description	Wire assignment
C	PTO Request	143
F	Aux. Function Range Inhibit (Special)	101/142
G	PTO Enable Output (See Input Function C)	130
S	Neutral Indicator for PTO	145
	Signal Return	103

### **TRANSMISSION SHIFT SELECTOR**

An Allison pressure sensitive range selector touch pad shall be provided and located to the right of the driver within clear view and easy reach. The shift selector shall provide a prognostic indicator (wrench symbol) on the digital display between the selected and attained indicators. The prognostics monitor various operating parameters to determine and shall alert you when a specific maintenance function is required.

#### **ELECTRONIC TRANSMISSION OIL LEVEL INDICATOR**

The transmission fluid shall be monitored electronically and shall send a signal to activate a warning in the instrument panel when levels fall below normal.

#### **TRANSMISSION PRE-SELECT WITH AUXILIARY BRAKE**

When the auxiliary brake is engaged, the transmission shall automatically shift to second gear to decrease the rate of speed assisting the secondary braking system and slowing the vehicle.

#### **TRANSMISSION COOLING SYSTEM**

The transmission shall include a water to oil cooler system located in the cooling loop between the radiator and the engine. The transmission cooling system shall meet all transmission manufacturer requirements. The transmission cooling system shall feature continuous flow of engine bypass water to maintain uninterrupted transmission cooling.

#### **TRANSMISSION DRAIN PLUG**

The transmission shall include an original equipment manufacturer installed oil drain plug.

#### **TRANSMISSION WARRANTY**

The Allison EVS series transmission shall be warranted for a period of five (5) years with unlimited mileage. Parts and labor shall be included in the warranty.

#### **DRIVELINE**

All drivelines shall be heavy duty metal tube and equipped with Spicer 1710 series universal joints. The shafts shall be dynamically balanced prior to installation to alleviate future vibration. In areas of the driveline where a slip shaft is required, the splined slip joint shall be coated with Glide Coat®.

#### **FUEL FILTER/WATER SEPARATOR**

The fuel system shall have a Fleetguard FS1003 fuel filter/water separator as a primary filter. The fuel filter shall have a drain valve.

A water in fuel sensor shall be provided and wired to an instrument panel lamp and audible alarm to indicate when water is present in the fuel/water separator.

A secondary fuel filter shall be included as approved by the engine manufacturer.

#### **FUEL LINES**

The fuel system supply and return lines installed from the fuel tank to the engine shall be reinforced nylon tubing rated for diesel fuel. The fuel lines shall be brown in color and connected with brass fittings.

#### **FUEL TANK**

The fuel tank shall have a capacity of fifty (50) gallons and shall measure 35.00 inches in width X 15.00 inches in height X 24.00 inches in length. The baffled tank shall be made of 14 gauge aluminized steel.

The exterior of the tank shall be painted with a PRP Corsol™ black anti-corrosive exterior metal treatment finish. This results in a tank which offers the internal and external corrosion resistance.

The tank shall have a vent port to facilitate venting to the top of the fill neck for rapid filling without "blow-back" and a roll over ball check vent for temperature related fuel expansion and draw.

The tank is designed with dual draw tubes and sender flanges. The tank shall have 2.00 inch NPT fill ports for right or left hand fill. A 0.50 inch NPT drain plug shall be centered in the bottom of the tank.

The fuel tank shall be mounted below the frame, behind the rear axle. Two (2) three-piece strap hanger assemblies with "U" straps bolted midway on the fuel tank front and rear shall be utilized to allow the tank to be easily lowered and removed for service purposes. Rubber isolating pads shall be provided between the tank and the upper tank mounting brackets. Strap mounting studs through the rail, hidden behind the body shall not be acceptable.

### **FUEL TANK FILL PORT**

The fuel tank fill ports shall be offset with the left fill port located in the rearward position and the right fill port located in the middle position on the fuel tank.

### **FRONT AXLE**

The front axle shall be a Meritor Easy Steer Non drive front axle, model number MFS-23. The axle shall include a 3.74 inch drop and a 71.00 inch king pin intersection (KPI). The axle shall include a conventional style hub with a standard knuckle. The weight capacity for the axle shall be rated to 23,000 pounds. This rating shall require special approvals from the wheel manufacturers.

### **FRONT AXLE WARRANTY**

The front axle shall be warranted by Meritor for two (2) years with unlimited miles under the general service application. Details of the Meritor warranty are provided on the PDF document attached to this option.

### **FRONT WHEEL BEARING LUBRICATION**

The front axle wheel bearings shall be lubricated with oil. The oil level can be visually checked via clear inspection windows in the front axle hubs.

### **FRONT SHOCK ABSORBERS**

Two (2) Bilstein inert, nitrogen gas filled shock absorbers shall be provided and installed as part of the front suspension system. The shocks shall be a monotubular design and fabricated using a special extrusion method, utilizing a single blank of steel without a welded seam, achieving an extremely tight peak-to-valley tolerance and maintains consistent wall thickness. The monotubular design shall provide superior strength while maximizing heat dissipation and shock life.

The ride afforded through the use of a gas shock is more consistent and shall not deteriorate with heat, the same way a conventional oil filled hydraulic shock would.

The Bilstein front shocks shall include a digressive working piston assembly allowing independent tuning of the compression and rebound damping forces to provide optimum ride and comfort without compromise. The working piston design shall feature fewer parts than most conventional twin tube and "road sensing" shock designs and shall contribute to the durability and long life of the Bilstein shock absorbers.

Proposals offering the use of conventional twin tube or "road sensing" designed shocks shall not be considered.

### **FRONT SUSPENSION**

The front suspension shall include a ten (10) leaf spring pack in which the longest leaf measures 53.38 inch long and 4.00 inches wide. The springs shall be shot peened for long life and include a military double wrapped front eye. The springs shall be bolted in place with M20 10.9 bolts and have replaceable rubber bushings in the spring eyes. The spring capacity shall be rated at 23,000 pounds.

### **STEERING COLUMN/ WHEEL**

The cab shall include a Douglas Autotech steering column which shall include a seven (7) position tilt, a 2.25 inch telescopic adjustment, and an 18.00 inch, two (2) spoke steering wheel located at the driver's position. The steering wheel shall be covered with black polyurethane foam padding.

The steering column shall contain a horn button, self-canceling turn signal switch, four-way hazard switch and headlamp dimmer switch.

### **POWER STEERING PUMP**

The hydraulic power steering pump shall be a TRW PS and shall be gear driven from the engine. The pump shall be a balanced, positive displacement, sliding vane type.

### **ELECTRONIC POWER STEERING FLUID LEVEL INDICATOR**

The power steering fluid shall be monitored electronically and shall send a signal to activate an audible alarm and visual warning in the instrument panel when fluid level falls below normal.

### **FRONT AXLE CRAMP ANGLE**

The chassis shall have a front axle cramp angle of 48-degrees to the left and 44-degrees to the right.

### **POWER STEERING GEAR**

The power steering gear shall be a TRW model TAS 85 with an assist cylinder.

### **CHASSIS ALIGNMENT**

The chassis frame rails shall be measured to insure the length is correct and cross checked to make sure they run parallel and are square to each other. The front and rear axles shall be laser aligned. The front tires and wheels shall be aligned and toe-in set on the front tires by the chassis manufacturer.

### **REAR AXLE**

The rear axle shall be a Meritor model RS-25-160 single drive axle. The axle shall include precision forged, single reduction differential gearing, and shall have a fire service rated capacity of 27,000 pounds.

The axle shall be built of superior construction and quality components to provide the rugged dependability needed to stand up to the fire industry's demands. The axle shall include rectangular shaped, hot-formed housing with a standard wall thickness of 0.63 of an inch for extra strength and rigidity and a rigid differential case for high axle strength and reduced maintenance.



The axle shall have heavy-duty Hypoid gearing for longer life, greater strength and quieter operation. Industry-standard wheel ends for compatibility with both disc and drum brakes, and unitized oil seal technology to keep lubricant in and help prevent contaminant damage will be used.

#### **REAR AXLE WARRANTY**

The rear axle shall be warranted by Meritor for two (2) years with unlimited miles under the general service application. Details of the Meritor warranty are provided on the PDF document attached to this option.

#### **REAR AXLE DIFFERENTIAL LUBRICATION**

The rear axle differential shall be lubricated with oil.

#### **REAR WHEEL BEARING LUBRICATION**

The rear axle wheel bearings shall be lubricated with oil.

#### **REAR AXLE DIFFERENTIAL CONTROL**

A driver controlled differential lock shall be installed on the rear axle. This feature shall allow the main differential to be locked and unlocked when encountering poor road or highway conditions, where maximum traction is needed, for use at speeds no greater than 25 MPH. The differential lock shall be controlled by a locking rocker switch on the switch panel. The light on the switch shall illuminate with positive engagement of the differential control.

#### **VEHICLE TOP SPEED**

The top speed of the vehicle shall be approximately 65 MPH +/-2 MPH at governed engine RPM.

#### **REAR SUSPENSION**

The single rear axle shall feature a Reyco 79KB vari-rate, self-leveling captive slipper type parabolic spring suspension, with 57.50 inch X 3.00 inch springs. One (1) adjustable and one (1) fixed torque rod shall be provided.

The rear suspension capacity shall be rated from 21,000 to 31,000 pounds.

#### **FRONT TIRE**

The front tires shall be Michelin 425/65R-22.5 20PR "L" tubeless radial XZY3 mixed service tread.

The front tire stamped load capacity shall be 22,800 pounds per axle with a speed rating of 65 miles per hour when properly inflated to 120 pounds per square inch.

The Michelin Tire Intermittent Service Rating load capacity shall be 24,400 pounds per axle with a speed rating of 65 miles per hour when properly inflated to 120 pounds per square inch. The Michelin Intermittent Service Rating limits the operation of the emergency vehicle to one (1) hour of loaded travel with a one (1) hour cool down prior to another loaded run.

#### **REAR TIRE**

The rear tires shall be Michelin 12R-22.5 16PR "H" tubeless radial XDS regional tread.

The rear tire stamped load capacity shall be 27,120 pounds per axle with a speed rating of 65 miles per hour when properly inflated to 120 pounds per square inch.

The Michelin Tire Intermittent Service Rating load capacity shall be 28,880 pounds per axle with a speed rating of 75 miles per hour when properly inflated to 120 pounds per square inch. The Michelin Intermittent Service Rating limits the operation of the emergency vehicle to one (1) hour of loaded travel with a one (1) hour cool down prior to another loaded run.

### **REAR AXLE RATIO**

The rear axle ratio shall be 5.38:1.

### **TIRE PRESSURE INDICATOR**

There shall be a voucher provided with the chassis for a pop up style tire pressure indicator at the front tire valve stem. The indicator shall provide visual indication of pressure in the specific tire. The front tire pressure indicators shall be redeemed upon the vehicle manufacturer's receipt of the voucher for installation by the customer.

The rear tire pressure indicators shall be VECSAFE LED valve cap indicators on each of the rear tires. The valve cap indicators shall be self-calibrating and the LED shall illuminate to indicate low tire pressure. The rear tire pressure indicators shall be shipped loose to be installed by the final vehicle manufacturer for self-calibration on inflated, loaded tires.

### **FRONT WHEEL**

The front wheels shall be Alcoa hub piloted, 22.50 inch X 12.25 inch LvL One™ polished aluminum wheels. The hub piloted mounting system shall provide easy installation and shall include two-piece flange nuts. The wheels shall feature one-piece forged strength and shall include Alcoa's Dura-Bright® finish with XBR technology as an integral part of the wheel surface. Alcoa Dura-Bright® wheels keep their shine without polishing. Brake dust, grime and road debris are easily removed by simply cleaning the wheels with soap and water.

### **REAR WHEEL**

The rear wheels shall be Alcoa hub piloted, 22.50 inch X 8.25 inch LvL One™ aluminum wheels with a polished outer surface and Alcoa Dura-Bright® wheel treatment with XBR® technology as an integral part of the wheel. The hub piloted mounting system shall provide easy installation and shall include two-piece flange nuts.

### **WHEEL TRIM**

The front wheels shall include stainless steel lug nut covers and stainless steel baby moons shipped loose with the chassis for installation by the apparatus builder. The baby moons shall have cutouts for oil seal viewing when applicable.

The rear wheels shall include stainless steel lug nut covers and band mounted spring clip stainless steel high hats shipped loose with the chassis for installation by the apparatus builder.

The lug nut covers, baby moons, and high hats shall be RealWheels® brand constructed of 304L grade, non-corrosive stainless steel with a mirror finish. Each wheel trim component shall meet D.O.T. certification.

### **WHEEL GUARDS**

The rear dual wheels shall include a plastic isolator approximately 0.04" thick installed between the inner and outer wheel to help prevent corrosion caused by metal to metal contact.

### **TIRE CHAINS**

Onspot brand six (6) strand automatic ice chains shall be installed on the rear axle of the chassis to provide instant traction while traveling on ice and snow at speeds below 35 MPH.

### **TIRE CHAINS ACTIVATION**

The tire chain system shall be activated by a locking switch on the dash to deter accidental activation. The light on the switch shall illuminate when the tire chains are engaged. The tire chains shall be interlocked with the transmission and shall engage only if the vehicle is traveling 30 MPH or less. After traveling over 30 MPH, the vehicle must be reduced to a speed below 5 MPH for the tire chains to be engaged or re-engaged.

### **BRAKE SYSTEM**

A rapid build-up air brake system shall be provided. The air brakes shall include a two (2) air tank, three (3) reservoir system with a total of 4152 cubic inch of air capacity. A floor mounted treadle valve shall be mounted inside the cab for graduated control of applying and releasing the brakes. An inversion valve shall be installed to provide a service brake application in the unlikely event of primary air supply loss. All air reservoirs provided on the chassis shall be labeled for identification.

The rear axle spring brakes shall automatically apply in any situation when the air pressure falls below 25 PSI and shall include a mechanical means for releasing the spring brakes when necessary. An audible alarm shall designate when the system air pressure is below 60 PSI.

A four (4) sensor, four (4) modulator anti-lock braking system (ABS) shall be installed on the front and rear axles in order to prevent the brakes from locking or skidding while braking during hard stops or on icy or wet surfaces. This in turn shall allow the driver to maintain steering control under heavy braking and in most instances, shorten the braking distance. The electronic monitoring system shall incorporate diagonal circuitry which shall monitor wheel speed during braking through a sensor and tone ring on each wheel. A dash mounted ABS lamp shall be provided to notify the driver of a system malfunction. The ABS system shall automatically disengage the auxiliary braking system device when required. The speedometer screen shall be capable of reporting all active defaults using PID/SID and FMI standards.

Additional safety shall be accommodated through Automatic Traction Control (ATC) which shall be installed on the single rear axle. The ATC system shall apply the ABS when the drive wheels loose traction. The system shall scale the electronic engine throttle back to prevent wheel spin while accelerating on ice or wet surfaces.

A momentary rocker style switch shall be provided and properly labeled "mud/snow". When the switch is pressed once, the system shall allow a momentary wheel slip to obtain traction under extreme mud and snow conditions. During this condition the ATC light and the light on the rocker switch shall blink continuously notifying the driver of activation. Pressing the switch again shall deactivate the mud/snow feature.

The Electronic Stability Control (ESC) unit is a functional extension of the electronic braking system. It is able to detect any skidding of the vehicle about its vertical axis as well as any rollover tendency. The control unit comprises an angular-speed sensor that measures the vehicle's motion about the vertical axis, caused, for instance, by cornering or by skidding on a slippery road surface. An acceleration sensor measures the vehicle's lateral acceleration. The Controller Area Network (CAN) bus provides information on the steering angle. On the basis of lateral acceleration and steering angle, an integrated microcontroller calculates a theoretical angular speed for the stable vehicle condition.

## **FRONT BRAKES**

The front brakes shall be Meritor EX225 Disc Plus disc brakes with 17.00 inch vented rotors.

## **REAR BRAKES**

The rear brakes shall be Meritor EX225 Disc Plus disc brakes with 17.00 inch vented rotors.

## **PARK BRAKE**

Upon application of the push-pull valve in the cab, the rear brakes will engage via mechanical spring force. This is accomplished by dual chamber rear brakes, satisfying the FMVSS parking brake requirements.

## **PARK BRAKE CONTROL**

A Meritor-Wabco manual hand control push-pull style valve shall operate the parking brake system. The control shall be yellow in color.

The parking brake actuation valve shall be mounted on the left hand dash to the right of the steering column within easy reach of the driver.

## **AIR DRYER**

The brake system shall include a Bendix AD-9 fully self contained air dryer which shall not require an extra purge tank or additional valves. The AD-9 system shall include a spin-off desiccant filter with a 12-volt, 75-watt thermostatically controlled heating element. The air dryer shall feature 3.9 pounds of premium, high crush strength desiccant which shall be produced with a composition that shall be more effective and longer lasting than other desiccants. It shall also offer protection against contamination and desiccant breakdown. The air dryer shall be mounted behind the battery box on the left hand side.

## **FRONT BRAKE CHAMBERS**

The front brakes shall be provided with MGM type 24 long stroke brake chambers.

## **REAR BRAKE CHAMBERS**

The rear axle shall include TSE 24/30 H.O.T. (High Output Technology) brake chambers shall convert the energy of compressed air into mechanical force and motion. This shall actuate the brake camshaft, which in turn shall operate the foundational brake mechanism forcing the brake pads against the brake rotor.

## **AIR COMPRESSOR**

The air compressor provided for the engine shall be a Wabco<sup>®</sup> SS318 single cylinder pass-through drive type compressor which shall be capable of producing 18.7 CFM at 1200 engine RPMs. The air compressor shall feature a higher delivery efficiency translating to more air delivery per horsepower absorbed. The compressor shall include an aluminum cylinder head which shall improve cooling, reduce weight and decrease carbon formation. Superior piston and bore finishing technology shall reduce oil consumption and significantly increasing the system component life.

## **AIR GOVERNOR**

An air governor shall be provided to control the cut-in and cut-out pressures of the engine mounted air compressor. The governor shall be calibrated to meet FMVSS requirements. The air governor shall be mounted to the right frame rail.

## **AUXILIARY AIR RESERVOIR**

One (1) auxiliary air reservoir with a 1200 cubic inch capacity shall be installed on the chassis to act as an additional reserve supply to the air system for air horn, air tool, or other non-service brake use. The reservoir shall be isolated with a 90 PSI pressure protection valve on the reservoir supply side to prevent depletion of the air to the air brake system.

### **MOISTURE EJECTORS**

Manual pet-cock type drain valves shall be installed on all reservoirs of the air supply system.

### **AIR SUPPLY LINES**

The air system on the chassis shall be plumbed with color coded reinforced nylon tubing air lines. The primary (rear) brake line shall be green, the secondary (front) brake line red, the parking brake line orange and the auxiliary (outlet) will be blue.

Brass compression type fittings shall be used on the nylon tubing. All drop hoses shall include fiber reinforced neoprene covered hoses.

### **AIR OUTLET CONNECTION**

A quick release air outlet female connector shall be installed in the left lower cab step towards the front of the cab for the use of auxiliary air tools. The air outlet connector shall be compatible with a Milton 787, Parker Hannifin B13 or Meyers 54-410 connector.

### **PLUMBING AIR OUTLET CONNECTION**

The cab mounted air outlet connection shall be plumbed to the chassis auxiliary air system reservoir.

### **AIR INLET/ OUTLET FITTING TYPE**

The air connector supplied shall be a 0.25 inch size Tru-Flate Interchange style manual connection which is compatible with Milton 'T' style, Myers 0.25 inch Automotive style and Parker 0.25 inch 10 Series connectors.

### **AIR TANK SPACERS**

There shall be spacers included with the air tank mounting. The spacers shall move the air tanks 1.50 inches inward towards the center of the chassis. This shall provide clearance between the air tanks and the frame for body U-bolt clearance.

### **REAR AIR TANK MOUNTING**

If a combination of wheel base, air tank quantity, or other requirements necessitate the location of one or more air tanks to be mounted rear of the fuel tank, these tank(s) will be mounted perpendicular to frame.

### **WHEELBASE**

The chassis wheelbase shall be 190.00 inches.

### **REAR OVERHANG**

The chassis rear overhang shall be 37.00 inches.

### **FRAME**

The frame shall consist of double rails running parallel to each other with cross members forming a ladder style frame. The frame rails shall be formed in the shape of a "C" channel, with the outer rail measuring 10.25 inches high X 3.50 inches deep upper and lower flanges X 0.38 inches thick with an

inner channel of 9.44 inches high X 3.13 inches deep and 0.38 inches thick. Each rail shall be constructed of 110,000 psi minimum yield high strength low alloy steel. Each double rail section shall be rated by a Resistance Bending Moment (RBM) minimum of 3,213,100 inch pounds and have a minimum section modulus of 29.21 cubic inches. The frame shall measure 35.00 inches in width.

Proposals calculating the frame strength using the "box method" shall not be considered.

Proposals including heat treated rails shall not be considered. Heat treating frame rails produces rails that are not uniform in their mechanical properties throughout the length of the rail. Rails made of high strength, low alloy steel are already at the required yield strength prior to forming the rail.

A minimum of seven (7) fully gusseted 0.25 inch thick cross members shall be installed. The inclusion of the body mounting, or bumper mounting shall not be considered as a cross member. The cross members shall be attached using zinc coated grade 8 fasteners. The bolt heads shall be flanged type, held in place by distorted thread flanged lock nuts. Each cross member shall be mounted to the frame rails utilizing a minimum of 0.25 inch thick gusset reinforcement plates at all corners balancing the area of force throughout the entire frame.

Any proposals not including additional reinforcement for each cross member shall not be considered.

All relief areas shall be cut in with a minimum 2.00 inch radius at intersection points with the edges ground to a smooth finish to prevent a stress concentration point.

The frame and cross members shall carry a lifetime warranty to the original purchaser. A copy of the frame warranty shall be made available upon request.

Proposals offering warranties for frames not including cross members shall not be considered.

#### **FRAME WARRANTY**

The frame and cross members shall carry a limited lifetime warranty to the original purchaser. The warranty shall include conditional items listed in the detailed warranty document which shall be provided upon request.

#### **MISCELLANEOUS FRAME OPTIONS**

The frame shall include hole patterns which shall be specific to Marion drop frame as specified by the OEM.

See PDF for OEM specified pattern.

#### **REAR TOW DEVICE**

The frame rails shall contain (3) holes per frame in a pattern specified by the OEM for mounting Marion tow eyes at the rear of the frame at a location defined by the OEM.

#### **FRAME PAINT**

The frame shall be powder coated black prior to any attachment of components.

All powder coatings, primers and paint shall be compatible with all metals, pretreatments and primers used. The cross hatch adhesion test per ASTM D3359 shall not have a fail of more than ten (10) squares. The pencil hardness test per ASTM D3363 shall have a final post-curved pencil hardness of

H-2H. The direct impact resistance test per ASTM D2794 shall have an impact resistance of 120.00 inches per pound at 2 mils.

Any proposals offering painted frame with variations from the above process shall not be accepted. The film thickness of vendor supplied parts shall also be sufficient to meet the performance standards as stated above.

The chassis under carriage consisting of frame, axles, driveline running gear, air tanks and other chassis mounted components shall be painted the primary/lower cab color. Paint shall be applied prior to airline and electrical wiring installation.

#### **FRONT BUMPER**

The chassis shall be equipped with a severe duty front bumper constructed from structural steel channel. The bumper material shall be 0.38 thick ASTM A36 steel which shall measure 12.00 inches high with a 3.05 inch flange and shall be 99.00 inches wide with angled front corners.

The bumper shall be primed and painted as specified.

#### **FRONT BUMPER EXTENSION LENGTH**

The front bumper shall be extended approximately 21.00 inches ahead of the cab.

#### **FRONT BUMPER EXTENSION FRAME WIDTH**

The front bumper extension frame shall feature an overall width of 48.25 inches.

#### **FRONT BUMPER PAINT**

The front bumper shall be painted the same as the lower cab color.

#### **FRONT BUMPER WINCH**

The front bumper shall include a Ramsey model RE12000 electric winch with 12,000 pound rated line pull, 12 volt electric winch shall be installed in the center of the front bumper. The winch shall be equipped with 125.00 feet of 0.38 inch cable, clevis hook and a 4-way roller fairlead. The winch shall be operated through a 25.00 foot pendant with a hand held control. The winch shall include a spring applied hydraulic released disc brake and counterbalance valve. It shall feature an easy to use spring loaded clutch with clutch engagement indicator light.

#### **FRONT BUMPER APRON**

The 21.00 inch extended front bumper shall include an apron constructed of 0.19 inch thick embossed aluminum tread plate.

The apron shall be installed between the bumper and the front face of the cab affixed using stainless steel bolts attaching the apron to the top bumper flange.

#### **FRONT BUMPER COMPARTMENT CENTER**

The front bumper shall include a compartment in the bumper apron located in the center between the frame rails which may be used as a hose well. The compartment shall be constructed of 0.13 inch 5052-H32 grade aluminum and shall include drain holes in the bottom corners to allow excess moisture to escape. The compartment shall include a cover constructed of 0.19 inch thick bright embossed aluminum tread plate.

#### **FRONT BUMPER COMPARTMENT COVER HARDWARE**

The front bumper compartment cover shall include gas cylinder stays which shall hold the cover open. The cover shall be held in the closed position via a D-ring style latch.

#### **FRONT BUMPER GUIDE POLES**

The cab bumper sides shall include a 42.00 inch chromed poles on the left and right sides of the bumper. The poles shall be mounted so the top of the pole is approximately at the same height as the bottom of the windshield. Each pole shall include an amber light at the top for improved night visibility. There shall be an electrical connection to allow for ease of removal and or replacement.

#### **MECHANICAL SIREN**

The front bumper shall include an electro mechanical Federal Q2B™ siren, which shall be streamlined, chrome-plated and shall produce 123 decibels of sound at 10.00 feet. The Q2B™ siren produces a distinctive warning sound that is recognizable at long distances. A unique clutch design provides a longer coast down sound while reducing the amp draw to 100 amps. The siren shall measure 10.50 inches wide X 10.00 inches high X 14.00 inches deep.

#### **MECHANICAL SIREN LOCATION**

The siren shall be recess mounted on the left side of the front fascia of the bumper approximately in the center of the flat surface between the bumper radius and the frame rail.

#### **MECHANICAL SIREN ACCESSORIES**

The front of the siren shall include (2) stainless steel flat bars approximately 1.00 inch wide by 19.00 inches long. Each bar shall be placed vertically on the right and left side of the siren face wrapping around towards the back of the siren into the bumper extension offering protection to the Q2B siren.

#### **AIR HORN**

The chassis shall include two (2) Hadley brand E-Tone air horns which shall measure 24.00 inches long with a 6.00 inch round flare. The air horns shall be trumpet style with a chrome finish on the exterior and a painted finish deep inside the trumpet.

#### **AIR HORN LOCATION**

The air horns shall be recess mounted in the front bumper face on the right side of the bumper in the inboard and outboard positions relative to the right hand frame rail.

#### **AIR HORN RESERVOIR**

One (1) air reservoir, with a 1200 cubic inch capacity, shall be installed on the chassis to act as a supply tank for operating air horns. The reservoir shall be isolated with a 90 PSI pressure protection valve on the reservoir supply side to prevent depletion of the air to the air brake system.

#### **ELECTRONIC SIREN SPEAKER**

The bumper shall include one (1) Whelen Engineering Inc. model SA122FMP, 100 watt cast aluminum speaker which shall be recess mounted within the bumper fascia. The speaker shall measure 4.44 inches tall X 7.44 inches wide X 5.18 inches deep. The speaker shall include a polished aluminum grille.

#### **ELECTRONIC SIREN SPEAKER LOCATION**

The two (2) electronic siren speakers shall be located on the front bumper face between the frame rails in the right and left side outboard positions.

#### **FRONT BUMPER TOW EYES**



The bumper shall include two (2) painted tow eyes shall be installed through the front bumper. The tow eyes shall be fabricated from 0.75 inch thick #1020 ASTM-36 hot rolled steel. The inside diameter of the tow eye shall be 2.00 inch and have a chamfered edge. The tow eyes shall be painted to match the frame.

### **CAB TILT SYSTEM**

The entire cab shall be capable of tilting approximately 45-degrees to allow for easy maintenance of the engine and transmission. The cab tilt pump assembly shall be located on the right side of the chassis above the battery box.

The electric-over-hydraulic lift system shall include an ignition interlock and red cab lock down indicator lamp on the tilt control which shall illuminate when holding the "Down" button to indicate safe road operation.

It shall be necessary to activate the master battery switch and set the parking brake in order to tilt the cab. As a third precaution the ignition switch must be turned off to complete the cab tilt interlock safety circuit.

Two (2) spring-loaded hydraulic hold down hooks located outboard of the frame shall be installed to hold the cab securely to the frame. Once the hold-down hooks are set in place, it shall take the application of pressure from the hydraulic cab tilt lift pump to release the hooks.

Two (2) cab tilt cylinders shall be provided with velocity fuses in each cylinder port. The cab tilt pivots shall be 1.90 inch ball and be anchored to frame brackets with 1.25 inch diameter studs.

A steel safety channel assembly, painted safety yellow shall be installed on the right side cab lift cylinder to prevent accidental cab lowering. The safety channel assembly shall fall over the lift cylinder when the cab is in the fully tilted position. A cable release system shall also be provided to retract the safety channel assembly from the lift cylinder to allow the lowering of the cab.

### **CAB TILT AUXILIARY PUMP**

A manual cab tilt pump module shall be attached to the cab tilt pump housing.

### **CAB TILT CONTROL RECEPTACLE**

The cab tilt control cable shall include a receptacle which shall be temporarily located on the right hand chassis rail rear of the cab to provide a place to plug in the cab tilt remote control pendant. The tilt pump shall include 8.00 feet of cable with a six (6) pin Deutsch receptacle with a cap.

The remote control pendant shall include 20.00 feet of cable with a mating Deutsch connector. The remote control pendant shall be shipped loose with the chassis.

### **CAB WINDSHIELD**

The cab windshield shall have a surface area of 2825.00 square inches and be of a two (2) piece wraparound design for maximum visibility.

The glass utilized for the windshield shall include standard automotive tint. The left and right windshield shall be fully interchangeable thereby minimizing stocking and replacement costs.

Each windshield shall be installed using black self locking window rubber.

**GLASS FRONT DOOR**

The front cab doors shall include a window which is 27.00 inches in width X 26.00 inches in height. These windows shall have the capability to roll down completely into the door housing. This shall be accomplished manually utilizing a crank style handle on the inside of the door. A reinforced window regulator assembly shall be provided for severe duty use.

There shall be an irregular shaped fixed window which shall measure 2.50 inches wide at the top, 8.00 inches wide at the bottom X 26.00 inches in height, more commonly known as "cozy glass" ahead of the front door roll down windows.

The windows shall be mounted within the frame of the front doors trimmed with a black anodized ring on the exterior.

**GLASS TINT FRONT DOOR**

The windows located in the left and right front doors shall have a standard green automotive tint which shall allow seventy-five percent (75%) light transmittance.

**GLASS REAR DOOR RH**

The rear right hand side door shall include a window which is 27.00 inches in width X 26.00 inches in height. This window shall roll up and down manually utilizing a crank style handle on the inside of the door. A reinforced window regulator assembly shall be provided for severe duty use.

**GLASS TINT REAR DOOR RIGHT HAND**

The window located in the right hand side rear door shall include a standard green automotive tint which shall allow seventy-five percent (75%) light transmittance.

**GLASS REAR DOOR LH**

The rear left hand side door shall include a window which is 27.00 inches in width X 26.00 inches in height. This window shall roll up and down manually utilizing a crank style handle on the inside of the door. A reinforced window regulator assembly shall be provided for severe duty use.

**GLASS TINT REAR DOOR LEFT HAND**

The window located in the left hand side rear door shall include a standard green automotive tint which shall allow seventy-five percent (75%) light transmittance.

**GLASS SIDE MID RH**

The cab shall include a window on the right side behind the front and ahead of the crew door which shall measure 16.00 inches wide X 26.00 inches high. This window shall be fixed within this space and shall be rectangular in shape. The window shall be mounted using self locking window rubber. The glass utilized for this window shall include a green automotive tint unless otherwise noted.

**GLASS TINT SIDE MID RIGHT HAND**

The window located on the right hand side of the cab between the front and rear doors shall include a standard green automotive tint which shall allow seventy-five percent (75%) light transmittance.

**GLASS SIDE MID LH**

The cab shall include a window on the left side behind the front door and ahead of the crew door and above the wheel well which shall measure 16.00 inches wide X 26.00 inches high. This window shall be fixed within this space and shall be rectangular in shape. The window shall be mounted using self locking window rubber. The glass utilized for this window shall include a green automotive tint unless otherwise noted.

**GLASS TINT SIDE MID LEFT HAND**

The window located on the left hand side of the cab between the front and rear doors shall include a standard green automotive tint which shall allow seventy-five percent (75%) light transmittance.

**GLASS UPPER SIDE FRONT**

The raised roof on the left and right sides of the cab shall include a triangular shaped window which shall be 14.00 inches wide X 14.00 inches high. These windows shall be fixed within this space. These windows shall be mounted to the cab using black self-locking window rubber.

**GLASS TINT UPPER SIDE FRONT**

The windows located in the upper section on the left and right side towards the front of the cab shall include a standard green automotive tint which shall allow seventy-five percent (75%) light transmittance.

**GLASS UPPER SIDE MID**

The middle section of the raised roof on the left and right sides of the cab shall include a window which shall measure 16.00 inches wide X 14.00 inches high. These windows shall be fixed within this space. These windows shall be mounted using black self-locking window rubber.

**GLASS TINT UPPER SIDE MID**

The windows located in the upper section on each side in the middle of the cab shall include a standard green automotive tint which shall allow seventy-five percent (75%) light transmittance.

**GLASS UPPER SIDE REAR DOOR**

Windows shall be provided in the upper portion of each rear door of the raised roof cab. Each window shall measure 27.00 inches wide X 14.00 inches high and be installed above the lower door window. The windows shall be rectangular in shape and fixed within this space. The windows shall be mounted using black self-locking window rubber.

**GLASS TINT UPPER SIDE REAR DOOR**

The window located in the upper section of the rear crew doors shall include a standard green automotive tint which shall allow seventy-five percent (75%) light transmittance.

**CLIMATE CONTROL**

The cab shall be equipped with a ceiling mounted combination defrost / heating and air-conditioning system mounted above the engine tunnel in a central location.

The system shall offer sixteen (16) adjustable louvers. Six (6) of the louvers shall face forward towards the windshield, offering 45,000 BTU of heat at 320 CFM for defrosting. The system shall include six (6) rearward facing louvers to direct air for the crew area and four (4) for driver and officer comfort. The HVAC system shall be designed to produce 60,000 BTU of heat and 32,000 BTU of cooling. The HVAC cover shall be made of aluminum which shall be coated with a customer specified interior paint, or protective coating.

All defrost/heating systems shall be plumbed with one (1) seasonal shut-off valve at the front corner on the right side of the cab.

The air conditioner lines shall be a mixture of custom bent zinc coated steel fittings and Aero-quip GH 134 flexible hose with Aero-Quip EZ-Clip fittings.

#### **CLIMATE CONTROL DRAIN**

The climate control system shall include a gravity drain for water management. The gravity drain shall remove condensation from the air conditioning system without additional mechanical assistance.

#### **CLIMATE CONTROL ACTIVATION**

The heating, defrosting and air conditioning controls shall be on the dash next to driver panel, in a position which is easily accessible to the driver. The climate control shall be activated by a rotary switch.

#### **HVAC OVERHEAD COVER PAINT**

The overhead HVAC cover shall be painted with a Zolatone #20-72 silver gray texture finish.

#### **A/C CONDENSER LOCATION**

A roof mounted A/C condenser shall be installed centered on the cab forward of the raised roof against the slope rise.

#### **A/C COMPRESSOR**

The air-conditioning compressor shall be a belt driven, engine mounted, open type compressor that shall be capable of producing a minimum of 32,000 BTU at 1500 engine RPMs. The compressor shall utilize R-134A refrigerant and PAG oil.

#### **CAB CIRCULATION FANS FRONT**

The cab shall include two (2) all metal 6.00 inch air circulation fans installed overhead in the center of the cab rearward of the windshield. Each fan shall be controlled by an individual rocker switch on the dash. The fans can be used to help defog the windshield or to increase air circulation for passenger comfort.

#### **CAB CIRCULATION FANS REAR**

The cab shall include two (2) individually switched all metal construction 6.00 inch fans which shall be installed in the upper rear cab corners as far outboard as possible. The multi purpose fans can be used to increase air circulation or help defog windows.

#### **CAB INSULATION**

The cab ceiling and walls shall include 1.00 inch thick foam insulation. The insulation shall act as a barrier absorbing noise as well as assisting in sustaining the desired climate within the cab interior.

#### **UNDER CAB INSULATION**

The underside of the cab tunnel surrounding the engine and the underside of the entire cab floor shall be lined with multi-layer insulation, engineered for application inside diesel engine compartments.

The insulation shall act as a noise barrier, absorbing noise thus keeping the decibel level in the cab well within NFPA recommendations. As an additional benefit, the insulation shall assist in sustaining the desired temperature within the cab interior.

The engine tunnel insulation shall measure approximately 0.75 inch thick including a vertically lapped polyester fiber layer, a 1.0 lb/ft<sup>2</sup> PVC barrier layer, an open cell foam layer, and a moisture and heat reflective foil facing reinforced with a woven fiberglass layer. The foil surface acts as protection against moisture and other contaminants. The insulation shall meet or exceed FMVSS 302 flammability test.

The cab floor insulation shall measure .56 inch thick including a 1.0#/sf PVC barrier and a moisture and heat reflective foil facing, reinforced with fiberglass strands. The foil surface acts as protection against moisture and other contaminants. The insulation shall meet or exceed MVSS 302 flammability test.

The insulation shall be cut precisely to fit each section and sealed for additional heat and sound deflection. The insulation shall be held in place by 3 mils of acrylic pressure sensitive adhesive and aluminum pins with hard hat, hold in place fastening heads. In addition, the insulation on the underside of the cab floor shall have an expanded metal overlay to assist in retaining the insulation tight against the cab.

#### **INTERIOR TRIM FLOOR**

The floor of the cab shall be covered with a multi-layer mat consisting of 0.25 inch thick sound absorbing closed cell foam with a 0.06 inch thick non-slip vinyl surface with a pebble grain finish. The covering shall be held in place by a pressure sensitive adhesive and aluminum trim molding. All exposed seams shall be sealed with silicone caulk matching the color of the floor mat to reduce the chance of moisture and debris retention.

#### **INTERIOR TRIM VINYL**

The cab interior shall include trim on the front ceiling, rear crew ceiling, and the cab walls. It shall be easily removable to assist in maintenance. The trim shall be constructed of insulated vinyl over a hard board backing.

#### **REAR WALL INTERIOR TRIM**

The rear wall of the cab shall be trimmed with vinyl.

#### **HEADER TRIM**

The cab interior shall feature header trim over the driver and officer dash constructed of 5052-H32 Marine Grade, 0.13 inch thick aluminum.

#### **TRIM CENTER DASH**

The main center dash area shall be constructed of 5052-H32 Marine Grade, 0.13 inch thick aluminum plate. There shall be four (4) holes located on the top of the dash near each outer edge of the electrical access cover for ventilation.

#### **TRIM LH DASH**

The left hand dash shall be constructed of 5052-H32 Marine Grade, 0.13 inch thick aluminum plate for a perfect fit around the instrument panel and the lower control panels to the left and right of the steering column.

#### **TRIM RH DASH**

The right hand dash shall be constructed of 5052-H32 Marine Grade, 0.13 of an inch thick aluminum plate and shall include a glove compartment with a hinged door and a Mobile Data Terminal (MDT) provision. The glove compartment size will measure 14.00 inches wide X 6.38 inches high X 5.88 inches deep. The MDT provision shall be provided above the glove compartment.

#### **TRIM RH DASH ACCESSORIES**

The Mobile Data Terminal (MDT) provision on the right hand dash shall be provided with a locking slide-out tray that can lock in multiple positions. The MDT slide-out tray shall be constructed of 5052-H32 Marine Grade, 0.13 of an inch thick aluminum plate. The mounting surface of the tray measures 12.50 inches wide X 10.75 inches deep which shall allow for the mounting of a MDT with the added luxury of sliding it toward the officer as much as 11.00 inches.

#### **ENGINE TUNNEL TRIM**

The cab engine tunnel shall be covered with a multi-layer mat consisting of 0.25 inch closed cell foam with a 0.06 inch thick non-slip vinyl surface with a pebble grain finish. The mat shall be held in place by pressure sensitive adhesive. The engine tunnel mat shall be trimmed with anodized aluminum stair nosing trim for an aesthetically pleasing appearance.

#### **STEP TRIM**

Each cab entry door shall include a three step entry. The first step closest to the ground shall be constructed of 14 gauge 304 stainless steel with indented perforations. The perforations shall allow water and other debris to flow through rather than becoming trapped within the stepping surface. The stainless steel material shall have a number 7 mirror finish. The lower step shall be mounted to a frame which is integral with the construction of the cab for rigidity and strength. The middle step shall be integral with the cab construction and shall be trimmed in 0.08 inch thick 3003-H22 embossed aluminum tread plate.

#### **UNDER CAB ACCESS DOOR**

The cab shall include an aluminum access door in the left crew step riser painted to match the cab interior paint with a push and turn latch. The under cab access door shall provide access to the diesel exhaust fluid fill.

#### **INTERIOR DOOR TRIM**

The interior trim on the doors of the cab shall consist of an aluminum panel constructed of Marine Grade 5052-H32 0.13 of an inch thick aluminum plate. The door panels shall include a DA sanded finish.

#### **DOOR TRIM CUSTOMER NAMEPLATE**

The interior door trim on the front doors shall include a customer nameplate which states the vehicle was custom built for their Department.

#### **CAB DOOR TRIM REFLECTIVE**

The interior of each door shall include high visibility reflective tape. A white reflective tape 1.00 inch in width shall be provided vertically along the rear outer edge of the door. The lowest portion of each door skin shall include a reflective tape chevron with red and white stripes and a Spartan logo. The chevron tape shall measure 6.00 inches in height.

#### **INTERIOR GRAB HANDLE "A" PILLAR**

There shall be two (2) rubber covered 11.00 inch grab handles installed inside the cab, one on each "A" post at the left and right door openings. The left handle shall be located 7.88 inches above the bottom of

the door window opening and the right handle shall be located 2.88 inches above the bottom of the door window opening. The handles shall assist personnel in entering and exiting the cab.

**INTERIOR GRAB HANDLE FRONT DOOR**

Each front door shall include one (1) ergonomically contoured 9.00 inch cast aluminum handle mounted horizontally on the interior door panels. The handles shall feature a textured black powder coat finish to assist personnel entering and exiting the cab.

**INTERIOR GRAB HANDLE REAR DOOR**

A black powder coated cast aluminum assist handle shall be provided on the inside of each rear crew door. A 30.00 inch long handle shall extend horizontally the width of the window just above the window sill. The handle shall assist personnel in exiting and entering the cab.

**INTERIOR TRIM VINYL COLOR**

The cab interior vinyl trim surfaces shall be gray in color.

**INTERIOR TRIM SUNVISOR**

The header shall include two (2) sun visors, one each side forward of the driver and officer seating positions above the windshield. Each sun visor shall be constructed of Masonite and covered with padded vinyl trim.

**INTERIOR FLOOR MAT COLOR**

The cab interior floor mat shall be gray in color.

**HEADER TRIM INTERIOR PAINT**

The metal surfaces in the header area shall be coated with Zolatone #20-72 silver gray texture finish.

**TRIM CENTER DASH INTERIOR PAINT**

The entire center dash shall be coated with Zolatone #20-72 silver gray texture finish. Any accessory pods attached to the dash shall also be painted this color.

**TRIM LH DASH INTERIOR PAINT**

The left hand dash shall be painted with a Zolatone #20-72 silver gray texture finish.

**TRIM RIGHT HAND DASH INTERIOR PAINT**

The right hand dash shall be painted with Zolatone #20-72 silver gray texture finish.

**RIGHT HAND DASH ACCESSORIES INTERIOR PAINT**

The right hand dash accessories shall be painted with Zolatone #20-72 silver gray texture finish.

**DASH PANEL GROUP**

The main center dash area shall include three (3) removable panels located one (1) to the right of the driver position, one (1) in the center of the dash and one (1) to the left of the officer position. The center panel shall be within comfortable reach of both the driver and officer.

**SWITCHES CENTER PANEL**

The center dash panel shall include twelve (12) rocker switch positions in a six (6) over six (6) switch configuration in the left portion of the panel.

A rocker switch with a blank legend installed directly above shall be provided for any position without a switch and legend designated by a specific option. The non-specified switches shall be two-position, black switches with a green indicator light. Each blank switch legend can be custom engraved by the body manufacturer. All switch legends shall have backlighting provided.

#### **SWITCHES LEFT PANEL**

The left dash panel shall include eight (8) switches in a single row configuration. Five (5) of the switches shall be rocker type and the left three (3) shall be the headlight switch, the instrument lamp dimmer switch and the windshield wiper/washer control switch.

A rocker switch with a blank legend installed directly above shall be provided for any position not designated by a specific option. The non-designated switches shall be two-position, black switches with a green indicator light. Each blank switch legend can be custom engraved by the body manufacturer. All switch legends shall have backlighting provided.

#### **SWITCHES RIGHT PANEL**

The right dash panel shall include no rocker switches or legends.

#### **SEAT BELT WARNING**

A Class One seat belt warning system, integrated with the Vehicle Data Recorder system, shall be installed for each seat within the cab. The system shall activate an indicator light in the instrument panel, a digital seat position indicator with a seat position legend in the switch panel, and an audible alarm.

The warning system shall activate when any seat is occupied with a minimum of 60 pounds, the corresponding seat belt remains unfastened, and the park brake is released. The warning system shall also activate when any seat is occupied, the corresponding seat belt was fastened in an incorrect sequence, and the park brake is released. Once activated, the visual indicators and audible alarm shall remain active until all occupied seats have the seat belts fastened.

#### **SEAT MATERIAL**

The seats shall include a covering of high strength, wear resistant fabric made of durable ballistic polyester. A PVC coating shall be bonded to the back side of the material to help protect the seats from UV rays and from being saturated or contaminated by fluids. Common trade names for this material are Imperial 1200 and Durawear.

#### **SEAT COLOR**

All seats supplied with the chassis shall be gray in color. All seats shall include red seat belts.

#### **SEAT BACK LOGO**

The seat back shall include a "Marion" logo. The logo shall be centered on the standard headrest of the seat back and on the left side of a split headrest.

#### **SEAT DRIVER**

The driver's seat shall be an H.O. Bostrom Sierra model seat with air suspension. The four-way seat shall feature 3.00 inch vertical travel air suspension and manual fore and aft adjustment with 5.00 inches of travel. The suspension control shall be located on the seat below the left front corner of the bottom cushion. The seat shall also feature integral springs to isolate shock.



The seat position shall include a three-point shoulder harness with lap belt and an automatic retractor attached to the cab. The buckle portion of the seat belt shall be mounted on a semi-rigid stalk extending from the seat base within easy reach of the occupant.

The minimum vertical dimension from the seat H-point to the ceiling for this belted seating position shall be 37.00 inches measured with the seat suspension height adjusted to the upper limit of its travel.

This model of seat shall have successfully completed the static load tests set forth by FMVSS 207, 209, and 210 in effect at the time of manufacture. This testing shall include a simultaneous forward load of 3000 pounds each on the lap and shoulder belts and twenty (20) times the weight through the center of gravity.

The materials used in construction of the seat shall also have successfully completed testing with regard to the flammability of materials used in the occupant compartments of motor vehicles as outlined in FMVSS 302, of which dictates the allowable burning rate of materials in the occupant compartments of motor vehicles.

#### **SEAT BACK DRIVER**

The driver's seat shall feature a two (2) way adjustable lumbar support and offer an infinite fully reclining adjustable titling seat back. The seat back shall also feature a contoured head rest.

#### **SEAT MOUNTING DRIVER**

The driver's seat shall be installed in an ergonomic position in relation to the cab dash.

#### **SEAT OFFICER**

The officer's seat shall be an H.O. Bostrom Firefighter model seat. The seat shall feature two-way manual adjustment and shall include a tapered and padded seat cushion. The seat shall also feature integral springs to isolate shock.

The seat shall feature an all belts to seat (ABTS) style of safety restraint. The ABTS feature shall include a three-point shoulder harness with the lap belt, automatic retractor and buckle as an integral part of the seat assembly.

The minimum vertical dimension from the seat H-point to the ceiling for this belted seating position shall be 35.00 inches.

This model of seat shall have successfully completed the static load tests by FMVSS 207, 209, 210 and 302 in effect at the time of manufacture. This testing shall include a simultaneous forward load of 3000 pounds each on the lap and shoulder belts and twenty (20) times the weight through the center of gravity. The model of seats shall also have successfully completed the flammability of materials used in the occupant compartments of motor vehicles as outlined in FMVSS 302, of which decides the burning rate of materials in the occupant compartments of motor vehicles.

#### **SEAT BACK OFFICER**

The officer's seat shall feature a SecureAll™ SCBA locking system which shall be one bracket model and store most U.S. and International SCBA brands and sizes while in transit or for storage within the seat back. The bracket shall be easily adjustable for all SCBA brands and cylinder diameters. All adjustment points shall utilize similar hardware and adjustments shall be made with one tool.

The bracket shall be adjustable to compensate for different cylinder lengths without the use of tools. The adjustment shall be made by raising a lever and moving the top clamp vertically.

The bracket system shall be free of straps and clamps that may interfere with auxiliary equipment on SCBA units. The center guide fork shall keep the SCBA tank in place for a safe and comfortable fit in the seat back cavity. The SCBA unit simply needs to be pushed against the pivot arm to engage the patented auto-locking system. Once the lock is engaged, the top clamp shall surround the top of the SCBA tank for a secure fit in all directions.

The SecureAll™ shall include a release handle which shall be integrated into the seat cushion for quick and easy release. This shall eliminate the need for straps or pull cords to interfere with other SCBA equipment.

The seat back shall include a removable padded cover which shall be provided over the SCBA cavity.

### **SEAT MOUNTING OFFICER**

The officer's seat shall be installed in an ergonomic position in relation to the cab dash.

### **SEAT REAR FACING OUTER LOCATION**

The crew area shall include two (2) rear facing crew seats, which include one (1) located directly behind the left side front seat and one (1) located directly behind the right side front seat.

### **SEAT CREW REAR FACING OUTER**

The crew area shall include a seat in the rear facing outboard position which shall be a H.O. Bostrom Firefighter series. The seat shall feature a tapered and padded seat, and cushion.

The seat shall feature an all belts to seat (ABTS) style of safety restraint. The ABTS feature shall include a three-point shoulder harness with the lap belt and automatic retractor as an integral part of the seat assembly. The buckle portion of the seat belt shall extend from the seat base towards the driver position within easy reach of the occupant.

The minimum vertical dimension from the seat H-point to the ceiling for each belted seating position shall be 35.00 inches.

This model of seat shall have successfully completed the static load tests by FMVSS 207/210. This testing shall include a simultaneous forward load of 3000 pounds each on the lap and shoulder belts and twenty (20) times the weight through the center of gravity. This model of seat installed in the cab model, as specified, shall have successfully completed the dynamic sled testing using FMVSS 208 as a guide with the following accommodations. In order to reflect the larger size outfitted firefighters, the test dummy used shall be a 95th percentile hybrid III male weighing 225 pounds rather than the 50th percentile male dummy weighing 165 pounds as referenced in FMVSS 208. The model of seats shall also have successfully completed the flammability of materials used in the occupant compartments of motor vehicles as outlined in FMVSS 302, of which decides the burning rate of materials in the occupant compartments of motor vehicles.

### **SEAT BACK REAR FACING OUTER**

The rear facing outboard seat shall feature a Bostrom SecureAll™ self contained breathing apparatus (SCBA) locking system which shall store most U.S. and International SCBA brands and bottle sizes while in transit or for storage within the seat back. The bracket shall be easily adjustable for all SCBA

brands and cylinder diameters. All adjustment points shall utilize similar hardware and adjustments shall be made with one tool.

The bracket shall be adjustable to compensate for different cylinder lengths without the use of tools. The adjustment shall be made by raising a lever and moving the top clamp vertically.

The bracket system shall be free of straps that may interfere with auxiliary equipment on SCBA units. The center guide fork shall keep the SCBA tank in place for a safe and comfortable fit in the seat back cavity. The SCBA unit simply needs to be pushed against the pivot arm to engage the patented auto-locking system. Once the lock is engaged, the top clamp shall surround the top of the SCBA tank for a secure fit in all directions.

The SecureAll™ shall include a release handle which shall be integrated into the center of the bottom seat cushion for easy access and to eliminate hooking the release handle with clothing or other equipment.

The seat back shall include a removable padded cover which shall be provided over the SCBA cavity.

#### **SEAT MOUNTING REAR FACING OUTER**

The rear facing outer seat shall be mounted facing the rear of the cab.

#### **SEAT REAR FACING CENTER LOCATION**

The crew area shall include two (2) rear facing crew seats, which include one (1) located directly behind the engine tunnel on the right side of the cab and one (1) located directly behind the engine tunnel on the left side of the cab.

#### **SEAT CREW REAR FACING CENTER**

The crew area shall include a seat in the rear facing center position which shall be a H.O. Bostrom Firefighter series. The seat shall feature a tapered and padded seat back and cushion.

The seat shall feature an all belts to seat (ABTS) style of safety restraint. The ABTS feature shall include a three-point shoulder harness with the lap belt and automatic retractor as an integral part of the seat assembly. The buckle portion of the seat belt shall extend from the seat base towards the driver position within easy reach of the occupant.

The minimum vertical dimension from the seat H-point to the ceiling for each belted seating position shall be 35.00 inches.

This model of seat shall have successfully completed the static load tests by FMVSS 207/210. This testing shall include a simultaneous forward load of 3000 pounds each on the lap and shoulder belts and twenty (20) times the weight through the center of gravity. This model of seat installed in the cab model, as specified, shall have successfully completed the dynamic sled testing using FMVSS 208 as a guide with the following accommodations. In order to reflect the larger size outfitted firefighters, the test dummy used shall be a 95th percentile hybrid III male weighing 225 pounds rather than the 50th percentile male dummy weighing 165 pounds as referenced in FMVSS 208. The model of seats shall also have successfully completed the flammability of materials used in the occupant compartments of motor vehicles as outlined in FMVSS 302, of which decides the burning rate of materials in the occupant compartments of motor vehicles.

#### **SEAT BACK REAR FACING CENTER**

The rear facing center seat shall feature a SecureAll™ self contained breathing apparatus (SCBA) locking system which shall be one bracket model and store most U.S. and International SCBA brands and sizes while in transit or for storage within the seat back. The bracket shall be easily adjustable for all SCBA brands and cylinder diameters. All adjustment points shall utilize similar hardware and adjustments shall be made with one tool.

The bracket shall be adjustable to compensate for different cylinder lengths without the use of tools. The adjustment shall be made by raising a lever and moving the top clamp vertically.

The bracket system shall be free of straps and clamps that may interfere with auxiliary equipment on SCBA units. The center guide fork shall keep the SCBA tank in place for a safe and comfortable fit in the seat back cavity. The SCBA unit simply needs to be pushed against the pivot arm to engage the patented auto- locking system. Once the lock is engaged, the top clamp shall surround the top of the SCBA tank for a secure fit in all directions.

The SecureAll™ shall include a release handle which shall be integrated into the seat cushion for quick and easy release. This shall eliminate the need for straps or pull cords to interfere with other SCBA equipment.

The seat back shall include a removable padded cover which shall be provided over the SCBA cavity.

#### **SEAT BELT ORIENTATION CREW**

The crew position seat belts shall follow the standard orientation which extends from the outboard shoulder extending to the inboard hip.

#### **SEAT MOUNTING REAR FACING CENTER**

The rear facing center seat shall be mounted facing the rear of the cab.

#### **SEAT FRAME REAR FACING CENTER**

The rear facing center seating shall include a seat frame which is located and installed behind the engine tunnel. The seat frame shall measure 40.75 inches wide X 12.00 inches high X 15.88 inches deep. The seat frame shall be constructed of 0.19 inch thick Marine Grade 5052-H32 smooth aluminum plate. The seat box shall be painted with the same color as the remaining interior.

#### **SEAT FRAME REAR FACING CENTER STORAGE ACCESS**

The rear facing center seat frame shall include a storage access opening which shall measure 32.00 inches wide X 8.75 inches high to allow access within the seat frame for storage. A solid access door which shall measure 34.00 inches wide X 11.12 inches high shall be provided at the opening.

#### **SEAT FORWARD FACING OUTER LOCATION**

The crew area shall include two (2) forward facing outboard seats, which include one (1) located next to the outer wall of the cab on the left side of the cab and one (1) located next to the outer wall on the right side of the cab.

#### **SEAT CREW FORWARD FACING OUTER**

The crew area shall include a seat in the forward facing outer position which shall be a H.O. Bostrom Firefighter series. The seat shall feature a tapered and padded seat back and cushion. The bottom

cushion shall be hinged and compact in design for additional room and shall remain in the stored position until occupied.

The seat shall feature an all belts to seat (ABTS) style of safety restraint. The ABTS feature shall include a three-point shoulder harness with the lap belt and automatic retractor as an integral part of the seat assembly. The buckle portion of the seat belt shall extend from the seat base towards the driver position within easy reach of the occupant.

The minimum vertical dimension from the seat H-point to the ceiling for each belted seating position shall be 35.00 inches.

This model of seat shall have successfully completed the static load tests by FMVSS 207/210. This testing shall include a simultaneous forward load of 3000 pounds each on the lap and shoulder belts and twenty (20) times the weight through the center of gravity. This model of seat installed in the cab model, as specified, shall have successfully completed the dynamic sled testing using FMVSS 208 as a guide with the following accommodations. In order to reflect the larger size outfitted firefighters, the test dummy used shall be a 95th percentile hybrid III male weighing 225 pounds rather than the 50th percentile male dummy weighing 165 pounds as referenced in FMVSS 208. The model of seats shall also have successfully completed the flammability of materials used in the occupant compartments of motor vehicles as outlined in FMVSS 302, of which decides the burning rate of materials in the occupant compartments of motor vehicles.

#### **SEAT BACK FORWARD FACING OUTER**

The forward facing outboard seat shall feature a SecureAll™ self contained breathing apparatus (SCBA) locking system which shall be one bracket model and store most U.S. and International SCBA brands and sizes while in transit or for storage within the seat back. The bracket shall be easily adjustable for all SCBA brands and cylinder diameters. All adjustment points shall utilize similar hardware and adjustments shall be made with one tool.

The bracket shall be adjustable to compensate for different cylinder lengths without the use of tools. The adjustment shall be made by raising a lever and moving the top clamp vertically.

The bracket system shall be free of straps and clamps that may interfere with auxiliary equipment on SCBA units. The center guide fork shall keep the SCBA tank in place for a safe and comfortable fit in the seat back cavity. The SCBA unit simply needs to be pushed against the pivot arm to engage the patented auto-locking system. Once the lock is engaged, the top clamp shall surround the top of the SCBA tank for a secure fit in all directions.

The SecureAll™ shall include a release handle which shall be integrated into the seat cushion for quick and easy release. This shall eliminate the need for straps or pull cords to interfere with other SCBA equipment.

The seat back shall include a removable padded cover which shall be provided over the SCBA cavity.

#### **SEAT MOUNTING FORWARD FACING OUTER**

The forward facing outer seat shall be mounted in the furthest outboard position facing the front of the cab.

#### **SEAT FRAME FORWARD FACING**

The forward facing outboard seating positions shall include individual enclosed seat frames for each position located and installed at the outer rear wall positions. The seat frames shall measure 21.81 inches wide X 12.38 inches high X 22.00 inches deep. The seat frames shall be constructed of Marine Grade 5052-H32 0.19 inch thick aluminum plate. The seat frames shall be painted with the same color as the remaining interior.

#### **SEAT FRAME FORWARD FACING STORAGE ACCESS**

There shall be two (2) access points to the storage area centered on the front of the seat frame. Each access point shall be covered by a hinged door to allow access for storage in the seat box.

#### **CAB FRONT UNDERSEAT STORAGE ACCESS**

The left and right under seat storage areas shall have a solid aluminum hinged door with non-locking latch.

#### **SEAT COMPARTMENT DOOR FINISH**

All underseat storage compartment access doors shall have a Zolatone #20-72 silver gray texture.

#### **WINDSHIELD WIPER SYSTEM**

The cab shall include a dual arm wiper system which shall clear the windshield of water, ice and debris. There shall be two (2) windshield wipers which shall be affixed to a radial wet arm. The system shall include a single motor which shall initiate the arm in which both the left hand and right hand windshield wipers are attached, initiating a back and forth motion for each wiper. The wiper motor shall be activated by an intermittent wiper control located within easy reach of the driver's position.

#### **ELECTRONIC WINDSHIELD FLUID LEVEL INDICATOR**

The windshield washer fluid level shall be monitored electronically. When the washer fluid level becomes low the yellow "Check Message Center" indicator light on the instrument panel shall illuminate and the message center in the dual air pressure gauge shall display a "Check Washer Fluid Level" message.

#### **CAB DOOR HARDWARE**

The cab entry doors shall be equipped with exterior pull handles, suitable for use while wearing firefighter gloves. The handles shall be made of aluminum with a chrome plated finish.

The interior exit door handles shall be flush paddle type with a black finish, which are incorporated into the upper door panel.

All cab entry doors shall include locks which are keyed alike. The door locks shall be designed to prevent accidental lockout.

The exterior pull handles shall include a scuff plate behind the handle constructed of polished stainless steel to help protect the cab finish.

#### **DOOR LOCKS**

Each cab entry door shall include a manually operated door lock. The each door lock may be actuated from the inside of the cab by means of a red knob located on the paddle handle of the respective door or by using a TriMark key from the exterior. The door locks are designed to prevent accidental lock out.

#### **DOOR LOCK LH REAR CAB COMPARTMENT**

The left hand side rear compartment shall feature a manual door lock.

**DOOR LOCK RH REAR CAB COMPARTMENT**

The right hand side rear compartment shall feature a manual door lock.

**GRAB HANDLES**

The cab shall include one (1) 18.00 inch knurled, anti-slip, one-piece exterior assist handle behind each cab door. The grab handle shall be made of 14 gauge 304- stainless steel and be 1.25 inch diameter to enable non-slip assistance with a gloved hand.

**REARVIEW MIRRORS**

Retrac Aerodynamic West Coast style dual vision mirror heads model 613305 shall be provided and installed on each of the front cab doors.

The mirrors shall be mounted via 1.00 inch diameter tubular stainless steel arms to provide a rigid mounting to reduce mirror vibration.

The mirrors shall measure 8.00 inches wide X 19.00 inches high and shall include an integral convex mirrors installed in the mirror head below the flat glass to provide a wider field of vision. The flat and convex mirrors shall be motorized with remote horizontal and vertical adjustment. The control switches shall be mounted within easy reach of the driver. The flat and convex mirrors shall be heated for defrosting in severe cold weather conditions.

The mirrors shall be constructed of a vacuum formed chrome plated ABS plastic housing that is corrosion resistant and shall include the finest quality non-glare glass.

**REARVIEW MIRROR HEAT SWITCH**

The heat for the rearview mirrors shall be controlled through a rocker switch on the dash in the switch panel.

**AUXILIARY EXTERIOR MIRRORS**

The cab exterior shall include one (1) Retrac 10.00 inch diameter polishes stainless steel convex look down mirror. The mirror shall be located above the right side front windshield using a Retrac model 612665 stainless steel arm assembly to provide a stable three-point mount to reduce mirror vibration. The mirror shall provide additional visibility to the right front corner of the vehicle.

**CAB FENDER**

Full width wheel well liners shall be installed on the extruded cab to limit road splash and enable easier cleaning. Each two-piece liner shall consist of an inner liner 16.00 inches wide made of vacuum formed ABS composite and an outer fenderette 5.00 inches wide made of 12 gauge polished aluminum.

**MUD FLAPS FRONT**

The front wheel wells shall have mud flaps installed on them.

**CAB EXTERIOR FRONT & SIDE EMBLEMS**

The cab shall include three (3) Spartan emblems. There shall be one (1) installed on the front air intake grille and one (1) installed on each side of the cab exterior above the wheel well.

**CAB EXTERIOR MODEL NAMEPLATE**

The cab shall include custom "Metro Star" nameplates on the front driver and officer side doors.

### **IGNITION**

A master battery system with a keyless start ignition system shall be provided. Each system shall be controlled by a one-quarter turn Cole Hersee switch, both of which shall be mounted to the left of the steering wheel on the dash. A chrome push type starter button shall be provided adjacent to the master battery and ignition switches.

Each switch shall illuminate a green LED indicator light on the dash when the respective switch is placed in the "ON" position.

The starter button shall only operate when both the master battery and ignition switches are in the "ON" position.

### **BATTERY**

The single start electrical system shall include six (6) Harris BCI 31 950 CCA batteries with a 210 minute reserve capacity and 4/0 welding type dual path starter cables per SAE J541. The cables shall have encapsulated ends with heat shrink and sealant.

### **BATTERY TRAY**

The batteries shall be installed within two (2) stainless steel battery trays located on the left side and right side of the chassis, securely bolted to the frame rails. The battery trays shall be coated with the same material as the frame.

The battery trays shall include drain holes in the bottom for sufficient drainage of water. A durable, non-conducting, interlocking mat made by Dri-Dek shall be installed in the bottom of the trays to allow for air flow and help prevent moisture build up. The batteries shall be held in place by non-conducting phenolic resin hold down boards.

### **BATTERY BOX COVER**

Each battery box shall include a stainless steel cover which protects the top of the batteries. Each cover shall include flush latches which shall keep the cover secure as well as a black powder coated handle for convenience when opening.

### **BATTERY CABLE**

The starting system shall include cables which shall be protected by 275 degree F. minimum high temperature flame retardant loom, sealed and encapsulated at the ends with heat shrink and sealant.

### **BATTERY JUMPER STUD**

The starting system shall include battery jumper studs. These studs shall be located in the forward most portion of the driver's side lower step. The studs shall allow the vehicle to be jump started, charged, or the cab to be raised in an emergency in the event of battery failure.

### **ALTERNATOR**

The charging system shall include a 320 amp Leece-Neville 12 volt alternator. The alternator shall include a self-exciting integral regulator.

### **BATTERY CONDITIONER**



A Kussmaul 35/10 battery conditioner shall be supplied. The battery conditioner shall provide a 35 amp output for the chassis batteries and a 10 amp battery saver output. The battery conditioner shall be mounted in the cab in the LH rear facing outer seating position.

#### **BATTERY CONDITIONER DISPLAY**

A Kussmaul battery conditioner display shall be supplied. The battery conditioner display shall be mounted in the cab, viewable through the cab mid side window behind the left front door.

#### **AUXILIARY AIR COMPRESSOR**

A Kussmaul Auto Pump 120V air compressor shall be supplied. The air compressor shall be installed behind the officer's seat. The air compressor shall be plumbed to the air brake system to maintain air pressure.

#### **ELECTRICAL INLET**

A Kussmaul 20 amp super auto-eject electrical receptacle shall be supplied. It shall automatically eject the plug when the starter button is depressed.

A single item or an addition of multiple items must not exceed the rating of the electric inlet that it's connected to.

#### **Amp Draw Reference List:**

*Kussmaul 1000 Charger - 3.5 Amps*

*Kussmaul 1200 Charger - 10 Amps*

*Kussmaul 35/10 Charger - 10 Amps*

*1000W Engine Heater - 8.33 Amps*

*1500W Engine Heater - 12.5 Amps*

*120V Air Compressor - 4.2 Amps*

#### **ELECTRICAL INLET LOCATION**

An electrical inlet shall be installed on the left hand side of cab over the wheel well.

#### **ELECTRICAL INLET CONNECTION**

The electrical inlet shall be connected to the battery conditioner and the air pump.

#### **ELECTRICAL INLET COLOR**

The electrical inlet connection shall include a yellow cover.

#### **HEADLIGHTS**

The cab front shall include four (4) rectangular halogen headlamps with separate high and low beams mounted in bright chrome bezels.

#### **FRONT TURN SIGNALS**

The front fascia shall include two (2) Whelen model 600 4.00 inch X 6.00 inch programmable amber LED turn signals which shall be installed in a polished aluminum housing above and outboard of the front warning and head lamps.

#### **HEADLIGHT LOCATION**

The headlights shall be located on the front fascia of the cab directly below the front warning lights.

#### **SIDE TURN/MARKER LIGHTS**

The sides of the cab shall include two (2) LED round side marker lights which shall be provided just behind the front cab radius corners.

#### **MARKER AND ICC LIGHTS**

In accordance with FMVSS, there shall be five (5) LED cab marker lamps designating identification, center, and clearance provided. These lamps shall be installed on the roof of the cab. The lamps shall be a beehive shape and include chrome housings. The lights shall measure 2.28 inches high and have a 2.54 inch diameter base.

#### **HEADLIGHT AND MARKER LIGHT ACTIVATION**

The headlights and marker lights shall be controlled through a rocker switch within easy reach of the driver. There shall be a dimmer switch within easy reach of the driver to adjust the brightness of the dash lights. The headlamps shall be equipped with the "Daytime Running" light feature, which shall illuminate the headlights to 80% brilliance when the battery master switch is in the "On" position and the parking brake is released.

#### **GROUND LIGHTS**

Each door shall include an incandescent NFPA compliant ground light mounted to the under side of the cab step below each door. Each light shall include a polycarbonate lens, a housing which is vibration welded and a bulb which shall be shock mounted for extended life. The ground lighting shall be activated by the opening of the respective door as well as rocker switched.

#### **STEP LIGHTS**

The middle step located at each door shall include a recess mounted 4.00 inch round LED light which shall activate with the opening of the respective door.

#### **UNDER BUMPER LIGHTS**

There shall be two (2) 4.00 inch round LED NFPA compliant ground lights mounted under the bumper. The lights shall include a polycarbonate lens, a housing which is vibration welded, and LEDs which shall be shock mounted for extended life. The under bumper ground lighting shall be interlocked with the park brake and the marker light activation.

#### **ENGINE COMPARTMENT LIGHT**

There shall be an incandescent NFPA compliant light mounted under the engine tunnel for area work lighting on the engine. The light shall include a polycarbonate lens, a housing which is vibration welded and a bulb which shall be shock mounted for extended life. The light shall activate automatically when the cab is tilted.

#### **FRONT SCENE LIGHTS**

The front of the cab shall include one (1) Whelen model Pioneer PFP2 contour roof mount scene light installed on the brow of the cab.

The lamp head shall have two (2) 12 volt high intensity LED panels. Each lamp head shall draw 12.0 amps and generate 14,000 lumens total. The lamp head will be adjustable up to 20-degrees and shall measure 4.25 inches in height X 14.00 inches in width. The lamp head and brackets shall be powder coated white.

#### **FRONT SCENE LIGHTS ACTIVATION**

The front scene lighting shall be activated by a rocker switch.

#### **FRONT SCENE LIGHT LOCATION**

There shall be one (1) scene light mounted center on the front brow of the cab.

#### **SIDE SCENE LIGHTS**

The cab shall include two (2) Whelen model Pioneer PFP1 semi-recess mount lights installed one (1) on each side of the cab.

Each lamp head shall have one (1) 12 volt high intensity LED panel. Each lamp head shall draw 6.0 amps and generate 7,000 lumens. Each lamp head shall measure 4.25 inches in height X 8.18 inches in width. Each lamp head shall be mounted at a 15-degree downward angle within a semi-recess housing featuring a chrome flange which shall measure 7.64 inches in height X 11.87 inches in width. The lamp heads shall be powder coated white.

#### **SIDE SCENE LIGHT LOCATION**

The scene lighting located on the left and right sides of the cab shall be mounted in the upper rear portion of the 20.00 inch raised roof of the cab behind the rear crew doors.

#### **SIDE SCENE ACTIVATION**

The scene lights shall be activated by two (2) rocker switches located in the switch panel, one (1) for each light.

#### **INTERIOR OVERHEAD LIGHTS**

The cab shall include a two-section Weldon incandescent dome lamp with a red and clear lens located over each door. The dome lamps shall be rectangular in shape and shall measure approximately 9.50 inches in length X 5.00 inches in width with a black colored bezel. The clear portion of each lamp shall be activated by opening the respective door and both the red and clear portions can be activated by individual switches on each lamp.

An additional two-section Weldon incandescent red and clear lamp shall be provided over the engine tunnel which can be activated by individual switches on the lamp.

#### **AUXILIARY DOME LIGHT LH**

The cab shall include two (2) 7.00 inch diameter auxiliary dome lights above the left hand front seat position. One (1) light shall include a clear lens and one (1) light shall include a red lens. The lights shall be activated by an individual switch located on the side of the light.

#### **AUXILIARY DOME LIGHT RH**

The cab shall include two (2) 7.00 inch diameter auxiliary dome lights above the right hand front seat position. One (1) light shall include a clear lens and one (1) light shall include a red lens. The lights shall be activated by an individual switch located on the side of each light.

#### **MAP LIGHTS**

A Roxter gooseneck style map light shall be provided. The light shall have a clear bulb and a control switch on the base. The light shall be located on the right hand side of the dash.

#### **SPOTLIGHT**

The officer position shall include one (1) 12 volt Collins Pulsar 750 hand-held spotlight which shall be mounted to the right of the engine tunnel. The spotlight shall provide 750,000 candlepower of illumination and shall include a coil cord and a momentary switch.

#### **DO NOT MOVE APPARATUS LIGHT**

The front headliner of the cab shall include a flashing red light clearly labeled "Do Not Move Apparatus". In addition to the flashing red light, an audible alarm shall be included which shall sound while the light is activated.

The flashing red light shall be 6.00 inches long X 2.50 inches wide X 1.75 inches high and shall be located centered left to right for greatest visibility.

The light and alarm shall be interlocked for activation when either a cab door is not firmly closed or an apparatus compartment door is not closed, and the parking brake is released.

#### **MASTER WARNING SWITCH**

A master switch shall be included in the main rocker switch panel. The switch shall be a rocker type, red in color and labeled "Master" for identification. The switch shall feature control over all devices wired through it. Any warning device switch left in the "ON" position shall automatically power up when the master switch is activated.

#### **HEADLIGHT FLASHER**

An alternating high beam headlight flashing system shall be installed into the high beam headlight circuit which shall allow the high beams to flash alternately from left to right.

Deliberate operator selection of high beams will override the flashing function until low beams are again selected. Per NFPA, these clear flashing lights will also be disabled "On Scene" when the park brake is applied.

#### **HEADLIGHT FLASHER SWITCH**

The flashing headlights shall be activated through the master warning switch.

#### **INBOARD FRONT WARNING LIGHTS**

The cab front fascia shall include two (2) Whelen M6 Super LED front warning lights in the left and right inboard positions. The lights shall feature multiple flash patterns including steady burn for solid colors and multiple flash patterns for split colors. The lights shall be mounted to the front fascia of the cab within a chrome bezel.

#### **INBOARD FRONT WARNING LIGHTS COLOR**

The warning lights mounted on the cab front fascia in the inboard positions shall be red.

#### **OUTBOARD FRONT WARNING LIGHTS**

The cab front fascia shall include two (2) Whelen M6 Super LED front warning lights in the left and right outboard positions. The lights shall feature multiple flash patterns including steady burn for solid colors and multiple flash patterns for split colors. The lights shall be mounted to the front fascia of the cab within a chrome bezel.

#### **OUTBOARD FRONT WARNING LIGHTS COLOR**

The warning lights mounted on the cab front fascia in the outboard position shall be red.

## **FRONT WARNING SWITCH**

The front warning lights shall be controlled via rocker switch on the panel. This switch shall be clearly labeled for identification.

## **INTERSECTION WARNING LIGHTS**

The chassis shall include two (2) Whelen M6 series Super LED intersection warning lights, one (1) each side. The lights shall feature multiple flash patterns including steady burn.

## **INTERSECTION WARNING LIGHTS COLOR**

The intersection lights shall be red.

## **INTERSECTION WARNING LIGHTS LOCATION**

The intersection lights shall be mounted on the side of the cab on the front radius.

## **SIDE WARNING LIGHTS**

The cab sides shall include two (2) Whelen M6 Super LED warning lights, one (1) on each side. The lights shall feature multiple flash patterns including steady burn for solid colors and multiple flash patterns for split colors. The lights shall be mounted to the sides of the cab within a chrome bezel.

## **SIDE WARNING LIGHTS COLOR**

The warning lights located on the side of the cab shall be red.

## **SIDE WARNING LIGHTS LOCATION**

The warning lights on the side of the cab shall be mounted over the front wheel well directly over the center of the front axle.

## **SIDE AND INTERSECTOR WARNING SWITCH**

The side and intersector warning lights shall be controlled by a rocker switch on the switch panel. This switch shall be clearly labeled for identification.

## **LIGHTBAR PROVISION**

There shall be one (1) light bar installed on the cab roof. The light bar shall be provided and installed by Spartan Chassis. The light bar installation shall include mounting and wiring to a control switch on the cab dash.

## **CAB FRONT LIGHTBAR**

The lightbar provisions shall be for one (1) Whelen brand Freedom FN72QLED lightbar mounted centered on the front of the cab roof. The lightbar shall be 72.00 inches in length. The lightbar shall feature six (6) red LED lights and two (2) clear LED lights. The clear lights shall be disabled with park brake engaged. The lightbar shall include an Opticom mounted centered in the front of the light bar. The cable shall exit the lightbar on the right side of the cab.

## **LIGHTBAR SWITCH**

The light bar shall be controlled by a rocker switch located on the switch panel. This switch shall be clearly labeled for identification.

## **TRAFFIC CONTROL**

There shall be one (1) GTT (Global Traffic Technologies) Opticom model 795H traffic control optical emitter mounted in the lightbar on the front of the cab roof. The emitter shall be activated by a lighted rocker switch on dash and shall be deactivated when the parking brake is applied.

#### **SIREN CONTROL HEAD**

A Whelen 295SLSA1 electronic siren control head with hard wired microphone. The siren shall offer a selectable 100 or 200-watt output, radio broadcast, public address, and seventeen (17) Scan-Lock siren tones and hands free operation which shall allow the operator to turn the siren on and off from the steering wheel horn ring if a horn/siren selector switch option is also selected. The siren circuitry shall be placed behind the rocker switch panels under the electrical cover with a 30.00 inch loop for the OEM to route as desired. The siren shall be mounted in lower left portion of the center panel.

#### **HORN BUTTON SELECTOR SWITCH**

A rocker switch shall be installed in the switch panel between the driver and officer to allow control of either the electric horn or the air horn from the steering wheel horn button. The electric horn shall sound by default when the selector switch is in either position to meet FMCSA requirements.

#### **AIR HORN ACTIVATION**

The air horn activation shall be accomplished by the steering wheel horn button for the driver and a right hand side Linemaster model SP491-S81 foot switch for the officer. An air horn activation circuit shall be provided to the chassis harness pump panel harness connector.

#### **MECHANICAL SIREN ACTIVATION**

The mechanical siren shall be actuated by two (2) Linemaster model SP491-S81 foot switches mounted in the front section of the cab for use by the driver and officer. A red momentary siren brake rocker switch shall be provided in the switch panel on the dash.

The siren shall only be active when master warning switch is on to prevent accidental engagement.

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

An ECCO model 575 backup alarm shall be installed at the rear of the chassis with an output level of 107 dB. The alarm shall automatically activate when the transmission is placed in reverse.

#### **INSTRUMENTATION**

An ergonomically designed instrument panel shall be provided. Each gauge shall be backlit with LED lamps. Stepper motor movements shall drive all gauges. The instrumentation system shall be multiplexed and shall receive ABS, engine, and transmission information over the J1939 data bus to reduce redundant sensors and wiring.

The instrument panel shall contain the following gauges:

One (1) electronic speedometer shall be included. The primary scale on the speedometer shall read from 0 to 100 MPH, and the secondary scale on the speedometer shall read from 0 to 160 KM/H.

One (1) electronic tachometer shall be included. The scale on the tachometer shall read from 0 to 3000 RPM.

One (1) two-movement gauge displaying primary system, and secondary system air volumes and integral LCD odometer/trip odometer shall be included on the lower portion of the LCD. The scale on

the air pressure gauges shall read from 0 to 150 pounds per square inch (PSI). The air pressure scales shall be linear to operate with an accuracy of 1 degree of the measured data with a red indication zone on the gauge showing critical levels of air pressure. A red indicator light in the gauge shall indicate a low air pressure, as well as a message on the LCD screen. The odometer shall display up to 9,999,999.9 miles. The trip odometer shall display 9,999.9 miles. The LCD shall display Transmission Temperature in degrees Fahrenheit on the upper portion of the LCD. The LCD screen shall also be capable of displaying certain diagnostic functions.

One (1) four-movement gauge displaying engine oil pressure, coolant temperature, fuel level, voltmeter, and an indicator bar displaying Diesel Exhaust Fluid (DEF) LED bar shall be included. The scale on the engine oil pressure gauge shall read from 0 to 120 pounds per square inch (PSI). The engine oil pressure scale shall be linear to operate with an accuracy of 1 degree of the measured. A red indicator light in the gauge shall indicate a low engine oil pressure, as well as a message on the LCD screen. The scale on the coolant temperature gauge shall read from 100 to 250 degrees Fahrenheit (F). The coolant temperature scale shall be linear to operate with an accuracy of 1 degree of the measured data with a red indication zone on the gauge showing critical levels of air pressure. A red indicator light in the gauge shall indicate high coolant temperature, as well as a message on the LCD screen. The scale on the fuel level gauge shall read from empty to full as a percentage of fuel remaining. An amber indicator light shall indicate low fuel at 25% tank level. The scale on the voltmeter shall read from 10 to 16 volts with a red indication zone on the gauge showing critical levels of battery voltage. A red indicator light shall indicate high or low system voltage, as well as a message on the LCD screen. The scale on the DEF LED bar will consist of four (4) LEDs displaying levels in increments of 25% of useable DEF in green. Upon decreasing levels, the indicator bar will change colors to notify the driver of decreasing levels of DEF and action will be required. An amber indicator light shall indicate low levels of DEF, as well as a message on the LCD screen and an audible alarm.

The instrument panel shall include a light bar that contains the following LED indicator lights and produce the following audible alarms in applicable configurations:

### **RED LAMPS**

Stop Engine-indicates critical engine fault

Air Filter Restricted-indicates excessive engine air intake restriction

Park Brake-indicates parking brake is set

Seat Belt Indicator-indicates when a seat is occupied and corresponding seat belt remains unfastened

Low Coolant-indicates engine coolant is required

### **AMBER LAMPS**

MIL-indicates an engine emission control system fault

Check Engine-indicates engine fault

Check Trans-indicates transmission fault

High Transmission Temperature-indicates excessive transmission oil temperature

ABS-indicates anti-lock brake system fault

Wait to Start-indicates active engine air preheat cycle

HEST-indicates a high exhaust system temperature

Water in Fuel-indicates presence of water in fuel filter

DPF-indicates a restriction of the diesel particulate filter

Regen Inhibit-indicates regeneration has been postponed due to user interaction

Range Inhibit-indicates a transmission operation is prevented and requested shift request may not occur.

SRS-indicates a problem in the RollTek supplemental restraint system

Check Message-Turn Signal On  
Check Message-Door Ajar  
Check Message-Cab Ajar  
Check Message-ESC Active  
Check Message-DPF Regen Active  
Check Message-No Engine Data  
Check Message-No Transmission Data  
Check Message-No ABS Data  
Check Message-No Data All Communication With Vehicle Systems Has Been Lost  
Check Message-Check Engine Oil Level  
Check Message-Check Washer Fluid Level  
Check Message-Check Power Steering Fluid Level  
Check Message-Low Transmission Fluid Level  
Check Message-Check Coolant Level

### **GREEN LAMPS**

Left and Right turn signal indicators  
ATC-indicates low wheel traction for automatic traction control equipped vehicles, also indicates mud/snow mode is active for ATC system  
High Idle-indicates engine high idle is active.  
Cruise Control-indicates cruise control is active  
OK to Pump-indicates the pump engage conditions have been met  
Pump Engaged-indicates the pump is currently in use  
Auxiliary Brake-indicates secondary braking device is active

### **BLUE LAMPS**

High Beam Indicator

### **CONSTANT AUDIBLE ALARMS FROM GAUGE PACKAGE**

High Trans Temp  
High or Low Voltage  
Seatbelt  
Check Engine  
Check Transmission  
Stop Engine  
Low Air Pressure  
Fuel Low  
Water in Fuel  
ESC  
High Coolant Temperature  
Low Engine Oil Pressure  
Low Coolant Level  
Low DEF Level  
Air Filter Restricted  
Extended Left and Right Turn Remaining On  
Cab Ajar  
Door Ajar  
ABS System Fault  
SRS (Supplemental Restraint System) Fault



## **EXTERNAL AUDIBLE ALARMS**

Air Filter  
Cab Ajar  
Door Ajar  
Seatbelt  
Check Engine  
Stop Engine  
Low Air Pressure  
Water in Fuel  
Low DEF  
ABS System Fault  
SRS (Supplemental Restraint System) Fault  
High or Low Voltage

## **BACKLIGHTING COLOR**

The instrumentation gauges and the switch panel legends shall be backlit using red LED backlighting.

## **AUXILIARY SPEEDOMETER**

The dash shall include an auxiliary speedometer which shall feature a digital readout.

## **CAMERA**

An Audiovox Voyager heavy duty rearview camera system, complete with an LCD display monitor, shall be supplied. One (1) camera with a teardrop shaped chrome plated housing shall be shipped loose for OEM installation in the body to afford the driver a clear view to the rear of the vehicle.

The camera shall be wired to a 7.00 inch flip down monitor which shall include a color display and day and night brightness modes installed above the driver position. The camera shall activate when the transmission is placed in reverse.

## **COMMUNICATION ANTENNA**

An antenna base, for use with an NMO type antenna, shall be mounted on the right hand front corner of the cab roof so not to interfere with light bars or other roof mounted equipment installed by Spartan Chassis. The antenna base shall be an Antenex model MABVT8 made for either a 0.38 inch or 0.75 inch receiving hole in the antenna and shall include 17.00 foot of RG58 A/U cable with no connector at the radio end of the cable. The antenna base design provides the most corrosion resistance and best power transfer available from a high temper all brass construction and gold plated contact design. The antenna base shall be provided by Spartan.

## **COMMUNICATION ANTENNA CABLE ROUTING**

The antenna cable shall be routed from the antenna base mounted on the roof to the area underneath the right hand front seat.

## **AUXILIARY COMMUNICATION ANTENNA**

An auxiliary antenna base, for use with an NMO type antenna, shall be installed on the cab. The antenna base shall be an Antenex model MABVT8 and shall include 17.00 foot of RG58 A/U cable with no connector at the radio end of the cable. The antenna shall be mounted on the left hand front corner of the cab roof so not to interfere with light bars or other roof mounted equipment installed by Spartan Chassis. The antenna base shall be provided by Spartan.

### **AUXILIARY COMMUNICATION ANTENNA CABLE ROUTING**

The auxiliary antenna cable shall be routed from the antenna base mounted on the roof to the area inside the center rocker switch console.

### **ADDITIONAL COMMUNICATION ANTENNA**

An additional antenna base, for use with and NMO type antenna, shall be installed on the cab. The antenna base shall be an Antenex model MABVT8 and shall include 17.00 foot of RG58 A/U cable with no connector at the radio end of the cable. The antenna base shall be mounted in the inboard position on the left hand front corner of the cab roof so not to interfere with light bars or other roof mounted equipment installed by Spartan Chassis. The antenna base shall be provided by Spartan.

### **ADDITIONAL COMMUNICATION ANTENNA CABLE ROUTING**

The additional antenna cable shall be routed from the antenna base mounted on the roof to the area inside the center rocker switch console.

### **EXTRA COMMUNICATION ANTENNA**

An extra antenna base, for use with a NMO type antenna, shall be installed on the cab. The antenna base shall be an Antenex model MABVT8 and shall include 30.00 foot of RG58 A/U cable with no connector at the radio end of the cable. The antenna base shall be mounted on the forward portion of the raised roof on the right hand side approximately 8.00 inches from the center of the cab so it does not interfere with light bars or other roof mounted equipment installed by Spartan Chassis. The antenna base shall be provided by Spartan.

### **EXTRA COMMUNICATION ANTENNA CABLE ROUTING**

The extra antenna cable shall be routed from the antenna base mounted on the roof to the area underneath the right hand front seat.

### **ANCILLARY COMMUNICATION ANTENNA**

An ancillary antenna base shall be installed on the cab. The antenna base shall be a Aviation antenna model Maxrad K220C. The antenna base shall be mounted on the forward portion of the raised roof offset towards the left side from the center of the cab and approximately 10.00 inches from forward antenna mounting location so it does not interfere with light bars or other roof mounted equipment installed by Spartan Chassis. The antenna base shall be provided by the customer.

### **ANCILLARY COMMUNICATION ANTENNA CABLE ROUTING**

The ancillary antenna cable shall be routed from the antenna base mounted on the roof to the area inside the center rocker switch console.

### **CAB EXTERIOR PROTECTION**

The cab face shall have a removable plastic film installed over the painted surfaces to protect the paint finish during transport to the body manufacturer.

### **FIRE EXTINGUISHER**

A 2.50 pound D.O.T approved fire extinguisher with BC rating shall be shipped loose with the cab.

### **DOOR KEYS**

The cab and chassis shall include a total of four (4) door keys for the manual door locks.

## **WARRANTY**

The chassis manufacturer shall provide a limited parts and labor warranty to the purchaser of the custom built cab and chassis for a period of twenty-four (24) months, or the first 36,000 miles, whichever occurs first. The warranty period shall commence on the date the vehicle is delivered to the end user. The limited warranty may be transferred to subsequent owners during the warranty period. The warranty shall include conditional items listed in the detailed warranty document which shall be provided upon request.

## **CHASSIS OPERATION MANUAL**

There shall be two (2) digital copies of the chassis operation manual provided with the chassis. The digital data shall include a parts list specific to the chassis model.

## **ENGINE AND TRANSMISSION OPERATION MANUALS**

There shall be one (1) printed hard copy set of the engine operation manual and one (1) printed hard copy set of the transmission operation manual specific to the model ordered included with the chassis in the ship loose items.

## **CAB/CHASSIS AS BUILT WIRING DIAGRAMS**

The cab and chassis shall include one (1) digital copy of wiring schematics and option wiring diagrams.

# Colchester Rescue Body

## **PRE-CONSTRUCTION MEETING**

A pre-construction meeting shall be held at the Bidders manufacturing facility prior to any construction processes. Authorized representatives of both the Purchaser and the Manufacturer shall be present. The Manufacturer shall supply complete apparatus drawings and specifications at the meeting for review and Purchaser approval.

The bidder's total proposal price shall include transportation, food, and lodging costs for Purchaser personnel to attend the meeting.

## **APPROVAL DRAWINGS**

Two (2) sets of engineering blueprints, CAD drawn to scale specifically for this apparatus, shall be provided. The Fire Department shall review and approve these drawings prior to actual construction of the apparatus.

Both left and right side views, a rear view and a top view shall be provided. The blueprints shall also show the overall dimensions of the apparatus, proposed compartment sizes and features, and the location of all emergency warning and work lights that are to be provided by the body builder.

## **PERFORMANCE REQUIREMENTS**

The apparatus, when fully equipped and loaded, shall be capable of the following performance on dry, level, paved roads in good condition:

From a standing start the vehicle shall attain a true speed of 35 mph within 25 seconds.

From a steady speed of 15 mph the vehicle shall accelerate to a true speed of 35 mph within 30 seconds. This shall be accomplished without moving the gear selector.

The vehicle shall attain a minimum top speed of not less than 50 mph.

The apparatus shall be able to maintain a speed of at least 20 mph on any grade up to and including six percent.

## **MODIFICATIONS TO CHASSIS**

The following modifications shall be performed on the chassis upon arrival at the body builder's facility:

### **FUEL FILL**

The chassis furnished fuel tank shall be located aft of the rear axle. The body builder shall install the fuel fill on the road side behind the rear axle. The fuel fill will hook up with flexible fuel hose and will have a polished cast aluminum recessed filler with a hinged door. A nametag shall be provided as to the type of fuel the vehicle shall use.

When possible a rear access panel will be provided in rear compartment wall to gain access to the fuel tank sending unit.

### **APPARATUS INFORMATION LABEL**

A label shall be provided in the area of the driver seat to notify the driver of the maximum amount of personnel to be carried on the vehicle as well the overall height, overall length, and the GVWR.

### **HELMET LABEL**

A label stating "DO NOT WEAR HELMET WHILE SEATED" shall be provided and visible from each seating location.

### **CHASSIS EXHAUST**

The chassis exhaust shall be extended just past the body side. A stainless steel exhaust deflector shall be located just above the exhaust pipe and below the body to prevent discoloration of the body side panels.

### **REAR TOW EYES**

## Colchester Rescue Body

Two (2) heavy duty eyes, .75" x 4" with a 2.375" elongated hole, shall be furnished at the rear of the body above the step and shall be bolted directly to the truck frame rails. There shall be stainless steel trim panels installed around the tow eyes.

### **PAINTED TOW EYES - BLACK**

Tow eyes will be painted black.

### **REAR SPRING SHACKLE ACCESS**

The rear axle spring shackles, if equipped with grease fittings, shall have the fittings replaced with 90 degree fittings for ease of service once the body is in place.

### **FLUID ID PLATE**

The following quantity and type of fluids used in the vehicle will be listed on a placard and located in the cab:

- Engine oil
- Engine coolant
- Transmission fluid
- \* Pump transmission lubrication fluid
- \* Pump primer fluid
- Drive axle lubrication fluid
- \* Air-conditioning refrigerant
- \* Air-conditioning lubrication oil
- Power steering fluid
- \* Cab tilt mechanism fluid
- \* Transfer case fluid
- \* Equipment rack fluid
- \* Air compressor system lubricant
- \* Generator system lubricant
- Front tire cold pressure
- Rear tire cold pressure
- Maximum tire speed ratings

\* = When applicable.

### **REAR MUDFLAPS**

A black hard rubber mudflap with the manufacturer's logo on it shall be installed behind the rear wheels, one (1) each side.

### **MAP STORAGE DESK, DUAL**

There will be a map storage box installed on the engine cover of chassis. The box will be approximately 21" wide x 12" high x full width of engine cover. The center part of the box will have slots for binders and papers. Each end will include a slanted desk surface with a 1" lip around the entire perimeter to allow for a folding notebook to lay flat inside the unit. The map storage boxes will be made of DA finished smooth aluminum.

Unit shall be fabricated per CFD specification.

### **HELMET HOLDERS**

The chassis manufacturer shall provide and install near each seat position helmet holders to meet compliance to the 2009 edition of NFPA 1901 for use inside of crew cabs. The holders shall secure traditional and contemporary style helmets without any adjustment being required.

# Colchester Rescue Body

## **BODY SPECIFICATIONS**

### **BODY CONSTRUCTION**

All body framing, doors, skin, etc. shall be of all aluminum construction to enhance vehicle performance, reduce overall maintenance and maximize available payload by minimizing the body weight. For maximum strength, the body framing shall be all extruded construction.

### **CROSSMEMBERS**

3" x 2" x .25" wall thickness, 6061-T6 aluminum extruded rectangular tubing on 16" centers.

To eliminate corrosion, all crossmembers and structural tubing will have the ends capped and solidly welded shut on all sides to eliminate the possibility of dirt, water, and salt from entering (NO EXCEPTIONS).

### **UPRIGHTS**

Door openings and between exterior side compartments will have 3" X 2" X .125" wall thickness, 6061-T6 aluminum extruded rectangular tubing. Intermediate uprights of 2" x 1" x .125" wall thickness, 6063-T52 aluminum extruded rectangular tubing on 16" centers.

### **ROOF RAFTERS**

Roof rafters to be 2" x 1" x .125" wall thickness, 6063-T52 aluminum extruded rectangular tubing on 16" centers.

### **ROOF COVE AND CORNER POSTS**

For body strength, the corner posts and roof cove perimeter shall have a 1.5" radius of 6061-T6 extruded .125" aluminum. All corners shall have a 1.5" radius cast aluminum ball cap at the top corners of the body.

### **SKIN**

Smooth .125" aluminum, bonded to uprights. Body sides to be one piece with no visible splice seams or rivets, for superior appearance and graphics.

Entire front body panel between the corner posts to be .125" bright aluminum treadplate. The treadplate front wall will prevent paint chips from stones or other debris which may be kicked up from the road.

### **ROOF**

Roof material to be .125" bright aluminum treadplate, seams and perimeter to be 100% welded. To insure a water tight non leaking roof, skip welding or caulking will not be acceptable.

### **INSULATION**

The body sides above the exterior compartments and roof shall be insulated with 2" sheet styrofoam insulation to reduce thermal loss.

### **RUBRAILS, REMOVABLE EXTRUDED CHANNEL**

Rubrails will be heavy duty extruded aluminum C-channel design with a bright dipped anodized finish. The top edge of the rubrail will include a ribbed design to help hide scratches and the inside of the channel will be striped with 3M diamond grade red-white reflective tape for improved safety. The rubrails shall have a .25" drain gap and will be located under each compartment door flush with the rear step and pump compartment running boards. These shall be fastened to the threshold extrusion on for ease of service and replacement in case of damage.

### **STONE SHIELDS**

Stone shields shall be located on the lower front body corner posts and fastened with stainless steel torx head screws.

## Colchester Rescue Body

Shields are to be .100" bright aluminum treadplate construction and wrap around the corner posts.

### **FENDERS**

Fenders are to be sized to allow ample clearance for tire chains. The fender liners shall extend full depth to the rear springs and be welded to the rear body panels. The fender liners are to be sealed with continuous welds to the outside and inside body panels to provide maximum strength, elimination of any pockets for the accumulation of dirt and road salt, and to provide ease of cleaning.

### **FENDERETTES**

The fenderettes shall be polished stainless steel held in place to the wheel housing with stainless steel cap screws and well-nuts for easy replacement. The fenderettes and the fasteners shall be isolated from the wheel housing to prevent electrolysis. A trim molding shall be provided between the fenderettes and wheel housing. The fenderettes shall be mounted to the body thereby affording superior protection from debris hitting the sides of the body.

### **FENDER PANELS**

The body panels above the wheel housing shall be .10" bright aluminum treadplate overlay fastened with stainless steel torx head screws for ease of replacement in case of an accident.

### **SPRING SHACKLE CLEARANCE**

Since exterior side compartments are full depth, provisions in the compartments, fore and aft of the rear wheels shall be made for special enclosures around the chassis springs and spring hangers. These enclosures shall be large enough for accessibility into grease fittings and spring pins.

### **BEAVERTAILS - NON SLOPING**

There shall be beavertails extending from the top of the body to the top of the rear beavertail compartment. Construction to be of .125" aluminum. The 1.75" corner posts will be an integral part of the beavertails. Beavertails that have an 'added-on' appearance shall not be permitted.

The two inner vertical beavertail walls that face the rear entrance door shall be .125" bright aluminum treadplate.

### **BODY MOUNTS - NYLON**

There shall be 75,000-90,000 PSI yield high strength .625" bolts to attach the body brackets to the chassis frame, mounted so as to prevent any movement of the body.

Full length nylon sills shall be located between the chassis frame rails and the body.

### **COMPARTMENT VENTS**

Stamped ventilating louvers shall be provided in each compartment and so located that water cannot normally enter the compartment through the louvers. Louvers shall be punched integrally into the back wall of the compartment and be open to the top. Each compartment shall have a minimum of six (6) louvers 4" long for good air circulation to dry out compartment interiors and equipment. **Added on louvers are not acceptable.**

### **EXTERIOR COMPARTMENTS**

All general framing to be aluminum. Compartments shall be an integral part of the body construction and shall also be suspended by the floor crossmembers. The floor crossmembers shall be attached to the main body uprights located between the compartment openings.

### **COMPARTMENT FLOORS**

Compartment floors will be 100% welded to the threshold extrusion. Floor material to be .125" smooth aluminum and to be of integral support to the front, rear and side compartment walls.

The center portion of the floor will be reinforced with an extruded aluminum channel to prevent buckling and oil-canning. To eliminate corrosion the channels will be inverted to eliminate the possibility of dirt, water, and salt from entering (**NO EXCEPTIONS**).

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## **DOOR THRESHOLD**

The door threshold shall be constructed from a sealed box type 6061-T6 aluminum extrusion. The extrusion shall be tied into the extruded uprights and shall provide a flush "sweep-out" style floor with no lip. The extrusion shall run under the compartment floor to prevent damage when heavy equipment is dropped on the front lip of the floor. A formed up compartment floor providing the sweep out lip area shall not be acceptable.

## **MATEFLEX GRATING**

Black Mateflex grating shall be installed where specified. Where appropriate the grating shall have a beveled edge facing the front of the compartment to prevent snagging while loading equipment.

## **COMPARTMENT WALLS**

The compartment sidewalls and rear wall to be .125" smooth aluminum. All compartment seams will be 100% sealed so to provide a water tight compartment.

The side compartment walls will be double wall design so all wiring can be hidden and also allow outlets, switches, reel buttons, breaker boxes, etc. to be recessed into the walls. **Separating the compartments with a single shared wall will not be acceptable. (NO EXCEPTIONS)**

## **ROLL-UP COMPARTMENT DOORS**

The body side compartments shall be equipped with Robinson brand roll up doors.

The doors will be of anodized aluminum to form a close fitting curtain, manufactured of close tolerance slat profiles. The doors will have a pretension operator in a sealed alloy drum. The operator is positioned at the forward part of the compartment to afford maximum clearances and head room. Each door will be provided with side seals as a standard feature. These will be a specially formulated extruded neoprene, shaped to readily shed water. The side seals are mounted in a special extrusion, forward of the curtain track. The latching mechanism will be a lift bar arrangement, which utilizes a door wide spring loaded bar and two (2) cam surfaced latch points. The door will include an additional slat on bottom to allow for adequate lift bar clearance. Any roll door that exceeds a 63" high door opening from the rubrail or above 30" if over a wheel well shall include a pull down strap to make for easy closing.

## **DOOR FINISH**

The body side compartment roll up doors shall have a natural anodized finish.

## **REAR STEP**

The rear step shall be .188" serrated bright aluminum treadplate with a 9.5" x 45" intermediate step of aluminum "Grip Strut" located half way between the door entrance and the main step.

There shall be a warning label mounted above the rear step.

"DANGER - DO NOT RIDE ON REAR STEP WHILE VEHICLE IS IN MOTION. DEATH OR SERIOUS INJURY MAY RESULT."

## **BACKSTOP**

A BACKSTOP rear bumper system shall be installed at the rear tailboard. When the vehicle is in reverse, the system shall automatically apply the vehicle brakes when it senses contact. When the brakes are applied, they will remain applied as long as the vehicle remains in reverse.

## **ZICO LADDER - ROOF ACCESS SWING OUT AND DOWN**

There shall be a Zico swing out and down ladder at the rear of the apparatus. The ladder shall store flat against the body when not in use. The ladder shall pull out to a locked comfortable climbing angle when use is desired also allowing a fold down section to start the ladder climb from the ground. The ladder shall be wired to the door ajar warning light circuit.



## Colchester Rescue Body

### **DRIP MOLDINGS**

Anodized extruded aluminum drip moldings shall be located above the side compartment doors.

### **PAINT**

The complete apparatus body and any applicable doors shall be painted. All exposed metal surfaces which are not chrome plated or polished shall be thoroughly cleaned and prepared.

To prevent corrosion and to insure bonding of primer, the body shall be washed by a chemical etch system. All irregularities in primed surfaces shall be sanded down before application of the finished coats. All removable items such as compartment doors shall be removed and painted separately.

To prevent electrolysis around fasteners, special attention must be given to how components are fastened to the exterior of body. All vendor-supplied screws shall be discarded and the manufacture shall replace them with their own stainless steel screws. In addition, every screw hole possible that protrudes into the body shall be punched with a square hole and then a plastic insert will be installed to isolate the dissimilar metals. Where an insert cannot be used, a zinc-rich type coating will be applied to each screw before they are installed. **(NO EXCEPTION TO THIS REQUIREMENT)**

Dupont polyurethane enamel "Imron" lead free paint shall be used on the body. Consistent with this requirement and to insure optimum adhesion of final paint and long service of paint, all related materials shall be those specified by the paint manufacturer for use with their finish. These related products shall include, but not be limited to the following: Corlar primer, catalysts, thinners, hardeners and reducers.

The body shall be painted the same color as the chassis.

### **PAINT UPPER BODY 2ND COLOR, ABOVE DOORS**

The body shall be painted from top of body to a line starting at top of the compartment doors.

### **CAB PAINT**

The cab and wheel exteriors shall be supplied in the proper color and shall not be repainted. Fire Department to use an available color from the chassis manufacturer.

### **COMPARTMENT FINISH**

To reduce marring and scuffing, the insides of the exterior compartments shall be painted with a durable light gray spatter type coating.

### **SHELF & TRAY FINISH**

Any shelves, trays, etc. shall be left a natural aluminum oscillated finish to allow for easy equipment mounting. The edges of all the roll-out items will include a 3M diamond grade red-white reflective stripe to improve safety.

### **FINISH PAINT UNDERBODY**

The body undercarriage shall be primed and painted to match the color of the body. This shall include the underside of the compartments, rear step, and wheel well liners.

### **ENCAPSULATED GOLD LEAF LETTERING**

Laminated encapsulated genuine gold leaf lettering shall be furnished on the apparatus. The lettering shall be genuine 23 carat gold leaf and have a burnished (engine turned) finish. The letters shall be encapsulated to protect them from the elements. Letters shall be outlined and drop shaded in black. Up to sixty (60) 3" high letters shall be provided. Lettering layout shall be as follows:

### **ENCAPSULATED GOLD LEAF LETTERING**

Thirty (30) 4"-6" high laminated encapsulated genuine gold leaf letters shall be furnished on the apparatus. The lettering shall be genuine 23 carat gold leaf and have a burnished (engine turned) finish. The letters shall be encapsulated so as to protect them from the elements. Letters shall be outlined and drop shaded in black. Lettering layout shall be as

## Colchester Rescue Body

follows:

### **SEAL, INSTALL CUSTOMER FURNISHED DECAL**

A pair of customer furnished seals will be applied on vehicle. Seals will be located as follows:

### **DECALS**

A pair of U.S. flag decals shall be applied on the vehicle where specified. The flag decals shall be Scotchlite vinyl and shall be approximately 11" x 15".

### **REFLECTIVE STRIPING**

A 6" horizontal Scotchlite reflective cab and body stripe shall be provided.

Stripe shall break at all unpainted surfaces. Where necessary, the striping material shall be applied to a smooth aluminum plate mechanically fastened to the apparatus.

### **OVERALL WIDTH**

Overall Width = 96" + rubrails.

### **GENERAL BODY DIMENSIONS**

Body dimensions shall be to match existing CFD rescue body dimensions.

### **INTERIOR HEADROOM**

The interior headroom shall be 78".

### **COMPARTMENT - UNDER RUBRAIL, ROLL-OUT DRAWER**

There shall be two (2) storage compartment(s) located under the rubrail. The compartment shall be approximately 50" long X 26" deep X 10" high. Clear opening height is approximately 6" high.

The compartment shall be free standing and separate from the apparatus body construction, easily removable and bolted into place. The compartment shall be fabricated of .13" smooth aluminum with reinforcement flanges for the door opening. The compartment interior shall be unpainted. Two (2) rows of louvers shall be provided at the rear of the compartment.

A roll-out drawer (approx. 6" deep) will be provided and fabricated out of .188" smooth aluminum. Drawer will be mounted on 300 lb. capacity Accuride 9308 side mounted tracks that will allow the drawer to be pulled out of compartment 20". The compartment door shall be fabricated from .13" aluminum treadplate and will act as the front face of the roll-out drawer. Weather-stripping shall be provided around the complete door frame. Gasket to be automotive type tubular hollow core weather stripping and shall crimp onto the door jamb lip there by eliminating the need for "glue on" weather stripping. This would allow the gasket to seal around the entire door (NO EXCEPTION).

Door latch to be the deadbolt Circle 'D' type with bent-up easy access 'D' ring stainless steel handle. The latches shall be two-point deadbolt. Door handle, latches and strike plates shall be secured with threaded fasteners. Pop rivet type fasteners shall not be acceptable.

The compartment shall be wired to the open door warning light circuit.

### **VERTICAL DIVIDER (30" MAX DEPTH)**

Two (2) fixed vertical divider(s) shall be fabricated from .13 smooth aluminum. The divider shall have a 1" lip on all edges for added strength.

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### **REMOVABLE DRAWER(S)**

Six (6) pull out, removable drawer(s) shall be provided and fabricated from polypropylene. A hand hold cutout shall be provided in the front and back wall of the drawer so that it can be easily carried when removed.

### **FIXED SHELVES (28" MAX DEPTH)**

Three (3) fixed shelf(s) shall be provided and fabricated from .188" 5052-H32 aluminum. The shelf is to have a 1.5" lip on the front edge to retain equipment.

All shelf spacing shall match existing rescue layout.

### **ADJUSTABLE SHELVES (28" MAX DEPTH)**

Seven (7) adjustable shelf(s) shall be provided and fabricated from .188" high strength 5052-H32 aluminum. The shelves are to have a double channel break both front and rear to form a reinforced channel. The rear channel is to be bent in the opposite direction of the front so that the shelf is reversible to provide either a lip to retain equipment or a smooth sweep-out front.

For ease of adjustment and as additional shelving reinforcement, the shelves shall not be bolted directly to the standards but shall be supported by angle shelf holders that in turn are fastened to the standards.

### **SHELVING STANDARDS FOR ADJUSTABLE SHELVES**

Eleven (11) compartments shall be equipped with heavy duty adjustable shelving standards, one per wall on all depths 20" or less and two per wall on depths greater than 20". These standards are to be the infinitely adjustable type of 6061-T6 extruded aluminum, located 2" up from floor and 12" down from ceiling.

Each compartment shall be equipped with standards.

### **ROLL-OUT TRAY, 600 LB CAPACITY**

Four (4) roll out tray(s) shall be provided in the compartments specified. Trays shall be fabricated of .188" smooth 5052 aluminum and have a 3" high lip on all four sides. The tray shall be mounted on Slidemaster 600 lb. capacity, model SM3 slides that extend 100% of the compartment depth. Track will have a powder coating to prevent corrosion and a spring loaded lock to allow the drawer to lock in the open and closed position.

### **ROLL-OUT/DROP-DOWN TRAY, 250 LB CAPACITY**

Six (6) roll-out/drop down tray(s) shall be provided in the compartments specified. Trays shall be fabricated of .188" smooth 5052 aluminum and have a 3" high lip on all four sides. The tray shall be mounted on Slidemaster #SMT-R, 250 lb. capacity, side mount slides with a powder coating to prevent corrosion. Tray will extend out as far as possible (max. 36") and will tilt down approximately 30 degrees. A chrome plated handle will be installed on the center face of the tray and a latch shall be provided to hold the tray in the closed position.

### **TRANSVERSE RACK**

A .13" smooth aluminum rack will be mounted transversely in compartment for storing long objects. Rack will include five (5) slots and will be open on both ends which will allow access to item from either end of the vehicle. A Velcro strap will be provided on each end to secure equipment. Compartment interior will be left an oscillated aluminum finish.

The below item shows the actual size of equipment and the body manufacturer will be responsible for adding the tolerances for a proper fit.

### **PAC TRACK TOOL BOARDS - 300 LB CAP. ROLL OUT, 20" EXT.**

Two (2) tool board(s) shall be furnished. Each board shall be fabricated of aluminum Pac Track that is located on each side. Each board shall be mounted on a 300 lb. capacity Accuride 9301 ball bearing slides that extend 20". A gas prop will be provided to hold the board in the open and closed position.

Located as directed.

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## **BRACKETS, POWER UNIT**

Custom aluminum brackets will be designed to hold a power unit. Brackets will be bolted in compartment and designed to allow easy removal of power unit. Located as directed.

## **BRACKETS, RAMS**

Custom aluminum brackets will be designed to hold ram(s). Brackets will be bolted in compartment and designed to allow easy removal of the rams(s).

## **BRACKETS, CUTTERS AND OR SPREADERS**

Custom aluminum brackets will be designed to hold the specified tool(s). Brackets will be bolted into compartment and designed to allow easy removal of the tools.

## **BODY INTERIOR FEATURES CONSTRUCTION**

Basic body interior unless otherwise specified shall be of all aluminum construction. Painted and formica over pressed wood surfaces are not acceptable as they are easily scratched and chipped by personnel moving about with equipment and donned air packs. Cabinet and counter lips when furnished shall be trimmed with black edge molding to eliminate any sharp edges.

### **FLOOR**

The interior walkway floor shall be .125" serrated bright aluminum treadplate over .75" marine grade plywood for rigidity. Floor will be bent up approximately 4" on each side to eliminate corner seams and allow easy cleaning and flushing of the walkway. Any floor seams shall be 100% welded to provide a water tightness. The sidewall shall overlap the bent up floor sides to provide a water-shed design. A subpan of .09" thick aluminum shall be located under the plywood to serve as a moisture barrier.

The center aisle side walls to be bright aluminum treadplate to the height of exterior compartments and will overlap the floor lips to provide a water shed design.

### **CEILING**

The ceiling shall be lined with a single piece of seamless white fiberglass USDA approved Kemlite that has a pebble finish for ease of cleaning, maximum light reflection, and lighter weight. The single piece design eliminates seams and plastic trim moldings that can trap dirt, bacteria, and eventually break.

### **WALLS**

The walls shall be lined with a single piece of seamless white fiberglass USDA approved Kemlite that has a pebble finish for ease of cleaning, maximum light reflection, and lighter weight. The single piece design eliminates seams and plastic trim moldings that can trap dirt, bacteria, and eventually break.

### **RUBBER COVERED COUNTER TOPS**

Where specified there shall be black rubber matting installed on counter area with a 1.5" lip.

### **WINDOWS**

Two (2) rectangular, tinted, sliding windows will be located in the body interior, one each side. Windows to be 20" high x 46" long, and have extruded aluminum radius style frames. Window interior opening to be trimmed with an aluminum garnish molding. Windows to be equipped with sliding removable screens.

## **INTERIOR COMPARTMENT FEATURES CABINET WITH MESH DOOR**

## Colchester Rescue Body

Six (6) .125" bright aluminum treadplate cabinet(s) will be provided. Door will be a black open mesh nylon design, 1" web with 2" squares. The mesh door will be fastened on with velcro around the entire perimeter.

Cabinet(s) will be 48" wide x full height x full depth of counter. Each cabinet will be made as an independent unit and fastened to the interior so it can be removed for future modifications **(NO EXCEPTIONS)**.

### **ADJUSTABLE SHELVES, INTERIOR CABINETS**

Six (6) adjustable shelves will be fabricated from .13" high strength 5052-H32 aluminum. The shelves are to have a bend both front and rear with one bend in the opposite direction so that the shelf is reversible to provide either a lip to retain equipment or a smooth sweep-out front.

For ease of adjustment and as additional shelving reinforcement, the shelves shall not be bolted directly to the standards but shall be supported by an angled gusset that in turn is fastened to the standards.

Heavy duty adjustable shelving standards will be furnished, one each side of cabinet. These standards are to be the infinitely adjustable type of 6061-T6 extruded aluminum.

### **RADIO CABINET WITH BLACK VINYL DOOR**

One (1) radio cabinet(s) fabricated of .125" bright aluminum treadplate will be provided and equipped with a single black vinyl door. Door will have a stainless steel piano hinge and a two (2) lift and turn latches.

### **WALKTHROUGH, BETWEEN CAB & BODY**

A walkthrough shall be installed between the back of the cab and the front of the body. There shall be a weatherproof "accordion" style billows installed to allow for flex between the cab and body. A step threshold plate of bright aluminum shall be provided at the floor of the walkthrough to protect the billows. Head bumpers located between the ceiling and the door opening shall be included for both sides of the walkthrough. The walkthrough shall have a 30" clear opening.

### **HEATER/AIR CONDITIONER COMBO**

There shall be a combination heater/air conditioner installed in the front of the body. A removable cover of bright aluminum treadplate shall be provided to conceal the A/C blower and hoses. All heater water circulating lines shall be insulated hose. Controls will be located on the heater/air conditioning unit. This unit shall be a Red Dot #R9750 and capable of 17,000 BTU of cooling and 25,600 BTU heating.

### **WIRING DIAGRAMS**

Two (2) complete copies of the body electrical wiring diagrams shall be supplied with the unit.

Separate diagrams for the 12 volt DC and 120 volt AC (if applicable) electrical systems shall be provided. Diagrams shall be custom drawn for this specific apparatus. Generic wiring diagrams are not acceptable.

### **12 VOLT WIRING – CONVENTIONAL HARDWIRED**

All of the emergency electrical equipment shall be served by circuits separate and distinct from the vehicle circuits. Body wiring shall be thermo plastic harness type, GXL (125 degree Centigrade) color and/or number or function coded. The wiring shall be grease, oil and moisture resistant, routed in convoluted looms and in protected locations. Wires and looms shall be neatly and securely fastened, and all apertures with proper grommets for passing wiring.

Solderless insulated crimp connectors shall be provided. Wire nut, insulation displacement, and insulation piercing connections shall not be used. All electrical connections that are exposed to the elements shall be of the heat shrink sealant type **(NO EXCEPTIONS)**.

The body electrical shall be designed for controlling the electrical devices of the vehicle. It shall consist of several automotive style relays, circuit breakers and electrical devices strategically located throughout the vehicle **(NO EXCEPTION)**.

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Junction areas with removable aluminum covers shall be located inside the front and rear side compartments.

A wiring trough shall be built into the upper body roof rail and above the exterior compartment doors. Easily removable panels shall be furnished to gain access to these wiring troughs.

### **ELECTRICAL TESTING**

Electrical continuity shall be verified from the chassis or body to all line voltage electrical enclosures, light housings, motor housings, light poles, switch boxes, and receptacle ground connections that are accessible to fire fighters in normal operations as per NFPA section 22.15.4.

### **CAB CONSOLE PANEL - CHASSIS FURNISHED**

The cab control switch console panel provided by the chassis manufacturer shall have rocker type switches with built-in indicator light. Labels shall be back lighted for night operation. The switches shall control all warning lights and accessories.

### **MASTER WARNING LIGHT SWITCH - CHASSIS FURNISHED**

A master warning light switch shall be provided on the cab switch console. The switch shall permit preselection of the emergency warning lights so that all warning lights can be turned on simultaneously through the sequencer.

There shall also be an interlock provided with the parking brake to change the visual warning to indicate "BLOCKING RIGHT OF WAY" mode.

### **LAMP SEQUENCER/LOAD MANAGER - CHASSIS FURNISHED**

Provisions will be provided within the electrical system for sequencing and load management.

In case of a low voltage situation, the system will shed the selected load until the proper voltage is maintained. After the voltage is stabilized the lights will then again switch on sequentially.

### **LOW VOLTAGE ALARM - CHASSIS FURNISHED**

An audible alarm and visual warning light will be installed in the cab to alert of a low voltage situation. The alarm and light will be activated when the voltage at the batteries or at the master load disconnect switch drops below 11.8 volts for more than 120 seconds.

### **REAR BODY CONSOLE PANEL**

There shall be a console panel provided in the interior counter area.

The panel will utilize state of the art multiplex components that include eight (8) touch pad type solid state switches with built in indicator lights. Labeling for switch identification shall be back lighted for night operation and located in the front face of switch for easy identification.

### **SWITCH PANEL LAYOUT**

The switch panel layout will be as follows:

### **RUNNING LIGHTS, LED**

Body shall be equipped with all lighting and reflectors as required by Federal Motor Vehicle Safety Standards.

Clearance lights will be LED type and located around the roof perimeter.

A chrome license plate light shall be provided.

### **MARKER/DIRECTIONAL LIGHTS**

Two (2) amber led marker/directional lights shall be provided, one each side, in rear fenderwells.

## Colchester Rescue Body

### **STOP, TAIL, AND TURN LIGHTS**

One (1) rectangular Whelen M6 series Linear Super LED amber arrow light each side of body for turn signals.

One (1) rectangular Whelen M6 series Linear Super LED red light each side of body for stop and tail.

### **BACKUP LIGHTS**

One (1) Whelen M6 series maximum intensity LED light with chrome flange shall be provided on each side of body for the backup light, wired to the reverse circuit of the truck transmission.

### **R.O.M COMPARTMENT LED STRIP LIGHTS**

Compartment(s) specified shall have two (2) R.O.M LED strip lights provided. The light tube shall include light emitting diodes of 112 lumens of light per 12" section.

### **DOOR AJAR INDICATOR LIGHT - CHASSIS FURNISHED**

There shall be a chassis furnished flashing red "do not move apparatus when light is on" indicator light in the cab to indicate that a cab door, entrance door, or compartment door is not in the closed position. Light will only illuminate when the parking brake is not fully engaged.

### **DOME LIGHT**

One (1) ROM Durolumen model R02986 white, LED, 12 volt lights shall be recessed in the ceiling to illuminate the interior. The lights shall be equally distributed throughout the interior providing light to the center walkway. The lights shall be activated by a switch located in the area specified.

### **STEP LIGHTS**

There shall be two (2) Whelen model 0AC0EDCR LED surface mounted lights with chrome flanges at the rear entrance door. The lights shall be automatically activated by the entrance door.

Lights deleted for compartment.

### **BUILT IN SCENE LIGHT, LED**

There shall be two (2) Whelen, Pioneer #PFP1 LED, 12 volt light(s) with #PBA103 chrome trim ring recessed in the side of the body as specified. The light(s) shall be activated by a switch in the cab.

The lamp head shall have one (1) lamp that shall draw 6 amps and generate 7,000 lumens. The light shall provide full brightness at power on and instant restarts with no warm-up required. Lamp head and brackets shall be powder coated white.

Shall be located as directed.

### **OPTI-SCENELIGHT SERIES 900 SUPER LED**

Six (6) scenelights shall be provided in the location specified and shall be switched in the cab. The lights shall be Whelen 900 Series Super LED, high intensity 90° gradient Opti-Scenelights™ with 24 diodes and chrome plated flange.

Shall be located as directed.

### **GROUND LIGHTS**

Trucklite rubber mounted ground lights will be installed under each stepping surface. Lights will be mounted under the rear step/entrance door and activated when the doors are opened.

### **GROUND LIGHTS**

## Colchester Rescue Body

The lights under the chassis entrance doors that are provided by chassis dealer shall be activated when the doors are opened.

### **ADDITIONAL LUMA BAR GROUND LIGHTS**

Six (6) additional Amdor Luma Bar H2O LED light(s) shall be provided under the vehicle in the area specified. The lights shall be switched together with the other ground lights.

### **HANDLIGHT**

Eight (8) orange Streamlight Fire Vulcan model #44401 lantern(s) with 12 volt DC charger bases shall be furnished and installed. The lantern features a Halogen bi-pin bulb and (2) two ultra-bright blue tail-light LEDs that are user programmable in two modes of operation: "Steady" Mode - Halogen only or Halogen and LEDs or "Blinking" Mode - LEDs only or Halogen and LEDs. The chargers shall be wired direct to the chassis batteries.

### **ANTENNA**

There shall be antenna(s) mounted on the chassis cab roof as specified. The antenna lead shall be routed to the area specified.

### **12-VOLT POWER LEAD**

There shall be a 12 gauge power lead and 12 gauge ground wire on the vehicle, terminating in the location specified. This power lead wire will be hooked direct to the battery, bypassing the battery switch.

### **Peltor Intercom SYSTEM**

There shall be a Peltor intercom system installed in the cab and at the operator panel. The system shall include:

One (1) intercom

Two (2) transmit headsets with HM-10 plug in modules and HGR-1 headset hangers for the driver and officer seat positions.

Four (4) headsets with HM-10 plug in modules and HGR-1 headset hangers for the crew cab positions.

Upgrade shall be made to peltor brand.

### **TRAFFIC ADVISOR**

A Whelen model #TAM85 LED Traffic Advisor shall be provided in the area specified. The light shall be 47" long and shall include eight (8) individual TIR6 LED amber lamps. The controls for the unit shall be installed in the chassis cab.

### **LINEAR SUPER LED, SERIES M9, RED**

Twelve (12) Whelen M9 series Linear Super LED red lights with clear lenses and chrome flange shall be provided and mounted as follows:

Shall be located as directed.

### **LINEAR SUPER LED, SERIES M7, RED**

Two (2) Whelen M7 series Linear Super LED red lights with clear lenses and chrome flange shall be provided and mounted as follows:

Shall be located as directed.

### **120 VOLT WIRING & BREAKER PANEL**

All 120 volt wiring shall be metallic or nonmetallic liquid tight flexible conduit rated at not less than 90 degree Centigrade or type SO cord with a WA suffix, rated at 600 volts at not less than 90 degree Centigrade. The cord will be number or



## Colchester Rescue Body

function coded to assist in trouble shooting.

All electrical equipment shall be circuit breaker controlled from a circuit breaker control panel. A plastic engraved label will be installed near the breaker box to identify the function of each circuit breaker.

A power source specification label shall be permanently attached near the breaker box. The label shall provide the operator with the following information:

- Rated voltage and type
- Phase
- Rated frequency
- Rated Amperage
- Continuous rated watts
- Power source engine speed

### **TRANSFER SWITCH**

An IOTA industries #ITS-50R automatic relay system shall be installed to switch the on-line device between the generator and shoreline inlet when it is connected for use. A time delay shall be provided to prevent the generator from starting under load.

The transfer switch shall power the items determined by the department that are to run when the generator is powered off and the 50 amp shoreline is plugged in (up to 50 amps).

### **HOT SHIFT PTO**

The hydraulic pump shall be driven by the chassis engine VIA a "HOT SHIFT" power take off unit from the chassis transmission. The engagement control to be located in cab, and identified by name plate. A console switch will be provided with a light to indicate "Generator Engaged" and an additional green light will be provided to indicate "OK to Operate Generator".

### **20 KW HARRISON HYDRAULIC GENERATOR**

A complete Harrison 20 KW hydraulic generator system shall be furnished and installed on the apparatus.

#### Generator Performance

Rating: 20,000 watts (20 KW)  
Volts: 120/240  
Phase: Single  
Cycles: 60 Hertz  
Amp. rating: 84/168  
Weight: 367 lbs. (without pump)  
Engine speed at engagement: Idle  
Engine speed after engagement: 1200-2500 RPM  
Generator speed: 1800 R.P.M.

#### **Hydraulic Drive Components**

If there is sufficient room, the hydraulic pump will be mounted directly to the PTO. There shall be a triangular brace on the tail of the pump for support and to meet the PTO specifications on weight restriction.

If there is not enough room to direct mount the pump to the PTO then the pump shall be mounted to the frame rails with a drive shaft between them. The drive shaft between the generator and the power take-off shall be a tubular type, minimum outside diameter of 2" with a minimum wall thickness of .083. It shall have Spicer #1280 U-joints and be dynamically balanced to insure vibration free performance. NOTE; Solid bar stock type drive shafting is unacceptable. The drive shaft shall have a slip yoke with a minimum of 1.5" travel so that it can be easily removed. Tube shall be D.O.M. (Drawn over

## Colchester Rescue Body

Mandrel) made for drive shafts.

They shall be electrically MIG welded by a certified welder on a specially designed drive shaft fabrication machine. After welding, the drive shaft shall be checked for straightness and dynamically balanced by computerized machinery. All drive shafts shall be balanced. (No exceptions.)

### **System Components**

System components such as hydraulic hoses, the hydraulic reservoir, hydraulic cooler, etc. shall be furnished and installed in accordance with the manufacturer's recommendations and requirements.

### **Manual and Schematics**

Two (2) complete parts lists, maintenance, wiring schematic, hydraulic schematic, circuit boards, voltage regulator board, and other component manuals shall be provided.

### **Cab Mounted Controls**

In addition to the instruments and controls at the circuit breaker box location, additional controls shall be located in the chassis cab adjacent to the driver.

The following controls shall be provided in cab:

1. One (1) hydraulic generator engagement control with red pilot light.
2. One (1) engine fast idle switch.

There shall be a warning light in the cab to indicate when the PTO is engaged. An additional green light will be installed in the cab and marked "Generator PTO operational".

### **GENERATOR CONTROL PANEL**

There shall be an generator control panel complete with one (1) voltmeter, two (2) ammeters, one (1) frequency meter, one (1) hour meter, and two (2) single pole circuit breakers. The panel shall be located near the 120/240 current breaker panel.

### **GENERATOR LOAD TEST**

The generator shall be load tested at the body builders facility by a third-party testing firm. The generator shall be tested at various loads, from no load to full load to ensure reliable power delivery at various loads. The department shall be given a certificate proving completion of this test. The test shall last for two (2) hour and shall be completed after the generator has been installed on the apparatus.

Shall be located in right side wheel well compartment.

### **GENERATOR TESTING**

The generator on the apparatus shall be tested by a third party to ensure proper operation as per NFPA 22.15.6 or 22.15.7.3.5 guidelines.

### **OUTLET, INTERIOR**

One (1) 120 volt AC powerstrips shall be furnished and located as directed by the purchaser. The powerstrip(s) shall be surface mounted and labeled with a permanent nameplate listing the voltage, type of current, phase and amp rating.

## Colchester Rescue Body

### **120 VOLT OUTLETS**

Four (4) 120 volt AC outlet(s) shall be furnished, located as directed by the purchaser. The outlet(s) shall be mounted inside a cast aluminum outlet box, flush mounted to the body side. The receptacle shall be labeled with a permanent nameplate listing the voltage, type of current, phase and amp rating. A weatherproof snap cover shall be provided.

Outlet configuration will be a NEMA #L5-20R.

### **LIGHT, 120 VT FLUORESCENT, RECESSED**

There shall be four (4) Crescent model #SM-220 fluorescent light(s) with two (2) 20 watt bulbs recessed flush in the ceiling. Lights shall be 24" long and covered by a clear plastic panel.

### **LIGHT TOWER**

There shall be two (2) Command Light Model #CL615, low profile extendable lighting system(s) installed as specified. The lights to be wired directly to the generator system circuit breaker panel with conduit and standard copper wire.

The lights shall telescope at 10-1/2 feet above the mounting surface and rotate 360 degrees by a remote control pistol grip having a 20' non-coiled cable.

The light will be equipped with six (6) 1500 watt quartz floodlights, 240 volt.

Instruction and warning labels shall be provided near the operating position of the light tower. A label shall also be provided that states the extended tower height from the ground and bulb replacement data. The light tower shall be equipped with a proximity switch. The switch will be wired into the "do not move apparatus when light is on" indicator light in cab and a light located in the area of the light tower controls. The lights will be activated when the light tower is not fully nested.

A 12-volt observation light will be installed on light tower. The light will be activated as soon as the up position switch is activated. The light is position so it will shine up in the air to help check for any overhead obstacles.

One light shall be upgraded to specified LED. The other shall be a Command Light traffic advisor as specified.

### **ELECTRIC CORD REEL**

There shall be two (2) Hannay #ECR 1600 Series cord reel(s) mounted in the compartment(s) specified. The color of the reel shall be red.

The reel(s) shall be equipped with a 12 volt DC electric rewind motor. A guarded push button switch, no higher than 72" from the ground, shall be located next to the reel to activate the rewind motor. A label will be provided next to the rewind switch that states the reel type.

A label shall be provided in a readily visible location near reel. The label shall indicate:

- Current rating
- Current type
- Phase
- Voltage
- Total cable length

### **12/3 BLACK SO CORD**

Four Hundred (400) feet of 12/3 black SO cord will be provided and installed as specified.

### **ELECTRICAL JUNCTION BOX**

There shall be a total of two (2) Extenda-Lite model EJB four (4) outlet junction box(es) provided with one attached to the end of the electric cord reel(s) specified. Box to include four (4) backlit outlets with weatherproof snap covers. A mounting

## Colchester Rescue Body

bracket shall be furnished on the inside of the compartment door where the cord reel is mounted to hold the connector box.

Outlet configuration will be a NEMA #5-20R.

No Hannay Ball Stop Required

### **AIR HOSE REEL**

There shall be one (1) Hannay EF-1514-17-18 air reel(s) mounted in the compartment(s) specified. The color of the reel shall be silver.

The reel shall be equipped with a 12 volt DC electric rewind motor. A guarded push button switch, no higher than 72" from the ground, shall be located next to the reel to activate the rewind motor. A label will be provided next to the rewind switch that states the reel type. For safety this circuit shall be wired through the battery switch so the reel cannot be rewound when the battery switch is turned off.

A label shall be provided in a readily visible location near reel. The label shall read "Utility Air and indicate:

- Operating pressure
- Total hose length
- Hose size (ID)

### **AIR SUPPLY, LOW PRESSURE, 150 PSI**

An air pressure gauge, regulator, and shut-off valve shall be installed near the reel. This low pressure system shall be piped from the chassis air system and shall include a check valve to prevent air loss to the chassis brake system.

The components shall be mounted on a separate panel. The panel shall be mounted in a compartment on a wall so as to protect the air connections from compartment storage and damage.

### **AIR SUPPLY, LOW PRESSURE, 150 PSI**

An air pressure gauge, regulator, and shut-off valve shall be installed near the reel. This low pressure system shall be piped from the chassis air system and shall include a check valve to prevent air loss to the chassis brake system.

The components shall be mounted on a separate panel. The panel shall be mounted in a compartment on a wall so as to protect the air connections from compartment storage and damage.

### **AIR HOSE**

One (1) feet of 3/8" air hose (300 PSI) will be provided and installed as specified. The hose will be blue to designate utility air.

### **FOLDING ROLLER GUIDE**

To aid in pulling off and rewinding the hose, there shall be a roller guide mounted on the inside of the compartment door closest to the reel. The guide shall have bottom and side rollers but be open on the top so the hose can be lifted out from the roller guide unit. The roller guide will be mounted on a bracket that allows the guide to be folded out of the way with one hand when not in use.

### **MISCELLANEOUS EQUIPMENT**

The following equipment items listed shall be furnished by the body builder per unit price quoted with the apparatus. All equipment shall be shipped loose unless otherwise specified.

2.5 gallon water fire extinguisher bracket

2.5 gallon AFFF extinguisher bracket

8lb flat head axle bracket

30" probar bracket

6' NY Roof Hook Brackets

36" bolt cutter brackets

10 lb sledge hammer bracket

## Colchester Rescue Body

PAC Ironslok  
2.5 BC fire extinguisher  
safety triangles (3)

### **WHEEL CHOCKS**

Two (2) set (pair) of Zico Model #SAC-44 folding type wheel chocks shall be provided. Wheel chocks will be mounted under the body in Zico Model #SQCH-44-H brackets

### **MISCELLANEOUS FASTENERS**

A bag of miscellaneous fasteners that was used on the construction of the apparatus will be provided with the completed unit.

### **CORROSION PROTECTION**

A bottle of ECK corrosion prevention chemical shall be supplied loose with final delivery of the apparatus to ensure the customer will be able to place this on any screws inserted or removed from the body in the future.

### **NFPA REQUIRED ITEMS**

It shall be the purchaser's responsibility to provide all equipment items required by NFPA 1901 that are not otherwise addressed in these specifications. These items shall be installed on the apparatus prior to it being put into active service.

### **WEBSITE UPDATES**

Production photos of the apparatus being built will be provided by the body builder. The photos will be taken every two - three weeks as production allows and posted to a private website designed only for the Fire Department to view. These photos will allow the Department to view the manufacturing process of the truck and possibly detect things that they may want changed earlier in the production process.

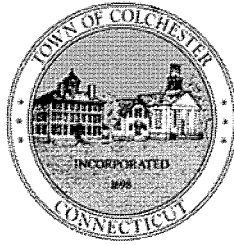
### **FACTORY INSPECTION TRIPS**

Factory inspection trips shall be provided as specified.

**SCHEDULE B**

Attached RFP

# TOWN OF COLCHESTER



## COLCHESTER FIRE DEPARTMENT



### **1990 SVI Heavy Rescue Re-Chassis & Rescue Body Refurbish R.F.P. Specifications NFPA 1901 2011**

# Instruction to Bidders

## Heavy Rescue Re-chassis and Body Refurbish

June 1, 2013

Bids shall be addressed to 1st Selectmen, Gregg Schuster, 127 Norwich Avenue, Suite 201, Colchester, Connecticut. 06415 and received on or before 2:00 P.M. **July 11, 2013**

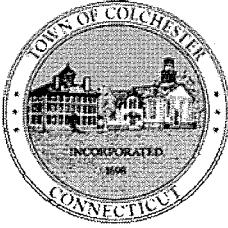
Bids shall be submitted in a sealed envelope clearly marked, **“Heavy Rescue”**

Bid opening shall take place at the Colchester Town Hall, Office of the 1<sup>st</sup> Selectmen, 127 Norwich Avenue, Suite 201, Colchester, CT. 06415 at 2:00 P.M. **July 11, 2013.**

Any questions concerning this bid may be answered by contacting Assistant Chief Paul Giudice at 860-377-6251.

*No right shall accrue to any person submitting a bid until such bids have been accepted and contract awarded in writing by the duly authorized representative of the Colchester Board of Selectmen. The Colchester Board of Selectmen reserves the right to reject any and all bids and to accept the lowest qualified bidder, and to waive any informalities, omissions, excess verbiage, or technical defects in the Bidding, if, in the opinion of the Board of Selectmen, it would be in their best interest to do so.*





## Town of Colchester Fire Department Instructions to Bidders 2013 Heavy Rescue Fire Apparatus



### **SCOPE**

It is the intent of the Colchester Fire Department and the Town of Colchester to Re-chassis and refurbish a 1990 SVI Heavy Rescue Fire Apparatus to withstand severe and continuous use encountered in the rural fire service.

The following specifications detail the requirements for the general design of the cab and chassis components, and related systems and components, the apparatus body, electrical systems and components, painting and furnished equipment.

All components, including those not specifically mentioned herein, but which are necessary in order to furnish a complete fire apparatus, shall be furnished and installed to the latest standards and practices in the fire apparatus manufacturing industry, National Fire Protection Association Pamphlet No. 1901, latest edition (2013), entitled "Standard for Automotive Fire Apparatus" are minimum specifications. The following specifications may exceed those specifications. Any costs associated with these increased specifications shall be included in the bid.

### **GENERAL REQUIREMENTS**

If any bidder has questions in connection with these specifications, please contact Asst Chief Paul Giudice at 860-377-6251. The Colchester Fire Department will communicate to the bidder and explain the specifications in detail. It is not the intent of these specifications to eliminate any qualified bidder.

The Colchester Fire Department will review the question, and where information sought is not clearly indicated or specified, in the Colchester Fire Department's opinion, will issue a clarifying or correcting addendum bulletin. Proper interpretation or the making of any necessary inquiry will be the Bidders responsibility. Oral answers will not be binding on the Colchester Fire Department or the Town of Colchester.

To be considered, all proposals must be made in accordance with these "Instructions to Bidders". Any contract in which the Town of Colchester shall enter into will include these specifications in whole and or as amended.

## **UNITED STATES MANUFACTURER**

The entire apparatus shall be assembled within the borders of the Continental United States to insure more readily available parts (without added costs and delays caused by tariffs and customs) and service, as well as protecting the purchaser should legal action ever be required.

Where the following detailed specifications require specific brand names, model number, dimension or capacities of components such as: axles, brakes, spring suspension, frame, steering gear, drive line, universal joints, engine, transmission, alternator, batteries, brake system, they have been specified for this apparatus because of their reliability or availability of replacement parts on a local basis.

Since components specified by brand name, model number, dimension, size or capacity are readily available to all manufactures and or potential bidders, substitutes or alternates claimed to be equal may not be acceptable.

This **specification package**, along with manufacturer's specifications and any herein forms, questionnaires, and listed exceptions **shall be submitted** as a part of the bidder's entire bid proposal. A Bidders checklist has been provided to assist the Bidder in providing all necessary documentation. It is included in the appendix section.

In no case shall a Bidder photocopy the purchaser's specifications and submit as their proposal specifications and bid.

Each bidder is required to provide in his bid a "complete and accurate description" of their own detailed product and engineering specifications.

In the event the published literature or other furnished documentation by the bidder is at variance with the requirements of any item of this specification, the bidder shall explain in detail, with full engineering support data, the reasons why the proposed equipment will meet this specification and not be considered an exception thereto. Exceptions will be considered during the evaluation process. Acceptance of any exception by the Colchester Fire Department shall be final. Please refer to the line numbers in the left hand margin of these specifications when making such explanation.

**These specifications shall be construed as minimum.** Should the manufacturer's current published data or specifications exceed these at the time of bid, they shall be considered minimum and be furnished. Bidders shall furnish, free of charge with their bid, technical graphs, charts, photographs, engineering diagrams, drive train certification, or other means to show that the equipment proposed fully complies with this specification.

## **COMPANY HISTORY**

The Bidder shall identify the location of their facility where this fire apparatus is to be manufactured and assembled and the number of regular full time employees at this facility. A complete history of the Bidder's company shall be supplied in its bid.

Bids are requested from the responsible manufacturers who are engaged in the manufacturer of Fire Apparatus and Emergency Vehicles as their sole product. To insure reliable and complete acceptance of the fire apparatus, the bidder shall have been in operation for minimum of 5 years in the fabrication and manufacture of Fire Apparatus. No exception to this requirement.

## **COMPANY RESPONSIBILITY**

The bidder warrants to the Town of Colchester, by submitting the bid, that the company's fire apparatus construction responsibility is the sole, single source for all components, parts, subassemblies, final assembly, finish (whether or not manufactured and or assembled by the companies own forces), including delivery and acceptance. The Bidder cannot make claim against the Town of Colchester for difficulties and delays in procurement, construction, delivery and acceptance of any items specified by the Bidder.

## **COMPLIANCE AND CERTIFICATIONS**

The Bid Heavy Rescue shall comply with all Federal, and State of Connecticut requirements for Fire Apparatus, and NFPA – 1901 2013 edition.

The fire apparatus shall comply with all federal and state Motor vehicle laws.

Upon delivery the following certifications and documentation shall be required three (3) copies each in a bound and indexed binder:

1. Apparatus manufacturer, model and serial number.
2. Chassis make, model and serial number.
3. GAWR of front and rear axles.
4. Certified chassis weight distribution by wheel in pounds with water and manufactured mounted equipment front and rear from a certified scale.
5. Engine make, model, and serial number, number of cylinders, bore, stroke, and displacement. Compression ratio, rated horsepower, related speed per SAE J690 certification of Maximum Net Horsepower for Motor Trucks and Truck Tractors and no load-governed speed.
6. Type of fuel and fuel tank capacity.
7. Electrical system voltage and alternator output in amps.
8. Battery make, model and type.
9. Paint numbers
10. The engines manufacturers' certified brake horsepower curve for the furnished engine.
11. Low voltage (12V) written load analysis and test results as required in these specifications.
12. All apparatus manufacturers warranties, engine with extended warranty, transmission with extended warranty, related component warranties and all other warranties not listed above.
13. Completed as built electrical (12 V and 120V) wiring diagrams, drawings, sketches and component literature including lighting and repair parts lists and diagrams.
14. The apparatus manufacturer as conforming to all applicable federal motor vehicle safety standards in effect and the date of contract shall certify the chassis. This will be attested to by the attachment of a FMVSS certification label on the vehicle by the apparatus manufacturer who will be recognized as the responsible final manufacturer.
15. All operational, repair, and repair parts manuals for the chassis components, and related systems, apparatus manufacturer installed systems and components and the 120V generator.

The bidder shall certify in their bid that a completed apparatus record file, of all components utilized in manufacturing this apparatus, be maintained by the bidding apparatus manufacturer. This record file shall also contain any and all reported deficiencies, all replacement parts required to maintain this apparatus, original purchase documents, including specifications, contract, invoices, incomplete chassis certificates, quality control reports and final delivery acceptance documents. The COLCHESTER FIRE DEPARTMENT and the Town of Colchester shall have access to this file upon request. The record file shall be maintained for a minimum period of ten (10) years.

### **CONTRACT EXECUTION - PAYMENT – TAXES**

Upon award of the bid, a sales contract will be drawn between the Town of Colchester and the manufacturer of the apparatus. Contracts drawn between the Town of Colchester and a sales representative, dealer, distributor, or agent of the apparatus manufacturer will not be acceptable. (No Exceptions.) All bidders shall be required to detail in exact terms the payment for said Heavy Rescue in their proposal. The terms for payment for the Bid Price shall be "payment in full upon delivery and acceptance" of the Heavy Rescue. Alternate terms for payment for the chassis shall be permitted, provided a 100% performance/payment bond is provided, and title to the chassis is received by the Town's lien holder. 100% shall mean the total contract price. A bonding company authorized to conduct such business and permitted to provide such bonds in the State of Connecticut must certify the performance/payment bond. The bond shall be made to the lien holder and the Town of Colchester, Connecticut as loss payee with the Town's lien holder named as additional obligee. Such plans must be detailed in the bid in the alternate section.

The Bid price shall not include any local, State or Federal taxes. The Town of Colchester will provide the necessary tax-exempt information. The Town of Colchester shall not be liable for any State or Federally mandated tax or program after the sale of this Fire Apparatus.

### **BID BOND AND/OR BID SECURITY**

Each bid must be accompanied by a bond certified by a bonding company authorized to conduct such business in the State of Connecticut in the penal amount of ten percent (10%) of the maximum amount of the bid including all "add" alternates made in the name of the Bidder for the Town of Colchester, Connecticut as payee. This requirement is to assure the Town of Colchester the adherence of the Bidder to his/her Bid, the execution of the Contract, Insurance(s) certificates and the furnishing of performance and payment bonds if required.

If the Bidder to whom the contract is awarded, refuses or neglects to execute the contract, or fails to furnish the required insurance certificates or if required to provide a 100% Performance bond within 14 calendar days after notice of award, the amount of his deposit will be forfeited and shall be retained by the Town of Colchester, without any claims of mistake or misfortune or remedies in the defense of any action based upon such accepted Bid by the Bidder or Bonding Company, as liquidated damages. If the bidder is not required to post a performance bond by virtue of 100% payment upon delivery and acceptance has not delivered and been accepted by the Colchester Fire Department, within 30 days from the contract delivery date shall be cause for the cancellation of the contract and forfeiture of the Bid deposit, without any claims of mistakes or misfortune or remedies in the defense of any action based upon such accepted Bid by the Bidder or Bonding Company, as liquidated damages. In addition to the Bid Bond or Security Deposit the Bidder shall also be liable for and agrees to pay the purchaser on demand the difference between the price bid by him/her and the price for which the Contract shall subsequently relet, together with the cost of reletting, if any, less the amount of the deposit.

## **INSURANCE/BONDS**

A certificate of insurance shall be required prior to the contract execution subject to the requirements below. Coverage shall apply during the performance of the contract by bidder, including partial or complete assembly of the chassis, module and all associated equipment, parts, or subassemblies. Coverage shall include any and all liability costs or awards arising from any personal injury or property damage claims during chassis delivery, transportation of components for the construction of, and for the construction of said fire apparatus, and delivery to Colchester Fire Department. Coverage shall remain in effect even if the chassis title has been properly transferred to the Town of Colchester.

The Bidder's insurance carrier must be licensed to do business in Connecticut and must be rated in A.M. Best's *Insurance Guide* with a rating of "A-/VIII" or better. Said policy shall be primary to any policies of insurance available to the Town and must contain thirty (30) days prior notice to the Town of cancellation or content change. Notwithstanding any terms, conditions or provisions, in any other writing between the parties, the Bidder hereby agrees to effectuate the naming of the Town as an unrestricted additional insured on the Bidder's insurance policies, with the exception of Workers Compensation. The policy naming the Town as an additional insured's shall state that the Bidder's coverage shall be primary coverage for the Town and their respective employees, agents, and volunteers. The Bidder shall self-insure any applicable deductibles, and the Bidder shall also agree to indemnify the Town for any applicable deductibles the Town must pay as a result of a claim caused by the negligence of Bidder. The Bidder and its insurers shall waive all rights of subrogation against the Town and their respective officials, agents and employees for losses arising from work performed under the Contract.

The following minimum insurance must be maintained in force by Bidder at its own expense:

(a) Automobile insurance.

A combined single limit of automobile bodily injury and property damage of \$1,000,000 per occurrence is required. The Town of Colchester is to be included as an additional insured.

(b) Commercial General Liability with limits of at least \$1,000,000 per occurrence/\$2,000,000 aggregate to apply per location and/or per project. Coverage for bodily injury, property damage, products/completed operation, personal injury and advertising injury. Coverage at least equal to General Liability policy ISO form CG 0001. An additional endorsement, equivalent to CG 2026 or CG 2010 naming the Town of Colchester and their public officials, agents and employees must be included. A Waiver of subrogation in favor of the Town of Colchester must apply.

(c) Workers Compensation and Employers Liability covering all employees and meeting the requirements of Connecticut law. A waiver of subrogation in favor of the Town of Colchester and its public officials, agents and employees must be included.

(d) A \$5,000,000 umbrella or excess liability coverage must at least follow form over the Auto Liability, General Liability and Employers Liability Coverage.

Said policy or policies shall be primary to any policies of insurance available to the Town.

The Bidder shall hold harmless, defend and indemnify the Board from all loss, liability, damage, penalty, expense or fee, including attorney's fees, or other costs or obligations which result from or arise out of the performance or breach of obligations of the Bidder, any employee, agent or personnel, including without limitation, claims brought against the Board by third parties, employees of the Board, or employees of the Bidder. The indemnification provisions shall survive the termination of the Contract.

#### **DELIVERY SCHEDULE**

Bidder shall on the Bid form, state in **calendar** days, the time from contract execution to acceptance by the Colchester Fire Department a completed and equipped as specified Heavy Rescue without constraints as to delivery, manufacture, assembly or construction of any part, or sub assembly, or equipment.

#### **INFRINGEMENT LIABILITY**

The accepted Bidder, shall defend any and all suits and assume all liability for use and all claims made against the Colchester Fire Department and the Town of Colchester (T.O.C.) or any of its officials or agents for the use of any patents, process, device(s), or article(s) forming a part of the fire apparatus or any equipment furnished under contract.

#### **MANUFACTURERS REPRESENTATIVE**

The successful bidder will designate a competent manufacturer's representative, to perform single source communications between the Colchester Fire Department and the fire apparatus manufacturer on all matters concerning the contract.

## **APPROVAL DRAWINGS**

Detailed scaled drawings preferably produced on CAD, shall be approved by the Colchester Fire Department prior to execution of any construction of the fire apparatus. Changes to the submitted drawings shall be made in red pen. The Colchester Fire Department and the manufacturer shall retain a copy. Final drawings shall be approved by the Chief of the Colchester Fire Department with copies to both parties and included as part of the sales contract and copies thereof.

The drawing(s) shall indicate pertinent dimensions, component and equipment locations, lighting etc.,. The drawings shall be a visual representation of the fire apparatus to be supplied. Changes to the contract shall be represented as an addendum sketch to be attached to the final drawings. If a conflict or omission arises between the drawings and the written specifications the item shall be supplied as if contained in both the drawings and the specifications. Copies of the final drawings and any addendum(s) shall be included in the delivery documentation.

## **PREBUILD CONFERENCE**

The Bidder shall at the convenience of the Colchester Fire Department and within 14 days of contract execution attend a pre-construction conference at Colchester Fire Department headquarters. The conference agenda is for the purpose of working drawing reviews, and any clarifications concerning the fire apparatus construction. The Chief of the Colchester Fire Department shall sign all working drawings and or construction detail acceptance

## **CONTRACT CHANGES**

Any changes to the contract once initiated shall be in writing in a form mutually agreed to by both contract parties and clearly state the nature of contract change, and whether or not any costs are involved. The change order must state the nature of the contract change, the amount of the change, and if the delivery date changes. The "change order" shall be signed by a duly authorized company person and by the First Selectman of the Town of Colchester. For any change that increases the contract price shall be accompanied by a Town of Colchester purchase order.

## **WARRANTY REQUIREMENTS**

Manufacturer shall warrant the Heavy Rescue manufactured by it against defects in material and workmanship provided the Heavy Rescue is used in a normal and reasonable manner for which it is intended. The warranty shall be to the Town of Colchester, Colchester Fire Department for a period of not less than ONE YEAR from the date of delivery. Prices for extended engine and transmission warranties, five (5) year shall be included in the base bid.

The "company" obligations under the warranty is limited to repairing or replacing, as the company may elect, any part or parts of such completed Fire Apparatus which the company's examination discloses to be defective in design, material or workmanship. The replacement of the part shall include full labor, and costs associated with the diagnostics to determine which part is defective.

The company shall provide a list of authorized repair facilities and the capability of the bidder to provide on site repairs for the Chassis, and Apparatus Body and associated systems and components and all related components with the shortest travel distance from Colchester, CT. It shall be the manufacturer's warranty responsibility that any warranty work be expeditiously completed, with priority given to placing this unit back in service within 36 hours. The manufacturer shall bear all costs of receiving necessary warranty replacement parts by overnight delivery. Components not part of this general warranty, which are covered by other warranty's the bidder shall act as the agent for the Colchester Fire Department / Town of Colchester. in expediting warranty work for these components.

The warranty work shall be completed in the Colchester Fire Department facilities at the discretion of the manufacturer, however if in-house repairs cannot be made, the manufacturer shall bear the cost of transportation to and from the repair facility including any towing or flatbed transportation required.

The manufacturer shall provide all warranty work required from other warranted components when such components or systems have failed in causation directly or indirectly or sequentially by altering or damaged caused in construction, assembly or delivery of the completed unit.

This warranty may not apply to:

- a) Major chassis components or trade accessories such as chassis, engines, tires, signaling devices or batteries that carry separate warranty by the original manufacturer of such components. It shall be the Bidders responsibility to register these warranty certificates and supply copies of such at the time of delivery.
- b) Normal adjustments and maintenance service including filters that require replacement before the warranty period expires.
- c) Normal wearing parts that are destined for failure prior to the warranty expiration of one year and the Colchester Fire Department estimate of 10,000 miles 1st year accumulation shall be listed on the Bid sheet.
- d). Failures from the Heavy Rescue being operated in a manner or for the purpose not recognized by the manufacturer, State and Federal motor vehicle laws.
- e). Any component or system that has been altered, repaired in any way so as, in the Company's sole judgment, to have adversely affected the units stability or reliability.
- f). Items subjected to misuse, negligence, accident, improper maintenance, or damage due to acid or chemical spills.

The manufacturer shall make no representation that the Fire apparatus has the capacity to perform any functions other than those contained in the Company's written literature, catalogs or specifications.

No person or affiliated company representative is authorized to give other warranties or to assume any other liability on behalf of the manufacturer in connection with the sale, servicing, or repair of any Fire apparatus manufactured by the Company.

The manufacturer shall have the right to make design changes or improvements in its product in the future, without imposing any obligation upon itself, other than required by law or other adjudication to change or improve the unit covered under these specifications.

The exterior paint and finish on the completed fire apparatus shall be warranted against blistering, peeling, or bubbling due to defects in manufacturing or improper preparation of a period of five **(5) years** from the date of delivery. This warranty does not cover defects if the vehicle is damaged, dented, scratched, or fading due to heat or chemicals from the exposure of hazardous material or fire.



The manufacturer shall warrant to the Colchester Fire Department and the Town of Colchester that the Rescue Body structure (exclusive of paint, finish, hardware) is structurally sound and free of all structural defects of design, material and workmanship and further warrants that it will maintain such structural integrity for a period of **ten (10) years** from the date of manufacture, as designated on a manufacturer's certification plate attached thereto.

The cab and body shall be warranted against rust-through or perforation, due to corrosion from within, for a period of ten (10) years. Perforation is defined as a condition in which an actual hole occurs in a sheet metal panel due to rust or corrosion from within. Surface rust or corrosion caused by chips or scratches in the paint are not covered by this warranty.

#### **SUBMISSION OF WARRANTY FORMS**

The Bidder must submit their own printed manufacturer warranty forms in exact compliance to the above minimum standards, without exceptions. Failure to comply to warranty specifications will result in rejection of the bid. All warranties shall be submitted and certified by the manufacturer; warranties by sales representatives, manufacturer's representatives or other agencies shall not be acceptable.

Re-submission of these minimum bid form warranties is NOT acceptable. Bidders must submit their own warranties, on their printed literature forms, (no exceptions).

#### **CHASSIS RECEIPT**

If the contract states that the chassis is to be paid after receipt, or constructed by the Bidder, the Bidder shall fully inspect the chassis for compliance with the specifications and that the construction of the chassis has been completed in a workmanlike manner.

The manufacturer shall have the chassis manufacturer arrange for changes to comply with the specifications and quality of work. These changes shall be made prior to the Rescue body installation.

The manufacturer shall record the mileage upon delivery and complete an acceptance record, transmitting such documentation within 36 hours to the Colchester Fire Department. Prior to payment release for the chassis, if required, the Town of Colchester must have in its possession the original title.

#### **MATERIALS**

Materials shall conform to the specifications listed herein. When not specifically listed, materials shall be of the best quality for the purpose of custom fire apparatus practice. All materials shall be of first quality free of all defects and imperfections that affect durability and serviceability of the finished product.

## **DESIGN**

Design of the Fire Apparatus shall be in accordance with the best engineering practices. Equipment layout and accessory installation shall permit ease of accessibility for use, maintenance, and service. All components and assemblies shall be free of hazardous protrusions, sharp edges, cracks or other elements, which might cause injury to personnel or equipment.

All oil, air, water, refrigerant, and electrical wiring shall be located in protective positions properly attached to the frame or body structure and shall have protective loom or grommets at each point where they pass through structural members, except where a through-frame or body connector is necessary. These connectors however shall be a quality to withstand the physical elements to which they are exposed.

The following is the design criteria for the development of the enclosed specifications:

### **OVERALL DESIGN AND ENGINEERING**

#### **A. The general description of this fire apparatus:**

1. Custom 4 door cab and chassis, diesel engine, automatic transmission, Weight distribution analysis within 95% of axle components (wheel ground weights).

1. Utilize "A" above for maximum weights.
2. Include extended front bumper, front suction, and appliances and other front bumper mounted components.
3. Cab area to include 250 lbs. per seated position plus 300 lb. of other distributed load within the cab area.
4. Submit calculated data and utilize for front and rear axle, wheel and tire capacity selections.

#### **B. Vehicle size**

1. Provide overall length, width, height, and wheel base dimensions minimizing the shortest wheelbase and over length possible and utilizing the widest step possible from the rear cab doors.
2. Provide steering maximum cramp angle and turning radius Cab, Fire Body, Design including overall flexation of chassis mounted sub assemblies, Structural & finish materials.

Walls

Ceiling

Floor

Doors

Cabinets

Cabinet Doors

#### **E. Finishes**

1. Ease of cleaning surfaces, handles, fixed components, switches
2. Durability of finishes.

#### **F. Warranty**

1. Length
2. Coverage
3. Optional Cost / Coverage

#### **G. Driver Ergonomics**

1. Position of switches, gages, operational controls

#### **H. Corrosion Protection**

I. Serviceability

1. Simplicity of electrical design and component utilization.
2. Ease of troubleshooting component failures.
3. Ease of repair/replacement of components (accessibility)
4. Ease of alterations (access to components and wire-ways)
5. Location of apparatus chassis, chassis component service centers.
6. Location of apparatus and chassis stocking distributors

J. Environmental Systems

1. Engineered HVAC (Heating, and Air Conditioning).
2. Engineered calculated electrical system with submitted data.

In addition to the aforementioned design requirements certain sections of the bid are performance related specifications. It shall be the bidders responsibility to properly design, manufacture and test these assemblies in order to comply with the performance requirements. Chapter 4 NFPA 1901.

These performance requirements are:

1. Weight distribution

The following maximum weight loading shall be utilized to calculate axle and wheel ground weight distributions.

These calculations shall be included in the Bid.

The calculated weights are:

Left Front \_\_\_\_\_

Right Front \_\_\_\_\_

Left Rear \_\_\_\_\_

Right Rear \_\_\_\_\_

During acceptance, the chassis will be weighed on certified scales with loading as above. If the actual axle weights come within 95% of axle certified carrying capacities shall be cause for non-acceptance and a redesign and construction by the bidder will be required in order to comply with this specification.

2. Speed and acceleration. NFPA 4.14

A. Maximum speed 68 MPH

B. Minimum acceleration 0% Grade, 0MPH to 50 MPH in 30 seconds with load above, maximum lighting and Air Conditioning on High.

C. Minimum acceleration 6% grade. 0MPH to 35 MPH in 25 seconds, and still gaining speed with same conditions as "B" above.

### 3. Stopping Distance NFPA 4.16

A. Within 35 feet from 20 MPH, not including reaction distance (0% grade, Dry asphalt road surface). With out front end pull or brake fade, wheel lockup or skid, same operational conditions and load in "2.B" above.

B. Brake test. 10 MPH Panic Stop, all wheels lock.

### 4. Parking Brake

A. Parking brake set, transmission in drive and reverse, engine speed 1000 RPM, with No vehicle movement.

B. Parking brake set, transmission in neutral, 30% grade, no vehicle movement.

### 5. Electrical Design

A. The bidder shall supply a list of all 12 volt connected loads including the chassis with their rated current draw.

B. A 20% increase factor shall be applied to the total above.

C. Provide an 320 amps Leece Neville model 178-131-100, dual belt driven alternator meeting SAE requirements (de-ration factor applied with 200 deg F. ambient temperature that matches the load in "5.B" above at high idle speeds of 1200 to 1400 engine RPM maximum. Battery voltage shall not decrease below 12.5 volt -.2 volt allowance

E. The alternator drive train shall be engineered to withstand the maximum load plus service factors in the "extreme duty" category. Alternator drive bearing design lateral forces shall not be exceeded.

### 6. HVAC Design

A. Bidder shall engineer the Air Conditioning System to withstand the following requirements:

1. Chassis manufacturer supplied Air Conditioning System shall have the capacity to cool the cab of the apparatus to a temperature of 75 degrees F., 50% RH with 95 degree F. and 80%RH Exterior temperature.

### **ENGINEERING SKETCHES**

The evaluation of the bids shall be based on many factors: Three of which shall be design, engineering reliability, and completeness of the sketches. No bidders proposal shall be considered unless complete engineering sketches are submitted with the Bid package. Failure to submit manufacturer's prepared sketches with the Bid will result in automatic rejection.

The submission of these engineering sketches is in addition to scaled drawing for the submission for construction purposes. The engineering sketches will allow the COLCHESTER FIRE DEPARTMENT the ability to fully evaluate the Bidders proposal, design engineering, and sketch quality in comparison to other bidders and to the COLCHESTER FIRE DEPARTMENT'S specifications.

Sketches shall provide the following views.

Left side exterior  
Right side exterior  
Front exterior  
Rear exterior  
Top View  
Interior Cab Floor Plan

### **ACCESSIBILITY**

Parts and components should be located or positioned for rapid and simple inspection and recognition of excessive wear or potential failure. Whenever functional layout of operating components determines that physical or visual interference between items cannot be avoided, the item predicted to require the most maintenance shall be located for best accessibility.

Cover plates, which must be removed for component adjustment or part removal should be equipped with quick disconnection fastening or hinged panels.

Drains, filler plugs, grease fittings, bleeders and other check points for all components should be located so that they are readily accessible and do not require special tools for proper servicing. Design practices should minimize the number of tools required for maintenance.

All components shall be designed and protected so that heavy or other adverse weather conditions will not interfere with normal servicing or operation.

### **ELECTRICAL SCHEMATICS**

The efficient maintenance and service of this fire apparatus is of prime importance to the COLCHESTER FIRE DEPARTMENT. To properly maintain the vehicle electrical system, the fire apparatus must be constructed with the finest in electrical materials, components and workmanship. To maintain the vehicles electrical system, the COLCHESTER FIRE DEPARTMENT must be provided with instructional manuals and complete electrical information and schematics. The electrical information shall be provided as follows:

12 and 120 volt wiring systems:

1. Graphic symbols for electric diagrams.
2. Terminal panel locations.
3. Wire colors and index.
4. Wire labeling, imprinting codes and index.
5. Parts list noting manufacturer and model numbers of components.
6. Master as built working drawing for electrical wiring systems.
7. Individual 8.5" X 11" computer drawn electrical schematics for each body electrical circuit, including chassis added components and controls, noting circuit number, wire size, switches, circuit breaker, terminals for that particular circuit and component.

8. A sample of the 8.5" x 11" electrical schematic must be submitted with the Bid.

### **GENERAL CONSTRUCTION**

The fire apparatus shall be constructed with due consideration to the nature and distribution of the load to be sustained, and to the general characteristics of the service performed.

1. All dimensions are subject to plus or minus 1/8" tolerance, in plane, trueness, alignment, or squareness. The loaded chassis as described in OVERALL DESIGN AND ENGINEERING section A.1, The general description of this fire apparatus, shall not be out of lateral level (side to side) as measured from the bottom of the chassis frame at the front and rear axle by more than 1/4".

The following specifications describe minimum requirements for proposed fire apparatus as designed for continuous reliable service.

The materials specifications are considered absolute minimum. Exceptions will not be accepted or permitted since all raw materials of the specified type are available to all manufactures. Since all custom manufacturers have the ability to shear, break, and weld as these specifications require, all basic design requirements shall be complied with.

### **INSTRUCTIONAL MANUALS**

**The manufacturer shall provide with the vehicle upon delivery, three (3) sets of complete delivery manuals. The manuals shall be in a three-ring notebook type binder(s), with reference tabs for each section of the vehicle. Within each section shall be:**

1. Individual component manufacturer instructions and parts manuals.
2. Warranty forms for the Chassis cab, and Fire Body.
3. Warranty forms for all major components (1 original, 2 copies).
4. Warranty instructions and format to be used in compliance to warranty obligations.
5. Wiring diagrams.
6. Working drawings of final body and compartment fabrication.
7. Necessary normal routine service forms, publications, components of module.
8. Technical publications on training and instructions for major body components.
9. Warning notices and safety related section for personnel protection.
10. **Complete sets** of chassis repair and parts manuals as configured.
11. All items as listed in the **COMPLIANCE AND CERTIFICATIONS** section, items 1 through 15.

## **DELIVERY**

Delivery from the manufacturer's final assembly location shall log the chassis mileage. Delivery shall be direct and continuous from the factory, no stops or detours or delays for demonstration purposes, sales promotions, etc. Chassis manufacturer dealer service must be completed in Connecticut if the odometer reading is in excess of 500 miles prior to delivery to the Colchester Fire Department.

The completed apparatus shall be delivered to the Colchester Fire Department with full written instructions provided to fire department personnel on operation, care, and maintenance of the apparatus, including warranties, and titles.

Delivery of the apparatus shall be by a factory trained delivery engineer, employed by the manufacturer (no exceptions). Transportation shall be by driving the completed fire apparatus from the factory's final assembly plant to Colchester, CT. Transportation by other means such as rail or truck flat bed or towing is not acceptable. The factory trained delivery engineer shall observe all chassis manufacturer break-in requirements.

Fire Department personnel shall be properly instructed as to the proper use of the entire apparatus including, but not limited to, chassis, the apparatus, and all equipment. Training shall be made by a factory-trained specialist who shall be responsible for complete instruction as to operation and maintenance of the chassis, and the completed vehicle.

The training specialist shall remain at the Fire Department for two (2) days (not less than four (4) hours) each day, to provide thorough training of all personnel, or as instructed by Chief of the Department. Training shall be conducted (1) daytime and (1) evening class. All meals, motel, and travel costs shall be the responsibility of the successful bidder.

Transportation shall be considered to include, but not limited to:

- A. Transportation of the Fire Apparatus to the Colchester Fire Department.
- B. Conducting day and evening class for instruction of fire department personnel and drivers in proper operation and maintenance.

The delivery engineer shall set delivery and instruction schedule with the Chief of the Department, or a person so designated to schedule day and or evening classes. Advance notice of at least one (1) week must be given advising the specific day on which the fire apparatus will arrive.

## **ACCEPTANCE**

Before acceptance of the fire apparatus to be furnished in this bid, the Colchester Fire Department shall have the right to inspect and test the fire apparatus and associated equipment to ascertain that all requirements of these specifications have been fully complied with and that all equipment is proper and complete within every respect and in perfect working order.

Testing shall include all performance specifications listed.

Acceptance time allowance shall be 72 hours, provided that no defects, adjustments, corrections or replacements are needed. In the event of acceptance / rejection by the Colchester Fire Department for any equipment, systems, accessories furnished under the contract, the Bidder shall, at its own expense, make such repairs or replacements the Colchester Fire Department considers necessary to

conform to any clause of these specifications within 10 calendar days after notice is given to the manufacturer or its sales agent. Permission to keep or store the equipment in any building owned or operated by the Colchester Fire Department or other town owned facility during the above-specified time shall not constitute acceptance of same.

#### **FORM OF THE BID**

**Failure to comply with all conditions mentioned under "Instructions to Bidders", or the failure to conform to the specifications, will be reasonable cause for the rejection of any Bid. Bid must be submitted on the attached "Town of Colchester, Connecticut Fire Department 2013 Fire Apparatus Bid Form". No Exceptions.**

Any Bid not in accordance with the "Instruction to Bidders" or containing bids not asked for, or not containing all statements contained on the said Bid form, shall be rejected.

Bids shall be enclosed in a sealed envelope marked on the out side of the envelope "Bid for the Town of Colchester Heavy Rescue". Pursuant to the specifications provided, the name of the bidder noted thereon, and shall be delivered at the time and place stated in the "Invitation of Bidders".

#### **EXCEPTIONS, VARIATIONS OR CLARIFICATIONS**

These specifications are based upon design and performance criteria, which have been developed by the Colchester Fire Department as a result of extensive research and careful analysis of available data. Subsequently, these specifications reflect the only type of Heavy Rescue that is acceptable at this time. Therefore, major exceptions to these specifications will not be accepted. Certain exceptions may be accepted if they are minor, equal or superior to that which is specified.

All Bidders are required to submit these specifications in their proposal, noting items where the Bidders proposal differs. Consecutively number each exception, variation or clarification on attached sheet(s) to the Bid utilizing the line numbers in the left hand margin of this bid specification for reference.

For purposes of this Bid the term EXCEPTION means; A compete difference to the Colchester Fire Department specifications.

VARIATION means; a slight alteration of the Colchester Fire Department specifications,

CLARIFICATION means; to narrate the reasons the Bidder takes exception or variation to the Colchester Fire Department specifications and why their proposal equals or exceeds the Colchester Fire Department specifications.

Provide attached sheet(s) to reference the Bidders proposal when these specifications require information concerning materials, design, means and methods or other information.

Brand name or model number has specified some items. These have been carefully selected because of their reliability and availability for replacement locally. In order to be most responsive, items named, or an item "equal to" the particular item specified by brand name or model, should be contained in the bid proposal. It is the bidder's responsibility to prove to the Colchester Fire Department that an item bid as "equal to" a particular specified item, is truly of equal quality, design, and function as the specified item. The Colchester Fire Department and or the Town of Colchester maintains the right to make a final decision as to the acceptability of an item bid as "equal to" a particular specified item.

The Colchester Fire Department assumes that silence to any exception indicates that the paragraph, sentence, line, or item will fully comply with these specifications as determined by the Colchester



Fire Department, and the Town of Colchester regardless of cost to the Bidder. Should the item not comply, when delivered, and the exception is not indicated, in the Bid, or is silent in the executed contract then the item shall be rejected. All items shall be given a general inspection for material, workmanship, and compliance with these specifications prior to acceptance.

Should the item not comply, and an exception was not taken, the Bidder shall be held responsible to fulfill that specification.

#### **WITHDRAWAL OF BIDS**

**Bids may be withdrawn by certified mail or telegraphic request from the Bidder prior to the time and date of the bid opening. Negligence on the part of the Bidder in preparing the bids confers no right for the withdrawal of the Bid after it has been opened. No bidder may withdraw his Bid after the time and date set for the opening thereof.**

#### **BIDS**

All Bids must be signed by the manufacturer or authorized sales representative of the manufacturer for the Heavy Rescue being Bid.

Each Bid must provide the full business name, address and telephone of the Bidder. Bids by a partnership must furnish the full name of all the partners and must be cosigned by each partner. Bids by a corporation, must be accompanied by the name of the state of incorporation and by the signature and designation of the President, Vice president, or Secretary. The name of each person signing shall also be typed or printed below the signature. A bid by a person who affixed to his/her signature the word "President", "Vice President", or "Secretary", may be held to the Bid of the individual signing. Therefore satisfactory evidence of the authority of the officer signing the Bid in behalf of the corporation shall accompany the Bid. All signatures shall be notarized.

## **EVALUATION OF BIDS**

The Colchester Fire Department utilizing the specification design will evaluate bids received.

The Bidder shall disclose any current or pending litigation regarding product liability claims, claims of failure to deliver, or claims of failure to comply with specified components or systems on completed fire apparatus.

No right shall accrue to any person submitting a bid until such bids have been accepted and contract awarded in writing by the duly authorized representative of the Colchester Board Selectmen. The Colchester Board of Selectmen reserves the right to reject any and all bids and to accept the lowest responsible qualified bidder, in accordance with the Town of Colchester purchasing policy and be in the best interest of the Town of Colchester.

The unit will be designed to conform fully to the "Automotive Fire Apparatus" requirements as stated in the NFPA 1901 Standard (2013 Revision) which will include but not limited to the following required chapters as stated in this revision:

Chapter 1	Administration
Chapter 2	Referenced Publications
Chapter 3	Definitions
Chapter 4	General Requirements
Chapter 12	Chassis and Vehicle Components
Chapter 13	Low Voltage Electrical Systems and Warning Systems
Chapter 14	Driving and Crew Areas
Chapter 15	Body, Compartments and Equipment Mounting
Chapter 22	Line Voltage Electrical System
Chapter 23	Referenced Publications

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1     **INSPECTION TRIPS**

2     The bidder shall provide two (2) factory inspections for four (4) customer representatives. The  
3     inspection shall be scheduled at times mutually agreed upon between the manufacturer's  
4     representatives and the customer. All costs such as travel, lodging and meals shall be the  
5     responsibility of the bidder.

6     **TRANSPORTATION OF EXISTING APPARATUS TO BIDDERS FACTORY**

7     The bidder shall be responsible to flat bed the current rescue apparatus to their factory for the  
8     refurb. The bidder will take full responsibility of the apparatus during the transportation process.

9     **SPARTON METRO STAR ELFD CUSTOM CHASSIS**

10    The cab and chassis will be a 2013 Spartan Metro Star extended long four door (8) person cab  
11    manufactured specifically for use in the fire service and meet the requirements of the 2009 edition  
12    of NFPA 1901 Standard.

13    The custom chassis shall be manufactured within the borders of the United States of America.

14    The bidder shall specify the manufacturer of the cab and chassis.

15    The cab shall be custom manufactured, medium four doors, full tilt, and aluminum construction,  
16    with a contour windshield.

17    The cab will be fully enclosed, capable of comfortably seating Six (8) fire fighters in full fire  
18    fighting turnout gear. Cab will be of the cab over engine design, with integral tilt mechanism and  
19    engine access.

20    Cab will be an E. L.F.D. four (4) -door designs, with four (4) side-opening doors. 24 inch raised  
21    roof. (No Exceptions)

22    The cab interior will be the "Open-Space" design with no wall or window between the front and  
23    rear crew area to allow direct communication, better visibility and air circulation in the cab.

24            **CAB MATERIAL**

25    The cab shall be fabricated from a minimum 3/16" (.188) thick, 5052-H32 alloy, marine grade  
26    aluminum sheets.

27            **CAB - BASE CONSTRUCTION**

28    Cab sub frame will be fabricated of 6063 structural aluminum alloys. This frame will extend the  
29    full length and width of the cab and be secured to the chassis frame through two (2) rear urethane  
30    self centering load cushions, two (2) forward pivot brackets, and two (2) cab locks.

31    The front cab wall will be of double wall type construction featuring an inner and outer panel.

32            **24" RAISED CAB ROOF**

33    The cab roof will be ribbed internally for maximum stiffness, with radiused forward and side  
34    edges for a pleasing streamline appearance.

35    Provide a full-length polished aluminum rain gutter running horizontally along each side of the  
36    cab, over the doors and side windows.

- 37            • Provide a minimum of a twenty four (24") inch raised roof over the rear crew  
38            area to ensure adequate headroom and maneuverability. A minimum floor to  
39            ceiling height of **59 inches** shall be provided in the front and **78" inches** floor to  
40            ceiling height in the rear crew area.

41                   **CAB DOORS**

42 Provide four (4) side-opening doors. The cab doors shall be totally aluminum construction with an  
43 extruded aluminum frame and a 3/16" aluminum door skin. Doors will be full height from the step  
44 to the cab roof rain gutter and enclose the step area when the doors are closed. The forward cab  
45 door opening will be a minimum of 37" wide, and the rear cab door opening will be a minimum of  
46 33" wide. The rearward cab doors will have a radius cutout allowing the door opening to protrude  
47 forward over the cab wheel well, while providing full access to the rear crew area.

48 Provide each side cab door with a fully retractable window operated by a crank mechanism.

49 The doors shall close flush with the side of the cab. Provide heavy duty 6" wide belting material to  
50 prevent the cab doors from opening greater than 90 degrees. Provide two (2) large chrome plated  
51 grab handles on the interior of each cab door, positioned to assist cab entry/egress and closing of  
52 the door.

53                   **ENTRY STEP AREA**

54 Each of the forward entrance steps will be a minimum of 9" deep x 29" wide with the floor board  
55 recessed a minimum of 3" to avoid "shin knocking". Each step will be fabricated of aluminum  
56 tread plate. The cab step risers will be overlaid with aluminum tread plate.

57 Each of the rear entrance steps will be a minimum of 8" deep x 22-1/4" wide. An intermediate step  
58 will be provided between the lower entrance step and the crew area floor for ease of entry and  
59 egress. Each set of steps and respective step risers will be fabricated of aluminum tread plate.

60                   **REAR WALL CUT OUT FOR WALK THROUGH RESCUE BODY**

61 Provisions shall be made for a rear wall cutout for watertight access to the walk through rescue  
62 body. The rear wall cut out shall be approximately 34" wide by 72" high. The final dimensions,  
63 structural and necessary fabrication requirements shall be the responsibility of the bidder.

64                   **EXTERIOR REAR LOWER CAB COMPARTMENT**

65 Provide two (2) exterior rear lower cab compartments one (1) each side. The doors shall have slam  
66 style door latches. The doors shall close flush with the side of the cab. Provide heavy duty 6" wide  
67 belting material to prevent the compartment doors from opening greater than 90 degrees. The  
68 compartment shall be as wide, deep and as high as possible. The doors shall contain a signal  
69 switch to signal an open door. The door open circuit shall be wired into cab door ajar light. The  
70 compartment shall have a LED compartment light that actuates/activates when the respective door  
71 is opened and the master battery switch is on.

72                   **DOOR LATCHES**

73 Provide heavy-duty cast paddle latches on the exterior of each cab door. A flush polished stainless  
74 steel paddle latch will be provided on the interior panel of each cab door.

75                   **INTERIOR DOOR LOCKS**

76 All doors shall have interior door locks and exterior keyed door lock controls. The door locks and  
77 the finished door assemblies shall be in conformance with FMVSS 206, with specific adherence to  
78 49 CFR 571.206 Section 4.1.3 requiring that each door shall be equipped with a locking  
79 mechanism. With an interior operating means in the vehicle. All doors shall be keyed alike. The  
80 doors shall be equipped with appropriate safety interlocks to prevent accidental locking of the  
81 doors when closed.

82 **DOOR SCUFF PLATES**

83 Each door interior will have aluminum scuff plates to provide lower and be full width for wear  
84 protection. Reflective STOP signs shall be provided to meet NFPA 14.1.6.

85 **CAB CORROSION PROTECTION**

86 A corrosion preventative material shall be applied during cab construction. A ten-(10)  
87 year warranty against corrosion perforation shall be provided for the cab.

88 **WINDSHIELD/GLASS**

89 Safety plate glass will be used in the windshield with tempered glass being used for the side  
90 windows, door glass, and side sliding crew area glass. All glass will be tinted.

91 The windshield will be of a contour design for improved visibility and style. Provide a two-piece  
92 slide open type window on each side of the cab behind the forward cab doors. These windows will  
93 provide additional ventilation for the enclosed cab.

94 **WINDSHIELD WIPER AND WASHER**

95 Provide dual, electric operated, pantographic type windshield wipers. Wipers will have "HI/LO"  
96 and "INTERMITTENT" operating speeds. "HI/LO" speeds will be controlled by a dash mounted  
97 rocker switch. "INTERMITTENT" operation will be controlled by a dash mounted "paddle/lever"  
98 switch. The wipers will be of the self parking type.

99 Windshield washers will be electric operated wet arm type with a washer fluid reservoir, readily  
100 accessible in the cab, behind the officer's seat. The washer control is integral with the intermittent  
101 wiper control switch.

102 Provide removable panels on the front face of the cab for access to the wiper motor assemblies.

103 **GRAB HANDLES**

104 Provide two (2) 1-1/4" diameter x 28" long, stainless steel grab handles located one at each cab  
105 door entrance. Grab rail stanchions will be chrome plated and of an offset design, when  
106 necessary, to prevent "hand pinching" when opening or closing the doors. Formed rubber gaskets  
107 will be provided between each stanchion base and the cab surface.

108 **INTERIOR GRAB RAIL**

109 Provide two (2) 1-1/4" diameter x 18" long, rubber covered grab rail on the cab dash in front of the  
110 driver and officer's seat area.

111 **AIR INTAKE/OUTLET**

112 Provide for proper engine cooling through an air intake; specify size, of \_\_\_ square inches, in the  
113 center front cab sheet. Provide air inlets / outlets, specify size of \_\_\_ square inches each, will be  
114 located one (1) on each side of the cab rearward of the forward cab doors. The design will permit  
115 proper ducting of air through the engine compartment and cooling system. The air intake and  
116 outlets will be covered with polished stainless steel grilles, secured with stainless steel fasteners.  
117 The air inlet shall be equipped with Ember Separator as per NFPA.

118 **WHEEL WELL LINERS**

119 The front cab wheel wells shall be equipped with removable, aluminum, inner wheel well liners.  
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**FENDERETTES**

Provide polished aluminum replaceable type federates installed around the front wheel openings.

**MUD FLAPS**

Provide heavy-duty anti-sail type mud flaps behind the front wheels.

**CAB MIRRORS**

Provide Areo Dynamic Retrac 613305 polished aluminum mirrors, located one (1) each side of the cabs front doors. An extension arm shall be provided to provide an adequate view of the mirror from the driver's seat.

The mirrors shall be heated with an on/off switch provided for the driver. The mirrors will be individually remote controlled from the driver's position. Each mirror will contain an integral convex section which will be controlled from the driver's position.

**EIGHT INCH CONVEX K-10 FDNY MIRROR**

Provide an eight-inch K-10 convex mirror on the upper right front of the cab for visibility of the right front corner and bumper by the driver.

**EXTREME DUTY INTERIOR CAB TRIM**

Provide a dashboard of custom formed material to create an ergonomically designed interior to be user friendly and functional for the driver and officer. The instrument cluster will be centered in front of the driver, and all gauges will be custom fitted in a non-glare panel. All warning lights and indicators will be clustered in the lower center portion for easy identification and will be backlit for easy identification when activated.

Provide for provisions for mounting of an additional switch panel in the center of the dash between the driver and officer. Provide for easy access to the main chassis wiring panels and breaker panels.

The cab shall be equipped with a minimum of three (3) sun visors. The visors shall be installed on the overhead panel and provide approximately 90 per cent coverage across the width of the cab. The visors shall be approximately 26 inches wide and six (6) inches tall.

Provide a compartment provided under each front seat with a latched access door. The compartment under the driver seat will measure approximately 13"W x 12"D x 9"H. The radio compartment under the officer seat that will measure approximately 19"W x 12"D x 9"H.

The entire interior rear wall of the cab will be covered with a smooth aluminum painted panel to match interior cab finish.

**FLOORING**

The floor of the driver's compartment and the floor of the crew area shall be covered with rubber matting with barrier type insulation. Edges of the insulation shall be trimmed with aluminum-extruded angle for a pleasing appearance the material shall comply with NFPA noise and heat requirements.

158                    **ENGINE ENCLOSURE**

159        Engine enclosure shall be fabricated from materials compatible with the basic cab material. The  
160        forward portion of the engine enclosure will be covered with formed vinyl to match the balance of  
161        the cab interior. The engine enclosure will not significantly obstruct the driver's vision in any  
162        direction. Inside of enclosure will be insulated to protect against heat and noise.

163        The rear top section of the engine enclosure in the rear crew area shall provide access to the  
164        engine, transmission and power steering reservoir dipsticks.

165                    **CAB SEATING**

166        **Driver's seating position:** Provide an H.O. Bostrom's adjustable air suspension seat.

167        **Officers seating position:** Provide a H.O. Bostrom's Tanker 450 fixed, non-suspension, individual  
168        seat with S.C.B.A. storage. The padded cradle seat back and integral headrest shall be custom  
169        fitted upholstery for ISI S.C.B.A

170        **Crew Members seating position:** Provide four (4) rearward facing H.O. Bostrom's Tanker 450  
171        full-size SCBA seats, and two (2) forward facing H.O. Bostrom's Tanker 400CT Flip-UP ABTS  
172        seats with S.C.B.A. storage, padded cradle seat backs, The S.C.B.A. bracket shall comply with  
173        NFPA crash protection requirements. The padded cradle seat back and integral headrest shall be  
174        custom fitted upholstery for ISI, S.C.B.A to avoid the back cradle from causing abrading of the  
175        padding.

176                    **SECURE-ALL SCBA BRACKET**

177        Secure-All SCBA brackets shall be provided and installed in each S.C.B.A. seat with the  
178        exception of the driver's seat for a total of seven (7) brackets. One (1) secure-all bracket will be  
179        provided in the driver's side exterior lower cab compartment. The brackets will accommodate a  
180        customer supplied ISI, Viking, 4500 psi, 45 minute S.C.B.A. with composite cylinders. The  
181        S.C.B.A. bracket shall comply with NFPA crash protection requirements.

182                    **SEAT BELTS**

183        Provide three point, retractable, shoulder harness type seat belts for all riding positions color **RED**.

184                    **UPHOLSTERY**

185        All seating shall be Grey tweed Durawear.

186        All ABS formed material will be medium gray in color, as well as the seating and upholstery. The  
187        cab upholstered overhead and rear wall portions will be a gray bar pattern.

188                    **HELMET HOLDERS**

189        Provide six (8) Zico UHH-1 helmet holders mounted in the cab / crew area. The location to be  
190        determined during preconstruction conference.

191                    **ANTENNA INSTALLATION**

192        Ten (10) customer furnished antennas will be mounted on the apparatus and will be located as  
193        noted on the final approval drawing. The antennas will be furnished to the manufacturer prior to  
194        construction of the custom chassis. The attached antenna wires will be run to the right side cab  
195        behind the officer's seat, and to the command area unless otherwise specified. (Preconstruction  
196        conference)

197                   **RADIO CABLE INSTALLATION**

198   Four (4) remote head radio cables will be furnished to the manufacturer prior to construction of the  
199   custom chassis. The wires will be run from behind the officer's seat, to the dashboard area for  
200   installation of customer radios. Unless otherwise specified. (Preconstruction conference)

201                   **INSTRUMENT PANELS**

202   The main instrument panel will be centered in front of the driver and shall be removable with  
203   sufficient slack on wire and cables to service the instrumentation attached. The cab dash panel  
204   will be an anti-glare surface. The instrument panel will include the following gauges and  
205   indicators:  
206

- 207           -Dual needle air pressure gauge
- 208           -Low front air warning light (red) in blacked out warning block
- 209           -Low rear air warning light (red) in blacked out warning block
- 210           -Low air audible alarm
- 211           -Oil pressure gauge with integral low pressure warning light (red)
- 212           -Low oil pressure audible alarm, between oil pressure gauges and transmission
- 213           -Temperature gauge
- 214           -Transmission temperature gauge with integral high temperature warning light (red)
- 215           -High transmission temperature audible alarm
- 216           -Voltmeter with color-coded dial and integral high/low voltage warning light (red)
- 217           -High/low voltage audible alarm
- 218           -Fuel gauge with integral low fuel warning light (red)
- 219           -Water temperature gauge with integral high temperature warning light (red)
- 220           -High water temperature audible alarm
- 221           -Electronic speedometer with LCD totaling odometer and trip odometer
- 222           -Tachometer with integral engine hour meter
- 223           -Air restriction indicator
- 224           -Headlight rocker switch with integral backlit label
- 225           -Dash light dimmer slide with integral backlit label
- 226           -Headlight high beam indicator light (blue) in blacked out warning block
- 227           -Two directional indicator lights (green) in blacked out warning block
- 228           -Windshield wiper rocker switch with integral backlit label
- 229           -Windshield wiper delay slide and momentary washer with integral backlit label
- 230           -Ignition on/off switch
- 231           -Ignition "ON" light (yellow) in blacked out warning block
- 232           -Battery "ON" light (green) in blacked out warning block
- 233           -Engine start rocker switch with integral backlit label
- 234           -Parking brake warning light (red) in blacked out warning block
- 235           -Electric horn/air horn selector switch with integral backlit label
- 236           -"Cab Not Latched" warning light (red) in blacked out warning block
- 237           - 300 amp Ammeter

238   The warning lights and indicators will be clustered in the lower center portion of the dash.

239   Below the main dash panel and to the right of the steering column will be the parking brake  
240   control valve. Additional auxiliary control switches can also be provided in these vertical panels  
241   below the main dash panel.

242 **OFFICER'S SPEEDOMETER**

243 INSTRUMENTATION: Speedometer

244 The apparatus shall be equipped with a Class I Officer's Speedometer to display apparatus speed.  
245 The display shall be a rectangular shaped, weatherproof, digital display with super-bright digits at  
246 least 1/2" high. The display shall be capable of showing speed in either MPH or KPH. It shall be  
247 located for easy viewing by the officer in the right front seat.

248 **COMPUTER BRACKET (OFFICER POSITION)**

249 Provide a HiNT-4115 Center sliding mount for a Panasonic Tough book computer on the dash in  
250 front of the officer's position.

251 **VEHICLE DATA RECORDER (VDR)**

252 The apparatus shall be equipped with an on-board vehicle data recorder (VDR) to monitor critical  
253 driving habits and the status of safety belt use. The VDR shall be capable of recording and storing  
254 the following apparatus and drive train data via the SAE J1939 network and hardwired inputs in  
255 accordance with the requirements of NFPA 1901 Section 4.11.

256 **DEFOGGER FANS**

257 Provide two (2), six (6) inch defogger fans in addition to the standard windshield defroster. They  
258 will be located in the cab overhead, one (1) each side of the heater/defroster unit. A single switch  
259 located for easy access of the driver shall control the units.

260 **CREW AREA FANS**

261 Provide two (2), six (6) inch fans. They will be located in the crew area, one (1) each side on the  
262 rear wall. A switch located on the unit shall control the fan.

263 **HEATING AND AIR CONDITIONING**

264 The cab's climate control system shall use three (3) heater-air conditioner units divided into two  
265 separate circuits. The front circuits use two (2) small heater-air conditioning units, one (1)  
266 mounted under the dash on the driver's side and one (1) under the officer's side dash. These units  
267 are each rated at 24,000 BTU and 2 tons cooling. These units shall be plumbed to their own 9.5  
268 cubic inch per revolution compressor and serpentine fin design condenser. The units blow toward  
269 the windshield through vents in the dash. There shall be two (2) adjustable vents installed to direct  
270 air at the lower portion of the driver and officer seating areas. Three switches on the dash,  
271 including low/med/high, right/left, and heat/off/cool, control these units.  
272

273 The rear circuit shall use one large heater air conditioner unit with a rating of 2 tons cooling and  
274 48,000 BTU heating. It shall be mounted under the forward facing rear seats. Ducting shall run up  
275 the rear wall to adjustable vents (minimum of six) mounted at the ceiling. This unit shall also  
276 utilize its own separate 9.5 cubic inch per revolution compressor and serpentine fin condenser.  
277 Two (2) switches on the seat base, including low/med/high and heat/off/cool, control this unit.  
278

279 A blend air switch shall be installed on the dash that simultaneously operates the front heating and  
280 cooling systems. This provides hot and dry air for defogging purposes.  
281

282 All units utilize permanent magnet motors. Climate control system using dual compressors or  
283 dual condensers plumbed into a single circuit are not acceptable since the failure of one unit shut  
284 down the entire system.

285                    **CAB TILT ASSEMBLY**

286        Provide a cab tilt mechanism custom designed for ease of maintenance consisting of two (2)  
287        hydraulic cylinders. Each cylinder will have an attached hydraulic locking mechanism, in the  
288        event of a hydraulic failure. Hydraulic cylinders will be detachable to allow removal of the engine  
289        for major service. A mechanical cylinder stay bar and release will be provided to insure a positive  
290        lock in the tilted position.

291  
292        Two (2) rear outboard cab latches will be of the hydraulic pressure release, automatic re-latching  
293        type and provide an automatic positive lock when the cab is lowered. The latch must not  
294        disengage or experience any damage when subjected to a pull apart tensile load of 6,000 lbs. The  
295        tilt pump will be electric over hydraulic type. A safety interlock switch will be provided to prevent  
296        accidental tilting of the cab.

297                    **AUXILIARY MANUAL CAB LIFT**

298        An auxiliary manual cab lift backup system will be furnished for use in the event of total electrical  
299        shutdown.

300                    **CHASSIS FRAME**

301        The chassis frame shall be fabricated in its entirety in the factory of the chassis manufacturer.  
302        This will prevent any split responsibility in warranty or service. Provide warranty on chassis  
303        frame.

304  
305        The frame shall consist of two channels fastened together by cross members. All structural  
306        fasteners used in the frame will be Grade 8 with vibration resistant aircraft nuts. Hardened steel  
307        washers will be used under all bolt heads and nuts to avoid stress concentrations. Top flange will  
308        be free of bolt heads. All spring hangers will be steel castings. Hanger or other weldments will not  
309        be acceptable.

310  
311        The minimum frame side rails shall be "C" channel type, 10.25" x 3.5" x .38" 110,000 psi  
312        minimum yield high strength steel with a RBM of 1,827,257 inch pounds and a section modulus  
313        of 16.61 cubic inches.

314  
315        Formed frame rails or a fish-plated frame will not be acceptable.

316  
317        The entire chassis frame assembly consisting of frame rails, cross members, axles and steering  
318        box, will be finish painted **body color yellow** before installation of any electrical wiring, fuel  
319        system components, or air system components.

320                    **SEVERE DUTY FRONT BUMPER**

321        There shall be a 12" high painted formed steel wrap-around (45 degree) bumper provided at the  
322        front of the apparatus. The bumper shall be mounted to a reinforcement plate constructed of 1/4" x  
323        12" x full width carbon steel. The frame rail extension shall be a reinforced four sided boxed  
324        frame rail for superior safety protection. A gravel shield shall be provided, constructed of .188"  
325        aluminum diamond plate. The bumper extension shall be approximately 21". The bumper shall be  
326        the body/cab primary (lower) color.

327



328

**WINCH STORAGE WELL**

329 Provide one (1) storage well constructed of 1/8" aluminum in the gravel shield. This storage well  
330 will be located center between the frame rails. The size shall be approximately full width between  
331 the frame rails, as large as possible. Reinstall department electric winch with guild rollers through  
332 the front bumper.

333

**WINCH STORAGE WELL COVER**

334 A polished aluminum tread plate cover shall be provided for the winch storage well. The cover  
335 shall be attached with a heavy-duty stainless steel hinge. A lift and turn latch shall secure the cover  
336 in the closed position and pneumatic stay arms shall hold the covers in the open position. A  
337 manually operated LED compartment light shall also be provided.

338

**SIGHT RODS**

339 Two (2) Bores, model BG48-10, lighted sight rods shall be mounted to the outside corners of the  
340 front bumper extension. The rods shall be polished stainless steel. The sight rod shall be mounted  
341 in a way that does not interfere with the cab tilt procedure

342

**REMOVE AND REMOUNT AND WIRE ELECTRIC WINCH**

343 Remove from the customer's chassis and remount and rewire 10,000 lb electric winch.

344

**FRONT BUMPER TOW EYES**

345 The bumper shall include two (2) painted tow eyes and shall be installed through the front bumper.  
346 The tow eyes shall be fabricated from 0.75 inch thick #1020 ASTM-36 hot rolled steel. The inside  
347 diameter of the tow eye shall be 2.00 inch and have a chamfered edge. The tow eyes shall be  
348 painted to match the frame.

349

**FRONT AXLE**

350 Provide a front axle of sufficient capacity as determined by the COLCHESTER FIRE  
351 DEPARTMENT loading requirements. The measured load during acceptance shall not exceed  
352 95% of the axle capacity. The front axle shall not be less than a Meritor (Rockwell) MFS-18 with  
353 22,800-pound capacity. Provide  
354 Stemco premium oil seals with hubcap window.

355

**STEERING SYSTEM**

356 The steering system shall be a package certified by Vickers for the application. All components  
357 from the steering column to the drag link shall be manufactured by TRW. A non-certified system  
358 shall not be acceptable.

359

360 The steering system shall use a Vickers steering gear with an slave gear which has the capacity to  
361 static steer the chassis loaded to 21,500 pounds with 425-size tire. The use of two equal size gears  
362 or a single gear with an assist cylinder shall not be acceptable.

363

### **STEERING**

364

Provide a front axle powered steering system of sufficient capacity as determined by the Colchester Fire Department loading requirements. The measured load during acceptance shall not exceed 95% of the axle capacity. The steering shall be an integral power assist type utilizing an engine driven hydraulic pump with a maximum operating pressure of 2000 PSI. Steering design will permit a maximum of 5.6 turns from stop to stop. Steering system components will be mounted in accordance with the manufacturer's instructions.

370

371

Provide a vinyl padded steering wheel, minimum 18" diameter, with a center hub mounted horn button. Provide a self canceling directional signal lever and a traffic hazard switch on the steering column. Pulling the directional signal lever toward the driver will control the high beam activator. Provide a steering column with tilting and telescoping capability.

374

375

### **FRONT BRAKES**

376

Front brakes shall be determined by selected load capacity of the front axle. Arvin / Meritor 16.5" x 6" S-cam type with Arvin / Meritor automatic slack adjusters. Drums are to be outboard mounted.

377

378

### **FRONT SUSPENSION**

379

The front springs shall be semi-elliptical, minimum of 4" wide x 54" long (flat), minimum of 11 leaves x .499" thickness with a capacity of 22,800 pounds. Grease fittings for lubrication shall be installed in the spring pins. Double acting shock absorbers shall be installed. Axle stops with energy absorbing bounce bumpers shall be supplied on the spring top pad.

380

381

382

383

384

Provide double acting hydraulic shock absorbers on the front axle. Shock absorbers shall match the capacity of the front axle and have a minimum bore of 1.38" and an outside diameter of approximately 3 1/4".

385

386

387

### **FRONT SHOCK ABSORBERS**

388

Two (2), nitrogen gas charged shock absorbers shall be part of the front axle suspension.

389

### **REAR AXLE**

390

Provide a rear axle of sufficient capacity as determined by the COLCHESTER FIRE DEPARTMENT loading requirements. The measured load during acceptance shall not exceed 95% of the axle capacity. The rear axle shall not be less than a Meritor RS-26-185 Rear Axle 26,000 # GAWR with a capacity of 26,000 lbs. The axle shall be a single reduction axle with hypoid gearing and oil lubricated wheel bearings. Heavy-duty 26,000 lb. rear suspension will be provided. Gear ratio shall be to provide a top speed of 65 to 70 MPH.

391

392

393

394

395

396

### **REAR SUSPENSION**

397

Provide the rear suspension of a leaf type variable rate with a 26,000 lb. rating. The rear suspension shall include a main spring pack with 14 leaves, and an auxiliary spring pack with four leaves. The suspension shall be a self-leveling slipper type with torque leaf and variable rate. The rear suspension shall have a ground rating of 26,000 lbs.

398

399

400

401

### **REAR BRAKES**

402

Rear brakes shall match the capacity of the selected rear axle. The brakes shall be "S" Cam, minimum size 16-1/2" x 7" cast shoes with 36 /36 chambers and shall be full air actuated with automatic slack adjusters. Drums are to be outboard mounted.

403

404

405

**BRAKE SYSTEM**

406 The braking system shall be full air type in compliance with FMVSS-121. They will be direct air  
407 type with dual air treadle in the cab.

408

**ABS SYSTEM**

409 Provide an ABS system to improve braking control and reduce stopping distance. This braking  
410 system shall be fitted to all axles. All electrical connections will be environmentally sealed, water  
411 weatherproof and vibration resistant.

412

413 The system shall constantly monitor wheel behavior during braking. Sensors on each wheel  
414 transmit wheel speed data to an electronic processor which will sense approaching wheel lock and  
415 instantly modulate brake pressure up to 5 times per second to prevent wheel lockup. Each wheel  
416 will be individually controlled. To improve service trouble shooting, provisions in the system for  
417 an optional diagnostic tester will be provided. The system will test itself each time the vehicle is  
418 started and a dash-mounted light will go out once the vehicle is moving above 4 mph. To improve  
419 field performance the system will be equipped with a dual circuit design. The system circuits will  
420 be configured in a diagonal pattern. Should a malfunction occur, that circuit would revert to  
421 normal braking action. A warning light will signal malfunction to the operator. The system will  
422 consist of a sensor clip, sensor, and electronic control unit and solenoid control valve. The sensor  
423 clip will hold the sensor in close proximity to the tooth wheel. An inductive sensor consisting of a  
424 permanent magnet with a round pole pin and coil will produce an alternating current with a  
425 frequency proportional to wheel speed. The unit shall be sealed, corrosion resistant and protected  
426 from Electromagnetic interference. The electronic control unit will monitor the speed of each  
427 sensor wheel slip. A deviation will be corrected by cyclical brake application and release. If a  
428 malfunction occurs, the circuit will signal the operator and the malfunctioning half of the system  
429 will shut down. The system is installed in a diagonal pattern for side-to-side control. The system  
430 will insure that each wheel is braked in optimum efficiency up to 5 times a second.

431

432 The system shall also control application of the auxiliary engine brake to prevent wheel lock.

433

434

**AUTOMATIC TRACTION CONTROL (ATC)**

435 Provide automatic traction control, (ATC); to further improve vehicle drive characteristics. This  
436 system shall control drive wheel slip during acceleration from a resting point. An extra solenoid  
437 valve will be added to the ABS system. The system will control the engine and brakes to ensure  
438 efficient acceleration. The system will include a dash-mounted light that will come on when ATC  
439 is controlling drive wheel slip

440 **ESC ELECTRONIC STABILITY CONTROL**

441 The apparatus shall have a Wabco ABS-based Electronic Stability Control (ESC), which offers  
442 another level of vehicle control. This automatic braking management system reduces the  
443 possibility of a side rollover and assists in the directional stability of apparatus. Upon reaching  
444 critical lateral acceleration thresholds, the system intervenes to regulate the vehicle's deceleration  
445 and braking functions by reducing the engine RPMs by overriding the foot throttle input and  
446 applying the engine retarder (if equipped) to slow the apparatus giving the driver added control  
447 and maneuverability. The ESC shall also apply braking power to selective wheel of the front and  
448 rear axles to assist in stabilizing the apparatus to its intended direction. This selective braking  
449 application and reduction of speed and torque reduces the possibility of spinouts and side rollovers  
450 even in adverse conditions

451 **AUTOMATIC TIRE CHAIN**

452 Provide an automatic tire chain system for the rear axle with a driver-controlled switch in the cab.  
453 Switch shall be provided with a protective flip cover. Air supply shall come from the additional  
454 1,200 cu.in. air tank.

455 **BRAKE AIR RESERVOIRS**

456 Provide (4) air reservoirs. Three (3) air reservoirs installed in conformance with best automotive  
457 practices with a reservoir capacity of 4,400 cubic inches minimum.  
458 Provide an additional 1200 cu. in. air reservoir for the accessory air outlet, location to be  
459 determined, for air reel /air tool operations. This tank shall be fitted with a high flow check stop.

460 **AIR DRYER**

461 Provide a Bendix #AD-9 heated air dryer. Provide an automatic moisture ejector on the primary  
462 or wet tank.

463 **AIR LINES**

464 Provide the entire chassis air system plumbed with reinforced Synflex airlines. All of the airlines  
465 will be color coded to correspond with an air system Schematic and shall be adequately protected  
466 from heat and chafing.

467 **AIR COMPRESSOR**

468 Provide an air compressor with the capacity of a minimum of 18.0 cu. ft. per minute. The air brake  
469 system will be the quick build up type.

470 **PARKING BRAKE**

471 The parking brake shall be of the spring actuated type, mounted on the rear axle brake chambers.  
472 The parking brake control and red application warning light will be mounted on the cab instrument  
473 panel.

474 **KUSSMAUL AIR PUMP**

475 Provide a Kussmaul 12 volt air pump, model 091-9, complete with 091-9G air line filter and  
476 091-9H mounting plate. The unit to be completely automatic and controlled by integral pressure  
477 switch. Provide a separate 12V fused circuit for this air pump. Mount under driver's seat.  
478

479

**WHEELS AND TIRES**

480 Provide Alcoa Aluminum Dura Bright hub piloted front and rear wheels of sufficient capacity as  
481 determined by the Colchester Fire Department loading requirements. The measured load during  
482 acceptance shall not exceed 95% of the wheel and tire capacity. Tires and wheels will be balanced.

483 The two (2) front tires shall be Michelin 425 x 65R, 22.5 tubeless radials, XZY 3, with a rating of  
484 11,400 lbs. for each tire.

485 The four (4) rear tires shall be Michelin 12R, 22.5 XDS mud and snow tubeless radials, with a  
486 rating of 6,780 lbs. for each tire in a dual configuration.

487

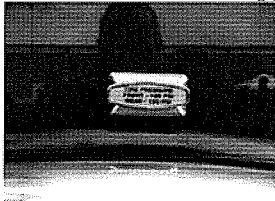
**TIRE PRESSURE MONITORING**

488 There shall be a Vecsafe LED tire alert pressure management system provided that shall monitor  
489 each tire's air pressure. A chrome plated brass sensor shall be provided on the valve stem of each  
490 tire for a total of six (6).The sensor shall calibrate to the tire pressure when installed on the valve  
491 stem for pressures between 20 and 120 psi. The sensor shall activate an integral battery operated  
492 LED when the pressure of the tire drops 8 psi. Removing the cap from the sensor shall indicate the  
493 functionality of the sensor and battery. If the sensor and battery are in good working condition, the  
494 LED shall immediately start blinking. Pressure to be determined after the apparatus has been live  
495 loaded.

496

**TIRE PRESSURE LABELS**

497 Provide over each wheel well a Permanent label indicating the proper inflation pressure for each  
498 tire or set of tires. Labels are to be made after the apparatus has been live loaded. Sample shown:



499

500

**ENGINE**

501 Engine shall be a Cummings ISL 450 Hp, turbocharged, per the following specifications.

502 Min. Horsepower - 450 horsepower.

503 Governed Speed - 2200 RPM

504 Peak Torque - 1250 lb-ft

505 Cylinders - Six (6)

506 Operating Cycles - Four (4)

507 Governor Type - Limiting Speed

508 The engine shall be installed in accordance with engine manufacturer's instructions, and the  
509 chassis manufacturer will be able to furnish proof of engine installation approval by the engine  
510 manufacturer. The engine controls shall be programmed for fire service application.

511

512

513

### **RADIATOR**

514 The radiator shall be steel with bolted top and bottom tanks. The cooling system will be designed  
515 for a minimum of seven (7) PSI operation. There will be a sight glass in the radiator to check the  
516 coolant level without removing the radiator cap. The core construction will be tube and fin with a  
517 minimum of four (4) tubes per row and a minimum of ten (10) fins per inch.  
518

519 Provide transmission oil to liquid cooler.  
520

521 Provide a one and one-half (1-1/2) gallon coolant recovery system located inside the engine  
522 enclosure that is accessible from the access hatch located at the rear of the engine enclosure.  
523

524 Provide silicone rubber hoses and appropriate hose clamps for the engine and heater system.  
525

526 Provide an engine water filter as required by the manufacturer.  
527

528 Provide a coolant additive to the cooling system as recommended by the engine manufacturer for -  
529 35 degrees F.

530

### **AIR CLEANER**

531 Provide an engine air cleaner of a dry type element. The air cleaner shall be sized and installed in  
532 accordance with the engine manufacturer's recommendations.

533

### **ENGINE BRAKE**

534 Provide a "Jacobs engine brake" for six (6) cylinders for increased braking capabilities in addition  
535 to VGT. It will be controlled by an on/off and low/hi switch on the dash and activated by releasing  
536 the throttle pedal to idle.

537 Wire the engine brake in such a manner so as to illuminate the chassis brake lights when the  
538 engine brake is engaged and operating.

539

### **ENGINE FAST IDLE**

540 Provide a fast idle for the electronic controlled engine. An ON/OFF switch located on the  
541 dashboard shall control the fast idle. Setting for the fast idle must produce a slight battery charge  
542 with all electrical components including air conditioning operating.  
543

544 Provide an electronic interlock system that will prevent the fast idle from operating unless the  
545 transmission is in "Neutral" (or "Park" if so equipped) and the parking brake is fully engaged. If  
546 the fast idle control is used in conjunction with a specified engine/transmission driven component  
547 or accessory, the fast idle control shall be properly interlocked with the engagement of the  
548 specified component or accessory.

549

### **TRANSMISSION**

550 The transmission shall be an Allison 3000 EVS five (5) speed automatic with electronic controls.

551 The transmission will have two (2) 10-bolt PTO pads, one (1) at the 8-o'clock position and the  
552 other at the 1-o'clock position.

553 The transmission shall be equipped with an air to oil transmission cooler located below the  
554 radiator allowing a single depth core and efficient cooling package. The transmission cooler shall  
555 be mounted in a manner to allow maximum approach angle by not protruding below the frame  
556 more than an inch. The transmission cooler shall be constructed completely of aluminum with  
557 welded side tanks. The transmission shall have two (2) internal oil filters.

558 The transmission gear ratios shall be:

559 1st 3.49:1

560 2nd 1.86:1

561 3rd 1.41:1

562 4th 1.00:1

563 5th 0.75:1

564 Rev 5.03:1

### **P.T.O. (POWER TAKE OFF) FOR GENERATOR**

566 There shall be a Chelsea PTO provided with the apparatus for generator operations.

### **P.T.O. LIGHT INDICATOR FOR GENERATOR**

568 A green light to indicate that the PTO is in gear shall be mounted on the cab dash.

### **TRANSMISSION SHIFTER / MODE**

570 The transmission shall be controlled by an Allison push button type shift control. It  
571 shall be internally illuminated for night operation. It shall be mounted to the right of  
572 the steering column on the driver's dash console. The transmission, upon start-up, shall  
573 select four-(4) speed operation. By pressing the "mode" switch on the shift pad (mode  
574 on) provides five-(5) speed overdrive.

### **TRANSMISSION WARRANTY**

576 The Allison 4000 EVS series transmission shall be warranted for a period of five (5) years with  
577 unlimited mileage. Parts and labor shall be included in the warranty.

578 The transmission must be filled with Transynd synthetic fluid or approved equal.

579 Transmission installation shall be in accordance with the transmission manufacturer's  
580 specifications. The transmission will be readily and easily removable for repairs or replacement.

### **DRIVELINES**

582 Drivelines shall be Dana (Spicer) 1810 series. The chassis manufacturer shall utilize an electronic  
583 type-balancing machine to statically and dynamically balance all drive shafts. The chassis  
584 manufacturer must provide proof of compliance with all drive shaft manufacturer's standards and  
585 specifications. (No Exceptions)

586

**EXHAUST SYSTEM**

587 Provide an aluminized exhaust system installed in accordance with the engine manufacturer's  
588 requirements and meet all Environmental Protection Agency and State noise level requirements.  
589 Exhaust system components will be securely mounted and easily removable.

590 The muffler will be fabricated from steel sheet and of a size compatible with the engine exhaust  
591 discharge flow and back flow restrictions.

592 All exhaust tubing will be a minimum of 16 gauge aluminized cold rolled steel. Any flexible  
593 exhaust tubing will be H D stainless steel type. All flex tubing clamps will be Flex-Seal II, packed  
594 with a pliable sealant, creating an emission type joint. To minimize heat build-up, exhaust tubing  
595 within the engine compartment will be wrapped with insulating pads that are easily removable.

596 Provide exhaust discharge on the right side of the apparatus forward of the rear axle. Provide a  
597 formed aluminum tread plate heat shield/exhaust deflector shall be installed between the floor of  
598 the body compartment and the top of the exhaust outlet. Provide an angled, chrome plated, exhaust  
599 deflector on the exhaust outlet.

600

**FUEL TANK**

601 Provide a fuel tank with a minimum of 50-gallon capacity. The fuel filler neck shall be 2" ID  
602 minimum. Provide a ½" minimum diameter drain plug. The tank will be fabricated from hot  
603 rolled, pickled and oiled steel. Provide a fuel level float.

604 Install the fuel tank behind the rear wheels between the frame rails. All lines to and from the  
605 engine shall be medium pressure aircraft type wire braid hoses.

606 Fuel filtration shall meet the requirements of the engine manufacturer.

607 Provide a fuel line shut-off valve between the fuel tank and the heated fuel/water separator. Also  
608 provide a fuel shutoff valve between the diesel generator engine and the fuel/water separator.

609 A Racor model B32002 fuel water separator shall be installed in place of the standard Cummings  
610 primary fuel filter. A water-sensing probe, along with a dash mounted warning light shall be  
611 supplied.

612

**FUEL POCKET**

613 Provide a fuel fill on the left side rear wheel well area. Provide a Cast Products heavy-duty cast  
614 aluminum spring loaded hinged fill door, labeled "Diesel Fuel Only".



615

**VEHICLE FLUIDS PLATE**

616 As required by N.F.P.A., the contractor will affix a permanent plate in the driver's compartment  
617 specifying the quantity and type of the following fluids used in the vehicle:

618 A permanent plate in the driving compartment will specify the quantity and type of the following  
619 fluids used in the vehicle:

- 620 A) Engine oil
- 621 B) Engine coolant
- 622 C) Chassis transmission fluid
- 623 D) Drive axle(s) lubrication fluid
- 624 E) Air-conditioning refrigerant
- 625 F) Air-conditioning lubrication oil
- 626 G) Power steering fluid
- 627 H) Cab tilt mechanism
- 628 I) Air compressor system lubricant
- 629 J) Generator system lubricant

630

**CHASSIS ELECTRICAL SYSTEM**

631 All electrical wiring in the chassis will be SXL cross link-insulated type. Wiring is to be color-  
632 coded and include function codes every three (3) inches on both sides. Wiring harnesses will be  
633 routed in protective heat resistant loom securely and neatly installed. Two power distribution  
634 centers will be provided in central locations for greater accessibility. The power distribution  
635 centers contain automatic thermal self-resetting breakers, power control relays, flashers, diode  
636 modules, daytime driving light module and engine and transmission data links. All breakers and  
637 relays utilized in circuits will have amp loads that are substantially lower than the respective  
638 component rating thus ensuring long component life. Power distribution centers will be composed  
639 of a system of interlocking plastic modules for ease in custom construction. The power  
640 distribution centers are function oriented. The first is to control major truck function and the  
641 second will control switching and interior operations. Each module shall be single function coded  
642 and labeled to aid in troubleshooting. The centers also have accessory breakers and relays for  
643 future installations. All harnesses and power distribution centers will be electrically tested prior to  
644 installation to ensure the highest system reliability.

645 All external harness interfaces will be of a triple seal type connection to ensure a proper  
646 connection. The cab/chassis and the chassis/body connection points will be mounted in accessible  
647 locations. Complete "as built" chassis wiring schematics shall be supplied with the apparatus.

648 The bidder shall supply with their bid photographs of their wiring centers as well as a copy of a  
649 wiring schematic from a competed apparatus.

650

**SPARE 12 VOLT CIRCUIT - CAB**

651 Provide seven spare 12V circuits sized and supplied for the interior of the custom cab for  
652 customer-supplied equipment. These circuits shall be wired to an area(s) determined at time of  
653 pre-construction. COLCHESTER FIRE DEPARTMENT to provide list of equipment to be used  
654 prior to pre-construction. (laptop computer / portable radio chargers etc.)

655

**RADIO 12 VOLT CIRCUITS**

656 A 12-volt, 60 amp radio circuit with four (4) post fusible block and grounding for department's  
657 two-way mobile radios shall be provided and installed (location to be determined during  
658 preconstruction). The circuit shall be activated with the master disconnect switch.

659 **INTERCOM SYSTEM – EIGHT SEATED POSITION**

660 A Peltor Y 2000 intercom eight-position communication system shall be provided and  
661 installed on the apparatus.

662 ***INTERCOM- PELTOR***

663 A Peltor model Y 2000 with dual radio monitoring and primary transmit selection  
664 intercom with eight (8) MT1H7B-Y2 headsets shall be provided and installed in the  
665 unit.

666 ***HEADSET - PELTOR SERIES- DRIVER POSITION***

667 There shall be a model HS-03 Intercom/Radio PTT headset station provided for the  
668 driver position. The headset shall provide a single plug under helmet radio transmit  
669 headset. It shall have a (PTT) "Push to Talk" located on the dome. The headset shall  
670 come with an adjustable volume, noise canceling electric microphone, adjustable head  
671 strap, and flexible style boom for rotation of right or left dress. The headset shall  
672 provide high clarity speakers and fully shielded EMI/RFI protected cabling to  
673 maximize performance. The liquid foam ear, seals along with the system provides a 24  
674 dB noise reduction.

675 ***HEADSET - PELTOR OFFICER POSITION***

676 There shall be a model HS-03 Intercom/Radio PTT headset station provided for the  
677 officer's position. The headset shall provide a single plug under helmet radio transmit  
678 headset. It shall have a (PTT) "Push to Talk" located on the dome. The headset shall  
679 come with an adjustable volume, noise canceling electric microphone, adjustable head  
680 strap, and flexible style boom for rotation of right or left dress. The headset shall  
681 provide high clarity speakers and fully shielded EMI/RFI protected cabling to  
682 maximize performance. The liquid foam ear, seals along with the system provides a 24  
683 dB noise reduction.

684 ***HEADSET PELTOR CREW POSITION INTERCOM ONLY***

685 There shall be six (6) model HS 04 headset(s) provided for crew-seated positions. The  
686 headset shall provide a single plug under helmet intercom transmit headset. It shall be  
687 voice activated. The headset shall come with an adjustable volume, noise canceling  
688 electric microphone, adjustable head strap, and flexible style boom for rotation of right  
689 or left dress. The headset shall provide high clarity speakers and fully shielded  
690 EMI/RFI protected cabling to maximize performance. The liquid foam ear, a seal along  
691 with the system provides a 24 dB noise reduction. Each headset shall have a one-(1)  
692 year warranty.

693 ***HEADSET PLUG-IN PELTOR SERIES-***

694 There shall be eight (8) MT1H7B-Y2 headset plugs in module(s) provided and  
695 installed in the apparatus. The module measures 2"W x 1.4"H x 2.7"D, and are used to  
696 connect the intercom via the module RJ-14 jack. The module features a connector  
697 guard against moisture and dust.

698 ***HEADSET HANGER***

699 There shall be eight (8) rubber coated headset hanger(s) provided with the apparatus.

700 **EMI/RFI PROTECTION**

701 The apparatus shall incorporate the latest designs in electrical systems with state of the art  
702 components to insure that radiated and conducted electromagnetic interference (EMI) and radio  
703 frequency interference (RFI) emissions are suppressed at the source.

704 The apparatus proposed shall have the ability to operate in the environment typically found in fire  
705 ground operations with no adverse effects from EMI/RFI.

706 EMI/RFI susceptibility is controlled by utilizing components that are fully protected and wiring  
707 that utilizes shielding and loop back grounds where required. The apparatus shall be bonded  
708 through wire braided ground straps. Relays and solenoids that are possible generators of spurious  
709 electromagnetic radiation are to be diode protected to prevent transient voltage spikes.

710 **WIRING HARNESS DESCRIPTION**

711 The wiring harness contained on the chassis shall be designed to utilize wires of stranded 100%  
712 copper of a gauge rated to carry 125% of maximum current for which the circuit is protected  
713 without exceeding 10% voltage drop across the circuit. Wiring shall be uniquely identified by  
714 color code or circuit function code, and labeled at a minimum of every three (3) inches. The  
715 identification of the wiring shall be referenced on a "as built" wiring diagram. All wires conform  
716 to SAEJ1127 (Battery Cable), SAEJ1128 (Low Tension Primary Cable), SAEJ1560 (Low Tension  
717 Thin Wall Primary Cable).

718 Provided covering of all wiring harnesses shall be moisture resistant loom with a minimum rating  
719 of 289 Degrees Fahrenheit and a flammability rating of VW-1 as defined in UL62. The wire  
720 insulation of jacketed cable shall have a minimum rating of 289 degree Fahrenheit.

721 All harnesses must be securely installed in areas protected against heat, liquid contaminants and  
722 damage. The harness connections and terminations shall utilize a method that provides a positive  
723 mechanical and electrical connection and shall be connected in accordance to the device  
724 manufacturers instructions. No connections within the harness shall utilize wire nuts, insulation  
725 displacement or insulation piercing.

726 All circuits shall conform to SAEJ1292. All circuits shall be provided with low voltage over  
727 current protective devices. These devices shall be readily accessible and protected against heat in  
728 excess of component rating, mechanical damage, and water spray. Star washers shall not be used  
729 for ground connections.

730 **12 VOLT BODY ELECTRICAL SYSTEM**

731 All electrical circuits in the rescue body shall be protected by automatic circuit breakers,  
732 conveniently located to permit ease of service. Flashers, heavy solenoids and other major electrical  
733 controls will be located in a central area near the circuit breakers.

734 All rescue body electrical wiring shall conform to the requirement as set forth in "WIRING  
735 HARNESS DESCRIPTION" description above. A complete "as built" wiring diagram will be  
736 supplied with the apparatus.

737 Wiring shall be carefully protected from weather elements and be sufficiently supported from ice  
738 buildup and snagging. Heavy-duty wire loom shall be used for the entire length. Grommets will  
739 be utilized where wiring passes through panels, cabinets or other sheet metal or structural  
740 members.

741 To minimize the risk of heat damage, wires run in the engine compartment area will be carefully  
742 installed and suitably protected by the installation of heat resistant shielded loom.

743 All electrical equipment shall be installed to conform to the latest federal standards as outlined in  
744 N.F.P.A. #1901 2009 edition.

745 **BODY ELECTRICAL JUNCTION COMPARTMENT**

746 Provide a weather tight electric junction compartment. Provide an easily accessible enclosure to  
747 house all of the body wiring junction points, terminal strips, solenoids, etc. The design of this  
748 compartment will not decrease the storage capacity area of the compartment in which it is located.  
749 Provide a removable panel for access to this compartment.

750 **12 VOLT ELECTRICAL SYSTEM TESTING**

751 The apparatus low voltage electrical system shall be tested and certified. **The bidder shall state**  
752 **the nature or types of the tests to be conducted as well as the criteria for pass/fail with their**  
753 **bid.** The certification will be provided with the apparatus. All tests will be performed with air  
754 temperature between 0 and 100 degrees F and logged at the time testing.

755 **LOAD MANAGEMENT SYSTEM**

756 Provide a load management system for performing electrical load management. The load manager  
757 shall contain 16 programmable outputs to supply warning and load switching requirements. The  
758 load management system shall be capable of offering load sequencing, load shedding, fast idle  
759 control, low voltage warning, scene mode operation and response mode operation

760 Load manager outputs 1 thru 12 will be independently programmable to activate during the scene  
761 mode, the response mode or both. These outputs shall be programmed to activate with master  
762 warning switch or to sequence and shed along with the priority. Output 13 will be designated to  
763 activate a fast idle system. Output 14 will provide a low voltage warning for an isolated battery.  
764 Output 15 is a user configurable output and will be programmable for activating between 10.5 and  
765 15 volts. Output 16 will provide a low voltage alarm that activates at the NFPA required 11.8  
766 volts.

767 The load management system shall contain a digital display to indicate system voltage in normal  
768 operation mode and also indicate the output configuration during programming mode.

769 The load management system shall be protected against reverse polarity and shorted outputs, and  
770 be enclosed in a metal enclosure to enhance EMI/RFI protection.

771 **ALTERNATOR**

772 Provide a 320 amps Leece Neville model 178-131-100 dual belt driven alternator. The installation  
773 will include an integral self diagnostic regulator and rectifier for compact installations.

774 The alternator installation shall be designed to provide maximum output at engine idle speed to  
775 meet the minimum continuous electrical load of the apparatus as required.

776 **BATTERY SYSTEM**

777 The battery system shall be a single system consisting of six-(6) Group 31, 12-volt DC,  
778 heavy-duty, high cycle automotive batteries. The battery bank shall have a group rating  
779 of 3750 cold cranking amperes (CCA) @ 0 degrees and a reserve of 1,080 minutes at  
780 80 degrees Fahrenheit.

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**BATTERY STORAGE**

Provide battery storage in a securely mounted fixed stainless steel ventilated trays located on each side of the chassis frame. Visual access shall be provided through a hinged drop down door in each of the rear crew step risers. Complete access will be provided when the cab is fully tilted. Batteries shall be mounted on non-corrosive matting material.

**BATTERY DISCONNECT SWITCH**

Provide the chassis batteries parallel wired to a single 12-volt electrical system controlled through a heavy-duty "Guest" brand rotary type master disconnect switch. The master disconnect switch will be located within easy access by the driver upon entering or exiting the cab. All electrical circuits shall be disconnected, except the engine and transmission battery, when the switch is in the "OFF" position. The alternator shall be connected to the engine and transmission battery.

**SHORELINE AUTO-EJECT**

A KUSSMAUL Super Auto Eject, model O91-55-20-120, with weatherproof yellow cover shall be mounted on the cab exterior immediately adjacent to the rear of the driver's door. The Super Auto Eject is to be completely sealed to prevent internal contamination of the working components. The internal switch arrangement of the Super Auto Eject shall be designed to close and open the 120-vac A.C. circuit after the mating connector is inserted and before the connector is removed. This design shall prevent arcing at the connector contacts to provide long life. The electrical connection shall be provided as a 120 VAC - 20-amp type using a NEMA 5-20P connector.

**AIR OUTLET (RIGHT SIDE FRONT BUMPER)**

Provide a female air outlet fitting with a valve on the right side of the front bumper Air shall be from the onboard air compressor reserve air tank for operation pneumatic air rescue tools.

**ON BOARD BATTERY CHARGER SYSTEM**

Provide a Kussmaul Auto Charge 35/10, Model #: 091-35/10 battery saver VHO" charger system connected to the 110-volt shoreline disconnect to power charger system for maintaining the vehicle batteries. This system is designed to provide up to 35 amperes to the main chassis batteries and a separate circuit providing up to 10 amperes to charge portable radios and box lights. Install if possible in the compartment under the driver's seat. A dual LED bar graph display shall be located in the compartment under the driver's seat adjacent to the shoreline connection to monitor each set of batteries charging status. The display will be labeled "Vehicle" and "Engine" battery.

**BATTERY SAVER**

Provide a Kussmaul model # 091-51-12"battery saver VHO" charger system connected to the 110-volt shoreline disconnect to power rechargeable hand lights and any other 12 VDC accessories in the rescue body.

820 **LIGHTING - CAB INTERIOR**

821 Provide four (4) combination red/white dome lights in the cab, two (2) in the forward section and  
822 two (2) in the rear section. Each dome light will have an integral 3-way (red-off-white), selector  
823 switch. Each dome light will also activate when the respective, adjacent cab door is opened.

824 Provide a shielded light in each side opening, cab doorstep well. These lights will activate with the  
825 respective doorjamb switch.

826 Provide two (2) red dome lights with individual lens mounted switches be recessed into the cab  
827 headliner in the rear cab area.

828 **CAB MAP LIGHT**

829 Provide a high intensity gooseneck map light located at the right side of the cab dash.

830 **CREW SAFETY LIGHT**

831 Provide (2) 3" LED dome lights in the crew area (1) Red and (1) Green each light shall be  
832 mounted in the interior cab ceiling area in a location visible to all firefighters seated in the jump  
833 seats. This light will illuminate RED as soon as the parking brake is released, and will illuminate  
834 GREEN whenever the parking brake is applied.

835 **CAB SPOTLIGHT**

836 A Collins Pulsar 750, 7" 750,000 candlepower hand held spot/flood light constructed  
837 from black aircraft aluminum shall be installed on the cabs dash. The 12-volt  
838 spot/flood light utilizes 100-watt H-2 spot and 55-watt H-2 flood bulb activated by a  
839 momentary switch. This light shall be held in place with the Collins supplied bracket.

840 **CAB MARKER LIGHTS AND REFLECTORS**

841 Provide five (5) LED amber FMVSS marker lights on top of the cab above the windshield area.  
842 Provide one (1) amber directional light mounted on each side of the cab above the front wheel  
843 well area. FMVSS reflectors will be installed as required.

844 **BODY MARKER LIGHTS AND REFLECTORS**

845 Provide LED clearance and license plate lights along with reflectors along the length of the body  
846 and at the rear of the body wired in accordance with federal regulations.

847 The rear mounted lower LED marker lights and reflectors shall be recess mounted in the vertical  
848 surface of the rear step for protection from breakage.

849 Provide rear LED marker lights at each side of the outermost practical mounting location at the top  
850 of the body.

851 Provide a secondary LED turn signal / clearance light below each side of the body in the area  
852 forward of the rear axle.

853 **CUSTOM CAB HEAD LIGHTS**

854 Provide two (2) dual rectangular halogen headlight modules in chrome-plated bezels on the front  
855 of the cab. Each side's head light module shall incorporate an individual low beam and a high  
856 beam headlight. High beam actuation will be controlled on the turn signal lever.

857 **DAYTIME RUNNING LIGHTS**

858 Provide the chassis head lights with integrated circuitry to actuate the low beam headlights at a  
859 maximum of 80 percent of capacity whenever the chassis engine is running. Daytime lights shall  
860 be turned off with the activation of the parking brake.

861 **SECONDARY DUAL LIGHT MODULE**

862 Provide two (2) Whelen 600 series LED amber arrows outlined turn signals, one (1) in each side  
863 of the dual light module above the headlights in matching chrome-plated bezels.

864 Provide the NFPA required Zone "A" lower warning lights incorporated into each side dual light  
865 module noted above.

866 **ALTERNATE FLASHING HEADLIGHT SYSTEM**

867 Provide an alternate flashing headlight wig-wag system. This wig-wag system shall be  
868 individually switched at the master light console and wired through the load management system  
869 to be shut down when load management is required. The alternating flashing system will be  
870 automatically disabled during the "Blocking Right of Way" mode.

871 **EMERGENCY SWITCHES**

872 Provide a switch control console within easy reach of the driver's position. This console will  
873 separate the emergency / auxiliary electrical functions from the regular chassis functions. A  
874 minimum of eight (8) rocker type switches with integral indicator lights shall be provided, in  
875 addition to the Load Manager indicator.

876 Provide a master switch which will allow pre-setting of emergency lighting switch(s) and shall  
877 contain a red integral indicator light. A primary emergency lighting switch shall be provided next  
878 to the master switch. A total of eight (8) load manageable emergency switches will be provided.  
879 The last remaining switch shall be designated as the ground light switch. All switches (other than  
880 the master switch) shall have switch function labeling and an amber integral indicator light.

881 **WHELEN - NFPA CERTIFIED LED LIGHTING PACKAGE**

882 The following warning light package includes the entire minimum warning light and actuation  
883 requirements for the 2009 edition of the NFPA 1901 Fire Apparatus Standard.

884 Provide the following lighting as specified. It shall meet the requirements for both "Clearing Right  
885 of Way" and "Blocking Right of Way" as noted.

886 **LIGHT PACKAGE ACTUATION CONTROLS**

887 The entire warning light package shall be actuated with a single warning light switch in the cab  
888 switch panel. The wiring for the warning light package will engage all of the lights required for  
889 "Clearing Right of Way" mode when the vehicle parking brake is not engaged. An automatic  
890 control system will be provided to switch the warning lights to the "Blocking Right of Way" mode  
891 when the vehicle parking brake is engaged.

892 **ZONE A CAB ROOF LIGHT BAR**

893 Provide One (1) Whelen #FN72QLED, 72" NFPA Edge Ultra Freedom LED light bar is to be  
894 mounted on the cab roof. As required by N.F.P.A. Pamphlet #1901, the white sections will  
895 automatically turn off when in the blocking right-of-way mode.

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**GTT OPTICOM**

Provide a GTT 795H Opti-com system installed in roof light bar as detailed in "NFPA Lighting Package" section.

**ZONE A HEAD LIGHT BEZEL MOUNTED WARNING LIGHTS**

Provide two (2) Whelen model M6RC-Series headlamp bezel mounted LED light heads and mounted with two (2) M6HDLMTK bracket one (1) in each side of the headlamp module adjacent to the amber turn signal. Clear lenses shall be provided.

**ZONE B & D SIDE INTERSECTION WARNING LIGHTS**

Provide four (4) Whelen model M6 series M6RC LED with polished mounting flanges M6FC mounted one (1) each side of the front bumper extension facing to each side of the unit. And one (1) each side of the cab above the front wheel well. The lights shall be equipped with clear lenses.

**SEE RESCUE BODY SPECIFICATION FOR ADDITIONAL LIGHTING REQUIREMENTS**

**BACK-UP CAMERA**

One (1) Spartan flat screen monitor with high-resolution low light remote color camera with 130 degree viewing angle shall be provided. Camera shall be supplied and mounted on the rear of the apparatus and the monitor mounted in the cab readily observable by the operator.

**ELECTRIC HORN**

Provide a single electric chassis horn activated by the steering wheel horn button installed in a functional location below the cab windshield. (See Q2B siren)

**BACK-UP ALARM**

Provide a solid-state back-up alarm installed at the rear of the apparatus under the tailboard. The back-up alarm shall activate automatically when the transmission is placed in reverse gear and the ignition is "on".

**UNIVERSAL LIFE SAFETY BACK STOP DEVICE**

Provide a "Universal Life Safety products Back Stop" protection assembly installed below and behind farthest portion of rear of vehicle. Upon contact with an object, when vehicle is traveling in reverse, the Back Stop will apply chassis brakes and stop vehicle.

**AIR HORNS**

Two (2) Hadley E Tone air horns shall be installed on the apparatus. The air horns shall be constructed from spun brass material and chrome plated. The air horns shall be mounted, one (1) each side, outboard the frame rails. The sounding unit shall be die cast and easily separated for service. The horns shall be mounted behind the cutouts in the front bumper. A foot switch on the driver's side will control the air horns. A dash-mounted switch shall also control the air horns. Provide a manual shutoff valve to the horn air switch.



932 **ELECTRONIC SIREN AND SPEAKER**

933 Provide one (1) Whelen # **295SLSA1** 200 watt electronic siren featuring: flush mount remote  
934 control head recessed in center dash panel as space allows, "Si-Test" self-diagnostic feature, six  
935 function siren, radio repeat and public address.

936 Provide one (1) Whelen # **SA122FMP** polished aluminum siren speaker, recessed in the front  
937 bumper and wired to the electronic siren.

938 The electronic siren and speaker shall meet the NFPA required SAE certification to ensure  
939 compatibility between the siren and speaker.

940 **REMOVE AND REMOUNT Q2B MECHANICAL SIREN**

941 Remove from the customer's chassis and remount and rewire one (1) Federal Model #Q2B-P siren  
942 with chrome plated grille, mounted thru the front bumper extension. Activation shall be through  
943 the horn ring in the cab. There will also be a push button siren brake switch on the cab dash. A  
944 dash-mounted horn/siren rocker switch shall control Q2B siren / chassis horn.

945 The Q2B siren shall be wired through the load management system to prevent excessive amperage  
946 draw. The siren is provided in addition to the required minimum NFPA audible warning  
947 requirements.

948 **UNDER CAB LIGHTS**

949 Provide one (1) rubber mounted LED ground light under each side cab door entrance step, four (4)  
950 total. The ground lights shall activate automatically with each respective doorjamb switch and by  
951 a master ground light switch in the warning light switch console

952 Each light will illuminate an area at a minimum 30" outward from the edge of the vehicle. The  
953 rear crew door ground lights will be positioned at an angle rearward to provide illumination at the  
954 pump panel and the front of the bodywork areas.

955 **SCENE LIGHTS**

956 Provide a Whelen Pioneer PLUS PFP1R15 LED floodlights on each side of the cab directly  
957 behind the front cab entrance door with 15 degree angled housing. A rocker switch in the master  
958 warning light switch console shall control the each scene light. All scene lights will be wired  
959 through the load management system.

960 **WHELEN PIONEER PLUS BROW LIGHT**

961 Provide one (1) Whelen PFP2 12 volt lights brow light installed on the front of the cab. The  
962 chassis manufacturer shall determine the mounting bracket. A rocker switch in the master warning  
963 light switch console shall control the scene lights. All scene lights will be wired through the load  
964 management system.

965 **"DO NOT MOVE APPARATUS" WARNING LIGHT WITH AUDIBLE ALARM**

966 Provide a red flashing warning light with an integral audible alarm, functionally located in the cab  
967 to signal when an unsafe condition is present such as an open cab door or body compartment door,  
968 extended light tower or any other device which is opened, extended or deployed which may cause  
969 damage to the apparatus if it is moved. This light shall be activated through the parking brake  
970 switch to signal only when the parking brake is released. This light will be labeled "DO NOT  
971 MOVE APPARATUS WHEN LIGHT IS ON".

972

**ENGINE COMPARTMENT WORK LIGHTS**

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Provide two (2) work lights mounted inside the engine enclosure, one (1) each side. Each light shall be individually switched.

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# Rescue Body

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## **REMOVE CUSTOMER'S RESCUE BODY AND REMOUNT ON SPARTAN CHASSIS**

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Disconnect all electrical harnesses, hydraulic lines, and mounts and remove rescue body from customers supplied apparatus; Remount refurbished rescue body onto new chassis supplied by Spartan motors. Re-mount using new body mounts with fixed spring points.

**NOTE** Attention to wheel well clearances are critical to assure that room is provided for application of customers St. Pierre roller chains during winter operations.

987

## **REMOVE AND REPLACE ROLL-UP DOORS (ROLL-O-MATIC)**

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The roll-up doors shall be constructed from brush finish, anodized aluminum, and extruded slats, which will have a flexible seal between each slat for proper sealing of the door.

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Provide a synthetic rubber seal each side, top and bottom edge of the door to prevent entry of dirt into the compartment.

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The doors shall be equipped with a lift bar style latch mechanism, which will latch at the bottom of the door mounting extrusion.

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Roll-up doors shall contain a protected magnetic door ajar system that must be integrated in the lift bar handle and the retainer block to signal an open door. No mechanical switches or switches interior to the compartment shall be used. The door open circuit shall be wired into cab door ajar light.

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The compartment lighting system shall be integrated into the door track. The compartment lights actuate when the door is open.

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## **ADD LED STRIP LIGHTING EXTERIOR COMPARTMENTS**

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Remove 12-volt incandescent light fixtures in the exterior compartments and replace with new On Scene Solutions LED Nightstik(s) with 6 HB, surface mount LED's per 9" light section and produce a minimum of 37 lumens per 9" length. Each Night Stik shall be capable of operating at a voltage of 10VDC to 30VDC. The light stick shall be rated at 100,000 hours of service and shall be provided with a 5 year free replacement warranty. (Copy of warranty to be in proposal).

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1009

The light stick shall be waterproof, and be connectible via a jumper wire to add additional lights in series if required.

1010

## **TURTLE TILE FOR COMPARTMENTS**

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1013

Provide black turtle tile for all compartments and shelving units. Tile shall be ¾" in thickness. Edge ramps shall be used where appropriate.

1014

## **REMOVE EXISTING SVI LIGHT TOWER AND ASSOCIATED COMPONENTS**

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1016

1017

Remove the current SVI light tower located in compartments L5 – R-5 along with associated plumbing wiring. Remove from compartment R-1 all SVI light tower controls and associated equipment.

1018 **RELOCATE HYDRAULIC GENERATOR**

1019 Remove the existing hydraulic generator from compartment R-3 and relocate to current light tower  
1020 location. Generator shall be mounted in such a manner to allow for both proper cooling and  
1021 routine servicing. Connect to PTO for hydraulic generator, Run new hydraulic lines to generator.  
1022 Add new Frog display to load center compartment L-1

1023 **REMOVE AND REPLACE 120 VAC SCENE LIGHTING**

1024 Remove and replace the (2) 500-watt floodlights mounted on the Rescue body, (1) Street Side (1)  
1025 Curb side. Provide a Whelen Pioneer PLUS 2 PFP1R Single Flood Light w/ Semi Recessed  
1026 Housing floodlights. Lighting shall have a 15 degree angled housing. A rocker switch in the  
1027 master warning light switch console shall control the scene lights. All scene lights will be wired  
1028 through the load management system.

1029 **INSPECT AND REPLACE 120 VAC ELECTRICAL WIRING & COMPONENTS**

1030 Inspect the 120 / 240 volt wiring and associated components. Replace as necessary where damage  
1031 to the seal tight has occurred, or corrosion has compromised the integrity of the 120 / 240  
1032 electrical system. Replace all exterior Woodhead receptacle covers

1033 **UNDERBODY ROLL OUT CRIBBING COMPARTMENTS**

1034 Remove existing underbody roll out storage tray. Provide and install one (1) each side, a new  
1035 under-body storage compartment. Manufacture shall suggest best requirements for proper layout  
1036 and design. Compartment shall be as deep, long and as wide as possible as to not interfere with  
1037 ground clearance and exhaust system. A minimum of 12 ½” ground clearance shall be maintained.

1038 **STREET SIDE COMPARTMENT L-1**

1039 Remove existing adjustable shelves in this compartment. The existing welded shelf is to remain in  
1040 place. The existing electrical cord and reel is to remain in place and OnScene fairlead extension  
1041 brackets shall be provided for the electrical reel.

1042 Two (2) adjustable shelves shall be provided and shall be 29.00” deep shelving by as wide as  
1043 possible for the compartment.

1044 **STREET SIDE COMPARTMENT L-2**

1045 Remove existing shelves and trays in compartments. The compartment shall have one (1) floor  
1046 mounted slide-out tray and one (1) adjustable shelf.

1047

1048 A floor mounted slide-out tray shall be provided with the capacity rating shall be 500 pounds  
1049 minimum in the extended position. The tray shall be 22.00” deep by as wide as possible for the  
1050 compartment. (See **Rescue Tool Mounts**)

1051

1052 An adjustable shelf shall be provided and shall be 15.00” deep shelving by as wide as for the  
1053 compartment

1054 **STREET SIDE COMPARTMENT L-3**

1055 Remove existing shelves and tubes in compartment. Storage racks for air bags and two (2) slide-  
1056 out tilt-down trays shall be installed. Existing air line and hose reel to remain.

1057

1058 The air bag storage rack shall be constructed of aluminum with all mating surfaces welded in  
1059 place. The dimensions of the rack shall be determined by the customer’s specific requirements for

1060 the air bags to be used and hold four (4) air bags in individual slots. The rack shall be fabricated so  
1061 the air bags store horizontally.

1062

1063 A slide-out tilt-down tray shall have the capacity rating shall be 200 pounds minimum in the  
1064 extended position. Interior tray dimensions shall be 29.00” long x 3.00” deep x as wide as possible  
1065 for the compartment.

1066 ***STREET SIDE COMPARTMENT L-4***

1067 Remove existing tray and wood panels in compartment. Provide two (2) slide-out tool boards with  
1068 the PAC mount tool board system and brackets for departments existing hand tools. The board  
1069 dimensions shall be 22.00” deep by as high as possible for the compartment.

1070 ***STREET SIDE COMPARTMENT L-5***

1071 Provide two (2) slide-out tool boards. The board dimensions shall be 22.00” deep by as high as  
1072 possible for the compartment. The slide-out boards shall have storage tubes and a PAC mount tool  
1073 board system. One (1) of the PAC mount systems will have the proper storage mounts for the  
1074 departments Paratech Strut system and asseceories.

1075 ***CURB SIDE COMPARTMENT R-1***

1076 Remove existing adjustable shelves in this compartment. The existing welded shelf is to remain in  
1077 place. The existing electrical cord and reel is to remain in place and OnScene fairlead extension  
1078 brackets shall be provided for the electrical reel.

1079 Two (2) adjustable shelves shall be provided and shall be 29.00” deep shelving by as wide as  
1080 possible for the compartment.

1081 ***CURB SIDE COMPARTMENT R-2***

1082 Remove existing shelves and trays in compartments. The compartment shall have one (1) floor  
1083 mounted slide-out tray and one (1) adjustable shelf.

1084

1085 A floor mounted slide-out tray shall be provided with the capacity rating shall be 500 pounds  
1086 minimum in the extended position. The tray shall be 22.00” deep by as wide as possible for the  
1087 compartment. (See Rescue Tool Mounts)

1088

1089 An adjustable shelf shall be provided and shall be 15.00” deep shelving by as wide as for the  
1090 compartment

1091 ***CURB SIDE COMPARTMENT R-3***

1092 Remove existing shelves in this compartment. Two (2) slide-out tilt-down trays shall be provided.

1093

1094 A slide-out tilt-down tray with the capacity rating of 200 pounds minimum in the extended  
1095 position shall be provided. Interior tray dimensions shall be 27.00” long x 3.00” deep x as wide as  
1096 possible for the compartment.

1097 ***CURB SIDE COMPARTMENT R-4***

1098 Remove existing tray and shelves in this compartment. Provide an SCBA storage bin, one (1) floor  
1099 mounted slide-out tray and one (1) adjustable shelf shall be provided.

1100

1101 The SCBA storage bin shall store nine (9) ISI 4500 PSI 1-hour air bottles. Storage bins shall be at  
1102 least 8” in diameter. The clearance from the bottom of the compartment to the underside of the  
1103 SCBA storage bin shall be 24.00”.

1104

1105 A floor mounted slide-out tray shall be provided with the capacity rating shall be 200 pounds  
1106 minimum in the extended position. The tray shall be 22.00” deep by as wide as possible for the  
1107 compartment.

1108

1109 An adjustable shelf shall be provided and shall be one (1) 29.00” deep shelving by as wide as  
1110 possible for the compartment

1111 ***CURB SIDE COMPARTMENT R-5***

1112 Provide a storage shelf for the departments four (4) backboards. The backboards will be stacked  
1113 and stored on their sides. The box-out for the backboards will be 19.00” high x 14.00” wide and  
1114 from the inside door track be 8’ long. The backboards will store along the inside wall and will  
1115 protrude slightly into Compartment L-5.

1116

1117 Provide storage slots to hold the departments four (4) KED’s and two (2) Collars bags.

1118 Manufacture shall suggest best requirements for proper layout and design.

1119 ***ADD REAR COMPARTMENT B-1***

1120 Remove current ladder and diamond plate panel located on the rear of the apparatus and install a  
1121 compartment that will not be transverse to compartment L-5 and R-5. The compartment shall have  
1122 a (Roll-O-Matic) roll up door. The compartment door shall be approximately 63.00” High x  
1123 33.00” Deep. The compartment shelving shall be one (1) floor mounted pull out tray and two (2)  
1124 pull out tilt down trays. The compartment shall allow storage of the departments stokes basket  
1125 between the frame rails.

1126

1127 The floor mounted slide-out tray shall be provided with a capacity rating of 200 pounds minimum  
1128 in the extended position. The tray shall be 19.00” long x 3.00” deep by as wide as possible for the  
1129 compartment.

1130

1131 The pull out tilt down trays shall have a capacity rating of 200 pounds minimum in the extended  
1132 position. Interior tray dimensions shall be 32.00” long x 3.00” deep x as wide as possible for the  
1133 compartment.

1134 ***RESCUE TOOL MOUNTS IN COMPARTMENTS L-2 AND R-2***

1135 Provide and install rescue tool holders in compartments L-2 and R-2.

1136

1137 Provide two (2) Ziamatic extrication tool holders QM-ET-C or equal and two (2) Ziamatic  
1138 extrication tool holders QM-ET-J or equal. Provide one (1) of each in each compartment. Rescue  
1139 tool holders must fit departments existing rescue tools. The current rescue tools are as follows: one  
1140 (1) TNT S100-28 Spreader, one (1) TNT BFS 32 Spreader, one (1) TNT SLC 29 Cutter and one  
1141 (1) TNT BFC 320 Cutter.

1142

1143 Provide in Compartment L-2 mounts for the departments Hydraulic RAM’s. The current  
1144 department hydraulic Rams are as follows: one (1) TNT R20 Ram, one (1) TNT R40 Ram, and  
1145 one (1) TNT R50 Ram.

1146 **ADJUSTABLE SHELVING**

1147 The construction shall consist of .188” thick aluminum formed to provide a 2.00” high wall  
1148 around the perimeter. Corners shall be welded to provide a rigid unit. Shelving shall be secured  
1149 within the compartment by means of adjustable threaded fasteners. These fasteners shall slide in  
1150 an extruded aluminum track to provide height adjustment.

1151 **FLOOR MOUNTED SLIDE-OUT TRAY**

1152 A floor mounted slide-out tray shall be provided with the capacity rating shall be 500 pounds  
1153 minimum in the extended position. The construction shall consist of .188” thick aluminum formed  
1154 to provide a 2.00” high wall around the perimeter. Corners shall be welded to form a rigid unit.  
1155 Slide mechanisms shall have ball bearings for ease of operation and years of dependable service.  
1156 Automatic locks shall be provided for both the in and out tray positions. The lock trip mechanism  
1157 shall be located at the front of the tray and shall be easily operated with a gloved hand.

1158 **SLIDE-OUT TILT- DOWN TRAY**

1159 A slide-out tilt-down tray shall have the capacity rating shall be 200 pounds minimum in the  
1160 extended position. Two-thirds of the tray shall slide out from its stored position and shall tip 30  
1161 degrees down from horizontal. The vertical location of the tray within the compartment shall be  
1162 adjustable. The construction shall consist of .188” thick aluminum for the tray bottom and end,  
1163 and special aluminum extrusions for the tray sides, front, and tracks. Corners shall be welded to  
1164 form a rigid unit. Tray shall be equipped with ball bearing rollers for smooth operation.  
1165 Two (2) spring-loaded locks shall be provided at the front of the tray, one (1) on each end.  
1166 Rubber padded stops shall be provided for both the in and out tray positions.

1167 **SLIDE OUT TOOL BOARD**

1168 The tool board shall be an aluminum “Pac Trac” tool board constructed of .188” thick aluminum  
1169 with .203” diameter holes in a pegboard pattern with 1.00” centers between holes. A 1.00” x  
1170 1.00” aluminum tube frame shall be welded to the edge of the tool board for rigidity.  
1171 The board shall be mounted on a slide out track fabricated of aluminum extrusions to allow easy  
1172 extension and retraction. The board shall have positive lock in the stowed and extended position.  
1173 The tool board shall support a minimum of 500 pounds in the extended position.

1174 **TRI POD STORAGE TUBE**

1175 Remove existing storage tube for the departments confined space tri-pod. Provide and install a  
1176 storage compartment under the rescue body just behind the rear wheels to store the departments  
1177 existing confined space tri-pod. Proper ground clearance and angle of departure must be  
1178 maintained. Manufacture shall suggest best requirements for proper layout and design.

1179 **ADD REAR LADDER**

1180 Add a Ziamatic fold out ladder Model #: RL15-2-6 15" width: Two step fold-down & 6 step  
1181 straight section to the rear of the apparatus with termination to be on the roof for roof access.  
1182 Location to be determined during the preconstruction meeting.

1183 **INTERIOR COMPARTMENT DOORS**

1184 Remove the plexi-glass and associated track and hardware from all the interior compartment  
1185 doors. Provide removable cargo netting that complies with NFPA 1901 for the interior  
1186 compartments on the street side and the road side. The rear center compartment to be replaced  
1187 with a ROM auto latch shutter. Rear left and rear right to be replaced with a metal type slam door  
1188 with hinges on one side.

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**ADD SHELVING FOR MANUALS AND BOOK STORAGE INTERIOR**

Provide in the interior rear curb side compartment shelving or storage for books and manuals.  
Manufacture shall suggest best requirements for proper layout and design.

**REPLACE INTERIOR 12 VOLT AND 120 VOLT LIGHTING**

Remove existing 12 volt and 120 volt interior ceiling lighting. Replace with On-Scene Solutions 12 volt clear/red LEDs in interior lights. The lights will be wired to a light master on /off switch for white or red operation. Switch to be located on the wall near rear body entrance.

**REMOVE INTERIOR BENCH SEAT AND SAFETY BELTS**

Remove existing interior bench seat and safety belts.

**ADD COMMAND / RADIO COMPARTMENTATION REAR INTERIOR**

Provide in the curbside rear window area a 12-volt, 60 amp radio circuit with four (4) post fusible block and grounding for department's two-way mobile radios. The circuit shall be activated with the master disconnect switch. Provide a radio compartment at the command area for customer supplied radios. Compartment dimensions are 40" W X 10" D X 3-1/2" H. Exact location to be determined during the preconstruction meeting.

**ADD 12 VOLT ACCESSORY CIRCUITS FOR PORTABLE CHARGING EQUIPMNET**

Provide seven spare 12V circuits sized and supplied for the interior of the rescue body for customer-supplied equipment. These circuits shall be wired to an area(s) determined at time of pre-construction. COLCHESTER FIRE DEPARTMENT to provide list of equipment to be used prior to pre-construction. (printer / portable suction/ DC Power socket, etc.)

**BODY INTERIOR DIAMOND PLATE**

Remove existing flooring and side walls and replace with new aluminum diamond plate.

The sides shall be replaced with 3003 aluminum diamond plate. The floor shall be replaced with 6061-T6 aluminum diamond plate and meet NFPA 1901 standards.

**BODY INTERIOR CEILING**

Remove existing ceiling material and install a new ceiling. Manufacture shall suggest best product and material

**TAIL, STOP, TURN AND BACK-UP LIGHTS**

Replace with two (2) Whelen M6FCV4 M6 Series Chrome Quad Light Housings. Two (2) Whelen M6BTTC M6 Series LED Brake/Tail/Turn w/ Clear Lens. Two (2) Whelen M6BUW M6 Series LED Back-Up. Two (2) Whelen M6TC M6 Series Turn Arrow w/ Clear Lens. Two (2) Whelen M6RC Red M6 Series Super-LED Light head w/ Clear Lens

**REMOVE UNDERBODY LIGHTS**

Remove existing underbody "Ground Effect" lights.

**BODY RUB RAIL W/LED GROUND LIGHTING**

Install on Scene Solutions Anodized aluminum body rub rail with Night Stik LED lights incorporated shall be provided on both sides and rear of the body. A lifetime warranty is to be included and copy of warranty included in the bid proposal package. The underbody light shall illuminate the ground beneath the rescue body.



1229 **REAR TOW EYES**

1230 The rear body shall include two (2) painted tow eyes and shall be installed through the rear body.  
1231 The tow eyes shall be fabricated from 0.75 inch thick #1020 ASTM-36 hot rolled steel. The inside  
1232 diameter of the tow eye shall be 2.00 inch and have a chamfered edge. The tow eyes shall be  
1233 painted to match the frame.

1234 **RESCUE BODY LIGHT PACKAGE**

1235 See cab body specification for additional lighting requirements

1236 **WARNING LIGHT SYSTEM CERTIFICATION**

1237 The warning light system specified will have a total amperage draw of 45 AMPS with all lights  
1238 activated in either the "Clearing Right of Way" or the "Blocking Right of Way" mode.

1239 The light system manufacturer shall meet all of the requirements as noted in chapter 13 of the  
1240 Current edition of the NFPA 1901 Fire Apparatus Standard shall certify this warning light system.  
1241 Certification shall be supplied at the time of delivery.

1242 **ZONE B & D RESCUE BODY SIDE SCENE LIGHTS**

1243 Provide four (4) Whelen M9LZC M9 Super-LED Scene Light with Four (4) M9FCZ900 to M9  
1244 Series Chrome Conversion Flange (Scene Light) two (2) each side.

1245 **ZONE B & D RESCUE BODY SIDE WARNING LIGHTS**

1246 Provide four (4) Whelen M9RC Red M9 Series Super-LED Lighthouse w/ Clear Lens with four (4)  
1247 M9FC900 to M9 Series Chrome Conversion Flange (Warning Light). Two (2) each side upper  
1248 warning lights.

1249 **ZONE B & D RESCUE BODY SIDE LOWER CENTER WARNING LIGHTS**

1250 Provide two (2) Whelen model M7RC Red M7 Series Super-LED Lighthouse w/ Clear Lens with  
1251 Two (2) M7FC700 to M7 Series Chrome Conversion Flange (Warning Light) one (1) each side  
1252 above wheel well.

1253 **ZONE C RESCUE BODY REAR WARNING LIGHTS**

1254 Provide two (2) Whelen M9RC Red M9 Series Super-LED Lighthouse w/ Clear Lens and two (2)  
1255 M9AC Amber M9 Series Super-LED Lighthouse w/ Clear Lens with four (4) M9FC900 to M9  
1256 Series Chrome Conversion Flange (Warning Light) Two (2) each side at the upper sides of the  
1257 apparatus two (2) red, two (2) yellow.

1258 **ZONE C RESCUE BODY REAR SCENE LIGHTS**

1259 Provide two (2) Whelen M9LZC M9 Super-LED Scene Lights with two (2) M9FCZ900 to M9  
1260 Series Chrome Conversion Flange (Scene Light)

1261 **TRAFFIC FLOW BOARD - COMMAND LIGHT**

1262 Provide one (1) Command Light H7 Traffic Flow Board. The board to be flush mounted on the  
1263 roof of the rescue body. A control module shall activate the directional light. The control module  
1264 will be conveniently located near the driver's position. The rear directional light will be wired  
1265 through the load management system of the unit. A light shall be provided in the cab when the unit  
1266 is deployed.

1267 **COMMAND LIGHT TOWER**

1268 Provide (1) one Command light CL602 - Whelen A/C LED Lighting Option, 120 VAC with  
1269 optional yellow strobe mounted on the chassis cab. The umbilical cord remote controller shall be  
1270 located in the left front compartment L-1.

1271 **REAR DIRECTIONAL LIGHT (WHELEN)**

1272 Provide one (1) Whelen "Traffic Advisor" Eight Lamp LINZ6 Super-LED® Traffic Advisor™,  
1273 30.36" Long-Traffic Advisor with Two End Flashing Super-LEDs, Amber, Aluminum Housing,  
1274 rear directional light. Light to be **flush mounted** on the rear wall of the apparatus as high as  
1275 possible. A control module shall activate the directional light. The control module will be  
1276 conveniently located near the driver's position. The rear directional light will be wired through the  
1277 load management system of the unit.

1278 **LITTLE GIANT LADDER STORAGE COMPARTMENT**

1279 Provide a storage compartment for the bidder supplied 17' Little Giant ladder to be mounted in  
1280 walkway. Storage compartment to be made out of diamond plate with a positive closing door.

1281 **POLYPROPYLENE STORAGE BOXES**

1282 Provide six (6) black textured poly boxes for cribbing storage and air bag accessory storage. Sizes  
1283 to be determined during the preconstruction conference.

1284 **PAINT, PREPARATION AND FINISH**

1285 All removable items, such as brackets, compartment doors, etc. shall be painted separately to  
1286 insure finish paint behind mounted items Sand and media blast entire body, rough out 60-100 grit  
1287 bare stainless. Repair any damages to body. Acid wash, and apply a self-etching primer. Level  
1288 body surfaces, Reapply primer, wet sand and clean. Apply base coats 3 covering coats. Add clear  
1289 high build. Wet sand and buff to show shine.

1290 **BODY EXTERIOR PAINT**

1291 The Rescue body shall be finish sanded and prepared for final paint. Upon completion of final  
1292 preparation, the cab exterior and body will be painted utilizing the highest quality, state of the art,  
1293 base paint. Finish paint will be applied in multiple coats to ensure proper paint coverage with a  
1294 high gloss finish.

1295  
1296 The Body exterior will be painted to match purchaser's furnished paint codes. A two tone paint  
1297 finish will be provided with the break line located approximately 3" below the cab side windows.  
1298 A Paint color sample for each color shall be provided to, and approved by the purchaser prior to  
1299 the painting the chassis or fire body.

1300  
1301 The upper portion of the rescue body shall be painted WHITE N0007 to match existing apparatus.  
1302 A PPG paint code will be provided for matching or cross-referencing.

1303  
1304 The lower portion of the rescue body shall be painted YELLOW N2637 to match existing  
1305 apparatus. A PPG paint code will be provided for matching or cross-referencing.

1306

1307 **PAINT FINISH WARRANTY**

1308 The finish paint on the unit shall be provided with a five (5) year paint finish guarantee, which will  
1309 cover the finish for the following items:

- 1310 • Peeling or de-lamination of the topcoat and/or other layers of paint.
- 1311 • Cracking or checking.
- 1312 • A copy of this warranty will be submitted with the proposal.
- 1313

1314 **LETTERING AND STRIPING**

1315 Provide lettering and striping computer generated SCOTCH-LITE appliqué with a single color  
1316 and clear coat.

1317 Provide a maximum of sixty (60), three (3) inch letters to coincide with the Fire Department's  
1318 existing lettering.

1319 Provide all lettering and striping with a clear coat with an acrylic enamel clear coat.

1320 Provide 16” reflective black letters on the roof “**Rescue 1-28**” for aerial identification.

1321 Provide (2) 18” gold Maltese Crosses with color lettering and graphics as shown. The final image  
1322 is subject to approval. To be installed one (1) each side crew entry doors.

1323 The “COLCHESTER” shall be provided with a single color drop shadow to match departments  
1324 existing lettering. This is to be provided in three (3) locations. One (1) each side of the upper  
1325 rescue body and one (1) on the upper rear.

1326 The “RES1CUE” shall be provided with a two color drop shadow to match departments existing  
1327 lettering. This is to be provided in three (3) locations. One (1) each side of the upper rescue body  
1328 and one (1) on the upper rear.

1329 Provide “RES1CUE” in two color lettering centered on the front of the cab between the grill and  
1330 the windshield.

1331 **SCOTCHLITE STRIPE**

1332 Provide a six (6) inch high white triple trim scotchlite stripe.  
1333

1334 The stripe shall be applied to at least 50 percent of the cab and body length on each side, and at  
1335 least 25 percent of the width of the front of the apparatus shall have the reflective material affixed  
1336 to it.  
1337

1338 Provide two (2) 1" scotchlite stripes incorporated into the scotchlite scheme to border the primary  
1339 4” scotchlite stripe on the top and bottom edges. The customer will determine final layout of this  
1340 configuration.

1341 **CHEVRON STRIPING**

1342 Chevron striping shall be provided and installed across the entire rear of the body. Striping will be  
1343 4" wide red/yellow reflective and installed in an inverted "V" pattern. Color shall be 3983 Yellow  
1344 3892 Red.

1345 No striping on the roll up door.

1346 **SEATING POSITION LABELS**

1347 Provide fourteen (14) permanent 3" X 5" engraved seating position labels, Seven (7) red and  
 1348 Seven (7) blue. Verbiage for each label will be provided during the preconstruction conference.  
 1349 Labels to be mounted at the factory as directed.

1350

*Example of Seat Position 3" X 5" tags*

EQUIPMENT	HOSE PERSON RESPONSIBILITIES
Portable Radio	Assist with line stretch
Set of Irons	Direct Hose Team
Box Light	Evaluate effectiveness and progress
	Communicate with Operations Chief

1351 *Background Blue for Technical Rescue Operations and Red tags for fire suppression activities*  
 1352 *Final Design and Text subject to Customer approval.*

1353 **WHEEL CHOCKS**

1354 Provide two (2) Zico SAC-44 folding wheel chocks with Zico SQCH-44-H horizontal mounting  
 1355 brackets mounted one (1) each side forward of the rear wheels below the side running board  
 1356 compartments.

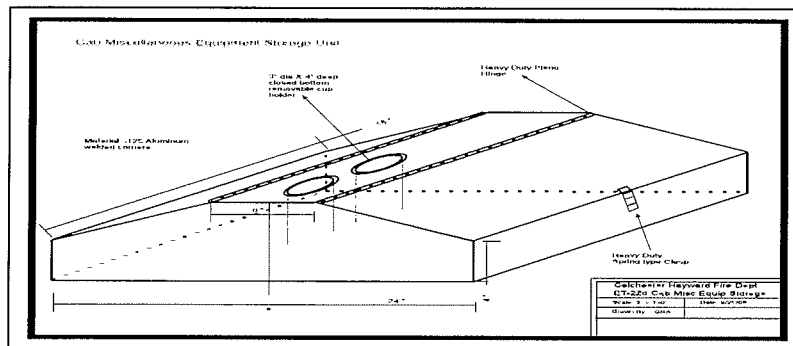
1357 **HAND LIGHTS**

1358 Provide eight (8) Streamlight Fire Vulcan Flashlights with flashing LED taillights - Vehicle  
 1359 Mount System - Orange- and installed as directed by the purchaser. The light chargers shall be  
 1360 wired to the chassis battery saver. Location to be determined at pre-construction conference.

1361 **HINGED STORAGE BOX**

1362 Provide a storage box with two hinged, positive latching doors approximately 18" L X 24" W X  
 1363 8" H to be mounted on the engine cover between the officer and driver as shown below.

1364



1365

1366 **SALES REPRESENTATIVE SUPPLIED EQUIPMENT**

1367 The following listing of equipment shall be furnished as part of the contract requirements and will  
1368 be installed locally by the regional Sales Representative as required by the Purchaser. The location  
1369 for mounting this equipment will be determined during the pre and/or post construction meetings.

1370

1371 Provide as stated an NFPA rated vehicle mounting bracket for the following items:

1372 2-1/2 gallon pressurized water fire extinguisher bracket - to be mounted in the crew area.

1373 2-1/2 gallon pressurized AFFF fire extinguisher bracket – location to be determined

1374 8lb. flat headed axe positive locking bracket - mounted on the PAC tool board

1375 30" Pro bar positive locking bracket - mounted on the PAC tool board

1376 6' NY Roof Hook - two (2) positive locking brackets - mounting location to be determined

1377 36" Bolt cutter positive locking bracket - mounted on PAC tool board

1378 10Lb Sledge Hammer positive locking bracket - mounted on PAC tool board

1379 PAC Mount IRONSLOK - to be mounted in the crew area

1380

1381 **ROAD SAFETY KIT**

1382 Provide a road safety kit with the following equipment:

1383 1 - 2 ½ lb. B-C fire extinguisher

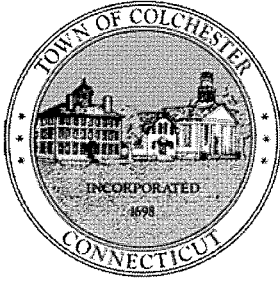
1384 3 - triangle safety reflectors

1385

1386

1387

1388



**TOWN OF COLCHESTER, CONNECTICUT  
COLCHESTER FIRE DEPARTMENT  
2013 RESCUE FIRE APPARATUS BID FORM**



**Bidder:**

Name: \_\_\_\_\_

Address: \_\_\_\_\_

City / State: \_\_\_\_\_

Phone: \_\_\_\_\_

FAX: \_\_\_\_\_

Contact Person: \_\_\_\_\_

Phone: (if different than above) \_\_\_\_\_

FAX (if different than above) \_\_\_\_\_

**Base Bid:** \$ \_\_\_\_\_, \_\_\_\_\_ thousand, dollars, and \_\_\_\_\_ cents.

**Alternate #1— SIDE ROLLOVER & AIR BAG PROTECTION**

The apparatus shall be equipped with a side rollover air bag protection system consisting of the following major components:

**Inflatable Tubular Structures (ITS)**

The ITS portion of the system consists of a tubular side airbag designed to protect the occupant's head during a rollover. The airbags shall be installed outboard of the driver and officer's seating positions. The airbag is attached to the vehicle at each end. Before deployment, it is normally stowed above the side window. As the diameter of the airbag increases during inflation, its length decreases. The deployed airbag; generates tension between attachment points and is positioned to protect the specified range of occupants. While stowed in the vehicle, the airbag is contained inside a trim cover. The trim cover opens and releases the airbag during deployment. The trim components are elastomeric extrusions that are attached to the vehicle interior. They are integrated into the vehicle interior to meet styling and functional requirements. The system uses a stored-gas inflator to generate inflation gases.

**Suspension Seat Safety System**

The seat and occupant pretensioning system using a stored gas powered actuator to pretension the front occupant's belt and pull down the suspension seat during a roll over. It is designed to "safely" move an occupant ranging from a 5th percentile female to a 95th percentile male, from an elevated position relative to normal driving conditions, to the seats lowest position while maintaining a tightened belt. This action {will/shall} occur in 100 to 180 milliseconds. For the S4S mechanism to provide adequate impulse to move the mass of a 95th percentile occupant in the prescribed time, it is necessary that the device produce a substantial force.

**Inflatable Head Curtain (IHC)**

The Inflatable Head Curtain shall be a state-of-the-art, pyrotechnic device designed to be compact and modular, assembly shall be installed outboard of the driver, officer and outboard crew seating position within the apparatus.

**Integrated Buckle Pretensioner (IBP)**

The Buckle Pretensioner is a pretensioning system using a micro gas generator to pretension the occupant's belt during a roll over. The Buckle Pretensioner is mounted in all protected static seating positions. The pretensioner deploys upon receiving a signal from the rollover sensor.

**FOR THE ADDITIONAL SUM OF \$ \_\_\_\_\_**

## **Alternate #2 – ITEMS REMOVED FROM THE SPEC AND DISASSEMBLED BY CUSTOMER**

The items listed below will be removed by the customer prior to the Rescue being shipped to the awarded bidders' factory. The bidder will deduct this from the total cost and show the cost savings below.

### **Underbody Roll Out Cribbing Compartments**

Remove existing underbody roll out storage tray.

### **Street Side Compartment L-1**

Remove existing adjustable shelves in this compartment.

### **Street Side Compartment L-2**

Remove existing shelves and trays in compartments.

### **Street Side Compartment L-3**

Remove existing shelves and tubes in compartment.

### **Street Side Compartment L-4**

Remove existing tray and wood panels in compartment.

### **Curb Side Compartment R-1**

Remove existing adjustable shelves in this compartment.

### **Curb Side Compartment R-2**

Remove existing shelves and trays in compartments.

### **Curb Side Compartment R-3**

Remove existing shelves in this compartment.

### **Curb Side Compartment R-4**

Remove existing tray and shelves in this compartment.

### **Rear Compartment B-1**

Remove current ladder and diamond plate panel located on the rear of the apparatus

### **Interior Compartment Doors**

Remove the plexi-glass and associated track and hardware from all the interior compartment doors.



**Interior 12 Volt And 120 Volt Lighting**

Remove existing 12 volt and 120 volt interior ceiling lighting.

**Interior Bench Seat And Safety Belts**

Remove existing interior bench seat and safety belts.

**Body Interior Diamond Plate**

Remove existing flooring and side walls.

**Body Interior Ceiling**

Remove existing ceiling material.

**Underbody Lights**

Remove existing underbody "Ground Effect" lights.

**Body Rub Rail**

Remove existing Stainless Steel Rub Rail.

**Exterior Compartment Lighting**

Remove 12-volt incandescent light fixtures in the exterior compartments.

**SVI Light Tower And Associated Components**

Remove the current SVI light tower located in compartments L5 – R-5 along with associated plumbing wiring. Remove from compartment R-1 all SVI light tower controls and associated equipment.

**FOR THE TOTAL SAVINGS OF \$ \_\_\_\_\_**

**Alternate #3— LOOSE EQUIPMENT**

Each bidder shall quote the following loose equipment list. They shall show individual pricing. The Colchester Fire Department reserves the right to choose any, all or none of these items. If any item/s are chosen, it will be an add-on to the main bid price.

One (1) 20# ABC fire extinguisher with vehicle mounting bracket  
**FOR THE SUM OF \$** \_\_\_\_\_

One (1) 15# CO2 fire extinguisher with vehicle mounting bracket  
**FOR THE SUM OF \$** \_\_\_\_\_

One (1) 2-1/2 gallon pressurized water fire extinguisher w/fire hooks unlimited shoulder strap #CH-312  
**FOR THE SUM OF \$** \_\_\_\_\_

One (1) 2-1/2 gallon pressurized AFFF fire extinguisher w/ fire hooks unlimited shoulder strap #CH-312  
**FOR THE SUM OF \$** \_\_\_\_\_

One (1) Fire Hooks Unlimited Lock-Slot 8lb Forcible Entry Axe  
**FOR THE SUM OF \$** \_\_\_\_\_

One (1) Fire Hooks Unlimited Lock-Slot 8lb Forcible Entry Axe  
**FOR THE SUM OF \$** \_\_\_\_\_

One (1) Fire Hooks Unlimited Maximus Forcible Entry Tool  
**FOR THE SUM OF \$** \_\_\_\_\_

One (1) Fire Hooks Unlimited Maximus Forcible Entry Tool  
**FOR THE SUM OF \$** \_\_\_\_\_

One (1) Fire Hooks Unlimited 6' NY Roof Hook.  
**FOR THE SUM OF \$** \_\_\_\_\_

One (1) 36" Bolt cutter  
**FOR THE SUM OF \$** \_\_\_\_\_

One (1) Fire Hooks Unlimited 10lb Sledge Hammer  
**FOR THE SUM OF \$** \_\_\_\_\_

One (1) 17' Little Giant Type IA-300 lb rated, Model 10102  
**FOR THE SUM OF \$** \_\_\_\_\_

One (1) Tempest 16" Ventmaster Chainsaw Model # 576HD-DG .404 with the Raptor Carbide Chain  
**FOR THE SUM OF \$** \_\_\_\_\_

One (1) Res-Q-Jack ALX-4PTX Aluminum X Deluxe 4-Point Kit  
**FOR THE SUM OF \$** \_\_\_\_\_

Two (2) 100 foot lengths of TNT Rescue Tool reel hose P/N **HRH-100-NEX**. 3/8"ID twin line 10,500 psi reel hose with Nexus connector on one end and #4 JIC on the reel end.  
**FOR THE SUM OF \$** \_\_\_\_\_

**FOR THE TOTAL ADDITIONAL SUM OF \$** \_\_\_\_\_.

**Alternate #4—SPEEDI DRI STORAGE DELIVERY SYSTEM**

Add speedy-dri storage and dispensing system in the top of compartment L-5. A dispensing tube and control valve shall be provided at the rear of the apparatus. The storage system shall hold 200lb's of martial. The exact location to be determined during the pre-construction conference.

**FOR THE ADDITIONAL SUM OF \$ \_\_\_\_\_.**

**Alternate #5— REAR HITCH RECEIVER**

A hitch receiver shall be installed at the rear of the apparatus. The hitch shall be constructed of heavy steel tubing and reinforced to the truck framework, for the receiving portion, including a heavy-duty slide-in tube with a ball. This shall be a class IV trailer hitch. The class IV rating is 10,000 pounds towing and 1000 pounds tongue with weight disturbing hitch. The slide-in portion shall be held in place by two (2) safety pins with clips. A seven-prong trailer-wiring plug and a 12-volt winch electrical plug shall be provided at the rear with a weatherproof snap cover.

**FOR THE ADDITIONAL SUM OF \$ \_\_\_\_\_.**

**Alternate #6— SIDE HITCH RECEIVERS**

An anchor point hitch receiver shall be installed at the sides of the apparatus in front of the rear wheels. The hitch shall be constructed of heavy steel tubing and reinforced to the truck framework, for the receiving portion, including a heavy-duty slide-in tube with a D Ring anchor point. The slide-in portion shall be held in place with a safety pin with a clip. The hitch shall have a 10,000 lb rating. A heavy gauge 12-volt wire and electrical plug with weather proof snap cover shall be provided mounted adjacent to the hitch receiver with a weatherproof snap cover.

**FOR THE ADDITIONAL SUM OF \$ \_\_\_\_\_.**

**Alternate #7— MINI REFRIGERATOR**

Provide and install in the interior rear street side compartment a mini refrigerator. The size and proper drainage to be recommended by the bidder.

**FOR THE ADDITIONAL SUM OF \$ \_\_\_\_\_.**

**Alternate #8— HYDRAULIC REEL WITH CAPACITY FOR 100' OF HOSE**

Provide two (2) new hydraulic hose reels located in compartments L-2 and R-2. There will be one (1) provided in each compartment along with the existing hose reels in each compartment. Compartments L-2 and R-2 will have a total of two (2) reels in each. One (1) existing and one (1) new in each compartment. The reel shall be operated by a 12 volt electric motor controlled by a rewind switch. The motor shall be protected by a circuit breaker and the rewind circuit shall be protected by a fuse. The switch shall be guarded to prevent accidental operation and installed at a height not to exceed 72 inches above the operators standing position.

The reel capacity shall be able to fit a 100 foot length of TNT Rescue Tool reel hose with 3/8" ID twin line 10,500 psi with Nexus connector on one end and #4 JIC on the reel end. Surfaces where the hose comes in contact with the reel roller shall be constructed of stainless steel, chrome plated steel or plastic. A captive roller assembly shall be provided to aid in the payout and loading of the reel.

**FOR THE ADDITIONAL SUM OF \$ \_\_\_\_\_.**

**All Alternates**

**Additional Cost of: \$ \_\_\_\_\_, \_\_\_\_\_ thousand, dollars, and \_\_\_\_\_ cents.**

**TOWN OF COLCHESTER, CONNECTICUT FIRE DEPARTMENT**

**2013 RESCUE FIRE APPARATUS BID FORM**

Delivery and Acceptance shall be completed within \_\_\_\_\_ calendar days from the date of contract execution.

The company does / does not carry product liability insurance. If carried, the amount is \$\_\_\_\_\_. Claims against product liability;

Claims \_\_\_\_\_ Amounts \_\_\_\_\_

Claims \_\_\_\_\_ Amounts \_\_\_\_\_

Claims \_\_\_\_\_ Amounts \_\_\_\_\_

Claims against the company for other liabilities.

Claims \_\_\_\_\_ Amounts \_\_\_\_\_

Claims \_\_\_\_\_ Amounts \_\_\_\_\_

Claims \_\_\_\_\_ Amounts \_\_\_\_\_

**TOWN OF COLCHESTER, CONNECTICUT FIRE DEPARTMENT**

**2013 RESCUE FIRE APPARATUS BID FORM**

References;

1. Number of years the Bidder has been engaged in the manufacture of fire apparatus:

\_\_\_\_\_ years.

2. List the dollar volume of fire apparatus sales for the previous year.

\$ \_\_\_\_\_

3. List six (6) recent deliveries or those under construction of fire apparatus of similar construction on similar chassis. Provide those customers closest to Colchester, Ct.

Customer	Amount of contract	Del. Date
1. _____	_____	_____
2. _____	_____	_____
3. _____	_____	_____
4. _____	_____	_____
5. _____	_____	_____
6. _____	_____	_____

Provide an additional list of fifteen customers of fire apparatus within the past 3 years. Attached to this Bid Form .

4. Has the Bidder ever failed to deliver work awarded; if so, state customer's name and why:

\_\_\_\_\_  
\_\_\_\_\_

5. Surety:

\_\_\_\_\_  
\_\_\_\_\_

6. Bank Reference: \_\_\_\_\_

\_\_\_\_\_

**TOWN OF COLCHESTER, CONNECTICUT FIRE DEPARTMENT**

**2013 RESCUE FIRE APPARATUS BID FORM**

7. Major Material Suppliers:

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_

8. List the Name, address and telephone of the repair facility nearest to Colchester, Ct. where warranty and service work will be conducted:

Cab and Chassis, \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Rescue Body \_\_\_\_\_  
\_\_\_\_\_

9. Provide the name, and address of the factory where the proposed fire apparatus will be manufactured: \_\_\_\_\_

10. Provide the name, and address of the factory where the proposed cab and chassis will be manufactured: \_\_\_\_\_

**TOWN OF COLCHESTER, CONNECTICUT FIRE DEPARTMENT**

**2013 RESCUE FIRE APPARATUS BID FORM**

The undersigned agrees to provide all necessary materials and labor for the construction, delivery, and acceptance and to provide warranty services for the periods stipulated for the construction of the proposed Fire Apparatus for the Colchester Fire Department, Town of Colchester, Connecticut listing all exceptions to the Bid Specifications.

The undersigned also warrants to the Town of Colchester that the company, its agents or employees have not participated in any collusion with any other agent or employee of any other bidder in setting of the Bid prices herein.

\_\_\_\_\_, \_\_\_\_\_  
Authorized Signature      Title

Corporate Seal

\_\_\_\_\_, \_\_\_\_\_  
Print Name of Signature      Date \_\_\_\_\_

Witnessed Signature by

Notary

\_\_\_\_\_  
\_\_\_\_\_

Notary Seal



Subject	Spec Page#	Bidder Meets Spec	Bidder Exceeds Spec	Bidder takes Exception to Spec	Bidder Exception to Line Numbers	Bidders Clarification to Specification
<b>Sample Exception Entry for Bidders</b>				X	1296-97	Manufacturer paints ALL fire trucks Red, suggest Final choice be Red, (This is NOT acceptable to CHVFD)
INSPECTION TRIPS	7					
TRANSPORTATION OF EXISTING APPARATUS TO BIDDERS FACTORY	7					
SPARTON Metro Star ELFD CUSTOM CHASSIS	7					
CAB MATERIAL	7					
CAB - BASE CONSTRUCTION	7					
24" RAISED CAB ROOF	7					
CAB DOORS	8					
ENTRY STEP AREA	8					
Rear wall cut out for walk through rescue body	8					
EXTERIOR REAR LOWER CAB COMPARTMENT	8					
DOOR LATCHES	8					
INTERIOR DOOR LOCKS	8					
DOOR SCUFF PLATES	9					
CAB CORROSION PROTECTION	9					
WINDSHIELD/GLASS	9					
WINDSHIELD WIPER AND WASHER	9					
GRAB HANDLES	9					
INTERIOR GRAB RAIL	9					
AIR INTAKE/OUTLET	9					
WHEEL WELL LINERS	9					
FENDER/TIRES	10					
MUD FLAPS	10					
CAB MIRRORS	10					
EIGHT INCH CONVEX K-10 FDNY MIRROR	10					
EXTREME DUTY INTERIOR CAB TRIM	10					
FLOORING	10					
ENGINE ENCLOSURE	11					
CAB SEATING	11					
SECURE-ALL SCBA BRACKET	11					
SEAT BELTS	11					
UPHOLSTERY	11					

Subject	Spec Page#	Bidder Meets Spec	Bidder Exceeds Spec	Bidder takes Exception to Spec	Bidder Exception to Line Numbers	Bidders Clarification to Specification
HELMET HOLDERS	11					
ANTENNA INSTALLATION	11					
RADIO CABLE INSTALLATION	12					
INSTRUMENT PANELS	12					
OFFICER'S SPEEDOMETER	13					
COMPUTER BRACKET (OFFICER POSITION)	13					
VEHICLE DATA RECORDER (VDR)	13					
DEFOGGER FANS	13					
CREW AREA FANS	13					
HEATING AND AIR CONDITIONING	13					
CAB TILT ASSEMBLY	14					
AUXILIARY MANUAL CAB LIFT	14					
CHASSIS FRAME	14					
Severe duty FRONT BUMPER	14					
WINCH STORAGE WELL	15					
WINCH STORAGE WELL COVER	15					
SIGHT RODS	15					
REMOVE AND REMOUNT AND WIRE ELECTRIC						
WINCH	15					
FRONT BUMPER TOW EYES	15					
FRONT AXLE	15					
STEERING SYSTEM	15					
STEERING	16					
FRONT BRAKES	16					
FRONT SUSPENSION	16					
FRONT SHOCK ABSORBERS	16					
REAR AXLE	16					
REAR SUSPENSION	16					
REAR BRAKES	16					
BRAKE SYSTEM	17					
ABS SYSTEM	17					
AUTOMATIC TRACTION CONTROL (ATC)	17					
ESC ELECTRONIC STABILITY CONTROL	18					
AUTOMATIC TIRE CHAIN	18					
BRAKE AIR RESERVOIRS	18					

Subject	Spec Page#	Bidder Meets Spec	Bidder Exceeds Spec	Bidder takes Exception to Spec	Bidder Exception to Line Numbers	Bidders Clarification to Specification
AIR DRYER	18					
AIR LINES	18					
AIR COMPRESSOR	18					
PARKING BRAKE	18					
KUSSMAUL AIR PUMP	18					
WHEELS AND TIRES	19					
TIRE PRESSURE MONITORING	19					
TIRE PRESSURE LABELS	19					
ENGINE	19					
RADIATOR	20					
AIR CLEANER	20					
ENGINE BRAKE	20					
ENGINE FAST IDLE	20					
TRANSMISSION	21					
P.T.O. (POWER TAKE OFF) FOR GENERATOR	21					
P.T.O. LIGHT INDICATOR FOR GENERATOR	21					
TRANSMISSION SHIFTER / MODE	21					
TRANSMISSION WARRANTY	21					
DRIVELINES	21					
EXHAUST SYSTEM	22					
FUEL TANK	22					
FUEL POCKET	22					
VEHICLE FLUIDS PLATE	23					
CHASSIS ELECTRICAL SYSTEM	23					
SPARE 12 VOLT CIRCUIT - CAB	23					
RADIO 12 VOLT CIRCUITS	23					
INTERCOM SYSTEM - EIGHT SEATED POSITION	24					
INTERCOM- PELTOR	24					
HEADSET - PELTOR SERIES- DRIVER POSITION	24					
HEADSET - PELTOR OFFICER POSITION	24					
HEADSET PELTOR CREW POSITION INTERCOM ONLY	24					
HEADSET PLUG-IN PELTOR SERIES-	24					
HEADSET HANGER	24					
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Subject	Spec Page#	Bidder Meets Spec	Bidder Exceeds Spec	Bidder takes Exception to Spec	Bidder Exception to Line Numbers	Bidders Clarification to Specification
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BODY ELECTRICAL JUNCTION COMPARTMENT	26					
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LOAD MANAGEMENT SYSTEM	26					
ALTERNATOR	26					
BATTERY SYSTEM	26					
BATTERY STORAGE	27					
BATTERY DISCONNECT SWITCH	27					
SHORELINE AUTO-EJECT	27					
AIR OUTLET (RIGHT SIDE FRONT BUMPER)	27					
ON BOARD BATTERY CHARGER SYSTEM	27					
BATTERY SAVER	27					
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CAB MAP LIGHT	28					
CREW SAFETY LIGHT	28					
CAB SPOTLIGHT	28					
CAB MARKER LIGHTS AND REFLECTORS	28					
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GTT OPTICOM	30					
ZONE A HEAD LIGHT BEZEL MOUNTED WARNING LIGHTS	30					
ZONE B & D SIDE INTERSECTION WARNING LIGHTS	30					
SEE RESCUE BODY SPECIFICATION FOR ADDITIONAL LIGHTING REQUIREMENTS	30					

Subject	Spec Page#	Bidder Meets Spec	Bidder Exceeds Spec	Bidder takes Exception to Spec	Bidder Exception to Line Numbers	Bidders Clarification to Specification
BACK-UP CAMERA	30					
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REMOVE AND REPLACE ROLL-UP DOORS (ROLL-O-MATIC)	33					
ADD LED STRIP LIGHTING EXTERIOR COMPARTMENTS	33					
TURTLE TILE FOR COMPARTMENTS	33					
REMOVE EXISTING SVI LIGHT TOWER AND ASSOCIATED COMPONENTS	33					
RELOCATE HYDRAULIC GENERATOR	34					
REMOVE AND REPLACE 120 VAC SCENE	34					
INSPECT AND REPLACE 120 VAC ELECTRICAL WIRING & COMPONENTS	34					
UNDERBODY ROLL OUT CRIBBING COMPARTMENTS	34					
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Subject	Spec Page#	Bidder Meets Spec	Bidder Exceeds Spec	Bidder takes Exception to Spec	Bidder Exception to Line Numbers	Bidders Clarification to Specification
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SLIDE OUT TOOL BOARD	37					
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Add Rear Ladder	37					
INTERIOR COMPARTMENT DOORS	37					
ADD SHELVING FOR MANUALS AND BOOK STORAGE INTERIOR	38					
REPLACE INTERIOR 12 VOLT AND 120 VOLT LIGHTING	38					
REMOVE INTERIOR BENCH SEAT AND SAFETY BELTS	38					
ADD COMMAND / RADIO COMPARTMENTATION	38					
REAR INTERIOR	38					
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BODY INTERIOR CEILING	38					
TAIL, STOP, TURN AND BACK- UP LIGHTS	38					
REMOVE UNDERBODY LIGHTS	38					
BODY RUB RAIL W/LED GROUND LIGHTING	38					
REAR TOW EYES	39					
RESCUE BODY LIGHT PACKAGE	39					
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ZONE B & D RESCUE BODY SIDE WARNING LIGHTS	39					

Subject	Spec Page#	Bidder Meets Spec	Bidder Exceeds Spec	Bidder takes Exception to Spec	Bidder Exception to Line Numbers	Bidders Clarification to Specification
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REAR DIRECTIONAL LIGHT (WHELEN)	40					
LITTLE GIANT LADDER STORAGE COMPARTMENT	40					
POLYPROPYLENE STORAGE BOXES	40					
PAINT, PREPARATION AND FINISH	40					
BODY EXTERIOR PAINT	40					
PAINT FINISH WARRANTY	40					
LETTERING AND STRIPING	41					
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CHEVRON STRIPING	41					
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HAND LIGHTS	42					
Hinged Storage Box	42					
SALES REPRESENTATIVE SUPPLIED EQUIPMENT	43					
ROAD SAFETY KIT	43					

**SCHEDULE C**

Attached Form of Bonds



Bond No. \_\_\_\_\_

# Performance Bond

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

CONTRACTOR (Name and Address):

SURETY:

OWNER (Name and Address):

Surety Phone No.

CONSTRUCTION CONTRACT

Date:

Amount: \$

DOLLARS

Description (Name and Location):

BOND

Date (Not earlier than Construction Contract Date):

Amount: \$

DOLLARS

Modifications to this Bond:

None

See Page 3

CONTRACTOR AS PRINCIPAL

SURETY

Company:

Company:

Corporate Seal

Corporate Seal

Signature: \_\_\_\_\_

Signature: \_\_\_\_\_

Name and Title:

Name and Title:

Attorney-in-Fact

(Any additional signatures appear on page 3)

(FOR INFORMATION ONLY—Name, Address and Telephone)

AGENT or BROKER:

OWNER'S REPRESENTATIVE (Architect, Engineer or other party):

Printed in cooperation with the American Institute of Architects (AIA) by

language used in AIA Document A-312, December 1984 Edition.

PRF76002ZZ0601f  
Without Modifications

vouches that the language in the document conforms exactly to the

1 The Contractor and the Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner for the performance of the Construction Contract, which is incorporated herein by reference.

2 If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except to participate in conferences as provided in Subparagraph 3.1.

3 If there is no Owner Default, the Surety's obligation under this Bond shall arise after:

3.1 The Owner has notified the Contractor and the Surety at its address described in Paragraph 10 below that the Owner is considering declaring a Contractor Default and has requested and attempted to arrange a conference with the Contractor and the Surety to be held not later than fifteen days after receipt of such notice to discuss methods of performing the Construction Contract. If the Owner, the Contractor and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement shall not waive the Owner's right, if any, subsequently to declare a Contractor Default; and

3.2 The Owner has declared a Contractor Default and formally terminated the Contractor's right to complete the contract. Such Contractor Default shall not be declared earlier than twenty days after the Contractor and the Surety have received notice as provided in Subparagraph 3.1; and

3.3 The Owner has agreed to pay the Balance of the Contract Price to the Surety in accordance with the terms of the Construction Contract or to a contractor selected to perform the Construction Contract in accordance with the terms of the contract with the Owner.

4 When the Owner has satisfied the conditions of Paragraph 3, the Surety shall promptly and at the Surety's expense take one of the following actions:

4.1 Arrange for the Contractor, with consent of the Owner, to perform and complete the Construction Contract; or

4.2 Undertake to perform and complete the Construction Contract itself, through its agents or through independent contractors; or

4.3 Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and the contractor selected with the Owner's concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Paragraph 6 in excess of the Balance of the Contract Price incurred by the Owner resulting from the Contractor's default; or

4.4 Waive its right to perform and complete, arrange for completion, or obtain a new contractor and with reasonable promptness under the circumstances:

.1 After investigation, determine the amount for which it

may be liable to the Owner and, as soon as practicable after the amount is determined, tender payment therefor to the Owner; or

.2 Deny liability in whole or in part and notify the Owner citing reasons therefor.

5 If the Surety does not proceed as provided in Paragraph 4 with reasonable promptness, the Surety shall be deemed to be in default on this Bond fifteen days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Subparagraph 4.4, and the Owner refuses the payment tendered or the Surety has denied liability, in whole or in part, without further notice the Owner shall be entitled to enforce any remedy available to the Owner.

6 After the Owner has terminated the Contractor's right to complete the Construction Contract, and if the Surety elects to act under Subparagraph 4.1, 4.2, or 4.3 above, then the responsibilities of the Surety to the Owner shall not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety shall not be greater than those of the Owner under the Construction Contract. To the limit of the amount of this Bond, but subject to commitment by the Owner of the Balance of the Contract Price to mitigation of costs and damages on the Construction Contract, the Surety is obligated without duplication for:

6.1 The responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;

6.2 Additional legal, design professional and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Paragraph 4; and

6.3 Liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.

7 The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction Contract, and the Balance of the Contract Price shall not be reduced or set off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than the Owner or its heirs, executors, administrators or successors.

8 The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related sub-contractors, purchase orders and other obligations.

9 Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and shall be instituted within two years after Contractor Default or within two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction

shall be applicable.

10 Notice to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the signature page.

11 When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. The intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

12 DEFINITIONS

12.1 Balance of the Contract Price: The total amount payable by the Owner to the Contractor under the Construction Contract after all proper adjustments have been made, including allowance to the Contractor of any amounts received or to be received by the

Owner in settlement of insurance or other claims for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Construction Contract.

12.2 Construction Contract: The agreement between the Owner and the Contractor identified on the signature page, including all Contract Documents and changes thereto.

12.3 Contractor Default: Failure of the Contractor, which has neither been remedied nor waived, to perform or otherwise to comply with the terms of the Construction Contract.

12.4 Owner Default: Failure of the Owner, which has neither been remedied nor waived, to pay the Contractor as required by the Construction Contract or to perform and complete or comply with the other terms thereof.

MODIFICATIONS TO THIS BOND ARE AS FOLLOWS:

(Space is provided below for additional signatures of added parties, other than those appearing on the cover page).

CONTRACTOR AS PRINCIPAL

Company: (Corporate Seal)

SURETY:

Company: (Corporate Seal)

Signature: \_\_\_\_\_

Signature: \_\_\_\_\_

Name and Title:

Name and Title:

Address:

Address:

Bond No. \_\_\_\_\_

## Payment Bond

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

CONTRACTOR (Name and Address):

SURETY:

OWNER (Name and Address):

Surety Phone No.

CONSTRUCTION CONTRACT

Date:

Amount:

DOLLARS

Description (Name and Location):

BOND

Date (Not earlier than Construction Contract Date):

Amount: \$

DOLLARS

Modifications to this Bond:

None

See Page 3

CONTRACTOR AS PRINCIPAL

Company:

Signature: \_\_\_\_\_

Name and Title:

Corporate Seal

SURETY

Company:

Signature: \_\_\_\_\_

Name and Title:

Attorney-in-Fact

Corporate Seal

(Any additional signatures appear on page 3)

(FOR INFORMATION ONLY—Name, Address and Telephone)

AGENT or BROKER:

OWNER'S REPRESENTATIVE (Architect, Engineer or other party):

Printed in cooperation with The American Institute of Architects (AIA) by

the language used in AIA Document A-312, December 1984 EDITION.

PAY76001ZZ0409F  
With Modifications

vouches that the language in the document conforms exactly to

1 The Contractor and the Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner to pay for labor, materials and equipment furnished for use in the performance of the Construction Contract, which is incorporated herein by reference.

2 With respect to the Owner, this obligation shall be null and void if the Contractor:

2.1 Promptly makes payment, directly or indirectly, for all sums due Claimants, and

2.2 Defends, indemnifies and holds harmless the Owner from claims, demands, liens or suits by any person or entity whose claim, demand, lien or suit is for payment for labor, materials or equipment furnished for use in the performance of the Construction Contract, provided the Owner has promptly notified the Contractor and the Surety (at the address described in paragraph 12) of any claims, demands, liens or suits and tendered defense of such claims, demands, liens or suits to the Contractor and the Surety, provided there is no Owner Default.

3 With respect to Claimants, this obligation shall be null and void if the Contractor promptly makes payment, directly or indirectly, for all sums due.

4 The Surety shall have no obligation to Claimants under this Bond until:

4.1 Claimants who are employed by or have a direct contract with the Contractor have given notice to the Surety (at the address described in Paragraph 12) and sent a copy, or notice thereof, to the Owner, stating that a claim is being made under this Bond and, with substantial accuracy, the amount of the claim.

4.2 Claimants who do not have a direct contract with the Contractor:

.1 Have furnished written notice to the Contractor and sent a copy, or notice thereof, to the Owner, within 90 days after having last performed labor or last furnished materials or equipment included in the claim stating, with substantial accuracy, the amount of the claim and the name of the party to whom the materials were furnished or supplied or for whom the labor was done or performed; and

.2 Have either received a rejection in whole or in part from from the Contractor, or not received within 30 days of furnishing the above notice any communication from the Contractor by which the Contractor has indicated the claim will be paid directly or indirectly; and

.3 Not having been paid within the above 30 days, have sent a written notice to the Surety (at the address described in Paragraph 12) and sent a copy, or notice thereof, to the Owner, stating that a claim is being made under this Bond and enclosing a copy of the previous written notice furnished to the Contractor.

5 If a notice required by Paragraph 4 is given by the Owner to the Contractor or to the Surety, that is sufficient compliance.

6 When the Claimant has satisfied the conditions of Paragraph 4, the Surety shall promptly and at the Surety's expense take the following actions:

6.1 Send an answer to the Claimant, with a copy to the Owner, within 45 days after receipt of the claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed.

6.2 Pay or arrange for payment of any undisputed amounts.

7 The Surety's total obligation shall not exceed the amount of this Bond, and the amount of this Bond shall be credited for any payments made in good faith by the Surety.

8 Amounts owed by the Owner to the Contractor under the Construction Contract shall be used for the performance of the Construction Contract and to satisfy claims, if any, under any Construction Performance Bond. By the Contractor furnishing and the Owner accepting this Bond, they agree that all funds earned by the Contractor in the performance of the Construction Contract are dedicated to satisfy obligations of the Contractor and the Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work.

9 The Surety shall not be liable to the Owner, Claimants or others for obligations of the Contractor that are unrelated to the Construction Contract. The Owner shall not be liable for payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligations to make payments to, give notices on behalf of, or otherwise have obligations to Claimants under this Bond.

10 The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related sub-contracts, purchase orders and other obligations.

11 No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the location in which the work or part of the work is located or after the expiration of one year from the date (1) on which the Claimant gave the notice required by Subparagraph 4.1 or Clause 4.2.3, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

12 Notice to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the signature page. Actual receipt of notice by Surety, the Owner or the Contractor, however accomplished, shall be sufficient compliance as of the date received at the address shown on the signature page.

13 When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. The intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

14 Upon request by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor shall promptly furnish a copy of this Bond or shall permit a copy to be made.

15 DEFINITIONS

15.1 Claimant: An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials or equipment for use in the performance of the Contract. The intent of this Bond shall be to include without limitation in the terms "labor, materials or equipment" that part of water, gas, power, light, heat, oil, gasoline, telephone service or rental equipment used in the Construction Contract, architectural and engineering services

required for performance of the work of the Contractor and the Contractor's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials or equipment were furnished.

15.2 Construction Contract: The agreement between the Owner and the Contractor identified on the signature page, including all Contract Documents and changes thereto.

15.3 Owner Default: Failure of the Owner, which has neither been remedied nor waived, to pay the Contractor as required by the Construction Contract or to perform and complete or comply with the other terms thereof.

MODIFICATIONS TO THIS BOND ARE AS FOLLOWS:

Paragraph 4 is amended to insert sub-paragraph 4.3, which states:

4.3 Claimants have furnished to Surety proof of claim duly sworn to by Claimants with adequate supporting documentation proving the amount claimed is due and payable.

Paragraph 5 shall be amended to delete the word "or" and insert the word "and" in its place.

Paragraph 6 and its sub-paragraphs 6.1 and 6.2 shall be deleted in their entirety and replaced with the following:

When the Claimant has satisfied the conditions of Paragraph 4, the Surety shall, within 90 days of the date when claimant finally completed its satisfactions of the conditions of Paragraph 4 notify the Claimant of the amounts that are undisputed and the basis for challenging any amounts that are disputed, including, but not limited to, the lack of substantiating documentation to support the claim as to entitlement or amount, and the Surety shall pay or make arrangements for payment of any undisputed amount; provided, however, that the failure of the Surety to timely discharge its obligations under this paragraph or to dispute or identify any specific defense to all or any part of a claim shall not be deemed to be an admission of liability by the Surety as to such claim or otherwise constitute a waiver of the Contractor's or Surety's defenses to, or right to dispute, such claim. Rather, the Claimant's sole remedy shall be the immediate right, without further notice, to bring suit against the Surety to enforce any remedy available to it under this Bond.

Paragraph 12 shall be amended to add the following paragraph:

CLAIM NOTICE for the FIDELITY AND DEPOSIT COMPANY OF MARYLAND, ZURICH AMERICAN INSURANCE COMPANY, COLONIAL AMERICAN CASUALTY AND INSURANCE COMPANY and/or AMERICAN GUARANTEE AND LIABILITY INSURANCE COMPANY must be sent to the following address: Contract Surety Bond Claims, c/o ZURICH, 1400 American Lane, Schaumburg, IL 60196.

(Space is provided below for additional signatures of added parties, other than those appearing on the cover page.)

CONTRACTOR AS PRINCIPAL (Corporate Seal)  
Company:

SURETY: (Corporate Seal)  
Company:

Signature: \_\_\_\_\_

Signature: \_\_\_\_\_

Name and Title:

Name and Title:

Address:

Address:



**EMERGENCY VEHICLE SALES CONTRACT**

**BUYER:**

Town of Colchester  
 127 Norwich Ave.  
 Colchester, Connecticut 06415

**SELLER:**

Marion Body Works, Inc.  
 211 West Ramsdell Street  
 Marion, WI 54950

**1. AGREEMENT TO SELL AND TO PURCHASE**

The seller (referred to as MARION or SELLER) agrees to sell, and buyer (referred to as TOWN OF COLCHESTER or BUYER) agrees to purchase, on the terms and conditions set forth in this Agreement, the following described apparatus and equipment (collectively, the APPARATUS) according to the specifications set forth in Schedule A attached hereto and made a part hereof (the SPECIFICATIONS).

(a) <b><u>DESCRIPTION OF APPARATUS</u></b>	<b><u>PRICE</u></b>
One (1) Marion custom aluminum rescue mounted on a 2014 Spartan Metro-star chassis per SPECIFICATIONS	\$449,790.00
Optional Roll-over occupancy roll-over protection	\$ 5,500.00
Optional rescue tool reels plumbed to pumps in specified locations	\$ 5,600.00
	=====
Total Price, F.O.B. Delivered, excluding all Federal, State and Local Taxes (the PURCHASE PRICE)	<b><u>\$460,890.00</u></b>

(b) **TRADE-IN**

A trade-in of BUYER's 1990 SVI rescue truck No. 128 (the TRADE-IN) is made part of this Agreement, and the trade-in value is reflected in the PURCHASE PRICE. BUYER shall keep the TRADE-IN in its current good working order, maintained and/or returned to same working condition/order at time of its turn over to SELLER for sale, normal wear and tear excepted. At the time of its turn over to SELLER, the TRADE-IN shall have its major components left on the vehicle (such as reels, trays, light tower, and the like). The Colchester Fire Department shall assist in showing the TRADE-IN and its records relating to the TRADE-IN to prospective buyers and keep the TRADE-IN clean and ready for sale/showing to prospective customers. Time of transfer of the TRADE-IN to SELLER's local sales representative shall be mutually agreed upon in conjunction with delivery of the new APPARATUS to BUYER.

**2. CONFORMANCE TO LAWS AND NFPA STANDARDS**

SELLER shall manufacture the APPARATUS in accordance with all applicable National Fire Protection Association (NFPA) standards and all applicable laws. SELLER certifies to BUYER that the SPECIFICATIONS conform to all applicable laws and NFPA standards as of the date of acceptance by SELLER. Any increased costs incurred by SELLER because of future NFPA standards issued during the manufacture of the APPARATUS will be passed on to BUYER as an addition to the PURCHASE PRICE; provided, however, that SELLER shall promptly inform BUYER of any such future NFPA standards that may affect the PURCHASE PRICE. As of the date of this Agreement, SELLER has no

actual knowledge of any pending or possible additional NFPA standards that could affect the manufacture of the APPARATUS.

### **3. COMPLETION SCHEDULE**

The APPARATUS is expected to be completed in spring of 2014. The above completion date estimate is based on timely approval by BUYER of submitted drawings and specifications, timely receipt of the chassis, and is subject to any events beyond the reasonable control of MARION. Subject to the foregoing sentence, SELLER shall be subject to a penalty of One Hundred and 00/100 Dollars (\$100.00) per day that the APPARATUS is not delivered to BUYER commencing October 30, 2014.

### **4. LICENSE**

It is understood that SELLER has the right and license to use the APPARATUS for trade show/demonstration purposes over several months, as needed, from the date of completion of the APPARATUS until the date of final delivery to BUYER on approximately September 30, 2014. During such period and until delivery to and acceptance of the APPARATUS by BUYER:

(a) SELLER shall provide normal maintenance for the APPARATUS. Some mileage will accrue (estimated 10,000 miles) as well as minor scuffs, foot traffic marks, etc. associated with product promotion; provided, however, that such scuffs, marks and any and all damage other than normal wear and tear shall be promptly repaired by SELLER at SELLER's sole cost and expense prior to delivery to BUYER.

(b) The APPARATUS shall be fully insured for casualty and liability during such time by SELLER. The scope and amount of such insurance shall be subject to the reasonable approval of BUYER's counsel, and BUYER shall be listed on such insurance as an additional insured or loss payee, as applicable. SELLER shall provide a certificate of such insurance to BUYER.

(c) SELLER shall indemnify and hold BUYER, its officials, employees and agents, harmless from and against any and all damages, losses, liabilities, claims and expenses (including reasonable attorney's fees) arising out of or in any way connected with the exercise of the rights granted in this Section 4. This provision shall survive termination of this Agreement.

(d) SELLER assumes all risk of loss with respect to the APPARATUS or personal property of SELLER, or its agents or invitees, located anywhere on or about the APPARATUS. In no event shall BUYER be liable for the damage, destruction, theft or other disappearance of any such personal property. This provision shall survive termination of this Agreement.

### **5. WARRANTY**

The standard Marion Emergency Vehicle Warranties shall be in effect upon delivery of the APPARATUS as outlined below:

- A two (2) year material and workmanship warranty.
- A fifteen (15) year structural warranty.
- A five (5) year paint warranty.
- A five (5) year electrical warranty.

### **6. CONSEQUENTIAL DAMAGES AND OTHER LIABILITY**



MARION shall not be liable for and disclaims all consequential, incidental and contingent damages.

## **7. CANCELLATION**

MARION's remedies shall be as follows in the event of cancellation of this Agreement by BUYER so long as MARION is not in default hereof:

(a) in the event of cancellation of this Agreement by BUYER prior to MARION's commencement of production of the APPARATUS, MARION shall be entitled to reimbursement by BUYER of the pre-production costs MARION has incurred prior to the date of such cancellation, but not including any costs relating to responding to the RFP (as hereinafter defined) or preparing or negotiating this Agreement. Notwithstanding the foregoing, in no event shall BUYER's reimbursement payments to MARION pursuant to this subsection (a) exceed ten percent (10%) of the PURCHASE PRICE.

(b) in the event of cancellation of this Agreement by BUYER following MARION's commencement of production of the APPARATUS, MARION shall be entitled to reimbursement by BUYER of the costs MARION has incurred prior to the date of such cancellation, but not including any costs relating to responding to the RFP or preparing or negotiating this Agreement. In the event all or any portion of the APPARATUS is utilized by SELLER in a future sale or manufacture, SELLER shall reimburse BUYER for any money already paid by BUYER therefor, less an equitable administration fee.

## **8. PAYMENT**

The PURCHASE PRICE shall be paid as follows:

(a) BUYER shall pay SELLER Two Hundred Fifty Thousand and 00/100 Dollars (\$250,000.00) upon completion of the chassis and delivery of the chassis to MARION. SELLER shall notify BUYER in writing of such delivery, and BUYER shall make such payment within thirty (30) days of BUYER's receipt of such notice.

(b) BUYER shall pay SELLER One Hundred Fifty Thousand and 00/100 Dollars (\$150,000.00) upon completion of the APPARATUS and inspection thereof by BUYER. SELLER shall notify BUYER in writing of such completion, and BUYER shall make such payment within thirty (30) days of BUYER's receipt of such notice.

(c) BUYER shall pay SELLER the balance of the PURCHASE PRICE upon delivery and acceptance of the completed APPARATUS to BUYER's station, and SELLER shall provide a full title certificate to BUYER.

(d) A finance charge of one percent (1%) per month (annual percentage rate of twelve percent (12%)) will be added to all accounts over thirty (30) days due.

(e) BUYER shall make such payments to the address of SELLER first set forth in this Agreement, unless SELLER provides a different address to BUYER in writing.

## **9. INCORPORATION OF RFP**

The request for proposals for the APPARATUS, entitled: "TOWN OF COLCHESTER COLCHESTER FIRE DEPARTMENT 1990 SVI Heavy Rescue Re-Chassis & Rescue Body Refurbish R.F.P. Specifications NFPA 1901 2011" (the RFP), is attached hereto as Schedule B and made a part hereof. The specifications set forth in

the RFP shall be construed as minimum specifications, which the SPECIFICATIONS may exceed but shall not fall below.

Notwithstanding the foregoing, the parties acknowledge and agree that the RFP provides for a refurbished rescue, and the SPECIFICATIONS provide for a new rescue. Therefore, the SPECIFICATIONS shall supersede the RFP to the extent the SPECIFICATIONS provide for a new rather than a refurbished rescue. All other provisions of the RFP, including, but not limited to, the provisions addressing insurance, bonds, warranties, inspection, acceptance and contract changes, shall bind the parties and be and remain in full force and effect.

## 10. ENTIRE AGREEMENT

This Agreement including its appendices is the entire understanding between the parties, and merges all prior discussion and agreements between them. Any changes to this contract, including appendices, must be in writing and signed by an authorized representative of the BUYER and SELLER.

## 11. NOTICES

All notices or communications given under this Agreement shall be in writing and shall be sent to the addresses set forth below or to such other addresses as the parties may designate by written notice, and shall be sent by: (a) hand delivery, or (b) nationally recognized overnight courier service with proof of delivery, or (c) U.S. mail, postage prepaid, or (d) confirmed facsimile transmission (if a copy thereof is also sent on the same day by a nationally recognized overnight courier service). Any such notice or communication shall be deemed to have been given (a) in the case of hand delivery, at the time of such hand delivery, (b) in the case of overnight delivery service, on the next business day, or (c) in the case of U.S. mail, three (3) business days after postmarked, and (d) in the case of confirmed facsimile transmission, on the business day so delivered.

If to SELLER: Marion Body Works, Inc.  
211 West Ramsdell Street  
Marion, WI 54950  
Attn: \_\_\_\_\_  
Fax No.: (\_\_\_\_) \_\_\_\_\_

If to BUYER: Town of Colchester  
127 Norwich Avenue  
Colchester, CT 06415  
Attention: First Selectman  
Fax No.: (860) 537-0547

## 12. BONDS

Promptly upon execution of this Agreement, SELLER shall provide performance and payment bonds to BUYER in the form attached hereto as Schedule C.

## 13. MISCELLANEOUS

(a) If any provision of this Agreement shall to any extent be held invalid or unenforceable, then only such provision shall be deemed ineffective and the remainder of this Agreement shall not be affected.

(b) SELLER shall not assign this Agreement without the prior written consent of BUYER, which may be withheld in BUYER's sole discretion, and any such purported assignment shall be void.

(c) This Agreement shall be construed in accordance with the laws of the State of Connecticut.

(d) This Agreement may be executed in one or more counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument.

[SIGNATURE PAGE FOLLOWS]

IN WITNESS WHEREOF, the parties have caused this Agreement to be executed, with the effective date being the date of the latest signature below.

**TOWN OF COLCHESTER**

By: \_\_\_\_\_  
Gregg B. Schuster  
First Selectman  
Date Signed: \_\_\_\_\_

**MARION BODY WORKS, INC.**

By: \_\_\_\_\_  
Name:  
Title:  
Date Signed: \_\_\_\_\_

## **SCHEDULE A**

The SPECIFICATIONS consist of the following attachments:

1. Town of Colchester, Connecticut Colchester Fire Department 2013 Rescue Fire Apparatus Bid Form
2. Summary of Proposal
3. Clarifications
4. Specification
5. Colchester Rescue Body

**SCHEDULE B**

Attached RFP

**SCHEDULE C**

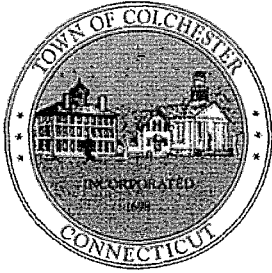
Attached Form of Bonds

## SCHEDULE A

The SPECIFICATIONS consist of the following attachments:

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TOWN OF COLCHESTER, CONNECTICUT  
COLCHESTER FIRE DEPARTMENT  
2013 RESCUE FIRE APPARATUS BID FORM



**Bidder:**

Name: MARION BODY WORKS, INC.

Address: 211 W. RAMSDEN

City / State: MARION, WI 54950

Phone: 715-754-5261

FAX: 715-754-1301

Contact Person: JON SCHRUMM

Phone: (if different than above) 203-217-5809

FAX (if different than above) 203-272-6833

Base Bid: \$ 449, 790 thousand, dollars, and 00 cents.

*FOR NEW RESCUE BODY WITH TRADE-IN AND SNOW TOW*

**Alternate #1— SIDE ROLLOVER & AIR BAG PROTECTION**

The apparatus shall be equipped with a side rollover air bag protection system consisting of the following major components:

**Inflatable Tubular Structures (ITS)**

The ITS portion of the system consists of a tubular side airbag designed to protect the occupant's head during a rollover. The airbags shall be installed outboard of the driver and officer's seating positions. The airbag is attached to the vehicle at each end. Before deployment, it is normally stowed above the side window. As the diameter of the airbag increases during inflation, its length decreases. The deployed airbag; generates tension between attachment points and is positioned to protect the specified range of occupants. While stowed in the vehicle, the airbag is contained inside a trim cover. The trim cover opens and releases the airbag during deployment. The trim components are elastomeric extrusions that are attached to the vehicle interior. They are integrated into the vehicle interior to meet styling and functional requirements. The system uses a stored-gas inflator to generate inflation gases.

**Suspension Seat Safety System**

The seat and occupant pretensioning system using a stored gas powered actuator to pretension the front occupant's belt and pull down the suspension seat during a roll over. It is designed to "safely" move an occupant ranging from a 5th percentile female to a 95th percentile male, from an elevated position relative to normal driving conditions, to the seats lowest position while maintaining a tightened belt. This action {will/shall} occur in 100 to 180 milliseconds. For the S4S mechanism to provide adequate impulse to move the mass of a 95th percentile occupant in the prescribed time, it is necessary that the device produce a substantial force.

**Inflatable Head Curtain (IHC)**

The Inflatable Head Curtain shall be a state-of-the-art, pyrotechnic device designed to be compact and modular, assembly shall be installed outboard of the driver, officer and outboard crew seating position within the apparatus.

**Integrated Buckle Pretensioner (IBP)**

The Buckle Pretensioner is a pretensioning system using a micro gas generator to pretension the occupant's belt during a roll over. The Buckle Pretensioner is mounted in all protected static seating positions. The pretensioner deploys upon receiving a signal from the rollover sensor.

FOR THE ADDITIONAL SUM OF \$ 5,500.00

**Interior 12 Volt And 120 Volt Lighting**

Remove existing 12 volt and 120 volt interior ceiling lighting.

**Interior Bench Seat And Safety Belts**

Remove existing interior bench seat and safety belts.

**Body Interior Diamond Plate**

Remove existing flooring and side walls.

**Body Interior Ceiling**

Remove existing ceiling material.

**Underbody Lights**

Remove existing underbody "Ground Effect" lights.

**Body Rub Rail**

Remove existing Stainless Steel Rub Rail.

**Exterior Compartment Lighting**

Remove 12-volt incandescent light fixtures in the exterior compartments.

**SVI Light Tower And Associated Components**

Remove the current SVI light tower located in compartments L5 – R-5 along with associated plumbing wiring. Remove from compartment R-1 all SVI light tower controls and associated equipment.

FOR THE TOTAL SAVINGS OF \$ NO BID

**Alternate #3— LOOSE EQUIPMENT**

Each bidder shall quote the following loose equipment list. They shall show individual pricing. The Colchester Fire Department reserves the right to choose any, all or none of these items. If any item/s are chosen, it will be an add-on to the main bid price.

One (1) 20# ABC fire extinguisher with vehicle mounting bracket  
FOR THE SUM OF \$ 150.00

One (1) 15# CO2 fire extinguisher with vehicle mounting bracket  
FOR THE SUM OF \$ 250.00

One (1) 2-1/2 gallon pressurized water fire extinguisher w/fire hooks unlimited shoulder strap #CH-312  
FOR THE SUM OF \$ 120.00

One (1) 2-1/2 gallon pressurized AFFF fire extinguisher w/ fire hooks unlimited shoulder strap #CH-312  
FOR THE SUM OF \$ 140.00

One (1) Fire Hooks Unlimited Lock-Slot 8lb Forcible Entry Axe  
FOR THE SUM OF \$ 100.00

One (1) Fire Hooks Unlimited Lock-Slot 8lb Forcible Entry Axe  
FOR THE SUM OF \$ 100.00

One (1) Fire Hooks Unlimited Maximus Forcible Entry Tool  
FOR THE SUM OF \$ 200.00

One (1) Fire Hooks Unlimited Maximus Forcible Entry Tool  
FOR THE SUM OF \$ 200.00

One (1) Fire Hooks Unlimited 6' NY Roof Hook.  
FOR THE SUM OF \$ 100.00

One (1) 36" Bolt cutter  
FOR THE SUM OF \$ 190.00

One (1) Fire Hooks Unlimited 10lb Sledge Hammer  
FOR THE SUM OF \$ 90.00

One (1) 17' Little Giant Type IA-300 lb rated, Model 10102  
FOR THE SUM OF \$ 450.00

One (1) Tempest 16" Ventmaster Chainsaw Model # 576HD-DG  
FOR THE SUM OF \$ 1650.00

One (1) Res-Q-Jack ALX-4PTX Aluminum X Deluxe 4-Point Kit  
FOR THE SUM OF \$ 2,000.00

Two (2) 100 foot lengths of TNT Rescue Tool reel hose P/N **HRH-100-NEX**. 3/8"ID twin line 10,500 psi reel hose with Nexus connector on one end and #4 JIC on the reel end.  
FOR THE SUM OF \$ 7,000

**FOR THE TOTAL ADDITIONAL SUM OF \$ \_\_\_\_\_**

Alt #3

\$ 18,740

**Alternate #4—SPEEDI DRI STORAGE DELIVERY SYSTEM**

Add speedy-dri storage and dispensing system in the top of compartment L-5. A dispensing tube and control valve shall be provided at the rear of the apparatus. The storage system shall hold 200lb's of martial. The exact location to be determined during the pre-construction conference.

**FOR THE ADDITIONAL SUM OF \$** 1,900.00

**Alternate #5— REAR HITCH RECEIVER**

A hitch receiver shall be installed at the rear of the apparatus. The hitch shall be constructed of heavy steel tubing and reinforced to the truck framework, for the receiving portion, including a heavy-duty slide-in tube with a ball. This shall be a class IV trailer hitch. The class IV rating is 10,000 pounds towing and 1000 pounds tongue with weight disturbing hitch. The slide-in portion shall be held in place by two (2) safety pins with clips. A seven-prong trailer-wiring plug and a 12-volt winch electrical plug shall be provided at the rear with a weatherproof snap cover.

**FOR THE ADDITIONAL SUM OF \$** 1,000.00

**Alternate #6— SIDE HITCH RECEIVERS**

An anchor point hitch receiver shall be installed at the sides of the apparatus in front of the rear wheels. The hitch shall be constructed of heavy steel tubing and reinforced to the truck framework, for the receiving portion, including a heavy-duty slide-in tube with a D Ring anchor point. The slide-in portion shall be held in place with a safety pin with a clip. The hitch shall have a 10,000 lb rating. A heavy gauge 12-volt wire and electrical plug with weather proof snap cover shall be provided mounted adjacent to the hitch receiver with a weatherproof snap cover.

**FOR THE ADDITIONAL SUM OF \$** 3,200.00

**Alternate #7— MINI REFRIGERATOR**

Provide and install in the interior rear street side compartment a mini refrigerator. The size and proper drainage to be recommended by the bidder.

**FOR THE ADDITIONAL SUM OF \$** 500.00

**Alternate #8— HYDRAULIC REEL WITH CAPACITY FOR 100' OF HOSE**

Provide two (2) new hydraulic hose reels located in compartments L-2 and R-2. There will be one (1) provided in each compartment along with the existing hose reels in each compartment. Compartments L-2 and R-2 will have a total of two (2) reels in each. One (1) existing and one (1) new in each compartment. The reel shall be operated by a 12 volt electric motor controlled by a rewind switch. The motor shall be protected by a circuit breaker and the rewind circuit shall be protected by a fuse. The switch shall be guarded to prevent accidental operation and installed at a height not to exceed 72 inches above the operators standing position.

The reel capacity shall be able to fit a 100 foot length of TNT Rescue Tool reel hose with 3/8" ID twin line 10,500 psi with Nexus connector on one end and #4 JIC on the reel end. Surfaces where the hose comes in contact with the reel roller shall be constructed of stainless steel, chrome plated steel or plastic. A captive roller assembly shall be provided to aid in the payout and loading of the reel.

**FOR THE ADDITIONAL SUM OF \$** 5,600.00

**All Alternates**

**Additional Cost of:** \$ \_\_\_\_\_, \_\_\_\_\_ thousand, dollars, and \_\_\_\_\_ cents.

TOWN OF COLCHESTER, CONNECTICUT FIRE DEPARTMENT

2013 RESCUE FIRE APPARATUS BID FORM

Delivery and Acceptance shall be completed within 390 calendar days from the date of contract execution.

The company does does not carry product liability insurance. If carried, the amount is \$ 10,000,000. Claims against product liability;

Claims NONE Amounts \_\_\_\_\_

Claims \_\_\_\_\_ Amounts \_\_\_\_\_

Claims \_\_\_\_\_ Amounts \_\_\_\_\_

Claims against the company for other liabilities.

Claims NONE Amounts \_\_\_\_\_

Claims \_\_\_\_\_ Amounts \_\_\_\_\_

Claims \_\_\_\_\_ Amounts \_\_\_\_\_

TOWN OF COLCHESTER, CONNECTICUT FIRE DEPARTMENT

2013 RESCUE FIRE APPARATUS BID FORM

References;

1. Number of years the Bidder has been engaged in the manufacture of fire apparatus:

50 years.

2. List the dollar volume of fire apparatus sales for the previous year.

\$ 25,000,000.00

3. List six (6) recent deliveries or those under construction of fire apparatus of similar construction on similar chassis. Provide those customers closest to Colchester, Ct.

Customer	Amount of contract	Del. Date
1. <u>Mystic, CT</u>	<u>420,000</u>	<u>9/13</u>
2. <u>Trumbull, CT</u>	<u>525,000</u>	<u>9/11</u>
3. <u>Norwalk, CT</u>	<u>430,000</u>	<u>5/10</u>
4. <u>East Fishkill, NY</u>	<u>520,000</u>	<u>7/10</u>
5. <u>Storrford, CT</u>	<u>458,000</u>	<u>11/11</u>
6. <u>North Storingdon, CT</u>	<u>500,000</u>	<u>7/08</u>

Provide an additional list of fifteen customers of fire apparatus within the past 3 years. Attached to this Bid Form .

4. Has the Bidder ever failed to deliver work awarded; if so, state customer's name and why:

No

5. Surety:

Fidelity and Deposit Company, Waukesha, Wisconsin

6. Bank Reference:

U.S. BANK  
ALAN HOLMAN 414-765-5692



TOWN OF COLCHESTER, CONNECTICUT FIRE DEPARTMENT

2013 RESCUE FIRE APPARATUS BID FORM

7. Major Material Suppliers:

1. Gordon Aluminum
2. Allegis Corp.
3. Elson Electric
4. Whelen Engineering
5. Hale Fire Pump

8. List the Name, address and telephone of the repair facility nearest to Colchester, Ct. where warranty and service work will be conducted:

Cab and Chassis, NORTHEASTERN FIRE  
128 BLACKS ROAD  
CHESTER, CT 06410

Rescue Body SAME

9. Provide the name, and address of the factory where the proposed fire apparatus will be manufactured: MARION, WI

10. Provide the name, and address of the factory where the proposed cab and chassis will be manufactured: SPARTAN MOTORS, CHARLOTTE, NC

TOWN OF COLCHESTER, CONNECTICUT FIRE DEPARTMENT

2013 RESCUE FIRE APPARATUS BID FORM

The undersigned agrees to provide all necessary materials and labor for the construction, delivery, and acceptance and to provide warranty services for the periods stipulated for the construction of the proposed Fire Apparatus for the Colchester Fire Department, Town of Colchester, Connecticut listing all exceptions to the Bid Specifications.

The undersigned also warrants to the Town of Colchester that the company, its agents or employees have not participated in any collusion with any other agent or employee of any other bidder in setting of the Bid prices herein.

Rob Rosenau, PROJECT ADMINISTRATOR  
Authorized Signature Title

ROB ROSENAU, 7-9-13  
Corporate Seal

Print Name of Signature Date 7/09/13

Witnessed Signature by  
Notary

Lynn M. Kroening  
Lynn M. Kroening  
Notary Seal

## Summary of Proposal

In reviewing your RFP and the scope of the body remounting, it became apparent that the logistic, engineering, fabrication, and disposal of existing rescue chassis were going to be as costly as a new unit. In an effort to optimize this undertaking we propose the following:

Instead of remounting the existing body on a new chassis, Marion would build a new rescue in entirety and take the other rescue in trade. By keeping the old rescue intact, we believe there is residual value to be unlocked keeping it whole and reselling it. Your fire department does not have to be without the use of the rescue vehicle during modifications and transport as would otherwise be the case.

With the construction of a new rescue body, marriage to the new chassis would be smoother and design changes desired by the department can be more readily accommodated. Holes for lights, doors, etc. do not have to be filled and fit up for new equipment would be better and more up to date revisions incorporated into the design. Interior/exterior compartments can be laid out in a more useful manner as well as light tower recess, matching roof, etc.

In exchange for this discounted new unit, Marion would have the opportunity take this new state of the art completed vehicle to trade-shows/demos during next year's summer show season, delivering the truck to your department in the fall of 2014. It would be delivered in "new condition" with a more comprehensive factory warranty beginning at that date. This offer assumes prompt ordering and submittal process and reasonable acceptance of the offer on the part of the Town of Colchester. It would be understood the old rescue truck to be turned over in same good working order as it is at time of agreement after new unit is placed in-service for sale.

## Clarifications

- 1) Terms for proposed unit: \$250,000.00 upon delivery of chassis to our plant. \$150,000.00 upon completion with balance upon delivery.
- 2) Stainless body option – Add \$15,000.00 to the price of our proposal.
- 3) Because of cab dimensional changes, body size may need to change to keep in same size footprint.
- 4) Because of axle sizes selected, disc brakes may be required.
- 5) Because of proposal for a new body, we are offering a 15 year warranty on the body, exceeding your requirements.

# *Specification*

## **MODEL**

The chassis shall be a Metro Star model. The cab and chassis shall include design considerations for multiple emergency vehicle applications, rapid transit and maneuverability. The chassis shall be manufactured for heavy duty service with the strength and capacity to support a fully laden apparatus, one hundred (100) percent of the time.

## **MODEL YEAR**

The chassis shall have a vehicle identification number that reflects a 2013 model year.

## **COUNTRY OF SERVICE**

The chassis shall be put in service in the country of United States of America (USA).

The chassis will meet applicable U.S.A. federal motor vehicle safety standards per CFR Title 49 Chapter V Part 571 as clarified in the incomplete vehicle book per CFR Title 49 Chapter V Part 568 Section 4 which accompanies each chassis. Spartan Chassis is not responsible for compliance to state, regional, or local regulations. Dealers should identify those regulations and order any necessary optional equipment from Spartan Chassis or their OEM needed to be in compliance with those regulations.

## **APPARATUS TYPE**

The apparatus shall be a rescue vehicle designed for emergency service use which shall include the functions of a multipurpose vehicle which primarily provides support services at emergency scenes.

## **VEHICLE TYPE**

The chassis shall be manufactured for use as a straight truck type vehicle and designed for the installation of a permanently mounted apparatus behind the cab. The apparatus of the vehicle shall be supplied and installed by the apparatus manufacturer.

## **AXLE CONFIGURATION**

The chassis shall feature a 4 x 2 axle configuration consisting of a single rear drive axle with a single front steer axle.

## **GROSS AXLE WEIGHT RATINGS FRONT**

The front gross axle weight rating (GAWR) of the chassis shall be 22,800 pounds.

This front gross axle weight rating shall be adequate to carry the weight of the completed apparatus including all equipment and personnel.

## **GROSS AXLE WEIGHT RATINGS REAR**

The rear gross axle weight rating (GAWR) of the chassis shall be 27,000 pounds.

This rear gross axle weight rating shall be adequate to carry the weight of the completed apparatus including all equipment and personnel.

## **CAB STYLE**

The cab shall be a custom, fully enclosed, ELFD model with a 24.00 inch raised roof over the driver, officer, and crew area, designed and built specifically for use as an emergency response vehicle by a company specializing in cab and chassis design for all emergency response applications. The cab shall be designed for heavy-duty service utilizing superior strength and capacity for the application of protecting the occupants of the vehicle. This style of cab shall offer up to ten (10) seating positions.

The cab shall incorporate a fully enclosed design with side wall roof supports, allowing for a spacious cab area with no partition between the front and rear sections of the cab. To provide a superior finish by reducing welds that fatigue cab metal; the roof, the rear wall and side wall panels shall be assembled using a combination of welds and proven industrial adhesives designed specifically for aluminum fabrication for construction.

The cab shall be constructed using multiple aluminum extrusions in conjunction with aluminum plate, which shall provide proven strength and the truest, flattest body surfaces ensuring less expensive paint repairs if needed. All aluminum welding shall be completed to the American Welding Society and ANSI D1.2-96 requirements for structural welding of aluminum.

All interior and exterior seams shall be sealed for optimum noise reduction and to provide the most favorable efficiency for heating and cooling retention.

The cab shall be constructed of 5052-H32 corrosion resistant aluminum plate. The cab shall incorporate tongue and groove fitted 6061-T6 0.13 & 0.19 inch thick aluminum extrusions for extreme duty situations. A single formed, one (1) piece extrusion shall be used for the "A" pillar, adding strength and rigidity to the cab as well as additional roll-over protection. The cab side walls and lower roof skin shall be 0.13 inch thick; the rear wall and raised roof skins shall be 0.09 inch thick; the front cab structure shall be 0.19 inch thick.

The exterior width of the cab shall be 94.00 inches wide with a minimum interior width of 88.00 inches. The overall cab length shall be 151.10 inches with 74.00 inches from the centerline of the front of the axle to the back of the cab.

The cab interior shall be designed to afford the maximum usable interior space and attention to ergonomics with hip and legroom while seated which exceeds industry standards. The crew cab floor shall be flat across the entire walking area for ease of movement inside the cab.

The cab shall offer an interior height of 57.50 inches from the front floor to the headliner and a rear floor to headliner height of 79.00 inches in the raised roof area, at a minimum. The cab shall offer an interior measurement at the floor level from the rear of the engine tunnel to the rear wall of the cab of 69.88 inches. All interior measurements shall include the area within the interior trimmed surfaces and not to any unfinished surface.

The cab shall include a driver and officer area with two (2) cab doors large enough for personnel in full firefighting gear. The front doors shall offer a clear opening of 40.25 inches wide X 53.50 inches high, from the cab floor to the top of the door opening. The cab shall also include a crew area with up to two (2) cab doors, also large enough for personnel in full firefighting gear. The rear doors shall offer a clear opening of 32.25 inches wide X 71.00 inches high, from the cab floor to the top of the door opening.

The cab shall incorporate a progressive two (2) step configuration from the ground to the cab floor at each door opening. The progressive steps are vertically staggered and extend the full width of each step well allowing personnel in full firefighting gear to enter and exit the cab easily and safely.

The first step for the driver and officer area shall measure approximately 11.50 inches deep X 31.50 inches wide. The intermediate step shall measure approximately 8.50 inches deep X 33.00 inches wide. The height from the first step to the intermediate step and the intermediate step to the cab floor shall not exceed 11.00 inches.

The first step for the crew area shall measure approximately 11.50 inches deep X 21.50 inches wide. The intermediate step shall measure approximately 10.25 inches deep X 22.50 inches wide. The height from the first step to the intermediate step and the intermediate step to the cab floor shall not exceed 12.50 inches.

### **CAB FRONT FASCIA**

The front cab fascia shall be constructed of 5052-H32 Marine Grade, 0.13 of an inch thick aluminum plate which shall be an integral part of the cab.

The cab fascia will encompass the entire front of the aluminum cab structure from the bottom of the windshield to the bottom of the cab and shall be the "Classic" design.

The front cab fascia shall include two (2) molded plastic modules on each side accommodating a total of up to four (4) Hi/Low beam headlights and two (2) turn signal lights or up to four (4) warning lights. A chrome plated molded plastic bezel shall be provided on each side around each set of four lamps.

### **FRONT GRILLE**

The front fascia shall include a box style, 304 stainless steel front grille 44.45 inches wide X 33.50 inches high X 1.50 inches deep. The grille shall include a minimum free air intake of 732.00 square inches.

### **CAB UNDERCOAT**

There shall be a rubberized undercoating applied to the underside of the cab that provides abrasion protection, sound deadening and corrosion protection.

### **CAB SIDE DRIP RAIL**

There shall be a drip rail along the top radius of each cab side. The drip rails shall help prevent water from the cab roof running down the cab side.

### **CAB PAINT EXTERIOR**

The cab shall be painted prior to the installation of glass accessories and all other cab trim to ensure complete paint coverage and the maximum in corrosion protection of all metal surfaces.

All metal surfaces on the entire cab shall be ground by disc to remove any surface oxidation or surface debris which may hinder the paint adhesion. Once the surface is machine ground a high quality acid etching of base primer shall be applied. Upon the application of body fillers and their preparation, the cab shall be primed with a coating designed for corrosion resistance and surface paint adhesion. The maximum thickness of the primer coat shall be 2.00 mils.

The entire cab shall then be coated with an intermediate solid or epoxy surfacing agent that is designed to fill any minor surface defects, provide an adhesive bond between the primer and the paint and improve the color and gloss retention of the color. The finish to this procedure shall be a sanding of the cab with 360 grit paper followed by sealing the seams with SEM brand seam sealer.

The cab shall then be painted the specific color designated by the customer with an acrylic urethane type system designed to retain color and resist acid rain and most atmospheric chemicals found on the fire ground or emergency scene. The paint shall have a minimum thickness of 2.00 mils, followed by a clear top coat not to exceed 2.00 mils. The entire cab shall then be baked at 180 degrees for one (1) hour to speed the curing process of the coatings.

#### **CAB PAINT MANUFACTURER**

The cab shall be painted with PPG Industries paint.

#### **CAB PAINT PRIMARY/LOWER COLOR**

The primary/lower paint color shall be PPG FBCH 83210 Yellow.

#### **CAB PAINT SECONDARY/UPPER COLOR**

The secondary/upper paint color shall be:

#### **CAB PAINT EXTERIOR BREAKLINE**

The upper and lower paint shall meet at a breakline on the cab which shall be located approximately 1.00 inch below the door windows on each side of the cab. The breakline shall curve down at the front cab corners to approximately 5.00 inches below the windshields on the front of the cab.

#### **CAB PAINT PINSTRIPE**

Where the upper and lower paint colors meet a temporary 0.50 inch wide black pinstripe shall be applied over this break line to offer a more finished look prior to the final pinstripe being installed by the OEM.

#### **CAB PAINT WARRANTY**

The cab and chassis shall be covered by a limited manufacturer paint warranty which shall be in effect for ten (10) years from the first owner's date of purchase or in service or the first 100,000 actual miles, whichever occurs first.

#### **CAB PAINT INTERIOR**

The visible interior cab structure surfaces shall be painted with a Zolatone #20-72 silver gray texture finish.

#### **CAB ENTRY DOORS**

The cab shall include four (4) entry doors, two (2) front doors and two (2) crew doors designed for ease of entering and egress when outfitted with an SCBA. The doors shall be constructed of extruded aluminum with a nominal thickness of 0.13 inch. The exterior skins shall be constructed of 0.13 inch aluminum plate.

The doors shall include a double rolled style automotive rubber seal around the perimeter of each door frame and door edge which ensures a weather tight fit.



All door hinges shall be hidden within flush mounted cab doors for a pleasing smooth appearance and perfect fit along each side of the cab. Each door hinge shall be piano style with a 0.38 inch pin and shall be constructed of stainless steel.

### **CAB ENTRY DOOR TYPE**

All cab entry doors shall be full length in design to fully enclose the lower cab steps.

### **LH EXTERIOR REAR COMPARTMENT**

The cab shall offer an exterior compartment on the left side of the cab behind the rear door. The compartment opening shall be 17.00 inches wide X 21.19 inches high. The compartment size shall be 17.34 inches wide X 21.19 inches high X 21.19 inches deep. The compartment shall have a 16.63 inch wide, 32.00 inch high and 1.50 inch thick hinged box pan style flush mount door with a bright aluminum tread plate inner panel and a bent D-ring slam latch. There shall be a switch to activate a light inside the compartment and the open compartment warning light in the cab in the event the door is left ajar.

### **LEFT HAND EXTERIOR REAR COMPARTMENT LIGHTING**

There shall be one (1) SoundOff Signal brand LED strip light installed to illuminate the exterior rear compartment on the left side of the cab. The strip light shall be 10.00 inches long and shall include three (3) bright white Gen3 LEDs.

### **LH EXTERIOR COMPARTMENT INTERIOR FINISH**

The interior of the left hand exterior compartment shall have a DA sanded finish.

### **RH EXTERIOR REAR COMPARTMENT**

The cab shall offer an exterior compartment on the right side of the cab behind the rear door. The compartment opening shall be 17.00 inches wide X 21.19 inches high. The compartment size shall be 17.34 inches wide X 21.19 inches high X 21.19 inches deep. The compartment shall have a 16.63 inch wide, 32.00 inch high and 1.50 inch thick hinged box pan style flush mount door with a bright aluminum tread plate inner panel and a bent D-ring slam latch. There shall be a switch to activate a light inside the compartment and the open compartment warning light in the cab in the event the door is left ajar.

### **RIGHT HAND EXTERIOR REAR COMPARTMENT LIGHTING**

There shall be one (1) SoundOff Signal brand LED strip light installed to illuminate the exterior rear compartment on the right side of the cab. The strip light shall be 10.00 inches long and shall include three (3) bright white Gen3 LEDs.

### **RH EXTERIOR COMPARTMENT INTERIOR FINISH**

The interior of the right hand exterior compartment shall have a DA sanded finish.

### **REAR CAB WALL CUTOUT**

The rear wall of the cab shall include a cut out which measures 36.00 inches wide X 76.50 inches tall to accommodate a walk through application.

### **CAB STRUCTURAL WARRANTY**

The cab structure shall be warranted for a period of ten (10) years or one hundred thousand (100,000) miles which ever may occur first. Warranty conditions may apply and shall be listed in the detailed warranty document that shall be provided upon request.

### **CAB TEST INFORMATION**

The cab shall have successfully completed the preload side impact, static roof load application and frontal impact without encroachment to the occupant survival space when tested in accordance with Section 4 of SAE J2420 COE Frontal Strength Evaluation Dynamic Loading Heavy Trucks, Section 5 of SAE J2422 Cab Roof Strength Evaluation Quasi –Static Loading Heavy Trucks and ECE R29 Uniform Provisions Concerning the Approval of Vehicles with regard to the Protection of the Occupants of the Cab of a Commercial Vehicles Annex 3 Paragraph 5.

The above tests have been witnessed by and attested to by an independent third party. The test results were recorded using cameras, high speed imagers, accelerometers and strain gauges. Documentation of the testing shall be provided upon request.

### **ELECTRICAL SYSTEM**

The chassis shall include a single starting electrical system which shall include a 12 volt direct current system, suppressed per SAE J551. The wiring shall be appropriate gauge cross link with 311 degree Fahrenheit insulation. All SAE wires in the chassis shall be color coded and shall include the circuit number and function where possible. The wiring shall be protected by 275 degree Fahrenheit minimum high temperature flame retardant loom.

### **APPARATUS WIRING PROVISION**

An apparatus wiring panel shall be installed in the center dash area behind the rocker switch panel which shall include eight (8) open circuits consisting of three (3) 20 amp, one (1) 30 amp, three (3) 10 amp, and one (1) 15 amp circuit, with relays and breakers with trigger wires which shall be routed to the rocker switch panel.

### **LOAD MANAGEMENT SYSTEM**

The apparatus shall be equipped with a Class 1 Total System Manager (TSM) for performing electrical load management. The TSM shall have sixteen (16) programmable outputs to supply warning and load switching requirements. Outputs one (1) through twelve (12) shall be independently programmable to activate during the scene mode, the response mode, or both. These outputs can also be programmed to activate with the ignition or master warning switch, or to sequence and shed along with the priority. Output thirteen (13) shall be designated to activate a fast idle system. Output fourteen (14) shall provide a low voltage warning for an isolated battery. Output fifteen (15) is a user configurable output and shall be programmable for activating between 10.50 and 15.00 volts. Output sixteen (16) shall provide a low voltage alarm that activates at the NFPA required 11.80 volts. The TSM shall have a digital display to indicate system voltage in normal operation mode and also indicate the output configuration during programming mode. The TSM shall be protected against reverse polarity and shorted outputs and be enclosed in a metal enclosure to enhance EMI/RFI protection.

### **DATA RECORDING SYSTEM**

The chassis shall have a Class One Vehicle Data Recorder (VDR) system installed. The system shall be designed to meet NFPA 1901. The following information shall be recorded:

- Vehicle Speed
- Acceleration
- Deceleration
- Engine Speed
- Engine Throttle Position
- ABS Event
- Seat Occupied Status

- Seat Belt Status
- Master Optical Warning Device Switch Position
- Time
- Date

Each portion of the data shall be recorded at the specified intervals and stored for the specified length of time to meet NFPA 1901 guidelines and shall be retrievable by connecting a laptop computer to the VDR system. The laptop connection shall be a panel mounted female type B USB connection point, remotely mounted in the left side foot well of the cab.

#### **ACCESSORY POWER DISTRIBUTION PANEL**

An accessory power distribution panel shall be installed behind the officers' seat. The panel shall feature ten (10) blade type fuses protected by a 40 amp fuse. The panel shall be capable of carrying up to a maximum 40 amp battery direct load.

#### **ACCESSORY POWER**

The electrical distribution panel shall include two (2) power studs. The studs shall be size #10 and each of the power studs shall be circuit protected with a fuse of the specified amperage. One (1) power stud shall be capable of carrying up to a 40 amp battery direct load. One (1) power stud shall be capable of carrying up to a 15 amp ignition switched load. The two (2) power studs shall share one (1) #10 ground stud.

#### **AUXILIARY ACCESSORY POWER**

An auxiliary set of power and ground studs shall be provided and installed in the driver side under seat storage compartment. The power and ground studs shall be circuit protected with a 40 amp breaker. The studs shall be 0.38 inch diameter and be capable of carrying up to a 40 amp battery direct load.

#### **ADDITIONAL ACCESSORY POWER**

An additional set of power and ground studs shall be provided and installed behind the electrical center cover with a 40 amp breaker. The studs shall be 0.38 inch diameter and capable of carrying up to a 40 amp battery direct load.

#### **EXTERIOR ELECTRICAL TERMINAL COATING**

All terminals exposed to the elements will be sprayed with a high visibility protective rubberized coating to prevent corrosion.

#### **ENGINE**

The chassis engine shall be a Cummins ISL9 engine. The ISL9 engine shall be an in-line six (6) cylinder, four cycle diesel powered engine. The engine shall offer a rating of 450 horse power at 2100 RPM and shall be governed at 2200 RPM. The torque rating shall feature 1250 foot pounds of torque at 1400 RPM with 543 cubic inches (8.9 liter) of displacement.

The ISL9 engine shall feature a VGT™ Turbocharger, a high pressure common rail fuel system, fully integrated electronic controls with an electronic governor, and shall be EPA certified to meet the 2010 emissions standards using cooled exhaust gas recirculation and selective catalytic reduction technology.

The engine shall include an engine mounted combination full flow/by-pass oil filter with replaceable spin on cartridge for use with the engine lubrication system. The engine shall include Citgo brand

Citgard 500, or equivalent SAE 15W40 CJ4 low ash engine oil which shall be utilized for proper engine lubrication.

A wiring harness shall be supplied ending at the back of the cab. The harness shall include a connector which shall allow an optional harness for the pump panel. The included circuits shall be provided for a tachometer, oil pressure, engine temperature, hand throttle, high idle and a PSG system. A circuit for J1939 data link shall also be provided at the back of the cab.

#### **CAB ENGINE TUNNEL**

The cab interior shall include an integrated engine tunnel constructed of 5052-H32 Marine Grade, 0.19 of an inch thick aluminum. The tunnel shall be a maximum of 41.50 inches wide X 25.50 inches high.

#### **DIESEL PARTICULATE FILTER CONTROLS**

There shall be two (2) controls for the diesel particulate filter. One (1) control shall be for regeneration and one (1) control shall be for regeneration inhibit.

#### **ENGINE PROGRAMMING HIGH IDLE SPEED**

The engine high idle control shall maintain the engine idle at approximately 1200 RPM when engaged.

#### **ENGINE HIGH IDLE CONTROL**

The vehicle shall be equipped with a high-idle speed control rocker switch, which shall be pre-set to maintain the engine idle at a pre-determined rate when activated manually. This device shall operate when the master switch is activated and safely interlocked only to function when the transmission is in neutral with the parking brake set.

#### **ENGINE PROGRAMMING ROAD SPEED GOVERNOR**

The engine shall include programming which will govern the top speed of the vehicle.

#### **AUXILIARY ENGINE BRAKE**

A compression brake, for the six (6) cylinder engine shall be provided. A cutout relay shall be installed to disable the compression brake when in pump mode or when an ABS event occurs. The engine compression brake shall activate upon 0% accelerator when in operation mode and actuate the vehicle's brake lights.

The engine shall utilize a variable geometry turbo (VGT) as an integrated auxiliary engine brake to offer a variable rate of exhaust flow, which when activated in conjunction with the compression brake shall enhance the engine's compression braking capabilities.

#### **AUXILIARY ENGINE BRAKE CONTROL**

An engine compression brake control device shall be included. The electronic control device shall monitor various conditions and shall activate the engine brake only if all of the following conditions are simultaneously detected:

- A valid gear ratio is detected.
- The driver has requested or enabled engine compression brake operation.
- The throttle is at a minimum engine speed position.
- The electronic controller is not presently attempting to execute an electronically controlled final drive gear shift.

The compression brake shall be controlled through an on/off switch and a low/medium/high selector switch.

### **ELECTRONIC ENGINE OIL LEVEL INDICATOR**

The engine oil shall be monitored electronically and shall send a signal to activate a warning in the instrument panel when levels fall below normal. The warning shall activate in a low oil situation upon turning on the master battery and ignition switches without the engine running.

### **FLUID FILLS**

The engine oil, coolant, transmission, and power steering fluid fills shall be located under the cab. The windshield washer fill shall be accessible through the front left side mid step.

### **ENGINE DRAIN PLUG**

The engine shall include an original equipment manufacturer installed oil drain plug.

### **ENGINE WARRANTY**

The Cummins engine shall be warranted for a period of five (5) years or 100,000 miles, whichever occurs first.

### **ENGINE PROGRAMMING REMOTE THROTTLE**

The engine ECM (Electronic Control Module) discreet wire remote throttle circuit shall be turned off for use with a J1939 based pump controller or when the discreet wire remote throttle controls are not required.

### **ENGINE PROGRAMMING IDLE SPEED**

The engine low idle speed will be programmed at 700 rpm.

### **ENGINE FAN DRIVE**

The engine cooling system fan shall incorporate a thermostatically controlled, Horton clutched type fan drive.

When the clutched fan is disengaged it shall facilitate improved vehicle performance, cab heating in cold climates, and fuel economy. The fan clutch design shall be fail safe so that if the clutch drive fails the fan shall engage to prevent engine overheating due to the fan clutch failure.

### **ENGINE COOLING SYSTEM**

There shall be a heavy-duty aluminum cooling system designed to meet the demands of the emergency response industry. The cooling system shall have the capacity to keep the engine properly cooled under all conditions of road and pumping operations. The cooling system shall be designed and tested to meet or exceed the requirements specified by the engine and transmission manufacturer and all EPA requirements. The complete cooling system shall be mounted to isolate the entire system from vibration or stress. The individual cores of the cooling system shall be mounted in a manner to allow expansion and contraction at various rates without inducing stress into the adjoining cores.

The cooling system shall utilize a charge air cooler to radiator serial flow package that provides the maximum cooling capacity for the specified engine as well as serviceability. The main components shall include a surge tank, an air to air charge air cooler bolted to the front of the radiator, recirculation shields, a shroud, a fan, and required tubing.

The radiator shall be a down-flow design constructed with aluminum cores, plastic end tanks, and a steel frame. The radiator shall be equipped with a drain cock to drain the coolant for serviceability.

The cooling system shall include a one piece injection molded polymer eleven (11) blade fan with a fiberglass fan shroud.

The cooling system shall be equipped with a surge tank that is capable of removing entrained air from the system. The surge tank shall be equipped with a low coolant probe and sight glass to monitor the level of the coolant. The surge tank shall have a dual seal cap that meets the engine manufacturer's pressure requirements, and allows for expansion and recovery of coolant into a separate integral expansion chamber.

All radiator tubes shall be formed from aluminized steel tubing. Recirculation shields shall be installed where required to prevent heated air from reentering the cooling package and affecting performance.

The charge air cooler shall be a cross-flow design constructed completely of aluminum with cast tanks. All charge air cooler tubes shall be formed from aluminized steel tubing and installed with silicone hump hoses and stainless steel "constant torque" style clamps meeting the engine manufacturer's requirements.

#### **ENGINE COOLING SYSTEM PROTECTION**

The engine cooling system shall include a recirculation shield designed to act as a light duty skid plate below the radiator to provide additional protection for the engine cooling system from light impacts, stones, and road debris.

#### **ENGINE COOLANT**

The cooling package shall include Extended Life Coolant (ELC). The use of ELC provides longer intervals between coolant changes over standard coolants providing improved performance. The coolant shall contain a 50/50 mix of ethylene glycol and de-ionized water to keep the coolant from freezing to a temperature of -34 degrees Fahrenheit.

Proposals offering supplemental coolant additives (SCA) shall not be considered, as this is part of the extended life coolant makeup.

#### **ELECTRONIC COOLANT LEVEL INDICATOR**

The instrument panel shall feature a low engine coolant indicator light which shall be located in the center of the instrument panel. An audible tone alarm shall also be provided to warn of a low coolant incident.

#### **COOLANT HOSES**

The cooling system hoses shall be silicone heater hose with rubber hoses in the cab interior. The radiator hoses shall be formed silicone coolant hoses with formed aluminized steel tubing. All heater hose, silicone coolant hose, and tubing shall be secured with stainless steel constant torque band clamps.

#### **ENGINE AIR INTAKE**

The engine air intake system shall include an ember separator air intake filter which shall be located in the front of the cab behind the right hand side fascia. This filter shall protect the downstream air filter from embers using a combination of unique flat and crimped metal screens constructed into a corrosion resistant steel frame. This multilayered screen shall be designed to trap embers or allow them to burn

out before passing through the pack, while creating only minimal air flow restriction through the system. Periodic cleaning or replacement of the screen shall be all that is required after installation.

The engine shall also include an air intake filter which shall be bolted to the frame and located under the front of the cab on the right hand side. The dry type filter shall ensure dust and debris safely contained inside the disposable housing, eliminating the chance of contaminating the air intake system during air filter service via a leak-tight seal.

The air flow distribution and dust loading shall be uniform throughout the high-performance filter cone pack, which shall result in pressure differential for improved horsepower and fuel economy. The air intake shall be mounted within easy access via a hinged panel behind the right hand side headlight module. The air intake system shall include a restriction indicator light in the warning light cluster on the instrument panel, which shall activate when the air cleaner element requires replacement.

### **ENGINE EXHAUST SYSTEM**

The exhaust system shall include a diesel particulate filter (DPF), a diesel oxidation catalyst, and a selective catalytic reduction (SCR) catalyst to meet current EPA standards. The selective catalytic reduction catalyst utilizes a diesel exhaust fluid solution consisting of urea and purified water to convert NOx into nitrogen, water, and trace amounts of carbon dioxide. The solution shall be injected into the system through the decomposition tube between the DPF and SCR.

The system shall utilize 0.07 inch thick stainless steel exhaust tubing between the engine turbo and the DPF. Zero leak clamps seal all system joints between the turbo and DPF.

The DPF, the decomposition tube, and the SCR canister through the end of the tailpipe shall be connected with zero leak clamps. The discharge shall terminate horizontally on the right side of the vehicle ahead of the rear tires.

The exhaust system shall be mounted below the frame in the outboard position with the SCR canister in line rearward of the DPF. The exhaust system canisters shall be mounted using T-shaped drop down angle brackets. The exhaust outlet shall be a fixed pipe connected directly to the side outlet of the SCR.

### **DIESEL EXHAUST FLUID TANK**

The exhaust system shall include a molded cross linked polyethylene tank for Diesel Exhaust Fluid (DEF). The tank shall have a capacity of six (6) usable gallons and shall be mounted on the left hand side of the chassis frame behind the batteries below the frame.

The DEF tank shall be designed with capacity for expansion in case of fluid freezing. Engine coolant, which shall be thermostatically controlled, shall be run through lines in the tank to help prevent the DEF from freezing and to provide a means of thawing the fluid if it should become frozen.

The tank fill tube shall be routed under the rear of the cab with the fill neck and splash guard accessible in the top rear step.

### **ENGINE EXHAUST ACCESSORIES**

An exhaust temperature mitigation device shall be shipped loose for installation by the body manufacturer on the vehicle. The temperature mitigation device shall lower the temperature of the exhaust by combining ambient air with the exhaust gasses at the exhaust outlet.

### **ENGINE EXHAUST WRAP**

The exhaust tubing between the engine turbo and the diesel particulate filter (DPF) shall be wrapped with a thermal cover in order to retain the necessary heat for DPF regeneration. The exhaust wrap shall also help protect surrounding components from radiant heat which can be transferred from the exhaust.

### **TRANSMISSION**

The drive train shall include an Allison model EVS 3000 torque converting, automatic transmission which shall include electronic controls. The transmission shall feature two (2) 10-bolt PTO pads located on the converter housing.

The transmission shall include two (2) internal oil filters and Castrol TranSynd™ synthetic TES 295 transmission fluid which shall be utilized in the lubrication of the EVS transmission. An electronic oil level sensor shall be included with the readout located in the shift selector.

The transmission gear ratios shall be:

1st	3.49:1
2nd	1.86:1
3rd	1.41:1
4th	1.00:1
5th	0.75:1
6th	0.65:1 (if applicable)
Rev	5.03:1

### **TRANSMISSION MODE PROGRAMMING**

The transmission, upon start-up, will automatically select a four (4) speed operation. The fifth speed over drive shall be available with the activation of the mode button on the shifting pad.

### **TRANSMISSION FEATURE PROGRAMMING**

The Allison Gen IV-E EVS group package number 127 shall contain the 199 vocational package in consideration of the duty of this apparatus for rescue. This package shall incorporate an automatic neutral with selector override. This feature commands the transmission to neutral when the park brake is applied, regardless of drive range requested on the shift selector. This requires re-selecting drive range to shift out of neutral for the override.

An eight (8) pin Delphi connector will be provided which will contain the following input/output circuits to the transmission control module. The Gen IV-E transmission shall include prognostic diagnostic capabilities. These capabilities shall include the monitoring of the fluid life, filter change indication, and transmission clutch maintenance.

Function ID	Description	Wire assignment
C	PTO Request	143
F	Aux. Function Range Inhibit (Special)	101/142
G	PTO Enable Output (See Input Function C)	130
S	Neutral Indicator for PTO	145
	Signal Return	103

### **TRANSMISSION SHIFT SELECTOR**



An Allison pressure sensitive range selector touch pad shall be provided and located to the right of the driver within clear view and easy reach. The shift selector shall provide a prognostic indicator (wrench symbol) on the digital display between the selected and attained indicators. The prognostics monitor various operating parameters to determine and shall alert you when a specific maintenance function is required.

#### **ELECTRONIC TRANSMISSION OIL LEVEL INDICATOR**

The transmission fluid shall be monitored electronically and shall send a signal to activate a warning in the instrument panel when levels fall below normal.

#### **TRANSMISSION PRE-SELECT WITH AUXILIARY BRAKE**

When the auxiliary brake is engaged, the transmission shall automatically shift to second gear to decrease the rate of speed assisting the secondary braking system and slowing the vehicle.

#### **TRANSMISSION COOLING SYSTEM**

The transmission shall include a water to oil cooler system located in the cooling loop between the radiator and the engine. The transmission cooling system shall meet all transmission manufacturer requirements. The transmission cooling system shall feature continuous flow of engine bypass water to maintain uninterrupted transmission cooling.

#### **TRANSMISSION DRAIN PLUG**

The transmission shall include an original equipment manufacturer installed oil drain plug.

#### **TRANSMISSION WARRANTY**

The Allison EVS series transmission shall be warranted for a period of five (5) years with unlimited mileage. Parts and labor shall be included in the warranty.

#### **DRIVELINE**

All drivelines shall be heavy duty metal tube and equipped with Spicer 1710 series universal joints. The shafts shall be dynamically balanced prior to installation to alleviate future vibration. In areas of the driveline where a slip shaft is required, the splined slip joint shall be coated with Glide Coat®.

#### **FUEL FILTER/WATER SEPARATOR**

The fuel system shall have a Fleetguard FS1003 fuel filter/water separator as a primary filter. The fuel filter shall have a drain valve.

A water in fuel sensor shall be provided and wired to an instrument panel lamp and audible alarm to indicate when water is present in the fuel/water separator.

A secondary fuel filter shall be included as approved by the engine manufacturer.

#### **FUEL LINES**

The fuel system supply and return lines installed from the fuel tank to the engine shall be reinforced nylon tubing rated for diesel fuel. The fuel lines shall be brown in color and connected with brass fittings.

#### **FUEL TANK**

The fuel tank shall have a capacity of fifty (50) gallons and shall measure 35.00 inches in width X 15.00 inches in height X 24.00 inches in length. The baffled tank shall be made of 14 gauge aluminized steel.

The exterior of the tank shall be painted with a PRP Corsol™ black anti-corrosive exterior metal treatment finish. This results in a tank which offers the internal and external corrosion resistance.

The tank shall have a vent port to facilitate venting to the top of the fill neck for rapid filling without "blow-back" and a roll over ball check vent for temperature related fuel expansion and draw.

The tank is designed with dual draw tubes and sender flanges. The tank shall have 2.00 inch NPT fill ports for right or left hand fill. A 0.50 inch NPT drain plug shall be centered in the bottom of the tank.

The fuel tank shall be mounted below the frame, behind the rear axle. Two (2) three-piece strap hanger assemblies with "U" straps bolted midway on the fuel tank front and rear shall be utilized to allow the tank to be easily lowered and removed for service purposes. Rubber isolating pads shall be provided between the tank and the upper tank mounting brackets. Strap mounting studs through the rail, hidden behind the body shall not be acceptable.

### **FUEL TANK FILL PORT**

The fuel tank fill ports shall be offset with the left fill port located in the rearward position and the right fill port located in the middle position on the fuel tank.

### **FRONT AXLE**

The front axle shall be a Meritor Easy Steer Non drive front axle, model number MFS-23. The axle shall include a 3.74 inch drop and a 71.00 inch king pin intersection (KPI). The axle shall include a conventional style hub with a standard knuckle. The weight capacity for the axle shall be rated to 23,000 pounds. This rating shall require special approvals from the wheel manufacturers.

### **FRONT AXLE WARRANTY**

The front axle shall be warranted by Meritor for two (2) years with unlimited miles under the general service application. Details of the Meritor warranty are provided on the PDF document attached to this option.

### **FRONT WHEEL BEARING LUBRICATION**

The front axle wheel bearings shall be lubricated with oil. The oil level can be visually checked via clear inspection windows in the front axle hubs.

### **FRONT SHOCK ABSORBERS**

Two (2) Bilstein inert, nitrogen gas filled shock absorbers shall be provided and installed as part of the front suspension system. The shocks shall be a monotubular design and fabricated using a special extrusion method, utilizing a single blank of steel without a welded seam, achieving an extremely tight peak-to-valley tolerance and maintains consistent wall thickness. The monotubular design shall provide superior strength while maximizing heat dissipation and shock life.

The ride afforded through the use of a gas shock is more consistent and shall not deteriorate with heat, the same way a conventional oil filled hydraulic shock would.

The Bilstein front shocks shall include a digressive working piston assembly allowing independent tuning of the compression and rebound damping forces to provide optimum ride and comfort without compromise. The working piston design shall feature fewer parts than most conventional twin tube and "road sensing" shock designs and shall contribute to the durability and long life of the Bilstein shock absorbers.

Proposals offering the use of conventional twin tube or "road sensing" designed shocks shall not be considered.

### **FRONT SUSPENSION**

The front suspension shall include a ten (10) leaf spring pack in which the longest leaf measures 53.38 inch long and 4.00 inches wide. The springs shall be shot peened for long life and include a military double wrapped front eye. The springs shall be bolted in place with M20 10.9 bolts and have replaceable rubber bushings in the spring eyes. The spring capacity shall be rated at 23,000 pounds.

### **STEERING COLUMN/ WHEEL**

The cab shall include a Douglas Autotech steering column which shall include a seven (7) position tilt, a 2.25 inch telescopic adjustment, and an 18.00 inch, two (2) spoke steering wheel located at the driver's position. The steering wheel shall be covered with black polyurethane foam padding.

The steering column shall contain a horn button, self-canceling turn signal switch, four-way hazard switch and headlamp dimmer switch.

### **POWER STEERING PUMP**

The hydraulic power steering pump shall be a TRW PS and shall be gear driven from the engine. The pump shall be a balanced, positive displacement, sliding vane type.

### **ELECTRONIC POWER STEERING FLUID LEVEL INDICATOR**

The power steering fluid shall be monitored electronically and shall send a signal to activate an audible alarm and visual warning in the instrument panel when fluid level falls below normal.

### **FRONT AXLE CRAMP ANGLE**

The chassis shall have a front axle cramp angle of 48-degrees to the left and 44-degrees to the right.

### **POWER STEERING GEAR**

The power steering gear shall be a TRW model TAS 85 with an assist cylinder.

### **CHASSIS ALIGNMENT**

The chassis frame rails shall be measured to insure the length is correct and cross checked to make sure they run parallel and are square to each other. The front and rear axles shall be laser aligned. The front tires and wheels shall be aligned and toe-in set on the front tires by the chassis manufacturer.

### **REAR AXLE**

The rear axle shall be a Meritor model RS-25-160 single drive axle. The axle shall include precision forged, single reduction differential gearing, and shall have a fire service rated capacity of 27,000 pounds.

The axle shall be built of superior construction and quality components to provide the rugged dependability needed to stand up to the fire industry's demands. The axle shall include rectangular shaped, hot-formed housing with a standard wall thickness of 0.63 of an inch for extra strength and rigidity and a rigid differential case for high axle strength and reduced maintenance.

The axle shall have heavy-duty Hypoid gearing for longer life, greater strength and quieter operation. Industry-standard wheel ends for compatibility with both disc and drum brakes, and unitized oil seal technology to keep lubricant in and help prevent contaminant damage will be used.

#### **REAR AXLE WARRANTY**

The rear axle shall be warranted by Meritor for two (2) years with unlimited miles under the general service application. Details of the Meritor warranty are provided on the PDF document attached to this option.

#### **REAR AXLE DIFFERENTIAL LUBRICATION**

The rear axle differential shall be lubricated with oil.

#### **REAR WHEEL BEARING LUBRICATION**

The rear axle wheel bearings shall be lubricated with oil.

#### **REAR AXLE DIFFERENTIAL CONTROL**

A driver controlled differential lock shall be installed on the rear axle. This feature shall allow the main differential to be locked and unlocked when encountering poor road or highway conditions, where maximum traction is needed, for use at speeds no greater than 25 MPH. The differential lock shall be controlled by a locking rocker switch on the switch panel. The light on the switch shall illuminate with positive engagement of the differential control.

#### **VEHICLE TOP SPEED**

The top speed of the vehicle shall be approximately 65 MPH +/-2 MPH at governed engine RPM.

#### **REAR SUSPENSION**

The single rear axle shall feature a Reyco 79KB vari-rate, self-leveling captive slipper type parabolic spring suspension, with 57.50 inch X 3.00 inch springs. One (1) adjustable and one (1) fixed torque rod shall be provided.

The rear suspension capacity shall be rated from 21,000 to 31,000 pounds.

#### **FRONT TIRE**

The front tires shall be Michelin 425/65R-22.5 20PR "L" tubeless radial XZY3 mixed service tread.

The front tire stamped load capacity shall be 22,800 pounds per axle with a speed rating of 65 miles per hour when properly inflated to 120 pounds per square inch.

The Michelin Tire Intermittent Service Rating load capacity shall be 24,400 pounds per axle with a speed rating of 65 miles per hour when properly inflated to 120 pounds per square inch. The Michelin Intermittent Service Rating limits the operation of the emergency vehicle to one (1) hour of loaded travel with a one (1) hour cool down prior to another loaded run.

#### **REAR TIRE**

The rear tires shall be Michelin 12R-22.5 16PR "H" tubeless radial XDS regional tread.

The rear tire stamped load capacity shall be 27,120 pounds per axle with a speed rating of 65 miles per hour when properly inflated to 120 pounds per square inch.

The Michelin Tire Intermittent Service Rating load capacity shall be 28,880 pounds per axle with a speed rating of 75 miles per hour when properly inflated to 120 pounds per square inch. The Michelin Intermittent Service Rating limits the operation of the emergency vehicle to one (1) hour of loaded travel with a one (1) hour cool down prior to another loaded run.

### **REAR AXLE RATIO**

The rear axle ratio shall be 5.38:1.

### **TIRE PRESSURE INDICATOR**

There shall be a voucher provided with the chassis for a pop up style tire pressure indicator at the front tire valve stem. The indicator shall provide visual indication of pressure in the specific tire. The front tire pressure indicators shall be redeemed upon the vehicle manufacturer's receipt of the voucher for installation by the customer.

The rear tire pressure indicators shall be VECSAFE LED valve cap indicators on each of the rear tires. The valve cap indicators shall be self-calibrating and the LED shall illuminate to indicate low tire pressure. The rear tire pressure indicators shall be shipped loose to be installed by the final vehicle manufacturer for self-calibration on inflated, loaded tires.

### **FRONT WHEEL**

The front wheels shall be Alcoa hub piloted, 22.50 inch X 12.25 inch LvL One™ polished aluminum wheels. The hub piloted mounting system shall provide easy installation and shall include two-piece flange nuts. The wheels shall feature one-piece forged strength and shall include Alcoa's Dura-Bright® finish with XBR technology as an integral part of the wheel surface. Alcoa Dura-Bright® wheels keep their shine without polishing. Brake dust, grime and road debris are easily removed by simply cleaning the wheels with soap and water.

### **REAR WHEEL**

The rear wheels shall be Alcoa hub piloted, 22.50 inch X 8.25 inch LvL One™ aluminum wheels with a polished outer surface and Alcoa Dura-Bright® wheel treatment with XBR® technology as an integral part of the wheel. The hub piloted mounting system shall provide easy installation and shall include two-piece flange nuts.

### **WHEEL TRIM**

The front wheels shall include stainless steel lug nut covers and stainless steel baby moons shipped loose with the chassis for installation by the apparatus builder. The baby moons shall have cutouts for oil seal viewing when applicable.

The rear wheels shall include stainless steel lug nut covers and band mounted spring clip stainless steel high hats shipped loose with the chassis for installation by the apparatus builder.

The lug nut covers, baby moons, and high hats shall be RealWheels® brand constructed of 304L grade, non-corrosive stainless steel with a mirror finish. Each wheel trim component shall meet D.O.T. certification.

### **WHEEL GUARDS**

The rear dual wheels shall include a plastic isolator approximately 0.04" thick installed between the inner and outer wheel to help prevent corrosion caused by metal to metal contact.

### **TIRE CHAINS**

Onspot brand six (6) strand automatic ice chains shall be installed on the rear axle of the chassis to provide instant traction while traveling on ice and snow at speeds below 35 MPH.

### **TIRE CHAINS ACTIVATION**

The tire chain system shall be activated by a locking switch on the dash to deter accidental activation. The light on the switch shall illuminate when the tire chains are engaged. The tire chains shall be interlocked with the transmission and shall engage only if the vehicle is traveling 30 MPH or less. After traveling over 30 MPH, the vehicle must be reduced to a speed below 5 MPH for the tire chains to be engaged or re-engaged.

### **BRAKE SYSTEM**

A rapid build-up air brake system shall be provided. The air brakes shall include a two (2) air tank, three (3) reservoir system with a total of 4152 cubic inch of air capacity. A floor mounted treadle valve shall be mounted inside the cab for graduated control of applying and releasing the brakes. An inversion valve shall be installed to provide a service brake application in the unlikely event of primary air supply loss. All air reservoirs provided on the chassis shall be labeled for identification.

The rear axle spring brakes shall automatically apply in any situation when the air pressure falls below 25 PSI and shall include a mechanical means for releasing the spring brakes when necessary. An audible alarm shall designate when the system air pressure is below 60 PSI.

A four (4) sensor, four (4) modulator anti-lock braking system (ABS) shall be installed on the front and rear axles in order to prevent the brakes from locking or skidding while braking during hard stops or on icy or wet surfaces. This in turn shall allow the driver to maintain steering control under heavy braking and in most instances, shorten the braking distance. The electronic monitoring system shall incorporate diagonal circuitry which shall monitor wheel speed during braking through a sensor and tone ring on each wheel. A dash mounted ABS lamp shall be provided to notify the driver of a system malfunction. The ABS system shall automatically disengage the auxiliary braking system device when required. The speedometer screen shall be capable of reporting all active defaults using PID/SID and FMI standards.

Additional safety shall be accommodated through Automatic Traction Control (ATC) which shall be installed on the single rear axle. The ATC system shall apply the ABS when the drive wheels loose traction. The system shall scale the electronic engine throttle back to prevent wheel spin while accelerating on ice or wet surfaces.

A momentary rocker style switch shall be provided and properly labeled "mud/snow". When the switch is pressed once, the system shall allow a momentary wheel slip to obtain traction under extreme mud and snow conditions. During this condition the ATC light and the light on the rocker switch shall blink continuously notifying the driver of activation. Pressing the switch again shall deactivate the mud/snow feature.

The Electronic Stability Control (ESC) unit is a functional extension of the electronic braking system. It is able to detect any skidding of the vehicle about its vertical axis as well as any rollover tendency. The control unit comprises an angular-speed sensor that measures the vehicle's motion about the vertical axis, caused, for instance, by cornering or by skidding on a slippery road surface. An acceleration sensor measures the vehicle's lateral acceleration. The Controller Area Network (CAN) bus provides information on the steering angle. On the basis of lateral acceleration and steering angle, an integrated microcontroller calculates a theoretical angular speed for the stable vehicle condition.

## **FRONT BRAKES**

The front brakes shall be Meritor EX225 Disc Plus disc brakes with 17.00 inch vented rotors.

## **REAR BRAKES**

The rear brakes shall be Meritor EX225 Disc Plus disc brakes with 17.00 inch vented rotors.

## **PARK BRAKE**

Upon application of the push-pull valve in the cab, the rear brakes will engage via mechanical spring force. This is accomplished by dual chamber rear brakes, satisfying the FMVSS parking brake requirements.

## **PARK BRAKE CONTROL**

A Meritor-Wabco manual hand control push-pull style valve shall operate the parking brake system. The control shall be yellow in color.

The parking brake actuation valve shall be mounted on the left hand dash to the right of the steering column within easy reach of the driver.

## **AIR DRYER**

The brake system shall include a Bendix AD-9 fully self contained air dryer which shall not require an extra purge tank or additional valves. The AD-9 system shall include a spin-off desiccant filter with a 12-volt, 75-watt thermostatically controlled heating element. The air dryer shall feature 3.9 pounds of premium, high crush strength desiccant which shall be produced with a composition that shall be more effective and longer lasting than other desiccants. It shall also offer protection against contamination and desiccant breakdown. The air dryer shall be mounted behind the battery box on the left hand side.

## **FRONT BRAKE CHAMBERS**

The front brakes shall be provided with MGM type 24 long stroke brake chambers.

## **REAR BRAKE CHAMBERS**

The rear axle shall include TSE 24/30 H.O.T. (High Output Technology) brake chambers shall convert the energy of compressed air into mechanical force and motion. This shall actuate the brake camshaft, which in turn shall operate the foundational brake mechanism forcing the brake pads against the brake rotor.

## **AIR COMPRESSOR**

The air compressor provided for the engine shall be a Wabco<sup>®</sup> SS318 single cylinder pass-through drive type compressor which shall be capable of producing 18.7 CFM at 1200 engine RPMs. The air compressor shall feature a higher delivery efficiency translating to more air delivery per horsepower absorbed. The compressor shall include an aluminum cylinder head which shall improve cooling, reduce weight and decrease carbon formation. Superior piston and bore finishing technology shall reduce oil consumption and significantly increasing the system component life.

## **AIR GOVERNOR**

An air governor shall be provided to control the cut-in and cut-out pressures of the engine mounted air compressor. The governor shall be calibrated to meet FMVSS requirements. The air governor shall be mounted to the right frame rail.

## **AUXILIARY AIR RESERVOIR**

One (1) auxiliary air reservoir with a 1200 cubic inch capacity shall be installed on the chassis to act as an additional reserve supply to the air system for air horn, air tool, or other non-service brake use. The reservoir shall be isolated with a 90 PSI pressure protection valve on the reservoir supply side to prevent depletion of the air to the air brake system.

### **MOISTURE EJECTORS**

Manual pet-cock type drain valves shall be installed on all reservoirs of the air supply system.

### **AIR SUPPLY LINES**

The air system on the chassis shall be plumbed with color coded reinforced nylon tubing air lines. The primary (rear) brake line shall be green, the secondary (front) brake line red, the parking brake line orange and the auxiliary (outlet) will be blue.

Brass compression type fittings shall be used on the nylon tubing. All drop hoses shall include fiber reinforced neoprene covered hoses.

### **AIR OUTLET CONNECTION**

A quick release air outlet female connector shall be installed in the left lower cab step towards the front of the cab for the use of auxiliary air tools. The air outlet connector shall be compatible with a Milton 787, Parker Hannifin B13 or Meyers 54-410 connector.

### **PLUMBING AIR OUTLET CONNECTION**

The cab mounted air outlet connection shall be plumbed to the chassis auxiliary air system reservoir.

### **AIR INLET/ OUTLET FITTING TYPE**

The air connector supplied shall be a 0.25 inch size Tru-Flate Interchange style manual connection which is compatible with Milton 'T' style, Myers 0.25 inch Automotive style and Parker 0.25 inch 10 Series connectors.

### **AIR TANK SPACERS**

There shall be spacers included with the air tank mounting. The spacers shall move the air tanks 1.50 inches inward towards the center of the chassis. This shall provide clearance between the air tanks and the frame for body U-bolt clearance.

### **REAR AIR TANK MOUNTING**

If a combination of wheel base, air tank quantity, or other requirements necessitate the location of one or more air tanks to be mounted rear of the fuel tank, these tank(s) will be mounted perpendicular to frame.

### **WHEELBASE**

The chassis wheelbase shall be 190.00 inches.

### **REAR OVERHANG**

The chassis rear overhang shall be 37.00 inches.

### **FRAME**

The frame shall consist of double rails running parallel to each other with cross members forming a ladder style frame. The frame rails shall be formed in the shape of a "C" channel, with the outer rail measuring 10.25 inches high X 3.50 inches deep upper and lower flanges X 0.38 inches thick with an



inner channel of 9.44 inches high X 3.13 inches deep and 0.38 inches thick. Each rail shall be constructed of 110,000 psi minimum yield high strength low alloy steel. Each double rail section shall be rated by a Resistance Bending Moment (RBM) minimum of 3,213,100 inch pounds and have a minimum section modulus of 29.21 cubic inches. The frame shall measure 35.00 inches in width.

Proposals calculating the frame strength using the “box method” shall not be considered.

Proposals including heat treated rails shall not be considered. Heat treating frame rails produces rails that are not uniform in their mechanical properties throughout the length of the rail. Rails made of high strength, low alloy steel are already at the required yield strength prior to forming the rail.

A minimum of seven (7) fully gusseted 0.25 inch thick cross members shall be installed. The inclusion of the body mounting, or bumper mounting shall not be considered as a cross member. The cross members shall be attached using zinc coated grade 8 fasteners. The bolt heads shall be flanged type, held in place by distorted thread flanged lock nuts. Each cross member shall be mounted to the frame rails utilizing a minimum of 0.25 inch thick gusset reinforcement plates at all corners balancing the area of force throughout the entire frame.

Any proposals not including additional reinforcement for each cross member shall not be considered.

All relief areas shall be cut in with a minimum 2.00 inch radius at intersection points with the edges ground to a smooth finish to prevent a stress concentration point.

The frame and cross members shall carry a lifetime warranty to the original purchaser. A copy of the frame warranty shall be made available upon request.

Proposals offering warranties for frames not including cross members shall not be considered.

#### **FRAME WARRANTY**

The frame and cross members shall carry a limited lifetime warranty to the original purchaser. The warranty shall include conditional items listed in the detailed warranty document which shall be provided upon request.

#### **MISCELLANEOUS FRAME OPTIONS**

The frame shall include hole patterns which shall be specific to Marion drop frame as specified by the OEM.

See PDF for OEM specified pattern.

#### **REAR TOW DEVICE**

The frame rails shall contain (3) holes per frame in a pattern specified by the OEM for mounting Marion tow eyes at the rear of the frame at a location defined by the OEM.

#### **FRAME PAINT**

The frame shall be powder coated black prior to any attachment of components.

All powder coatings, primers and paint shall be compatible with all metals, pretreatments and primers used. The cross hatch adhesion test per ASTM D3359 shall not have a fail of more than ten (10) squares. The pencil hardness test per ASTM D3363 shall have a final post-curved pencil hardness of

H-2H. The direct impact resistance test per ASTM D2794 shall have an impact resistance of 120.00 inches per pound at 2 mils.

Any proposals offering painted frame with variations from the above process shall not be accepted. The film thickness of vendor supplied parts shall also be sufficient to meet the performance standards as stated above.

The chassis under carriage consisting of frame, axles, driveline running gear, air tanks and other chassis mounted components shall be painted the primary/lower cab color. Paint shall be applied prior to airline and electrical wiring installation.

#### **FRONT BUMPER**

The chassis shall be equipped with a severe duty front bumper constructed from structural steel channel. The bumper material shall be 0.38 thick ASTM A36 steel which shall measure 12.00 inches high with a 3.05 inch flange and shall be 99.00 inches wide with angled front corners.

The bumper shall be primed and painted as specified.

#### **FRONT BUMPER EXTENSION LENGTH**

The front bumper shall be extended approximately 21.00 inches ahead of the cab.

#### **FRONT BUMPER EXTENSION FRAME WIDTH**

The front bumper extension frame shall feature an overall width of 48.25 inches.

#### **FRONT BUMPER PAINT**

The front bumper shall be painted the same as the lower cab color.

#### **FRONT BUMPER WINCH**

The front bumper shall include a Ramsey model RE12000 electric winch with 12,000 pound rated line pull, 12 volt electric winch shall be installed in the center of the front bumper. The winch shall be equipped with 125.00 feet of 0.38 inch cable, clevis hook and a 4-way roller fairlead. The winch shall be operated through a 25.00 foot pendant with a hand held control. The winch shall include a spring applied hydraulic released disc brake and counterbalance valve. It shall feature an easy to use spring loaded clutch with clutch engagement indicator light.

#### **FRONT BUMPER APRON**

The 21.00 inch extended front bumper shall include an apron constructed of 0.19 inch thick embossed aluminum tread plate.

The apron shall be installed between the bumper and the front face of the cab affixed using stainless steel bolts attaching the apron to the top bumper flange.

#### **FRONT BUMPER COMPARTMENT CENTER**

The front bumper shall include a compartment in the bumper apron located in the center between the frame rails which may be used as a hose well. The compartment shall be constructed of 0.13 inch 5052-H32 grade aluminum and shall include drain holes in the bottom corners to allow excess moisture to escape. The compartment shall include a cover constructed of 0.19 inch thick bright embossed aluminum tread plate.

#### **FRONT BUMPER COMPARTMENT COVER HARDWARE**

The front bumper compartment cover shall include gas cylinder stays which shall hold the cover open. The cover shall be held in the closed position via a D-ring style latch.

#### **FRONT BUMPER GUIDE POLES**

The cab bumper sides shall include a 42.00 inch chromed poles on the left and right sides of the bumper. The poles shall be mounted so the top of the pole is approximately at the same height as the bottom of the windshield. Each pole shall include an amber light at the top for improved night visibility. There shall be an electrical connection to allow for ease of removal and or replacement.

#### **MECHANICAL SIREN**

The front bumper shall include an electro mechanical Federal Q2B™ siren, which shall be streamlined, chrome-plated and shall produce 123 decibels of sound at 10.00 feet. The Q2B™ siren produces a distinctive warning sound that is recognizable at long distances. A unique clutch design provides a longer coast down sound while reducing the amp draw to 100 amps. The siren shall measure 10.50 inches wide X 10.00 inches high X 14.00 inches deep.

#### **MECHANICAL SIREN LOCATION**

The siren shall be recess mounted on the left side of the front fascia of the bumper approximately in the center of the flat surface between the bumper radius and the frame rail.

#### **MECHANICAL SIREN ACCESSORIES**

The front of the siren shall include (2) stainless steel flat bars approximately 1.00 inch wide by 19.00 inches long. Each bar shall be placed vertically on the right and left side of the siren face wrapping around towards the back of the siren into the bumper extension offering protection to the Q2B siren.

#### **AIR HORN**

The chassis shall include two (2) Hadley brand E-Tone air horns which shall measure 24.00 inches long with a 6.00 inch round flare. The air horns shall be trumpet style with a chrome finish on the exterior and a painted finish deep inside the trumpet.

#### **AIR HORN LOCATION**

The air horns shall be recess mounted in the front bumper face on the right side of the bumper in the inboard and outboard positions relative to the right hand frame rail.

#### **AIR HORN RESERVOIR**

One (1) air reservoir, with a 1200 cubic inch capacity, shall be installed on the chassis to act as a supply tank for operating air horns. The reservoir shall be isolated with a 90 PSI pressure protection valve on the reservoir supply side to prevent depletion of the air to the air brake system.

#### **ELECTRONIC SIREN SPEAKER**

The bumper shall include one (1) Whelen Engineering Inc. model SA122FMP, 100 watt cast aluminum speaker which shall be recess mounted within the bumper fascia. The speaker shall measure 4.44 inches tall X 7.44 inches wide X 5.18 inches deep. The speaker shall include a polished aluminum grille.

#### **ELECTRONIC SIREN SPEAKER LOCATION**

The two (2) electronic siren speakers shall be located on the front bumper face between the frame rails in the right and left side outboard positions.

#### **FRONT BUMPER TOW EYES**

The bumper shall include two (2) painted tow eyes shall be installed through the front bumper. The tow eyes shall be fabricated from 0.75 inch thick #1020 ASTM-36 hot rolled steel. The inside diameter of the tow eye shall be 2.00 inch and have a chamfered edge. The tow eyes shall be painted to match the frame.

### **CAB TILT SYSTEM**

The entire cab shall be capable of tilting approximately 45-degrees to allow for easy maintenance of the engine and transmission. The cab tilt pump assembly shall be located on the right side of the chassis above the battery box.

The electric-over-hydraulic lift system shall include an ignition interlock and red cab lock down indicator lamp on the tilt control which shall illuminate when holding the "Down" button to indicate safe road operation.

It shall be necessary to activate the master battery switch and set the parking brake in order to tilt the cab. As a third precaution the ignition switch must be turned off to complete the cab tilt interlock safety circuit.

Two (2) spring-loaded hydraulic hold down hooks located outboard of the frame shall be installed to hold the cab securely to the frame. Once the hold-down hooks are set in place, it shall take the application of pressure from the hydraulic cab tilt lift pump to release the hooks.

Two (2) cab tilt cylinders shall be provided with velocity fuses in each cylinder port. The cab tilt pivots shall be 1.90 inch ball and be anchored to frame brackets with 1.25 inch diameter studs.

A steel safety channel assembly, painted safety yellow shall be installed on the right side cab lift cylinder to prevent accidental cab lowering. The safety channel assembly shall fall over the lift cylinder when the cab is in the fully tilted position. A cable release system shall also be provided to retract the safety channel assembly from the lift cylinder to allow the lowering of the cab.

### **CAB TILT AUXILIARY PUMP**

A manual cab tilt pump module shall be attached to the cab tilt pump housing.

### **CAB TILT CONTROL RECEPTACLE**

The cab tilt control cable shall include a receptacle which shall be temporarily located on the right hand chassis rail rear of the cab to provide a place to plug in the cab tilt remote control pendant. The tilt pump shall include 8.00 feet of cable with a six (6) pin Deutsch receptacle with a cap.

The remote control pendant shall include 20.00 feet of cable with a mating Deutsch connector. The remote control pendant shall be shipped loose with the chassis.

### **CAB WINDSHIELD**

The cab windshield shall have a surface area of 2825.00 square inches and be of a two (2) piece wraparound design for maximum visibility.

The glass utilized for the windshield shall include standard automotive tint. The left and right windshield shall be fully interchangeable thereby minimizing stocking and replacement costs.

Each windshield shall be installed using black self locking window rubber.

**GLASS FRONT DOOR**

The front cab doors shall include a window which is 27.00 inches in width X 26.00 inches in height. These windows shall have the capability to roll down completely into the door housing. This shall be accomplished manually utilizing a crank style handle on the inside of the door. A reinforced window regulator assembly shall be provided for severe duty use.

There shall be an irregular shaped fixed window which shall measure 2.50 inches wide at the top, 8.00 inches wide at the bottom X 26.00 inches in height, more commonly known as "cozy glass" ahead of the front door roll down windows.

The windows shall be mounted within the frame of the front doors trimmed with a black anodized ring on the exterior.

**GLASS TINT FRONT DOOR**

The windows located in the left and right front doors shall have a standard green automotive tint which shall allow seventy-five percent (75%) light transmittance.

**GLASS REAR DOOR RH**

The rear right hand side door shall include a window which is 27.00 inches in width X 26.00 inches in height. This window shall roll up and down manually utilizing a crank style handle on the inside of the door. A reinforced window regulator assembly shall be provided for severe duty use.

**GLASS TINT REAR DOOR RIGHT HAND**

The window located in the right hand side rear door shall include a standard green automotive tint which shall allow seventy-five percent (75%) light transmittance.

**GLASS REAR DOOR LH**

The rear left hand side door shall include a window which is 27.00 inches in width X 26.00 inches in height. This window shall roll up and down manually utilizing a crank style handle on the inside of the door. A reinforced window regulator assembly shall be provided for severe duty use.

**GLASS TINT REAR DOOR LEFT HAND**

The window located in the left hand side rear door shall include a standard green automotive tint which shall allow seventy-five percent (75%) light transmittance.

**GLASS SIDE MID RH**

The cab shall include a window on the right side behind the front and ahead of the crew door which shall measure 16.00 inches wide X 26.00 inches high. This window shall be fixed within this space and shall be rectangular in shape. The window shall be mounted using self locking window rubber. The glass utilized for this window shall include a green automotive tint unless otherwise noted.

**GLASS TINT SIDE MID RIGHT HAND**

The window located on the right hand side of the cab between the front and rear doors shall include a standard green automotive tint which shall allow seventy-five percent (75%) light transmittance.

**GLASS SIDE MID LH**

The cab shall include a window on the left side behind the front door and ahead of the crew door and above the wheel well which shall measure 16.00 inches wide X 26.00 inches high. This window shall be fixed within this space and shall be rectangular in shape. The window shall be mounted using self locking window rubber. The glass utilized for this window shall include a green automotive tint unless otherwise noted.

**GLASS TINT SIDE MID LEFT HAND**

The window located on the left hand side of the cab between the front and rear doors shall include a standard green automotive tint which shall allow seventy-five percent (75%) light transmittance.

**GLASS UPPER SIDE FRONT**

The raised roof on the left and right sides of the cab shall include a triangular shaped window which shall be 14.00 inches wide X 14.00 inches high. These windows shall be fixed within this space. These windows shall be mounted to the cab using black self-locking window rubber.

**GLASS TINT UPPER SIDE FRONT**

The windows located in the upper section on the left and right side towards the front of the cab shall include a standard green automotive tint which shall allow seventy-five percent (75%) light transmittance.

**GLASS UPPER SIDE MID**

The middle section of the raised roof on the left and right sides of the cab shall include a window which shall measure 16.00 inches wide X 14.00 inches high. These windows shall be fixed within this space. These windows shall be mounted using black self-locking window rubber.

**GLASS TINT UPPER SIDE MID**

The windows located in the upper section on each side in the middle of the cab shall include a standard green automotive tint which shall allow seventy-five percent (75%) light transmittance.

**GLASS UPPER SIDE REAR DOOR**

Windows shall be provided in the upper portion of each rear door of the raised roof cab. Each window shall measure 27.00 inches wide X 14.00 inches high and be installed above the lower door window. The windows shall be rectangular in shape and fixed within this space. The windows shall be mounted using black self-locking window rubber.

**GLASS TINT UPPER SIDE REAR DOOR**

The window located in the upper section of the rear crew doors shall include a standard green automotive tint which shall allow seventy-five percent (75%) light transmittance.

**CLIMATE CONTROL**

The cab shall be equipped with a ceiling mounted combination defrost / heating and air-conditioning system mounted above the engine tunnel in a central location.

The system shall offer sixteen (16) adjustable louvers. Six (6) of the louvers shall face forward towards the windshield, offering 45,000 BTU of heat at 320 CFM for defrosting. The system shall include six (6) rearward facing louvers to direct air for the crew area and four (4) for driver and officer comfort. The HVAC system shall be designed to produce 60,000 BTU of heat and 32,000 BTU of cooling. The HVAC cover shall be made of aluminum which shall be coated with a customer specified interior paint, or protective coating.

All defrost/heating systems shall be plumbed with one (1) seasonal shut-off valve at the front corner on the right side of the cab.

The air conditioner lines shall be a mixture of custom bent zinc coated steel fittings and Aero-quip GH 134 flexible hose with Aero-Quip EZ-Clip fittings.

#### **CLIMATE CONTROL DRAIN**

The climate control system shall include a gravity drain for water management. The gravity drain shall remove condensation from the air conditioning system without additional mechanical assistance.

#### **CLIMATE CONTROL ACTIVATION**

The heating, defrosting and air conditioning controls shall be on the dash next to driver panel, in a position which is easily accessible to the driver. The climate control shall be activated by a rotary switch.

#### **HVAC OVERHEAD COVER PAINT**

The overhead HVAC cover shall be painted with a Zolatone #20-72 silver gray texture finish.

#### **A/C CONDENSER LOCATION**

A roof mounted A/C condenser shall be installed centered on the cab forward of the raised roof against the slope rise.

#### **A/C COMPRESSOR**

The air-conditioning compressor shall be a belt driven, engine mounted, open type compressor that shall be capable of producing a minimum of 32,000 BTU at 1500 engine RPMs. The compressor shall utilize R-134A refrigerant and PAG oil.

#### **CAB CIRCULATION FANS FRONT**

The cab shall include two (2) all metal 6.00 inch air circulation fans installed overhead in the center of the cab rearward of the windshield. Each fan shall be controlled by an individual rocker switch on the dash. The fans can be used to help defog the windshield or to increase air circulation for passenger comfort.

#### **CAB CIRCULATION FANS REAR**

The cab shall include two (2) individually switched all metal construction 6.00 inch fans which shall be installed in the upper rear cab corners as far outboard as possible. The multi purpose fans can be used to increase air circulation or help defog windows.

#### **CAB INSULATION**

The cab ceiling and walls shall include 1.00 inch thick foam insulation. The insulation shall act as a barrier absorbing noise as well as assisting in sustaining the desired climate within the cab interior.

#### **UNDER CAB INSULATION**

The underside of the cab tunnel surrounding the engine and the underside of the entire cab floor shall be lined with multi-layer insulation, engineered for application inside diesel engine compartments.

The insulation shall act as a noise barrier, absorbing noise thus keeping the decibel level in the cab well within NFPA recommendations. As an additional benefit, the insulation shall assist in sustaining the desired temperature within the cab interior.

The engine tunnel insulation shall measure approximately 0.75 inch thick including a vertically lapped polyester fiber layer, a 1.0 lb/ft<sup>2</sup> PVC barrier layer, an open cell foam layer, and a moisture and heat reflective foil facing reinforced with a woven fiberglass layer. The foil surface acts as protection against moisture and other contaminants. The insulation shall meet or exceed FMVSS 302 flammability test.

The cab floor insulation shall measure .56 inch thick including a 1.0#/sf PVC barrier and a moisture and heat reflective foil facing, reinforced with fiberglass strands. The foil surface acts as protection against moisture and other contaminants. The insulation shall meet or exceed MVSS 302 flammability test.

The insulation shall be cut precisely to fit each section and sealed for additional heat and sound deflection. The insulation shall be held in place by 3 mils of acrylic pressure sensitive adhesive and aluminum pins with hard hat, hold in place fastening heads. In addition, the insulation on the underside of the cab floor shall have an expanded metal overlay to assist in retaining the insulation tight against the cab.

#### **INTERIOR TRIM FLOOR**

The floor of the cab shall be covered with a multi-layer mat consisting of 0.25 inch thick sound absorbing closed cell foam with a 0.06 inch thick non-slip vinyl surface with a pebble grain finish. The covering shall be held in place by a pressure sensitive adhesive and aluminum trim molding. All exposed seams shall be sealed with silicone caulk matching the color of the floor mat to reduce the chance of moisture and debris retention.

#### **INTERIOR TRIM VINYL**

The cab interior shall include trim on the front ceiling, rear crew ceiling, and the cab walls. It shall be easily removable to assist in maintenance. The trim shall be constructed of insulated vinyl over a hard board backing.

#### **REAR WALL INTERIOR TRIM**

The rear wall of the cab shall be trimmed with vinyl.

#### **HEADER TRIM**

The cab interior shall feature header trim over the driver and officer dash constructed of 5052-H32 Marine Grade, 0.13 inch thick aluminum.

#### **TRIM CENTER DASH**

The main center dash area shall be constructed of 5052-H32 Marine Grade, 0.13 inch thick aluminum plate. There shall be four (4) holes located on the top of the dash near each outer edge of the electrical access cover for ventilation.

#### **TRIM LH DASH**

The left hand dash shall be constructed of 5052-H32 Marine Grade, 0.13 inch thick aluminum plate for a perfect fit around the instrument panel and the lower control panels to the left and right of the steering column.

#### **TRIM RH DASH**



The right hand dash shall be constructed of 5052-H32 Marine Grade, 0.13 of an inch thick aluminum plate and shall include a glove compartment with a hinged door and a Mobile Data Terminal (MDT) provision. The glove compartment size will measure 14.00 inches wide X 6.38 inches high X 5.88 inches deep. The MDT provision shall be provided above the glove compartment.

#### **TRIM RH DASH ACCESSORIES**

The Mobile Data Terminal (MDT) provision on the right hand dash shall be provided with a locking slide-out tray that can lock in multiple positions. The MDT slide-out tray shall be constructed of 5052-H32 Marine Grade, 0.13 of an inch thick aluminum plate. The mounting surface of the tray measures 12.50 inches wide X 10.75 inches deep which shall allow for the mounting of a MDT with the added luxury of sliding it toward the officer as much as 11.00 inches.

#### **ENGINE TUNNEL TRIM**

The cab engine tunnel shall be covered with a multi-layer mat consisting of 0.25 inch closed cell foam with a 0.06 inch thick non-slip vinyl surface with a pebble grain finish. The mat shall be held in place by pressure sensitive adhesive. The engine tunnel mat shall be trimmed with anodized aluminum stair nosing trim for an aesthetically pleasing appearance.

#### **STEP TRIM**

Each cab entry door shall include a three step entry. The first step closest to the ground shall be constructed of 14 gauge 304 stainless steel with indented perforations. The perforations shall allow water and other debris to flow through rather than becoming trapped within the stepping surface. The stainless steel material shall have a number 7 mirror finish. The lower step shall be mounted to a frame which is integral with the construction of the cab for rigidity and strength. The middle step shall be integral with the cab construction and shall be trimmed in 0.08 inch thick 3003-H22 embossed aluminum tread plate.

#### **UNDER CAB ACCESS DOOR**

The cab shall include an aluminum access door in the left crew step riser painted to match the cab interior paint with a push and turn latch. The under cab access door shall provide access to the diesel exhaust fluid fill.

#### **INTERIOR DOOR TRIM**

The interior trim on the doors of the cab shall consist of an aluminum panel constructed of Marine Grade 5052-H32 0.13 of an inch thick aluminum plate. The door panels shall include a DA sanded finish.

#### **DOOR TRIM CUSTOMER NAMEPLATE**

The interior door trim on the front doors shall include a customer nameplate which states the vehicle was custom built for their Department.

#### **CAB DOOR TRIM REFLECTIVE**

The interior of each door shall include high visibility reflective tape. A white reflective tape 1.00 inch in width shall be provided vertically along the rear outer edge of the door. The lowest portion of each door skin shall include a reflective tape chevron with red and white stripes and a Spartan logo. The chevron tape shall measure 6.00 inches in height.

#### **INTERIOR GRAB HANDLE "A" PILLAR**

There shall be two (2) rubber covered 11.00 inch grab handles installed inside the cab, one on each "A" post at the left and right door openings. The left handle shall be located 7.88 inches above the bottom of

the door window opening and the right handle shall be located 2.88 inches above the bottom of the door window opening. The handles shall assist personnel in entering and exiting the cab.

**INTERIOR GRAB HANDLE FRONT DOOR**

Each front door shall include one (1) ergonomically contoured 9.00 inch cast aluminum handle mounted horizontally on the interior door panels. The handles shall feature a textured black powder coat finish to assist personnel entering and exiting the cab.

**INTERIOR GRAB HANDLE REAR DOOR**

A black powder coated cast aluminum assist handle shall be provided on the inside of each rear crew door. A 30.00 inch long handle shall extend horizontally the width of the window just above the window sill. The handle shall assist personnel in exiting and entering the cab.

**INTERIOR TRIM VINYL COLOR**

The cab interior vinyl trim surfaces shall be gray in color.

**INTERIOR TRIM SUNVISOR**

The header shall include two (2) sun visors, one each side forward of the driver and officer seating positions above the windshield. Each sun visor shall be constructed of Masonite and covered with padded vinyl trim.

**INTERIOR FLOOR MAT COLOR**

The cab interior floor mat shall be gray in color.

**HEADER TRIM INTERIOR PAINT**

The metal surfaces in the header area shall be coated with Zolatone #20-72 silver gray texture finish.

**TRIM CENTER DASH INTERIOR PAINT**

The entire center dash shall be coated with Zolatone #20-72 silver gray texture finish. Any accessory pods attached to the dash shall also be painted this color.

**TRIM LH DASH INTERIOR PAINT**

The left hand dash shall be painted with a Zolatone #20-72 silver gray texture finish.

**TRIM RIGHT HAND DASH INTERIOR PAINT**

The right hand dash shall be painted with Zolatone #20-72 silver gray texture finish.

**RIGHT HAND DASH ACCESSORIES INTERIOR PAINT**

The right hand dash accessories shall be painted with Zolatone #20-72 silver gray texture finish.

**DASH PANEL GROUP**

The main center dash area shall include three (3) removable panels located one (1) to the right of the driver position, one (1) in the center of the dash and one (1) to the left of the officer position. The center panel shall be within comfortable reach of both the driver and officer.

**SWITCHES CENTER PANEL**

The center dash panel shall include twelve (12) rocker switch positions in a six (6) over six (6) switch configuration in the left portion of the panel.

A rocker switch with a blank legend installed directly above shall be provided for any position without a switch and legend designated by a specific option. The non-specified switches shall be two-position, black switches with a green indicator light. Each blank switch legend can be custom engraved by the body manufacturer. All switch legends shall have backlighting provided.

#### **SWITCHES LEFT PANEL**

The left dash panel shall include eight (8) switches in a single row configuration. Five (5) of the switches shall be rocker type and the left three (3) shall be the headlight switch, the instrument lamp dimmer switch and the windshield wiper/washer control switch.

A rocker switch with a blank legend installed directly above shall be provided for any position not designated by a specific option. The non-designated switches shall be two-position, black switches with a green indicator light. Each blank switch legend can be custom engraved by the body manufacturer. All switch legends shall have backlighting provided.

#### **SWITCHES RIGHT PANEL**

The right dash panel shall include no rocker switches or legends.

#### **SEAT BELT WARNING**

A Class One seat belt warning system, integrated with the Vehicle Data Recorder system, shall be installed for each seat within the cab. The system shall activate an indicator light in the instrument panel, a digital seat position indicator with a seat position legend in the switch panel, and an audible alarm.

The warning system shall activate when any seat is occupied with a minimum of 60 pounds, the corresponding seat belt remains unfastened, and the park brake is released. The warning system shall also activate when any seat is occupied, the corresponding seat belt was fastened in an incorrect sequence, and the park brake is released. Once activated, the visual indicators and audible alarm shall remain active until all occupied seats have the seat belts fastened.

#### **SEAT MATERIAL**

The seats shall include a covering of high strength, wear resistant fabric made of durable ballistic polyester. A PVC coating shall be bonded to the back side of the material to help protect the seats from UV rays and from being saturated or contaminated by fluids. Common trade names for this material are Imperial 1200 and Durawear.

#### **SEAT COLOR**

All seats supplied with the chassis shall be gray in color. All seats shall include red seat belts.

#### **SEAT BACK LOGO**

The seat back shall include a "Marion" logo. The logo shall be centered on the standard headrest of the seat back and on the left side of a split headrest.

#### **SEAT DRIVER**

The driver's seat shall be an H.O. Bostrom Sierra model seat with air suspension. The four-way seat shall feature 3.00 inch vertical travel air suspension and manual fore and aft adjustment with 5.00 inches of travel. The suspension control shall be located on the seat below the left front corner of the bottom cushion. The seat shall also feature integral springs to isolate shock.

The seat position shall include a three-point shoulder harness with lap belt and an automatic retractor attached to the cab. The buckle portion of the seat belt shall be mounted on a semi-rigid stalk extending from the seat base within easy reach of the occupant.

The minimum vertical dimension from the seat H-point to the ceiling for this belted seating position shall be 37.00 inches measured with the seat suspension height adjusted to the upper limit of its travel.

This model of seat shall have successfully completed the static load tests set forth by FMVSS 207, 209, and 210 in effect at the time of manufacture. This testing shall include a simultaneous forward load of 3000 pounds each on the lap and shoulder belts and twenty (20) times the weight through the center of gravity.

The materials used in construction of the seat shall also have successfully completed testing with regard to the flammability of materials used in the occupant compartments of motor vehicles as outlined in FMVSS 302, of which dictates the allowable burning rate of materials in the occupant compartments of motor vehicles.

#### **SEAT BACK DRIVER**

The driver's seat shall feature a two (2) way adjustable lumbar support and offer an infinite fully reclining adjustable titling seat back. The seat back shall also feature a contoured head rest.

#### **SEAT MOUNTING DRIVER**

The driver's seat shall be installed in an ergonomic position in relation to the cab dash.

#### **SEAT OFFICER**

The officer's seat shall be an H.O. Bostrom Firefighter model seat. The seat shall feature two-way manual adjustment and shall include a tapered and padded seat cushion. The seat shall also feature integral springs to isolate shock.

The seat shall feature an all belts to seat (ABTS) style of safety restraint. The ABTS feature shall include a three-point shoulder harness with the lap belt, automatic retractor and buckle as an integral part of the seat assembly.

The minimum vertical dimension from the seat H-point to the ceiling for this belted seating position shall be 35.00 inches.

This model of seat shall have successfully completed the static load tests by FMVSS 207, 209, 210 and 302 in effect at the time of manufacture. This testing shall include a simultaneous forward load of 3000 pounds each on the lap and shoulder belts and twenty (20) times the weight through the center of gravity. The model of seats shall also have successfully completed the flammability of materials used in the occupant compartments of motor vehicles as outlined in FMVSS 302, of which decides the burning rate of materials in the occupant compartments of motor vehicles.

#### **SEAT BACK OFFICER**

The officer's seat shall feature a SecureAll™ SCBA locking system which shall be one bracket model and store most U.S. and International SCBA brands and sizes while in transit or for storage within the seat back. The bracket shall be easily adjustable for all SCBA brands and cylinder diameters. All adjustment points shall utilize similar hardware and adjustments shall be made with one tool.

The bracket shall be adjustable to compensate for different cylinder lengths without the use of tools. The adjustment shall be made by raising a lever and moving the top clamp vertically.

The bracket system shall be free of straps and clamps that may interfere with auxiliary equipment on SCBA units. The center guide fork shall keep the SCBA tank in place for a safe and comfortable fit in the seat back cavity. The SCBA unit simply needs to be pushed against the pivot arm to engage the patented auto-locking system. Once the lock is engaged, the top clamp shall surround the top of the SCBA tank for a secure fit in all directions.

The SecureAll™ shall include a release handle which shall be integrated into the seat cushion for quick and easy release. This shall eliminate the need for straps or pull cords to interfere with other SCBA equipment.

The seat back shall include a removable padded cover which shall be provided over the SCBA cavity.

### **SEAT MOUNTING OFFICER**

The officer's seat shall be installed in an ergonomic position in relation to the cab dash.

### **SEAT REAR FACING OUTER LOCATION**

The crew area shall include two (2) rear facing crew seats, which include one (1) located directly behind the left side front seat and one (1) located directly behind the right side front seat.

### **SEAT CREW REAR FACING OUTER**

The crew area shall include a seat in the rear facing outboard position which shall be a H.O. Bostrom Firefighter series. The seat shall feature a tapered and padded seat, and cushion.

The seat shall feature an all belts to seat (ABTS) style of safety restraint. The ABTS feature shall include a three-point shoulder harness with the lap belt and automatic retractor as an integral part of the seat assembly. The buckle portion of the seat belt shall extend from the seat base towards the driver position within easy reach of the occupant.

The minimum vertical dimension from the seat H-point to the ceiling for each belted seating position shall be 35.00 inches.

This model of seat shall have successfully completed the static load tests by FMVSS 207/210. This testing shall include a simultaneous forward load of 3000 pounds each on the lap and shoulder belts and twenty (20) times the weight through the center of gravity. This model of seat installed in the cab model, as specified, shall have successfully completed the dynamic sled testing using FMVSS 208 as a guide with the following accommodations. In order to reflect the larger size outfitted firefighters, the test dummy used shall be a 95th percentile hybrid III male weighing 225 pounds rather than the 50th percentile male dummy weighing 165 pounds as referenced in FMVSS 208. The model of seats shall also have successfully completed the flammability of materials used in the occupant compartments of motor vehicles as outlined in FMVSS 302, of which decides the burning rate of materials in the occupant compartments of motor vehicles.

### **SEAT BACK REAR FACING OUTER**

The rear facing outboard seat shall feature a Bostrom SecureAll™ self contained breathing apparatus (SCBA) locking system which shall store most U.S. and International SCBA brands and bottle sizes while in transit or for storage within the seat back. The bracket shall be easily adjustable for all SCBA

brands and cylinder diameters. All adjustment points shall utilize similar hardware and adjustments shall be made with one tool.

The bracket shall be adjustable to compensate for different cylinder lengths without the use of tools. The adjustment shall be made by raising a lever and moving the top clamp vertically.

The bracket system shall be free of straps that may interfere with auxiliary equipment on SCBA units. The center guide fork shall keep the SCBA tank in place for a safe and comfortable fit in the seat back cavity. The SCBA unit simply needs to be pushed against the pivot arm to engage the patented auto-locking system. Once the lock is engaged, the top clamp shall surround the top of the SCBA tank for a secure fit in all directions.

The SecureAll™ shall include a release handle which shall be integrated into the center of the bottom seat cushion for easy access and to eliminate hooking the release handle with clothing or other equipment.

The seat back shall include a removable padded cover which shall be provided over the SCBA cavity.

#### **SEAT MOUNTING REAR FACING OUTER**

The rear facing outer seat shall be mounted facing the rear of the cab.

#### **SEAT REAR FACING CENTER LOCATION**

The crew area shall include two (2) rear facing crew seats, which include one (1) located directly behind the engine tunnel on the right side of the cab and one (1) located directly behind the engine tunnel on the left side of the cab.

#### **SEAT CREW REAR FACING CENTER**

The crew area shall include a seat in the rear facing center position which shall be a H.O. Bostrom Firefighter series. The seat shall feature a tapered and padded seat back and cushion.

The seat shall feature an all belts to seat (ABTS) style of safety restraint. The ABTS feature shall include a three-point shoulder harness with the lap belt and automatic retractor as an integral part of the seat assembly. The buckle portion of the seat belt shall extend from the seat base towards the driver position within easy reach of the occupant.

The minimum vertical dimension from the seat H-point to the ceiling for each belted seating position shall be 35.00 inches.

This model of seat shall have successfully completed the static load tests by FMVSS 207/210. This testing shall include a simultaneous forward load of 3000 pounds each on the lap and shoulder belts and twenty (20) times the weight through the center of gravity. This model of seat installed in the cab model, as specified, shall have successfully completed the dynamic sled testing using FMVSS 208 as a guide with the following accommodations. In order to reflect the larger size outfitted firefighters, the test dummy used shall be a 95th percentile hybrid III male weighing 225 pounds rather than the 50th percentile male dummy weighing 165 pounds as referenced in FMVSS 208. The model of seats shall also have successfully completed the flammability of materials used in the occupant compartments of motor vehicles as outlined in FMVSS 302, of which decides the burning rate of materials in the occupant compartments of motor vehicles.

#### **SEAT BACK REAR FACING CENTER**

The rear facing center seat shall feature a SecureAll™ self contained breathing apparatus (SCBA) locking system which shall be one bracket model and store most U.S. and International SCBA brands and sizes while in transit or for storage within the seat back. The bracket shall be easily adjustable for all SCBA brands and cylinder diameters. All adjustment points shall utilize similar hardware and adjustments shall be made with one tool.

The bracket shall be adjustable to compensate for different cylinder lengths without the use of tools. The adjustment shall be made by raising a lever and moving the top clamp vertically.

The bracket system shall be free of straps and clamps that may interfere with auxiliary equipment on SCBA units. The center guide fork shall keep the SCBA tank in place for a safe and comfortable fit in the seat back cavity. The SCBA unit simply needs to be pushed against the pivot arm to engage the patented auto- locking system. Once the lock is engaged, the top clamp shall surround the top of the SCBA tank for a secure fit in all directions.

The SecureAll™ shall include a release handle which shall be integrated into the seat cushion for quick and easy release. This shall eliminate the need for straps or pull cords to interfere with other SCBA equipment.

The seat back shall include a removable padded cover which shall be provided over the SCBA cavity.

#### **SEAT BELT ORIENTATION CREW**

The crew position seat belts shall follow the standard orientation which extends from the outboard shoulder extending to the inboard hip.

#### **SEAT MOUNTING REAR FACING CENTER**

The rear facing center seat shall be mounted facing the rear of the cab.

#### **SEAT FRAME REAR FACING CENTER**

The rear facing center seating shall include a seat frame which is located and installed behind the engine tunnel. The seat frame shall measure 40.75 inches wide X 12.00 inches high X 15.88 inches deep. The seat frame shall be constructed of 0.19 inch thick Marine Grade 5052-H32 smooth aluminum plate. The seat box shall be painted with the same color as the remaining interior.

#### **SEAT FRAME REAR FACING CENTER STORAGE ACCESS**

The rear facing center seat frame shall include a storage access opening which shall measure 32.00 inches wide X 8.75 inches high to allow access within the seat frame for storage. A solid access door which shall measure 34.00 inches wide X 11.12 inches high shall be provided at the opening.

#### **SEAT FORWARD FACING OUTER LOCATION**

The crew area shall include two (2) forward facing outboard seats, which include one (1) located next to the outer wall of the cab on the left side of the cab and one (1) located next to the outer wall on the right side of the cab.

#### **SEAT CREW FORWARD FACING OUTER**

The crew area shall include a seat in the forward facing outer position which shall be a H.O. Bostrom Firefighter series. The seat shall feature a tapered and padded seat back and cushion. The bottom

cushion shall be hinged and compact in design for additional room and shall remain in the stored position until occupied.

The seat shall feature an all belts to seat (ABTS) style of safety restraint. The ABTS feature shall include a three-point shoulder harness with the lap belt and automatic retractor as an integral part of the seat assembly. The buckle portion of the seat belt shall extend from the seat base towards the driver position within easy reach of the occupant.

The minimum vertical dimension from the seat H-point to the ceiling for each belted seating position shall be 35.00 inches.

This model of seat shall have successfully completed the static load tests by FMVSS 207/210. This testing shall include a simultaneous forward load of 3000 pounds each on the lap and shoulder belts and twenty (20) times the weight through the center of gravity. This model of seat installed in the cab model, as specified, shall have successfully completed the dynamic sled testing using FMVSS 208 as a guide with the following accommodations. In order to reflect the larger size outfitted firefighters, the test dummy used shall be a 95th percentile hybrid III male weighing 225 pounds rather than the 50th percentile male dummy weighing 165 pounds as referenced in FMVSS 208. The model of seats shall also have successfully completed the flammability of materials used in the occupant compartments of motor vehicles as outlined in FMVSS 302, of which decides the burning rate of materials in the occupant compartments of motor vehicles.

#### **SEAT BACK FORWARD FACING OUTER**

The forward facing outboard seat shall feature a SecureAll™ self contained breathing apparatus (SCBA) locking system which shall be one bracket model and store most U.S. and International SCBA brands and sizes while in transit or for storage within the seat back. The bracket shall be easily adjustable for all SCBA brands and cylinder diameters. All adjustment points shall utilize similar hardware and adjustments shall be made with one tool.

The bracket shall be adjustable to compensate for different cylinder lengths without the use of tools. The adjustment shall be made by raising a lever and moving the top clamp vertically.

The bracket system shall be free of straps and clamps that may interfere with auxiliary equipment on SCBA units. The center guide fork shall keep the SCBA tank in place for a safe and comfortable fit in the seat back cavity. The SCBA unit simply needs to be pushed against the pivot arm to engage the patented auto-locking system. Once the lock is engaged, the top clamp shall surround the top of the SCBA tank for a secure fit in all directions.

The SecureAll™ shall include a release handle which shall be integrated into the seat cushion for quick and easy release. This shall eliminate the need for straps or pull cords to interfere with other SCBA equipment.

The seat back shall include a removable padded cover which shall be provided over the SCBA cavity.

#### **SEAT MOUNTING FORWARD FACING OUTER**

The forward facing outer seat shall be mounted in the furthest outboard position facing the front of the cab.

#### **SEAT FRAME FORWARD FACING**



The forward facing outboard seating positions shall include individual enclosed seat frames for each position located and installed at the outer rear wall positions. The seat frames shall measure 21.81 inches wide X 12.38 inches high X 22.00 inches deep. The seat frames shall be constructed of Marine Grade 5052-H32 0.19 inch thick aluminum plate. The seat frames shall be painted with the same color as the remaining interior.

#### **SEAT FRAME FORWARD FACING STORAGE ACCESS**

There shall be two (2) access points to the storage area centered on the front of the seat frame. Each access point shall be covered by a hinged door to allow access for storage in the seat box.

#### **CAB FRONT UNDERSEAT STORAGE ACCESS**

The left and right under seat storage areas shall have a solid aluminum hinged door with non-locking latch.

#### **SEAT COMPARTMENT DOOR FINISH**

All underseat storage compartment access doors shall have a Zolatone #20-72 silver gray texture.

#### **WINDSHIELD WIPER SYSTEM**

The cab shall include a dual arm wiper system which shall clear the windshield of water, ice and debris. There shall be two (2) windshield wipers which shall be affixed to a radial wet arm. The system shall include a single motor which shall initiate the arm in which both the left hand and right hand windshield wipers are attached, initiating a back and forth motion for each wiper. The wiper motor shall be activated by an intermittent wiper control located within easy reach of the driver's position.

#### **ELECTRONIC WINDSHIELD FLUID LEVEL INDICATOR**

The windshield washer fluid level shall be monitored electronically. When the washer fluid level becomes low the yellow "Check Message Center" indicator light on the instrument panel shall illuminate and the message center in the dual air pressure gauge shall display a "Check Washer Fluid Level" message.

#### **CAB DOOR HARDWARE**

The cab entry doors shall be equipped with exterior pull handles, suitable for use while wearing firefighter gloves. The handles shall be made of aluminum with a chrome plated finish.

The interior exit door handles shall be flush paddle type with a black finish, which are incorporated into the upper door panel.

All cab entry doors shall include locks which are keyed alike. The door locks shall be designed to prevent accidental lockout.

The exterior pull handles shall include a scuff plate behind the handle constructed of polished stainless steel to help protect the cab finish.

#### **DOOR LOCKS**

Each cab entry door shall include a manually operated door lock. The each door lock may be actuated from the inside of the cab by means of a red knob located on the paddle handle of the respective door or by using a TriMark key from the exterior. The door locks are designed to prevent accidental lock out.

#### **DOOR LOCK LH REAR CAB COMPARTMENT**

The left hand side rear compartment shall feature a manual door lock.

**DOOR LOCK RH REAR CAB COMPARTMENT**

The right hand side rear compartment shall feature a manual door lock.

**GRAB HANDLES**

The cab shall include one (1) 18.00 inch knurled, anti-slip, one-piece exterior assist handle behind each cab door. The grab handle shall be made of 14 gauge 304- stainless steel and be 1.25 inch diameter to enable non-slip assistance with a gloved hand.

**REARVIEW MIRRORS**

Retrac Aerodynamic West Coast style dual vision mirror heads model 613305 shall be provided and installed on each of the front cab doors.

The mirrors shall be mounted via 1.00 inch diameter tubular stainless steel arms to provide a rigid mounting to reduce mirror vibration.

The mirrors shall measure 8.00 inches wide X 19.00 inches high and shall include an integral convex mirrors installed in the mirror head below the flat glass to provide a wider field of vision. The flat and convex mirrors shall be motorized with remote horizontal and vertical adjustment. The control switches shall be mounted within easy reach of the driver. The flat and convex mirrors shall be heated for defrosting in severe cold weather conditions.

The mirrors shall be constructed of a vacuum formed chrome plated ABS plastic housing that is corrosion resistant and shall include the finest quality non-glare glass.

**REARVIEW MIRROR HEAT SWITCH**

The heat for the rearview mirrors shall be controlled through a rocker switch on the dash in the switch panel.

**AUXILIARY EXTERIOR MIRRORS**

The cab exterior shall include one (1) Retrac 10.00 inch diameter polishes stainless steel convex look down mirror. The mirror shall be located above the right side front windshield using a Retrac model 612665 stainless steel arm assembly to provide a stable three-point mount to reduce mirror vibration. The mirror shall provide additional visibility to the right front corner of the vehicle.

**CAB FENDER**

Full width wheel well liners shall be installed on the extruded cab to limit road splash and enable easier cleaning. Each two-piece liner shall consist of an inner liner 16.00 inches wide made of vacuum formed ABS composite and an outer fenderette 5.00 inches wide made of 12 gauge polished aluminum.

**MUD FLAPS FRONT**

The front wheel wells shall have mud flaps installed on them.

**CAB EXTERIOR FRONT & SIDE EMBLEMS**

The cab shall include three (3) Spartan emblems. There shall be one (1) installed on the front air intake grille and one (1) installed on each side of the cab exterior above the wheel well.

**CAB EXTERIOR MODEL NAMEPLATE**

The cab shall include custom "Metro Star" nameplates on the front driver and officer side doors.

### **IGNITION**

A master battery system with a keyless start ignition system shall be provided. Each system shall be controlled by a one-quarter turn Cole Hersee switch, both of which shall be mounted to the left of the steering wheel on the dash. A chrome push type starter button shall be provided adjacent to the master battery and ignition switches.

Each switch shall illuminate a green LED indicator light on the dash when the respective switch is placed in the "ON" position.

The starter button shall only operate when both the master battery and ignition switches are in the "ON" position.

### **BATTERY**

The single start electrical system shall include six (6) Harris BCI 31 950 CCA batteries with a 210 minute reserve capacity and 4/0 welding type dual path starter cables per SAE J541. The cables shall have encapsulated ends with heat shrink and sealant.

### **BATTERY TRAY**

The batteries shall be installed within two (2) stainless steel battery trays located on the left side and right side of the chassis, securely bolted to the frame rails. The battery trays shall be coated with the same material as the frame.

The battery trays shall include drain holes in the bottom for sufficient drainage of water. A durable, non-conducting, interlocking mat made by Dri-Dek shall be installed in the bottom of the trays to allow for air flow and help prevent moisture build up. The batteries shall be held in place by non-conducting phenolic resin hold down boards.

### **BATTERY BOX COVER**

Each battery box shall include a stainless steel cover which protects the top of the batteries. Each cover shall include flush latches which shall keep the cover secure as well as a black powder coated handle for convenience when opening.

### **BATTERY CABLE**

The starting system shall include cables which shall be protected by 275 degree F. minimum high temperature flame retardant loom, sealed and encapsulated at the ends with heat shrink and sealant.

### **BATTERY JUMPER STUD**

The starting system shall include battery jumper studs. These studs shall be located in the forward most portion of the driver's side lower step. The studs shall allow the vehicle to be jump started, charged, or the cab to be raised in an emergency in the event of battery failure.

### **ALTERNATOR**

The charging system shall include a 320 amp Leece-Neville 12 volt alternator. The alternator shall include a self-exciting integral regulator.

### **BATTERY CONDITIONER**

A Kussmaul 35/10 battery conditioner shall be supplied. The battery conditioner shall provide a 35 amp output for the chassis batteries and a 10 amp battery saver output. The battery conditioner shall be mounted in the cab in the LH rear facing outer seating position.

#### **BATTERY CONDITIONER DISPLAY**

A Kussmaul battery conditioner display shall be supplied. The battery conditioner display shall be mounted in the cab, viewable through the cab mid side window behind the left front door.

#### **AUXILIARY AIR COMPRESSOR**

A Kussmaul Auto Pump 120V air compressor shall be supplied. The air compressor shall be installed behind the officer's seat. The air compressor shall be plumbed to the air brake system to maintain air pressure.

#### **ELECTRICAL INLET**

A Kussmaul 20 amp super auto-eject electrical receptacle shall be supplied. It shall automatically eject the plug when the starter button is depressed.

A single item or an addition of multiple items must not exceed the rating of the electric inlet that it's connected to.

#### **Amp Draw Reference List:**

*Kussmaul 1000 Charger - 3.5 Amps*

*Kussmaul 1200 Charger - 10 Amps*

*Kussmaul 35/10 Charger - 10 Amps*

*1000W Engine Heater - 8.33 Amps*

*1500W Engine Heater - 12.5 Amps*

*120V Air Compressor - 4.2 Amps*

#### **ELECTRICAL INLET LOCATION**

An electrical inlet shall be installed on the left hand side of cab over the wheel well.

#### **ELECTRICAL INLET CONNECTION**

The electrical inlet shall be connected to the battery conditioner and the air pump.

#### **ELECTRICAL INLET COLOR**

The electrical inlet connection shall include a yellow cover.

#### **HEADLIGHTS**

The cab front shall include four (4) rectangular halogen headlamps with separate high and low beams mounted in bright chrome bezels.

#### **FRONT TURN SIGNALS**

The front fascia shall include two (2) Whelen model 600 4.00 inch X 6.00 inch programmable amber LED turn signals which shall be installed in a polished aluminum housing above and outboard of the front warning and head lamps.

#### **HEADLIGHT LOCATION**

The headlights shall be located on the front fascia of the cab directly below the front warning lights.

#### **SIDE TURN/MARKER LIGHTS**

The sides of the cab shall include two (2) LED round side marker lights which shall be provided just behind the front cab radius corners.

#### **MARKER AND ICC LIGHTS**

In accordance with FMVSS, there shall be five (5) LED cab marker lamps designating identification, center, and clearance provided. These lamps shall be installed on the roof of the cab. The lamps shall be a beehive shape and include chrome housings. The lights shall measure 2.28 inches high and have a 2.54 inch diameter base.

#### **HEADLIGHT AND MARKER LIGHT ACTIVATION**

The headlights and marker lights shall be controlled through a rocker switch within easy reach of the driver. There shall be a dimmer switch within easy reach of the driver to adjust the brightness of the dash lights. The headlamps shall be equipped with the "Daytime Running" light feature, which shall illuminate the headlights to 80% brilliance when the battery master switch is in the "On" position and the parking brake is released.

#### **GROUND LIGHTS**

Each door shall include an incandescent NFPA compliant ground light mounted to the under side of the cab step below each door. Each light shall include a polycarbonate lens, a housing which is vibration welded and a bulb which shall be shock mounted for extended life. The ground lighting shall be activated by the opening of the respective door as well as rocker switched.

#### **STEP LIGHTS**

The middle step located at each door shall include a recess mounted 4.00 inch round LED light which shall activate with the opening of the respective door.

#### **UNDER BUMPER LIGHTS**

There shall be two (2) 4.00 inch round LED NFPA compliant ground lights mounted under the bumper. The lights shall include a polycarbonate lens, a housing which is vibration welded, and LEDs which shall be shock mounted for extended life. The under bumper ground lighting shall be interlocked with the park brake and the marker light activation.

#### **ENGINE COMPARTMENT LIGHT**

There shall be an incandescent NFPA compliant light mounted under the engine tunnel for area work lighting on the engine. The light shall include a polycarbonate lens, a housing which is vibration welded and a bulb which shall be shock mounted for extended life. The light shall activate automatically when the cab is tilted.

#### **FRONT SCENE LIGHTS**

The front of the cab shall include one (1) Whelen model Pioneer PFP2 contour roof mount scene light installed on the brow of the cab.

The lamp head shall have two (2) 12 volt high intensity LED panels. Each lamp head shall draw 12.0 amps and generate 14,000 lumens total. The lamp head will be adjustable up to 20-degrees and shall measure 4.25 inches in height X 14.00 inches in width. The lamp head and brackets shall be powder coated white.

#### **FRONT SCENE LIGHTS ACTIVATION**

The front scene lighting shall be activated by a rocker switch.

#### **FRONT SCENE LIGHT LOCATION**

There shall be one (1) scene light mounted center on the front brow of the cab.

#### **SIDE SCENE LIGHTS**

The cab shall include two (2) Whelen model Pioneer PFP1 semi-recess mount lights installed one (1) on each side of the cab.

Each lamp head shall have one (1) 12 volt high intensity LED panel. Each lamp head shall draw 6.0 amps and generate 7,000 lumens. Each lamp head shall measure 4.25 inches in height X 8.18 inches in width. Each lamp head shall be mounted at a 15-degree downward angle within a semi-recess housing featuring a chrome flange which shall measure 7.64 inches in height X 11.87 inches in width. The lamp heads shall be powder coated white.

#### **SIDE SCENE LIGHT LOCATION**

The scene lighting located on the left and right sides of the cab shall be mounted in the upper rear portion of the 20.00 inch raised roof of the cab behind the rear crew doors.

#### **SIDE SCENE ACTIVATION**

The scene lights shall be activated by two (2) rocker switches located in the switch panel, one (1) for each light.

#### **INTERIOR OVERHEAD LIGHTS**

The cab shall include a two-section Weldon incandescent dome lamp with a red and clear lens located over each door. The dome lamps shall be rectangular in shape and shall measure approximately 9.50 inches in length X 5.00 inches in width with a black colored bezel. The clear portion of each lamp shall be activated by opening the respective door and both the red and clear portions can be activated by individual switches on each lamp.

An additional two-section Weldon incandescent red and clear lamp shall be provided over the engine tunnel which can be activated by individual switches on the lamp.

#### **AUXILIARY DOME LIGHT LH**

The cab shall include two (2) 7.00 inch diameter auxiliary dome lights above the left hand front seat position. One (1) light shall include a clear lens and one (1) light shall include a red lens. The lights shall be activated by an individual switch located on the side of the light.

#### **AUXILIARY DOME LIGHT RH**

The cab shall include two (2) 7.00 inch diameter auxiliary dome lights above the right hand front seat position. One (1) light shall include a clear lens and one (1) light shall include a red lens. The lights shall be activated by an individual switch located on the side of each light.

#### **MAP LIGHTS**

A Roxter gooseneck style map light shall be provided. The light shall have a clear bulb and a control switch on the base. The light shall be located on the right hand side of the dash.

#### **SPOTLIGHT**

The officer position shall include one (1) 12 volt Collins Pulsar 750 hand-held spotlight which shall be mounted to the right of the engine tunnel. The spotlight shall provide 750,000 candlepower of illumination and shall include a coil cord and a momentary switch.

#### **DO NOT MOVE APPARATUS LIGHT**

The front headliner of the cab shall include a flashing red light clearly labeled "Do Not Move Apparatus". In addition to the flashing red light, an audible alarm shall be included which shall sound while the light is activated.

The flashing red light shall be 6.00 inches long X 2.50 inches wide X 1.75 inches high and shall be located centered left to right for greatest visibility.

The light and alarm shall be interlocked for activation when either a cab door is not firmly closed or an apparatus compartment door is not closed, and the parking brake is released.

#### **MASTER WARNING SWITCH**

A master switch shall be included in the main rocker switch panel. The switch shall be a rocker type, red in color and labeled "Master" for identification. The switch shall feature control over all devices wired through it. Any warning device switch left in the "ON" position shall automatically power up when the master switch is activated.

#### **HEADLIGHT FLASHER**

An alternating high beam headlight flashing system shall be installed into the high beam headlight circuit which shall allow the high beams to flash alternately from left to right.

Deliberate operator selection of high beams will override the flashing function until low beams are again selected. Per NFPA, these clear flashing lights will also be disabled "On Scene" when the park brake is applied.

#### **HEADLIGHT FLASHER SWITCH**

The flashing headlights shall be activated through the master warning switch.

#### **INBOARD FRONT WARNING LIGHTS**

The cab front fascia shall include two (2) Whelen M6 Super LED front warning lights in the left and right inboard positions. The lights shall feature multiple flash patterns including steady burn for solid colors and multiple flash patterns for split colors. The lights shall be mounted to the front fascia of the cab within a chrome bezel.

#### **INBOARD FRONT WARNING LIGHTS COLOR**

The warning lights mounted on the cab front fascia in the inboard positions shall be red.

#### **OUTBOARD FRONT WARNING LIGHTS**

The cab front fascia shall include two (2) Whelen M6 Super LED front warning lights in the left and right outboard positions. The lights shall feature multiple flash patterns including steady burn for solid colors and multiple flash patterns for split colors. The lights shall be mounted to the front fascia of the cab within a chrome bezel.

#### **OUTBOARD FRONT WARNING LIGHTS COLOR**

The warning lights mounted on the cab front fascia in the outboard position shall be red.

## **FRONT WARNING SWITCH**

The front warning lights shall be controlled via rocker switch on the panel. This switch shall be clearly labeled for identification.

## **INTERSECTION WARNING LIGHTS**

The chassis shall include two (2) Whelen M6 series Super LED intersection warning lights, one (1) each side. The lights shall feature multiple flash patterns including steady burn.

## **INTERSECTION WARNING LIGHTS COLOR**

The intersection lights shall be red.

## **INTERSECTION WARNING LIGHTS LOCATION**

The intersection lights shall be mounted on the side of the cab on the front radius.

## **SIDE WARNING LIGHTS**

The cab sides shall include two (2) Whelen M6 Super LED warning lights, one (1) on each side. The lights shall feature multiple flash patterns including steady burn for solid colors and multiple flash patterns for split colors. The lights shall be mounted to the sides of the cab within a chrome bezel.

## **SIDE WARNING LIGHTS COLOR**

The warning lights located on the side of the cab shall be red.

## **SIDE WARNING LIGHTS LOCATION**

The warning lights on the side of the cab shall be mounted over the front wheel well directly over the center of the front axle.

## **SIDE AND INTERSECTOR WARNING SWITCH**

The side and intersector warning lights shall be controlled by a rocker switch on the switch panel. This switch shall be clearly labeled for identification.

## **LIGHTBAR PROVISION**

There shall be one (1) light bar installed on the cab roof. The light bar shall be provided and installed by Spartan Chassis. The light bar installation shall include mounting and wiring to a control switch on the cab dash.

## **CAB FRONT LIGHTBAR**

The lightbar provisions shall be for one (1) Whelen brand Freedom FN72QLED lightbar mounted centered on the front of the cab roof. The lightbar shall be 72.00 inches in length. The lightbar shall feature six (6) red LED lights and two (2) clear LED lights. The clear lights shall be disabled with park brake engaged. The lightbar shall include an Opticom mounted centered in the front of the light bar. The cable shall exit the lightbar on the right side of the cab.

## **LIGHTBAR SWITCH**

The light bar shall be controlled by a rocker switch located on the switch panel. This switch shall be clearly labeled for identification.

## **TRAFFIC CONTROL**



There shall be one (1) GTT (Global Traffic Technologies) Opticom model 795H traffic control optical emitter mounted in the lightbar on the front of the cab roof. The emitter shall be activated by a lighted rocker switch on dash and shall be deactivated when the parking brake is applied.

#### **SIREN CONTROL HEAD**

A Whelen 295SLSA1 electronic siren control head with hard wired microphone. The siren shall offer a selectable 100 or 200-watt output, radio broadcast, public address, and seventeen (17) Scan-Lock siren tones and hands free operation which shall allow the operator to turn the siren on and off from the steering wheel horn ring if a horn/siren selector switch option is also selected. The siren circuitry shall be placed behind the rocker switch panels under the electrical cover with a 30.00 inch loop for the OEM to route as desired. The siren shall be mounted in lower left portion of the center panel.

#### **HORN BUTTON SELECTOR SWITCH**

A rocker switch shall be installed in the switch panel between the driver and officer to allow control of either the electric horn or the air horn from the steering wheel horn button. The electric horn shall sound by default when the selector switch is in either position to meet FMCSA requirements.

#### **AIR HORN ACTIVATION**

The air horn activation shall be accomplished by the steering wheel horn button for the driver and a right hand side Linemaster model SP491-S81 foot switch for the officer. An air horn activation circuit shall be provided to the chassis harness pump panel harness connector.

#### **MECHANICAL SIREN ACTIVATION**

The mechanical siren shall be actuated by two (2) Linemaster model SP491-S81 foot switches mounted in the front section of the cab for use by the driver and officer. A red momentary siren brake rocker switch shall be provided in the switch panel on the dash.

The siren shall only be active when master warning switch is on to prevent accidental engagement.

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

An ECCO model 575 backup alarm shall be installed at the rear of the chassis with an output level of 107 dB. The alarm shall automatically activate when the transmission is placed in reverse.

#### **INSTRUMENTATION**

An ergonomically designed instrument panel shall be provided. Each gauge shall be backlit with LED lamps. Stepper motor movements shall drive all gauges. The instrumentation system shall be multiplexed and shall receive ABS, engine, and transmission information over the J1939 data bus to reduce redundant sensors and wiring.

The instrument panel shall contain the following gauges:

One (1) electronic speedometer shall be included. The primary scale on the speedometer shall read from 0 to 100 MPH, and the secondary scale on the speedometer shall read from 0 to 160 KM/H.

One (1) electronic tachometer shall be included. The scale on the tachometer shall read from 0 to 3000 RPM.

One (1) two-movement gauge displaying primary system, and secondary system air volumes and integral LCD odometer/trip odometer shall be included on the lower portion of the LCD. The scale on

the air pressure gauges shall read from 0 to 150 pounds per square inch (PSI). The air pressure scales shall be linear to operate with an accuracy of 1 degree of the measured data with a red indication zone on the gauge showing critical levels of air pressure. A red indicator light in the gauge shall indicate a low air pressure, as well as a message on the LCD screen. The odometer shall display up to 9,999,999.9 miles. The trip odometer shall display 9,999.9 miles. The LCD shall display Transmission Temperature in degrees Fahrenheit on the upper portion of the LCD. The LCD screen shall also be capable of displaying certain diagnostic functions.

One (1) four-movement gauge displaying engine oil pressure, coolant temperature, fuel level, voltmeter, and an indicator bar displaying Diesel Exhaust Fluid (DEF) LED bar shall be included. The scale on the engine oil pressure gauge shall read from 0 to 120 pounds per square inch (PSI). The engine oil pressure scale shall be linear to operate with an accuracy of 1 degree of the measured. A red indicator light in the gauge shall indicate a low engine oil pressure, as well as a message on the LCD screen. The scale on the coolant temperature gauge shall read from 100 to 250 degrees Fahrenheit (F). The coolant temperature scale shall be linear to operate with an accuracy of 1 degree of the measured data with a red indication zone on the gauge showing critical levels of air pressure. A red indicator light in the gauge shall indicate high coolant temperature, as well as a message on the LCD screen. The scale on the fuel level gauge shall read from empty to full as a percentage of fuel remaining. An amber indicator light shall indicate low fuel at 25% tank level. The scale on the voltmeter shall read from 10 to 16 volts with a red indication zone on the gauge showing critical levels of battery voltage. A red indicator light shall indicate high or low system voltage, as well as a message on the LCD screen. The scale on the DEF LED bar will consist of four (4) LEDs displaying levels in increments of 25% of useable DEF in green. Upon decreasing levels, the indicator bar will change colors to notify the driver of decreasing levels of DEF and action will be required. An amber indicator light shall indicate low levels of DEF, as well as a message on the LCD screen and an audible alarm.

The instrument panel shall include a light bar that contains the following LED indicator lights and produce the following audible alarms in applicable configurations:

### **RED LAMPS**

Stop Engine-indicates critical engine fault

Air Filter Restricted-indicates excessive engine air intake restriction

Park Brake-indicates parking brake is set

Seat Belt Indicator-indicates when a seat is occupied and corresponding seat belt remains unfastened

Low Coolant-indicates engine coolant is required

### **AMBER LAMPS**

MIL-indicates an engine emission control system fault

Check Engine-indicates engine fault

Check Trans-indicates transmission fault

High Transmission Temperature-indicates excessive transmission oil temperature

ABS-indicates anti-lock brake system fault

Wait to Start-indicates active engine air preheat cycle

HEST-indicates a high exhaust system temperature

Water in Fuel-indicates presence of water in fuel filter

DPF-indicates a restriction of the diesel particulate filter

Regen Inhibit-indicates regeneration has been postponed due to user interaction

Range Inhibit-indicates a transmission operation is prevented and requested shift request may not occur.

SRS-indicates a problem in the RollTek supplemental restraint system

Check Message-Turn Signal On  
Check Message-Door Ajar  
Check Message-Cab Ajar  
Check Message-ESC Active  
Check Message-DPF Regen Active  
Check Message-No Engine Data  
Check Message-No Transmission Data  
Check Message-No ABS Data  
Check Message-No Data All Communication With Vehicle Systems Has Been Lost  
Check Message-Check Engine Oil Level  
Check Message-Check Washer Fluid Level  
Check Message-Check Power Steering Fluid Level  
Check Message-Low Transmission Fluid Level  
Check Message-Check Coolant Level

### **GREEN LAMPS**

Left and Right turn signal indicators  
ATC-indicates low wheel traction for automatic traction control equipped vehicles, also indicates mud/snow mode is active for ATC system  
High Idle-indicates engine high idle is active.  
Cruise Control-indicates cruise control is active  
OK to Pump-indicates the pump engage conditions have been met  
Pump Engaged-indicates the pump is currently in use  
Auxiliary Brake-indicates secondary braking device is active

### **BLUE LAMPS**

High Beam Indicator

### **CONSTANT AUDIBLE ALARMS FROM GAUGE PACKAGE**

High Trans Temp  
High or Low Voltage  
Seatbelt  
Check Engine  
Check Transmission  
Stop Engine  
Low Air Pressure  
Fuel Low  
Water in Fuel  
ESC  
High Coolant Temperature  
Low Engine Oil Pressure  
Low Coolant Level  
Low DEF Level  
Air Filter Restricted  
Extended Left and Right Turn Remaining On  
Cab Ajar  
Door Ajar  
ABS System Fault  
SRS (Supplemental Restraint System) Fault

## **EXTERNAL AUDIBLE ALARMS**

Air Filter  
Cab Ajar  
Door Ajar  
Seatbelt  
Check Engine  
Stop Engine  
Low Air Pressure  
Water in Fuel  
Low DEF  
ABS System Fault  
SRS (Supplemental Restraint System) Fault  
High or Low Voltage

## **BACKLIGHTING COLOR**

The instrumentation gauges and the switch panel legends shall be backlit using red LED backlighting.

## **AUXILIARY SPEEDOMETER**

The dash shall include an auxiliary speedometer which shall feature a digital readout.

## **CAMERA**

An Audiovox Voyager heavy duty rearview camera system, complete with an LCD display monitor, shall be supplied. One (1) camera with a teardrop shaped chrome plated housing shall be shipped loose for OEM installation in the body to afford the driver a clear view to the rear of the vehicle.

The camera shall be wired to a 7.00 inch flip down monitor which shall include a color display and day and night brightness modes installed above the driver position. The camera shall activate when the transmission is placed in reverse.

## **COMMUNICATION ANTENNA**

An antenna base, for use with an NMO type antenna, shall be mounted on the right hand front corner of the cab roof so not to interfere with light bars or other roof mounted equipment installed by Spartan Chassis. The antenna base shall be an Antenex model MABVT8 made for either a 0.38 inch or 0.75 inch receiving hole in the antenna and shall include 17.00 foot of RG58 A/U cable with no connector at the radio end of the cable. The antenna base design provides the most corrosion resistance and best power transfer available from a high temper all brass construction and gold plated contact design. The antenna base shall be provided by Spartan.

## **COMMUNICATION ANTENNA CABLE ROUTING**

The antenna cable shall be routed from the antenna base mounted on the roof to the area underneath the right hand front seat.

## **AUXILIARY COMMUNICATION ANTENNA**

An auxiliary antenna base, for use with an NMO type antenna, shall be installed on the cab. The antenna base shall be an Antenex model MABVT8 and shall include 17.00 foot of RG58 A/U cable with no connector at the radio end of the cable. The antenna shall be mounted on the left hand front corner of the cab roof so not to interfere with light bars or other roof mounted equipment installed by Spartan Chassis. The antenna base shall be provided by Spartan.

### **AUXILIARY COMMUNICATION ANTENNA CABLE ROUTING**

The auxiliary antenna cable shall be routed from the antenna base mounted on the roof to the area inside the center rocker switch console.

### **ADDITIONAL COMMUNICATION ANTENNA**

An additional antenna base, for use with and NMO type antenna, shall be installed on the cab. The antenna base shall be an Antenex model MABVT8 and shall include 17.00 foot of RG58 A/U cable with no connector at the radio end of the cable. The antenna base shall be mounted in the inboard position on the left hand front corner of the cab roof so not to interfere with light bars or other roof mounted equipment installed by Spartan Chassis. The antenna base shall be provided by Spartan.

### **ADDITIONAL COMMUNICATION ANTENNA CABLE ROUTING**

The additional antenna cable shall be routed from the antenna base mounted on the roof to the area inside the center rocker switch console.

### **EXTRA COMMUNICATION ANTENNA**

An extra antenna base, for use with a NMO type antenna, shall be installed on the cab. The antenna base shall be an Antenex model MABVT8 and shall include 30.00 foot of RG58 A/U cable with no connector at the radio end of the cable. The antenna base shall be mounted on the forward portion of the raised roof on the right hand side approximately 8.00 inches from the center of the cab so it does not interfere with light bars or other roof mounted equipment installed by Spartan Chassis. The antenna base shall be provided by Spartan.

### **EXTRA COMMUNICATION ANTENNA CABLE ROUTING**

The extra antenna cable shall be routed from the antenna base mounted on the roof to the area underneath the right hand front seat.

### **ANCILLARY COMMUNICATION ANTENNA**

An ancillary antenna base shall be installed on the cab. The antenna base shall be a Aviation antenna model Maxrad K220C. The antenna base shall be mounted on the forward portion of the raised roof offset towards the left side from the center of the cab and approximately 10.00 inches from forward antenna mounting location so it does not interfere with light bars or other roof mounted equipment installed by Spartan Chassis. The antenna base shall be provided by the customer.

### **ANCILLARY COMMUNICATION ANTENNA CABLE ROUTING**

The ancillary antenna cable shall be routed from the antenna base mounted on the roof to the area inside the center rocker switch console.

### **CAB EXTERIOR PROTECTION**

The cab face shall have a removable plastic film installed over the painted surfaces to protect the paint finish during transport to the body manufacturer.

### **FIRE EXTINGUISHER**

A 2.50 pound D.O.T approved fire extinguisher with BC rating shall be shipped loose with the cab.

### **DOOR KEYS**

The cab and chassis shall include a total of four (4) door keys for the manual door locks.

## **WARRANTY**

The chassis manufacturer shall provide a limited parts and labor warranty to the purchaser of the custom built cab and chassis for a period of twenty-four (24) months, or the first 36,000 miles, whichever occurs first. The warranty period shall commence on the date the vehicle is delivered to the end user. The limited warranty may be transferred to subsequent owners during the warranty period. The warranty shall include conditional items listed in the detailed warranty document which shall be provided upon request.

## **CHASSIS OPERATION MANUAL**

There shall be two (2) digital copies of the chassis operation manual provided with the chassis. The digital data shall include a parts list specific to the chassis model.

## **ENGINE AND TRANSMISSION OPERATION MANUALS**

There shall be one (1) printed hard copy set of the engine operation manual and one (1) printed hard copy set of the transmission operation manual specific to the model ordered included with the chassis in the ship loose items.

## **CAB/CHASSIS AS BUILT WIRING DIAGRAMS**

The cab and chassis shall include one (1) digital copy of wiring schematics and option wiring diagrams.

# Colchester Rescue Body

## **PRE-CONSTRUCTION MEETING**

A pre-construction meeting shall be held at the Bidders manufacturing facility prior to any construction processes. Authorized representatives of both the Purchaser and the Manufacturer shall be present. The Manufacturer shall supply complete apparatus drawings and specifications at the meeting for review and Purchaser approval.

The bidder's total proposal price shall include transportation, food, and lodging costs for Purchaser personnel to attend the meeting.

## **APPROVAL DRAWINGS**

Two (2) sets of engineering blueprints, CAD drawn to scale specifically for this apparatus, shall be provided. The Fire Department shall review and approve these drawings prior to actual construction of the apparatus.

Both left and right side views, a rear view and a top view shall be provided. The blueprints shall also show the overall dimensions of the apparatus, proposed compartment sizes and features, and the location of all emergency warning and work lights that are to be provided by the body builder.

## **PERFORMANCE REQUIREMENTS**

The apparatus, when fully equipped and loaded, shall be capable of the following performance on dry, level, paved roads in good condition:

From a standing start the vehicle shall attain a true speed of 35 mph within 25 seconds.

From a steady speed of 15 mph the vehicle shall accelerate to a true speed of 35 mph within 30 seconds. This shall be accomplished without moving the gear selector.

The vehicle shall attain a minimum top speed of not less than 50 mph.

The apparatus shall be able to maintain a speed of at least 20 mph on any grade up to and including six percent.

## **MODIFICATIONS TO CHASSIS**

The following modifications shall be performed on the chassis upon arrival at the body builder's facility:

### **FUEL FILL**

The chassis furnished fuel tank shall be located aft of the rear axle. The body builder shall install the fuel fill on the road side behind the rear axle. The fuel fill will hook up with flexible fuel hose and will have a polished cast aluminum recessed filler with a hinged door. A nametag shall be provided as to the type of fuel the vehicle shall use.

When possible a rear access panel will be provided in rear compartment wall to gain access to the fuel tank sending unit.

### **APPARATUS INFORMATION LABEL**

A label shall be provided in the area of the driver seat to notify the driver of the maximum amount of personnel to be carried on the vehicle as well the overall height, overall length, and the GVWR.

### **HELMET LABEL**

A label stating "DO NOT WEAR HELMET WHILE SEATED" shall be provided and visible from each seating location.

### **CHASSIS EXHAUST**

The chassis exhaust shall be extended just past the body side. A stainless steel exhaust deflector shall be located just above the exhaust pipe and below the body to prevent discoloration of the body side panels.

### **REAR TOW EYES**

## Colchester Rescue Body

Two (2) heavy duty eyes, .75" x 4" with a 2.375" elongated hole, shall be furnished at the rear of the body above the step and shall be bolted directly to the truck frame rails. There shall be stainless steel trim panels installed around the tow eyes.

### **PAINTED TOW EYES - BLACK**

Tow eyes will be painted black.

### **REAR SPRING SHACKLE ACCESS**

The rear axle spring shackles, if equipped with grease fittings, shall have the fittings replaced with 90 degree fittings for ease of service once the body is in place.

### **FLUID ID PLATE**

The following quantity and type of fluids used in the vehicle will be listed on a placard and located in the cab:

- Engine oil
- Engine coolant
- Transmission fluid
- \* Pump transmission lubrication fluid
- \* Pump primer fluid
- Drive axle lubrication fluid
- \* Air-conditioning refrigerant
- \* Air-conditioning lubrication oil
- Power steering fluid
- \* Cab tilt mechanism fluid
- \* Transfer case fluid
- \* Equipment rack fluid
- \* Air compressor system lubricant
- \* Generator system lubricant
- Front tire cold pressure
- Rear tire cold pressure
- Maximum tire speed ratings

\* = When applicable.

### **REAR MUDFLAPS**

A black hard rubber mudflap with the manufacturer's logo on it shall be installed behind the rear wheels, one (1) each side.

### **MAP STORAGE DESK, DUAL**

There will be a map storage box installed on the engine cover of chassis. The box will be approximately 21" wide x 12" high x full width of engine cover. The center part of the box will have slots for binders and papers. Each end will include a slanted desk surface with a 1" lip around the entire perimeter to allow for a folding notebook to lay flat inside the unit. The map storage boxes will be made of DA finished smooth aluminum.

Unit shall be fabricated per CFD specification.

### **HELMET HOLDERS**

The chassis manufacturer shall provide and install near each seat position helmet holders to meet compliance to the 2009 edition of NFPA 1901 for use inside of crew cabs. The holders shall secure traditional and contemporary style helmets without any adjustment being required.



# Colchester Rescue Body

## **BODY SPECIFICATIONS**

### **BODY CONSTRUCTION**

All body framing, doors, skin, etc. shall be of all aluminum construction to enhance vehicle performance, reduce overall maintenance and maximize available payload by minimizing the body weight. For maximum strength, the body framing shall be all extruded construction.

### **CROSSMEMBERS**

3" x 2" x .25" wall thickness, 6061-T6 aluminum extruded rectangular tubing on 16" centers.

To eliminate corrosion, all crossmembers and structural tubing will have the ends capped and solidly welded shut on all sides to eliminate the possibility of dirt, water, and salt from entering (NO EXCEPTIONS).

### **UPRIGHTS**

Door openings and between exterior side compartments will have 3" X 2" X .125" wall thickness, 6061-T6 aluminum extruded rectangular tubing. Intermediate uprights of 2" x 1" x .125" wall thickness, 6063-T52 aluminum extruded rectangular tubing on 16" centers.

### **ROOF RAFTERS**

Roof rafters to be 2" x 1" x .125" wall thickness, 6063-T52 aluminum extruded rectangular tubing on 16" centers.

### **ROOF COVE AND CORNER POSTS**

For body strength, the corner posts and roof cove perimeter shall have a 1.5" radius of 6061-T6 extruded .125" aluminum. All corners shall have a 1.5" radius cast aluminum ball cap at the top corners of the body.

### **SKIN**

Smooth .125" aluminum, bonded to uprights. Body sides to be one piece with no visible splice seams or rivets, for superior appearance and graphics.

Entire front body panel between the corner posts to be .125" bright aluminum treadplate. The treadplate front wall will prevent paint chips from stones or other debris which may be kicked up from the road.

### **ROOF**

Roof material to be .125" bright aluminum treadplate, seams and perimeter to be 100% welded. To insure a water tight non leaking roof, skip welding or caulking will not be acceptable.

### **INSULATION**

The body sides above the exterior compartments and roof shall be insulated with 2" sheet styrofoam insulation to reduce thermal loss.

### **RUBRAILS, REMOVABLE EXTRUDED CHANNEL**

Rubrails will be heavy duty extruded aluminum C-channel design with a bright dipped anodized finish. The top edge of the rubrail will include a ribbed design to help hide scratches and the inside of the channel will be striped with 3M diamond grade red-white reflective tape for improved safety. The rubrails shall have a .25" drain gap and will be located under each compartment door flush with the rear step and pump compartment running boards. These shall be fastened to the threshold extrusion on for ease of service and replacement in case of damage.

### **STONE SHIELDS**

Stone shields shall be located on the lower front body corner posts and fastened with stainless steel torx head screws.

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Shields are to be .100" bright aluminum treadplate construction and wrap around the corner posts.

### **FENDERS**

Fenders are to be sized to allow ample clearance for tire chains. The fender liners shall extend full depth to the rear springs and be welded to the rear body panels. The fender liners are to be sealed with continuous welds to the outside and inside body panels to provide maximum strength, elimination of any pockets for the accumulation of dirt and road salt, and to provide ease of cleaning.

### **FENDERETTES**

The fenderettes shall be polished stainless steel held in place to the wheel housing with stainless steel cap screws and well-nuts for easy replacement. The fenderettes and the fasteners shall be isolated from the wheel housing to prevent electrolysis. A trim molding shall be provided between the fenderettes and wheel housing. The fenderettes shall be mounted to the body thereby affording superior protection from debris hitting the sides of the body.

### **FENDER PANELS**

The body panels above the wheel housing shall be .10" bright aluminum treadplate overlay fastened with stainless steel torx head screws for ease of replacement in case of an accident.

### **SPRING SHACKLE CLEARANCE**

Since exterior side compartments are full depth, provisions in the compartments, fore and aft of the rear wheels shall be made for special enclosures around the chassis springs and spring hangers. These enclosures shall be large enough for accessibility into grease fittings and spring pins.

### **BEAVERTAILS - NON SLOPING**

There shall be beavertails extending from the top of the body to the top of the rear beavertail compartment. Construction to be of .125" aluminum. The 1.75" corner posts will be an integral part of the beavertails. Beavertails that have an 'added-on' appearance shall not be permitted.

The two inner vertical beavertail walls that face the rear entrance door shall be .125" bright aluminum treadplate.

### **BODY MOUNTS - NYLON**

There shall be 75,000-90,000 PSI yield high strength .625" bolts to attach the body brackets to the chassis frame, mounted so as to prevent any movement of the body.

Full length nylon sills shall be located between the chassis frame rails and the body.

### **COMPARTMENT VENTS**

Stamped ventilating louvers shall be provided in each compartment and so located that water cannot normally enter the compartment through the louvers. Louvers shall be punched integrally into the back wall of the compartment and be open to the top. Each compartment shall have a minimum of six (6) louvers 4" long for good air circulation to dry out compartment interiors and equipment. **Added on louvers are not acceptable.**

### **EXTERIOR COMPARTMENTS**

All general framing to be aluminum. Compartments shall be an integral part of the body construction and shall also be suspended by the floor crossmembers. The floor crossmembers shall be attached to the main body uprights located between the compartment openings.

### **COMPARTMENT FLOORS**

Compartment floors will be 100% welded to the threshold extrusion. Floor material to be .125" smooth aluminum and to be of integral support to the front, rear and side compartment walls.

The center portion of the floor will be reinforced with an extruded aluminum channel to prevent buckling and oil-canning. To eliminate corrosion the channels will be inverted to eliminate the possibility of dirt, water, and salt from entering (**NO EXCEPTIONS**).

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## **DOOR THRESHOLD**

The door threshold shall be constructed from a sealed box type 6061-T6 aluminum extrusion. The extrusion shall be tied into the extruded uprights and shall provide a flush "sweep-out" style floor with no lip. The extrusion shall run under the compartment floor to prevent damage when heavy equipment is dropped on the front lip of the floor. A formed up compartment floor providing the sweep out lip area shall not be acceptable.

## **MATEFLEX GRATING**

Black Mateflex grating shall be installed where specified. Where appropriate the grating shall have a beveled edge facing the front of the compartment to prevent snagging while loading equipment.

## **COMPARTMENT WALLS**

The compartment sidewalls and rear wall to be .125" smooth aluminum. All compartment seams will be 100% sealed so to provide a water tight compartment.

The side compartment walls will be double wall design so all wiring can be hidden and also allow outlets, switches, reel buttons, breaker boxes, etc. to be recessed into the walls. **Separating the compartments with a single shared wall will not be acceptable. (NO EXCEPTIONS)**

## **ROLL-UP COMPARTMENT DOORS**

The body side compartments shall be equipped with Robinson brand roll up doors.

The doors will be of anodized aluminum to form a close fitting curtain, manufactured of close tolerance slat profiles. The doors will have a pretension operator in a sealed alloy drum. The operator is positioned at the forward part of the compartment to afford maximum clearances and head room. Each door will be provided with side seals as a standard feature. These will be a specially formulated extruded neoprene, shaped to readily shed water. The side seals are mounted in a special extrusion, forward of the curtain track. The latching mechanism will be a lift bar arrangement, which utilizes a door wide spring loaded bar and two (2) cam surfaced latch points. The door will include an additional slat on bottom to allow for adequate lift bar clearance. Any roll door that exceeds a 63" high door opening from the rubrail or above 30" if over a wheel well shall include a pull down strap to make for easy closing.

## **DOOR FINISH**

The body side compartment roll up doors shall have a natural anodized finish.

## **REAR STEP**

The rear step shall be .188" serrated bright aluminum treadplate with a 9.5" x 45" intermediate step of aluminum "Grip Strut" located half way between the door entrance and the main step.

There shall be a warning label mounted above the rear step.

"DANGER - DO NOT RIDE ON REAR STEP WHILE VEHICLE IS IN MOTION. DEATH OR SERIOUS INJURY MAY RESULT."

## **BACKSTOP**

A BACKSTOP rear bumper system shall be installed at the rear tailboard. When the vehicle is in reverse, the system shall automatically apply the vehicle brakes when it senses contact. When the brakes are applied, they will remain applied as long as the vehicle remains in reverse.

## **ZICO LADDER - ROOF ACCESS SWING OUT AND DOWN**

There shall be a Zico swing out and down ladder at the rear of the apparatus. The ladder shall store flat against the body when not in use. The ladder shall pull out to a locked comfortable climbing angle when use is desired also allowing a fold down section to start the ladder climb from the ground. The ladder shall be wired to the door ajar warning light circuit.

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### **DRIP MOLDINGS**

Anodized extruded aluminum drip moldings shall be located above the side compartment doors.

### **PAINT**

The complete apparatus body and any applicable doors shall be painted. All exposed metal surfaces which are not chrome plated or polished shall be thoroughly cleaned and prepared.

To prevent corrosion and to insure bonding of primer, the body shall be washed by a chemical etch system. All irregularities in primed surfaces shall be sanded down before application of the finished coats. All removable items such as compartment doors shall be removed and painted separately.

To prevent electrolysis around fasteners, special attention must be given to how components are fastened to the exterior of body. All vendor-supplied screws shall be discarded and the manufacture shall replace them with their own stainless steel screws. In addition, every screw hole possible that protrudes into the body shall be punched with a square hole and then a plastic insert will be installed to isolate the dissimilar metals. Where an insert cannot be used, a zinc-rich type coating will be applied to each screw before they are installed. **(NO EXCEPTION TO THIS REQUIREMENT)**

Dupont polyurethane enamel "Imron" lead free paint shall be used on the body. Consistent with this requirement and to insure optimum adhesion of final paint and long service of paint, all related materials shall be those specified by the paint manufacturer for use with their finish. These related products shall include, but not be limited to the following: Corlar primer, catalysts, thinners, hardeners and reducers.

The body shall be painted the same color as the chassis.

### **PAINT UPPER BODY 2ND COLOR, ABOVE DOORS**

The body shall be painted from top of body to a line starting at top of the compartment doors.

### **CAB PAINT**

The cab and wheel exteriors shall be supplied in the proper color and shall not be repainted. Fire Department to use an available color from the chassis manufacturer.

### **COMPARTMENT FINISH**

To reduce marring and scuffing, the insides of the exterior compartments shall be painted with a durable light gray spatter type coating.

### **SHELF & TRAY FINISH**

Any shelves, trays, etc. shall be left a natural aluminum oscillated finish to allow for easy equipment mounting. The edges of all the roll-out items will include a 3M diamond grade red-white reflective stripe to improve safety.

### **FINISH PAINT UNDERBODY**

The body undercarriage shall be primed and painted to match the color of the body. This shall include the underside of the compartments, rear step, and wheel well liners.

### **ENCAPSULATED GOLD LEAF LETTERING**

Laminated encapsulated genuine gold leaf lettering shall be furnished on the apparatus. The lettering shall be genuine 23 carat gold leaf and have a burnished (engine turned) finish. The letters shall be encapsulated to protect them from the elements. Letters shall be outlined and drop shaded in black. Up to sixty (60) 3" high letters shall be provided. Lettering layout shall be as follows:

### **ENCAPSULATED GOLD LEAF LETTERING**

Thirty (30) 4"-6" high laminated encapsulated genuine gold leaf letters shall be furnished on the apparatus. The lettering shall be genuine 23 carat gold leaf and have a burnished (engine turned) finish. The letters shall be encapsulated so as to protect them from the elements. Letters shall be outlined and drop shaded in black. Lettering layout shall be as

## Colchester Rescue Body

follows:

### **SEAL, INSTALL CUSTOMER FURNISHED DECAL**

A pair of customer furnished seals will be applied on vehicle. Seals will be located as follows:

### **DECALS**

A pair of U.S. flag decals shall be applied on the vehicle where specified. The flag decals shall be Scotchlite vinyl and shall be approximately 11" x 15".

### **REFLECTIVE STRIPING**

A 6" horizontal Scotchlite reflective cab and body stripe shall be provided.

Stripe shall break at all unpainted surfaces. Where necessary, the striping material shall be applied to a smooth aluminum plate mechanically fastened to the apparatus.

### **OVERALL WIDTH**

Overall Width = 96" + rubrails.

### **GENERAL BODY DIMENSIONS**

Body dimensions shall be to match existing CFD rescue body dimensions.

### **INTERIOR HEADROOM**

The interior headroom shall be 78".

### **COMPARTMENT - UNDER RUBRAIL, ROLL-OUT DRAWER**

There shall be two (2) storage compartment(s) located under the rubrail. The compartment shall be approximately 50" long X 26" deep X 10" high. Clear opening height is approximately 6" high.

The compartment shall be free standing and separate from the apparatus body construction, easily removable and bolted into place. The compartment shall be fabricated of .13" smooth aluminum with reinforcement flanges for the door opening. The compartment interior shall be unpainted. Two (2) rows of louvers shall be provided at the rear of the compartment.

A roll-out drawer (approx. 6" deep) will be provided and fabricated out of .188" smooth aluminum. Drawer will be mounted on 300 lb. capacity Accuride 9308 side mounted tracks that will allow the drawer to be pulled out of compartment 20". The compartment door shall be fabricated from .13" aluminum treadplate and will act as the front face of the roll-out drawer. Weather-stripping shall be provided around the complete door frame. Gasket to be automotive type tubular hollow core weather stripping and shall crimp onto the door jamb lip there by eliminating the need for "glue on" weather stripping. This would allow the gasket to seal around the entire door (NO EXCEPTION).

Door latch to be the deadbolt Circle 'D' type with bent-up easy access 'D' ring stainless steel handle. The latches shall be two-point deadbolt. Door handle, latches and strike plates shall be secured with threaded fasteners. Pop rivet type fasteners shall not be acceptable.

The compartment shall be wired to the open door warning light circuit.

### **VERTICAL DIVIDER (30" MAX DEPTH)**

Two (2) fixed vertical divider(s) shall be fabricated from .13 smooth aluminum. The divider shall have a 1" lip on all edges for added strength.

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### **REMOVABLE DRAWER(S)**

Six (6) pull out, removable drawer(s) shall be provided and fabricated from polypropylene. A hand hold cutout shall be provided in the front and back wall of the drawer so that it can be easily carried when removed.

### **FIXED SHELVES (28" MAX DEPTH)**

Three (3) fixed shelf(s) shall be provided and fabricated from .188" 5052-H32 aluminum. The shelf is to have a 1.5" lip on the front edge to retain equipment.

All shelf spacing shall match existing rescue layout.

### **ADJUSTABLE SHELVES (28" MAX DEPTH)**

Seven (7) adjustable shelf(s) shall be provided and fabricated from .188" high strength 5052-H32 aluminum. The shelves are to have a double channel break both front and rear to form a reinforced channel. The rear channel is to be bent in the opposite direction of the front so that the shelf is reversible to provide either a lip to retain equipment or a smooth sweep-out front.

For ease of adjustment and as additional shelving reinforcement, the shelves shall not be bolted directly to the standards but shall be supported by angle shelf holders that in turn are fastened to the standards.

### **SHELVING STANDARDS FOR ADJUSTABLE SHELVES**

Eleven (11) compartments shall be equipped with heavy duty adjustable shelving standards, one per wall on all depths 20" or less and two per wall on depths greater than 20". These standards are to be the infinitely adjustable type of 6061-T6 extruded aluminum, located 2" up from floor and 12" down from ceiling.

Each compartment shall be equipped with standards.

### **ROLL-OUT TRAY, 600 LB CAPACITY**

Four (4) roll out tray(s) shall be provided in the compartments specified. Trays shall be fabricated of .188" smooth 5052 aluminum and have a 3" high lip on all four sides. The tray shall be mounted on Slidemaster 600 lb. capacity, model SM3 slides that extend 100% of the compartment depth. Track will have a powder coating to prevent corrosion and a spring loaded lock to allow the drawer to lock in the open and closed position.

### **ROLL-OUT/DROP-DOWN TRAY, 250 LB CAPACITY**

Six (6) roll-out/drop down tray(s) shall be provided in the compartments specified. Trays shall be fabricated of .188" smooth 5052 aluminum and have a 3" high lip on all four sides. The tray shall be mounted on Slidemaster #SMT-R, 250 lb. capacity, side mount slides with a powder coating to prevent corrosion. Tray will extend out as far as possible (max. 36") and will tilt down approximately 30 degrees. A chrome plated handle will be installed on the center face of the tray and a latch shall be provided to hold the tray in the closed position.

### **TRANSVERSE RACK**

A .13" smooth aluminum rack will be mounted transversely in compartment for storing long objects. Rack will include five (5) slots and will be open on both ends which will allow access to item from either end of the vehicle. A Velcro strap will be provided on each end to secure equipment. Compartment interior will be left an oscillated aluminum finish.

The below item shows the actual size of equipment and the body manufacturer will be responsible for adding the tolerances for a proper fit.

### **PAC TRACK TOOL BOARDS - 300 LB CAP. ROLL OUT, 20" EXT.**

Two (2) tool board(s) shall be furnished. Each board shall be fabricated of aluminum Pac Track that is located on each side. Each board shall be mounted on a 300 lb. capacity Accuride 9301 ball bearing slides that extend 20". A gas prop will be provided to hold the board in the open and closed position.

Located as directed.

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### **BRACKETS, POWER UNIT**

Custom aluminum brackets will be designed to hold a power unit. Brackets will be bolted in compartment and designed to allow easy removal of power unit. Located as directed.

### **BRACKETS, RAMS**

Custom aluminum brackets will be designed to hold ram(s). Brackets will be bolted in compartment and designed to allow easy removal of the rams(s).

### **BRACKETS, CUTTERS AND OR SPREADERS**

Custom aluminum brackets will be designed to hold the specified tool(s). Brackets will be bolted into compartment and designed to allow easy removal of the tools.

### **BODY INTERIOR FEATURES CONSTRUCTION**

Basic body interior unless otherwise specified shall be of all aluminum construction. Painted and formica over pressed wood surfaces are not acceptable as they are easily scratched and chipped by personnel moving about with equipment and donned air packs. Cabinet and counter lips when furnished shall be trimmed with black edge molding to eliminate any sharp edges.

### **FLOOR**

The interior walkway floor shall be .125" serrated bright aluminum treadplate over .75" marine grade plywood for rigidity. Floor will be bent up approximately 4" on each side to eliminate corner seams and allow easy cleaning and flushing of the walkway. Any floor seams shall be 100% welded to provide a water tightness. The sidewall shall overlap the bent up floor sides to provide a water-shed design. A subpan of .09" thick aluminum shall be located under the plywood to serve as a moisture barrier.

The center aisle side walls to be bright aluminum treadplate to the height of exterior compartments and will overlap the floor lips to provide a water shed design.

### **CEILING**

The ceiling shall be lined with a single piece of seamless white fiberglass USDA approved Kemlite that has a pebble finish for ease of cleaning, maximum light reflection, and lighter weight. The single piece design eliminates seams and plastic trim moldings that can trap dirt, bacteria, and eventually break.

### **WALLS**

The walls shall be lined with a single piece of seamless white fiberglass USDA approved Kemlite that has a pebble finish for ease of cleaning, maximum light reflection, and lighter weight. The single piece design eliminates seams and plastic trim moldings that can trap dirt, bacteria, and eventually break.

### **RUBBER COVERED COUNTER TOPS**

Where specified there shall be black rubber matting installed on counter area with a 1.5" lip.

### **WINDOWS**

Two (2) rectangular, tinted, sliding windows will be located in the body interior, one each side. Windows to be 20" high x 46" long, and have extruded aluminum radius style frames. Window interior opening to be trimmed with an aluminum garnish molding. Windows to be equipped with sliding removable screens.

### **INTERIOR COMPARTMENT FEATURES CABINET WITH MESH DOOR**

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Six (6) .125" bright aluminum treadplate cabinet(s) will be provided. Door will be a black open mesh nylon design, 1" web with 2" squares. The mesh door will be fastened on with velcro around the entire perimeter.

Cabinet(s) will be 48" wide x full height x full depth of counter. Each cabinet will be made as an independent unit and fastened to the interior so it can be removed for future modifications **(NO EXCEPTIONS)**.

### **ADJUSTABLE SHELVES, INTERIOR CABINETS**

Six (6) adjustable shelves will be fabricated from .13" high strength 5052-H32 aluminum. The shelves are to have a bend both front and rear with one bend in the opposite direction so that the shelf is reversible to provide either a lip to retain equipment or a smooth sweep-out front.

For ease of adjustment and as additional shelving reinforcement, the shelves shall not be bolted directly to the standards but shall be supported by an angled gusset that in turn is fastened to the standards.

Heavy duty adjustable shelving standards will be furnished, one each side of cabinet. These standards are to be the infinitely adjustable type of 6061-T6 extruded aluminum.

### **RADIO CABINET WITH BLACK VINYL DOOR**

One (1) radio cabinet(s) fabricated of .125" bright aluminum treadplate will be provided and equipped with a single black vinyl door. Door will have a stainless steel piano hinge and a two (2) lift and turn latches.

### **WALKTHROUGH, BETWEEN CAB & BODY**

A walkthrough shall be installed between the back of the cab and the front of the body. There shall be a weatherproof "accordion" style billows installed to allow for flex between the cab and body. A step threshold plate of bright aluminum shall be provided at the floor of the walkthrough to protect the billows. Head bumpers located between the ceiling and the door opening shall be included for both sides of the walkthrough. The walkthrough shall have a 30" clear opening.

### **HEATER/AIR CONDITIONER COMBO**

There shall be a combination heater/air conditioner installed in the front of the body. A removable cover of bright aluminum treadplate shall be provided to conceal the A/C blower and hoses. All heater water circulating lines shall be insulated hose. Controls will be located on the heater/air conditioning unit. This unit shall be a Red Dot #R9750 and capable of 17,000 BTU of cooling and 25,600 BTU heating.

### **WIRING DIAGRAMS**

Two (2) complete copies of the body electrical wiring diagrams shall be supplied with the unit.

Separate diagrams for the 12 volt DC and 120 volt AC (if applicable) electrical systems shall be provided. Diagrams shall be custom drawn for this specific apparatus. Generic wiring diagrams are not acceptable.

### **12 VOLT WIRING – CONVENTIONAL HARDWIRED**

All of the emergency electrical equipment shall be served by circuits separate and distinct from the vehicle circuits. Body wiring shall be thermo plastic harness type, GXL (125 degree Centigrade) color and/or number or function coded. The wiring shall be grease, oil and moisture resistant, routed in convoluted looms and in protected locations. Wires and looms shall be neatly and securely fastened, and all apertures with proper grommets for passing wiring.

Solderless insulated crimp connectors shall be provided. Wire nut, insulation displacement, and insulation piercing connections shall not be used. All electrical connections that are exposed to the elements shall be of the heat shrink sealant type **(NO EXCEPTIONS)**.

The body electrical shall be designed for controlling the electrical devices of the vehicle. It shall consist of several automotive style relays, circuit breakers and electrical devices strategically located throughout the vehicle **(NO EXCEPTION)**.



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Junction areas with removable aluminum covers shall be located inside the front and rear side compartments.

A wiring trough shall be built into the upper body roof rail and above the exterior compartment doors. Easily removable panels shall be furnished to gain access to these wiring troughs.

### **ELECTRICAL TESTING**

Electrical continuity shall be verified from the chassis or body to all line voltage electrical enclosures, light housings, motor housings, light poles, switch boxes, and receptacle ground connections that are accessible to fire fighters in normal operations as per NFPA section 22.15.4.

### **CAB CONSOLE PANEL - CHASSIS FURNISHED**

The cab control switch console panel provided by the chassis manufacturer shall have rocker type switches with built-in indicator light. Labels shall be back lighted for night operation. The switches shall control all warning lights and accessories.

### **MASTER WARNING LIGHT SWITCH - CHASSIS FURNISHED**

A master warning light switch shall be provided on the cab switch console. The switch shall permit preselection of the emergency warning lights so that all warning lights can be turned on simultaneously through the sequencer.

There shall also be an interlock provided with the parking brake to change the visual warning to indicate "BLOCKING RIGHT OF WAY" mode.

### **LAMP SEQUENCER/LOAD MANAGER - CHASSIS FURNISHED**

Provisions will be provided within the electrical system for sequencing and load management.

In case of a low voltage situation, the system will shed the selected load until the proper voltage is maintained. After the voltage is stabilized the lights will then again switch on sequentially.

### **LOW VOLTAGE ALARM - CHASSIS FURNISHED**

An audible alarm and visual warning light will be installed in the cab to alert of a low voltage situation. The alarm and light will be activated when the voltage at the batteries or at the master load disconnect switch drops below 11.8 volts for more than 120 seconds.

### **REAR BODY CONSOLE PANEL**

There shall be a console panel provided in the interior counter area.

The panel will utilize state of the art multiplex components that include eight (8) touch pad type solid state switches with built in indicator lights. Labeling for switch identification shall be back lighted for night operation and located in the front face of switch for easy identification.

### **SWITCH PANEL LAYOUT**

The switch panel layout will be as follows:

### **RUNNING LIGHTS, LED**

Body shall be equipped with all lighting and reflectors as required by Federal Motor Vehicle Safety Standards.

Clearance lights will be LED type and located around the roof perimeter.

A chrome license plate light shall be provided.

### **MARKER/DIRECTIONAL LIGHTS**

Two (2) amber led marker/directional lights shall be provided, one each side, in rear fenderwells.

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### **STOP, TAIL, AND TURN LIGHTS**

One (1) rectangular Whelen M6 series Linear Super LED amber arrow light each side of body for turn signals.

One (1) rectangular Whelen M6 series Linear Super LED red light each side of body for stop and tail.

### **BACKUP LIGHTS**

One (1) Whelen M6 series maximum intensity LED light with chrome flange shall be provided on each side of body for the backup light, wired to the reverse circuit of the truck transmission.

### **R.O.M COMPARTMENT LED STRIP LIGHTS**

Compartment(s) specified shall have two (2) R.O.M LED strip lights provided. The light tube shall include light emitting diodes of 112 lumens of light per 12" section.

### **DOOR AJAR INDICATOR LIGHT - CHASSIS FURNISHED**

There shall be a chassis furnished flashing red "do not move apparatus when light is on" indicator light in the cab to indicate that a cab door, entrance door, or compartment door is not in the closed position. Light will only illuminate when the parking brake is not fully engaged.

### **DOME LIGHT**

One (1) ROM Durolumen model R02986 white, LED, 12 volt lights shall be recessed in the ceiling to illuminate the interior. The lights shall be equally distributed throughout the interior providing light to the center walkway. The lights shall be activated by a switch located in the area specified.

### **STEP LIGHTS**

There shall be two (2) Whelen model 0AC0EDCR LED surface mounted lights with chrome flanges at the rear entrance door. The lights shall be automatically activated by the entrance door.

Lights deleted for compartment.

### **BUILT IN SCENE LIGHT, LED**

There shall be two (2) Whelen, Pioneer #PFP1 LED, 12 volt light(s) with #PBA103 chrome trim ring recessed in the side of the body as specified. The light(s) shall be activated by a switch in the cab.

The lamp head shall have one (1) lamp that shall draw 6 amps and generate 7,000 lumens. The light shall provide full brightness at power on and instant restarts with no warm-up required. Lamp head and brackets shall be powder coated white.

Shall be located as directed.

### **OPTI-SCENELIGHT SERIES 900 SUPER LED**

Six (6) scenelights shall be provided in the location specified and shall be switched in the cab. The lights shall be Whelen 900 Series Super LED, high intensity 90° gradient Opti-Scenelights™ with 24 diodes and chrome plated flange.

Shall be located as directed.

### **GROUND LIGHTS**

Trucklite rubber mounted ground lights will be installed under each stepping surface. Lights will be mounted under the rear step/entrance door and activated when the doors are opened.

### **GROUND LIGHTS**

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The lights under the chassis entrance doors that are provided by chassis dealer shall be activated when the doors are opened.

### **ADDITIONAL LUMA BAR GROUND LIGHTS**

Six (6) additional Amdor Luma Bar H2O LED light(s) shall be provided under the vehicle in the area specified. The lights shall be switched together with the other ground lights.

### **HANDLIGHT**

Eight (8) orange Streamlight Fire Vulcan model #44401 lantern(s) with 12 volt DC charger bases shall be furnished and installed. The lantern features a Halogen bi-pin bulb and (2) two ultra-bright blue tail-light LEDs that are user programmable in two modes of operation: "Steady" Mode - Halogen only or Halogen and LEDs or "Blinking" Mode - LEDs only or Halogen and LEDs. The chargers shall be wired direct to the chassis batteries.

### **ANTENNA**

There shall be antenna(s) mounted on the chassis cab roof as specified. The antenna lead shall be routed to the area specified.

### **12-VOLT POWER LEAD**

There shall be a 12 gauge power lead and 12 gauge ground wire on the vehicle, terminating in the location specified. This power lead wire will be hooked direct to the battery, bypassing the battery switch.

### **Peltor Intercom SYSTEM**

There shall be a Peltor intercom system installed in the cab and at the operator panel. The system shall include:

One (1) intercom

Two (2) transmit headsets with HM-10 plug in modules and HGR-1 headset hangers for the driver and officer seat positions.

Four (4) headsets with HM-10 plug in modules and HGR-1 headset hangers for the crew cab positions.

Upgrade shall be made to peltor brand.

### **TRAFFIC ADVISOR**

A Whelen model #TAM85 LED Traffic Advisor shall be provided in the area specified. The light shall be 47" long and shall include eight (8) individual TIR6 LED amber lamps. The controls for the unit shall be installed in the chassis cab.

### **LINEAR SUPER LED, SERIES M9, RED**

Twelve (12) Whelen M9 series Linear Super LED red lights with clear lenses and chrome flange shall be provided and mounted as follows:

Shall be located as directed.

### **LINEAR SUPER LED, SERIES M7, RED**

Two (2) Whelen M7 series Linear Super LED red lights with clear lenses and chrome flange shall be provided and mounted as follows:

Shall be located as directed.

### **120 VOLT WIRING & BREAKER PANEL**

All 120 volt wiring shall be metallic or nonmetallic liquid tight flexible conduit rated at not less than 90 degree Centigrade or type SO cord with a WA suffix, rated at 600 volts at not less than 90 degree Centigrade. The cord will be number or

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function coded to assist in trouble shooting.

All electrical equipment shall be circuit breaker controlled from a circuit breaker control panel. A plastic engraved label will be installed near the breaker box to identify the function of each circuit breaker.

A power source specification label shall be permanently attached near the breaker box. The label shall provide the operator with the following information:

- Rated voltage and type
- Phase
- Rated frequency
- Rated Amperage
- Continuous rated watts
- Power source engine speed

### **TRANSFER SWITCH**

An IOTA industries #ITS-50R automatic relay system shall be installed to switch the on-line device between the generator and shoreline inlet when it is connected for use. A time delay shall be provided to prevent the generator from starting under load.

The transfer switch shall power the items determined by the department that are to run when the generator is powered off and the 50 amp shoreline is plugged in (up to 50 amps).

### **HOT SHIFT PTO**

The hydraulic pump shall be driven by the chassis engine VIA a "HOT SHIFT" power take off unit from the chassis transmission. The engagement control to be located in cab, and identified by name plate. A console switch will be provided with a light to indicate "Generator Engaged" and an additional green light will be provided to indicate "OK to Operate Generator".

### **20 KW HARRISON HYDRAULIC GENERATOR**

A complete Harrison 20 KW hydraulic generator system shall be furnished and installed on the apparatus.

#### Generator Performance

Rating: 20,000 watts (20 KW)  
Volts: 120/240  
Phase: Single  
Cycles: 60 Hertz  
Amp. rating: 84/168  
Weight: 367 lbs. (without pump)  
Engine speed at engagement: Idle  
Engine speed after engagement: 1200-2500 RPM  
Generator speed: 1800 R.P.M.

#### Hydraulic Drive Components

If there is sufficient room, the hydraulic pump will be mounted directly to the PTO. There shall be a triangular brace on the tail of the pump for support and to meet the PTO specifications on weight restriction.

If there is not enough room to direct mount the pump to the PTO then the pump shall be mounted to the frame rails with a drive shaft between them. The drive shaft between the generator and the power take-off shall be a tubular type, minimum outside diameter of 2" with a minimum wall thickness of .083. It shall have Spicer #1280 U-joints and be dynamically balanced to insure vibration free performance. NOTE; Solid bar stock type drive shafting is unacceptable. The drive shaft shall have a slip yoke with a minimum of 1.5" travel so that it can be easily removed. Tube shall be D.O.M. (Drawn over

## Colchester Rescue Body

Mandrel) made for drive shafts.

They shall be electrically MIG welded by a certified welder on a specially designed drive shaft fabrication machine. After welding, the drive shaft shall be checked for straightness and dynamically balanced by computerized machinery. All drive shafts shall be balanced. (No exceptions.)

### **System Components**

System components such as hydraulic hoses, the hydraulic reservoir, hydraulic cooler, etc. shall be furnished and installed in accordance with the manufacturer's recommendations and requirements.

### **Manual and Schematics**

Two (2) complete parts lists, maintenance, wiring schematic, hydraulic schematic, circuit boards, voltage regulator board, and other component manuals shall be provided.

### **Cab Mounted Controls**

In addition to the instruments and controls at the circuit breaker box location, additional controls shall be located in the chassis cab adjacent to the driver.

The following controls shall be provided in cab:

1. One (1) hydraulic generator engagement control with red pilot light.
2. One (1) engine fast idle switch.

There shall be a warning light in the cab to indicate when the PTO is engaged. An additional green light will be installed in the cab and marked "Generator PTO operational".

### **GENERATOR CONTROL PANEL**

There shall be an generator control panel complete with one (1) voltmeter, two (2) ammeters, one (1) frequency meter, one (1) hour meter, and two (2) single pole circuit breakers. The panel shall be located near the 120/240 current breaker panel.

### **GENERATOR LOAD TEST**

The generator shall be load tested at the body builders facility by a third-party testing firm. The generator shall be tested at various loads, from no load to full load to ensure reliable power delivery at various loads. The department shall be given a certificate proving completion of this test. The test shall last for two (2) hour and shall be completed after the generator has been installed on the apparatus.

Shall be located in right side wheel well compartment.

### **GENERATOR TESTING**

The generator on the apparatus shall be tested by a third party to ensure proper operation as per NFPA 22.15.6 or 22.15.7.3.5 guidelines.

### **OUTLET, INTERIOR**

One (1) 120 volt AC powerstrips shall be furnished and located as directed by the purchaser. The powerstrip(s) shall be surface mounted and labeled with a permanent nameplate listing the voltage, type of current, phase and amp rating.

## Colchester Rescue Body

### **120 VOLT OUTLETS**

Four (4) 120 volt AC outlet(s) shall be furnished, located as directed by the purchaser. The outlet(s) shall be mounted inside a cast aluminum outlet box, flush mounted to the body side. The receptacle shall be labeled with a permanent nameplate listing the voltage, type of current, phase and amp rating. A weatherproof snap cover shall be provided.

Outlet configuration will be a NEMA #L5-20R.

### **LIGHT, 120 VT FLUORESCENT, RECESSED**

There shall be four (4) Crescent model #SM-220 fluorescent light(s) with two (2) 20 watt bulbs recessed flush in the ceiling. Lights shall be 24" long and covered by a clear plastic panel.

### **LIGHT TOWER**

There shall be two (2) Command Light Model #CL615, low profile extendable lighting system(s) installed as specified. The lights to be wired directly to the generator system circuit breaker panel with conduit and standard copper wire.

The lights shall telescope at 10-1/2 feet above the mounting surface and rotate 360 degrees by a remote control pistol grip having a 20' non-coiled cable.

The light will be equipped with six (6) 1500 watt quartz floodlights, 240 volt.

Instruction and warning labels shall be provided near the operating position of the light tower. A label shall also be provided that states the extended tower height from the ground and bulb replacement data. The light tower shall be equipped with a proximity switch. The switch will be wired into the "do not move apparatus when light is on" indicator light in cab and a light located in the area of the light tower controls. The lights will be activated when the light tower is not fully nested.

A 12-volt observation light will be installed on light tower. The light will be activated as soon as the up position switch is activated. The light is position so it will shine up in the air to help check for any overhead obstacles.

One light shall be upgraded to specified LED. The other shall be a Command Light traffic advisor as specified.

### **ELECTRIC CORD REEL**

There shall be two (2) Hannay #ECR 1600 Series cord reel(s) mounted in the compartment(s) specified. The color of the reel shall be red.

The reel(s) shall be equipped with a 12 volt DC electric rewind motor. A guarded push button switch, no higher than 72" from the ground, shall be located next to the reel to activate the rewind motor. A label will be provided next to the rewind switch that states the reel type.

A label shall be provided in a readily visible location near reel. The label shall indicate:

- Current rating
- Current type
- Phase
- Voltage
- Total cable length

### **12/3 BLACK SO CORD**

Four Hundred (400) feet of 12/3 black SO cord will be provided and installed as specified.

### **ELECTRICAL JUNCTION BOX**

There shall be a total of two (2) Extenda-Lite model EJB four (4) outlet junction box(es) provided with one attached to the end of the electric cord reel(s) specified. Box to include four (4) backlit outlets with weatherproof snap covers. A mounting

## Colchester Rescue Body

bracket shall be furnished on the inside of the compartment door where the cord reel is mounted to hold the connector box.

Outlet configuration will be a NEMA #5-20R.

No Hannay Ball Stop Required

### **AIR HOSE REEL**

There shall be one (1) Hannay EF-1514-17-18 air reel(s) mounted in the compartment(s) specified. The color of the reel shall be silver.

The reel shall be equipped with a 12 volt DC electric rewind motor. A guarded push button switch, no higher than 72" from the ground, shall be located next to the reel to activate the rewind motor. A label will be provided next to the rewind switch that states the reel type. For safety this circuit shall be wired through the battery switch so the reel cannot be rewound when the battery switch is turned off.

A label shall be provided in a readily visible location near reel. The label shall read "Utility Air and indicate:

- Operating pressure
- Total hose length
- Hose size (ID)

### **AIR SUPPLY, LOW PRESSURE, 150 PSI**

An air pressure gauge, regulator, and shut-off valve shall be installed near the reel. This low pressure system shall be piped from the chassis air system and shall include a check valve to prevent air loss to the chassis brake system.

The components shall be mounted on a separate panel. The panel shall be mounted in a compartment on a wall so as to protect the air connections from compartment storage and damage.

### **AIR SUPPLY, LOW PRESSURE, 150 PSI**

An air pressure gauge, regulator, and shut-off valve shall be installed near the reel. This low pressure system shall be piped from the chassis air system and shall include a check valve to prevent air loss to the chassis brake system.

The components shall be mounted on a separate panel. The panel shall be mounted in a compartment on a wall so as to protect the air connections from compartment storage and damage.

### **AIR HOSE**

One (1) feet of 3/8" air hose (300 PSI) will be provided and installed as specified. The hose will be blue to designate utility air.

### **FOLDING ROLLER GUIDE**

To aid in pulling off and rewinding the hose, there shall be a roller guide mounted on the inside of the compartment door closest to the reel. The guide shall have bottom and side rollers but be open on the top so the hose can be lifted out from the roller guide unit. The roller guide will be mounted on a bracket that allows the guide to be folded out of the way with one hand when not in use.

### **MISCELLANEOUS EQUIPMENT**

The following equipment items listed shall be furnished by the body builder per unit price quoted with the apparatus. All equipment shall be shipped loose unless otherwise specified.

2.5 gallon water fire extinguisher bracket

2.5 gallon AFFF extinguisher bracket

8lb flat head axle bracket

30" probar bracket

6' NY Roof Hook Brackets

36" bolt cutter brackets

10 lb sledge hammer bracket

## Colchester Rescue Body

PAC Ironslok  
2.5 BC fire extinguisher  
safety triangles (3)

### **WHEEL CHOCKS**

Two (2) set (pair) of Zico Model #SAC-44 folding type wheel chocks shall be provided. Wheel chocks will be mounted under the body in Zico Model #SQCH-44-H brackets

### **MISCELLANEOUS FASTENERS**

A bag of miscellaneous fasteners that was used on the construction of the apparatus will be provided with the completed unit.

### **CORROSION PROTECTION**

A bottle of ECK corrosion prevention chemical shall be supplied loose with final delivery of the apparatus to ensure the customer will be able to place this on any screws inserted or removed from the body in the future.

### **NFPA REQUIRED ITEMS**

It shall be the purchaser's responsibility to provide all equipment items required by NFPA 1901 that are not otherwise addressed in these specifications. These items shall be installed on the apparatus prior to it being put into active service.

### **WEBSITE UPDATES**

Production photos of the apparatus being built will be provided by the body builder. The photos will be taken every two - three weeks as production allows and posted to a private website designed only for the Fire Department to view. These photos will allow the Department to view the manufacturing process of the truck and possibly detect things that they may want changed earlier in the production process.

### **FACTORY INSPECTION TRIPS**

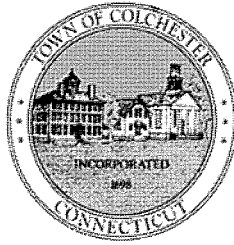
Factory inspection trips shall be provided as specified.



**SCHEDULE B**

Attached RFP

# TOWN OF COLCHESTER



## COLCHESTER FIRE DEPARTMENT



### **1990 SVI Heavy Rescue Re-Chassis & Rescue Body Refurbish R.F.P. Specifications NFPA 1901 2011**

# Instruction to Bidders

## Heavy Rescue Re-chassis and Body Refurbish

June 1, 2013

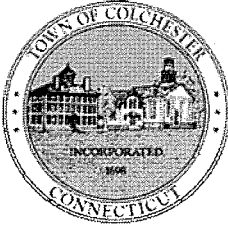
Bids shall be addressed to 1st Selectmen, Gregg Schuster, 127 Norwich Avenue, Suite 201, Colchester, Connecticut. 06415 and received on or before 2:00 P.M. **July 11, 2013**

Bids shall be submitted in a sealed envelope clearly marked, "**Heavy Rescue**"

Bid opening shall take place at the Colchester Town Hall, Office of the 1<sup>st</sup> Selectmen, 127 Norwich Avenue, Suite 201, Colchester, CT. 06415 at 2:00 P.M. **July 11, 2013.**

Any questions concerning this bid may be answered by contacting Assistant Chief Paul Giudice at 860-377-6251.

*No right shall accrue to any person submitting a bid until such bids have been accepted and contract awarded in writing by the duly authorized representative of the Colchester Board of Selectmen. The Colchester Board of Selectmen reserves the right to reject any and all bids and to accept the lowest qualified bidder, and to waive any informalities, omissions, excess verbiage, or technical defects in the Bidding, if, in the opinion of the Board of Selectmen, it would be in their best interest to do so.*



## Town of Colchester Fire Department Instructions to Bidders 2013 Heavy Rescue Fire Apparatus



### **SCOPE**

It is the intent of the Colchester Fire Department and the Town of Colchester to Re-chassis and refurbish a 1990 SVI Heavy Rescue Fire Apparatus to withstand severe and continuous use encountered in the rural fire service.

The following specifications detail the requirements for the general design of the cab and chassis components, and related systems and components, the apparatus body, electrical systems and components, painting and furnished equipment.

All components, including those not specifically mentioned herein, but which are necessary in order to furnish a complete fire apparatus, shall be furnished and installed to the latest standards and practices in the fire apparatus manufacturing industry, National Fire Protection Association Pamphlet No. 1901, latest edition (2013), entitled "Standard for Automotive Fire Apparatus" are minimum specifications. The following specifications may exceed those specifications. Any costs associated with these increased specifications shall be included in the bid.

### **GENERAL REQUIREMENTS**

If any bidder has questions in connection with these specifications, please contact Asst Chief Paul Giudice at 860-377-6251. The Colchester Fire Department will communicate to the bidder and explain the specifications in detail. It is not the intent of these specifications to eliminate any qualified bidder.

The Colchester Fire Department will review the question, and where information sought is not clearly indicated or specified, in the Colchester Fire Department's opinion, will issue a clarifying or correcting addendum bulletin. Proper interpretation or the making of any necessary inquiry will be the Bidders responsibility. Oral answers will not be binding on the Colchester Fire Department or the Town of Colchester.

To be considered, all proposals must be made in accordance with these "Instructions to Bidders". Any contract in which the Town of Colchester shall enter into will include these specifications in whole and or as amended.

## **UNITED STATES MANUFACTURER**

The entire apparatus shall be assembled within the borders of the Continental United States to insure more readily available parts (without added costs and delays caused by tariffs and customs) and service, as well as protecting the purchaser should legal action ever be required.

Where the following detailed specifications require specific brand names, model number, dimension or capacities of components such as: axles, brakes, spring suspension, frame, steering gear, drive line, universal joints, engine, transmission, alternator, batteries, brake system, they have been specified for this apparatus because of their reliability or availability of replacement parts on a local basis.

Since components specified by brand name, model number, dimension, size or capacity are readily available to all manufactures and or potential bidders, substitutes or alternates claimed to be equal may not be acceptable.

This **specification package**, along with manufacturer's specifications and any herein forms, questionnaires, and listed exceptions **shall be submitted** as a part of the bidder's entire bid proposal. A Bidders checklist has been provided to assist the Bidder in providing all necessary documentation. It is included in the appendix section.

In no case shall a Bidder photocopy the purchaser's specifications and submit as their proposal specifications and bid.

Each bidder is required to provide in his bid a "complete and accurate description" of their own detailed product and engineering specifications.

In the event the published literature or other furnished documentation by the bidder is at variance with the requirements of any item of this specification, the bidder shall explain in detail, with full engineering support data, the reasons why the proposed equipment will meet this specification and not be considered an exception thereto. Exceptions will be considered during the evaluation process. Acceptance of any exception by the Colchester Fire Department shall be final. Please refer to the line numbers in the left hand margin of these specifications when making such explanation.

**These specifications shall be construed as minimum.** Should the manufacturer's current published data or specifications exceed these at the time of bid, they shall be considered minimum and be furnished. Bidders shall furnish, free of charge with their bid, technical graphs, charts, photographs, engineering diagrams, drive train certification, or other means to show that the equipment proposed fully complies with this specification.

## **COMPANY HISTORY**

The Bidder shall identify the location of their facility where this fire apparatus is to be manufactured and assembled and the number of regular full time employees at this facility. A complete history of the Bidder's company shall be supplied in its bid.

Bids are requested from the responsible manufacturers who are engaged in the manufacturer of Fire Apparatus and Emergency Vehicles as their sole product. To insure reliable and complete acceptance of the fire apparatus, the bidder shall have been in operation for minimum of 5 years in the fabrication and manufacture of Fire Apparatus. No exception to this requirement.

## **COMPANY RESPONSIBILITY**

The bidder warrants to the Town of Colchester, by submitting the bid, that the company's fire apparatus construction responsibility is the sole, single source for all components, parts, subassemblies, final assembly, finish (whether or not manufactured and or assembled by the companies own forces), including delivery and acceptance. The Bidder cannot make claim against the Town of Colchester for difficulties and delays in procurement, construction, delivery and acceptance of any items specified by the Bidder.

## **COMPLIANCE AND CERTIFICATIONS**

The Bid Heavy Rescue shall comply with all Federal, and State of Connecticut requirements for Fire Apparatus, and NFPA – 1901 2013 edition.

The fire apparatus shall comply with all federal and state Motor vehicle laws.

Upon delivery the following certifications and documentation shall be required three (3) copies each in a bound and indexed binder:

1. Apparatus manufacturer, model and serial number.
2. Chassis make, model and serial number.
3. GAWR of front and rear axles.
4. Certified chassis weight distribution by wheel in pounds with water and manufactured mounted equipment front and rear from a certified scale.
5. Engine make, model, and serial number, number of cylinders, bore, stroke, and displacement. Compression ratio, rated horsepower, related speed per SAE J690 certification of Maximum Net Horsepower for Motor Trucks and Truck Tractors and no load-governed speed.
6. Type of fuel and fuel tank capacity.
7. Electrical system voltage and alternator output in amps.
8. Battery make, model and type.
9. Paint numbers
10. The engines manufacturers' certified brake horsepower curve for the furnished engine.
11. Low voltage (12V) written load analysis and test results as required in these specifications.
12. All apparatus manufacturers warranties, engine with extended warranty, transmission with extended warranty, related component warranties and all other warranties not listed above.
13. Completed as built electrical (12 V and 120V) wiring diagrams, drawings, sketches and component literature including lighting and repair parts lists and diagrams.
14. The apparatus manufacturer as conforming to all applicable federal motor vehicle safety standards in effect and the date of contract shall certify the chassis. This will be attested to by the attachment of a FMVSS certification label on the vehicle by the apparatus manufacturer who will be recognized as the responsible final manufacturer.
15. All operational, repair, and repair parts manuals for the chassis components, and related systems, apparatus manufacturer installed systems and components and the 120V generator.

The bidder shall certify in their bid that a completed apparatus record file, of all components utilized in manufacturing this apparatus, be maintained by the bidding apparatus manufacturer. This record file shall also contain any and all reported deficiencies, all replacement parts required to maintain this apparatus, original purchase documents, including specifications, contract, invoices, incomplete chassis certificates, quality control reports and final delivery acceptance documents. The COLCHESTER FIRE DEPARTMENT and the Town of Colchester shall have access to this file upon request. The record file shall be maintained for a minimum period of ten (10) years.

### **CONTRACT EXECUTION - PAYMENT – TAXES**

Upon award of the bid, a sales contract will be drawn between the Town of Colchester and the manufacturer of the apparatus. Contracts drawn between the Town of Colchester and a sales representative, dealer, distributor, or agent of the apparatus manufacturer will not be acceptable. (No Exceptions.) All bidders shall be required to detail in exact terms the payment for said Heavy Rescue in their proposal. The terms for payment for the Bid Price shall be "payment in full upon delivery and acceptance" of the Heavy Rescue. Alternate terms for payment for the chassis shall be permitted, provided a 100% performance/payment bond is provided, and title to the chassis is received by the Town's lien holder. 100% shall mean the total contract price. A bonding company authorized to conduct such business and permitted to provide such bonds in the State of Connecticut must certify the performance/payment bond. The bond shall be made to the lien holder and the Town of Colchester, Connecticut as loss payee with the Town's lien holder named as additional obligee. Such plans must be detailed in the bid in the alternate section.

The Bid price shall not include any local, State or Federal taxes. The Town of Colchester will provide the necessary tax-exempt information. The Town of Colchester shall not be liable for any State or Federally mandated tax or program after the sale of this Fire Apparatus.

### **BID BOND AND/OR BID SECURITY**

Each bid must be accompanied by a bond certified by a bonding company authorized to conduct such business in the State of Connecticut in the penal amount of ten percent (10%) of the maximum amount of the bid including all "add" alternates made in the name of the Bidder for the Town of Colchester, Connecticut as payee. This requirement is to assure the Town of Colchester the adherence of the Bidder to his/her Bid, the execution of the Contract, Insurance(s) certificates and the furnishing of performance and payment bonds if required.

If the Bidder to whom the contract is awarded, refuses or neglects to execute the contract, or fails to furnish the required insurance certificates or if required to provide a 100% Performance bond within 14 calendar days after notice of award, the amount of his deposit will be forfeited and shall be retained by the Town of Colchester, without any claims of mistake or misfortune or remedies in the defense of any action based upon such accepted Bid by the Bidder or Bonding Company, as liquidated damages. If the bidder is not required to post a performance bond by virtue of 100% payment upon delivery and acceptance has not delivered and been accepted by the Colchester Fire Department, within 30 days from the contract delivery date shall be cause for the cancellation of the contract and forfeiture of the Bid deposit, without any claims of mistakes or misfortune or remedies in the defense of any action based upon such accepted Bid by the Bidder or Bonding Company, as liquidated damages. In addition to the Bid Bond or Security Deposit the Bidder shall also be liable for and agrees to pay the purchaser on demand the difference between the price bid by him/her and the price for which the Contract shall subsequently relet, together with the cost of reletting, if any, less the amount of the deposit.

## **INSURANCE/BONDS**

A certificate of insurance shall be required prior to the contract execution subject to the requirements below. Coverage shall apply during the performance of the contract by bidder, including partial or complete assembly of the chassis, module and all associated equipment, parts, or subassemblies. Coverage shall include any and all liability costs or awards arising from any personal injury or property damage claims during chassis delivery, transportation of components for the construction of, and for the construction of said fire apparatus, and delivery to Colchester Fire Department. Coverage shall remain in effect even if the chassis title has been properly transferred to the Town of Colchester.

The Bidder's insurance carrier must be licensed to do business in Connecticut and must be rated in A.M. Best's *Insurance Guide* with a rating of "A-/VIII" or better. Said policy shall be primary to any policies of insurance available to the Town and must contain thirty (30) days prior notice to the Town of cancellation or content change. Notwithstanding any terms, conditions or provisions, in any other writing between the parties, the Bidder hereby agrees to effectuate the naming of the Town as an unrestricted additional insured on the Bidder's insurance policies, with the exception of Workers Compensation. The policy naming the Town as an additional insured's shall state that the Bidder's coverage shall be primary coverage for the Town and their respective employees, agents, and volunteers. The Bidder shall self-insure any applicable deductibles, and the Bidder shall also agree to indemnify the Town for any applicable deductibles the Town must pay as a result of a claim caused by the negligence of Bidder. The Bidder and its insurers shall waive all rights of subrogation against the Town and their respective officials, agents and employees for losses arising from work performed under the Contract.



The following minimum insurance must be maintained in force by Bidder at its own expense:

(a) Automobile insurance.

A combined single limit of automobile bodily injury and property damage of \$1,000,000 per occurrence is required. The Town of Colchester is to be included as an additional insured.

(b) Commercial General Liability with limits of at least \$1,000,000 per occurrence/\$2,000,000 aggregate to apply per location and/or per project. Coverage for bodily injury, property damage, products/completed operation, personal injury and advertising injury. Coverage at least equal to General Liability policy ISO form CG 0001. An additional endorsement, equivalent to CG 2026 or CG 2010 naming the Town of Colchester and their public officials, agents and employees must be included. A Waiver of subrogation in favor of the Town of Colchester must apply.

(c) Workers Compensation and Employers Liability covering all employees and meeting the requirements of Connecticut law. A waiver of subrogation in favor of the Town of Colchester and its public officials, agents and employees must be included.

(d) A \$5,000,000 umbrella or excess liability coverage must at least follow form over the Auto Liability, General Liability and Employers Liability Coverage.

Said policy or policies shall be primary to any policies of insurance available to the Town.

The Bidder shall hold harmless, defend and indemnify the Board from all loss, liability, damage, penalty, expense or fee, including attorney's fees, or other costs or obligations which result from or arise out of the performance or breach of obligations of the Bidder, any employee, agent or personnel, including without limitation, claims brought against the Board by third parties, employees of the Board, or employees of the Bidder. The indemnification provisions shall survive the termination of the Contract.

#### **DELIVERY SCHEDULE**

Bidder shall on the Bid form, state in **calendar** days, the time from contract execution to acceptance by the Colchester Fire Department a completed and equipped as specified Heavy Rescue without constraints as to delivery, manufacture, assembly or construction of any part, or sub assembly, or equipment.

#### **INFRINGEMENT LIABILITY**

The accepted Bidder, shall defend any and all suits and assume all liability for use and all claims made against the Colchester Fire Department and the Town of Colchester (T.O.C.) or any of its officials or agents for the use of any patents, process, device(s), or article(s) forming a part of the fire apparatus or any equipment furnished under contract.

#### **MANUFACTURERS REPRESENTATIVE**

The successful bidder will designate a competent manufacturer's representative, to perform single source communications between the Colchester Fire Department and the fire apparatus manufacturer on all matters concerning the contract.

## **APPROVAL DRAWINGS**

Detailed scaled drawings preferably produced on CAD, shall be approved by the Colchester Fire Department prior to execution of any construction of the fire apparatus. Changes to the submitted drawings shall be made in red pen. The Colchester Fire Department and the manufacturer shall retain a copy. Final drawings shall be approved by the Chief of the Colchester Fire Department with copies to both parties and included as part of the sales contract and copies thereof.

The drawing(s) shall indicate pertinent dimensions, component and equipment locations, lighting etc.,. The drawings shall be a visual representation of the fire apparatus to be supplied. Changes to the contract shall be represented as an addendum sketch to be attached to the final drawings. If a conflict or omission arises between the drawings and the written specifications the item shall be supplied as if contained in both the drawings and the specifications. Copies of the final drawings and any addendum(s) shall be included in the delivery documentation.

## **PREBUILD CONFERENCE**

The Bidder shall at the convenience of the Colchester Fire Department and within 14 days of contract execution attend a pre-construction conference at Colchester Fire Department headquarters. The conference agenda is for the purpose of working drawing reviews, and any clarifications concerning the fire apparatus construction. The Chief of the Colchester Fire Department shall sign all working drawings and or construction detail acceptance

## **CONTRACT CHANGES**

Any changes to the contract once initiated shall be in writing in a form mutually agreed to by both contract parties and clearly state the nature of contract change, and whether or not any costs are involved. The change order must state the nature of the contract change, the amount of the change, and if the delivery date changes. The "change order" shall be signed by a duly authorized company person and by the First Selectman of the Town of Colchester. For any change that increases the contract price shall be accompanied by a Town of Colchester purchase order.

## **WARRANTY REQUIREMENTS**

Manufacturer shall warrant the Heavy Rescue manufactured by it against defects in material and workmanship provided the Heavy Rescue is used in a normal and reasonable manner for which it is intended. The warranty shall be to the Town of Colchester, Colchester Fire Department for a period of not less than ONE YEAR from the date of delivery. Prices for extended engine and transmission warranties, five (5) year shall be included in the base bid.

The "company" obligations under the warranty is limited to repairing or replacing, as the company may elect, any part or parts of such completed Fire Apparatus which the company's examination discloses to be defective in design, material or workmanship. The replacement of the part shall include full labor, and costs associated with the diagnostics to determine which part is defective.

The company shall provide a list of authorized repair facilities and the capability of the bidder to provide on site repairs for the Chassis, and Apparatus Body and associated systems and components and all related components with the shortest travel distance from Colchester, CT. It shall be the manufacturer's warranty responsibility that any warranty work be expeditiously completed, with priority given to placing this unit back in service within 36 hours. The manufacturer shall bear all costs of receiving necessary warranty replacement parts by overnight delivery. Components not part of this general warranty, which are covered by other warranty's the bidder shall act as the agent for the Colchester Fire Department / Town of Colchester. in expediting warranty work for these components.

The warranty work shall be completed in the Colchester Fire Department facilities at the discretion of the manufacturer, however if in-house repairs cannot be made, the manufacturer shall bear the cost of transportation to and from the repair facility including any towing or flatbed transportation required.

The manufacturer shall provide all warranty work required from other warranted components when such components or systems have failed in causation directly or indirectly or sequentially by altering or damaged caused in construction, assembly or delivery of the completed unit.

This warranty may not apply to:

- a) Major chassis components or trade accessories such as chassis, engines, tires, signaling devices or batteries that carry separate warranty by the original manufacturer of such components. It shall be the Bidders responsibility to register these warranty certificates and supply copies of such at the time of delivery.
- b) Normal adjustments and maintenance service including filters that require replacement before the warranty period expires.
- c) Normal wearing parts that are destined for failure prior to the warranty expiration of one year and the Colchester Fire Department estimate of 10,000 miles 1st year accumulation shall be listed on the Bid sheet.
- d). Failures from the Heavy Rescue being operated in a manner or for the purpose not recognized by the manufacturer, State and Federal motor vehicle laws.
- e). Any component or system that has been altered, repaired in any way so as, in the Company's sole judgment, to have adversely affected the units stability or reliability.
- f). Items subjected to misuse, negligence, accident, improper maintenance, or damage due to acid or chemical spills.

The manufacturer shall make no representation that the Fire apparatus has the capacity to perform any functions other than those contained in the Company's written literature, catalogs or specifications.

No person or affiliated company representative is authorized to give other warranties or to assume any other liability on behalf of the manufacturer in connection with the sale, servicing, or repair of any Fire apparatus manufactured by the Company.

The manufacturer shall have the right to make design changes or improvements in its product in the future, without imposing any obligation upon itself, other than required by law or other adjudication to change or improve the unit covered under these specifications.

The exterior paint and finish on the completed fire apparatus shall be warranted against blistering, peeling, or bubbling due to defects in manufacturing or improper preparation of a period of five **(5) years** from the date of delivery. This warranty does not cover defects if the vehicle is damaged, dented, scratched, or fading due to heat or chemicals from the exposure of hazardous material or fire.

The manufacturer shall warrant to the Colchester Fire Department and the Town of Colchester that the Rescue Body structure (exclusive of paint, finish, hardware) is structurally sound and free of all structural defects of design, material and workmanship and further warrants that it will maintain such structural integrity for a period of **ten (10) years** from the date of manufacture, as designated on a manufacturer's certification plate attached thereto.

The cab and body shall be warranted against rust-through or perforation, due to corrosion from within, for a period of ten (10) years. Perforation is defined as a condition in which an actual hole occurs in a sheet metal panel due to rust or corrosion from within. Surface rust or corrosion caused by chips or scratches in the paint are not covered by this warranty.

### **SUBMISSION OF WARRANTY FORMS**

The Bidder must submit their own printed manufacturer warranty forms in exact compliance to the above minimum standards, without exceptions. Failure to comply to warranty specifications will result in rejection of the bid. All warranties shall be submitted and certified by the manufacturer; warranties by sales representatives, manufacturer's representatives or other agencies shall not be acceptable.

Re-submission of these minimum bid form warranties is NOT acceptable. Bidders must submit their own warranties, on their printed literature forms, (no exceptions).

### **CHASSIS RECEIPT**

If the contract states that the chassis is to be paid after receipt, or constructed by the Bidder, the Bidder shall fully inspect the chassis for compliance with the specifications and that the construction of the chassis has been completed in a workmanlike manner.

The manufacturer shall have the chassis manufacturer arrange for changes to comply with the specifications and quality of work. These changes shall be made prior to the Rescue body installation.

The manufacturer shall record the mileage upon delivery and complete an acceptance record, transmitting such documentation within 36 hours to the Colchester Fire Department. Prior to payment release for the chassis, if required, the Town of Colchester must have in its possession the original title.

### **MATERIALS**

Materials shall conform to the specifications listed herein. When not specifically listed, materials shall be of the best quality for the purpose of custom fire apparatus practice. All materials shall be of first quality free of all defects and imperfections that affect durability and serviceability of the finished product.

## **DESIGN**

Design of the Fire Apparatus shall be in accordance with the best engineering practices. Equipment layout and accessory installation shall permit ease of accessibility for use, maintenance, and service. All components and assemblies shall be free of hazardous protrusions, sharp edges, cracks or other elements, which might cause injury to personnel or equipment.

All oil, air, water, refrigerant, and electrical wiring shall be located in protective positions properly attached to the frame or body structure and shall have protective loom or grommets at each point where they pass through structural members, except where a through-frame or body connector is necessary. These connectors however shall be a quality to withstand the physical elements to which they are exposed.

The following is the design criteria for the development of the enclosed specifications:

### **OVERALL DESIGN AND ENGINEERING**

#### **A. The general description of this fire apparatus:**

1. Custom 4 door cab and chassis, diesel engine, automatic transmission, Weight distribution analysis within 95% of axle components (wheel ground weights).

1. Utilize "A" above for maximum weights.
2. Include extended front bumper, front suction, and appliances and other front bumper mounted components.
3. Cab area to include 250 lbs. per seated position plus 300 lb. of other distributed load within the cab area.
4. Submit calculated data and utilize for front and rear axle, wheel and tire capacity selections.

#### **B. Vehicle size**

1. Provide overall length, width, height, and wheel base dimensions minimizing the shortest wheelbase and over length possible and utilizing the widest step possible from the rear cab doors.
2. Provide steering maximum cramp angle and turning radius Cab, Fire Body, Design including overall flexation of chassis mounted sub assemblies, Structural & finish materials.

Walls

Ceiling

Floor

Doors

Cabinets

Cabinet Doors

#### **E. Finishes**

1. Ease of cleaning surfaces, handles, fixed components, switches
2. Durability of finishes.

#### **F. Warranty**

1. Length
2. Coverage
3. Optional Cost / Coverage

#### **G. Driver Ergonomics**

1. Position of switches, gages, operational controls

#### **H. Corrosion Protection**

I. Serviceability

1. Simplicity of electrical design and component utilization.
2. Ease of troubleshooting component failures.
3. Ease of repair/replacement of components (accessibility)
4. Ease of alterations (access to components and wire-ways)
5. Location of apparatus chassis, chassis component service centers.
6. Location of apparatus and chassis stocking distributors

J. Environmental Systems

1. Engineered HVAC (Heating, and Air Conditioning).
2. Engineered calculated electrical system with submitted data.

In addition to the aforementioned design requirements certain sections of the bid are performance related specifications. It shall be the bidders responsibility to properly design, manufacture and test these assemblies in order to comply with the performance requirements. Chapter 4 NFPA 1901.

These performance requirements are:

1. Weight distribution

The following maximum weight loading shall be utilized to calculate axle and wheel ground weight distributions.

These calculations shall be included in the Bid.

The calculated weights are:

Left Front \_\_\_\_\_

Right Front \_\_\_\_\_

Left Rear \_\_\_\_\_

Right Rear \_\_\_\_\_

During acceptance, the chassis will be weighed on certified scales with loading as above. If the actual axle weights come within 95% of axle certified carrying capacities shall be cause for non-acceptance and a redesign and construction by the bidder will be required in order to comply with this specification.

2. Speed and acceleration. NFPA 4.14

A. Maximum speed 68 MPH

B. Minimum acceleration 0% Grade, 0MPH to 50 MPH in 30 seconds with load above, maximum lighting and Air Conditioning on High.

C. Minimum acceleration 6% grade. 0MPH to 35 MPH in 25 seconds, and still gaining speed with same conditions as "B" above.

### 3. Stopping Distance NFPA 4.16

A. Within 35 feet from 20 MPH, not including reaction distance (0% grade, Dry asphalt road surface). With out front end pull or brake fade, wheel lockup or skid, same operational conditions and load in "2.B" above.

B. Brake test. 10 MPH Panic Stop, all wheels lock.

### 4. Parking Brake

A. Parking brake set, transmission in drive and reverse, engine speed 1000 RPM, with No vehicle movement.

B. Parking brake set, transmission in neutral, 30% grade, no vehicle movement.

### 5. Electrical Design

A. The bidder shall supply a list of all 12 volt connected loads including the chassis with their rated current draw.

B. A 20% increase factor shall be applied to the total above.

C. Provide an 320 amps Leece Neville model 178-131-100, dual belt driven alternator meeting SAE requirements (de-ration factor applied with 200 deg F. ambient temperature that matches the load in "5.B" above at high idle speeds of 1200 to 1400 engine RPM maximum. Battery voltage shall not decrease below 12.5 volt -.2 volt allowance

E. The alternator drive train shall be engineered to withstand the maximum load plus service factors in the "extreme duty" category. Alternator drive bearing design lateral forces shall not be exceeded.

### 6. HVAC Design

A. Bidder shall engineer the Air Conditioning System to withstand the following requirements:

1. Chassis manufacturer supplied Air Conditioning System shall have the capacity to cool the cab of the apparatus to a temperature of 75 degrees F., 50% RH with 95 degree F. and 80%RH Exterior temperature.

### **ENGINEERING SKETCHES**

The evaluation of the bids shall be based on many factors: Three of which shall be design, engineering reliability, and completeness of the sketches. No bidders proposal shall be considered unless complete engineering sketches are submitted with the Bid package. Failure to submit manufacturer's prepared sketches with the Bid will result in automatic rejection.

The submission of these engineering sketches is in addition to scaled drawing for the submission for construction purposes. The engineering sketches will allow the COLCHESTER FIRE DEPARTMENT the ability to fully evaluate the Bidders proposal, design engineering, and sketch quality in comparison to other bidders and to the COLCHESTER FIRE DEPARTMENT'S specifications.

Sketches shall provide the following views.

Left side exterior  
Right side exterior  
Front exterior  
Rear exterior  
Top View  
Interior Cab Floor Plan

### **ACCESSIBILITY**

Parts and components should be located or positioned for rapid and simple inspection and recognition of excessive wear or potential failure. Whenever functional layout of operating components determines that physical or visual interference between items cannot be avoided, the item predicted to require the most maintenance shall be located for best accessibility.

Cover plates, which must be removed for component adjustment or part removal should be equipped with quick disconnection fastening or hinged panels.

Drains, filler plugs, grease fittings, bleeders and other check points for all components should be located so that they are readily accessible and do not require special tools for proper servicing. Design practices should minimize the number of tools required for maintenance.

All components shall be designed and protected so that heavy or other adverse weather conditions will not interfere with normal servicing or operation.

### **ELECTRICAL SCHEMATICS**

The efficient maintenance and service of this fire apparatus is of prime importance to the COLCHESTER FIRE DEPARTMENT. To properly maintain the vehicle electrical system, the fire apparatus must be constructed with the finest in electrical materials, components and workmanship. To maintain the vehicles electrical system, the COLCHESTER FIRE DEPARTMENT must be provided with instructional manuals and complete electrical information and schematics. The electrical information shall be provided as follows:

12 and 120 volt wiring systems:

1. Graphic symbols for electric diagrams.
2. Terminal panel locations.
3. Wire colors and index.
4. Wire labeling, imprinting codes and index.
5. Parts list noting manufacturer and model numbers of components.
6. Master as built working drawing for electrical wiring systems.
7. Individual 8.5" X 11" computer drawn electrical schematics for each body electrical circuit, including chassis added components and controls, noting circuit number, wire size, switches, circuit breaker, terminals for that particular circuit and component.



8. A sample of the 8.5" x 11" electrical schematic must be submitted with the Bid.

### **GENERAL CONSTRUCTION**

The fire apparatus shall be constructed with due consideration to the nature and distribution of the load to be sustained, and to the general characteristics of the service performed.

1. All dimensions are subject to plus or minus 1/8" tolerance, in plane, trueness, alignment, or squareness. The loaded chassis as described in OVERALL DESIGN AND ENGINEERING section A.1, The general description of this fire apparatus, shall not be out of lateral level (side to side) as measured from the bottom of the chassis frame at the front and rear axle by more than 1/4".

The following specifications describe minimum requirements for proposed fire apparatus as designed for continuous reliable service.

The materials specifications are considered absolute minimum. Exceptions will not be accepted or permitted since all raw materials of the specified type are available to all manufactures. Since all custom manufacturers have the ability to shear, break, and weld as these specifications require, all basic design requirements shall be complied with.

### **INSTRUCTIONAL MANUALS**

**The manufacturer shall provide with the vehicle upon delivery, three (3) sets of complete delivery manuals. The manuals shall be in a three-ring notebook type binder(s), with reference tabs for each section of the vehicle. Within each section shall be:**

1. Individual component manufacturer instructions and parts manuals.
2. Warranty forms for the Chassis cab, and Fire Body.
3. Warranty forms for all major components (1 original, 2 copies).
4. Warranty instructions and format to be used in compliance to warranty obligations.
5. Wiring diagrams.
6. Working drawings of final body and compartment fabrication.
7. Necessary normal routine service forms, publications, components of module.
8. Technical publications on training and instructions for major body components.
9. Warning notices and safety related section for personnel protection.
10. **Complete sets** of chassis repair and parts manuals as configured.
11. All items as listed in the **COMPLIANCE AND CERTIFICATIONS** section, items 1 through 15.

## **DELIVERY**

Delivery from the manufacturer's final assembly location shall log the chassis mileage. Delivery shall be direct and continuous from the factory, no stops or detours or delays for demonstration purposes, sales promotions, etc. Chassis manufacturer dealer service must be completed in Connecticut if the odometer reading is in excess of 500 miles prior to delivery to the Colchester Fire Department.

The completed apparatus shall be delivered to the Colchester Fire Department with full written instructions provided to fire department personnel on operation, care, and maintenance of the apparatus, including warranties, and titles.

Delivery of the apparatus shall be by a factory trained delivery engineer, employed by the manufacturer (no exceptions). Transportation shall be by driving the completed fire apparatus from the factory's final assembly plant to Colchester, CT. Transportation by other means such as rail or truck flat bed or towing is not acceptable. The factory trained delivery engineer shall observe all chassis manufacturer break-in requirements.

Fire Department personnel shall be properly instructed as to the proper use of the entire apparatus including, but not limited to, chassis, the apparatus, and all equipment. Training shall be made by a factory-trained specialist who shall be responsible for complete instruction as to operation and maintenance of the chassis, and the completed vehicle.

The training specialist shall remain at the Fire Department for two (2) days (not less than four (4) hours) each day, to provide thorough training of all personnel, or as instructed by Chief of the Department. Training shall be conducted (1) daytime and (1) evening class. All meals, motel, and travel costs shall be the responsibility of the successful bidder.

Transportation shall be considered to include, but not limited to:

- A. Transportation of the Fire Apparatus to the Colchester Fire Department.
- B. Conducting day and evening class for instruction of fire department personnel and drivers in proper operation and maintenance.

The delivery engineer shall set delivery and instruction schedule with the Chief of the Department, or a person so designated to schedule day and or evening classes. Advance notice of at least one (1) week must be given advising the specific day on which the fire apparatus will arrive.

## **ACCEPTANCE**

Before acceptance of the fire apparatus to be furnished in this bid, the Colchester Fire Department shall have the right to inspect and test the fire apparatus and associated equipment to ascertain that all requirements of these specifications have been fully complied with and that all equipment is proper and complete within every respect and in perfect working order.

Testing shall include all performance specifications listed.

Acceptance time allowance shall be 72 hours, provided that no defects, adjustments, corrections or replacements are needed. In the event of acceptance / rejection by the Colchester Fire Department for any equipment, systems, accessories furnished under the contract, the Bidder shall, at its own expense, make such repairs or replacements the Colchester Fire Department considers necessary to

conform to any clause of these specifications within 10 calendar days after notice is given to the manufacturer or its sales agent. Permission to keep or store the equipment in any building owned or operated by the Colchester Fire Department or other town owned facility during the above-specified time shall not constitute acceptance of same.

#### **FORM OF THE BID**

**Failure to comply with all conditions mentioned under "Instructions to Bidders", or the failure to conform to the specifications, will be reasonable cause for the rejection of any Bid. Bid must be submitted on the attached "Town of Colchester, Connecticut Fire Department 2013 Fire Apparatus Bid Form". No Exceptions.**

Any Bid not in accordance with the "Instruction to Bidders" or containing bids not asked for, or not containing all statements contained on the said Bid form, shall be rejected.

Bids shall be enclosed in a sealed envelope marked on the out side of the envelope "Bid for the Town of Colchester Heavy Rescue". Pursuant to the specifications provided, the name of the bidder noted thereon, and shall be delivered at the time and place stated in the "Invitation of Bidders".

#### **EXCEPTIONS, VARIATIONS OR CLARIFICATIONS**

These specifications are based upon design and performance criteria, which have been developed by the Colchester Fire Department as a result of extensive research and careful analysis of available data. Subsequently, these specifications reflect the only type of Heavy Rescue that is acceptable at this time. Therefore, major exceptions to these specifications will not be accepted. Certain exceptions may be accepted if they are minor, equal or superior to that which is specified.

All Bidders are required to submit these specifications in their proposal, noting items where the Bidders proposal differs. Consecutively number each exception, variation or clarification on attached sheet(s) to the Bid utilizing the line numbers in the left hand margin of this bid specification for reference.

For purposes of this Bid the term EXCEPTION means; A compete difference to the Colchester Fire Department specifications.

VARIATION means; a slight alteration of the Colchester Fire Department specifications,

CLARIFICATION means; to narrate the reasons the Bidder takes exception or variation to the Colchester Fire Department specifications and why their proposal equals or exceeds the Colchester Fire Department specifications.

Provide attached sheet(s) to reference the Bidders proposal when these specifications require information concerning materials, design, means and methods or other information.

Brand name or model number has specified some items. These have been carefully selected because of their reliability and availability for replacement locally. In order to be most responsive, items named, or an item "equal to" the particular item specified by brand name or model, should be contained in the bid proposal. It is the bidder's responsibility to prove to the Colchester Fire Department that an item bid as "equal to" a particular specified item, is truly of equal quality, design, and function as the specified item. The Colchester Fire Department and or the Town of Colchester maintains the right to make a final decision as to the acceptability of an item bid as "equal to" a particular specified item.

The Colchester Fire Department assumes that silence to any exception indicates that the paragraph, sentence, line, or item will fully comply with these specifications as determined by the Colchester

Fire Department, and the Town of Colchester regardless of cost to the Bidder. Should the item not comply, when delivered, and the exception is not indicated, in the Bid, or is silent in the executed contract then the item shall be rejected. All items shall be given a general inspection for material, workmanship, and compliance with these specifications prior to acceptance.

Should the item not comply, and an exception was not taken, the Bidder shall be held responsible to fulfill that specification.

#### **WITHDRAWAL OF BIDS**

**Bids may be withdrawn by certified mail or telegraphic request from the Bidder prior to the time and date of the bid opening. Negligence on the part of the Bidder in preparing the bids confers no right for the withdrawal of the Bid after it has been opened. No bidder may withdraw his Bid after the time and date set for the opening thereof.**

#### **BIDS**

All Bids must be signed by the manufacturer or authorized sales representative of the manufacturer for the Heavy Rescue being Bid.

Each Bid must provide the full business name, address and telephone of the Bidder. Bids by a partnership must furnish the full name of all the partners and must be cosigned by each partner. Bids by a corporation, must be accompanied by the name of the state of incorporation and by the signature and designation of the President, Vice president, or Secretary. The name of each person signing shall also be typed or printed below the signature. A bid by a person who affixed to his/her signature the word "President", "Vice President", or "Secretary", may be held to the Bid of the individual signing. Therefore satisfactory evidence of the authority of the officer signing the Bid in behalf of the corporation shall accompany the Bid. All signatures shall be notarized.

## **EVALUATION OF BIDS**

The Colchester Fire Department utilizing the specification design will evaluate bids received.

The Bidder shall disclose any current or pending litigation regarding product liability claims, claims of failure to deliver, or claims of failure to comply with specified components or systems on completed fire apparatus.

No right shall accrue to any person submitting a bid until such bids have been accepted and contract awarded in writing by the duly authorized representative of the Colchester Board Selectmen. The Colchester Board of Selectmen reserves the right to reject any and all bids and to accept the lowest responsible qualified bidder, in accordance with the Town of Colchester purchasing policy and be in the best interest of the Town of Colchester.

The unit will be designed to conform fully to the "Automotive Fire Apparatus" requirements as stated in the NFPA 1901 Standard (2013 Revision) which will include but not limited to the following required chapters as stated in this revision:

Chapter 1	Administration
Chapter 2	Referenced Publications
Chapter 3	Definitions
Chapter 4	General Requirements
Chapter 12	Chassis and Vehicle Components
Chapter 13	Low Voltage Electrical Systems and Warning Systems
Chapter 14	Driving and Crew Areas
Chapter 15	Body, Compartments and Equipment Mounting
Chapter 22	Line Voltage Electrical System
Chapter 23	Referenced Publications

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1     **INSPECTION TRIPS**

2     The bidder shall provide two (2) factory inspections for four (4) customer representatives. The  
3     inspection shall be scheduled at times mutually agreed upon between the manufacturer's  
4     representatives and the customer. All costs such as travel, lodging and meals shall be the  
5     responsibility of the bidder.

6     **TRANSPORTATION OF EXISTING APPARATUS TO BIDDERS FACTORY**

7     The bidder shall be responsible to flat bed the current rescue apparatus to their factory for the  
8     refurb. The bidder will take full responsibility of the apparatus during the transportation process.

9     **SPARTON METRO STAR ELFD CUSTOM CHASSIS**

10    The cab and chassis will be a 2013 Spartan Metro Star extended long four door (8) person cab  
11    manufactured specifically for use in the fire service and meet the requirements of the 2009 edition  
12    of NFPA 1901 Standard.

13    The custom chassis shall be manufactured within the borders of the United States of America.

14    The bidder shall specify the manufacturer of the cab and chassis.

15    The cab shall be custom manufactured, medium four doors, full tilt, and aluminum construction,  
16    with a contour windshield.

17    The cab will be fully enclosed, capable of comfortably seating Six (8) fire fighters in full fire  
18    fighting turnout gear. Cab will be of the cab over engine design, with integral tilt mechanism and  
19    engine access.

20    Cab will be an E. L.F.D. four (4) -door designs, with four (4) side-opening doors. 24 inch raised  
21    roof. (No Exceptions)

22    The cab interior will be the "Open-Space" design with no wall or window between the front and  
23    rear crew area to allow direct communication, better visibility and air circulation in the cab.

24            **CAB MATERIAL**

25    The cab shall be fabricated from a minimum 3/16" (.188) thick, 5052-H32 alloy, marine grade  
26    aluminum sheets.

27            **CAB - BASE CONSTRUCTION**

28    Cab sub frame will be fabricated of 6063 structural aluminum alloys. This frame will extend the  
29    full length and width of the cab and be secured to the chassis frame through two (2) rear urethane  
30    self centering load cushions, two (2) forward pivot brackets, and two (2) cab locks.

31    The front cab wall will be of double wall type construction featuring an inner and outer panel.

32            **24" RAISED CAB ROOF**

33    The cab roof will be ribbed internally for maximum stiffness, with radiused forward and side  
34    edges for a pleasing streamline appearance.

35    Provide a full-length polished aluminum rain gutter running horizontally along each side of the  
36    cab, over the doors and side windows.

- 37        • Provide a minimum of a twenty four (24") inch raised roof over the rear crew  
38        area to ensure adequate headroom and maneuverability. A minimum floor to  
39        ceiling height of **59 inches** shall be provided in the front and **78" inches** floor to  
40        ceiling height in the rear crew area.

41                   **CAB DOORS**

42   Provide four (4) side-opening doors. The cab doors shall be totally aluminum construction with an  
43   extruded aluminum frame and a 3/16" aluminum door skin. Doors will be full height from the step  
44   to the cab roof rain gutter and enclose the step area when the doors are closed. The forward cab  
45   door opening will be a minimum of 37" wide, and the rear cab door opening will be a minimum of  
46   33" wide. The rearward cab doors will have a radius cutout allowing the door opening to protrude  
47   forward over the cab wheel well, while providing full access to the rear crew area.

48   Provide each side cab door with a fully retractable window operated by a crank mechanism.

49   The doors shall close flush with the side of the cab. Provide heavy duty 6" wide belting material to  
50   prevent the cab doors from opening greater than 90 degrees. Provide two (2) large chrome plated  
51   grab handles on the interior of each cab door, positioned to assist cab entry/egress and closing of  
52   the door.

53                   **ENTRY STEP AREA**

54   Each of the forward entrance steps will be a minimum of 9" deep x 29" wide with the floor board  
55   recessed a minimum of 3" to avoid "shin knocking". Each step will be fabricated of aluminum  
56   tread plate. The cab step risers will be overlaid with aluminum tread plate.

57   Each of the rear entrance steps will be a minimum of 8" deep x 22-1/4" wide. An intermediate step  
58   will be provided between the lower entrance step and the crew area floor for ease of entry and  
59   egress. Each set of steps and respective step risers will be fabricated of aluminum tread plate.

60                   **REAR WALL CUT OUT FOR WALK THROUGH RESCUE BODY**

61   Provisions shall be made for a rear wall cutout for watertight access to the walk through rescue  
62   body. The rear wall cut out shall be approximately 34" wide by 72" high. The final dimensions,  
63   structural and necessary fabrication requirements shall be the responsibility of the bidder.

64                   **EXTERIOR REAR LOWER CAB COMPARTMENT**

65   Provide two (2) exterior rear lower cab compartments one (1) each side. The doors shall have slam  
66   style door latches. The doors shall close flush with the side of the cab. Provide heavy duty 6" wide  
67   belting material to prevent the compartment doors from opening greater than 90 degrees. The  
68   compartment shall be as wide, deep and as high as possible. The doors shall contain a signal  
69   switch to signal an open door. The door open circuit shall be wired into cab door ajar light. The  
70   compartment shall have a LED compartment light that actuates/activates when the respective door  
71   is opened and the master battery switch is on.

72                   **DOOR LATCHES**

73   Provide heavy-duty cast paddle latches on the exterior of each cab door. A flush polished stainless  
74   steel paddle latch will be provided on the interior panel of each cab door.

75                   **INTERIOR DOOR LOCKS**

76   All doors shall have interior door locks and exterior keyed door lock controls. The door locks and  
77   the finished door assemblies shall be in conformance with FMVSS 206, with specific adherence to  
78   49 CFR 571.206 Section 4.1.3 requiring that each door shall be equipped with a locking  
79   mechanism. With an interior operating means in the vehicle. All doors shall be keyed alike. The  
80   doors shall be equipped with appropriate safety interlocks to prevent accidental locking of the  
81   doors when closed.

82 **DOOR SCUFF PLATES**

83 Each door interior will have aluminum scuff plates to provide lower and be full width for wear  
84 protection. Reflective STOP signs shall be provided to meet NFPA 14.1.6.

85 **CAB CORROSION PROTECTION**

86 A corrosion preventative material shall be applied during cab construction. A ten-(10)  
87 year warranty against corrosion perforation shall be provided for the cab.

88 **WINDSHIELD/GLASS**

89 Safety plate glass will be used in the windshield with tempered glass being used for the side  
90 windows, door glass, and side sliding crew area glass. All glass will be tinted.

91 The windshield will be of a contour design for improved visibility and style. Provide a two-piece  
92 slide open type window on each side of the cab behind the forward cab doors. These windows will  
93 provide additional ventilation for the enclosed cab.

94 **WINDSHIELD WIPER AND WASHER**

95 Provide dual, electric operated, pantographic type windshield wipers. Wipers will have "HI/LO"  
96 and "INTERMITTENT" operating speeds. "HI/LO" speeds will be controlled by a dash mounted  
97 rocker switch. "INTERMITTENT" operation will be controlled by a dash mounted "paddle/lever"  
98 switch. The wipers will be of the self parking type.

99 Windshield washers will be electric operated wet arm type with a washer fluid reservoir, readily  
100 accessible in the cab, behind the officer's seat. The washer control is integral with the intermittent  
101 wiper control switch.

102 Provide removable panels on the front face of the cab for access to the wiper motor assemblies.

103 **GRAB HANDLES**

104 Provide two (2) 1-1/4" diameter x 28" long, stainless steel grab handles located one at each cab  
105 door entrance. Grab rail stanchions will be chrome plated and of an offset design, when  
106 necessary, to prevent "hand pinching" when opening or closing the doors. Formed rubber gaskets  
107 will be provided between each stanchion base and the cab surface.

108 **INTERIOR GRAB RAIL**

109 Provide two (2) 1-1/4" diameter x 18" long, rubber covered grab rail on the cab dash in front of the  
110 driver and officer's seat area.

111 **AIR INTAKE/OUTLET**

112 Provide for proper engine cooling through an air intake; specify size, of \_\_\_\_ square inches, in the  
113 center front cab sheet. Provide air inlets / outlets, specify size of \_\_\_\_ square inches each, will be  
114 located one (1) on each side of the cab rearward of the forward cab doors. The design will permit  
115 proper ducting of air through the engine compartment and cooling system. The air intake and  
116 outlets will be covered with polished stainless steel grilles, secured with stainless steel fasteners.  
117 The air inlet shall be equipped with Ember Separator as per NFPA.

118 **WHEEL WELL LINERS**

119 The front cab wheel wells shall be equipped with removable, aluminum, inner wheel well liners.  
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**FENDERETTES**

Provide polished aluminum replaceable type federates installed around the front wheel openings.

**MUD FLAPS**

Provide heavy-duty anti-sail type mud flaps behind the front wheels.

**CAB MIRRORS**

Provide Areo Dynamic Retrac 613305 polished aluminum mirrors, located one (1) each side of the cabs front doors. An extension arm shall be provided to provide an adequate view of the mirror from the driver's seat.

The mirrors shall be heated with an on/off switch provided for the driver. The mirrors will be individually remote controlled from the driver's position. Each mirror will contain an integral convex section which will be controlled from the driver's position.

**EIGHT INCH CONVEX K-10 FDNY MIRROR**

Provide an eight-inch K-10 convex mirror on the upper right front of the cab for visibility of the right front corner and bumper by the driver.

**EXTREME DUTY INTERIOR CAB TRIM**

Provide a dashboard of custom formed material to create an ergonomically designed interior to be user friendly and functional for the driver and officer. The instrument cluster will be centered in front of the driver, and all gauges will be custom fitted in a non-glare panel. All warning lights and indicators will be clustered in the lower center portion for easy identification and will be backlit for easy identification when activated.

Provide for provisions for mounting of an additional switch panel in the center of the dash between the driver and officer. Provide for easy access to the main chassis wiring panels and breaker panels.

The cab shall be equipped with a minimum of three (3) sun visors. The visors shall be installed on the overhead panel and provide approximately 90 per cent coverage across the width of the cab. The visors shall be approximately 26 inches wide and six (6) inches tall.

Provide a compartment provided under each front seat with a latched access door. The compartment under the driver seat will measure approximately 13"W x 12"D x 9"H. The radio compartment under the officer seat that will measure approximately 19"W x 12"D x 9"H.

The entire interior rear wall of the cab will be covered with a smooth aluminum painted panel to match interior cab finish.

**FLOORING**

The floor of the driver's compartment and the floor of the crew area shall be covered with rubber matting with barrier type insulation. Edges of the insulation shall be trimmed with aluminum-extruded angle for a pleasing appearance the material shall comply with NFPA noise and heat requirements.

158                   **ENGINE ENCLOSURE**

159       Engine enclosure shall be fabricated from materials compatible with the basic cab material. The  
160       forward portion of the engine enclosure will be covered with formed vinyl to match the balance of  
161       the cab interior. The engine enclosure will not significantly obstruct the driver's vision in any  
162       direction. Inside of enclosure will be insulated to protect against heat and noise.

163       The rear top section of the engine enclosure in the rear crew area shall provide access to the  
164       engine, transmission and power steering reservoir dipsticks.

165                   **CAB SEATING**

166       **Driver's seating position:** Provide an H.O. Bostrom's adjustable air suspension seat.

167       **Officers seating position:** Provide a H.O. Bostrom's Tanker 450 fixed, non-suspension, individual  
168       seat with S.C.B.A. storage. The padded cradle seat back and integral headrest shall be custom  
169       fitted upholstery for ISI S.C.B.A

170       **Crew Members seating position:** Provide four (4) rearward facing H.O. Bostrom's Tanker 450  
171       full-size SCBA seats, and two (2) forward facing H.O. Bostrom's Tanker 400CT Flip-UP ABTS  
172       seats with S.C.B.A. storage, padded cradle seat backs, The S.C.B.A. bracket shall comply with  
173       NFPA crash protection requirements. The padded cradle seat back and integral headrest shall be  
174       custom fitted upholstery for ISI, S.C.B.A to avoid the back cradle from causing abrading of the  
175       padding.

176                   **SECURE-ALL SCBA BRACKET**

177       Secure-All SCBA brackets shall be provided and installed in each S.C.B.A. seat with the  
178       exception of the driver's seat for a total of seven (7) brackets. One (1) secure-all bracket will be  
179       provided in the driver's side exterior lower cab compartment. The brackets will accommodate a  
180       customer supplied ISI, Viking, 4500 psi, 45 minute S.C.B.A. with composite cylinders. The  
181       S.C.B.A. bracket shall comply with NFPA crash protection requirements.

182                   **SEAT BELTS**

183       Provide three point, retractable, shoulder harness type seat belts for all riding positions color **RED**.

184                   **UPHOLSTERY**

185       All seating shall be Grey tweed Durawear.

186       All ABS formed material will be medium gray in color, as well as the seating and upholstery. The  
187       cab upholstered overhead and rear wall portions will be a gray bar pattern.

188                   **HELMET HOLDERS**

189       Provide six (8) Zico UHH-1 helmet holders mounted in the cab / crew area. The location to be  
190       determined during preconstruction conference.

191                   **ANTENNA INSTALLATION**

192       Ten (10) customer furnished antennas will be mounted on the apparatus and will be located as  
193       noted on the final approval drawing. The antennas will be furnished to the manufacturer prior to  
194       construction of the custom chassis. The attached antenna wires will be run to the right side cab  
195       behind the officer's seat, and to the command area unless otherwise specified. (Preconstruction  
196       conference)



197           **RADIO CABLE INSTALLATION**

198   Four (4) remote head radio cables will be furnished to the manufacturer prior to construction of the  
199   custom chassis. The wires will be run from behind the officer's seat, to the dashboard area for  
200   installation of customer radios. Unless otherwise specified. (Preconstruction conference)

201           **INSTRUMENT PANELS**

202   The main instrument panel will be centered in front of the driver and shall be removable with  
203   sufficient slack on wire and cables to service the instrumentation attached. The cab dash panel  
204   will be an anti-glare surface. The instrument panel will include the following gauges and  
205   indicators:  
206

- 207           - Dual needle air pressure gauge
- 208           - Low front air warning light (red) in blacked out warning block
- 209           - Low rear air warning light (red) in blacked out warning block
- 210           - Low air audible alarm
- 211           - Oil pressure gauge with integral low pressure warning light (red)
- 212           - Low oil pressure audible alarm, between oil pressure gauges and transmission
- 213           - Temperature gauge
- 214           - Transmission temperature gauge with integral high temperature warning light (red)
- 215           - High transmission temperature audible alarm
- 216           - Voltmeter with color-coded dial and integral high/low voltage warning light (red)
- 217           - High/low voltage audible alarm
- 218           - Fuel gauge with integral low fuel warning light (red)
- 219           - Water temperature gauge with integral high temperature warning light (red)
- 220           - High water temperature audible alarm
- 221           - Electronic speedometer with LCD totaling odometer and trip odometer
- 222           - Tachometer with integral engine hour meter
- 223           - Air restriction indicator
- 224           - Headlight rocker switch with integral backlit label
- 225           - Dash light dimmer slide with integral backlit label
- 226           - Headlight high beam indicator light (blue) in blacked out warning block
- 227           - Two directional indicator lights (green) in blacked out warning block
- 228           - Windshield wiper rocker switch with integral backlit label
- 229           - Windshield wiper delay slide and momentary washer with integral backlit label
- 230           - Ignition on/off switch
- 231           - Ignition "ON" light (yellow) in blacked out warning block
- 232           - Battery "ON" light (green) in blacked out warning block
- 233           - Engine start rocker switch with integral backlit label
- 234           - Parking brake warning light (red) in blacked out warning block
- 235           - Electric horn/air horn selector switch with integral backlit label
- 236           - "Cab Not Latched" warning light (red) in blacked out warning block
- 237           - 300 amp Ammeter

238   The warning lights and indicators will be clustered in the lower center portion of the dash.

239   Below the main dash panel and to the right of the steering column will be the parking brake  
240   control valve. Additional auxiliary control switches can also be provided in these vertical panels  
241   below the main dash panel.

242                   **OFFICER'S SPEEDOMETER**

243   INSTRUMENTATION: Speedometer

244   The apparatus shall be equipped with a Class I Officer's Speedometer to display apparatus speed.  
245   The display shall be a rectangular shaped, weatherproof, digital display with super-bright digits at  
246   least 1/2" high. The display shall be capable of showing speed in either MPH or KPH. It shall be  
247   located for easy viewing by the officer in the right front seat.

248                   **COMPUTER BRACKET (OFFICER POSITION)**

249   Provide a HiNT-4115 Center sliding mount for a Panasonic Tough book computer on the dash in  
250   front of the officer's position.

251                   **VEHICLE DATA RECORDER (VDR)**

252   The apparatus shall be equipped with an on-board vehicle data recorder (VDR) to monitor critical  
253   driving habits and the status of safety belt use. The VDR shall be capable of recording and storing  
254   the following apparatus and drive train data via the SAE J1939 network and hardwired inputs in  
255   accordance with the requirements of NFPA 1901 Section 4.11.

256                   **DEFOGGER FANS**

257   Provide two (2), six (6) inch defogger fans in addition to the standard windshield defroster. They  
258   will be located in the cab overhead, one (1) each side of the heater/defroster unit. A single switch  
259   located for easy access of the driver shall control the units.

260                   **CREW AREA FANS**

261   Provide two (2), six (6) inch fans. They will be located in the crew area, one (1) each side on the  
262   rear wall. A switch located on the unit shall control the fan.

263                   **HEATING AND AIR CONDITIONING**

264   The cab's climate control system shall use three (3) heater-air conditioner units divided into two  
265   separate circuits. The front circuits use two (2) small heater-air conditioning units, one (1)  
266   mounted under the dash on the driver's side and one (1) under the officer's side dash. These units  
267   are each rated at 24,000 BTU and 2 tons cooling. These units shall be plumbed to their own 9.5  
268   cubic inch per revolution compressor and serpentine fin design condenser. The units blow toward  
269   the windshield through vents in the dash. There shall be two (2) adjustable vents installed to direct  
270   air at the lower portion of the driver and officer seating areas. Three switches on the dash,  
271   including low/med/high, right/left, and heat/off/cool, control these units.  
272

273   The rear circuit shall use one large heater air conditioner unit with a rating of 2 tons cooling and  
274   48,000 BTU heating. It shall be mounted under the forward facing rear seats. Ducting shall run up  
275   the rear wall to adjustable vents (minimum of six) mounted at the ceiling. This unit shall also  
276   utilize its own separate 9.5 cubic inch per revolution compressor and serpentine fin condenser.  
277   Two (2) switches on the seat base, including low/med/high and heat/off/cool, control this unit.  
278

279   A blend air switch shall be installed on the dash that simultaneously operates the front heating and  
280   cooling systems. This provides hot and dry air for defogging purposes.

281  
282   All units utilize permanent magnet motors. Climate control system using dual compressors or  
283   dual condensers plumbed into a single circuit are not acceptable since the failure of one unit shut  
284   down the entire system.

285                    **CAB TILT ASSEMBLY**

286        Provide a cab tilt mechanism custom designed for ease of maintenance consisting of two (2)  
287        hydraulic cylinders. Each cylinder will have an attached hydraulic locking mechanism, in the  
288        event of a hydraulic failure. Hydraulic cylinders will be detachable to allow removal of the engine  
289        for major service. A mechanical cylinder stay bar and release will be provided to insure a positive  
290        lock in the tilted position.

291  
292        Two (2) rear outboard cab latches will be of the hydraulic pressure release, automatic re-latching  
293        type and provide an automatic positive lock when the cab is lowered. The latch must not  
294        disengage or experience any damage when subjected to a pull apart tensile load of 6,000 lbs. The  
295        tilt pump will be electric over hydraulic type. A safety interlock switch will be provided to prevent  
296        accidental tilting of the cab.

297                    **AUXILIARY MANUAL CAB LIFT**

298        An auxiliary manual cab lift backup system will be furnished for use in the event of total electrical  
299        shutdown.

300                    **CHASSIS FRAME**

301        The chassis frame shall be fabricated in its entirety in the factory of the chassis manufacturer.  
302        This will prevent any split responsibility in warranty or service. Provide warranty on chassis  
303        frame.

304  
305        The frame shall consist of two channels fastened together by cross members. All structural  
306        fasteners used in the frame will be Grade 8 with vibration resistant aircraft nuts. Hardened steel  
307        washers will be used under all bolt heads and nuts to avoid stress concentrations. Top flange will  
308        be free of bolt heads. All spring hangers will be steel castings. Hanger or other weldments will not  
309        be acceptable.

310  
311        The minimum frame side rails shall be "C" channel type, 10.25" x 3.5" x .38" 110,000 psi  
312        minimum yield high strength steel with a RBM of 1,827,257 inch pounds and a section modulus  
313        of 16.61 cubic inches.

314  
315        Formed frame rails or a fish-plated frame will not be acceptable.

316  
317        The entire chassis frame assembly consisting of frame rails, cross members, axles and steering  
318        box, will be finish painted **body color yellow** before installation of any electrical wiring, fuel  
319        system components, or air system components.

320                    **SEVERE DUTY FRONT BUMPER**

321        There shall be a 12" high painted formed steel wrap-around (45 degree) bumper provided at the  
322        front of the apparatus. The bumper shall be mounted to a reinforcement plate constructed of 1/4" x  
323        12" x full width carbon steel. The frame rail extension shall be a reinforced four sided boxed  
324        frame rail for superior safety protection. A gravel shield shall be provided, constructed of .188"  
325        aluminum diamond plate. The bumper extension shall be approximately 21". The bumper shall be  
326        the body/cab primary (lower) color.

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**WINCH STORAGE WELL**

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Provide one (1) storage well constructed of 1/8" aluminum in the gravel shield. This storage well will be located center between the frame rails. The size shall be approximately full width between the frame rails, as large as possible. Reinstall department electric winch with guild rollers through the front bumper.

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**WINCH STORAGE WELL COVER**

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A polished aluminum tread plate cover shall be provided for the winch storage well. The cover shall be attached with a heavy-duty stainless steel hinge. A lift and turn latch shall secure the cover in the closed position and pneumatic stay arms shall hold the covers in the open position. A manually operated LED compartment light shall also be provided.

338

**SIGHT RODS**

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Two (2) Bores, model BG48-10, lighted sight rods shall be mounted to the outside corners of the front bumper extension. The rods shall be polished stainless steel. The sight rod shall be mounted in a way that does not interfere with the cab tilt procedure

342

**REMOVE AND REMOUNT AND WIRE ELECTRIC WINCH**

343

Remove from the customer's chassis and remount and rewire 10,000 lb electric winch.

344

**FRONT BUMPER TOW EYES**

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The bumper shall include two (2) painted tow eyes and shall be installed through the front bumper. The tow eyes shall be fabricated from 0.75 inch thick #1020 ASTM-36 hot rolled steel. The inside diameter of the tow eye shall be 2.00 inch and have a chamfered edge. The tow eyes shall be painted to match the frame.

349

**FRONT AXLE**

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Provide a front axle of sufficient capacity as determined by the COLCHESTER FIRE DEPARTMENT loading requirements. The measured load during acceptance shall not exceed 95% of the axle capacity. The front axle shall not be less than a Meritor (Rockwell) MFS-18 with 22,800-pound capacity. Provide Stemco premium oil seals with hubcap window.

355

**STEERING SYSTEM**

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The steering system shall be a package certified by Vickers for the application. All components from the steering column to the drag link shall be manufactured by TRW. A non-certified system shall not be acceptable.

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The steering system shall use a Vickers steering gear with an slave gear which has the capacity to static steer the chassis loaded to 21,500 pounds with 425-size tire. The use of two equal size gears or a single gear with an assist cylinder shall not be acceptable.

363

### **STEERING**

364

Provide a front axle powered steering system of sufficient capacity as determined by the Colchester Fire Department loading requirements. The measured load during acceptance shall not exceed 95% of the axle capacity. The steering shall be an integral power assist type utilizing an engine driven hydraulic pump with a maximum operating pressure of 2000 PSI. Steering design will permit a maximum of 5.6 turns from stop to stop. Steering system components will be mounted in accordance with the manufacturer's instructions.

370

371

Provide a vinyl padded steering wheel, minimum 18" diameter, with a center hub mounted horn button. Provide a self canceling directional signal lever and a traffic hazard switch on the steering column. Pulling the directional signal lever toward the driver will control the high beam activator. Provide a steering column with tilting and telescoping capability.

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375

### **FRONT BRAKES**

376

Front brakes shall be determined by selected load capacity of the front axle. Arvin / Meritor 16.5" x 6" S-cam type with Arvin / Meritor automatic slack adjusters. Drums are to be outboard mounted.

377

378

### **FRONT SUSPENSION**

379

The front springs shall be semi-elliptical, minimum of 4" wide x 54" long (flat), minimum of 11 leaves x .499" thickness with a capacity of 22,800 pounds. Grease fittings for lubrication shall be installed in the spring pins. Double acting shock absorbers shall be installed. Axle stops with energy absorbing bounce bumpers shall be supplied on the spring top pad.

380

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384

Provide double acting hydraulic shock absorbers on the front axle. Shock absorbers shall match the capacity of the front axle and have a minimum bore of 1.38" and an outside diameter of approximately 3 1/4".

385

386

387

### **FRONT SHOCK ABSORBERS**

388

Two (2), nitrogen gas charged shock absorbers shall be part of the front axle suspension.

389

### **REAR AXLE**

390

Provide a rear axle of sufficient capacity as determined by the COLCHESTER FIRE DEPARTMENT loading requirements. The measured load during acceptance shall not exceed 95% of the axle capacity. The rear axle shall not be less than a Meritor RS-26-185 Rear Axle 26,000 # GAWR with a capacity of 26,000 lbs. The axle shall be a single reduction axle with hypoid gearing and oil lubricated wheel bearings. Heavy-duty 26,000 lb. rear suspension will be provided. Gear ratio shall be to provide a top speed of 65 to 70 MPH.

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### **REAR SUSPENSION**

397

Provide the rear suspension of a leaf type variable rate with a 26,000 lb. rating. The rear suspension shall include a main spring pack with 14 leaves, and an auxiliary spring pack with four leaves. The suspension shall be a self-leveling slipper type with torque leaf and variable rate. The rear suspension shall have a ground rating of 26,000 lbs.

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401

### **REAR BRAKES**

402

Rear brakes shall match the capacity of the selected rear axle. The brakes shall be "S" Cam, minimum size 16-1/2" x 7" cast shoes with 36 /36 chambers and shall be full air actuated with automatic slack adjusters. Drums are to be outboard mounted.

403

404

405

**BRAKE SYSTEM**

406

The braking system shall be full air type in compliance with FMVSS-121. They will be direct air type with dual air treadle in the cab.

407

408

**ABS SYSTEM**

409

Provide an ABS system to improve braking control and reduce stopping distance. This braking system shall be fitted to all axles. All electrical connections will be environmentally sealed, water weatherproof and vibration resistant.

410

411

412

413

The system shall constantly monitor wheel behavior during braking. Sensors on each wheel transmit wheel speed data to an electronic processor which will sense approaching wheel lock and instantly modulate brake pressure up to 5 times per second to prevent wheel lockup. Each wheel will be individually controlled. To improve service trouble shooting, provisions in the system for an optional diagnostic tester will be provided. The system will test itself each time the vehicle is started and a dash-mounted light will go out once the vehicle is moving above 4 mph. To improve field performance the system will be equipped with a dual circuit design. The system circuits will be configured in a diagonal pattern. Should a malfunction occur, that circuit would revert to normal braking action. A warning light will signal malfunction to the operator. The system will consist of a sensor clip, sensor, and electronic control unit and solenoid control valve. The sensor clip will hold the sensor in close proximity to the tooth wheel. An inductive sensor consisting of a permanent magnet with a round pole pin and coil will produce an alternating current with a frequency proportional to wheel speed. The unit shall be sealed, corrosion resistant and protected from Electromagnetic interference. The electronic control unit will monitor the speed of each sensor wheel slip. A deviation will be corrected by cyclical brake application and release. If a malfunction occurs, the circuit will signal the operator and the malfunctioning half of the system will shut down. The system is installed in a diagonal pattern for side-to-side control. The system will insure that each wheel is braked in optimum efficiency up to 5 times a second.

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The system shall also control application of the auxiliary engine brake to prevent wheel lock.

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434

**AUTOMATIC TRACTION CONTROL (ATC)**

435

Provide automatic traction control, (ATC); to further improve vehicle drive characteristics. This system shall control drive wheel slip during acceleration from a resting point. An extra solenoid valve will be added to the ABS system. The system will control the engine and brakes to ensure efficient acceleration. The system will include a dash-mounted light that will come on when ATC is controlling drive wheel slip

436

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439

440 **ESC ELECTRONIC STABILITY CONTROL**

441 The apparatus shall have a Wabco ABS-based Electronic Stability Control (ESC), which offers  
442 another level of vehicle control. This automatic braking management system reduces the  
443 possibility of a side rollover and assists in the directional stability of apparatus. Upon reaching  
444 critical lateral acceleration thresholds, the system intervenes to regulate the vehicle's deceleration  
445 and braking functions by reducing the engine RPMs by overriding the foot throttle input and  
446 applying the engine retarder (if equipped) to slow the apparatus giving the driver added control  
447 and maneuverability. The ESC shall also apply braking power to selective wheel of the front and  
448 rear axles to assist in stabilizing the apparatus to its intended direction. This selective braking  
449 application and reduction of speed and torque reduces the possibility of spinouts and side rollovers  
450 even in adverse conditions

451 **AUTOMATIC TIRE CHAIN**

452 Provide an automatic tire chain system for the rear axle with a driver-controlled switch in the cab.  
453 Switch shall be provided with a protective flip cover. Air supply shall come from the additional  
454 1,200 cu.in. air tank.

455 **BRAKE AIR RESERVOIRS**

456 Provide (4) air reservoirs. Three (3) air reservoirs installed in conformance with best automotive  
457 practices with a reservoir capacity of 4,400 cubic inches minimum.  
458 Provide an additional 1200 cu. in. air reservoir for the accessory air outlet, location to be  
459 determined, for air reel /air tool operations. This tank shall be fitted with a high flow check stop.

460 **AIR DRYER**

461 Provide a Bendix #AD-9 heated air dryer. Provide an automatic moisture ejector on the primary  
462 or wet tank.

463 **AIR LINES**

464 Provide the entire chassis air system plumbed with reinforced Synflex airlines. All of the airlines  
465 will be color coded to correspond with an air system Schematic and shall be adequately protected  
466 from heat and chafing.

467 **AIR COMPRESSOR**

468 Provide an air compressor with the capacity of a minimum of 18.0 cu. ft. per minute. The air brake  
469 system will be the quick build up type.

470 **PARKING BRAKE**

471 The parking brake shall be of the spring actuated type, mounted on the rear axle brake chambers.  
472 The parking brake control and red application warning light will be mounted on the cab instrument  
473 panel.

474 **KUSSMAUL AIR PUMP**

475 Provide a Kussmaul 12 volt air pump, model 091-9, complete with 091-9G air line filter and  
476 091-9H mounting plate. The unit to be completely automatic and controlled by integral pressure  
477 switch. Provide a separate 12V fused circuit for this air pump. Mount under driver's seat.  
478

479

**WHEELS AND TIRES**

480 Provide Alcoa Aluminum Dura Bright hub piloted front and rear wheels of sufficient capacity as  
481 determined by the Colchester Fire Department loading requirements. The measured load during  
482 acceptance shall not exceed 95% of the wheel and tire capacity. Tires and wheels will be balanced.

483 The two (2) front tires shall be Michelin 425 x 65R, 22.5 tubeless radials, XZY 3, with a rating of  
484 11,400 lbs. for each tire.

485 The four (4) rear tires shall be Michelin 12R, 22.5 XDS mud and snow tubeless radials, with a  
486 rating of 6,780 lbs. for each tire in a dual configuration.

487

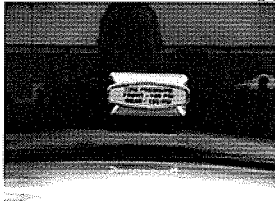
**TIRE PRESSURE MONITORING**

488 There shall be a Vecsafe LED tire alert pressure management system provided that shall monitor  
489 each tire's air pressure. A chrome plated brass sensor shall be provided on the valve stem of each  
490 tire for a total of six (6).The sensor shall calibrate to the tire pressure when installed on the valve  
491 stem for pressures between 20 and 120 psi. The sensor shall activate an integral battery operated  
492 LED when the pressure of the tire drops 8 psi. Removing the cap from the sensor shall indicate the  
493 functionality of the sensor and battery. If the sensor and battery are in good working condition, the  
494 LED shall immediately start blinking. Pressure to be determined after the apparatus has been live  
495 loaded.

496

**TIRE PRESSURE LABELS**

497 Provide over each wheel well a Permanent label indicating the proper inflation pressure for each  
498 tire or set of tires. Labels are to be made after the apparatus has been live loaded. Sample shown:



499

500

**ENGINE**

501 Engine shall be a Cummings ISL 450 Hp, turbocharged, per the following specifications.

502 Min. Horsepower - 450 horsepower.

503 Governed Speed - 2200 RPM

504 Peak Torque - 1250 lb-ft

505 Cylinders - Six (6)

506 Operating Cycles - Four (4)

507 Governor Type - Limiting Speed

508 The engine shall be installed in accordance with engine manufacturer's instructions, and the  
509 chassis manufacturer will be able to furnish proof of engine installation approval by the engine  
510 manufacturer. The engine controls shall be programmed for fire service application.

511

512



513

### **RADIATOR**

514 The radiator shall be steel with bolted top and bottom tanks. The cooling system will be designed  
515 for a minimum of seven (7) PSI operation. There will be a sight glass in the radiator to check the  
516 coolant level without removing the radiator cap. The core construction will be tube and fin with a  
517 minimum of four (4) tubes per row and a minimum of ten (10) fins per inch.  
518

519 Provide transmission oil to liquid cooler.  
520

521 Provide a one and one-half (1-1/2) gallon coolant recovery system located inside the engine  
522 enclosure that is accessible from the access hatch located at the rear of the engine enclosure.  
523

524 Provide silicone rubber hoses and appropriate hose clamps for the engine and heater system.  
525

526 Provide an engine water filter as required by the manufacturer.  
527

528 Provide a coolant additive to the cooling system as recommended by the engine manufacturer for -  
529 35 degrees F.

530

### **AIR CLEANER**

531 Provide an engine air cleaner of a dry type element. The air cleaner shall be sized and installed in  
532 accordance with the engine manufacturer's recommendations.

533

### **ENGINE BRAKE**

534 Provide a "Jacobs engine brake" for six (6) cylinders for increased braking capabilities in addition  
535 to VGT. It will be controlled by an on/off and low/hi switch on the dash and activated by releasing  
536 the throttle pedal to idle.

537 Wire the engine brake in such a manner so as to illuminate the chassis brake lights when the  
538 engine brake is engaged and operating.

539

### **ENGINE FAST IDLE**

540 Provide a fast idle for the electronic controlled engine. An ON/OFF switch located on the  
541 dashboard shall control the fast idle. Setting for the fast idle must produce a slight battery charge  
542 with all electrical components including air conditioning operating.  
543

544 Provide an electronic interlock system that will prevent the fast idle from operating unless the  
545 transmission is in "Neutral" (or "Park" if so equipped) and the parking brake is fully engaged. If  
546 the fast idle control is used in conjunction with a specified engine/transmission driven component  
547 or accessory, the fast idle control shall be properly interlocked with the engagement of the  
548 specified component or accessory.

549

### **TRANSMISSION**

550 The transmission shall be an Allison 3000 EVS five (5) speed automatic with electronic controls.

551 The transmission will have two (2) 10-bolt PTO pads, one (1) at the 8-o'clock position and the  
552 other at the 1-o'clock position.

553 The transmission shall be equipped with an air to oil transmission cooler located below the  
554 radiator allowing a single depth core and efficient cooling package. The transmission cooler shall  
555 be mounted in a manner to allow maximum approach angle by not protruding below the frame  
556 more than an inch. The transmission cooler shall be constructed completely of aluminum with  
557 welded side tanks. The transmission shall have two (2) internal oil filters.

558 The transmission gear ratios shall be:

559 1st 3.49:1

560 2nd 1.86:1

561 3rd 1.41:1

562 4th 1.00:1

563 5th 0.75:1

564 Rev 5.03:1

### **P.T.O. (POWER TAKE OFF) FOR GENERATOR**

566 There shall be a Chelsea PTO provided with the apparatus for generator operations.

### **P.T.O. LIGHT INDICATOR FOR GENERATOR**

568 A green light to indicate that the PTO is in gear shall be mounted on the cab dash.

### **TRANSMISSION SHIFTER / MODE**

570 The transmission shall be controlled by an Allison push button type shift control. It  
571 shall be internally illuminated for night operation. It shall be mounted to the right of  
572 the steering column on the driver's dash console. The transmission, upon start-up, shall  
573 select four-(4) speed operation. By pressing the "mode" switch on the shift pad (mode  
574 on) provides five-(5) speed overdrive.

### **TRANSMISSION WARRANTY**

576 The Allison 4000 EVS series transmission shall be warranted for a period of five (5) years with  
577 unlimited mileage. Parts and labor shall be included in the warranty.

578 The transmission must be filled with Transynd synthetic fluid or approved equal.

579 Transmission installation shall be in accordance with the transmission manufacturer's  
580 specifications. The transmission will be readily and easily removable for repairs or replacement.

### **DRIVELINES**

582 Drivelines shall be Dana (Spicer) 1810 series. The chassis manufacturer shall utilize an electronic  
583 type-balancing machine to statically and dynamically balance all drive shafts. The chassis  
584 manufacturer must provide proof of compliance with all drive shaft manufacturer's standards and  
585 specifications. (No Exceptions)

586

### **EXHAUST SYSTEM**

587 Provide an aluminized exhaust system installed in accordance with the engine manufacturer's  
588 requirements and meet all Environmental Protection Agency and State noise level requirements.  
589 Exhaust system components will be securely mounted and easily removable.

590 The muffler will be fabricated from steel sheet and of a size compatible with the engine exhaust  
591 discharge flow and back flow restrictions.

592 All exhaust tubing will be a minimum of 16 gauge aluminized cold rolled steel. Any flexible  
593 exhaust tubing will be H D stainless steel type. All flex tubing clamps will be Flex-Seal II, packed  
594 with a pliable sealant, creating an emission type joint. To minimize heat build-up, exhaust tubing  
595 within the engine compartment will be wrapped with insulating pads that are easily removable.

596 Provide exhaust discharge on the right side of the apparatus forward of the rear axle. Provide a  
597 formed aluminum tread plate heat shield/exhaust deflector shall be installed between the floor of  
598 the body compartment and the top of the exhaust outlet. Provide an angled, chrome plated, exhaust  
599 deflector on the exhaust outlet.

600

### **FUEL TANK**

601 Provide a fuel tank with a minimum of 50-gallon capacity. The fuel filler neck shall be 2" ID  
602 minimum. Provide a ½" minimum diameter drain plug. The tank will be fabricated from hot  
603 rolled, pickled and oiled steel. Provide a fuel level float.

604 Install the fuel tank behind the rear wheels between the frame rails. All lines to and from the  
605 engine shall be medium pressure aircraft type wire braid hoses.

606 Fuel filtration shall meet the requirements of the engine manufacturer.

607 Provide a fuel line shut-off valve between the fuel tank and the heated fuel/water separator. Also  
608 provide a fuel shutoff valve between the diesel generator engine and the fuel/water separator.

609 A Racor model B32002 fuel water separator shall be installed in place of the standard Cummings  
610 primary fuel filter. A water-sensing probe, along with a dash mounted warning light shall be  
611 supplied.

612

### **FUEL POCKET**

613 Provide a fuel fill on the left side rear wheel well area. Provide a Cast Products heavy-duty cast  
614 aluminum spring loaded hinged fill door, labeled "Diesel Fuel Only".

615

**VEHICLE FLUIDS PLATE**

616 As required by N.F.P.A., the contractor will affix a permanent plate in the driver's compartment  
617 specifying the quantity and type of the following fluids used in the vehicle:

618 A permanent plate in the driving compartment will specify the quantity and type of the following  
619 fluids used in the vehicle:

- 620 A) Engine oil
- 621 B) Engine coolant
- 622 C) Chassis transmission fluid
- 623 D) Drive axle(s) lubrication fluid
- 624 E) Air-conditioning refrigerant
- 625 F) Air-conditioning lubrication oil
- 626 G) Power steering fluid
- 627 H) Cab tilt mechanism
- 628 I) Air compressor system lubricant
- 629 J) Generator system lubricant

630

**CHASSIS ELECTRICAL SYSTEM**

631 All electrical wiring in the chassis will be SXL cross link-insulated type. Wiring is to be color-  
632 coded and include function codes every three (3) inches on both sides. Wiring harnesses will be  
633 routed in protective heat resistant loom securely and neatly installed. Two power distribution  
634 centers will be provided in central locations for greater accessibility. The power distribution  
635 centers contain automatic thermal self-resetting breakers, power control relays, flashers, diode  
636 modules, daytime driving light module and engine and transmission data links. All breakers and  
637 relays utilized in circuits will have amp loads that are substantially lower than the respective  
638 component rating thus ensuring long component life. Power distribution centers will be composed  
639 of a system of interlocking plastic modules for ease in custom construction. The power  
640 distribution centers are function oriented. The first is to control major truck function and the  
641 second will control switching and interior operations. Each module shall be single function coded  
642 and labeled to aid in troubleshooting. The centers also have accessory breakers and relays for  
643 future installations. All harnesses and power distribution centers will be electrically tested prior to  
644 installation to ensure the highest system reliability.

645 All external harness interfaces will be of a triple seal type connection to ensure a proper  
646 connection. The cab/chassis and the chassis/body connection points will be mounted in accessible  
647 locations. Complete "as built" chassis wiring schematics shall be supplied with the apparatus.

648 The bidder shall supply with their bid photographs of their wiring centers as well as a copy of a  
649 wiring schematic from a competed apparatus.

650

**SPARE 12 VOLT CIRCUIT - CAB**

651 Provide seven spare 12V circuits sized and supplied for the interior of the custom cab for  
652 customer-supplied equipment. These circuits shall be wired to an area(s) determined at time of  
653 pre-construction. COLCHESTER FIRE DEPARTMENT to provide list of equipment to be used  
654 prior to pre-construction. (laptop computer / portable radio chargers etc.)

655

**RADIO 12 VOLT CIRCUITS**

656 A 12-volt, 60 amp radio circuit with four (4) post fusible block and grounding for department's  
657 two-way mobile radios shall be provided and installed (location to be determined during  
658 preconstruction). The circuit shall be activated with the master disconnect switch.

659 **INTERCOM SYSTEM – EIGHT SEATED POSITION**

660 A Peltor Y 2000 intercom eight-position communication system shall be provided and  
661 installed on the apparatus.

662 ***INTERCOM- PELTOR***

663 A Peltor model Y 2000 with dual radio monitoring and primary transmit selection  
664 intercom with eight (8) MT1H7B-Y2 headsets shall be provided and installed in the  
665 unit.

666 ***HEADSET - PELTOR SERIES- DRIVER POSITION***

667 There shall be a model HS-03 Intercom/Radio PTT headset station provided for the  
668 driver position. The headset shall provide a single plug under helmet radio transmit  
669 headset. It shall have a (PTT) "Push to Talk" located on the dome. The headset shall  
670 come with an adjustable volume, noise canceling electric microphone, adjustable head  
671 strap, and flexible style boom for rotation of right or left dress. The headset shall  
672 provide high clarity speakers and fully shielded EMI/RFI protected cabling to  
673 maximize performance. The liquid foam ear, seals along with the system provides a 24  
674 dB noise reduction.

675 ***HEADSET - PELTOR OFFICER POSITION***

676 There shall be a model HS-03 Intercom/Radio PTT headset station provided for the  
677 officer's position. The headset shall provide a single plug under helmet radio transmit  
678 headset. It shall have a (PTT) "Push to Talk" located on the dome. The headset shall  
679 come with an adjustable volume, noise canceling electric microphone, adjustable head  
680 strap, and flexible style boom for rotation of right or left dress. The headset shall  
681 provide high clarity speakers and fully shielded EMI/RFI protected cabling to  
682 maximize performance. The liquid foam ear, seals along with the system provides a 24  
683 dB noise reduction.

684 ***HEADSET PELTOR CREW POSITION INTERCOM ONLY***

685 There shall be six (6) model HS 04 headset(s) provided for crew-seated positions. The  
686 headset shall provide a single plug under helmet intercom transmit headset. It shall be  
687 voice activated. The headset shall come with an adjustable volume, noise canceling  
688 electric microphone, adjustable head strap, and flexible style boom for rotation of right  
689 or left dress. The headset shall provide high clarity speakers and fully shielded  
690 EMI/RFI protected cabling to maximize performance. The liquid foam ear, a seal along  
691 with the system provides a 24 dB noise reduction. Each headset shall have a one-(1)  
692 year warranty.

693 ***HEADSET PLUG-IN PELTOR SERIES-***

694 There shall be eight (8) MT1H7B-Y2 headset plugs in module(s) provided and  
695 installed in the apparatus. The module measures 2"W x 1.4"H x 2.7"D, and are used to  
696 connect the intercom via the module RJ-14 jack. The module features a connector  
697 guard against moisture and dust.

698 ***HEADSET HANGER***

699 There shall be eight (8) rubber coated headset hanger(s) provided with the apparatus.

700 **EMI/RFI PROTECTION**

701 The apparatus shall incorporate the latest designs in electrical systems with state of the art  
702 components to insure that radiated and conducted electromagnetic interference (EMI) and radio  
703 frequency interference (RFI) emissions are suppressed at the source.

704 The apparatus proposed shall have the ability to operate in the environment typically found in fire  
705 ground operations with no adverse effects from EMI/RFI.

706 EMI/RFI susceptibility is controlled by utilizing components that are fully protected and wiring  
707 that utilizes shielding and loop back grounds where required. The apparatus shall be bonded  
708 through wire braided ground straps. Relays and solenoids that are possible generators of spurious  
709 electromagnetic radiation are to be diode protected to prevent transient voltage spikes.

710 **WIRING HARNESS DESCRIPTION**

711 The wiring harness contained on the chassis shall be designed to utilize wires of stranded 100%  
712 copper of a gauge rated to carry 125% of maximum current for which the circuit is protected  
713 without exceeding 10% voltage drop across the circuit. Wiring shall be uniquely identified by  
714 color code or circuit function code, and labeled at a minimum of every three (3) inches. The  
715 identification of the wiring shall be referenced on a "as built" wiring diagram. All wires conform  
716 to SAEJ1127 (Battery Cable), SAEJ1128 (Low Tension Primary Cable), SAEJ1560 (Low Tension  
717 Thin Wall Primary Cable).

718 Provided covering of all wiring harnesses shall be moisture resistant loom with a minimum rating  
719 of 289 Degrees Fahrenheit and a flammability rating of VW-1 as defined in UL62. The wire  
720 insulation of jacketed cable shall have a minimum rating of 289 degree Fahrenheit.

721 All harnesses must be securely installed in areas protected against heat, liquid contaminants and  
722 damage. The harness connections and terminations shall utilize a method that provides a positive  
723 mechanical and electrical connection and shall be connected in accordance to the device  
724 manufacturers instructions. No connections within the harness shall utilize wire nuts, insulation  
725 displacement or insulation piercing.

726 All circuits shall conform to SAEJ1292. All circuits shall be provided with low voltage over  
727 current protective devices. These devices shall be readily accessible and protected against heat in  
728 excess of component rating, mechanical damage, and water spray. Star washers shall not be used  
729 for ground connections.

730 **12 VOLT BODY ELECTRICAL SYSTEM**

731 All electrical circuits in the rescue body shall be protected by automatic circuit breakers,  
732 conveniently located to permit ease of service. Flashers, heavy solenoids and other major electrical  
733 controls will be located in a central area near the circuit breakers.

734 All rescue body electrical wiring shall conform to the requirement as set forth in "WIRING  
735 HARNESS DESCRIPTION" description above. A complete "as built" wiring diagram will be  
736 supplied with the apparatus.

737 Wiring shall be carefully protected from weather elements and be sufficiently supported from ice  
738 buildup and snagging. Heavy-duty wire loom shall be used for the entire length. Grommets will  
739 be utilized where wiring passes through panels, cabinets or other sheet metal or structural  
740 members.

741 To minimize the risk of heat damage, wires run in the engine compartment area will be carefully  
742 installed and suitably protected by the installation of heat resistant shielded loom.

743 All electrical equipment shall be installed to conform to the latest federal standards as outlined in  
744 N.F.P.A. #1901 2009 edition.

745 **BODY ELECTRICAL JUNCTION COMPARTMENT**

746 Provide a weather tight electric junction compartment. Provide an easily accessible enclosure to  
747 house all of the body wiring junction points, terminal strips, solenoids, etc. The design of this  
748 compartment will not decrease the storage capacity area of the compartment in which it is located.  
749 Provide a removable panel for access to this compartment.

750 **12 VOLT ELECTRICAL SYSTEM TESTING**

751 The apparatus low voltage electrical system shall be tested and certified. **The bidder shall state**  
752 **the nature or types of the tests to be conducted as well as the criteria for pass/fail with their**  
753 **bid.** The certification will be provided with the apparatus. All tests will be performed with air  
754 temperature between 0 and 100 degrees F and logged at the time testing.

755 **LOAD MANAGEMENT SYSTEM**

756 Provide a load management system for performing electrical load management. The load manager  
757 shall contain 16 programmable outputs to supply warning and load switching requirements. The  
758 load management system shall be capable of offering load sequencing, load shedding, fast idle  
759 control, low voltage warning, scene mode operation and response mode operation

760 Load manager outputs 1 thru 12 will be independently programmable to activate during the scene  
761 mode, the response mode or both. These outputs shall be programmed to activate with master  
762 warning switch or to sequence and shed along with the priority. Output 13 will be designated to  
763 activate a fast idle system. Output 14 will provide a low voltage warning for an isolated battery.  
764 Output 15 is a user configurable output and will be programmable for activating between 10.5 and  
765 15 volts. Output 16 will provide a low voltage alarm that activates at the NFPA required 11.8  
766 volts.

767 The load management system shall contain a digital display to indicate system voltage in normal  
768 operation mode and also indicate the output configuration during programming mode.

769 The load management system shall be protected against reverse polarity and shorted outputs, and  
770 be enclosed in a metal enclosure to enhance EMI/RFI protection.

771 **ALTERNATOR**

772 Provide a 320 amps Leece Neville model 178-131-100 dual belt driven alternator. The installation  
773 will include an integral self diagnostic regulator and rectifier for compact installations.

774 The alternator installation shall be designed to provide maximum output at engine idle speed to  
775 meet the minimum continuous electrical load of the apparatus as required.

776 **BATTERY SYSTEM**

777 The battery system shall be a single system consisting of six-(6) Group 31, 12-volt DC,  
778 heavy-duty, high cycle automotive batteries. The battery bank shall have a group rating  
779 of 3750 cold cranking amperes (CCA) @ 0 degrees and a reserve of 1,080 minutes at  
780 80 degrees Fahrenheit.

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**BATTERY STORAGE**

Provide battery storage in a securely mounted fixed stainless steel ventilated trays located on each side of the chassis frame. Visual access shall be provided through a hinged drop down door in each of the rear crew step risers. Complete access will be provided when the cab is fully tilted. Batteries shall be mounted on non-corrosive matting material.

**BATTERY DISCONNECT SWITCH**

Provide the chassis batteries parallel wired to a single 12-volt electrical system controlled through a heavy-duty "Guest" brand rotary type master disconnect switch. The master disconnect switch will be located within easy access by the driver upon entering or exiting the cab. All electrical circuits shall be disconnected, except the engine and transmission battery, when the switch is in the "OFF" position. The alternator shall be connected to the engine and transmission battery.

**SHORELINE AUTO-EJECT**

A KUSSMAUL Super Auto Eject, model O91-55-20-120, with weatherproof yellow cover shall be mounted on the cab exterior immediately adjacent to the rear of the driver's door. The Super Auto Eject is to be completely sealed to prevent internal contamination of the working components. The internal switch arrangement of the Super Auto Eject shall be designed to close and open the 120-vac A.C. circuit after the mating connector is inserted and before the connector is removed. This design shall prevent arcing at the connector contacts to provide long life. The electrical connection shall be provided as a 120 VAC - 20-amp type using a NEMA 5-20P connector.

**AIR OUTLET (RIGHT SIDE FRONT BUMPER)**

Provide a female air outlet fitting with a valve on the right side of the front bumper Air shall be from the onboard air compressor reserve air tank for operation pneumatic air rescue tools.

**ON BOARD BATTERY CHARGER SYSTEM**

Provide a Kussmaul Auto Charge 35/10, Model #: 091-35/10 battery saver VHO" charger system connected to the 110-volt shoreline disconnect to power charger system for maintaining the vehicle batteries. This system is designed to provide up to 35 amperes to the main chassis batteries and a separate circuit providing up to 10 amperes to charge portable radios and box lights. Install if possible in the compartment under the driver's seat. A dual LED bar graph display shall be located in the compartment under the driver's seat adjacent to the shoreline connection to monitor each set of batteries charging status. The display will be labeled "Vehicle" and "Engine" battery.

**BATTERY SAVER**

Provide a Kussmaul model # 091-51-12"battery saver VHO" charger system connected to the 110-volt shoreline disconnect to power rechargeable hand lights and any other 12 VDC accessories in the rescue body.



820 **LIGHTING - CAB INTERIOR**

821 Provide four (4) combination red/white dome lights in the cab, two (2) in the forward section and  
822 two (2) in the rear section. Each dome light will have an integral 3-way (red-off-white), selector  
823 switch. Each dome light will also activate when the respective, adjacent cab door is opened.

824 Provide a shielded light in each side opening, cab doorstep well. These lights will activate with the  
825 respective doorjamb switch.

826 Provide two (2) red dome lights with individual lens mounted switches be recessed into the cab  
827 headliner in the rear cab area.

828 **CAB MAP LIGHT**

829 Provide a high intensity gooseneck map light located at the right side of the cab dash.

830 **CREW SAFETY LIGHT**

831 Provide (2) 3" LED dome lights in the crew area (1) Red and (1) Green each light shall be  
832 mounted in the interior cab ceiling area in a location visible to all firefighters seated in the jump  
833 seats. This light will illuminate RED as soon as the parking brake is released, and will illuminate  
834 GREEN whenever the parking brake is applied.

835 **CAB SPOTLIGHT**

836 A Collins Pulsar 750, 7" 750,000 candlepower hand held spot/flood light constructed  
837 from black aircraft aluminum shall be installed on the cabs dash. The 12-volt  
838 spot/flood light utilizes 100-watt H-2 spot and 55-watt H-2 flood bulb activated by a  
839 momentary switch. This light shall be held in place with the Collins supplied bracket.

840 **CAB MARKER LIGHTS AND REFLECTORS**

841 Provide five (5) LED amber FMVSS marker lights on top of the cab above the windshield area.  
842 Provide one (1) amber directional light mounted on each side of the cab above the front wheel  
843 well area. FMVSS reflectors will be installed as required.

844 **BODY MARKER LIGHTS AND REFLECTORS**

845 Provide LED clearance and license plate lights along with reflectors along the length of the body  
846 and at the rear of the body wired in accordance with federal regulations.

847 The rear mounted lower LED marker lights and reflectors shall be recess mounted in the vertical  
848 surface of the rear step for protection from breakage.

849 Provide rear LED marker lights at each side of the outermost practical mounting location at the top  
850 of the body.

851 Provide a secondary LED turn signal / clearance light below each side of the body in the area  
852 forward of the rear axle.

853 **CUSTOM CAB HEAD LIGHTS**

854 Provide two (2) dual rectangular halogen headlight modules in chrome-plated bezels on the front  
855 of the cab. Each side's head light module shall incorporate an individual low beam and a high  
856 beam headlight. High beam actuation will be controlled on the turn signal lever.

857 **DAYTIME RUNNING LIGHTS**

858 Provide the chassis head lights with integrated circuitry to actuate the low beam headlights at a  
859 maximum of 80 percent of capacity whenever the chassis engine is running. Daytime lights shall  
860 be turned off with the activation of the parking brake.

861 **SECONDARY DUAL LIGHT MODULE**

862 Provide two (2) Whelen 600 series LED amber arrows outlined turn signals, one (1) in each side  
863 of the dual light module above the headlights in matching chrome-plated bezels.

864 Provide the NFPA required Zone "A" lower warning lights incorporated into each side dual light  
865 module noted above.

866 **ALTERNATE FLASHING HEADLIGHT SYSTEM**

867 Provide an alternate flashing headlight wig-wag system. This wig-wag system shall be  
868 individually switched at the master light console and wired through the load management system  
869 to be shut down when load management is required. The alternating flashing system will be  
870 automatically disabled during the "Blocking Right of Way" mode.

871 **EMERGENCY SWITCHES**

872 Provide a switch control console within easy reach of the driver's position. This console will  
873 separate the emergency / auxiliary electrical functions from the regular chassis functions. A  
874 minimum of eight (8) rocker type switches with integral indicator lights shall be provided, in  
875 addition to the Load Manager indicator.

876 Provide a master switch which will allow pre-setting of emergency lighting switch(s) and shall  
877 contain a red integral indicator light. A primary emergency lighting switch shall be provided next  
878 to the master switch. A total of eight (8) load manageable emergency switches will be provided.  
879 The last remaining switch shall be designated as the ground light switch. All switches (other than  
880 the master switch) shall have switch function labeling and an amber integral indicator light.

881 **WHELEN - NFPA CERTIFIED LED LIGHTING PACKAGE**

882 The following warning light package includes the entire minimum warning light and actuation  
883 requirements for the 2009 edition of the NFPA 1901 Fire Apparatus Standard.

884 Provide the following lighting as specified. It shall meet the requirements for both "Clearing Right  
885 of Way" and "Blocking Right of Way" as noted.

886 **LIGHT PACKAGE ACTUATION CONTROLS**

887 The entire warning light package shall be actuated with a single warning light switch in the cab  
888 switch panel. The wiring for the warning light package will engage all of the lights required for  
889 "Clearing Right of Way" mode when the vehicle parking brake is not engaged. An automatic  
890 control system will be provided to switch the warning lights to the "Blocking Right of Way" mode  
891 when the vehicle parking brake is engaged.

892 **ZONE A CAB ROOF LIGHT BAR**

893 Provide One (1) Whelen #FN72QLED, 72" NFPA Edge Ultra Freedom LED light bar is to be  
894 mounted on the cab roof. As required by N.F.P.A. Pamphlet #1901, the white sections will  
895 automatically turn off when in the blocking right-of-way mode.

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**GTT OPTICOM**

Provide a GTT 795H Opti-com system installed in roof light bar as detailed in "NFPA Lighting Package" section.

**ZONE A HEAD LIGHT BEZEL MOUNTED WARNING LIGHTS**

Provide two (2) Whelen model M6RC-Series headlamp bezel mounted LED light heads and mounted with two (2) M6HDLMTK bracket one (1) in each side of the headlamp module adjacent to the amber turn signal. Clear lenses shall be provided.

**ZONE B & D SIDE INTERSECTION WARNING LIGHTS**

Provide four (4) Whelen model M6 series M6RC LED with polished mounting flanges M6FC mounted one (1) each side of the front bumper extension facing to each side of the unit. And one (1) each side of the cab above the front wheel well. The lights shall be equipped with clear lenses.

**SEE RESCUE BODY SPECIFICATION FOR ADDITIONAL LIGHTING REQUIREMENTS**

**BACK-UP CAMERA**

One (1) Spartan flat screen monitor with high-resolution low light remote color camera with 130 degree viewing angle shall be provided. Camera shall be supplied and mounted on the rear of the apparatus and the monitor mounted in the cab readily observable by the operator.

**ELECTRIC HORN**

Provide a single electric chassis horn activated by the steering wheel horn button installed in a functional location below the cab windshield. (See Q2B siren)

**BACK-UP ALARM**

Provide a solid-state back-up alarm installed at the rear of the apparatus under the tailboard. The back-up alarm shall activate automatically when the transmission is placed in reverse gear and the ignition is "on".

**UNIVERSAL LIFE SAFETY BACK STOP DEVICE**

Provide a "Universal Life Safety products Back Stop" protection assembly installed below and behind farthest portion of rear of vehicle. Upon contact with an object, when vehicle is traveling in reverse, the Back Stop will apply chassis brakes and stop vehicle.

**AIR HORNS**

Two (2) Hadley E Tone air horns shall be installed on the apparatus. The air horns shall be constructed from spun brass material and chrome plated. The air horns shall be mounted, one (1) each side, outboard the frame rails. The sounding unit shall be die cast and easily separated for service. The horns shall be mounted behind the cutouts in the front bumper. A foot switch on the driver's side will control the air horns. A dash-mounted switch shall also control the air horns. Provide a manual shutoff valve to the horn air switch.

932                    ***ELECTRONIC SIREN AND SPEAKER***

933            Provide one (1) Whelen # **295SLSA1** 200 watt electronic siren featuring: flush mount remote  
934            control head recessed in center dash panel as space allows, "Si-Test" self-diagnostic feature, six  
935            function siren, radio repeat and public address.

936            Provide one (1) Whelen # **SA122FMP** polished aluminum siren speaker, recessed in the front  
937            bumper and wired to the electronic siren.

938            The electronic siren and speaker shall meet the NFPA required SAE certification to ensure  
939            compatibility between the siren and speaker.

940                    ***REMOVE AND REMOUNT Q2B MECHANICAL SIREN***

941            Remove from the customer's chassis and remount and rewire one (1) Federal Model #Q2B-P siren  
942            with chrome plated grille, mounted thru the front bumper extension. Activation shall be through  
943            the horn ring in the cab. There will also be a push button siren brake switch on the cab dash. A  
944            dash-mounted horn/siren rocker switch shall control Q2B siren / chassis horn.

945            The Q2B siren shall be wired through the load management system to prevent excessive amperage  
946            draw. The siren is provided in addition to the required minimum NFPA audible warning  
947            requirements.

948                    ***UNDER CAB LIGHTS***

949            Provide one (1) rubber mounted LED ground light under each side cab door entrance step, four (4)  
950            total. The ground lights shall activate automatically with each respective doorjamb switch and by  
951            a master ground light switch in the warning light switch console

952            Each light will illuminate an area at a minimum 30" outward from the edge of the vehicle. The  
953            rear crew door ground lights will be positioned at an angle rearward to provide illumination at the  
954            pump panel and the front of the bodywork areas.

955                    ***SCENE LIGHTS***

956            Provide a Whelen Pioneer PLUS PFP1R15 LED floodlights on each side of the cab directly  
957            behind the front cab entrance door with 15 degree angled housing. A rocker switch in the master  
958            warning light switch console shall control the each scene light. All scene lights will be wired  
959            through the load management system.

960                    ***WHELEN PIONEER PLUS BROW LIGHT***

961            Provide one (1) Whelen PFP2 12 volt lights brow light installed on the front of the cab. The  
962            chassis manufacturer shall determine the mounting bracket. A rocker switch in the master warning  
963            light switch console shall control the scene lights. All scene lights will be wired through the load  
964            management system.

965                    ***"DO NOT MOVE APPARATUS" WARNING LIGHT WITH AUDIBLE ALARM***

966            Provide a red flashing warning light with an integral audible alarm, functionally located in the cab  
967            to signal when an unsafe condition is present such as an open cab door or body compartment door,  
968            extended light tower or any other device which is opened, extended or deployed which may cause  
969            damage to the apparatus if it is moved. This light shall be activated through the parking brake  
970            switch to signal only when the parking brake is released. This light will be labeled "DO NOT  
971            MOVE APPARATUS WHEN LIGHT IS ON".

972

**ENGINE COMPARTMENT WORK LIGHTS**

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Provide two (2) work lights mounted inside the engine enclosure, one (1) each side. Each light shall be individually switched.

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# Rescue Body

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## **REMOVE CUSTOMER'S RESCUE BODY AND REMOUNT ON SPARTAN CHASSIS**

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Disconnect all electrical harnesses, hydraulic lines, and mounts and remove rescue body from customers supplied apparatus; Remount refurbished rescue body onto new chassis supplied by Spartan motors. Re-mount using new body mounts with fixed spring points.

**NOTE** Attention to wheel well clearances are critical to assure that room is provided for application of customers St. Pierre roller chains during winter operations.

987

## **REMOVE AND REPLACE ROLL-UP DOORS (ROLL-O-MATIC)**

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989

The roll-up doors shall be constructed from brush finish, anodized aluminum, and extruded slats, which will have a flexible seal between each slat for proper sealing of the door.

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Provide a synthetic rubber seal each side, top and bottom edge of the door to prevent entry of dirt into the compartment.

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The doors shall be equipped with a lift bar style latch mechanism, which will latch at the bottom of the door mounting extrusion.

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Roll-up doors shall contain a protected magnetic door ajar system that must be integrated in the lift bar handle and the retainer block to signal an open door. No mechanical switches or switches interior to the compartment shall be used. The door open circuit shall be wired into cab door ajar light.

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1001

The compartment lighting system shall be integrated into the door track. The compartment lights actuate when the door is open.

1002

## **ADD LED STRIP LIGHTING EXTERIOR COMPARTMENTS**

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Remove 12-volt incandescent light fixtures in the exterior compartments and replace with new On Scene Solutions LED Nightstik(s) with 6 HB, surface mount LED's per 9" light section and produce a minimum of 37 lumens per 9" length. Each Night Stik shall be capable of operating at a voltage of 10VDC to 30VDC. The light stick shall be rated at 100,000 hours of service and shall be provided with a 5 year free replacement warranty. (Copy of warranty to be in proposal).

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1009

The light stick shall be waterproof, and be connectible via a jumper wire to add additional lights in series if required.

1010

## **TURTLE TILE FOR COMPARTMENTS**

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1013

Provide black turtle tile for all compartments and shelving units. Tile shall be ¾" in thickness. Edge ramps shall be used where appropriate.

1014

## **REMOVE EXISTING SVI LIGHT TOWER AND ASSOCIATED COMPONENTS**

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1016

1017

Remove the current SVI light tower located in compartments L5 – R-5 along with associated plumbing wiring. Remove from compartment R-1 all SVI light tower controls and associated equipment.

1018 **RELOCATE HYDRAULIC GENERATOR**

1019 Remove the existing hydraulic generator from compartment R-3 and relocate to current light tower  
1020 location. Generator shall be mounted in such a manner to allow for both proper cooling and  
1021 routine servicing. Connect to PTO for hydraulic generator, Run new hydraulic lines to generator.  
1022 Add new Frog display to load center compartment L-1

1023 **REMOVE AND REPLACE 120 VAC SCENE LIGHTING**

1024 Remove and replace the (2) 500-watt floodlights mounted on the Rescue body, (1) Street Side (1)  
1025 Curb side. Provide a Whelen Pioneer PLUS 2 PFP1R Single Flood Light w/ Semi Recessed  
1026 Housing floodlights. Lighting shall have a 15 degree angled housing. A rocker switch in the  
1027 master warning light switch console shall control the scene lights. All scene lights will be wired  
1028 through the load management system.

1029 **INSPECT AND REPLACE 120 VAC ELECTRICAL WIRING & COMPONENTS**

1030 Inspect the 120 / 240 volt wiring and associated components. Replace as necessary where damage  
1031 to the seal tight has occurred, or corrosion has compromised the integrity of the 120 / 240  
1032 electrical system. Replace all exterior Woodhead receptacle covers

1033 **UNDERBODY ROLL OUT CRIBBING COMPARTMENTS**

1034 Remove existing underbody roll out storage tray. Provide and install one (1) each side, a new  
1035 under-body storage compartment. Manufacture shall suggest best requirements for proper layout  
1036 and design. Compartment shall be as deep, long and as wide as possible as to not interfere with  
1037 ground clearance and exhaust system. A minimum of 12 ½” ground clearance shall be maintained.

1038 **STREET SIDE COMPARTMENT L-1**

1039 Remove existing adjustable shelves in this compartment. The existing welded shelf is to remain in  
1040 place. The existing electrical cord and reel is to remain in place and OnScene fairlead extension  
1041 brackets shall be provided for the electrical reel.

1042 Two (2) adjustable shelves shall be provided and shall be 29.00” deep shelving by as wide as  
1043 possible for the compartment.

1044 **STREET SIDE COMPARTMENT L-2**

1045 Remove existing shelves and trays in compartments. The compartment shall have one (1) floor  
1046 mounted slide-out tray and one (1) adjustable shelf.

1047

1048 A floor mounted slide-out tray shall be provided with the capacity rating shall be 500 pounds  
1049 minimum in the extended position. The tray shall be 22.00” deep by as wide as possible for the  
1050 compartment. (See **Rescue Tool Mounts**)

1051

1052 An adjustable shelf shall be provided and shall be 15.00” deep shelving by as wide as for the  
1053 compartment

1054 **STREET SIDE COMPARTMENT L-3**

1055 Remove existing shelves and tubes in compartment. Storage racks for air bags and two (2) slide-  
1056 out tilt-down trays shall be installed. Existing air line and hose reel to remain.

1057

1058 The air bag storage rack shall be constructed of aluminum with all mating surfaces welded in  
1059 place. The dimensions of the rack shall be determined by the customer’s specific requirements for

1060 the air bags to be used and hold four (4) air bags in individual slots. The rack shall be fabricated so  
1061 the air bags store horizontally.

1062

1063 A slide-out tilt-down tray shall have the capacity rating shall be 200 pounds minimum in the  
1064 extended position. Interior tray dimensions shall be 29.00” long x 3.00” deep x as wide as possible  
1065 for the compartment.

1066 ***STREET SIDE COMPARTMENT L-4***

1067 Remove existing tray and wood panels in compartment. Provide two (2) slide-out tool boards with  
1068 the PAC mount tool board system and brackets for departments existing hand tools. The board  
1069 dimensions shall be 22.00” deep by as high as possible for the compartment.

1070 ***STREET SIDE COMPARTMENT L-5***

1071 Provide two (2) slide-out tool boards. The board dimensions shall be 22.00” deep by as high as  
1072 possible for the compartment. The slide-out boards shall have storage tubes and a PAC mount tool  
1073 board system. One (1) of the PAC mount systems will have the proper storage mounts for the  
1074 departments Paratech Strut system and asseceories.

1075 ***CURB SIDE COMPARTMENT R-1***

1076 Remove existing adjustable shelves in this compartment. The existing welded shelf is to remain in  
1077 place. The existing electrical cord and reel is to remain in place and OnScene fairlead extension  
1078 brackets shall be provided for the electrical reel.

1079 Two (2) adjustable shelves shall be provided and shall be 29.00” deep shelving by as wide as  
1080 possible for the compartment.

1081 ***CURB SIDE COMPARTMENT R-2***

1082 Remove existing shelves and trays in compartments. The compartment shall have one (1) floor  
1083 mounted slide-out tray and one (1) adjustable shelf.

1084

1085 A floor mounted slide-out tray shall be provided with the capacity rating shall be 500 pounds  
1086 minimum in the extended position. The tray shall be 22.00” deep by as wide as possible for the  
1087 compartment. (See Rescue Tool Mounts)

1088

1089 An adjustable shelf shall be provided and shall be 15.00” deep shelving by as wide as for the  
1090 compartment

1091 ***CURB SIDE COMPARTMENT R-3***

1092 Remove existing shelves in this compartment. Two (2) slide-out tilt-down trays shall be provided.

1093

1094 A slide-out tilt-down tray with the capacity rating of 200 pounds minimum in the extended  
1095 position shall be provided. Interior tray dimensions shall be 27.00” long x 3.00” deep x as wide as  
1096 possible for the compartment.

1097 ***CURB SIDE COMPARTMENT R-4***

1098 Remove existing tray and shelves in this compartment. Provide an SCBA storage bin, one (1) floor  
1099 mounted slide-out tray and one (1) adjustable shelf shall be provided.

1100



1101 The SCBA storage bin shall store nine (9) ISI 4500 PSI 1-hour air bottles. Storage bins shall be at  
1102 least 8” in diameter. The clearance from the bottom of the compartment to the underside of the  
1103 SCBA storage bin shall be 24.00”.

1104

1105 A floor mounted slide-out tray shall be provided with the capacity rating shall be 200 pounds  
1106 minimum in the extended position. The tray shall be 22.00” deep by as wide as possible for the  
1107 compartment.

1108

1109 An adjustable shelf shall be provided and shall be one (1) 29.00” deep shelving by as wide as  
1110 possible for the compartment

1111 ***CURB SIDE COMPARTMENT R-5***

1112 Provide a storage shelf for the departments four (4) backboards. The backboards will be stacked  
1113 and stored on their sides. The box-out for the backboards will be 19.00” high x 14.00” wide and  
1114 from the inside door track be 8’ long. The backboards will store along the inside wall and will  
1115 protrude slightly into Compartment L-5.

1116

1117 Provide storage slots to hold the departments four (4) KED’s and two (2) Collars bags.

1118 Manufacture shall suggest best requirements for proper layout and design.

1119 ***ADD REAR COMPARTMENT B-1***

1120 Remove current ladder and diamond plate panel located on the rear of the apparatus and install a  
1121 compartment that will not be transverse to compartment L-5 and R-5. The compartment shall have  
1122 a (Roll-O-Matic) roll up door. The compartment door shall be approximately 63.00” High x  
1123 33.00” Deep. The compartment shelving shall be one (1) floor mounted pull out tray and two (2)  
1124 pull out tilt down trays. The compartment shall allow storage of the departments stokes basket  
1125 between the frame rails.

1126

1127 The floor mounted slide-out tray shall be provided with a capacity rating of 200 pounds minimum  
1128 in the extended position. The tray shall be 19.00” long x 3.00” deep by as wide as possible for the  
1129 compartment.

1130

1131 The pull out tilt down trays shall have a capacity rating of 200 pounds minimum in the extended  
1132 position. Interior tray dimensions shall be 32.00” long x 3.00” deep x as wide as possible for the  
1133 compartment.

1134 ***RESCUE TOOL MOUNTS IN COMPARTMENTS L-2 AND R-2***

1135 Provide and install rescue tool holders in compartments L-2 and R-2.

1136

1137 Provide two (2) Ziamatic extrication tool holders QM-ET-C or equal and two (2) Ziamatic  
1138 extrication tool holders QM-ET-J or equal. Provide one (1) of each in each compartment. Rescue  
1139 tool holders must fit departments existing rescue tools. The current rescue tools are as follows: one  
1140 (1) TNT S100-28 Spreader, one (1) TNT BFS 32 Spreader, one (1) TNT SLC 29 Cutter and one  
1141 (1) TNT BFC 320 Cutter.

1142

1143 Provide in Compartment L-2 mounts for the departments Hydraulic RAM’s. The current  
1144 department hydraulic Rams are as follows: one (1) TNT R20 Ram, one (1) TNT R40 Ram, and  
1145 one (1) TNT R50 Ram.

1146 **ADJUSTABLE SHELVING**

1147 The construction shall consist of .188” thick aluminum formed to provide a 2.00” high wall  
1148 around the perimeter. Corners shall be welded to provide a rigid unit. Shelving shall be secured  
1149 within the compartment by means of adjustable threaded fasteners. These fasteners shall slide in  
1150 an extruded aluminum track to provide height adjustment.

1151 **FLOOR MOUNTED SLIDE-OUT TRAY**

1152 A floor mounted slide-out tray shall be provided with the capacity rating shall be 500 pounds  
1153 minimum in the extended position. The construction shall consist of .188” thick aluminum formed  
1154 to provide a 2.00” high wall around the perimeter. Corners shall be welded to form a rigid unit.  
1155 Slide mechanisms shall have ball bearings for ease of operation and years of dependable service.  
1156 Automatic locks shall be provided for both the in and out tray positions. The lock trip mechanism  
1157 shall be located at the front of the tray and shall be easily operated with a gloved hand.

1158 **SLIDE-OUT TILT- DOWN TRAY**

1159 A slide-out tilt-down tray shall have the capacity rating shall be 200 pounds minimum in the  
1160 extended position. Two-thirds of the tray shall slide out from its stored position and shall tip 30  
1161 degrees down from horizontal. The vertical location of the tray within the compartment shall be  
1162 adjustable. The construction shall consist of .188” thick aluminum for the tray bottom and end,  
1163 and special aluminum extrusions for the tray sides, front, and tracks. Corners shall be welded to  
1164 form a rigid unit. Tray shall be equipped with ball bearing rollers for smooth operation.  
1165 Two (2) spring-loaded locks shall be provided at the front of the tray, one (1) on each end.  
1166 Rubber padded stops shall be provided for both the in and out tray positions.

1167 **SLIDE OUT TOOL BOARD**

1168 The tool board shall be an aluminum “Pac Trac” tool board constructed of .188” thick aluminum  
1169 with .203” diameter holes in a pegboard pattern with 1.00” centers between holes. A 1.00” x  
1170 1.00” aluminum tube frame shall be welded to the edge of the tool board for rigidity.  
1171 The board shall be mounted on a slide out track fabricated of aluminum extrusions to allow easy  
1172 extension and retraction. The board shall have positive lock in the stowed and extended position.  
1173 The tool board shall support a minimum of 500 pounds in the extended position.

1174 **TRI POD STORAGE TUBE**

1175 Remove existing storage tube for the departments confined space tri-pod. Provide and install a  
1176 storage compartment under the rescue body just behind the rear wheels to store the departments  
1177 existing confined space tri-pod. Proper ground clearance and angle of departure must be  
1178 maintained. Manufacture shall suggest best requirements for proper layout and design.

1179 **ADD REAR LADDER**

1180 Add a Ziamatic fold out ladder Model #: RL15-2-6 15" width: Two step fold-down & 6 step  
1181 straight section to the rear of the apparatus with termination to be on the roof for roof access.  
1182 Location to be determined during the preconstruction meeting.

1183 **INTERIOR COMPARTMENT DOORS**

1184 Remove the plexi-glass and associated track and hardware from all the interior compartment  
1185 doors. Provide removable cargo netting that complies with NFPA 1901 for the interior  
1186 compartments on the street side and the road side. The rear center compartment to be replaced  
1187 with a ROM auto latch shutter. Rear left and rear right to be replaced with a metal type slam door  
1188 with hinges on one side.

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**ADD SHELVING FOR MANUALS AND BOOK STORAGE INTERIOR**

Provide in the interior rear curb side compartment shelving or storage for books and manuals.  
Manufacture shall suggest best requirements for proper layout and design.

**REPLACE INTERIOR 12 VOLT AND 120 VOLT LIGHTING**

Remove existing 12 volt and 120 volt interior ceiling lighting. Replace with On-Scene Solutions 12 volt clear/red LEDs in interior lights. The lights will be wired to a light master on /off switch for white or red operation. Switch to be located on the wall near rear body entrance.

**REMOVE INTERIOR BENCH SEAT AND SAFETY BELTS**

Remove existing interior bench seat and safety belts.

**ADD COMMAND / RADIO COMPARTMENTATION REAR INTERIOR**

Provide in the curbside rear window area a 12-volt, 60 amp radio circuit with four (4) post fusible block and grounding for department's two-way mobile radios. The circuit shall be activated with the master disconnect switch. Provide a radio compartment at the command area for customer supplied radios. Compartment dimensions are 40" W X 10" D X 3-1/2" H. Exact location to be determined during the preconstruction meeting.

**ADD 12 VOLT ACCESSORY CIRCUITS FOR PORTABLE CHARGING EQUIPMNET**

Provide seven spare 12V circuits sized and supplied for the interior of the rescue body for customer-supplied equipment. These circuits shall be wired to an area(s) determined at time of pre-construction. COLCHESTER FIRE DEPARTMENT to provide list of equipment to be used prior to pre-construction. (printer / portable suction/ DC Power socket, etc.)

**BODY INTERIOR DIAMOND PLATE**

Remove existing flooring and side walls and replace with new aluminum diamond plate.

The sides shall be replaced with 3003 aluminum diamond plate. The floor shall be replaced with 6061-T6 aluminum diamond plate and meet NFPA 1901 standards.

**BODY INTERIOR CEILING**

Remove existing ceiling material and install a new ceiling. Manufacture shall suggest best product and material

**TAIL, STOP, TURN AND BACK-UP LIGHTS**

Replace with two (2) Whelen M6FCV4 M6 Series Chrome Quad Light Housings. Two (2) Whelen M6BTTC M6 Series LED Brake/Tail/Turn w/ Clear Lens. Two (2) Whelen M6BUW M6 Series LED Back-Up. Two (2) Whelen M6TC M6 Series Turn Arrow w/ Clear Lens. Two (2) Whelen M6RC Red M6 Series Super-LED Light head w/ Clear Lens

**REMOVE UNDERBODY LIGHTS**

Remove existing underbody "Ground Effect" lights.

**BODY RUB RAIL W/LED GROUND LIGHTING**

Install on Scene Solutions Anodized aluminum body rub rail with Night Stik LED lights incorporated shall be provided on both sides and rear of the body. A lifetime warranty is to be included and copy of warranty included in the bid proposal package. The underbody light shall illuminate the ground beneath the rescue body.

1229 **REAR TOW EYES**

1230 The rear body shall include two (2) painted tow eyes and shall be installed through the rear body.  
1231 The tow eyes shall be fabricated from 0.75 inch thick #1020 ASTM-36 hot rolled steel. The inside  
1232 diameter of the tow eye shall be 2.00 inch and have a chamfered edge. The tow eyes shall be  
1233 painted to match the frame.

1234 **RESCUE BODY LIGHT PACKAGE**

1235 See cab body specification for additional lighting requirements

1236 **WARNING LIGHT SYSTEM CERTIFICATION**

1237 The warning light system specified will have a total amperage draw of 45 AMPS with all lights  
1238 activated in either the "Clearing Right of Way" or the "Blocking Right of Way" mode.

1239 The light system manufacturer shall meet all of the requirements as noted in chapter 13 of the  
1240 Current edition of the NFPA 1901 Fire Apparatus Standard shall certify this warning light system.  
1241 Certification shall be supplied at the time of delivery.

1242 **ZONE B & D RESCUE BODY SIDE SCENE LIGHTS**

1243 Provide four (4) Whelen M9LZC M9 Super-LED Scene Light with Four (4) M9FCZ900 to M9  
1244 Series Chrome Conversion Flange (Scene Light) two (2) each side.

1245 **ZONE B & D RESCUE BODY SIDE WARNING LIGHTS**

1246 Provide four (4) Whelen M9RC Red M9 Series Super-LED Lighthouse w/ Clear Lens with four (4)  
1247 M9FC900 to M9 Series Chrome Conversion Flange (Warning Light). Two (2) each side upper  
1248 warning lights.

1249 **ZONE B & D RESCUE BODY SIDE LOWER CENTER WARNING LIGHTS**

1250 Provide two (2) Whelen model M7RC Red M7 Series Super-LED Lighthouse w/ Clear Lens with  
1251 Two (2) M7FC700 to M7 Series Chrome Conversion Flange (Warning Light) one (1) each side  
1252 above wheel well.

1253 **ZONE C RESCUE BODY REAR WARNING LIGHTS**

1254 Provide two (2) Whelen M9RC Red M9 Series Super-LED Lighthouse w/ Clear Lens and two (2)  
1255 M9AC Amber M9 Series Super-LED Lighthouse w/ Clear Lens with four (4) M9FC900 to M9  
1256 Series Chrome Conversion Flange (Warning Light) Two (2) each side at the upper sides of the  
1257 apparatus two (2) red, two (2) yellow.

1258 **ZONE C RESCUE BODY REAR SCENE LIGHTS**

1259 Provide two (2) Whelen M9LZC M9 Super-LED Scene Lights with two (2) M9FCZ900 to M9  
1260 Series Chrome Conversion Flange (Scene Light)

1261 **TRAFFIC FLOW BOARD - COMMAND LIGHT**

1262 Provide one (1) Command Light H7 Traffic Flow Board. The board to be flush mounted on the  
1263 roof of the rescue body. A control module shall activate the directional light. The control module  
1264 will be conveniently located near the driver's position. The rear directional light will be wired  
1265 through the load management system of the unit. A light shall be provided in the cab when the unit  
1266 is deployed.

1267 **COMMAND LIGHT TOWER**

1268 Provide (1) one Command light CL602 - Whelen A/C LED Lighting Option, 120 VAC with  
1269 optional yellow strobe mounted on the chassis cab. The umbilical cord remote controller shall be  
1270 located in the left front compartment L-1.

1271 **REAR DIRECTIONAL LIGHT (WHELEN)**

1272 Provide one (1) Whelen "Traffic Advisor" Eight Lamp LINZ6 Super-LED® Traffic Advisor™,  
1273 30.36" Long-Traffic Advisor with Two End Flashing Super-LEDs, Amber, Aluminum Housing,  
1274 rear directional light. Light to be **flush mounted** on the rear wall of the apparatus as high as  
1275 possible. A control module shall activate the directional light. The control module will be  
1276 conveniently located near the driver's position. The rear directional light will be wired through the  
1277 load management system of the unit.

1278 **LITTLE GIANT LADDER STORAGE COMPARTMENT**

1279 Provide a storage compartment for the bidder supplied 17' Little Giant ladder to be mounted in  
1280 walkway. Storage compartment to be made out of diamond plate with a positive closing door.

1281 **POLYPROPYLENE STORAGE BOXES**

1282 Provide six (6) black textured poly boxes for cribbing storage and air bag accessory storage. Sizes  
1283 to be determined during the preconstruction conference.

1284 **PAINT, PREPARATION AND FINISH**

1285 All removable items, such as brackets, compartment doors, etc. shall be painted separately to  
1286 insure finish paint behind mounted items Sand and media blast entire body, rough out 60-100 grit  
1287 bare stainless. Repair any damages to body. Acid wash, and apply a self-etching primer. Level  
1288 body surfaces, Reapply primer, wet sand and clean. Apply base coats 3 covering coats. Add clear  
1289 high build. Wet sand and buff to show shine.

1290 **BODY EXTERIOR PAINT**

1291 The Rescue body shall be finish sanded and prepared for final paint. Upon completion of final  
1292 preparation, the cab exterior and body will be painted utilizing the highest quality, state of the art,  
1293 base paint. Finish paint will be applied in multiple coats to ensure proper paint coverage with a  
1294 high gloss finish.

1295  
1296 The Body exterior will be painted to match purchaser's furnished paint codes. A two tone paint  
1297 finish will be provided with the break line located approximately 3" below the cab side windows.  
1298 A Paint color sample for each color shall be provided to, and approved by the purchaser prior to  
1299 the painting the chassis or fire body.

1300  
1301 The upper portion of the rescue body shall be painted WHITE N0007 to match existing apparatus.  
1302 A PPG paint code will be provided for matching or cross-referencing.

1303  
1304 The lower portion of the rescue body shall be painted YELLOW N2637 to match existing  
1305 apparatus. A PPG paint code will be provided for matching or cross-referencing.

1306

1307 **PAINT FINISH WARRANTY**

1308 The finish paint on the unit shall be provided with a five (5) year paint finish guarantee, which will  
1309 cover the finish for the following items:

- 1310 • Peeling or de-lamination of the topcoat and/or other layers of paint.
- 1311 • Cracking or checking.
- 1312 • A copy of this warranty will be submitted with the proposal.
- 1313

1314 **LETTERING AND STRIPING**

1315 Provide lettering and striping computer generated SCOTCH-LITE appliqué with a single color  
1316 and clear coat.

1317 Provide a maximum of sixty (60), three (3) inch letters to coincide with the Fire Department's  
1318 existing lettering.

1319 Provide all lettering and striping with a clear coat with an acrylic enamel clear coat.

1320 Provide 16” reflective black letters on the roof “**Rescue 1-28**” for aerial identification.

1321 Provide (2) 18” gold Maltese Crosses with color lettering and graphics as shown. The final image  
1322 is subject to approval. To be installed one (1) each side crew entry doors.

1323 The “COLCHESTER” shall be provided with a single color drop shadow to match departments  
1324 existing lettering. This is to be provided in three (3) locations. One (1) each side of the upper  
1325 rescue body and one (1) on the upper rear.

1326 The “RES1CUE” shall be provided with a two color drop shadow to match departments existing  
1327 lettering. This is to be provided in three (3) locations. One (1) each side of the upper rescue body  
1328 and one (1) on the upper rear.

1329 Provide “RES1CUE” in two color lettering centered on the front of the cab between the grill and  
1330 the windshield.

1331 **SCOTCHLITE STRIPE**

1332 Provide a six (6) inch high white triple trim scotchlite stripe.  
1333

1334 The stripe shall be applied to at least 50 percent of the cab and body length on each side, and at  
1335 least 25 percent of the width of the front of the apparatus shall have the reflective material affixed  
1336 to it.  
1337

1338 Provide two (2) 1" scotchlite stripes incorporated into the scotchlite scheme to border the primary  
1339 4” scotchlite stripe on the top and bottom edges. The customer will determine final layout of this  
1340 configuration.

1341 **CHEVRON STRIPING**

1342 Chevron striping shall be provided and installed across the entire rear of the body. Striping will be  
1343 4" wide red/yellow reflective and installed in an inverted "V" pattern. Color shall be 3983 Yellow  
1344 3892 Red.

1345 No striping on the roll up door.

1346 **SEATING POSITION LABELS**

1347 Provide fourteen (14) permanent 3" X 5" engraved seating position labels, Seven (7) red and  
 1348 Seven (7) blue. Verbiage for each label will be provided during the preconstruction conference.  
 1349 Labels to be mounted at the factory as directed.

1350

*Example of Seat Position 3" X 5" tags*

EQUIPMENT	HOSE PERSON RESPONSIBILITIES
Portable Radio	Assist with line stretch
Set of Irons	Direct Hose Team
Box Light	Evaluate effectiveness and progress
	Communicate with Operations Chief

1351 *Background Blue for Technical Rescue Operations and Red tags for fire suppression activities*  
 1352 *Final Design and Text subject to Customer approval.*

1353 **WHEEL CHOCKS**

1354 Provide two (2) Zico SAC-44 folding wheel chocks with Zico SQCH-44-H horizontal mounting  
 1355 brackets mounted one (1) each side forward of the rear wheels below the side running board  
 1356 compartments.

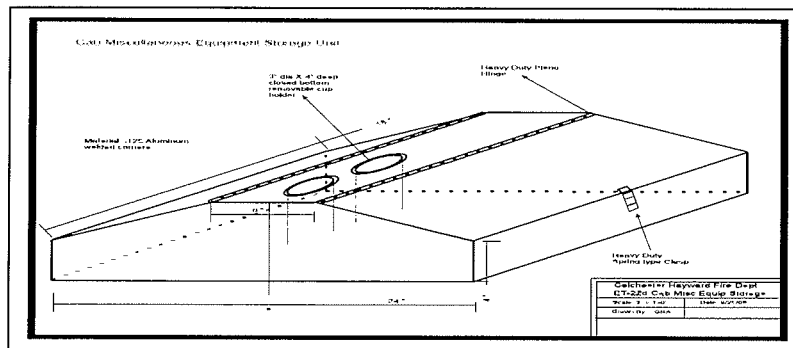
1357 **HAND LIGHTS**

1358 Provide eight (8) Streamlight Fire Vulcan Flashlights with flashing LED taillights - Vehicle  
 1359 Mount System - Orange- and installed as directed by the purchaser. The light chargers shall be  
 1360 wired to the chassis battery saver. Location to be determined at pre-construction conference.

1361 **HINGED STORAGE BOX**

1362 Provide a storage box with two hinged, positive latching doors approximately 18" L X 24" W X  
 1363 8" H to be mounted on the engine cover between the officer and driver as shown below.

1364



1365

1366 **SALES REPRESENTATIVE SUPPLIED EQUIPMENT**

1367 The following listing of equipment shall be furnished as part of the contract requirements and will  
1368 be installed locally by the regional Sales Representative as required by the Purchaser. The location  
1369 for mounting this equipment will be determined during the pre and/or post construction meetings.

1370

1371 Provide as stated an NFPA rated vehicle mounting bracket for the following items:

1372 2-1/2 gallon pressurized water fire extinguisher bracket - to be mounted in the crew area.

1373 2-1/2 gallon pressurized AFFF fire extinguisher bracket – location to be determined

1374 8lb. flat headed axe positive locking bracket - mounted on the PAC tool board

1375 30" Pro bar positive locking bracket - mounted on the PAC tool board

1376 6' NY Roof Hook - two (2) positive locking brackets - mounting location to be determined

1377 36" Bolt cutter positive locking bracket - mounted on PAC tool board

1378 10Lb Sledge Hammer positive locking bracket - mounted on PAC tool board

1379 PAC Mount IRONSLOK - to be mounted in the crew area

1380

1381 **ROAD SAFETY KIT**

1382 Provide a road safety kit with the following equipment:

1383 1 - 2 ½ lb. B-C fire extinguisher

1384 3 - triangle safety reflectors

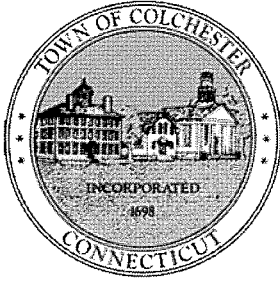
1385

1386

1387

1388





**TOWN OF COLCHESTER, CONNECTICUT  
COLCHESTER FIRE DEPARTMENT  
2013 RESCUE FIRE APPARATUS BID FORM**



**Bidder:**

Name: \_\_\_\_\_

Address: \_\_\_\_\_

City / State: \_\_\_\_\_

Phone: \_\_\_\_\_

FAX: \_\_\_\_\_

Contact Person: \_\_\_\_\_

Phone: (if different than above) \_\_\_\_\_

FAX (if different than above) \_\_\_\_\_

**Base Bid:** \$ \_\_\_\_\_, \_\_\_\_\_ thousand, dollars, and \_\_\_\_\_ cents.

**Alternate #1— SIDE ROLLOVER & AIR BAG PROTECTION**

The apparatus shall be equipped with a side rollover air bag protection system consisting of the following major components:

**Inflatable Tubular Structures (ITS)**

The ITS portion of the system consists of a tubular side airbag designed to protect the occupant's head during a rollover. The airbags shall be installed outboard of the driver and officer's seating positions. The airbag is attached to the vehicle at each end. Before deployment, it is normally stowed above the side window. As the diameter of the airbag increases during inflation, its length decreases. The deployed airbag; generates tension between attachment points and is positioned to protect the specified range of occupants. While stowed in the vehicle, the airbag is contained inside a trim cover. The trim cover opens and releases the airbag during deployment. The trim components are elastomeric extrusions that are attached to the vehicle interior. They are integrated into the vehicle interior to meet styling and functional requirements. The system uses a stored-gas inflator to generate inflation gases.

**Suspension Seat Safety System**

The seat and occupant pretensioning system using a stored gas powered actuator to pretension the front occupant's belt and pull down the suspension seat during a roll over. It is designed to "safely" move an occupant ranging from a 5th percentile female to a 95th percentile male, from an elevated position relative to normal driving conditions, to the seats lowest position while maintaining a tightened belt. This action {will/shall} occur in 100 to 180 milliseconds. For the S4S mechanism to provide adequate impulse to move the mass of a 95th percentile occupant in the prescribed time, it is necessary that the device produce a substantial force.

**Inflatable Head Curtain (IHC)**

The Inflatable Head Curtain shall be a state-of-the-art, pyrotechnic device designed to be compact and modular, assembly shall be installed outboard of the driver, officer and outboard crew seating position within the apparatus.

**Integrated Buckle Pretensioner (IBP)**

The Buckle Pretensioner is a pretensioning system using a micro gas generator to pretension the occupant's belt during a roll over. The Buckle Pretensioner is mounted in all protected static seating positions. The pretensioner deploys upon receiving a signal from the rollover sensor.

**FOR THE ADDITIONAL SUM OF \$ \_\_\_\_\_**

## **Alternate #2 – ITEMS REMOVED FROM THE SPEC AND DISASSEMBLED BY CUSTOMER**

The items listed below will be removed by the customer prior to the Rescue being shipped to the awarded bidders' factory. The bidder will deduct this from the total cost and show the cost savings below.

### **Underbody Roll Out Cribbing Compartments**

Remove existing underbody roll out storage tray.

### **Street Side Compartment L-1**

Remove existing adjustable shelves in this compartment.

### **Street Side Compartment L-2**

Remove existing shelves and trays in compartments.

### **Street Side Compartment L-3**

Remove existing shelves and tubes in compartment.

### **Street Side Compartment L-4**

Remove existing tray and wood panels in compartment.

### **Curb Side Compartment R-1**

Remove existing adjustable shelves in this compartment.

### **Curb Side Compartment R-2**

Remove existing shelves and trays in compartments.

### **Curb Side Compartment R-3**

Remove existing shelves in this compartment.

### **Curb Side Compartment R-4**

Remove existing tray and shelves in this compartment.

### **Rear Compartment B-1**

Remove current ladder and diamond plate panel located on the rear of the apparatus

### **Interior Compartment Doors**

Remove the plexi-glass and associated track and hardware from all the interior compartment doors.

**Interior 12 Volt And 120 Volt Lighting**

Remove existing 12 volt and 120 volt interior ceiling lighting.

**Interior Bench Seat And Safety Belts**

Remove existing interior bench seat and safety belts.

**Body Interior Diamond Plate**

Remove existing flooring and side walls.

**Body Interior Ceiling**

Remove existing ceiling material.

**Underbody Lights**

Remove existing underbody "Ground Effect" lights.

**Body Rub Rail**

Remove existing Stainless Steel Rub Rail.

**Exterior Compartment Lighting**

Remove 12-volt incandescent light fixtures in the exterior compartments.

**SVI Light Tower And Associated Components**

Remove the current SVI light tower located in compartments L5 – R-5 along with associated plumbing wiring. Remove from compartment R-1 all SVI light tower controls and associated equipment.

**FOR THE TOTAL SAVINGS OF \$** \_\_\_\_\_

**Alternate #3— LOOSE EQUIPMENT**

Each bidder shall quote the following loose equipment list. They shall show individual pricing. The Colchester Fire Department reserves the right to choose any, all or none of these items. If any item/s are chosen, it will be an add-on to the main bid price.

One (1) 20# ABC fire extinguisher with vehicle mounting bracket  
**FOR THE SUM OF \$** \_\_\_\_\_

One (1) 15# CO2 fire extinguisher with vehicle mounting bracket  
**FOR THE SUM OF \$** \_\_\_\_\_

One (1) 2-1/2 gallon pressurized water fire extinguisher w/fire hooks unlimited shoulder strap #CH-312  
**FOR THE SUM OF \$** \_\_\_\_\_

One (1) 2-1/2 gallon pressurized AFFF fire extinguisher w/ fire hooks unlimited shoulder strap #CH-312  
**FOR THE SUM OF \$** \_\_\_\_\_

One (1) Fire Hooks Unlimited Lock-Slot 8lb Forcible Entry Axe  
**FOR THE SUM OF \$** \_\_\_\_\_

One (1) Fire Hooks Unlimited Lock-Slot 8lb Forcible Entry Axe  
**FOR THE SUM OF \$** \_\_\_\_\_

One (1) Fire Hooks Unlimited Maximus Forcible Entry Tool  
**FOR THE SUM OF \$** \_\_\_\_\_

One (1) Fire Hooks Unlimited Maximus Forcible Entry Tool  
**FOR THE SUM OF \$** \_\_\_\_\_

One (1) Fire Hooks Unlimited 6' NY Roof Hook.  
**FOR THE SUM OF \$** \_\_\_\_\_

One (1) 36" Bolt cutter  
**FOR THE SUM OF \$** \_\_\_\_\_

One (1) Fire Hooks Unlimited 10lb Sledge Hammer  
**FOR THE SUM OF \$** \_\_\_\_\_

One (1) 17' Little Giant Type IA-300 lb rated, Model 10102  
**FOR THE SUM OF \$** \_\_\_\_\_

One (1) Tempest 16" Ventmaster Chainsaw Model # 576HD-DG .404 with the Raptor Carbide Chain  
**FOR THE SUM OF \$** \_\_\_\_\_

One (1) Res-Q-Jack ALX-4PTX Aluminum X Deluxe 4-Point Kit  
**FOR THE SUM OF \$** \_\_\_\_\_

Two (2) 100 foot lengths of TNT Rescue Tool reel hose P/N **HRH-100-NEX**. 3/8"ID twin line 10,500 psi reel hose with Nexus connector on one end and #4 JIC on the reel end.  
**FOR THE SUM OF \$** \_\_\_\_\_

**FOR THE TOTAL ADDITIONAL SUM OF \$** \_\_\_\_\_.

**Alternate #4—SPEEDI DRI STORAGE DELIVERY SYSTEM**

Add speedy-dri storage and dispensing system in the top of compartment L-5. A dispensing tube and control valve shall be provided at the rear of the apparatus. The storage system shall hold 200lb's of martial. The exact location to be determined during the pre-construction conference.

**FOR THE ADDITIONAL SUM OF \$ \_\_\_\_\_.**

**Alternate #5— REAR HITCH RECEIVER**

A hitch receiver shall be installed at the rear of the apparatus. The hitch shall be constructed of heavy steel tubing and reinforced to the truck framework, for the receiving portion, including a heavy-duty slide-in tube with a ball. This shall be a class IV trailer hitch. The class IV rating is 10,000 pounds towing and 1000 pounds tongue with weight disturbing hitch. The slide-in portion shall be held in place by two (2) safety pins with clips. A seven-prong trailer-wiring plug and a 12-volt winch electrical plug shall be provided at the rear with a weatherproof snap cover.

**FOR THE ADDITIONAL SUM OF \$ \_\_\_\_\_.**

**Alternate #6— SIDE HITCH RECEIVERS**

An anchor point hitch receiver shall be installed at the sides of the apparatus in front of the rear wheels. The hitch shall be constructed of heavy steel tubing and reinforced to the truck framework, for the receiving portion, including a heavy-duty slide-in tube with a D Ring anchor point. The slide-in portion shall be held in place with a safety pin with a clip. The hitch shall have a 10,000 lb rating. A heavy gauge 12-volt wire and electrical plug with weather proof snap cover shall be provided mounted adjacent to the hitch receiver with a weatherproof snap cover.

**FOR THE ADDITIONAL SUM OF \$ \_\_\_\_\_.**

**Alternate #7— MINI REFRIGERATOR**

Provide and install in the interior rear street side compartment a mini refrigerator. The size and proper drainage to be recommended by the bidder.

**FOR THE ADDITIONAL SUM OF \$ \_\_\_\_\_.**

**Alternate #8— HYDRAULIC REEL WITH CAPACITY FOR 100' OF HOSE**

Provide two (2) new hydraulic hose reels located in compartments L-2 and R-2. There will be one (1) provided in each compartment along with the existing hose reels in each compartment. Compartments L-2 and R-2 will have a total of two (2) reels in each. One (1) existing and one (1) new in each compartment. The reel shall be operated by a 12 volt electric motor controlled by a rewind switch. The motor shall be protected by a circuit breaker and the rewind circuit shall be protected by a fuse. The switch shall be guarded to prevent accidental operation and installed at a height not to exceed 72 inches above the operators standing position.

The reel capacity shall be able to fit a 100 foot length of TNT Rescue Tool reel hose with 3/8" ID twin line 10,500 psi with Nexus connector on one end and #4 JIC on the reel end. Surfaces where the hose comes in contact with the reel roller shall be constructed of stainless steel, chrome plated steel or plastic. A captive roller assembly shall be provided to aid in the payout and loading of the reel.

**FOR THE ADDITIONAL SUM OF \$ \_\_\_\_\_.**

**All Alternates**

**Additional Cost of: \$ \_\_\_\_\_, \_\_\_\_\_ thousand, dollars, and \_\_\_\_\_ cents.**

**TOWN OF COLCHESTER, CONNECTICUT FIRE DEPARTMENT**

**2013 RESCUE FIRE APPARATUS BID FORM**

Delivery and Acceptance shall be completed within \_\_\_\_\_ calendar days from the date of contract execution.

The company does / does not carry product liability insurance. If carried, the amount is \$\_\_\_\_\_. Claims against product liability;

Claims \_\_\_\_\_ Amounts \_\_\_\_\_

Claims \_\_\_\_\_ Amounts \_\_\_\_\_

Claims \_\_\_\_\_ Amounts \_\_\_\_\_

Claims against the company for other liabilities.

Claims \_\_\_\_\_ Amounts \_\_\_\_\_

Claims \_\_\_\_\_ Amounts \_\_\_\_\_

Claims \_\_\_\_\_ Amounts \_\_\_\_\_



**TOWN OF COLCHESTER, CONNECTICUT FIRE DEPARTMENT**

**2013 RESCUE FIRE APPARATUS BID FORM**

References;

1. Number of years the Bidder has been engaged in the manufacture of fire apparatus:

\_\_\_\_\_ years.

2. List the dollar volume of fire apparatus sales for the previous year.

\$ \_\_\_\_\_

3. List six (6) recent deliveries or those under construction of fire apparatus of similar construction on similar chassis. Provide those customers closest to Colchester, Ct.

Customer	Amount of contract	Del. Date
1. _____	_____	_____
2. _____	_____	_____
3. _____	_____	_____
4. _____	_____	_____
5. _____	_____	_____
6. _____	_____	_____

Provide an additional list of fifteen customers of fire apparatus within the past 3 years. Attached to this Bid Form .

4. Has the Bidder ever failed to deliver work awarded; if so, state customer's name and why:

\_\_\_\_\_  
\_\_\_\_\_

5. Surety:

\_\_\_\_\_  
\_\_\_\_\_

6. Bank Reference: \_\_\_\_\_

\_\_\_\_\_

**TOWN OF COLCHESTER, CONNECTICUT FIRE DEPARTMENT**

**2013 RESCUE FIRE APPARATUS BID FORM**

7. Major Material Suppliers:

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_

8. List the Name, address and telephone of the repair facility nearest to Colchester, Ct. where warranty and service work will be conducted:

Cab and Chassis, \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Rescue Body \_\_\_\_\_  
\_\_\_\_\_

9. Provide the name, and address of the factory where the proposed fire apparatus will be manufactured: \_\_\_\_\_

10. Provide the name, and address of the factory where the proposed cab and chassis will be manufactured: \_\_\_\_\_

**TOWN OF COLCHESTER, CONNECTICUT FIRE DEPARTMENT**

**2013 RESCUE FIRE APPARATUS BID FORM**

The undersigned agrees to provide all necessary materials and labor for the construction, delivery, and acceptance and to provide warranty services for the periods stipulated for the construction of the proposed Fire Apparatus for the Colchester Fire Department, Town of Colchester, Connecticut listing all exceptions to the Bid Specifications.

The undersigned also warrants to the Town of Colchester that the company, its agents or employees have not participated in any collusion with any other agent or employee of any other bidder in setting of the Bid prices herein.

\_\_\_\_\_, \_\_\_\_\_  
Authorized Signature      Title

Corporate Seal

\_\_\_\_\_, \_\_\_\_\_  
Print Name of Signature      Date \_\_\_\_\_

Witnessed Signature by

Notary

\_\_\_\_\_  
\_\_\_\_\_

Notary Seal

Subject	Spec Page#	Bidder Meets Spec	Bidder Exceeds Spec	Bidder takes Exception to Spec	Bidder Exception to Line Numbers	Bidders Clarification to Specification
<b>Sample Exception Entry for Bidders</b>				X	1296-97	Manufacturer paints ALL fire trucks Red, suggest Final choice be Red, (This is NOT acceptable to CHVFD
INSPECTION TRIPS	7					
TRANSPORTATION OF EXISTING APPARATUS TO BIDDERS FACTORY	7					
SPARTON Metro Star ELFD CUSTOM CHASSIS	7					
CAB MATERIAL	7					
CAB - BASE CONSTRUCTION	7					
24" RAISED CAB ROOF	7					
CAB DOORS	8					
ENTRY STEP AREA	8					
Rear wall cut out for walk through rescue body	8					
EXTERIOR REAR LOWER CAB COMPARTMENT	8					
DOOR LATCHES	8					
INTERIOR DOOR LOCKS	8					
DOOR SCUFF PLATES	9					
CAB CORROSION PROTECTION	9					
WINDSHIELD/GLASS	9					
WINDSHIELD WIPER AND WASHER	9					
GRAB HANDLES	9					
INTERIOR GRAB RAIL	9					
AIR INTAKE/OUTLET	9					
WHEEL WELL LINERS	9					
FENDER/TIRES	10					
MUD FLAPS	10					
CAB MIRRORS	10					
EIGHT INCH CONVEX K-10 FDNY MIRROR	10					
EXTREME DUTY INTERIOR CAB TRIM	10					
FLOORING	10					
ENGINE ENCLOSURE	11					
CAB SEATING	11					
SECURE-ALL SCBA BRACKET	11					
SEAT BELTS	11					
UPHOLSTERY	11					

Subject	Spec Page#	Bidder Meets Spec	Bidder Exceeds Spec	Bidder takes Exception to Spec	Bidder Exception to Line Numbers	Bidders Clarification to Specification
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INSTRUMENT PANELS	12					
OFFICER'S SPEEDOMETER	13					
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WINCH STORAGE WELL	15					
WINCH STORAGE WELL COVER	15					
SIGHT RODS	15					
REMOVE AND REMOUNT AND WIRE ELECTRIC						
WINCH	15					
FRONT BUMPER TOW EYES	15					
FRONT AXLE	15					
STEERING SYSTEM	15					
STEERING	16					
FRONT BRAKES	16					
FRONT SUSPENSION	16					
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REAR SUSPENSION	16					
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BRAKE SYSTEM	17					
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AUTOMATIC TRACTION CONTROL (ATC)	17					
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Subject	Spec Page#	Bidder Meets Spec	Bidder Exceeds Spec	Bidder takes Exception to Spec	Bidder Exception to Line Numbers	Bidders Clarification to Specification
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AIR LINES	18					
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PARKING BRAKE	18					
KUSSMAUL AIR PUMP	18					
WHEELS AND TIRES	19					
TIRE PRESSURE MONITORING	19					
TIRE PRESSURE LABELS	19					
ENGINE	19					
RADIATOR	20					
AIR CLEANER	20					
ENGINE BRAKE	20					
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P.T.O. (POWER TAKE OFF) FOR GENERATOR	21					
P.T.O. LIGHT INDICATOR FOR GENERATOR	21					
TRANSMISSION SHIFTER / MODE	21					
TRANSMISSION WARRANTY	21					
DRIVELINES	21					
EXHAUST SYSTEM	22					
FUEL TANK	22					
FUEL POCKET	22					
VEHICLE FLUIDS PLATE	23					
CHASSIS ELECTRICAL SYSTEM	23					
SPARE 12 VOLT CIRCUIT - CAB	23					
RADIO 12 VOLT CIRCUITS	23					
INTERCOM SYSTEM - EIGHT SEATED POSITION	24					
INTERCOM- PELTOR	24					
HEADSET - PELTOR SERIES- DRIVER POSITION	24					
HEADSET - PELTOR OFFICER POSITION	24					
HEADSET PELTOR CREW POSITION INTERCOM ONLY	24					
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Subject	Spec Page#	Bidder Meets Spec	Bidder Exceeds Spec	Bidder takes Exception to Spec	Bidder Exception to Line Numbers	Bidders Clarification to Specification
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GTT OPTICOM	30					
ZONE A HEAD LIGHT BEZEL MOUNTED WARNING LIGHTS	30					
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SEE RESCUE BODY SPECIFICATION FOR ADDITIONAL LIGHTING REQUIREMENTS	30					

Subject	Spec Page#	Bidder Meets Spec	Bidder Exceeds Spec	Bidder takes Exception to Spec	Bidder Exception to Line Numbers	Bidders Clarification to Specification
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"DO NOT MOVE APPARATUS" WARNING LIGHT WITH AUDIBLE ALARM	31					
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Remove customer's Rescue body and remount on Spartan Chassis	33					
REMOVE AND REPLACE ROLL-UP DOORS (ROLL-O-MATIC)	33					
ADD LED STRIP LIGHTING EXTERIOR COMPARTMENTS	33					
TURTLE TILE FOR COMPARTMENTS	33					
REMOVE EXISTING SVI LIGHT TOWER AND ASSOCIATED COMPONENTS	33					
RELOCATE HYDRAULIC GENERATOR	34					
REMOVE AND REPLACE 120 VAC SCENE	34					
INSPECT AND REPLACE 120 VAC ELECTRICAL WIRING & COMPONENTS	34					
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STREET SIDE COMPARTMENT L-4	35					
STREET SIDE COMPARTMENT L-5	35					
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Subject	Spec Page#	Bidder Meets Spec	Bidder Exceeds Spec	Bidder takes Exception to Spec	Bidder Exception to Line Numbers	Bidders Clarification to Specification
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SLIDE OUT TOOL BOARD	37					
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Add Rear Ladder	37					
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ADD SHELVING FOR MANUALS AND BOOK STORAGE INTERIOR	38					
REPLACE INTERIOR 12 VOLT AND 120 VOLT LIGHTING	38					
REMOVE INTERIOR BENCH SEAT AND SAFETY BELTS	38					
ADD COMMAND / RADIO COMPARTMENTATION	38					
REAR INTERIOR	38					
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BODY INTERIOR DIAMOND PLATE	38					
BODY INTERIOR CEILING	38					
TAIL, STOP, TURN AND BACK- UP LIGHTS	38					
REMOVE UNDERBODY LIGHTS	38					
BODY RUB RAIL W/LED GROUND LIGHTING	38					
REAR TOW EYES	39					
RESCUE BODY LIGHT PACKAGE	39					
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Subject	Spec Page#	Bidder Meets Spec	Bidder Exceeds Spec	Bidder takes Exception to Spec	Bidder Exception to Line Numbers	Bidders Clarification to Specification
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LITTLE GIANT LADDER STORAGE COMPARTMENT	40					
POLYPROPYLENE STORAGE BOXES	40					
PAINT, PREPARATION AND FINISH	40					
BODY EXTERIOR PAINT	40					
PAINT FINISH WARRANTY	40					
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SCOTCHLITE STRIPE	41					
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Hinged Storage Box	42					
SALES REPRESENTATIVE SUPPLIED EQUIPMENT	43					
ROAD SAFETY KIT	43					

**SCHEDULE C**

Attached Form of Bonds

Bond No. \_\_\_\_\_

# Performance Bond

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

CONTRACTOR (Name and Address):

SURETY:

OWNER (Name and Address):

Surety Phone No.

## CONSTRUCTION CONTRACT

Date:

Amount: \$

DOLLARS

Description (Name and Location):

## BOND

Date (Not earlier than Construction Contract Date):

Amount: \$

DOLLARS

Modifications to this Bond:

None

See Page 3

CONTRACTOR AS PRINCIPAL

SURETY

Company:

Company:

Corporate Seal

Corporate Seal

Signature: \_\_\_\_\_

Signature: \_\_\_\_\_

Name and Title:

Name and Title:

Attorney-in-Fact

(Any additional signatures appear on page 3)

(FOR INFORMATION ONLY—Name, Address and Telephone)

AGENT or BROKER:

OWNER'S REPRESENTATIVE (Architect, Engineer or other party):

Printed in cooperation with the American Institute of Architects (AIA) by

language used in AIA Document A-312, December 1984 Edition.

PRF76002ZZ0601f  
Without Modifications

vouches that the language in the document conforms exactly to the

1 The Contractor and the Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner for the performance of the Construction Contract, which is incorporated herein by reference.

2 If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except to participate in conferences as provided in Subparagraph 3.1.

3 If there is no Owner Default, the Surety's obligation under this Bond shall arise after:

3.1 The Owner has notified the Contractor and the Surety at its address described in Paragraph 10 below that the Owner is considering declaring a Contractor Default and has requested and attempted to arrange a conference with the Contractor and the Surety to be held not later than fifteen days after receipt of such notice to discuss methods of performing the Construction Contract. If the Owner, the Contractor and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement shall not waive the Owner's right, if any, subsequently to declare a Contractor Default; and

3.2 The Owner has declared a Contractor Default and formally terminated the Contractor's right to complete the contract. Such Contractor Default shall not be declared earlier than twenty days after the Contractor and the Surety have received notice as provided in Subparagraph 3.1; and

3.3 The Owner has agreed to pay the Balance of the Contract Price to the Surety in accordance with the terms of the Construction Contract or to a contractor selected to perform the Construction Contract in accordance with the terms of the contract with the Owner.

4 When the Owner has satisfied the conditions of Paragraph 3, the Surety shall promptly and at the Surety's expense take one of the following actions:

4.1 Arrange for the Contractor, with consent of the Owner, to perform and complete the Construction Contract; or

4.2 Undertake to perform and complete the Construction Contract itself, through its agents or through independent contractors; or

4.3 Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and the contractor selected with the Owner's concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Paragraph 6 in excess of the Balance of the Contract Price incurred by the Owner resulting from the Contractor's default; or

4.4 Waive its right to perform and complete, arrange for completion, or obtain a new contractor and with reasonable promptness under the circumstances:

.1 After investigation, determine the amount for which it

may be liable to the Owner and, as soon as practicable after the amount is determined, tender payment therefor to the Owner; or

.2 Deny liability in whole or in part and notify the Owner citing reasons therefor.

5 If the Surety does not proceed as provided in Paragraph 4 with reasonable promptness, the Surety shall be deemed to be in default on this Bond fifteen days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Subparagraph 4.4, and the Owner refuses the payment tendered or the Surety has denied liability, in whole or in part, without further notice the Owner shall be entitled to enforce any remedy available to the Owner.

6 After the Owner has terminated the Contractor's right to complete the Construction Contract, and if the Surety elects to act under Subparagraph 4.1, 4.2, or 4.3 above, then the responsibilities of the Surety to the Owner shall not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety shall not be greater than those of the Owner under the Construction Contract. To the limit of the amount of this Bond, but subject to commitment by the Owner of the Balance of the Contract Price to mitigation of costs and damages on the Construction Contract, the Surety is obligated without duplication for:

6.1 The responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;

6.2 Additional legal, design professional and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Paragraph 4; and

6.3 Liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.

7 The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction Contract, and the Balance of the Contract Price shall not be reduced or set off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than the Owner or its heirs, executors, administrators or successors.

8 The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related sub-contractors, purchase orders and other obligations.

9 Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and shall be instituted within two years after Contractor Default or within two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction

shall be applicable.

10 Notice to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the signature page.

11 When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. The intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

12 DEFINITIONS

12.1 Balance of the Contract Price: The total amount payable by the Owner to the Contractor under the Construction Contract after all proper adjustments have been made, including allowance to the Contractor of any amounts received or to be received by the

Owner in settlement of insurance or other claims for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Construction Contract.

12.2 Construction Contract: The agreement between the Owner and the Contractor identified on the signature page, including all Contract Documents and changes thereto.

12.3 Contractor Default: Failure of the Contractor, which has neither been remedied nor waived, to perform or otherwise to comply with the terms of the Construction Contract.

12.4 Owner Default: Failure of the Owner, which has neither been remedied nor waived, to pay the Contractor as required by the Construction Contract or to perform and complete or comply with the other terms thereof.

MODIFICATIONS TO THIS BOND ARE AS FOLLOWS:

(Space is provided below for additional signatures of added parties, other than those appearing on the cover page).

CONTRACTOR AS PRINCIPAL

Company: (Corporate Seal)

SURETY:

Company: (Corporate Seal)

Signature: \_\_\_\_\_

Signature: \_\_\_\_\_

Name and Title:

Name and Title:

Address:

Address:

Bond No. \_\_\_\_\_

## Payment Bond

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

CONTRACTOR (Name and Address):

SURETY:

OWNER (Name and Address):

Surety Phone No.

CONSTRUCTION CONTRACT

Date:

Amount:

DOLLARS

Description (Name and Location):

BOND

Date (Not earlier than Construction Contract Date):

Amount: \$

DOLLARS

Modifications to this Bond:

None

See Page 3

CONTRACTOR AS PRINCIPAL

Company:

SURETY

Company:

Signature: \_\_\_\_\_

Corporate Seal

Signature: \_\_\_\_\_

Corporate Seal

Name and Title:

Name and Title:

Attorney-in-Fact

(Any additional signatures appear on page 3)

(FOR INFORMATION ONLY—Name, Address and Telephone)

AGENT or BROKER:

OWNER'S REPRESENTATIVE (Architect, Engineer or other party):

Printed in cooperation with The American Institute of Architects (AIA) by

the language used in AIA Document A-312, December 1984 EDITION.

PAY76001ZZ0409F  
With Modifications

vouches that the language in the document conforms exactly to

1 The Contractor and the Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner to pay for labor, materials and equipment furnished for use in the performance of the Construction Contract, which is incorporated herein by reference.

2 With respect to the Owner, this obligation shall be null and void if the Contractor:

2.1 Promptly makes payment, directly or indirectly, for all sums due Claimants, and

2.2 Defends, indemnifies and holds harmless the Owner from claims, demands, liens or suits by any person or entity whose claim, demand, lien or suit is for payment for labor, materials or equipment furnished for use in the performance of the Construction Contract, provided the Owner has promptly notified the Contractor and the Surety (at the address described in paragraph 12) of any claims, demands, liens or suits and tendered defense of such claims, demands, liens or suits to the Contractor and the Surety, provided there is no Owner Default.

3 With respect to Claimants, this obligation shall be null and void if the Contractor promptly makes payment, directly or indirectly, for all sums due.

4 The Surety shall have no obligation to Claimants under this Bond until:

4.1 Claimants who are employed by or have a direct contract with the Contractor have given notice to the Surety (at the address described in Paragraph 12) and sent a copy, or notice thereof, to the Owner, stating that a claim is being made under this Bond and, with substantial accuracy, the amount of the claim.

4.2 Claimants who do not have a direct contract with the Contractor:

.1 Have furnished written notice to the Contractor and sent a copy, or notice thereof, to the Owner, within 90 days after having last performed labor or last furnished materials or equipment included in the claim stating, with substantial accuracy, the amount of the claim and the name of the party to whom the materials were furnished or supplied or for whom the labor was done or performed; and

.2 Have either received a rejection in whole or in part from from the Contractor, or not received within 30 days of furnishing the above notice any communication from the Contractor by which the Contractor has indicated the claim will be paid directly or indirectly; and

.3 Not having been paid within the above 30 days, have sent a written notice to the Surety (at the address described in Paragraph 12) and sent a copy, or notice thereof, to the Owner, stating that a claim is being made under this Bond and enclosing a copy of the previous written notice furnished to the Contractor.

5 If a notice required by Paragraph 4 is given by the Owner to the Contractor or to the Surety, that is sufficient compliance.

6 When the Claimant has satisfied the conditions of Paragraph 4, the Surety shall promptly and at the Surety's expense take the following actions:

6.1 Send an answer to the Claimant, with a copy to the Owner, within 45 days after receipt of the claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed.

6.2 Pay or arrange for payment of any undisputed amounts.

7 The Surety's total obligation shall not exceed the amount of this Bond, and the amount of this Bond shall be credited for any payments made in good faith by the Surety.

8 Amounts owed by the Owner to the Contractor under the Construction Contract shall be used for the performance of the Construction Contract and to satisfy claims, if any, under any Construction Performance Bond. By the Contractor furnishing and the Owner accepting this Bond, they agree that all funds earned by the Contractor in the performance of the Construction Contract are dedicated to satisfy obligations of the Contractor and the Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work.

9 The Surety shall not be liable to the Owner, Claimants or others for obligations of the Contractor that are unrelated to the Construction Contract. The Owner shall not be liable for payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligations to make payments to, give notices on behalf of, or otherwise have obligations to Claimants under this Bond.

10 The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related sub-contracts, purchase orders and other obligations.

11 No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the location in which the work or part of the work is located or after the expiration of one year from the date (1) on which the Claimant gave the notice required by Subparagraph 4.1 or Clause 4.2.3, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

12 Notice to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the signature page. Actual receipt of notice by Surety, the Owner or the Contractor, however accomplished, shall be sufficient compliance as of the date received at the address shown on the signature page.

13 When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. The intent is that this Bond shall be construed as a statutory bond and not as a common law bond.



14 Upon request by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor shall promptly furnish a copy of this Bond or shall permit a copy to be made.

15 DEFINITIONS

15.1 Claimant: An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials or equipment for use in the performance of the Contract. The intent of this Bond shall be to include without limitation in the terms "labor, materials or equipment" that part of water, gas, power, light, heat, oil, gasoline, telephone service or rental equipment used in the Construction Contract, architectural and engineering services

required for performance of the work of the Contractor and the Contractor's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials or equipment were furnished.

15.2 Construction Contract: The agreement between the Owner and the Contractor identified on the signature page, including all Contract Documents and changes thereto.

15.3 Owner Default: Failure of the Owner, which has neither been remedied nor waived, to pay the Contractor as required by the Construction Contract or to perform and complete or comply with the other terms thereof.

MODIFICATIONS TO THIS BOND ARE AS FOLLOWS:

Paragraph 4 is amended to insert sub-paragraph 4.3, which states:

4.3 Claimants have furnished to Surety proof of claim duly sworn to by Claimants with adequate supporting documentation proving the amount claimed is due and payable.

Paragraph 5 shall be amended to delete the word "or" and insert the word "and" in its place.

Paragraph 6 and its sub-paragraphs 6.1 and 6.2 shall be deleted in their entirety and replaced with the following: When the Claimant has satisfied the conditions of Paragraph 4, the Surety shall, within 90 days of the date when claimant finally completed its satisfactions of the conditions of Paragraph 4 notify the Claimant of the amounts that are undisputed and the basis for challenging any amounts that are disputed, including, but not limited to, the lack of substantiating documentation to support the claim as to entitlement or amount, and the Surety shall pay or make arrangements for payment of any undisputed amount; provided, however, that the failure of the Surety to timely discharge its obligations under this paragraph or to dispute or identify any specific defense to all or any part of a claim shall not be deemed to be an admission of liability by the Surety as to such claim or otherwise constitute a waiver of the Contractor's or Surety's defenses to, or right to dispute, such claim. Rather, the Claimant's sole remedy shall be the immediate right, without further notice, to bring suit against the Surety to enforce any remedy available to it under this Bond.

Paragraph 12 shall be amended to add the following paragraph: CLAIM NOTICE for the FIDELITY AND DEPOSIT COMPANY OF MARYLAND, ZURICH AMERICAN INSURANCE COMPANY, COLONIAL AMERICAN CASUALTY AND INSURANCE COMPANY and/or AMERICAN GUARANTEE AND LIABILITY INSURANCE COMPANY must be sent to the following address: Contract Surety Bond Claims, c/o ZURICH, 1400 American Lane, Schaumburg, IL 60196.

(Space is provided below for additional signatures of added parties, other than those appearing on the cover page.)

CONTRACTOR AS PRINCIPAL (Corporate Seal)  
Company:

SURETY: (Corporate Seal)  
Company:

Signature: \_\_\_\_\_

Signature: \_\_\_\_\_

Name and Title:

Name and Title:

Address:

Address: