

# Rome Fire Department – 1500 GPM Custom Pumper

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Y=Can Comply N=Cannot Comply E=Equivalent or Better

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## **FINANCIAL STABILITY SPECIFICATIONS**

Ensuring the financial stability of the proposed body builder is a paramount consideration to this department. Financial strength directly relates to the body builders ability to successfully produce an apparatus without jeopardizing fire department funds. In addition, financial strength is vital to this department to insure a body builder will be able to provide warranty service along with replacement parts and service for the life of the apparatus. Failure to be able to provide these lifelong services may cause future increases in maintenance expenses and create undue burden on the department's budget and tax base. This is a situation that this department is unwilling to risk. The body builder, therefore, shall meet certain minimum financial ratios in order to qualify for a bid award. The financial ratios presented shall be that of the consolidated entity; not the consolidated entity's parent company; for the body builder.

The financial ratios required to be met shall be derived from the most recent audited financial statements of the body builder proposed. **NO EXCEPTIONS.**

ANY EXCEPTION taken to this requirement shall immediately render the bid non-responsive and the bidder dismissed from further consideration. Under no circumstance shall a bid be considered where the bidder submits a letter of explanation taking exception to this requirement in lieu of providing the required documentation, nor shall consideration be given to bidders that refuse to submit the required information on the basis that the body builder proposed is a private company. **NO EXCEPTIONS.**

The three (3) critical financial indicators to be met are as follows:

**Debt-to-Equity Ratio:** The debt-to-equity ratio of the entity must not exceed a 2.0 rating. A debt-to-equity ratio is defined as that of total liabilities divided by total owner's equity. In layman's terms, a low debt-to-equity ratio means the company itself owns a greater share of its assets, as opposed to banks, creditors and other financial institutions. Conversely, companies with high debt-to-equity ratios are those that are generally financing their growth by carrying additional debt. The cost of this debt-financing may outweigh the return that the company generates on the debt through business activities and become too much for the company to manage. This can lead to bankruptcy, which is of grave concern to this purchaser.

**Debt Coverage Ratio:** The debt coverage ratio of the entity must exceed a 100.0 rating. A debt coverage ratio is defined as annual net income divided by the current portion of long-term debt. A high debt coverage ratio means the company can easily meet its payment obligations with its banks and other creditors. A low debt coverage ratio clearly infers the company may struggle to meet these obligations, which could ultimately delay or cancel production of apparatus.

**Equity Ratio:** The equity ratio of the body builder must exceed a .30 rating. An equity ratio is defined as total owners' equity divided by total assets. The equity ratio is another good indicator of the level of leverage (or financing) used by a company. The equity ratio measures the proportion of the total assets that are financed by owners and not creditors. A high equity ratio provides the company with flexibility in financing growth and other needs.

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All financial indicators required by this section must be verified by Dun and Bradstreet, the nationally-recognized, independent financial analysis company. Bids furnished without the required financial information shall render the bid non-responsive and the bidder dismissed from further consideration. **NO EXCEPTIONS.**

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## **ELECTRONIC STABILITY CONTROL**

Electronic stability control shall be supplied on the chassis.

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## **ENGINEERING BLUEPRINTS**

The manufacturer has submitted "proposal" blueprints which are “representative” of the vehicle being proposed and these have been generated on computer-aided-design (CAD) equipment. The blueprints submitted shall be on "B" size paper, 11" x 17" in size and views are on 1/16" to 1" scale.

The blueprints are provided as follows:

Sheet No. 1:           Left side exterior view  
                          Right side exterior view  
                          Rear exterior view  
                          Front exterior view

The manufacture shall provide construction drawings for approval prior to actual construction of the vehicle.

The design of the equipment is in accordance with the best engineering practices. The equipment design and accessory installation shall permit accessibility for use, maintenance and service. All components and assemblies shall be free of hazardous protrusions, sharp edges, cracks or other elements, which might cause injury to personnel or equipment.

All oil, hydraulic, and air tubing lines and electrical wiring shall be located in protective positions properly attached to the frame or body structure and shall have protective loom or grommets at each point where they pass through structural members, except where a through-frame connector is necessary.

Parts and components will be located or positioned for rapid and simple inspection and recognition of excessive wear or potential failure. Whenever functional layout of operating components determines that physical or visual interference between items cannot be avoided, the item predicted to require the most maintenance shall be located for best accessibility.

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## **PRE-CONSTRUCTION CONFERENCE (AT FIRE DEPARTMENT)**

A pre-construction conference shall be conducted at the Rome Fire Department Emergency Operations Center (409 E. 12<sup>th</sup> Str. Rome, Ga. 30161), at which time all final designs and equipment mounting locations will be approved, prior to any sheet metal being cut. A factory-trained dealer shall be present during the pre-construction conference to answer any design questions relating to the layout of the apparatus. All expenses for travel, meals, and lodging shall be included.

BIDDER SHALL INDICATE INTENTION TO PROVIDE THE REQUIRED PRE-CONSTRUCTION CONFERENCE IN THE PROPOSAL PACKET.

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## **INSPECTION TRIP**

A Final Inspection trip for up to four (4) Fire Department personnel shall be made to the manufacturer's facility upon completion 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.

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## **ISO COMPLIANCE**

The manufacturer shall operate a Quality Management System under the requirements of ISO 9001. These standards sponsored by the "International Organization for Standardization (ISO)" specify the quality systems that shall be established by the manufacturer for design, manufacture, installation and service. A copy of the certificate of compliance shall be included with the bid.

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## **SINGLE SOURCE MANUFACTURER**

Bids shall only be accepted from a single source apparatus manufacturer. Single source is defined as a manufacturer that designs and builds their products using an integrated approach. The chassis and body shall be built and assembled on the bidder's facilities. The chassis and body design and workmanship warranties (with the exception of major components such as engine, transmission, axles, pump, etc.) must be from a single source manufacturer and not split between manufacturers (i.e. body and chassis). The bidder shall confirm their compliance with this requirement.

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## **DELIVERY**

Final delivery of the completed apparatus shall be made F.O.B. Fire Department Maintenance Division. 168 North Ave. Rome, GA 30161

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## **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.

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## **BODY MANUFACTURER SERVICE AND SUPPORT REQUIREMENTS**

To insure the purchaser a source of service and parts over the anticipated life of the apparatus, the manufacturer shall provide supporting information establishing their permanency in the industry and include in the proposal a description of our service abilities and facilities.

The manufacturer shall stock a complete line of equipment and parts for this apparatus. Location of the manufacturing plant and nearest service facility must be outlined in the bid submission, including a complete history of the manufacturer. The manufacturer shall include in the bid a description of the service abilities and facilities.

The manufacturer's facilities shall provide, as a minimum, the following:

- Full body shop
- Paint spray booths for entire apparatus
- Sheet metal shears and brake press
- Fabrication and sheet metal department
- Plumbing facilities and UL testing area at service center
- Service and parts store for walk-in sales
- Engineering and office support personnel
- Adequate indoor storage of vehicle while service is being performed

Prior to the award of the contract the manufacturer shall make available the service center for an inspection tour at the convenience of the fire officials and or their designee. Although local service is available, the manufacturer shall be solely responsible for coordination and processing of all warranty claims.

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## **MAX HEIGHT**

The maximum height of the apparatus shall not exceed: 9'-11"

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## **MAX LENGTH**

The maximum length of the apparatus shall not exceed: 32'

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## **MAX WIDTH**

The maximum width of the apparatus shall not exceed: 101"

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## **MAX WHEELBASE**

The maximum wheelbase of the apparatus shall not exceed: 186"-190"

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## **ANGLE OF APPROACH**

The angle of approach for the apparatus shall not be less than eight (8) degrees as specified by the current edition of NFPA 1901.

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## **ANGLE OF DEPARTURE**

The angle of departure for the apparatus shall not be less than eight (8) degrees as specified by the current edition of NFPA 1901.

## *Custom Chassis Specifications*

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### **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.

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### **PAINT WARRANTY TEN YEAR**

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

The full apparatus chassis manufactured and painted the manufacturer 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 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.

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## **CAB STRUCTURE WARRANTY**

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

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## **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.

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## **ENGINE WARRANTY**

The engine shall be warranted for a minimum 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.

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## **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.

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## **FRONT AND REAR AXLE WARRANTY**

The front and rear axles shall be warranted by Meritor for a minimum of two (2) years with unlimited miles under the general service application.

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## **CAB AND CHASSIS WARRANTY**

The cab and chassis shall carry a twenty-four (24) 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.

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## **STATIC LOAD SEAT TEST INFORMATION**

The 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

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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.

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## **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.

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## **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.

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## **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 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.



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## 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.

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## 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.

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## ENGINE AND TRANSMISSION MANUALS

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

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## 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, Auto Cad 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.

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## 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 and body manuals

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The USB shall be accessible through a USB-A to USB-B cable.

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## **DIAGNOSTIC SOFTWARE ENGINE**

The manufacturer shall provide diagnostic software, adapters and any other hardware needed to run engine diagnostic tests.

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## **DIAGNOSTIC SOFTWARE TRANSMISSION**

The cab and chassis shall include the latest version of Allison's DOC diagnostic software for the transmission, which shall interface with the MagiKey®. The software shall be compatible with both 3000 and 4000 Gen IV transmissions.

Allison® DOCTM for PC-Service Tool is backward compatible with older electronically controlled transmissions.

The feature matrix for Allison Transmission Diagnostic Tools shall offer a user friendly table which shall guide you through all available and unavailable functions of the Allison Transmission diagnostic tools.

The software shall be supported by Microsoft® Windows, XP, Professional and Window 2000 (SP4 or later).

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## **DIAGNOSTIC INTERFACE MODULE**

The apparatus shall include a PC-to-vehicle interface compatible with multiple software applications, minimizing your investment in multiple brand-specific diagnostic interfaces.

- Compatible with applications that diagnose engines, transmissions, ABS, instrument panels and more
- Direct USB connection
- Quick access to vehicle data for maintenance or management reports
- Quickly attaches to vehicle's diagnostic connector
- Easy portability increases flexibility
- May be used with desktop PC or laptop

### **FEATURES:**

- RP1210A, RP1210B, and J2534 API support
- USB vehicle-to-PC connectivity
- Protocol coverage for heavy duty vehicles:
  - CAN - J1939/CAN125/CAN250/CAN500/CAN1000
  - 2nd CAN - J1939/CAN125/CAN250/CAN500/CAN1000

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- Automatic bit rate detection for both CAN channels
- J1587/J1708
- Power, data and fault detection LEDs
- Supports Windows® XP, and Windows® 7, 32- and 64-bit versions

## **COMPATIBLE SOFTWARE:**

- Cummins or Detroit engine specific software
- Allison DOC® For PC-Service Tool - Protocols Supported: J1939, GMLAN, J1708/J1587, J1850, and ATEC160
- Allison DOC® For PC (AED) - Protocols Supported: J1939
- Allison DOC® For Fleets (3000/4000) - Protocols Supported: J1939, J1708/J1587
- Bendix Acom
- WABCO Toolbox

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## **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

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## **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 and assembled by the apparatus manufacturer in a facility located on the manufacturer's premises. No Exceptions.

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 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.

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There shall be two (2) grease able 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 aluminum or stainless steel. The cab shall be able to offer superior occupant protection in the event of vehicle impact.

There shall be 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 outside cab width shall not exceed 101” across. The interior cab shall provide the maximum space available without compromising the strength, integrity and safety of the passengers.

The cab shall also feature ample driver and officer foot room, a minimum of 3.7 square feet for the driver and a minimum of 4.45 square feet of floor space at the officer’s feet.

The crew floor shall feature a complete flat floor design.

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 not exceed a two-step design at each door.

The roof of the cab shall be constructed in a manner to defend against buckling in the event of a rollover.

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 full size doors.

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.

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## **REAR FACING INTERIOR CEILING COMPARTMENTS**

There shall be one (1) rear facing ceiling compartment installed between the roof mounted HVAC evaporators. The compartments shall be fabricated from smooth aluminum and coated to match the interior of the cab.

The compartment shall be provided with a fold up hinged door. The door shall use a locking trigger latch and include a spring to hold the door in the open position. The spring shall be installed as to prevent the door and latch from coming in contact with the ceiling of the cab. The interior and exterior of the compartment shall be painted to match the interior of the cab.

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## **CAB DOORS**

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

All cab doors shall open a minimum of 80 degrees for the safety of personnel during entrance or egression from the cab.

Each cab door shall feature:

- Superior strength and rigidity
- Insulation and 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 heavy gauge stainless steel door hinge with a minimum of a 1/4" pin, which shall be mounted in a manner 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.

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## **CAB STEPS**

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

The cab shall incorporate a maximum of 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.

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## **CAB STEP TRIM**

The step shall include a frame which is integral with the construction of the cab for rigidity and strength.

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## **CAB STEP TRIM KICKPLATE**

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

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## **FULL HEIGHT DOORS**

All doors shall be full height from the roof of the cab extending down to cover and protect the entrance step areas.

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## **DOOR FILL PANEL**

The door fill panel shall have the same finish as the door.

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## **DOOR HANDLES**

The exterior door handles shall be constructed of 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 chrome plated paddle style latch. The paddle shall be hinged towards the front of the cab and shall include a manual door lock unless otherwise specified.

Each door latch shall feature a self-aligning dove tail guide striker assembly for precision door closure which prevents sagging throughout the life of the vehicle.

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## **CAB DOOR LOCKS**

All cab doors shall include manual door locks with keys. The door lock shall include a toggle and shall be an integral part of the interior door handle. 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.

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## **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. ABS material shall not be acceptable. No Exceptions.

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## **INTERIOR FRONT DOOR PULL**

The interior driver and officer cab doors shall each include one (1) customized aluminum or stainless steel single piece door grab pulls designed specifically for the fire service.

The single piece door pull shall have a curved design to provide points for grasping with a gloved hand. 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 of the pull utilizing stainless steel fasteners with nut inserts in each location. Self-taping screws or other mounting techniques shall not be allowed for interior door pulls or grab handles.

Each handle shall be constructed of A356 aluminum or stainless steel.

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## **INTERIOR GRAB HANDLE REAR DOOR**

An aluminum or stainless steel 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 aluminum or stainless steel single piece door grab pulls designed specifically for the fire service.

The door pulls shall have an ergonomic curve making them easier to grasp when entering and exiting the cab.

The door pull shall feature secure mounting with stainless steel fasteners with nut inserts in each location. Self-taping screws or other mounting techniques shall not be allowed for interior door pulls or grab handles. No exceptions.

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Each handle shall be constructed of A356 aluminum casting and shall feature a yellow powder coated finish.

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

There shall be two (2) additional molded 9.00” minimum 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.

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## **WINDSHIELD**

A one (1)-piece, safety glass full width windshield will be provided.

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.

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## **WINDSHIELD WIPER SYSTEM**

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

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

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## **WINDSHIELD WIPER ACTIVATION**

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

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## **DRIVER WINDOW**

The driver's door shall include a window providing a maximum available clear viewing area. The glass shall include a dark tint and through a powered operation shall completely roll into the door housing.

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

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## **POWER WINDOW -**

The Driver shall have switches for each of the cab door windows and the officer and each respective crew door powered window 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.

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## **OFFICER WINDOW**

The officer's door shall include a window providing a maximum available clear viewing area. The glass shall include a 50% dark tint and through a powered operation shall completely roll into the door housing.

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

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## **REAR DRIVER SIDE WINDOW**

The rear driver's side door shall include a window providing a maximum available clear viewing area. The glass shall include a 50% dark 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.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## **REAR OFFICER SIDE WINDOW**

The rear officer's side crew door shall include a window providing a maximum available clear viewing area. The glass shall include a 50% dark 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.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

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## **CAB INSULATION**

The cab shall be completely insulated from road and vehicle resonance, exterior sound and thermal intrusion.

The interior cab insulation system shall ensure that no seated position within the cab exceeds 72dB as certified by the manufacture. 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.

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

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

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

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## **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 at least 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.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## **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.

Y\_\_\_\_\_ N\_\_\_\_\_

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## **INTERIOR TRIM MATERIAL**

The interior trim shall feature a 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.

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.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## **REAR WALL INTERIOR MATERIAL**

The rear wall of the cab shall be covered in gray marine grade vinyl.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## **FLOOR MAT**

The interior flooring of the cab shall be covered with an advanced gray 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.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## **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 gray tinted plastic.

Y\_\_\_\_\_ N\_\_\_\_\_

## **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

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- Gray in color

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## **CAB DASH**

The cab dash 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.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## **CAB DASH**

The cab dash 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.

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 six (6) louvers; three louvers pointing at the driver and three louvers pointing at the officer.
- The cab dash instrument cluster shall be installed on a painted panel. This panel shall provide for easy removal to increase serviceability and provide ease of maintenance.
- 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 have a painted fire service grade RTM composite fiberglass panel that shall house the three 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.

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- 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 driver dash shall include a panel for inclusion of an optional Weldon Vista screen and six (6) additional switches or the HVAC controls and additional switching to the right of the Driver
- The officer dash shall include a recessed 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 panel for inclusion of an optional Weldon Vista screen and or provisions for switches and gauges to the left of the Officer

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## **ENGINE TUNNEL**

The engine tunnel shall be constructed of aluminum offering superior durability in addition to thermal and acoustic resistance. Covering the engine tunnel shall be a layer of formed composite material for a contoured transition into the dash and offering a pleasing appearance.

The tunnel shall feature a polyurethane coating which shall match the dash and header in texture and color for a consistent appearance and robust finish.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## **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.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## **MODULAR CENTER DASH CONSOLE ( if cab design offers this option)**

The dash and front portion of the tunnel shall include an angled modular console centered between the driver and officer positions.

The console shall feature:

- A heavy duty housing constructed from 14 gauge steel which is powder coated with a durable semi-gloss textured black finish to provide glare and corrosion resistance

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- The console top constructed of black anodized aluminum extruded rails which allow for mounting brackets, plates, and other console options
- Integral nut tracks which allow mounting of equipment to the sides of the console by way of sliding 1/4"-20 hex nuts
- A hinged lid constructed from 16 gauge steel also powder coated for corrosion resistance
- The availability of pre wiring for specific components
- A modular design for ease of changes and future additions such as changing out brands of radio, types of sirens or adding accessory space

The console shall offer an available eight (8) zones configured with mounting plates for optional components as shown below:

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## **MICROPHONE TABS**

Two (2) black mounting plate(s) containing mic tabs shall be provided and incorporated in the modular dash console.

Y\_\_\_\_\_ N\_\_\_\_\_

## **CONSOLE MOUNTED MAP LIGHTS**

One (1) map light(s) shall be provided and incorporated in the modular dash console. The map light shall be a 12" LED Federal Signal Littlite model LF12TSB-LED.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## **BLACK MOUNTING PLATE**

One (1) black mounting plate(s) containing blank plates shall be provided and incorporated in the modular dash console.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## **CONSOLE MOUNTED LOCKING ACCESSORY BOX**

One (1) black locking accessory box shall be provided and incorporated in the modular dash console. The lock shall be a key type lock.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## **CONSOLE MOUNTED ACCESSORY BOX**

One (1) black mounting plate(s) containing an open accessory box shall be provided and incorporated in the modular dash console.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

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## **BLACK MOUNTING SWITCH PLATE**

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

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## **BLACK MOUNTING PLATE FOR RADIO**

One (1) black mounting plate(s) containing radio mounting shall be provided and incorporated in the modular dash console.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## **BLACK MOUNTING PLATE FOR POWER POINTS**

Two (2) black mounting plate(s) containing two (2) 12 volt power points and one (1) dual USB power point shall be provided and incorporated in the modular dash console.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## **CONSOLE MOUNTED SIREN**

One (1) black mounting plate(s) containing mounting for a siren shall be provided and incorporated in the modular dash console.

Y\_\_\_\_\_ N\_\_\_\_\_

## **CONSOLE MOUNTED TRAFFIC LIGHTBAR CONTROLLER**

One (1) black mounting plate(s) containing a plate to mount the traffic advisor light bar controller shall be provided and incorporated in the modular dash console.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## **CONSOLE MOUNTED AM/FM RADIO**

One (1) black mounting plate(s) containing a mount for an AM/FM radio shall be provided and incorporated in the modular dash console.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## **INSTRUMENTATION PANEL**

The instrumentation panel inlay shall be painted job color.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

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## **CAB HEADER**

The cab header shall offer heavy duty, durable construction using resin transfer molding (RTM) technology formed composite material.

The cab header shall offer a finish of a polyurethane coating for a rugged design and 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.

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 for mounting radios, aerial controls and switches.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## **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 sufficient 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.

Y\_\_\_\_\_ N\_\_\_\_\_

## **DEFROSTING SYSTEM**

The defrosting system shall feature:

- To provide maximum defrost and heating performance with a minimum 30,000 BTU heater-defroster unit with 780 CFM of air flow 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.



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- Mounting under the dash with fresh air intake providing excellent defrost and demist capabilities.
- Vents shall be located in the top forward portion of the dash for superior defrosting properties across the entire windshield.
- 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.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

### **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, with 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
- 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
- A minimum of 880 CFM of air flow measured at the front seated positions and 1580 CFM of air flow per side in the rear seated positions for a combined total of 4040 CFM of air flow in the cab. No Exceptions.
- The heater shall be plumbed with a shut off valve (s) at the engine, so that the coolant bypasses the heaters.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

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## **AIR CONDITIONING**

The air conditioning system shall feature:

- A minimum of 96,000 BTU/hour of cooling capacity to the entire cab.
- 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
- The air condition system shall be capable of cooling the cab from 110 degrees Fahrenheit (43.33 degrees Celsius) to 70 degrees Fahrenheit (21.11 degrees Celsius) at 60% humidity in less than 30 minutes with an engine RPM of 1400; and cool the cab from 100 degrees Fahrenheit to 73 degrees Fahrenheit at 80% humidity, after a three (3) 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.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

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

The air conditioning condenser cover shall be painted to match the roof color.

Y\_\_\_\_\_ N\_\_\_\_\_

## **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.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

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## **AUXILIARY DEFROSTER FANS**

Two (2) each 6" diameter defrost fans integrated into the driver and officer header angled towards the windshield for improved air circulation.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## **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.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

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

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

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## **SEAT AND SEAT BELT COLOR**

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

Y\_\_\_\_\_ N\_\_\_\_\_

## **DRIVER SEAT**

The driver's seat shall be a H. O. Bostrom Sierra reclining ABTS bucket seat with Air-50 Suspension. The seat shall have contoured, high-density cushions with lumbar support. The seat cushion shall be supported with a serpentine spring suspension. The back recline shall include a locking mechanism on both sides of the seat and shall have a release handle located at the retractor side of the seat assembly. The seat shall have a double-locking five-inch fore and aft adjustment and Occupancy sensor in the seat cushion. The seat shall include a pneumatic suspension with 3" of vertical ride range adjustable with a molded switch located on the retractor side of the seat assembly. The suspension shall be internally tethered and shall not require secondary tethers from the suspension to the cab structure.

The seat shall be equipped with a red integrated 3-point shoulder harness and lap belt and an emergency locking retractor. 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.

Y\_\_\_\_\_ N\_\_\_\_\_

## **SEAT BACK**

The seat back shall incorporate a standard style headrest.

Y\_\_\_\_\_ N\_\_\_\_\_

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## **HEAVY DUTY SHOCK ABSORBER**

A heavy duty shock shall be added to the air ride seat.

Y\_\_\_\_\_ N\_\_\_\_\_

## **SEAT MOUNTING DRIVER**

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

Y\_\_\_\_\_ N\_\_\_\_\_

## **SEAT MATERIAL**

The seats shall include a covering of high strength, wear resistant fabric made of durable ballistic polyester.

A PVC coating shall be bonded to the back side of the material to help protect the seats from UV rays and from being saturated or contaminated by fluids.

Y\_\_\_\_\_ N\_\_\_\_\_

## **DRIVER SEAT BOX STORAGE COMPARTMENT**

There shall be a storage area under the driver's seat.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## **ALUMINUM ACCESS DOOR**

There shall be an aluminum door cover provided for the driver and officer seat compartment. The door shall be coated to match the interior of the cab, and it shall be equipped with a piano style hinge and a manual latch.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## **OFFICER SEAT**

The officer's seat shall be a H. O. Bostrom ABTS (All Belts to Seat/Integrated Seat Belts) series seat with fixed base. The seat shall have contoured, high-density cushions with lumbar support and Occupancy sensor in the seat cushion. The seat cushion shall be supported with a serpentine spring suspension.

The seat shall be equipped with a red integrated 3-point shoulder harness and lap belt and an emergency locking retractor. 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. The seat shall come with a parade panel if equipped with an SCBA cavity.

Y\_\_\_\_\_ N\_\_\_\_\_

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## **SEAT BACK**

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

- The bracket shall be adjustable to compensate for different cylinder lengths without the use of tools. The adjustment shall be made by raising a lever and moving the top clamp vertically
- A center guide fork shall keep the SCBA tank in place for a safe and comfortable fit in the seat back cavity. The SCBA unit simply needs to be pushed against the pivot arm to engage the patented auto- locking system. Once the lock is engaged, the top clamp shall surround the top of the SCBA tank for a secure fit in all directions

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

Y\_\_\_\_\_ N\_\_\_\_\_

## **SEAT MATERIAL**

The seats shall include a covering of high strength, wear resistant fabric made of durable ballistic polyester.

A PVC coating shall be bonded to the back side of the material to help protect the seats from UV rays and from being saturated or contaminated by fluids.

Y\_\_\_\_\_ N\_\_\_\_\_

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

There shall be a storage area under the officer's seat.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## **REAR FACING OUTER SEAT**

Two (2) rearward facing outer crew seats shall be a H. O. Bostrom Tanker 450 ABTS (All Belts to Seat/Integrated Seat Belts) series high back seat with fixed base. The seat shall have contoured, high-density cushions with lumbar support and Occupancy sensor in the seat cushion. The seat cushion shall be supported with a serpentine spring suspension. The seat shall include an SCBA storage area with one piece flip- up headrest with spring return. The seat shall include two part bolster padding with removable insert to accommodate SCBAs with rigid waist belts.

The seat shall be equipped with a red integrated 3-point shoulder harness and lap belt and an emergency locking retractor. 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

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seat frame and covering to protect webbing. The seat shall come with a parade panel if equipped with an SCBA cavity.

Y\_\_\_\_\_ N\_\_\_\_\_

## **SCBA SEAT**

The seat shall be an HO Bostrom Tanker 450 series seat. The seat shall include an SCBA storage area with one piece flip-up headrest with spring return. The seat shall include two part bolster padding with removable insert to accommodate SCBA's with rigid waist belts.

## **SEAT BACK**

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

- The bracket shall be adjustable to compensate for different cylinder lengths without the use of tools. The adjustment shall be made by raising a lever and moving the top clamp vertically
- A center guide fork shall keep the SCBA tank in place for a safe and comfortable fit in the seat back cavity. The SCBA unit simply needs to be pushed against the pivot arm to engage the patented auto- locking system. Once the lock is engaged, the top clamp shall surround the top of the SCBA tank for a secure fit in all directions

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

Y\_\_\_\_\_ N\_\_\_\_\_

## **REAR FACING OUTER SEAT MOUNTING**

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

Y\_\_\_\_\_ N\_\_\_\_\_

## **SEAT MATERIAL**

The seats shall include a covering of high strength, wear resistant fabric made of durable ballistic polyester.

A PVC coating shall be bonded to the back side of the material to help protect the seats from UV rays and from being saturated or contaminated by fluids.

Y\_\_\_\_\_ N\_\_\_\_\_

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## **SEAT FRAME FORWARD FACING ACCESS**

The seat frame shall include two (2) cutouts one on each side of the seat box for access. Each cutout shall be in the outboard position facing the rear crew doors.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## **SEAT FRAME FORWARD FACING ACCESS**

The seat frame shall include two (2) doors, one (1) on the driver and one (1) on the officer side, facing the rear crew doors for access.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## **SEAT COMPARTMENT DOOR FINISH**

The seat box doors shall be finished in a high performance polyurethane coating. The color shall be gray.

Y\_\_\_\_\_ N\_\_\_\_\_

## **SEAT COMPARTMENT FINISH**

The seat frame shall be finished in a high performance polyurethane coating. The color shall be gray.

Y\_\_\_\_\_ N\_\_\_\_\_

## **FORWARD FACING OUTER THEATER SEAT- DRIVER & OFFICER SIDE**

There shall be two forward facing Bostrom flip up theater seats mounted in the forward facing outer positions. They shall be mounted to the rear wall and have a 3 point red seat belt that is attached to the rear wall of the cab, and the seat cushion shall be covered with ballistic type material. There shall be covered padding mounted on the rear wall behind seats. The seat cushion shall be gray.

Y\_\_\_\_\_ N\_\_\_\_\_

## **HELMET STORAGE MODEL**

Helmet storage brackets shall be provided in the cab. The location of the helmet bracket shall be decided prior to construction of the cab.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## **EXTERIOR GRAB HANDLES**

One (1) exterior assist handle shall be mounted behind each of the cab doors. The grab handle shall be made of 1.25” diameter aluminum to enable non-slip assistance with a gloved hand and mounted on stanchions. The handle shall feature white LED lights which shall illuminate when the respective door is opened.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

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## **SCUFF PLATE**

The grab handles shall include a stainless steel scuff plate to protect painted surfaces.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## **GRAB HANDLE LIGHT ACTIVATION**

The grab handle lights shall activate when the park brake is engaged.

Y\_\_\_\_\_ N\_\_\_\_\_

## **CAB FASCIA**

The cab fascia shall offer a traditional, yet aggressive appearance. This design shall feature:

- Headlamp bezels of a chrome type film or plating shall be provided.
- Traditional style headlight bezels with 4 x 6 high intensity headlights which shall add a classic look to the fascia while improving visibility
- The turn signal lights shall be located in the lower outboard portion of the head lamp bezel and a warning light in the lower inboard position

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## **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

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## **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.

Y\_\_\_\_\_ N\_\_\_\_\_

## **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.

Y\_\_\_\_\_ N\_\_\_\_\_



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## **FLUID FILLS & CHECK**

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

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

The following fluid fill shall be located behind the tilt able and/or removable panel:

- Engine Oil
- Power Steering
- Windshield Washer

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

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## **LED HEADLIGHTS**

LED headlights shall be provided

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## **HEADLIGHT FLASHER**

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

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

Y\_\_\_\_\_ N\_\_\_\_\_

## **HEADLIGHT FLASHER SWITCH**

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

Y\_\_\_\_\_ N\_\_\_\_\_

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## **FRONT TURN SIGNALS**

Two (2) Whelen M6 LED square, front turn signal assemblies shall be included on the front fascia in the upper wing position, one each side of the cab grille. Each turn signal shall be mounted in an attractive façade style bezel which is an integral part of the fascia.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## **SIDE MARKER LIGHTS**

Two (2) Weldon amber LED round 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.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## **HEADLIGHT AND MARKER LIGHT ACTIVATION**

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

Y\_\_\_\_\_ N\_\_\_\_\_

## **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.

Y\_\_\_\_\_ N\_\_\_\_\_

## **ROTO-RAY MOUNTING PROVISION**

There shall be a provision made in the center of the mid bar of the grille to allow the mounting of a Roto-Ray warning light.

Y\_\_\_\_\_ N\_\_\_\_\_

## **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.

Y\_\_\_\_\_ N\_\_\_\_\_

## **FRONT MUD FLAPS**

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

Y\_\_\_\_\_ N\_\_\_\_\_

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## 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 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 large enough to provide a 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 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.

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.

Y\_\_\_\_\_ N\_\_\_\_\_

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## **CAB TILT LIMIT SWITCH**

A cab tilt limit switch shall be included with the cab tilt system. The switch shall effectively limit cab's travel to 45 degrees when being tilted.

There shall be a safety bar to hold the cab at 45 degrees for additional safety.

Y\_\_\_\_\_ N\_\_\_\_\_

## **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.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## **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 a turn signal built into the convex, and there shall be a marker light on the back side of the mirror.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## **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.

Y\_\_\_\_\_ N\_\_\_\_\_

## **CAB TWO TONE PAINT**

The cab should be painted 2 tone black over red (candy apple red (Imron) or equivalent) to current industry specifications and standards.

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.

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Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## **CAB PAINT UPPER**

The upper cab color shall be Black.

Y\_\_\_\_\_ N\_\_\_\_\_

## **CAB PAINT LOWER**

The lower or primary cab color shall be candy apple red.

Y\_\_\_\_\_ N\_\_\_\_\_

## **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.

Y\_\_\_\_\_ N\_\_\_\_\_

## **PAINT SPRAY OUT**

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

Y\_\_\_\_\_ N\_\_\_\_\_

## **FRONT AXLE**

A Meritor MFS Easy Steer non-drive axle shall be incorporated as the front axle for the chassis. The axle shall feature:

- A capacity of 20,000 pounds
- A 3.74” drop and a 71” king pin intersection (KPI)
- A conventional style hub with a standard knuckle
- 2 year warranty

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## **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.

Y\_\_\_\_\_ N\_\_\_\_\_

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## **FRONT SUSPENSION**

The front suspension shall include a Hendrickson leaf spring suspension. The suspension shall feature:

- Capacity rating of 20,000 pounds
- 9 Leafs
- A Grease fitting
- Double wrapped front eye

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## **FRONT SHOCK ABSORBERS**

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

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

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

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

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## **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

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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.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## **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.

Y\_\_\_\_\_ N\_\_\_\_\_

## **FRONT AXLE CRAMP ANGLE**

The chassis shall have a front axle cramp angle of 46 degrees to the left and right.

The manufacturer shall provide third party verification of cramp angle upon request from the fire department.

Y\_\_\_\_\_ N\_\_\_\_\_

## **FRONT TIRES**

The front tires shall be Good Year 38565R 22.5 G296 MSA “J” tubeless radial.

The front tires shall feature:

- A stamped load capacity of 18,740 pounds per axle with a speed capacity of 65 miles per hour when properly inflated to 120 pounds per square inch
- Deep 23/32” tread helps put more wearable rubber on the road for enhanced mileage.
- Severe service compound helps resist cuts, chips and tears and offers enhanced mileage.
- Deep, wide circumferential grooves with more than 500 biting edges help promote all-season traction on wet, snowy and dry roads.
  
- Optimized tread design helps reduce road noise for a quiet ride.

Y\_\_\_\_\_ N\_\_\_\_\_

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## **FRONT WHEELS**

The front wheels shall be Accuride ACCU-SHIELD hub piloted, 22.50 inch X 12.25 inch aluminum wheels. The hub piloted mounting system shall provide easy installation and shall include two-piece flange nuts.

Y\_\_\_\_\_ N\_\_\_\_\_

## **FRONT BRAKES**

The chassis shall include front brakes which are a Meritor brand, 16.5" x 6" S-cam drum type. Front brakes shall include brake chambers supplied by Meritor and shall be approved per application. Disc brakes may be considered.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## **FRONT BRAKE SLACK ADJUSTERS**

The front brakes shall include Meritor automatic slack adjusters shall be installed on the chassis which features a simple, durable design offering reduced weight. The automatic slack adjusters shall feature a manual adjusting nut which cannot inadvertently be backed off and threaded grease fittings for easy serviceability.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## **FRONT BRAKE DUST SHIELDS**

The front axle shall be equipped with brake dust shields.

Y\_\_\_\_\_ N\_\_\_\_\_

## **STEERING COLUMN AND WHEEL**

The steering column shall feature a five (5) position tilt and 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.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## **REAR AXLE**

A Meritor RS-26-185 driving axle shall be incorporated as the rear axle for the chassis. The axle shall feature:

- Rated capacity of 27,000 pounds
- Heavy duty Hypoid gearing for longer life, increased strength and quieter operation



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- 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 .56” for extra strength and rigidity
- 2 year warranty

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## **REAR AXLE DIFFERENTIAL LUBRICATION**

The rear axle differential shall be lubricated with oil.

Y\_\_\_\_\_ N\_\_\_\_\_

## **REAR WHEEL BEARING LUBRICATION**

The rear axle wheel bearings shall be lubricated with oil.

Y\_\_\_\_\_ N\_\_\_\_\_

## **REAR SUSPENSION**

The single rear axle shall feature a Reyco 79KB vari-rate, self-leveling captive slipper type conventional multi-leaf spring suspension. One (1) adjustable and one (1) fixed torque rod shall be provided.

The rear suspension capacity shall be rated at 27,000 pounds based on the capacity of the brakes and rear tires.

Y\_\_\_\_\_ N\_\_\_\_\_

## **REAR BRAKES**

The rear brakes shall be Meritor 16.50 inch X 7.00 inch S-cam drum type.

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

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## **REAR BRAKE DUST SHIELDS**

The rear brakes shall be equipped with brake dust shields.

Y\_\_\_\_\_ N\_\_\_\_\_

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## **REAR BRAKE SLACK ADJUSTERS**

The rear brakes shall include Meritor automatic slack adjusters installed on the axle which features a simple, durable design offering reduced weight. The automatic slack adjusters shall feature a manual adjusting nut which cannot inadvertently be backed off and threaded grease fittings for easy serviceability.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## **AR SHOCK ABSORBERS**

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

Y\_\_\_\_\_ N\_\_\_\_\_

## **ON-SPOT TIRE CHAINS**

"On-Spot" automatic tire chains shall be installed on the rear axle of the apparatus. A switch installed on the cab dash shall allow the operator to "Engage" and "Disengage" the tire chains without stopping to enhance traction and braking while in forward or reverse motion. The system shall include protective switch guard, continuous duty solenoid, arm bearings and replaceable chain plates.

Y\_\_\_\_\_ N\_\_\_\_\_

## **REAR TIRES**

The rear tires shall be Goodyear 12R 22.5 "H" tubeless radial G661 HSA mixed service tread.

The rear tires shall feature:

- A stamped load capacity of 27,120 pounds per axle with a speed capacity of 75 miles per hour when properly inflated to 120 pounds per square inch

Y\_\_\_\_\_ N\_\_\_\_\_

## **REAR WHEEL**

The rear wheels shall be Accuride ACCU-SHIELD hub piloted, heavy duty 22.50 inch x 8.25 inch 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 wheels shall be forged from a single piece of aluminum which shall be corrosion resistant, engineered to be lightweight and provide exceptional performance. The hub piloted mounting system shall provide easy installation and shall include two-piece flange nuts.

Y\_\_\_\_\_ N\_\_\_\_\_

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## **VALVE STEM EXTENSION - SINGLE AXLE**

To allow for easy checking and inflation of the rear inner tire it 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.

Y\_\_\_\_\_ N\_\_\_\_\_

## **VEHICLE TOP SPEED**

The top speed of the vehicle shall be programmed at approximately 70 MPH +/-2 MPH at governed engine RPM.

Y\_\_\_\_\_ N\_\_\_\_\_

## **BRAKE SYSTEM**

A rapid build-up air brake system shall be provided. The air brakes shall include a two (2) air tank, three (3) reservoir system with a minimum of 4152 cubic inch of air capacity. A floor mounted treadle valve shall be mounted inside the cab for graduated control of applying and releasing the brakes. 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 four (4) sensor, four (4) modulator anti-lock braking system (ABS) shall be installed on the front and rear axles in order to prevent the brakes from locking or skidding while braking during hard stops or on icy or wet surfaces. This in turn shall allow the driver to maintain steering control under heavy braking and in most instances, shorten the braking distance. The electronic monitoring system shall incorporate diagonal circuitry which shall monitor wheel speed during braking through a sensor and tone ring on each wheel. A dash mounted ABS lamp shall be provided to notify the driver of a system malfunction. The ABS system shall automatically disengage the auxiliary braking system device when required. The speedometer screen shall be capable of reporting all active defaults using PID/SID and FMI standards.

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

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

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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.

Y\_\_\_\_\_ N\_\_\_\_\_

## **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.

Y\_\_\_\_\_ N\_\_\_\_\_

## **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.

Y\_\_\_\_\_ N\_\_\_\_\_

## **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.

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

Y\_\_\_\_\_ N\_\_\_\_\_

## **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.

Y\_\_\_\_\_ N\_\_\_\_\_

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## **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.

Y\_\_\_\_\_ N\_\_\_\_\_

## **MOISTURE EJECTORS**

Automatic moisture ejectors with a manual drain provision shall be installed on all reservoirs of the air supply system.

Y\_\_\_\_\_ N\_\_\_\_\_

## **AIR OUTLET CONNECTION**

A quick release air outlet female connector shall be installed in the cab for the use of auxiliary air tools.

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

Y\_\_\_\_\_ N\_\_\_\_\_

## **AIR OUTLET SHUTOFF VALVE**

The air outlet shall include one (1) quarter turn shutoff valve.

Y\_\_\_\_\_ N\_\_\_\_\_

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## **AIR OUTLET FITTING TYPE**

The air connector supplied shall be a .25" pipe thread provision in a bulk head for customer installation of quick disconnect air fitting.

Y\_\_\_\_\_ N\_\_\_\_\_

## **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.

Y\_\_\_\_\_ N\_\_\_\_\_

## **FRAME**

The chassis frame shall consist of high strength low alloy material and shall feature the following:

- Cold rolled steel frame or equivalent.
- The frame height shall be maintained throughout the entire length of the frame to allow for maximum storage capacity for the entire apparatus.
- 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.
- Grade 8 Structural fasteners, Huck bolts or equivalent shall be provided.
- The hardware used for the chassis shall be are to be corrosion resistant.
- The frame ratings shall be as follows:
  - 110,000 PSI minimum yield strength high strength low alloy steel
  - Minimum Resisting Bending Moment (RBM) of 1,860,000 inch pounds per rail

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## **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

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- Enhanced vehicle stability providing improved safety to occupants

## **CROSS MEMBERS**

There shall be 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
- Cross members 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.

Y\_\_\_\_N\_\_\_\_E\_\_\_\_

## **FRONT FRAME EXTENSION**

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

Y\_\_\_\_ N\_\_\_\_ E\_\_\_\_

## **FRAME FINISH**

The frame shall be powder coated to resist weather, dirt and other corrosive material.

Y\_\_\_\_ N\_\_\_\_

## **TOW HOOKS**

Two (2) tow hooks shall be mounted to the bumper extension under the bumper towards the rearward section of the extension. The tow hooks shall be steel and shall be powder coated black.

Y\_\_\_\_ N\_\_\_\_

## **ENGINE**

A Cummins or Detroit 500 HP or higher diesel fueled, turbo charged engine shall be provided.

Y\_\_\_\_ N\_\_\_\_

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## **ENGINE PLACEMENT**

The engine placement shall provide optimal weight distribution to the front axle to enhance vehicle handling and prevent unsafe “bump steer” conditions.

The engine shall be mounted in a position that provides for the lowest possible height of the interior engine tunnel.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## **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.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## **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.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## **HORSEPOWER**

The engine shall have at least 500 horsepower and provide 1750lbs of torque.

Y\_\_\_\_\_ N\_\_\_\_\_

## **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.

Y\_\_\_\_\_ N\_\_\_\_\_

The clutch fan shall automatically engage in pump mode (when applicable).

Y\_\_\_\_\_ N\_\_\_\_\_



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## **AUXILIARY ENGINE BRAKE**

An 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.

Y\_\_\_\_\_ N\_\_\_\_\_

## **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.

Y\_\_\_\_\_ N\_\_\_\_\_

## **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.

Y\_\_\_\_\_ N\_\_\_\_\_

## **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.

Y\_\_\_\_\_ N\_\_\_\_\_

## **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.

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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.

Y\_\_\_\_\_ N\_\_\_\_\_

## **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.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## **ENGINE EXHAUST SYSTEM**

The exhaust system shall include a 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 through the decomposition tube between the DPF and SCR.

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

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

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

The DPF and SCR shall be mounted to the frame using brackets that shall be hot dipped galvanized there by creating a superior barrier from corrosion. Powder coated or painted brackets shall not be accepted. No exception.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## **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 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.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## **DIESEL EXHAUST FLUID TANK**

There shall be an easily access exterior door provided to fill the DEF tank.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## **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.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## **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.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## **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.

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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.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## **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  
Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## **COOLANT HOSES**

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

Y\_\_\_\_\_ N\_\_\_\_\_

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## **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.

Y\_\_\_\_\_ N\_\_\_\_\_

## **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.

Y\_\_\_\_\_ N\_\_\_\_\_

## **ENGINE PUMP HEAT EXCHANGER**

A single bundle type coolant to water heat exchanger shall be installed between the engine and the radiator. This pump heat exchanger shall circulate water from the fire pump to the heat exchanger thereby reducing the temperature of the coolant for the engine. The heat exchanger shall be designed to prohibit water from the pump from coming in contact with the engine coolant.

Y\_\_\_\_\_ N\_\_\_\_\_

## **TRANSMISSION**

The drive train shall include an Allison model EVS 4000 torque converting, automatic transmission which shall include electronic controls.

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 Gen 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

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

Y\_\_\_\_\_ N\_\_\_\_\_

## **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.

Y\_\_\_\_\_ N\_\_\_\_\_

## **TRANSMISSION DRAIN PLUG**

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

Y\_\_\_\_\_ N\_\_\_\_\_

## **AUTOMATIC NEUTRAL**

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

Y\_\_\_\_\_ N\_\_\_\_\_

## **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.

Y\_\_\_\_\_ N\_\_\_\_\_

## **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.

Y\_\_\_\_\_ N\_\_\_\_\_

## **PTO LOCATION**

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

Y\_\_\_\_\_ N\_\_\_\_\_

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## **TRANSMISSION MODE PROGRAMMING**

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

Y\_\_\_\_\_ N\_\_\_\_\_

## **TRANSMISSION PROGRAMMING**

The EVS group package number 127 shall contain the 198 vocational package 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 next to the steering column.

The transmission module shall contain the following circuits:

Function ID	Description	Wire assignment
C	PTO Request	142
J	Fire Truck Pump Mode (4th Lockup)	122 / 123
C	Range Indicator	145 (4th)
G	PTO Enable Output	130
	Signal Return	103
Y_____	N_____	

## **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®.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

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## **FUEL SYSTEM**

The fuel tank shall have a minimum capacity of fifty (50) gallons. 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”
- 2” NPT fill ports for left and right hand fill with a .5” NPT drain plug centered in the bottom 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 and 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 to 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.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## **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.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_



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## **FUEL LINES**

The fuel system supply and return lines installed from the fuel tank to the engine shall be black aramid braided lines with a fiber outer braid. The fuel lines shall be connected with reusable steel fittings. Fuel line is compatible with bio-fuel blends.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## **FUEL SHUTOFF VALVE**

Two (2) fuel shutoff valves shall be installed at the fuel filter to allow the fuel filter to be changed without loss of fuel to the fuel pump.

Y\_\_\_\_\_ N\_\_\_\_\_

## **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 behind 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.

Y\_\_\_\_\_ N\_\_\_\_\_

## **ALTERNATOR**

The charging system shall include a 275 amp Delco Remy 40SI 12 volt alternator. The alternator shall feature:

- Premium brushless design providing added durability and life
- Provide the highest efficiency resulting in less horsepower requirements
- Remote sense technology in extending the life of the battery
- 70% efficiency
- 3 Year warranty

Y\_\_\_\_\_ N\_\_\_\_\_

## **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:

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- 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.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## **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 10 KHz-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 10 KHz-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.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

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## **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.

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- 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.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

### **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.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

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## **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.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## **DRIVER SWITCH PANEL**

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

- In the upper most rows it shall have 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.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## **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.

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## **COMMUNICATION ANTENNA BASE**

A communications antenna base shall be provided and mounted on the cab roof on the Officer's side.

Y\_\_\_\_\_ N\_\_\_\_\_

## **COMMUNICATION ANTENNA CABLE ROUTING**

The cable routing for the communication antenna shall terminate under the dash panel.

Y\_\_\_\_\_ N\_\_\_\_\_

## **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

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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™ or Apple™ 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 1901-2009 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.

Y\_\_\_\_\_ N\_\_\_\_\_

## **CAB INSTRUMENTATION**

The instrumentation panel within the cab shall feature a gauge panel which shall include three (3) 5" diameter information centers, telltale indicator lamps, control switches, alarms, and a LCD diagnostic panel.

The gauges shall be easy to read including red backlighting.

The instrument panel shall contain the following gauges and indicators:

The middle information center shall include:

- A programmable speedometer to read either 0 to 140 MPH or 0 to 140 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

The right hand side information center shall include:

- 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
- A voltage gauge with low voltage indicator
- A water temperature gauge with high water temp indicator and alarm

The left hand side information center shall include:

- A primary air PSI gauge including low air and high air warning displays

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- A secondary air PSI gauge with low and high air warning indication

An LCD diagnostic display, located in the left hand side information center shall include digital readouts for the following:

- Odometer
- Transmission oil temp
- Engine oil temp
- Speedometer
- Engine hours
- Engine and transmission code
- Exhaust temp
- Engine coolant temp
- Engine oil PSI
- Turbo boost PSI
- Primary air pressure
- Secondary air pressure
- Engine load %
- Engine torque
- Battery volts
- Fuel level %
- Vehicle speed
- RPM
- DEF level
- Instant fuel economy
- Average fuel economy
- Engine hours
- Capable to record three trips, each shall be include:
  - Trip distance
  - Fuel economy
  - Fuel used
  - Idle fuel used
- The LCD screen shall also provide diagnostic capability

To promote safety, the following telltale indicator lamps will be integral to the gauge assembly and are located below the middle information center. The indicator lamps will be "dead-front"

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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

- High Beam Headlight

## GREEN Indicator Lights

- Right Turn Indicator
- Left Turn Indicator
- Battery On (Always On)

## YELLOW Indicator Lights

- Particle Filter Regeneration (DPF)
- Regeneration Inhibit (Switch Engaged)
- Air Intake Restriction
- High Exhaust System Temperature (HEST)
- Wait to Start (when applicable)
- ATC (Automatic Traction Control) (when applicable)
- Water in Fuel

## RED Indicator Lights

- Low Engine Coolant Level
- Air Bag Warning (when applicable)
- Check Transmission
- High Transmission Temperature
- ABS
- Parking Brake

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## 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 right side of the LCD screen.

Y\_\_\_\_\_ N\_\_\_\_\_



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

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

Y\_\_\_\_\_ N\_\_\_\_\_

## **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. Diagnostic switches shall allow engine and ABS systems to provide blink codes should a problem exist.

The following diagnostic panel shall include:

- Engine diagnostic port
- V-Mux USB diagnostic port (when applicable)
- Engine diagnostic switch (blink codes flashed on check engine telltale indicator)
- Diesel particulate filter regeneration switch (when applicable)
- Diesel particulate filter regeneration inhibit switch (when applicable)

It shall be accessible while standing on the ground and located inside the driver's side door, left of the steering column:

The following diagnostic panel shall include:

- Transmission diagnostic port
- ABS diagnostic port
- SRS diagnostic port (when applicable)

It shall be located under the center dash by the in dash HVAC unit and accessible through the access cover.

Y\_\_\_\_\_ N\_\_\_\_\_

## **TURBO TEMPERATURE GAUGE**

One (1) engine turbo temperature gauge (pyrometer) shall be installed on the driver's side gauge panel.

Y\_\_\_\_\_ N\_\_\_\_\_

## **BACKLIGHTING COLOR**

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

Y\_\_\_\_\_ N\_\_\_\_\_

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## **BATTERIES**

The single start electrical system shall include six (6) group 31 1070 CCA batteries.

The batteries shall feature:

- A 210 minute reserve capacity
- 4/0 dual path starter cables per SAE J541
- Heat shrink and sealant encapsulated ends on the cables
- Maintenance free

Y\_\_\_\_\_ N\_\_\_\_\_

## **BATTERY COMPARTMENTS**

A well ventilated 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:

- Steel construction with powder coated finish
- A complete floor of heavy duty, industrial grade, recycled Turtle Tile brand interlocking matting
- A double hinged powder coated steel or aluminum 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.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## **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.

Y\_\_\_\_\_ N\_\_\_\_\_

## **BATTERY JUMPER STUD**

The starting system shall include battery jumper studs.

These studs shall be located in a readily accessible position on the apparatus.

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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.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## **IGNITION**

A master battery system with a keyless start ignition system shall be provided. Each system shall be controlled by a two position switch located in a position easily accessible for the driver.

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.

Y\_\_\_\_\_ N\_\_\_\_\_

## **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.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## **ACCESSORY POWER DISTRIBUTION PANEL**

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

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## **GROUND LIGHTS**

Each door shall include a Whelen 3SC0CDCR LED NFPA compliant ground light mounted to the underside of the cab step below each door.

Each light shall include a polycarbonate lens, a housing which is vibration welded and a bulb which shall be shock mounted for extended life.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## **GROUND LIGHT ACTIVATION**

The ground lights shall activate when the park brake is engaged.

Y\_\_\_\_\_ N\_\_\_\_\_

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## **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.

Y\_\_\_\_\_ N\_\_\_\_\_

## **STEP LIGHT ACTIVATION**

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

Y\_\_\_\_\_ N\_\_\_\_\_

## **INTERIOR DOOR WARNING LIGHTS**

The interior of each door shall include one (1) red 4" rectangular LED warning light 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.

Y\_\_\_\_\_ N\_\_\_\_\_

## **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.

Y\_\_\_\_\_ N\_\_\_\_\_

## **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.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## **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 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.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

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## **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.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## **REAR & SIDE FACING CAMERA**

A rear facing box style rearview camera shall be installed on the rear of the vehicle. There shall also be two (2) teardrop style rearview cameras; one mounted to the Officer side of the vehicle, and one to the Driver side of the vehicle. The rear camera and microphone shall activate when the vehicle transmission is shifted to reverse, and the side tear drop cameras shall be activated with the corresponding blinker. The image viewed on a monitor mounted on the Driver's side dash.

Y\_\_\_\_\_ N\_\_\_\_\_

## **BATTERY CHARGER AND AIR COMPRESSOR**

One (1) Kussmaul Pump Plus 1200 model #091-9-12V-1200 battery charger and air compressor system shall be installed. The 12 volt compressor system shall be designed to maintain the air pressure in the chassis brake system whenever the pressure drops below a predetermined level.

The battery charger shall be supplied from the 120 volt shore power receptacle and be a fully automatic high output charging system. The unit shall be mounted in a clean dry area and will be accessible for service and/or maintenance.

Y\_\_\_\_\_ N\_\_\_\_\_

## **EJECTION UNIT**

A Kussmaul Super Auto Eject 20 amp 120 volt shore power assembly, cover, solenoid input wire, power cord, and plug shall be installed. The 12 volt solenoid 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 arcing when connecting and disconnecting power cord.

The unit shall have a waterproof back enclosure with watertight cable fittings, which protect mechanism from road contamination. A pre-wired 3 foot AC electrical cord and starting sense wire (side wired) shall be installed.

The assembly shall have the following dimensions: 6.17” high x 4.08” wide x 2.8” deep with 4 lb. weight.

Y\_\_\_\_\_ N\_\_\_\_\_

There shall be a Kussmaul 20-amp super auto eject with yellow cover supplied.

Y\_\_\_\_\_ N\_\_\_\_\_

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## **SHORELINE LOCATION**

The shoreline shall be located in the driver's side behind the front door above the wheel well.

Y\_\_\_\_\_ N\_\_\_\_\_

The Battery Charger indicator shall be located in the canopy window.

Y\_\_\_\_\_ N\_\_\_\_\_

## *Body Specifications*

Y=Can Comply N=Cannot Comply E=Equivalent or Better

Y\_\_ N\_\_ E\_\_

### **BUMPER TO BUMPER WARRANTY**

The manufacturer shall provide a detailed written warranty of their completely manufactured fire apparatus. This warranty shall provide length of warranty, detailed list of components covered under warranty and / or any components excluded from the warranty.

Y\_\_\_\_\_ N\_\_\_\_\_

### **BODY WARRANTY - FIVE YEAR**

The manufacturer shall provide a detailed written warranty for all body components. This warranty shall provide length of warranty, detailed list of components covered under warranty and / or any components excluded from the warranty.

Y\_\_\_\_\_ N\_\_\_\_\_

### **SUBFRAME WARRANTY**

The manufacturer shall provide a detailed written warranty for all subframe components. This warranty shall provide length of warranty, detailed list of components covered under warranty and / or any components excluded from the warranty.

Y\_\_\_\_\_ N\_\_\_\_\_

### **PAINT WARRANTY**

The manufacturer shall provide a detailed written warranty for all painted components. This warranty shall provide length of warranty, detailed list of components covered under warranty and / or any components excluded from the warranty.

The warranty shall cover but not limited to the following paint failures

- 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 paint products or application.

Y\_\_\_\_\_ N\_\_\_\_\_

### **LETTERING WARRANTY**

The manufacturer shall provide a detailed written warranty for all lettering on the apparatus. This warranty shall provide length of warranty, detailed list of components covered under warranty and / or any components excluded from the warranty. This warranty shall address all lettering, striping, and application of previously listed items.

Y\_\_\_\_\_ N\_\_\_\_\_

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## **FIRE PUMP WARRANTY**

The manufacturer shall provide a detailed written warranty for the fire apparatus pump components. This warranty shall provide length of warranty, detailed list of components covered under warranty and / or any components excluded from the warranty.

Y\_\_\_\_\_ N\_\_\_\_\_

## **STAINLESS STEEL PLUMBING WARRANTY**

The manufacturer shall provide a ten (10) year warranty on the stainless steel plumbing components and installation. The manufacturer shall supply details of their warranty information with their bid submission.

Y\_\_\_\_\_ N\_\_\_\_\_

## **COMPLETE PRINTED MANUAL**

The manufacturer shall provide with the vehicle upon delivery, one (1) complete delivery manual. This manual shall be in a notebook type binder, with reference tabs for each section of the vehicle. A companion compact disk (CD) with all of the printed material in an electronic format (Adobe Acrobat PDF) 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

Y\_\_\_\_\_ N\_\_\_\_\_

## **"ON-LINE" SERVICE MANUAL SUPPORT**

As part of the standard delivery manual, the manufacturer shall give a password-protected link to the end user, allowing access to the manufacturers' database on service parts. The internet-based system shall allow the end user to access the major component supplier's service parts listing such as Hale, Waterous, Akron, etc.

This shall be accomplished with simplistic point and click features on the manufacturer line item within the "stripper" or "line item sheet". This will include automatic updates, printable schematics and manufacturer's web links and is available in the commercially available format of



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Adobe Acrobat Reader to access these documents. The manufacturer shall submit with the bid proposal, a sample set of on line Adobe formatted material that has been printed from the manufacturer's website.

## Parts Listings within Manuals

The manuals will include cross-reference part numbers from the manufacturer part number to the vendor parts. The manuals will list all components of the vehicle that includes a vendor part utilized in a complete installation via the manufacturer's "line item sheet" or "stripper" utilized to manufacture the completed vehicle.

These are "As Built" and proposals with "typical" or "generic" manuals will be rejected.

## Illustrative Schematics within Manuals

The manufacturer shall include installation diagrams and drawings of all major sub-assemblies. This will include components such as hydraulic ladder rack assemblies, pump panels, tanks, fire pumps, etc. The drawings shall be linked via an Internet based service program, in an electronic format from the manufacturers "stripper" (line item listing) of the manufacturing document. The manufacturer shall submit, upon request, a sample schematic.

## Digital Images within Manuals

In addition to two and three-dimensional installation drawings, the manufacturer shall make accessible, via an internet based link, the actual photos of the installed components listed within the "stripper" or line sheet. This will include, but not limited to wiring terminals, main body distribution strips, fire pump shifting, auxiliary components, etc. The manufacturer shall submit a sample of these upon request.

## Installation Instructions within Manuals

The manufacturer "work instructions" or "installation instructions" shall be included with the service manuals. These documents shall be accessible via a web-based link to the individual vehicle manufactured. The work instructions shall give systematic instructions of the component installation process. The manufacturer shall submit, upon request, a sample set of instructions.

## Automatic Updates of Manuals and Parts Listings

The online manuals will include automatic updates that are accessible via the web link. When clicking on the part within the manufacturer's stripper or line sheet, it will allow the end user to access the component manufacturer website for updated information. This will allow for latest parts and service components from the individual part manufacturer or vendor.

## Electrical Schematics

To maintain the vehicles electrical systems, the manufacturer shall provide to the purchaser the instructional manuals, complete electrical information and schematics on the vehicle. The electrical information shall be provided as follows:

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## Wiring Systems 12 and 120 Volt:

- Graphic symbols for electrical diagrams.
- Wire labeling, imprinting codes and index.
- Computer generated electrical schematics indicating the circuit number, wire size, switches, circuit breaker and terminals on the vehicle.

The manufacturer shall submit, upon request, a sample set of diagrams.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## **IN PROCESS PHOTOS**

The vehicle manufacturer shall provide a series of photos of the apparatus as it progresses through the production process. There will be a minimum of four (4) photos per interval and a total of six intervals, one (1) upon chassis arrival, four (4) during construction and one (1) upon completion.

Y\_\_\_\_\_ N\_\_\_\_\_

## **OPERATION AND FAMILIARIZATION MANUAL**

The apparatus manufacturer shall supply, at delivery, customized Operation & Familiarization Manual, complete with full-color photos of the actual, completed apparatus with each feature and control identified and its function explained.

Safety, Operation, Maintenance and Troubleshooting sections will include information about each major component of the apparatus (chassis, pump, foam system, generator, electrical devices, etc.). The manual shall be specific to the apparatus (or group of apparatus) being delivered.

All safety and warning labels shall be represented in the manual for subsequent safety inspections to ensure their continued presence on the apparatus.

The manufacturer shall submit a sample manual with the bid proposal. Failure to do so will result in rejection of the proposal. Reference to "on delivery" or "at pre-build" submission is not an acceptable response for the bid document.

“Similar” or “Representative” manuals will not be accepted.

Y\_\_\_\_\_ N\_\_\_\_\_

## **ELECTRIC SIREN**

One (1) Code 3 Model #3692 V-Con electronic siren shall be mounted in the cab. The unit shall feature an electronic air horn, wail, yelp, hi-lo siren and shall have a hard wired microphone.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

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## **SPEAKER**

One (1) Cast Products Model #SA2401100 watt speaker shall be recess mounted in the front bumper of the apparatus and connected to the electronic siren control unit.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## **SPEAKER**

One (1) stainless steel grille shall be installed on the speaker.

Y\_\_\_\_\_ N\_\_\_\_\_

## **SPEAKER LOCATION**

The siren speaker shall be installed in the right side of the apparatus bumper.

Y\_\_\_\_\_ N\_\_\_\_\_

## **FEDERAL MECHANICAL SIREN**

One (1) Federal Signal Q2B mechanical siren shall be recess mounted into the left side of the front 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 shall be installed in the cab.

Y\_\_\_\_\_ N\_\_\_\_\_

## **Q2B SIREN GUARDS**

Two (2) polished guards shall be installed to help protect the portion of the recessed Q2B siren that is not recessed in the front bumper.

Y\_\_\_\_\_ N\_\_\_\_\_

## **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.

Y\_\_\_\_\_ N\_\_\_\_\_

## **SIREN CONTROL**

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

Y\_\_\_\_\_ N\_\_\_\_\_

## **SIREN BRAKE**

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

Y\_\_\_\_\_ N\_\_\_\_\_

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## **LIGHTBAR**

One (1) Whelen Ultra Freedom IV 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
- Four (4) 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

Y\_\_\_\_\_ N\_\_\_\_\_

## **LIGHTBAR ACTIVATION**

The front upper light bar activation shall be wired into the master warning switch.

Y\_\_\_\_\_ N\_\_\_\_\_

## **UPPER REAR WARNING LIGHTS**

One (1) pair of Whelen model #600 red Super LED warning lights shall be installed, one each side on the upper rear of the apparatus body. The dimensions of the lights shall be 4" x 6".

Y\_\_\_\_\_ N\_\_\_\_\_

The driver side warning light shall be a Whelen Model 60R02FRR red-LED with a red lens.

Y\_\_\_\_\_ N\_\_\_\_\_

The officer side warning light shall be a Whelen Model 60R02FRR red-LED with a red lens.

Y\_\_\_\_\_ N\_\_\_\_\_

Each light shall be mounted with a Whelen Model 6EFLANGE chrome flange.

Y\_\_\_\_\_ N\_\_\_\_\_

## **UPPER SIDE FRONT WARNING LIGHTS**

One (1) pair of Whelen model #600 red Super LED warning lights shall be installed, on the upper portion of the body side, towards the front. The dimensions of the lights shall be 4" x 6".

Y\_\_\_\_\_ N\_\_\_\_\_

The driver side warning light shall be a Whelen Model 60R02FRR red-LED with a red lens.

Y\_\_\_\_\_ N\_\_\_\_\_

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The officer side warning light shall be a Whelen Model 60R02FRR red-LED with a red lens.

Y\_\_\_\_\_ N\_\_\_\_\_

Each light shall be mounted with a Whelen Model 6EFLANGE chrome flange.

Y\_\_\_\_\_ N\_\_\_\_\_

## **UPPER SIDE REAR WARNING LIGHTS**

Two (2) pair of Whelen model #600 red Super 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 4" x 6".

Y\_\_\_\_\_ N\_\_\_\_\_

The driver side warning light shall be a Whelen Model 60R02FRR red-LED with a red lens.

Y\_\_\_\_\_ N\_\_\_\_\_

The officer side warning light shall be a Whelen Model 60R02FRR red-LED with a red lens.

Y\_\_\_\_\_ N\_\_\_\_\_

Each light shall be mounted with a Whelen Model 6EFLANGE chrome flange.

Y\_\_\_\_\_ N\_\_\_\_\_

## **INBOARD WARNING LIGHTS**

One (1) pair of Whelen model 600 super LED's 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" x 6".

Y\_\_\_\_\_ N\_\_\_\_\_

The driver side warning light shall be a Whelen Model 60R02FRR red-LED with a red lens.

Y\_\_\_\_\_ N\_\_\_\_\_

The officer side warning light shall be a Whelen Model 60R02FRR red-LED with a red lens.

Y\_\_\_\_\_ N\_\_\_\_\_

## **OUTBOARD FRONT WARNING LIGHTS**

One (1) pair of Whelen model 600 super LED's warning lights shall be installed, one each side one the front of the chassis cab, in the outboard position, below the headlights. The dimensions of the lights shall be 4" x 6".

Y\_\_\_\_\_ N\_\_\_\_\_

The driver side warning light shall be a Whelen Model 60R02FRR red-LED with a red lens.

Y\_\_\_\_\_ N\_\_\_\_\_

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The officer side warning light shall be a Whelen Model 60R02FRR red-LED with a red lens.

Y\_\_\_\_\_ N\_\_\_\_\_

## **INTERSECTION WARNING LIGHTS**

One (1) pair of Whelen model #600 red Super LED warning lights shall be installed one each side of the chassis cab. The dimensions of the lights shall be 4" x 6".

Y\_\_\_\_\_ N\_\_\_\_\_

The driver side warning light shall be a Whelen Model 60R02FRR red-LED with a red lens.

Y\_\_\_\_\_ N\_\_\_\_\_

The officer side warning light shall be a Whelen Model 60R02FRR red-LED with a red lens.

Y\_\_\_\_\_ N\_\_\_\_\_

Each light shall be mounted with a Whelen Model 6EFLANGE chrome flange.

Y\_\_\_\_\_ N\_\_\_\_\_

## **LOWER MID-CHASSIS WARNING LIGHTS**

Two (2) Whelen model #600 Super LED warning lights shall be installed on the lower side of the mid-chassis. The dimensions of the lights shall be 4" x 6".

Y\_\_\_\_\_ N\_\_\_\_\_

The driver side warning light shall be a Whelen Model 60R02FRR red-LED with a red lens.

Y\_\_\_\_\_ N\_\_\_\_\_

The officer side warning light shall be a Whelen Model 60R02FRR red-LED with a red lens.

Y\_\_\_\_\_ N\_\_\_\_\_

Each light shall be mounted with a Whelen Model 6EFLANGE chrome flange.

Y\_\_\_\_\_ N\_\_\_\_\_

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

One (1) pair of Whelen model #600 red Super LED warning lights shall be installed , one each side of the apparatus, mid-body. The dimensions of the lights shall be 4" x 6".

Y\_\_\_\_\_ N\_\_\_\_\_

The driver side warning light shall be a Whelen Model 60R02FRR red-LED with a red lens.

Y\_\_\_\_\_ N\_\_\_\_\_

The officer side warning light shall be a Whelen Model 60R02FRR red-LED with a red lens.

Y\_\_\_\_\_ N\_\_\_\_\_

Each light shall be mounted with a Whelen Model 6EFLANGE chrome flange.

Y\_\_\_\_\_ N\_\_\_\_\_

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## **LOWER REAR SIDE WARNING LIGHTS**

One (1) pair of Whelen model #600 red Super LED warning lights shall be installed, one each side of the apparatus body, towards the rear of the body. The dimensions of the lights shall be 4" x 6".

Y\_\_\_\_\_ N\_\_\_\_\_

The driver side warning light shall be a Whelen Model 60R02FRR red-LED with a red lens.

Y\_\_\_\_\_ N\_\_\_\_\_

The officer side warning light shall be a Whelen Model 60R02FRR red-LED with a red lens.

Y\_\_\_\_\_ N\_\_\_\_\_

There shall be cast aluminum step light housing provided for the warning lights. The housing shall have a pyramid tread on the top of the housing.

Y\_\_\_\_\_ N\_\_\_\_\_

## **LOWER REAR WARNING LIGHTS**

One (1) pair of Whelen model #600 red Super 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" x 6".

Y\_\_\_\_\_ N\_\_\_\_\_

The driver side warning light shall be a Whelen Model 60R02FRR red-LED with a red lens.

Y\_\_\_\_\_ N\_\_\_\_\_

The officer side warning light shall be a Whelen Model 60R02FRR red-LED with a red lens.

Y\_\_\_\_\_ N\_\_\_\_\_

## **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.

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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.

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.



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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.

Y\_\_\_\_\_ N\_\_\_\_\_

## **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 tests 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.

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## 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.

Y\_\_\_\_\_ N\_\_\_\_\_

## WEATHER RESISTANT ELECTRICAL JUNCTION BOX

The 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. The main body junction panel shall be located in the pump compartment.

Y\_\_\_\_\_ N\_\_\_\_\_

## ELECTRICAL LOAD MANAGEMENT SYSTEM

One (1) Class 1 Total System Manager (TSM) shall be installed to control the 12 volt electrical system in the commercial cab. This system shall automatically shed excess loads in a preprogrammed fashion when system voltage levels become compromised. When proper voltage resumes the items that were turned off will re-activate.

A manual switch shall be provided to engage the high idle mode upon a drop in voltage provided that the parking brake is applied and the pump is not in gear.

Y\_\_\_\_\_ N\_\_\_\_\_

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

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

Y\_\_\_\_\_ N\_\_\_\_\_

## **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 "master" switch shall be provided and wired through a heavy-duty relay to activate power to the emergency lights.

Y\_\_\_\_\_ N\_\_\_\_\_

## **AIR HORNS**

Two (2) 24.5" Stuttertone chrome plated air horns shall be recess mounted into the front bumper with one positioned on each side. An air protection valve shall be provided in the air horn piping that will not allow the chassis air brake system to drop below 90 PSI.

All air line connections to horns will be supplied with brass Compression Style fittings. No push lock connectors will be acceptable.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## **AIR HORN LANYARD**

One (1) dual roof mounted pull cord shall be installed to activate the air horn system. The pull cord shall be installed within easy reach of the driver and officer.

Y\_\_\_\_\_ N\_\_\_\_\_

## **PUMP ENCLOSURE LIGHTS**

Two (2) LED work light shall be provided in the pump enclosure.

Y\_\_\_\_\_ N\_\_\_\_\_

The control switch shall be mounted on the light head.

Y\_\_\_\_\_ N\_\_\_\_\_

## **LIGHT MOUNTING LOCATION**

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

Y\_\_\_\_\_ N\_\_\_\_\_

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## **LED SCENE LIGHT**

Fire Research Spectra LED Floodlight model SPA800-Q20 contour roof mount light shall be installed. The mounting brackets shall attach to the bottom of the lamphead and be machined to conform to the roof radius. Wiring shall extend from a weatherproof strain relief at the rear of the lamphead.

The lamphead shall have eighty four (84) ultra-bright white LEDs, 72 for flood lighting and 12 to provide a spot light beam pattern. It shall operate at 12/24 volts DC, draw 18/9 amps, and generate 20,000 lumens of light. The lamphead shall have a unique lens that directs flood lighting onto the work area and focuses the spot light beam into the distance. The lamphead shall be no more than 5 7/8" high by 14" wide. The lamphead and mounting bracket shall be powder coated white. The light shall be for fire service use.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## **LIGHT SWITCH REMOTE LOCATION**

A switch shall be installed from a remote location in the chassis cab. The weatherproof on-off toggle switch shall be used for the remote switching.

Y\_\_\_\_\_ N\_\_\_\_\_

## **SCENE LIGHT SWITCHING**

One (1) 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".

Y\_\_\_\_\_ N\_\_\_\_\_

## **LIGHT MOUNTING LOCATION**

The mounting location for the specified light shall be on the rear of the cab.

Y\_\_\_\_\_ N\_\_\_\_\_

## **SCENE LIGHT**

Two (2) Fire Research Spectra LED Scene Light model SPA530-Q20 side mount push up telescopic light shall be installed. The light pole shall be anodized aluminum and have a knurled twist lock mechanism to secure the extension pole in position. The extension pole shall rotate 360 degrees. The outer pole shall be a grooved aluminum extrusion and qualify as an NFPA compliant handrail. The pole mounting brackets shall have a 2 3/4" offset. Wiring shall extend from the pole bottom with a 4' retractile cord.

The lamphead shall have eighty four (84) ultra-bright white LEDs, 72 for flood lighting and 12 to provide a spot light beam pattern. It shall operate at 12/24 volts DC, draw 18/9 amps, and generate 20,000 lumens of light. The lamphead shall have a unique lens that directs flood lighting onto the work area and focuses the spot light beam into the distance. The lamphead angle of elevation shall be adjustable at a pivot in the mounting arm and the position locked with a round knurled locking knob. The lamphead shall be no more than 5 3/8" high by 14" wide by 3

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3/4" deep and have a heat resistant handle. The lamphead and mounting arm shall be powder coated. The LED scene light shall be for fire service use.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

### SCENE LIGHT SWITCHING

Two (2) scene light switch with indicator shall be installed on the pump panel to control the left side scene light(s). The switch shall be labeled "LEFT SCENE".

Y\_\_\_\_\_ N\_\_\_\_\_

### SCENE LIGHT SWITCHING

Two (2) scene light switch with indicator shall be installed on the pump panel to control the right side scene light(s). The switch shall be labeled "RIGHT SCENE".

Y\_\_\_\_\_ N\_\_\_\_\_

### **IN CAB HAND HELD SPOT LIGHT**

One (1) Optronics model #KB-4003 "Blue Eye" hand held 12 volt spotlight shall be provided on the right side of the cab dash area. The light shall be controlled by a momentary switch located on the hand light. The light shall be secured per requirements of the NFPA standard.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

### **PORTABLE LANTERN**

Four (4) Streamlight "Vulcan" LED portable hand lights 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.

Y\_\_\_\_\_ N\_\_\_\_\_

### **HANDLIGHT INSTALLATION**

The location of the hand lights shall be in the chassis cab. All components shall be installed as directed by the fire department at the pre-construction conference.

Y\_\_\_\_\_ N\_\_\_\_\_

### **MARKER LIGHTS**

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

Y\_\_\_\_\_ N\_\_\_\_\_

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## **MARKER LIGHTS**

Two (2) Britax P/N L427.203.L12V flex rubber arm style LED Clearance lights shall be mounted on the rear of the body, one each side. These lights are in addition to the lights required by the DOT.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## **LICENSE PLATE BRACKET**

One (1) stainless steel license plate bracket shall be provided at the rear bumper. The bracket shall have a LED light.

Y\_\_\_\_\_ N\_\_\_\_\_

## **TAIL LIGHTS**

One (1) pair of Whelen 60BTT LED tail/brake lights shall be provided on the rear of the apparatus. The rectangular lights shall be 4" x 6" LED with a red lens.

Y\_\_\_\_\_ N\_\_\_\_\_

## **TURN SIGNALS**

One (1) pair of Whelen, 60A00TAR turn signals with populated arrow shape shall be provided. The rectangular LED lights shall be 4" x 6" in dimension and shall have an amber lens.

Y\_\_\_\_\_ N\_\_\_\_\_

## **BACKUP LIGHTS**

One (1) pair of Whelen Series 600 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.

Y\_\_\_\_\_ N\_\_\_\_\_

## **FOUR LIGHT BEZEL**

One (1) pair of tail light cluster bezels shall be supplied. Each bezel shall be designed to hold the specified rear lights located at the lower rear corners of the body.

Y\_\_\_\_\_ N\_\_\_\_\_

## **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.

Y\_\_\_\_\_ N\_\_\_\_\_

## **FRONT BUMPER GROUND LIGHTS**

Two (2) ground lights LED lights shall be installed under the front bumper.

Y\_\_\_\_\_ N\_\_\_\_\_

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## **PUMP PANEL GROUND LIGHTS**

Two (2) LED ground lights shall be installed under the pump panel running boards. One (1) light shall be located on the driver's side and one (1) light located on the officer's side of the apparatus.

Y\_\_\_\_\_ N\_\_\_\_\_

## **REAR STEP GROUND LIGHTS**

Two (2) LED ground lights shall be installed under rear step of the apparatus.

Y\_\_\_\_\_ N\_\_\_\_\_

The ground lights shall automatically activate when the parking brake is applied.

Y\_\_\_\_\_ N\_\_\_\_\_

## **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.

Y\_\_\_\_\_ N\_\_\_\_\_

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

Y\_\_\_\_\_ N\_\_\_\_\_

## **SCENE LIGHT**

Four (4) Fire Research model SPA900-Q70 surface mount light shall be installed. The light shall be mounted with four (4) screws to a flat surface. It shall be 6 3/4" high by 9" wide and have a profile of less than 1 3/4" beyond the mounting surface. Wiring shall extend from a weatherproof strain relief at the rear of the light.

The light shall have twenty-four (24) white LEDs that generate a rated 7000 lumens at 12 or 24 volts DC. The lens shall redirect the light along the vehicle and out onto the working area. The light housing shall be aluminum with chrome colored bezel.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

### SCENE LIGHT LOCATION

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

Y\_\_\_\_\_ N\_\_\_\_\_

### SCENE LIGHT LOCATION

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

Y\_\_\_\_\_ N\_\_\_\_\_

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## SCENE LIGHT LOCATION

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

Y\_\_\_\_\_ N\_\_\_\_\_

## 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".

Y\_\_\_\_\_ N\_\_\_\_\_

## 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".

Y\_\_\_\_\_ N\_\_\_\_\_

## 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".

Y\_\_\_\_\_ N\_\_\_\_\_

## SCENE LIGHT SWITCHING

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

Y\_\_\_\_\_ N\_\_\_\_\_

## **ROTO RAY LIGHT**

One (1) Roto-Ray LED warning light shall be installed on the apparatus. The light shall have two (2) red light heads, one (1) clear light head and shall be controlled by a switch located on the emergency switch panel in the apparatus cab.

Y\_\_\_\_\_ N\_\_\_\_\_

## **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



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

Y\_\_\_\_\_ N\_\_\_\_\_

## **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.

### CAB SEATING POSITION LIMITS

The label shall also include the seating positions for firefighters. A weight allowance of 250 pounds for each shall be factored into the gross vehicle weight rating of the chassis.

Y\_\_\_\_\_ N\_\_\_\_\_

### 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.

Y\_\_\_\_\_ N\_\_\_\_\_

### 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.

Y\_\_\_\_\_ N\_\_\_\_\_

### 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.

Y\_\_\_\_\_ N\_\_\_\_\_

## **REAR TOWING PROVISIONS**

There shall be two tow eyes furnished under the rear of the body and attached directly to the chassis frame rails. There shall be a reinforcement spreader bar connecting the two tow eyes. Tow eyes are to be constructed of 3/8" plate steel with a 4" I.D. hole, large enough for passing through a tow chain end hook.

Y\_\_\_\_\_ N\_\_\_\_\_

The tow plates shall be painted black.

Y\_\_\_\_\_ N\_\_\_\_\_

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## **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.

Y\_\_\_\_\_ N\_\_\_\_\_

## **TOW EYES**

Two (2) 3" tow eyes shall be mounted to the chassis frame under the bumper. The tow eyes shall be steel and shall be painted black.

Y\_\_\_\_\_ N\_\_\_\_\_

## **HUB AND LUG NUT COVERS**

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

Y\_\_\_\_\_ N\_\_\_\_\_

## **TIRE PRESSURE INDICATOR**

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

Y\_\_\_\_\_ N\_\_\_\_\_

## **REAR MUD FLAPS**

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

Y\_\_\_\_\_ N\_\_\_\_\_

## **INTERIOR CABINET**

There shall be one (1) full height storage cabinet installed on the back wall of the interior cab. The cabinet shall be constructed of smooth aluminum plate. The cabinet shall have approximate interior dimensions of 36" Wide x 18" Deep x Full Height.

The cabinet shall be equipped with a roll-up door constructed of anodized aluminum.

Y\_\_\_\_\_ N\_\_\_\_\_

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

Y\_\_\_\_\_ N\_\_\_\_\_

The cabinet's interior shall have a natural finish.

Y\_\_\_\_\_ N\_\_\_\_\_

Three (3) adjustable shelves shall be installed in the interior cab compartment. The shelf shall be constructed from aluminum.

Y\_\_\_\_\_ N\_\_\_\_\_

## **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.

Y\_\_\_\_\_ N\_\_\_\_\_

## **COMPARTMENT LIGHTS**

Two (2) LUMA BAR vertically mounted roll-up compartment LED door lights shall be installed one each side of the door opening. The compartment lights shall be integrated into the roll-up door tracks with the light actuation with the door opening.

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

Y\_\_\_\_\_ N\_\_\_\_\_

The compartment light will be controlled by a magnetic "On-Off" switch located on each compartment door.

Y\_\_\_\_\_ N\_\_\_\_\_

## **HALE QMAX SINGLE STAGE PUMP**

A Hale model Q-MAX single stage pump shall be designed to mount within a pump enclosure and shall be split-drive shaft driven. The pump shall be driven by a driveline from the truck transmission. The engine shall provide sufficient horsepower and RPM to enable the pump to meet and exceed its rated performance.

The entire pump, suction and discharge passages shall be hydrostatically tested to a pressure of 600 PSI. The pump shall be tested at the pump manufacturer's factory to the performance specs as outlined by the applicable sections of the NFPA 1901 standard. The pump shall be free from objectionable pulsation and vibration.

## **PUMP BODY**

The pump body and related parts shall be fine grain alloy cast iron, with a minimum tensile strength of 30,000 PSI. All metal moving parts in contact with water shall be of high quality

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bronze or stainless steel. The pump body shall be horizontally split, on a single plane in two sections for easy removal of entire impeller assembly including wear rings and bearings from beneath the pump without disturbing piping or the mounting of the pump in chassis.

## IMPELLERS

The pump shall have one double suction impeller. The pump body shall have two opposed discharge outlet volute cutwaters to eliminate radial unbalance. Pump impeller shall be hard, fine grain bronze of the mixed flow design; accurately machined and individually balanced. The vanes of the impeller intake eyes shall be of sufficient size and design to provide ample reserve capacity utilizing minimum horsepower.

Impeller clearance rings shall be bronze, easily renewable without replacing impeller or pump volute body, and shall be of wrap-around double labyrinth design for maximum efficiency.

## PUMP SHAFT

Pump shaft shall be rigidly supported by three bearings for minimum deflection. One (1) high lead bronze sleeve bearing shall be located immediately adjacent to the impeller (on side opposite the gearbox). The sleeve bearing shall be lubricated by a force fed, automatic oil lubricated design, pressure balanced to exclude foreign material. The remaining bearings shall be heavy-duty, deep groove ball bearings in the gearbox and they shall be splash lubricated.

The pump shaft shall be heat-treated, electric furnace, corrosion resistant stainless steel to be super-finished with galvanic corrosion protection for longer shaft life. Pump shaft must be sealed with double-lip oil seal to keep road dirt and water out of the gearbox.

## PUMP TRANSMISSION

Pump transmission shall be of sufficient size to withstand 16,000 lb. /ft. of torque of the engine. The drive unit shall be designed of ample capacity for lubrication reserve and to maintain the proper operating temperature.

The gearbox drive shafts shall be of heat-treated chrome nickel steel and be at least 2-3/4" in diameter, on both the input and output drive shafts. They shall withstand the full torque of the engine.

All gears both drive and pump, shall be of highest quality electric furnace chrome nickel steel. Bores shall be ground to size and teeth integrated and hardened, to give an extremely accurate gear for long life. An accurately cut spur design shall be provided to eliminate all possible end thrust.

## PUMP MOUNTING

The pump shall be bolted to steel angles in the pump module, using grade 8 bolts.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

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## DRIVELINES

Hollow-tube drivelines and universals shall be properly matched to the engine and transmission output torque ratings.

Y\_\_\_\_\_ N\_\_\_\_\_

## 1500 GPM FIRE PUMP SPECIFICATIONS

The centrifugal type fire pump shall be a Hale model QMAX midship mounted with a rated capacity of 1500 GPM. The pump shall meet NFPA 1901 requirements.

The pump shall be certified to meet the following deliveries:

1500 GPM @ 150 PSI

1500 GPM @ 165 PSI

1050 GPM @ 200 PSI

750 GPM @ 250 PSI

Y\_\_\_\_\_ N\_\_\_\_\_

## LEFT SIDE -- 6" UNGATED INTAKE

One (1) 6" un gated suction intake shall be installed on the left side pump panel to supply the fire pump from an external water supply. The threads shall be 6" NST. The intake shall be provided with a removable screen.

Y\_\_\_\_\_ N\_\_\_\_\_

One (1) 6" chrome plated cap shall be provided. The threads shall be NST and the cap shall be equipped long handles.

Y\_\_\_\_\_ N\_\_\_\_\_

## RIGHT SIDE -- 6" UNGATED INTAKE

One (1) 6" un gated suction intake shall be installed on the right side pump panel to supply the fire pump from an external water supply. The intake shall be provided with a removable screen.

Y\_\_\_\_\_ N\_\_\_\_\_

One (1) 6" chrome plated cap shall be provided. The threads shall be NST and the cap shall be equipped long handles.

Y\_\_\_\_\_ N\_\_\_\_\_

## FIRE PUMP MECHANICAL WATER SEAL

The Hale fire pump shall have a high quality, self-adjusting, maintenance free mechanical seal.

Y\_\_\_\_\_ N\_\_\_\_\_

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## **ELECTRIC/PNEUMATIC PUMP SHIFT**

The pump shift shall be an air operated and shall incorporate an air cylinder with an electric actuating switch to shift from road to pump and back. The power shift control valve shall be mounted in the cab. The fire pump-shift system shall be equipped with a means to prevent unintentional movement of the control device from its set position.

The system shall include a nameplate indicating the chassis transmission shift selector position to be used for pumping and located so that it can be easily read from the driver's position.

The system shall include applicable the NFPA interlocks, pump shift and OK TO PUMP indicator lights in the cab and pump panel. The fire pump system shall be equipped with an interlock system shall be provided to ensure that the pump drive system components are properly engaged in the pumping mode of operation so that the pumping system can be safely operated from the pump operator's position.

If applicable, the secondary braking device shall be automatically disengaged for pumping operations.

All air line connections to the pump and components will be supplied with brass Compression Style fittings. No push lock connectors will be acceptable.

Y\_\_\_\_\_ N\_\_\_\_\_

## **PRIMER**

The priming pump shall be a Trident Emergency Products compressed air powered, high efficiency, multi-stage, venturi based AirPrime™ System. All wetted metallic parts of the priming system are to be of brass and stainless steel construction. A single panel mounted control will activate the priming pump and open the priming valve to the pump. The priming system shall have a five year warranty.

All air line connections to the primer and components will be supplied with brass Compression Style fittings. No push lock connectors will be acceptable.

Y\_\_\_\_\_ N\_\_\_\_\_

## **PRIMER CONTROL**

A manual push button shall be provided on the pump operator's panel, for the manually priming the main pump.

Y\_\_\_\_\_ N\_\_\_\_\_

## **ENGINE/PUMP GOVERNOR**

Apparatus shall be equipped with a Class1 “Total Pressure Governor” (TPG) that is connected to the Electronic Control Module (ECM) mounted on the engine.

The “TPG” will operate as a pressure sensor (regulating) governor (PSG) utilizing the engines J1939 data for optimal resolution and response when supported by the engine manufacturer. If J-

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1939 engine control is not supported, then analog remote throttle control shall be provided by the TPG.

The TPG shall utilize control algorithms that minimize pressure spikes during low or erratic water supply situations. The TPG shall be backwards compatible to any engine that supplies J1939 RPM, Temperature and Oil Pressure information providing the ability to maintain a consistent fleet fire-fighting capability and reduce operator cross training and confusion.

The TPG shall have the ability to use either a 300 PSI or a 600 PSI transducer for best operation. PSG system diagnostics shall be built in and accessible by technicians. Programmable presets for RPM and Pressure settings shall be easily configurable. The straightforward menu structure shall allow the “TPG” configuration to match existing apparatus operation as closely as possible.

The “TPG” shall also include indication of engine RPM, system voltage, engine oil pressure and engine temperature with audible alarm output for all. The “TPG” uses the J1939 data bus for engine information, requiring no additional sensors to be installed. The TPG shall use J1939 broadcast warnings for the alarm as a standard and allow the “user” to select warning values if “SOPs” dictate.

Y\_\_\_\_\_ N\_\_\_\_\_

## **ENGINE HOUR METER**

One (1) engine hour meter shall be provided on the operator's pump panel.

Y\_\_\_\_\_ N\_\_\_\_\_

## **PUMP ANODES**

There shall be sacrificial, zinc anodes in the pump steamer ports which shall protect the pump and piping from electrolysis. These anodes shall also act as screens.

Y\_\_\_\_\_ N\_\_\_\_\_

## **PUMP PLUMBING SYSTEM**

The fire pump plumbing system shall be of rigid stainless steel pipe or flexible piping with stainless steel fittings. Mechanical grooved couplings shall be installed to permit flexing of the plumbing system and allow for quick removal of piping or valves for service. Flexible hose couplings shall be threaded stainless steel or mechanical grooved coupling connections.

The fire pump and plumbing shall be hydrostatically tested in compliance to applicable sections of NFPA standards. The test results shall be included in the delivery documentation.

Y\_\_\_\_\_ N\_\_\_\_\_

## **FIRE PUMP MASTER DRAIN**

The fire pump plumbing system and fire pump shall be piped to a single pump panel mounted 'handwheel' type master pump drain assembly. The master drain valve shall be a bronze master drain with a rubber disc seal, a universal joint and a handwheel control on the pump panel. The

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master drain shall also provide for low point drainage of the fire pump and auxiliary devices.

## **ADDITIONAL LOW POINT DRAINS**

The plumbing system shall be equipped with additional low point manually operated drain valves to allow total draining of the fire pump plumbing system. These valves shall be accessible from the side of the vehicle and labeled for exact location.

Y\_\_\_\_\_ N\_\_\_\_\_

## **FIRE PUMP & PLUMBING SYSTEM PAINTING**

The fire pump and plumbing system shall be painted by the fire apparatus manufacturer. The fire pump and the plumbing shall be painted metallic silver.

Y\_\_\_\_\_ N\_\_\_\_\_

## **HOSE THREADS**

The hose threads shall be National Standard Thread (NST) on all base threads on the apparatus intakes and discharges.

Y\_\_\_\_\_ N\_\_\_\_\_

## **WATER TANK TO PUMP LINE**

One (1) 3" water tank to fire pump line shall be provided with a full flow quarter turn ball valve, 3" piping, and with flex hose and stainless steel hose clamps. The tank to pump line shall be equipped with a check valve to prevent pressurization of the water tank.

The line shall be flow tested during the fire pump testing and shall meet applicable requirements of NFPA standards.

Y\_\_\_\_\_ N\_\_\_\_\_

The tank to pump valve shall be controlled at the pump operator's panel.

Y\_\_\_\_\_ N\_\_\_\_\_

The valve shall be a three-inch (3") Akron valve with a stainless ball.

Y\_\_\_\_\_ N\_\_\_\_\_

## **FIRE PUMP TO WATER TANK FILL LINE**

One (1) 2" fire pump to water tank refill and pump bypass cooler line shall be provided. The valve shall be a full flow quarter turn ball valve with 2" piping and flex hose to tank. The valve control handle shall have a nameplate located near the valve control.

Y\_\_\_\_\_ N\_\_\_\_\_

The valve shall be an Akron 8000 Series two-inch (2") valve with a stainless ball.

Y\_\_\_\_\_ N\_\_\_\_\_



## Rome Fire Department – 1500 GPM Custom Pumper

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One (1) Akron valve equipped with a manually operated pull rod, with quarter-turn locking feature shall be provided on the intake. The handle shall be equipped with a color-coded name plate.

Y\_\_\_\_\_ N\_\_\_\_\_

### **FIRE PUMP SPLIT SHAFT DRIVESHAFTS AND INSTALLATION**

The mid-ship split shaft fire pump shall be installed and shall include installation of the fire pump, modification and/or fabrication of new drivelines and all pump-mounting brackets. The drive shaft(s) shall be spin balanced prior to final installation.

Y\_\_\_\_\_ N\_\_\_\_\_

### **INTAKE RELIEF/DUMP VALVE**

One (1) Elkhart Model 40, 2-1/2" intake relief/dump valve preset at 125 psi shall be permanently installed on the suction side of the fire pump. The valve shall have an adjustment range of 75 psi to 250 psi, and shall be designed to automatically self-restore to a non-relieving position when excessive pressure is no longer present.

Discharge side of the intake relief valve shall be plumbed away from the pump operator.

Y\_\_\_\_\_ N\_\_\_\_\_

### **FIRE PUMP COOLING**

The fire pump shall be equipped with 3/8" cooling line from the pump to the water tank. This re-circulation line shall be controlled by a pump panel control valve with nameplate label noting it as the "fire pump bypass cooler". There shall be a check valve installed in the pump cooler line to prevent tank water from back flowing into the pump when it is not in use.

Y\_\_\_\_\_ N\_\_\_\_\_

### **CHASSIS ENGINE HEAT EXCHANGER COOLING SYSTEM**

The apparatus shall be equipped with a heat exchanger for supplementary chassis engine cooling during fire pump operations. A manually opened valve, mounted at the operator's panel, shall direct water from the fire pump to the heat exchanger that is mounted in the engine radiator cooling hose. The system shall provide cooling water from the fire pump to circulate around the engine radiator coolant without mixing or coming in direct contact with the engine coolant. The complete installation shall be done by the fire apparatus manufacturer.

A nameplate label shall be installed on the pump panel noting "engine cooling system" with "on-off" opening directions noted.

Y\_\_\_\_\_ N\_\_\_\_\_

### **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.

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The UL acceptance certificate shall be furnished with the apparatus on delivery.

Y\_\_\_\_\_ N\_\_\_\_\_

## **FIRE PUMP TEST LABEL**

A fire pump performance and rating label shall be installed on the fire apparatus pump panel. The label shall denote levels of pump performance and testing completed at factory. These shall include GPM at net pump pressure, RPM at such level, and other pertinent data as required by applicable NFPA standards. In addition, the pressure control device, tank to pump flow tests, and other required testing shall be completed.

In addition, the entire pump, suction and discharge passages shall be hydrostatically tested to a pressure as required by applicable NFPA standards.

The pump shall be fully tested at the pump manufacturer's factory to the performance specifications as outlined by applicable NFPA standards. Pump shall be free from objectionable pulsation and vibration.

If applicable, the fire pump shall be tested and rated as follows:

100% of rated capacity at 150 pounds net pressure.

70% of rated capacity at 200 pounds net pressure.

50% of rated capacity at 250 pounds net pressure.

100% or rated capacity at 165 pounds net pressure.

Y\_\_\_\_\_ N\_\_\_\_\_

## **LEFT SIDE -- 2-1/2" GATED INTAKE**

One (1) 2-1/2" gated suction intake shall be installed on left side pump panel to supply the fire pump from an external water supply. The control valve shall be a quarter turn ball valve and shall have 2-1/2" NST female thread of chrome plated brass.

Y\_\_\_\_\_ N\_\_\_\_\_

The intake shall be equipped with a 3/4" drain and bleeder valve. A nameplate label and removable screen shall be installed.

Y\_\_\_\_\_ N\_\_\_\_\_

A 3/4" cast bronze quarter-turn drain/bleeder valve shall be installed. The valve shall be complete with a chrome plated bronze ball, reinforced Teflon seals, and blow-out proof stem rated to 600 PSI. A chrome plated zinc handle shall be provided on each drain valve complete with a recessed ID label provision. The handle shall lift to open and push down to close.

Y\_\_\_\_\_ N\_\_\_\_\_

One (1) 2-1/2" chrome plated plug shall be provided. The threads shall be Special 3-3/16" x 7 TPI and the plug shall be equipped rocker lugs and chain or cable securement.

Y\_\_\_\_\_ N\_\_\_\_\_

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One (1) 2.5" NST Male x 2.5" Female Swivel Special Thread (3-3/16 x 7 TPI) adapter shall be provided.

Y\_\_\_\_\_ N\_\_\_\_\_

The valve shall be an Akron 8000 Series two and one half-inch (2-1/2") valve with a stainless ball.

Y\_\_\_\_\_ N\_\_\_\_\_

The valve shall be equipped with one (1) manually operated, swing-type manual control located adjacent the intake. The valve shall be equipped with a color-coded name plate.

Y\_\_\_\_\_ N\_\_\_\_\_

### **RIGHT SIDE -- 2-1/2" GATED INTAKE**

One (1) 2-1/2" gated suction intake shall be installed on right side pump panel to supply the fire pump from an external water supply. The control valve shall be a quarter turn ball valve and shall have 2-1/2" NST female thread of chrome plated brass.

Y\_\_\_\_\_ N\_\_\_\_\_

The intake shall be equipped with a 3/4" drain and bleeder valve. A nameplate and removable screen shall be installed.

Y\_\_\_\_\_ N\_\_\_\_\_

A 3/4" cast bronze quarter-turn drain/bleeder valve shall be installed. The valve shall be complete with a chrome plated bronze ball, reinforced Teflon seals, and blow-out proof stem rated to 600 PSI. A chrome plated zinc handle shall be provided on each drain valve complete with a recessed ID label provision. The handle shall lift to open and push down to close.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

One (1) 2-1/2" chrome plated plug shall be provided. The threads shall be Special 3-3/16" x 7 TPI and the plug shall be equipped rocker lugs and chain or cable securement.

Y\_\_\_\_\_ N\_\_\_\_\_

One (1) 2.5" NST Male x 2.5" Female Swivel Special Thread (3-3/16 x 7 TPI) adapter shall be provided.

Y\_\_\_\_\_ N\_\_\_\_\_

The valve shall be an Akron 8000 Series two and one half-inch (2-1/2") valve with a stainless ball.

Y\_\_\_\_\_ N\_\_\_\_\_

The valve shall be equipped with one (1) manually operated, swing-type manual control located adjacent the intake. The valve shall be equipped with a color-coded name plate.

Y\_\_\_\_\_ N\_\_\_\_\_

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## **TWO (2) 1-1/2" SPEEDLAY DISCHARGES**

Two (2) 1-3/4" pre-connect hose speedlays shall be installed ahead of the front of body or pump enclosure, controlled with quarter turn 2" diameter ball valves. The outlets shall be equipped 2" NPT female swivel x 1-1/2" male NST hose threads.

Y\_\_\_\_\_ N\_\_\_\_\_

The hosebed decking shall be constructed with slots integrated into the hosebed floor.

Y\_\_\_\_\_ N\_\_\_\_\_

The hose bed shall provide a minimum capacity of 200 feet of 1-3/4" diameter double jacket hose with hose and nozzle provided by fire department.

Y\_\_\_\_\_ N\_\_\_\_\_

A Class 1 automatic type 3/4" bleeder valve shall be installed.

Y\_\_\_\_\_ N\_\_\_\_\_

The specified valve shall be an Akron 8000 Series two-inch (2") valve with a stainless ball.

Y\_\_\_\_\_ N\_\_\_\_\_

For valve actuation, the specified discharge shall be equipped with a side mount valve control. The ergonomically designed 1/4 turn push-pull T-handle shall be chrome plated zinc with recessed labels for color coding and signage. The gear-control rod, double laminated locking clips, and rod housing shall be stainless steel and provide true positive lock that will eliminate valve drift. Bronze and Teflon impregnated stainless steel bushings in both ends of rod housing shall eliminate rod deflection, never need lubrication and ensure consistent long-term operation.

Y\_\_\_\_\_ N\_\_\_\_\_

The control assembly shall include a decorative chrome-plated zinc panel mounted bezel with recessed color-coded label.

Y\_\_\_\_\_ N\_\_\_\_\_

Two (2) 2-1/2" discharge pressure gauges (0-400 PSI) shall be provided. The face of the gauge shall be a WHITE dial with black letters. The gauges will be located on the pump instrument panel.

Y\_\_\_\_\_ N\_\_\_\_\_

## **SPEEDLAY COVER**

Black cargo webbing shall be provided at each speedlay hosebed. The webbing shall be permanently attached on the forward side and have Velcro and a grab handle at the rear. A Velcro retaining strap on both ends shall be provided. It shall be permanently attached on the cab side at the top of the crosslays with a footman's loop.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

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## **ROLLERS FOR PRE-CONNECTED SPEEDLAY HOSE BED**

The pre-connect speedlay hosebed shall be equipped stainless steel "U" shaped roller system, one on each end of the hosebed.

Y\_\_\_\_\_ N\_\_\_\_\_

## **REMOVABLE TRAY FOR PRE-CONNECTED HOSE BEDS**

The 1-3/4" pre-connect hosebed(s) shall be equipped with a "U" shaped aluminum hose tray. The unit shall be equipped with pull out hand holes and retaining devices to secure the tray, nozzle, and hose in transit.

Y\_\_\_\_\_ N\_\_\_\_\_

## **LEFT SIDE PUMP PANEL -- 2-1/2" DISCHARGE**

Two (2) 2-1/2" discharge shall be installed on the left side pump panel area and shall be controlled by a quarter turn ball valve. The discharge shall have 2-1/2" NST male hose threads. A color coded nameplate label shall be provided adjacent the control handle.

Y\_\_\_\_\_ N\_\_\_\_\_

A 3/4" cast bronze quarter-turn drain/bleeder valve shall be installed. The valve shall be complete with a chrome plated bronze ball, reinforced Teflon seals, and blow-out proof stem rated to 600 PSI. A chrome plated zinc handle shall be provided on each drain valve complete with a recessed ID label provision. The handle shall lift to open and push down to close.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

Two (2) chrome plated elbow with rocker lugs shall be provided with 2-1/2" NST swivel female x 2-1/2" NST male hose threads.

Y\_\_\_\_\_ N\_\_\_\_\_

Two (2) 2-1/2" NST Female rocker lug x 2-1/2" Special Thread Male (3-3/16 x 7 TPI) chrome plated adapter with 2-1/2" vented Special Thread (3-3/16 x 7 TPI) cap and cable or chain securement shall be provided.

Y\_\_\_\_\_ N\_\_\_\_\_

The specified valve shall be an Akron 8000 Series two and one half-inch (2-1/2") valve with a stainless ball.

Y\_\_\_\_\_ N\_\_\_\_\_

For valve actuation, the specified discharge shall be equipped with a side mount valve control. The ergonomically designed 1/4 turn push-pull T-handle shall be chrome plated zinc with recessed labels for color coding and signage. The gear-control rod, double laminated locking clips, and rod housing shall be stainless steel and provide true positive lock that will eliminate valve drift. Bronze and Teflon impregnated stainless steel bushings in both ends of rod housing shall eliminate rod deflection, never need lubrication and ensure consistent long-term operation.

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The control assembly shall include a decorative chrome-plated zinc panel mounted bezel with recessed color-coded label.

Y\_\_\_\_\_ N\_\_\_\_\_

Two (2) 2-1/2" discharge pressure gauges (0-400 PSI) shall be provided. The face of the gauge shall be a WHITE dial with black letters. The gauges will be located on the pump instrument panel.

Y\_\_\_\_\_ N\_\_\_\_\_

## **RIGHT SIDE PUMP PANEL -- 2-1/2" DISCHARGE**

One (1) 2-1/2" discharge shall be installed on the right side pump panel area and shall be controlled by a quarter turn ball valve. The discharge shall have 2-1/2" NST male hose threads. A color coded nameplate label shall be provided adjacent the control handle.

Y\_\_\_\_\_ N\_\_\_\_\_

A 3/4" cast bronze quarter-turn drain/bleeder valve shall be installed. The valve shall be complete with a chrome plated bronze ball, reinforced Teflon seals, and blow-out proof stem rated to 600 PSI. A chrome plated zinc handle shall be provided on each drain valve complete with a recessed ID label provision. The handle shall lift to open and push down to close.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

One (1) chrome plated elbow with rocker lugs shall be provided with 2-1/2" NST swivel female x 2-1/2" NST male hose threads.

Y\_\_\_\_\_ N\_\_\_\_\_

One (1) 2-1/2" NST Female rocker lug x 2-1/2" Special Thread Male (3-3/16 x7 TPI) chrome plated adapter with 2-1/2" vented Special Thread (3-3/16 x 7 TPI) cap and cable or chain securement shall be provided.

Y\_\_\_\_\_ N\_\_\_\_\_

The specified valve shall be an Akron 8000 Series two and one half-inch (2-1/2") valve with a stainless ball.

Y\_\_\_\_\_ N\_\_\_\_\_

For valve actuation, the specified discharge shall be equipped with a side mount valve control. The ergonomically designed 1/4 turn push-pull T-handle shall be chrome plated zinc with recessed labels for color coding and signage. The gear-control rod, double laminated locking clips, and rod housing shall be stainless steel and provide true positive lock that will eliminate valve drift. Bronze and Teflon impregnated stainless steel bushings in both ends of rod housing shall eliminate rod deflection, never need lubrication and ensure consistent long-term operation.

The control assembly shall include a decorative chrome-plated zinc panel mounted bezel with recessed color-coded label.

Y\_\_\_\_\_ N\_\_\_\_\_

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One (1) 2-1/2" discharge pressure gauges (0-400 PSI) shall be provided. The face of the gauge shall be a WHITE dial with black letters. The gauges will be located on the pump instrument panel.

Y\_\_\_\_\_ N\_\_\_\_\_

### **RIGHT SIDE PUMP PANEL -- 3" DISCHARGE**

One (1) 3" discharge shall be installed on the right side pump panel area and shall be controlled by a quarter turn ball valve. The discharge shall have 3" NST male hose threads. A color coded nameplate label shall be provided adjacent the control handle.

Y\_\_\_\_\_ N\_\_\_\_\_

A 3/4" cast bronze quarter-turn drain/bleeder valve shall be installed. The valve shall be complete with a chrome plated bronze ball, reinforced Teflon seals, and blow-out proof stem rated to 600 PSI. A chrome plated zinc handle shall be provided on each drain valve complete with a recessed ID label provision. The handle shall lift to open and push down to close.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

One (1) lightweight aluminum elbow with 30 degree slant shall be provided. Threads shall be 5" Storz with lugs and manual locks x 3" female swivel NST with rocker lugs.

Y\_\_\_\_\_ N\_\_\_\_\_

One (1) 5" lightweight aluminum Storz cap with cable or chain securement shall be provided.

Y\_\_\_\_\_ N\_\_\_\_\_

The specified valve shall be an Akron 8000 Series three-inch (3") valve with a stainless ball.

Y\_\_\_\_\_ N\_\_\_\_\_

One (1) Akron valve equipped with a manually operated pull rod, with quarter-turn locking feature and a manual slow-close device shall be provided on the specified discharge. The handle shall be equipped with color-coded name plate.

Y\_\_\_\_\_ N\_\_\_\_\_

One (1) 2-1/2" discharge pressure gauges (0-400 PSI) shall be provided. The face of the gauge shall be a WHITE dial with black letters. The gauges will be located on the pump instrument panel.

Y\_\_\_\_\_ N\_\_\_\_\_

### **REAR RIGHT SIDE -- 2-1/2" DISCHARGE**

One (1) 2-1/2" discharge shall be installed on the right side rear panel of the apparatus body and shall be controlled by a quarter turn ball valve on the pump panel. The discharge shall have 2-1/2" NPT x 2-1/2" NST male hose threads. The outlet shall be equipped with an engraved nameplate label shall be installed adjacent the valve control handle.

Y\_\_\_\_\_ N\_\_\_\_\_

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A 3/4" cast bronze quarter-turn drain/bleeder valve shall be installed. The valve shall be complete with a chrome plated bronze ball, reinforced Teflon seals, and blow-out proof stem rated to 600 PSI. A chrome plated zinc handle shall be provided on each drain valve complete with a recessed ID label provision. The handle shall lift to open and push down to close.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

One (1) chrome plated elbow with rocker lugs shall be provided with 2-1/2" NST swivel female x 2-1/2" NST male hose threads.

Y\_\_\_\_\_ N\_\_\_\_\_

One (1) 2-1/2" NST Female rocker lug x 2-1/2" Special Thread Male (3-3/16 x7 TPI) chrome plated adapter with 2-1/2" vented Special Thread (3-3/16 x 7 TPI) cap and cable or chain securement shall be provided.

Y\_\_\_\_\_ N\_\_\_\_\_

The specified valve shall be an Akron 8000 Series two and one half-inch (2-1/2") valve with a stainless ball.

Y\_\_\_\_\_ N\_\_\_\_\_

For valve actuation, the specified discharge shall be equipped with a side mount valve control. The ergonomically designed 1/4 turn push-pull T-handle shall be chrome plated zinc with recessed labels for color coding and signage. The gear-control rod, double laminated locking clips, and rod housing shall be stainless steel and provide true positive lock that will eliminate valve drift. Bronze and Teflon impregnated stainless steel bushings in both ends of rod housing shall eliminate rod deflection, never need lubrication and ensure consistent long-term operation.

The control assembly shall include a decorative chrome-plated zinc panel mounted bezel with recessed color-coded label.

Y\_\_\_\_\_ N\_\_\_\_\_

One (1) 2-1/2" discharge pressure gauges (0-400 PSI) shall be provided. The face of the gauge shall be a WHITE dial with black letters. The gauges will be located on the pump instrument panel.

Y\_\_\_\_\_ N\_\_\_\_\_

### **3" MONITOR DISCHARGE**

One (1) 3" discharge shall be piped to the area over the pump enclosure with 3" NPT male threads provided. The pipe shall be equipped with Victaulic couplings (if necessary) and shall be properly secured to prevent movement when a monitor or deck gun is attached. The quarter turn ball valve shall be controlled on pump panel.

A color coded nameplate label shall be provided adjacent the valve control handle.

Y\_\_\_\_\_ N\_\_\_\_\_

A 3/4" cast bronze quarter-turn drain/bleeder valve shall be installed. The valve shall be complete with a chrome plated bronze ball, reinforced Teflon seals, and blow-out proof stem rated to 600



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PSI. A chrome plated zinc handle shall be provided on each drain valve complete with a recessed ID label provision. The handle shall lift, to open and push down, to close.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

The specified valve shall be an Akron 8000 Series three-inch (3") valve with a stainless ball.

Y\_\_\_\_\_ N\_\_\_\_\_

One (1) Akron valve equipped with a manually operated pull rod, with quarter-turn locking feature and a manual slow-close device shall be provided on the specified discharge. The handle shall be equipped with color-coded name plate.

Y\_\_\_\_\_ N\_\_\_\_\_

One (1) 2-1/2" discharge pressure gauges (0-400 PSI) shall be provided. The face of the gauge shall be a WHITE dial with black letters. The gauges will be located on the pump instrument panel.

Y\_\_\_\_\_ N\_\_\_\_\_

### **MONITOR**

One (1) Akron 3423 lift off style monitor and direct truck mount adapter shall be installed. The monitor shall be capable of 360-degree rotation, and be capable of flowing 1250 GPM when installed on the direct truck mount.

The lift off monitor shall have heavy-duty dual lock pins when installed on the direct truck mount or the portable ground stand.

The portable ground stand shall have two (2) 2-1/2" NST female swivels Special Thread 3-3/16 x 7 TPI inlet connections. Each inlet connection shall have an automatic check valve. The portable ground stand shall have folding legs, a built in safety chain and spanner wrench.

Y\_\_\_\_\_ N\_\_\_\_\_

### **MASTER STREAM NOZZLE**

One (1) Akron #5160 Akromatic nozzle shall be provided. The nozzle shall be manually adjustable to accommodate the fluctuating flows of 250 to 1250 GPM. The stream pattern can easily be adjusted for an infinite pattern selection from straight stream to a wide full fog. The construction of the nozzle shall be lightweight aluminum with a 2-1/2" NH swivel base.

Y\_\_\_\_\_ N\_\_\_\_\_

### **MASTER STREAM STACKED TIPS**

One (1) Akron 3488 stream shaper with model #2499 quad stacked handline tips shall be provided. The set shall consist of four (4) tips with the base tip having a 2-1/2" female NH swivel inlet and 2" outlet. The other tip sizes shall be 1-3/4", 1-1/2" and 1-3/8". Each tip shall be laser engraved with a flow/pressure chart, orifice size, and thread size.

Y\_\_\_\_\_ N\_\_\_\_\_

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## **TELESCOPING MONITOR PIPE**

One (1) Task Force Tips model # XG18VL-PL manually telescoping waterway shall be installed. The waterway shall be capable of being lowered to deck level (or into a monitor well) for storage and transportation and shall be capable of being raised to an extended height of 18" by lifting a quick release latch located at the base of the extension tube. This latching device shall be capable of locking the waterway in either the raised or lowered position while maintaining the ability to horizontally rotate the monitor device 360 degrees.

A sensor shall be located on the waterway that signals a 12 volt indicator light installed in the cab to illuminate to indicate that the monitor is raised.

The aluminum riser shall have a 3" waterway; hard coat anodized finish and be furnished with a 3" Victaulic inlet and a 3" male NPT outlet.

Y\_\_\_\_\_ N\_\_\_\_\_

## **ELECTRIC REWIND HOSE REEL**

One (1) hose reel with leak proof ball bearing swing joint, adjustable friction brake, electric rewind shall be installed. The reel shall be plumbed with wire reinforced, high-pressure hose. The reel shall be bolted to a mounting system for easy service or removal.

The hose reel is to be mounted in the area above the pump.

Y\_\_\_\_\_ N\_\_\_\_\_

A push button hose reel rewind switch shall be installed to control the electric rewind hose reel. The exact location shall be determined at construction.

Y\_\_\_\_\_ N\_\_\_\_\_

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

Y\_\_\_\_\_ N\_\_\_\_\_

A ¾" cast bronze quarter-turn drain/bleeder valve shall be installed. The valve shall be complete with a chrome plated bronze ball, reinforced Teflon seals, and blow-out proof stem rated to 600 PSI. A chrome plated zinc handle shall be provided on each drain valve complete with a recessed ID label provision. The handle shall lift, to open and push down, to close.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

The specified hose reel shall be piped to the normal pressure side of the fire pump.

Y\_\_\_\_\_ N\_\_\_\_\_

One (1) Akron 8000 Series one-inch (1") valve with a stainless ball shall be supplied.

Y\_\_\_\_\_ N\_\_\_\_\_

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For valve actuation, the specified discharge shall be equipped with a side mount valve control. The ergonomically designed 1/4 turn push-pull T-handle shall be chrome plated zinc with recessed labels for color coding and signage. The gear-control rod, double laminated locking clips, and rod housing shall be stainless steel and provide true positive lock that will eliminate valve drift. Bronze and Teflon impregnated stainless steel bushings in both ends of rod housing shall eliminate rod deflection, never need lubrication and ensure consistent long-term operation.

The control assembly shall include a decorative chrome-plated zinc panel mounted bezel with recessed color-coded label.

Y\_\_\_\_\_ N\_\_\_\_\_

One (1) 2-1/2" discharge pressure gauges (0-400 PSI) shall be provided. The face of the gauge shall be a WHITE dial with black letters. The gauges will be located on the pump instrument panel.

Y\_\_\_\_\_ N\_\_\_\_\_

Two (2) 100 foot length(s) of 1" red rubber jacketed booster hose with recessed couplings, service pressure shall be provided and mounted on the specified hose reel.

Y\_\_\_\_\_ N\_\_\_\_\_

One (1) Akron model 1702P nozzle with a pistol grip shall be supplied. The nozzle shall flow 30 GPM. It shall be capable of flushing without shutting down. The nozzle shall be lightweight aluminum with a 1" NH free swivel base.

Y\_\_\_\_\_ N\_\_\_\_\_

The specified booster reel nozzle shall be mounted adjacent the hose reel area in secure clip or clamp type mountings.

Y\_\_\_\_\_ N\_\_\_\_\_

One (1) stainless steel roller assembly shall be provided on the left side hose reel.

Y\_\_\_\_\_ N\_\_\_\_\_

One (1) stainless steel roller assembly shall be provided on the right side hose reel.

Y\_\_\_\_\_ N\_\_\_\_\_

### **HOSE REEL PAINTING**

The hose reel(s) shall be painted silver grey.

Y\_\_\_\_\_ N\_\_\_\_\_

### **SIDE MOUNT PUMP ENCLOSURE**

The side mount pump enclosure shall be removable and supported from the chassis frame rails. This enclosure will allow independent flexing of the pump enclosure from the body and allow for quick removal. The support structure shall be constructed of extruded aluminum tubing and angle.

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All pump suction and discharge controls are to be mounted on the driver side pump operator's panel so as to permit operation of the pump from a central location. The fire pump, valves and controls shall be accessible for service and maintenance as required by applicable sections of NFPA standards.

The "master" gauges shall be suitably enclosed and mounted on a full pump compartment with "hinged" gauge panel constructed of the same material as the pump operators control panel, allowing access to the backside of all gauges and gauge lines. The individual gauges shall be mounted in line with the control handle or adjacent to the control handle. Panel is to include a stainless steel piano hinge, flush mounted chrome plated trigger latch, and stainless steel cable end stops. Electrical wiring and all gauge lines shall be properly tie wrapped to prevent kinking or cutting of the lines when the panel is opened.

The following controls and equipment as specified in the specifications shall be provided on the pump panel or within the pump enclosure:

- Primer.
- Pump and plumbing area service lights.
- Pressure control device and throttle control.
- Fire pump and engine instruments.
- Pump intakes and discharge controls.
- Master intake and discharge gauges.
- Tank fill control.
- Tank suction control.
- Water tank level gauge.
- Pump panel lights.

## Speedlay Installation

Speedlay pre-connect hosebeds shall be installed in the forward section of the pump enclosure. The hosebed shall have smooth sides and a perforated floor to allow for drainage. Provisions shall be provided to secure hose and equipment per requirements of applicable NFPA standards.

Y\_\_\_\_\_ N\_\_\_\_\_

## OPEN DUNNAGE COMPARTMENT -- OVER PUMP ENCLOSURE

One (1) open compartment shall be located on the top of the pump module. The compartment will be constructed as large as space permits with removable slip resistance floor material or decking in the base of the compartment.

The dunnage area shall be sized appropriately to allow for installation of the booster hose reel, generator, and monitor. This area shall also allow for storage of up to five (5) five gallon foam buckets and long hand tools.

Y\_\_\_\_\_ N\_\_\_\_\_

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## **LEFT SIDE RUNNING BOARD -- SIDE MOUNT PANEL**

The left side mount pump panel shall be equipped with side running board. The running board will extend along the width of the pump enclosure from the forward end of the body module to behind the chassis cab.

The running board shall be constructed of aluminum tread plate, bolted in place with stainless steel fasteners. The step surfaces shall be in compliance with applicable sections of NFPA requirements.

Y\_\_\_\_\_ N\_\_\_\_\_

## **FLOATING HOSE WELL COMPARTMENT -- LEFT SIDE**

One (1) floating hose well shall be recessed in the left side running board of the apparatus pump panel. The hose well shall be constructed of aluminum tread plate material and shall be provided with drain holes drilled in each bottom corner with plastic grating on the floor.

The hose and couplings shall be secured in compliance to applicable NFPA standards.

Capacity for the following purchaser supplied hose: 100' of 1-1/2" DJ Hose

Y\_\_\_\_\_ N\_\_\_\_\_

## **HOSE WELL COVER**

One (1) vinyl cover shall be provided for the running board hose well.

Y\_\_\_\_\_ N\_\_\_\_\_

The vinyl cover shall be red in color.

Y\_\_\_\_\_ N\_\_\_\_\_

## **RIGHT SIDE RUNNING BOARD -- SIDE MOUNT PANEL**

The right side mount pump panel shall be equipped with side running board. The running board will extend along the width of the pump enclosure from the forward end of the body module to behind the chassis cab.

The running board shall be constructed of aluminum tread plate, bolted in place with stainless steel fasteners. The step surfaces shall be in compliance with applicable sections of NFPA requirements.

Y\_\_\_\_\_ N\_\_\_\_\_

## **FLOATING HOSE WELL COMPARTMENT -- RIGHT SIDE**

One (1) floating hose well shall be recessed in the right side running board of the apparatus pump panel. The hose well shall be constructed of aluminum tread plate material and shall be provided with drain holes drilled in each bottom corner with plastic grating on the floor.

## Rome Fire Department – 1500 GPM Custom Pumper

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The hose and couplings shall be secured in compliance to applicable NFPA standards.

Capacity for the following purchaser supplied hose: 100' of 1-1/2" DJ Hose

Y\_\_\_\_\_ N\_\_\_\_\_

### **HOSE WELL COVER**

One (1) vinyl cover shall be provided for the running board hose well.

Y\_\_\_\_\_ N\_\_\_\_\_

The vinyl cover shall be red in color.

Y\_\_\_\_\_ N\_\_\_\_\_

### **PUMP ENCLOSURE ACCESS DOOR -- RIGHT SIDE UPPER**

A pump panel access door shall be provided on the upper right side of the side mount pump enclosure. The access door shall be approximately 18" high and as wide as possible. The door shall be constructed of black thermoplastic covered aluminum with push button type latches.

Y\_\_\_\_\_ N\_\_\_\_\_

### **FRONT ACCESS PUMP PANEL**

A removable front access panel shall be installed on the front of the pump enclosure of the apparatus. The panel shall be constructed of aluminum tread plate and be fastened to the pump enclosure with push button or D-ring type latches.

Y\_\_\_\_\_ N\_\_\_\_\_

### **PUMP PANEL -- SIDE MOUNT**

The pump operator's panel, along with the lower left hand and right hand pump panels shall be constructed of black thermoplastic coating aluminum material and be fastened to the pump enclosure with 1/4" stainless steel bolts.

The instrument area shall have a stainless steel continuous hinge that shall swing for easy access to gauges.

Y\_\_\_\_\_ N\_\_\_\_\_

### **HINGED PUMP PANEL -- LEFT SIDE**

The pump panel installed on the on the left hand side of the pump enclosure shall be hinged with push-button latches.

Y\_\_\_\_\_ N\_\_\_\_\_

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## **HINGED PUMP PANEL -- RIGHT SIDE**

The pump panel installed on the on the right hand side of the pump enclosure shall be hinged with push-button latches.

Y\_\_\_\_\_ N\_\_\_\_\_

## **PUMP PANEL COLOR TRIM PANELS**

Innovative Controls intake and discharge trim rings shall be installed to the apparatus with mounting bolts. These bezel assemblies will be used to identify intake and discharge ports with color and verbiage. These trim rings are designed and manufactured to withstand the specified apparatus service environment and shall be backed by a warranty equal to that of the exterior paint and finish. The specified assemblies feature a chrome-plated panel-mount bezel with durable UV resistant polycarbonate inserts. These UV resistant polycarbonate graphic inserts shall be sub-surface screen printed to eliminate the possibility of wear and protect the inks from fading. All insert labels shall be backed with 3M permanent adhesive (200MP), which meets UL969 and NFPA standards

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## **BACKBOARD STORAGE**

A compartment large enough to accommodate one (1) backboard shall be supplied in the ladder compartment.

Y\_\_\_\_\_ N\_\_\_\_\_

## **LABELS**

Safety, information, data, and instruction labels for apparatus shall be provided and installed at the operator's instrument panel.

The labels shall include rated capacities, pressure ratings, and engine speeds as determined by the certification tests. The no-load governed speed of the engine, as stated by the engine manufacturer, shall also be included.

The labels shall be provided with all information and be attached to the apparatus prior to delivery.

Y\_\_\_\_\_ N\_\_\_\_\_

## **COLOR CODED PUMP PANEL LABELING AND NAMEPLATES**

Discharge and intake valve controls shall be color coded in compliance to guidelines of applicable sections of NFPA standards.

Innovative Controls permanent type nameplates and instruction panels shall be installed on the pump panel for safe operation of the pumping equipment and controls.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

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## **MIDSHIP PUMP PANEL LIGHTS -- LEFT SIDE**

Three (3) Techiq E10-W0001-1 or equal LED lights with clear lenses shall be installed under an instrument panel light hood on the left side pump panel. The lights shall be controlled by a switch located on the operator's instrument panel.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## **MIDSHIP PUMP PANEL LIGHTS -- RIGHT SIDE**

Two (2) Tecniq E10-W0001-1 or equal LED lights with clear lenses shall be installed under an instrument panel light hood on the right side pump panel. The lights shall be controlled by a switch located on the operator's instrument panel.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## **PUMP ENGAGED LIGHT**

One (1) pump panel light shall be illuminated at the time the fire pump is engaged into operation. The remaining lights shall be controlled by a switch located on the operator's instrument panel.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## **MASTER DISCHARGE AND INTAKE GAUGES**

Two (2) 4" diameter discharge pressure and intake gauges (30"-0-600 PSI) shall be provided. The face of the gauge shall be a WHITE dial with black letters. The gauges will be located on the pump instrument panel.

The master gauges shall have clear scratch resistant molded crystals with captive O-ring seals shall be used to ensure distortion free viewing and to seal the gauge. The gauges shall be filled with a synthetic mixture to dampen shock and vibration, lubricate the internal mechanisms, prevent lens condensation and ensure proper operation from -40°F to +160°F. Each gauge shall exceed ANSI B40.1 Grade A requirements with an accuracy of +/- 1.5% full scale and include a size appropriate phosphorous bronze bourdon tube with a reinforced lap joint and large tube base to increase the tube life and gauge accuracy. A polished chrome-plated brass bezel shall be provided to prevent corrosion and protect the lens and gauge case.

Y\_\_\_\_\_ N\_\_\_\_\_

## **TEST TAPS**

Test taps for pump intake and pump pressure shall be provided on the pump instrument panel and be properly labeled.

Y\_\_\_\_\_ N\_\_\_\_\_



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## **WATER TANK LEVEL GAUGE - PUMP PANEL**

The apparatus shall be equipped with one (1) Innovative Controls SL Series Tank Level Monitor System shall be installed. The system shall include an electronic display module, a pressure transducer-based sender unit, and a 15' connection cable. The display module shall show the volume of water in the tank using 14 super bright easy-to-see LEDs to easily distinguish the tank level at a glance. Tank level indication is enhanced by the use of green LEDs at the full and near-full levels, amber LEDs between  $\frac{3}{4}$  and  $\frac{1}{4}$  tank levels, and red LEDs at the near-empty and empty levels.

The electronic display module shall be waterproof and shock resistant being encapsulated in a urethane-based potting compound. The potted display module shall be mounted to a chrome plated panel-mount bezel with a durable easy-to-read polycarbonate insert featuring blue graphics and a water icon.

All programming functions shall be accessed and performed from the front of the display module. The programming includes self-diagnostics, manual or self-calibration, and networking capabilities to connect remote slave displays. Low tank level warnings shall include flashing red LEDs starting below the  $\frac{1}{4}$  level and an output for an audible alarm.

The display module shall receive an input signal from a pressure transducer. This stainless steel sender unit shall be installed on the outside of the water tank near the bottom. All wiring, cables and connectors shall be waterproof without the need for sealing grease.

Location of water tank level monitor shall be at the pump panel.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## **AIR HORN PUSH-BUTTON**

One (1) push button with a label shall be installed on the pump instrument panel to operate the air horns.

Y\_\_\_\_\_ N\_\_\_\_\_

## **WATER TANK - 750 GALLON**

The apparatus shall be equipped with a seven-hundred-fifty (750) gallon polypropylene water tank. The tank shall be equipped with a four-inch (4") overflow pipe (a six-inch (6") overflow pipe shall be provided if required by dump valve installation).

Y\_\_\_\_\_ N\_\_\_\_\_

## **WATER TANK**

The apparatus shall be equipped with a rectangular tank.

Y\_\_\_\_\_ N\_\_\_\_\_

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## WATER TANK FILL TOWER

A fill tower measuring approximately 10” x 10” square shall be provided on the water tank.

Y \_\_\_\_\_ N \_\_\_\_\_

The apparatus shall be equipped with a polypropylene water tank. The tank construction shall conform to applicable NFPA standards. The tank shall carry a lifetime warranty.

Hold down dowels shall extend through and be welded to both the covers and the transverse partitions, providing rigidity during fast fill operations. Drilled and tapped holes for lifting eyes shall be provided in the top area of the booster tank.

A combination vent/water fill tower shall be provided at front of the tank. The 0.5" thick polypropylene fill and overflow tower shall be equipped with a hinged lid and a removable polypropylene screen. The overflow tube shall be installed in fill tower and piped with a minimum schedule 40 PVC pipe through the tank.

The water tank sump shall be located in the forward area of the tank. There will be a schedule 40 polypropylene tank suction pipe from the front of the tank to the tank sump. The tank drain and clean out shall be located in the bottom of the tank sump. The sump shall have a minimum 3" threaded outlet on the bottom to be used for a combination clean out and drain.

The pump to tank refill connection shall be sized to mate with tank fill discharge line. A deflector shield inside the tank will also be provided.

The tank shall rest on the body cross members in conjunction with such additional cross members, spaced at a distance that would not allow for more than 530 square inches of unsupported area under the tank floor.

The tank must be isolated from the cross members through the use of hard rubber strips with a minimum thickness and width dimension of 1/4” x 1” and a hardness of approximately 60 durometer. The rubber must be installed so it will not become dislodged during normal operation of the vehicle. Additionally, the tank must be supported around the entire bottom outside perimeter and captured both in the front and rear as well as side to side to prevent tank from shifting during vehicle operation.

The tank shall have adequate vertical hold down restraints to minimize movement during vehicle operation. If proper retention has not been incorporated into the apparatus hose floor structure, an optional mounting restraint system shall be located on top of the tank, half way between the front and the rear on each side of the tank.

Hose beds floors must be so designed that the floor slat supports extend full width from side wall to side wall and are not permitted to drop off the edge of the tank or in any way come in contact with the individual covers where a puncture could occur. Tank top must be capable of supporting loads up to 200 lbs. per sq. foot when evenly distributed. The tank shall be completely removable without disturbing or dismantling the apparatus structure.

Y \_\_\_\_\_ N \_\_\_\_\_ E \_\_\_\_\_

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The tank construction shall include PolyProSeal™ technology wherein a sealant shall be installed between the plastic components prior to being fusion welded. This sealing method shall provide a liquid barrier, offering leak protection in the event of a weld compromise.

The tank shall be equipped with polychromatic fill towers.

The water tank shall be certified for the capacity of the water tank prior to delivery of the apparatus. This capacity shall be recorded on the manufacturer's record of construction and the certification shall be provided to the purchaser when the apparatus is delivered.

Water tank warranty information shall be provided.

Y\_\_\_\_\_ N\_\_\_\_\_

## **WATER TANK DRAIN VALVE**

One (1) 1-1/2" diameter gated quarter-turn drain valve shall be provided for the water tank.

Y\_\_\_\_\_ N\_\_\_\_\_

## **HOSEBED SINGLE AXLE**

The hose bed compartment deck shall be constructed entirely from maintenance-free, extruded aluminum slats. The slats shall have an anodized, radius ribbed top surface. The slats shall be of widths approximately 3/4" high x 6" wide and shall be welded into a one-piece grid system to prevent the accumulation of water and allow ventilation to assist in drying hose.

The apparatus hose body shall be properly reinforced without the use of angles or structural shapes and free from all projections that might injure the fire hose.

The main apparatus hose body shall run the full length of the apparatus body from behind the pump panel area to the rear face of the body.

The upper rear interior of the hose body on the right and left sides shall be overlaid with brushed stainless steel to protect the painted surface from damage by hose couplings.

The maximum height of the hose bed shall not exceed 76" from the ground.

Y\_\_\_\_\_ N\_\_\_\_\_

## **HOSE BED STORAGE CAPACITY**

The hosebed shall be designed to have a storage capacity for a minimum of 55 cubic feet of fire department supplied fire hose.

Y\_\_\_\_\_ N\_\_\_\_\_

The hose bed shall be designed to have storage capacity for twenty nine (29) 50-ft lengths of 2.5" Double Jacket fire hose.

Y\_\_\_\_\_ N\_\_\_\_\_

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Two separate beds, one (1) with 1200' Capacity, and one (1) with 250 feet capacity installed on the right side.

Y\_\_\_\_\_ N\_\_\_\_\_

The hose bed shall be designed to have storage capacity for ten (10) 100-ft lengths of 5" LDH Single Jacket rubber fire.

Y\_\_\_\_\_ N\_\_\_\_\_

## **ALUMINUM HOSEBED DIVIDER**

Two (2) adjustable hose bed dividers constructed of .250" aluminum shall be installed on the apparatus.

Y\_\_\_\_\_ N\_\_\_\_\_

Each hose bed divider installed on the apparatus shall be provided with a 3/4" aluminum tube welded along the entire edge of the divider.

Y\_\_\_\_\_ N\_\_\_\_\_

## **ALUMINUM BOX**

There shall be a full width smooth aluminum box fabricated around the fill tower(s).

Y\_\_\_\_\_ N\_\_\_\_\_

## **BULKHEAD DIVIDER**

There shall be a full width smooth aluminum bulkhead behind the fill tower(s).

Y\_\_\_\_\_ N\_\_\_\_\_

## **HOSEBED COVER**

The apparatus shall be equipped with a black cargo webbing hosebed cover.

The cover shall be secured utilizing 1/4 turn fasteners at the front and sides of the hosebed body.

The cover shall be secured at the rear of the hosebed with quick release buckles.

Y\_\_\_\_\_ N\_\_\_\_\_

## **3/16" ALUMINUM BODY**

The body shall be fabricated of aluminum extrusions, smooth aluminum sheet and aluminum treadplate.

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 aluminum extrusions shall 3" x 3" aluminum tubing, 1-3/4" x 3" aluminum tubing and 3" x 3" aluminum angle and specially designed extrusions, up to .250" wall thickness where applicable.

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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.

The extrusions shall be designed as structural-framing members with the smooth aluminum and treadplate fabricated to form compartments, hosebeds, and floors. All aluminum material shall be welded together using the latest MIG spray pulse arc welding system.

Compartment floors shall be of the sweep out design with the floor higher than the compartment door lip and to be water and dust proof. All compartments shall be made to the maximum practical dimensions to provide maximum storage capacity. To ensure maximum storage space, the apparatus shall be constructed without any void spaces between the body and the compartment walls. Double wall construction does not meet this requirement.

All exterior compartments shall have polished aluminum drip moldings installed above the doors where necessary to prevent water from entering the compartments.

Wheel well panels shall be formed aluminum that is welded in place. There shall be no visible bolt heads, retention nuts or fasteners on the exterior surface of the panel. To fully protect the wheel well area from road debris and to aid in cleaning, a full depth radius wheel well liner shall be provided. The frame side of the wheel well area on each side of the opening shall be attached to the frame side of the front and rear compartments. All seams on the frame side of the body shall be welded and caulked to prevent moisture from entering the compartments.

The rear wheel wells shall be radius cut for a streamlined appearance. A fenderette shall be furnished at each rear wheel well opening, held in place with stainless steel fasteners.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## FASTENERS

All aluminum and stainless steel components shall be attached using stainless steel fasteners.

Compartment door hinges, handrails and running boards shall be attached using minimum 1/4" diameter machine bolt fasteners.

3/16" diameter fasteners shall only be used in nonstructural areas such as; door handles, trim moldings, gauge mounting, etc.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## COMPARTMENT FLOORS

The compartment floors shall be constructed of aluminum treadplate material.

Y\_\_\_\_\_ N\_\_\_\_\_

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## **GALVANIZED SUB-FRAME**

The apparatus body subframe shall be constructed entirely of heavy steel structural channel material.

The steel frame pads, longitudinal steel channels and subframe crossmembers shall be attached to the chassis frame rails using heavy "U" bolt fasteners to allow removal of the subframe and body assembly from the chassis. There shall be a barrier provided between the subframe and body to prevent electrolysis.

A minimum of two rear platform support channels shall be provided and constructed heavy steel material. Each support channel shall have welded in gusset where the support meets the rear subframe rails.

After fabrication the entire subframe assembly shall be sprayed or dipped with a corrosive resistant protectant to prevent corrosion.

This steel subframe shall carry the weight of the apparatus body, tank, water and equipment.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## **BODY CONFIGURATION**

The formed apparatus body shall be up to 160" long, reference the drawing for actual body length.

Y\_\_\_\_\_ N\_\_\_\_\_

## **SINGLE AXLE WHEEL AREA**

For ease of accessibility and maintenance, wheel well panels shall be double break formed painted smooth plate that is welded in place.

To fully protect the wheel well area from road debris and to aid in cleaning, a full depth (minimum of 25") radius wheel well liner shall be provided. Wheel well liner shall be smooth aluminum to prevent corrosion.

Y\_\_\_\_\_ N\_\_\_\_\_

## **FENDERETTES**

The rear wheel wells shall be radius cut for a streamlined appearance. A polished aluminum fenderette shall be furnished at each rear wheel well opening, held in place with concealed stainless steel fasteners.

Y\_\_\_\_\_ N\_\_\_\_\_

## **BODY WIDTH**

The overall width of the pumper body shall not exceed 102".

Y\_\_\_\_\_ N\_\_\_\_\_

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## **COMPARTMENT DEPTH**

The left side compartments on the pumper body shall have the maximum available height and depth dimensions. These dimensions shall remain consistent for the full height and depth of the compartment.

The right side compartments on the pumper body shall have the following dimensions:

Lower portion depth of 26"

Upper portion depth of 16"

Y\_\_\_\_\_ N\_\_\_\_\_

## **HOSEBED WIDTH**

The width of the pumper body hosebed shall be 68".

Y\_\_\_\_\_ N\_\_\_\_\_

## **COMPARTMENT HEIGHT**

The left side body compartments shall be 79".

Y\_\_\_\_\_ N\_\_\_\_\_

## **COMPARTMENT HEIGHT**

The right side body compartments shall be 79" high.

Y\_\_\_\_\_ N\_\_\_\_\_

## **ROLL UP DOOR CONSTRUCTION**

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.

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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. The door latch system shall be a full width one (1) piece lift bar that enables the user to operate with one hand.

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 to shall be incorporated to assist in lifting the door.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## **DOOR DRIP PANS**

An aluminum drip pan shall be provided on the roll up door.

Y\_\_\_\_\_ N\_\_\_\_\_

## **LEFT FRONT COMPARTMENT**

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 minimum interior compartment dimensions shall be 46" Wide x 79" High x 26" Deep.

The compartment shall be equipped with the following:

Y\_\_\_\_\_ N\_\_\_\_\_

One (1) louver with filter shall be installed in the compartment.

Y\_\_\_\_\_ N\_\_\_\_\_

## **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.

Y\_\_\_\_\_ N\_\_\_\_\_

## **ADJUSTABLE SHELF**

Three (3) adjustable shelves shall be constructed of .125” smooth aluminum plate with 1.5” formed vertical lip front & back. Shelf supports on each side to be constructed of .188” aluminum and bolted to an aluminum extrusion (mounted vertically) by use of 3/8” bolts and spring-loaded cam locks. If shelf is longer than 40” a reinforcement by aluminum gusset is to be placed full-length on bottom of shelf.

Y\_\_\_\_\_ N\_\_\_\_\_



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The shelf/tray 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.

Y\_\_\_\_\_ N\_\_\_\_\_

## COMPARTMENT LIGHTS

Two (2) ROM vertically mounted roll-up compartment LED V3 door lights shall be installed one each side of the door opening. The compartment lights shall be integrated into the roll-up door tracks with the light actuation with the door opening.

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

Y\_\_\_\_\_ N\_\_\_\_\_

The compartment light will be controlled by a magnetic "On-Off" switch located on each compartment door.

Y\_\_\_\_\_ N\_\_\_\_\_

## **LEFT OVERWHEEL COMPARTMENT**

There shall be one (1) compartment above the rear wheels. The compartment shall be equipped with a single painted roll up door. The minimum interior compartment dimensions shall be 62.75" Wide x 51" High x 26" Deep.

The compartment shall be equipped with the following:

Y\_\_\_\_\_ N\_\_\_\_\_

One (1) louver with filter shall be installed in the compartment.

Y\_\_\_\_\_ N\_\_\_\_\_

## 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.

Y\_\_\_\_\_ N\_\_\_\_\_

## PULL-OUT AND DROP-DOWN

One (1) roll-out and tilt-down equipment tray shall be installed in the customer-specified compartment. The tray with roller bearing tracks shall be rated to a maximum load of 250 lb. Construction shall consist of four (4) inch tall extruded aluminum sides. Reflective material measuring 1" x 6" shall be installed on the front corners both on the face and side of tray for firefighter safety.

Track assembly shall allow tray to roll out and tilt down at approximately a 30-degree angle.

Y\_\_\_\_\_ N\_\_\_\_\_

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The shelf/tray 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.

Y\_\_\_\_\_ N\_\_\_\_\_

### COMPARTMENT LIGHTS

Two (2) ROM vertically mounted roll-up compartment LED V3 door lights shall be installed one each side of the door opening. The compartment lights shall be integrated into the roll-up door tracks with the light actuation with the door opening.

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

Y\_\_\_\_\_ N\_\_\_\_\_

The compartment light will be controlled by a magnetic "On-Off" switch located on each compartment door.

Y\_\_\_\_\_ N\_\_\_\_\_

### LEFT REAR COMPARTMENT

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 minimum interior compartment dimensions shall be 51.25" Wide x 79" High x 26" Deep.

The compartment shall be equipped with the following:

Y\_\_\_\_\_ N\_\_\_\_\_

One (1) louver with filter shall be installed in the compartment.

The compartment shall also be equipped with the necessary mounting equipment for our **Paratech Interstate Kit (struts and extensions) with enough mounting for up to 30 tips.**

Y\_\_\_\_\_ N\_\_\_\_\_

### COMPARTMENT DIVIDER

One (1) compartment divider constructed from 3/16" smooth aluminum material shall be installed. The divider shall be bolted in place and shall be constructed with appropriate bracing to support department supplied Paratech Struts and Extensions. Exact dimensions and part numbers for the struts will be provided at pre-construction.

Y\_\_\_\_\_ N\_\_\_\_\_

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## COMPARTMENT LIGHTS

Two (2) ROM vertically mounted roll-up compartment LED V3 door lights shall be installed one each side of the door opening. The compartment lights shall be integrated into the roll-up door tracks with the light actuation with the door opening.

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

Y\_\_\_\_\_ N\_\_\_\_\_

The compartment light will be controlled by a magnetic "On-Off" switch located on each compartment door.

Y\_\_\_\_\_ N\_\_\_\_\_

## **RIGHT FRONT COMPARTMENT**

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 minimum interior compartment dimensions shall be 46" Wide x 79" High x 26" Deep. The upper 49" shall be a minimum of 16" Deep.

The compartment shall be equipped with the following:

Y\_\_\_\_\_ N\_\_\_\_\_

One (1) louver with filter shall be installed in the compartment.

Y\_\_\_\_\_ N\_\_\_\_\_

## 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.

Y\_\_\_\_\_ N\_\_\_\_\_

## ADJUSTABLE SHELF

Three (3) adjustable shelves shall be constructed of .125" smooth aluminum plate with 1.5" formed vertical lip front & back. Shelf supports on each side to be constructed of .188" aluminum and bolted to an aluminum extrusion (mounted vertically) by use of 3/8" bolts and spring-loaded cam locks. If shelf is longer than 40" a reinforcement by aluminum gusset is to be placed full-length on bottom of shelf.

Y\_\_\_\_\_ N\_\_\_\_\_

The shelf/tray 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.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

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## ROLLOUT TRAY

One (1) 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.

Y\_\_\_\_\_ N\_\_\_\_\_

A "spring" lock shall hold tray in both the "in" and "out" positions. The "spring lock" operates with a spring loaded pawl engaging a strike. The user pulls on the rod to release the lock, while the lock automatically re-engages for locking.

Y\_\_\_\_\_ N\_\_\_\_\_

## COMPARTMENT LIGHTS

Two (2) ROM vertically mounted roll-up compartment LED V3 door lights shall be installed one each side of the door opening. The compartment lights shall be integrated into the roll-up door tracks with the light actuation with the door opening.

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

Y\_\_\_\_\_ N\_\_\_\_\_

The compartment light will be controlled by a magnetic "On-Off" switch located on each compartment door.

Y\_\_\_\_\_ N\_\_\_\_\_

## **RIGHT HIGH SIDE COMPARTMENTS**

There shall be one (1) compartment above the rear wheels. The compartment shall be equipped with a single painted roll up door. The minimum interior compartment dimensions shall be 52" Wide x 51" High x 16" Deep.

The compartment shall be equipped with the following:

Y\_\_\_\_\_ N\_\_\_\_\_

One (1) louver with filter shall be installed in the compartment.

Y\_\_\_\_\_ N\_\_\_\_\_

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## 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.

Y\_\_\_\_\_ N\_\_\_\_\_

## ADJUSTABLE SHELF

One (1) adjustable shelf shall be constructed of .125" smooth aluminum plate with 1.5" formed vertical lip front & back. Shelf supports on each side to be constructed of .188" aluminum and bolted to an aluminum extrusion (mounted vertically) by use of 3/8" bolts and spring-loaded cam locks. If shelf is longer than 40" a reinforcement by aluminum gusset is to be placed full-length on bottom of shelf.

Y\_\_\_\_\_ N\_\_\_\_\_

The shelf/tray 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.

Y\_\_\_\_\_ N\_\_\_\_\_

## COMPARTMENT LIGHTS

Two (2) ROM vertically mounted roll-up compartment LED V3 door lights shall be installed one each side of the door opening. The compartment lights shall be integrated into the roll-up door tracks with the light actuation with the door opening.

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

Y\_\_\_\_\_ N\_\_\_\_\_

The compartment light will be controlled by a magnetic "On-Off" switch located on each compartment door.

Y\_\_\_\_\_ N\_\_\_\_\_

## **RIGHT REAR COMPARTMENT**

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 minimum interior compartment dimensions shall be 62" Wide x 79" High x 26" Deep. The upper 49" shall be a minimum of 16" Deep.

The compartment shall be equipped with the following:

Y\_\_\_\_\_ N\_\_\_\_\_

One (1) louver with filter shall be installed in the compartment.

Y\_\_\_\_\_ N\_\_\_\_\_

# Rome Fire Department – 1500 GPM Custom Pumper

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## 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.

Y\_\_\_\_\_ N\_\_\_\_\_

## ADJUSTABLE SHELF

Three (3) adjustable shelves shall be constructed of .125" smooth aluminum plate with 1.5" formed vertical lip front & back. Shelf supports on each side to be constructed of .188" aluminum and bolted to an aluminum extrusion (mounted vertically) by use of 3/8" bolts and spring-loaded cam locks. If shelf is longer than 40" a reinforcement by aluminum gusset is to be placed full-length on bottom of shelf.

Y\_\_\_\_\_ N\_\_\_\_\_

The shelf/tray 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.

Y\_\_\_\_\_ N\_\_\_\_\_

## COMPARTMENT LIGHTS

Two (2) ROM vertically mounted roll-up compartment LED V3 door lights shall be installed one each side of the door opening. The compartment lights shall be integrated into the roll-up door tracks with the light actuation with the door opening.

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

Y\_\_\_\_\_ N\_\_\_\_\_

The compartment light will be controlled by a magnetic "On-Off" switch located on each compartment door.

Y\_\_\_\_\_ N\_\_\_\_\_

## **REAR BODY CONFIGURATION**

The rear of the apparatus body shall be of the flat back design.

Y\_\_\_\_\_ N\_\_\_\_\_

## **REAR CENTER COMPARTMENT**

There shall be one (1) low compartment located at the rear of the apparatus. The compartment shall be partitioned off from the side compartments. The minimum interior compartment dimensions shall be 48" Wide x 30"High x 26" Deep.

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The compartment shall be equipped with hinged double doors.

Y\_\_\_\_\_ N\_\_\_\_\_

The compartment door shall be constructed from smooth aluminum to allow for the application of chevron stripe.

The compartment shall be equipped with the following:

Y\_\_\_\_\_ N\_\_\_\_\_

One (1) louver with filter shall be installed in the compartment.

Y\_\_\_\_\_ N\_\_\_\_\_

## 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.

Y\_\_\_\_\_ N\_\_\_\_\_

## ROLLOUT TRAY

One (1) roll-out equipment tray shall be installed in the compartment. The tray with telescoping slides and cam follower bearings shall be rated to a maximum load of 500 lbs. The tray shall have a gas shock to hold the tray extended or closed. There shall be a lock to prevent movement, when the tray is in the closed position.

The tray shall be formed of .188" smooth aluminum plate, fabricated with two (2) inch sides. Reflective material measuring 1" x 6" shall be installed on each front corner both on the face and side of tray for firefighter safety.

Y\_\_\_\_\_ N\_\_\_\_\_

The shelf/tray 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.

Y\_\_\_\_\_ N\_\_\_\_\_

## COMPARTMENT LIGHTS

Two (2) 18" long Fire Research Sun Strip LED Work Lights model LED200-A18 shall be installed, one (1) on each side of the door opening. The LEDs and electronics shall be enclosed in a 5/8" diameter Lexan tube that is sealed at both ends with EPDM rubber caps to create a waterproof environment and be suitable for mounting in a wet location. The LEDs shall be in a row one inch apart and have a beam angle of 120 degrees. The tube shall rotate to adjust the beam direction as required.

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Each light shall have eighteen (18) white LEDs that generate a rated 300 lumens of light at 12 VDC/0.35 amps and have a life span of over 50,000 hours. Each light shall fit in a 20" space and be secured with two (2) molded nylon mounting clips.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

The compartment light will be controlled by an automatic "On-Off" switch located on each compartment door.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

### **REAR STEP - 16" BOLT-ON**

A 16" 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.

A label shall be provided warning personnel that riding on the rear step while the apparatus is in motion is prohibited.

Y\_\_\_\_\_ N\_\_\_\_\_

### **SLIDE OUT VERTICAL LADDER MOUNTINGS**

The ladder shall slide into the right rear of the apparatus, through the right side of the body. The vertically mounted slide in assembly shall be an integral part of the body and accessible through a hinged door.

Y\_\_\_\_\_ N\_\_\_\_\_

The hinged door shall be constructed of smooth material, with chevron striping applied to match the rear of the apparatus body.

Y\_\_\_\_\_ N\_\_\_\_\_

### **INTERNAL FOLDING ATTIC LADDER MOUNTING**

An internal mounting shall be provided for the specified folding attic ladder.

Y\_\_\_\_\_ N\_\_\_\_\_

### **LADDER SOURCE**

New ground ladders shall be provided by the body builder.

Y\_\_\_\_\_ N\_\_\_\_\_

### **PIKE POLE MOUNTING BRACKET**

Three (3) tubes shall be provided for pike pole mounting. The tube shall have a 2" interior diameter and shall be mounted inside of the apparatus body.

Y\_\_\_\_\_ N\_\_\_\_\_



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## **PIKE POLE SOURCE**

The pike poles shall be provided by the body builder.

Y\_\_\_\_\_ N\_\_\_\_\_

## **HARD SUCTION MOUNTING**

Two (2) hard suction hose trays shall be provided above the ground ladders, on the right side. The design shall allow the hose to be individually removed from the rear of the apparatus. The hard suction hose compartment shall have a hinged door with push to latch door catches.

Y\_\_\_\_\_ N\_\_\_\_\_

The hinged door shall be constructed of smooth material, with chevron striping applied to match the rear of the apparatus body.

Y\_\_\_\_\_ N\_\_\_\_\_

## **SUCTION HOSE SOURCE**

New suction hose shall be provided by the body builder.

Y\_\_\_\_\_ N\_\_\_\_\_

## **FOLDING STEPS LEFT SIDE FRONT**

Three (3) folding steps of die cast high-strength zinc/aluminum alloy, plated with a superior automotive grade chrome finish shall be provided. The greater than 42 sq. in. serrated non-skid step traction area also offers an oversized non-slip grasp hand-hold. A heavy duty stainless steel spring design firmly holds the step in the open or closed positions. A rubber stop prevents any transit noise and rattles in the closed position. Step lighting shall be from a LED light mounted above the step.

The step has been third part tested to assure conformation of NFPA 1901 and FHA, 49CFR specifications for stepping surfaces and handhold.

The step shall be installed on the left side front compartment face.

Y\_\_\_\_\_ N\_\_\_\_\_

## **FOLDING STEPS RIGHT SIDE FRONT**

Three (3) folding steps of die cast high-strength zinc/aluminum alloy, plated with a superior automotive grade chrome finish shall be provided. The greater than 42 sq. in. serrated non-skid step traction area also offers an oversized non-slip grasp hand-hold. A heavy duty stainless steel spring design firmly holds the step in the open or closed positions. A rubber stop prevents any transit noise and rattles in the closed position. Step lighting shall be from a LED light mounted above the step.

The step has been third part tested to assure conformation of NFPA 1901 and FHA, 49CFR specifications for stepping surfaces and handhold.

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The step shall be installed on the right side front compartment face.

Y\_\_\_\_\_ N\_\_\_\_\_

## **HANDRAIL TOP OF BODY SIDES**

Two (2) extruded aluminum non-slip handrails, approximately 12" in length, shall be provided and mounted, one (1) each side at the top of the body sides, at the front of the apparatus body.

Y\_\_\_\_\_ N\_\_\_\_\_

## **FRONT BODY PROTECTION PANELS**

Aluminum tread plate overlays and panels shall be installed on the front of the body compartment from the lower edge to the top of the compartment doors.

Y\_\_\_\_\_ N\_\_\_\_\_

## **REAR BODY PROTECTION PANELS**

Brushed stainless steel overlays and panels shall be installed on the rear corners of the body.

The overlays shall be bolted in place and sealed to prevent any moisture entry between the overlay and the body structure.

Y\_\_\_\_\_ N\_\_\_\_\_

## **REAR BODY PROTECTION PANELS**

The rear body panels of the body shall be a smooth material, to allow for the proper application and installation of a "Chevron" stripe on the rear.

Y\_\_\_\_\_ N\_\_\_\_\_

## **POLISHED COMPARTMENT TOP WELDS**

The compartment top welds to be polished.

Y\_\_\_\_\_ N\_\_\_\_\_

## **FUEL TANK ACCESS PANEL**

There shall be a removable panel in the rear compartment, used to gain access to the fuel tank and fuel gauge-sending unit.

Y\_\_\_\_\_ N\_\_\_\_\_

## **FOLDING STEPS RIGHT SIDE REAR**

Two (2) folding steps of die cast high-strength zinc/aluminum alloy, plated with a superior automotive grade chrome finish shall be provided. The greater than 42 sq. in. serrated non-skid

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step traction area also offers an oversized non-slip grasp hand-hold. A heavy duty stainless steel spring design firmly holds the step in the open or closed positions. A rubber stop prevents any transit noise and rattles in the closed position. Step lighting shall be from a LED light mounted above the step.

The step has been third part tested to assure conformation of NFPA 1901 and FHA, 49CFR specifications for stepping surfaces and handhold.

The steps shall be installed on the rear right side of the body.

Y\_\_\_\_\_ N\_\_\_\_\_

## **ACCESS LADDER - LEFT REAR**

One (1) swing out and down ladder shall be installed on the left side of the rear body panel for access to the roof. The ladder shall be designed to store parallel to the body when not in use. A handle shall be provided to unlock the ladder from the travel position to allow the ladder to be pulled out to a comfortable climbing angle.

Release of the handle allows the ladder to latch automatically and it will not retract until the scissor lock is raised. The ladder shall have a six-rung main ladder section and be equipped with aluminum rungs having flat, non-skid surfaces to provide traction and safety.

Y\_\_\_\_\_ N\_\_\_\_\_

## **HANDRAIL REAR STEP**

Two (2) extruded aluminum non-slip handrails, approximately 30" in length, shall be provided and vertically mounted on the rear of the apparatus, one (1) on each side of the body.

Y\_\_\_\_\_ N\_\_\_\_\_

## **HANDRAIL BELOW HOSEBED**

One (1) extruded aluminum non-slip handrail, approximately 48" in length, shall be provided and horizontally mounted below the hosebed on the rear of the apparatus.

Y\_\_\_\_\_ N\_\_\_\_\_

## **HANDRAIL SIDE PUMP PANEL**

Two (2) extruded aluminum non-slip handrails, approximately 12" in length, shall be provided and horizontally mounted, one (1) each side on the side pump panel.

Y\_\_\_\_\_ N\_\_\_\_\_

## **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.

Y\_\_\_\_\_ N\_\_\_\_\_

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## **NYLON SPACERS FOR RUB RAILS**

There shall be nylon spacers provided between the rubrails and the body. This shall allow wash out and replacement in the event of damage.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## **WHEEL WELL PROVISION LOCATION**

The wheel well provisions shall be located on the left side of the apparatus, ahead of the rear wheels.

Y\_\_\_\_\_ N\_\_\_\_\_

One (1) 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 bolted in-place and removable for repair or replacement.

Y\_\_\_\_\_ N\_\_\_\_\_

Compartment shall be provided with SCBA cylinder scuff protection. A brushed aluminum door with push button trigger latch shall be provided.

Y\_\_\_\_\_ N\_\_\_\_\_

One (1) 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.

Y\_\_\_\_\_ N\_\_\_\_\_

## **WHEEL WELL PROVISION LOCATION**

The wheel well provisions shall be located on the left side of the apparatus, behind of the rear wheels.

Y\_\_\_\_\_ N\_\_\_\_\_

## **FUEL PIPING AND FILL CAP**

There shall be a fuel fill cap provided in the recessed area of the left side rear wheel well clearly marked, "DIESEL FUEL ONLY". The fill shall be piped to the fuel tank.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

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Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

### **WHEEL WELL PROVISION LOCATION**

The wheel well provisions shall be located on the right side of the apparatus, ahead of the rear wheels.

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One (1) breathing air cylinder storage compartment shall be provided and located in the rear wheel well of the apparatus body.

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Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

### **WHEEL WELL PROVISION LOCATION**

The wheel well provisions shall be located on the right side of the apparatus, behind of the rear wheels.

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Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

### **GENERATOR**

One (1) Smart Power, model HR-10, 10,000 watt hydraulic generator shall be provided. The generator is designed specifically for mounting on top of the vehicle, at the specified location. If required, the generator can be easily separated into its three major components (tray, cooler/fan assembly, and reservoir) for mounting in custom locations.

The generator system and the Command and Control Center (CCC) shall be Sole Source manufactured and shall be covered by a standard **5 year/1,000 hour** fully transferable warranty from the manufacturer. No exception.

The unit shall come equipped with a generator tray assembly (which includes the generator, hydraulic motor, cooler, fan, electronics package, 10 micron spin-on fluid filter and reservoir), an axial piston hydraulic pump with pressure compensated control, and Command and Control Center (CCC) display with all required wiring harnesses.

The CCC display shall be an interactive operator control center, equipped with smart touch solid state buttons, with displays for voltage, frequency, amperage, hour meter, service reminders, operator warnings, system faults and diagnostics.

The generator shall have the following features.

- Smart Start engagement to reduce mechanical stress
- Precise voltage and frequency control
- Cold Start System
- Automatic Load and Temperature Compensation
- Integrated Diagnostics System

The generator electrical enclosure, the oil cooler/fan enclosure, the hydraulic fluid reservoir and other steel structural components will be protected with a white powder coat finish.

The generator tray assembly shall be delivered with the cooler/fan assembly mounted such that the hot air is exhausted straight up, through an NFPA approved walking grate.

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The body of the generator tray assembly (including reservoir) shall be 32" long x 13.5" wide x 17" high, weighing approximately 220 pounds. The hydraulic pump shall be driven by a chassis transmission mounted power take off (PTO).

The generator and the Command Control Center shall be 100% American made. No exceptions.

## **Ratings and Capacity**

Rating:	12000 watts peak 10000 watts continuous
Volts:	120/240 volts
Phase:	Single, 4 wire
Frequency:	60 Hz
Amperage:	83 amps @ 120 volts or 42 amps @ 240 volts
Engine speed at engagement:	Standard soft start feature allows for any speed engagement
Operation range:	800 to 3240 RPM

## **Testing**

The generator shall be tested in accordance with all current N.F.P.A. 1901 standards.

## **Notes**

\*All ratings and capacities shall be derived utilizing current NFPA 1901 test parameters.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## **ELECTRICAL SYSTEM INSTALLATION**

The line voltage electrical system shall comply with the applicable NFPA standards and also comply with the applicable sections of the National Electric Code #70 standards. Line voltage carrying equipment downstream of the power source shall be "listed" (where available) and installed in accordance with manufacturer's 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 with 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.

Y\_\_\_\_\_ N\_\_\_\_\_

## **OVER CURRENT PROTECTION PANEL**

Manually re-settable over current devices shall be installed to protect the line voltage electrical system components. A main over current protection device shall be provided. The device shall be either incorporated in the power source or connected to the power source by a power supply assembly. The size of the main over current 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

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available size over current 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 over current protection device shall not exceed 144 inches in length. If over this distance, a separate master disconnect shall be installed at the generator area.

Over current protection devices shall be provided for each individual circuit and shall be sized at not less than 15 amps in accordance with NEC. Each over current 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.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## HYDRAULIC COMPONENTS

A hydraulic system filter, fluid level gauge, and fluid temperature gauge shall be provided as integral components within the hydraulic reservoir. The reservoir shall be easily accessible to allow filter changes and fluid level checks. There shall be at least 10 inches of clear space above the reservoir to allow removal of the filter element. Interconnecting hoses and fittings shall meet the generator system manufacturer's recommendations for pressure, size, and type of hose used. Where any hydraulic hose contacts other surfaces, the hose shall be protected from chafing. The hydraulic pump shall be driven by a power take-off mounted to the chassis automatic transmission.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## CONTROL PANEL

The panel shall include the following:

- Green indicator light to indicate PTO engagement. The light shall be labeled "GENERATOR ENGAGED."
- Red indicator to indicate hydraulic fluid overheating.
- Main circuit breaker panel with "main" breaker and individual line breakers.
- All breakers, outlets, switches, and receptacles shall be labeled per requirements of applicable NFPA standards.
- The generator shall be capable of producing full rated power throughout the entire RPM range of the engine.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## INSTRUCTION LABEL

An instruction label indicating essential generator operating instructions, including power-up and power-down sequence shall be permanently attached at or near the operator's panel.

Y\_\_\_\_\_ N\_\_\_\_\_



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## **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.

Y\_\_\_\_\_ N\_\_\_\_\_

## **CIRCUIT BREAKER BOX**

One (1) circuit breaker box for single phase voltage equipment shall be provided capable of holding twelve (12) breakers.

Y\_\_\_\_\_ N\_\_\_\_\_

## **CIRCUIT BREAKER BOX LOCATION**

The circuit breaker box shall be installed in an outside body compartment.

Y\_\_\_\_\_ N\_\_\_\_\_

The instrument panel for the generator shall be installed in a side body compartment.

Y\_\_\_\_\_ N\_\_\_\_\_

## **GENERATOR STARTUP**

An activation switch for the hydraulic generator shall be installed in the apparatus cab.

Y\_\_\_\_\_ N\_\_\_\_\_

## **GENERATOR MOUNTING LOCATION**

The generator shall be installed over the fire pump enclosure.

Y\_\_\_\_\_ N\_\_\_\_\_

## **LINE VOLTAGE WIRING INSTALLATION**

Line voltage wiring in the apparatus shall be with Type SO or approved cable suitable for mobile

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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.

Y\_\_\_\_\_ N\_\_\_\_\_

### **120V ELECTRIC RECEPTACLE -- TWIST LOCK**

Four (4) 120-volt 20 amp twist lock (NEMA L5-20) receptacle with spring loaded weatherproof cover shall be provided.

Y\_\_\_\_\_ N\_\_\_\_\_

The electric receptacle shall be located inside the left side exterior body compartment ahead of the rear wheels.

Y\_\_\_\_\_ N\_\_\_\_\_

The electric receptacle shall be located inside the right side exterior body compartment ahead of the rear wheels.

Y\_\_\_\_\_ N\_\_\_\_\_

The electric receptacle shall be located on the exterior left rear face of the body.

Y\_\_\_\_\_ N\_\_\_\_\_

The electric receptacle shall be located on the exterior right rear face of the body.

Y\_\_\_\_\_ N\_\_\_\_\_

### **CHASSIS CAB SHORELINE RECEPTACLES**

Receptacles shall be wired to the shoreline for the charging of portables. The final location will be determined at pre-construction conference.

Y\_\_\_\_\_ N\_\_\_\_\_

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## 120V ELECTRIC RECEPTACLE -- STRAIGHT BLADE

One (1) 120-volt 20 amp straight blade, 3-prong duplex receptacle with spring loaded weatherproof cover shall be provided and installed in the cab EMS cabinet

Y\_\_\_\_\_ N\_\_\_\_\_

## 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 120 volt, three (3) 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.

Y\_\_\_\_\_ N\_\_\_\_\_

### 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.

Y\_\_\_\_\_ N\_\_\_\_\_

The electric cable reel shall be installed in the upper right side of the pump hose, below the dunnage area. Cord will exit through rollers installed on the right side pump panel.

Y\_\_\_\_\_ N\_\_\_\_\_

A two hundred foot (200') length of 10/3 yellow electric cable shall be installed with specified plugs. The cable shall be type SEO-WA with a 20 amp, 120 volt rating.

Y\_\_\_\_\_ N\_\_\_\_\_

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The electric cable shall be configured with a 120-volt 20 amp NEMA L5-20R three prong, twist lock female receptacle.

Y\_\_\_\_\_ N\_\_\_\_\_

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.

Y\_\_\_\_\_ N\_\_\_\_\_

### **JUNCTION BOX**

One (1) Akron yellow electrical junction box shall have a 12" pigtail with a NEMA L5-20 twist-lock plug for connection to the cord reel. The unit shall have an integral pilot light to indicate electrical current.

The unit shall be equipped with four (4) 120 volt 20 amp NEMA L5-20 twist-lock receptacles, each with a hinged, weatherproof cover.

Y\_\_\_\_\_ N\_\_\_\_\_

One (1) aluminum storage bracket designed to hold an electric junction box shall be supplied. The holder shall be mounted in the same compartment as the specified cable reel.

Y\_\_\_\_\_ N\_\_\_\_\_

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.

Y\_\_\_\_\_ N\_\_\_\_\_

### **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.

Y\_\_\_\_\_ N\_\_\_\_\_

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).

Y\_\_\_\_\_ N\_\_\_\_\_

### **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.

Y\_\_\_\_\_ N\_\_\_\_\_

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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).

Y\_\_\_\_\_ N\_\_\_\_\_

## **WINCH RECEIVERS - SIDE BODY**

The body shall be equipped with one (1) 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 or chassis frame rails and shall be located behind the rear wheels.

Y\_\_\_\_\_ N\_\_\_\_\_

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).

Y\_\_\_\_\_ N\_\_\_\_\_

## **BODY PAINT PROCESS**

All bright metal fittings, if unavailable in stainless steel shall be heavily chrome plated. Iron fittings shall be copper plated prior to chrome plating. If applicable, any and all accessory times shall be removed from the body prior to cleaning and painting. Any accessory items that are to be painted shall be painted separately and installed after the body is painted and cured.

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.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## **INTERIOR COMPARTMENT FINISH**

The interior compartment walls shall be coated 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 lining material shall dry to form an impervious one piece covering to protect the compartment interiors from damage. The lining material shall be applied on eight (8) compartments.

Y\_\_\_\_\_ N\_\_\_\_\_

## **INTERIOR COMPARTMENT FINISH**

The lining material shall be dark grey in color.

Y\_\_\_\_\_ N\_\_\_\_\_

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## **TOUCH-UP PAINT**

Two (2) two (2) ounce bottles of touch-up paint (one for each color) shall be furnished with the completed truck at final delivery.

Y\_\_\_\_\_ N\_\_\_\_\_

## **UNDERCOATING**

The entire underside of the single axle apparatus body is to be cleaned and properly prepared for application of a sprayed on automotive type undercoating for added corrosion resistance.

Undercoating is to be a solvent based, rubberized coating, black in color.

Y\_\_\_\_\_ N\_\_\_\_\_

## **SCOTCHLITE REFLECTIVE LETTERING**

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

A quantity of fifty (50) four (4) inch letters will be placed on the cab and on the body as directed by fire department.

Y\_\_\_\_\_ N\_\_\_\_\_

## **REFLECTIVE STRIPING**

A 6" wide 3M brand Scotchlite #680-10 reflective stripe shall be affixed to the perimeter of the vehicle. Striping shall be placed up to 60" above ground level and shall conform to the applicable NFPA reflectivity requirements.

At least 50% of the perimeter length of each side and width of the rear and at least 25% of the perimeter width of the front of the vehicle shall have reflective stripe.

The side stripe shall be applied in a "Z" pattern.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## **COLOR OF STRIPING MATERIAL**

The color of the 3M brand striping material shall be white.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## **CHEVRON STRIPING**

The entire rear portion of the body shall have 3M Diamond Grade reflective red and amber 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.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

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## **WHEEL CHOCKS**

Two (2) medium aluminum wheel chocks shall be provided.

Y\_\_\_\_\_ N\_\_\_\_\_

## **WHEEL CHOCK MOUNTINGS**

Two (2) wheel chock holders shall be mounted under the apparatus body.

Y\_\_\_\_\_ N\_\_\_\_\_

## **ROOF LADDER**

One (1) Duo Safety Model 775-A, 14 foot aluminum roof ladder with folding steel roof hooks on one end and steel spikes on the other end shall be provided on the apparatus. The ladder shall meet or exceed all latest NFPA Standards.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## **EXTENSION LADDER**

One (1) Duo-Safety Model 900-A, 24 foot two (2) section aluminum extension ladder shall be provided on the apparatus. The ladder shall meet or exceed all the latest NFPA standards.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## **FOLDING LADDER**

One (1) Duo Safety Model 585-A, 10 foot folding aluminum ladder shall be provided on the apparatus. The ladder shall meet or exceed all the latest NFPA Standards.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## **PIKE POLE**

One (1) 6' pike pole with I-Beam handle shall be provided. The pike pole shall be of fiberglass construction.

Y\_\_\_\_\_ N\_\_\_\_\_

## **PIKE POLE**

One (1) 8' pike pole with I-Beam handle shall be provided. The pike pole shall be of fiberglass construction.

Y\_\_\_\_\_ N\_\_\_\_\_

## **PIKE POLE**

One (1) 10' pike pole with I-Beam handle shall be provided. The pike pole shall be of fiberglass construction.

Y\_\_\_\_\_ N\_\_\_\_\_

# Rome Fire Department – 1500 GPM Custom Pumper

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## **SUCTION HOSE**

Two (2) 6.0" x 10 foot lengths of PVC flexible suction hose shall be supplied. The suction hose shall have light weight couplings provided.

Y\_\_\_\_\_ N\_\_\_\_\_

## **HOSE COUPLINGS**

Lightweight aluminum couplings shall be provided on the suction hose. A long handle female swivel shall be provided on one end and a rocker lug male shall be provided for the other end.

Y\_\_\_\_\_ N\_\_\_\_\_

## **STRAINER**

One (1) Kochek Model BS60 barrel strainer shall be provided. The strainer shall be constructed from aluminum with K-Brite finish and include a tie off loop on the end plate. The strainer shall be provided with a 6.0" NST female rocker lug coupling.

Y\_\_\_\_\_ N\_\_\_\_\_ E\_\_\_\_\_

## **MISCELLANEOUS HARDWARE**

Miscellaneous loose hardware consisting of bolts, nuts, washers, and screws shall be supplied with the apparatus at time of delivery.



# Rome Fire Department – 1500 GPM Custom Pumper

## Optional Items

Please provide separate pricing for each item. Do not include the cost of any of the items in the cost of the 1500 GPM Custom Pumper bid amount. The optional items listed may or may not be purchased as a whole. Some or all may be purchased available budget permitting. Pricing should be based on a unit of one (1) EACH.

Item Number	Description	Bidder's Response
AKR-1720	4 each nozzle 1.5 NST turbo P/G	
AKR-1446	1 each shutoff plain tip w/ pistol GR Rome thread X 1"	
AKR-1446	1 each shutoff plain tip w/ pistol GR Rome thread X 1.125	
AKR-1725	2 each nozzle 2.5 turbojet Rome thread	
KEY-DP25-800ARN-50 YEL	42 each Big 10 hose DJ 2.5 X 50 yellow Rome thread or brand that is equivalent	
KEY-DP15-800ARN-50 YEL	24 each Big 10 hose DJ 1.5 X 50 YEL or brand that is equivalent	
KEY-RC50-450STORZ 100	10 each pro flow 5" X 100 ft CPL STORZ yellow or brand that is equivalent	
KEY-RC50-450STORZ 50	1 each RC 5X50 CPL STORZ or brand that is equivalent	
KOC-70K60105	2 each piston intake 5" STORZ x 6" FEM or brand that is equivalent	
HAR-HSFS50-25SP	1 each adapter 5" STZ X 2.5" Rome thread or brand that is equivalent	
HAR-HHGV-25SP-25SP	1 each hydrant gate valve Rome thread or brand that is equivalent	
HAR-H37-25SP-15NH	2 each adapt 2.5" Rome thread X 1.5 NH or brand that is equivalent	
HAR-H37-25SP-25NH	1 each 2.5" Rome thread fem X 2.5" NH male or brand that is equivalent	
HAR-H37-25NH-25SP	1 each 2.5" F NH X 2.5" male Rome thread or brand that is equivalent	
USC- 144-4	2 each storz spanner set w/ holder or brand that is equivalent	
USC-146-2	2 each DBL wrench set w/ holder or brand that is equivalent	
HAR-H201-25SP-15NH	1 each 2.5 Rome thread WYE, (2) 1.5" NH or brand that is equivalent	
TFT-UE-095-BH-NF	1 each eductor 95gpm 2.5 Rome thread X 1.5NH or brand that is equivalent	

Rome thread = 3-3/16" X 7tpi threads