

Arvada Fire Protection District

BID SPECIFICATIONS

FOR

ROSENBAUER CUSTOM T.D.A.

OVERALL HEIGHT

An overall height restriction has not been specified for this apparatus.

OVERALL LENGTH

An overall length restriction has not been specified for this apparatus.

OVERALL WIDTH

An overall width restriction has not been specified for this apparatus.

WHEELBASE

A wheelbase restriction has not been specified for this apparatus.

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 the NFPA 1901 Guideline.

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 the NFPA 1901 Guideline.

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NFPA AERIAL/QUINT EQUIPMENT ALLOWANCE

In compliance with the current NFPA 1901 guidelines, the apparatus shall be engineered to provide an allow of 2500 pounds of fire department provided loose equipment.

CONTRACT CHANGE NOTICE

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

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

After execution and acceptance of this Purchase Process, the Buyer may request that the Company incorporate a change to the Products or the Specifications for the Products by delivering a Change Order to the Company; provided, however, that any such Change Order must be in writing and include a description of the proposed change sufficient to permit the Company to evaluate the feasibility of such Change Order. Within seven (7) working days of receipt of a Change Order, the Company will inform the Buyer in writing of the feasibility of the Change Order, the earliest possible implementation date for the Change Order, of any increase or decrease in the Purchase Price resulting from such Change Order, and of any effect on production scheduling or delivery resulting from such Change Order. The Company shall not be liable to the Buyer for any delay in performance or delivery arising from any such Change Order. Purchase Price may be modified only by mutual written agreement of the Parties because of changes to the Apparatus required or requested by the Buyer during the construction process pursuant to Appendix C, Change Order Policy. Any changes in the Purchase Price resulting from changes to the Apparatus required or requested by the Buyer during the construction process shall be stated in the Change Order signed by both parties. Additional Changes: If various state or federal regulatory agencies (e.g., NFPA, DOT, EPA) require changes to the specification and/or the product that result in a cost increase to comply therewith this cost will be added to the Purchase Price to be paid by the customer.

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FINANCIAL STABILITY SPECIFICATIONS

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

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

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

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

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

The first criteria call for the successful bidder to meet a debt-to-equity ratio not exceeding a 2.0 rating. Rosenbauer presently stands at a 1.51 rating, which is well-below the accepted rating. This low number results from Rosenbauer owning more assets with a marginal debt service. This means we are not using lenders to fund our operations, nor our growth.

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

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

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

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

ELECTRONIC STABILITY CONTROL

Electronic stability control shall be supplied on the chassis.

Contract - Minnesota Division

PRE-CONSTRUCTION CONFERENCE (AT MANUFACTURER)

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

INSPECTION TRIPS

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

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LOCAL SALES AND SERVICE VEHICLE SUPPORT

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

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

BODY WARRANTY

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

Under this warranty we agree to furnish any parts to replace those that have failed due to defective material or workmanship where there is no indication of abuse, neglect, unusual or other than normal service providing that such parts are, at the option of ROSENBAUER AMERICA, LLC, made available for our inspection at our request, returned to our factory or other location designated by us with transportation prepaid within thirty days after the date of failure or within three (3) years from the date of delivery of the apparatus to the original purchaser, whichever occurs first, and inspection indicates the failure was attributed to defective material or workmanship.

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

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

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

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

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EXT MODULAR BODY WARRANTY - LIFE-TIME

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

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

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

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

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

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

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

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ALUMINUM SUBFRAME WARRANTY

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

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

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

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

EXCLUSIONS AND LIMITATIONS: THIS MANUFACTURER'S WARRANTY IS PROVIDED IN PLACE OF ANY AND ALL OTHER REPRESENTATIONS OR IMPLIED WARRANTIES. NO PERSON IS AUTHORIZED TO MAKE ANY REPRESENTATIONS OR WARRANTY ON BEHALF OF ROSENBAUER AMERICA, LLC OR ANY OF ITS DISTRIBUTORS OTHER THAN SET FORTH IN THIS MANUFACTURER'S WARRANTY. YOUR RIGHT TO SERVICE AND REPLACEMENT OF PARTS ON THE TERMS EXPRESSLY SET FORTH HERIN ARE YOUR EXCLUSIVE REMEDIES AND NEITHER THE MANUFACTURER NOR ANY OF ITS DISTRIBUTORS SHALL BE LIABLE FOR DAMAGES, WHETHER ORDINARY, INCIDENTAL OR CONSEQUENTIAL.

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

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PAINT WARRANTY TEN YEAR

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

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

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

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

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

LETTERING WARRANTY

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

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

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PUMP WARRANTY

Waterous warrants, to the original buyer only, that products and parts manufactured by Waterous will be free from defects in material and workmanship under normal use and service for a period of seven (7) years from the date the product is first placed in service, or seven and one half 7-1/2 years from the date of shipment by Waterous, whichever period will be the first to expire; provided the buyer notifies Waterous in writing, of the defect in said product within the warranty period, and said product is found by Waterous to be conforming with the aforesaid warranty.

When required in writing by Waterous, defective products must be promptly returned by the buyer to the Waterous Company at Waterous' plant at South St. Paul, Minnesota, or at such other place as may be specified by Waterous with transportation and other charges prepaid. A returned materials authorization (RMA) is required for all products and parts and may be requested by phone, fax or mail. The previously mentioned warranty excludes any responsibility or liability of Waterous for:

- Damages or defects due to accident, abuse, misuse, abnormal operating conditions, negligence, accidental causes or improper maintenance, or attributable to written specifications or instructions furnished by buyer.
- Defects in products manufactured by others and furnished by Waterous hereunder, it being understood and agreed by the parties that the only warranty provided for such products shall be the warranty provided by the manufacturer thereof which, if assignable, Waterous will assign to the buyer, if requested by buyer.
- Any product or part, altered, modified, serviced or repaired other than by Waterous, without its prior written consent.
- The cost of dismantling, removing, transporting, storing, or insuring the defective product or part and the cost of reinstallation.
- Normal wear items (packing, strainers, filters, light bulbs, anodes, intake screens, etc.)
- This warranty is subject to Waterous' conditions of sale (Waterous Company form number F-2190 as currently in effect all of which are herein incorporated and by this reference made a part hereof.

All other warranties are excluded, whether expressed or implied by operation of law or otherwise, including all implied warranties of merchantability or fitness for purpose. Waterous shall not be liable for consequential or incidental damages directly or indirectly arising or resulting from breach of any of the terms of this limited warranty or from the sale, handling, or use of any other product or part. Waterous' liability hereunder, either for breach of warranty or for negligence, is expressly limited at Waterous' option:

- To the replacement at the agreed point of delivery of any product or part, which upon inspection by Waterous or its duly authorized representative, is found not to conform to the limited warranty set forth above, or
- To the repair of such product or part, or
- To the refund or crediting to buyer of the net sales price of the defective product or part.
- Buyer's remedies contained herein are exclusive of any other remedy otherwise available to the buyer.

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STAINLESS STEEL PLUMBING WARRANTY

Subject to the provisions, limitations and conditions set forth in this warranty, Rosenbauer America, LLC (hereby referred to as "seller"), hereby warrants to each original purchaser only that stainless steel plumbing components and ancillary brass fittings used in the construction of the water/foam plumbing system shall be warranted for a period of ten (10) years. This covers structural failures caused by defective design or workmanship, or perforation caused by corrosion, provided the apparatus is used in a normal and reasonable manner. This warranty is extended only to the original purchaser for a period of ten years from the date of the delivery and shall terminate upon the transfer of possession or ownership by original purchaser.

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

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

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

EXCLUSIONS AND LIMITATIONS: THIS MANUFACTURER'S WARRANTY IS PROVIDED IN PLACE OF ANY AND ALL OTHER REPRESENTATIONS OR IMPLIED WARRANTIES. NO PERSON IS AUTHORIZED TO MAKE ANY REPRESENTATIONS OR WARRANTY ON BEHALF OF ROSENBAUER AMERICA, LLC OR ANY OF ITS DISTRIBUTORS OTHER THAN SET FORTH IN THIS MANUFACTURER'S WARRANTY. YOUR RIGHT TO SERVICE AND REPLACEMENT OF PARTS ON THE TERMS EXPRESSLY SET FORTH HERIN ARE YOUR EXCLUSIVE REMEDIES AND NEITHER THE MANUFACTURER NOR ANY OF ITS DISTRIBUTORS SHALL BE LIABLE FOR DAMAGES, WHETHER ORDINARY, INCIDENTAL OR CONSEQUENTIAL.

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BODY MANUAL - DIGITAL

Rosenbauer shall provide with the vehicle upon delivery one (1) digital copy of the delivery manual. The manual shall include sections that contain the following:

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

PARTS CATALOG

The apparatus manufacturer shall supply, at delivery, a customized parts catalog listing. The parts catalog shall be both apparatus and customer specific.

“Similar” or “Representative” parts catalogs will not be accepted.

ELECTRICAL SYSTEM PRINTED MANUAL (OPTION) AS BUILT

ROSENBAUER shall provide with the vehicle upon delivery, one (1) delivery manual for the electrical system. This manual shall be in a notebook type binder, with reference tabs for each section of the vehicle. A digital copy, with all 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 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 for the installed electrical components
- Technical publications for training and instruction on major components
- Warning and safety related notices for personnel protection

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

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ROSENBAUER CUSTOM CHASSIS

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

== Use Drop Down For Chassis Options - 1115.017 11/15/17 ==
== EXT TDA - DC Elec System - COMMANDERS ONLY - 6022.021 06/02/21 ==
ELECTRONIC SIREN - SPEAKERS - Q's - BELL

ELECTRIC SIREN AND CONTROL

A Whelen model #295SLSA1 electronic siren shall be mounted in the cab. This unit shall feature an electronic air horn, wail, yelp, hi-lo and shall have a hard wired PA microphone.

SPEAKER

One (1) Federal Signal DynaMax 100-watt speaker, model #ES100C, shall be installed. The speaker shall feature a Neodymium driver and a high strength composite housing that is chemical resistant and maintains rigidity at high temperatures.

SPEAKER

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

SPEAKER LOCATION

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

FEDERAL MECHANICAL SIREN

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

DRIVER MECHANICAL SIREN ACTIVATION

The Q2B mechanical siren shall be activated by the driver through a momentary switch in the console.

SIREN CONTROL

A push button switch shall be installed on the officer's side of the cab dash to activate the Federal Signal Q2B siren.

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SIREN BRAKE

Two (2) push button siren brake switches for the Federal Signal Q2B siren shall be provided, one (1) on the driver's side dash and one (1) on the officer's side dash.

CAB LIGHTBARS - UPPER ZONE A

LIGHTBAR

LACo Spec 43.8.2

One (1) Whelen Liberty II Solo Model BWORRRR-LACoFD or equal light bar. The light bar shall approximately 78" long and shall be mounted on the top of the cab. The light bar shall be configuration shall meet District requirements and provide two (2) Steady RED to comply with CA Title 13. Rest of lights shall be set to CA Title 13 signal/pattern of choice which will be determined at preconstruction. White will flash while the vehicle is in motion and will turn off automatically when vehicle is in park and they shall have an override trigger to make them illuminate to create a scene zone.

TRAFFIC LIGHT CONTROL

One (1) Global Traffic Technologies Opticom 492H high-priority traffic light emitter and control device shall be installed on the apparatus cab roof. The traffic emitter shall be wired thru the park brake to deactivate when the park brake is set.

LIGHTBAR OPTION

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

LIGHTBAR ACTIVATION

The front upper light bar shall be activated through the Weldon Vista screen "E-Master" red button and through a separate virtual switch located within the "Warning Lt Menu".

REAR FACING - UPPER WARNING LIGHTS - UPPER ZONE C

UPPER REAR WARNING LIGHTS

Two (2) pair of Whelen model M7 LED warning lights shall be installed, one each side on the upper rear of the apparatus body. The dimensions of the lights shall be 3-3/8" x 7-5/8".

The scene light shall be installed on a treadplate mounting plate.

The driver side warning light shall be a Whelen Model M7RC red Super-LED™ with clear lens.

The officer side warning light shall be a Whelen Model M7RC red Super-LED™ with clear lens.

Each light shall be mounted with a Whelen Model M7FC chrome flange.

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UPPER SIDE REAR WARNING LIGHTS

One (1) pair of Whelen model M6 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 4-5/16" x 6-3/4".

The scene light shall be installed on a treadplate mounting plate.

The driver side warning light shall be a Whelen Model M6RC red Super-LED™ with clear lens.

The officer side warning light shall be a Whelen Model M6RC red Super-LED™ with clear lens.

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

CAB WARNING LIGHTS

UPPER WING FRONT WARNING LIGHTS

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

The driver side warning light shall be a Whelen Model M6RC red Super-LED™ with clear lens.

The officer side warning light shall be a Whelen Model M6RC red Super-LED™ with clear lens.

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

INBOARD WARNING LIGHTS

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

The driver side warning light shall be a Whelen Model M6RC red Super-LED™ with clear lens.

The officer side warning light shall be a Whelen Model M6RC red Super-LED™ with clear lens.

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

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INTERSECTION WARNING LIGHTS

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

The driver side warning light shall be a Whelen Model M6RC red Super-LED™ with clear lens.

The officer side warning light shall be a Whelen Model M6RC red Super-LED™ with clear lens.

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

LOWER MID CHASSIS WARNING LIGHTS

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

The driver side warning light shall be a Whelen Model M6RC red Super-LED™ with clear lens.

The officer side warning light shall be a Whelen Model M6RC red Super-LED™ with clear lens.

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

LOWER REAR CHASSIS WARNING LIGHTS

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

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

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

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

LOWER MID-BODY WARNING LIGHTS

Two (2) pair of Whelen model M6 LED warning lights shall be installed , one each side of the apparatus, mid-body. The dimensions of the lights shall be 4-5/16" x 6-3/4".

The driver side warning light shall be a Whelen Model M6RC red Super-LED™ with clear lens.

The officer side warning light shall be a Whelen Model M6RC red Super-LED™ with clear lens.

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

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LOWER REAR WARNING LIGHTS

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

The driver side warning light shall be a Whelen Model M6RC red Super-LED™ with clear lens.

The officer side warning light shall be a Whelen Model M6RC red Super-LED™ with clear lens.

LOWER REAR SIDE WARNING LIGHTS

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

The driver side warning light shall be a Whelen Model M2WRC wide-angle red Super-LED™ with clear lens.

The officer side warning light shall be a Whelen Model M2WRC wide-angle red Super-LED™ with clear lens.
12 VOLT ELECTRICAL INSTALLATION - AERIALS

LOW VOLTAGE ELECTRICAL SYSTEM SPECIFICATIONS

The following specifications describe the low voltage electrical system on the specified rescue fire apparatus. 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 1901 standards.

The apparatus shall have a Weldon V-MUX multiplexing system, to provide diagnostic capability. The system shall have the capability of delivering multiple signals via a CAN bus, utilizing specifications set forth by SAE J1939. The electrical system shall be pre-wired for computer modem accessibility to allow service personnel to easily plug in a modem to allow remote diagnostics, troubleshooting, or program additions. There shall be a diagnostic display provided in the cab. The multiplexed system shall use twisted-pair shielded wire within the electrical system for noise reduction. The diagnostic display shall allow for fault and condition messages to be displayed. For superior system integrity, the networked system shall meet the following minimum requirement components:

1. Power management center
2. Load shedding power management
3. Solid-state circuitry
4. Switch input capability
5. Responsible for lighting device activation
6. Self-contained diagnostic indicators
7. Power distribution module
8. Diagnostic display for warning message indication
9. High Idle Function

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

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

The wiring between the cab and body shall be joined using Deutsche type connectors or in an enclosed terminal junction panel. This system will permit body removal with minimal impact on the apparatus electrical system. All connections shall be crimp-type with insulated shanks to resist moisture and foreign debris such as grease and road grime. Weather-resistant connectors shall be provided throughout to ensure the integrity of the electrical system.

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

There shall be no exposed electrical cabling, harnesses, or terminal connections located in compartments, unless they are enclosed in an electrical 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 at least every two feet (2') by color coding or permanent marking with a circuit function code and identified on a reference chart or electrical wiring schematic per requirements of the applicable NFPA 1901 standards.

The electrical circuits shall be provided with low voltage over current protective devices. Such devices shall be accessible and located in required terminal connection locations or weather resistant enclosures. The over current protection shall be suitable for electrical equipment and shall be the 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 the maximum current for which the protected circuit. The system shall have electro-magnetic interference suppression provided as required in applicable SAE standards.

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The electrical system shall include the following:

- j) 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.
- k) The electrical wiring shall be harnessed or be placed in a protective loom.
- l) 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.
- m) Any electrical component that is installed in an exposed area shall be mounted in a manner that will not allow moisture to accumulate.
- n) A coil of wire must be provided behind each electrical appliance to allow them to be pulled away from the mounting area for inspection and service work.
- o) All lights that have their sockets in a weather exposed area shall have corrosion preventative compound added to the socket terminal area.

The warning lights shall be switched in the chassis cab with labeled switches in an accessible location. Individual rocker switches shall be provided only for warning lights added over the minimum requirement 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. Rocker type warning light switches shall be utilized. For ease of 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 be automatically activated per requirements of the NFPA 1901 standard. All "clear" warning lights shall be automatically turned off upon application of the parking brake.

NFPA REQUIRED TESTING OF ELECTRICAL SYSTEM

The apparatus shall be electrically tested upon completion of the vehicle and prior to delivery. The electrical testing, certifications, and test results shall be submitted with the delivery documentation per requirements of the NFPA 1901 standard. 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.

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2. Alternator performance test at idle:

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

3. Alternator performance test at full load:

The total continuous electrical load shall be activated with the engine running up to the engine manufacturer's governed speed. The test duration shall be a minimum of two (2) hours. Activation of the load management system shall be permitted during this test. However, if an alarm sounds due to excessive battery discharge, as detected by the system requirements in the NFPA 1901 standard, or a system voltage of less than 11.7 volts dc for a 12 volt system is present for more than 120 seconds, the test shall be considered a failure.

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.

ROCKER SWITCH CONSOLE

One (1) rocker switch to control electrical equipment and emergency lighting shall be installed in the chassis cab dash area.

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COMPARTMENT DOOR OPEN SYSTEM ON VISTA SCREEN

The cab and body main compartment doors shall be wired to illuminate an open door indicator on the Weldon V-MUX Vista screen located in the cab when the parking brake is released. The indicator shall individually specify the door(s) that is(are) open. Accessories on the truck, such as light towers, hydraulic ladder rack, deck gun and small accessory doors shall also be wired to illuminate an indicator on the Vista screen when not stowed or open.

BATTERY SYSTEMS AND SHORELINE PLUG-INS

BATTERY SYSTEM

The battery system shall be supplied with the chassis.

MASTER ELECTRIC SWITCH

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

AIR HORNS AND CONTROLS

AIR HORNS

One (1) air horn shall be mounted to the bumper. The air horn shall be 6" in diameter and 21" long and shall feature a flared end for a pleasing appearance.

AIR HORN LOCATION

The air horn shall be located on the officer's side of the bumper.

ELECTRIC TRAFFIC HORN AND AIR HORN SELECTOR SWITCH

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

AIR HORN SWITCH

A switch shall be installed to activate the air horn system on the officer's side of the cab dash.

12 VOLT POWER SOURCES

12 VOLT POWER SOURCE

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

The power source shall be "constant hot" and remain active regardless of the position of the master battery switch.

DOME-CABINET-INTERIOR-ENGINE-PUMP LIGHTS

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PUMP ENCLOSURE LIGHTS

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

The control switch shall be mounted on the light head.

TELESCOPING LIGHTS - BROW LIGHTS - 12 VOLT

LIGHT MOUNTING LOCATION

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

LED SCENE LIGHT

LACo Spec 43.J.2. One (1) Hi-Viz Model FT-B-72-ML-B or equal 72" diffused scene/flood light mounted on the cab brow. The panel mounted rocker switch labeled "FRONT SCENE" shall control the light. The brow light shall also have built in marker lights.

SCENE LIGHT SWITCHING

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

LIGHT MOUNTING LOCATION

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

LED SCENE LIGHT

A Fire Tech FT-MB-18-FT-B brow light shall be provided and installed below the light bar. The light shall produce 7,920 lumens and be powder coated black.

SCENE LIGHT SWITCHING

Two (2) 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".

LIGHT MOUNTING LOCATION

The mounting location for the specified light shall be on the front of the apparatus body.

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SCENE LIGHT

Two (2) FRC Spectra SPA570-Q20 or equal 12VDC 20,000 lumen LED top mount flood lights with rotation and elevation adjustment base shall be provided, one on each left and right side mid-point of the trailer walk deck. The lights shall be controlled along by the separate rocker switches mounted on the switch panel labeled "RIGHT SCENE" and "LEFT SCENE".

SCENE LIGHT SWITCHING

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

SCENE LIGHT SWITCHING

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

BACK UP ALARMS AND CAMERAS

FORWARD CAMERA, TILLER CAB

A camera system shall be provided to allow the tiller driver to visually see the sides of the apparatus while in the tiller cab. The system shall include two (2) 7.0" flat panel LCD color monitor mounted adjacent to the tiller driver one for each side camera. The system shall also feature a microphone on the camera and speaker built into the monitor. Two (2) side mounted wide angle camera shall be mounted on the driver's and officer side of the body to allow the tiller driver to see each side of the tiller body as well as the rear trailer steering tires. The tiller cab cameras will be positioned on the access ladders facing forward toward the steer axle. The driver side vision camera shall automatically activate when the driver side turn signal is activated. The officer side vision camera shall automatically activate when the officer side turn signal is activated.

ADDITIONAL MONITOR

An additional monitor shall be provided on the pump operator's panel. The monitor shall be a Safety Vision 70WP4, with capability of viewing up to 4 cameras simultaneously.

HAND LIGHTS

All NFPA required portable hand lights supplied by the Customer must be installed before the apparatus is placed into service.

ANTENNAS - RADIOS - HEADSETS - FIRE RADIOS

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INTERCOM SYSTEM

The vehicle shall be equipped with a Firecom 5100D intercom master station. The system comes standard with connections for six (6) positions, (4) wired and (2) wireless. Additional positions can be added through daisy chaining.

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

INTERCOM HEADSET

One (1) UH-51 Under-The-Helmet-Headset shall be provided with the intercom system. The red PTT button activates radio transmit. The mic is always live for intercom communication. Appropriate for driver or officer positions.

INTERCOM PLUG IN MODULE

One (1) HM-10 plug-in module for with any single-plug headset at interior positions in the apparatus shall be provided.

HEADSET HANGER HOOK

Six (6) headset hanger hooks shall be provided and installed in the cab for storage of the headsets while not in use.

INTERCOM HEADSET

Two (2) UHW505 Wireless Headset plus wireless base station with single channel transmitter for each headset shall be provided with the intercom system. The raised PTT buttons on either side activate the radio transmit function. The mic is always live for intercom communication. Appropriate for driver or officer positions.

INTERCOM HEADSET

Three (3) UHW503 Wireless Headset(s) plus wireless base station with single channel transmitter for each headset shall be provided with the intercom system. Appropriate for crew positions. The headsets shall come in standard black. Adjustable Listen Through Microphones allow for face to face discussion without removing the ear cuffs, and Wideband audio enhancement provide clarity in all environments.

WIRELESS BASE STATION

One (1) five (5) channel Transmit Wireless Base Station that supports (5) positions that can either be PTT or crew listen. The 505R can support up to 5 PTT headsets, or any combination thereof. More than five positions will require another base station.

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KNOX BOX

One (1) KeySecure Series master key box shall be supplied by the customer and installed. The location shall be determined by the customer.

MARKER AND DOT REQUIRED LIGHTS

MARKER LIGHTS

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

MARKER LIGHTS

Additional LED marker lights shall be installed on the vehicle. These lights are in addition to the lights required by the Department of Transportation.

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.

LICENSE PLATE BRACKET

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

TAIL LIGHTS

One (1) pair of Whelen M62BTT LED tail/brake lights shall be provided. The rectangular 4"x6" lights shall be red.

THIRD BRAKE LIGHT

There shall be one (1) additional Whelen M62BTT LED tail/brake light provided on the rear of the apparatus. The light shall be mounted as high as practical and centered on the rear of the apparatus body. The rectangular light shall be red with color lens.

TURN SIGNALS

One (1) pair of Whelen, 604T 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.

TURN SIGNALS

One (1) pair of Whelen M62T LED turn signals with populated sequential chevron arrow shall be provided.

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BACKUP LIGHTS

One (1) pair of Whelen Series M62BU LED backup lights shall be installed on the rear of the apparatus body. The dimensions shall be 4" x 6" and the lens color shall be clear.

FOUR LIGHT HOUSING

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

GROUND LIGHTS

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.

MID BODY GROUND LIGHTS

Two (2) LED ground lights shall be installed under the mid-body of the apparatus. One (1) light shall be located on the driver's side and one (1) light located on the officer's side of the apparatus.

REAR STEP GROUND LIGHTS

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

REAR BODY GROUND LIGHTS

Two (2) LED ground lights shall be installed under the compartments located behind the rear wheels. One (1) light shall be located on the driver's side and one (1) light located on the officer's side of the apparatus.

GROUND LIGHT

Two (2) pair of additional LED ground lights shall be installed.

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

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

STEP LIGHT

Four (4) LED step light(s) with clear lens shall be installed.

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WALKWAY LIGHT

Four (4) LED walkway light shall be installed. The lights shall be installed in upper roof walkway area.

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

The step/walkway light switch shall be installed and wired to a switch on the pump panel.

LED SURFACE MOUNT SCENE LIGHT

Two (2) Fire Research model SPA260-Q20 surface mount light shall be installed. The light shall be mounted with four (4) screws to a flat surface. It shall be 5-7/8" high by 14.5" 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 lamphead shall have sixty (60) ultra-bright white LEDs, 56 for flood lighting and 4 to provide a spot light beam pattern. It shall operate at 12/24 volts DC, draw 13.8/6.9 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 powder coated. The LED scene light shall be for fire service use. The light housing shall be powdercoated with a chrome colored bezel.

SCENE LIGHT LOCATION

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

SCENE LIGHT LOCATION

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

SCENE LIGHT SWITCHING

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

SCENE LIGHT SWITCHING

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

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SCENE LIGHT

Two (2) 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 a chrome colored bezel.

SCENE LIGHT LOCATION

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

SCENE LIGHT LOCATION

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

SCENE LIGHT SWITCHING

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

SCENE LIGHT SWITCHING

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

ANGLED SCENE LIGHT

Two (2) sealed, watertight 12 volt surface mount TecNiq E61-WS00-1 LED lights with polished stainless steel housings shall be installed. A high brightness, extreme environment spot and flood lamp shall project the main beam of light at a 60 degree angle from the mounting surface. A secondary, lower intensity light shall emit in a rectangular pattern over a wide angular range from the light.

The lights shall be located in the rear wheel well area, one each side, and shall automatically activate when the vehicle transmission is placed into reverse to assist with backing.

DIRECTIONAL WARNING LIGHTBARS

TRAFFIC ARROW LIGHT

One (1) Whelen Model #TAL65 Traffic Advisor shall be installed. The light shall be equipped with six (6) LED lights measuring 36" in length. The unit shall be mounted at the rear of the apparatus body. The Traffic Advisor control head shall be mounted inside the cab and be accessible by the driver and officer.

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TRAFFIC ARROW CONTROL HEAD

A Whelen TACTL5 control head shall be supplied with the traffic arrow.

The traffic arrow light shall be mounted at the rear of the apparatus cab.

DIMENSIONS OF APPARATUS

OVERALL DIMENSIONS

The vehicle shall have the following dimensions:

- Chassis wheelbase:
- Cab to Chassis Rear Axle
- Trailer Wheelbase
- Overall length:
- Overall width:
- Overall height

PLACARDS AND LABELING

FLUID DATA PLAQUE

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

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

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

HEIGHT LENGTH & WEIGHT WARNING LABEL

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

NO RIDE LABEL

A "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.

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TIRE PRESSURE LABEL

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

CAB SEATING POSITION LIMITS

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

HELMET WARNING TAG

A 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.

FRAME PREP AND MODIFICATIONS

TOW EYES

Two (2) 3" tow eyes shall be mounted to bumper extension on the top of the bumper. The tow eyes shall be steel and shall be painted black.

REAR TOW EYES

There shall be two (2) tow eyes furnished at the rear of the body. The tow eyes shall be accessible above the rear tailboard. The tow eyes shall be constructed of 3/4" plate steel with a 3" I.D. hole, large enough for passing through a tow chain end hook.

The tow plates shall be painted black.

BUMPER MODIFICATIONS - EXTENSIONS - COMPARTMENTS

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 fourteen inch (14") 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.

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HIGH ANGLE OF APPROACH BUMPER

The standard front bumper design shall be modified to be angled from front to back to accommodate areas where a high angle of approach is required.

STAINLESS STEEL BUMPER CLADDING

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

FRONT BUMPER COMPARTMENT

A recessed fire hose compartment constructed from smooth aluminum shall be installed in the center of the front bumper extension. Water drain holes shall be provided in the bottom.

HOSE WELL SECUREMENT

One (1) pair of Velcro straps shall be provided for the securement of the hose in the front bumper hose well.
WHEEL TRIM AND COVERS

TIRE PRESSURE INDICATOR

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

TIRE PRESSURE INDICATOR

There shall be a tire pressure indicator, p/n RWTG1235, installed on each trailer tire valve stem to indicate if there is insufficient pressure in the specific tire.
MUD FLAPS

REAR MUD FLAPS

A pair of black mud flaps shall be installed behind the rear wheels.
CREW CAB INTERIOR CABINETS

CUSTOM STORAGE BOX

There shall be a custom storage module on the engine tunnel. Dimensions shall be approximately: 30" Long X 24" Wide with a permanent divider at 12" from the front and the capability to add adjustable dividers. See Picture

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

The cabinet's interior shall have a natural finish.
CHASSIS AIR BRAKE SYSTEMS
TRACTOR 5TH WHEEL TRIM

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EQUIPMENT ENCLOSURE - TRACTOR

A full width equipment enclosure a minimum of 28" in length shall be installed to the rear of the cab and supported from the chassis frame rails. The overall height of the enclosure shall be determined by the equipment and other features being incorporated into the enclosure. The equipment enclosure's support structure shall be constructed from extruded aluminum profiles. The purpose of the enclosure is to house generators, oil reservoirs, air compressors or any other equipment requiring permanent installation on the chassis with limited access and provide some protection from road debris and weather elements similar to a pump compartment. Access panels shall be provided for equipment installed within the enclosure. These panels shall be held in place with threaded fasteners.

The front, rear, top and sides shall be overlayed with polished aluminum treadplate material.

TOOL COMPARTMENT - TRACTOR

Tractor Compartments

The following enclosed watertight compartments shall be provided. All dimensions reflected herein are approximations and compartments shall be as large as practicable.

One (1) compartment integrated on each right and left side of the water tank enclosure body directly above the running boards maximum width height and depth with [Double Pan, smooth alum, painted] vertically hinged door. The compartments shall extend inboard as deeply as practicable below the tank bottom. The exact size and location shall be approved by the District at the Pre-Construction.

The right side wall of the compartment facing the pump panel shall have two (2) cutouts provided for radio speakers. Size of the cutouts shall be confirmed at the preconstruction conference.

All pump enclosure and compartment body inner door panels shall be brushed aluminum.

TOOL COMPARTMENTS - TRACTOR

One (1) polished aluminum tread plate compartment on each right and left side of the apparatus, just aft of the pump enclosure body, directly above the running boards, with horizontally hinged dropdown polished aluminum tread plate doors. Left compartment to be 18" wide x 18" high x 14-3/4" deep and right compartment to be 18" wide x 18" high x 24" deep. The exact size and location to be approved by the District at the pre-construction conference.

Add: Retention Cable to keep compartments up when the door is open.

COMPARTMENT LIGHT

Two (2) LED light fixture shall be installed on the wall of the compartment. The light shall have a clear lens.

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

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COMPARTMENT LIGHTS

Two (2) 54" long OnScene Solutions Access LED light shall be installed on one side of the door opening and contain 36 LEDs producing approximately 180 lumens per light (six LEDs and 30 lumens every 9"). The light stick shall be rated at 100,000 hours of service and shall be provided with a 5 year free replacement warranty. The light shall have a 5/8" LEXAN™ polycarbonate tube enclosure for severe duty applications.

The light stick shall be waterproof and be connectible via a jumper wire to add additional lights in series if required.

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

WALKWAY - TRACTOR DRAWN AERIAL

1. Provide a tranverse hose bed as large as possible with an adjustable divider, shall be located in the upper section of the pump enclosure body, directly behind the water tank.
2. The minimum dimension of the bed shall be 18" wide x 15" high.
3. The interior surfaces of the hose beds and partitions shall be brushed aluminum or stainless steel. A 1" minimum diameter tubing reinforcement shall be welded to the top and outer ends of the partitions and outer walls. Radiused stainless steel lower scuff plates to be provided at each end of the hose beds.
4. Two (2) transversely hinged 3/16" polished aluminum tread plate covers, with a 90-degree bend on the rear edge, shall be installed over the hose beds with locking devices to secure the covers in both the opened and closed positions. The full width piano-type stainless steel hinges, with stainless steel pins, shall be mounted on the forward side of the compartment. Each cover shall support the weight of a fire fighter standing on it in the closed position. Provide mesh webbing with positive retention over side openings of hose beds to secure hose lays from sliding out. Final approval of system to be determined at pre-construction.
5. Provide easy access to the hose beds on each side of the apparatus. Folding access steps may be required. District to approve access and the possible mounting locations of folding steps.
6. The distance from the top of the running board to the top of the hose bed slats shall not exceed 46".

WALKWAY LIGHTS

Four (4) hooded LED step lights with clear lens shall be installed to illuminate the walkway and walkway access areas.

TRACTOR 5TH WHEEL OVERLAY

The tractor's fifth wheel area shall be overlayed with polished aluminum treadplate for a pleasing and finished appearance. The overlays shall enclose the top, sides and rear of the tractor's chassis frame rails and wide enough to conceal chassis components fastened outboard of the frame rails. The overlays shall extend from the top of the chassis frame down to the fifth wheel area running boards. The running boards shall be aligned vertically with the cab steps and trailer body rub rails when possible. The overlays shall help support the fenders and fifth wheel area running boards and be bolted in place with stainless steel fasteners. The stepping surfaces shall be in compliance to applicable sections of NFPA requirements.

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FENDER

For ease of accessibility and maintenance, a one-piece semi-circular polished aluminum treadplate fender shall be installed each side over the tractor's rear wheels. The fender shall be bolted in place with stainless fasteners and be a removable design to allow replacement in the event of damage. There shall be no visible bolt heads, retention nuts or fasteners on the exterior surface of the fender. The fender shall protect the 5th wheel area and trailer from road debris.

DRIVER SIDE RUNNING BOARD -- 5TH WHEEL

The tractor shall be equipped with a driver side running board. The running board will extend the full length of the tractor walkway to the forward edge of the tractor's rear fender. There shall be a small section installed from the rearward edge of the tractor's rear fender to the rear of the tractor's chassis frame overlay.

The running board shall be constructed of aluminum tread plate, bolted in place with stainless steel fasteners. The step surfaces shall be in compliance to applicable sections of NFPA requirements.

PASSENGER SIDE RUNNING BOARD -- 5TH WHEEL

The tractor shall be equipped with a passenger side running board. The running board will extend the full length of the tractor walkway to the forward edge of the tractor's rear fender. There shall be a small section installed from the rearward edge of the tractor's rear fender to the rear of the tractor's chassis frame overlay.

The running board shall be constructed of aluminum tread plate, bolted in place with stainless steel fasteners. The step surfaces shall be in compliance to applicable sections of NFPA requirements.

FENDERETTES

The rear wheel wells shall be radius cut for a streamlined appearance. A polished type 304 stainless steel radius fenderette shall be furnished at each rear wheel well opening, held in place with concealed stainless steel fasteners with nylon isolators to prevent contact of the fastener with the wheelwell housing panel. A black rubber gasket shall be installed between the stainless fenderette and the apparatus body sides. Silicone caulking does not meet the intent nor the technical requirement of a solid gasket material in this area and is not acceptable.

FUEL FILL DOOR

A Fire Shopp Inc. fuel fill access assembly shall be provided on the left side rear wheel well area. The assembly shall include a brushed stainless steel fuel fill enclosure door and a stainless steel pocket fuel assembly. A label indicating DIESEL FUEL ONLY shall be applied.

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FUEL FILL DOOR

A Fire Shopp Inc. fuel fill access assembly shall be provided on the right side rear wheel well area. The assembly shall include a brushed stainless steel fuel fill enclosure door and a stainless steel pocket fuel assembly. A label indicating DIESEL FUEL ONLY shall be applied.

MIDSHIP SPLIT-SHAFT PUMPS

WATEROUS S100C22 SINGLE STAGE PUMP

A Waterous model S100C22, single stage centrifugal pump shall be designed to mount on the chassis frame rails and shall be split-drive shaft driven. The pump casing shall be of high-tensile, close-grained ductile iron. Pump body shall be in a single impeller housing, for easy removal of impeller assembly including wear rings and bearings.

IMPELLER

A matched bronze impeller specifically designed for the fire service will be provided. It will be accurately balanced both mechanically and hydraulically, for vibration-free operation. Stainless steel heat-treated and precisely ground to size. It shall be supported by oil or grease lubricated ball bearings.

Replaceable wear rings, bronze, reverse-flow, labyrinth-type shall be provided. Deep groove ball bearings shall be located outside the pump to give rugged support and proper alignment to the impeller shaft. The bearings shall be oil or grease lubricated. All bearings shall be completely separated from the water being pumped.

PUMP TRANSMISSION

The housing shall be constructed of high tensile aluminum and be of three (3) piece, horizontally split design. The transmission driveline shafts shall be made from alloy steel forging, hardened and ground to size. The drive and driven sprockets shall be made of steel and shall be carbonized and hardened.

The drive chain shall be Morse HV involute form chain. The lubrication system shall be an impeller shaft driven oil pump to deliver oil to an integral spray header, to completely pressure lubricate the drive chain.

PUMP MOUNTING

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

DRIVE LINE

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

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2000 GPM FIRE PUMP SPECIFICATIONS

The centrifugal type fire pump shall be a Waterous model S100C22 midship mounted with a rated capacity of 2000 GPM. The pump shall meet NFPA 1901 requirements.

The pump shall be certified to meet the following deliveries:

2000 GPM @ 150 PSI

2000 GPM @ 165 PSI

1400 GPM @ 200 PSI

1000 GPM @ 250 PSI

LEFT SIDE -- 6" UNGATED INTAKE

One (1) 6" ungated 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.

A 6" chrome plated cap shall be provided. The threads shall be NST and the cap shall be equipped long handles.

RIGHT SIDE -- 6" UNGATED INTAKE

One (1) 6" ungated 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.

A 6" chrome plated cap shall be provided. The threads shall be NST and the cap shall be equipped long handles.

FIRE PUMP MECHANICAL SHAFT SEAL

The Waterous fire pump shall be equipped with self-adjusting, maintenance free, 'mechanical shaft seal' which is designed to be functional in the unlikely event of a seal failure.

IMPELLER HUBS

The Waterous fire pump impeller hubs shall be standard bronze type.

FIRE PUMP ANODE SYSTEM

Two (2) Waterous Fire Pump Anode(s) shall be installed to reduce corrosion. The anode shall be a bolt-in or screw-in type and easily replaceable. The anode is designed to sacrifice the zinc element to galvanic corrosion. Without this protection, galvanic corrosion may damage the iron pump body and fittings.

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PNEUMATIC PUMP SHIFT

The pump shift shall be air operated and shall incorporate an air cylinder with an actuating switch to shift from road to pump and back. The pump shift air valve shall be supplied with the pump by the pump manufacturer.

The pump shift switch shall be mounted in the cab and identified as "Pump Shift" and include instructions permanently inscribed on the pump shift switch plate. The In-Cab operating switch uses a spring loaded lock to prevent it from accidentally being moved.

- A "Pump Engaged" indicator shall be provided in the driving compartment to indicate that the pump shift has been successfully completed.
- An "Ok to Pump" indicator shall be provided in the driving compartment to indicate that the pump is engaged, the chassis transmission is in pump gear, and the parking brake is engaged.
- A "Throttle Ready" indicator shall be provided at the pump operator's panel that indicates that the apparatus is in "OK to Pump" mode or that the chassis transmission is in neutral and the parking brake is engaged.
- An interlock system shall be provided to prevent advancement of the engine speed at the pump operators panel unless the chassis transmission is in neutral and the parking brake is engaged, or the apparatus is in "OK to Pump" mode.
- Controls for the pump shift are to be in the cab, and easily accessible.

MANUAL OVERRIDE FIRE PUMP SHIFT

The Waterous fire pump shall be equipped with a manual pull type shift on the pump panel location, with will be in addition to the air operated pump shift system.

TRIDENT PRIMER - MANUAL

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.

PRIMER CONTROL

A manual push button shall be provided on the pump operator's panel, for the manually priming the main pump.

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PRESSURE GOVERNOR AND MONITORING DISPLAY

A Fire Research PumpBoss model PBA400-A00 pressure governor and monitoring display kit shall be provided on the pump panel. The kit shall include a control module, pressure sensor, and cables. The control module case shall be waterproof and have dimensions not to exceed 6 3/4" high by 4 5/8" wide by 1 3/4" deep. Inputs for monitored information shall be from a J1939 databus or independent sensors. Outputs for engine control shall be on the J1939 databus or engine specific wiring.

The following continuous displays shall be provided:

- CHECK ENGINE and STOP ENGINE warning LEDs
- Engine RPM; shown with four daylight bright LED digits more than 1/2" high
- Engine OIL PRESSURE; shown on an LED bar graph display in 10 psi increments
- Engine TEMPERATURE; shown on an LED bar graph display in 10 degree increments
- BATTERY VOLTAGE; shown on an LED bar graph display in 0.5 volt increments
- PSI / RPM setting; shown on a dot matrix message display
- PSI and RPM mode LEDs
- THROTTLE READY LED.

A dot-matrix message display shall show diagnostic and warning messages as they occur. It shall show monitored apparatus information, stored data, and program options when selected by the operator. The brightness of the displays shall be automatically adjusted for day or night viewing.

The program shall store the accumulated operating hours for the pump and engine, previous incident hours, and current incident hours in a non-volatile memory. Stored elapsed hours shall be displayed at the push of a button.

It shall monitor inputs and support audible and visual warning alarms for the following conditions:

- High Engine RPM
- Pump Overheat
- High Transmission Temperature
- Low Battery Voltage (Engine Off)
- Low Battery Voltage (Engine Running)
- High Battery Voltage
- Low Engine Oil Pressure
- High Engine Coolant Temperature

The governor shall operate in two control modes, pressure and RPM. No discharge pressure or engine RPM variation shall occur when switching between modes. A control knob that uses optical technology shall adjust pressure or RPM settings. It shall be 2" in diameter with no mechanical stops, a serrated grip, and have a red idle push button in the center.

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A throttle ready LED shall light when the interlock signal is recognized. The governor shall start in pressure mode and set the engine RPM to idle. In pressure mode the governor shall automatically regulate the discharge pressure at the level set by the operator. In RPM mode the governor shall maintain the engine RPM at the level set by the operator except in the event of a discharge pressure increase. The governor shall limit a discharge pressure increase in RPM mode to a maximum of 30 psi. Other safety features shall include recognition of no water conditions with an automatic programmed response and a push button to return the engine to idle.

ENGINE WATER TEMPERATURE AND OIL PRESSURE GAUGES

An engine coolant temperature gauge and an engine oil pressure gauge shall be provided to monitor engine conditions. A red flashing warning light and an audible alarm will be mounted on the pump instrument panel.

CHASSIS FUEL GAUGE

A fuel tank level gauge, part number 960536, shall be installed on the pump panel.

STAINLESS STEEL PUMP PLUMBING

APPROVED PUMP PANEL DRAWING

A pump panel drawing shall be provided for approval to the fire department prior to building the pump panel. The drawing will show the primary controls and gauges and not every switch or label.

Pump panel drawing shall be based on model of pump, manifolds, driveline angles, exhaust layout and other engineering concerns. The pump panel drawing is configured based on the pump and manifold design specified and in some cases changes to the lay out will be limited. Any changes made by the department are subject to engineering approval.

Delays in pump panel drawing approval may delay the completion of the apparatus.

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.

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.

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FIRE PUMP MASTER DRAIN

The fire pump plumbing system and fire pump shall be piped to a single push-pull type master pump drain assembly.

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.

STAINLESS STEEL INTAKE MANIFOLD

The suction manifold assembly shall be fabricated with Schedule #10 type 304 stainless steel. All threaded fittings shall be a minimum of Schedule 10 stainless steel. The suction manifold assembly shall have radiused sweep elbows to minimize water turbulence into the suction volute. The suction manifold shall be welded and pressure tested prior to installation. The stainless steel manifold assembly shall be attached to the pump intake volute with a heavy-duty, flexible Victaulic coupling.

The stainless steel manifold assembly shall have a ten (10) year warranty.

STAINLESS STEEL DISCHARGE MANIFOLD

The discharge manifold assembly shall be fabricated with minimum of Schedule #10 Type 304 stainless steel. All threaded fittings shall be a minimum of Schedule #40 stainless steel. The discharge manifold assembly shall have radiused sweep elbows to minimize water turbulence. The manifold shall be welded and pressure tested prior to installation. The stainless steel manifold inlet shall be attached to the pump discharge and have additional brackets as required to support the discharge manifold, valves and related components.

The stainless steel manifold assembly shall have a ten (10) year warranty.

PLUMBING SYSTEM

The plumbing system shall be unpainted.

HOSE THREADS

The hose threads shall be National Standard Thread (NST) on all base threads on the apparatus intakes and discharges.

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WATER TANK TO PUMP LINE

A 3" water tank to the rear mounted fire pump line shall be provided with a full flow quarter turn ball valve, 4" 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.

The tank to pump valve shall be controlled at the pump operator's panel.

The valve shall be an Akron 8000 Series three-inch (3") valve with a stainless ball.

An 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.

FIRE PUMP TO WATER TANK FILL LINE

A 1-1/2" 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 1-1/2" piping and flex hose to tank. The valve control handle shall have a nameplate located near the valve control.

The valve shall be an Akron 8000 Series one and one half-inch (1-1/2") valve with a stainless ball.

An 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.

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.

PUMP TESTING

UNDERWRITERS LABORATORIES CERTIFICATION

The pump shall undergo an Underwriters Laboratories Incorporated test per applicable sections of NFPA standards, prior to delivery of the completed apparatus.

The UL acceptance certificate shall be furnished with the apparatus on delivery.

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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.

PUMP INTAKE RELIEF AND COOLING

INTAKE RELIEF/DUMP VALVE

An 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.

FIRE PUMP COOLING

The fire pump shall be equipped with 3/8" cooling line from the pump to the water tank. This pump cooling re-circulation line shall be controlled at the pump panel by a quarter-turn in-line ball valve with mini-twist control handle. The control handle shall be labeled "PUMP COOLING". 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.

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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 operated quarter-turn in-line ball valve with mini-twist control handle mounted at the pump 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 unit shall be installed by the chassis manufacturer and connected to the plumbing system by the fire apparatus manufacturer.

The control shall be identified with a chrome bezel label assembly labeled, "AUXILIARY ENGINE COOLER".

BUMPER DISCHARGES

2" DISCHARGE FRONT CENTER BUMPER

A 2" discharge shall be installed at front center bumper area with chrome or stainless steel swivel outlet with 1-1/2" NST male threads. The valve control shall be on pump panel and a nameplate label provided at valve control area.

The plumbing shall be flexible hose with abrasion resistant support mountings. Auxiliary low point drains shall be provided on the discharge line.

A Class 1 automatic type 3/4" bleeder valve shall be installed.

The hose connection for the front discharge shall be a swivel type located above the front bumper deck level.

The specified valve shall be an Akron 8000 Series two-inch (2") valve with a stainless ball.

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.

One (1) 3-1/2" discharge Class 1 pressure gauge (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.

CROSSLAY DISCHARGES

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TWO (2) 2-1/2" CROSSLAY DISCHARGES

Two (2) pre-connect 2-1/2" hose crosslays shall be installed over the pump enclosure with quarter turn 2-1/2" diameter ball valves. The outlets shall be a 2-1/2" NPT female swivel x 2-1/2" male NST hose threads.

The hosebed decking shall be constructed with slots integrated into the hosebed floor. A divider shall be installed to separate the crosslay beds.

Each hose bed shall provide for a minimum capacity of 150 feet of 2-1/2" diameter double jacket hose with the hose and nozzle provided by the fire department.

An Innovative Controls 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.

The specified valve shall be an Akron 8000 Series two and one half-inch (2-1/2") valve with a stainless ball.

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.

Two (2) 2-1/2" IC 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.

CROSSLAY COVER

A diamond plate hinged forward cover shall be provided for the crosslay compartment with a hold open device. A net shall be provided to secure the crosslays on each side.

Black cargo webbing shall terminate in the bottom of each crosslay hosebed, covering the ends of the 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.

CROSSLAY HOSEBEDS

Crosslay hosebed(s) shall be mounted over the upper pump panel or gauge panel in the upper portion of the pump enclosure. The crosslay hosebed shall be approximately 12" from the top of the pump enclosure.

LEFT SIDE DISCHARGES

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LEFT SIDE PUMP PANEL -- 2-1/2" DISCHARGE

One (1) 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.

An Innovative Controls 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.

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.

One (1) 2-1/2" NST rocker lug chrome plated vented cap and cable or chain securement shall be provided.

The specified valve shall be an Akron 8000 Series two and one half-inch (2-1/2") valve with a stainless ball.

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.

One (1) 2-1/2" IC 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.

RIGHT SIDE DISCHARGES

RIGHT SIDE PUMP PANEL -- 3" x 4" DISCHARGE

One (1) 3" discharge shall be installed on the right side pump panel area and shall be controlled by a full flow 3" slow-close quarter turn ball valve. The discharge shall have 4" NST male hose threads. A color coded nameplate label shall be provided adjacent the control handle.

An Innovative Controls 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.

One (1) lightweight aluminum elbow with 30 degree slant shall be provided. Threads shall be 5" Storz with lugs and manual locks x 4" female swivel NST with rocker lugs.

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One (1) 5" lightweight aluminum Storz cap with cable or chain securement shall be provided.

The specified valve shall be an Akron 8000 Series three-inch (3") valve with a stainless ball.

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 type name plate.

One (1) 2-1/2" IC 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.

== EXT Aerial - Side Mount Pump Cmnt - 6022.021 06/02/21 ==

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.

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 width "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 inline 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.

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CROSSLAY INSTALLATION

The dunnage area atop the pump enclosure shall be notched for the installation of a crosslay hose bed. 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.

SIDE MOUNT PUMP ENCLOSURE OPTIONS

OPEN DUNNAGE COMPARTMENT -- OVER PUMP ENCLOSURE

An 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.

PUMP ENCLOSURE STEPS AND RUNNING BOARDS

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.

PUMP SLIDE OUT STEP -- LEFT SIDE

A slide out step assembly shall be installed on the left side pump panel using roller bearing slide tracks. The step shall be fabricated of slip resistant NFPA compliant grating, and shall extend out approximately 24" and lock in both the in and out positions.

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.

PUMP SLIDE OUT STEP -- RIGHT SIDE

A slide out step assembly shall be installed on the right side pump panel using roller bearing slide tracks. The step shall be fabricated of slip resistant NFPA compliant grating, and shall extend out approximately 24" and lock in both the in and out positions.

PUMP ENCLOSURE ACCESS DOORS OR PANELS

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GAUGE PANEL -- LEFT SIDE UPPER

A gauge panel shall be provided on the upper left side of the side mount pump enclosure. The gauge panel shall be constructed of 14 gauge #304 brushed stainless steel and hinged. The gauge panel shall be held in the closed position with push button type latches.

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 door shall be constructed of 14 gauge #304 brushed stainless steel with push button type latches.

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 stainless steel bolts and nut-serts. (no sheet metal screws)

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 stainless steel bolts and nut-serts. (no sheet metal screws)

PUMP PANEL SURFACE -- MIDSHIP AND PTO

PUMP PANELS -- SIDE MOUNT

The pump operator's panel, along with the lower left hand and right hand pump panels shall be constructed of 14 gauge #304 brushed stainless steel.

LEFT SIDE PUMP PANEL -- BOLTED

The pump panel installed on the left hand side of the pump enclosure shall be fastened to the pump enclosure with 1/4" stainless steel bolts.

The left hand side lower pump panel shall be recessed when using externally mounted intake valves.

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.

The right hand side lower pump panel shall be recessed when using externally mounted intake valves.

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PUMP PANEL STAINLESS STEEL TRIM PANELS

Brushed stainless steel intake and discharge trim rings shall be installed to the apparatus with mounting bolts. Separate identification tags with chrome plated bezels will be used to identify intake and discharge ports with color and verbiage. The identification tags are designed and manufactured to withstand the environment and shall be backed by a warranty equal to that of the exterior paint and finish. All labels shall be backed with 3M permanent adhesive (200MP), which meets UL969 and NFPA standards.

PUMP PANEL LABELING

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.

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.

All labels, instruction panels and warnings shall be installed on the pump panel for safe operation of the pumping equipment and controls using Innovative Controls labels and bezel assemblies. These bezel assemblies will be used to identify intake and discharge controls with color and verbiage. The label and bezel assemblies 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

LIGHTING OF PUMP PANEL AND ENCLOSURE

MIDSHIP PUMP PANEL LIGHTS -- LEFT SIDE

Three (3) Grote #01-61F8-70 low profile 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.

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MIDSHIP PUMP PANEL LIGHTS -- RIGHT SIDE

Three (3) Grote #01-61F8-70 low profile 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.

PUMP ENGAGED LIGHT

One (1) green pump panel light shall be illuminated at the panel when the fire pump is engaged for operation.
MASTER PRESSURE GAUGES

MASTER DISCHARGE AND INTAKE GAUGES

Two (2) 4-1/2" diameter Class 1 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 be fully filled with pulse and vibration dampening interlube to lubricate the internal mechanisms. This shall prevent lens condensation and will insure proper operation to minus 40 degrees F. The case shall be temperature compensated with an internal breathing diaphragm to permit filled cases and to allow a rigid lens with a distortion free viewing area. To prevent internal freezing and to keep contaminants from entering the gauge, the stem and Bourdon tube shall be filled with low temperature material and be sealed from the water system using an isolation Sub-Z diaphragm located in the stem. A bright metal bezel shall be supplied for resistance to corrosion and to protect the lens and case from damage.

TEST TAPS

Test taps for pump intake and pump pressure shall be provided on the pump instrument panel and be properly labeled.

WATER TANK GAUGES

WATER TANK GAUGE

A Fire Research TankVision Pro model WLA300-A00 tank indicator kit shall be installed on the pump panel. The kit shall include an electronic indicator module, a pressure sensor, and a 10' sensor cable. The indicator shall show the volume of water in the tank on nine (9) easy to see super bright RGB LEDs. A wide view lens over the LEDs shall provide for a viewing angle of 180 degrees. The indicator case shall be waterproof, manufactured of Polycarbonate/Nylon material, and have a distinctive blue label.

The program features shall be accessed from the front of the indicator module. The program shall support self-diagnostics capabilities, self-calibration, six (6) programmable colored light patterns to display tank volume, adjustable brightness control levels and a datalink to connect remote indicators. Low water warnings shall include flashing LEDs at 1/4 tank, down chasing LEDs when the tank is almost empty, and an output for an audio alarm.

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The indicator shall receive an input signal from an electronic pressure sensor. The sensor shall be mounted from the outside of the water tank near the bottom. No probe shall place on the interior of the tank. Wiring shall be weather resistant and have automotive type plug-in connectors.

AIR EQUIPMENT FOR PUMP PANEL

AIR HORN PUSH-BUTTON

A push button with a label shall be installed on the pump instrument panel to operate the air horns.

PUMP PANEL RADIO EQUIPMENT
PUMP PANEL HANDRAILS

HANDRAIL SIDE PUMP PANEL

Two (2) extruded aluminum non-slip handrails, approximately 12" in length, shall be provided and vertically mounted, one (1) each side on the side pump panel.

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.

CHASSIS REQUIREMENTS FOR AERIAL APPARATUS

The following items shall be included with the chassis to operate the aerial device:

- Truck chassis with a selectable high idle system. High idle to be set at 1,200 rpm
- A red warning light installed in the driving compartment and visible to the driver to indicate if any outrigger is not in the stowed position.
- There shall be a (hot shift) PTO system mounted to the chassis transmission. The PTO assembly shall supply power to the hydraulic pump for all aerial operations. Electrical safety wiring shall be installed that requires the transmission be in neutral, or the fire pump engaged, and the parking brake set before the PTO will operate.
- A PTO engaged indicator light shall be installed in the cab of the apparatus.

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BODY BUILDER REQUIREMENTS FOR AERIAL APPARATUS

The following items shall be installed by the body builder for the aerial device:

- Outrigger plates shall be installed on heavy aluminum brackets and installed adjacent to each outrigger.
- A preset relief valve capable of protecting the waterway system by relieving pressure through the dumping of water to the environment. Relief valve shall be plumbed to dump excess water below chassis frame. (N/A if the rear connection is an inlet only)
- A 1-1/2-inch minimum drain valve shall be installed at the low point of the waterway inlet system. Handle to operate drain valve shall be extended to rear of body.
- Reflective striping shall be installed on all stabilizers that protrude beyond the body of the apparatus.
- Warning signs for the aerial and outriggers shall be installed to meet the aerial manufacturer recommendations.

The following items are not required with the Smart Aerial application:

- A leveling bubble shall be installed on the rear of the truck, for side to side leveling.
- A leveling bubble shall be installed at the pump operator's panel, for front to rear leveling.
- There shall be a ladder alignment indicator provided on the turntable to indicate when the ladder is aligned with the travel support and may be lowered into it.

OUTRIGGER PAD STORAGE

Two (2) aluminum outrigger pad storage brackets capable of holding one (1) outrigger pad each shall be installed. There shall be one storage bracket located adjacent to each outrigger in an easily accessible location.

SAFETY HARNESS

All NFPA required life safety harnesses shall be provided and mounted by the Customer before the apparatus is placed into service.

3-AXLE COMBINATION VEHICLE ALIGNMENT

A 3-axle alignment for a combination vehicle shall be performed upon completion of the apparatus final assembly process and prior to final delivery to the customer or end user.

WATER TANKS

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WATER TANK - 300 GALLON

The apparatus shall be equipped with a three-hundred (300) gallon polypropylene water tank. The tank shall be equipped with a four-inch (4") overflow pipe.

The apparatus shall be equipped with a polypropylene water tank. The tank body and end bulkheads shall be constructed of .75" thick, polypropylene, nitrogen-welded and tested inside and out. Tank construction shall conform to applicable NFPA standards. The tank shall carry a lifetime warranty.

The transverse and longitudinal .375" thick swash partitions shall be interlocked and welded to each other as well as to the walls of the tank. The partitions shall be designed and equipped with vent holes to permit air and liquid movement between compartments.

The .5" thick cover shall be recessed .375" from the top of the side walls. 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. In cases where overall height of the tank exceeds 40 inches, cross member spacing must be decreased to allow for not more than 400 square inches of unsupported area.

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.

A picture frame type cradle mount with a minimum of 2" x 2" x 1/4" mild steel, stainless steel, or aluminum angle shall be provided or the use of corner angles having a minimum dimension of 4" x 4" x 1/4" by 6" high are permitted for the purpose of capturing the tank.

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Although the tank is designed on a free floating suspension principle, it is required that the tank 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. These stops can be constructed of steel, stainless steel or aluminum angle having minimum dimensions of 3" x 3" x 1/4" and shall be approximately 6" to 12" long. These brackets must incorporate rubber isolating pads with a minimum thickness of 1/4" inch and a hardness of 60 durometer affixed on the underside of the angle. The angle should then be bolted to the body side walls of the vehicle while extending down to rest on the top outside edge of the upper side wall 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. Other equipment such as generators, portable pumps, etc. must not be mounted directly to the tank top unless provisions have been designed into the tank for that purpose. The tank shall be completely removable without disturbing or dismantling the apparatus structure.

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 fill tower shall be blue in color. The foam tank fill towers, if applicable, shall be yellow for foam A and green for foam B and black for any additional foam 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.

The tank shall be manufactured by United Plastic Fabricating (UPF).

WATER TANK FILL TOWER

A fill tower measuring approximately 10" x 10" square shall be provided on the water tank.

Tank suction shall be located in a sump assembly located below the bottom of the tank, properly baffled to prevent surging of water. A 3" cleanout plug shall be provided in the bottom of the tank sump.

TRACTOR DRAWN AERIAL TILLER BODY

A tractor drawn aerial tiller body shall be provided and constructed as follows:

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HEAVY DUTY EXTRUDED ALUMINUM BODY

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

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

The aluminum extrusion alloy shall be 6061 with a temper rating of T6, and have a tensile strength of 45,000 PSI and yield strength of 40,000 pounds.

The smooth aluminum sheet material alloy shall be 5052 with a temper rating of H32, and have a tensile strength of 33,000 PSI and yield strength of 28,000 pounds.

The aluminum treadplate alloy shall be 3003 with a temper rating of H22, and have a tensile strength of 30,000 PSI and yield strength of 28,000 pounds.

All extrusions utilized in the body superstructure, substructure and framing shall be 6061-T6 alloy aluminum. All extrusions shall be beveled at each joint and all seams shall be electrically seam welded using #5356 alloy aluminum wire. For strength and rigidity, all aluminum sheets utilized in the apparatus body for structural support shall be a minimum of **3/16"** 5052-H32 alloy aluminum sheet.

FASTENERS

All fasteners use in the apparatus body shall be attached with Ny-Lok type fasteners.

All aluminum and stainless steel components shall be attached using stainless steel fasteners. Zinc or cadmium plated fasteners are not acceptable for use with any aluminum or stainless steel components on the vehicle.

Compartment door hinges, handrails and running boards shall be attached using a minimum of 1/4" diameter machine bolt fasteners. Fasteners used in nonstructural areas such as; door handles, trim moldings, gauge mounting, etc shall be 3/16" in diameter.

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BODY SUPERSTRUCTURE CONSTRUCTION

All vertical and horizontal structural members of the outer apparatus body shall be constructed of no less than 4.00" by 12.00", 6061-T6 aluminum extrusions with a minimum .200" wall thickness fully welded together forming a unitized support system for the body and compartments. In order to provide a complete internal and integrated body super-structure, full height extruded structural members shall be provided at each corner of the apparatus and between each exterior equipment compartment.

Bidder is to provide with their bid proposal illustrations and drawings of the body structure to show compliance with this requirement.

EXTERIOR COMPARTMENT CONSTRUCTION

Compartment sides and walls shall be welded to the super-structure. Seams shall be sealed using an engineered grade polyurethane adhesive-sealant.

The compartments shall be designed to provide protected raceways for vertically hinged door fastener retention elements. This requirement shall eliminate the possibility of door hinge hardware from being damaged by or damaging equipment stored in the compartments.

Full height access panels fastened with stainless steel fasteners shall be provided to access all wiring routed through vertical super-structure extrusions. There shall be no exposed wiring allowed within the compartment interiors.

Compartment flooring shall be constructed of a combination aluminum extrusion and smooth aluminum welded in place to the extruded aluminum framework creating a double compartment floor for added strength.

ROOF CONSTRUCTION

The roof of the rescue body shall be covered with polished aluminum diamond plate. The body shall be designed to support a distributed load of two hundred pounds per square foot.

SHELVING TRACKS

The vertical extrusions forming the framework of the side exterior compartmentation shall be designed to incorporate FULLY RECESSED adjustable shelving standards. Shelving tracks shall run full height of **ALL** side exterior equipment compartment.

The intent of this requirement is to allow full use of the available storage areas without the interference of shelving tracks extending into and reducing the interior widths of the compartments which will allow equipment to be stored within the full width of the compartment interiors.

Shelving, when specified, shall have a width of no less than .50" of the overall compartment width.

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ELECTROLYSIS CORROSION CONTROL

The apparatus shall be assembled using ECK or electrolysis corrosion control, on all high corrosion potential areas, such as door latches, door hinges, trim plates, fenderettes, etc. This coating is a high zinc compound that shall act as a sacrificial barrier to prevent electrolysis and corrosion between dissimilar metals. This shall be in addition to any other barrier material that may be used.

All 1/4" diameter and smaller screws and bolts shall be stainless steel.

Due to the expected life of the vehicle, proposals will only be acceptable from manufacturers that include these corrosion features.

ALUMINUM SUB-FRAME

The surface of the trailer drawn aerial frame rails shall be isolated from the apparatus body substructure by an elastomeric isolator.

The main body crossmembers shall be fully welded to the longitudinal extrusions which cap the trailer drawn aerial frame and routed through and fully welded to the vertical and horizontal extrusions forming the body super-structure. The intermediate structural "I" beam crossmembers shall be interconnected to the main body tubular crossmembers by the longitudinal extrusions forming a fully welded support grid for the body super-structure and compartments.

Two (2) 6061-T6 aluminum longitudinal extrusions shall be provided, one (1) on each trailer frame rail running beneath the forward body module. A minimum .50" extruded wall thickness shall be provided on the top flange of the trailer frame rail. Each extrusion shall be designed to cover the complete top flange and outside radius of the chassis frame rail extending down the outside web of the frame rail a minimum of 1.25" to prevent side to side shifting of the apparatus body. The forward body module sub-frame shall be constructed of not less than five (5) 4.00" by 2.50" tubular, 6061-T6 aluminum, "Twin I" beams with a .375" vertical main body crossmembers. One (1) shall be provided at the front of the module, one (1) between each body compartment and one (1) at the rear of the module forming the main support crossmembers for this module. For added strength and rigidity, intermediate body crossmembers constructed of solid aluminum structural "I" beams 4.00" high by 3.00" wide with a minimum .29" flange thickness shall be provided between the main body crossmembers with a maximum distance of 20" centerline to centerline.

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Two (2) 6061-T6 aluminum longitudinal extrusions shall be provided, one (1) on each trailer frame rail running beneath the rear body module. A minimum .50" extruded wall thickness shall be provided on the top flange of the trailer frame rail. Each extrusion shall be designed to cover the complete top flange and outside radius of the chassis frame rail extending down the outside web of the frame rail a minimum of 1.25" to prevent side to side shifting of the apparatus body. The rear body module sub-frame shall be constructed of not less than four (4) 4.00" by 2.50" tubular, 6061-T6 aluminum, "Twin I" beams with a .375" vertical main body crossmembers. One (1) shall be provided at the front of the module, one (1) between each body compartment and one (1) at the rear of the module forming the main support crossmembers for this module. For added strength and rigidity, intermediate body crossmembers constructed of solid aluminum structural "I" beams 4.00" high by 3.00" wide with a minimum .29" flange thickness shall be provided between the main body crossmembers with a maximum distance of 20" centerline to centerline.

A minimum of four (4) mounting points shall be provided to secure each body module sub-structure to the trailer frame. The forward two (2) mounting points shall be shock absorbing spring tension type to allow for flexing without placing stress on the apparatus body or trailer frame rails.

WHEEL WELL PANEL AND LINER

For ease of accessibility and maintenance, wheel well panels shall be double break formed painted smooth aluminum plate that is fully gasketed and bolted in place with stainless fasteners. Wheel wells shall be of the removable design so as to provide replacement in the event of damage. There shall be no visible bolt heads, retention nuts or fasteners on the exterior surface of the panel. Wheelwell panel shall be isolated from the apparatus body utilizing .25" nylon spacer blocks.

To fully protect the wheel well area from road debris and to aid in cleaning, a full depth (minimum of 24.00") radius wheel well liner constructed of exterior grade .25" black polyethylene sheet shall be provided. For ease of removal, the liner shall be held in place by a self-captive retention design. Due to possible corrosion and contamination by road debris in the wheel well area a minimal number of mechanical fasteners shall be used to secure the wheel well liner at the front and rear edges.

FENDERETTES

The rear wheel wells shall be radius cut for a streamlined appearance. A polished type 304 stainless steel radius fenderette shall be furnished at each rear wheel well opening, held in place with concealed stainless steel fasteners with nylon isolators to prevent contact of the fastener with the wheelwell housing panel. A black rubber gasket shall be installed between the stainless fenderette and the apparatus body sides. Silicone caulking does not meet the intent nor the technical requirement of a solid gasket material in this area and is not acceptable.

OUTRIGGER BODY PANELS

Body panels shall be installed at each outrigger to provide a clean, finished look to the outrigger cavity. Outrigger panels shall be double break formed painted smooth aluminum plate that is fully gasketed and bolted in place with stainless fasteners.

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OUTRIGGER COVERS

Polished stainless steel covers shall be attached to the extending outrigger assemblies.

TDA (TILLER) HOSEBEDS - CHUTE DESIGN - EXT

AERIAL HOSEBED CHUTE

The main apparatus hosebed shall run from the rear of the body to the forward bulkhead of the compartment located directly ahead of the tiller body's wheels. The width of the hosebed will be dependent on the depth of the body side upper storage area. The side of the rear center ladder storage and the back of the body side upper storage area shall form a hose chute for hose payout.

There shall be one (1) hosebed chute, located on the left (driver's) side of the ladder storage. The hosebed chute shall be equipped with a hinged diamond plate cover allowing safe access to the tiller cab.

The aerial hosebed body is to be properly reinforced without the use of angles or structural shapes, and free from all projections which might injure the fire hose. To maintain strength and rigidity, the main hose body shall be framed with a minimum of 2.00" X 3.00" 6061-T6 alloy aluminum extrusions with a .281 nominal wall thickness. The hose body extrusions shall be welded to the super-structure framework, becoming an integral portion of a complete unitized support system. Sheet metal or sheet aluminum with double or triple formed breaks, does not meet the technical requirement of the specification in providing a complete hosebody framework and are not acceptable. Sides shall be constructed of aluminum sheet welded to the framework. There shall be no visible welds on the exterior of the hose bed side sheets.

ALUMINUM HOSEBED GRATING

The hose bed compartment deck shall be constructed entirely from maintenance-free, extruded aluminum slats. The slats shall have an anodized, radiused ribbed top surface. The slats shall be of widths approximately 3/4" high x 6" wide, space 1/2" apart 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 hose bed shall be designed to have storage capacity for 5" LDH Single Jacket rubber fire.

Four (4) one-hundred foot lengths of hose shall be supplied.

ALUMINUM HOSEBED COVER

The hosebed shall be equipped with a reinforced hinged .125" aluminum diamond plate cover. The walking surface on the cover shall be a NFPA #1901 compliant surface. Positive hold-open devices shall be provided to hold the door in the open position.

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REAR VINYL FLAPS FOR ALUMINUM COVER

There shall be a vinyl flaps attached to each aluminum hosebed cover. The vinyl flaps shall cover the area on the rear of the hosebed from top to bottom. The flaps shall be independent of each other but attachable with velcro in the center. The bottom edge of the flap shall be secured utilizing a hook and loop fastening system.

The vinyl cover shall be black in color.

HOSEBED LIGHTS

Two (2) lights shall be recessed into the underside of the hinged aluminum hosebed covers to provide illumination for repacking of fire hose. The 12 volt lights shall be automatically controlled by a switch which activates upon opening of the door.

AERIAL BODY CONFIGURATION - TDA (TILLER)

HINGED COMPARTMENT DOOR CONSTRUCTION

Any compartment calling for a hinged door shall be supplied with a flush style door, so that all hinged compartment doors shall be of the overlapping style so that the entire door fits flush against the apparatus body sides. Doors shall be designed, in the closed position, to have the painted edges protected from damage on the tops by forming the treadplate compartment tops into an extended drip edge, on the bottoms by the rub rail and on the front and rear by extending the front and rear vertical scuff plates into protective edges. There shall be no visible painted door edge surfaces when the doors are in the closed position. Doors shall not extend into the compartments thereby reducing the usable compartment depths.

Doors shall be a minimum 2" thick, fabricated of a minimum of 1/8" smooth aluminum. Full panel inner compartment door liners shall be provided and constructed from smooth aluminum. Exterior door panels shall be smooth with no welds visible on the exterior skin. Double door compartments shall not require nor be equipped with a secondary latch to hold the same in position.

All compartment door hinges shall be full length piano type constructed of a minimum 14 gauge type 304 stainless steel with 1/4" stainless steel hinge pin with dual directional bolt holes for ease of adjustment. Door hinges shall be fully recessed and protected from the environment by the door gasket. The door hinges shall not be visible from the outside of the body when the doors are in the closed position.

Striker plates shall be a minimum of 12 gauge stainless steel and posts shall be positioned so they do not interfere with the clear door openings by pointing down. Door retention studs or posts on striker plates that extend into the clear door frame opening do not meet the technical intent of these specifications and are not acceptable. Door hinges and striker plates shall be attached with minimum 5/16" stainless steel nuts and bolts.

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On vertically hinged double door compartments, the secondary door shall have a nylon door holders, top and bottom of the interior of the door to hold the door in place when closed. When specified, horizontally hinged lift-up doors shall be equipped with heavy-duty gas filled dampeners to hold the doors in the open position. All other hinged doors shall be equipped with spring loaded hold open devices specifically designed for use on vertically hinged doors. Door holders shall be bolted in position. The door ajar switches shall be fully enclosed within structural members and shall not extend into the clear door opening.

All hinged compartment doors shall be provided with hollow core weather stripping to provide a weather tight seal at the door opening and to prevent road spray and debris from entering the compartment.

Hinge door openings shall match the compartment sizes. No exception.

EXTERIOR DOOR HANDLES

All hinged compartment doors shall be furnished with a large Hanson Model #102 solid STAINLESS STEEL spring loaded D-handle with slam type latches. D-handles shall have the large style "bent" D-ring for ease of grabbing the handle even when wearing mitts or gloves. Chrome plated standard steel D-handles are not acceptable.

Door handles shall be held in place with four stainless steel stud fasteners secured on the interior of the door skin to eliminate bolt heads on the exterior latch ring. To prevent possible interaction between dissimilar metals, the studs shall not break any painted surface. A non-moisture absorbing gasket shall be installed between the door latch and the door skin panel.

Handles which are held in place with visible fasteners, two sided tape or glue do not meet the intent of this requirement.

BODY DIMENSIONS

The aluminum tiller trailer body shall be approximately thirty-two feet (32') long.

The forward body module body side height shall be 69" from the top of the rub rail to the top of the body. The rearward body module body side height shall be 51" from the top of the rub rail to the top of the body.

BODY DIMENSIONS

The overall width of the tiller trailer body shall not exceed 100". The overall width across the rub rails shall be 101".

LEFT SIDE COMPARTMENTS

There shall be one (1) compartments located on the driver's side of the tiller trailer. The compartments shall be as follows:

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LEFT FRONT COMPARTMENT - ABOVE FRONT OUTRIGGER

There shall be one (1) compartment located above the front outrigger. The compartment shall be equipped with a single horizontal hinged lift up door.

The compartment shall be 25" high and equipped with a 25" high clear door opening.

A removable louvered vent shall be provided in the compartment.

COMPARTMENT LIGHTING

The compartment shall be provided with Rosenbauer InVisiLight LED Compartment lighting. The lighting shall be installed in the adjustable shelving track which shall be recessed into the side wall of the compartment. The lighting shall provide a continuous illumination from the compartment bottom to top and side to side while still allowing for full adjustment of any compartment provision (shelf/tray/etc.). To prevent damage, lights that protrude into the compartment in any fashion shall be deemed unacceptable.

The lights shall be installed in the shelving tracks; two (2) lights 17" in length shall be installed, one on each side of the compartment. The lights shall produce approximately 17 lumens per inch of lighting.

The lights shall be provided with a 5-Year warranty.

An additional InVisiLight up to 17" in length shall be installed in the recessed track in the ceiling.

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

LEFT FRONT COMPARTMENT - FRONT OF BODY

There shall be one (1) full height compartment located at the front of the body 35" wide with a 35" wide clear door opening. The compartment shall be equipped with a full height double hinged doors.

The compartment shall be 53" high and equipped with a 53" high clear door opening.

A removable louvered vent shall be provided in the compartment.

ADJUSTABLE SHELF

One (1) compartment shelf(ves) shall be provided and constructed of .190" smooth aluminum, and are to have formed upward breaks on front and rear for added strength. Shelf(s) shall be fully adjustable within the compartments. Lighter gauge shelf materials are not acceptable.

Shelf(ves) shall extend full width of the compartments, within .50" of the overall width, and adjust up and down in the integral shelf tracks.

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MOBILE STORAGE SYSTEM

{Quantity} mobile storage system shall be installed in the specified compartment. The assembly shall be constructed of aluminum. All drawers shall have 250 lb. slides and one-handed operation. The latching hardware shall be concealed for protection. The assembly shall have a useable top tray with telescoping ends to aid in installation. Drawer fronts shall be powder coated red with black handles. Rubber liners shall be included in each drawer.

The assembly shall be 26" wide with the following drawers provided in order from top to bottom:

One (1) eight inch (8") high drawer(s).

One (1) ten inch (10") high drawer(s).

One (1) ten inch (10") high drawer(s).

One (1) ten inch (10") high drawer(s).

COMPARTMENT LIGHTING

The compartment shall be provided with Rosenbauer InVisiLight LED Compartment lighting. The lighting shall be installed in the adjustable shelving track which shall be recessed into the side wall of the compartment. The lighting shall provide a continuous illumination from the compartment bottom to top and side to side while still allowing for full adjustment of any compartment provision (shelf/tray/etc.). To prevent damage, lights that protrude into the compartment in any fashion shall be deemed unacceptable.

The lights shall be installed in the shelving tracks; two (2) lights 45" in length shall be installed, one on each side of the compartment. The lights shall produce approximately 17 lumens per inch of lighting.

The lights shall be provided with a 5-Year warranty.

An additional InVisiLight up to 17" in length shall be installed in the recessed track in the ceiling.

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

LEFT FRONT COMPARTMENT - FORWARD CENTER

There shall be one (1) full height forward center compartment located behind the front of body compartment. The compartment shall be 55" wide with a 55" wide clear door opening. The compartment shall be equipped with a full height hinged double door.

The compartment shall be 53" high and equipped with a 53" high clear door opening.

A removable louvered vent shall be provided in the compartment.

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ADJUSTABLE SHELF

One (1) compartment shelf(ves) shall be provided and constructed of .190" smooth aluminum, and are to have formed upward breaks on front and rear for added strength. Shelve(s) shall be fully adjustable within the compartments. Lighter gauge shelf materials are not acceptable.

Shelf(ves) shall extend full width of the compartments, within .50" of the overall width, and adjust up and down in the integral shelf tracks.

ROLL-OUT ALUMINUM TOOL BOARD

Two (2) roll-out tool board panel shall be mounted vertically within compartment. The panel and tracks shall be rated to a maximum load of 500 lb. Panel shall be formed of .188" smooth aluminum with an opening to accommodate a gloved-hand to slide tool board.

The tool board shall slide out to full extension of the compartment, with a device to hold tool board in both fully-extended and stored positions.

REFLECTIVE STRIPE

The outer edge and both sides of the shelf, slide-out tray, pull-out tool board, swing-out tool board, or pull-out and down tray shall have alternating red and white reflective DOT striping applied for safety.

COMPARTMENT LIGHTING

The compartment shall be provided with Rosenbauer InVisiLight LED Compartment lighting. The lighting shall be installed in the adjustable shelving track which shall be recessed into the side wall of the compartment. The lighting shall provide a continuous illumination from the compartment bottom to top and side to side while still allowing for full adjustment of any compartment provision (shelf/tray/etc.). To prevent damage, lights that protrude into the compartment in any fashion shall be deemed unacceptable.

The lights shall be installed in the shelving tracks; two (2) lights 45" in length shall be installed, one on each side of the compartment. The lights shall produce approximately 17 lumens per inch of lighting.

The lights shall be provided with a 5-Year warranty.

An additional InVisiLight 34" in length shall be installed in the recessed track in the ceiling.

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

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LEFT FRONT COMPARTMENT - REARWARD CENTER

There shall be one (1) full height rearward center compartment located behind the forward center body compartment. The compartment shall be 45" wide with a 45" wide clear door opening. The compartment shall be equipped with a full height hinged double door.

The compartment shall be 53" high and equipped with a 53" high clear door opening.

A removable louvered vent shall be provided in the compartment.

ADJUSTABLE SHELF

One (1) compartment shelf(ves) shall be provided and constructed of .190" smooth aluminum, and are to have formed upward breaks on front and rear for added strength. Shelf(s) shall be fully adjustable within the compartments. Lighter gauge shelf materials are not acceptable.

Shelf(ves) shall extend full width of the compartments, within .50" of the overall width, and adjust up and down in the integral shelf tracks.

1000# ROLLOUT TRAY

One (1) SlideMaster SM3-SP Series mid profile telescoping equipment tray(s) shall be installed that is(are) approximately half the depth of the body width. The tray assembly shall have a silver powder coated steel slide frame with sealed roller bearings rated to 1,000 pounds. A tray constructed of .190" smooth aluminum plate with four 3" sides shall be mounted to the slide frame. The slide frame shall extend 100% allowing the tray to be completely accessible from outside the compartment. The slide shall have a 3-7/8" deck height.

An integrated manual quarter turn "gravity" lock shall hold tray in both the "in" and "out" positions. The "gravity lock" manually rotates a rod with a tab to engage the bottom frame.

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REFLECTIVE STRIPE

The outer edge and both sides of the shelf, slide-out tray, pull-out tool board, swing-out tool board, or pull-out and down tray shall have alternating red and white reflective DOT striping applied for safety.

COMPARTMENT LIGHTING

The compartment shall be provided with Rosenbauer InVisiLight LED Compartment lighting. The lighting shall be installed in the adjustable shelving track which shall be recessed into the side wall of the compartment. The lighting shall provide a continuous illumination from the compartment bottom to top and side to side while still allowing for full adjustment of any compartment provision (shelf/tray/etc.). To prevent damage, lights that protrude into the compartment in any fashion shall be deemed unacceptable.

The lights shall be installed in the shelving tracks; two (2) lights 45" in length shall be installed, one on each side of the compartment. The lights shall produce approximately 17 lumens per inch of lighting.

The lights shall be provided with a 5-Year warranty.

An additional InVisiLight 28" in length shall be installed in the recessed track in the ceiling.

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

LEFT FRONT COMPARTMENT - AHEAD OF REAR WHEELS

There shall be one (1) full height compartment located ahead of the rear wheels 44" wide with a 44" wide clear door opening. The compartment shall be equipped with a full height double hinged doors.

The compartment shall be 53" high and equipped with a 53" high clear door opening.

A removable louvered vent shall be provided in the compartment.

ADJUSTABLE SHELF

One (1) compartment shelf(ves) shall be provided and constructed of .190" smooth aluminum, and are to have formed upward breaks on front and rear for added strength. Shelve(s) shall be fully adjustable within the compartments. Lighter gauge shelf materials are not acceptable.

Shelf(ves) shall extend full width of the compartments, within .50" of the overall width, and adjust up and down in the integral shelf tracks.

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1000# ROLLOUT TRAY

One (1) SlideMaster SM3-SP Series mid profile telescoping equipment tray(s) shall be installed that is(are) approximately half the depth of the body width. The tray assembly shall have a silver powder coated steel slide frame with sealed roller bearings rated to 1,000 pounds. A tray constructed of .190" smooth aluminum plate with four 3" sides shall be mounted to the slide frame. The slide frame shall extend 100% allowing the tray to be completely accessible from outside the compartment. The slide shall have a 3-7/8" deck height.

An integrated manual quarter turn "gravity" lock shall hold tray in both the "in" and "out" positions. The "gravity lock" manually rotates a rod with a tab to engage the bottom frame.

REFLECTIVE STRIPE

The outer edge and both sides of the shelf, slide-out tray, pull-out tool board, swing-out tool board, or pull-out and down tray shall have alternating red and white reflective DOT striping applied for safety.

COMPARTMENT LIGHTING

The compartment shall be provided with Rosenbauer InVisiLight LED Compartment lighting. The lighting shall be installed in the adjustable shelving track which shall be recessed into the side wall of the compartment. The lighting shall provide a continuous illumination from the compartment bottom to top and side to side while still allowing for full adjustment of any compartment provision (shelf/tray/etc.). To prevent damage, lights that protrude into the compartment in any fashion shall be deemed unacceptable.

The lights shall be installed in the shelving tracks; two (2) lights 45" in length shall be installed, one on each side of the compartment. The lights shall produce approximately 17 lumens per inch of lighting.

The lights shall be provided with a 5-Year warranty.

An additional InVisiLight 28" in length shall be installed in the recessed track in the ceiling.

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

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LEFT FRONT COMPARTMENT - AHEAD OF REAR WHEELS

There shall be one (1) full height compartment located ahead of the rear wheels 44" wide with a 44" wide clear door opening. The compartment shall be equipped with a full height double hinged doors.

The compartment shall be 35" high and equipped with a 35" high clear door opening.

A removable louvered vent shall be provided in the compartment.

ADJUSTABLE SHELF

One (1) compartment shelf(ves) shall be provided and constructed of .190" smooth aluminum, and are to have formed upward breaks on front and rear for added strength. Shelf(s) shall be fully adjustable within the compartments. Lighter gauge shelf materials are not acceptable.

Shelf(ves) shall extend full width of the compartments, within .50" of the overall width, and adjust up and down in the integral shelf tracks.

1000# ROLLOUT TRAY

One (1) SlideMaster SM3-SP Series mid profile telescoping equipment tray(s) shall be installed in a standard depth compartment. The tray assembly shall have a silver powder coated steel slide frame with sealed roller bearings rated to 1,000 pounds. A tray constructed of .190" smooth aluminum plate with four 3" sides shall be mounted to the slide frame. The slide frame shall extend 100% allowing the tray to be completely accessible from outside the compartment. The slide shall have a 3-7/8" deck height.

An integrated manual quarter turn "gravity" lock shall hold tray in both the "in" and "out" positions. The "gravity lock" manually rotates a rod with a tab to engage the bottom frame.

REFLECTIVE STRIPE

The outer edge and both sides of the shelf, slide-out tray, pull-out tool board, swing-out tool board, or pull-out and down tray shall have alternating red and white reflective DOT striping applied for safety.

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COMPARTMENT LIGHTING

The compartment shall be provided with Rosenbauer InVisiLight LED Compartment lighting. The lighting shall be installed in the adjustable shelving track which shall be recessed into the side wall of the compartment. The lighting shall provide a continuous illumination from the compartment bottom to top and side to side while still allowing for full adjustment of any compartment provision (shelf/tray/etc.). To prevent damage, lights that protrude into the compartment in any fashion shall be deemed unacceptable.

The lights shall be installed in the shelving tracks; two (2) lights 17" in length shall be installed, one on each side of the compartment. The lights shall produce approximately 17 lumens per inch of lighting.

The lights shall be provided with a 5-Year warranty.

An additional InVisiLight 28" in length shall be installed in the recessed track in the ceiling.

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

LEFT REAR COMPARTMENT

There shall be one (1) compartment 46" wide with a 46" wide clear door opening located behind the tiller trailer wheels. The compartment shall be equipped with low double hinged doors.

The compartment shall be 35" high and equipped with a 35" high clear door opening.

A removable louvered vent shall be provided in the compartment.

FLOOR PAN, STAINLESS STEEL

Provide the left compartment floor with a stainless steel floor pan to contain petroleum spillage from motorized equipment. The exact size location stainless steel floor pan to be approved by the District at PreConstruction.

COMPARTMENT LIGHTING

The compartment shall be provided with Rosenbauer InVisiLight LED Compartment lighting. The lighting shall be installed in the adjustable shelving track which shall be recessed into the side wall of the compartment. The lighting shall provide a continuous illumination from the compartment bottom to top and side to side while still allowing for full adjustment of any compartment provision (shelf/tray/etc.). To prevent damage, lights that protrude into the compartment in any fashion shall be deemed unacceptable.

The lights shall be installed in the shelving tracks; two (2) lights 17" in length shall be installed, one on each side of the compartment. The lights shall produce approximately 17 lumens per inch of lighting.

The lights shall be provided with a 5-Year warranty.

An additional InVisiLight 39" in length shall be installed in the recessed track in the ceiling.

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

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LEFT REAR TILLER CAB ACCESS

There shall be a tiller cab access area 24" wide located on the left body side at the rear. The floor and sides of the tiller cab access area shall be finished with polished aluminum treadplate.

ACCESS TO TILLER CAB

An access ladder shall be provided on the left side of the apparatus as a means of egress to and from the tractor drawn aerial tiller cab. The ladder shall have three (3) seven (7") inch stair treads leading to the tiller cab. The running board and the top of the body shall be utilized as the first and last steps. A full length thirty-six inch (36") handrail shall be furnished on both sides of the access ladder to provide hand holds while traveling up and down the ladder.

STEP LIGHT

Two (2) LED step light(s) with clear lens shall be installed.

RIGHT SIDE COMPARTMENTS

There shall be one (1) compartments located on the passenger's side of the tiller trailer. The compartments shall be as follows:

RIGHT FRONT COMPARTMENT - ABOVE FRONT OUTRIGGER

There shall be one (1) compartment located above the front outrigger. The compartment shall be equipped with a single horizontal hinged lift up door.

The compartment shall be 25" high and equipped with a 25" high clear door opening.

A removable louvered vent shall be provided in the compartment.

COMPARTMENT LIGHTING

The compartment shall be provided with Rosenbauer InVisiLight LED Compartment lighting. The lighting shall be installed in the adjustable shelving track which shall be recessed into the side wall of the compartment. The lighting shall provide a continuous illumination from the compartment bottom to top and side to side while still allowing for full adjustment of any compartment provision (shelf/tray/etc.). To prevent damage, lights that protrude into the compartment in any fashion shall be deemed unacceptable.

The lights shall be installed in the shelving tracks; two (2) lights 17" in length shall be installed, one on each side of the compartment. The lights shall produce approximately 17 lumens per inch of lighting.

The lights shall be provided with a 5-Year warranty.

An additional InVisiLight up to 17" in length shall be installed in the recessed track in the ceiling.

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

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RIGHT FRONT COMPARTMENT - FRONT OF BODY

There shall be one (1) full height compartment located at the front of the body 35" wide with a 35" wide clear door opening. The compartment shall be equipped with a full height double hinged doors.

The compartment shall be 53" high and equipped with a 53" high clear door opening.

A removable louvered vent shall be provided in the compartment.

ADJUSTABLE SHELF

Two (2) compartment shelf(ves) shall be provided and constructed of .190" smooth aluminum, and are to have formed upward breaks on front and rear for added strength. Shelf(s) shall be fully adjustable within the compartments. Lighter gauge shelf materials are not acceptable.

Shelf(ves) shall extend full width of the compartments, within .50" of the overall width, and adjust up and down in the integral shelf tracks.

1000# ROLLOUT TRAY DUAL DIRECTION

One (1) 3/4 Depth SlideMaster SM2-D Series standard profile telescoping equipment tray(s) shall be installed that is(are) transverse. The tray assembly shall have a silver powder coated steel slide frame with sealed roller bearings rated to 1,000 pounds. A tray constructed of .190" smooth aluminum plate with four 3" sides shall be mounted to the slide frame.

An integrated manual quarter turn "gravity" lock shall hold tray in both the "in" and "out" positions. The "gravity lock" manually rotates a rod with a tab to engage the bottom frame.

REFLECTIVE STRIPE

The outer edge and both sides of the shelf, slide-out tray, pull-out tool board, swing-out tool board, or pull-out and down tray shall have alternating red and white reflective DOT striping applied for safety.

COMPARTMENT LIGHTING

The compartment shall be provided with Rosenbauer InVisiLight LED Compartment lighting. The lighting shall be installed in the adjustable shelving track which shall be recessed into the side wall of the compartment. The lighting shall provide a continuous illumination from the compartment bottom to top and side to side while still allowing for full adjustment of any compartment provision (shelf/tray/etc.). To prevent damage, lights that protrude into the compartment in any fashion shall be deemed unacceptable.

The lights shall be installed in the shelving tracks; two (2) lights 45" in length shall be installed, one on each side of the compartment. The lights shall produce approximately 17 lumens per inch of lighting.

The lights shall be provided with a 5-Year warranty.

An additional InVisiLight up to 17" in length shall be installed in the recessed track in the ceiling.

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

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RIGHT FRONT COMPARTMENT - FORWARD CENTER

There shall be one (1) full height forward center compartment located behind the front of body compartment. The compartment shall be 55" wide with a 55" wide clear door opening. The compartment shall be equipped with a full height hinged double door.

The compartment shall be 53" high and equipped with a 53" high clear door opening.

A removable louvered vent shall be provided in the compartment.

ADJUSTABLE SHELF

Two (2) compartment shelf(ves) shall be provided and constructed of .190" smooth aluminum, and are to have formed upward breaks on front and rear for added strength. Shelf(s) shall be fully adjustable within the compartments. Lighter gauge shelf materials are not acceptable.

Shelf(ves) shall extend full width of the compartments, within .50" of the overall width, and adjust up and down in the integral shelf tracks.

1000# ROLLOUT TRAY

One (1) SlideMaster SM3-SP Series mid profile telescoping equipment tray(s) shall be installed that is(are) approximately half the depth of the body width. The tray assembly shall have a silver powder coated steel slide frame with sealed roller bearings rated to 1,000 pounds. A tray constructed of .190" smooth aluminum plate with four 3" sides shall be mounted to the slide frame. The slide frame shall extend 100% allowing the tray to be completely accessible from outside the compartment. The slide shall have a 3-7/8" deck height.

An integrated manual quarter turn "gravity" lock shall hold tray in both the "in" and "out" positions. The "gravity lock" manually rotates a rod with a tab to engage the bottom frame.

REFLECTIVE STRIPE

The outer edge and both sides of the shelf, slide-out tray, pull-out tool board, swing-out tool board, or pull-out and down tray shall have alternating red and white reflective DOT striping applied for safety.

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COMPARTMENT LIGHTING

The compartment shall be provided with Rosenbauer InVisiLight LED Compartment lighting. The lighting shall be installed in the adjustable shelving track which shall be recessed into the side wall of the compartment. The lighting shall provide a continuous illumination from the compartment bottom to top and side to side while still allowing for full adjustment of any compartment provision (shelf/tray/etc.). To prevent damage, lights that protrude into the compartment in any fashion shall be deemed unacceptable.

The lights shall be installed in the shelving tracks; two (2) lights 45" in length shall be installed, one on each side of the compartment. The lights shall produce approximately 17 lumens per inch of lighting.

The lights shall be provided with a 5-Year warranty.

An additional InVisiLight 34" in length shall be installed in the recessed track in the ceiling.

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

RIGHT FRONT COMPARTMENT - REARWARD CENTER

There shall be one (1) full height rearward center compartment located behind the forward center body compartment. The compartment shall be 45" wide with a 45" wide clear door opening. The compartment shall be equipped with a full height hinged double door.

The compartment shall be 57" high and equipped with a 57" high clear door opening.

A removable louvered vent shall be provided in the compartment.

ADJUSTABLE SHELF

One (1) compartment shelf(ves) shall be provided and constructed of .190" smooth aluminum, and are to have formed upward breaks on front and rear for added strength. Shelf(s) shall be fully adjustable within the compartments. Lighter gauge shelf materials are not acceptable.

Shelf(ves) shall extend full width of the compartments, within .50" of the overall width, and adjust up and down in the integral shelf tracks.

1000# ROLLOUT TRAY

One (1) SlideMaster SM3-SP Series mid profile telescoping equipment tray(s) shall be installed that is(are) approximately half the depth of the body width. The tray assembly shall have a silver powder coated steel slide frame with sealed roller bearings rated to 1,000 pounds. A tray constructed of .190" smooth aluminum plate with four 3" sides shall be mounted to the slide frame. The slide frame shall extend 100% allowing the tray to be completely accessible from outside the compartment. The slide shall have a 3-7/8" deck height.

An integrated manual quarter turn "gravity" lock shall hold tray in both the "in" and "out" positions. The "gravity lock" manually rotates a rod with a tab to engage the bottom frame.

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REFLECTIVE STRIPE

The outer edge and both sides of the shelf, slide-out tray, pull-out tool board, swing-out tool board, or pull-out and down tray shall have alternating red and white reflective DOT striping applied for safety.

COMPARTMENT LIGHTING

The compartment shall be provided with Rosenbauer InVisiLight LED Compartment lighting. The lighting shall be installed in the adjustable shelving track which shall be recessed into the side wall of the compartment. The lighting shall provide a continuous illumination from the compartment bottom to top and side to side while still allowing for full adjustment of any compartment provision (shelf/tray/etc.). To prevent damage, lights that protrude into the compartment in any fashion shall be deemed unacceptable.

The lights shall be installed in the shelving tracks; two (2) lights 45" in length shall be installed, one on each side of the compartment. The lights shall produce approximately 17 lumens per inch of lighting.

The lights shall be provided with a 5-Year warranty.

An additional InVisiLight 28" in length shall be installed in the recessed track in the ceiling.

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

RIGHT FRONT COMPARTMENT - AHEAD OF REAR WHEELS

There shall be one (1) full height compartment located ahead of the rear wheels 44" wide with a 44" wide clear door opening. The compartment shall be equipped with a full height double hinged doors.

The compartment shall be 53" high and equipped with a 53" high clear door opening.

A removable louvered vent shall be provided in the compartment.

ADJUSTABLE SHELF

One (1) compartment shelf(ves) shall be provided and constructed of .190" smooth aluminum, and are to have formed upward breaks on front and rear for added strength. Shelf(s) shall be fully adjustable within the compartments. Lighter gauge shelf materials are not acceptable.

Shelf(ves) shall extend full width of the compartments, within .50" of the overall width, and adjust up and down in the integral shelf tracks.

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1000# ROLLOUT TRAY

One (1) SlideMaster SM3-SP Series mid profile telescoping equipment tray(s) shall be installed that is(are) approximately half the depth of the body width. The tray assembly shall have a silver powder coated steel slide frame with sealed roller bearings rated to 1,000 pounds. A tray constructed of .190" smooth aluminum plate with four 3" sides shall be mounted to the slide frame. The slide frame shall extend 100% allowing the tray to be completely accessible from outside the compartment. The slide shall have a 3-7/8" deck height.

An integrated manual quarter turn "gravity" lock shall hold tray in both the "in" and "out" positions. The "gravity lock" manually rotates a rod with a tab to engage the bottom frame.

REFLECTIVE STRIPE

The outer edge and both sides of the shelf, slide-out tray, pull-out tool board, swing-out tool board, or pull-out and down tray shall have alternating red and white reflective DOT striping applied for safety.

COMPARTMENT LIGHTING

The compartment shall be provided with Rosenbauer InVisiLight LED Compartment lighting. The lighting shall be installed in the adjustable shelving track which shall be recessed into the side wall of the compartment. The lighting shall provide a continuous illumination from the compartment bottom to top and side to side while still allowing for full adjustment of any compartment provision (shelf/tray/etc.). To prevent damage, lights that protrude into the compartment in any fashion shall be deemed unacceptable.

The lights shall be installed in the shelving tracks; two (2) lights 45" in length shall be installed, one on each side of the compartment. The lights shall produce approximately 17 lumens per inch of lighting.

The lights shall be provided with a 5-Year warranty.

An additional InVisiLight 28" in length shall be installed in the recessed track in the ceiling.

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

RIGHT FRONT COMPARTMENT - AHEAD OF REAR WHEELS

There shall be one (1) full height compartment located ahead of the rear wheels 44" wide with a 44" wide clear door opening. The compartment shall be equipped with a full height double hinged doors.

The compartment shall be 35" high and equipped with a 35" high clear door opening.

A removable louvered vent shall be provided in the compartment.

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ADJUSTABLE SHELF

One (1) compartment shelf(ves) shall be provided and constructed of .190" smooth aluminum, and are to have formed upward breaks on front and rear for added strength. Shelve(s) shall be fully adjustable within the compartments. Lighter gauge shelf materials are not acceptable.

Shelf(ves) shall extend full width of the compartments, within .50" of the overall width, and adjust up and down in the integral shelf tracks.

1000# ROLLOUT TRAY

One (1) SlideMaster SM3-SP Series mid profile telescoping equipment tray(s) shall be installed that is(are) approximately half the depth of the body width. The tray assembly shall have a silver powder coated steel slide frame with sealed roller bearings rated to 1,000 pounds. A tray constructed of .190" smooth aluminum plate with four 3" sides shall be mounted to the slide frame. The slide frame shall extend 100% allowing the tray to be completely accessible from outside the compartment. The slide shall have a 3-7/8" deck height.

An integrated manual quarter turn "gravity" lock shall hold tray in both the "in" and "out" positions. The "gravity lock" manually rotates a rod with a tab to engage the bottom frame.

REFLECTIVE STRIPE

The outer edge and both sides of the shelf, slide-out tray, pull-out tool board, swing-out tool board, or pull-out and down tray shall have alternating red and white reflective DOT striping applied for safety.

COMPARTMENT LIGHTING

The compartment shall be provided with Rosenbauer InVisiLight LED Compartment lighting. The lighting shall be installed in the adjustable shelving track which shall be recessed into the side wall of the compartment. The lighting shall provide a continuous illumination from the compartment bottom to top and side to side while still allowing for full adjustment of any compartment provision (shelf/tray/etc.). To prevent damage, lights that protrude into the compartment in any fashion shall be deemed unacceptable.

The lights shall be installed in the shelving tracks; two (2) lights 17" in length shall be installed, one on each side of the compartment. The lights shall produce approximately 17 lumens per inch of lighting.

The lights shall be provided with a 5-Year warranty.

An additional InVisiLight 28" in length shall be installed in the recessed track in the ceiling.

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

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RIGHT REAR COMPARTMENT

There shall be one (1) compartment 46" wide with a 46" wide clear door opening located behind the tiller trailer wheels. The compartment shall be equipped with low double hinged doors.

A removable louvered vent shall be provided in the compartment.

COMPARTMENT LIGHTING

The compartment shall be provided with Rosenbauer InVisiLight LED Compartment lighting. The lighting shall be installed in the adjustable shelving track which shall be recessed into the side wall of the compartment. The lighting shall provide a continuous illumination from the compartment bottom to top and side to side while still allowing for full adjustment of any compartment provision (shelf/tray/etc.). To prevent damage, lights that protrude into the compartment in any fashion shall be deemed unacceptable.

The lights shall be installed in the shelving tracks; two (2) lights 17" in length shall be installed, one on each side of the compartment. The lights shall produce approximately 17 lumens per inch of lighting.

The lights shall be provided with a 5-Year warranty.

An additional InVisiLight 39" in length shall be installed in the recessed track in the ceiling.

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

RIGHT REAR TILLER CAB ACCESS

There shall be a tiller cab access area 24" wide located on the left body side at the rear. The floor and sides of the tiller cab access area shall be finished with polished aluminum treadplate.

ACCESS TO TILLER CAB

An access ladder shall be provided on the right side of the apparatus as a means of egress to and from the tractor drawn aerial tiller cab. The ladder shall have three (3) seven (7") inch stair treads leading to the tiller cab. The running board and the top of the body shall be utilized as the first and last steps. A full length thirty-six inch (36") handrail shall be furnished on both sides of the access ladder to provide hand holds while traveling up and down the ladder.

STEP LIGHT

Two (2) LED step light(s) with clear lens shall be installed.

REAR AERIAL BODY CONFIGURATION

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REAR COMPARTMENT

There shall be one (1) compartment located at the rear of the apparatus. The compartment shall be located within the aerial torque box to accommodate the ladders and pike poles as specified. The compartment shall be equipped with a single horizontally hinged, double-pan aluminum treadplate lift-up door with two-point D-ring latch. The door shall be held in the open position by two (2) heavy-duty gas filled dampeners.

COMPARTMENT LIGHTS

Two (2) 18" long OnScene Solutions Access LED lights shall be installed, one on each side of the door opening. The lights shall contain 12 LEDs per light producing approximately 60 lumens (six LEDs and 30 lumens every 9"). The light stick shall be rated at 100,000 hours of service and shall be provided with a 5 year free replacement warranty. The light shall have a 5/8" LEXAN™ polycarbonate tube enclosure for severe duty applications.

The light stick shall be waterproof and be connectible via a jumper wire to add additional lights in series if required.

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

COMPARTMENT LIGHT

Four (4) 54" long OnScene Solutions Access LED light shall be installed above the door opening and contain 36 LEDs producing approximately 180 lumens per light (six LEDs and 30 lumens every 9"). The light stick shall be rated at 100,000 hours of service and shall be provided with a 5 year free replacement warranty. The light shall have a 5/8" LEXAN™ polycarbonate tube enclosure for severe duty applications. The light stick shall be waterproof and be connectible via a jumper wire to add additional lights in series if required.

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

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REAR COMPARTMENT

There shall be one (1) compartment located at the rear of the apparatus. The compartment, located within the aerial torque box, shall have provisions to accommodate the following ladders and pike poles.

The compartment shall be equipped with hinged aluminum treadplate double doors.

COMPARTMENT LIGHT

Two (2) 18" long OnScene Solutions Access LED light shall be installed on one side of the door opening and contain 12 LEDs per light producing approximately 60 lumens (six LEDs and 30 lumens every 9"). The light stick shall be rated at 100,000 hours of service and shall be provided with a 5 year free replacement warranty. The light shall have a 5/8" LEXAN™ polycarbonate tube enclosure for severe duty applications.

The light stick shall be waterproof and be connectible via a jumper wire to add additional lights in series if required.

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

REAR COMPARTMENT

There shall be one (1) compartment located at the rear of the apparatus. The compartment shall be located within the aerial torque box to accommodate the specified ladders and pike poles. The compartment shall be equipped with vertically hinged, single panel aluminum treadplate double doors. The primary door shall have a two-point D-ring latch. The secondary door will be held closed by an offset lip on the primary door. Each door shall be held in the open position by one (1) heavy-duty gas filled dampener.

COMPARTMENT LIGHTS

Two (2) 18" long OnScene Solutions Access LED lights shall be installed, one on each side of the door opening. The lights shall contain 12 LEDs per light producing approximately 60 lumens (six LEDs and 30 lumens every 9"). The light stick shall be rated at 100,000 hours of service and shall be provided with a 5 year free replacement warranty. The light shall have a 5/8" LEXAN™ polycarbonate tube enclosure for severe duty applications.

The light stick shall be waterproof and be connectible via a jumper wire to add additional lights in series if required.

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

EQUIPMENT - BODY MOUNTED - EXT TDA (TILLER)

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SLIDE OUT REAR LADDER AERIAL TORQUE BOX

Ground ladders and pike poles shall be accessed from the rear of the apparatus. All ladders shall be mounted on individual brackets and slide on composite material so as not to damage the main beams of the ladders. Pike poles and the folding ladder shall be stored in individual storage area. Ladders shall have stops provided on the front of all slides so ladders will not slide forward during emergency braking conditions.

LADDER SOURCE

New ground ladders shall be provided by the manufacturer.

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.

ROOF LADDER

One (1) Duo Safety Model 875-A, 16 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.

EXTENSION LADDER

Two (2) Duo-Safety Model 1200-A, 28 foot two (2) section aluminum extension ladder shall be provided on the apparatus. The ladder shall meet or exceed all the latest NFPA standards.

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.

EXTENSION LADDER

One (1) Duo-Safety Model 1200-A, 35 foot two (2) section aluminum extension ladder shall be provided on the apparatus. The ladder shall meet or exceed all the latest NFPA standards.

FOLDING ATTIC LADDER SOURCE

New folding attic ladders shall be provided by the manufacturer.

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.

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COMBINATION LADDER

One (1) Velocity Aluminum, Little Giant, Ladder Model Revolution 2.0 model number 13122-801.

The ladder shall be mounted to the officer's side of the trailer.

PIKE POLE MOUNTING BRACKET

Four (4) tube shall be provided for pike pole mounting. The tube shall have a 2-1/4" interior diameter and shall be mounted within the ladder compartment.

PIKE POLE SOURCE

The following pike poles shall be provided.

ROOF HOOK

Two (2) 6-ft Fire Hooks Unlimited NY style Roof Hook with grips shall be provided.

ROOF HOOK

One (1) 8-ft Fire Hooks Unlimited NY style Roof Hook with grips shall be provided.

ROOF HOOK

One (1) 10-ft Fire Hooks Unlimited NY style Roof Hook with grips shall be provided.

REAR STEP - EXT AERIAL/PLATFORM

REAR RUB RAIL

A single piece full body width polished aluminum rub rail shall be bolted in place at the rear of the body. The rub rail is to be removable for ease of repair or replacement. The rear rub rail shall be a heavy extruded aluminum "C" channel.

WHEEL WELL PANEL FUEL PROVISIONS AND OPTIONS

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WHEEL WELL COMPARTMENT LEFT SIDE AHEAD OF WHEELS

One (1) wheel well compartment shall be located on the left side in the rear wheel well panel ahead of the rear wheels of the type specified herein.

A Fire Shopp Inc. 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 black polymer. The door assemblies shall be provided with a gasket between door and body side, bolted in-place and removable for repair or replacement.

Compartment shall be provided with SCBA cylinder scuff protection. A brushed stainless steel door shall be provided.

An one-inch (1") wide loop of black webbing shall be installed in each SCBA compartment to prevent the bottle from sliding out of the compartment in case of door failure. The loop shall be mounted, centered in the compartment and shall hang within one-inch (1") of the compartment floor to allow the bottle to pass by the strap when the bottle is placed in the compartment. The strap shall loop over the valve.

WHEEL WELL COMPARTMENT LEFT SIDE BEHIND WHEELS

A wheel well compartment shall be located on the left side in the rear wheel well panel behind the rear wheels of the type specified herein.

A Fire Shopp Inc. 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 black polymer. The door assemblies shall be provided with a gasket between door and body side, bolted in-place and removable for repair or replacement.

Compartment shall be provided with SCBA cylinder scuff protection. A brushed stainless steel door shall be provided.

An 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.

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WHEEL WELL COMPARTMENT RIGHT SIDE AHEAD OF WHEELS

A wheel well compartment shall be located on the right side in the rear wheel well panel ahead of the rear wheels of the type specified herein.

A Fire Shopp Inc. 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 black polymer. The door assemblies shall be provided with a gasket between door and body side, bolted in-place and removable for repair or replacement.

Compartment shall be provided with SCBA cylinder scuff protection. A brushed stainless steel door shall be provided.

An one-inch (1") wide loop of black webbing shall be installed in each SCBA compartment to prevent the bottle from sliding out of the compartment in case of door failure. The loop shall be mounted, centered in the compartment and shall hang within one-inch (1") of the compartment floor to allow the bottle to pass by the strap when the bottle is placed in the compartment. The strap shall loop over the valve.

WHEEL WELL COMPARTMENT RIGHT SIDE BEHIND WHEELS

A wheel well compartment shall be located on the right side in the rear wheel well panel behind the rear wheels of the type specified herein.

A Fire Shopp Inc. 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 black polymer. The door assemblies shall be provided with a gasket between door and body side, bolted in-place and removable for repair or replacement.

Compartment shall be provided with SCBA cylinder scuff protection. A brushed stainless steel door shall be provided.

An 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.

== EXT Aerial/Platform Common Body Part - 6022.021 06/02/21 ==
FRONT BODY DESIGN - EXT AERIAL/PLATFORM

FRONT BODY PROTECTION PANELS

Aluminum tread plate overlays and panels shall be installed on the front of the body from the lower edge to the top of the compartment doors. The material shall be bolted in place and sealed to prevent any moisture entry between the overlay and the body structure.

REAR BODY DESIGN - EXT AERIAL/PLATFORM

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REAR BODY PROTECTION PANELS

Smooth aluminum shall be installed on the rear of the body, to allow for the installation of a "Chevron" stripe on the rear.

AUXILIARY REAR STEPS - EXT AERIAL/PLATFORM
HANDRAILS - EXT AERIAL/PLATFORM

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.

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 rear of the apparatus body.

REAR STEP HAND RAILS

Two (2) exterior lighted hand rails, approximately 30" in length, shall be vertically mounted on the rear, one (1) on each side of the apparatus body. The hand rail shall be made of 1.25" diameter extruded aluminum to enable non-slip assistance with a gloved hand and mounted on stanchions. The hand rails shall feature white LED lighting which shall illuminate when the park brake is engaged.

RUB RAILS - EXT AERIAL/PLATFORM

EXTRUDED ALUMINUM RUB RAILS

Full body length polished aluminum rub rails shall be bolted in place on the lower right and left body sides. The side rub rails shall be a heavy extruded aluminum "C" channel. There shall also be a bolt on aluminum corner casting on each rear corner to blend the rear tail board assembly with the side rub rails.

120 / 240 VOLT ELECTRICAL SYSTEM

8000 WATT HYDRAULIC GENERATOR

The generator shall be a Harrison MCR Hydraulic Driven Generator rated at 8,000 watts, 33/66 amps, 120/240 VAC, 60Hz, 1-phase. The generator shall be designed and assembled by a company with no less than 20 years experience in the manufacture of hydraulic driven generators.

The generator components shall be housed in a structural steel frame which affords protection to the components and provides a unitized mounting module. The generator shall have top access to the oil filter, oil fill tube and electrical interface box. The hydraulic oil reservoir shall include an oil level sight gauge visible from three sides; an oil temperature gauge; an oil fill cap; an oil filter and an internal venturi boost unit to provide positive pressure to the pump suction port.

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The hydraulic oil reservoir shall be shipped attached to the structural steel frame. The hydraulic oil reservoir shall have an option to be remote mounted if required. The generator shall have a cover consisting of NFPA approved diamond tread plate.

A meter package that provides the frequency, voltage and amperage of each leg shall be provided. The generator shall not utilize electronic controls or a multiplex system to control the frequency. The generator shall include a bypass solenoid to remotely turn the generator on/off with a 12 VDC signal.

The generator shall be a commercial type with a heavy-duty bearing and of brushless design to ensure low maintenance. No brushes or slip rings shall be allowed.

The generator and motor shall be close coupled and aligned using a Morse taper with a through bolt to secure the motor to the generator. No two (2) bearing generators shall be permitted. The system shall be capable of producing the full nameplate power when driven from the vehicles PTO from idle to maximum engine speed.

The generator shall provide a dedicated air intake duct for the alternator and a dedicated air intake duct for the heat exchanger. Both air intake ducts shall be located on the same side of the generator.

The hydraulic motor and pump shall be of axial piston design to provide low internal leakage and a high degree of frequency stability. Gear motors shall not be allowed. The hydraulic pump shall match the system with the proper orifice, pressure compensator, and load sense settings to provide stable output regardless of engine rpm or electrical load demands. Use of electronics to control the flow shall not be allowed.

The system shall be capable of normal operations using a commonly available premium hydraulic oil; Mobile DTE series or equivalent. All fluid service points shall be in close proximity to the reservoir for ease of scheduled maintenance.

When properly installed, the system shall be warranted for a period of not less than two (2) years or 2000 hours, whichever should come first.

The generator shall be tested at the full nameplate rated load prior to shipping and the test report shall be included. The test report will document the generator's performance at various loads from no load to full load to ensure reliable power delivery at those loads.

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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 down stream of the power source shall be "listed" (where available) and installed in accordance with manufacturers instructions. The electrical equipment installed shall be suitable for intended use and type locations (wet, dry, or underbody and chassis).

The grounding and bonding shall comply to applicable sections of NFPA standards. The chassis frame rail, body sheet metal, and cab sheet metal shall be properly bonded per NFPA schematic. The bonding copper conductor shall be rated at 115 % of current rating of power source.

OVER CURRENT PROTECTION PANEL

Manually re-setable 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 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.

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.

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CONTROL PANEL

The panel shall include the following:

- Green indicator light to indicate PTO engagement. The light shall be labeled "GENERATOR ENGAGED."
- p) Red indicator to indicate hydraulic fluid overheating.
- q) Main circuit breaker panel with "main" breaker and individual line breakers.
- r) All breakers, outlets, switches, and receptacles shall be labeled per requirements of applicable NFPA standards.
- s) The generator shall be capable of producing full rated power throughout the entire RPM range of the engine.

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.

ELECTRICAL SYSTEM TESTING

All apparatus installed wiring and associated equipment shall be tested by the apparatus manufacturer in compliance to applicable NFPA standards. The apparatus manufacturer shall test the generator system at the continuous duty rating for a minimum of two (2) hours.

If the apparatus is equipped with a fire pump, both the generator and fire pump shall be operated simultaneously at full pump capacity and generator at "continuous rating" for two (2) hours. Failure of either the generator system or fire pump system during testing will require retesting of both components simultaneously.

The conditions specified shall be recorded at least every 1/2 hour during the test. The results of these tests shall be submitted to the purchaser upon delivery.

Each outlet shall be tested individually to device rating.

Electrical polarity verification shall be made of all permanently wired equipment and receptacles to determine that connections have been properly made.

CIRCUIT BREAKER BOX

A circuit breaker box for single phase voltage equipment shall be provided capable of holding twelve (12) breakers.

CIRCUIT BREAKER BOX LOCATION

The circuit breaker box shall be installed on the wall in the rear body compartment.

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GENERATOR INSTRUMENTS - DIGITAL

The generator instrument panel shall include an instrument panel that includes the following:

- t) Amperage-L1
- u) Amperage
 - Voltage
 - Frequency meter

The panel shall be located next to circuit breaker panel.

GENERATOR HOUR METER

An hour meter to display the total run time of the generator shall be installed. The meter shall be installed near the generator control panel.

The instrument panel for the generator shall be installed next to the breaker panel.

GENERATOR STARTUP

An activation switch for the hydraulic generator shall be installed in the apparatus cab.

GENERATOR MOUNTING LOCATION

The generator shall be installed over the fire pump enclosure.

LINE VOLTAGE WIRING INSTALLATION

Type THHN line voltage wiring in the vehicle shall be through Carflex, or equal flexible moisture resistant reinforced conduit, with proper seal-tight connectors and hardware. Type SO line voltage wiring in the vehicle shall be suitable for mobile applications and should not require the use of conduit. All Type THHN and Type SO line voltage wiring shall be stranded copper conductors with 600-volt insulation rated for at least 194 degrees. All electrical junction boxes shall conform to the National Electric Code and be accessible for service.

Electrical conduit shall be supported within 6 inches of any junction box and at a minimum of every 24 inches of run. Supports shall be made of corrosion protected metal and that does not cut or abrade the conduit and shall be mechanically fastened to the vehicle.

Electrical conduit shall not be attached to chassis suspension components, water or fuel lines, air or air brake lines, fire pump piping, hydraulic lines, exhaust system components, or low voltage wiring and shall be separated by a minimum of 12 inches from exhaust piping or properly shielded and separated from fuel lines by a minimum of 6 inches distance.

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All wiring connections and terminations shall provide a positive mechanical and electrical connection. Connectors shall be installed in accordance with the manufacturer's instructions. Use of wire nuts or insulation displacement and insulation piercing connectors shall be avoided.

120 / 240 VOLT RECEPTACLES

120V ELECTRIC RECEPTACLE -- TWIST LOCK

One (1) 120-volt 15 amp twist lock (NEMA L5-15) receptacle with spring loaded weatherproof cover shall be provided.

The electric receptacle shall be located inside the left side exterior body compartment ahead of the rear wheels.

The electric receptacle shall be located inside the right side exterior body compartment ahead of the rear wheels.

SHORELINE POWER

LINE VOLTAGE TRANSFER SWITCH

One (1) automatic transfer switch shall be installed that allows components normally powered by the 120-volt shore power connection to be automatically powered by the on board generator upon startup of the generator.

SHORE POWER INLET

One (1) receptacle for a shore power inlet line shall be provided to supply the body interior 120-volt outlets.

ELECTRIC CABLE REELS

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.

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.

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LABELING

An information label shall be installed in a location visible adjacent to any permanently connected reel with the following data:

- Voltage
- Phase
- Current type
- Current rating
- Total cable length

ELECTRICAL SUPPLY WIRING TO REEL

The wiring shall end in a sealed conduit box at the reel with mechanical connectors to allow removal of the reel. Appropriately, sized wire and circuit breakers shall be utilized.

The electric cable reel shall be installed in the upper rear body compartment.

A two hundred foot (200') length of 12/3 yellow electric cable shall be installed with specified plugs. The cable shall be type SEO-WA with a 20 amp, 120 volt rating.

The electric cable shall be configured with a 120-volt 15 amp NEMA L5-15R three prong, twist lock female receptacle.

One (1) ball stop shall be attached to the electric cable to prevent total re-wind and to allow the cable to remain at a reachable position. The ball shall positively attach to the cable and be bright orange in color for high visibility.

One (1) four-sided encompassing stainless steel roller unit for the electric cable shall be installed on specified reels. The roller unit shall be mounted in the specified location to permit the cable to feed directly off the reel.

== EXT Aerial - Equipment Systems - 6022.021 06/02/21 ==
HITCHES-TIE OFFS-RECEIVERS

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ROOF ANCHOR POINTS

The completed unit shall have an integrated receiver system for use with rope rescue accessories. Each receiver shall conform to NFPA requirements for safety.

The body shall be equipped with four (4) roof anchor points rated for rope rescue. The receivers shall be square steel tube, same size as that of a trailer hitch. The units shall be attached to the upper body superstructure and shall be located two (2) each side. The tie points shall be bolted to integrated structural members that are welded directly to the body superstructure.

Four (4) slide in receiver with the same dimensions as a trailer hitch receiver shall be shipped loose with the apparatus. The unit shall be equipped with a 2.5" eye opening.

The roof anchor point assemblies (total of four), shall be rated at a minimum straight line pull of 600 pounds each with a 15 to 1 safety factor for rope rescue. Each assembly shall be secured with one (1) push button detent safety pin to lock it in place.

The roof anchor points shall located as determined by the OEM's engineering department, NO EXCEPTIONS.
NO 12V Winch Power Receptacle

WINCH RECEIVER - REAR

The rear of the apparatus body shall be equipped with a receiver assembly for high or low angle rescue or winch applications. The receiver shall be a square steel tube, same size as that of a trailer hitch. The unit shall be attached to the body sub-frame assembly.

One (1) 12 volt Warn quick disconnect electrical receptacle, shall be installed in the body for the portable winch. The power cables shall be color coded "red" positive and "black" neutral and rated at 125% of winch power requirement (including line drop).

NO 12V Trailer Hitch Power Plug

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WINCH RECEIVERS - SIDE BODY

The body shall be equipped with two (2) receiver assemblies for high or low angle rescue or winch applications. The receivers shall be square steel tube, same size as that of a trailer hitch. The units shall be attached to the body sub-frame assembly or chassis frame rails and shall be located behind the rear wheels, one (1) on the left side and one (1) on the right side of the apparatus.

One (1) slide in receiver with the same dimensions as a trailer hitch receiver shall be shipped loose with the apparatus. The unit shall be equipped with a 2.5" eye opening.

The receiver assemblies (total of 2), shall be rated at a minimum of 9,000 pounds each, and each assembly shall be secured with one (1) safety pin.

Two (2) 12 volt Warn quick disconnect electrical receptacle, shall be installed in the body for the portable winch. The power cables shall be color coded "red" positive and "black" neutral and rated at 125% of winch power requirement (including line drop).

== EXT SA Aerial - Pnt/Ltr/Str - 6022.021 06/02/21 ==
PAINT

BODY PAINT PROCESS

While constructing the truck body, all aluminum parts that are to be finish painted shall be properly fitted on the body and then removed to be painted individually. The back side of all aluminum parts shall be sanded smooth of any burrs and sharp edges.

During reassembly of the apparatus, care shall be exercised in fitting and fastening the parts back in their respective position on the vehicle.

All aluminum parts shall be bolted to the body using stainless steel fasteners. Zinc or Cadmium plated fasteners are not acceptable. All bright metal fittings, if unavailable in stainless steel shall be heavily chrome plated. Iron fittings shall be copper plated prior to chrome plating.

All seams shall be caulked both inside and along the exterior edges with a urethane automotive sealant to prevent moisture from entering between any body panels.

The body and all parts shall be thoroughly washed with a grease cutting solvent (PPG DX330) prior to any sanding. After the body has been sanded and the weld marks and minor imperfections are filled and sanded, the body shall be washed again with (PPG DX330) to remove any contaminants on the surface.

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A coating of epoxy sealer (PPG DP 48/50/90) shall be applied with a minimum of 1.0 mil dry film build. The epoxy sealer allows for maximum adhesion to the body material. A color coating of PPG Urethane Paint Direct Gloss with PPG Catalyst shall be applied with a minimum of 2.0 mil dry film build. The catalyst provides a base level UV barrier to prevent fading and chalking. A coating of PPG Clearcoat Topcoat Urethane with a minimum of 2.0 mil dry film build shall be applied. The clearcoat topcoat provides a maximum amount of UV barrier protection.

All products and technicians are certified by PPG every two (2) years.

The Tiller cab shall be painted two-tone. Black/Red.

INTERIOR COMPARTMENT FINISH

The interior of the eight (8) compartments shall be unpainted and have a D/A orbital sander finish.

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.

LETTERING AND STRIPING

LETTERING

The purchaser shall supply the apparatus lettering.

SCOTCHLITE REFLECTIVE LETTERING

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

A quantity of fifty (50) letters are to be placed on the cab and on the body as directed by the customer. The letters shall be between eight and twelve inches in height.

LETTERING

Two (2) painted panels shall be supplied for attachment to the sides of the aerial device. The panels shall be painted to match the color of the aerial device. Lettering (up to fifty (50) letters) shall be provided on the aerial sign panels. The maximum size of the panels shall be up to 12" x 144". The lettering provided shall be painted or vinyl with the color specified by the customer at pre-construction conference.

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AERIAL LIFT CYLINDER PROTECTIVE COVERS

There shall be aluminum protective covers provided, one over each of the two (2) aerial lift cylinder assemblies. The covers shall be constructed from .125 thick, smooth aluminum material and be designed to prevent damage to the lift cylinders due to impact from environmental factors. The protective covers shall be bolted in place using stainless steel fasteners and easily removable for service to the aerial lift cylinders. Lubrication points shall be accessible without the need to remove the protective covers. In addition to the added component protection, the lift cylinder covers shall provide added firefighter safety from lift cylinder pinch point areas and a superior aesthetic appearance to the aerial device.

The exterior of the protective covers shall be painted to match the aerial body color using AkzoNobel automotive quality product. The application process shall conform to all AkzoNobel guidelines.

The exterior of the protective covers shall be painted to match the aerial body color using PPG automotive quality product. The application process shall conform to all PPG guidelines.

APPARATUS DOOR GRAPHICS

Two (2) custom door graphics designed primarily with artistic features shall be proposed for installation on the apparatus.

REFLECTIVE STRIPING

A 1" x 6" x 1" wide 3M brand Scotchlite reflective multi-stripe shall be affixed to the perimeter of the vehicle. There shall be a 1" gap between each of the stripes. Striping shall conform to applicable NFPA 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 striping.

COLOR OF STRIPING MATERIAL

The color of the 3M brand striping material shall be black.

COLOR OF STRIPING MATERIAL

The color of the 3M brand striping material shall be gold.

CHEVRON STRIPING

The entire rear portion of the body shall have 3M Diamond Grade reflective red and yellow striping installed. The chevron style striping shall be applied at a 45-degree upward angle pointing towards the center upper portion of the rear panel.

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REFLECTIVE TAPE ON OUTRIGGERS

The outriggers that extend beyond the side of the body shall have white diamond grade reflective tape applied to both the front and rear facing sides.

INTERIOR CAB DOOR CHEVRON

Reflective striping shall be installed on the interior of each chassis door. The lower portion of the door shall have a scotchlite red and yellow chevron striping applied to it. A reflective stripe shall also be applied on the vertical outer edge of each cab door.

YELLOW SAFETY TAPE - STANDING & WALKING SURFACES

The apparatus shall not meet NFPA standard 15.7.1.6 designating any horizontal standing or walking surface higher than 48-in (1220 mm) from the ground and not guarded by railing or structure at least 12-in (300 mm) high shall have at least a 1-in (25 mm) wide safety yellow line delineation that contrasts with the background to mark the outside perimeter of the designated standing or walking surface area, excluding steps and ladders.

YELLOW SAFETY TAPE - STANDING & WALKING SURFACES

The apparatus shall meet NFPA 1901 15.7.1.6 designating any horizontal standing or walking surface higher than 48-in (1220 mm) from the ground and not guarded by railing or structure at least 12-in (300 mm) high shall have at least a 1-in (25 mm) wide safety yellow line delineation that contrasts with the background to mark the outside perimeter of the designated standing or walking surface area, excluding steps and ladders.

AERIAL INSTRUCTION LABELS

Safety and instructional labels shall be applied at all necessary areas on the aerial device to identify points critical to the safe operation and maintenance of the aerial.

== EXT Aerial - Loose Equipment - 6022.021 06/02/21 ==

EQUIPMENT PAYLOAD WEIGHT ALLOWANCE

In compliance with NFPA #1901 standards, the apparatus shall be engineered to provide an allowance of 2500 pounds of fire department provided loose equipment.

WHEEL CHOCKS

WHEEL CHOCKS WITH MOUNTS

A pair of Zico Model SAC-44 Quic-Chok folding wheel chocks shall be provided and mounted under the apparatus body with model SQCH-44H horizontal mounting brackets.

NFPA TOOLS - EQUIPMENT

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LADDER PIPE ASSEMBLY

One (1) 1000 gpm aluminum alloy ladder pipe assembly and detachable aluminum alloy 3” waterway shutoff with 2-1/2” female swivel inlet, Akron Brass Company [p/n 1495 w/3 tips and 2 tip mnt brkts] or District approved equivalents. Ladder pipe and associated component selection shall be prioritized by weight, overall size and functionality.

Provide one (1) ladder pipe storage bracket assembly to secure the ladder pipe on the uppermost right side walkway of the trailer body. District to have final approval of the storage at the pre-construction conference.

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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.

PAINT WARRANTY FIVE YEAR

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

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

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

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

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

CAB STRUCTURE WARRANTY

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

TRANSMISSION WARRANTY

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

ENGINE WARRANTY

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

FRAME WARRANTY

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

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FRONT AXLE WARRANTY

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

REAR AXLE WARRANTY

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

CAB AND CHASSIS WARRANTY

The cab and chassis shall carry a thirty-six (36) month warranty providing limited parts and labor from the date the complete apparatus is delivered to the end user. The complete detail of the warranty shall be outlined in a document provided upon request.

STATIC LOAD SEAT TEST INFORMATION

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

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

CAB TEST INFORMATION

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

The above tests shall have been witnessed by and attested to by an independent third party. The test results shall have been recorded using cameras, high speed imagers, accelerometers and strain gauges.

Documentation of the testing shall be provided upon request.

CAB INTEGRITY CERTIFICATION

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

CAB TEST INFORMATION

Roof Crush

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

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Side Impact

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

Frontal Impact

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

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

OPERATION AND PARTS LIST MANUALS

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

ENGINE AND TRANSMISSION MANUALS

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

AS BUILT WIRING DIAGRAMS

Each cab and chassis shall include one (1) digital copy of the wiring schematics and component wiring. The wiring schematics shall be developed on a software program such as VeSys Design or equal that provides continuity in files and diagram. The software shall allow you to trace through the design schematics to identify cross referenced items such as in-line connectors and wires. The software shall be interactive which allows you to view one electrical assembly drawing, click on a wire routing and the program will take you to the related circuit assembly or termination point. The software shall also provide a searchable function allowing you to view multiple diagrams using readily available pdf viewers. The digital copy of the wiring schematics shall be compatible with hand held devices such as I-Pads.

USB STORAGE

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

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

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

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

ROAD SAFETY KIT

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

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

One (1) first aid kit

===NO Arctic Package===

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MAX HEIGHT

The maximum height of the apparatus shall not exceed:

===== 8 Degree Angle of Approach =====

===== 8 Degree Angle of Departure =====

CAB

CAB CUSTOM STYLE

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

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

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

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

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

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

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

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

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

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

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

The rear wall of the cab shall offer a seamless wrap around style on each of the rear corners thereby alleviating water entering the cab as well as additional rigidity.

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

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The cab length shall measure 77.3" from the center of the front axle to the front cab skin and 54" from center of the front axle to the back of the cab, for a total cab length of 134.3".

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

The crew floor shall feature a complete flat floor design, including provisions for a one o'clock PTO inclusion, while still offering an uninterrupted 25 total square feet of space. The distance from the back of the tunnel to the interior wall shall be 49" measured at floor level and 55" at top of engine tunnel with the short engine tunnel. Distances are reduced approximately 8" when specifying the longer engine tunnel.

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

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

The cab shall include 4 doors. They shall have a front two (2) cab doors shall have a minimum clear opening of 42.5" wide by 81" high measured from the top of the lower cab step to the top of the door opening.; and the rear two (2) crew doors shall be a minimum clear door opening of 32.5" wide by 89" high measured from the top of the lower cab step to the top of the door opening. The length of the door will vary depending on door type.

ROOF STYLE - 8" RAISED

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

The roof height shall feature an 8" raise starting over the driver and officer positions and continuing back to the roof and rear wall joint.

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

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

The raised roof shall offer a crew head height area a minimum of 63-1/2" from the floor to the ceiling in the crew areas for optimum headroom.

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

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

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

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

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

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DRIP RAIL EXTENSION

The cab shall have a drip rail extension in front of the driver and officer doors. The drip rail shall be connected to the rail along the roof and run midway down the "A" pillar to help prevent water from entering the cab when the front doors are opened. The rail shall be painted to match the cab exterior paint and paint break.

DRIVER SIDE EMS COMPARTMENT

The driver side of the cab shall feature a compartment which is designed for housing emergency medical equipment. The compartment shall be located immediately behind the driver's seat and the interior shall measure 23" wide x 36" tall x 24" deep (measured from the exterior door).

- The compartment shall have a minimum of 11 cubic feet of storage. No Exceptions

==== No Perimeter Lip ====

DRIVER SIDE EMS COMPARTMENT – Exterior Hinged Door

The EMS compartment shall feature:

- A hinged box pan style exterior compartment door
- A hidden, piano style Stainless-steel door hinge which shall be mounted inside the panel of the door prohibiting dirt and debris from becoming trapped in the hinge.
- A clear door opening of 17.5" wide x approximately 36" tall

EMS COMPARTMENT HANDLE

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

EMS COMPARTMENT LOCKS

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

COMPARTMENT SHELF

One (1) adjustable shelf shall be installed in the interior cab compartment. The shelf shall be constructed from aluminum.

EXTERIOR EMS COMPT, SCUFF PLATE, BOTTOM EDGE

EMS ACCESS COVER, LA COUNTY

DRIVER EMS COMPARTMENT INTERIOR FINISH

The interior of the driver side EMS compartment shall have a DA sanded finish.

DRIVER EMS CAB COMPARTMENT LIGHTING

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

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OFFICER SIDE EMS COMPARTMENT

The officer side of the cab shall feature a compartment which is designed for housing emergency medical equipment. The compartment shall be located immediately behind the officer's seat and the interior shall measure 18.5" wide x 36" tall x 23" deep (measured from the exterior door).

- The compartment shall feature an opening on the exterior and/or interior of the cab.
- The compartment shall have a minimum of 8.9 cubic feet of storage. No Exceptions

==== No Perimeter Lip ====

OFFICER SIDE EMS COMPARTMENT – Exterior Hinged Door

The EMS compartment shall feature:

- A hinged box pan style exterior compartment door
- A hidden, piano style Stainless-steel door hinge which shall be mounted inside the panel of the door prohibiting dirt and debris from becoming trapped in the hinge.
- A clear door opening of 14.5" wide x approximately 36" tall
- The compartment floor shall be a sweep out design. No Exceptions

EMS COMPARTMENT HANDLE

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

EMS COMPARTMENT LOCKS

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

COMPARTMENT SHELF

One (1) adjustable shelf shall be installed in the interior cab compartment. The shelf shall be constructed from aluminum.

OFFICER EMS COMPARTMENT INTERIOR FINISH

The interior of the officer side EMS compartment shall have a DA sanded finish.

OFFICER EMS CAB COMPARTMENT LIGHTING

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

Stainless Steel - 54" - 70"

CAB STEPS

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

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

The front cab first step shall measure a minimum of 32" wide x 9-1/2" deep. The front cab intermediate step shall measure a minimum 33" wide x 8-1/2" deep.

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The crew cab first step shall measure a minimum of 20-1/2" wide x 9-1/2" deep. The crew cab intermediate step shall measure a minimum 22-1/4" wide x 9-1/2" deep.

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

CAB STEP TRIM

The cab steps shall include a 12 gauge 304 Grip Strut stainless steel construction on the first step, the step closest to the ground. The stainless steel finish shall be a number 7 mirror. The step shall include a frame which is integral with the construction of the cab for rigidity and strength. The Grip Strut shall allow water and other debris to flow through rather than becoming packed under the step. The middle step shall be integral with the cab in construction and shall be trimmed in 3003-H22 embossed aluminum tread plate which is 0.084" thick.

AUXILIARY CAB STEPS

The cab shall be equipped with four (4) auxiliary stirrup style steps. There shall be one installed below each cab door opening. The frame of the step will include a flexible material.

CAB DOORS

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

The forward cab doors shall be a minimum of 45" wide, and have a cab structure opening of 42.5" wide; and the rear crew doors shall be a minimum of 35" wide, and have a minimum cab structure opening of 32.5" wide to provide enhanced entry and egress of the cab.

Each cab door shall feature:

- Superior strength and rigidity from 3/16" closed section extruded door frames
- Damping inside each door for a solid feel and minimized reverberation when closed
- A rolled rubber bulb seal style gasket shall be utilized around the door ensuring a weather tight fit
- Integrated, mechanical door stop
- A full length, hidden piano style 10 gauge stainless steel door hinge with a 3/8" pin, which shall be mounted inside the panel of the door prohibiting dirt and debris from becoming trapped in the hinge
- An integrated one-piece inner door assembly that includes a glass track, mounting provisions for window regulator, door handle and door panel shall be utilized. The inner door assembly shall be easily removed with nut inserts. Self-tapping screws shall not be acceptable.

BARRIER FREE DOORS

The cab doors shall be "barrier free" style, meaning the door shall be constructed to cover the entry down to the intermediate step, leaving the bottom step open. Each door shall provide approximately 30" of clearance from the ground to the bottom of the door so the door may be opened without stopping due to guard rails along highways.

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

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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 tread plate finish.

CAB DOOR INSULATION

The cab doors shall have insulation installed on the interior of the door skin in the areas that will not interfere operation of any of the door components.

DOOR HANDLES

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

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

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

CAB DOOR LOCKS

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

INTERIOR CAB DOORS

All cab doors shall feature of a stainless steel interior panel.

CAB DOOR TRIM

Each cab door jamb shall include a polished stainless steel trim piece which shall assist in preventing scuffs and abrasion from equipment coming in contact with painted surfaces during egress.

INTERIOR CAB DOOR CHEVRON

Reflective striping shall be installed on the interior of each chassis door. The lower portion of the doors shall have a scotchlite red and yellow chevron striping applied to it. The striping shall be a minimum of 96 square inches per door. No Exception.

INTERIOR FRONT DOOR PULL

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

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

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

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

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INTERIOR GRAB HANDLE REAR DOOR

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

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

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

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

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

GRAB HANDLES "A" PILLAR

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

WINDSHIELD

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

The windshield shall feature:

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

WINDSHIELD WIPER SYSTEM

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

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

WINDSHIELD WIPER ACTIVATION

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

DRIVER WINDOW

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

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

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POWER WINDOW SWITCHES

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

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

OFFICER WINDOW

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

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

REAR DRIVER SIDE WINDOW

The rear driver's side door shall include a window which is 20.75" wide x 21.75" high with a minimum clear viewable area of 451 square inches. The glass shall include a dark gray tint and through a powered operation shall completely roll into the door housing.

REAR OFFICER SIDE WINDOW

The rear officer's side door shall include a window which is 20.75" wide x 21.75" high with a minimum clear viewable area of 451 square inches. The glass shall include a dark gray tint and through a powered operation shall completely roll into the door housing.

CAB INTERIOR AND TRIM

====NO Vehicle Decontamination ADP-CC For Crew Cab Using AeroClave System====

====8 Raised Cab 54" Interior Trim====

CAB INSULATION

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

The cab insulation system shall be comprised of three separate components each designed to assure optimal thermal and acoustic properties are achieved. Two layers of insulation material shall be utilized.

A minimum of .8" of SCbond Polyurethane Foam insulation shall be applied as an additional insulation between the cab skin and all interior ceiling surfaces. The insulation shall have a density of 10 lb/ft3 +/- .5 providing better thermal properties and acoustic reduction properties.

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

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

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

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

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

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ENGINE TUNNEL INSULATION

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

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

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

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

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

The insulation shall meet or exceed FMVSS 302 flammability testing.

INSULATION FASTENING PINS

The insulation shall be affixed with welded in fastening pins.

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.

CAB UNDERBODY INSULATION

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

INSULATION FASTENING PINS

The insulation shall be affixed with welded in fastening pins.

CAB INSULATION, INTERIOR TUNNEL, DESERT PACKAGE
CAB INSULATION ENGINE TUNNEL, REFLECTIVE PLATING
CAB INSULATION UNDERBODY, 54" & 60" CAB, REFLECTIVE PLATING
CAB UNDERBODY STEP PLATING, 54" CAB

INTERIOR TRIM MATERIAL

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

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

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

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

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

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REAR WALL INTERIOR MATERIAL

The rear wall of the cab shall be covered in black 31 oz. marine grade vinyl for a more pleasing appearance.

THROTTLE AND BRAKE PEDALS

The apparatus shall have suspended throttle and brake pedals.

FLOOR MAT

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

INTERIOR FLOOR COVERING

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

INTERIOR FLOOR COVERING

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

SUN VISORS

The driver and officer seats shall feature a sun visor mounted in the header over each seating position. The sun visors shall be gray tinted plastic.
Cab Coating Interior Color

INTERIOR CAB FINISH

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

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

ENGINE TUNNEL

The distance from the back of the tunnel to the interior wall shall be 40" measured at floor level and 46" at top of engine tunnel. No Exception.

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ENGINE TUNNEL

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

The engine tunnel shall feature:

- A low-profile design measuring approximately 46.5" wide and 21.5" in height from the crew floor shall offer optimum visibility of the windshield and cab interior from any seated position. No Exception.
- The engine tunnel at the driver's position shall be a tapered design, featuring 24" clear width at floor level, first taper shall start 16.5" from floor level and taper inward for a clear width of 26" and the final taper shall start at 21" from floor level and taper inward for a clear width of 33".
- The engine tunnel at the officer's position shall be a tapered design, featuring 23" clear width at floor level, first taper shall start 16.5" from floor level and taper inward for a clear width of 22.5" and the final taper shall start at 21" from floor level and taper inward for a clear width of 31.5".
- The design shall offer a minimum of 30" for the driver and 28.5" for the officer as measured from the inside door pan to the top edge of the tunnel. The dimension measured at the "H" (hip) point, with the seat in the lowest position, shall be a minimum of 28.5" for the driver and 27" for the officer. No Exception.
- Recessed sections for ease of mounting equipment at the rear of the tunnel or for compartments and bases which can be used for installing Fire/EMS equipment and components such as hand- held radios.

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CAB DASH

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

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

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

- Optimal heating and cooling of cab occupants, HVAC louvers shall be integrated into the gauge panel with a total of four (4) louvers; two louvers pointing at the driver and two louvers pointing at the officer.
- For improved safety cab switches and controls shall be ergonomically located within easy reach of the driver when in the seated position with seatbelts fastened. This design will reduce driver distraction and increase safety by putting frequently accessed driver controls within easy reach to allow the driver more time to focus on the road.
- The officer side cab dash shall house the two HVAC louvers on the officer side. This panel will also provide ergonomically located switches and controls for the officer. All controls shall be within easy reach while in the seated position with seatbelts fastened.
- Access panels on the top of the dash for both the driver and officer sides easing maintenance access to controls, components and gauge assemblies
- The driver side dash shall include gauges for primary air pressure, secondary air pressure, a Pacific Insight instrumentation gauge panel and the DEF gauge as standard
- The driver side dash shall also include two (2) lower panels to the left and right of the steering column for FMVSS switches such as the Off/Ignition and start switches and the park brake assembly
- The dash shall include a provision for switches to the right of the Driver
- The officer dash shall include a flat area for optional mounting cradles or brackets for a laptop computer, mobile data terminal, map compartment or clip board

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

CAB DASH & ENGINE TUNNEL

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

BLACK MOUNTING SWITCH PLATE

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

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CONSOLE MOUNTED MAP LIGHTS

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

The location(s) shall be as follows:

CUP HOLDER

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

INSTRUMENTATION PANEL

The instrumentation panel inlay shall be powder coat black.
HAVIS PARTS, INCLUDING BRAKE PANEL - LA COUNTY
MDC DASH MOUNT, WELD ON, LA COUNTY

TRIM ROOF

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

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

CAB EXTERIOR TRIM

The cab shall include diamond plate along the entire exterior rear wall.
LA COUNTY ANTENNA ARRAY COVER PLATES
TILLER ALIGN INDICATOR, LED
CAB HEADER - HEAT AND AC
Cab Header / Heating and AC

CAB HEADER

The cab header shall offer an aluminum cover.

ABS polymer construction shall not be acceptable. No Exceptions.

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

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

The cab header shall also be purpose built for integration of Fire/EMS components and ease of maintenance with a panel in the middle of the cab.

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HVAC HEATING AND COOLING SYSTEMS

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

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

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

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

DEFROSTING SYSTEM

The defrosting system shall feature:

- To provide maximum defrost and heating performance, a 30,000 BTU heater-defroster unit will be provided inside the cab.
- The defroster unit will be strategically located under the center forward portion of the instrument panel. For easy access, a removable cover will be installed over the defroster unit.
- Six (6) vents shall be located in the top forward portion of the dash for superior defrosting properties across the entire windshield.
- Defrost vents for the driver and officer windows.
- The system shall be capable of clearing 90 percent or more of the windshield in fifteen (15) minutes or less after a three (3) hour cold soak at 0 degrees Fahrenheit (-17.78 degrees Celsius).
- The system shall exceed Flash Fogging standards that are set forth in the SAE Heavy-duty Cab with Sleeper specifications. Documentation from a third-party testing facility shall be available upon request. No Exception.
- The defroster will include an integral aluminum frame air filter, high performance dual scroll blowers, and ducts designed to provide maximum defrosting capabilities for the one (1) piece windshield.

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HEATING SYSTEM

The heating system shall feature:

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

AIR CONDITIONING

The air conditioning system shall feature:

- One (1) evaporator shall be located under the center dash and Two (2) crew overhead evaporators located center of the cab 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, Composite dash will have six (6) adjustable louvers, located in the dash, three (3) adjustable louvers shall be directed at the driver and three (3) adjustable louvers shall be directed at the officer and floor vents at the driver and officer. Aluminum dash will have (4) adjustable louvers, located in the dash, two (2) adjustable louvers directed at the driver and two (2) adjustable lovers directed at the officer and floor vents at the driver and officer.
- The air condition system shall be capable of cooling the cab with an engine RPM of 1250, as follows. A certification document from the testing facility shall be available upon request. No Exception.

A controlled testing chamber with Rosenbauer America fire truck within was heated utilizing heat lamps to simulate heat from the sun to create realistic solar loading. The truck interior was extremely heated to a minimum temperature of 115 degrees Fahrenheit for a minimum of 1hour soak maintaining a stable temperature with a relative humidity of 20%. Thirteen (13) Thermocouple sensors were used to measure temperature variations within the apparatus cab.

- ArcticBlast Climate Control pulled the temperature down 30 degrees in 4 minutes.

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- ArcticBlast Climate Control pulled the temperature to 70 degrees or less in 15 minutes across all thermocouples

After all doors opened in cab temperature dropped from 82 degrees Fahrenheit to 64 degrees Fahrenheit

- ArcticBlast Climate Control: Open the door for 1 minute and recover: System was able to recover in less than 1 minute to 64 degrees or less across all comfort probes.

CAB PAINT AIR CONDITIONING CONDENSER COVER

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

HEATER HOSE

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

Rear Crew Controls Advanced Wiring

The Rear Crew HVAC controls will be wired so that whenever the A/C is turned on in the cab the rear crew A/C fans will also come on at the low setting, to prevent the evaporators from freezing up.

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.

USSC AIR FILTRATION SYSTEM

=====No Auxiliary Roof Mounted A/C Coleman Roughneck 13.5K =====

HEATING AND COOLING CONTROLS

The HVAC system shall be controlled through all available vistas, and the HVAC system for the crew area shall be controlled through a manual panel located in the crew area.

REAR CREW AREA CONTROLS –CENTERED OVERHEAD

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

AC CRIMP TOOL

SEAT AND SEAT BELT COLOR

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

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DRIVER SEAT

The driver's seat shall be a H. O. Bostrom Sierra, Air-30RX/HD/ABTS LH air suspension, high back bucket. The seat shall have contoured, high-density cushions with lumbar support and an occupancy sensor in the seat cushion. The seat shall have a five-inch fore and aft adjustment, a one and one-half inch height adjustment with a reclining back. The seat air ride suspension shall be pneumatically controlled from a control switch on the forward lower edge of the seat.

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.

SEAT BACK

The seat back shall incorporate a standard style headrest.

HEAVY DUTY SHOCK ABSORBER

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

SEAT MOUNTING DRIVER

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

SEAT MATERIAL

The seats shall include 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.

SEAT BACK LOGO

The seat back shall not have any logo.

DRIVER SEAT BOX STORAGE COMPARTMENT

There shall be a storage area under the driver's seat. The compartment shall be 21.25 inches wide, 22.50-inches long, and 6.25 inches high. The access opening shall be 15.00 inches wide and 4.50 inches high.

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.

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OFFICER SEAT

The officer's seat shall be a H. O. Bostrom Sierra, Air-30RX/HD/ABTS LH air suspension, high back bucket. The seat shall have contoured, high-density cushions with lumbar support and an occupancy sensor in the seat cushion. The seat shall have a five inch fore and aft adjustment, a one and one half inch height adjustment with a reclining back. The seat air ride suspension shall be pneumatically controlled from a control switch on the forward lower edge of the seat.

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 cavity cover (parade panel) if equipped with an SCBA cavity.

SEAT BACK

The seat back shall incorporate a standard style headrest.

HEAVY DUTY SHOCK ABSORBER

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

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.

SEAT BACK LOGO

The seat back shall not have any logo.

OFFICER'S SEAT BOX STORAGE COMPARTMENT

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

FORWARD FACING OUTER SEAT

Two (2) forward facing outer seats shall be Bostrom flip-up seats and shall feature all the seat belts within the seat (ABTS). The seat shall come with a parade panel if equipped with an SCBA cavity.

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.

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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.

SEAT MOUNTING FORWARD FACING OUTBOARD

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

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.

SEAT BACK LOGO

The seat back shall not have any logo.

FORWARD FACING CENTER SEAT

One (1) forward facing center seats shall be H.O. Bostrom 400 flip-up seats and shall feature all the seat belts within the seat (ABTS). The seat shall come with a cavity cover (parade panel) if equipped with an SCBA cavity.

SEAT BACK

The seat back shall incorporate a standard style back.

SEAT MOUNTING FORWARD FACING CENTER

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

SEAT MATERIAL

The seats shall include 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.

SEAT BACK LOGO

The seat back shall not have any logo.

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SEAT FRAME FORWARD FACING ENCLOSED

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

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

SEAT FRAME FORWARD-FACING ACCESS

The seat frame shall include dual cutouts in the wall facing the tunnel for access. The cutouts shall be a minimum of 7.5"h x 17" w.

SEAT FRAME FORWARD FACING ACCESS DOORS

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

SEAT COMPARTMENT DOOR FINISH

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

SEAT COMPARTMENT FINISH

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

FORWARD FACING SEATBOX, VENTILATION FANS W/ THERMOSTAT

Ventilation Fans

Exterior Grab Handles 24" Aluminum

Exterior Grab Handles Bare Aluminum w/ Lighting

EXTERIOR GRAB HANDLES

One (1) 24" 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. The handles shall be mounted to the cab with nutserts. No Exception.

GRAB HANDLE LIGHT ACTIVATION

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

CAB FASCIA

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

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

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FRONT GRILLE

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

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

LIGHT BEZEL

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

===== No Front Grille, Grille Glo =====

FRONT GRILLE INLAY

The front grille shall include a honeycomb inlay of steel, painted black, which shall provide air flow to through the grille and provide a sporty, muscular appearance to the front of the apparatus.

The horizontal bars shall be overlaid with polished stainless steel strips.

FLUID FILLS & CHECK

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

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

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

- Power Steering
- Windshield Washer

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

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LED HEADLIGHTS

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

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

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

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

DAYTIME RUNNING LIGHTS

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

HEADLIGHT FLASHER

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

HEADLIGHT FLASHER SWITCH

The alternating high beam headlamp switch shall be located in the VISTA screen.

HEADLIGHT LOCATION

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

FRONT MARKER LAMPS

The cab front shall include five (5) LED amber marker lamps above the windshield in accordance with the Department of Transportation requirements. Front Marker Lamps Face Mounted LED (Center 3 Lightings, 2 Corner)

SIDE MARKER LIGHTS

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

FRONT TURN SIGNALS

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

TURN SIGNAL LOCATION

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

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HEADLIGHT AND MARKER LIGHT ACTIVATION

The head light and marker lights shall be activated through a switch on the driver's panel.
4 WAY FLASHERS BATTERY DIRECT

CAB FENDERS

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

CAB EXTERIOR TRIM

The rear corners of the cab shall be trimmed in polished Stainless-steel to provide protection for painted surfaces and to enhance the appearance of the cab.

==== No Stainless-Steel Rear Wall Cap - pick to select =====

COMMANDER LOGO

A COMMANDER logo shall be installed on each side of the chassis cab.

FRONT MUD FLAPS

The cab and chassis shall be provided with rubber anti-spray front mud flaps.
CAB EXTERIOR REAR WALL LIFTING EYELETS, LA COUNTY

CAB TILT SYSTEM

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

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

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

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

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

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

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

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

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

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

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

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

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

CAB TILT LIMIT SWITCH

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

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

CAB TILT LOCK DOWN INDICATOR

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

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

CAB TILT ALARM

As the cab is tilted, there shall be an alarm which sounds as a warning.

REARVIEW MIRRORS

West Coast Style Mirrors

REARVIEW MIRRORS

Retrac Aerodynamic West Coast style single vision mirror heads model 613770 shall be provided and installed on each of the front cab doors. The mirrors shall be mounted via 1" diameter tubular Stainless-steel arms to provide a rigid mounting reducing mirror vibration.

The mirrors shall measure 8" wide x 19" high and shall include an 8" convex mirror with a Stainless-steel back, model 980-4, installed below the flat glass to provide a wider field of vision. The flat mirror shall be motorized with remote horizontal and vertical adjustment. The convex mirrors shall be manually adjustable.

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

REARVIEW MIRROR REMOTE ACTIVATION

The driver's panel shall include activation for the rearview mirrors remote function.

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CAB SINGLE TONE PAINT

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

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

The cab shall then be painted with the specific color 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.

CAB PAINT LOWER

The lower or primary cab color shall be PPG _____ color and _____ number.

CAB UNDERCOAT

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

PAINT SPRAY OUT

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

FRONT AXLE

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

The axle shall have a magnetic plug.

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

FRONT WHEEL BEARING LUBRICATION

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

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FRONT SUSPENSION

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

POWER STEERING GEAR WITH ASSIST

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

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

A certified torque and geometry study by TRW shall be available upon request.
Power Steering Provision for Tiller

CHASSIS ALIGNMENT

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

Alignment documentation shall be available upon request.
425 Front Tires

STEER TIRES

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

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

TIRE BALANCING

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

SPARE TIRE FRONT

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

TIRE BALANCING

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

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FRONT WHEEL

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

==== No Run Flat Tire Safety Ring ====

SPARE FRONT WHEELS

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

==== No Front Full Wheel Cover ====

==== No Run Flat Tire Safety Ring ====

FRONT BRAKES

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

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

STEERING COLUMN AND WHEEL

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

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

REAR AXLE

A Meritor RS-30-185 driving axle shall be incorporated as the rear axle for the chassis. The axle shall feature:

- Rated capacity of 33,000 pounds
- Heavy duty Hypoid gearing for longer life, increased strength and quieter operation
- Industry-standard wheel ends for compatibility with 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
- A magnetic plug
- 5-year warranty

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REAR AXLE DIFFERENTIAL LUBRICATION

The rear axle differential shall be lubricated with oil.

REAR WHEEL BEARING LUBRICATION

The rear axle wheel bearings shall be lubricated with oil.

REAR SUSPENSION

The single rear axle shall feature a Hendrickson Roadmaax air suspension. The suspension shall include two optimized air springs mounted to cast structural trailing arms, a transverse cross beam for increased roll stability and two heavy duty shock absorbers. Dual air height control valves shall be installed to ensure equal frame height on both sides of the vehicle regardless of the load. Axle alignment is maintained using two eccentric bushings at each frame bracket.

The rear suspension capacity shall be rated at 35,000 pounds.

REAR BRAKES

The rear brakes shall be Meritor 16.50 inch X 8.63 inch S-cam drum type.

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

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.

REAR SHOCK ABSORBERS

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

REAR TIRES

The rear tires shall be Bridgestone 315/80R 22.5 tubeless radial M870A tread.

The rear tires shall feature:

- A stamped load capacity of 36,360 pounds per axle with a speed capacity of 65 miles per hour when properly inflated to 130 pounds per square inch

TIRE BALANCING

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

SPARE TIRE REAR

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

TIRE BALANCING

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

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REAR WHEEL

The rear wheels shall be Alcoa hub piloted, heavy duty, 22.50 inch X 9.00 inch polished aluminum wheels. Each outer wheel shall have a polished aluminum finish on the exterior surface and each inner wheel shall have a machine finish. The hub piloted mounting system shall provide easy installation and shall include two-piece flange nuts.

SPARE REAR WHEEL

The apparatus shall be delivered with a spare rear wheel. The spare wheel shall be an Alcoa hub piloted, heavy duty, 22.50 inch X 9.00 inch polished aluminum wheels. Each outer wheel shall have a polished aluminum finish on the exterior surface and each inner wheel shall have a machine finish. The hub piloted mounting system shall provide easy installation and shall include two-piece flange nuts.

VALVE STEM EXTENSION - 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.

===== No Full Wheel Cover, Rear Wheel =====

VEHICLE TOP SPEED

The top speed of the vehicle shall be programmed at approximately 60 MPH +/-2 MPH at 1,750 RPM.

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. A spring brake release valve shall be installed to provide a controlled service brake application during an unlikely event including primary air supply loss. 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.

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

AIR TANK BRACKETS & STRAPS

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

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

PARK BRAKE

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

In addition to the mechanical rear brake engagement, the front service brakes will also engage via air pressure, providing additional braking capability.

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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 of the console within easy reach of the driver and more easily accessible to the officer.

AIR DRYER

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

The system shall have the following features:

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

MOISTURE EJECTORS

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

AIR SUPPLY LINES

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

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

AIR HORN SHUTOFF VALVE

A shut-off valve located under the front bumper shall be installed in the air horn supply line. The valve shall be clearly marked and accessible without tilting the cab.

AIR INLET CONNECTION

An air connection for the shoreline air inlet shall be supplied.

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PLUMBING AIR INLET CONNECTION

The air inlet connector shall be plumbed to the air system with a check valve to prevent air from escaping through the inlet connector.

AIR INLET LOCATION

The air inlet shall be located on the driver side of the cab above the wheel well.

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.

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.

AIR OUTLET LOCATION

The air outlet shall be located in the driver's middle step towards the front of the cab.

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.

TRAILER AIR BRAKE CONNECTION PACKAGE

The trailer air brake connection shall be accomplished via tractor connection points provided at the rear of the chassis. The connections shall terminate at the rear cross member and shall be temporarily plugged for final installation by the OEM.

FRAME

The chassis frame shall consist of two (2) "C" style parallel rails, constructed of high strength low alloy and shall feature the following:

- A Stenx **MODEL 110XF** 10.19" high by 3.63" deep cold rolled steel frame or equivalent.
- .38" thick flange
- Inner channel measuring 9.31" high x 3.25" deep x .25" thick
- The 10.19" frame height shall be maintained throughout the entire length of the frame to allow for maximum storage capacity for the entire apparatus.
- If frame rails that are larger than those specified are to be utilized, the maximum height of each frame rail shall not exceed 10.25" at any point on the frame rail. This will ensure the lowest possible vehicle center of gravity allowing maximum stability as well as providing the lowest body height possible.
- Frame rail shall have a consistent frame web throughout the entire length.
- The entire frame rail design shall be manufactured in the United States of America and readily available on the aftermarket.
- Grade 8 Structural fasteners, Huck bolts shall not be acceptable. No Exception.

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- The hardware used for the chassis shall be are to be corrosion resistant. The process shall be dip-spin-bake coated with two coats of zinc/aluminum metal flake coating in an inorganic binder. Coating one is to be zinc flake and coating two is to be aluminum flake. The zinc flakes sacrificially corrode to protect the base metal. The aluminum flakes prolong the life of the zinc. Salt fog test life, based on ASTM B117 on unassembled fasteners, is 1000 hours to red rust. The same test on assembled fasteners is 750 hours to red rust. The two step coating is RoHS compliant as it eliminates the hexavalent chromium used in the passivation of electroplated zinc coatings to create yellow zinc (zinc dichromate). The elimination of the zinc plating also greatly reduces the likelihood that hydrogen embrittlement will occur. Hydrogen embrittlement is a side effect of electroplating that reduces toughness and can lead to fracture. No Exception
- Manufacturer's lifetime warranty

The frame ratings shall be as follows:

- 110,000 PSI minimum yield strength high strength low alloy steel
- Minimum Resisting Bending Moment (RBM) of 2,810,000-inch pounds per rail

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

UNDER-FRAME REINFORCEMENT

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

The under-frame reinforcement provides:

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

CROSS MEMBERS

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

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

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FRONT FRAME EXTENSION

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

- Reduces frame flex which translates into improved vehicle handling and ride quality
- Designs using multiple piece, bolted together extensions will not be acceptable since they are prone to more flexing, possible frame failure and cab cracking
- Allows radiator to be removed through the bottom of the frame extension without tilting the chassis cab
- Minimizes damage to the chassis cab in the event of frontal impact accident
- Maintains structural integrity of the chassis frame rails while attaching bumper extensions of varying lengths
- Splayed or notched frame rails and/or extensions shall not be accepted
- Provides foundational strength and stability of the cab tilt system which provides superior access to engine and cooling components

FRAME FINISH

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

Engine Placement

ENGINE

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

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

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

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

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

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

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

ENGINE PLACEMENT

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

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

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

AIR COMPRESSOR

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

AIR GOVERNOR

An air governor shall be provided to control the cut-in and cut-out pressures of the engine mounted air compressor. The governor shall be calibrated to meet FMVSS requirements. The air governor shall be integrated in the air dryer assembly.
Cummins X12 & X15 Surchage

HORSEPOWER

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

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

The engine shall have a standard drain plug.

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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.

A Horton Drive Master or equal thermostatic, 2-speed, air actuated fan clutch shall be provided.

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.

CLUTCH FAN SWITCH

A switch on the dash shall be provided to turn the fan clutch on and off manually. The switch shall not function to turn off the fan when the fan is activated due to high coolant temperature.

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

AUXILIARY ENGINE BRAKE

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

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

TRANSMISSION PRE-SELECT

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

AUXILIARY ENGINE BRAKE CONTROL

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

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

The auxiliary brake shall be controlled through an on/off switch and individual low/medium/high selector switches on the Driver's panel.
AC COMPRESSOR, ARCTIC BLAST SYSTEM, 15L

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ENGINE PROGRAMMING HIGH IDLE SPEED

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

ENGINE HIGH IDLE CONTROL

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

This device shall operate only when the master switch is activated and the transmission is in neutral with the parking brake set. The device shall disengage when the operator depresses the brake pedal, or the transmission is placed in gear, and shall be available to manually through a virtual switch in the Vista, or automatically re-engage when the brake is set, or when the transmission is placed in neutral. A light on the Vista screen shall indicate the high idle speed control.

ENGINE AIR INTAKE

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

The filter shall protect the downstream air filter from embers using a combination of unique flat and crimped metal screens constructed into a corrosion resistant steel frame.

This multilayered screen shall be designed to trap embers or allow them to burn out before passing through the pack, while creating only minimal air flow restriction through the system. Periodic cleaning or replacement of the screen shall be all that is required after installation.

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

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

The filter must have a capacity of no less than 1350 cubic feet of air per minute. The filter paper media must be of a flame retardant treated material. An electric air filter restriction indicator shall also be included with the system.

ENGINE EXHAUST SYSTEM

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

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

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

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

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

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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 ten (10) usable gallons (18.92 Liters) and shall be mounted on the left hand side of the chassis frame in front of the batteries below the frame. The mounting bracket shall be Hot Dipped Galvanized.

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

DIESEL EXHAUST FLUID TANK

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

ENGINE EXHAUST ACCESSORIES

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

ENGINE EXHAUST WRAP

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

DIESEL PARTICULATE FILTER CONTROLS

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

Warning systems shall provide DEF low level warning.

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

The switches shall be located in a covered location.

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CUMMINS EXTENDED WARRANTY

A Cummins 10 year, 200,000-mile Major component warranty shall be included with the apparatus.

The warranty shall include but not be limited to the following components:

- Engine Cylinder Block Castings
- Engine Cylinder Head Castings
- Engine Cylinder Head Capscrews
- Engine Crankshaft forging
- Engine Camshaft Forging
- Engine Connecting Rods
- Flywheel Housing
- Engine Manifold Castings
- Valve Castings
- Oil Cooler Cover/Filter heads
- Oil Pan
- Gear Cover and Housing
- Gear Train Gears
- Camshaft Idler Gear
- Accessory Drive Gear
- Fuel Pump Drive Gear

Warranties not supplied by Cummins will not be accepted, No Exception.

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

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COOLANT HOSES

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

All heater hoses within the cab shall be Goodyear Blue Hi- miler or equal. Silicone hoses are not acceptable in the cab.

ENGINE COOLANT

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

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

ADDITIONAL COOLANT SHUT OFF VALVE

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

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.

Label, Under Cab Engine ACC Belt Diagram, X15

Drain Valve, Engine Oil, X15, Femco "No Spill", 10-27200-02

TRANSMISSION

The drive train shall include an Allison model EVS 4500 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	4.70:1
2nd	2.21:1
3rd	1.53:1
4th	1.00:1
5th	0.76:1
6th	0.67:1 (if applicable)
Rev	5.55:1

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TRANSMISSION COOLING SYSTEM

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

TRANSMISSION DRAIN PLUG

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

AUTOMATIC NEUTRAL

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

TRANSMISSION FLUID

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

TRANSMISSION SHIFT SELECTOR

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

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

PTO LOCATION

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

TRANSMISSION MODE PROGRAMMING

The transmission, upon start-up, will select a six (6) speed operation without the need to press the mode button.

TRANSMISSION PROGRAMMING

The EVS Vocation Package Number 198 for the fire service for this apparatus as a Pumper. This package shall incorporate an automatic neutral with selector override. This feature commands the transmission to neutral when the park brake is applied, regardless of drive range requested on the shift selector which requires re-selecting the drive range to shift out of neutral for the override.

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

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

The trans module shall contain the following circuits:

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

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TRANSMISSION RETARDER CAPACITY LEVEL

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

TRANSMISSION RETARDER CONTROL

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

DRIVELINE

All drivelines shall be heavy duty metal tube and equipped with Spicer 1810 series universal joints.

The shafts shall be dynamically balanced prior to installation to alleviate future vibration. In areas of the driveline where a slip shaft is required, the splined slip joint shall be coated with Glide Coat®.

Driveline Grease Guards

Transmission Cooler, 4000 Retarder, Aux Sump and Converter Cooler

SELECTOR SWITCH

A Switch shall be provided when more than one secondary braking system is selected. The switch shall allow the operator to choose which braking system shall be active at any one time. The switch shall be located in the Vista on trucks with the V-Mux electrical system.

FUEL FILTER/WATER SEPARATOR

The fuel system shall incorporate a Racor 3150R-1210, 10 micron fuel filter/water separator as a primary filter. The fuel filter shall have a sight bowl to allow visual inspection of fuel and a drain valve to remove visible contaminants. The instrument panel shall signal when water is present in the fuel/water separator through an audible alarm and lamp.

A water-in-fuel sensor probe shall be installed in the filter bowl and wired to the water in fuel (WIF) indicator lamp on the cab dash.

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

FUEL SYSTEM

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

The tank shall offer:

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

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

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

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

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

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

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

FUEL LINES

All non-pressurized fuel lines shall be FC300 or Department Approved Equal, brown in color. Fuel lines shall be sized in accordance with the engine manufacturer’s recommendations.

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.

FUEL COOLER

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

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

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

FUEL TANK SERVICE LINE

The fuel lines shall be extended to 12’.

ALTERNATOR

The charging system shall include a 320-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

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V-MUX 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:

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

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

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

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

EMI/RFI PROTECTION

To prevent erroneous signals from crosstalk contamination and interference, the electrical system will meet, at a minimum, SAE J551/2, thus reducing undesired electromagnetic and radio frequency emissions. An advanced electrical system will be used to ensure radiated and conducted electromagnetic interference (EMI) or radio frequency interference (RFI) emissions are suppressed at their source.

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

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

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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.
- 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.

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- Cab and crew cab harnessing will not be routed through enclosed metal tubing. Dedicated wire routing channels will be used to protect harnessing therefore improving the overall integrity of the vehicle electrical system. The design of the cab will allow for easy routing of additional wiring and easy access to existing wiring.
- All braided wire harnesses will have a permanent label attached for easy identification of the harness part number and fabrication date.
- All standard wiring entering or exiting the cab will be routed through sealed bulkhead connectors to protect against water intrusion into the cab.

BATTERY CABLE INSTALLATION

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

SAE J1127 - Battery Cable

SAE J561 - Electrical terminals, eyelets and spade type

SAE J562 - Nonmetallic loom

SAE J836A - Automotive metallurgical joining

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

NFPA 1901 - Standard for automotive fire apparatus

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

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

ELECTRICAL COMPONENT INSTALLATION

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

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

SUMMARY OF LOAD MANAGEMENT SYSTEM

In the V-MUX electrical system there will be eight pre-defined Load Manager Trigger points spaced apart in 0.4 Volt increments. Each Output channel can be set for Load Management that will be turned OFF if node voltage falls below a certain level. The trigger points will be configured as shown below.

Load Manager Trigger Points:

1: 12.5-V	Load Shed Region 1 (12.5 - 12.1 V)
2: 12.1-V	Load Shed Region 2 (12.1 - 11.7 V)
3: 11.7-V	Load Shed Region 3 (11.7 - 11.3 V)
4: 11.3-V	Load Shed Region 4 (11.3 - 10.9 V)
5: 10.9-V	Load Shed Region 5 (10.9 - 10.5 V)
6: 10.5-V	Load Shed Region 6 (10.5 - 10.1 V)
7: 10.1-V	Load Shed Region 7 (10.1 - 9.7 V)
8: 9.7-V	

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When the voltage of a Load Managed device recovers back above the trigger point, there will be an additional 30 seconds before the Output channel is turned back ON. This buffering time is to ensure that the added load doesn't immediately pull the voltage back below the trigger point.

Below are the standard voltage managed outputs that will be triggered off at 12.1 V.

HVAC FAN MED
HVAC FAN HIGH
HVAC FAN LOW
AUX DEFROST FANS
A/C CONDENSER FANS RLY
A/C COMPRESSOR CLUTCH

AUTO THROTTLE (AUTO HIGH IDLE)

There will be an Automatic High Idle (Auto Throttle) logic that will run in conjunction with the Load Management. The Auto Throttle logic will be ran on the Hercules node under the passenger side kick panel compartment. The standard system design will be triggered on at 12.3 V and triggered off at 12.6 V with a 30 second delay before disengagement. The Auto Throttle function will act to turn the V-MUX High Idle Output ON and OFF. In turn the High Idle sends a signal to the engine ECU. The Auto Throttle Command will be interlocked with **Park Brake** and **Park/Neutral** for safety. A **Service Brake** override interlock will also be configured to immediately return the engine to Low Idle if the vehicle has to move.

12V POWER POINTS

There shall be one (1) 12v power point and one (1) dual USB power point provided. They shall be mounted in the driver's side of the dash. They shall be within easy reach of the driver; and shall be wired directly to the battery

12V POWER POINTS

There shall be one (1) 12v power point and one (1) dual USB power point provided. They shall be mounted in the officer's side of the dash. They shall be within easy reach of the officer; and shall be wired directly to the battery

Driver Switch Panels, Black

MULTIPLEX DISPLAYS

Two (2) Weldon Vista IV displays shall be located one (1) on the driver's side dash and one (1) on the officer's side of the dash.

The Vista IV displays shall feature:

- A full color LCD display screens
- A message bar displaying the time of day, and important messages requiring acknowledgement by the user
- Four (4) push button style controls on either side of the screen for the on-board diagnostics
- Seven (7) push button style controls located below the screen for the on-board diagnostics
- Video ready display screens for back- up cameras, thermal cameras, and DVD
- A DIN type input connector ready for GPS interfacing shall be incorporated into the back of the display
- There shall be a display which indicates any open cab door with a visual display.
- There shall be a text message indication for low washer fluid.

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The Vista IV displays shall measure approximately 10.36" wide x 7.63" in height.

DRIVER SWITCHES

The driver switch panel to the right of the Driver's position shall include two power points in the upper left corner and one (1) row with six (6) backlit rocker switches with laser etched labels located under the Weldon Vista screen.

Standard switches shall include:

- Windshield Wiper/Washer Control (except when Smart Wheel is specified)
- Dash panel dimmer switch

V-MUX WARRANTY – 4 YEAR

A four (4) year limited (V-MUX) multiplex system warranty, of Weldon Technologies, Incorporated; shall be provided by the apparatus manufacturer for parts and labor, while under normal use and service; against mechanical, electrical and physical defects from the date of manufacture.

The warranty shall exclude; sensors, shunt interface modules, serial or USB kits, transceivers, cameras, GPS, and electrical display screens, which shall be limited to a period of one a (1) year repair parts and labor from the date of installation. A copy of the warranty shall be provided with each Bidders proposal for the review and evaluation of the Purchaser.

VISAT IV -LA LEGEND OPTION

ACCESSORY POWER DISTRIBUTION PANEL

An accessory power distribution panel shall be installed. The panel shall feature a covered twelve (12) blade type fuses and have a ground section; and shall be protected by a 40 amp fuse. The panel shall be capable of carrying up to a maximum 40 amp battery direct load.

ADDITIONAL POWER & GROUND STUDS

One (1) additional 40A power and 1/4" ground studs shall be provided. These shall be powered directly from the battery.

ADDITIONAL POWER & GROUND STUDS

One (1) additional 40A power and 1/4" ground studs shall be provided. These shall be powered through the master switch.

POWER CABLE FOR ADDITIONAL POWER STUDS

In order to meet NFPA voltage drop requirements an additional power cable shall be added to appratus.

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DATA RECORDING SYSTEM

The chassis shall have a Weldon Vehicle Data Recorder system installed. The system shall be designed to meet NFPA 1901. The following information shall be recorded:

- Vehicle Speed
- Acceleration
- Deceleration
- Engine Speed
- Engine Throttle Position
- ABS Event
- Seat Occupied Status
- Seat Belt Status
- Master Optical Warning Device Switch Position
- Service Brake
- Engine Hours
- Time
- Date

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

SEAT BELT WARNING

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

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

COMMANDER, DIGITAL GAUGE, ALUMINUM DASH, FOLD DOWN

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CAB INSTRUMENTATION

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

The gauges shall be easy to read including.

The instrument panel shall contain the following gauges and indicators:

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

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

- 1 Odometer
- 2 Transmission oil temp
- 3 Engine oil temp
- 4 Speedometer
- 5 Engine hours
- 6 Engine and transmission code
- 7 Exhaust temp
- 8 Engine coolant temp
- 9 Engine oil PSI
- 10 Turbo boost PSI
- 11 Primary air pressure
- 12 Secondary air pressure
- 13 Engine load %
- 14 Engine torque
- 15 Battery volts
- 16 Fuel level %
- 17 Vehicle speed
- 18 RPM
- 19 DEF level (when applicable)
- 20 Instant fuel economy
- 21 Average fuel economy
- 22 Engine hours
- 23 Capable to record three trips, each shall include:
 - Trip distance
 - Fuel economy
 - Fuel used
 - Idle fuel used
- 24 The screen shall also provide diagnostic capability

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

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BLUE Indicator Lights

- 25 High Beam Headlight

GREEN Indicator Lights

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

YELLOW Indicator Lights

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

RED Indicator Lights

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

ALARMS

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

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

INDICATOR LAMP AND ALARM PROVE-OUT

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

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DIAGNOSTIC PANEL

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

The diagnostic panel shall include:

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

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

- 46 Transmission diagnostic port
- 47 ABS diagnostic port

SRS diagnostic port (when applicable)

6 Battery System

BATTERIES

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

The batteries shall feature:

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

BATTERY COMPARTMENTS

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

The each battery compartment shall feature:

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

BATTERY CABLES

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

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

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BATTERY JUMPER STUD

The starting system shall include battery jumper studs.

These studs shall be located in the forward most portion of the driver's side lower step.

The studs shall allow the vehicle to be jump started, charged, or the cab to be raised in an emergency in the event of battery failure.

IGNITION

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

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

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

Ignition Switch - Right side of steering wheel

POWER & GROUND STUD

An electrical distribution panel shall include two (2) power studs. The studs shall be a minimum of 1/4" and each of the power studs shall be circuit protected with a fuse of the specified amperage. One (1) power stud shall be capable of carrying up to a 40-amp battery direct load. One (1) power stud shall be capable of carrying up to a 15-amp ignition switched load. The two (2) power studs shall share one (1) 1/4" ground stud.

GROUND LIGHTS

Each door shall include a Techniq Strip 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.

GROUND LIGHT ACTIVATION

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

CAB STEP LIGHTING

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

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

STEP LIGHT ACTIVATION

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

INTERIOR DOOR WARNING LIGHTS

The interior of each door shall include one (1) 15" Weldon Amber Direct Flash LED warning light located on the door above the window. Each light shall activate with a flashing pattern when the door is in the open position to serve as a warning to oncoming traffic.

DOOR JAMB WARNING LIGHTS

ENGINE COMPARTMENT LIGHTING

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

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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.

ADDITIONAL DOME LIGHT

One (1) additional dual red and white dome lamp(s) shall be provided. 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.

ROOF TOP SPOT LIGHT

One (1) GoLight Model 20214 (black) LED spotlight with wired dash-mount remote shall be installed on the officer's side cab roof.
Go-Light Mount Officer Side - 8-11"

ROOF TOP SPOT LIGHT

One (1) GoLight Model 20214 (black) LED spotlight with wired dash-mount remote shall be installed on the driver's side cab roof.
Go-Light Mount Driver Side - 8-11"

DO NOT MOVE APPARATUS LIGHT

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

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

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

NFPA requires red light. NFPA 1901.13.11.1

DOOR OPEN ALARM

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

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.

=== NO Captium System - Pick to Select ===

AERIAL INTERFACE

==== No Aerial Mount ====

Aerial Pre Wire - V-Mux

Aerial Interface - Tiller

Electrical Provision for Tiller

Camera System with V-Mux

Camera System - Chrome Side Cameras

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REAR & SIDE FACING CAMERA

A rear facing black box style rearview camera shall be installed on the rear of the vehicle. There shall also be a teardrop style rearview camera mounted to the Officer side of the vehicle. The rear camera shall be activated when the vehicle transmission is shifted to reverse, and the side tear drop camera shall be activated with the blinker. The image viewed on the Driver and Officer's side Vista.

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

360° Camera System

===== No 360° Camera - Pick to Select =====

BATTERY CHARGER

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

CHARGER LOCATION

The battery Charger shall be located inside the EMS compartment located behind the driver's seat.

EJECTION UNIT

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

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

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

SHORELINE LOCATION

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

The battery Charger Indicator shall be located above the wheel well.

Build Station 10 Activations

Additional Chassis Discount

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== 100' TDA Technical Information - 0.000 ==

AERIAL COST IS DEALER NET

Truck Information

100' FOUR SECTION LA COUNTY TRACTOR DRAWN AERIAL

100' FOUR SECTION TRACTOR DRAWN AERIAL

Aerial Ladder Design and Construction

A 100' four-section steel aerial ladder shall be provided. The ladders shall be all steel tubular construction with round rungs and "K" bracing. The rated capacities of the aerial ladder shall be attainable with the tractor and trailer in an in-line configuration and in addition to any fire-fighting equipment installed on the aerial ladder by the manufacturer. It shall have a maximum height that will vary between 98' to 100' (pending options) at the top rung of the fly section at 75-degrees elevation. The horizontal reach from the top rung to the center of the turntable shall be 94' 4.1".

Operation on grades

The aerial shall be capable of being operated with full rated capabilities in any plane up to 5-degrees out of level with the turntable leveled as much as possible by placement of the outriggers. Operation beyond this limit shall be at the operator's discretion.

Extension And Retraction System

Two [2] 5" inside diameter cylinders, each with 2-1/2" outside diameter rods and a 62" stroke, are used in the extension and retraction system. The specified extension cylinders shall not exceed the specified length. The required length cylinders shall place the cylinder weight closer to the base of the aerial device. Smaller size cylinders are required since they are easier to handle for removal for service reasons. In addition, the specified shorter stroke cylinders provide less potential for damage to the rod by hitting an obstacle when extended.

The extension cylinders shall have counter balance valves mounted directly to them and shall extend and retract the aerial with a 4 to 1 cable cylinder arrangement from totally retracted to 100' at 75 degrees totally extended.

The extension and retraction system shall have six [6] pairs of galvanized cables. Lower-mid section cables shall have a .50" diameter and upper-mid section cables shall have a .375" diameter, and the fly section cables shall have a .3125" diameter. The sheaves, in which the cables run on, shall be galvanized, no exception. A galvanized cable running on a galvanized sheave creates a natural lubricate allowing the cables to run more freely minimizing the wear on the cables.

Each of the cylinders, cables, and sheave assemblies shall be completely independent of the other system, so as to provide a safety factor wherein a failure of one assembly shall not affect the function and operation of the other assembly. Each set of cables shall be capable of operating the ladder in the event of a failure of the other.

There are no restrictions on the waterway as the ladder is extended and retracted

State-of-the Art Technology

The aerial device materials, parts, technology or procedures used in construction of the apparatus are subject to change at the manufacturer's discretion to provide "equal or better" products and must be in compliance to applicable NFPA #1901 standards and industry standard practice.

BASE SECTION

The ladder base section length shall 345.5", with inside dimension of 39.25"; distance between the top of the handrail and the centerline of the rungs shall be 33". The base rails shall be 100,000 PSI material and the handrails shall be 100,000 PSI material. All rungs shall be spaced 14" on center.

The aerial ladder heel pin position and rear handrails shall be so designed as to provide unobstructed access to the aerial ladder when elevated.

LOWER MID SECTION

The ladder lower-mid section length shall be 352.5", with inside dimension of 33.375"; the distance between the top of the handrail and the centerline of the rungs shall be 29". The base rails shall be 100,000 PSI material and the handrails shall be 70,000 PSI steel material. All rungs shall be spaced 14" on center.

UPPER MID SECTION

The ladder upper mid-section length shall be 353.5", with inside dimension of 27.375", the distance between the top of the handrail and the centerline of the rungs shall be 25". The base rails shall be 70,000 PSI material and the handrails shall be 70,000 PSI steel material. All rungs shall be spaced 14" on center.

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FLY SECTION

The ladder fly section length shall be 354.5" including the bolt-on egress, with inside dimension of 22.125"; the distance between the top of the handrail and the centerline of the rungs shall be 21.5". The handrails shall be 70,000 PSI steel material and base rails shall be 100,000PSI. All rungs shall be spaced 14" on center. The last three rungs on the fly section shall be modified to accept the Akron ladder pipe. K-braces needs to be installed on the last 3 rungs, instead of the gussets, they should not go to the center of the rung so the monitor can still be used.

AERIAL ENGINEERING DRAWINGS

TECHNICAL DRAWINGS

Technical and engineering drawings shall be provided for the aerial ladder as follows: left side view, top view and rear view.

ELECTRICAL DRAWINGS

Technical and engineering drawings shall be provided for the 12 volt electrical system for the model of apparatus specified.

HYDRAULIC DRAWINGS

Technical and engineering drawings shall be provided for the aerial device hydraulic system.

IN PROCESS PHOTOS

=== No In Process Photos - Pick to Select ===

AERIAL OPERATION INSTRUCTIONS

As required by applicable sections of NFPA #1901, operating instructions and demonstration of the aerial apparatus shall be provided at the purchaser's location. The aerial manufacturer shall provide these instructions and demonstration of the aerial apparatus.

Personnel providing the instructions shall be professionally trained by the aerial manufacturer prior to the delivery process. All costs of these instructions shall be borne by the bidder. The bidder shall notify the purchaser a minimum of 14 days prior to the instruction period. The bidder shall provide classroom instructions, operational instruction. The instructor shall provide the all necessary material to assure proper operation of the aerial device.

This instruction period shall be three (3) consecutive days at the purchaser's location.

AERIAL OPERATION MANUALS

At time of delivery, an aerial manual shall be supplied which shall include aerial operation overview, service documentation, wiring schematics and technical high-level bill of material drawings. The documentation shall address at a minimum the inspection, service, and operations of the fire apparatus and all major components thereof. This documentation and manuals shall be provided in the English language.

MATERIAL AND WORKMANSHIP TEN (10) YEAR WARRANTY

TERMS AND CONDITIONS

Rosenbauer hereby warrants each new Rosenbauer Aerial to be free from defects in material and workmanship for a warranty period of ten (10) years starting on the date the vehicle is delivered to original purchaser. Under this warranty, Rosenbauer agrees to furnish any item or items to replace those that have been found to be defective in material or workmanship where there is no indication of abuse, neglect or other than normal service. Such an item or items, at the option of Rosenbauer must be made available for our inspection at our request and returned to our factory or another location designated by Rosenbauer. Transportation of such an item or items will be arranged and covered by buyer within thirty (30) days after the date of failure and within ten (10) years from the date of delivery of the apparatus to the original purchaser, whichever occurs first. The inspection must indicate that the failure was attributed to defective material or workmanship. Authorization for repair or item replacement must be sought from Rosenbauer customer service department prior to repair or item replacement occurring.

This warranty is applicable only if the aerial device is serviced annually by an authorized Rosenbauer service facility. The cost of the annual service is the responsibility of the purchaser.

THIS WARRANTY SHALL NOT APPLY TO OR COVER THE FOLLOWING:

- Normal maintenance services or adjustments, including but not limited to, lubricants, cable adjustment, hoses, and other incidentals.
- Any item that has been repaired, replaced or altered by a facility not approved in advance by Rosenbauer, or in a manner which, at Rosenbauer's discretion, may adversely affect the safe operation or durability of the vehicle or item.
- Special, incidental or consequential damages including, but not limited to, loss of time, inconvenience, loss of use, lost profits or transportation fees or charges to or from any facility.
- Any malfunction resulting from misuse, negligence, alteration, accident or lack of operational knowledge, lack of normal or required maintenance or adjustments, exposure to corrosive agents, fire, severe environmental conditions or acts of God.

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EXCLUSIONS OF DAMAGES BOTH INCIDENTAL AND CONSEQUENTIAL.

At no time shall Rosenbauer be held liable for any incidental, consequential, indirect, special and/or punitive damages whatsoever, whether coming from breach of contract, warranty, tort or equity. Such items shall include the chassis or other items sold by Rosenbauer, or their operation or their failure to operate, or defects herein, or any undertakings, acts or omissions related to, regardless whether Rosenbauer's knowledge of the possibility of any such damage.

Without limitation of the generality of the preceding statements, Rosenbauer categorically disclaims any and all liability for property and personal injury, damages, penalties for lost revenue and/or profit, loss of aerial or products and associated pieces of equipment, the expense of substituting chassis and/or products, or the out of service expenses, resulting from damages and/or delays, that creates down time expenses and/or create economic losses, or any third party claims for damages.

This warranty is in lieu of all other warranties, expressed or implied, and all other obligations or liabilities on our part. We neither assume nor authorize any person to assume for us any liability or make any alteration to this warranty in connection with the sale of our apparatus unless expressly given in writing by Rosenbauer.

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

WATERWAY WARRANTY TEN (10) YEAR TERMS AND CONDITIONS

Rosenbauer hereby warrants each new Rosenbauer Aerial waterway to be free from defects in material and workmanship for a warranty period of ten (10) years starting on the date the vehicle is delivered to original purchaser. Under this warranty, Rosenbauer agrees to furnish any item or items to replace those that have been found to be defective in material or workmanship where there is no indication of abuse, neglect or other than normal service. Such an item or items, at the option of Rosenbauer must be made available for our inspection at our request and returned to our factory or another location designated by Rosenbauer. Transportation of such an item or items will be arranged and covered by buyer within thirty (30) days after the date of failure and within ten (10) years from the date of delivery of the apparatus to the original purchaser, whichever occurs first. The inspection must indicate that the failure was attributed to defective material or workmanship. Authorization for repair or item replacement must be sought from Rosenbauer customer service department prior to repair or item replacement occurring. Waterway seals shall be covered for a period of ten (10) years.

This warranty is applicable only if the aerial device is serviced annually by an authorized Rosenbauer service facility. The cost of the annual service is the responsibility of the purchaser.

THIS WARRANTY SHALL NOT APPLY TO OR COVER THE FOLLOWING:

- Normal maintenance services or adjustments, including but not limited to, lubrication, greasing, cleaning, and other incidentals.
- Any item that has been repaired, replaced or altered by a facility not approved in advance by Rosenbauer, or in a manner which, at Rosenbauer's discretion, may adversely affect the safe operation or durability of the vehicle or item.
- Special, incidental or consequential damages including, but not limited to, loss of time, inconvenience, loss of use, lost profits or transportation fees or charges to or from any facility.
- Any malfunction resulting from misuse, negligence, alteration, accident or lack of operational knowledge, lack of normal or required maintenance or adjustments, exposure to corrosive agents, fire, severe environmental conditions or acts of God.

EXCLUSIONS OF DAMAGES BOTH INCIDENTAL AND CONSEQUENTIAL.

At no time shall Rosenbauer be held liable for any incidental, consequential, indirect, special and/or punitive damages whatsoever, whether coming from breach of contract, warranty, tort or equity. Such items shall include the chassis or other items sold by Rosenbauer, or their operation or their failure to operate, or defects herein, or any undertakings, acts or omissions related to, regardless whether Rosenbauer's knowledge of the possibility of any such damage.

Without limitation of the generality of the preceding statements, Rosenbauer categorically disclaims any and all liability for property and personal injury, damages, penalties for lost revenue and/or profit, loss of aerial or products and associated pieces of equipment, the expense of substituting chassis and/or products, or the out of service expenses, resulting from damages and/or delays, that creates down time expenses and/or create economic losses, or any third party claims for damages.

This warranty is in lieu of all other warranties, expressed or implied, and all other obligations or liabilities on our part. We neither assume nor authorize any person to assume for us any liability or make any alteration to this warranty in connection with the sale of our apparatus unless expressly given in writing by Rosenbauer.

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

AERIAL TESTING

THIRD PARTY TESTING

The aerial ladder shall be inspected and tested by a third party. A non-destructive test shall be performed on each unit at a rate of 100% inspection by the Underwriters Laboratories inspector, exceeding the requirements applicable section of NFPA #1901 for new apparatus. All non-destructive procedures shall be fully documented and meet or exceed the requirements of applicable sections of NFPA #1901.

PERFORMANCE WATER FLOW TESTING

The waterway flow test shall be conducted by an accredited third party testing organization with certified results provided on delivery of the apparatus. If the aerial device is equipped with a permanent water system and has a rated vertical height of 110 ft (34 m) or less, standard model flow test data shall be provided to the purchaser.

If the water system has been modified from the standard model configuration, a new flow test shall be conducted to determine that the friction loss in the water system between the base of the swivel and the monitor outlet does not exceed 100 psi (700 kPa) with 1000 gpm (3748 L/min) flowing and with the water system at full extension.

A flow test shall be conducted on each vehicle to determine that the water system is capable of flowing 1000 gpm (3748 L/min) (or rating as specified in these specifications) at 100 psi (700 kPa) nozzle pressure with the aerial device at full elevation and extension.

Where the apparatus is equipped with a fire pump designed to supply the water system, the test shall be conducted using the onboard fire pump.

The intake pressure to the fire pump shall not exceed 20 psi (140 kPa).

AERIAL PAINT

Before assembly, in preparation for the final painting, the aerial ladder sections and turntable shall be thoroughly cleaned and prepared to conform to good painting practices. The aerial ladder sections and turntable shall be primed with two (2) coats of SIKENS or equal lead free primer. Ladder sections and turntable shall then be sprayed with one (1) coat of color using SIKENS or equal paint.

The color of the ladder sections shall be white FLNA40566.

STRUCTURAL DESIGN WARRANTY TWENTY (20) YEAR

TERMS AND CONDITIONS

Rosenbauer hereby shall warranty each new Rosenbauer aerial device to be free from structural failure caused by defective design and workmanship for a warranty period of twenty (20) years or 100,000 miles starting on the date the vehicle is delivered to original purchaser. Under this warranty, Rosenbauer agrees to furnish any item or items to replace those that have been found to be defective in material or workmanship where there is no indication of abuse, neglect or other than normal service. Such an item or items, at the option of Rosenbauer must be made available for our inspection at our request and returned to our factory or another location designated by Rosenbauer. Transportation of such an item or items will be arranged and covered by buyer within thirty (30) days after the date of failure and within two (2) years from the date of delivery of the apparatus to the original purchaser, whichever occurs first. The inspection must indicate that the failure was attributed to defective material or workmanship. Authorization for repair or item replacement must be sought from Rosenbauer customer service department prior to repair or item replacement occurring.

This warranty is applicable only if the aerial device is serviced annually by an authorized Rosenbauer service facility. The cost of the annual service is the responsibility of the purchaser.

THIS WARRANTY SHALL NOT APPLY TO OR COVER THE FOLLOWING:

- Normal maintenance services or adjustments, including but not limited to, filters, lubricants, cable adjustment, hoses, and other incidentals.
- Any item that has been repaired, replaced or altered by a facility not approved in advance by Rosenbauer, or in a manner which, at Rosenbauer's discretion, may adversely affect the safe operation or durability of the vehicle or item.
- Special, incidental or consequential damages including, but not limited to, loss of time, inconvenience, loss of use, lost profits or transportation fees or charges to or from any facility.
- Any malfunction resulting from misuse, negligence, alteration, accident or lack of operational knowledge, lack of normal or required maintenance or adjustments, exposure to corrosive agents, fire, severe environmental conditions or acts of God.

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EXCLUSIONS OF DAMAGES BOTH INCIDENTAL AND CONSEQUENTIAL.

At no time shall Rosenbauer be held liable for any incidental, consequential, indirect, special and/or punitive damages whatsoever, whether coming from breach of contract, warranty, tort or equity. Such items shall include the chassis or other items sold by Rosenbauer, or their operation or their failure to operate, or defects herein, or any undertakings, acts or omissions related to, regardless whether Rosenbauer's knowledge of the possibility of any such damage.

Without limitation of the generality of the preceding statements, Rosenbauer categorically disclaims any and all liability for property and personal injury, damages, penalties for lost revenue and/or profit, loss of chassis or products and associated pieces of equipment, the expense of substituting chassis and/or products, or the out of service expenses, resulting from damages and/or delays, that creates down time expenses and/or create economic losses, or any third party claims for damages.

This warranty is in lieu of all other warranties, expressed or implied, and all other obligations or liabilities on our part. We neither assume nor authorize any person to assume for us any liability or make any alteration to this warranty in connection with the sale of our apparatus unless expressly given in writing by Rosenbauer.

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

PAINT WARRANTY ONE (1) YEAR TERMS AND CONDITIONS

Rosenbauer hereby warrants the paint on the Rosenbauer aerial of each new fire & rescue vehicle to be free from blistering, peeling, corrosion or any other adhesion defect caused by defective manufacturing methods or paint material selection for a warranty period of one (1) year starting on the date the vehicle is delivered to original purchaser. Under this warranty, Rosenbauer agrees to furnish any item or items to replace those that have been found to be defective in material or workmanship where there is no indication of abuse, neglect or other than normal service. Such an item or items, at the option of Rosenbauer must be made available for our inspection at our request and returned to our factory or another location designated by Rosenbauer. Transportation of such an item or items will be arranged and covered by buyer within thirty (30) days after the date of failure and within one (1) year from the date of delivery of the apparatus to the original purchaser. The inspection must indicate that the failure was attributed to an adhesion defect caused by defective manufacturing methods or paint material selection. Authorization for repair or item replacement must be sought from Rosenbauer customer service department prior to repair or item replacement occurring.

This warranty is applicable only if the aerial device is serviced annually by an authorized Rosenbauer service facility. The cost of the annual service is the responsibility of the purchaser.

THIS WARRANTY SHALL NOT APPLY TO OR COVER THE FOLLOWING:

- Any item that has been repaired, repainted or altered by a facility not approved in advance by Rosenbauer.
- Special, incidental or consequential damages including, but not limited to, loss of time, inconvenience, loss of use, lost profits or transportation fees or charges to or from any facility.
- Any defect resulting from misuse, negligence, alteration, accident or lack of normal or required maintenance or adjustments, exposure to corrosive agents, fire, severe environmental conditions or acts of God.
- Painted items which are manufactured by a party other than Rosenbauer and which are separately warranted by that party.

EXCLUSIONS OF DAMAGES BOTH INCIDENTAL AND CONSEQUENTIAL.

At no time shall Rosenbauer be held liable for any incidental, consequential, indirect, special and/or punitive damages whatsoever, whether coming from breach of contract, warranty, tort or equity. Such items shall include the chassis or other items sold by Rosenbauer, or their operation or their failure to operate, or defects herein, or any undertakings, acts or omissions related to, regardless whether Rosenbauer's knowledge of the possibility of any such damage.

Without limitation of the generality of the preceding statements, Rosenbauer categorically disclaims any and all liability for property and personal injury, damages, penalties for lost revenue and/or profit, loss of chassis or products and associated pieces of equipment, the expense of substituting chassis and/or products, or the out of service expenses, resulting from damages and/or delays, that creates down time expenses and/or create economic losses, or any third party claims for damages.

This warranty is in lieu of all other warranties, expressed or implied, and all other obligations or liabilities on our part. We neither assume nor authorize any person to assume for us any liability or make any alteration to this warranty in connection with the sale of our apparatus unless expressly given in writing by Rosenbauer.

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

EGRESS PAINT

The fly section shall have a bolt-on egress section. The egress area shall be painted yellow in color, FLNA 1713

LADDER BED

A heavy duty ladder bed shall provide support of the aerial in the travel position.

On the base section of the aerial device, a stainless steel scuff plate shall be installed where the aerial comes in contact with the travel support.

GALVANIZED OUTRIGGERS

The aerial outriggers assemblies, beam, outer jack tube, inner jack tube, jack cover plate, and jack pad shall be galvanized.

The outriggers shall be galvanized inside and out. The process shall eliminate the rusting, scratching or paint chips on the outriggers. The galvanizing process shall permeate the metal and shall not be an "over-coating only" on outside surfaces. The galvanized components shall lessen the potential for corrosion and eliminates the requirement for finish paint. The process shall negate any later requirement for touch-up paint or total repaint of the outrigger/stabilizer assemblies.

The galvanizing shall provide the steel outriggers with both barrier and cathodic protection from corrosion. The galvanizing process shall immerse the complete outrigger components in molten zinc. The galvanizing diffusion process shall allow the zinc to bond to the steel, at the molecular level. The galvanized zinc coating shall provide a barrier that shields the steel from the environment.

CORROSION RESISTANT WARRANTY

A galvanized steel corrosion protection warranty shall be provided for the aerial outriggers and stabilizers for a period of twenty-five (25) years. The conditions of the corrosion protection warranty shall be as follows.

1. This warranty shall cover parts and labor to correct the affected area or parts only and shall not be deemed to include entire outrigger or stabilizer assemblies. This warranty does not include the turntable, aerial ladder sections, or torque box.
2. Should any warranty claim occur, the affected area shall be inspected, reviewed and approved by the aerial manufacturer prior to any work being completed.
3. Any authorized warranty work shall be only performed by the aerial manufacturer or its designated repair personnel or facility. Any repairs completed by un-authorized repair shops or personnel shall cause this warranty to be invalid.
4. Transportation costs associated with this corrosion protection warranty shall be the responsibility of the purchaser.
5. Warranty shall not cover damage due to lack of specified normal maintenance and service as outlined and required in the service and operating manuals provided with the apparatus..
6. Warranty shall not cover damage from accidents, abuse, physical and mechanical damage, and all other conditions not considered as "normal" operating conditions.
7. The obligations of the aerial manufacturer pursuant to the foregoing warranty with respect to the outriggers and stabilizers shall be limited to the cost of bringing the affected area into compliance with the specifications or of removing any defects in materials or workmanship.

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GALVANIZED TORQUE BOX

The torque box shall be hot dip galvanized inside and out. The galvanizing shall include the top and bottom and sides of the torque box, outrigger electrical compartment, and outrigger valve control compartment.

The torque box shall be totally hot dip galvanized. The galvanizing process shall not be an over-coating only to outside surfaces but shall permeate the metal. The galvanizing process shall prevent or greatly lessen rust and corrosion on the torque box and in areas between the torque box and chassis frame rails, as well as areas which cannot be reached when washing the unit and which cannot be visually inspected, and shall eliminate the need to finish paint the torque box.

The galvanizing process shall provide the steel torque box assembly with both barrier and cathodic protection from corrosion. The galvanizing process shall immerse the complete torque box component in molten zinc. The galvanizing diffusion process shall allow the zinc to bond to the steel, at the molecular level. The galvanized zinc coating shall provide a barrier that shields the steel from the environment.

The front part of the torque box (gooseneck) shall be galvanized and then painted to match the lower cab. The painted area shall be from the front of the gooseneck to 2' rearward of the front outriggers.

The 5th wheel area of the tiller shall be thoroughly cleaned and prepared to conform to good painting practices. The 5th wheel shall be primed with two (2) coats of PPG or equal lead free primer and sprayed with one (1) coat of color using PPG paint. The color of the 5th wheel shall match job color red.

== 100' TDA Base Components - 0.000 ==

RUNG COVERS

For ease of climbing the ladder rungs shall be equally spaced on a maximum 14" centers and minimum 11.75" centers and shall have a skid-resistant surface or covering.

For added safety, skid-resistant rung covering shall be provided. The rung covering shall not twist and shall cover at least 60 percent of the climbing area of each rung.

Round rungs shall be provided and shall have a minimum outside diameter of 1-1/4", including the skid-resistant surface or covering.

For maximum strength, the minimum design load for each rung shall be 500lb distributed over a 3-1/2" wide area at the center of the length of the rung with the rung oriented in its weakest position.

Each aerial rung shall be covered with one (1) continuous piece of a protective, High-Traction safety walk non- skid material.

WEAR PADS

The aerial wear pads shall be "PET" type and shall incorporate semi-crystalline hardness, rigidity, mechanical strength with exceptional sliding properties and very low sliding wear. The pads shall be used between the telescoping sections for maximum weight distribution, strength, and smooth operation. Side wear pads shall be nylatron GSM, stainless steel adjustment screws shall be provided on the side wear pads to permit proper side clearance.

SIGN PANEL BRACKETS

The aerial manufacturer shall supply aerial sign brackets welded to the base section of the aerial. These brackets shall be located on both sides of the base section.

AERIAL SIGN PANELS

Sign panels shall be provided on each side of the base section that are 16" high x 120" long. The panels shall be painted to match the aerial ladder sections.

=== No Provisions for Backlit Sign Panels - Pick to Select ===

CRADLE COVER BRACKETS

Brackets shall be installed on the cradle of the aerial for the installation of the cover. Design and installation shall be done by the final OEM.

=== No Provisions for Cylinder Covers to be Backlit - Pick to Select

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EXTENSION MARKINGS

To improve safety and to provide the operator with vital information, extension markings shall be provided. For best visibility the base section of the ladder shall include markings on the outside of the right handrail and the inside of the left handrail to indicate extension position of the ladder in operation. The markings shall be BLACK reflective numbers that will mark every 10 feet with a hash mark between the numbers.

== 100' TDA Fly Components - 0.000 ==

FOLDING STEPS

The fly section on the aerial shall have two (2) sets of folding steps incorporating toe stops with a 2" flange and non-skid surface. Steps shall be installed approximately 42" and 70" below the top rung. When deployed, the stepping surfaces shall be perpendicular to the ladder base section. Steps shall be as large as design shall permit but far enough apart to allow clearance for a charged 3" water hose. The steps shall be easily foot actuated by a fire fighter wearing turnout boots.

ROPE RESCUE EYELETS & MIAMI-DADE SPREADER BAR

Two (2) rope rescue eyelets shall be installed one on each side of the fly section, with each anchor being rated at 250 pounds, for a total combined weight rating of 500 pounds.

The special spreader bar with center roller and rope retainer has two (2) eyelets one (1) on each side of the roller rated at 250 pounds per eyelet. The roller shall be two separate rollers each operating independently from the other. The spreader bar shall fit between the rope rescue eyelets on the fly section and shall be held in place with retaining pins. The spreader bar is rated for a total of 500 pounds. The bar shall be painted yellow PPG #: FDG 82150. Storage location for rope roller shall be provided on the cradle.

ROOF LADDER BRACKETS FLY

There shall be welded plates and bolt on roof ladder mounting brackets installed on the inside of the fly section.

ROOF LADDER

Install a 12' Duo-Safety roof ladder, model number 775-A on the inside of the fly section on the driver (engineer) side. The ladder width shall be 14" and shall not exceed the height of the handrails. Hooks need to be facing the turntable.

AXE & PIKE POLE WELDMENTS

Welded-in mounting plates shall be installed for the an axe mounting on the right side and a pike pole mounting on the left side of the fly section.

=== NO Axe Bolt On Mounting Brackets - Pick to Select ===

PIKE POLE BRACKETS: FLY

Bolt on mounting brackets for two (2) rubbish hook shall be installed on the driver side of the tip in the fly section.

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PER FD:

Install two (2) Classic Nuplaglas Roof Ventilation Pole, Round W/ Grip (36561 (RH-6DA)) MAS # 46302. See LACO photos for placement.

PIKE POLE

Two (2) 6' long rubbish hooks shall be provided.

CHAIN SAW HOLSTERS

Two (2) chain saw bar holsters shall be manufactured from aluminum treadplate measuring 18"L x 5"W x 1"D and mounted at an angle on the tip section of the aerial ladder. The bottom of the holster shall be matching the curve of the tip of the chainsaw. Each bracket and mounting shall be capable of securely holding a Stihl model number MS 460 Rescue Chainsaw during aerial ladder operations. The saws shall not be provided.

== 100' TDA Aerial Rotation System - 0.000 ==

HANDRAIL STAINLESS STEEL

The handrails shall be knurled stainless steel.

HANDRAIL ORIENTATION

The turntable handrails shall be orientated in a U-like configuration. The handrail shall have an opening that allows for equipment to pass through from the ground to the aerial.

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AERIAL ROTATION SYSTEM

The rotation system shall be powered by a hydraulic motor to drive an eccentric planetary gearbox, capable of field adjustment, to rotate the aerial.

A 43.6" pitch diameter external tooth bearing shall be provided for 360 degree continuous rotation in either direction. As turntable bearing bolts are required to be checked and re-torqued at regular intervals, to make this task relatively simple, the ability to re-torque all bolts from the top of the turntable is mandatory.

The bearing shall be bolted to the bearing base plate using sixty (60) 5/8" SAE Grade 8 bolts and shall also be bolted to the turntable using fifty five (55) 5/8" SAE Grade 8 bolts.

A hydraulic release spring applied brake shall provide a positive lock for the rotation.

Two [2] pressure relief valves shall control the force of the rotation to protect the aerial from excessive side loads.

COMMAND PEDESTAL

The Aerial Command Pedestal is monitored by programmable logic control. The programmable logic control operating system shall use absolute encoders for elevation and rotation to be able to monitor the following functions continuously to offer maximum safety. The monitored aerial control functions are as follows:

The turntable shall have a stand up Aerial Command Pedestal. The following items shall appear on the panel at the main control station:

- One (1) aerial Smart Screen
- One (1) system pressure gauge, 0-5,000 psi minimum
- One (1) emergency stop button
- One (1) joystick controller
- Monitor switches
- Emergency pump engaged indicator light

The system shall be capable of performing simultaneous aerial functions.

Smart Screen

One (1) aerial smart screen shall be installed at the main control station. The screen shall consist of multiple pages. All screen shall have the same information.

The first page on the screen shall be the main aerial information. It shall give the following information:

- Aerial rotation: as the aerial is rotated 180 degrees left and right of the ladder bed, positive and negative numbers shall indicate how far right or left the aerial is rotated.
- Aerial height: as the aerial extends and elevates the distance from of the top of the handrail to the ground shall be indicated on the screen.
- Aerial reach: as the aerial extends the reach shall be indicated on the screen from the tip of the aerial to the center of the turntable.
- Aerial extension remaining: as the aerial extends the amount of feet remaining to extend shall be indicated.
- Rungs aligned indicator: as the aerial extends the rungs aligned indicator shall illuminate on the smart screen, indicating safety for climbing. The indicator shall not illuminate when the rungs are not aligned.

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- Operational envelop indicators: prior to the aerial coming upon an unsafe operating position, while operating over the short jacked side of the truck or to close to the cab and body, the collision protection shall ramp to a stop. The right disable, down disable and/or left disable indicators shall appear on the screen indicating to the operator the function that is inoperable based on the position of the aerial.

The aerial shall be programed so it shall not make contact with the cab or body or any equipment as identified during the build process. Programmable cab and body collision protection shall alert the operator with indicators on the screen stating Right Rotation Disabled, Down Disabled and Left Rotation Disabled. Each individual indicator shall illuminate when the corresponding aerial function(s) (right rotation, left rotation or lowering) are disabled. All three indicators shall illuminate when the E-STOP is pushed or the outrigger interlock is active.

The cab and body programming needs to be tight enough, so the ladder comes out of the bed cmove off to the side and be close enough for personnel to be able to stand on the top of the body and put the monitor on the truck

- Emergency stop engaged indicator: when the emergency stop button is engaged an indicator shall appear on the screen. An emergency stop button on the control panel shall be used for immediate emergency stopping of all aerial functions at all operating locations.
- Aerial load gauge: a load indicator shall appear on the screen to visually allow the operator to know they are within the safe operating parameters. The indicator shall change colors, green (safe), amber (caution) and red (overloaded) to alert the operator of the load on the aerial. The red load indicator shall flash and begin to sound a warning alarm at 100 pounds over the rated load.
- Outrigger short set indicator: when any outrigger is not fully extended and the jack is not supporting some of the truck weight a pie chart shall flash to indicate the outrigger has not been set for aerial operations. The outrigger diagram shall show the percent the outriggers have been extended. The outrigger diagram shall not change color until the jack has been set. Once the outrigger has been set the outrigger diagram shall change colors to match the pie charts display of color and safe operational envelop.

The aerial shall be able to be rotate 360 degrees over the short jacked side of the truck. A programmable logic control system allows the aerial to rotate over the short jacked outriggers while maintaining safe operating parameters. An indicator shall appear on all the smart screens to warn the operator that one or more outriggers have been short set. An operational pie chart shall also be on the smart screen to indicate the safe operating parameters depending on the short set outrigger. In the event the vehicle has been set up with one or more of the outriggers short set, any attempted operation outside the predetermined parameters shall automatically ramp the operation to a feather-soft stop. A corresponding disable light shall appear on the screen to alert the operator of the disabled function. The operator shall be able to return the aerial back to the safe operating parameters without the use of overrides.

- Auto bedding indicator and switch: an indicator shall appear when the aerial is in the 20/20/20 zone (within 20 degrees left or right of the ladder bed, below 20 degrees elevation and 20 percent retraction remaining) indicating the ladder can now be automatically stowed. By pushing a momentary button on the side of the screen the aerial shall rotate, retract and lower into the bed while avoiding cab and body collision.
- Tip lights switch: a button on the side of the screen shall turn all of the tip lights and the rung lights on and off.
- Tracking lights switch: a button on the side of the screen shall turn all of the tracking lights, panel lights and rung lights on and off.
- Flow and Pressure gauge: an indicator on the screen shall give a continuous reading of the monitors flow and presser. Total gallons shall be saved until the truck master switch has been turned off.
- Hydraulic tank level: an icon will indicate the amount of oil left in the tank.
- Dirty fliter: a picture will illuminate when the aerial filters are dirty and need to be replaced.

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The second page shall display the following information:

- Side to side leveling: a picture and number (positive or negative) indicating how level the truck is left to right.
- Front to back leveling: a picture and number (positive or negative) indicating how level the truck is front to back.
- Aerial hour meter: continual reading of the operational hours on the aerial.
- Outrigger extension: an outrigger with percentage shall appear indicating how far the outrigger is extended: red (25%-49% extension), orange (50%-74% extension), yellow (75%-95% extension), or green (96%-100% extension). The percentage shall co-inside with the operational pie chart on the next page to show the operator the parameters in which the aerial shall be able to operate.
- Hydraulic tank temperature: an icon will indicate the temperature of the oil in the hydraulic tank.

The third page shall display the following engine diagnostics information:

- Engine RPM: shows live readings of the engines RPM's
- Engine coolant temperature: shows live readings of the engines coolant temperature
- Engine oil pressure: shows live readings of the engines oil pressure.
- Battery charging condition: shows live readings of the engine's battery condition
- Transmission fluid temperature: shows live readings of the transmission fluid temperature.
- Fuel level: shows live readings in percentage of the amount of fuel remaining.

The fourth page shall display the following information:

- Aerial operations pie chart: an operational pie chart shall show in the corresponding color (red, orange, yellow or green) how far each outrigger out is extended and aerial's operational parameters based on each outrigger set up.

The fifth page shall display the following information:

- Load and reach chart: an aerial load and reach chart shall be displayed to inform the operator of the operational capabilities of the aerial wet and dry.

Aerial Speed

The aerials speed functions are proportionally regulated by the elevation and extension of the aerial. The aerial shall have proportional slow down on full extension and full retraction. The elevation system shall proportionally reduce the speed at sixty (60) degrees and ramp to off at full elevation. Lowering shall proportionally reduce the speed at three (3) degrees and ramp to off at minus twelve (-12) degrees. When the aerial is fully retracted the aerial speed shall be 20 percent faster than when fully extended.

The controls are also proportionally regulated during rotation, extension and elevation operations. The aerial shall smoothly ramp up to full operation speed to prevent jerking of the aerial. Should the operator release the controller during any of the three operations, the aerial shall ramp to a smooth soft stop.

Joystick Controller

A single joystick controller shall control aerial left/right, extend/retract and raise/lower functions. The joystick shall operate with the natural movement of the operator's hand for rotation and elevation. There shall be a thumb lever on the joystick to operate extension and retraction. The joystick shall have built in ramp up and ramp down capabilities.

The safety interlock trigger on the back side of the joystick must be engaged to operate all aerial functions. With the trigger activated the RPM's shall increase to 1,250 RPM and maintain there for two (2) seconds after returning to the neutral position.

Lighting

LED Lights shall illuminate the main control station and turntable work area for added operator visibility and safety.

A "T" shall be added into the pressure gauge line on the valve so the FD can test the back up system pressure.

The aerial ladder will have a limitation programmed into its operation to protect the step deck. The ladder will be allowed to elevate 60 degrees while fully retracted. The ladder must be extended a minimum of 2 feet in order to elevate the full 75 degrees.

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GAUGES & VISUAL DISPLAY UNITS

All gauges and visual display on the aerial apparatuses at the operating positions shall readout in the following measurements:

- Distances shall be displayed in feet and inches
- Loads shall be displayed in pounds
- Flows shall be displayed in gallons/psi
- Engine information shall be displayed in F/PSI

CONTROL STAND LID

There shall be a lid installed on the command pedestal to give extra protection to the screen and joystick.

Change Order: 2 T100T27s Los Angeles County CA (75341) 22.05.02 CO REV 2

PER FD:

Three sided turntable See Drawing

Turntable decking, step deck and all items on the walking surface shall be covered with NFPA compliant polished aluminum tread plate. The vertical outer edge shall be finished with white Scotchlite or equal reflective tape. See Photo 6622. The uprights and beauty ring need to be painted the same color as the ladder.

TURNTABLE

The turntable shall be three sided (left, rear & right) with the corners cut to allow for personnel to enter and exit the turntable. The turntable walking area shall be covered with NFPA #1901 compliant skid resistant black Line-X material, with a 2-1/2" lip. Three (3) 42" high, slip resistant handrails capable of withstanding a 225 pound force applied from any direction shall be installed on the turntable.

Change Order: 2 T100T27s Los Angeles County CA (75341) 22.05.02 CO REV 2

PER FD:

Install two (2) mansaver bar on the turntable handrails. See drawing for size.

TURNTABLE MAN SAVER BARS

Two (2) Fire Research ManSaver bars shall be installed on the left and right side of the turntable. The safety bars shall lift either upward or inward to open, and be spring loaded to automatically return to the horizontal closed position. The safety bar assembly shall be made of aluminum and stainless steel.

Change Order: 2 T100T27s Los Angeles County CA (75341) 22.05.02 CO REV 2

PER FD:

The mansaver bar vinyl cover shall be yellow.

MANSAVER BAR COLOR

The mansaver bar vinyl cover shall be yellow.

Change Order: 2 T100T27s Los Angeles County CA (75341) 22.05.02 CO REV 2

TURNTABLE FINISH

The aerial control console will be covered with aluminum treadplate. The back of the control panel will have one (1) full hinged door. The front of the control panel will have one (1) 8" x 8" hinged door. These doors are provided for maintenance and emergency operation of the aerial.

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OUTRIGGER CONTROL PANEL

The outrigger control panel shall have a switch to energize the hydraulic system for outrigger functions.

Control Panel

The control panel shall include a Smart Screen that will display the same information as the other Smart Screens on the aerial, no buttons shall be active that will allow for aerial operation (i.e. auto bedding). The panel shall contain the follow switches and lights not located on the screen at the rear of the truck.

1. Manual override system to override the outrigger/aerial interlock system
2. One (1) switch for the emergency power unit.
3. Outrigger on/off switch
4. Outrigger set indicator light, for both driver and passenger side outrigger
5. Outrigger not extended light
6. 5th Wheel Locked indicator (include the words "ladder power" in small print under the 5th Wheel Locked words)
7. Change hydraulic filters when light light is on indicator
8. Provide a red emergency pump indicator light on the driver and passenger side of the outrigger control stations to signal the pump is engaged.

HYDRAULIC HIGH PRESSURE FILTER

The hydraulic system shall be equipped with a 'high pressure' hydraulic oil filter between the pump and the control valve designed to meet the flow requirements of the system. There shall be a filter replacement light on the outrigger control panel for the convenience of the mechanic. The return filter and pressure filter shall be connected together to the same light on the outrigger control panel to indicate replacement of filters.

HYDRAULIC RETURN FILTER

A 10 micron low pressure return line filter element shall be connected to the hydraulic reservoir. The 10 micron return line replaceable filter. There shall be a filter replacement light on the outrigger control panel for the convenience of the mechanic. The return filter and pressure filter shall be connected together to the same light on the outrigger control panel to indicate replacement of filters.

WARNING LABELS

Danger, caution, and warning labels shall be installed at all aerial control stations, individual controls, and at various locations on the aerial device. These labels shall be in compliance to industry warning symbols, ASME, SAE, and applicable NFPA #1901 standard. These labels shall be with symbols commonly used in the fire industry.

AIR HORN

A momentary switch shall be provided for controlling the vehicle's air horn at the turntable control console. The button shall be in the smart screen.
== 100' TDA Torque Box Components - 0.000 ==

TORQUE BOX

The torque box connecting the turntable to the outriggers shall provide the rigidity needed for the aerial to be operated at -10 degrees to +75 degrees elevation at full extension. The dimensions of the torque box will be unique to the truck and based upon customer requested specifications and engineering stability requirements. The design will be a double drop to help with compartment space within the body.

ROPE TIE DOWN AT GOOSENECK

There shall be four (4) rope tie down points installed on the tiller gooseneck. Two (2) shall be installed on each side one in the forward and one in rearward position. The tie downs will be rated for straight line pull of 9,000 lbs and will be galvanized.

== 100' TDA Outriggers & Stabilizers - 0.000 ==

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OUTRIGGER COMPONENTS

The aerial device outriggers and stabilizers shall be designed to function with the Smart Aerial operational components. The system shall have a pad that pivots left-to-right and front-to-rear.

Extension Beams

The extension beams shall entirely enclose the extension cylinders to prevent damage to the rods and hoses. Each outrigger shall be controlled with an independent controller which can extend and lower the outrigger at the same time or raise and retract the outrigger at the same time.

A double box design shall enclose the jack cylinders completely to protect the rods from damage that could result from exterior circumstances.

Jack Cylinders

The jack cylinders shall have pilot operated check valves for both the raised and lowered positions. Each jack tube shall be drilled for mechanical pin locks for a safety backup.

The outrigger jack cylinders shall be mounted so they can be removed from the top of the outrigger jack tube. Jack cylinders that are removed from the bottom of the outrigger jack tube will not be accepted.

Outrigger Deployment Alarm and Warning System

The outrigger deployment alarm, of not less than 87 DBA, shall sound at all times while the outrigger master switch is in the on position and stops sounding only when the outrigger switch is turned off. The audible alarm shall warn personnel that outrigger movement is possible at any time the switch is on.

Safety Features

The outrigger system provides the following safety features:

9. A cradle interlock system shall be provided, to prevent the lifting of the aerial from the nested position until the operator has positioned all the stabilizers in a load supporting configuration.
2. There shall be a system on the truck that continually monitors the weight and balance on the truck and how that affects the associated operating parameter. This system allows operators to set up the truck up in a short-jacked position. The operator shall be allowed to operate the full 180 degrees off of the short-jacked side of the truck within the safe operating parameters without the need of a second operator. Operators shall be able to identify on the screen what quadrant each outrigger is set in as well as the associated safe operating parameters they are in.
3. The outrigger not extended indicator on the screen shall have a warning indicator flashing if one or more outriggers has not been set.
4. The monitoring system on the truck shall be able to identify if two or more adjacent outriggers come off the ground and shut down the current aerial operation. The monitoring system shall then only allow the operator to adjust the truck back into the safe operating parameters.

Lighting

A Whelen V-Series, model 5V3R, shall be mounted to the inside of the vertical outrigger jack beam. The warning light shall consist of 12 red Super-LED's installed on a V-light PC board with a TIR V-light reflector. The flashing lights shall alert personnel on either side of the outrigger of its location. The V-light PC board shall have four white Super-LED's installed below that work independently as the ground illumination light. The lights shall activate with the master switch.

Outrigger and Stabilizer Specifications

The specified outriggers and torque box system shall provide a 1-1/2 to 1 stability safety factor when the aerial is in any operating position.

The stability requirements shall be met by the apparatus on which the aerial device is mounted when that apparatus is in a service-ready condition but with all normally removable items such as water, hose, ground ladders, and loose equipment removed.

The aerial device shall be capable of sustaining a static load 1-1/3 times its rated capacity in every position in which the aerial device can be placed when the apparatus is on a slope of 5 degrees downward in the direction most likely to cause overturning.

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All outriggers and stabilizers that protrude beyond the body of the apparatus shall be striped or painted with reflective material so as to indicate a hazard or obstruction. Each outrigger or stabilizer shall also be provided with one or more red warning light(s) located either on the stabilizer or in the body panel visible on the side of the apparatus where the stabilizer is located.

Cradle Interlock System

A cradle interlock system shall be provided, to prevent the lifting of the aerial from the nested position until the operator has positioned all the stabilizers in a load supporting configuration. A switch shall be installed at the cradle, to prevent operations of the stabilizers once the aerial has been elevated from the nested position.

OUTRIGGERS

Two (2) front out and down outriggers shall be provided on the apparatus.

The outrigger assemblies shall consist of the following components:

5. A 2" inside diameter cylinder with a 1.125" outside diameter rod shall extend and retract the outrigger 48".
6. A 5" inside diameter cylinder with a 3" outside diameter rod shall raise and lower each jack tube a distance of 22".

The total width from the center of pivot pin to center of pivot pin when the outriggers are fully extended shall be 15' 6".

Each outrigger shoe shall have a minimum contact surface of 370 square inches and shall be fabricated from a minimum 80,000 psi yield strength 1/2" steel plate. Surface gussets shall be provided to prevent folding in soft material.

For the purposes of standardized emergency operations within the District, with the outrigger fully deployed there shall be sufficient stability to permit full operation with the tractor straight ahead.

SHORT JACKING

The aerial device shall be able to be operated a full 360 degrees while any outrigger is short set. As the outriggers are set further out the operating parameters are adjusted to allow for more aerial operations. The outriggers shall be monitored and operations shall be displayed when the outriggers are in the following quadrants 25% - 49%, 50% - 74%, 75% - 95% and 96% - 100%. An operational graph shall be displayed outlaying the operational capabilities of the aerial within each quadrant. The outrigger along with the load on the aerial will continually be monitored so that the aerial is always within safe operating parameters. Devices that do not allow the aerial to operate 360 degrees while the truck is short jacked shall not be accepted, no exception.

OUTRIGGER PLATES

An auxiliary outrigger plate shall be provided and permanently attached to each outrigger. Pin to be installed on the vertical outrigger tube (if there is enough room) with cable.

OUTRIGGER STOWED INDICATOR LIGHT

An outrigger stowed indicator light will be provided in the cab. The light shall indicate if one or more outriggers is not fully retracted and fully raised. The light will be connected to the door ajar light in the cab.

== 100' TDA Aerial Waterway & Capabilities - 0.000 ==

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PERFORMANCE CAPABILITIES

The following are aerial ladder and water capabilities for the operation of this unit in the unsupported configuration with the truck level, the outriggers fully extended and lowered to relieve the chassis weight from the axles. The capabilities are based upon 360-degree continuous rotation and up to full extension.

The following capabilities are based upon continuous 360-degree rotation and up to full extension. The aerial ladder and water system shall be designed to permit the following flows:

1,000 GPM: 90-degrees to the side of the ladder centerline

1,000 GPM: 135-degrees down from a line parallel to the centerline

<u>Elevation</u>	<u>Capabilities DRY</u>		<u>Capabilities WET</u>	
	Tip Load	Evenly Distributed	Tip Load	Evenly Distributed
-10 degrees to 30 degrees	500 lbs	1,000 lbs	500 lbs	750 lbs
30 degrees to 45 degrees	500 lbs	1,500 lbs	500 lbs	750 lbs
45 degrees to 60 degrees	750 lbs	2,000 lbs	500 lbs	1,500 lbs
60 degrees to 75 degrees	1,000 lbs	2,500 lbs	500 lbs	2,000 lbs

The above ratings shall be based on average weight of personnel on the ladder at 250 pounds each. The ladder meets the 2:1 safety factor requirement for material based on the weight of the ladder plus a 500 pound live load at the tip of the aerial, and flowing 1,000 GPM of water at 90 degrees to the side of the aerial at zero degrees elevation.

If a monitor is ordered that can elevate above 0 degrees the tip load shall be reduced to 250 lbs.

SWIVEL

There shall be a 4" waterway swivel with 360 degrees continuous rotation. It shall be installed through the turntable and torque box. The hydraulic oil for the aerial shall be directed through a three-port hydraulic swivel with 360 degrees continuous rotation.

The swivel will be a modular three component swivel. It shall have a separate electrical swivel and hydraulic swivel that when connected shall form one component. The two individual swivels shall not affect the operations of any other part of the swivel. Individual replacement of each individual portion of the swivel shall be capable.

ELECTRIC OUTRIGGER CONTROLS

The aerial shall be equipped with two (2) out and down outriggers with electric outrigger control valves activated by momentary rocker switches. The controls located on the driver's side and officer side, shall control both the driver's side and officer side outriggers.

- Provide green indicator lights at both outrigger control stations to indicate when the outriggers are full out and fully down (next to rocker switches).

A "T" shall be installed in the pressure gauge line of the blue block for the FD to test the back up system pressure.

=== No All Jacks Up Switch - Pick To Select ===

MONITOR

Install and Akron 1495 Ladder Pipe. The 1000gpm rated monitor shall be constructed of lightweight Pyrolite and weigh no more than 27lbs. The ladder pipe shall have mounting clamps that are adjustable to fit up to 16" rung spacing.

The last three rungs on the fly section shall be modified to accept the Akron ladder pipe.

STACKED TIPS

One (1) set of Akron #2499 straight bore tips shall be provided for the monitor as follows:

7. One (1) 2"
8. One (1) 1-3/4"
9. One (1) 1-1/2"
10. One (1) 1-3/8"
11. One (1) 2-1/2" NH male threaded base mounting bracket.

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MONITOR COLOR

The monitor shall be Akron standard red in color.
No Waterway Provided

2.5" RELIEF VALVE

A 2.5" relief valve shall be installed above the turntable.
== 100' TDA Electrical System - 0.000 ==

INTERCOM

The two station intercom communication system shall have the master station at the turntable and secondary intercom and speaker at the tip of the aerial.

The master station shall have a volume control and a push-to-talk button. The remote station shall operate "hands free" and constantly transmit to the master station and speaker, unless the master station push-to-talk button is pressed.

The intercom shall be designed for exterior aerial application. Each station shall have a weather resistant and protective housing and water resistant speakers. The cable for the intercom shall be shielded.

Fire Research Intercom

Fire Research ACT Intercom model ICA900-112 two-way system shall be installed. The intercom kit shall include two control modules, one that is hands free and one that has a push-to-talk button, two speakers, and cables. The control modules shall have an LED volume display and push-button volume control. The hands free module shall constantly transmit to the other module unless the push-to-talk button is pressed.

The intercom shall be designed for exterior use. The control module shall be no more than 2 7/8" high by 5 1/8" wide by 1 7/8". The speaker shall be no more than 5 1/8" high by 5 1/8" wide by 1 1/2" deep. The power requirements for each control module with a speaker shall not exceed 1/2 amp at 12 VDC.

LIGHT HOUSING COLOR

All light housing shall be white in color.

TRACKING LIGHTS:

Two FireTech HiViz area and work lights Model # FT-WL-X-5H-FT-W shall be installed at the lower end of the base section ahead of the lift cylinders of the ladder. The 35 watt +12 DC, 2.91 Amp, light head configuration shall incorporate 5 white LED's. High-quality construction and components enable the light to withstand vibration up to 21Grms. Build-in reverse polarity protection helps prevent accidental damage caused by incorrect installation. Electronic thermal management ensures that if the light is subjected to a massive heat overload, that a self-protection protocol is engaged to reduce the light output, until such time as the heat overload retreats to normal parameters. The HiViz lights shall be activated from the tracking lights switch on the main control station. The FT-WL-X-5H-FT-W lights shall have 4,000 raw lumens (3,305 effective lumens).

TIP LIGHTS:

Two FireTech HiViz area and work lights Model # FT-WL-X-5H-FT-W shall be installed at the tip of the ladder. The 35 watt +12 DC, 2.91 Amp, light head configuration shall incorporate 5 white LED's. High-quality construction and components enable the light to withstand vibration up to 21Grms. Build-in reverse polarity protection helps prevent accidental damage caused by incorrect installation. Electronic thermal management ensures that if the light is subjected to a massive heat overload, that a self-protection protocol is engaged to reduce the light output, until such time as the heat overload retreats to normal parameters. The HiViz lights shall be activated from the tracking lights switch on the main control station. The FT-WL-X-5H-FT-W lights shall have 4,000 raw lumens (3,305 effective lumens).

TIP LIGHTS:

Two (2) Fire Research Spectra Max LED Scene Light model SPA260-K20 shall be provided facing downward on the egress of the ladder. There shall be a guard around the front of the light to protect it from being kicked. The mount shall be designed to withstand the weight (250lbs) of one person should their foot rest on it. The lights shall be activated by the tip lights switch.

The lamphead shall have sixty (60) ultra-bright white LEDs, 48 for flood lighting and 12 to provide a spot light beam pattern. It shall operate at 120 volts AC, draw 1.4 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 powder coated.

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TIP MARKER LIGHTS

Two (2) TIR3 Whelen LED lights, model # RSR03ZCR and RSG03ZCR, shall be installed at the tip of the fly section. The driver side red and officer side green. These lights shall be activated from the tip light switch on the turntable.

RUNG LIGHTING

The ladder rungs of each aerial section shall be equipped with 12-volt LED luma-bar lighting. The luma-bar shall run the full length of the climbing portion of each section. These lights shall be activated from the turntable tracking light switch. The ladder rung lights shall be blue in color.

=== No Camera - Pick to Select ===

== 100' TDA Hydarulic System - 0.000 ==

AERIAL HYDRAULIC SYSTEM

HYDRAULIC SYSTEM

The hydraulic system shall have a load sensing, variable gallonage, hydraulic piston pump with a 12-volt pressure reducing system. To reduce the normal time for aerial set up, the hydraulic pump shall be of the load sensing design. The hydraulic system shall have sufficient oil flow to provide the capability of performing multiple functions simultaneously without reducing operating speeds of the selected functions.

The hydraulic oil for the aerial shall be directed through a hydraulic swivel with 360 degrees continuous rotation. Enclosed in the hydraulic swivel shall be a minimum of twenty (20) electrical collector rings and a maximum of thirty-six (36) electrical collector rings with 360-degrees continuous rotation.

The hydraulic pump shall be large enough to provide oil to meet all of the requirements needed for aerial and outrigger operation standards.

A pressure reducing valve set at 500 PSI above the system pressure shall be connected to the hydraulic pump. This pressure reducing valve shall be a safety device for hydraulic pump failure. The hydraulic oil shall be directed through high pressure hydraulic hose and tubing.

The hydraulic system shall be designed to direct oil to the outriggers only while the ladder is in the bedded position. The oil can be directed to the aerial operation only when all of the outriggers are supporting sufficient load. This operation is made available through the use of electrical diverter valves with a manual override system for safety backup.

Hydraulic System Installation

The non-sealing moving parts of all hydraulic components, whose failure results in motion of the aerial device, shall have a minimum bursting strength of four times the maximum operating pressure to which the component is subjected.

Dynamic sealing parts of all hydraulic components, whose failure results in motion of the aerial device, shall not begin to extrude or otherwise fail at pressures at or below two times the maximum operating pressure to which the component is subjected.

Static sealing parts of all hydraulic components, whose failure results in motion of the aerial device, shall have a minimum bursting strength of four (4) times the maximum operating pressure to which the component is subjected.

All hydraulic hose, tubing, and fittings shall have a minimum bursting strength of at least three times the maximum operating pressure to which the components are subjected. All hydraulic hoses shall have a stamped embedded on one end of the metal fitting to include the date, technicians creating the hose identification number, PSI of hose and the company the hose was made by. This shall assist a mechanic in determining the age of the hydraulic hose.

All other hydraulic components shall have a minimum bursting strength of at least two times the maximum operating pressure to which the components are subjected.

The hydraulic system shall be provided with an oil pressure gauge at the control station position.

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Hydraulic Reservoir

The hydraulic system shall be supplied by a 35 gallon oil tank with a 10 micron filter on the return line and a 100 mesh filter on the pump inlet side.

A means for checking and filling the hydraulic reservoir shall be readily accessible.

The fill location shall be conspicuously marked with a label that reads "Hydraulic Oil Only."

Instructions for checking and filling the hydraulic reservoir shall be provided.

The hydraulic system components shall be capable of maintaining, under all operating conditions, oil cleanliness and temperature that comply with the component manufacturer's recommendations.

HYDRAULIC GATED DRAIN LINE

One (1) quarter turn shut-off valve shall be connected in the drain line of the hydraulic oil tank..

HYDRAULIC GATED DRAIN LINE

One (1) quarter turn shut-off valve shall be supplied between the suction line of the hydraulic oil tank and the inlet of the hydraulic pump.

HYDRAULIC OIL ISO 32

United MV Extreme Hydraulic Oil is a multi-grade hydraulic lubricant engineered for extreme temperature ranges. The low pour point of -58° F enables this fluid to flow quickly in extreme cold climates, avoiding pump cavitation that results in pump wear. The high viscosity index of this fluid addresses the extreme hot climates and operating temperatures, thinning out less at high temperatures than typical hydraulic fluids.

United MV Extreme Hydraulic Oil is formulated with rust inhibitors, oxidation inhibitors, anti-wear agents and anti-foam additives. This fluid is fortified with a friction modifier lubricity agent necessary in hydraulic systems operating wet clutches and/or wet brakes, commonly found in industrial cranes and other off-road equipment. United MV Extreme Hydraulic is has very good water separation so that contaminant water may be drained from the reservoir when the machine is at rest. In-plant filtration systems insure ISO clean-liness standards during blending and container filling, providing a clean product for your expensive hydrau-lic system.

HYDRAULIC SIGHT LEVER GAUGE

There shall be a 5" sight level gauge installed on the oil tank. The fill and sight gauge need to be on the same side of the tank. A EPU kill switch shall be installed behind the same door as the sight level gauge.

ELEVATION SYSTEM

The hydraulic elevation system shall have two (2) 6" inside diameter cylinders that have 3-1/2" diameter rods and a 36" stroke. The elevation system shall elevate the aerial from -10 degrees to +75 degrees. The cylinders shall be equipped with spherical bushings to minimize cylinder rod wear. Each cylinder shall have lock valves connected directly to the barrel of the cylinder.

A pressure-reducing valve shall limit the force of the aerial when lowering and the system pressure limits the force when elevating the aerial.

All hydraulic cylinders utilized in the aerial elevation and extension system shall be commercially available and shall be of standard sizes and lengths rather than special sizes or of proprietary manufacture. This requirement is important since it assures quicker parts availability, shorter down time, and less costly replacement parts for cylinders.

PTO

An electrical start-stop "hot shift" PTO shall be mounted to the transmission. The PTO shall be connected to the hydraulic pump and shall supply power for all aerial and outrigger operations. Electrical safety wiring shall require that the vehicle be in neutral and the parking brake set before the PTO will operate. A "PTO Engaged" indicator light is installed in the cab of the apparatus.

EMERGENCY BACK UP PUMP

An emergency hydraulic system shall be provided for capability for limited ladder functions and to stow the ladder and outriggers in case of prime motor failure.

The emergency system shall be powered from the 12-volt electrical system from the apparatus battery system and shall not be load managed.

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TILLER CAB

RBA Specs:

A permanently mounted tiller cab shall be mounted at the top rear of the tiller trailer, directly behind the egress tip of the aerial ladder. The cab will have approximate dimensions of 64" from front to back, 39" from side to side and approximately 65" tall.

The frame of the tiller cab will be made of tubular aluminum to provide a safety roll cage to the driver. The frame must be supported by a minimum of 2 structural aluminum posts (A post and B post) to provide the best roll over protection possible. The interior of the tiller cab shall be finished in a black bed liner type material to provide years of maintenance free protection.

The cab will be completely enclosed with windows. The front windshield must be contoured to allow the most visibility possible. The laminated glass must be a minimum of 33" wide by 37" tall in the front. There shall be reverse hinged doors on both sides of the cab to all access from either side of the tiller trailer body. The doors shall be affixed with die cast steel chrome plated latches. Each door shall have a design and shape to allow for maximum visibility to the tiller driver. On each cab side there will be an additional fixed wing window that will give the operator side visibility. This window must have a minimum of 250 square inches of surface area.

Switching for the windshield wipers will be on the switch panel on the tiller cab dash. The reservoir for the windshield washer solution shall be in a location that provides easy access for refilling.

There shall be a single tiller operator's seat installed in the cab. The seat shall be centrally located in the tiller cab to provide the best visibility possible. The seat shall be a Bostrom "Sierra" mid back bucket air ride seat specifically designed for use as a tiller cab seat. The seat shall allow 5" of fore and aft adjustment. There must be a minimum of 37" from the bottom cushion of the set to the headliner. There shall be a lap belt per NFPA. The seat belt shall be tied in to the main chassis seat belt warning system and notify personnel when the tiller cab drivers is not belted.

There shall be a single steering wheel installed that will control the trailer axle steering. The trailer axle shall have a minimum of 19 degrees of movement in either direction. The steering wheel will have the ability to both tilt and telescope to allow adjustment for different drivers.

There shall be a Smart Screen tiller information center installed in the tiller cab dash. This information screen shall provide personnel with the following information:

- Position of the tiller steer axle
- Tiller cab Seatbelt/occupied
- Jack knife alarm
- Communication buzzer activation indicator
- Tractor RPM
- Current truck speed
- Parking brake application

On the dash of the tiller cab there shall be a minimum of the following:

- HVAC Controls to include:
 - Fan speed
 - Temperature selection
- Air Conditioning engagement
- Light and Auxiliary controls to include:
 - Dome light activation
 - Windshield wiper activation
 - Windshield washer activation
 - Auxiliary lighting activation
 - USB charging port
 - Headset push to talk button (if required)
- Smart Screen tiller information center
- Audible Alarm for jackknife alarm

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- A minimum of 4 HVAC vents for driver and front windshield defrosting with at least 2 vents positioned at the bottom of the windshield for optimal defrosting

The tiller cab floor shall contain the following items:

- Foot switch for dead man / main engine start up
- Foot switch for tiller cab to tractor cab signaling.
- Lockout mechanism to disable tiller axle steering
- NFPA compliant tread plate finish for walking surface

There shall be a dead man switch provided on the tiller cab floor. This dead man switch must be depressed before the main tractor engine can start.

TILLER CAB SEAT

H.O. Bostrom Co. Sierra or equal low back seat with Grey Tweed Durawear upholstery and 5" minimum fore and aft adjustment with passenger seated indicator switch. The seat shall be centrally located behind the aerial ladder to give the tiller operator maximum visibility. The seat shall mount on a storage box with side access openings. The cab floor to top of seat bottom cushion height, when measured 5" forward of the seat back, shall not be less than 14" and the top of seat cushion to headliner height, when measured 5" forward of the seat back, shall not be less than 39".

Provide the tiller cab seating location with an INDIANA MILLS or equal retractable lap belt with a seatbelt latched indicator switch.

TILLER CAB HEATER / VENTILATION

Provide four (4) flush frame-style adjustable vents with tube handles, one (1) on each right and left side of the front and rear bulkheads of the cab. Exact size and locations of the vents to be determined and approved by the District at the pre- construction conference.

Provide one (1) 800 BTU minimum, 3 speed, electric controlled defroster for the tiller cab (HEATER CRAFT 1002H24 or equal) including all necessary components for proper operation. Body builder shall install a 12v to 24v step inverter to provide increased defroster capabilities. Mounting locations to be approved by the District at the pre- construction conference.

TILLER CAB FANS

Two (2) 12-Volt heavy duty fans shall be provided for additional air circulation in the tiller cab.

Provide two (2) six (6) inch diameter auxiliary fans, with fan mounted two-speed toggle switches, suspended from the tiller cab overhead, one (1) on each right and left side. The fans shall be capable of being rotated 360-degrees, for windshield defrosting or personnel comfort, and shall not interfere with access to the tiller operator's position. Fans and exact mounting locations to be determined and approved by the District at the pre-construction conference.

ELECTRICAL

Switch and circuit breaker panels shall be located in front of the tractor and tiller operators. The panels shall be hinged or removable with quick release attachments for maintenance. Two (2) extra switches shall be provided for future use on each of the above panels.

All panel mounted switches, as designated herein, shall be grouped together on the panel, illuminated and clearly identifiable, day or night, by easily read labels.

All dash or panel mounted switches, with exception of the ignition, battery, intermittent wiper and rheostat switches to be rocker-type, two (2) or three (3) positions as noted.

All on/off switches to have amber integral pilot light, except "MASTER", illuminated identification labels and polarity specific spade-type connectors. All switches shall be top of line, readily available from diversified sources, Cole Hersee or a District approved equal. No exceptions.

Switch panel layouts shall be approved by the District.

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Provide the interior of the tiller cab with turn signal indicator lights connected to the tractor turn signal wiring. Lights and exact mounting locations to be determined and approved by the District at the pre-construction conference.

Provide a dimmer switch to control the tiller cab's overhead switch panel illumination.

12 VOLT POWER SOURCE

One (1) 12 volt cigarette lighter style power connection rated at 15 amps shall be provided in the tiller dash.

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

12 VOLT USB POWER SOURCE

Two (2) 12 volt dual USB power outlet with 5 volt 2.1 amp output shall be provided in the dash of the tiller.

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

DEADMAN SWITCH

A deadman switch shall be provided in the tiller cab that must be pressed prior to the starting the engine. NOTE: Tiller seat shall also be tied into seat belt indicator and vehicle data recorder located in the tractor cab.

Provide foot activated dead-man system in the tiller cab to prevent the apparatus from being started until the tiller operator responds to the two-way buzzer and indicator light communication system reflected in the previous paragraph. Mount the Linemaster Compact #491-S or equal foot switch in front of the tiller operator on the extreme right side of the tiller cab floor. Provide a polarized override jumper connector at an approved location for one-person transportation.

COMMUNICATION

Provide a two-way buzzer and indicator light communication system between the tiller operator and tractor driver. This system shall be installed in addition to the intercom system. Provide a Linemaster Compact #491-S or equal foot switch, labeled "ALARM", mounted in front of the tiller operator on the tiller cab floor, to the right of the steering column. Provide a waterproof momentary pushbutton switch, labeled "ALARM", in front of the driver on the left side of the tractor cab dash panel. This system shall also be activated in the tractor cab when the parking brakes are released and the tiller operator is not present. The buzzers, lights and exact mounting locations to be determined and approved by the District at the pre-construction conference.

STEERING LOCK

A steering lock shall be provided on the tiller.

Provide foot activated dead-man system in the tiller cab to prevent the apparatus from being started until the tiller operator responds to the two-way buzzer and indicator light communication system reflected in the previous paragraph... Provide a polarized override jumper connector at an approved location for one-person transportation.

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TILLER BODY CONVEX MIRRORS

Provide two (2) adjustable, rectangular, convex rear view mirrors, one (1) on each interior outboard side of the tiller cab. Mirrors and exact mounting locations to be determined and approved by the District at the pre-construction conference.

Provide two (2) 8" stainless steel exterior convex rear view mirrors, one on each right and left side of the trailer, slightly forward of the tiller axle, for the purpose of viewing tiller wheel position and road blind spots. All hardware to be stainless steel. Mirrors and mounting locations to be determined and approved by the District at the pre-construction conference.

TILLER CAB DOME LIGHT

A Whelen red/white LED light shall be provided in the tiller cab.

WINDOWS SIDE TILLER CAB

WINDOWS

Provide a dark tint drop-down sliding-type rear window in the tiller cab, as large as practicable, approximately 39" wide x 25" high. The upper window glass shall slide vertically downward to open and the lower window glass to be fixed. The window and size shall be determined and approved by the District at the pre-construction conference.

HINGED DOOR TILLER CAB

A hinged door shall be supplied on the tiller cab.

Provide hinged and insulated suicide-type doors, one (1) on each right and left side of the tiller cab. The doors shall be capable of locking in the open position. The doors shall utilize adequate latching to prevent the frame from rattling. The doors shall have sliding-type windows, as large as practicable. The forward window glass shall slide horizontally rearward to open and the rear window glass to be fixed. The windows and size shall be determined and approved by the District at the pre-construction conference.

WINDOW TILLER CAB DOORS

There shall be two (2) sliding windows provided on the door of the tiller cab.

WINDSHIELD WIPER SYSTEM

Provide a self-parking, electric windshield wiper motor. Two-speed switches to be mounted in the tiller cab's overhead switch panel. The wiper shall appropriately clear the windshield to the satisfaction of the District. The wiper motor shall have an access panel and be easily serviceable.

Provide a windshield washer system. Control switch to be mounted in the tiller cab's overhead switch panel

SUNROOF

There shall be a sun roof provided in the tiller cab.

Provide a fixed sun roof, approximately 29" wide x 14" long, on top of the tiller cab. Sun roof glass to be tinted as dark as possible to provide maximum solar protection. Sun roof, solar protection and exact mounting location to be determined and approved by the District at the pre-construction conference.

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SUNVISOR

Provide the tiller operator's position with an appropriately sized adjustable dark tint poly carbonite sun visor. The sun visor shall not interfere with the tiller operator's view when stowed and shall be provided with positive restraint/s to keep the visors in the stowed position when not in use. No exceptions.

WINDSHIELD, THREE PIECE, HEATED, TILLER

CAB DOOR HARDWARE EBERHARD CHROME (2) TILLER CAB

INTERIOR DOOR HANDLES, 7IN CHROME

SEAT MOUNTING-TILLER, BOSTROM 2-WAY

MIRROR- TILLER CONVEX

CAB DASH, TILLER

DOOR INSULATION, TILLER

INTERIOR INSULATION, TILLER

INTERIOR FLOOR COVERING COLOR BLACK, TILLER

TREAD PLATE FLOOR COVERING, TILLER

EXTERIOR GRAB HANDLES ALUMINUM WITH STANCIONS, 48IN, TILLER

FRESH AIR VENTS, EOY ALP, TILLER

USSC MINI AIR FILTRATION SYSTEM

STEERING COLUMN, STEERING WHEEL - TILLER

4" SS EXTERIOR TOE KICK - TILLER

TRIM SPECIFIC PARTS FOR M13263-73

Cab Coating Interior Black Polyurethane

Single Tone Paint

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== Rosenbauer Tiller Subframe - 1115.017 11/15/17 ==
PRICE PROTECTION

TILLER FRAME

The chassis frame shall consist of two (2) "C" style parallel rails, constructed of high strength low alloy and shall feature the following:

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

The frame ratings shall be as follows:

- 110,000 PSI minimum yield strength high strength low alloy steel
- Minimum Resisting Bending Moment (RBM) of 2,810,000-inch pounds per rail

FRAME FINISH

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

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REAR TRAILER STEER AXLE

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

- A capacity of 23,000 pounds
- A 3.74" drop and a 71" king pin intersection (KPI)
- A conventional style hub with a standard knuckle
- A reinforced brake spider

TRAILER BRAKES

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

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

TILLER AXLE CRAMP ANGLE

The tiller shall have a steering axle cramp angle of 19 degrees to the left and right.

BRAKE SYSTEM

The rear air brakes shall include a dual reservoir system with two (2) 1700 cubic inch reservoirs with 3400 cubic inch of air capacity. The air reservoir 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.

A two (2) sensor, one (1) modulator Anti-lock Braking System (ABS) shall be installed on the rear axle in order to prevent the brakes from locking or skidding while braking during hard stops or on icy or wet surfaces.

AIR SUPPLY LINES

The air system on the tiller subframe assembly shall be plumbed with color coded reinforced nylon tubing air lines. The tiller subframe assembly service brake line shall be blue, the parking brake line orange.

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

Please make this available as an option as a pull down under air supply lines.

POWER STEERING GEAR

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 16-degree angle in relationship to the vertical plane of the trailer frame. This mounting technique is designed to reduce the operating angle of input steering shafts. A more direct, responsive, and smoother handling vehicle will result from these unique design characteristics.

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POWER STEERING PUMP AND RESERVOIR

The tiller subframe will be provided with a power steering pump and reservoir that will be supplied on the chassis or shipped loose. Plumbing to be provided by the body facility.

REAR WHEEL BEARING LUBRICATION

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

REAR SUSPENSION

The single rear axle shall feature a Ridewell Model RAS-227 steer axle air suspension with constant axle pitch and maximum stability through advanced parallelogram design. The suspension floats on four (4) air springs and includes all rubber-brushed pivots for low maintenance. Axle alignment is maintained using eccentric bolts at each frame bracket. Dual air height control valves shall be installed to ensure equal frame height on both sides of the vehicle regardless of the load.

The rear suspension capacity shall be rated at 23, 000 pounds.

REAR SHOCK ABSORBERS

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

STEER TIRES

The steer tires shall be Bridgestone 425/65R 22.5 "L" tubeless radial M864 on/off highway tread.

The steer tires shall feature:

- A stamped load capacity of 22,800 pounds per axle with a speed capacity of 75 miles per hour when properly inflated to 120 pounds per square inch

TIRE BALANCING

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

FRONT WHEEL

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

==== No Run Flat Tire Safety Ring =====

TRAILER ELECTRICAL CONNECTION

A seven (7) pin round electrical trailer electrical connection shall be provided with the chassis. The wiring shall include a ground wire which shall be in the white cavity; wiring for marker lights which shall be black, left turn signal wiring shall be yellow, wiring for stop lights which shall be red; right turn signal wiring which shall be green, additional marker lights which shall be brown and ABS brake power which shall be in the blue cavity.

STEERING COLUMN AND WHEEL

The tiller shall include a Douglas Autotech steering column. The steering column shall feature an 18", four (4) spoke steering wheel located at the driver's position; a five (5) position tilt and 2.25" telescopic adjustment. The steering column shall include a steering sensor. The steering wheel shall be provided with a black vinyl cover.

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REAR AXLE WARRANTY

The rear axle shall be warranted by Meritor for two (2) years with unlimited miles under the general service application.