



## Invoice

### Rosenbauer Minnesota, LLC

5181 260th Street  
PO Box 549  
Wyoming, MN 55092  
P:651-462-1000 / F:651-462-1700

PAGE: 1  
Invoice# 68116  
Date: 5/31/2022

| Sold To                                                                   | Ship To |
|---------------------------------------------------------------------------|---------|
| City of Huntington Beach<br>200 Main Street<br>Huntington Beach, CA 92648 | Same    |

| Customer ID |                                                                                                                                                                                                                                                                                                                                                                                                                        | Customer PO | Terms           | Job Number      |  |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|-----------------|-----------------|--|
|             |                                                                                                                                                                                                                                                                                                                                                                                                                        | Sourcewell  | Net 30 Days     |                 |  |
| Qty         | Description                                                                                                                                                                                                                                                                                                                                                                                                            |             | Price           | Amount          |  |
| 1.00        | Sourcewell Contract Price for one (1) 2022 Rosenbauer Heavy Duty US&R Rescue per the attached specification                                                                                                                                                                                                                                                                                                            |             | \$ 1,275,007.00 | \$ 1,275,007.00 |  |
| 1.00        | Prepayment Discount                                                                                                                                                                                                                                                                                                                                                                                                    |             | \$ (34,151.00)  | \$ (34,151.00)  |  |
|             | Subtotal                                                                                                                                                                                                                                                                                                                                                                                                               |             |                 | \$ 1,240,856.00 |  |
| 1.00        | CA Sales Tax - 7.75%                                                                                                                                                                                                                                                                                                                                                                                                   |             | \$ 96,166.34    | \$ 96,166.34    |  |
|             |                                                                                                                                                                                                                                                                                                                                                                                                                        |             |                 |                 |  |
|             |                                                                                                                                                                                                                                                                                                                                                                                                                        |             |                 |                 |  |
|             | Rosenbauer will be providing a 100% performance bond, Issued by Swiss Re Corporate Solutions America Insurance Corporation. The bond shall be in the full (100%) amount of the pre-pay.                                                                                                                                                                                                                                |             |                 |                 |  |
|             |                                                                                                                                                                                                                                                                                                                                                                                                                        |             |                 |                 |  |
|             | Bank Wiring Instructions: Rosenbauer Minnesota, LLC<br>Name and Address of Bank:<br>Wells Fargo Bank Minnesota, N.A.<br>Forest Lake Office<br>208 South Lake Street<br>Forest Lake, MN 55025<br>Telephone Number:<br>651-205-5713<br>Bank Routing Number:<br>121000248<br>Bank Account Number:<br>397 200 1140<br>Bank Account Name:<br>Rosenbauer Minnesota, LLC<br>FEIN:41-1808379 / MN Sales Tax Exempt ID:209-3960 |             |                 |                 |  |
| THANK YOU!  |                                                                                                                                                                                                                                                                                                                                                                                                                        |             | TOTAL USD       | 1,337,022.34    |  |



# Huntington Beach

## Fire Department

### Heavy Rescue Vehicle

### Proposal



## **NFPA 2016 STANDARDS**

This unit shall comply with the NFPA standards effective January 1, 2016.

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

A plate that is highly visible to the driver while seated shall be provided which states the overall height, length, and gross vehicle weight rating.

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

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

## **PAINT WARRANTY FIVE YEAR**

The AKZO paint performance guarantee will cover the areas of the vehicle finished with the specified product for a period of FIVE (5) years beginning the day the vehicle is delivered to the purchaser.

The full apparatus chassis, manufactured and painted by Rosenbauer Motors, LLC, shall be covered for the following paint failures as outlined on the guarantee certificate:

- Peeling or delaminating of the topcoat and/or other layers of paint.
- Cracking or checking.
- Loss of gloss caused by cracking, checking, or hazing.
- Any paint failure caused by defective AKZO Fleet Finishes, which are covered by this guarantee.

All guarantee exclusions, limitations, and methods of claims are covered in the full certificate provided to the original purchaser.

Note: Surety bond, if required, will cover standard one-year warranty period only and will not cover any extended warranties allowed by seller or other component manufacturers.

## **CAB STRUCTURE WARRANTY**

The cab structure shall be warranted for a period of ten (10) years with the complete detail of the warranty outlined in a document provided upon request.

## **TRANSMISSION WARRANTY**

The Allison EVS transmission shall be warranted for a period of five (5) years with the complete detail of the warranty outlined in a document provided upon request.

#### **ENGINE WARRANTY**

The Cummins engine shall be warranted for a period of five (5) years or 100,000 miles, whichever comes first, with the complete detail of the warranty outlined in a document provided upon request.

#### **FRAME WARRANTY**

The frame and cross members shall carry a lifetime warranty with the complete detail of the warranty outlined in a document provided upon request.

#### **FRONT AXLE WARRANTY**

The front axle shall be warranted by Hendrickson for five (5) years or 500,000 miles, whichever comes first, under the general service application.

#### **REAR AXLE WARRANTY**

The rear axle(s) shall be warranted by Meritor for five (5) years with unlimited miles under the general service application.

#### **CAB AND CHASSIS WARRANTY**

The cab and chassis shall carry a twelve (12) month warranty providing limited parts and labor from the date the complete apparatus is delivered to the end user. The complete detail of the warranty shall be outlined in a document provided upon request.

#### **STATIC LOAD SEAT TEST INFORMATION**

This model of seat shall have successfully completed the static load tests set forth 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 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.

## **CAB TEST INFORMATION**

The cab as built shall have successfully completed the pre-load 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 shall have been witnessed by and attested to by an independent third party. The test results shall have been recorded using cameras, high speed imagers, accelerometers and strain gauges.

Documentation of the testing shall be provided upon request.

## **CAB INTEGRITY CERTIFICATION**

The manufacturer shall provide a cab crash test certification with this proposal including SAE J2422 Cab Roof Strength Evaluation - Quasi-Static Loading for Heavy Trucks and SAE J2420 COE Frontal Strength Evaluation - Dynamic Load for Heavy Trucks.

## **CAB TEST INFORMATION**

### **Roof Crush**

The cab shall be subjected to a roof crush test of 120,000-pounds exceeding the requirements of ECE 29 criteria. The 120,000-pound requirement is important to ensure to most structurally sound and safe cab in the event of a crash or roll over.

### **Side Impact**

The cab shall be subjected to dynamic moving barrier slammed into the side of the cab at 7.5 mph, striking with an impact of 15,157-foot pounds of energy. This test will closely represent the forces a cab would incur in a rollover incident.

### **Frontal Impact**

The cab shall withstand a frontal force produced from a moving barrier slammed into the front of the cab traveling at 10.5 mph, striking with an impact of 42,587-foot pounds of energy.

The same cab shall withstand all tests without any measurable intrusion into the survival space of the occupant area.

## **OPERATION AND PARTS LIST MANUALS**

Each cab and chassis shall include two (2) electronic copies of the operation manuals and parts listings. The manuals shall include information specific to the components included on the apparatus.

## **ENGINE AND TRANSMISSION MANUALS**

One (1) paper copy of the specific engine and transmission manuals shall accompany each cab and chassis.

## **AS BUILT WIRING DIAGRAMS**

Each cab and chassis shall include two (2) digital copies of the wiring schematics and component wiring. The wiring schematics shall be developed on a software program such as VeSys Design or equal that provides continuity in files and diagram. The software shall allow you to trace through the design schematics to identify cross referenced items such as in-line connectors and wires. The software shall be interactive which allows you to view one electrical assembly drawing, click on a wire routing and the program will take you to the related circuit assembly or termination point. The software shall also provide a searchable function allowing you to view multiple diagrams using readily available pdf viewers. The digital copy of the wiring schematics shall be compatible with hand held devices such as I-Pads.

## **USB STORAGE**

For ease of service the chassis shall come with an on-board USB flash drive. The flash drive shall have a minimum of 8 GB of storage capacity; and shall be located behind the access panel on the driver side kick panel, next to the data port for the engine.

The following items shall be stored on the Flash Drive. No Exception.

- As built wiring diagrams
- Plumbing diagram
- Chassis, body and aerial manuals

The USB shall be accessible through a 3 foot (3') USB-A to USB-B cable.

## **ROAD SAFETY KIT**

One (1) 2-1/2# ABC DOT Approved fire extinguisher shall be provided. The fire extinguisher shall be shipped loose with the chassis.

One (1) set of DOT approved hazard triangles shall be supplied with the chassis. They shall be stored in a plastic case and shipped loose with the chassis.

One (1) first aid kit

### **MAX HEIGHT**

The maximum height of the apparatus shall not exceed: 138"

### **ANGLE OF APPROACH**

The minimum angle of approach for the apparatus is:

### **ANGLE OF DEPARTURE**

The minimum angle of departure for the apparatus is:

### **CAB**

### **CAB CUSTOM STYLE**

The cab shall be a custom, cab over engine style, with the driver and officer positions ahead of the engine and front axle. The cab shall be specifically designed and manufactured for the fire service industry.

The cab shall be designed by manufacturer's Engineering to meet the unique, Heavy-duty construction specifications. The raw cab will be fabricated to meet the exacting demand of the fire industry and shall be manufactured by a company with no less than 50 years of experience in building custom cabs. All aspects of the cab will be quality checked by manufacturer's personnel. All cab and chassis customization and assembly will take place on the manufacturers premises.

The cab shall be of a totally enclosed full tilt design, with the interior area completely open to improve visibility and verbal communication between the occupants. The cab shall be capable of tilting 45-degrees, allowing the chassis engine to be removed, if required, without tilting the cab beyond 45-degrees. No Exceptions.

The cab shall include a four (4)-point rubber isolated cab pivot and mounting system. The rear histic mounts shall be isolated from the chassis frame to reduce the transfer of road vibrations and frame torque into the cab, while providing superior handling characteristics. No solid mounted rear lock downs shall be acceptable. No Exceptions.

The front cab pivot assemblies shall be 1/2" A36 steel plate with a .31" thick 2-1/2" diameter tube cross member mechanically attached to the cab and frame. There shall be two (2) greaseable rubber isolated engineered bushings to reduce the transfer of road vibrations into the cab.

The cab shall be locked down by a two (2)-point automatic spring-loaded hook mechanism that actuates after the cab has been lowered.

The cab super-structure shall be designed with high strength 6061-T6 Aluminum extrusions and 3/16" 5052-H32 Aluminum plate. This shall include the "A", "B", "C" and "D" extruded pillars, triple wall front end reinforced by 3/16" thick x 2"x3" extrusion tubes, 3/16" side walls and rear wall. This shall offer superior occupant protection in the event of vehicle impact.

The extrusions shall provide adequate space for routing of wiring and hoses which will provide service accessibility. Routing of harnessing which requires pulling of wires through tubes will not be allowed. No Exceptions.

The "A" pillar shall be of a closed section, one-piece extrusion extending from the cab header to the bottom of the cab. This design shall ensure strength and superior resistance to buckling in the event of a frontal impact.

The cabs front corners shall be constructed of 5052-H32 stamped Aluminum to provide a consistent material composition. The stamping process alleviates the high tendency of fractures through the fusing of dissimilar metal composition as appears with a casting process.

Cast cab components, including cab corners, "A" pillars and front fascia components shall not be acceptable due to the high tendency of fractures. No Exceptions.

Additional cab strength shall be obtained through closed section, dual extrusions in the construction of the "D" pillars.

The front façade shall be constructed with dual wall .19" thick 5052-H32 Aluminum plates which make up the front bulkhead, reinforced by .19" thick 6061-T6 Aluminum extrusion (box-sections), though-out the inner and outer perimeter of the front end / façade. The reinforcing third wall / barrier is .13" thick 5052-H32 work hardened Aluminum façade panels. All panels shall be welded, no adhesive.

The cab side wall of the cab shall be 3/16" thick 5052-H32 Aluminum plate. The cab side plate shall wrap the corner of the cab B pillar and slam post. The cab rear wall plates shall be reinforced with a minimum of two (2) 3/16 x 3" Aluminum sections; the cab side reinforcements shall be a minimum of 28" apart and span from the cab B pillar and cab C pillar.

The rear wall of the cab shall be 3/16" thick 5052-H32 Aluminum plate. The rear cab plate shall wrap the corner of the cab and attach to the cab D pillar and slam post. The cab rear wall plates shall be reinforced with four horizontal and dual vertical support sections; the dual vertical support structure shall consist of 1/8" thick x 2" 6061-T6 Aluminum tubes and the horizontal hat sections shall consist of 1/8" thick x 4" 5052-H32 Aluminum. The dual vertical support sections shall be 40" a-part, and the cab shall contain a minimum of four (4) 4" hat section horizontal supports.

Additionally, the rear edge of the floor shall include a 3/16" 6061-T6 Aluminum tube extrusion (under the floor) and a 7" 5052-H32 Aluminum cab floor support section (above the floor)

The outside cab width shall measure 99" across. The interior cab shall have a width of 93".

The cab length shall measure 77.3" from the center of the front axle to the front cab skin and 60" from center of the front axle to the back of the cab, for a total cab length of 137.3".

The cab shall also feature ample driver and officer foot room, a total of 3.7 square feet for the driver and 4.45 square feet of floor space at the officer's feet. (No exceptions)

The crew floor shall feature a complete flat floor design, including provisions for a one o'clock PTO inclusion, while still offering an uninterrupted 25 total square feet of space.

The leading edge of the cab floor from the steps shall meet NFPA 15.7.4 slip resistance requirements on both the front and rear cab doors. No Exceptions.

The cab shall meet or exceed cab impact test (SAE J-2420, cab rollover test (SAE J2422), and cab seating requirements (FMVSS 210, and FMVSS 208).

The cab shall include 4 doors. They shall have a front two (2) cab doors shall have a minimum clear opening of 42.5" wide by 81" high measured from the top of the lower cab step to the top of the door opening.; and the rear two (2) crew doors shall be a minimum clear door opening of 38.5" wide by 104.5" high measured from the top of the lower cab step to the top of the door opening. The length of the door will vary depending on door type.

### **ROOF STYLE - 24" RAISED**

The cab roof design shall incorporate an angled front roof, transitioning into a rolled extrusion for a swept back design.

The roof height shall feature a 24" raise starting over the driver and officer positions and continuing back to the roof and rear wall joint. Raised roof designs that do not include a raised portion over the driver and officer positions will not be acceptable. No Exceptions.

The roof of the cab shall feature dual .25" thick interlocked structural member extrusions running the entire width of the cab defending against buckling in the event of a rollover.

The cab header shall feature dual 6061-T6 Aluminum extrusions which shall offer superior rigidity and strength.

The raised roof shall offer a crew head height area of 78-1/2" from the floor to the ceiling in the crew areas for optimum headroom.

The crew roof super structure shall include a reinforcement hat-section structure 1/8" thick 5052-H32 Aluminum bracing. The for-aft support braces will be 24" on center apart, the side to side support braces will stretch from cab side to cab side and centered between the dual 3/16" extruded and plate reinforced roll-cage section.

The forward cab roof section shall include a combination of 1/8" 6061-T6 extruded tube reinforcements and a hat-section structure 1/8" thick 5052-H32 Aluminum bracing. The bracing shall wrap the entire perimeter of the cab forward roof, and the condenser support structure.

The condenser support structure shall include 1/8" triple sections, supporting the outer perimeter and center of the condenser mounting pad.

Additionally, the entire roof super structure is reinforced by a .25" thick roof edge corner extrusion around the entire cab perimeter.

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

### **DRIVER SIDE EMS COMPARTMENT**

The driver side of the cab shall feature a compartment which is designed for housing emergency medical equipment. The compartment shall be located immediately behind the driver's seat and the interior shall measure 23" wide x 26" tall x 24" deep.

- The compartment shall feature an opening on the exterior and/or interior of the cab.
- The compartment shall have a minimum of 8 cubic feet of storage. No Exceptions

### **DRIVER SIDE EMS COMPARTMENT – Exterior Hinged Door**

The EMS compartment shall feature:

- A hinged box pan style exterior compartment door
- A hidden, piano style Stainless-steel door hinge which shall be mounted inside the panel of the door prohibiting dirt and debris from becoming trapped in the hinge.
- A clear door opening of approximately 17.5" wide x approximately 25.5" tall
- The door shall open as far as possible without contacting the side of the cab or interfere with the opening or closing of the officer's door.
- The compartment floor shall be a sweep out design

### **EMS COMPARTMENT HANDLE**

The EMS compartment handle shall be a die cast steel, chrome plated door handle.

### **EMS COMPARTMENT LOCKS**

The door handle shall include an integral manual door lock, which may be unlocked from the exterior with a key.

### **DRIVER EMS COMPARTMENT INTERIOR FINISH**

The interior of the driver side EMS compartment shall be finished with the same product and color as the cab coating.

### **DRIVER EMS CAB COMPARTMENT LIGHTING**

The driver's side EMS compartment shall include one (1) 18" strip of LED lighting and shall be located in the inside front corner of the compartment near the door.

### **OFFICER SIDE EMS COMPARTMENT**

The officer side of the cab shall feature a compartment which is designed for housing emergency medical equipment. The compartment shall be located immediately behind the officer's seat and the interior shall measure 18.5" wide x 26" tall x 23" deep.

- The compartment shall feature an opening on the exterior and/or interior of the cab.
- The compartment shall have a minimum of 6 cubic feet of storage. No Exceptions

### **OFFICER SIDE EMS COMPARTMENT – Exterior Hinged Door**

The EMS compartment shall feature:

- A hinged box pan style exterior compartment door
- A hidden, piano style Stainless-steel door hinge which shall be mounted inside the panel of the door prohibiting dirt and debris from becoming trapped in the hinge.
- A clear door opening of approximately 14.5" wide x approximately 25.5" tall
- The door shall open as far as possible without contacting the side of the cab or interfere with the opening or closing of the officer's door.
- The compartment floor shall be a sweep out design

### **EMS COMPARTMENT HANDLE**

The EMS compartment handle shall be a die cast steel, chrome plated door handle.

### **EMS COMPARTMENT LOCKS**

The door handle shall include an integral manual door lock, which may be unlocked from the exterior with a key.

### **OFFICER EMS COMPARTMENT INTERIOR FINISH**

The interior of the officer side EMS compartment shall be finished with the same product and color as the cab coating.

### **OFFICER EMS CAB COMPARTMENT LIGHTING**

The officer's side EMS compartment shall include one (1) 18" strip of LED lighting and shall be located in the inside front corner of the compartment near the door.

### **CAB DOORS**

The cab shall include a total of four (4) doors, two (2) forward and two (2) rear crew doors.

The forward cab doors shall be a minimum of 45" wide, and have a cab structure opening of 42.5" wide; and the rear crew doors shall be a minimum of 41" wide, and a cab structure opening of 38.5" wide to provide enhanced entry and egress of the cab.

Each cab door shall feature:

- Superior strength and rigidity from 3/16" closed section extruded door frames
- Damping inside each door for a solid feel and minimized reverberation when closed
- A rolled rubber bulb seal style gasket shall be utilized around the door ensuring a weather tight fit
- Integrated, mechanical door stop
- A full length, hidden piano style 10 gauge stainless steel door hinge with a 3/8" pin, which shall be mounted inside the panel of the door prohibiting dirt and debris from becoming trapped in the hinge

- An integrated one-piece inner door assembly that includes a glass track, mounting provisions for window regulator, door handle and door panel shall be utilized. The inner door assembly shall be easily removed with nut inserts. Self-tapping screws shall not be acceptable.

## **CAB STEPS**

The cab steps shall meet NFPA 13-7.3 in size and slip resistance requirements.

The cab shall incorporate a two-step design at each door, with a first step height of approximately 22" from the ground. The leading edge of the first step shall be 5" further outboard than the second step to provide a staircase design for safer egress.

The front cab first step shall measure a minimum of 33" wide x 10" deep. The front cab intermediate step shall measure a minimum 31" wide x 8" deep.

The crew cab first step shall measure a minimum of 26" wide x 10" deep. The crew cab intermediate step shall measure a minimum 28" wide x 9" deep.

The top crew step shall incorporate an angle approximately midway from the rear wall to the crew door hinge extending out the flooring under the rear facing outer seat positions, offering foot placement for safety while seated in this position.

## **CAB STEP TRIM**

The cab steps shall include a .80 gauge stainless steel construction on the first step, the step closest to the ground. The stainless steel finish shall be a number 7 mirror. The step shall include a frame which is integral with the construction of the cab for rigidity and strength. The Round Hole pattern shall allow water and other debris to flow through rather than becoming packed under the step. The middle step shall be integral with the cab in construction and shall be trimmed in 3003-H22 embossed aluminum tread plate which is 0.100" thick.

## **BARRIER FREE DOORS**

The cab doors shall be "barrier free" style, meaning the door shall be constructed to cover the entry down to the intermediate step, leaving the bottom step open. Each door shall provide approximately 33" of clearance from the ground to the bottom of the door so the door may be opened without stopping due to guard rails along highways.

The lower step well of the cab shall be painted job to match the lower primary color of the cab.

## **CAB STEP TRIM KICKPLATE**

The cab step risers at all doors, the vertical section of all steps, shall include an aluminum tread plate finish.

## **DOOR HANDLES**

The exterior door handles shall be constructed of die-cast steel and chrome plated for a pleasing appearance. They shall feature a vertically oriented heavy duty pull style handles which are extended out and suitable for easy grasping with a gloved hand.

The interior door handle shall be a paddle style which shall be chrome in color. The paddle shall be hinged towards the rear of the cab.

Each door latch shall feature a military grade aligning dove tail guide striker assembly for precision door closure which prevents sagging throughout the life of the vehicle. No exceptions.

## **CAB DOOR LOCKS**

All cab doors shall include power and manual door locks with keys. The door lock shall include a manual toggle and shall be an integral part of the interior door handle which is red in color. The exterior door lock is integral with the door latch. The cab doors may be unlocked from the exterior with a key or through a thumb turn from inside the cab.

## **POWER DOOR LOCK OPERATION**

Each powered door lock shall be activated by a switch on the Driver and Officer interior front grab handle; which shall control all of the powered cab entry door locks.

## **POWER DOOR LOCK ACTIVATION**

The power entry door locks shall include an electronic door lock system which shall include a switch on the inside of each front cab door and two external keypads. The external key pads shall be located near the driver's side front door and near the officer's front door.

The power entry door locks shall include two key fobs for activation of the power door locks.

## **INTERIOR CAB DOORS**

All cab doors shall consist of a one-piece formed and stamped brushed stainless steel interior panel. The panel shall include a formed collar around the interior door latch. The door panels shall be attached to the door with nutserts. ABS material shall not be acceptable. No Exceptions.

## **INTERIOR FRONT DOOR PULL**

The interior driver and officer cab doors shall each include one (1) customized cast Aluminum single piece door grab pull designed specifically for the fire service.

The single piece door pull shall have a curved designed in an "L" formation to provide multiple points for grasping with a gloved hand. The horizontal dimension shall be a minimum of 28" and the vertical dimension shall be a minimum of 20". The door pulls shall have an ergonomic curve making them easier to grasp when entering and exiting the cab. No Exceptions.

The door pull shall feature secure mounting in three separate locations of the pull utilizing Stainless-steel fasteners with nut inserts in each location. Self-tapping screws or other mounting techniques shall not be allowed for interior door pulls or grab handles.

Each handle shall be constructed of A356 Aluminum casting and shall feature a black powder coated finish.

### **INTERIOR GRAB HANDLE REAR DOOR**

A black powder coated cast Aluminum grab handle shall be provided on the inside of each rear crew door. The handle shall extend horizontally the width of the window just above the windowsill. The handle shall assist with entry and egress from the crew area of the vehicle.

The interior driver and officer rear cab crew doors shall include one (1) customized cast Aluminum single piece door grab pull designed specifically for the fire service.

The door pull shall have an ergonomic curve making them easier to grasp when entering and exiting the cab. No Exceptions.

The door pull shall feature secure mounting with Stainless-steel fasteners with nut inserts in each location. Self-tapping screws or other mounting techniques shall not be allowed for interior door pulls or grab handles.

Each handle shall be constructed of A356 Aluminum casting and shall feature a black powder coated finish.

### **GRAB HANDLES "A" PILLAR**

There shall be two (2) additional molded 9.00" rubberized grab handle shall be installed inside the front cab doors. The handles shall be located one on the Driver's side A Pillar and one on the officer's side on the A Pillar.

### **WINDSHIELD**

A one (1)-piece, safety glass full width windshield with more than 3,228 square inches of area will be provided. No Exceptions.

The windshield shall feature:

- A completely uninterrupted view from both the driver and officer positions
- The windshield will consist of three (3) layers; the outer layer, the middle safety laminate, and the inner layer. The .114" thick outer light layer will provide superior chip resistance. The middle safety laminate layer will prevent the windshield glass pieces from detaching in the event of breakage.
- Economical replacement readily available from auto glass supplier
- Easily removable for replacement using standard automotive techniques
- A frit band will be provided along with an outer trim seal on the outside perimeter of the windshield for a finished automotive appearance.

### **WINDSHIELD WIPER SYSTEM**

A single windshield wiper system shall be incorporated in conformance with FMVSS and SAE requirements. Two (2) 22" windshield wiper arms shall be mounted below the windshield. Each arm shall include a 26" long wiper to provide optimum windshield clearing.

The windshield wiper fluid reservoir can be filled without raising the cab.

### **WINDSHIELD WIPER ACTIVATION**

The windshield wipers shall be activated through a switch on the driver's panel, with intermittent control.

### **POWER WINDOW - DRIVER'S DOOR**

The driver's door shall include a window which measures a minimum of 23.5" wide x 29" high, measured from the midpoints left to right and top to bottom. The window shall have a minimum clear viewing area of 681 square inches. The glass shall include a standard automotive tint and through a powered operation shall completely roll into the door housing.

The window shall be trimmed in a black anodized aluminum ring and rubber seal to prevent water from entering the cab when closed.

### **POWER WINDOW SWITCHES**

The Driver shall have switches for each of the cab door windows. The powered windows of the officer door, and each respective crew door, shall be activated by a switch on the respective door.

The switches for the driver and officer door windows shall be located in a customized door grab handle. No Exception

## **POWER WINDOW - OFFICER'S DOOR**

The officer's door shall include a window which measures a minimum of 23.5" wide x 29" high, measured from the midpoints left to right and top to bottom. The window shall have a minimum clear viewing area of 681 square inches. The glass shall include a standard automotive tint and through a powered operation shall completely roll into the door housing.

The window shall be trimmed in a black anodized aluminum ring and rubber seal to prevent water from entering the cab when closed.

## **REAR DRIVER SIDE WINDOW**

The rear driver's side door shall include a window which is 22.5" wide x 27" high, measured from the midpoints left to right and top to bottom. The window shall have a minimum clear viewing area of 607 square inches. The glass shall include a light gray tint and through power actuation shall roll completely into the door housing. The power window shall be activated through a switch located on the top of the door panel.

## **REAR OFFICER SIDE WINDOW**

The rear officer's side crew door shall include a window measuring 22.5" wide x 27" high, measured from the midpoints left to right and top to bottom. The window shall have a minimum clear viewing area of 607 square inches. The glass shall include a light gray tint and through powered actuation shall roll completely into the door housing. The power window shall be activated through a switch located on the top of the door panel.

## **CAB INTERIOR AND TRIM**

### **CAB INSULATION**

The cab shall be insulated from road and vehicle resonance, exterior sound and thermal intrusion. The cab insulation system shall be comprised of three separate components each designed to assure optimal thermal and acoustic properties are achieved. Two layers of insulation material shall be utilized.

A minimum of .8" of SCbond Polyurethane Foam insulation shall be applied as an additional insulation between the cab skin and all interior ceiling surfaces. The insulation shall have a density of 10 lb/ft<sup>3</sup> +/- .5 providing better thermal properties and acoustic reduction properties.

A layer of 1/8" barrier bubble film laminated between two layers of reflective metalized film shall be provided in the roof to minimize the effects of radiant heat. The barrier shall be mold and mildew resistant and have a Class A/Class 1 fire rating. The barrier shall have a minimum of a R-5.6 rating. No Exception

The interior cab insulation system shall meet NFPA 1901 14.1.6 standards and ensure that no seated position within the cab exceeds 90dB. This decibel rating shall be measured with the apparatus traveling 45 mph with

climate control settings off.

All insulation used in the construction of the cab shall be marine grade featuring longevity and resistance to degradation.

The interior of the cab including the rear wall, side walls and ceiling panels shall be insulated.

Use of open cell material as the primary insulation will not be acceptable. No exceptions.

### **ENGINE TUNNEL INSULATION**

The engine tunnel shall include an insulated barrier from noise on the underside of each tunnel surface. This barrier shall be engineered for surrounding engines.

The insulation barrier shall provide an acceptable decibel level within the cab meeting or exceeding the recommendations of NFPA 1901.

The thickness of the engine tunnel insulation shall be 1" thick. The insulating material shall be open cell polyether based foam with a textured surface, specifically designed for acoustic absorption.

Use of aluminized faced material on the engine tunnel shall not be acceptable. No exceptions.

The engine tunnel insulation shall be precisely cut and sealed to fit each segment on the underside of the tunnel surface. The insulation shall then be affixed by a pressure sensitive adhesive.

The insulation shall meet or exceed FMVSS 302 flammability testing.

### **INSULATION FASTENING PINS**

The insulation shall be affixed with welded in fastening pins.

### **CAB UNDERBODY INSULATION**

The underside of the cab shall include at a minimum of 1" of a uni-seal Cab-Foam insulation offering reducing vibration noise and thermal effect to the interior of the cab.

### **INSULATION FASTENING PINS**

The insulation shall be affixed with welded in fastening pins.

## **DAMPING INSULATION**

The entire cab, including the ceiling and walls shall include additional insulation reducing structure borne noise from vibration, impact and resonance within the cab.

## **INTERIOR TRIM MATERIAL**

The interior trim shall feature a 31 oz. marine grade vinyl which features a tensile strength of ASTM D751 of excellent, tear strength meeting the Federal standard 191-5134 of excellent and shall be oil resistant passing the CID-A-A-2950A requirement for no permeation.

Due to the excellent qualities of the marine grade vinyl material, no other type of interior trim shall be acceptable. No Exceptions.

The soft trim vinyl shall feature mildew resistance passing ASTM G21-90 and shall be rated to -25 degrees Fahrenheit.

The vinyl shall be flame retardant meeting California Fire Code 117, UFAC Class 1, and BIFMA Class 1 and shall have a high resistance to abrasion.

The interior of the cab including the ceiling panels shall feature this soft trim and shall be gray in color.

## **REAR WALL INTERIOR MATERIAL**

The rear wall of the cab shall be coated with Polyurethane coating for a durable finish. The color shall be gray.

## **THROTTLE AND BRAKE PEDALS**

The apparatus shall have suspended throttle and brake pedals.

## **FLOOR MAT**

The interior flooring of the cab shall be covered with an advanced black multi-layer acoustic dampening mat. The floor matting shall be an open/closed cell, flexible polyurethane polyamide material with frictional dampening and dissipation properties. The mat shall be a fire and skid resistant non-wicking material.

## **INTERIOR FLOOR COVERING**

The floor of the cab underneath the driver and officer seats and extending towards the fire wall of the cab shall be covered in aluminum tread plate.

## **INTERIOR FLOOR COVERING**

The floor of the cab underneath the entire crew area and extending towards the rear wall of the cab shall be covered in aluminum tread plate.

## **SUN VISORS**

The driver and officer seats shall feature a sun visor mounted in the header over each seating position. The sun visors shall be padded and trimmed in black vinyl.

## **Cab Coating Interior Color**

## **INTERIOR CAB FINISH**

The interior cab shall be finished in a high performance Polyurethane coating including the interior A, B, C and D pillars, all occupant seat frames and any surrounding surfaces extending to the ball seal around each door. This type of coating shall feature:

- Durability, scratch, chemical and abrasion resistance
- Consistent, even coverage and a uniform texture
- Resistance from fading from exposure to UV light
- Gray in color

## **ENGINE TUNNEL**

The distance from the back of the tunnel to the interior wall shall be 46" measured at floor level and 52" at top of engine tunnel. No Exception.

## **ENGINE TUNNEL**

The engine tunnel shall be constructed of aluminum offering superior durability in addition to thermal and acoustic resistance.

The engine tunnel shall feature:

- A low-profile design measuring approximately 46.5" wide and 21.5" in height from the crew floor shall offer optimum visibility of the windshield and cab interior from any seated position. No Exception.

- The engine tunnel at the driver's position shall be a tapered design, featuring 24" clear width at floor level, first taper shall start 16.5" from floor level and taper inward for a clear width of 26" and the final taper shall start at 21" from floor level and taper inward for a clear width of 33".
- The engine tunnel at the officer's position shall be a tapered design, featuring 23" clear width at floor level, first taper shall start 16.5" from floor level and taper inward for a clear width of 22.5" and the final taper shall start at 21" from floor level and taper inward for a clear width of 31.5".
- The design shall offer a minimum of 30" for the driver and 28.5" for the officer as measured from the inside door pan to the top edge of the tunnel. The dimension measured at the "H" (hip) point, with the seat in the lowest position, shall be a minimum of 28.5" for the driver and 27" for the officer. No Exception.
- Recessed sections for ease of mounting equipment at the rear of the tunnel or for compartments and bases which can be used for installing Fire/EMS equipment and components such as hand-held radios.

### **CAB DASH**

The cab dash shall offer heavy duty, durable construction from formed aluminum. The cab dash shall be finished with an advanced polyurethane coating for a rugged finish.

The polyurethane finish shall provide a tough, flexible, impact-absorbing, chemical & abrasion-resistant, even-textured and skid-resistant surface. The polyurethane finish shall offer durability and scratch resistance even against today's advanced firefighting turnout materials with consistent, even coverage and a uniform texture. The polyurethane coating finish shall resist fading from UV light.

This construction shall allow for a clean, seamless dash area that shall reduce unnecessary joining of cab dash components. This design allows for the following features:

- Optimal heating and cooling of cab occupants, HVAC louvers shall be integrated into the gauge panel with a total of four (4) louvers; two louvers pointing at the driver and two louvers pointing at the officer.
- For improved safety cab switches and controls shall be ergonomically located within easy reach of the driver when in the seated position with seatbelts fastened. This design will reduce driver distraction and increase safety by putting frequently accessed driver controls within easy reach to allow the driver more time to focus on the road.
- The officer side cab dash shall house the two HVAC louvers on the officer side. This panel will also provide ergonomically located switches and controls for the officer. All controls shall be within easy reach while in the seated position with seatbelts fastened.

- Access panels on the top of the dash for both the driver and officer sides easing maintenance access to controls, components and gauge assemblies
- The driver side dash shall include gauges for primary air pressure, secondary air pressure, a Pacific Insight instrumentation gauge panel and the DEF gauge as standard
- The driver side dash shall also include two (2) lower panels to the left and right of the steering column for FMVSS switches such as the Off/Ignition and start switches and the park brake assembly
- The dash shall include a provision for switches to the right of the Driver
- The officer dash shall include a flat area for optional mounting cradles or brackets for a laptop computer, mobile data terminal, map compartment or clip board

The officer dash shall include a provision for switches to the left of the Office

### **CAB DASH & ENGINE TUNNEL**

The cab dash and the engine tunnel of the cab shall be coated with a Polyurethane coating for a durable finish. The color shall be gray.

### **CUP HOLDER**

Two (2) cup holders shall be provided. There shall be one mounted on both the driver and officer side and shall be in the forward outer portion on the upper portion of the dash.

### **INSTRUMENTATION PANEL**

The instrumentation panel inlay shall be powder coat black.

### **CAB HEADER - HEAT AND AC**

Cab Header / Heating and AC

#### **CAB HEADER**

The cab header shall offer Heavy-duty, durable construction using resin transfer molding (RTM) technology formed composite material. The composite material shall be .28" thick for improved resistance and military type strength.

RTM is a low pressure, closed molding process which offers a dimensionally accurate and high-quality surface finish composite molding, using liquid thermoset polymers reinforced with various forms of fiber reinforcements. The matrix selection of polymer and reinforcement dictates molding mechanical and surface finish performance.

ABS polymer construction shall not be acceptable. No Exceptions.

The cab header shall offer a finish of a polyurethane coating for a rugged design and finish. No Exceptions.

The polyurethane finish shall provide a tough, flexible, impact-absorbing, chemical & abrasion-resistant, even-textured and skid-resistant surface. The polyurethane finish shall offer durability and scratch resistance even against today's advanced firefighting turnout materials with consistent, even coverage and a uniform texture. The polyurethane coating finish shall resist fading from UV light.

The cab header shall also be purpose built for integration of Fire/EMS components and ease of maintenance with panels above both the driver and officer positions measuring 8" wide x 15" long for mounting radios, aerial controls and switches.

### **HVAC HEATING AND COOLING SYSTEMS**

The interior cab climate control shall be comprised of a triple system that shall include a defroster, a cab and crew heater and air conditioner for a complete HVAC system. The air conditioning system shall be comprised of compressor, condenser, and a minimum of three (3) evaporators to provide consistent temperature control throughout the entire cab.

The system shall be rated as an Emergency Vehicle grade for the use in Fire and Rescue style vehicles and shall provide environmental air treatment in accordance with published SAE standards.

The HVAC system shall be tested and certified by the component manufacturer and a third-party independent certified testing laboratory, including all three systems. Documentation of test results shall be provided with the bid. No Exceptions.

The HVAC system shall be a total and complete system, and shall provide sufficient defrosting, heating and cooling to the entire cab. The HVAC system shall meet or exceed all specified items without the use of auxiliary heating and cooling systems.

### **DEFROSTING SYSTEM**

The defrosting system shall feature:

- To provide maximum defrost and heating performance, a 30,000 BTU heater-defroster unit will be provided inside the cab.

- The defroster unit will be strategically located under the center forward portion of the instrument panel. For easy access, a removable cover will be installed over the defroster unit.
- Six (6) vents shall be located in the top forward portion of the dash for superior defrosting properties across the entire windshield.
- Defrost vents for the driver and officer windows.
- The system shall be capable of clearing 90 percent or more of the windshield in fifteen (15) minutes or less after a three (3) hour cold soak at 0 degrees Fahrenheit (-17.78 degrees Celsius).
- The system shall exceed Flash Fogging standards that are set forth in the SAE Heavy-duty Cab with Sleeper specifications. Documentation from a third-party testing facility shall be available upon request. No Exception.
- The defroster will include an integral Aluminum frame air filter, high performance dual scroll blowers, and ducts designed to provide maximum defrosting capabilities for the one (1) piece windshield.

### **HEATING SYSTEM**

The heating system shall feature:

- Delivery of a minimum of 82,000 BTU/hour of heat to the entire cab.
- Heat and air circulation shall be provided to the driver and officer foot area of the cab as standard through ducting in the foot well area of both positions. No Exception.
- Substantial air movement and heating provided to the driver and officer's position, Composite dash will have six (6) adjustable louvers, located in the dash, three (3) adjustable louvers directed at the driver and three (3) adjustable louvers directed at the officer and floor vents at the driver and officer. Aluminum dash will have (4) adjustable louvers, located in the dash, two (2) adjustable louvers directed at the driver and two (2) adjustable louvers directed at the officer and floor vents at the driver and officer.
- Dual overhead units, with five (5) adjustable louvers shall be mounted above the rear facing seat positions on the driver and officer side of the cab
- The heater shall be plumbed with a shut off valve at the engine, so that the coolant bypasses the heaters.

## **AIR CONDITIONING**

The air conditioning system shall feature:

- One (1) evaporator shall be located under the center dash and Two (2) crew overhead evaporators located near the B-pillar on each side of the cab allowing for greater frontal visibility for the forward-facing crew seating and allowing for more interior mounting of accessories.
- A gravity condensation drain system shall be utilized. These drains shall remove all condensation from the evaporator units and direct it to the exterior of the chassis cab for optimal performance. Systems utilizing pumps to remove condensation, or gravity systems with poles or other obstructions located within the cab to route drains through shall not be acceptable. No Exceptions.
- Substantial air movement for optimum cooling shall be provided to the driver and officer positions, with six (6) adjustable louvers, located in the dash, three (3) adjustable louvers shall be directed at the driver and three (3) adjustable louvers shall be directed at the officer and floor vents at the driver and officer.
- The air condition system shall be capable of cooling the cab from outside ambient average temp of 104 degrees Fahrenheit (40 degrees Celsius) to an average inside cab temp of 71 degrees Fahrenheit (22 degrees Celsius) at no less than 50% humidity in 30 minutes with an engine RPM of 1250, after a two (2) hour heat soak. A certification document from the testing facility shall be available upon request. No Exception.

Proposals offering ceiling mounted evaporator units in the center of the cab above or on the engine tunnel shall not be accepted as this is a safety consideration due to the lack of visibility and communication within the cab.

## **CAB PAINT AIR CONDITIONING CONDENSER COVER**

The air conditioning condenser cover shall be made out of aluminum and shall be painted to match the roof color. Plastic condenser covers will not be acceptable. No Exception.

## **HEATER HOSE**

The heater hose inside the cab for the HVAC system shall be premium silicone hose.

*In-line 1/4-turn shut-off valves shall be installed that allow the heater core to be isolated from the cooling system.*

## **CONDENSER**

The cab air conditioning system shall include one (1) low profile HE-condenser which shall be centered forward on the roof of the cab.

## **CAB CIRCULATION FANS MID**

The cab shall be provided with two (2) individually switched 6.00 inch fans. The fans shall be installed in the crew area just behind the front doors. The multi-purpose fans can be used for air circulation or to help defog windows.

## **DEFROSTER FANS**

The cab shall be provided with two (2) individually switched 6.00 inch fans. The fans shall be installed in the front of the cab in corner near the outer edges of the windshield. The multi-purpose fans can be used for air circulation or to help defog windows.

## **HEATING AND COOLING CONTROLS**

The HVAC system shall be controlled from the Driver dash through three (3) turn style knobs for the temperature control, the fan control and for the mode. Fan controls shall also be available to the rear crew area.

## **REAR CREW AREA CONTROLS –CENTERED OVERHEAD**

The controls for the crew area heat shall be mounted overhead, centered between the rear facing seating position.

USSC Valor Seat Package

## **SEAT AND SEAT BELT COLOR**

This seat in the cab shall be black in color with a red seat belt.

## **DRIVER SEAT**

The seat will be a USSC Valor fixed cushion seat with fore/aft, and 4-way air adjustment, 20 inch wide race back bucket seat. The seat will have a contoured and padded seat cushion. The seat will be equipped with a red integrated 3-point shoulder harness with lap belt and DUAL automatic retractors and Ready Reach.

## **SEAT BELT DUAL RETRACTOR**

The seat shall be equipped with a red, integrated 3-point shoulder harness and lap belt and an emergency locking dual retractor built into the seat assembly with RiteHite™ Seat Belt customized fit Adjustment. The seat belt shall include a buckle latched switch. The seat belt shall include a rotating bezel guide at the upper shoulder point and shall be routed through the seat frame and covering to protect webbing.

#### **SEAT BACK**

The seat back shall incorporate a standard style headrest.

#### **SEAT MOUNTING DRIVER**

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

#### **SEAT MATERIAL**

The seats shall include VALORTech XD Cordura 1000 Denier covering.

#### **SEAT BACK LOGO**

The seat back shall not have any logo.

#### **OFFICER SEAT**

The seat will be a USSC Valor fixed cushion seat with fore/aft, and 4-way air adjustment, 20 inch wide race back bucket seat. The seat will have a contoured and padded seat cushion. The seat will be equipped with a red integrated 3-point shoulder harness with lap belt and DUAL automatic retractors and Ready Reach.

#### **SEAT BELT DUAL RETRACTOR**

The seat shall be equipped with a red, integrated 3-point shoulder harness and lap belt and an emergency locking dual retractor built into the seat assembly with RiteHite™ Seat Belt customized fit Adjustment. The seat belt shall include a buckle latched switch. The seat belt shall include a rotating bezel guide at the upper shoulder point and shall be routed through the seat frame and covering to protect webbing.

#### **SEAT BACK**

The seat back shall incorporate a standard style headrest.

#### **SEAT MATERIAL**

The seats shall include VALORTech XD Cordura 1000 Denier covering.

### **SEAT BACK LOGO**

The seat back shall not have any logo.

### **OFFICER'S SEAT BOX STORAGE COMPARTMENT**

There shall be a storage area under the officer's seat. The compartment shall be 19.75 inches wide, 17.50 inches long, and 6.25 inches high. The access opening shall be 9.00 inches wide and 4.50 inches high.

### **FORWARD FACING SEATS, OUTBOARD**

The outboard forward-facing crew flip seat(s) shall be a Valor fixed base ABTS LH seat. The seat(s) shall have a contoured and padded 90° flip seat cushion. The seat(s) shall be equipped with a red integrated 3-point shoulder harness with lap belt and DUAL automatic retractors and Ready Reach built into the seat assembly.

### **SEAT BELT DUAL RETRACTOR**

The seat shall be equipped with a red, integrated 3-point shoulder harness and lap belt and an emergency locking dual retractor built into the seat assembly with RiteHite™ Seat Belt customized fit Adjustment. The seat belt shall include a buckle latched switch. The seat belt shall include a rotating bezel guide at the upper shoulder point and shall be routed through the seat frame and covering to protect webbing.

### **SEAT BACK**

The seat back shall incorporate a standard style headrest.

### **SEAT MATERIAL**

The seats shall include VALORTech XD Cordura 1000 Denier covering with black top-stitching.

### **SEAT BACK LOGO**

The seat back shall not have any logo.

### **FORWARD FACING CENTER SEAT**

The inboard forward-facing crew flip seat(s) shall be a Valor fixed base ABTS LH seat. The seat(s) shall have a contoured and padded 90° flip seat cushion. The seat(s) shall be equipped with a red integrated 3-point shoulder harness with lap belt and DUAL automatic retractors and Ready Reach built into the seat assembly.

### **SEAT BACK**

The seat back shall incorporate a standard style headrest.

### **SEAT MOUNTING FORWARD FACING CENTER**

The forward facing center seats shall be installed facing the front of the cab.

### **SEAT MATERIAL**

The seats shall include VALORTech XD Cordura 1000 Denier covering with black top-stitching.

### **SEAT BACK LOGO**

The seat back shall not have any logo.

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

The forward facing center seats shall include an enclosed seat box which is located and installed on the rear wall.

The seat frame shall be constructed of no less than 5052-H32 .19" thick aluminum plate.

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

The seat frame shall include a cutout in the center of the wall facing the tunnel for access. The cutout shall be a minimum of 7.5"h x 28"w.

### **SEAT FRAME FORWARD FACING ACCESS DOOR**

The seat frame shall include a diamond plate door with a flush latch in the center of the wall facing the tunnel.

### **SEAT COMPARTMENT FINISH**

The seat frame shall be finished to match the interior finish of the cab.

Exterior Grab Handles 18" Aluminum

Exterior Grab Handles Bare Aluminum

### **EXTERIOR GRAB HANDLES**

One (1) 18” anti-slip exterior assist handle shall be mounted behind each of the cab doors. The grab handle shall be mounted on stanchions and constructed of aluminum and be 1.25” diameter with a knurled finish enabling non-slip assistance with a gloved hand and mounted on stanchions. The handles shall be mounted to the cab with nutserts. No Exception.

### **TRIM ROOF**

The raised roof section of the cab shall be trimmed in tread plate which shall feature as reinforcement:

- .08" thick, 003-H22 bright aluminum embossed tread plate
- Stainless steel fasteners
- Silver silicone caulk around the perimeter of the tread plate and at each mounting

### **CAB FASCIA**

The cab fascia shall offer a traditional, yet aggressive appearance, in its design and shall be constructed of work-hardened 5052-H32 aluminum. This design shall feature:

- A super structure which is fully welded to the cab, for a seamless and robust integration
- Thermoformed headlamp bezels, constructed of impact resistant, polycarbonate composite which is vacuum metalized to eliminate peeling and bubbling of a chrome type film or plating
- Traditional style headlight bezels with 4 x 6 high intensity headlights which shall add a classic look to the fascia while improving visibility

### **FRONT GRILLE**

A prominent front grille shall punctuate the aggressive design of the cab with its outboard wing style warning light bezels and heavy framework. The front grille shall feature:

- Fabricated construction for superior strength and durability
- Stainless Steel mirror finish for a distinctive appearance
- Up to six (6) warning light locations along the mid bar for a variety of warning light combinations

### **LIGHT BEZEL**

The front grille shall include wing light bezels. The bezels shall be constructed of a stainless material and shall be capable of holding two (2) 4" x 6" warning lights.

### **FRONT GRILLE - UNITED STATES OF AMERICA FLAG INLAY**

An American Flag shall be painted over the front grille honeycomb inlay, with a minimum of two (2) coats of clear coat to help protect the painted surface.

### **FLUID FILLS & CHECK**

For ease of maintenance and access, the following fluid checks shall be located behind the tiltable and/or removable mesh panel:

- Engine Oil dipstick
- Engine Coolant Sight Glass
- Power Steering Fluid dipstick
- Windshield Washer Fluid

The following fluid fill shall be located behind the tiltable and/or removable mesh panel:

- Power Steering
- Windshield Washer

Proposals including access to fluid checks through the tunnel or by raising the cab shall not be considered.

### **LED HEADLIGHTS**

A set of 4 FireTech 4X6 LED Headlights shall be provided. The kit shall consist of 2 fixtures which operate as SAE VOR "high/low" beams, and 2 fixtures which operate as SAE VO "high-only" beams. All 4 headlights shall have a SAE "P" parking lamp halo surrounding the driving beams, which shall be energized any time the vehicle park brake is set. Optically, on the high/low headlight, an articulated set of elliptical optics must be used to illuminate the foreground while operating in "low" beam mode. The lens of the high/low beam headlight shall be marked "DOT VOR SAE HL P 16." The lens of the high-only beam shall be marked "DOT VO SAE HL P 16." All circuits of the headlights shall be designed to operate from 9-32v DC.

All 4 fixtures must be manufactured such that the internal pressure of the headlight remains constant regardless of operating temperature. The housing shall be equipped with a mechanically fastened GORE PolyVent. Similar functioning vent materials affixed to the housing using adhesive shall not be acceptable for substitution.

The headlights shall be installed, wired, and aimed, in accordance with FMVSS108. The manufacturer of the headlights shall warrant the headlights against defects for the life of the apparatus.

The headlights shall be warranted against failure and condensation accumulation by Hiviz for the life of the apparatus.

### **DAYTIME RUNNING LIGHTS**

The daytime running light feature shall include the headlights on low beam and the marker lights shall be illuminated and a wig-wag or alternating feature.

### **HEADLIGHT FLASHER**

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 alternating high beam headlamp switch shall be located on the driver console.

### **HEADLIGHT LOCATION**

The headlights shall be located on the front fascia in the lower buckets, on each side of the cab grille.

### **FRONT TURN SIGNALS**

Two (2) Whelen M6 LED square, front turn signal assemblies shall be provided. Each turn signal shall be mounted in an attractive façade style bezel which is an integral part of the fascia.

### **TURN SIGNAL LOCATION**

The turn signals shall be located on the front fascia directly above the headlights, one each side of the cab grille.

### **FRONT MARKER LAMPS**

The cab front shall include five (5) LED amber marker lamps above the windshield in accordance with the Department of Transportation requirements.

### **SIDE MARKER LIGHTS**

Two (2) LED side marker light assemblies shall be mounted on the side of the cab ahead of the driver door, adjacent to the front head lamp bezel.

## **HEADLIGHT AND MARKER LIGHT ACTIVATION**

The head light and marker lights shall be activated through a switch on the driver's panel.

## **CAB FENDERS**

The cab wheel wells shall include full width, 14-gauge 304 polished, stainless-steel cab fenders to resist corrosion and enable easier cleaning maintenance. The inner liner, measuring 18" wide shall be constructed of plastic with an outer fenderette measuring 2.5" wide. The inner liner shall be installed with 410 stainless-steel hardware that has been coated with black zinc oxide.

## **FRONT MUD FLAPS**

The cab and chassis shall be provided with rubber front mud flaps.

## **CAB TILT SYSTEM**

The cab shall be a full tilt style. A hydraulic cab lift system shall be provided consisting of an electric powered hydraulic pump, dual lift cylinders, and necessary hoses and valves. The cab tilt shall be mounted on the right hand side of the chassis frame in front of the batteries below the frame. The mounting bracket shall be Hot Dipped Galvanized.

The dual lift cylinders shall lift the cab 45 degrees from a horizontal plane facilitating easy engine maintenance. The chassis engine shall be able to be removed if required without tilting the cab beyond 45-degrees.

The center line of the chassis cab tilt shall be a minimum of 76" from the center line of the front axle, providing a large corridor between the cab and front tire for maximum work space and accessibility to fan, fan belt, fan drive, air compressor, power steering pump, alternator and air filter.

The tilt angle shall allow access to the engine and area under the cab without contacting any components mounted to the gravel shield.

The cab shall include a four (4)-point rubber isolated cab pivot and mounting system. The rear histic mounts shall be isolated from the chassis frame to reduce the transfer of road vibrations and frame torque into the cab, while providing superior handling characteristics.

The front cab pivot assemblies shall be a 1/2" A36 steel plate with a .31" thick 2-1/2" diameter tube cross member mechanically attached to the cab and frame. There shall be two (2) greaseable rubber isolated engineered bushings to reduce the transfer of road vibrations into the cab.

The cab shall be locked down by a two (2)-point automatic spring-loaded hook mechanism that actuates after the cab has been lowered.

The cylinders shall include blocking valves (velocity fuses) which prevent motion when no control buttons are pushed. In the event of a hydraulic system failure, the valves shall retain the fluid in the cylinders.

A redundant mechanical stay arm shall automatically be engaged once the cab has been fully raised. Before lowering the cab, this device must be disengaged using the stay arm control located on the driver's side rear of the cab, providing the operator protection from high engine exhaust temperatures. The stay arm shall be safety yellow for high visibility so that it is easy to see whether the arm is in place or not. No Exception

All mounting points shall be bolted directly to the frame rail.

The cab lift safety system shall be interlocked with the parking brake. The cab tilt mechanism shall be active only when the parking brake is set and the battery master switch is in the on position. If the parking brake is release, the cab tilt mechanism shall be disabled.

There shall be a manual pump incorporated in the event of a system failure to the cab tilt system.

A warning light shall illuminate in the cab instrument panel to indicate whenever the cab is not fully latched in the locked down position, and the parking break is release.

### **CAB TILT LIMIT SWITCH**

An adjustable cab tilt limit switch shall be included with the cab tilt system. The switch shall effectively limit cab's travel to avoid impact with bumper mounted items, or station ceiling clearance, when being tilted.

There shall be a safety bar to hold the cab at the new adjusted height for additional safety.

### **CAB TILT LOCK DOWN INDICATOR**

The cab dash shall include a message located within the dual air pressure gauge which shall alert the driver when the cab is unlocked and ajar. The alert message shall cease to be displayed when the cab is in the fully lowered position and the hold down hooks are secured and locked to the cab mounts.

In addition to the alert message an audible alarm shall sound when the cab is unlocked and ajar and the parking brake is released.

### **REARVIEW MIRRORS**

West Coast Style Mirrors

## **REARVIEW MIRRORS**

Lang Mekra West Coast 300 Series AERO mirrors shall be provided and installed on each of the front cab doors. The mirrors shall be mounted via tubular stainless steel arms to provide a rigid mounting reducing mirror vibration.

The main head shall measure 8" wide x 15" high x 4.5" deep and shall include a 6.6" wide x 8.5" high x 4.5" deep convex mirror with a textured chrome finish. The flat mirror shall be motorized with remote horizontal and vertical adjustment. The mirrors shall also be heated. The convex mirrors shall be manually adjustable.

The mirrors shall also have an turn signal built into the convex, and there shall be a marker light on the back side of the mirror.

## **REARVIEW MIRROR REMOTE ACTIVATION**

The driver's panel shall include activation for the rearview mirrors remote function. The driver panel shall also include a switch activating the mirrors to be heated.

## **CAB TWO TONE PAINT**

The cab surface shall be thoroughly washed with grease cutting solvent (PPG DX330) prior to any sanding. The cab surface shall then be sanded and minor imperfections filled and sanded. The prepared surface shall then be washed again with (PPG DX330) to remove any contaminants from all surfaces to be painted.

The first coating to be applied shall be a pre-treat epoxy primer (.5 to 1.0 dry film build) for maximum adhesion to the body material. The next two to four coats shall be a polyurethane primer resurfacing agent (PPG F4936). The film build shall be 4-6 mils when dry. The primer coat, after appropriate dry time, shall be sanded with 320-600 grit sandpaper to ensure a maximum gloss finish. The last step shall be an application of at least three coats of PPG FDG polyurethane two-component color (single stage). The film build shall be 2-3 mils when dry. The single stage polyurethane shall provide a UV barrier to prevent fading and chalking.

The cab shall then be painted with the specific colors designated by the customer with a minimum thickness of 2.00 mils of finished paint, followed by a clear top coat not to exceed 2.00 mils.

## **A single, 1/4" black separation stripe will be provided between the upper and lower cab paint colors.**

The upper white to match paint code FLNA 4060 and the lower red to match paint code FLNA 30021

## **CAB PAINT UPPER**

The upper or secondary cab color shall be AkzoNobel \_\_\_\_\_ color and \_\_\_\_\_ number.

## **CAB PAINT LOWER**

The lower or primary cab color shall be AkzoNobel \_\_\_\_\_ color and \_\_\_\_\_ number.

#### Cab Paint Exterior Breakline - Paint Break A

#### **CAB UNDERCOAT**

The cab shall have an undercoat applied prior to the cab being set on the running gear. The under coat shall be a waterborne, one-component, air dry undercoat formulated to prevent chipping, cracking and marring of painted or unpainted surfaces after exposure to high impact sand, gravel or other abrasive materials. It shall also have high corrosion resistance.

#### **PAINT SPRAY OUT**

The customer shall be supplied with a paint spray out for customer approval prior to the cab being painted.

#### **FRONT AXLE**

The Hendrickson SteerTek front axle beam shall be rated to carry 24,000 lbs. and consist of a fabricated box cross section construction with 100ksi plate and a continuous beam architecture to minimize stress points for added durability. The box shaped cross section resists horizontal, vertical, and twisting forces more effectively than traditional I-beam axles while helping to reduce dynamic camber and toe changes therefore a traditional I-beam axle shall not be considered. The axle shall incorporate a removable kingpin feature for ease of kingpin serviceability. The knuckles shall allow for compatibility with disc brakes mounted at the 12 o'clock position and with drum brakes and allow for wheel cut up to 45 degrees. They shall also utilize premium kingpin bushings and seals to provide enhanced protection from the elements to improve bushing life.

The axle shall have a magnetic drain plug in the hubs.

The axle shall be warrantied for five (5) years or five hundred thousand (500,000) miles whichever comes first. No Exception.

#### **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 SUSPENSION**

The suspension shall consist of multi-leaf parabolic springs with double wrapped front eye that are packaged within an integrated clamp group that allows for ease of OEM assembly on to the axle beam and reduced part count. The clamp group bolts are tightened on the top of the clamp group opposed to the traditional U-bolt on the bottom making it easier to access with a torque wrench for servicing. The spring shall also include a lower shock attachment with an upturned eye. The springs will contain threaded pin bushings to allow simplification of spring alignment as well as long service life and improved ride quality. The suspension and spring geometry will be optimized to provide improved bump steer and Ackermann. Two ZF Sachs twin-tube shocks shall be provided with the front suspension assembly. The shocks shall be specially developed for parabolic leaf springs with a digressive characteristic curve using a patented piston system. The shocks shall feature multi-stage piston and base valves. The combination of valves shall achieve the desired damping characteristics that are ideal for the application. The suspension shall be rated for a minimum of 24,000 lbs. No Exception.

### **POWER STEERING GEAR WITH ASSIST**

The power steering gear shall be a TRW model TAS 85 and shall include the following:

- A balanced, hydraulic, positive displacement, sliding vane power steering pump which is gear driven from the engine
- One-piece, 2" diameter drag link for maintaining consistent wheel alignment resulting in less maintenance.
- The steering gear shall be mounted on a plane that is at a 9-degree angle in relationship to the center plane of the chassis. This mounting technique is designed to reduce the operating angle of input steering shafts. A more direct, responsive, and smoother handling vehicle will result from these unique design characteristics.

A certified torque and geometry study by TRW shall be available upon request.

### **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 apparatus manufacturer.

Alignment documentation shall be available upon request.

425 Front Tires

### **STEER TIRES**

The steer tires shall be Bridgestone 425/65R 22.5 "L" tubeless radial M854 on/off highway tread. The steer tires shall feature:

A stamped load capacity of 22,800 pounds per axle with a speed capacity of 75 miles per hour when properly inflated to 120 pounds per square inch and a 24,396 pound per axle intermittent service rating at 65 miles per hour.

#### **TIRE BALANCING**

There shall be counter acting balancing beads used in all of the tires.

#### **SPARE TIRE FRONT**

The apparatus shall be delivered to include one (1) each spare tire for the front matching the brand, model and size as provided on the front axle.

#### **TIRE BALANCING**

There shall be counter acting balancing beads used in all of the tires.

#### **FRONT WHEEL**

The front wheels shall be Alcoa hub piloted, 22.50 inch X 12.25 inch 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 a polished finish that lasts.

#### **SPARE FRONT WHEELS**

The apparatus shall be delivered with one spare front wheel. The spare shall be an Alcoa hub piloted, 22.50 inch X 12.25 inch polished aluminum wheel. The hub piloted mounting system shall provide easy installation and shall include two-piece flange nuts. The wheel shall feature one-piece forged strength and a polished finish that lasts.

#### **FRONT BRAKES**

The front brakes shall be Meritor EX225 Disc Plus disc brakes with 17" vented rotors. The disc brakes shall be provided with visual wear indicators.

The front brakes shall include brake chambers supplied by Meritor and shall be approved per application.

#### **STEERING COLUMN AND WHEEL**

The cab shall include a Douglas Autotech steering column. The steering column shall feature an 18", four (4) spoke steering wheel located at the driver's position; a five (5) position tilt and 2.25" telescopic adjustment. The steering wheel shall be provided with a black vinyl cover with foam padding and a horn button, self-canceling turn signal switch, four-way hazard switch and headlamp dimmer switch. The steering column shall also incorporate a steering angle sensor.

The chassis shall include dual electric 12-volt horn with a minimum 110 decibels.

### **REAR AXLE**

A Meritor RT-46-160 tandem driving axle shall be incorporated as the rear axle for the chassis. The axle shall feature:

- Rated capacity of 48,000 pounds
- Heavy duty Hypoid gearing for longer life, increased 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
- Rigid differential case for high axle strength and reduced maintenance
- Rugged Dependability
- Rectangular shaped, hot formed housing with a standard wall thickness at spring seat of .50" for extra strength and rigidity
- A magnetic plug
- 5-year warranty

### **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 SUSPENSION**

The tandem rear axle shall feature a Hendrickson Firemaax™ air suspension. Each axle will be independently suspended for optimum performance. The suspension shall include four optimized air springs mounted to cast structural trailing arms, transverse cross beams for increased roll stability and four heavy duty shock absorbers. Dual air height control valves shall be installed on each axle to ensure equal frame height on both sides of the vehicle regardless of the load. Axle alignment is maintained using four eccentric bushings at each frame bracket.

The rear suspension capacity shall be rated at 40-48,000 pounds.

## **BRAKE SYSTEM**

A rapid build-up air brake system shall be provided. The air brakes shall include a three (3) air tank, four (4) reservoir system with a minimum of 5852 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. The system shall include an anti-compounding feature. 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 six (6) sensor, six (6) modulator Anti-lock Braking System (ABS) shall be installed on the front and tandem 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 tandem 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.

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.

The Meritor Wabco ABS and ESC system shall come with a three (3) year/300,000 mile parts and labor warranty.

### **REAR BRAKES**

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

The rear brakes shall include brake chambers supplied by Meritor and shall be approved per application.

### **REAR SHOCK ABSORBERS**

Shock absorbers shall be supplied by the suspension manufacturer and installed on the rear axle suspension.

### **REAR AXLE DIFFERENTIAL CONTROL**

The tandem axles shall include an inter-axle differential lock which shall allow both axles to be engaged as drive axles.

### **INTERAXLE DIFFERENTIAL LOCK CONTROL ACTIVATION**

The inter-axle differential lock control shall be activated through a switch on the driver's panel.

### **REAR TIRES**

The rear tires shall be Bridgestone 11R 22.5 tubeless radial M483 on/off highway tread. The rear tires shall feature:

- A stamped load capacity of 24,020 pounds per axle with a speed capacity of 65 miles per hour when properly inflated to 120 pounds per square inch

### **TIRE BALANCING**

There shall be counter acting balancing beads used in all of the tires.

### **REAR WHEEL**

The rear wheels shall be Alcoa hub piloted, heavy duty, 22.50 inch X 8.25 inch polished aluminum wheels. Each outer wheel shall have a polished aluminum finish on the exterior surface and each inner wheel shall have a machine finish. The hub piloted mounting system shall provide easy installation and shall include two-piece flange nuts.

### **VALVE STEM EXTENSION - TANDEM AXLE**

To allow for easy checking and inflation of the rear inner tires shall be equipped with a multi-layer valve stem extension, the layers shall be as follows: starting from the inner to out layer, stainless steel metal core, air tube, stainless steel jacket, protective color.

### **VEHICLE TOP SPEED**

The top speed of the vehicle shall be programmed at approximately 60 MPH +/-2 MPH at governed engine RPM.

### **AIR TANK BRACKETS & STRAPS**

The air tank(s) shall be mounted to the frame rail with brackets that are hot dipped galvanized thereby creating a barrier and cathodic protection from corrosion, and eliminating the requirement for finish paint and the subsequent requirements for touch up paint and/or total repaint after a period of time due to nicks, chips and corrosion. Powder coated or painted air tank brackets shall not be accepted. No exception.

All of the air tank straps shall be plastic coated stainless-steel cable. No Exception.

### **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 system shall include an anti-compounding feature.

### **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 driver's side dash to the right of the steering column within easy reach of the driver.

### **AIR DRYER**

The brake system shall include a Wabco System Saver 1200 Plus air dryer with an integral 100-watt heater with a Metri-Pack sealed connector. The system shall have an integrated purge volume and integrated governor.

The system shall have the following features:

- Premium desiccant provides greater water adsorption

- Replaceable spin on cartridge for simple maintenance
- Compact light weight design
- Pressure relief safety valve
- Turbo cut-off valve for boosted compressor applications
- Service components are external for easy replacement
- Common service components proven for reliability and quality
- Integrated with the air governor.

## **MOISTURE EJECTORS**

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

## **AIR SUPPLY LINES**

A dual air system plumbed with color coded reinforced nylon tubing air lines shall be installed on the chassis. The primary (rear) brake line shall be green, the secondary (front) brake line orange, the parking brake line yellow and the auxiliary (outlet) will be black; in accordance with SAE standards. No Exception.

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

## **AIR HORN RESERVOIR**

One (1) air tank, with a 1200 cubic inch reservoir, 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.

## **FRAME**

To avoid frame cracking and failure over time, the top flange of the frame adjacent to the engine installation shall have a tapered design. Notches for engine components shall not be accepted due to fatigue and the potential for cracking.

The chassis frame shall consist of three (3) “C” style parallel rails, constructed of high strength low alloy and shall feature the following:

- A Stenx **MODEL 110XF** 10.19" high by 3.63" deep cold rolled steel frame or equivalent.
- Inner channel measuring 9.31" high x 3.25" deep x .25" thick
- Third channel measuring 8.69" high x 3.00" deep x .25" thick
- The 10.19" frame height shall be maintained throughout the entire length of the frame to allow for maximum storage capacity for the entire apparatus.
- If frame rails that are larger than those specified are to be utilized, the maximum height of each frame rail shall not exceed 10.25" at any point on the frame rail. This will ensure the lowest possible vehicle center of gravity allowing maximum stability as well as providing the lowest body height possible.
- Frame rail shall have a consistent frame web throughout the entire length.
- The entire frame rail design shall be manufactured in the United States of America and readily available on the aftermarket.
- Grade 8 Structural fasteners, Huck bolts shall not be acceptable. No Exception.
- The hardware used for the chassis shall be are to be corrosion resistant. The process shall be dip-spin-bake coated with two coats of zinc/aluminum metal flake coating in an inorganic binder. Coating one is to be zinc flake and coating two is to be aluminum flake. The zinc flakes sacrificially corrode to protect the base metal. The aluminum flakes prolong the life of the zinc. Salt fog test life, based on ASTM B117 on unassembled fasteners, is 1000 hours to red rust. The same test on assembled fasteners is 750 hours to red rust. The two step coating is RoHS compliant as it eliminates the hexavalent chromium used in the passivation of electroplated zinc coatings to create yellow zinc (zinc dichromate). The elimination of the zinc plating also greatly reduces the likelihood that hydrogen embrittlement will occur. Hydrogen embrittlement is a side effect of electroplating that reduces toughness and can lead to fracture. No Exception
- Manufacturer's lifetime warranty

The frame ratings shall be as follows:

- 110,000 PSI minimum yield strength high strength low alloy steel
- Minimum Resisting Bending Moment (RBM) of 3,572,000-inch pounds per rail

To avoid frame cracking and failure over time, the top flange of the frame adjacent to the engine installation shall have a tapered design. Notches for engine components shall not be accepted due to fatigue and the potential for cracking. No Exceptions.

### **UNDER-FRAME REINFORCEMENT**

An under slung frame reinforcement shall be installed below the frame rails in the transmission area to increase the vertical rigidity of the frame.

The under-frame reinforcement provides:

- Enhanced handling
- Improved ride quality
- Increase resistance to frame and cross member fatigue
- Enhanced vehicle stability providing improved safety to occupants

### **CROSS MEMBERS**

There shall be a minimum of seven (7) steel plate cross members installed on the apparatus.

- 50,000 psi minimum yield strength steel plate cross members
- Manufacturer's lifetime warranty to match frame warranty. No Exceptions
- Installed with one-piece cross member gusset to maximize vertical strength and minimize cross member flex
- Crossmembers can be inverted when required to allow for PTO drive line installation without the need for notching or modifying the cross members in anyway. No Exceptions.

### **FRONT FRAME EXTENSION**

A single piece 80,000 PSI steel extension shall be installed on the front of the frame rails.

- Reduces frame flex which translates into improved vehicle handling and ride quality
- Designs using multiple piece, bolted together extensions will not be acceptable since they are prone to more flexing, possible frame failure and cab cracking
- Allows radiator to be removed through the bottom of the frame extension without tilting the chassis cab
- Minimizes damage to the chassis cab in the event of frontal impact accident
- Maintains structural integrity of the chassis frame rails while attaching bumper extensions of varying lengths

- Splayed or notched frame rails and/or extensions shall not be accepted
- Provides foundational strength and stability of the cab tilt system which provides superior access to engine and cooling components

### **FRAME FINISH**

The frame shall be finish painted lower job color over the powder coated component, after the running gear is assembled, but prior to the installation of the air system plumbing or any electrical components. The paint shall not include items that are hot dip galvanized, such as the battery boxes and air tank brackets. No Exception.

### **FRAME RAIL**

The chassis VIN number shall be stamped in the frame rail.

### **TOW EYES**

Two (2) 3" tow eyes shall be shipped loose. The tow eyes shall be steel and shall be black powder coated.

### **Engine Placement**

### **ENGINE**

A Cummins X 15 liter diesel fueled, turbo charged engine shall feature the following:

- One of the highest power to weight ratios in its class
- Heavy-duty replaceable wet liners, roller followers, by-pass oil filtration with replaceable spin on cartridge and targeted piston cooling for longer service in tough work environments
- Improved cooled EGR system
- 912 cubic inches of displacement
- High pressure common rail fuel system producing a precise quantity of fuel at ultra high pressures
- Fully integrated, robust electronic engine controls
- Electric fuel lift pump. No Exceptions.

The engine shall be coupled with a Holset VGT™ (Variable Geometry Turbocharger).

The engine shall be filled with Citgo brand Citgard 500 (or equivalent) SAE 15W40 CJ4 low ash engine oil for proper engine lubrication.

The engine shall be EPA certified to meet the 2021 emissions standards without compromising performance, reliability or durability using cooled exhaust gas recirculation and selective catalytic reduction technology.

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

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

### **ENGINE PLACEMENT**

The engine shall be a maximum of 36" from the center line of the front axle to the front face of the engine block. The engine valve cover shall be a maximum of 23" from the top of the frame.

The engine placement shall provide optimal weight distribution to the front axle to enhance vehicle handling. More weight out in front of the front axle can cause a "fulcrum effect" and cause unsafe "bump steer" conditions.

The engine shall be mounted in a position that provides for the lowest possible height of the interior engine tunnel. An engine tunnel height from the floor of the chassis cab shall be no more than 21" high inside the cab.

### **AIR COMPRESSOR**

The air compressor provided for the engine shall be a Wabco® 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 integrated in the air dryer assembly.

Cummins X12 & X15 Surcharge

HORSEPOWER

The engine shall have 600 horsepower at 1800 RPM, with a governed speed of 2100 RPM.

The engine shall have 1850-foot pounds of torque at 1150 RPM.

The engine shall have a standard drain plug.

#### **ENGINE FAN DRIVE**

The engine cooling system fan shall incorporate a thermostatically controlled, one (1) piece eleven (11) blade Horton clutched type fan drive and shroud.

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.

The clutch fan shall automatically engage when the PTO or the engine high-idle is engaged.

#### **AUXILIARY ENGINE BRAKE**

A Cummins engine compression brake, for the six (6) cylinder engine, shall be provided. The engine compression brake shall:

- Activate upon 0% accelerator when in operation mode and activate the vehicle's brake lights.

#### **TRANSMISSION PRE-SELECT**

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

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

An auxiliary engine 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 auxiliary brake shall be controlled through an on/off switch and individual low/medium/high selector switches on the Driver's panel.

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

The Engine high idle will be set at 1250 RPM. The high idle will be operational only when the parking brake is set and the truck transmission is in neutral.

### **ENGINE HIGH IDLE CONTROL**

The vehicle shall be equipped with an automatic high-idle speed control. It shall be pre-set so when activated, it will operate the engine at the appropriate RPM to increase alternator output and optimize output of the HVAC system.

This device shall operate only when the master switch is activated and the transmission is in neutral with the parking brake set. The device shall disengage when the operator depresses the brake pedal, or the transmission is placed in gear, and shall be available to manually, through a switch, or automatically re-engage when the brake is set, or when the transmission is placed in neutral.

### **ENGINE AIR INTAKE**

The engine air intake system shall include an ember separator air intake filter which shall be located behind the fascia.

The 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 intake shall also feature a cyclone style water separator to remove unwanted moisture from incoming air.

The engine shall include an air intake filter which shall be bolted to the frame and located under the front of the cab. This dry type filter shall ensure dust and debris is 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 filter must have a capacity of no less than 1350 cubic feet of air per minute. The filter paper media must be of a flame retardant treated material. An electric air filter restriction indicator shall also be included with the system.

### **ENGINE EXHAUST SYSTEM**

The exhaust system shall include a one-piece diesel particulate filter (DPF), a diesel oxidation catalyst, and a selective catalytic reduction catalyst (SCR) to meet current EPA standards.

The selective catalytic reduction catalyst shall utilize a diesel exhaust fluid solution consisting of urea and purified water to convert nitrogen oxide into nitrogen, water, and trace amounts of carbon dioxide. The solution shall be injected into the system between the DPF and SCR chambers.

The system shall utilize 0.065-inch-thick stainless steel exhaust tubing between the engine turbo and the DPF.

The after-treatment canister through the end of the tailpipe shall all be connected with zero leak gasketed clamps. The discharge shall terminate horizontally on the right side of the vehicle ahead of the rear tires with an exhaust gas diffuser.

The diffuser shall lower exhaust gas temperatures during the regeneration cycle.

### **DIESEL EXHAUST FLUID TANK**

There shall be a molded cross linked polyethylene tank for the Diesel Exhaust Fluid (DEF). The tank shall have a capacity of not less than five (5) usable gallons (18.92 Liters) and shall be mounted on the left hand side of the chassis frame in front of the batteries below the frame. The mounting bracket shall be Hot Dipped Galvanized.

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.

### **DIESEL EXHAUST FLUID TANK**

There shall be an access door provided in the top rear step of left side crew area for access to the DEF tank.

### **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.

### **DIESEL PARTICULATE FILTER CONTROLS**

Provide DPF system status annunciation indicator lights, lights shall be installed on driver dash to alert driver when regeneration is needed and when DPF is in an active re-generation cycle.

Warning systems shall provide DEF low level warning.

Driver's dash shall be provided with two (2) controls for the Diesel particulate filter; one (1) manual regeneration switch to activate a regeneration cycle manually when passive burn is unobtainable due to driving conditions; and one (1) Regen "Inhibit Switch".

The switches shall be located in a covered location.

### **ENGINE COOLING SYSTEM**

The radiator and the complete cooling system shall meet or exceed NFPA and engine manufacturer cooling system requirements.

The system shall include and feature the following:

- A vertically stacked charge air cooler providing the maximum cooling capacity for the engine. Proposals offering horizontally stacked charge air cooler shall not be acceptable. No Exceptions
- The charge air cooler and radiator shall measure not less than 1382 square inches
- A surge tank with a low coolant probe and capable of removing entrained air from the cooling system, with built in sight glass
- Radiator re-circulation shields to prevent heated air from re-entering the cooling system and affecting performance
- Mounts allowing the entire radiator to drop through the frame for service when needed - No Exceptions
- Engine placement shall provide a minimum of 8" between the engine fan and radiator to maximize the airflow and cooling of the engine.
- A Spin on Element water filter with corrosion inhibitor shall be provided for the cooling system. No Exception.

- The coolant filter shall be provided with two (2) shut off valves, one (1) one inlet and one (1) outlet. No Exception.
- Cooling system shall be tested and certified by the engine manufacturer

## **COOLANT HOSES**

The cooling systems hose shall be formed silicone hose and formed aluminized steel tubing and include constant tension spring clamps.

## **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 F.

Supplemental coolant additives (SCA) are not required as this is part of the extended life coolant makeup.

## **ADDITIONAL COOLANT SHUT OFF VALVE**

An additional coolant shut off valve with connection shall be installed in the chassis coolant lines with a connector. This shall allow for the installation of an additional heater such as a pump compartment heater without draining the coolant system.

## **TRANSMISSION**

The drive train shall include an Allison model EVS 4000 torque converting, automatic transmission which shall include electronic controls and an output retarder. The transmission shall feature two (2) 10-bolt PTO pads located on the converter housing; one (1) in the 8:00 o'clock position and one (1) in the 1:00 o'clock position.

The transmission shall include two (2) internal oil filters and Allison approved 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 shall include prognostic diagnostic capabilities. These capabilities shall include the monitoring of the fluid life, filter change indication, and transmission clutch maintenance.

The transmission gear ratios shall be:

|     |        |
|-----|--------|
| 1st | 3.51:1 |
| 2nd | 1.91:1 |

|     |                        |
|-----|------------------------|
| 3rd | 1.43:1                 |
| 4th | 1.00:1                 |
| 5th | 0.74:1                 |
| 6th | 0.64:1 (if applicable) |
| Rev | 4.80:1                 |

### **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 magnetuc oil drain plug.

### **AUTOMATIC NEUTRAL**

The transmission shall be provided with an automatic neutral. When the parking brake is applied the transmission automatically returns to neutral.

### **TRANSMISSION FLUID**

The transmission shall include two (2) internal oil filters and Allison approved 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.

### **TRANSMISSION SHIFT SELECTOR**

An Allison GEN V pressure sensitive range selector touch pad shall be provided and located on the tunnel to the right of the driver.

The shift selector shall provide an indicator on the digital display and shall alert the driver/operator when a specific maintenance function is required.

### **PTO LOCATION**

The transmission driven power take off (PTO) shall be mounted in the 1:00 o'clock position.

### **TRANSMISSION MODE PROGRAMMING**

The transmission, upon start-up, will select the fifth speed operation without the need to press the mode button.

## **TRANSMISSION PROGRAMMING**

The EVS Vocation Package Number 198 for the fire service for this apparatus as a Pumper. 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 which requires re-selecting the drive range to shift out of neutral for the override.

This package shall be coupled with the use of a split shaft PTO and incorporate pumping circuits. The transmission will detect the pump engaged signal and automatically select or deselect fourth gear lock-up. These circuits shall be used allowing the vehicle to operate in the fourth range lockup while operating the pump mode due to the 1 to 1 ratio through the transmission, therefore the output speed of the engine is the input speed to the pump. The pump output can be easily calculated by using this input speed and the drive ratio of the pump itself to rate the gallons of water the pump can provide.

A nine (9) pin diagnostic connector will be provided.

The trans module shall contain the following circuits:

| Function ID | Description                                   | Wire Assignment        |
|-------------|-----------------------------------------------|------------------------|
| C1          | PTO Drive Interface Output 1                  | 142                    |
| J           | Fire Truck Pump Mode (4 <sup>th</sup> Lockup) | 122/123                |
| C           | Range Indicator                               | 145 (4 <sup>th</sup> ) |
| G1          | PTO Drive Interface Output 1                  | 130                    |
|             | Signal Return                                 | 103                    |

## **TRANSMISSION RETARDER CAPACITY LEVEL**

The transmission retarder shall be programmed so the maximum reduction in engine decline shall be at the low capacity level.

## **TRANSMISSION RETARDER CONTROL**

The Allison transmission retarder shall be engaged with the first one-third at 0% throttle and the remaining two-thirds shall be modulated by brake pedal actuation. The system shall include a retarder on/off rocker switch mounted on the dash. The engagement of the retarder shall activate the brake lights. The retarder shall be inactive during pump mode.

## **DRIVELINE**

All drivelines shall be heavy duty metal tube and equipped with Spicer 1810 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 FS1065 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 SYSTEM**

The fuel tank shall have a capacity of sixty-eight (68) gallons/two hundred fifty-seven (257) liters.

The tank shall offer:

- A vent port which will facilitate venting to the top of the fill neck for rapid filling without any “blow-back”
- Two (2) 2” NPT fill ports for left and right-hand fill with a .5” NPT drain plug centered side to side, 9" from the front of the tank
- A roll over ball check vent for temperature related fuel expansion and draw
- A design including dual draw tubes and sender flanges
- A baffled design which shall be constructed of steel
- A black Powder Coated exterior to ensure corrosion resistance

The fuel tank shall be mounted below the frame, behind the rear axle. There shall be two (2) three-piece strap hanger assemblies with “U” straps bolted midway on the fuel tank, allowing the tank to be easily lowered and removed for service purposes.

The strap hanger material shall be stainless-steel. No Exceptions.

For isolation of vibration and movement, rubber isolating pads shall be provided between the tank and the hanger strap assemblies. The tank straps shall be attached to rubber coated cross members which help isolate the tank from frame flex.

Strap mounting studs through the rail, hidden behind the body shall not be acceptable.

All fuel lines shall be connected with steel fittings with all fittings pointed towards the right side (curbside) of the chassis.

The chassis fuel lines shall feature an additional 4' of length provided so the tank can be easily lowered and removed for service purposes which shall be coiled and secured at the top of the tank.

### **FUEL LINES**

The fuel system supply and return lines installed from the fuel tank to the engine shall be wire braided reinforced hose with machine crimped fittings shall be provided for the chassis fuel lines.

The wire braided hose shall consist of four (4) layers, an inner synthetic rubber tubing, an inner textile braid, a high tensile wire braid reinforcement and a textile braided outer cover.

### **FUEL SHUTOFF VALVE**

Three (3) fuel shutoff valves shall be installed in the fuel draw line. Two (2) valves shall be installed at the primary fuel filter to allow the fuel filter to be changed without loss of fuel to the fuel pump.

A third fuel shutoff valve shall be installed in the fuel draw line, near the fuel tank to allow maintenance to be performed with minimal loss of fuel.

### **FUEL COOLER**

The cross flow air to fuel cooler shall be all aluminum and shall be provided to lower fuel temperature allowing the vehicle to operate at higher ambient temperatures. The fuel cooler shall be located reward of the battery box, under the frame.

The fuel cooler shall incorporate a fan for improved heat transfer.

The fuel cooler shall be mounted to the frame using hot dipped galvanized brackets. Powder coated or painted brackets shall not be acceptable. No exception.

### **FUEL TANK MAGNETIC DRAIN PLUG**

The fuel tank shall include a .5" NPT magnetic drain plug which shall be centered in the bottom of the tank.

## **FUEL TANK SERVICE LINE**

The fuel lines shall be extended to 12'.

## **ALTERNATOR**

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

## **ELECTRICAL SYSTEM**

There shall be a 12-volt direct current single starting electrical system providing power to all components for the cab and chassis. The system shall feature:

- 300-degree Fahrenheit high temperature, flame retardant loom
- All SAE wiring color coded and labeled as to its function
- Wiring which is cross link with 311-degree Fahrenheit insulation
- A suppressed system in accordance with SAE J551

The primary power distribution will be located forward of the officer's seating position and be easily accessible while standing on the ground for simplified maintenance and troubleshooting. Additional electrical distribution centers will be provided throughout the vehicle to house the vehicle's electrical power, circuit protection, and control components. The electrical distribution centers will be located strategically throughout the vehicle to minimize wire length. For ease of maintenance, all electrical distribution centers will be easily accessible. All distribution centers containing fuses, circuit breakers and/or relays will be easily accessible.

Circuit protection devices, which conform to SAE standards, will be utilized to protect electrical circuits. All circuit protection devices will be rated per NFPA requirements to prevent wire and component damage when subjected to extreme current overload.

General protection circuit breakers will be a combination of automatic and manual reset breakers. This will provide a durability and capacity maximization of the electrical system. When required, automotive type fuses will be utilized to protect electronic equipment. Control relays and solenoid will have a direct current rating of 125 percent of the maximum current for which the circuit is protected per NFPA.

## **EMI/RFI PROTECTION**

To prevent erroneous signals from crosstalk contamination and interference, the electrical system will meet, at a minimum, SAE J551/2, thus reducing undesired electromagnetic and radio frequency emissions. An advanced

electrical system will be used to ensure radiated and conducted electromagnetic interference (EMI) or radio frequency interference (RFI) emissions are suppressed at their source.

The apparatus will have the ability to operate in the electromagnetic environment typically found in fire ground operations to ensure clean operations. The electrical system will meet, without exceptions, electromagnetic susceptibility conforming to SAE J1113/25 Region 1, Class C EMR for 10KHz-1GHz to 100 Volts/Meter. The vehicle OEM, upon request, will provide EMC testing reports from testing conducted on an entire apparatus and will certify that the vehicle meets SAE J551/2 and SAE J1113/25 Region 1, Class C EMR for 10KHz-1GHz to 100 Volts/Meter requirements. Component and partial (incomplete) vehicle testing is not adequate as overall vehicle design can impact test results and thus is not acceptable by itself.

EMI/RFI susceptibility will be controlled by applying appropriate circuit designs and shielding. The electrical system will be designed for full compatibility with low-level control signals and high-powered two-way radio communication systems. Harness and cable routing will be given careful attention to minimize the potential for conducting and radiated EMI/RFI susceptibility.

### **ELECTRICAL HARNESSING INSTALLATION**

To ensure rugged dependability, all wiring harnesses installed by the apparatus manufacturer will conform to the following specifications:

SAE J1128 - Low tension primary cable

SAE J1292 - Automobile, truck, truck-tractor, trailer and motor coach wiring

SAE J163 - Low tension wiring and cable terminals and splice clips

SAE J2202 - Heavy duty wiring systems for on-highway trucks

NFPA 1901 - Standard for automotive fire apparatus

FMVSS 302 - Flammability of interior materials for passenger cars, multipurpose passenger vehicles, trucks and buses

SAE J1939 - Serial communications protocol

SAE J2030 - Heavy-duty electrical connector performance standard

SAE J2223 - Connections for on board vehicle electrical wiring harnesses NEC - National Electrical Code

SAE J561 - Electrical terminals - Eyelet and spade type

SAE J928 - Electrical terminals - Pin and receptacle type A

For increased reliability and harness integrity, harnesses will be routed throughout the cab and chassis in a manner which allows the harnessing to be laid into its mounting location. Routing of harnessing which requires pulling of wires through tubes will not be allowed.

Wiring will be run in loom or conduit where exposed, and have grommets or other edge protection where wires pass through metal. Wiring will be color, function and number coded. Wire colors will be integral to each wire insulator and run the entire length of each wire. Harnessing containing multiple wires and uses a single wire color for all wires will not be allowed. Function and number codes will be continuously imprinted on all wiring harness conductors at 3.00" intervals. All wiring installed between the cab and into doors will be protected by an expandable rubber boot to protect the wiring. Exterior exposed wire connectors will be positive locking, and environmentally sealed to withstand elements such as temperature extremes, moisture and automotive fluids.

Electrical wiring and equipment will be installed utilizing the following guidelines:

- All wire ends not placed into connectors will be sealed with a heat shrink end cap. Wires without a terminating connector or sealed end cap will not be allowed.
- All holes made in the roof will be caulked with silicon. Large fender washers, liberally caulked, will be used when fastening equipment to the underside of the cab roof.
- Any electrical component that is installed in an exposed area will be mounted in a manner that will not allow moisture to accumulate in it. Exposed area will be defined as any location outside of the cab or body.
- For low cost of ownership, electrical components designed to be removed for maintenance will be quickly accessible. For ease of use, a coil of wire will be provided behind the appliance to allow them to be pulled away from the mounting area for inspection and service work.
- Corrosion preventative compound will be applied to non-waterproof electrical connectors located outside of the cab or body. All non-waterproof connections will require this compound in the plug to prevent corrosion and for easy separation of the plug.
- Any lights containing non-waterproof sockets in a weather-exposed area will have corrosion preventative compound added to the socket terminal area.
- All electrical terminals in exposed areas will have protective Coating applied completely over the metal portion of the terminal.
- Rubber coated metal clamps will be used to support wire harnessing and battery cables routed along the chassis frame rails.
- Heat shields will be used to protect harnessing in areas where high temperatures exist. Harnessing passing near the engine exhaust will be protected by a heat shield.
- Cab and crew cab harnessing will not be routed through enclosed metal tubing. Dedicated wire routing channels will be used to protect harnessing therefore improving the overall integrity of the vehicle electrical system. The design of the cab will allow for easy routing of additional wiring and easy access to existing wiring.
- All braided wire harnesses will have a permanent label attached for easy identification of the harness part number and fabrication date.
- All standard wiring entering or exiting the cab will be routed through sealed bulkhead connectors to protect against water intrusion into the cab.

#### **BATTERY CABLE INSTALLATION**

All 12-volt battery cables and battery cable harnessing installed by the apparatus manufacturer will conform to the following requirements:

SAE J1127 - Battery Cable

SAE J561 - Electrical terminals, eyelets and spade type

SAE J562 - Nonmetallic loom

SAE J836A - Automotive metallurgical joining

SAE J1292 - Automotive truck, truck-tractor, trailer and motor coach wiring

NFPA 1901 - Standard for automotive fire apparatus

Battery cables and battery cable harnessing will be installed utilizing the following guidelines:

- All battery cables and battery harnesses will have a permanent label attached for easy identification of the harness part number.
- Splices will not be allowed on battery cables or battery cable harnesses.
- For ease of identification and simplified use, battery cables will be color coded. All positive battery cables will be red in color or wrapped in red loom the entire length of the cable. All negative battery cables will be black in color.
- For increased reliability and reduced maintenance, all electrical buss bars located on the exterior of the apparatus will be coated to prevent corrosion.

### **ELECTRICAL COMPONENT INSTALLATION**

All lighting used on the apparatus will be, at a minimum, a two (2) wire light grounded through a wired connection to the battery system. Lights using an apparatus metal structure for grounding will not be allowed.

An operational test will be conducted to ensure that any equipment that is permanently attached to the electrical system is properly connected and in working order. The results of the tests will be recorded and provided to the purchaser at time of delivery.

### **12V POWER POINTS**

There shall be one (1) 12-volt Blue Sea model #4368 power point provided. It shall be mounted in the driver's side of the dash within easy reach of the driver; and shall be wired directly to the battery.

### **12V POWER POINTS**

There shall be one (1) 12-volt Blue Sea model #4368 power point provided. It shall be mounted in the officer's side of the dash within easy reach of the driver; and shall be wired directly to the battery.

### **MAP LIGHT**

One (1) Sunnex LS-941-00 LED map light will be mounted near the officer seating position, ceiling mounted over the officer's left shoulder.

### **DRIVER SWITCH PANEL**

The driver panel to the right of the Driver's position shall include the following:

- In the upper most row on the left side it shall have two power points. Next to the power points will be the HVAC Controls, which shall include three (3) controls, the fan speed, comfort and defrost control, and temperature control. In the far-right position shall be the seat belt indicator.

- In the middle section there shall be eight (8) backlit switches, the switch on the far-right side shall be a high idle switch.
- In the bottom row there shall be six (6) switches. The two (2) switches in the far-right location shall be the dimmer switch in the second to last switch location and the wiper controls in the last switch location.

### **BLACK MOUNTING SWITCH PLATE**

A black mounting plate containing a switch panel with seven (7) switches shall be provided and incorporated in the center dash console.

### **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.

### **LOAD MANAGEMENT SYSTEM**

A load manager shall be installed on the chassis. It shall be programmed to shed loads to prevent over loading of the electrical system.

### **VEHICLE DATA RECORDER**

Apparatus shall be equipped with a Class1 “Vehicle Data Recorder (VDR) that is connected to the power train CAN (Controller Area Network) bus consisting of transmission (TCM), engine control (ECM) and anti-lock brake (ABS) modules mounted on the apparatus. The VDR will function per NFPA 1901-2009 sections 4.11 (Vehicle Data Recorder) utilizing the power train s J1939 data.

The VDR data shall be downloadable by USB cable to a computer using either Microsoft <sup>™</sup> or Apple <sup>™</sup> Operating Systems using Class 1/ O.E.M. supplied reporting software. The latest version of the software shall be available by contacting Class 1.

The apparatus shall be equipped with a Class1 Seat Belt Warning System” (SBW) that is connected to the power train CAN (Controller Area Network) bus consisting of transmission (TCM), engine control (ECM) and anti-lock brake (ABS) modules mounted on the apparatus. The SBW will function per NFPA 1901 14.1.3.10 (Seat Belt Warning) using the Class1 “Seat Belt Input Module” for seat occupied and belt status information.

The SBW system shall have the ability to use either normally open (NO) or normally closed (NC) switches (user selectable by “dip switches” at ground potential) for operation.

Commander Digital Gauge Aluminum Dash Black

### **CAB INSTRUMENTATION**

The instrumentation panel within the cab shall feature a digital display which shall include, an information center, telltale indicator lamps, control switches, alarms, and diagnostics.

The gauges shall be easy to read including.

The instrument panel shall contain the following gauges and indicators:

- A programmable speedometer to read either 0 to 100 MPH or 0 to 100 KM/H
- An amber telltale lamp indicating the Check Engine
- An amber telltale lamp indicating MIL Engine Emissions System Malfunction
- A red telltale lamp indicating Stop Engine
- A tachometer gauge with 0-3,000 RPM
- A gauge to display the engine oil pressure with high and low-level indicators and stop engine alarm
- A fuel level gauge with a low fuel indicator and alarm
- An LED bar displaying 4 stages of the level for the Diesel Exhaust Fluid (DEF) with a refill indicator (when applicable)
- A voltage gauge with low voltage indicator
- A water temperature gauge with high water temp indicator and alarm
- A primary air PSI gauge including low air and high air warning displays
- A secondary air PSI gauge with low and high air warning indication

A diagnostic display, located in the lower left hand side of the screen shall include digital readouts for the following:

- 1 Odometer
- 2 Transmission oil temp
- 3 Engine oil temp
- 4 Speedometer
- 5 Engine hours
- 6 Engine and transmission code
- 7 Exhaust temp
- 8 Engine coolant temp

- 9 Engine oil PSI
- 10 Turbo boost PSI
- 11 Primary air pressure
- 12 Secondary air pressure
- 13 Engine load %
- 14 Engine torque
- 15 Battery volts
- 16 Fuel level %
- 17 Vehicle speed
- 18 RPM
- 19 DEF level (when applicable)
- 20 Instant fuel economy
- 21 Average fuel economy
- 22 Engine hours
- 23 Capable to record three trips, each shall include:
  - Trip distance
  - Fuel economy
  - Fuel used
  - Idle fuel used
- 24 The screen shall also provide diagnostic capability

To promote safety, the following telltale indicator lamps will be integral to the digital display. The indicator lamps will be "dead-front" design that is only visible when active. The colored indicator lights will have descriptive text or symbols. The following indicator lamps shall be located on the Telltale panel:

BLUE Indicator Lights

- 25 High Beam Headlight

GREEN Indicator Lights

- 26 Right Turn Indicator
- 27 Left Turn Indicator
- 28 Battery On (Always On with master switch)

YELLOW Indicator Lights

- 29 Particle Filter Regeneration (DPF)
- 30 Regeneration Inhibit (Switch Engaged)
- 31 Air Intake Restriction
- 32 High Exhaust System Temperature (HEST)
- 33 Wait to Start (when applicable)
- 34 ATC (Automatic Traction Control) (when applicable)
- 35 Water in Fuel Air Bag Warning (when applicable)
- 36 ABS

#### RED Indicator Lights

- 37 Low Engine Coolant Level
- 38 Air Bag Warning (when applicable)
- 39 Check Transmission
- 40 High Transmission Temperature
- 41 Parking Brake

### **ALARMS**

Audible steady tone warning alarm: A steady audible tone alarm will be provided whenever a warning message is present.

Alarm silence: Any active audible alarm will be able to be silenced with a button on the screen, except the low air pressure alarm will not silence until air pressure is above 70 psi.

### **INDICATOR LAMP AND ALARM PROVE-OUT**

Telltale indicators and alarms will perform prove-out at initial power-up to ensure proper performance.

### **DIAGNOSTIC PANEL**

A diagnostic panel shall allow diagnostic tools such as computers to connect to various vehicle systems for improved trouble shooting providing a lower cost of ownership.

The diagnostic panel shall include:

- 42 Engine diagnostic port
- 43 V-Mux USB diagnostic port (when applicable)
- 44 Diesel particulate filter regeneration switch (when applicable)
- 45 Diesel particulate filter regeneration inhibit switch (when applicable)

The enclosed diagnostic panel, accessible through the HVAC access panel shall include:

46 Transmission diagnostic port

47 ABS diagnostic port

SRS diagnostic port (when applicable)

## 6 Battery System

### **BATTERIES**

The single start electrical system shall include six (6) group 31 1000 CCA batteries.

The batteries shall feature:

- A 200 minute reserve capacity
- 4/0 dual path starter cables per SAE J541
- Heat shrink and sealant encapsulated ends on the cables
- Maintenance free

### **BATTERY COMPARTMENTS**

A well ventilated, hot dipped galvanized battery storage compartment shall house the batteries on the officer and driver side of the chassis and shall be located so as to offer easy access to the batteries when the cab is tilted.

The each battery compartment shall feature:

- Hot dipped galvanized 3/16" steel construction.
- A complete floor of heavy duty, industrial grade, recycled Turtle Tile brand interlocking matting
- A double hinged hot dipped galvanized steel cover with two (2) rubber latches shall be utilized providing easy access to the batteries. No tools shall be required to gain access to the batteries.
- When in the open position, the double hinged door shall be flush with the bottom of the battery compartment, allowing for a sweep out style floor and removal of the batteries when necessary, without the inference of a lower lip. No Exceptions.

### **BATTERY CABLES**

The starting system shall include cables which shall be protected by a 275 degree F, minimum high temperature flame retardant loom.

The cables shall be in a loom to help keep out dirt, dust and debris.

## **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.

## **IGNITION**

A master battery system with a keyless start ignition system shall be provided. Each system shall be controlled by a marine grade two position switch, of which shall be mounted on the left side of the steering wheel adjacent to the driver's knee.

A push button type starter button shall be provided on the driver dash to the left of the steering wheel.

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

## **POWER & GROUND STUD**

An electrical distribution panel shall include two (2) power studs. The studs shall be a minimum of 1/4" 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) 1/4" ground stud.

## **GROUND LIGHTS**

Each door shall include an Amdor H2O LED 20.00 inch AY-9500-020 white ground light mounted to the underside of the cab step below each door.

## **GROUND LIGHT ACTIVATION**

The ground lights shall activate with a cab switch, when the park brake is engaged and when either the front or rear side doors is open, the respective ground light shall activate.

## **CAB STEP LIGHTING**

One (1) LED light shall be mounted to the riser of the middle cab step, a total of eight (8) step lights for the cab, in accordance with NFPA.

Each light shall include a polycarbonate lens and shall be contained in a housing which is vibration welded with a bulb which shall be shock mounted. Each step light shall not be any larger than 3" in diameter.

### **STEP LIGHT ACTIVATION**

The step lighting shall be activated by opening any of the cab doors on the respective side.

### **INTERIOR DOOR WARNING LIGHTS**

The interior of each door shall include one (1) Whelen red LED warning light with chrome flange located on the door panel. Each light shall activate with a flashing pattern when the door is in the open position to serve as a warning to oncoming traffic.

### **DOOR JAMB WARNING LIGHTS**

### **ENGINE COMPARTMENT LIGHTING**

Two (2) LED lights shall be mounted to the engine compartment in such a fashion as to provide as much light as possible to the engine compartment area. The engine compartment lighting shall activate with the tilting of the cab.

### **INTERIOR OVERHEAD CAB LED LIGHTING**

Each cab door shall include a dual red and white LED lamp. There shall be one (1) light centered over each of the Driver and Officer's seat and one centered over each crew door.

The clear lamp shall illuminate with the opening of each respective door with both the red and clear portions of the lamp activated by individual lighted switches on each lamp.

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

The front headliner of the cab shall include a flashing red Whelen round LED light with a red lens clearly labeled "Do Not Move Apparatus".

The flashing red light shall be 3.00-inches in diameter and shall be located centered left to right for greatest visibility.

The light 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.

NFPA requires red light. NFPA 1901.13.11.1

### **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.

## HAAS Alert System

### **HAAS ALERT / HA-5**

#### R2V (Responder-to-Vehicle) with HAAS ALERT R2R (Responder-to-Responder) Capability

HAAS Alert Model Number “HA-5” shall be provided.

The device shall: be constructed of high strength, impact resistant, RoHS compliant ASA Plastic; have IP65 ingress protection; include a cellular modem that connects to commercially available cellular networks to transmit and receive data to/from the HAAS Alert Safety Cloud™ and include a cellular network data plan that shall; send vehicle GPS location, speed, course, acceleration, and emergency lights status (e.g., “on” or “off”) to the HAAS Alert Safety Cloud every two (2) seconds while the vehicle is moving with e-master activated; send changes in the emergency lights status to the HAAS Alert Safety Cloud; be connected to the E-Master or emergency lights master via a minimum of 22-gauge wire; be connected to the vehicle’s main battery via a minimum of 20-gauge wire so that it receives constant power; be connected to the vehicle’s ground via a minimum of 20-gauge wire; have a parasitic shut off that turns off the device when the vehicle’s battery voltage falls below 12V; be mounted inside the cab on the dashboard, within 10 feet of the officer’s seat and with a clear view of the sky. The device shall be upgradeable to other communication technologies such as, at minimum; 5G, 5.9 band, and FirstNet.

The device shall utilize the HAAS Alert Safety Cloud to send digital R2V (Responder-to-Vehicle) alerts to nearby civilian drivers via in-dash infotainment and IVI (In-vehicle Infotainment) units, Waze and other popular consumer navigation applications when the vehicle is en-route with emergency lights engaged; utilize the HAAS Alert Safety Cloud to send digital R2V alerts to nearby civilian drivers via in-dash infotainment and IVI (In-vehicle Infotainment) units, Waze and other popular consumer navigation applications when the vehicle is on-scene with emergency lights engaged; has the ability to utilize the HAAS Alert Safety Cloud to receive digital R2R (Responder-to-Responder) alerts when the vehicle is en-route with emergency lights engaged and other responding emergency vehicles are in close proximity; have a port that connects to a compatible peripheral device to communicate R2R alerts to vehicle passengers. The device shall be able to communicate across all manufacturer brands.

The device shall have a companion, password-protected, web-based dashboard that provides authorized users with a map-based visualization of real-time vehicle location, emergency response status (i.e., “responding”, “on-scene”, “ready”, “offline”) with the ability for expanded attribution, vehicle speed and course, vehicle time-to-scene information, and vehicle time-on-scene information.

Dimensions – Length, Width, Height (Inches): 5.4” x 2.7” x 1.3”

Input Voltage - Power: 12.5V to 15V

Input Voltage - Lights Indicator: 12V to 15V  
Amperage: 120 mA peak draw  
Operating Temperature Range: -40°C to 85°C  
Weight (Ounces): 7 oz.

HAAS - 5 Year Subscription

Camera System P2P

Camera System - Black Side Cameras

### **REAR & SIDE FACING CAMERA**

A rear facing black box style rearview camera shall be installed on the rear of the vehicle. There shall also be a teardrop style rearview camera mounted to the Officer side of the vehicle. The rear facing camera and microphone shall activate when the vehicle transmission is shifted to reverse; and the side camera shall activate with the corresponding turn signal. The image shall be viewed on a monitor. The side camera housing shall be black in color.

The rear facing camera shall feature automatic heating when the temperature is below 10 degrees Fahrenheit, and 150-degree lens. No Exception.

### **CAMERA MONITOR MOUNT**

The drivers monitor for the camera system will be mounted on the dash.

360° Camera System

### **BATTERY CHARGER**

One (1) Blue Sea model #7532, 40 amp fully automatic high output battery charger shall be wired to the 12-volt battery system. The charger unit shall be mounted in a clean dry area and will be accessible for service and/or maintenance. The charger shall have a Blue Sea EV 7517 indicator attached to the unit. The charger shall have a manufacturer's 5-year warranty. No Exception.

### **CHARGER LOCATION**

The battery charger will be mounted under the Forward-facing Seat box.

## **EJECTION UNIT**

A Blue Sea 7851 Auto Eject 20-amp 120-volt shore power assembly, cover, motor input wire, power cord, and plug shall be installed. The 12-volt motor shall eject the shore power cord away from vehicle path upon sensing engine start; after ejection, the weatherproof cover snaps into position over inlet. The unit shall sequence energizing of an Auto Eject, eliminating terminal arching when connecting and disconnecting power cord.

The unit shall have a waterproof back enclosure with watertight cable fittings, which protect mechanism from road contamination.

There shall be a 20-amp Sure Eject auto eject with a yellow cover supplied

## **SHORELINE LOCATION**

The shoreline shall be located in the driver's front stepwell.

## **Indicator Location Drivers Step Well**

The indicator shall be located in the drivers step well.

## **GREASE SPLATTER SHIELDS**

Splatter shields shall be provided above each driveline u-joint to keep excess grease off the underside of the apparatus and components.



### **NFPA SPECIAL SERVICE EQUIPMENT ALLOWANCE**

In compliance with NFPA #1901 standards, the apparatus shall be engineered to provide an allow of 10000 pounds of fire department provided loose equipment.

### **ADDITIONAL NFPA EQUIPMENT ALLOWANCE**

The apparatus shall be engineered to provide an allow of the specified pounds of fire department provided loose equipment plus an additional 5000# of equipment.

### **CONTRACT CHANGE NOTICE**

The quoted delivery time is based upon our receipt of the specified materials required to produce the apparatus in a timely manner. "Delivery" means the date company is prepared to make physical possession of vehicle available to customer.

The Company shall not be responsible nor deemed to be in default on account of delays in performance due to causes which are beyond the Company's control which make the Company's performance impracticable, including but not limited to civil wars, insurrections, strikes, riots, fires, storms, floods, other acts of nature, explosions, earthquakes, accidents, any act of government, delays in transportation, inability to obtain necessary labor supplies or manufacturing facilities, allocation regulations or orders affecting materials, equipment, facilities or completed products, failure to obtain any required license or certificates, acts of God or the public enemy or terrorism, failure of transportation, epidemics, quarantine restrictions, failure of vendors (due to causes similar to those within the scope of this clause) to perform their contracts or labor troubles causing cessation, slowdown, or interruption of work.

After execution and acceptance of this Purchase Process, the Buyer may request that the Company incorporate a change to the Products or the Specifications for the Products by delivering a Change Order to the Company; provided, however, that any such Change Order must be in writing and include a description of the proposed change sufficient to permit the Company to evaluate the feasibility of such Change Order. Within seven (7) working days of receipt of a Change Order, the Company will inform the Buyer in writing of the feasibility of the Change Order, the earliest possible implementation date for the Change Order, of any increase or decrease in the Purchase Price resulting from such Change Order, and of any effect on production scheduling or delivery resulting from such Change Order. The Company shall not be liable to the Buyer for any delay in performance or delivery arising from any such Change Order. Purchase Price may be modified only by

mutual written agreement of the Parties because of changes to the Apparatus required or requested by the Buyer during the construction process pursuant to Appendix C, Change Order Policy. Any changes in the Purchase Price resulting from changes to the Apparatus required or requested by the Buyer during the construction process shall be stated in the Change Order signed by both parties. Additional Changes: If various state or federal regulatory agencies (e.g. NFPA, DOT, EPA) require changes to the specification and/or the product that result in a cost increase to comply therewith this cost will be added to the Purchase Price to be paid by the customer.

### **FINANCIAL STABILITY SPECIFICATIONS**

With high-profile instances of fire apparatus manufacturers encountering financial difficulties, it is imperative that fire departments be diligent in evaluating the financial position of the companies they solicit to build on their emergency response vehicles. A contract entered into with a company on shaky ground is a dangerous prospect, since conducting business with a manufacturer in such condition could open the department to monumental problems.

Take, for instance, the growing theme of manufacturers *requiring* as opposed to *offering* pre-payment and progressive payment options with a corresponding discount off the price of a vehicle. Such offers are made with an ulterior motive in mind, as it can be generally inferred that manufacturers requiring pre-payments and progressive payments do so because they need your cash *today* to fund production of other vehicles already in the backlog.

Should problems arise, as has been the case in situations too numerous to mention, your department risks losing any down payments already made or even the entire cost of a piece of equipment should certain pre-pay discount situations go awry.

While pre-payment discounts may be enticing, it is important to know just how stable the manufacturer seeking your funds is before you make that commitment. If you enter into one of these agreements and the manufacturer hits a rough patch, it is you that will be hurting, because your funds may not be recoverable. However, if you enter into a contract with a financially sound manufacturer, you will reap all of the benefits of a well-built truck at a lower cost. You may equally, by taking advantage of the time-value of money, be able to afford more truck than initially thought, because funds saved by leveraging pre-payment options could allow you get some added features that you might not necessarily have been able to afford.

With this in mind, it must be noted that Rosenbauer is a company with rock-solid financial stability. This is a statement not made lightly, as we can prove it to you. We can provide language that you can insert into your bid specifications that stipulates that in order for bids to be accepted by a fire department, the company bidding must meet several fiscal criteria.

The first criteria call for the successful bidder to meet a debt-to-equity ratio not exceeding a 2.0 rating. Rosenbauer presently stands at a 1.51 rating, which is well-below the accepted rating. This low number results

from Rosenbauer owning more assets with a marginal debt service. This means we are not using lenders to fund our operations, nor our growth.

The second requirement is that the debt coverage ratio of the successful body builder exceeds a 100 rating. The higher the number, the better able a company is to meet its payment obligations with banks and creditors. Rosenbauer's number is at 279.6, which is nearly three times the required amount. The higher the debt coverage ratio, the easily and more fluidly a company is positioned to pay its monthly obligations and operating costs.

The third criteria require that the equity ratio of the successful bidder must exceed .30 rating. A higher equity ratio indicates that the body builder has increased flexibility to meet its financial obligations which translates into greater financial stability. Rosenbauer currently has an equity ratio of .387 which is well above the accepted rating and an excellent indicator of financial strength.

When exploring and evaluating various manufacturers to consider for building your apparatus, there is little doubt you will find one that stands on as firmly a financial ground as Rosenbauer. While others are experiencing stressful issues that raise doubts as to the company's long-term viability, Rosenbauer continues to demonstrate a strengthening of its financial position in the apparatus manufacturing industry. Because Rosenbauer meets and exceeds all the above-stated financial bid requirements, we are best positioned to ensure customers of a strong relationship with the company, which cannot be claimed by most of our competitors in this volatile market.

The Rosenbauer America Dun and Bradstreet number is 02-447-3584. To acquire a Dun and Bradstreet report, telephone them at 1-800-234-3867 (in Canada 800-463-6362) or visit their web site address at [www.dnb.com](http://www.dnb.com). Dun and Bradstreet is nationally-recognized, independent financial analysis company.

### **CENTER OF GRAVITY**

The apparatus, prior to acceptance, will be required to meet the vehicle stability of the applicable NFPA Automotive Fire Apparatus Standard.

A calculated center of gravity shall be provided. The calculated or measured center of gravity (CG) shall be no higher than 80-percent of the rear axle track width.

### **PRE-CONSTRUCTION CONFERENCE (AT MANUFACTURER)**

A pre-construction conference shall be conducted at the apparatus manufacturer's factory at which time all final designs and equipment mounting locations will be approved, prior to any sheet metal being cut. A factory employed design engineer shall be present during the pre-construction conference to answer any design, and/or engineering questions relating to the layout of the apparatus. Air travel (for distances over 250 miles), meals, and lodging expenses shall be included. BIDDER SHALL INDICATE INTENTION TO PROVIDE THE REQUIRED PRE-CONSTRUCTION CONFERENCE IN THE PROPOSAL PACKET.

## **INSPECTION TRIPS**

Inspection trip(s) for Fire Department personnel shall be made to the facility during the course of construction of the apparatus. Successful bidder shall consult with Fire Department committee chairperson as to the proper timing of the inspection trip(s). Air travel (for distances over 250 miles), meals, and lodging expenses shall be included. BIDDER SHALL INDICATE INTENTION TO PROVIDE THE REQUIRED INSPECTION TRIP(S) IN THE PROPOSAL PACKET.

## **SINGLE SOURCE MANUFACTURER**

Rosenbauer is a “Single Source” manufacturer meeting the requirements specified by your bid specifications. Rosenbauer maintains an integrated approach to all aspects of manufacturing including, but not limited to, the chassis and cab, engineered assemblies, apparatus body, pump module, fabricated components, aerial devices, and all related appurtenants. Rosenbauer and our subsidiaries take sole responsibility of each apparatus we manufacture, guaranteeing parts and service availability within your specified time frames.

Final assembly of our proposed apparatus takes place on our premises. The chassis and aerial device are engineered and manufactured within wholly or partially owned Rosenbauer facilities eliminating split warranty responsibility.

## **ONE CALL SERVICE RESPONSE**

Rosenbauer assumes the total responsibility for warranty services for each apparatus we build. These services include, but are not limited to, all components used in the manufacture of the apparatus, the specified chassis, cab, and body. A designated factory staff is employed to maintain “One Call” warranty and repair service coverage. Many members of our nationwide dealer network also provide and maintain service facilities and on-site service response capabilities. Additionally, contracted service centers are strategically placed across the nation to provide immediate response to any issue or situation that may arise with any of our apparatus.

In addition, (*Huntington Beach Fire*) may elect to perform warranty services and repairs in (Huntington Beach Fire Department’s) own service facility while this vehicle is within a warranty coverage period, Rosenbauer will provide all necessary support and consideration. We stock a full line of support parts at our factory, which can be expedited to your location if necessary.

## **DELIVERED UNITS**

The vehicle manufacturer shall provide a listing of ten (10) recently delivered units of similar design. The list shall include a contact person and phone number who represents the purchaser.

## **ROSENBAUER MINNESOTA COMPANY OVERVIEW**

Please allow us to share with you a brief summary of the history of Rosenbauer Minnesota, formally General Safety Equipment, LLC.

Rosenbauer Minnesota, LLC is located in Wyoming, MN, where it manufactures a complete line of fire apparatus including pumpers, tankers, aerials, rescue units, ARFF, etc. The company operates in modern facilities consisting of 60,000 sq.ft., which features computer controlled fabricating equipment, down-draft paint booths, and CAD system. Production currently averages eight (8) units per month.

Rosenbauer Minnesota was founded in 1929 in the town of Lindstrom, Minnesota. From its inception, Rosenbauer Minnesota was known for building high quality, customized fire apparatus.

During the 1940s and 50s, Rosenbauer Minnesota manufactured over 600 vehicles for the U.S. Armed Forces, earning our company the Army-Navy "E" Award, the highest recognition available to a civilian company.

Over the years, Rosenbauer Minnesota has developed and introduced many innovative concepts. Our most recent developments include an apparatus body so unique it has been awarded six design patents, and a newly designed airport crash truck (ARFF) that is the most advanced fire fighting vehicle of its kind in the world.

Of all our accomplishments, the one we are most proud of is the close relationship maintained with our customers. We have many customers who have been using our apparatus exclusively for over 50 years. In fact, over 80% of our orders come from "repeat" customers. We encourage you to discuss the quality and service of our apparatus with any one of our over 3,000 customers.

In 1995, Rosenbauer Minnesota formed a partnership with Rosenbauer International, the largest and most respected fire apparatus company in the world. As a result of this partnership, American fire departments now have access to fire fighting technologies from throughout the world. As the partnership with Rosenbauer International progressed, we felt it was important to take advantage of economies of scale, yet be aligned with an organization that is 100% committed to the fire service. Thus, in 1998 Rosenbauer Minnesota of Wyoming, Minnesota and Rosenbauer International of Leonding, Austria partnered with Rosenbauer South Dakota, LLC to become Rosenbauer America.

Thank you for considering a Rosenbauer unit. We are sure that you will be more than pleased with a quality apparatus from Rosenbauer.

Feel free to contact us with any questions or concerns you may have regarding our proposal for fire apparatus.

### **DELIVERY**

Final delivery of the completed apparatus shall be made F.O.B. Fire Department Headquarters.

### **DEMONSTRATION**

Fire Department personnel shall be properly instructed as to the proper use of the entire apparatus including, but not limited to, chassis, fire pump system, the apparatus and all equipment. The demonstration 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 demonstration specialist shall remain at the Fire Department for a sufficient amount of time to provide thorough instructions to all personnel, or as instructed by Chief of the Department. All meals, motel and travel costs shall be the responsibility of the successful bidder.

### **LOCAL SALES AND SERVICE VEHICLE SUPPORT**

The manufacturer and local sales/service facility shall provide information pertaining to authorized local sales representative of the apparatus. The representative is capable of repairing the apparatus and has a service center located within \_\_\_\_\_ miles of the purchaser. This facility provides complete repair, maintenance and service of the apparatus.

This dealer shall have in their employ, qualified full time employee(s) who are capable and certified of repairing the apparatus. The local service dealer shall make available their service center for inspection tour at the convenience of the fire officials and or their designates.

1. Service Center Name: Velocity Truck Centers
2. Location: Multiple Locations
3. Telephone:
4. Fax:
5. Square Footage of Service Center: we have multiple service centers in the area
6. Is the Service Center Enclosed and Heated?:      YES XX      NO \_\_\_\_\_
7. Number of Service Technicians: Over 40
8. Service Shop and Sources to Handle the Following?:
  - A) Body Repairs Including Welding      YES XX      NO \_\_\_\_\_
  - B) Minor Paint Work      YES XX      NO \_\_\_\_\_
  - C) Chassis Repairs and Service      YES XX      NO \_\_\_\_\_
  - D) Major Component Repairs & Service      YES XX      NO \_\_\_\_\_

E) Electric Repairs and Service

YES XX

NO \_\_\_\_\_

**TOLL FREE SERVICE NUMBER**

Due to the nature of emergency fire and rescue services being subject to respond at any time of the day or night, the municipality requires that this also applies to the selling Dealer and the manufacturer.

On a typical day to day basis the request for service is expected to be requested from the selling Dealer. However, if the Dealer's service center is not readily available the municipality needs assurance that the OEM (Original Equipment Manufacturer) can be reached for assistance.

With that said, each bidder shall supply a toll-free telephone number that provides OEM emergency service assistance. This number, when called, shall be directed to a call center, then to an OEM service technician, 24 hours a day, 365 days a year.

There shall be a minimum of ten (10) OEM service technicians at any time in the que to answer an incoming emergency service call. One of which shall be the OEM's National Service Manager.

In the interest of providing the minimum level of acceptable service for the new apparatus this shall be considered a requirement of the successful bidder/proposal.

**"ON-LINE" WARRANTY TRACKING SYSTEM**

Rosenbauer shall provide an online warranty tracking system shall be used to track all service and warranty issues.

The tracking system will show real time information on all warranty and service requests.

A user will be able to create or track the status of their service or warranty requests 24 hours a day, 7 days a week from anywhere with an internet connection.

The warranty / service tracking system shall be capable of tracking all department service issues via truck VIN or job number.

The system must provide user with instant confirmation of receipt of warranty or service request and must not require user to purchase or use proprietary software.

**BODY WARRANTY**

We warrant each new motorized fire apparatus manufactured by ROSENBAUER AMERICA, LLC for a period of ONE YEAR from the date of delivery, except for chassis and other components noted herein.

Under this warranty we agree to furnish any parts to replace those that have failed due to defective material or workmanship where there is no indication of abuse, neglect, unusual or other than normal service providing that such parts are, at the option of ROSENBAUER AMERICA, LLC, made available for our inspection at our request, returned to our factory or other location designated by us with transportation prepaid within thirty days after the date of failure or within one year from the date of delivery of the apparatus to the original purchaser, whichever occurs first, and inspection indicates the failure was attributed to defective material or workmanship.

The warranty on the chassis and chassis supplied components, storage batteries, generators, electrical lamps and other devices subject to deterioration is limited to the warranty of the manufacturer thereof and adjustments for the same are to be made directly with the manufacturer by the customer.

This warranty will not apply to any fire apparatus that has been repaired or altered outside our factory in any way, which in our opinion might affect its stability or reliability.

This warranty shall not apply to those items that are usually considered normal maintenance and upkeep services: including, but not limited to, normal lubrication or proper adjustment of minor auxiliary pumps or reels.

This warranty is in lieu of all other warranties, expressed or implied, and all other obligations or liabilities on our part. We neither assume nor authorize any person to assume for us any liability in connection with the sales of our apparatus unless made in writing by ROSENBAUER AMERICA, LLC.

#### **EXT MODULAR BODY WARRANTY - LIFE-TIME**

Rosenbauer America, LLC warrants to the original purchaser that the all aluminum body, fabricated by Rosenbauer America, LLC, under normal use and with reasonable maintenance, be structurally sound and will retain structural integrity for the life of the vehicle. Warranty coverage is transferable to second owner, if applicable, with proper notification made to Rosenbauer America, LLC.

This warranty does not apply to the following items that are covered by a separate warranty: paint finish, hardware, moldings, and other accessories attached to this body. In addition, this warranty does not apply to any part or accessory manufactured by others and attached to this body.

ROSENBAUER AMERICA, LLC MAKES NO OTHER WARRANTY, EXPRESS OR IMPLIED, WITH RESPECT TO THE ALUMINUM BODY AND ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE AND HEREBY DISCLAIMED.

Rosenbauer America, LLC will replace without charge, repair or make a fair allowance for any defect in material or workmanship demonstrated to its satisfaction to have existed at the time of delivery or not due to misuse, negligence, or accident. If Rosenbauer America, LLC elects to repair this body, the extent of such repair shall be determined solely by Rosenbauer America, LLC, and shall be performed solely at the Rosenbauer America, LLC factory, or at an approved facility. The expense of any transportation to or from such repair facility shall be borne by the purchaser and is not an item covered under this warranty.

Rosenbauer America, LLC will not be liable for damages and under no circumstances will its liability exceed the price for a defective body. The remedies set forth herein are exclusive and in substitution for all other remedies to which the purchaser would otherwise be entitled.

Rosenbauer America, LLC will be given a reasonable opportunity to investigate all claims. The purchaser must commence any action arising out of, based upon or relating to agreement or the breach hereof, within twelve months from the date the cause of the action occurred.

Note: Surety bond, if required, will cover standard one year warranty period only and will not cover any extended warranties allowed by seller or other component manufacturers.

### **ALUMINUM SUBFRAME WARRANTY**

Subject to the provisions, limitations and conditions set forth in this warranty, Rosenbauer America, LLC (hereby referred to as "seller"), hereby warrants to each original purchaser that each new aluminum body subframe (exclusive of paint finish and hardware) is structurally sound and free of all structural defects of both material and workmanship and further warrants that it will maintain such structural integrity for the lifetime of the body. Warranty coverage is transferable to second owner, if applicable, with proper notification made to Rosenbauer America, LLC.

This warranty is conditioned upon normal use and reasonable maintenance of such subframe; prompt written notice of all defects to seller or one of the seller's then authorized dealers in the area; no repair or additions there to except by seller or authorized by it; said defect not resulting from misuse, negligence, accident, remount, overloading beyond applicable weight rating by customer or third parties. If any such conditions are not complied with, this warranty shall become void and unenforceable.

Should repairs become necessary under the terms of the warranty, the extent of that repair shall be determined solely by the seller and shall be performed solely at Rosenbauer America, LLC or a repair facility designated by the seller. The expense of any transportation to or from such repair facility shall be that of the purchaser and is not an item covered by this warranty.

Seller reserves the unrestricted right at any time from time to time to make changes in the design of and/or improvements on its products without thereby imposing any obligation on itself to make corresponding changes or improvements in or on its products theretofore manufactured.

EXCLUSIONS AND LIMITATIONS: THIS MANUFACTURER'S WARRANTY IS PROVIDED IN PLACE OF ANY AND ALL OTHER REPRESENTATIONS OR IMPLIED WARRANTIES. NO PERSON IS AUTHORIZED TO MAKE ANY REPRESENTATIONS OR WARRANTY ON BEHALF OF ROSENBAUER AMERICA, LLC OR ANY OF ITS DISTRIBUTORS OTHER THAN SET FORTH IN THIS MANUFACTURER'S WARRANTY. YOUR RIGHT TO SERVICE AND REPLACEMENT OF PARTS ON THE TERMS EXPRESSLY SET FORTH HERIN ARE YOUR EXCLUSIVE REMEDIES AND NEITHER

THE MANUFACTURER NOR ANY OF ITS DISTRIBUTORS SHALL BE LIABLE FOR DAMAGES, WHETHER ORDINARY, INCIDENTAL OR CONSEQUENTIAL.

Note: Surety bond, if required, will cover standard one year warranty period only and will not cover any extended warranties allowed by seller or other component manufacturers.

### **PAINT WARRANTY TEN YEAR**

The AkzoNobel paint performance guarantee will cover the areas of the vehicle finished with the specified product for a period of TEN (10) years beginning the day the vehicle is delivered to the purchaser.

The full apparatus body, manufactured and painted by Rosenbauer America, LLC, shall be covered for the following paint failures as outlined on the guarantee certificate:

- Peeling or delaminating of the topcoat and/or other layers of paint.
- Cracking or checking.
- Loss of gloss caused by cracking, checking, or hazing.
- Any paint failure caused by defective AkzoNobel finishes, which are covered by this guarantee.

All guarantee exclusions, limitations, and methods of claims are covered in the full certificate provided to the original purchaser.

Note: Surety bond, if required, will cover standard one year warranty period only and will not cover any extended warranties allowed by seller or other component manufacturers.

### **LETTERING WARRANTY**

Rosenbauer America, LLC warrants to the original purchaser only, that the lettering and striping, installed by Rosenbauer America, LLC, will remain free from defects for a period of one (1) year under normal use.

Rosenbauer America, LLC will replace without charge, repair or make a fair allowance for any defect in material or workmanship demonstrated to its satisfaction to have existed at the time of delivery or not due to misuse, negligence, or accident. If Rosenbauer America, LLC elects to repair this item, the extent of such repair shall be determined solely by Rosenbauer America, LLC, and shall be performed solely at the Rosenbauer America, LLC factory, or at an approved facility. The expense of any transportation to or from such repair facility shall be borne by the purchaser and is not an item covered under this warranty.

### **BODY MANUAL - PRINTED WITH DIGITAL COPY**

Rosenbauer shall provide with the vehicle upon delivery, two (2) complete delivery manuals. These manuals shall be in notebook type binders, with reference tabs for each section of the vehicle. In addition to the printed material, a digital copy shall be provided.

Within each section shall be:

- Individual component manufacturer instruction and parts manuals
- Warranty forms for the body
- Warranty forms for all major components
- Warranty instructions and format to be used in compliance with warranty obligations
- Wiring diagrams
- Installation instruction and drawings for major parts
- Visual graphics and electronic photos for the installation of major parts
- Necessary normal routine service forms, publications and components of the body portion of the apparatus
- Technical publications for training and instruction on major body components
- Warning and safety related notices for personnel protection

Cab and chassis manuals on parts, service and maintenance shall be provided

### **ROSENBAUER CUSTOM CHASSIS**

A Rosenbauer Commander custom fire truck chassis shall be furnished with the following apparatus body and equipment. See attached specifications for exact chassis configuration.

### **ELECTRONIC SIREN**

One (1) Federal Signal Pathfinder electronic siren, model #PF200R, shall be mounted in the cab console. The Pathfinder shall consist of a remote-control head and a separate amplifier and relay unit. This unit features a four (4) position slide switch for progressive response modes, seven (7) position rotary switch, nine (9) Red & Blue LED backlit buttons, seven (7) programmable inputs, twelve (12) programmable outputs, integrated dual siren tone capability, Convergence Network lightbar control, integrated Convergence Network SignalMaster capability with indicator lights on control head, library of digital siren tones, and shall have an RJ11 type PA microphone plugged into the remote head.

The Pathfinder siren features a 200-watt output requiring two (2) ES100C 100W speakers for dual tone capability.

All emergency lighting, SignalMaster, siren, and body mounted scene lights shall be wired into the Pathfinder control box. The Pathfinder siren will be fitted with a public address system in conjunction with the siren function. A noise cancelling microphone shall be plugged into the control head. The Pathfinder control box will

be installed within the custom console. The emergency lighting as it is reflected in the Pathfinder siren shall be activated as follows:

Slide position 1 - all upper and lower red warning lights

Slide position 2 - all upper and lower red warning lights, and white traffic clearing

Slide position 3 - all upper and lower red warning lights, white traffic clearing and siren.

All the red warning lights will be controlled by the slide in the Pathfinder siren unit and be activated by position 1. The white lights mounted in the lightbar, or in the grille, will be activated by position 2 of the Pathfinder slide switch. The white lights will also feature a cut-out switch (White Light Disable) within the Pathfinder siren to allow for deactivation when operating in position 3 in case of fog or snow to minimize reflection. The white lights shall also deactivate with the application of an air park brake or Park transmission setting. All warning lights and the siren shall activate with position 3 of the slide switch. The optional TAP II feature allows the driver to change tone via the vehicles horn ring.

### **SPEAKER**

Two (2) Federal Signal DynaMax 100-watt speaker, Model #ES100C, shall be installed. The speaker shall feature a Neodymium driver and a high strength composite housing that is chemical resistant and maintains rigidity at high temperatures.

### **SPEAKER**

Two (2) stainless steel grille shall be installed on the speaker.

### **SPEAKER LOCATION**

The siren speaker shall be installed on the apparatus bumper extension, as determined by the body manufacturer.

### **SIREN CONTROL**

One (1) electronic foot switch shall be provided on the driver's side of the cab floor to activate the siren.

### **FEDERAL MECHANICAL SIREN**

One (1) Federal Signal Q2B-NN mechanical siren, model Q2B-012NNSD, shall be fully recess mounted into the center of the front bumper. The grille will be outside the bumper. The "Q" siren shall feature a highly polished chrome body and grille. The siren's distinctive mechanical wail sound shall produce 123 db at 10'. The siren control switch(es) shall be installed in the cab.

### **SIREN CONTROL**

One (1) foot switch shall be provided on the driver's side of the cab floor to activate the Federal Signal Q2B siren.

### **SIREN BRAKE**

One (1) push button siren brake to silence the Federal Signal Q2B siren shall be provided on the driver's side dash.

### **LIGHTBAR**

One (1) Whelen Ultra Freedom IV fully populated light bar shall be included with the apparatus cab. The light bar shall be a model F4N7QLED and shall be mounted on the roof of the cab, towards the front, above the windshield.

The light bar shall feature:

- A 72" light bar designed for high performance
- Two (2) red Linear Super LED corner modules
- Two (2) red 400 series Linear Super LED endcap lights
- Ten (10) red 400 series Linear Super LED lights
- Two (2) white 400 series Linear Super LED lights with clear optic lenses
- Clear hard coated lenses to provide extended life/luster protection against UV & chemical stresses
- Designed in accordance with NFPA Zone A requirements

### **LIGHTBAR OPTION**

One (1) steady burn RED light shall be installed on the driver's side of the lightbar in accordance with California Title 13 requirements.

### **LIGHTBAR ACTIVATION**

The front upper light bar shall be activated through the master warning switch.

### **UPPER REAR WARNING LIGHTS**

One (1) pair of Whelen model M9 LED warning lights shall be installed, one each side on the upper rear of the apparatus body. The dimensions of the lights shall be 6-1/2" x 10-3/8".

The driver side warning light shall be a Whelen Model M9R red Super-LED™ with color lens.

The officer side warning light shall be a Whelen Model M9R red Super-LED™ with color lens.

Each light shall be mounted with a Whelen Model M9FC chrome flange.

### **UPPER SIDE FRONT WARNING LIGHTS**

One (1) pair of Whelen model M9 LED warning lights shall be installed, on the upper portion of the body side, towards the front. The dimensions of the lights shall be 6-1/2" x 10-3/8".

The driver side warning light shall be a Whelen Model M9R red Super-LED™ with color lens.

The officer side warning light shall be a Whelen Model M9R red Super-LED™ with color lens.

Each light shall be mounted with a Whelen Model M9FC chrome flange.

### **UPPER SIDE REAR WARNING LIGHTS**

One (1) pair of Whelen model M9 LED warning lights shall be installed, one each side on the upper portion of the body side, towards the rear of the body. The dimensions of the lights shall be 6-1/2" x 10-3/8".

The driver side warning light shall be a Whelen Model M9R red Super-LED™ with color lens.

The officer side warning light shall be a Whelen Model M9R red Super-LED™ with color lens.

Each light shall be mounted with a Whelen Model M9FC chrome flange.

### **UPPER WING FRONT WARNING LIGHTS**

One (1) pair of Whelen model M6 LED warning lights shall be installed, one each side one the front of the chassis cab upper wing area. The dimensions of the lights shall be 4-5/16" x 6-3/4".

The driver side warning light shall be a Whelen Model M6R red Super-LED™ with color lens.

The officer side warning light shall be a Whelen Model M6R red Super-LED™ with color lens.

Each light shall be mounted with a Whelen Model M6FC chrome flange.

### **INBOARD WARNING LIGHTS**

One (1) pair of Whelen model M6 LED warning lights shall be installed, one each side one the front of the chassis cab, in the inboard warning light position. The dimensions of the lights shall be 4-5/16" x 6-3/4".

The driver side warning light shall be a Whelen Model M6R red Super-LED™ with color lens.

The officer side warning light shall be a Whelen Model M6R red Super-LED™ with color lens.

Each light shall be mounted with a Whelen Model M6FC chrome flange.

### **INTERSECTION WARNING LIGHTS**

One (1) pair of Whelen model M6 LED warning lights shall be installed one each side of the chassis cab. The dimensions of the lights shall be 4-5/16" x 6-3/4".

The driver side warning light shall be a Whelen Model M6R red Super-LED™ with color lens.

The officer side warning light shall be a Whelen Model M6R red Super-LED™ with color lens.

Each light shall be mounted with a Whelen Model M6FC chrome flange.

### **LOWER MID-BODY WARNING LIGHTS**

One (1) pair of Whelen model M4 LED warning lights shall be installed , one each side of the apparatus, mid-body. The dimensions of the lights shall be 3-3/8" x 5-1/2".

The driver side warning light shall be a Whelen Model M4R red Super-LED™ with color lens.

The officer side warning light shall be a Whelen Model M4R red Super-LED™ with color lens.

Each light shall be mounted with a Whelen Model M4FC chrome flange.

### **LOWER REAR SIDE WARNING LIGHTS**

Two (2) pair of Whelen model M2 LED warning lights shall be installed , one each side of the apparatus, towards the rear of the body, in the rub rail. The dimensions of the lights shall be 4-1/4" x 2-11/16".

The driver side warning light shall be a Whelen Model M2WR wide-angle red Super-LED™ with color lens.

The officer side warning light shall be a Whelen Model M2WR wide-angle red Super-LED™ with color lens.

### **LOWER REAR WARNING LIGHTS**

One (1) pair of Whelen model M6 LED warning lights shall be installed, one each side on the lower rear of the apparatus body. The dimensions of the lights shall be 4-5/16" x 6-3/4".

The driver side warning light shall be a Whelen Model M6R red Super-LED™ with color lens.

The officer side warning light shall be a Whelen Model M6R red Super-LED™ with color lens.

### **LOW VOLTAGE ELECTRICAL SYSTEM SPECIFICATIONS**

The electrical system shall include all panels, electrical components, switches and relays, wiring harnesses and other electrical components. The electrical equipment installed by the apparatus manufacturer shall conform to current automotive electrical system standards, the latest Federal DOT standards, and the requirements of the applicable NFPA standards.

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

The wiring connections and terminations shall use a method that provides a positive mechanical and electrical connection and shall be installed in accordance with the device manufacturer's instructions. Electrical connections shall be with mechanical type fasteners and large rubber grommets where wiring passes through metal panels.

The wiring between the cab and body shall be joined using Deutsche type connectors or an enclosed in a terminal junction panel area. This system will permit body removal with minimal impact on the apparatus electrical system. All connections shall be crimp-type with insulated shanks to resist moisture and foreign debris

such as grease and road grime. Weather-resistant connectors shall be provided throughout to ensure the integrity of the electrical system.

Any electrical junction or terminal boxes shall be weather resistant and located away from water spray conditions. In addition, the main body junction panel shall house the automatic reset breakers and relays where required.

There shall be no exposed electrical cabling, harnesses, or terminal connections located in compartments, unless they are enclosed in a junction box or covered with a removable electrical panel. The wiring shall be secured in place and protected against heat, liquid contaminants and damage. Wiring shall be uniquely identified every three-inches (3") by color coding or permanent marking with a circuit function code and identified on a reference chart or electrical wiring schematic per requirements of applicable NFPA #1901 standards.

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

The electrical system shall include the following:

- Electrical terminals in weather exposed areas shall have a non-conductive grease or spray applied. A corrosion preventative compound shall be applicable to all terminal plugs located outside of the cab or body.
- The electrical wiring shall be harnessed or be placed in a protective loom.
- Holes made in the roof shall be caulked with silicone. Large fender washers shall be used when fastening equipment to the underside of the cab roof.
- Any electrical component that is installed in an exposed area shall be mounted in a manner that will not allow moisture to accumulate in it.
- A coil of wire must be provided behind an electrical appliance to allow them to be pulled away from mounting area for inspection and service work.
- All lights that have their sockets in a weather exposed area shall have corrosion preventative compound added to the socket terminal area.

The warning lights shall be switched in the chassis cab with labeled switches in an accessible location. Individual rocker switches shall be provided only for warning lights provided over the minimum level of warning lights in either the stationary or moving modes. All electrical equipment switches shall be mounted on a switch panel mounted in the cab convenient to the operator. The warning light switches shall be of the rocker

type. For easy nighttime operation, an integral indicator light shall be provided to indicate when the circuit is energized. All switches shall be appropriately identified as to their function.

A single warning light switch shall activate all required warning lights. This switch will allow the vehicle to respond to an emergency and "call for the right of way". When the parking brake is applied, a "blocking right of way" system shall automatically activate per requirements of the applicable NFPA standards. All "clear" warning lights shall be automatically turned off upon application of the parking brake.

### **NFPA REQUIRED TESTING OF ELECTRICAL SYSTEM**

The apparatus shall be electrically tested upon completion of the vehicle and prior to delivery. The electrical testing, certifications, and test results shall be submitted with delivery documentation per requirements of the applicable NFPA standards. The following minimum testing shall be completed by the apparatus manufacturer:

#### **1. Reserve capacity test:**

The engine shall be started and kept running until the engine and engine compartment temperatures are stabilized at normal operating temperatures and the battery system is fully charged. The engine shall be shut off and the minimum continuous electrical load shall be activated for ten (10) minutes. All electrical loads shall be turned off prior to attempting to restart the engine. The battery system shall then be capable of restarting the engine. Failure to restart the engine shall be considered a failed test.

#### **2. Alternator performance test at idle:**

The minimum continuous electrical load shall be activated with the engine running at idle speed. The engine temperature shall be stabilized at normal operating temperature. The battery system shall be tested to detect the presence of battery discharge current. The detection of battery discharge current shall be considered a test failure.

#### **3. Alternator performance test at full load:**

The total continuous electrical load shall be activated with the engine running up to the engine manufacturer's governed speed. The test duration shall be a minimum of two (2) hours. Activation of the load management system is permitted during this test. However, if an alarm sounds due to excessive battery discharge, as detected by the system requirements in the NFPA standards, or a system voltage of less than 11.7 volts dc for more than 120 seconds is present, the test has failed.

#### **4. Low voltage alarm test:**

Following the completion of the above tests, the engine shall be shut off. The total continuous electrical load shall be activated and shall continue to be applied until the excessive battery discharge alarm activates. The battery voltage shall be measured at the battery terminals. With the load still applied, a reading of less than 11.7

volts dc for a 12 volt system shall be considered a test failure. The battery system shall then be able to restart the engine. Failure to restart the engine shall be considered a test failure.

#### **NFPA REQUIRED DOCUMENTATION**

The following documentation shall be provided on delivery of the apparatus:

- a. Documentation of the electrical system performance tests required above.
- b. A written load analysis, including:
  1. The nameplate rating of the alternator.
  2. The alternator rating under the conditions.
  3. Each specified component load.
  4. Individual intermittent loads.

#### **DOOR OPEN SYSTEM**

Switches shall be installed on the right side cab doors designed to activate the door open light in the driver's area of the cab. A separate light labeled "Right Cab Doors" shall be installed in the cab. The door open light shall operate only when the parking brake is released.

#### **DOOR OPEN SYSTEM**

Switches shall be installed on the left side cab doors designed to activate the door open light in the driver's area of the cab. A separate light labeled "Left Cab Doors" shall be installed in the cab. The door open light shall operate only when the parking brake is released.

#### **DOOR OPEN SYSTEM**

Switches shall be installed on the left side body doors designed to activate the door open light in the driver's area of the cab. A separate light labeled "Left Body Doors" shall be installed in the cab. The door open light shall operate only when the parking brake is released.

#### **DOOR OPEN SYSTEM**

Switches shall be installed on the right side body doors designed to activate the door open light in the driver's area of the cab. A separate light labeled "Right Body Doors" shall be installed in the cab. The door open light shall operate only when the parking brake is released.

## **DOOR OPEN SYSTEM**

Switches shall be installed on the rear body doors designed to activate the door open light in the driver's area of the cab. A separate light labeled "Rear Body Doors" shall be installed in the cab. The door open light shall operate only when the parking brake is released.

## **DOOR OPEN SYSTEM**

Switches shall be installed on the roof compartment doors designed to activate the door open light in the driver's area of the cab. A separate light labeled "Roof Compartment Doors" shall be installed in the cab. The door open light shall operate only when the parking brake is released.

## **DOOR OPEN SYSTEM**

Switches shall be installed on the front bumper compartment doors designed to activate the door open light in the driver's area of the cab. A separate light labeled "Front Bumper Compartment Doors" shall be installed in the cab. The door open light shall operate only when the parking brake is released.

## **DOOR OPEN/HAZARD WARNING ALARM**

A door open/hazard warning alarm shall be installed. The audible alarm shall activate when an open door is detected upon release of the parking brake. The alarm shall have a distinct noise to avoid conflict with other cab mounted alarms.

## **DASH MOUNTED EMERGENCY ELECTRICAL SWITCH PANEL**

An electrical switch panel shall be designed and mounted in the cab dash area as furnished with the chassis. All switches shall be provided with backlighted snap-in legend inserts.

## **SWITCHES**

All emergency light switches shall be lighted, rocker style. Switches shall be internally lit when the switch circuit is in the on position. A plug-in identification label is to be provided and installed adjacent to each rocker switch with backlighting provided behind the label.

An internally lighted switch shall be provided and wired through a heavy-duty relay to activate power to the emergency lights. The emergency lights shall be activated by a single "MASTER SWITCH" on the electrical console.

## **BATTERY SYSTEM**

The battery system shall be supplied with the chassis.

## **MASTER ELECTRIC SWITCH**

One (1) battery disconnect switch shall be located conveniently to the driver of the apparatus. The switch shall disconnect the 12 volt power supply from the battery system.

## **SHORE POWER TRANSFER SWITCH**

One (1) 120 volt, 30 amp power transfer switch shall be installed on the apparatus. This shall allow components normally powered by the 120 volt shore power connection to be automatically powered by the on board generator upon startup of the generator.

## **AIR HORNS**

Two (2) Hadley brand E-Tone air horns shall be provided. The air horns shall be 6" in diameter and 24" long. Each horn shall feature flared ends offering a pleasing appearance.

## **AIR HORN LOCATION**

The air horns shall be located on the front bumper. One (1) shall be mounted outboard on the driver side and one (1) outboard on the officer side, so as not to interfere with any other components on the bumper.

## **ELECTRIC TRAFFIC HORN AND AIR HORN SELECTOR SWITCH**

One (1) selector switch shall be provided on the cab's dash that will allow the chassis steering wheel horn button to activate either the electric traffic horn or air horn system.

## **12 VOLT POWER SOURCE**

One (1) 12 volt power and ground connection rated at 20 amps shall be provided in an exterior compartment of the apparatus body.

The power source shall be run through the chassis master battery switch and shall be deactivated when the master switch is in the "OFF" position.

## **12 VOLT POWER SOURCE**

One (1) 12 volt power and ground connection rated at 20 amps shall be provided in an exterior compartment of the apparatus body.

The power source shall be run through the chassis master battery switch and shall be deactivated when the master switch is in the "OFF" position.

## **LIGHT MOUNTING LOCATION**

The mounting location for the specified light shall be on the front edge of the chassis cab roof.

## **LED SCENE LIGHT**

A Fire Tech FT-B-72-W brow light shall be provided and intalled below the light bar. The light shall produce 30,096 lumens and be powder coated white.

## **SCENE LIGHT SWITCHING**

One (1) scene light switch with indicator shall be installed on the cab main switch panel to control all scene light(s). The switch shall be labeled "SCENE LIGHTS".

## **SCENE LIGHT SWITCHING**

Three (3) scene light switch with indicator shall be installed on the cab main switch panel to control the front scene light(s). The switch shall be labeled "FRONT SCENE".

## **BACKUP CAMERA**

One (1) chassis supplied rear camera system shall be mounted on the rear of the vehicle. The camera component and cabling from the camera to the back of the cab shall be installed by the apparatus body manufacturer. All other components shall be installed by the chassis manufacturer.

## **PORTABLE LANTERN**

Two (2) Streamlight "Vulcan" portable handlight shall be installed. The lantern shall include a mounting bracket, with 12 volt charger wired to the battery system to allow the light to recharge when not in use.

## **HANDLIGHT INSTALLATION**

The location of the handlight installation shall be in the apparatus body. All components shall be installed as directed by the fire department.

## **INTERCOM SYSTEM**

The vehicle shall be equipped with a Sigtronics US45S intercom master station. The system comes standard with connections for up to four (4) positions plus one (1) pump panel position. Two positions plus the pump panel position will have radio transmit capability.

This system can operate with one (1) mobile radio. Connection of this system to the mobile radio is not included, unless specified.

### **INTERCOM HEADSET**

Four (4) SE-8 Under-The-Helmet-Headset shall be provided with the intercom system. The mic is always live for intercom communication. Appropriate for all positions.

### **RADIO**

Two (2) fire radio and antenna shall be supplied by the customer and installed on the apparatus, by the apparatus manufacturer. The location shall be determined by the customer. The radio shall have interface to the specified intercom system.

### **MARKER LIGHTS**

LED marker lights shall be installed on the vehicle in conformance to the Department of Transportation requirements.

### **LICENSE PLATE BRACKET**

One (1) Cast Products license plate bracket, model LP0005-1-C shall be provided at the rear of the apparatus. The bracket shall have a polished finish and LED light.

### **LICENSE PLATE BRACKET**

One (1) stainless steel license plate bracket shall be provided at the front bumper.

### **TAIL LIGHTS**

One (1) pair of Whelen M6 LED tail/brake lights shall be provided. The rectangular 4"x6" lights shall be red.

### **THIRD BRAKE LIGHT**

There shall be one (1) additional Whelen M6 LED tail/brake light provided on the rear of the apparatus. The light shall be mounted as high as practical and centered on the rear of the apparatus body. The rectangular light shall be red with color lens.

### **TURN SIGNALS**

One (1) pair of Whelen M6 LED turn signals with populated sequential chevron arrow shall be provided.

### **BACKUP LIGHTS**

One (1) pair of Whelen Series M6 LED backup lights shall be installed on the rear of the apparatus body. The dimensions shall be 4" x 6" and the lens color shall be clear.

#### **FOUR LIGHT HOUSING**

One (1) pair of chrome plated tail light housings shall be supplied. Each housing shall be designed to hold four (4) Whelen M6 rear lights located at the lower rear corners of the body.

#### **MID BODY LED TURN SIGNALS**

One (1) pair of mid body LED turn signals shall be provided. The location of the turn lights shall be at mid-body near the rear wheel axle.

#### **GROUND LIGHTS - MID BODY**

There shall be two (2) AMDOR Luma-Bar H20 LED lights (approx 12") mounted to the underside of the rub rail, mid body. One (1) light shall be located on the driver's side and one (1) light located on the officer's side of the apparatus.

The light shall have a polycarbonate lens to eliminate breakage from impact and eliminate heat buildup.

The ground lighting shall be activated when the parking brake is set.

#### **GROUND LIGHTS - REAR STEP**

There shall be two (2) AMDOR Luma-Bar H20 LED, model AY-9500-12, lights (approx 12") mounted under the rear step. One (1) light shall be located on the driver's side and one (1) light located on the officer's side of the apparatus.

The light shall have a polycarbonate lens to eliminate breakage from impact and eliminate heat buildup.

The ground lighting shall be activated when the parking brake is set.

#### **GROUND LIGHTS**

There shall be two (2) AMDOR Luma-Bar H20 LED, model AY-9500-12 lights (approx 12") mounted to the underside of the compartments, behind the rear wheels. One (1) light shall be located on the driver's side and one (1) light located on the officer's side of the apparatus.

The light shall have a polycarbonate lens to eliminate breakage from impact and eliminate heat buildup.

The ground lighting shall be activated when the parking brake is set.

The ground lights shall activate with a switch on the cab dash.

### **REAR TAILBOARD LIGHTS**

Two (2) LED step lights with clear lens shall be installed to illuminate the step surfaces at the rear of the apparatus body.

### **WALKWAY LIGHT**

One (1) LED walkway light shall be installed. The lights shall be installed in upper roof walkway area.

The step/walkway light switch shall be installed and wired to the parking brake.

### **SCENE LIGHT**

Ten (10) FireTech Guardian FT-GESM scene light shall be provided. The fixture shall be designed to attach to the side of the apparatus and emit light both straight down the side of the body at 0 degrees, and in a perpendicular plane to the mounting sheet on to the scene area near the apparatus. The fixture shall incorporate 4 rows of LEDs, with the center two rows of 6 LEDs using conical acrylic optics mounted in alignment with each other to a portion of the aluminum fixture body pointing the entire optical and electronic assembly downward 10 degrees. A moisture blocking vent valve shall be installed in the body of the fixture to allow for equalization of internal pressure without introduction of moisture into the housing.

The fixture shall have a white housing, black rubber gasket and a chrome trim bezel.

#### **SCENE LIGHT LOCATION**

One (1) scene light shall be located on the left side of the cab.

#### **SCENE LIGHT LOCATION**

One (1) scene light shall be located on the right side of the cab.

#### **SCENE LIGHT LOCATION**

Three (3) scene light shall be located on the left side of the apparatus body.

#### **SCENE LIGHT LOCATION**

Three (3) scene light shall be located on the right side of the apparatus body.

#### **SCENE LIGHT LOCATION**

Two (2) scene light shall be located on the rear of the apparatus body.

#### SCENE LIGHT SWITCHING

One (1) scene light switch with indicator shall be installed on the cab main switch panel to control the left side scene light(s). The switch shall be labeled "LEFT SCENE".

#### SCENE LIGHT SWITCHING

One (1) scene light switch with indicator shall be installed on the cab main switch panel to control the right side scene light(s). The switch shall be labeled "RIGHT SCENE".

#### SCENE LIGHT SWITCHING

One (1) scene light switch with indicator shall be installed on the cab main switch panel to control the rear scene light(s). The switch shall be labeled "REAR SCENE".

#### SCENE LIGHT SWITCHING

The rear scene lights shall activate automatically upon placing the transmission into reverse.

#### **TRAFFIC ARROW LIGHT**

One (1) Whelen Model #TAM65 Traffic Advisor shall be installed. The light shall be equipped with six (6) 500 Series TIR6™ Super-LED lights in a low profile flat style lamps measuring 36" (91cm) in length. The unit shall be mounted at the rear of the apparatus body. The Traffic Advisor control head shall be mounted inside the cab and be accessible by the driver and officer.

The traffic arrow light shall be surface mounted below the rear intermediate step of the apparatus body.

#### **OVERALL DIMENSIONS**

The vehicle shall have the following dimensions:

- Chassis wheelbase:
- Cab to axle dimension of chassis:
- Overall length:
- Overall width:

- Overall height:

### **FLUID DATA PLAQUE**

One (1) fluid data plaque containing required information shall be provided based on the applicable components for this apparatus, compliant with NFPA Standards:

- Engine oil
- Engine coolant
- Chassis transmission fluid
- Drive axle lubricant
- Power steering fluid
- Pump transmission lubrication fluid
- Other NFPA applicable fluid levels or data as required

Location shall be in the driver's compartment or on driver's door.

### **DATA & WARNING LABELS**

#### **HEIGHT LENGTH & WEIGHT**

A highly visible label indicating the overall height, length, and weight of the vehicle shall be installed in the cab dash area.

#### **NO RIDE LABEL**

One (1) "NO RIDERS" label shall be applied on the vehicle at the rear step area or other applicable areas. The label shall warn personnel that riding in or on these areas, while the vehicle is in motion is prohibited.

#### **TIRE PRESSURE LABEL**

A label shall be placed in a visible area that indicates the front and rear tire pressure.

#### **CAB SEATING POSITION LIMITS**

One (1) label shall be installed in the cab to indicate seating positions for firefighters. A weight allowance of 250 pounds for each shall be factored into the gross vehicle weight rating of the chassis.

#### **HELMET WARNING TAG**

One (1) label shall be installed in the cab, visible from each seating position. The label shall read "CAUTION: DO NOT WEAR HELMET WHILE SEATED." Helmets must be properly stowed while the vehicle is in motion according to the current edition of NFPA 1901.

### **REAR TOW EYES**

There shall be two tow eyes furnished under the rear of the body. Tow eyes are to be constructed of 3/4" plate steel with a 3" I.D. hole, large enough for passing through a tow chain end hook.

The tow plates shall be painted to match the exterior color of the body.

### **BUMPER**

The chassis shall feature a heavy duty bumper constructed from ASTM A36, 1/4" thick steel and painted primary job color. The bumper shall be 12" high by 102" wide with two inch (2") flanges and chamfered corners.

Integral heavy duty steel bumper "wings" shall extend from the bumper to the cab.

The bumper shall be mounted to a six inch (6") long chassis frame extension.

A contoured apron / gravel shield fabricated from NFPA compliant, slip-resistant polished aluminum shall enclose the area between the bumper and the cab.

### **STAINLESS STEEL BUMPER CLADDING**

The heavy-duty bumper shall have brushed stainless steel applied to the vertical surfaces of the bumper.

### **HUB AND LUG NUT COVERS**

The apparatus shall have chrome or stainless steel hub and lug nut covers on the front and tandem rear axles.

### **TIRE PRESSURE INDICATOR**

There shall be a tire pressure indicator, p/n RWTG1235, at each tire's valve stem on the vehicle that shall indicate if there is insufficient pressure in the specific tire.

### **EXHAUST HEAT SHIELD**

A heat shield shall be installed under the body in the areas where the exhaust system is routed.

### **REAR MUD FLAPS**

One (1) pair of black mud flaps shall be installed behind the rear wheels.

### **REFERENCE BOOK STORAGE**

The cabinet's exterior finish shall match the interior finish of the chassis cab.

The cabinet's interior shall have a natural finish.

### **CAB LIFT CONTROL LOCATION**

The cab lift controls for tilting the cab shall be recess mounted in the forward wall inside the left front compartment or behind the pump compartment left side upper access (gauge) panel. Proper operation and warning labels shall be installed adjacent to the controls.

## **BODY CONSTRUCTION**

### **HEAVY DUTY EXTRUDED ALUMINUM BODY**

To prevent possible interaction of dissimilar metals and to reduce the weight of the completed apparatus, the body and ALL STRUCTURAL SUPPORTS shall be constructed entirely of aluminum sheet and aluminum extrusions.

Aluminum extrusions or sheet aluminum of smaller thicknesses or lesser grades to those specified herein are not acceptable.

The aluminum extrusion alloy shall be 6061 with a temper rating of T6, and have a tensile strength of 45,000 PSI and yield strength of 40,000 pounds.

The smooth aluminum sheet material alloy shall be 5052 with a temper rating of H32, and have a tensile strength of 33,000 PSI and yield strength of 28,000 pounds.

The aluminum treadplate alloy shall be 3003 with a temper rating of H22, and have a tensile strength of 30,000 PSI and yield strength of 28,000 pounds.

All extrusions utilized in the body superstructure, substructure and framing shall be 6061-T6 alloy aluminum. All extrusions shall be beveled at each joint and all seams shall be electrically seam welded using #5356 alloy aluminum wire. For strength and rigidity, all aluminum sheets utilized in the apparatus body for structural support shall be a minimum of **3/16"** 5052-H32 alloy aluminum sheet.

### **FASTENERS**

All fasteners use in the apparatus body shall be attached with Ny-Lok type fasteners.

All aluminum and stainless steel components shall be attached using stainless steel fasteners. Zinc or cadmium plated fasteners are not acceptable for use with any aluminum or stainless steel components on the vehicle.

Compartment door hinges, handrails and running boards shall be attached using a minimum of 1/4" diameter machine bolt fasteners. Fasteners used in nonstructural areas such as; door handles, trim moldings, gauge mounting, etc shall be 3/16" in diameter.

### **BODY SUPERSTRUCTURE CONSTRUCTION**

All vertical and horizontal structural members of the outer apparatus body shall be constructed of no less than 4.00" by 12.00", 6061-T6 aluminum extrusions with a minimum .200" wall thickness fully welded together forming a unitized support system for the body and compartments. In order to provide a complete internal and integrated body super-structure, full height extruded structural members shall be provided at each corner of the apparatus and between each exterior equipment compartment.

Bidder is to provide with their bid proposal illustrations and drawings of the body structure to show compliance with this requirement.

### **EXTERIOR COMPARTMENT CONSTRUCTION**

Compartment sides and walls shall be welded to the super-structure. Seams shall be sealed using an engineered grade polyurethane adhesive-sealant.

The compartments shall be designed to provide protected raceways for vertically hinged door fastener retention elements. This requirement shall eliminate the possibility of door hinge hardware from being damaged by or damaging equipment stored in the compartments.

The compartment door openings are to be full width of the compartment with no loss of space. The raceways shall be designed to allow door hardware removal by a single person with simple hand tools.

Full height access panels fastened with stainless steel fasteners shall be provided to access all wiring routed through vertical super-structure extrusions. There shall be no exposed wiring allowed within the compartment interiors.

Compartment flooring shall be constructed of a combination aluminum extrusion and aluminum treadplate welded in place to the extruded aluminum framework creating a double compartment floor for added strength. Due to the high usage and wear and tear caused by removal of equipment, only treadplate aluminum with a raised pattern will be acceptable for compartment flooring. Bolted or welded in smooth raw aluminum or painted aluminum does not meet the intent nor technical requirement of raised pattern treadplate.

The tops of the side exterior compartments shall be constructed of NFPA #1901 Standards compliant non-slip polished aluminum treadplate fastened to the body with stainless steel fasteners. Compartment tops that are welded in place do not meet the serviceability intent of this requirement.

## **ROOF CONSTRUCTION**

The roof of the rescue body shall be covered with NFPA compliant polished aluminum embossed treadplate. The body shall be designed to support two hundred fifty pounds in any given area to allow emergency personnel roof access.

## **SHELVING TRACKS**

The vertical extrusions forming the framework of the side exterior compartmentation shall be designed to incorporate FULLY RECESSED adjustable shelving standards. Shelving tracks shall run full height of **ALL** side exterior equipment compartment.

The intent of this requirement is to allow full use of the available storage areas without the interference of shelving tracks extending into and reducing the interior widths of the compartments which will allow equipment to be stored within the full width of the compartment interiors.

Shelving, when specified, shall have a width of no less than .50" of the overall compartment width.

Adjustable shelving tracks welded or bolted onto interior walls of the compartments do not meet the intent of these specifications.

## **ELECTROLYSIS CORROSION CONTROL**

The apparatus shall be assembled using ECK or electrolysis corrosion control, on all high corrosion potential areas, such as door latches, door hinges, trim plates, fenderettes, etc. This coating is a high zinc compound that shall act as a sacrificial barrier to prevent electrolysis and corrosion between dissimilar metals. This shall be in addition to any other barrier material that may be used.

All 1/4" diameter and smaller screws and bolts shall be stainless steel.

Due to the expected life of the vehicle, proposals will only be acceptable from manufacturers that include these corrosion features.

## **SIDE BODY HEADER**

All high side compartment tops shall be NFPA approved non-slip treadplate with the side body header area above the compartment doors a smooth aluminum painted surface.

Lower or rear face compartments, if specified shall be provided with polished aluminum drip rails.

## **TANDEM WHEEL WELL PANEL AND LINER**

For ease of accessibility and maintenance, the tandem wheel well panels shall be constructed for ease of accessibility and maintenance, wheel well panels shall be double break formed painted smooth aluminum plate that is fully gasketed and bolted in place with stainless fasteners. Wheel wells shall be of the removable design so as to provide replacement in the event of damage. There shall be no visible bolt heads, retention nuts or fasteners on the exterior surface of the panel. Wheelwell panel shall be isolated from the apparatus body utilizing .25" nylon spacer blocks.

To fully protect the wheel well area from road debris and to aid in cleaning, a full depth (minimum of 24.00") radius wheel well liner constructed of exterior grade .25" black polyethylene sheet shall be provided. For ease of removal, the liner shall be held in place via means of a self-tension retention system. Due to possible corrosion and contamination by road debris in the wheel well area, mechanical fasteners shall not be used to secure the wheel well liner.

## **FENDERETTES**

The rear wheel wells shall be radius cut for a streamlined appearance. A polished type 304 stainless steel radius fenderette shall be furnished at each rear wheel well opening, held in place with concealed stainless steel fasteners with nylon isolators to prevent contact of the fastener with the wheelwell housing panel. A black rubber gasket shall be installed between the stainless fenderette and the apparatus body sides. Silicone caulking does not meet the intent nor the technical requirement of a solid gasket material in this area and is not acceptable.

## **ALUMINUM SUB-FRAME**

The surface of the chassis frame rails shall be isolated from the apparatus substructure by an elastomeric isolator.

The main body sub-frame shall be fully welded to the longitudinal chassis extrusions.

Two (2) 6061-T6 aluminum longitudinal extrusions shall be provided, one (1) on each chassis frame rail running full length beneath the apparatus body. A minimum .50" extruded wall thickness shall be provided on the top flange of the chassis frame rail. Each extrusion shall be designed to cover the complete top flange and outside radius of the chassis frame rail extending down the outside web of the frame rail a minimum of 1.25" to prevent side to side shifting of the apparatus body.

The main body sub-frame shall be constructed of not less than four (4) 4.00" by 2.50" tubular, 6061-T6 aluminum, "I" beams with a .375" vertical main body crossmembers. A minimum of four (4) crossmembers shall be provided two ahead of and two behind the rear axle forming the main body support crossmembers.

The main crosstubes shall be routed through and fully welded to the vertical and horizontal extrusions forming the body super-structure.

For added strength and rigidity, no less than six (6) intermediate body crossmembers shall be provided constructed of solid aluminum structural "I" beams 4.00" high by 3.00" wide with a minimum .29" flange thickness.

The intermediate structural "I" beam crossmembers shall be interconnected and welded to the main body tubular crossmembers forming a fully welded support grid for the body super-structure compartments.

A minimum of six (6) U-bolts shall be provided to secure the body sub-structure to the chassis frame. The forward two (2) U-bolts shall be shock absorbing spring tension type to allow for flexing without placing stress on the apparatus body or chassis frame rails.

### **BODY DIMENSIONS**

The overall width of the rescue body shall not exceed 100". The overall width across the rub rails shall be 101".

The body side height from the top of the rear tailboard to the top of the body shall be 85" high.

The side full height body compartments shall be 63" high and equipped with a 63" high clear door opening.

The side upper level compartment(s) shall be 32" high and equipped with a 32" high clear door opening.

The aluminum rescue body shall be approximately twenty-six feet (26') long.

The compartments at the front of the body shall be transverse to the opposite side of the truck.

The compartments ahead of the rear wheels shall be transverse to the opposite side of the truck.

The compartments above the tandem's front wheels shall be transverse to the opposite side of the truck.

The compartments above the tandem's rear wheels shall be 26" deep the full height of the compartment with the specified doors in the closed position.

The compartments behind the rear wheels shall be 26" deep the full height of the compartment with the specified doors in the closed position.

### **ROLL-UP DOOR CONSTRUCTION**

Exterior side equipment compartments so specified shall be equipped with roll-up shutter doors to be installed as specified herein. The door shall be located above and outside of the interior of the compartments thereby protecting the door in the raised position from possible damage by the shifting of equipment.

The door roll mechanism shall also be protected from possible damage should equipment shift while the vehicle is in transit with the door in the closed position.

When the door is raised, the location of the drum assembly shall not allow water drainage from the doors into any portion of the interior of the compartment, thereby preventing the accumulation of water, snow, or ice from damaging the equipment located therein.

The roll-up door drum assembly shall be fully enclosed and protected from the elements. Provisions shall be made on each end and each side of the apparatus for moisture to self-drain from the raised doors to below the apparatus body using integral drainage ports.

To provide access for repairs and adjustments without removing equipment from the compartments, the door roll assemblies shall be serviced from above the compartment. There shall be no need to remove any equipment nor to open the door to provide service to the same. Should a door be prohibited from being raised because of damage to or a defect in the roller assembly, service must be capable of being performed without the cutting, damaging or destroying of the door shutters to gain access. Access to the door mechanism shall be provided through the removable door roller assembly access panel that requires only the use of common hand tools to remove.

Pendent plates supporting the door roll assembly shall be bolted in place, adjustable and capable of being removed with common hand tools. Pendent plates and supports that are welded in place do not meet the maintenance and service criteria of these specifications.

In order to provide unlimited access to stored equipment and to help prevent damage to the tracks by removing equipment, the tracks shall not protrude into any portion of the door frame opening. The width of the door frame opening shall be the actual useable width available to store and remove equipment. No Exception.

Door openings shall match the compartment sizes as specified.

The roll up door(s) shall be fabricated from aluminum extrusions and be manufactured and assembled in the United States.

The door slats shall be double-wall extrusions with dimensions of 1.366" high x .315" thick. The exterior surface shall be flat and the interior surface concave to deflect loose equipment to prevent the door from jamming. Each slat shall have interlocking end shoes to prevent the slat from moving side to side resulting in binding of the door. Each slat shall be separated by a co-extruded PVC and rubber inner seal to prevent metal to metal contact and minimize dirt and moisture from entering the compartment. The inner seal shall not be visible from the exterior to maintain a clean appearance of door. The slats shall have interlocking joints with a folding locking flange to provide security and prevent penetration by sharp objects.

The track shall be a one (1) piece aluminum assembly that has an attaching flange and finishing flange incorporated into the design that facilitates installation and provides a finished look to the door without additional trim or caulking. A low profile side seal shall be utilized to maximize usable compartment space.

A drip rail designed to prevent water from dripping into the compartment shall be provided. The drip rail shall have a built in replaceable non-contacting seal to eliminate scratching of the surface of the door.

Bottom rail extrusion must have smooth back to prevent loose equipment from jamming the door and have “V” shaped double seal to prevent water and debris from entering the compartment. A two (2) inch wide finger pull shall be integrated into the bottom rail extrusion for easy one hand opening and closing. The door latch system shall be a full width one (1) piece lift bar that enables the user to operate with one hand.

A magnetic door ajar system shall be integrated in the lift bar handle and the lift bar handle retainer block to signal an open door.

The roll mechanism shall have a clip system that connects the curtain slats to the operator drum to allow for easy tension adjustment without tools. A four (4) inch diameter counterbalanced operator drum shall be incorporated to assist in lifting the door.

### **EZ-PULL DOWN STRAPS**

Eleven (11) elastic nylon straps shall be provided and installed on each roll up door. The straps shall be secured to the side wall of the interior compartment in a way that will allow the EZ-Pull strap to contract automatically and tuck inside the compartment when closed to prevent the strap from dangling and hindering closing of the door. When the door is in the open position, the straps shall be installed so that they are fully extended as to not interfere with removing items from the compartment. For the ease of locating, the straps shall be bright orange in color.

### **DOOR LOCKS**

A cylindrical door lock shall be provided on the roll up door(s). The door lock shall operate a rod mechanism located within the bottom rail of the door that extends into both side rails when locked.

To safely access equipment stored in the upper section of the compartments, a heavy duty drop-down door safety step shall be provided at the base of the compartment. The drop-down door safety step and the upper door can be operated independently of each other and shall have no exposed mechanical devices or hinges in the closed position. Any use of piano style hinges does not meet the intent of this specification. **No Exception.**

An aluminum NFPA compliant treadplate stepping surface shall be provided full width of the compartment and no less than 16" in depth. Each drop-down safety step shall have a minimum static load capacity of 500 pounds. Gas-filled springs shall assist in opening and closing the drop-down door safety step.

Each safe-step exterior surface shall have a smooth aluminum painted finish when in the closed position. The painted finish shall match the body and chassis cab.

### **LEFT FRONT COMPARTMENT - FRONT OF BODY**

There shall be one (1) full height compartment located at the front of the body. The compartment shall be equipped with a full height single painted roll up door.

The compartment shall be equipped with the following:

A removable louvered vent shall be provided in the compartment.

### **ADJUSTABLE SHELF**

One (1) compartment shelf(ves) shall be provided and constructed of .190" smooth aluminum, and are to have formed upward breaks on front and rear for added strength. Shelf(s) shall be fully adjustable within the compartments. Lighter gauge shelf materials are not acceptable.

Shelf(ves) shall extend full width of the compartments, within .50" of the overall width, and adjust up and down in the integral shelf tracks.

The shelf/tray shall be fitted with removable vinyl Turtle Tile matting. The matting shall be interlocking modules approximately 12" square by 1/2" thick. This material shall be resistant to heat, cold, ultra-violet radiation, mechanical impacts, chemical actions and is corrosion resistant.

### **600# ROLLOUT TRAY**

One (1) SlideMaster SM3-MP Series mid profile telescoping equipment tray(s) shall be installed that is(are) approximately half the depth of the body width. The tray assembly shall have a silver powder coated steel slide frame with sealed roller bearings rated to 600 pounds. A tray constructed of .190" smooth aluminum plate with four 3" sides shall be mounted to the slide frame. The slide frame shall extend 100% allowing the tray to be completely accessible from outside the compartment. The slide shall have a 3-1/4" deck height.

An integrated manual quarter turn "gravity" lock shall hold tray in both the "in" and "out" positions. The "gravity lock" manually rotates a rod with a tab to engage the bottom frame.

The roll-out tray shall be mounted on tracks to make the tray adjustable.

The shelf/tray shall be fitted with removable vinyl Turtle Tile matting. The matting shall be interlocking modules approximately 12" square by 1/2" thick. This material shall be resistant to heat, cold, ultra-violet radiation, mechanical impacts, chemical actions and is corrosion resistant.

### **REFLECTIVE STRIPE**

The outer edge and both sides of the shelf/slide-out tray/tool board shall have alternating red and white reflective DOT striping applied for safety.

#### 1000# ROLLOUT TRAY

One (1) SlideMaster SM3-SP Series mid profile telescoping equipment tray(s) shall be installed in a standard depth compartment. The tray assembly shall have a silver powder coated steel slide frame with sealed roller bearings rated to 1,000 pounds. A tray constructed of .190" smooth aluminum plate with four 3" sides shall be mounted to the slide frame. The slide frame shall extend 100% allowing the tray to be completely accessible from outside the compartment. The slide shall have a 3-7/8" deck height.

An integrated manual quarter turn "gravity" lock shall hold tray in both the "in" and "out" positions. The "gravity lock" manually rotates a rod with a tab to engage the bottom frame.

The shelf/tray shall be fitted with removable vinyl Turtle Tile matting. The matting shall be interlocking modules approximately 12" square by 1/2" thick. This material shall be resistant to heat, cold, ultra-violet radiation, mechanical impacts, chemical actions and is corrosion resistant.

#### **REFLECTIVE STRIPE**

The outer edge and both sides of the shelf/slide-out tray/tool board shall have alternating red and white reflective DOT striping applied for safety.

#### 1000# ROLLOUT TRAY DUAL DIRECTION

One (1) dual direction SlideMaster SM2-D Series standard profile telescoping equipment tray(s) shall be installed that is(are) transverse. The tray assembly shall have a silver powder coated steel slide frame with sealed roller bearings rated to 1,000 pounds. A tray constructed of .190" smooth aluminum plate with four 3" sides shall be mounted to the slide frame. The slide frame shall extend 70% out either side of the compartment allowing the tray to be easily accessible from outside the compartment on either side of the apparatus. The slide shall have a 3-3/8" deck height.

An integrated manual quarter turn "gravity" lock shall hold tray in both the "in" and "out" positions. The "gravity lock" manually rotates a rod with a tab to engage the bottom frame.

The roll-out tray shall be mounted on tracks to make the tray adjustable.

The shelf/tray shall be fitted with removable vinyl Turtle Tile matting. The matting shall be interlocking modules approximately 12" square by 1/2" thick. This material shall be resistant to heat, cold, ultra-violet radiation, mechanical impacts, chemical actions and is corrosion resistant.

#### **REFLECTIVE STRIPE**

The outer edge and both sides of the shelf/slide-out tray/tool board shall have alternating red and white reflective DOT striping applied for safety.

#### 250# TIP-DOWN TRAY

One (1) SlideMaster SMT Series tip-down equipment tray(s) shall be installed that is(are) approximately half the depth of the body width. The tray assembly shall have a silver powder coated steel slide frame with sealed roller bearings rated to 250 pounds. A tray constructed of .190" smooth aluminum plate with four 4" sides shall be mounted to the slide frame. The slide frame shall extend out of the compartment while tipping downward to approximately 30 degrees when fully extended. An integrated manual quarter turn lock shall hold tray in the "in" position. Gravity shall hold the tray in the "out" position. The slide shall have a 2-5/8" deck height.

The shelf/tray shall be fitted with removable vinyl Turtle Tile matting. The matting shall be interlocking modules approximately 12" square by 1/2" thick. This material shall be resistant to heat, cold, ultra-violet radiation, mechanical impacts, chemical actions and is corrosion resistant.

#### **REFLECTIVE STRIPE**

The outer edge and both sides of the shelf/slide-out tray/tool board shall have alternating red and white reflective DOT striping applied for safety.

#### COMPARTMENT DIVIDER

One (1) compartment divider constructed from 3/16" smooth aluminum material shall be installed. The divider shall be bolted in for ease of removal.

#### ROLL-OUT ALUMINUM TOOL BOARD

One (1) SlideMaster SM3-MP T.B. Series telescoping equipment tool board(s) shall be installed in a half body width compartment. The tray assembly shall have a silver powder coated steel slide frame with sealed roller bearings rated to 600 pounds. A tool board constructed of .190" smooth aluminum plate with an opening to accommodate a gloved-hand for operating tool board shall be mounted to the slide frame. The slide frame shall extend 100% allowing the tray to be completely accessible from outside the compartment and a device shall be installed to hold each tool board in both the "in" and "out" positions. The slide shall have a 3-1/4" deck height.

#### **REFLECTIVE STRIPE**

The outer edge and both sides of the shelf/slide-out tray/tool board shall have alternating red and white reflective DOT striping applied for safety.

## **CTECH MOBILE STORAGE SYSTEM**

{Quantity} Aluminum mobile storage system shall be installed in the specified compartment. The assembly shall be constructed of aluminum. All drawers shall have 500 lb. slides and one handed operation. The latching hardware shall be concealed for protection.

The assembly shall be 40" wide with the following drawers provided in order from top to bottom:

One (1) three inch (3") high drawer(s).

One (1) five inch (5") high drawer(s).

One (1) five inch (5") high drawer(s).

One (1) seven inch (7") high drawer(s).

### **COMPARTMENT LIGHTING**

The compartment shall be provided with Rosenbauer InVisiLight LED Compartment lighting. The lighting shall be installed in the adjustable shelving track which shall be recessed into the side wall of the compartment. The lighting shall provide a continuous illumination from the compartment bottom to top and side to side while still allowing for full adjustment of any compartment provision (shelf/tray/etc.). To prevent damage, lights that protrude into the compartment in any fashion shall be deemed unacceptable.

The lights shall be installed in the shelving tracks; Two (2) lights 56" in length shall be installed, one on each side of the compartment. The lights shall produce approximately 17 lumens per inch of lighting.

The lights shall be provided with a 5-Year warranty.

The compartment light will be controlled by an automatic "On-Off" switch located on each compartment door.

## **SCBA MOUNTING BRACKET**

Two (2) Zico 30 minute SCBA air pack mounting with spring tension bracket included.

## **LEFT FRONT COMPARTMENT - AHEAD OF REAR WHEELS**

There shall be one (1) full height compartment located ahead of the rear wheels. The compartment shall be equipped with a full height single painted roll up door.

The compartment shall be equipped with the following:

A removable louvered vent shall be provided in the compartment.

#### ADJUSTABLE SHELVING TRACKS

The compartments shall be equipped with two (2) aluminum adjustable tracks, vertically mounted, that are bolted in place for adjustable shelving and equipment mounting.

#### 1000# ROLLOUT TRAY

One (1) SlideMaster SM3-SP Series mid profile telescoping equipment tray(s) shall be installed in a standard depth compartment. The tray assembly shall have a silver powder coated steel slide frame with sealed roller bearings rated to 1,000 pounds. A tray constructed of .190" smooth aluminum plate with four 3" sides shall be mounted to the slide frame. The slide frame shall extend 100% allowing the tray to be completely accessible from outside the compartment. The slide shall have a 3-7/8" deck height.

An integrated manual quarter turn "gravity" lock shall hold tray in both the "in" and "out" positions. The "gravity lock" manually rotates a rod with a tab to engage the bottom frame.

#### **REFLECTIVE STRIPE**

The outer edge and both sides of the shelf/slide-out tray/tool board shall have alternating red and white reflective DOT striping applied for safety.

#### 250# TIP-DOWN TRAY

Two (2) SlideMaster SMT Series tip-down equipment tray(s) shall be installed that is(are) approximately half the depth of the body width. The tray assembly shall have a silver powder coated steel slide frame with sealed roller bearings rated to 250 pounds. A tray constructed of .190" smooth aluminum plate with four 4" sides shall be mounted to the slide frame. The slide frame shall extend out of the compartment while tipping downward to approximately 30 degrees when fully extended. An integrated manual quarter turn lock shall hold tray in the "in" position. Gravity shall hold the tray in the "out" position. The slide shall have a 2-5/8" deck height.

The roll-out tray shall be mounted on tracks to make the tray adjustable.

The shelf/tray shall be fitted with removable vinyl Turtle Tile matting. The matting shall be interlocking modules approximately 12" square by 1/2" thick. This material shall be resistant to heat, cold, ultra-violet radiation, mechanical impacts, chemical actions and is corrosion resistant.

#### **REFLECTIVE STRIPE**

The outer edge and both sides of the shelf/slide-out tray/tool board shall have alternating red and white reflective DOT striping applied for safety.

## ROLL-OUT ALUMINUM TOOL BOARD

Two (2) SlideMaster SM3-MP T.B. Series telescoping equipment tool board(s) shall be installed in a half body width compartment. The tray assembly shall have a silver powder coated steel slide frame with sealed roller bearings rated to 600 pounds. A tool board constructed of .190" smooth aluminum plate with an opening to accommodate a gloved-hand for operating tool board shall be mounted to the slide frame. The slide frame shall extend 100% allowing the tray to be completely accessible from outside the compartment and a device shall be installed to hold each tool board in both the "in" and "out" positions. The slide shall have a 3-1/4" deck height.

The roll-out tray shall be mounted on tracks to make the tray adjustable.

## **REFLECTIVE STRIPE**

The outer edge and both sides of the shelf/slide-out tray/tool board shall have alternating red and white reflective DOT striping applied for safety.

## **AIR BAG STORAGE MODULE**

One (1) compartment module constructed of .188" aluminum shall be provided for the storage of fire department supplied air bags as described below;

- One (1) 7" x 7"
- One (1) 7" x 13"
- One (1) 11" x 11"
- One (1) 16" x 16"
- One (1) 16" x 21"
- One (1) 16" x 42"
- One (1) 21" x 21"
- One (1) 25" x 25"
- One (1) 29" x 29"
- One (1) 37.5" x 38"

## COMPARTMENT LIGHTING

The compartment shall be provided with Rosenbauer InVisiLight LED Compartment lighting. The lighting shall be installed in the adjustable shelving track which shall be recessed into the side wall of the compartment. The lighting shall provide a continuous illumination from the compartment bottom to top and side to side while still allowing for full adjustment of any compartment provision (shelf/tray/etc.). To prevent damage, lights that protrude into the compartment in any fashion shall be deemed unacceptable.

The lights shall be installed in the shelving tracks; Two (2) lights 56" in length shall be installed, one on each side of the compartment. The lights shall produce approximately 17 lumens per inch of lighting.

The lights shall be provided with a 5-Year warranty.

The compartment light will be controlled by an automatic "On-Off" switch located on each compartment door.

### **LEFT UPPER COMPARTMENT- ABOVE FRONT TANDEM**

There shall be one (1) compartment above the tandem's front wheels. The compartment shall be equipped with a single painted roll up door.

The compartment shall be equipped with the following:

A removable louvered vent shall be provided in the compartment.

#### **600# ROLLOUT TRAY**

One (1) SlideMaster SM3-MP Series mid profile telescoping equipment tray(s) shall be installed that is(are) approximately half the depth of the body width. The tray assembly shall have a silver powder coated steel slide frame with sealed roller bearings rated to 600 pounds. A tray constructed of .190" smooth aluminum plate with four 3" sides shall be mounted to the slide frame. The slide frame shall extend 100% allowing the tray to be completely accessible from outside the compartment. The slide shall have a 3-1/4" deck height.

An integrated manual quarter turn "gravity" lock shall hold tray in both the "in" and "out" positions. The "gravity lock" manually rotates a rod with a tab to engage the bottom frame.

The roll-out tray shall be mounted on tracks to make the tray adjustable.

The shelf/tray shall be fitted with removable vinyl Turtle Tile matting. The matting shall be interlocking modules approximately 12" square by 1/2" thick. This material shall be resistant to heat, cold, ultra-violet radiation, mechanical impacts, chemical actions and is corrosion resistant.

### **REFLECTIVE STRIPE**

The outer edge and both sides of the shelf/slide-out tray/tool board shall have alternating red and white reflective DOT striping applied for safety.

#### **1000# ROLLOUT TRAY**

One (1) SlideMaster SM3-SP Series mid profile telescoping equipment tray(s) shall be installed that is(are) approximately half the depth of the body width. The tray assembly shall have a silver powder coated steel slide frame with sealed roller bearings rated to 1,000 pounds. A tray constructed of .190" smooth aluminum plate

with four 3" sides shall be mounted to the slide frame. The slide frame shall extend 100% allowing the tray to be completely accessible from outside the compartment. The slide shall have a 3-7/8" deck height.

An integrated manual quarter turn "gravity" lock shall hold tray in both the "in" and "out" positions. The "gravity lock" manually rotates a rod with a tab to engage the bottom frame.

The shelf/tray shall be fitted with removable vinyl Turtle Tile matting. The matting shall be interlocking modules approximately 12" square by 1/2" thick. This material shall be resistant to heat, cold, ultra-violet radiation, mechanical impacts, chemical actions and is corrosion resistant.

### **REFLECTIVE STRIPE**

The outer edge and both sides of the shelf/slide-out tray/tool board shall have alternating red and white reflective DOT striping applied for safety.

### **COMPARTMENT DIVIDER**

One (1) compartment divider constructed from 3/16" smooth aluminum material shall be installed. The divider shall be bolted in for ease of removal.

The floor of the body compartment shall be fitted with removable 1/2" vinyl Turtle Tile matting.

### **COMPARTMENT LIGHTING**

The compartment shall be provided with Rosenbauer InVisiLight LED Compartment lighting. The lighting shall be installed in the adjustable shelving track which shall be recessed into the side wall of the compartment. The lighting shall provide a continuous illumination from the compartment bottom to top and side to side while still allowing for full adjustment of any compartment provision (shelf/tray/etc.). To prevent damage, lights that protrude into the compartment in any fashion shall be deemed unacceptable.

The lights shall be installed in the shelving tracks; Two (2) lights 28" in length shall be installed, one on each side of the compartment. The lights shall produce approximately 17 lumens per inch of lighting.

The lights shall be provided with a 5-Year warranty.

The compartment light will be controlled by an automatic "On-Off" switch located on each compartment door.

### **LEFT UPPER COMPARTMENT- ABOVE REAR TANDEM**

There shall be one (1) compartment above the tandem's rear wheels. The compartment shall be equipped with a single painted roll up door.

The compartment shall be equipped with the following:

A removable louvered vent shall be provided in the compartment.

The floor of the body compartment shall be fitted with removable 1/2" vinyl Turtle Tile matting.

#### COMPARTMENT LIGHTING

The compartment shall be provided with Rosenbauer InVisiLight LED Compartment lighting. The lighting shall be installed in the adjustable shelving track which shall be recessed into the side wall of the compartment. The lighting shall provide a continuous illumination from the compartment bottom to top and side to side while still allowing for full adjustment of any compartment provision (shelf/tray/etc.). To prevent damage, lights that protrude into the compartment in any fashion shall be deemed unacceptable.

The lights shall be installed in the shelving tracks; Two (2) lights 28" in length shall be installed, one on each side of the compartment. The lights shall produce approximately 17 lumens per inch of lighting.

The lights shall be provided with a 5-Year warranty.

The compartment light will be controlled by an automatic "On-Off" switch located on each compartment door.

#### **LEFT REAR COMPARTMENT - BEHIND REAR WHEELS**

There shall be one (1) full height compartment located behind the rear wheels. The compartment shall be equipped with a full height single painted roll up door.

The compartment shall be equipped with the following:

A removable louvered vent shall be provided in the compartment.

#### 500# ROLLOUT TRAY

Three (3) rollout equipment tray shall be installed in a standard depth compartment. The 500# rated tracks shall have roller bearings. The tray shall be constructed of .188" smooth aluminum plate, fabricated with four 3" sides.

The unit shall roll fully out of the compartment, with a gas operator to hold tray in both the "in and out" positions.

The roll-out tray shall be mounted on tracks to make the tray adjustable.

The shelf/tray shall be fitted with removable vinyl Turtle Tile matting. The matting shall be interlocking modules approximately 12" square by 1/2" thick. This material shall be resistant to heat, cold, ultra-violet radiation, mechanical impacts, chemical actions and is corrosion resistant.

### **REFLECTIVE STRIPE**

The outer edge and both sides of the shelf/slide-out tray/tool board shall have alternating red and white reflective DOT striping applied for safety.

### **PULL-OUT AND DROP-DOWN**

Three (3) 250 pound capacity rollout and drop-down tray shall be installed in the specified compartment. The tray shall be constructed of aluminum with 3" edges on each side. The tray shall be equipped with roller bearing wheels.

The track assembly allows the tray to roll out of compartment while dropping downward at approximately a 30 degree angle.

The roll-out tray shall be mounted on tracks to make the tray adjustable.

The shelf/tray shall be fitted with removable vinyl Turtle Tile matting. The matting shall be interlocking modules approximately 12" square by 1/2" thick. This material shall be resistant to heat, cold, ultra-violet radiation, mechanical impacts, chemical actions and is corrosion resistant.

### **REFLECTIVE STRIPE**

The outer edge and both sides of the shelf/slide-out tray/tool board shall have alternating red and white reflective DOT striping applied for safety.

### **COMPARTMENT DIVIDER**

One (1) compartment divider constructed from 3/16" smooth aluminum material shall be installed. The divider shall be bolted in for ease of removal.

### **ROLL-OUT ALUMINUM TOOL BOARD**

Two (2) SlideMaster SM3-MP T.B. Series telescoping equipment tool board(s) shall be installed in a standard depth compartment. The tray assembly shall have a silver powder coated steel slide frame with sealed roller bearings rated to 600 pounds. A tool board constructed of .190" smooth aluminum plate with an opening to accommodate a gloved-hand for operating tool board shall be mounted to the slide frame. The slide frame shall extend 100% allowing the tray to be completely accessible from outside the compartment and a device shall be installed to hold each tool board in both the "in" and "out" positions. The slide shall have a 3-1/4" deck height.

## **REFLECTIVE STRIPE**

The outer edge and both sides of the shelf/slide-out tray/tool board shall have alternating red and white reflective DOT striping applied for safety.

## **COMPARTMENT LIGHTING**

The compartment shall be provided with Rosenbauer InVisiLight LED Compartment lighting. The lighting shall be installed in the adjustable shelving track which shall be recessed into the side wall of the compartment. The lighting shall provide a continuous illumination from the compartment bottom to top and side to side while still allowing for full adjustment of any compartment provision (shelf/tray/etc.). To prevent damage, lights that protrude into the compartment in any fashion shall be deemed unacceptable.

The lights shall be installed in the shelving tracks; Two (2) lights 56" in length shall be installed, one on each side of the compartment. The lights shall produce approximately 17 lumens per inch of lighting.

The lights shall be provided with a 5-Year warranty.

The compartment light will be controlled by an automatic "On-Off" switch located on each compartment door.

## **RIGHT FRONT COMPARTMENT - FRONT OF BODY**

There shall be one (1) full height compartment located at the front of the body. The compartment shall be equipped with a full height single painted roll up door.

The compartment shall be equipped with the following:

A removable louvered vent shall be provided in the compartment.

## **600# ROLLOUT TRAY**

One (1) SlideMaster SM3-MP Series mid profile telescoping equipment tray(s) shall be installed that is(are) approximately half the depth of the body width. The tray assembly shall have a silver powder coated steel slide frame with sealed roller bearings rated to 600 pounds. A tray constructed of .190" smooth aluminum plate with four 3" sides shall be mounted to the slide frame. The slide frame shall extend 100% allowing the tray to be completely accessible from outside the compartment. The slide shall have a 3-1/4" deck height.

An integrated manual quarter turn "gravity" lock shall hold tray in both the "in" and "out" positions. The "gravity lock" manually rotates a rod with a tab to engage the bottom frame.

The roll-out tray shall be mounted on tracks to make the tray adjustable.

The shelf/tray shall be fitted with removable vinyl Turtle Tile matting. The matting shall be interlocking modules approximately 12" square by 1/2" thick. This material shall be resistant to heat, cold, ultra-violet radiation, mechanical impacts, chemical actions and is corrosion resistant.

### **REFLECTIVE STRIPE**

The outer edge and both sides of the shelf/slide-out tray/tool board shall have alternating red and white reflective DOT striping applied for safety.

### **1000# ROLLOUT TRAY**

One (1) SlideMaster SM3-SP Series mid profile telescoping equipment tray(s) shall be installed in a standard depth compartment. The tray assembly shall have a silver powder coated steel slide frame with sealed roller bearings rated to 1,000 pounds. A tray constructed of .190" smooth aluminum plate with four 3" sides shall be mounted to the slide frame. The slide frame shall extend 100% allowing the tray to be completely accessible from outside the compartment. The slide shall have a 3-7/8" deck height.

An integrated manual quarter turn "gravity" lock shall hold tray in both the "in" and "out" positions. The "gravity lock" manually rotates a rod with a tab to engage the bottom frame.

The shelf/tray shall be fitted with removable vinyl Turtle Tile matting. The matting shall be interlocking modules approximately 12" square by 1/2" thick. This material shall be resistant to heat, cold, ultra-violet radiation, mechanical impacts, chemical actions and is corrosion resistant.

### **REFLECTIVE STRIPE**

The outer edge and both sides of the shelf/slide-out tray/tool board shall have alternating red and white reflective DOT striping applied for safety.

### **250# TIP-DOWN TRAY**

Two (2) SlideMaster SMT Series tip-down equipment tray(s) shall be installed that is(are) approximately half the depth of the body width. The tray assembly shall have a silver powder coated steel slide frame with sealed roller bearings rated to 250 pounds. A tray constructed of .190" smooth aluminum plate with four 4" sides shall be mounted to the slide frame. The slide frame shall extend out of the compartment while tipping downward to approximately 30 degrees when fully extended. An integrated manual quarter turn lock shall hold tray in the "in" position. Gravity shall hold the tray in the "out" position. The slide shall have a 2-5/8" deck height.

The shelf/tray shall be fitted with removable vinyl Turtle Tile matting. The matting shall be interlocking modules approximately 12" square by 1/2" thick. This material shall be resistant to heat, cold, ultra-violet radiation, mechanical impacts, chemical actions and is corrosion resistant.

## **REFLECTIVE STRIPE**

The outer edge and both sides of the shelf/slide-out tray/tool board shall have alternating red and white reflective DOT striping applied for safety.

## **COMPARTMENT DIVIDER**

One (1) compartment divider constructed from 3/16" smooth aluminum material shall be installed. The divider shall be bolted in for ease of removal.

## **ROLL-OUT ALUMINUM TOOL BOARD**

One (1) SlideMaster SM3-MP T.B. Series telescoping equipment tool board(s) shall be installed in a half body width compartment. The tray assembly shall have a silver powder coated steel slide frame with sealed roller bearings rated to 600 pounds. A tool board constructed of .190" smooth aluminum plate with an opening to accommodate a gloved-hand for operating tool board shall be mounted to the slide frame. The slide frame shall extend 100% allowing the tray to be completely accessible from outside the compartment and a device shall be installed to hold each tool board in both the "in" and "out" positions. The slide shall have a 3-1/4" deck height.

## **REFLECTIVE STRIPE**

The outer edge and both sides of the shelf/slide-out tray/tool board shall have alternating red and white reflective DOT striping applied for safety.

The floor of the body compartment shall be fitted with removable 1/2" vinyl Turtle Tile matting.

## **COMPARTMENT LIGHTING**

The compartment shall be provided with Rosenbauer InVisiLight LED Compartment lighting. The lighting shall be installed in the adjustable shelving track which shall be recessed into the side wall of the compartment. The lighting shall provide a continuous illumination from the compartment bottom to top and side to side while still allowing for full adjustment of any compartment provision (shelf/tray/etc.). To prevent damage, lights that protrude into the compartment in any fashion shall be deemed unacceptable.

The lights shall be installed in the shelving tracks; Two (2) lights 56" in length shall be installed, one on each side of the compartment. The lights shall produce approximately 17 lumens per inch of lighting.

The lights shall be provided with a 5-Year warranty.

The compartment light will be controlled by an automatic "On-Off" switch located on each compartment door.

## **SCBA MOUNTING BRACKET**

Two (2) Zico 30 minute SCBA air pack mounting with spring tension bracket included.

### **RIGHT FRONT COMPARTMENT - AHEAD OF REAR WHEELS**

There shall be one (1) full height compartment located ahead of the rear wheels. The compartment shall be equipped with a full height single painted roll up door.

The compartment shall be equipped with the following:

A removable louvered vent shall be provided in the compartment.

#### **600# ROLLOUT TRAY**

One (1) SlideMaster SM3-MP Series mid profile telescoping equipment tray(s) shall be installed that is(are) approximately half the depth of the body width. The tray assembly shall have a silver powder coated steel slide frame with sealed roller bearings rated to 600 pounds. A tray constructed of .190" smooth aluminum plate with four 3" sides shall be mounted to the slide frame. The slide frame shall extend 100% allowing the tray to be completely accessible from outside the compartment. The slide shall have a 3-1/4" deck height.

An integrated manual quarter turn "gravity" lock shall hold tray in both the "in" and "out" positions. The "gravity lock" manually rotates a rod with a tab to engage the bottom frame.

The roll-out tray shall be mounted on tracks to make the tray adjustable.

The shelf/tray shall be fitted with removable vinyl Turtle Tile matting. The matting shall be interlocking modules approximately 12" square by 1/2" thick. This material shall be resistant to heat, cold, ultra-violet radiation, mechanical impacts, chemical actions and is corrosion resistant.

### **REFLECTIVE STRIPE**

The outer edge and both sides of the shelf/slide-out tray/tool board shall have alternating red and white reflective DOT striping applied for safety.

#### **1000# ROLLOUT TRAY**

One (1) SlideMaster SM3-SP Series mid profile telescoping equipment tray(s) shall be installed in a standard depth compartment. The tray assembly shall have a silver powder coated steel slide frame with sealed roller bearings rated to 1,000 pounds. A tray constructed of .190" smooth aluminum plate with four 3" sides shall be mounted to the slide frame. The slide frame shall extend 100% allowing the tray to be completely accessible from outside the compartment. The slide shall have a 3-7/8" deck height.

An integrated manual quarter turn "gravity" lock shall hold tray in both the "in" and "out" positions. The "gravity lock" manually rotates a rod with a tab to engage the bottom frame.

The shelf/tray shall be fitted with removable vinyl Turtle Tile matting. The matting shall be interlocking modules approximately 12" square by 1/2" thick. This material shall be resistant to heat, cold, ultra-violet radiation, mechanical impacts, chemical actions and is corrosion resistant.

### **REFLECTIVE STRIPE**

The outer edge and both sides of the shelf/slide-out tray/tool board shall have alternating red and white reflective DOT striping applied for safety.

### **250# TIP-DOWN TRAY**

Two (2) SlideMaster SMT Series tip-down equipment tray(s) shall be installed that is(are) approximately half the depth of the body width. The tray assembly shall have a silver powder coated steel slide frame with sealed roller bearings rated to 250 pounds. A tray constructed of .190" smooth aluminum plate with four 4" sides shall be mounted to the slide frame. The slide frame shall extend out of the compartment while tipping downward to approximately 30 degrees when fully extended. An integrated manual quarter turn lock shall hold tray in the "in" position. Gravity shall hold the tray in the "out" position. The slide shall have a 2-5/8" deck height.

The shelf/tray shall be fitted with removable vinyl Turtle Tile matting. The matting shall be interlocking modules approximately 12" square by 1/2" thick. This material shall be resistant to heat, cold, ultra-violet radiation, mechanical impacts, chemical actions and is corrosion resistant.

### **REFLECTIVE STRIPE**

The outer edge and both sides of the shelf/slide-out tray/tool board shall have alternating red and white reflective DOT striping applied for safety.

### **COMPARTMENT DIVIDER**

One (1) compartment divider constructed from 3/16" smooth aluminum material shall be installed. The divider shall be bolted in for ease of removal.

The floor of the body compartment shall be fitted with removable 1/2" vinyl Turtle Tile matting.

### **COMPARTMENT LIGHTING**

The compartment shall be provided with Rosenbauer InVisiLight LED Compartment lighting. The lighting shall be installed in the adjustable shelving track which shall be recessed into the side wall of the compartment. The

lighting shall provide a continuous illumination from the compartment bottom to top and side to side while still allowing for full adjustment of any compartment provision (shelf/tray/etc.). To prevent damage, lights that protrude into the compartment in any fashion shall be deemed unacceptable.

The lights shall be installed in the shelving tracks; Two (2) lights 56" in length shall be installed, one on each side of the compartment. The lights shall produce approximately 17 lumens per inch of lighting.

The lights shall be provided with a 5-Year warranty.

The compartment light will be controlled by an automatic "On-Off" switch located on each compartment door.

### **RIGHT UPPER COMPARTMENT- ABOVE FRONT TANDEM**

There shall be one (1) compartment above the tandem's front wheels. The compartment shall be equipped with a single painted roll up door.

The compartment shall be equipped with the following:

A removable louvered vent shall be provided in the compartment.

#### **1000# ROLLOUT TRAY**

One (1) SlideMaster SM3-SP Series mid profile telescoping equipment tray(s) shall be installed that is(are) approximately half the depth of the body width. The tray assembly shall have a silver powder coated steel slide frame with sealed roller bearings rated to 1,000 pounds. A tray constructed of .190" smooth aluminum plate with four 3" sides shall be mounted to the slide frame. The slide frame shall extend 100% allowing the tray to be completely accessible from outside the compartment. The slide shall have a 3-7/8" deck height.

An integrated manual quarter turn "gravity" lock shall hold tray in both the "in" and "out" positions. The "gravity lock" manually rotates a rod with a tab to engage the bottom frame.

The shelf/tray shall be fitted with removable vinyl Turtle Tile matting. The matting shall be interlocking modules approximately 12" square by 1/2" thick. This material shall be resistant to heat, cold, ultra-violet radiation, mechanical impacts, chemical actions and is corrosion resistant.

### **REFLECTIVE STRIPE**

The outer edge and both sides of the shelf/slide-out tray/tool board shall have alternating red and white reflective DOT striping applied for safety.

#### **COMPARTMENT DIVIDER**

One (1) compartment divider constructed from 3/16" smooth aluminum material shall be installed. The divider shall be bolted in for ease of removal.

#### **ROLL-OUT ALUMINUM TOOL BOARD**

One (1) SlideMaster SM3-MP T.B. Series telescoping equipment tool board(s) shall be installed in a half body width compartment. The tray assembly shall have a silver powder coated steel slide frame with sealed roller bearings rated to 600 pounds. A tool board constructed of .190" smooth aluminum plate with an opening to accommodate a gloved-hand for operating tool board shall be mounted to the slide frame. The slide frame shall extend 100% allowing the tray to be completely accessible from outside the compartment and a device shall be installed to hold each tool board in both the "in" and "out" positions. The slide shall have a 3-1/4" deck height.

The roll-out tray shall be mounted on tracks to make the tray adjustable.

The floor area of the full thru/half depth compartment shall be fitted with removable vinyl Turtle Tile matting. The matting shall be interlocking modules approximately 12" square by 9/16" thick. This material shall be resistant to heat, cold, ultra-violet radiation, mechanical impacts, chemical actions and is corrosion resistant.

#### **REFLECTIVE STRIPE**

The outer edge and both sides of the shelf/slide-out tray/tool board shall have alternating red and white reflective DOT striping applied for safety.

The floor of the body compartment shall be fitted with removable 1/2" vinyl Turtle Tile matting.

#### **COMPARTMENT LIGHTING**

The compartment shall be provided with Rosenbauer InVisiLight LED Compartment lighting. The lighting shall be installed in the adjustable shelving track which shall be recessed into the side wall of the compartment. The lighting shall provide a continuous illumination from the compartment bottom to top and side to side while still allowing for full adjustment of any compartment provision (shelf/tray/etc.). To prevent damage, lights that protrude into the compartment in any fashion shall be deemed unacceptable.

The lights shall be installed in the shelving tracks; Two (2) lights 28" in length shall be installed, one on each side of the compartment. The lights shall produce approximately 17 lumens per inch of lighting.

The lights shall be provided with a 5-Year warranty.

The compartment light will be controlled by an automatic "On-Off" switch located on each compartment door.

#### **RIGHT UPPER COMPARTMENT- ABOVE REAR TANDEM**

There shall be one (1) compartment above the tandem's rear wheels. The compartment shall be equipped with a single painted roll up door.

The compartment shall be equipped with the following:

A removable louvered vent shall be provided in the compartment.

The floor of the body compartment shall be fitted with removable 1/2" vinyl Turtle Tile matting.

#### COMPARTMENT LIGHTING

The compartment shall be provided with Rosenbauer InVisiLight LED Compartment lighting. The lighting shall be installed in the adjustable shelving track which shall be recessed into the side wall of the compartment. The lighting shall provide a continuous illumination from the compartment bottom to top and side to side while still allowing for full adjustment of any compartment provision (shelf/tray/etc.). To prevent damage, lights that protrude into the compartment in any fashion shall be deemed unacceptable.

The lights shall be installed in the shelving tracks; Two (2) lights 28" in length shall be installed, one on each side of the compartment. The lights shall produce approximately 17 lumens per inch of lighting.

The lights shall be provided with a 5-Year warranty.

The compartment light will be controlled by an automatic "On-Off" switch located on each compartment door.

#### **RIGHT REAR COMPARTMENT - BEHIND REAR WHEELS**

There shall be one (1) full height compartment located behind the rear wheels. The compartment shall be equipped with a full height single painted roll up door.

The compartment shall be equipped with the following:

A removable louvered vent shall be provided in the compartment.

#### 500# ROLLOUT TRAY

Two (2) rollout equipment tray shall be installed in a standard depth compartment. The 500# rated tracks shall have roller bearings. The tray shall be constructed of .188" smooth aluminum plate, fabricated with four 3" sides.

The unit shall roll fully out of the compartment, with a gas operator to hold tray in both the "in and out" positions.

The roll-out tray shall be mounted on tracks to make the tray adjustable.

The shelf/tray shall be fitted with removable vinyl Turtle Tile matting. The matting shall be interlocking modules approximately 12" square by 1/2" thick. This material shall be resistant to heat, cold, ultra-violet radiation, mechanical impacts, chemical actions and is corrosion resistant.

### **REFLECTIVE STRIPE**

The outer edge and both sides of the shelf/slide-out tray/tool board shall have alternating red and white reflective DOT striping applied for safety.

### **PULL-OUT AND DROP-DOWN**

Two (2) 250 pound capacity rollout and drop-down tray shall be installed in the specified compartment. The tray shall be constructed of aluminum with 3" edges on each side. The tray shall be equipped with roller bearing wheels.

The track assembly allows the tray to roll out of compartment while dropping downward at approximately a 30 degree angle.

The roll-out tray shall be mounted on tracks to make the tray adjustable.

The shelf/tray shall be fitted with removable vinyl Turtle Tile matting. The matting shall be interlocking modules approximately 12" square by 1/2" thick. This material shall be resistant to heat, cold, ultra-violet radiation, mechanical impacts, chemical actions and is corrosion resistant.

### **REFLECTIVE STRIPE**

The outer edge and both sides of the shelf/slide-out tray/tool board shall have alternating red and white reflective DOT striping applied for safety.

The floor of the body compartment shall be fitted with removable 1/2" vinyl Turtle Tile matting.

### **COMPARTMENT LIGHTING**

The compartment shall be provided with Rosenbauer InVisiLight LED Compartment lighting. The lighting shall be installed in the adjustable shelving track which shall be recessed into the side wall of the compartment. The lighting shall provide a continuous illumination from the compartment bottom to top and side to side while still allowing for full adjustment of any compartment provision (shelf/tray/etc.). To prevent damage, lights that protrude into the compartment in any fashion shall be deemed unacceptable.

The lights shall be installed in the shelving tracks; Two (2) lights 56" in length shall be installed, one on each side of the compartment. The lights shall produce approximately 17 lumens per inch of lighting.

The lights shall be provided with a 5-Year warranty.

The compartment light will be controlled by an automatic "On-Off" switch located on each compartment door.

#### **WHEEL WELL COMPARTMENT LEFT SIDE AHEAD OF WHEELS**

One (1) wheel well compartment shall be located on the left side in the rear wheel well panel ahead of the rear wheels of the type specified herein.

One (1) breathing air cylinder storage compartment for three (3) SCBA cylinders (not supplied) shall be provided and located in the rear wheel well of the apparatus body.

The cylinder storage compartment shall be constructed entirely of aluminum. The door assemblies shall be provided with a gasket between door and body side, bolted in-place and removable for repair or replacement.

The compartment shall be provided with SCBA cylinder scuff protection. A painted stainless steel door shall be provided.

Three (3) one-inch (1") wide loop of black webbing shall be installed in each SCBA compartment to prevent the bottle from sliding out of the compartment in case of door failure. The loop shall be mounted, centered in the compartment and shall hang within one-inch (1") of the compartment floor to allow the bottle to pass by the strap when the bottle is placed in the compartment. The strap shall loop over the valve.

#### **WHEEL WELL COMPARTMENT LEFT SIDE BETWEEN TANDEMS**

One (1) wheel well compartment shall be located on the left side in the rear wheel well panel between the rear tandem wheels of the type specified herein.

Two (2) breathing air cylinder storage compartment shall be provided and located in the rear wheel well of the apparatus body.

The cylinder storage compartment shall be constructed entirely of aluminum. The door assemblies shall be provided with a gasket between door and body side, bolted in-place and removable for repair or replacement.

Compartment shall be provided with SCBA cylinder scuff protection. A painted stainless steel door shall be installed.

Two (2) one-inch (1") wide loop of black webbing shall be installed in each SCBA compartment to prevent the bottle from sliding out of the compartment in case of door failure. The loop shall be mounted, centered in the

compartment and shall hang within one-inch (1") of the compartment floor to allow the bottle to pass by the strap when the bottle is placed in the compartment. The strap shall loop over the valve.

#### **WHEEL WELL COMPARTMENT LEFT SIDE BEHIND WHEELS**

One (1) wheel well compartment shall be located on the left side in the rear wheel well panel behind the rear wheels of the type specified herein.

#### **FUEL FILL DOOR**

A Fire Shopp Inc. fuel fill access assembly shall be provided on the left side rear wheel well area. The assembly shall include a painted stainless steel fuel fill enclosure door and a black polymer fuel assembly. A label indicating DIESEL FUEL ONLY shall be applied.

#### **WHEEL WELL COMPARTMENT RIGHT SIDE AHEAD OF WHEELS**

One (1) wheel well compartment shall be located on the right side in the rear wheel well panel ahead of the rear wheels of the type specified herein.

One (1) breathing air cylinder storage compartment for three (3) SCBA cylinders (not supplied) shall be provided and located in the rear wheel well of the apparatus body.

The cylinder storage compartment shall be constructed entirely of aluminum. The door assemblies shall be provided with a gasket between door and body side, bolted in-place and removable for repair or replacement.

The compartment shall be provided with SCBA cylinder scuff protection. A painted stainless steel door shall be provided.

Three (3) one-inch (1") wide loop of black webbing shall be installed in each SCBA compartment to prevent the bottle from sliding out of the compartment in case of door failure. The loop shall be mounted, centered in the compartment and shall hang within one-inch (1") of the compartment floor to allow the bottle to pass by the strap when the bottle is placed in the compartment. The strap shall loop over the valve.

#### **WHEEL WELL COMPARTMENT RIGHT SIDE BETWEEN TANDEMS**

One (1) wheel well compartment shall be located on the right side in the rear wheel well panel between the rear tandem wheels of the type specified herein.

Two (2) breathing air cylinder storage compartment shall be provided and located in the rear wheel well of the apparatus body.

The cylinder storage compartment shall be constructed entirely of aluminum. The door assemblies shall be provided with a gasket between door and body side, bolted in-place and removable for repair or replacement.

Compartment shall be provided with SCBA cylinder scuff protection. A painted stainless steel door shall be installed.

Two (2) one-inch (1") wide loop of black webbing shall be installed in each SCBA compartment to prevent the bottle from sliding out of the compartment in case of door failure. The loop shall be mounted, centered in the compartment and shall hang within one-inch (1") of the compartment floor to allow the bottle to pass by the strap when the bottle is placed in the compartment. The strap shall loop over the valve.

### **WHEEL WELL COMPARTMENT RIGHT SIDE BEHIND WHEELS**

One (1) wheel well compartment shall be located on the right side in the rear wheel well panel behind the rear wheels of the type specified herein.

### **FUEL FILL DOOR**

A Fire Shopp Inc fuel fill access assembly shall be provided on the right side rear wheel well area. The assembly shall include a painted stainless steel fuel fill enclosure door and a black polymer fuel assembly. A label indicating DIESEL FUEL ONLY shall be applied.

### **REAR CENTER COMPARTMENT**

There shall be one (1) full height compartment located at the rear of the apparatus. The compartment shall be equipped with a full height painted finish roll up door.

The compartment shall be equipped with the following:

### **REAR BODY PROTECTION PANELS**

Painted smooth aluminum overlays and panels shall be installed on the rear of the body from the rear step to the top of the body and above the rear center compartment door. The material shall be bolted in place and sealed to prevent any moisture entry between the overlay and the body structure.

A removable louvered vent shall be provided in the compartment.

### **ADJUSTABLE SHELF**

Two (2) compartment shelf(ves) shall be provided and constructed of .190" smooth aluminum, and are to have formed upward breaks on front and rear for added strength. Shelf(s) shall be fully adjustable within the compartments. Lighter gauge shelf materials are not acceptable.

Shelf(ves) shall extend full width of the compartments, within .50" of the overall width, and adjust up and down in the integral shelf tracks.

The shelf/tray shall be fitted with removable vinyl Turtle Tile matting. The matting shall be interlocking modules approximately 12" square by 1/2" thick. This material shall be resistant to heat, cold, ultra-violet radiation, mechanical impacts, chemical actions and is corrosion resistant.

#### 1000# ROLLOUT TRAY

One (1) SlideMaster SM3-SP Series mid profile telescoping equipment tray(s) shall be installed that is(are) approximately **90" long**. The tray assembly shall have a silver powder coated steel slide frame with sealed roller bearings rated to 1,000 pounds. A tray constructed of .190" smooth aluminum plate with four 3" sides shall be mounted to the slide frame. The slide frame shall extend 100% allowing the tray to be completely accessible from outside the compartment. The slide shall have a 3-7/8" deck height.

An integrated manual quarter turn "gravity" lock shall hold tray in both the "in" and "out" positions. The "gravity lock" manually rotates a rod with a tab to engage the bottom frame.

The shelf/tray shall be fitted with removable vinyl Turtle Tile matting. The matting shall be interlocking modules approximately 12" square by 1/2" thick. This material shall be resistant to heat, cold, ultra-violet radiation, mechanical impacts, chemical actions and is corrosion resistant.

#### **REFLECTIVE STRIPE**

The outer edge and both sides of the shelf/slide-out tray/tool board shall have alternating red and white reflective DOT striping applied for safety.

The lower floor of the rear body compartment (below the frame rails) shall be fitted with a full-size, stainless steel overlay. All edges will be properly sealed/caulked to prevent moisture from getting under the overlay.

#### COMPARTMENT LIGHTS

Two (2) 54" long OnScene Solutions Access LED lights shall be installed, one on each side of the door opening. The lights shall contain 36 LEDs per light producing approximately 180 lumens (six LEDs and 30 lumens every 9"). The light stick shall be rated at 100,000 hours of service and shall be provided with a 5 year free replacement warranty. The light shall have a 5/8" LEXAN™ polycarbonate tube enclosure for severe duty applications.

The light stick shall be waterproof and be connectible via a jumper wire to add additional lights in series if required.

The compartment light will be controlled by an automatic "On-Off" switch located on each compartment door.

#### **REAR STEP - 12" BOLT-ON**

A 12" deep step surface shall be provided at the rear of the apparatus body, bolted in place and easily removable for replacement or repair. The tailboard shall be constructed of .188" aluminum diamond plate or equal non-slip surface in compliance with NFPA #1901 standards.

The maximum height of the step assembly shall be no more than 24" from the ground when the apparatus is in the loaded condition. A label shall be provided warning personnel that riding on the rear step while the apparatus is in motion is prohibited.

### **LEFT SIDE ROOF COMPARTMENTS**

Two (2) upper body compartment shall be provided top of body with useable dimensions of approximately 24" wide by 20" deep by half the available upper body length.

The compartment shall have a lift-up door installed and constructed of 3/16" NFPA approved non-slip aluminum tread plate flanged downward to overlap the door opening. The door shall have a stainless steel hinge and dual gas openers. The door opening shall be flanged upward to prevent water from running into compartments when the door is closed. The gas openers shall be installed in a dual purpose over-center arrangement to hold the door in either the open or closed position. Two (2) heavy duty socket and plunger latches shall be installed to secure the door. A heavy duty chrome grab handle shall be provided to lift the door.

The compartment shall be located on the left side of the body.

The floor areas of the up to 90" long roof compartments shall be fitted with removable vinyl Turtle Tile matting. The matting shall be interlocking modules approximately 12" square by 9/16" thick. This material shall be resistant to heat, cold, ultra-violet radiation, mechanical impacts, chemical actions and is corrosion resistant.

### **COMPARTMENT LIGHT**

One (1) 62" long OnScene Solutions Access LED light shall be installed on the door and contain 42 LEDs producing approximately 210 lumens per light (six LEDs and 30 lumens every 9"). The light stick shall be rated at 100,000 hours of service and shall be provided with a 5 year free replacement warranty. The light shall have a 5/8" LEXAN™ polycarbonate tube enclosure for severe duty applications. The light stick shall be waterproof and be connectible via a jumper wire to add additional lights in series if required.

The compartment light will be controlled by an automatic "On-Off" switch located on each compartment door.

### **RIGHT SIDE ROOF COMPARTMENTS**

Two (2) upper body compartment shall be provided top of body with useable dimensions of approximately 24" wide by **24.5" deep** by half the available upper body length.

**Provisions shall be made to store one (1) Duo-Safety model 35B, 7' to 14' combination ladder on beam (edge) within the compartment.**

The compartment shall have a lift-up door installed and constructed of 3/16" NFPA approved non-slip aluminum tread plate flanged downward to overlap the door opening. The door shall have a stainless steel hinge and dual gas openers. The door opening shall be flanged upward to prevent water from running into compartments when the door is closed. The gas openers shall be installed in a dual purpose over-center arrangement to hold the door in either the open or closed position. Two (2) heavy duty socket and plunger latches shall be installed to secure the door. A heavy duty chrome grab handle shall be provided to lift the door.

The compartment shall be located on the right side of the body.

The floor areas of the up to 90" long roof compartments shall be fitted with removable vinyl Turtle Tile matting. The matting shall be interlocking modules approximately 12" square by 9/16" thick. This material shall be resistant to heat, cold, ultra-violet radiation, mechanical impacts, chemical actions and is corrosion resistant.

#### COMPARTMENT LIGHT

One (1) 62" long OnScene Solutions Access LED light shall be installed on the door and contain 42 LEDs producing approximately 210 lumens per light (six LEDs and 30 lumens every 9"). The light stick shall be rated at 100,000 hours of service and shall be provided with a 5 year free replacement warranty. The light shall have a 5/8" LEXAN™ polycarbonate tube enclosure for severe duty applications. The light stick shall be waterproof and be connectible via a jumper wire to add additional lights in series if required.

The compartment light will be controlled by an automatic "On-Off" switch located on each compartment door.

#### **ROOF DUNNAGE AREA**

A roof dunnage area shall be provided. The dunnage area shall be approximately 72" front to rear, 94" right to left and **24.5" deep**. The dunnage area shall be located at the front of the body and be fabricated from .190 smooth aluminum with a natural finish. Floor drains, routed to the exterior of the body shall be installed.

**The forward area will be open and house the light-tower assembly. The open storage area shall have LED lighting to sufficiently illuminate the area when the vehicle park brake is engaged.**

**Enclosed storage for two (2) stokes baskets stored on edge will be provided at the rear of the dunnage compartment. The stokes basket storage will be separated into two separate pockets and will measure 24.5" front to back and be full body width.**

The stokes basket storage shall have a forward-hinged, lift-up door installed and constructed of 3/16" NFPA approved non-slip aluminum tread plate flanged downward to overlap the door opening. The door shall have a stainless steel hinge and dual gas openers. The door opening shall be flanged upward to prevent water from running into compartments when the door is closed. The gas openers shall be installed in a dual purpose over-center arrangement to hold the door in either the open or closed position. Two (2) heavy duty socket and

plunger latches shall be installed to secure the door. A heavy duty chrome grab handle shall be provided to lift the door.

### **ROOF TOP CRIBBING/LUMBER STORAGE**

Storage for cribbing/lumber shall be provided in the upper body walkway area. The storage area shall be the full width, depth and length of the body.

The compartment shall have a lift-up door installed and constructed of 3/16" NFPA approved non-slip aluminum tread plate flanged downward to overlap the door opening. The door shall have a stainless steel hinge and dual gas openers. The door opening shall be flanged upward to prevent water from running into compartment when the door is closed. The gas openers shall be installed in a dual purpose over-center arrangement to hold the door in either the open or closed position. Two (2) heavy duty socket and plunger latches shall be installed to secure the door. A heavy duty chrome grab handle shall be provided to lift the door.

### **SURFACE MOUNT AWNING**

One (1) side body awning up to 24 feet long shall be surface mounted on the left side of the body.

The housing of the awning will be painted job color.

### **CANOPY AWNING - 110V ELECTRIC**

One (1) side body 110V electric awning shall be up to 22 feet long x 10 feet wide and shall be installed on the side of the body. The awning support arms shall be attached at the front and rear bottom corners of the apparatus on the outer door supports.

The canopy shall be made from white acrylic fabric that resists rotting, cracking, peeling and mildew. The awning shall have spring design and system, and shall be easily extended and retracted.

The wraparound slatted metal awning enclosure protects the awning in transit and automatically opens or closes with the awning. The enclosed design shall minimize dirt and grime from entering through exposed arms. Stainless steel nuts, washers, screws and other hardware shall be utilized in installation.

### **SURFACE MOUNT AWNING**

One (1) side body awning up to 24 feet long shall be surface mounted on the right side of the body.

The housing of the awning will be painted job color.

### **CANOPY AWNING - 110V ELECTRIC**

One (1) side body 110V electric awning shall be up to 22 feet long x 10 feet wide and shall be installed on the side of the body. The awning support arms shall be attached at the front and rear bottom corners of the apparatus on the outer door supports.

The canopy shall be made from white acrylic fabric that resists rotting, cracking, peeling and mildew. The awning shall have spring design and system, and shall be easily extended and retracted.

The wraparound slatted metal awning enclosure protects the awning in transit and automatically opens or closes with the awning. The enclosed design shall minimize dirt and grime from entering through exposed arms. Stainless steel nuts, washers, screws and other hardware shall be utilized in installation.

### **FRONT BODY PROTECTION PANELS**

Aluminum tread plate overlays and panels shall be installed on the front of the body from the lower edge to the top of the compartment doors. The material shall be bolted in place and sealed to prevent any moisture entry between the overlay and the body structure.

### **REAR BODY PROTECTION PANELS**

Smooth aluminum shall be installed on the rear of the body, to allow for the installation of a "Chevron" stripe on the rear.

### **ACCESS LADDER - EZ CLIMB - RIGHT REAR**

There shall be a swing out and down access ladder supplied and installed for accessing the top of the apparatus. It shall be of an all aluminum design incorporating treads 13" inches wide spaced no more than eighteen (18") inches apart. The ground to the first step dimension, on level ground, shall be no more than twenty-four (24") inches.

The access ladder shall have integrated hand holds, to aid in the ascent/descent of the ladder.

When in the deployed position the ladder shall have an angle of approximately 75-degrees to facilitate ascending and descending the ladder. The ladder shall be retained in the stowed and deployed position by two (2) gas cylinders and shall not require the use of latches to hold it in position. The ladder overall width shall be approximately 14 inches wide.

### **STEP LIGHT**

Three (3) Tecniq Model E03-W000-1 LED lights with clear lens shall be installed to illuminate the access ladder steps.

### **EXTRUDED ALUMINUM RUB RAILS**

Full body length polished aluminum rub rails shall be bolted in place on the lower right and left body sides. The side rub rails shall be a heavy extruded aluminum "C" channel. There shall also be a bolt on aluminum corner casting on each rear corner to blend the rear tail board assembly with the side rub rails.

### **ROLLOUT UNDERBODY COMPARTMENT**

Two (2) rollout underbody storage compartment shall be provided under the apparatus body for additional storage. The compartment shall be constructed from aluminum with an aluminum tread plate door and stainless steel hinge.

500# rating tray slide hardware shall be installed on both sides to allow the inner tray to extend further out from the side of the body. A stainless steel, D-ring handle shall be provided for opening and closing the door. The door shall have weather stripping installed around the perimeter to provide for a weatherproof seal.

The compartments shall be located under L2 & R2

The compartment dimensions shall be approximately 60" wide x 24" deep.

The underbody compartments (up to 60" wide) shall be fitted with removable vinyl Turtle Tile matting. The matting shall be interlocking modules approximately 12" square by 9/16" thick. This material shall be resistant to heat, cold, ultra-violet radiation, mechanical impacts, chemical actions and is corrosion resistant.

### **UNDERWRITERS LABORATORIES FIRE PUMP TEST**

The pump shall undergo an Underwriters Laboratories Incorporated test per applicable sections of NFPA standards, prior to delivery of the completed apparatus.

The UL acceptance certificate shall be furnished with the apparatus on delivery.

### **GENERATOR**

One (1) Lima Mac 361PDL3120 40kW PTO driven generator system shall be supplied and installed. The generator shall be installed per the manufacturer recommendations and shall be capable of supplying full power at engine high idle. The alternator field and armature windings shall be of copper magnet wire, coated with class 200 film insulation. The generator alternator shall be capable of accepting a zero power factor load of 200% rated kVA and recover to 90% of rated voltage within 1/2 second. The generator shall be capable of continuous operation in ambient conditions of 120 degrees Fahrenheit.

Splashguards to protect against direct road spray shall be installed. Guards designed to allow for proper cooling air circulation while protecting from road spray during vehicle transport must be installed.

Alternator installations shall provide adequate warning decals and have adequately sized and configured mounting brackets.

#### Data Label

A permanent data label indicating the following information shall be applied:

- Rated voltage
- Phase
- Frequency
- Amperage
- Continuous Watts
- Peak Watts

#### **GENERATOR DRIVE**

The generator shall be mounted on a heavily reinforced steel frame in the chassis frame rail area providing adequate road clearance, and service accessibility. The generator shall be protected from direct road spray with underside aluminum or stainless steel bolt-on protection guard.

The generator shall be driven from a 10 bolt power-take-off from the automatic transmission. A "PTO control" shall be located at driver's position. Generator shall be equipped with a means to prevent the unintended movement of the control device from its set position. An interlock shall prevent PTO engagement unless the parking brake is engaged. An interlock shall be installed to prevent engine speed control from any other source while the generator is operating. A nameplate indicating the chassis transmission shift selector position to be used for generator operation shall be provided in the driving compartment and located so that it can easily be read from the driver's position.

A green indicator light shall be located in the driving compartment. The light shall be energized when the PTO drive has been engaged and shall be marked "GENERATOR PTO ENGAGED." The green light shall be energized when both the PTO drive has been engaged, chassis transmission is in neutral, and parking brake engaged. The green light shall be marked "GENERATOR PTO ENGAGED."

#### **ELECTRICAL SYSTEM INSTALLATION**

The line voltage electrical system shall comply with the applicable NFPA standards and shall also comply with applicable sections of the National Electric Code #70 standards. Line voltage carrying equipment down stream of the power source shall be "listed" (where available) and installed in accordance with manufacturers instructions. The electrical equipment installed shall be suitable for intended use and type locations (wet, dry, or underbody and chassis).

The grounding and bonding shall comply to applicable sections of NFPA standards. The chassis frame rail, body sheet metal, and cab sheet metal shall be properly bonded per NFPA schematic. The bonding copper conductor shall be rated at 115 % of current rating of power source.

## OVER CURRENT PROTECTION PANEL

Manually re-setable overcurrent devices shall be installed to protect the line voltage electrical system components. A main overcurrent protection device shall be provided that is either incorporated in the power source or is connected to the power source by a power supply assembly. The size of the main overcurrent protection device shall not exceed 100 percent of the nameplate amperage rating on the power source specification label or the rating of the next larger available size overcurrent protection device where so recommended by the power source manufacturer.

The conductor used in the power supply assembly between the output terminals of the power source and the main overcurrent protection device shall not exceed 144 inches in length. Over this length, a master circuit breaker shall be provided near the generator in accessible location.

Overcurrent protection devices shall be provided for each individual circuit and shall be sized at not less than 15 amps in accordance with NEC. Each overcurrent protection device shall be marked to identify the function of the circuit it protects. The circuit breaker panel and instruments shall be located so that all circuit breakers are readily visible under normal operating conditions. The panel shall be readily visible and located so that there is unimpeded access to the panel board controls.

The chassis engine shall have a governor capable of maintaining engine speed within the limits required by the generator to meet frequency control.

## LABELING OF EQUIPMENT

All circuit breakers shall be labeled. All interior and exterior outlets shall be provided with labels indicating output amperage, voltage and phase.

## INSTRUCTION LABEL

A label that provides the operator with the essential power source operating instructions, including the power-up and power-down sequence shall be permanently attached to the apparatus at any point where such operations can take place.

## ELECTRICAL SYSTEM TESTING

All apparatus installed wiring and associated equipment shall be tested by the apparatus manufacturer in compliance to applicable NFPA standards. The apparatus manufacturer shall test the generator system at the continuous duty rating for a minimum of two (2) hours.

If the apparatus is equipped with a fire pump, both the generator and fire pump shall be operated simultaneously at full pump capacity and generator at "continuous rating" for two (2) hours. Failure of either the generator system or fire pump system during testing will require retesting of both components simultaneously.

The conditions specified shall be recorded at least every 1/2 hour during the test. The results of these tests shall be submitted to the purchaser upon delivery.

Each outlet shall be tested individually to device rating.

Electrical polarity verification shall be made of all permanently wired equipment and receptacles to determine that connections have been properly made.

### **CIRCUIT BREAKER BOX**

One (1) circuit breaker box for three phase voltage equipment shall be provided capable of holding thirty (30) breakers.

### **CIRCUIT BREAKER BOX LOCATION**

The circuit breaker box shall be installed in an outside body compartment.

### **GENERATOR INSTRUMENTS**

Fire Research FROG-D model FDA700 series generator monitoring display kit shall be installed to monitor a three phase, delta wound, 60 Hz generator. The kit shall include a display module, three (3) voltage transformer, three (3) current transformers, and cables. The display case shall be waterproof and have dimensions not to exceed 4 1/4" high by 4 1/4" wide by 3 1/4" deep.

The following displays shall be provided with super bright LED digits more than 1/2" high:

- Generator output frequency in hertz

- Line voltage, phase to neutral or phase to phase, in volts

- Line current for each phase in amperes.

Individual line current and voltage shall be displayed at the push of a button or set to continuously scroll.

The program shall support the accumulation of elapsed generator hours and the monitoring of hydraulic oil temperature. Generator hours and oil temperature shall be displayed at the push of a button. Audible warning alarm outputs are provided for generator overload, over/under voltage fluctuations, and high oil temperature.

The panel shall be located next to circuit breaker panel.

### **CIRCUIT BREAKER BOX LOCATION**

The circuit breaker box shall be installed on the wall towards the front of the apparatus in the left front body compartment.

The instrument panel for the generator shall be installed next to the breaker panel.

## **LINE VOLTAGE WIRING INSTALLATION**

Type THHN line voltage wiring in the vehicle shall be through Carflex, or equal flexible moisture resistant reinforced conduit, with proper seal-tight connectors and hardware. Type SO line voltage wiring in the vehicle shall be suitable for mobile applications and should not require the use of conduit. All Type THHN and Type SO line voltage wiring shall be stranded copper conductors with 600-volt insulation rated for at least 194 degrees. All electrical junction boxes shall conform to the National Electric Code and be accessible for service.

Electrical conduit shall be supported within 6 inches of any junction box and at a minimum of every 24 inches of run. Supports shall be made of corrosion protected metal and that does not cut or abrade the conduit and shall be mechanically fastened to the vehicle.

Electrical conduit shall not be attached to chassis suspension components, water or fuel lines, air or air brake lines, fire pump piping, hydraulic lines, exhaust system components, or low voltage wiring and shall be separated by a minimum of 12 inches from exhaust piping or properly shielded and separated from fuel lines by a minimum of 6 inches distance.

All wiring connections and terminations shall provide a positive mechanical and electrical connection. Connectors shall be installed in accordance with the manufacturer's instructions. Use of wire nuts or insulation displacement and insulation piercing connectors shall be avoided.

## **LINE VOLTAGE WIRING INSTALLATION**

Line voltage wiring in the apparatus shall be with Type SO or approved cable suitable for mobile applications. The flexible electrical cable shall have 600-volt insulation rated for at least 194 degrees F. All junction boxes shall conform to the National Electric Code and shall be accessible for service.

Electrical cable shall be supported within 6 inches of any junction box and at a minimum of every 24 inches of run. Supports shall be made of corrosion protected metal that does not cut or abrade the conduit or cable and shall be mechanically fastened to the vehicle.

Electrical cable shall not be attached to chassis suspension components, water or fuel lines, air or air brake lines, fire pump piping, hydraulic lines, exhaust system components, or low voltage wiring and shall be separated by a minimum of 12 inches from exhaust piping or properly shielded and separated from fuel lines by a minimum of 6 inches distance.

All wiring connections and terminations shall provide a positive mechanical and electrical connection. Connectors shall be installed in accordance with the manufacturer's instructions. Wire nuts or insulation displacement and insulation piercing connectors shall not be used.

## **120V ELECTRIC RECEPTACLE -- STRAIGHT BLADE**

Three (3) 120-volt 15 amp straight blade, 3-prong duplex receptacle with spring loaded weatherproof cover shall be provided.

The electric receptacle shall be located inside the rear portion of the crew cab.

#### **120V ELECTRIC RECEPTACLE -- STRAIGHT BLADE**

Seven (7) 120-volt 20 amp straight blade, 3-prong duplex receptacle with spring loaded weatherproof cover shall be provided.

The electric receptacle shall be located inside the left side exterior body compartment ahead of the rear wheels.

The electric receptacle shall be located inside the left side exterior body compartment behind the rear wheels.

The electric receptacle shall be located inside the right side exterior body compartment ahead of the rear wheels.

The electric receptacle shall be located inside the right side exterior body compartment behind the rear wheels.

#### **120V ELECTRIC RECEPTACLE -- TWIST LOCK**

Two (2) 120-volt 20 amp twist lock (NEMA L5-20) receptacle with spring loaded weatherproof cover shall be provided.

The electric receptacle shall be located near the left side wheel well.

The electric receptacle shall be located near the right side wheel well.

#### **120V ELECTRIC RECEPTACLE -- TWIST LOCK**

One (1) 120-volt 30 amp twist lock (NEMA L5-30) receptacle with spring loaded weatherproof cover shall be provided.

The electric receptacle shall be located near the left side wheel well.

The electric receptacle shall be located near the right side wheel well.

#### **240V ELECTRIC RECEPTACLE -- TWIST LOCK**

Two (2) 240-volt 30 amp twist lock (NEMA L6-30) receptacle with spring loaded weatherproof cover shall be provided.

The electric receptacle shall be located inside the left side exterior body compartment behind the rear wheels.

The electric receptacle shall be located inside the right side exterior body compartment behind the rear wheels.

#### **250V ELECTRIC RECEPTACLE -- TWIST LOCK**

Two (2) 250-volt 50 amp single phase twist lock receptacle (Non-NEMA CS8269) with spring loaded weatherproof cover shall be provided.

**Marinco model CS6369 with weather resistant covers.**

The electric receptacle shall be located on the exterior right rear face of the body.

#### **240V ELECTRIC RECEPTACLE -- STRAIGHT BLADE**

One (1) 240-volt 50 amp NEMA 6-50 straight blade receptacle shall be provided.

The electric receptacle shall be located inside the left side exterior body compartment ahead of the rear wheels.

#### **240V ELECTRIC RECEPTACLE -- PIN AND SLEEVE**

Two (2) 240-volt **60 amp** pin and sleeve receptacle shall be provided.

The electric receptacle shall be located in the left side exterior body compartment over the rear wheels.

The electric receptacle shall be located in the right side exterior body compartment over the rear wheels.

#### **ELECTRIC CABLE REEL**

One (1) Hannay ECR-1600 series electric cable reel with an electric rewind shall be installed on the vehicle. The reel shall be designed for use with 240 volt, four (4) wire cable. The duty rating of the cable reel shall be for continuous usage. The reel shall be installed so that it is easily accessible for cord access and maintenance. A 12-volt motor controlled by a push button switch located in a convenient position and properly labeled shall perform the electric rewind function.

The installation of the cable reel shall meet applicable sections of the NFPA standards at.

#### **Reel Capacity**

The reel shall be sized to hold 110 percent of the capacity needed for the specified cable length. The wire size shall be in accordance with the National Electric Code.

#### **Labeling**

An information label shall be installed in a location visible adjacent to any permanently connected reel with the following data:

- Voltage
- Phase
- Current type
- Current rating
- Total cable length

#### Electrical Supply Wiring To Reel

The wiring shall end in a sealed conduit box at the reel with mechanical connectors to allow removal of the reel. Appropriately, sized wire and circuit breakers shall be utilized.

The electric cable reel shall be installed in the upper left side body, in the specified coffin compartment.

A two hundred foot (200') length of 10/4 yellow electric cable shall be installed with specified plugs. The cable shall be type SEO-WA with a 30 amp, 240 volt rating.

The electric cable shall be configured with a 120/240-volt 30 amp NEMA L14-30R four-prong twist lock female receptacle.

One (1) ball stop shall be attached to the electric cable to prevent total re-wind and to allow the cable to remain at a reachable position. The ball shall positively attach to the cable and be bright orange in color for high visibility.

One (1) four-sided encompassing stainless steel roller unit for the electric cable shall be installed on specified reels. The roller unit shall be mounted in the specified location to permit the cable to feed directly off the reel.

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- Voltage
- Phase
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## Electrical Supply Wiring To Reel

The wiring shall end in a sealed conduit box at the reel with mechanical connectors to allow removal of the reel. Appropriately, sized wire and circuit breakers shall be utilized.

The electric cable reel shall be installed in the upper right side body, in the specified coffin compartment.

A two hundred foot (200') length of 10/4 yellow electric cable shall be installed with specified plugs. The cable shall be type SEO-WA with a 30 amp, 240 volt rating.

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One (1) four-sided encompassing stainless steel roller unit for the electric cable shall be installed on specified reels. The roller unit shall be mounted in the specified location to permit the cable to feed directly off the reel.

## **TELESCOPIC TRIPOD LED FLOODLIGHT**

Two (2) FireTech Guardian Elite pole-mount fixture, model 90-277V with switch shall be provided. Two (2) FireTech model FT-SL-GESM-110-SW-\* LED scene lights will be mounted, one (1) on each tri-pod.

A tripod truck mount bracket set shall be installed. The set shall include a lower base plate and an upper lock with a quick release spring loaded locking pin.

The floodlight shall be installed at the rear of the apparatus body on the left side only.

The rear quartz floodlight(s) shall be circuit breaker protected. The circuit breaker(s) shall be used as an ON/OFF switch(es) for the floodlight(s). The circuit breaker(s) shall be labelled "REAR QUARTZ".

The on/off switch(es) for the floodlight(s) shall be located on the base of the lamp housing.

## **LIGHT TOWER**

A light tower shall be recess mounted into the top of the body.

A Will-Burt Night Scan Powerlite Series 4.5-1200-2 light tower shall be provided. The horizontal surface mounted tower shall be raised electrically and pneumatically.

## **FLOODLIGHT SYSTEM**

Two (2) Night Scan Sirion lamps shall be provided. Each 600 Watt 120-240 VAC lighthouse shall incorporate a combination of 24 spot light optics, 56 long-range flood optics and 2 short-range flood lamps enclosed in IP-69k rated die-cast white powder coated aluminum housings. The configuration shall consist of 6500k colour LEDs with optic reflector assemblies, and clear non-optic polycarbonate lenses. Each Night Scan Sirion shall have 110,000 lumens for a total of 220,000 lumens. The lens/reflector assembly shall utilize a liquid injection molded silicon gasket to be resistant to water, moisture, dust, and other environmental conditions. The hard coated lens shall provide extended life / luster protection against UV and chemical stresses. The light shall be vibration resistant. The Night Scan Sirion shall have a warranty of 10 years. Each light fixture shall measure H=21.33" W=13.25", D=5" (H=54.2 cm, W=33.7 cm, D=12.7 cm).

## **DESIGN AND CONSTRUCTION**

The tower shall be a series of graduated extruded aluminum tubes that nest one inside another. The tower shall have an extended height of approximately 15 ft (4.5 m) above the mounting location and a stowed height of approximately 11.8" (30.1 cm) above the mounting surface. The tower shall be approximately 42" wide by 77.9" in length (106.7 cm wide by 197.8 cm long). The tower shall be designed to sustain the intended top load with a 125 percent safety factor and shall exceed NFPA requirements of a minimum 50 mph (80 kph) wind when in a fully raised and unguyed position. The 4.5 metre Powerlite towers shall be tested for wind survival to 69 MPH (111 KPH) fully extended and 118 MPH (190 KPH) retracted. The tower shall be of a compact design with a total weight of approximately 192 pounds (87 kilograms). The light tower shall not exceed 200 lbs. / 91 kg.

The tower tubular sections shall be constructed of high strength, heat-treated 6061-T6 aluminum tubes and collars. Each tube shall be protected by low friction synthetic collars for smooth operation and long life. Bumpers shall be designed to reduce shock on extension and retraction. All exterior surfaces shall be anodized for long life and fasteners shall be stainless steel for corrosion resistance.

#### NESTING SYSTEM

The tower shall have an “auto-stow” function. A double click of the mast down button will stow, retract, and shut power off to the unit. An integrated saddle assembly with synthetic, non-marring rests shall be provided for the tower and flood light assembly in the nested position.

#### FLOODLIGHT ROTATION AND TILT OPERATION

The tower shall be equipped with a Will Burt Model RCP (remote control positioner) to control the rotation and direction of the lights in a manner that provides 360° of light coverage. The remote control positioner unit shall be equipped with three (3) gear motors; one for rotation and two for individual positioning of each floodlight bank (one (1) motor for left side tilting and one (1) motor for right side tilting.) This feature shall be designed so that the lighting may be directed in two separate locations equally and simultaneously for enhanced safety and functionality. The positioner shall also rotate the floodlight assembly from zero to 350 degrees and tilt the floodlight assembly from 0 to 346 degrees.

#### HAND HELD REMOTE CONTROL

A safety yellow in color for high visibility, hand held remote control pendant, connected to a quick-disconnect, 25 ft. (7.62 meter) coiled cord shall be provided to control the tower. All functions of the tower shall be accessible through this remote control including raising with “auto-up” ability, lowering with “auto-stow” ability, rotation and separate buttons for tilting of each floodlight bank and floodlight switching. An auxiliary

power button shall also be included to control optional equipment such as strobe lights or a camera that is mounted to the mast. Each button of the controller shall have a corresponding LED light that provides operational feedback. An LED display that includes alphanumeric feedback shall be located in the center of the controller. This display shall provide operational feedback and error codes if they occur.

## PNEUMATIC CONTROLS

The pneumatic controls to raise and lower the tower shall include an air regulator and solenoid valves. Lights will be operational within approximately 12 seconds from elevation initiation. The tower shall be able to be fully elevated in approximately 60 seconds. In the event of malfunction of the elevating system while the tower is in operation or being deployed, a method of limiting the rate of descent shall be provided to prevent injury to personnel or damage to the equipment.

Two Allen keys as well as directions are included under the cover to fold the mast into the saddle if manual stowage of mast is required.

The air supply for pneumatic operation of the tower shall be from chassis air with supplied air regulator and dual solenoids. The installer shall provide piping, shut-off valve, pressure protection valve, air compressor, auxiliary air tank(s) and additional required equipment. The complete air system shall be installed in conformance to applicable NFPA and FVMSS brake standards.

## ELECTRICAL INSTALLATION

The wiring harness for the floodlights, accessories, and remote control positioner shall be internally routed through telescoping aluminum tubing with a highly flexible coil cord.

Installer supplied 12 or 24 volt electrical wiring shall be provided with electrical connections at the tower assembly in conjunction with appropriate electrical power for the floodlights. The installer as required by manufacturer's installation guidelines shall provide appropriate wiring from the circuit breaker panel for connection to the tower. The electric power to the tower and light units shall automatically disconnect whenever the tower is in the nested position.

The tower operation area shall be illuminated automatically by a look up light whenever the tower is in operation. Any upward movement of the tower from the nested position shall energize a red warning light in the cab and a secondary light located at the tower control area. In addition, the installer shall provide parking brake interlocks and other equipment as required by applicable NFPA standards.

#### WARRANTY

The tower assembly shall carry a two (2) year parts and labor warranty. Exact provisions of such warranty shall be provided with the proposal and at time of delivery of product.

#### LABELING AND NFPA COMPLIANCE

Essential operating instructions and warning labels shall be provided in compliance to applicable OSHA, SAE, and NFPA standards. Appropriate labels on the "hazards of electrocution" associated with the operation of a light tower shall be installed in the appropriate areas.

A label shall be provided at the operator's position by the installer with the following information:

1. Extended height of the tower from the ground.
2. Bulb replacement data.

The tower and installation shall be in full compliance to applicable sections of the current NFPA 1901 Standard.

#### TESTING AND QUALITY ASSURANCE

The tower manufacturer shall be ISO 9001:2015 certified. In addition, quality control and manufacturer testing shall be completed prior to shipment of the tower. The final installer shall test the operation of the tower for a minimum of 2 hours at full load, with testing documentation provided upon delivery.

#### MANUALS

Detailed service, parts, operating, and installation manuals shall be provided by the tower manufacturer. Samples of such manuals shall be provided on request. A CD ROM manual will be provided to the end user.

#### **MOUNTING – LIGHT TOWER CONTROLS**

The controls for the light tower shall be mounted in the left front compartment.

#### **STOKES BASKET VERTICAL SLIDE-IN MOUNTING**

One (1) vertically mounted slide-in stokes basket track shall be installed. The upper and lower tracks shall be fiberglass. The tracks shall be approximately 10" inside width x 86" deep x 26" high (The Stokes basket shall be supplied by the fire department).

Cmpt Lt, Wall, OSS Access, 54" LED Tube Light

#### **BREATHING AIR COMPRESSOR**

A Bauer BP13H-E3-VS-FS mobile breathing air compressor shall be installed in the body in a location identified at the pre-construction meeting.

Operational training shall be supplied to the fire department/end user by qualified personnel.

The two ASME storage bottles shall be mounted in the body in a location identified at the pre-construction meeting.

### **HORIZONTAL MOUNTING OF AIR PRESSURE VESSELS/CYLINDERS**

The specified air pressure vessels or cylinders shall be securely mounted in a rack in the location specified below. The mounting rack shall be installed with bolts in an adjustable manner, directly to the apparatus body or sub-structure. The units shall not be subject to damage, wear, or vibration while in the mounting system. The units shall be accessible for removal, testing, and maintenance. Units shall not be located near heat producing devices or chassis exhaust system.

The following shall be installed:

Number of pressure vessels: Two (2)

### **ASME PRESSURE VESSEL AIR STORAGE SPECIFICATIONS**

One (1) ASME breathing air pressure vessels shall be provided as part of the Bauer compressor package and mounted in the body in a location identified at the pre-construction meeting..

The following ASME air pressure vessels shall be provided:

1. Quantity: Two (2)
2. Pressure: 6,000#
3. Diameter: 10"
4. Height: 64"
5. Weight: 350 pounds

This specification defines the requirements for a compressed air system used to provide air suitable for human respiration with self-contained breathing apparatus (SCBA). The air system is to be designed for mobile operation.

### **CYLINDER FILL ENCLOSURE**

A Bauer CFS-5.5-2M fill station designed to refill self-contained breathing apparatus (SCBA) cylinders shall be installed on the apparatus. The fill station shall be designed to hold two (2) cylinders.

The fill station shall be designed for a maximum working pressure of 6,000 PSIG. The fill station shall be built and tested by a third party to verify compliance to the applicable NFPA 1901 standards.

The fill station shall be supplied on a welded structural steel frame and shall be fully enclosed.

The front-loading, one position, fill station shall totally contain the SCBA or SCUBA cylinder during the refilling process.

The fill station's outer enclosure shall be constructed of 1/4" thick steel. The fill station door shall be constructed of 1/4" thick steel plate and reinforced by two 1/4" thick steel cylinder holders, providing a 1/2" thick steel protective safety barrier between the operator and the refilling process. The fill station shall be ergonomically designed for maximum operator convenience and safety for refilling cylinders. The fill station door and cylinder holder assembly shall tilt out towards the operator, providing unobstructed access to the cylinder holder to load and unload the cylinders. A slip resistant handle and heavy-duty gas spring shall be incorporated into the design of the fill station to assist the operator in opening and closing the fill station door.

Each cylinder holder shall be lined with ABS plastic strips to prevent scuffing the outer surface of the SCBA cylinders. For complete operator protection, the fill station shall include a two-point pneumatic safety interlock system that will prevent refilling SCBA cylinders unless the fill station door is closed and secured in the closed position.

Two (2) fill hose connections shall be located within the fill station. Each fill hose shall be equipped with a bleed valve and SCBA fill adapter of choice. CGA-346 male adapters shall be provided to anchor the fill hoses when not in use.

Installation of the fill station shall require high pressure connections from the above mentioned fill panel; one high pressure connection to each fill position and one to the fill stations air actuated door interlock system. The airline to the door interlock system must be tapped in after the fill panels regulator and before the fill valves to insure proper operation of the fill station door.

The fill station shall be tested and copy of the manufacturers test report shall be provided on delivery. An operator's instruction and maintenance manual shall be supplied on delivery. The manual shall outline all operating and maintenance instructions. The manual shall include detailed illustrated drawings along with a complete parts listing for all illustrated components. Warnings and safety precautions shall be included in the manual. A manufacturer's nameplate shall be securely affixed to the stations frame in a conspicuous location.

### **TOOL AIR COMPRESSOR**

**ONE (1) HYDRAULIC DRIVE AIR COMPRESSOR WILL BE PROVIDED . THE COMPRESSOR WILL HAVE A CAPACITY OF DELIVERING 300 CFM OF FREE AIR AT 125 PSI. SEPARATE TWO (2)-STAGE, HEAVY DUTY, DRY-TYPE AIR FILTERS WILL BE PROVIDED TO REMOVE DIRT PARTICULATE FROM ENTERING THE AIR COMPRESSOR.**

THE SEPARATOR TO BE LOCATED INTERNALLY IN THE AIR RECEIVER TANK. THE SEPARATOR WILL BE CONSTRUCTED WITH A PLEATED MEDIA, WELDED STRAPS, SCRIM BARRIER, SUPPORT SCREEN, EXPANDED METAL OUTER WRAP AND INTERNAL AND EXTERNAL GROUNDING. THE COMPRESSOR INSTRUMENT PANEL WILL INCLUDE THE COMPRESSOR AIR PRESSURE GAUGE, HOUR METER, COMPRESSOR OIL TEMPERATURE GAUGE AND AN OVER-TEMPERATURE/OVER-PRESSURE RESET SWITCH. EXACT LOCATION OF THE INSTRUMENT PANEL TBD AT PRE-CONSTRUCTION.

PROTECTIVE CIRCUIT - THE COMPRESSOR WILL PROVIDE PROVISIONS FOR AUTOMATIC SHUTDOWN IN CASE OF HIGH COMPRESSOR TEMPERATURE OR OVER PRESSURIZATION. ADDITIONAL PROTECTIVE FEATURES PROVIDED WILL INCLUDE AUTOMATIC BLOW DOWN VALVE, RECEIVER RELIEF VALVE AND MINIMUM PRESSURE VALVE.

COOLING SYSTEM - THE COMPRESSOR COOLING SYSTEM WILL ALLOW RATED AIR DELIVERY AND PRESSURE OPERATION CONTINUOUSLY IN 125 DEGREE FAHRENHEIT AMBIENT TEMPERATURES. THE COOLER WILL BE MOUNTED IN A POWDER COATED SHEET METAL ENCLOSURE WITH A SUCTION TYPE FAN ASSEMBLY. (NO ABS PLASTIC SHROUDING) COMPRESSOR FLUID WILL BE FILTERED BY A 25 MICRON FULL FLOW SPIN-ON REPLACEABLE FILTER CANISTER. A FAN TEMPERATURE SWITCH WILL BE PROVIDED TO REGULATE COMPRESSOR COOLING.

INLET CONTROLS - A PNEUMATIC INLET CONTROL VALVE WILL BE INTEGRATED INTO THE COMPRESSOR SYSTEM AND WILL AUTOMATICALLY MODULATE OUTPUT FROM 0 UP TO 100 PERCENT IN RESPONSE TO AIR DEMAND.

TOOL AIR REGULATOR - A TOOL AIR REGULATOR WILL BE SUPPLIED WITH A GAUGE AND SHUTOFF VALVE. THE REGULATOR WILL BE HAND ADJUSTABLE FROM 0 TO 175 PSI. A GAUGE WILL BE ON THE REGULATED SIDE. A TOTAL QUANTITY OF TWO (2) WILL BE SUPPLIED.

AIR OUTLETS - WILL BE PROVIDED AS DESCRIBED BELOW:

- **Driver side forward compartment (D2)**
  - ☐ One (1) Tomco PT40 female outlet with 1/4-turn control valve
- **Driver side rear overwheel compartment (D5)**
  - ☐ One (1) outlet with a Tomco PT40 female connection and ¼-turn control valve
  - ☐ One (1) ¾" outlet with 3/8" Hanson model #1100 female connection and ¼-turn control valve
- **Passenger side forward compartment (P2)**

☐ One (1) Tomco PT40 female outlet with 1/4-turn control valve

- **Passenger side rear overwheel compartment (P5)**

☐ One (1) outlet with a Tomco PT40 female connection and ¼-turn control valve

☐ One (1) ¾" outlet with 3/8" Hanson model #1100 female connection and ¼-turn control valve

### **AIR HOSE REEL LOW PRESSURE FOR TOOLS**

Two (2) Hannay 1500 Series low pressure (50-250 PSI) utility air hose reel shall be installed. The reel shall have a 12 volt electric rewind motor.

The 12 volt rewind electrical supply shall be wired directly from the chassis battery system with heavy duty stranded copper cable, with guarded finger type rewind button.

### **LOW PRESSURE AIR HOSE**

Two (2) 150' length of 3/8" low pressure (not for breathing purposes) utility air hose shall be provided on the specified low pressure reel. The hose shall have quick connect couplings.

### **AIR HOSE ROLLER ASSEMBLY**

Two (2) four-way style stainless steel roller assembly shall be installed at the specified air location(s). The roller shall be installed near the reel to permit the air hose to feed directly off of the reel and away from the compartment.

### **BALL STOP ASSEMBLY**

Two (2) orange ball stop assembly shall be installed at the specified air location(s). The ball stop shall be installed on the air hose as to prevent the air hose from not to being rewound too far onto the reel.

### **AIR HOSE REEL - HIGH PRESSURE BREATHING AIR**

One (1) Hannay 1500 Series 12 volt electric rewind high pressure air hose reel shall be installed.

The 12 volt rewind electrical supply shall be wired directly from the chassis battery system with heavy duty stranded copper cable, with guarded finger type rewind button.

### **HIGH PRESSURE BREATHING AIR HOSE**

One (1) 200' length of 1/4" high pressure (Minimum of 5000 PSI rating) breathing air hose shall be provided on the air reel. The hose shall include quick connect fittings.

### **AIR HOSE ROLLER ASSEMBLY**

One (1) captive type roller assembly shall be installed at the specified air location(s). The roller shall be installed near the reel to permit the air hose to feed directly off of the reel and away from the compartment.

### **BALL STOP ASSEMBLY**

One (1) orange ball stop assembly shall be installed at the specified air location(s). The ball stop shall be installed on the air hose as to prevent the air hose from not to being rewound too far onto the reel.

### **AIR HOSE REEL LOW PRESSURE BREATHING AIR**

Two (2) Hannay 1500 Series 12 volt electric rewind low pressure (50-250psi) air hose reel shall be installed.

The 12 volt rewind electrical supply shall be wired directly from the chassis battery system with heavy duty stranded copper cable, with guarded finger type rewind button.

### **LOW PRESSURE AIR HOSE**

Two (2) 150' length of 1" low pressure (not for breathing purposes) utility air hose shall be provided on the specified low pressure reel. The hose shall have quick connect couplings.

### **AIR HOSE ROLLER ASSEMBLY**

Two (2) four-way style stainless steel roller assembly shall be installed at the specified air location(s). The roller shall be installed near the reel to permit the air hose to feed directly off of the reel and away from the compartment.

### **BALL STOP ASSEMBLY**

Two (2) orange ball stop assembly shall be installed at the specified air location(s). The ball stop shall be installed on the air hose as to prevent the air hose from not to being rewound too far onto the reel.

### **ROOF ANCHOR POINTS**

The completed unit shall have an integrated receiver system for use with rope rescue accessories.

The body shall be equipped with \*\* roof anchor points rated for rope rescue. The receivers shall be square steel tube, same size as that of a trailer hitch. The units shall be attached to the upper body superstructure and shall be located \*\* each side. The tie points shall be bolted to integrated structural members that are welded directly to the body superstructure.

Six (6) slide in receiver with the same dimensions as a trailer hitch receiver shall be shipped loose with the apparatus. The unit shall be equipped with a 2.5" eye opening.

The roof anchor points shall be located as determined by the OEM's engineering department, NO EXCEPTIONS.

### **WINCH RECEIVER - FRONT**

The front of the chassis shall be equipped with a receiver assembly for high or low angle rescue or winch applications. The receiver shall be a square steel tube, same size as that of a trailer hitch. The unit shall be attached to the chassis frame assembly.

One (1) 12 volt Warn quick disconnect electrical receptacle, shall be installed in the body for the portable winch. The power cables shall be color coded "red" positive and "black" neutral and rated at 125% of winch power requirement (including line drop).

### **WINCH RECEIVER - REAR**

The rear of the apparatus body shall be equipped with a receiver assembly for high or low angle rescue or winch applications. The receiver shall be a square steel tube, same size as that of a trailer hitch. The unit shall be attached to the body sub-frame assembly.

One (1) 12 volt Warn quick disconnect electrical receptacle, shall be installed in the body for the portable winch. The power cables shall be color coded "red" positive and "black" neutral and rated at 125% of winch power requirement (including line drop).

### **WINCH RECEIVERS - SIDE BODY**

The body shall be equipped with two (2) receiver assemblies for high or low angle rescue or winch applications. The receivers shall be square steel tube, same size as that of a trailer hitch. The units shall be attached to the body sub-frame assembly or chassis frame rails and shall be located behind the rear wheels, one (1) on the left side and one (1) on the right side of the apparatus.

One (1) slide in receiver with the same dimensions as a trailer hitch receiver shall be shipped loose with the apparatus. The unit shall be equipped with a 2.5" eye opening.

The receiver assemblies (total of 2), shall be rated at a minimum of 9,000 pounds each, and each assembly shall be secured with one (1) safety pin.

Two (2) 12 volt Warn quick disconnect electrical receptacle, shall be installed in the body for the portable winch. The power cables shall be color coded "red" positive and "black" neutral and rated at 125% of winch power requirement (including line drop).

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## **BODY PAINT PROCESS**

While constructing the truck body, all aluminum parts that are to be finish painted shall be properly fitted on the body and then removed to be painted individually. The back side of all aluminum parts shall be sanded smooth of any burrs and sharp edges.

During reassembly of the apparatus, care shall be exercised in fitting and fastening the parts back in their respective position on the vehicle.

All aluminum parts shall be bolted to the body using stainless steel fasteners. Zinc or Cadmium plated fasteners are not acceptable. All bright metal fittings, if unavailable in stainless steel shall be heavily chrome plated. Iron fittings shall be copper plated prior to chrome plating.

All seams shall be caulked both inside and along the exterior edges with a urethane automotive sealant to prevent moisture from entering between any body panels.

The body and all parts shall be thoroughly washed with a grease cutting solvent (PPG DX330) prior to any sanding. After the body has been sanded and the weld marks and minor imperfections are filled and sanded, the body shall be washed again with (PPG DX330) to remove any contaminants on the surface.

A coating of epoxy sealer (PPG DP 48/50/90) shall be applied with a minimum of 1.0 mil dry film build. The epoxy sealer allows for maximum adhesion to the body material. A color coating of PPG Urethane Paint Direct Gloss with PPG Catalyst shall be applied with a minimum of 2.0 mil dry film build. The catalyst provides a base level UV barrier to prevent fading and chalking. A coating of PPG Clearcoat Topcoat Urethane with a minimum of 2.0 mil dry film build shall be applied. The clearcoat topcoat provides a maximum amount of UV barrier protection.

All products and technicians are certified by PPG every two (2) years.

Body color to match paint code FLNA 30021 Red

## **INTERIOR COMPARTMENT FINISH**

Twelve (12) apparatus side compartment interiors are to be painted with a heavy spray on lining material. The compartments shall be cleaned with a wax and grease remover and then caulked with a urethane caulk. The compartments are then sprayed with one coat of epoxy primer, then a single coat of urethane compartment liner approximately 10-12 mils in thickness. The lining material shall dry to form an impervious one piece covering to protect the compartment interiors from damage.

## **INTERIOR COMPARTMENT FINISH**

The lining material shall be light grey in color.

## **ROOF INTERIOR COMPARTMENT FINISH**

Five (5) apparatus roof compartment interiors are to be painted with a spatter finish material. The compartments shall be painted to match the side body compartments.

## **TOUCH-UP PAINT**

One (1) two (2) ounce bottle of touch-up paint shall be furnished with the completed truck at final delivery.

## **CUSTOM LETTERING AND NUMBERING**

The manufacturer shall decal and letter the apparatus per the design and layouts of the Huntington Beach Fire Department (HBFD) as described below. The HBFD fleet specific lettering design, locations, fonts, and sizes are provided for manufacturer cost purposes. All material manufacturer and part numbers will be used according to HBFD Specifications and shall be finalized at the pre-construction meeting.

### **Front of cab: (above grille)**

- “HUNTINGTON BEACH”
- Font – Times New Roman Bold
- Letter Height 2.25” Gold Reflective overlaid on 2.5” Black Glossy (will leave a .125” outline around the gold)
- Total Height 2.5” x 30.5” Length

### **Front Red Reflective rectangle on bumper:**

- 8.25” H x 19” W - Rectangle shall have a .5” radius on the corners
  - ☐ Front Unit Identifier TBD (on red reflective rectangle on bumper)
    - Font – Gothic725 Blk BT
    - Letter Height 6.75” White Reflective overlaid on 7” Black Glossy (will leave a .125” outline around the white)
    - Total dimensions not to exceed 7”H x 18”W

### **Front Cab Doors**

- Arched “HUNTINGTON BEACH”
  - ☐ Font – Gothic725 Blk BT
  - ☐ Letter Height 1.6” Gold Reflective overlaid on 1.725” Black Glossy (will leave a .125 outline around the Gold)
  - ☐ Arch is based off of an 11.5” Radius

- ☐ Total width of arch not to exceed 18.75

- "F I R E" below the HBFD Door Seal

- ☐ Font – Gothic725 Blk BT
- ☐ Letter Height 2.25" Gold Reflective overlaid on 2.5" Black Glossy (will leave a .125" outline around the Gold)
- ☐ Total size 2.5" H x 8.0" W

#### **Rear Cab Doors:**

- "HBFD"

- ☐ Font – Gothic725 Blk BT
- ☐ Letter Height 3" White Reflective overlaid on 3.25" Black Glossy (will leave a .125" outline around the Gold)
- ☐ Total size 3.25" with outline

- Unit Identifier

- ☐ Font – Gothic725 Blk BT
- ☐ Letter Height 6.75" White Reflective overlaid on 7" Black Glossy (will leave a .125" outline around the white)
- ☐ Total height 7"H x maximum 20"W (depending on unit assignment)

#### **Rear Unit Identifier:**

- "HBFD"

- Font – Gothic725 Blk BT
- Letter Height - 2.75" White Reflective overlaid on 3.0" Black Glossy (will leave a .125 outline around the white)
- Total height - 3.0" with outline

- Unit Identifier

- Font – Gothic725 Blk BT
- Letter Height 5.5" White Reflective overlaid on 5.75" Black Glossy (will leave a .125" outline around the white)

Total Letter Height 5.75" H x Max 18" Vertical (depending on unit assignment)

#### **Roof Number:**

- Vertical “HBFD”
  - ☐ Font – Gothic 725Blk BT
  - ☐ Letter Height 5.575” Black Matte Non-Reflective
  - ☐ Max dimensions 8.725” x 18” Vertically
- Unit Identifier
  - ☐ Font – Machine BT
  - ☐ Letter Height 18” Black Matte Non-Reflective
  - ☐ Vertical ORC and Unit ID shall fit the allotted space provided on the cab roof or body number panel

### **Upper sides of body:**

Horizontal lettering of size and font to be determined at pre-construction or mid-point inspection. The lettering will fit in between the two red LEDs on the upper Zone B and D sides.

- Large lettering “HUNTINGTON BEACH FIRE”
  - ☐ Font – Gothic725 Blk BT
  - ☐ Letter Height; TBD based on body space available; Gold Reflective overlaid on Black Glossy (will leave a .125 outline around the Gold)
  - ☐ Total width TBD based on upper body space available between surface mounted lighting

### **CAB PAINT BREAK STRIPING**

There shall be a 1/4" black separation stripe between the upper and lower paint lines of the cab.

Paint-break will be determined during Pre-Construction.

### **INSTALL CUSTOMER SUPPLIED DECALS**

Factory installation of the purchaser supplied decals shall be provided as specified.

### **CAB AND BODY STRIPE**

A straight Scotchlite reflective stripe, 6" minimum in width, shall be applied horizontally around the cab and body in compliance with applicable NFPA 1901 standards. The purchaser shall specify the color and location of the stripe.

## **COLOR OF STRIPING MATERIAL**

The color of the 3M brand striping material shall be white.

## **CHEVRON STRIPING**

The entire rear portion of the body shall have **OraLite V98** reflective red and yellow striping installed. The chevron style striping shall be applied at a 45-degree upward angle pointing towards the center upper portion of the rear panel.

## **INTERIOR CAB DOOR CHEVRON**

Reflective striping shall be installed on the interior of each chassis door. The lower portion of the doors shall have a **Ora-lite V98** red and amber chevron striping applied to it. The striping shall be a minimum of 96 square inches per door. No Exception.

A reflective stripe shall also be applied on the vertical outer edge of each cab door.

## **YELLOW SAFETY TAPE - STANDING & WALKING SURFACES**

The apparatus shall be NFPA standard 15.7.1.6 designating any horizontal standing or walking surface higher than 48-in (1220 mm) from the ground and not guarded by railing or structure at least 12-in (300 mm) high shall have at least a 1-in (25 mm) wide safety yellow line delineation that contrasts with the background to mark the outside perimeter of the designated standing or walking surface area, excluding steps and ladders.

## **WHEEL CHOCKS WITH MOUNTS**

A pair of Zico Model SAC-44 Quic-Chok folding wheel chocks shall be provided and mounted under the apparatus body with model SQCH-44H horizontal mounting brackets.

## **COMBINATION LADDER**

One (1) **Duo Safety Model 35-B, 7/14** foot combination aluminum ladder shall be provided on the apparatus. The ladder shall meet or exceed all the latest NFPA Standards.